

**Metasol** Meta Solution

# MC/TOR

Contactors and Overload Relays



**LS** ELECTRIC

# **Metasol** Contactors and overload relays

New Generation of Contactors From LS



## **Designed to show superior technology: Metasol series**

Sealed structure has improved its safety features so that no arc flash is exposed. In order to emphasize its durability as an industrial device, Metasol series adopt simple design form and sophisticated shape applying diamond cut concepts on product surface.





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# Metasol

Series completion



More Safe,  
More Valuable



Contactors & Overload Relays





- *Advanced technology & Expert solution*
- *Offering economical solution with compact size & easy connection*
- *Ensure reliability in the system: Type II Coordination*
- *Perfect system with peripheral devices.*
- *Environment friendly product: complies with International environment standard RoHS.*
- *25 Models in 9 Frames*
- *Ready for IE3*

Contactors and overload relays

# Motor Starters

- Compact design for space saving
- DIN rail and screw mountable (upto 150AF)
- Overload relays directly mountable to contactors separately
- Finger-proof design
- Easy to combine with manual motor starters
- Broad range of accessories
- World class products conforming to IEC and UL standards



## 18AF

### Contactor

**MC-6a, 9a, 12a, 18a**

Rated current:

6, 9, 12, 18A

Rated insulation voltage:  
690V

### Overload relay MT-12

Current range: 0.1~18A

Trip class: Class10A, 20

## 22AF

### Contactor

**MC-9b, 12b, 18b, 22b**

Rated current:

9, 12, 18, 22A

Rated insulation voltage:  
690V

### Overload relay MT-32

Current range: 0.1~40A

Trip class: Class10A, 20

## 40AF

### Contactor

**MC-32a, 40a**

Rated current:

32, 40A

Rated insulation voltage:  
1000V

### Overload relay MT-32

Current range: 0.1~40A

Trip class: Class10A, 20

## 65AF

### Contactor

**MC-50a, 65a**

Rated current:

50, 65A

Rated insulation voltage:  
1000V

### Overload relay MT-63

Current range: 4~65A

Trip class: Class10A, 20

## 100AF

### Contactor

**MC-75a, 85a, 100a**

Rated current:

75, 85, 100A

Rated insulation voltage:  
1000V

### Overload relay MT-95

Current range: 7~100A

Trip class: Class10A, 20

## 150AF

### Contactor

**MC-130a, 150a**

Rated current:

130, 150A

Rated insulation voltage:  
1000V

### Overload relay MT-150

Current range: 34~150A

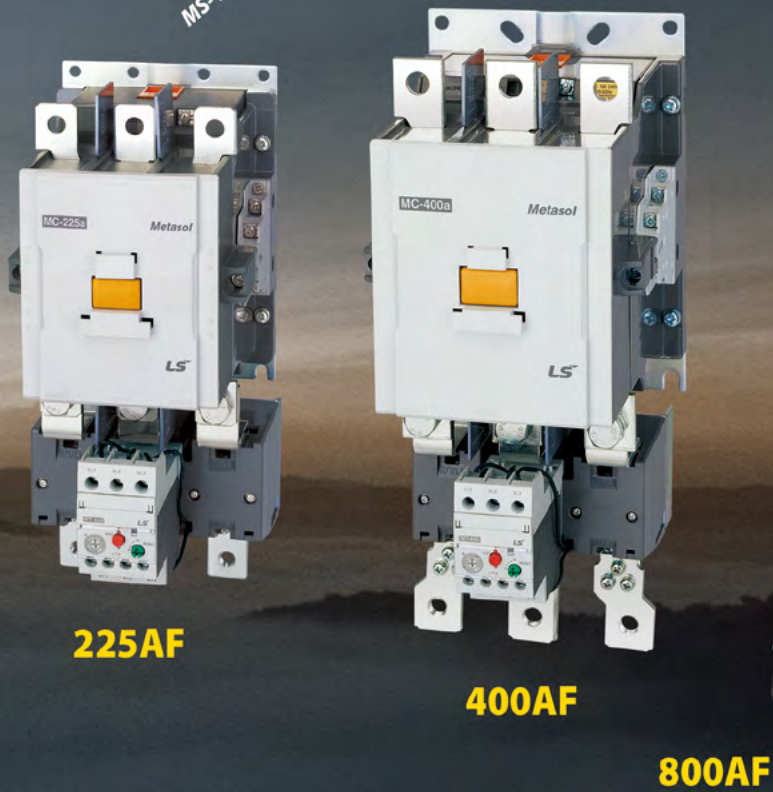
Trip class: Class10A, 20



MS-500a, MS-630a, MS-800a

MS-185a, MS-225a

MS-265a, MS-330a, MS-400a



## 225AF

### Contactor

**MC-185a, 225a**

Rated current:

185, 225A

Rated insulation voltage:  
1000V

### Overload relay MT-225

Current range: 65~240A

Trip class: Class10A, 20

## 400AF

### Contactor

**MC-265a, 330a, 400a**

Rated current:

265, 330, 400A

Rated insulation voltage:  
1000V

### Overload relay MT-400

Current range: 85~400A

Trip class: Class10A, 20

## 800AF

### Contactor

**MC-500a, 630a, 800a**

Rated current:

500, 630, 800A

Rated insulation voltage:  
1000V

### Overload relay MT-800

Current range: 200~800A

Trip class: Class10A, 20

## 1260AF

### Contactor

**MC-1260a**

Rated current:

1260A

Rated insulation voltage:  
1000V

## 2650AF

### Contactor

**MC-1400a, 1700a, 2100a,  
2650a**

Rated current:

1400, 1700, 2100, 2650A

Rated insulation voltage:  
1000V



## MC/TOR Accessories

Perfect combination of peripheral  
devices and various accessories

# Offering economical solution with compact size & easy connection



## Perfect system with other devices and accessories

### ■ One-touch connection

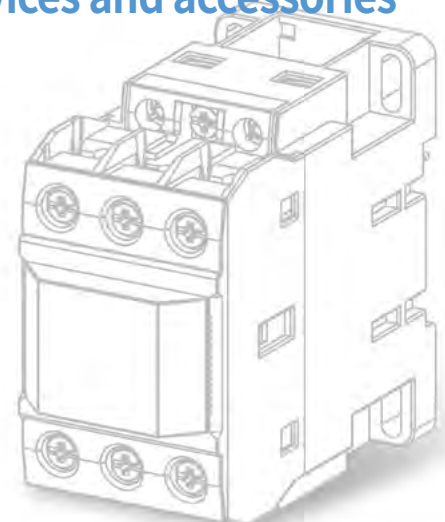
- Din Rail connection without any special tools
- Direct combine a surge unit

### ■ Simple wiring

- Mounting unit, Adapter
- Reversing wire set

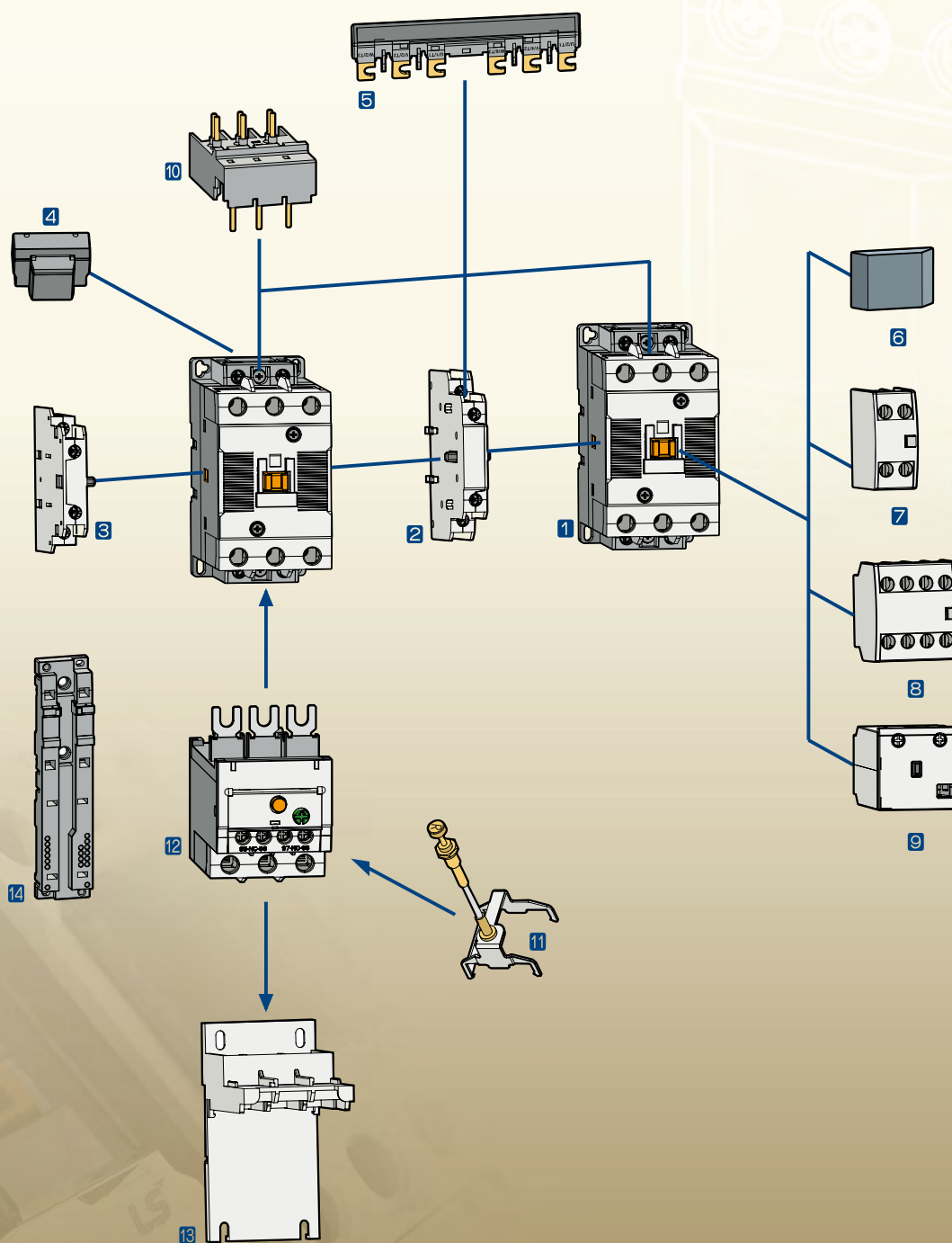
### ■ Easy maintenance

- 4-terminal type: Easy wiring of operation coil
- Module type of screw terminal
- Interlock unit with built-in auxiliary contacts(2NO built-in)





# Advanced accessories for Metasol contactors



- |                                              |                                                   |                                          |
|----------------------------------------------|---------------------------------------------------|------------------------------------------|
| <b>1</b> Contactor                           | <b>6</b> Safety cover (Option)                    | <b>10</b> Direct adaptor to MMS          |
| <b>2</b> Interlock unit                      | <b>7</b> Auxiliary contact unit - front mount(2p) | <b>11</b> Remote reset unit              |
| <b>3</b> Auxiliary contact unit - side mount | <b>8</b> Auxiliary contact unit - front mount(4p) | <b>12</b> Overload relay                 |
| <b>4</b> Surge unit                          | <b>9</b> Mechanical latch unit                    | <b>13</b> Separate mounting unit         |
| <b>5</b> Wire kit                            |                                                   | <b>14</b> Mounting unit for use with MMS |

# Table of specifications

## MC type Magnetic Contactors



| Frame size                                               |                        |             | 18AF                     |       |        |        | 22AF                     |        |        |        |
|----------------------------------------------------------|------------------------|-------------|--------------------------|-------|--------|--------|--------------------------|--------|--------|--------|
| Type                                                     |                        |             | MC-6a                    | MC-9a | MC-12a | MC-18a | MC-9b                    | MC-12b | MC-18b | MC-22b |
|                                                          | Screws clamp terminals |             | ●                        | ●     | ●      | ●      | ●                        | ●      | ●      | ●      |
|                                                          | Lug clamp terminals    |             |                          |       |        |        |                          |        |        |        |
| Number of poles                                          |                        |             | 3pole                    |       |        |        | 3pole                    |        |        |        |
| Rated operational voltage(Ue)                            |                        |             | 690V                     |       |        |        | 690V                     |        |        |        |
| Rated insulation voltage(Ui)                             |                        |             | 690V                     |       |        |        | 690V                     |        |        |        |
| Rated frequency                                          |                        |             | 50/60Hz                  |       |        |        | 50/60Hz                  |        |        |        |
| Rated impulse withstand voltage, Uimp                    |                        |             | 6kV                      |       |        |        | 6kV                      |        |        |        |
| Maximum operating rate in operating cycles per hour(AC3) |                        |             | 1800 operations per hour |       |        |        | 1800 operations per hour |        |        |        |
| Durability                                               | Mechanical             |             | 15 mil. operations       |       |        |        | 15 mil. operations       |        |        |        |
|                                                          | Electrical             |             | 2.5 mil. operations      |       |        |        | 2.5 mil. operations      |        |        |        |
| Current power                                            | AC-1, Thermal current  | [A]         | 25                       | 25    | 25     | 32     | 25                       | 27     | 40     | 45     |
|                                                          | AC-3 200/240V          | [kW]        | 2.2                      | 2.5   | 3.5    | 4.5    | 2.5                      | 3.5    | 4.5    | 5.5    |
|                                                          |                        | [A]         | 9                        | 11    | 13     | 18     | 11                       | 13     | 18     | 22     |
|                                                          | 380/440V               | [kW]        | 3                        | 4     | 5.5    | 7.5    | 4                        | 5.5    | 7.5    | 11     |
|                                                          |                        | [A]         | 7                        | 9     | 12     | 18     | 9                        | 12     | 18     | 22     |
|                                                          | 500/550V               | [kW]        | 3                        | 4     | 7.5    | 7.5    | 4                        | 7.5    | 7.5    | 15     |
|                                                          |                        | [A]         | 6                        | 7     | 12     | 13     | 7                        | 12     | 13     | 20     |
|                                                          | 690V                   | [kW]        | 3                        | 4     | 7.5    | 7.5    | 4                        | 7.5    | 7.5    | 15     |
|                                                          |                        | [A]         | 4                        | 5     | 9      | 9      | 6                        | 9      | 9      | 18     |
|                                                          | 1000V                  | [kW]        | -                        | -     | -      | -      | -                        | -      | -      | -      |
|                                                          |                        | [A]         | -                        | -     | -      | -      | -                        | -      | -      | -      |
|                                                          |                        |             |                          |       |        |        |                          |        |        |        |
| Rated Short-time withstand current (IEC 60947)           | 1s                     | [A]         | 210                      | 250   | 280    | 300    | 250                      | 280    | 300    | 400    |
|                                                          | 10s                    | [A]         | 105                      | 110   | 120    | 130    | 110                      | 120    | 154    | 186    |
|                                                          | 30s                    | [A]         | 70                       | 70    | 80     | 85     | 70                       | 80     | 100    | 130    |
|                                                          | 1min                   | [A]         | 61                       | 61    | 61     | 70     | 61                       | 61     | 84     | 90     |
|                                                          | 3min                   | [A]         | 40                       | 45    | 47     | 50     | 45                       | 50     | 60     | 60     |
|                                                          | 10min                  | [A]         | 30                       | 30    | 30     | 40     | 30                       | 30     | 40     | 50     |
|                                                          | ≥15min                 | [A]         | 25                       | 26    | 28     | 30     | 26                       | 28     | 30     | 45     |
| UL rating (50/60Hz)                                      | Continuous current     | [A]         | 25                       | 25    | 25     | 32     | 25                       | 25     | 40     | 40     |
|                                                          | Single 110~120V        | [HP]        | 0.5                      | 0.5   | 1      | 2      | 0.5                      | 1      | 2      | 2      |
|                                                          | phase 220~240V         | [HP]        | 1.5                      | 1.5   | 2      | 3      | 1.5                      | 2      | 3      | 3      |
|                                                          | Three 200~208V         | [HP]        | 2                        | 2     | 3      | 7.5    | 2                        | 3      | 7.5    | 7.5    |
|                                                          | phase 220~240V         | [HP]        | 3                        | 3     | 5      | 7.5    | 3                        | 5      | 7.5    | 10     |
|                                                          | 440~480V               | [HP]        | 5                        | 5     | 7.5    | 10     | 5                        | 7.5    | 10     | 15     |
|                                                          | 550~600V               | [HP]        | 7.5                      | 7.5   | 10     | 15     | 7.5                      | 10     | 15     | 20     |
|                                                          | NEMA size              |             | 00                       | 00    | 0      | 1      | 00                       | 0      | 1      |        |
| Size and weight                                          | AC control             | Weight [kg] | 0.33                     |       |        |        | 0.34                     |        |        |        |
|                                                          | Size(W×H×D)            | [mm]        | 45×73.5×80.4             |       |        |        | 45×73.5×87.4             |        |        |        |
|                                                          | DC control             | Weight [kg] | 0.4                      |       |        |        | 0.41                     |        |        |        |
|                                                          | Size(W×H×D)            | [mm]        | 45×73.5×96.6             |       |        |        | 45×73.5×103.6            |        |        |        |
| Auxiliary(Standard)                                      |                        |             | 1a or 1b                 |       |        |        | 1a1b                     |        |        |        |
| Auxiliary                                                | Side mount             |             | UA-1                     |       |        |        | UA-1                     |        |        |        |
|                                                          | Front mount            |             | UA-2, UA-4               |       |        |        | UA-2, UA-4               |        |        |        |

Note) Minimum conduct current of Auxiliary contactor is DC 17V 5mA.

## MT type Thermal Overload Relays



| Type                                  |                        |      | MT-12/□      | MT-32/□  |
|---------------------------------------|------------------------|------|--------------|----------|
|                                       | Screws clamp terminals |      | ●            | ●        |
|                                       | Lug clamp terminals    |      |              |          |
| Rated operational voltage, Ue         |                        |      | 690V         | 690V     |
| Rated insulation voltage, Ui          |                        |      | 690V         | 690V     |
| Rated impulse withstand voltage, Uimp |                        |      | 6kV          | 6kV      |
| Trip class                            |                        |      | 10A, 20      | 10A, 20  |
| Setting range                         |                        |      | 0.1~18A      | 0.1~40A  |
| Size and weight                       | Weight                 | [kg] | 0.1          | 0.17     |
|                                       | Size(W×H×D)            | [mm] | 45×73.2×63.7 | 45×75×90 |

\* The safety cover of magnetic contactor and thermal overload relay is optional.





| 40AF                     |        | 65AF                     |        | 100AF                    |                   |         |
|--------------------------|--------|--------------------------|--------|--------------------------|-------------------|---------|
| MC-32a                   | MC-40a | MC-50a                   | MC-65a | MC-75a                   | MC-85a            | MC-100a |
| ●                        | ●      | ●                        | ●      | ●                        | ●                 | ●       |
| 3pole                    |        | 3pole                    |        | 3pole                    |                   |         |
| 1000V                    |        | 1000V                    |        | 1000V                    |                   |         |
| 1000V                    |        | 1000V                    |        | 1000V                    |                   |         |
| 50/60Hz                  |        | 50/60Hz                  |        | 50/60Hz                  |                   |         |
| 8kV                      |        | 8kV                      |        | 8kV                      |                   |         |
| 1800 operations per hour |        | 1200 operations per hour |        | 1200 operations per hour |                   |         |
| 12 mil. operations       |        | 12 mil. operations       |        | 12 mil. operations       |                   |         |
| 2 mil. operations        |        | 2 mil. operations        |        | 2 mil. operations        | 1 mil. operations |         |
| 55                       | 60     | 100                      | 115    | 125                      | 135               | 160     |
| 7.5                      | 11     | 15                       | 18.5   | 22                       | 25                | 30      |
| 32                       | 40     | 55                       | 65     | 75                       | 85                | 105     |
| 15                       | 18.5   | 22                       | 30     | 37                       | 45                | 55      |
| 32                       | 40     | 50                       | 65     | 75                       | 85                | 105     |
| 18.5                     | 22     | 30                       | 33     | 37                       | 45                | 55      |
| 28                       | 32     | 43                       | 60     | 64                       | 75                | 85      |
| 18.5                     | 22     | 30                       | 33     | 37                       | 45                | 55      |
| 20                       | 23     | 28                       | 35     | 42                       | 45                | 65      |
| 22                       | 22     | 30                       | 30     | 37                       | 37                | 37      |
| 17                       | 17     | 23                       | 23     | 28                       | 28                | 28      |
| 600                      | 700    | 1000                     | 1050   | 1100                     | 1200              | 1320    |
| 260                      | 300    | 550                      | 700    | 750                      | 800               | 900     |
| 160                      | 190    | 330                      | 380    | 400                      | 450               | 500     |
| 100                      | 120    | 250                      | 270    | 300                      | 350               | 400     |
| 70                       | 80     | 150                      | 200    | 220                      | 270               | 270     |
| 55                       | 65     | 90                       | 120    | 140                      | 170               | 180     |
| 50                       | 60     | 87                       | 96     | 114                      | 150               | 160     |
| 50                       | 60     | 70                       | 100    | 110                      | 135               | 160     |
| 3                        | 3      | 3                        | 5      | 5                        | 7.5               | 10      |
| 5                        | 7.5    | 10                       | 15     | 15                       | 15                | 20      |
| 7.5                      | 15     | 20                       | 25     | 25                       | 30                | 30      |
| 10                       | 15     | 25                       | 30     | 30                       | 40                | 40      |
| 20                       | 30     | 40                       | 50     | 50                       | 60                | 75      |
| 25                       | 30     | 50                       | 60     | 60                       | 75                | 75      |
| 1P                       | 2      |                          |        |                          | 3                 |         |
| 0.55                     |        | 1.05                     |        | 1.93                     |                   |         |
| 69×83×90                 |        | 79×106×119               |        | 94×140×135.8             |                   |         |
| 0.77                     |        | 1.3                      |        | 2.8                      |                   |         |
| 69×83×117.1              |        | 79×106×146.4             |        | 94×140×172.3             |                   |         |
| <b>2a2b</b>              |        | <b>2a2b</b>              |        | <b>2a2b</b>              |                   |         |
| UA-1                     |        | UA-1                     |        | UA-1                     |                   |         |
| UA-2, UA-4               |        | UA-2, UA-4               |        | UA-2, UA-4               |                   |         |



| MT-32/□  | MT-63/□   | MT-95/□   |
|----------|-----------|-----------|
| ●        | ●         | ●         |
| 690V     | 690V      | 690V      |
| 690V     | 690V      | 690V      |
| 6kV      | 6kV       | 6kV       |
| 10A, 20  | 10A, 20   | 10A, 20   |
| 0.1~40A  | 4~65A     | 7~100A    |
| 0.17     | 0.31/0.33 | 0.48/0.5  |
| 45×75×90 | 55×81×100 | 70×97×110 |

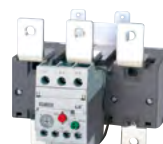
# Table of specifications

## MC type Magnetic Contactors



| Frame size                                               |                                                                                     |            |                  | 150AF                    |         | 225AF                      |         | 400AF                      |         |                     |  |
|----------------------------------------------------------|-------------------------------------------------------------------------------------|------------|------------------|--------------------------|---------|----------------------------|---------|----------------------------|---------|---------------------|--|
| Type                                                     |                                                                                     |            |                  | MC-130a                  | MC-150a | MC-185a                    | MC-225a | MC-265a                    | MC-330a | MC-400a             |  |
| Screws clamp terminals                                   |                                                                                     |            |                  | ●                        | ●       | ●                          | ●       | ●                          | ●       | ●                   |  |
| Lug clamp terminals                                      |                                                                                     |            |                  | ●                        | ●       | ●                          | ●       |                            |         |                     |  |
| Number of poles                                          |                                                                                     |            |                  | 3pole                    |         | 3pole                      |         | 3pole                      |         |                     |  |
| Rated operational voltage(Ue)                            |                                                                                     |            |                  | 1000V                    |         | 1000V                      |         | 1000V                      |         |                     |  |
| Rated insulation voltage(Ui)                             |                                                                                     |            |                  | 1000V                    |         | 1000V                      |         | 1000V                      |         |                     |  |
| Rated frequency                                          |                                                                                     |            |                  | 50/60Hz                  |         | 50/60Hz                    |         | 50/60Hz                    |         |                     |  |
| Rated impulse withstand voltage, Uimp                    |                                                                                     |            |                  | 8kV                      |         | 8kV                        |         | 8kV                        |         |                     |  |
| Maximum operating rate in operating cycles per hour(AC3) |                                                                                     |            |                  | 1200 operations per hour |         | 1200 operations per hour   |         | 1200 operations per hour   |         |                     |  |
| Durability                                               | Mechanical                                                                          |            |                  | 5 mil. operations        |         | 5 mil. operations          |         | 5 mil. operations          |         | 2.5 mil. operations |  |
|                                                          | Electrical                                                                          |            |                  | 1 mil. operations        |         | 1 mil. operations          |         | 1 mil. operations          |         | 0.5 mil. operations |  |
| Current and power                                        | AC-1, Thermal current                                                               |            | [A]              | 200                      | 250     | 300                        | 350     | 400                        | 500     | 520                 |  |
|                                                          | AC-3                                                                                | 200/240V   | [kW]             | 37                       | 45      | 55                         | 75      | 80                         | 90      | 125                 |  |
|                                                          |                                                                                     |            | [A]              | 130                      | 150     | 185                        | 225     | 265                        | 330     | 400                 |  |
|                                                          |                                                                                     | 380/440V   | [kW]             | 60                       | 75      | 90                         | 132     | 147                        | 160     | 200                 |  |
|                                                          |                                                                                     |            | [A]              | 130                      | 150     | 185                        | 225     | 265                        | 330     | 400                 |  |
|                                                          |                                                                                     | 500/550V   | [kW]             | 60                       | 70      | 110                        | 132     | 147                        | 160     | 225                 |  |
|                                                          |                                                                                     |            | [A]              | 90                       | 100     | 180                        | 200     | 225                        | 280     | 350                 |  |
|                                                          |                                                                                     | 690V       | [kW]             | 55                       | 55      | 110                        | 140     | 160                        | 200     | 250                 |  |
|                                                          |                                                                                     |            | [A]              | 60                       | 60      | 120                        | 150     | 185                        | 220     | 300                 |  |
|                                                          |                                                                                     | 1000V      | [kW]             | 75                       | 75      | 132                        | 132     | 147                        | 147     | 147                 |  |
|                                                          |                                                                                     |            | [A]              | 50                       | 50      | 90                         | 90      | 105                        | 105     | 105                 |  |
|                                                          | Rated Short-time withstand current (IEC 60947)                                      | 1s         | [A]              | 1350                     | 1800    | 2000                       | 2500    | 3500                       | 4000    | 4600                |  |
|                                                          |                                                                                     | 10s        | [A]              | 950                      | 1200    | 1500                       | 1700    | 2400                       | 3000    | 4400                |  |
|                                                          |                                                                                     | 30s        | [A]              | 700                      | 800     | 1000                       | 1200    | 1500                       | 2500    | 2974                |  |
| 1min                                                     |                                                                                     | [A]        | 550              | 600                      | 800     | 1000                       | 1100    | 1700                       | 1846    |                     |  |
| 3min                                                     |                                                                                     | [A]        | 350              | 450                      | 520     | 700                        | 800     | 1000                       | 1313    |                     |  |
| 10min                                                    |                                                                                     | [A]        | 200              | 300                      | 350     | 500                        | 600     | 620                        | 760     |                     |  |
| ≥15min                                                   |                                                                                     | [A]        | 175              | 280                      | 320     | 400                        | 500     | 553                        | 699     |                     |  |
| UL rating (50/60Hz)                                      | Continuous current                                                                  |            | [A]              | 200                      | 250     | 300                        | 350     | 400                        | 500     | 520                 |  |
|                                                          | Single phase                                                                        | 110~120V   | [HP]             | 10                       | 15      | 15                         | 15      | -                          | -       | -                   |  |
|                                                          |                                                                                     | 220~240V   | [HP]             | 20                       | 25      | 30                         | 40      | -                          | -       | -                   |  |
|                                                          | Three phase                                                                         | 200~208V   | [HP]             | 40                       | 40      | 60                         | 60      | 75                         | 100     | 125                 |  |
|                                                          |                                                                                     | 220~240V   | [HP]             | 40                       | 50      | 60                         | 75      | 100                        | 100     | 150                 |  |
|                                                          |                                                                                     | 440~480V   | [HP]             | 75                       | 100     | 125                        | 150     | 200                        | 200     | 300                 |  |
|                                                          |                                                                                     | 550~600V   | [HP]             | 75                       | 75      | 125                        | 150     | 200                        | 200     | 300                 |  |
|                                                          | NEMA size                                                                           |            |                  |                          |         | 4                          |         |                            | 5       |                     |  |
| Size and weight                                          |  | AC control | Weight [kg]      | 2.4                      |         | 5.4                        |         | 9.2                        |         |                     |  |
|                                                          |                                                                                     |            | Size(W×H×D) [mm] | 119×158×130.3            |         | 138×203×185.1              |         | 163×243×204.4              |         |                     |  |
|                                                          |                                                                                     | DC control | Weight [kg]      | 2.4                      |         | 5.4                        |         | 9.2                        |         |                     |  |
|                                                          |                                                                                     |            | Size(W×H×D) [mm] | 119×158×130.3            |         | 138×203×185.1              |         | 163×243×204.4              |         |                     |  |
| Auxiliary(Standard)                                      |                                                                                     |            |                  | 2a2b                     |         | 2a2b                       |         | 2a2b                       |         |                     |  |
| Auxiliary                                                | Side mount                                                                          |            |                  | UA-1                     |         | AU-100, AU-100E (Max.4a4b) |         | AU-100, AU-100E (Max.4a4b) |         |                     |  |
|                                                          | Front mount                                                                         |            |                  | UA-2, UA-4               |         | -                          |         | -                          |         |                     |  |

## MT type Thermal Overload Relays



| Type                                  |                                                                                                 | MT150/□          | MT225/□    | MT400/□     |             |
|---------------------------------------|-------------------------------------------------------------------------------------------------|------------------|------------|-------------|-------------|
|                                       | Screws clamp terminals                                                                          | ●                | ●          | ●           |             |
|                                       | Lug clamp terminals                                                                             | ●                | ●          |             |             |
| Rated operational voltage, Ue         |                                                                                                 | 690V             | 690V       | 690V        |             |
| Rated insulation voltage, Ui          |                                                                                                 | 690V             | 690V       | 690V        |             |
| Rated impulse withstand voltage, Uimp |                                                                                                 | 6kV              | 6kV        | 6kV         |             |
| Trip class                            |                                                                                                 | 10A, 20          | 10A, 20    | 10A, 20     |             |
| Setting range                         |                                                                                                 | 34~150A          | 65~240A    | 85~400A     |             |
| Size and weight                       |  Weight [kg] | 0.67             | 2.5        | 2.6         |             |
|                                       |                                                                                                 | Size(W×H×D) [mm] | 95×109×113 | 147×141×184 | 151×171×198 |

\* The safety cover of magnetic contactor and thermal overload relay is optional.



| 800AF                      |         |         |  | 1260AF                     | 2650AF                     |          |          |                      |
|----------------------------|---------|---------|--|----------------------------|----------------------------|----------|----------|----------------------|
| MC-500a                    | MC-630a | MC-800a |  | MC-1260a                   | MC-1400a                   | MC-1700a | MC-2100a | MC-2650a             |
| ●                          | ●       | ●       |  | ●                          | ●                          | ●        | ●        | ●                    |
| 3pole                      |         |         |  | 3pole                      | 3pole                      |          |          |                      |
| 1000V                      |         |         |  | 1000V                      | 1000V                      |          |          |                      |
| 1000V                      |         |         |  | 1000V                      | 1000V                      |          |          |                      |
| 50/60Hz                    |         |         |  | 50/60Hz                    | 50/60Hz                    |          |          |                      |
| 8kV                        |         |         |  | 8kV                        | 8kV                        |          |          |                      |
| 1200 operations per hour   |         |         |  | 300 operations per hour    | 300 operations per hour    |          |          |                      |
| 2.5 mil. operations        |         |         |  | 0.5 mil. operations        | 0.5 mil. operations        |          |          | 0.3 mil. operations  |
| 0.5 mil. operations        |         |         |  | 0.05 mil. operations       | 0.05 mil. operations       |          |          | 0.02 mil. operations |
| 700                        | 900     | 1050    |  | 1260                       | 1400                       | 1700     | 2100     | 2650                 |
| 147                        | 190     | 220     |  | -                          | 290                        | 310      | -        | -                    |
| 500                        | 630     | 800     |  | -                          | 860                        | 1050     | -        | -                    |
| 265                        | 330     | 440     |  | -                          | 550                        | 700      | 900      | -                    |
| 500                        | 630     | 800     |  | -                          | 860                        | 1050     | 1450     | -                    |
| 265                        | 330     | 500     |  | -                          | -                          | -        | -        | -                    |
| 400                        | 500     | 720     |  | -                          | -                          | -        | -        | -                    |
| 300                        | 400     | 500     |  | -                          | 800                        | 1000     | -        | -                    |
| 380                        | 420     | 630     |  | -                          | 800                        | 950      | -        | -                    |
| 280                        | 280     | 280     |  | -                          | -                          | -        | -        | -                    |
| 220                        | 220     | 220     |  | -                          | -                          | -        | -        | -                    |
| 6000                       | 7000    | 7500    |  | 8000                       | -                          | -        | -        | -                    |
| 5050                       | 6400    | 7000    |  | 7200                       | 8000                       | 10000    | 10000    | -                    |
| 4400                       | 4500    | 4900    |  | 5200                       | -                          | -        | -        | -                    |
| 3400                       | 3500    | 3800    |  | 4000                       | 4500                       | 5500     | 5500     | -                    |
| 2000                       | 2200    | 2500    |  | 2300                       | -                          | -        | -        | -                    |
| 1400                       | 1550    | 1550    |  | 3000                       | 2600                       | 3000     | 3000     | -                    |
| 1100                       | 1300    | 1300    |  | 1500                       | -                          | -        | -        | -                    |
| 700                        | 900     | 1050    |  | 1260                       | 1400                       | 1700     | 2100     | 2650                 |
| -                          | -       | -       |  | -                          | -                          | -        | -        | -                    |
| -                          | -       | -       |  | -                          | -                          | -        | -        | -                    |
| 150                        | 200     | 200     |  |                            |                            |          |          |                      |
| 200                        | 250     | 300     |  |                            |                            |          |          |                      |
| 400                        | 500     | 600     |  |                            |                            |          |          |                      |
| 400                        | 500     | 600     |  |                            |                            |          |          |                      |
| 6                          |         | 7       |  |                            |                            |          |          |                      |
| 22.2                       |         |         |  | 24                         | 33.8                       |          |          | 47                   |
| 285×310×246                |         |         |  | 285×352×246                | 431×380×246                |          |          | 431×392×246          |
| 22.2                       |         |         |  | 24                         | 33.8                       |          |          | 47                   |
| 285×310×246                |         |         |  | 285×352×246                | 431×380×246                |          |          | 431×392×246          |
| 2a2b                       |         |         |  | 2a2b                       | 2a2b                       |          |          |                      |
| AU-100, AU-100E (Max.4a4b) |         |         |  | AU-100, AU-100E (Max.4a4b) | AU-100, AU-100E (Max.4a4b) |          |          |                      |
| -                          |         |         |  | -                          | -                          |          |          |                      |



| MT-800/□    |
|-------------|
| ●           |
| 690V        |
| 690V        |
| 6kV         |
| 10A, 20     |
| 200~800A    |
| 11.5        |
| 360×530×212 |



# Table of specifications

## MC type Magnetic Contactors (4pole)



| Frame size                                               |                                                                                                                                     |                     |                    | 18AF                     |         |                     |          |    |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------------|---------|---------------------|----------|----|
| Type                                                     |                                                                                                                                     |                     |                    | MC-6a/4                  | MC-9a/4 | MC-12a/4            | MC-18a/4 |    |
| Screw clamp terminal                                     |                                                                                                                                     |                     |                    | ●                        |         |                     |          |    |
| Number of poles                                          |                                                                                                                                     |                     |                    | 4pole                    |         |                     |          |    |
| Rated operational voltage (Ue)                           |                                                                                                                                     |                     |                    | 690V                     |         |                     |          |    |
| Rated insulation voltage (Ui)                            |                                                                                                                                     |                     |                    | 690V                     |         |                     |          |    |
| Rated frequency                                          |                                                                                                                                     |                     |                    | 50/60Hz                  |         |                     |          |    |
| Rated impulse withstand voltage, Uimp                    |                                                                                                                                     |                     |                    | 6kV                      |         |                     |          |    |
| Maximum operating rate in operating cycles per hour(AC1) |                                                                                                                                     |                     |                    | 1800 operations per hour |         |                     |          |    |
| Durability                                               | Mechanical                                                                                                                          |                     |                    | 15 mil. operations       |         |                     |          |    |
|                                                          | Electrical                                                                                                                          |                     |                    | 0.5 mil. operations      |         | 0.8 mil. operations |          |    |
| Current and power                                        | Thermal current                                                                                                                     | [A]                 | 25                 | 25                       | 25      | 40                  |          |    |
|                                                          |                                                                                                                                     | AC-1                | 200/240V           | [kW]                     | 9       | 9                   | 9        | 15 |
|                                                          |                                                                                                                                     | [A]                 | 25                 | 25                       | 25      | 40                  |          |    |
|                                                          |                                                                                                                                     | 380/400V            | [kW]               | 17                       | 17      | 17                  | 27       |    |
|                                                          |                                                                                                                                     | [A]                 | 25                 | 25                       | 25      | 40                  |          |    |
|                                                          |                                                                                                                                     | 500/550V            | [kW]               | 21                       | 21      | 21                  | 35       |    |
|                                                          |                                                                                                                                     | [A]                 | 25                 | 25                       | 25      | 40                  |          |    |
|                                                          |                                                                                                                                     | 690V                | [kW]               | 27                       | 27      | 27                  | 44       |    |
|                                                          |                                                                                                                                     | [A]                 | 25                 | 25                       | 25      | 40                  |          |    |
|                                                          |                                                                                                                                     | UL rating (50/60Hz) | Continuous current |                          |         | [A]                 | 25       | 25 |
|                                                          | Single                                                                                                                              | 110~120V            | [HP]               | 0.5                      | 0.5     | 0.75                | 1        |    |
|                                                          | Phase                                                                                                                               | 220~240V            | [HP]               | 1.5                      | 1.5     | 2                   | 3        |    |
|                                                          | Three                                                                                                                               | 200~208V            | [HP]               | 2                        | 2       | 3                   | 7.5      |    |
|                                                          | Phase                                                                                                                               | 220~240V            | [HP]               | 3                        | 3       | 5                   | 7.5      |    |
|                                                          |                                                                                                                                     | 440~480V            | [HP]               | 5                        | 5       | 7.5                 | 10       |    |
|                                                          |                                                                                                                                     | 550~600V            | [HP]               | 7.5                      | 7.5     | 10                  | 15       |    |
|                                                          | <div><div>Size and weight</div><div></div></div> | AC                  | Weight             | [kg]                     | 0.33    |                     |          |    |
| Control                                                  |                                                                                                                                     | Size(W×H×D)         | [mm]               | 45×73.5×80.4             |         |                     |          |    |
| DC                                                       |                                                                                                                                     | Weight              | [kg]               | 0.4                      |         |                     |          |    |
| Control                                                  |                                                                                                                                     | Size(W×H×D)         | [mm]               | 45×73.5×96.6             |         |                     |          |    |
| Auxiliary(Standard)                                      |                                                                                                                                     |                     |                    | -                        |         |                     |          |    |
| Auxiliary                                                | Side mount                                                                                                                          |                     |                    | UA-1                     |         |                     |          |    |
|                                                          | Front mount                                                                                                                         |                     |                    | UA-2, UA-4               |         |                     |          |    |



|  | 22AF               | 40AF                     |          | 85AF                     |          |          |          |
|--|--------------------|--------------------------|----------|--------------------------|----------|----------|----------|
|  | MC-22a/4           | MC-32a/4                 | MC-40a/4 | MC-50a/4                 | MC-65a/4 | MC-75a/4 | MC-85a/4 |
|  | ●                  | ●                        |          | ●                        |          |          |          |
|  | 4pole              | 4pole                    |          | 4pole                    |          |          |          |
|  | 690V               | 690V                     |          | 690V                     |          |          |          |
|  | 690V               | 690V                     |          | 1000V                    |          |          |          |
|  | 50/60Hz            | 50/60Hz                  |          | 50/60Hz                  |          |          |          |
|  | 6kV                | 6kV                      |          | 8kV                      |          |          |          |
|  | 1800 operations    | 1800 operations per hour |          | 1800 operations per hour |          |          |          |
|  | 15 mil. operations | 15 mil. operations       |          | 12 mil. operations       |          |          |          |
|  | 1 mil. operations  | 1 mil. operations        |          | 1 mil. operations        |          |          |          |
|  | 40                 | 50                       | 60       | 80                       | 100      | 110      | 135      |
|  | 15                 | 18                       | 22       | 30                       | 37       | 41       | 51       |
|  | 40                 | 50                       | 60       | 80                       | 100      | 110      | 135      |
|  | 27                 | 35                       | 42       | 56                       | 70       | 76       | 95       |
|  | 40                 | 50                       | 60       | 80                       | 100      | 110      | 135      |
|  | 35                 | 43                       | 52       | 70                       | 88       | 97       | 120      |
|  | 40                 | 50                       | 60       | 80                       | 100      | 110      | 135      |
|  | 44                 | 55                       | 66       | 88                       | 110      | 120      | 150      |
|  | 40                 | 50                       | 60       | 80                       | 100      | 110      | 135      |
|  | 32                 | 45                       | 50       | 70                       | 80       | 90       | 100      |
|  | 2                  | 2                        | 3        | 3                        | 5        | 5        | 7.5      |
|  | 3                  | 5                        | 5        | 7.5                      | 10       | 15       | 15       |
|  | 7.5                | 7.5                      | 10       | 10                       | 15       | 20       | 25       |
|  | 7.5                | 10                       | 10       | 15                       | 20       | 25       | 30       |
|  | 10                 | 20                       | 25       | 30                       | 40       | 50       | 50       |
|  | 15                 | 20                       | 25       | 30                       | 40       | 50       | 50       |
|  | 0.4                | 0.59                     |          | 1.2                      |          |          |          |
|  | 47.2×80×86.8       | 59×83.5×94.6             |          | 91×123.5×117.8           |          |          |          |
|  | 0.5                | 0.7                      |          | 1.29                     |          |          |          |
|  | 47.2×80×113.2      | 59×83.5×121              |          | 91×123.5×117.8           |          |          |          |
|  | -                  | -                        |          | -                        |          |          |          |
|  | AU-1               | AU-1                     |          | AU-1                     |          |          |          |
|  | UA-2, UA-4         | UA-2, UA-4               |          | UA-2, UA-4               |          |          |          |

# Table of specifications



## MC type Magnetic Contactors (4pole)

| Frame size                                               |             |                     |                    | 225AF                    |             |           |           |           |     |
|----------------------------------------------------------|-------------|---------------------|--------------------|--------------------------|-------------|-----------|-----------|-----------|-----|
| Type                                                     |             |                     |                    | MC-100a/4                | MC-130a/4   | MC-150a/4 | MC-185a/4 | MC-225a/4 |     |
| Screw clamp terminal                                     |             |                     |                    | ●                        |             |           |           |           |     |
| Number of poles                                          |             |                     |                    | 4pole                    |             |           |           |           |     |
| Rated operational voltage (Ue)                           |             |                     |                    | 690V                     |             |           |           |           |     |
| Rated insulation voltage (Ui)                            |             |                     |                    | 1000V                    |             |           |           |           |     |
| Rated frequency                                          |             |                     |                    | 50/60Hz                  |             |           |           |           |     |
| Rated impulse withstand voltage, Uimp                    |             |                     |                    | 8kV                      |             |           |           |           |     |
| Maximum operating rate in operating cycles per hour(AC1) |             |                     |                    | 1200 operations per hour |             |           |           |           |     |
| Durability                                               | Mechanical  |                     |                    | 5 mil. operations        |             |           |           |           |     |
|                                                          | Electrical  |                     |                    | 0.8 mil. operations      |             |           |           |           |     |
| Current and power                                        | AC-1        | Thermal current     | [A]                | 200                      | 250         | 275       | 300       | 350       |     |
|                                                          |             | 200/240V            | [kW]               | 57                       | 60          | 76        | 87        | 100       |     |
|                                                          |             |                     | [A]                | 200                      | 250         | 275       | 300       | 350       |     |
|                                                          |             | 380/400V            | [kW]               | 106                      | 110         | 142       | 165       | 185       |     |
|                                                          |             |                     | [A]                | 200                      | 250         | 275       | 300       | 350       |     |
|                                                          |             | 500/550V            | [kW]               | 132                      | 137         | 180       | 205       | 230       |     |
|                                                          |             |                     | [A]                | 200                      | 250         | 275       | 300       | 350       |     |
|                                                          |             | 690V                | [kW]               | 165                      | 170         | 225       | 255       | 290       |     |
|                                                          |             |                     | [A]                | 200                      | 250         | 275       | 300       | 350       |     |
|                                                          |             | UL rating (50/60Hz) | Continuous current | [A]                      | 200         | 250       | 275       | 300       | 350 |
| Single                                                   | 110~120V    |                     | [HP]               | 7.5                      | 10          | 15        | 15        | 15        |     |
| Phase                                                    | 220~240V    |                     | [HP]               | 15                       | 20          | 25        | 30        | 40        |     |
| Three                                                    | 200~208V    |                     | [HP]               | 30                       | 40          | 40        | 60        | 60        |     |
| Phase                                                    | 220~240V    |                     | [HP]               | 30                       | 40          | 50        | 60        | 75        |     |
|                                                          | 440~480V    |                     | [HP]               | 60                       | 75          | 100       | 125       | 150       |     |
|                                                          | 550~600V    |                     | [HP]               | 60                       | 75          | 100       | 125       | 150       |     |
| Size and weight                                          | AC          |                     | Weight             | [kg]                     | 5.6         |           |           |           |     |
|                                                          |             | Control             | Size(W×H×D)        | [mm]                     | 175×203×185 |           |           |           |     |
|                                                          | DC          | Weight              | [kg]               | 5.6                      |             |           |           |           |     |
|                                                          |             | Control             | Size(W×H×D)        | [mm]                     | 175×203×185 |           |           |           |     |
| Auxiliary(Standard)                                      |             |                     |                    | 2NO2NC                   |             |           |           |           |     |
| Auxiliary                                                | Side mount  |                     |                    | AU-100, AU-100E          |             |           |           |           |     |
|                                                          | Front mount |                     |                    | -                        |             |           |           |           |     |

\* - FLA=722A, LRA=5618A

\*\* - FLA=566A, LRA=4495A





| 400AF                    |           |           |  | 800AF                    |           |           |
|--------------------------|-----------|-----------|--|--------------------------|-----------|-----------|
| MC-265a/4                | MC-330a/4 | MC-400a/4 |  | MC-500a/4                | MC-630a/4 | MC-800a/4 |
| ●                        |           |           |  | ●                        |           |           |
| 4pole                    |           |           |  | 4pole                    |           |           |
| 690V                     |           |           |  | 690V                     |           |           |
| 1000V                    |           |           |  | 1000V                    |           |           |
| 50/60Hz                  |           |           |  | 50/60Hz                  |           |           |
| 8kV                      |           |           |  | 8kV                      |           |           |
| 1200 operations per hour |           |           |  | 1200 operations per hour |           |           |
| 2.5 mil. operations      |           |           |  | 2.5 mil. operations      |           |           |
| 0.5 mil. operations      |           |           |  | 0.5 mil. operations      |           |           |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| 115                      | 135       | 160       |  | 245                      | 255       | 310       |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| 215                      | 250       | 300       |  | 450                      | 470       | 570       |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| 265                      | 315       | 375       |  | 560                      | 590       | 710       |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| 335                      | 390       | 470       |  | 710                      | 740       | 900       |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| 400                      | 500       | 520       |  | 700                      | 900       | 1050      |
| -                        | -         | -         |  | -                        | -         | -         |
| -                        | -         | -         |  | -                        | -         | -         |
| 75                       | 100       | 125       |  | 150                      | 200       | 200       |
| 100                      | 100       | 150       |  | 200                      | 250       | 300       |
| 200                      | 200       | 300       |  | 400                      | 500       | 600*      |
| 200                      | 200       | 300       |  | 400                      | 500       | 600**     |
| 9.9<br>206×243×205       |           |           |  | 26.3<br>346×310×244      |           |           |
| 9.9<br>206×243×205       |           |           |  | 26.3<br>346×310×244      |           |           |
| 2NO2NC                   |           |           |  | 2NO2NC                   |           |           |
| AU-100, AU-100E          |           |           |  | AU-100, AU-100E          |           |           |
| -                        |           |           |  | -                        |           |           |

# Table of specifications

## Renewable Magnetic Contactor

- Eco-friendly contact material applied (Cd free)
- Type 2 coordination data with MCCB or ACB



| Frame size                                          |                       |               | 1260AF                            |                 |                 |  |
|-----------------------------------------------------|-----------------------|---------------|-----------------------------------|-----------------|-----------------|--|
| Type                                                |                       |               | MCI-900                           | MCI-1050        | MCI-1260        |  |
| Screws clamp terminals                              |                       |               |                                   | ●               |                 |  |
| Number of poles                                     |                       | [pole]        |                                   | 3               |                 |  |
| Rated operational voltage(Ue)                       |                       | [Vac]         |                                   | 1000            |                 |  |
| Rated insulation voltage(Ui)                        |                       | [Vac]         |                                   | 1000            |                 |  |
| Rated frequency                                     |                       | [Hz]          |                                   | 50/60           |                 |  |
| Rated impulse withstand voltage(Uimp)               |                       | [kV]          |                                   | 8               |                 |  |
| Mechanical operating cycle                          |                       | [cycles/hour] | 600                               | 600             | 300             |  |
| Electrical operating cycle                          |                       | [cycles/hour] | 600                               | 600             | 300             |  |
| Durability                                          | Mechanical            | [million]     | 1                                 | 1               | 0.5             |  |
|                                                     | Electrical(AC-1@690V) | [million]     | 0.26                              | 0.26            | 0.15            |  |
|                                                     | Electrical(AC-1@400V) | [million]     | 0.5                               | 0.5             | 0.2             |  |
| Current and Power (IEC)                             | AC-1 1000V 55/60/70°C | [A]           | 900/850/700                       | 1050/875/720    | 1260/1060/900   |  |
|                                                     | Thermal current       | [A]           | 900                               | 1050            | 1260            |  |
|                                                     | Heat dissipation      | [W]           | 100                               | 170             | 170             |  |
| Rated Short-time withstand current(Icw) (IEC 60947) | 1s                    | [A]           | 7000                              | 7500            | 8000            |  |
|                                                     | 10s                   | [A]           | 6400                              | 7000            | 7200            |  |
|                                                     | 1min                  | [A]           | 3500                              | 3800            | 4000            |  |
|                                                     | 10min                 | [A]           | 1550                              | 1550            | 2300            |  |
| max. breaking capacity(Icd)                         | 400V                  | [A]           | 6000                              | 7500            | 7500            |  |
|                                                     | 690V                  | [A]           | 5000                              | 7000            | 7000            |  |
|                                                     | 1000V                 | [A]           | 2000                              | 2500            | 2500            |  |
| Type-2 Coordination (with MCCB or ACB)              |                       |               | 42kA (Break time: less than 20ms) |                 |                 |  |
| Current and HP (UL)                                 | Thermal current       | [A]           | 900                               | 1050            | 1260            |  |
|                                                     | Single phase          | 110~120V      | [HP]                              | -               | -               |  |
|                                                     |                       | 220~240V      | [HP]                              | -               | -               |  |
|                                                     | Three phase           | 200~208V      | [HP]                              | 200             | -               |  |
|                                                     |                       | 220~240V      | [HP]                              | 250             | -               |  |
|                                                     |                       | 440~480V      | [HP]                              | 500             | -               |  |
|                                                     |                       | 550~600V      | [HP]                              | 500             | -               |  |
| Weight                                              |                       | [kg]          | 22.2                              | 22.2            | 25              |  |
| Size(W×H×D) mm]                                     |                       |               | 285 x 310 x 246                   | 285 x 310 x 246 | 285 x 352 x 246 |  |
| Auxiliary(Standard)                                 |                       |               | 2a2b                              |                 |                 |  |
| Auxiliary                                           | Side mount            |               | AU-100, AU-100E (max.4a4b)        |                 |                 |  |
|                                                     | Front mount           |               | -                                 |                 |                 |  |



| 2650AF |                                   |                 |                 |
|--------|-----------------------------------|-----------------|-----------------|
|        | MCI-1700                          | MCI-2100        | MCI-2650        |
|        |                                   | ●               |                 |
|        |                                   | 3               |                 |
|        |                                   | 1000            |                 |
|        |                                   | 1000            |                 |
|        |                                   | 50/60           |                 |
|        |                                   | 8               |                 |
|        |                                   | 300             |                 |
|        | 300                               | 300             | 120             |
|        | 0.5                               | 0.5             | 0.3             |
|        | 0.05                              | 0.05            | 0.02            |
|        | 0.05                              | 0.05            | 0.05            |
|        | 1700/1450/1300                    | 2100/1750/1500  | 2650/2350/2150  |
|        | 1700                              | 2100            | 2650            |
|        | 220                               | 350             | 350             |
|        |                                   | 12000           |                 |
|        |                                   | 10000           |                 |
|        |                                   | 5500            |                 |
|        |                                   | 3000            |                 |
|        | 9000                              | 12000           | 12000           |
|        | 8000                              | 8500            | 8500            |
|        | 3000                              | 3150            | 3150            |
|        | 42kA (Break time: less than 50ms) |                 |                 |
|        | 1700                              | 2100            | 2650            |
|        | -                                 | -               | -               |
|        | -                                 | -               | -               |
|        | -                                 | -               | -               |
|        | -                                 | -               | -               |
|        | -                                 | -               | -               |
|        | -                                 | -               | -               |
|        | 34.6                              | 34.6            | 47              |
|        | 431 x 380 x 246                   | 431 x 380 x 246 | 431 x 392 x 246 |
| 2a2b   |                                   |                 |                 |
|        | AU-100, AU-100E (max.4a4b)        |                 |                 |
|        | -                                 |                 |                 |

# Type numbering system

## Contactors

| MC-6a         | / | R           | / | 220V                               | 60Hz      | SCREW | 1a1b              |
|---------------|---|-------------|---|------------------------------------|-----------|-------|-------------------|
| Rated current |   | Version     |   | Coil voltage                       | Frequency |       | Auxiliary contact |
| 6a 6A         |   | - Standard  |   | AC 220V                            | 60Hz      | None  | None              |
| ⋮             |   | R Reversing |   | ⋮                                  | 50Hz      | Screw | 1a1b              |
| 2650a 2650A   |   | 4 4pole     |   | DC 24V                             | 50/60HZ   | LUG   | 2a2b              |
| 9b 9A         |   |             |   | Note) See page 22, 23 for details. |           |       | 1a                |
| ⋮             |   |             |   |                                    |           |       | 1b                |
| 22b 22A       |   |             |   |                                    |           |       |                   |

## Renewable contactors

| MCi-900       | / | AC 300V      | 50/60Hz   | 2a2b              |
|---------------|---|--------------|-----------|-------------------|
| Rated Current |   | Coil Voltage | Frequency | Auxiliary contact |
| 900 900A      |   | AC 300V      | 50/60Hz   | 2a2b              |
| ⋮             |   | ⋮            |           |                   |
| 2650 2650A    |   | AC 100~240V  |           |                   |
|               |   | DC 100~220V  |           |                   |

## Starters

| MS-6a         | / | R                 | 2H                             | / | 220V                               | 60Hz      | 1N01NC            | / | 0.1                   |
|---------------|---|-------------------|--------------------------------|---|------------------------------------|-----------|-------------------|---|-----------------------|
| Rated current |   | Contactor version | Relay version                  |   | Coil voltage                       | Frequency | Auxiliary contact |   | Relay setting current |
| 6a 6A         |   | - Standard        | 2H Non-differential (2-heater) |   | AC 220V                            | 60Hz      | 無                 |   | 0.1 0.1A              |
| ⋮             |   | R Reversing       | 3H Non-differential (3-heater) |   | ⋮                                  | 50Hz      | 1a1b              |   | ⋮                     |
| 800a 800A     |   |                   | 3K Differential                |   | DC 24V                             |           | 2a2b              |   | 800 800A              |
| 9b 9A         |   |                   | 3D Class 20                    |   | Note) See page 22, 23 for details. |           | 1a                |   |                       |
| ⋮             |   |                   |                                |   |                                    |           | 1b                |   |                       |
| 22b 22A       |   |                   |                                |   |                                    |           |                   |   |                       |

## Thermal Overload Relay

| MT-12         | / | 2H                             | 0.1                   |
|---------------|---|--------------------------------|-----------------------|
| Rated current |   | Relay version                  | Relay setting current |
| 12 12AF       |   | 2H Non-differential (2-heater) | 0.1 0.1A              |
| 32 32AF       |   | ⋮                              | ⋮                     |
| 63 63AF       |   | 3H Non-differential (3-heater) | 800 800A              |
| 95 95AF       |   | 3K Differential                |                       |
| ⋮             |   | 3D Class 20                    |                       |
| 800 800AF     |   |                                |                       |

## Contactor relays

| MR | / | 4        |
|----|---|----------|
|    |   | Poles    |
|    |   | 4 4 Pole |
|    |   | 6 6 Pole |
|    |   | 8 8 Pole |



## Optional accessories

### Auxiliary contact unit

| UA1                                        |                 | 11                  |         |
|--------------------------------------------|-----------------|---------------------|---------|
| Version                                    |                 | Contact composition |         |
| UA-1<br>UA-1E<br>AU-1<br>AU-100<br>AU-100E | Side mount      | 11                  | 1NO+1NC |
|                                            |                 | 20                  | 2NO     |
|                                            |                 | 02                  | 2NC     |
|                                            |                 | 40                  | 4NO     |
|                                            |                 | 31                  | 3NO+1NC |
| UA-2                                       | Front mount(2P) | 22                  | 2NO+2NC |
|                                            |                 | 13                  | 1NO+3NC |
| UA-4                                       | Front mount(4P) | 04                  | 4NC     |

Note) UA-2: 2NO, 1NO1NC, 2NC  
 UA-4: 4NO, 3NO1NC, 4NC,  
 2NO2NC, 1NO3NC,

### Surge absorber

| US11                    |             |                |
|-------------------------|-------------|----------------|
| Composition and voltage |             |                |
| 1                       | Varistor+RC | AC 24~48V      |
| 2                       | Varistor+RC | AC 100~125V    |
| 3                       | Varistor+RC | AC 200~240V    |
| 4                       | Varistor+RC | DC 24~48V      |
| 5                       | Varistor+RC | DC 100~125V    |
| 6                       | Varistor+RC | DC 200~220V    |
| 11                      | Varistor    | AC/DC 24~48V   |
| 12                      | Varistor    | AC/DC 100~125V |
| 13                      | Varistor    | AC/DC 200~240V |
| 14                      | Varistor    | AC/DC 380~440V |
| 22                      | RC          | AC 100~125V    |

Note) See page 82 for details.

### Interlock unit

UR02

#### Contact composition

|    |      |
|----|------|
| 02 | 2NC  |
| 00 | None |

### Wire kit for interlocking

UW32

#### Rated current

|    |       |
|----|-------|
| 18 | 18AF  |
| 22 | 22AF  |
| 32 | 40AF  |
| 63 | 65AF  |
| 95 | 100AF |

### Separate mounting unit (For relay)

UZ32

#### Rated current

|     |       |
|-----|-------|
| 12  | 12AF  |
| 32  | 32AF  |
| 63  | 63AF  |
| 95  | 95AF  |
| 150 | 150AF |

### Remote reset unit (For relay)

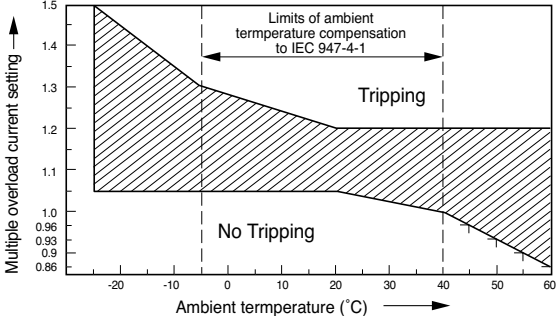
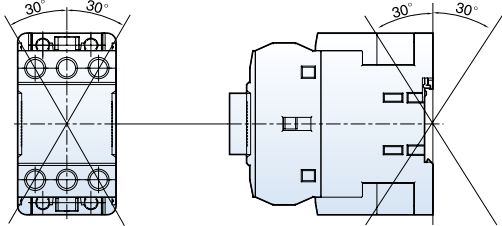
UM

#### Cable length

|    |     |
|----|-----|
| 4R | 400 |
| 5R | 500 |
| 6R | 600 |

# Environment



|                                                                   |                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                                         | IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, K60947                                                                                                                                                                                                                              |
| Certifications                                                    | CE, UL, CCC                                                                                                                                                                                                                                                                  |
| Rated insulation voltage (Ui)                                     | 1000V (6A-22A: 690V, 32A-800A: 1000V)                                                                                                                                                                                                                                        |
| Rated impulse withstand voltage (Uimp)                            | 8kV (6A-22A: 6kV, 32A-800A: 8kV)                                                                                                                                                                                                                                             |
| Degree of protection                                              | IP20 (Conforming to IEC60529)                                                                                                                                                                                                                                                |
| Ambient air temperature                                           | <p>Storage: -30°C ~ +65°C (MCi: -40 ~ +80°C)</p> <p>Operation: -5°C ~ +55°C (AC Type)<br/> -5°C ~ +40°C (MT, DC Type)<br/> -25°C ~ +60°C (MT refer to Graph)<br/> -25°C ~ +55°C (MCi)</p>  |
| Operating altitude                                                | 3000m (8900ft)                                                                                                                                                                                                                                                               |
| Operating positions                                               |                                                                                                                                                                                          |
| Shock resistance<br>(1/2 sine wave =11ms)                         | Opened: 8G(MC-2650a / MCi-2650 : 5G)<br>Closed: 10G(MC-2650a / MCi-2650 : 5G)                                                                                                                                                                                                |
| Vibration resistance<br>(Conforming to IEC68-2-6)<br>(5...300 Hz) | Opened: 2G(MC-2650a / MCi-2650 : 1G)<br>Closed: 4G(MC-2650a / MCi-2650 : 1G)                                                                                                                                                                                                 |
| Flame resistance                                                  | Conforming to UL 94: V0<br>Conforming to IEC 695-2-1: 960°C                                                                                                                                                                                                                  |

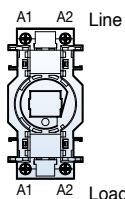
| Wire type                         |                                                                                     | Main terminal size |  |  |  |  |  |  |  | Torque  |      |          |
|-----------------------------------|-------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|------|----------|
|                                   |                                                                                     |                    | (AWG / mm <sup>2</sup> )                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | mm(max)                                                                             | [lb-in] | [Nm] | [kgf-cm] |
| Frame                             |                                                                                     |                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-6a/9a                          |    | M3.5               | 18-10/1-4                                                                         | 18-10 / 1-4                                                                       | 18-10 / 1-4                                                                       |                                                                                   |                                                                                   |                                                                                     | 8.3                                                                                 | 10      | 1.13 | 12       |
| MC-12a                            |                                                                                     |                    | 16-10/1.5-4                                                                       | 16-10 / 1.5-4                                                                     | 16-10 / 1.5-4                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-18a                            |                                                                                     |                    | 16-10/1.5-6                                                                       | 16-10 / 1.5-6                                                                     | 16-10 / 1.5-6                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-9b                             |    | M4                 | 18-10/1-4                                                                         | 18-10 / 1-4                                                                       | 18-10 / 1-4                                                                       |                                                                                   |                                                                                   |                                                                                     | 9.6                                                                                 | 20      | 2.25 | 23       |
| MC-12b                            |                                                                                     |                    | 16-10/1.5-6                                                                       | 16-10 / 1.5-6                                                                     | 16-10 / 1.5-6                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-18b                            |                                                                                     |                    | 16-10/1.5-6                                                                       | 16-10 / 1.5-6                                                                     | 16-10 / 1.5-6                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-22b                            |                                                                                     |                    | 14-8/2.5-10                                                                       | 14-8 / 2.5-10                                                                     | 14-8 / 2.5-10                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-32a                            |    | M5                 | -                                                                                 | 12-6 / 2.5-16                                                                     | 12-6 / 2.5-16                                                                     |                                                                                   |                                                                                   |                                                                                     | 12.8                                                                                | 35      | 4    | 41       |
| MC-40a                            |                                                                                     |                    | -                                                                                 | 12-6 / 2.5-16                                                                     | 12-6 / 2.5-16                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-50a                            |    | M6                 | -                                                                                 | 10-3 / 4-35                                                                       | 10-3 / 4-35                                                                       |                                                                                   |                                                                                   |                                                                                     | 14                                                                                  | 35      | 4    | 41       |
| MC-65a                            |                                                                                     |                    | -                                                                                 | 10-2 / 4-35                                                                       | 10-2 / 4-35                                                                       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-75a                            |  | M8                 | -                                                                                 | 10-1 / 6-50                                                                       | 10-1 / 6-50                                                                       |                                                                                   |                                                                                   |                                                                                     | 17                                                                                  | 45      | 5.1  | 52       |
| MC-85a                            |                                                                                     |                    | -                                                                                 | 10-1/0 / 6-50                                                                     | 10-1/0 / 6-50                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-100a                           |                                                                                     |                    | -                                                                                 | 10-2/0 / 6-70                                                                     | 10-2/0 / 6-70                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-130a                           |  | M8                 | -                                                                                 | 8-3/0 / 10-95                                                                     | 8-3/0 / 10-95                                                                     |                                                                                   |                                                                                   |                                                                                     | 24                                                                                  | 80      | 9.1  | 93       |
| MC-150a                           |                                                                                     |                    | -                                                                                 | 8-250kcmil / 10-120                                                               | 8-250kcmil / 10-120                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-6~150a<br>Aux./Coil            |  | M4                 | 20~14 / 0.5~2.5                                                                   | 18~12 / 0.75~2.5                                                                  | 18~12 / 0.75~2.5                                                                  |                                                                                   |                                                                                   |                                                                                     | 7.6                                                                                 | 10      | 1.13 | 12       |
| MC-185a                           |  | M10                | -                                                                                 | 3-350kcmil / 35-185                                                               | 3-350kcmil / 35-185                                                               |                                                                                   |                                                                                   |                                                                                     | 25                                                                                  | 130     | 14.7 | 150      |
| MC-225a                           |                                                                                     |                    | -                                                                                 | 3-400kcmil / 35-185                                                               | 3-400kcmil / 35-185                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-265a                           |  | M12                | -                                                                                 | 2-500kcmil / 35-240                                                               | 2-500kcmil / 35-240                                                               |                                                                                   |                                                                                   |                                                                                     | 30                                                                                  | 200     | 22.6 | 230      |
| MC-330a                           |                                                                                     |                    | -                                                                                 | 2-250kcmil x 2 / 35-150 x 2                                                       | 2-250kcmil x 2 / 35-150 x 2                                                       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-400a                           |                                                                                     |                    | -                                                                                 | 2-350kcmil x 2 / 35-185 x 2                                                       | 2-350kcmil x 2 / 35-185 x 2                                                       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-500a                           |  | M16                | -                                                                                 | 4/0-300kcmil x 3 / 95-240 x 2                                                     | 4/0-300kcmil x 3 / 95-240 x 2                                                     |                                                                                   |                                                                                   |                                                                                     | 40                                                                                  | 500     | 56.5 | 576      |
| MC-630a/MCi-900                   |                                                                                     |                    | -                                                                                 | 95-60 x 5 x 2                                                                     | 95-60 x 5 x 2                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-800a/MCi-1050                  |                                                                                     |                    | -                                                                                 | 95-80 x 5 x 2                                                                     | 95-80 x 5 x 2                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-185~800a/MCi-1050<br>Aux./Coil |  | M4                 | 16~10 / 1.25~5.5                                                                  | 16~10 / 1.25~5.5                                                                  | 16~10 / 1.25~5.5                                                                  |                                                                                   |                                                                                   |                                                                                     | 7.6                                                                                 | 15      | 1.75 | 18       |
| MC-1260a/MCi-1260                 |  | M12                | -                                                                                 | 50mm×10mm×2ea                                                                     | -                                                                                 |                                                                                   |                                                                                   |                                                                                     | -                                                                                   | 200     | 22.6 | 230      |
| MC-1400a                          |  | M12                | -                                                                                 | 100mm×5mm×2ea<br>100mm×5mm×3ea<br>100mm×5mm×4ea<br>100mm×10mm×3ea                 | -                                                                                 |                                                                                   |                                                                                   |                                                                                     | -                                                                                   | 200     | 22.6 | 230      |
| MC-1700a/MCi-1700                 |                                                                                     |                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-2100a/MCi-2100                 |                                                                                     |                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |
| MC-2650a/MCi-2650                 |                                                                                     |                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |         |      |          |

# Control coil characteristics (3pole)



| Frame size                 |         |      | 18AF                                                                                | 22AF                         | 40AF      | 65AF      | 100AF       | 150AF(A)                                          |
|----------------------------|---------|------|-------------------------------------------------------------------------------------|------------------------------|-----------|-----------|-------------|---------------------------------------------------|
| Type                       |         |      | MC-6a                                                                               | MC-9b                        | MC-32a    | MC-50a    | MC-75a      | MC-130a                                           |
|                            |         |      | MC-9a                                                                               | MC-12b                       | MC-40a    | MC-65a    | MC-85a      | MC-150a                                           |
|                            |         |      | MC-12a                                                                              | MC-18b                       |           | MD-30a    | MC-100a     |                                                   |
|                            |         |      | MC-18a                                                                              | MC-22b                       |           |           | MD-60a      |                                                   |
|                            |         |      | MR-4, 6, 8                                                                          |                              |           |           | MD-100a     |                                                   |
| AC coil                    |         |      |                                                                                     |                              |           |           |             |                                                   |
| Control voltage            |         | [Uc] |                                                                                     |                              |           |           |             | 48, 110~120,<br>220~240,<br>300, 380~440,<br>500V |
|                            | 50Hz    | [V]  | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |                              |           |           |             |                                                   |
|                            | 60Hz    | [V]  | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |                              |           |           |             |                                                   |
| Voltage limit              |         | [Uc] | 85 ~110%                                                                            |                              |           |           |             |                                                   |
| Coil consumption at 20°C   |         |      |                                                                                     |                              |           |           |             |                                                   |
| AC 220V                    | Inrush  | [VA] | 70                                                                                  | 70                           | 90        | 110       | 240         | 110                                               |
| 60Hz                       | Holding | [VA] | 9                                                                                   | 9                            | 9         | 13        | 17          | 18                                                |
| Heat dissipation           |         | [W]  | 2.3                                                                                 | 2.3                          | 2.7       | 2.8       | 5.4         | 2.7                                               |
| Operating time             |         |      |                                                                                     |                              |           |           |             |                                                   |
|                            | Closing | [ms] | 15 ... 30                                                                           | 15 ... 30                    | 15 ... 30 | 15 ... 30 | 15 ... 30   | 20 ... 40                                         |
|                            | Opening | [ms] | 4 ... 19                                                                            | 4 ... 19                     | 4 ... 19  | 4 ... 19  | 10 ... 30   | 50 ... 7                                          |
| DC coil                    |         |      |                                                                                     |                              |           |           |             |                                                   |
| Control voltage            |         | [Uc] | 12, 20, 24, 30, 48, 60, 80, 100, 110, 125, 200, 220, 250V                           |                              |           |           |             | 24, 48                                            |
| Voltage limit              |         | [Uc] | 85~110%                                                                             |                              |           |           |             |                                                   |
| Coil consumption at 20°C   |         |      |                                                                                     |                              |           |           |             |                                                   |
| DC 110V <sup>Note 4)</sup> | Inrush  | [W]  | 6                                                                                   | 6                            | 9         | 9         | 18          | 280 <sup>Note 3)</sup>                            |
|                            | Holding | [W]  | 6                                                                                   | 6                            | 9         | 9         | 18          | 7.5                                               |
| Time constant (L/R)        |         | [ms] | 28                                                                                  | 28                           | 28        | 65        | 75          |                                                   |
| Operating time             |         |      |                                                                                     |                              |           |           |             |                                                   |
|                            | Closing | [ms] | 40 ... 70 <sup>Note 2)</sup>                                                        | 40 ... 70 <sup>Note 2)</sup> | 50 ... 65 | 50 ... 65 | 100 ... 120 | 70 ... 80                                         |
|                            | Opening | [ms] | 4 ... 19                                                                            | 4 ... 19                     | 4 ... 19  | 4 ... 19  | 10 ... 25   | 60 ... 70                                         |

Note 1. Either semi-electronic coil(A) or electronic coil(B) can be chosen for MC-130a and MC-150a  
 2. The operation time may increase up to 80ms when re-supply after the ON state continues.  
 3. MC-150AF is based on DC24V  
 4. Coil consumptions for the other coil voltages are similar to the above data



Note) A1(A2) in line side is internally connected to A1(A2) in load side.





| Frame size                                    | 150AF(B)                     | 225AF              | 400AF                         | 800AF                                                | 1260AF               | 2650AF                                                                           |
|-----------------------------------------------|------------------------------|--------------------|-------------------------------|------------------------------------------------------|----------------------|----------------------------------------------------------------------------------|
| Type                                          | MC-130a<br>MC-150a           | MC-185a<br>MC-225a | MC-265a<br>MC-330a<br>MC-400a | MC-500a<br>MC-630a<br>MC-800a<br>MCI-900<br>MCI-1050 | MC-1260a<br>MCI-1260 | MC-1400a<br>MC-1700a<br>MC-2100a<br>MC-2650a<br>MCI-1700<br>MCI-2100<br>MCI-2650 |
| <b>AC/DC common coil</b>                      |                              |                    |                               |                                                      |                      |                                                                                  |
| Control voltage [Uc]                          |                              |                    |                               |                                                      |                      |                                                                                  |
| AC/DC                                         | AC 24                        | 24/24              | DC 24                         | -                                                    | -                    | -                                                                                |
| AC/DC                                         | 24~48/24~48                  | 48/48              | -                             | 100/100                                              | -                    | -                                                                                |
| AC/DC                                         | 100~240/100~220              | 100~240/100~220    | 100~240/100~220               | 200/200                                              | 100~240/100~220      | 100~240/100~220                                                                  |
| AC or DC                                      | DC 70~110                    | AC 300             | AC 300                        | AC 300                                               | -                    | -                                                                                |
| AC or DC                                      | DC 110                       | AC 400             | AC 400                        | AC 400                                               | -                    | -                                                                                |
| AC or DC                                      | -                            | AC 500             | AC 500                        | AC 500                                               | -                    | -                                                                                |
| Voltage limit [Uc]                            | 85~110% <span>Note 1)</span> |                    |                               |                                                      |                      |                                                                                  |
| Coil consumption at 20°C <span>Note 2)</span> |                              |                    |                               |                                                      |                      |                                                                                  |
| AC 220V Inrush [VA]                           | 320                          | 380                | 571                           | 1000                                                 | 1500                 | 2500                                                                             |
| 50/60Hz Holding [VA]                          | 10                           | 11.6               | 14                            | 29                                                   | 24                   | 50                                                                               |
| Heat dissipation [W]                          | 4.5                          | 4.7                | 5                             | 7.8                                                  | 7.8                  | 8.7                                                                              |
| Operating time                                |                              |                    |                               |                                                      |                      |                                                                                  |
| Closing [ms]                                  | 70                           | 70                 | 55                            | 75                                                   | 75                   | 80                                                                               |
| Opening [ms]                                  | 70                           | 70                 | 55                            | 75                                                   | 75                   | 70                                                                               |

Note) 1. Voltage limit for DC 24V coil is 75~110%.

2. Operating time for DC 24V coil is 90ms.

3. Either semi-electronic coil(A) or electronic coil(B) can be chosen for MC-130a and MC-150a

4. Please check the details page for each AF range

# Control coil characteristics (4pole)



| Frame size               |         |      | 18AF                                                               | 22AF                                                                                | 40AF                                                                          | 85AF      |
|--------------------------|---------|------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------|
| Type                     |         |      | MC-6a/4P                                                           | MC-22a/4P                                                                           | MC-32a/4P                                                                     | MC-50a/4P |
|                          |         |      | MC-9a/4P                                                           |                                                                                     | MC-40a/4P                                                                     | MC-65a/4P |
|                          |         |      | MC-12a/4P                                                          |                                                                                     |                                                                               | MC-75a/4P |
|                          |         |      | MC-18a/4P                                                          |                                                                                     |                                                                               | MC-85a/4P |
| AC coil                  |         |      |                                                                    |                                                                                     |                                                                               |           |
| Control voltage [Uc]     |         |      |                                                                    |                                                                                     |                                                                               |           |
| 50Hz                     | [V]     |      | 24, 32, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 500, 550    | 24, 32, 42, 48, 65, 80, 100, 110, 220, 230, 240, 380, 400, 415, 500, 550, 240(wide) | 24, 48, 100, 110, 200, 220, 230, 240, 380, 400, 415, 440, 500, 550, 240(wide) |           |
| 60Hz                     | [V]     |      | 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600 | 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600                            | 24, 48, 110, 120, 208, 220, 230, 240, 277, 380, 440, 480, 600                 |           |
| 50/60Hz                  | [V]     |      | 24, 48, 100, 110, 120, 200, 220, 230, 20, 380, 415, 440, 500, 550  | 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550                  | 24, 48, 110, 120, 220, 230, 240, 380, 415, 440, 500, 550                      |           |
| Voltage limit            |         |      | 85~110%                                                            |                                                                                     |                                                                               |           |
| Coil consumption at 20°C |         |      |                                                                    |                                                                                     |                                                                               |           |
| AC 220V                  | Inrush  | [VA] | 70                                                                 | 95                                                                                  | 95                                                                            | 220       |
| 60Hz                     | Holding | [VA] | 9                                                                  | 9                                                                                   | 9                                                                             | 17        |
| Heat dissipation         |         |      | [W]                                                                | 2.3                                                                                 | 2                                                                             | 5         |
| Operating time           | Closing | [ms] | 15...30                                                            | 10~17                                                                               | 10~17                                                                         | 16~25     |
|                          | Opening | [ms] | 4...9                                                              | 6~9                                                                                 | 6~9                                                                           | 8~15      |
| DC coil                  |         |      |                                                                    |                                                                                     |                                                                               |           |
| Control voltage [Uc]     |         |      | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250               |                                                                                     |                                                                               |           |
| Voltage limit            |         |      | 85~110%                                                            |                                                                                     |                                                                               |           |
| Coil consumption at 20°C |         |      |                                                                    |                                                                                     |                                                                               |           |
| DC 100V                  | Inrush  | [W]  | 6                                                                  | 9                                                                                   | 9                                                                             | 460       |
| (18AF: DC110V)           | Holding | [W]  | 6                                                                  | 9                                                                                   | 9                                                                             | 6         |
| Time constant (L/R)      |         |      | [ms]                                                               | 28                                                                                  | 50                                                                            | -         |
| Operating time           | Closing | [ms] | 40...60                                                            | 45~55                                                                               | 45~55                                                                         | 20~30     |
|                          | Opening | [ms] | 4...19                                                             | 8~15                                                                                | 8~15                                                                          | 13~20     |

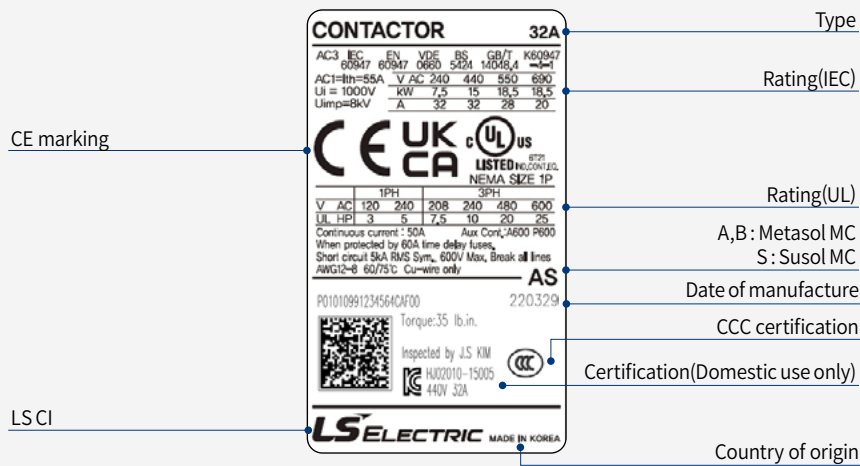
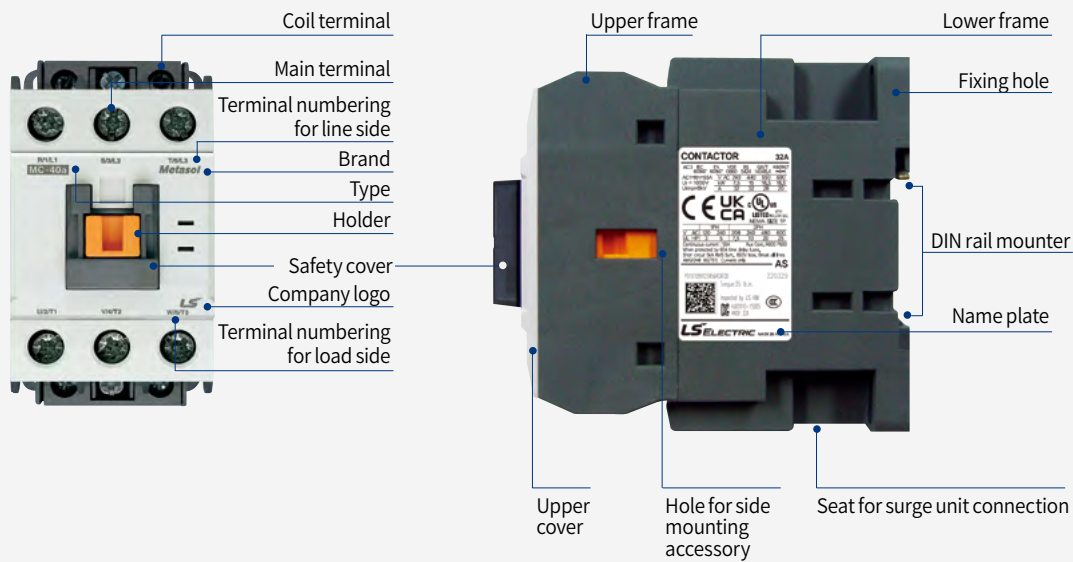


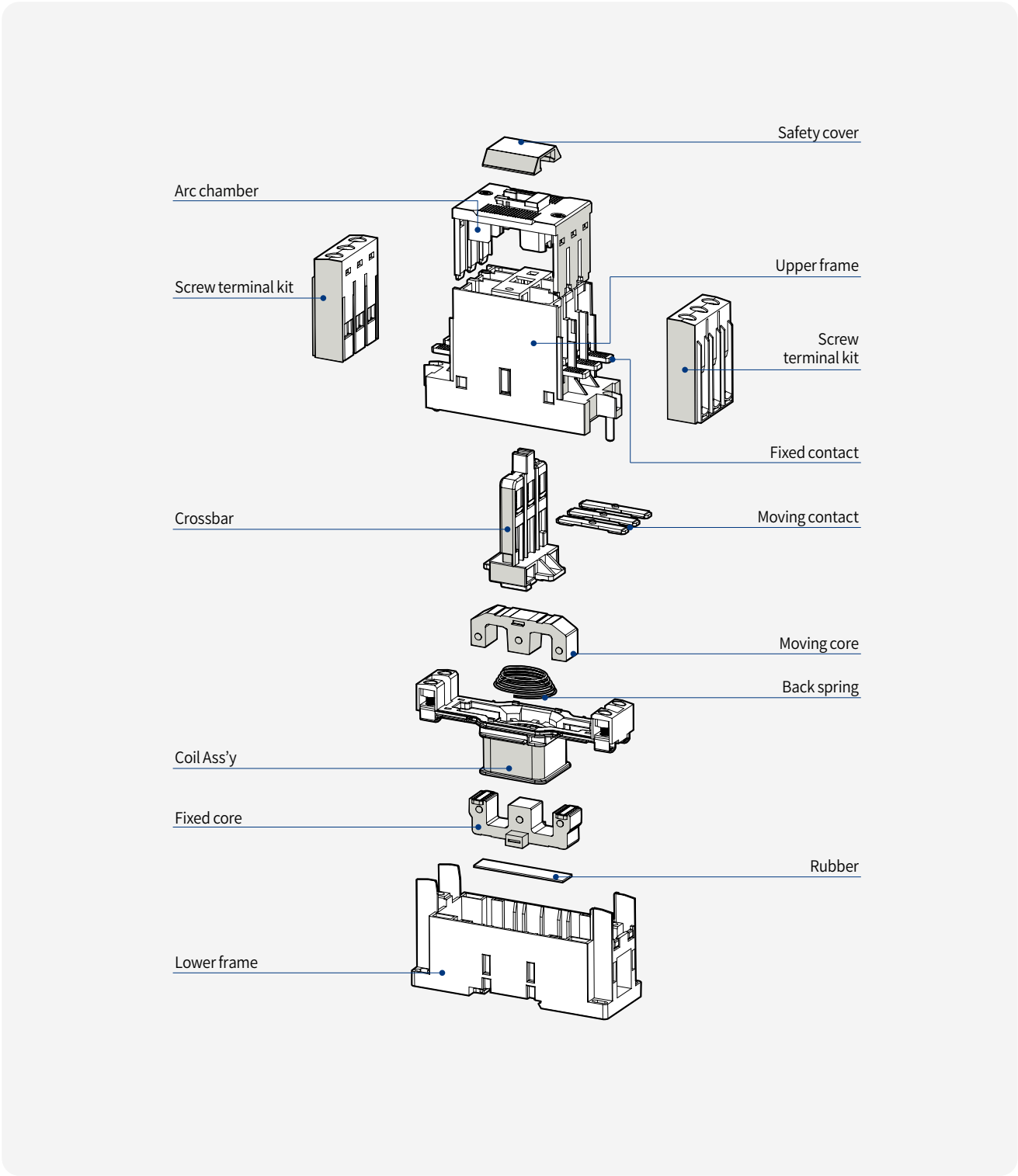
| Frame size                                    |         |                              | 225AF           | 400AF           | 800AF      |
|-----------------------------------------------|---------|------------------------------|-----------------|-----------------|------------|
| Type                                          |         |                              | MC-100a/4P      | MC-265a/4P      | MC-500a/4P |
|                                               |         |                              | MC-130a/4P      | MC-330a/4P      | MC-630a/4P |
|                                               |         |                              | MC-150a/4P      | MC-400a/4P      | MC-800a/4P |
|                                               |         |                              | MC-185a/4P      |                 |            |
|                                               |         |                              | MC-225a/4P      |                 |            |
| AC/DC common coil                             |         |                              |                 |                 |            |
| Control voltage                               |         | [Uc]                         |                 |                 |            |
|                                               |         | [AC/DC]                      | 24/24           | 24(DC Only)     | -          |
|                                               |         | [AC/DC]                      | 48/48           | -               | 100/100    |
|                                               |         | [AC/DC]                      | 100~240/100~220 | 100~240/100~220 | 200/200    |
|                                               |         | [AC]                         | 300             | 300             | 300        |
|                                               |         | [AC]                         | 400             | 400             | 400        |
|                                               |         | [AC]                         | 500             | 500             | 500        |
| Voltage limit                                 |         | 85~110% <span>Note 1)</span> |                 |                 |            |
| Coil consumption at 20°C <span>Note 2)</span> |         |                              |                 |                 |            |
| AC 220V                                       | Inrush  | [VA]                         | 380             | 571             | 1000       |
| 50/60Hz                                       | Holding | [VA]                         | 11.6            | 14              | 29         |
| Heat dissipation                              |         | [W]                          | 4.7             | 5               | 7.8        |
| Operating time                                | Closing | [ms]                         | 70              | 55              | 75         |
|                                               | Opening | [ms]                         | 70              | 55              | 75         |

Note 1) 1. Voltage limit for DC 24V coil is 75~110%.

2. Operating time for DC 24V coil is 90ms.

# Marking







# Contactors

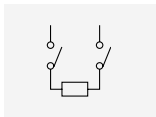
## Description 18AF

- 3-pole(NO) main contact
- Finger proof design
- DIN rail(35mm) or screw mountable
- AC or DC control in different physical size
- Front/side mountable accessories available
- Direct mountable overload relay available rating
- 1NO or 1NC Auxiliary contact built-in as standard.
- Degree of protection: IP20

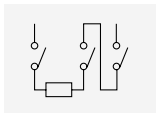
## Rating



MC-18a



2pole for DC contact



3pole for DC contact

| Contactor type                                                       |                     |                 | MC-6a                |     | MC-9a |     | MC-12a |    | MC-18a |    |
|----------------------------------------------------------------------|---------------------|-----------------|----------------------|-----|-------|-----|--------|----|--------|----|
|                                                                      |                     |                 | kW                   | A   | kW    | A   | kW     | A  | kW     | A  |
| AC duty                                                              | AC3                 | 200/240V        | 2.2                  | 9   | 2.5   | 11  | 3.5    | 13 | 4.5    | 18 |
|                                                                      |                     | 380/440V        | 3                    | 7   | 4     | 9   | 5.5    | 12 | 7.5    | 18 |
|                                                                      |                     | 500/550V        | 3                    | 6   | 4     | 7   | 7.5    | 12 | 7.5    | 13 |
|                                                                      |                     | 690V            | 3                    | 4   | 4     | 5   | 7.5    | 9  | 7.5    | 9  |
|                                                                      | AC4                 | 200/240V        | 1.5                  | 7   | 1.5   | 8   | 2.2    | 11 | 3.7    | 16 |
|                                                                      |                     | 380/440V        | 2.2                  | 5   | 2.2   | 6   | 4      | 9  | 4      | 11 |
|                                                                      | AC1                 |                 | -                    | 25  | -     | 25  | -      | 25 | -      | 32 |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 24V             | -                    | 10  | -     | 10  | -      | 12 | -      | 18 |
|                                                                      |                     | 48V             | -                    | 10  | -     | 10  | -      | 12 | -      | 18 |
|                                                                      |                     | 110V            | -                    | 6   | -     | 6   | -      | 10 | -      | 13 |
|                                                                      | 3-pole<br>in series | 24V             | -                    | 10  | -     | 10  | -      | 12 | -      | 18 |
|                                                                      |                     | 48V             | -                    | 10  | -     | 10  | -      | 12 | -      | 18 |
|                                                                      |                     | 110V            | -                    | 8   | -     | 8   | -      | 12 | -      | 18 |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series | 24V             | -                    | 8   | -     | 8   | -      | 12 | -      | 12 |
|                                                                      |                     | 48V             | -                    | 4   | -     | 4   | -      | 6  | -      | 6  |
|                                                                      |                     | 110V            | -                    | 2.5 | -     | 2.5 | -      | 4  | -      | 4  |
|                                                                      | 3-pole<br>in series | 24V             | -                    | 8   | -     | 8   | -      | 12 | -      | 12 |
|                                                                      |                     | 48V             | -                    | 6   | -     | 6   | -      | 10 | -      | 10 |
|                                                                      |                     | 110V            | -                    | 4   | -     | 4   | -      | 8  | -      | 8  |
| Directly mountable overload relay                                    |                     |                 | MT-12                |     |       |     |        |    |        |    |
| Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                     | AWG             | 18~10                |     | 16~10 |     | 16~8   |    | 14~8   |    |
|                                                                      |                     | mm <sup>2</sup> | 1~4                  |     | 1.5~4 |     | 1.5~10 |    | 2.5~10 |    |
| Conductor type                                                       |                     |                 | 65/75°C Cu-wire only |     |       |     |        |    |        |    |



## Coil voltage

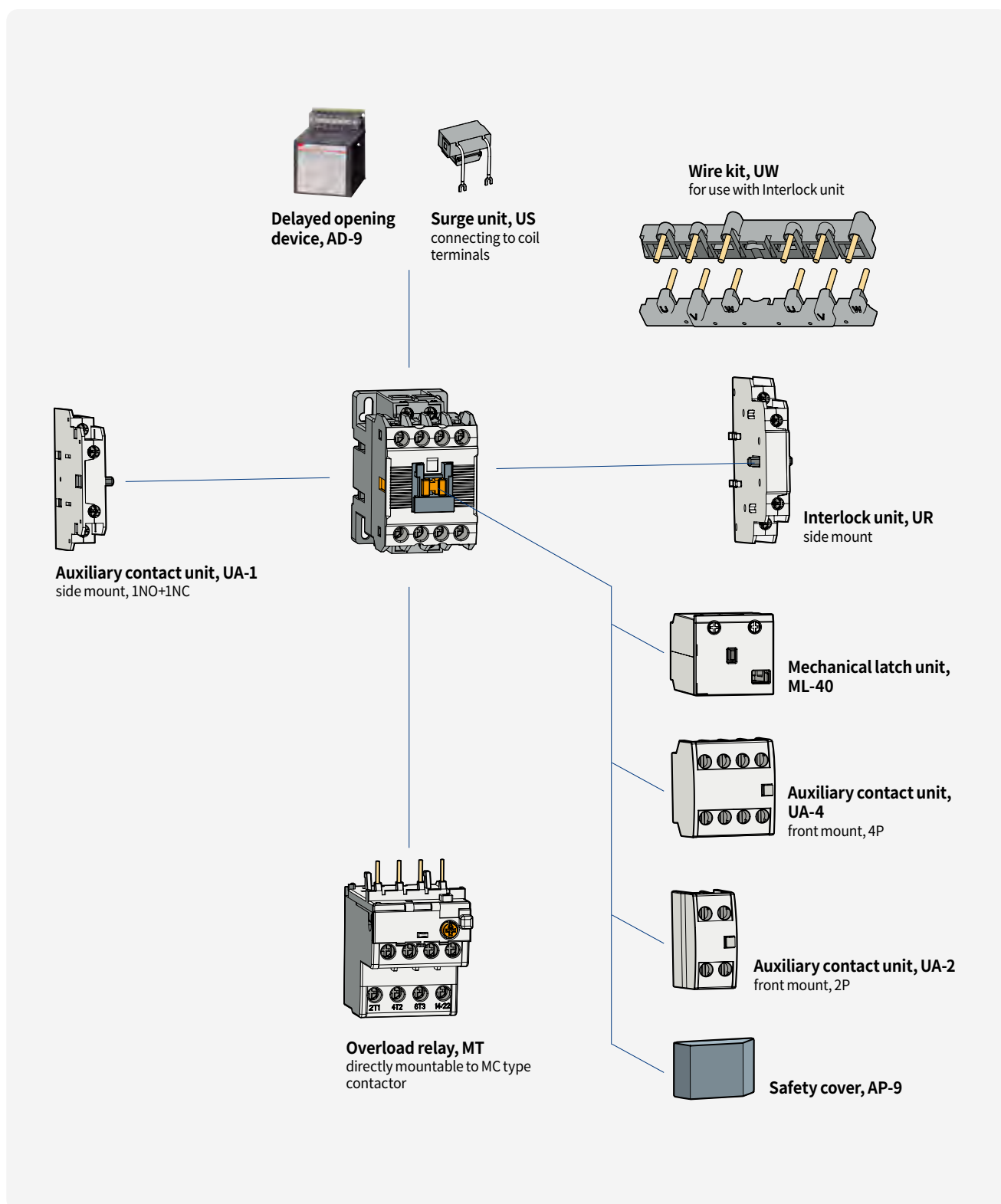
|    |      |                                                                                     |
|----|------|-------------------------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|    | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |
| DC |      | 12, 20, 24, 30, 48, 60, 80, 100, 110, 125, 200, 220, 250V                           |

## Certification

- CE(IEC)
- UL508
- CCC

\* Please be cautious for wiring control power cable, especially " + " (Positive) and " - " (Negative) polarity should be correctly considered.

## Accessories



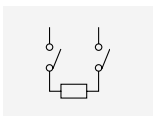
# Contactors

## Description 22AF

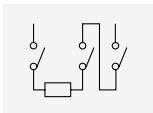
- 3-pole(NO) main contact
- Finger proof design
- DIN rail(35mm) or screw mountable
- AC or DC control in different physical size
- Front/side mountable accessories available
- Direct mountable overload relay available rating
- 1NO1NC Auxiliary contact built-in as standard.
- UA-1 is available on only left side
- Degree of protection: IP20



MC-22b



2pole for DC contact



3pole for DC contact

## Rating

| Contactor type                                                       |                           |                     | MC-9b                |     | MC-12b |    | MC-18b |    | MC-22b |    |
|----------------------------------------------------------------------|---------------------------|---------------------|----------------------|-----|--------|----|--------|----|--------|----|
|                                                                      |                           |                     | kW                   | A   | kW     | A  | kW     | A  | kW     | A  |
| AC duty                                                              | AC3                       | 200/240V            | 2.5                  | 11  | 3.5    | 13 | 4.5    | 18 | 5.5    | 22 |
|                                                                      |                           | 380/440V            | 4                    | 9   | 5.5    | 12 | 7.5    | 18 | 11     | 22 |
|                                                                      |                           | 500/550V            | 4                    | 7   | 7.5    | 12 | 7.5    | 13 | 15     | 20 |
|                                                                      |                           | 690V                | 4                    | 6   | 7.5    | 9  | 7.5    | 9  | 15     | 18 |
|                                                                      | AC4                       | 200/240V            | 1.5                  | 8   | 2.2    | 11 | 3.7    | 16 | 3.7    | 18 |
|                                                                      |                           | 380/440V            | 2.2                  | 6   | 4      | 9  | 4      | 11 | 5.5    | 13 |
|                                                                      | AC1                       |                     | -                    | 25  | -      | 27 | -      | 40 | -      | 45 |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series       | 24V                 | -                    | 10  | -      | 12 | -      | 18 | -      | 20 |
|                                                                      |                           | 48V                 | -                    | 10  | -      | 12 | -      | 18 | -      | 20 |
|                                                                      |                           | 110V                | -                    | 6   | -      | 10 | -      | 13 | -      | 15 |
|                                                                      | 3-pole<br>in series       | 24V                 | -                    | 10  | -      | 12 | -      | 18 | -      | 20 |
|                                                                      |                           | 48V                 | -                    | 10  | -      | 12 | -      | 18 | -      | 20 |
|                                                                      |                           | 110V                | -                    | 8   | -      | 12 | -      | 18 | -      | 20 |
|                                                                      | DC3, 5 duty<br>(L/R=15ms) | 2-pole<br>in series | 24V                  | -   | 8      | -  | 12     | -  | 12     | -  |
| 48V                                                                  |                           |                     | -                    | 4   | -      | 6  | -      | 6  | -      | 15 |
| 110V                                                                 |                           |                     | -                    | 2.5 | -      | 4  | -      | 4  | -      | 8  |
| 3-pole<br>in series                                                  |                           | 24V                 | -                    | 8   | -      | 12 | -      | 12 | -      | 20 |
|                                                                      |                           | 48V                 | -                    | 6   | -      | 10 | -      | 10 | -      | 20 |
|                                                                      |                           | 110V                | -                    | 4   | -      | 8  |        | 8  | -      | 15 |
| Directly mountable overload relay                                    |                           |                     | MT-32                |     |        |    |        |    |        |    |
| Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                           | AWG                 | 16~10                |     | 16~8   |    | 14~8   |    | 14~8   |    |
|                                                                      |                           | mm <sup>2</sup>     | 1.5~4                |     | 1.5~10 |    | 2.5~10 |    | 2.5~10 |    |
| Conductor type                                                       |                           |                     | 65/75°C Cu-wire only |     |        |    |        |    |        |    |



## Coil voltage

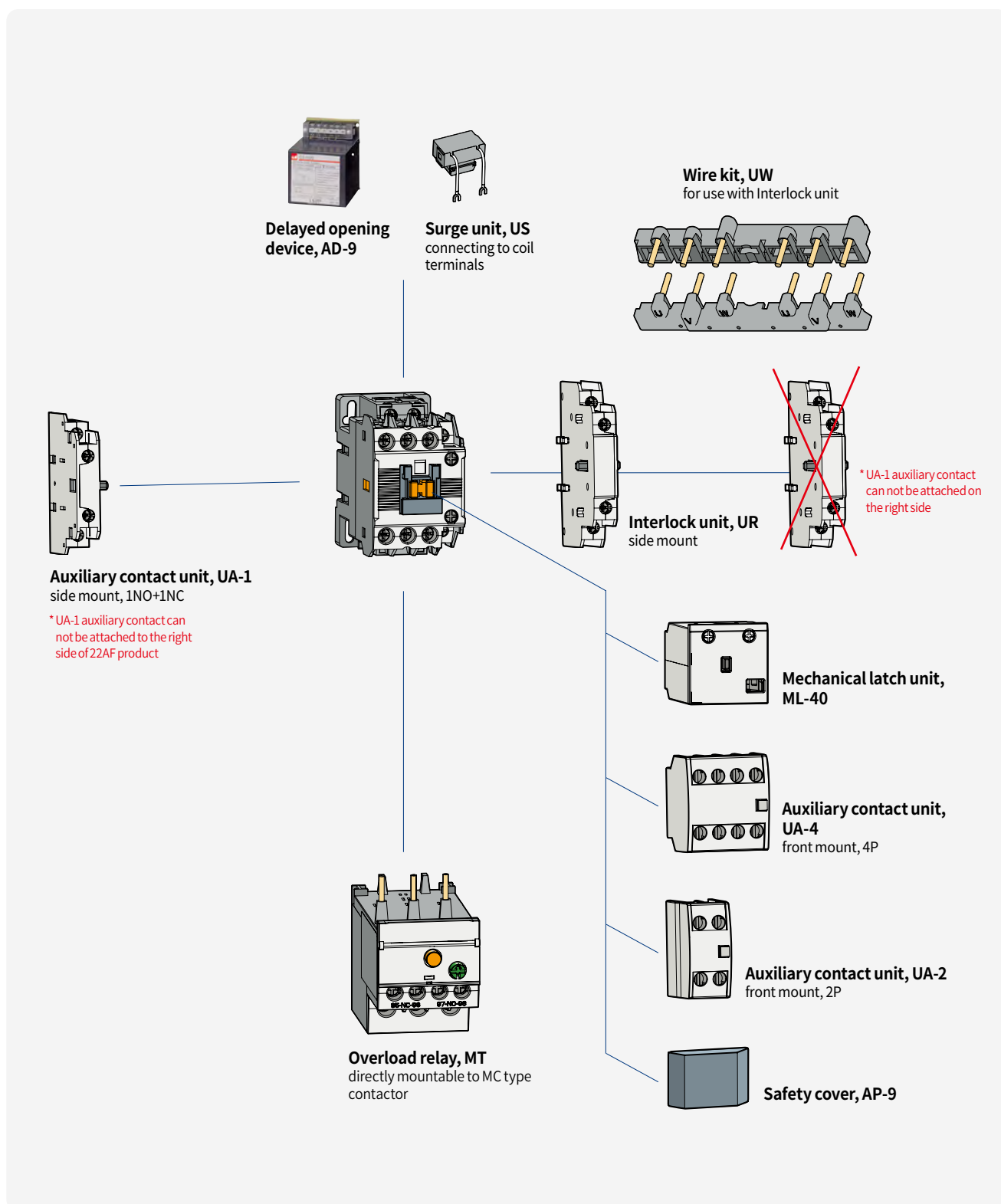
|    |      |                                                                                     |
|----|------|-------------------------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|    | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |
| DC |      | 12, 20, 24, 30, 48, 60, 80, 100, 110, 125, 200, 220, 250V                           |

## Certification

- CE(IEC)
- UL508
- CCC

\* Please be cautious for wiring control power cable, especially “+” (Positive) and “-” (Negative) polarity should be correctly considered.

## Accessories



# Contactors

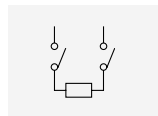
## Description 40AF

- 3-pole(NO) main contact
- Finger proof design
- DIN rail(35mm) or screw mountable
- AC or DC control in different physical size
- Front/side mountable accessories available
- Direct mountable overload relay available rating
- 2NO2NC Auxiliary contact built-in is possible as standard
- Degree of protection: IP20

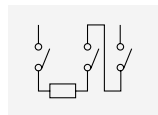
## Rating



MC-40a



2pole for DC contact



3pole for DC contact

| Contactor type                                                       |                       |                     | MC-32a               |    | MC-40a |    |
|----------------------------------------------------------------------|-----------------------|---------------------|----------------------|----|--------|----|
|                                                                      |                       |                     | kW                   | A  | kW     | A  |
| AC duty                                                              | AC3                   | 200/240V            | 7.5                  | 32 | 11     | 40 |
|                                                                      |                       | 380/440V            | 15                   | 32 | 18.5   | 40 |
|                                                                      |                       | 500/550V            | 18.5                 | 28 | 22     | 32 |
|                                                                      |                       | 690V                | 18.5                 | 20 | 22     | 23 |
|                                                                      |                       | 1000V               | 22                   | 17 | 22     | 17 |
|                                                                      | AC4                   | 200/240V            | 4.5                  | 20 | 5.5    | 25 |
|                                                                      |                       | 380/440V            | 7.5                  | 17 | 11     | 24 |
|                                                                      | AC1                   |                     | -                    | 55 | -      | 60 |
|                                                                      | DC1 duty<br>(L/R=1ms) | 2-pole<br>in series | 24V                  | -  | 25     | -  |
| 48V                                                                  |                       |                     | -                    | 25 | -      | 35 |
| 110V                                                                 |                       |                     | -                    | 25 | -      | 25 |
| 3-pole<br>in series                                                  |                       | 24V                 | -                    | 25 | -      | 35 |
|                                                                      |                       | 48V                 | -                    | 25 | -      | 35 |
|                                                                      |                       | 110V                | -                    | 25 | -      | 35 |
|                                                                      |                       |                     |                      |    |        |    |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series   | 24V                 | -                    | 25 | -      | 35 |
|                                                                      |                       | 48V                 | -                    | 20 | -      | 20 |
|                                                                      |                       | 110V                | -                    | 10 | -      | 10 |
|                                                                      | 3-pole<br>in series   | 24V                 | -                    | 25 | -      | 35 |
|                                                                      |                       | 48V                 | -                    | 25 | -      | 30 |
|                                                                      |                       | 110V                | -                    | 20 | -      | 20 |
|                                                                      |                       |                     |                      |    |        |    |
| Directly mountable overload relay                                    |                       | MT-32               |                      |    |        |    |
| Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                       | AWG                 | 12~8                 |    | 8~6    |    |
|                                                                      |                       | mm <sup>2</sup>     | 2.5~10               |    | 10~16  |    |
| Conductor type                                                       |                       |                     | 65/75°C Cu-wire only |    |        |    |



## Coil voltage

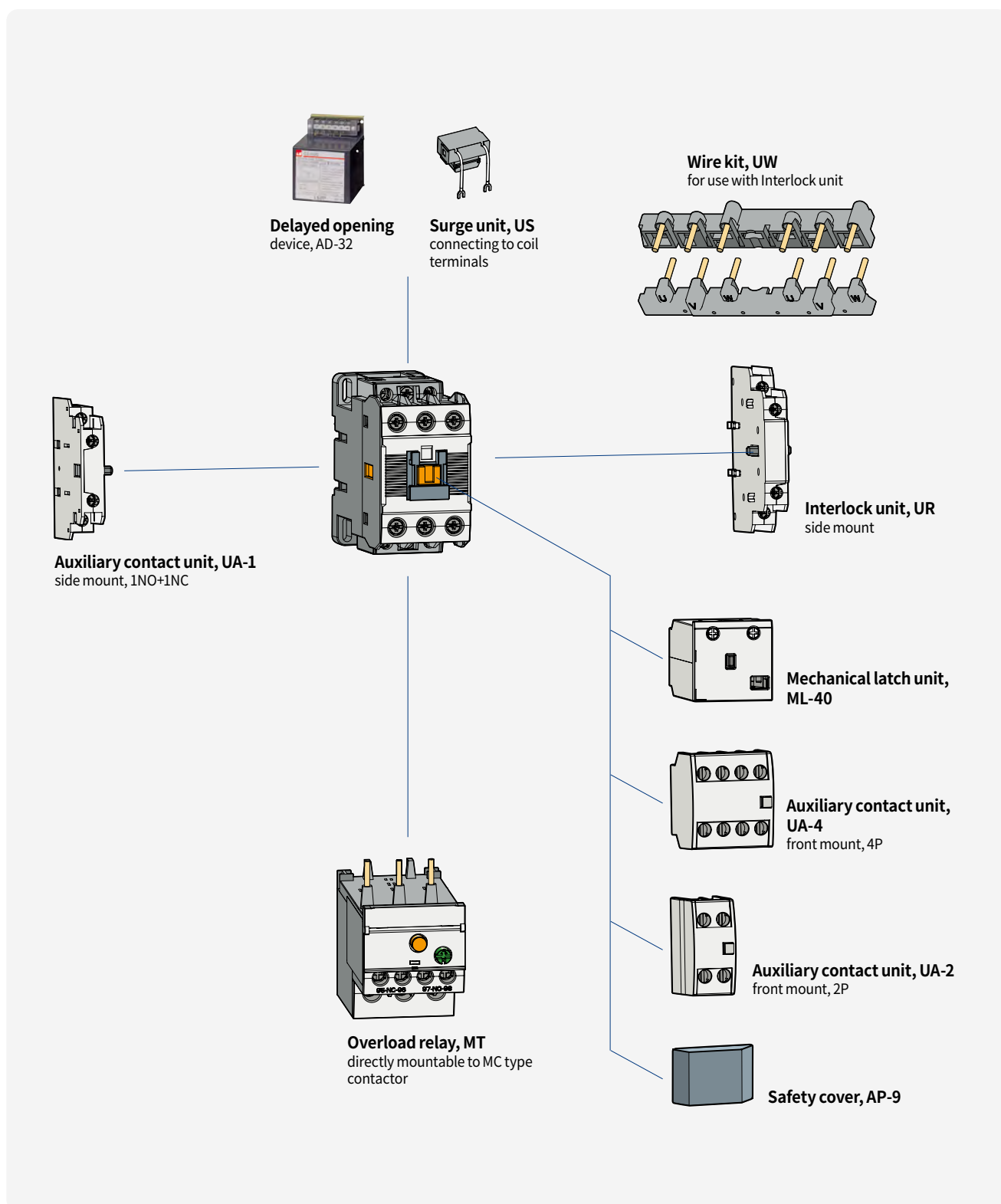
|    |      |                                                                                     |
|----|------|-------------------------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|    | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |
| DC |      | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V                               |

## Certification

- CE(IEC)
- UL508
- CCC



## Accessories



# Contactors

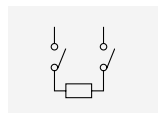
## Description 65AF

- 3-pole(NO) main contact
- Finger proof design
- DIN rail(35mm) or screw mountable
- Both screw and Box terminal (lug) type are available
- AC or DC control in different physical size
- Front/side mountable accessories available
- Direct mountable overload relay available rating
- 2NO2NC Auxiliary contact built-in is possible as standard
- Degree of protection: IP20

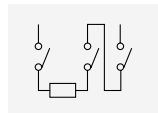
## Rating



MC-65a



2pole for DC contact



3pole for DC contact

| Contactor type                                                       |                       |                     | MC-50a               |     | MC-65a |     |
|----------------------------------------------------------------------|-----------------------|---------------------|----------------------|-----|--------|-----|
|                                                                      |                       |                     | kW                   | A   | kW     | A   |
| AC duty                                                              | AC3                   | 200/240V            | 15                   | 55  | 18.5   | 65  |
|                                                                      |                       | 380/440V            | 22                   | 50  | 30     | 65  |
|                                                                      |                       | 500/550V            | 30                   | 43  | 33     | 60  |
|                                                                      |                       | 690V                | 30                   | 28  | 33     | 35  |
|                                                                      |                       | 1000V               | 30                   | 23  | 30     | 23  |
|                                                                      | AC4                   | 200/240V            | 7.5                  | 35  | 11     | 50  |
|                                                                      |                       | 380/440V            | 15                   | 32  | 22     | 47  |
|                                                                      | AC1                   |                     | -                    | 100 | -      | 115 |
|                                                                      | DC1 duty<br>(L/R=1ms) | 2-pole<br>in series | 24V                  | -   | 50     | -   |
| 48V                                                                  |                       |                     | -                    | 40  | -      | 40  |
| 110V                                                                 |                       |                     | -                    | 35  | -      | 35  |
| 3-pole<br>in series                                                  |                       | 24V                 | -                    | 50  | -      | 65  |
|                                                                      |                       | 48V                 | -                    | 50  | -      | 65  |
|                                                                      |                       | 110V                | -                    | 50  | -      | 65  |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series   | 24V                 | -                    | 45  | -      | 45  |
|                                                                      |                       | 48V                 | -                    | 25  | -      | 25  |
|                                                                      |                       | 110V                | -                    | 15  | -      | 15  |
|                                                                      | 3-pole<br>in series   | 24V                 | -                    | 50  | -      | 50  |
|                                                                      |                       | 48V                 | -                    | 35  | -      | 35  |
|                                                                      |                       | 110V                | -                    | 30  | -      | 30  |
| Directly mountable overload relay                                    |                       |                     | MT-63                |     |        |     |
| Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                       | AWG                 | 10~4                 |     | 8~3    |     |
|                                                                      |                       | mm <sup>2</sup>     | 6~25                 |     | 10~35  |     |
| Conductor type                                                       |                       |                     | 65/75°C Cu-wire only |     |        |     |



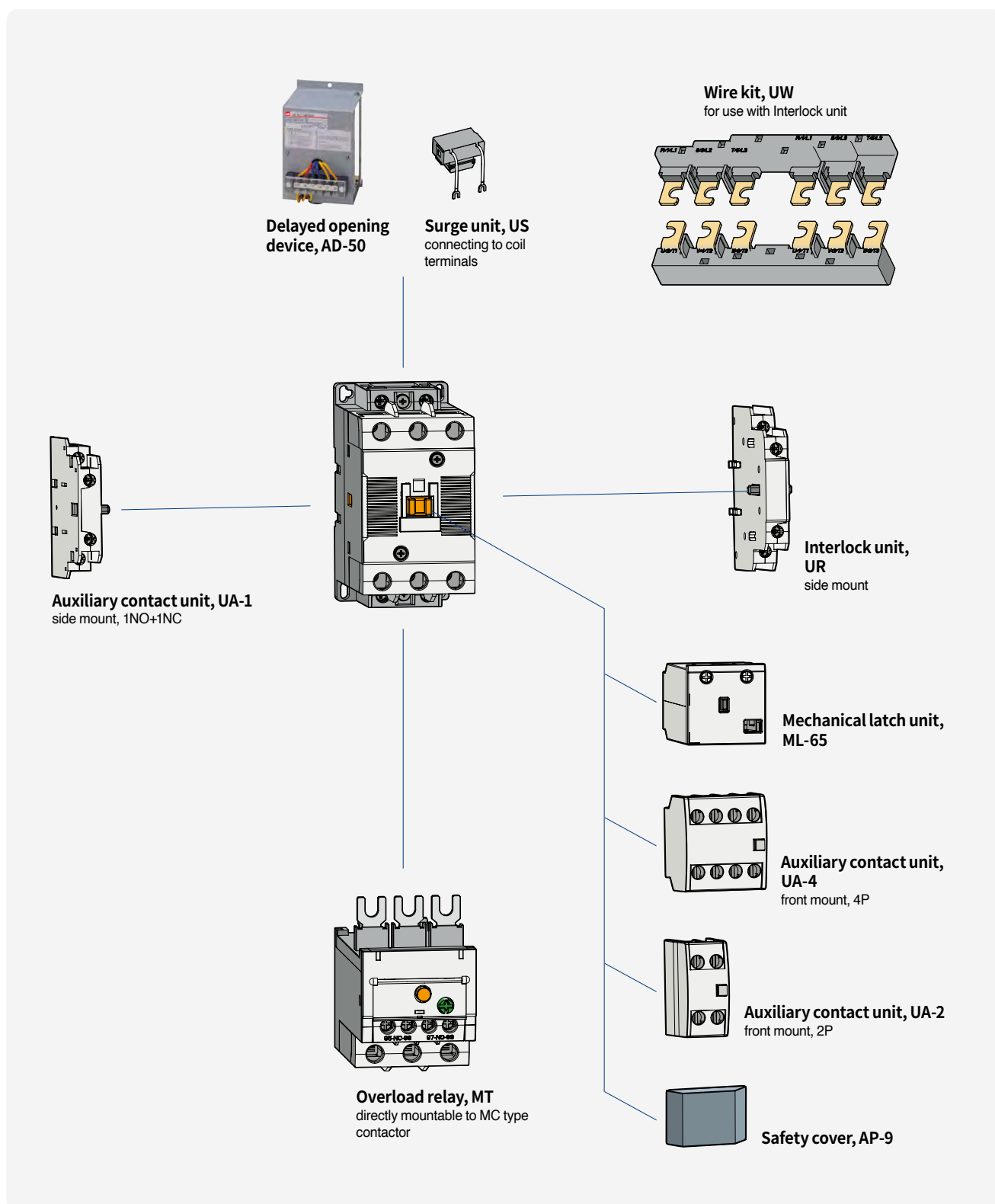
## Coil voltage

|    |      |                                                                                     |
|----|------|-------------------------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|    | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |
| DC |      | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V                               |

## Certification

- CE(IEC)
- UL508
- CCC

## Accessories



# Contactors

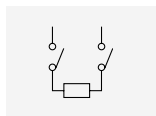
## Description 100AF

- 3-pole(NO) main contact
- Finger proof design
- DIN rail(35, 70mm) or screw mountable
- Both screw and Box terminal (lug) type are available
- AC or DC control in different physical size
- Front/side mountable accessories available
- Direct mountable overload relay available rating
- 2NO2NC Auxiliary contact built-in is possible as standard
- Degree of protection: IP20

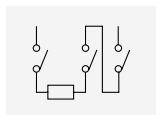
## Rating



MC-100a



2pole for DC contact



3pole for DC contact

| Contactor type            |                                                                      |                     | MC-75a               |       | MC-85a |       | MC-100a |       |     |
|---------------------------|----------------------------------------------------------------------|---------------------|----------------------|-------|--------|-------|---------|-------|-----|
|                           |                                                                      |                     | kW                   | A     | kW     | A     | kW      | A     |     |
| AC duty                   | AC3                                                                  | 200/240V            | 22                   | 75    | 25     | 85    | 30      | 105   |     |
|                           |                                                                      | 380/440V            | 37                   | 75    | 45     | 85    | 55      | 105   |     |
|                           |                                                                      | 500/550V            | 37                   | 64    | 45     | 75    | 55      | 85    |     |
|                           |                                                                      | 690V                | 37                   | 42    | 45     | 45    | 55      | 65    |     |
|                           |                                                                      | 1000V               | 37                   | 28    | 37     | 28    | 37      | 28    |     |
|                           | AC4                                                                  | 200/240V            | 13                   | 55    | 15     | 65    | 19      | 80    |     |
|                           |                                                                      | 380/440V            | 25                   | 52    | 30     | 62    | 37      | 75    |     |
|                           | AC1                                                                  |                     | -                    | 125   | -      | 135   | -       | 160   |     |
|                           | DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 24V                  | -     | 75     | -     | 80      | -     | 100 |
| 48V                       |                                                                      |                     | -                    | 65    | -      | 65    | -       | 100   |     |
| 110V                      |                                                                      |                     | -                    | 50    | -      | 50    | -       | 80    |     |
| 3-pole<br>in series       |                                                                      | 24V                 | -                    | 75    | -      | 80    | -       | 100   |     |
|                           |                                                                      | 48V                 | -                    | 75    | -      | 80    | -       | 100   |     |
|                           |                                                                      | 110V                | -                    | 75    | -      | 80    | -       | 100   |     |
| DC3, 5 duty<br>(L/R=15ms) |                                                                      | 2-pole<br>in series | 24V                  | -     | 65     | -     | 65      | -     | 100 |
|                           |                                                                      |                     | 48V                  | -     | 40     | -     | 40      | -     | 60  |
|                           |                                                                      |                     | 110V                 | -     | 20     | -     | 20      | -     | 40  |
|                           | 3-pole<br>in series                                                  | 24V                 | -                    | 80    | -      | 80    | -       | 100   |     |
|                           |                                                                      | 48V                 | -                    | 60    | -      | 60    | -       | 90    |     |
|                           |                                                                      | 110V                | -                    | 50    | -      | 50    | -       | 80    |     |
|                           | Directly mountable overload relay                                    |                     |                      | MT-95 |        |       |         |       |     |
|                           | Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                     | AWG                  | 8~2   |        | 8~0   |         | 8~00  |     |
|                           |                                                                      |                     | mm <sup>2</sup>      | 10~35 |        | 10~50 |         | 10~70 |     |
| Conductor type            |                                                                      |                     | 65/75°C Cu-wire only |       |        |       |         |       |     |



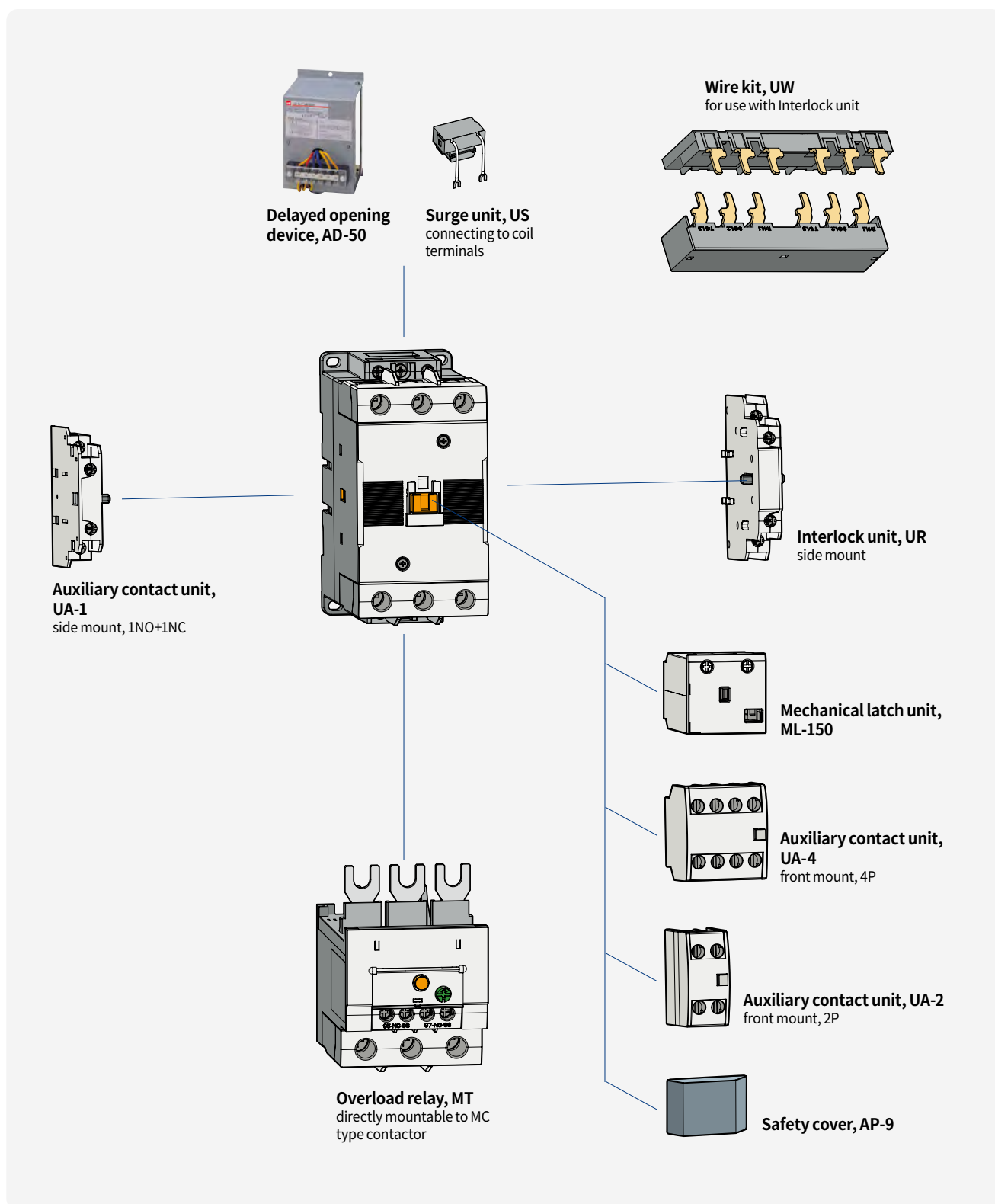
## Coil voltage

|    |      |                                                                                     |
|----|------|-------------------------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 36, 42, 48, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|    | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                 |
| DC |      | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V                               |

## Certification

- CE(IEC)
- UL508
- CCC

## Accessories



# Contactors

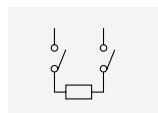
## Description 150AF

- 3-pole(NO) main contact
- Finger proof design
- DIN rail(70mm) or screw mountable
- Both screw and Box terminal (lug) type are available
- AC or DC control in the same physical size
- Front/side mountable accessories available
- Direct mountable overload relay available
- 2NO2NC Auxiliary contact built-in is possible as standard
- Degree of protection: IP20

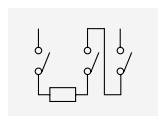
## Rating



MC-150a



2pole for DC contact



3pole for DC contact

| Contactor type                                                       |                       |                     | MC-130a              |     | MC-150a |     |
|----------------------------------------------------------------------|-----------------------|---------------------|----------------------|-----|---------|-----|
|                                                                      |                       |                     | kW                   | A   | kW      | A   |
| AC duty                                                              | AC3                   | 200/240V            | 37                   | 130 | 45      | 150 |
|                                                                      |                       | 380/440V            | 60                   | 130 | 75      | 150 |
|                                                                      |                       | 500/550V            | 60                   | 90  | 70      | 100 |
|                                                                      |                       | 690V                | 55                   | 60  | 55      | 60  |
|                                                                      |                       | 1000V               | 75                   | 50  | 75      | 50  |
|                                                                      | AC4                   | 200/240V            | 22                   | 93  | 30      | 120 |
|                                                                      |                       | 380/440V            | 45                   | 90  | 55      | 110 |
|                                                                      | AC1                   |                     | -                    | 200 | -       | 250 |
|                                                                      | DC1 duty<br>(L/R=1ms) | 2-pole<br>in series | 24V                  | -   | 120     | -   |
| 48V                                                                  |                       |                     | -                    | 100 | -       | 120 |
| 110V                                                                 |                       |                     | -                    | 80  | -       | 100 |
| 3-pole<br>in series                                                  |                       | 24V                 | -                    | 120 | -       | 150 |
|                                                                      |                       | 48V                 | -                    | 120 | -       | 150 |
|                                                                      |                       | 110V                | -                    | 100 | -       | 150 |
|                                                                      |                       |                     |                      |     |         |     |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series   | 24V                 | -                    | 120 | -       | 150 |
|                                                                      |                       | 48V                 | -                    | 60  | -       | 100 |
|                                                                      |                       | 110V                | -                    | 40  | -       | 80  |
|                                                                      | 3-pole<br>in series   | 24V                 | -                    | 120 | -       | 150 |
|                                                                      |                       | 48V                 | -                    | 90  | -       | 130 |
|                                                                      |                       | 110V                | -                    | 80  | -       | 120 |
|                                                                      |                       |                     |                      |     |         |     |
| Directly mountable overload relay                                    |                       |                     | MT-150               |     |         |     |
| Conductor size (Solid, stranded)<br>(the max. number of conducts: 2) |                       | AWG                 | 3~00                 |     | 3~4/0   |     |
|                                                                      |                       | mm²                 | 35~70                |     | 35~95   |     |
| Conductor type                                                       |                       |                     | 65/75°C Cu-wire only |     |         |     |



## Coil voltage

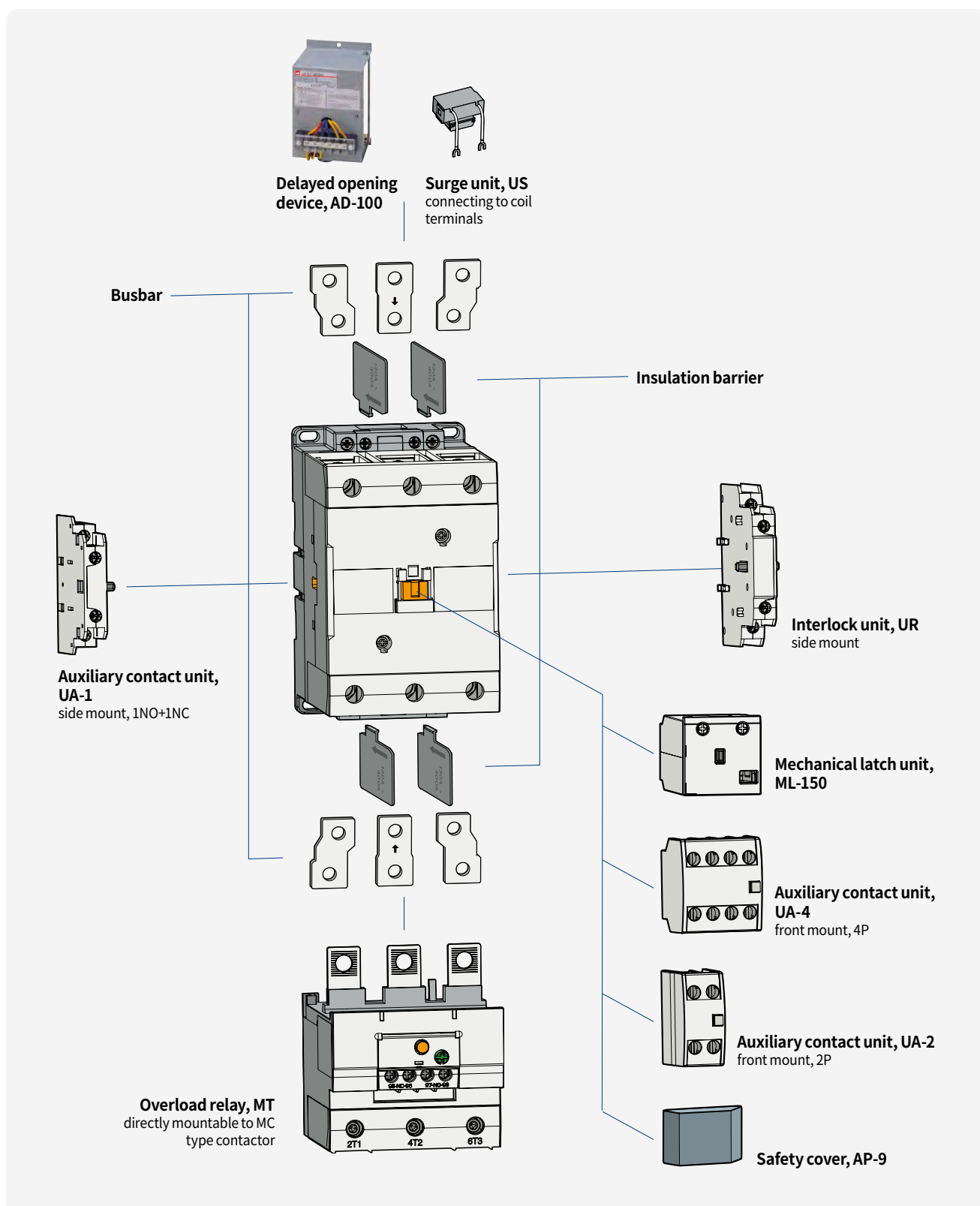
|            |                                                       |
|------------|-------------------------------------------------------|
| AC / DC    | 100~240 / 100~220 / 24~48                             |
| AC 50/60Hz | 24, 48, 100~240, 110~120, 220~240, 300, 380~440, 500V |
| DC         | 24, 48, 70~110, 100~220, 110, 220V                    |

## Certification

- CE(IEC)
- UL508
- CCC



## Accessories



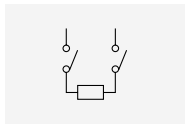
# Contactors

## Description 225AF

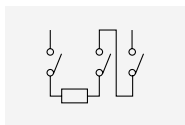
- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Top/side mountable accessories available
- Direct mountable overload relays available
- Degree of protection: IP00



MC-225a



2pole for DC contact



3pole for DC contact

### Rating

| Contactor type                                                       |                     |          | MC-185a               |        | MC-225a |     |
|----------------------------------------------------------------------|---------------------|----------|-----------------------|--------|---------|-----|
|                                                                      |                     |          | kW                    | A      | kW      | A   |
| AC duty                                                              | AC3                 | 200/240V | 55                    | 185    | 75      | 225 |
|                                                                      |                     | 380/440V | 90                    | 185    | 132     | 225 |
|                                                                      |                     | 500/550V | 110                   | 180    | 132     | 200 |
|                                                                      |                     | 690V     | 110                   | 120    | 140     | 150 |
|                                                                      |                     | 1000V    | 132                   | 90     | 132     | 90  |
|                                                                      | AC4                 | 200/240V | 37                    | 150    | 45      | 180 |
|                                                                      |                     | 380/440V | 75                    | 150    | 90      | 180 |
|                                                                      | AC1                 |          | -                     | 300    | -       | 350 |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 24V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 48V      | -                     | 180    | -       | 180 |
|                                                                      |                     | 110V     | -                     | 150    | -       | 150 |
|                                                                      | 3-pole<br>in series | 24V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 48V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 110V     | -                     | 180    | -       | 220 |
|                                                                      |                     |          |                       |        |         |     |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series | 24V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 48V      | -                     | 150    | -       | 150 |
|                                                                      |                     | 110V     | -                     | 120    | -       | 120 |
|                                                                      | 3-pole<br>in series | 24V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 48V      | -                     | 180    | -       | 220 |
|                                                                      |                     | 110V     | -                     | 150    | -       | 150 |
|                                                                      |                     |          |                       |        |         |     |
| Directly mountable overload relay                                    |                     |          | MT-225                |        |         |     |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) | AWG                 | 1~4/0    |                       | 0~300  |         |     |
|                                                                      | mm²                 | 50~95    |                       | 50~150 |         |     |
| Conductor type                                                       |                     |          | 75°C Cu stranded wire |        |         |     |



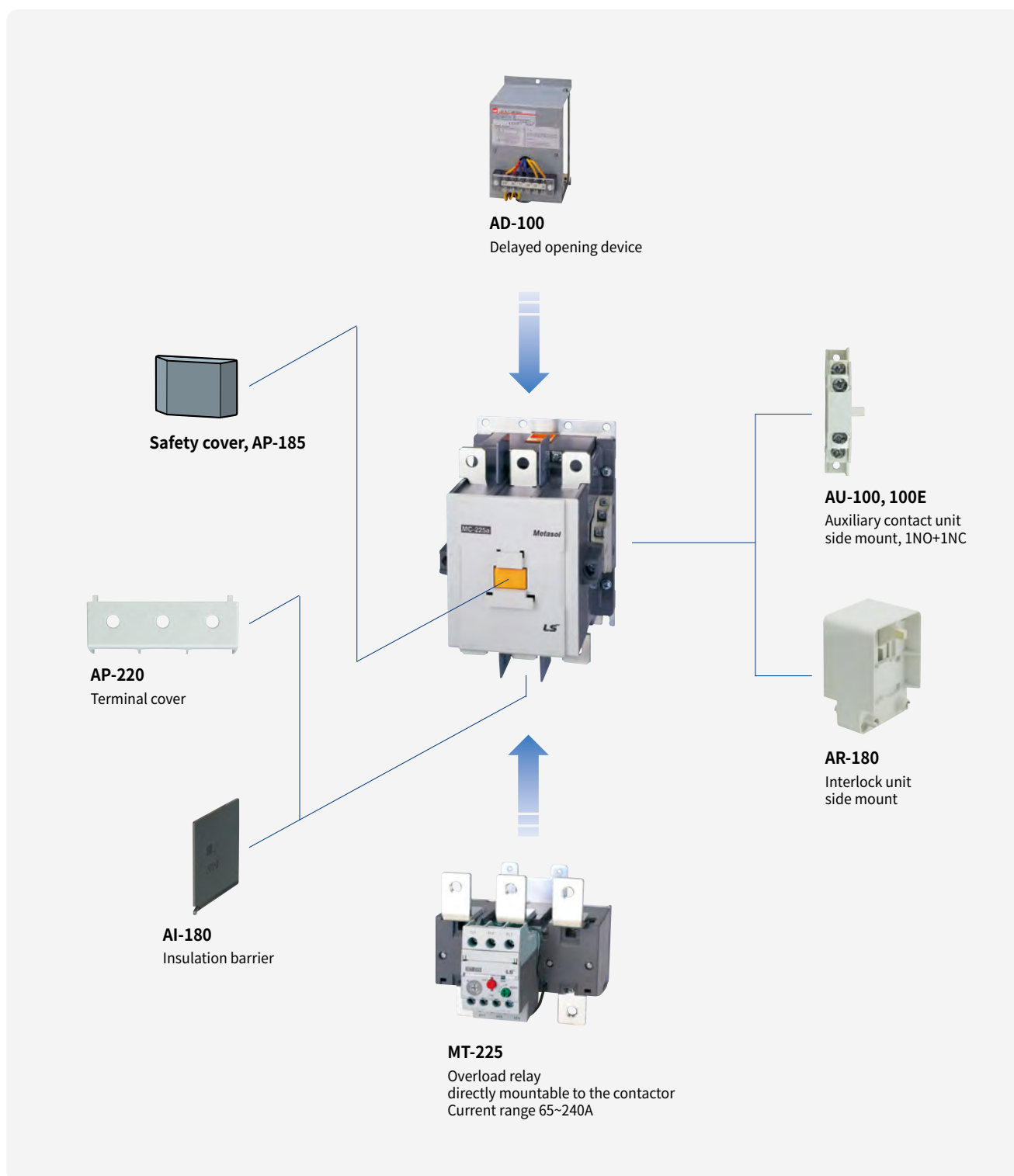
### Coil voltage, AC/DC common

| Nominal(ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 24V                       | 24 - 25V   | 24V        |
| 48V                       | 48 - 50V   | 48V        |
| 100/200V                  | 100 - 240V | 100 - 220V |
| 300V                      | 265 - 347V | -          |
| 400V                      | 380 - 450V | -          |
| 500V                      | 440 - 575V | -          |

#### Certification

- CE(IEC)
- UL508
- CCC

## Accessories



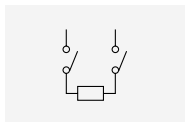
# Contactors

## Description 400AF

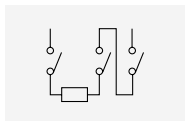
- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Side mountable accessories available
- Degree of protection: IP00



MC-400a



2pole for DC contact



3pole for DC contact

### Rating

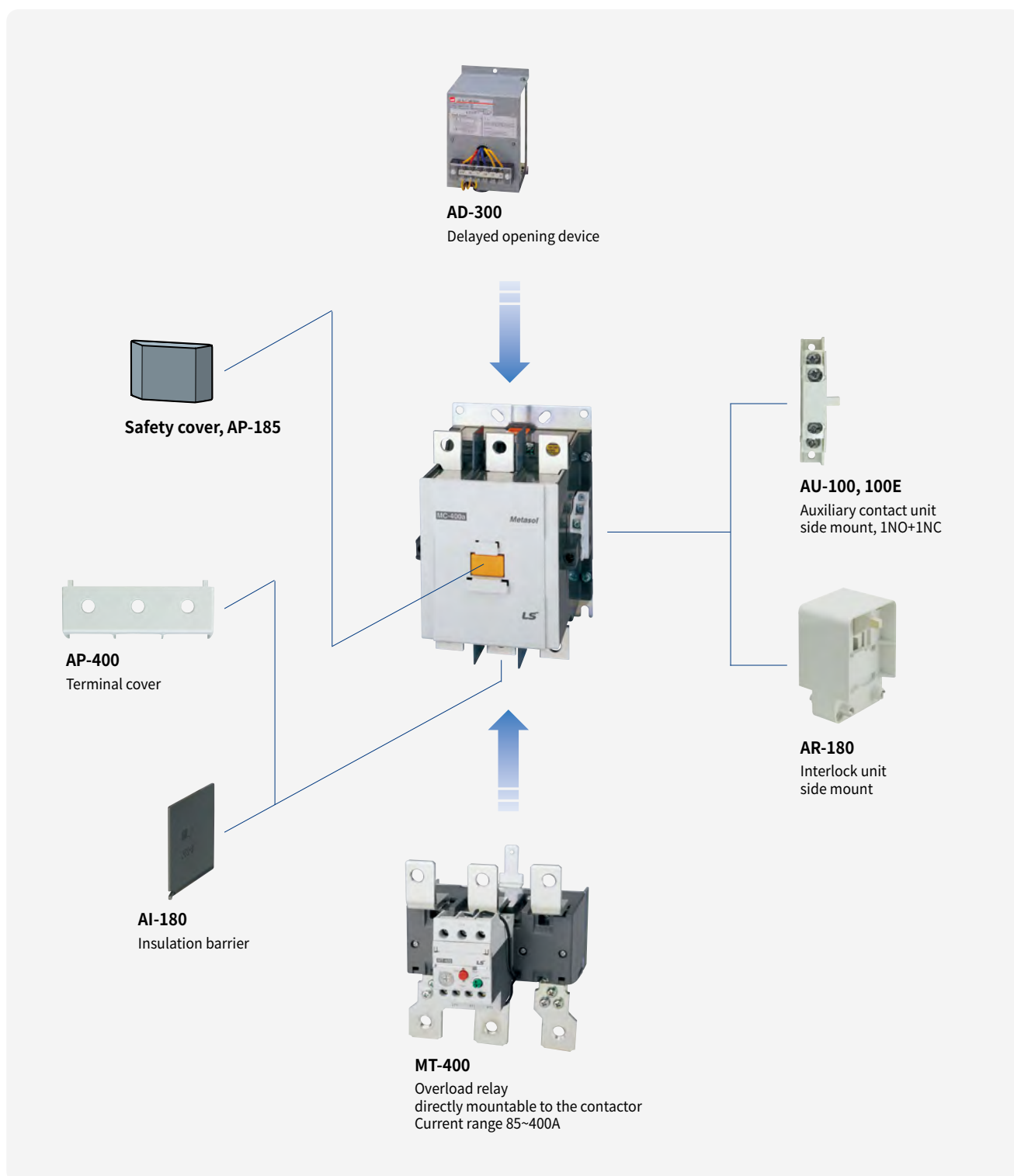
| Contactor type                                                       |                           |                     | MC-265a               |         | MC-330a |         | MC-400a |     |
|----------------------------------------------------------------------|---------------------------|---------------------|-----------------------|---------|---------|---------|---------|-----|
|                                                                      |                           |                     | kW                    | A       | kW      | A       | kW      | A   |
| AC duty                                                              | AC3                       | 200/240V            | 80                    | 265     | 90      | 330     | 125     | 400 |
|                                                                      |                           | 380/440V            | 147                   | 265     | 160     | 330     | 200     | 400 |
|                                                                      |                           | 500/550V            | 147                   | 225     | 160     | 280     | 225     | 350 |
|                                                                      |                           | 690V                | 160                   | 185     | 200     | 220     | 250     | 300 |
|                                                                      |                           | 1000V               | 147                   | 105     | 147     | 105     | 147     | 105 |
|                                                                      | AC4                       | 200/240V            | 50                    | 200     | 55      | 220     | 75      | 300 |
|                                                                      |                           | 380/440V            | 102                   | 200     | 110     | 220     | 150     | 300 |
|                                                                      | AC1                       |                     | -                     | 400     | -       | 500     | -       | 520 |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series       | 24V                 | -                     | 220     | -       | 300     | -       | 400 |
|                                                                      |                           | 48V                 | -                     | 180     | -       | 240     | -       | 240 |
|                                                                      |                           | 110V                | -                     | 150     | -       | 200     | -       | 200 |
|                                                                      | 3-pole<br>in series       | 24V                 | -                     | 220     | -       | 300     | -       | 400 |
|                                                                      |                           | 48V                 | -                     | 220     | -       | 300     | -       | 400 |
|                                                                      |                           | 110V                | -                     | 220     | -       | 300     | -       | 400 |
|                                                                      | DC3, 5 duty<br>(L/R=15ms) | 2-pole<br>in series | 24V                   | -       | 220     | -       | 300     | -   |
| 48V                                                                  |                           |                     | -                     | 150     | -       | 200     | -       | 200 |
| 110V                                                                 |                           |                     | -                     | 120     | -       | 150     | -       | 150 |
| 3-pole<br>in series                                                  |                           | 24V                 | -                     | 220     | -       | 300     | -       | 400 |
|                                                                      |                           | 48V                 | -                     | 220     | -       | 280     | -       | 280 |
|                                                                      |                           | 110V                | -                     | 150     | -       | 200     | -       | 200 |
| Directly mountable overload relay                                    |                           | MT-400              |                       |         |         |         |         |     |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) | AWG                       | 3/0~500             |                       | 4/0~500 |         | 350~700 |         |     |
|                                                                      | mm²                       | 95~240              |                       | 95~240  |         | 185~370 |         |     |
| Conductor type                                                       |                           |                     | 75°C Cu stranded wire |         |         |         |         |     |



### Coil voltage

| Nominal(ordering) voltage | AC 50/60Hz | DC         | Certification                                                                               |
|---------------------------|------------|------------|---------------------------------------------------------------------------------------------|
| 100V / 200V               | 100 - 240V | 100 - 220V |                                                                                             |
| 300V                      | 265 - 347V | -          |                                                                                             |
| 400V                      | 380 - 450V | -          |                                                                                             |
| 500V                      | 440 - 575V | -          |                                                                                             |
| 24V                       | -          | 24V        |                                                                                             |
|                           |            |            | <ul style="list-style-type: none"> <li>• CE(IEC)</li> <li>• UL508</li> <li>• CCC</li> </ul> |

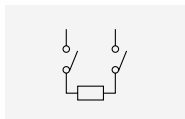
## Accessories



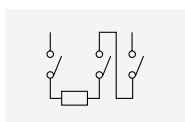
# Contactors

## Description 800AF

- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Top/side mountable accessories available
- Overload relays available
- Degree of protection: IP00



2pole for DC contact



3pole for DC contact

### Rating

| Contactor type                                                       |                     |          | MC-500a               |          | MC-630a |             | MC-800a |      |
|----------------------------------------------------------------------|---------------------|----------|-----------------------|----------|---------|-------------|---------|------|
|                                                                      |                     |          | kW                    | A        | kW      | A           | kW      | A    |
| AC duty                                                              | AC3                 | 200/240V | 147                   | 500      | 190     | 630         | 220     | 800  |
|                                                                      |                     | 380/440V | 265                   | 500      | 330     | 630         | 440     | 800  |
|                                                                      |                     | 500/550V | 265                   | 400      | 330     | 500         | 500     | 720  |
|                                                                      |                     | 690V     | 300                   | 380      | 400     | 420         | 500     | 630  |
|                                                                      |                     | 1000V    | 280                   | 220      | 280     | 220         | 280     | 220  |
|                                                                      | AC4                 | 200/240V | 90                    | 350      | 110     | 400         | 160     | 630  |
|                                                                      |                     | 380/440V | 176                   | 350      | 200     | 400         | 300     | 630  |
|                                                                      | AC1                 |          | -                     | 700      | -       | 900         | -       | 1050 |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 24V      | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     | 48V      | -                     | 240      | -       | 630         | -       | 800  |
|                                                                      |                     | 110V     | -                     | 200      | -       | 630         | -       | 630  |
|                                                                      | 3-pole<br>in series | 24V      | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     | 48V      | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     | 110V     | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     |          |                       |          |         |             |         |      |
| DC3, 5 duty<br>(L/R=15ms)                                            | 2-pole<br>in series | 24V      | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     | 48V      | -                     | 200      | -       | 630         | -       | 630  |
|                                                                      |                     | 110V     | -                     | 150      | -       | 630         | -       | 630  |
|                                                                      | 3-pole<br>in series | 24V      | -                     | 400      | -       | 630         | -       | 800  |
|                                                                      |                     | 48V      | -                     | 280      | -       | 630         | -       | 630  |
|                                                                      |                     | 110V     | -                     | 200      | -       | 630         | -       | 630  |
|                                                                      |                     |          |                       |          |         |             |         |      |
| Directly mountable overload relay                                    |                     | MT-800   |                       |          |         |             |         |      |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) | AWG                 | 350~800  |                       | 600~2000 |         | 1700~Busbar |         |      |
|                                                                      | mm²                 | 185~480  |                       | -        |         | -           |         |      |
| Conductor type                                                       |                     |          | 75°C Cu stranded wire |          |         |             |         |      |



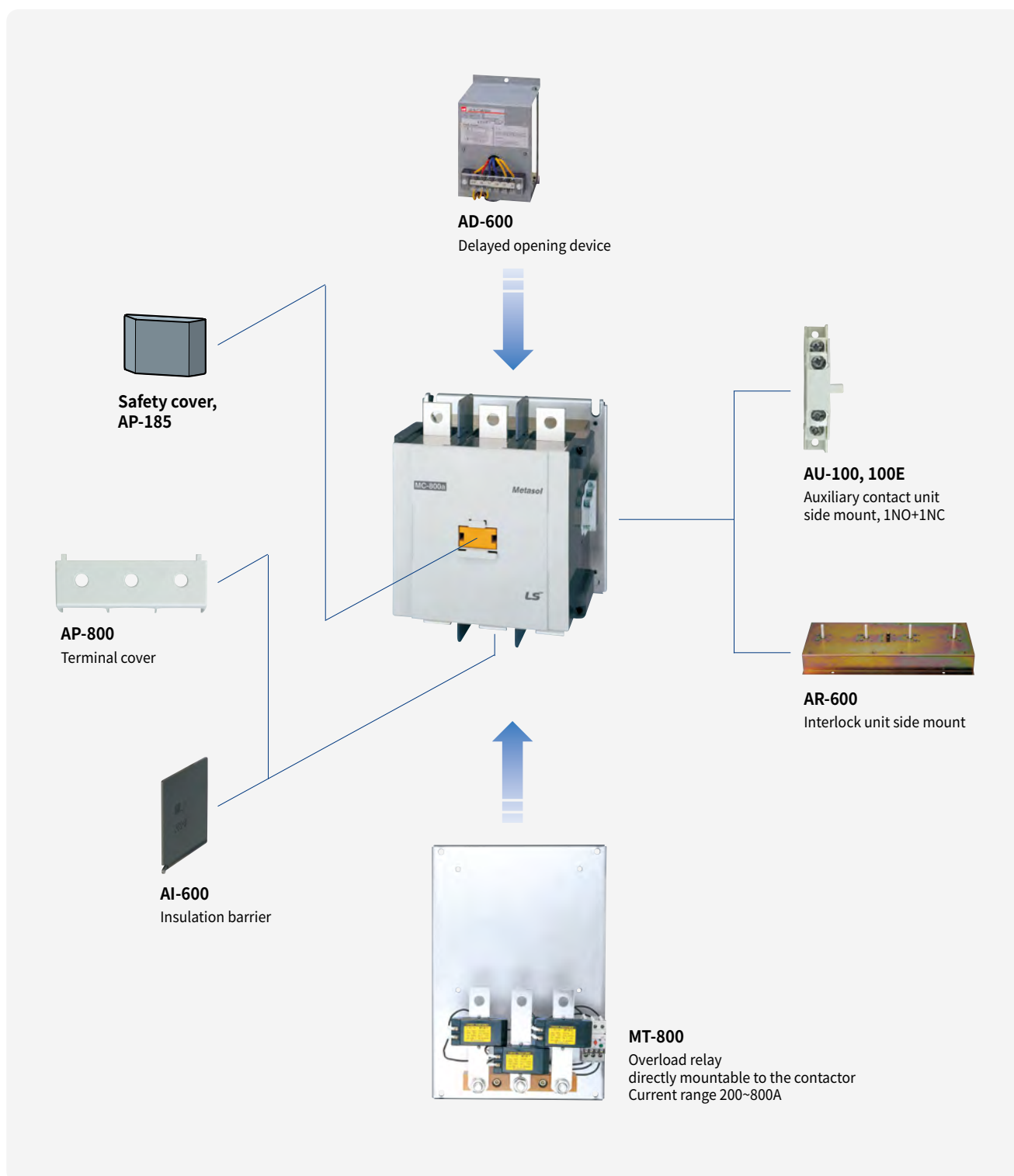
### Coil voltage, AC/DC common

| Nominal(ordering) voltage | AC 50/60Hz | DC         | Certification |
|---------------------------|------------|------------|---------------|
| 100V                      | 100 - 127V | 100 - 110V |               |
| 200V                      | 200 - 240V | 200 - 220V |               |
| 300V                      | 265 - 347V | -          |               |
| 400V                      | 380 - 450V | -          |               |
| 500V                      | 440 - 575V | -          |               |

- CE(IEC)
- UL508
- CCC



## Accessories



# Contactors

## Description 1260AF

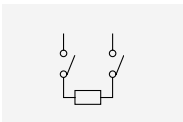
- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Side mountable accessories available
- Degree of protection: IP00



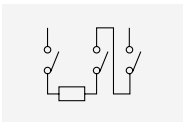
MC-1260a

### Rating

| Contactor type                        |     |          | MC-1260a      |      |
|---------------------------------------|-----|----------|---------------|------|
|                                       |     |          | kW            | A    |
| AC duty                               | AC3 | 200/240V | -             | -    |
|                                       |     | 380/440V | -             | -    |
|                                       |     | 500/550V | -             | -    |
|                                       |     | 690V     | -             | -    |
|                                       |     | 1000V    | -             | -    |
|                                       | AC1 |          | -             | 1260 |
| Conductor size (Solid, stranded) (mm) |     | Busbar   | 50 x 10 x 2ea |      |
| Conductor type                        |     |          | Busbar        |      |



2pole for DC contact



3pole for DC contact



### Coil voltage, AC/DC common

| Nominal(ordering) voltage | AC 50/60Hz | DC         | Certification |
|---------------------------|------------|------------|---------------|
| 100V / 200V               | 100 - 240V | 100 - 220V |               |

- CE(IEC)
- UL, UL/cUL

## Accessories



**AI-800**  
Insulation barrier



**AU-100, 100E**  
Auxiliary contact unit  
side mount, 1NO+1NC

# Contactors

## Description 2650AF

- 3-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- Side mountable accessories available
- Degree of protection: IP00



MC-2650a

### Rating

| Contactor type                        |     |          | MC-1400a      |      | MC-1700a      |      | MC-2100a      |      | MC-2650a       |      |
|---------------------------------------|-----|----------|---------------|------|---------------|------|---------------|------|----------------|------|
|                                       |     |          | kW            | A    | kW            | A    | kW            | A    | kW             | A    |
| AC duty                               | AC3 | 200/240V | 290           | 860  | 310           | 1050 | -             | -    | -              | -    |
|                                       |     | 380/440V | 550           | 860  | 700           | 1050 | 900           | 1450 | -              | -    |
|                                       |     | 500/550V | -             | -    | -             | -    | -             | -    | -              | -    |
|                                       |     | 690V     | 800           | 800  | 1000          | 950  | -             | -    | -              | -    |
|                                       |     | 1000V    | -             | -    | -             | -    | -             | -    | -              | -    |
| AC1                                   |     |          | -             | 1400 | -             | 1700 | -             | 2100 | -              | 2650 |
| Conductor size (Solid, stranded) (mm) |     | Busbar   | 100 x 5 x 2ea |      | 100 x 5 x 3ea |      | 100 x 5 x 4ea |      | 100 x 10 x 3ea |      |
| Conductor type                        |     |          | Busbar        |      |               |      |               |      |                |      |



### Coil voltage, AC/DC common

| Nominal(ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 100V / 200V               | 100 - 240V | 100 - 220V |

#### Certification

- CE(IEC)
- UL60947-4-1
- CCC

## Accessories



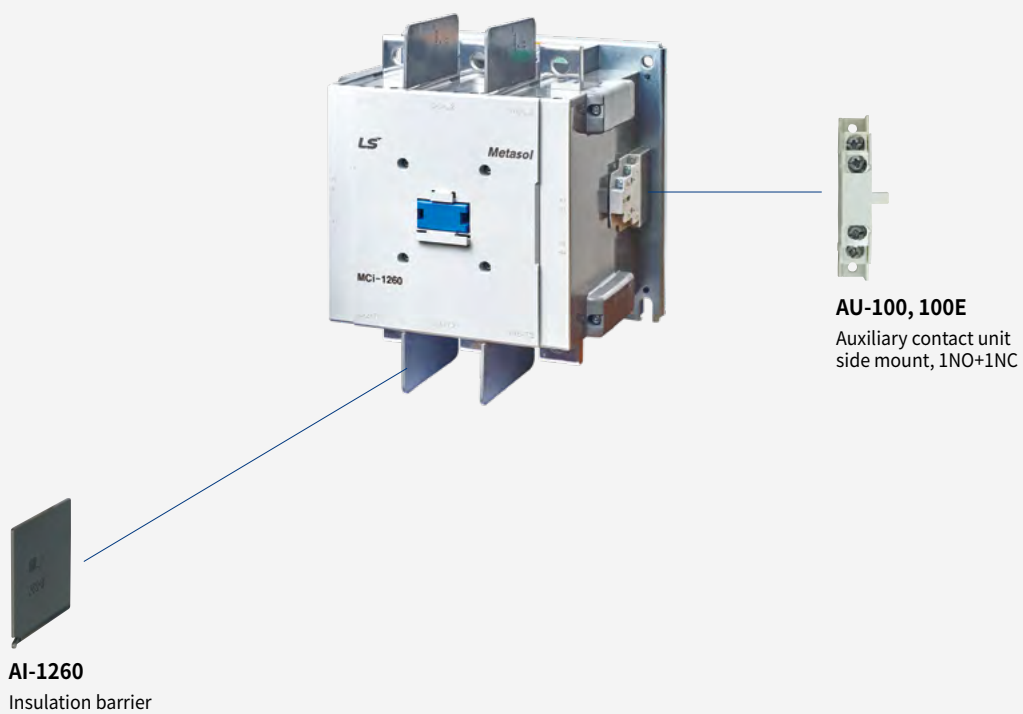
**Insulation barrier**  
AI-2100(MC-1400a~2100a)  
AI-2650(MC-2650a)



**AU-100, 100E**  
Auxiliary contact unit  
side mount, 1NO+1NC

# Renewal Magnetic Contactor

## Accessories 1260AF



## Accessories 2650AF



**Insulation barrier**  
AI-2650



**AU-100, 100E**  
Auxiliary contact unit  
side mount, 1NO+1NC



# Motor starters

## Description

- Opened direct motor starter
- 3-pole(NO) main contact
- Finger proof design
- DIN rail or screw mountable
- AC or DC control contactor selectable
- Front/side mountable accessories available
- Overload relay is directly mounted to the contactor
- Degree of protection: IP20



## Rating

| Frame size                                                        |                              |             |      | 18AF  |       |        |        | 22AF  |        |        |        |  |
|-------------------------------------------------------------------|------------------------------|-------------|------|-------|-------|--------|--------|-------|--------|--------|--------|--|
| Type                                                              |                              |             |      | MC-6a | MC-9a | MC-12a | MC-18a | MC-9b | MC-12b | MC-18b | MC-22b |  |
| Number of poles                                                   |                              |             |      | 3     |       |        |        | 3     |        |        |        |  |
| Rated operational voltage (Ue)                                    |                              |             |      | 690V  |       |        |        | 690V  |        |        |        |  |
| Degree of pollution (IEC60529)                                    |                              |             |      | IP20  |       |        |        | IP20  |        |        |        |  |
| Rated operational current Ie (θ≤40°C)                             | AC-1                         | Ue max 690V | [A]  | 25    | 25    | 25     | 32     | 25    | 27     | 40     | 45     |  |
|                                                                   | AC-3                         | 200/240V    | [A]  | 9     | 11    | 13     | 18     | 11    | 13     | 18     | 22     |  |
|                                                                   |                              | 380/400V    | [A]  | 7     | 9     | 12     | 18     | 9     | 12     | 18     | 22     |  |
|                                                                   |                              | 415V        | [A]  | 7     | 9     | 12     | 18     | 9     | 12     | 18     | 22     |  |
|                                                                   |                              | 440V        | [A]  | 7     | 9     | 12     | 18     | 9     | 12     | 18     | 22     |  |
|                                                                   |                              | 500V        | [A]  | 6     | 7     | 12     | 13     | 7     | 12     | 13     | 20     |  |
|                                                                   |                              | 690V        | [A]  | 4     | 5     | 9      | 9      | 6     | 9      | 9      | 18     |  |
|                                                                   |                              | 1000V       | [A]  | -     | -     | -      | -      | -     | -      | -      | -      |  |
| Rated operational power (θ≤40°C)                                  | AC-3                         | 200/240V    | [kW] | 2.2   | 2.5   | 3.5    | 4.5    | 2.5   | 3.5    | 4.5    | 5.5    |  |
|                                                                   |                              | 380/400V    | [kW] | 3     | 4     | 5.5    | 7.5    | 4     | 5.5    | 7.5    | 11     |  |
|                                                                   |                              | 415V        | [kW] | 3     | 4     | 5.5    | 7.5    | 4     | 5.5    | 7.5    | 11     |  |
|                                                                   |                              | 440V        | [kW] | 3     | 4     | 5.5    | 7.5    | 4     | 5.5    | 7.5    | 11     |  |
|                                                                   |                              | 500V        | [kW] | 3     | 4     | 7.5    | 7.5    | 4     | 7.5    | 7.5    | 15     |  |
|                                                                   |                              | 690V        | [kW] | 3     | 4     | 7.5    | 7.5    | 4     | 7.5    | 7.5    | 15     |  |
|                                                                   |                              | 1000V       | [kW] | -     | -     | -      | -      | -     | -      | -      | -      |  |
| According to IEC60947-4-1                                         | Rated making capacity AC-3   |             |      | 70    | 90    | 120    | 180    | 90    | 120    | 180    | 220    |  |
|                                                                   | Rated breaking capacity AC-3 |             |      | 56    | 72    | 96     | 144    | 72    | 96     | 144    | 176    |  |
| Electrical life for Ie / AC-3 Max in millions of operating cycles |                              |             |      | 2.5   | 2.5   | 2.5    | 2.5    | 2.5   | 2.5    | 2.5    | 2.5    |  |
| Maximum operating rate in operating cycles per hour               |                              |             |      | 1800  | 1800  | 1800   | 1800   | 1800  | 1800   | 1800   | 1800   |  |

## Devices usable in the starter combination

| Contactors                            |                                 | 18AF     |       |        |        | 22AF     |        |        |        |  |
|---------------------------------------|---------------------------------|----------|-------|--------|--------|----------|--------|--------|--------|--|
| with AC or DC control coil            |                                 | MC-6a    | MC-9a | MC-12a | MC-18a | MC-9b    | MC-12b | MC-18b | MC-22b |  |
| with coil in common use for AC and DC |                                 | -        | -     | -      | -      | -        | -      | -      | -      |  |
| Thermal overload relays               |                                 | 18AF     |       |        |        | 22AF     |        |        |        |  |
| Class 10                              | Differential type               | MT-12/3K |       |        |        | MT-32/3K |        |        |        |  |
|                                       | Non-differential type           | MT-12/3H |       |        |        | MT-32/3H |        |        |        |  |
|                                       | Non-differential type(2-heater) | MT-12/2H |       |        |        | MT-32/2H |        |        |        |  |
| Class 20                              | Differential type               | MT-12/3D |       |        |        | MT-32/3D |        |        |        |  |
| Setting range A                       |                                 | 0.1~18A  |       |        |        | 0.1~40A  |        |        |        |  |



| 40AF   |        | 65AF   |        | 100AF  |        |         |
|--------|--------|--------|--------|--------|--------|---------|
| MC-32a | MC-40a | MC-50a | MC-65a | MC-75a | MC-85a | MC-100a |
| 3      |        | 3      |        | 3      |        |         |
| 690V   |        | 690V   |        | 690V   |        |         |
| IP20   |        | IP20   |        | IP20   |        |         |
| 55     | 60     | 100    | 115    | 125    | 135    | 160     |
| 32     | 40     | 55     | 65     | 75     | 85     | 105     |
| 32     | 40     | 50     | 65     | 75     | 85     | 105     |
| 32     | 40     | 50     | 65     | 75     | 85     | 105     |
| 32     | 40     | 50     | 65     | 75     | 85     | 105     |
| 28     | 32     | 43     | 60     | 64     | 75     | 85      |
| 20     | 23     | 28     | 35     | 42     | 45     | 65      |
| 17     | 17     | 23     | 23     | 28     | 28     | 28      |
| 7.5    | 11     | 15     | 18.5   | 22     | 25     | 30      |
| 15     | 18.5   | 22     | 30     | 37     | 45     | 55      |
| 15     | 18.5   | 22     | 30     | 37     | 45     | 55      |
| 15     | 18.5   | 22     | 30     | 37     | 45     | 55      |
| 18.5   | 22     | 30     | 33     | 37     | 45     | 55      |
| 18.5   | 22     | 30     | 33     | 37     | 45     | 55      |
| 22     | 22     | 30     | 30     | 37     | 37     | 37      |
| 320    | 400    | 500    | 650    | 750    | 850    | 1050    |
| 256    | 320    | 400    | 520    | 600    | 650    | 840     |
| 2      | 2      | 2      | 2      | 2      | 2      | 2       |
| 1800   | 1800   | 1200   | 1200   | 1200   | 1200   | 1200    |

| 40AF     |        | 65AF     |        | 100AF    |        |         |
|----------|--------|----------|--------|----------|--------|---------|
| MC-32a   | MC-40a | MC-50a   | MC-65a | MC-75a   | MC-85a | MC-100a |
| -        | -      | -        | -      | -        | -      | -       |
| 40AF     |        | 65AF     |        | 100AF    |        |         |
| MT-32/3K |        | MT-63/3K |        | MT-95/3K |        |         |
| MT-32/3H |        | MT-63/3H |        | MT-95/3H |        |         |
| MT-32/2H |        | MT-63/2H |        | MT-95/2H |        |         |
| MT-32/3D |        | MT-63/3D |        | MT-95/3D |        |         |
| 0.1~40A  |        | 4~65A    |        | 7~100A   |        |         |

# Motor starters

## Description

- Opened direct motor starter
- 3-pole(NO) main contacts
- Screw mountable
- AC/DC common use control contactor used (from 225AF)
- Additional accessories available
- Overload relay is directly mounted to the contactor
- Degree of protection: IP20



## Rating

| Frame size                                                        |                              |             |      | 150AF   |         | 225AF   |         |  |
|-------------------------------------------------------------------|------------------------------|-------------|------|---------|---------|---------|---------|--|
| Type                                                              |                              |             |      | MS-130a | MS-150a | MS-185a | MS-225a |  |
| Number of poles                                                   |                              |             |      | 3       |         | 3       |         |  |
| Rated operational voltage (Ue)                                    |                              |             |      | 690V    |         | 690V    |         |  |
| Degree of pollution (IEC60529)                                    |                              |             |      | IP20    |         | IP20    |         |  |
| Rated operational current Ie (θ≤40°C)                             | AC-1                         | Ue max 690V | [A]  | 200     | 250     | 300     | 350     |  |
|                                                                   |                              | 200/240V    | [A]  | 130     | 150     | 185     | 225     |  |
|                                                                   |                              | 380/400V    | [A]  | 130     | 150     | 185     | 225     |  |
|                                                                   |                              | 415V        | [A]  | 130     | 150     | 185     | 225     |  |
|                                                                   |                              | 440V        | [A]  | 130     | 150     | 185     | 225     |  |
|                                                                   |                              | 500V        | [A]  | 90      | 100     | 180     | 200     |  |
|                                                                   |                              | 690V        | [A]  | 60      | 60      | 120     | 150     |  |
|                                                                   |                              | 1000V       | [A]  | 50      | 50      | 90      | 90      |  |
| Rated operational power (θ≤40°C)                                  | AC-3                         | 200/240V    | [kW] | 37      | 45      | 55      | 75      |  |
|                                                                   |                              | 380/400V    | [kW] | 60      | 75      | 90      | 132     |  |
|                                                                   |                              | 415V        | [kW] | 60      | 75      | 90      | 132     |  |
|                                                                   |                              | 440V        | [kW] | 60      | 75      | 90      | 132     |  |
|                                                                   |                              | 500V        | [kW] | 60      | 70      | 110     | 132     |  |
|                                                                   |                              | 690V        | [kW] | 55      | 55      | 110     | 140     |  |
|                                                                   |                              | 1000V       | [kW] | 75      | 90      | 132     | 132     |  |
| According to IEC60947-4-1                                         | Rated making capacity AC-3   |             |      | 1200    | 1500    | 1850    | 2250    |  |
|                                                                   | Rated breaking capacity AC-3 |             |      | 960     | 1200    | 1480    | 1800    |  |
| Electrical life for Ie / AC-3 Max in millions of operating cycles |                              |             |      | 1       | 1       | 1       | 1       |  |
| Maximum operating rate in operating cycles per hour               |                              |             |      | 1200    | 1200    | 1200    | 1200    |  |

## Devices usable in the starter combination

| Contactors                            |                                 | 150AF     |         | 225AF     |         |  |
|---------------------------------------|---------------------------------|-----------|---------|-----------|---------|--|
| with AC or DC control coil            |                                 | MC-130a   | MC-150a | -         | -       |  |
| with coil in common use for AC and DC |                                 | -         | -       | MC-185a   | MC-225a |  |
| Thermal overload relays               |                                 | 150AF     |         | 225AF     |         |  |
| Class 10                              | Differential type               | MT-150/3K |         | MT-225/3K |         |  |
|                                       | Non-differential type           | MT-150/3H |         | MT-225/3H |         |  |
|                                       | Non-differential type(2-heater) | MT-150/2H |         | MT-225/2H |         |  |
| Class 20                              | Differential type               | MT-150/3D |         | MT-225/3D |         |  |
| Setting range A                       |                                 | 34~150A   |         | 65~240A   |         |  |



|  | 400AF   |         |         | 800AF   |         |         |
|--|---------|---------|---------|---------|---------|---------|
|  | MS-265a | MS-330a | MS-400a | MS-500a | MS-630a | MS-800a |
|  | 3       |         |         | 3       |         |         |
|  | 690V    |         |         | 690V    |         |         |
|  | IP20    |         |         | IP20    |         |         |
|  | 400     | 500     | 520     | 700     | 900     | 1050    |
|  | 265     | 330     | 400     | 500     | 630     | 800     |
|  | 265     | 330     | 400     | 500     | 630     | 800     |
|  | 265     | 330     | 400     | 500     | 630     | 800     |
|  | 265     | 330     | 400     | 500     | 630     | 800     |
|  | 225     | 280     | 350     | 400     | 500     | 720     |
|  | 185     | 220     | 300     | 380     | 420     | 630     |
|  | 105     | 105     | 105     | 220     | 220     | 220     |
|  | 80      | 90      | 125     | 147     | 190     | 220     |
|  | 147     | 160     | 200     | 265     | 330     | 440     |
|  | 147     | 160     | 200     | 265     | 330     | 440     |
|  | 147     | 160     | 200     | 265     | 330     | 440     |
|  | 147     | 160     | 225     | 265     | 330     | 500     |
|  | 160     | 200     | 250     | 300     | 400     | 500     |
|  | 147     | 147     | 147     | 280     | 280     | 280     |
|  | 2650    | 3300    | 4000    | 5000    | 6300    | 8000    |
|  | 2120    | 2640    | 3200    | 4000    | 5040    | 6400    |
|  | 1       | 1       | 0.5     | 0.5     | 0.5     | 0.5     |
|  | 1200    | 1200    | 1200    | 1200    | 1200    | 1200    |

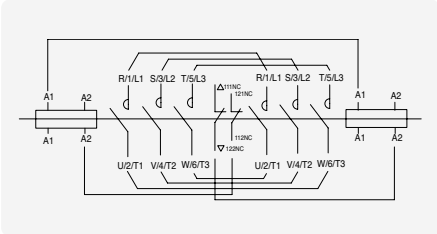
|  | 400AF     |         |         | 800AF     |         |         |
|--|-----------|---------|---------|-----------|---------|---------|
|  | -         | -       | -       | -         | -       | -       |
|  | MC-265a   | MC-330a | MC-400a | MC-500a   | MC-630a | MC-800a |
|  | 400AF     |         |         | 800AF     |         |         |
|  | MT-400/3K |         |         | MT-800/3K |         |         |
|  | MT-400/3H |         |         | MT-800/3H |         |         |
|  | MT-400/2H |         |         | MT-800/2H |         |         |
|  | MT-400/3D |         |         | MT-800/3D |         |         |
|  | 85~400A   |         |         | 200~800A  |         |         |

# Reversing contactors

## Description

- Two AC or DC control contactors are interlocked mechanically and electrically
- 3-pole(NO) main contact in each contactor
- Finger proof design
- DIN rail or screw mountable
- Front/side mountable accessories available
- Overload relay can be directly mounted to the contactor if necessary
- Please use interval time of over 25ms
- Degree of protection: IP20

## Circuit diagram



## Rating

| Type      | AC-3 duty    |              |      |      |      |      |       | Current<br>(AC3) | Weight<br>(AC control) |
|-----------|--------------|--------------|------|------|------|------|-------|------------------|------------------------|
|           | 200~<br>240V | 380~<br>400V | 415V | 440V | 500V | 690V | 1000V | 440V             |                        |
|           | kW           | kW           | kW   | kW   | kW   | kW   | kW    | A                |                        |
| MC-6a/R   | 2.2          | 3            | 3    | 3    | 3    | 3    | -     | 7                | 0.63kg                 |
| MC-9a/R   | 2.5          | 4            | 4    | 4    | 4    | 4    | -     | 9                | 0.63kg                 |
| MC-12a/R  | 3.5          | 5.5          | 5.5  | 5.5  | 7.5  | 7.5  | -     | 12               | 0.63kg                 |
| MC-18a/R  | 4.5          | 7.5          | 7.5  | 7.5  | 7.5  | 7.5  | -     | 18               | 0.63kg                 |
| MC-9b/R   | 2.5          | 4            | 4    | 4    | 4    | 4    | -     | 9                | 0.75kg                 |
| MC-12b/R  | 3.5          | 5.5          | 5.5  | 5.5  | 7.5  | 7.5  | -     | 12               | 0.75kg                 |
| MC-18b/R  | 4.5          | 7.5          | 7.5  | 7.5  | 7.5  | 7.5  | -     | 18               | 0.75kg                 |
| MC-22b/R  | 5.5          | 11           | 11   | 11   | 15   | 15   | -     | 22               | 0.75kg                 |
| MC-32a/R  | 7.5          | 15           | 15   | 15   | 18.5 | 18.5 | 22    | 32               | 0.95kg                 |
| MC-40a/R  | 11           | 18.5         | 18.5 | 18.5 | 22   | 22   | 22    | 40               | 0.95kg                 |
| MC-50a/R  | 15           | 22           | 22   | 22   | 30   | 30   | 30    | 50               | 1.9kg                  |
| MC-65a/R  | 18.5         | 30           | 30   | 30   | 33   | 33   | 30    | 65               | 1.9kg                  |
| MC-75a/R  | 22           | 37           | 37   | 37   | 37   | 37   | 37    | 75               | 3.4kg                  |
| MC-85a/R  | 25           | 45           | 45   | 45   | 45   | 45   | 37    | 85               | 3.4kg                  |
| MC-100a/R | 30           | 55           | 55   | 55   | 55   | 55   | 37    | 105              | 3.4kg                  |



MC-40a/R



MC-65a/R



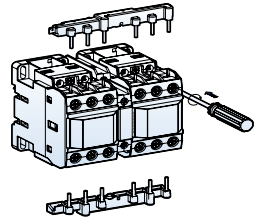
MC-100a/R



## Coil voltage

|    |      |                                                                     |
|----|------|---------------------------------------------------------------------|
| AC | 50Hz | 24, 32, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 500, 550V    |
|    | 60Hz | 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600V |
| DC |      | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V               |

| Certification |
|---------------|
| • CE(IEC)     |
| • UL508       |
| • CCC         |



## Description

- 3-pole main contact
- Mechanically interlocked
- AC/DC common use coil built (from MC-185a/R)
- Wide coil operation voltage
- Screw mountable
- 4NO4NC Auxiliary contacts built-in
- Top/side mountable accessories available
- Please use interval time of over 50ms
- Degree of protection: IP20



## Rating

| Type      | AC-3 duty    |              |      |      |      |      |       | Current<br>(AC3) | Weight<br>(AC control) |
|-----------|--------------|--------------|------|------|------|------|-------|------------------|------------------------|
|           | 200~<br>240V | 380~<br>400V | 415V | 440V | 500V | 690V | 1000V | 440V             |                        |
|           | kW           | kW           | kW   | kW   | kW   | kW   | kW    | A                |                        |
| MC-130a/R | 37           | 60           | 60   | 60   | 60   | 55   | 75    | 130              | 4.3kg                  |
| MC-150a/R | 45           | 75           | 75   | 75   | 70   | 55   | 75    | 150              | 4.3kg                  |
| MC-185a/R | 55           | 90           | 90   | 90   | 110  | 110  | 132   | 185              | 13kg                   |
| MC-225a/R | 75           | 132          | 132  | 132  | 132  | 140  | 132   | 225              | 13kg                   |
| MC-265a/R | 80           | 147          | 147  | 147  | 147  | 160  | 147   | 265              | 21.4kg                 |
| MC-330a/R | 90           | 160          | 160  | 160  | 160  | 200  | 147   | 330              | 21.4kg                 |
| MC-400a/R | 125          | 200          | 200  | 225  | 225  | 250  | 147   | 400              | 21.4kg                 |
| MC-500a/R | 147          | 265          | 265  | 265  | 265  | 300  | 280   | 500              | 60kg                   |
| MC-630a/R | 190          | 330          | 330  | 330  | 330  | 400  | 280   | 630              | 60kg                   |
| MC-800a/R | 220          | 440          | 440  | 440  | 440  | 500  | 280   | 800              | 60kg                   |



## Coil voltage

|                                |    |         |                                                       |
|--------------------------------|----|---------|-------------------------------------------------------|
| For MC130a/<br>R and MC-150a/R | AC | 50/60Hz | 24, 48, 100~240, 110~120, 220~240, 300, 380~440, 500V |
|                                | DC |         | 24, 48, 70~110, 100~220, 110, 220V                    |

|                              |                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For MC-185a/R ~<br>MC-800a/R | - 24, 48, 100/200, 300, 400, 500V for types MC-185a/R, 225a/R<br>- 100/200, 300, 400, 500V for types MC-265a/R, 330a/R, 400a/R<br>- 100, 200, 300, 400, 500V for types MC-500a/R, 600a/R, 800a/R |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Nominal(ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 24V                       | 24 - 25V   | 24V        |
| 48V                       | 48 - 50V   | 48V        |
| 100V                      | 100 - 127V | 100 - 110V |
| 200V                      | 200 - 240V | 200 - 220V |
| 100/200V                  | 100 - 240V | 100 - 220V |
| 300V                      | 265 - 347V | -          |
| 400V                      | 380 - 450V | -          |
| 500V                      | 440 - 575V | -          |

# LED voltage monitoring contactor

## Description



Real time observe coil voltage without additional equipments for protect coil burn out due to the under and over voltage

Yellow LED: U/V  
(Under Voltage)

L/V R/V O/V

Green LED: R/V  
(Rating Voltage)

L/V R/V O/V

Red LED: O/V  
(Over Voltage)

L/V R/V O/V



### Coil voltage

| Type                        | Coil voltage | LED indicate statue       |                           |                       |
|-----------------------------|--------------|---------------------------|---------------------------|-----------------------|
|                             |              | Under voltage<br>(Yellow) | Rating voltage<br>(Green) | Over voltage<br>(Red) |
| MC-130a, MC 150a            | 110V         | ~80V                      | 80~130V                   | 130V~                 |
|                             | 220V         | ~160V                     | 160~260V                  | 260V~                 |
|                             | 400V         | ~330V                     | 330~480V                  | 280V~                 |
| MC-185a, MC-225a            | 110V         | ~80V                      | 80~130V                   | 130V~                 |
|                             | 220V         | ~160V                     | 160~260V                  | 260V~                 |
|                             | 400V         | ~330V                     | 330~480V                  | 280V~                 |
| MC-265a, MC-330a<br>MC-400a | 110V         | ~80V                      | 80~130V                   | 130V~                 |
|                             | 220V         | ~160V                     | 160~260V                  | 260V~                 |
|                             | 400V         | ~330V                     | 330~480V                  | 280V~                 |
| MC-500a, MC-630a<br>MC-800a | 110V         | ~80V                      | 80~130V                   | 130V~                 |
|                             | 220V         | ~160V                     | 160~260V                  | 260V~                 |

\* The accuracy of LED indicate statue is ±5%



## Description

- 4,6,8 pole units
- AC/DC control voltage
- 16A continuous current, lth
- DIN rail or screw mountable
- Degree of protection: IP20

## Selection

| Poles  | Composition                                 | Types | Remarks                                                     |
|--------|---------------------------------------------|-------|-------------------------------------------------------------|
| 4 pole | 4NO<br>3NO1NC<br>2NO2NC<br>1NO3NC<br>4NC    | MR-4  | Additional auxiliary contacts can be mounted on the relays. |
| 6 pole | 6NO<br>5NO1NC<br>4NO2NC<br>3NO3NC<br>2NO4NC | MR-6  | UA-2 is mounted on the MR-4.                                |
| 8 pole | 8NO<br>7NO1NC<br>6NO2NC<br>5NO3NC<br>4NO4NC | MR-8  | UA-4 is mounted on the MR-4.                                |

Note) Product indicated "Low" is for Low current application

## Rating

|                               |                      |      |                      |      |      |      |      |
|-------------------------------|----------------------|------|----------------------|------|------|------|------|
| Rated insulation voltage (Ui) |                      |      | AC 690V              |      |      |      |      |
| Continuous current (Ith)      |                      |      | 16A                  |      |      |      |      |
| Operating cycle               |                      |      | 1800 operations/hour |      |      |      |      |
| Endurance                     | Mechanical life time |      | 10 mil. operations   |      |      |      |      |
|                               | Electrical life time |      | 0.25 mil. operations |      |      |      |      |
| Type                          |                      |      | MR-4                 | MR-6 |      | MR-8 |      |
| AC-15                         | Rated current (A)    | 120V | 6                    | 6    |      | 6    |      |
|                               |                      | 240V | 3                    | 3    |      | 3    |      |
|                               |                      | 380V | 1.9                  | 1.9  |      | 1.9  |      |
|                               |                      | 480V | 1.5                  | 1.5  |      | 1.5  |      |
|                               |                      | 500V | 1.4                  | 1.4  |      | 1.4  |      |
|                               |                      | 600V | 1.2                  | 1.2  |      | 1.2  |      |
|                               |                      |      | MR-4                 | MR-4 | UA-2 | MR-4 | UA-4 |
| DC-13                         | Rated current (A)    | 125V | 1.1                  | 1.1  | 0.55 | 1.1  | 0.55 |
|                               |                      | 250V | 0.55                 | 0.55 | 0.27 | 0.55 | 0.27 |
|                               |                      | 400V | 0.31                 | 0.31 | 0.15 | 0.31 | 0.15 |
|                               |                      | 500V | 0.27                 | 0.27 | 0.13 | 0.27 | 0.13 |
|                               |                      | 600V | 0.2                  | 0.2  | 0.1  | 0.2  | 0.1  |
| Minimum rated through current |                      |      | DC 24V 10mA          |      |      |      |      |



MR-4



MR-6



MR-8



## Coil voltage

|               |      |                                                                           |
|---------------|------|---------------------------------------------------------------------------|
| AC            | 50Hz | 24, 32, 42, 48, 65, 80, 100, 110, 120, 220, 230, 240, 380, 400, 500, 550V |
|               | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600V            |
| DC            |      | 12, 20, 24, 30, 48, 60, 80, 100, 110, 125, 200, 220, 250V                 |
| Voltage limit |      | 85%~110%                                                                  |

Note)

See page 22, 23 for details.

\* Please be cautious for wiring control power cable, especially "+" (Positive) and "-" (Negative) polarity should be correctly considered.

# Contactor relays for micro current

## Description

- 2,4,8 pole units
- AC/DC control voltage
- 0.5 mil. operations, 2.5 mil. operations
- DIN rail or screw mountable (35mm)
- Degree of protection: IP20

\* Do not place strong magnets around the main circuit.

## Type



MR-4E



MR-8E



UA-4E



UA-1E

| Number of poles | Contact configuration            |                                  | Types                    | Remarks                                                         |
|-----------------|----------------------------------|----------------------------------|--------------------------|-----------------------------------------------------------------|
|                 | Micro contact                    | Normal contact                   |                          |                                                                 |
| 2 pole          | 1a1b                             | -                                | UA-1E<br>AU-100E         | Auxiliary contact unit (UA-1E)                                  |
| 4 Pole          | 2a<br>1a1b<br>2b                 | 2a<br>1a1b<br>2b                 | MR-4E<br>or<br>UA-4E     | Auxiliary relay (MR-4E)<br>or<br>Auxiliary contact unit (UA-4E) |
| 8 Pole          | 4a<br>3a1b<br>2a2b<br>1a3b<br>4b | 4a<br>3a1b<br>2a2b<br>1a3b<br>4b | MR-8E<br>(MR-4E + UA-4E) | Auxiliary relay (MR-4E) and<br>Auxiliary contact unit (UA-4E)   |

\* MR-4E UA-4E 'Negative sides of both sides' is the contact for microcurrent.

\* UA-1E is applicable to 150AF or less. (Above 225AF, AU-100E is available.)

\* Please note that contact welding may occur when a high voltage is applied to the contact for micro current, not the rated voltage.

## Rating

|                                | Micro contact         | Normal contact       |
|--------------------------------|-----------------------|----------------------|
| Rated operational voltage (Ue) | AC 130V, DC 180V MAX. | AC 600V              |
| Continuous current (Ith)       | 1A                    | 16A                  |
| Switching current              | 0.7A MAX.             | 6A                   |
| Contact capacity               | 10VA (10W) Less       | 720VA                |
| Rated insulation voltage (Ui)  | DC 200V               | AC 690V              |
| Operating cycle (AC1)          | 1800 operations/hour  | 1800 operations/hour |
| Endurance                      | Mechanical            | 2.5 mil. operations  |
|                                | Electrical            | 0.5 mil. operations  |
| Minimum rated through current  | DC 5V 0.5mA           | DC 24V 10mA          |
| Contact reliability            | $1 \times 10^{-8}$    | $4 \times 10^{-6}$   |



## Coil voltage

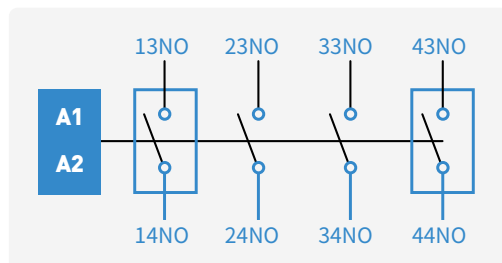
|                   |      |                                                                                         |
|-------------------|------|-----------------------------------------------------------------------------------------|
| AC                | 50Hz | 24, 32, 36, 42, 48, 65, 80, 100, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
|                   | 60Hz | 24, 48, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V                     |
| DC                |      | 12, 20, 24, 30, 48, 60, 80, 100, 110, 125, 200, 220, 250V                               |
| Temperature Range |      | 85%~110%                                                                                |

Note) 1. Coil For detailed specifications, refer to Operating Coil Rating and Characteristics data (22AF) on Catalog 22 page.

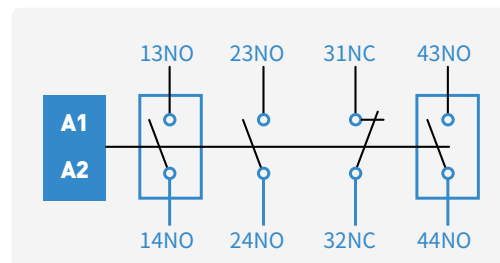
2. For DC type products, be sure to wire the polarity of the + and - polarities when wiring the coil terminals.

## Contact configuration

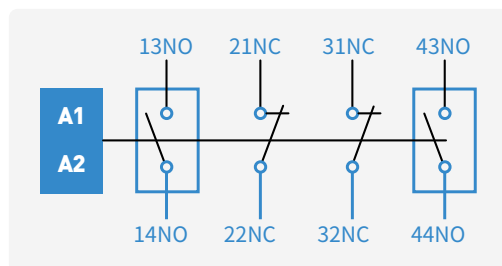
2a+2a



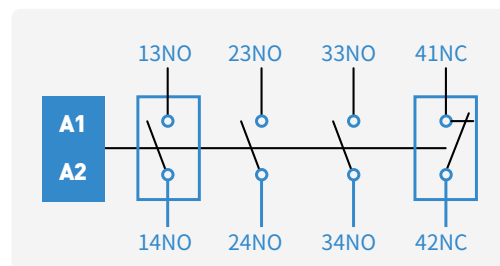
2a+1a1b



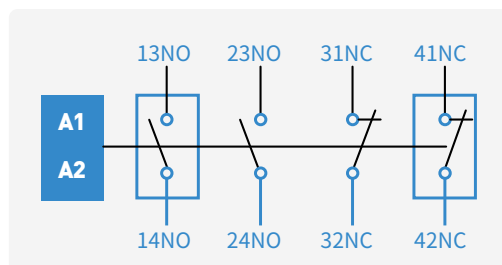
2a+2b



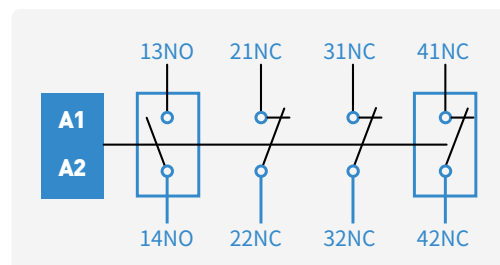
1a1b+2a



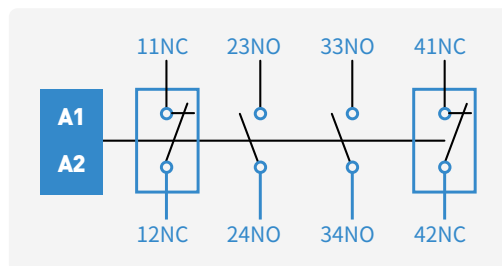
1a1b+1a1b



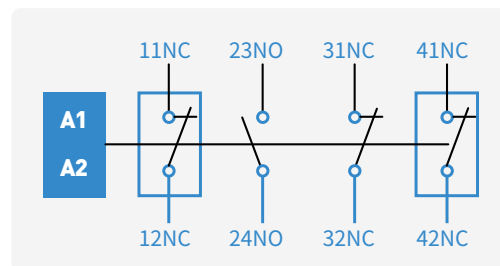
1a1b+2b



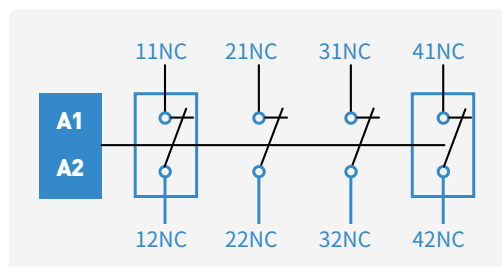
2b+2a



2b+1a1b



2b+2b



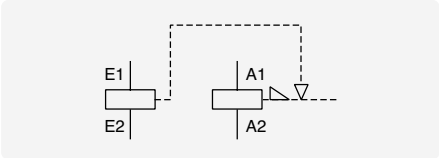
\*  is microcontact.

# Latching contactors

## Description 6~150AF

- 3-pole main contact
- Mechanically latched
- Finger proof design
- DIN rail or screw mountable
- Side mountable accessories available
- Direct mountable overload relays available

Circuit diagram MC-6a/L~150a/L



## Rating



| Contactor | AC3 ratings |            |           |      |       | Devices combined |                         |                  |                      |
|-----------|-------------|------------|-----------|------|-------|------------------|-------------------------|------------------|----------------------|
|           | 200 / 240V  | 380 / 440V | 500/ 550V | 690V | 1000V | Type             | Durability (Mechanical) | Operational time | Excitation time      |
|           | kW          | kW         | kW        | kW   | kW    |                  |                         |                  |                      |
| MC-6a/L   | 2.2         | 3          | 3         | 3    | -     | ML-40            | 0.5 mil.                | Less 30ms (AC)   | More than 100ms (AC) |
| MC-9a/L   | 2.5         | 4          | 4         | 4    | -     |                  |                         |                  |                      |
| MC-12a/L  | 3.5         | 5.5        | 7.5       | 7.5  | -     |                  |                         |                  |                      |
| MC-18a/L  | 4.5         | 7.5        | 7.5       | 7.5  | -     |                  |                         |                  |                      |
| MC-9b/L   | 2.5         | 4          | 4         | 4    | -     |                  |                         |                  |                      |
| MC-12b/L  | 3.5         | 5.5        | 7.5       | 7.5  | -     |                  |                         |                  |                      |
| MC-18b/L  | 4.5         | 7.5        | 7.5       | 7.5  | -     |                  |                         |                  |                      |
| MC-22b/L  | 5.5         | 11         | 15        | 15   | -     |                  |                         |                  |                      |
| MC-32a/L  | 7.5         | 15         | 18.5      | 18.5 | 22    | ML-65            | 0.5 mil.                | Less 50ms (DC)   | More than 130ms (DC) |
| MC-40a/L  | 11          | 18.5       | 22        | 22   | 22    |                  |                         |                  |                      |
| MC-50a/L  | 15          | 22         | 30        | 30   | 30    | ML-150           | 2.5 mil.                | Less 100ms       | More than 130ms      |
| MC-65a/L  | 18.5        | 30         | 33        | 33   | 30    |                  |                         |                  |                      |
| MC-75a/L  | 22          | 37         | 37        | 37   | 37    |                  |                         |                  |                      |
| MC-85a/L  | 25          | 45         | 45        | 45   | 37    |                  |                         |                  |                      |
| MC-100a/L | 30          | 55         | 55        | 45   | 37    |                  |                         |                  |                      |
| MC-130a/L | 37          | 60         | 60        | 55   | 75    |                  |                         |                  |                      |
| MC-150a/L | 45          | 75         | 75        | 55   | 75    |                  |                         |                  |                      |

\* When the open signal is input for more than 1 second, the coil of the latch is burned.  
For MC input signals, please give at least 100ms for AC coil and 250ms for DC coil.  
For MC input signal voltage, please use 85% to 110% of the coil rating. Contacts can be in complete due to insufficient input signal when low voltage is applied.



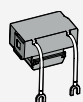
## Coil voltage

|    |         |                                                                |
|----|---------|----------------------------------------------------------------|
| AC | 50/60Hz | 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 400, 415, 440V |
| DC |         | 24, 48, 110V                                                   |

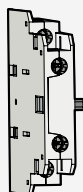
## Certification

- CE(IEC)
- UL508

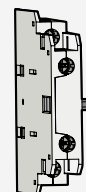
## Accessories



**Surge unit, US**  
Connecting to coil terminals



**Auxiliary contact unit, UA-1**  
Side mount, 1NO+1NC



**Auxiliary contact unit, UA-1**  
Side mount, 1NO+1NC

\* It is not possible to attach "UA-1" on the right side of product for Range MC-9b~22b.



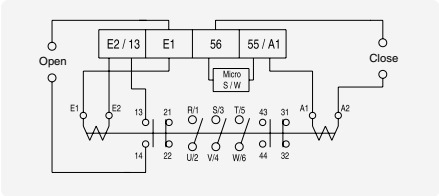
**Overload relay**  
MT-12 ~ MT-150

# Latching contactors

## Description 185~400AF

- 3-pole main contact
- Mechanically interlocked
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 1NO+2NC auxiliary contacts built-in as standard
- Top/side mountable accessories available

### Circuit diagram



### Rating



| Contactor | AC3 ratings   |               |               |               |               | Auxiliary contact (Standard) |
|-----------|---------------|---------------|---------------|---------------|---------------|------------------------------|
|           | 200~240V      | 380 ~440V     | 500 ~550V     | 690V          | 1000V         |                              |
| MC-185a/L | 55kW<br>185A  | 90kW<br>185A  | 110kW<br>180A | 110kW<br>120A | 132kW<br>90A  | 2NO2NC*<br>(1NO2NC)          |
| MC-225a/L | 75kW<br>225A  | 132kW<br>225A | 132kW<br>200A | 140kW<br>150A | 132kW<br>90A  |                              |
| MC-265a/L | 80kW<br>265A  | 147kW<br>265A | 147kW<br>225A | 160kW<br>185A | 147kW<br>105A |                              |
| MC-330a/L | 90kW<br>330A  | 160kW<br>330A | 160kW<br>280A | 200kW<br>220A | 147kW<br>105A |                              |
| MC-400a/L | 125kW<br>400A | 200kW<br>400A | 225kW<br>350A | 250kW<br>300A | 147kW<br>105A |                              |

\* 1NO contact of 2NO2NC is used in Latch and customer contact is 1NO2NC. If 2NO or higher is used, additional attachment of AU-100 is required.

### Coil voltage

| Nominal(ordering) voltage | Operational voltage | Operation frequency |
|---------------------------|---------------------|---------------------|
| 100V                      | AC100~127V          | 600 operations/hour |
|                           | DC100~125V          | 300 operations/hour |
| 200V                      | AC200~240V          | 600 operations/hour |
|                           | DC200~220V          | 300 operations/hour |

## Accessories



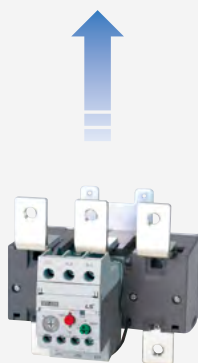
**AP220~400**  
Terminal cover



**AI-180**  
Insulation barrier



**AU-100, 100E**  
Auxiliary contact unit  
side mount, 1NO+1NC

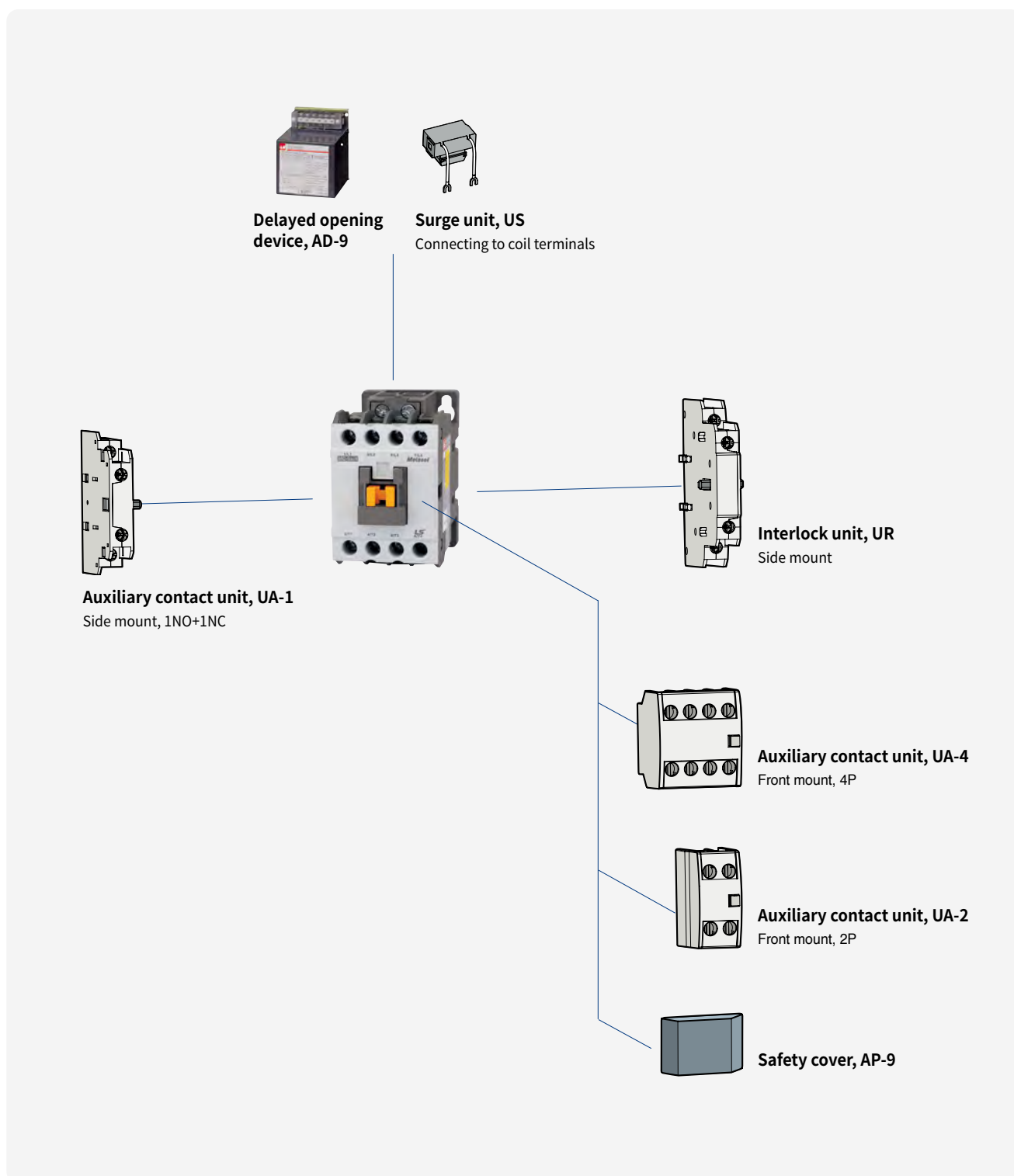


**Overload relay**  
MT-225H ~ MT-400H  
MT-225/3H ~ MT-400/3H  
MT-225/3K ~ MT-400/3K

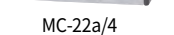




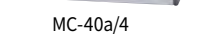
## Accessories



11

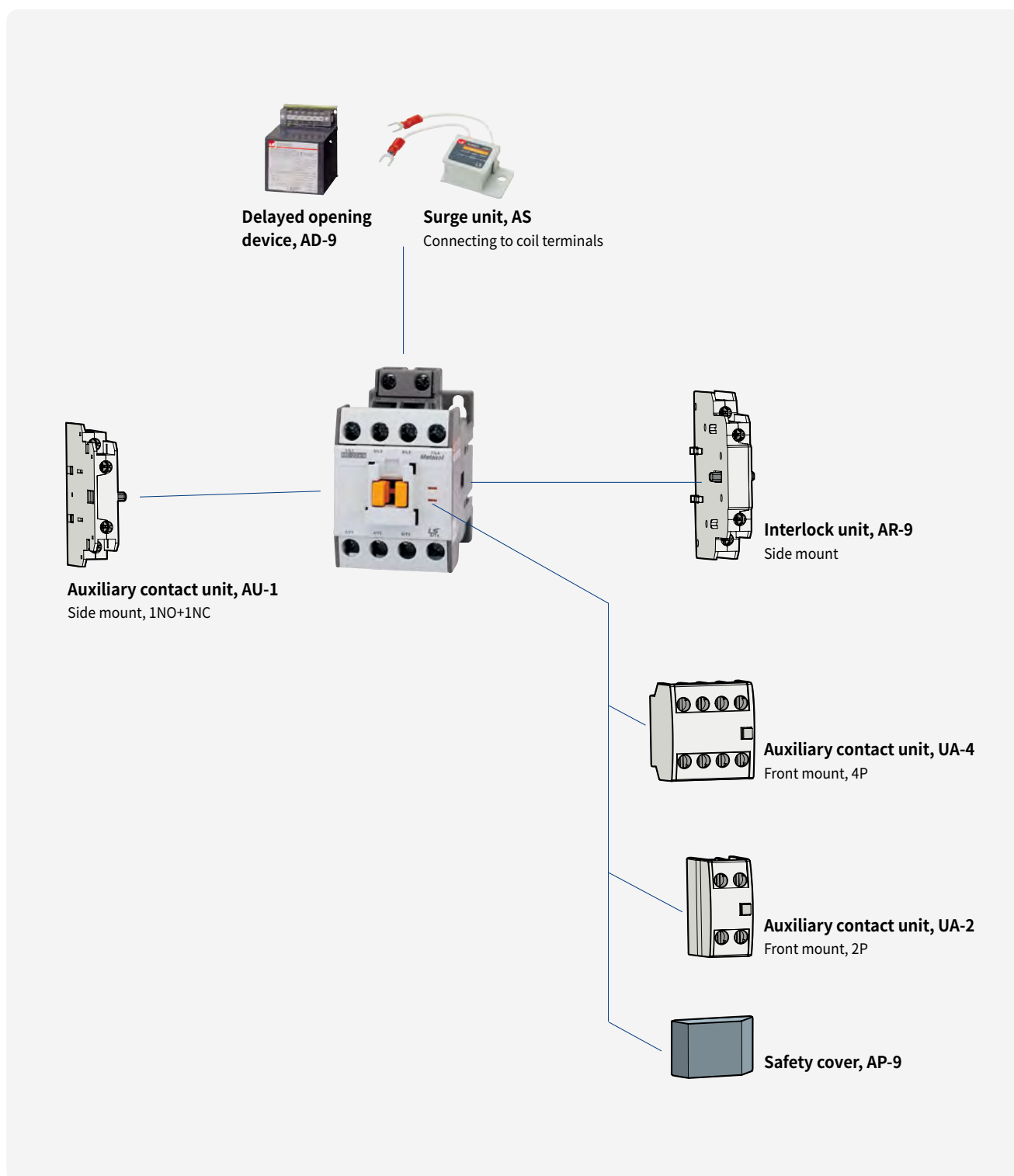


112-113/14



|  |  |
|--|--|
|  |  |
|--|--|

## Accessories



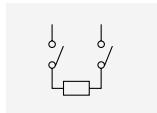
# 4-pole contactors

## Description 85AF

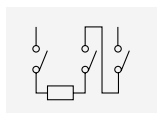
- 4-pole main contact
- Finger proof design
- DIN rail or screw mountable
- Auxiliary contacts are optional
- Front/side mountable accessories
- Direct mountable overload relays available
- Degree of protection: IP20



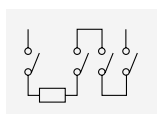
MC-85a/4



2pole for DC contact



3pole for DC contact



4pole for DC contact

## Rating

| Contactor type                                                       |                     |          | MC-50a/4             |    | MC-65a/4 |     | MC-75a/4 |     | MC-85a/4 |     |     |
|----------------------------------------------------------------------|---------------------|----------|----------------------|----|----------|-----|----------|-----|----------|-----|-----|
|                                                                      |                     |          | kW                   | A  | kW       | A   | kW       | A   | kW       | A   |     |
| AC duty                                                              | AC1                 | 200/240V | 30                   | 80 | 37       | 100 | 41       | 110 | 51       | 135 |     |
|                                                                      |                     | 380/440V | 56                   | 80 | 70       | 100 | 76       | 110 | 95       | 135 |     |
|                                                                      |                     | 500/550V | 70                   | 80 | 88       | 100 | 97       | 110 | 120      | 135 |     |
|                                                                      |                     | 690V     | 88                   | 80 | 110      | 100 | 120      | 110 | 150      | 135 |     |
|                                                                      | AC3                 | 200/240V | 15                   | 55 | 18.5     | 65  | 22       | 75  | 25       | 85  |     |
|                                                                      |                     | 380/440V | 22                   | 50 | 30       | 65  | 37       | 75  | 45       | 85  |     |
|                                                                      |                     | lth      | -                    | 80 | -        | 100 | -        | 110 | -        | 135 |     |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 110V     | -                    | 35 | -        | 35  | -        | 50  | -        | 50  |     |
|                                                                      |                     | 220V     | -                    | 15 | -        | 15  | -        | 20  | -        | 20  |     |
|                                                                      | 3-pole<br>in series | 110V     | -                    | 50 | -        | 65  | -        | 75  | -        | 80  |     |
|                                                                      |                     | 220V     | -                    | 40 | -        | 50  | -        | 55  | -        | 60  |     |
|                                                                      | 4-pole<br>in series | 110V     | -                    | 60 | -        | 70  | -        | 80  | -        | 100 |     |
|                                                                      |                     | 220V     | -                    | 50 | -        | 60  | -        | 70  | -        | 70  |     |
| UL rating                                                            |                     |          | hp                   | A  | hp       | A   | hp       | A   | hp       | A   |     |
|                                                                      |                     |          | 220/240V             | 15 | -        | 20  | -        | 25  | -        | 30  | -   |
|                                                                      |                     |          | 440/480V             | 30 | -        | 40  | -        | 50  | -        | 50  | -   |
|                                                                      |                     |          | 550/600V             | 30 | -        | 40  | -        | 50  | -        | 50  | -   |
|                                                                      |                     |          | lth                  | -  | 70       | -   | 80       | -   | 90       | -   | 100 |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) |                     | AWG      | 8~4                  |    | 6~3      |     | 4~2      |     | 4~2      |     |     |
|                                                                      |                     | mm²      | 10~25                |    | 16~35    |     | 25~35    |     | 25~50    |     |     |
| Conductor type                                                       |                     |          | 65/75°C Cu-wire only |    |          |     |          |     |          |     |     |



## Coil voltage

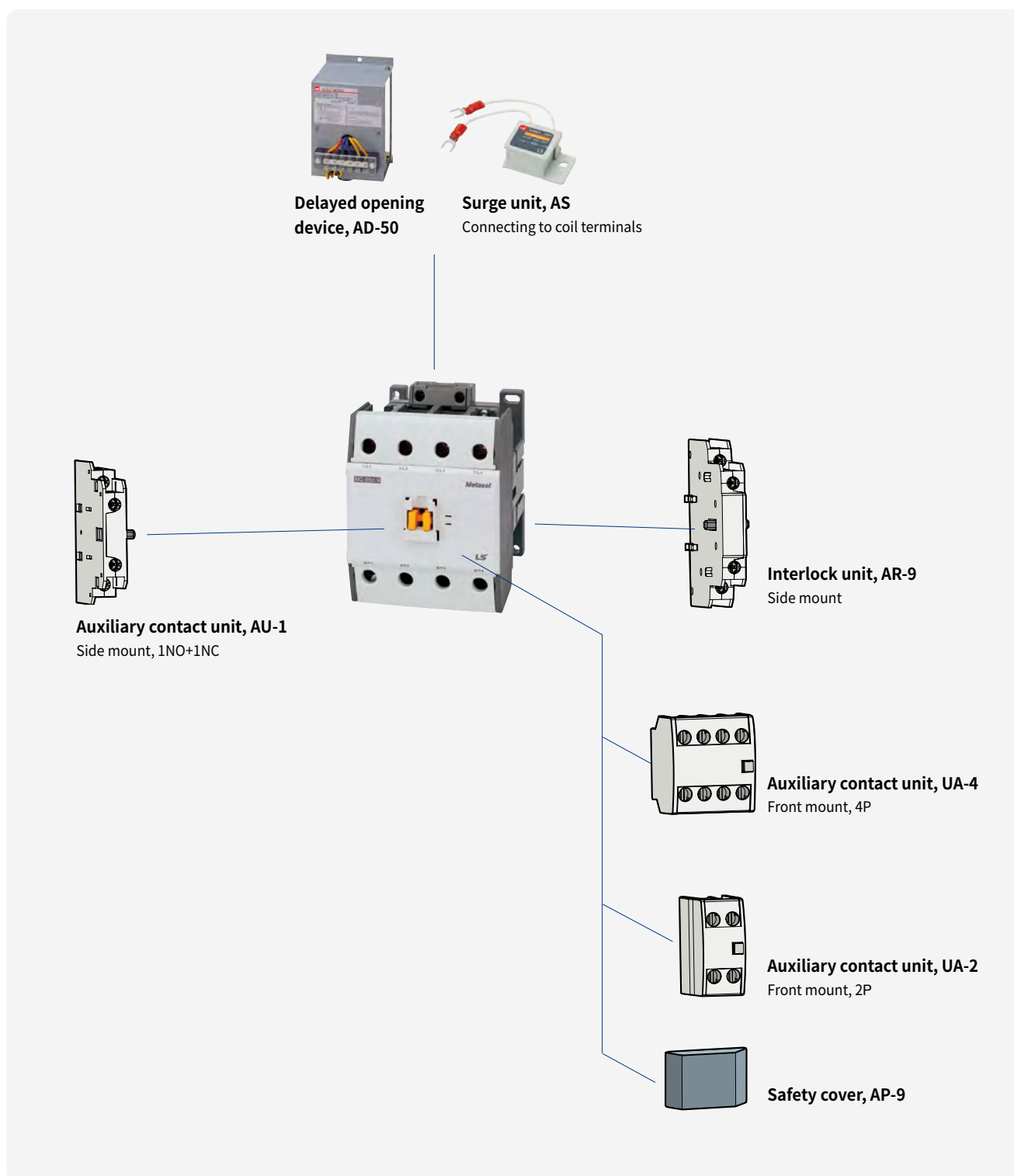
|    |         |                                                                                |
|----|---------|--------------------------------------------------------------------------------|
| AC | 50Hz    | 24, 48, 100, 110, 200, 220, 230, 240, 380, 400, 415, 440, 500, 550V, 240(wide) |
|    | 60Hz    | 24, 48, 110, 120, 208, 220, 240, 277, 380, 440, 480, 600V                      |
|    | 50/60Hz | 24, 48, 110, 120, 220, 230, 240, 380, 400, 415, 440, 500, 550V                 |
| DC |         | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V                          |

## Certification

- CE(IEC)
- UL508
- CCC

Note) For DC coil products in 85AF, 1a1b auxiliary contact is installed as standard. However, 1b contact is being used for coil control. Therefore, if necessary, only 1a contact can be used.

## Accessories



# 4-pole contactors

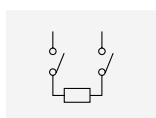
## Description 225AF

- 4-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC auxiliary contacts built-in as standard
- Side mountable accessories
- Direct mountable overload relays available
- Degree of protection: IP20

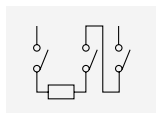
### Rating



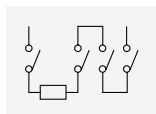
MC-225a/4



2pole for DC contact



3pole for DC contact



4-pole in series

| Contactor type                                                       |                       |                     | MC-100a/4             |     | MC-130a/4 |     | MC-150a/4 |     | MC-185a/4 |     | MC-225a/4 |     |     |
|----------------------------------------------------------------------|-----------------------|---------------------|-----------------------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----|
|                                                                      |                       |                     | kW                    | A   | kW        | A   | kW        | A   | kW        | A   | kW        | A   |     |
| AC duty                                                              | AC1                   | 200/240V            | 57                    | 200 | 60        | 250 | 76        | 275 | 87        | 300 | 100       | 350 |     |
|                                                                      |                       | 380/440V            | 106                   | 200 | 110       | 250 | 142       | 275 | 165       | 300 | 185       | 350 |     |
|                                                                      |                       | 500/550V            | 132                   | 200 | 137       | 250 | 180       | 275 | 205       | 300 | 230       | 350 |     |
|                                                                      |                       | 690V                | 165                   | 200 | 170       | 250 | 225       | 275 | 255       | 300 | 290       | 350 |     |
|                                                                      | AC3                   | 200/240V            | 30                    | 105 | 37        | 125 | 45        | 150 | 55        | 185 | 75        | 225 |     |
|                                                                      |                       | 380/440V            | 55                    | 105 | 60        | 120 | 75        | 150 | 90        | 185 | 132       | 225 |     |
|                                                                      |                       | Ith                 | -                     | 200 | -         | 250 | -         | 275 | -         | 300 | -         | 350 |     |
|                                                                      | DC1 duty<br>(L/R=1ms) | 2-pole<br>in series | 110V                  | -   | 80        | -   | 80        | -   | 100       | -   | 150       | -   | 150 |
|                                                                      |                       |                     | 220V                  | -   | 50        | -   | 50        | -   | 100       | -   | 150       | -   | 150 |
| 3-pole<br>in series                                                  |                       | 110V                | -                     | 100 | -         | 100 | -         | 150 | -         | 180 | -         | 220 |     |
|                                                                      |                       | 220V                | -                     | 80  | -         | 80  | -         | 150 | -         | 180 | -         | 220 |     |
| 4-pole<br>in series                                                  |                       | 110V                | -                     | 100 | -         | 100 | -         | 150 | -         | 180 | -         | 220 |     |
|                                                                      |                       | 220V                | -                     | 90  | -         | 100 | -         | 150 | -         | 180 | -         | 220 |     |
| UL rating                                                            |                       |                     | hp                    | A   | hp        | A   | hp        | A   | hp        | A   | hp        | A   |     |
|                                                                      |                       |                     | 220/240V              | 30  | -         | 40  | -         | 50  | -         | 60  | -         | 75  | -   |
|                                                                      |                       |                     | 440/480V              | 60  | -         | 75  | -         | 100 | -         | 125 | -         | 150 | -   |
|                                                                      |                       |                     | 550/600V              | 60  | -         | 75  | -         | 100 | -         | 125 | -         | 150 | -   |
|                                                                      |                       |                     | Ith                   | -   | 200       | -   | 250       | -   | 275       | -   | 300       | -   | 350 |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) |                       | AWG                 | 6~00                  |     | 3~00      |     | 3~4/0     |     | 1~4/0     |     | 0~300     |     |     |
|                                                                      |                       | mm²                 | 16~70                 |     | 35~70     |     | 35~95     |     | 50~95     |     | 50~150    |     |     |
| Conductor type                                                       |                       |                     | 75°C Cu stranded wire |     |           |     |           |     |           |     |           |     |     |



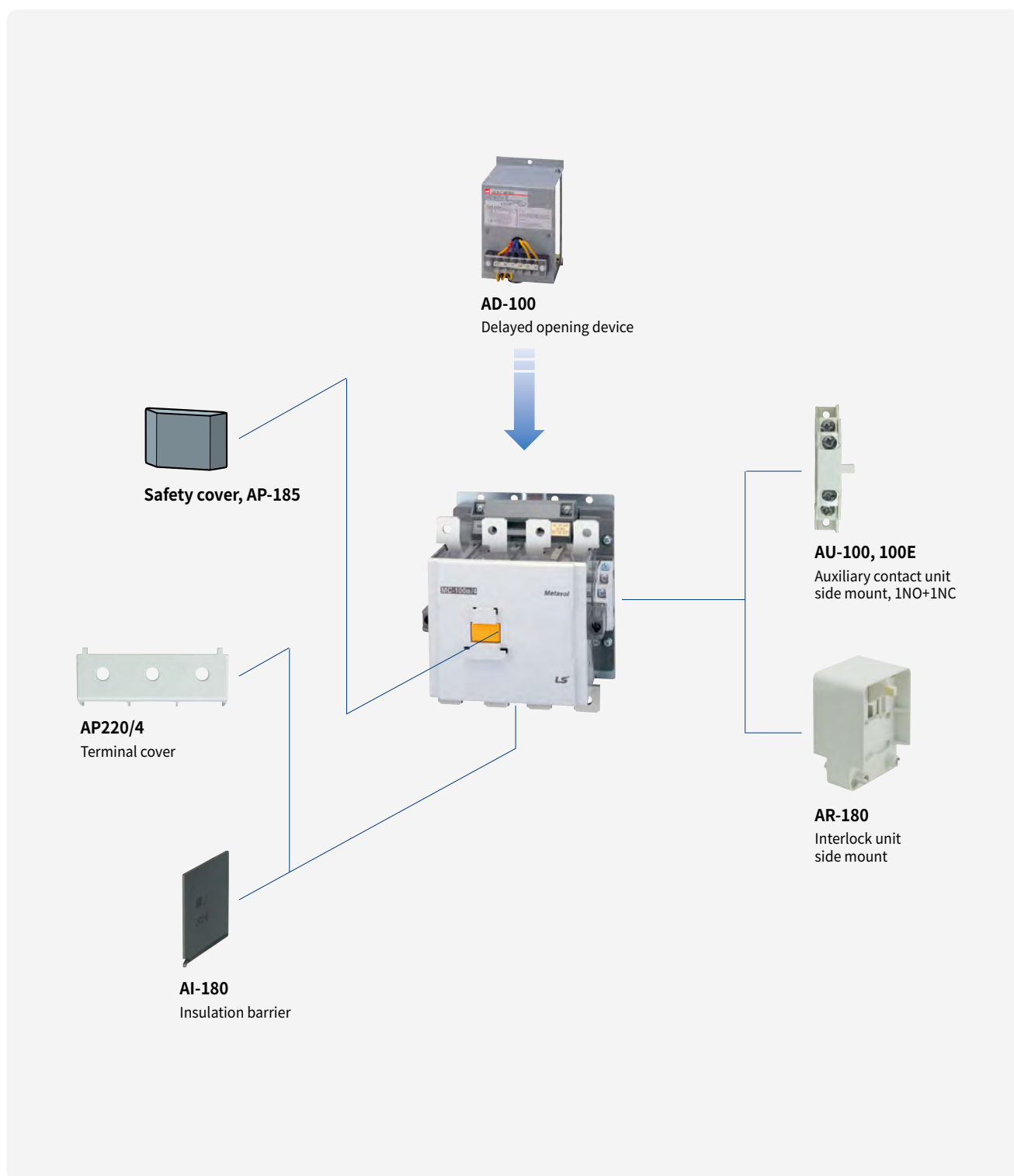
### Coil voltage, AC/DC common

| Nominal(Ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 24V                       | 24 - 25V   | 24V        |
| 48V                       | 48 - 50V   | 48V        |
| 100/200V                  | 100 - 240V | 100 - 220V |
| 300V                      | 265 - 347V | -          |
| 400V                      | 380 - 450V | -          |
| 500V                      | 440 - 575V | -          |

#### Certification

- CE(IEC)
- UL508
- CCC

## Accessories



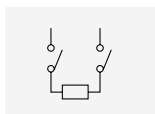


# 4-pole contactors

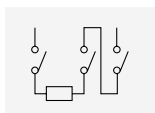
## Description 400AF

- 4-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC auxiliary contacts built-in as standard
- Side mountable accessories
- Degree of protection: IP20

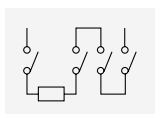
### Rating



2pole for DC contact



3pole for DC contact



4pole for DC contact

| Contactor type                                                       |                     |          | MC-265a/4             |     | MC-330a/4 |     | MC-400a/4 |     |   |
|----------------------------------------------------------------------|---------------------|----------|-----------------------|-----|-----------|-----|-----------|-----|---|
|                                                                      |                     |          | kW                    | A   | kW        | A   | kW        | A   |   |
| AC duty                                                              | AC1                 | 200/240V | 115                   | 400 | 135       | 500 | 160       | 520 |   |
|                                                                      |                     | 380/440V | 215                   | 400 | 250       | 500 | 300       | 520 |   |
|                                                                      |                     | 500/550V | 265                   | 400 | 315       | 500 | 375       | 520 |   |
|                                                                      |                     | 690V     | 335                   | 400 | 390       | 500 | 470       | 520 |   |
|                                                                      | AC3                 | 200/240V | 80                    | 265 | 90        | 330 | 125       | 400 |   |
|                                                                      |                     | 380/440V | 147                   | 265 | 160       | 330 | 200       | 400 |   |
|                                                                      |                     | Ith      | -                     | 400 | -         | 500 | -         | 520 |   |
|                                                                      |                     |          |                       |     |           |     |           |     |   |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole<br>in series | 110V     | -                     | 150 | -         | 200 | -         | 200 |   |
|                                                                      |                     | 220V     | -                     | 150 | -         | 200 | -         | 200 |   |
|                                                                      | 3-pole<br>in series | 110V     | -                     | 220 | -         | 300 | -         | 400 |   |
|                                                                      |                     | 220V     | -                     | 220 | -         | 300 | -         | 300 |   |
|                                                                      | 4-pole<br>in series | 110V     | -                     | 220 | -         | 300 | -         | 400 |   |
|                                                                      |                     | 220V     | -                     | 220 | -         | 300 | -         | 300 |   |
|                                                                      | UL rating           |          |                       | hp  | A         | hp  | A         | hp  | A |
|                                                                      |                     | 220/240V | 100                   | -   | 100       | -   | 150       | -   |   |
|                                                                      | 440/480V            | 200      | -                     | 200 | -         | 300 | -         |     |   |
|                                                                      | 550/600V            | 200      | -                     | 200 | -         | 300 | -         |     |   |
|                                                                      | Ith                 | -        | 400                   | -   | 500       | -   | 520       |     |   |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) |                     | AWG      | 3/0~500               |     | 4/0~500   |     | 350~700   |     |   |
|                                                                      |                     | mm²      | 95~240                |     | 95~240    |     | 185~370   |     |   |
| Conductor type                                                       |                     |          | 75°C Cu stranded wire |     |           |     |           |     |   |



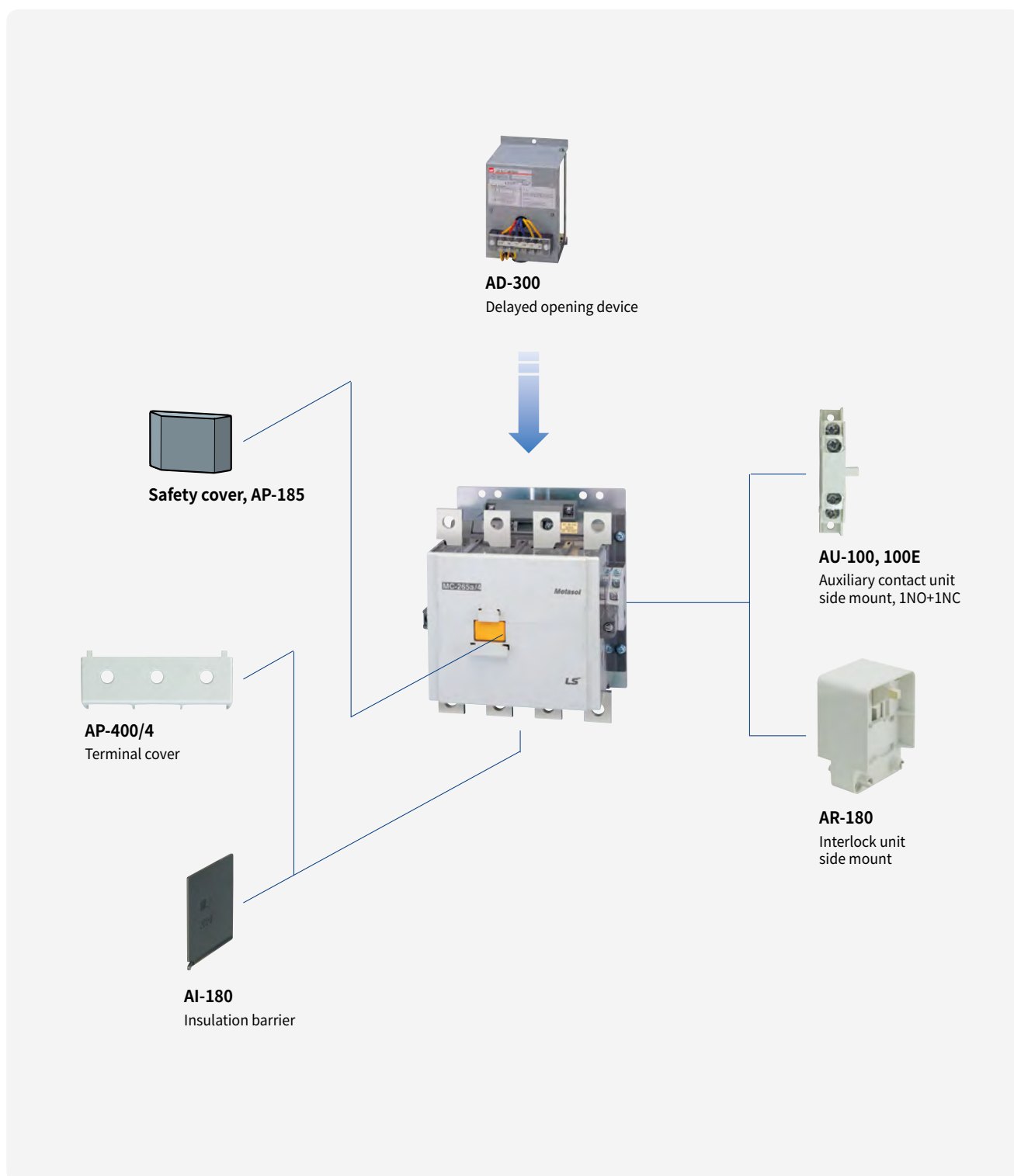
### Coil voltage, AC/DC common

| Nominal(Ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 100/200V                  | 100 - 240V | 100 - 220V |
| 300V                      | 265 - 347V | -          |
| 400V                      | 380 - 450V | -          |
| 500V                      | 440 - 575V | -          |

#### Certification

- CE(IEC)
- UL508
- CCC

## Accessories



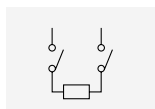
# 4-pole contactors

## Description 800AF

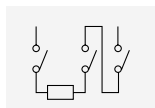
- 4-pole main contact
- AC/DC common use coil built
- Wide coil operation voltage
- Screw mountable
- 2NO+2NC auxiliary contacts built-in as standard
- Side mountable accessories
- Degree of protection: IP20



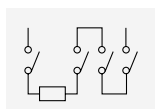
MC-800a/4



2pole for DC contact



3pole for DC contact



4pole for DC contact

## Rating

| Contactor type                                                       |           |          | MC-500a/4             |     | MC-630a/4 |     | MC-800a/4   |      |   |
|----------------------------------------------------------------------|-----------|----------|-----------------------|-----|-----------|-----|-------------|------|---|
|                                                                      |           |          | kW                    | A   | kW        | A   | kW          | A    |   |
| AC duty                                                              | AC1       | 200/240V | 245                   | 700 | 255       | 900 | 310         | 1050 |   |
|                                                                      |           | 380/440V | 450                   | 700 | 470       | 900 | 570         | 1050 |   |
|                                                                      |           | 500/550V | 560                   | 700 | 590       | 900 | 710         | 1050 |   |
|                                                                      |           | 690V     | 710                   | 700 | 740       | 900 | 900         | 1050 |   |
|                                                                      | AC3       | 200/240V | 147                   | 500 | 190       | 630 | 220         | 800  |   |
|                                                                      |           | 380/440V | 265                   | 500 | 330       | 630 | 440         | 800  |   |
|                                                                      |           | Ith      | -                     | 700 | -         | 900 | -           | 1050 |   |
|                                                                      |           |          |                       |     |           |     |             |      |   |
| DC1 duty<br>(L/R=1ms)                                                | 2-pole    | 110V     | -                     | 200 | -         | 630 | -           | 630  |   |
|                                                                      |           | 220V     | -                     | 200 | -         | 630 | -           | 630  |   |
|                                                                      | 3-pole    | 110V     | -                     | 400 | -         | 630 | -           | 800  |   |
|                                                                      |           | 220V     | -                     | 300 | -         | 630 | -           | 800  |   |
|                                                                      | 4-pole    | 110V     | -                     | 400 | -         | 630 | -           | 800  |   |
|                                                                      |           | 220V     | -                     | 300 | -         | 630 | -           | 800  |   |
|                                                                      | UL rating |          |                       | hp  | A         | hp  | A           | hp   | A |
|                                                                      |           | 220/240V | 200                   | -   | 250       | -   | 300         | -    |   |
|                                                                      | 440/480V  | 400      | -                     | 500 | -         | 600 | -           |      |   |
|                                                                      | 550/600V  | 400      | -                     | 500 | -         | 600 | -           |      |   |
|                                                                      | Ith       | -        | 700                   | -   | 900       | -   | 1050        |      |   |
| Conductor size (Solid, stranded)<br>(The max. number of conducts: 2) |           | AWG      | 350~800               |     | 600~2000  |     | 1700~Busbar |      |   |
|                                                                      |           | mm²      | 185~480               |     | -         |     | -           |      |   |
| Conductor type                                                       |           |          | 75°C Cu stranded wire |     |           |     |             |      |   |



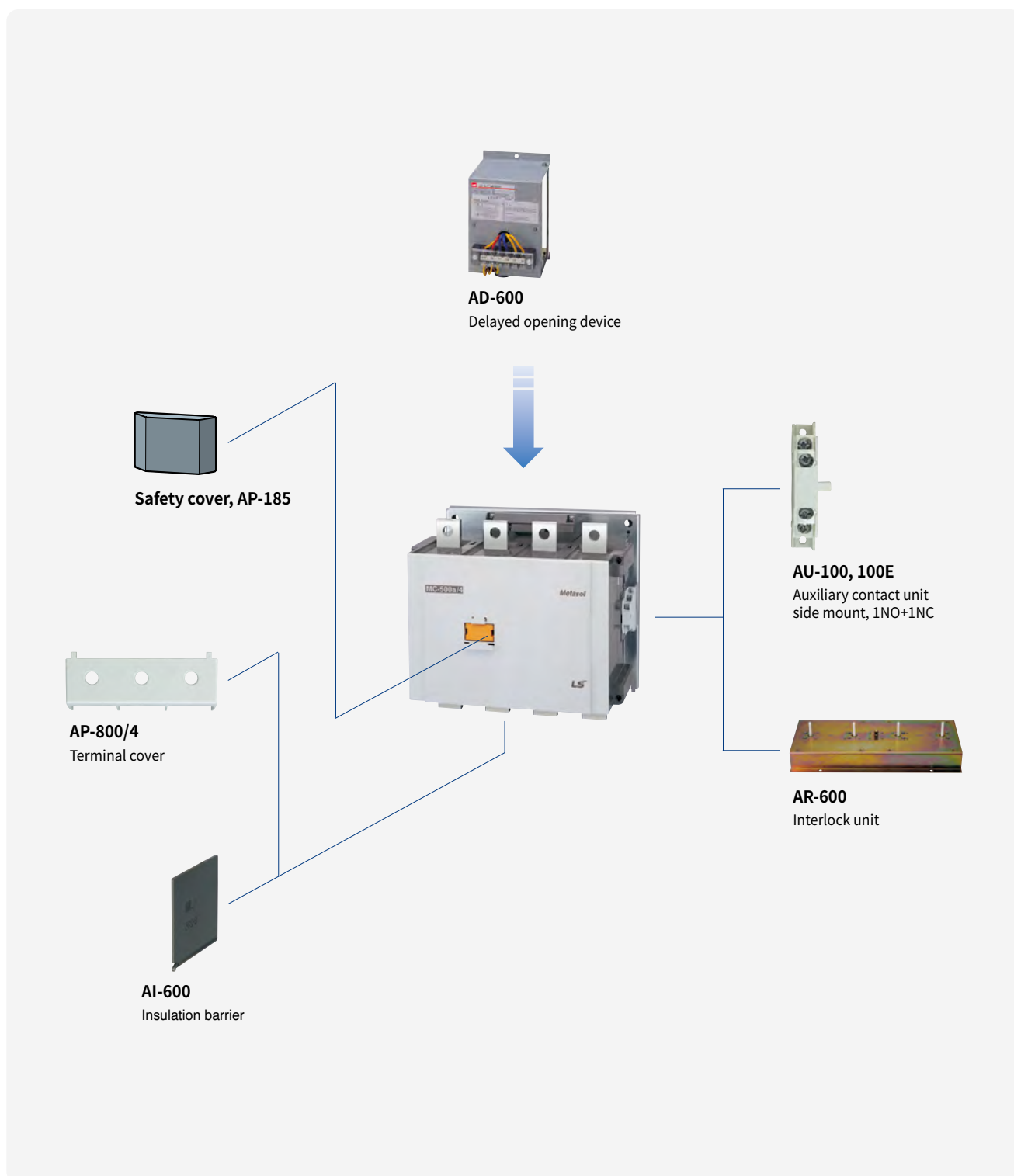
## Coil voltage, AC/DC common

| Nominal(Ordering) voltage | AC 50/60Hz | DC         |
|---------------------------|------------|------------|
| 100V                      | 100 - 127V | 100 - 220V |
| 200V                      | 200 - 240V | 200 - 220V |
| 300V                      | 265 - 347V | -          |
| 400V                      | 380 - 450V | -          |
| 500V                      | 440 - 575V | -          |

## Certification

- CE(IEC)
- UL508
- CCC

## Accessories



# Enclosed motor starters, Mold enclosure

## Description

- Enclosed & full voltage type
  - MW-□bM: Plastic enclosure without buttons
  - MW-□bMB: Plastic enclosure with ON/OFF buttons
- With differential or non-differential type thermal overload relay
- Contactors: 3 pole with AC coil
- Screw mountable
- Degree of protection: IP40

## Rating



| Type       | AC3 Ratings (IEC 60947-4-1) |           |           |          | Auxiliary contact (standard) | Devices combined |                 |
|------------|-----------------------------|-----------|-----------|----------|------------------------------|------------------|-----------------|
|            | 220~240V                    | 380~440V  | 500~550V  | 690V     |                              | Contactor        | Overload relay  |
| MW-9bM(B)  | 2.5kW 11A                   | 4kW 9A    | 4kW 7A    | 4kW 6A   | 1NO1NC                       | MC-9b            | MT-32 (0.1~22A) |
| MW-12bM(B) | 3.5kW 13A                   | 5.5kW 12A | 7.5kW 12A | 7.5kW 9A |                              | MC-12b           |                 |
| MW-18bM(B) | 4.5kW 18A                   | 7.5kW 18A | 7.5kW 13A | 7.5kW 9A |                              | MC-18b           |                 |
| MW-22bM(B) | 5.5kW 22A                   | 11kW 22A  | 15kW 20A  | 15kW 18A |                              | MC-22b           |                 |



## Overload relay setting range, Amp.

| MT-12       |         | MT-32       |         | MT-63   |         | MT-95   |          |
|-------------|---------|-------------|---------|---------|---------|---------|----------|
| 0.1 - 0.16  | 5 - 8   | 0.1 - 0.16  | 5 - 8   | 4 - 6   | 28 - 40 | 7 - 10  | 54 - 75  |
| 0.16 - 0.25 | 6 - 9   | 0.16 - 0.25 | 6 - 9   | 5 - 8   | 34 - 50 | 9 - 13  | 63 - 85  |
| 0.25 - 0.4  | 7 - 10  | 0.25 - 0.4  | 7 - 10  | 6 - 9   | 45 - 65 | 12 - 18 | 70 - 95  |
| 0.4 - 0.63  | 9 - 13  | 0.4 - 0.63  | 9 - 13  | 7 - 10  |         | 16 - 22 | 80 - 100 |
| 0.63 - 1    | 12 - 18 | 0.63 - 1    | 12 - 18 | 9 - 13  |         | 18 - 25 |          |
| 1 - 1.6     |         | 1 - 1.6     | 16 - 22 | 12 - 18 |         | 24 - 36 |          |
| 1.6 - 2.5   |         | 1.6 - 2.5   | 18 - 25 | 16 - 22 |         | 28 - 40 |          |
| 2.5 - 4     |         | 2.5 - 4     | 22 - 32 | 18 - 25 |         | 34 - 50 |          |
| 4 - 6       |         | 4 - 6       | 28 - 40 | 24 - 36 |         | 45 - 65 |          |



Internal device



## Coil voltage

| AC | 50Hz | 24, 32, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 500, 550V    |
|----|------|---------------------------------------------------------------------|
|    | 60Hz | 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600V |

| Certification |         |
|---------------|---------|
| • CE(IEC)     | • UL508 |

## Type numbering system

| MW-6a         |      | B              |                                      | 2H                             |                            |
|---------------|------|----------------|--------------------------------------|--------------------------------|----------------------------|
| Rated current |      | Enclosure type |                                      | Thermal overload relay version |                            |
| 6a            | 6A   | -              | Without push button(Steel enclosure) | 2H                             | Non-differential(2-heater) |
| ⋮             | ⋮    | B              | With push button (Steel enclosure)   | 3H                             | Non-differential(3-heater) |
| 100a          | 100A | M              | Without push button (Mold enclosure) | 3K                             | Differential               |
|               |      | MB             | With push button (Mold enclosure)    | 3D                             | Class 20                   |

## Description

- Full voltage type
- MW-□a/MW-□b: Steel enclosure without buttons
- MW-□aB/MW-□bB: Steel enclosure ON/OFF buttons
- Contactors: 3 pole with AC coil
- Overload relay with differential or non-differential type
- Screw mountable
- Degree of protection: IP40

## Rating



Internal device

| Type       | AC3 Ratings (IEC 60947-4-1) |            |            |            |          | Devices combined |                    |
|------------|-----------------------------|------------|------------|------------|----------|------------------|--------------------|
|            | 220~240V                    | 380 ~ 440V | 500 ~ 550V | 690V       | 1000V    | Contactor        | Overload relay     |
| MW-6a(B)   | 2.2kW 9A                    | 3kW 7A     | 3kW 6A     | 3kW 4A     | -        | MC-6a            | MT-12<br>(0.1~18A) |
| MW-9a(B)   | 2.5kW 11A                   | 4kW 9A     | 4kW 7A     | 4kW 5A     | -        | MC-9a            |                    |
| MW-12a(B)  | 3.5kW 13A                   | 5.5kW 12A  | 7.5kW 12A  | 7.5kW 9A   | -        | MC-12a           |                    |
| MW-18a(B)  | 4.5kW 18A                   | 7.5kW 18A  | 7.5kW 13A  | 7.5kW 9A   | -        | MC-18a           |                    |
| MW-9b(B)   | 2.5kW 11A                   | 4kW 9A     | 4kW 7A     | 4kW 6A     | -        | MC-9b            | MT-32<br>(0.1~22A) |
| MW-12b(B)  | 3.5kW 13A                   | 5.5kW 12A  | 7.5kW 12A  | 7.5kW 9A   | -        | MC-12b           |                    |
| MW-18b(B)  | 4.5kW 18A                   | 7.5kW 18A  | 7.5kW 13A  | 7.5kW 9A   | -        | MC-18b           |                    |
| MW-22b(B)  | 5.5kW 22A                   | 11kW 22A   | 15kW 20A   | 15kW 18A   | -        | MC-22b           |                    |
| MW-32a(B)  | 7.5kW 32A                   | 15kW 32A   | 18.5kW 28A | 18.5kW 20A | 22kW 17A | MC-32a           | MT-32<br>(0.1~40A) |
| MW-40a(B)  | 11kW 40A                    | 18.5kW 40A | 22kW 32A   | 22kW 23A   | 22kW 17A | MC-40a           |                    |
| MW-50a(B)  | 15kW 55A                    | 22kW 50A   | 30kW 43A   | 30kW 28A   | 30kW 23A | MC-50a           | MT-63<br>(4~65A)   |
| MW-65a(B)  | 18.5kW 65A                  | 30kW 65A   | 33kW 60A   | 33kW 35A   | 30kW 23A | MC-65a           |                    |
| MW-75a(B)  | 22kW 75A                    | 37kW 75A   | 37kW 64A   | 37kW 42A   | 37kW 28A | MC-75a           | MT-95<br>(7~100A)  |
| MW-85a(B)  | 25kW 85A                    | 45kW 85A   | 45kW 75A   | 45kW 45A   | 37kW 28A | MC-85a           |                    |
| MW-100a(B) | 30kW 105A                   | 55kW 105A  | 55kW 85A   | 55kW 65A   | 37kW 28A | MC-100a          |                    |

## Overload relay setting range, Amp.

| MT-12       |         | MT-32       |         | MT-63   |         | MT-95   |          |
|-------------|---------|-------------|---------|---------|---------|---------|----------|
| 0.1 - 0.16  | 5 - 8   | 0.1 - 0.16  | 5 - 8   | 4 - 6   | 28 - 40 | 7 - 10  | 54 - 75  |
| 0.16 - 0.25 | 6 - 9   | 0.16 - 0.25 | 6 - 9   | 5 - 8   | 34 - 50 | 9 - 13  | 63 - 85  |
| 0.25 - 0.4  | 7 - 10  | 0.25 - 0.4  | 7 - 10  | 6 - 9   | 45 - 65 | 12 - 18 | 70 - 95  |
| 0.4 - 0.63  | 9 - 13  | 0.4 - 0.63  | 9 - 13  | 7 - 10  |         | 16 - 22 | 80 - 100 |
| 0.63 - 1    | 12 - 18 | 0.63 - 1    | 12 - 18 | 9 - 13  |         | 18 - 25 |          |
| 1 - 1.6     |         | 1 - 1.6     | 16 - 22 | 12 - 18 |         | 24 - 36 |          |
| 1.6 - 2.5   |         | 1.6 - 2.5   | 18 - 25 | 16 - 22 |         | 28 - 40 |          |
| 2.5 - 4     |         | 2.5 - 4     | 22 - 32 | 18 - 25 |         | 34 - 50 |          |
| 4 - 6       |         | 4 - 6       | 28 - 40 | 24 - 36 |         | 45 - 65 |          |



## Coil voltage

| AC | 50Hz | 24, 32, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 500, 550V    |
|----|------|---------------------------------------------------------------------|
|    | 60Hz | 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600V |

| Certification |         |
|---------------|---------|
| • CE(IEC)     | • UL508 |

# Capacitor contactors

## Description

- Capacitor unit(Pre-loading resistor) is connected to the terminals of the contactor to reduce the high inrush current exceeding  $20\times I_n$ .
- AC control coil on selection
- 3-pole(NO) main contact
- Finger proof design
- DIN rail or screw mountable
- IEC 60947-4-1 AC 6b

## Rating

| Type               | Rating (kVar, A) |                 |                |                 |
|--------------------|------------------|-----------------|----------------|-----------------|
|                    | 220~240V         | 400~440V        | 500~550V       | 600~690V        |
| MC-9b with AC-9    | 5kVar<br>13A     | 9.7kVar<br>14A  | 14kVar<br>16A  | 16kVar<br>15A   |
| MC-12b with AC-9   | 6.7kVar<br>18A   | 12.5kVar<br>18A | 18kVar<br>21A  | 18kVar<br>17A   |
| MC-18b with AC-9   | 8.5kVar<br>22A   | 16.7kVar<br>24A | 24kVar<br>28A  | 26kVar<br>25A   |
| MC-22b with AC-9   | 10kVar<br>26A    | 18kVar<br>26A   | 26kVar<br>30A  | 30kVar<br>29A   |
| MC-32a with AC-9   | 15kVar<br>39A    | 25kVar<br>36A   | 36kVar<br>42A  | 40kVar<br>38A   |
| MC-40a with AC-9   | 20kVar<br>52A    | 33.3kVar<br>48A | 48kVar<br>55A  | 53kVar<br>51A   |
| MC-50a with AC-50  | 20kVar<br>52A    | 40kVar<br>58A   | 58kVar<br>67A  | 65kVar<br>63A   |
| MC-65a with AC-50  | 25kVar<br>66A    | 45.7kVar<br>66A | 66kVar<br>76A  | 73kVar<br>70A   |
| MC-75a with AC-75  | 29.7kVar<br>78A  | 54kVar<br>78A   | 78kVar<br>90A  | 85kVar<br>82A   |
| MC-85a with AC-75  | 35kVar<br>92A    | 60kVar<br>87A   | 92kVar<br>106A | 100kVar<br>96A  |
| MC-100a with AC-75 | 37kVar<br>97A    | 62kVar<br>89A   | 94kVar<br>109A | 105kVar<br>101A |

| Type    | Rating (kVar) |         |
|---------|---------------|---------|
|         | 600~690V      | 1000V   |
| MC-9b   | 3.5kVar       | -       |
| MC-12b  | 4kVar         | -       |
| MC-18b  | 4.5kVar       | -       |
| MC-22b  | 8kVar         | -       |
| MC-32a  | 14kVar        | -       |
| MC-40a  | 18kVar        | -       |
| MC-50a  | 25kVar        | -       |
| MC-65a  | 35kVar        | -       |
| MC-75a  | 40kVar        | -       |
| MC-85a  | 45kVar        | -       |
| MC-100a | 48kVar        | -       |
| MC-130a | 60kVar        | 60kVar  |
| MC-150a | 78kVar        | 78kVar  |
| MC-185a | 140kVar       | 140kVar |
| MC-225a | 150kVar       | 150kVar |
| MC-265a | 155kVar       | 155kVar |
| MC-330a | 160kVar       | 160kVar |
| MC-400a | 250kVar       | 250kVar |
| MC-500a | 300kVar       | 300kVar |
| MC-630a | 350kVar       | 350kVar |
| MC-800a | 450kVar       | 450kVar |

- Note) 1. When the switch is closed condenser must be discharged before recharged. (Maximum residual voltage at terminals  $\leq 50V$ )
2. To prevent short current, gG type fuse must be 1.5-2 times than rated current.

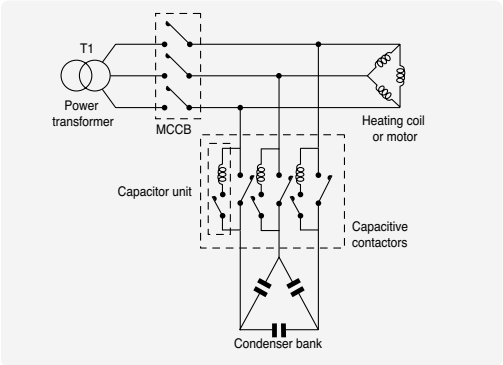


## Coil voltage

| AC | 50Hz | 24, 32, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 500, 550V    |
|----|------|---------------------------------------------------------------------|
|    | 60Hz | 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 480, 600V |

- These capacitive contactors are suitable for switching single-step or multiple-step condenser bank.
- It is standardized by IEC-60947-4941, UL and CSA.
- Features of capacitor unit(Pre-loading resistor)
  - Damping resistor that can limit the inrush current upto  $60\times I_n$  is connected to the mechanism that closed earlier than the main contact of the contactor
  - No heat loss by the serial resistor
  - Eliminate the switching surge
  - Improving the performance of the capacitor system

## Example



## Description

- Two normally open main contacts
- Screw clamp or fast-on connections
- Small and light design suitable for use in air conditioners, heaters, refrigerators, etc.
- Screw mountable
- No auxiliary contact
- AC control voltage

## Rating

| Type     | AC3 ratings |          |          | I <sub>th</sub> | Contact |    |
|----------|-------------|----------|----------|-----------------|---------|----|
|          | 220~240V    | 380~440V | 500~550V |                 | NO      | NC |
| GMC-10P2 | 10A         | 8A       | 6A       | 20A             | 2       | -  |
| GMC-20P2 | 20A         | 17A      | 14A      | 30A             | 2       | -  |
| GMC-25P2 | 25A         | 21A      | 17A      | 35A             | 2       | -  |
| GMC-30P2 | 30A         | 23A      | 21A      | 40A             | 2       | -  |
| GMC-35P2 | 35A         | 26A      | 23A      | 45A             | 2       | -  |
| GMC-40P2 | 40A         | 32A      | 26A      | 50A             | 2       | -  |

Insulation voltage: 690V at AC, 250V at DC

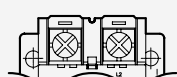
## Control coil characteristics

| Coil voltage | Coil consumption (VA) |         | Thermal dissipation (W) | Operational voltage (V)     |                               | Coil current (mA) | Operational time (ms) |         |
|--------------|-----------------------|---------|-------------------------|-----------------------------|-------------------------------|-------------------|-----------------------|---------|
|              | Inrush                | Holding |                         | Pick-up                     | Drop-out                      |                   | Closing               | Opening |
| 24V 50/60Hz  | 35                    | 6.0     | 2                       | 83% or less of coil voltage | More than 20% of coil voltage | 263               | 40                    | 30      |
| 48V 50/60Hz  | 35                    | 6.0     | 2                       |                             |                               | 131               | 40                    | 30      |
| 100V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 63                | 40                    | 30      |
| 110V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 57                | 40                    | 30      |
| 120V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 53                | 40                    | 30      |
| 200V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 32                | 40                    | 30      |
| 220V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 29                | 40                    | 30      |
| 230V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 27                | 40                    | 30      |
| 240V 50/60Hz | 35                    | 6.0     | 2                       |                             |                               | 26                | 40                    | 30      |

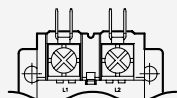
Note) 1. The condition of the above data: 60Hz, 20°C from cold state

2. Coil consumption (VA) is average value.

### Main terminal

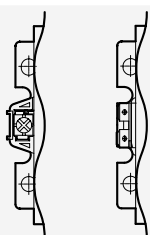


Screw clamp



Fast-on (Quick connect)

### Coil terminal



Screw clamp

Fast-on (Quick connect)

## Type numbering system

| GMC        | 10P          | 2       | TS                    | BQ                   | 100V                   |
|------------|--------------|---------|-----------------------|----------------------|------------------------|
| Contactors | Capacity (A) | Pole    | Main terminal connect | Power supply connect | Operation voltage (AC) |
|            | 10P 10       | 2 2pole | TS Screw clamp        | BS Screw clamp       | 20V 24V                |
|            | 20P 20       |         | TQ Quick connect      | BQ Quick connect     | 48V 24~240             |
|            | 25P 25       |         |                       |                      | 110V 100~120V          |
|            | 30P 30       |         |                       |                      | 220V 208~240V          |
|            | 35P 35       |         |                       |                      |                        |
|            | 40P 40       |         |                       |                      |                        |



# 3-pole AC contactors, Definite purpose

## Description

- Three main contacts
- Screw clamp connections
- Small and light design suitable for use in air conditioners, heaters, refrigerators, etc.
- Screw mountable
- No auxiliary contact
- AC control voltage



## Rating

| Type                 | AC3 ratings |          |          | AC4 ratings |          |          | Ith | Contact |    |
|----------------------|-------------|----------|----------|-------------|----------|----------|-----|---------|----|
|                      | 220~240V    | 380~440V | 500~550V | 220~240V    | 380~440V | 500~550V |     | NO      | NC |
| GMC-20D2<br>GMC-20D3 | 20A         | 17A      | 14A      | 18A         | 13A      | 10A      | 30A | 2       | -  |
|                      |             |          |          |             |          |          |     | 3       | -  |
|                      |             |          |          |             |          |          |     | 2       | 1  |
| GMC-25D2<br>GMC-25D3 | 25A         | 21A      | 17A      | 20A         | 14A      | 12A      | 35A | 2       | -  |
|                      |             |          |          |             |          |          |     | 3       | -  |
|                      |             |          |          |             |          |          |     | 2       | 1  |

Note) Above contact ratings are for NO contact.  
 Rating for NC contact: 6A@120V, 3A@240V, 1.5A@480V at AC15 duty  
 Rating above 24V 1A  
 Please use NC contact for Insulation voltage: 690V at AC, 250V at DC

## Control coil characteristics

| Coil voltage | Coil consumption (VA) |         | Thermal dissipation (W) | Operational voltage(V)      |                               | Coil current (mA) | Operational time (ms) |         |
|--------------|-----------------------|---------|-------------------------|-----------------------------|-------------------------------|-------------------|-----------------------|---------|
|              | Inrush                | Holding |                         | Pick-up                     | Drop-out                      |                   | Closing               | Opening |
| 24V 60Hz     | 72                    | 9.0     | 3                       | 83% or less of coil voltage | More than 20% of coil voltage | 215               | 30                    | 20      |
| 48V 60Hz     | 72                    | 9.0     | 3                       |                             |                               | 125               | 30                    | 20      |
| 110V 60Hz    | 72                    | 9.0     | 3                       |                             |                               | 60                | 30                    | 20      |
| 220V 60Hz    | 72                    | 9.0     | 3                       |                             |                               | 41                | 30                    | 20      |

Note) 1. The condition of the above data: 60Hz, 20 °C from cold state  
 2. Coil consumption (VA) is average value.

## Type numbering system

| GMC        | / | 20            | D2             | 2NO1NC            | AC 220V                |
|------------|---|---------------|----------------|-------------------|------------------------|
| Contactors |   | Rated current | Pole           | Auxiliary contact | Operation voltage (AC) |
|            |   | 20 20         | D2 2NO, 2NO1NC | - 2pole: 2NO      | 20V                    |
|            |   | 25 25         | D3 3NO         | - 3pole: 3NO      | 48V                    |
|            |   |               |                | 2NO 1NC 2NO1NC    | 110V                   |
|            |   |               |                |                   | 220V                   |

## Description

- Single-pole NO main contact
- Small and light design suitable for use in electric shock protector for AC arc welder
- DIN rail or screw mountable
- No auxiliary contact (Optional unit can be added up to 2NO2NC)
- AC control voltage



## Rating

| Type     | Rated current, In<br>110/220V | Ith  | Performance    |                  |
|----------|-------------------------------|------|----------------|------------------|
|          |                               |      | Making current | Breaking current |
| MC-65aSP | 220A                          | 500A | 1.5×In         |                  |

## Control coil characteristics

| Coil consumption (VA) |         | Operational voltage |          | Operational time |
|-----------------------|---------|---------------------|----------|------------------|
| Inrush                | Holding | Pick-up             | Drop-out | Closing          |
| 150VA                 | 17VA    | 85% under           | 20% over | 30ms under       |

Note) Coil voltage is available between AC24V and AC550V

# 2-pole DC contactors

## Description

- Two normally open main contacts for DC circuit
- Positive and negative poles indicated on the front plate
- Eternal magnet installed for the effective arc extinguishing
- DIN rail or screw mountable
- 2NO+2NC Auxiliary contacts built-in as standard
- AC/DC control voltage
- Durability : 500K times(Elec.) / 10M times(Mech.)

## Selection

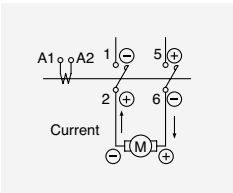
| Contactor Type | DC-3, 5 ratings |      |      | DC-1 rating | Continuous current, Ith | Auxiliary contacts |
|----------------|-----------------|------|------|-------------|-------------------------|--------------------|
|                | 125V            | 250V | 500V | 1000V       |                         |                    |
| MD-30a         | 40A             | 30A  | 20A  | 10A         | 60A                     | 2a(NO)+2b(NC)      |
| MD-60a         | 80A             | 60A  | 40A  | 25A         | 100A                    | 2a(NO)+2b(NC)      |
| MD-100a        | 120A            | 100A | 60A  | 35A         | 135A                    | 2a(NO)+2b(NC)      |

## Ratings of auxiliary contacts

| UA-1                    | AC15 duty |      |      |      |      |      | DC13 duty |       |       |      |      |
|-------------------------|-----------|------|------|------|------|------|-----------|-------|-------|------|------|
|                         | 120V      | 240V | 380V | 480V | 500V | 600V | 125V      | 250V  | 400V  | 500V | 600V |
| Rated currents          | 6A        | 3A   | 1.9A | 1.5A | 1.4A | 1.2A | 1.1A      | 0.55A | 0.31A | 0.27 | 0.2A |
| Continuous current, Ith | 16A       |      |      |      |      |      |           |       |       |      |      |

## Coil voltage

|    |         |                                                                          |
|----|---------|--------------------------------------------------------------------------|
| AC | 50/60Hz | 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 400, 415, 440, 500, 550V |
| DC |         | 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V                    |



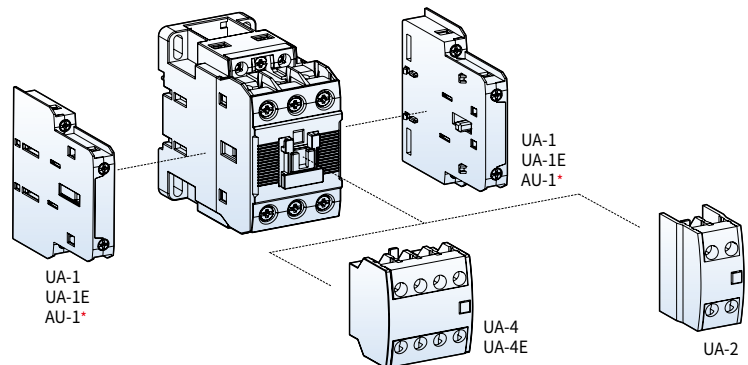
## Auxiliary contact units

- 2 and 4 pole
- Side and front mountable
- Common use for Metasol contactors from MC-6a to MC-150a, and from MC-6a/4 to 85a/4
- Auxiliary contact meet the requirements for mirror contacts in IEC 60947-4-1. Annex F  
(A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact)

MC-6a~MC-150a

MC-6a/4~85a/4

\* AU-1 only applies to MC-22a/4~85a/4.



### Selection

| Type                  | Appearance | Pole | Composition           |                       | Contact arrangement                            | Mount | Weight |
|-----------------------|------------|------|-----------------------|-----------------------|------------------------------------------------|-------|--------|
|                       |            |      | No                    | Nc                    |                                                |       |        |
| UA-1<br>UA-1E<br>AU-1 |            | 2    | 1                     | 1                     |                                                | Side  | 53g    |
| UA-2                  |            | 2    | 2<br>1<br>-           | -<br>1<br>2           | <br>2a      1a1b      2b                       | Front | 28g    |
| UA-4<br>UA-4E         |            | 4    | 4<br>3<br>2<br>1<br>- | -<br>1<br>2<br>3<br>4 | <br>4a      3a1b      2a2b<br><br>1a3b      4b | Front | 50g    |

\* UA-1 auxiliary contact can not be attached to the right side of 22AF product

### Maximum combination of contact units

| MC-6a~18a, 9b~22b (Max. 3a3b)                   | MC-32a~150a (Max. 4a4b)                           |
|-------------------------------------------------|---------------------------------------------------|
| UA-4(2a2b)+UA-1×1EA (1EA on one side)           | UA-4(2a2b)+UA-1×2EA (1EA on both sides)           |
| UA-2(2a, 1a, 1b, 2b)+UA-1×1EA (1EA on one side) | UA-2(2a, 1a, 1b, 2b)+UA-1×2EA (1EA on both sides) |
| UA-1×2EA (1EA on both sides)                    | UA-1×4EA (2EA on both sides) *For AC Coil         |

\* Max. 2a2b can be attached for MC-6a~18a & 9b~22b DC type.  
 - UA-4(2a2b) 1EA  
 - UA-2(2a, 1a, 1b, 2b) 1EA  
 - UA-2(1a1b) 1EA+ UA-1 1EA  
 - UA-1 1EA

Auxiliary contact units

- 2 pole
- Side mountable
- Auxiliary contact meet the requirements for mirror contacts in IEC 60947-4-1. Annex F  
(A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact)



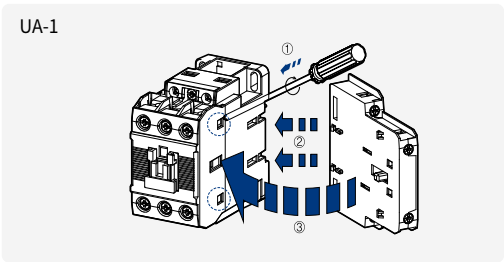
Selection

| Type              | Appearance | Pole | Composition |       | Contact arrangement | Mount | Weight |
|-------------------|------------|------|-------------|-------|---------------------|-------|--------|
|                   |            |      | a(NO)       | b(NC) |                     |       |        |
| AU-100<br>AU-100E |            | 2    | 1           | 1     |                     | Side  | 53g    |

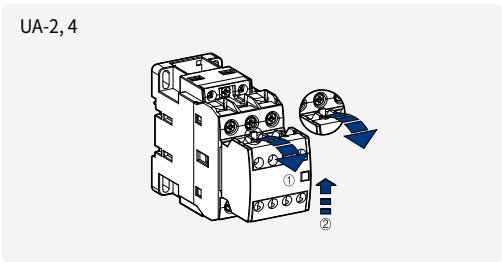
Maximum combination of contact units

|                                   |
|-----------------------------------|
| MC-185a~2650a (Max. 4a4b)         |
| AU-100 × 4EA (2EA on both sides)  |
| AU-100E × 4EA (2EA on both sides) |

Installation



To install side mounting unit remove the indicated part in the circle in the fig. first. And then fit each part as shown.  
To separate push forward and pull.



To install front mounting unit fit it on the upper part of the front of the contactor and push it down. To separate pull the lever of the unit and push the unit upward.

## Rating

| Type                                   |                                       |        | UA-1    | AU-1    | UA-2, 4 | AU-100  |
|----------------------------------------|---------------------------------------|--------|---------|---------|---------|---------|
| Rated operation voltage                |                                       | (Ue)   | 600V    | 600V    | 600V    | 600V    |
| Rated insulation voltage               |                                       | (Ui)   | 1000V   | 690V    | 690V    | 600V    |
| Rated impulse withstand voltage        |                                       | (Uimp) | 8kV     | 8kV     | 6kV     | 6kV     |
| Rated frequency                        |                                       |        | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| Contact sensibility                    | Voltage                               |        | DC 24V  | DC 24V  | DC 24V  | DC 24V  |
|                                        | Current                               |        | DC 10mA | DC 10mA | DC 10mA | DC 10mA |
| Rated thermal current (Ith, AC12 duty) |                                       |        | 16A     | 16A     | 16A     | 16A     |
| Rated operation current                | AC15 duty                             | 120V   | 6A      | 6A      | 6A      | 6A      |
|                                        |                                       | 240V   | 3A      | 3A      | 3A      | 3A      |
|                                        |                                       | 380V   | 1.9A    | 1.9A    | 1.9A    | 1.9A    |
|                                        |                                       | 480V   | 1.5A    | 1.5A    | 1.5A    | 1.5A    |
|                                        |                                       | 500V   | 1.4A    | 1.4A    | 1.4A    | 1.4A    |
|                                        |                                       | 600V   | 1.2A    | 1.2A    | 1.2A    | 1.2A    |
|                                        |                                       | 600V   | 0.2A    | 0.2A    | 0.1A    | 0.2A    |
| Rated                                  | 1s                                    | 100A   | 100A    | -       | 100A    |         |
| Short-time withstand current           | 0.5s                                  | 125A   | 125A    | -       | 120A    |         |
|                                        | 0.1s                                  | 145A   | 145A    | -       | 140A    |         |
| Electrical lifetime (Mil. operations)  | AC15 duty                             | 220V   | 0.25    | 0.25    | 0.25    | 0.25    |
|                                        |                                       | 440V   | 0.25    | 0.25    | 0.25    | 0.25    |
| Maximum operating cycles per hour      |                                       |        | 1800    | 1800    | 1800    | 1800    |
| Conductor size (Solid, stranded)       | AWG                                   | 18~10  | 18~10   | 18~10   | 18~10   | 18~10   |
|                                        | (The max. number of conducts : 2) mm² | 1~2.5  | 1~2.5   | 1~2.5   | 1~2.5   | 1~2.5   |

## Pneumatic timer



Air pressure timer



Combination with MC

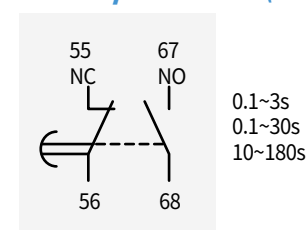
It is attached to the head-on of the magnetic contactor. It uses the principle of air pressure and it is delayed by the set time after the magnetic contactor is inserted and released and then the auxiliary contact of the Pneumatic timer is reversed

|    |   |                  |             |
|----|---|------------------|-------------|
| UN | - | 1                | N           |
|    |   | Time delay range | Timer type  |
|    |   | 1 0.1 ~ 3s       | N ON delay  |
|    |   | 2 0.1 ~ 30s      | F OFF delay |
|    |   | 3 10 ~ 180s      |             |

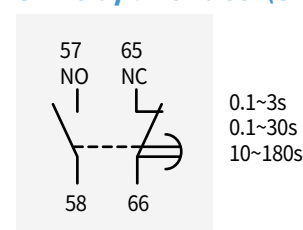
Note) Applicable MC: MC-6a ~ 100a, MC-9b ~ 22b, AC operation voltage

| Type                        |           | MC-6a~100a / MC-9b~22b              |         |         |        |         |         |
|-----------------------------|-----------|-------------------------------------|---------|---------|--------|---------|---------|
|                             |           | UN-1N                               | UN-2N   | UN-3N   | UN-1F  | UN-2F   | UN-3F   |
| Standards                   |           | IEC60947-5-1, GB14048.5             |         |         |        |         |         |
| Certification               |           | CCC, CE                             |         |         |        |         |         |
| Degree of protection        |           | IP20                                |         |         |        |         |         |
| Temperature range           | Storage   | -25°C ~ +60°C                       |         |         |        |         |         |
|                             | Operation | -5°C ~ +40°C                        |         |         |        |         |         |
| Altitude                    |           | 2,000m less                         |         |         |        |         |         |
| Poles                       |           | 1NO + 1NC                           |         |         |        |         |         |
| Rated operating voltage     |           | 600V                                |         |         |        |         |         |
| Rated insulation voltage    |           | 690V                                |         |         |        |         |         |
| Frequency                   |           | 50/60Hz                             |         |         |        |         |         |
| Rated operation current(Ie) |           | A600(AC-15), Q600(DC-13)            |         |         |        |         |         |
| Ith(Thermal current)        |           | 10A                                 |         |         |        |         |         |
| Minimum switching capacity  |           | DC 24V 10mA                         |         |         |        |         |         |
| Irms rated making capacity  |           | 10 x Ie AC-15 acc. to IEC 60947-5-1 |         |         |        |         |         |
| Non overlap time            |           | 1.5ms                               |         |         |        |         |         |
| Setting time                |           | 0.1~3s                              | 0.1~30s | 10~180s | 0.1~3s | 0.1~30s | 10~180s |
| Operating time tolerance    |           | ±50% less                           |         |         |        |         |         |
| Mechanical durability       |           | 2.5 mil. operations                 |         |         |        |         |         |

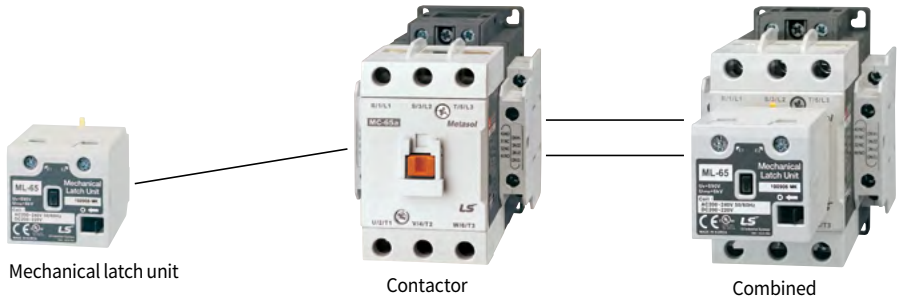
### On Delay timer block(UN-N)



### Off Delay timer block(UN-F)



Mechanical latch unit ML, AL



Rating

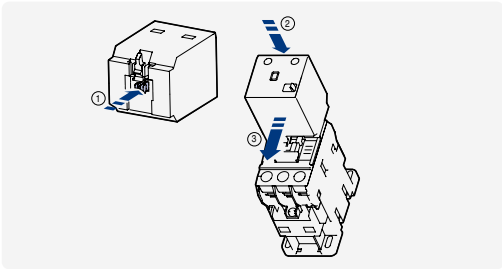
| Applying contactors                                                                           | Type                                 | Coil voltage of latch unit                                                                                                                                                                                                                                                               |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
|-----------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------|----------------|----------------------------------|----------------|----------------------------------|-----------------|--------------------------------------|--|
| MC-6a<br>MC-9a<br>MC-12a<br>MC-18a<br>MC-9b<br>MC-12b<br>MC-18b<br>MC-22b<br>MC-32a<br>MC-40a | ML-40                                | <table><tr><th>Ordering voltage</th><th>Operation voltage</th></tr><tr><td>AC 24V/ DC 24V</td><td>AC 24V 50/60Hz, DC 24V</td></tr><tr><td>AC 48V/ DC 48V</td><td>AC 48V 50/60Hz, DC 48V</td></tr><tr><td>AC 100V/DC 100V</td><td>AC 100~127V 50/60Hz,<br/>DC 100V~125V</td></tr></table> | Ordering voltage | Operation voltage                    | AC 24V/ DC 24V | AC 24V 50/60Hz, DC 24V           | AC 48V/ DC 48V | AC 48V 50/60Hz, DC 48V           | AC 100V/DC 100V | AC 100~127V 50/60Hz,<br>DC 100V~125V |  |
| Ordering voltage                                                                              | Operation voltage                    |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| AC 24V/ DC 24V                                                                                | AC 24V 50/60Hz, DC 24V               |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| AC 48V/ DC 48V                                                                                | AC 48V 50/60Hz, DC 48V               |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| AC 100V/DC 100V                                                                               | AC 100~127V 50/60Hz,<br>DC 100V~125V |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| MC-50a<br>MC-65a                                                                              | ML-65                                | <table><tr><td>AC 200V/DC 200V</td><td>AC 200~240V 50/60Hz,<br/>DC 200V~220V</td></tr></table>                                                                                                                                                                                           | AC 200V/DC 200V  | AC 200~240V 50/60Hz,<br>DC 200V~220V |                |                                  |                |                                  |                 |                                      |  |
| AC 200V/DC 200V                                                                               | AC 200~240V 50/60Hz,<br>DC 200V~220V |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| MC-75a<br>MC-85a<br>MC-100a<br>MC-130a<br>MC-150a                                             | ML-150                               | <table><tr><td>AC 400V</td><td>AC 380V~440V 50/60Hz</td></tr></table> <p><i>* Coils for 24, 48, 100, 200V are AC / DC common.</i></p>                                                                                                                                                    | AC 400V          | AC 380V~440V 50/60Hz                 |                |                                  |                |                                  |                 |                                      |  |
| AC 400V                                                                                       | AC 380V~440V 50/60Hz                 |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| MC-185a<br>MC-225a                                                                            | AL-225                               | <table><tr><th>Ordering voltage</th><th>Operation voltage</th></tr><tr><td>AC 100V</td><td>AC 100~127V 50/60Hz, DC 100~110V</td></tr><tr><td>AC 200V</td><td>AC 200~240V 50/60Hz, DC 200~220V</td></tr></table>                                                                          | Ordering voltage | Operation voltage                    | AC 100V        | AC 100~127V 50/60Hz, DC 100~110V | AC 200V        | AC 200~240V 50/60Hz, DC 200~220V |                 |                                      |  |
| Ordering voltage                                                                              | Operation voltage                    |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| AC 100V                                                                                       | AC 100~127V 50/60Hz, DC 100~110V     |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| AC 200V                                                                                       | AC 200~240V 50/60Hz, DC 200~220V     |                                                                                                                                                                                                                                                                                          |                  |                                      |                |                                  |                |                                  |                 |                                      |  |
| MC-265a<br>MC-330a<br>MC-400a                                                                 | AL-400                               | <p><i>* For using safely the product providing DC control power, Please consider that the maximum switching frequency should be less than 150 times/hour.</i></p>                                                                                                                        |                  |                                      |                |                                  |                |                                  |                 |                                      |  |

\* Coils for 24, 48, 100, 200V are AC / DC common.

\* For using safely the product providing DC control power, Please consider that the maximum switching frequency should be less than 150 times/hour.

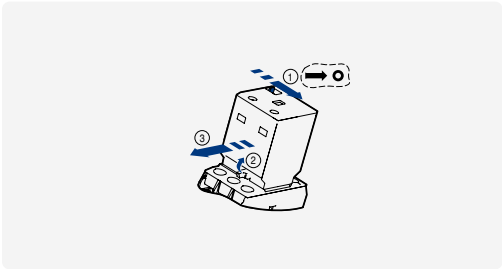
Note) Latch units for upto MC-150 are supplied seperately.  
ML-40 can also be attached to MR

To install



1. Push the black bar
2. Position the Latch on the top of the contactor
3. Pull in the direction of the arrow until snapping

To separate



1. Pull the black lever in the direction of the arrow.
2. Pull up the yellow lever.
3. Push the latch in the direction of the arrow.

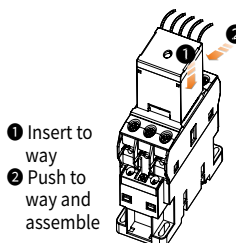
## Delayed opening devices, AD

Delayed opening device prevents the inadvertent opening of a contactor in the event of a wide voltage drop or brief supply voltage interruptions of control power for 1 to 7 seconds.



| Applying contactors | Type   | Rated voltage | MC Rated voltage | Durability       |                    | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|--------|---------------|------------------|------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |        |               |                  | Mechanical       | Electrical         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-6a~18a           | AD-9   | AC 110V       | DC 110V          | 5 mil operations | 1 mil operations   | <ul style="list-style-type: none"><li>• Making/Breaking capacity at AC3<ul style="list-style-type: none"><li>- Making current : min. 10xIn</li><li>- Breaking current : min. 8xIn</li></ul></li><li>• Max. operating rate : 600 operations/hour</li><li>• Delaying time : 1~7sec.</li><li>• Capacitor durability<ul style="list-style-type: none"><li>1) Operation : &gt; 0.1 mil. operations</li><li>2) Cumulative charge life at AC 200/220V<ul style="list-style-type: none"><li>- 45°C or less: 80,000 hours</li><li>- 50°C or less: 60,000 hours</li></ul></li></ul></li></ul> |
| MC-9b~22b           |        | AC 220V       | DC 220V          |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-32a~40a          | AD-32  | AC 110V       | DC 110V          |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     |        | AC 220V       | DC 220V          |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-50a~100a         | AD-50  | AC 110V       | DC 110V          |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     |        | AC 220V       | DC 220V          |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-130a~225a        | AD-100 | AC 100~240V   | AC/DC 100~240V   |                  | 0.5 mil operations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-265a~400a        | AD-300 | AC 100~240V   | AC/DC 100~240V   |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MC-500a~800a        | AD-600 | AC 100~127V   | AC/DC 100~127V   |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     |        | AC 200~240V   | AC/DC 200~240V   |                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

\* AD shall be used for DC type contactor



## Electronic timer unit, UT

| Applying contactors               |           | Type  | Rated voltage | Performance                                                                                                                                                                                                                                                                   |
|-----------------------------------|-----------|-------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MC-6a~150a<br>MC-9b~22b<br>MR-4~8 | On delay  | UT-1N | AC/DC 24~48V  | <ul style="list-style-type: none"> <li>Mounting: Head on</li> <li>Contact: 1c</li> <li>Time delay: 1 Sec~30 Sec On delay, Off delay</li> <li>Frequency: AC 50/60Hz</li> <li>Operation: Min. voltage 85%, Max. voltage 110%</li> <li>Accuracy of setting time: ±20%</li> </ul> |
|                                   |           | UT-2N | AC 110~220V   |                                                                                                                                                                                                                                                                               |
|                                   | Off delay | UT-1F | AC/DC 24~48V  |                                                                                                                                                                                                                                                                               |
|                                   |           | UT-2F | AC 110~220V   |                                                                                                                                                                                                                                                                               |

## Terminal cover units for contactors, AP

| Applying contactors       | Type     |          |             |        | Remarks                      |
|---------------------------|----------|----------|-------------|--------|------------------------------|
|                           | Standard |          | Transparent |        |                              |
| MC-6a,9a,12a,18a (18AF)   | AP-18    | Included | AP/T-6      | Option | 2 pcs required per contactor |
| MC-9b,12b,18b,22b (22AF)  | AP-22    |          | AP/T-9      |        |                              |
| MC-32a,40a (40AF)         | AP-40    |          | AP/T-32     |        |                              |
| MC-50,65a (65AF)          | AP-65    |          | AP/T-50     |        |                              |
| MC-75a,85a,100a (100AF)   | AP-100   |          | AP/T-75     |        |                              |
| MC-130a,150a (150AF)      | AP-150   |          | AP/T-130    |        |                              |
| MC-185a,225a (225AF)      | AP-220   | Option   | AP/T-185    |        |                              |
| MC-265a,330a,400a (400AF) | AP-400   |          | AP/T-265    |        |                              |
| MC-500a,630a,800 (800AF)  | AP-800   |          | AP/T-500    |        |                              |

## Insulation barrier units, AI

| Applying contactors            | Type    | Remarks                      |
|--------------------------------|---------|------------------------------|
| MC-130a, 150a                  | AI-180  | 4 pcs required per contactor |
| MC-185a, 225a                  |         |                              |
| MC-265a, 330a, 400a            |         |                              |
| MC-500a, 630a, 800a, 1260a     | AI-800  |                              |
| MC-1400a, 1700a, 2100a         | AI-2100 |                              |
| MC-2650a, MCI-1700, 2100, 2650 | AI-2650 |                              |
| MCI-900, 1050, 1260            | AI-1260 |                              |

\* The insulation barrier for MC-150a is available on the screw type only.





## Interlocks

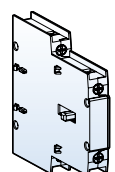
Component parts for assembling by customer

### Interlock unit, UR-02 and AR-9 & Wire kit UW

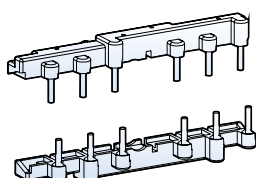
UR-02 is a mechanical interlock unit and provides 2NC contacts for use in electrical interlocking

UW is used for making reversing circuit between two contactors.

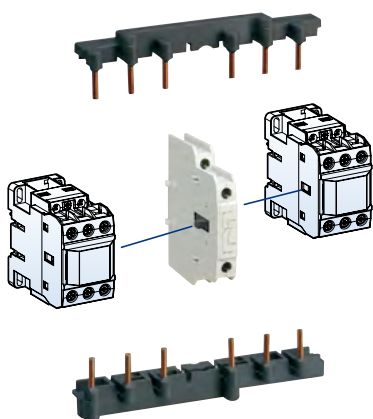
| Contactor    | Pole | Wire kit |        | Interlock unit |        | Aux Contact |
|--------------|------|----------|--------|----------------|--------|-------------|
|              |      | Type     | Weight | Type           | Weight |             |
| MC-6a~18a    | 3P   | UW-18    | 0.05kg | UR-02          | 0.06kg | 2NC         |
|              | 4P   | -        | -      |                |        | -           |
| MC-9b~22b    | 3P   | UW-22    | 0.04kg |                |        | -           |
| MC-32a~40a   |      | UW-32    | 0.05kg |                |        | -           |
| MC-50a, 65a  |      | UW-63    | 0.12kg |                |        | -           |
| MC-75a~100a  |      | UW-95    | 0.33kg |                |        | -           |
| MC-130a~150a |      | UW-150   | 0.6kg  |                |        | -           |
| MC-22a~85a   | 4P   | -        | -      | AR-9           | 0.05kg | -           |



Interlock unit



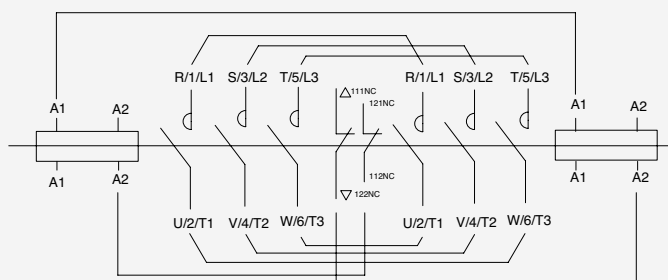
Wire kit



### Rating of the contacts in the interlocks

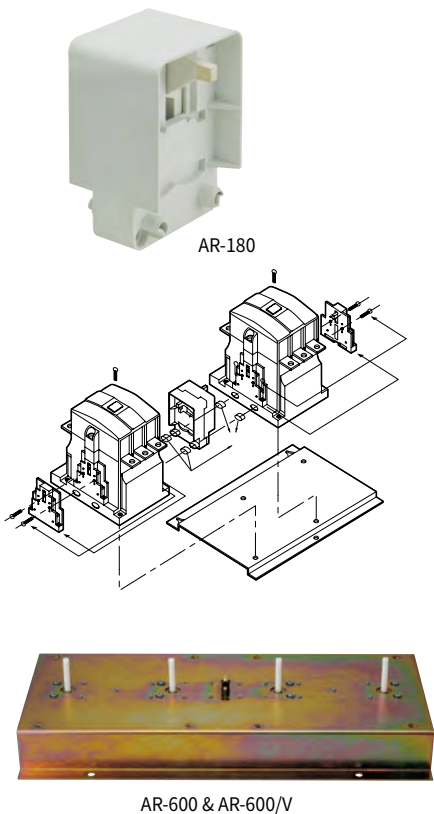
|                          |                  |                  |
|--------------------------|------------------|------------------|
| Rated operation voltage  |                  | 600V             |
| Rated insulation voltage |                  | 1000V            |
| Rated frequency          |                  | 50/60Hz          |
| Rated thermal current    |                  | 16A              |
| Rated operation current  | AC15 duty (A600) | 120V             |
|                          |                  | 240V             |
|                          |                  | 380V             |
|                          |                  | 480V             |
|                          |                  | 500V             |
|                          |                  | 600V             |
|                          |                  | DC13 duty (Q300) |
|                          | 125V             | 0.55A            |
|                          |                  | 250V             |
|                          |                  | 0.27A            |

### MC-6aR ~ MC-150aR typical circuit diagram for reversing contactor



Interlock unit, AR-180 and AR-600

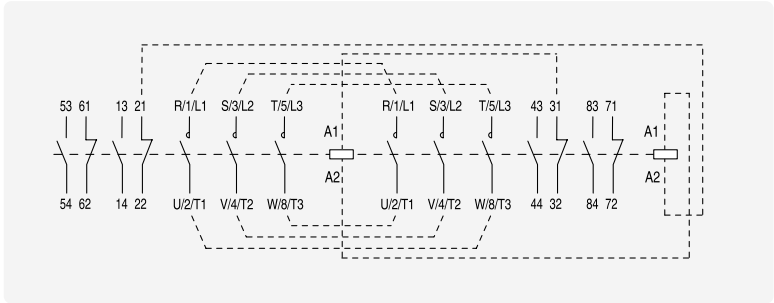
AR-180 and AR-600 are mechanical interlock units in which electrical contacts for use in electrical interlocking are not included. Please use the auxiliary contacts on the sides of the contactors for that purpose.



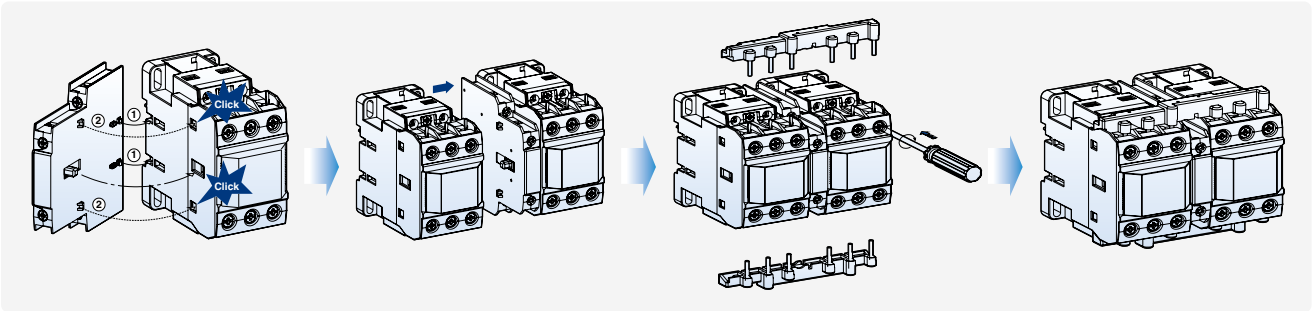
| Contactor | Pole | Interlock unit     |        |
|-----------|------|--------------------|--------|
|           |      | Type               | Weight |
| MC-100a   | 4P   | AR-180             | 0.09kg |
| MC-130a   |      |                    |        |
| MC-150a   |      |                    |        |
| MC-185a   |      |                    |        |
| MC-225a   | 3,4P |                    |        |
| MC-265a   |      |                    |        |
| MC-330a   |      |                    |        |
| MC-400a   |      |                    |        |
| MC-500a   | 3,4P | AR-600<br>AR-600/V | 15.2kg |
| MC-630a   |      |                    |        |
| MC-800a   |      |                    |        |

\* AR-600 3pole product is different fro, AR-600 4pole product in size.  
\* The AR-600 / Vis a vertical interlock unit.

MC-180aR ~ MC-800aR typical circuit diagram for reversing contactor



Installation of interlock and wire kits



Install the interlock unit on the side of a contactor first. fit each part as indicated in the fig.

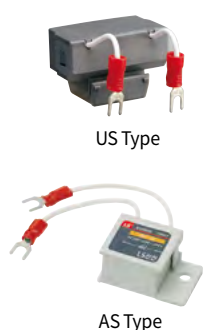
And then install the other contactor on the other side of the interlock unit as shown.

After installing interlock unit wiring kit can be assembled. Wiring kit contains two molded wires - one for line side and the other for load side.  
- In case of assembling Reversing contactor, please check the R, S, T/U, V, W mark on the contactor and Wire kit.

## Surge unit

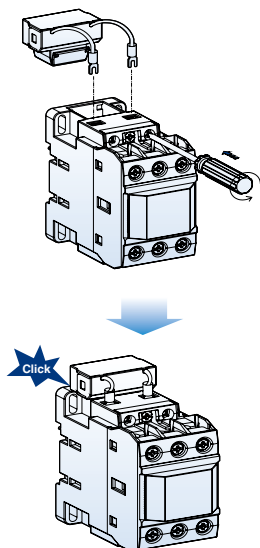
- It absorbs the surge arisen out of the coil of the contactor.
- It can be installed simply to the contactor.
  - Rated operation voltage (Ue): AC 24 ~ 440V / DC 24 ~ 125V
  - Rated insulation voltage (Ui): 1000V
  - Rated impulse withstand voltage (Uimp): 8kV
  - Degree of protection: IP20
  - Combination with 3Pole 6a/3~150a/3, 4Pole 32a/4~85a/4

### US Type



| Surge unit |             | Rated voltage   |          | Internal elements spec. |      |        | Contactor                                               |
|------------|-------------|-----------------|----------|-------------------------|------|--------|---------------------------------------------------------|
| Type       | Composition |                 |          | V                       | R    | C      |                                                         |
| US-1       | Varistor+RC | AC              | 24~48V   | 120V                    | 100Ω | 0.1μF  | 3Pole MC<br>6a~150a<br>9b~22b<br>4Pole MC<br>6a/4~18a/4 |
| US-2       | Varistor+RC |                 | 100~125V | 270V                    | 100Ω | 0.1μF  |                                                         |
| US-3       | Varistor+RC |                 | 200~240V | 470V                    | 100Ω | 0.1μF  |                                                         |
| US-4       | Varistor+RC | DC              | 24~48V   | 120V                    | 100Ω | 0.47μF |                                                         |
| US-5       | Varistor+RC |                 | 100~125V | 270V                    | 100Ω | 0.47μF |                                                         |
| US-6       | Varistor+RC |                 | 200~220V | 470V                    | 100Ω | 0.47μF |                                                         |
| US-11      | Varistor    | AC/DC<br>Common | 24~48V   | 120V                    | -    | -      |                                                         |
| US-12      | Varistor    |                 | 100~125V | 270V                    | -    | -      |                                                         |
| US-13      | Varistor    |                 | 200~240V | 470V                    | -    | -      |                                                         |
| US-14      | Varistor    |                 | 380~440V | 1000V                   | -    | -      |                                                         |
| US-22      | RC          | AC              | 100~125V | -                       | 56Ω  | 1μF    |                                                         |

### Installation (US Type)

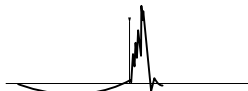
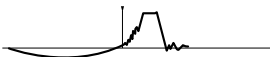
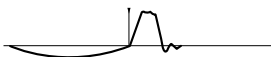


Connect the lead wires to the coil terminals of the contactor first. And then insert the body into the space of the contactor as shown above.

### AS Type

| Surge unit |             | Rated voltage   |          | Internal elements spec. |      |        | Contactor                                         |
|------------|-------------|-----------------|----------|-------------------------|------|--------|---------------------------------------------------|
| Type       | Composition |                 |          | V                       | R    | C      |                                                   |
| AS-1       | Varistor+RC | AC              | 24~48V   | 120V                    | 100Ω | 0.1μF  | 3Pole MC<br>185a~800a<br>4Pole MC<br>22a/4~800a/4 |
| AS-2       | Varistor+RC |                 | 100~125V | 270V                    | 100Ω | 0.1μF  |                                                   |
| AS-3       | Varistor+RC |                 | 200~240V | 470V                    | 100Ω | 0.1μF  |                                                   |
| AS-4       | Varistor+RC | DC              | 24~48V   | 120V                    | 100Ω | 0.47μF |                                                   |
| AS-5       | Varistor+RC |                 | 100~125V | 270V                    | 100Ω | 0.47μF |                                                   |
| AS-6       | Varistor+RC |                 | 200~220V | 470V                    | 100Ω | 0.47μF |                                                   |
| AS-11      | Varistor    | AC/DC<br>Common | 24~48V   | 120V                    | -    | -      |                                                   |
| AS-12      | Varistor    |                 | 100~125V | 270V                    | -    | -      |                                                   |
| AS-13      | Varistor    |                 | 200~240V | 470V                    | -    | -      |                                                   |
| AS-14      | Varistor    |                 | 380~440V | 1000V                   | -    | -      |                                                   |

### Specitication of surge unit

| Without surge unit                                                                              | ① With varistor unit                                                                 | ② With CR+Varistor unit                                                               |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Surge voltage, arise when the coil is off, may provoke mis-operation and damage in the circuit. | Varistor has an effect to cut down the peak voltage                                  | Varistor has an effect to cut down the peak voltage and high frequency wave           |
|              |  |  |

## Capacitor unit

Capacitor unit is connected to the terminals of the contactor to reduce the high inrush current.  
IEC 60947-5-1

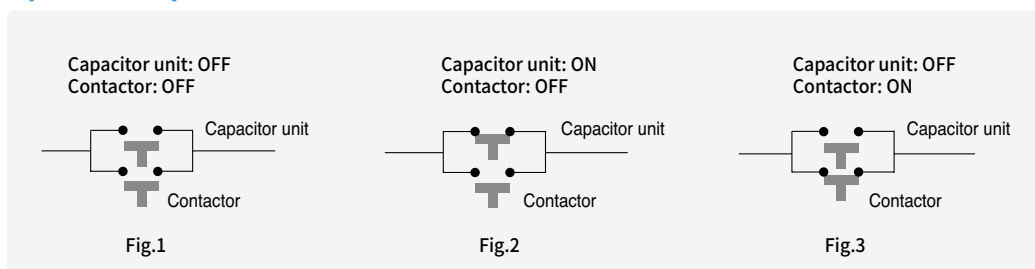


| Type (AUX Contact 1b)        |       |                                        |      | AC-9 (1b) | AC-50 (1b) | AC-75 (1b) |
|------------------------------|-------|----------------------------------------|------|-----------|------------|------------|
| Rating thermal current (Ith) |       |                                        |      | 16A       | 16A        | 16A        |
| Current                      | AC-15 | Rated<br>Operational<br>Current<br>(A) | 120V | 6         | 6          | 6          |
|                              |       |                                        | 240V | 3         | 3          | 3          |
|                              |       |                                        | 380V | 1.9       | 1.9        | 1.9        |
|                              |       |                                        | 480V | 1.5       | 1.5        | 1.5        |
|                              |       |                                        | 500V | 1.4       | 1.4        | 1.4        |
|                              |       |                                        | 600V | 1.2       | 1.2        | 1.2        |
|                              | DC-13 | Rated<br>Operational<br>Current<br>(A) | 125V | 0.55      | 0.55       | 0.55       |
|                              |       |                                        | 250V | 0.27      | 0.27       | 0.27       |
|                              |       |                                        | 400V | 0.15      | 0.15       | 0.15       |
|                              |       |                                        | 500V | 0.13      | 0.13       | 0.13       |
|                              |       |                                        | 600V | 0.1       | 0.1        | 0.1        |

### Features of capacitor unit (Pre-loading resistor)

- Damping resistor that can limit the inrush current upto  $60 \times I_n$  is connected to the mechanism that closed earlier than the main contact of the contactor
- No heat loss by the serial resistor
- Eliminate the switching surge
- Improving the performance of the capacitor system

### Operation sequence



Note) Closing sequence: Fig.1 => Fig.2 => Fig.3  
Opening sequence: Fig.3 => Fig.1

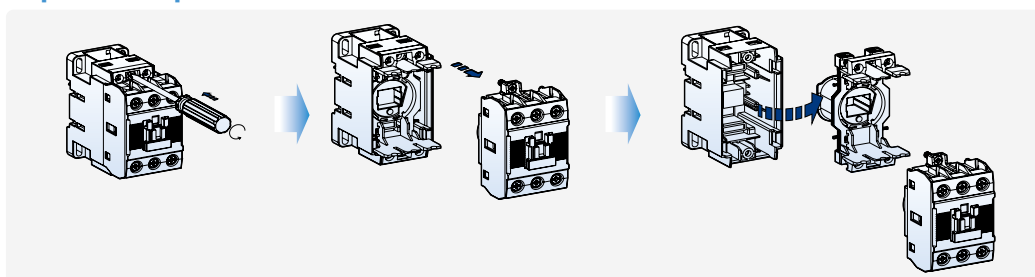
## Replacement coils

To replace the existing coil to change voltage or repair.



| Contactor                                        | Coil voltage |     |             |         |                |     |                                                             |
|--------------------------------------------------|--------------|-----|-------------|---------|----------------|-----|-------------------------------------------------------------|
|                                                  | AC coil      |     |             |         |                |     | DC coil                                                     |
|                                                  | AC 60Hz (V)  |     | AC 50Hz (V) |         | AC 50/60Hz (V) |     | DC (V)                                                      |
| MC-6a<br>MC-9a<br>MC-12a<br>MC-18a<br>MR-4, 6, 8 | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
|                                                  | 100          | 277 | 42          | 380     | 100            | 415 |                                                             |
|                                                  | 110          | 380 | 48          | 400     | 110            | 440 |                                                             |
|                                                  | 120          | 440 | 80          | 415     | 120            | 500 |                                                             |
|                                                  | 200          | 480 | 100         | 440     | 200            | 550 |                                                             |
|                                                  | 208          | 600 | 110         | 500     | 220            |     |                                                             |
| MC-9b<br>MC-12b<br>MC-18b<br>MC-22b              | 220          |     | 220         | 550     | 230            |     |                                                             |
|                                                  | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
|                                                  | 100          | 277 | 42          | 380     | 100            | 415 |                                                             |
|                                                  | 110          | 380 | 48          | 400     | 110            | 440 |                                                             |
|                                                  | 120          | 440 | 80          | 415     | 120            | 500 |                                                             |
|                                                  | 200          | 480 | 100         | 440     | 200            | 550 |                                                             |
| MC-32a<br>MC-40a                                 | 208          | 600 | 110         | 500     | 220            |     | 12 110<br>20 125<br>24 200<br>48 220<br>60 250              |
|                                                  | 220          |     | 220         | 550     | 230            |     |                                                             |
|                                                  | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
|                                                  | 100          | 277 | 42          | 380     | 100            | 415 |                                                             |
|                                                  | 110          | 380 | 48          | 400     | 110            | 440 |                                                             |
|                                                  | 120          | 440 | 80          | 415     | 120            | 500 |                                                             |
| MC-50a<br>MC-65a                                 | 200          | 480 | 100         | 440     | 200            | 550 | 80<br>100                                                   |
|                                                  | 208          | 600 | 110         | 500     | 220            |     |                                                             |
|                                                  | 220          |     | 220         | 550     | 230            |     |                                                             |
|                                                  | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
|                                                  | 100          | 277 | 42          | 380     | 100            | 415 |                                                             |
|                                                  | 110          | 380 | 48          | 400     | 110            | 440 |                                                             |
| MC-75a<br>MC-85a<br>MC-100a                      | 120          | 440 | 80          | 415     | 120            | 500 | 60 250<br>80<br>100                                         |
|                                                  | 200          | 480 | 100         | 440     | 200            | 550 |                                                             |
|                                                  | 208          | 600 | 110         | 500     | 220            |     |                                                             |
|                                                  | 220          |     | 220         | 550     | 230            |     |                                                             |
|                                                  | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
|                                                  | 100          | 277 | 42          | 380     | 100            | 415 |                                                             |
| MC-130a<br>MC-150a                               | 110          | 380 | 48          | 400     | 110            | 440 | 12 110<br>20 125<br>24 200<br>48 220<br>60 250<br>80<br>100 |
|                                                  | 120          | 440 | 80          | 415     | 120            | 500 |                                                             |
|                                                  | 200          | 480 | 100         | 440     | 200            | 550 |                                                             |
|                                                  | 208          | 600 | 110         | 500     | 220            |     |                                                             |
|                                                  | 220          |     | 220         | 550     | 230            |     |                                                             |
|                                                  | 24           | 230 | 24          | 230     | 24             | 240 |                                                             |
|                                                  | 48           | 240 | 36          | 240     | 48             | 380 |                                                             |
| MC-130a<br>MC-150a                               | 100~240      | 500 | 70~110      | 100~220 |                |     | 24 110<br>48 220<br>24~48<br>380~440<br>500                 |
|                                                  | 110~120      |     |             |         |                |     |                                                             |
|                                                  |              |     |             |         |                |     |                                                             |
|                                                  |              |     |             |         |                |     |                                                             |
|                                                  |              |     |             |         |                |     |                                                             |

## Replacement process





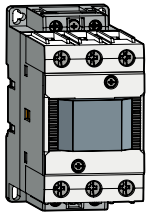
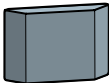
To replace the existing coil to change voltage or repair.

| Contactor                                                                        | Coil voltage                |                   |
|----------------------------------------------------------------------------------|-----------------------------|-------------------|
|                                                                                  | AC/DC common coil (V)       | AC coil (V)       |
| MC-185a<br>MC-225a                                                               | 24<br>48<br>100~240/100~220 | 300<br>400<br>500 |
| MC-265a<br>MC-300a<br>MC-400a                                                    | DC 24<br>100~240/100~220    | 300<br>400<br>500 |
| MC-500a<br>MC-630a<br>MC-800a<br>MCI-900<br>MCI-1050                             | 100/100<br>200/200          | 300<br>400<br>500 |
| MC-1260<br>MCI-1260                                                              | 100~240/100~220             | -                 |
| MC-1400a<br>MC-1700a<br>MC-2100a<br>MC-2650a<br>MCI-1700<br>MCI-2100<br>MCI-2650 | 100~240/100~220             | -                 |

Safety cover (Option)

To prevent arc from coming out from the contactor To protect from unintended manual operation To prevent dust from entering into the inside of the contactor

| Type   | Contactor    |
|--------|--------------|
| AP-9   | MC-6a~150a   |
| AP-185 | MC-185a~800a |



# Overload relays

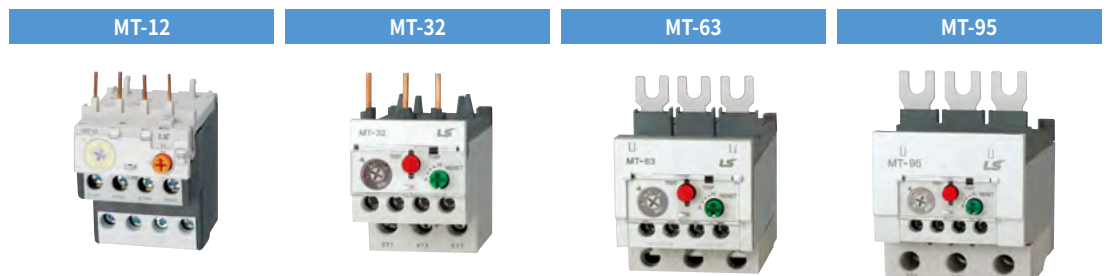
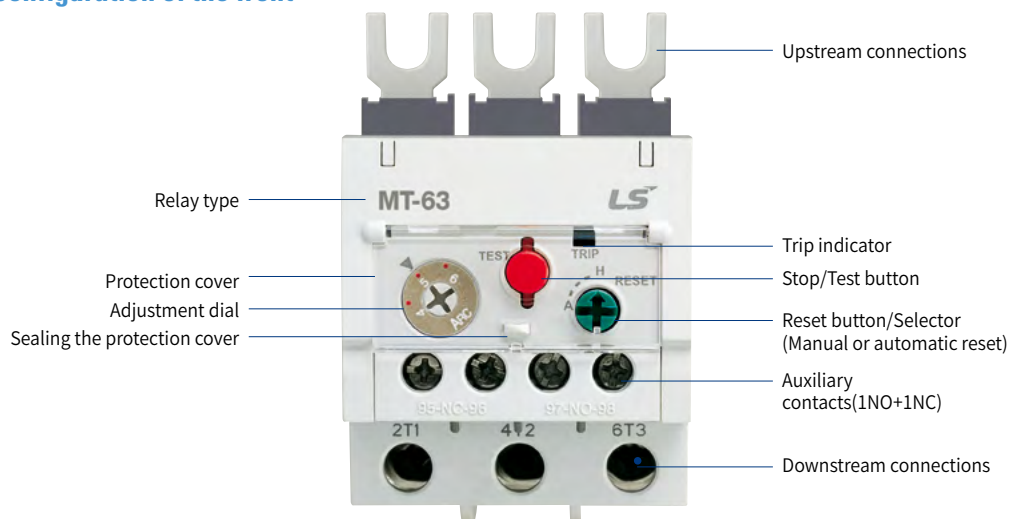
## General descriptions

Type MT, bimetal-style, overload relays are designed to protect AC circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

Four versions are available according to the protection function and trip class as below.

1. Non-differential: 3pole-2bimetal(Heater) and trip class 10A
2. Non-differential: 3pole-3bimetal(Heater) and trip class 10A
3. Differential: 3pole-3bimetal(Heater) and trip class 10A
4. Differential: 3pole-3bimetal(Heater) and trip class 20

### Configuration of the front



### Environment and auxiliary circuit

| Environment                                               |                  | MT-12~800                        |
|-----------------------------------------------------------|------------------|----------------------------------|
| Standards                                                 |                  | IEC/EN 60947-1, IEC/EN 60947-4-1 |
| Certifications                                            |                  | CE, CSA, UL, CCC                 |
| Rated operation voltage                                   |                  | Max. 690V                        |
| Rated insulation voltage                                  |                  | 690V                             |
| Rated frequency                                           |                  | 50/60Hz                          |
| Degree of protection (Conforming to IEC 60 529)           |                  | IP 20                            |
| Ambient air temperature                                   | Storage          | -30 ~ +65°C                      |
|                                                           | Operation        | -25 ~ +60°C (MT refer to Graph)  |
| Mounting position                                         |                  | Vertical plane                   |
| Shock resistance (Conforming to IEC 68-2-7)               |                  | 15gn - 11ms                      |
| Vibration resistance (Conforming to IEC68-2-6)            |                  | 6G                               |
| Insulation strength (Conforming to IEC 255-5)             |                  | 6kV                              |
| Rated impulse withstand voltage (Conforming to IEC 801-5) |                  | 6kV                              |
| Auxiliary contacts characteristics                        |                  |                                  |
| Composition                                               |                  | 1NO +1NC                         |
| Rated thermal current                                     |                  | 5A                               |
| Rated operation current                                   |                  | C600, R300                       |
|                                                           | AC15 duty (C600) | 120V 1.5A                        |
|                                                           |                  | 240V 0.75A                       |
|                                                           |                  | 380V 0.47A                       |
|                                                           |                  | 480V 0.375A                      |
|                                                           |                  | 500V 0.35A                       |
|                                                           |                  | 600V 0.3A                        |
|                                                           | DC13 duty (R300) | 120V 0.22A                       |
|                                                           |                  | 240V 0.1A                        |
| Connecting conductor                                      | Size             | 18AWG /1mm <sup>2</sup>          |
|                                                           | Type             | 65/75°C Cu-wire                  |

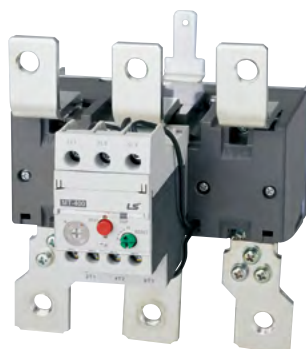
MT-150



MT-225



MT-400



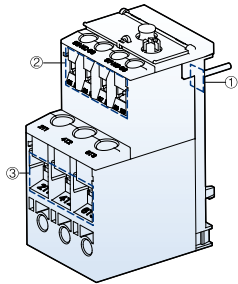
MT-800





# Overload relay specifications

## MT type Thermal overload relays



- ① Main terminals/upstream
- ② Auxiliary terminals
- ③ Main terminals/downstream

| Frame size                        |                                |       | 18AF                |            |  |
|-----------------------------------|--------------------------------|-------|---------------------|------------|--|
| Trip class                        |                                |       | 10A                 | 20         |  |
| Type                              | Non-differential (3P-2 heater) |       | MT-12/2H□S          | -          |  |
|                                   | Non-differential (3P-3 heater) |       | MT-12/3H□S          | -          |  |
|                                   | Differential type              |       | MT-12/3K□S          | MT-12/3D□S |  |
| Terminals                         | Main-upstream                  |       | Screw clamp         |            |  |
|                                   | Main-downstream                |       | Screw clamp         |            |  |
|                                   | Auxiliary                      |       | Screw clamp         |            |  |
| Number of poles                   |                                |       | 3                   |            |  |
| Rated operational voltage (Ue)    |                                |       | 690V                |            |  |
| Rated insulation voltage (Ui)     |                                |       | Up to 690V          |            |  |
| Rated impulse voltage (Uimp)      |                                |       | 6kV                 |            |  |
| Degree of protection (IEC 60 529) |                                |       | IP 20               |            |  |
| Temperature compensation (°C)     |                                |       | -5~+40°C            |            |  |
| Functions                         | Trip indicating                |       | ■                   |            |  |
|                                   | Stop                           |       | -                   |            |  |
|                                   | Test                           |       | ■                   |            |  |
|                                   | Manual/Automatic reset         |       | ■                   |            |  |
| Setting range(A)                  |                                |       | 0.1~18A             | 1~18A      |  |
| Nominal current rating            | Wire size                      |       |                     |            |  |
|                                   | mm²                            | AWG   |                     |            |  |
| 0.14                              | 1                              | 18    | 0.1~0.16            |            |  |
| 0.21                              |                                |       | 0.16~0.25           |            |  |
| 0.33                              |                                |       | 0.25~0.4            |            |  |
| 0.52                              |                                |       | 0.4~0.63            |            |  |
| 0.82                              |                                |       | 0.63~1              |            |  |
| 1.3                               |                                |       | 1~1.6               | 1~1.6      |  |
| 2.1                               |                                |       | 1.6~2.5             | 1.6~2.5    |  |
| 3.3                               |                                |       | 2.5~4               | 2.5~4      |  |
| 5                                 |                                |       | 4~6                 | 4~6        |  |
| 6.5                               |                                |       | 5~8                 | 5~8        |  |
| 7.5                               | 1~1.5                          | 18~16 | 6~9                 | 6~9        |  |
| 8.5                               |                                |       | 7~10                | 7~10       |  |
| 11                                | 1.5~2.5                        | 16~14 | 9~13                | 9~13       |  |
| 15                                | 2.5                            | 14~12 | 12~18               | 12~18      |  |
| 19                                | 2.5~4                          | 12~10 |                     |            |  |
| 21.5                              |                                |       |                     |            |  |
| 27                                | 4~6                            | 10    |                     |            |  |
| 30                                | 4~10                           | 10~8  |                     |            |  |
| 34                                | 6~10                           | 10~8  |                     |            |  |
| 42                                | 10                             | 8     |                     |            |  |
| 54                                |                                |       |                     |            |  |
| 65                                | 16~25                          | 6~4   |                     |            |  |
| 74                                |                                |       |                     |            |  |
| 83                                | 25~35                          | 4~3   |                     |            |  |
| 90                                |                                |       |                     |            |  |
| Applied contactors                |                                |       | MC-6a, 9a, 12a, 18a |            |  |
| Separate mounting unit            |                                |       | UZ-12               |            |  |

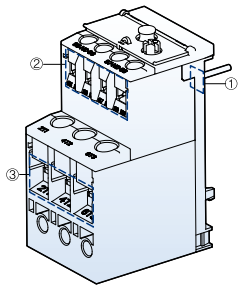
Note: Screw clamp and Lug types are available for the main terminals of 65AF, 100AF and 150AF relays.  
The other AF relays provide Screw clamp types only.



|  | 40AF                           |            | 65AF            |              | 100AF             |              |
|--|--------------------------------|------------|-----------------|--------------|-------------------|--------------|
|  | 10A                            | 20         | 10A             | 20           | 10A               | 20           |
|  | MT-32/2H□S                     | -          | MT-63/2H□S/L    | -            | MT-95/2H□S/L      | -            |
|  | MT-32/3H□S                     | -          | MT-63/3H□S/L    | -            | MT-95/3H□S/L      | -            |
|  | MT-32/3K□S                     | MT-32/3D□S | MT-63/3K□S/L    | MT-63/3D□S/L | MT-95/3K□S/L      | MT-95/3D□S/L |
|  | Screw clamp                    |            | Screw/Lug clamp |              | Screw/Lug clamp   |              |
|  | Screw clamp                    |            | Screw/Lug clamp |              | Screw/Lug clamp   |              |
|  | Screw clamp                    |            | Screw clamp     |              | Screw clamp       |              |
|  | 3                              |            | 3               |              | 3                 |              |
|  | 690V                           |            | 690V            |              | 690V              |              |
|  | Up to 690V                     |            | Up to 690V      |              | Up to 690V        |              |
|  | 6kV                            |            | 6kV             |              | 6kV               |              |
|  | IP 20                          |            | IP 20           |              | IP 20             |              |
|  | -5~+40°C                       |            | -5~+40°C        |              | -5~+40°C          |              |
|  | ■                              |            | ■               |              | ■                 |              |
|  | ■                              |            | ■               |              | ■                 |              |
|  | ■                              |            | ■               |              | ■                 |              |
|  | ■                              |            | ■               |              | ■                 |              |
|  | 0.1~40A                        | 1~40A      | 4~65A           |              | 7~100A            |              |
|  |                                |            |                 |              |                   |              |
|  | 0.1~0.16                       |            |                 |              |                   |              |
|  | 0.16~0.25                      |            |                 |              |                   |              |
|  | 0.25~0.4                       |            |                 |              |                   |              |
|  | 0.4~0.63                       |            |                 |              |                   |              |
|  | 0.63~1                         |            |                 |              |                   |              |
|  | 1~1.6                          | 1~1.6      |                 |              |                   |              |
|  | 1.6~2.5                        | 1.6~2.5    |                 |              |                   |              |
|  | 2.5~4                          | 2.5~4      |                 |              |                   |              |
|  | 4~6                            | 4~6        | 4~6             | 4~6          |                   |              |
|  | 5~8                            | 5~8        | 5~8             | 5~8          |                   |              |
|  | 6~9                            | 6~9        | 6~9             | 6~9          |                   |              |
|  | 7~10                           | 7~10       | 7~10            | 7~10         | 7~10              | 7~10         |
|  | 9~13                           | 9~13       | 9~13            | 9~13         | 9~13              | 9~13         |
|  | 12~18                          | 12~18      | 12~18           | 12~18        | 12~18             | 12~18        |
|  | 16~22                          | 16~22      | 16~22           | 16~22        | 16~22             | 16~22        |
|  | 18~25                          | 18~25      | 18~25           | 18~25        | 18~25             | 18~25        |
|  | 22~32                          | 22~32      | -               | -            | -                 | -            |
|  | -                              | -          | 24~36           | 24~36        | 24~36             | 24~36        |
|  | 28~40                          | 28~40      | 28~40           | 28~40        | 28~40             | 28~40        |
|  |                                |            | 34~50           | 34~50        | 34~50             | 34~50        |
|  |                                |            | 45~65           | 45~65        | 45~65             | 45~65        |
|  |                                |            |                 |              | 54~75             | 54~75        |
|  |                                |            |                 |              | 63~85             | 63~85        |
|  |                                |            |                 |              | 70~95             | 70~95        |
|  |                                |            |                 |              | 80~100            | 80~100       |
|  | MC-9b, 12b, 18b, 22b, 32a, 40a |            | MC-50a, 65a     |              | MC-75a, 85a, 100a |              |
|  | UZ-32                          |            | UZ-63S/L        |              | UZ-95S/L          |              |

# Overload relay specifications

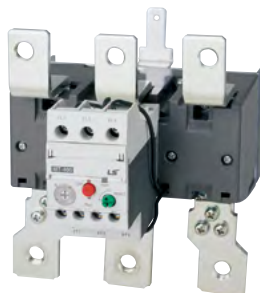
## MT type Thermal overload relays



- ① Main terminals/upstream
- ② Auxiliary terminals
- ③ Main terminals/downstream

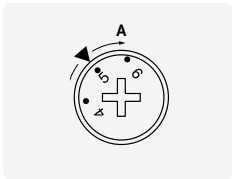
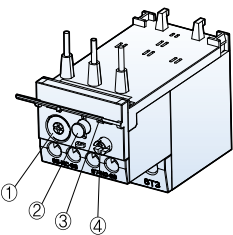
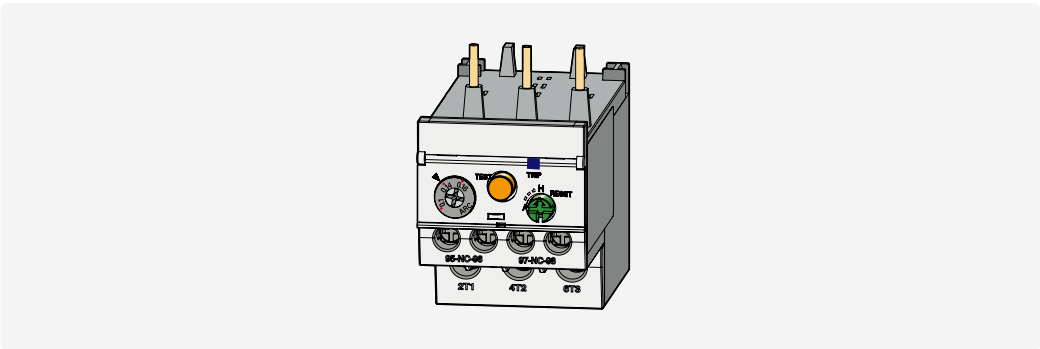
| Frame size                        |                                |        | 150AF           |               |  |
|-----------------------------------|--------------------------------|--------|-----------------|---------------|--|
| Trip class                        |                                |        | 10A             | 20            |  |
| Type                              | Non-differential (3P-2 heater) |        | MT-150/2H□S/L   | -             |  |
|                                   | Non-differential (3P-3 heater) |        | MT-150/3H□S/L   | -             |  |
|                                   | Differential type              |        | MT-150/3K□S/L   | MT-150/3D□S/L |  |
| Terminals                         | Main-upstream                  |        | Screw/Lug clamp |               |  |
|                                   | Main-downstream                |        | Screw/Lug clamp |               |  |
|                                   | Auxiliary                      |        | Screw clamp     |               |  |
| Number of poles                   |                                |        | 3               |               |  |
| Rated operational voltage (Ue)    |                                |        | 690V            |               |  |
| Rated insulation voltage (Ui)     |                                |        | 690V            |               |  |
| Rated impulse voltage (Uimp)      |                                |        | 6kV             |               |  |
| Degree of protection (IEC 60 529) |                                |        | IP 20           |               |  |
| Temperature compensation (°C)     |                                |        | -5~+40°C        |               |  |
| Functions                         | Trip indicating                |        | ■               |               |  |
|                                   | Stop                           |        | ■               |               |  |
|                                   | Test                           |        | ■               |               |  |
|                                   | Manual/Automatic reset         |        | ■               |               |  |
| Setting range(A)                  |                                |        | 34~150A         | 34~150A       |  |
| Nominal current rating            | Wire size                      |        |                 |               |  |
|                                   | mm²                            | AWG    |                 |               |  |
| 42                                | 10                             | 8      | 34~50           |               |  |
| 55                                | 16                             | 6      | 45~65           |               |  |
| 65                                | 25                             | 4      | 54~75           |               |  |
| 74                                | 25                             | 4      | 63~85           |               |  |
| 80                                | 35                             | 3      | -               |               |  |
| 93                                | 35                             | 2      | 80~105          |               |  |
| 107                               | 50                             | 1      | -               |               |  |
| 113                               | 50                             | 1      | 95~130          |               |  |
| 130                               | 50                             | 0      | 110~150         |               |  |
| 130                               | 70                             | 00     |                 |               |  |
| 153                               | 95                             | 000    |                 |               |  |
| 200                               | 120                            | 250    |                 |               |  |
| 265                               | 185                            | 350    |                 |               |  |
| 350                               | 240                            | 500    |                 |               |  |
| 515                               | 185×2n                         | 350×2n |                 |               |  |
| 660                               | 240×2n                         | 300×3n |                 |               |  |
| Applied contactors                |                                |        | MC-130a, 150a   |               |  |
| Separate mounting unit            |                                |        | UZ-150S/L       |               |  |

Note: Screw clamp and Lug types are available for the main terminals of 65AF, 100AF and 150AF relays.  
The other AF relays provide Screw clamp types only.



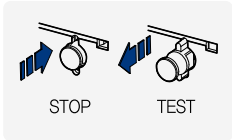
|  | 225AF         |             | 400AF               |             | 800AF               |               |
|--|---------------|-------------|---------------------|-------------|---------------------|---------------|
|  | 10A           | 20          | 10A                 | 20          | 10A                 | 20            |
|  | MT-225/2H□S   | -           | MT-400/2H□S         | -           | MT-800/2H□S/L       | -             |
|  | MT-225/3H□S   | -           | MT-400/3H□S         | -           | MT-800/3H□S/L       | -             |
|  | MT-225/3K□S   | MT-225/3D□S | MT-400/3K□S         | MT-400/3D□S | MT-800/3K□S/L       | MT-800/3D□S/L |
|  | Screw clamp   |             | Screw clamp         |             | Screw clamp         |               |
|  | Screw clamp   |             | Screw clamp         |             | Screw clamp         |               |
|  | Screw clamp   |             | Screw clamp         |             | Screw clamp         |               |
|  | 3             |             | 3                   |             | 3                   |               |
|  | 690V          |             | 690V                |             | 690V                |               |
|  | 690V          |             | 690V                |             | 690V                |               |
|  | 6kV           |             | 6kV                 |             | 6kV                 |               |
|  | IP 20         |             | IP 20               |             | IP 20               |               |
|  | -5~+40°C      |             | -5~+40°C            |             | -5~+40°C            |               |
|  | ■             |             | ■                   |             | ■                   |               |
|  | ■             |             | ■                   |             | ■                   |               |
|  | ■             |             | ■                   |             | ■                   |               |
|  | ■             |             | ■                   |             | ■                   |               |
|  | 65~240A       | 65~240A     | 85~400A             | 85~400A     | 200~800A            | 200~800A      |
|  |               |             |                     |             |                     |               |
|  |               |             |                     |             |                     |               |
|  |               |             |                     |             |                     |               |
|  |               |             |                     |             |                     |               |
|  | 65~100        |             |                     |             |                     |               |
|  | -             |             |                     |             |                     |               |
|  | 85~125        |             | 85~125              |             |                     |               |
|  | -             |             | -                   |             |                     |               |
|  | -             |             | -                   |             |                     |               |
|  | 100~160       |             | 100~160             |             |                     |               |
|  | 120~185       |             | 120~185             |             |                     |               |
|  | 160~240       |             | 160~240             |             |                     |               |
|  |               |             | 200~330             |             | 200~300             |               |
|  |               |             | 260~400             |             | 260~400             |               |
|  |               |             |                     |             | 400~600             |               |
|  |               |             |                     |             | 520~800             |               |
|  | MC-185a, 225a |             | MC-265a, 330a, 400a |             | MC-500a, 630a, 800a |               |
|  | -             |             | -                   |             | -                   |               |

# Overload relay operation



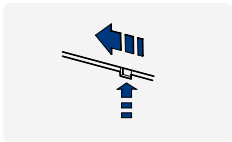
### 1. Adjustment dial

- Before adjusting the dial open the protection cover.
- Current setting can be done easily by using (+) or (-) driver and have to be set by dotting or graduations standard.
- Do not rotate the dial out of the setting range.



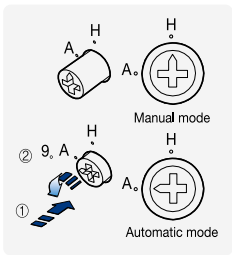
### 2. Stop/Test button

- STOP function is executed by pushing the button, which causes the next sequence.
- In case of operation test pull this button.



### 3.Trip indicator

- If relay is tripped it comes out.



### 4. Reset button/Selector

- Using a driver the reset mode can be set.
- In case of Manual mode(H) push the button to reset the relay.
- To change to Automatic mode(A) from Manual mode push the button and rotate as shown in the fig.

### 5. Auxiliary contact operation

| Terminal no. | Normal | Stop | Test/Trip | Reset |
|--------------|--------|------|-----------|-------|
| NC 95-96     |        |      |           |       |
| NO 97-98     |        |      |           |       |

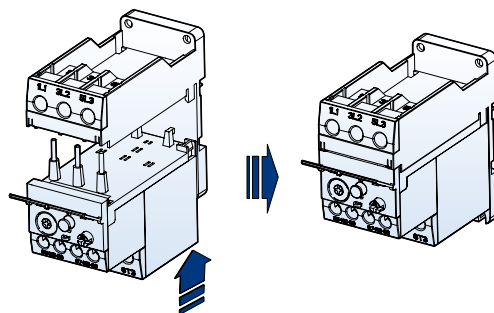
## Separate mounting units

These accessories are used to mount the relays separately from contactors.

If a relay is combined with a unit, it can be mounted on DIN rail or panel by fixing screws.



| Relay                                                | Unit      |        |
|------------------------------------------------------|-----------|--------|
|                                                      | Type      | Weight |
| MT-12/2H□<br>MT-12/3H□<br>MT-12/3K□<br>MT-12/3D□     | UZ-12     | 35g    |
| MT-32/2H□<br>MT-32/3H□<br>MT-32/3K□<br>MT-32/3D□     | UZ-32     | 68g    |
| MT-63/2H□<br>MT-63/3H□<br>MT-63/3K□<br>MT-63/3D□     | UZ-63S/L  | 134g   |
| MT-95/2H□<br>MT-95/3H□<br>MT-95/3K□<br>MT-95/3D□     | UZ-95S/L  | 230g   |
| MT-150/2H□<br>MT-150/3H□<br>MT-150/3K□<br>MT-150/3D□ | UZ-150S/L | 284g   |



## Terminal cover units for overload relays



| Relay  | Remarks |
|--------|---------|
| MT-225 | 2 pcs   |
| MT-400 |         |

# Accessories for overload relay

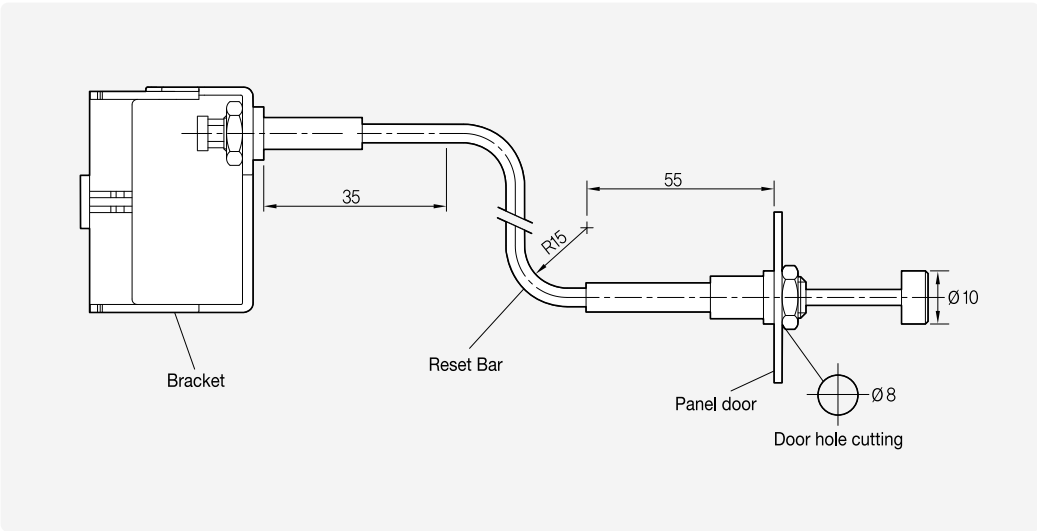
## Remote reset units



These accessories are used to reset the relays on the panel door.

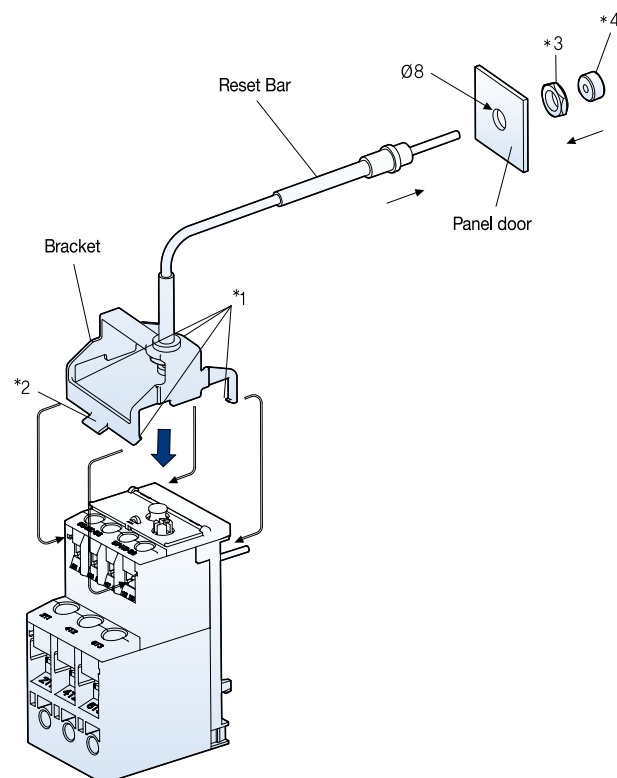
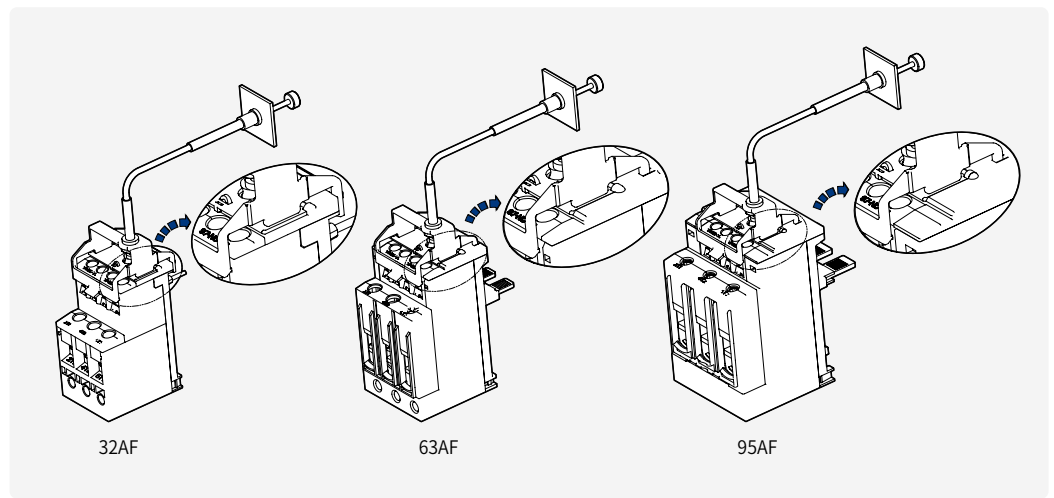
| Type  | Cable length (L) |
|-------|------------------|
| UM-4R | 400 mm           |
| UM-5R | 500 mm           |
| UM-6R | 600 mm           |
| UM-7R | 700 mm           |
| UM-9R | 900 mm           |

- 1. Make the reset bar straight at least 55mm from the panel door and 35mm from the bracket.
- 2. The bending radius of the flexible reset bar should not be less than 15mm.



### Installation

1. Fit the bracket with the relay as indicated(\*1) below.
2. Separate Nut(\*3) and Head cap(\*4) from the reset bar first.  
Insert the reset bar into the panel hole and then fix it with the Nut and Head.
3. To separate the bracket from the relay lift the \*2 part as shown in the fig.

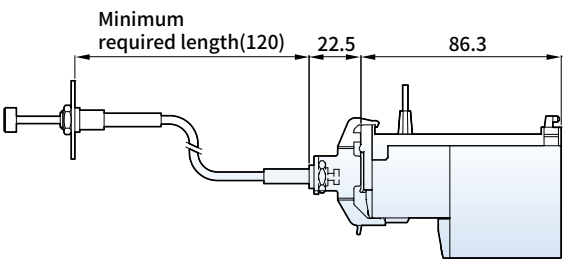




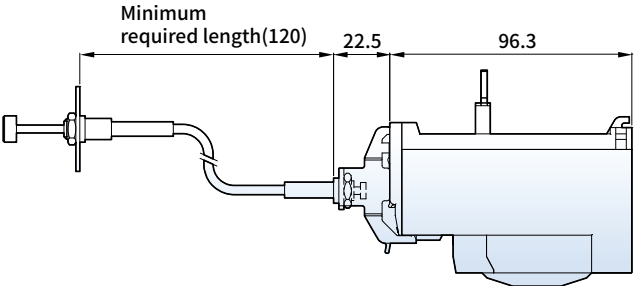
# Accessories for overload relay

## Remote reset units

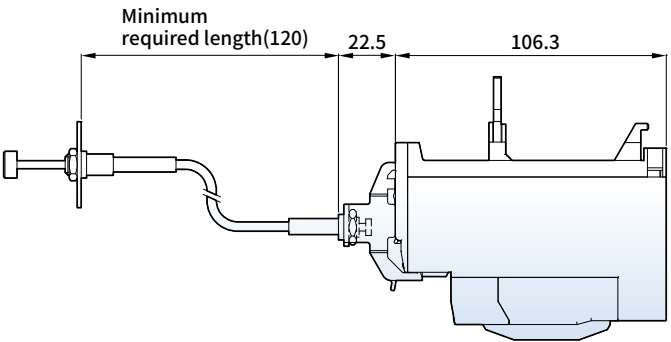
MT-32



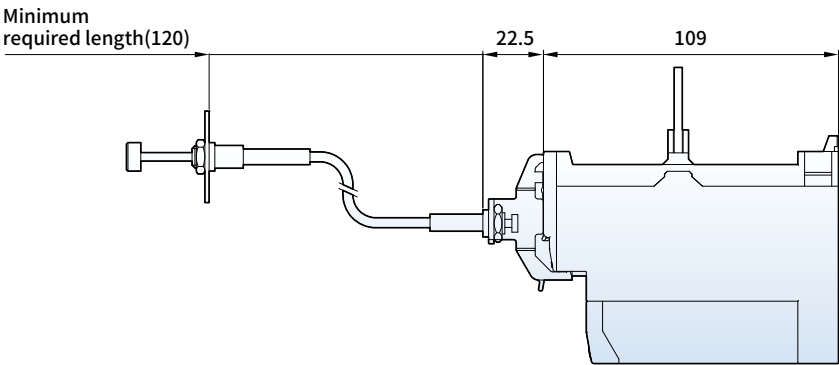
MT-63



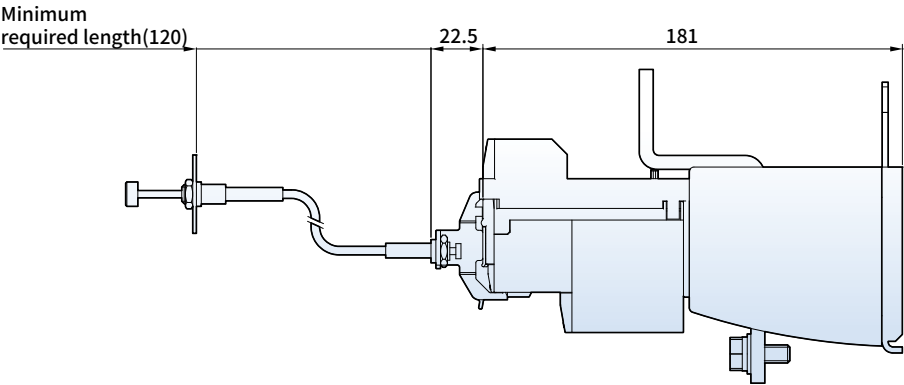
MT-95



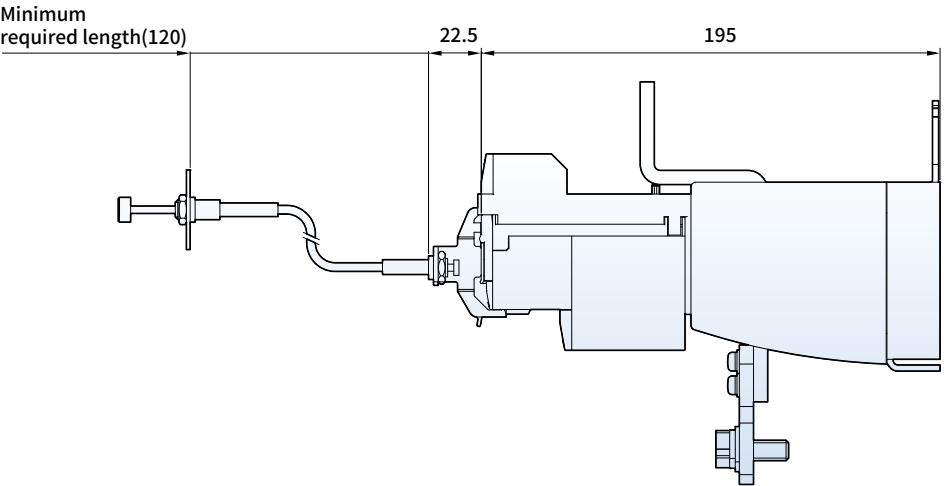
MT-150



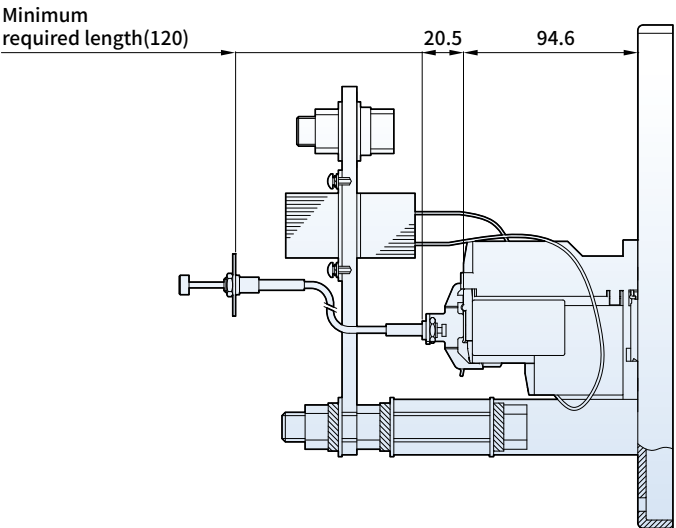
MT-225



MT-400



MT-800



# Overload relay ordering types

## Trip class 10A



MT-12/□

**MT-12** (Terminal type: Screw / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |              | Contactor                          | Separate<br>mounting unit |
|----------------------|-----------------------------------|-----------------------------------|--------------|------------------------------------|---------------------------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential |                                    |                           |
| 0.1~0.16             | MT-12/2H0.14                      | MT-12/3H0.14                      | MT-12/3K0.14 | MC-6a<br>MC-9a<br>MC-12a<br>MC-18a | UZ-12                     |
| 0.16~0.25            | MT-12/2H0.21                      | MT-12/3H0.21                      | MT-12/3K0.21 |                                    |                           |
| 0.25~0.4             | MT-12/2H0.33                      | MT-12/3H0.33                      | MT-12/3K0.33 |                                    |                           |
| 0.4~0.63             | MT-12/2H0.52                      | MT-12/3H0.52                      | MT-12/3K0.52 |                                    |                           |
| 0.63~1               | MT-12/2H0.82                      | MT-12/3H0.82                      | MT-12/3K0.82 |                                    |                           |
| 1~1.6                | MT-12/2H1.3                       | MT-12/3H1.3                       | MT-12/3K1.3  |                                    |                           |
| 1.6~2.5              | MT-12/2H2.1                       | MT-12/3H2.1                       | MT-12/3K2.1  |                                    |                           |
| 2.5~4                | MT-12/2H3.3                       | MT-12/3H3.3                       | MT-12/3K3.3  |                                    |                           |
| 4~6                  | MT-12/2H5                         | MT-12/3H5                         | MT-12/3K5    |                                    |                           |
| 5~8                  | MT-12/2H6.5                       | MT-12/3H6.5                       | MT-12/3K6.5  |                                    |                           |
| 6~9                  | MT-12/2H7.5                       | MT-12/3H7.5                       | MT-12/3K7.5  |                                    |                           |
| 7~10                 | MT-12/2H8.5                       | MT-12/3H8.5                       | MT-12/3K8.5  |                                    |                           |
| 9~13                 | MT-12/2H11                        | MT-12/3H11                        | MT-12/3K11   |                                    |                           |
| 12~18                | MT-12/2H15                        | MT-12/3H15                        | MT-12/3K15   |                                    |                           |



MT-32/□

**MT-32** (Terminal type: Screw / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |              | Contactor                                               | Separate<br>mounting unit |
|----------------------|-----------------------------------|-----------------------------------|--------------|---------------------------------------------------------|---------------------------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential |                                                         |                           |
| 0.1~0.16             | MT-32/2H0.14                      | MT-32/3H0.14                      | MT-32/3K0.14 | MC-9b<br>MC-12b<br>MC-18b<br>MC-22b<br>MC-32a<br>MC-40a | UZ-32                     |
| 0.16~0.25            | MT-32/2H0.21                      | MT-32/3H0.21                      | MT-32/3K0.21 |                                                         |                           |
| 0.25~0.4             | MT-32/2H0.33                      | MT-32/3H0.33                      | MT-32/3K0.33 |                                                         |                           |
| 0.4~0.63             | MT-32/2H0.52                      | MT-32/3H0.52                      | MT-32/3K0.52 |                                                         |                           |
| 0.63~1               | MT-32/2H0.82                      | MT-32/3H0.82                      | MT-32/3K0.82 |                                                         |                           |
| 1~1.6                | MT-32/2H1.3                       | MT-32/3H1.3                       | MT-32/3K1.3  |                                                         |                           |
| 1.6~2.5              | MT-32/2H2.1                       | MT-32/3H2.1                       | MT-32/3K2.1  |                                                         |                           |
| 2.5~4                | MT-32/2H3.3                       | MT-32/3H3.3                       | MT-32/3K3.3  |                                                         |                           |
| 4~6                  | MT-32/2H5                         | MT-32/3H5                         | MT-32/3K5    |                                                         |                           |
| 5~8                  | MT-32/2H6.5                       | MT-32/3H6.5                       | MT-32/3K6.5  |                                                         |                           |
| 6~9                  | MT-32/2H7.5                       | MT-32/3H7.5                       | MT-32/3K7.5  |                                                         |                           |
| 7~10                 | MT-32/2H8.5                       | MT-32/3H8.5                       | MT-32/3K8.5  |                                                         |                           |
| 9~13                 | MT-32/2H11                        | MT-32/3H11                        | MT-32/3K11   |                                                         |                           |
| 12~18                | MT-32/2H15                        | MT-32/3H15                        | MT-32/3K15   |                                                         |                           |
| 16~22                | MT-32/2H19                        | MT-32/3H19                        | MT-32/3K19   |                                                         |                           |
| 18~25                | MT-32/2H21.5                      | MT-32/3H21.5                      | MT-32/3K21.5 |                                                         |                           |
| 22~32                | MT-32/2H27                        | MT-32/3H27                        | MT-32/3K27   |                                                         |                           |
| 28~40                | MT-32/2H34                        | MT-32/3H34                        | MT-32/3K34   |                                                         | UZ-32(34A)                |



MT-63/S



MT-63/L

**MT-63** (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |                 | Contactor        | Separate<br>mounting unit |
|----------------------|-----------------------------------|-----------------------------------|-----------------|------------------|---------------------------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential    |                  |                           |
| 4~6                  | MT-63/2H5S/L                      | MT-63/3H5S/L                      | MT-63/3K5S/L    | MC-50a<br>MC-65a | UZ-63S/L                  |
| 5~8                  | MT-63/2H6.5S/L                    | MT-63/3H6.5S/L                    | MT-63/3K6.5S/L  |                  |                           |
| 6~9                  | MT-63/2H7.5S/L                    | MT-63/3H7.5S/L                    | MT-63/3K7.5S/L  |                  |                           |
| 7~10                 | MT-63/2H8.5S/L                    | MT-63/3H8.5S/L                    | MT-63/3K8.5S/L  |                  |                           |
| 9~13                 | MT-63/2H11S/L                     | MT-63/3H11S/L                     | MT-63/3K11S/L   |                  |                           |
| 12~18                | MT-63/2H15S/L                     | MT-63/3H15S/L                     | MT-63/3K15S/L   |                  |                           |
| 16~22                | MT-63/2H19S/L                     | MT-63/3H19S/L                     | MT-63/3K19S/L   |                  |                           |
| 18~25                | MT-63/2H21.5S/L                   | MT-63/3H21.5S/L                   | MT-63/3K21.5S/L |                  |                           |
| 24~36                | MT-63/2H30S/L                     | MT-63/3H30S/L                     | MT-63/3K30S/L   |                  |                           |
| 28~40                | MT-63/2H34S/L                     | MT-63/3H34S/L                     | MT-63/3K34S/L   |                  |                           |
| 34~50                | MT-63/2H42S/L                     | MT-63/3H42S/L                     | MT-63/3K42S/L   |                  |                           |
| 45~65                | MT-63/2H55S/L                     | MT-63/3H55S/L                     | MT-63/3K55S/L   |                  |                           |



MT-95/S



MT-95/L

**MT-95** (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |                 | Contactor                   | Separate<br>mounting unit |
|----------------------|-----------------------------------|-----------------------------------|-----------------|-----------------------------|---------------------------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential    |                             |                           |
| 7~10                 | MT-95/2H8.5S/L                    | MT-95/3H8.5S/L                    | MT-95/3K8.5S/L  | MC-75a<br>MC-85a<br>MC-100a | UZ-95S/L                  |
| 9~13                 | MT-95/2H11S/L                     | MT-95/3H11S/L                     | MT-95/3K11S/L   |                             |                           |
| 12~18                | MT-95/2H15S/L                     | MT-95/3H15S/L                     | MT-95/3K15S/L   |                             |                           |
| 16~22                | MT-95/2H19S/L                     | MT-95/3H19S/L                     | MT-95/3K19S/L   |                             |                           |
| 18~25                | MT-95/2H21.5S/L                   | MT-95/3H21.5S/L                   | MT-95/3K21.5S/L |                             |                           |
| 24~36                | MT-95/2H30S/L                     | MT-95/3H30S/L                     | MT-95/3K30S/L   |                             |                           |
| 28~40                | MT-95/2H34S/L                     | MT-95/3H34S/L                     | MT-95/3K34S/L   |                             |                           |
| 34~50                | MT-95/2H42S/L                     | MT-95/3H42S/L                     | MT-95/3K42S/L   |                             |                           |
| 45~65                | MT-95/2H55S/L                     | MT-95/3H55S/L                     | MT-95/3K55S/L   |                             |                           |
| 54~75                | MT-95/2H65S/L                     | MT-95/3H65S/L                     | MT-95/3K65S/L   |                             |                           |
| 63~85                | MT-95/2H74S/L                     | MT-95/3H74S/L                     | MT-95/3K74S/L   |                             |                           |
| 70~95                | MT-95/2H83S/L                     | MT-95/3H83S/L                     | MT-95/3K83S/L   |                             |                           |
| 80~100               | MT-95/2H90S/L                     | MT-95/3H90S/L                     | MT-95/3K90S/L   |                             |                           |



MT-150/□

**MT-150** (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |                 | Contactor          | Separate<br>mounting unit |
|----------------------|-----------------------------------|-----------------------------------|-----------------|--------------------|---------------------------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential    |                    |                           |
| 34~50                | MT-150/2H42S/L                    | MT-150/3H42S/L                    | MT-150/3K42S/L  | MC-130a<br>MC-150a | UZ-150S/L                 |
| 45~65                | MT-150/2H55S/L                    | MT-150/3H55S/L                    | MT-150/3K55S/L  |                    |                           |
| 54~75                | MT-150/2H65S/L                    | MT-150/3H65S/L                    | MT-150/3K65S/L  |                    |                           |
| 63~85                | MT-150/2H74S/L                    | MT-150/3H74S/L                    | MT-150/3K74S/L  |                    |                           |
| 80~105               | MT-150/2H93S/L                    | MT-150/3H93S/L                    | MT-150/3K93S/L  |                    |                           |
| 95~130               | MT-150/2H113S/L                   | MT-150/3H113S/L                   | MT-150/3K113S/L |                    |                           |
| 110~150              | MT-150/2H130S/L                   | MT-150/3H130S/L                   | MT-150/3K130S/L |                    |                           |

# Overload relay ordering types

## Trip class 10A



MT-225/□

**MT-225** (Terminal type: Screw / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |              | Contactor          | Remarks |
|----------------------|-----------------------------------|-----------------------------------|--------------|--------------------|---------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential |                    |         |
| 65~100               | MT-225/2H80                       | MT-225/3H80                       | MT-225/3K80  | MC-185a<br>MC-225a | -       |
| 85~125               | MT-225/2H107                      | MT-225/3H107                      | MT-225/3K107 |                    |         |
| 100~160              | MT-225/2H130                      | MT-225/3H130                      | MT-225/3K130 |                    |         |
| 120~185              | MT-225/2H153                      | MT-225/3H153                      | MT-225/3K153 |                    |         |
| 160~240              | MT-225/2H200                      | MT-225/3H200                      | MT-225/3K200 |                    |         |



MT-400/□

**MT-400** (Terminal type: Screw / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |              | Contactor                     | Remarks |
|----------------------|-----------------------------------|-----------------------------------|--------------|-------------------------------|---------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential |                               |         |
| 85~125               | MT-400/2H107                      | MT-400/3H107                      | MT-400/3K107 | MC-265a<br>MC-330a<br>MC-400a | -       |
| 100~160              | MT-400/2H130                      | MT-400/3H130                      | MT-400/3K130 |                               |         |
| 120~185              | MT-400/2H153                      | MT-400/3H153                      | MT-400/3K153 |                               |         |
| 160~240              | MT-400/2H200                      | MT-400/3H200                      | MT-400/3K200 |                               |         |
| 200~330              | MT-400/2H265                      | MT-400/3H265                      | MT-400/3K265 |                               |         |
| 260~400              | MT-400/2H350                      | MT-400/3H350                      | MT-400/3K350 |                               |         |



MT-800/□

**MT-800** (Terminal type: Screw / Degree of protection: IP20)

| Setting range<br>(A) | Ordering type                     |                                   |              | Contactor                     | Remarks |
|----------------------|-----------------------------------|-----------------------------------|--------------|-------------------------------|---------|
|                      | Non-differential<br>(3P-2 heater) | Non-differential<br>(3P-3 heater) | Differential |                               |         |
| 200~330              | MT-800/2H265                      | MT-800/3H265                      | MT-800/3K265 | MC-500a<br>MC-630a<br>MC-800a | -       |
| 260~400              | MT-800/2H350                      | MT-800/3H350                      | MT-800/3K350 |                               |         |
| 400~630              | MT-800/2H515                      | MT-800/3H515                      | MT-800/3K515 |                               |         |
| 520~800              | MT-800/2H660                      | MT-800/3H660                      | MT-800/3K660 |                               |         |

## Trip class 20A



MT-12/3D□

### MT-12 (Terminal type: Screw / Degree of protection: IP20)

| Setting range (A) | Ordering type | Contactor                          | Separate mounting unit |
|-------------------|---------------|------------------------------------|------------------------|
|                   | Differential  |                                    |                        |
| 1~1.6             | MT-12/3D1.3   | MC-6a<br>MC-9a<br>MC-12a<br>MC-18a | UZ-12                  |
| 1.6~2.5           | MT-12/3D2.1   |                                    |                        |
| 2.5~4             | MT-12/3D3.3   |                                    |                        |
| 4~6               | MT-12/3D5     |                                    |                        |
| 5~8               | MT-12/3D6.5   |                                    |                        |
| 6~9               | MT-12/3D7.5   |                                    |                        |
| 7~10              | MT-12/3D8.5   |                                    |                        |
| 9~13              | MT-12/3D11    |                                    |                        |
| 12~18             | MT-12/3D15    |                                    |                        |



MT-32/3D□

### MT-32 (Terminal type: Screw / Degree of protection: IP20)

| Setting range (A) | Ordering type | Contactor                                               | Separate mounting unit |
|-------------------|---------------|---------------------------------------------------------|------------------------|
|                   | Differential  |                                                         |                        |
| 1~1.6             | MT-32/3D1.3   | MC-9b<br>MC-12b<br>MC-18b<br>MC-22b<br>MC-32a<br>MC-40a | UZ-32                  |
| 1.6~2.5           | MT-32/3D2.1   |                                                         |                        |
| 2.5~4             | MT-32/3D3.3   |                                                         |                        |
| 4~6               | MT-32/3D5     |                                                         |                        |
| 5~8               | MT-32/3D6.5   |                                                         |                        |
| 6~9               | MT-32/3D7.5   |                                                         |                        |
| 7~10              | MT-32/3D8.5   |                                                         |                        |
| 9~13              | MT-32/3D11    |                                                         |                        |
| 12~18             | MT-32/3D15    |                                                         |                        |
| 16~22             | MT-32/3D19    |                                                         |                        |
| 18~25             | MT-32/3D21.5  |                                                         |                        |
| 22~32             | MT-32/3D27    |                                                         |                        |
| 28~40             | MT-32/3D34    |                                                         |                        |
|                   |               |                                                         | UZ-32(34A)             |

# Overload relay ordering types

## Trip class 20A



MT-63/ S



MT-63/ L

### MT-63 (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range (A) | Ordering type   | Contactor        | Separate mounting unit |
|-------------------|-----------------|------------------|------------------------|
|                   | Differential    |                  |                        |
| 4~6               | MT-63/3D5S/L    | MC-50a<br>MC-65a | UZ-63S/L               |
| 5~8               | MT-63/3D6.5S/L  |                  |                        |
| 6~9               | MT-63/3D7.5S/L  |                  |                        |
| 7~10              | MT-63/3D8.5S/L  |                  |                        |
| 9~13              | MT-63/3D11S/L   |                  |                        |
| 12~18             | MT-63/3D15S/L   |                  |                        |
| 16~22             | MT-63/3D19S/L   |                  |                        |
| 18~25             | MT-63/3D21.5S/L |                  |                        |
| 24~36             | MT-63/3D30S/L   |                  |                        |
| 28~40             | MT-63/3D34S/L   |                  |                        |
| 34~50             | MT-63/3D42S/L   |                  |                        |
| 45~65             | MT-63/3D55S/L   |                  |                        |



MT-95/ S



MT-95/ L

### MT-95 (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range (A) | Ordering type   | Contactor                   | Separate mounting unit |
|-------------------|-----------------|-----------------------------|------------------------|
|                   | Differential    |                             |                        |
| 7~10              | MT-95/3D8.5S/L  | MC-75a<br>MC-85a<br>MC-100a | UZ-95S/L               |
| 9~13              | MT-95/3D11S/L   |                             |                        |
| 12~18             | MT-95/3DK15S/L  |                             |                        |
| 16~22             | MT-95/3D19S/L   |                             |                        |
| 18~25             | MT-95/3D21.5S/L |                             |                        |
| 24~36             | MT-95/3D30S/L   |                             |                        |
| 28~40             | MT-95/3D34S/L   |                             |                        |
| 34~50             | MT-95/3D42S/L   |                             |                        |
| 45~65             | MT-95/3D55S/L   |                             |                        |
| 54~75             | MT-95/3D65S/L   |                             |                        |
| 63~85             | MT-95/3D74S/L   |                             |                        |
| 70~95             | MT-95/3D83S/L   |                             |                        |
| 80~100            | MT-95/3D90S/L   |                             |                        |



MT-150/ S

### MT-150 (Terminal type: Screw(S), Lug(L) / Degree of protection: IP20)

| Setting range (A) | Ordering type   | Contactor          | Separate mounting unit |
|-------------------|-----------------|--------------------|------------------------|
|                   | Differential    |                    |                        |
| 34~50             | MT-150/3D42S/L  | MC-130a<br>MC-150a | UZ-150S/L              |
| 45~65             | MT-150/3D55S/L  |                    |                        |
| 54~75             | MT-150/3D65S/L  |                    |                        |
| 63~85             | MT-150/3D74S/L  |                    |                        |
| 80~105            | MT-150/3D93S/L  |                    |                        |
| 95~130            | MT-150/3D113S/L |                    |                        |
| 110~150           | MT-150/3D130S/L |                    |                        |



MT-225/3D

**MT-225** (Terminal type: Screw / Degree of protection: IP20)

| Setting range (A) | Ordering type | Contactor          | Remarks |
|-------------------|---------------|--------------------|---------|
|                   | Differential  |                    |         |
| 65~100            | MT-225/3D80   | MC-185a<br>MC-225a | -       |
| 85~125            | MT-225/3D107  |                    |         |
| 100~160           | MT-225/3D130  |                    |         |
| 120~185           | MT-225/3D153  |                    |         |
| 160~240           | MT-225/3D200  |                    |         |



MT-400/3D

**MT-400** (Terminal type: Screw / Degree of protection: IP20)

| Setting range (A) | Ordering type | Contactor                     | Remarks |
|-------------------|---------------|-------------------------------|---------|
|                   | Differential  |                               |         |
| 85~125            | MT-400/3D107  | MC-265a<br>MC-330a<br>MC-400a | -       |
| 100~160           | MT-400/3D130  |                               |         |
| 120~185           | MT-400/3D153  |                               |         |
| 160~240           | MT-400/3D200  |                               |         |
| 200~330           | MT-400/3D265  |                               |         |
| 260~400           | MT-400/3D350  |                               |         |



MT-800/3D

**MT-800** (Terminal type: Screw / Degree of protection: IP20)

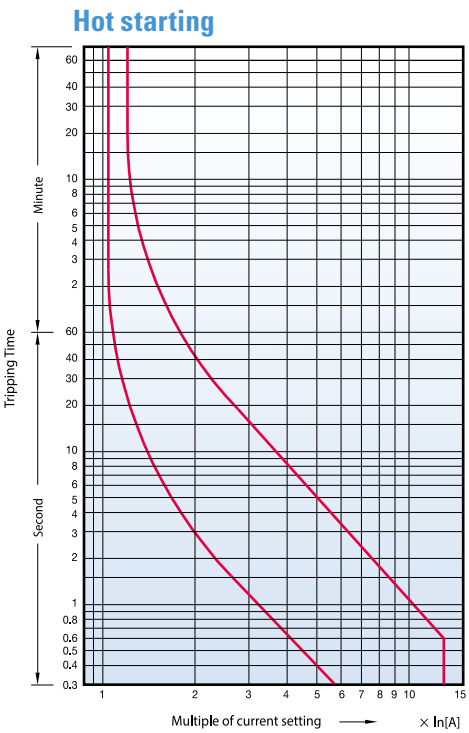
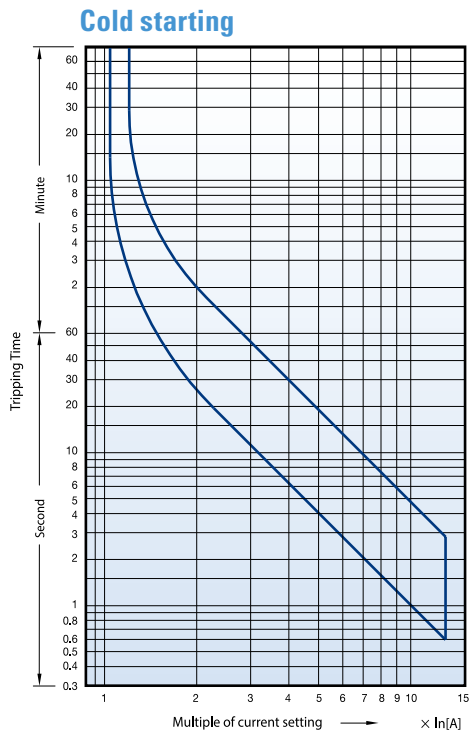
| Setting range (A) | Ordering type | Contactor                     | Remarks |
|-------------------|---------------|-------------------------------|---------|
|                   | Differential  |                               |         |
| 200~330           | MT-800/3D265  | MC-500a<br>MC-630a<br>MC-800a | -       |
| 260~400           | MT-800/3D350  |                               |         |
| 400~630           | MT-800/3D515  |                               |         |
| 520~800           | MT-800/3D660  |                               |         |



# Overload relay trip curves

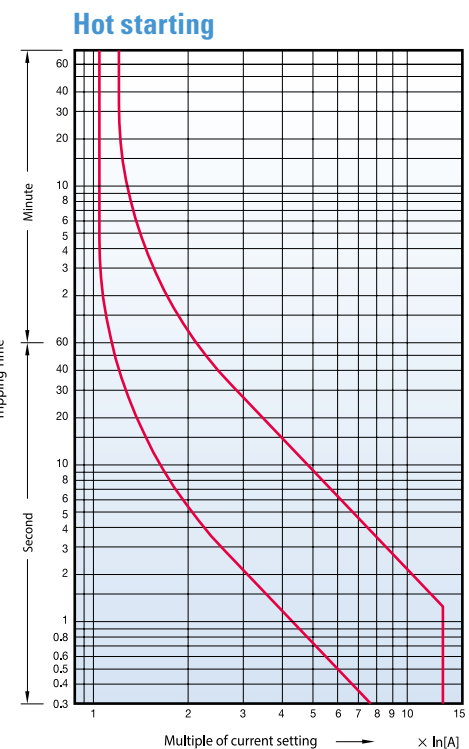
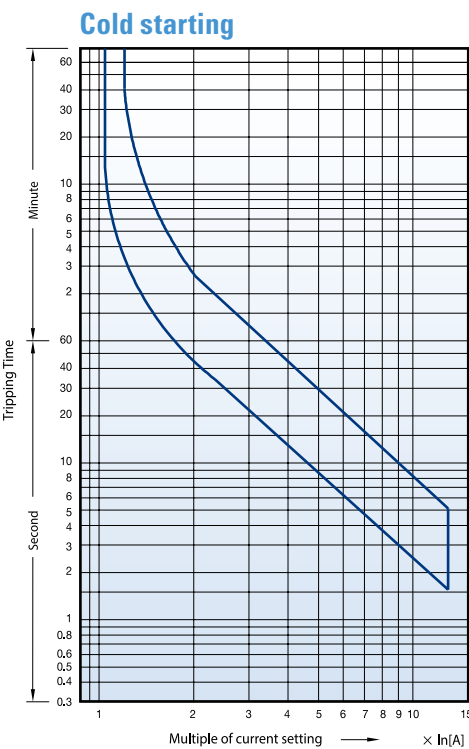
## Class 10A, 18AF

- MT-12/2H
- MT-12/3H
- MT-12/3K



## Class 20, 18AF

- MT-12/3D

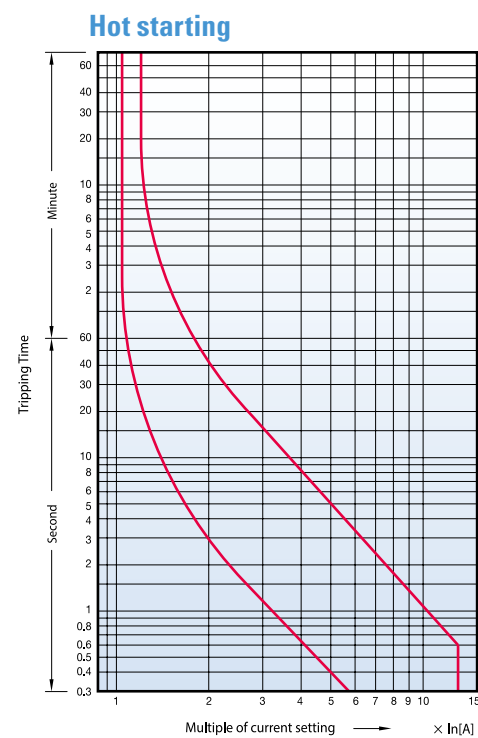
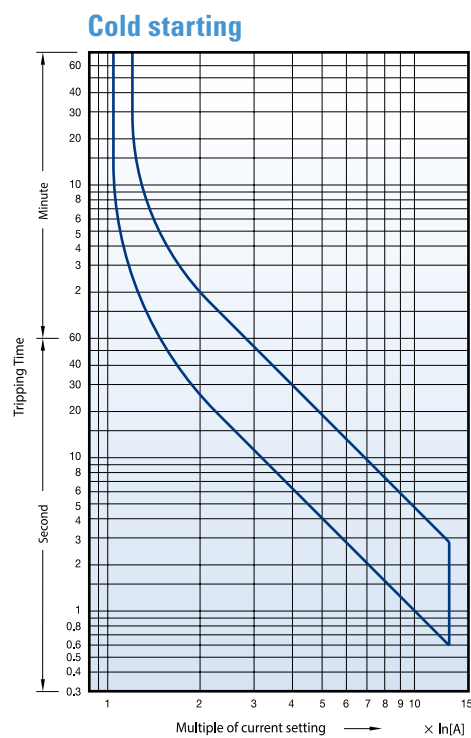


## Class 10A, 40AF

MT-32/2H

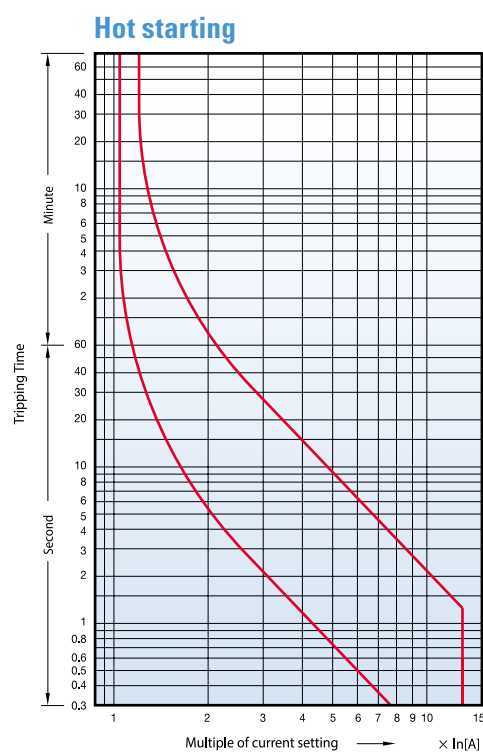
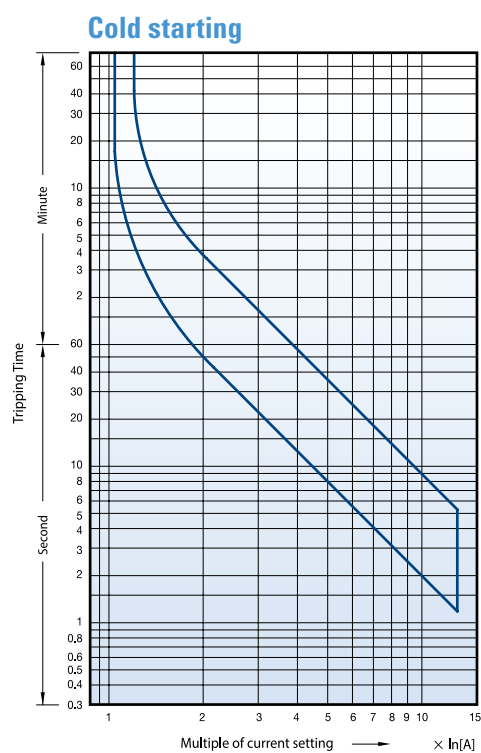
MT-32/3H

MT-32/3K



## Class 20, 40AF

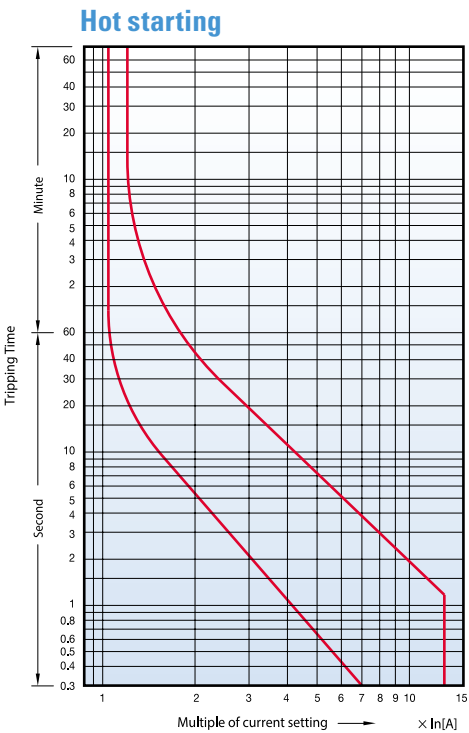
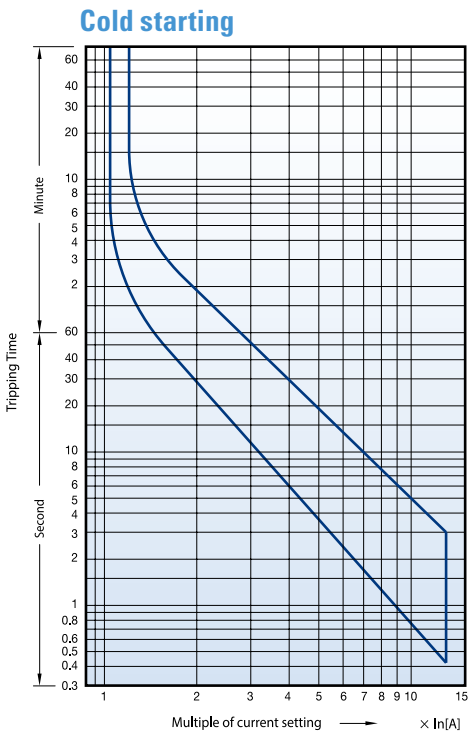
MT-32/3D



# Overload relay trip curves

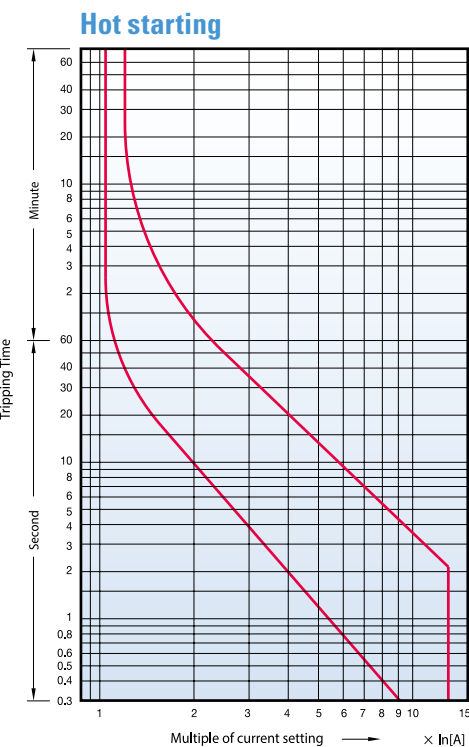
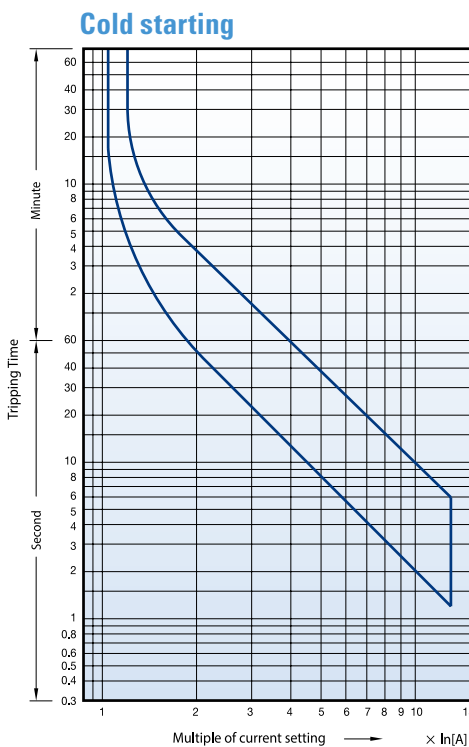
## Class 10A, 65AF

- MT-63/2H
- MT-63/3H
- MT-63/3K



## Class 20, 65AF

- MT-63/3D

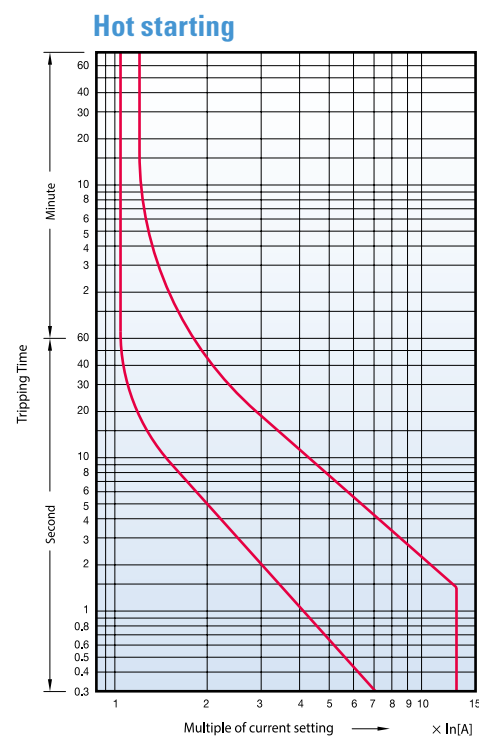
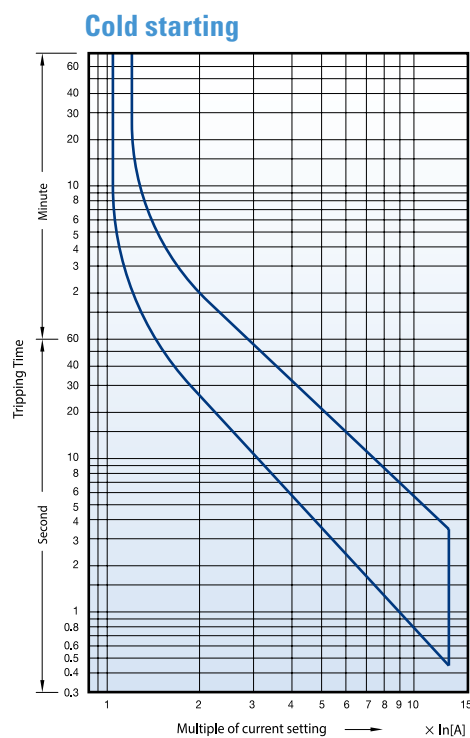


## Class 10A, 100AF

MT-95/2H

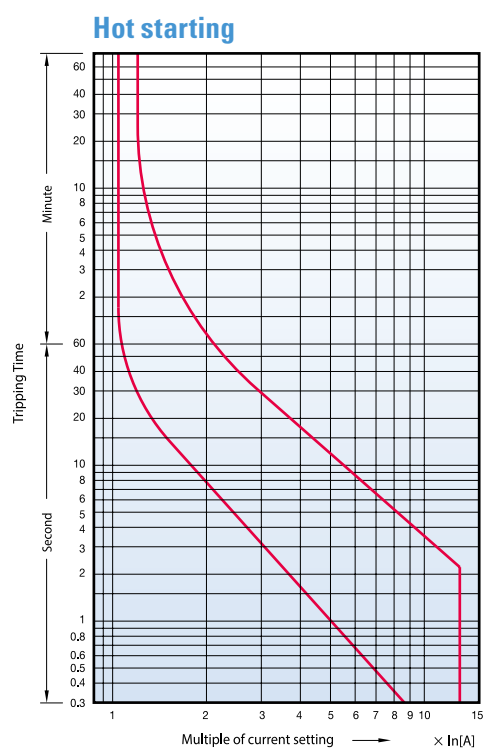
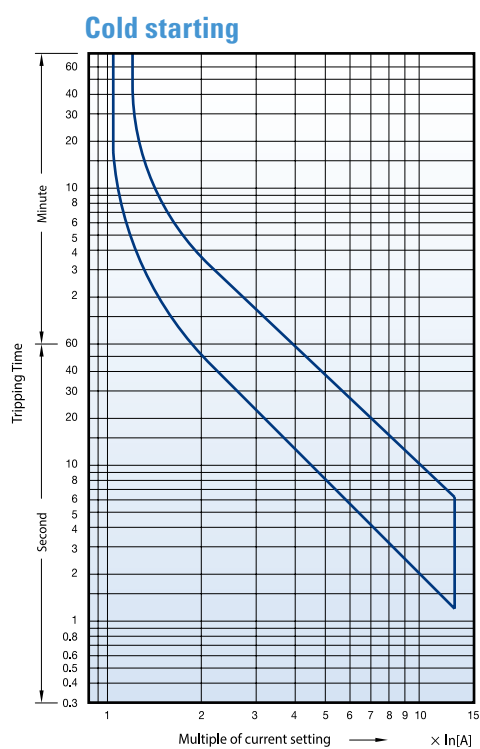
MT-95/3H

MT-95/3K



## Class 20, 100AF

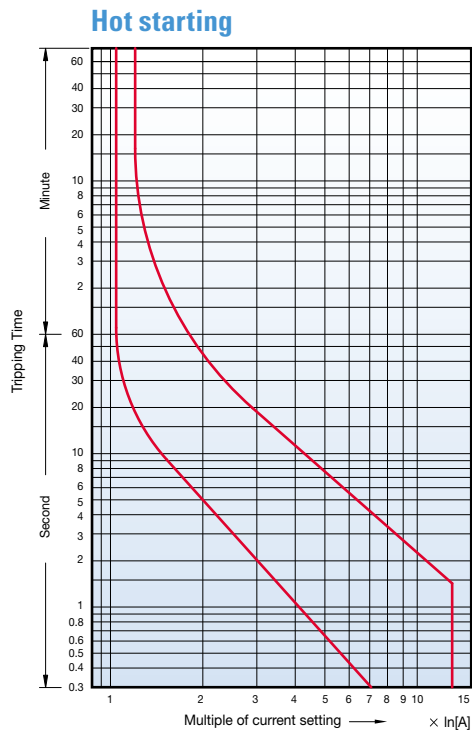
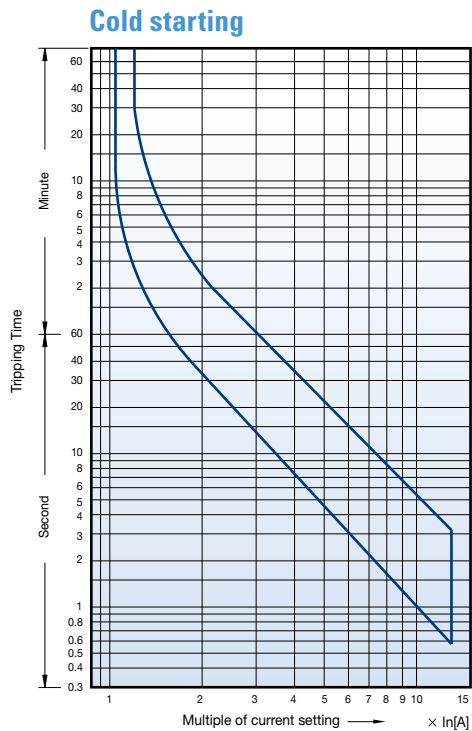
MT-95/3D



# Overload relay trip curves

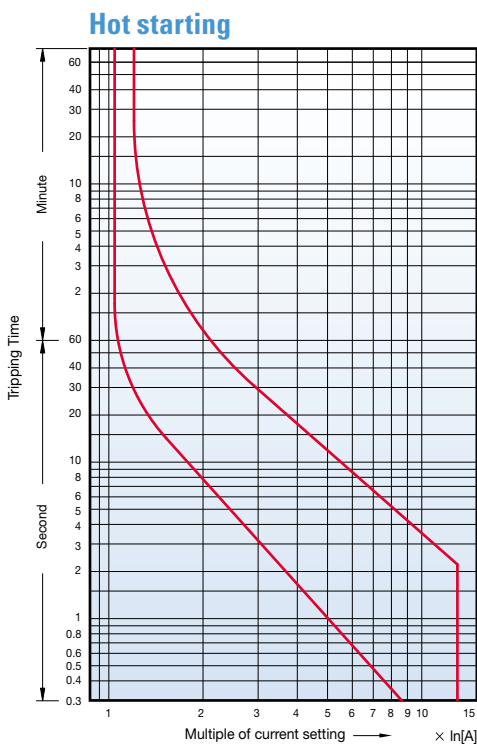
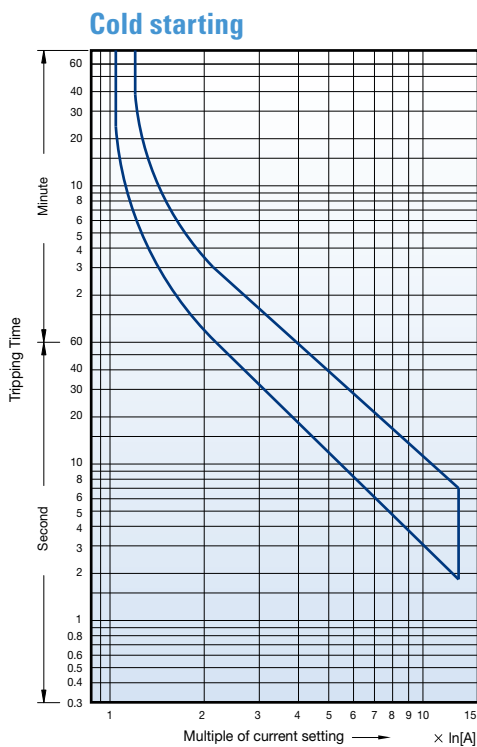
## Class 10A, 150AF

- MT-150/2H
- MT-150/3H
- MT-150/3K



## Class 20, 150AF

- MT-150/3D



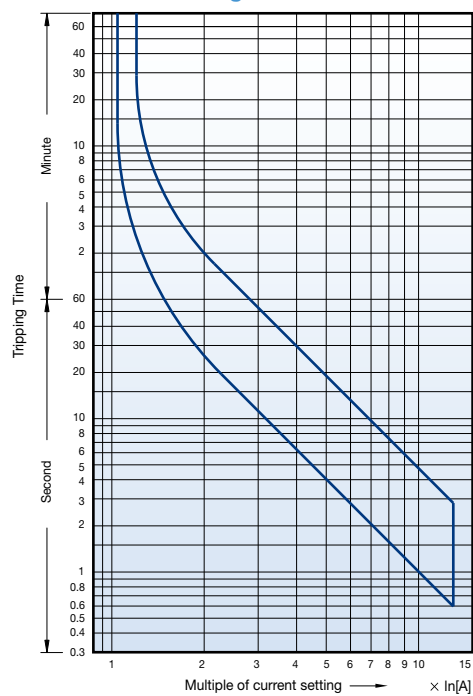
## Class 10A, 225AF

MT-225/2H

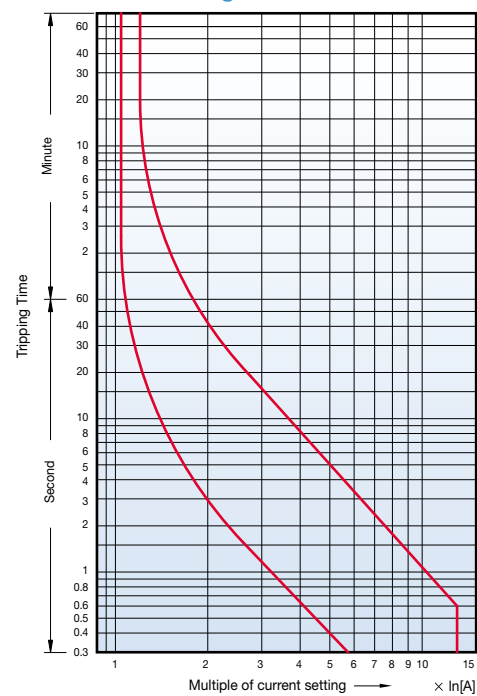
MT-225/3H

MT-225/3K

Cold starting



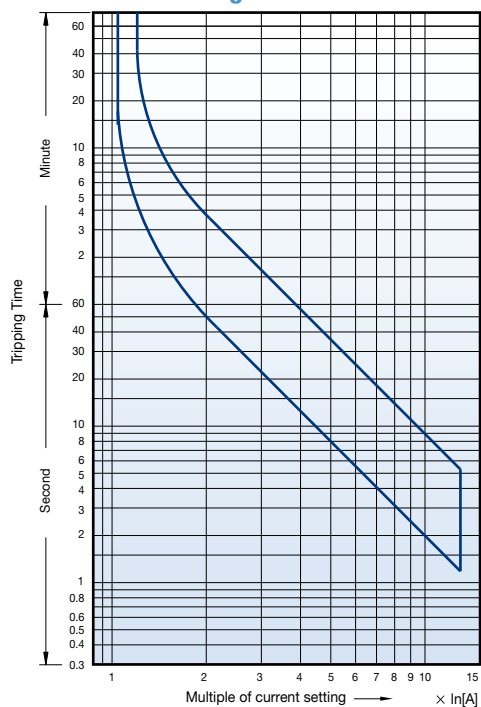
Hot starting



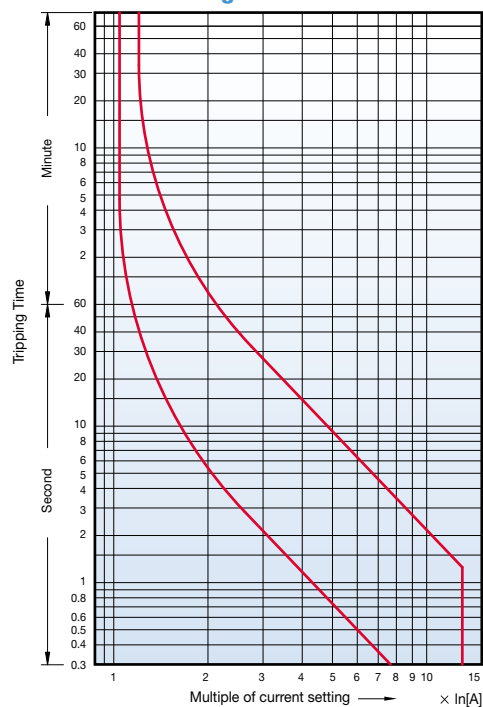
## Class 20, 225AF

MT-225/3D

Cold starting



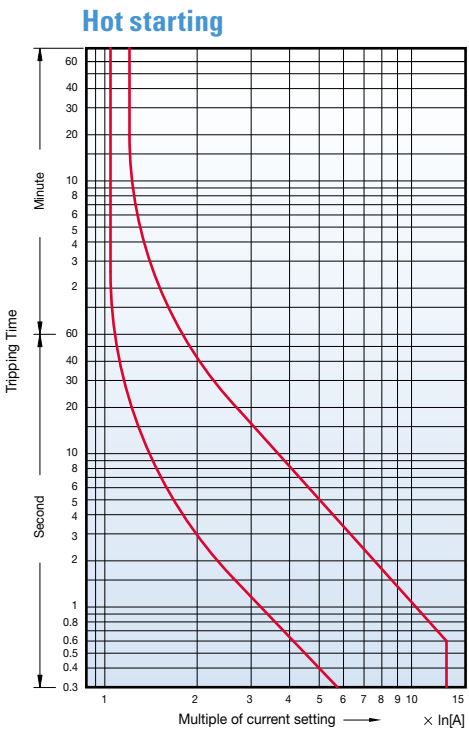
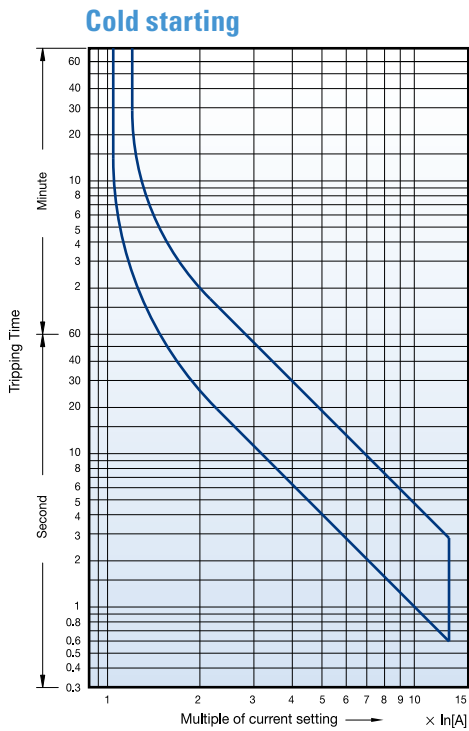
Hot starting



# Overload relay trip curves

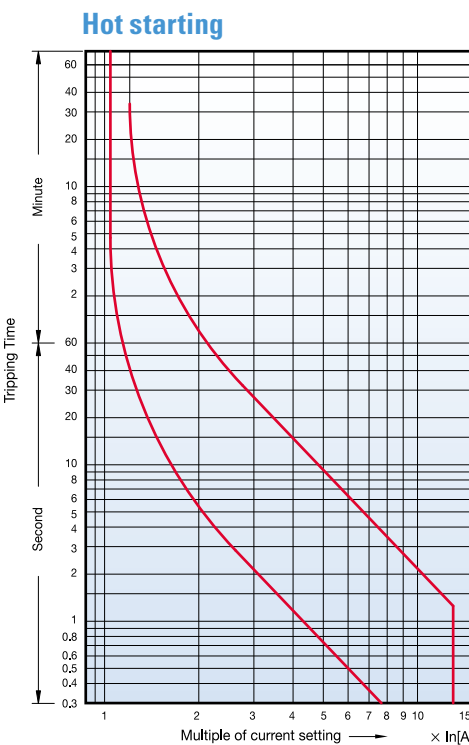
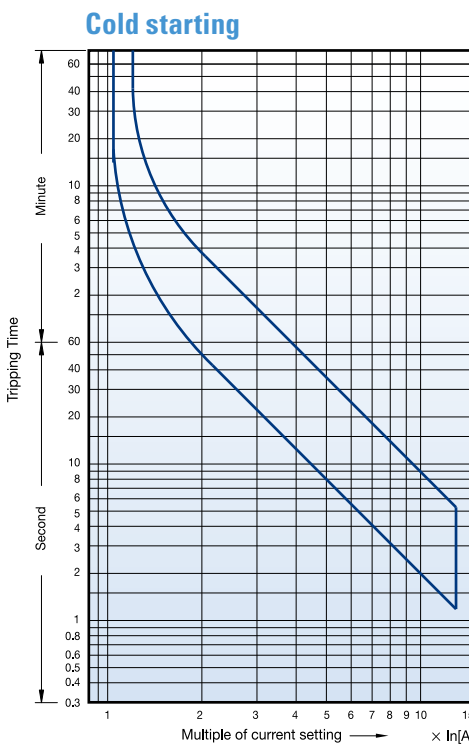
## Class 10A, 400AF

- MT-400/2H
- MT-400/3H
- MT-400/3K



## Class 20, 400AF

- MT-400/3D



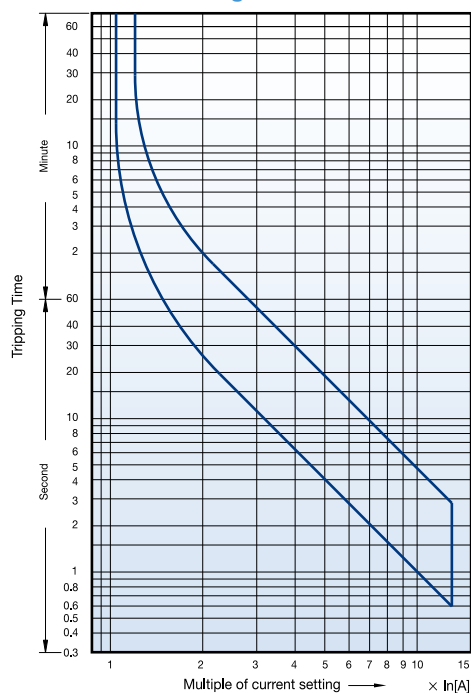
## Class 10A, 800AF

MT-800/2H

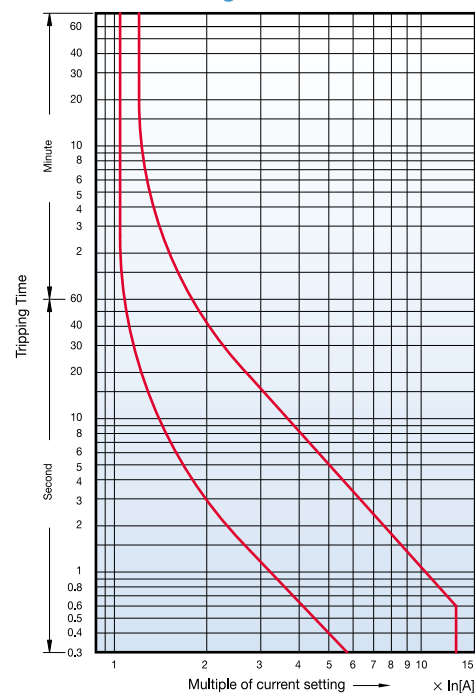
MT-800/3H

MT-800/3K

Cold starting



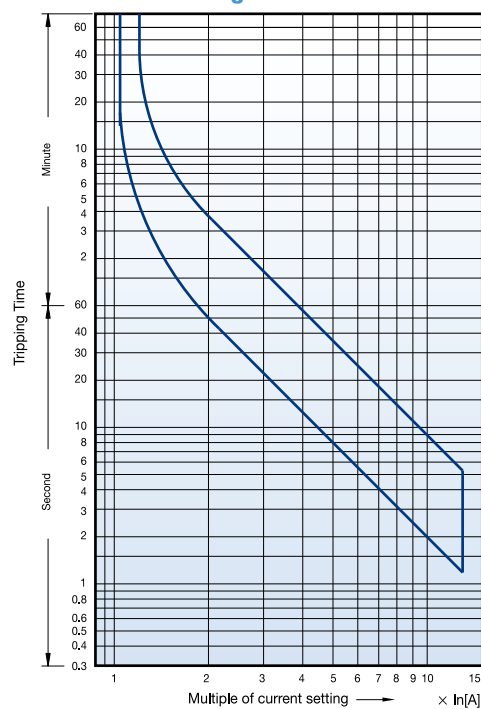
Hot starting



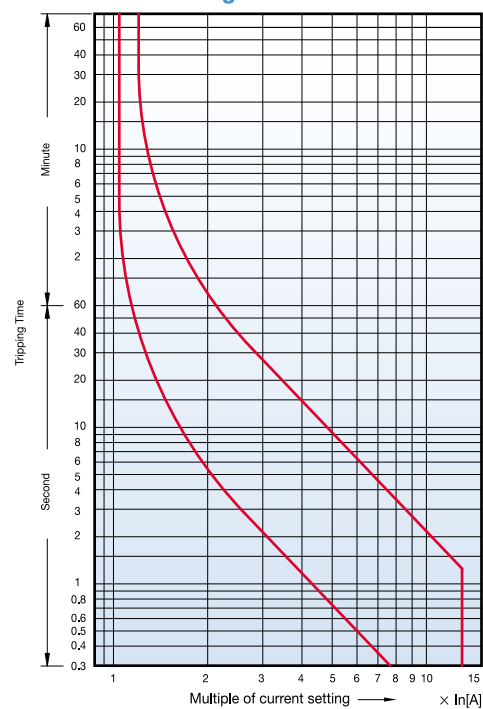
## Class 20, 800AF

MT-800/3D

Cold starting



Hot starting





# Type 2 coordination

## 440V

### Susol MCCB N-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                   | Short circuit breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|-------------------|---------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting range [A] |                                 |                     |
|                         | 440V        |                 |            |           |                         |                   | I <sub>r</sub> [kA]             | I <sub>q</sub> [kA] |
| 1.1                     | 2.37        | TS100N          | 16         | MC-12b    | MT-32                   | 2.5~4             | 1                               | 50                  |
| 1.5                     | 3.06        | TS100N          | 16         | MC-18b    | MT-32                   | 2.5~4             | 1                               | 50                  |
| 2.2                     | 4.42        | TS100N          | 16         | MC-22b    | MT-32                   | 4~6               | 1                               | 50                  |
| 3                       | 5.77        | TS100N          | 16         | MC-22b    | MT-32                   | 5~8               | 1                               | 50                  |
| 4                       | 7.90        | TS100N          | 16         | MC-32a    | MT-32                   | 6~9               | 1                               | 50                  |
| 5.5                     | 10.40       | TS100N          | 16         | MC-32a    | MT-32                   | 9~13              | 3                               | 50                  |
| 7.5                     | 13.70       | TS100N          | 20         | MC-32a    | MT-32                   | 12~18             | 3                               | 50                  |
| 11                      | 20.10       | TS100N          | 32         | MC-40a    | MT-32                   | 18~25             | 3                               | 50                  |
| 15                      | 26.50       | TS100N          | 40         | MC-40a    | MT-32                   | 22~32             | 3                               | 50                  |
| 18.5                    | 32.80       | TS100N          | 40         | MC-50a    | MT-63                   | 28~40             | 3                               | 50                  |
| 22                      | 39.00       | TS100N          | 50         | MC-50a    | MT-63                   | 34~50             | 3                               | 50                  |
| 30                      | 51.50       | TS100N          | 63         | MC-65a    | MT-63                   | 45~65             | 3                               | 50                  |
| 37                      | 64.00       | TS100N          | 80         | MC-75a    | MT-95                   | 54~75             | 5                               | 50                  |
| 45                      | 76.00       | TS100N          | 100        | MC-85a    | MT-95                   | 63~85             | 5                               | 50                  |
| 55                      | 90.00       | TS100N          | 100        | MC-100a   | MT-95                   | 70~95             | 5                               | 50                  |
| 59                      | 97.00       | TS160N          | 100        | MC-130a   | MT-150                  | 80~105            | 5                               | 50                  |
| 75                      | 125         | TS160N          | 160        | MC-150a   | MT-150                  | 110~150           | 10                              | 50                  |
| 90                      | 146         | TS160N          | 160        | MC-185a   | MT-225                  | 120~185           | 10                              | 50                  |
| 110                     | 178         | TS250N          | 200        | MC-185a   | MT-225                  | 160~240           | 10                              | 50                  |
| 132                     | 215         | TS250N          | 250        | MC-225a   | MT-225                  | 160~240           | 10                              | 65                  |
| 160                     | 256         | TS400N          | 300        | MC-400a   | MT-400                  | 200~330           | 18                              | 65                  |
| 200                     | 330         | TS400N          | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 65                  |
| 220                     | 353         | TS400N          | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 65                  |
| 250                     | 401         | TS630N          | 500        | MC-630a   | MT-800                  | 260~400           | 18                              | 65                  |
| 300                     | 481         | TS630N          | 500        | MC-630a   | MT-800                  | 400~630           | 18                              | 65                  |

## 440V

### Susol MCCB H-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                   | Short circuit breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|-------------------|---------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting range [A] | I <sub>r</sub> [kA]             | I <sub>q</sub> [kA] |
|                         | 440V        |                 |            |           |                         |                   |                                 |                     |
| 1.1                     | 2.37        | TS100H          | 16         | MC-12b    | MT-32                   | 2.5~4             | 1                               | 50                  |
| 1.5                     | 3.06        | TS100H          | 16         | MC-18b    | MT-32                   | 2.5~4             | 1                               | 50                  |
| 2.2                     | 4.42        | TS100H          | 16         | MC-22b    | MT-32                   | 4~6               | 1                               | 50                  |
| 3                       | 5.77        | TS100H          | 16         | MC-22b    | MT-32                   | 5~8               | 1                               | 50                  |
| 4                       | 7.90        | TS100H          | 16         | MC-32a    | MT-32                   | 6~9               | 1                               | 50                  |
| 5.5                     | 10.40       | TS100H          | 16         | MC-32a    | MT-32                   | 9~13              | 3                               | 50                  |
| 7.5                     | 13.70       | TS100H          | 20         | MC-32a    | MT-32                   | 12~18             | 3                               | 70                  |
| 11                      | 20.10       | TS100H          | 32         | MC-40a    | MT-32                   | 18~25             | 3                               | 70                  |
| 15                      | 26.50       | TS100H          | 40         | MC-40a    | MT-32                   | 22~32             | 3                               | 70                  |
| 18.5                    | 32.80       | TS100H          | 40         | MC-50a    | MT-63                   | 28~40             | 3                               | 70                  |
| 22                      | 39.00       | TS100H          | 50         | MC-50a    | MT-63                   | 34~50             | 3                               | 70                  |
| 30                      | 51.50       | TS100H          | 63         | MC-65a    | MT-63                   | 45~65             | 3                               | 70                  |
| 37                      | 64.00       | TS100H          | 80         | MC-75a    | MT-95                   | 54~75             | 5                               | 70                  |
| 45                      | 76.00       | TS100H          | 100        | MC-85a    | MT-95                   | 63~85             | 5                               | 70                  |
| 55                      | 90.00       | TS100H          | 100        | MC-100a   | MT-95                   | 70~95             | 5                               | 70                  |
| 59                      | 97.00       | TS160H          | 100        | MC-130a   | MT-150                  | 80~105            | 5                               | 70                  |
| 75                      | 125         | TS160H          | 160        | MC-150a   | MT-150                  | 110~150           | 10                              | 70                  |
| 90                      | 146         | TS160H          | 160        | MC-185a   | MT-225                  | 120~185           | 10                              | 70                  |
| 110                     | 178         | TS250H          | 200        | MC-185a   | MT-225                  | 160~240           | 10                              | 70                  |
| 132                     | 215         | TS250H          | 250        | MC-225a   | MT-225                  | 160~240           | 10                              | 70                  |
| 160                     | 256         | TS400H          | 300        | MC-400a   | MT-400                  | 200~330           | 18                              | 85                  |
| 200                     | 330         | TS400H          | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 85                  |
| 220                     | 353         | TS400H          | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 85                  |
| 250                     | 401         | TS630H          | 500        | MC-630a   | MT-800                  | 260~400           | 18                              | 85                  |
| 300                     | 481         | TS630H          | 500        | MC-630a   | MT-800                  | 400~630           | 18                              | 100                 |

# Type 2 Coordination

## 440V

### Susol MCCB L-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                      | Short circuit<br>breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|----------------------|------------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting<br>range [A] |                                    |                     |
|                         | 440V        |                 |            |           |                         |                      | I <sub>r</sub> [kA]                | I <sub>q</sub> [kA] |
| 1.1                     | 2.37        | TS100L          | 16         | MC-12b    | MT-32                   | 2.5~4                | 1                                  | 50                  |
| 1.5                     | 3.06        | TS100L          | 16         | MC-18b    | MT-32                   | 2.5~4                | 1                                  | 50                  |
| 2.2                     | 4.42        | TS100L          | 16         | MC-22b    | MT-32                   | 4~6                  | 1                                  | 50                  |
| 3                       | 5.77        | TS100L          | 16         | MC-22b    | MT-32                   | 5~8                  | 1                                  | 50                  |
| 4                       | 7.90        | TS100L          | 16         | MC-32a    | MT-32                   | 6~9                  | 1                                  | 50                  |
| 5.5                     | 10.40       | TS100L          | 16         | MC-32a    | MT-32                   | 9~13                 | 3                                  | 50                  |
| 7.5                     | 13.70       | TS100L          | 20         | MC-32a    | MT-32                   | 12~18                | 3                                  | 100                 |
| 11                      | 20.10       | TS100L          | 32         | MC-40a    | MT-32                   | 18~25                | 3                                  | 100                 |
| 15                      | 26.50       | TS100L          | 40         | MC-40a    | MT-32                   | 22~32                | 3                                  | 100                 |
| 18.5                    | 32.80       | TS100L          | 40         | MC-50a    | MT-63                   | 28~40                | 3                                  | 130                 |
| 22                      | 39.00       | TS100L          | 50         | MC-50a    | MT-63                   | 34~50                | 3                                  | 130                 |
| 30                      | 51.50       | TS100L          | 63         | MC-65a    | MT-63                   | 45~65                | 3                                  | 130                 |
| 37                      | 64.00       | TS100L          | 80         | MC-75a    | MT-95                   | 54~75                | 5                                  | 130                 |
| 45                      | 76.00       | TS100L          | 100        | MC-85a    | MT-95                   | 63~85                | 5                                  | 130                 |
| 55                      | 90.00       | TS100L          | 100        | MC-100a   | MT-95                   | 70~95                | 5                                  | 130                 |
| 59                      | 97.00       | TS160L          | 100        | MC-130a   | MT-150                  | 80~105               | 5                                  | 130                 |
| 75                      | 125         | TS160L          | 160        | MC-150a   | MT-150                  | 110~150              | 10                                 | 130                 |
| 90                      | 146         | TS160L          | 160        | MC-185a   | MT-225                  | 120~185              | 10                                 | 130                 |
| 110                     | 178         | TS250L          | 200        | MC-185a   | MT-225                  | 160~240              | 10                                 | 130                 |
| 132                     | 215         | TS250L          | 250        | MC-225a   | MT-225                  | 160~240              | 10                                 | 130                 |
| 160                     | 256         | TS400L          | 300        | MC-400a   | MT-400                  | 200~330              | 18                                 | 130                 |
| 200                     | 330         | TS400L          | 400        | MC-400a   | MT-400                  | 260~400              | 18                                 | 130                 |
| 220                     | 353         | TS400L          | 400        | MC-400a   | MT-400                  | 260~400              | 18                                 | 130                 |
| 250                     | 401         | TS630L          | 500        | MC-630a   | MT-800                  | 260~400              | 18                                 | 130                 |
| 300                     | 481         | TS630L          | 500        | MC-630a   | MT-800                  | 400~630              | 18                                 | 130                 |

## 440V

## Metasol MCCB N-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                   | Short circuit breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|-------------------|---------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting range [A] | I <sub>r</sub> [kA]             | I <sub>q</sub> [kA] |
|                         | 440V        |                 |            |           |                         |                   |                                 |                     |
| 1.1                     | 2.37        | ABN53c          | 15         | MC-12b    | MT-32                   | 2.5~4             | 1                               | 14                  |
| 1.5                     | 3.06        | ABN53c          | 15         | MC-18b    | MT-32                   | 2.5~4             | 1                               | 14                  |
| 2.2                     | 4.42        | ABN53c          | 15         | MC-22b    | MT-32                   | 4~6               | 1                               | 14                  |
| 3.0                     | 5.77        | ABN53c          | 15         | MC-22b    | MT-32                   | 5~8               | 1                               | 14                  |
| 4.0                     | 7.90        | ABN53c          | 15         | MC-32a    | MT-32                   | 6~9               | 1                               | 14                  |
| 5.5                     | 10.40       | ABN53c          | 15         | MC-32a    | MT-32                   | 9~13              | 3                               | 14                  |
| 7.5                     | 13.70       | ABN53c          | 20         | MC-32a    | MT-32                   | 12~18             | 3                               | 14                  |
| 11.0                    | 20.10       | ABN103c         | 30         | MC-40a    | MT-32                   | 18~25             | 3                               | 18                  |
| 15.0                    | 26.50       | ABN103c         | 40         | MC-40a    | MT-32                   | 22~32             | 3                               | 18                  |
| 18.5                    | 32.80       | ABN103c         | 40         | MC-50a    | MT-63                   | 28~40             | 3                               | 18                  |
| 22.0                    | 39.00       | ABN103c         | 50         | MC-50a    | MT-63                   | 34~50             | 3                               | 18                  |
| 30.0                    | 51.50       | ABN103c         | 75         | MC-65a    | MT-63                   | 45~65             | 3                               | 18                  |
| 37.0                    | 64.00       | ABN103c         | 75         | MC-75a    | MT-95                   | 54~75             | 5                               | 18                  |
| 45.0                    | 76.00       | ABN103c         | 100        | MC-85a    | MT-95                   | 63~85             | 5                               | 18                  |
| 55.0                    | 90.00       | ABN103c         | 100        | MC-100a   | MT-95                   | 70~95             | 5                               | 18                  |
| 59.0                    | 97.00       | ABN103c         | 100        | MC-130a   | MT-150                  | 80~105            | 5                               | 18                  |
| 75.0                    | 125         | ABN203c         | 150        | MC-150a   | MT-150                  | 110~150           | 10                              | 26                  |
| 90.0                    | 146         | ABN203c         | 200        | MC-185a   | MT-225                  | 120~185           | 10                              | 26                  |
| 110.0                   | 178         | ABN203c         | 200        | MC-185a   | MT-225                  | 160~240           | 10                              | 26                  |
| 132.0                   | 215         | ABN203c         | 250        | MC-225a   | MT-225                  | 160~240           | 10                              | 26                  |
| 160.0                   | 256         | ABN403c         | 300        | MC-400a   | MT-400                  | 200~330           | 18                              | 37                  |
| 200.0                   | 330         | ABN403c         | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 37                  |
| 220.0                   | 353         | ABN403c         | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 37                  |
| 250.0                   | 401         | ABN803c         | 500        | MC-630a   | MT-800                  | 260~400           | 18                              | 37                  |
| 300.0                   | 481         | ABN803c         | 500        | MC-630a   | MT-800                  | 400~630           | 18                              | 37                  |

# Type 2 Coordination

## 440V

### Metasol MCCB S-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                      | Short circuit<br>breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|----------------------|------------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting<br>range [A] |                                    |                     |
|                         | 440V        |                 |            |           |                         |                      | I <sub>r</sub> [kA]                | I <sub>q</sub> [kA] |
| 1.1                     | 2.37        | ABS53c          | 15         | MC-12b    | MT-32                   | 2.5~4                | 1                                  | 18                  |
| 1.5                     | 3.06        | ABS53c          | 15         | MC-18b    | MT-32                   | 2.5~4                | 1                                  | 18                  |
| 2.2                     | 4.42        | ABS53c          | 15         | MC-22b    | MT-32                   | 4~6                  | 1                                  | 18                  |
| 3.0                     | 5.77        | ABS53c          | 15         | MC-22b    | MT-32                   | 5~8                  | 1                                  | 18                  |
| 4.0                     | 7.90        | ABS53c          | 15         | MC-32a    | MT-32                   | 6~9                  | 1                                  | 18                  |
| 5.5                     | 10.40       | ABS53c          | 15         | MC-32a    | MT-32                   | 9~13                 | 3                                  | 18                  |
| 7.5                     | 13.70       | ABS53c          | 20         | MC-32a    | MT-32                   | 12~18                | 3                                  | 18                  |
| 11.0                    | 20.10       | ABS103c         | 30         | MC-40a    | MT-32                   | 18~25                | 3                                  | 37                  |
| 15.0                    | 26.50       | ABS103c         | 40         | MC-40a    | MT-32                   | 22~32                | 3                                  | 37                  |
| 18.5                    | 32.80       | ABS103c         | 40         | MC-50a    | MT-63                   | 28~40                | 3                                  | 37                  |
| 22.0                    | 39.00       | ABS103c         | 50         | MC-50a    | MT-63                   | 34~50                | 3                                  | 37                  |
| 30.0                    | 51.50       | ABS103c         | 75         | MC-65a    | MT-63                   | 45~65                | 3                                  | 37                  |
| 37.0                    | 64.00       | ABS103c         | 75         | MC-75a    | MT-95                   | 54~75                | 5                                  | 37                  |
| 45.0                    | 76.00       | ABS103c         | 100        | MC-85a    | MT-95                   | 63~85                | 5                                  | 37                  |
| 55.0                    | 90.00       | ABS103c         | 100        | MC-100a   | MT-95                   | 70~95                | 5                                  | 37                  |
| 59.0                    | 97.00       | ABS103c         | 100        | MC-130a   | MT-150                  | 80~105               | 5                                  | 37                  |
| 75.0                    | 125         | ABS203c         | 150        | MC-150a   | MT-150                  | 110~150              | 10                                 | 37                  |
| 90.0                    | 146         | ABS203c         | 200        | MC-185a   | MT-225                  | 120~185              | 10                                 | 37                  |
| 110.0                   | 178         | ABS203c         | 200        | MC-185a   | MT-225                  | 160~240              | 10                                 | 37                  |
| 132.0                   | 215         | ABS203c         | 250        | MC-225a   | MT-225                  | 160~240              | 10                                 | 37                  |
| 160.0                   | 256         | ABS403c         | 300        | MC-400a   | MT-400                  | 200~330              | 18                                 | 50                  |
| 200.0                   | 330         | ABS403c         | 400        | MC-400a   | MT-400                  | 260~400              | 18                                 | 50                  |
| 220.0                   | 353         | ABS403c         | 400        | MC-400a   | MT-400                  | 260~400              | 18                                 | 50                  |
| 250.0                   | 401         | ABS803c         | 500        | MC-630a   | MT-800                  | 260~400              | 18                                 | 65                  |
| 300.0                   | 481         | ABS803c         | 500        | MC-630a   | MT-800                  | 400~630              | 18                                 | 65                  |

## 440V

### Metasol MCCB H-type

| Rated operational power |             | Circuit breaker |            | Contactor | Thermal overload relays |                   | Short circuit breaking capacity |                     |
|-------------------------|-------------|-----------------|------------|-----------|-------------------------|-------------------|---------------------------------|---------------------|
| kW                      | Current [A] | Type            | Rating [A] | Type      | Type                    | Setting range [A] |                                 |                     |
|                         | 440V        |                 |            |           |                         |                   | I <sub>r</sub> [kA]             | I <sub>q</sub> [kA] |
| 1.1                     | 2.37        | ABH53c          | 15         | MC-12b    | MT-32                   | 2.5~4             | 1                               | 35                  |
| 1.5                     | 3.06        | ABH53c          | 15         | MC-18b    | MT-32                   | 2.5~4             | 1                               | 35                  |
| 2.2                     | 4.42        | ABH53c          | 15         | MC-22b    | MT-32                   | 4~6               | 1                               | 35                  |
| 3                       | 5.77        | ABH53c          | 15         | MC-22b    | MT-32                   | 5~8               | 1                               | 35                  |
| 4                       | 7.90        | ABH53c          | 15         | MC-32a    | MT-32                   | 6~9               | 1                               | 35                  |
| 5.5                     | 10.40       | ABH53c          | 15         | MC-32a    | MT-32                   | 9~13              | 3                               | 35                  |
| 7.5                     | 13.70       | ABH53c          | 20         | MC-32a    | MT-32                   | 12~18             | 3                               | 35                  |
| 11                      | 20.10       | ABH103c         | 30         | MC-40a    | MT-32                   | 18~25             | 3                               | 50                  |
| 15                      | 26.50       | ABH103c         | 40         | MC-40a    | MT-32                   | 22~32             | 3                               | 50                  |
| 18.5                    | 32.80       | ABH103c         | 40         | MC-50a    | MT-63                   | 28~40             | 3                               | 50                  |
| 22                      | 39.00       | ABH103c         | 50         | MC-50a    | MT-63                   | 34~50             | 3                               | 50                  |
| 30                      | 51.50       | ABH103c         | 75         | MC-65a    | MT-63                   | 45~65             | 3                               | 50                  |
| 37                      | 64.00       | ABH103c         | 75         | MC-75a    | MT-95                   | 54~75             | 5                               | 50                  |
| 45                      | 76.00       | ABH103c         | 100        | MC-85a    | MT-95                   | 63~85             | 5                               | 50                  |
| 55                      | 90.00       | ABH103c         | 100        | MC-100a   | MT-95                   | 70~95             | 5                               | 50                  |
| 59                      | 97.00       | ABH103c         | 100        | MC-130a   | MT-150                  | 80~105            | 5                               | 50                  |
| 75                      | 125         | ABH203c         | 150        | MC-150a   | MT-150                  | 110~150           | 10                              | 50                  |
| 90                      | 146         | ABH203c         | 200        | MC-185a   | MT-225                  | 120~185           | 10                              | 50                  |
| 110                     | 178         | ABH203c         | 200        | MC-185a   | MT-225                  | 160~240           | 10                              | 50                  |
| 132                     | 215         | ABH203c         | 250        | MC-225a   | MT-225                  | 160~240           | 10                              | 50                  |
| 160                     | 256         | ABL403c         | 300        | MC-400a   | MT-400                  | 200~330           | 18                              | 85                  |
| 200                     | 330         | ABL403c         | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 85                  |
| 220                     | 353         | ABL403c         | 400        | MC-400a   | MT-400                  | 260~400           | 18                              | 85                  |
| 250                     | 401         | ABL803c         | 500        | MC-630a   | MT-800                  | 260~400           | 18                              | 85                  |
| 300                     | 481         | ABL803c         | 500        | MC-630a   | MT-800                  | 400~630           | 18                              | 85                  |

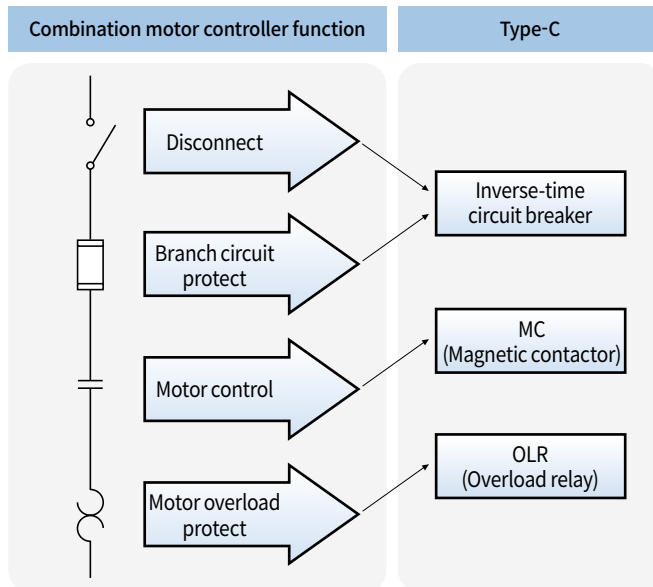
## Type 2 coordination (MCi series)

| Circuit breaker (ACB) |             |           | Contactor(MCi) |           | Short circuit                       |
|-----------------------|-------------|-----------|----------------|-----------|-------------------------------------|
| ACB type              | CRADLE type | Rating(A) | Type           | Rating(A) | I <sub>r</sub> =I <sub>q</sub> (kA) |
| AN-16C3-16A           | AL-H16C3    | 1600      | MCi-900        | 900       | 42                                  |
| AN-16C3-16A           | AL-H16C3    | 1600      | MCi-1050       | 1050      | 42                                  |
| AN-16C3-16A           | AL-H16C3    | 1600      | MCi-1260       | 1260      | 42                                  |
| AH-32E3-32A           | AL-H06~32E3 | 3200      | MCi-1700       | 1700      | 42                                  |
| AH-32E3-32A           | AL-H06~32E3 | 3200      | MCi-2100       | 2100      | 42                                  |
| AH-32E3-32A           | AL-H06~32E3 | 3200      | MCi-2650       | 2650      | 42                                  |

\* Breaker (ACB) Model AN-16C3-16A when the OCR Override setting is "On"

# Rated UL 508 combination motor controller type-C

Metasol MS



## 240V

### Susol UL MCCB C-type

| CB      | MC     | OLR           | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|---------|--------|---------------|---------|------------|---------------------|
| UTE100E | MC-6a  | MT-12 0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |               | 65      | 3          |                     |
| UTE100E | MC-9a  | MT-12 0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |               | 65      | 3          |                     |
| UTE100E | MC-12a | MT-12 0.1~18A | 50      | 5          | 15.2                |
| UTE100N |        |               | 65      | 5          |                     |
| UTE100E | MC-18a | MT-12 0.1~18A | 50      | 7.5        | 22                  |
| UTE100N |        |               | 65      | 7.5        |                     |
| UTS150N |        |               | 65      | 7.5        |                     |
| UTS150L |        |               | 100     | 7.5        |                     |
| UTE100E | MC-9b  | MT-32 0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |               | 65      | 3          |                     |
| UTE100E | MC-12b | MT-32 0.1~18A | 50      | 5          | 15.2                |
| UTE100N |        |               | 65      | 5          |                     |
| UTE100E | MC-18b | MT-32 0.1~25A | 50      | 7.5        | 22                  |
| UTE100N |        |               | 65      | 7.5        |                     |
| UTS150N |        |               | 65      | 7.5        |                     |
| UTS150L |        |               | 100     | 7.5        |                     |

| CB      | MC     | OLR           | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|---------|--------|---------------|---------|------------|---------------------|
| UTE100E | MC-22b | MT-32 0.1~32A | 50      | 10         | 28                  |
| UTE100N |        |               | 65      | 10         |                     |
| UTS150N |        |               | 65      | 10         |                     |
| UTS150L |        |               | 100     | 10         |                     |
| UTE100E | MC-32a | MT-32 0.1~32A | 50      | 10         | 28                  |
| UTE100N |        |               | 65      | 10         |                     |
| UTS150N |        |               | 65      | 10         |                     |
| UTS150L |        |               | 100     | 10         |                     |
| UTE100E | MC-40a | MT-32 0.1~40A | 50      | 15         | 42                  |
| UTE100N |        |               | 65      | 15         |                     |
| UTS150N |        |               | 65      | 15         |                     |
| UTS150L |        |               | 100     | 15         |                     |



# Rated UL 508 combination motor controller type-C

240V

## Susol UL MCCB C-type

| CB      | MC     | OLR              | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|---------|--------|------------------|---------|------------|---------------------|
| UTE100E | MC-6a  | MT-12<br>0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |                  | 65      | 3          |                     |
| UTE100E | MC-9a  | MT-12<br>0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |                  | 65      | 3          |                     |
| UTE100E | MC-12a | MT-12<br>0.1~18A | 50      | 5          | 15.2                |
| UTE100N |        |                  | 65      | 5          |                     |
| UTE100E | MC-18a | MT-12<br>0.1~18A | 50      | 7.5        | 22                  |
| UTE100N |        |                  | 65      | 7.5        |                     |
| UTS150N |        |                  | 65      | 7.5        |                     |
| UTS150L |        |                  | 100     | 7.5        |                     |
| UTE100E | MC-9b  | MT-32<br>0.1~10A | 50      | 3          | 9.6                 |
| UTE100N |        |                  | 65      | 3          |                     |
| UTE100E | MC-12b | MT-32<br>0.1~18A | 50      | 5          | 15.2                |
| UTE100N |        |                  | 65      | 5          |                     |
| UTE100E | MC-18b | MT-32<br>0.1~25A | 50      | 7.5        | 22                  |
| UTE100N |        |                  | 65      | 7.5        |                     |
| UTS150N |        |                  | 65      | 7.5        |                     |
| UTS150L |        |                  | 100     | 7.5        |                     |
| UTE100E | MC-22b | MT-32<br>0.1~32A | 50      | 10         | 28                  |
| UTE100N |        |                  | 65      | 10         |                     |
| UTS150N |        |                  | 65      | 10         |                     |
| UTS150L |        |                  | 100     | 10         |                     |
| UTE100E | MC-32a | MT-32<br>0.1~32A | 50      | 10         | 28                  |
| UTE100N |        |                  | 65      | 10         |                     |
| UTS150N |        |                  | 65      | 10         |                     |
| UTS150L |        |                  | 100     | 10         |                     |
| UTE100E | MC-40a | MT-32<br>0.1~40A | 50      | 15         | 42                  |
| UTE100N |        |                  | 65      | 15         |                     |
| UTS150N |        |                  | 65      | 15         |                     |
| UTS150L |        |                  | 100     | 15         |                     |
| UTE100E | MC-50a | MT-63<br>4~65A   | 50      | 25         | 65                  |
| UTE100N |        |                  | 65      | 25         |                     |
| UTS150N |        |                  | 65      | 25         |                     |
| UTS150L |        |                  | 100     | 25         |                     |

| CB      | MC      | OLR                | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|---------|---------|--------------------|---------|------------|---------------------|
| UTE100E | MC-65a  | MT-63<br>4~65A     | 50      | 30         | 80                  |
| UTE100N |         |                    | 65      | 30         |                     |
| UTS150N |         |                    | 65      | 30         |                     |
| UTS150L |         |                    | 100     | 30         |                     |
| UTS150N | MC-75a  | MT-95<br>7~95A     | 65      | 30         | 80                  |
| UTS150L |         |                    | 100     | 30         |                     |
| UTS150N | MC-85a  | MT-95<br>7~100A    | 65      | 40         | 104                 |
| UTS150L |         |                    | 100     | 40         |                     |
| UTS150N | MC-100a | MT-95<br>7~100A    | 65      | 40         | 104                 |
| UTS150L |         |                    | 100     | 40         |                     |
| UTS150N | MC-130a | MT-150<br>34~130A  | 65      | 40         | 104                 |
| UTS150L |         |                    | 100     | 40         |                     |
| UTS150N | MC-150a | MT-150<br>34~130A  | 65      | 50         | 130                 |
| UTS150L |         |                    | 100     | 50         |                     |
| UTS250N |         |                    | 65      | 50         |                     |
| UTS250L |         |                    | 100     | 50         |                     |
| UTS250N | MC-185a | MT-225<br>65~185A  | 65      | 60         | 154                 |
| UTS250L |         |                    | 100     | 60         |                     |
| UTS400N |         |                    | 65      | 60         |                     |
| UTS400L |         |                    | 100     | 60         |                     |
| UTS400N | MC-225a | MT-225<br>65~240A  | 65      | 75         | 192                 |
| UTS400L |         |                    | 100     | 75         |                     |
| UTS250N |         |                    | 65      | 75         |                     |
| UTS250L |         |                    | 100     | 75         |                     |
| UTS400N | MC-265a | MT-400<br>85~330A  | 65      | 100        | 248                 |
| UTS400L |         |                    | 100     | 100        |                     |
| UTS400N | MC-330a | MT-400<br>85~330A  | 65      | 100        | 248                 |
| UTS400L |         |                    | 100     | 100        |                     |
| UTS600N | MC-400a | MT-400<br>85~400A  | 65      | 150        | 360                 |
| UTS600L |         |                    | 100     | 150        |                     |
| UTS800L | MC-500a | MT-800<br>200~600A | 100     | 200        | 480                 |
| UTS800L | MC-630a | MT-800<br>200~800A | 100     | 250        | 604                 |

## 480V

## Susol UL MCCB C-type

| CB      | MC     | OLR              | Voltage (V) | Short circuit rating (kA) (4) | Maximum HP | Maximum NEC FLC [A] |
|---------|--------|------------------|-------------|-------------------------------|------------|---------------------|
| UTE100E | MC-6a  | MT-12<br>0.1~10A | 480         | 25                            | 5          | 7.6                 |
| UTE100N |        |                  | 480         | 35                            | 5          |                     |
| UTE100E | MC-9a  | MT-12<br>0.1~10A | 480         | 25                            | 5          | 7.6                 |
| UTE100N |        |                  | 480         | 35                            | 5          |                     |
| UTE100E | MC-12a | MT-12<br>0.1~13A | 480         | 25                            | 7.5        | 11                  |
| UTE100N |        |                  | 480         | 35                            | 7.5        |                     |
| UTE100E | MC-18a | MT-12<br>0.1~18A | 480         | 25                            | 10         | 14                  |
| UTE100N |        |                  | 480         | 35                            | 10         |                     |
| UTS150N |        |                  | 480         | 35                            | 10         |                     |
| UTS150H |        |                  | 480         | 65                            | 10         |                     |
| UTS150L |        |                  | 480         | 100                           | 10         |                     |
| UTE100E | MC-9b  | MT-32<br>0.1~10A | 480         | 25                            | 5          | 7.6                 |
| UTE100N |        |                  | 480         | 35                            | 5          |                     |
| UTE100E | MC-12b | MT-32<br>0.1~13A | 480         | 25                            | 7.5        | 11                  |
| UTE100N |        |                  | 480         | 35                            | 7.5        |                     |
| UTE100E | MC-18b | MT-32<br>0.1~18A | 480         | 25                            | 10         | 14                  |
| UTE100N |        |                  | 480         | 35                            | 10         |                     |
| UTE100E | MC-22b | MT-32<br>0.1~25A | 480         | 25                            | 15         | 21                  |
| UTE100N |        |                  | 480         | 35                            | 15         |                     |
| UTS150N |        |                  | 480         | 35                            | 15         |                     |
| UTS150H |        |                  | 480         | 65                            | 15         |                     |
| UTS150L |        |                  | 480         | 100                           | 15         |                     |
| UTE100E | MC-32a | MT-32<br>0.1~32A | 480         | 25                            | 20         | 27                  |
| UTE100N |        |                  | 480         | 35                            | 20         |                     |
| UTS150N |        |                  | 480         | 35                            | 20         |                     |
| UTS150H |        |                  | 480         | 65                            | 20         |                     |
| UTE100E | MC-40a | MT-32<br>0.1~40A | 480         | 25                            | 30         | 40                  |
| UTE100N |        |                  | 480         | 35                            | 30         |                     |
| UTS150N |        |                  | 480         | 35                            | 30         |                     |
| UTS150H |        |                  | 480         | 65                            | 30         |                     |
| UTS150L |        |                  | 480         | 100                           | 30         |                     |
| UTE100E | MC-50a | MT-63<br>4~65A   | 480         | 25                            | 40         | 52                  |
| UTE100N |        |                  | 480         | 35                            | 40         |                     |
| UTS150N |        |                  | 480         | 35                            | 40         |                     |
| UTS150H |        |                  | 480         | 65                            | 40         |                     |
| UTS150L |        |                  | 480         | 100                           | 40         |                     |
| UTE100E | MC-65a | MT-63<br>4~65A   | 480         | 25                            | 50         | 65                  |
| UTE100N |        |                  | 480         | 35                            | 50         |                     |
| UTS150N |        |                  | 480         | 35                            | 50         |                     |
| UTS150H |        |                  | 480         | 65                            | 50         |                     |
| UTS150L |        |                  | 480         | 100                           | 50         |                     |

| CB      | MC      | OLR                | Voltage (V) | Short circuit rating (kA) (4) | Maximum HP | Maximum NEC FLC [A] |
|---------|---------|--------------------|-------------|-------------------------------|------------|---------------------|
| UTS150N | MC-75a  | MT-95<br>7~75A     | 480         | 35                            | 50         | 65                  |
| UTS150H |         |                    | 480         | 65                            | 50         |                     |
| UTS150L |         |                    | 480         | 100                           | 50         |                     |
| UTS150N | MC-85a  | MT-95<br>7~85A     | 480         | 35                            | 60         | 77                  |
| UTS150H |         |                    | 480         | 65                            | 60         |                     |
| UTS150L |         |                    | 480         | 100                           | 60         |                     |
| UTS150N | MC-100a | MT-95<br>7~100A    | 480         | 35                            | 75         | 96                  |
| UTS150H |         |                    | 480         | 65                            | 75         |                     |
| UTS150L |         |                    | 480         | 100                           | 75         |                     |
| UTS150N | MC-130a | MT-150<br>34~130A  | 480         | 35                            | 75         | 96                  |
| UTS150H |         |                    | 480         | 65                            | 75         |                     |
| UTS150L |         |                    | 480         | 100                           | 75         |                     |
| UTS150N | MC-150a | MT-150<br>34~130A  | 480         | 35                            | 100        | 124                 |
| UTS150H |         |                    | 480         | 65                            | 100        |                     |
| UTS150L |         |                    | 480         | 100                           | 100        |                     |
| UTS250N |         |                    | 480         | 35                            | 100        |                     |
| UTS250H |         |                    | 480         | 65                            | 100        |                     |
| UTS250N | MC-185a | MT-225<br>65~185A  | 480         | 35                            | 125        | 156                 |
| UTS250H |         |                    | 480         | 65                            | 125        |                     |
| UTS250L |         |                    | 480         | 100                           | 125        |                     |
| UTS400N |         |                    | 480         | 35                            | 150        |                     |
| UTS400H |         |                    | 480         | 65                            | 150        |                     |
| UTS400L |         |                    | 480         | 100                           | 150        |                     |
| UTS250N | MC-225a | MT-225<br>65~240A  | 480         | 35                            | 125        | 180                 |
| UTS250H |         |                    | 480         | 65                            | 125        |                     |
| UTS250L |         |                    | 480         | 100                           | 125        |                     |
| UTS400N |         |                    | 480         | 35                            | 150        |                     |
| UTS400H |         |                    | 480         | 65                            | 150        |                     |
| UTS400L | MC-265a | MT-400<br>85~330A  | 480         | 35                            | 200        | 240                 |
| UTS400H |         |                    | 480         | 65                            | 200        |                     |
| UTS400L |         |                    | 480         | 100                           | 200        |                     |
| UTS400N | MC-330a | MT-400<br>85~330A  | 480         | 35                            | 200        | 302                 |
| UTS400H |         |                    | 480         | 65                            | 200        |                     |
| UTS400L |         |                    | 480         | 100                           | 200        |                     |
| UTS600N | MC-400a | MT-400<br>85~400A  | 480         | 35                            | 300        | 361                 |
| UTS600H |         |                    | 480         | 65                            | 300        |                     |
| UTS600L |         |                    | 480         | 100                           | 300        |                     |
| UTS800H | MC-500a | MT-800<br>200~600A | 480         | 65                            | 400        | 477                 |
| UTS800L |         |                    | 480         | 100                           | 400        |                     |
| UTS800H | MC-630a | MT-800<br>200~800A | 480         | 65                            | 500        | 590                 |
| UTS800L | MC-630a |                    | 480         | 100                           | 500        |                     |

# Rated UL 508 combination motor controller type-C

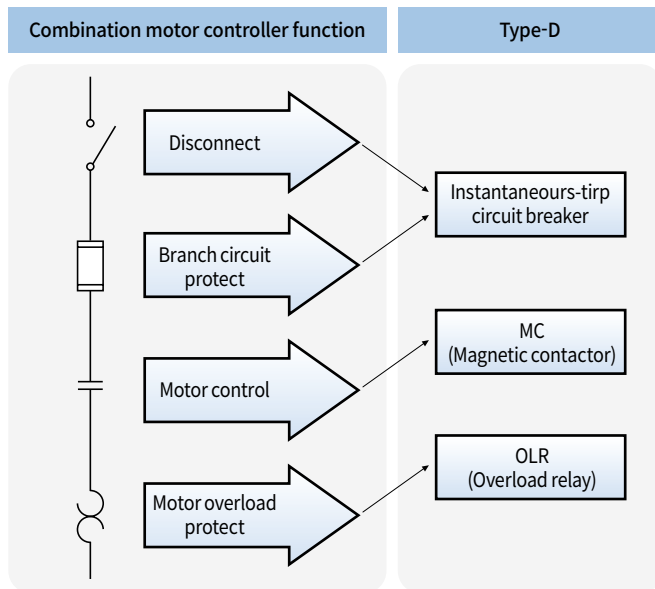
600V

## Susol UL MCCB C-type

| CB      | MC     | OLR              | Voltage (V) | Maximum HP | Maximum HP | Maximum NEC FLC [A] |
|---------|--------|------------------|-------------|------------|------------|---------------------|
| UTE100E | MC-6a  | MT-12<br>0.1~10A | 600Y/347    | 14         | 7.5        | 9                   |
| UTE100N |        |                  | 600Y/347    | 18         | 7.5        |                     |
| UTE100E | MC-9a  | MT-12<br>0.1~10A | 600Y/347    | 14         | 7.5        | 9                   |
| UTE100N |        |                  | 600Y/347    | 18         | 7.5        |                     |
| UTE100E | MC-12a | MT-12<br>0.1~13A | 600Y/347    | 14         | 10         | 11                  |
| UTE100N |        |                  | 600Y/347    | 18         | 10         |                     |
| UTE100E | MC-18a | MT-12<br>0.1~18A | 600Y/347    | 14         | 15         | 17                  |
| UTE100N |        |                  | 600Y/347    | 18         | 15         |                     |
| UTS150N |        |                  | 600         | 18         | 15         |                     |
| UTS150H |        |                  | 600         | 35         | 15         |                     |
| UTS150L |        |                  | 600         | 50         | 15         |                     |
| UTE100E | MC-9b  | MT-32<br>0.1~10A | 600Y/347    | 14         | 7.5        | 9                   |
| UTE100N |        |                  | 600Y/347    | 18         | 7.5        |                     |
| UTE100E | MC-12b | MT-32<br>0.1~13A | 600Y/347    | 14         | 10         | 11                  |
| UTE100N |        |                  | 600Y/347    | 18         | 10         |                     |
| UTE100E | MC-18b | MT-32<br>0.1~18A | 600Y/347    | 14         | 15         | 17                  |
| UTE100N |        |                  | 600Y/347    | 18         | 15         |                     |
| UTE100E | MC-22b | MT-32<br>0.1~25A | 600Y/347    | 14         | 20         | 22                  |
| UTE100N |        |                  | 600Y/347    | 18         | 20         |                     |
| UTS150N |        |                  | 600         | 18         | 20         |                     |
| UTS150H |        |                  | 600         | 35         | 20         |                     |
| UTS150L |        |                  | 600         | 50         | 20         |                     |
| UTE100E | MC-32a | MT-32<br>0.1~32A | 600Y/347    | 14         | 25         | 27                  |
| UTE100N |        |                  | 600Y/347    | 18         | 25         |                     |
| UTS150N |        |                  | 600         | 18         | 25         |                     |
| UTS150H |        |                  | 600         | 35         | 25         |                     |
| UTS150L |        |                  | 600         | 50         | 25         |                     |
| UTE100E | MC-40a | MT-32<br>0.1~32A | 600Y/347    | 14         | 30         | 32                  |
| UTE100N |        |                  | 600Y/347    | 18         | 30         |                     |
| UTS150N |        |                  | 600         | 18         | 30         |                     |
| UTS150H |        |                  | 600         | 35         | 30         |                     |
| UTS150L |        |                  | 600         | 50         | 30         |                     |
| UTE100E | MC-50a | MT-63<br>4~65A   | 600Y/347    | 14         | 50         | 52                  |
| UTE100N |        |                  | 600Y/347    | 18         | 50         |                     |
| UTS150N |        |                  | 600         | 18         | 50         |                     |
| UTS150H |        |                  | 600         | 35         | 50         |                     |
| UTS150L |        |                  | 600         | 50         | 50         |                     |
| UTE100E | MC-65a | MT-63<br>4~65A   | 600Y/347    | 14         | 60         | 62                  |
| UTE100N |        |                  | 600Y/347    | 18         | 60         |                     |
| UTS150N |        |                  | 600         | 18         | 60         |                     |
| UTS150H |        |                  | 600         | 35         | 60         |                     |
| UTS150L |        |                  | 600         | 50         | 60         |                     |

| CB      | MC      | OLR                | Voltage (V) | Maximum HP | Maximum HP | Maximum NEC FLC [A] |
|---------|---------|--------------------|-------------|------------|------------|---------------------|
| UTS150N | MC-75a  | MT-95<br>7~75A     | 600         | 18         | 60         | 62                  |
| UTS150H |         |                    | 600         | 35         | 60         |                     |
| UTS150L |         |                    | 600         | 50         | 60         |                     |
| UTS150N | MC-85a  | MT-95<br>7~85A     | 600         | 18         | 75         | 77                  |
| UTS150H |         |                    | 600         | 35         | 75         |                     |
| UTS150L |         |                    | 600         | 50         | 75         |                     |
| UTS150N | MC-100a | MT-95<br>7~85A     | 600         | 18         | 75         | 77                  |
| UTS150H |         |                    | 600         | 35         | 75         |                     |
| UTS150L |         |                    | 600         | 50         | 75         |                     |
| UTS150N | MC-130a | MT-150<br>34~85A   | 600         | 18         | 75         | 77                  |
| UTS150H |         |                    | 600         | 35         | 75         |                     |
| UTS150L |         |                    | 600         | 50         | 75         |                     |
| UTS150N | MC-150a | MT-150<br>34~85A   | 600         | 18         | 75         | 77                  |
| UTS150H |         |                    | 600         | 35         | 75         |                     |
| UTS150L |         |                    | 600         | 50         | 75         |                     |
| UTS250N | MC-185a | MT-150<br>65~185A  | 600         | 18         | 125        | 125                 |
| UTS250H |         |                    | 600         | 35         | 125        |                     |
| UTS250L |         |                    | 600         | 50         | 125        |                     |
| UTS400N |         |                    | 600         | 18         | 150        |                     |
| UTS400H |         |                    | 600         | 35         | 150        |                     |
| UTS400L |         |                    | 600         | 50         | 150        |                     |
| UTS250N | MC-225a | MT-225<br>65~185A  | 600         | 18         | 125        | 144                 |
| UTS250H |         |                    | 600         | 35         | 125        |                     |
| UTS250L |         |                    | 600         | 50         | 125        |                     |
| UTS400N |         |                    | 600         | 18         | 150        |                     |
| UTS400H |         |                    | 600         | 35         | 150        |                     |
| UTS400L |         |                    | 600         | 50         | 150        |                     |
| UTS400N | MC-265a | MT-400<br>85~240A  | 600         | 18         | 200        | 192                 |
| UTS400H |         |                    | 600         | 35         | 200        |                     |
| UTS400L |         |                    | 600         | 50         | 200        |                     |
| UTS400N | MC-330a | MT-400<br>85~330A  | 600         | 18         | 200        | 242                 |
| UTS400H |         |                    | 600         | 35         | 200        |                     |
| UTS400L |         |                    | 600         | 50         | 200        |                     |
| UTS600N | MC-400a | MT-400<br>85~400A  | 600         | 18         | 300        | 289                 |
| UTS600H |         |                    | 600         | 35         | 300        |                     |
| UTS600L |         |                    | 600         | 50         | 300        |                     |
| UTS800H | MC-500a | MT-800<br>200~400A | 600         | 35         | 400        | 382                 |
| UTS800L |         |                    | 600         | 50         | 400        |                     |
| UTS800H | MC-630a | MT-800<br>200~600A | 600         | 35         | 500        | 472                 |
| UTS800L |         |                    | 600         | 50         | 500        |                     |

# Rated UL 508 combination motor controller type-D Metasol MS



## 240V

### Susol UL MCCB D-type

| CB          | MC     | OLR           | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|-------------|--------|---------------|---------|------------|---------------------|
| UTS150L MCP | MC-6a  | MT-12 0.1~10A | 100     | 3          | 9.6                 |
| UTS150L MCP | MC-9a  | MT-12 0.1~10A | 100     | 3          | 9.6                 |
| UTS150L MCP | MC-12a | MT-12 0.1~18A | 100     | 5          | 15.2                |
| UTS150L MCP | MC-18a | MT-12 0.1~18A | 100     | 7.5        | 22                  |
| UTS150L MCP | MC-9b  | MT-32 0.1~10A | 100     | 3          | 9.6                 |
| UTS150L MCP | MC-12b | MT-32 0.1~18A | 100     | 5          | 15.2                |
| UTS150L MCP | MC-18b | MT-32 0.1~25A | 100     | 7.5        | 22                  |
| UTS150L MCP | MC-22b | MT-32 0.1~32A | 100     | 10         | 28                  |
| UTS150L MCP | MC-32a | MT-32 0.1~32A | 100     | 10         | 28                  |
| UTS150L MCP | MC-40a | MT-32 0.1~40A | 100     | 15         | 42                  |
| UTS150L MCP | MC-50a | MT-63 4~65A   | 100     | 25         | 65                  |
| UTS150L MCP | MC-65a | MT-63 4~65A   | 100     | 30         | 80                  |
| UTS150L MCP | MC-75a | MT-95 7~95A   | 100     | 30         | 80                  |

| CB          | MC      | OLR             | kA@240V | Maximum HP | Maximum NEC FLC [A] |
|-------------|---------|-----------------|---------|------------|---------------------|
| UTS150L MCP | MC-85a  | MT-95 7~100A    | 100     | 40         | 104                 |
| UTS150L MCP | MC-100a | MT-95 7~100A    | 100     | 40         | 104                 |
| UTS150L MCP | MC-130a | MT-150 34~130A  | 100     | 40         | 104                 |
| UTS250L MCP | MC-150a | MT-150 34~130A  | 100     | 50         | 130                 |
| UTS250L MCP | MC-185a | MT-225 65~160A  | 100     | 60         | 154                 |
| UTS400L MCP | MC-185a | MT-225 65~185A  | 100     | 60         | 154                 |
| UTS250L MCP | MC-225a | MT-225 65~240A  | 100     | 75         | 192                 |
| UTS400L MCP | MC-225a | MT-225 65~240A  | 100     | 75         | 192                 |
| UTS400L MCP | MC-265a | MT-400 85~330A  | 100     | 100        | 248                 |
| UTS400L MCP | MC-330a | MT-400 85~330A  | 100     | 100        | 248                 |
| UTS600L MCP | MC-400a | MT-400 85~400A  | 100     | 150        | 360                 |
| UTS800L MCP | MC-500a | MT-800 200~600A | 100     | 200        | 480                 |
| UTS800L MCP | MC-630a | MT-800 200~800A | 100     | 250        | 604                 |

# Rated UL 508 combination motor controller type-D

480V

## Susol UL MCCB D-type

| CB          | MC      | OLR              | kA@400V | Maximum HP | Maximum NEC FLC [A] |
|-------------|---------|------------------|---------|------------|---------------------|
| UTS150L MCP | MC-6a   | MT-12<br>0.1~10A | 65      | 5          | 7.6                 |
| UTS150L MCP | MC-9a   | MT-12<br>0.1~10A | 65      | 5          | 7.6                 |
| UTS150L MCP | MC-12a  | MT-12<br>0.1~13A | 65      | 7.5        | 11                  |
| UTS150L MCP | MC-18a  | MT-12<br>0.1~18A | 65      | 10         | 14                  |
| UTS150L MCP | MC-9b   | MT-32<br>0.1~10A | 65      | 5          | 7.6                 |
| UTS150L MCP | MC-12b  | MT-32<br>0.1~13A | 65      | 7.5        | 11                  |
| UTS150L MCP | MC-18b  | MT-32<br>0.1~18A | 65      | 10         | 14                  |
| UTS150L MCP | MC-22b  | MT-32<br>0.1~25A | 65      | 15         | 21                  |
| UTS150L MCP | MC-32a  | MT-32<br>0.1~32A | 65      | 20         | 27                  |
| UTS150L MCP | MC-40a  | MT-32<br>0.1~40A | 65      | 20         | 40                  |
| UTS150H MCP | MC-50a  | MT-63<br>4~65A   | 65      | 40         | 52                  |
| UTS150L MCP | MC-50a  | MT-63<br>4~65A   | 100     | 40         | 52                  |
| UTS150H MCP | MC-65a  | MT-63<br>4~65A   | 65      | 50         | 65                  |
| UTS150L MCP | MC-65a  | MT-63<br>4~65A   | 100     | 50         | 65                  |
| UTS150H MCP | MC-75a  | MT-95<br>7~75A   | 65      | 50         | 65                  |
| UTS150L MCP | MC-75a  | MT-95<br>7~75A   | 100     | 50         | 65                  |
| UTS150H MCP | MC-85a  | MT-95<br>7~85A   | 65      | 60         | 77                  |
| UTS150L MCP | MC-85a  | MT-95<br>7~85A   | 100     | 60         | 77                  |
| UTS150H MCP | MC-100a | MT-95<br>7~100A  | 65      | 75         | 96                  |
| UTS150L MCP | MC-100a | MT-95<br>7~100A  | 100     | 75         | 96                  |

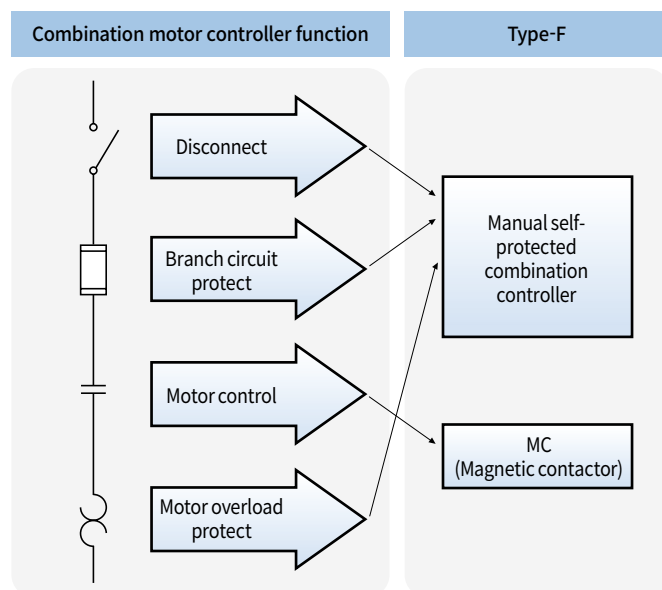
| CB          | MC      | OLR                | kA@400V | Maximum HP | Maximum NEC FLC [A] |
|-------------|---------|--------------------|---------|------------|---------------------|
| UTS150H MCP | MC-130a | MT-150<br>34~130A  | 65      | 75         | 96                  |
| UTS150L MCP | MC-130a | MT-150<br>34~130A  | 100     | 75         | 96                  |
| UTS250H MCP | MC-150a | MT-150<br>34~130A  | 65      | 100        | 124                 |
| UTS250L MCP | MC-150a | MT-150<br>34~130A  | 100     | 100        | 124                 |
| UTS250H MCP | MC-185a | MT-225<br>65~185A  | 65      | 125        | 156                 |
| UTS250L MCP | MC-185a | MT-225<br>65~185A  | 85      | 125        | 156                 |
| UTS400H MCP | MC-185a | MT-225<br>65~185A  | 65      | 125        | 156                 |
| UTS400L MCP | MC-185a | MT-225<br>65~185A  | 100     | 125        | 156                 |
| UTS250H MCP | MC-225a | MT-225<br>65~240A  | 65      | 150        | 180                 |
| UTS250L MCP | MC-225a | MT-225<br>65~240A  | 85      | 150        | 180                 |
| UTS400H MCP | MC-225a | MT-225<br>65~240A  | 65      | 150        | 180                 |
| UTS400L MCP | MC-225a | MT-225<br>65~240A  | 100     | 150        | 180                 |
| UTS400H MCP | MC-265a | MT-400<br>85~330A  | 65      | 200        | 240                 |
| UTS400L MCP | MC-265a | MT-400<br>85~330A  | 100     | 200        | 240                 |
| UTS400H MCP | MC-330a | MT-400<br>85~330A  | 65      | 200        | 240                 |
| UTS400L MCP | MC-330a | MT-400<br>85~330A  | 100     | 200        | 240                 |
| UTS600H MCP | MC-400a | MT-400<br>85~400A  | 65      | 300        | 361                 |
| UTS600L MCP | MC-400a | MT-400<br>85~400A  | 100     | 300        | 361                 |
| UTS800L MCP | MC-500a | MT-800<br>200~600A | 100     | 400        | 477                 |
| UTS800L MCP | MC-630a | MT-800<br>200~800A | 100     | 500        | 590                 |

## 600V

## Susol UL MCCB D-type

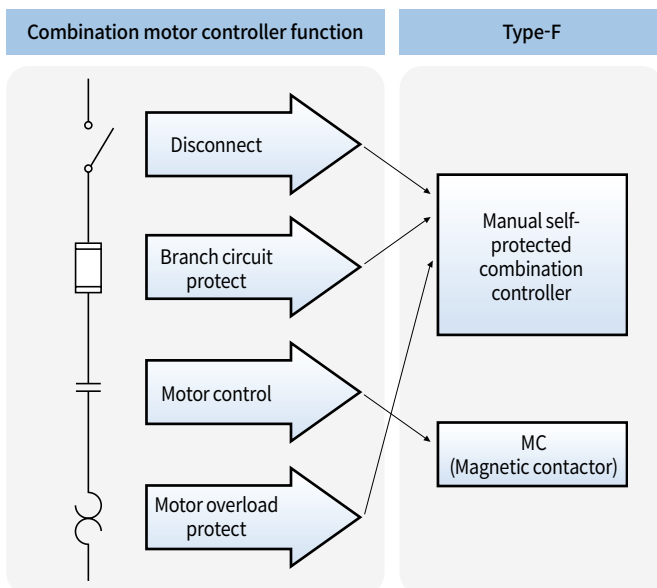
| CB          | MC      | OLR              | kA@600V | Maximum HP | Maximum NEC FLC [A] | CB          | MC      | OLR                | kA@600V | Maximum HP | Maximum NEC FLC [A] |
|-------------|---------|------------------|---------|------------|---------------------|-------------|---------|--------------------|---------|------------|---------------------|
| UTS150L MCP | MC-6a   | MT-12<br>0.1~10A | 25      | 7.5        | 9                   | UTS150H MCP | MC-130a | MT-150<br>65~185A  | 25      | 75         | 77                  |
| UTS150L MCP | MC-9a   | MT-12<br>0.1~10A | 25      | 7.5        | 9                   | UTS150L MCP | MC-130a | MT-150<br>65~185A  | 50      | 75         | 77                  |
| UTS150L MCP | MC-12a  | MT-12<br>0.1~13A | 25      | 10         | 11                  | UTS150H MCP | MC-150a | MT-150<br>65~185A  | 25      | 75         | 77                  |
| UTS150L MCP | MC-18a  | MT-12<br>0.1~18A | 25      | 15         | 17                  | UTS150L MCP | MC-150a | MT-150<br>65~185A  | 50      | 75         | 77                  |
| UTS150L MCP | MC-9b   | MT-32<br>0.1~10A | 25      | 7.5        | 9                   | UTS250H MCP | MC-185a | MT-225<br>65~185A  | 25      | 125        | 125                 |
| UTS150L MCP | MC-12b  | MT-32<br>0.1~13A | 25      | 10         | 11                  | UTS250L MCP | MC-185a | MT-225<br>65~185A  | 50      | 125        | 125                 |
| UTS150L MCP | MC-18b  | MT-32<br>0.1~18A | 25      | 15         | 17                  | UTS400H MCP | MC-185a | MT-225<br>65~185A  | 25      | 125        | 125                 |
| UTS150L MCP | MC-22b  | MT-32<br>0.1~25A | 25      | 20         | 22                  | UTS400L MCP | MC-185a | MT-225<br>65~185A  | 50      | 125        | 125                 |
| UTS150L MCP | MC-32a  | MT-32<br>0.1~32A | 25      | 25         | 27                  | UTS250H MCP | MC-225a | MT-225<br>65~185A  | 25      | 150        | 144                 |
| UTS150L MCP | MC-40a  | MT-32<br>0.1~32A | 25      | 25         | 32                  | UTS250L MCP | MC-225a | MT-225<br>65~185A  | 50      | 150        | 144                 |
| UTS150H MCP | MC-50a  | MT-63<br>4~65A   | 25      | 50         | 52                  | UTS400H MCP | MC-225a | MT-225<br>65~185A  | 25      | 150        | 144                 |
| UTS150L MCP | MC-50a  | MT-63<br>4~65A   | 50      | 50         | 62                  | UTS400L MCP | MC-225a | MT-225<br>65~185A  | 50      | 150        | 144                 |
| UTS150H MCP | MC-65a  | MT-63<br>4~65A   | 25      | 60         | 62                  | UTS400H MCP | MC-265a | MT-400<br>85~240A  | 25      | 200        | 192                 |
| UTS150L MCP | MC-65a  | MT-63<br>4~65A   | 50      | 60         | 62                  | UTS400L MCP | MC-265a | MT-400<br>85~240A  | 50      | 200        | 192                 |
| UTS150H MCP | MC-75a  | MT-95<br>7~75A   | 25      | 60         | 77                  | UTS400H MCP | MC-330a | MT-400<br>85~330A  | 25      | 200        | 242                 |
| UTS150L MCP | MC-75a  | MT-95<br>7~75A   | 50      | 60         | 77                  | UTS400L MCP | MC-330a | MT-400<br>85~330A  | 50      | 200        | 242                 |
| UTS150H MCP | MC-85a  | MT-95<br>7~85A   | 25      | 75         | 77                  | UTS600H MCP | MC-400a | MT-400<br>85~400A  | 25      | 300        | 289                 |
| UTS150L MCP | MC-85a  | MT-95<br>7~85A   | 50      | 75         | 77                  | UTS600L MCP | MC-400a | MT-400<br>85~400A  | 50      | 300        | 289                 |
| UTS150H MCP | MC-100a | MT-95<br>7~85A   | 25      | 75         | 77                  | UTS800L MCP | MC-500a | MT-800<br>200~400A | 50      | 400        | 382                 |
| UTS150L MCP | MC-100a | MT-95<br>7~85A   | 50      | 75         | 77                  | UTS800L MCP | MC-630a | MT-800<br>200~600A | 50      | 500        | 472                 |

# Rated UL 508 combination motor controller type-F



## 32AF rotary operation, High interruption

| Manual self-Protected | Adjustment range (A) | Short circuit rating (kA) |           |           | MC (Applied contactor) |                   |
|-----------------------|----------------------|---------------------------|-----------|-----------|------------------------|-------------------|
|                       |                      | 240V                      | 480Y/277V | 600Y/347V | Susol                  | Metasol           |
| MMS-32H-0.16          | 0.1~0.16             | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-0.25          | 0.16~0.25            | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-0.4           | 0.25~0.4             | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-0.63          | 0.4~0.63             | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-1             | 0.63~1               | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-1.6           | 1~1.6                | 100                       | 65        | 25        | MC-9                   | MC-6a/MC-9a/MC-9b |
| MMS-32H-2.5           | 1.6~2.5              | 100                       | 65        | 25        | MC-12                  | MC-12a/MC-12b     |
| MMS-32H-4             | 2.5~4                | 100                       | 65        | 25        | MC-12                  | MC-12a/MC-12b     |
| MMS-32H-6             | 4~6                  | 100                       | 65        | 25        | MC-18                  | MC-18a/MC-18b     |
| MMS-32H-8             | 5~8                  | 100                       | 65        | 10        | MC-18                  | MC-18a/MC-18b     |
| MMS-32H-10            | 6~10                 | 100                       | 65        | 10        | MC-18                  | MC-18a/MC-18b     |
| MMS-32H-13            | 9~13                 | 100                       | 65        | 10        | MC-25                  | MC-22b/MC-25a     |
| MMS-32H-17            | 11~17                | 100                       | 30        | 10        | MC-25                  | MC-22b/MC-25a     |
| MMS-32H-22            | 14~22                | 100                       | 30        | 10        | MC-25                  | MC-22b/MC-25a     |
| MMS-32H-26            | 18~26                | 100                       | 30        | 10        | MC-32                  | MC-32a            |
| MMS-32H-32            | 22~32                | 100                       | 30        | 10        | MC-32                  | MC-32a            |
| MMS-32H-40            | 28~40                | 100                       | 30        | 10        | -                      | MC-35a/MC-40a     |



## 63AF rotary operation, Standard interruption

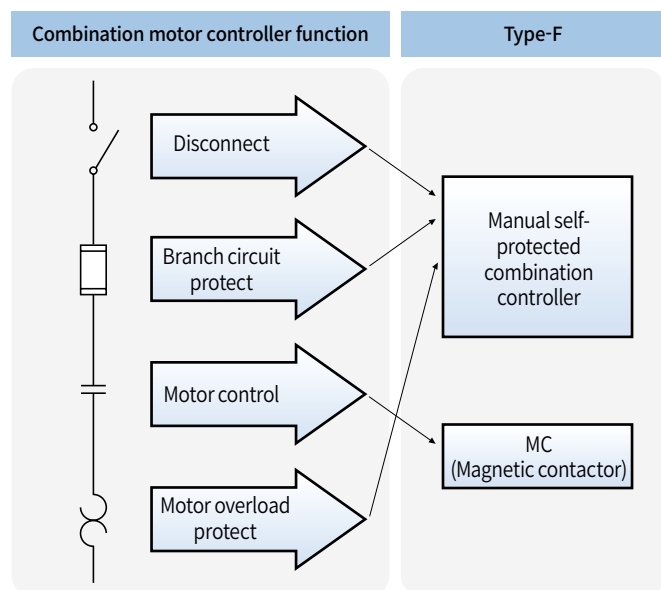
| Manual self-Protected | Adjustment range (A) | Short circuit rating (kA) |           |           | MC (Applied contactor) |         |
|-----------------------|----------------------|---------------------------|-----------|-----------|------------------------|---------|
|                       |                      | 240V                      | 480Y/277V | 600Y/347V | Susol                  | Metasol |
| MMS-63S-10            | 6~10                 | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63S-13            | 9~13                 | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63S-17            | 11~17                | 100                       | 40        | 10        | MC-35                  | MC-50a  |
| MMS-63S-22            | 14~22                | 100                       | 40        | 10        | MC-35                  | MC-50a  |
| MMS-63S-26            | 18~26                | 100                       | 40        | 10        | MC-35                  | MC-50a  |
| MMS-63S-32            | 22~32                | 100                       | 40        | 10        | MC-35                  | MC-50a  |
| MMS-63S-40            | 28~40                | 100                       | 40        | 10        | MC-40                  | MC-50a  |
| MMS-63S-50            | 34~50                | 100                       | 40        | 10        | MC-50                  | MC-50a  |
| MMS-63S-63            | 45~63                | 100                       | 40        | 10        | MC-63                  | MC-65a  |
| MMS-63S-65            | 47~65                | 100                       | 40        | 10        | -                      | MC-65a  |

## 63AF rotary operation, High interruption

| Manual self-Protected | Adjustment range (A) | Short circuit rating (kA) |           |           | MC (Applied contactor) |         |
|-----------------------|----------------------|---------------------------|-----------|-----------|------------------------|---------|
|                       |                      | 240V                      | 480Y/277V | 600Y/347V | Susol                  | Metasol |
| MMS-63H-10            | 6~10                 | 100                       | 65        | 25        | MC-35                  | MC-50a  |
| MMS-63H-13            | 9~13                 | 100                       | 65        | 25        | MC-35                  | MC-50a  |
| MMS-63H-17            | 11~17                | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63H-22            | 14~22                | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63H-26            | 18~26                | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63H-32            | 22~32                | 100                       | 50        | 10        | MC-35                  | MC-50a  |
| MMS-63H-40            | 28~40                | 100                       | 50        | 10        | MC-40                  | MC-50a  |
| MMS-63H-50            | 34~50                | 100                       | 50        | 10        | MC-50                  | MC-50a  |
| MMS-63H-63            | 45~63                | 100                       | 50        | 10        | MC-63                  | MC-65a  |
| MMS-63H-65            | 47~65                | 100                       | 40        | 10        | -                      | MC-65a  |



# Rated UL 508 combination motor controller type-F



## 100AF rotary operation, Standard interruption

| Manual self-Protected | Adjustment range (A) | Short circuit rating (kA) |           |           | MC (Applied contactor) |         |
|-----------------------|----------------------|---------------------------|-----------|-----------|------------------------|---------|
|                       |                      | 240V                      | 480Y/277V | 600Y/347V | Susol                  | Metasol |
| MMS-100S-17           | 11~17                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-22           | 14~22                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-26           | 18~26                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-32           | 22~32                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-40           | 28~40                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-50           | 34~50                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100S-63           | 45~63                | 100                       | 40        | 10        | MC-65                  | MC-75a  |
| MMS-100S-75           | 55~75                | 100                       | 40        | 10        | MC-75                  | MC-75a  |
| MMS-100S-90           | 70~90                | 100                       | 40        | 10        | MC-85                  | MC-85a  |
| MMS-100S-100          | 80~100               | 100                       | 40        | 10        | MC-95                  | MC-100a |

## 100AF rotary operation, High interruption

| Manual self-Protected | Adjustment range (A) | Short circuit rating (kA) |           |           | MC (Applied contactor) |         |
|-----------------------|----------------------|---------------------------|-----------|-----------|------------------------|---------|
|                       |                      | 240V                      | 480Y/277V | 600Y/347V | Susol                  | Metasol |
| MMS-100H-17           | 11~17                | 100                       | 65        | 25        | MC-65                  | MC-75a  |
| MMS-100H-22           | 14~22                | 100                       | 65        | 20        | MC-65                  | MC-75a  |
| MMS-100H-26           | 18~26                | 100                       | 65        | 20        | MC-65                  | MC-75a  |
| MMS-100H-32           | 22~32                | 100                       | 65        | 20        | MC-65                  | MC-75a  |
| MMS-100H-40           | 28~40                | 100                       | 65        | 20        | MC-65                  | MC-75a  |
| MMS-100H-50           | 34~50                | 100                       | 65        | 20        | MC-65                  | MC-75a  |
| MMS-100H-63           | 45~63                | 100                       | 50        | 10        | MC-65                  | MC-75a  |
| MMS-100H-75           | 55~75                | 100                       | 50        | 10        | MC-75                  | MC-75a  |
| MMS-100H-90           | 70~90                | 100                       | 50        | 10        | MC-85                  | MC-85a  |
| MMS-100H-100          | 80~100               | 100                       | 50        | 10        | MC-95                  | MC-100a |

## LS contactor ready for IE3-rated motors



### What is the IE3?

Motor is rated from IE1 through IE4 depends on its energy efficiency which means IE3 is more efficient compared to IE1 and IE2-rated motors. IE3-rated motor is not only more efficient than IE2-rated motor but it also has lower rated current and higher starting current & inrush current.



### WHY IE3?

As part of the EU Environmental policy "20/30-20-20" strategy, the EU is committed to achieve the followings by 2020

- Reduce greenhouse gas emissions by up to 30 %
- Increase the share of renewable energy to 20 % and
- Boost energy efficiency by 20% in general. IEC 60034-30 standard specifies IE classes for motors in accordance with the above requirements.
- IEC 60034-30-1 standard
  - IE1 Standard Efficiency
  - IE2 High Efficiency
  - **IE3 Premium Efficiency**
  - IE4 Super Premium Efficiency



IE3 motors can be associated with standard starter solutions, like contactor, manual motor starter.

During the starting the IE3 motor, Inrush and starting current are increased compared with IE2 motor.

The increased inrush and starting current can affect the selection of the electrical device.

In order to secure the highest efficiency in your electrical system, it is strongly recommended to use the more efficient IE3 class product.

LS contactors are already compliant with IE3.

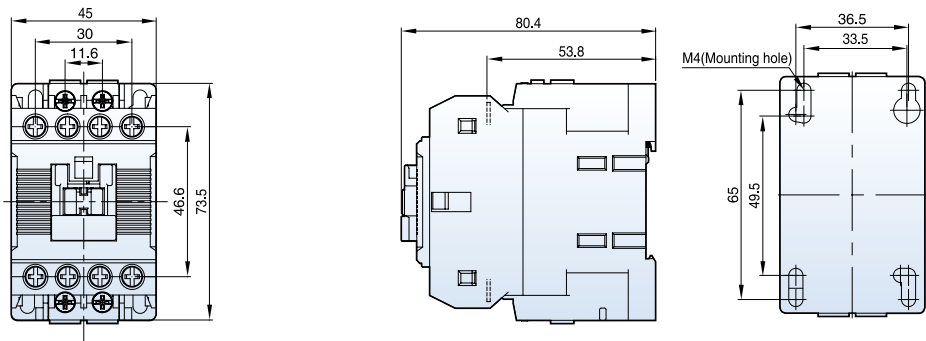


# Dimension

## 3-pole contactors 18AF/22AF

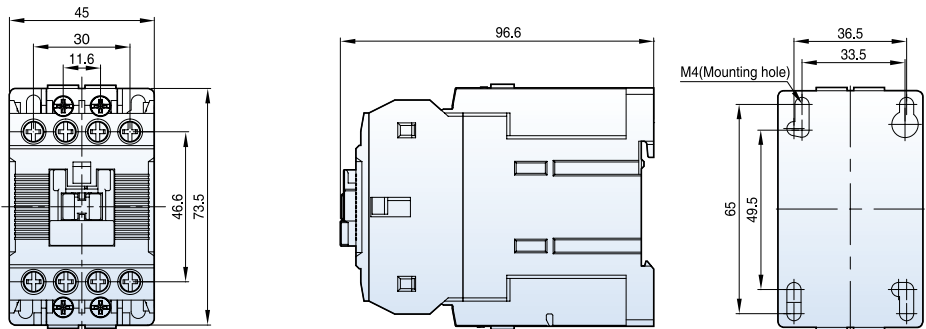
[mm]

MC-6a~18a AC  
1NO or 1NC



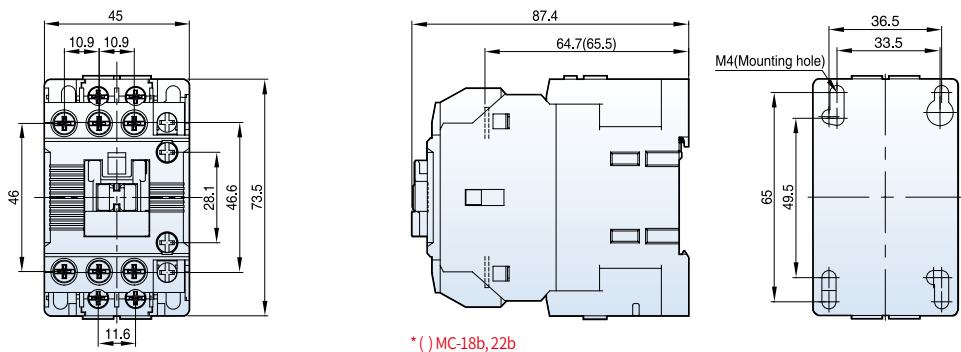
0.3kg

MC-6a~18a DC  
1NO or 1NC



0.4kg

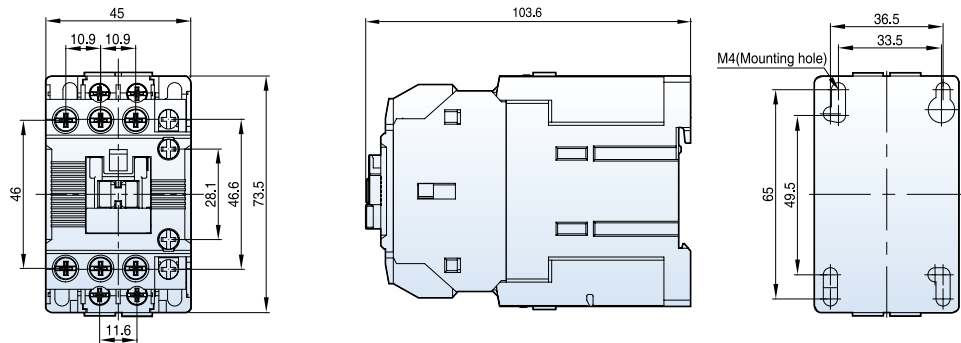
MC-9b~22b AC  
1NO1NC



\* ( ) MC-18b, 22b

0.3kg

MC-9b~22b DC  
1NO1NC

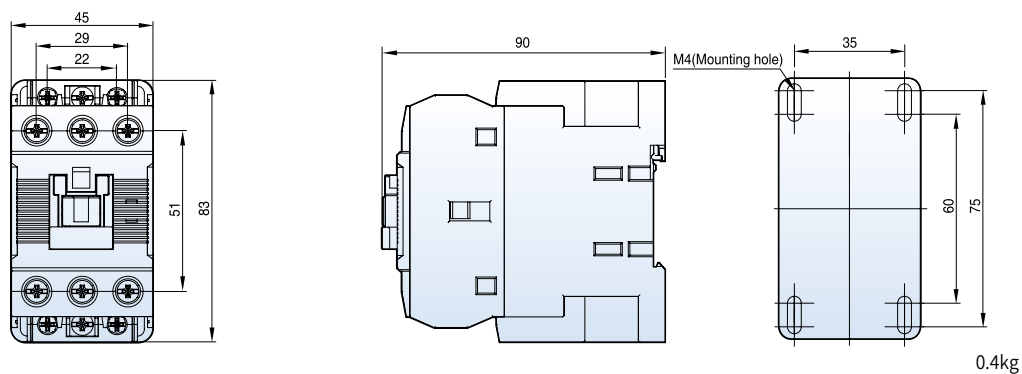


0.41kg

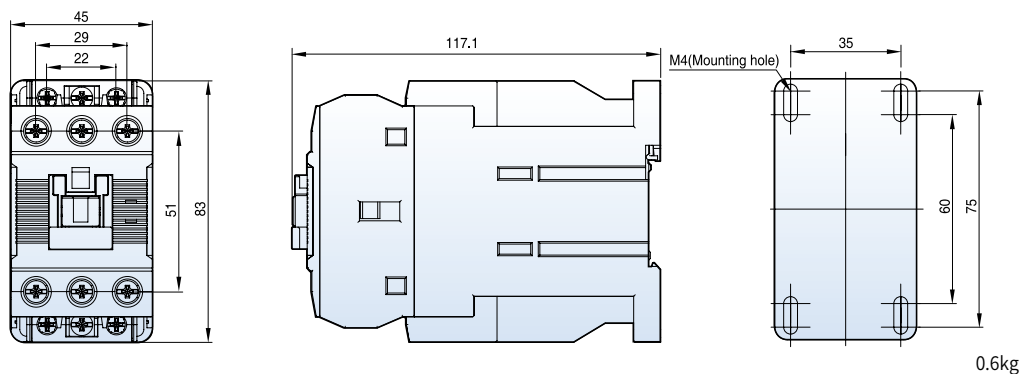
## 3-pole contactors 40AF

[mm]

MC-32a~40a AC

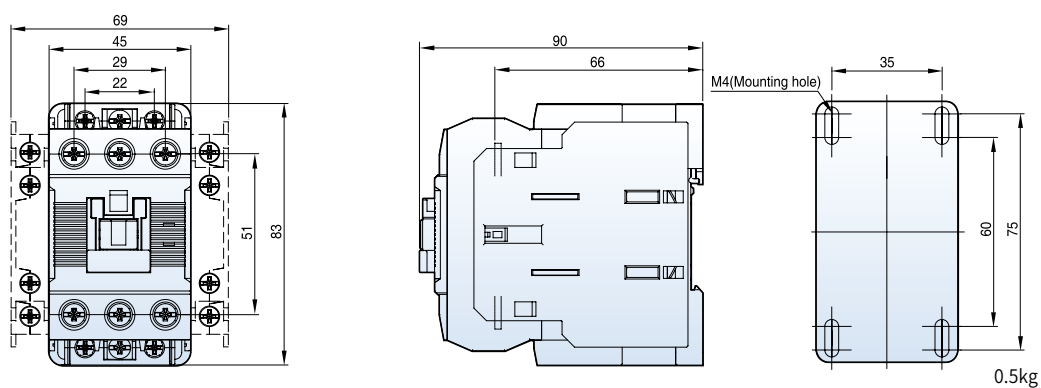


MC-32a~40a DC



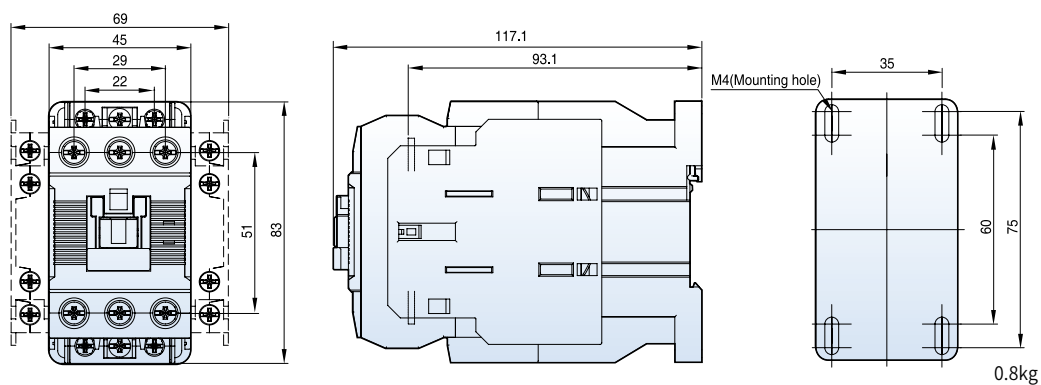
MC-32a~40a AC

2NO2NC



MC-32a~40a DC

2NO2NC

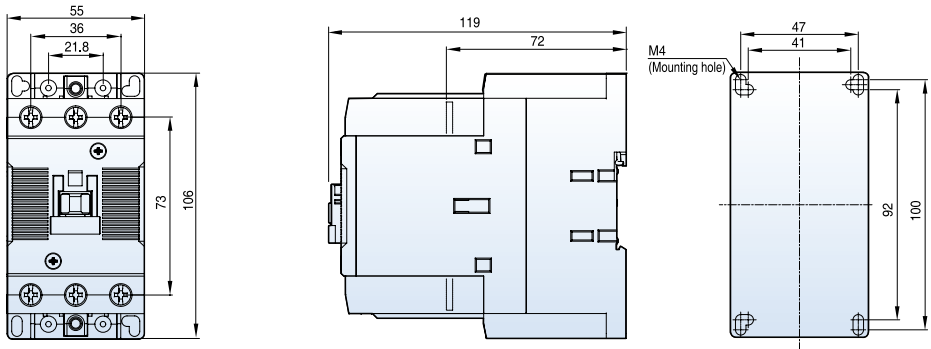


# Dimension

## 3-pole contactors 65AF

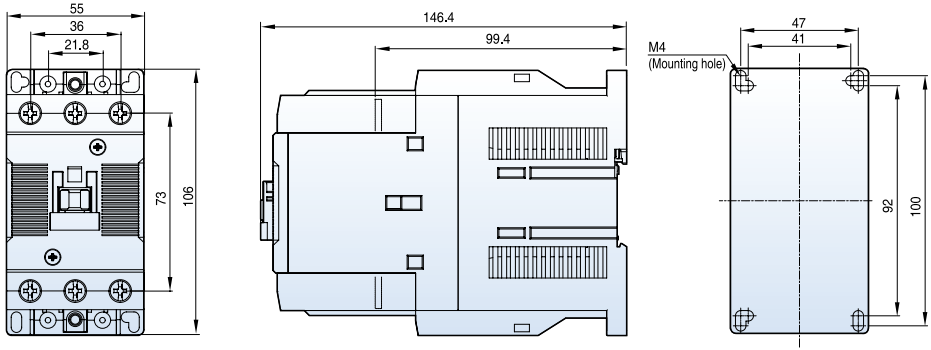
[mm]

MC-50a~65a AC



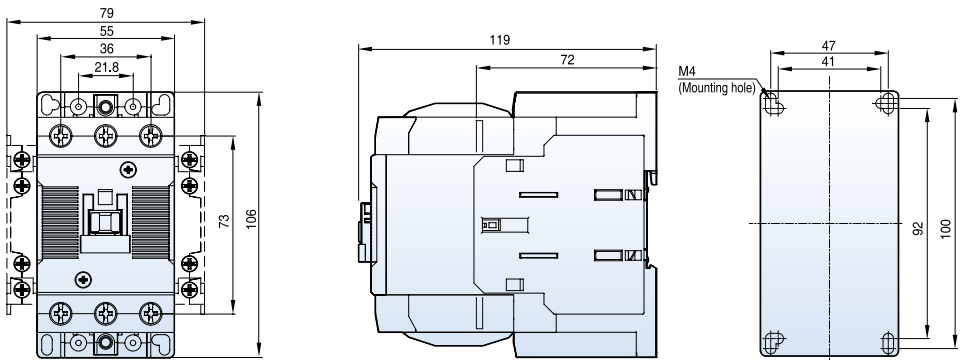
0.9kg

MC-50a~65a DC



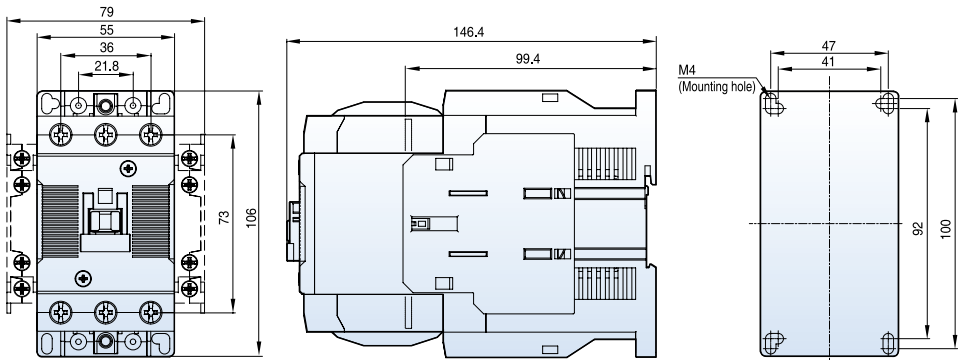
1.2kg

MC-50a~65a AC  
2NO2NC



1kg

MC-50a~65a DC  
2NO2NC

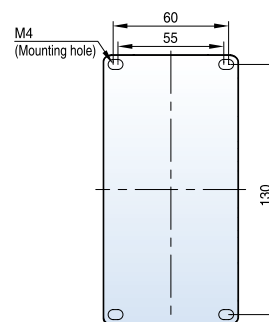
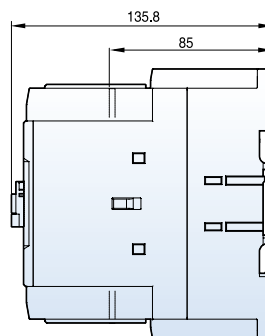
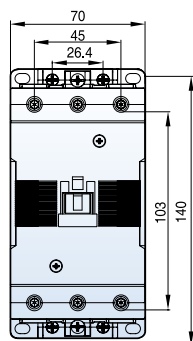


1.3kg

## 3-pole contactors 100AF

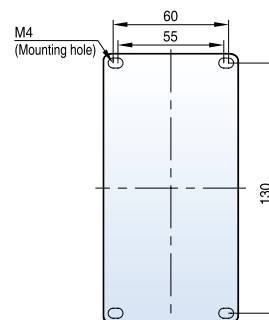
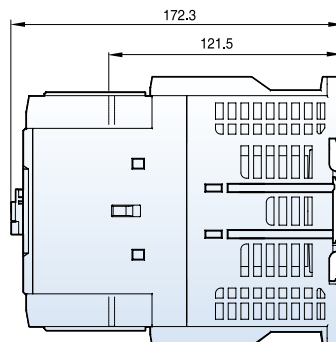
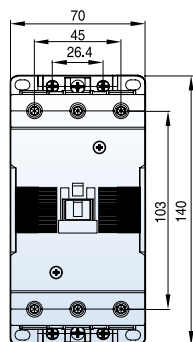
[mm]

MC-75a~100a AC



1.8kg

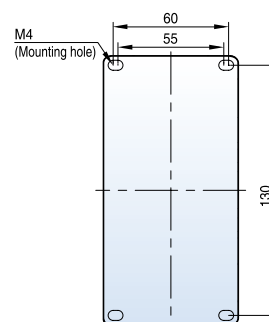
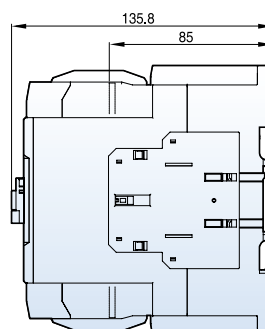
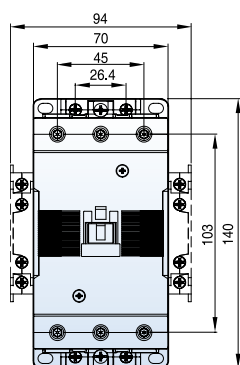
MC-75a~100a DC



2.7kg

MC-75a~100a AC

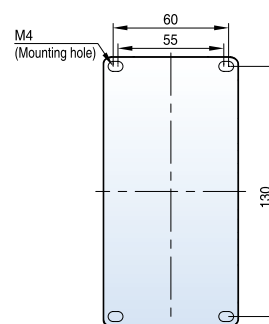
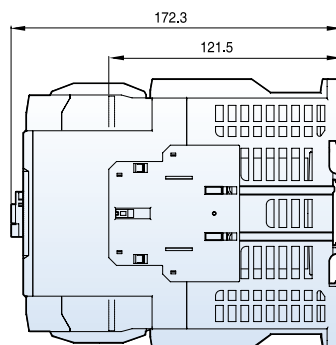
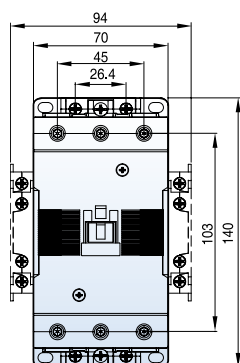
2NO2NC



1.9kg

MC-75a~100a DC

2NO2NC



2.8kg

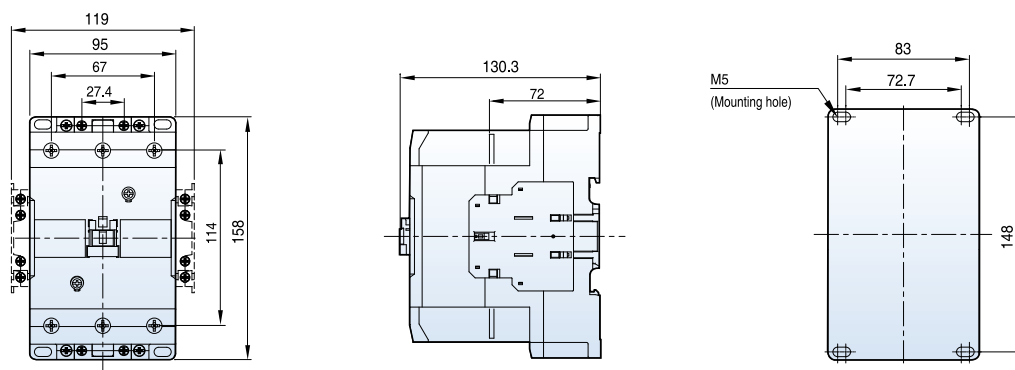
# Dimension

## 3-pole contactors 150AF~400AF

[mm]

MC-130a

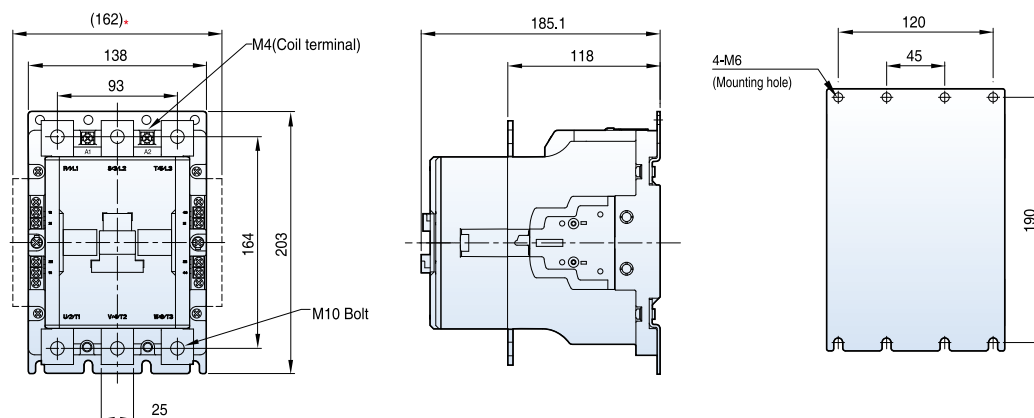
MC-150a



2.4kg

MC-185a

MC-225a

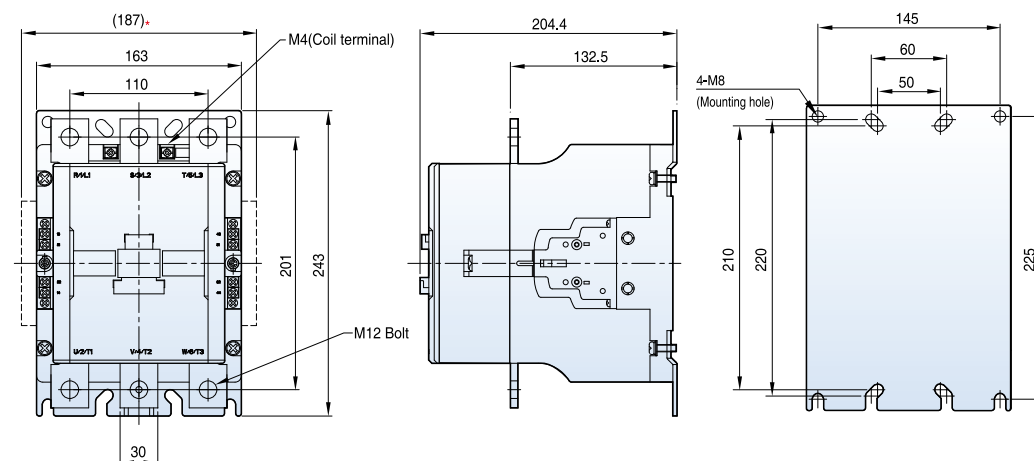


5.4kg

MC-265a

MC-330a

MC-400a



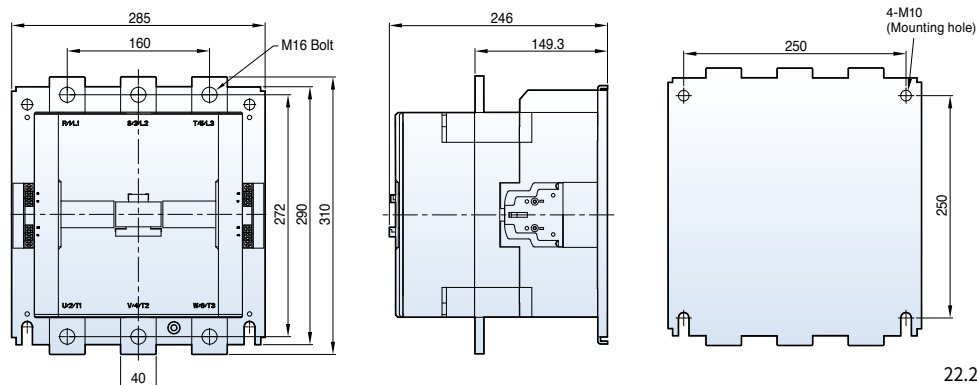
\* Optional auxiliary contact unit (side mount type)

9.2kg

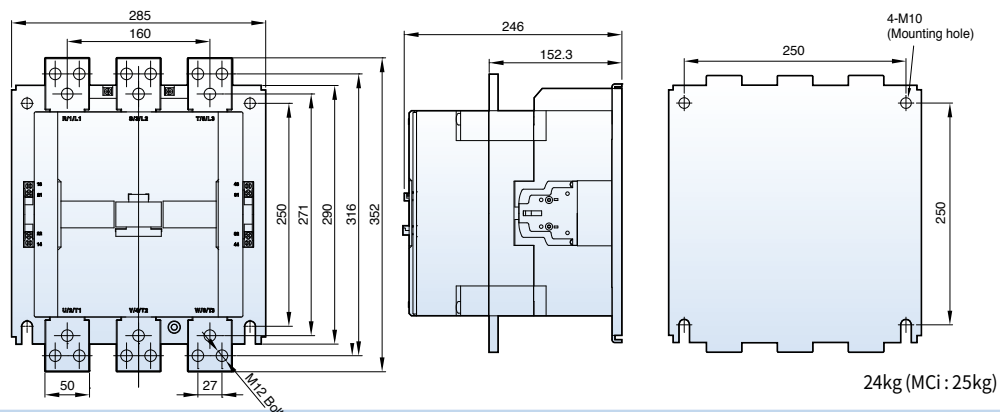
# 3-pole contactors 800AF~2650AF

[mm]

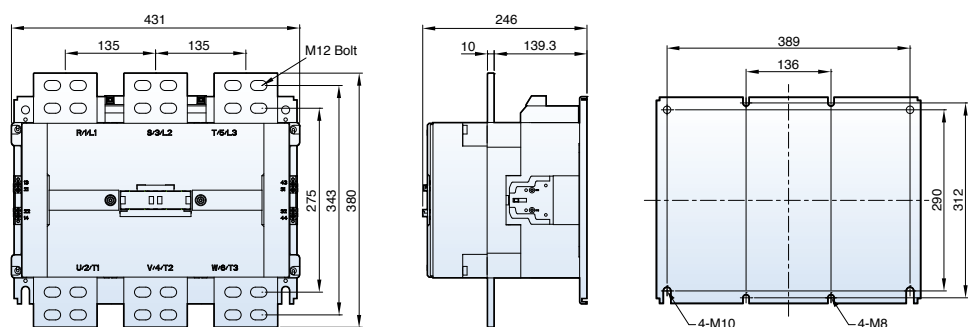
- MC-500a
- MC-630a
- MC-800a
- MCi-900
- MCi-1050



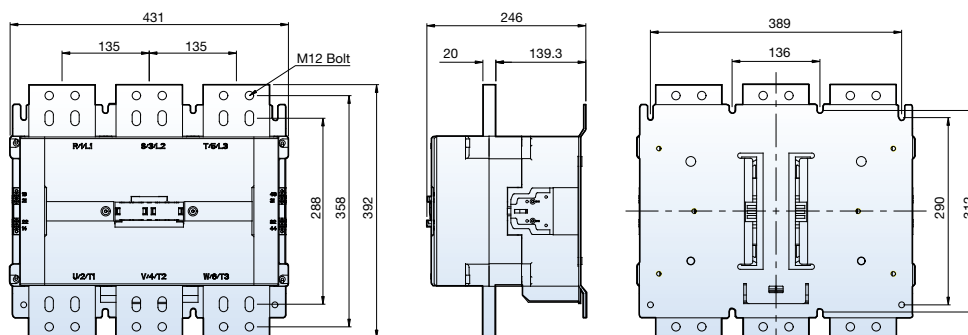
- MC-1260a
- MCi-1260



- MC-1400a
- MC-1700a
- MC-2100a
- MCi-1700
- MCi-2100



- MC-2650a
- MCi-2650



47kg

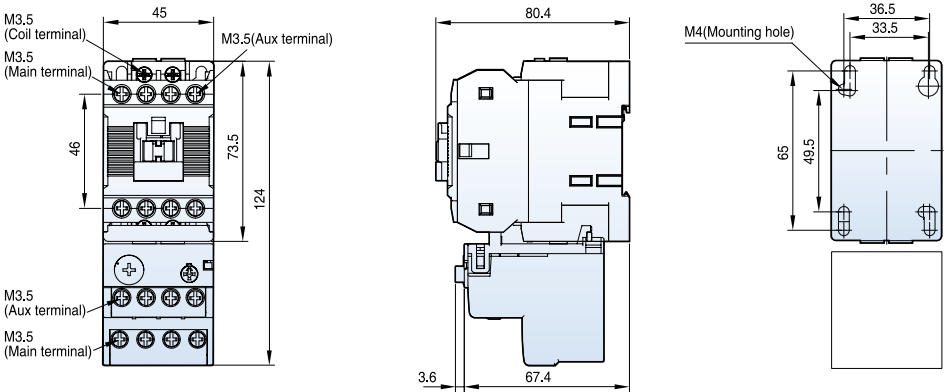


# Dimension

## Motor starters 18AF~40AF

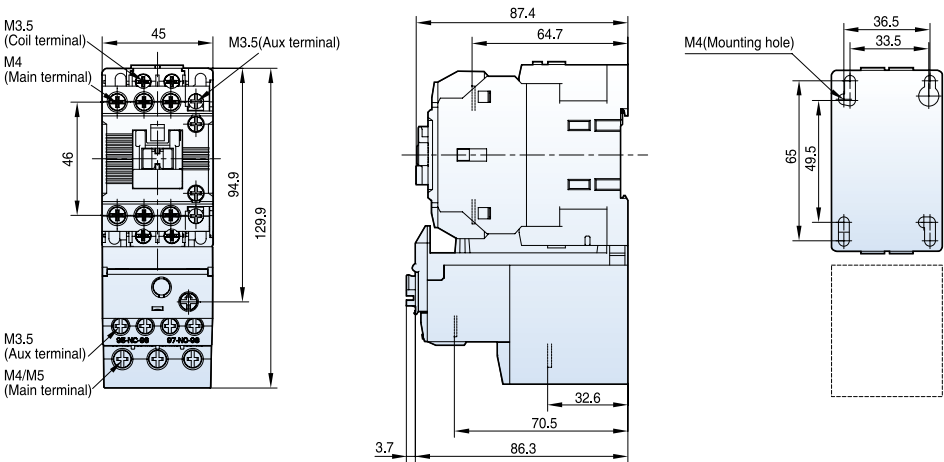
[mm]

MS-6a~18a



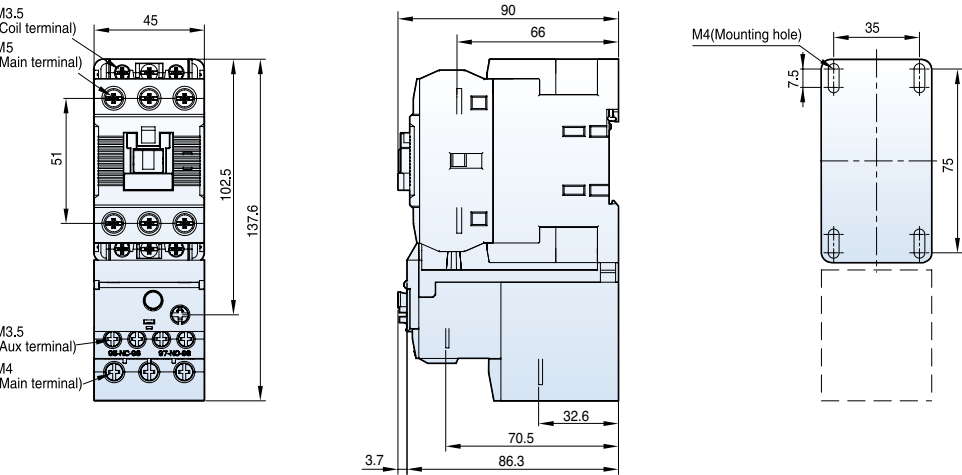
0.5kg

MS-9b~22b



0.5kg

MS-32a~40a

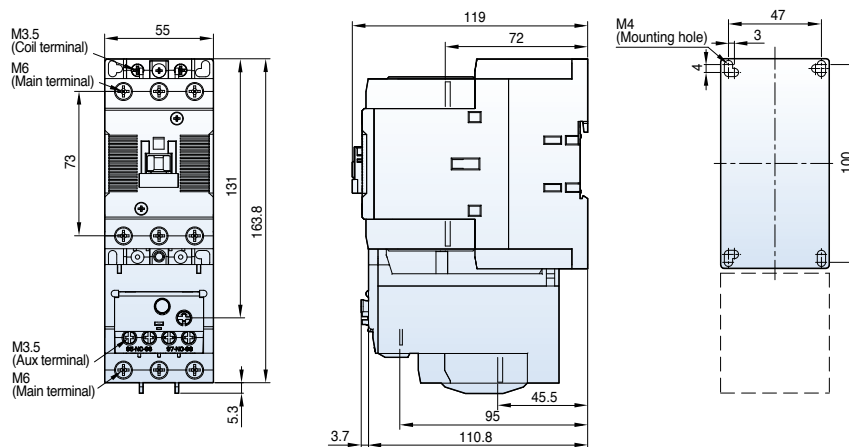


0.6kg

# Motor starters 65AF~150AF

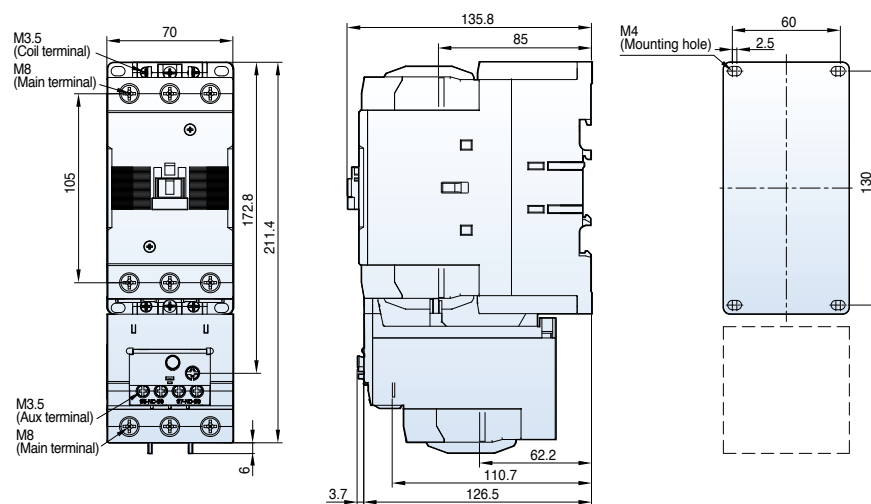
[mm]

MS-50a~65a



1.3kg

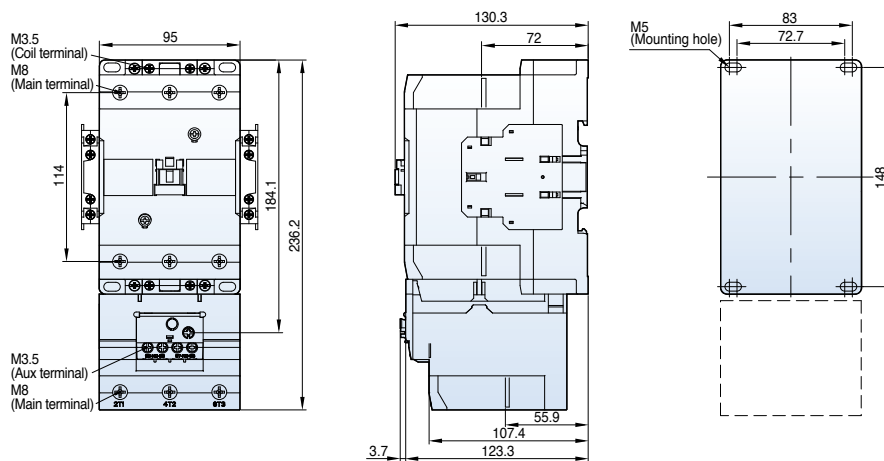
MS-75a~100a



2.3kg

MS-130a

MS-150a



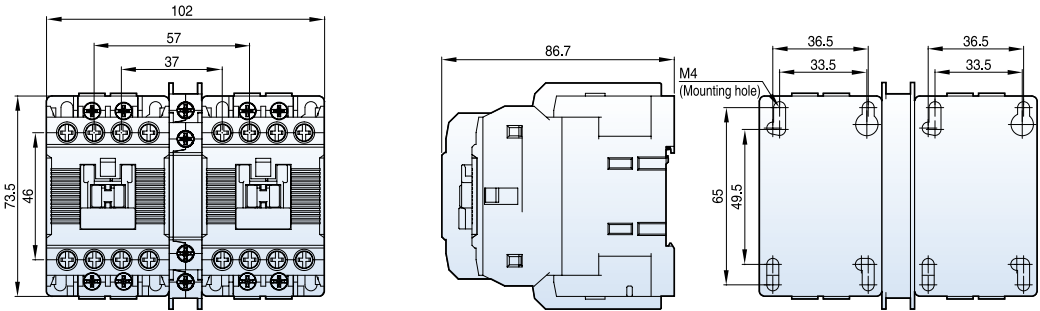
2.9kg

## [mm]

Reversing contactors and starters 18AF

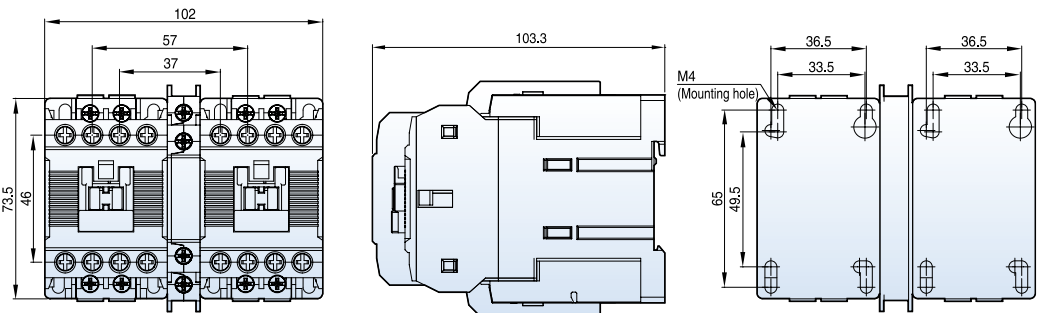
[mm]

MC-6aR~18aR AC



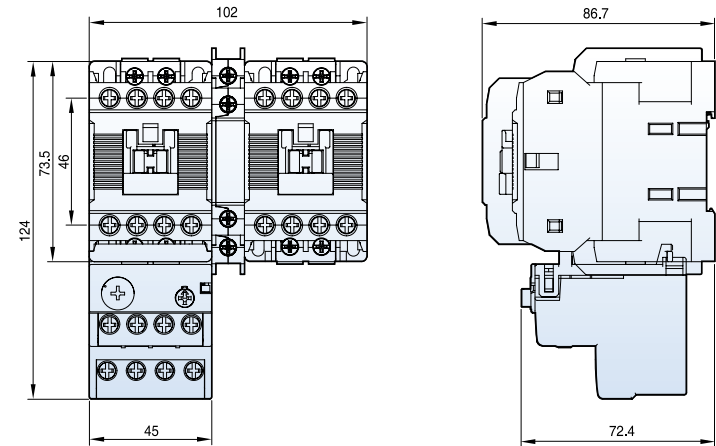
0.7kg

MC-6aR~18aR DC



1kg

MS-6aR~18aR AC



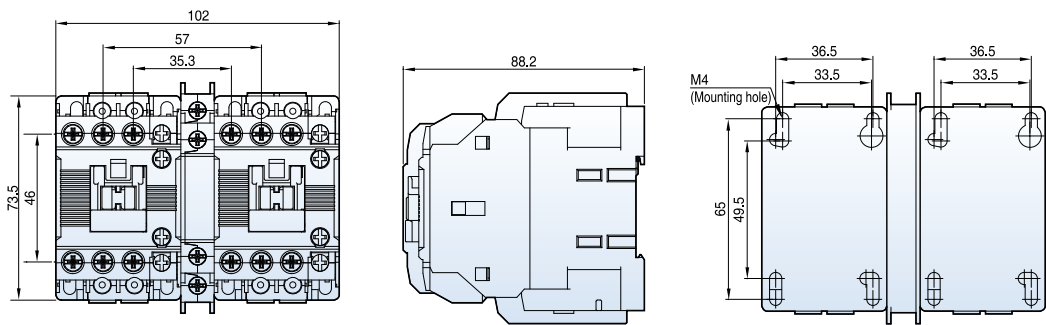
0.9kg

# Dimension

## Reversing contactors and starters 22AF

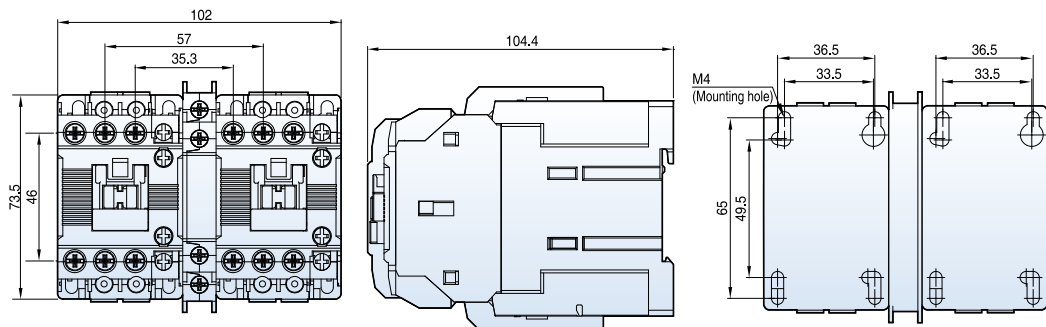
[mm]

MC-9bR-22bR AC



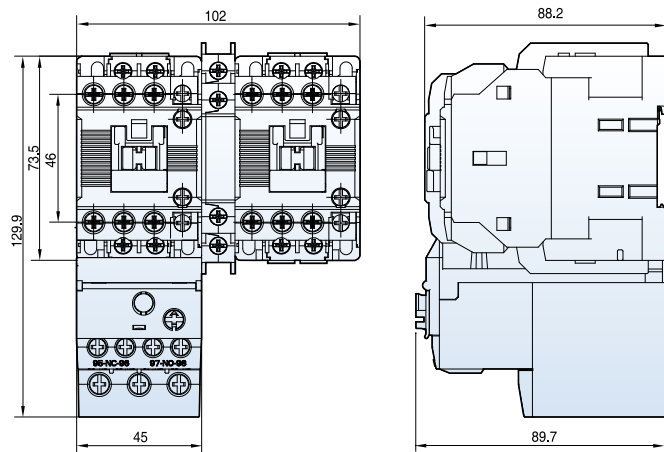
0.7kg

MC-9bR-22bR DC



1.1kg

MS-9bR-22bR AC

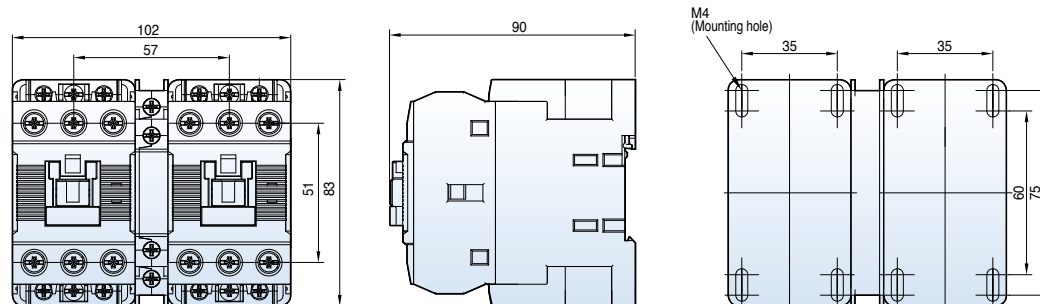


1.3kg

# Reversing contactors and starters 40AF

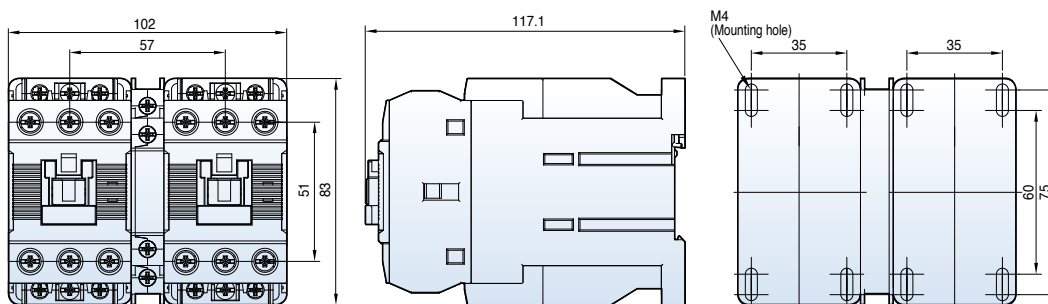
[mm]

## MC-32aR~40aR AC



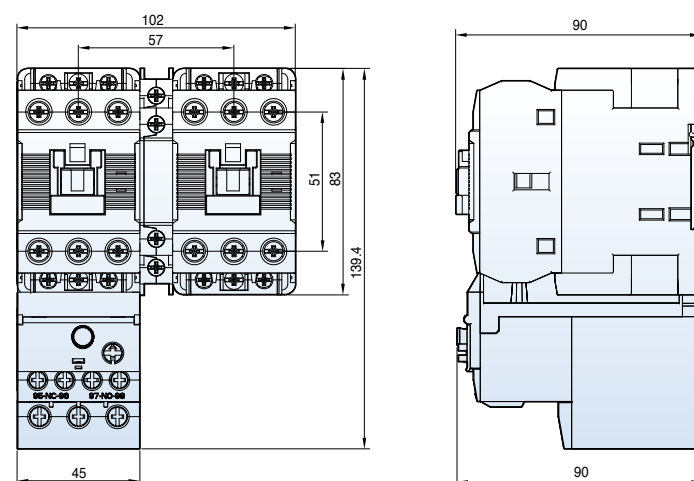
0.9kg

## MC-32aR~40aR DC



1.4kg

## MS-32aR~40aR AC



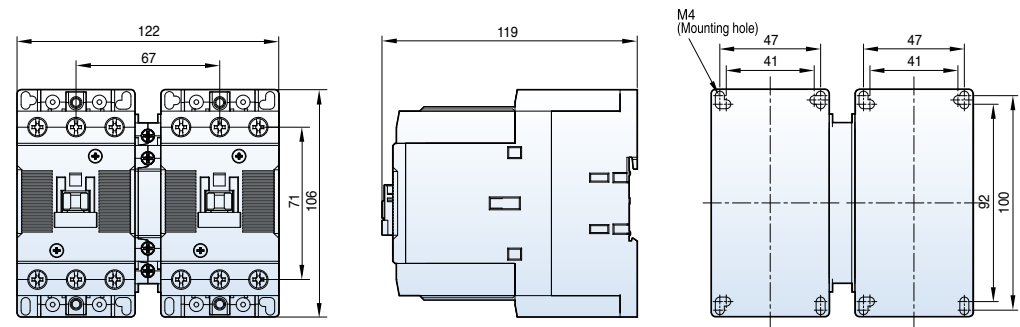
1.1kg

# Dimension

## Reversing contactors and starters 65AF

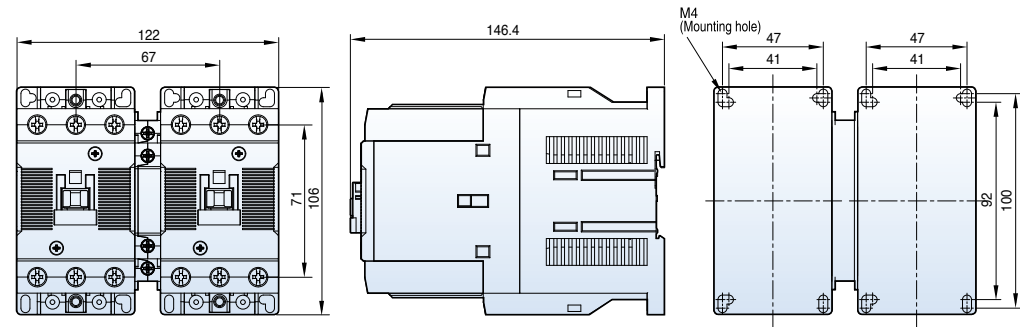
[mm]

MC-50aR~65aR AC



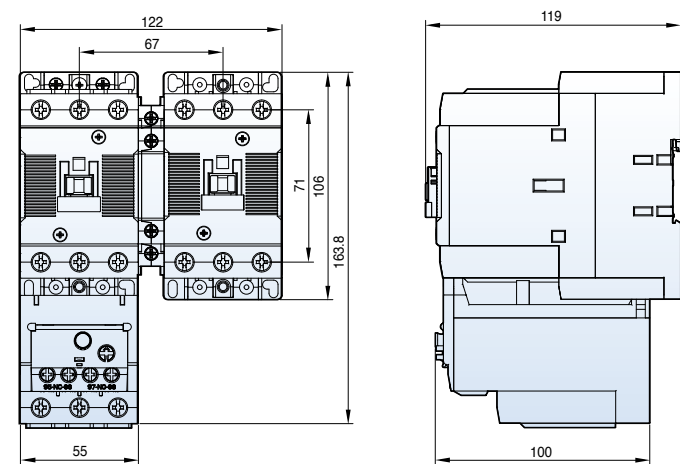
1.8kg

MC-50aR~65aR DC



2.4kg

MS-50aR~65aR AC

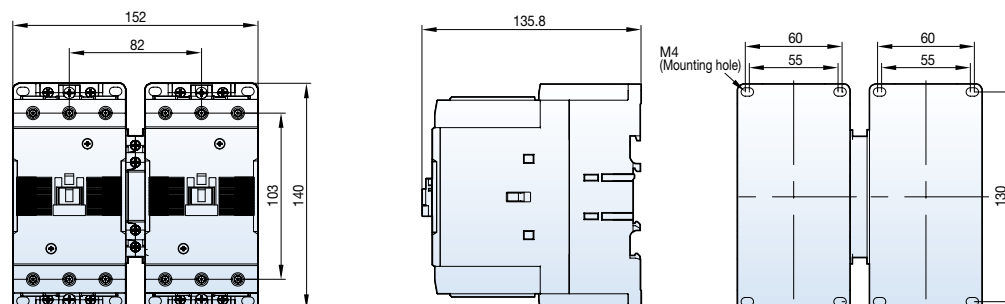


1.9kg

## Reversing contactors and starters 100AF

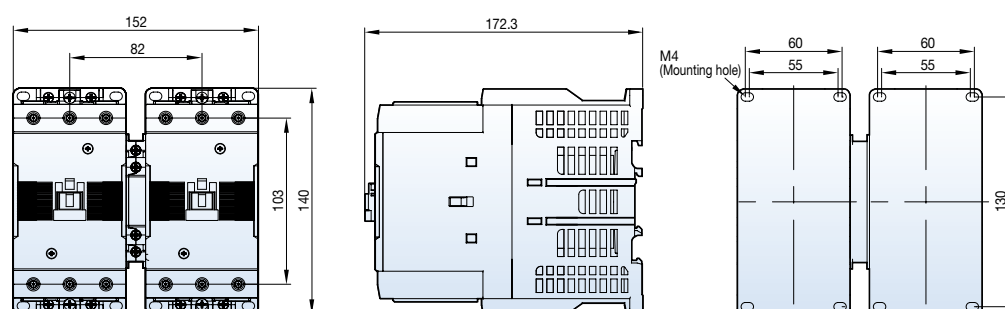
[mm]

### MC-75aR~100aR AC



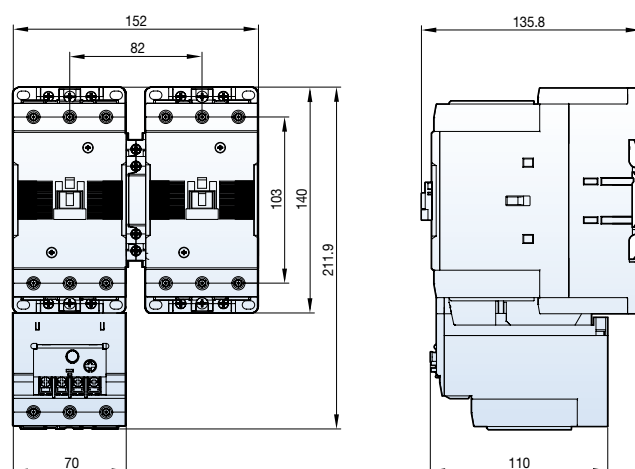
3.3kg

### MC-75aR~100aR DC



5.2kg

### MS-75aR~100aR AC



3.8kg

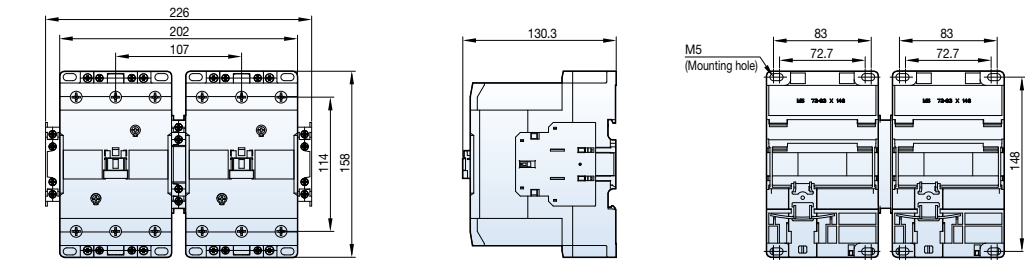


# Dimension

## Reversing contactors and starters 150~800AF

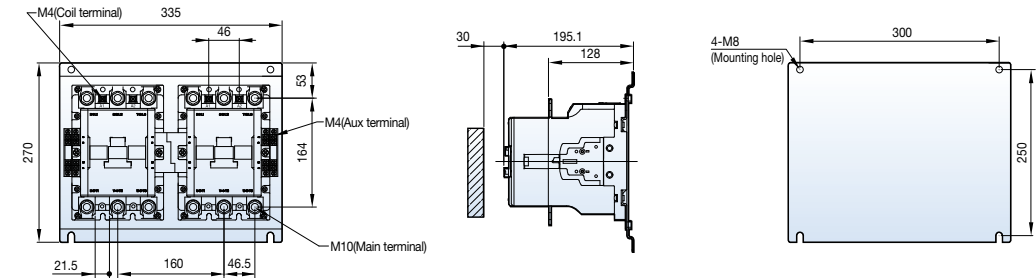
[mm]

- MC-130aR
- MC-150aR



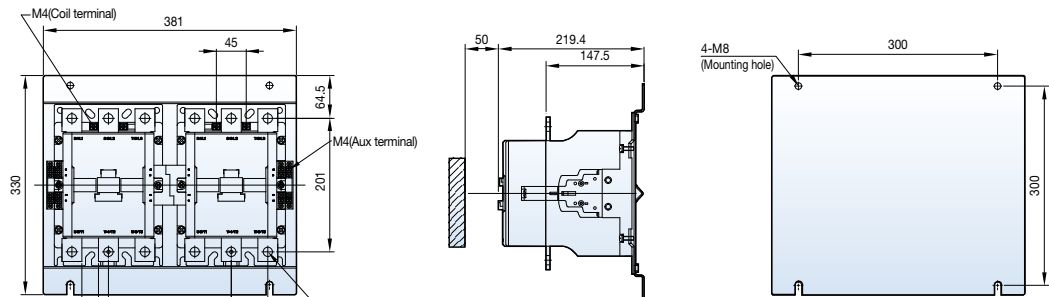
4.3kg

- MC-185aR
- MC-225aR



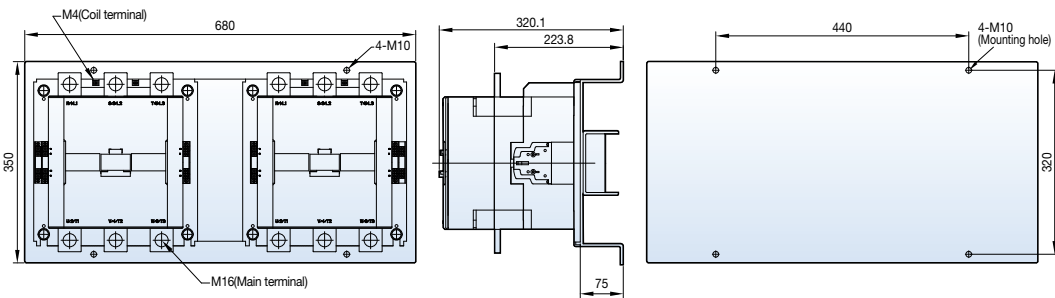
12.9kg

- MC-265aR
- MC-330aR
- MC-400aR



21.4kg

- MC-500aR
- MC-630aR
- MC-800aR



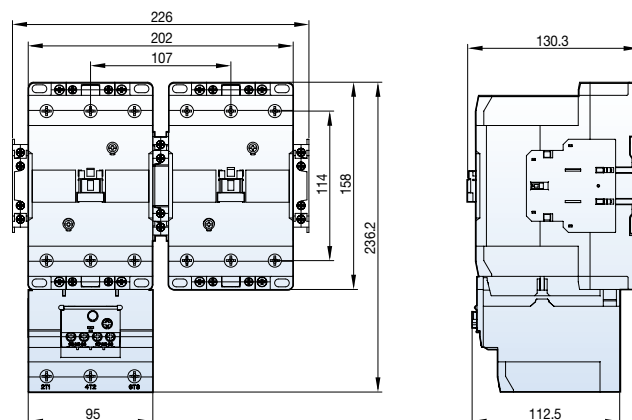
60kg

# Reversing contactors and starters 150~400AF

[mm]

MS-130aR AC

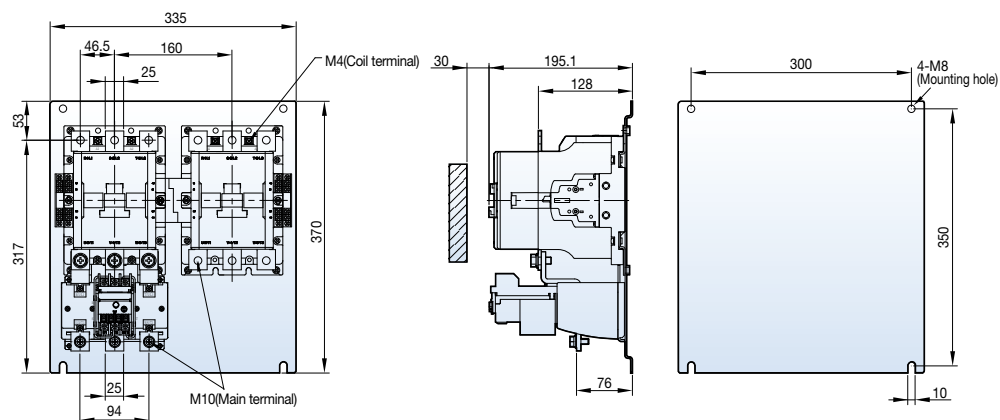
MS-150aR AC



5kg

MS-185aR AC

MS-225aR AC

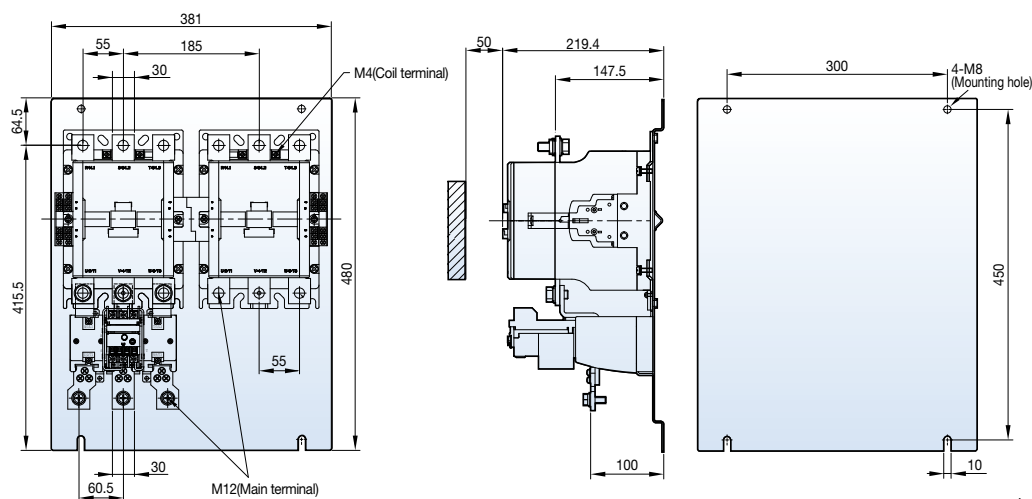


15.5kg

MS-265aR DC

MS-330aR DC

MS-400aR DC

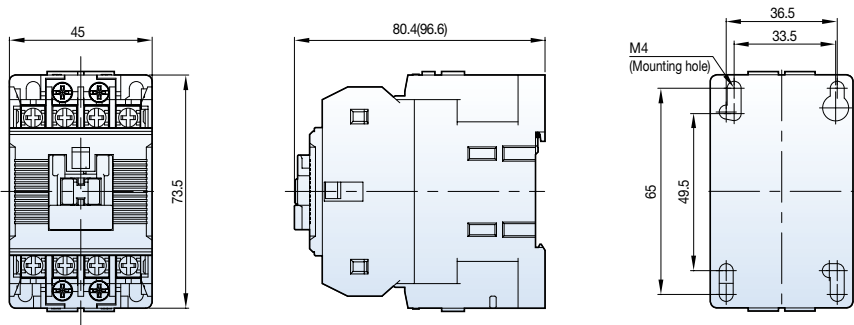


23kg

Contactor relays

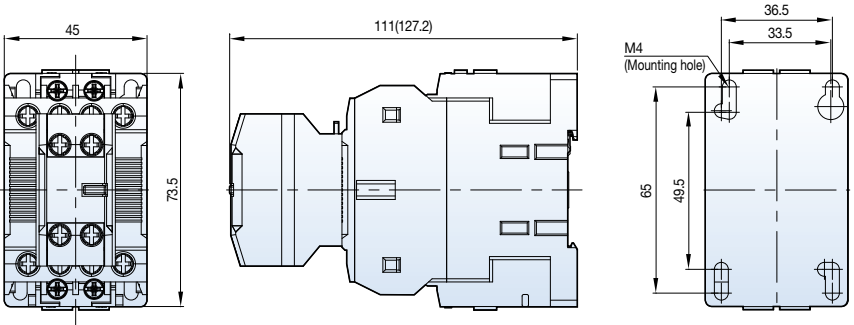
[mm]

MR-4 (D)



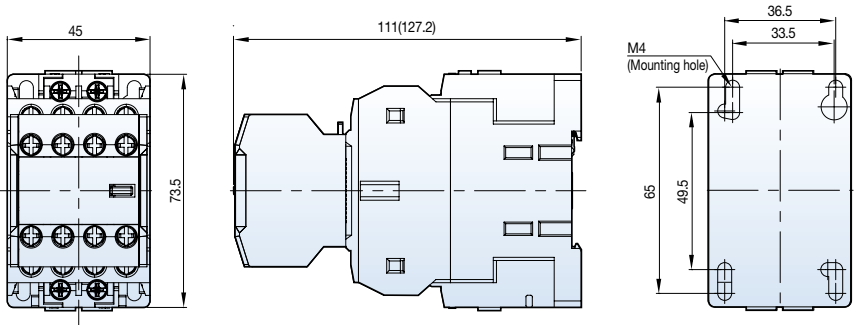
284g

MR-6 (D)



315g

MR-8 (D)



339g

Composition

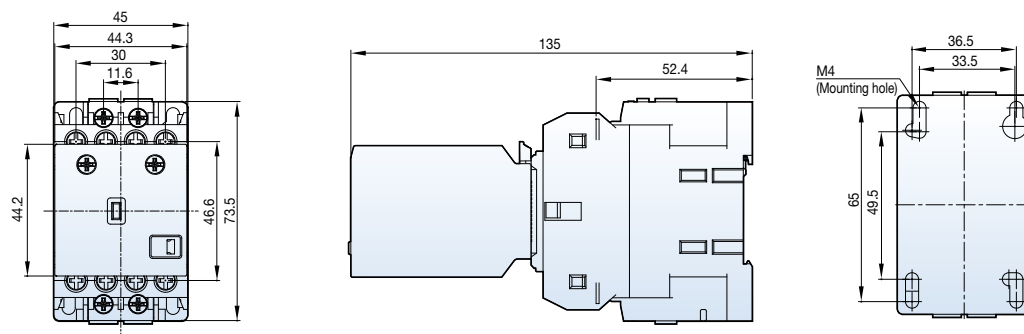
|      |  |  |  |  |  |
|------|--|--|--|--|--|
| MR-4 |  |  |  |  |  |
| MR-6 |  |  |  |  |  |
| MR-8 |  |  |  |  |  |

Note) 1. UA-2: Auxiliary contact units 2. UA-4: Auxiliary contact units  
• Please refer to the contact diagram represented on catalog when contactor relays MR-4, 4D and auxiliary contact units UA-2,4 are purchased separately.  
• Be sure to order the auxiliary contact units separately except for the above contact units. • ( ): Dimension for DC control contactor relays

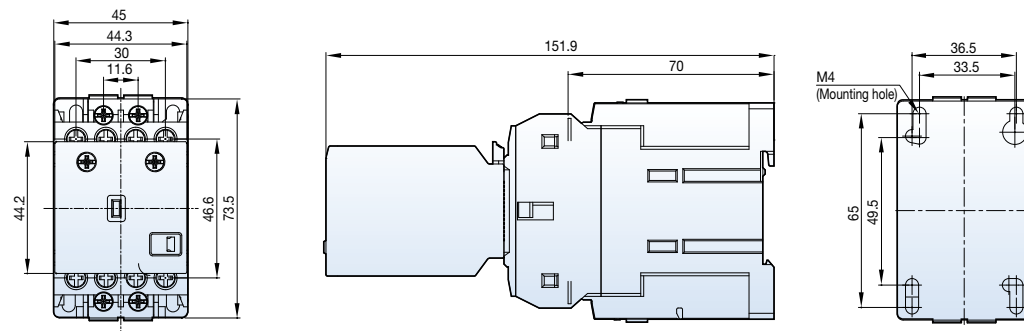
## Latching contactors 18AF/22AF

[mm]

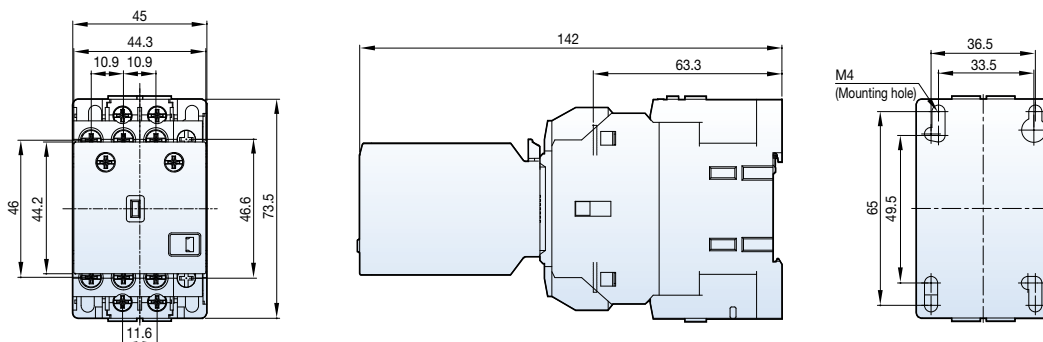
MC-6a~18a AC  
1NO or 1NC + ML-40



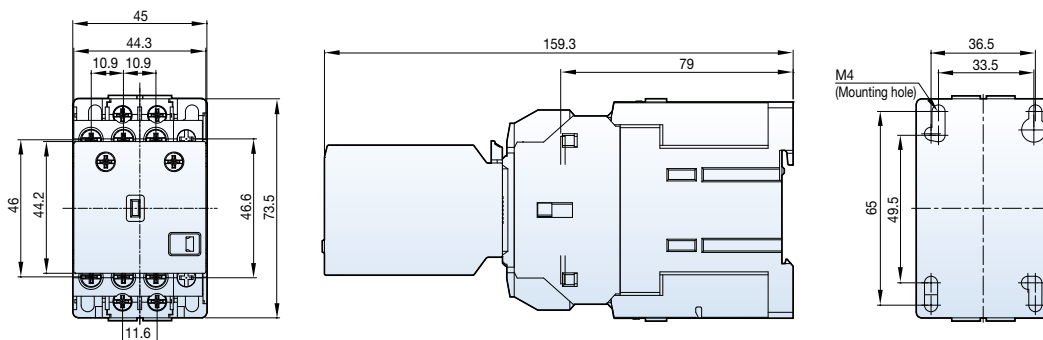
MC-6a~18a DC  
1NO or 1NC + ML-40



MC-9b~22b AC  
1NO1NC + ML-40



MC-9b~22b DC  
1NO1NC + ML-40

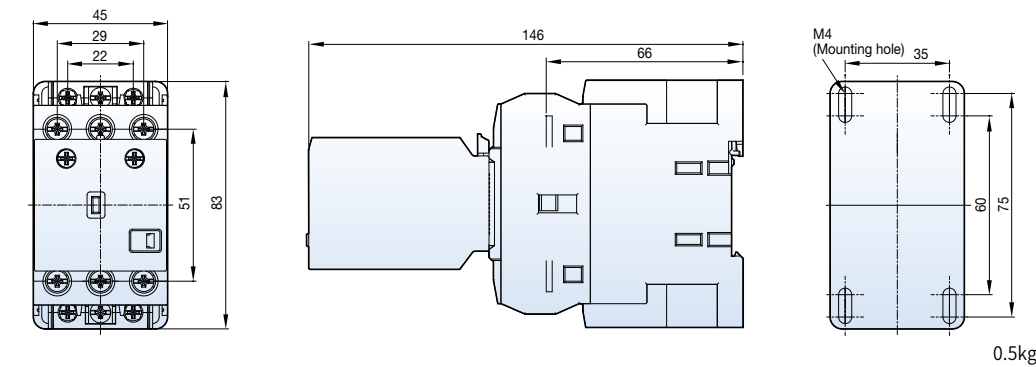


# Dimension

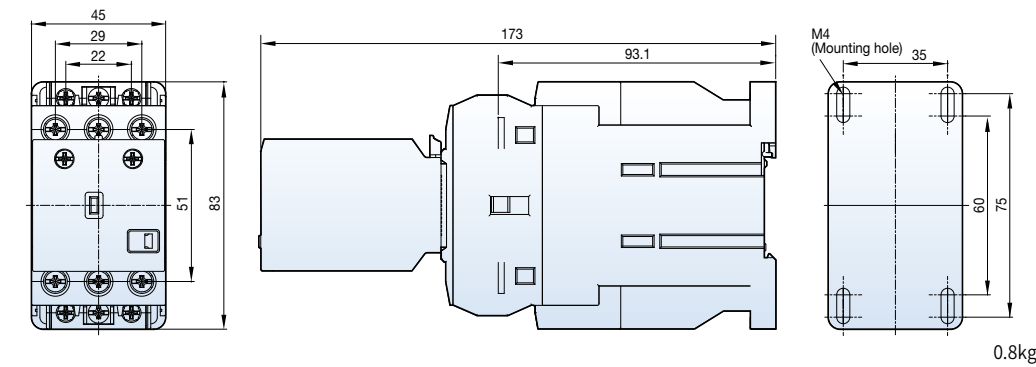
## Latching contactors 40AF

[mm]

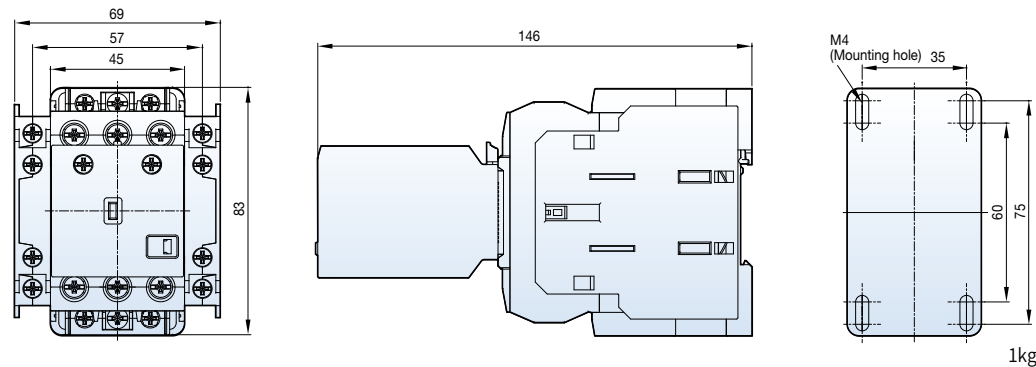
MC-32a~40a AC  
+ML-40



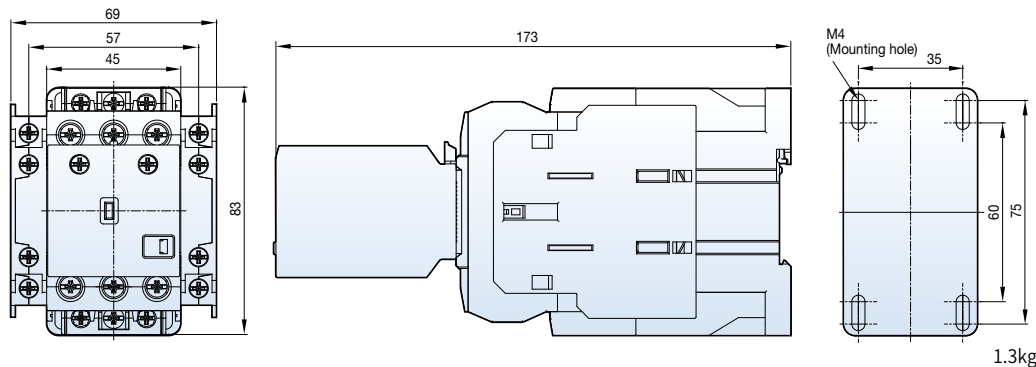
MC-32a~40a DC  
+ ML-40



MC-32a~40a AC  
2NO2NC + ML-40



MC-32a~40a DC  
2NO2NC + ML-40

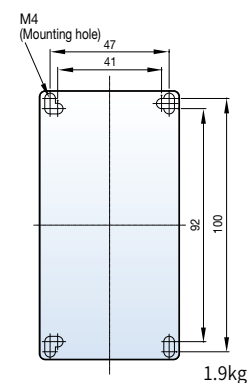
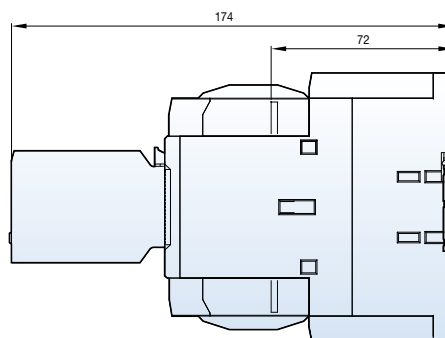
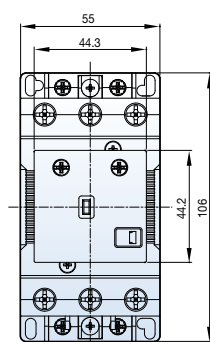


## Latching contactors 65AF

[mm]

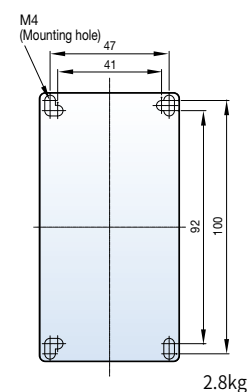
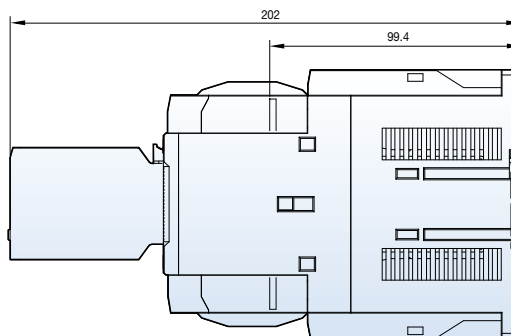
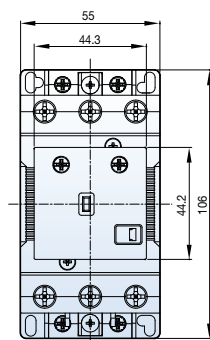
MC-50a~65a AC

+ ML-65



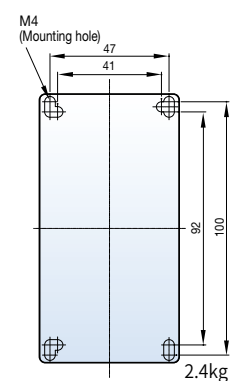
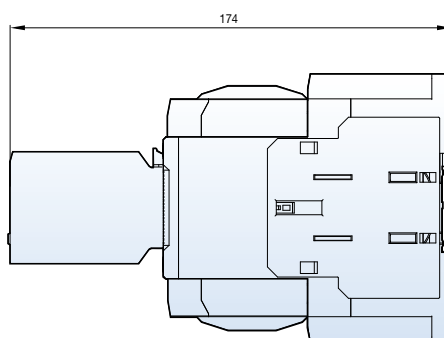
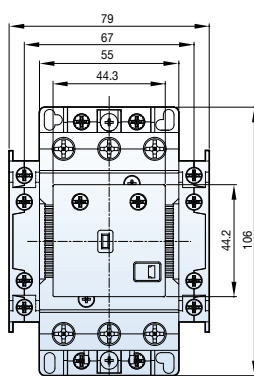
MC-50a~65a DC

+ ML-65



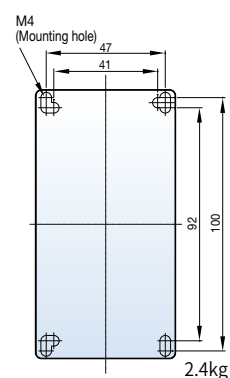
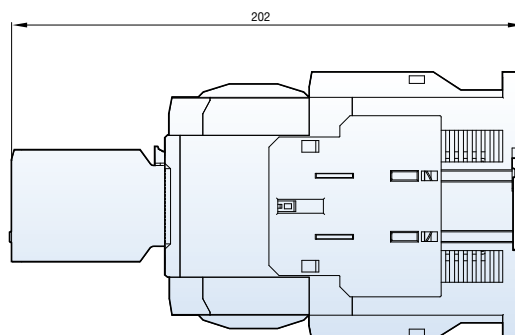
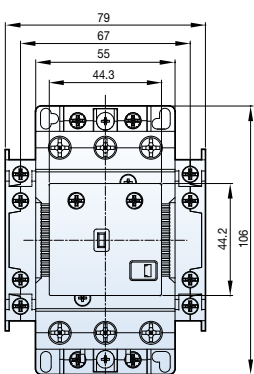
MC-50a~65a AC

2NO2NC + ML-65



MC-50a~65a DC

2NO2NC + ML-65

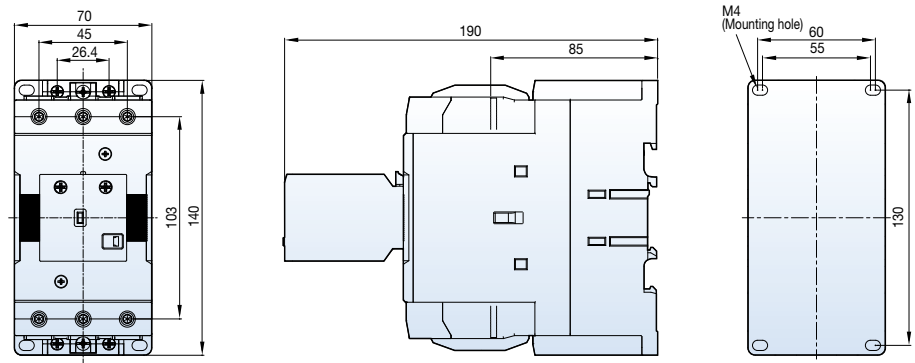


# Dimension

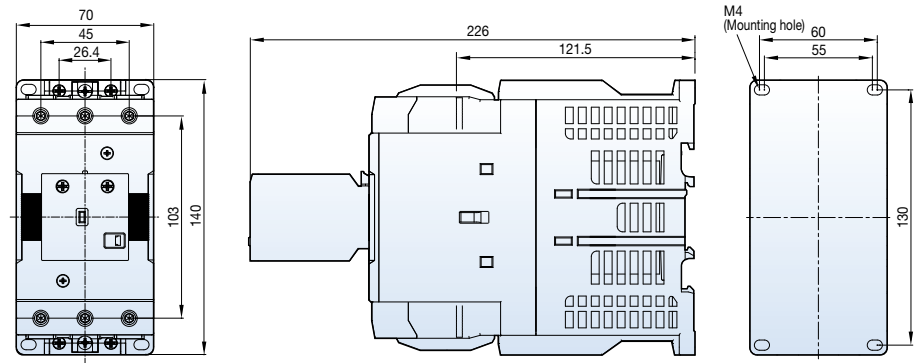
## Latching contactors 100AF

[mm]

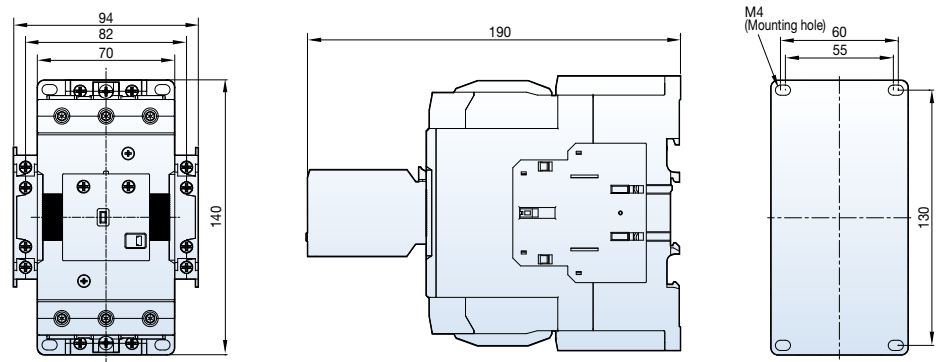
MC-75a~100a AC  
+ ML-150



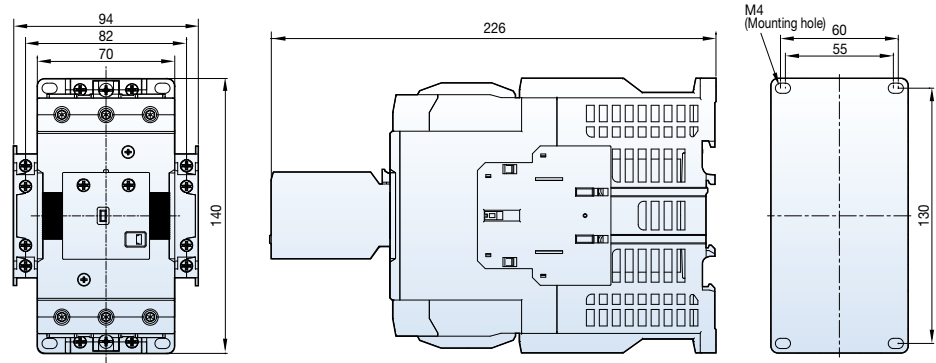
MC-75a~100a DC  
+ ML-150



MC-75a~100a AC  
2NO2NC + ML-150



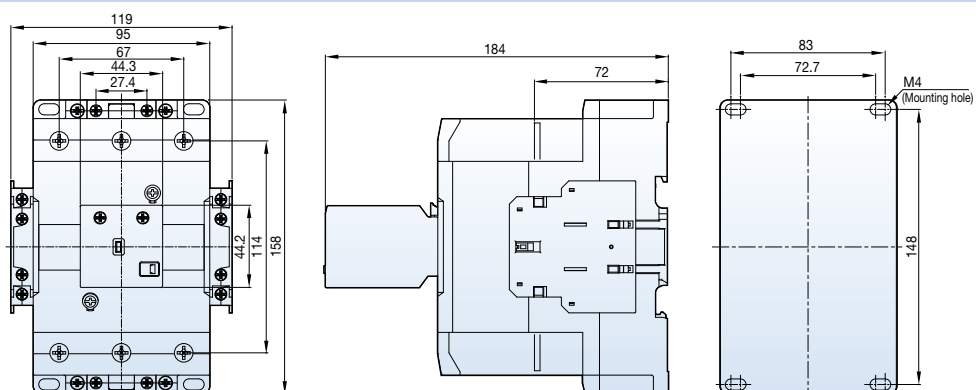
MC-75a~100a DC  
2NO2NC + ML-150



## Latching contactors 150AF~400AF

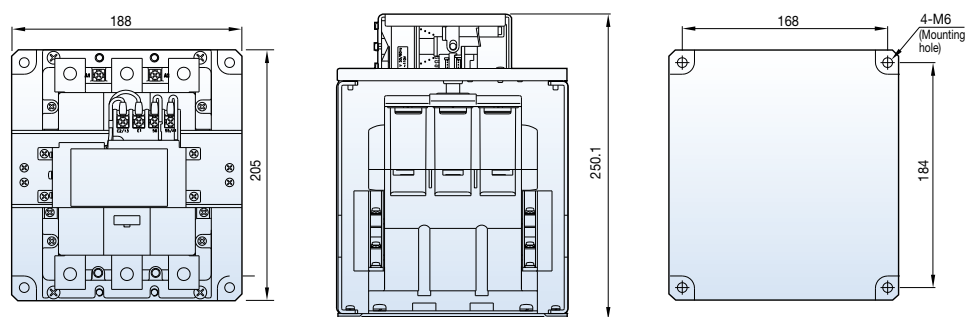
[mm]

MC-130a~150a  
2NO2NC + ML-150



MC-185a

MC-225a

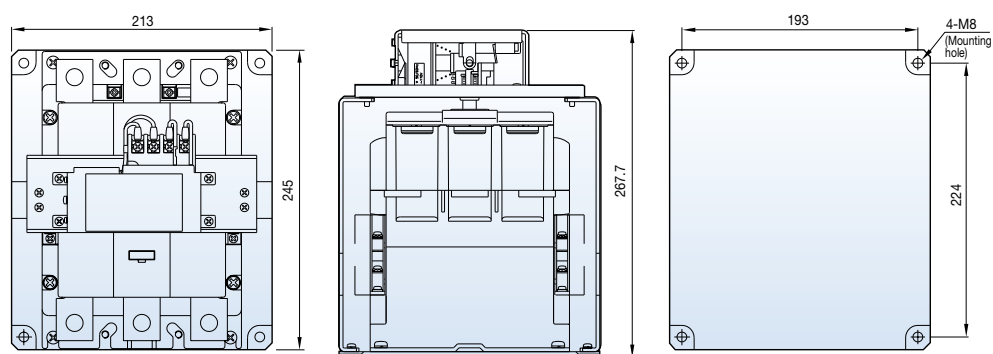


7.4kg

MC-265a

MC-330a

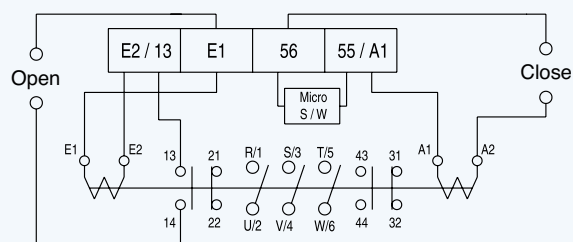
MC-400a



11.6kg

Composition

MC-185a/L~400a/L



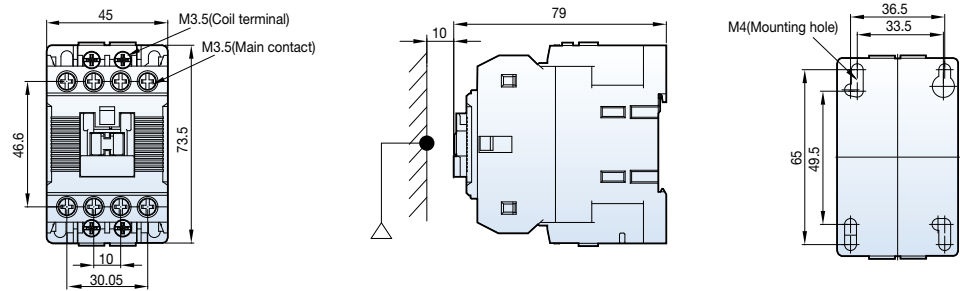


# Dimension

## 4-pole contactors MC-6a/4~22a/4

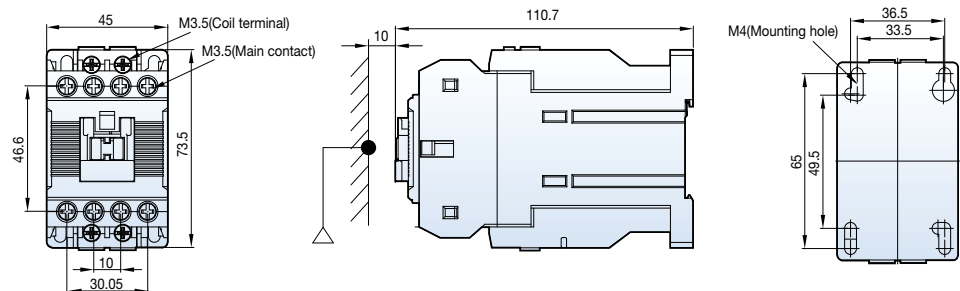
[mm]

MC-6a/4~18a/4 AC



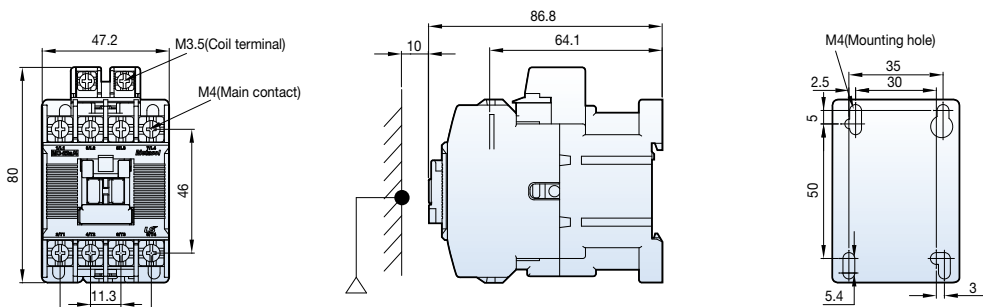
0.3kg

MC-6a/4~18a/4 DC



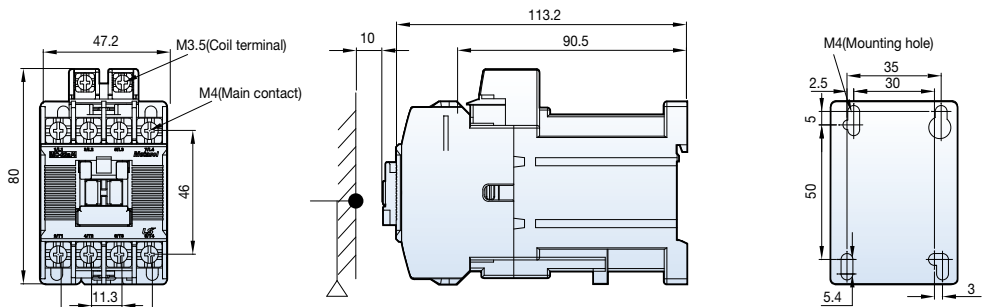
0.45kg

MC-22a/4 AC



0.4kg

MC-22a/4 DC

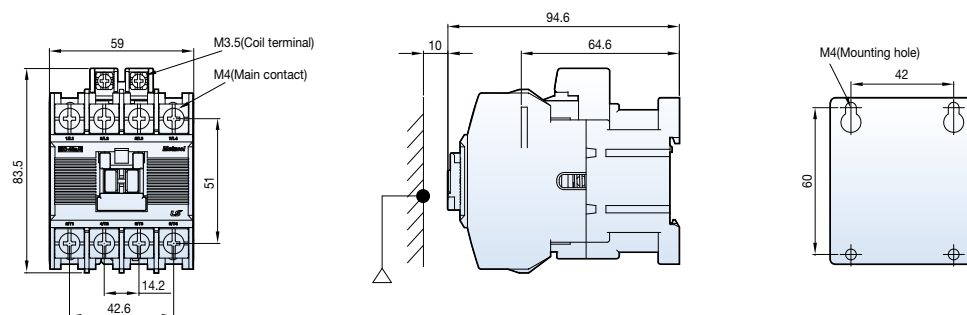


0.5kg

## 4-pole contactors MC-32a/4~85a/4

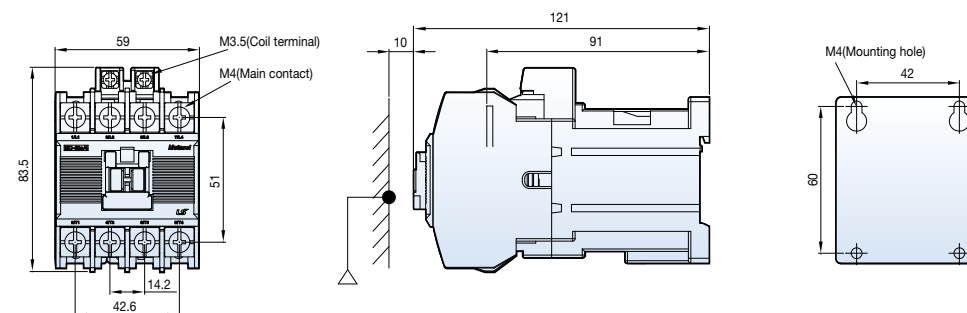
[mm]

MC-32a/4~40a/4 AC



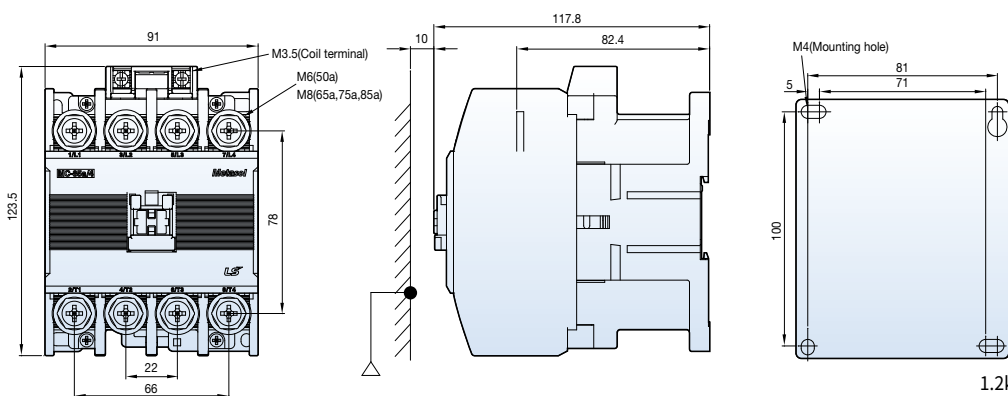
0.59kg

MC-32a/4~40a/4 DC



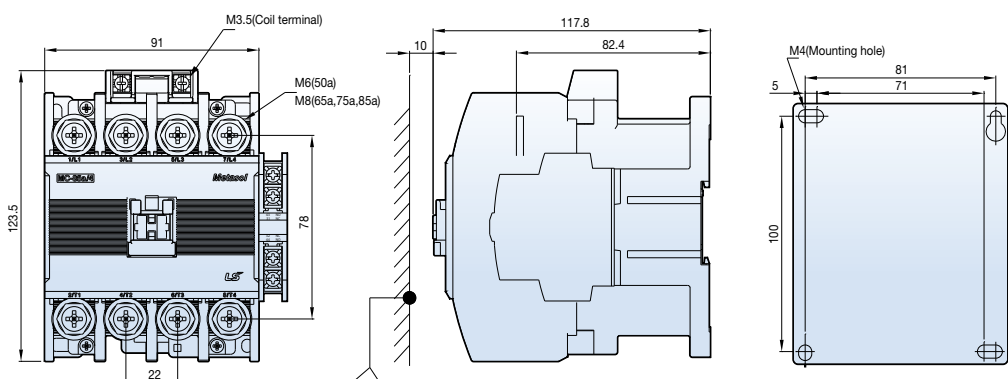
0.7kg

MC-50a/4~85a/4 AC



1.2kg

MC-50a/4~85a/4 DC



1.29kg

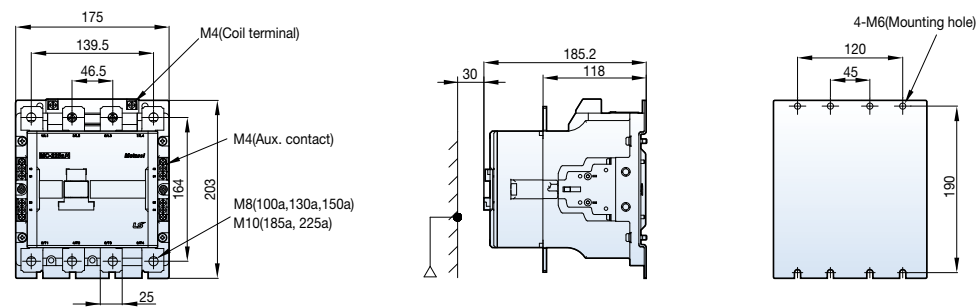
Note) 1b contact is being used for coil control. Therefore, if necessary, only 1a contact can be used.

# Dimension

## 4-pole contactors MC-100a/4~800a/4

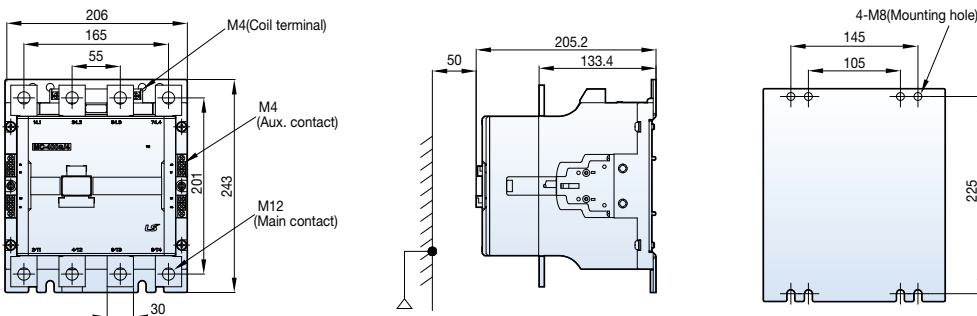
[mm]

- MC-100a/4
- MC-130a/4
- MC-150a/4
- MC-185a/4
- MC-225a/4



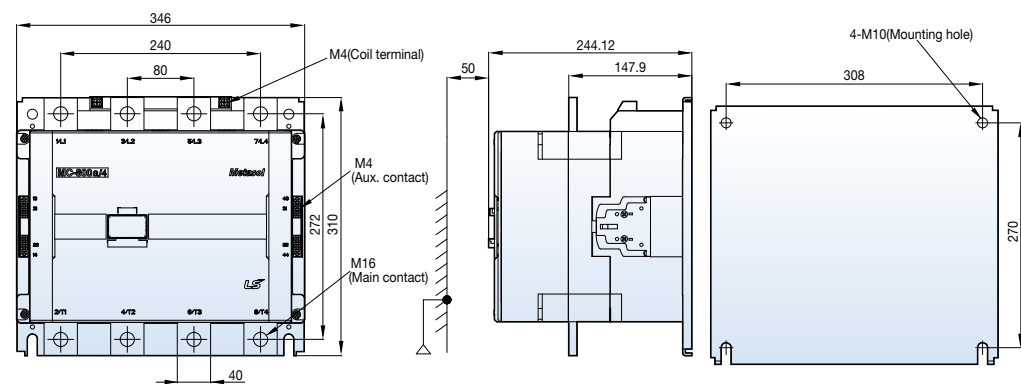
5.6kg

- MC-265a/4
- MC-330a/4
- MC-400a/4



9.9kg

- MC-500a/4
- MC-630a/4
- MC-800a/4

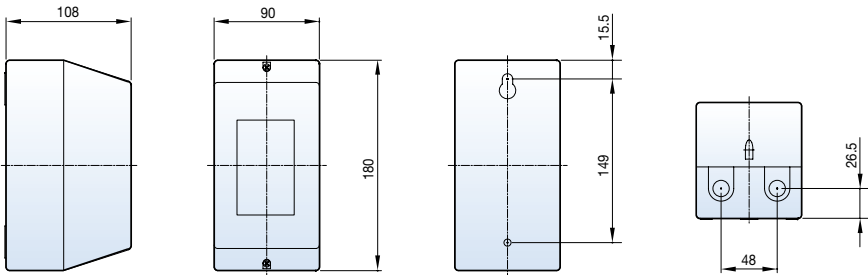


26.3kg

Enclosed motor starters, Mold enclosure

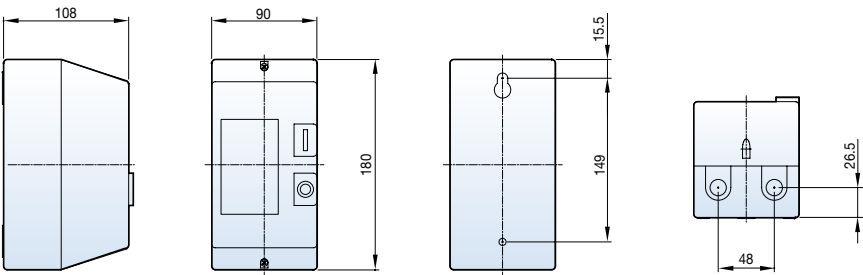
[mm]

MW-9bM~22bM



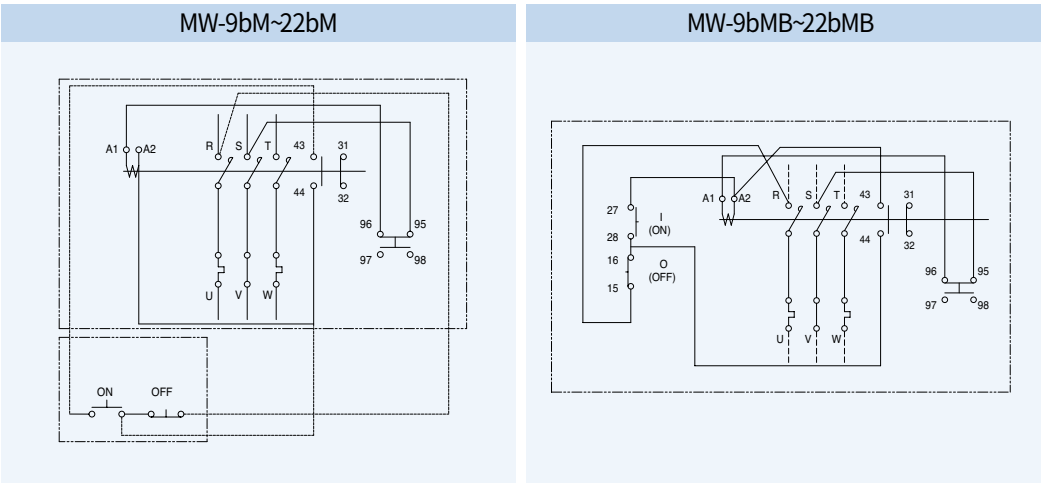
0.8kg

MW-9bMB~22bMB



0.8kg

Circuit diagram

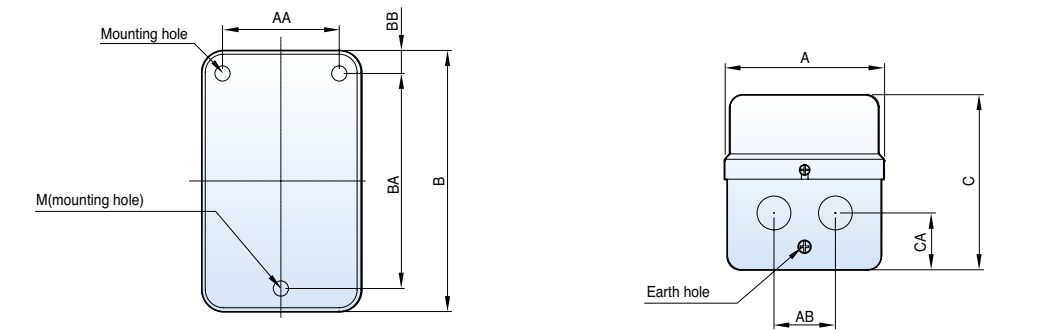


# Dimension

## Enclosed motor starters, Steel enclosure

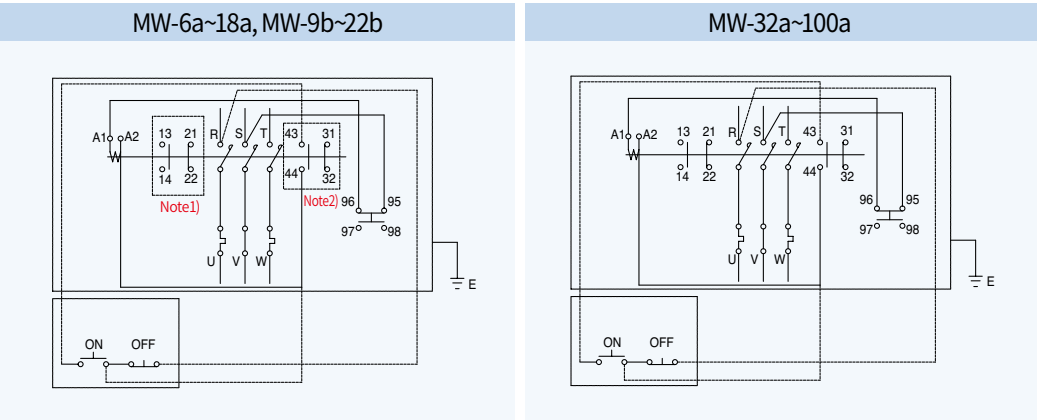
[mm]

- MW-6a~100a
- MW-9b~22b



| Type              | A   | AA  | AB | B   | BA  | BB | C   | CA | M  | N   | Weight(kg) |
|-------------------|-----|-----|----|-----|-----|----|-----|----|----|-----|------------|
| MW-9b~22b, 6a~18a | 104 | 76  | 40 | 170 | 140 | 15 | 114 | 41 | M5 | Ø22 | 1.1        |
| MW-32a, 40a       | 145 | 95  | 55 | 245 | 165 | 40 | 130 | 50 | M5 | Ø35 | 1.6        |
| MW-50a, 65a       | 160 | 120 | 74 | 290 | 220 | 35 | 141 | 50 | M5 | Ø35 | 2.7        |
| MW-75a, 85a, 100a | 160 | 120 | 74 | 290 | 220 | 35 | 161 | 67 | M5 | Ø35 | 3.6        |

### Circuit diagram

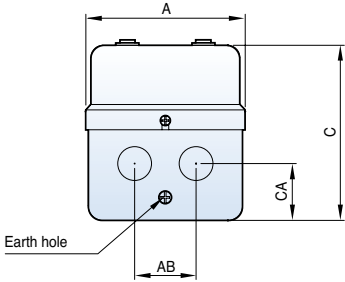
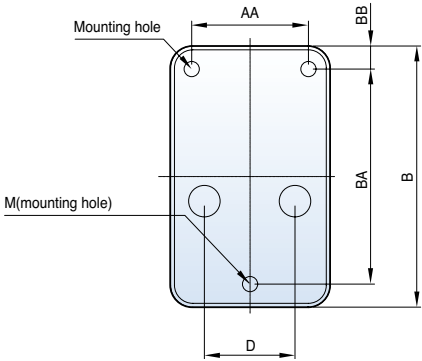


Note) 1. In case of adding the auxiliary contact unit(1NO1NC).  
 2. See below for MC-6a~18a(1NO)



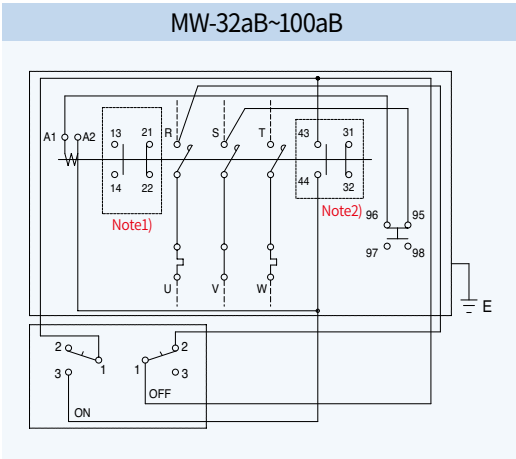
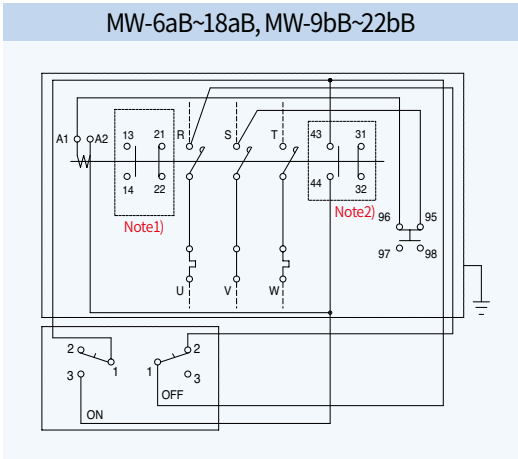
[mm]

MW-6aB~100aB  
MW-9bB~22bB



| Type                  | A   | AA  | AB | B   | BA  | BB | C   | CA | D   | M  | N   | Weight(kg) |
|-----------------------|-----|-----|----|-----|-----|----|-----|----|-----|----|-----|------------|
| MW-9bB~22bB, 6aB~18aB | 104 | 76  | 40 | 170 | 140 | 15 | 114 | 41 | 59  | M5 | Ø22 | 1.1        |
| MW-32aB, 40aB         | 145 | 95  | 55 | 245 | 165 | 40 | 130 | 50 | 97  | M5 | Ø35 | 1.6        |
| MW-50aB, 65aB         | 160 | 120 | 74 | 290 | 220 | 35 | 141 | 50 | 114 | M5 | Ø35 | 2.7        |
| MW-75aB, 85aB, 100aB  | 160 | 120 | 74 | 290 | 220 | 35 | 161 | 67 | 114 | M5 | Ø35 | 3.6        |

Circuit diagram



Note) 1. In case of adding the auxiliary contact unit(1NO1NC).  
2. See below for MC-6a~18a(1NO)



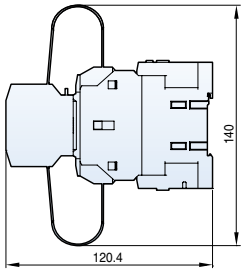
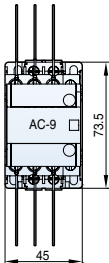
# Dimension

## Capacitor contactors

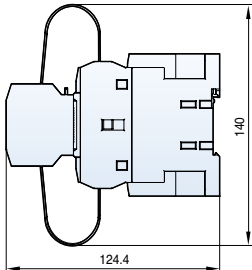
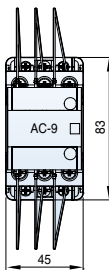
MC-9b~40a with AC-9, MC-50a~65a with AC-50, MC-75a~100a with AC-75

[mm]

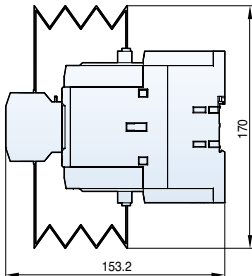
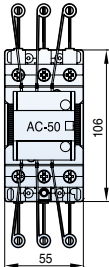
MC-9b~22b  
with AC-9



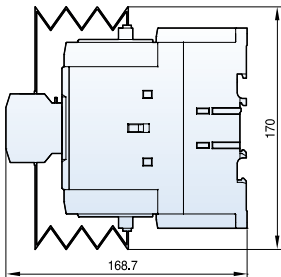
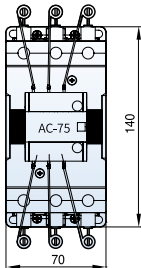
MC-32a,40a  
with AC-9



MC-50a,65a  
with AC-50

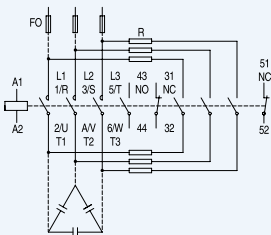


MC-75a~100a  
with AC-75

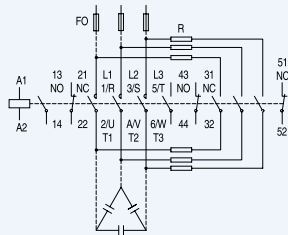


Circuit diagram

MC-9b~22b with AC-9



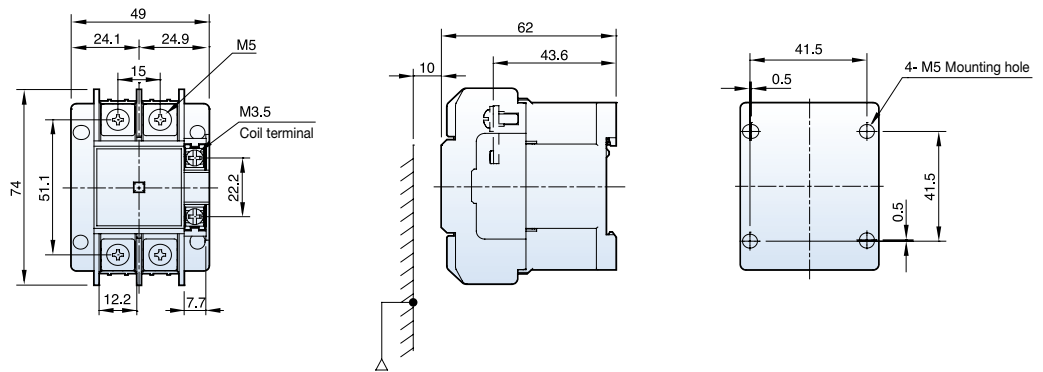
MC-32a, 40a with AC-9,  
MC-50a~65a with AC-50, MC-75a~100a with AC-75



2-pole AC contactors GMC-10P2~40P2

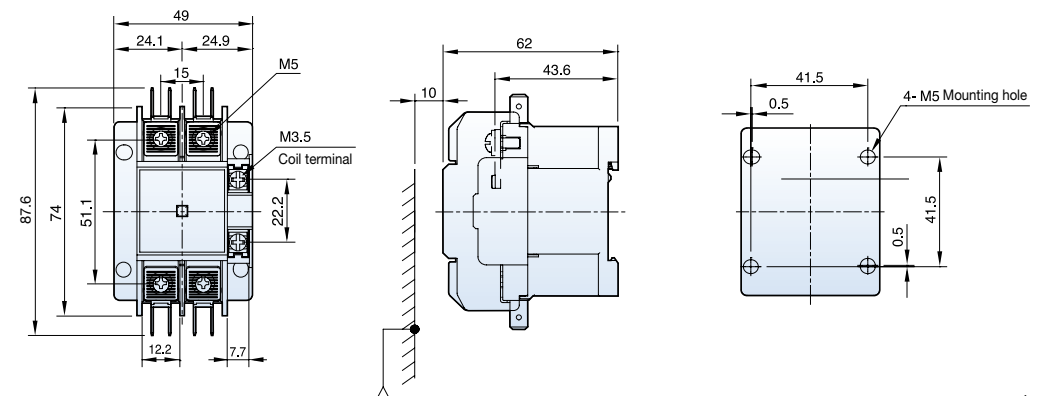
[mm]

- GMC-10P2
  - GMC-20P2
  - GMC-25P2
  - GMC-30P2
  - GMC-35P2
  - GMC-40P2
- (TSBS Type)



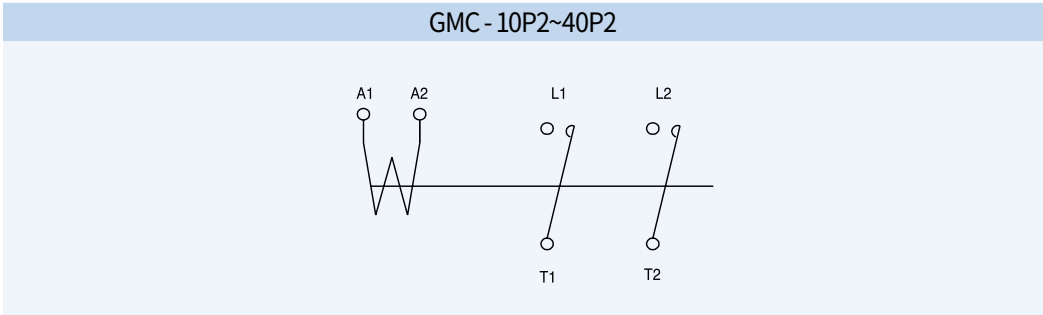
1.29kg

- GMC-10P2
  - GMC-20P2
  - GMC-25P2
  - GMC-30P2
  - GMC-35P2
  - GMC-40P2
- (TQBS Type)



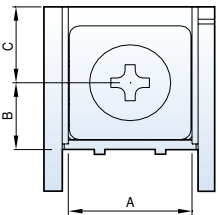
1.29kg

Composition



Terminal

| Type          | Terminals | Screw | Wire(mm²) | Torque(kgf-cm) | A×B×C(mm)   |
|---------------|-----------|-------|-----------|----------------|-------------|
| GMC-10P2~40P2 | Main      | M5    | 1-16      | 26             | 12.2×7×8    |
|               | Coil      | M3.5  | 1-2.5     | 12             | 7.7×7.5×4.5 |



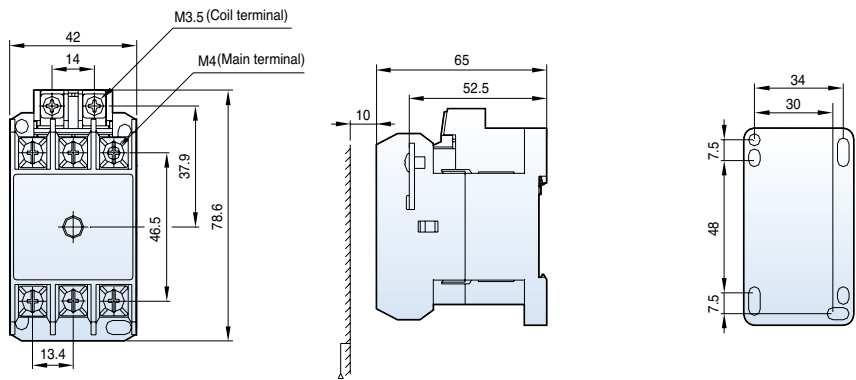


# Dimension

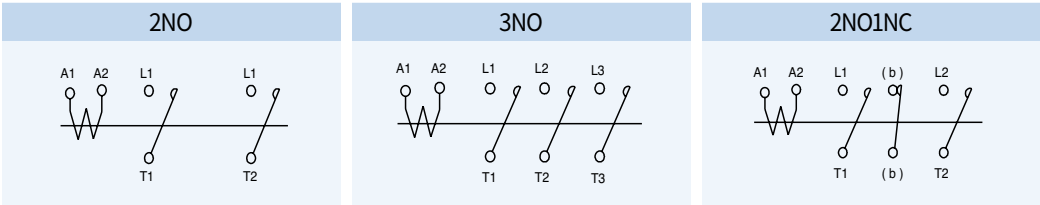
## 3-pole AC Contactors GMC-20D, 25D

[mm]

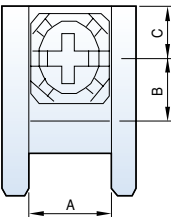
- GMC-20D
- GMC-25D



### Contact arrangement



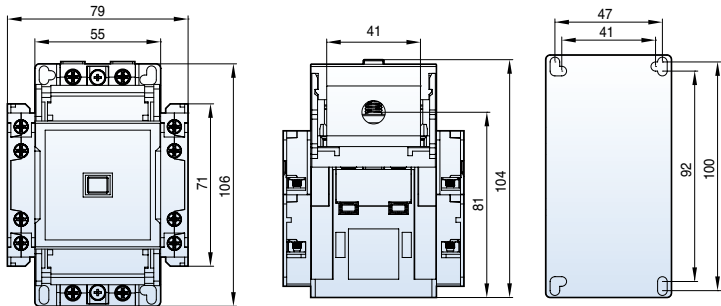
### Terminal



| Type        | Screw | Wire(mm <sup>2</sup> ) | Torque(kgf·cm) | A×B×C(mm)  |
|-------------|-------|------------------------|----------------|------------|
| GMC-20D~25D | M4    | 1-10                   | 15             | 9.4×5×85.1 |
| Coil~       | M3.5  | 1.25-2                 | 12             | 8×5×4.9    |

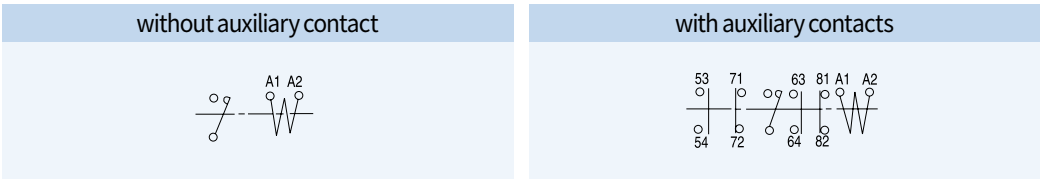
## Single-pole AC Contactors MC-65aSP

### MC-65aSP



0.65kg

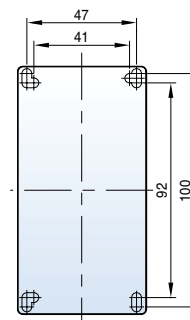
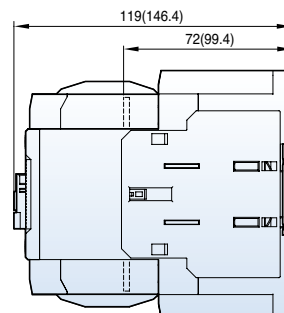
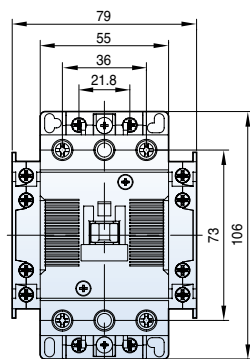
### Composition



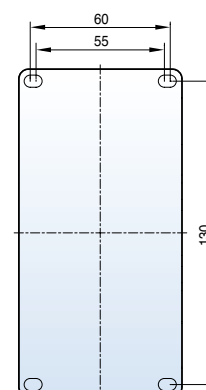
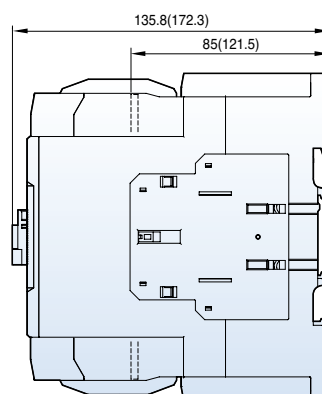
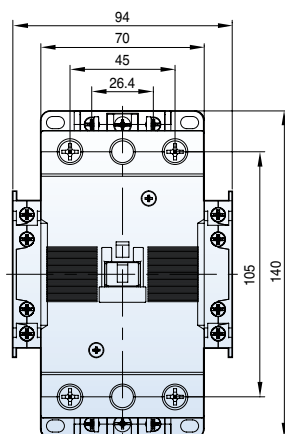
## DC Contactors MD-30a, 60a, 100a

[mm]

MD-30a AC(DC)  
2NO2NC

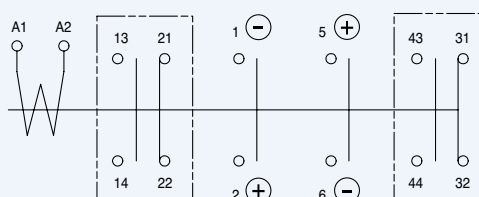


MD-60a,100a AC(DC)  
2NO2NC

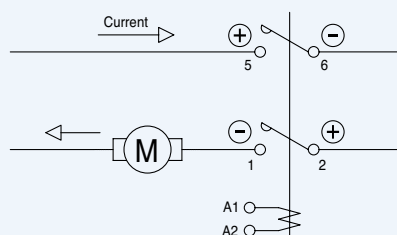


### Composition

MD-30a, 60a, 100a



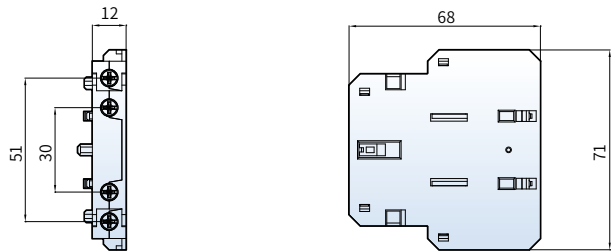
### Contact arrangement



# Dimension

[mm]

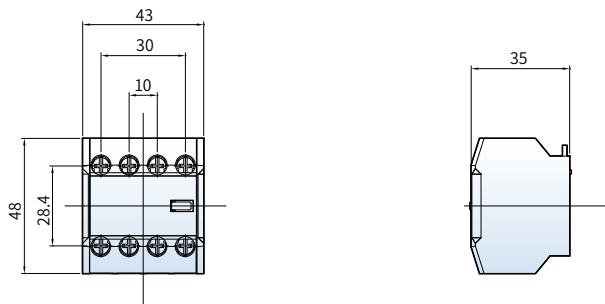
UA-1



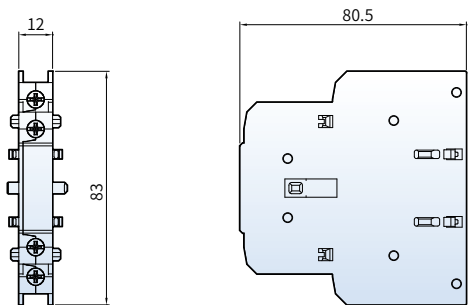
UA-2



UA-4



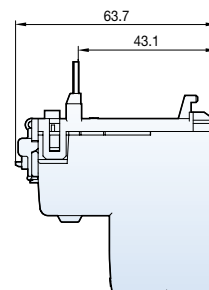
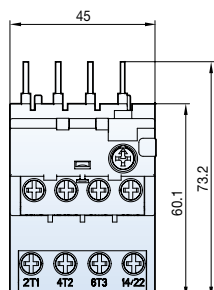
UR-02



## Overload relays

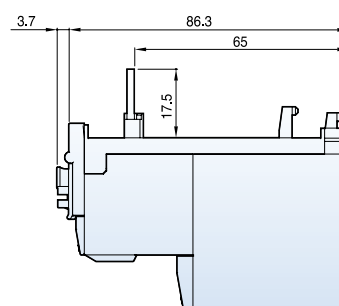
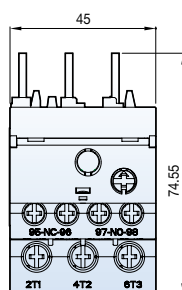
[mm]

MT-12



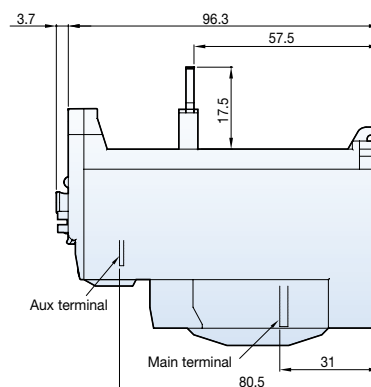
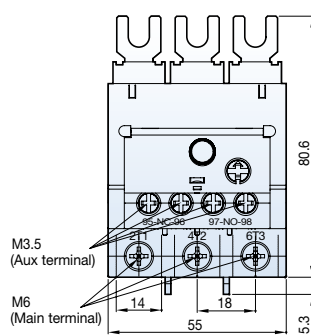
100g

MT-32



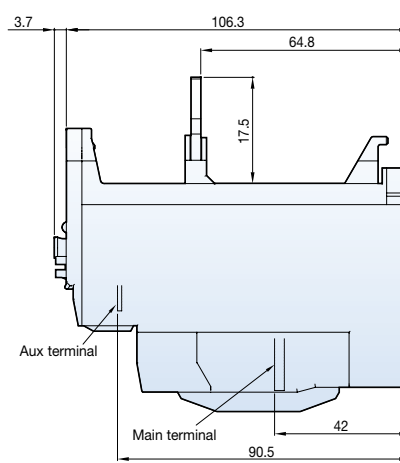
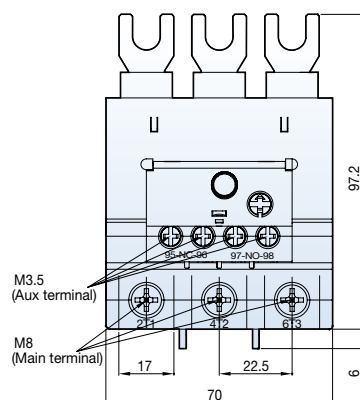
167g

MT-63



303g

MT-95

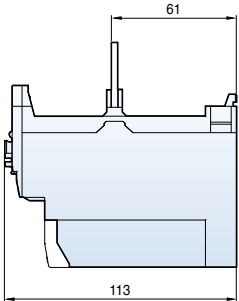
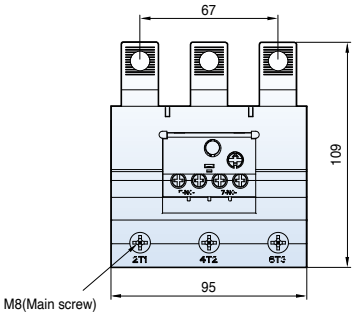


474g

# Dimension

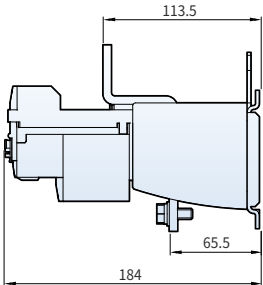
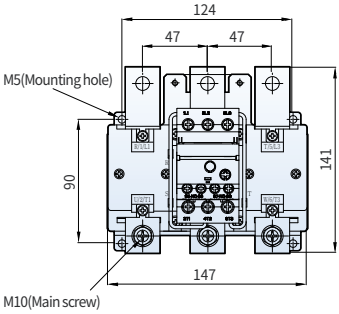
[mm]

MT-150



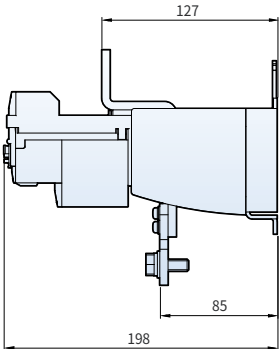
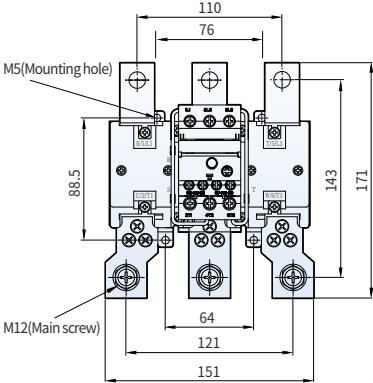
0.7kg

MT-225



2.5kg

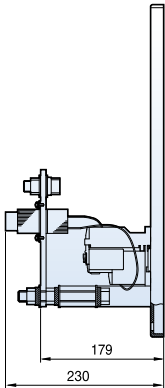
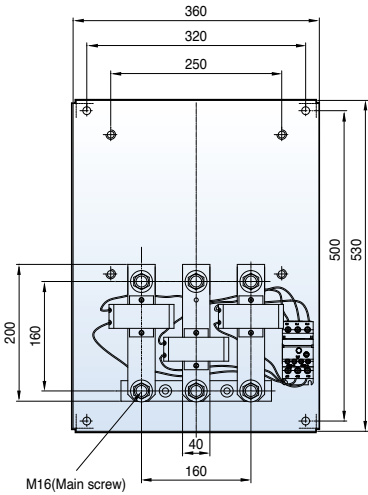
MT-400



Note) MT-225,400 \*M5(Mounting hole) is not applicable when connecting to magnetic contactor

2.6kg

MT-800

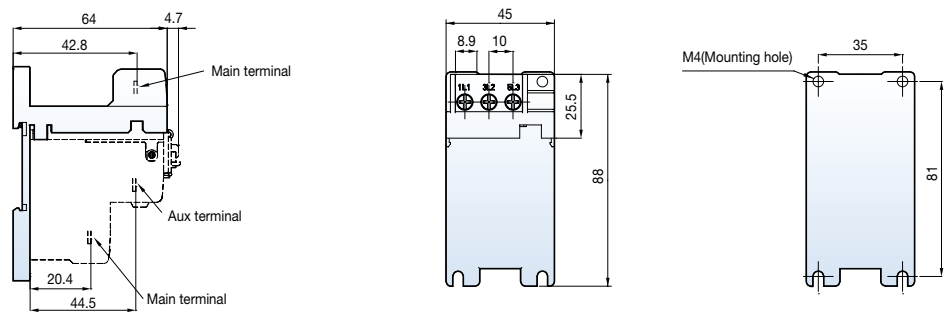


11.5kg

Overload relays

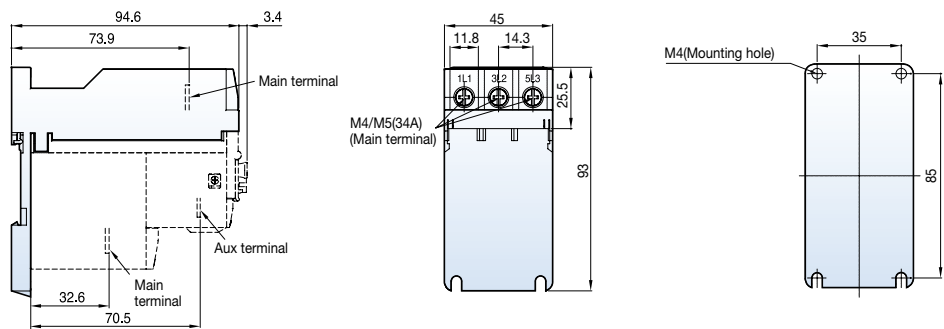
[mm]

UZ-12



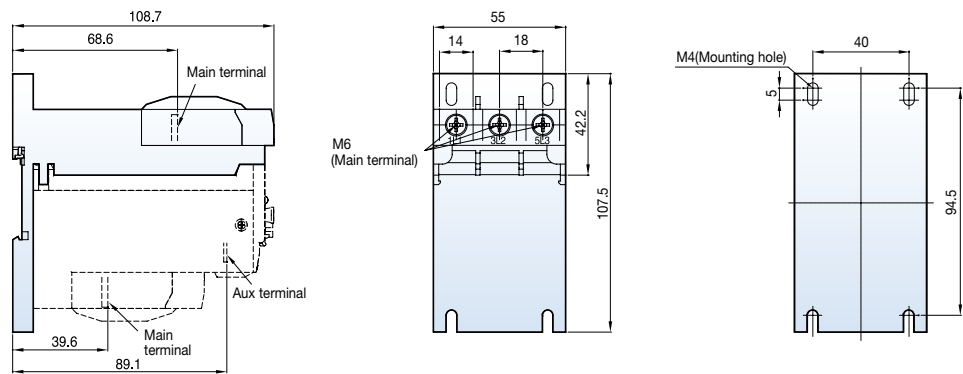
35g

UZ-32



68g

UZ-63

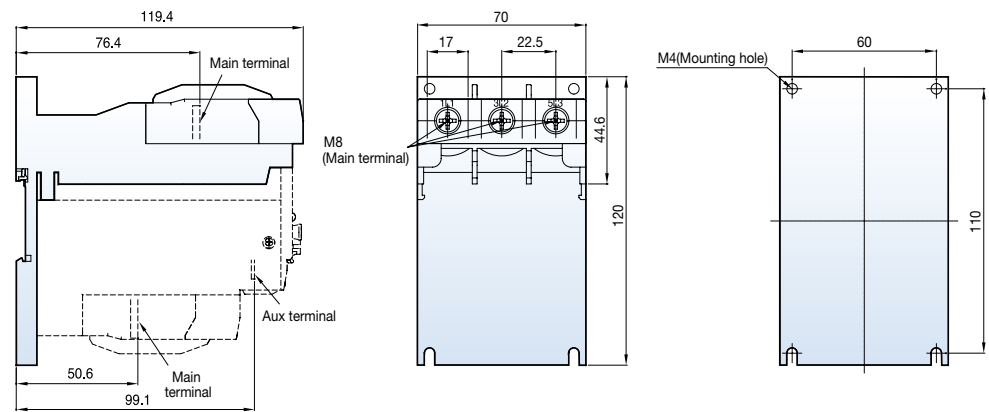


134g

# Dimension (Separate mount)

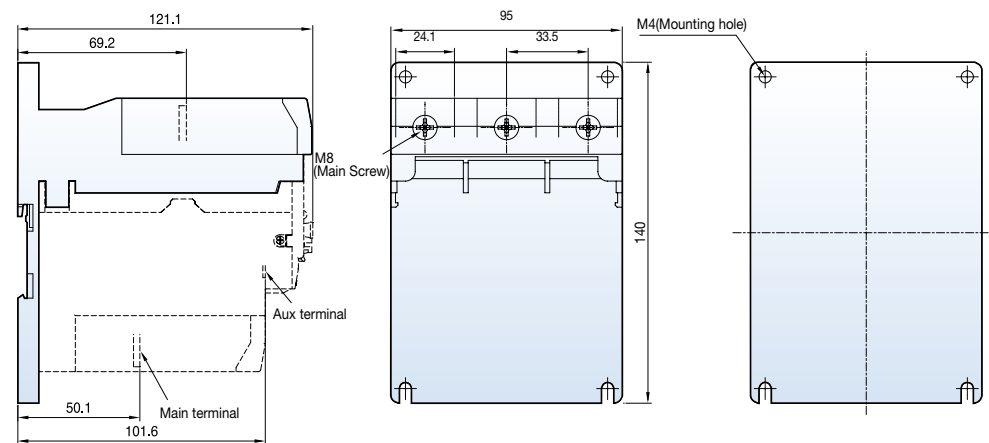
[mm]

UZ-95



230g

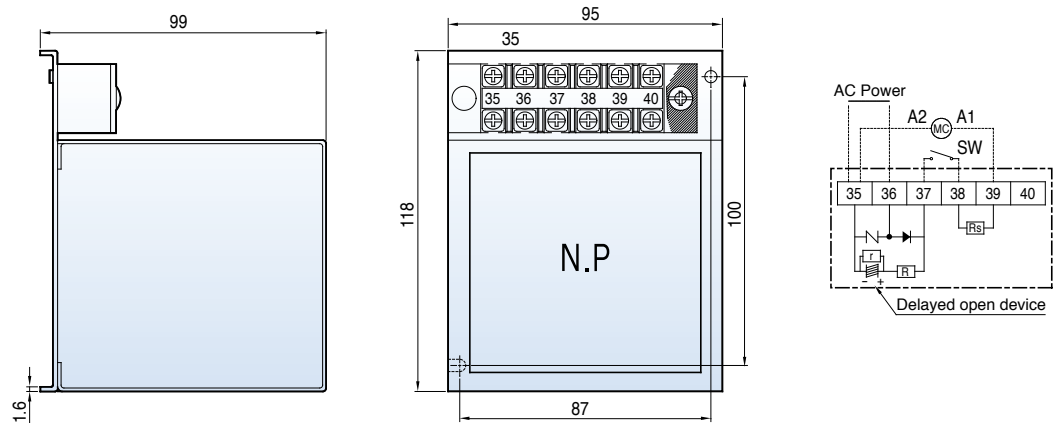
UZ-150



284g

## Dimension

AD - 9

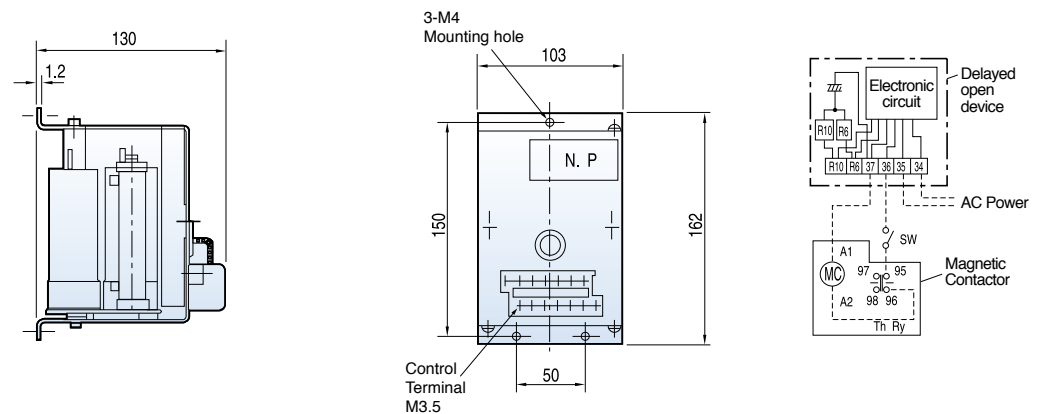


AD - 50

AD - 100

AD - 300

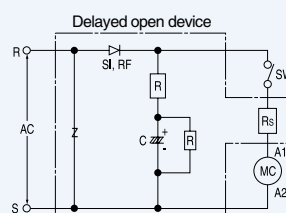
AD - 600



0.5kg

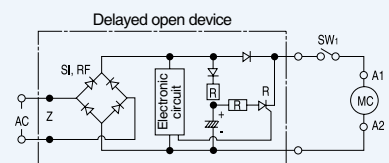
## Control circuit diagram

AD - 9



SI, RF : Rectifier  
C : Condenser  
Rs : Resistance in series

AD - 50~600



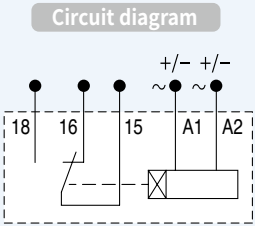
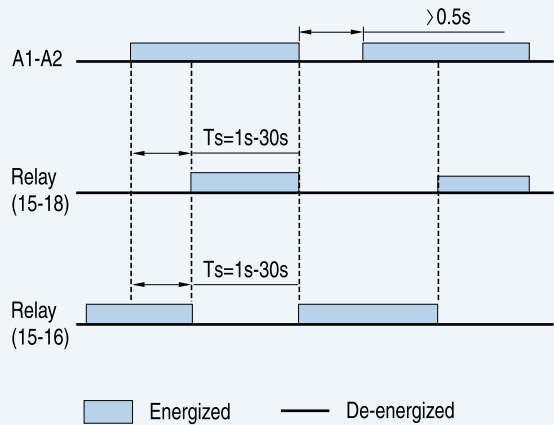
SI, RF : Rectifier  
C : Condenser  
Rs : Resistance in series



# Electronic timer unit

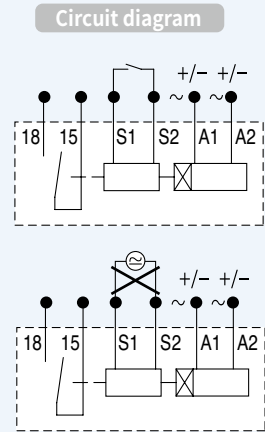
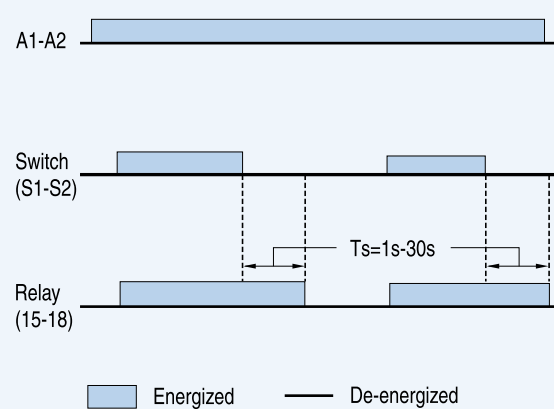
## ON delay timer

On time(Close MC) delay of magnetic contactors 1~30sec

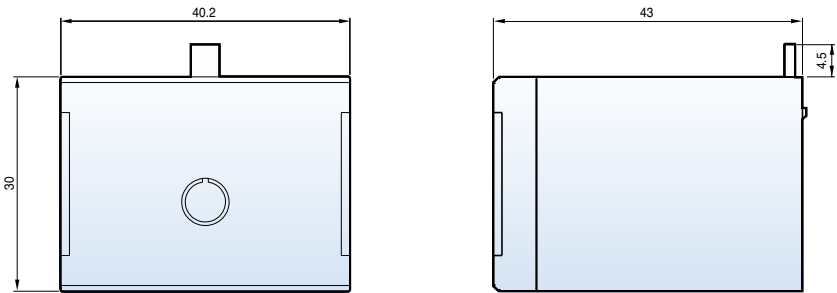


## OFF delay timer

Off time(Open MC) delay of magnetic contactors 1~30sec



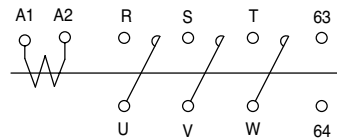
## Dimension



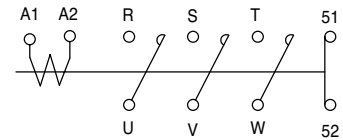
## Contactors

MC-6a~18a

1NO

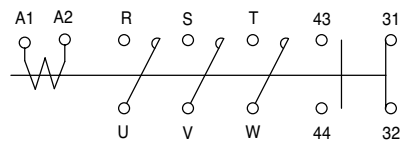


1NC



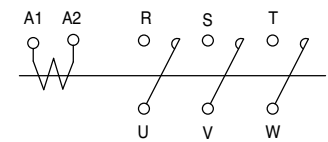
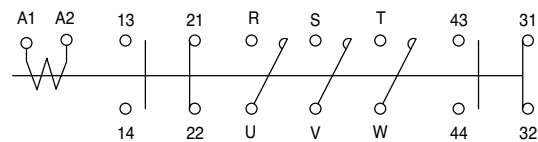
MC-9b~22b

1NO1NC



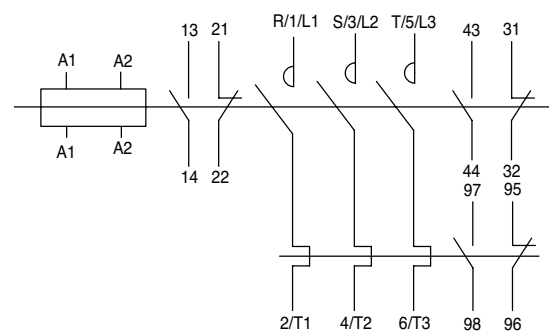
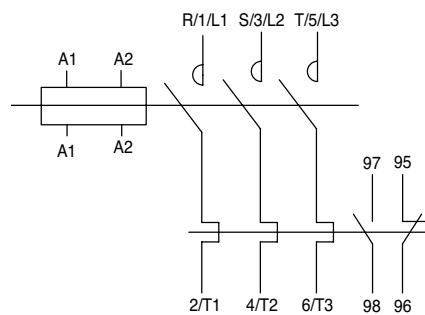
MC-32a~2650a

2NO2NC

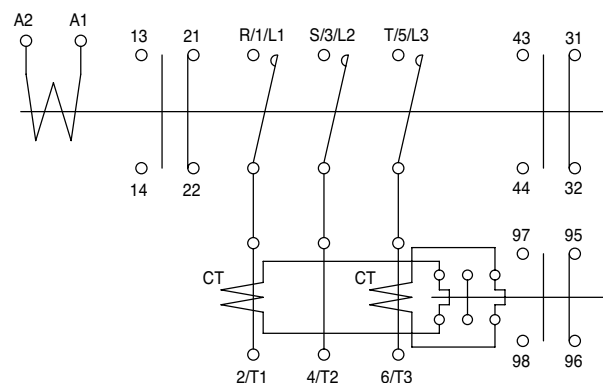


## Motor starters

MS-6a~150a



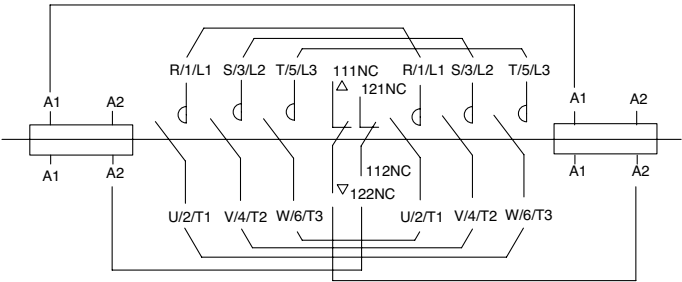
MS-185a~800a



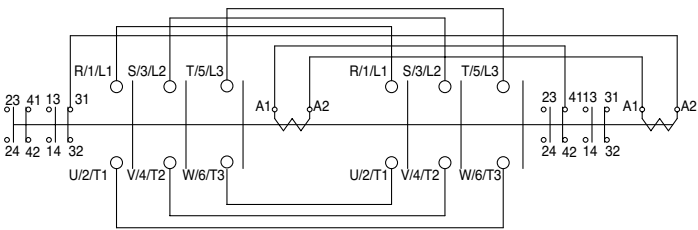
# Contact arrangement

## Reversing contactors

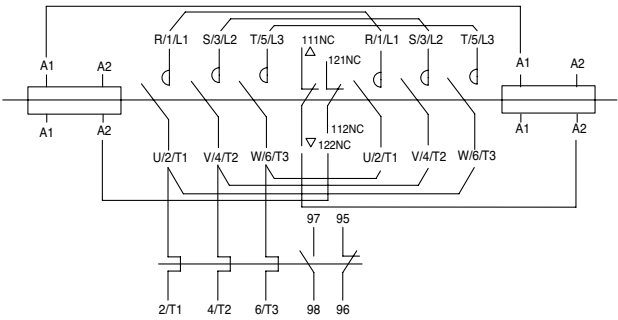
MC-6aR~150aR



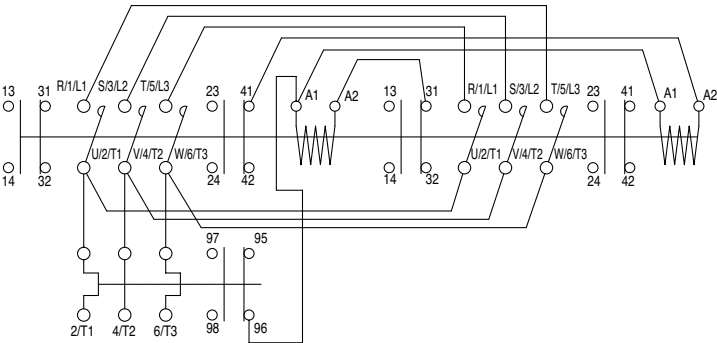
MC-185aR~800aR



MS-6aR~150aR

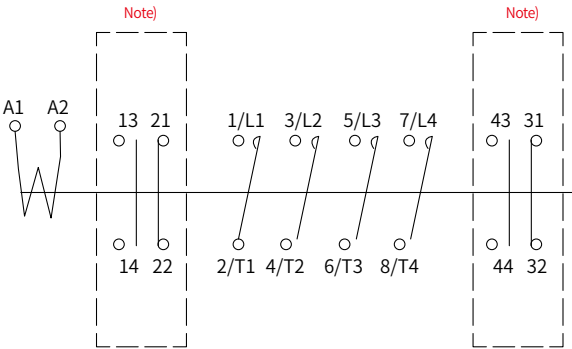


MS-185aR~400aR



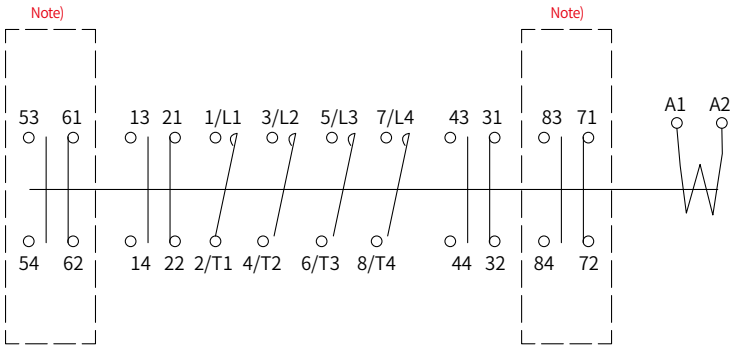
# Contactors (4-Pole)

MC-6a/4~85a/4



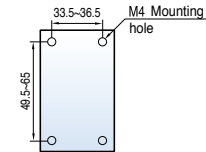
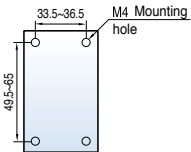
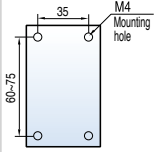
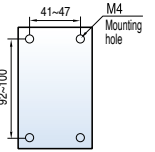
Note) For auxiliary contacts 2a2b

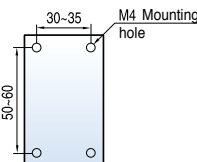
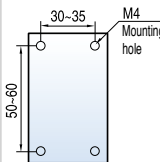
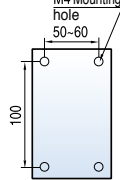
MC-100a/4~800a/4



Note) For auxiliary contacts 4a4b

# Meta-MEC and Metasol MC comparison table

| Type                  |                      |                       |              | MC-6a                                                                             | MC-9a | MC-12a | MC-18a       | MC-9b                                                                              | MC-12b | MC-18b | MC-22b   | MC-32a                                                                              | MC-40a     | MC-50a                                                                              | MC-65a |
|-----------------------|----------------------|-----------------------|--------------|-----------------------------------------------------------------------------------|-------|--------|--------------|------------------------------------------------------------------------------------|--------|--------|----------|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|--------|
| Manufactured products | Metasol MC           | Current and power AC3 | 200~240V     | 2.2kW                                                                             | 2.5kW | 3.5kW  | 4.5kW        | 2.5kW                                                                              | 3.5kW  | 4.5kW  | 5.5kW    | 7.5kW                                                                               | 11kW       | 15kW                                                                                | 18.5kW |
|                       |                      |                       |              | 9A                                                                                | 11A   | 13A    | 18A          | 11A                                                                                | 13A    | 18A    | 22A      | 32A                                                                                 | 40A        | 55A                                                                                 | 65A    |
|                       |                      |                       | 380~440V     | 3kW                                                                               | 4kW   | 5.5kW  | 7.5kW        | 4kW                                                                                | 5.5kW  | 7.5kW  | 11kW     | 15kW                                                                                | 18.5kW     | 22kW                                                                                | 30kW   |
|                       |                      |                       | 7A           | 9A                                                                                | 12A   | 18A    | 9A           | 12A                                                                                | 18A    | 22A    | 32A      | 40A                                                                                 | 50A        | 65A                                                                                 |        |
|                       |                      | 500~550V              | 3kW          | 4kW                                                                               | 7.5kW | 7.5kW  | 4kW          | 7.5kW                                                                              | 7.5kW  | 15kW   | 18.5kW   | 22kW                                                                                | 30kW       | 33kW                                                                                |        |
|                       |                      |                       | 6A           | 7A                                                                                | 12A   | 13A    | 7A           | 12A                                                                                | 13A    | 20A    | 28A      | 32A                                                                                 | 43A        | 60A                                                                                 |        |
|                       | Auxiliary (Standard) |                       |              | 1NO or 1NC                                                                        |       |        |              | 1NO1NC                                                                             |        |        |          | -                                                                                   |            | -                                                                                   |        |
|                       | Mounting size        |                       |              |  |       |        |              |  |        |        |          |  |            |  |        |
| Weight (kg)           |                      |                       | 0.33         |                                                                                   |       |        | 0.34         |                                                                                    |        |        | 0.4      |                                                                                     | 0.9        |                                                                                     |        |
| Dimension(W×H×D)      |                      |                       | 45×73.5×80.4 |                                                                                   |       |        | 45×73.5×87.4 |                                                                                    |        |        | 45×83×90 |                                                                                     | 55×106×119 |                                                                                     |        |

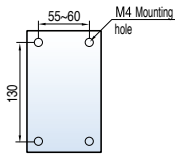
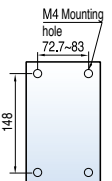
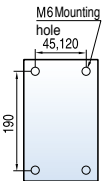
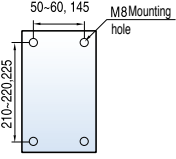
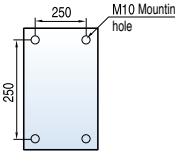
| Type                  |                            |                       |          | -                                                                                    | GMC-9  | GMC-12 | GMC-18 | GMC-22                                                                                | GMC-32 | GMC-40                                                                                | GMC-50 | GMC-65 |
|-----------------------|----------------------------|-----------------------|----------|--------------------------------------------------------------------------------------|--------|--------|--------|---------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|--------|--------|
| Discontinued products | Meta-MEC MC                | Current and power AC3 | 200~220V | -                                                                                    | 2.5kW  | 3.5kW  | 4.5kW  | 5.5kW                                                                                 | 7.5kW  | 11kW                                                                                  | 15kW   | 18.5kW |
|                       |                            |                       | 380~440V | -                                                                                    | 11A    | 13A    | 18A    | 22A                                                                                   | 32A    | 40A                                                                                   | 55A    | 65A    |
|                       |                            | 500~550V              | 380~440V | -                                                                                    | 4kW    | 5.5kW  | 7.5kW  | 11kW                                                                                  | 15kW   | 18.5kW                                                                                | 22kW   | 30kW   |
|                       |                            |                       | 500~550V | -                                                                                    | 9A     | 12A    | 18A    | 22A                                                                                   | 32A    | 40A                                                                                   | 50A    | 65A    |
|                       | Auxiliary (Standard)       |                       | -        | 1NO1NC                                                                               | 1NO1NC | 1NO1NC | 1NO1NC | 2NO2NC                                                                                | 2NO2NC | 2NO2NC                                                                                | 2NO2NC |        |
|                       | Mounting size              |                       | -        |  |        |        |        |  |        |  |        |        |
|                       | Weight (kg)                |                       | -        | 0.33                                                                                 |        | 0.37   |        | 0.45                                                                                  |        | 1                                                                                     |        |        |
|                       | Demension(W×H×D)           |                       | -        | 44×80×86.8                                                                           |        |        |        | 68×82×94.6                                                                            |        | 94×122×115.7                                                                          |        |        |
|                       | Compatibility with Metasol |                       | -        | ○                                                                                    |        |        |        | ▲                                                                                     |        | ▲                                                                                     |        |        |

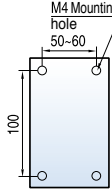
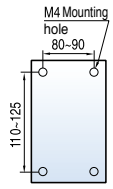
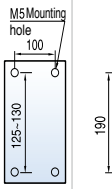
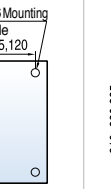
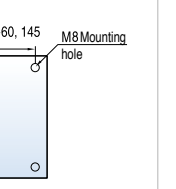
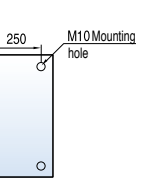
Note) Marks of compatibility

○: can be compatible

▲: compatible when applied the bracket

×: can't be compatible(have to use bracket)

| Type                  |                  |                       | MC-75a               | MC-85a                                                                            | MC-100a     | MC-130a      | MC-150a                                                                           | MC-185a       | MC-225a                                                                           | MC-265a       | MC-330a                                                                             | MC-400a       | MC-500a                                                                             | MC-630a       | MC-800a       |               |
|-----------------------|------------------|-----------------------|----------------------|-----------------------------------------------------------------------------------|-------------|--------------|-----------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|---------------|---------------|---------------|
| Manufactured products | Metasol MC       | Current and power AC3 | 200~240V             | 22 kW<br>75A                                                                      | 25kW<br>85A | 30kW<br>105A | 37kW<br>130A                                                                      | 45kW<br>150A  | 55kW<br>185A                                                                      | 75kW<br>225A  | 80kW<br>265A                                                                        | 90kW<br>330A  | 125kW<br>400A                                                                       | 147kW<br>500A | 190kW<br>630A | 220kW<br>800A |
|                       |                  |                       | 380~440V             | 37 kW<br>75A                                                                      | 45kW<br>85A | 55kW<br>105A | 60kW<br>130A                                                                      | 75kW<br>150A  | 90kW<br>185A                                                                      | 132kW<br>225A | 147kW<br>265A                                                                       | 160kW<br>330A | 200kW<br>400A                                                                       | 265kW<br>500A | 330kW<br>630A | 440kW<br>800A |
|                       |                  | 500~550V              | 37 kW<br>64A         | 45 kW<br>75A                                                                      | 55kW<br>85A | 60kW<br>90A  | 70kW<br>100A                                                                      | 110kW<br>180A | 132kW<br>200A                                                                     | 147kW<br>225A | 160kW<br>280A                                                                       | 225kW<br>350A | 265kW<br>400A                                                                       | 330kW<br>500A | 500kW<br>720A |               |
|                       |                  |                       | Auxiliary (Standard) |                                                                                   |             | -            |                                                                                   |               | -                                                                                 |               | 2NO2NC                                                                              |               | 2NO2NC                                                                              |               | 2NO2NC        |               |
|                       | Mounting size    |                       |                      |  |             |              |  |               |  |               |  |               |  |               |               |               |
|                       | Weight (kg)      |                       |                      | 1.6                                                                               |             |              | 2.4                                                                               |               | 5.4                                                                               |               | 9.2                                                                                 |               | 22.4                                                                                |               |               |               |
|                       | Demension(W×H×D) |                       |                      | 70×140×135.8                                                                      |             |              | 95×158×130.3                                                                      |               | 138×203×185.1                                                                     |               | 163×243×204.4                                                                       |               | 285×312×245.3                                                                       |               |               |               |

| Type                       |                      | GMC-75                | GMC-85                                                                              | GMC-100         | GMC-125                                                                             | GMC-150     | GMC-180                                                                             | GMC-220     | -                                                                                    | GMC-300 | GMC-400                                                                               | -           | GMC-600                                                                               | GMC-800 |        |             |    |  |
|----------------------------|----------------------|-----------------------|-------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------|---------|--------|-------------|----|--|
| Discontinued products      | Meta-MEC MC          | Current and power AC3 | 200~220V                                                                            | 22kW            | 25kW                                                                                | 30kW        | 37kW                                                                                | 45kW        | 55kW                                                                                 | 75kW    | -                                                                                     | 90kW        | 125kW                                                                                 | -       | 190kW  | 220kW       |    |  |
|                            |                      |                       |                                                                                     | 75A             | 85A                                                                                 | 105A        | 125A                                                                                | 150A        | 180A                                                                                 | 250A    |                                                                                       | 300A        | 400A                                                                                  | -       | 630A   | 800A        |    |  |
|                            |                      |                       | 380~440V                                                                            | 37kW            | 45kW                                                                                | 55kW        | 60kW                                                                                | 75kW        | 90kW                                                                                 | 132kW   | -                                                                                     | 160kW       | 200kW                                                                                 | -       | 330kW  | 440kW       |    |  |
|                            |                      |                       |                                                                                     | 75A             | 85A                                                                                 | 105A        | 120A                                                                                | 150A        | 180A                                                                                 | 250A    |                                                                                       | 300A        | 400A                                                                                  | -       | 630A   | 800A        |    |  |
|                            | 500~550V             | 37kW                  | 45kW                                                                                | 55kW            | 60kW                                                                                | 90kW        | 110kW                                                                               | 132kW       | -                                                                                    | 160kW   | 225kW                                                                                 | -           | 330kW                                                                                 | 500kW   |        |             |    |  |
|                            |                      | 64A                   | 75A                                                                                 | 85A             | 90A                                                                                 | 140A        | 180A                                                                                | 200A        |                                                                                      | 250A    | 350A                                                                                  |             | 500A                                                                                  | 720A    |        |             |    |  |
|                            | Auxiliary (Standard) |                       | 2NO2NC                                                                              | 2NO2NC          | 2NO2b                                                                               | 2NO2NC      | 2NO2NC                                                                              | 2NO2NC      | 2NO2NC                                                                               |         | 2NO2NC                                                                                | 2NO2NC      |                                                                                       | 2NO2NC  | 2NO2NC |             |    |  |
|                            | Mounting size        |                       |  |                 |  |             |  |             |  |         |  |             |  |         |        |             |    |  |
|                            | Weight (kg)          |                       | 1                                                                                   |                 | 2.9                                                                                 |             | 3.4                                                                                 |             | 5.4                                                                                  |         | -                                                                                     |             | 9.2                                                                                   |         | -      |             | 22 |  |
| Demension(W×H×D)           |                      | 94×122×115.7          |                                                                                     | 100×157.4×146.5 |                                                                                     | 120×166×157 |                                                                                     | 138×203×181 |                                                                                      | -       |                                                                                       | 163×243×198 |                                                                                       | -       |        | 285×290×242 |    |  |
| Compatibility with Metasol |                      |                       | ▲                                                                                   |                 | ×                                                                                   |             | ×                                                                                   |             | ○                                                                                    |         | -                                                                                     |             | ○                                                                                     |         | -      |             | ○  |  |

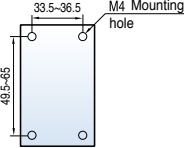
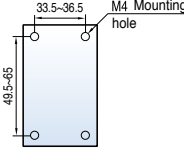
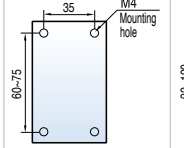
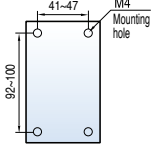
Note) Marks of compatibility

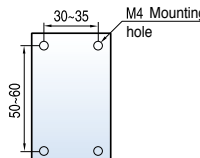
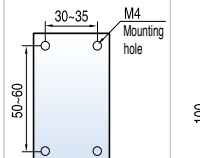
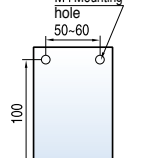
○: can be compatible

▲: compatible when applied the bracket

×: can't be compatible(have to use bracket)

# Meta-MEC and Metasol MS comparison table

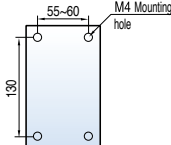
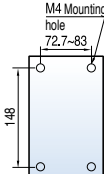
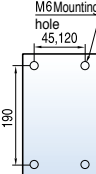
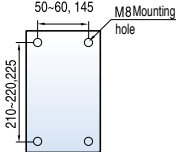
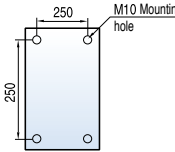
| Type                  |                      |                       |          | MS-6a                                                                             | MS-9a | MS-12a | MS-18a | MS-9b | MS-12b                                                                             | MS-18b | MS-22b | MS-32a | MS-40a                                                                              | MS-50a | MS-65a                                                                              |  |
|-----------------------|----------------------|-----------------------|----------|-----------------------------------------------------------------------------------|-------|--------|--------|-------|------------------------------------------------------------------------------------|--------|--------|--------|-------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------|--|
| Manufactured products | Metasol MC           | Current and power AC3 | 200~240V | 2.2kW                                                                             | 2.5kW | 3.5kW  | 4.5kW  | 2.5kW | 3.5kW                                                                              | 4.5kW  | 5.5kW  | 7.5kW  | 11kW                                                                                | 15kW   | 18.5kW                                                                              |  |
|                       |                      |                       |          | 9A                                                                                | 11A   | 13A    | 18A    | 11A   | 13A                                                                                | 18A    | 22A    | 32A    | 40A                                                                                 | 55A    | 65A                                                                                 |  |
|                       |                      |                       | 380~440V | 3kW                                                                               | 4kW   | 5.5kW  | 7.5kW  | 4kW   | 5.5kW                                                                              | 7.5kW  | 11kW   | 15kW   | 18.5kW                                                                              | 22kW   | 30kW                                                                                |  |
|                       |                      |                       |          | 7A                                                                                | 9A    | 12A    | 18A    | 9A    | 12A                                                                                | 18A    | 22A    | 32A    | 40A                                                                                 | 50A    | 65A                                                                                 |  |
|                       | 500~550V             | 3kW                   | 4kW      | 7.5kW                                                                             | 7.5kW | 4kW    | 7.5kW  | 7.5kW | 15kW                                                                               | 18.5kW | 22kW   | 30kW   | 33kW                                                                                |        |                                                                                     |  |
|                       |                      | 6A                    | 7A       | 12A                                                                               | 13A   | 7A     | 12A    | 13A   | 20A                                                                                | 28A    | 32A    | 43A    | 60A                                                                                 |        |                                                                                     |  |
|                       | Auxiliary (Standard) |                       |          | 1NO or 1NC                                                                        |       |        |        |       | 1NO1NC                                                                             |        |        |        | -                                                                                   |        | -                                                                                   |  |
|                       | Mounting size        |                       |          |  |       |        |        |       |  |        |        |        |  |        |  |  |
|                       | Weight (kg)          |                       |          | 0.5                                                                               |       |        |        |       | 0.5                                                                                |        |        |        | 0.7                                                                                 |        | 1.5                                                                                 |  |
|                       | Demension(W×H×D)     |                       |          | 45×124×80.4                                                                       |       |        |        |       | 45×129.9×87.4                                                                      |        |        |        | 45×139.4×90                                                                         |        | 55×163.8×119                                                                        |  |

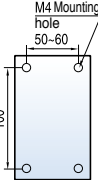
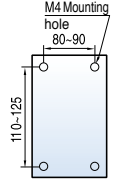
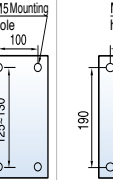
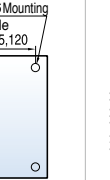
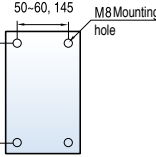
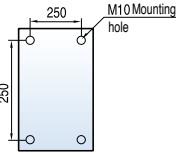
| Type                  |                            |                       |                      | -                                                                                    | GMS-9        | GMS-12       | GMS-18                                                                                | GMS-22        | GMS-32                                                                                | GMS-40        | GMS-50         | GMS-65        |
|-----------------------|----------------------------|-----------------------|----------------------|--------------------------------------------------------------------------------------|--------------|--------------|---------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------|----------------|---------------|
| Discontinued products | Meta-MEC MC                | Current and power AC3 | 200~220V             | -                                                                                    | 2.5kW<br>11A | 3.5kW<br>13A | 4.5kW<br>18A                                                                          | 5.5kW<br>22A  | 7.5kW<br>32A                                                                          | 11kW<br>40A   | 15kW<br>55A    | 18.5kW<br>65A |
|                       |                            |                       | 380~440V             | -                                                                                    | 4kW<br>9A    | 5.5kW<br>12A | 7.5kW<br>18A                                                                          | 11kW<br>22A   | 15kW<br>32A                                                                           | 18.5kW<br>40A | 22kW<br>50A    | 30kW<br>65A   |
|                       |                            | 500~550V              | -                    | 4kW<br>7A                                                                            | 7.5kW<br>12A | 7.5kW<br>13A | 15kW<br>22A                                                                           | 18.5kW<br>28A | 22kW<br>32A                                                                           | 30kW<br>43A   | 33kW<br>60A    |               |
|                       |                            |                       | Auxiliary (Standard) | -                                                                                    | 1NO1NC       | 1NO1NC       | 1NO1NC                                                                                | 1NO1NC        | 2NO2NC                                                                                | 2NO2NC        | 2NO2NC         | 2NO2NC        |
|                       | Mounting size              |                       | -                    |  |              |              |  |               |  |               |                |               |
|                       | Weight (kg)                |                       | -                    | 0.46                                                                                 | 0.5          |              |                                                                                       | 0.45          |                                                                                       | 1.12          |                |               |
|                       | Demension(W×H×D)           |                       | -                    | 44×128.9×86.8                                                                        |              |              |                                                                                       |               | 68×136.5×94.6                                                                         |               | 94×181.5×115.7 |               |
|                       | Compatibility with Metasol |                       |                      | -                                                                                    | ○            |              |                                                                                       |               | ×                                                                                     |               | ×              |               |

Note) Marks of compatibility

○: can be compatible

×: can't be compatible(have to use bracket)

| Type                  |                  |                       | MS-75a               | MS-85a                                                                            | MS-100a     | MS-130a      | MS-150a                                                                           | MS-185a       | MS-225a                                                                           | MS-265a       | MS-330a                                                                             | MS-400a       | MS-500a       | MS-630a                                                                             | MS-800a       |               |
|-----------------------|------------------|-----------------------|----------------------|-----------------------------------------------------------------------------------|-------------|--------------|-----------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|---------------|---------------|-------------------------------------------------------------------------------------|---------------|---------------|
| Manufactured products | Metasol MC       | Current and power AC3 | 200~240V             | 22 kW<br>75A                                                                      | 25kW<br>85A | 30kW<br>105A | 37kW<br>130A                                                                      | 45kW<br>150A  | 55kW<br>185A                                                                      | 75kW<br>225A  | 80kW<br>265A                                                                        | 90kW<br>330A  | 125kW<br>400A | 147kW<br>500A                                                                       | 190kW<br>630A | 220kW<br>800  |
|                       |                  |                       | 380~440V             | 37 kW<br>75A                                                                      | 45kW<br>85A | 55kW<br>105A | 60kW<br>130A                                                                      | 75kW<br>150A  | 90kW<br>185A                                                                      | 132kW<br>225A | 147kW<br>265A                                                                       | 160kW<br>330A | 200kW<br>400A | 265kW<br>500A                                                                       | 330kW<br>630A | 440kW<br>800A |
|                       |                  | 500~550V              | 37 kW<br>64A         | 45 kW<br>75A                                                                      | 55kW<br>85A | 60kW<br>90A  | 70kW<br>100A                                                                      | 110kW<br>180A | 132kW<br>200A                                                                     | 147kW<br>225A | 160kW<br>280A                                                                       | 225kW<br>350A | 265kW<br>400A | 330kW<br>500A                                                                       | 500kW<br>720A |               |
|                       |                  |                       | Auxiliary (Standard) |                                                                                   |             | -            |                                                                                   |               | -                                                                                 |               | 2NO2NC                                                                              |               | 2NO2NC        |                                                                                     | 2NO2NC        |               |
|                       | Mounting size    |                       |                      |  |             |              |  |               |  |               |  |               |               |  |               |               |
|                       | Weight (kg)      |                       |                      | 2.4                                                                               |             |              | 3                                                                                 |               | 7.9                                                                               |               | 11.8                                                                                |               |               | 28                                                                                  |               |               |
|                       | Demension(W×H×D) |                       |                      | 70×211.4×135.8                                                                    |             |              | 95×236.2×130.3                                                                    |               | 138×306.5×185.1                                                                   |               | 163×380×204.4                                                                       |               |               | 360×530×245.3                                                                       |               |               |

| Type                  |                            |                       | GMC-75                                                                              | GMC-85      | GMC-100                                                                             | GMC-125      | GMC-150                                                                             | GMC-180       | GMC-220                                                                              | -             | GMC-300                                                                               | GMC-400       | -             | GMC-600                                                                               | GMC-800       |               |             |  |
|-----------------------|----------------------------|-----------------------|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------|---------------|---------------------------------------------------------------------------------------|---------------|---------------|-------------|--|
| Discontinued products | Meta-MEC MC                | Current and power AC3 | 200~220V                                                                            | 22kW<br>75A | 25kW<br>85A                                                                         | 30kW<br>105A | 37kW<br>125A                                                                        | 45kW<br>150A  | 55kW<br>180A                                                                         | 75kW<br>250A  | -                                                                                     | 90kW<br>300A  | 125kW<br>400A | -                                                                                     | 190kW<br>630A | 220kW<br>800A |             |  |
|                       |                            |                       | 380~440V                                                                            | 37kW<br>75A | 45kW<br>85A                                                                         | 55kW<br>105A | 60kW<br>120A                                                                        | 75kW<br>150A  | 90kW<br>180A                                                                         | 132kW<br>250A | -                                                                                     | 160kW<br>300A | 200kW<br>400A | -                                                                                     | 330kW<br>630A | 440kW<br>800A |             |  |
|                       |                            | 500~550V              | 37kW<br>64A                                                                         | 45kW<br>75A | 55kW<br>85A                                                                         | 60kW<br>90A  | 90kW<br>140A                                                                        | 110kW<br>180A | 132kW<br>200A                                                                        | -             | 160kW<br>250A                                                                         | 225kW<br>350A | -             | 330kW<br>500A                                                                         | 500kW<br>720A |               |             |  |
|                       |                            |                       | Auxiliary (Standard)                                                                |             | 2NO2NC                                                                              | 2NO2NC       | 2NO2NC                                                                              | 2NO2NC        | 2NO2NC                                                                               | 2NO2NC        | 2NO2NC                                                                                | -             | 2NO2NC        | 2NO2NC                                                                                | -             | 2NO2NC        | 2NO2NC      |  |
|                       | Mounting size              |                       |  |             |  |              |  |               |  |               |  |               |               |  |               |               |             |  |
|                       | Weight (kg)                |                       | 1.12                                                                                |             | 3.4                                                                                 |              | 4                                                                                   |               | 7.9                                                                                  |               | -                                                                                     |               | 11.8          |                                                                                       | -             |               | 28          |  |
|                       | Demension(W×H×D)           |                       | 94×181.5×115.7                                                                      |             | 114×231.4×146.5                                                                     |              | 120×206.4×157                                                                       |               | 138×306.54×181                                                                       |               | -                                                                                     |               | 163×380×198   |                                                                                       | -             |               | 360×530×262 |  |
|                       | Compatibility with Metasol |                       | ×                                                                                   |             | ×                                                                                   |              | ×                                                                                   |               | ○                                                                                    |               | -                                                                                     |               | ○             |                                                                                       | -             |               | ○           |  |

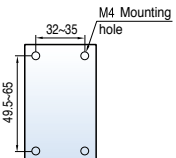
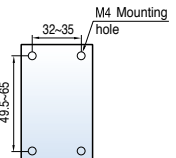
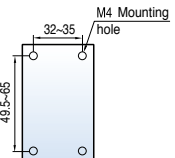
Note) Marks of compatibility

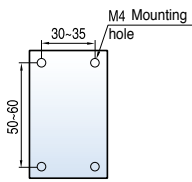
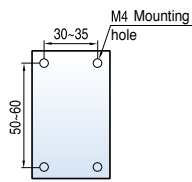
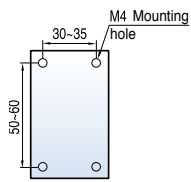
○: can be compatible

×: can't be compatible(have to use bracket)



# Meta-MEC and Metasol relays comparison table

|                       |            | Type              | MR-4                                                                              | MR-6                                                                               | MR-8                                                                                |
|-----------------------|------------|-------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Manufactured products | Metasol MR | Auxiliary (kW)    | 4NO, 3NO1NC, 2NO2NC<br>1NO3NC, 4NC                                                | 6NO, 5NO1NC, 4NO2NC<br>3NO3NC, 2NO4NC                                              | 8NO, 7NO1NC, 6NO2NC<br>5NO3NC, 4NO4NC                                               |
|                       |            | Rated current (A) | 120 V                                                                             | 6                                                                                  | 6                                                                                   |
|                       |            | AC15              | 240 V                                                                             | 3                                                                                  | 3                                                                                   |
|                       |            | Mounting size     |  |  |  |
|                       |            | Demension (W×H×D) | 45×73.5×79(96.6)                                                                  | 45×73.5×109.6(127.2)                                                               | 45×73.5×109.6(127.2)                                                                |
|                       |            | Weight (kg)       | 0.284                                                                             | 0.315                                                                              | 0.339                                                                               |

|                       |     | Type              | GMR-4(D)                                                                            | GMR-6(D)                                                                             | GMR-8(D)                                                                              |
|-----------------------|-----|-------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Discontinued products | GMR | Auxiliary (kW)    | 4NO, 3NO1NC, 2NO2NC<br>1NO3NC, 4NC                                                  | 6NO, 5NO1NC, 4NO2NC<br>3NO3NC, 2NO4NC                                                | 8NO, 7NO1NC, 6NO2NC<br>5NO3NC, 4NO4NC                                                 |
|                       |     | Rated current (A) | AC110V                                                                              | 6                                                                                    | 6                                                                                     |
|                       |     | AC11              | AC220V                                                                              | 5                                                                                    | 5                                                                                     |
|                       |     | Mounting size     |  |  |  |
|                       |     | Demension (W×H×D) | 44×80×86.8(113.2)                                                                   | 44×80×118.6(145)                                                                     | 44×80×118.6(145)                                                                      |
|                       |     | Weight (kg)       | 0.34(0.56)                                                                          | 0.37(0.59)                                                                           | 0.39(0.61)                                                                            |

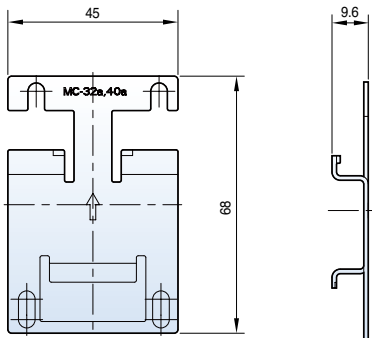
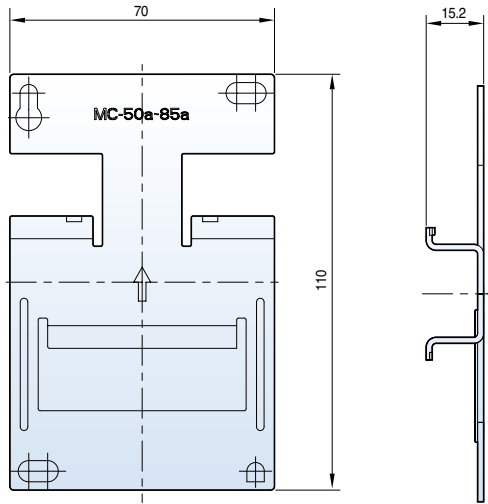
# Meta-MEC and Metasol TOR comparison table

Metasol MS

| Manufactured products |                                                                                                                                                                                            | Discontinued products |                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MT                    |                                                                                                                                                                                            | GTH (K)               |                                                                                                                                                                                            |
| MT-12                 | 0.14(0.1~0.16), 0.21(0.16~0.25), 0.33(0.25~0.4), 0.52(0.4~0.63), 0.82(0.63~1), 1.3(1~1.6), 2.1(1.6~2.5), 3.3(2.5~4), 5(4~6), 6.5(5~8), 7.5(6~9), 8.5(7~10), 11(9~13), 15(12~18), 19(16~22) | GTH(K)-22             | 0.14(0.1~0.16), 0.21(0.16~0.25), 0.33(0.25~0.4), 0.52(0.4~0.63), 0.82(0.63~1), 1.3(1~1.6), 2.1(1.6~2.5), 3.3(2.5~4), 5(4~6), 6.5(5~8), 7.5(6~9), 8.5(7~10), 11(9~13), 15(12~18), 19(16~22) |
| MT-32                 | 0.14(0.1~0.16), 0.21(0.16~0.25), 0.33(0.25~0.4), 0.52(0.4~0.63), 0.82(0.63~1), 5(4~6), 6.5(5~8), 7.5(6~9), 8.5(7~10), 11(9~13), 15(12~18), 19(16~22), 22(18~26), 34(28~40)                 | GTH(K)-40             | 5(4~6), 6.5(5~8), 7.5(6~9), 8.5(7~10), 11(9~13), 15(12~18), 19(16~22), 22(18~26), 30(24~36), 34(28~40)                                                                                     |
| MT-63                 | 5(4~6), 6.5(5~8), 7.5(6~9), 8.5(7~10), 11(9~13), 15(12~18), 19(16~22), 22(18~26), 30(24~36), 34(28~40), 42(34~50), 54(45~65)                                                               | GTH(K)-85             | 8.5(7~10), 11(9~13), 15(12~18), 19(16~22), 22(18~26), 30(24~36), 34(28~40), 42(34~50), 55(45~65), 65(54~75), 74(63~85)                                                                     |
| MT-95                 | 8.5(7~10), 11(9~13), 15(12~18), 19(16~22), 22(18~26), 30(24~36), 34(28~40), 42(34~50), 54(45~65), 65(54~75), 74(63~85), 83(70~95), 90(80~100)                                              | GTH(K)-100            | 41(34~50), 48(39~57), 56(43~65), 67(54~80), 80(65~100), 107(85~125)                                                                                                                        |
| MT-150                | 42(34~50), 55(45~65), 65(54~75), 74(63~85), 93(80~105), 113(95~130), 130(110~150)                                                                                                          | GTH(K)-150            | 41(34~50), 48(39~57), 56(43~65), 67(54~80), 80(65~100), 107(85~125), 130(100~150)                                                                                                          |
| MT-225                | 80(65~100), 107(85~125), 130(100~160), 153(120~185), 200(160~240)                                                                                                                          | GTH(K)-220            | 80(65~100), 107(85~125), 130(100~160), 150(120~180), 200(160~240)                                                                                                                          |
| MT-400                | 107(85~125), 130(100~160), 153(120~185), 200(160~240), 265(200~330), 350(260~400)                                                                                                          | GTH(K)-400            | 107(85~125), 130(100~160), 150(120~180), 200(160~240), 250(200~300), 350(260~400)                                                                                                          |
| MT-800                | 265(200~300), 350(260~400), 515(400~630), 660(520~800)                                                                                                                                     | GTH(K)-600            | 250(200~300), 350(260~400), 500(400~600), 660(520~800)                                                                                                                                     |

## Compatibility bracket

- Mounting Metasol MC on Din-Rail of bracket after install the bracket on panel
- Please use compatibility bracket when replace from Meta-MEC to Metasol MC without to change of panel size

|                       | MP-40                                                                               | MP-85                                                                                |
|-----------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Manufactured products | MC-32a~40a                                                                          | MC-50a~85a                                                                           |
| Discontinued products | GMC-32~40                                                                           | GMC-50~85                                                                            |
|                       |  |  |

# Certifications

| Type                                               |           | Type          | Approvals                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                     | Certificates                                                                        |                                                                                     |
|----------------------------------------------------|-----------|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                    |           | Certificate   | -                                                                                 | IEC                                                                               | UL                                                                                | CSA                                                                               | GB                                                                                  | IEC                                                                                 | KEPIC                                                                               |
|                                                    |           | Mark and name |  |  |  |  |  |  |  |
|                                                    |           |               | Korea                                                                             | Europe                                                                            | U.S.A & Canada                                                                    | Canada                                                                            | China                                                                               | Denmark                                                                             | Korea                                                                               |
| Metasol contactors                                 | MC-6a     |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-9a     |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-12a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-18a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-9b     |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-12b    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-18b    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-22b    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-32a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-40a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-50a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-65a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-75a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-85a    |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-100a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-130a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-150a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-185a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-225a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-265a   |               | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-330a   |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-400a   |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-500a   |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-630a   |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-800a   |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-1260a  |               |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                     | ●                                                                                   |                                                                                     |
|                                                    | MC-1400a  |               |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |
|                                                    | MC-1700a  |               |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |
|                                                    | MC-2100a  |               |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                   | ●                                                                                   |                                                                                     |
| Thermal overload relays nondifferential (2-heater) | MT-12/2H  |               |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/2H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/2H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/2H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/2H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/2H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/2H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
| Thermal overload relays nondifferential (3-heater) | MT-800/2H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                     | ●                                                                                   | ●                                                                                   |
|                                                    | MT-12/3H  |               |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3H  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/3H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays differential               | MT-400/3H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-800/3H |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-12/3K  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3K  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3K  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3K  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3K |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays class 20                   | MT-225/3K |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/3K |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-800/3K |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-12/3D  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3D  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3D  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3D  |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3D |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/3D |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/3D |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-800/3D |               |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                   | ●                                                                                   | ●                                                                                   |

Note) ●: Completion

## Marine

| Type                                               |               | Approvals                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|----------------------------------------------------|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Type                                               | Type          |  |  |  |  |  |  |  |  |
|                                                    | Mark and name | KR                                                                                | LR                                                                                | BV                                                                                | GL                                                                                | DNV                                                                                | ABS                                                                                 | NK                                                                                  | RINA                                                                                |
|                                                    |               | Korea                                                                             | U.K                                                                               | France                                                                            | Germany                                                                           | Norway                                                                             | U.S.A                                                                               | Japan                                                                               | Italy                                                                               |
| Metasol contactors                                 | MC-6a         | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-9a         | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-12a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-18a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-9b         | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-12b        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-18b        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-22b        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-32a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-40a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-50a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-65a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-75a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-85a        | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-100a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-130a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-150a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-185a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-225a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-265a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-330a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-400a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-500a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-630a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MC-800a       | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays nondifferential (2-heater) | MT-12/2H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/2H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/2H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/2H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/2H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/2H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/2H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays nondifferential (3-heater) | MT-12/3H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3H      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/3H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/3H     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays differential               | MT-12/3K      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3K      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3K      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3K      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3K     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/3K     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/3K     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
| Thermal overload relays class 20                   | MT-12/3D      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-32/3D      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-63/3D      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-95/3D      | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-150/3D     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-225/3D     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-400/3D     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |
|                                                    | MT-800/3D     | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  | ●                                                                                   | ●                                                                                   | ●                                                                                   |

Note) ●: Completion



#### Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.  
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



- According to The WEEE Directive, please do not discard the device with your household waste.



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