

---

# Magnetic Starters

---

For low operating cycle of magnetic contactor **CLK** Series

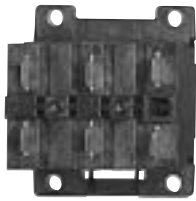


**Togami Electric Mfg.Co.,Ltd.**



May 2004  
Catalog No.CO156

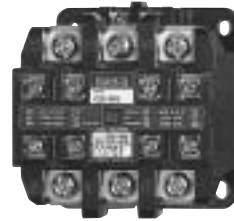
# CLK Series



CLK-25JF2



CLK-15JC



CLK-50J

TOGAMI MAGNETIC STARTERS HAVE BEEN REGULARLY USED THROUGHOUT INDUSTRIES FOR THE EXCELLENCE AND RELIABILITY FOR OVER A HALF CENTURY.

FOR LOW OPERATING CYCLE OF MAGNETIC CONTACTOR (ECONOMIC TYPE) CLK-J SERIES(15AF ~ 50AF),CLK-H SERIES(65AF ~ 250AF) MAGNETIC CONTACTOR & STARTER SUCCEEDED SUCH A TIME-HONORED TRADITION ARE ASSURED MAXIMUM SATISFACTION TO CUSTOMERS IN THE WORLD.



## SAFETY PRECAUTION

For your safety, please be sure to read the cause 5 “handling” in the catalogue and pertinent handling manuals attached to products before using.

# TABLE OF CONTENTS

|          |  |             |
|----------|--|-------------|
| <b>1</b> | Line-up, rating and selection table                    | page1 ~ 2   |
| <b>2</b> | Manufactured model and model identification            | page3       |
|          | 2.1 Manufactured model                                 |             |
|          | 2.2 Model identification                               |             |
| <b>3</b> | Selection  | page4 ~ 6   |
|          | 3.1 Operating coil rating                              |             |
|          | 3.2 Application of thermal overload relay for motors   |             |
|          | 3.3 Electromagnetic characteristics                    |             |
| <b>4</b> | Service condition                                      | page6 ~ 7   |
|          | 4.1 Standard service condition                         |             |
|          | 4.2 Mounting space                                     |             |
| <b>5</b> | Applicable wire size and tightening torque             | page7       |
| <b>6</b> | Handling instruction                                   | page8 ~ 9   |
| <b>7</b> | Dimensions and specifications                          | page10 ~ 18 |
| <b>8</b> | Thermal overload relay operation characteristic curves | page19 ~ 24 |

# 1. Line-up, rating and selection table

| Series                                   |  | CLK-J Serie   |                                  |                                 |  |             |                |             |           |
|--|--|---|----------------------------------|---------------------------------|--|-------------|----------------|-------------|-----------|
| Model type                               | Magnetic contactor   | CLK-25JF2   | CLK-15JFC                        | CLK-15JC                        | CLK-20J  | CLK-26J     | CLK-35J        | CLK-50J     |           |
|  | Magnetic Starter   | With 2-element thermal                                | -                                | CLK-15JTC                       | CLK-20JTC                                      | CLK-26JTC   | CLK-35JTC      | CLK-50JTC   |           |
|  |  | With open phase thermal                               | -                                | CLK-15JGTC                      | CLK-20JGTC                                     | CLK-26JGTC  | CLK-35JGTC     | CLK-50JGTC  |           |
|  |  | With 3-element thermal                                | -                                | CLK-15JT-3C                     | CLK-20JT-3C                                    | CLK-26JT-3C | CLK-35JT-3C    | CLK-50JT-3C |           |
| Rated insulation voltage                 |  | AC600V  |                                  |                                 |  |             |                |             |           |
| Rated operational voltage                |  | AC440V  |                                  |                                 |  |             |                |             |           |
| Main contact                             |  | 2P  | 3P                               | 3P                              | 3P   | 3P          | 3P             | 3P          |           |
| Auxiliary contact                        |  | -   | 1NO(1NC)                         |                                 | 1NO1NC(2NO,2NC)                                |             | 1NO1NC(2NO2NC) | 2NO2NC      |           |
| Terminal specification                   |  | Tab   | Tab                              | Screw                           | Screw  | Screw       | Screw          | Screw       |           |
| Main                                     | Rated thermal current  | 30A   | 24A                              | 20A                             | 26A  | 30A         | 45A            | 60A         |           |
|  | 3-Phase Squirrel-Cage (AC-3)   | 200-220V  | -                                | 3kW/15A                         | 3kW/15A  | 4kW/20A     | 5.5kW/26A      | 7.5kW/35A   | 11kW/50A  |
|  |  | 380-440V  | -                                | 4.5kW/10A                       | 4.5kW/10A                                      | 5.5kW/13A   | 7.5kW/18A      | 11kW/26A    | 19kW/40A  |
|  | Single-Phase motor (AC-3)  | 100-110V  | 1.2kW/25A                        | 0.65kW/15A                      | 0.65kW/15A                                     | 0.9kW/20A   | 1.2kW/26A      | 1.6kW/35A   | 2.3kW/50A |
|  |  | 200-220V  | 2.4kW/25A                        | 1.3kW/15A                       | 1.3kW/15A                                      | 1.8kW/20A   | 2.4kW/26A      | 3.3kW/35A   | 4.7kW/50A |
|  | Resistive Load AC-1  | 200-220V  | 30                               | 24                              | 20   | 26          | 30             | 45          | 60        |
|  |  | 380-440V  | 21                               | 18                              | 18   | 20          | 28             | 38          | 60        |
| Auxiliary                                | Rated thermal current  | -   | 10                               | 10                              | 10   | 10          | 10             | 10          |           |
|  | Rating of Auxiliary Contact AC-15                                      | 100-110V  | -                                | 10                              | 10   | 10          | 10             | 10          | 10        |
|  |  | 200-220V  | -                                | 6                               | 6  | 5           | 5              | 5           | 5         |
|  |  | 380-440V  | -                                | 3                               | 3  | 3           | 3              | 3           | 3         |
| Min. operating reted                     |  | -   | 48V 100mA                        | 48V 100mA                       | 48V 100mA                                      | 48V 100mA   | 48V 100mA      | 48V 100mA   |           |
| Performan                                | IEC 60947-4-1  | AC-3  |                                  |                                 |  |             |                |             |           |
|  | Mechanical Life  | 1 × 10 <sup>6</sup> ops                               |                                  |                                 |  |             |                |             |           |
|  | Electrical Life  | 0.25 × 10 <sup>6</sup> ops                            |                                  |                                 |  |             |                |             |           |
|  | Switching frq  | 600(ops/hour)   |                                  |                                 |  |             |                |             |           |
| Thermal overload relay                   | Type   | -   | TJ-18JA<br>GTJ-18JA<br>TJ-18JA-3 | TJ-18<br>GTJ-18<br>TJ-18-3      | TJ-35<br>GTJ-35<br>TJ-35-3                     |             |                |             |           |
|  | Rated Current (A)<br>Standard tripping<br>(3 point set:<br>adjustable) | -   | 0.28 - 0.35 - 0.42               | 4 - 5 - 6                       | 7.4 - 9.2 - 11                                 |             |                |             |           |
|  |  | -   | 0.4 - 0.5 - 0.6                  | 5.4 - 6.7 - 8                   | 8.8 - 11 - 13                                  |             |                |             |           |
|  |  | -   | 0.56 - 0.7 - 0.84                | 6 - 7.5 - 9                     | 12 - 15 - 18                                   |             |                |             |           |
| -  |  | 0.8 - 1 - 1.2   | 7.4 - 9.2 - 11                   | 15 - 18 - 20                    |  |             |                |             |           |
| -  |  | 1 - 1.2 - 1.4   | 8.8 - 11 - 13                    | 18 - 22 - 26                    |  |             |                |             |           |
| -  |  | 1.4 - 1.8 - 2.2                                       | 11 - 13 - 15                     | 24 - 30 - 36                    |  |             |                |             |           |
| -  |  | 1.8 - 2.3 - 2.8                                       | 12 - 15 - 18                     | 30 - 34 - 42                    |  |             |                |             |           |
| -  | 2.4 - 3 - 3.6  | 15 - 18 - 20  | 34 - 42 - 48                     |                                 |  |             |                |             |           |
| -  | 2.9 - 3.6 - 4.3  | 18 - 22 - 26  | 40 - 48 - 52                     |                                 |  |             |                |             |           |
| -  | 3.7 - 4.6 - 5.5  |   |                                  |                                 |  |             |                |             |           |
| Type                                     | -  | TJ-18JA-F<br>GTJ-18JA-F<br>TJ-18JA-3F                 | TJ-18-F<br>GTJ-18-F<br>TJ-18-3F  | TJ-35-F<br>GTJ-35-F<br>TJ-35-3F |  |             |                |             |           |
| Fast tripping<br>(1 point set:<br>fixed) | -  | 5, 6, 7, 8, 9, 10, 12, 14, 15, 16, 18, 20, 22, 24, 26 |                                  |                                 | 17, 21, 24, 26, 28, 32, 36, 38, 40, 42, 46, 50 |             |                |             |           |

Note Capacity of thermal overload relates used in magnetic contactors should not be greater than the rated operating current of the 3P motor.

| CLK-H Series  |             |              |   |              |              |   |
|---|-------------|--------------|---|--------------|--------------|---|
| CLK-65H   | CLK-80H     | CLK-100H     | CLK-125H  | CLK-150H     | CLK-200H     | CLK-250H  |
| CLK-65HTC   | CLK-80HTC   | CLK-100HTC   | CLK-125HTC  | CLK-150HTC   | CLK-200HTC   | CLK-250HTC  |
| CLK-65HGTC  | CLK-80HGTC  | CLK-100HGTC  | CLK-125HGTC   | CLK-150HGTC  | CLK-200HGTC  | CLK-250HGTC   |
| CLK-65HT-3C   | CLK-80HT-3C | CLK-100HT-3C | CLK-125HT-3C  | CLK-150HT-3C | CLK-200HT-3C | CLK-250HT-3C  |
| AC600V  |             |              |   |              |              |   |
| AC440V  |             |              |   |              |              |   |
| 3P  | 3P          | 3P           | 3P  | 3P           | 3P           | 3P  |
| 2NO2NC  | 2NO2NC      | 2NO2NC       | 2NO2NC  | 2NO2NC       | 2NO2NC       | 2NO2NC  |
| Screw   | Screw       | Screw        | Screw   | Screw        | Screw        | Screw   |
| 75  | 90          | 110          | 150   | 170          | 220          | 260   |
| 15kW/65A  | 19kW/80A    | 22kW/100A    | 30kW/125A   | 37kW/150A    | 50kW/200A    | 68kW/250A   |
| 30kW/65A  | 37kW/75A    | 40kW/80A     | 55kW/110A   | 60kW/125A    | 80kW/160A    | 90kW/180A   |
| -   | -           | -            | -   | -            | -            | -   |
| -   | -           | -            | -   | -            | -            | -   |
| 75  | 90          | 110          | 150   | 170          | 220          | 260   |
| 75  | 90          | 110          | 150   | 170          | 220          | 260   |
| 10  | 10          | 10           | 10  | 10           | 10           | 10  |
| 10  | 10          | 10           | 10  | 10           | 10           | 10  |
| 6   | 6           | 6            | 6   | 6            | 6            | 6   |
| 3   | 3           | 3            | 3   | 3            | 3            | 3   |
| 48V 100mA   | 48V 100mA   | 48V 100mA    | 48V 100mA   | 48V 100mA    | 24V 10mA     | 24V 10mA  |
| AC-3  |             |              |   |              |              |   |
| 1 × 10 <sup>6</sup> ops   |             |              |   |              |              |   |
| 0.25 × 10 <sup>6</sup> ops  |             |              |   |              |              |   |
| 600(ops/hour)   |             |              |   |              |              |   |
| TJ-50<br>GTJ-50<br>TJ-50-3  |             |              | TJ-125<br>GTJ-125<br>TJ-125-3   |              |              | TJ-220<br>GTJ-220<br>TJ-220-3   |
| 12 - 15 - 18<br>18 - 22 - 26<br>24 - 30 - 36<br>30 - 34 - 42<br>34 - 42 - 48<br>40 - 48 - 58<br>46 - 56 - 64<br>56 - 68 - 80<br>68 - 80 - 94<br>76 - 90 - 100 |             |              | 34 - 42 - 48<br>40 - 48 - 58<br>46 - 56 - 64<br>56 - 68 - 80<br>68 - 80 - 94<br>76 - 90 - 100<br>85 - 105 - 125<br>110 - 130 - 150<br>130 - 160 - 190 |              |              | 65 - 80 - 95<br>85 - 105 - 125<br>105 - 130 - 150<br>130 - 160 - 190<br>150 - 190 - 230 |
| TJ-50-F<br>GTJ-50-F<br>TJ-50-3F   |             |              | TJ-125-F<br>GTJ-125-F<br>TJ-125-3F  |              |              | -   |
| 28 , 32 , 36 , 42 , 50 ,<br>58 , 64 , 72 , 80 , 90 ,<br>100   |             |              | 60 , 66 , 70 , 76 , 80 ,<br>85 , 94 , 100 , 114 , 125 ,<br>130 , 140 , 150  |              |              | -   |

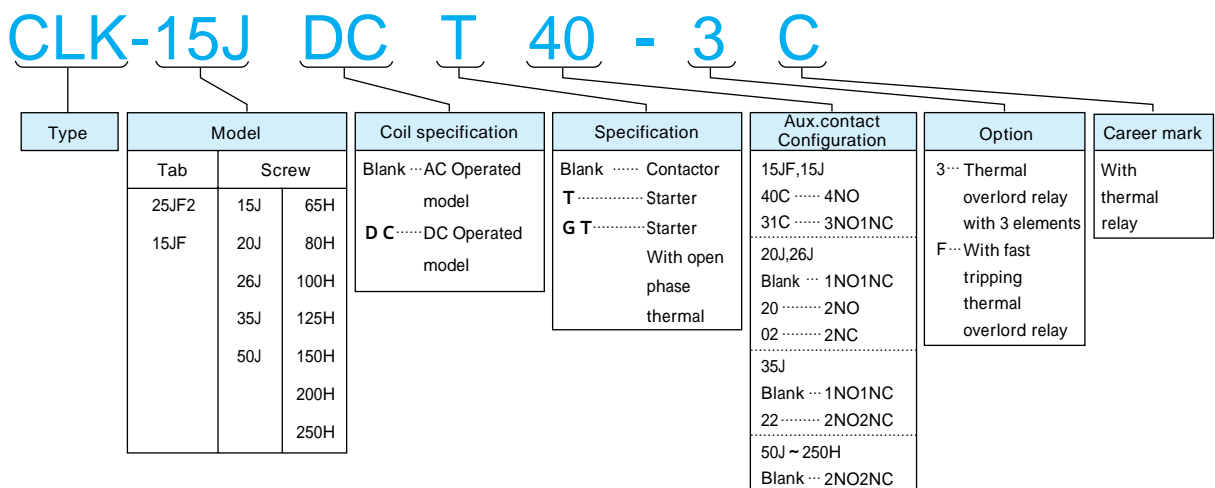
## 2. Manufactured model and model identification

### 2.1 Manufactured model

| Series name            |                     | CLK-J Series                          |              |                     |                    |        |     |     | CLK-H Series |     |      |      |      |      |      |  |
|------------------------|---------------------|---------------------------------------|--------------|---------------------|--------------------|--------|-----|-----|--------------|-----|------|------|------|------|------|--|
| Frame                  |                     | 25JF2                                 | 15JFC        | 15JC                | 20J                | 26J    | 35J | 50J | 65H          | 80H | 100H | 125H | 150H | 200H | 250H |  |
| Terminal specification |                     | Tab                                   |              |                     | Screw              |        |     |     |              |     |      |      |      |      |      |  |
| Contact configuration  | Main                | 2P                                    | 3P           | 3P                  | 3P                 | 3P     | 3P  | 3P  | 3P           | 3P  | 3P   | 3P   | 3P   | 3P   | 3P   |  |
|                        | Aux.                | -                                     | 1NO<br>(1NC) | 1NO1NC<br>(2NO,2NC) | 1NO1NC<br>(2NO2NC) | 2NO2NC |     |     |              |     |      |      |      |      |      |  |
| Magnetic contactor     | AC-operated model   |                                       |              |                     |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        | DC-operated model   | -                                     |              |                     | -                  | -      | -   | -   | -            | -   | -    | -    | -    | -    | -    |  |
| Magnetic starter       | AC-operated model   | -                                     | -            |                     |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        | DC-operated model   | -                                     | -            | -                   | -                  | -      | -   | -   | -            | -   | -    | -    | -    | -    | -    |  |
|                        | Standard trip model | With 2-element thermal<br>CLK- TC     | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        |                     | With open phase thermal<br>CLK- GTC   | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        |                     | With 3-element thermal<br>CLK- T-3C   | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        | Fast-trip model     | With 2-element thermal<br>CLK- T-FC   | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        |                     | With open phase thermal<br>CLK- GT-FC | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |
|                        |                     | With 3-element thermal<br>CLK- T-3FC  | -            | -                   |                    |        |     |     |              |     |      |      |      |      |      |  |

Note ① : Manufactures  
 ② - : Non manufactures



### 2.2 Model identification



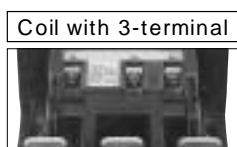
Note ① CLK-15JF,15J accompanies " C " at the end of model name

# 3. Selection

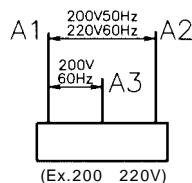
## 3.1 Operating coil rating

| Coil name            | Rated voltage of coil          | Model   |   | Color of coil nameplate |
|----------------------|--------------------------------|---|---|-------------------------|
|                      |                                | 25JF,15JFC,15JC<br>20J ~ 50J<br>65H ~ 100H,200H,250H                                | 125H<br>150H  |                         |
| AC100V (Standard)    | 100V 50Hz<br>100-110V 60Hz     | Coil with 2-terminal  | Coil with 3-terminal③   | Blue                    |
| AC200V (Standard)    | 200V 50Hz<br>200-220V 60Hz     | "   | "   | Yellow                  |
| AC 24V               | 24V 50Hz<br>24V 60Hz           | "   | "   | Green                   |
| AC110V               | 105-110V 50Hz<br>110-120V 60Hz | "   | "   | White                   |
| AC120V               | 110-120V 50Hz<br>120-130V 60Hz | "   | "   | White                   |
| AC220V               | 208-220V 50Hz<br>220-240V 60Hz | "   | "   | White                   |
| AC240V               | 220-240V 50Hz<br>240-260V 60Hz | "   | "   | White                   |
| AC400V               | 380-400V 50Hz<br>400-440V 60Hz | "   | "   | Pink                    |
| DC 12V               | DC 12V                         | Coil with 2-terminal<br>(15JFC,15JC only)   | -   | White                   |
| DC 24V               | DC 24V                         | "   | -   | White                   |
| DC100V               | DC100V                         | "   | -   | White                   |
| DC200V               | DC200V                         | "   | -   | White                   |
| Coil terminal symble |                                |  |  | -                       |

Note Coil name voltage is designed to simplify specification in ordering please use coil name when ordering  
 Rated voltage of coil indicates the rated operating frequency marked on the coil.  
 3-terminal coil.



( Connection is made to terminals A<sub>1</sub> and A<sub>2</sub> at delivery )



### 3.2 Application of thermal overload relay for motors

| Motor output Capacity ( kW ) | 220V 3-phase motor (4-pole) |                                  |                   | 440V 3-phase motor (4-pole) |                                  |                   |
|------------------------------|-----------------------------|----------------------------------|-------------------|-----------------------------|----------------------------------|-------------------|
|                              | Magnetic Contactor          | Thermal overload relay           |                   | Magnetic Contactor          | Thermal overload relay           |                   |
|                              |                             | Model                            | Rated current (A) |                             | Model                            | Rated current (A) |
| 0.1                          | 15JC                        | TJ-18JA<br>GTJ-18JA<br>TJ-18JA-3 | 0.7               | 15JC                        | TJ-18JA<br>GTJ-18JA<br>TJ-18JA-3 | 0.35              |
| 0.2                          |                             |                                  | 1.2               |                             |                                  | 0.7               |
| 0.4                          |                             |                                  | 2.3               |                             |                                  | 1.2               |
| 0.75                         |                             |                                  | 3.6               |                             |                                  | 1.8               |
| 1.1                          |                             |                                  | 5                 |                             |                                  | 2.3               |
| 1.5                          |                             |                                  | 6.7               |                             |                                  | 3.6               |
| 2.2                          |                             |                                  | 9.2               |                             |                                  | 4.6               |
| 2.5                          |                             |                                  | 11                |                             |                                  | 5                 |
| 2.7                          |                             |                                  | 11                |                             |                                  | 5                 |
| 3.7                          | 20J                         | TJ-18                            | 15                | 20J                         | TJ-18<br>GTJ-18<br>TJ-18-3       | 7.5               |
| 4                            |                             | GTJ-18                           | 18                |                             |                                  |                   |
| 5.5                          | 26J                         | TJ-18-3                          | 22                | 26J                         | TJ-18<br>GTJ-18<br>TJ-18-3       | 11                |
| 7.5                          | 35J                         | TJ-35<br>GTJ-35<br>TJ-35-3       | 30                | 35J                         | TJ-35<br>GTJ-35<br>TJ-35-3       | 15                |
| 11                           | 50J                         | TJ-50<br>GTJ-50<br>TJ-50-3       | 42                | 50J                         | TJ-50<br>GTJ-50<br>TJ-50-3       | 22                |
| 15                           | 65H                         | TJ-50                            | 56                | 65H                         | TJ-50<br>GTJ-50<br>TJ-50-3       | 30                |
| 19                           | 80H                         | GTJ-50                           | 68                |                             |                                  | 34                |
| 22                           | 100H                        | TJ-50-3                          | 80                | 100H                        | TJ-50<br>GTJ-50<br>TJ-50-3       | 42                |
| 30                           | 125H                        | TJ-125                           | 105               |                             |                                  | 56                |
| 37                           | 150H                        | GTJ-125                          | 130               | 80H                         | TJ-125<br>GTJ-125<br>TJ-125-3    | 68                |
| 40                           | 200H                        | TJ-125-3                         | 130               | 100H                        |                                  | 68                |
| 45                           |                             | 160                              | 125H              | 190                         | 125H                             | TJ-125            |
| 55                           | 250H                        | TJ-220<br>GTJ-220<br>TJ-220-3    |                   |                             |                                  | 240               |
| 75                           |                             | 200H                             | TJ-125-3          |                             | 200H                             | TJ-125-3          |
| 90                           | -                           | -                                | -                 | 250H                        | TJ-220<br>GTJ-220<br>TJ-220-3    | 160               |

Note Load current will be different for 3-phase motors with other than four poles, and for non-standard motors. Selected the rated current appropriate for each motor in this case. If the same rated current is not available, select the closest current and use the adjusting dial to match it to the rated motor current.



### 3.3 Electromagnetic characteristics

| Item<br>Model         | Coil ratings |           | Operating voltage(V) |               | Coil consumptions(VA) |             | Loss(W)   | Operating of main contacts(ms) |         |
|-----------------------|--------------|-----------|----------------------|---------------|-----------------------|-------------|-----------|--------------------------------|---------|
|                       | Voltage      | Frequency | Pick-UP(max)         | Drop-Out(max) | Inrush(max)           | Sealed(max) | Sealed    | Closing                        | Opening |
| CLK-25JF2             | 200V         | 50Hz      | 154                  | 120           | 22                    | 6.4         | 2.1~3.5   | 6~20                           | 4~33    |
|                       | 200-220V     | 60Hz      | 154                  | 120           | 24                    | 6.9         | 2.3~3.7   | 7~23                           | 4~33    |
| CLK-15JFC<br>CLK-15JC | 200V         | 50Hz      | 154                  | 120           | 22                    | 6.4         | 2.1~3.5   | 6~20                           | 4~33    |
|                       | 200-220V     | 60Hz      | 154                  | 120           | 24                    | 6.9         | 2.3~3.7   | 7~23                           | 4~33    |
|                       | DC200V       | -         | 132                  | 130           | 46                    | 4.6         | 2.8~4.6   | 14~27                          | 4~33    |
| CLK-20J<br>CLK-26J    | 200V         | 50Hz      | 144                  | 120           | 43                    | 9.8         | 2.0~3.7   | 6~22                           | 4~33    |
|                       | 200-220V     | 60Hz      | 150                  | 120           | 48                    | 9.0         | 1.8~3.3   | 8~25                           | 4~33    |
| CLK-35J<br>CLK-50J    | 200V         | 50Hz      | 144                  | 120           | 92                    | 14.6        | 3.0~5.7   | 5~20                           | 4~33    |
|                       | 200-220V     | 60Hz      | 148                  | 120           | 100                   | 14.5        | 3.2~6.0   | 8~23                           | 4~33    |
| CLK-65H               | 200V         | 50Hz      | 145                  | 120           | 165                   | 18.0        | 5.0~7.3   | 8~35                           | 4~33    |
|                       | 200-220V     | 60Hz      | 148                  | 120           | 175                   | 17.6        | 5.0~7.5   | 8~35                           | 4~33    |
| CLK-80H<br>CLK-100H   | 200V         | 50Hz      | 147                  | 120           | 225                   | 23.0        | 6.0~9.0   | 5~35                           | 4~33    |
|                       | 200-220V     | 60Hz      | 150                  | 120           | 245                   | 23.1        | 7.5~9.5   | 5~35                           | 4~33    |
| CLK-125H<br>CLK-150H  | 200V         | 50Hz      | 155                  | 120           | 470                   | 43          | 10.0~16.5 | 12~34                          | 8~33    |
|                       | 220V         | 60Hz      | 158                  | 120           | 490                   | 44          | 11.0~18.5 | 12~34                          | 8~33    |
| CLK-200H<br>CLK-250H  | 200V         | 50Hz      | 148                  | 120           | 682                   | 64          | 9.5~17.5  | 16~31                          | 9~33    |
|                       | 200-220V     | 60Hz      | 154                  | 120           | 726                   | 61          | 8.1~19.0  | 16~35                          | 9~33    |

Note IEC 60947-4-1 stipulate that 85% of rated voltage be applied to coil for switching operation, with satisfactory performance.

Pick-up voltages indicate 20 operations with zero failures.

60Hz is used for 220V input, in addition to operating voltage.

Values measured at 20 ± 15 °C ambient temperature.

Select operating transformers with capacities of at least a third of the electromagnet inrush capacity.

## 4. Service condition

### 4.1 Standard service condition

- |                                    |   |
|------------------------------------|---|
| ( 1 ) Standard ambient temperature | Open Model (to be used in control box)55  |
| ( 2 ) Maximum ambient temperature  | Open Model 60 (peak mean temperature not to exceed 50 )   |
| ( 3 ) Minimum ambient temperature  | - 5   |
| ( 4 ) Ambient storage temperature  | - 20 ~ 70   |
| ( 5 ) Relative humidity            | 45 ~ 85%RH  |
| ( 6 ) Altitude                     | 2000m or lower  |
| ( 7 ) Withstand vibration          | 10 ~ 55Hz 19.6m/S <sup>2</sup> ( 2G )   |
| ( 8 ) Withstand shock              | 49m/S <sup>2</sup> ( 5G )   |
| ( 9 ) Atmosphere                   | Don't dew and freeze, and must not contain much dust, smoke, corrosive gas, flammable gas, vapor, and salt.<br>And it is impossible to use a hermetically sealed box.<br>(Except CLK-25JF2, 15JFC,15JC) |

## 4.2 Mounting space

For mounting more than one magnetic starters in a row, make sure that the space between the units is more than the distance indicated in the table below. Also, be sure that the space between the starter and other metallic items is more than the distance indicated below.



【In the case of Faston terminal, please ensure the space(C) from RESEPVACUL.】

| Model             |                 | Space (mm) |    |   |    |    |    |
|-------------------|-----------------|------------|----|---|----|----|----|
|                   |                 | A          | B  | C | D  | E  | F  |
| Magnetic Starters | CLK-15JTC       | 5          | 5  | 5 | 10 | 5  | 5  |
|                   | CLK-20,26JTC    | 5          | 5  | 5 | 10 | 5  | 5  |
|                   | CLK-35,50JTC    | 5          | 5  | 5 | 10 | 5  | 5  |
|                   | CLK-65 ~ 100HTC | 5          | 5  | 5 | 30 | 5  | 5  |
|                   | CLK-125,150HTC  | 5          | 5  | 5 | 40 | 5  | 5  |
|                   | CLK-200HTC      | 5          | 10 | 5 | 50 | 10 | 5  |
|                   | CLK-250HTC      | -          | -  | 5 | 50 | 10 | 15 |

Notes The space indicates the distance from the largest part of the product.  
Also applies to magnetic starters with 3-element thermal overload relays.

| Model              |                 | Space (mm) |    |   |    |
|--------------------|-----------------|------------|----|---|----|
|                    |                 | A          | B  | C | D  |
| Magnetic Contactor | CLK-25JF2,15JFC | 5          | 5  | 5 | 10 |
|                    | CLK-15JC        | 5          | 5  | 5 | 10 |
|                    | CLK-20,26J      | 5          | 5  | 5 | 10 |
|                    | CLK-35,50J      | 5          | 5  | 5 | 10 |
|                    | CLK-65 ~ 100H   | 5          | 5  | 5 | 30 |
|                    | CLK-125,150H    | 5          | 5  | 5 | 40 |
|                    | CLK-200H        | 5          | 10 | 5 | 50 |
|                    | CLK-250H        | 20         | 10 | 5 | 50 |

Notes The space indicates the distance from the largest part of the product.

## 5. Applicable wire size and tightening torque

| Item<br>Model | Screw size   |         |                 | Suitable crimp-style terminal                  |                   | Fastening torque<br>N · m { kgf · cm }    |               |
|---------------|--------------|---------|-----------------|--|-------------------|---|---------------|
|               | Main circuit |         | Aux.<br>Circuit | Main Circuit                                   | Aux.Circuit       | Main Circuit                              | Aux.Circuit   |
|               | Contactor    | Thermal |                 |  |                   |   |               |
| CLK-25JF2     | -            | -       | -               | #250series (Match to POSITIVE ROCK CONNECTION) |                   | -   | -             |
| CLK-15JFC     | -            | -       | -               |  |                   | -   | -             |
| CLK-15JC      | M3.5         | M4      | M3.5            | 1.25-3.5 ~ 2-3.5<br>1.25-4 ~ 5.5-4①            | 1.25-3.5<br>2-3.5 | M3.5:0.8~1.2{8~12}<br>M4 :1.2~1.8{12~18}① | 0.8~1.2{8~12} |
| CLK-20J       | M4           | M4      |                 | 1.25-4 ~ 5.5-4                                 |                   | 1.2 ~ 1.8{12 ~ 18}                        |               |
| CLK-26J       |              |         |                 |  |                   |   |               |
| CLK-35J       | M5           | M5      |                 | 1.25-5 ~ 14-5                                  |                   | 2.4 ~ 3.5{24 ~ 36}                        |               |
| CLK-50J       |              |         |                 |  |                   |   |               |
| CLK-65H       | M6           | M6      |                 | 2-6 ~ 38-6S②                                   |                   | 3.9 ~ 5.9{40 ~ 60}                        |               |
| CLK-80H       |              |         |                 |  |                   |   |               |
| CLK-100H      |              |         |                 |  |                   |   |               |
| CLK-125H      | M8           | M8      |                 | 2-8 ~ CB80-8③                                  |                   | 9.0 ~ 13.5{92 ~ 138}                      |               |
| CLK-150H      |              |         |                 |  |                   |   |               |
| CLK-200H      | M8           | M8      | 2-8 ~ CB100-8③  |  |                   |   |               |
| CLK-250H      | M10          | M10     | 2-10 ~ 150-10   | 18.1 ~ 27.0{185 ~ 275}                         |                   |   |               |

Note Thermal overload relay side  
Standard 38-6 crimp-type terminal is too wide. Please use 38-6S (Nichifu Terminal industries CO.,Ltd.) or 38-S6 (Japan Solderless Terminal Mfg. CO.,Ltd.)  
Standard 80-8 and 100-8 crimp-type terminal lugs are too wide. Please use CB-type terminal connectors for low-voltage switching devices (Nichifu Terminal industries CO.,Ltd.) or for molded case circuit breakers (Japan Solderless Terminal Mfg. CO.,Ltd.).

## 6. Handling instruction

### 6.1 Operating circuit control voltage

The voltage and frequency of the operating circuit should be the same as the voltage and frequency of the operating coil, if the voltage is greater than 100% of the rated voltage of the coil, this will result various deteriorations for coil insulation and for mechanical and electrical performances. At the closing, if the control voltage is less than the minimum operating voltage of contactors, it may cause the coil burning out because of small coil impedance, contact chattering or contact welding.

### 6.2 Handling of thermal overload relay

Do not touch the inside of thermal relays.

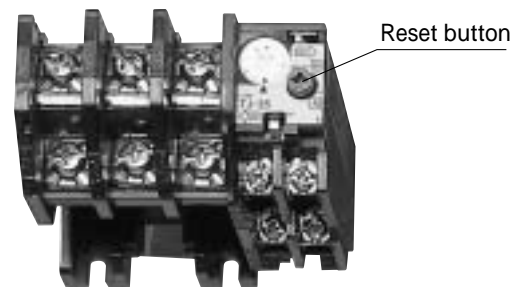
If the motor stops because of the tripping operation of thermal overload relay, gently press down the reset button for resetting only after the cause is traced and removed.

(Factory setting is manual reset.)

For auto resetting is desired, press the reset button down and turn it 90 degree clockwise.

In an automatic control circuit in which a self-holding starter contactor is not used, the motor starts automatically by automatically resetting the thermal overload relay.

This may result in motor burnout if care is not taken.



### 6.3 Protection coordination

For direct on-line starting, magnetic starters have a switching capacity of ten times the rated current and but it cannot break a short circuit current. Thus it uses all together a characteristic of cooperative action with a fuse or a no-fuse breaker. If the protection coordination is not good, a burnout of contacting points or heaters of thermal relay will occur.

The heater which short-circuit current was applied that it will burnout with even a momentary over-current that flows before a breaker or a fuse makes a break action. On 5A or smaller rated models, the heater itself becomes a resistor to reduce the short circuit current and burnout will not always occur. The short circuit current is reduced for a heater with smaller capacity, so the breaking time is prolonged and short circuit current flows for a longer time. This may cause a damage to the bimetal plate by overheating.

### 6.4 Application in the circuit exceeding AC380V

When using solderless terminals for the circuit exceeding AC380V, use of solderless terminals with insulation tube is recommended.

### 6.5 Auxiliary contact terminal (NC)

When NC auxiliary contact terminal is inserted into the magnetic contactor, be sure to push the contactor rod insertion. (When the terminal falls out or inspection.) (Except CLK-25JF2, CLK-15JFC and CLK-15J.)

## 6.6 Maintenance

### • Contact

The contact tips will discolor slightly and become irregular in using, but this will not affect their performance. Do not file the tips, as this will shorten their contact life. Contacts should be replaced when the thickness of the contact tips becomes half the size of new ones. All three phases should be replaced at the same time.

### • Core

To minimize hum level, contact surfaces of cores are polished to a high degree of flatness and coated with a corrosion-resistant finish. As well as being matched to the shading coil, movable core and fixed core. However, in long-term storage, dirt, iron filings, and rust through humidity on the core surfaces may cause core humming. So appropriate storage conditions are highly requested.

### • Do not lubricate

Abrasion of moving parts is very small. The switch is designed to operate with stable characteristics. Lubrication may cause the magnetic contactor to prevent its normal operations. Please exercise caution, especially when used in oil-operated machinery.

## 6.7 Connecting of faston terminal

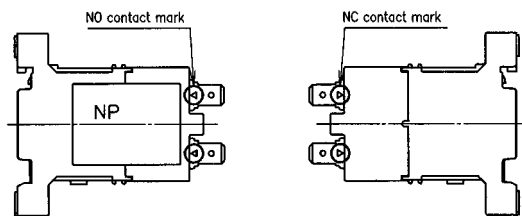
### • For connecting, please put “ #250 ” to use.

It is possible to use “ POSSITIVE ROCK CONNECTER ” also.

### • Faston terminal is marked with a triangle mark.

When connecting, please verify mark.

But coil terminal isn't represented.



### • When connecting, make certain that Faston terminal is connected.

When connecting, please plug in a RESEPUTACUL perpendicular to the Faston terminal.

### • When pulling out RESEPUTACUL from terminal, please pull out RESEPUTACUL one by one.

And pull out RESEPUTACUL perpendicular to the Faston terminal.



### < Cautions >

When a contact welding is occurred by causes indicated below, there would be the danger such as reckless driving of machines and abnormal heat of the heater. Please use with the commiserations for the safety supposing the failure of making and breaking operations by mechanical rocking or contact welding.

Moreover, the thermal overload relay cannot protect phenomena.

- Making and breaking of excessive current.
- Abnormal consumption of contact-tip and the life of contact-tip.
- Secular change
- Chattering by the control relay.
- Instantaneous voltage drops of the power supply.

# 7. Dimensions and specifications

**25JF2**

**CLK-25JF2**



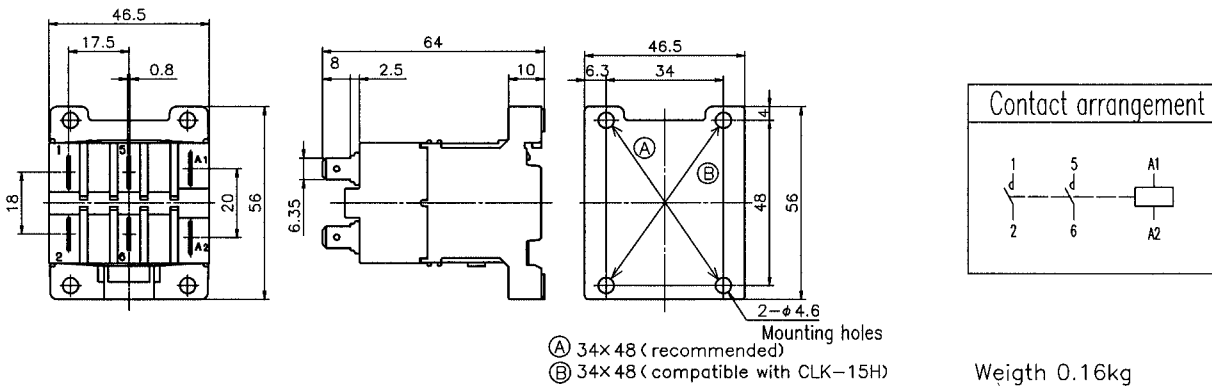
(Only for 2-pole type)

| Ratings        |           |      |     |
|----------------|-----------|------|-----|
| Frame          |           | 25J  |     |
| Rated capacity | AC-3 (kW) | 110V | 1.2 |
|                |           | 240V | 2.4 |
| AC-1 (A)       | 240V      | 30   |     |
|                | 440V      | 21   |     |

| Applicable wire size and tightening torque |              |  |
|--|--------------|--|
| Applicable terminal connector              |              |  |
| Contactor                                  | Main circuit | #250 series<br>(Match to POSITIVE ROCK CONNECTION) |
|  | Aux. circuit |  |

Notes. Rated capacity is single phase motor rating.

## Magnetic contactor CLK-25JF2



**15JFC**

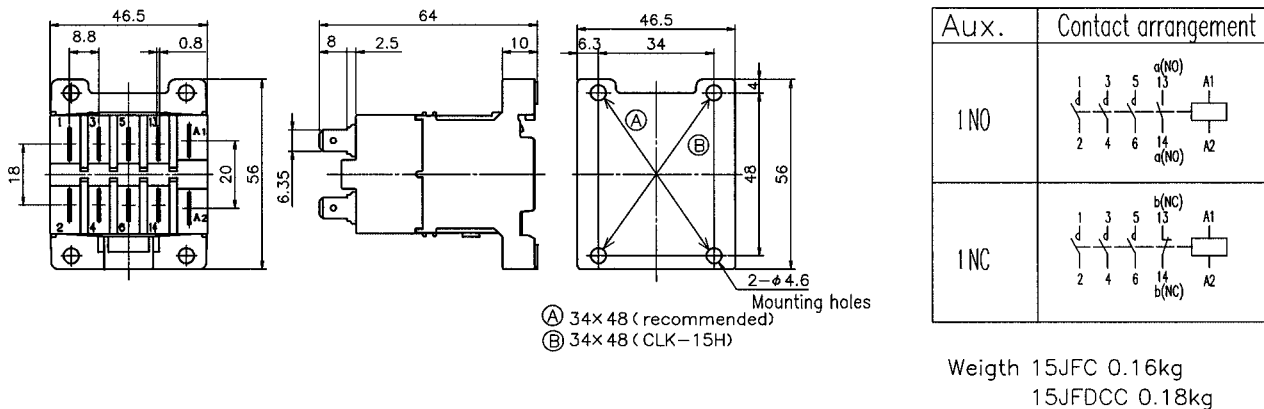
**CLK-15JFC**



| Ratings        |           |      |     |
|----------------|-----------|------|-----|
| Frame          |           | 15J  |     |
| Rated capacity | AC-3 (kW) | 240V | 3   |
|                |           | 440V | 4.5 |
| AC-1 (A)       | 240V      | 24   |     |
|                | 440V      | 18   |     |

| Applicable wire size and tightening torque |              |  |
|--|--------------|--|
| Applicable terminal connector              |              |  |
| Contactor                                  | Main circuit | #250 series<br>(Match to POSITIVE ROCK CONNECTION) |
|  | Aux. circuit |  |

## Magnetic contactor CLK-15JFC, 15JFDCC

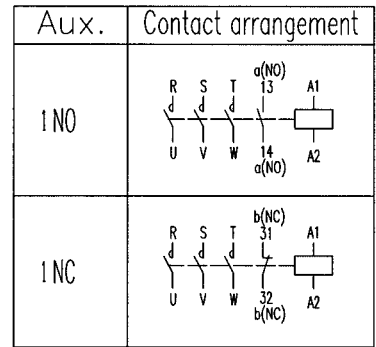
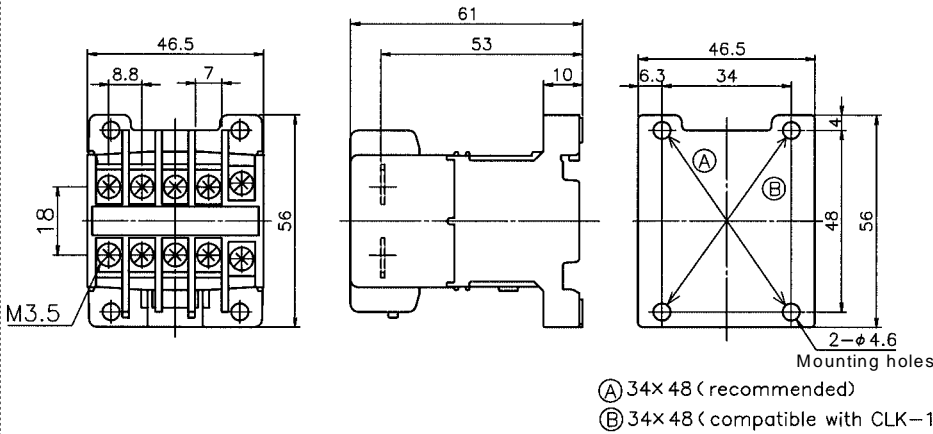




| Ratings        |                | 15J  |     |
|----------------|----------------|------|-----|
| Rated capacity | AC - 3<br>(kW) | 240V | 3   |
|                |                | 440V | 4.5 |
|                | AC - 1<br>(A)  | 240V | 20  |
|                |                | 440V | 18  |

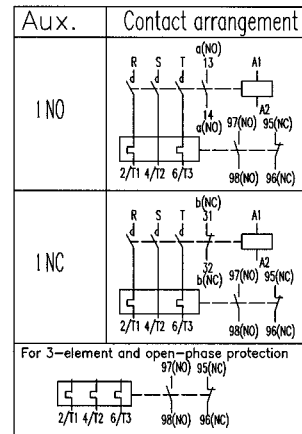
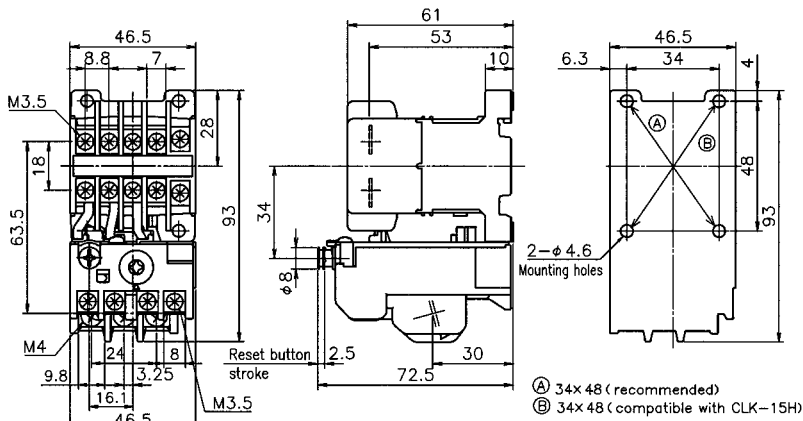
|                        |              | Screw size | Applicable terminal connector | Tightening torque<br>N·m(kgf·cm) |
|------------------------|--------------|------------|-------------------------------|----------------------------------|
| Contactor              | Main circuit | M3.5       | 1.25 - 3.5<br>2 - 3.5         | 0.8 ~ 1.2<br>(8 ~ 12)            |
|                        | Aux. circuit |            |                               |                                  |
| Thermal overload relay | Main circuit | M4         | 1.25 - 4 ~ 5.5 - 4            | 1.2 ~ 1.8<br>(12 ~ 18)           |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)            |

Magnetic contactor CLK-15JC, 15JDCC



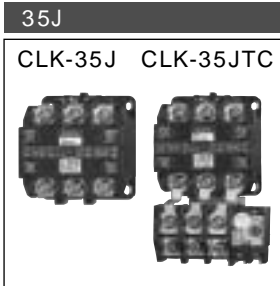
Weight 15JC 0.17kg  
15JDCC 0.19kg

Magnetic starter CLK-15JTC(15JGTC, 15JT-3C)



Weight 0.29kg

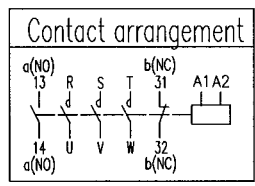
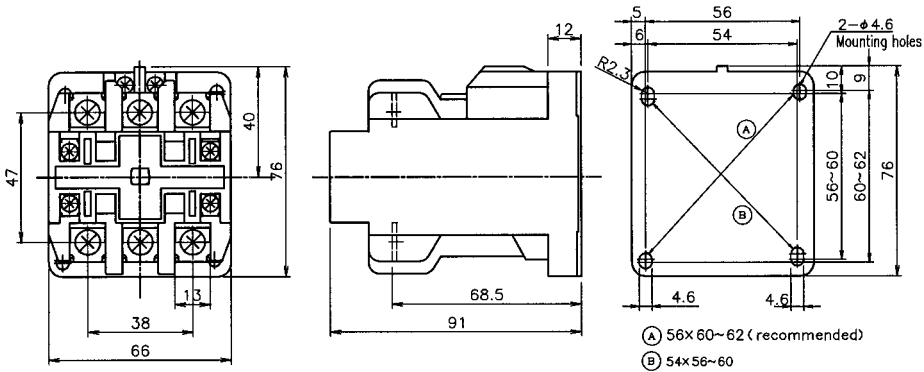




| Ratings        |              | 35J  |     |
|----------------|--------------|------|-----|
| Rated capacity | AC-3<br>(kW) | 240V | 7.5 |
|                |              | 440V | 11  |
|                | AC-1<br>(A)  | 240V | 45  |
|                |              | 440V | 38  |

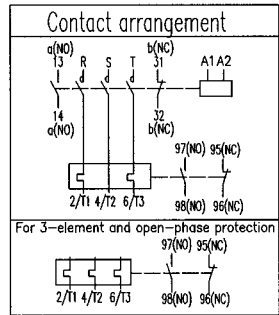
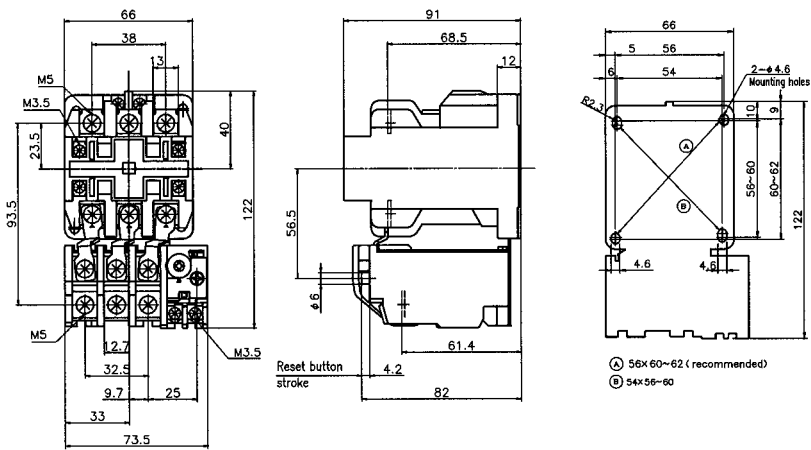
|                        |              | Screw size | Applicable terminal connector | Tightening torque N·m(kgf·cm) |
|------------------------|--------------|------------|-------------------------------|-------------------------------|
| Contactor              | Main circuit | M5         | 1.25 - 5 ~ 14 - 5             | 2.4 ~ 3.5<br>(24 ~ 36)        |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)         |
| Thermal overload relay | Main circuit | M5         | 1.25 - 5 ~ 14 - 5             | 2.4 ~ 3.5<br>(24 ~ 36)        |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)         |

Magnetic contactor CLK-35J



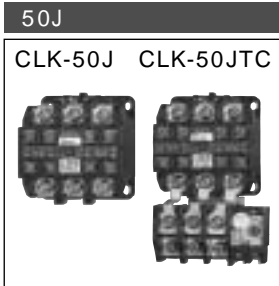
Weight 0.55kg

Magnetic starter CLK-35JTC(35JGTC, 35JT-3C)



Weight 0.77kg

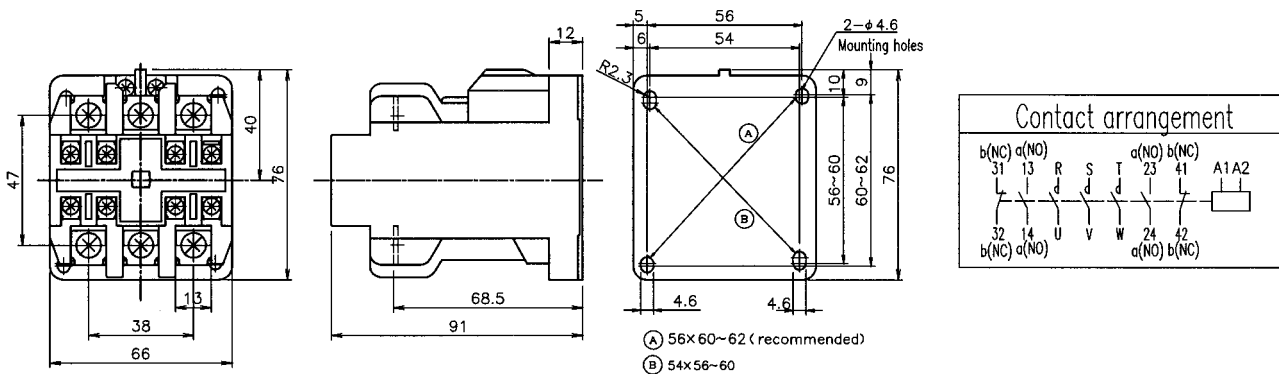




| Ratings        |              | 50J  |    |
|----------------|--------------|------|----|
| Rated capacity | AC-3<br>(kW) | 240V | 11 |
|                |              | 440V | 19 |
|                | AC-1<br>(A)  | 240V | 60 |
|                |              | 440V | 60 |

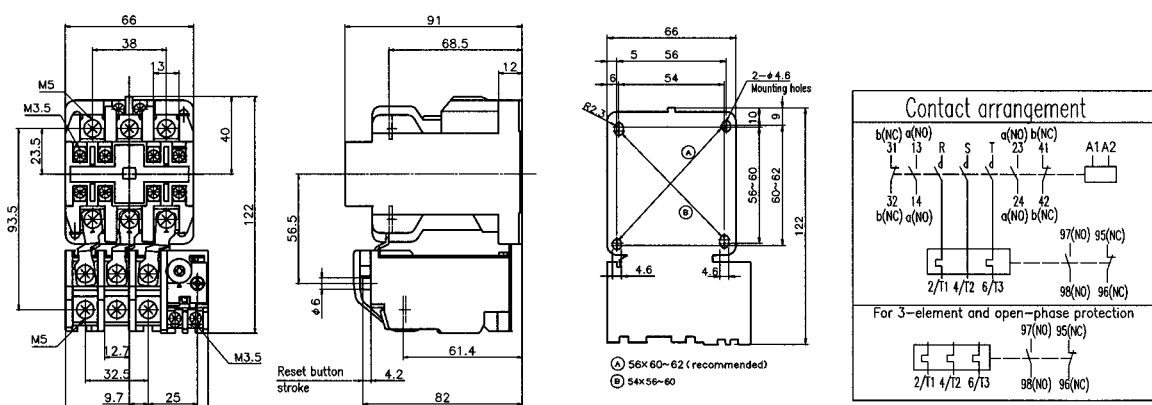
| Applicable wire size and tightening torque |              | Screw size | Applicable terminal connector | Tightening torque N·m(kgf·cm) |
|--|--------------|------------|-------------------------------|-------------------------------|
| Contactor                                  | Main circuit | M5         | 1.25 - 5 ~ 14 - 5             | 2.4 ~ 3.5 (24 ~ 36)           |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |
| Thermal overload relay                     | Main circuit | M5         | 1.25 - 5 ~ 14 - 5             | 2.4 ~ 3.5 (24 ~ 36)           |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |

Magnetic contactor CLK-50J

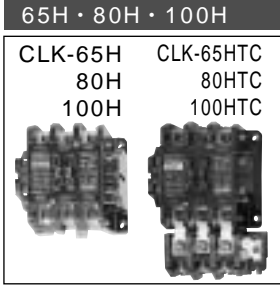


Weight 0.55kg

Magnetic starter CLK-50JTC(50JGTC, 50JT-3C)



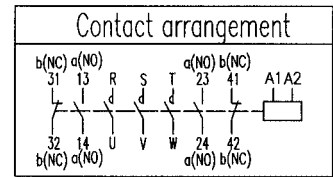
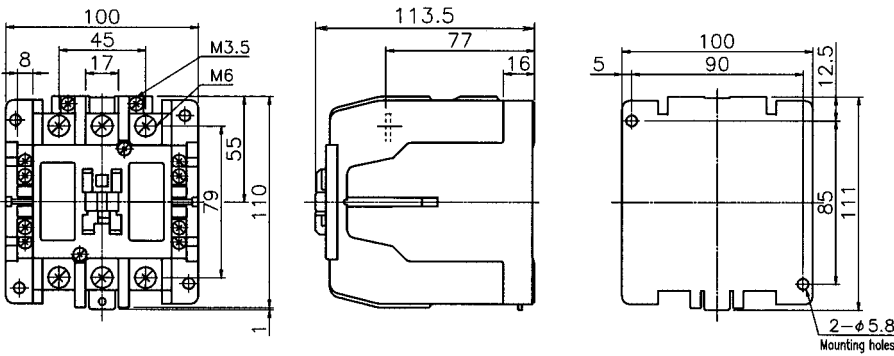
Weight 0.77kg



| Ratings        |           | 65H  | 80H | 100H |     |
|----------------|-----------|------|-----|------|-----|
| Rated capacity | AC-3 (kW) | 220V | 15  | 19   | 22  |
|                |           | 440V | 30  | 37   | 40  |
|                | AC-1 (A)  | 220V | 75  | 90   | 110 |
|                |           | 440V | 75  | 90   | 110 |

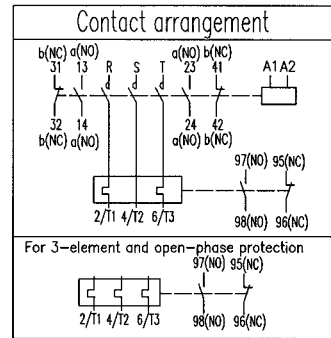
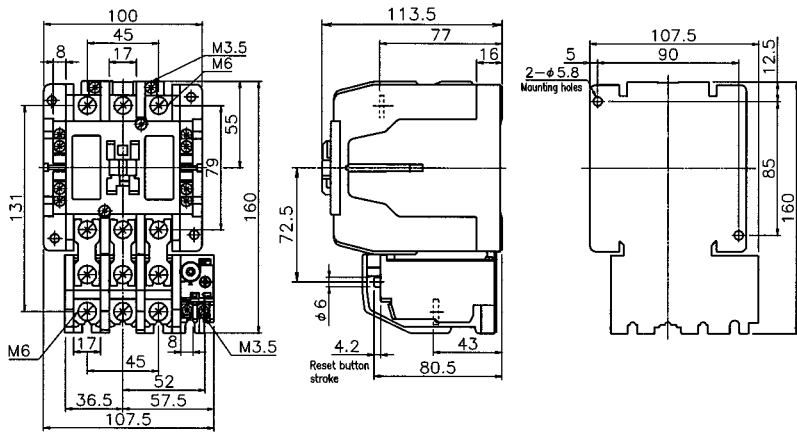
| Applicable wire size and tightening torque |              | Screw size | Applicable terminal connector | Tightening torque N·m(kgf·cm) |
|--|--------------|------------|-------------------------------|-------------------------------|
| Contactor                                  | Main circuit | M6         | 2 - 6 ~ 38 - 6S               | 3.9 ~ 5.9 (40 ~ 60)           |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |
| Thermal overload relay                     | Main circuit | M6         | 2 - 6 ~ 38 - 6S               | 3.9 ~ 5.9 (40 ~ 60)           |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |

### Magnetic contactor CLK-65H,80H,100H

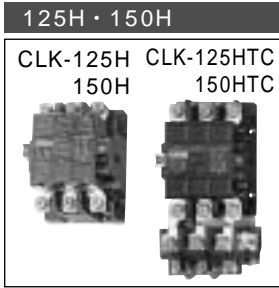


Weight 65H=1.3kg  
80H,100H=1.5kg

### Magnetic starter CLK-65HTC,80HTC,100HTC(65HGTC,80HGTC,100HGTC 65HT-3C,80HT-3C,100HT-3C)



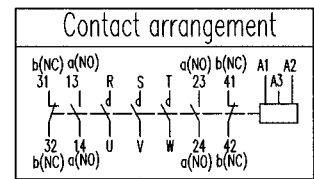
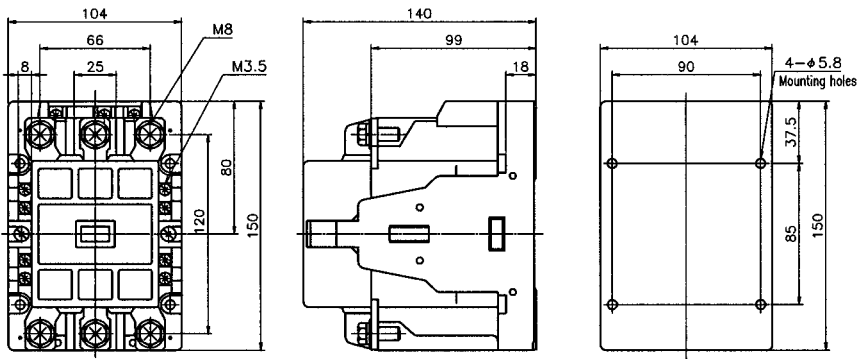
Weight 65HTC=1.7kg  
80HTC,100HTC=1.9kg



| Ratings        |           | 125H | 150H |
|----------------|-----------|------|------|
| Rated capacity | AC-3 (kW) | 220V | 30   |
|                |           | 440V | 55   |
|                | AC-1 (A)  | 220V | 150  |
|                |           | 440V | 150  |

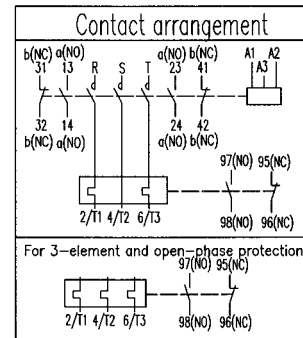
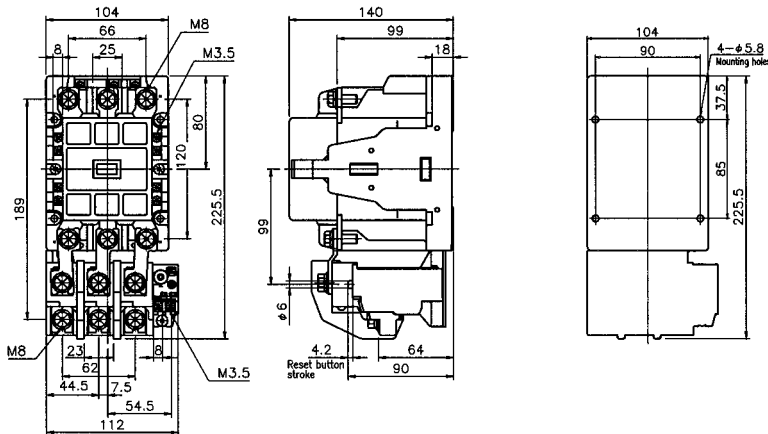
| Applicable wire size and tightening torque |              | Screw size | Applicable terminal connector | Tightening torque N·m(kgf·cm) |
|--|--------------|------------|-------------------------------|-------------------------------|
| Contactor                                  | Main circuit | M8         | 2 - 8 ~ CB80 - 8              | 9.0 ~ 13.5 (92 ~ 138)         |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |
| Thermal overload relay                     | Main circuit | M8         | 2 - 8 ~ CB80 - 8              | 9.0 ~ 13.5 (92 ~ 138)         |
|  | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2 (8 ~ 12)            |

### Magnetic contactor CLK-125H,150H

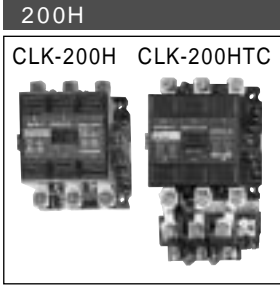


Weight 2.9kg

### Magnetic starter CLK-125HTC,150HTC(125HGTC,150HGTC,125HT-3C,150HT-3C)



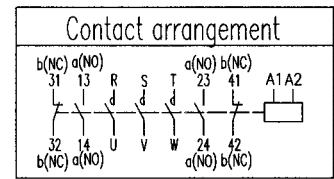
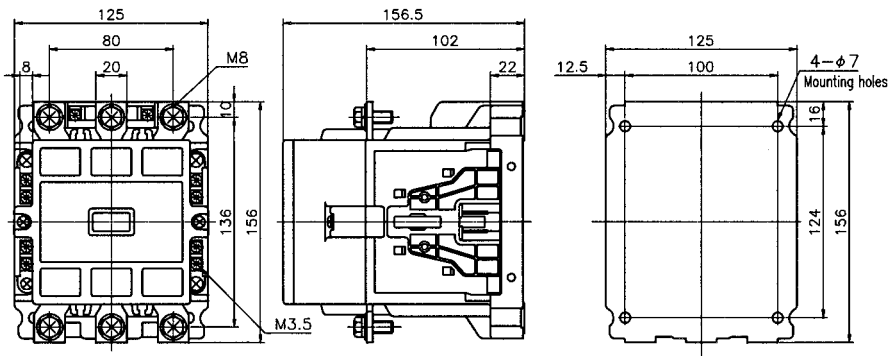
Weight 3.7kg



| Ratings        |                | 200H |     |
|----------------|----------------|------|-----|
| Rated capacity | AC - 3<br>(kW) | 220V | 50  |
|                |                | 440V | 80  |
|                | AC - 1<br>(A)  | 220V | 220 |
|                |                | 440V | 220 |

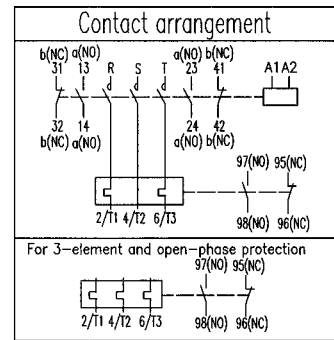
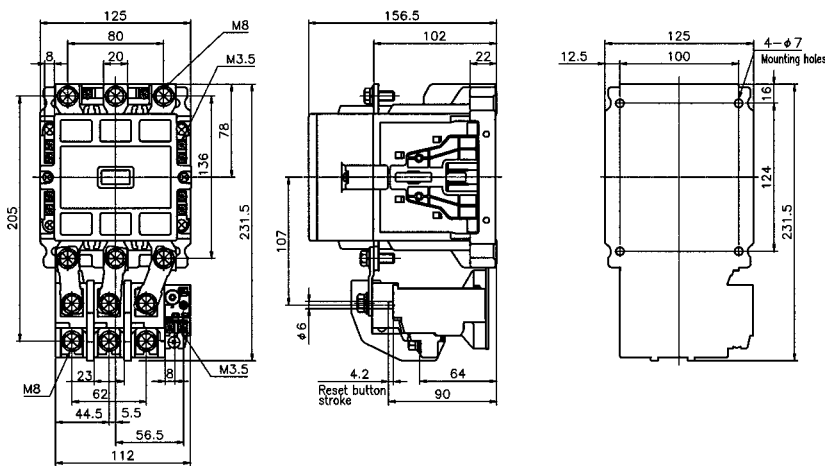
|                        |              | Screw size | Applicable terminal connector | Tightening torque N·m(kgf·cm) |
|------------------------|--------------|------------|-------------------------------|-------------------------------|
| Contactor              | Main circuit | M8         | 2 - 8 ~ CB100 - 8             | 9.0 ~ 13.5<br>(92 ~ 138)      |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)         |
| Thermal overload relay | Main circuit | M8         | 2 - 8 ~ CB100 - 8             | 9.0 ~ 13.5<br>(92 ~ 138)      |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)         |

Magnetic contactor CLK-200H

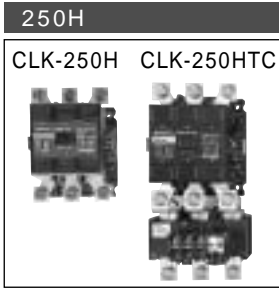


Weight 3.5kg

Magnetic starter CLK-200HTC(200HGTC,200HT-3C)



Weight 4.6kg

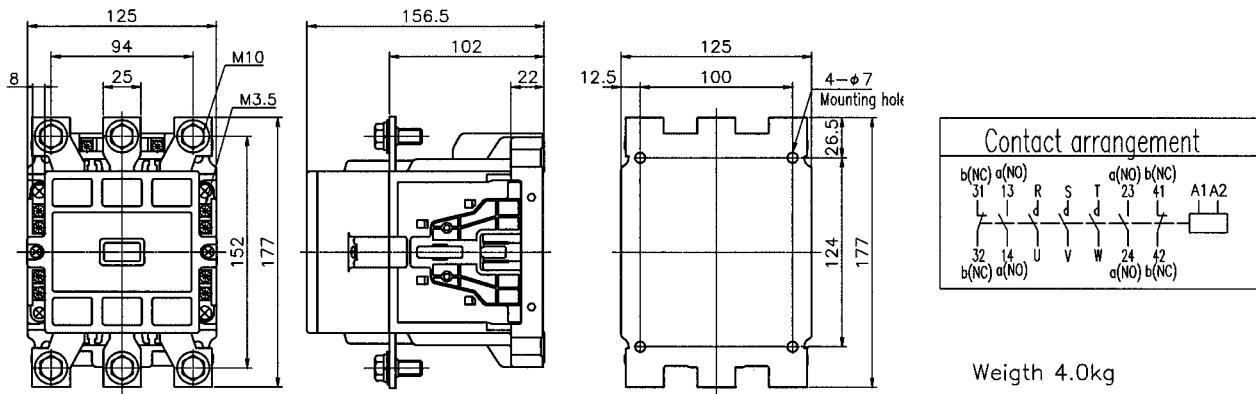


| Ratings        |              | 250H |     |
|----------------|--------------|------|-----|
| Rated capacity | AC-3<br>(kW) | 220V | 68  |
|                |              | 440V | 90  |
|                | AC-1<br>(A)  | 220V | 260 |
|                |              | 440V | 260 |

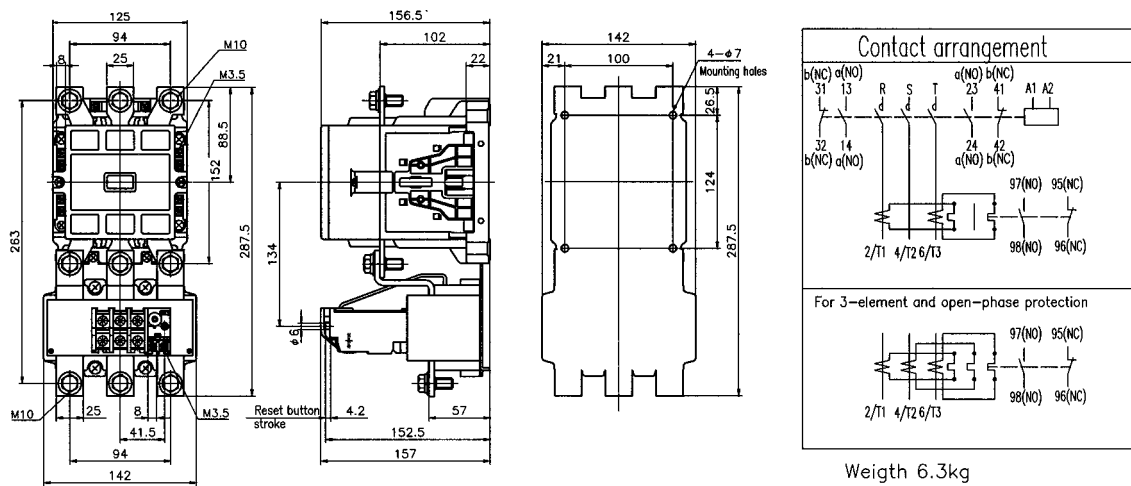
|                        |              | Screw size | Applicable terminal connector | Tightening torque<br>N·m(kgf·cm) |
|------------------------|--------------|------------|-------------------------------|----------------------------------|
| Contactor              | Main circuit | M10        | 2 - 10 ~ 150 - 10             | 18.1 ~ 27.0<br>(185 ~ 275)       |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)            |
| Thermal overload relay | Main circuit | M10        | 2 - 10 ~ 150 - 10             | 18.1 ~ 27.0<br>(185 ~ 275)       |
|                        | Aux. circuit | M3.5       | 1.25 - 3.5 ~ 2 - 3.5          | 0.8 ~ 1.2<br>(8 ~ 12)            |

Notes. Rated capacity is single phase motor rating.

### Magnetic contactor CLK-250H



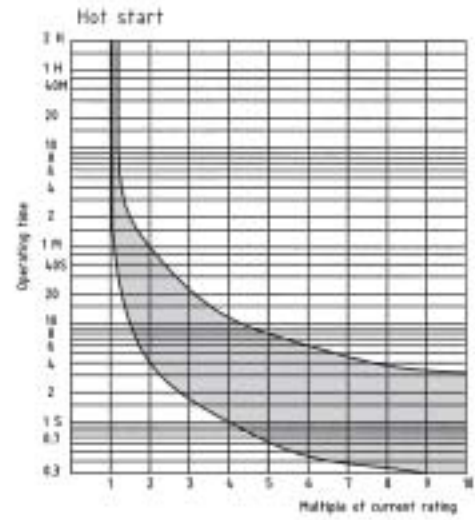
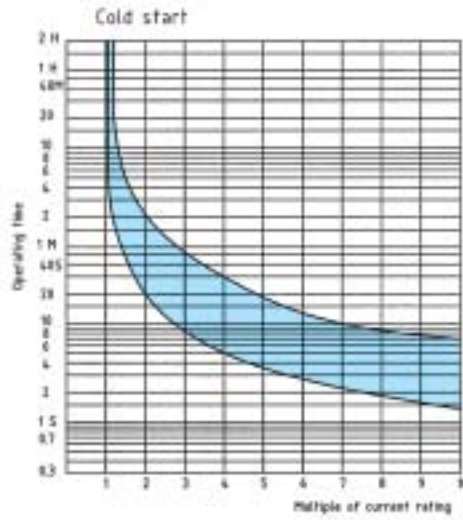
### Magnetic starter CLK-250HTC(250HGTC,250HT-3C)



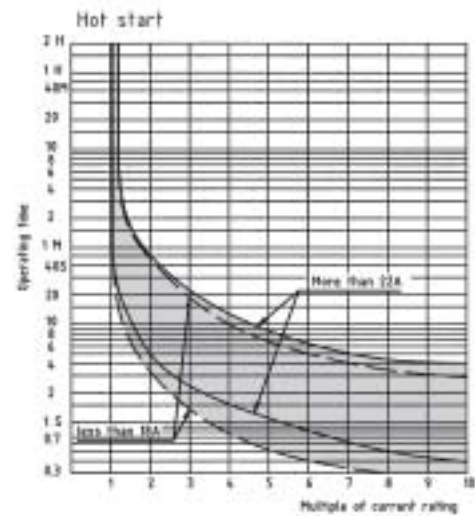
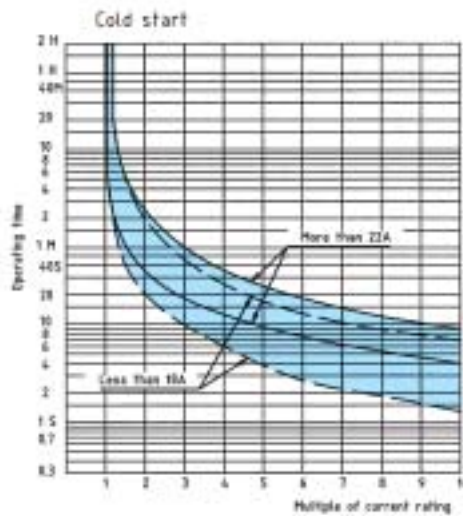
# 8. Thermal overload relay operation characteristic curves

Standard trip model

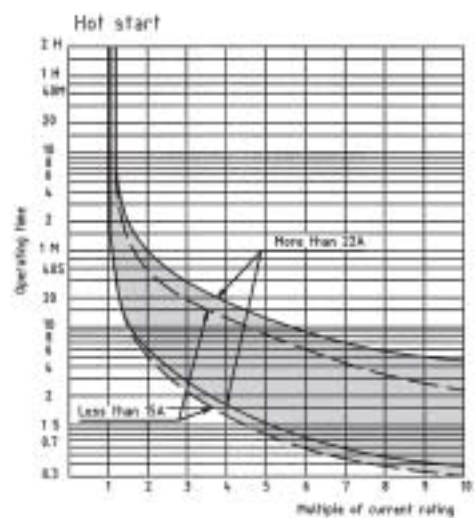
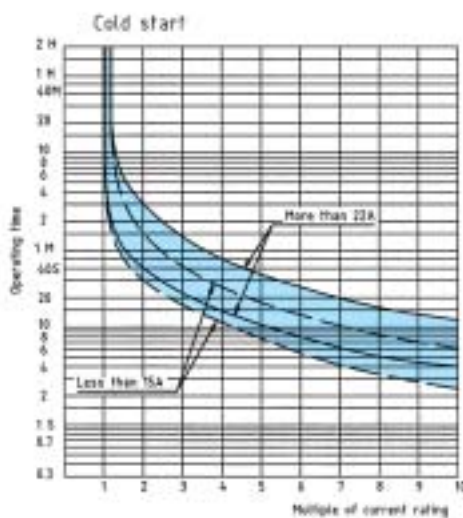
TJ-18  
TJ-18-3  
TJ-18JA  
TJ-18JA-3



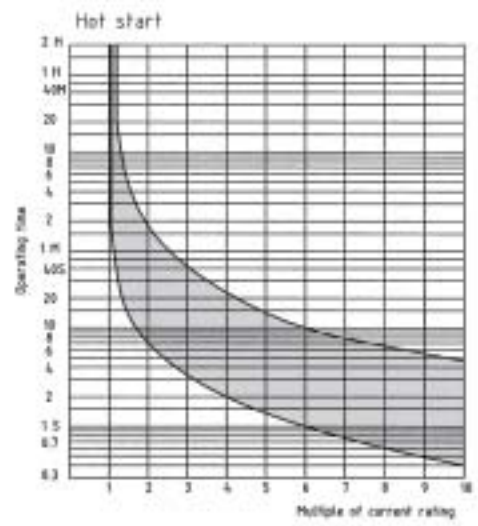
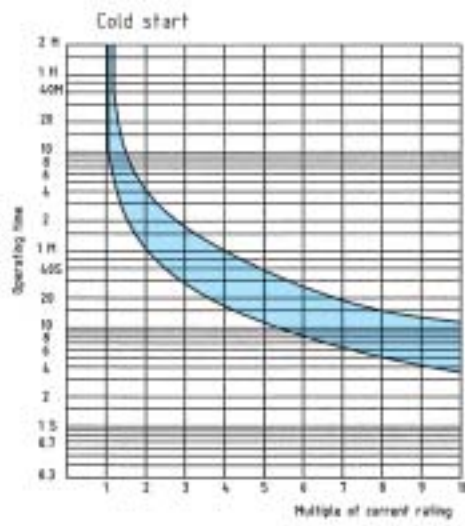
TJ-35  
TJ-35-3



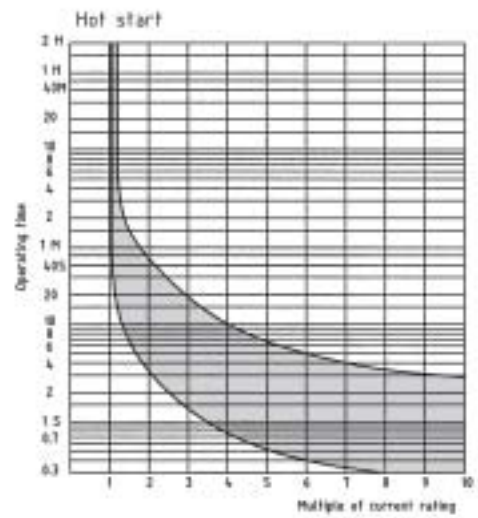
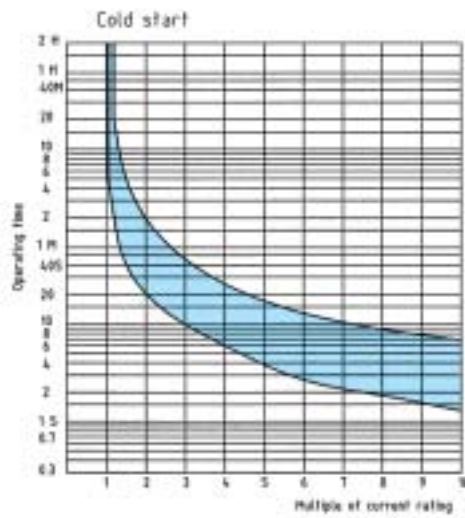
TJ-50  
TJ-50-3



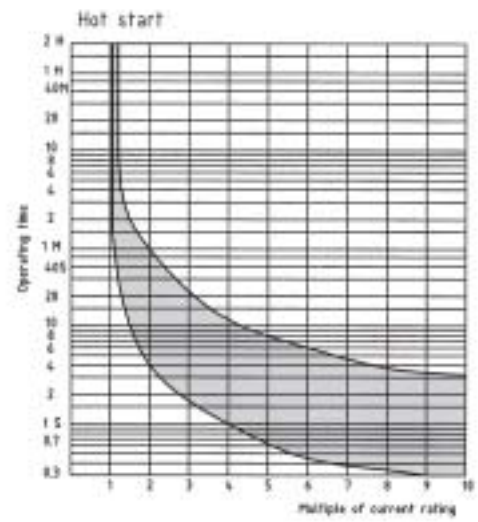
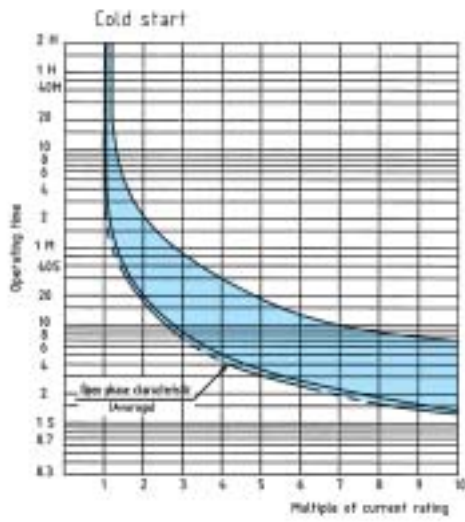
TJ-125  
TJ-125-3



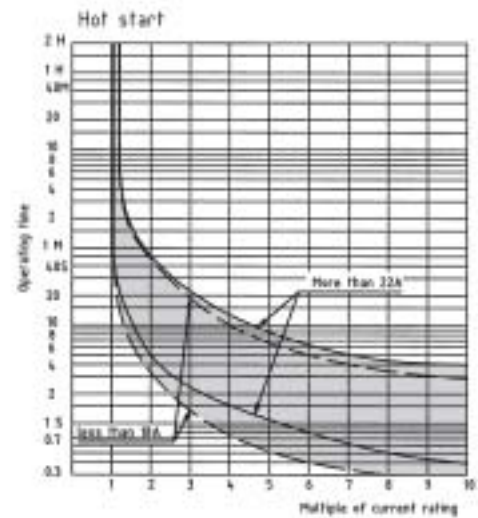
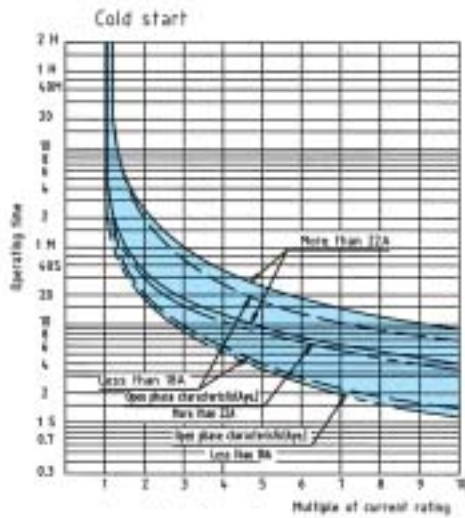
TJ-220  
TJ-220-3



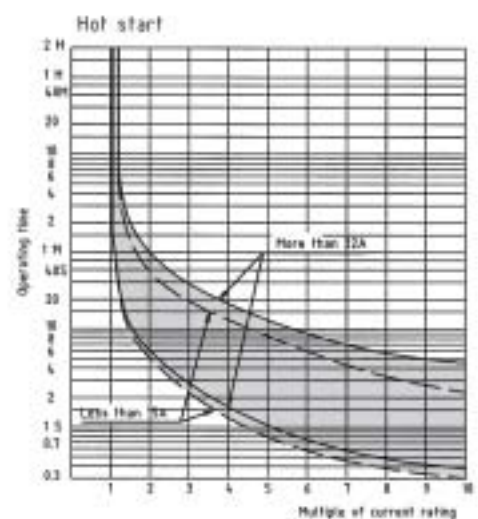
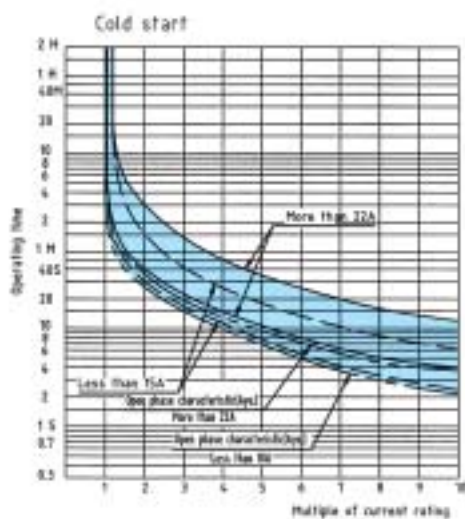
GTJ-18JA  
GTJ-18



GTJ-35

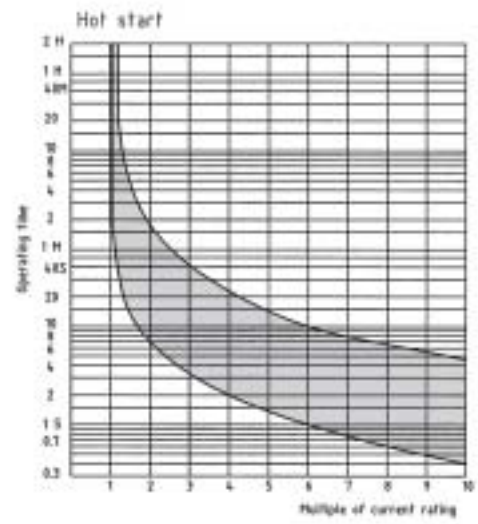
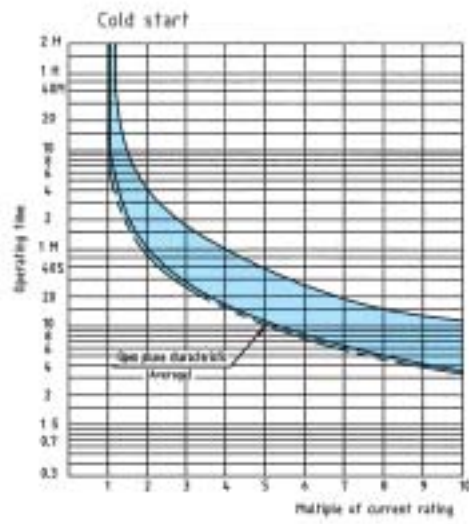


GTJ-50

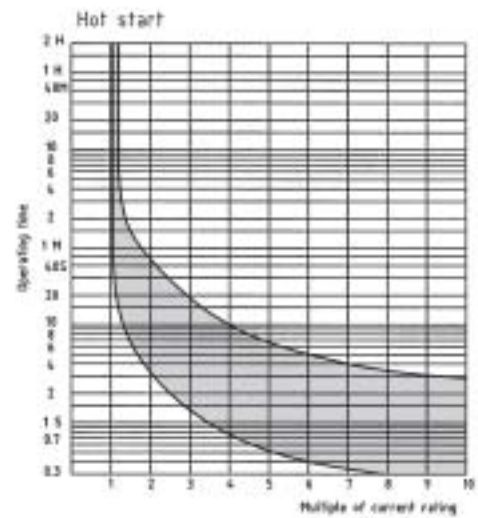
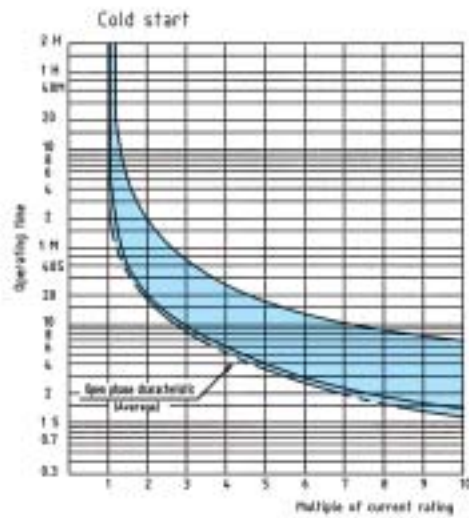




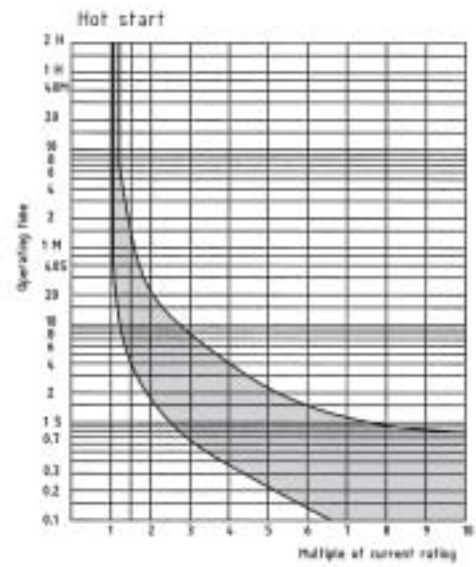
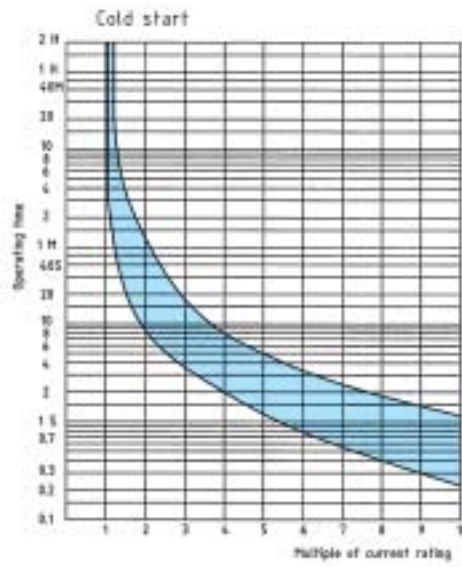
GTJ-125



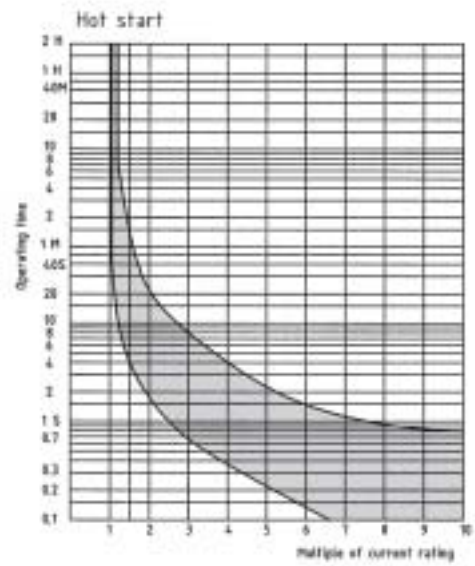
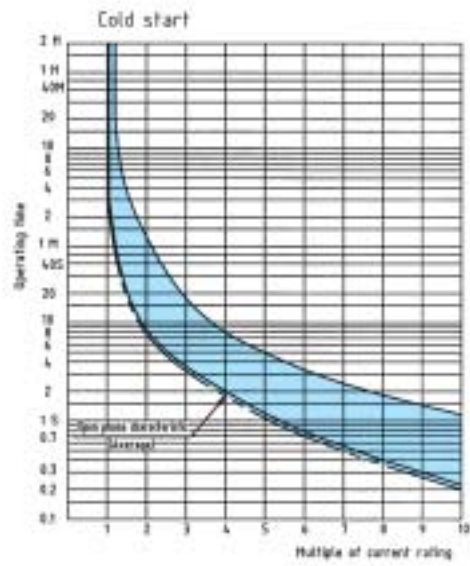
GTJ-220



- TJ-18-F
- TJ-18-3F
- TJ-18JA-F
- TJ-18JA-3F
- TJ-35-F
- TJ-35-3F
- TJ-50-F
- TJ-50-3F
- TJ-125-F
- TJ-125-3F



GTJ-18JA-F  
 GTJ-18-F  
 GTJ-35-F  
 GTJ-50-F  
 GTJ-125-F



## Warranty

**Warranty period**

One year after delivery to your designated location.

**Warranty range**

If the products concerned have defects in material and workmanship under normal operating conditions within the warranty period, they shall be repaired at no charge. However, the following cases shall be excluded from no-charge repair.

Defects caused by users' carelessness, acts of God and natural disasters.

Failures caused by modifications and repair not carried out by us or personnel entrusted by us.

This warranty shall cover delivered products, but secondary damage inducing failure of delivered products cannot be compensated.

Specifications subject to change without notice.

**HEAD OFFICE:**

1-1 Ohtakarakita-machi, Saga-City, Saga  
840-0802 JAPAN  
TEL 0952-24-4111 ( Key Number )  
FAX 0952-26-4594

**INTERNATIONAL BUSINESS GROUP:**

Togami Bldg,4-1-13 Aobadai, Meguro-ku, Tokyo  
153-0042 JAPAN  
TEL +81-3-3465-5324  
FAX +81-3-3465-8500