

TÜV Rheinland

**FUJI**  
ELECTRIC



# MANUAL MOTOR STARTERS MAGNETIC CONTACTORS



**DUO** SERIES

# Advanced Motor Protection and Control – Fuji DUO series

Fuji's new motor control system for the international market.

The DUO series adds a new family of compact, high-performance combination starters to manual motor starters BM3 series, magnetic contactors SC-M and SC-E series and thermal overload relays TK-E series to form a complete line-up of motor control products.

Responding to today's market needs, Fuji DUO series was designed to provide various distinctive features.

## ULTIMATE COST SAVING SOLUTION

- The number of components like Circuit Breakers can be reduced. (See page 4 to 7 for detail.)
- Combination starters combined with manual motor starters and contactors, provides 52% reduction for mounting space and 90% reduction for wiring work to make a control panel.

## RESPONSE TO THE INTERNATIONAL MARKET

- Short-circuit protective coordination between protective devices and the equipment to be protected.
- Conformance to UL including Type E, Type F, CSA, IEC and other international standards.

## SAFETY AND ECOLOGICAL CONSIDERATION

- Application of international standards in safety features such as terminals with finger protection.
- Use of recycled materials to help conserve the environment and save resources.

## FUJI meets emerging needs with a new form of motor protection.

### DUO SERIES

#### Manual motor starters (MMS)

##### BM3 series

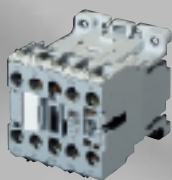


Manual Motor Starters that provide optimal protection by integrating the functions of a molded case circuit breaker and thermal overload relay into a highly compact unit.

Rated current: 0.16 to 32A, 10 to 63A  
Short circuit current rating : 22, 50kA 480VAC  
Width: 45mm, 55mm

#### Contactors and thermal overload relays

##### SC-M series



Compact magnetic contactors and small capacity motor control for 3 to 5HP, 480VAC.

Rated capacity: AC-3 3 to 5HP, 480VAC  
Width: 45mm

##### SC-E series



##### TK-E series



Magnetic contactors and thermal overload relays featuring terminals with finger protection for 5 to 100HP.

Rated capacity: AC-3 5 to 100HP  
Width: 43,54,67mm (5 to 50HP)  
88,100,115mm (60 to 100HP)

#### Combination starters

Provide the ability to configure combination starters for compact, reliable motor protection by combining a manual motor starter and a magnetic contactor.



# Manual motor starters BM3 series

Conforming to international standards and combining compactness with high breaking performance, this versatile series features leading-edge motor protection.

Molded case circuit breaker and thermal overload relay functions integrated into a highly compact unit.

## Circuit breaker functions

- Short-circuit protection
- Overcurrent protection
- Line protection



## Thermal overload relay functions

- Overload protection
- Phase-loss protection
- Rated current adjustment
- Ambient temperature compensation



## Manual motor starter advantages



### Compactness

Mounting space: MCCB + Thermal overload relay: 100%  
MMS: **43%** (57% reduction)

### Reduction in wiring work

MCCB + Contactor + Thermal overload relay: 100%  
MMS + Contactor: **50%** (50% reduction)

### Standards

• IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14

### Approved

• cUL (File No. E163944, E211710), TÜV (R205062B)

### Ecological design

- Recyclable thermoplastic resin used in plastic parts
- Indication of materials used
- Cadmium-free contacts

# Magnetic contactors SC-M and SC-E series

A full line-up consisting of the mini-contactor SC-M series for 3 to 5HP, 480VAC use and the SC-E series for 5 to 100HP 480VAC use.

- Finger protection standard
- Lug terminal

## SC-M series



SC-M01, M02

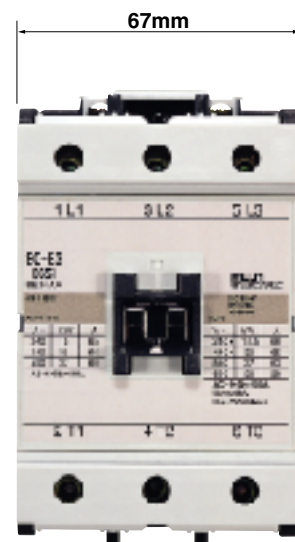
## SC-E series



SC-E02 to E05



SC-E1 to E2S

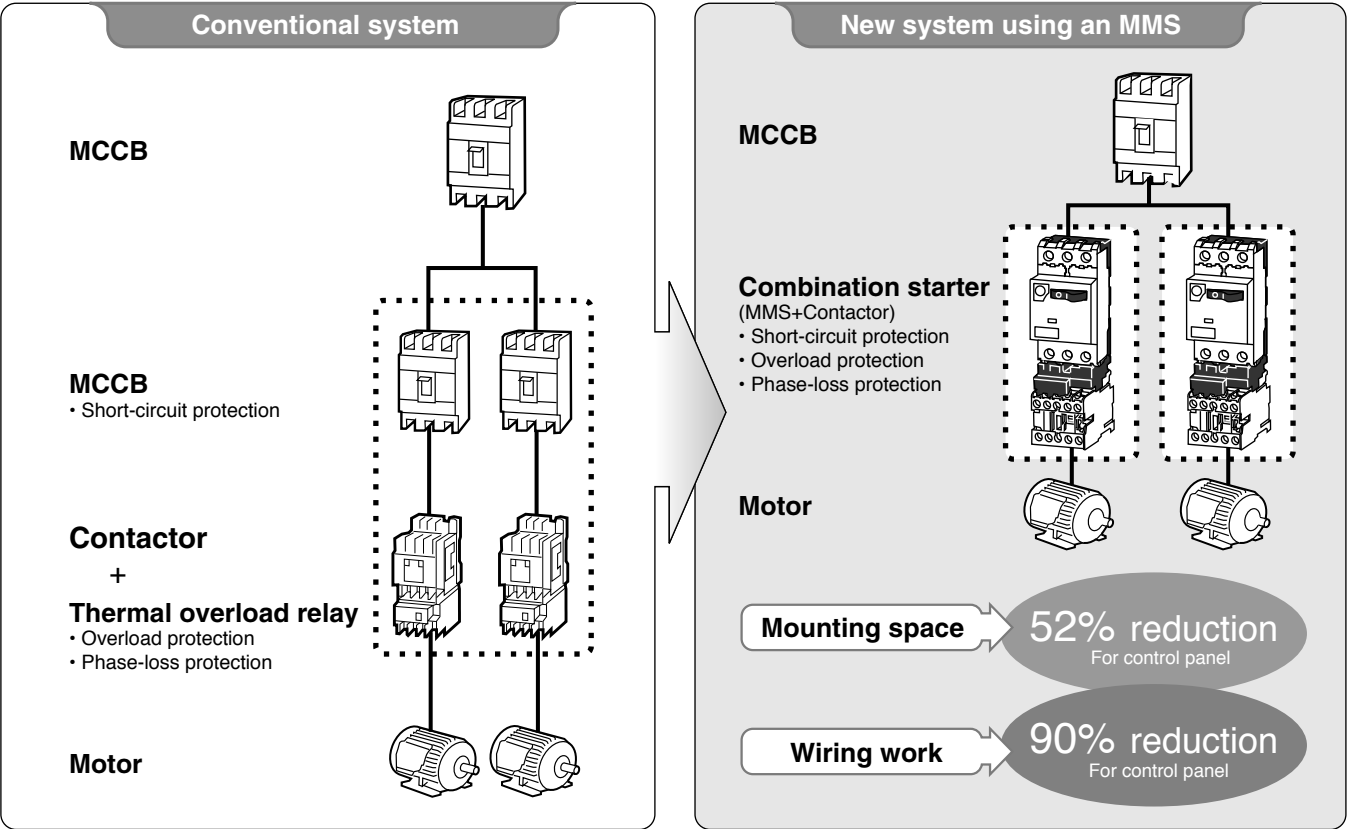


SC-E3, E4

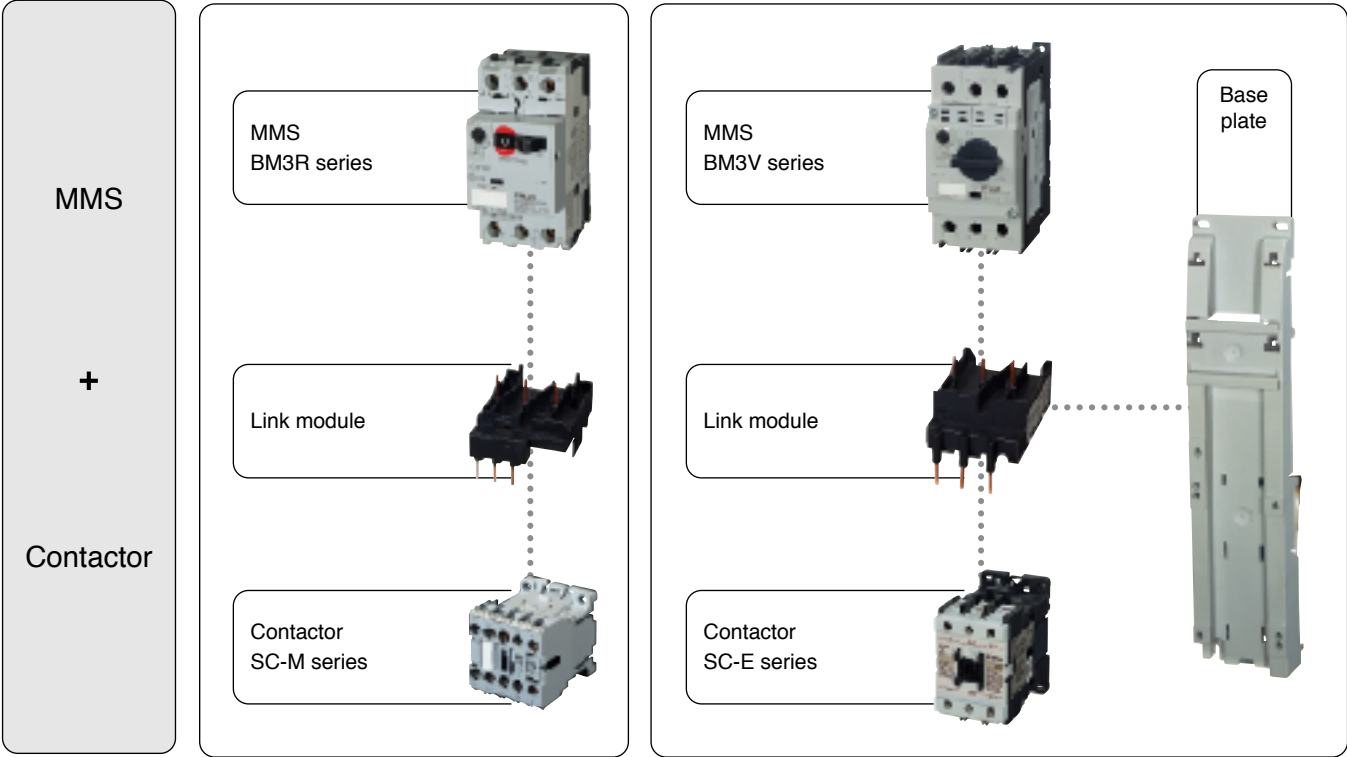
# Combination of manual motor starters and magnetic contactors

A line-up that aims to set a new world standard for compactness, high performance, and utility in combination starters.

Space-saving, reliable motor protection achieved by combining a manual motor starter and magnetic contactor.



Combination starters can be easily configured with a manual motor starter, magnetic contactor and other parts.



# Fuji proposes ultimate cost saving solution with DUO series

Fuji Manual Motor Starter (MMS) intends to apply for manual motor starting application.

As UL listed manual motor controller per UL508, they provide overload protection but are required to be installed with short circuit protection devices (Fuses or Circuit Breakers) on the upstream.

However, according to National Electrical Code (NEC), you can save the cost of short circuit protection devices and can make a smaller panel using DUO series.

The following are case studies for the cost saving use of Fuji DUO series.

## Case study 1 : Group Motor Installation

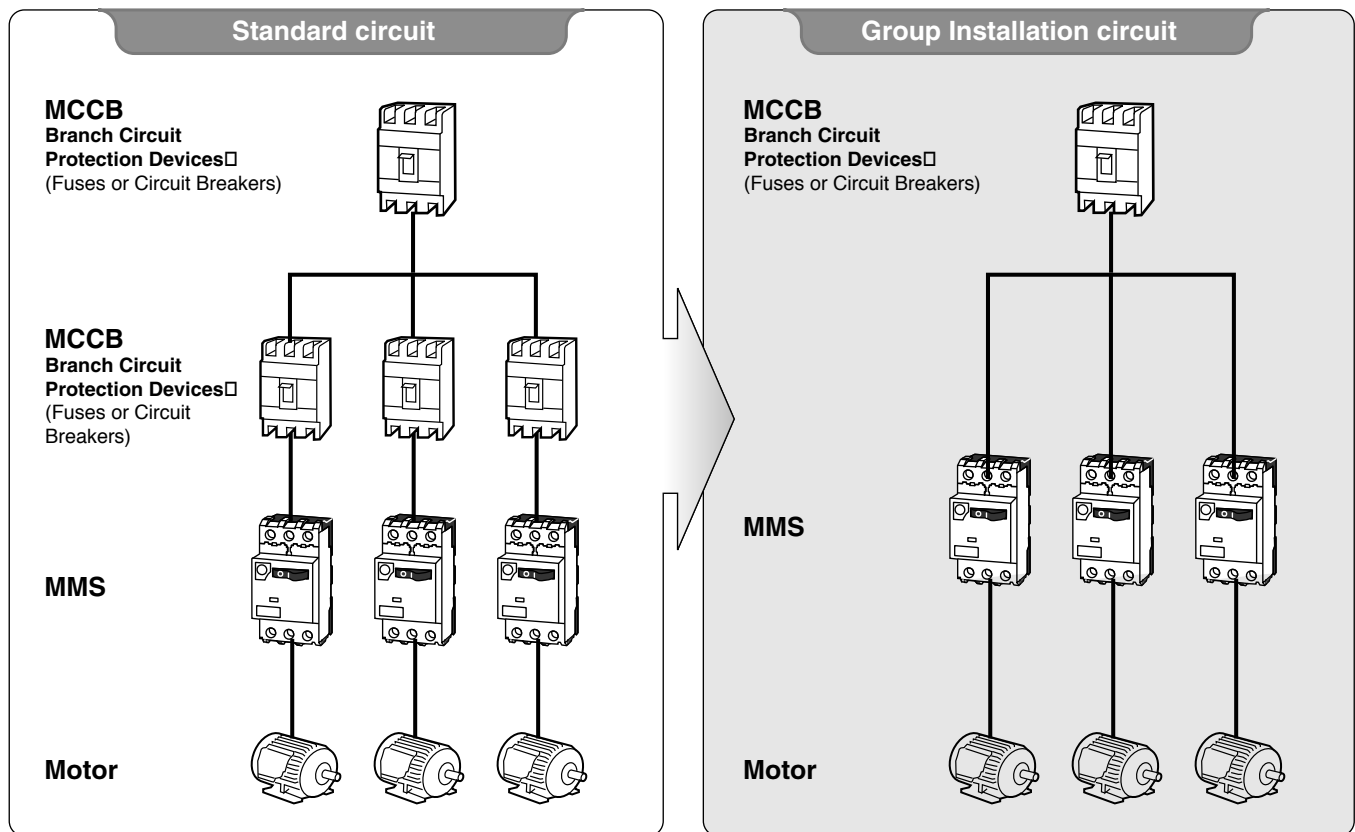
Per NEC430-52 and -53, the combination with a specific rated Fuse or Circuit Breaker allows several motors in a circuit composition.

Fuji MMS are cUL listed per group installation regulations of NEC.

Two or more motors can be connected to one branch circuit when the MMS is used with a specific current rated branch circuit protection device (see remarks below).

The advantages of Group Installation are as follows.

- **The number of components like Circuit Breakers can be reduced**
- **The wire size can be reduced by 1/3 - 1/10 under certain conditions**
- **The area inside the control panel can be minimized**



Remarks :

Per NEC regulations, to connect several motors on one branch circuit protection device, note the following conditions (A) or (B) or (C) and condition (D) listed NEC article 430.53 must be complied.

- (A) : Not over 1 horsepower
- (B) : If smallest rated motor protected
- (C) : Other group installation
- (D) : Single motor taps.

For complete details, please refer to NEC book.

## Case study 2 : Self-Protected Combination Motor Controller / TYPE E and TYPE F

Fuji MMS are cUL listed as a Self-Protected Combination Controller such as Type E and Type F.

To apply MMS as Self-Protected Combination Controller, MMS must be attached to short circuit alarm contact block (**BZ0TKUAB**).  
32A frame type, BM3R series must also be attached to the line side terminal cover (**BZ0TCRE**) because the Self-Protected Combination Controller has the clearance and creepage distance requirements as UL489 regulation.  
(63A frame type, BM3V series complies with their regulation without terminal cover.)

- (1) Combination motor controller, **Type E**, when only MMS is used.  
(Manual Self-Protected Combination Motor Controller according to UL508)
- (2) Combination motor controller, **Type F**, when MMS is used with Fuji SC-E, SC-M contactor.  
(Manual Self-Protected Combination Motor Controller + Magnetic contactor according to UL508)

The advantage of a Self-Protected Combination Motor Controller is that it can replace a **UL489 Circuit Breaker**.

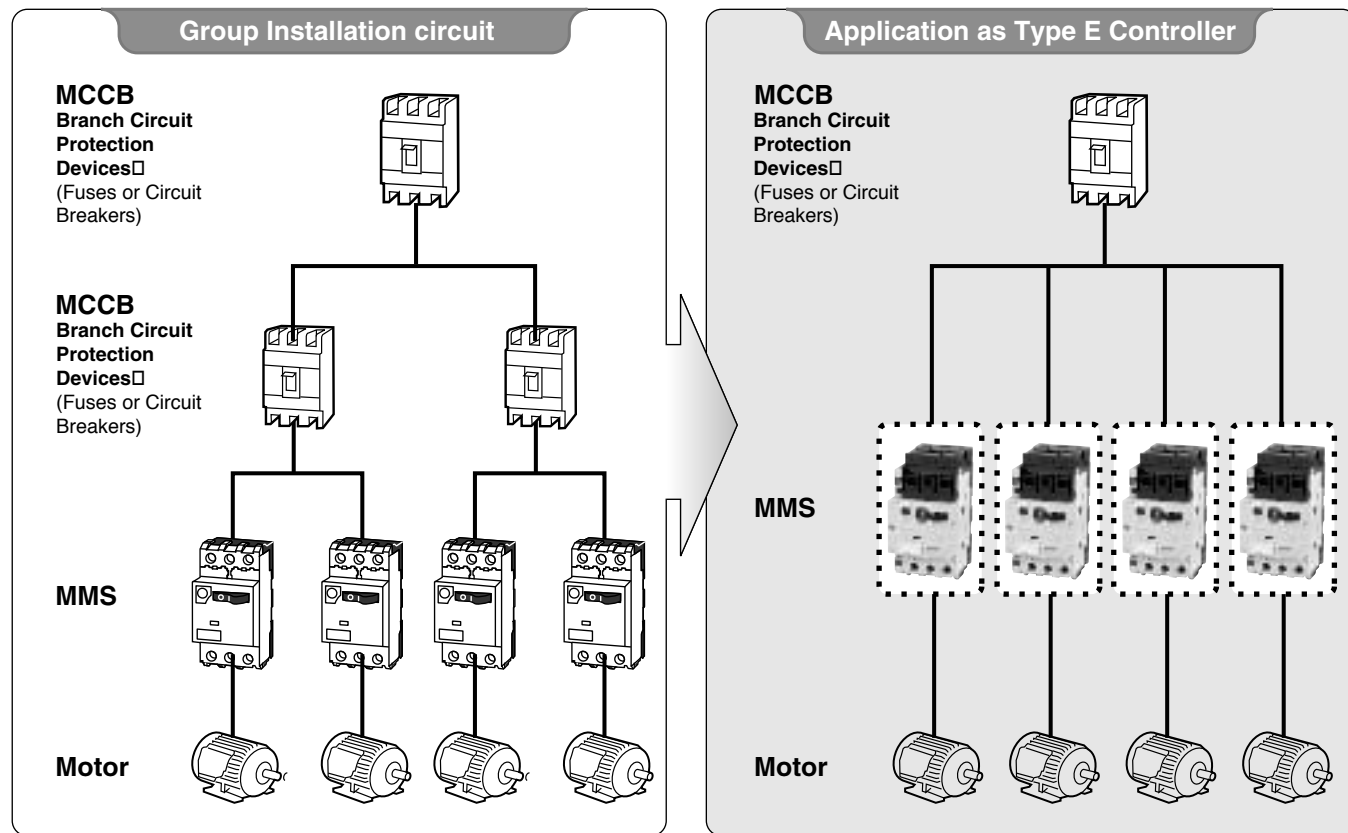
***This means that in a motor branch circuit, the UL489 Circuit Breaker upstream can be eliminated.***

MMS has a trip function like a Circuit Breaker for the purpose of protection against short-circuit.

Therefore, the number of components can be reduced and will result in saving more space than the ordinary Group Installation.

\* The self-protected combination motor controller can be used as branch circuit protection in *Motor Circuit only*.  
They cannot be applied to any other loads such as resistance load.

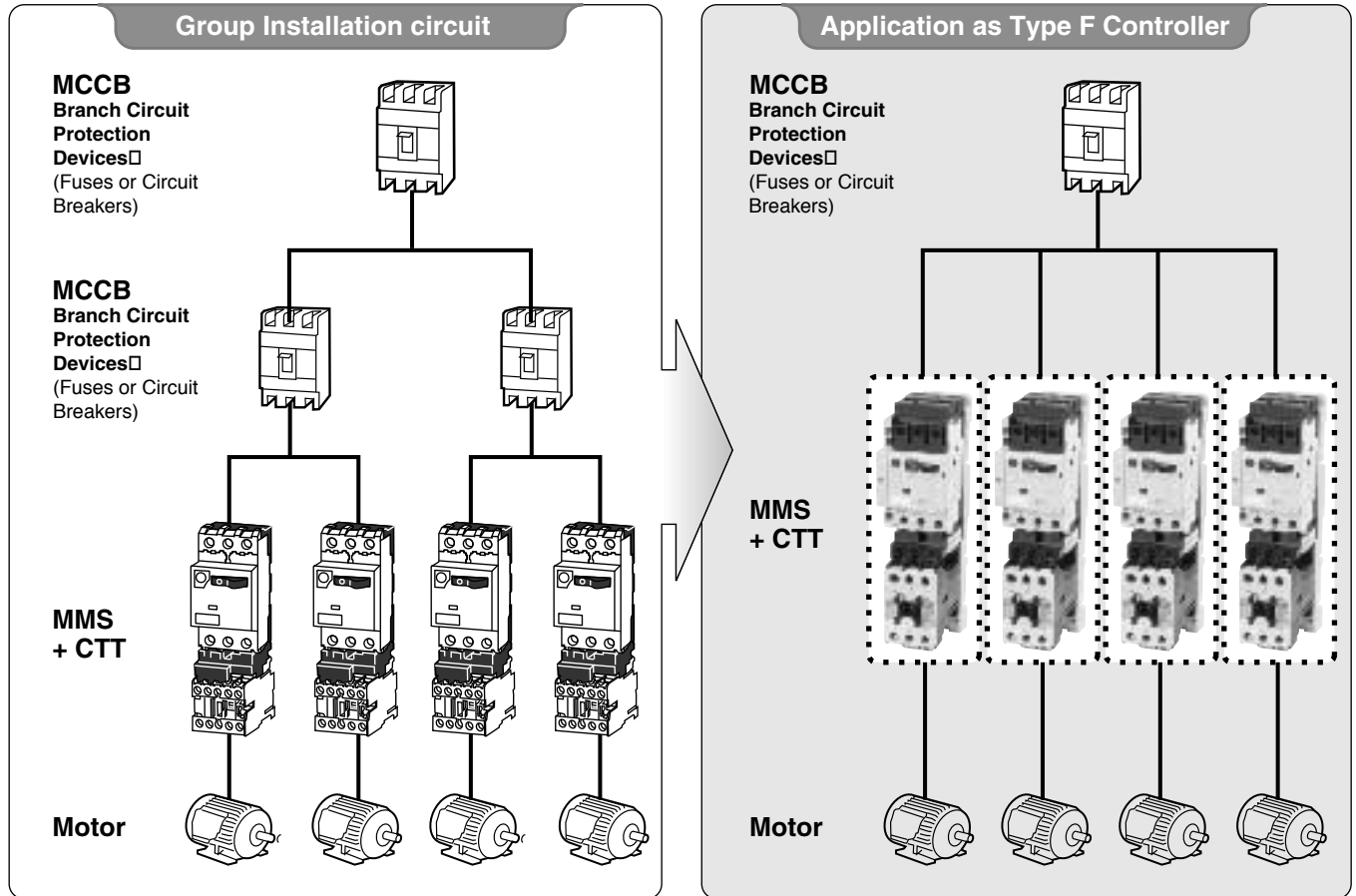
### Example of Type E application



Requirements for Type E construction

- Terminal cover (BZ0TCRE) except for BM3V series.
- Short-circuit alarm contact block (BZ0TKUAB) for all MMS.

## Example of Type F application



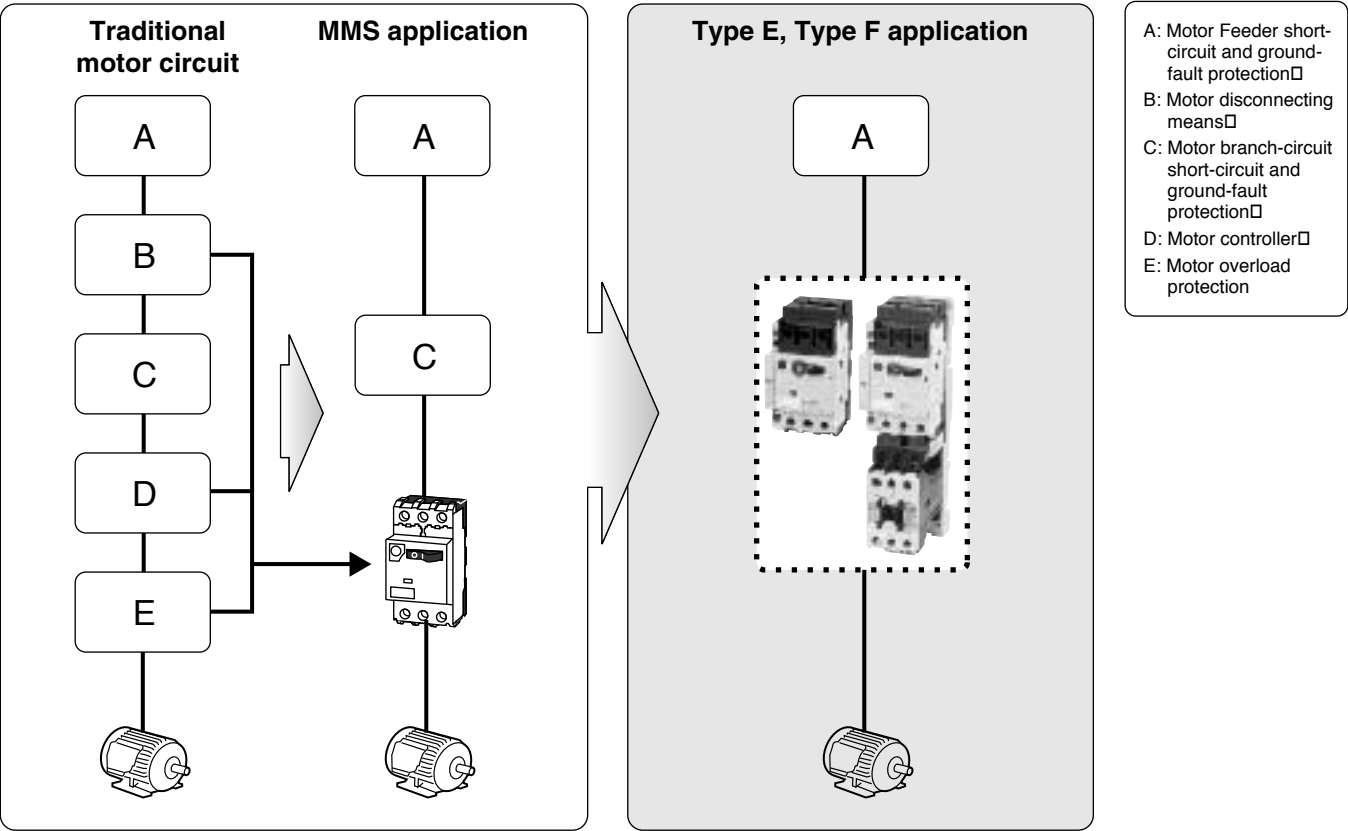
### Requirements for Type F construction□

- Must be used with contactor for motor control function.□
- Terminal cover (BZ0TCRE) except for BM3V series.□
- Short-circuit alarm contact block (BZ0TKUAB) for all MMS.

**Case study 3 : Motor Disconnecting Means**

Per NEC 430.102, a disconnecting means must be applied to each controller.  
Fuji MMS are also cUL listed as **"Suitable as Motor disconnect"** and can be applied as a Motor disconnect.

The advantage of using MMS for disconnect means :  
- An extra component will not be needed because the MMS has a dual function, which will lead to smaller space requirement and less components.



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# Manual Motor Starters

## Quick reference guide

### ■ 32A Frame types and ratings

|                                                  |                                   |                                                                                                                                                                             |            |            |            |                                |                                             |        |        |                                                                 |
|--------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|--------------------------------|---------------------------------------------|--------|--------|-----------------------------------------------------------------|
| Adjustable thermal-magnetic trip type            |                                   | <div>Standard breaking capacity</div> <div>BM3RSB-□</div> <div></div> <div>KK01-317</div> |            |            |            |                                |                                             |        |        |                                                                 |
| Number of poles                                  |                                   | 3                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
| Handle type                                      |                                   | Rocker                                                                                                                                                                      |            |            |            |                                |                                             |        |        |                                                                 |
| Rated current Ie (A)                             |                                   | 0.16 to 32                                                                                                                                                                  |            |            |            |                                |                                             |        |        |                                                                 |
| Rated operational voltage Ue (V)                 |                                   | 200 to 690                                                                                                                                                                  |            |            |            |                                |                                             |        |        |                                                                 |
| Rated frequency (Hz)                             |                                   | 50/60                                                                                                                                                                       |            |            |            |                                |                                             |        |        |                                                                 |
| Rated insulation voltage Ui (V)                  |                                   | 690                                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                                                 |
| Rated impulse withstand voltage Uimp (kV)        |                                   | 6                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
| Utilization category IEC 60947-2 Circuit breaker |                                   | Cat. A                                                                                                                                                                      |            |            |            |                                |                                             |        |        |                                                                 |
| IEC 60947-4-1 Motor starter                      |                                   | AC-3                                                                                                                                                                        |            |            |            |                                |                                             |        |        |                                                                 |
| Trip class IEC 60947-4-1                         |                                   | 10                                                                                                                                                                          |            |            |            |                                |                                             |        |        |                                                                 |
| Instantaneous trip characteristic                |                                   | 13 × Ie max.                                                                                                                                                                |            |            |            |                                |                                             |        |        |                                                                 |
| Power loss (total of 3-pole)                     |                                   | 7W: In=0.16 to 25A 8.5W: In=32A                                                                                                                                             |            |            |            |                                |                                             |        |        |                                                                 |
| Mechanical durability (operations)               |                                   | 100,000: In=0.16 to 25A 70,000: In=32A                                                                                                                                      |            |            |            |                                |                                             |        |        |                                                                 |
| Electrical durability (operations)               |                                   | 100,000: In=0.16 to 25A 70,000: In=32A                                                                                                                                      |            |            |            |                                |                                             |        |        |                                                                 |
| Max. operations per hour (motor start-up)        |                                   | 25                                                                                                                                                                          |            |            |            |                                |                                             |        |        |                                                                 |
| Phase-loss protection                            |                                   | Provided                                                                                                                                                                    |            |            |            |                                |                                             |        |        |                                                                 |
| Trip indicator                                   |                                   | Provided                                                                                                                                                                    |            |            |            |                                |                                             |        |        |                                                                 |
| Test trip function                               |                                   | Provided                                                                                                                                                                    |            |            |            |                                |                                             |        |        |                                                                 |
| Adjustable current range                         |                                   | UL/CSA 3phase HP rating (HP) *2                                                                                                                                             |            |            |            | Instantaneous trip current (A) | UL/CSA Short circuit current rating (kA) *3 |        |        | Maximum listed branch circuit protection *3<br>Fuse or MCCB (A) |
| Code *1                                          | Ie: Min.–Max. (A)                 | 200-208VAC                                                                                                                                                                  | 220-240VAC | 440-480VAC | 550-600VAC |                                | 240VAC                                      | 480VAC | 600VAC |                                                                 |
| P16                                              | 0.1–0.16                          | In accordance with<br>Motor full load current                                                                                                                               |            |            |            | 2.1                            | 100                                         | 50     | 10     | 500                                                             |
| P25                                              | 0.16–0.25                         |                                                                                                                                                                             |            |            |            | 3.3                            | 100                                         | 50     | 10     | 500                                                             |
| P40                                              | 0.25–0.4                          |                                                                                                                                                                             |            |            |            | 5.2                            | 100                                         | 50     | 10     | 500                                                             |
| P63                                              | 0.4–0.63                          |                                                                                                                                                                             |            |            |            | 8.2                            | 100                                         | 50     | 10     | 500                                                             |
| 001                                              | 0.63–1                            |                                                                                                                                                                             |            |            |            |                                | 1/2                                         | 13     | 100    | 50                                                              |
| 1P6                                              | 1–1.6                             |                                                                                                                                                                             |            | 3/4        | 3/4        | 20.8                           | 100                                         | 50     | 10     | 500                                                             |
| 2P5                                              | 1.6–2.5                           | 1/2                                                                                                                                                                         | 1/2        | 1          | 1-1/2      | 32.5                           | 100                                         | 50     | 10     | 500                                                             |
| 004                                              | 2.5–4                             | 3/4                                                                                                                                                                         | 3/4        | 2          | 3          | 52                             | 100                                         | 50     | 10     | 500                                                             |
| 6P3                                              | 4–6.3                             | 1                                                                                                                                                                           | 1-1/2      | 3          | 5          | 81.9                           | 100                                         | 50     | 10     | 500                                                             |
| 010                                              | 6.3–10                            | 2                                                                                                                                                                           | 3          | 5          | 7-1/2      | 130                            | 100                                         | 22     | 10     | 500                                                             |
| 013                                              | 9–13                              | 3                                                                                                                                                                           | 3          | 7-1/2      | 10         | 169                            | 100                                         | 22     | 10     | 500                                                             |
| 016                                              | 11–16                             | 3                                                                                                                                                                           | 5          | 10         | 10         | 208                            | 100                                         | 22     | 10     | 500                                                             |
| 020                                              | 14–20                             | 5                                                                                                                                                                           | 5          | 10         | 15         | 260                            | 50                                          | 22     | 10     | 500                                                             |
| 025                                              | 19–25                             | 7-1/2                                                                                                                                                                       | 7-1/2      | 15         | 20         | 325                            | 50                                          | 22     | 10     | 500                                                             |
| 032                                              | 24–32                             | 10                                                                                                                                                                          | 10         | 20         | 30         | 416                            | 50                                          | 22     | 10     | 500                                                             |
| Dimensions (mm) W x H x D                        |                                   | 45 x 90 x 66                                                                                                                                                                |            |            |            |                                |                                             |        |        |                                                                 |
| Mass (g)                                         |                                   | 350                                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                                                 |
| Optional accessory                               | Auxiliary contact block           | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | Alarm contact block               | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | Auxiliary and alarm contact block | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | Short-circuit alarm contact block | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | Shunt trip device                 | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | Undervoltage trip device          | ○                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
|                                                  | External operating handle         | —                                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                                                 |
| Standard                                         |                                   | IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14                                                                                                                    |            |            |            |                                |                                             |        |        |                                                                 |

Notes: \*1 Replace the □ mark in the part number by current range codes.

\*2 The BM3RSB is cUL listed as HP rated motor controllers.

\*3 The BM3RSB is cUL listed for group Installation as per NEC430-53(C).

○ Available

– Not available

### 32A Frame types and ratings

|                                                       |                                   |                                                                                     |            |            |            |                                |                                             |        |                                             |
|-------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|------------|------------|------------|--------------------------------|---------------------------------------------|--------|---------------------------------------------|
| Adjustable thermal-magnetic trip type                 |                                   | <b>High breaking capacity</b><br><b>BM3RHB-□</b>                                    |            |            |            |                                |                                             |        |                                             |
|                                                       |                                   |  |            |            |            |                                |                                             |        |                                             |
|                                                       |                                   | AF01-42                                                                             |            |            |            |                                |                                             |        |                                             |
| Number of poles                                       |                                   | 3                                                                                   |            |            |            |                                |                                             |        |                                             |
| Handle type                                           |                                   | Rotary                                                                              |            |            |            |                                |                                             |        |                                             |
| Rated current I <sub>e</sub> (A)                      |                                   | 0.16 to 32                                                                          |            |            |            |                                |                                             |        |                                             |
| Rated operational voltage U <sub>e</sub> (V)          |                                   | 200 to 690                                                                          |            |            |            |                                |                                             |        |                                             |
| Rated frequency (Hz)                                  |                                   | 50/60                                                                               |            |            |            |                                |                                             |        |                                             |
| Rated insulation voltage U <sub>i</sub> (V)           |                                   | 690                                                                                 |            |            |            |                                |                                             |        |                                             |
| Rated impulse withstand voltage U <sub>imp</sub> (kV) |                                   | 6                                                                                   |            |            |            |                                |                                             |        |                                             |
| Utilization category                                  | IEC 60947-2 Circuit breaker       | Cat. A                                                                              |            |            |            |                                |                                             |        |                                             |
|                                                       | IEC 60947-4-1 Motor starter       | AC-3                                                                                |            |            |            |                                |                                             |        |                                             |
| Trip class IEC 60947-4-1                              |                                   | 10                                                                                  |            |            |            |                                |                                             |        |                                             |
| Instantaneous trip characteristic                     |                                   | 13 × I <sub>e</sub> max.                                                            |            |            |            |                                |                                             |        |                                             |
| Power loss (total of 3-pole)                          |                                   | 7W: I <sub>n</sub> =0.16 to 25A 8.5W: I <sub>n</sub> =32A                           |            |            |            |                                |                                             |        |                                             |
| Mechanical durability (operations)                    |                                   | 100,000: I <sub>n</sub> =0.16 to 25A 70,000: I <sub>n</sub> =32A                    |            |            |            |                                |                                             |        |                                             |
| Electrical durability (operations)                    |                                   | 100,000: I <sub>n</sub> =0.16 to 25A 70,000: I <sub>n</sub> =32A                    |            |            |            |                                |                                             |        |                                             |
| Max. operations per hour (motor start-up)             |                                   | 25                                                                                  |            |            |            |                                |                                             |        |                                             |
| Phase-loss protection                                 |                                   | Provided                                                                            |            |            |            |                                |                                             |        |                                             |
| Trip indicator                                        |                                   | Provided                                                                            |            |            |            |                                |                                             |        |                                             |
| Test trip function                                    |                                   | Provided                                                                            |            |            |            |                                |                                             |        |                                             |
| Adjustable current range                              |                                   | UL/CSA 3phase HP rating (HP) *2                                                     |            |            |            | Instantaneous trip current (A) | UL/CSA Short circuit current rating (kA) *3 |        |                                             |
| Code *1                                               | I <sub>e</sub> : Min.–Max. (A)    | 200-208VAC                                                                          | 220-240VAC | 440-480VAC | 550-600VAC |                                | 240VAC                                      | 480VAC | 600VAC                                      |
|                                                       |                                   | In accordance with Motor full load current                                          |            |            |            |                                |                                             |        | Maximum listed branch circuit protection *3 |
| P16                                                   | 0.1–0.16                          |                                                                                     |            |            |            | 2.1                            | 100                                         | 50     | 10                                          |
| P25                                                   | 0.16–0.25                         |                                                                                     |            |            |            | 3.3                            | 100                                         | 50     | 10                                          |
| P40                                                   | 0.25–0.4                          |                                                                                     |            |            |            | 5.2                            | 100                                         | 50     | 10                                          |
| P63                                                   | 0.4–0.63                          |                                                                                     |            |            |            | 8.2                            | 100                                         | 50     | 10                                          |
| 001                                                   | 0.63–1                            |                                                                                     |            |            |            | 13                             | 100                                         | 50     | 10                                          |
| 1P6                                                   | 1–1.6                             |                                                                                     |            |            |            | 20.8                           | 100                                         | 50     | 10                                          |
| 2P5                                                   | 1.6–2.5                           | 1/2                                                                                 | 1/2        | 1          | 1-1/2      | 32.5                           | 100                                         | 50     | 10                                          |
| 004                                                   | 2.5–4                             | 3/4                                                                                 | 3/4        | 2          | 3          | 52                             | 100                                         | 50     | 10                                          |
| 6P3                                                   | 4–6.3                             | 1                                                                                   | 1-1/2      | 3          | 5          | 81.9                           | 100                                         | 50     | 10                                          |
| 010                                                   | 6.3–10                            | 2                                                                                   | 3          | 5          | 7-1/2      | 130                            | 100                                         | 50     | 10                                          |
| 013                                                   | 9–13                              | 3                                                                                   | 3          | 7-1/2      | 10         | 169                            | 100                                         | 50     | 10                                          |
| 016                                                   | 11–16                             | 3                                                                                   | 5          | 10         | 10         | 208                            | 100                                         | 50     | 10                                          |
| 020                                                   | 14–20                             | 5                                                                                   | 5          | 10         | 15         | 260                            | 100                                         | 50     | 10                                          |
| 025                                                   | 19–25                             | 7-1/2                                                                               | 7-1/2      | 15         | 20         | 325                            | 100                                         | 50     | 10                                          |
| 032                                                   | 24–32                             | 10                                                                                  | 10         | 20         | 30         | 416                            | 100                                         | 50     | 10                                          |
| Dimensions (mm) W x H x D                             |                                   | 45 x 90 x 79                                                                        |            |            |            |                                |                                             |        |                                             |
| Mass (g)                                              |                                   | 370                                                                                 |            |            |            |                                |                                             |        |                                             |
| Optional accessory                                    | Auxiliary contact block           | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | Alarm contact block               | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | Auxiliary and alarm contact block | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | Short-circuit alarm contact block | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | Shunt trip device                 | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | Undervoltage trip device          | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
|                                                       | External operating handle         | ○                                                                                   |            |            |            |                                |                                             |        |                                             |
| Standard                                              |                                   | IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14                            |            |            |            |                                |                                             |        |                                             |

Notes: \*1 Replace the □ mark in the part number by current range codes.

\*2 The BM3RHB is cUL listed as HP rated motor controllers.

\*3 The BM3RHB is cUL listed for group Installation as per NEC430-53(C).

○ Available

– Not available

# Manual Motor Starters

## Quick reference guide

### ■ 63A Frame types and ratings

|                                                  |                                   |                                                                                                                                                                |            |            |            |                                |                                             |        |        |                                             |  |
|--------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|--------------------------------|---------------------------------------------|--------|--------|---------------------------------------------|--|
| Adjustable thermal-magnetic trip type            |                                   | <div>Standard breaking capacity</div> <div>BM3VSB-□</div> <div>AF01-47</div> |            |            |            |                                |                                             |        |        |                                             |  |
| Number of poles                                  |                                   | 3                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
| Handle type                                      |                                   | Rotary                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                             |  |
| Rated current Ie (A)                             |                                   | 10 to 63                                                                                                                                                       |            |            |            |                                |                                             |        |        |                                             |  |
| Rated operational voltage Ue (V)                 |                                   | 200 to 690                                                                                                                                                     |            |            |            |                                |                                             |        |        |                                             |  |
| Rated frequency (Hz)                             |                                   | 50/60                                                                                                                                                          |            |            |            |                                |                                             |        |        |                                             |  |
| Rated insulation voltage Ui (V)                  |                                   | 1000                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                             |  |
| Rated impulse withstand voltage Uimp (kV)        |                                   | 8                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
| Utilization category IEC 60947-2 Circuit breaker |                                   | Cat. A                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                             |  |
| IEC 60947-4-1 Motor starter                      |                                   | AC-3                                                                                                                                                           |            |            |            |                                |                                             |        |        |                                             |  |
| Trip class IEC 60947-4-1                         |                                   | 10                                                                                                                                                             |            |            |            |                                |                                             |        |        |                                             |  |
| Instantaneous trip characteristic                |                                   | 13 x Ie max.                                                                                                                                                   |            |            |            |                                |                                             |        |        |                                             |  |
| Power loss (total of 3-pole)                     |                                   | 11W: In=10 to 32A 15W: In=40 to 50A 17W: In=63A                                                                                                                |            |            |            |                                |                                             |        |        |                                             |  |
| Mechanical durability (operations)               |                                   | 50,000                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                             |  |
| Electrical durability (operations)               |                                   | 25,000                                                                                                                                                         |            |            |            |                                |                                             |        |        |                                             |  |
| Max. operations per hour (motor start-up)        |                                   | 25                                                                                                                                                             |            |            |            |                                |                                             |        |        |                                             |  |
| Phase-loss protection                            |                                   | Provided                                                                                                                                                       |            |            |            |                                |                                             |        |        |                                             |  |
| Trip indicator                                   |                                   | Provided                                                                                                                                                       |            |            |            |                                |                                             |        |        |                                             |  |
| Test trip function                               |                                   | Provided                                                                                                                                                       |            |            |            |                                |                                             |        |        |                                             |  |
| Adjustable current range                         |                                   | UL/CSA 3phase HP rating (HP) *2                                                                                                                                |            |            |            | Instantaneous trip current (A) | UL/CSA Short circuit current rating (kA) *3 |        |        | Maximum listed branch circuit protection *3 |  |
| Code *1                                          | Ie: Min.–Max. (A)                 | 200-208VAC                                                                                                                                                     | 220-240VAC | 440-480VAC | 550-600VAC |                                | 240VAC                                      | 480VAC | 600VAC |                                             |  |
| 010                                              | 6.3–10                            | 2                                                                                                                                                              | 3          | 5          | 7-1/2      | 130                            | 100                                         | 22     | 10     | 600                                         |  |
| 013                                              | 9–13                              | 3                                                                                                                                                              | 3          | 7-1/2      | 10         | 169                            | 100                                         | 22     | 10     | 600                                         |  |
| 016                                              | 11–16                             | 3                                                                                                                                                              | 5          | 10         | 10         | 208                            | 100                                         | 22     | 10     | 600                                         |  |
| 020                                              | 14–20                             | 5                                                                                                                                                              | 5          | 10         | 15         | 260                            | 100                                         | 22     | 10     | 600                                         |  |
| 025                                              | 19-25                             | 7-1/2                                                                                                                                                          | 7-1/2      | 15         | 20         | 325                            | 100                                         | 22     | 10     | 600                                         |  |
| 032                                              | 24-32                             | 10                                                                                                                                                             | 10         | 20         | 30         | 416                            | 100                                         | 22     | 10     | 600                                         |  |
| 040                                              | 28-40                             | 10                                                                                                                                                             | 10         | 30         | 30         | 520                            | 100                                         | 22     | 10     | 600                                         |  |
| 050                                              | 35-50                             | 15                                                                                                                                                             | 15         | 30         | 40         | 650                            | 100                                         | 22     | 10     | 600                                         |  |
| 063                                              | 45-63                             | 20                                                                                                                                                             | 20         | 40         | 60         | 819                            | 100                                         | 22     | 10     | 600                                         |  |
| Dimensions (mm) W x H x D                        |                                   | 55 x 110 x 96                                                                                                                                                  |            |            |            |                                |                                             |        |        |                                             |  |
| Mass (g)                                         |                                   | 780                                                                                                                                                            |            |            |            |                                |                                             |        |        |                                             |  |
| Optional accessory                               | Auxiliary contact block           | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | Alarm contact block               | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | Auxiliary and alarm contact block | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | Short-circuit alarm contact block | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | Shunt trip device                 | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | Undervoltage trip device          | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
|                                                  | External operating handle         | ○                                                                                                                                                              |            |            |            |                                |                                             |        |        |                                             |  |
| Standard                                         |                                   | IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14                                                                                                       |            |            |            |                                |                                             |        |        |                                             |  |

Notes: \*1 Replace the □ mark in the part number by current range codes.

\*2 The BM3VSB is cUL listed as HP rated motor controllers.

\*3 The BM3VSB is cUL listed for group Installation as per NEC430-53(C).

○ Available

— Not available

### 63A Frame types and ratings

|                                                  |                                   |                                                          |            |            |            |                                                                                               |                                             |        |        |                                             |
|--------------------------------------------------|-----------------------------------|----------------------------------------------------------|------------|------------|------------|-----------------------------------------------------------------------------------------------|---------------------------------------------|--------|--------|---------------------------------------------|
| Adjustable thermal-magnetic trip type            |                                   | High breaking capacity<br>BM3VHB-□                       |            |            |            | <br>AF01-43 |                                             |        |        |                                             |
| Number of poles                                  |                                   | 3                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
| Handle type                                      |                                   | Rotary                                                   |            |            |            |                                                                                               |                                             |        |        |                                             |
| Rated current Ie (A)                             |                                   | 10 to 63                                                 |            |            |            |                                                                                               |                                             |        |        |                                             |
| Rated operational voltage Ue (V)                 |                                   | 200 to 690                                               |            |            |            |                                                                                               |                                             |        |        |                                             |
| Rated frequency (Hz)                             |                                   | 50/60                                                    |            |            |            |                                                                                               |                                             |        |        |                                             |
| Rated insulation voltage Ui (V)                  |                                   | 1000                                                     |            |            |            |                                                                                               |                                             |        |        |                                             |
| Rated impulse withstand voltage Uimp (kV)        |                                   | 8                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
| Utilization category IEC 60947-2 Circuit breaker |                                   | Cat. A                                                   |            |            |            |                                                                                               |                                             |        |        |                                             |
| IEC 60947-4-1 Motor starter                      |                                   | AC-3                                                     |            |            |            |                                                                                               |                                             |        |        |                                             |
| Trip class IEC 60947-4-1                         |                                   | 10                                                       |            |            |            |                                                                                               |                                             |        |        |                                             |
| Instantaneous trip characteristic                |                                   | 13 x Ie max.                                             |            |            |            |                                                                                               |                                             |        |        |                                             |
| Power loss (total of 3-pole)                     |                                   | 11W: In=10 to 32A 15W: In=40 to 50A 17W: In=63A          |            |            |            |                                                                                               |                                             |        |        |                                             |
| Mechanical durability (operations)               |                                   | 50,000                                                   |            |            |            |                                                                                               |                                             |        |        |                                             |
| Electrical durability (operations)               |                                   | 25,000                                                   |            |            |            |                                                                                               |                                             |        |        |                                             |
| Max. operations per hour (motor start-up)        |                                   | 25                                                       |            |            |            |                                                                                               |                                             |        |        |                                             |
| Phase-loss protection                            |                                   | Provided                                                 |            |            |            |                                                                                               |                                             |        |        |                                             |
| Trip indicator                                   |                                   | Provided                                                 |            |            |            |                                                                                               |                                             |        |        |                                             |
| Test trip function                               |                                   | Provided                                                 |            |            |            |                                                                                               |                                             |        |        |                                             |
| Adjustable current range                         |                                   | UL/CSA 3phase HP rating (HP) *2                          |            |            |            | Instantaneous trip current (A)                                                                | UL/CSA Short circuit current rating (kA) *3 |        |        | Maximum listed branch circuit protection *3 |
| Code *1                                          | Ie: Min.–Max. (A)                 | 200-208VAC                                               | 220-240VAC | 440-480VAC | 550-600VAC |                                                                                               | 240VAC                                      | 480VAC | 600VAC |                                             |
| 010                                              | 6.3–10                            | 2                                                        | 3          | 5          | 7-1/2      | 130                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 013                                              | 9–13                              | 3                                                        | 3          | 7-1/2      | 10         | 169                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 016                                              | 11–16                             | 3                                                        | 5          | 10         | 10         | 208                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 020                                              | 14–20                             | 5                                                        | 5          | 10         | 15         | 260                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 025                                              | 19-25                             | 7-1/2                                                    | 7-1/2      | 15         | 20         | 325                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 032                                              | 24-32                             | 10                                                       | 10         | 20         | 30         | 416                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 040                                              | 28-40                             | 10                                                       | 10         | 30         | 30         | 520                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 050                                              | 35-50                             | 15                                                       | 15         | 30         | 40         | 650                                                                                           | 100                                         | 50     | 10     | 600                                         |
| 063                                              | 45-63                             | 20                                                       | 20         | 40         | 60         | 819                                                                                           | 100                                         | 50     | 10     | 600                                         |
| Dimensions (mm) W x H x D                        |                                   | 55 x 110 x 96                                            |            |            |            |                                                                                               |                                             |        |        |                                             |
| Mass (g)                                         |                                   | 780                                                      |            |            |            |                                                                                               |                                             |        |        |                                             |
| Optional accessory                               | Auxiliary contact block           | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | Alarm contact block               | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | Auxiliary and alarm contact block | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | Short-circuit alarm contact block | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | Shunt trip device                 | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | Undervoltage trip device          | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
|                                                  | External operating handle         | ○                                                        |            |            |            |                                                                                               |                                             |        |        |                                             |
| Standard                                         |                                   | IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14 |            |            |            |                                                                                               |                                             |        |        |                                             |

Notes: \*1 Replace the □ mark in the part number by current range codes.

\*2 The BM3VHB is cUL listed as HP rated motor controllers.

\*3 The BM3VHB is cUL listed for group Installation as per NEC430-53(C).

○ Available

– Not available

# Manual Motor Starters

## Type E ratings

### • BM3RSB (Type E ratings)

| Manual motor starters |                                    | 3 phase motor                              |                                    | Short circuit rating(kA) |                   |
|-----------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------|-------------------|
| Code                  | I <sub>e</sub> ; Min-Max. □<br>(A) | Rated capacity (HP)<br>220-240V AC         | Rated capacity (HP)<br>440-480V AC | up to 240V AC            | up to 480/277V AC |
| P16                   | 0.1-0.16                           | In accordance with Motor full load current |                                    | 100                      | 50                |
| P25                   | 0.16-0.25                          |                                            |                                    | 100                      | 50                |
| P40                   | 0.25-0.4                           |                                            |                                    | 100                      | 50                |
| P63                   | 0.4-0.63                           |                                            |                                    | 100                      | 50                |
| 001                   | 0.63-1.0                           |                                            |                                    | 100                      | 50                |
| 1P6                   | 1-1.6                              |                                            |                                    | 100                      | 50                |
| 2P5                   | 1.6-2.5                            | 1/2                                        | 1                                  | 100                      | 50                |
| 004                   | 2.5-4                              | 3/4                                        | 2                                  | 100                      | 50                |
| 6P3                   | 4-6.3                              | 1-1/2                                      | 3                                  | 100                      | 50                |
| 010                   | 6.3-10                             | 3                                          | 5                                  | 100                      | 22                |
| 013                   | 9-13                               | 3                                          | 7-1/2                              | 100                      | 22                |
| 016                   | 11-16                              | 5                                          | 10                                 | 100                      | 22                |
| 020                   | 14-20                              | 5                                          | 10                                 | 100                      | 22                |
| 025                   | 19-25                              | 7-1/2                                      | 15                                 | 50                       | 22                |
| 032                   | 24-32a                             | 10                                         | 20                                 | 50                       | 22                |

To make an application for use with Type E controller, you need to prepare BZ0TCRE and BZ0TKUAB accessories for BM3RSB separately.

### • BM3RHB (Type E ratings)

| Manual motor starters |                                    | 3 phase motor                              |                                    | Short circuit rating(kA) |                   |
|-----------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------|-------------------|
| Code                  | I <sub>e</sub> ; Min-Max. □<br>(A) | Rated capacity (HP)<br>220-240V AC         | Rated capacity (HP)<br>440-480V AC | up to 240V AC            | up to 480/277V AC |
| P16                   | 0.1-0.16                           | In accordance with Motor full load current |                                    | 100                      | 50                |
| P25                   | 0.16-0.25                          |                                            |                                    | 100                      | 50                |
| P40                   | 0.25-0.4                           |                                            |                                    | 100                      | 50                |
| P63                   | 0.4-0.63                           |                                            |                                    | 100                      | 50                |
| 001                   | 0.63-1.0                           |                                            |                                    | 100                      | 50                |
| 1P6                   | 1-1.6                              |                                            |                                    | 100                      | 50                |
| 2P5                   | 1.6-2.5                            | 1/2                                        | 1                                  | 100                      | 50                |
| 004                   | 2.5-4                              | 3/4                                        | 2                                  | 100                      | 50                |
| 6P3                   | 4-6.3                              | 1-1/2                                      | 3                                  | 100                      | 50                |
| 010                   | 6.3-10                             | 3                                          | 5                                  | 100                      | 50                |
| 013                   | 9-13                               | 3                                          | 7-1/2                              | 100                      | 50                |
| 016                   | 11-16                              | 5                                          | 10                                 | 100                      | 50                |
| 020                   | 14-20                              | 5                                          | 10                                 | 100                      | 50                |
| 025                   | 19-25                              | 7-1/2                                      | 15                                 | 100                      | 50                |
| 032                   | 24-32                              | 10                                         | 20                                 | 100                      | 50                |

To make an application for use with Type E controller, you need to prepare BZ0TCRE and BZ0TKUAB accessories for BM3RHB separately.

### • BM3VSB (Type E ratings)

| Manual motor starters |                                    | 3 phase motor                      |                                    | Short circuit rating(kA) |                   |
|-----------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------|-------------------|
| Code                  | I <sub>e</sub> ; Min-Max. □<br>(A) | Rated capacity (HP)<br>220-240V AC | Rated capacity (HP)<br>440-480V AC | up to 240V AC            | up to 480/277V AC |
| 010                   | 6.3-10                             | 3                                  | 5                                  | 100                      | 22                |
| 013                   | 9-13                               | 3                                  | 7-1/2                              | 100                      | 22                |
| 016                   | 11-16                              | 5                                  | 10                                 | 100                      | 22                |
| 020                   | 14-20                              | 5                                  | 10                                 | 100                      | 22                |
| 025                   | 19-25                              | 7-1/2                              | 15                                 | 100                      | 22                |
| 032                   | 24-32                              | 10                                 | 20                                 | 100                      | 22                |
| 040                   | 28-40                              | 10                                 | 30                                 | 100                      | 22                |
| 050                   | 35-50                              | 15                                 | 30                                 | 100                      | 22                |
| 063                   | 45-63                              | 20                                 | 40                                 | 100                      | 22                |

To make an application for use with Type E controller, you need to prepare BZ0TKUAB accessories for BM3VSB separately.

### • BM3VHB (Type E ratings)

| Manual motor starters |                                    | 3 phase motor                      |                                    | Short circuit rating(kA) |                   |
|-----------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------|-------------------|
| Code                  | I <sub>e</sub> ; Min-Max. □<br>(A) | Rated capacity (HP)<br>220-240V AC | Rated capacity (HP)<br>440-480V AC | up to 240V AC            | up to 480/277V AC |
| 010                   | 6.3-10                             | 3                                  | 5                                  | 100                      | 50                |
| 013                   | 9-13                               | 3                                  | 7-1/2                              | 100                      | 50                |
| 016                   | 11-16                              | 5                                  | 10                                 | 100                      | 50                |
| 020                   | 14-20                              | 5                                  | 10                                 | 100                      | 50                |
| 025                   | 19-25                              | 7-1/2                              | 15                                 | 100                      | 50                |
| 032                   | 24-32                              | 10                                 | 20                                 | 100                      | 50                |
| 040                   | 28-40                              | 10                                 | 30                                 | 100                      | 50                |
| 050                   | 35-50                              | 15                                 | 30                                 | 100                      | 50                |
| 063                   | 45-63                              | 20                                 | 40                                 | 100                      | 50                |

To make an application for use with Type E controller, you need to prepare BZ0TKUAB accessories for BM3VHB separately.

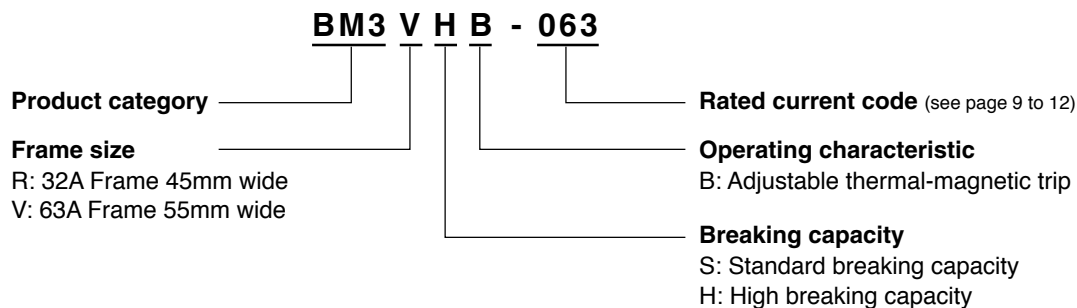
# Manual Motor Starters

## Ordering information and Characteristics

### Ordering information

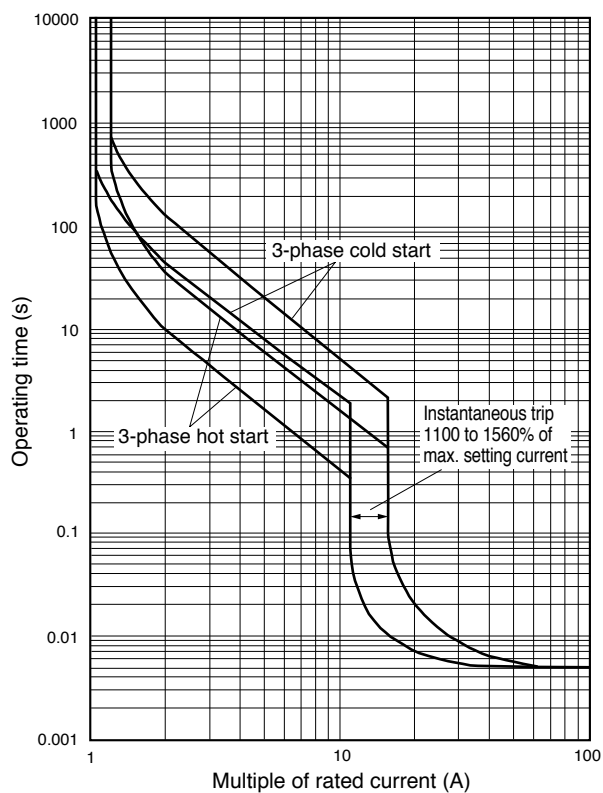
Specify the following:

1. Part number
2. Accessories if required

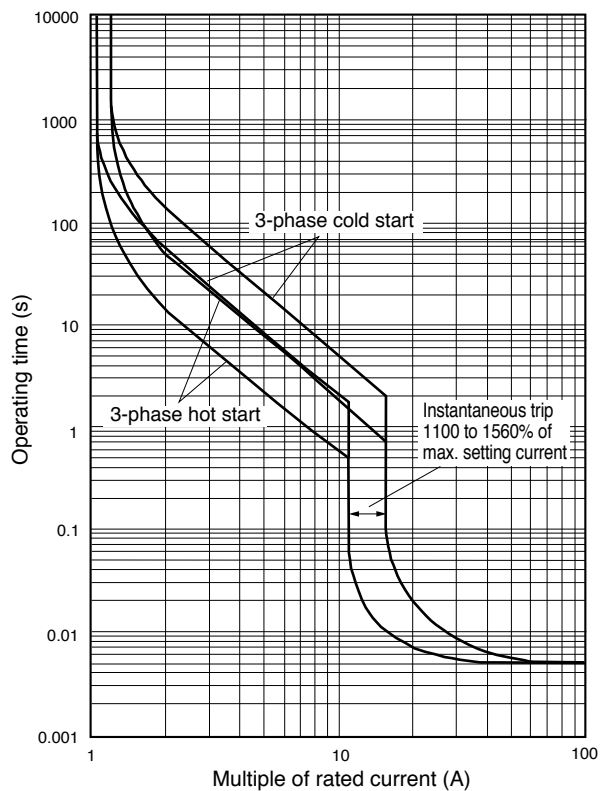


### Characteristic curves

#### • BM3RSB, RHB



#### • BM3VSB, VHB

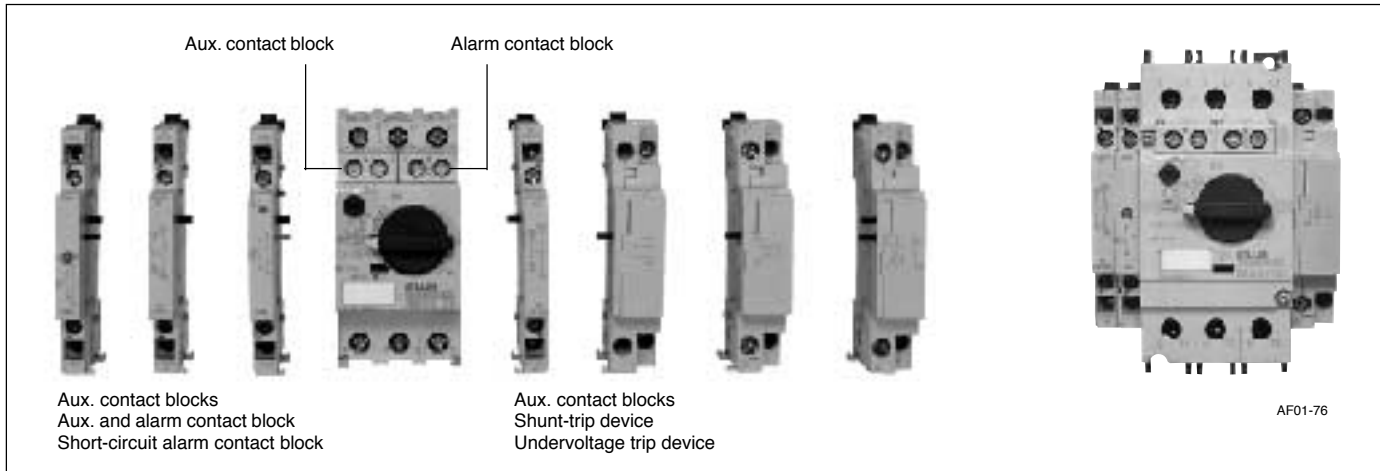


# Manual Motor Starters

## Optional accessories

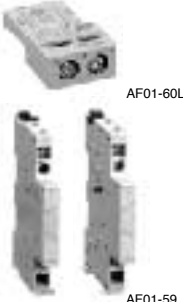
### ■ Features

- All accessories can be used with BM3R (45mm wide) and BM3V (55mm wide) frames.
- Accessories are easily mounted.
- Internal auxiliary contact blocks and alarm contact blocks can be mounted on front side.
- External auxiliary contact blocks can be mounted on either the right or left side.
- Shunt trip and undervoltage trip devices are available in a wide range of operating voltages.
- Standard and emergency external handles are available.
- IP20 terminal cover prevents accidental contact to electrically charged parts.



### ■ Part number and ratings

#### • Auxiliary contact blocks (W)

| Description                                                                                                               | Starter type | Mounting   | Contact arrangement   | Part number                                           | Mass (g) |
|---------------------------------------------------------------------------------------------------------------------------|--------------|------------|-----------------------|-------------------------------------------------------|----------|
|  <p>AF01-60L</p> <p>AF01-59, 01-58</p> | BM3R<br>BM3V | Front      | 1NO<br>1NC            | <b>BZ0WIA</b><br><b>BZ0WIB</b>                        | 9        |
|                                                                                                                           |              | Left side  | 2NO<br>1NO+1NC<br>2NC | <b>BZ0WUAAL</b><br><b>BZ0WUABL</b><br><b>BZ0WUBBL</b> | 45       |
|                                                                                                                           |              | Right side | 2NO<br>1NO+1NC<br>2NC | <b>BZ0WUAAR</b><br><b>BZ0WUABR</b><br><b>BZ0WUBBR</b> | 45       |

#### • Alarm contact blocks (K)

| Description                                                                                         | Starter type | Mounting                   | Contact arrangement | Part number                    | Mass (g) |
|-----------------------------------------------------------------------------------------------------|--------------|----------------------------|---------------------|--------------------------------|----------|
|  <p>AF01-60R</p> | BM3R<br>BM3V | Front<br>(Right side only) | 1NO<br>1NC          | <b>BZ0KIA</b><br><b>BZ0KIB</b> | 9        |

# Manual Motor Starters

## Optional accessories

### • Auxiliary and alarm contact blocks (WK)

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Starter type | Mounting | Contact arrangement        | Part number     | Mass (g) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|----------------------------|-----------------|----------|
|  <p>• This contact block combines auxiliary contact and alarm contact that operate in the event of an overload, phase loss, or short-circuit. Alarm contact is not linked to the ON/OFF operation of the MMS.</p> <p>• An alarm is displayed in the contact block's indicator when the alarm contact operates.</p> <p>Note: Operation can be checked with the test trip function.</p> <p>AF01-57</p> | BM3R<br>BM3V | Left     | 1NO (Aux.)+<br>1NO (Alarm) | <b>BZ0WKUAA</b> | 45       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |          | 1NC (Aux.)+<br>1NO (Alarm) | <b>BZ0WKUBA</b> |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |          | 1NO (Aux.)+<br>1NC (Alarm) | <b>BZ0WKUAB</b> |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |          | 1NC (Aux.)+<br>1NC (Alarm) | <b>BZ0WKUBB</b> |          |

### • Short-circuit alarm contact block (KI)

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Starter type | Mounting | Contact arrangement | Part number     | Mass (g) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|---------------------|-----------------|----------|
|  <p>• The contacts operate only when the MMS has tripped due to a short-circuit.</p> <p>• When these contacts operate, the blue reset button extends out, and a trip indication is displayed.</p> <p>• The power to the MMS can be turned ON after pressing the reset button.</p> <p>Note: Operation can be checked with the test trip function.<br/>Be sure to press the reset button before mounting to the MMS.</p> <p>AF01-56</p> | BM3R<br>BM3V | Left     | 1NO+1NC             | <b>BZ0TKUAB</b> | 45       |

### • Shunt trip devices (F)

| Description                                                                                                                                                                                                                                                                                                                                                                                                              | Starter type | Mounting | Coil voltage                                                                                                                                                                                                                                                                                                                                             | Part number                                                                                                                                                                                                                                      | Mass (g) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|  <p>This device is used to remotely trip the MMS.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• This device cannot be used together with an undervoltage trip device.</li> <li>• When the MMS has been tripped with the shunt trip device, press the reset button before turning ON the power.</li> </ul> <p>AF01-55</p> | BM3R<br>BM3V | Right    | 24VAC 50/60Hz<br>48VAC 60Hz<br>48VAC 50Hz/60VAC 60Hz<br><br>100VAC 50Hz/100–110VAC 60Hz<br>110–127VAC 50Hz/120VAC 60Hz<br>200VAC 50Hz/200–220VAC 60Hz<br>220–230VAC 50Hz/240–260VAC 60Hz<br>240VAC 50Hz/277VAC 60Hz<br><br>380–400VAC 50Hz/400–440VAC 60Hz<br>415–440VAC 50Hz/460–480VAC 60Hz<br>500VAC 50Hz/600VAC 60Hz<br>24–60V DC *<br>110-240V DC * | <b>BZ0FAZU</b><br><b>BZ0FBZU</b><br><b>BZ0FCZU</b><br><br><b>BZ0F1ZU</b><br><b>BZ0FDZU</b><br><b>BZ0FEZU</b><br><b>BZ0FFZU</b><br><b>BZ0FGZU</b><br><br><b>BZ0FHZU</b><br><b>BZ0F4ZU</b><br><b>BZ0FJZU</b><br><b>BZ0FKZUD</b><br><b>BZ0FLZUD</b> | 115      |

Note: \* The time rating of coil is 5s.

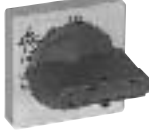
### • Undervoltage trip devices (R)

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Starter type | Mounting | Coil voltage                                                                                                                                                                                                                                                                                                             | Part number                                                                                                                                                                                                                     | Mass (g) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|  <p><b>R types</b></p> <p>This device automatically trips the MMS when the control circuit voltage drops below the specified value.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• This device cannot be used together with a shunt trip device.</li> <li>• When the MMS has been tripped with the undervoltage trip device, press the reset button before turning ON the power.</li> </ul> <p>AF01-54</p> | BM3R<br>BM3V | Right    | 24VAC 50Hz<br>24VAC 60Hz<br>48VAC 50Hz<br>48VAC 60Hz<br><br>100VAC 50Hz/100–110VAC 60Hz<br>110–127VAC 50Hz/120VAC 60Hz<br>200VAC 50Hz/200–220VAC 60Hz<br>220–230VAC 50Hz/240–260VAC 60Hz<br>240VAC 50Hz/277VAC 60Hz<br><br>380–400VAC 50Hz/400–440VAC 60Hz<br>415–440VAC 50Hz/460–480VAC 60Hz<br>500VAC 50Hz/600VAC 60Hz | <b>BZ0RAZ1U</b><br><b>BZ0RAZ2U</b><br><b>BZ0RBZ1U</b><br><b>BZ0RBZU</b><br><br><b>BZ0R1ZU</b><br><b>BZ0RDZU</b><br><b>BZ0REZU</b><br><b>BZ0RFZU</b><br><b>BZ0RGZU</b><br><br><b>BZ0RHZU</b><br><b>BZ0R4ZU</b><br><b>BZ0RJZU</b> | 115      |

# Manual Motor Starters

## Optional accessories

### • External operating handles

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Starter type | Handle type            | Part number    | Mass (g) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|----------------|----------|
|  <p>KK02-305</p> <ul style="list-style-type: none"> <li>Used to operate an MMS installed inside a panel, from the outside of the panel.</li> <li>Equipped with an interlock mechanism that prevents someone from mistakenly opening the panel door when the MMS is in the ON state.</li> <li>The shaft can be cut to match the distance between the MMS and the panel door.</li> </ul> | BM3RH        | Standard (black)       | <b>BZ0VBBL</b> | 160      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              | Emergency (red/yellow) | <b>BZ0VYRL</b> | 160      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BM3V         | Standard (black)       | <b>BZ0VBBM</b> | 160      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              | Emergency (red/yellow) | <b>BZ0VYRM</b> | 160      |
|  <p>KK02-306</p> <ul style="list-style-type: none"> <li>Door interlock function</li> <li>• OFF lock function</li> <li>Can be locked OFF with up to three padlocks.<br/>Note: Padlocks not included.</li> <li>Release screw allows the door to be opened with the handle in the ON position.</li> <li>• IP54 enclosure</li> </ul>                                                       |              |                        |                |          |

### • Line side terminal cover

| Description                                                                                                                         | Starter type | Part number    | Mass (g) |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|----------|
|  <p>Used for making Type E or Type F condition</p> | BM3R         | <b>BZ0TCRE</b> | 30       |

### • Others

| Description                                                                                                                                                                                                                                                                                                                                                 | Starter type | Part number   | Mass (g) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|----------|
| <b>Push-in lug</b>  <p>Used for screw mounting.<br/>10 pcs/pack</p>                                                                                                                                                                                                      | BM3R         | <b>BZ0SET</b> | 2.0      |
| <b>Terminal cover for IP20</b>  <p>Prevents accidental contact to charged parts.<br/>6 pcs/pack</p>                                                                                                                                                                      | BM3V         | <b>BZ0TCV</b> | 0.6      |
| <b>Dummy cover</b>  <p>KK02-39</p> <ul style="list-style-type: none"> <li>Used to cover the open space if an internally mounted accessory should become unnecessary.</li> <li>Mounts to either the left-front or right-front position.</li> <li>• 10 pcs/pack</li> </ul> | BM3R<br>BM3V | <b>BZ0CFG</b> | 1.4      |

### ■ Ratings of accessories

| Accessory type                |              | Auxiliary contact block/front | Auxiliary contact block/side | Alarm contact block | Aux. and alarm contact block | Short-circuit alarm contact block |
|-------------------------------|--------------|-------------------------------|------------------------------|---------------------|------------------------------|-----------------------------------|
| Part number                   |              | <b>BZ0WI</b>                  | <b>BZ0WU</b>                 | <b>BZ0KI</b>        | <b>BZ0WKU</b>                | <b>BZ0TKUAB</b>                   |
| Standard                      |              | IEC 60947-5-1, UL 508         |                              |                     |                              |                                   |
| Rated operational current (A) | 48V AC AC-15 | 5                             | 6                            | 5                   | 6                            | 6                                 |
|                               | 125V AC      | 3                             | 4                            | 3                   | 4                            | 4                                 |
|                               | 230V AC      | 1.5                           | 4                            | 1.5                 | 4                            | 4                                 |
|                               | 400V AC      | —                             | 2.2                          | —                   | 2.2                          | 2.2                               |
|                               | 500V AC      | —                             | 1.5                          | —                   | 1.5                          | 1.5                               |
|                               | 690V AC      | —                             | 0.6                          | —                   | 0.6                          | 0.6                               |
|                               | 48V DC DC-13 | 1.38                          | 5                            | 1.38                | 5                            | 5                                 |
|                               | 110V DC      | 0.55                          | 1.3                          | 0.55                | 1.3                          | 1.3                               |
|                               | 220V DC      | 0.27                          | 0.5                          | 0.27                | 0.5                          | 0.5                               |
|                               |              |                               |                              |                     |                              |                                   |
| Contact rating code UL 508    |              | B300<br>Q300                  | A600<br>P300                 | B300<br>Q300        | A600<br>P300                 | A600<br>P300                      |
| Min. voltage and current      |              | 17V 5mA                       |                              |                     |                              |                                   |

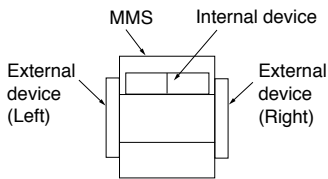
| Accessory type                  |                      | Shunt trip device       | Undervoltage device |
|---------------------------------|----------------------|-------------------------|---------------------|
| Part number                     |                      | <b>BZ0F</b>             | <b>BZ0R</b>         |
| Standard                        |                      | IEC 60947-1, UL 508     |                     |
| Rated insulation voltage (V AC) | IEC 60947<br>UL 508  | 690<br>600              |                     |
| No. of ON-OFF operations        |                      | 5000                    |                     |
| Operating time (ms)             |                      | 20                      |                     |
| Power consumption               | Inrush (VA/W)        | 21/12                   |                     |
|                                 | Sealed (VA/W)        | 8/1.2                   |                     |
| Voltage range                   | Tripping voltage (V) | 0.7 to 1.1Ue            | 0.35 to 0.7Ue       |
|                                 | Closing voltage (V)  | —                       | 0.85 to 1.1Ue       |
| Time rating of coil (s)         |                      | AC: Continuous<br>DC: 5 | AC: Continuous      |

Note: Ue: Rated Voltage

# Manual Motor Starters

## Optional accessories

### Available accessory configuration



#### Internal devices

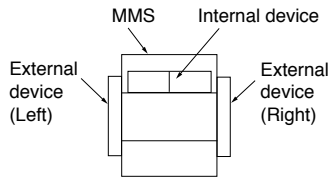
□ Auxiliary contact block (W)    ■ Alarm contact block (K)

#### External devices

□ Auxiliary contact (W2)    □ Auxiliary and alarm contact block (WK)    □ Short-circuit alarm contact block (KI)  
□ Shunt trip device (F)    ■ Undervoltage trip device (R)

| Adj. thermal-magnetic trip type MMS |                      | BM3RSB, BM3RHB |  |  |  |  |  | BM3VSB, BM3VHB |  |  |  |  |  |
|-------------------------------------|----------------------|----------------|--|--|--|--|--|----------------|--|--|--|--|--|
| Internal accessory                  |                      |                |  |  |  |  |  |                |  |  |  |  |  |
| External accessory                  | W2 (Left)            |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Right)           |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | WK (Left)            |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI (Left)            |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | F (Right)            |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | R (Right)            |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+F          |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+R          |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | WK+F                 |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | WK+R                 |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI+F                 |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI+R                 |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+W2 (Left)  |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+W2 (Right) |                |  |  |  |  |  |                |  |  |  |  |  |

### ■ Available accessory configuration (continued)



#### Internal devices

□ Auxiliary contact block (W)    ■ Alarm contact block (K)

#### External devices

□ Auxiliary contact (W2)    □ Auxiliary and alarm contact block (WK)    □ Short-circuit alarm contact block (KI)  
 □ Shunt trip device (F)    ■ Undervoltage trip device (R)

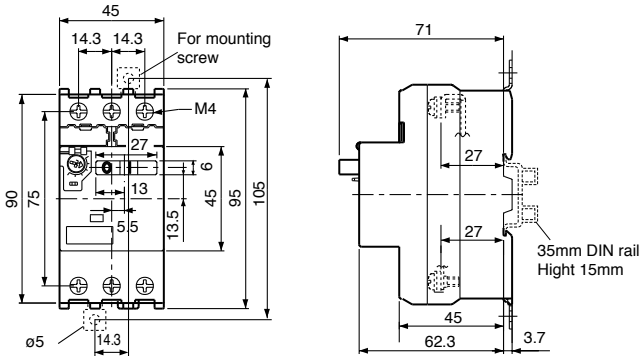
| Adj. thermal-magnetic trip type MMS |                           | BM3RSB, BM3RHB |  |  |  |  |  | BM3VSB, BM3VHB |  |  |  |  |  |
|-------------------------------------|---------------------------|----------------|--|--|--|--|--|----------------|--|--|--|--|--|
| Internal accessory                  |                           |                |  |  |  |  |  |                |  |  |  |  |  |
| External accessory                  | W2 (Right)+<br>W2 (Right) |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>WK          |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Right)+<br>WK         |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>KI          |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Right)+<br>KI         |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI+WK                     |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>W2 (Left)+F |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>W2 (Left)+R |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>WK+F        |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>WK+R        |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>KI+F        |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | W2 (Left)+<br>KI+R        |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI+WK+F                   |                |  |  |  |  |  |                |  |  |  |  |  |
|                                     | KI+WK+R                   |                |  |  |  |  |  |                |  |  |  |  |  |

# Manual Motor Starters

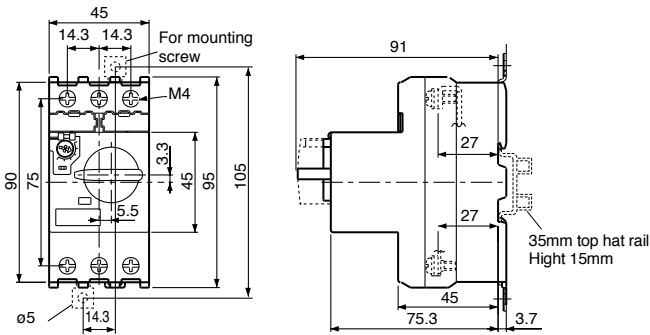
## Dimensions

### ■ Dimensions, mm

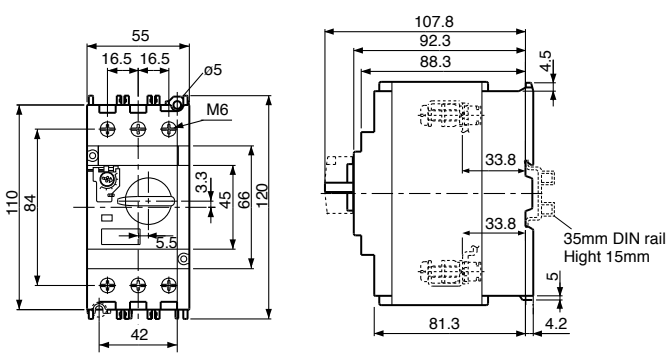
#### • Rocker handle types BM3RSB



#### • Rotary handle types BM3RHB

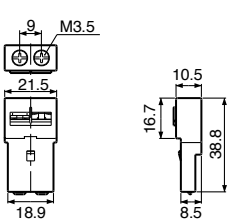


#### • Rotary handle types BM3VSB, BM3VHB

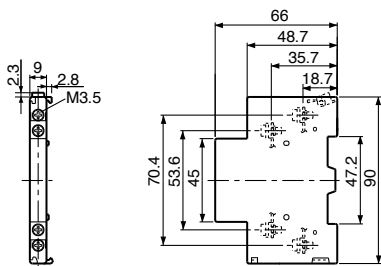


### Accessories

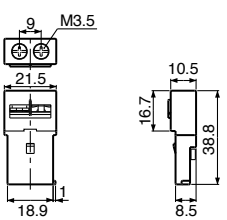
#### • Auxiliary contact blocks, front mounting BZ0WI



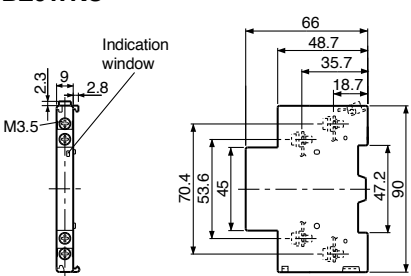
#### • Auxiliary contact blocks, side mounting BZ0WU



#### • Alarm contact blocks, front mounting BZ0KI



#### • Auxiliary and alarm contact blocks BZ0WKU



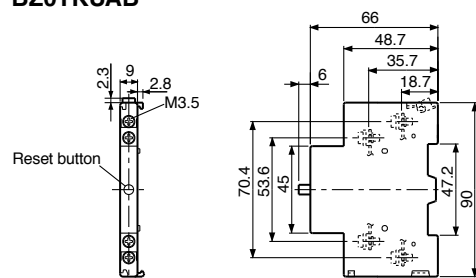
# Manual Motor Starters

## Dimensions

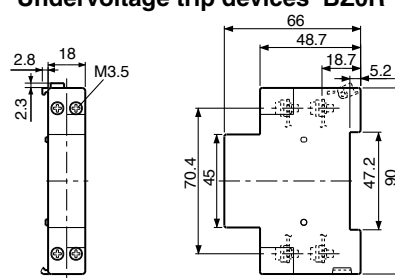
### ■ Dimensions, mm

#### Accessories

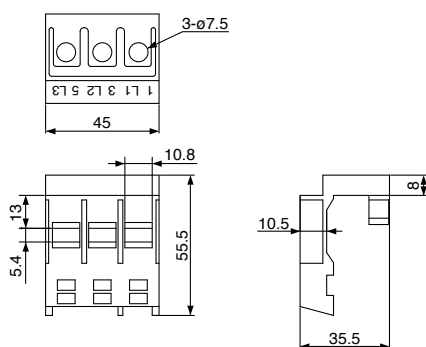
- Short-circuit alarm contact block  
BZ0TKUAB



- Shunt trip devices BZ0F
- Undervoltage trip devices BZ0R

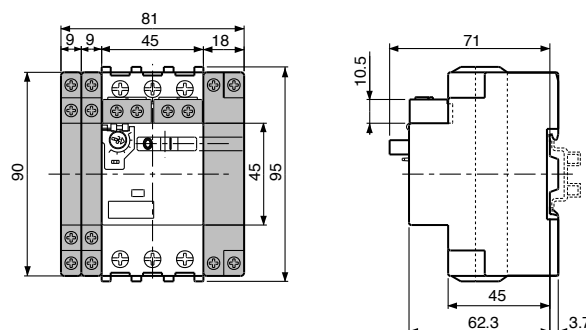


- BZ0TCRE

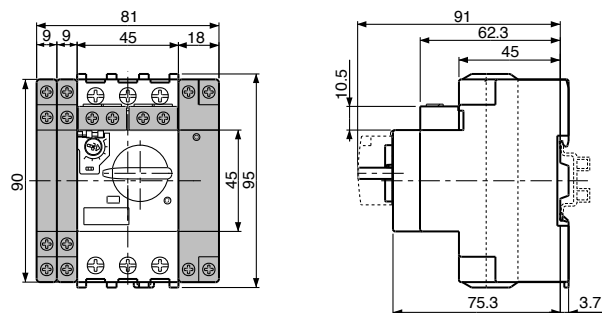


#### MMS with accessories

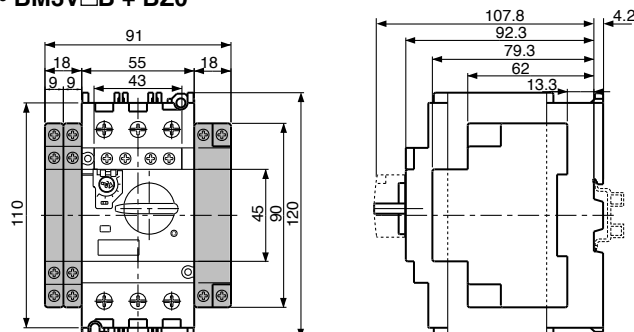
- BM3RSB + BZ0



- BM3RHB + BZ0

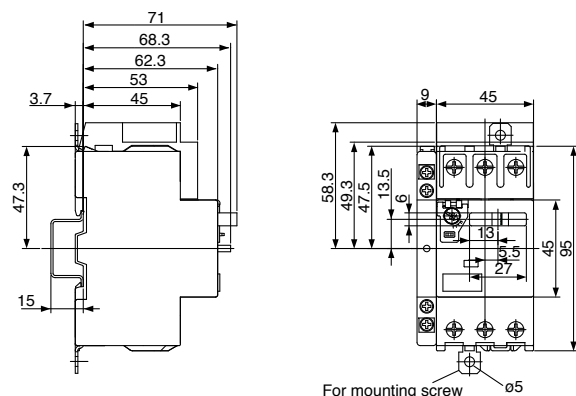


- BM3V□B + BZ0

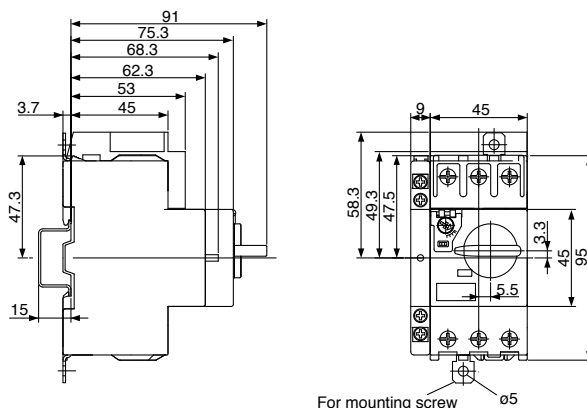


#### Type E construction

- BM3RSB



- BM3RHB



| MMS    | Line side terminal cover | Short-circuit alarm contact block | Mass (g) |
|--------|--------------------------|-----------------------------------|----------|
| BM3RSB | BZ0TCRE                  | BZ0TKUAB                          | 425      |

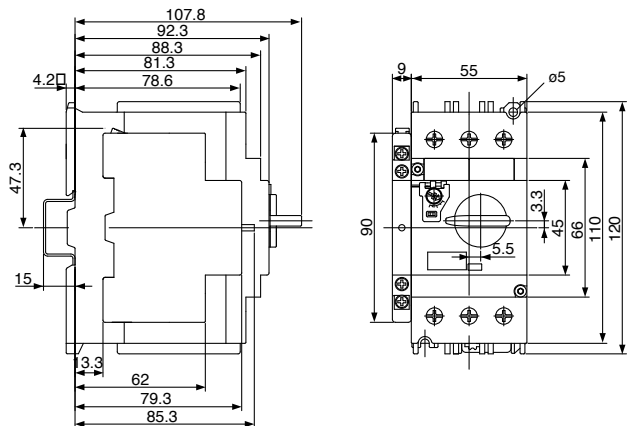
| MMS    | Line side terminal cover | Short-circuit alarm contact block | Mass (g) |
|--------|--------------------------|-----------------------------------|----------|
| BM3RHB | BZ0TCRE                  | BZ0TKUAB                          | 445      |

## Dimensions

### ■ Dimensions, mm

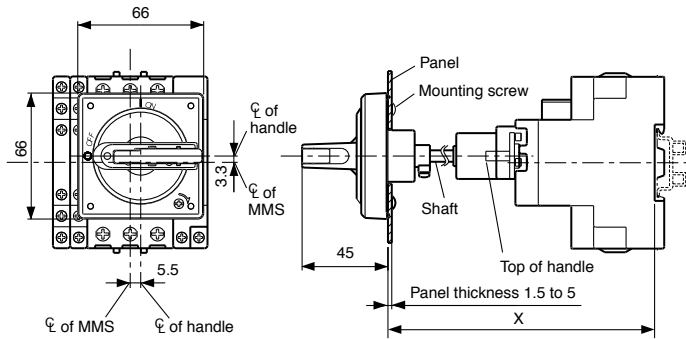
### Type E construction

- **BM3VSB, BM3VHB**



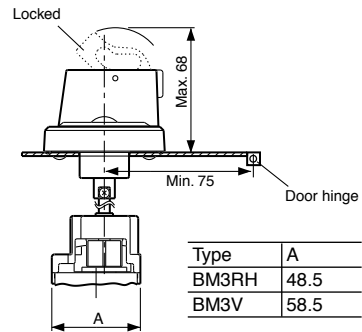
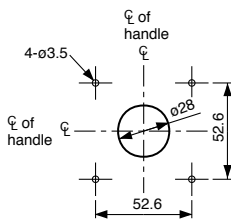
|            |                          |                                   |          |
|------------|--------------------------|-----------------------------------|----------|
| MMS        | Line side terminal cover | Short-circuit alarm contact block | Mass (g) |
| BM3VSB,VHB | -                        | BZ0TKUAB                          | 825      |

## External operation handle BZ0V



| Type             | X min.      | X max.      |
|------------------|-------------|-------------|
| BZ0VBBL, BZ0VYRL | 139 $\pm$ 2 | 289 $\pm$ 2 |
| BZ0VBBM, BZ0VYRM | 156 $\pm$ 2 | 306 $\pm$ 2 |

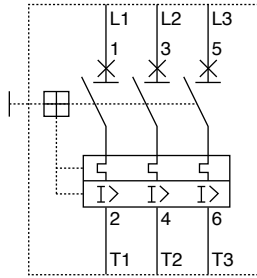
## Panel drilling



| Type  | A    |
|-------|------|
| BM3RH | 48.5 |
| BM3V  | 58.5 |

### ■ Wiring diagrams

#### • MMS

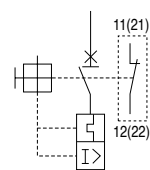
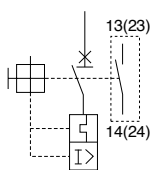


#### • Auxiliary contact blocks

##### Front mounting

BZ0WIA

BZ0WIB

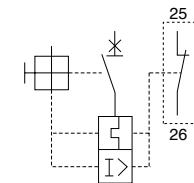
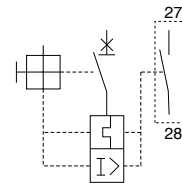


#### • Alarm contact blocks

##### Front mounting

BZ0KIA

BZ0KIB

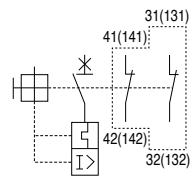
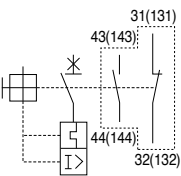
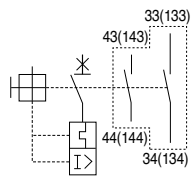


##### Side mounting

BZ0WUAAAL

BZ0WUABL

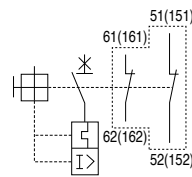
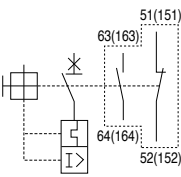
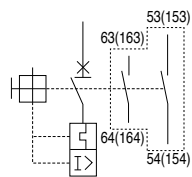
BZ0WUBBL



BZ0WUAAR

BZ0WUABR

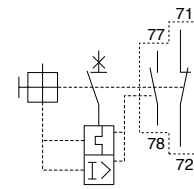
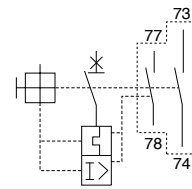
BZ0WUBBR



#### • Auxiliary and alarm contact blocks

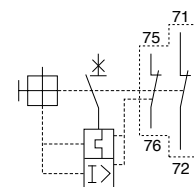
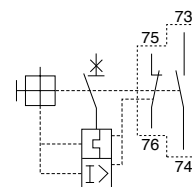
BZ0WKUAA

BZ0WKUBA



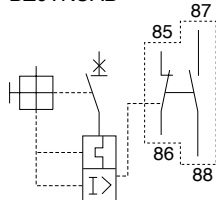
BZ0WKUAB

BZ0WKUBB



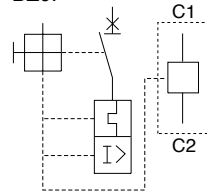
#### • Short-circuit alarm contact blocks

BZ0TKUAB



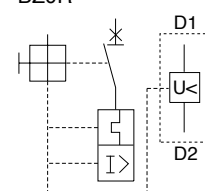
#### • Shunt trip devices

BZ0F



#### • Undervoltage trip devices

BZ0R



# Manual Motor Starters

## Instructions

### Standard operating conditions

|                     |                                                                            |                                                                   |
|---------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------|
| Ambient temperature | Operating: -5 to +55°C<br>Storage: -40 to +65°C                            | No sudden temperature changes resulting in condensation or icing. |
| Humidity            | 45 to 85%RH                                                                |                                                                   |
| Altitude            | 2000m or lower                                                             |                                                                   |
| Atmosphere          | No excessive dust, smoke, corrosive gases, flammable gases, steam or salt. |                                                                   |
| Vibration           | 10 to 55Hz 15m/s²                                                          | No abnormal shock or vibration                                    |
| Shock               | 50m/s²                                                                     |                                                                   |

### Mountings

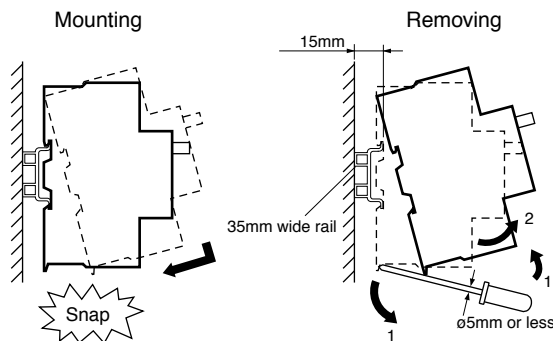
#### Rail mounting

The MMS can be mounted to a 35mm DIN rail. Secure the rail with screws at mounting pitch of less than 400mm for the BM3R type and less than 300mm for the BM3V type.

Applicable rail:

Use a 15mm-high TH35-15 (FUJI model TH35-15AL) rail conforming to EN-50022 and IEC715.

The standard rail mounting direction is horizontal. When using the MMS on a vertically mounted rail, use FUJI end clamp kits.

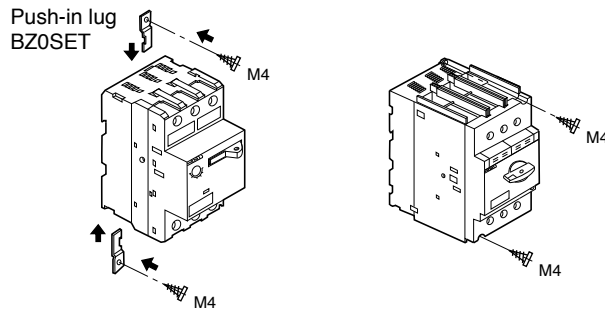


#### Screw mounting

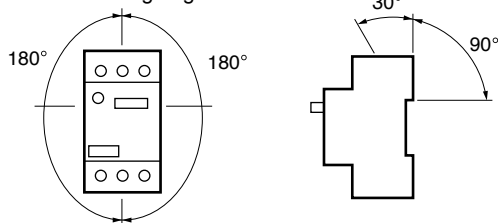
The separately sold push-in lug (BZ0SET) is required for screw mounting the BM3R frame. The BM3V frame can be screw mounted directly to the panel.

BM3RSB  
BM3RHB

BM3VSB  
BM3VHB



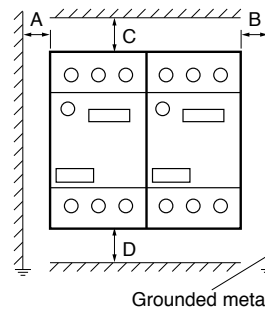
Mounting angle



### Arc space

The arc space required when mounting is shown in the table below.

| Type  | Rated operational voltage $U_e$ (V) | Min. distance to grounded metal (mm) |      |
|-------|-------------------------------------|--------------------------------------|------|
|       |                                     | A, B                                 | C, D |
| BM3RS | Up to 460                           | 15                                   | 20   |
|       | 500                                 | 15                                   | 30   |
|       | Up to 690                           | 40                                   | 40   |
| BM3RH | Up to 500                           | 15                                   | 30   |
|       | Up to 690                           | 40                                   | 50   |
| BM3V  | Up to 500                           | 15                                   | 40   |
|       | Up to 690                           | 40                                   | 50   |



When frames are mounted side-by-side, operating conditions such as a high ambient temperature or using the maximum setting for continuous current may cause slight changes in operating characteristics due to temperature rises. Under such conditions, it is recommended that the frames be separated by at least 5mm.

### Wirings

While pressing the wire with a screwdriver, tighten the screw to the specified tightening torque.

| Type                             | BM3R                       | BM3V                       | BZ0 Accessories              |
|----------------------------------|----------------------------|----------------------------|------------------------------|
| Solid wire (mm)                  | ø1.6 to 2.6                | ø1.6 to 2.6                | ø1 to 1.6                    |
| Stranded wire (mm <sup>2</sup> ) | Single-wire                | 1 to 10                    | 1 to 25                      |
|                                  | 2-wire                     | 1 to 6                     | 1 to 16                      |
| AWG                              | Single-wire                | 18 to 8                    | 18 to 4                      |
|                                  | 2-wire                     | 18 to 10                   | 18 to 4                      |
| Sheath stripping length (mm)     | Approx.10                  | Approx.13                  | Approx.10                    |
| Terminal screw                   | Pan head screw (PZ2)<br>M4 | Pan head screw (PZ2)<br>M6 | Pan head screw (PZ2)<br>M3.5 |
| Tightening torque (N·m)          | 2                          | 4                          | 0.8                          |

Note: There is no need for a crimp terminal or any other terminal on the end of the connection wire.

# Manual Motor Starters

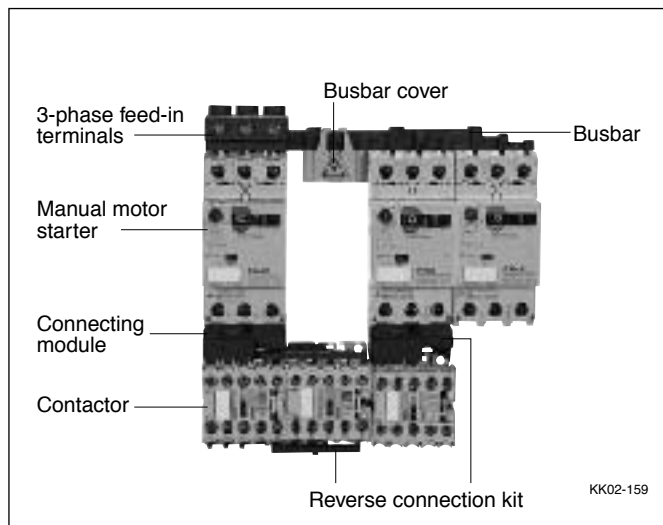
## Busbar system

### ■ Features

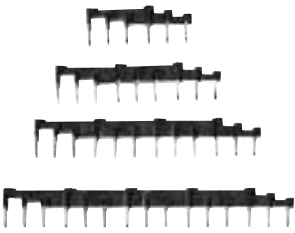
- The busbar system reduces wiring time and saves floorspace.
- The busbar makes it easy to power from 2 to 5 manual motor starters – with no wiring needed.
- The 3-phase feed-in terminals are used to connect the wire for the power supply circuit.
- The busbar cover guards against accidental contact with non-connected busbar terminals (charged parts).

<Note>

If using BZ0TCRE terminal cover with BM3R series MMS, the busbar system can not be used.



### ■ Part number and ratings

| Description                                                                                     | Used with                                                                      | Specification                                                                  | Part number                                                                                                              | Mass (g)                                                                              |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br>KK02-164 | BM3R                                                                           | Continuous current:<br>64A max.<br>Pin connection                              | 2-BM3R, modular space: 45mm<br>3-BM3R, modular space: 45mm<br>4-BM3R, modular space: 45mm<br>5-BM3R, modular space: 45mm | <b>BZ0BR02A</b> 30<br><b>BZ0BR03A</b> 50<br><b>BZ0BR04A</b> 70<br><b>BZ0BR05A</b> 90  |
|                                                                                                 | BM3R+1-external accessory, 9mm wide                                            |                                                                                | 2-BM3R, modular space: 54mm<br>3-BM3R, modular space: 54mm<br>4-BM3R, modular space: 54mm<br>5-BM3R, modular space: 54mm | <b>BZ0BR12A</b> 30<br><b>BZ0BR13A</b> 55<br><b>BZ0BR14A</b> 80<br><b>BZ0BR15A</b> 105 |
|                                                                                                 | BM3R+2-external accessory, 9mm wide or<br>BM3R+1-external accessory, 18mm wide | Continuous current:<br>64A max.<br>Fork connection                             | 2-BM3R, modular space: 63mm<br>4-BM3R, modular space: 63mm                                                               | <b>BZ0BR22A</b> 45<br><b>BZ0BR24A</b> 100                                             |
|                                                                                                 | BM3V                                                                           | Continuous current:<br>126A max.<br>Pin connection                             | 2-BM3V, modular space: 55mm<br>3-BM3V, modular space: 55mm<br>4-BM3V, modular space: 55mm                                | <b>BZ0BV02A</b> 140<br><b>BZ0BV03A</b> 240<br><b>BZ0BV04A</b> 340                     |
|                                                                                                 | BM3V+1-external accessory, 9mm wide                                            |                                                                                | 2-BM3V, modular space: 64mm<br>3-BM3V, modular space: 64mm<br>4-BM3V, modular space: 64mm                                | <b>BZ0BV12A</b> 150<br><b>BZ0BV13A</b> 270<br><b>BZ0BV14A</b> 380                     |
|                                                                                                 | BM3V+2-external accessory, 9mm wide or<br>BM3V+1-external accessory, 18mm wide |                                                                                | 2-BM3V, modular space: 73mm<br>4-BM3V, modular space: 73mm                                                               | <b>BZ0BV22A</b> 165<br><b>BZ0BV24A</b> 425                                            |
|                                                                                                 | 3-phase feed-in terminal                                                       | Continuous current: 64A max.<br>Applicable cable size: 25mm <sup>2</sup> max.  |                                                                                                                          | <b>BZ0BFRA</b> 40                                                                     |
|                                                                                                 | 3-phase feed-in terminal                                                       | Continuous current: 126A max.<br>Applicable cable size: 50mm <sup>2</sup> max. |                                                                                                                          | <b>BZ0BFVA</b> 170                                                                    |
|                                                                                                 | Busbar cover                                                                   | For pin connection                                                             |                                                                                                                          | <b>BZ0BCRA</b> 10                                                                     |
|                                                                                                 | Busbar cover                                                                   | For fork connection                                                            |                                                                                                                          | <b>BZ0BCRB</b> 5                                                                      |
|                                                                                                 |                                                                                | For pin connection                                                             |                                                                                                                          | <b>BZ0BCVA</b> 5                                                                      |

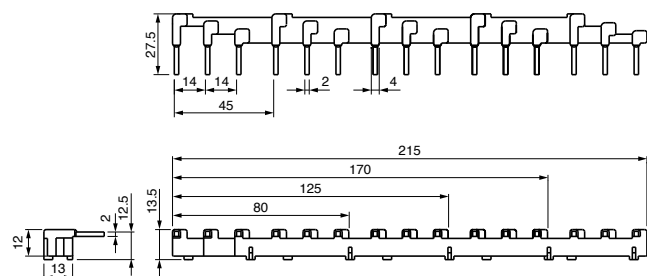
# Manual Motor Starters

## Busbar system

### ■ Dimensions, mm

#### • For BM3R

#### BZ0BR0 Without external accessory



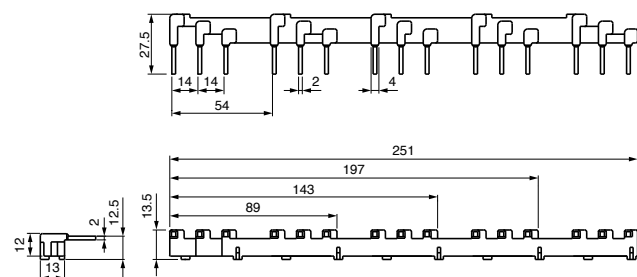
BZ0BR02A: 80mm

BZ0BR03A: 125mm

BZ0BR04A: 170mm

BZ0BR05A: 215mm

#### BZ0BR1 With 1-external accessory



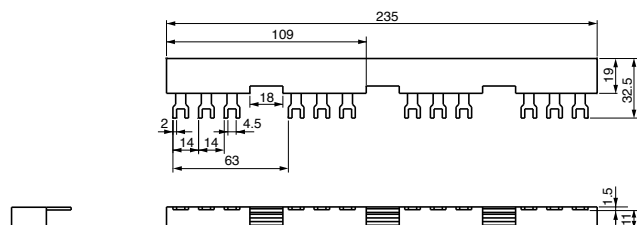
BZ0BR12A: 89mm

BZ0BR13A: 143mm

BZ0BR14A: 197mm

BZ0BR15A: 251mm

#### BZ0BR2 With 2-external accessory, 9mm wide With 1-external accessory, 18mm wide

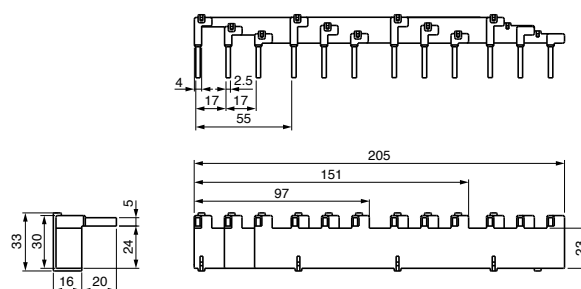


BZ0BR22A: 109mm

BZ0BR24A: 235mm

#### • For BM3V

#### BZ0BV0 Without external accessory

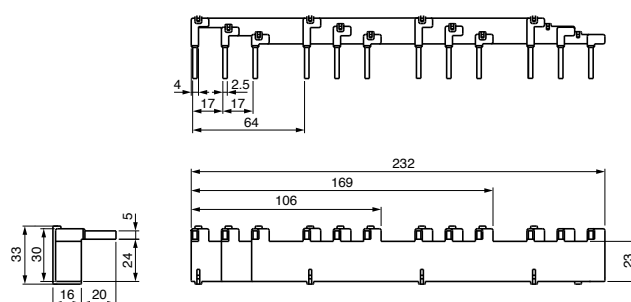


BZ0BV02A: 97mm

BZ0BV03A: 151mm

BZ0BV04A: 205mm

#### BZ0BV1 With 1-external accessory, 9mm wide

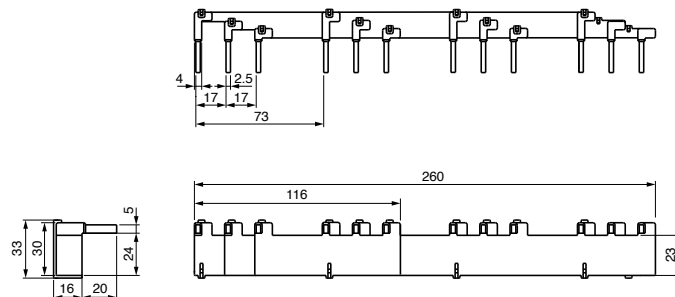


BZ0BV12A: 106mm

BZ0BV13A: 169mm

BZ0BV14A: 232mm

#### BZ0BV2 With 2-external accessory, 9mm wide With 1-external accessory, 18mm wide



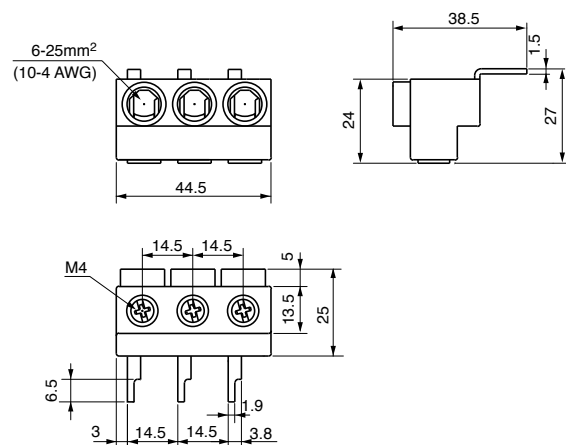
BZ0BV22A: 116mm

BZ0BV24A: 260mm

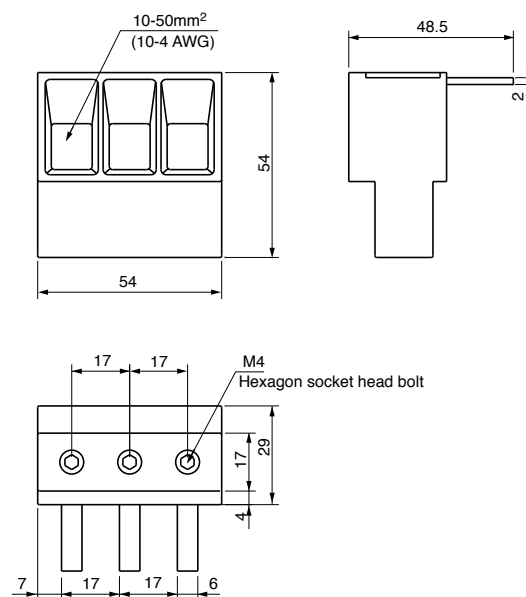
■ Dimensions, mm

- 3-phase feed-in terminals

**BZ0BFRA**



**BZ0BFVA**



# Manual Motor Starters

## Enclosures

### ■ Features

- Accommodates a variety of manual motor starters (BM3RSB-P16 to 025). Put the manual motor starter inside an enclosure for use in harsh environments. Surface mounting and flush mounting types available.
- IP41 and IP55 enclosure protection degree available.
- Manual motor starters (BM3RSB-P16 to 025) equipped with internal accessories and the following external accessories can be used inside an enclosure.
 

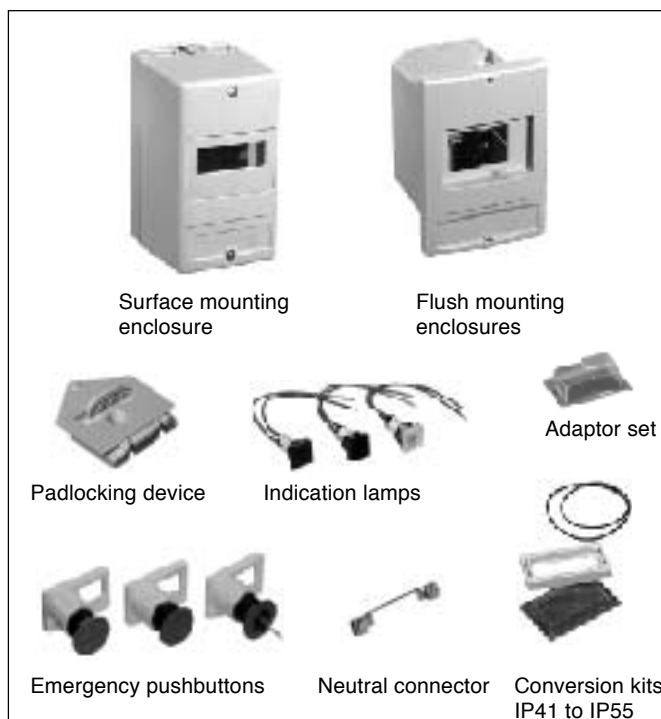
Left side: One auxiliary contact block (W) or one auxiliary and alarm contact block (WK)

Right side: One shunt trip device (F) or one undervoltage trip device (R)
- A wide variety of enclosure accessories are available. Padlocking device, emergency mushroom head pushbutton, conversion kit, and indicator lamps.

### ■ Part number and ratings

#### Enclosures for BM3RSB-P16 to 025

| Mounting | Specification              | Part number    | Mass (g) |
|----------|----------------------------|----------------|----------|
| Surface  | IP41                       | <b>BZ0CSLA</b> | 320      |
|          | IP55 (with conversion kit) | <b>BZ0CSLB</b> | 340      |
| Flush    | IP41                       | <b>BZ0CFLA</b> | 240      |
|          | IP55 (with conversion kit) | <b>BZ0CFLB</b> | 260      |



#### Accessories for enclosures

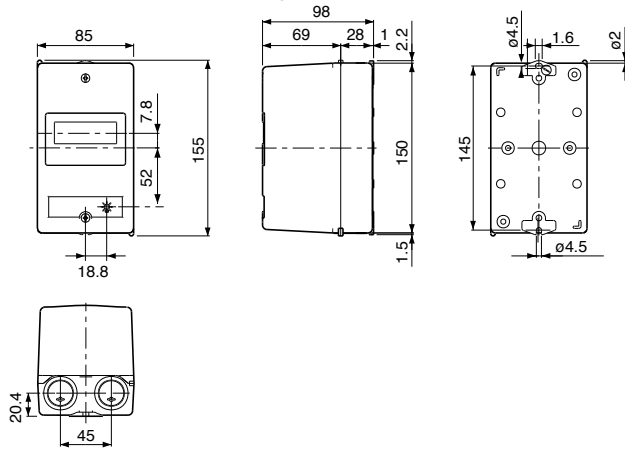
| Description          | Specification                                                                     | Part number    | Mass (g) |
|----------------------|-----------------------------------------------------------------------------------|----------------|----------|
| Padlocking device    | OFF locking possible using up to three padlocks with a 5 to 8mm shackle diameter. | <b>BZ0CKA</b>  | 90       |
| Emergency pushbutton | Momentary                                                                         | <b>BZ0CPM</b>  | 55       |
|                      | Push-lock turn reset                                                              | <b>BZ0CPL</b>  | 55       |
|                      | Key operated                                                                      | <b>BZ0CPK</b>  | 90       |
| Conversion kit       | Converts IP41 to IP55                                                             | <b>BZ0CCA</b>  | 25       |
| Adaptor set          | For BM3RS + undervoltage trip device with auxiliary contact.                      | <b>BZ0CUA</b>  | 20       |
| Neutral connector    | Used inside the enclosure for neutral and ground connection.                      | <b>BZ0CNA</b>  | 10       |
| Indication lamp      | Green, 100–120V AC                                                                | <b>BZ0CLGA</b> | 15       |
|                      | Green, 200–240V AC                                                                | <b>BZ0CLGB</b> | 15       |
|                      | Green, 380–440V AC                                                                | <b>BZ0CLGC</b> | 15       |
|                      | Green, 480–500V AC                                                                | <b>BZ0CLGD</b> | 15       |
|                      | Green, 500–600V AC                                                                | <b>BZ0CLGE</b> | 15       |
|                      | Red, 100–120V AC                                                                  | <b>BZ0CLRA</b> | 15       |
|                      | Red, 200–240V AC                                                                  | <b>BZ0CLRB</b> | 15       |
|                      | Red, 380–440V AC                                                                  | <b>BZ0CLRC</b> | 15       |
|                      | Red, 480–500V AC                                                                  | <b>BZ0CLRD</b> | 15       |
|                      | Red, 500–600V AC                                                                  | <b>BZ0CLRE</b> | 15       |
|                      | White, 100–120V AC                                                                | <b>BZ0CLCA</b> | 15       |
|                      | White, 200–240V AC                                                                | <b>BZ0CLCB</b> | 15       |
|                      | White, 380–440V AC                                                                | <b>BZ0CLCC</b> | 15       |
|                      | White, 480–500V AC                                                                | <b>BZ0CLCD</b> | 15       |
|                      | White, 500–600V AC                                                                | <b>BZ0CLCE</b> | 15       |

Notes: • The padlocking device cannot be used together with the emergency pushbutton or undervoltage trip device with auxiliary contact.  
 • The emergency pushbutton cannot be used together with the undervoltage trip device with auxiliary contact.

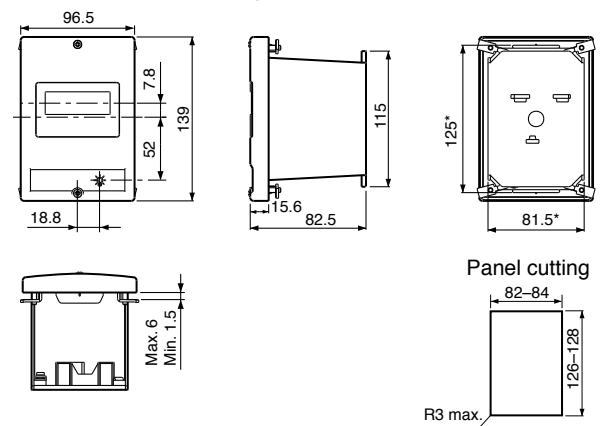
# Manual Motor Starters Dimensions

## ■ Dimensions, mm

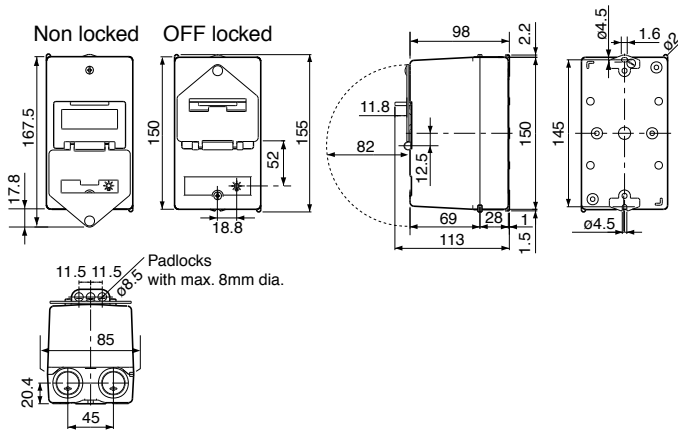
### • Surface mounting For without accessory



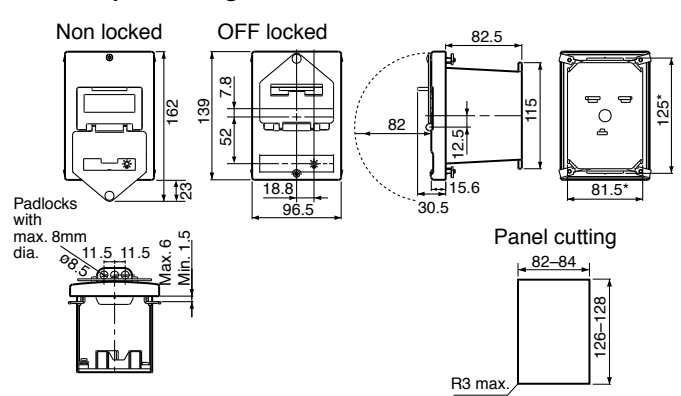
### • Flush mounting For without accessory



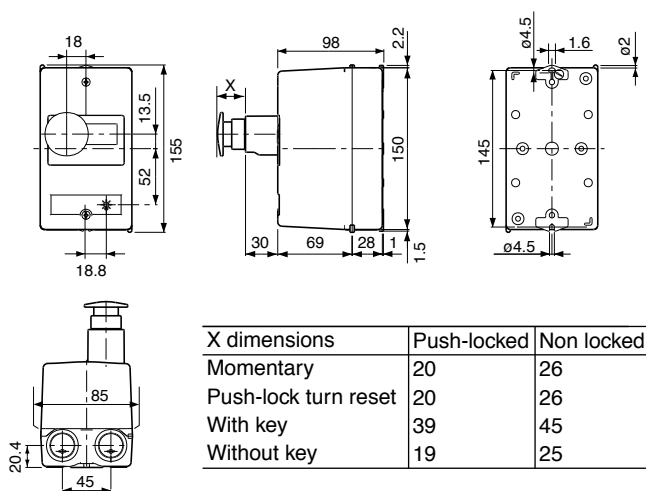
### For with padlocking device



### For with padlocking device

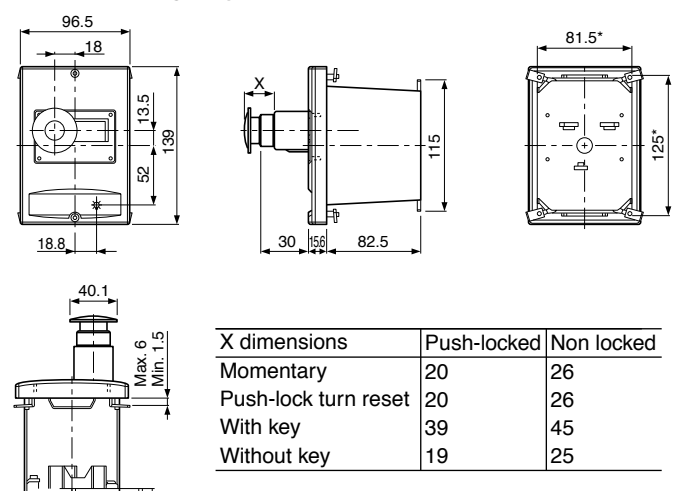


### For with emergency pushbutton

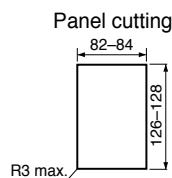


| X dimensions         | Push-locked | Non locked |
|----------------------|-------------|------------|
| Momentary            | 20          | 26         |
| Push-lock turn reset | 20          | 26         |
| With key             | 39          | 45         |
| Without key          | 19          | 25         |

### For with emergency pushbutton



| X dimensions         | Push-locked | Non locked |
|----------------------|-------------|------------|
| Momentary            | 20          | 26         |
| Push-lock turn reset | 20          | 26         |
| With key             | 39          | 45         |
| Without key          | 19          | 25         |



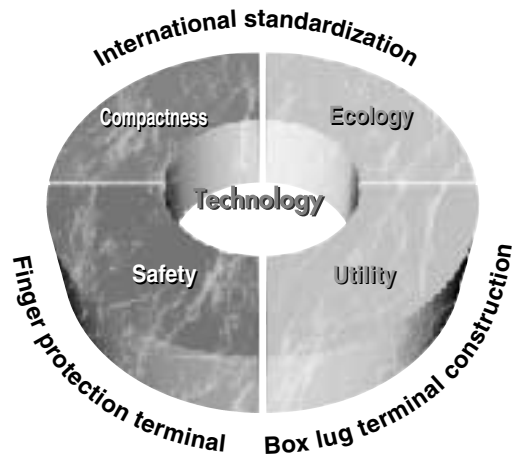
# Contactors SC-M and SC-E series

## General information

### 3 to 100HP at 480V AC

The SC-M and SC-E series further enhance the high reliability of the SC series with full conformance to International standards.

In addition to the five basic concepts of the existing SC series magnetic contactors and motor starters — international standardization, compactness, safety, utility, and ecology — the SC-M and SC-E series take the line-up to the next step in utility with a new finger protection terminal and box lug terminal construction.



#### International standardization

IEC 60947-4-1, EN 60947-4-1, VDE 0660

UL 508, CSA C 22.2, JIS C 8201-4-1

[Approved cUL (File No. E42419, E44592),

TÜV (R2018010, R2150072, R50013402)]

#### Compactness

- SC-M01, M02: 45mm wide
- SC-E02 to E05: 43mm wide, SC-E1 to E2S: 54mm wide
- SC-E3, E4: 67mm wide, SC-E5: 88mm wide
- SC-E6: 100mm wide, SC-E7: 115mm wide
- Reducing mounting area

#### Safety

- Terminals with finger-touch protection (DIN 57106/ VDE 0106 Teil100)

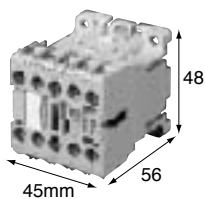
#### Utility

- Box lug terminal construction
- Long electrical life
- Reduction of wiring work

#### Ecology

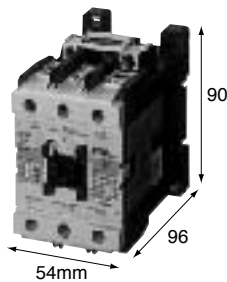
- Reducing power consumption
- Recycled thermoplastic resin used for plastic parts.
- The names of materials are indicated on all major parts to facilitate their recycling.

#### SC-M series

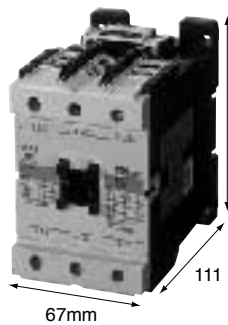


SC-M01, M02

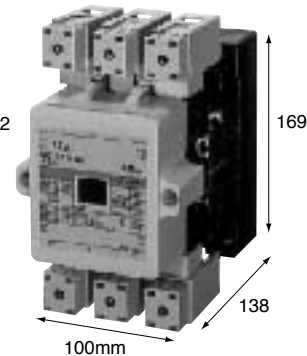
#### SC-E series



SC-E1 to E2S



SC-E3, E4



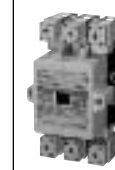
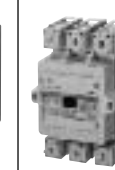
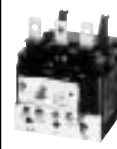
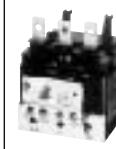
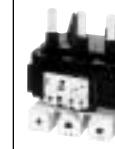
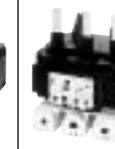
SC-E6 with SUPER magnet

# **Contactors SC-M and SC-E series** Quick reference guide

| Contactor                                                                                                                                                               | AC operating                                           | SC-M01                                                                            | SC-M02                                                                              | SC-E02                                                                               | SC-E03                                                                                | SC-E04                                                                                | SC-E05                                                                                | SC-E1                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                         | DC operating                                           | SC-M01/G                                                                          | SC-M02/G                                                                            | SC-E02/G                                                                             | SC-E03/G                                                                              | SC-E04/G                                                                              | SC-E05/G                                                                              | SC-E1/G                                                                             |
|       |                                                        |  |    |     |     |    |    |  |
|                                                                                                                                                                         |                                                        | KK02-292                                                                          | KK02-292                                                                            | AF01-12                                                                              | AF01-11                                                                               | AF01-10                                                                               | KK01-105                                                                              | AF01-8                                                                              |
|                                                                                                                                                                         | Rating of 3-phase motor (HP)                           |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
|                                                                                                                                                                         | 200V                                                   | 1-1/2                                                                             | 3                                                                                   | 2                                                                                    | 3                                                                                     | 5                                                                                     | 5                                                                                     | 7 1/2                                                                               |
|                                                                                                                                                                         | 220-240V                                               | 1-1/2                                                                             | 3                                                                                   | 2                                                                                    | 3                                                                                     | 5                                                                                     | 7 1/2                                                                                 | 10                                                                                  |
| 400-480V                                                                                                                                                                | 3                                                      | 5                                                                                 | 5                                                                                   | 7 1/2                                                                                | 10                                                                                    | 15                                                                                    | 25                                                                                    |                                                                                     |
| 550-600V                                                                                                                                                                | 3                                                      | 5                                                                                 | 5                                                                                   | 7 1/2                                                                                | 10                                                                                    | 15                                                                                    | 25                                                                                    |                                                                                     |
| Rated operational current (A)                                                                                                                                           |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 200V                                                                                                                                                                    | 6.9                                                    | 11                                                                                | 7.8                                                                                 | 11                                                                                   | 17.5                                                                                  | 17.5                                                                                  | 25.3                                                                                  |                                                                                     |
| 220-240V                                                                                                                                                                | 6                                                      | 9.6                                                                               | 6.8                                                                                 | 9.6                                                                                  | 15.2                                                                                  | 22                                                                                    | 28                                                                                    |                                                                                     |
| 400-480V                                                                                                                                                                | 4.8                                                    | 7.6                                                                               | 7.6                                                                                 | 11                                                                                   | 14                                                                                    | 21                                                                                    | 34                                                                                    |                                                                                     |
| 550-600V                                                                                                                                                                | 3.9                                                    | 6.1                                                                               | 6.1                                                                                 | 9                                                                                    | 11                                                                                    | 17                                                                                    | 27                                                                                    |                                                                                     |
| Rated thermal current AC-1 (A)                                                                                                                                          | 20                                                     | 20                                                                                | 20                                                                                  | 20                                                                                   | 25                                                                                    | 32                                                                                    | 50                                                                                    |                                                                                     |
| Auxiliary contact                                                                                                                                                       | 1NO, 1NC                                               | 1NO, 1NC                                                                          | —                                                                                   | —                                                                                    | —                                                                                     | —                                                                                     | —                                                                                     |                                                                                     |
| Dimensions AC operated                                                                                                                                                  | 45×48×56                                               | 43×80×81                                                                          |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       | 54×90×96                                                                            |
| W×H×D (mm) DC operated                                                                                                                                                  | 45×48×68                                               | 43×80×108                                                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       | 54×90×121.5                                                                         |
| Standard                                                                                                                                                                | IEC 60947-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2 |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| Thermal overload relay                                                                                                                                                  |                                                        |                                                                                   | TK-E02                                                                              | TK-E02                                                                               | TK-E02                                                                                | TK-E02                                                                                | TK-E2                                                                                 |                                                                                     |
|   |                                                        |                                                                                   |  |  |  |  |  |                                                                                     |
|                                                                                                                                                                         |                                                        |                                                                                   | KK01-86                                                                             | KK01-86                                                                              | KK01-86                                                                               | KK01-86                                                                               | KK01-88                                                                               |                                                                                     |
|                                                                                                                                                                         | Ampere setting range (A)                               |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
|                                                                                                                                                                         | 0.1–0.15                                               |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 4–6                                                                                   |                                                                                     |
|                                                                                                                                                                         | 0.13–0.2                                               |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 5–8                                                                                   |                                                                                     |
| 0.15–0.24                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 6–9                                                                                   |                                                                                       |                                                                                     |
| 0.2–0.3                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 7–11                                                                                  |                                                                                       |                                                                                     |
| 0.24–0.36                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 9–13                                                                                  |                                                                                       |                                                                                     |
| 0.3–0.45                                                                                                                                                                |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 12–18                                                                                 |                                                                                       |                                                                                     |
| 0.36–0.54                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 18–26                                                                                 |                                                                                       |                                                                                     |
| 0.48–0.72                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       | 24–36                                                                                 |                                                                                       |                                                                                     |
| 0.64–0.96                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 0.8–1.2                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 0.95–1.45                                                                                                                                                               |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 1.4–2.2                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 1.7–2.6                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 2.2–3.4                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 2.8–4.2                                                                                                                                                                 |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 4–6                                                                                                                                                                     |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 5–8                                                                                                                                                                     |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 6–9                                                                                                                                                                     |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
| 7–11                                                                                                                                                                    |                                                        |                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                     |
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# Contactors SC-M and SC-E series

## Quick reference guide

| Contactors                                                                                                                                                              | AC operating | SC-E2                                                                               | SC-E2S                                                                                  | SC-E3                                                                               | SC-E4                                                                                | SC-E5                                                                                 | SC-E6                                                                                 | SC-E7                                                                                 |             |
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|                                                                                                                                                                         | DC operating | SC-E2/G                                                                             | SC-E2S/G                                                                                | SC-E3/G                                                                             | SC-E4/G                                                                              |                                                                                       |                                                                                       |                                                                                       |             |
|       |              |    |        |    |    |    |    |    |             |
|                                                                                                                                                                         |              | AF01-7                                                                              | AF01-6                                                                                  | AF01-5                                                                              | AF01-4                                                                               | AF01-3                                                                                | AF01-2                                                                                | AF01-1                                                                                |             |
| Rating of 3-phase motor                                                                                                                                                 | (HP)         |                                                                                     |                                                                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |             |
| 200V                                                                                                                                                                    |              | 10                                                                                  | 15                                                                                      | 20                                                                                  | 25                                                                                   | 30                                                                                    | 40                                                                                    | 50                                                                                    |             |
| 220-240V                                                                                                                                                                |              | 15                                                                                  | 20                                                                                      | 25                                                                                  | 30                                                                                   | 30                                                                                    | 40                                                                                    | 50                                                                                    |             |
| 400-480V                                                                                                                                                                |              | 30                                                                                  | 30                                                                                      | 50                                                                                  | 50                                                                                   | 60                                                                                    | 75                                                                                    | 100                                                                                   |             |
| 550-600V                                                                                                                                                                |              | 30                                                                                  | 30                                                                                      | 50                                                                                  | 50                                                                                   | 75                                                                                    | 100                                                                                   | 125                                                                                   |             |
| Rated operational current                                                                                                                                               | (A)          |                                                                                     |                                                                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |             |
| 200V                                                                                                                                                                    |              | 32.2                                                                                | 48.3                                                                                    | 63.1                                                                                | 78.2                                                                                 | 92                                                                                    | 119.6                                                                                 | 149.5                                                                                 |             |
| 220-240V                                                                                                                                                                |              | 42                                                                                  | 54                                                                                      | 68                                                                                  | 80                                                                                   | 80                                                                                    | 104                                                                                   | 130                                                                                   |             |
| 400-480V                                                                                                                                                                |              | 40                                                                                  | 40                                                                                      | 65                                                                                  | 65                                                                                   | 77                                                                                    | 96                                                                                    | 124                                                                                   |             |
| 550-600V                                                                                                                                                                |              | 32                                                                                  | 32                                                                                      | 52                                                                                  | 52                                                                                   | 77                                                                                    | 99                                                                                    | 125                                                                                   |             |
| Rated thermal current AC-1                                                                                                                                              | (A)          | 60                                                                                  | 65                                                                                      | 100                                                                                 | 105                                                                                  | 150                                                                                   | 150                                                                                   | 200                                                                                   |             |
| Auxiliary contact                                                                                                                                                       |              | —                                                                                   | —                                                                                       | —                                                                                   | —                                                                                    | 2NO+2NC                                                                               | 2NO+2NC                                                                               | 2NO+2NC                                                                               |             |
| Dimensions                                                                                                                                                              | AC operated  | 54×90×96                                                                            |                                                                                         |                                                                                     | 67×112×111                                                                           |                                                                                       | 88×155×132                                                                            | 100×169×138                                                                           | 115×175×140 |
| W×H×D (mm)                                                                                                                                                              | DC operated  | 54×90×121.5                                                                         |                                                                                         |                                                                                     | 67×112×130                                                                           |                                                                                       |                                                                                       |                                                                                       |             |
| Standard                                                                                                                                                                |              | IEC 60947-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2                              |                                                                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |             |
| Thermal overload relay                                                                                                                                                  |              | TK-E2                                                                               | TK-E2                                                                                   | TK-E3                                                                               | TK-E3                                                                                | TK-E5                                                                                 | TK-E6                                                                                 | TK-E6                                                                                 |             |
|   |              |  |      |  |  |  |  |  |             |
|                                                                                                                                                                         |              | KK01-88                                                                             | KK01-88                                                                                 | KK01-87                                                                             | KK01-87                                                                              | KK01-85                                                                               | KK01-84                                                                               | KK01-84                                                                               |             |
| Ampere setting range                                                                                                                                                    | (A)          | 4–6<br>5–8<br>6–9<br>7–11<br>9–13<br>12–18<br>18–26<br>24–36<br>32–42               | 4–6<br>5–8<br>6–9<br>7–11<br>9–13<br>12–18<br>18–26<br>24–36<br>32–42<br>40–50<br>44–54 | 7–11<br>9–13<br>12–18<br>18–26<br>24–36<br>28–40<br>34–50<br>45–65<br>48–68         | 7–11<br>9–13<br>12–18<br>18–26<br>24–36<br>28–40<br>34–50<br>45–65<br>48–68<br>64–80 | 18–26<br>24–36<br>28–40<br>34–50<br>45–65<br>65–95<br>85–105                          | 45–65<br>53–80<br>65–95<br>85–125                                                     | 45–65<br>53–80<br>65–95<br>85–125<br>110–160                                          |             |
| Dimensions W×H×D (mm)                                                                                                                                                   |              | 54×78.5×97                                                                          |                                                                                         | 68×89.5×107.5                                                                       |                                                                                      | 76.5×105×106                                                                          | 100×122×123                                                                           |                                                                                       |             |
| Standard                                                                                                                                                                |              | IEC 60947-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2                              |                                                                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |             |

# **Contactors SC-M and SC-E series** Quick reference guide

## ■ Available coil

### • AC coil, SC-M01 to SC-M02 and SC-E02 to SC-E4

| Code          | Coil operating voltage and frequency |
|---------------|--------------------------------------|
| <b>24VAC</b>  | 24V AC 50Hz / 24–26V AC 60Hz         |
| <b>48VAC</b>  | 48V AC 50Hz / 48–52V AC 60Hz         |
| <b>100VAC</b> | 100V AC 50Hz / 100–110V AC 60Hz      |
| <b>110VAC</b> | 100–110V AC 50Hz / 110–120V AC 60Hz  |
| <b>120VAC</b> | 110–120V AC 50Hz / 120–130V AC 60Hz  |
| <b>200VAC</b> | 200V AC 50Hz / 200–220V AC 60Hz      |
| <b>220VAC</b> | 200–220V AC 50Hz / 220–240V AC 60Hz  |
| <b>400VAC</b> | 380–400V AC 50Hz / 400–440V AC 60Hz  |
| <b>440VAC</b> | 415–440V AC 50Hz / 440–480V AC 60Hz  |
| <b>500VAC</b> | 480–500V AC 50Hz / 500–550V AC 60Hz  |

### • DC coil, SC-M01/G to SC-M02/G and SC-E02/G to SC-E4/G

| Code          | Coil operating voltage |
|---------------|------------------------|
| <b>12VDC</b>  | 12V DC                 |
| <b>24VDC</b>  | 24V DC                 |
| <b>48VDC</b>  | 48V DC                 |
| <b>100VDC</b> | 100V DC                |
| <b>110VDC</b> | 110V DC                |
| <b>200VDC</b> | 200V DC                |

### • Super Magnet Coil, SC-E5 to SC-E7

| Code        | Coil operating voltage and frequency |
|-------------|--------------------------------------|
| <b>24V</b>  | 24–25V AC 50/60Hz, 24V DC            |
| <b>48V</b>  | 48–50V AC 50/60Hz, 48V DC            |
| <b>100V</b> | 100–127V AC 50/60Hz, 100–120V DC     |
| <b>200V</b> | 200–250V AC 50/60Hz, 200–240V DC     |
| <b>400V</b> | 380–450V AC 50/60Hz                  |
| <b>500V</b> | 460–575V AC 50/60Hz                  |

## ■ Coil characteristics

### • AC operation

| Frame size | Power consumption (VA) |                    | Power loss (W) |      | Pick-up voltage (V) *1 | Drop-out voltage (V) *1 | Operating time (ms)     |                           |
|------------|------------------------|--------------------|----------------|------|------------------------|-------------------------|-------------------------|---------------------------|
|            | Inrush<br>50/60 Hz     | Sealed<br>50/60 Hz | 50Hz           | 60Hz |                        |                         | Coil ON →<br>Contact ON | Coil OFF →<br>Contact OFF |
| M01, M02   | 32/36                  | 6/6                | 1.5            | 1.6  | 0.8–1.1 X US           | 0.35–0.55 X US          | 7–12                    | 6–13                      |
| E02 to E05 | 90/95                  | 9/9                | 2.7            | 2.8  | 0.85–1.1 X US          | 0.2–0.75 X US           | 9–20                    | 5–16                      |
| E1 to E2S  | 120/135                | 12.7/12.4          | 3.6            | 3.8  | 0.85–1.1 X US          | 0.2–0.75 X US           | 10–17                   | 6–13                      |
| E3, E4     | 180/190                | 13.3/13.4          | 4.5            | 5    | 0.85–1.1 X US          | 0.2–0.75 X US           | 10–18                   | 8–18                      |
| E5         | 80/95                  | 4/4.6              | 3.2            | 3.6  | 0.85–1.1 X US          | 0.2–0.75 X US           | 39–45                   | 27–33                     |
| E6, E7     | 190/230                | 4.9/5.8            | 3.4            | 3.7  | 0.8–1.1 X US           | 0.1–0.65 X US           | 31–37                   | 30–36                     |

Note: \*1 US: Rated coil voltage

### • DC operation

| Frame size     | Power consumption (VA) |        | Time constant (ms) | Pick-up voltage (V) *1 | Drop-out voltage (V) *1 | Operating time (ms)     |                           |
|----------------|------------------------|--------|--------------------|------------------------|-------------------------|-------------------------|---------------------------|
|                | Inrush                 | Sealed |                    |                        |                         | Coil ON →<br>Contact ON | Coil OFF →<br>Contact OFF |
| M01/G, M02/G   | 3                      | 3      | 35                 | 0.8–1.1 X US           | 0.2–0.4 X US            | 24–27                   | 5–8                       |
| E02/G to E05/G | 7                      | 7      | 50                 | 0.85–1.1 X US          | 0.1–0.75 X US           | 45–49                   | 10–26                     |
| E1/G to E2S/G  | 9                      | 9      | 60                 | 0.85–1.1 X US          | 0.1–0.75 X US           | 40–50                   | 8–17                      |
| E3/G, E4/G     | 12                     | 12     | 70                 | 0.85–1.1 X US          | 0.1–0.75 X US           | 60–70                   | 14–21                     |
| E5             | 20                     | 2.8    | 1                  | 0.85–1.1 X US          | 0.1–0.75 X US           | 35–41                   | 26–32                     |
| E6, E7         | 225                    | 3.2    | 1                  | 0.8–1.1 X US           | 0.1–0.65 X US           | 28–34                   | 27–33                     |

Note: \*1 US: Rated coil voltage

## ■ Auxiliary contact ratings for UL and CSA

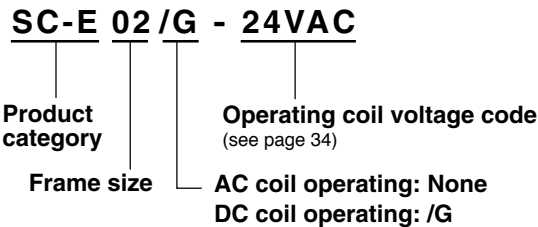
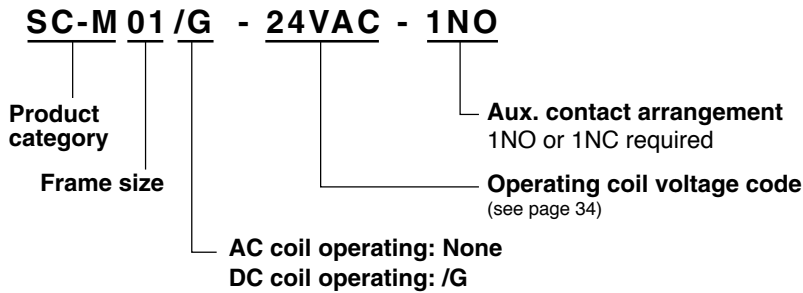
| Frame size               | Rated insulation voltage (V) | Rated thermal current (A) | Making and breaking current (A) |        |          |                       |        |          |
|--------------------------|------------------------------|---------------------------|---------------------------------|--------|----------|-----------------------|--------|----------|
|                          |                              |                           | AC (rating code A600)           |        |          | DC (rating code Q300) |        |          |
|                          |                              |                           | Voltage                         | Making | Breaking | Voltage               | Making | Breaking |
| M01, M02<br>M01/G, M02/G | 600                          | 16                        | 120V                            | 60     | 6        | 125V                  | 0.55   | 0.55     |
|                          |                              |                           | 240V                            | 30     | 3        | 250V                  | 0.27   | 0.27     |
|                          |                              |                           | 480V                            | 15     | 1.5      | 301–600V              | 0.1    | 0.1      |
|                          |                              |                           | 600V                            | 12     | 1.2      |                       |        |          |
| E02 to E4, E02/G to E4/G | –                            | –                         | –                               | –      | –        | –                     | –      | –        |
| E5 to E7                 | 600                          | 10                        | 120V                            | 60     | 6        | 125V                  | 0.55   | 0.55     |
|                          |                              |                           | 240V                            | 30     | 3        | 250V                  | 0.27   | 0.27     |
|                          |                              |                           | 480V                            | 15     | 1.5      |                       |        |          |
|                          |                              |                           | 600V                            | 12     | 1.2      |                       |        |          |

# Contactors SC-M and SC-E series

## Ordering information and Characteristics

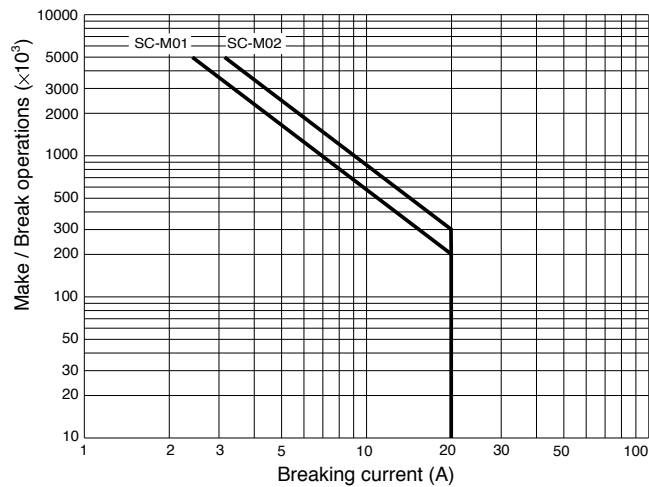
### Ordering information

- Specify the following :
1. Part number
  2. Operating coil voltage code
  3. Auxiliary contact arrangement (SC-M series only)

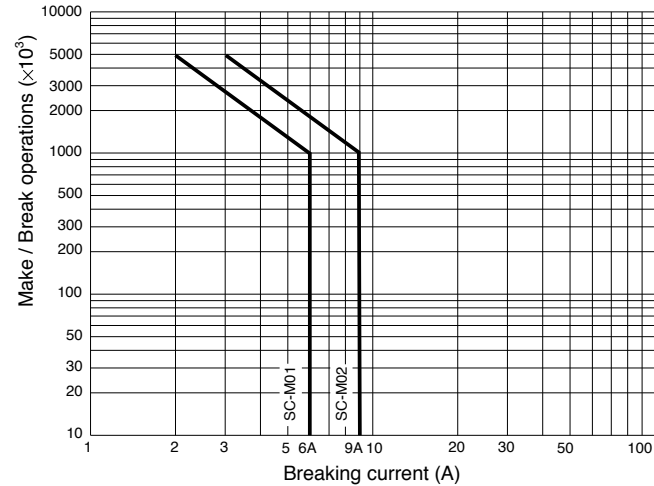


### Electrical durability

#### AC-1 duty / 380 to 440 V AC / SC-M



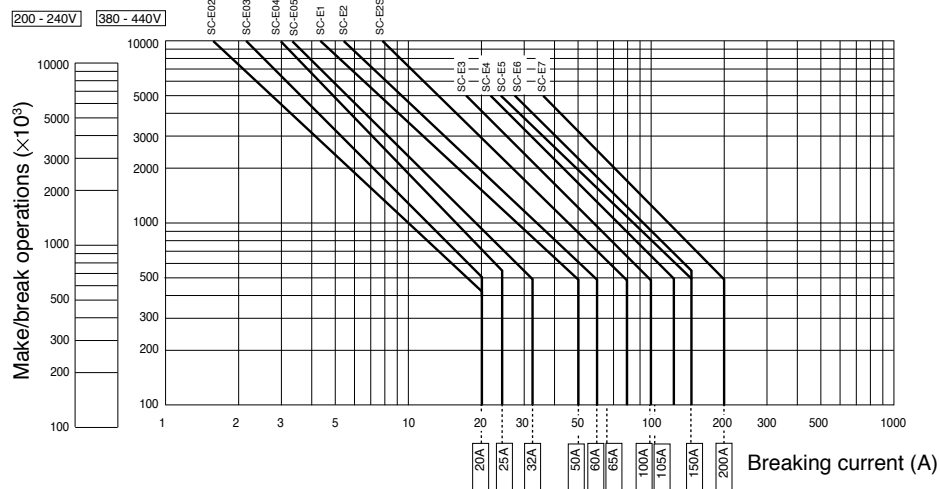
#### AC-3 duty / 380 to 440 V AC / SC-M



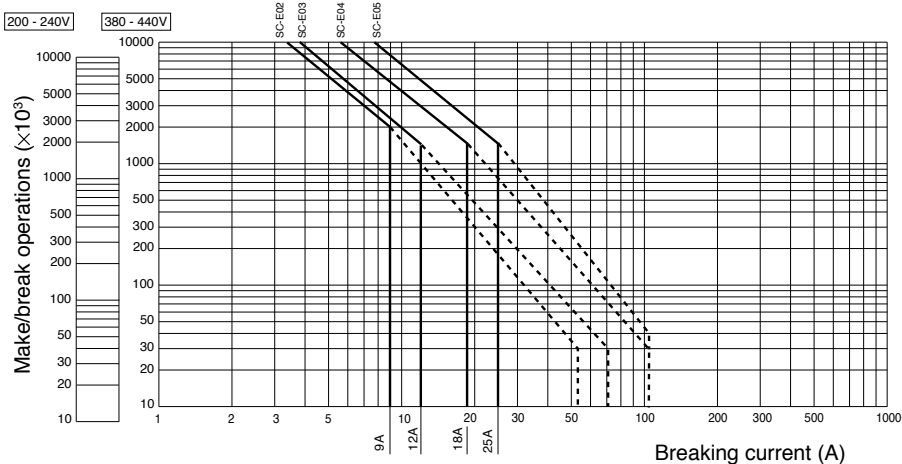
# **Contactors SC-M and SC-E series** Ordering information and Characteristics

## ■ **Electrical durability**

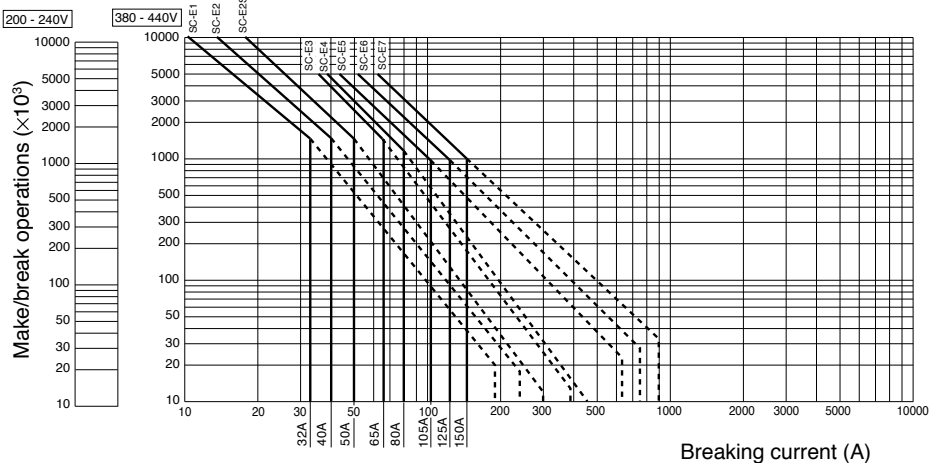
### • **AC-1 duty / SC-E02 to SC-E7**



### • **AC-3 duty / SC-E02 to SC-E05**



### • **AC-3 duty / SC-E1 to SC-E7**



# Contactors SC-M and SC-E series

## Optional accessories

### • Auxiliary contact blocks with terminal covers

| Applicable contactor             | Mounting       | No. of contacts | Contact arrangement | Part number     |
|----------------------------------|----------------|-----------------|---------------------|-----------------|
| SC-M01, M02<br>SC-M01/G, M02/G   | Front mounting | 4               | 4NO                 | <b>SZ-MA40</b>  |
|                                  |                |                 | 3NO+1NC             | <b>SZ-MA31</b>  |
|                                  |                |                 | 2NO+2NC             | <b>SZ-MA22</b>  |
|                                  |                |                 | 1NO+3NC             | <b>SZ-MA13</b>  |
|                                  |                |                 | 4NC                 | <b>SZ-MA04</b>  |
|                                  |                | 2               | 2NO                 | <b>SZ-MA20</b>  |
|                                  |                |                 | 1NO+1NC             | <b>SZ-MA11</b>  |
|                                  |                |                 | 2NC                 | <b>SZ-MA02</b>  |
|                                  |                | 1               | 1NO                 | <b>SZ-MAS10</b> |
|                                  |                |                 | 1NC                 | <b>SZ-MAS01</b> |
| SC-E02 to E4<br>SC-E02/G to E4/G | Front mounting | 4               | 4NO                 | <b>SZ-A40/T</b> |
|                                  |                |                 | 3NO+1NC             | <b>SZ-A31/T</b> |
|                                  |                |                 | 2NO+2NC             | <b>SZ-A22/T</b> |
|                                  |                |                 | 2NO                 | <b>SZ-A20/T</b> |
|                                  |                | 2               | 1NO+1NC             | <b>SZ-A11/T</b> |
|                                  |                |                 | 2NC                 | <b>SZ-A02/T</b> |
|                                  |                | 2               | 1NO+1NC             | <b>SZ-AS1/T</b> |
|                                  |                |                 | 1NO+1NC             | <b>SZ-AS2/T</b> |
| SC-E5, E6, E7                    | Side mounting  | 2               | 1NO+1NC             | <b>SZ-AS2/T</b> |

### Contact ratings

- Based on UL and CSA

| Rated thermal current (A) | Making and breaking current (A) |        |          |                       |        |          |
|---------------------------|---------------------------------|--------|----------|-----------------------|--------|----------|
|                           | AC (rating code A600)           |        |          | DC (rating code Q300) |        |          |
|                           | Volts                           | Making | Breaking | Volts                 | Making | Breaking |
| 10                        | 120V                            | 60     | 6        | 125V                  | 0.55   | 0.55     |
|                           | 240V                            | 30     | 3        | 250V                  | 0.27   | 0.27     |
|                           | 480V                            | 15     | 1.5      |                       |        |          |
|                           | 600V                            | 12     | 1.2      |                       |        |          |

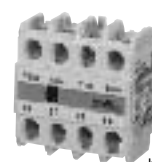
### • Main circuit surge suppression units

| Applicable contactor      | Mounting       | Rated voltage and frequency | CR constant    | Applicable 3-phase motor | Part number    |
|---------------------------|----------------|-----------------------------|----------------|--------------------------|----------------|
| SC-M01, M02, M01/G, M02/G | —              | —                           | —              | —                        | —              |
| SC-E02 to E05             | Front mounting | 250V AC                     | C=0.22 $\mu$ F | 200–240V AC              | <b>SZ-ZM1E</b> |
| SC-E02/G to E05/G         | Side mounting  | 50/60Hz                     | R=100 $\Omega$ | 1-1/2–5HP                | <b>SZ-ZM2E</b> |
| SC-E1 to E4               | Front mounting | 250V AC                     | C=0.33 $\mu$ F | 200–240V AC              | <b>SZ-ZM3E</b> |
| SC-E1/G to E4/G           | Side mounting  | 50/60Hz                     | R=47 $\Omega$  | 1-1/2–30HP               | <b>SZ-ZM4E</b> |

### • Coil surge suppression units

| Applicable contactor | Operating coil voltage | Device   | Operation indicator | Part number   |
|----------------------|------------------------|----------|---------------------|---------------|
| SC-M01, M02          | —                      | CR       | —                   | <b>SZ-MZ1</b> |
|                      |                        |          | —                   | <b>SZ-MZ2</b> |
| —                    | SC-M01/G, M02/G        | Diode    | —                   | <b>SZ-MZ3</b> |
| SC-E02 to E05        | SC-E02/G to E05/G      | Varistor | —                   | <b>SZ-Z1</b>  |
|                      |                        |          | —                   | <b>SZ-Z2</b>  |
|                      |                        |          | —                   | <b>SZ-Z3</b>  |
| SC-E02 to E05        | SC-E02/G to E05/G      |          | Red LED             | <b>SZ-Z6</b>  |
|                      |                        |          | Red LED             | <b>SZ-Z7</b>  |
|                      |                        |          | —                   | <b>SZ-Z31</b> |
| SC-E1 to E4          | SC-E1/G to E4/G        |          | —                   | <b>SZ-Z32</b> |
|                      |                        |          | —                   | <b>SZ-Z33</b> |
|                      |                        |          | —                   | <b>SZ-Z4</b>  |
| SC-E02 to E05        | SC-E02/G to E05/G      | CR       | —                   | <b>SZ-Z5</b>  |
|                      |                        |          | —                   | <b>SZ-Z6</b>  |
| SC-E02 to E05        | SC-E02/G to E05/G      |          | Red LED             | <b>SZ-Z8</b>  |
|                      |                        |          | Red LED             | <b>SZ-Z9</b>  |
| SC-E1 to E4          | —                      |          | —                   | <b>SZ-Z34</b> |
|                      |                        |          | —                   | <b>SZ-Z35</b> |
|                      |                        |          | —                   | <b>SZ-Z36</b> |
| —                    | SC-E1/G to E4/G        |          | —                   | <b>SZ-Z37</b> |

### Front mounting



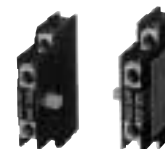
**SZ-A22/T**



**SZ-A11/T**

### Side mounting

**SZ-AS1/T**  
**SZ-AS2/T**



KK01-090

### Main circuit surge suppression units



Front mounting  
**SZ-ZM1E**

KK02-077



Side mounting  
**SZ-ZM4E**

KK02-079

### Coil surge suppression unit



CR  
**SZ-Z4**

AF88-766

## **Contactors SC-M and SC-E series**

### Optional accessories

- **Power Connection kit for reversing for SC-M and SC-E contactor**

| Description                                                               | Applicable contactor      | Part number      | Mass (g) |
|---------------------------------------------------------------------------|---------------------------|------------------|----------|
| Line side and load side wire kits                                         | SC-M01, M02, M01/G, M02/G | <b>SZ-MRWC</b>   | 4.2      |
| Line side wire kit                                                        | SC-E02 to E05             | <b>SZ-ERW1/A</b> | 19       |
| Load side wire kit                                                        | SC-E02/G to E05/G         | <b>SZ-ERW1/B</b> | 17       |
| Load side wire kit for the contactor to be connected with overload relay. |                           | <b>SZ-ERW1/D</b> | 13       |
| Line side wire kit                                                        | SC-E1 to E2S,             | <b>SZ-ERW2/A</b> | 48       |
| Load side wire kit                                                        | SC-E1/G to E2S/G,         | <b>SZ-ERW2/B</b> | 42       |
| Load side wire kit for the contactor to be connected with overload relay. |                           | <b>SZ-ERW2/D</b> | 31       |
| Line side wire kit                                                        | SC-E3,E4                  | <b>SZ-ERW3/A</b> | 162      |
| Load side wire kit                                                        | SC-E3/G,E4/G              | <b>SZ-ERW3/B</b> | 138      |
| Load side wire kit for the contactor to be connected with overload relay. |                           | <b>SZ-ERW3/D</b> | 110      |



- **Mechanical interlock unit**

| Description | Applicable contactor      | Part number   | Mass (g) |
|-------------|---------------------------|---------------|----------|
|             | SC-M01, M02, M01/G, M02/G | <b>SZ-MRM</b> | 3        |
|             | SC-E02 to E4              | <b>SZ-RM</b>  | 27       |
|             | SC-E02/G to E4/G          |               |          |



- **Preparing to make a reversing contactors and motor starters.**

**<For SC-M contactor>**

1. SC-M\_ x 2
2. SZ-MRWC x 1
3. SZ-MRM x 1

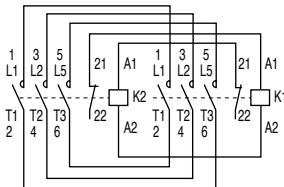
**<For SC-E contactor>**

1. SC-E\_ x 2
2. SZ-ERW\_/A x 1
3. SZ-ERW\_/B x 1
4. SZ-RM x 1
5. SZ- A/T x 2

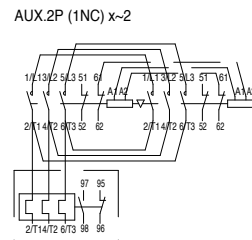
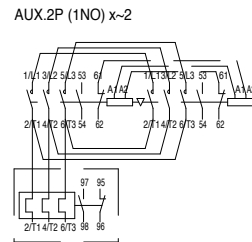
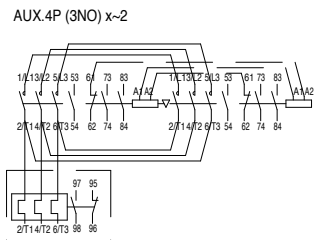
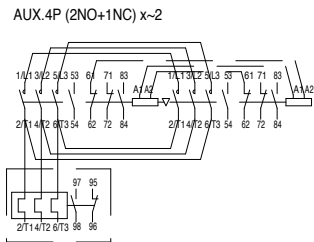
**<For SC-E motor starters>**

1. SC-E\_ x 2
2. TK-E\_ X1
3. SZ-ERW\_/A x 1
4. SZ-ERW\_/D x 1
5. SZ-RM x 1
6. SZ- A/T x 2

### Example of connecting, SC-M reversing contactor



### Example of connecting, SC-E reversing motor starter



# Contactors SC-M and SC-E series

## Optional accessories

### ■ Replacement coils

Replacement coil for SC-M series is not available

Replacement coil for SC-E series, AC coil is available, DC coil is not available

| Contactors part number | AC coil part number | Super magnet coil part number |
|------------------------|---------------------|-------------------------------|
| SC-E02 to E05          | <b>4NC0H-#MC</b>    | <b>N/A</b>                    |

Replace the # symbol with the desired code, shown in the chart below.

| Code letter # | AC coil 60Hz | AC coil 50Hz |
|---------------|--------------|--------------|
| E             | 24-26V       | 24V          |
| F             | 48-52V       | 48V          |
| A             | 100-110V     | 100V         |
| 1             | 110-120V     | 100-110V     |
| G             | 120-130V     | 110-120V     |
| B             | 200-220V     | 200V         |
| 2             | 220-240V     | 200-220V     |
| C             | 400-440V     | 380-400V     |
| 4             | 440-480V     | 415-440V     |
| 5             | 550-600      | 500-550V     |

| Contactors part number | AC coil part number (Chart 1) | Super magnet coil part number (Chart 2) |
|------------------------|-------------------------------|-----------------------------------------|
| SC-E1, E2 and E2S      | <b>SZ-GM/N1-#</b>             | <b>N/A</b>                              |
| SC-E3 and E4           | <b>SZ-GM/N2S-#</b>            | <b>N/A</b>                              |
| SC-E5                  | <b>N/A</b>                    | <b>SZ-GS/N5-#</b>                       |
| SC-E6 and E7           | <b>N/A</b>                    | <b>SZ-GS/N6-#</b>                       |

Replace the # symbol with the desired code, shown in the charts below.

Chart 1 : AC coil

| Code letter # | AC coil 60Hz | AC coil 50Hz |
|---------------|--------------|--------------|
| 24            | 24-26V       | 24V          |
| 48            | 48-52V       | 48V          |
| 100           | 100-110V     | 100V         |
| 110           | 110-120V     | 100-110V     |
| 120           | 120-130V     | 110-120V     |
| 200           | 200-220V     | 200V         |
| 220           | 220-240V     | 200-220V     |
| 400           | 400-440V     | 380-400V     |
| 440           | 440-480V     | 415-440V     |
| 500           | 550-600      | 500-550V     |

Chart 2 : Super magnet coil

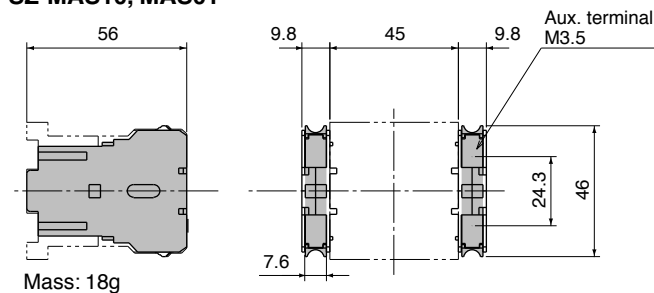
| Code letter # | AC coil 50/60Hz | DC       |
|---------------|-----------------|----------|
| 24            | 24-25V          | 24V      |
| 48            | 48-50V          | 48V      |
| 100           | 100-127V        | 100-120V |
| 200           | 200-250V        | 200-240V |
| 400           | 380-450V        | N/A      |
| 500           | 460-575V        | N/A      |



# Contactors SC-M and SC-E series Dimensions

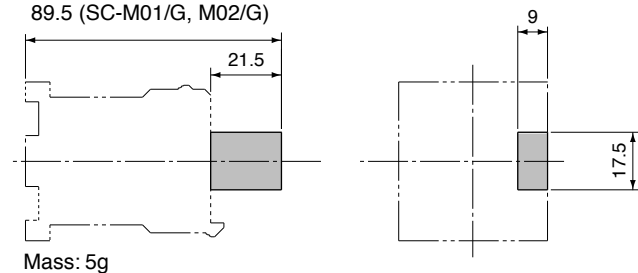
## Dimensions, mm

### • Aux. contact blocks (Side mounting) SZ-MAS10, MAS01

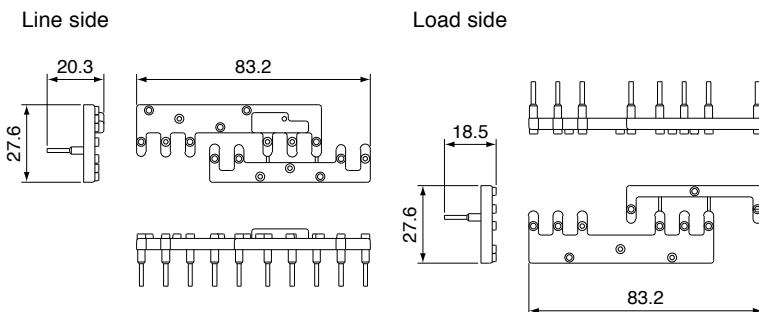


### • Coil surge suppression unit SZ-MZ1, MZ2, MZ3

77.5 (SC-M01, M02)  
89.5 (SC-M01/G, M02/G)



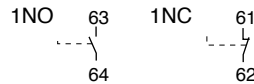
### • Power Connection kit for reversing for SC-M



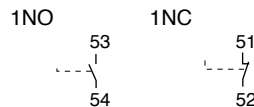
## Wiring diagrams

Aux. contact

• Mounted on the right side

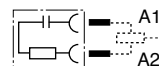


• Mounted on the left side

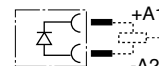


Internal circuit

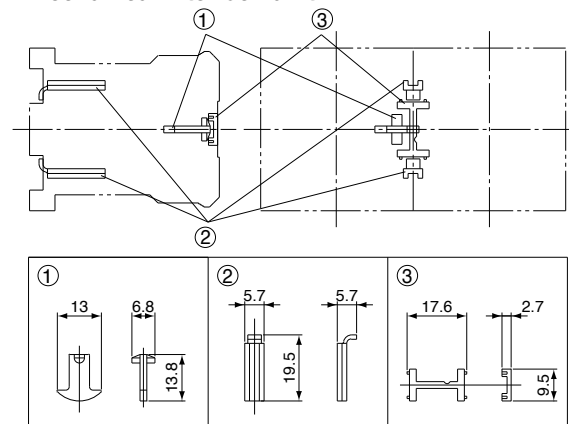
• Built-in CR



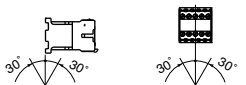
• Built-in diode



### • Mechanical interlock unit



## Standard operating conditions

|                     |                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature | Operating: -5 to 55°C<br>No sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35°C)<br>Storage: -40 to 65°C |
| Humidity            | 45 to 85%RH                                                                                                                                                                            |
| Altitude            | 2000m or lower                                                                                                                                                                         |
| Atmosphere          | No excessive dust, smoke, corrosive gases, flammable gases, steam, or salt.                                                                                                            |
| Vibration           | 10 to 55Hz 15m/s <sup>2</sup>                                                                                                                                                          |
| Shock               | 50m/s <sup>2</sup>                                                                                                                                                                     |
| Mounting            | Screw mounting, 35mm-wide top hat rail (DIN)                                                                                                                                           |
| Mounting angle      |                                                                                                     |
| Standard            | IEC 60947-4-1, EN 60947-4-1, VDE 0660<br>JIS C 8201-4-1, JEM 1038<br>UL 508, CSA C22.2                                                                                                 |

## Wiring

|                                 |                                        |
|---------------------------------|----------------------------------------|
| Terminal screw                  | M3.5                                   |
| Connectable wire size           | 1.25 to 2mm <sup>2</sup> (ø1.2 to 2mm) |
| Applicable round crimp terminal | 7.5mm (R2-3.5)                         |
| Tightening torque               | 0.8 to 1.0N·m                          |

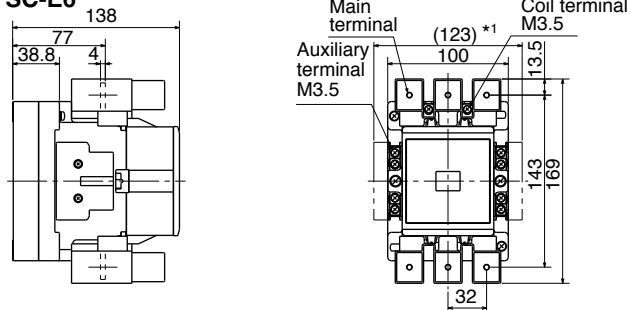


# Contactors SC-M and SC-E series Dimensions

## ■ Dimensions, mm

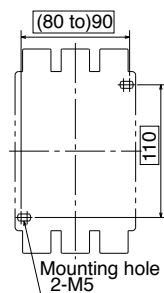
### • Non-reversing AC operated

#### SC-E6

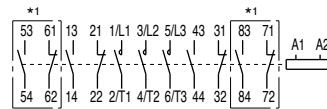


Mass: 2.6kg

#### Panel drilling

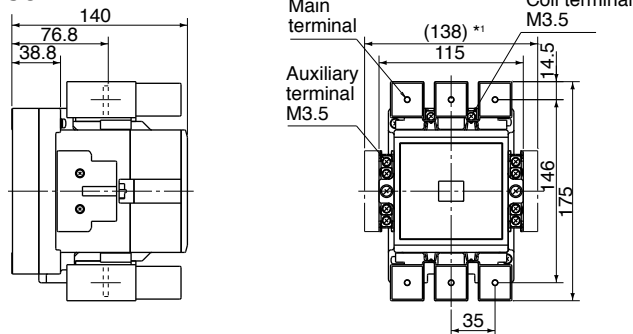


## ■ Wiring diagrams



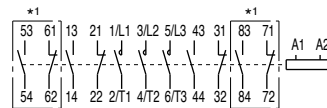
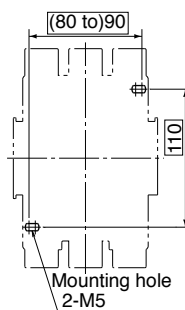
\*1 In case of aux. contact 4NO+4NC

#### SC-E7



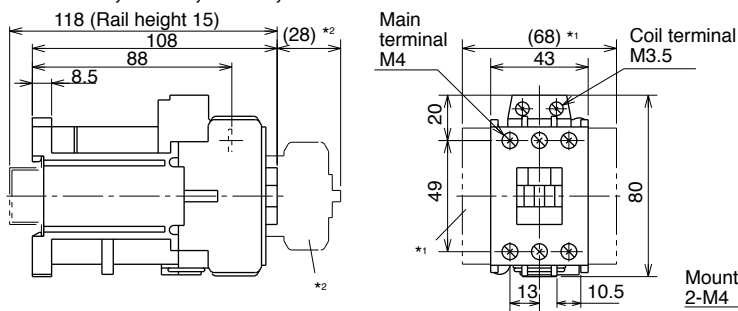
Mass: 2.9kg

#### Panel drilling



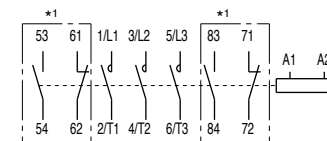
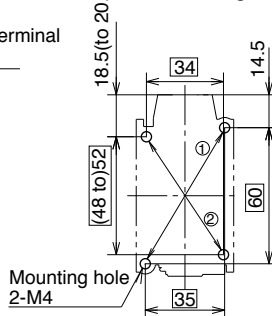
\*1 In case of aux. contact 4NO+4NC

### • Non-reversing DC operated SC-E02/G, E03/G, E04/G, E05/G



Mass: 0.59kg

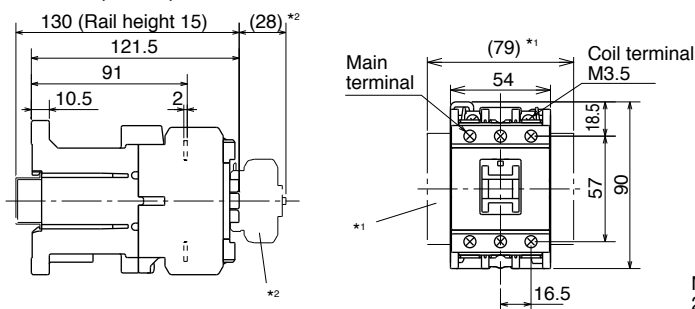
#### Panel drilling



\*1 In case of aux. contact 2NO+2NC

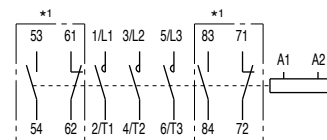
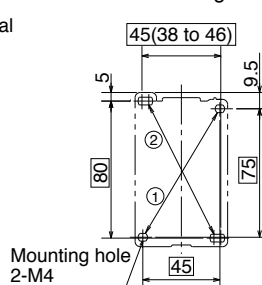
Use the two mounting holes on a diagonal line  
① or ② to mount contactor  
①: 35 × 60 ②: 35 × (48 to 52)

#### SC-E1/G, E2/G, E2S/G



Mass: 0.79kg

#### Panel drilling



\*1 In case of aux. contact 2NO+2NC

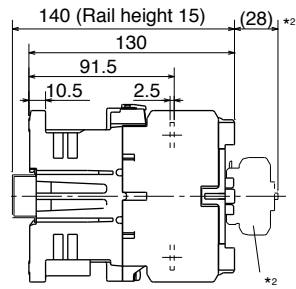
Use the two mounting holes on a diagonal line  
① or ② to mount contactor  
①: 45 × 75 ②: 45 (38 to 46) × 80

\*1 Side mounting aux. contact block  
\*2 Front mounting aux. contact block

# **Contactors SC-M and SC-E series** **Dimensions**

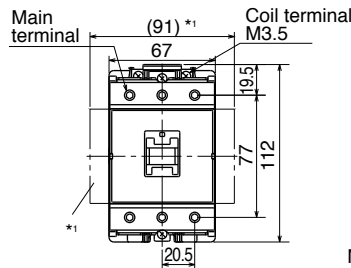
## **■ Dimensions, mm**

- Non-reversing DC operated
- SC-E3/G, E4/G

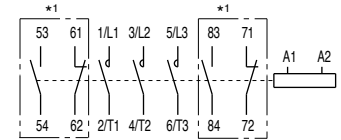
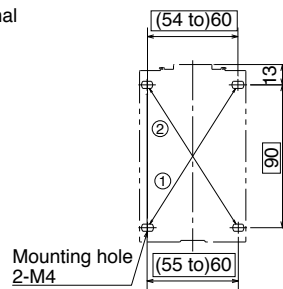


Mass: 1.4kg

\*1 Side mounting aux. contact block  
\*2 Front mounting aux. contact block



## **Panel drilling**



\*1 In case of aux. contact 2NO+2NC

Use the two mounting holes on a diagonal line

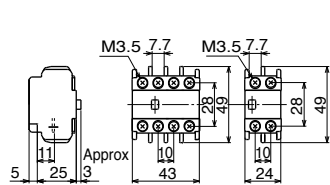
① or ② to mount contactor

①: (55 to) 60 × 90 ②: (54 to) 60 × 90

- Auxiliary contact blocks Front mounting

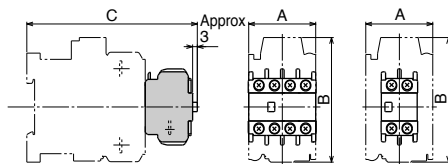
SZ-A40/T, A31/T, A22/T, A20/T, A11/T, A02/T for SC-E02 to E4

Contactor with aux. contact block



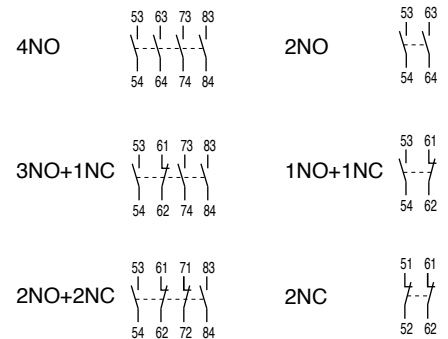
SZ-A40/T, A31/T, A22/T Mass: 36g

SZ-A20/T, A11/T, A02/T Mass: 20g



| Type□                  | A□  | B□  | C□   |
|------------------------|-----|-----|------|
| SC-E02, E03, E04, E05□ | 43□ | 80□ | 109□ |
| SC-E1, E2, E2S         | 54□ | 90□ | 124□ |
| SC-E3, E4              | 67  | 112 | 139  |

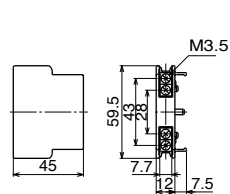
## **■ Wiring diagrams**



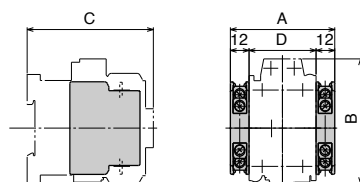
- Auxiliary contact blocks Side mounting

SZ-AS1/T, for SC-E02 to E4

Contactor with aux. contact block



Mass: 28g



| Type□                  | A□  | B□  | C□  | D  |
|------------------------|-----|-----|-----|----|
| SC-E02, E03, E04, E05□ | 67  | 80□ | 81□ | 43 |
| SC-E1, E2, E2S□        | 78□ | 90  | 96□ | 54 |
| SC-E3, E4              | 91  | 112 | 111 | 67 |

1NO+1NC Mounted on right side

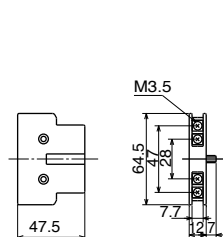


Mounted on left side

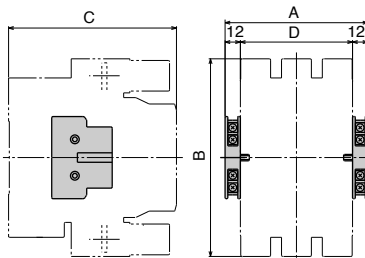


SZ-AS2/T, for SC-E5 to E7

Contactor with aux. contact block



Mass: 40g



| Type□  | A□   | B□   | C□   | D□   |
|--------|------|------|------|------|
| SC-E5□ | 112□ | 155□ | 132□ | 88□  |
| SC-E6□ | 124□ | 169□ | 138□ | 100□ |
| SC-E7  | 139  | 175  | 140  | 115  |

1NO+1NC Mounted on right side



Mounted on left side



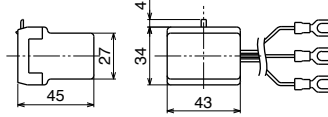
# Contactors SC-M and SC-E series

## Dimensions

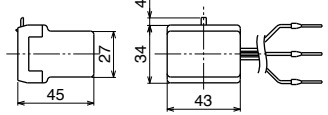
### ■ Dimensions, mm

#### • Main circuit surge suppression units

##### SZ-ZM1E

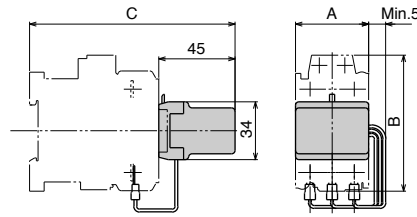


##### SZ-ZM3E



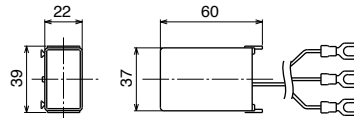
Mass: 60g

Contactor with surge suppression unit

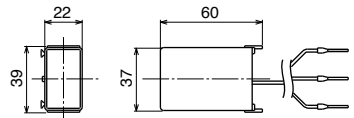


| Type□           | A□  | B□  | C□   |
|-----------------|-----|-----|------|
| SC-E02+SZ-ZM1E□ | 43□ | 80□ | 121□ |
| SC-E03□         | □   | □   | □    |
| SC-E04□         | □   | □   | □    |
| SC-E05□         | □   | □   | □    |
| SC-E1+SZ-ZM3E□  | 54□ | 90□ | 136□ |
| SC-E2□          | □   | □   | □    |
| SC-E2S□         | □   | □   | □    |
| SC-E3+SZ-ZM3E□  | 67  | 112 | 151  |
| SC-E4           |     |     |      |

##### SZ-ZM2E

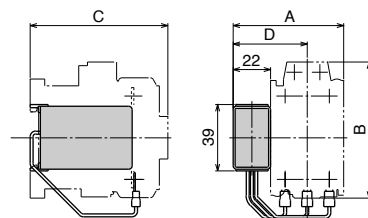


##### SZ-ZM4E



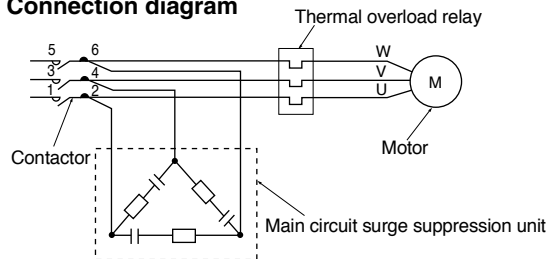
Mass: 60g

Contactor with surge suppression unit



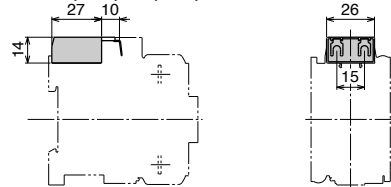
| Type□           | A□  | B□  | C□  | D□    |
|-----------------|-----|-----|-----|-------|
| SC-E02+SZ-ZM2E□ | 65□ | 80□ | 81□ | 43.5□ |
| SC-E03□         | □   |     |     |       |
| SC-E04□         | □   |     |     |       |
| SC-E05□         | □   |     |     |       |
| SC-E1□          |     |     |     |       |
| SC-E2+SZ-ZM2E□  | 76□ | 90□ | 96□ | 49□   |
| SC-E2S□         |     |     |     |       |
| SC-E3+SZ-ZM2E□  | 89  | 112 | 111 | 55.5  |
| SC-E4           |     |     |     |       |

### Connection diagram



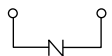
#### • Coil surge suppression units

##### SZ-Z1, Z2, Z3, Z4, Z5



Mass: 14g

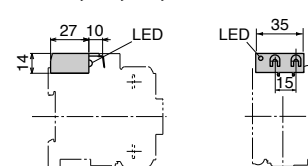
SC-E02 to E05 + SZ-Z1 to Z3  
(Built-in varistor)



SC-E02 to E05 + SZ-Z4, Z5  
(Built-in CR)

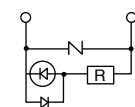


##### SZ-Z6, Z7, Z8, Z9

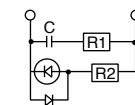


Mass: 16g

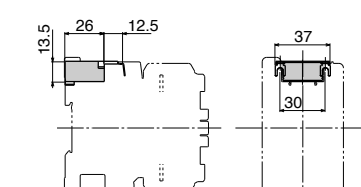
SC-E02 to E05 + SZ-Z6, Z7  
(Built-in varistor with operating indicator)



SC-E02 to E05 + SZ-Z8, Z9  
(Built-in CR with operating indicator)

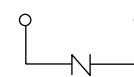


##### SZ-Z31, Z32, Z33, Z34, Z35, Z36, Z37

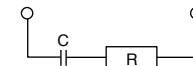


Mass: 15g

SC-E1 to E4 + SZ-Z31 to Z33  
(Built-in varistor)



SC-E1 to E4 + SZ-Z34, Z35  
(Built-in CR)  
SC-E1/G to E4/G + SZ-Z36, Z37  
(Built-in CR)

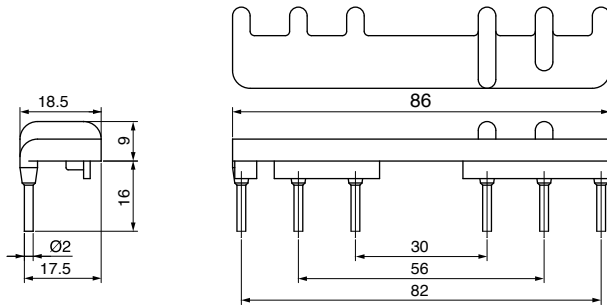


# **Contactors SC-M and SC-E series** **Dimensions**

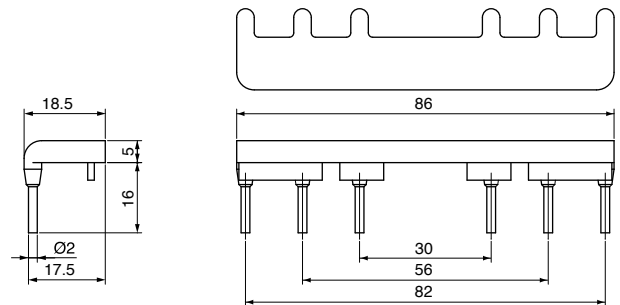
## **■ Dimensions, mm**

- Power connection kit for reversing for SC-E

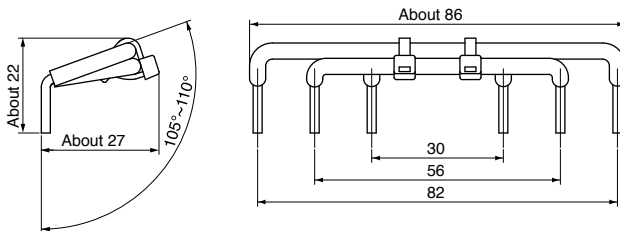
**SZ-ERW1/A**



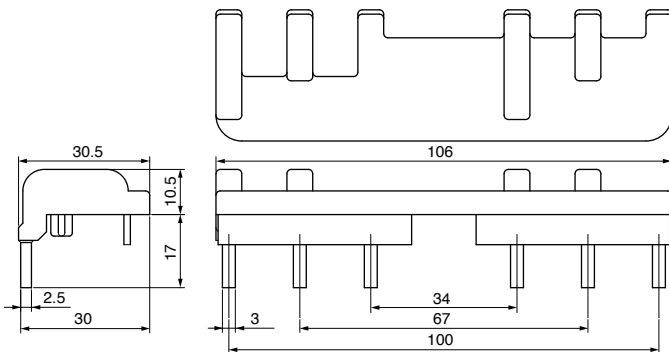
**SZ-ERW1/B**



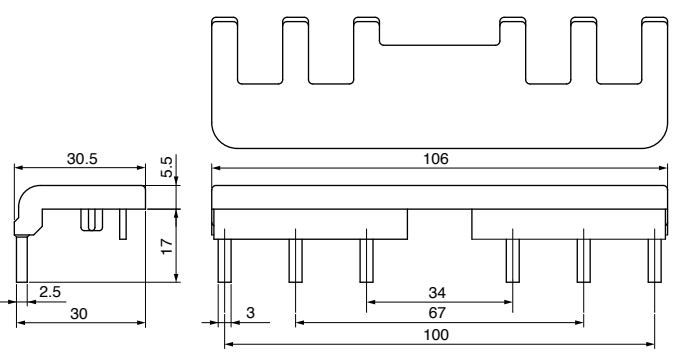
**SZ-ERW1/D**



**SZ-ERW2/A**



**SZ-ERW2/B**



**SZ-ERW2/D**

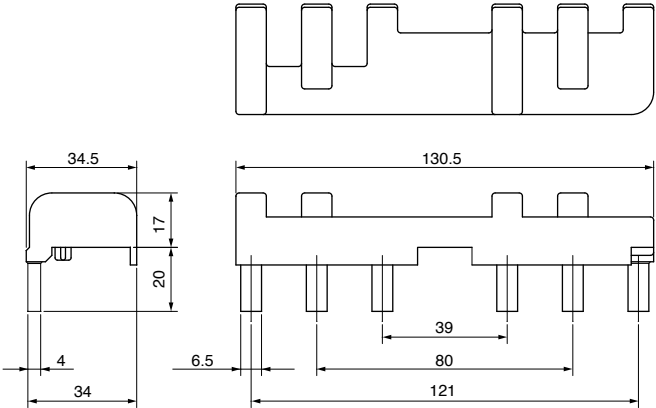
|             |                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6/T3 - 2/T1 | <p>Technical drawing of the SZ-ERW2/D contactor for the 6/T3 - 2/T1 configuration. The side view shows a terminal height of about 31 mm, a distance of about 18.5 mm from the edge to the mounting hole, and a terminal angle of 105°-110°. The front view shows a total width of 106 mm, with terminal spacing of 34 mm, 67 mm, and 100 mm. The terminal height is 17 mm.</p> |
| 4/T2 - 4/T2 | <p>Technical drawing of the SZ-ERW2/D contactor for the 4/T2 - 4/T2 configuration. The side view shows a terminal height of about 31 mm, a distance of about 22 mm from the edge to the mounting hole, and a terminal angle of 105°-110°. The front view shows a total width of 106 mm, with terminal spacing of 34 mm, 67 mm, and 100 mm. The terminal height is 17 mm.</p>   |
| 2/T1 - 6/T3 | <p>Technical drawing of the SZ-ERW2/D contactor for the 2/T1 - 6/T3 configuration. The side view shows a terminal height of about 42 mm, a distance of about 22 mm from the edge to the mounting hole, and a terminal angle of 105°-110°. The front view shows a total width of 106 mm, with terminal spacing of 34 mm, 67 mm, and 100 mm. The terminal height is 17 mm.</p>   |

# Contactors SC-M and SC-E series

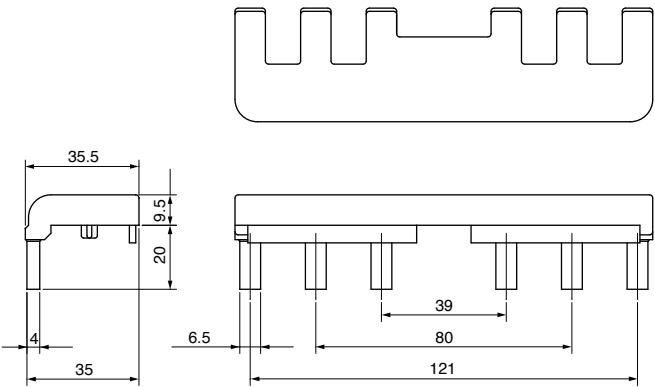
## Dimensions

■ Dimensions, mm  
Power connection kit for reversing for SC-E

SZ-ERW3/A



SZ-ERW3/B



SZ-ERW3/D

|             |                                                                                                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6/T3 - 2/T1 | <p>Technical drawing of the SZ-ERW3/D contactor for the 6/T3 - 2/T1 configuration. The side view shows a height of About 25.5 mm and a base width of 2.5 mm. The front view shows a base width of 29 mm and a height of About 22.5 mm. The distance between the two main contact blocks is 10 mm.</p> |
| 4/T2 - 4/T2 | <p>Technical drawing of the SZ-ERW3/D contactor for the 4/T2 - 4/T2 configuration. The side view shows a height of About 25.5 mm and a base width of 2.5 mm. The front view shows a base width of 70 mm and a height of About 28 mm. The distance between the two main contact blocks is 10 mm.</p>   |
| 2/T1 - 6/T3 | <p>Technical drawing of the SZ-ERW3/D contactor for the 2/T1 - 6/T3 configuration. The side view shows a height of About 38.5 mm and a base width of 2.5 mm. The front view shows a base width of 111 mm and a height of About 28 mm. The distance between the two main contact blocks is 10 mm.</p>  |



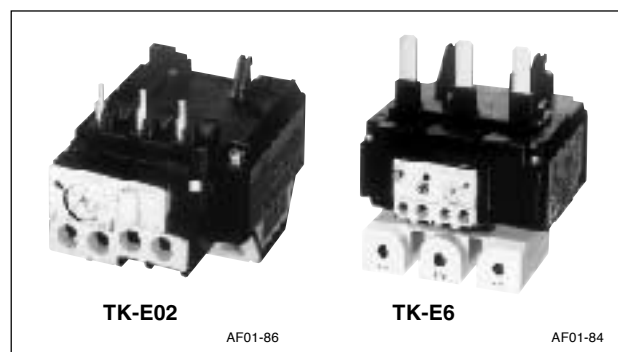
# Thermal overload relays TK-E series

## Quick reference guide and Ordering information

### TK-E series with open-phase protection device

#### ■ Features

- This relay protects motor windings from burning due to overloads, locked rotor current, or open-phases.
- Maintenance and inspection safety has been improved by employing a finger protection mechanism to cover exposed terminals (conforms to DIN 57106, VDE 0106 Teil 100).
- A high-precision scale for the current adjustment dial enables easy and exact current setting.
- The operating status can be visually checked with ease.
- The relays can be manually tripped. A trip-free mechanism is also provided.
- Base unit can be added to enable separate-mounting types of the TK-E02, E2, and E3 models.



#### ■ Part number and specification

| Applicable contactor          | Part number   | Aux. contact | Trip category (JIS) | No. of heater elements | Power consumption per pole | Provided functions                |
|-------------------------------|---------------|--------------|---------------------|------------------------|----------------------------|-----------------------------------|
| SC-E02 to E05, E02/G to E05/G | <b>TK-E02</b> | 1NO+1NC      | 10A                 | 3                      | 2.2VA                      | Overload, phase-loss protection□  |
| SC-E1 to E2S, E1/G to E2S/G   | <b>TK-E2</b>  |              |                     |                        | 3.8VA                      | Ambient temperature compensation□ |
| SC-E3, E4, E3/G, E4/G         | <b>TK-E3</b>  |              |                     |                        | 6.6VA                      | Manual or auto reset selectable□  |
| SC-E5                         | <b>TK-E5</b>  |              |                     |                        | 6.6VA                      | Manual trip mechanism□            |
| SC-E6, E7                     | <b>TK-E6</b>  |              |                     |                        | 8.0VA                      | Trip indicator                    |

Note: Separate mounting type is available for TK-E6. The part number is TK-E6H.

#### ■ Ampere ranges

| Thermal overload relay type |       |       |        |              |
|-----------------------------|-------|-------|--------|--------------|
| TK-E02                      | TK-E2 | TK-E3 | TK-E5  | TK-E6, E6H * |
| 0.1–0.15                    |       |       |        |              |
| 0.13–0.2                    |       |       |        |              |
| 0.15–0.24                   |       |       |        |              |
| 0.2–0.3                     |       |       |        |              |
| 0.24–0.36                   |       |       |        |              |
| 0.36–0.54                   |       |       |        |              |
| 0.48–0.72                   |       |       |        |              |
| 0.64–0.96                   |       |       |        |              |
| 0.8–1.2                     |       |       |        |              |
| 0.95–1.45                   |       |       |        |              |
| 1.4–2.2                     |       |       |        |              |
| 1.7–2.6                     |       |       |        |              |
| 2.2–3.4                     |       |       |        |              |
| 2.8–4.2                     |       |       |        |              |
| 4–6                         | 4–6   |       |        |              |
| 5–8                         | 5–8   |       |        |              |
| 6–9                         | 6–9   |       |        |              |
| 7–11                        | 7–11  | 7–11  |        |              |
| 9–13                        | 9–13  | 9–13  |        |              |
| 12–18                       | 12–18 | 12–18 |        |              |
| 16–22                       |       |       |        |              |
| 20–25                       | 18–26 | 18–26 | 18–26  |              |
|                             | 24–36 | 24–36 | 24–36  |              |
|                             |       | 28–40 | 28–40  |              |
|                             | 32–42 |       |        |              |
|                             |       | 34–50 | 34–50  |              |
|                             | 40–50 |       |        |              |
|                             | 44–54 |       |        |              |
|                             |       | 45–65 | 45–65  | 45–65        |
|                             |       | 48–68 |        |              |
|                             |       |       |        | 53–80        |
|                             |       | 64–80 |        |              |
|                             |       |       | 65–95  | 65–95        |
|                             |       |       | 85–105 |              |
|                             |       |       |        | 85–125       |
|                             |       |       |        | 110–160      |

Note: \* Applicable only for separate-mounting type. Not applicable for use in combination with a magnetic contactor

#### ■ Standards

IEC 60947-4-1, EN60947-4-1  
VDE 0660, JIS C 8201-4-1  
UL 508, CSA C22.2

#### ■ Ordering information

Specify the following:

1. Part number
2. Ampere range

**TK-E 02 - 0.1–0.15**

Product category | Frame size | Ampere range

# Thermal overload relays TK-E series

## Characteristics

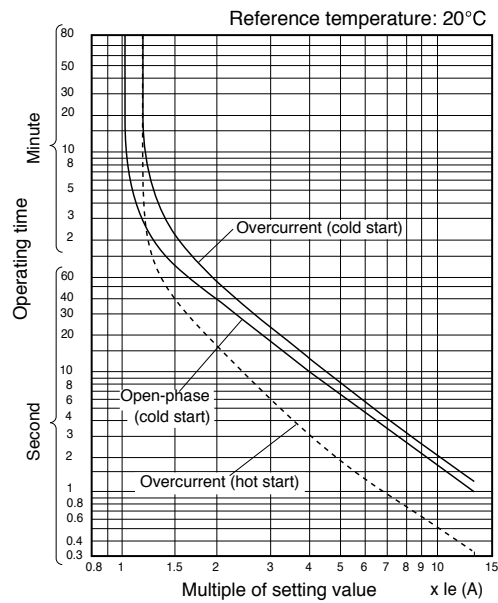
### ■ Auxiliary contact ratings

#### • Based on UL and CSA

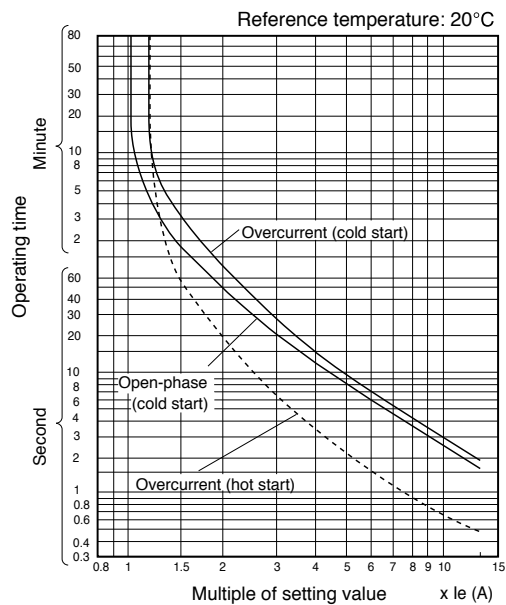
| Part number | Rated insulation voltage (V) | Rated thermal current (A) | Making and breaking current (A) |            |              |                       |            |              |
|-------------|------------------------------|---------------------------|---------------------------------|------------|--------------|-----------------------|------------|--------------|
|             |                              |                           | AC (rating code B600)           |            |              | DC (rating code R300) |            |              |
|             |                              |                           | Voltage (V)                     | Making (A) | Breaking (A) | Voltage (V)           | Making (A) | Breaking (A) |
| TK-E02      | 600                          | 5                         | 120                             | 30         | 3            | 120                   | 0.22       | 0.22         |
| TK-E2, E3   |                              |                           | 240                             | 15         | 1.5          | 250                   | 0.11       | 0.11         |
| TK-E5       |                              |                           | 480                             | 7.5        | 0.75         |                       |            |              |
| TK-E6       |                              |                           | 600                             | 6          | 0.6          |                       |            |              |

### ■ Operating characteristics (mean value)

#### • TK-E02



#### • TK-E2 to E6, E6H



# Thermal overload relays TK-E series

## Optional accessories

### ■ Optional accessories for TK-E series

#### • Base units for separate mounting

The base unit modifies thermal overload relays to separate mounting that can be mounted to 35mm-wide IEC top hat rail or secured with screws.

| Applicable thermal overload relay | Type          |
|-----------------------------------|---------------|
| TK-E02                            | <b>SZ-HCE</b> |
| TK-E2                             | <b>SZ-HDE</b> |
| TK-E3                             | <b>SZ-HEE</b> |

#### • Trip indicator

Reports any tripping action at a thermal overload relay through its LED display.

| Applicable thermal overload relay | Rated voltage        | Type             |
|-----------------------------------|----------------------|------------------|
| TK-E02                            | 100–110V AC, 50/60Hz | <b>SZ-L100</b>   |
|                                   | 200–220V AC, 50/60Hz | <b>SZ-L200</b>   |
| TK-E2 to TK-E6                    | 100–110V AC, 50/60Hz | <b>SZ-L100N2</b> |
|                                   | 200–220V AC, 50/60Hz | <b>SZ-L200N2</b> |

#### • Reset release button

Reset a thermal overload relay from the rear side of the board or a distant location.

| Applicable thermal overload relay | Load length (mm) | Type         |
|-----------------------------------|------------------|--------------|
| TK-E02                            | 300              | <b>SZ-R1</b> |
|                                   | 500              | <b>SZ-R2</b> |
|                                   | 700              | <b>SZ-R3</b> |
| TK-E2 to TK-E6                    | 300              | <b>SZ-R4</b> |
|                                   | 500              | <b>SZ-R5</b> |
|                                   | 700              | <b>SZ-R6</b> |

#### • Dial cover

Protects the setting current value of a thermal overload relay from being changed unintentionally.

| Applicable thermal overload relay | Type         |
|-----------------------------------|--------------|
| TK-E02 to TK-E6                   | <b>SZ-DA</b> |

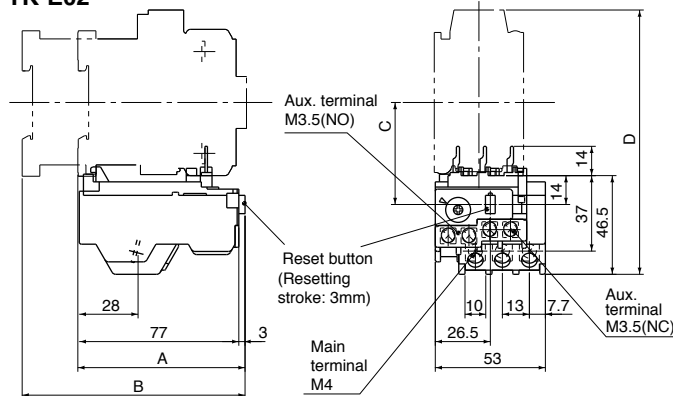


# Thermal overload relays TK-E series

## Dimensions

### ■ Dimensions, mm

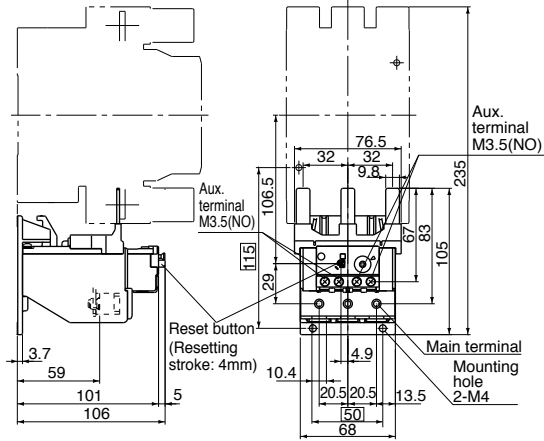
#### TK-E02



| Contactor        | A    | B     | C  | D     |
|------------------|------|-------|----|-------|
| SC-E02 to 05     | 80.5 | —     | 49 | 127.5 |
| SC-E02/G to 05/G | —    | 107.5 | 49 | 127.5 |

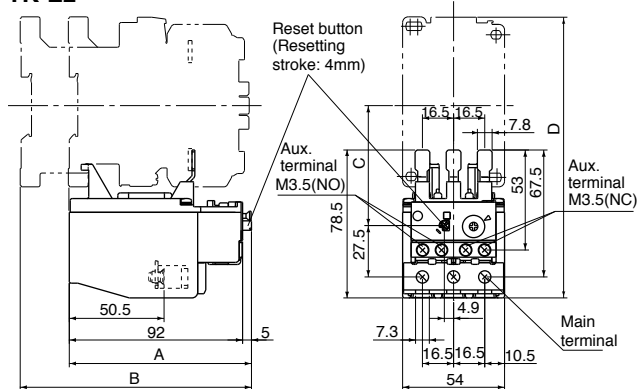
Mass: 0.13kg

#### TK-E5 On-contactor mounting only



Mass: 0.37kg

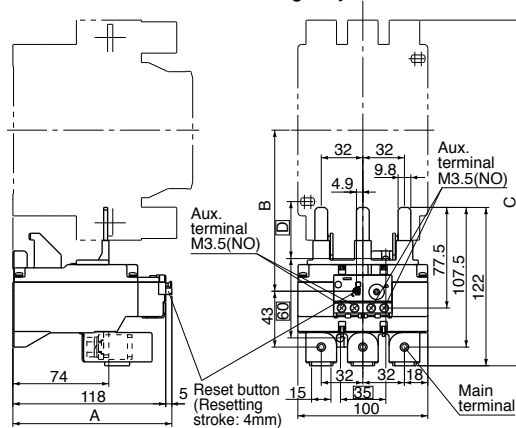
#### TK-E2



| Contactor        | A  | B   | C    | D   |
|------------------|----|-----|------|-----|
| SC-E1 to E2S     | 97 | —   | 63.5 | 149 |
| SC-E1/G to E2S/G | —  | 123 | 63.5 | 149 |

Mass: 0.25kg

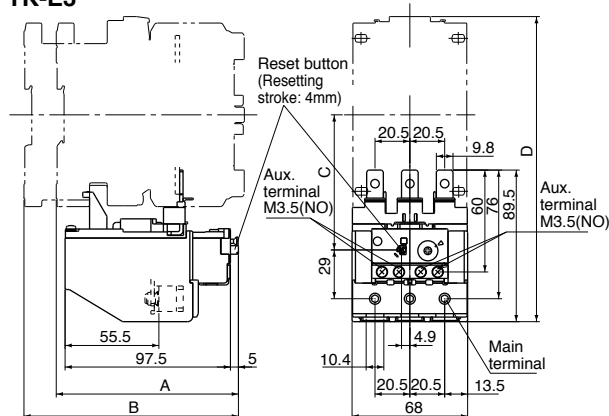
#### TK-E6 On-contactor mounting only



| Contactor | A   | B   | C     | D  |
|-----------|-----|-----|-------|----|
| SC-E6     | 123 | 124 | 266.5 | 45 |
| SC-E7     | 123 | 129 | 274   | 50 |

Mass: 0.71kg

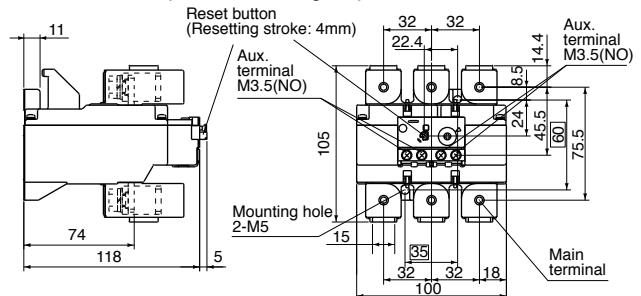
#### TK-E3



| Contactor    | A     | B     | C    | D   |
|--------------|-------|-------|------|-----|
| SC-E3, E4    | 107.5 | —     | 79.5 | 180 |
| SC-E3/, E4/G | —     | 126.5 | 79.5 | 180 |

Mass: 0.34kg

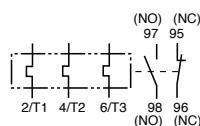
#### TK-E6H For separate mounting only



Mass: 0.82kg

### ■ Wiring diagrams

3-heater element



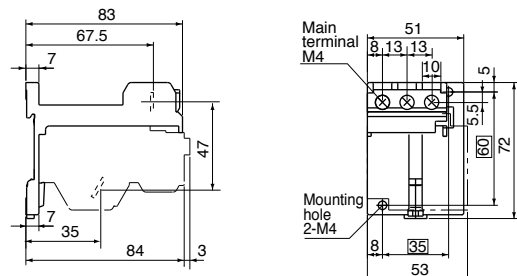
# Thermal overload relays TK-E series

## Dimensions

### ■ Dimensions, mm

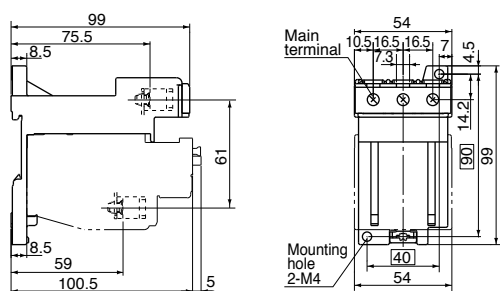
#### • Base units for separate mounting

##### SZ-HCE



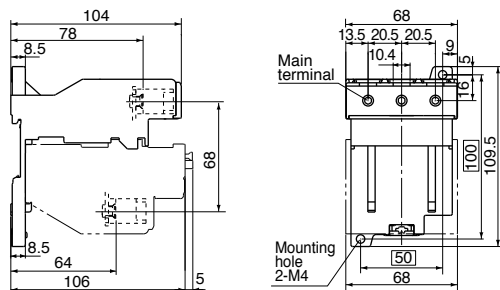
Mass: 55g

##### SZ-HDE



Mass: 0.1kg

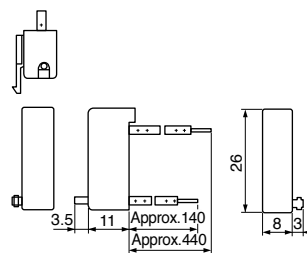
##### SZ-HEE



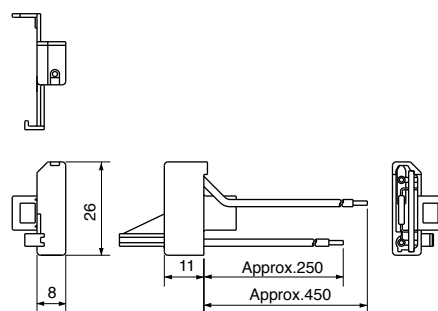
Mass: 0.15kg

#### • Trip indicators

##### SZ-L100, L200

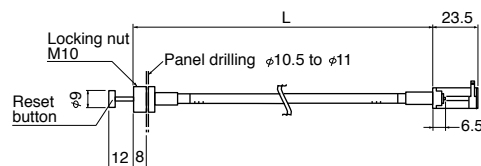


##### SZ-L100N2, L200N2



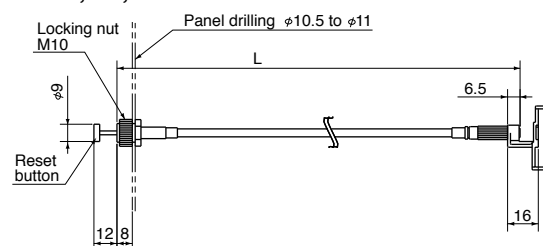
#### • Reset release button

##### SZ-R1, R2, R3



| Type  | L   |
|-------|-----|
| SZ-R1 | 300 |
| SZ-R2 | 500 |
| SZ-R3 | 700 |

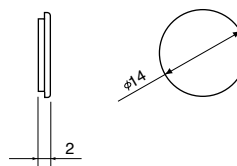
##### SZ-R4, R5, R6



| Type  | L   |
|-------|-----|
| SZ-R4 | 300 |
| SZ-R5 | 500 |
| SZ-R6 | 700 |

#### • Dial cover

##### SZ-DA



# Thermal overload relays TK-E series

## Instructions

### ■ Standard operating conditions

The thermal overload relays are manufactured for use in the standard operating conditions given in the table at the right. Consult FUJI before using the thermal overload in different conditions.

### ■ Wiring

#### • Connection wires and terminal processing

Be sure to perform wiring correctly referring to the connection diagram. Main terminals for models TK-E02 to TK-E6 are wired using solid wires or stranded wires. Stranded wires or flexible stranded wires can be connected by twisting them together crimping a sleeve (ferrule) onto them before connecting.

#### • Tightening torque

If wires are not tightened sufficiently, they may become hot or come loose and result in a fire, short-circuit, electric shock, or some other potentially dangerous situation. Be sure to tighten the wires to the torques specified in the tables below.

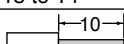
#### • Wire sizes, tightening tools, tightening torques

##### Main circuit

|                                |                                                                                                          |           |
|--------------------------------|----------------------------------------------------------------------------------------------------------|-----------|
| Thermal overload relay type    | <b>TK-E02</b>                                                                                            |           |
| Base unit type                 | SZ-HCE                                                                                                   |           |
| Solid wire                     | One                                                                                                      | 0.75 to 4 |
| (mm <sup>2</sup> )             | Two                                                                                                      | 1 to 4    |
| Stranded wire                  | One                                                                                                      | 0.75 to 4 |
| (mm <sup>2</sup> )             | Two                                                                                                      | 1 to 4    |
| AWG                            | One                                                                                                      | 12 max.   |
|                                | Two                                                                                                      | 12 max.   |
| Sheath stripping length (mm)   |                       |           |
| Terminal screw size            | M4                                                                                                       |           |
| Tool                           | ⊕ Phillips screwdriver, H-type, No. 2 (ISO 8764)<br>⊖ Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830) |           |
| Tightening torque [N·m(lb·in)] | 1.2 to 1.5 (11 to 13)                                                                                    |           |

|                     |                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature | Operating: -5 to 55°C<br>No sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35°C)<br>Storage: -40 to 65°C |
| Humidity            | 45 to 85%RH                                                                                                                                                                            |
| Atmosphere          | No excessive dust, smoke, corrosive gases, flammable gases, steam, or salt                                                                                                             |
| Vibration           | 10 to 55Hz 15m/s <sup>2</sup>                                                                                                                                                          |
| Shock               | 50m/s <sup>2</sup>                                                                                                                                                                     |

##### Control circuit

|                                         |                                                                                                          |                          |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------|
| Single stranded wire (mm <sup>2</sup> ) | One                                                                                                      | 0.75 to 2.5 (ø1 to ø1.6) |
|                                         | Two                                                                                                      | 0.75 to 2.5              |
| AWG                                     | One                                                                                                      | 18 to 14                 |
|                                         | Two                                                                                                      | 18 to 14                 |
| Sheath stripping length (mm)            |                     |                          |
| Fork terminal                           | Max. 7.7mm wide (R2-3.5)                                                                                 |                          |
| Terminal screw size                     | M3.5                                                                                                     |                          |
| Tool                                    | ⊕ Phillips screwdriver, H-type, No. 2 (ISO 8764)<br>⊖ Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830) |                          |
| Tightening torque [N·m(lb·in)]          | 0.8 to 1 (7 to 9)                                                                                        |                          |

| Thermal overload relay type                                                         | TK-E2                                                    | TK-E3                                                                                                    | TK-E5     | TK-E6, E6H |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------|------------|
| Base unit type                                                                      | SZ-HDE                                                   | SZ-HEE                                                                                                   | —         | —          |
|  | Single stranded wire (mm <sup>2</sup> ) *1               | 0.75 to 16                                                                                               | 1.5 to 35 | 16 to 70   |
|                                                                                     | Flexible stranded wire with sleeve (mm <sup>2</sup> ) *1 | 0.75 to 16                                                                                               | 1.5 to 35 | 16 to 70   |
|                                                                                     | Flexible stranded wire without sleeve (mm <sup>2</sup> ) | 0.75 to 16                                                                                               | 1.5 to 35 | 16 to 70   |
|                                                                                     | AWG                                                      | 6 max.                                                                                                   | 2 max.    | 00 max.    |
|                                                                                     | Sheath stripping length (mm)                             | 18                                                                                                       | 21        | 23         |
|                                                                                     | Tool                                                     | ⊕ Phillips screwdriver, H-type, No. 2 (ISO 8764)<br>⊖ Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830) |           |            |
|                                                                                     | Tightening torque (N·m)                                  | 2.5                                                                                                      | 6         | 10         |

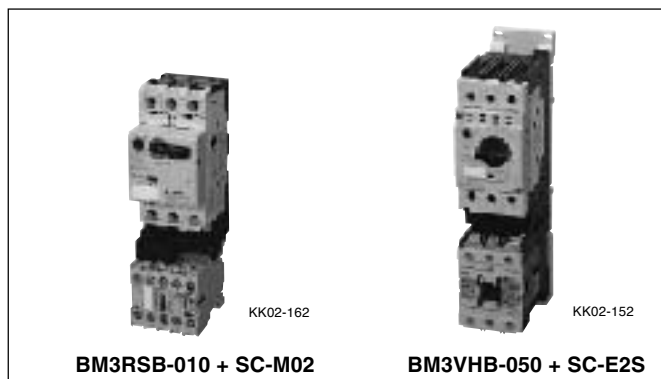
Notes: \*1 Stranded wire (0 to 25mm<sup>2</sup>) consists of 7 wires or less.  
Stranded wire (35 to 120mm<sup>2</sup>) consists of 19 wires or less.  
Flexible stranded wire consists of more number wires than the above.

# Combination Starters

## Quick reference guide

### ■ Features

- The user can assemble a combination starter by combining a BM3 series manual motor starter and an SC series magnetic contactor according to the load motor capacity.
- The manual motor starter provides overload, phase-loss, and short-circuit protections for the motor circuit, and incorporates a dial for flexible adjustment to match the total load current of the motor.
- The magnetic contactor allows remote ON/OFF operation of the motor circuit with high frequency, and features a electrical durability of one million operations.
- The manual motor starter and magnetic contactor are connected via link module and mounted to a base plate.



### ■ Combinations meeting for North American market

#### • BM3RSB, BM3RHB (General)

| 220-240V AC       |                      | 440-480V AC       |                      | MMS part number |                      | Contactor □<br>part number | Link module                         | Base plate                                                              |
|-------------------|----------------------|-------------------|----------------------|-----------------|----------------------|----------------------------|-------------------------------------|-------------------------------------------------------------------------|
| HP rating<br>(HP) | Rated<br>current (A) | HP rating<br>(HP) | Rated<br>current (A) | Part number     | Current<br>range (A) |                            |                                     |                                                                         |
| -                 | -                    | -                 | -                    | BM3RSB-P16      | BM3RHB-P16           | 0.1-0.16                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | -                 | -                    | BM3RSB-P25      | BM3RHB-P25           | 0.16-0.25                  | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | -                 | -                    | BM3RSB-P40      | BM3RHB-P40           | 0.25-0.4                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | -                 | -                    | BM3RSB-P63      | BM3RHB-P63           | 0.4-0.63                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | -                 | -                    | BM3RSB-001      | BM3RHB-001           | 0.63-1                     | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | 3/4               | 1.6                  | BM3RSB-1P6      | BM3RHB-1P6           | 1-1.6                      | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| 1/2               | 2.2                  | 1                 | 2.1                  | BM3RSB-2P5      | BM3RHB-2P5           | 1.6-2.5                    | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| 3/4               | 3.2                  | 2                 | 3.4                  | BM3RSB-004      | BM3RHB-004           | 2.5-4                      | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| 1-1/2             | 6                    | 3                 | 4.8                  | BM3RSB-6P3      | BM3RHB-6P3           | 4-6.3                      | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| -                 | -                    | 5                 | 7.6                  | BM3RSB-010      | BM3RHB-010           | 6.3-10                     | SC-M02, M02/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA<br>-<br>BZ0BPRE22A<br>BZ0BPRE22A |
| 3                 | 9.6                  | 7-1/2             | 11                   | BM3RSB-013      | BM3RHB-013           | 10-13                      | SC-E03<br>SC-E03/G                  | BZ0LRE22AA<br>BZ0LRE22GA<br>BZ0BPRE22A<br>BZ0BPRE22A                    |
| 5                 | 15.2                 | 10                | 14                   | BM3RSB-016      | BM3RHB-016           | 11-16                      | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA<br>BZ0BPRE22A<br>BZ0BPRE22A                    |
| 5                 | 15.2                 | 10                | 14                   | BM3RSB-020      | BM3RHB-020           | 14-20                      | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA<br>BZ0BPRE22A<br>BZ0BPRE22A                    |
| 7-1/2             | 22                   | 15                | 21                   | BM3RSB-025      | BM3RHB-025           | 18-25                      | SC-E05<br>SC-E05/G                  | BZ0LRE22AA<br>BZ0LRE22GA<br>BZ0BPRE22A<br>BZ0BPRE22A                    |
| 10                | 28                   | 20                | 27                   | BM3RSB-032      | BM3RHB-032           | 24-32                      | SC-E1<br>SC-E1/G                    | BZ0LRE32AA<br>BZ0LRE32GA<br>BZ0BPRE32A<br>BZ0BPRE32A                    |

# Combination Starter

## Quick reference guide

### • BM3RSB, BM3RHB (Type F coordination)

| 220-240V AC       |                      | 440-480V AC       |                      | MMS part number |            |                      | Contactor □<br>part number          | Link module                            | Base plate                      | Short-circuit ratings at<br>480Y/277 AC (kA) |            |
|-------------------|----------------------|-------------------|----------------------|-----------------|------------|----------------------|-------------------------------------|----------------------------------------|---------------------------------|----------------------------------------------|------------|
| HP rating<br>(HP) | Rated<br>current (A) | HP rating<br>(HP) | Rated<br>current (A) | Part number     |            | Current<br>range (A) |                                     |                                        |                                 | for BM3RSB                                   | for BM3RHB |
| -                 | -                    | -                 | -                    | BM3RSB-P16      | BM3RHB-P16 | 0.1-0.16             | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| -                 | -                    | -                 | -                    | BM3RSB-P25      | BM3RHB-P25 | 0.16-0.25            | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| -                 | -                    | -                 | -                    | BM3RSB-P40      | BM3RHB-P40 | 0.25-0.4             | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| -                 | -                    | -                 | -                    | BM3RSB-P63      | BM3RHB-P63 | 0.4-0.63             | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| -                 | -                    | -                 | -                    | BM3RSB-001      | BM3RHB-001 | 0.63-1               | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| -                 | -                    | 3/4               | 1.6                  | BM3RSB-1P6      | BM3RHB-1P6 | 1-1.6                | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 65                                           | 65         |
| 1/2               | 2.2                  | 1                 | 2.1                  | BM3RSB-2P5      | BM3RHB-2P5 | 1.6-2.5              | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 50                                           | 65         |
| 3/4               | 3.2                  | 2                 | 3.4                  | BM3RSB-004      | BM3RHB-004 | 2.5-4                | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 50                                           | 65         |
| 1-1/2             | 6                    | 3                 | 4.8                  | BM3RSB-6P3      | BM3RHB-6P3 | 4-6.3                | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 50                                           | 65         |
| -                 | -                    | 5                 | 7.6                  | BM3RSB-010      | BM3RHB-010 | 6.3-10               | SC-M02, M02/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 25                                           | 65         |
| 3                 | 9.6                  | -                 | -                    | BM3RSB-010      | BM3RHB-010 | 6.3-10               | SC-M02, M02/G<br>SC-E03<br>SC-E03/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BPRED22A<br>BZ0BPRED22A | 25                                           | 65         |
| -                 | -                    | 7-1/2             | 11                   | BM3RSB-013      | BM3RHB-013 | 10-13                | SC-E03<br>SC-E03/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BPRED22A<br>BZ0BPRED22A      | 25                                           | 65         |
| 5                 | 15.2                 | 10                | 14                   | BM3RSB-016      | BM3RHB-016 | 11-16                | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BPRED22A<br>BZ0BPRED22A      | 25                                           | 65         |
| 5                 | 15.2                 | 10                | 14                   | BM3RSB-020      | BM3RHB-020 | 14-20                | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BPRED22A<br>BZ0BPRED22A      | 25                                           | 65         |
| 7-1/2             | 22                   | 15                | 21                   | BM3RSB-025      | BM3RHB-025 | 18-25                | SC-E05<br>SC-E05/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BPRED22A<br>BZ0BPRED22A      | 25                                           | 50         |
| 10                | 28                   | 20                | 27                   | BM3RSB-032      | BM3RHB-032 | 24-32                | SC-E1<br>SC-E1/G                    | BZ0LRE32AA<br>BZ0LRE32GA               | BZ0BPRED32A<br>BZ0BPRED32A      | 25                                           | 50         |

To make an application for Type F condition, You need to prepare BZ0TCRE and BZ0TKUAB accessories separately.

# Combination Starter

## Quick reference guide

### • BM3VSB, BM3VHB (General)

| 220-240V AC       |                      | 440-480V AC       |                      | MMS part number   |                   |                      | Contactor □<br>part number       | Link module              | Base plate               |
|-------------------|----------------------|-------------------|----------------------|-------------------|-------------------|----------------------|----------------------------------|--------------------------|--------------------------|
| HP rating<br>(HP) | Rated<br>current (A) | HP rating<br>(HP) | Rated<br>current (A) | Part number       |                   | Current<br>range (A) |                                  |                          |                          |
| 3                 | 9.6                  | 5                 | 7.6                  | <b>BM3VSB-010</b> | <b>BM3VHB-010</b> | 6.3-10               | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 3                 | 9.6                  | 7-1/2             | 11                   | <b>BM3VSB-013</b> | <b>BM3VHB-013</b> | 10-13                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-016</b> | <b>BM3VHB-016</b> | 11-16                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-020</b> | <b>BM3VHB-020</b> | 14-20                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 7-1/2             | 22                   | 15                | 21                   | <b>BM3VSB-025</b> | <b>BM3VHB-025</b> | 18-25                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 10                | 28                   | 20                | 27                   | <b>BM3VSB-032</b> | <b>BM3VHB-032</b> | 24-32                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 10                | 28                   | 30                | 40                   | <b>BM3VSB-040</b> | <b>BM3VHB-040</b> | 28-40                | <b>SC-E2</b><br><b>SC-E2/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 15                | 42                   | 30                | 40                   | <b>BM3VSB-050</b> | <b>BM3VHB-050</b> | 35-50                | <b>SC-E2S</b><br><b>SC-E2S/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A |
| 20                | 54                   | 40                | 52                   | <b>BM3VSB-063</b> | <b>BM3VHB-063</b> | 45-63                | <b>SC-E3</b><br><b>SC-E3/G</b>   | BZ0LVE65AA<br>BZ0LVE65GA | BZ0BPVE65A<br>BZ0BPVE65A |

### • BM3VSB, BM3VHB (Type F coordination)

| 220-240V AC       |                      | 440-480V AC       |                      | MMS part number   |                   |                      | Contactor □<br>part number       | Link module              | Base plate               | Short-circuit ratings at<br>480Y/277 AC (kA) |            |
|-------------------|----------------------|-------------------|----------------------|-------------------|-------------------|----------------------|----------------------------------|--------------------------|--------------------------|----------------------------------------------|------------|
| HP rating<br>(HP) | Rated<br>current (A) | HP rating<br>(HP) | Rated<br>current (A) | Part number       |                   | Current<br>range (A) |                                  |                          |                          | for BM3VSB                                   | for BM3VHB |
| 3                 | 9.6                  | 5                 | 7.6                  | <b>BM3VSB-010</b> | <b>BM3VHB-010</b> | 6.3-10               | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 3                 | 9.6                  | 7-1/2             | 11                   | <b>BM3VSB-013</b> | <b>BM3VHB-013</b> | 10-13                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-016</b> | <b>BM3VHB-016</b> | 11-16                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-020</b> | <b>BM3VHB-020</b> | 14-20                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 7-1/2             | 22                   | 15                | 21                   | <b>BM3VSB-025</b> | <b>BM3VHB-025</b> | 18-25                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 10                | 28                   | 20                | 27                   | <b>BM3VSB-032</b> | <b>BM3VHB-032</b> | 24-32                | <b>SC-E1</b><br><b>SC-E1/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 10                | 28                   | 30                | 40                   | <b>BM3VSB-040</b> | <b>BM3VHB-040</b> | 28-40                | <b>SC-E2</b><br><b>SC-E2/G</b>   | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 15                | 42                   | 30                | 40                   | <b>BM3VSB-050</b> | <b>BM3VHB-050</b> | 35-50                | <b>SC-E2S</b><br><b>SC-E2S/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                           | 65         |
| 20                | 54                   | 40                | 52                   | <b>BM3VSB-063</b> | <b>BM3VHB-063</b> | 45-63                | <b>SC-E3</b><br><b>SC-E3/G</b>   | BZ0LVE65AA<br>BZ0LVE65GA | BZ0BPVE65A<br>BZ0BPVE65A | 25                                           | 65         |

To make an application for Type F condition, You need to prepare BZ0TKUAB accessories separately.

### Optional accessories

#### Link modules

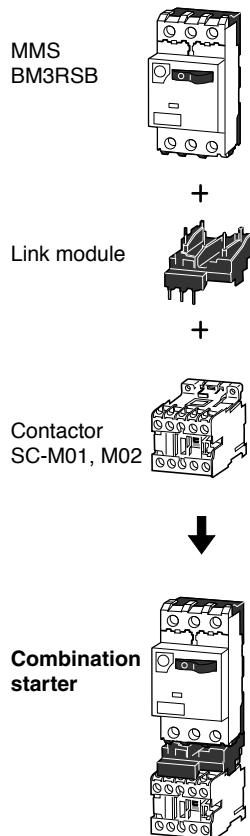
| Description                                                                                                                                                                                                           | Applicable MMS | Applicable magnetic contactor | Operating coil | Type              | Mass (g) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------|----------------|-------------------|----------|
|  <p>The link module connects the manual motor starter and magnetic contactor electrically and mechanically.</p> <p>(No.KK01-153)</p> | BM3R           | SC-M01, M02                   | AC             | <b>BZ0LRC09AA</b> | 25       |
|                                                                                                                                                                                                                       |                | SC-M01/G, M02/G               | DC             | <b>BZ0LRC09AA</b> | 25       |
|                                                                                                                                                                                                                       |                | SC-E02, E03, E04, E05         | AC             | <b>BZ0LRE22AA</b> | 25       |
|                                                                                                                                                                                                                       |                | SC-E02/G, E03/G, E04/G, E05/G | DC             | <b>BZ0LRE22GA</b> | 35       |
|                                                                                                                                                                                                                       |                | SC-E1                         | AC             | <b>BZ0LRE32AA</b> | 45       |
|                                                                                                                                                                                                                       |                | SC-E1/G                       | DC             | <b>BZ0LRE32GA</b> | 60       |
|                                                                                                                                                                                                                       | BM3V           | SC-E1, E2, E2S                | AC             | <b>BZ0LVE51AA</b> | 45       |
|                                                                                                                                                                                                                       |                | SC-E1/G, E2/G, E2S/G          | DC             | <b>BZ0LVE51GA</b> | 60       |
|                                                                                                                                                                                                                       |                | SC-E3                         | AC             | <b>BZ0LVE65AA</b> | 65       |
|                                                                                                                                                                                                                       |                | SC-E3/G                       | DC             | <b>BZ0LVE65GA</b> | 80       |

#### Base plates

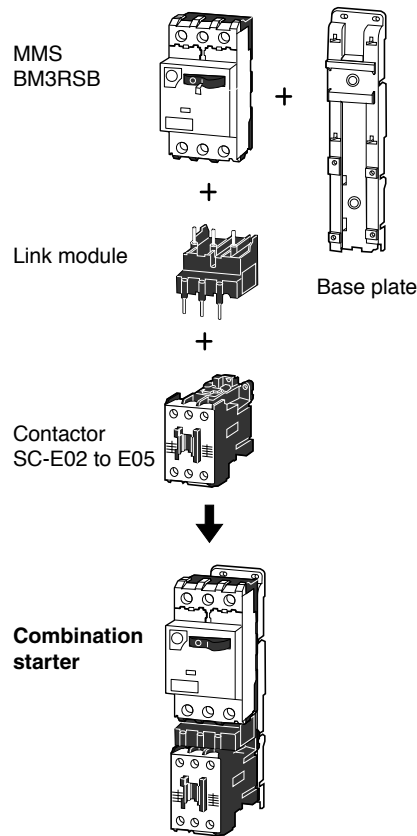
| Description                                                                                                                                                                                                                                                               | Applicable MMS | Applicable magnetic contactor | Operating coil | Type              | Mass (g) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------|----------------|-------------------|----------|
|  <p>The base plate is a plastic plate to which the combination starter is mounted. The base plate can then be mounted to a panel with screws or to a DIN rail.</p> <p>(No.KK01-155)</p> | BM3R           | SC-E02, E03, E04, E05         | AC             | <b>BZ0BPPE22A</b> | 100      |
|                                                                                                                                                                                                                                                                           |                | SC-E02/G, E03/G, E04/G, E05/G | DC             | <b>BZ0BPPE22A</b> | 100      |
|                                                                                                                                                                                                                                                                           |                | SC-E1                         | AC             | <b>BZ0BPPE32A</b> | 160      |
|                                                                                                                                                                                                                                                                           |                | SC-E1/G                       | DC             | <b>BZ0BPPE32A</b> | 160      |
|                                                                                                                                                                                                                                                                           | BM3V           | SC-E1, E2, E2S                | AC             | <b>BZ0BPVE51A</b> | 160      |
|                                                                                                                                                                                                                                                                           |                | SC-E1/G, E2/G, E2S/G          | DC             | <b>BZ0BPVE51A</b> | 160      |
|                                                                                                                                                                                                                                                                           |                | SC-E3                         | AC             | <b>BZ0BPVE65A</b> | 195      |
|                                                                                                                                                                                                                                                                           |                | SC-E3/G                       | DC             | <b>BZ0BPVE65A</b> | 195      |

### Combination starter configurations

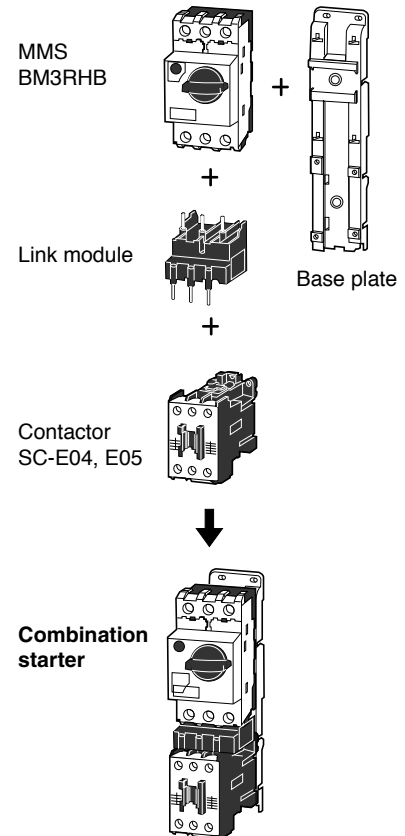
#### BM3RSB+SC-M01, M02



#### BM3RSB+SC-E02 to E05



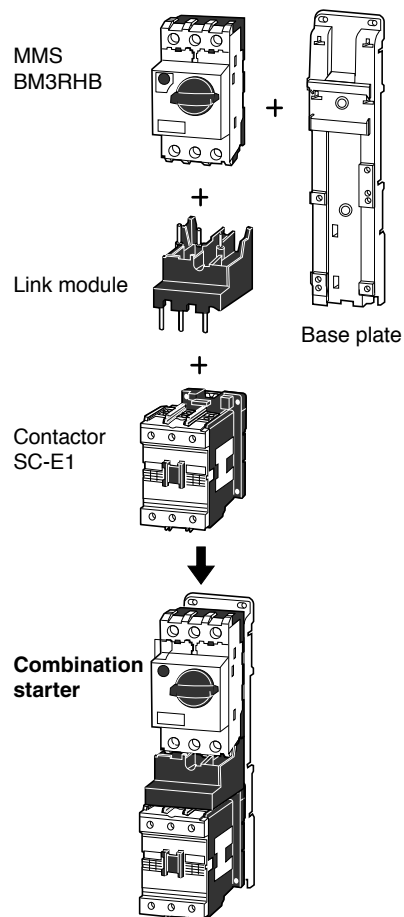
#### BM3RHB+SC-E04, E05



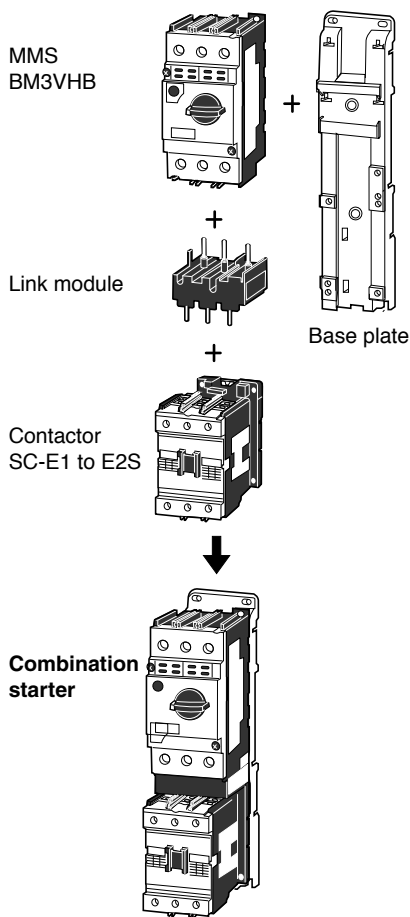
# Combination Starters

## Optional accessories

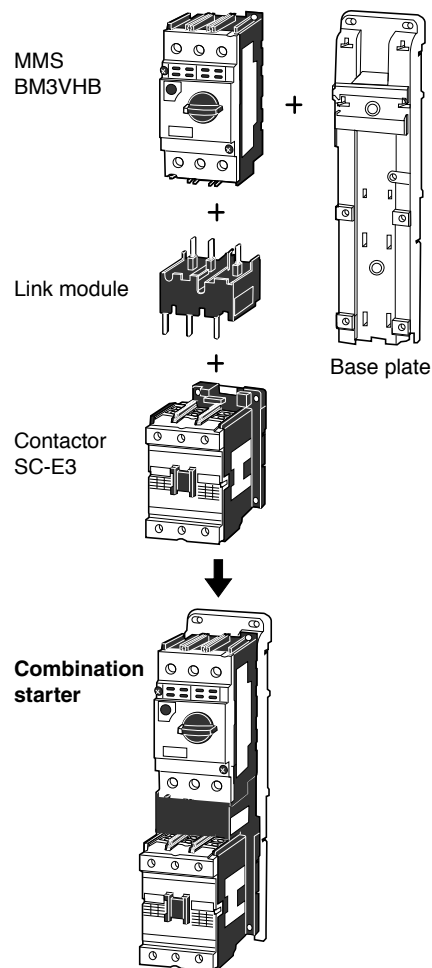
### • BM3RHB+SC-E1



### • BM3VHB+SC-E1 to E2S



### • BM3VHB+SC-E3

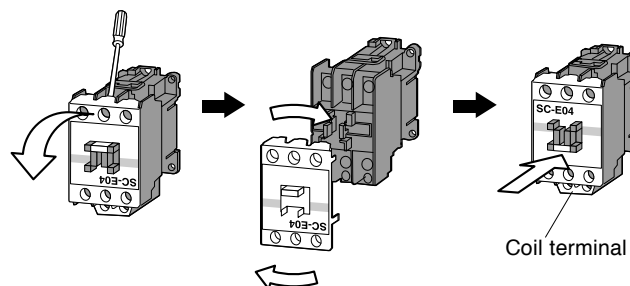


### ■ Notes for mounting an MMS and contactor

When the manual motor starter and magnetic contactor are configured as a combination starter, the nameplate ends up facing the wrong direction because the coil terminal of the magnetic contactor faces downward. Use the following procedure to turn the nameplate upside down.

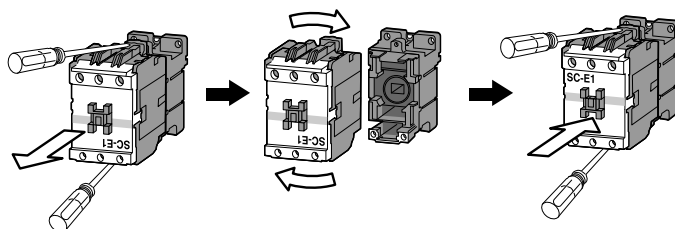
#### For SC-E02 to SC-E05 magnetic contactors

- Insert a flat-blade screwdriver between the arc-chamber of the S phase or V phase and the terminal screw, and lift the arc-chamber to remove it.
- After removing the cover, turn the cover 180 degrees (top to bottom), then re-mount it onto the magnetic contactor.
- Align the cover with the top and bottom terminals and press it on firmly by hand.



#### For SC-E1 to SC-E3 magnetic contactors

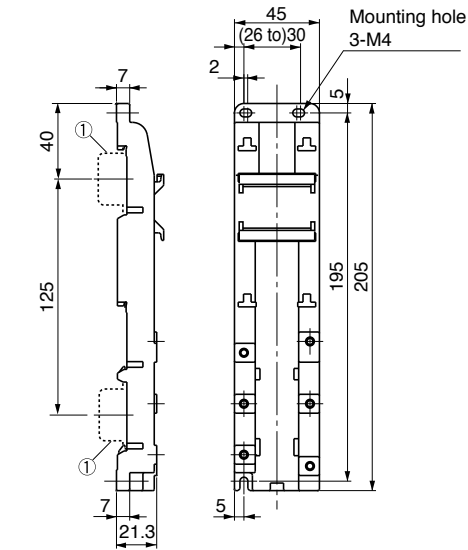
- Use a Phillips screwdriver to remove the two screws securing the front and back bodies.
- Remove the front body and turn it 180 degrees (top to bottom), then re-mount it with the screws.
- Make sure that no foreign matter enters the interior of the magnetic contactor during this removal and re-mounting procedure.



# Combination Starters Dimensions

## ■ Dimensions, mm

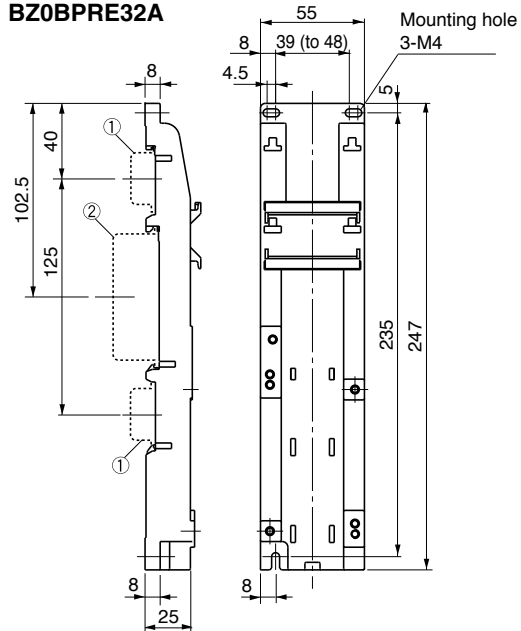
### • Base plates BZ0BPRE22A



① 35mm wide rail (height 15mm) x 2

| Base plate<br>type | Applicable type |                            |
|--------------------|-----------------|----------------------------|
|                    | MMS             | Contactor                  |
| BZ0BPRE22A         | BM3RSB          | SC-E02, E03, E04, E05      |
|                    | BM3RHB          | E02/G, E03/G, E04/G, E05/G |

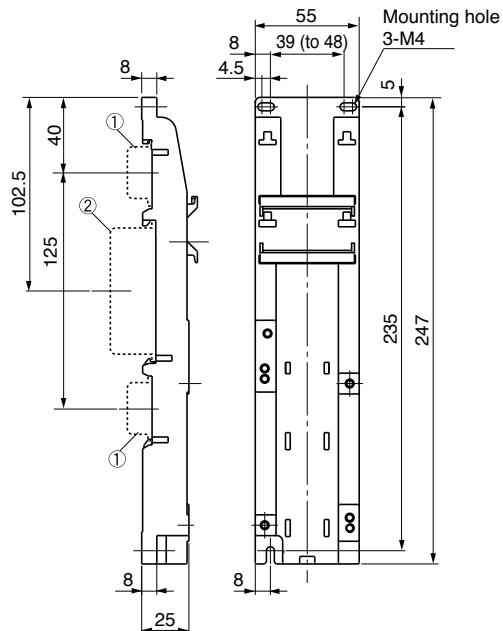
### BZ0BPRE32A



① 35mm wide rail (height 15mm) x 2  
② 75mm wide rail (height 25mm) x 1

| Base plate<br>type | Applicable type |             |
|--------------------|-----------------|-------------|
|                    | MMS             | Contactor   |
| BZ0BPRE32A         | BM3RSB          | SC-E1, E1/G |
|                    | BM3RHB          |             |

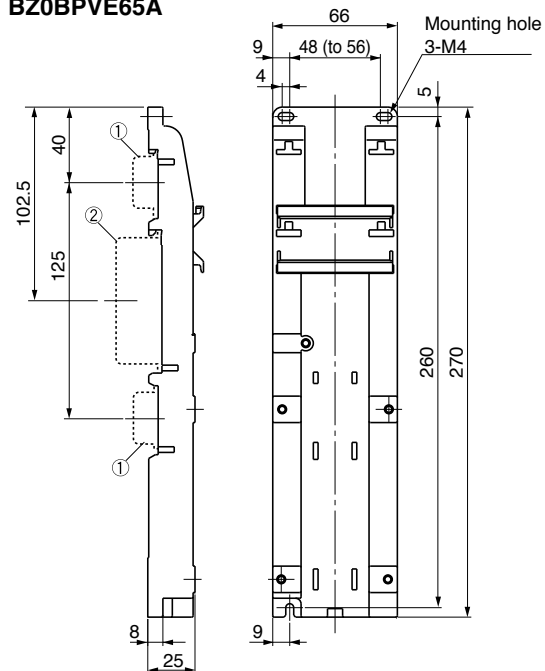
### BZ0BPVE51A



① 35mm wide rail (height 15mm) x 2  
② 75mm wide rail (height 25mm) x 1

| Base plate<br>type | Applicable type |                   |
|--------------------|-----------------|-------------------|
|                    | MMS             | Contactor         |
| BZ0BPVE51A         | BM3VSB          | SC-E1, E2, E2S,   |
|                    | BM3VHB          | E1/G, E2/G, E2S/G |

### BZ0BPVE65A



① 35mm wide rail (height 15mm) x 2  
② 75mm wide rail (height 25mm) x 1

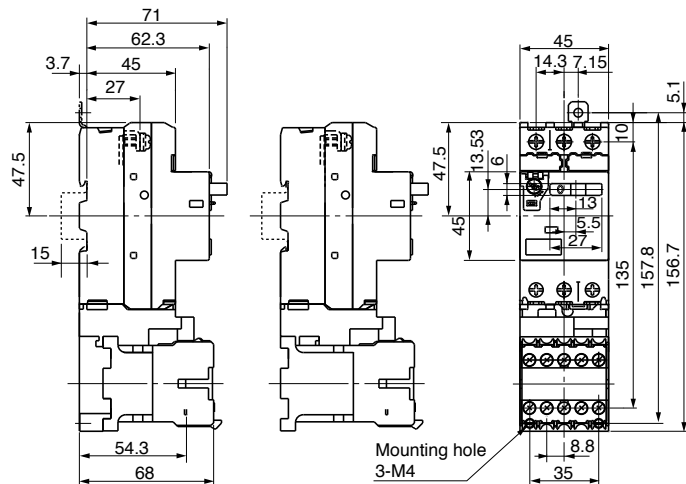
| Base plate<br>type | Applicable type |             |
|--------------------|-----------------|-------------|
|                    | MMS             | Contactor   |
| BZ0BPVE65A         | BM3VSB          | SC-E3, E3/G |
|                    | BM3VHB          |             |

# Combination Starters

## Dimensions

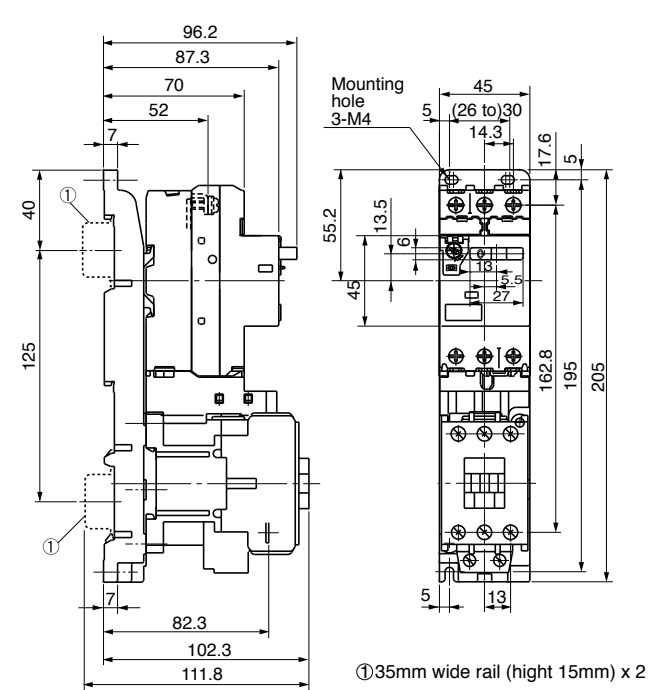
■ Dimensions, mm

- Combination
- BM3RSB + SC-M01, M02
- + SC-M01/G, SC-M02/G



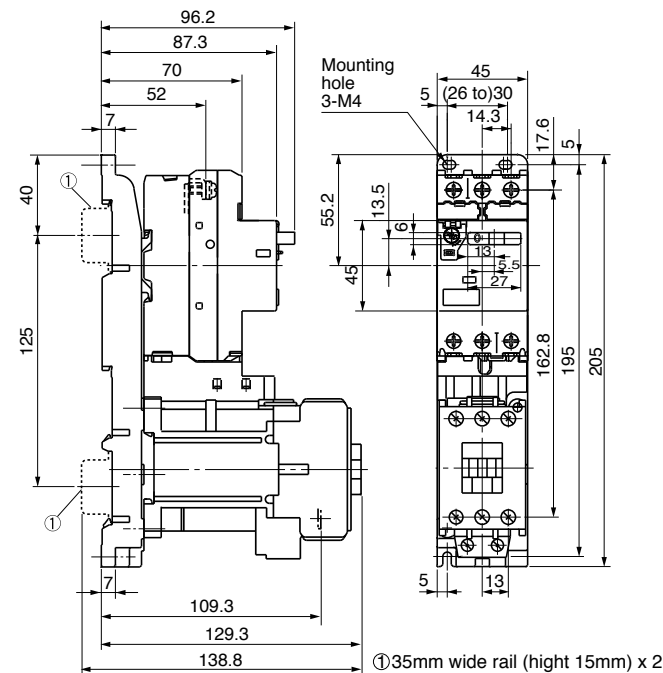
| MMS    | Contactors         | Link module | Mass(g) |
|--------|--------------------|-------------|---------|
| BM3RSB | SC-M01, M02        | BZ0LRC09AA  | 540     |
|        | SC-M01/G, SC-M02/G | BZ0LRC09AA  | 600     |

### BM3RSB + SC-E02 to E05



| MMS    | Contactors            | Link module | Base plate | Mass (g) |
|--------|-----------------------|-------------|------------|----------|
| BM3RSB | SC-E02, E03, E04, E05 | BZ0LRE22AA  | BZ0BPRE22A | 820      |

### BM3RSB + SC-E02/G to E05/G



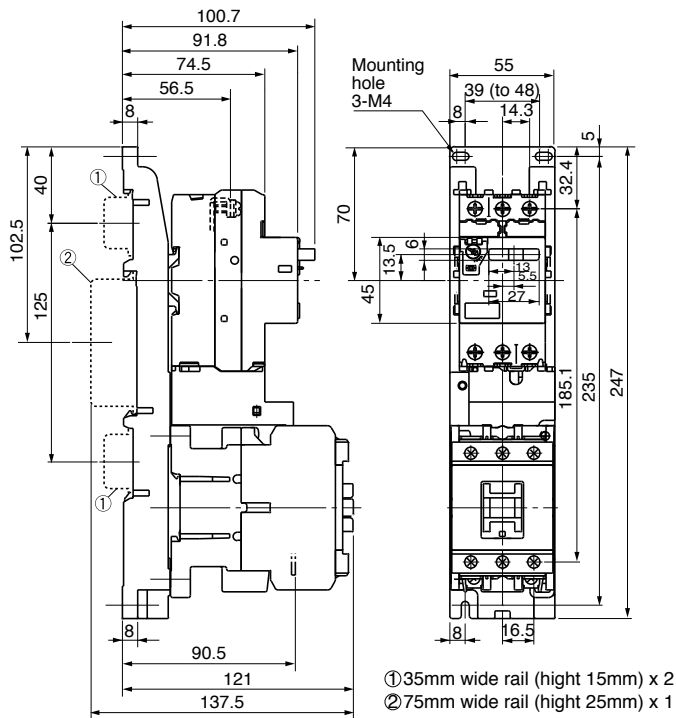
| MMS    | Contactors                    | Link module | Base plate | Mass (g) |
|--------|-------------------------------|-------------|------------|----------|
| BM3RSB | SC-E02/G, E03/G, E04/G, E05/G | BZ0LRE22GA  | BZ0BPRE22A | 1,065    |

# Combination Starters

## Dimensions

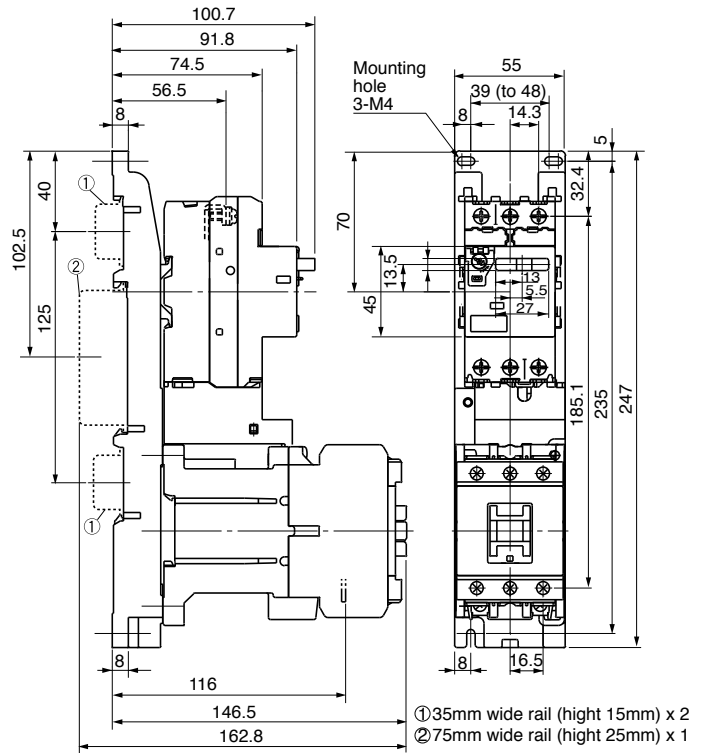
### ■ Dimensions, mm

#### • Combination BM3RSB + SC-E1



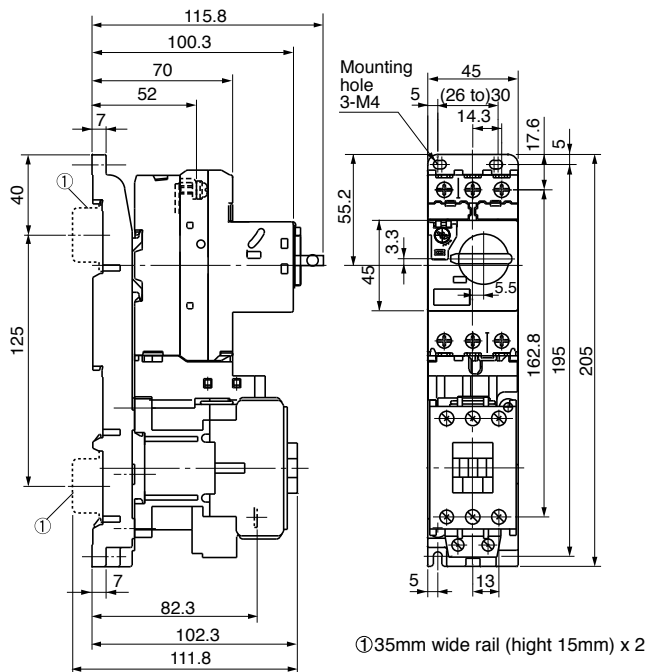
| MMS    | Contactor | Link module | Base plate | Mass (g) |
|--------|-----------|-------------|------------|----------|
| BM3RSB | SC-E1     | BZ0LRE32AA  | BZ0BPPE32A | 1,135    |

#### BM3RSB + SC-E1/G



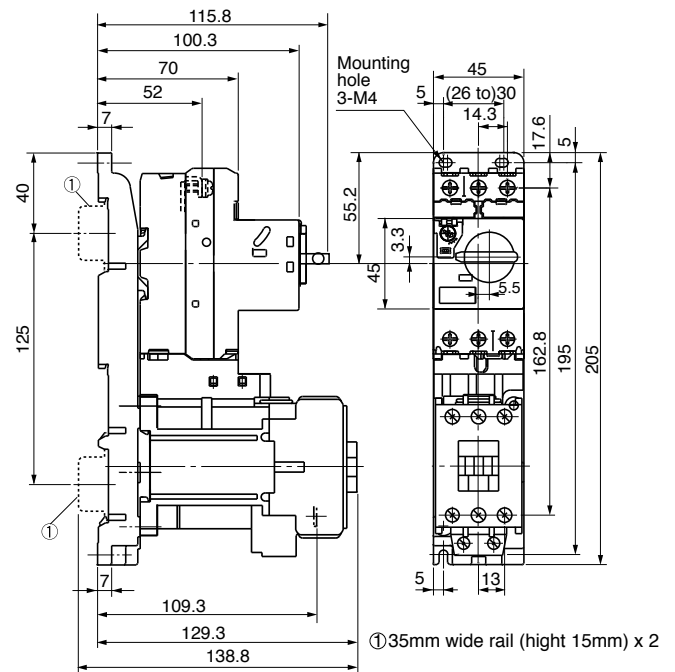
| MMS    | Contactor | Link module | Base plate | Mass (g) |
|--------|-----------|-------------|------------|----------|
| BM3RSB | SC-E1/G   | BZ0LRE32GA  | BZ0BPPE32A | 1,360    |

#### BM3RHB + SC-E02 to E05



| MMS    | Contactor             | Link module | Base plate | Mass (g) |
|--------|-----------------------|-------------|------------|----------|
| BM3RHB | SC-E02, E03, E04, E05 | BZ0LRE22AA  | BZ0BPPE22A | 840      |

#### BM3RHB + SC-E02/G to E05/G



| MMS    | Contactor                     | Link module | Base plate | Mass (g) |
|--------|-------------------------------|-------------|------------|----------|
| BM3RHB | SC-E02/G, E03/G, E04/G, E05/G | BZ0LRE22GA  | BZ0BPPE22A | 1,085    |

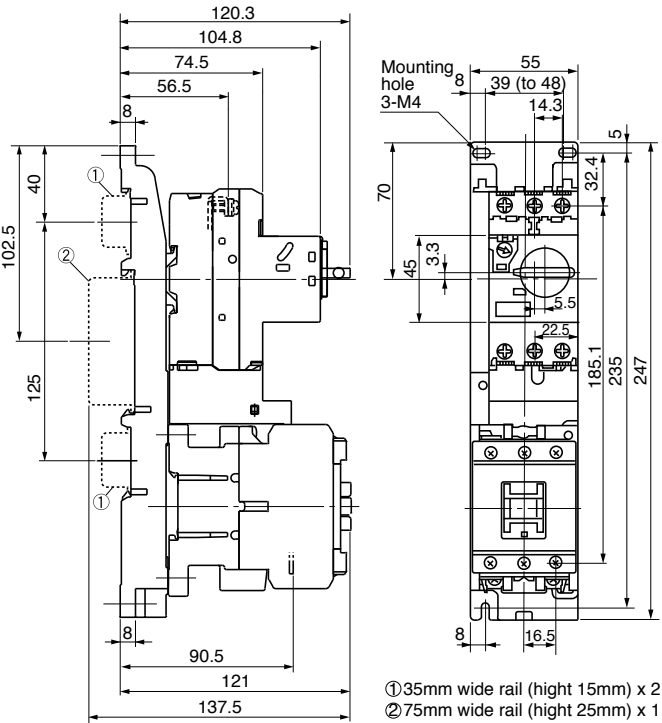
# Combination Starters

## Dimensions

■ Dimensions, mm

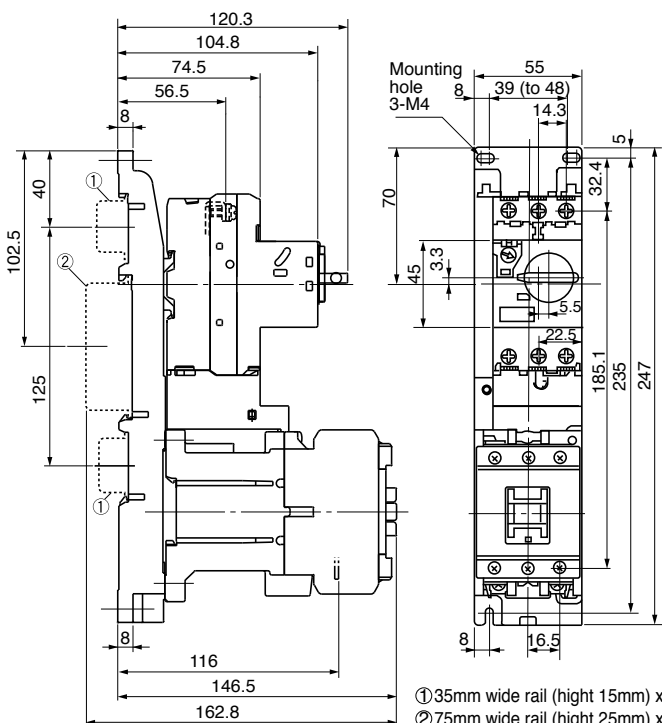
• Combination

BM3RHB + SC-E1



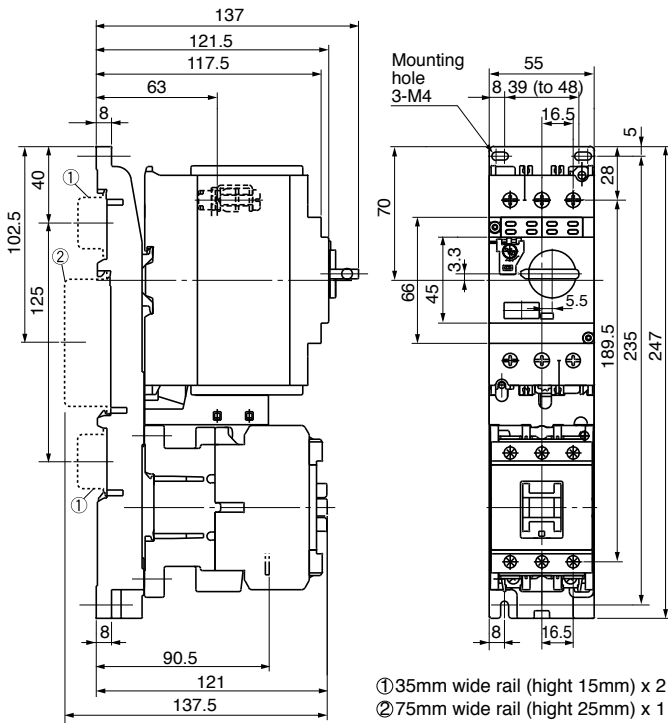
| MMS    | Contactors | Link module | Base plate | Mass (g) |
|--------|------------|-------------|------------|----------|
| BM3RHB | SC-E1      | BZ0LRE32AA  | BZ0BPRE32A | 1,155    |

BM3RHB + SC-E1/G



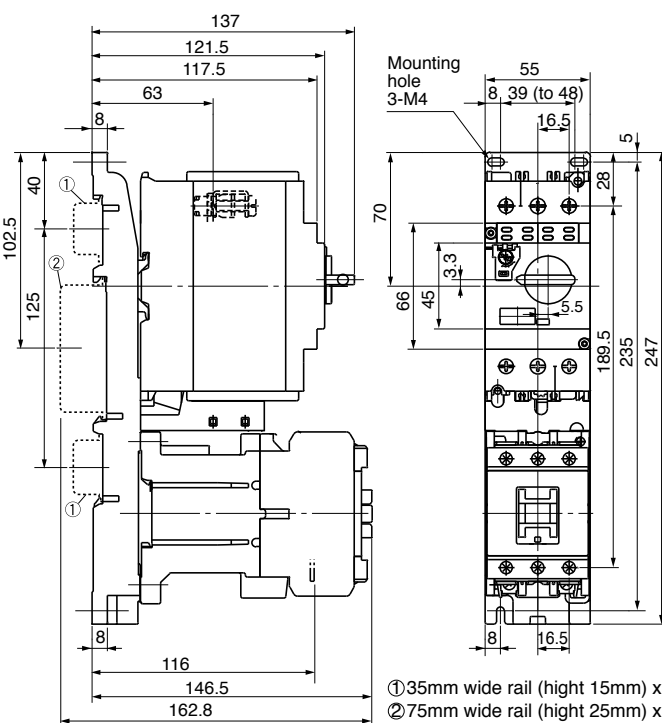
| MMS    | Contactors | Link module | Base plate | Mass (g) |
|--------|------------|-------------|------------|----------|
| BM3RHB | SC-E1/G    | BZ0LRE32GA  | BZ0BPRE32A | 1,380    |

BM3V□B + SC-E1, E2, E2S



| MMS    | Contactors     | Link module | Base plate | Mass (g) |
|--------|----------------|-------------|------------|----------|
| BM3VSB | SC-E1, E2, E2S | BZ0LVE51AA  | BZ0BPVE51A | 1,580    |
| BM3VHB |                |             |            |          |

BM3V□B + SC-E1/G, E2/G, E2S/G



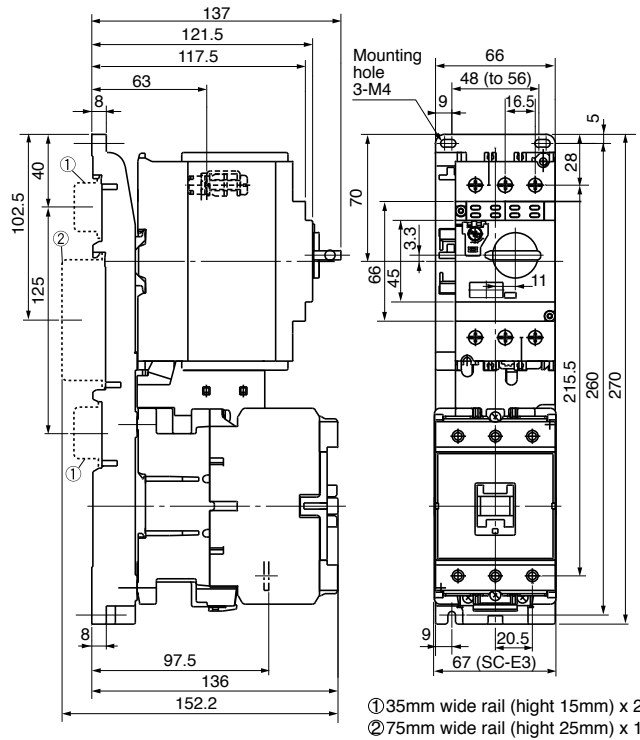
| MMS    | Contactors           | Link module | Base plate | Mass (g) |
|--------|----------------------|-------------|------------|----------|
| BM3VSB | SC-E1/G, E2/G, E2S/G | BZ0LVE51GA  | BZ0BPVE51A | 1,810    |
| BM3VHB |                      |             |            |          |

# Combination Starters

## Dimensions

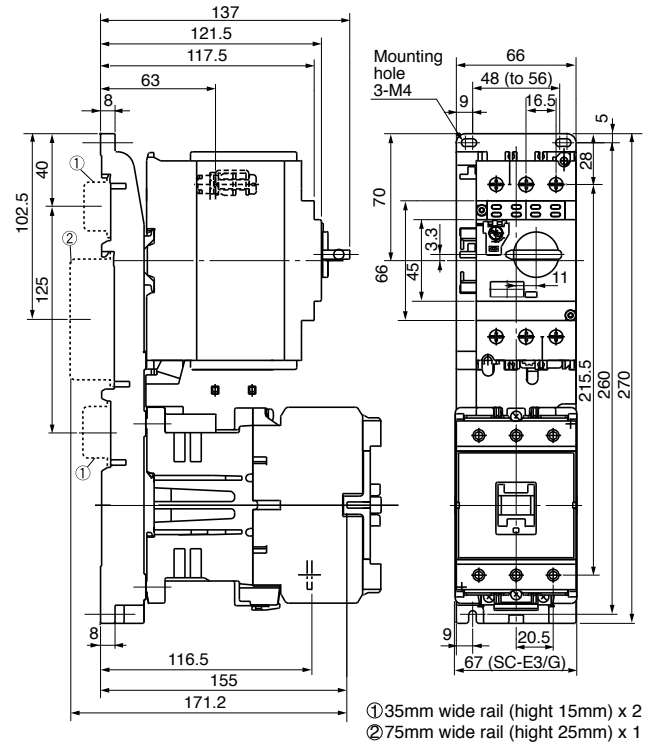
### ■ Dimensions, mm

#### • Combination BM3V□B + SC-E3



| MMS    | Contactors | Link module | Base plate | Mass (g) |
|--------|------------|-------------|------------|----------|
| BM3VSB | SC-E3      | BZ0LVE65AA  | BZ0BPVE65A | 2,080    |
| BM3VHB |            |             |            |          |

#### BM3V□B + SC-E3/G



| MMS    | Contactors | Link module | Base plate | Mass (g) |
|--------|------------|-------------|------------|----------|
| BM3VSB | SC-E3/G    | BZ0LVE65GA  | BZ0BPVE65A | 2,400    |
| BM3VHB |            |             |            |          |

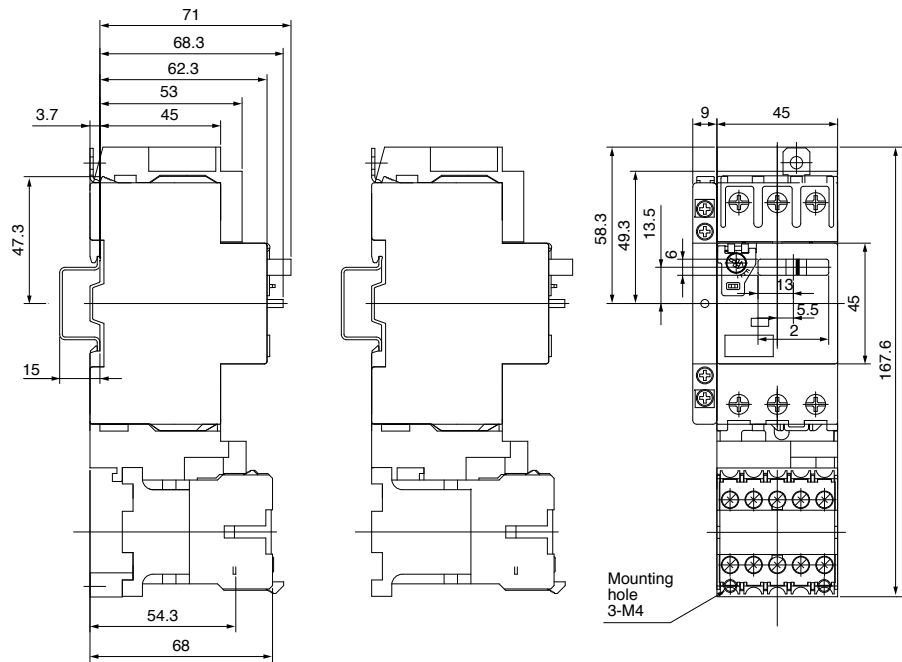
# Combination Starters

## Dimensions

■ Dimensions, mm

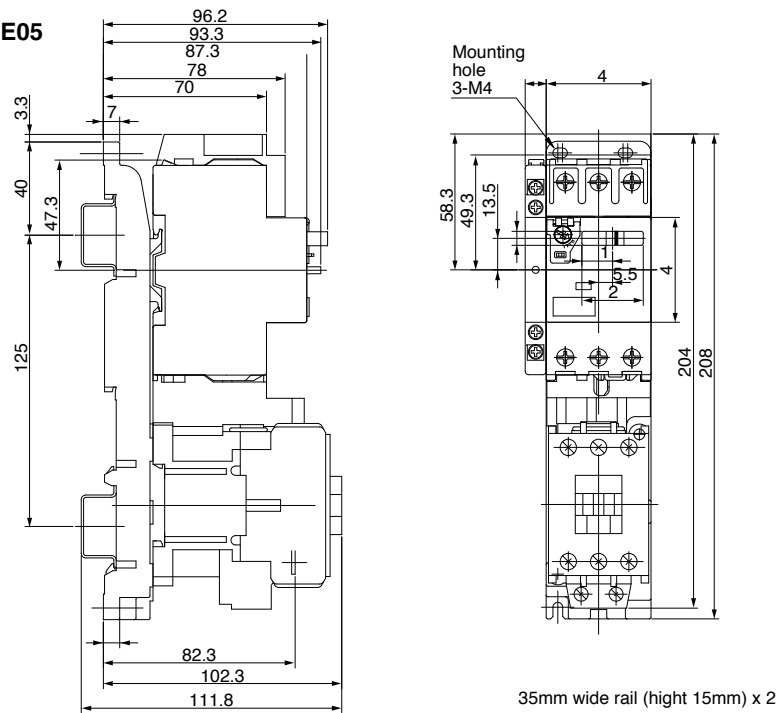
- Type F combination

BM3RSB + SC-M01, M02, M01/G, M02/G



| MMS    | Contactors      | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-----------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RSB | SC-M01, M02     | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRC09AA  | -          | 615      |
| BM3RSB | SC-M01/G, M02/G | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRC09AA  | -          | 675      |

BM3RSB + SC-E02 to E05



| MMS    | Contactors            | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-----------------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RSB | SC-E02, E03, E04, E05 | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE22AA  | BZ0BPRE22A | 895      |

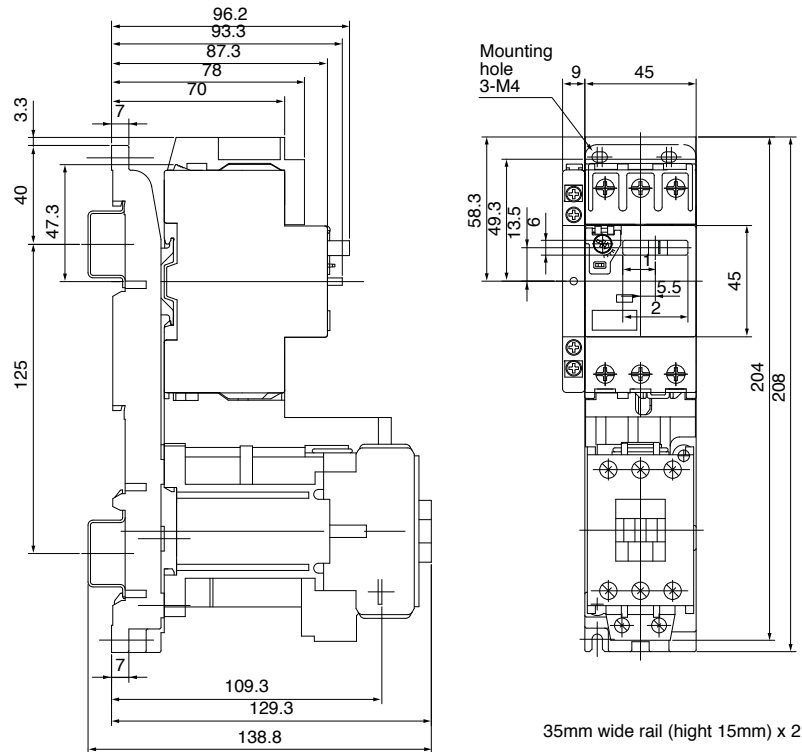
# Combination Starters

## Dimensions

### ■ Dimensions, mm

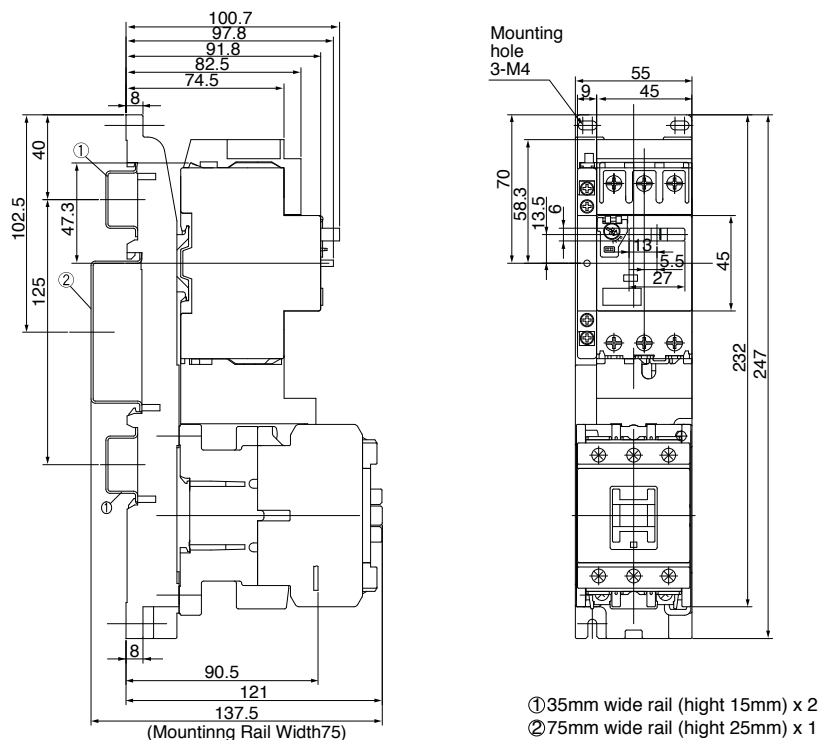
#### • Type F combination

#### BM3RSB + SC-E02/G to E05/G



| MMS    | Contactors                    | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-------------------------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RSB | SC-E02/G, E03/G, E04/G, E05/G | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE22GA  | BZ0BPPE22A | 1,160    |

#### BM3RSB + SC-E1

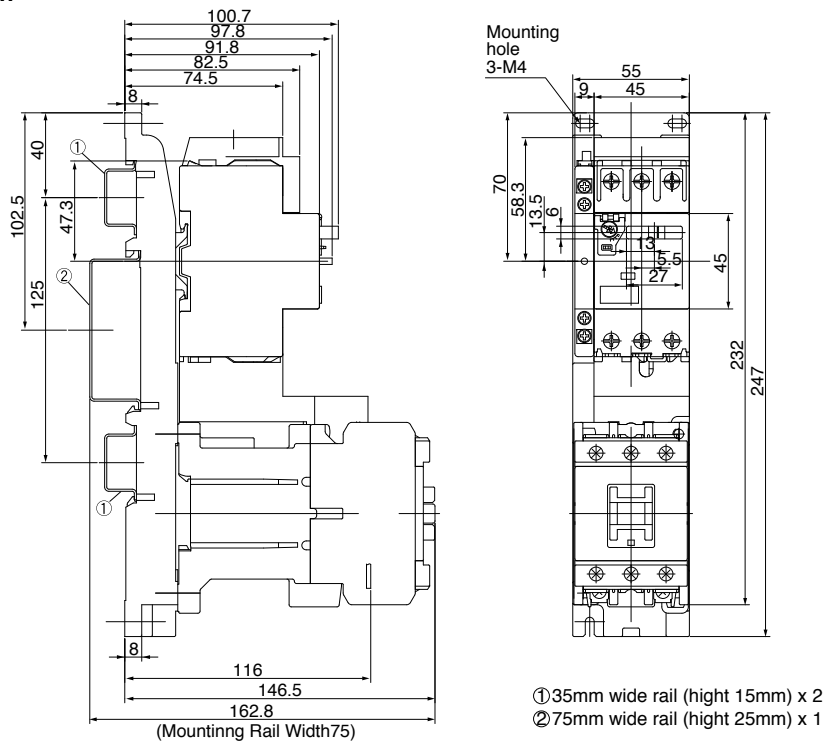


| MMS    | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RSB | SC-E1      | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE32AA  | BZ0BPPE32A | 1,230    |

# Combination Starters

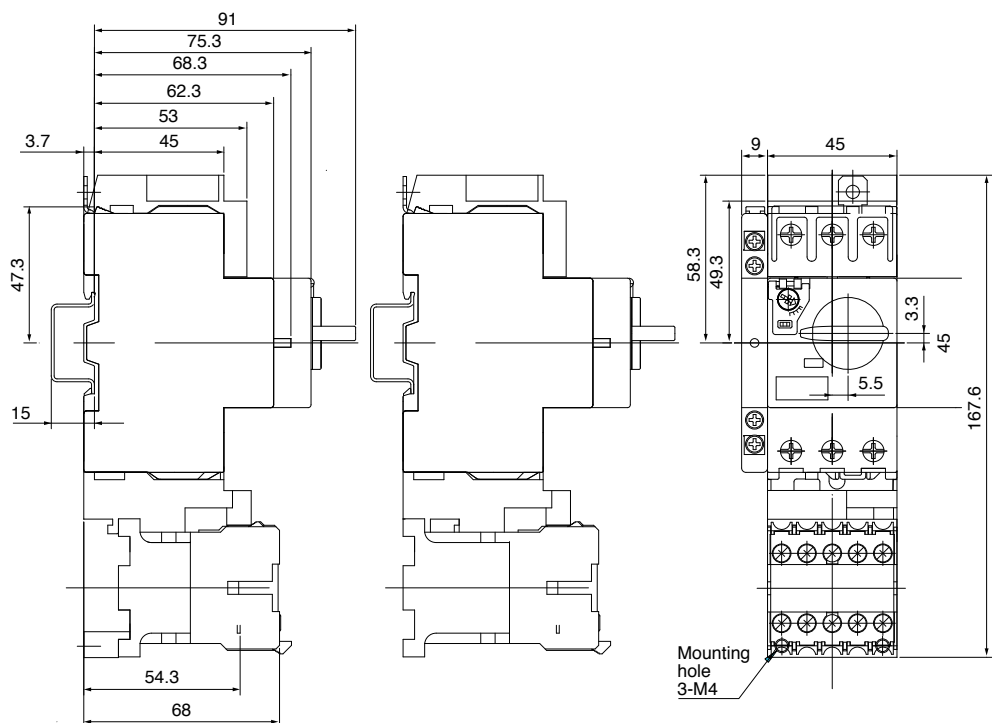
## Dimensions

■ Dimensions, mm  
• Type F combination  
BM3RSB + SC-E1/G



| MMS    | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RSB | SC-E1/G    | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE32GA  | BZ0BPRE32A | 1,455    |

BM3RHB + SC-M01, M02, M01/G, M02/G



| MMS    | Contactors      | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-----------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RHB | SC-M01, M02     | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRC09AA  | -          | 635      |
| BM3RHB | SC-M01/G, M02/G | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRC09AA  | -          | 695      |

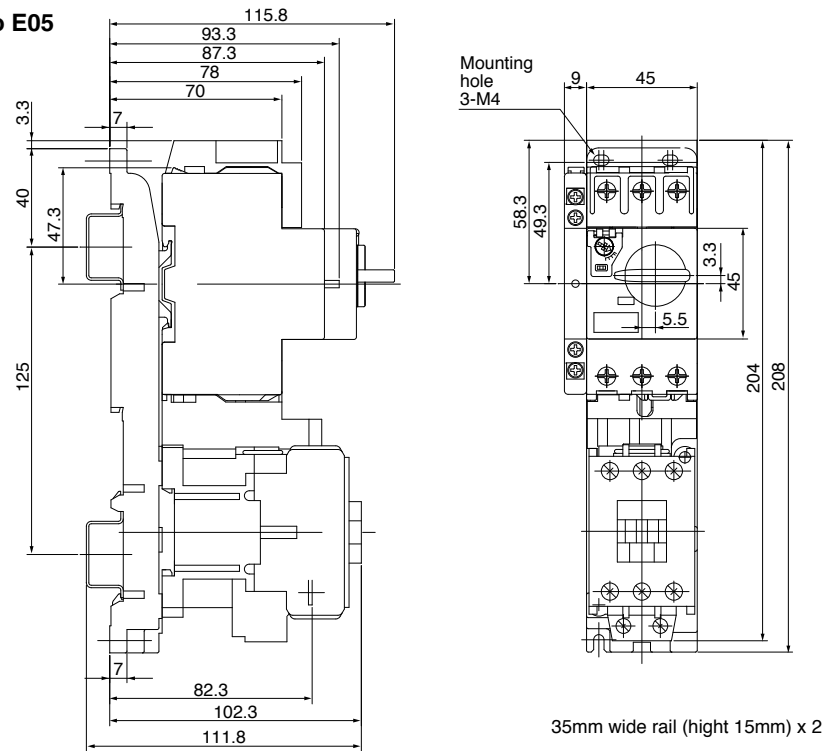
# Combination Starters

## Dimensions

### ■ Dimensions, mm

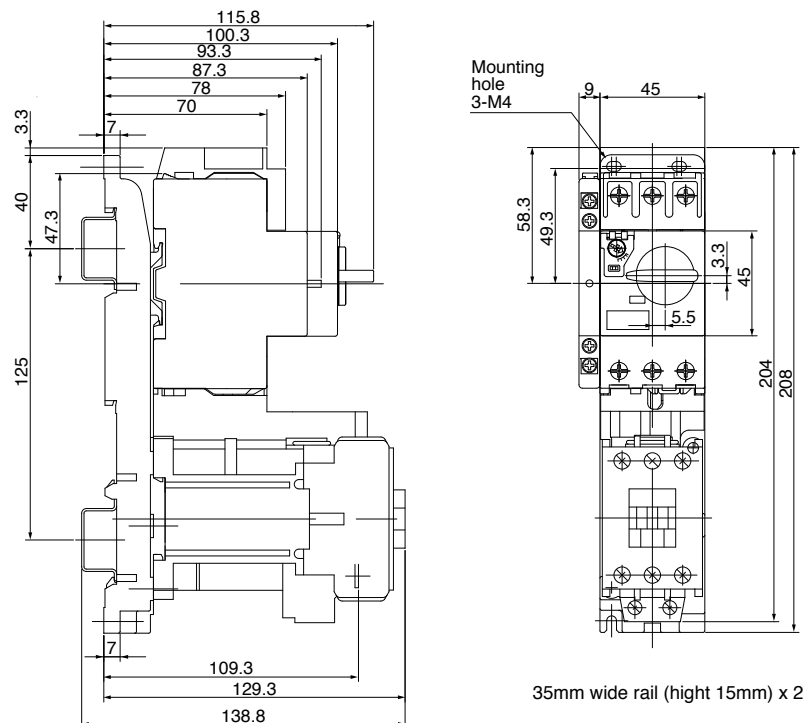
#### • Type F combination

#### BM3RHB + SC-E02 to E05



| MMS    | Contactors            | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-----------------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RHB | SC-E02, E03, E04, E05 | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE22AA  | BZ0BPRE22A | 915      |

#### BM3RHB + SC-E02/G to E05/G

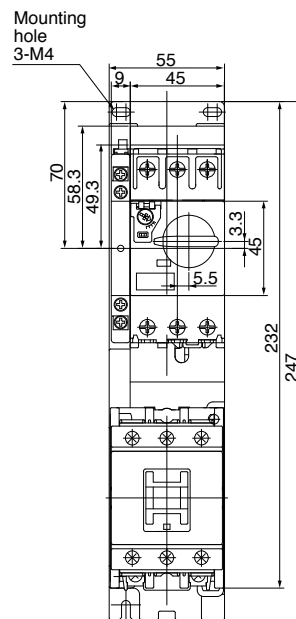
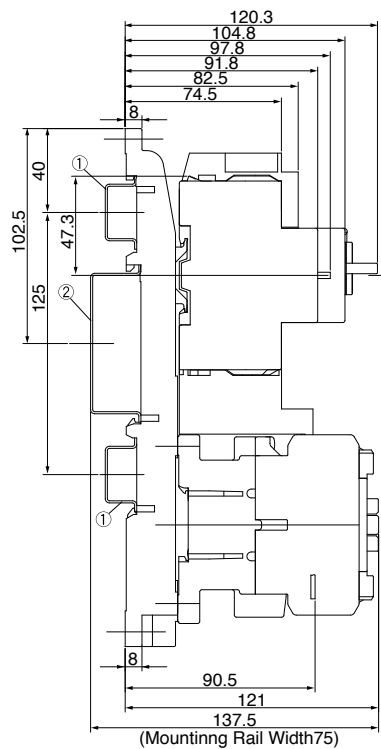


| MMS    | Contactors                    | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|--------|-------------------------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3RHB | SC-E02/G, E03/G, E04/G, E05/G | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE22GA  | BZ0BPRE22A | 1,160    |

# Combination Starters

## Dimensions

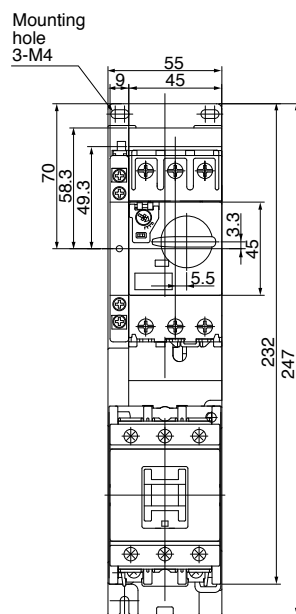
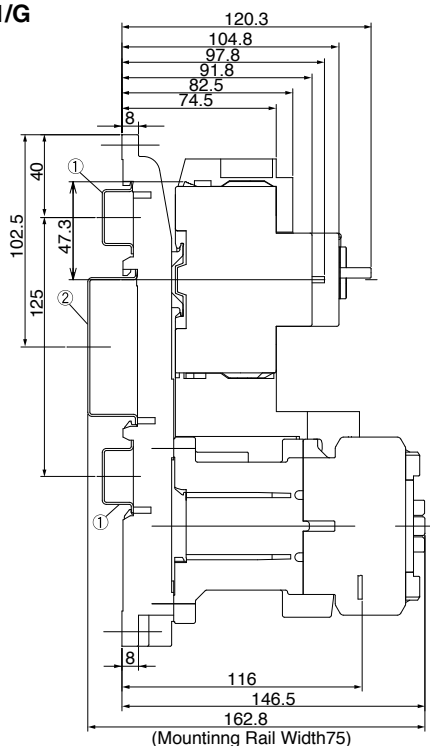
■ Dimensions, mm  
• Type F combination  
BM3RHB + SC-E1



- ① 35mm wide rail (height 15mm) x 2
- ② 75mm wide rail (height 25mm) x 1

| MMS    | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate  | Mass (g) |
|--------|------------|--------------------------|-----------------------------------|-------------|-------------|----------|
| BM3RHB | SC-E1      | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE32AA  | BZ0BPRES32A | 1,230    |

BM3RHB + SC-E1/G



- ① 35mm wide rail (height 15mm) x 2
- ② 75mm wide rail (height 25mm) x 1

| MMS    | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate  | Mass (g) |
|--------|------------|--------------------------|-----------------------------------|-------------|-------------|----------|
| BM3RHB | SC-E1/G    | BZ0TCRE                  | BZ0TKUAB                          | BZ0LRE32GA  | BZ0BPRES32A | 1,455    |

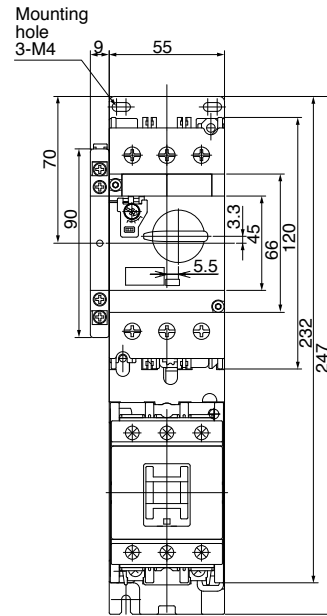
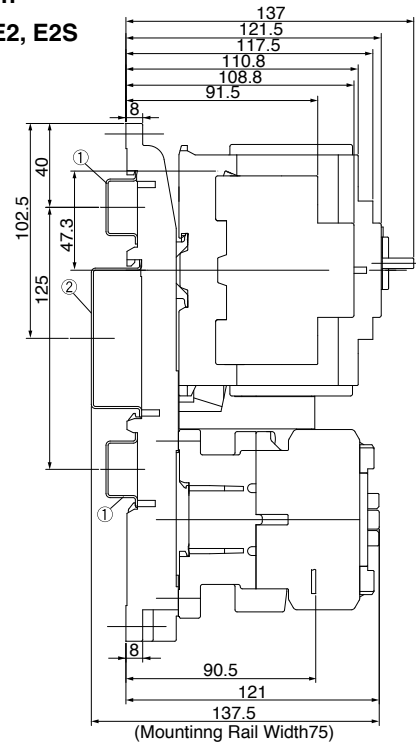
# Combination Starters

## Dimensions

### ■ Dimensions, mm

#### • Type F combination

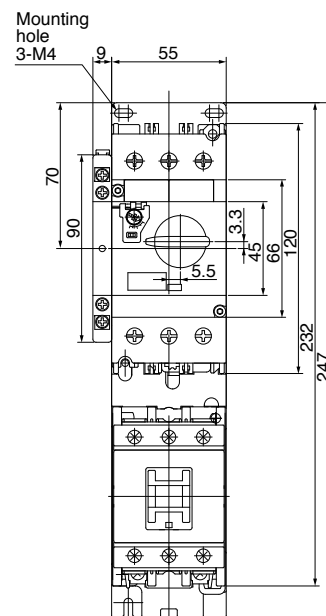
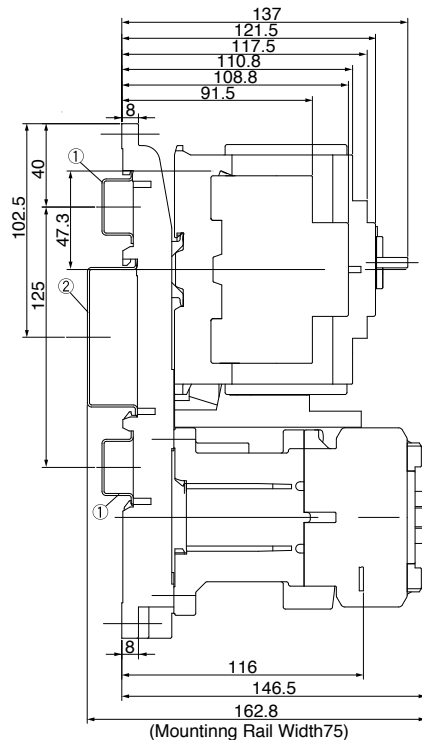
#### BM3V□B + SC-E1, E2, E2S



- ① 35mm wide rail (height 15mm) x 2
- ② 75mm wide rail (height 25mm) x 1

| MMS        | Contactors   | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|------------|--------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3VSB,VHB | SC-E1,E2,E2S | -                        | BZ0TKUAB                          | BZ0LVE51AA  | BZ0BPVE51A | 1,625    |

#### BM3V□B + SC-E1/G, E2/G, E2S/G



- ① 35mm wide rail (height 15mm) x 2
- ② 75mm wide rail (height 25mm) x 1

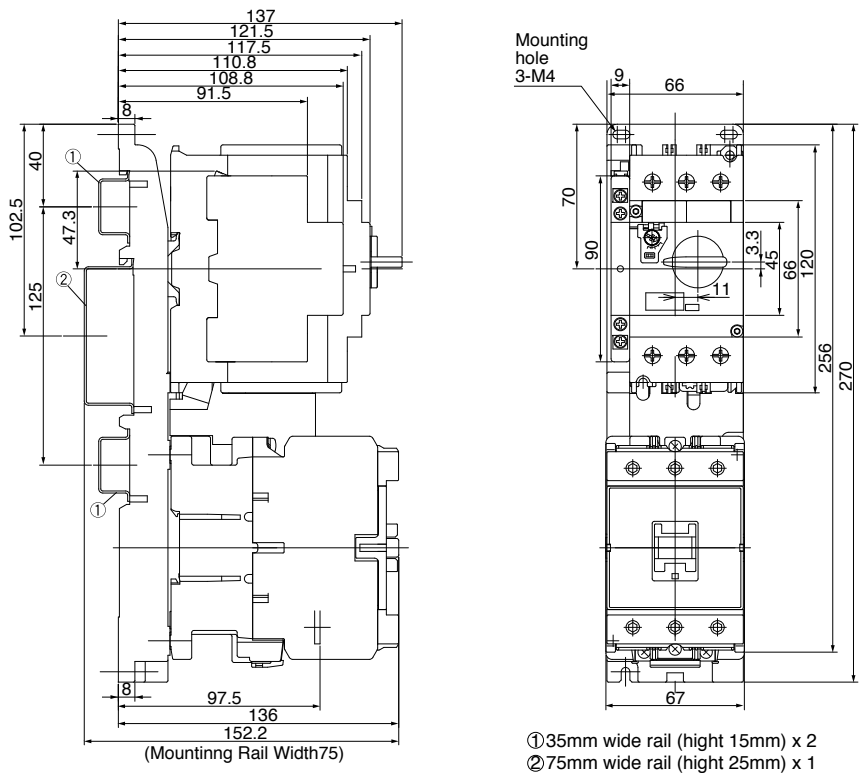
| MMS        | Contactors         | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|------------|--------------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3VSB,VHB | SC-E1/G,E2/G,E2S/G | -                        | BZ0TKUAB                          | BZ0LVE51GA  | BZ0BPVE51A | 1,855    |

# Combination Starters Dimensions

■ Dimensions, mm

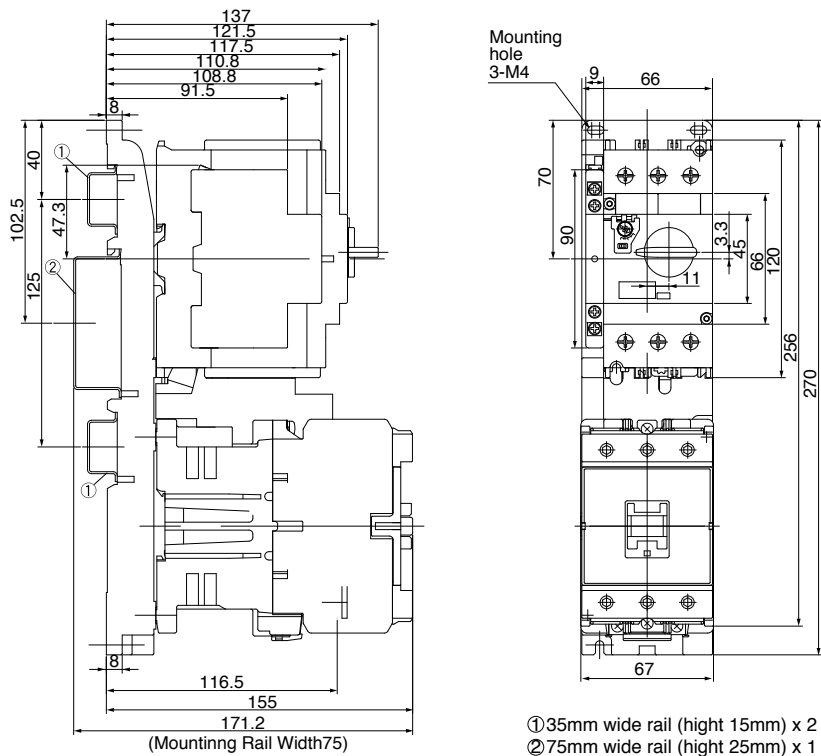
• Type F combination

BM3V□B + SC-E3



| MMS        | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|------------|------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3VSB,VHB | SC-E3      | -                        | BZ0TKUAB                          | BZ0LVE65AA  | BZ0BPVE65A | 2,125    |

BM3V□B + SC-E3/G



| MMS        | Contactors | Line side terminal cover | Short-circuit alarm contact block | Link module | Base plate | Mass (g) |
|------------|------------|--------------------------|-----------------------------------|-------------|------------|----------|
| BM3VSB,VHB | SC-E3/G    | -                        | BZ0TKUAB                          | BZ0LVE65GA  | BZ0BPVE65A | 2,445    |

# List Price for BM3 Series Manual Motor Starters

## 32A Frame types

| Standard breaking capacity |               |            | High breaking capacity |               |            |
|----------------------------|---------------|------------|------------------------|---------------|------------|
| Part number                | Discount code | List Price | Part number            | Discount code | List Price |
| <b>BM3RSB-P16</b>          | D14           | 80.00      | <b>BM3RHB-P16</b>      | D14           | 100.00     |
| <b>BM3RSB-P25</b>          | D14           | 80.00      | <b>BM3RHB-P25</b>      | D14           | 100.00     |
| <b>BM3RSB-P40</b>          | D14           | 80.00      | <b>BM3RHB-P40</b>      | D14           | 100.00     |
| <b>BM3RSB-P63</b>          | D14           | 80.00      | <b>BM3RHB-P63</b>      | D14           | 100.00     |
| <b>BM3RSB-001</b>          | D14           | 80.00      | <b>BM3RHB-001</b>      | D14           | 100.00     |
| <b>BM3RSB-1P6</b>          | D14           | 80.00      | <b>BM3RHB-1P6</b>      | D14           | 100.00     |
| <b>BM3RSB-2P5</b>          | D14           | 80.00      | <b>BM3RHB-2P5</b>      | D14           | 100.00     |
| <b>BM3RSB-004</b>          | D14           | 80.00      | <b>BM3RHB-004</b>      | D14           | 100.00     |
| <b>BM3RSB-6P3</b>          | D14           | 80.00      | <b>BM3RHB-6P3</b>      | D14           | 100.00     |
| <b>BM3RSB-010</b>          | D14           | 90.00      | <b>BM3RHB-010</b>      | D14           | 110.00     |
| <b>BM3RSB-013</b>          | D14           | 90.00      | <b>BM3RHB-013</b>      | D14           | 110.00     |
| <b>BM3RSB-016</b>          | D14           | 90.00      | <b>BM3RHB-016</b>      | D14           | 110.00     |
| <b>BM3RSB-020</b>          | D14           | 90.00      | <b>BM3RHB-020</b>      | D14           | 110.00     |
| <b>BM3RSB-025</b>          | D14           | 100.00     | <b>BM3RHB-025</b>      | D14           | 120.00     |
| <b>BM3RSB-032</b>          | D14           | 150.00     | <b>BM3RHB-032</b>      | D14           | 170.00     |

## 63A Frame types

| Standard breaking capacity |               |            | High breaking capacity |               |            |
|----------------------------|---------------|------------|------------------------|---------------|------------|
| Part number                | Discount code | List Price | Part number            | Discount code | List Price |
| <b>BM3VSB-010</b>          | D14           | 170.00     | <b>BM3VHB-010</b>      | D14           | 260.00     |
| <b>BM3VSB-013</b>          | D14           | 170.00     | <b>BM3VHB-013</b>      | D14           | 260.00     |
| <b>BM3VSB-016</b>          | D14           | 170.00     | <b>BM3VHB-016</b>      | D14           | 260.00     |
| <b>BM3VSB-020</b>          | D14           | 170.00     | <b>BM3VHB-020</b>      | D14           | 260.00     |
| <b>BM3VSB-025</b>          | D14           | 190.00     | <b>BM3VHB-025</b>      | D14           | 290.00     |
| <b>BM3VSB-032</b>          | D14           | 210.00     | <b>BM3VHB-032</b>      | D14           | 310.00     |
| <b>BM3VSB-040</b>          | D14           | 210.00     | <b>BM3VHB-040</b>      | D14           | 310.00     |
| <b>BM3VSB-050</b>          | D14           | 230.00     | <b>BM3VHB-050</b>      | D14           | 330.00     |
| <b>BM3VSB-063</b>          | D14           | 230.00     | <b>BM3VHB-063</b>      | D14           | 330.00     |

## List Price for BM3 Series Manual Motor Starters accessories

| Part number                                    | Description                                                                            | Discount code | List Price |
|------------------------------------------------|----------------------------------------------------------------------------------------|---------------|------------|
| <b>Auxiliary contact block (W)</b>             |                                                                                        |               |            |
| BZ0WIA                                         | Front mounting Auxiliary contact - Internal type 1NO                                   | D14           | 8.50       |
| BZ0WIB                                         | Front mounting Auxiliary contact - Internal type 1NC                                   | D14           | 8.50       |
| BZ0WUAAAL                                      | Left side mounting Auxiliary contact - Lateral type 2NO                                | D14           | 12.00      |
| BZ0WUABL                                       | Left side mounting Auxiliary contact - Lateral type 1NO+1NC                            | D14           | 12.00      |
| BZ0WUBBL                                       | Left side mounting Auxiliary contact - Lateral type 2NC                                | D14           | 12.00      |
| BZ0WUAAR                                       | Right side mounting Auxiliary contact - Lateral type 2NO                               | D14           | 12.00      |
| BZ0WUABR                                       | Right side mounting Auxiliary contact - Lateral type 1NO+1NC                           | D14           | 12.00      |
| BZ0WUBBR                                       | Right side mounting Auxiliary contact - Lateral type 2NC                               | D14           | 12.00      |
| <b>Alarm contact block (K)</b>                 |                                                                                        |               |            |
| BZ0KIA                                         | Front (right side only) mounting Alarm contact - Internal type 1NO                     | D14           | 9.00       |
| BZ0KIB                                         | Front (right side only) mounting Alarm contact - Internal type 1NC                     | D14           | 9.00       |
| <b>Auxiliary and alarm contact blocks (WK)</b> |                                                                                        |               |            |
| BZ0WKUAA                                       | Left side mounting Auxiliary and Alarm contact 1NO(Aux.)+1NO(Alarm)                    | D14           | 18.00      |
| BZ0WKUBA                                       | Left side mounting Auxiliary and Alarm contact 1NC(Aux.)+1NO(Alarm)                    | D14           | 18.00      |
| BZ0WKUAB                                       | Left side mounting Auxiliary and Alarm contact 1NO(Aux.)+1NC(Alarm)                    | D14           | 18.00      |
| BZ0WKUBB                                       | Left side mounting Auxiliary and Alarm contact 1NC(Aux.)+1NC(Alarm)                    | D14           | 18.00      |
| <b>Short-circuit alarm contact block (KI)</b>  |                                                                                        |               |            |
| BZ0TKUAB                                       | Left side mounting Short Circuit Alarm contact 1NO+1NC                                 | D14           | 20.00      |
| <b>Shunt trip devices (F)</b>                  |                                                                                        |               |            |
| BZ0FAZU                                        | Right side mounting Shunt trip / Coil voltage 24VAC 50/60Hz                            | D14           | 34.00      |
| BZ0FBZU                                        | Right side mounting Shunt trip / Coil voltage 48VAC 60Hz                               | D14           | 34.00      |
| BZ0FCZU                                        | Right side mounting Shunt trip / Coil voltage 48VAC 50Hz / 60VAC 60Hz                  | D14           | 34.00      |
| BZ0F1ZU                                        | Right side mounting Shunt trip / Coil voltage 100VAC 50Hz / 100-110VAC 60Hz            | D14           | 34.00      |
| BZ0FDZU                                        | Right side mounting Shunt trip / Coil voltage 110-127VAC 50Hz / 120VAC 60Hz            | D14           | 34.00      |
| BZ0FEZU                                        | Right side mounting Shunt trip / Coil voltage 200VAC 50Hz / 200-220VAC 60Hz            | D14           | 34.00      |
| BZ0FFZU                                        | Right side mounting Shunt trip / Coil voltage 220-230VAC 50Hz / 240-260VAC 60Hz        | D14           | 34.00      |
| BZ0FGZU                                        | Right side mounting Shunt trip / Coil voltage 240VAC 50Hz / 277VAC 60Hz                | D14           | 34.00      |
| BZ0FHZU                                        | Right side mounting Shunt trip / Coil voltage 380-400VAC 50Hz / 400-440VAC 60Hz        | D14           | 34.00      |
| BZ0F4ZU                                        | Right side mounting Shunt trip / Coil voltage 415-440VAC 50Hz / 460-480VAC 60Hz        | D14           | 34.00      |
| BZ0FJZU                                        | Right side mounting Shunt trip / Coil voltage 500VAC 50Hz / 600VAC 60Hz                | D14           | 34.00      |
| BZ0FKZUD                                       | Right side mounting Shunt trip / Coil voltage 24-60VDC                                 | D14           | 34.00      |
| BZ0FLZUD                                       | Right side mounting Shunt trip / Coil voltage 110-240VDC                               | D14           | 34.00      |
| <b>Undervoltage trip devices (R)</b>           |                                                                                        |               |            |
| BZ0RAZ1U                                       | Right side mounting Undervoltage trip / Coil voltage 24VAC 50Hz                        | D14           | 34.00      |
| BZ0RAZ2U                                       | Right side mounting Undervoltage trip / Coil voltage 24VAC 60Hz                        | D14           | 34.00      |
| BZ0RBZ1U                                       | Right side mounting Undervoltage trip / Coil voltage 48VAC 50Hz                        | D14           | 34.00      |
| BZ0RBZU                                        | Right side mounting Undervoltage trip / Coil voltage 48VAC 60Hz                        | D14           | 34.00      |
| BZ0R1ZU                                        | Right side mounting Undervoltage trip / Coil voltage 100VAC 50Hz / 100-110VAC 60Hz     | D14           | 34.00      |
| BZ0RDZU                                        | Right side mounting Undervoltage trip / Coil voltage 110-127VAC 50Hz / 120VAC 60Hz     | D14           | 34.00      |
| BZ0REZU                                        | Right side mounting Undervoltage trip / Coil voltage 200VAC 50Hz / 200-220VAC 60Hz     | D14           | 34.00      |
| BZ0RFZU                                        | Right side mounting Undervoltage trip / Coil voltage 220-230VAC 50Hz / 240-260VAC 60Hz | D14           | 34.00      |
| BZ0RGZU                                        | Right side mounting Undervoltage trip / Coil voltage 240VAC 50Hz / 277VAC 60Hz         | D14           | 34.00      |
| BZ0RHZU                                        | Right side mounting Undervoltage trip / Coil voltage 380-400VAC 50Hz / 400-440VAC 60Hz | D14           | 34.00      |
| BZ0R4ZU                                        | Right side mounting Undervoltage trip / Coil voltage 415-440VAC 50Hz / 460-480VAC 60Hz | D14           | 34.00      |
| BZ0RJZU                                        | Right side mounting Undervoltage trip / Coil voltage 500VAC 50Hz / 600VAC 60Hz         | D14           | 34.00      |
| <b>External operating handles</b>              |                                                                                        |               |            |
| BZ0VBBL                                        | External operating handle Standard type (Black) for BM3RH                              | D14           | 40.00      |
| BZ0VYRL                                        | External operating handle Emergency type (Red / Yellow) for BM3RH                      | D14           | 45.00      |
| BZ0VBBM                                        | External operating handle Standard type (Black) for BM3V                               | D14           | 40.00      |
| BZ0VYRM                                        | External operating handle Emergency type (Red / Yellow) for BM3V                       | D14           | 45.00      |
| <b>Line side terminal cover</b>                |                                                                                        |               |            |
| BZ0TCRE                                        | Line side terminal cover for BM3R                                                      | D14           | 18.00      |
| <b>Others</b>                                  |                                                                                        |               |            |
| BZ0SET                                         | Push-in lug for BM3R (10pcs/pack)                                                      | D14           | 8.00       |
| BZ0TCV                                         | IP 20 Terminal cover for BM3V (6pcs/pack)                                              | D14           | 12.00      |
| BZ0CFG                                         | Dummy cover (10pcs/pack)                                                               | D14           | 40.00      |

## List Price for BM3 Series Manual Motor Starters accessories

| Part number          | Description                                                                  | Discount code | List Price |
|----------------------|------------------------------------------------------------------------------|---------------|------------|
| <b>Busbar system</b> |                                                                              |               |            |
| <b>BZ0BR02A</b>      | Busbar / 2-BM3R, modular space : 45mm                                        | D14           | 19.00      |
| <b>BZ0BR03A</b>      | Busbar / 3-BM3R, modular space : 45mm                                        | D14           | 23.00      |
| <b>BZ0BR04A</b>      | Busbar / 4-BM3R, modular space : 45mm                                        | D14           | 27.00      |
| <b>BZ0BR05A</b>      | Busbar / 5-BM3R, modular space : 45mm                                        | D14           | 28.00      |
| <b>BZ0BR12A</b>      | Busbar / 2-BM3R+1(9mm) external accessory, modular space : 54mm              | D14           | 20.00      |
| <b>BZ0BR13A</b>      | Busbar / 3-BM3R+1(9mm) external accessory, modular space : 54mm              | D14           | 24.00      |
| <b>BZ0BR14A</b>      | Busbar / 4-BM3R+1(9mm) external accessory, modular space : 54mm              | D14           | 28.00      |
| <b>BZ0BR15A</b>      | Busbar / 5-BM3R+1(9mm) external accessory, modular space : 54mm              | D14           | 30.00      |
| <b>BZ0BR22A</b>      | Busbar / 2-BM3R+1(18mm) or 2(9mm) external accessories, modular space : 63mm | D14           | 44.00      |
| <b>BZ0BR24A</b>      | Busbar / 4-BM3R+1(18mm) or 2(9mm) external accessories, modular space : 63mm | D14           | 54.00      |
| <b>BZ0BV02A</b>      | Busbar / 2-BM3V, modular space : 55mm                                        | D14           | 42.00      |
| <b>BZ0BV03A</b>      | Busbar / 3-BM3V, modular space : 55mm                                        | D14           | 53.00      |
| <b>BZ0BV04A</b>      | Busbar / 4-BM3V, modular space : 55mm                                        | D14           | 65.00      |
| <b>BZ0BV12A</b>      | Busbar / 2-BM3V+1(9mm) external accessory, modular space : 64mm              | D14           | 46.00      |
| <b>BZ0BV13A</b>      | Busbar / 3-BM3V+1(9mm) external accessory, modular space : 64mm              | D14           | 59.00      |
| <b>BZ0BV14A</b>      | Busbar / 4-BM3V+1(9mm) external accessory, modular space : 64mm              | D14           | 70.00      |
| <b>BZ0BV22A</b>      | Busbar / 2-BM3V+1(18mm) or 2(9mm) external accessories, modular space : 73mm | D14           | 50.00      |
| <b>BZ0BV24A</b>      | Busbar / 4-BM3V+1(18mm) or 2(9mm) external accessories, modular space : 73mm | D14           | 78.00      |
| <b>BZ0BFRA</b>       | 3-phase feed-in terminal for BM3R                                            | D14           | 23.00      |
| <b>BZ0BFVA</b>       | 3-phase feed-in terminal for BM3V                                            | D14           | 48.00      |
| <b>BZ0BCRA</b>       | Busbar cover for BZ0BR (pin connection)                                      | D14           | 6.00       |
| <b>BZ0BCRB</b>       | Busbar cover for BZ0BR (fork connection)                                     | D14           | 6.00       |
| <b>BZ0BCVA</b>       | Busbar cover for BZ0BV (pin connection)                                      | D14           | 8.00       |
| <b>Enclosure</b>     |                                                                              |               |            |
| <b>BZ0CSLA</b>       | Enclosure Surface mounting type IP41                                         | D14           | 40.00      |
| <b>BZ0CSLB</b>       | Enclosure Surface mounting type IP55 with conversion kits                    | D14           | 57.00      |
| <b>BZ0CFLA</b>       | Enclosure Flush mounting type IP41                                           | D14           | 40.00      |
| <b>BZ0CFLB</b>       | Enclosure Flush mounting type IP55 with conversion kits                      | D14           | 51.00      |
| <b>BZ0CKA</b>        | Padlocking device                                                            | D14           | 30.00      |
| <b>BZ0CPM</b>        | Emergency pushbutton / Momentary                                             | D14           | 39.00      |
| <b>BZ0CPL</b>        | Emergency pushbutton / Push-lock turn reset                                  | D14           | 40.00      |
| <b>BZ0CPK</b>        | Emergency pushbutton / Key operated                                          | D14           | 82.00      |
| <b>BZ0CCA</b>        | Conversion kit from IP41 to IP55                                             | D14           | 12.00      |
| <b>BZ0CUA</b>        | Adapter set                                                                  | D14           | 11.00      |
| <b>BZ0CNA</b>        | Neutral connector                                                            | D14           | 4.00       |
| <b>BZ0CLGA</b>       | Indication Lamp / Green, 100-120VAC                                          | D14           | 33.00      |
| <b>BZ0CLGB</b>       | Indication Lamp / Green, 200-240VAC                                          | D14           | 33.00      |
| <b>BZ0CLGC</b>       | Indication Lamp / Green, 380-440VAC                                          | D14           | 33.00      |
| <b>BZ0CLGD</b>       | Indication Lamp / Green, 480-500VAC                                          | D14           | 33.00      |
| <b>BZ0CLGE</b>       | Indication Lamp / Green, 500-600VAC                                          | D14           | 33.00      |
| <b>BZ0CLRA</b>       | Indication Lamp / Red, 100-120VAC                                            | D14           | 33.00      |
| <b>BZ0CLRB</b>       | Indication Lamp / Red, 200-240VAC                                            | D14           | 33.00      |
| <b>BZ0CLRC</b>       | Indication Lamp / Red, 380-440VAC                                            | D14           | 33.00      |
| <b>BZ0CLRD</b>       | Indication Lamp / Red, 480-500VAC                                            | D14           | 33.00      |
| <b>BZ0CLRE</b>       | Indication Lamp / Red, 500-600VAC                                            | D14           | 33.00      |
| <b>BZ0CLCA</b>       | Indication Lamp / Transparent, 100-120VAC                                    | D14           | 33.00      |
| <b>BZ0CLCB</b>       | Indication Lamp / Transparent, 200-240VAC                                    | D14           | 33.00      |
| <b>BZ0CLCC</b>       | Indication Lamp / Transparent, 380-440VAC                                    | D14           | 33.00      |
| <b>BZ0CLCD</b>       | Indication Lamp / Transparent, 480-500VAC                                    | D14           | 33.00      |
| <b>BZ0CLCE</b>       | Indication Lamp / Transparent, 500-600VAC                                    | D14           | 33.00      |

# List Price for SC-E Series Contactors and TK-E Series Overload Relays and accessories

## List Price for SC-E Series Contactors and TK-E Series Overload Relays

### Contactors

| AC operating coil                  |               |            | DC operating coil |               |            | Overload Relays |               |            |
|------------------------------------|---------------|------------|-------------------|---------------|------------|-----------------|---------------|------------|
| Part number                        | Discount code | List Price | Part number       | Discount code | List Price | Part number     | Discount code | List Price |
| SC-M01                             | D14           | 40.00      | SC-M01/G          | D14           | 57.00      | -               | -             | -          |
| SC-M02                             | D14           | 40.00      | SC-M02/G          | D14           | 57.00      | -               | -             | -          |
| SC-E02                             | D14           | 33.00      | SC-E02/G          | D14           | 38.00      | TK-E02          | D14           | 42.00      |
| SC-E03                             | D14           | 40.00      | SC-E03/G          | D14           | 60.00      | TK-E02          | D14           | 42.00      |
| SC-E04                             | D14           | 54.00      | SC-E04/G          | D14           | 80.00      | TK-E02          | D14           | 42.00      |
| SC-E05                             | D14           | 65.00      | SC-E05/G          | D14           | 94.00      | TK-E02          | D14           | 42.00      |
| SC-E1                              | D14           | 78.00      | SC-E1/G           | D14           | 99.00      | TK-E2           | D14           | 80.00      |
| SC-E2                              | D14           | 108.00     | SC-E2/G           | D14           | 130.00     | TK-E2           | D14           | 80.00      |
| SC-E2S                             | D14           | 130.00     | SC-E2S/G          | D14           | 158.00     | TK-E2           | D14           | 80.00      |
| SC-E3                              | D14           | 140.00     | SC-E3/G           | D14           | 175.00     | TK-E3           | D14           | 90.00      |
| SC-E4                              | D14           | 160.00     | SC-E4/G           | D14           | 200.00     | TK-E3           | D14           | 90.00      |
| <b>Super magnet operating coil</b> |               |            |                   |               |            |                 |               |            |
| SC-E5                              | D14           | 360.00     |                   |               |            | TK-E5           | D14           | 100.00     |
| SC-E6                              | D14           | 460.00     |                   |               |            | TK-E6           | D14           | 148.00     |
| SC-E7                              | D14           | 535.00     |                   |               |            | TK-E6           | D14           | 148.00     |
|                                    |               |            |                   |               |            | TK-E6H          | D14           | 148.00     |

## List Price for SC-E Series Contactors and TK-E Series Overload Relays accessories

| Part number                                | Description                                                                     | Discount code | List Price |
|--------------------------------------------|---------------------------------------------------------------------------------|---------------|------------|
| <b>Auxiliary contact block</b>             |                                                                                 |               |            |
| SZ-MA40                                    | Front mounting Auxiliary contact block (4NO) for SC-M01(/G), SC-M02(/G)         | D14           | 30.00      |
| SZ-MA31                                    | Front mounting Auxiliary contact block (3NO+1NC) for SC-M01(/G), SC-M02(/G)     | D14           | 30.00      |
| SZ-MA22                                    | Front mounting Auxiliary contact block (2NO+2NC) for SC-M01(/G), SC-M02(/G)     | D14           | 30.00      |
| SZ-MA13                                    | Front mounting Auxiliary contact block (1NO+3NC) for SC-M01(/G), SC-M02(/G)     | D14           | 30.00      |
| SZ-MA04                                    | Front mounting Auxiliary contact block (4NC) for SC-M01(/G), SC-M02(/G)         | D14           | 30.00      |
| SZ-MA20                                    | Front mounting Auxiliary contact block (2NO) for SC-M01(/G), SC-M02(/G)         | D14           | 25.00      |
| SZ-MA11                                    | Front mounting Auxiliary contact block (1NO+1NC) for SC-M01(/G), SC-M02(/G)     | D14           | 25.00      |
| SZ-MA02                                    | Front mounting Auxiliary contact block (2NC) for SC-M01(/G), SC-M02(/G)         | D14           | 25.00      |
| SZ-MAS10                                   | Side mounting Auxiliary contact block (1NO) for SC-M01(/G), SC-M02(/G)          | D14           | 15.00      |
| SZ-MAS01                                   | Side mounting Auxiliary contact block (1NC) for SC-M01(/G), SC-M02(/G)          | D14           | 15.00      |
| SZ-A40/T                                   | Front mounting Auxiliary contact block (4NO) for SC-E02(/G) to SC-E4(/G)        | D14           | 20.00      |
| SZ-A31/T                                   | Front mounting Auxiliary contact block (3NO+1NC) for SC-E02(/G) to SC-E4(/G)    | D14           | 20.00      |
| SZ-A22/T                                   | Front mounting Auxiliary contact block (2NO+2NC) for SC-E02(/G) to SC-E4(/G)    | D14           | 20.00      |
| SZ-A20/T                                   | Front mounting Auxiliary contact block (2NO) for SC-E02(/G) to SC-E4(/G)        | D14           | 14.00      |
| SZ-A11/T                                   | Front mounting Auxiliary contact block (1NO+1NC) for SC-E02(/G) to SC-E4(/G)    | D14           | 14.00      |
| SZ-A02/T                                   | Front mounting Auxiliary contact block (2NC) for SC-E02(/G) to SC-E4(/G)        | D14           | 14.00      |
| SZ-AS1/T                                   | Side mounting Auxiliary contact block (1NO+1NC) for SC-E02(/G) to SC-E4(/G)     | D14           | 22.00      |
| SZ-AS2/T                                   | Side mounting Auxiliary contact block (1NO+1NC) for SC-E5 to SC-E7              | D14           | 22.00      |
| <b>Main circuit surge suppression unit</b> |                                                                                 |               |            |
| SZ-ZM1E                                    | Front mounting Main circuit surge suppression unit for SC-E02(/G) to SC-E05(/G) | D14           | 38.00      |
| SZ-ZM2E                                    | Side mounting Main circuit surge suppression unit for SC-E02(/G) to SC-E05(/G)  | D14           | 38.00      |
| SZ-ZM3E                                    | Front mounting Main circuit surge suppression unit for SC-E1(/G) to SC-E4(/G)   | D14           | 40.00      |
| SZ-ZM4E                                    | Side mounting Main circuit surge suppression unit for SC-E1(/G) to SC-E4(/G)    | D14           | 40.00      |

# List Price for SC-E Series Contactors and TK-E Series Overload Relays accessories

## List Price for SC-E Series Contactors and TK-E Series Overload Relays accessories

| Part number                               | Description                                                                                       | Discount code | List Price |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|---------------|------------|
| <b>Coil surge suppression unit</b>        |                                                                                                   |               |            |
| SZ-MZ1                                    | Coil surge suppression unit CR type 12-60VAC for SC-M01, SC-M02                                   | D14           | 5.00       |
| SZ-MZ2                                    | Coil surge suppression unit CR type 72-250VAC for SC-M01, SC-M02                                  | D14           | 5.00       |
| SZ-MZ3                                    | Coil surge suppression unit Diode type 6-250VDC for SC-M01/G, SC-M02/G                            | D14           | 5.00       |
| SZ-Z1                                     | Coil surge suppression unit Varistor type 24-48VAC/DC for SC-E02(/G) to SC-E05(/G)                | D1            | 13.00      |
| SZ-Z2                                     | Coil surge suppression unit Varistor type 100-250VAC/DC for SC-E02(/G) to SC-E05(/G)              | D1            | 13.00      |
| SZ-Z3                                     | Coil surge suppression unit Varistor type 380-440VAC/DC for SC-E02 to SC-E05                      | D1            | 13.00      |
| SZ-Z6                                     | Coil surge suppression unit Varistor type 24-48VAC/DC with LED for SC-E02(/G) to SC-E05(/G)       | D1            | 17.00      |
| SZ-Z7                                     | Coil surge suppression unit Varistor type 100-250VAC/DC with LED for SC-E02(/G) to SC-E05(/G)     | D1            | 17.00      |
| SZ-Z31                                    | Coil surge suppression unit Varistor type 24-48VAC/DC for SC-E1(/G) to SC-E4(/G)                  | D1            | 22.00      |
| SZ-Z32                                    | Coil surge suppression unit Varistor type 100-250VAC/DC for SC-E1(/G) to SC-E4(/G)                | D1            | 22.00      |
| SZ-Z33                                    | Coil surge suppression unit Varistor type 380-440VAC/DC for SC-E1 to SC-E4                        | D1            | 22.00      |
| SZ-Z4                                     | Coil surge suppression unit CR type 24-48VAC/DC for SC-E02(/G) to SC-E05(/G)                      | D1            | 13.00      |
| SZ-Z5                                     | Coil surge suppression unit CR type 100-250VAC/DC for SC-E02(/G) to SC-E05(/G)                    | D1            | 13.00      |
| SZ-Z8                                     | Coil surge suppression unit CR type 24-48VAC/DC with LED for SC-E02(/G) to SC-E05(/G)             | D1            | 17.00      |
| SZ-Z9                                     | Coil surge suppression unit CR type 100-250VAC/DC with LED for SC-E02(/G) to SC-E05(/G)           | D1            | 17.00      |
| SZ-Z34                                    | Coil surge suppression unit CR type 24-48VAC/DC for SC-E1 to SC-E4                                | D1            | 23.00      |
| SZ-Z35                                    | Coil surge suppression unit CR type 100-250VAC/DC for SC-E1 to SC-E4                              | D1            | 23.00      |
| SZ-Z36                                    | Coil surge suppression unit CR type 24-48VAC/DC for SC-E1/G to SC-E4/G                            | D1            | 23.00      |
| SZ-Z37                                    | Coil surge suppression unit CR type 100-250VAC/DC for SC-E1/G to SC-E4/G                          | D1            | 23.00      |
| <b>Power connection kit for reversing</b> |                                                                                                   |               |            |
| SZ-MRWC                                   | Power connection kit for reversing line side and load side for SC-M01(/G), SC-M02(/G)             | D14           | 18.00      |
| SZ-ERW1/A                                 | Power connection kit for reversing line side for SC-E02(/G) to SC-E05(/G)                         | D14           | 10.00      |
| SZ-ERW1/B                                 | Power connection kit for reversing load side for Reversing Contactor SC-E02(/G) to SC-E05(/G)     | D14           | 10.00      |
| SZ-ERW1/D                                 | Power connection kit for reversing load side for Reversing Motor Starter SC-E02(/G) to SC-E05(/G) | D14           | 10.00      |
| SZ-ERW2/A                                 | Power connection kit for reversing line side for SC-E1(/G) to SC-E2S(/G)                          | D14           | 20.00      |
| SZ-ERW2/B                                 | Power connection kit for reversing load side for Reversing Contactor SC-E1(/G) to SC-E2S(/G)      | D14           | 20.00      |
| SZ-ERW2/D                                 | Power connection kit for reversing load side for Reversing Motor Starter SC-E1(/G) to SC-E2S(/G)  | D14           | 20.00      |
| SZ-ERW3/A                                 | Power connection kit for reversing line side for SC-E3(/G) to SC-E4(/G)                           | D14           | 40.00      |
| SZ-ERW3/B                                 | Power connection kit for reversing load side for Reversing Contactor SC-E3(/G) to SC-E4(/G)       | D14           | 40.00      |
| SZ-ERW3/D                                 | Power connection kit for reversing load side for Reversing Motor Starter SC-E3(/G) to SC-E4(/G)   | D14           | 40.00      |
| <b>Mechanical interlock unit</b>          |                                                                                                   |               |            |
| SZ-MRM                                    | Mechanical interlock unit for SC-M01(/G), SC-M02(/G)                                              | D14           | 4.00       |
| SZ-RM                                     | Mechanical interlock unit for SC-E02(/G) to SC-E4(/G)                                             | D1            | 20.00      |
| <b>Replacement coil</b>                   |                                                                                                   |               |            |
| 4NC0H-#MC                                 | Replacement coil for SC-E02 to SC-E05 (# : operating coil voltage code)                           | D1            | 30.00      |
| SZ-GM/N1-#                                | Replacement coil for SC-E1 to SC-E2S (# : operating coil voltage code)                            | D1            | 30.00      |
| SZ-GM/N2S-#                               | Replacement coil for SC-E3 to SC-E4 (# : operating coil voltage code)                             | D1            | 31.00      |
| SZ-GS/N5-#                                | Replacement coil for SC-E5 (# : operating coil voltage code)                                      | D1            | 250.00     |
| SZ-GS/N6-#                                | Replacement coil for SC-E6 to SC-E7 (# : operating coil voltage code)                             | D1            | 276.00     |
| <b>Base unit for separate mounting</b>    |                                                                                                   |               |            |
| SZ-HCE                                    | Separate mounting base unit for TK-E02                                                            | D14           | 10.00      |
| SZ-HDE                                    | Separate mounting base unit for TK-E2                                                             | D14           | 20.00      |
| SZ-HEE                                    | Separate mounting base unit for TK-E3                                                             | D14           | 25.00      |
| <b>Trip indicator</b>                     |                                                                                                   |               |            |
| SZ-L100                                   | Trip indicator 100-110VAC for TK-E02                                                              | D1            | 15.00      |
| SZ-L200                                   | Trip indicator 200-220VAC for TK-E02                                                              | D1            | 15.00      |
| SZ-L100N2                                 | Trip indicator 100-110VAC for TK-E2 to TK-E6                                                      | D1            | 15.00      |
| SZ-L200N2                                 | Trip indicator 100-110VAC for TK-E2 to TK-E6                                                      | D1            | 15.00      |
| <b>Reset release button</b>               |                                                                                                   |               |            |
| SZ-R1                                     | Reset release button 300mm for TK-E02                                                             | D1            | 96.00      |
| SZ-R2                                     | Reset release button 500mm for TK-E02                                                             | D1            | 112.00     |
| SZ-R3                                     | Reset release button 700mm for TK-E02                                                             | D1            | 127.00     |
| SZ-R4                                     | Reset release button 300mm for TK-E2 to TK-E6                                                     | D1            | 100.00     |
| SZ-R5                                     | Reset release button 500mm for TK-E2 to TK-E6                                                     | D1            | 120.00     |
| SZ-R6                                     | Reset release button 700mm for TK-E2 to TK-E6                                                     | D1            | 135.00     |
| <b>Dial cover</b>                         |                                                                                                   |               |            |
| SZ-DA                                     | Dial cover for TK-E02 to TK-E6                                                                    | D1            | 2.00       |

## List Price for Combination Starters accessories

| Part number        | Description                                      | Discount code | List Price |
|--------------------|--------------------------------------------------|---------------|------------|
| <b>BZ0LRC09AA</b>  | Link module for BM3R and SC-M01(/G), SC-M02(/G)  | D14           | 15.00      |
| <b>BZ0LRE22AA</b>  | Link module for BM3R and SC-E02 to SC-E05        | D14           | 15.00      |
| <b>BZ0LRE22GA</b>  | Link module for BM3R and SC-E02/G to SC-E05/G    | D14           | 20.00      |
| <b>BZ0LRE32AA</b>  | Link module for BM3R and SC-E1                   | D14           | 18.00      |
| <b>BZ0LRE32GA</b>  | Link module for BM3R and SC-E1/G                 | D14           | 20.00      |
| <b>BZ0LVE51AA</b>  | Link module for BM3V and SC-E1 to E2S            | D14           | 18.00      |
| <b>BZ0LVE51GA</b>  | Link module for BM3V and SC-E1/G to E2S/G        | D14           | 22.00      |
| <b>BZ0LVE65AA</b>  | Link module for BM3V and SC-E3                   | D14           | 24.00      |
| <b>BZ0LVE65GA</b>  | Link module for BM3V and SC-E3/G                 | D14           | 28.00      |
| <b>Base plates</b> |                                                  |               |            |
| <b>BZ0BPRE22A</b>  | Base plate for BM3R and SC-E02(/G) to SC-E05(/G) | D14           | 22.00      |
| <b>BZ0BPRE32A</b>  | Base plate for BM3R and SC-E1(/G)                | D14           | 24.00      |
| <b>BZ0BPVE51A</b>  | Base plate for BM3V and SC-E1(/G) to SC-E2S(/G)  | D14           | 26.00      |
| <b>BZ0BPVE65A</b>  | Base plate for BM3V and SC-E3(/G)                | D14           | 30.00      |

## Appendix 1 : Construction of combination motor controllers

The UL508 standard defines 6 categories depending on the construction type for the combination motor controllers. The type and component function is shown below.

| Type | Component                                          | Component standard | Component function per NEC |                           |               |                |
|------|----------------------------------------------------|--------------------|----------------------------|---------------------------|---------------|----------------|
|      |                                                    |                    | Disconnect                 | Branch circuit protection | Motor control | Motor overload |
| A    | Manual disconnect                                  | UL98,UL1087        | X                          |                           |               |                |
|      | Fuse                                               | UL248              |                            | X                         |               |                |
|      | Magnetic                                           | UL508              |                            |                           | X             |                |
|      | Overload relay                                     | UL508              |                            |                           |               | X              |
| B    | Manual disconnect                                  | UL98,UL1087        | X                          |                           |               |                |
|      | Motor short-circuit Protector                      | UL508              |                            | X                         |               |                |
|      | Magnetic                                           | UL508              |                            |                           | X             |                |
|      | Overload relay                                     | UL508              |                            |                           |               | X              |
| C    | Inverse time Circuit Breaker                       | UL489              | X                          | X                         |               |                |
|      | Magnetic                                           | UL508              |                            |                           | X             |                |
|      | Overload relay                                     | UL508              |                            |                           |               | X              |
| D    | Instantaneous Circuit Breaker                      | UL489              | X                          | X                         |               |                |
|      | Magnetic                                           | UL508              |                            |                           | X             |                |
|      | Overload relay                                     | UL508              |                            |                           |               | X              |
| E    | Self-Protected control device                      | UL508              | X                          | X                         | X             | X              |
| F    | Manual Self-protected combination motor controller | UL508              | X                          | X                         |               | X              |
|      | Magnetic                                           | UL508              |                            |                           | X             |                |

Fuji MMS is indicated on the label with "Manual Self-Protected Combination Motor Controller" (TYPE E) and "Combination Motor Controller" (TYPE F).

## Appendix 2 : Short circuit coordination comparison

UL508 (Part IV, Combination Motor Controllers) and IEC60947-4-1 are the two major standards concerning the combination of the MMS and the Contactor. In IEC60947-4-1, it only regulates the short-circuit protective coordination between the Contactor and the Circuit Breaker. However, in UL508, it takes the combination of the MMS and Contactor as a united component and requires additional performances besides the short-circuit test.

UL standard is available for another standard related short circuit coordination, that is **UL subject 508E**.

(IEC type "2" Coordination Short Circuit Tests of Electromagnetic Motor Controllers in accordance with IEC Publication 947-4-1)

UL subject 508E is to certify that the coordination between the MMS and Contactor comply with IEC60947-4-1 type 2 requirements.

Fuji combination Starters are also cUL listed UL subject 508E, which means that it conforms to both UL and IEC regulation for short-circuit coordination.

| Test                                                | UL508 Type F                                                                                                           | IEC60947-4-1                                                                                                           |                                                                                                                        | UL subject 508E                                                                                                        |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|                                                     |                                                                                                                        | Type 1                                                                                                                 | Type 2                                                                                                                 |                                                                                                                        |
| Short-Circuit <input type="checkbox"/> Coordination | X<br><br>- The contactor may be damaged<br>- It may not be suitable for further service without repair or replacement. | X<br><br>- The contactor may be damaged<br>- It may not be suitable for further service without repair or replacement. | X<br><br>- No damage except light welding of the contacts of the contactor.<br>- It shall be suitable for further use. | X<br><br>- No damage except light welding of the contacts of the contactor.<br>- It shall be suitable for further use. |
| Current withstand                                   | X                                                                                                                      | -                                                                                                                      | -                                                                                                                      | -                                                                                                                      |
| Dielectric voltage withstand                        | X                                                                                                                      | X                                                                                                                      | X                                                                                                                      | X                                                                                                                      |
| Calibration                                         | X                                                                                                                      | -                                                                                                                      | X                                                                                                                      | X                                                                                                                      |
| Temperature                                         | X                                                                                                                      | -                                                                                                                      | -                                                                                                                      | -                                                                                                                      |
| Effective region                                    | North America                                                                                                          | Europe                                                                                                                 | Europe                                                                                                                 | North America                                                                                                          |

Coordination details between MMS and Contactor as UL508 Type F, please see page 56, 57, as UL subject 508E, please see page 79, 80.

# Appendix

## • BM3RSB, BM3RHB (UL subject E coordination)

| 220-240V AC    |                   | 440-480V AC    |                   | MMS part number |                   | Contactor □<br>part number | Link module                         | Base plate                             | Short-circuit ratings at 480V AC (kA) |            |
|----------------|-------------------|----------------|-------------------|-----------------|-------------------|----------------------------|-------------------------------------|----------------------------------------|---------------------------------------|------------|
| HP rating (HP) | Rated current (A) | HP rating (HP) | Rated current (A) | Part number     | Current range (A) |                            |                                     |                                        | for BM3RSB                            | for BM3RHB |
| -              | -                 | -              | -                 | BM3RSB-P16      | BM3RHB-P16        | 0.1-0.16                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| -              | -                 | -              | -                 | BM3RSB-P25      | BM3RHB-P25        | 0.16-0.25                  | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| -              | -                 | -              | -                 | BM3RSB-P40      | BM3RHB-P40        | 0.25-0.4                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| -              | -                 | -              | -                 | BM3RSB-P63      | BM3RHB-P63        | 0.4-0.63                   | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| -              | -                 | -              | -                 | BM3RSB-001      | BM3RHB-001        | 0.63-1                     | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| -              | -                 | 3/4            | 1.6               | BM3RSB-1P6      | BM3RHB-1P6        | 1-1.6                      | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| 1/2            | 2.2               | 1              | 2.1               | BM3RSB-2P5      | BM3RHB-2P5        | 1.6-2.5                    | SC-M01, M01/G<br>SC-E02<br>SC-E02/G | BZ0LRC09AA<br>BZ0LRE22AA<br>BZ0LRE22GA | -<br>BZ0BP22A<br>BZ0BP22A             | 50<br>50   |
| 3/4            | 3.2               | 2              | 3.4               | BM3RSB-004      | BM3RHB-004        | 2.5-4                      | SC-E02<br>SC-E02/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | 50<br>50   |
| 1-1/2          | 6                 | 3              | 4.8               | BM3RSB-6P3      | BM3RHB-6P3        | 4-6.3                      | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | 50<br>50   |
| 3              | 9.6               | 5              | 7.6               | -               | BM3RHB-010        | 6.3-10                     | SC-E04<br>SC-E04/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | -<br>50    |
| 3              | 9.6               | 7-1/2          | 11                | -               | BM3RHB-013        | 10-13                      | SC-E05<br>SC-E05/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | -<br>50    |
| 5              | 15.2              | 10             | 14                | -               | BM3RHB-016        | 11-16                      | SC-E05<br>SC-E05/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | -<br>50    |
| 5              | 15.2              | 10             | 14                | -               | BM3RHB-020        | 14-20                      | SC-E05<br>SC-E05/G                  | BZ0LRE22AA<br>BZ0LRE22GA               | BZ0BP22A<br>BZ0BP22A                  | -<br>50    |
| 7-1/2          | 22                | 15             | 21                | -               | BM3RHB-025        | 18-25                      | SC-E1<br>SC-E1/G                    | BZ0LRE32AA<br>BZ0LRE32GA               | BZ0BP32A<br>BZ0BP22A                  | -<br>50    |
| 10             | 28                | 20             | 27                | -               | BM3RHB-032        | 24-32                      | SC-E1<br>SC-E1/G                    | BZ0LRE32AA<br>BZ0LRE32GA               | BZ0BP32A<br>BZ0BP22A                  | -<br>50    |

• **BM3VSB, BM3VHB (UL subject E coordination)**

| 220-240V AC       |                      | 440-480V AC       |                      | MMS part number   |                   |                      | Contactor □<br>part number     | Link module              | Base plate               | Short-circuit ratings at<br>480V AC (kA) |            |
|-------------------|----------------------|-------------------|----------------------|-------------------|-------------------|----------------------|--------------------------------|--------------------------|--------------------------|------------------------------------------|------------|
| HP rating<br>(HP) | Rated<br>current (A) | HP rating<br>(HP) | Rated<br>current (A) | Part number       |                   | Current<br>range (A) |                                |                          |                          | for BM3VSB                               | for BM3VHB |
| 3                 | 9.6                  | 5                 | 7.6                  | <b>BM3VSB-010</b> | <b>BM3VHB-010</b> | 6.3-10               | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 3                 | 9.6                  | 7-1/2             | 11                   | <b>BM3VSB-013</b> | <b>BM3VHB-013</b> | 10-13                | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-016</b> | <b>BM3VHB-016</b> | 11-16                | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 5                 | 15.2                 | 10                | 14                   | <b>BM3VSB-020</b> | <b>BM3VHB-020</b> | 14-20                | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 7-1/2             | 22                   | 15                | 21                   | <b>BM3VSB-025</b> | <b>BM3VHB-025</b> | 18-25                | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 10                | 28                   | 20                | 27                   | <b>BM3VSB-032</b> | <b>BM3VHB-032</b> | 24-32                | <b>SC-E1</b><br><b>SC-E1/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |
| 10                | 28                   | 30                | 40                   | <b>BM3VSB-040</b> | <b>BM3VHB-040</b> | 28-40                | <b>SC-E2</b><br><b>SC-E2/G</b> | BZ0LVE51AA<br>BZ0LVE51GA | BZ0BPVE51A<br>BZ0BPVE51A | 25                                       | 50         |

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