

What Fuji Motor Control Do I Need?

There are four basic motor control options available: Basic contactors, traditional starters, manual motor starters, or combination starters. Follow these 3 steps to choose the best fit.

1

What does the application require?

Basic Contactors Only



Contactor

Typical applications:

- Electronic switching
- Lighting
- Resistive loads
- Non-motor-related inductive loads
- Disconnect switches
- VFD bypass/isolation



Traditional Starters



Contactor and overload relay

Typical applications:

- Inductive motor starting and control
- NEC 430 and 409 fulfillment
- Nm starter replacement/retrofit



Manual Motor Starters



Manual motor starter (MMS)

Typical applications:

- Inductive motor starting and manual control
- NEC 430 fulfillment
- Lockout/tagout
- UL 508, type E
- Not AC-4 rated



Combination Starters



Manual motor starter, contactor, link module, and base plate

Typical applications:

- Inductive motor starting and control
- NEC 430 and 409 fulfillment
- Lockout/tagout
- UL 508, type F



2

Consider these factors when selecting components:

- Load type: Resistive (AC-1) or inductive (AC-3)
- Duty cycle: One direction, reversing, plugging (AC-4); Refer to IEC Utilization Chart on page MRC-112
- Horsepower (HP) and full load amperage (FLA); Refer to motor data plate information.

3

Select your components.

Duo Series

SC-E Contactor [See page MRC-28](#)

- 1/2 to 100 hp @ 480 V
- 9-150 A (AC3)

Odyssey Series

3N Contactor [See page MRC-74](#)

- 60 to 300 hp
- 180-361 A (AC3)

Duo Series

SC-E Contactor [See page MRC-28](#)

TK-E Overload relay [See page MRC-43](#)

- 1/2 to 100 hp @ 480 V

Odyssey Series

3N Contactor [See page MRC-74](#)

3N Overload relay [See page MRC-77](#)

- 60 to 300 hp

Duo Series

BM3 Manual motor starter

- 1/2 to 40 hp @ 480 V [See page MRC-50](#)

Duo Series

BM3 Manual motor starter [See page MRC-50](#)

SC-E Contactor [See page MRC-28](#)

BZOL link module [See page MRC-65](#)

BZOBP base plate

- 1/2 to 40 hp @ 480 V

Fuji Duo Series SC-E Contactors

Features

- 5 to 100 hp at 480 VAC
- cULus and CSA approval, CE mark, meets JIS and IEC standards.
- Models SC-E02-xxx to SC-E4-xxx have 3-pole main circuits and come in three sizes with widths of 43 mm, 54 mm, and 67 mm.
- Models SC-E1-xxx to SC-E7-xxx employ a box terminal structure; allowing wires to be connected directly to the main circuit.
- Has a finger-protection terminal structure that prevents the exposure of live parts.
- Models SC-E5-xxx to SC-E7-xxx use a SUPERMAGNET™ (AC-input/DC-output operation) for high operating reliability and requires no surge suppressor.

Small Size

- SC-E02-xxx to E05-xxx: 43mm wide
- SC-E1-xxx to E25-xxx: 54mm wide
- SC-E3-xxx, E4-xxx: 67mm wide
- SC-E5-xxx: 88mm wide



SC-E2S



SC-E7

Safety

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

Utility

- Box lug terminal construction
- Long electrical life
- Easy to wire

Environmental

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

Standards & Approvals

- UL listed, file E42419, Standard UL 508
- cUL listed, file E42419, Standard CSA C 22.2 No.14
- VDE 0660
- JIS C 8201-4-1
- IEC 60947-4-1 / EN 60947-4-1
- CE compliant

Optional accessories

- Auxiliary contact blocks
- Coil surge suppression units
- Replacement coils for contactor sizes SC-E5 and larger

| SC-E Series Contactors Specifications - UL and CSA | | | | | | | | | | | | | |
|--|---------|----------------------|---------------------|----------|----------|----------|---------------|----------|---------------------------------|---|-------------------|------------------------------|------------------|
| Model | Price | Nominal Coil Voltage | Rated Capacity (HP) | | | | | | Rated AC-3 Current (A) [note 1] | Rated AC-1 Thermal Current (A) [note 2] | SCCR Ratings (KA) | Rated Insulation Voltage (V) | Frame Width (mm) |
| | | | 3-Phase Motor | | | | 1-Phase Motor | | | | | | |
| | | | 200V | 220-240V | 440-480V | 550-600V | 100-120V | 220-240V | | | | | |
| SC-E02-24VAC | \$15.00 | 24VAC | 2 | 2 | 5 | 5 | 1/3 | 1 | 9 | 20 | 5 | 690 | 43 |
| SC-E02-110VAC | \$15.00 | 110VAC | | | | | | | | | | | |
| SC-E02-220VAC | \$15.00 | 220VAC | | | | | | | | | | | |
| SC-E02-440VAC | \$15.00 | 440-480VAC | | | | | | | | | | | |
| SC-E02-500VAC | \$15.00 | 500-550VAC | | | | | | | | | | | |
| SC-E02G-24VDC | \$17.00 | 24VDC | | | | | | | | | | | |
| SC-E03-24VAC | \$19.50 | 24VAC | 3 | 3 | 7.5 | 7.5 | 1/2 | 2 | 12 | 20 | | | |
| SC-E03-110VAC | \$19.50 | 110VAC | | | | | | | | | | | |
| SC-E03-220VAC | \$19.50 | 220VAC | | | | | | | | | | | |
| SC-E03-440VAC | \$19.50 | 440-480VAC | | | | | | | | | | | |
| SC-E03-500VAC | \$19.50 | 500-550VAC | | | | | | | | | | | |
| SC-E03G-24VDC | \$27.50 | 24VDC | | | | | | | | | | | |
| SC-E04-24VAC | \$24.00 | 24VAC | 5 | 5 | 10 | 10 | 1 | 3 | 18 | 25 | | | |
| SC-E04-110VAC | \$24.00 | 110VAC | | | | | | | | | | | |
| SC-E04-220VAC | \$24.00 | 220VAC | | | | | | | | | | | |
| SC-E04-440VAC | \$24.00 | 440-480VAC | | | | | | | | | | | |
| SC-E04-500VAC | \$24.00 | 500-550VAC | | | | | | | | | | | |
| SC-E04G-24VDC | \$33.00 | 24VDC | | | | | | | | | | | |
| SC-E05-24VAC | \$30.50 | 24VAC | 5 | 7.5 | 15 | 15 | 2 | 3 | 25 | 32 | | | |
| SC-E05-110VAC | \$30.50 | 110VAC | | | | | | | | | | | |
| SC-E05-220VAC | \$30.50 | 220VAC | | | | | | | | | | | |
| SC-E05-440VAC | \$30.50 | 440-480VAC | | | | | | | | | | | |
| SC-E05-500VAC | \$30.50 | 500-550VAC | | | | | | | | | | | |
| SC-E05G-24VDC | \$40.00 | 24VDC | | | | | | | | | | | |

TABLE CONTINUED NEXT PAGE

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.
 2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

Fuji Duo Series SC-E Contactors

| SC-E Series Contactors Specifications - UL and CSA | | | | | | | | | | | | | | | | | | |
|--|----------|----------------------|---------------------|----------|----------|----------|---------------|----------|---------------------------------|---|-------------------|------------------------------|------------------|----|-----|-----|-----|-----|
| Model | Price | Nominal Coil Voltage | Rated Capacity (HP) | | | | | | Rated AC-3 Current (A) [note 1] | Rated AC-1 Thermal Current (A) [note 2] | SCCR Ratings (KA) | Rated Insulation Voltage (V) | Frame Width (mm) | | | | | |
| | | | 3-Phase Motor | | | | 1-Phase Motor | | | | | | | | | | | |
| | | | 200V | 220-240V | 440-480V | 550-600V | 100-120V | 220-240V | | | | | | | | | | |
| SC-E1-24VAC | \$37.50 | 24VAC | 7.5 | 10 | 25 | 25 | 2 | 3 | 32 | 50 | 690 | 54 | | | | | | |
| SC-E1-110VAC | \$37.50 | 110VAC | | | | | | | | | | | | | | | | |
| SC-E1-220VAC | \$37.50 | 220VAC | | | | | | | | | | | | | | | | |
| SC-E1-440VAC | \$37.50 | 440-480VAC | | | | | | | | | | | | | | | | |
| SC-E1-500VAC | \$37.50 | 500-550VAC | | | | | | | | | | | | | | | | |
| SC-E1G-24VDC | \$44.50 | 24VDC | 10 | 15 | 30 | 30 | 3 | 5 | 40 | 60 | | | 690 | 54 | | | | |
| SC-E2-24VAC | \$52.50 | 24VAC | | | | | | | | | | | | | | | | |
| SC-E2-110VAC | \$52.50 | 110VAC | | | | | | | | | | | | | | | | |
| SC-E2-220VAC | \$52.50 | 220VAC | | | | | | | | | | | | | | | | |
| SC-E2-440VAC | \$52.50 | 440-480VAC | | | | | | | | | | | | | | | | |
| SC-E2-500VAC | \$52.50 | 500-550VAC | | | | | | | | | | | | | | | | |
| SC-E2G-24VDC | \$63.50 | 24VDC | 15 | 20 | 30 | 30 | 3 | 10 | 50 | 65 | | | | | 690 | 54 | | |
| SC-E2S-24VAC | \$63.50 | 24VAC | | | | | | | | | | | | | | | | |
| SC-E2S-110VAC | \$63.50 | 110VAC | | | | | | | | | | | | | | | | |
| SC-E2S-220VAC | \$63.50 | 220VAC | | | | | | | | | | | | | | | | |
| SC-E2S-440VAC | \$63.50 | 440-480VAC | | | | | | | | | | | | | | | | |
| SC-E2S-500VAC | \$63.50 | 500-550VAC | | | | | | | | | | | | | | | | |
| SC-E2SG-24VDC | \$75.50 | 24VDC | 20 | 25 | 50 | 50 | 5 | 15 | 65 | 100 | | | | | | | 690 | 67 |
| SC-E3-24VAC | \$72.00 | 24VAC | | | | | | | | | | | | | | | | |
| SC-E3-110VAC | \$72.00 | 110VAC | | | | | | | | | | | | | | | | |
| SC-E3-220VAC | \$72.00 | 220VAC | | | | | | | | | | | | | | | | |
| SC-E3-440VAC | \$72.00 | 440-480VAC | | | | | | | | | | | | | | | | |
| SC-E3-500VAC | \$72.00 | 500-550VAC | | | | | | | | | | | | | | | | |
| SC-E3G-24VDC | \$89.00 | 24VDC | 25 | 30 | 50 | 50 | 5 | 15 | 80 | 105 | 690 | 67 | | | | | | |
| SC-E4-24VAC | \$74.00 | 24VAC | | | | | | | | | | | | | | | | |
| SC-E4-110VAC | \$74.00 | 110VAC | | | | | | | | | | | | | | | | |
| SC-E4-220VAC | \$74.00 | 220VAC | | | | | | | | | | | | | | | | |
| SC-E4-440VAC | \$74.00 | 440-480VAC | | | | | | | | | | | | | | | | |
| SC-E4-500VAC | \$74.00 | 500-550VAC | | | | | | | | | | | | | | | | |
| SC-E4G-24VDC | \$92.00 | 24VDC | 30 | 30 | 60 | 75 | 7.5 | 15 | 105 | 150 | | | 690 | 88 | | | | |
| SC-E5-24V | \$184.00 | 24VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E5-100V | \$184.00 | 110VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E5-200V | \$184.00 | 220VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E5-400V | \$184.00 | 380-450VAC | | | | | | | | | | | | | | | | |
| SC-E5-500V | \$184.00 | 460-575VAC | | | | | | | | | | | | | | | | |
| SC-E6-24V | \$234.50 | 24VAC/VDC | 40 | 40 | 75 | 100 | 10 | 20 | 125 | 150 | | | | | 690 | 100 | | |
| SC-E6-100V | \$234.50 | 110VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E6-200V | \$234.50 | 220VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E6-400V | \$234.50 | 380-450VAC | | | | | | | | | | | | | | | | |
| SC-E6-500V | \$234.50 | 460-575VAC | | | | | | | | | | | | | | | | |
| SC-E7-24V | \$273.00 | 24VAC/VDC | 50 | 50 | 100 | 125 | 15 | 25 | 150 | 200 | | | | | | | 690 | 115 |
| SC-E7-100V | \$273.00 | 110VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E7-200V | \$273.00 | 220VAC/VDC | | | | | | | | | | | | | | | | |
| SC-E7-400V | \$273.00 | 380-450VAC | | | | | | | | | | | | | | | | |
| SC-E7-500V | \$273.00 | 460-575VAC | | | | | | | | | | | | | | | | |

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.
 2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

Fuji Duo Series SC-E Contactors

| SC-E Series Contactors Specifications - IEC | | | | | | | | | | | | |
|---|---------------------------|-------------|-----------|----------|-----------------------------|-----------|----------|----------|---------------------|----------|---------------------------|--|
| Contactor Type | Rated Capacity (kW) | | | | Rated Operating Current (A) | | | | | | Rated Thermal Current (A) | Internal Auxiliary Contact Arrangement |
| | 3-Phase Motor AC-3 / AC-4 | | | | 3-Phase Motor AC-3 / AC-4 | | | | Resistive Load AC-1 | | | |
| | 200-240V | 380-440V | 500-550V | 600-690V | 200-240V | 380-440V | 500-550V | 600-690V | 200-240V | 380-440V | | |
| SC-E02(G)-xxx | 2.2 / 2.2 | 4 / 4 | 4 / NA | 4 / NA | 9 / 9 | 9 / 9 | 7 / NA | 5 / NA | 20 | 20 | 20 | - |
| SC-E03(G)-xxx | 3 / 3 | 5.5 / 5.5 | 5.5 / NA | 5.5 / NA | 12 / 12 | 12 / 12 | 9 / NA | 7 / NA | 20 | 20 | 20 | - |
| SC-E04(G)-xxx | 4 / 4 | 7.5 / 7.5 | 7.5 / NA | 7.5 / NA | 18 / 18 | 18 / 18 | 13 / NA | 9 / NA | 25 | 25 | 25 | - |
| SC-E05(G)-xxx | 5.5 / 4 | 11 / 7.5 | 11 / NA | 7.5 / NA | 25 / 18 | 25 / 18 | 17 / NA | 9 / NA | 32 | 32 | 32 | - |
| SC-E1(G)-xxx | 7.5 / 7.5 | 15 / 15 | 15 / NA | 11 / NA | 32 / 32 | 32 / 32 | 24 / NA | 15 / NA | 50 | 50 | 50 | - |
| SC-E2(G)-xxx | 11 / 11 | 18.5 / 18.5 | 18.5 / NA | 15 / NA | 40 / 40 | 40 / 40 | 29 / NA | 19 / NA | 60 | 60 | 60 | - |
| SC-E2S(G)-xxx | 15 / 11 | 22 / 18.5 | 25 / NA | 22 / NA | 50 / 40 | 50 / 40 | 38 / NA | 26 / NA | 65 | 65 | 65 | - |
| SC-E3(G)-xxx | 18.5 / 18.5 | 30 / 30 | 37 / NA | 30 / NA | 68 / 68 | 65 / 65 | 60 / NA | 38 / NA | 100 | 100 | 100 | - |
| SC-E4(G)-xxx | 22 / 18.5 | 40 / 30 | 37 / NA | 37 / NA | 80 / 68 | 80 / 65 | 60 / NA | 44 / NA | 105 | 105 | 105 | - |
| SC-E5-xxx | 30 / 30 | 55 / 55 | 5 5 / NA | 55 / NA | 105 / 105 | 105 / 105 | 85 / NA | 64 / NA | 150 | 150 | 150 | 2NO+2NC |
| SC-E6-xxx | 37 / 37 | 60 / 60 | 6 0 / NA | 60 / NA | 125 / 125 | 125 / 125 | 90 / NA | 72 / NA | 150 | 150 | 150 | 2NO+2NC |
| SC-E7-xxx | 45 / 45 | 75 / 75 | 75 / NA | 90 / NA | 150 / 150 | 150 / 150 | 120 / NA | 103 / NA | 200 | 200 | 200 | 2NO+2NC |

Internal Auxiliary Contact Ratings

| Internal Auxiliary Contact Ratings - UL and CSA | | | | | | |
|---|------------------------------|---|-----------|-------------|-------------|--------------------|
| Frame Size <small>(note 1)</small> | Rated Insulation Voltage (V) | NEMA ICS 5-2000 Ratings <small>(note 2)</small> | | | | |
| | | AC Ratings | | | DC Ratings | |
| | | Designation | Making VA | Breaking VA | Designation | Making/Breaking VA |
| E5 to E7-xxx | 690 | A600 | 7200 | 720 | Q300 | 69 |

Notes:

- E02(G) to E4(G) do not have internal auxiliary contact.
- NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings, see page MRC-111.

| Internal Auxiliary Contact Ratings - IEC, JIS | | | | | | | | | |
|--|------------------------------|---------------------------|----------------------------------|------|-------------------------------|-------------------|------------|---------------------------------------|-------------------|
| Based on IEC 60974-4-1, EN 60947-4-1, JIS C 8201-4-1 | | | | | | | | | |
| Frame Size <small>(note 1)</small> | Rated Insulation Voltage (V) | Rated Thermal Current (A) | Making and Breaking Capacity (A) | | Rated Operational Current (A) | | | Minimum Operating Voltage and Current | |
| | | | AC Voltage | Amps | AC Voltage | AC-15 (Ind. load) | DC Voltage | | DC-13 (Ind. load) |
| E5 to E7-xxx | 690 | 10 | 120V | 60 | 120V | 6 | 24V | 3 | 5VDC, 3mA |
| | | | 220V | 30 | 220V | 3 | 48V | 1.5 | |
| | | | 440V | 15 | 440V | 1.5 | 110V | 0.55 | |
| | | | 600V | 12 | 600V | 1.2 | 220V | 0.27 | |

Note 1: E02(G) to E4(G) do not have internal auxiliary contact.

Fuji Odyssey Series 3N Contactors

Description

- 180 - 361A rating (AC3)
- Provides higher current and horsepower capabilities than SC-E series. Designed for reliable use in applications requiring constant switching, reduced coil energy consumption, and increased horsepower capabilities.
- Available in 154 mm and 169 mm frame widths
- SUPERMAGNET™ for high operating reliability.
- Use with Odyssey 3N series overload relays.

Features

- Equipped with 2 N.O. and 2 N.C. auxiliary contacts
- Chatter-free operation eliminates contact welding and coil burning
- SUPERMAGNET™ coil operates on either AC or DC voltage
- Wire Terminal Connection Type: Crimp ring Terminal



3NC4H0122

Agency approvals

- UL listed file E42419, Standard UL508
- cUL listed file E42419, Standard CSA C22.2 No. 14
- CE: Meets LVD EN60947-4-1
- SEMI F47-0200

Ecology

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

Optional accessories

- Replacement coils
- Terminal covers
- Auxiliary contacts

| Odyssey 3N Series Contactors 180–361 Amps | | | | | | | | | | | | | | | |
|---|-----------|----------|-------------------------|---------------------------|----------|----------|----------|---------------------------------|---|--------------------------------|----------|-------------------|------------------|----|----|
| Part Number | Fuji Type | Price | Coil Voltage | Rated Motor Capacity (HP) | | | | Rated AC-3 Current (A) [note 1] | Rated AC-1 Thermal Current (A) [note 2] | Quantity of Auxiliary Contacts | | SCCR Ratings (KA) | Frame Width (mm) | | |
| | | | | 3-Phase | | | | | | 1-Phase | | | | NO | NC |
| | | | | 200–208V | 220–240V | 440–480V | 550–600V | | | 100–120V | 220–240V | | | | |
| 3NC4Q0E22 | SC-N8 | \$361.50 | 24–25VAC / 24VDC | 60 | 60 | 150 | 150 | 180 | 260 | 2 | 2 | 10 | 138 | | |
| 3NC4Q0122 | | \$361.50 | 100–127VAC / 100–120VDC | | | | | | | | | | | | |
| 3NC4Q0222 | | \$361.50 | 200–250VAC / 200–240VDC | | | | | | | | | | | | |
| 3NC4Q0Q22 | | \$361.50 | 380–450VAC | | | | | | | | | | | | |
| 3NC4Q0422 | | \$361.50 | 460–575VAC | | | | | | | | | | | | |
| 3NC4H0E22 | SC-N10 | \$428.00 | 24–25VAC / 24VDC | 75 | 75 | 150 | 200 | 221 | 260 | 2 | 2 | 18 | 148 | | |
| 3NC4H0122 | | \$428.00 | 100–127VAC / 100–120VDC | | | | | | | | | | | | |
| 3NC4H0222 | | \$428.00 | 200–250VAC / 200–240VDC | | | | | | | | | | | | |
| 3NC4H0Q22 | | \$428.00 | 380–450VAC | | | | | | | | | | | | |
| 3NC4H0422 | | \$428.00 | 460–575VAC | | | | | | | | | | | | |
| 3NC5F0E22 | SC-N11 | \$558.00 | 24–25VAC / 24VDC | 100 | 100 | 200 | 250 | 285 | 350 | 2 | 2 | 18 | 148 | | |
| 3NC5F0122 | | \$558.00 | 100–127VAC / 100–120VDC | | | | | | | | | | | | |
| 3NC5F0222 | | \$558.00 | 200–250VAC / 200–240VDC | | | | | | | | | | | | |
| 3NC5F0Q22 | | \$558.00 | 380–450VAC | | | | | | | | | | | | |
| 3NC5F0422 | | \$558.00 | 460–575VAC | | | | | | | | | | | | |
| 3NC5H0E22 | SC-N12 | \$612.00 | 24–25VAC / 24VDC | 125 | 150 | 300 | 350 | 361 | 450 | 2 | 2 | 18 | 148 | | |
| 3NC5H0122 | | \$612.00 | 100–127VAC / 100–120VDC | | | | | | | | | | | | |
| 3NC5H0222 | | \$612.00 | 200–250VAC / 200–240VDC | | | | | | | | | | | | |
| 3NC5H0Q22 | | \$612.00 | 380–450VAC | | | | | | | | | | | | |
| 3NC5H0422 | | \$612.00 | 460–575VAC | | | | | | | | | | | | |

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.
 2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

| Contactor Coil Characteristics - AC Input | | | | | | |
|---|------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
| Part Number | Power Consumption (VA) | | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms) | |
| | Inrush | Sealed | | | Coil ON to Contact ON | Coil OFF to Contact OFF |
| 3NC4Qxxxx, 3NC4Hxxxx | 277 | 5.4 | 70-80 | 35-50 | 35-41 | 37-45 |
| 3NC5Fxxxx, 3NC5Hxxxx | 265 | 5.9 | 70-80 | 35-50 | 40-47 | 36-43 |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 120VAC, 60Hz.

Fuji Odyssey Series 3N Contactors

| Contactor Coil Characteristics - DC Input - 110VDC | | | | | | |
|--|---------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
| Part Number | Power Consumption (watts) | | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms) | |
| | Inrush | Sealed | | | Coil ON to Contact ON | Coil OFF to Contact OFF |
| 3NC4Qxxxx, 3NC4Hxxxx | 324 | 4.1 | 77-88 | 28-44 | 35-41 | 37-45 |
| 3NC5Fxxxx, 3NC5Hxxxx | 340 | 4.5 | 77-88 | 28-44 | 40-47 | 36-43 |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 110VDC.

| Contactor Coil Characteristics - DC Input - 24VDC | | | | | | |
|---|---------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
| Part Number | Power Consumption (watts) | | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms) | |
| | Inrush | Sealed | | | Coil ON to Contact ON | Coil OFF to Contact OFF |
| 3NC4Qxxxx, 3NC4Hxxxx | 250 | 5.9 | 17-19.2 | 6-12 | 35-41 | 37-45 |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 110VDC.

| Contactor Auxiliary Contact Ratings | | | | | |
|-------------------------------------|-----------|-------------|-------------|--------------------|--|
| NEMA ICS 5-2000 Ratings (note 1) | | | | | |
| AC Ratings | | | DC Ratings | | |
| Designation | Making VA | Breaking VA | Designation | Making/Breaking VA | |
| A600 | 7200 | 720 | Q300 | 69 | |

Note 1: NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings, page MRC-111.

| Contactor Terminal Tightening Torque Chart | | | | |
|--|---------------|------------------------------|---|------------------------------|
| Part Number | Terminal Size | Cable Size Maximum | Applicable Max. Width for Ring Terminal | Tightening Torque |
| 3NC4Q0XXX | M10 | 300MCM (152mm ²) | 36.5mm | 133-177 in.-lbs. 15-20 Nm |
| 3NC4H0XXX | M10 | 300MCM (152mm ²) | 36.5mm | 133-177 in.-lbs. 15-20 Nm |
| 3NC5F0XXX 3NC5H0XXX | M12 | 400MCM (203mm ²) | 44.5mm | 310-399 in.-lbs. 35-45 Nm |

| Contactor Life Expectancy Performance Data | | | | |
|--|-----------------------------|---------------------------|--------------------------------------|------------|
| Model | Current Capacity Make/Break | Operating Cycles per Hour | Life Expectancy (million operations) | |
| | | | Electrical | Mechanical |
| 3NC4Qxxxx through 3NC5Fxxxx | 12xle/10xle | 1200 | 1 | 5 |
| 3NC5Hxxxx | 12xle/10xle | 1200 | 0.5 | 5 |

Note: Rated operational current. Electrical life test: Conforming to IEC947-4-1, AC3. The endurance test complies with the requirements of international standard IEC, JIS and JEM.

Note: Super Magnet Coils on 3NC4 and 3NC5 series contactors have internal surge suppression. See diagram below.

Optional accessories

Terminal covers

Prevent contact with electrified terminals.



SZ-N8T

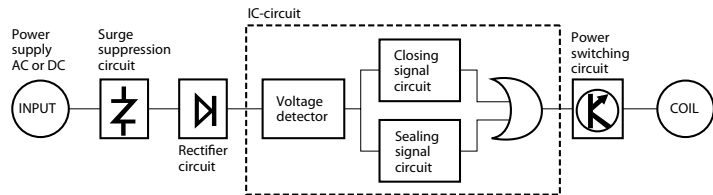


SZ-N11T

Replacement contactor coils



SZ-GSN11-100



| Odyssey Series Contactor Terminal Covers | | | |
|--|---------|--|---------------------------------|
| Part Number | Price | Description | Applicable Contactors |
| SZ-N8T | \$45.00 | Terminal cover for line or load side. Prevents contact with electrified contactor terminals. | 3NC4Qxxxx, 3NC4Hxxxx contactors |
| SZ-N11T | \$55.00 | | 3NC5Fxxxx, 3NC5Hxxxx contactors |

| Odyssey Series Replacement Contactor Coils | | | |
|--|----------|-----------------------|-----------------------|
| Part Number | Price | Applicable Contactors | Coil Voltage |
| SZ-GSN8-100 | \$148.50 | 3NC4Q0122, 3NC4H0122 | 100-127VAC/100-120VDC |
| SZ-GSN11-100 | \$163.50 | 3NC5F0122, 3NC5H0122 | 100-127VAC/100-120VDC |
| SZ-GSN8-24 | \$148.50 | 3NC4Q0E22, 3NC4H0E22 | 24-25VAC/24VDC |
| SZ-GSN11-24 | \$163.50 | 3NC5F0E22, 3NC5H0E22 | 24-25VAC/24VDC |

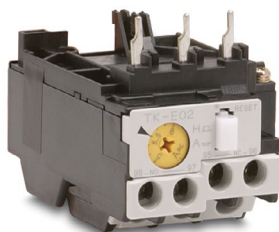
Replacement coils are not available for coil codes Q and 4 (380-450VAC and 460-575VAC).

Fuji Duo Series TK-E Overload Relays

TK-E series thermal overload relays with open-phase protective 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)
- Isolated NO and NC contacts can be used with different potentials
- 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 of the TK-E02, E2, and E3-xxx models



TK-E02-900



TK-E3-5000



TK-E2-800



TK-E5-3600

Standards

UL listed, file E44592, Standard UL 508
 cUL listed, file E44592, CSA C22.2 No. 14
 IEC 60947-4-1, EN60947-4-1
 VDE 0660, JIS C 8201-4-1
 CE Compliant



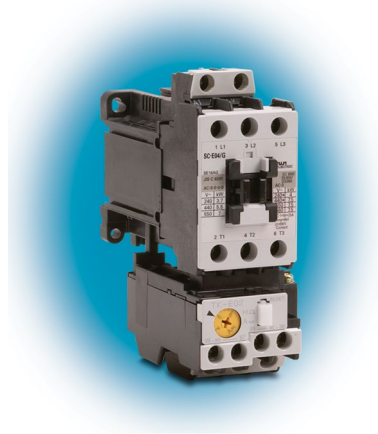
TK-E6-6500

| TK-E Series Overloads | | | |
|-----------------------|---------|-------------------------------|---|
| Part Number | Price | Amperage Adjustment Range (A) | Frame Width/ Contactor |
| TK-E02-15 | \$25.00 | 0.1 - 0.15 | 53mm SC-E02(G) through SC-E05(G) For separate mounting, use with optional base unit SZ-HCE on page MRC-48 |
| TK-E02-20 | \$25.00 | 0.13 - 0.2 | |
| TK-E02-24 | \$25.00 | 0.15 - 0.24 | |
| TK-E02-30 | \$25.00 | 0.2 - 0.3 | |
| TK-E02-36 | \$25.00 | 0.24 - 0.36 | |
| TK-E02-54 | \$25.00 | 0.36 - 0.54 | |
| TK-E02-72 | \$25.00 | 0.48 - 0.72 | |
| TK-E02-96 | \$25.00 | 0.64 - 0.96 | |
| TK-E02-120 | \$25.00 | 0.8 - 1.2 | |
| TK-E02-145 | \$25.00 | 0.95 - 1.45 | |
| TK-E02-220 | \$25.00 | 1.4 - 2.2 | |
| TK-E02-260 | \$25.00 | 1.7 - 2.6 | |
| TK-E02-340 | \$25.00 | 2.2 - 3.4 | |
| TK-E02-420 | \$25.00 | 2.8 - 4.2 | |
| TK-E02-600 | \$25.00 | 4.0 - 6.0 | |
| TK-E02-800 | \$25.00 | 5.0 - 8.0 | |
| TK-E02-900 | \$25.00 | 6.0 - 9.0 | |
| TK-E02-1100 | \$25.00 | 7.0 - 11.0 | |
| TK-E02-1300 | \$25.00 | 9.0 - 13.0 | |
| TK-E02-1800 | \$25.00 | 12 - 18 | |
| TK-E02-2200 | \$25.00 | 16 - 22 | |
| TK-E02-2500 | \$25.00 | 20 - 25 | |

| TK-E Series Overloads (continued) | | | |
|-----------------------------------|---------|-------------------------------|--|
| Part Number | Price | Amperage Adjustment Range (A) | Frame Width/ Contactor |
| TK-E2-600 | \$40.00 | 4 - 6 | 54mm SC-E1(G) through SC-E2S(G) For separate mounting, use with optional base unit SZ-HDE on page MRC-48 |
| TK-E2-800 | \$40.00 | 5 - 8 | |
| TK-E2-900 | \$40.00 | 6 - 9 | |
| TK-E2-1100 | \$40.00 | 7 - 11 | |
| TK-E2-1300 | \$40.00 | 9 - 13 | |
| TK-E2-1800 | \$40.00 | 12 - 18 | |
| TK-E2-2600 | \$40.00 | 18 - 26 | |
| TK-E2-3600 | \$40.00 | 24 - 36 | |
| TK-E2-4200 | \$40.00 | 32 - 42 | |
| TK-E2-5000 | \$40.00 | 40 - 50 | |
| TK-E2-5400 | \$40.00 | 44 - 54 | |
| TK-E3-1100 | \$49.00 | 7 - 11 | 68mm SC-E3(G) through SC-E4(G) For separate mounting, use with optional base unit SZ-HEE on page MRC-48 |
| TK-E3-1300 | \$49.00 | 9 - 13 | |
| TK-E3-1800 | \$49.00 | 12 - 18 | |
| TK-E3-2600 | \$49.00 | 18 - 26 | |
| TK-E3-3600 | \$49.00 | 24 - 36 | |
| TK-E3-4000 | \$49.00 | 28 - 40 | |
| TK-E3-5000 | \$49.00 | 34 - 50 | |
| TK-E3-6500 | \$49.00 | 45 - 65 | |
| TK-E3-6800 | \$49.00 | 48 - 68 | |
| TK-E3-8000 | \$49.00 | 64 - 80 | |

| TK-E Series Overloads (continued) | | | | |
|-----------------------------------|---------|-------------------------------|------------------------|-------------------------|
| Part Number | Price | Amperage Adjustment Range (A) | Frame Width/ Contactor | |
| TK-E5-2600 | \$55.00 | 18 - 26 | 76.5mm SC-E5 | |
| TK-E5-3600 | \$55.00 | 24 - 36 | | |
| TK-E5-4000 | \$55.00 | 28 - 40 | | |
| TK-E5-5000 | \$55.00 | 34 - 50 | | |
| TK-E5-6500 | \$55.00 | 45 - 65 | | |
| TK-E5-9500 | \$55.00 | 65 - 95 | | |
| TK-E5-10500 | \$55.00 | 85 - 105 | | |
| TK-E6-6500 | \$94.50 | 45 - 65 | | 100mm SC-E6 SC-E7 |
| TK-E6-8000 | \$94.50 | 53 - 80 | | |
| TK-E6-9500 | \$94.50 | 65 - 95 | | |
| TK-E6-12500 | \$94.50 | 85 - 125 | | |
| TK-E6-16000 | \$94.50 | 110 - 160 | | |

Fuji Duo Series Contactor and Overload Relay Selection Tables




100-240V Single Phase Motor (1/3 to 25 hp)

Step 1. Select a contactor from page MRC-28 based on motor voltage and horsepower.

Step 2. Select an overload relay from page MRC-43 based on motor full load current.

Check the data plate on the motor for the hp, volts and full-rated amps.



| Motor | | | | | | | |
|--------|------|-------|------|-------------|--------|----|------|
| HP | 5 | Volts | 460 | Phase 3 | Type P | | |
| RPM | 1725 | Amps | 7.6 | Hz | 60 | SF | 1.15 |
| Design | B | AMB | 40°C | Insul Class | F | | |
| Duty | Cont | Encl | TEFC | Code | K | | |

Motor horsepower → (points to HP 5)

Motor voltage → (points to Volts 460)

Motor full-load rated amperage (FLA) → (points to Amps 7.6)

Three Phase Motors - Refer to tables on following page

Step 1. Select a SC-E contactor from Column A based on motor voltage, and horsepower.

Step 2. Select a TK-E overload relay from Column B to work with the SC-E contactor selected in Step 1. The motor full load current (FLA) should be within the adjustable current range of the overload relay.

Fuji Duo Series Overload Relay Selection Tables

220-240V 3-Phase Motor (0.5 to 50 hp)¹

| Overload Relay Selection for 220–240V 3-phase motors | | | | |
|--|---|-------------|----------------|--------------------------|
| Motor Rating | | A | B | |
| Motor HP | Motor Full Load Amperage (FLA) ² | Contactor | Overload Relay | |
| | | | Part Number | Adjustable Current Range |
| 1/2 | 2.2 | SC-E02-xxxx | TK-E02-260 | 1.7 to 2.6 Amps |
| 3/4 | 3.5 | | TK-E02-420 | 2.8 to 4.2 Amps |
| 1 | 4.2 | | TK-E02-600 | 4 to 6 Amps |
| 1-1/2 | 6 | | TK-E02-800 | 5 to 8 Amps |
| 2 | 6.8 | | TK-E02-900 | 6 to 9 Amps |
| 3 | 9.6 | SC-E03-xxxx | TK-E02-1300 | 9 to 13 Amps |
| 5 | 15.2 | SC-E04-xxxx | TK-E02-1800 | 12 to 18 Amps |
| 7-1/2 | 22 | SC-E05-xxxx | TK-E02-2500 | 20 to 25 Amps |
| 10 | 28 | SC-E1-xxxx | TK-E2-3600 | 24 to 36 Amps |
| 15 | 42 | SC-E2-xxxx | TK-E2-4200 | 32 to 42 Amps |
| 20 | 54 | SC-E3-xxxx | TK-E3-6500 | 45 to 65 Amps |
| 25 | 68 | SC-E4-xxxx | TK-E3-6800 | 48 to 68 Amps |
| 30 | 80 | SC-E5-xxxx | TK-E5-9500 | 65 to 95 Amps |
| 40 | 104 | SC-E6-xxxx | TK-E6-12500 | 85 to 125 Amps |
| 50 | 130 | SC-E7-xxxx | TK-E6-16000 | 110 to 160 Amps |

Note 1: For 220-240 V three-phase motors up to 150 hp refer to the Fuji Odyssey series.
Note 2: Per NEC 2005 table 430.250

440-480V 3-Phase Motor (0.5 to 100 hp)¹

| Overload Relay Selection for 440–480V 3-phase motors | | | | |
|--|---|-------------|----------------|--------------------------|
| Motor Rating | | A | B | |
| Motor HP | Motor Full Load Amperage (FLA) ² | Contactor | Overload Relay | |
| | | | Part Number | Adjustable Current Range |
| 1/2 | 1.1 | SC-E02-xxxx | TK-E02-145 | 0.95 to 1.45 Amps |
| 3/4 | 1.6 | SC-E02-xxxx | TK-E02-220 | 1.4 to 2.2 Amps |
| 1 | 2.1 | SC-E02-xxxx | TK-E02-260 | 1.7 to 2.6 Amps |
| 1-1/2 | 3.0 | SC-E02-xxxx | TK-E02-420 | 2.8 to 4.2 Amps |
| 2 | 3.4 | SC-E02-xxxx | TK-E02-420 | 2.8 to 4.2 Amps |
| 3 | 4.8 | SC-E02-xxxx | TK-E02-600 | 4 to 6 Amps |
| 5 | 7.6 | SC-E02-xxxx | TK-E02-900 | 6 to 9 Amps |
| 7 1/2 | 11 | SC-E03-xxxx | TK-E02-1300 | 9 to 13 Amps |
| 10 | 14 | SC-E04-xxxx | TK-E02-1800 | 12 to 18 Amps |
| 15 | 21 | SC-E05-xxxx | TK-E02-2500 | 20 to 25 Amps |
| 20 | 27 | SC-E1-xxxx | TK-E2-3600 | 24 to 36 Amps |
| 25 | 34 | SC-E1-xxxx | TK-E2-4200 | 32 to 42 Amps |
| 30 | 40 | SC-E2-xxxx | TK-E2-4200 | 32 to 42 Amps |
| 40 | 52 | SC-E3-xxxx | TK-E3-6500 | 45 to 65 Amps |
| 50 | 65 | SC-E4-xxxx | TK-E3-6800 | 48 to 68 Amps |
| 60 | 77 | SC-E5-xxxx | TK-E5-9500 | 65 to 95 Amps |
| 75 | 96 | SC-E6-xxxx | TK-E6-12500 | 85 to 125 Amps |
| 100 | 124 | SC-E7-xxxx | TK-E6-16000 | 110 to 160 Amps |

Note 1: For 440-480 V three-phase motors up to 300 hp refer to the Fuji Odyssey series.
Note 2: Per NEC 2005 table 430.250

Fuji Duo Series Manual Motor Starters

BM3RHB-xxx Specifications



| General Specifications: 45 mm Frame Width - BM3RHB-XXX Series | | | | | | | | | | | | | |
|---|---------|--|---------------------------------------|------------|------------|------------|--|---|--------|--------|---|-----|-----|
| Part Number | Price | Adjustable Current Range <i>I_e</i> : Min.-Max. (A) | UL/CSA 3-Phase HP Rating ¹ | | | | Instantaneous Trip Current (A) | UL/CSA Short Circuit Current Rating (kA) ² | | | Max. Listed Branch Circuit Protection - Fuse or MCCB (A) ² | | |
| | | | 200-208VAC | 220-240VAC | 440-480VAC | 550-600VAC | | 240VAC | 480VAC | 600VAC | | | |
| BM3RHB-P16 | \$49.50 | 0.1-0.16 | Rated to motor full-load amperage | | | | In accordance with motor full-load current | 2.1 | 100 | 50 | 10 | 500 | |
| BM3RHB-P25 | \$49.50 | 0.16-0.25 | | | | | | 3.3 | 100 | 50 | 10 | 500 | |
| BM3RHB-P40 | \$49.50 | 0.25-0.4 | | | | | | 5.2 | 100 | 50 | 10 | 500 | |
| BM3RHB-P63 | \$49.50 | 0.4-0.63 | | | | | | 8.2 | 100 | 50 | 10 | 500 | |
| BM3RHB-001 | \$49.50 | 0.63-1 | | | | | | 1/2 | 13 | 100 | 50 | 10 | 500 |
| BM3RHB-1P6 | \$49.50 | 1-1.6 | | | | | | 3/4 | 20.8 | 100 | 50 | 10 | 500 |
| BM3RHB-2P5 | \$49.50 | 1.6-2.5 | 1/2 | 1/2 | 1 | 1-1/2 | 32.5 | 100 | 50 | 10 | 500 | | |
| BM3RHB-004 | \$49.50 | 2.5-4 | 3/4 | 3/4 | 2 | 3 | 52 | 100 | 50 | 10 | 500 | | |
| BM3RHB-6P3 | \$49.50 | 4-6.3 | 1 | 1-1/2 | 3 | 5 | 81.9 | 100 | 50 | 10 | 500 | | |
| BM3RHB-010 | \$52.50 | 6.3-10 | 2 | 3 | 5 | 7-1/2 | 130 | 100 | 50 | 10 | 500 | | |
| BM3RHB-013 | \$52.50 | 9-13 | 3 | 3 | 7-1/2 | 10 | 169 | 100 | 50 | 10 | 500 | | |
| BM3RHB-016 | \$52.50 | 11-16 | 3 | 5 | 10 | 10 | 208 | 100 | 50 | 10 | 500 | | |
| BM3RHB-020 | \$52.50 | 14-20 | 5 | 5 | 10 | 15 | 260 | 100 | 50 | 10 | 500 | | |
| BM3RHB-025 | \$62.50 | 19-25 | 7-1/2 | 7-1/2 | 15 | 20 | 325 | 100 | 50 | 10 | 500 | | |
| BM3RHB-032 | \$79.50 | 24-32 | 10 | 10 | 20 | 30 | 416 | 100 | 50 | 10 | 500 | | |

Note 1: BM3RHB-xxx are cUL listed as HP rated motor controllers.

Note 2: BM3RHB-xxx are cUL listed for group installation per NEC430-53(C).

| General Specifications: 45 mm Frame Width - BM3RHB-XXX Series - continued | | |
|---|--|-----|
| Features | Adjustable thermal-magnetic trip type | |
| Number of Poles | 3 | |
| Handle Type | Rotary | |
| Rated Current <i>I_e</i> (A) | 0.16 to 32 | |
| Rated Operational Voltage <i>U_e</i> (V) | 200 to 690 | |
| Rated Frequency (Hz) | 50/60 | |
| Rated insulation Voltage <i>U_i</i> (V) | 690 | |
| Rated Impulse Withstand Voltage <i>U_{imp}</i> (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 x <i>I_e</i> max. | |
| Power Loss (total of 3-pole) | 7W: <i>I_n</i> =0.16 to 25A 8.5W: <i>I_n</i> =32A | |
| Mechanical Durability (operations) | 100,000: <i>I_n</i> =0.16 to 25A 70,000: <i>I_n</i> =32A | |
| Electrical Durability (operations) | 100,000: <i>I_n</i> =0.16 to 25A 70,000: <i>I_n</i> =32A | |
| Max. Operations per Hour (motor start-up) | 25 | |
| Phase-loss Protection | Provided | |
| Trip Indicator | Provided | |
| Test Trip Function | Provided | |
| Dimensions (mm) WxHxD | 45x90x79 | |
| Weight (oz/g) | 13.05 / 370 | |
| Optional Accessories | Auxiliary Contact Block | Yes |
| | Alarm Contact Block | Yes |
| | Auxiliary and Alarm Contact Block | Yes |
| | Short-Circuit Alarm Contact Block | Yes |
| | Shunt Trip Device | Yes |
| | Undervoltage Trip Device | Yes |
| | External Operating Handle | Yes |
| Standards & Agency Approvals | IEC 60947-1, 60947-2, 60947-4-1, UL 508 file E163944, CSA C22.2 No.14 file 20479 | |

Fuji Duo Series Manual Motor Starters

BM3VHB-xxx Specifications

| General Specifications: 55 mm Frame Width - BM3VHB-XXX Series | | | | | | | | | | | |
|---|----------|--|---------------------------------------|------------|------------|------------|--------------------------------|---|--------|--------|---|
| Part Number | Price | Adjustable Current Range <i>I_e</i> : Min.-Max. (A) | UL/CSA 3-Phase hp Rating ¹ | | | | Instantaneous Trip Current (A) | UL/CSA Short Circuit Current Rating (kA) ² | | | Max. Listed Branch Circuit Protection - Fuse or MCCB (A) ³ |
| | | | 200-208VAC | 220-240VAC | 440-480VAC | 550-600VAC | | 240VAC | 480VAC | 600VAC | |
| BM3VHB-010 | \$122.50 | 6.3-10 | 2 | 3 | 5 | 7-1/2 | 130 | 100 | 50 | 10 | 600 |
| BM3VHB-013 | \$122.50 | 9-13 | 3 | 3 | 7-1/2 | 10 | 169 | 100 | 50 | 10 | 600 |
| BM3VHB-016 | \$122.50 | 11-16 | 3 | 5 | 10 | 10 | 208 | 100 | 50 | 10 | 600 |
| BM3VHB-020 | \$122.50 | 14-20 | 5 | 5 | 10 | 15 | 260 | 100 | 50 | 10 | 600 |
| BM3VHB-025 | \$142.00 | 19-25 | 7-1/2 | 7-1/2 | 15 | 20 | 325 | 100 | 50 | 10 | 600 |
| BM3VHB-032 | \$150.50 | 24-32 | 10 | 10 | 20 | 30 | 416 | 100 | 50 | 10 | 600 |
| BM3VHB-040 | \$150.50 | 28-40 | 10 | 10 | 30 | 30 | 520 | 100 | 50 | 10 | 600 |
| BM3VHB-050 | \$157.00 | 35-50 | 15 | 15 | 30 | 40 | 650 | 100 | 50 | 10 | 600 |
| BM3VHB-063 | \$157.00 | 45-63 | 20 | 20 | 40 | 60 | 819 | 100 | 50 | 10 | 600 |

Note 1: BM3VHB-xxx are cUL listed as HP rated motor controllers. **Note 2:** BM3VHB-xxx are cUL listed for group installation per NEC430-53(C).

| General Specifications: 55 mm Frame Width - BM3VHB-XXX Series - continued | | |
|---|---|--------|
| Features | Adjustable thermal-magnetic trip type | |
| Number of Poles | 3 | |
| Handle Type | Rotary | |
| Rated Current <i>I_e</i> (A) | 10 to 63 | |
| Rated Operational Voltage <i>U_e</i> (V) | 200 to 690 | |
| Rated Frequency (Hz) | 50/60 | |
| Rated Insulation Voltage <i>U_i</i> (V) | 1,000 | |
| Rated Impulse Withstand Voltage <i>U_{imp}</i> (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 <i>I_e</i> max. | |
| Power Loss (total of 3-pole) | 11W: <i>I_n</i> = 10 to 32A 15W: <i>I_n</i> = 40 to 50A 17W: <i>I_n</i> = 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 | |
| Dimensions (mm) WxHxD | 55x110x96 | |
| Weight (oz/g) | 27.51 / 780 | |
| Optional Accessories | Auxiliary Contact Block | Yes |
| | Alarm Contact Block | Yes |
| | Auxiliary and Alarm Contact Block | Yes |
| | Short-Circuit Alarm Contact Block | Yes |
| | Shunt Trip Device | Yes |
| | Undervoltage Trip Device | Yes |
| | External Operating Handle | Yes |
| Standards & Agency Approvals | IEC 60947-1, 60947-2, 60947-4-1, UL 508 file E163944, CSA C22.2 No.14 file 20479 | |

Fuji Duo Series Manual Motor Starters

DIN-rail mounting

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

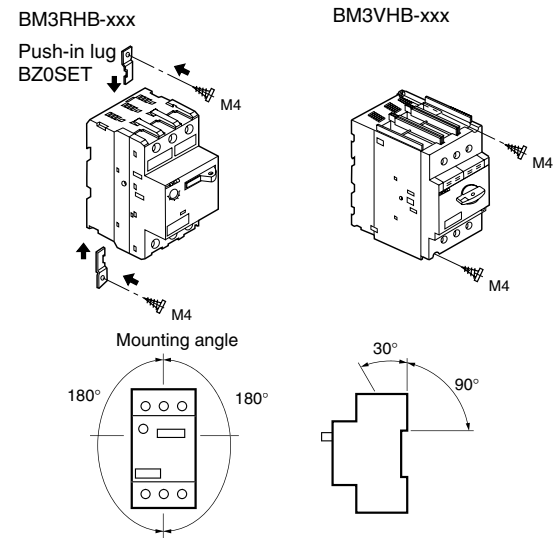
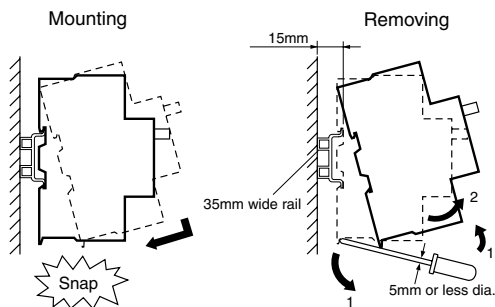
Applicable rail:

Use a 15 mm-high DIN rail, such as our DN-R35HS1, which conforms to EN-50022 and IEC715.

The standard DIN rail mounting direction is horizontal. When using the MMS on vertically mounted DIN rail, use end clamps.

Screw mounting

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



Wiring

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

| Environmental Specifications | | |
|------------------------------|--|---|
| Ambient Temperature | Operating: -5 to +55°C 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/s ² | No abnormal shock or vibration. |
| Shock | 50m/s ² | |

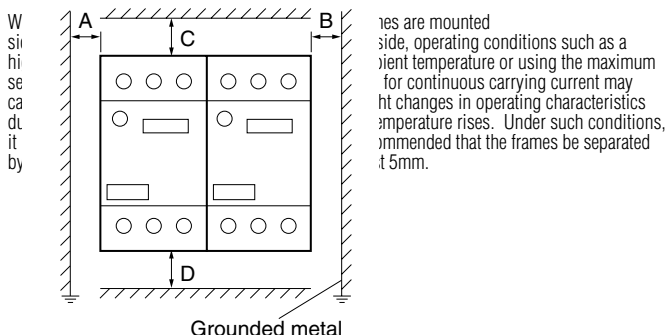
Wiring Specifications

| Wire Size and Tightening Torque | | | |
|---------------------------------------|---|--|---|
| Type | BM3RHB-XXX | BM3VHB-XXX | BZO Accessories |
| Solid Wire (mm) | 1.6 to 2.6 dia. | 1.6 to 2.6 dia. | 1 to 1.6 dia. |
| Stranded Wire (mm²) | Single-wire 1 to 10 1 to 6 | Single-wire 1 to 25 1 to 16 | 2-wire 0.5 to 2.5 0.5 to 2.5 |
| AWG | Single-wire 18 to 8 18 to 10 | 2-wire 18 to 4 18 to 4 | 18 to 14 18 to 14 |
| Sheath Stripping Length (mm) | Approx.10 | Approx.13 | Approx.10 |
| Terminal Screw | Pan head screw (PZ2) M4 | Pan head screw (PZ2) M6 | Pan head screw (PZ2) 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.

Arc Space Requirements

| Arc Space Requirements | | | |
|------------------------|----------------------------------|---|-----|
| Part Number | Rated operational voltage Ue (V) | Minimum distance to grounded metal (mm) | |
| | | A,B | C,D |
| BM3RHB-XXX | Up to 500 | 15 | 30 |
| | Up to 690 | 40 | 50 |
| BM3VHB-XXX | Up to 500 | 15 | 40 |
| | Up to 690 | 40 | 50 |



Fuji Duo Series Combination Starter Selection Table - 45 mm

Use this selection table to select 45 mm frame width (A) Manual Motor Starter, (B) Contactor, (C) Link Module, and (D) Base Plate for a Combination Starter

| Combination Starter Selection Table - 45 mm | | | | | | | | | | |
|---|---|--|---|---|---|--|--------------------------|------------|---|----|
| Three Phase Motor | | | | Manual Motor Starter Adjustable Current Range (A) | A | B | C | D | SCCR at 480Y/277 VAC (kA) type F coordination | |
| 220-240 Volt | | 440-480 Volt | | | | | | | | |
| Motor Horsepower (hp) See Note 1 below | Motor Full-Load Amperage (FLA) See Note 4 below | Motor Horsepower (hp) See Note 1 below | Motor Full-Load Amperage (FLA) See Note 4 below | | Manual Motor Starter See Note 2 below for UL Type E applications. | Contactor The contactor part number needs the coil voltage suffix. See Note 3 below. | Link Module | Base Plate | | |
| - | - | - | - | 0.1 to 0.16 | BM3RHB-P16 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | BZ0BPRE22A | 65 | |
| - | - | - | - | 0.16 to 0.25 | BM3RHB-P25 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| - | - | - | - | 0.25 to 0.4 | BM3RHB-P40 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| - | - | - | - | 0.4 to 0.63 | BM3RHB-P63 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| - | - | - | - | 0.63 to 1.0 | BM3RHB-001 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| - | - | 0.75 | 1.6 | 1.0 to 1.6 | BM3RHB-1P6 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 0.5 | 2.2 | 1 | 2.1 | 1.6 to 2.5 | BM3RHB-2P5 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 0.75 | 3.2 | 2 | 3.4 | 2.5 to 4.0 | BM3RHB-004 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 1.5 | 6 | 3 | 4.8 | 4.0 to 6.3 | BM3RHB-6P3 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| - | - | 5 | 7.6 | 6.3 to 10 | BM3RHB-010 | SC-E02-110VAC SC-E02G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 3 | 9.6 | 7.5 | 11 | 9 to 13 | BM3RHB-013 | SC-E03-110VAC SC-E03G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 5 | 15.2 | 10 | 14 | 11 to 16 | BM3RHB-016 | SC-E04-110VAC SC-E04G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 5 | 15.2 | 10 | 14 | 14 to 20 | BM3RHB-020 | SC-E04-110VAC SC-E04G-24VDC | BZOLRE22AA BZOLRE22GA | | 65 | |
| 7.5 | 22 | 15 | 21 | 19 to 25 | BM3RHB-025 | SC-E05-110VAC SC-E05G-24VDC | BZOLRE22AA BZOLRE22GA | | 50 | |
| 10 | 28 | 20 | 27 | 24 to 32 | BM3RHB-032 | SC-E1-110VAC SC-E1G-24VDC | BZOLRE32AA BZOLRE32GA | | BZ0BPRE32A | 50 |

Note 1: When a horsepower rating is listed on two rows, the motor full-load amperage must be known so you can select the MMS with the best adjustable current range for your application. For example, if you have a 230V, 5 hp, 15.2A motor, you can select a MMS with either a 11-16A range or a 14-20A range. Consult the motor data plate or motor manufacturer.

Note 2: When using BM3RHB-xxx MMS in a UL Type E application, you must also use part numbers BZ0TKUAB (short-circuit contact block) and BZ0TCRE (line side terminal cover).

Note 3: For AC coil voltages other than 110VAC, substitute the "110VAC" in the part number with "220VAC" for 220/240VAC coils or "24VAC" for 24VAC coils. For example, if the table lists a SC-E02-110VAC contactor for your application and you need a contactor with a 220VAC coil, use contactor SC-E02-220VAC.

Note 4: Per NEC 2005 Table 430.250

Fuji Duo Series Combination Starter Selection Table - 55 mm



Use this selection table to select 55 mm frame width (A) Manual Motor Starter, (B) Contactor, (C) Link Module, and (D) Base Plate for a Combination Starter

| Combination Starter Selection Table - 55 mm | | | | | | | | | |
|---|---|--|---|---|---|--|-------------|------------|---|
| Three Phase Motor | | | | | A | B | C | D | |
| 220-240 Volt | | 440-480 Volt | | | | | | | |
| Motor horsepower (hp) See Note 1 below | Motor Full-Load Amperage (FLA) See Note 4 below | Motor Horsepower (hp) See Note 1 below | Motor Full-Load Amperage (FLA) See Note 4 below | Manual Motor Starter Adjustable Current Range (A) | Manual Motor Starter See Note 2 below for UL Type E applications. | Contactor The contactor part number needs the coil voltage suffix. See Note 3 below. | Link Module | Base Plate | SCCR at 480Y/277 VAC (kA) type F coordination |
| 3 | 9.6 | 5 | 7.6 | 6.3 to 10 | BM3VHB-010 | SC-E1-110VAC | BZ0LVE51AA | BZ0BPVE51A | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 3 | 9.6 | 7.5 | 11 | 9 to 13 | BM3VHB-013 | SC-E1-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 5 | 15.2 | 10 | 14 | 11 to 16 | BM3VHB-016 | SC-E1-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 5 | 15.2 | 10 | 14 | 14 to 20 | BM3VHB-020 | SC-E1-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 7.5 | 22 | 15 | 21 | 19 to 25 | BM3VHB-025 | SC-E1-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 10 | 28 | 20 | 27 | 24 to 32 | BM3VHB-032 | SC-E1-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E1G-24VDC | BZ0LVE51GA | | |
| 10 | 28 | 30 | 40 | 28 to 40 | BM3VHB-040 | SC-E2-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E2G-24VDC | BZ0LVE51GA | | |
| 15 | 42 | 30 | 40 | 35 to 50 | BM3VHB-050 | SC-E2S-110VAC | BZ0LVE51AA | | 65 |
| | | | | | | SC-E2SG-24VDC | BZ0LVE51GA | | |
| 20 | 54 | 40 | 52 | 45 to 63 | BM3VHB-063 | SC-E3-110VAC | BZ0LVE65AA | BZ0BPVE65A | 65 |
| | | | | | | SC-E3G-24VDC | BZ0LVE65GA | | |

Note 1: When a horsepower rating is listed on two rows, the motor full-load amperage must be known so you can select the MMS with the best adjustable current range for your application. For example, if you have a 230V, 10 hp, 28A motor, you can select a MMS with either a 24-32A range or a 28-40A range. Consult the motor data plate or motor manufacturer.

Note 2: When using BM3VHB-xxx MMS in a UL Type E application, you must also use part number BZ0TKUAB (short-circuit contact block).

Note 3: For AC coil voltages other than 110VAC, substitute the "110VAC" in the part number with "220VAC" for 220/240VAC coils or "24VAC" for 24VAC coils. For example, if the table lists a SC-E1-110VAC contactor for your application and you need a contactor with a 220VAC coil, use contactor SC-E1-220VAC.

Note 4: Per NEC 2005 Table 430.250