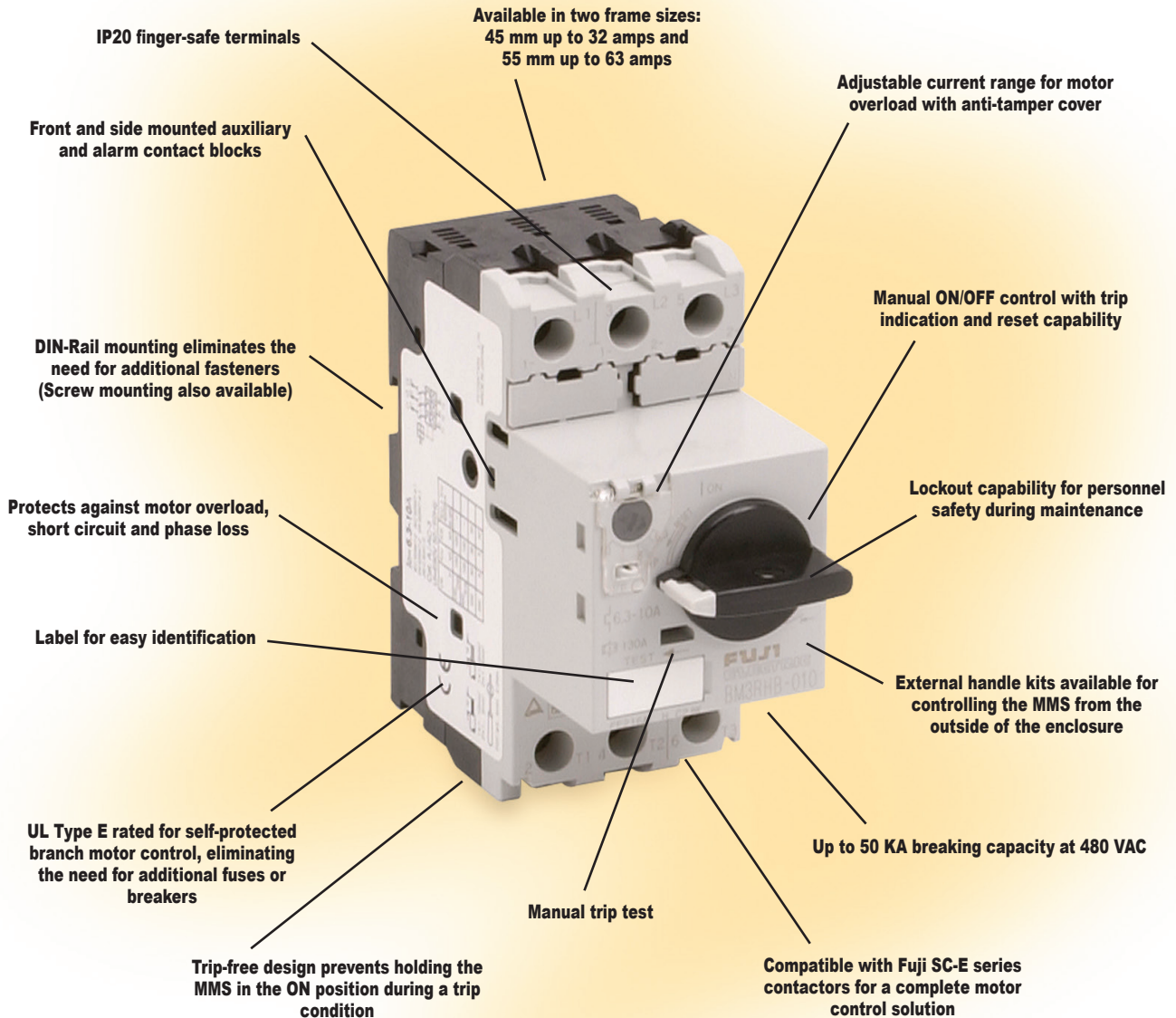


# Fuji Duo Series Manual Motor Starters

The manual motor starter is a protective device for motor use that provides optimal protection by integrating the functions of a molded case circuit breaker and thermal overload relay into a compact unit. Since Fuji's MMS is UL listed for Category E self-protected motor control, it can be used for motor branch circuit protection without the need for additional protection such as

fuses or molded case circuit breakers. The MMS is available in a 32A version with a 45 mm frame width, and a 63A version with a 55 mm frame width. Both MMS versions have high breaking capacities, up to 100,000A in some ranges. A wide range of accessories is available, including shunt trips and undervoltage releases.



**Auxiliary and alarm contact blocks**



**Shunt trips and undervoltage releases**



**MMS external handles**



**MMS Busbars**

# Accessories

# Fuji Duo Series Manual Motor Starters

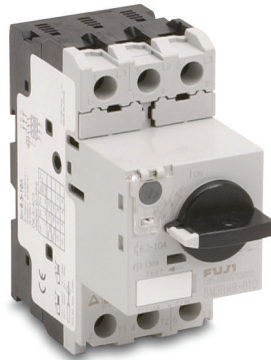
## General Information

### Features

- Adjustable thermal-magnetic trip
- Available in two frame sizes, 45 mm width and 55 mm width
- A wide motor capacity range up to 40 hp, 3-phase (440/480 VAC, 63A); 60 hp @ 600 V
- Rotary handle operators
- On/Off and trip state indicators for all frames
- Max. breaking capacity of 100 kA (240 VAC)
- Common accessories to reduce inventory
- A wide rated operational current range of up to 32A for the 45 mm wide and 63A for the 55 mm wide starters
- ON/OFF and trip indicators for instant status recognition
- Accessories such as auxiliary contact blocks, shunt trip devices, and undervoltage trip devices are compatible with the 45 mm and 55 mm wide frame sizes
- External operating handles are available as optional accessories
- Lockout/tagout feature

### Standards

- UL listed, file E163944, Standard UL 508
- cUL listed, file E163944, CSA C22.2 No.14
- TÜV, CE
- cULus listed for group installation per NEC 430-53(c)



### BM3RHB-xxx Models (45mm wide)

Rated current: 0.16 to 32A

Rated insulation voltage: 690V

Operation handle: Rotary

Short circuit current rating:

- 100 kA at 240 VAC
- 50 kA at 480 VAC

NOTE: 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).



### BM3VHB-xxx Models (55mm wide)

Rated current: 10 to 63A

Rated insulation voltage: 1000V

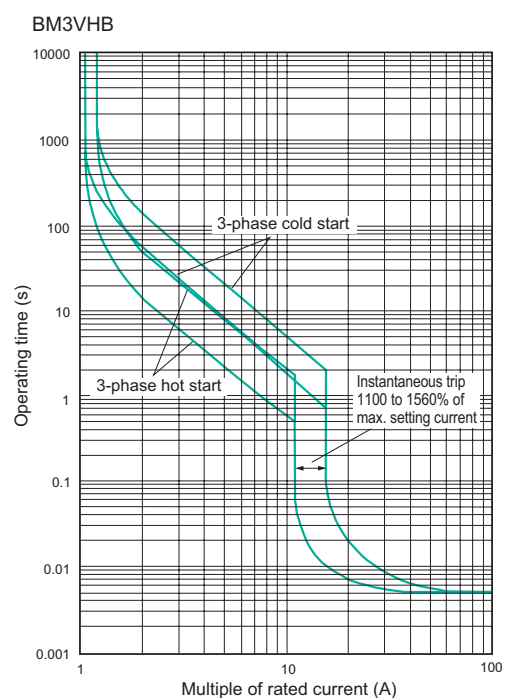
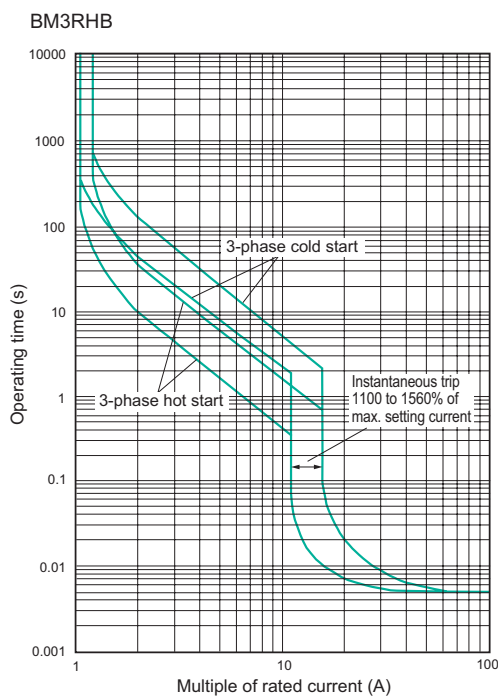
Operation handle: Rotary

Short circuit current rating:

- 100 kA at 240 VAC
- 50 kA at 480 VAC

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

## Characteristic curves



# Fuji Duo Series Manual Motor Starters

## BM3RHB-xxx Specifications



General Specifications: 45mm Frame Width - BM3RHB-xxx Series														
Part Number	Price	Adjustable Current Range <i>I<sub>e</sub></i> : Min.-Max. (A)	UL/CSA 3-Phase HP Rating <sup>1</sup>				Instantaneous Trip Current (A)	UL/CSA Short Circuit Current Rating (kA) <sup>2</sup>			Max. Listed Branch Circuit Protection - Fuse or MCCB (A) <sup>2</sup>			
			200-208VAC	220-240VAC	440-480VAC	550-600VAC		240VAC	480VAC	600VAC				
<a href="#">BM3RHB-P16</a>	\$75.00	0.1-0.16	Rated to motor full-load amperage				In accordance with motor full-load current	2.1	100	50	10	500		
<a href="#">BM3RHB-P25</a>	\$75.00	0.16-0.25						3.3	100	50	10	500		
<a href="#">BM3RHB-P40</a>	\$75.00	0.25-0.4						5.2	100	50	10	500		
<a href="#">BM3RHB-P63</a>	\$75.00	0.4-0.63						8.2	100	50	10	500		
<a href="#">BM3RHB-001</a>	\$75.00	0.63-1							1/2	13	100	50	10	500
<a href="#">BM3RHB-1P6</a>	\$75.00	1-1.6						3/4	3/4	20.8	100	50	10	500
<a href="#">BM3RHB-2P5</a>	\$75.00	1.6-2.5	1/2	1/2	1	1-1/2	32.5	100	50	10	500			
<a href="#">BM3RHB-004</a>	\$75.00	2.5-4	3/4	3/4	2	3	52	100	50	10	500			
<a href="#">BM3RHB-6P3</a>	\$75.00	4-6.3	1	1-1/2	3	5	81.9	100	50	10	500			
<a href="#">BM3RHB-010</a>	\$79.00	6.3-10	2	3	5	7-1/2	130	100	50	10	500			
<a href="#">BM3RHB-013</a>	\$79.00	9-13	3	3	7-1/2	10	169	100	50	10	500			
<a href="#">BM3RHB-016</a>	\$79.00	11-16	3	5	10	10	208	100	50	10	500			
<a href="#">BM3RHB-020</a>	\$79.00	14-20	5	5	10	15	260	100	50	10	500			
<a href="#">BM3RHB-025</a>	\$95.00	19-25	7-1/2	7-1/2	15	20	325	100	50	10	500			
<a href="#">BM3RHB-032</a>	\$120.00	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: 45mm Frame Width - BM3RHB-xxx Series - continued		
Features	Adjustable thermal-magnetic trip type	
Number of Poles	3	
Handle Type	Rotary	
Rated Current <i>I<sub>e</sub></i> (A)	0.16 to 32	
Rated Operational Voltage <i>U<sub>e</sub></i> (V)	200 to 690	
Rated Frequency (Hz)	50/60	
Rated insulation Voltage <i>U<sub>i</sub></i> (V)	690	
Rated Impulse Withstand Voltage <i>U<sub>imp</sub></i> (kV)	6	
Utilization Category	IEC 60947-2 Circuit Breaker IEC 60947-4-1 Motor Starter	
Trip Class IEC 60947-4-1	Cat. A AC-3	
Instantaneous Trip Characteristic	10	
Power Loss (total of 3-pole)	13 x <i>I<sub>e</sub></i> max.	
Mechanical Durability (operations)	7W: <i>I<sub>n</sub></i> =0.16 to 25A 8.5W: <i>I<sub>n</sub></i> =32A	
Electrical Durability (operations)	100,000: <i>I<sub>n</sub></i> =0.16 to 25A 70,000: <i>I<sub>n</sub></i> =32A	
Max. Operations per Hour (motor start-up)	100,000: <i>I<sub>n</sub></i> =0.16 to 25A 70,000: <i>I<sub>n</sub></i> =32A	
Phase-loss Protection	25	
Trip Indicator	Provided	
Test Trip Function	Provided	
Dimensions (mm) WxHxD	Provided	
Weight (oz/g)	45x90x79	
Optional Accessories	Auxiliary Contact Block	13.05 / 370
	Alarm Contact Block	Yes
	Auxiliary and Alarm Contact Block	Yes
	Short-Circuit Alarm Contact Block	Yes
	Shunt Trip Device	Yes
	Undervoltage Trip Device	Yes
Standards & Agency Approvals	External Operating Handle	Yes
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: 55mm Frame Width - BM3VHB-xxx Series											
Part Number	Price	Adjustable Current Range <i>I<sub>e</sub></i> : Min.-Max. (A)	UL/CSA 3-Phase hp Rating <sup>1</sup>				Instantaneous Trip Current (A)	UL/CSA Short Circuit Current Rating (kA) <sup>2</sup>			Max. Listed Branch Circuit Protection - Fuse or MCCB (A) <sup>2</sup>
			200-208VAC	220-240VAC	440-480VAC	550-600VAC		240VAC	480VAC	600VAC	
<a href="#">BM3VHB-010</a>	\$184.00	6.3-10	2	3	5	7-1/2	130	100	50	10	600
<a href="#">BM3VHB-013</a>	\$184.00	9-13	3	3	7-1/2	10	169	100	50	10	600
<a href="#">BM3VHB-016</a>	\$184.00	11-16	3	5	10	10	208	100	50	10	600
<a href="#">BM3VHB-020</a>	\$184.00	14-20	5	5	10	15	260	100	50	10	600
<a href="#">BM3VHB-025</a>	\$216.00	19-25	7-1/2	7-1/2	15	20	325	100	50	10	600
<a href="#">BM3VHB-032</a>	\$228.00	24-32	10	10	20	30	416	100	50	10	600
<a href="#">BM3VHB-040</a>	\$228.00	28-40	10	10	30	30	520	100	50	10	600
<a href="#">BM3VHB-050</a>	\$237.00	35-50	15	15	30	40	650	100	50	10	600
<a href="#">BM3VHB-063</a>	\$237.00	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: 55mm Frame Width - BM3VHB-xxx Series - continued		
<b>Features</b>		Adjustable thermal-magnetic trip type
<b>Number of Poles</b>		3
<b>Handle Type</b>		Rotary
<b>Rated Current <math>I_e</math> (A)</b>		10 to 63
<b>Rated Operational Voltage <math>U_e</math> (V)</b>		200 to 690
<b>Rated Frequency (Hz)</b>		50/60
<b>Rated Insulation Voltage <math>U_i</math> (V)</b>		1,000
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math> (kV)</b>		8
<b>Utilization Category</b>	IEC 60947-2 Circuit Breaker	Cat. A
	IEC 60947-4-1 Motor Starter	AC-3
<b>Trip Class IEC 60947-4-1</b>		10
<b>Instantaneous Trip Characteristic</b>		13 x $I_e$ max.
<b>Power Loss (total of 3-pole)</b>		11W: $I_n$ = 10 to 32A 15W: $I_n$ = 40 to 50A 17W: $I_n$ = 63A
<b>Mechanical Durability (operations)</b>		50,000
<b>Electrical Durability (operations)</b>		25,000
<b>Max. Operations per Hour (motor start-up)</b>		25
<b>Phase-Loss Protection</b>		Provided
<b>Trip Indicator</b>		Provided
<b>Test Trip Function</b>		Provided
<b>Dimensions (mm) WxHxD</b>		55x110x96
<b>Weight (oz/g)</b>		27.51 / 780
<b>Optional Accessories</b>	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
<b>Standards &amp; Agency Approvals</b>		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.

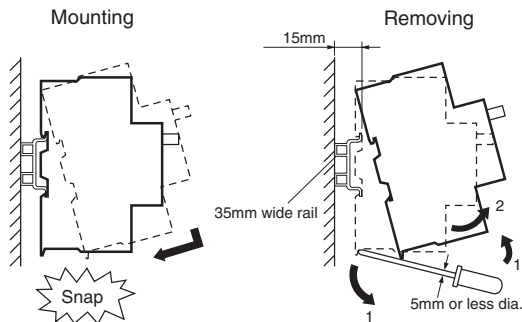
Applicable rail:

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

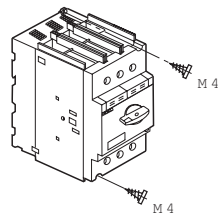
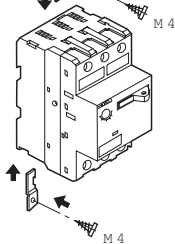
The separately sold push-in lug (BZ0SET) is required for screw mounting the BM3R frame. The BM3V frame can be screw mounted directly to the panel.



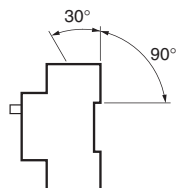
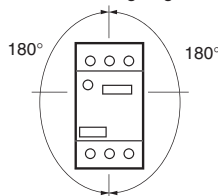
BM3RHB -xxx

BM3 VHB -xxx

Push-in lug  
BZ0SET



Mounting angle



## Wiring

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

## Environmental Specifications

<b>Ambient Temperature</b>	Operating: -5 to +55°C Storage: -40 to +65°C	No sudden temperature changes resulting in condensation or icing.
<b>Humidity</b>	45 to 85%RH	
<b>Altitude</b>	2000m or lower	
<b>Atmosphere</b>	No excessive dust, smoke, corrosive gases, flammable gases, steam or salt.	
<b>Vibration</b>	10 to 55Hz 15m/s <sup>2</sup>	No abnormal shock or vibration.
<b>Shock</b>	50m/s <sup>2</sup>	

## Wiring Specifications

### Wire Size and Tightening Torque

Type	BM3RHB-xxx	BM3VHB-xxx	BZ0 Accessories
<b>Solid Wire (mm)</b>	1.6 to 2.6 dia.	1.6 to 2.6 dia.	1 to 1.6 dia.
<b>Stranded Wire (mm<sup>2</sup>)</b>	<b>Single-wire</b>	1 to 10	0.5 to 2.5
	<b>2-wire</b>	1 to 6	0.5 to 2.5
<b>AWG</b>	<b>Single-wire</b>	18 to 8	18 to 14
	<b>2-wire</b>	18 to 10	18 to 14
<b>Sheath Stripping Length (mm)</b>	Approx.10	Approx.13	Approx.10
<b>Terminal Screw</b>	Pan head screw (PZ2) M4	Pan head screw (PZ2) M6	Pan head screw (PZ2) M3.5
<b>Tightening Torque (N·m)</b>	2	4	0.8

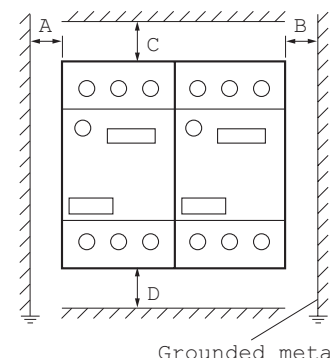
Note: There is no need for a crimp terminal or any other terminal on the end of the connection wire.

## Arc Space Requirements

### Arc Space Requirements

Part Number	Rated operational voltage $U_e$	Minimum distance to grounded metal (mm)	
	(V)	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

When frames are mounted side-by-side, operating conditions such as a high ambient temperature or using the maximum setting for continuous carrying 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.



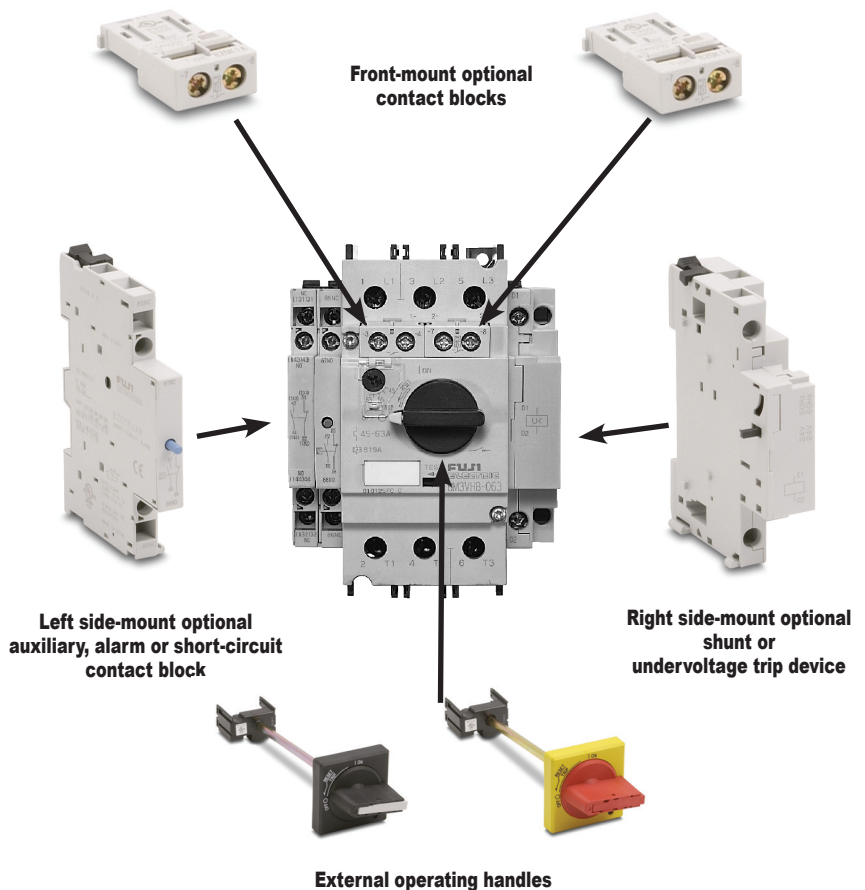
# Fuji Duo Series Manual Motor Starters Accessories

## Optional accessories

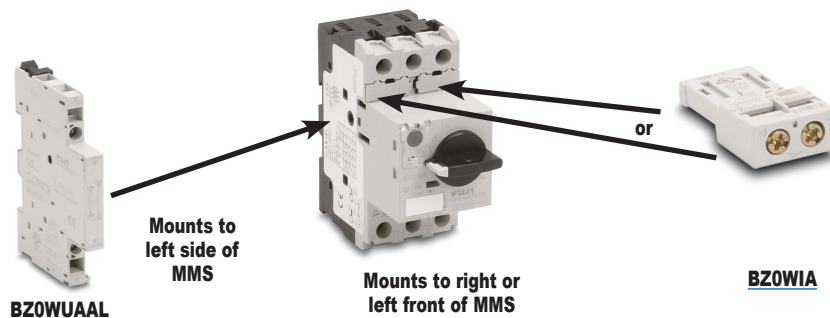
- All accessories can be used with BM3R (45 mm wide) and BM3V (55 mm wide) frames
- Accessories are easily mounted
- Internally-mountable auxiliary contact blocks and alarm contact blocks can be front mounted
- Side-mountable auxiliary contact blocks can be mounted on the left side
- Shunt trip and undervoltage trip devices are available in a wide operating coil voltage range and mount on the right side
- Standard and emergency external handles are available
- IP20 terminal cover helps prevent accidental contact with electrically charged parts
- Optional front mounted contact and alarm blocks eliminate horizontal space needed with the DIN rail



### Installation of optional contact blocks and trip devices



### Auxiliary contact blocks



Auxiliary Contact Blocks						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<b>BZ0WIA</b>	\$8.75	These contact blocks do not discriminate between OFF, overload, phase-loss, or short circuit. The blocks are linked to the ON/OFF operation of the MMS, and also operate in the event of an overload, phase-loss, or short circuit. Up to two contact blocks can be mounted to the right/left front, and up to two contact blocks can be mounted to the left sides.	BM3RHB-xxx BM3VHB-xxx	Front	1NO	9/0.02
<b>BZ0WIB</b>	\$8.75				1NC	
<b>BZ0WUAAAL</b>	\$12.50			Left side	2NO	45/0.1
<b>BZ0WUABL</b>	\$12.50				1NO + 1NC	
<b>BZ0WUBBL</b>	\$12.50				2NC	

# Fuji Duo Series Manual Motor Starters Accessories



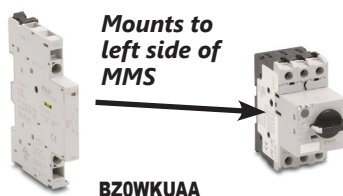
## Accessories (continued)

### Alarm contact blocks

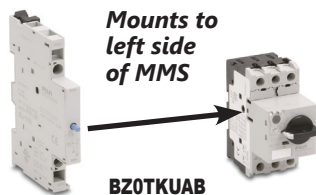


Alarm Contact Blocks						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<b>BZ0KIA</b>	\$8.75	This block operates when the MMS trips due to overload, phase-loss, or short-circuit. It is not linked to the ON/OFF operation of the MMS. Note: Operation can be checked with the test trip function.	BM3RHB-xxx BM3VHB-xxx	Front (Right side only)	1NO	9/0.02
<b>BZ0KIB</b>	\$8.75				1NC	

### Auxiliary and alarm contact blocks



Combination Auxiliary/Alarm Contact Blocks						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<b>BZ0WKUAA</b>	\$15.50	<ul style="list-style-type: none"> <li>This contact block combines an auxiliary contact and an alarm contact that operates in the event of an overload, phase loss, or short-circuit. Alarm contact is not linked to the ON/OFF operation of the MMS.</li> <li>An alarm is displayed in the contact block's indicator when the alarm contact operates.</li> <li>Note: Operation can be checked with the test trip function.</li> </ul>	BM3RHB-xxx BM3VHB-xxx	Left	1NO (Aux.) + 1NO (Alarm)	45/0.1



Note 1: Required when using MMS in a UL Type E application.  
Note 2: Do not configure this with an auxiliary contact block; the contact will only close when a short circuit occurs.

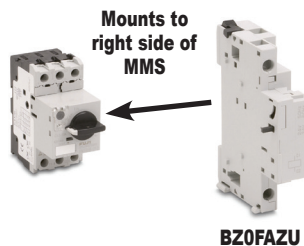
### Short-circuit alarm contact blocks

Short-Circuit Alarm Contact Block						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<b>BZ0TKUAB</b>	\$19.50	<ul style="list-style-type: none"> <li>The contacts operate only when the MMS has tripped due to a short-circuit (cannot be checked with trip test function).</li> <li>When these contacts operate, the blue reset button extends out, and a trip indication is displayed.</li> <li>The power to the MMS can be turned ON after pressing the reset button.</li> <li>Note: Be sure to press the reset button before mounting to the MMS.</li> </ul>	BM3RHB-xxx BM3VHB-xxx	Left	1NO + 1NC	45/0.1

Contact Status					
Contact Type		Device Condition			
		OFF	ON	Tripped	
				Overload or Phase-loss	Short Circuit
AUX CONTACT, <b>BZ0WIA, BZ0WIB, BZ0WUAA, BZ0WUBBL, BZ0WUABL</b>	NO	Open	Closed	Opens	
	NC	Closed	Open	Closes	
ALARM CONTACT <b>BZ0KIA, BZ0KIB</b>	NO	Open (no change)	Open (no change)	Closes	
	NC	Closed (no change)	Closed (no change)	Opens	
AUX & ALARM CONTACT <b>BZ0WKUAA</b>	NO (AUX)	Open	Closed	Opens	
	NO (ALM)	Open (no change)	Open (no change)	Closes	
SHORT-CIRCUIT CONTACT <b>BZ0TKUAB</b>	NO	Open (no change)	Open (no change)	Open (no change)	Closes
	NC	Closed (no change)	Closed (no change)	Closed (no change)	Opens

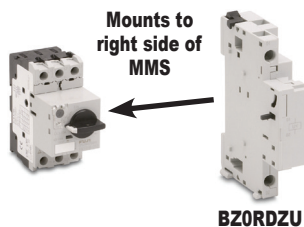
# Fuji Duo Series Manual Motor Starters Accessories

## Accessories (continued)



### Shunt trip devices

Shunt Trip Devices						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<a href="#"><u>BZ0FAZU</u></a> <a href="#"><u>BZ0FDZU</u></a>	\$26.00	This device is used to remotely trip the MMS.	BM3RHB-xxx BM3VHB-xxx	Right	110-127V 50Hz/120V 60Hz	115/0.25
<a href="#"><u>BZ0FKZUD</u></a>	\$26.00	<i>Notes:</i> • This device cannot be used together with an undervoltage trip device. • When the MMS has been tripped with the shunt trip device, press the reset button before turning ON the power.			24-60VDC (time rating of coil is 5s)	



### Undervoltage trip devices

Undervoltage Trip Devices						
Part Number	Price	Description	Starter Type	Mounting	Contact Arrangement	Weight (g/lb)
<a href="#"><u>BZ0RDZU</u></a>	\$26.00	This device automatically trips the MMS when the control circuit voltage drops below the specified value.	BM3RHB-xxx BM3VHB-xxx	Right	110-127V 50Hz/120V 60Hz	115/0.25
<a href="#"><u>BZ0R4ZU</u></a>	\$26.00	<i>Notes:</i> This device cannot be used together with a shunt trip device. When the MMS has been tripped with the undervoltage trip device, press the reset button before turning ON the power.			415-440V 50Hz/460-480V 60Hz	



### Push-in lug

Push-in Lug				
Part Number	Price	Description	Starter type	Weight (g/lb)
<a href="#"><u>BZ0SET</u></a>	\$8.75	Push-in mounting lug. Required for screw mounting of MMS; qty: 10/pkg	BM3RHB-xxx	2.0/.004

Note: See page MRC-tMRC-73 for installation instructions



### Terminal Cover

Terminal Cover			
Part Number	Price	Description	Starter Type
<a href="#"><u>BZ0TCRE</u></a>	\$15.00	Line side terminal cover.	BM3RHB-xxx

Notes: BZ0TCRE required only when using BM3RHB-xxx MMS in a UL Type E application (along with short circuit alarm contact block [BZ0TKUAB](#)). If using BZ0TCRE terminal cover with BM3R series MMS, the busbar system and front mounted contacts cannot be used.



# Fuji Duo Series Manual Motor Starters Accessories

## Accessories (continued)

### External operating handles



**BZ0VBBL**

**BZ0VYRL**

External Operating Handles					
Part Number	Price	Description	Starter Type	Handle Type	Weight (g/lb)
<a href="#"><u>BZ0VBBL</u></a>	\$38.00	<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> <li>Door interlock function</li> <li>OFF lock function</li> <li>Can be locked OFF with up to three padlocks. Note: Padlocks are to be provided by the customer.</li> <li>Release screw allows the door to be opened with the handle in the ON position.</li> <li>IP54 enclosure</li> </ul>	BM3RHB-xxx	Standard (black)	160/0.35
<a href="#"><u>BZ0VYRL</u></a>	\$39.50			Emergency (red/yellow)	160/0.35
<a href="#"><u>BZ0VBBM</u></a>	\$38.00		BM3VHB-xxx	Standard (black)	160/0.35
<a href="#"><u>BZ0VYRM</u></a>	\$39.50			Emergency (red/yellow)	160/0.35

NOTE: Premade MMS enclosures are currently not available.

## Accessory Specifications

Trip Device Specifications			
Accessory Type and Part Number		Shunt trip device	Undervoltage device
		BZ0Fxxx	BZ0Rxxx
<b>Standard</b>		IEC 60947-1, UL 508	
<b>Rated Insulation Voltage (VAC)</b>	IEC 60947	690	
	UL 508	600	
<b>No. of ON-OFF Operations</b>		5000	
<b>Operating Time (ms)</b>		20	
<b>Power Consumption</b>	Inrush (VA/W)	21/12	
	Sealed (VA/W)	8/1.2	
<b>Voltage Range</b>	Tripping Voltage (V)	0.7 to 1.1 Ue	0.35 to 0.7 Ue
	Closing Voltage (V)	-	0.85 to 1.1 Ue
<b>Time Rating of Coil (s)</b>	AC: Continuous		AC: Continuous
	DC: 5		

# Fuji Duo Series Manual Motor Starters Accessories

## Accessory specifications (continued)

Contact Block Specifications						
Accessory Type and Part Number		Auxiliary contact block/front	Auxiliary contact block/side	Alarm contact block	Aux. and alarm contact block	Short-circuit alarm contact block
		<u>BZOWIA, BZOWIB</u> (note 3)	<u>BZOWUAA</u> <u>BZOWUABL</u> <u>BZOWUBBL</u>	<u>BZOKIA, BZOKIB</u> (note 3)	<u>BZOWKUA</u>	<u>BZOTKUAB</u>
<b>Standard</b>		IEC 60947-5-1, UL 508				
<b>Rated Operational Current (A)</b>	<b>48VAC AC-15</b> (note 2)	5	6	5	6	6
	<b>125VAC</b>	3	4	3	4	4
	<b>230VAC</b>	1.5	4	1.5	4	4
	<b>400VAC</b>	(note 3)	2.2	(note 3)	2.2	2.2
	<b>500VAC</b>		1.5		1.5	
	<b>690VAC</b>		0.6		0.6	
	<b>48VDC DC-13</b> (note 2)	1.38	5	1.38	5	5
	<b>110VDC</b>	0.55	1.3	0.55	1.3	1.3
<b>220VDC</b>	0.27	0.5	0.27	0.5	0.5	
<b>Contact Rating Code UL 508</b> (note 1)	<b>AC</b>	B300	A600	B300	A600	A600
	<b>DC</b>	Q300	P300	Q300	P300	P300
<b>Min. Voltage and Current</b>		17V / 5mA				

Note 1: NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings, page MRC-tMRC-130.

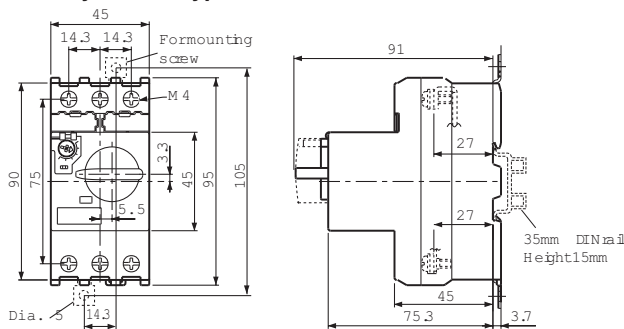
Note 2: IEC utilization category. For more information, refer to page MRC-tMRC-131.

Note 3: The indicated contacts should not be used in control circuits higher than 300V.

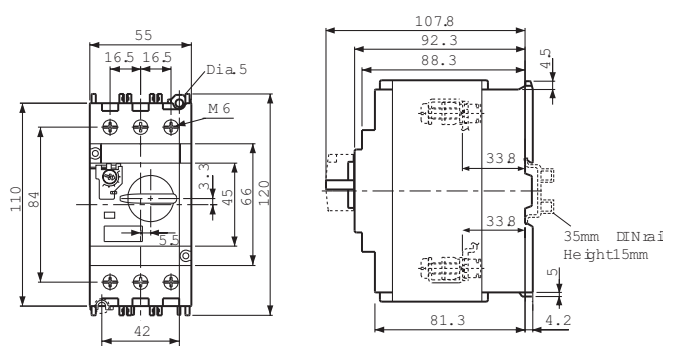
## Dimensions [mm]

### Manual motor starters

Rotary handle types **BM3RHB-xxx**



Rotary handle types **BM3VHB-xxx**



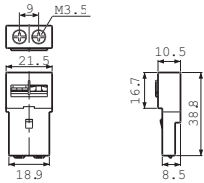
# Fuji Duo Series Manual Motor Starters Accessories

## Dimensions (continued) [mm]

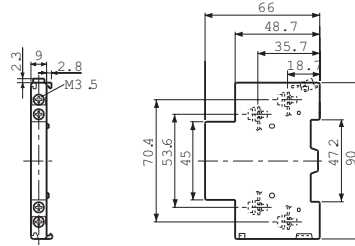


### Accessories

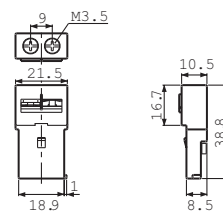
**Auxiliary contact blocks, front mounting  
BZ0WIA, BZ0WIB**



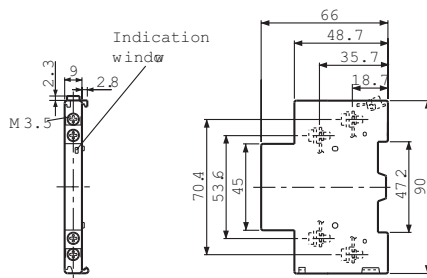
**Auxiliary contact blocks, side mounting  
BZ0WUAAL, BZ0WUABL, BZ0WUBBL**



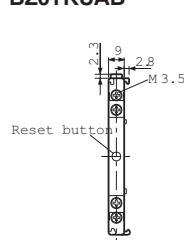
**Alarm contact blocks, front mounting  
BZ0KIA, BZ0KIB**



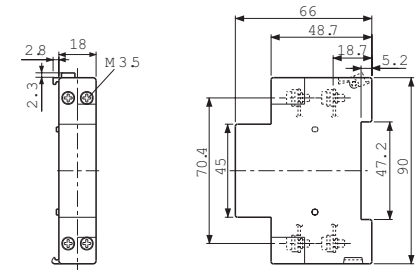
**Auxiliary and alarm contact blocks  
BZ0WKUAA**



**Short-circuit alarm contact block  
BZ0TKUAB**

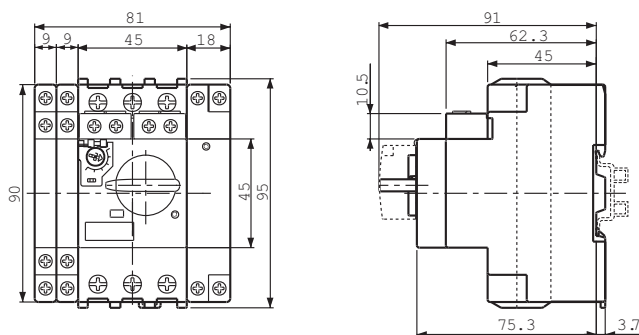


**Shunt trip devices BZ0Fxxxx  
Undervoltage trip devices BZ0Rxxxx**

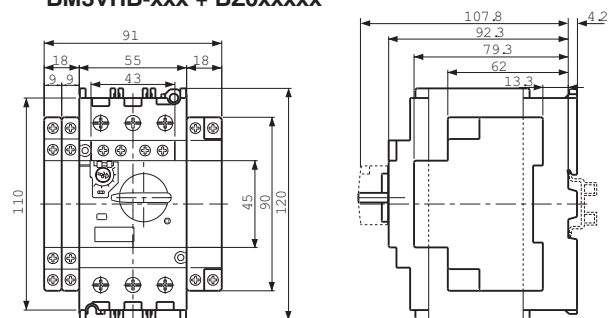


### MMS with accessories

**BM3RHB-xxx + BZ0xxxxx**



**BM3VHB-xxx + BZ0xxxxx**



# Fuji Duo Series Manual Motor Starters Accessories

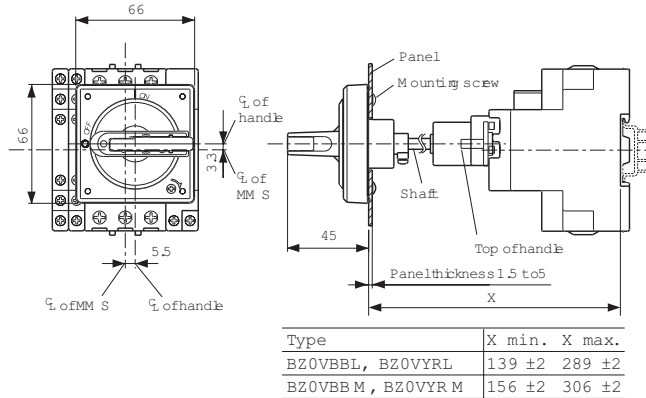


## Dimensions (continued)

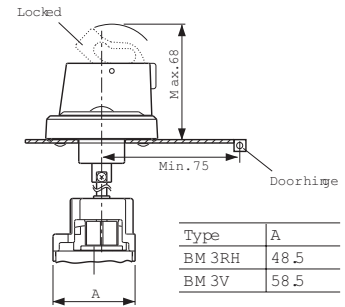
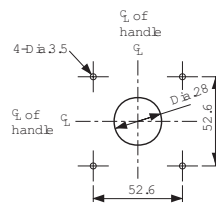
[mm]

### Accessories

#### External operation handle BZ0Vxxx

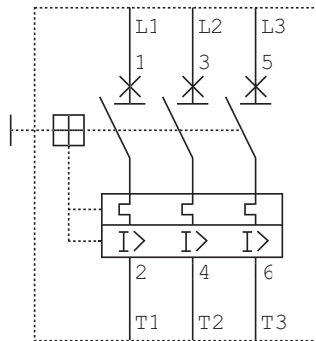


#### Panel drilling

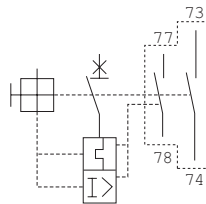


## Wiring Diagrams

### MMS



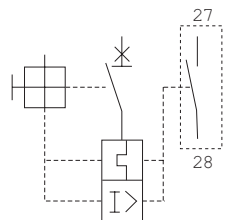
### Auxiliary and alarm contact blocks BZ0WKUAA



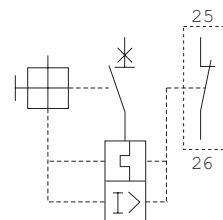
### Alarm contact blocks

#### Front mounting

#### BZ0KIA



#### BZ0KIB



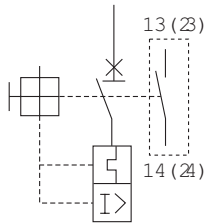
For control circuit design, see design standards such as NEC 430 "Electrical Arrangement of control Circuits" or UL508A Section 38 "Wiring methods, wire routing, and separation of circuits for internal wiring of a control circuit."

# Fuji Duo Series Manual Motor Starters Accessories

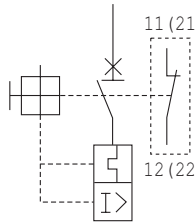
## Wiring Diagrams (continued)

### Auxiliary contact blocks Front mounting

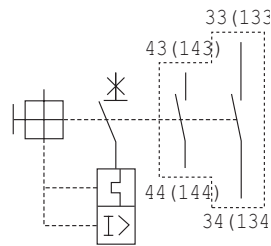
**BZ0WIA**



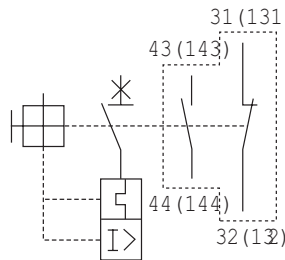
**BZ0WIB**



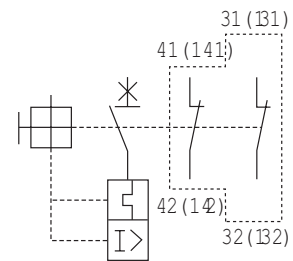
### Side mounting BZ0WUAAAL



**BZ0WUABL**

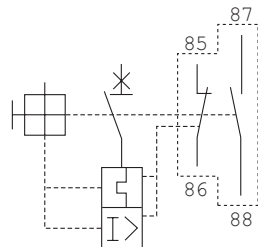


**BZ0WUBBL**



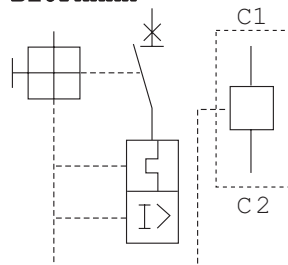
### Short-circuit alarm contact blocks

**BZ0TKUAB**



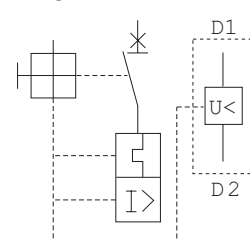
### Shunt trip devices

**BZ0Fxxxx**



### Undervoltage trip devices

**BZ0Rxxxx**



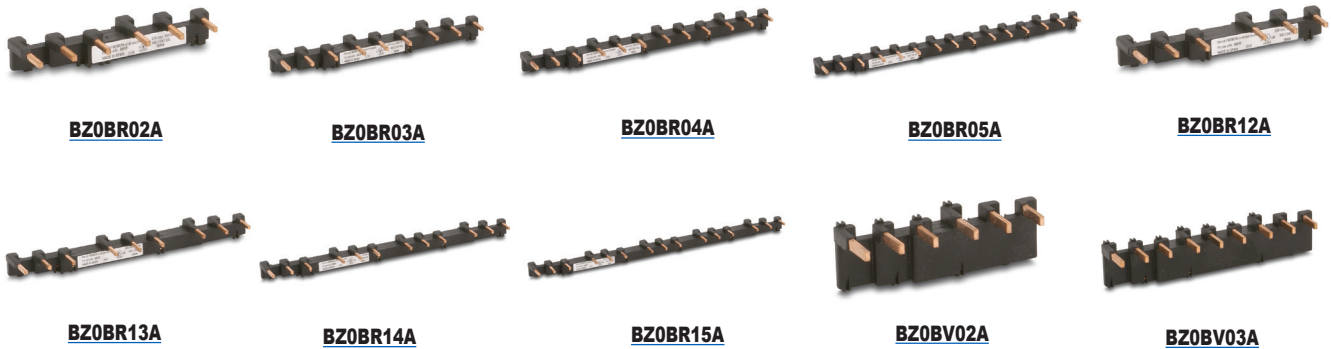
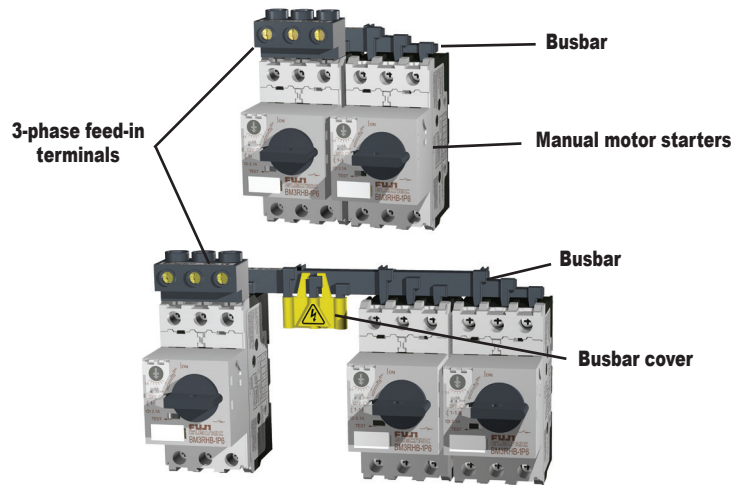
For control circuit design, see design standards such as NEC 430 "Electrical Arrangement of control Circuits" or UL508A section 38 "Wiring methods, wire routing, and separation of circuits for internal wiring of a control circuit."

# Fuji Duo Series Manual Motor Starters Accessories

## Busbar system

### Features

- The busbar system reduces wiring time and saves floor space.
- 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 touching of nonconnected busbar terminals (charged parts).
- If using BZ0TCRE terminal cover with BM3R series MMS, the busbar system can not be used.



Note: Busbar photos continued on next page.



**BZ0BFRA**



**BZ0BFVA**



**BZ0BCRA**



**BZ0BCVA**

Busbar System Components and Ratings								
Part Number	Price	Description	Used with	Specifications	Weight (g)			
<a href="#">BZ0BR02A</a>	\$23.00	Busbar	BM3R	Continuous current: 64A max. pin connection	2-BM3R, modular space: 45mm	30		
<a href="#">BZ0BR03A</a>	\$20.50				3-BM3R, modular space: 45mm	50		
<a href="#">BZ0BR04A</a>	\$24.50				4-BM3R, modular space: 45mm	70		
<a href="#">BZ0BR05A</a>	\$26.00				5-BM3R, modular space: 45mm	90		
<a href="#">BZ0BR12A</a>	\$19.50				2-BM3R, modular space: 54mm	30		
<a href="#">BZ0BR13A</a>	\$23.50		BM3R+ 1 external accessory, 9mm wide	Continuous current: 126A max. pin connection	3-BM3R, modular space: 54mm	55		
<a href="#">BZ0BR14A</a>	\$26.00				4-BM3R, modular space: 54mm	80		
<a href="#">BZ0BR15A</a>	\$27.50				5-BM3R, modular space: 54mm	105		
<a href="#">BZ0BV02A</a>	\$37.00				BM3V	Continuous current: 126A max. pin connection	2-BM3V, modular space: 55mm	140
<a href="#">BZ0BV03A</a>	Retired						3-BM3V, modular space: 55mm	240
<a href="#">BZ0BV04A</a>	\$55.00		4-BM3V, modular space: 55mm	340				
<a href="#">BZ0BV12A</a>	\$39.50		BM3V + 1 external accessory, 9mm wide	2-BM3V, modular space: 64mm			150	
<a href="#">BZ0BV13A</a>	Retired			3-BM3V, modular space: 64mm			270	
<a href="#">BZ0BV14A</a>	Retired			4-BM3V, modular space: 64mm	380			
<a href="#">BZ0BFRA</a>	\$20.50		3-phase feed-in terminal	BM3R	Continuous current: 64A max. Applicable cable size: 25mm <sup>2</sup> max.	40		
<a href="#">BZ0BFVA</a>	\$41.50	BM3V		Continuous current: 126A max. Applicable cable size: 50mm <sup>2</sup> max.	170			
<a href="#">BZ0BCRA</a>	\$5.50	Busbar cover	BZ0BR	For pin connection	10			
<a href="#">BZ0BCVA</a>	Retired		BZ0BV	NOTE: Some fine tuning and fitting adjustments may be needed.	5			

# Fuji Duo Series Manual Motor Starters

## Accessories

### Busbar system (continued)

### Dimensions

(mm)



**BZ0BV04A**



**BZ0BV12A**



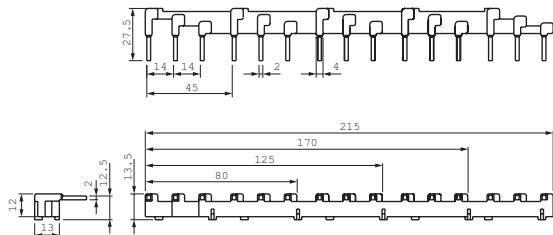
**BZ0BV13A**



**BZ0BV14A**

**For BM3RHB-xxx**

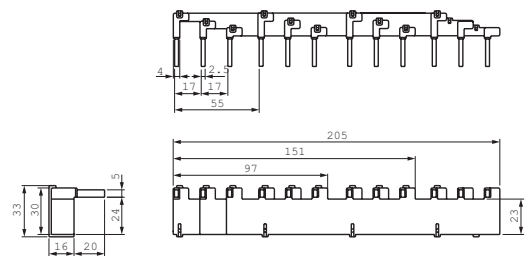
**BZ0BR0xx Without external accessory**



- BZ0BR02A: 80 mm
- BZ0BR03A: 125 mm
- BZ0BR04A: 170 mm
- BZ0BR05A: 215 mm

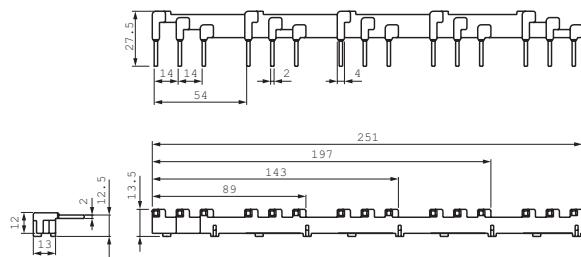
**For BM3VHB-xxx**

**BZ0BV0xx Without external accessory**



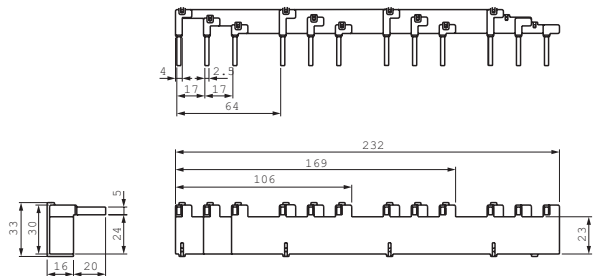
- BZ0BV02A: 97 mm
- BZ0BV03A: 151 mm
- BZ0BV04A: 205 mm

**BZ0BR1xx With 1 external accessory**



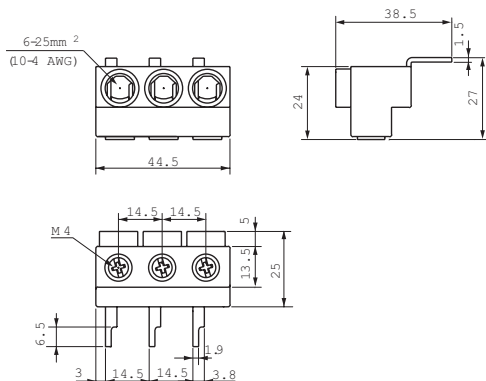
- BZ0BR12A: 89 mm
- BZ0BR13A: 143mm
- BZ0BR14A: 197 mm
- BZ0BR15A: 251 mm

**BZ0BV1xx With 1 external accessory, 9mm wide**

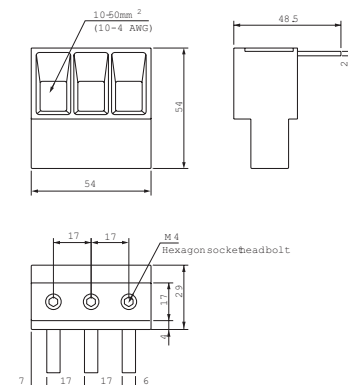


- BZ0BV12A: 106 mm
- BZ0BV13A: 169 mm
- BZ0BV14A: 232 mm

**BZ0BFRA 3-phase feed-in terminals**



**BZ0BFVA**



# Fuji Duo Series Combination Starter Selection Table - 45mm

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

Combination Starter Selection Table - 45mm										
Three Phase Motor				Manual Motor Starter Adjustable Current Range (A)	A Manual Motor Starter See Note 2 below for UL Type E applications.	B Contactor The contactor part number needs the coil voltage suffix. See Note 3 below.	C Link Module	D Base Plate	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							
-	-	-	-	0.1 to 0.16	<a href="#">BM3RHB-P16</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>	<a href="#">BZ0BPRE22A</a>	65	
-	-	-	-	0.16 to 0.25	<a href="#">BM3RHB-P25</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
-	-	-	-	0.25 to 0.4	<a href="#">BM3RHB-P40</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
-	-	-	-	0.4 to 0.63	<a href="#">BM3RHB-P63</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
-	-	-	-	0.63 to 1.0	<a href="#">BM3RHB-001</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
-	-	0.75	1.6	1.0 to 1.6	<a href="#">BM3RHB-1P6</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
0.5	2.2	1	2.1	1.6 to 2.5	<a href="#">BM3RHB-2P5</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
0.75	3.2	2	3.4	2.5 to 4.0	<a href="#">BM3RHB-004</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
1.5	6	3	4.8	4.0 to 6.3	<a href="#">BM3RHB-6P3</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
-	-	5	7.6	6.3 to 10	<a href="#">BM3RHB-010</a>	<a href="#">SC-E02-110VAC</a> <a href="#">SC-E02G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
3	9.6	7.5	11	9 to 13	<a href="#">BM3RHB-013</a>	<a href="#">SC-E03-110VAC</a> <a href="#">SC-E03G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
5	15.2	10	14	11 to 16	<a href="#">BM3RHB-016</a>	<a href="#">SC-E04-110VAC</a> <a href="#">SC-E04G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
5	15.2	10	14	14 to 20	<a href="#">BM3RHB-020</a>	<a href="#">SC-E04-110VAC</a> <a href="#">SC-E04G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		65	
7.5	22	15	21	19 to 25	<a href="#">BM3RHB-025</a>	<a href="#">SC-E05-110VAC</a> <a href="#">SC-E05G-24VDC</a>	<a href="#">BZ0LRE22AA</a> <a href="#">BZ0LRE22GA</a>		50	
10	28	20	27	24 to 32	<a href="#">BM3RHB-032</a>	<a href="#">SC-E1-110VAC</a> <a href="#">SC-E1G-24VDC</a>	<a href="#">BZ0LRE32AA</a> <a href="#">BZ0LRE32GA</a>		<a href="#">BZ0BPRE32A</a>	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

Note 5: The table above also include the Fuji part numbers with (P). Example: SC-E02-110VAC = SC-E02P-110VAC.



# Fuji Duo Series Combination Starter Selection Table - 55mm



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

Combination Starter Selection Table - 55mm									
Three Phase Motor				Manual Motor Starter Adjustable Current Range (A)	A Manual Motor Starter See Note 2 below for UL Type E applications.	B Contactor The contactor part number needs the coil voltage suffix. See Note 3 below.	C Link Module	D Base Plate	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						
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