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.

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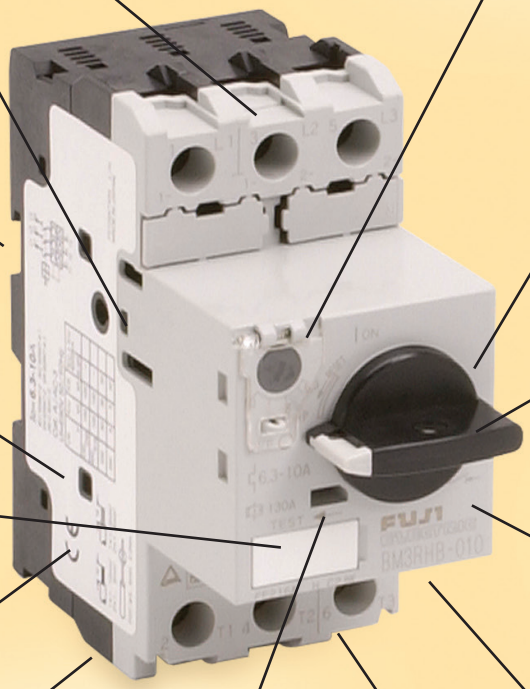


IP20 finger-safe terminals

Available in two frame sizes: 45 mm up to 32 amps and 55 mm up to 63 amps

Adjustable current range for motor overload with anti-tamper cover

Front and side mounted auxiliary and alarm contact blocks

Manual ON/OFF control with trip indication and reset capability

DIN-Rail mounting eliminates the need for additional fasteners (Screw mounting also available)

Lockout capability for personnel safety during maintenance

Protects against motor overload, short circuit and phase loss

Label for easy identification

External handle kits available for controlling the MMS from the outside of the enclosure

UL Type E rated for self-protected branch motor control, eliminating the need for additional fuses or breakers

Up to 50 KA breaking capacity at 480 VAC

Manual trip test

Trip-free design prevents holding the MMS in the ON position during a trip condition

Compatible with Fuji SC-E series contactors for a complete motor control solution

Auxiliary and alarm contact blocks

Shunt trips and undervoltage releases

MMS external handles

MMS Busbars

Accessories

Fuji Duo Series Manual Motor Starters

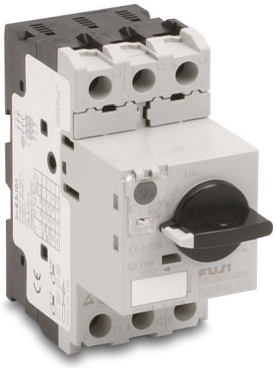
General Information

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

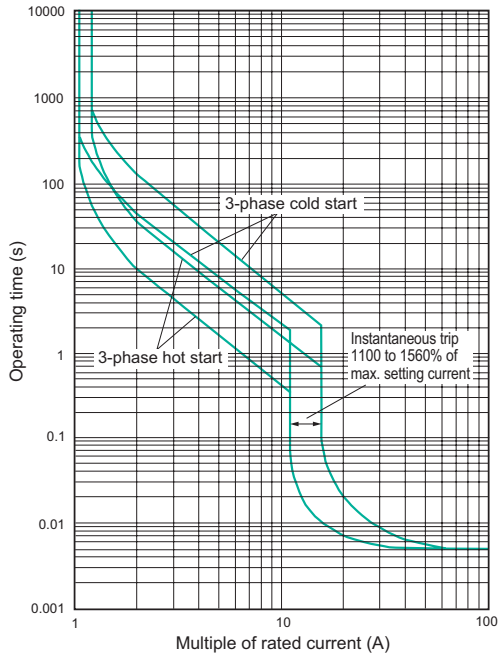
Short circuit current rating:

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

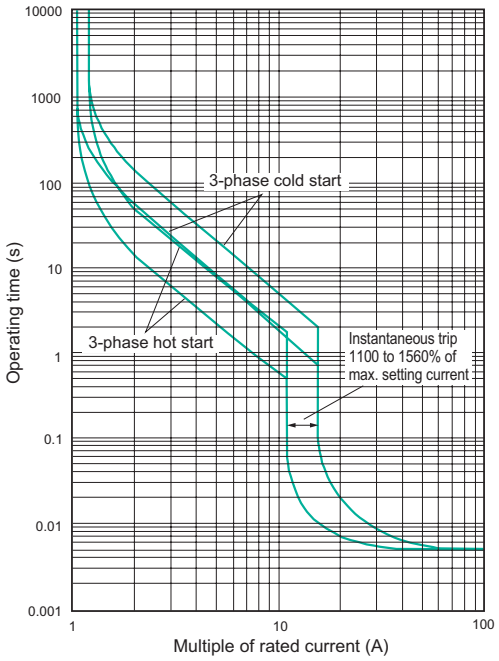
NOTE: When using BM3VHB-xxx MMS in a UL Type E application, you must also use part number BZ0TKUAB (short-circuit contact block).

Characteristic curves

BM3RHB



BM3VHB



Fuji Duo Series Manual Motor Starters

BM3RHB-xxx Specifications

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General Specifications: 45mm Frame Width - BM3RHB-xxx Series											
Part Number	Price	Adjustable Current Range	UL/CSA 3-Phase HP Rating[1]				Instant-aneous Trip Current (A)	UL/CSA Short Circuit Current Rating (kA)2			Max. Listed Branch Circuit Protection - Fuse or MCCB (A)[2]
		Ie: Min.-Max. (A)	200-208VAC	220-240VAC	440-480VAC	550-600VAC		240VAC	480VAC	600VAC	
BM3RHB-P16	$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
BM3RHB-P25	$75.00	0.16-0.25					3.3	100	50	10	500
BM3RHB-P40	$75.00	0.25-0.4					5.2	100	50	10	500
BM3RHB-P63	$75.00	0.4-0.63					8.2	100	50	10	500
BM3RHB-001	$75.00	0.63-1				1/2	13	100	50	10	500
BM3RHB-1P6	$75.00	1-1.6			3/4	3/4	20.8	100	50	10	500
BM3RHB-2P5	$75.00	1.6-2.5	1/2	1/2	1	1-1/2	32.5	100	50	10	500
BM3RHB-004	$75.00	2.5-4	3/4	3/4	2	3	52	100	50	10	500
BM3RHB-6P3	$75.00	4-6.3	1	1-1/2	3	5	81.9	100	50	10	500
BM3RHB-010	$79.00	6.3-10	2	3	5	7-1/2	130	100	50	10	500
BM3RHB-013	$79.00	9-13	3	3	7-1/2	10	169	100	50	10	500
BM3RHB-016	$79.00	11-16	3	5	10	10	208	100	50	10	500
BM3RHB-020	$79.00	14-20	5	5	10	15	260	100	50	10	500
BM3RHB-025	$95.00	19-25	7-1/2	7-1/2	15	20	325	100	50	10	500
BM3RHB-032	$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_e (A)		0.16 to 32
Rated Operational Voltage U_e (V)		200 to 690
Rated Frequency (Hz)		50/60
Rated insulation Voltage U_i (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 x I_e max.
Power Loss (total of 3-pole)		7W: I_n=0.16 to 25A 8.5W: I_n=32A
Mechanical Durability (operations)		100,000: I_n=0.16 to 25A 70,000: I_n=32A
Electrical Durability (operations)		100,000: I_n=0.16 to 25A 70,000: I_n=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: 55mm Frame Width - BM3VHB-xxx Series											
Part Number	Price	Adjustable Current Range	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]
		Ie: Min.-Max. (A)	200-208VAC	220-240VAC	440-480VAC	550-600VAC		240VAC	480VAC	600VAC	
BM3VHB-010	$184.00	6.3-10	2	3	5	7-1/2	130	100	50	10	600
BM3VHB-013	$184.00	9-13	3	3	7-1/2	10	169	100	50	10	600
BM3VHB-016	$184.00	11-16	3	5	10	10	208	100	50	10	600
BM3VHB-020	$184.00	14-20	5	5	10	15	260	100	50	10	600
BM3VHB-025	$216.00	19-25	7-1/2	7-1/2	15	20	325	100	50	10	600
BM3VHB-032	$228.00	24-32	10	10	20	30	416	100	50	10	600
BM3VHB-040	$228.00	28-40	10	10	30	30	520	100	50	10	600
BM3VHB-050	$237.00	35-50	15	15	30	40	650	100	50	10	600
BM3VHB-063	$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		
Features		Adjustable thermal-magnetic trip type
Number of Poles		3
Handle Type		Rotary
Rated Current I_e (A)		10 to 63
Rated Operational Voltage U_e (V)		200 to 690
Rated Frequency (Hz)		50/60
Rated Insulation Voltage U_i (V)		1,000
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 I_e max.
Power Loss (total of 3-pole)		11W: I_n = 10 to 32A 15W: I_n = 40 to 50A 17W: I_n = 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

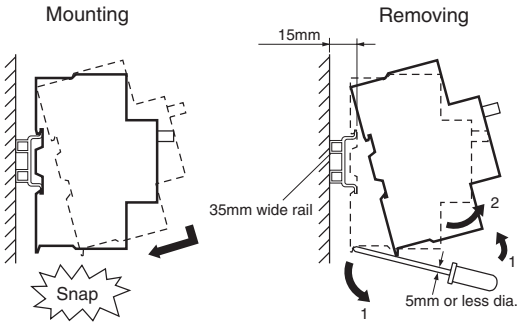
DIN-rail mounting
The MMS can be mounted to a 35 mm DIN rail. Secure the rail with screws at mounting pitch of less than 400 mm for the BM3R type and less than 300 mm for the BM3V type.

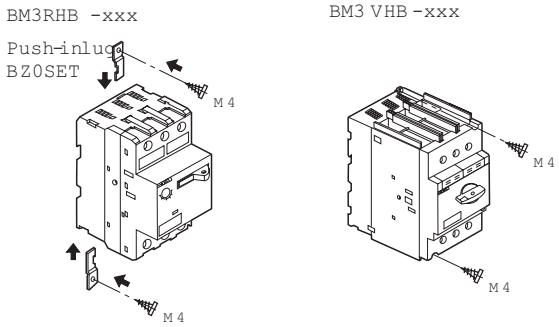
Applicable rail:

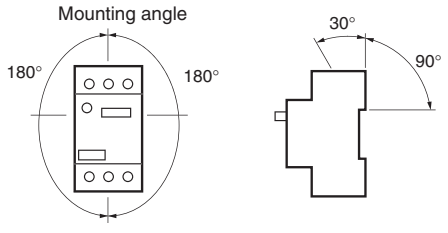
Use a 15 mm-high DIN rail, such as our DN-R35HS1, which conforms to EN-50022 and IEC715.

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 (BZ0SET) 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/s2	No abnormal shock or vibration.
Shock	50m/s2	

Wiring Specifications

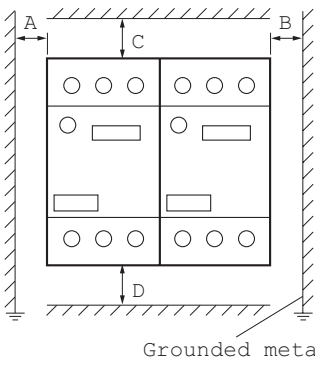
Wire Size and Tightening Torque				
Type		***BM3RHB-xxx***	***BM3VHB-xxx***	***BZ0 Accessories***
Solid Wire (mm)		1.6 to 2.6 dia.	1.6 to 2.6 dia.	1 to 1.6 dia.
Stranded Wire (mm2)	***Single-wire*** ***2-wire***	1 to 10 1 to 6	1 to 25 1 to 16	0.5 to 2.5 0.5 to 2.5
AWG	***Single-wire*** ***2-wire***	18 to 8 18 to 10	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 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

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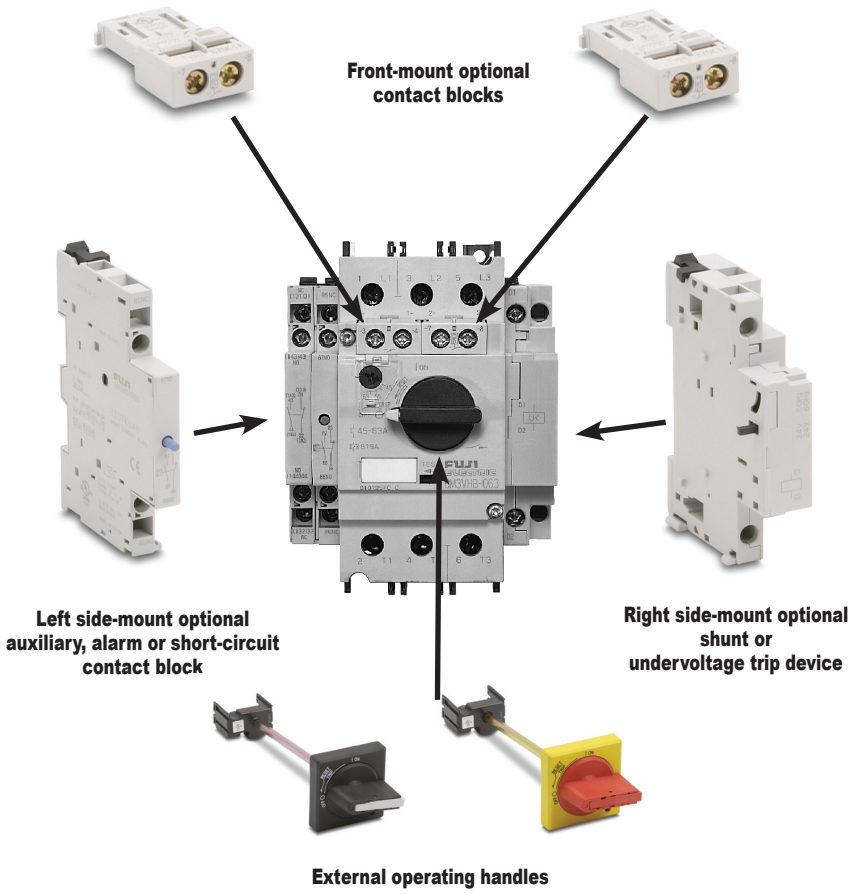
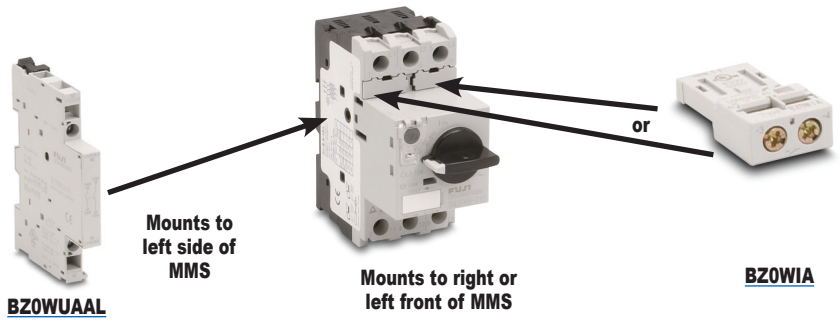
Installation of optional contact blocks and trip devices



Auxiliary contact blocks



Auxiliary Contact Blocks						
Part Number	*Price*	*Description*	*Starter Type*	*Mounting*	*Contact Arrangement*	*Weight (g/lb)*
BZ0WIA	$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
BZ0WIB	$8.75				1NC	
BZ0WUAAL	$12.50			Left side	2NO	45/0.1
BZ0WUABL	$12.50				1NO + 1NC	
BZ0WUBBL	$12.50				2NC	

Fuji Duo Series Manual Motor Starters Accessories

Accessories (continued)

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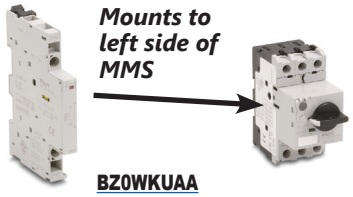
Alarm contact blocks

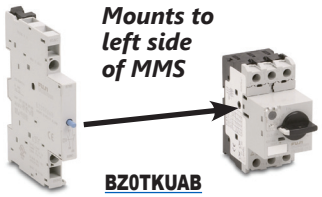
Alarm Contact Blocks						
Part Number	*Price*	*Description*	*Starter Type*	*Mounting*	*Contact Arrangement*	*Weight (g/lb)*
BZ0KIA	$8.75	This block operates when the MMS trips due to overload, phase-loss, or short-circuit. It is not linked to the ON/OFF operation of the MMS. Note: Operation can be checked with the test trip function.	BM3RHB-xxx BM3VHB-xxx	Front (Right side only)	1NO	9/0.02
BZ0KIB	$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)*
BZ0WKUAA	$15.50	• 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. • An alarm is displayed in the contact block's indicator when the alarm contact operates. • Note: Operation can be checked with the test trip function.	BM3RHB-xxx BM3VHB-xxx	Left	1NO (Aux.) + 1NO (Alarm)	45/0.1

Short-circuit alarm contact blocks



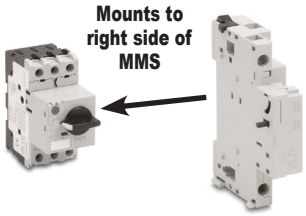
Note 1: Required when using MMS in a UL Type E application.
Note 2: Do not configure this with an auxiliary contact block; the contact will only close when a short circuit occurs.

Short-Circuit Alarm Contact Block						
Part Number	*Price*	*Description*	*Starter Type*	*Mounting*	*Contact Arrangement*	*Weight (g/lb)*
BZ0TKUAB	$19.50	• The contacts operate only when the MMS has tripped due to a short-circuit (cannot be checked with trip test function). • When these contacts operate, the blue reset button extends out, and a trip indication is displayed. • The power to the MMS can be turned ON after pressing the reset button. • Note: Be sure to press the reset button before mounting to the MMS.	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, BZ0WIA, BZ0WIB, BZ0WUAAL, BZ0WUBBL, BZ0WUABL	*NO*	Open	Closed	Opens	
	NC	Closed	Open	Closes	
ALARM CONTACT BZ0KIA, BZ0KIB	*NO*	Open (no change)	Open (no change)	Closes	
	NC	Closed (no change)	Closed (no change)	Opens	
AUX & ALARM CONTACT BZ0WKUAA	*NO (AUX)*	Open	Closed	Opens	
	NO (ALM)	Open (no change)	Open (no change)	Closes	
SHORT-CIRCUIT CONTACT BZ0TKUAB	*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

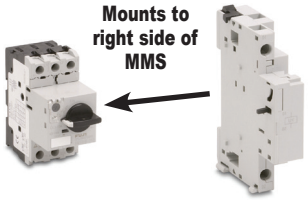
Accessories (continued)



BZ0FAZU

Shunt trip devices

Shunt Trip Devices						
Part Number	***Price***	***Description***	***Starter Type***	***Mounting***	***Contact Arrangement***	***Weight (g/lb)***
BZ0FAZU ***BZ0FDZU***	$26.00	This device is used to remotely trip the MMS. ***Notes:*** ***• 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.***	BM3RHB-xxx BM3VHB-xxx	Right	110-127V 50Hz/120V 60Hz	115/0.25
BZ0FKZUD	$26.00				24-60VDC (time rating of coil is 5s)	



BZ0RDZU

Undervoltage trip devices

Undervoltage Trip Devices						
Part Number	***Price***	***Description***	***Starter Type***	***Mounting***	***Contact Arrangement***	***Weight (g/lb)***
BZ0RDZU	$26.00	This device automatically trips the MMS when the control circuit voltage drops below the specified value. ***Notes:*** ***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.***	BM3RHB-xxx BM3VHB-xxx	Right	110-127V 50Hz/120V 60Hz	115/0.25
BZ0R4ZU	$26.00				415-440V 50Hz/460-480V 60Hz	

Push-in lug

BZ0SET

Push-in Lug				
Part Number	***Price***	***Description***	***Starter type***	***Weight (g/lb)***
BZ0SET	$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

BZ0TCRE

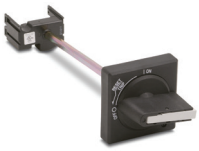
Terminal Cover			
Part Number	***Price***	***Description***	***Starter Type***
BZ0TCRE	$15.00	Line side terminal cover.	BM3RHB-xxx

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



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BZ0VBBL **BZ0VYRL**

External Operating Handles					
Part Number	***Price***	***Description***	***Starter Type***	***Handle Type***	***Weight (g/lb)***
BZ0VBBL	$38.00	• Used to operate an MMS installed inside a panel, from the outside of the panel. • Equipped with an interlock mechanism that prevents someone from mistakenly opening the panel door when the MMS is in the ON state. • The shaft can be cut to match the distance between the MMS and the panel door. • Door interlock function • OFF lock function • Can be locked OFF with up to three padlocks. Note: Padlocks are to be provided by the customer. • Release screw allows the door to be opened with the handle in the ON position. • IP54 enclosure	BM3RHB-xxx	Standard (black)	160/0.35
BZ0VYRL	$39.50			Emergency (red/yellow)	160/0.35
BZ0VBBM	$38.00		BM3VHB-xxx	Standard (black)	160/0.35
BZ0VYRM	$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***
Standard		IEC 60947-1, UL 508	
Rated Insulation Voltage (VAC)	IEC 60947	690	
	UL 508	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 1.1 Ue	0.35 to 0.7 Ue
	Closing Voltage (V)	-	0.85 to 1.1 Ue
Time Rating of Coil (s)		AC: Continuous	AC: Continuous
		DC: 5	

Fuji Duo Series Manual Motor Starters Accessories

Accessory specifications (continued)

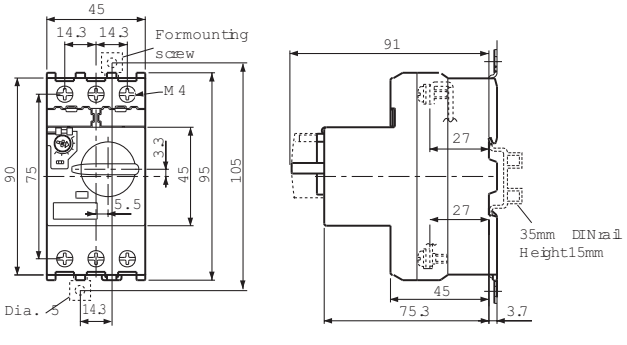
Contact Block Specifications						
Accessory Type and Part Number		Auxiliary contact block/front	Auxiliary contact block/side	Alarm contact block	Aux. and alarm contact block	Short-circuit alarm contact block
		BZ0WIA, BZ0WIB (note 3)	BZ0WUAAL BZ0WUABL BZ0WUBBL	BZ0KIA, BZ0KIB (note 3)	BZ0WKUAA	BZ0TKUAB
Standard		IEC 60947-5-1, UL 508				
Rated Operational Current (A)	48VAC AC-15 (note 2)	5	6	5	6	6
	125VAC	3	4	3	4	4
	230VAC	1.5	4	1.5	4	4
	400VAC	(note 3)	2.2	(note 3)	2.2	2.2
	500VAC		1.5		1.5	1.5
	690VAC		0.6		0.6	0.6
	48VDC DC-13 (note 2)	1.38	5	1.38	5	5
	110VDC	0.55	1.3	0.55	1.3	1.3
	220VDC	0.27	0.5	0.27	0.5	0.5
Contact Rating Code UL 508 (note 1)	AC	B300	A600	B300	A600	A600
	DC	Q300	P300	Q300	P300	P300
Min. Voltage and Current		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.

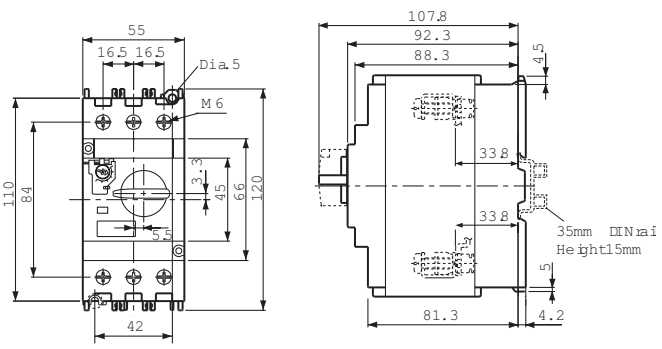
Dimensions [mm]

Manual motor starters

Rotary handletypes BM3RHB-xxx



Rotary handletypes BM3VHB-xxx

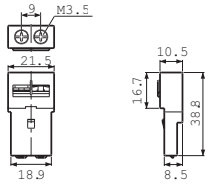


Fuji Duo Series Manual Motor Starters Accessories

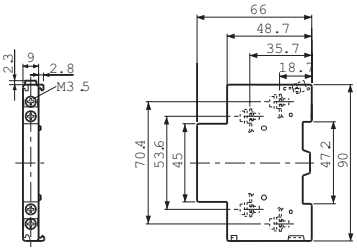
Dimensions (continued) [mm]

Accessories

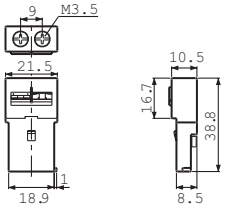
Auxiliary contactks frontm ounting
BZ0WIA,BZ0WIB



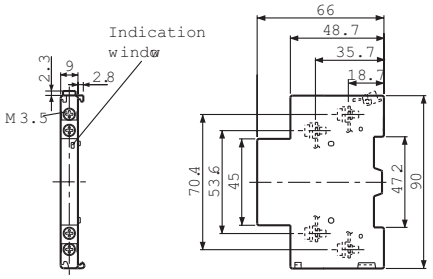
Auxiliary contabtcks,sidem ounting
BZ0WU AA L,BZ0WU ABL,BZ0WUBBL



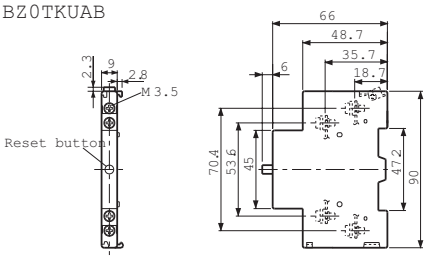
Alarm contactlbcks,front mounting
BZ0KIA,BZ0KIB



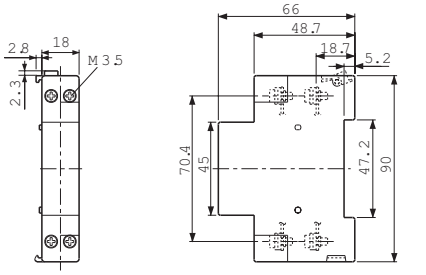
Auxiliary and alarm contacks
BZ0WKU AA



Short-circuit alarm contact block
BZ0TKUAB

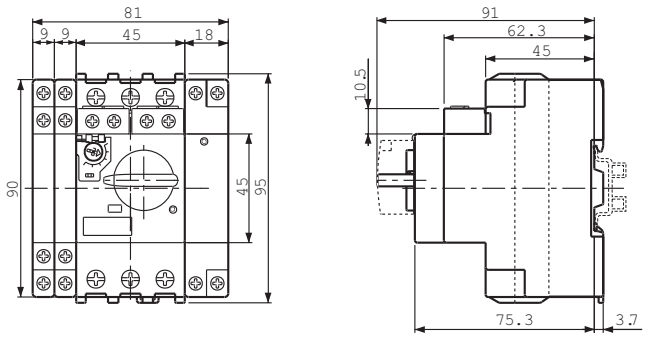


Shunt trip devices BZ0Fxxxx
Undervoltage trip devices RBZ0xx

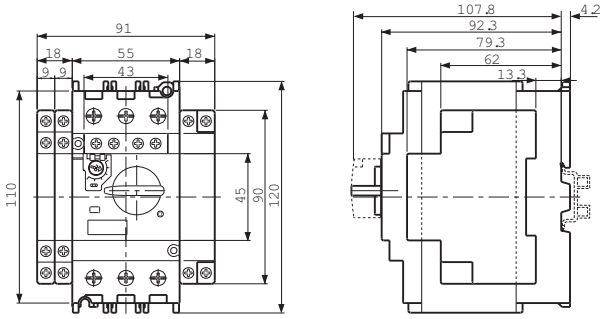


MMS with accessories

BM3RHB-xxx + BZ0xxxxx



BM3VHB-xxx + BZ0xxxxx



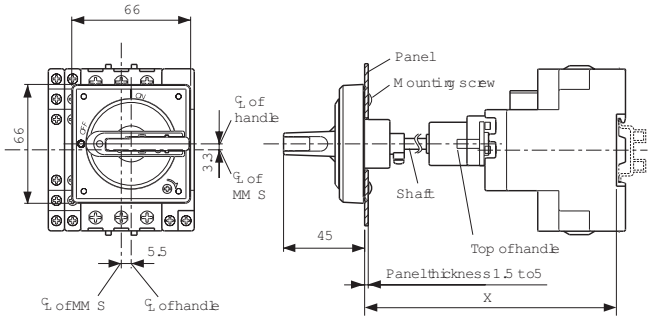
Fuji Duo Series Manual Motor Starters Accessories

Dimensions (continued)

[mm]

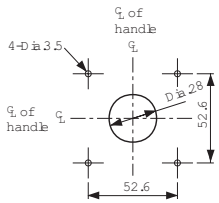
Accessories

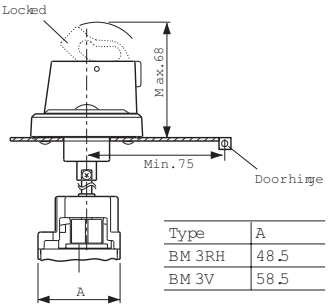
External operation handle BZ0V xxx



Type	X min.	X max.
BZ0VBBL, BZ0VYRL	139 ±2	289 ±2
BZ0VBBM, BZ0VYRM	156 ±2	306 ±2

Panel drilling

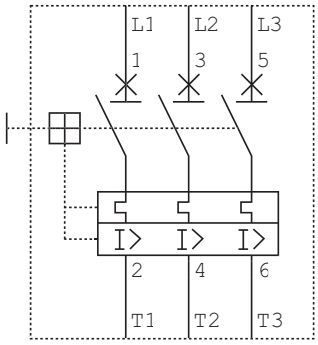




Type	A
BM 3RH	48.5
BM 3V	58.5

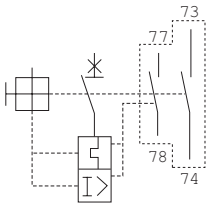
Wiring Diagrams

MMS



Auxiliary and alarm contact blocks

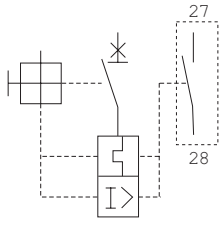
BZ0WKU AA



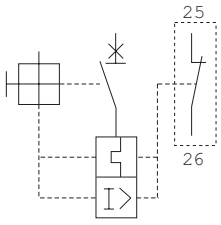
Alarm contact blocks

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."

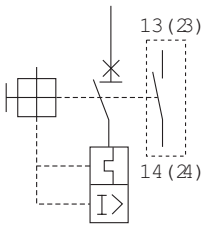
Fuji Duo Series Manual Motor Starters Accessories

Wiring Diagrams (continued)

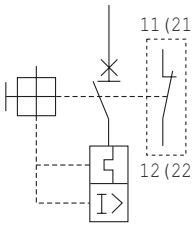
Auxiliary contact blocks

Front mounting

BZ0WIA

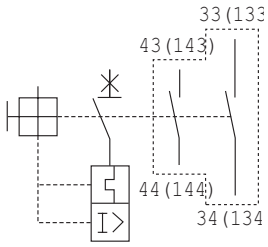


BZ0WIB

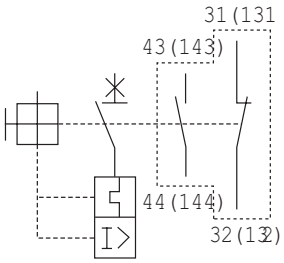


Side mounting

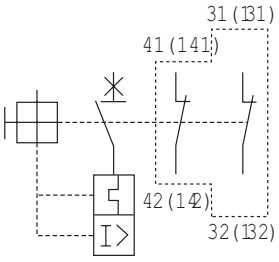
BZ0WUAAL



BZ0WUABL

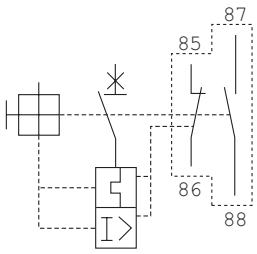


BZ0WUBBL



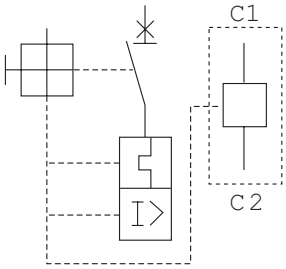
Short-circuit a
contact blocks

BZ0TKUAB



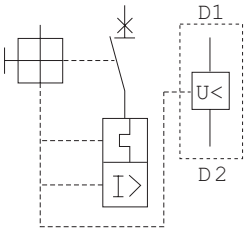
Shunt trip vides

BZ0Fxxxx



Undervoltage trip dev

BZ0Rxxxx



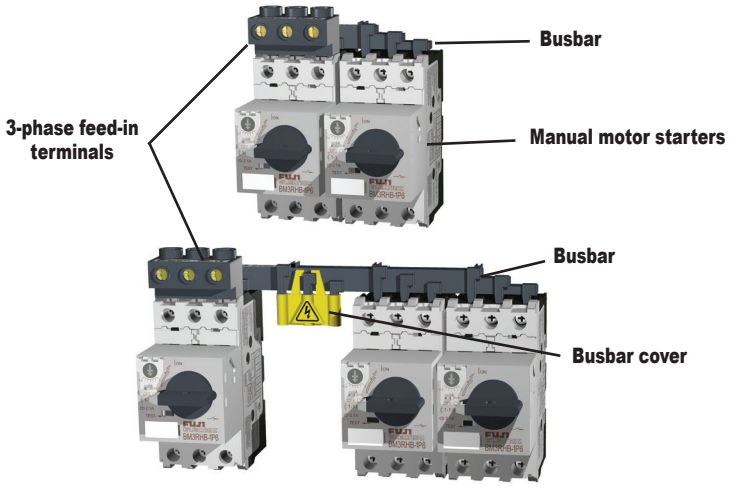
For control circuit design, see design standards such as NEC 430 "Electrical Arrangement of control Circuits" or UL508A section 38 "Wiring methods, wire routing, and separation of circuits for internal wiring of a control circuit."

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.



BZ0BR02A

BZ0BR03A

BZ0BR04A

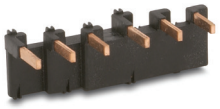
BZ0BR05A

BZ0BR12A

BZ0BR13A

BZ0BR14A

BZ0BR15A



BZ0BV02A

BZ0BV03A

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)
BZ0BR02A	$23.00	Busbar	BM3R	Continuous current: 64A max. pin connection	2-BM3R, modular space: 45mm	30
BZ0BR03A	$20.50				3-BM3R, modular space: 45mm	50
BZ0BR04A	$24.50				4-BM3R, modular space: 45mm	70
BZ0BR05A	$26.00				5-BM3R, modular space: 45mm	90
BZ0BR12A	$19.50		BM3R+ 1 external accessory, 9mm wide		2-BM3R, modular space: 54mm	30
BZ0BR13A	$23.50				3-BM3R, modular space: 54mm	55
BZ0BR14A	$26.00				4-BM3R, modular space: 54mm	80
BZ0BR15A	$27.50				5-BM3R, modular space: 54mm	105
BZ0BV02A	$37.00		BM3V	Continuous current: 126A max. pin connection	2-BM3V, modular space: 55mm	140
BZ0BV03A	Retired				3-BM3V, modular space: 55mm	240
BZ0BV04A	$55.00				4-BM3V, modular space: 55mm	340
BZ0BV12A	$39.50		BM3V + 1 external accessory, 9mm wide		2-BM3V, modular space: 64mm	150
BZ0BV13A	Retired				3-BM3V, modular space: 64mm	270
BZ0BV14A	Retired				4-BM3V, modular space: 64mm	380
BZ0BFRA	$20.50	3-phase feed-in terminal	BM3R	Continuous current: 64A max. Applicable cable size: 25mm2 max.		40
BZ0BFVA	$41.50		BM3V	Continuous current: 126A max. Applicable cable size: 50mm2 max.		170
BZ0BCRA	$5.50	Busbar cover	BZ0BR	For pin connection NOTE: Some fine tuning and fitting adjustments may be needed.		10
BZ0BCVA	Retired		BZ0BV			5

Fuji Duo Series Manual Motor Starters Accessories

Busbar system (continued)

Dimensions

(mm)

BZ0BV04A

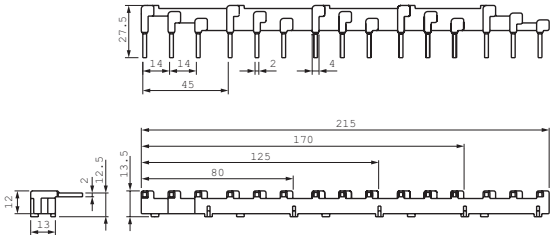
BZ0BV12A

BZ0BV13A

BZ0BV14A

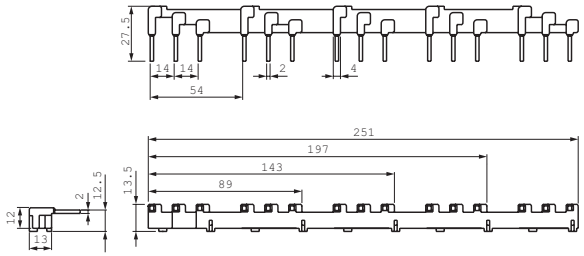
For BM3RHB-xxx

BZ0BR0xx Without external accessory



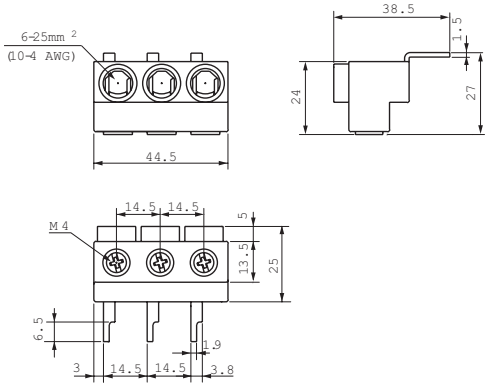
BZ0BR02A: 80 mm
BZ0BR03A: 125 mm
BZ0BR04A: 170 mm
BZ0BR05A: 215 mm

BZ0BR1xx With 1 external accessory



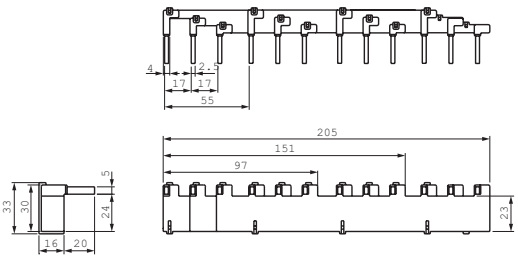
BZ0BR12A: 89 mm
BZ0BR13A: 143mm
BZ0BR14A: 197 mm
BZ0BR15A: 251 mm

BZ0BFRA 3-phase feed-in terminals



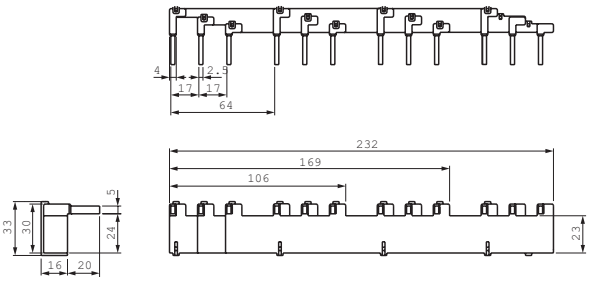
For BM3VHB-xxx

BZ0BV0xx Without external accesssory



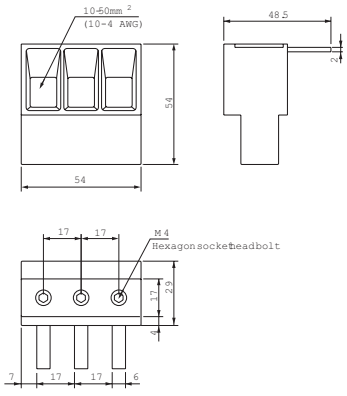
BZ0BV02A: 97 mm
BZ0BV03A: 151 mm
BZ0BV04A: 205 mm

BZ0BV1xx With 1 external accessory, 9mm wide



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

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					*A*	*B*	*C*	*D*	
220-240 Volt		*440-480 Volt*				*Contactor*			
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.*	*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*
-	-	-	-	0.1 to 0.16	BM3RHB-P16	SC-E02-110VAC	BZ0LRE22AA	BZ0BPRE22A	65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	-	-	0.16 to 0.25	BM3RHB-P25	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	-	-	0.25 to 0.4	BM3RHB-P40	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	-	-	0.4 to 0.63	BM3RHB-P63	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	-	-	0.63 to 1.0	BM3RHB-001	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	0.75	1.6	1.0 to 1.6	BM3RHB-1P6	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
0.5	2.2	1	2.1	1.6 to 2.5	BM3RHB-2P5	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
0.75	3.2	2	3.4	2.5 to 4.0	BM3RHB-004	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
1.5	6	3	4.8	4.0 to 6.3	BM3RHB-6P3	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
-	-	5	7.6	6.3 to 10	BM3RHB-010	SC-E02-110VAC	BZ0LRE22AA		65
						SC-E02G-24VDC	BZ0LRE22GA		
3	9.6	7.5	11	9 to 13	BM3RHB-013	SC-E03-110VAC	BZ0LRE22AA		65
						SC-E03G-24VDC	BZ0LRE22GA		
5	15.2	10	14	11 to 16	BM3RHB-016	SC-E04-110VAC	BZ0LRE22AA		65
						SC-E04G-24VDC	BZ0LRE22GA		
5	15.2	10	14	14 to 20	BM3RHB-020	SC-E04-110VAC	BZ0LRE22AA		65
						SC-E04G-24VDC	BZ0LRE22GA		
7.5	22	15	21	19 to 25	BM3RHB-025	SC-E05-110VAC	BZ0LRE22AA		50
						SC-E05G-24VDC	BZ0LRE22GA		
10	28	20	27	24 to 32	BM3RHB-032	SC-E1-110VAC	BZ0LRE32AA	BZ0BPRE32A	50
						SC-E1G-24VDC	BZ0LRE32GA		

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

Fuji Electric

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					*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