OMRON

Manual Motor Starter (Motor Protection Circuit Breaker)
J7MC Series

MPCB system, protection from Overload, Phase failure and Short Circuit

- Push-In Plus wiring Technology saves Wiring and Maintenance time
- In combination with magnetic contactor model J7KC, it is ideal for control of motors to AC-3 class, 2.2 kW (200 to 240 VAC) ✻ or 5.5 kW (380 to 440 VAC).
- Rocker switch (standard type) and rotary switch (high-performance type)
- High breaking capacity (Max100 kA/440 VAC)
- Equipped with a dial cover as standard to protect accidental setting changes.
  Lockable with a padlock to ensure safety at startup
- Certified as compliant with the main safety standards

✻Based on JIS C 8201-4-1

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Refer to *Safety Precautions* on page 13.

Model Number Structure

Model Number Legend Order according to the format described in Ordering Information.

J7MC- 3 □ - □□
(1) (2) (3)

(1) Number of poles

Code	Number of poles
3	3

(2) Breaking capacity

Code	Switch type
P	Rocker switch (Standard type)
R	Rotary switch (High-performance type)

(3) Rated current

Code	Rated current
E16	0.16 A
E25	0.25 A
E4	0.4 A
E63	0.63 A
1	1 A
1E6	1.6 A
2E5	2.5 A
4	4 A
6	6.3 A
10	10 A
13	13 A
16	16 A
20	20 A

Ordering Information

Main unit

Rocker switch (standard type)

Rated current (A) (Values in ( ) are the current setting range)	Model
0.16 (0.1-0.16)	**J7MC-3P-E16**
0.25 (0.16-0.25)	**J7MC-3P-E25**
0.40 (0.25-0.4)	**J7MC-3P-E4**
0.63 (0.4-0.63)	**J7MC-3P-E63**
1 (0.63-1)	**J7MC-3P-1**
1.6 (1-1.6)	**J7MC-3P-1E6**
2.5 (1.6-2.5)	**J7MC-3P-2E5**
4 (2.5-4)	**J7MC-3P-4**
6.3 (4-6.3)	**J7MC-3P-6**
10 (6.3-10)	**J7MC-3P-10**
13 (9-13)	**J7MC-3P-13**
16 (11-16)	**J7MC-3P-16**
20 (14-20)	**J7MC-3P-20**

Rotary switch (high-performance type)

Rated current (A) (Values in ( ) are the current setting range)	Model
0.16 (0.1-0.16)	**J7MC-3R-E16**
0.25 (0.16-0.25)	**J7MC-3R-E25**
0.40 (0.25-0.4)	**J7MC-3R-E4**
0.63 (0.4-0.63)	**J7MC-3R-E63**
1 (0.63-1)	**J7MC-3R-1**
1.6 (1-1.6)	**J7MC-3R-1E6**
2.5 (1.6-2.5)	**J7MC-3R-2E5**
4 (2.5-4)	**J7MC-3R-4**
6.3 (4-6.3)	**J7MC-3R-6**
10 (6.3-10)	**J7MC-3R-10**
13 (9-13)	**J7MC-3R-13**
16 (11-16)	**J7MC-3R-16**
20 (14-20)	**J7MC-3R-20**

Options (Order Separately)

Auxiliary contact unit

Model	Auxiliary contact
J73MC-W-10	SPST-1NO
J73MC-W-01	SPST-1NC

Alarm contact unit

Model	Auxiliary contact
J73MC-K-10	SPST-1NO
J73MC-K-01	SPST-1NC

Insulation stop

	Model	Minimum order (bag)
For main unit	**J77MC-A**	1 (10 pcs./bag)
For optional unit (For auxiliary contact unit and alarm contact unit)	**J77MC-B**	

For selection of J7MC for each motor capacity, refer to the following table.

3-phase standard motor capacity and full load current (reference values)			MMS		Magnetic contactor model
Main circuit voltage	Capacity [kW]	Current [A]	Standard type model	High-performance type model	
200-240 VAC	0.03	0.24	J7MC-3P-E25	J7MC-3R-E25	J7KC-12
	0.06	0.37	J7MC-3P-E4	J7MC-3R-E4	
	0.1	0.68	J7MC-3P-1	J7MC-3R-1	
	0.2	1.3	J7MC-3P-1E6	J7MC-3R-1E6	
	0.4	2.3	J7MC-3P-2E5	J7MC-3R-2E5	
	0.75	3.5	J7MC-3P-4	J7MC-3R-4	
	1.5	6.9	J7MC-3P-10	J7MC-3R-10	
	2.2	9.5			
	2.2	9.5	J7MC-3P-13	J7MC-3R-13	
	3.7	15.5	J7MC-3P-16	J7MC-3R-16	---
	3.7	15.5	J7MC-3P-20	J7MC-3R-20	---
380-440 VAC	0.02	0.1	J7MC-3P-E16	J7MC-3R-E16	J7KC-12
	0.06	0.21	J7MC-3P-E25	J7MC-3R-E25	
	0.1	0.34	J7MC-3P-E4	J7MC-3R-E4	
	0.12	0.41	J7MC-3P-E63	J7MC-3R-E63	
	0.2	0.65	J7MC-3P-1	J7MC-3R-1	
	0.4	1.15	J7MC-3P-1E6	J7MC-3R-1E6	
	0.75	1.8	J7MC-3P-2E5	J7MC-3R-2E5	
	1.5	3.5	J7MC-3P-4	J7MC-3R-4	
	2.2	4.8	J7MC-3P-6	J7MC-3R-6	
	3.7	7.8	J7MC-3P-10	J7MC-3R-10	
	5.5	10.5	J7MC-3P-13	J7MC-3R-13	
	7.5	13.5	J7MC-3P-16	J7MC-3R-16	---
	11	20	J7MC-3P-20	J7MC-3R-20	---

Note: The 3-phase motor full load current is a reference value. When applying, check the full load current of the motor you will use.

J7MC Series

Ratings/Specifications

J7MC-3P-☐ (standard type)

Rated current ✻2 In [A]	Current setting range Rated operating current [A]	Instantaneous trip current [A]	3-phase standard motor capacity and full load current ✻1				Model	Rated breaking current Icu [kA]		
			200-240 VAC		380-440 VAC					
			Capacity [kW]	Current [A]	Capacity [kW]	Current [A]		240 VAC	415 VAC	440 VAC
0.16	0.1 to 0.16	2.1	---	---	0.02	0.1	J7MC-3P-E16	100	100	100
0.25	0.16 to 0.25	3.3	0.03	0.24	0.06	0.21	J7MC-3P-E25			
0.4	0.25 to 0.4	5.2	0.06	0.37	0.1	0.34	J7MC-3P-E4			
0.63	0.4 to 0.63	8.2	---	---	0.12	0.41	J7MC-3P-E63			
1	0.63 to 1	13	0.1	0.68	0.2	0.65	J7MC-3P-1			
1.6	1 to 1.6	20.8	0.2	1.3	0.4	1.15	J7MC-3P-1E6			
2.5	1.6 to 2.5	32.5	0.4	2.3	0.75	1.8	J7MC-3P-2E5			
4	2.5 to 4	52	0.75	3.5	1.5	3.5	J7MC-3P-4			
6.3	4 to 6.3	81.9	---	---	2.2	4.8	J7MC-3P-6			50
10	6.3 to 10	130	1.5	6.9	3.7	7.8	J7MC-3P-10			15
			2.2	9.5						
13	9 to 13	169	2.2	9.5	5.5	10.5	J7MC-3P-13		50	10
16	11 to 16	208	3.7	15.5	7.5	13.5	J7MC-3P-16		25	
20	14 to 20	260	3.7	15.5	11	20	J7MC-3P-20	50		

J7MC-3R-☐ (high-performance type)

Rated current ✻2 In [A]	Current setting range Rated operating current [A]	Instantaneous trip current [A]	3-phase standard motor capacity and full load current ✻1				Model	Rated breaking current Icu [kA]		
			200-240 VAC		380-440 VAC					
			Capacity [kW]	Current [A]	Capacity [kW]	Current [A]		240 VAC	415 VAC	440 VAC
0.16	0.1 to 0.16	2.1	---	---	0.02	0.1	J7MC-3R-E16	100	100	100
0.25	0.16 to 0.25	3.3	0.03	0.24	0.06	0.21	J7MC-3R-E25			
0.4	0.25 to 0.4	5.2	0.06	0.37	0.1	0.34	J7MC-3R-E4			
0.63	0.4 to 0.63	8.2	---	---	0.12	0.41	J7MC-3R-E63			
1	0.63 to 1	13	0.1	0.68	0.2	0.65	J7MC-3R-1			
1.6	1 to 1.6	20.8	0.2	1.3	0.4	1.15	J7MC-3R-1E6			
2.5	1.6 to 2.5	32.5	0.4	2.3	0.75	1.8	J7MC-3R-2E5			
4	2.5 to 4	52	0.75	3.5	1.5	3.5	J7MC-3R-4			
6.3	4 to 6.3	81.9	---	---	2.2	4.8	J7MC-3R-6			
10	6.3 to 10	130	1.5	6.9	3.7	7.8	J7MC-3R-10			50
			2.2	9.5						
13	9 to 13	169	2.2	9.5	5.5	10.5	J7MC-3R-13			
16	11 to 16	208	3.7	15.5	7.5	13.5	J7MC-3R-16		50	35 ✻3
20	14 to 20	260	3.7	15.5	11	20	J7MC-3R-20			

✻**1.** Full load currents are values for 200 VAC / 50 Hz, 400 VAC / 50 Hz, 4P reference motors.
Before applying them, check the full load current of the motor used.
✻**2.** Maximum thermal current setting value
✻**3.** JEM1195 breaking duty "O", single time breaking capacity is 50 kA.

Ratings/Characteristics

Item \ Model		J7MC-3P-☐ (standard type)	J7MC-3R-☐ (high-performance type)
Switch type		Rocker switch	Rotary switch
Number of poles		3	
Rated current In		0.16 to 20 A	
Rated operational voltage Ue		200 to 690 V	
Rated frequency		50/60 Hz	
Rated insulation voltage		690VAC	
Rated impulse dielectric strength		6 kV	
Use category	IEC 60947-2 (circuit breaker), JIS C 8201-2	Cat.A	
	IEC 60947-4-1 (motor starter), JIS C 8201-4-1	AC-3	
Trip class (IEC 60947-4-1/JIS C 8201-4-1)		10 Trips within 4 minutes at 150% Ie on hot start, trips in 4 to 10 seconds at 720% Ie on cold start	
Instantaneous trip characteristics		13 x Ie max.	
Power loss (3-phase reference value)		Rated current 0.16 to 2.5 A: 6 W Rated current 4 to 6.3 A: 6.5 W Rated current 10 to 20 A: 7 W	Rated current 0.16 to 1.6 A: 6 W Rated current 2.5 to 4 A: 6.5 W Rated current 6.3 to 20 A: 7 W
Endurance	Mechanical	100,000 cycles In=0.16 to 20 A	
	Electrical	100,000 cycles In=0.16 to 20 A	
Number of terminal insertions and removals [cycles]		20	
Maximum operate frequency (motor starts) [cycles/hour]		25	
Phase failure protection		Yes	
Trip indicator		Yes	
Test trip function		Yes	

Rated limit breaking capacity Icu: Rated limit breaking capacity [kA] (Breaking duty O-CO) Ics: Rated operating breaking capacity [kA] (Breaking duty O-CO-CO) Ics=100%Icu(Icu=100 kA)	Rated operational current Ie Current setting [A]	IEC 60947-2/JIS C 8201-2										UL		IEC 60947-2/JIS C 8201-2										UL	
		240 V 200 V		415 V 400 V		460 V 440 V		500 V		690 V 600 V		480 V		240 V 200 V		415 V 400 V		460 V 440 V		500 V		690 V 600 V		480 V	
		Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
	0.1-0.16	100		100		100		100		100		50		100		100		100		100		100		50	
	0.16-0.25	100		100		100		100		100		50		100		100		100		100		100		50	
	0.25-0.4	100		100		100		100		100		50		100		100		100		100		100		50	
	0.4-0.63	100		100		100		100		100		50		100		100		100		100		100		50	
	0.63-1	100		100		100		100		100		50		100		100		100		100		100		50	
	1-1.6	100		100		100		100		100		50		100		100		100		100		100		50	
	1.6-2.5	100		100		100		100		3	2	50		100		100		100		100		8	6	50	
	2.5-4	100		100		100		100		3	2	50		100		100		100		100		8	6	50	
	4-6.3	100		100		50	38	50	38	3	2	22		100		100		100		100		6	5	50	
	6.3-10	100		100		15	11	10	8	3	2	22		100		100		50	38	50	38	6	5	50	
	9-13	100		50	38	10	8	6	5	3	2	22		100		100		50	38	42	32	6	5	50	
	11-16	100		25	19	10	8	6	5	3	2	22		100		50	38	35 ✻		27	10	8	4	3	50
	14-20	50	38	25	19	10	8	6	5	3	2	22		100		50	38	35 ✻		27	10	8	4	3	50

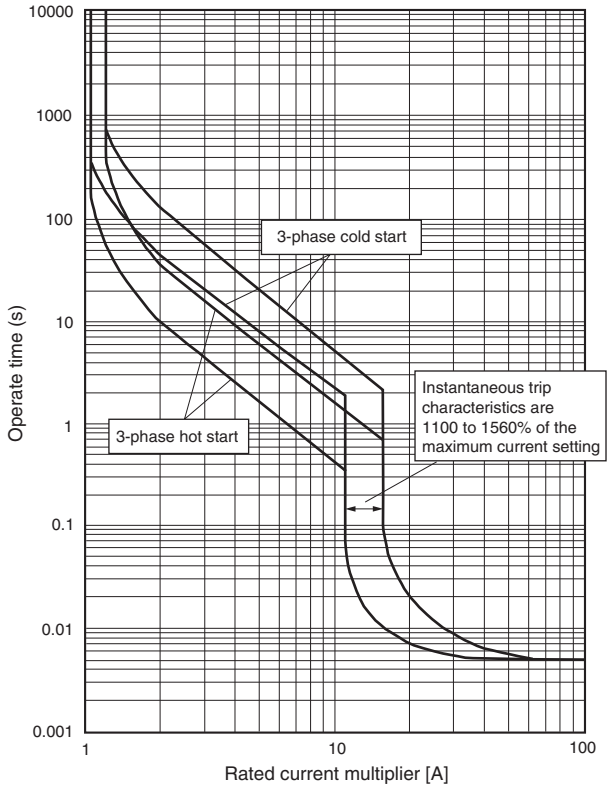
Vibration resistance		Vibration: 10 to 55 Hz, acceleration: 15 m/s^2
Shock resistance		Shock value 50 m/s^2
Degree of protection		IP20 (IEC60529)
Operating temperature		-20°C to +60°C
Ambient storage temperature		-40°C to +80°C (no condensation or icing)
Relative humidity		95% RH max. (no condensation or icing)
Altitude		2000m max.
Weight		Approx. 430 g / 460 g
Applicable Standards	Safety Standard	EN 60947-2 (IEC 60947-2, IEC 60947-4-1), UL60947-4-1, CSA 22.2 No.60947-4-1, CCC GB/T 14048.2, GB/T 14048.4, Electrical Appliances and Material Safety Act (Non-Specified Electrical Appliances and Materials), UKCA

✻ JEM1195 breaking duty "O", single time breaking capacity is 50 kA

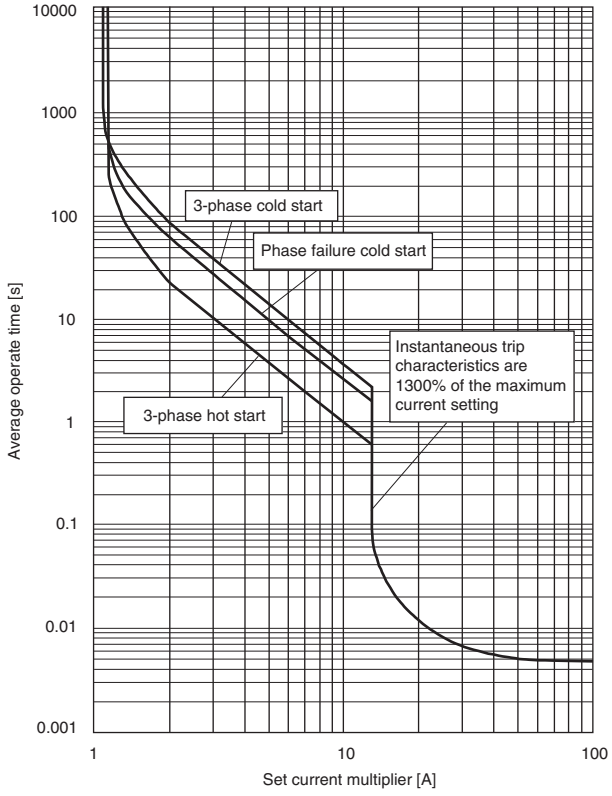
Engineering Data

Operating characteristics curves

J7MC-3P-☐ (standard type)/J7MC-3R-☐ (high-performance type)

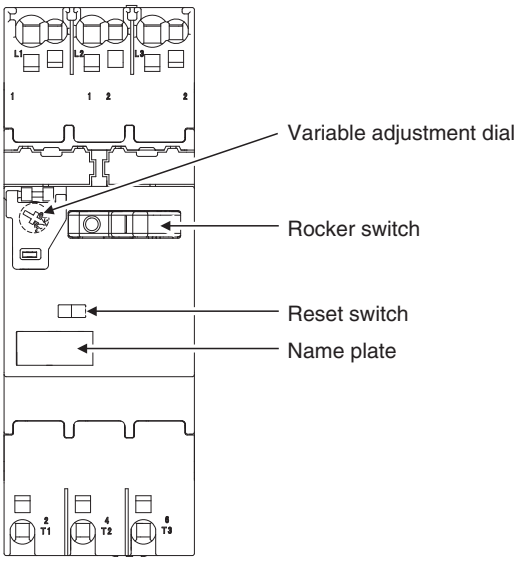


Average values of operating characteristics (reference values)

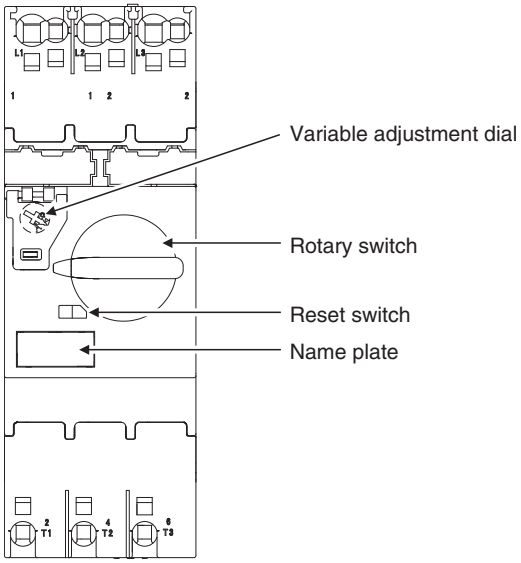


Nomenclature

J7MC-3P-☐ (standard type)



J7MC-3R-☐ (high-performance type)



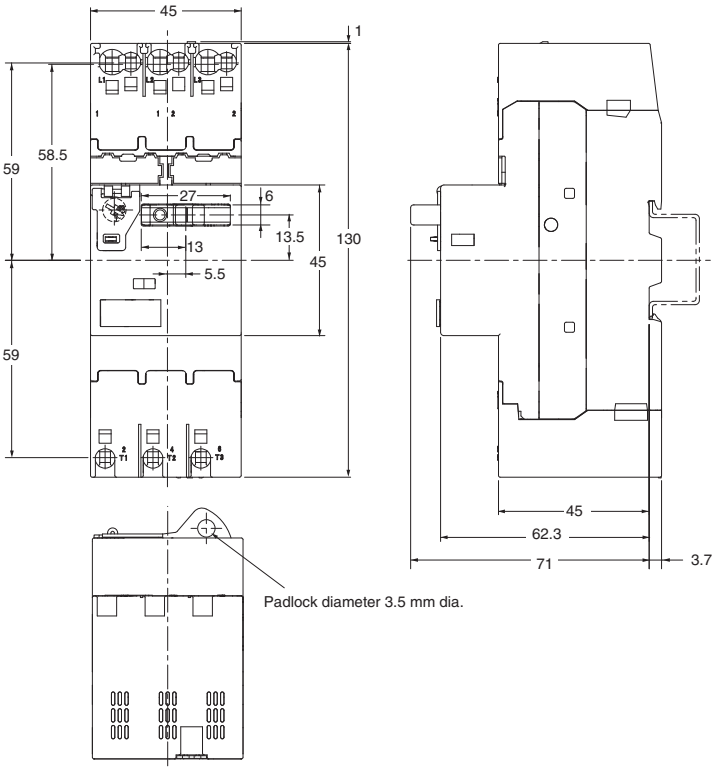
J7MC Series

Dimensions

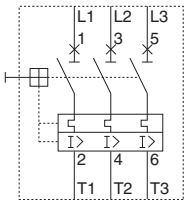
(Unit: mm)

Main unit

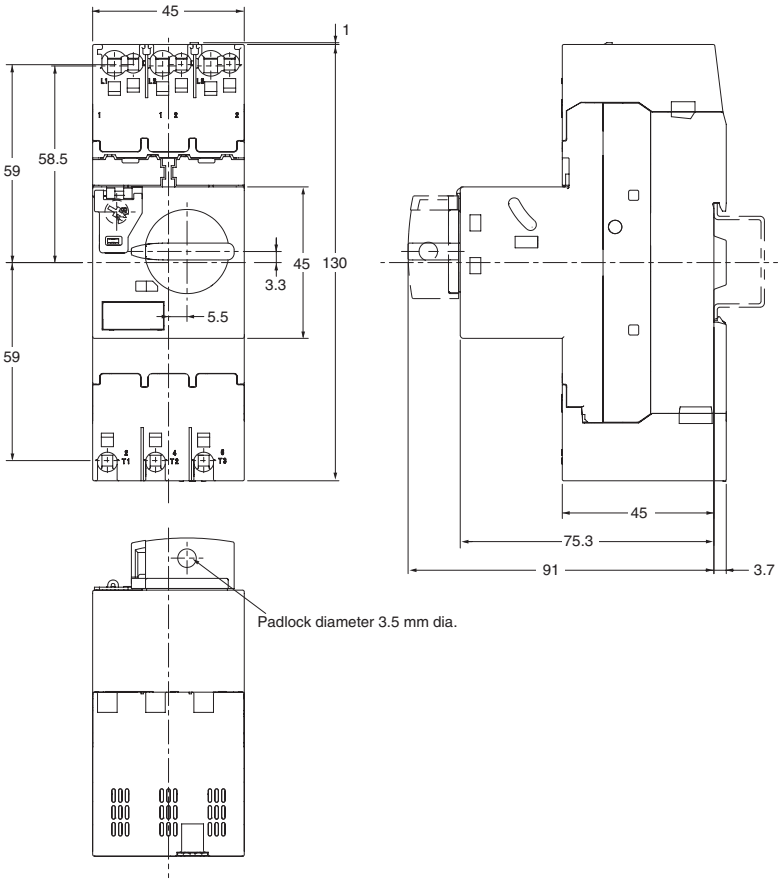
J7MC-3P-☐ (standard type)



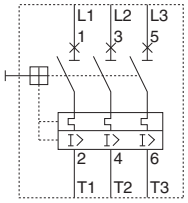
Circuit diagram



J7MC-3R-☐ (high-performance type)



Circuit diagram



Related Products (Order Separately)

Magnetic contactor

J7KC

For details, refer to *J7KC Magnetic Contactor Data Sheet* (Catalog No.J230-E1).

Short-circuit harmonized protection

Satisfies the harmonized protection types 1 and 2 for magnetic switches and short-circuit protection devices specified in IEC 60947 and JIS C 8201.

- Type 1: Damage to magnetic contactors and thermal overload relays is observed. Requires partial or complete replacement at the time of inspection.
- Type 2: No damage, except slight welding of the contacts in the magnetic contactor. Can remain in use without replacement at the time of inspection.

This greatly reduces the possibility of secondary accidents in the event that an accident occurs.

Type 1 rated conditional short-circuit current Iq = 50 kA (200 VAC, 400 VAC)

3-phase motor capacity and full load current				Manual motor starter			Short-circuit current Iq [kA]	Magnetic contactor	
200 VAC		400 VAC							
Capacity [kW]	Current [A]	Capacity [kW]	Current [A]	Model		Current setting range [A]		Model	Rated operational current AC-3 [A]
				J7MC-3P-E16	J7MC-3R-E16	0.1-0.16	50	J7KC-12	12
0.03	0.24	0.06	0.23	J7MC-3P-E25	J7MC-3R-E25	0.16-0.25			
0.06	0.37	0.09	0.32	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4			
		0.12	0.5	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63			
0.1	0.68	0.18	0.65	J7MC-3P-1	J7MC-3R-1	0.63-1.0			
		0.25	0.9	J7MC-3P-1	J7MC-3R-1	0.63-1.0			
0.2	1.3	0.37	1.25	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6			
		0.55	1.6	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5			
0.4	2.3	0.75	2	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5			
		1.1	2.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0			
0.75	3.6	1.5	3.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0			
1.5	6.1	2.2	5	J7MC-3P-6	J7MC-3R-6	4.0-6.3			
		3	6.5	J7MC-3P-10	J7MC-3R-10	6.3-10			
2.2	9	4	9	J7MC-3P-10	J7MC-3R-10	6.3-10			

Note: The 3-phase motor full load current is a reference value. When applying, check the full load current of the motor you will use.

Type 2 rated conditional short-circuit current Iq = 50 kA (200 VAC, 400 VAC)

3-phase motor capacity and full load current				Manual motor starter			Short-circuit current Iq [kA]	Magnetic contactor	
200 VAC		400 VAC							
Capacity [kW]	Current [A]	Capacity [kW]	Current [A]	Model		Current setting range [A]		Model	Rated operational current AC-3 [A]
				J7MC-3P-E16	J7MC-3R-E16	0.1-0.16	50	J7KC-12	12
0.03	0.24	0.06	0.23	J7MC-3P-E25	J7MC-3R-E25	0.16-0.25			
0.06	0.37	0.09	0.32	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4			
		0.12	0.5	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63			
0.1	0.68	0.18	0.65	J7MC-3P-1	J7MC-3R-1	0.63-1.0			
		0.25	0.9	J7MC-3P-1	J7MC-3R-1	0.63-1.0			
0.2	1.3	0.37	1.25	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6			

Note: The 3-phase motor full load current is a reference value. When applying, check the full load current of the motor you will use.

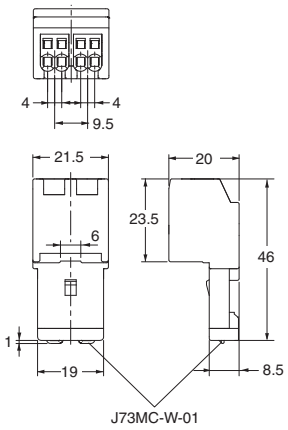
Rated combination table and SCCR for North America

220-240 V		440-480 V		Manual motor starter			Magnetic contactor	Short-circuit current rating SCCR [kA]	
Rated capacity [Hp]	Rated operational current [A]	Rated capacity [Hp]	Rated operational current [A]	Model		Current setting range [A]	Model	J7MC-3P	J7MC-3R
✻	0.4	✻	0.4	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4	J7KC-12	65	65
	0.63		0.63	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63		65	65
	1		1	J7MC-3P-1	J7MC-3R-1	0.63-1.0		65	65
	1.6	3/4	1.6	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6		65	65
1/2	2.2	1	2.1	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5		50	65
3/4	3.2	2	3.4	J7MC-3P-4	J7MC-3R-4	2.5-4		50	65
1-1/2	6	3	4.8	J7MC-3P-6	J7MC-3R-6	4-6.3		50	65
3	9.6	5	7.6	J7MC-3P-10	J7MC-3R-10	6.3-10		25	65
		7-1/2	11	J7MC-3P-13	J7MC-3R-13	9-13		10	65

✻ An area where horsepower is not defined in UL60947-4-1 (SCCR is acquired in this area)

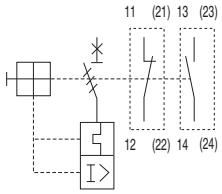
Accessories (Order Separately)

Auxiliary contact unit
J73MC-W-☐



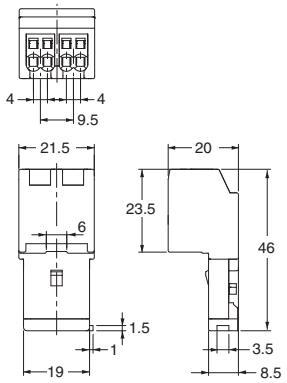
A unit in which the contacts operate in synchronization with the ON/OFF operation of the main unit.
Up to two auxiliary contact units can be mounted on the left and right front panels.

Circuit diagram



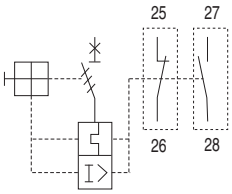
Note: 1. The terminal numbers () in the circuit diagram are the terminal numbers when mounting on the right front panel.
2. Refer to page 17 for the combinations of accessories that can be mounted simultaneously.

Alarm contact unit
J73MC-K-☐



The contacts in this unit operate when the main unit trips due to an overload, phase failure, or short circuit.
(The contacts are not synchronized with ON/OFF operation of the main unit)

Circuit diagram



Note: 1. Operation can be checked with a test trip.
2. Refer to page 17 for the combinations of accessories that can be mounted simultaneously.

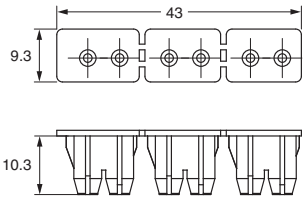
Model					J73MC-W-☐	J73MC-K-☐
Compliant standards					IEC 60947-5-1, UL 508	
Auxiliary contact					SPST-1NO (1a), SPST-1NC (1b)	
Rated carry current [A]		IEC 60947-5-1			6	
		UL 508			5	
Rated operating current [A]	IEC 60947-5-1	AC-15		48 V	5	
				125 V	3	
				230 V	1.5	
		DC-13		48 V	1.38	
				110 V	0.55	
				220 V	0.27	
	UL 508	AC	B300	120 V	3	
				240 V	1.5	
		DC	Q300	125 V	0.55	
				250 V	0.27	
Mechanical life expectancy [cycles]					100,000	1,000
Minimum operating voltage/current					17 VDC, 5 mA	
Contact form					Double-break	
Contact material					Ag alloy	

Insulation stop
J77MC-A

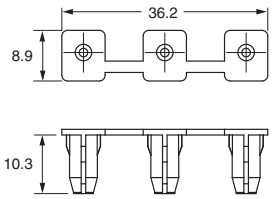
Guide for insertion into terminal (insertion) holes to stabilize holding of 1mm² or less stranded wire (direct insertion).

For MMS main unit (set for power supply side and load side)

(Power supply side)

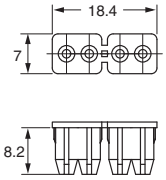


(Load side)



J77MC-B

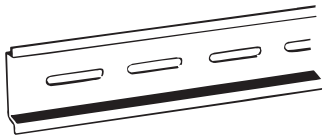
For auxiliary contacts and alarm contacts

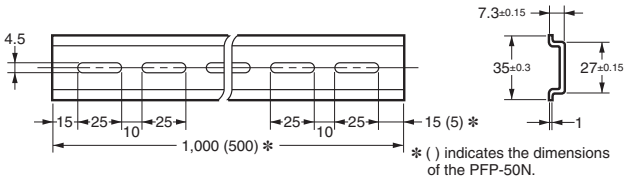


DIN Rails (Order Separately)

(Unit: mm)

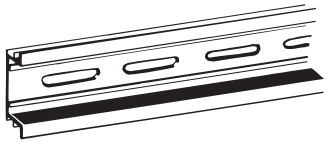
Mounting Rail
PFP-100N
PFP-50N

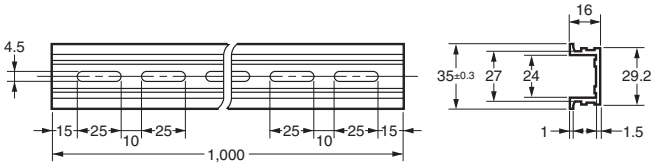




Model
PFP-100N
PFP-50N

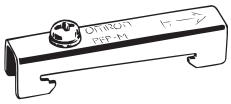
Mounting Rail
PFP-100N2

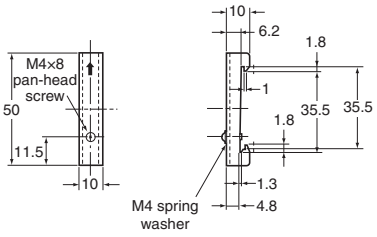




Model
PFP-100N2

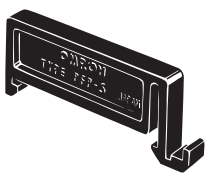
End Plate
PFP-M

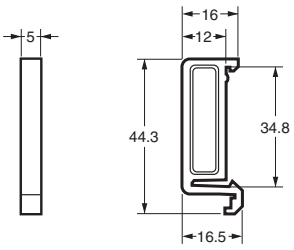




Model
PFP-M

Spacer
PFP-S





Model
PFP-S

Note: 1. Order the parts above in units of ten. The prices shown above are standard prices for one piece.
2. Rails conform to DIN standards.