

SC-M series magnetic contactors / Non-reversing

■ **Features**

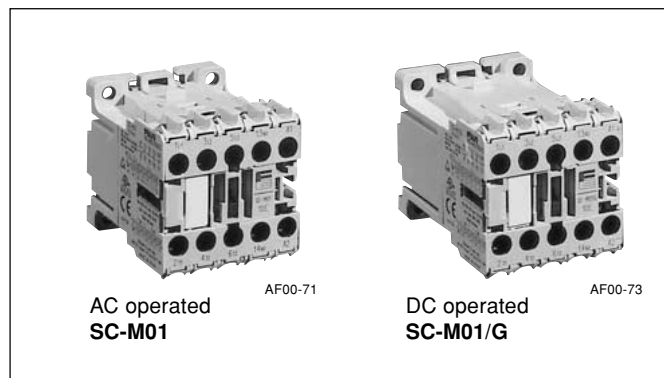
- 45mm-wide compact magnetic contactors
- Terminal block with easy wiring that prevents the accidental finger touch to live parts.
- Snap-on mounting to 35mm-wide top hat rail (DIN)
- Electrical durability of one million operations
- Two models with low power consumption (1.2W and 2W at 24V DC) as well as standard DC-operation models
- Many optional accessories: Auxiliary contact block, coil surge suppression unit, and solid-state time-delay unit

■ **Standards**

IEC 60947-4-1, EN 60947-4-1, VDE 0660
UL 508, CSA C 22.2, JIS C 8201-4-1, JEM 1038

■ **Types and ratings**

• **Non-reversing**



Operating coil	Max. motor capacity (kW)				Rated operational current (A)				Rated thermal current (A)	Auxiliary contact arrangement	Type		
	3-phase motor AC-3				3-phase motor AC-3							Resistive load AC-1	
	200V	380V	500V	600V	200V	380V	500V	600V	200V	380V			
AC operated	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO 1NC	SC-M01
	3	4	4	4	9	9	6.5	5	20	20	20	1NO 1NC	SC-M02
DC operated	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO 1NC	SC-M01/G
	3	4	4	4	9	9	6.5	5	20	20	20	1NO 1NC	SC-M02/G
DC operated (Low power consumption 24V DC 1.2W)	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO 1NC	SC-M01/G1
	3	4	4	4	9	9	6.5	5	20	20	20	1NO 1NC	SC-M02/G1
DC operated (Low power consumption 24V DC 2W)	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO 1NC	SC-M01/G2
	3	4	4	4	9	9	6.5	5	20	20	20	1NO 1NC	SC-M02/G2

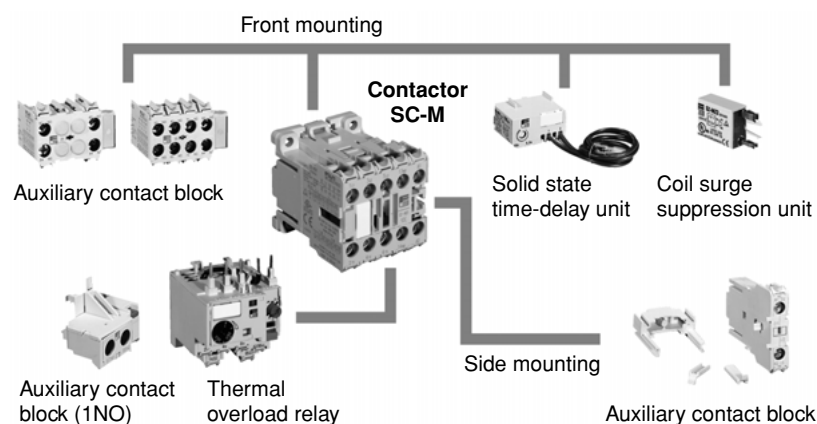
Note: Ratings conform to IEC 60947-4-1

■ **Accessories**

A full range of accessories with the emphasis on utility.

Contactors: SC-M series

Thermal overload relays: TK-M series



■ **Type number nomenclature**

SC-M01/G

Operating coil

- Blank: AC operated
- G: 12–220V DC operated, power consumption 3W
- G1: 24V DC operated, power consumption 1.2W
- G2: 24V DC operated, power consumption 2W

Max. motor capacity

- M01: 2.2kW at 380–440V
- M02: 4kW at 380–440V

■ **Ordering information**

Specify the following:

1. Type number
2. Operating coil order voltage (See page 02/37)
3. Auxiliary contact arrangement

DUO series Contactors

SC-M series

SC-M series magnetic contactors/Reversing

■ Features

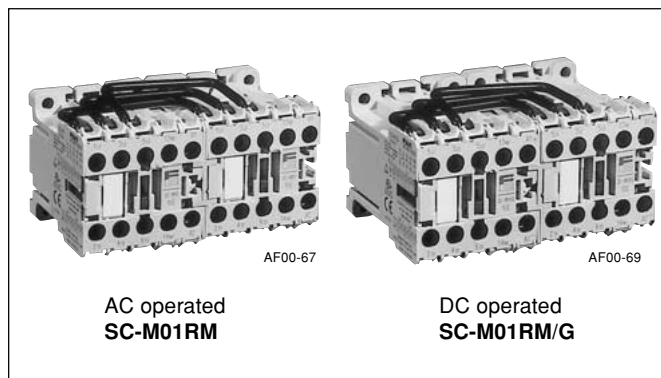
- Ideal for the forward-reverse operation of 3-phase motors or plugging stops.
- Mechanical interlock
- 90mm wide (same as two magnetic contactors)
- Snap-on mounting to 35mm-wide top hat rail (DIN).

■ Standards

IEC 60947-4-1, EN 60947-4-1, VDE 0660
UL 508, CSA C 22.2, JIS C 8201-4-1, JEM 1038

■ Types and ratings

• Reversing



Operating coil	Max. motor capacity (kW)				Rated operational current (A)				Rated thermal current (A)		Auxiliary contact arrangement	Type		
	3-phase motor AC-3				3-phase motor AC-3								Resistive load AC-1	
	200 240V	380 440V	500V	600 690V	200 240V	380 440V	500V	600 690V					200 240V	380 440V
AC operated	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M01RM	
	3	4	4	4	9	9	6.5	5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M02RM	
DC operated	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M01RM/G	
	3	4	4	4	9	9	6.5	5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M02RM/G	
DC operated (Low power consumption 24V DC 1.2W)	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M01RM/G1	
	3	4	4	4	9	9	6.5	5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M02RM/G1	
DC operated (Low power consumption 24V DC 2W)	1.5	2.2	3	3	6	6	5	3.5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M01RM/G2	
	3	4	4	4	9	9	6.5	5	20	20	20	1NO × 2 ^{*1} 1NC × 2 ^{*2}	SC-M02RM/G2	

Notes: Ratings conform to IEC 60947-4-1

^{*1} The reversing magnetic contactors with 1NOx2 auxiliary contacts cannot be arranged to form an electrical interlock circuit by themselves. When using the contactors, be sure to arrange an electrical interlock circuit externally to prevent short-circuit accidents from simultaneous switching.

^{*2} The reversing magnetic contactors with 1NCx2 auxiliary contacts can be arranged to form an electrical interlock circuit with additional wiring. When using the contactors, arrange an electrical interlock circuit internally or externally to prevent short-circuit accidents from simultaneous switching.

■ Type number nomenclature

SC-M01RM/G

Operating coil

Blank: AC operated

G: 12–220V DC operated,
power consumption 3W

G1: 24V DC operated,
power consumption 1.2W

G2: 24V DC operated,
power consumption 2W

Max. motor capacity

M01RM: 2.2kW at 380–440V

M02RM: 4kW at 380–440V

■ Ordering information

Specify the following:

1. Type number
2. Operating coil order voltage (See page 02/37)
3. Auxiliary contact arrangement

■ Performance data

Frame size	Making capacity (A)	Breaking capacity (A)	Operating cycles per hour	Voltage	Durability (operations)	
					Electrical	Mechanical
M01	72	60	1200	200/240V AC 380/440V AC	1 million	5 million
M02	108	90	1200	200/240V AC 380/440V AC	1 million	5 million

■ Auxiliary contact ratings

Conforming to IEC 60947 5-1, BSEN 60947 5-1 VDE 0660

Rated thermal current	Making and breaking current	Rated operational current				Minimum voltage and current
		AC		DC		
		Voltage	AC-15(Ind. load)	Voltage	DC-13(Ind. load)	
16A	120V AC 60A 220V AC 60A 440V AC 30A 600V AC 15A	120V	6A	24V	5A	17V DC 5mA
		220V	6A	48V	3.5A	
		440V	3A	110V	1.2A	
		600V	1.5A	220V	0.6A	

■ Operating coil

• AC coil

Order voltage	Coil operating voltage and frequency
AC24V	24V AC 50Hz / 24–26V AC 60Hz
AC48V	48V AC 50Hz / 48–52V AC 60Hz
AC100V	100V AC 50Hz / 100–110V AC 60Hz
AC110V	100–110V AC 50Hz / 110–120V AC 60Hz
AC120V	110–120V AC 50Hz / 120–130V AC 60Hz
AC200V	200V AC 50Hz / 200–220V AC 60Hz
AC220V	200–220V AC 50Hz / 220–240V AC 60Hz
AC240V	220–240V AC 50Hz / 240–260V AC 60Hz
AC380V	346–380V AC 50Hz / 380–420V AC 60Hz
AC400V	380–400V AC 50Hz / 400–440V AC 60Hz
AC440V	415–440V AC 50Hz / 440–480V AC 60Hz
AC500V	480–500V AC 50Hz / 500–550V AC 60Hz

• DC coil

Order voltage	Coil operating voltage
DC12V	12V DC
DC24V	24V DC
DC48V	48V DC
DC60V	60V DC
DC100V	100V DC
DC110V	110V DC
DC120V	120V DC
DC200V	200V DC
DC210V	210V DC
DC220V	220V DC

Note: For G1, G2 types, 24V DC only

■ Coil characteristics

• AC operated

Type	Power consumption (VA) *1		Watt loss (W)	Operating voltage range (V)		Operating time (ms)	
	Inrush	Sealed		Pick-up voltage	Drop-out voltage	Coil ON	Coil OFF
SC-M01	32/36	6/6	1.5/1.6	0.8–1.1Us *2	0.35–0.55Us *1	7–12	6–13
SC-M02						Contact ON	Contact OFF

Notes: *1 Coil ratings: 200V 50Hz, 220V 60Hz

*2 Us: Coil rated voltage

• DC operated

Type	Power consumption (W)		Time constant (ms)	Operating voltage range (V)		Operating time (ms)	
	Inrush	Sealed		Pick-up voltage	Drop-out voltage	Coil ON	Coil OFF
SC-M01/G	3	3	35	0.8–1.1Us *	0.2–0.4Us *	24–27	5–8
SC-M02/G						Contact ON	Contact OFF
SC-M01/G1	1.2	1.2	55	0.8–1.25Us *	0.2–0.3Us *	25–45	5–9
SC-M02/G1							
SC-M01/G2	2	2	45	0.7–1.25Us *	0.2–0.35Us *	25–45	5–8
SC-M02/G2							

Note: * Us: Coil rated voltage

DUO series Contactors

SC-M series

■ UL and CSA approved

• **Contact ratings** Conforming to UL 508, CSA 22.2

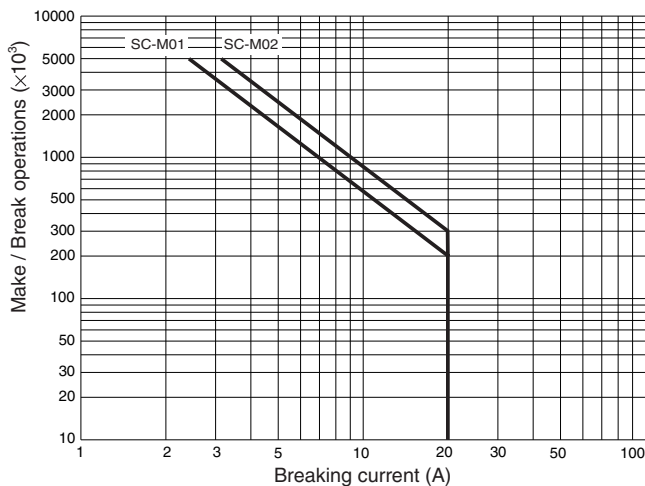
Operating coil	Max. motor capacity (Hp)				Rated operational current (A)				Rated thermal current (A)	Auxiliary contact arrangement	Type
	3-phase motor				3-phase motor						
	200V	220 240V	400 480V	550 600V	200V	220 240V	400 480V	550 600V			
AC operated	1.5	1.5	3	3	6.9	6	4.8	3.9	20	1NO 1NC	SC-M01
	3	3	5	5	11	9.6	7.6	6.1	20	1NO 1NC	SC-M02
DC operated	1.5	1.5	3	3	6.9	6	4.8	3.9	20	1NO 1NC	SC-M01/G
	3	3	5	5	11	9.6	7.6	6.1	20	1NO 1NC	SC-M02/G
DC operated (Low power consumption 24V DC 1.2W)	1.5	1.5	3	3	6.9	6	4.8	3.9	20	1NO 1NC	SC-M01/G1
	3	3	5	5	11	9.6	7.6	6.1	20	1NO 1NC	SC-M02/G1
DC operated (Low power consumption 24V DC 2W)	1.5	1.5	3	3	6.9	6	4.8	3.9	20	1NO 1NC	SC-M01/G2
	3	3	5	5	11	9.6	7.6	6.1	20	1NO 1NC	SC-M02/G2

• Auxiliary contact ratings

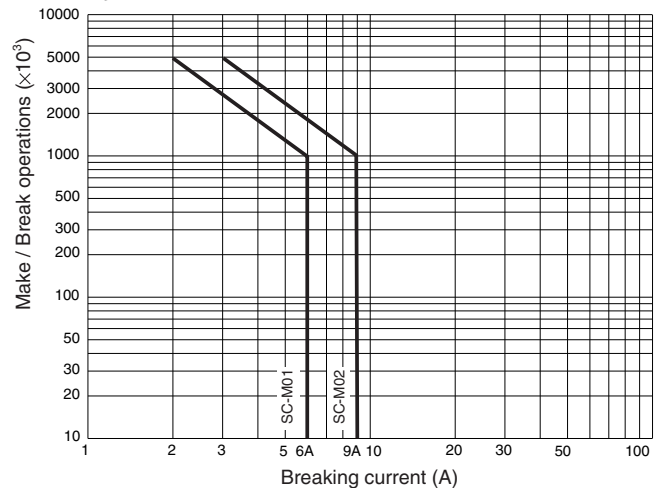
Rated thermal current (A)	Making and breaking current (A)					
	AC (Rating code: A600)			DC (Rating code: Q600)		
	Volts	Make	Break	Volts	Make	Break
16	120	60	6	125	0.55	0.55
	240	30	3	250	0.27	0.27
	480	15	1.5	301-600	0.1	0.1
	600	12	1.2			

■ Electrical durability

• AC-1 duty / 380 to 440V AC



• AC-3 duty / 380 to 440V AC



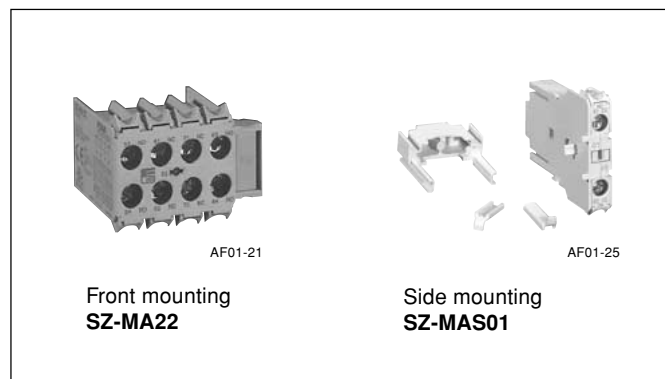
■ **Optional accessories**

• **Auxiliary contact blocks**

The front mounting auxiliary contact block allows two or four auxiliary contacts to be added without increasing the mounting area of the magnetic contactors. The side mounting auxiliary

contact block allows two auxiliary contacts to be added to the magnetic contactors without increasing the depth.

Mounting	No. of contacts	Contact arrangement	Type
Front mounting	4	4NO	SZ-MA40
		3NO+1NC	SZ-MA31
		2NO+2NC	SZ-MA22
		1NO+3NC	SZ-MA13
	2	4NC	SZ-MA04
		2NO	SZ-MA20
Side mounting	1	1NO+1NC	SZ-MA11
		2NC	SZ-MA02
		1NO	SZ-MAS10
		1NC	SZ-MAS01



The auxiliary contact blocks can be used in combination with the magnetic contactors listed in the following table. The front mounting and side mounting auxiliary contact blocks cannot be used together.

Auxiliary contact block				Used with							
Mounting	No. of additional contacts	Contact arrangement	Type	SC-M01, SC-M02		SC-M01/G, SC-M02/G		SC-M01/G1, SC-M02/G1		SC-M01/G2, SC-M02/G2	
				1NO	1NC	1NO	1NC	1NO	1NC	1NO	1NC
Front mounting	4	4NO	SZ-MA40	5NO	4NO+1NC	5NO	4NO+1NC	–	–	–	–
		3NO+1NC	SZ-MA31	4NO+1NC	3NO+2NC	4NO+1NC	3NO+2NC	–	–	–	–
		2NO+2NC	SZ-MA22	3NO+2NC	2NO+3NC	3NO+2NC	2NO+3NC	–	–	–	–
		1NO+3NC	SZ-MA13	2NO+3NC	1NO+4NC	2NO+3NC	1NO+4NC	–	–	–	–
	2	4NC	SZ-MA04	1NO+4NC	5NC	1NO+4NC	5NC	–	–	–	–
		2NO	SZ-MA20	3NO	2NO+1NC	3NO	2NO+1NC	–	–	3NO	2NO+1NC
Side mounting	1	1NO+1NC	SZ-MA11	2NO+1NC	1NO+2NC	2NO+1NC	1NO+2NC	–	–	2NO+1NC	1NO+2NC
		2NC	SZ-MA02	1NO+2NC	3NC	1NO+2NC	3NC	–	–	1NO+2NC	3NC
		1NO	SZ-MAS10	2NO	1NO+1NC	2NO	1NO+1NC	–	–	2NO	1NO+1NC
	2	1NC	SZ-MAS01	1NO+1NC	2NC	1NO+1NC	2NC	–	–	1NO+1NC	2NC
		2×1NO	2× SZ-MAS10	3NO	2NO+1NC	3NO	2NO+1NC	–	–	3NO	2NO+1NC
		1NO+1NC	SZ-MAS10 + SZ-MAS01	2NO+1NC	1NO+2NC	2NO+1NC	1NO+2NC	–	–	2NO+1NC	1NO+2NC
	2×1NC	2× SZ-MAS01	1NO+2NC	3NC	1NO+2NC	3NC	–	–	1NO+2NC	3NC	

• **Coil surge suppression unit**

The coil surge suppression unit on to the magnetic contactor.

Device	Operating coil voltage and frequency	Type
CR	12–60V AC 50/60Hz	SZ-MZ1
	72–250V AC 50/60Hz	SZ-MZ2
Diode	6–250V DC	SZ-MZ3

• **Solid-state time-delay unit**

The solid-state time-delay unit used with the magnetic contactor works as an on-delay timer.

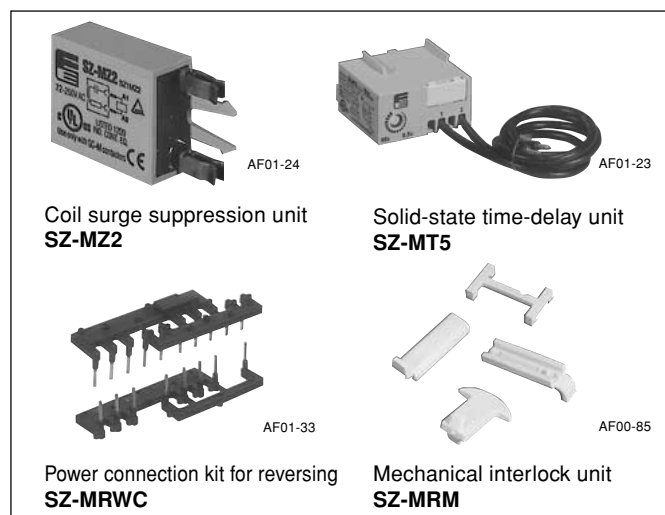
Operation	Operating coil voltage and frequency	Timing range	Type
On-delay	24–250V AC/DC 50/60Hz	0.2–24s	SZ-MT2
		0.5–60s	SZ-MT5

• **Mechanical interlock unit / SZ-MRM**

The mechanical interlock unit provides a mechanical interlock with assembly parts to convert a magnetic contactor into a reversing magnetic contactor.

• **Power connection kit for reversing / SZ-MRWC**

This kit includes an electrical interlock circuit to convert a magnetic contactor into a reversing magnetic contactor.



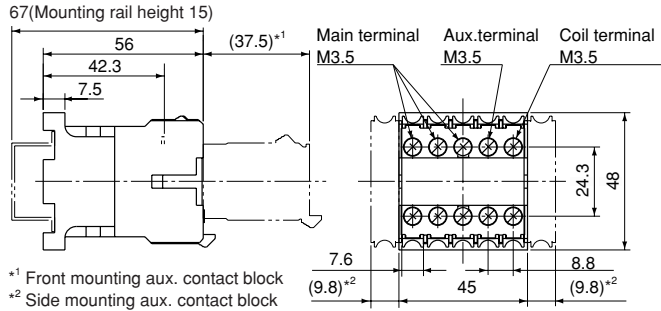
DUO series Contactors

SC-M series

Dimensions

■ Dimensions, mm

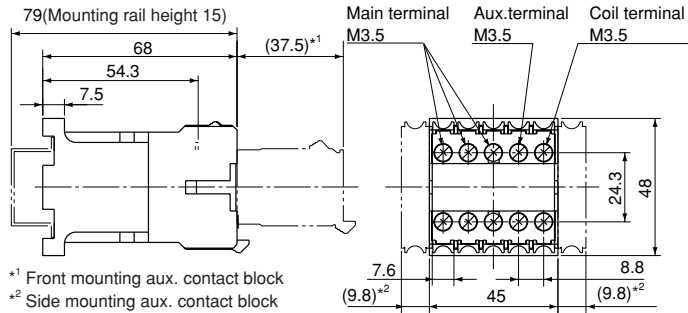
• Non-reversing/AC operated SC-M01, SC-M02



^{*1} Front mounting aux. contact block
^{*2} Side mounting aux. contact block

Mass: 0.17kg

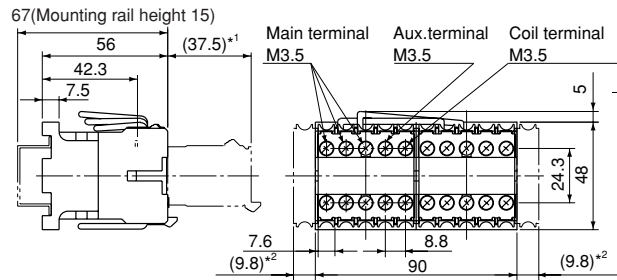
• Non-reversing/DC operated SC-M01/G, M01/G1, M01/G2 SC-M02/G, M02/G1, M02/G2



^{*1} Front mounting aux. contact block
^{*2} Side mounting aux. contact block

Mass: 0.23kg

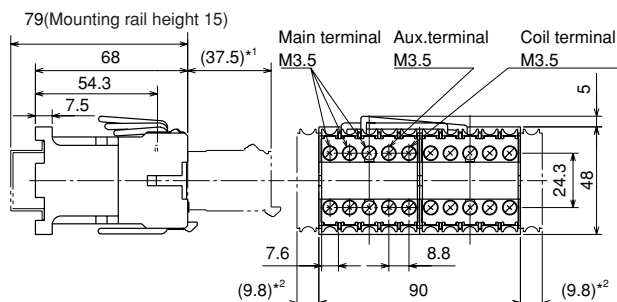
• Reversing/AC operated SC-M01RM, SC-M02RM



^{*1} Front mounting aux. contact block
^{*2} Side mounting aux. contact block

Mass : 0.36kg

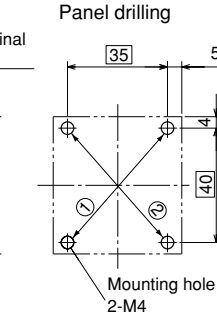
• Reversing/DC operated SC-M01RM/G, M01RM/G1, M01RM/G2 SC-M02RM/G, M02RM/G1, M02RM/G2



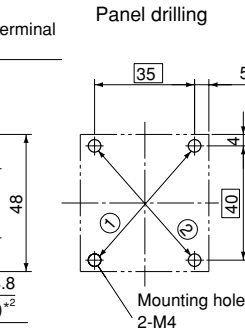
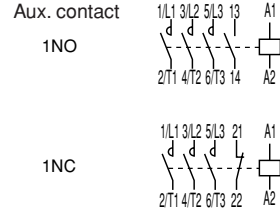
^{*1} Front mounting aux. contact block
^{*2} Side mounting aux. contact block

Mass : 0.48kg

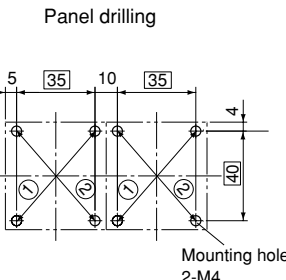
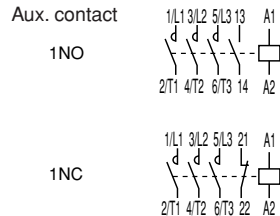
■ Wiring diagrams



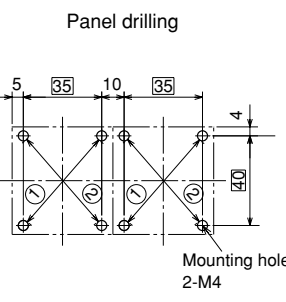
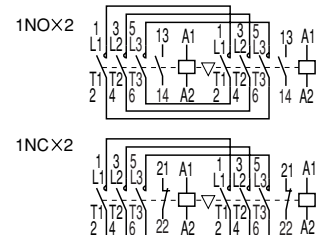
Use the two mounting holes on a diagonal line ① or ② to mount a contactor.



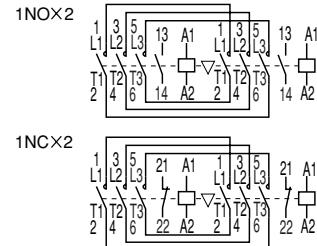
Use the two mounting holes on a diagonal line ① or ② to mount a contactor.



Use the two mounting holes on a diagonal line ① or ② to mount a contactor.

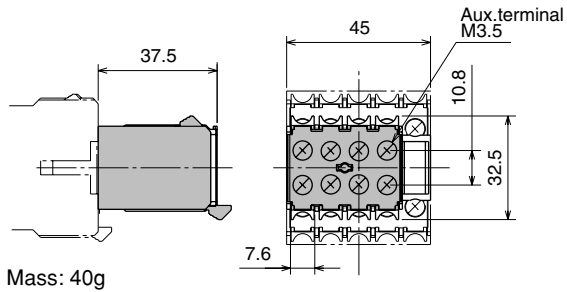


Use the two mounting holes on a diagonal line ① or ② to mount a contactor.

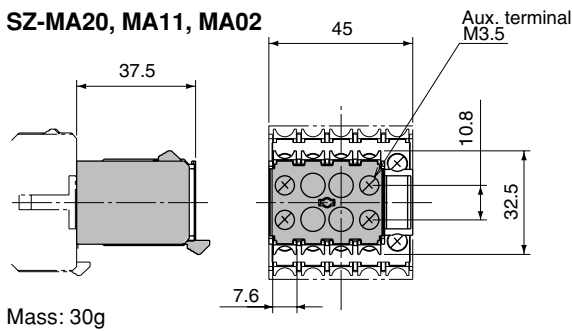


■ Dimensions, mm

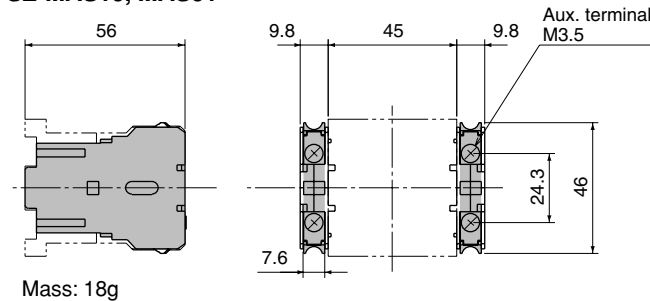
• Auxiliary contact blocks/Front mounting
SZ-MA40, MA31, MA22, MA13, MA04



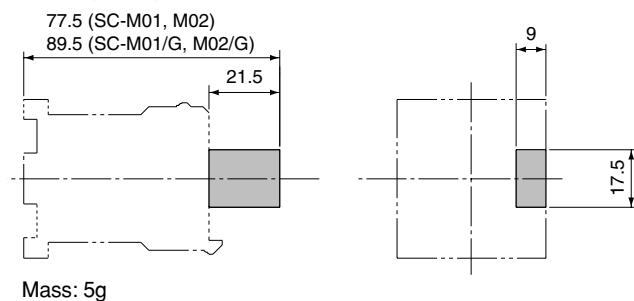
SZ-MA20, MA11, MA02



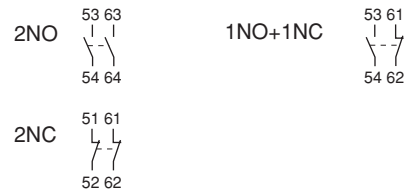
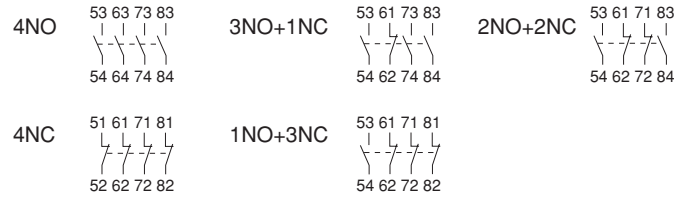
• Aux. contact blocks / Side mounting
SZ-MAS10, MAS01



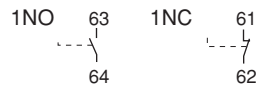
• Coil surge suppression unit
SZ-MZ1, MZ2, MZ3



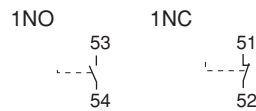
■ Wiring diagrams



Aux. contact
 • Mounted on the right side

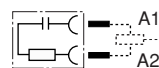


• Mounted on the left side

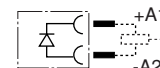


Internal circuit

• Built-in CR



• Built-in diode



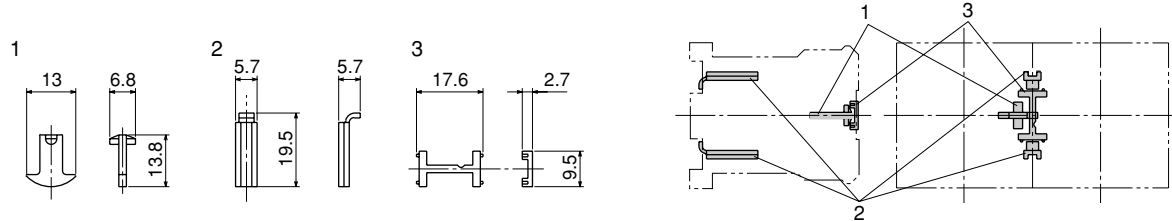
DUO series Contactors

SC-M series

Dimensions

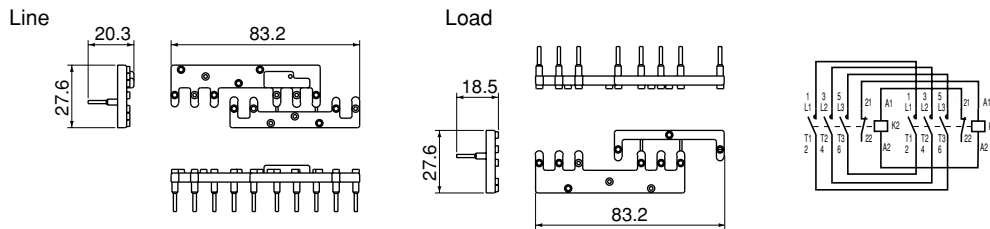
■ Dimensions, mm

• Mechanical interlock unit SZ-MRM



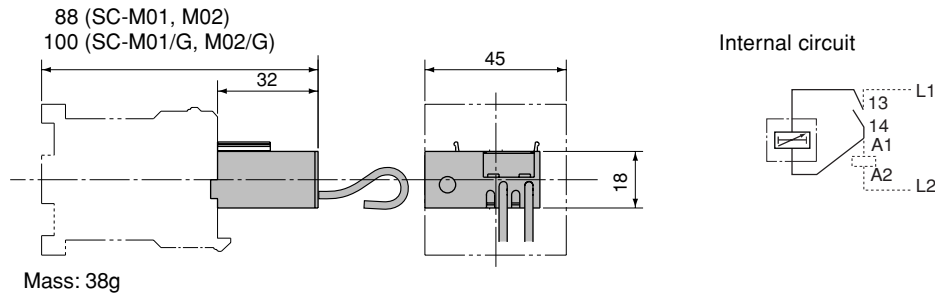
Mass: 1g (3-set)

• Power connection kit for reversing SZ-MRM



Mass: 27g

• Solid-state time-delay unit SZ-MT2, MT5



Mass: 38g

■ Standard operating conditions

Ambient temperature	Operating: -5 to 55°C No sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35°C) Storage: -40 to 65°C
Humidity	45 to 85%RH
Altitude	2000m or lower
Atmosphere	No excessive dust, smoke, corrosive gases, flammable gases, steam, or salt.
Vibration	10 to 55Hz 15m/s ²
Shock	50m/s ²
Mounting	Screw mounting, 35mm-wide top hat rail (DIN)
Mounting angle	
Standard	IEC 60947-4-1, EN 60947-4-1, VDE 0660 JIS C 8201-4-1, UL 508, CSA C22.2 TÜV (EN60947-4-1)

■ Wiring

Terminal screw	M3.5
Connectable wire size	1.25 to 2mm ² (ø1.2 to 2mm)
Applicable round crimp terminal	7.5mm (R2-3.5)
Tightening torque	0.8 to 1.0N·m
Tool	Pozi-drive screwdriver