Fuji Electric

Innovating Energy Technology

MOTOR CONTROL

Contactors and Thermal Overload Relays

FJ Series

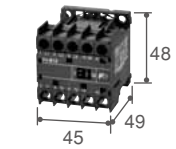
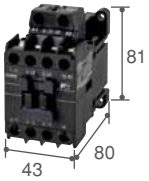
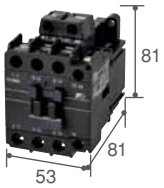
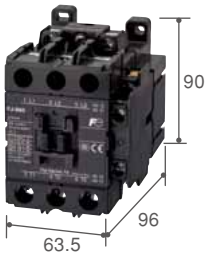
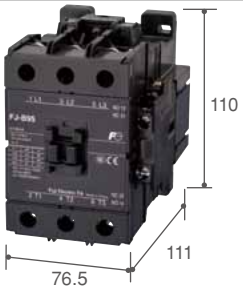
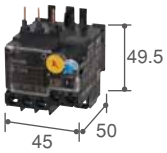
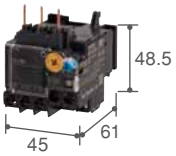
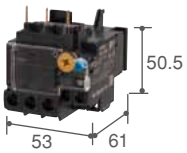
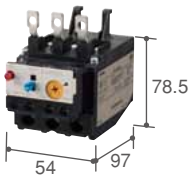
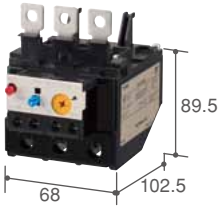
62C1-E-0129c

The FJ Series is compact, safety, environmental friendly and the world's smallest magnetic contactors. (applied motor capacity: 440 VAC, 2.2 to 45 kW)

Compact

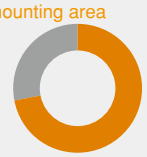
Compact and space-saving of magnetic contactor and thermal overload relay

Unit : mm

Motor rating AC-3, 440V AC	FJ-B06 : 2.2kW FJ-B09 : 4kW FJ-B12 : 5.5kW	FJ-B18 : 7.5kW	FJ-B25 : 11kW FJ-B32 : 15kW	FJ-B40 : 18.5kW FJ-B50 : 22kW FJ-B65 : 30kW	FJ-B80 : 40kW FJ-B95 : 45kW
Contactors	World's smallest 				
Type	FJ-B06 FJ-B09 FJ-B12	FJ-B18	FJ-B25 FJ-B32	FJ-B40 FJ-B50 FJ-B65	FJ-B80 FJ-B95
Thermal overload relays					
Type	TK12B	TK18B	TK32B	TK65B	TK95B

● Average of FJ-B06 to B95 types

Floor mounting area



Volume

● Average of models with thermal overload relay

Floor mounting area

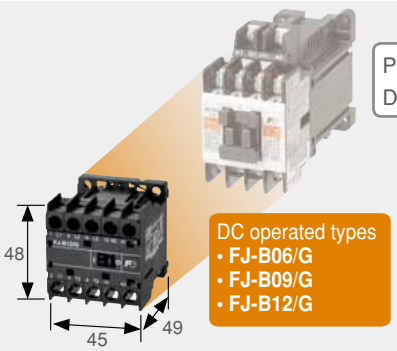
Volume

Compact DC operated Contactor

6 to 12 A frame products have been made much smaller and lighter by adopting a newly developed electromagnet.

Volume ratio 72% DOWN

Weight ratio 68% DOWN

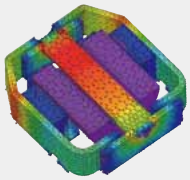


Highly efficient electromagnet has been developed by using a computer simulation with 3D magnetic field analysis so that AC and DC electromagnets have the same appearance. (FJ-B06, B09, and B12 types)

Developing DC electromagnet

- Developing compact and highly efficient electromagnet by using permanent magnet and making use of coil energy
- The DC electromagnet can be directly powered by 2.4 W through semiconductor output by minimizing the leaked magnetic flux, distributing optimized magnetic flux, and satisfying demand for both less loss and smaller size.

DC operated electromagnet
(FJ-B06/G, B09/G, and B12/G types)



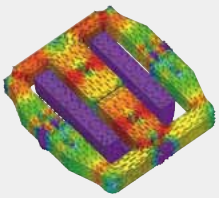
Analyzing electromagnet
(distribution of magnetic flux density and magnetic flux flow)

Developing AC electromagnet

- A compact electromagnet has been developed by optimizing the sectional area of each iron core part and excluding magnetic flux saturation and not having a wasteful shape
- The iron-core-fixing rivets are optimally arranged in order to remove the impact on magnetic flux route and the rivets can reduce eddy current loss.

This optimal design makes it possible to develop an energy saving electromagnet that has 4.5 VA of electromagnetic capacity.

AC operated electromagnet
(FJ-B06, B09, and B12 types)

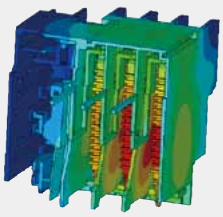


Analyzing electromagnet
(distribution of magnetic flux density and magnetic flux flow)

Optimization was achieved through 3D thermal analysis and inversion mechanism simulation.

3D thermal analysis simulation

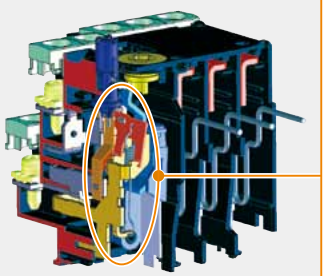
The thermal element is explored through 3D thermal imaging analysis. With the high efficiency heating and the stable bend of the bimetallic strips, the product can be further miniaturized.



3D Thermal Analysis Simulation

New inversion mechanism

The reversing mechanisms can be miniaturized and their stable operation features can be achieved through the simulation experiments of reversing mechanisms.

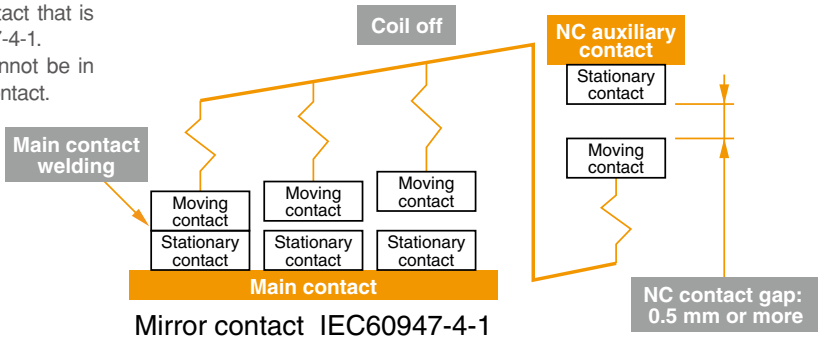


Inversion Mechanism Simulation

Safety

Magnetic contactor equipped with mirror contact

Mirror contact conforms to the requirement for auxiliary contact that is intended to be included in the future amendment to IEC 60947-4-1.
Mirror contact : Normally closed auxiliary contact,which cannot be in closed position simultaneously with the normally open main contact.



Mirror contact IEC60947-4-1

Standards

Standard models of the FJ Series are certified by CCC and have obtained a CE mark, and that is shown on the nameplate of the main unit.

Terminal cover for finger protection

The terminal cover satisfies the requirements of Machinery Directive EN60204-1 “Direct Contact Prevention” concerning mechanical safety.

Ecology

- Compliant with RoHS directive (Restriction of Hazardous Substances in the EU)
  The materials used do not contain any of the six substances that are specified in the RoHS Directive or have less than the specified content percentages of those substances.

- China Energy Label
  The FJ Series of magnetic contactors is highly energy efficient and they have met the specified value defined by the Energy Efficiency Label Management Method. Especially, FJ-B06, B09, B12, B40, B50, B65, B80 and B95 types are energy saving with an energy efficiency class of 2.

Energy Efficiency Label

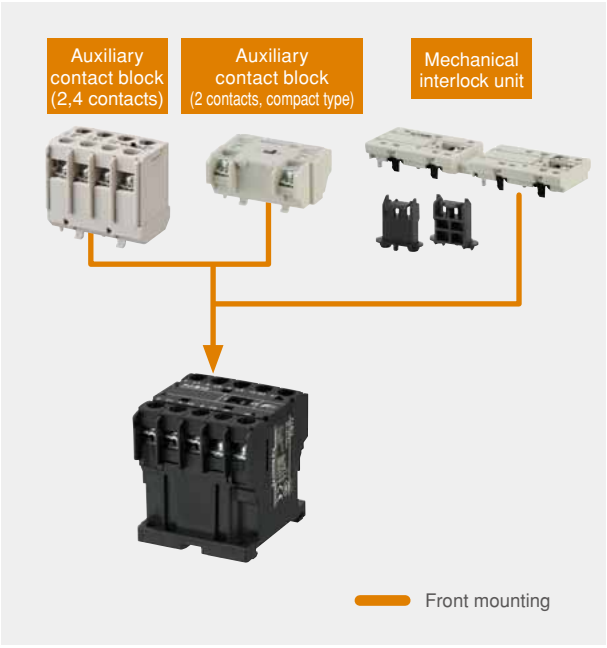
Frame	06	09	12	18	25	32	40	50	65	80	95
Sealed VA	4.5	4.5	4.5	9	9	9	12.7	12.7	12.7	13.4	13.4
Class	2	2	2	3	3	3	2	2	2	2	2

Utility Many options

Options

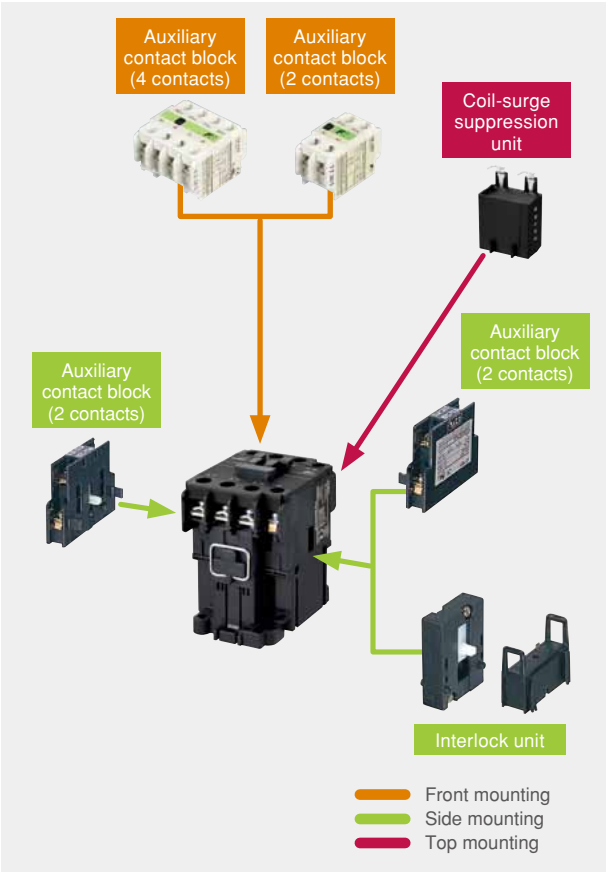
Options for FJ-B06 to B12 types

Product name / Type	Descriptions
Auxiliary contact block (front mounting)  **SZ1FA□, SZ1KA□**	Auxiliary contact block with 2-pole or 4-pole contacts adopting a bifurcated contact. Easy to mount on a magnetic contactor.
Mechanical interlock unit  **SZ1KRM**	The mechanical interlock unit is used to interlock two contactors for reversing. One size fits all contactors.
Power Connection Kit for Reversing  **SZ1KRW1W**	Cable kit for reversible circuit between main circuit terminals for two magnetic contactors.



Options for FJ-B18 to B95 types

Product name / Type	Descriptions
Auxiliary contact block (front mounting)  **SZ-A□**	Two and four auxiliary contact blocks adopting a bifurcated contact. Easy to mount on a magnetic contactor.
Auxiliary contact block (side mounting)  **SZ-A□**	Auxiliary contact block with 2 (1NO1NC) contacts adopting a highly reliable auxiliary contact. Easy to mount on a magnetic contactor.
Mechanical interlock unit  **SZ-RM**	Two magnetic contactors are mechanically interlocked. Reversible and easy to assemble.
Coil-surge suppression unit  **SZ-Z□**	Built-in surge voltage suppression elements (varistor, CR) while the coil is turned off.



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⚠ Safety Considerations
- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity, condensation, dust, corrosive gases, oil, organic solvents, excessive vibration or shock might cause electric shock, fire, erratic operation or failure.
- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult with Fuji Electric FA.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.
- Follow the regulations of industrial wastes when the product is to be discarded.
- For further questions, please contact your Fuji sales representative or Fuji Electric FA.

FJ Series
Contactors and Thermal Overload Relays

● Magnetic contactors

Series			FJ Series		
Frame			06	09	12
Appearance					
Type		AC operated type	**FJ-B06**	**FJ-B09**	**FJ-B12**
		DC operated type	**FJ-B06/G**	**FJ-B09/G**	**FJ-B12/G**
Max. motor capacity (kW)		200/240V	1.5kW	2.2kW	3kW
AC-3, IEC60947-4-1		380/440V	2.2kW	4kW	5.5kW
		600/690V	2.7kW	4kW	5.5kW
Operational current (A)		200/240V	6A	9A	12A
		380/440V	6A	9A	12A
		600/690V	3A	5A	6A
Conventional free air thermal current (rated thermal current) Ith (A)			20A	20A	20A
Auxiliary contact arrangement			1NO or 1NC	1NO or 1NC	1NO or 1NC
Dimensions		AC operated type	45 × 48 × 49		
W × H × D (mm)		DC operated type			
Optional unit	Auxiliary contact block	Front mounting	SZ1FA11 or SZ1FA11H, SZ1KA□,SZ1KA□H		
		Side mounting	–		
	Coil surge suppression unit *1		–		
Standards			CE cULus IEC		

Note: *1. Attach “S” behind the built-in order model of coil surge suppression unit.

● Thermal overload relays

Type	**TK12B-□**	
Appearance		
Protection function	Overload	
Tripping class	10A	
Ampere setting range (A) / code	0.1-0.15 [P10] 0.13-0.2 [P13] 0.18-0.27 [P18] 0.24-0.36 [P24] 0.34-0.52 [P34] 0.48-0.72 [P48] 0.64-0.96 [P64] 0.8-1.2 [P80] 0.95-1.45 [P95] 1.4-2.1 [1P4]	1.7-2.6 [1P7] 2.2-3.4 [2P2] 2.8-4.2 [2P8] 4-6 [004] 5-7.5 [005] 6-9 [006] 7-10.5 [007] 9-13 [009]
Applicable contactors	FJ-B06, B09, B12	
Dimensions W × H × D (mm)	45 × 49.5 × 50	

Note: Replace the □ mark in the type number by the Ampere setting range code.

	18	25	32	40	50	65	80	95
								
	FJ-B18	**FJ-B25**	**FJ-B32**	**FJ-B40**	**FJ-B50**	**FJ-B65**	**FJ-B80**	**FJ-B95**
	FJ-B18/G	**FJ-B25/G**	**FJ-B32/G**	–	–	–	–	–
	4kW	5.5kW	7.5kW	11kW	15kW	18.5kW	22kW	25kW
	7.5kW	11kW	15kW	18.5kW	22kW	30kW	40kW	45kW
	7.5kW	7.5kW	7.5kW	11kW	15kW	22kW	30kW	37kW
	18A	25A	32A	40A	50A	65A	80A	95A
	18A	25A	32A	40A	50A	65A	80A	95A
	7A	9A	10A	15A	19A	26A	38A	44A
	25A	32A	40A	50A	60A	65A	100A	105A
	1NO or 1NC	1NO or 1NC	1NO or 1NC	1NO1NC	1NO1NC	1NO1NC	1NO1NC	1NO1NC
	43 × 81 × 80	53 × 81 × 81		63.5 × 90 × 96	63.5 × 90 × 96	63.5 × 90 × 96	76.5 × 110 × 111	76.5 × 110 × 111
	43 × 81 × 107	53 × 81 × 108		–	–	–	–	–
	SZ-A□ (2pole or 4pole)							
	SZ-AS1							
	SZ-Z1 to Z9			SZ-Z31 to Z35				
	CE cULus IEC							

	TK18B-□	**TK32B-□**	**TK65B-□**	**TK95B-□**
				
	Overload	Overload	Overload	Overload
	10A	10A	10A	10A
	0.1-0.15 [P10] 1.7-2.6 [1P7] 0.13-0.2 [P13] 2.2-3.4 [2P2] 0.18-0.27 [P18] 2.8-4.2 [2P8] 0.24-0.36 [P24] 4-6 [004] 0.34-0.52 [P34] 5-7.5 [005] 0.48-0.72 [P48] 6-9 [006] 0.64-0.96 [P64] 7-10.5 [007] 0.8-1.2 [P80] 9-13 [009] 0.95-1.45 [P95] 13-18 [013] 1.4-2.1 [1P4]	0.1-0.15 [P10] 1.7-2.6 [1P7] 0.13-0.2 [P13] 2.2-3.4 [2P2] 0.18-0.27 [P18] 2.8-4.2 [2P8] 0.24-0.36 [P24] 4-6 [004] 0.34-0.52 [P34] 5-7.5 [005] 0.48-0.72 [P48] 6-9 [006] 0.64-0.96 [P64] 7-10.5 [007] 0.8-1.2 [P80] 9-13 [009] 0.95-1.45 [P95] 12-18 [012] 1.4-2.1 [1P4] 16-22 [016] 20-26 [020] 26-32 [026]	4-6 [004] 5-8 [005] 6-9 [006] 7-11 [007] 9-13 [009] 12-18 [012] 18-26 [018] 24-36 [024] 32-42 [032] 40-50 [040] 44-54 [044] 53-65 [053]	7-11 [007] 9-13 [009] 12-18 [012] 18-26 [018] 24-36 [024] 28-40 [028] 34-50 [034] 45-65 [045] 48-68 [048] 64-80 [064] 68-86 [068] 86-96 [086]
	FJ-B18	FJ-B25, B32	FJ-B40, B50, B65	FJ-B80, B95
	45 × 48.5 × 61	53 × 50.5 × 61	54 × 78.5 × 97	68 × 89.5 × 102.5

Type number nomenclature

■ List of Products

Type			Frame Size										
			06	09	12	18	25	32	40	50	65	80	95
Standard type contactors	AC Operated	**FJ-B□**	○	○	○	○	○	○	○	○	○	○	○
	DC Operated	**FJ-B□/G**	○	○	○	○	○	○	–	–	–	–	–
Reversing contactors	AC Operated	**FJ-B□RM**	○	○	○	○	○	○	–	–	–	–	–
	DC Operated	**FJ-B□RM/G**	○	○	○	○	○	○	–	–	–	–	–

■ Type number nomenclature

(1) (2) (3) (4) (5) (6) (7)

FJ-B 12 RM /G S E 01

(1) Basic type	Code
AC Contactor	FJ-B

(2) Frame Size	Code
6A	06
9A	09
12A	12
18A	18
25A	25
32A	32
40A	40
50A	50
65A	65
80A	80
95A	95

(3) Non-reversing or reversing	Code
Non-reversing	Blank
Reversing	RM

(4) Operating method	Code
AC operated	Blank
DC operated	/G

(5) Built-in coil surge	Code
None	Blank
Built-in (06, 09, 12 only)	S

(6) Rated voltage of DC coil	Code
DC24V	E
DC48V	F
DC110V	H
DC220V	M

(6) Rated voltage of AC coil	Code
AC24V 50Hz	E5
Ac110V 50Hz	H5
AC220/230V 50Hz	N5
AC380/400V 50Hz	45

(7) Contact arrangement	Code
Auxiliary contact 1NO	10
Auxiliary contact 1NC	01
Auxiliary contact 1NO1NC	11

● Thermal overload relays

(1) (2) (3)
TK 12B — 009

(1) Basic type	Code
Thermal overload relays	TK

(2) Setting current (A)	Applicable contactors	Code
0.1 - 13	FJ-B06, B09, B12	12B
0.1 - 18	FJ-B18	18B
0.1 - 32	FJ-B25, B32	32B
4 - 65	FJ-B40, B50, B65	65B
7 - 96	FJ-B80, B95	95B

(Note) Depending on different types, production may not be able to proceed. Please refer to P.21.

(3) Setting range (A)	Code
0.1-0.15	P10
0.13-0.2	P13
0.18-0.27	P18
0.24-0.36	P24
0.34-0.52	P34
0.48-0.72	P48
0.64-0.96	P64
0.8-1.2	P80
0.95-1.45	P95
1.4-2.1	1P4
1.7-2.6	1P7
2.2-3.4	2P2
2.8-4.2	2P8
4-6	004
5-7.5	005
6-9	006
7-10.5	007
9-13	009

(3) Setting range (A)	Code
12-18	012
13-18	013
16-22	016
18-26	018
20-26	020
24-36	024
26-32	026
28-40	028
32-42	032
34-50	034
40-50	040
44-54	044
45-65	045
48-68	048
53-65	053
64-80	064
68-86	068
86-96	086

● Auxiliary relays

(1) (2) (1) (3) (4) (5)
SKH4 A B H — H5 22

(1) Basic type	Code
Contactor relay	SKH4□B

(2) Control coil	Code
AC	A
DC	G

(3) Contact Structure	Code
Double-contact	None
Single-contact	H

(5) Contact arrangement	Code
4NO	40
3NO1NC	31
2NO2NC	22

(4) Rated voltage of AC coil	Code
AC24V 50Hz/24-26V 60Hz	E
AC100-110V 50Hz/110-120V 60Hz	H
AC220-240V 50Hz/240-260V 60Hz	P
AC380-400V 50Hz/400-440V 60Hz	4

(4) Rated voltage of DC coil	Code
DC24V	E
DC48V	F
DC110V	H
DC220V	M

■ Main circuit ratings

● In accordance with the ratings of the IEC and GB standards (IEC60947-4-1 and GB14048.4)

Type \ Applicable	Max. motor capacity [kW]			Operational current Ie[A]				Conventional free air thermal current (Rated thermal current) [A]
	Three-phase squirrel-cage motor (AC-3)			Three-phase squirrel-cage motor (AC-3)			Resistive load (AC-1)	
	220/230V	380/400V	600/690V	220/230V	380/400V	600/690V	Below 400V	
FJ-B06	1.5	2.2	2.7	6	6	3	20	20
FJ-B09	2.2	4	4	9	9	5	20	20
FJ-B12	3	5.5	5.5	12	12	6	20	20
FJ-B18	4	7.5	7.5	18	18	7	25	25
FJ-B25	5.5	11	7.5	25	25	9	32	32
FJ-B32	7.5	15	7.5	32	32	10	40	40
FJ-B40	11	18.5	11	40	40	15	50	50
FJ-B50	15	22	15	50	50	19	60	60
FJ-B65	18.5	30	22	65	65	26	65	65
FJ-B80	22	40	30	80	80	38	100	100
FJ-B95	25	45	37	95	95	44	105	105

■ Auxiliary circuit ratings

● In accordance with the ratings of the IEC and GB standards (IEC60947-5-1 and GB14048.5)

Type	Conventional free air thermal current (Rated thermal current) [A]	Making and breaking current (AC) [A]	Rated operational current [A]						Minimum operating voltage and current *1
			AC			DC			
			Rated operating voltage [V]	AC-15 (Inductive load)	AC-12 (Resistive load)	Rated operating voltage [V]	DC-13 *2 (Inductive load)	DC-12 (Resistive load)	
FJ-B06 to FJ-B12	10	60	110V	6	10	24V	3	5	DC24V, 10mA
		30	220/230V	3	8	48V	1.5	3	
		15	380/400V	1.5	5	110V	0.55	2.5	
		12	500/600V	1.2	5	220V	0.27	1	
FJ-B18 to FJ-B95	10	60	110V	6	10	24V	3	5	DC5V, 3mA
		30	220/230V	3	8	48V	1.5	3	
		15	380/400V	1.5	5	110V	0.55	2.5	
		12	500/600V	1.2	5	220V	0.27	1	

*1 The failure level is 10-7 for a normal environment without dust, dirt, or corrosive gas.
*2 Given the time constant L/R = 70ms

Operating coil characteristics

■ Operating coil characteristics

● AC-operated type

Type			FJ-B06	FJ-B09	FJ-B12	FJ-B18	FJ-B25	FJ-B32	FJ-B40	FJ-B50	FJ-B65	FJ-B80	FJ-B95
Pick-up voltage range (AC220/230V, 50Hz)		Making voltage [V]	120-152	120-152	120-152	126-150	126-150	126-150	120-150	120-150	120-150	126-150	126-150
		Drop-out voltage [V]	73-95	73-95	73-95	84-118	84-118	84-118	90-120	90-120	90-120	90-130	90-130
Power consumption		Inrush [VA]	22	22	22	90	90	90	120	120	120	180	180
		Sealed [VA]	4.5	4.5	4.5	9	9	9	12.7	12.7	12.7	13.3	13.3
Loss		Sealed [W]	1.5	1.5	1.5	2.7	2.7	2.7	3.6	3.6	3.6	4.5	4.5
Operating times	Coil ON → Contact ON [ms]		9-20	9-20	9-20	9-20	9-20	9-20	10-17	10-17	10-17	10-18	10-18
	Coil OFF → Contact OFF [ms]		5-15	5-15	5-15	4-20	4-20	4-20	6-13	6-13	6-13	8-18	8-18

● DC-operated type

Type			FJ-B06/G	FJ-B09/G	FJ-B12/G	FJ-B18/G	FJ-B25/G	FJ-B32/G
Pick-up voltage range (DC24V)		Making voltage [V]	8-14	8-14	8-14	10-15	10-15	10-15
		Drop-out voltage [V]	3-6	3-6	3-6	3-7	3-7	3-7
Power consumption		Inrush [VA]	2.4	2.4	2.4	7	7	7
		Sealed [VA]	2.4	2.4	2.4	7	7	7
Time constant		Sealed [W]	20	20	20	50	50	50
Operating times	Coil ON → Contact ON [ms]		17-30	17-30	17-30	43-47	43-47	43-47
	Coil OFF → Contact OFF [ms]		5-15	5-15	5-15	10-24	10-24	10-24

■ Performance

Frame size			06	09	12	18	25	32	40	50	65	80	95
Type		AC-operated type	FJ-B06	FJ-B09	FJ-B12	FJ-B18	FJ-B25	FJ-B32	FJ-B40	FJ-B50	FJ-B65	FJ-B80	FJ-B95
		DC-operated type	FJ-B06/G	FJ-B09/G	FJ-B12/G	FJ-B18/G	FJ-B25/G	FJ-B32/G	–	–	–	–	–
Rated insulation voltage Ui [V]			690						1000				
Rated impulse voltage Uimp[kV]			6						8				
Main circuit	Making current [A]	220/230V	60	90	120	180	250	320	400	500	650	800	950
		380/400V	60	90	120	180	250	320	400	500	650	800	950
	Breaking current [A]	220/230V	48	72	96	144	200	256	320	400	520	640	760
		380/400V	48	72	96	144	200	256	320	400	520	640	760
Operating cycles per hour AC-3 [times/hour]			1200	1200	1200	1200	1200	1200	600	600	600	600	600

General conditions of use

■ General conditions of use

Ambient temperature *1	-5 to +55 °C, with no sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35°C.) *2
Relative humidity	No more than 85%RH at 40 °C
Altitude	2,000m max.
Atmosphere	Dust, smoke, corrosive gases, flammable gases, water vapour or salt is rarely contained in the air.
Storage temperature	-40 to +65 °C
Vibration resistance	10 to 55Hz 15m/s^2
Shock resistance	50m/s^2
Mounting	Mounting with screws or a standard guide rail of 35mm
Mounting angle	

*1 Ambient temperature refers to the ambient temperature when the product is being used.
*2 The ambient temperature when the capacitor circuit is switched to the AC contactor is -5 to +40 °C.

■ Descriptions

Compliant descriptions	GB14048, IEC 60947-4-1
Certification	CCC (GB14048.4)

■ List of wire descriptions

● Main circuit

Type			FJ-B06 FJ-B12 FJ-B09 FJ-B18 TK12B TK18B	FJ-B25 FJ-B32 TK32B	FJ-B40 FJ-B65 FJ-B50 TK65B	FJ-B80 FJ-B95 TK95B
Direct connection	Single-core wire / multi-strand wire [Note 1] [Note 4]	(mm^2)	1Setx(0.75 -2.5) 2Setsx(0.75 -1.5) 2Setsx(1.5 -2.5)	1 Setx(0.75-6) 2 Setsx(1-4) 2 Setsx(1.5-6)	1 Setx(0.75-6) 2 Setsx(0.75-1.5) 2 Setsx(1.5-4) 2 Setsx(4-6)	–
	Multi-strand flexible wire (with bushing) [Note 1]	(mm^2)	1 Setx(0.75-2.5) 2 Setsx(0.75-1.5) 2 Setsx(1.5-2.5)	1 Setx(0.75-4) 2 Setsx(1-4)	1 Setx(0.75-4) 2 Setsx(0.75-1.5) 2 Setsx(1.5-4)	–
	Wire stripping dimensions	(mm)	10	11	15	–
Connection via crimp terminals	Multi-strand wire Multi-strand flexible wire	(mm^2)	0.75-4	0.75-10	2-22	2-38
	Maximum width of crimp terminal [Note 2]	(mm)	7.7	9.7	12.4	16.7
Terminal screws size			M3.5	M4	M5	M6
Tightening tool [Note 3]			⊕2 ⊖			⊕3 ⊖1.2
Tightening torque		(N·m)	0.8-1	1.2-1.5	2-2.5	4-5

● Control circuit

Type				FJ-B06 FJ-B09 FJ-B12 TK12B TK95B	FJ-B18 FJ-B25 FJ-B32 TK18B	FJ-B40 FJ-B50 FJ-B65 TK32B	FJ-B80 FJ-B95 SKH4□B TK65B
Direct connection	Single-core wire / multi-strand wire / multi-strand flexible wire (with bushing) [Note 1] [Note 4]		(mm^2)	1 Setx(0.75-2.5) 2 Setsx(0.75-1.5) 2 Setsx(1.5-2.5)			
	Wire stripping dimensions		(mm)	10			
Connection via crimp terminals	Multi-strand wire Multi-strand flexible wire		(mm^2)	0.75-2.5			
	Maximum width of crimp terminal [Note 2]	Coil terminal	(mm)	7.7			
		Auxiliary terminal		7.7			
Terminal screws size				M3.5			
Tightening tool [Note 3]				⊕2 ⊖			
Tightening torque			(N·m)	0.8-1			

[Note1] The multi-strand flexible wire without a bushing shall not be used. If a multi-strand flexible wire is used, before being used, it should be crimped into a bushing (a metal ferrule). Before an insulating protective bushing is used, refer to the parameters provided by the insulating protective bushing manufacturer for the wire stripping dimensions. If the multi-strand wire is 0.75~6mm^2: the number of strands shall be less than 7. Multi-strand flexible wire: The wire with the strands more than that of the above-mentioned wire.

[Note2] Use the crimp terminals of the width less than the maximum crimp terminal width. Refer to Figure 1 For the maximum width of the circular crimp terminal.

[Note 3] ⊕2: H2 cross screwdriver
⊖ : I-1×5.5×L B flat screwdriver

[Note 4] If two single-core wires are used for wiring, the two single-core wires should be of same descriptions.

[Note 5] Each terminal can be connected to 2 crimp terminals. (Please refer to Figure 2)

[Note 6] Before use, screw up all terminal screws that are not used for wiring.

[Note 7] After the wiring is completed, if the connected wires are bent due to wiring or other reasons, reconfirm whether the fastening torque is proper.

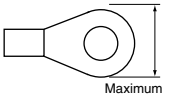


Figure 1

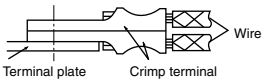


Figure 2

Magnetic contactors

■ Features

- The smallest one in the basic type series (6A, 9A, 12A rated products)
- 6A, 9A and 12A rated products are small sized AC contactors of AC and DC coil products with the same outline dimensions.
- DC coil products are low-power-consumption products that can be driven directly by PLC. (FJ-B06/G to B12/G type DC24V coil)
- Energy-saving type with an energy efficiency level of 2. (6A, 9A, 12A, 40A to 95A rated products)

FJ-B12

FJ-B65

■ Ordering information (Types)

● **Reversing magnetic contactor (FJ-B18RM Coil AC220/230V 50Hz when the auxiliary contact is 1NC×2)**

FJ-B12 S N5 10

(1) Type (2) Built-in coil surge (3) Coil voltage code (4) Contact arrangement (auxiliary contact 1NC×2: 01 Auxiliary contact 1NO×2: 10)

Blank: None
S: Buit-in

Please refer to Type number nomenclature in P10

■ Types and ratings

● Standard-type (non-reversing)

Frame	Max. motor capacity (kW) AC-3, IEC60947-4-1			Operational current (A)			Operational current (A) AC-1	Conventional free air thermal current (A)	Auxiliary contact arrangement	Type	
										AC operated	DC operated
	200/240V	380/440V	600/690V	200/240V	380/440V	600/690V	Under 440V				
06	1.5	2.2	2.7	6	6	3	20	20	1NO or 1NC	**FJ-B06**	**FJ-B06/G**
09	2.2	4	4	9	9	5	20	20	1NO or 1NC	**FJ-B09**	**FJ-B09/G**
12	3	5.5	5.5	12	12	6	20	20	1NO or 1NC	**FJ-B12**	**FJ-B12/G**
18	4	7.5	7.5	18	18	7	25	25	1NO or 1NC	**FJ-B18**	**FJ-B18/G**
25	5.5	11	7.5	25	25	9	32	32	1NO or 1NC	**FJ-B25**	**FJ-B25/G**
32	7.5	15	7.5	32	32	10	40	40	1NO or 1NC	**FJ-B32**	**FJ-B32/G**
40	11	18.5	11	40	40	15	50	50	1NO1NC	**FJ-B40**	**–**
50	15	22	15	50	50	19	60	60	1NO1NC	**FJ-B50**	**–**
65	18.5	30	22	65	65	26	65	65	1NO1NC	**FJ-B65**	**–**
80	22	40	30	80	80	38	100	100	1NO1NC	**FJ-B80**	**–**
95	25	45	37	95	95	44	105	105	1NO1NC	**FJ-B95**	**–**

(Note 1) The rated values meet the standards IEC60947-4-1 and GB14048.4.

● Reversing-type

Frame	Max. motor capacity (kW) AC-3, IEC60947-4-1			Operational current (A)			Operational current (A) AC-1	Conventional free air thermal current (A)	Auxiliary contact arrangement *1	Type	
										AC operated	DC operated
	200/240V	380/440V	600/690V	200/240V	380/440V	600/690V	Under 440V				
06	1.5	2.2	2.7	6	6	3	20	20	1NC×2 or 1NO×2 *2	**FJ-B06RM**	**FJ-B06RM/G**
09	2.2	4	4	9	9	5	20	20		**FJ-B09RM**	**FJ-B09RM/G**
12	3	5.5	5.5	12	12	6	20	20		**FJ-B12RM**	**FJ-B12RM/G**
18	4	7.5	7.5	18	18	7	25	25		**FJ-B18RM**	**FJ-B18RM/G**
25	5.5	11	7.5	25	25	9	32	32		**FJ-B25RM**	**FJ-B25RM/G**
32	7.5	15	7.5	32	32	10	40	40		**FJ-B32RM**	**FJ-B32RM/G**

(Note 1) The rated values meet the standards IEC60947-4-1 and GB14048.4.

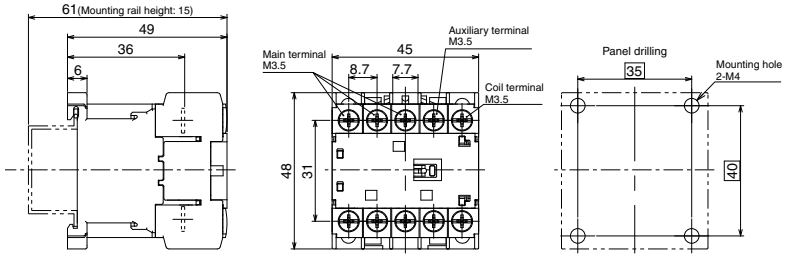
*1 In the auxiliary contact arrangement, "1NC" indicates the number of contacts of 1 AC contactor, while "×2" means the total values of 2 contactors. Please make orders according to the codes of the auxiliary contacts of each piece of equipment.

*2 Auxiliary contact 1NO×2 is available on request. However, these contactors are not electrically interlocked. Be sure to arrange electrical interlock circuit externally to avoid short-circuit accidents.

● Magnetic Contactor (AC operated)

FJ-B06
FJ-B09
FJ-B12

35mm



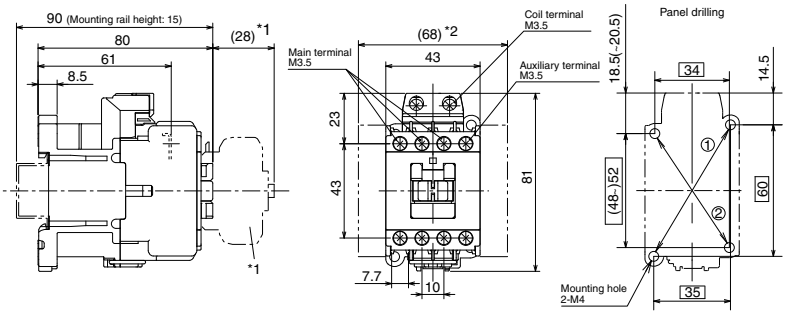
Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 A1 A2 2/T1 4/T2 6/T3 22

Mount it using the 2 holes on the diagonal line.

Mass: 0.14kg

FJ-B18

35mm



Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 A1 A2 2/T1 4/T2 6/T3 22

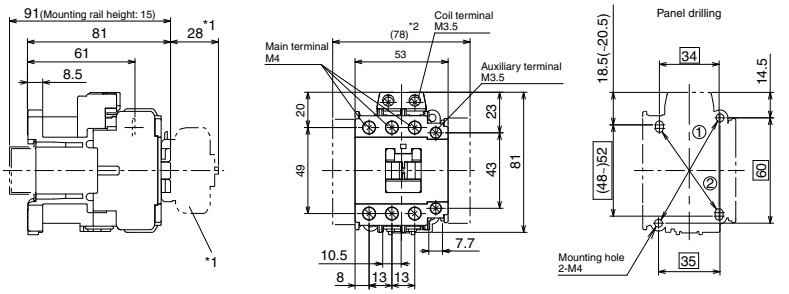
Mounting dimension: mounting according to (1) or (2)
(1)…35×60
(2)…34×(48-)52
Mount it using the 2 holes on the diagonal line.

*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.33kg

FJ-B25
FJ-B32

35mm



Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 A1 A2 2/T1 4/T2 6/T3 22

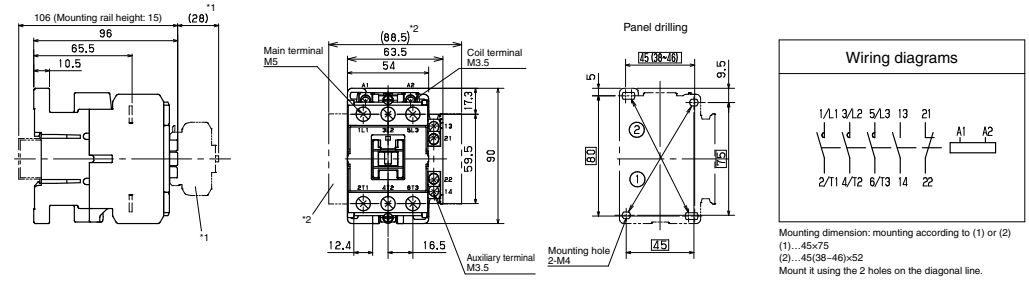
Mounting dimension: mounting according to (1) or (2)
(1)…35×60
(2)…34×(48-)52
Mount it using the 2 holes on the diagonal line.

*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.35kg

FJ-B40
FJ-B50
FJ-B65

35mm



Wiring diagrams

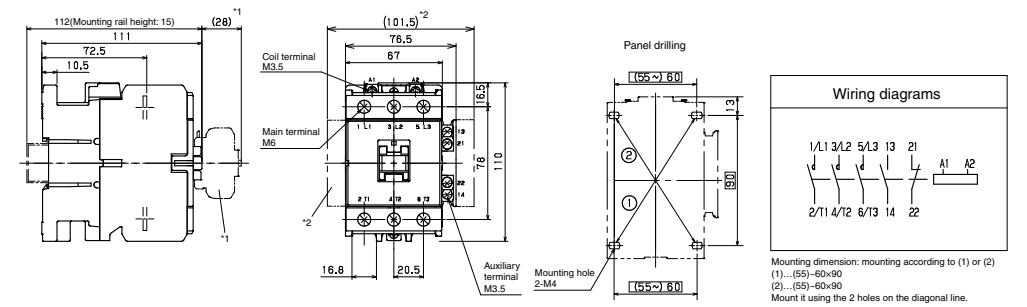
Mounting dimension: mounting according to (1) or (2)
(1)…45×75
(2)…45(38-46)×52
Mount it using the 2 holes on the diagonal line.

*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.54kg

FJ-B80
FJ-B95

35mm



Wiring diagrams

Mounting dimension: mounting according to (1) or (2)
(1)…(55)-60×90
(2)…(55)-60×90
Mount it using the 2 holes on the diagonal line.

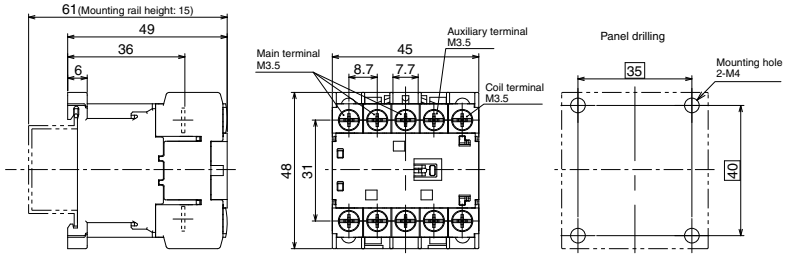
*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.97kg

● Magnetic Contactor (DC operated)

FJ-B06/G
FJ-B09/G
FJ-B12/G

35mm



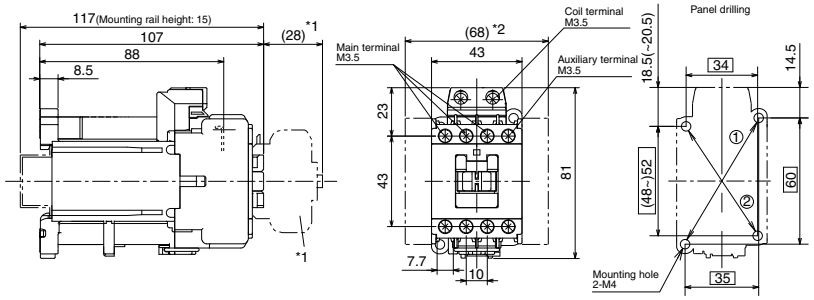
Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 (+) (-) A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 (+) (-) A1 A2 2/T1 4/T2 6/T3 22

(Note) Please note that the terminal of the control coil has polarity.
Mount it using the 2 holes on the diagonal line.

Mass: 0.17kg

FJ-B18/G

35mm



Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 A1 A2 2/T1 4/T2 6/T3 22

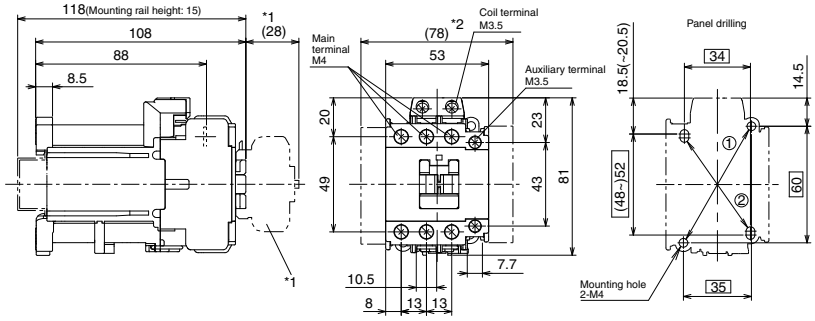
Mounting dimension: mounting according to (1) or (2)
(1)…35×60
(2)…34×(48~)52
Mount it using the 2 holes on the diagonal line.

*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.57kg

FJ-B25/G
FJ-B32/G

35mm



Auxiliary contact	Wiring diagrams
1NO (1a)	1/L1 3/L2 5/L3 13 A1 A2 2/T1 4/T2 6/T3 14
1NC (1b)	1/L1 3/L2 5/L3 21 A1 A2 2/T1 4/T2 6/T3 22

Mounting dimension: mounting according to (1) or (2)
(1)…35×60
(2)…34×(48~)52
Mount it using the 2 holes on the diagonal line.

*1 For front mounting aux. contact blocks mounted.
*2 For two side mounting aux. contact blocks mounted.

Mass: 0.59kg

Reversing Magnetic contactors

■ Features

- In accordance with the GB and IEC standards.
- Suitable for the forward and reverse running of the motor.
- Equipped with mechanical interlock for standard configuration.
- The auxiliary contact can be easily added by adding an auxiliary contact unit.

FJ-B18RM

■ Ordering information (Types)

● **Reversing magnetic contactor (FJ-B18RM Coil AC220/230V 50Hz when the auxiliary contact is 1NC×2)**

FJ-B18RM **N5** **01**

(1) Type (2) Coil voltage code (3) Contact arrangement (auxiliary contact 1NC×2: 01 Auxiliary contact 1NO×2: 10)

Please refer to Type Description in P.12

■ Types and ratings

● **Reversing AC contactor**

Frame	Max. motor capacity (kW)			Operational current (A)				Conventional free air thermal current (A)	Auxiliary contact arrangement *1	Type	
	Three-phase squirrel-cage motor (AC-3)			Three-phase squirrel-cage motor (AC-3)			Resistive load(AC-1)				
	200/240V	380/440V	600/690V	200/240V	380/440V	600/690V	Below 440V			AC-operated	DC-operated
06	1.5	2.2	2.7	6	6	3	20	20	1NC×2 or 1NO×2 *2	**FJ-B06RM**	**FJ-B06RM/G**
09	2.2	4	4	9	9	5	20	20		**FJ-B09RM**	**FJ-B09RM/G**
12	3	5.5	5.5	12	12	6	20	20		**FJ-B12RM**	**FJ-B12RM/G**
18	4	7.5	7.5	18	18	7	25	25		**FJ-B18RM**	**FJ-B18RM/G**
25	5.5	11	7.5	25	25	9	32	32		**FJ-B25RM**	**FJ-B25RM/G**
32	7.5	15	7.5	32	32	10	40	40		**FJ-B32RM**	**FJ-B32RM/G**

(Note 1) The ratings are in accordance with IEC60947-4-1 and GB14048.4.

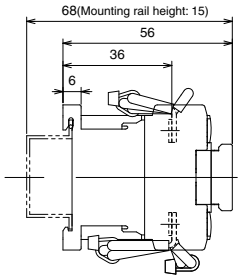
*1 In the auxiliary contact arrangement, "1NC" represents the number of contacts of one AC contactor, and "×2" represents the total number of contacts of two AC contactors. Please order the product according to the code of the auxiliary contact of each device.

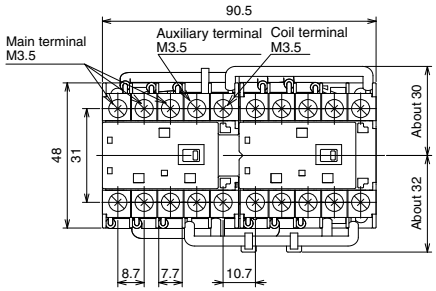
*2 Since the main element of the AC contactor with the auxiliary contactor of 1NO has no electrical interlocking function, in order to prevent a short-circuit accident to occur due to being simultaneously powered on during use, it is necessary to provide electrical interlock in the external control circuit.

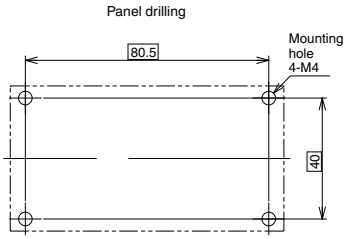
Dimensions and wiring diagrams

● Reversing-type (AC operated)

FJ-B06RM
FJ-B09RM
FJ-B12RM

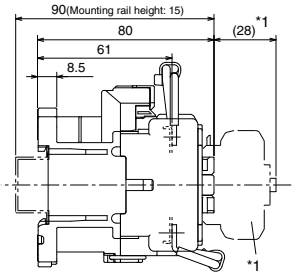


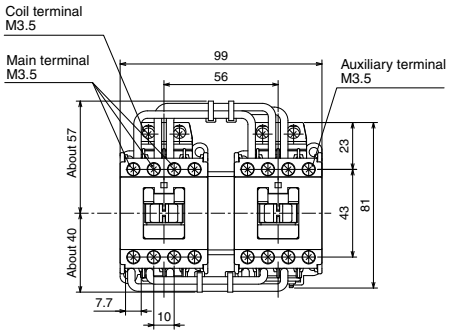


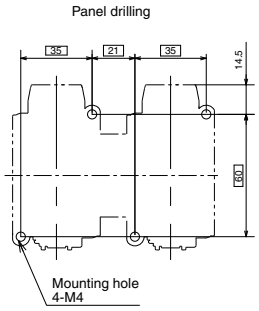


Mass: 0.32kg

FJ-B18RM



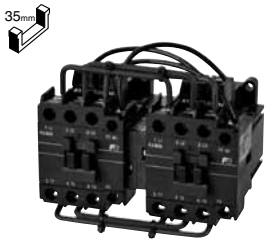


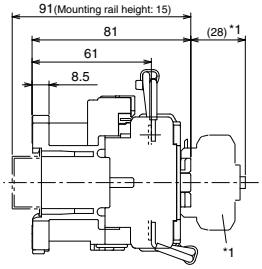


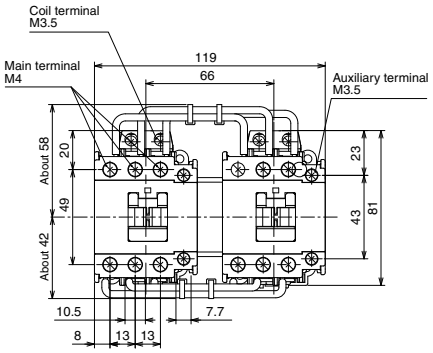
*1 For front mounting aux. contact blocks mounted.

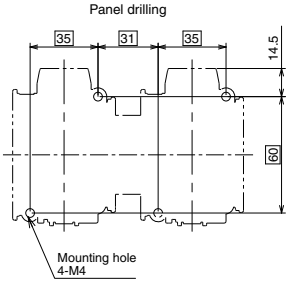
Mass: 0.7kg

FJ-B25RM
FJ-B32RM



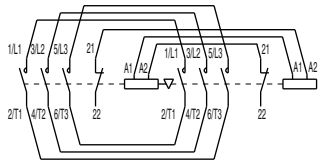


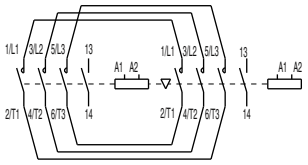




*1 For front mounting aux. contact blocks mounted.

Mass: 0.75kg

Auxiliary contact	Wiring diagram
1NC×2	

Auxiliary contact	Wiring diagram
1NO×2	

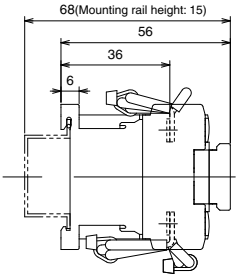
Note: The interlock unit can be set separately.

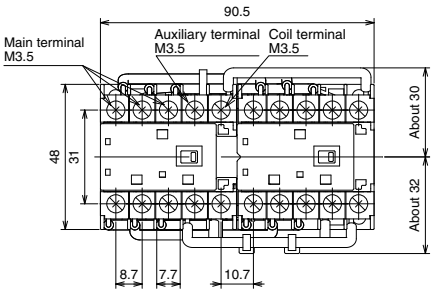
Dimensions and wiring diagrams

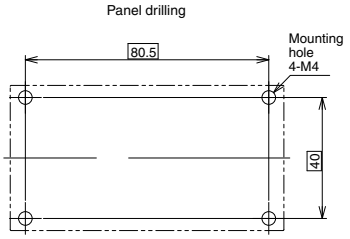
● Reversing AC contactors (DCoperated type)

FJ-B06RM/G
FJ-B09RM/G
FJ-B12RM/G

35mm



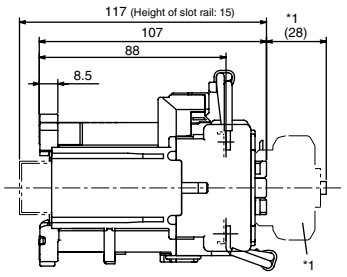


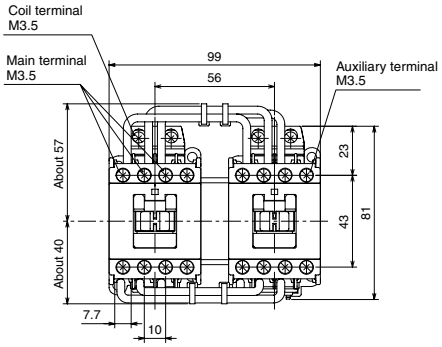


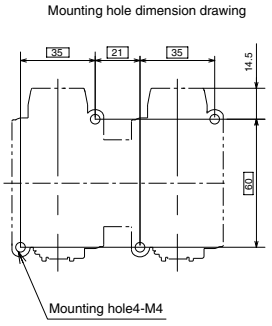
Mass: 0.32kg

FJ-B18RM/G

35mm





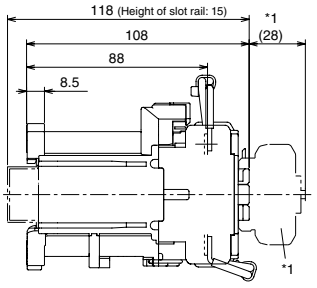


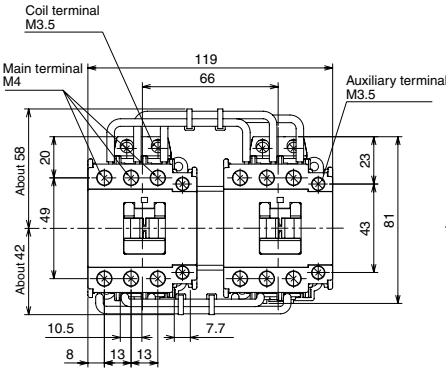
*1 represents the dimensions where the auxiliary contact unit is mounted on the top surface

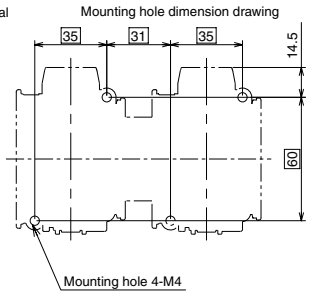
Weight: 1.18kg

FJ-B25RM/G
FJ-B32RM/G

35mm

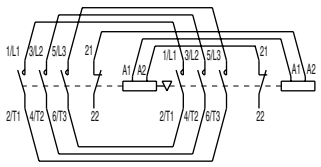


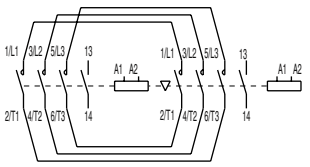




*1 represents the dimensions where the auxiliary contact unit is mounted on the top surface

Weight: 1.23kg

Auxiliary contact	Wiring diagram
1NC×2	

Auxiliary contact	Wiring diagram
1NO×2	

Note: The interlock unit can be set separately.

Thermal overload relays

■ Features

- Provided with terminal covers and a scale cover for standard configuration
- Using highly reliable independent auxiliary contacts of 1NO1NC, where NO and NC contacts can use different voltages.
- Using manual and automatic switching in favour of resetting.
- Arranging the main terminal and auxiliary terminals in parallel to improve the efficiency of wiring operation.

TK12B

TK95B

■ Ordering information (type)

● **Thermal overload relays**

TK12B–004

(1) Type (2) Heater element rating

■ Heater element rating

Heater element rating		Thermal overload relays type										
		TK12B			TK18B	TK32B		TK65B			TK95B	
Setting range (A)	Ordering code	Tripping class: 10A Contactor to be combined										
		FJ-B06	FJ-B09	FJ-B12	FJ-B18	FJ-B25	FJ-B32	FJ-B40	FJ-B50	FJ-B65	FJ-B80	FJ-B95
0.1-0.15	P10	0.1-0.15	0.1-0.15	0.1-0.15	0.1-0.15	0.1-0.15	0.1-0.15					
0.13-0.2	P13	0.13-0.2	0.13-0.2	0.13-0.2	0.13-0.2	0.13-0.2	0.13-0.2					
0.18-0.27	P18	0.18-0.27	0.18-0.27	0.18-0.27	0.18-0.27	0.18-0.27	0.18-0.27					
0.24-0.36	P24	0.24-0.36	0.24-0.36	0.24-0.36	0.24-0.36	0.24-0.36	0.24-0.36					
0.34-0.52	P34	0.34-0.52	0.34-0.52	0.34-0.52	0.34-0.52	0.34-0.52	0.34-0.52					
0.48-0.72	P48	0.48-0.72	0.48-0.72	0.48-0.72	0.48-0.72	0.48-0.72	0.48-0.72					
0.64-0.96	P64	0.64-0.96	0.64-0.96	0.64-0.96	0.64-0.96	0.64-0.96	0.64-0.96					
0.8-1.2	P80	0.8-1.2	0.8-1.2	0.8-1.2	0.8-1.2	0.8-1.2	0.8-1.2					
0.95-1.45	P95	0.95-1.45	0.95-1.45	0.95-1.45	0.95-1.45	0.95-1.45	0.95-1.45					
1.4-2.1	1P4	1.4-2.1	1.4-2.1	1.4-2.1	1.4-2.1	1.4-2.1	1.4-2.1					
1.7-2.6	1P7	1.7-2.6	1.7-2.6	1.7-2.6	1.7-2.6	1.7-2.6	1.7-2.6					
2.2-3.4	2P2	2.2-3.4	2.2-3.4	2.2-3.4	2.2-3.4	2.2-3.4	2.2-3.4					
2.8-4.2	2P8	2.8-4.2	2.8-4.2	2.8-4.2	2.8-4.2	2.8-4.2	2.8-4.2					
4-6	004	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6		
5-7.5	005		5-7.5	5-7.5	5-7.5	5-7.5	5-7.5	5-8	5-8	5-8		
6-9	006		6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9		
7-10.5	007			7-10.5	7-10.5	7-10.5	7-10.5	7-11	7-11	7-11	7-11	7-11
9-13	009			9-13	9-13	9-13	9-13	9-13	9-13	9-13	9-13	9-13
12-18	012				-	12-18	12-18	12-18	12-18	12-18	12-18	12-18
13-18	013				13-18	-	-	-	-	-	-	-
16-22	016					16-22	16-22	-	-	-	-	-
18-26	018					-	-	18-26	18-26	18-26	18-26	18-26
20-26	020					20-26	20-26	-	-	-	-	-
24-36	024						-	24-36	24-36	24-36	24-36	24-36
26-32	026						26-32	-	-	-	-	-
28-40	028							-	-	-	28-40	28-40
32-42	032							32-42	32-42	32-42	-	-
34-50	034								-	-	34-50	34-50
40-50	040								40-50	40-50	-	-
44-54	044									44-54	-	-
45-65	045									-	45-65	45-65
48-68	048									-	48-68	48-68
53-65	053									53-65	-	-
64-80	064										64-80	64-80
68-86	068											68-86
86-96	086											86-96

■ Auxiliary circuit ratings

● Ratings for GB and IEC standards

Type	Conventional free air thermal current [A] (Rated continuous current)	Rated operational voltage [V]	Rated operational current [A]			
			AC		DC	
			AC-15 (Inductive load)		DC-13 (Inductive load)	
			NC contact	NC contact	NC contact	NC contact
TK12B	5	24	3 (0.5)	3 (0.5)	1.1 (0.3)	1.1 (0.3)
		100-120	2.5 (0.5)	2.5 (0.5)	0.28	0.28
		200-240	2 (0.5)	1.5 (0.5)	0.14	0.14
		380-440	1 (0.5)	0.75 (0.5)	–	
		500-600	0.6 (0.5)	0.6 (0.5)	–	
TK18B to TK95B	5	24	3 (0.5)	3 (0.5)	1.1 (0.3)	1.1 (0.3)
		100-120	2.5 (0.5)	2.5 (0.5)	0.28	0.28
		200-240	2 (0.5)	2 (0.5)	0.14	0.14
		380-440	1 (0.5)	1 (0.5)	–	
		500-600	0.6 (0.5)	0.6 (0.5)	–	

■ Operating characteristics

● Operation of the balanced circuit

Descriptions	Operating limit		Overloaded (hot start)	Locked rotor (cold start)	Ambient temperature
	Non-tripping	Tripping			
IEC 60947-4-1 GB14048.4-2003	105%Ie (less than 2 hours)	120%Ie (less than 2 hours)	Tripping 150%Ie less than 2 min. class:10A	Tripping 720%Ie Below 2 - 10s class:10A	20°C

● Operation of the unbalanced circuit

Description name	Phase-loss protection	Non-tripping	Operation (warm boot)	Ambient temperature
IEC 60947-4-1 GB14048.4-2003	No phase-loss protection device	Three-phase: 105%Ie	Two-phase: 132%Ie(less than 2 hours) One-phase: 0	20°C

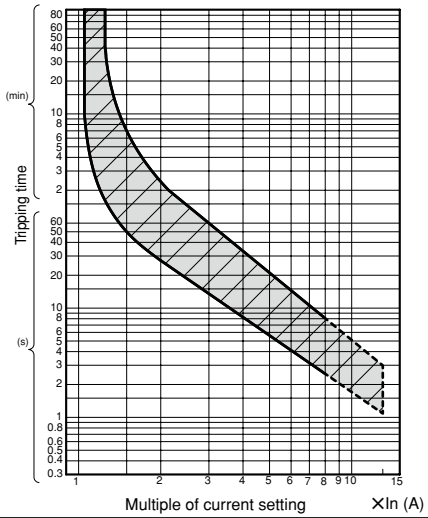
(Note 1) Ie: setting current.
(Note 2) The description value represents that the ambient temperature compensates the thermal overload relay.

■ Operating characteristics curves

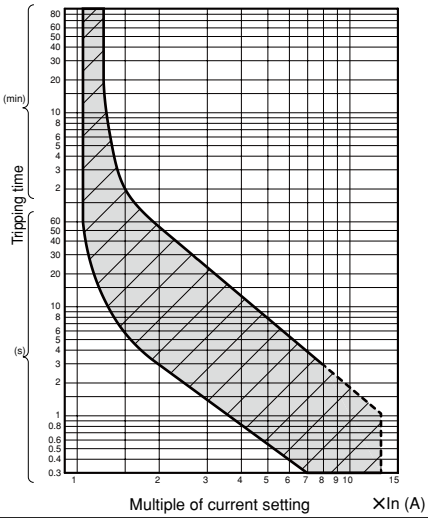
● Tripping class10A

TK12B, TK18B, TK32B

Cold start (Ambient temperature: 20˚C)



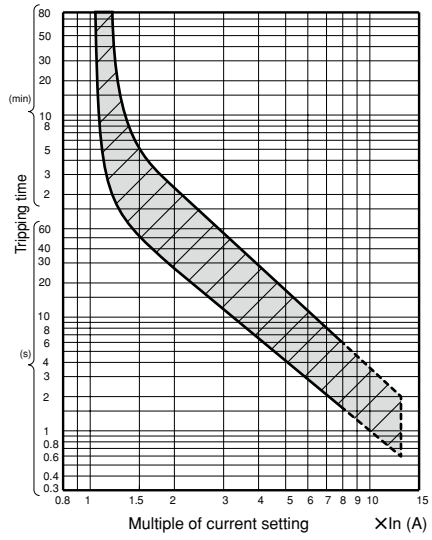
Hot start (Ambient temperature: 20˚C)



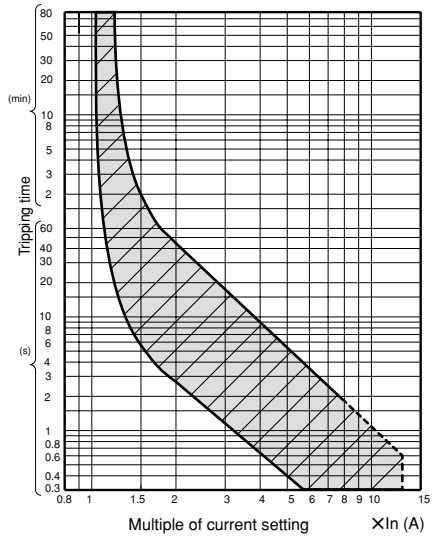
● Tripping class10A

TK65B - TK95B

Cold start (Ambient temperature: 20˚C)



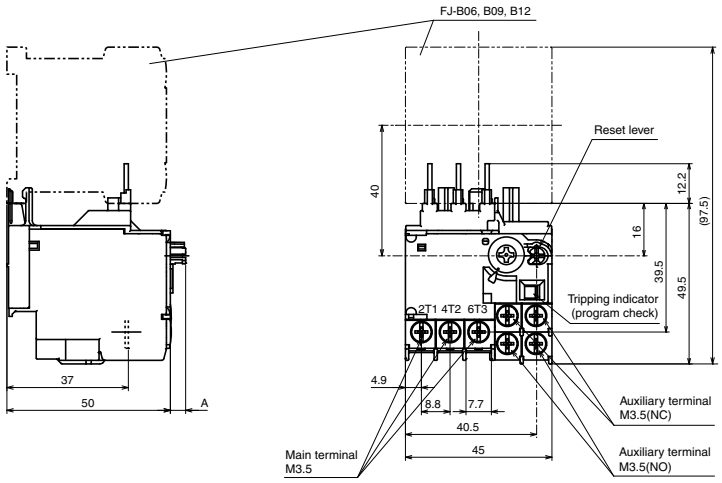
Hot start (Ambient temperature: 20˚C)



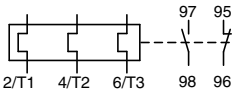
■ Thermal overload relays

● Combination with contactors

TK12B



Wiring diagram

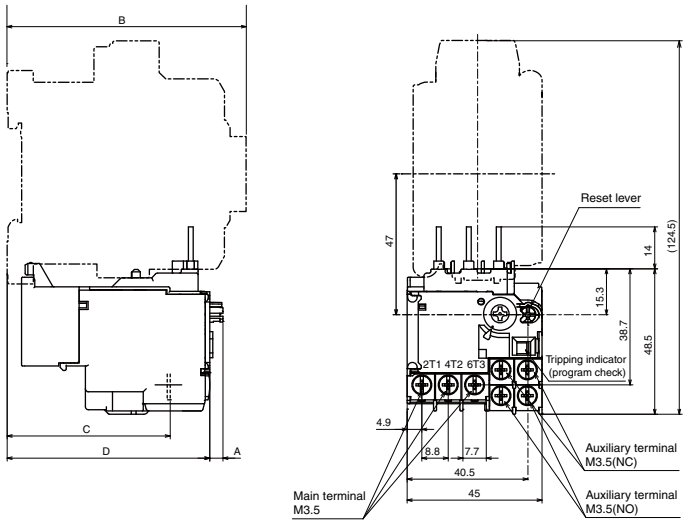


Weight: 0.1kg

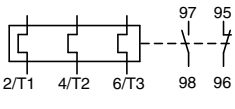
Dimension A
- Manual reset state: 5mm
- Automatic reset state: 2mm

TK18B

Combination contactors types	Dimensions		
	B	C	D
FJ-B18	80	54.5	67.5
FJ-B18/G	107	81	94



Wiring diagram

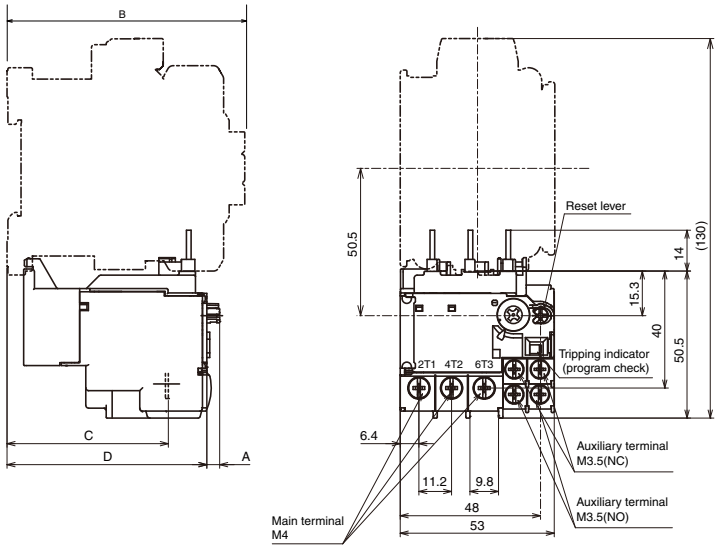


Weight: 0.11kg

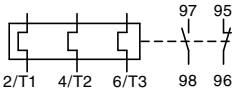
Dimension A
- Manual reset state: 5mm
- Automatic reset state: 2mm

TK32B

Combination contactors types	Dimensions		
	B	C	D
FJ-B25 FJ-B32	81	55.5	68.5
FJ-B25/G FJ-B32/G	108	81.5	94.5



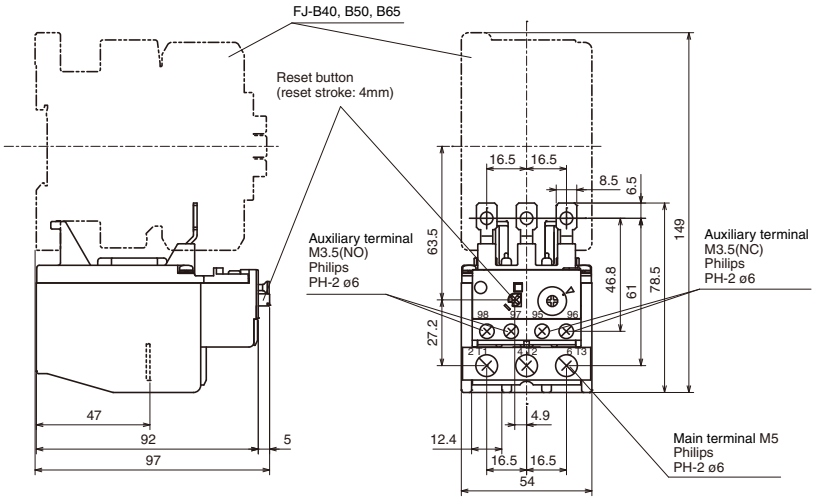
Wiring diagram



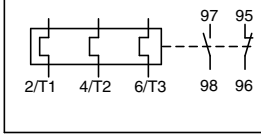
Weight: 0.11kg

Dimension A
- Manual reset state: 5mm
- Automatic reset state: 2mm

TK65B



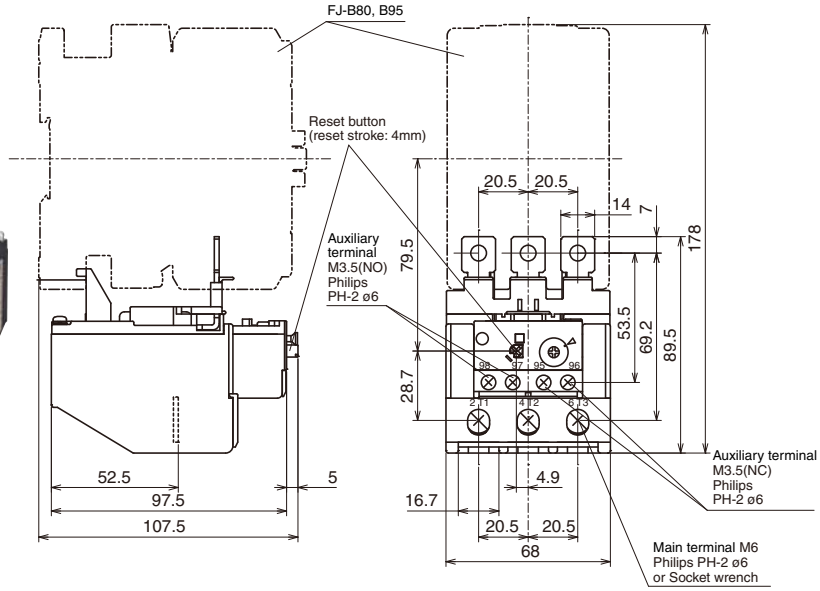
Wiring diagram



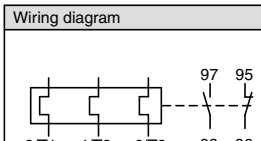
Weight: 0.25kg

Dimension A
- Manual reset state: 5mm
- Automatic reset state: 2mm

TK95B



Wiring diagram



Weight: 0.34kg

Dimension A
- Manual reset state: 5mm
- Automatic reset state: 2mm

■ Optional units

Product name		Type	Descriptions	Used with	
Auxiliary contact units (Front mounting) 	Bifurcated · compact	**SZ1FA11**	Contact arrangement: 1NO1NC	FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G	
	Single button · compact	**SZ1FA11H**	Contact arrangement: 1NO1NC		
	Bifurcated	**SZ1KA40**	Contact arrangement: 4NO		
		SZ1KA31	Contact arrangement: 3NO1NC		
		SZ1KA22	Contact arrangement: 2NO2NC		
		SZ1KA13	Contact arrangement: 1NO3NC		
		SZ1KA04	Contact arrangement: 4NC		
		SZ1KA20	Contact arrangement: 2NO		
		SZ1KA11	Contact arrangement: 1NO1NC		
		SZ1KA02	Contact arrangement: 2NC		
	Single button	**SZ1KA40H**	Contact arrangement: 4NO		
		SZ1KA31H	Contact arrangement: 3NO1NC		
		SZ1KA22H	Contact arrangement: 2NO2NC		
		SZ1KA13H	Contact arrangement: 1NO3NC		
		SZ1KA04H	Contact arrangement: 4NC		
		SZ1KA20H	Contact arrangement: 2NO		
		**SZ1KA11H**	Contact arrangement: 1NO1NC		
		SZ1KA02H	Contact arrangement: 2NC		
	Bifurcated	**SZ-A40-C**	Contact arrangement: 4NO	FJ-B18,B25,B32,B40,B50,B65,B80,B95 FJ-B18/G,B25/G,B32/G	
		SZ-A31-C	Contact arrangement: 3NO1NC		
		SZ-A22-C	Contact arrangement: 2NO2NC		
		SZ-A20-C	Contact arrangement: 2NO		
		SZ-A11-C	Contact arrangement: 1NO1NC		
		SZ-A02-C	Contact arrangement: 2NC		
Auxiliary contact unit (Side mounting) 	Bifurcated	**SZ-AS1-C**	Contact arrangement: 1NO1NC		
Mechanical interlock units 		**SZ1KRM**	Reversing-type assembly, mechanical interlock	FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G	
		SZ-RM-C		FJ-B18,B25,B32 FJ-B18/G,B25/G,B32/G	
Power connection kit for reversing 		**SZ1KRW1W**	Power connection kit (power side, load side)	FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G	
		SZ-RW21-C		FJ-B18, B18/G,B25/G,B32/G	
		SZ-RW23-C		FJ-B25,B32,B25/G,B32/G	
Coil-surge suppression units 		**SZ-Z1-C**	Varistor: AC/DC24-48V	FJ-B18,B25,B32	FJ-B18/G,B25/G,B32/G
		SZ-Z2-C	Varistor: AC/DC100-240V		
		SZ-Z3-C	Varistor: AC380-440V		–
		SZ-Z4-C	CR: AC/DC24-48V		FJ-B18/G,B25/G,B32/G
		SZ-Z5-C	CR: AC/DC100-240V		
		SZ-Z31-C	Varistor: AC/DC24-48V	FJ-B40,B50,B65,B80,B95	
		SZ-Z32-C	Varistor: AC/DC100-240V		
		SZ-Z33-C	Varistor: AC380-440V		
		SZ-Z34-C	CR: AC/DC24-48V		
		SZ-Z35-C	CR: AC100-250V		

Auxiliary contact units

■ Features

- An auxiliary contact can be added just by a single press.
- An auxiliary contact can be added to the front mounting unit without changing the mounting area. This is conducive to the miniaturization of the control panel.
- Using bifurcated contacts with high reliability of contact so that it can operate normally with minimum operating voltage and current (DC5V, 3mA) (SZ1FA11, SZ-A□-C, SZ-AS1-C)

SZ1FA11

SZ-AS1-C

■ Ordering information (Types)

● **Auxiliary contact unit**

SZ-A22 - C

(1) Type

■ Types, applicable types

Product name	No. of contacts	Contact arrangement	Mounting method:	Type (1)	Applicable types	Note:
Auxiliary contact unit (Bifurcated-contact, compact)	2	1NO1NC	Front mounting	**SZ1FA11**	FJ-B06,B09,B12	The units for front mounting and side mounting should not be used simultaneously
Auxiliary contact unit (Single-contact, compact)	2	1NO1NC		**SZ1FA11H**	FJ-B06/G,B09/G,B12/G	
Auxiliary contact unit (Bifurcated contact)	4	4NO	Front mounting	**SZ1KA40**	SKH4AB, SKH4GB	
		3NO1NC		**SZ1KA31**		
		2NO2NC		**SZ1KA22**		
		1NO3NC		**SZ1KA13**		
		4NC		**SZ1KA04**		
	2	2NO		**SZ1KA20**		
		1NO1NC		**SZ1KA11**		
		2NC		**SZ1KA02**		
Auxiliary contact unit (Single-contact)	4	4NO		**SZ1KA40H**		
		3NO1NC		**SZ1KA31H**		
		2NO2NC		**SZ1KA22H**		
		1NO3NC		**SZ1KA13H**		
		4NC		**SZ1KA04H**		
		2NO		**SZ1KA20H**		
		1NO1NC		**SZ1KA11H**		
		2NC		**SZ1KA02H**		
Auxiliary contact unit (Bifurcated contact)	4	4NO	Front mounting	**SZ-A40-C**	FJ-B18,B25,B32,B40,B50, B65,B80,B95 FJ-B18/G,B25/G,B32/G	
		3NO1NC		**SZ-A31-C**		
		2NO2NC		**SZ-A22-C**		
	2	2NO		**SZ-A20-C**		
		1NO1NC		**SZ-A11-C**		
		2NC		**SZ-A02-C**		
Auxiliary contact unit (Bifurcated contact)	2	1NO1NC	Side mounting	**SZ-AS1-C**		

■ Descriptions (IEC, GB Description standard)

Type				**SZ1FA11, SZ1KA□**	**SZ-A□-C, SZ-AS1-C**	**SZ1FA11H, SZ1KA□H**
Auxiliary contact ratings	Rated insulation voltage Ui [V]			690	690	690
	Rated impulse voltage Uimp [kV]			6	6	6
	Conventional free air thermal current (Rated continuous current) [A]			10	10	10
	Rated operatinal current Ie (A)	AC (AC-15)	110V	3	6	6
			220/230V	3	3	3
			380/400V	1	1.5	1.5
			500/600V	0.5	1.2	1.2
		AC (AC-12)	110V	6	10	10
			220/230V	6	8	10
			380/400V	6	5	10
			500/600V	3	5	5
		DC (DC-13) *2	24V	2	3	4
			48V	1	1.5	1
			110V	0.3	0.55	0.5
			220V	0.2	0.27	0.25
		DC (DC-12)	24V	3	5	8
			48V	2	3	3.5
			110V	1.5	2.5	2.5
			220V	0.5	1	0.8
	Minimum operating voltage, current *1			DC5V,3mA	DC5V,3mA	DC24V,10mA

*1 The failure level is 10^{-7} for a normal environment without dust, dirt, or corrosive gas.
*2 Time constant L/R=70ms

■ Notes for assembly of auxiliary contact units

(1) Auxiliary contact units cannot be mounted on the front and side of the same main element.
(2) Only one type of units or one front mounting unit can be mounted on each AC contactor.
(3) In the case that an interlock unit is mounted, the auxiliary contact unit (side mounting) can be mounted on only one side.

■ Notes for maintenance and spot inspection

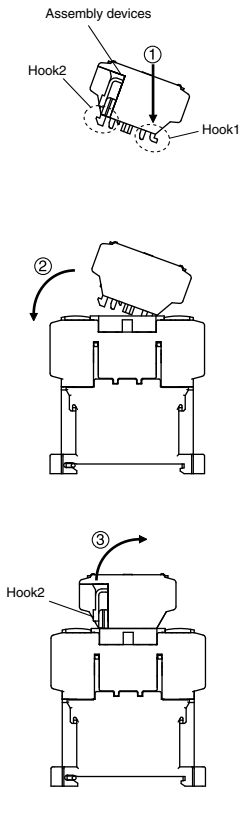
(1) Auxiliary contact unit, Please store the product after it is packaged in a plastic bag, in case dust gets into it.
(2) You should not merely replace the contacts of the auxiliary contact unit. You need to replace all the contacts of the unit.

■ Mounting and dismounting methods

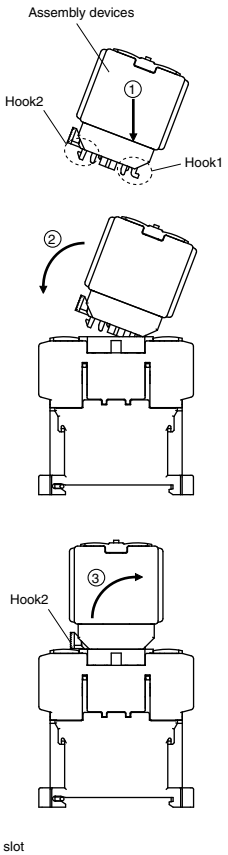
● Front mounting (SZ1FA□, SZ1KA□)

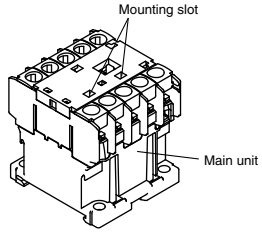
During mounting, tilt and press the assembly device in the direction ① into the main unit, and hang the hook 1 of the assembly device on the mounting slot of the main unit. Slide it in direction ② and confirm whether the hook 2 is mounted on the main unit.
During dismounting, hold the hook 2 of the assembly device with your fingers and slide it in direction ③ until it is unlocked, and then dismount it.

SZ1FA□



SZ1KA□





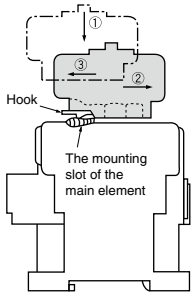
● Front mounting (SZ-A□-C)

· **Mounting steps**

(1) Press the unit in direction ① into the main element. Move the unit in direction ② until the hook of the unit snaps into the mounting slot of the main element. (When the hook snaps into the slot, a “click” will be heard.)
(2) After the mounting is completed, push the movable part of the auxiliary contact unit from the front to confirm whether the movement is smooth or not.

· **Dismounting steps**

(1) Lift the hook of the unit with your fingers and move the unit in direction ③.



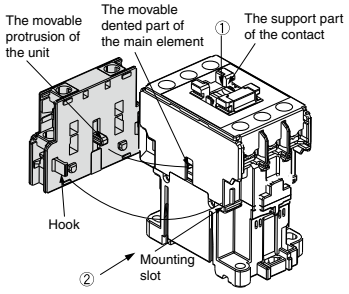
● Side mounting (SZ-AS1-C)

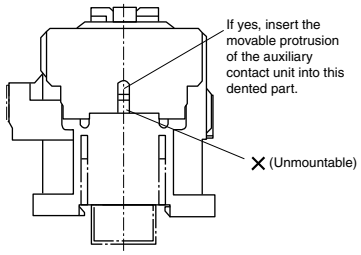
· **Mounting steps**

(1) Press the contact support part of the main element in direction ① while inserting the movable protrusion of the unit into the dented portion of the movable part of the main element. Press the unit in direction ② until the hook of the unit snaps into the mounting slot of the main element.
(2) After the mounting is completed, push the movable part of the auxiliary element or main contact unit from the front to confirm whether the movement is smooth or not.

· **Dismounting steps**

Dismount after the upper and lower frames are dismounted.



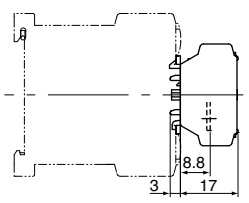


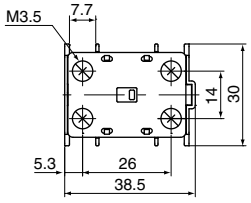
■ Dimensions and wiring diagrams

● Auxiliary contact block (Front mounting)

SZ1FA11
SZ1FA11H

compact
2pole



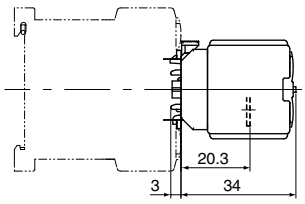


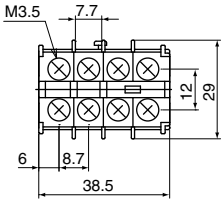
Weight: 17g

Contact arrangement

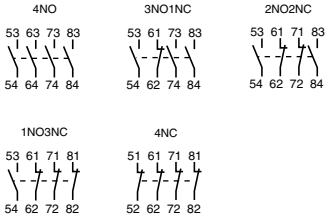
SZ1KA40
SZ1KA31
SZ1KA22
SZ1KA13
SZ1KA04
SZ1KA40H
SZ1KA31H
SZ1KA22H
SZ1KA13H
SZ1KA04H

4pole



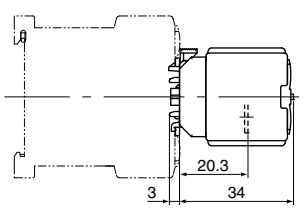


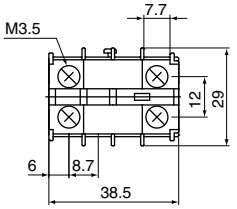
Weight: 34g



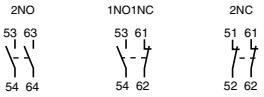
SZ1KA20
SZ1KA11
SZ1KA02
SZ1KA20H
SZ1KA11H
SZ1KA02H

2pole



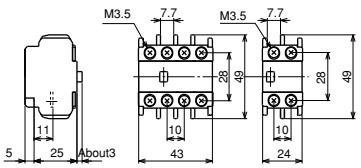


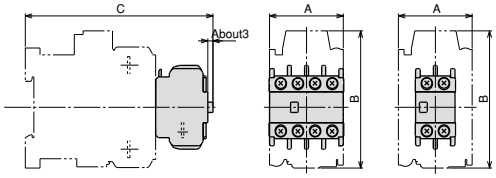
Weight: 29g



● Auxiliary contact block (Front mounting)

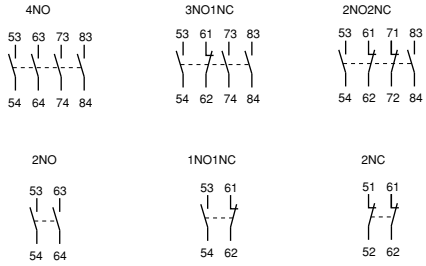
SZ-A40-C
SZ-A31-C
SZ-A22-C
SZ-A20-C
SZ-A11-C
SZ-A02-C





Dimensions of combination frames	Dimensions (mm)		
	A	B	C
FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G SKH4AB,SKH4GB	45	48	66
FJ-B18	43	81	108
FJ-B18/G	43	81	135
FJ-B25,B32	53	81	109
FJ-B25/G,B32/G	53	81	136
FJ-B40,B50,B65	63.5	90	124
FJ-B80,B95	76.5	110	139

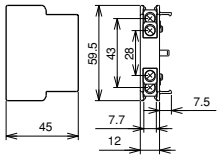
Contact arrangement

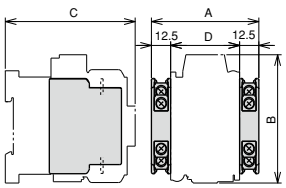


Type	Mass (g)
SZ-A40 - A22	36
SZ-A20 - A02	20

● Auxiliary contact unit (side mounting)

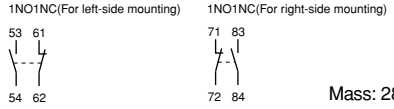
SZ-AS1-C





Dimensions of combination frames	Dimensions (mm)			
	A	B	C	D
FJ-B18	68	81	80	43
FJ-B18/G	68	81	107	43
FJ-B25,B32	78	81	81	53
FJ-B25/G,B32/G	78	81	108	53
FJ-B40,B50,B65	88.5	90	98	63.5
FJ-B60,B95	101.5	110	111	76.5

Contact arrangement



Mass: 28g

Mechanical Interlock units and power connection kit for reversing

■ Features

- The reversing magnetic contactor can be conveniently assembled by using the reversing connection kit combined with the mechanical interlock unit.
- Through a mechanical structure, two magnetic contactors are prevented from being switched on at the same time.

Interlock unit

Power connection kit for reversing

■ Ordering information

● **Mechanical Interlock units**

SZ-RM - C

(1) Type

● **Power connection kit for reversing**

SZ-RW21 - C

(2) Type

■ Types and combination products

● **Mechanical interlock unit……connecting two magnetic contactors to mechanically lock them.**

Product name	Applicable products	Type
Mechanical interlock units	FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G	SZ1KRM
	FJ-B18,B25,B32 FJ-B18/G,B25/G,B32/G	SZ-RM-C

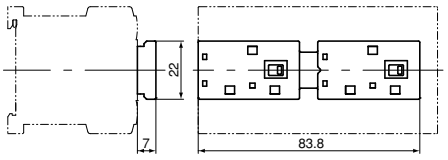
● **Power connection kit for reversing……for wiring between main circuit terminals**

Product name	Wire size	Type		Applicable products	Type
Power connection kit for reversing	AWG14 (ø1.6)	• A power-side kit	• A load-side kit	FJ-B06,B09,B12 FJ-B06/G,B09/G,B12/G	SZ1KRW1W
		• A power-side kit	• A load-side kit	FJ-B18B,B18/G	SZ-RW21-C
				FJ-B25,B32,B25/G,B32/G	SZ-RW23-C

■ Dimensions

● **Mechanical interlock unit**

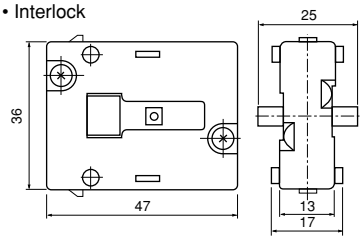
SZ1KRM



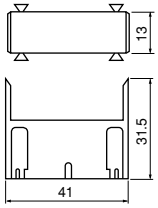
Mass: 11g

SZ-RM-C

• Interlock



• Coupling element



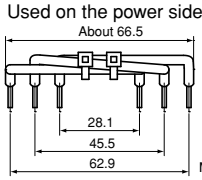
Mass: 25g

(Note 1) An interlock unit is composed of an interlock element and a coupling element.
(Note 2) In accordance with the Dimensions of the combination magnetic contactors,

● **Power connection kit for reversing**

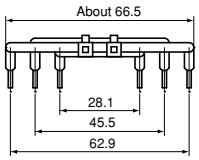
SZ1KRW1W

Used on the power side

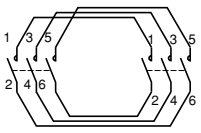


Mass: 8g

Used on the load side

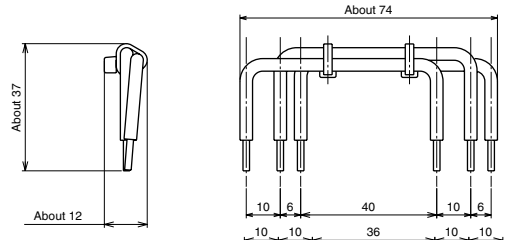


Mass: 7g

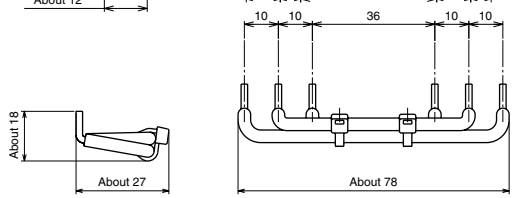


● SZ-RW21-C (For FJ-B18,B18/G)

Power side



Load side



Applicable types	Wiring site	Wiring diagram	Wire descriptions	Harness colour
FJ-B18RM FJ-B18RM/G	main circuit Power side		UL No.1015 AWG14 (About ϕ1.6) Colour: black	Green

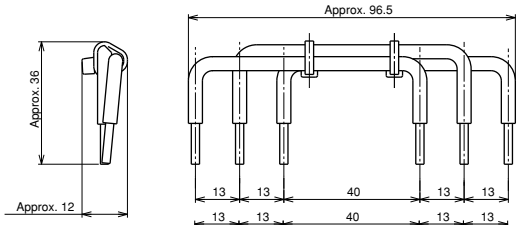
Weight: 9g

Applicable types	Wiring site	Wiring diagram	Wire descriptions	Harness colour
FJ-B18RM FJ-B18RM/G	Main circuit Load side		UL No.1015 AWG14 (About ϕ1.6) Colour: black	Green

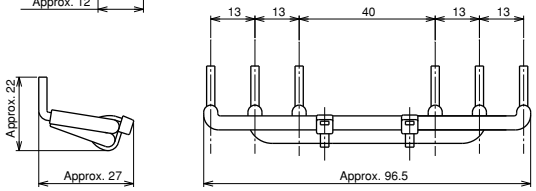
Weight: 8g

● SZ-RW23-C (For FJ-B25,B32,B25/G,B32/G)

Power side



Load side



Applicable types	Wiring site	Wiring diagram	Wire size	Harness color
FJ-B25RM,B32RM FJ-B25RM/G,B32RM/G	Main circuit Power side		UL No.3271 AWG12 (About ϕ2) Colour: black	Orange

Mass: 15g

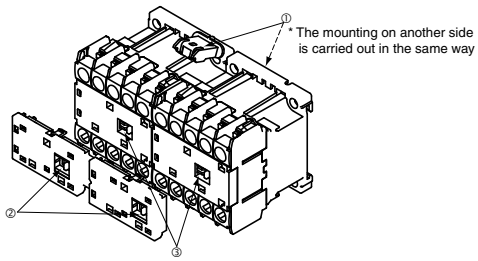
Applicable types	Wiring site	Wiring diagram	Wire size	Harness color
FJ-B25RM,B32RM FJ-B25RM/G,B32RM/G	Main circuit Load side		UL No.3271 AWG12 (About ϕ2) Colour: black	Orange

Mass: 14g

■ Mounting methods

● Interlock unit SZ1KRM

(1) Connect the two AC contactors with two connection plates ①.
(2) Keep the protrusion ② of the movable part of the interlock unit close to the right side.
(3) Insert it from just above and align it with the protrusion ③ of the movable part of the main element.
(4) After the mounting is completed, move the left and right protrusions to confirm that they can move smoothly.
(5) After the interlock unit is mounted, it cannot be dismounted. (The interlock unit has a structure that can hardly be dismounted after being mounted.)

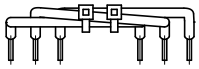


● Interlock unit SZ-RM-C

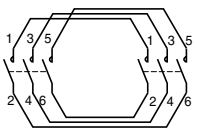
(1) Align the protrusion ① of the movable part of the interlock unit with the dented portion ② of the movable part of the main element, and align the interlocked circular protrusion ③ with the dented portion ④ on a side of the main element. Snap the interlock in from both sides of the main element.
(2) Insert the guide element ⑤ of the coupling element into the guide rail ⑥ of the main element so that the hook ⑧ of the coupling element is stopped at the protrusion ⑦ of the interlock.
(3) After the mounting is completed, respectively push the support parts of the movable contacts of the left and right AC contactors from the front to confirm whether the movement is smooth or not.
(4) During dismounting, use a screwdriver to pry the hook ⑧ of the coupling element and pull out the coupling element.

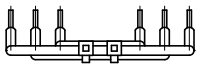
● Power connection kit for reversing

Mount it on the main circuit terminal. A wire has a power side and a load side. Be sure not to mount them improperly.



Used on the power side

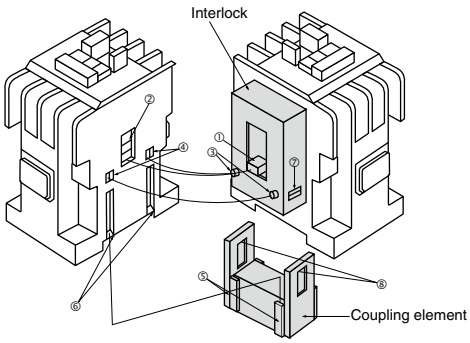




Used on the load side

⚠ Cautions for use

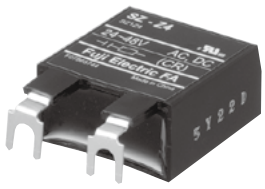
- When abrupt switching is needed, in order to prevent a short-circuit accident, a device such as a time delay relay can be used to carry out electrical interlock so that the time of the switching between the contacts of the two AC contactors is more than 15ms.
- Electrical interlock should be provided between the control circuits on the forwarding and reversing sides.



Coil-surge suppression unit

■ Features

- The surge voltage generated when the suppression coil is turned off prevents malfunction of the electronic circuit.
- The mounting can be carried out easily just by connecting the connection terminals to the coil terminals.
  (1) Built-in varistor……Cutting off the peak surge voltage.
  (2) Built-in CR……Suppressing the abrupt rise in the surge voltage.



SZ-Z4-C

(Photo No.KKD06-021)

■ Ordering information

● **Coil-surge suppression unit**

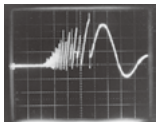
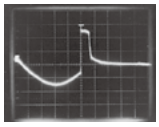
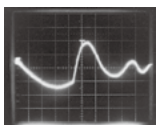
SZ-Z35-C

(1) Type

■ Types and ratings

Product name	Surge absorption element	Specifications	Applicable type frame		Control coil applicable voltage range	Type ①
			AC-operated type	DC-operated type		
Coil-surge absorption unit	varistor	Varistor voltage 100V	FJ-B18,B25 ,B32	FJ-B18/G,B25/G,B32/G	AC/DC24-48V	**SZ-Z1-C**
		Varistor voltage 470V			AC/DC100-250V	**SZ-Z2-C**
		Varistor voltage 910V		—	AC380-440V	**SZ-Z3-C**
	CR	0.22μF, 22Ω		FJ-B18/G,B25/G,B32/G	AC/DC24-48V	**SZ-Z4-C**
		0.1μF, 220Ω			AC/DC100-250V	**SZ-Z5-C**
	Varistor	Varistor voltage 100V	FJ-B40 -B95	—	AC/DC24-48V	**SZ-Z31-C**
		Varistor voltage 470V			AC/DC100-250V	**SZ-Z32-C**
		Varistor voltage 910V			AC380-440V	**SZ-Z33-C**
	CR	0.47μF, 100Ω			AC24-48V	**SZ-Z34-C**
		0.22μF, 470Ω			AC100-250V	**SZ-Z35-C**

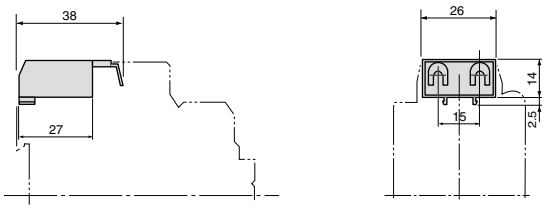
■ Coil-surge suppression unit

Type	Applicable	Coil-surge absorption property (AC200V coil)
No surge absorption unit	The current will change abruptly when the coil is turned off. And a very high surge voltage will be generated due to the coil inductance and will cause interference to the surrounding electronic equipment, and thereby result in circuit malfunction or damage to the circuit.	FJ-B18  (0.1ms/div, 1kV/div)(CP-487)
Built-in varistor	When the surge voltage exceeds a certain range, the current will flow to the varistor that is connected in parallel with the coil and play the role of suppressing the peak surge voltage. Used for AC and DC circuits. Suppressing the surge voltage, i.e., the voltage of the varistor.	FJ-B18＋SZ-Z2-C  (2ms/div, 200V/div)(CP-489)
Built-in CR	The CR circuit (capacitor and resistor series circuit) that is connected in parallel with the coil reduces the frequency of the surge voltage, and suppresses an abrupt rise in the surge voltage (dv/dtproperty). Used for AC and DC circuits.	FJ-B18＋SZ-Z5-C  (2ms/div, 200V/div)(CP-488)

■ Dimensions

● Coil-surge suppression unit

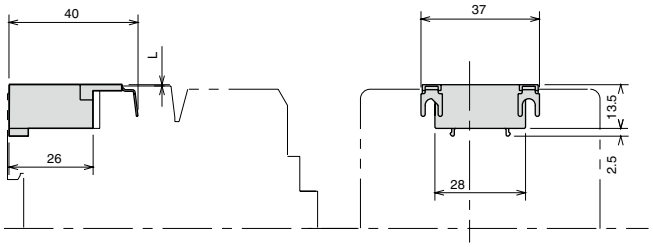
SZ-Z1-C
SZ-Z2-C
SZ-Z3-C
SZ-Z4-C
SZ-Z5-C



Internal wiring diagram
Built-in varistor
CRBuilt-in

Weight: 14g

SZ-Z31-C
SZ-Z32-C
SZ-Z33-C
SZ-Z34-C
SZ-Z35-C



Internal wiring diagram
Built-in varistor
CRBuilt-in

Weight: 15g

⚠ Cautions for use

- For built-in CR types, there will be a leakage current of approximately 17 mA for SZ-Z35-C products with a rated voltage of 220 V AC applied, and 5 mA for SZ-Z34-C products with a rated voltage of 24 V AC applied.

■ Features

- Having passed the international certification and in accordance with the main descriptions of the GB and IEC standards
- Control coils are provided for AC and DC and have identical appearance.
- Compact size: 45 × 48 × 49mm (width × height × depth)
- Bifurcated contacts are used to improve contact reliability; supporting small loads of DC5V and 3mA
- Large-capacity contact (single-contact) series

SKH4AB

■ Ordering information (type)

● **Auxiliary relays**

(1) (2) (1) (3) (4) (5)

SKH4 A B H - H5 22

(1) Series (2) Operating coil (3) Contact specification (4)Coil voltage code (5) Contact arrangement

■ Types

Control coil	Contact specification	Coil voltage code		Contact arrangement		Type
AC-operated type [A]	Bifurcated-contact (blank)	AC24V 50Hz/24-26V 60Hz AC100-110V 50Hz/110-120V 60Hz AC220-240V 50Hz/240-260V 60Hz AC380-400V 50Hz/400-440V 60Hz	[E] [H] [P] [4]	4NO	[40]	**SKH4AB-□40**
				3NO1NC	[31]	**SKH4AB-□31**
				2NO2NC	[22]	**SKH4AB-□22**
	Single-contact [H]			4NO	[40]	**SKH4ABH-□40**
				3NO1NC	[31]	**SKH4ABH-□31**
				2NO2NC	[22]	**SKH4ABH-□22**
DC-operated type [G]	Bifurcated-contact (blank)	DC24V DC48V DC110V DC220V	[E] [F] [H] [M]	4NO	[40]	**SKH4GB-□40**
				3NO1NC	[31]	**SKH4GB-□31**
				2NO2NC	[22]	**SKH4GB-□22**
	Single-contact [H]			4NO	[40]	**SKH4GBH-□40**
				3NO1NC	[31]	**SKH4GBH-□31**
				2NO2NC	[22]	**SKH4GBH-□22**

Note 1 Provided in [ ] is a code.

■ Ratings (IEC60947-5-1, GB14048.5)

● Bifurcated-contact

Type	Conventional thermal current [A] (rated making current)	Making and breaking current (AC)	Rated operating current [A]						Minimum operating voltage · current
			Rated operating voltage [V]	AC-15 (Coil load)	AC-12 (Resistive load)	Rated operating voltage [V]	DC-13 (Coil load)	DC-12 (Resistive load)	
SKH4AB **SKH4GB**	10	30	AC100-120	3	6	DC24	2	3	DC5V, 3mA
		30	AC200-240	3	6	DC48	1	2	
		10	AC380-440	1	6	DC110	0.3	1.5	
		5	AC500-600	0.5	3	DC220	0.2	0.5	

(Note) Generally, when the atmosphere does not contain dust and corrosive gases, the failure rate is Level 10^{-7}.
Ratings of additional auxiliary contacts are the same as shown in the above table.

● Single-contact

Type	Conventional thermal current [A] (rated making current)	Making and breaking current (AC)	Rated operating current [A]						Minimum operating voltage · current
			Rated operating voltage [V]	AC-15 (Coil load)	AC-12 (Resistive load)	Rated operating voltage [V]	DC-13 (Coil load)	DC-12 (Resistive load)	
SKH4ABH **SKH4GBH**	10	60	AC100-120	6	10	DC24	4	8	DC24V, 10mA
		60	AC200-240	3	10	DC48	1	3.5	
		60	AC380-440	1.5	10	DC110	0.5	2.5	
		30	AC500-600	1.2	5	DC220	0.25	0.8	

(Note) Generally, when the atmosphere does not contain dust and corrosive gases, the failure rate is Level 10^{-7}.
Ratings of additional auxiliary contacts are the same as shown in the above table.

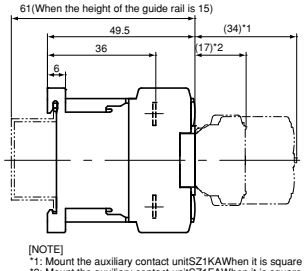
■ List of optional combination units

Product name		Type	Descriptions	Used with
Auxiliary contact unit (Top mounting)	Bifurcated-contact Compact	**SZ1FA11**	Contact arrangement: 1NO1NC	SKH4□B
	Single-contact Compact	**SZ1FA11H**	Contact arrangement: 1NO1NC	SKH4□BH
	Bifurcated-contact	**SZ1KA40**	Contact arrangement: 4NO	
		SZ1KA31	Contact arrangement: 3NO1NC	
		SZ1KA22	Contact arrangement: 2NO2NC	
		SZ1KA13	Contact arrangement: 1NO3NC	
		SZ1KA04	Contact arrangement: 4NC	
		SZ1KA20	Contact arrangement: 2NO	
		SZ1KA11	Contact arrangement: 1NO1NC	
		SZ1KA02	Contact arrangement: 2NC	
	Single-contact	**SZ1KA40H**	Contact arrangement: 4NO	
		SZ1KA31H	Contact arrangement: 3NO1NC	
		SZ1KA22H	Contact arrangement: 2NO2NC	
		SZ1KA13H	Contact arrangement: 1NO3NC	
		SZ1KA04H	Contact arrangement: 4NC	
		SZ1KA20H	Contact arrangement: 2NO	
		SZ1KA11H	Contact arrangement: 1NO1NC	
		SZ1KA02H	Contact arrangement: 2NC	
Coil-surge absorption unit		**SZ1KZ1**	Built-in varistor: AC24-48V	SKH4AB
		SZ1KZ2	Built-in varistor: AC48-125V	SKH4ABH
		SZ1KZ3	Built-in varistor: AC100-250V	*1

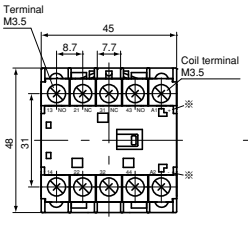
*1 DC-operated SKH4GB, SKH4GBH with built-in varistors.

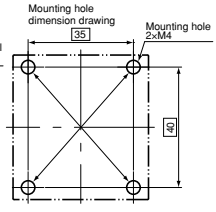
■ Dimensions, mm

SKH4□B

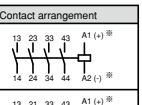
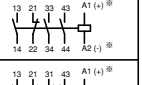
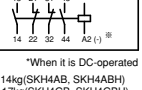


[NOTE]
*1: Mount the auxiliary contact unitSZ1KAWhen it is square
*2: Mount the auxiliary contact unitSZ1FAWhen it is square





● Mounting screws: 2-M4
Align the two mounting holes on the diagonal during mounting. .

Contact arrangement	
4NO	
3NO1NC	
2NO2NC	

*When it is DC-operated

Mass: 0.14kg(SKH4AB, SKH4ABH)
0.17kg(SKH4GB, SKH4GBH)

⚠ Safety Considerations

- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity, condensation, dust, corrosive gases, oil, organic solvents, excessive vibration or shock might cause electric shock, fire, erratic operation or failure.
- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult with Fuji Electric FA.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.
- Follow the regulations of industrial wastes when the product is to be discarded.
- For further questions, please contact your Fuji sales representative or Fuji Electric FA.

Fuji Electric FA Components & Systems Co., Ltd.

5-7, Nihonbashi Odemma-cho, Chuo-ku, Tokyo, 103-0011, Japan

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