OMRON

Power Relays

Compact Electromagnetic Contactors That Switch 40 A at 440 VAC

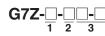
One pole switches 40 A.
UL NO contacts
(resistive 40 A 480 VAC, 60 Hz, 80,000 operations).
EN 60947-4-1 NO contacts
(AC1 40 A 440 VAC, 50/60 Hz, 80,000 operations).

- Ideal for supply power to industrial inverters, servo drivers, and other devices, and switching power to motors and other equipment.
- The maximum load capacity of 160 A when using 4-pole parallel connections.
- EN 60947-4-1 certification for mirror contact mechanism obtained by combining the Relay with an Auxiliary Contact Block.
- Conforms to European PV standard (VDE0126).
- Approx. 30% less operation noise than a standard electromagnetic contactor.*
 - (Approx. 100 dB reduced to approx. 70 dB.)
- Approx. 50% the volume of a standard electromagnetic contactor* to help downsize control panels.
- * According to OMRON investigation of IEC 60947-4-1 AC-1 50 A specifications.

Be sure to read the Safety Precautions on page 8 and the "Precautions for All Relays with Forcibly Guided Contacts".

Model Number Structure

Model Number Legend Relay with Auxiliary Contact Block



- 1. Relay Contact Configuration4A:4PST-NO3A1B:3PST-NO/SPST-NC2A2B:DPST-NO/DPST-NC
- 2. Contact Configuration of Auxiliary Contacts 20: DPST-NO
 - 11: SPST-NO/SPST-NC
 - 02: DPST-NC
- 3. Contact Mechanism of Auxiliary Contacts Z-R: Bifurcated crossbar contact (Single break)

Relay



1. Contact Configuration 4A: 4PST-NO 3A1B: 3PST-NO/SPST-NC 2A2B: DPST-NO/DPST-NC

Auxiliary Contact Block



- 1. Contact Configuration of Auxiliary Contacts 20: DPST-NO
 - 11: SPST-NO/SPST-NC
 - 02: DPST-NC
- 2. Contact Mechanism of Auxiliary Contacts Z-R: Bifurcated crossbar contact

(Single break)





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

Ordering Information When your order, specify the rated voltage.

Relay with Auxiliary Contact Block

Number of poles	Contact	configuration	Madal		
(Relay with Auxiliary Contact)	Relay	Auxiliary Contact Block	Model	Rated Voltage	
		DPST-NO	G7Z-4A-20Z-R	12, 24 VDC	
	4PST-NO	SPST-NO/SPST-NC	G7Z-4A-11Z-R	12, 24 VDC	
		DPST-NC	G7Z-4A-02Z-R	12, 24 VDC	
	3PST-NO/SPST-NC	DPST-NO	G7Z-3A1B-20Z-R	12, 24 VDC	
4 poles + 2 poles		SPST-NO/SPST-NC	G7Z-3A1B-11Z-R	12, 24 VDC	
		DPST-NC	G7Z-3A1B-02Z-R	12, 24 VDC	
		DPST-NO	G7Z-2A2B-20Z-R	12, 24 VDC	
	DPST-NO/DPST-NC	SPST-NO/SPST-NC	G7Z-2A2B-11Z-R	12, 24 VDC	
		DPST-NC	G7Z-2A2B-02Z-R	12, 24 VDC	

Note: 1. Relay contact terminals are M5, and the coil terminals are M3.5.

2. Auxiliary contact block terminals are M3.5.

3. When placing an order, specify the model number and rated supply voltage (12 VDC or 24 VDC).

Relay

Number of poles	Contact configuration	Model	Rated Voltage
	4PST-NO	G7Z-4A	
4 poles	3PST-NO/SPST-NC	G7Z-3A1B	12, 24 VDC
	DPST-NO/DPST-NC	G7Z-2A2B	1

Note: 1. Relay contact terminals are M5, and the coil terminals are M3.5.

2. When placing an order, specify the model number and rated supply voltage (12 VDC or 24 VDC).

Accessories (Order Separately)

Auxiliary Contact Block

Number of poles	Contact Configuration	Model
	DPST-NO	G73Z-20Z-R
2 poles	SPST-NO/SPST-NC	G73Z-11Z-R
	DPST-NC	G73Z-02Z-R

Note: Auxiliary contact block terminals are M3.5.

2

Specifications

Ratings

Coil

ltem	Rated current (mA)	Coil resistance (Ω)	Must operate voltage	Must release voltage	Maximum voltage	Power consumption
Rated voltage	(IIIA)	(52)	Percei	(W)		
12 VDC	308	39	75% max.	10% min.	110%	Approx. 3.7
24 VDC	154	156	75% max.	10 % 11111.	11070	Approx. 5.7

Note: 1. Rated current and coil resistance were measured at a coil temperature of 23° C with coil resistance of $\pm 15\%$.

2. Operating characteristics were measured at a coil temperature of 23°C.

3. The maximum allowable voltage is the maximum value of the fluctuation range for the Relay coil operating power supply and was measured at an ambient temperature of 23°C.

There is, however, no continuous allowance.

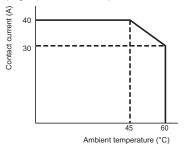
Contacts

Relay, Relay with Auxiliary Contact Block

	Model	G	7Z-4A-□Z-R, G7Z-3A1B-□Z-R, G7Z-2A2B-□	G7Z-3A1B-□Z-R, G7Z-2A2B-□Z-R		
Item	Load	Resistive load	Inductive load cos	Resistive load L/R = 1 ms		
Contact structure			Double break	·		
Contact material			Ag alloy			
Rated load	NO	40 A at 440 VAC	22 A at 440 VAC	5 A at 110 VDC		
	NC	25 A at 440 VAC	10 A at 440 VAC	5 A at 110 VDC		
Dated community	NO	40 A *				
Rated carry current	NC	25 A				
Maximum contact volt	age	48	125 VDC			
Maximum contact	NO	40 A	40 A 22 A			
current	NC	25 A	10 A	5 A		
Maximum switching	NO	17,600 VA	9,680 VA	550 W		
capacity	NC	11,000 VA	4,400 VA	550 W		
Failure rate P value (reference value)			2 A at 24 VDC	•		

Note: The ratings for the auxiliary contact block mounted on the G7Z are the same as those for the G73Z auxiliary contact block. * For the set of Relay and Auxiliary Contact Block, the rated carry current of the main contact varies depending on the ambient temperature. For details, see the following figure (Fig. 1).

(Fig. 1) Ambient temperature and rated carry current of the main contact



Auxiliary Contact Block

	Model		G73Z-20Z-R, G73Z-11Z-R, G73Z-02Z-R		
Item	Load	Resistive load	Inductive load cos	Resistive load L/R = 1 ms	
Contact structure			Single break		
Contact material			Au clad + AgNi		
Rated load		1 A at 440 VAC	0.5 A at 440 VAC 0.5 A at 110 VDC		
Rated carry current	nt		1 A		
Maximum contact	voltage	480	VAC	125 VDC	
Maximum contact	current	1 A	0.	5 A	
Maximum switchin	ng capacity	440 VA	220 VA 55 W		
Failure rate P valu (reference value)	e	1 mA at 1 VDC			

Characteristics

	Classification	Relay with auxiliary contact block *5	Relay	Auxiliary contact block			
ltem	Model	G7Z-4A-⊟Z-R, G7Z-3A1B-⊟Z-R, G7Z-2A2B-⊟Z-R	G7Z-4A, G7Z-3A1B, G7Z-2A2B	G73Z-20Z-R, G73Z-11Z-R, G73Z-02Z-R			
Contact resi	stance * 1	400 mΩ max.		100 mΩ max.			
Operating tir	me * 2	50 ms max.					
Release time	e * 2	50 ms max.					
Maximum	Mechanical	800 operations/h					
operating frequency	Rated load	1,200 operations/h					
Insulation re	sistance * 3	1,000 MΩ min.					
	Between coil and contacts	4,000 VAC, 50/60 Hz for 1 min					
Dielectric strength	Between contacts of different polarity	4,000 VAC, 50/60 Hz for 1 min					
	Between contacts of the same polarity	2,000 VAC, 50/60 Hz for 1 min					
	Between coil and contacts	10 kV, 1.2 × 50 μs					
Impulse withstand voltage	Between contacts of different polarity	10 kV, 1.2 × 50 μs					
	Between contacts of the same polarity	4.5 kV, 1.2 × 50 μs	3.0 kV, 1.2 \times 50 μs				
Vibration	Destruction	10 to 55 to 10 Hz, 0.5-mm single amplitu	de (1.0-mm double amplitude)				
resistance	Malfunction	NO: 10 to 55 to 10 Hz, 0.5-mm single am NC: 10 to 32 to 10 Hz, 0.5-mm single am					
	Destruction	Screw mounting: 700 m/s ²	Screw mounting: 800 m/s ²	Screw mounting: 700 m/s ²			
Shock	Destruction	DIN Track mounting: 500 m/s ²					
resistance	Malfunction	NO: 100 m/s ²					
	wanunction	NC: 25 m/s ²	NC: 60 m/s ²	NC: 25 m/s ²			
	Mechanical	1,000,000 operations min. (at 1,800 oper	rations/h, contact no load)				
Durability	Electrical *4	AC resistive load: 80,000 operations AC inductive load: 80,000 operations DC resistive load: 100,000 operations (at 1,200 operations/h, rated load)					
Failure rate (value) * 6	(P level) (reference	2 A at 24 VDC		1 mA at 1 VDC			
Ambient ope	erating temperature	-25 to 60°C (with no icing or condensation	on)				
Ambient ope	erating humidity	5% to 85%					
Weight		Approx. 330 g	Approx. 310 g	Approx. 20 g			

Note: The above values are initial values.

*1. The contact resistance for the Relay (G7Z) was measured with 1 A at 5 VDC using the voltage drop method.

The contact resistance for the auxiliary contact block (G73Z) was measured with 0.1 A at 5 VDC using the voltage drop method.

*2. The operate time was measured with the rated voltage imposed with any contact bounce ignored at the ambient temperature of 23°C.

***3.** The insulation resistance was measured with a 1,000-VDC megohmmeter applied to the same places as those used for checking the dielectric strength.

*4. The electrical endurance was measured at an ambient temperature of 23°C.

*5. The specifications for the auxiliary contact block mounted on the G7Z are the same as those for the G73Z auxiliary contact block.

***6.** The failure rate is based on an operating frequency of 1,800 operations/h.

Approved Standards UL Standard: (File No. E41643)

Classification	Model	Number of poles		Cor	ntact ratings	Number of test operations	Coil ratings	
					40 A, 480 VAC, 60 Hz (Resistive)	80,000		
				Relay	5 A, 120 VDC (Resistive)	100,000		
	G7Z-4A-20Z-R G7Z-4A-11Z-R G7Z-4A-02Z-R		NO contact		22 A, 480 VAC, 60 Hz (General Use)	100,000		
Relay with Auxiliary	G7Z-3A1B-20Z-R G7Z-3A1B-20Z-R G7Z-3A1B-11Z-R	4 poles + 2 poles (Relay unit +		Auxiliary Contact	D300 (1-A current applied)		12, 24 VDC	
Contact Block		2A2B-20Z-R 2A2B-11Z-R	NC contact	Relay	25 A, 480 VAC, 60 Hz (Resistive) 5 A, 120 VDC (Resistive) 10 A, 480 VAC, 60 Hz (General Use)	100,000		
			Auxiliary Contact	D300 (1-A current applied)		1		
			NO contact		40 A, 480 VAC, 60 Hz (Resistive)	80,000		
					5 A, 120 VDC (Resistive)	100,000		
Delau	G7Z-4A	4 poles			22 A, 480 VAC, 60 Hz (General Use)	100,000		
Relay G7Z-3A1B G7Z-2A2B	(Relay)		(Relay)	25 A, 480 VAC, 60 Hz (General Use)		12, 24 VDC		
			NC contact		5 A, 120 VDC (Resistive)	100,000		
				10 A, 480 VAC, 60 Hz (General Use)	+			
Auxiliary	G73Z-20Z-R	2 poles	NO contact	(Auxiliary	D300 (1-A current applied)			
Contact Block	G73Z-11Z-R G73Z-02Z-R	(Auxiliary Contact Block)	NC contact	Contact)	D300 (1-A current applied)	†		

CSA Standard: CSA Certification by cUL EN Standard/TÜV Certification: EN 60947-4-1 (Certification No. R50079155)

Category	Model	Number of poles		Conta	act ratings
	G7Z-4A-20Z-R G7Z-4A-11Z-R G7Z-4A-02Z-R		NO contact	Relay	AC-1 : 40 A 440 V 50/60 Hz AC-3 : 16 A 440 V 50/60 Hz DC-1 : 5 A 110 V
Relay with Auxiliary Contact Block	G7Z-3A1B-20Z-R G7Z-3A1B-11Z-R	4 poles + 2 poles (Relay unit + auxiliary	NO contact Relay AC-1: 40 A 440 V 50/60 Hz AC-3: 16 A 440 V 50/60 Hz DC-1: 5 A 110 V Auxiliary Contact AC-1: 25 A 440 V 50/60 Hz DC-13: 0.3 A 410 V 50/60 Hz DC-13: 0.3 A 110 V NC contact Relay AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NC contact Relay AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NO contact Relay AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NO contact Relay AC-1: 40 A 440 V 50/60 Hz DC-13: 0.3 A 110 V NO contact (Relay) AC-1: 40 A 440 V 50/60 Hz DC-1: 5 A 110 V NC contact (Relay) AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NO contact (Auxiliary Contact) AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NO contact (Auxiliary Contact) AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V NO contact (Auxiliary Contact) AC-1: 25 A 440 V 50/60 Hz DC-1: 5 A 110 V		
Contact Block	G7Z-3A1B-02Z-R G7Z-2A2B-20Z-R G7Z-2A2B-11Z-R	contact)	Relay DC-1 : 5 A 110 V		
	G7Z-2A2B-02Z-R			Auxiliary Contact	
	G7Z-4A G7Z-3A1B G7Z-2A2B	4 poles (Relay)	NO contact	(Relay)	AC-3 : 16 A 440 V 50/60 Hz
			NC contact		
Auxiliary Contact Block	G73Z-20Z-R	2 poles	NO contact	(Auxilian(Contact)	
	G73Z-11Z-R G73Z-02Z-R	(Auxiliary Contact Block)	(Auxiliary Contact)		AC-15 : 0.3 A 440 V 50/60 Hz DC-13 : 0.3 A 110 V

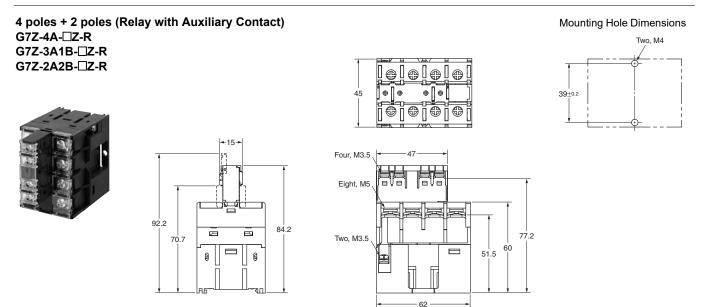
CCC Certification

Classification	Model	Standard No.	Certification No.
Relay with Auxiliary Contact Block	G7Z-4A-20Z-R G7Z-4A-11Z-R G7Z-4A-02Z-R G7Z-3A1B-20Z-R G7Z-3A1B-11Z-R G7Z-3A1B-02Z-R G7Z-2A2B-20Z-R G7Z-2A2B-11Z-R G7Z-2A2B-02Z-R	GB/T 14048.4	2024010304685837
Relay	G7Z-4A G7Z-3A1B G7Z-2A2B	GB/T 14048.4	

Dimensions

G7Z

Relay (12 VDC, 24 VDC) with Auxiliary Contact Block

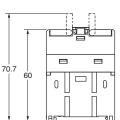


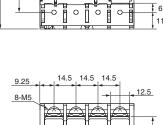
Note: The dimensions are typical values.

Relay (12 VDC, 24 VDC)

4 Poles







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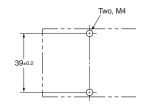
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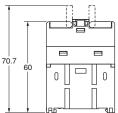
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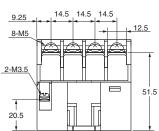
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Mounting Hole Dimensions

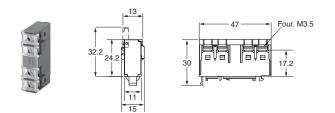






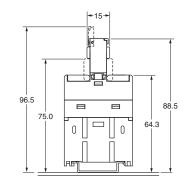
Note: The dimensions are typical values.

Contact Block G73Z-DZ-R



Note: The dimensions are typical values.

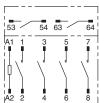
Auxiliary DIN Track Mounting Height (when using the PFP-100N or PFP-50N mounting rail)



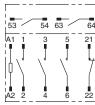
Note: The dimensions are typical values.

Terminal Arrangement/Internal Connections Relay with Auxiliary Contact Block

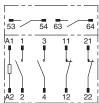
G7Z-4A-20Z-R

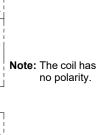


G7Z-3A1B-20Z-R



G7Z-2A2B-20Z-R



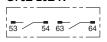


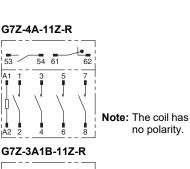
Note: The coil has

no polarity.

Note: The coil has no polarity.

Auxiliary Contact Block G73Z-20Z-R

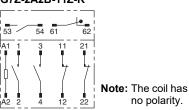




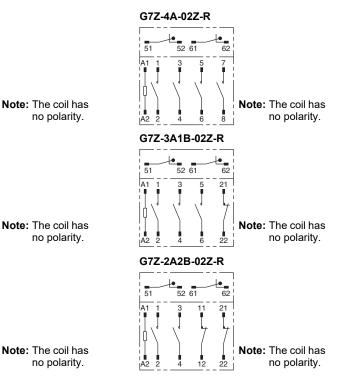
no polarity.











G73Z-02Z-R

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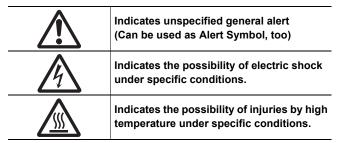
Safety Precautions

Be sure to read the precautions "*Precautions for All Relays*" and "*Precautions for All Relays with Forcibly Guided Contacts*" in the website at:http://www.ia.omron.com/.

Indication and Meaning for Safe Use

	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing, to prevent failure to operate, or undesirable effect on product performance.

Meaning of Product Safety Symbols



Take measures to prevent contact with charged parts when using the Relay for high voltages.



Do not touch the terminal section (charged parts) when power is being supplied. Always use the Relay with terminal covers mounted.

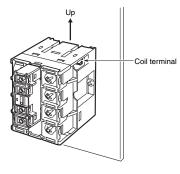
Contact with charged parts may result in electric shock.

Do not touch the Relay when power is being supplied or right after the power has been turned OFF. The hot surface may cause burn injury.

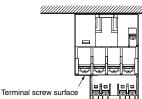


Installation

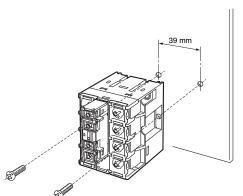
• Mount the G7Z with the coil terminal at the top.



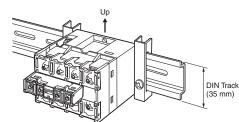
• Do not use the Relay with the terminal screw surfaces facing down.



• To mount the Relay, secure M4 screws in two locations. Use a screw-tightening torque of 1.2 to 1.3 N·m.



- The Relay can be mounted directly on a mounting rail (PFP) or a DIN Track (EN 50022-35 × 7.5, 15). The Relay cannot be mounted, however, to some reinforced rails (e.g., those produced by Kameda Denki or Toyogiken).
- Mount the Relay sideways when it is mounted on a rail.
- Use End Plates (PFP-M) on both sides of the Relay to make sure that it is properly secured.

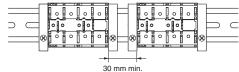


• Provide at least 5 mm of space between the sides and top of the Relay and nearby grounded metal surfaces.

Gr

rounded metal surface	15m	m min.
	5 mm min.	5 mm min.

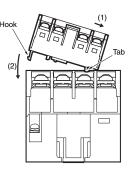
• Provide at least 30 mm of space between Relays when two or more Relays are mounted in a row.



• The auxiliary contact block can be mounted on the Relay.

Mounting and Removal Mounting

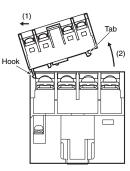
Insert the tab on the auxiliary contact block into the groove on the Relay and press down until the hook on the auxiliary contact block catches in the mounting hole on the Relay.



Removing

Slide the auxiliary contact block, remove the auxiliary contact block tab from the groove on the Relay, and remove the auxiliary contact block hook from the Relay.

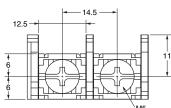
Be careful not to apply excessive force on the hook.



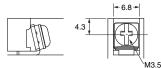
Connecting

 Be sure to use round or open-end (Y-type) crimp terminals, and <u>connect the terminals with the prescribed tightening torque.</u> Refer to the terminal section space in the following figure for the crimp terminal dimensions.

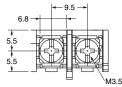
Relay Contacts (Unit: mm)



Relay Coil



Auxiliary Contact Block

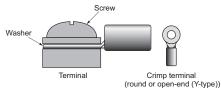


One crimp terminal can be used for the Relay contact section (M5 screw). Two crimp terminals can be connected for the coil terminal and auxiliary contact block.

Recommended Crimp Terminals and Wire

Location	Crimp terminals	Appropriate wire size	
Contact	5.5-5	2.63 to 6.64 mm ² (AWG12, 10)	
section	8-5	6.64 to 10.52 mm ² (AWG8)	
Coil section/ Auxiliary Contact Block	1.25-3.5	0.5 to 1.65 mm ² (AWG20 to 16)	

- Use the following tightening torque when tightening screws. Loose screws may result in fire caused by abnormal heat generated when the power is being supplied.
 - M5 screws: 2.0 to 2.2 N·m
 - M3.5 screws: 0.8 to 0.9 N·m
- Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.
- Install so that the washer, crimp terminal, and terminal are parallel and in close contact, and tighten with the prescribed torque.



Microloads

The G7Z is used for switching power loads, such as current carry for device power supplies and heater loads. Use an auxiliary contact block if microloads are required for signal applications and operation status feedback.

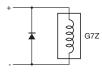
Coil

(Internal Connections of Coils) DC Coil



- If a transistor drives the G7Z, check the leakage current and connect a bleeder resistor if necessary.
- The must operate voltage is the minimum value for the Relay armature to operate and the contacts to turn ON. Therefore, fundamentally apply the rated voltage to the coils, taking into consideration the increases in coil resistance caused by voltage fluctuation and coil temperature rise.
- Counter-electromotive voltage generated by the coil when the coil is OFF may destroy semiconductor elements or cause malfunctions. Attach surge-absorbing diodes to both ends of the coil as a countermeasure. Particularly, when driving G7Z with semiconductor elements, always attach the surge-absorbing diodes.

Note that the relay reset time will be extended, so always use after verifying implementation under actual usage conditions. Use surge-absorbing diodes with a minimum of 600 V reverse voltage resistance, and a forward current of approximately 1A. G7Z does not have coil polarity so attach surge-absorbing diodes so that the polarity is reverse to the applied voltage of the coil.

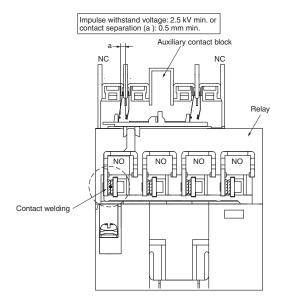


Mirror Contact Mechanism

By combining a Relay with an auxiliary contact block, all NC contacts of the auxiliary contact block will satisfy an impulse withstand voltage of 2.5 kV or higher or maintain a gap of 0.5 mm or greater when the coil is de-energized even if at least one NO contact (main contact) of the Relay is welded. However, this does not apply to models without an NC contact in the auxiliary contact block.

G7Z-4A-20Z-R, G7Z-3A1B-20Z-R, G7Z-2A2B-20Z-R

Description of Mirror Contact Mechanism

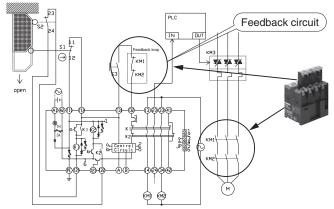


Safety Function with Mirror Contacts

EN 60947-4-1 certification for mirror contact mechanisms has been obtained by using a combination of a relay and auxiliary contact blocks, enabling application in feedback circuits of safety circuits.

Application Example: General Safety Circuit

G9SA-301 (24-V AC/DC) (two limit switch input channels with manual reset)



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