

High-grade Power Relays with an Breaking Capability of 30 A at 110 VDC with an L/R of 40 ms

- Main DPST-NO contacts for interruption of 30 A at 110 VDC (short-time rating).
- Built-in auxiliary contacts (SPST-NO and SPST-NC) for answerback application.
- All terminals are for PCB mounting.
- The main contact terminals can be wired with screws or to PCBs.
- High-density design with a compact, flat shape.



Refer to the *Common Relay Precautions*

Model Number Structure

Model Number Legend

G7X- -

1 2 3

1. Number of Poles

4: Number of poles

2. Terminal Shape

BP: Screw terminals for the main contacts, PCB terminals for all other contacts.

3. Approved Standards

JD: Compatible for auxiliary relay for power

Application Examples

- Pole switch units
- Industrial devices
- Power supplies
- FA and OA devices

Ordering Information

When your order, specify the rated voltage.

List of Models

Contact configuration	Main contacts: DPST-NO, Auxiliary contacts: SPST-NO and SPST-NC	
	Model	Rated voltage (V)
Standard models	G7X-4BP-JD	12, 24, 48, or 100/110 VDC

Ratings and Specifications

Ratings

Operating Coil

Item		Rated voltage (V)	Rated current (mA)	Coil resistance (Ω)	Must-operate voltage (V)	Must-release voltage (V)	Maximum voltage (V)	Power consumption (W)
DC	12	125	96	80% max.	10% min.	110%	Approx. 1.5	
	24	62.5	384					
	48	31.3	1,536					
	100/110	14.3/15.7	7,000					

Note: 1. Rated current and coil resistance were measured at a coil temperature of 23°C with a tolerance of ±15%.
2. Operating characteristics were measured at a coil temperature of 23°C.
3. The maximum allowable voltage is the maximum value of the allowable voltage fluctuation range for the Relay coil operating power supply and was measured at an ambient temperature of 23°C. There is no continuous allowance.

Contacts

Classification		Main contacts		Auxiliary contacts	
Item	Load	Resistive load	Inductive load (L/R = 7 ms)	Resistive load	Inductive load (cos φ = 0.4, L/R = 7 ms)
Contact structure		Single			
Contact materials		Ag		Au plating + Ag	
Rated load		5 A at 110 V	---	1 A at 220 VAC 0.3 A at 110 VDC	0.5 A at 220 VAC 0.1 A at 110 VDC
Rated carry current		5 A		2 A	
Maximum contact voltage		250 VDC		250 VAC, 250 VDC	
Maximum contact current		DC: 30 A (ON: 0.5 s OFF: 15 s) *		AC: 1 A DC: 0.3 A	AC: 0.5 A DC: 0.1 A
Maximum switching capacity (reference value)		DC: 3,300 W		AC: 220 VA DC: 33W	AC: 110 VA DC: 11W

* This is the short-time rating. Contact your OMRON sales representative for currents higher than 30 A.

Characteristics

Contact resistance*1		50 mΩ max.
Operating time*2		30 ms max.
Release time*2		30 ms max.
Maximum operating frequency	Mechanical	1,800 operations/hr
	Rated load	1,800 operations/hr
Insulation resistance*3		100 MΩ min.
Dielectric strength	Between coil and contacts	2,000 VAC at 50/60 Hz for 1 min.
	Between contacts of the same polarity	1,500 VAC at 50/60 Hz for 1 minute (main contacts) 750 VAC at 50/60 Hz for 1 minute (auxiliary contacts)
	Between contacts of different polarity	2,000 VAC at 50/60 Hz for 1 min.
Impulse withstand voltage		Between coil and main contact: 4.5 kV*4
Vibration resistance	Destruction	10 to 55 to 10 Hz, 0.375-mm single amplitude (0.75-mm double amplitude)
	Malfunction	Energized: 10 to 16.7 to 10 Hz, 0.75- mm single amplitude (1.5-mm double amplitude) Non-energized: 10 to 16.7 to 10 Hz, 0.75- mm single amplitude (1.5-mm double amplitude)
Shock resistance	Destruction	300 m/s ²
	Malfunction	Energized: 50 m/s ² , Non-energized: 30 m/s ²
Endurance	Mechanical	1,000,000 operations min. (operating frequency: 1,800 operations/hr)
	Electrical*5	100,000 operations min. (at 1,800 operations/hr, rated load) 5,000 operations min., 30 A at 110 VDC, L/R = 40 ms 180 operations per hour (ON: 0.5 s, OFF: 15 s)
Failure rate P value (reference value*6)		1 mA at 5 VDC (auxiliary contacts)
Ambient operating temperature		-25 to 70°C (with no icing or condensation)
Ambient operating humidity		5% to 85%
Weight		Approx. 151 g

Note: The above values are initial values.

*1. Measurement conditions: 1 A at 5 VDC using the voltage drop method

*2. Measurement conditions: With rated operating power applied, not including contact bounce.

Ambient temperature condition: 23°C

*3. Measurement conditions: For 500 VDC applied to the same location as for dielectric strength measurement.

*4. JEC-212-1981-compliant surge waveform (1.2 × 50 μs)

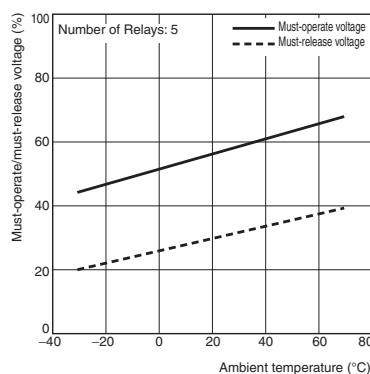
*5. Ambient temperature condition: 23°C

*6. This value was measured at a switching frequency of 60 operations per minute.

Engineering Data

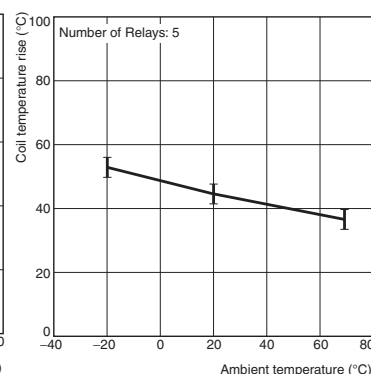
Ambient Temperature vs. Must-operate and Must-release Voltage

G7X-4BP-JD 100/110 VDC



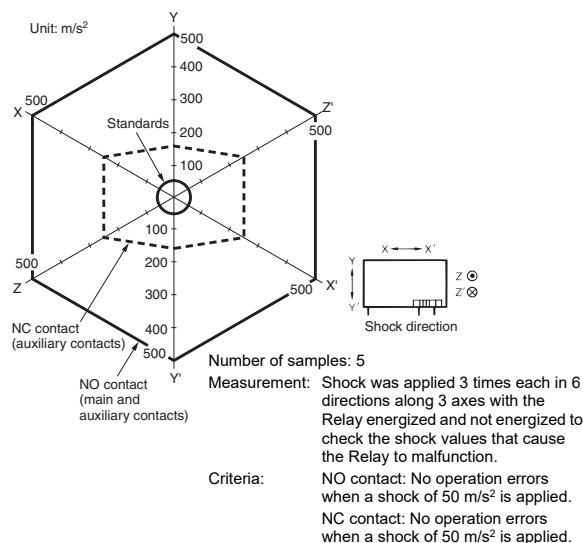
Ambient Temperature vs. Coil Temperature Rise

G7X-4BP-JD 100/110 VDC



Malfunctioning Shock

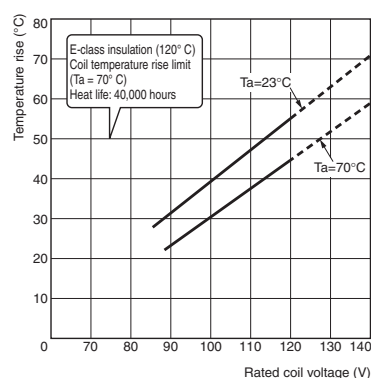
G7X-4BP-JD 100/110 VDC



Actual Performance and Characteristic Values

Switching test	30 A at 140 VDC, L/R = 40 ms ON: 0.5 s, OFF: 15 s	5,000 operations min.
	75 A at 250 VDC, L/R = 7 ms ON: 0.5 s, OFF: 60 s	1,000 operations min.
Dielectric strength	Between coil and main contacts	8,000 V (average value)
Impulse withstand voltage		12,500V (average value)

Coil Applied Voltage and Coil Temperature Increase (5 A Carry Current through Contacts) (Average Values)

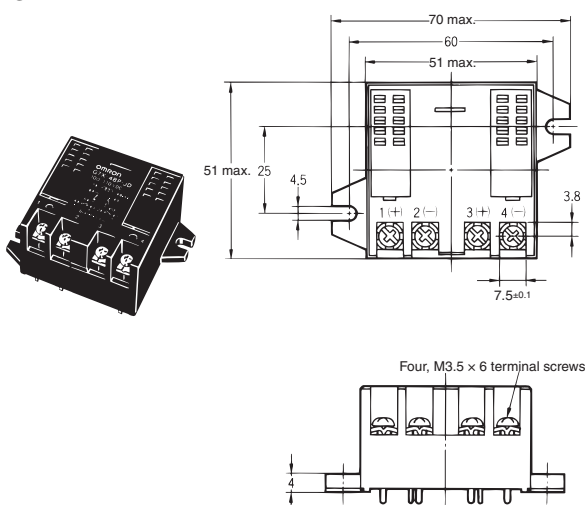


Dimensions

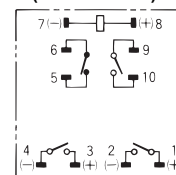
(Unit: mm)

List of Models

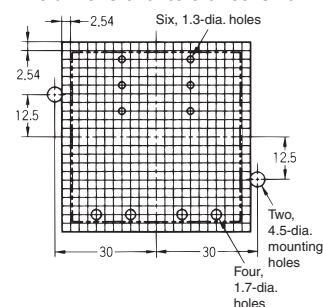
G7X



Terminal Arrangement/Internal Connections (Bottom View)



Mounting Hole Dimensions The dimensional tolerance is ±0.1.



Safety Precautions

Refer to the *Common Relay Precautions* for precautions that apply to all Relays.

Precautions for Correct Use

Handling

- Shaking the Relay will cause the arc grid to produce a vibration noise, but this noise is normal.
- A magnet is embedded in the Relay as an arc extinguisher. Do not place any IC cards, floppy disks, or other objects that should not be placed in a magnetic field near the Relay.

Contact Current

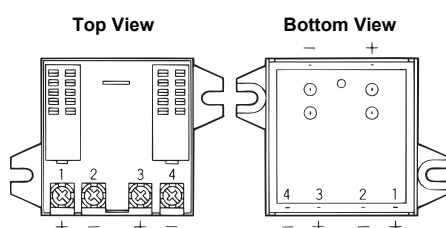
The rated carry current for the contacts is 5 A. Do not apply more than 5 A of current for a continuous period. Do not apply a current of 30 A for 0.5 s or longer.

Operating Frequency

Limit operation to 30 A at 110 VDC with an L/R of 40 ms to 0.5 s maximum when ON or 15 s minimum when OFF.

Main Contacts

The main contacts have polarity. If the polarity is wrong, this can limit the breaking capability of the Relay and its functionality. Make sure that the polarity is correct.



Installation

- Use two M4 screws to mount the Relay. (Tightening torque: 0.98 N·m)
- The Relay weighs approximately 151 g. Be sure that the PCB is strong enough to support them. Use hand soldering only.
- Mount the Relay so that the screw terminals are facing downward.

About PCBs

We recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.

Cleaning

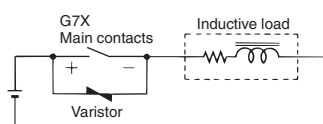
This Relay is sealed. It cannot be cleaned.

Screw Tightening Torque

The tightening torque is 0.79 to 1.2 N·m.

Varistor

- When the main contact interrupt a DC inductive load, high voltage is produced due to the inductance of the inductive load. If any electrical circuits are in the vicinity, this can cause unintended operations. In this case, we recommend that you use a varistor.



- The above figure shows the varistor connected to both ends of the contacts. You can also connect it to both ends of the load.

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