

## Building a complete Omron panel solution



### Relays and other control panel switching components with Value Design and Push-In Plus Technology

- Uniform dimensions optimize space usage
- Wide-ranging relay portfolio suits any application need
- Omron relays are built to global industry standards
- Push-In Plus technology cuts wiring time by 60%
- Vibration-resistant blocks keeps wires firmly in place



## Cover all application needs with one space-saving design

Building a cost-effective, modern control panel that meets certification requirements is a common concern. Relays are one of the core components of Omron's Value Design for Panel Building methodology, which improves cost of ownership, manufacturing, and wiring.

Nearly all applications require at least a few relays, if not hundreds. These ubiquitous devices are used to switch power on and off for devices in an industrial automation environment. They generally reside inside a control panel and are considered a control panel component.

With a wide-ranging portfolio of mechanical relays, solid state relays, and magnetic contactors (low-voltage switch gear) built to global industry standards, our Value Design solutions can cover any application need.

Unified relay dimensions optimize space usage inside the panel.

Relays that use Value Design methodology makes component size and footprint uniform. The components use up to 50% less space within the cabinet, allowing for additional devices to be installed.

Omron relays meet industry standards across the globe.

Our relays are built to industry standards in all major regions of the globe, including UL, CSA, and TUV.

Wide-ranging portfolio offers a single source for all relay needs.

Omron has more than 40 different relay families to handle almost any industrial automation application, including but not limited to:

- Food processing machines (peeling/skinning stations)
- Packaging machinery
- Palletizer/de-palletizer machinery
- Assembly line machinery
- Material handling systems
- Robotic Cells
- Power-press
- Body Transfer lines
- Folding or brake presses
- Filter presses
- Punching machines
- Machine tending
- Printing machines
- Corrugating machines

# Faster wiring and better vibration resistance with Push-In Plus

Vibration from shipment and operating conditions can cause components to come loose — a common concern in industrial environments. Design and assembly times can also be an issue, especially when it comes to wiring up terminals quickly and correctly.

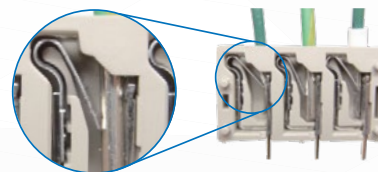
Omron Push-In Plus terminals have a robust design that's simple to wire up and resistant to vibration. This reduces the amount of labor required to keep wires firmly held in place and eliminates the need for periodic retightening.

Push-In Plus simplifies and speeds up the wiring process.

Relays that use Push-In Plus technology save customers up to 60% of the time required to wire standard screw terminals.



Omron Push-In Plus technology is as easy as plugging in to an earphone jack.



IEC standard <sup>1</sup>	Push-In Plus <sup>2</sup>	Screw <sup>2</sup>
20 N min.	125 N	112 N

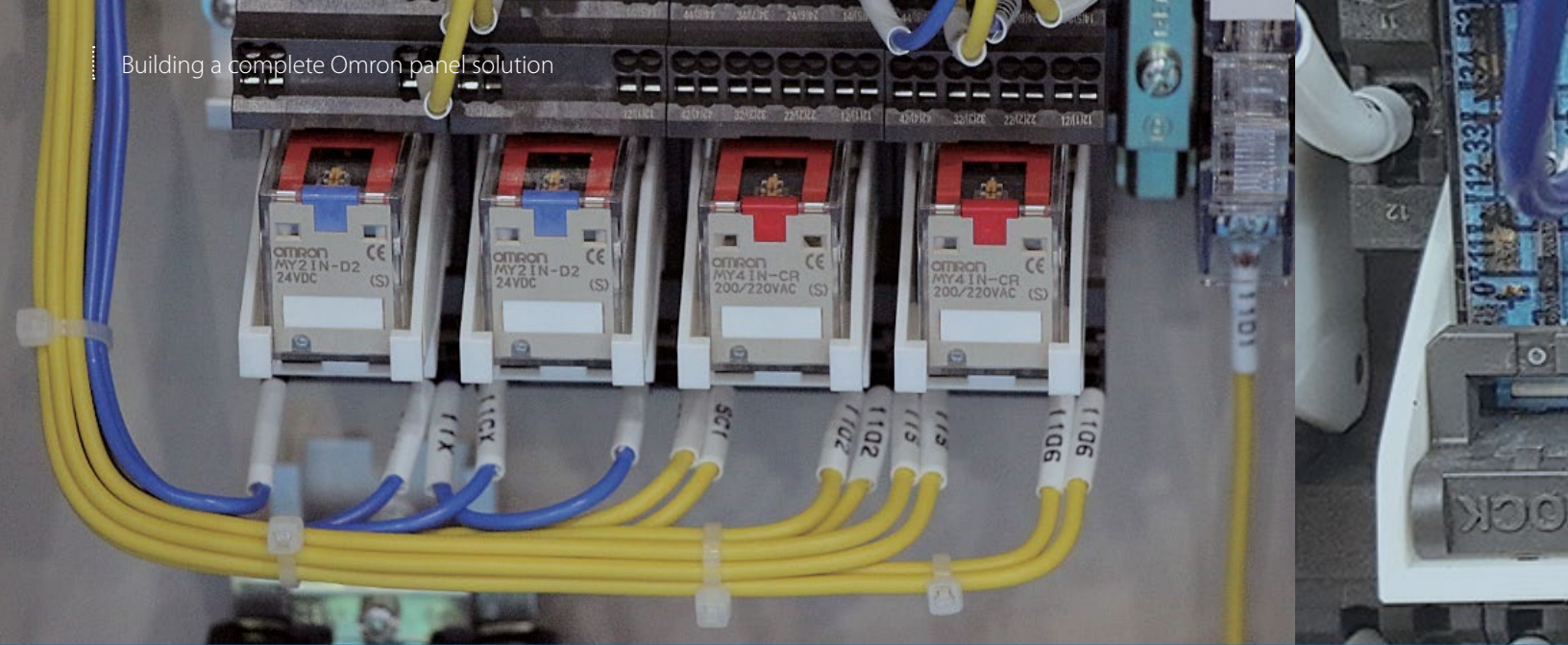
Even though less insertion force is required, the wires are held firmly in place by a unique spring structure that ensures reliability.

## Vibration resistance makes wire retightening unnecessary

Push-In Plus terminal blocks are more resistant to vibration and have a stronger hold on terminated wires. There is no need to retighten wires over time because the innovative latch mechanism — with a spring clamp that has a force of 110N — holds wires and ferrules firmly in place.

- Up to 60% reduction in wiring labor
- Terminal spring clamp
- Stronger wire clamping force
- Tool-less design
- Accepts ferrules and stranded wires



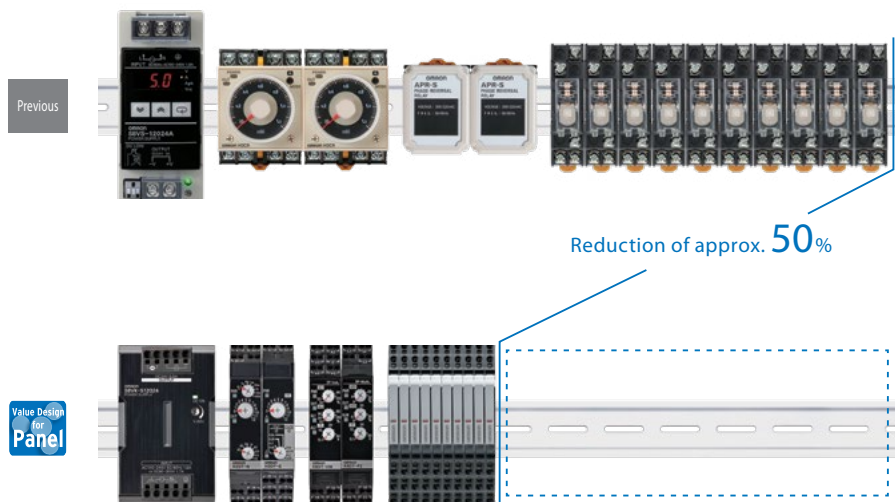


# How Omron's Value Design reduces cost of ownership

Manufacturers across industries are seeking to downsize their control panels while enabling a wider range of devices and potential future expansions. Omron's Value Design methodology supports these expansions and device additions while maintaining a smaller panel footprint.

Value Design Panels are built with unified component dimensions to reduce the amount of space required, improve thermal dissipation, withstand vibration, reduce design and assembly time, and meet industry standard certifications. These benefits multiply as more Omron components are used in a complete Omron panel solution.

Omron relays let you build panels with a smaller footprint or mount more devices in an existing panel. By optimizing airflow and improving thermal dissipation, a Value Design solution keeps components operating reliably over a longer period of time.



Space savings by approximately 50%

Add more devices without wasting space.

The saved space can be used for implementing additional functions such as safety or IoT.



Safety Controllers    Condition Monitoring Devices    Networks

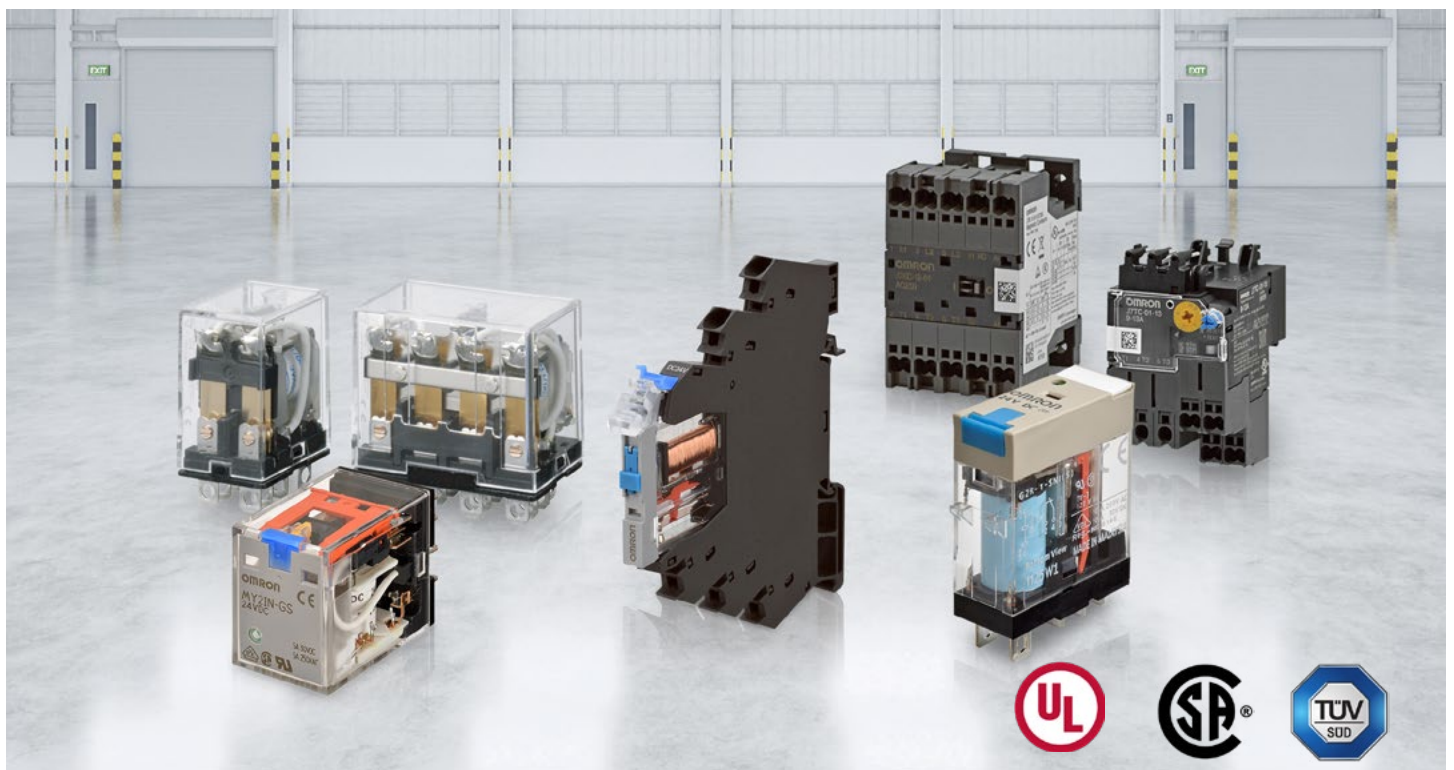
1. A space of 10 mm is allowed above and below the products (This is in comparison with previous OMRON products.).



## One of the widest selections of relays available

Omron has been building relays for more than 50 years, and our relays meet the industry standards for each region of the globe and offer excellent quality and reliability.

Encompassing electromechanical, solid state, and even magnetic contactors (LVSG), the Omron relay lineup has more than 40 different families to choose from, virtually guaranteeing that we have a solution available for any application.





# Mechanical Relays



## Applications for electromechanical relays

Mechanical relays are widely used to switch on various loads. Our dependable relays set the standard for reliability, ease of testing, and compatibility with momentary voltage drops.



Relay logic controllers



Air cylinders



Valves



Actuators



Motors



Elevators



Sorting stations



Boilers and Processing equipment



Gates



Cooling fans

## How to select a mechanical relay<sup>1</sup>

### 1. Form factor

- Slim 6mm, ice-cube, octal pin

### 2. Coil voltage (Input voltage)

- AC or DC switching
- Common spec : 24 VDC

### 3. Rated load current (Contact side)

- Confirm load type (resistive, or inductive)
- Select rated load current 1.3 x actual rating

### 4. # of poles

- SPDT = 1 pole relay
- DPDT = 2 pole relay
- 4PDT = 4 pole relay

Part number  
MY4 DC24 (S)

Item	DPDT	
	Resistive load ( $\cos \phi = 1$ )	Inductive load ( $\cos \phi = 0.4, L/R = 7 \text{ ms}$ )
Rated load	5A, 250 VAC 5A, 30 VDC	2A, 250 VAC 2A, 30 VDC



# Suggested Part Numbers

Model	Part Number	Description	Notes
<a href="#">G2RV-ST</a> 	G2RV-ST500 DC24	Slim I/O Relay & Socket, SPDT, 24VDC, 6A, Push-in terminals	Slim mechanical relay equipped with screw or push-in terminals. Ideal for I/O relay applications.
	G2RV-ST500 AC/DC24	Slim I/O Relay & Socket, SPDT, 24VAC/VDC, 6A, Push-in terminals	
	G2RV-ST500 AC110	Slim I/O Relay & Socket, SPDT, 110VAC, 6A, Push-in terminals	
	G2RV-ST500 AC230	Slim I/O Relay & Socket, SPDT, 230VAC, 6A, Push-in terminals	
<a href="#">G2RS</a> 	G2R-1-S DC24 (S)	SPDT, 24VDC (use P2RFZ-05-E or P2RF-05-PU socket)	 G2RS Screw Terminal Socket (P2RFZ)
	G2R-1-SN DC24 (S)	SPDT, LED indicator, 24VDC (use P2RFZ-05-E or P2RF-05-PU socket)	
	G2R-1-S AC120 (S)	SPDT, 120VAC (use P2RFZ-05-E or P2RF-05-PU socket)	
	G2R-1-SN AC120 (S)	SPDT, LED indicator, 120VAC (use P2RFZ-05-E or P2RF-05-PU socket)	
	G2R-2-S DC24 (S)	DPST, 24VDC (use P2RFZ-08-E or P2RF-08-PU socket)	 G2RS Push-in Plus Socket (P2RF)
	G2R-2-SN DC24 (S)	DPDT, LED indicator, 24VDC (use P2RFZ-08-E or P2RF-08-PU socket)	
	G2R-2-S AC120 (S)	DPST, 120VAC (use P2RFZ-08-E or P2RF-08-PU socket)	
	G2R-2-SN AC120 (S)	DPDT, LED indicator, 120VAC (use P2RFZ-08-E or P2RF-08-PU socket)	
	P2RFZ-05-E	Screw terminal socket for G2R-1-S(S) relay	 G2RS Push-in Plus Socket (P2RF)
	P2RFZ-08-E	Screw terminal socket for G2R-2-S(S) relay	
	P2RF-05-PU	Push-in Plus socket for G2R-1-S(S) relay	
	P2RF-08-PU	Push-in Plus socket for G2R-2-S(S) relay	
<a href="#">MY</a> 	MY2N DC24 (S)	4PDT, 24VDC w/operation indicator (use PYFZ-08-E or PYF-08-PU socket)	 MY Screw Terminal Socket (PYFZ)
	MY2N AC110/120 (S)	4PDT, 110/120VAC w/operation indicator (use PYFZ-08-E or PYF-08-PU socket)	
	MY4N DC24 (S)	4PDT, 24VDC w/operation indicator (use PYFZ-14-E or PYF-14-PU socket)	
	MY4N AC110/120 (S)	4PDT, 110/120VAC w/operation indicator (use PYFZ-14-E or PYF-14-PU socket)	
	PYFZ-08-E	Screw terminal socket for MY2 relay	 MY Push-in Plus Socket (PYF-PU)
	PYFZ-14-E	Screw terminal socket for MY4 relay	
	PYF-08-PU	Push-in Plus socket for MY2 relay w/release lever	
	PYF-14-PU	Push-in Plus socket for MY4 relay w/release lever	
<a href="#">LY</a> 	LY2N DC24	4PDT, 24VDC w/operation indicator (use PTF08A-E or PTF-08-PU socket)	 LY Screw Terminal Socket (PTF-AE)
	LY2N AC110/120	4PDT, 110/120VAC w/operation indicator (use PTF08A-E or PTF-08-PU socket)	
	LY4N DC24	4PDT, 24VDC w/operation indicator (use PTF014A-E or PTF-14-PU-L socket)	
	LY4N AC110/120	4PDT, 110/120VAC w/operation indicator (use PTF014A-E or PTF-14-PU-L socket)	
	PTF08A-E	Screw terminal socket for LY2 relay	 LY Push-in Plus Terminal Socket (PTF-PU)
	PTF14A-E	Screw terminal socket for LY4 relay	
	PTF-08-PU	Push-in Plus socket for LY2 relay w/release lever	
	PTF-14-PU-L	Push-in Plus socket for LY4 relay w/o release lever	

# Solid State Relays



## Applications for solid state relays

Solid State relays can also be used in mechanical relay applications, but they are more commonly found in heaters (frying equipment, injection molding, sealing equipment, etc.) or lamps (industrial lighting, entertainment).



Heaters

Lamps



## How to select a solid state relay<sup>1</sup>

1. Form factor
  - DIN-rail mount, hocky puck, PCB
2. Input voltage
  - AC or DC switching
  - Common spec: 24 VDC
3. Rated load current
  - Inductive load-select current rating 130% of actual load
  - Resistive load-select current rating 150% of actual load
  - 40A
4. Zero cross or non-zero cross (A/C outputs only)

Part number

G3NA-240B-UTU DC5-24

Zero cross function	Applicable load	Model
Yes	15 A, 100 to 240 VAC	G3PE-215B DC12-24
	25 A, 100 to 240 VAC	G3PE-225B DC12-24
	35 A, 100 to 240 VAC	G3PE-235B DC12-24
	45 A, 100 to 240 VAC	G3PE-245B DC12-24
No	15 A, 100 to 240 VAC	G3PE-215BL DC12-24
	25 A, 100 to 240 VAC	G3PE-225BL DC12-24
	35 A, 100 to 240 VAC	G3PE-235BL DC12-24
	45 A, 100 to 240 VAC	G3PE-245BL DC12-24





# Suggested Part Numbers

Model		Part Number	Description	Notes
<a href="#">G3RV-ST</a>		G3RV-ST500-D DC24	Slim I/O SSR & Socket, 24VDC input, 3A, Push-in terminals	Slim 6mm solid-state relay equipped with screw or push-in terminals Available in zero-cross, non zero cross, and MOSFET DC outputs. Ideal for I/O applications.
		G3RV-ST700-D DC24	Slim I/O SSR & Socket, 24VDC input, 3A, Screw terminals	
		G3RV-ST700-A DC24	Slim I/O SSR & Socket, 24VAC input, 2A, Screw terminals	
		G3RV-ST700-D AC/DC24	Slim I/O SSR & Socket, 24VAC/VDC input, 3A, Screw terminals	
<a href="#">G3PJ</a>		G3PJ-215B-PU DC12-24	15A, 1-phase SSR, 240VAC out, 24VDC in	DIN-rail mounting solid state relay with integrated heat sink for low heat generation. Equipped with zero cross function and optional push-in terminals. Ideal for heater applications.
		G3PJ-225B-PU DC12-24	25A, 1-phase SSR, 240VAC out, 24VDC in	
		G3PJ-515B-PU DC12-24	15A, 1-phase SSR, 480VAC out, 24VDC in	
		G3PJ-525B-PU DC12-24	25A, 1-phase SSR, 480VAC out, 24VDC in	
<a href="#">G3NA</a>		G3NA-210B-UTU DC5-24	10A, 240VAC out, 24VDC in, with indicator	Hockey puck style solid state relay. AC outputs models equipped with zero cross function. Optional heat sinks and mounting brackets available.
		G3NA-220B-UTU DC5-24	20A, 240VAC out, 24VDC in, with indicator	
		G3NA-225B-UTU DC5-24	25A, 240VAC out, 24VDC in, with indicator	
		G3NA-240B-UTU DC5-24	40A, 240VAC out, 24VDC in, with indicator	
		G3NA-250B-UTU DC5-24	50A, 240VAC out, 24VDC in, with indicator	
		G3NA-420B-UTU DC5-24	20A, 400VAC out, 24VDC in, with indicator	
		G3NA-490B-UTU-2 DC5-24	90A, 400VAC out, 24VDC in, with indicator	
		G3NA-210B-UTU AC100-240	10A, 240VAC out, 100-240VAC in, with indicator	
		G3NA-220B-UTU AC100-240	20A, 240VAC out, 100-240VAC in, with indicator	
		G3NA-225B-UTU AC100-240	25A, 240VAC out, 100-240VAC in, with indicator	
		G3NA-240B-UTU AC100-240	40A, 240VAC out, 100-240VAC in, with indicator	
		G3NA-440B-UTU-2 AC100-240	40A, 400VAC out, 100-240VAC in, with indicator	
		Y92B-A150N	Surface mount heat sink-for G3NA 225, 240, 425, 440 models	
		Y92B-N150	DIN-Rail mount heat sink-for G3NA 225, 240, 425, 440 models	
Y92B-N100	DIN-Rail mount heat sink-for G3NA 220, 420 models			
Y92B-N50	DIN-Rail mount heat sink for G3NA 205, 210, 410 models			
R99-12 FOR G3NA	G3NA DIN-rail mounting bracket (no heat sink)			
<a href="#">G3PE</a>		G3PE-225B DC12-24	25A, 1-phase, 240VAC out, 24VDC in, zero cross	DIN-rail mounting solid state relay with integrated heat sink for low heat generation. Equipped with zero cross function and screw terminals. Single and three-phase models available for high load heater applications.
		G3PE-245B DC12-24	45A, 1-phase, 240VAC out, 24VDC in, zero cross	
		G3PE-525B DC12-24	25A, 1-phase, 480VAC out, 24VDC in, zero cross	
		G3PE-545B DC12-24	45A, 1-phase, 480VAC out, 24VDC in, zero cross	
		G3PE-225B-3N DC12-24	25A, 3-phase, 3-pole, 240VAC out, 24VDC in	
		G3PE-245B-3N DC12-24	45A, 3-phase, 3-pole, 240VAC out, 24VDC in	
<a href="#">G3NE</a>		G3NE-210T-US DC5	10A, 100-240VAC out, 5VDC in, zero cross	Compact SSR rated from 5 - 20 A. Features quick-connect #110 input terminals and #250 output connections.
		G3NE-205T-US DC12	5A, 100-240VAC out, 12VDC in, zero cross	
		G3NE-210T-US DC12	10A, 100-240VAC out, 12VDC in, zero cross	
		G3NE-210T-US DC24	10A, 100-240VAC out, 24VDC in, zero cross	
		G3NE-220T-US DC24	20A, 100-240VAC out, 24VDC in, zero cross	

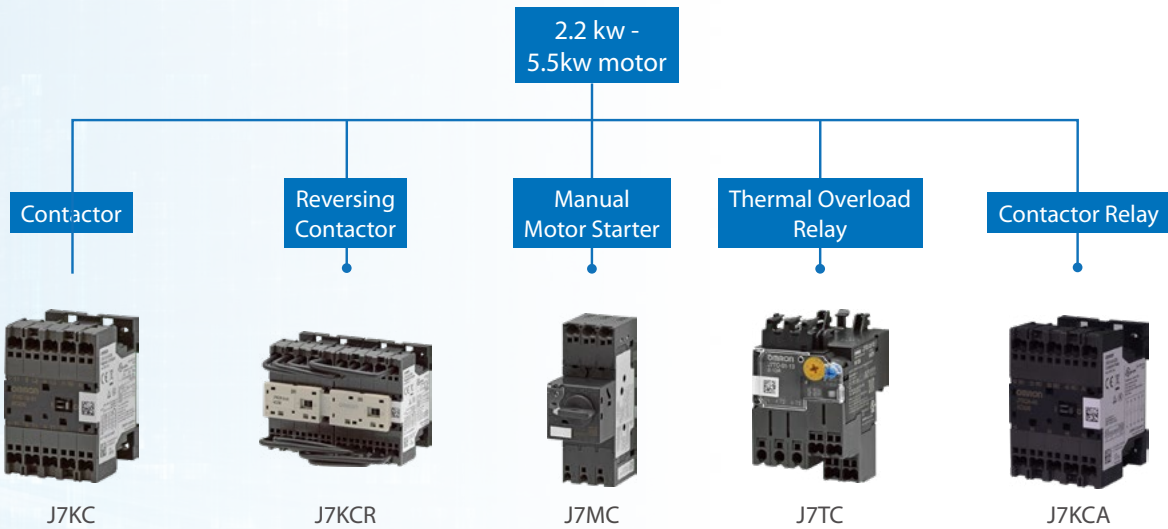
# Low Voltage Switch Gear



## Applications for low voltage switch gear

Omron's switchgear products provide circuit protection for a broad range of motor control applications.

## How to select low voltage switch gear<sup>1</sup>



Associated Product Categories	Use Case	Product Families
Power Supplies	Powering the devices connected to your control panel.	S8VK-G,S8VK-X, S8FS-G, S8VK-C
Predictive Maintenance	Used to monitor equipment condition and predict failure	K6CM, K6PM, K7GE, K7TM
Monitoring Products	Detects voltage, current, temperature, fluid level or phase errors to protect equipment	K8DT, K8AK, K8DS
Temperature Controllers	Used for process control involving temperature	E5AC, E5CC, E5DC, E5GC, E5EC



# Suggested Part Numbers

Model	Part Number	Description	Notes
<a href="#">J7KC</a> 	J7KC-12-10 AC24	Magnetic Contactor, 24 VAC input, SPST-1N0 auxiliary contact	Motor contactor designed for ON/OFF control of 3-7 hp. motors. Ideal for conveyors, compressors, pumps, fans and gantry systems.
	J7KC-12-01 AC24	Magnetic Contactor, 24 VAC input, SPST-1NC auxiliary contact	
	J7KC-12-10 AC120	Magnetic Contactor, 120 VAC input, SPST-1N0 auxiliary contact	
	J7KC-12-01 AC120	Magnetic Contactor, 120 VAC input, SPST-1NC auxiliary contact	
	J7KC-12-10 AC230	Magnetic Contactor, 230 VAC input, SPST-1N0 auxiliary contact	
	J7KC-12-01 AC230	Magnetic Contactor, 230 VAC input, SPST-1NC auxiliary contact	
<a href="#">J7KCR</a> 	J7KCR-12-10 AC24	Reversing Magnetic Contactor, 24 VAC input, SPST-1N0, auxiliary contact	Motor contactor designed for forward/reverse control of 3-7 hp. Motors. Ideal for window motor applications.
	J7KCR-12-10 AC120	Reversing, Magnetic Contactor, 120 VAC input, SPST-1N0, auxiliary contact	
<a href="#">J7MC</a> 	J7MC-3P-2E5	Manual Motor Starter, rocker switch 200-690 VAC, 2.5A rated current	Manual Motor Starter protects motor from overloads, phase failures and short circuits. Recommended use with J7KC motor contactor.
	J7MC-3P-4	Manual Motor Starter, rocker switch, 200-690 VAC, 4A rated current	
	J7MC-3P-10	Manual Motor Starter, rocker switch, 200-690 VAC, 10A rated current	
<a href="#">J7TC</a> 	J7TC-01-2E6	Thermal Overload Relay, 24-600 VAC, 1.7-2.6 A current range setting	Thermal Overload Relay protects motor from overloads and phase-loss by cutting off power if exceeding trip current. Recommended to use with J7KC motor contactor.
<a href="#">J7KCA</a> 	J7KCA-22 DC24	Contactor Relay, 24 VDC input, 4PST-2NO 2NC contacts	J7KCA Contactor Relay uses mechanically linked contacts to control 3-phase motors and heaters.
	J7KCA-31 DC24	Contactor Relay, 24 VDC input, 4PST-3NO 1 NC contact	
	J7KCA-40 DC24	Contactor Relay, 24 VDC, 4PST-4NO	





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