

# Industrial Automation Guide 2016



Industrial Products & Systems

[industrial.omron.eu](http://industrial.omron.eu)

# Targeted Technologies

## Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

[industrial.omron.eu/technologies](https://industrial.omron.eu/technologies)







# Welcome to our world

## Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

## Find information fast!

Quick Links shortens your search. Quick Links are unique codes assigned to Omron products listed in this guide. Enter Quick Link codes in the search box on [industrial.omron.eu](http://industrial.omron.eu) to access detailed information on products in this guide.



# Industrial Automation Guide 2016

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“To the machine the work of the machine,  
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

# Omron at a glance

200.000 products ranging  
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,  
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track  
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

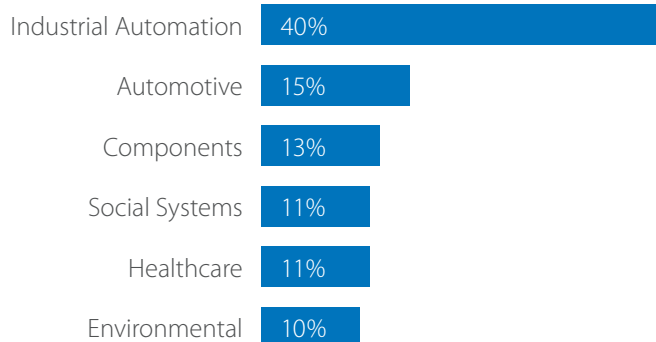
210

Locations worldwide

22

Countries in EMEA

Working for the  
benefit of society



## Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

# Your needs, our focus

## Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

### 361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
<b>PRO<sup>plus</sup></b>	Premium	Tailored	Special	Yes	Yes	Application oriented
<b>PRO</b>	Premium	Complete	Advanced	Yes	Yes	Above Standard
<b>LITE</b>	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels



# The extra degree of advantage

## Three distinct lines of sensors and components

### Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

### Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

### Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

### Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

### Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



# Sysmac: A fully integrated platform

## Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.

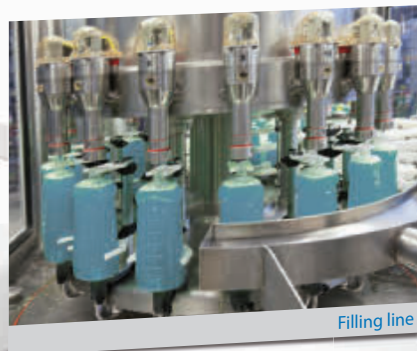


Machine Automation Controller

FACTORY  
AUTOMATION

MACHINE  
CONTROL

## Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque

## Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



## Information



- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

### ✓ Integrated Automation Control:

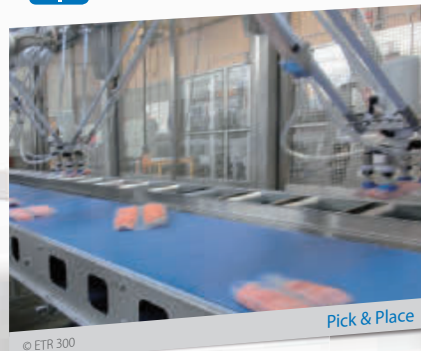
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

## Vision



- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

## Robotics



- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

## Sensing



- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

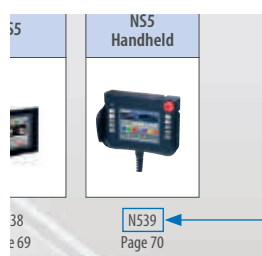
# Product selection table

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Sensing				
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	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
	462 Emergency stop and control devices	472 Safety limit switches	480 Safety door switches	506 Safety sensors
				
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Switching components				
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Software				

# Switching components

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*Quick Link*



# Switching components

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# Electromechanical relays

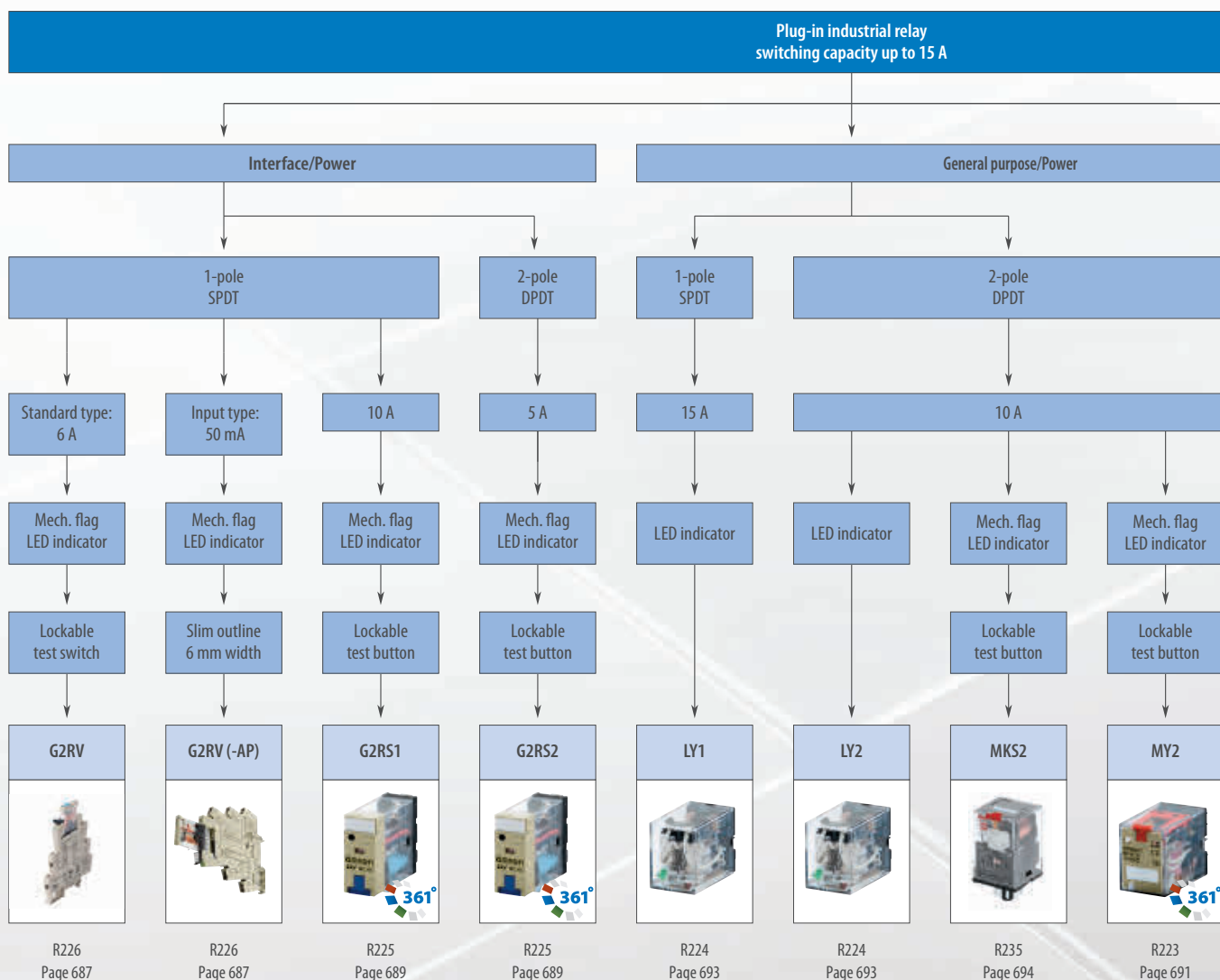
## UNIQUE!

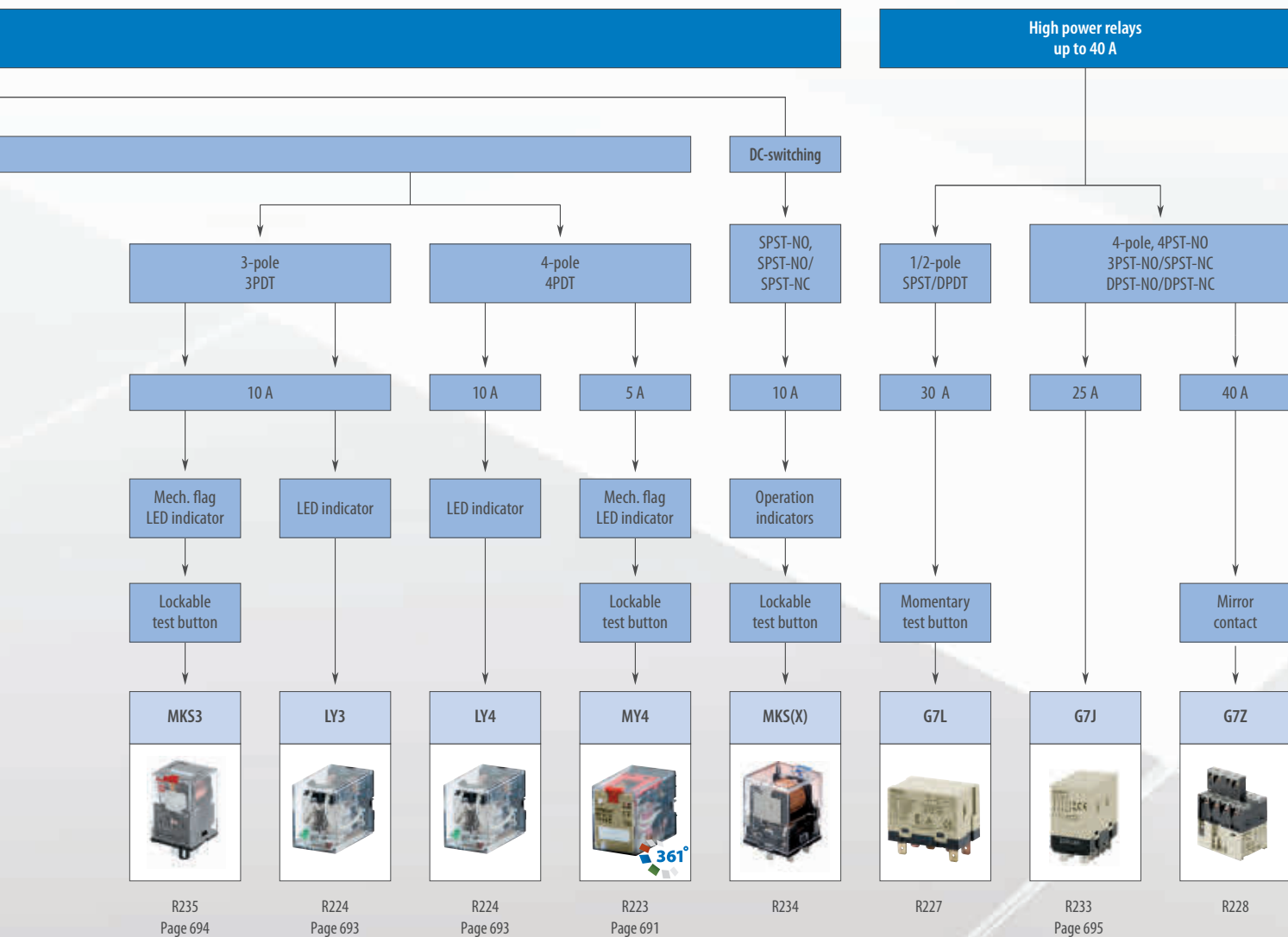
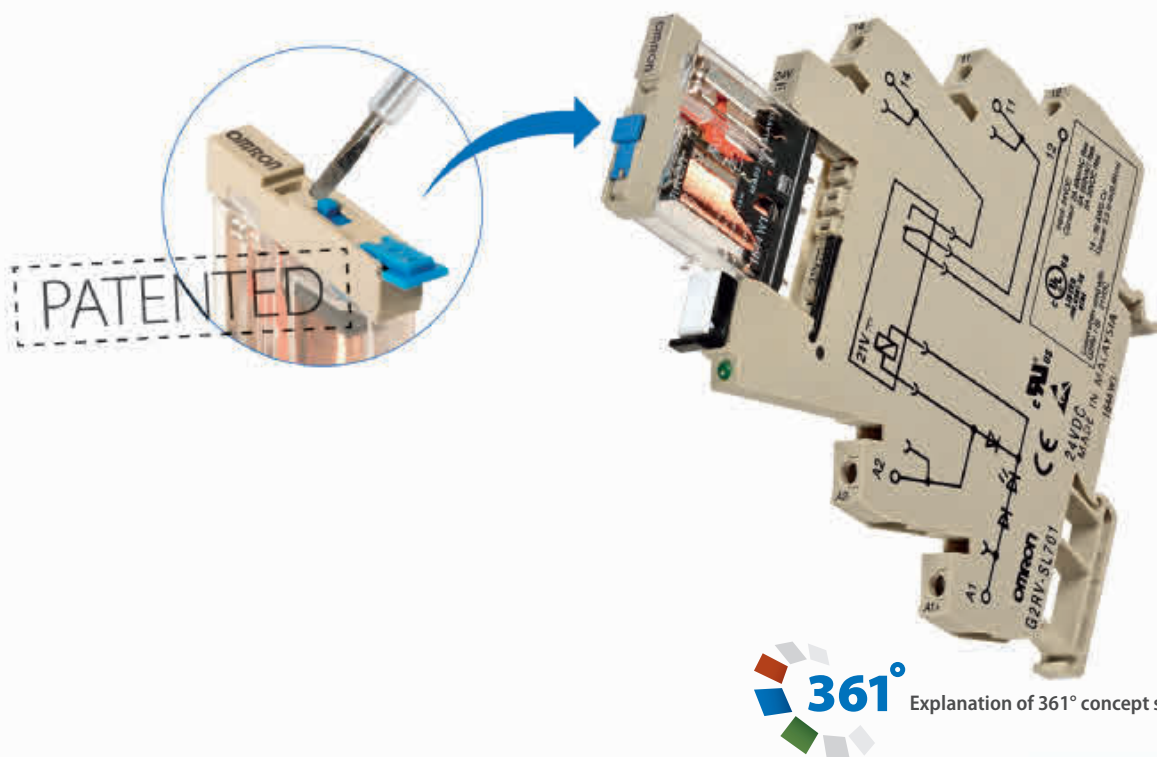
### G2RV-SL□□ 1-6 mm relay with lockable test switch

At the heart of the industrial G2RV relay is a strong mechanical pin with a large contact surface that ensures reliable connection and high conductivity between the socket and relay. The patented switch design with rotating protection cover is (almost) impossible to achieve in an adapted PCB relay.




Benefits lockable test switch:




- Test panel, machine or system functionality, or simulate an actuator when one or more modules are offline or have been removed
- Rotating protection cover stops accidental operation
- See from distance that the switch is protected – eg, in a hazardous environment








# Selection table

Category		Interface/Power				General purpose/Power		
		  						
Family		G2RV		G2R- _S		MY		
Selection criteria	1-pole	■	■	■	–	–	–	–
	2-pole	–	–	–	■	■	–	–
	3-pole	–	–	–	–	–	–	–
	4-pole	–	–	–	–	–	■	■
	Contact configuration	SPDT	SPDT	SPDT	DPDT	DPDT	4PDT	4PDT bifurcated
	Contact material	AgSnIn	AgSnIn + gold plating	AgSnIn	AgSnIn	Ag	AgNi + Au	AgNi + Au
	Max. switching current	6 A	50 mA	10 A	5 A	10 A	5 A	5 A
	Min. switching current	10 mA at 5 VDC	1 mA at 100 mVDC	100 mA at 5 VDC	10 mA at 5 VDC	1 mA at 5 VDC	1 mA at 1 VDC	0.1 mA at 1 VDC
	Gold clad/plate	–	■	□	□	–	■	■
Features	Width max. (Relay only)	5.2 mm	5.2 mm	13.0 mm	13.0 mm	21.5 mm	21.5 mm	21.5 mm
	LED indication	■	■	□	□	□	□	□
	Mechanical flag	■	■	■	■	■	■	■
	Momentary testbutton	–	–	–	–	–	–	–
	Momentary/Lockable testbutton (/switch)	□	–	□	□	□	□	□
	Label	□	□	□	□	□	□	□
	Diode (DC coil)	■	■	□	□	□	□	□
	Varistor (AC coil)	–	–	–	–	–	–	–
	CR network (AC coil)	■	■	–	–	□	□	□
Wiring to socket	Screw (plate clamp)	–	–	□	□	□	□	□
	Screw (box clamp)	□	□	□	□	□	□	□
	Screw-less clamp	□	□	□	□	□	□	□
Page/Quick Link		687/R226		689/R225		691/R223		

Category		High power relays								
		  								
Family		G7J				G7L		G7Z		
Selection criteria	1-pole	–	–	–	–	■	–	–	–	–
	2-pole	–	–	–	–	–	■	–	–	–
	3-pole	–	–	–	–	–	–	–	–	–
	4-pole	■	■	■	■	–	–	■	■	■
	Contact configuration	4PST-NO	4PST-NO	3PST-NO/SPST-NC	DPST-NO/DPST-NC	SPST-NO	DPST-NO	4PST-NO	3PST-NO/SPST-NC	DPST-NO/DPST-NC
	Max. switching current	25 A	25 A	25 A	25 A	30 A	25 A	40 A	40 A	40 A
	Min. permissible load	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 5 VDC	100 mA at 5 VDC	2 A at 24 VDC	2 A at 24 VDC	2 A at 24 VDC
	Auxiliary contact block mirror contact	–	–	–	–	–	–	■	■	■
	Momentary testbutton	–	–	–	–	□	□	–	–	–
Relay terminals	Screw	□	□	□	□	□	□	□	□	□
	Quick-connect	□	□	□	□	□	□	–	–	–
	PCB terminals	□	□	□	□	□	□	–	–	–
Mounting	Screw	–	–	–	–	–	–	□	□	□
	DIN rail	–	–	–	–	–	–	□	□	□
	Clip (screw)	□	□	□	□	□	□	–	–	–
	Flange (screw)	□	□	□	□	□	□	–	–	–
	DIN rail (adapter)	–	–	–	–	□	□	–	–	–
Page/Quick Link		695/R233				R227		R228		

Category		General purpose/Power									
											
Family		LY					MKS		MKS(X)		
Selection criteria	1-pole	■	–	–	–	–	–	–	■	–	–
	2-pole	–	■	■	–	–	■	–	–	■	–
	3-pole	–	–	–	■	–	–	■	–	–	–
	4-pole	–	–	–	–	■	–	–	–	–	–
	Contact configuration	SPDT	DPDT	DPDT bifurcated	3PDT	4PDT	DPDT	3PDT	SPST-NO	SPST-NO/SPST-NC	–
	Contact material	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn
	Max. switching current	15 A	10 A	7 A	10 A	10 A	10 A	10 A	10 A, 220 VDC; 15 A, 250 VAC	5 A, 220 VDC; 15 A, 250 VAC	–
	Min. switching current	100 mA at 5 VDC	100 mA at 5 VDC	10 mA at 5 VDC	100 mA at 5 VDC	100 mA at 5 VDC	10 mA at 1 VDC	10 mA at 1 VDC	10 mA at 24 VDC	10 mA at 24 VDC	–
	Gold clad/plate	–	□	■	–	–	–	–	–	–	–
	Width max. (Relay only)	21.5 mm	21.5 mm	21.5 mm	31.5 mm	41.5 mm	34.5 mm	34.5 mm	34.5 mm	34.5 mm	–
Features	LED indication	□	□	□	□	□	□	□	□	□	□
	Mechanical flag	–	–	–	–	–	■	■	–	–	–
	Momentary testbutton	–	–	–	–	–	–	–	–	–	–
	Momentary/Lockable testbutton	–	–	–	–	–	□	□	□	□	–
	Label	–	–	–	–	–	□	□	–	–	–
	Diode (DC coil)	□	□	□	□	□	□	□	Optional for socket	Optional for socket	–
	Varistor (AC coil)	–	–	–	–	–	□	□	–	–	–
	CR network (AC coil)	–	□	□	–	–	–	–	–	–	–
Wiring to socket	Screw (plate clamp)	□	□	□	□	□	□	□	□	□	–
	Screw (box clamp)	–	–	–	–	–	□	□	–	–	–
	Screw-less clamp	–	–	–	–	–	–	–	–	–	–
	Page/Quick Link	693/R224					694/R235		R234		

■ Standard

□ Available

– No/not available







### The only truly industrial 6 mm relay

Having been designed from first principles, instead of being adapted from a PCB relay, Omron's G2RV series is the only genuine slim industrial relay on the market. As a result, the G2RV offers a wide array of benefits to machine manufacturers and panel builders. Just 6mm wide, the relay is ideal for compact panels and equipment, yet it offers all of the durability and reliability required for industrial applications.

- Lockable test switch models available
- Large plug-in pins – excellent connection
- LED/mechanical flag – check operation
- Transparent housing – check condition
- Slim outline – space saving
- Push-in/accessories – simple wiring
- Special input type with gold plated contacts
- G3RV compatible

### Ordering information

Relay	Input voltage	Order code	
		Screw terminals	Push-in terminals
Standard type without lockable test switch	12 VDC	G2RV-SL700 DC12	G2RV-SL500 DC12
	24 VDC	G2RV-SL700 DC24	G2RV-SL500 DC24
	24 VAC/VDC	G2RV-SL700 AC/DC24	G2RV-SL500 AC/DC24
	48 VAC/VDC	G2RV-SL700 AC/DC48	G2RV-SL500 AC/DC48
	110 VAC	G2RV-SL700 AC110	G2RV-SL500 AC110
	230 VAC	G2RV-SL700 AC230	G2RV-SL500 AC230
Standard type with lockable test switch	24 VDC	G2RV-SL701 DC24	G2RV-SL501 DC24
	24 VAC/VDC	G2RV-SL701 AC/DC24	G2RV-SL501 AC/DC24
Input type	12 VDC	G2RV-SL700-AP DC12	G2RV-SL500-AP DC12
	24 VDC	G2RV-SL700-AP DC24	G2RV-SL500-AP DC24
	24 VAC/VDC	G2RV-SL700-AP AC/DC24	G2RV-SL500-AP AC/DC24
	48 VAC/VDC	G2RV-SL700-AP AC/DC48	G2RV-SL500-AP AC/DC48
	110 VAC	G2RV-SL700-AP AC110	G2RV-SL500-AP AC110
	230 VAC	G2RV-SL700-AP AC230	G2RV-SL500-AP AC230

### Accessories

Type	Description	Order code
Cross bar	2-pole	P2RVM-020_
Cross bar	3-pole	P2RVM-030_
Cross bar	4-pole	P2RVM-040_
Cross bar	10-pole	P2RVM-100_
Cross bar	20-pole	P2RVM-200_
PLC interface	Connect 8 relays and PLC output	P2RVC-8-O-F
PLC interface	Connect 8 relays and PLC input	P2RVC-8-I-F
Label	Plastic, for mounting on socket	R99-15 for G2RV
Label (Sticker)	Paper for mounting on socket or relay	R99-16 for G2RV
Separating plate	Provides isolation between adjacent relays to achieve 400 V isolation	P2RV-S
Relay only	Maintenance part for G2RV-SL_00-series 12 VDC	G2RV-1-S DC11
Relay only	Maintenance part for G2RV-SL_00-series 24 VDC and 24 VAC/VDC	G2RV-1-S DC21
Relay only	Maintenance part for G2RV-SL_00-series 48 VAC/VDC and 110, 230 VAC	G2RV-1-S DC48
Relay only	Maintenance part for G2RV-SL_01-series 24 VDC and 24 VAC/VDC	G2RV-1-SI SC21
Relay only	Maintenance part for G2RV-SL-AP series 12 VDC	G2RV-1-S-AP DC11
Relay only	Maintenance part for G2RV-SL-AP series 24 VDC and 24 VAC/VDC	G2RV-1-S-AP DC21
Relay only	Maintenance part for G2RV-SL-AP series 48 VAC/VDC and 110, 230 VAC	G2RV-1-S-AP DC48

Note: \_ Select color: R=Red, S=Blue, B=Black

## Interface cables

PLC brand	PLC type	Number of I/O	I/O type	Cable length	Order code
Omron	CJ1	32	Digital Output (MIL)	1.0 m	P2RV-4-100C
				2.0 m	P2RV-4-200C
				3.0 m	P2RV-4-300C
				5.0 m	P2RV-4-500C
			Digital Input (Fujitsu)	1.0 m	P2RV-4-100IFC
				2.0 m	P2RV-4-200IFC
				3.0 m	P2RV-4-300IFC
				5.0 m	P2RV-4-500IFC
			Digital Input (MIL)	1.0 m	P2RV-4-100IMC
				2.0 m	P2RV-4-200IMC
				3.0 m	P2RV-4-300IMC
				5.0 m	P2RV-4-500IMC
	GRT1 SmartSlice	8	Digital Output	0.5 m	P2RV-A050C-OMR GRT1
				1.0 m	P2RV-A100C-OMR GRT1
			Digital Input	0.5 m	P2RV-A050IC-OMR GRT1
				1.0 m	P2RV-A100IC-OMR GRT1
	NX	8	Digital Output	0.5 m	P2RV-A050C-OMR NX
				1.0 m	P2RV-A100C-OMR NX
			Digital Input	0.5 m	P2RV-A050IC-OMR NX
				1.0 m	P2RV-A100IC-OMR NX
Siemens	S7/300	32	Digital Input and Digital Output	2.0 m	P2RV-200C-SIM S7/300
				2.5 m	P2RV-250C-SIM S7/300
				3.0 m	P2RV-300C-SIM S7/300
				5.0 m	P2RV-500C-SIM S7/300
	S7/400	32	Digital Input and Digital Output	2.0 m	P2RV-200C-SIM S7/400
				2.5 m	P2RV-250C-SIM S7/400
				3.0 m	P2RV-300C-SIM S7/400
				5.0 m	P2RV-500C-SIM S7/400
Multi purpose (flying leads)	All	8	Digital Input and Digital Output	1.0 m	P2RV-A100C
				2.0 m	P2RV-A200C
				3.0 m	P2RV-A300C
				5.0 m	P2RV-A500C

## Specifications

## Coil ratings

Item	Standard type	Input type <sup>*1</sup>
Contact form	SPDT	
Input voltage	12, 24 VDC, 24, 48 VAC/VDC, 110, 230 VAC	
Rated load	6 A at 250 VAC 6 A at 30 VDC	50 mA at 30 VAC 50 mA at 36 VDC
Max. switching voltage	400 VAC, 125 VDC	30 VAC, 36 VDC
Max. switching current	6 A	50 mA
Max. switching power	1,500 VA/180 W (resistive load)	
Min. permissible load	10 mA at 5 VDC	1 mA at 100 mVDC
Mechanical durability	5 Million operations min.	
Electrical durability (rated load)	100 K operations (typical)	5 Million operations min.
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min between coil and contacts; 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity	
Ambient temperature	−40 to 55°C	
Approved standards	UL, IEC/VDE, Lloyd's, and CE marking	
Size in mm (H×W×D)	92.7×106.3×6.2 (push-in type) 97.4×106.3×6.2 (screw type)	

<sup>\*1</sup> If a gold layer is destroyed, contact ratings of standard type are applicable



### Plug-in relay with enhanced features covers a wide range of applications

G2RS series, which comes as standard with a mechanical indicator and nameplate covering a wide range of interface applications.

Optionally available with gold clad contacts and diode, whilst the socket and crossbar range offer maximum flexibility during installation.

- SPDT type 10A / DPDT type 5 A
- Mechanical Flag, LED indicator and momentary / lockable testbutton optional
- Transparent housing
- Screwless clamp terminal sockets available
- Space saving – 16 mm width (including sockets)

### Ordering information

Contact form	Diode	LED indicator	Test button	Gold clad 3 µm	Order code		
					(___ = coil voltage + AC/DC)	Common coil voltages <sup>*1</sup>	
SPDT (1-pole)	no	no	no	no	G2R-1-S___(S)	24	230
		yes	no	no	G2R-1-SN___(S)	12, 24	24, 110, 230
		yes	yes	no	G2R-1-SNI___(S)	12, 24	12, 24, 110, 230
	yes	no	no	yes	G2R-1-SNI-AP3___(S)	–	230
		yes	no	no	G2R-1-SND___(S)	12, 24	–
		yes	yes	yes	G2R-1-SNDI___(S)	24	–
DPDT (2-pole)	no	no	no	no	G2R-2-S___(S)	24	24, 110, 240
		yes	no	yes	G2R-2-SN___(S)	12, 24, 48	24, 110, 230
		yes	yes	no	G2R-2-SN-AP3___(S)	24	–
		no	no	yes	G2R-2-SNI___(S)	12, 24	12, 24, 110, 230
		yes	yes	yes	G2R-2-SNI-AP3___(S)	–	230
	yes	no	no	no	G2R-2-SD___(S)	–	–
		yes	no	yes	G2R-2-SND___(S)	12, 24	–
		yes	yes	yes	G2R-2-SND-AP3___(S)	24	–
		no	no	no	G2R-2-SNDI___(S)	12, 24	–
		yes	yes	yes	G2R-2-SNDI-AP3___(S)	24	–

<sup>\*1</sup> Other coil voltages available. Please see specifications.

### Sockets & accessories

For type	Order code									
	DIN rail					PCB				
	Screwless clamp					Screw (plate clamp)		Screw (box clamp)		
	Socket	Clip	Cross bar AC type	Cross bar DC type	Name plate	Socket	Socket	Clip	Name plate	Socket
G2R-1-S	P2RF-05-S	P2CM-S	P2RM-SR	P2RM-SB	R99-11	P2RF-05-E	P2RF-05-ESS	P2CM-ESS	PYC-TR	P2R-05P
G2R-2-S	P2RF-08-S	P2CM-S	P2RM-SR	P2RM-SB	R99-11	P2RF-08-E	P2RF-08-ESS	P2CM-ESS	PYC-TR	P2R-08P

### Specifications

#### Coil ratings

Rated voltage		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
		% of rated voltage			
AC	24 V, 110 V, 120 V, 230 V, 240 V	80% max.	30% max.	110%	0.9 VA (60 Hz)
DC	6 V, 12 V, 24 V, 48 V	70% max.	15% max.	110%	0.53 W

#### Contact ratings

Number of poles	1-pole		2-pole	
Load	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)
Rated load	10 A at 250 VAC 10 A at 30 VDC	7.5 A at 250 VAC 5 A at 30 VDC	5 A at 250 VAC 5 A at 30 VDC	2 A at 250 VAC 3 A at 30 VDC
Rated carry current	10 A		5 A	
Max. switching voltage	440 VAC, 125 VDC		380 VAC, 125 VDC	
Max. switching current	10 A		5 A	
Max. switching power	2,500 VA, 300 W	1,875 VA, 150 W	1,250 VA, 150 W	500 VA, 90 W
Failure rate (reference value)	100 mA at 5 VDC		10 mA at 5 VDC	
Mechanical life	AC: 10,000,000 operations min., DC: 20,000,000 operations min.			
Electrical life	100,000 operations min.			

Technical data

Item	1-pole	2-pole
Contact material	AgSnIn	
Operating time	15 ms max.	15 ms max.
Release time	AC: 10 ms max., DC: 5 ms max.	AC: 15 ms max., DC: 10 ms max.
Dielectric strength	5,000 VAC (coil-contact)	5,000 VAC (coil-contact)
Ambient temperature	Operating: -40 to 70°C (no icing or condensation)	
Size in mm (H×W×D)	35.5×13×29	





### Versatile plug-in relay that sets the standard

Over 1 billion pieces of this mini power relay have been manufactured since its introduction and have successfully been used in many different applications. Bifurcated contacts are optionally available to achieve reliable low current switching during the entire electrical life. Full range of sockets covering mounting by screw, box clamp and screw-less clamp method.

- DPDT type 10 A / 4PDT type 5 A
- Mechanical flag, LED indicator and momentary / lockable testbutton optional
- Transparent housing
- Low power switching (1 mA at 5 VDC) / Bifurcated 4PDT (0.1 mA at 1 VDC)
- Screw-less clamp terminal sockets available

### Ordering information

Contact form	Diode	LED indicator	Lockable test button	Order code (___ = coil voltage + AC/DC)				Common coil voltages <sup>*1</sup>	
								DC	AC
DPDT	no	no	no	MY2___ (S)	–			12, 24	12, 24, 48/50, 110/120, 220/240
DPDT		yes		MY2N___ (S)	–			12, 24	24, 110/120, 220/240
DPDT	yes			MY2N-D2___ (S)	–			24	–
DPDT	no		yes	MY2IN___ (S)	–			12, 24, 48	12, 24, 110/120, 220/240
DPDT				–	MY2IN1___ (S)			12, 24	–
DPDT	yes			MY2IN-D2___ (S)	–			24	–
DPDT				–	MY2IN1-D2___ (S)			24	–
4PDT	no	no	no	MY4___ (S)	–			12, 24, 48, 100/110, 125	12, 24, 48/50, 110/120, 220/240
4PDT		yes		MY4N___ (S)	–			12, 24, 48, 100/110	24, 110/120, 220/240
4PDT	yes			MY4N-D2___ (S)	–			12, 24	–
4PDT	no		yes	MY4IN___ (S)	–			12, 24, 48	12, 24, 48/50, 110/120, 220/240
4PDT				–	MY4IN1___ (S)			12, 24, 48	–
4PDT	yes			MY4IN-D2___ (S)	–			24	–
4PDT				–	MY4IN1-D2___ (S)			24, 48	–

<sup>\*1</sup> Other coil voltages available. Please see specifications.

- Note**
- MY4 also available with bifurcated contacts => example MY4Z
  - MY2 and MY4 AC 110/120, 220/240 types also available with suppression => example MY4N-CR

### Sockets & accessories

#### Input terminals separated from output terminals

For type	Order code					Box clamp			
	Screw-less clamp					Socket	Metal spring clip	Plastic holding clip	Label
MY2	PYF08S	PYCM-08S	PYDM-08SR	PYDM-08SB	R99-11	PYF14-ESS	PYC-0	PYC-35	PYCTR1
MY4	PYF14S	PYCM-14S	PYDM-14SR	PYDM-14SB	R99-11	PYF14-ESS	PYC-0	PYC-35	PYCTR1

#### Combined input/output terminals

Order code	Order code			Box clamp			
	Screw terminal			Socket	Metal spring clip	Plastic holding clip	Label
MY2	Socket	Clip (set = 2 pcs)	Clip for MY2IN (set = 2 pcs)	PYF14-ESN	PYC-0	PYC-35	PYCTR1
MY4	PYF08A-N	PYC-A1	PYC-E1	PYF14-ESN	PYC-0	PYC-35	PYCTR1

## Specifications

## Coil ratings

Rated voltage	Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
	% of rated voltage			
AC 6 V, 12 V, 24 V, 48/50 V 110/120 V, 220/240 V	80% max	30% min.	110%	1.0 to 1.2 VA (60 Hz)
				0.9 to 1.1 VA (60 Hz)
DC 6 V, 12 V, 24 V, 48 V, 100/110 V		10% min.		0.9 W

## Contact ratings

Item	2-pole		4-pole		4-pole (bifurcated)	
	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)
Rated load	5 A at 250 VAC	2 A at 250 VAC	3 A at 250 VAC	0.8 A at 250 VAC	3 A at 250 VAC	0.8 A at 250 VAC
	5 A at 30 VDC	2 A at 30 VDC	3 A at 30 VDC	1.5 A at 30 VDC	3 A at 30 VDC	1.5 A at 30 VDC
Rated carry current	10 A		5 A			
Max. switching voltage	250 VAC, 125 VDC		250 VAC, 125 VDC			
Max. switching current	10 A		5 A			
Max. switching power	2,500 VA, 300 W	1,250 VA, 300 W	1,250 VA, 150 W	500 VA, 150 W	1,250 VA, 150 W	500 VA, 150 W
Failure rate (reference value)	5 VDC at 1 mA		1 VDC at 1 mA		1 VDC at 100 µA	
Mechanical life	AC: 50,000,000 operations min., DC: 100,000,000 operations min.					20,000,000 operations min.
Electrical life	500,000 operations min.		200,000 operations min.		100,000 operations min.	

## Technical data

Item	2-pole	4-pole
Contact Material:	Ag	AgNi + Au
Operating time	20 ms max.	
Release time	20 ms max.	
Dielectric strength	2,000 VAC	
Ambient temperature	Operating: -55 to 70°C (no icing)	
Size in mm (H×W×D)	28×21.5×36	

## Dimension relay + socket

Type	Size in mm (H×W×D)
PYF08S + MYS	90×23.2×38.2
PYF08A-E + MYS	76×23×31
PYF08A-N + MYS	73×22×30
PYF14S + MYS	89.2×31×36.5
PYF14A-E + MYS	76×29.5×31
PYF14A-N + MYS	73×29.5×30
PYF14-ESN + MYS	82×27×80 (incl. plastic holding clip PYC-35)
PYF14-ESS + MYS	83×27×82 (inc. plastic holding clip PYC-35)



### Miniature 15 A power relay

LY-series comes in SPDT, DPDT, 3PDT and 4PDT types covering depending on the number of poles 10 or even 15A rated load. Bifurcated contacts available for DPDT configuration only, whilst the optional Diodes for DC and CR circuit for AC coils are available for all plug-in types.

- SPDT type 15 A / DPDT, 3PDT and 4PDT type 10 A
- Led indicator optional
- Transparent housing
- Suppression by optional Built-in Diodes (DC only) or CR network (AC-types)
- DIN rail mounting by socket. PCB and Flange mounting available

### Ordering information

Contact form	LED indicator	Diode	Terminals			Order code <sup>*1</sup> (___ = coil voltage + AC/DC)	Common coil voltages <sup>*2</sup>	
			Plug-in/solder	PCB	Upper-mounting plug-in/solder		DC	AC
SPDT (1 pole)	no	no	yes	no	no	LY1 ___	24	–
SPDT (1 pole)	yes	yes				LY1N-D2 ___	24	–
DPDT (2 pole)	no	no				LY2 ___	12, 24, 100/110	24, 100/110, 110/120, 220/240
DPDT (2 pole)			no		yes	LY2F ___	–	220/240
DPDT (2 pole)	yes	yes	yes	no	no	LY2N-D2 ___	24	–
3PDT (3 pole)	no	no				LY3 ___	24	–
4PDT (4 pole)						LY4 ___	12, 24, 100/110, 125	24, 100/110, 230
4PDT (4 pole)	yes	yes				LY4N-D2 ___	24	–

<sup>\*1</sup> For other options like CR suppression, please see specifications.

<sup>\*2</sup> Other coil voltages available. Please see specifications.

### Sockets & accessories

	Order code			
	DIN rail		PCB	
	Screw		Soldering	
For type	Socket	Clip (set = 2 pcs)	Socket	Clip (set = 2 pcs.)
LY1/LY2	PTF08A-E	PYC-A1	PT08-0	PYC-P
LY2 CR-type	PTF08A-E	Y92H-3	PT08-0	PYC-1
LY3	PTF11A-E	PYC-A1	PT11-0	PYC-P
LY4	PTF14A-E	PYC-A1	PT14-0	PYC-P

### Dimension relay & socket

Type	Size in mm (H×W×D)
PTF08A-E + LY	78.5×28.5×71
PTF11A-E + LY	78.5×37×71
PTF14A-E + LY	78.5×45.5×71

### Specifications

#### Coil ratings

Poles	Rated voltage		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
			% of rated voltage			
1 or 2	AC	6 V, 12 V, 24 V, 50 V	80% max.	30% min.	110%	1.0 to 1.2 VA (60 Hz)
	DC	100/110 V, 110/120 V, 200/220 V, 220/240 V				0.9 to 1 VA (60 Hz)
3	AC	6 V, 12 V, 24 V, 50 V, 100/110 V, 200/220 V	80% max.	30% min.	110%	0.9 W
	DC	6 V, 12 V, 24 V, 48 V, 100/110 V				1.6 to 2.0 VA (60 Hz)
4	AC	6 V, 12 V, 24 V, 50 V, 100/110 V, 200/220 V	80% max.	30% min.	110%	1.4 W
	DC	6 V, 12 V, 24 V, 48 V, 100/110 V				1.95 to 2.5 VA (60 Hz)
						1.5 W

#### Technical data

Contact material	AgSnIn
Operating time	25 ms max.
Release time	25 ms max.
Dielectric strength	1,000 VAC
Ambient temperature <sup>*1</sup>	–25 to 70°C

<sup>\*1</sup> See datasheet for more details.

#### Contact ratings

Relay	Single contact 1-pole		Single contact 2-, 3- or 4-pole		Bifurcated contacts 2-pole	
Load	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)
Rated load	110 VAC at 15 A	110 VAC at 10 A	110 VAC at 10 A	110 VAC at 7.5 A	110 VAC at 5 A	110 VAC at 4 A
	24 VDC at 15 A	24 VDC at 7 A	24 VDC at 10 A	24 VDC at 5 A	24 VDC at 5 A	24 VDC at 4 A
Rated carry current	15 A		10 A		7 A	
Max. switching voltage	250 VAC, 125 VDC		250 VAC, 125 VDC		250 VAC, 125 VDC	
Max. switching current	15 A		10 A		7 A	
Max. switching power	1,700 VA	1,100 VA	1,100 VA	825 VA	550 VA	440 VA
	360 W	170 W	240 W	120 W	120 W	100 W
Failure rate (reference value)	100 mA at 5 VDC		100 mA at 5 VDC		10 mA at 5 VDC	
Mechanical life	AC: 50,000,000 operations min., DC: 100,000,000 operations min.					
Electrical life	1-, 3-, 4-pole: 200,000 operations min., 2-pole: 500,000 operations min.					



### Exceptionally reliable general purpose relay with 8 or 11 plug-in pins for round sockets

MK relay breaks compared to its size relatively large currents. The AgSnIn contacts ensure long electrical lifetime (min. 100,000 operations). Wide switching range from 10 mA at 1 VDC upto 10 A at 250 VAC.

- 8-pin DPDT and 11-pin 3PDT contact types
- Switching current up to 10 A
- Lockable test button for easy testing
- Temperature rating from –40°C up to 60°C

### Ordering information

Contact form	Mechanical indicator & lockable test button	LED indicator	Diode	Order code *1 (___ = coil voltage + AC/DC)	Common coil voltages *2	
					DC	AC
DPDT (2-pole)	yes	no	no	MKS2PI	12, 24, 110	24, 110, 230
		yes		MKS2PIN	24	24, 230
3PDT (3-pole)		no	yes	MKS3PI-5	12, 24, 48, 110	12, 24, 110, 230
				MKS3PI-D-5	24	N/A
			yes	no	MKS3PIN-5	12, 24
		yes	MKS3PIN-D-5	24	N/A	

<sup>\*1</sup> Many various terminal arrangements possible, please see specifications.

<sup>\*2</sup> Other coil voltages available. Please see specifications.

### Sockets & accessories

For type	Order code			
	DIN rail			
	Screw		Box clamp	
	Socket	Clip (set= 2 pcs.)	Socket	
MKS2	PF083A-E	PFC-A1	–	PF083A-D
MKS3	PF113A-E	PFC-A1	PF113A-N	PF113A-D

### Specifications

#### Coil ratings

Rated voltage		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
		% of rated voltage			
AC	6 V, 12 V, 24 V, 100 V, 110 V, 120 V, 200 V, 220 V, 230 V, 240 V	80% max.	30% min.	110%	2.3 VA (60 Hz)
DC	6 V, 12 V, 24 V, 48 V, 100 V, 110 V		15% min.		1.4 W

#### Contact ratings

Load	2- or 3-pole	
	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7)
Contact material	AgSnIn	
Rated load	NO: 10 A at 250 VAC NC: 5 A at 30 VDC	7 A at 250 VAC
Rated carry current	10 A	
Max. switching voltage	250 VAC, 250 VDC	–
Max. switching current	10 A	
Max. switching power	2,500 VA/ 300 W	1,250 VA/150 W
Mechanical life	5,000,000 operations min.	
Electrical life	100,000 operations min.	

#### Technical data

Operating time	AC: 20 ms max., DC: 30 ms max.
Release time	20 ms max. (40 ms max. for built-in Diode relays)
Dielectric strength	2,500 VAC (coil-contact)
Ambient temperature	Operating: –40 to 60°C (with no icing or condensation)
Size in mm (H×W×D)	34.5×34.5×53.3

#### Dimension relay & socket

Type	Size in mm (H×W×D)
PF083A-E + MKS	56×41×77.8 (incl. clip)
PF113A-E + MKS	56×42.8×87.8 (incl. clip)
PF___A-D + MKS	65×38×80.3



### High capacity, high dielectric strength 4 pole power relay

G7J series developed for switching resistive, inductive as well as motor loads. No contact chattering for momentary voltage drops up to 50% of rated voltage. High dielectric strength (4KV) between coil and contacts as well as between different polarity contacts.

- 25 A Rated current
- 4PST-NO, 3PST-NO / SPST-NC or DPST-NO / DPST-NC
- Bifurcated contacts optional
- Terminals: Screw, Quick-connect or PCB pins
- Mounting by insertion into a clip or just by screws (flange type)

### Ordering information

Contact form	Mounting		Terminal			Order code <sup>*1</sup> (___ = coil voltage + AC/DC)	Common coil voltages <sup>*2</sup>	
	PCB	W-bracket mounting	PCB	Quick-connect	Screw		DC	AC
4PST-NO	yes	no	yes	no	no	G7J-4A-P_ _ _	12, 24	200/240
	no	yes	no		yes	G7J-4A-B_ _ _	24	—
				yes	no	G7J-4A-T_ _ _	12, 24	200/240
3PST-NO/SPST-NC	yes	no	yes	no		G7J-3A1B-P_ _ _	24	—
	no	yes	no		yes	G7J-3A1B-B_ _ _	24	—
DPST-NO/SPST-NC				yes	no	G7J-3A1B-T_ _ _	24	200/240
DPST-NO/DPST-NC	yes	no	yes	no		G7J-2A2B-P_ _ _	24	—

<sup>\*1</sup> For other options like bifurcated contacts, please see specifications.

<sup>\*2</sup> Other coil voltages available. Please see specifications.

### Accessories

For type	Order code
	W-bracket
G7J Screw terminal type	R99-04 for G5F
G7J Quick Connect type	

### Specifications

#### Coil ratings

Rated voltage		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
		% of rated voltage			
AC	24, 50, 100 to 120, 200 to 240	75% max.	15% min.	110%	1.8 to 2.6 VA
DC	6, 12, 24, 48, 100		10% min.		2.0 W

#### Contact ratings

Item	4-pole		
	Resistive load cosφ = 1	Inductive load cosφ = 0.4	Resistive load
Rated load	NO: 25 A at 220 VAC (24 A at 230 VAC) NC: 8 A at 220 VAC (7.5 A at 230 VAC)		NO: 25 A at 30 VDC NC: 8 A at 30 VDC
Rated carry current	NO: 25 A (1 A), NC: 8 A (1 A)		
Max. switching voltage	250 VAC		125 VDC
Max. switching current	NO: 25 A (1 A), NC: 8 A (1 A)		
Mechanical life	1,000,000 operations min.		
Electrical life	100,000 operations min.		

Note: Values between () indicate bifurcated contact specification.

#### Technical data

Contact material	Ag alloy
Operating time	50 ms max.
Release time	50 ms max.
Dielectric strength	4,000 VAC
Ambient temperature	Operating: -25 to 60°C (no icing)