

Electromechanical relays

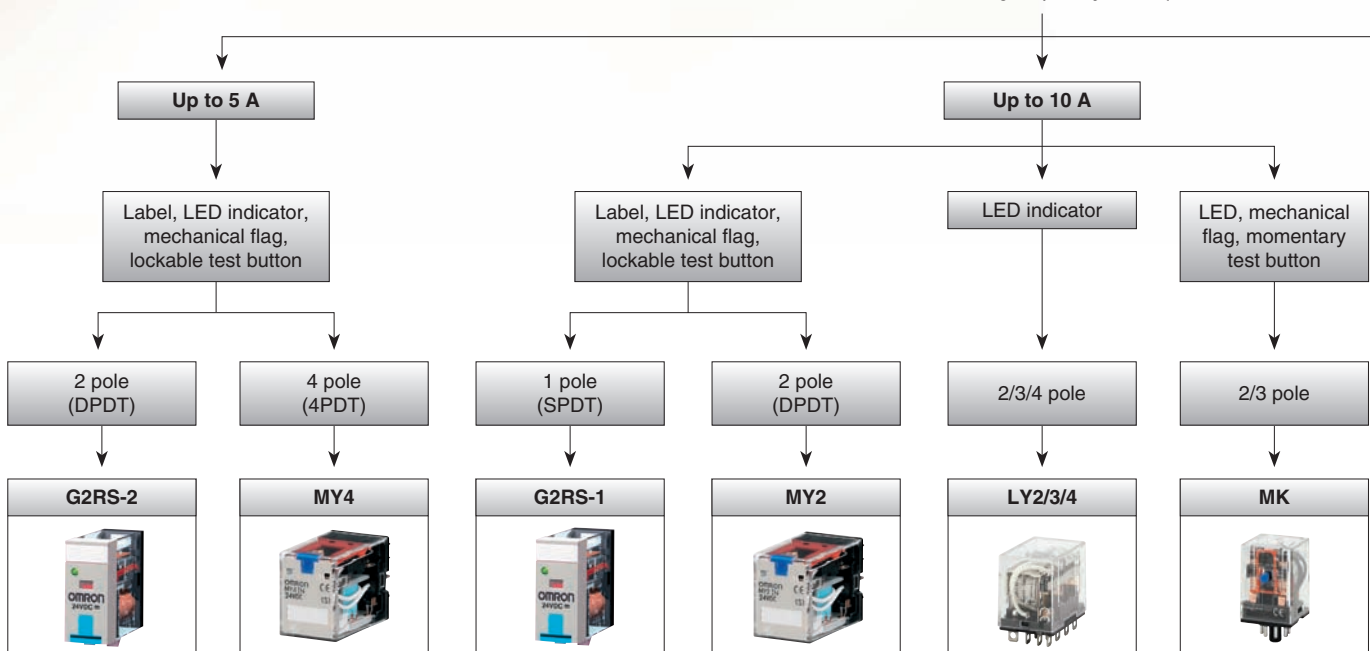
The general-purpose relay outperforming all others!

The MYS gives you peace of mind

The MYS general-purpose relay series sets the standard in terms of performance and reliability. With features like LED indicators and colour-coded two-way action test buttons, these truly versatile relays bring enhanced flexibility for more user-friendly installation, commissioning and operation. They meet all relevant international standards, including UL, CSA, VDE, LR and CE. And they are available with screw terminal or Screw-Less Clamp (SLC) terminal sockets for maximum installation flexibility. No wonder they're first choice among relay users!



What switching capacity is required?



Ever get excited about relays?

Let G2RS turn you on!

Since pioneering the widespread use of slim-line interface relays over a decade ago Omron has consistently set new standards in relay design, and G2RS relays are no exception. They offer unrivalled reliability, performance and product choice, which makes them the preferred choice for relay users. They meet all relevant international standards, including UL, CSA, VDE, LR and CE. And plug-in relay users have the choice of screw terminal or Screw-Less Clamp (SLC) terminal sockets for maximum installation flexibility. The G2RS series make relays exciting again!

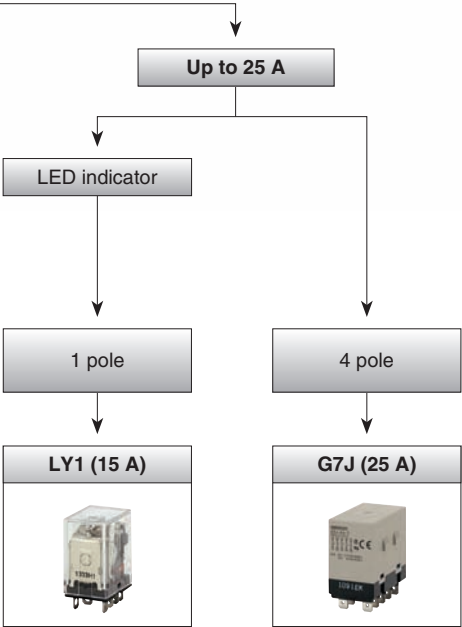


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Selection table

Category		Control panel relay									
Selection criteria											
	Family	G2RS				MY			LY		
	Label	With label							Without label		
	Flag	Mechanical flag							No mechanical flag		
	1 pole	■	■	■					■		
	2 pole				■	■				■	■
	3 pole										
	4 pole						■	■			
	Contacts	SPDT	SPTS-NO bifurcated	SPDT bifurcated	DPDT	DPDT	4PDT	4PDT bifurcated	SPDT	DPDT	DPDT bifurcated
Features	LED indicator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Momentary test button	☐	☐	☐	☐	☐	☐	☐			
	Lockable test button	☐	☐	☐	☐	☐	☐	☐			
	Min. load	100 mA	1 mA	1 mA	10 mA	1 mA	1 mA	0.1 mA	100 mA	100 mA	10 mA
	Max. current	10 A	1 A	1 A	5 A	10 A	5 A	5 A	15 A	10 A	7 A
	SLC socket	■	■	■	■	■	■	■			
	Sealed type						☐	☐			
	Plug-in / solder terminals	■	■	■	■	■	■	■	☐	☐	☐
	PCB terminals					■	■	■	☐	☐	☐
	Quick connect terminals										
	Diode	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
AC voltage	Varistor					☐	☐	☐	☐	☐	☐
	6 V					■	■	■	■	■	■
	12 V					■	■	■	■	■	■
	24 V	■	■	■	■	■	■	■	■	■	■
	48 / 50 V					■	■	■	■	■	■
	110 / 120 V	■	■	■	■	■	■	■	■	■	■
DC voltage	220 / 240 V	■	■	■	■	■	■	■	■	■	■
	6 V	■	■	■	■	■	■	■	■	■	■
	12 V	■	■	■	■	■	■	■	■	■	■
	24 V	■	■	■	■	■	■	■	■	■	■
	48 / 50 V	■	■	■	■	■	■	■	■	■	■
	110 / 120 V					■	■	■	■	■	■
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Electromechanical relays

Category			Control panel relay								
Selection criteria											
	Family	LY		MK-I		MK-S		G7J			
	Label	Without label		Without label							
	Flag	No mechanical flag		Mechanical flag							
	1 pole							■			
	2 pole			■		■			■		
	3 pole	■			■		■			■	
	4 pole		■								■
Contacts	3PDT	4PDT	DPDT	3PDT	DPDT	3PDT	SPST-NC	DPST-NO / -NC	3PDT-NO	4PST-NO	
Features	LED indicator	☐	☐	☐	☐	☐	☐				
	Momentary test button					■	■				
	Lockable test button										
	Min. load	100 mA	100 mA	10 mA	10 mA	10 mA	10 mA	100 mA 10 mA	100 mA	100 mA 10 mA	100 mA 10 mA
	Max. current	10 A	10 A	10 A	10 A	10 A	10 A	8 A	25 A	25 A	25 A
	SLC socket										
	Sealed type										
	Plug-in / solder terminals	☐	☐	■	■	■	■	■	■	■	■
	PCB terminals	☐	☐					■	■	■	■
	Quick connect terminals							■	■	■	■
	Diode	☐	☐	☐	☐	☐	☐				
Varistor			☐	☐	☐	☐					
AC voltage	6 V	■	■	■	■	■	■				
	12 V	■	■		■	■	■				
	24 V	■	■	■	■	■	■	■	■	■	■
	48 / 50 V	■	■	■	■	■	■	■	■	■	■
	110 / 120 V	■	■	■	■	■	■	■	■	■	■
	220 / 240 V	■	■	■	■	■	■	■	■	■	■
DC voltage	6 V	■	■	■	■	■	■				
	12 V	■	■	■	■	■	■	■	■	■	■
	24 V	■	■	■	■	■	■	■	■	■	■
	48 / 50 V	■	■	■	■	■	■	■	■	■	■
	110 / 120 V	■	■	■	■	■	■	■	■	■	■
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Standard



Available



No / not available



Plug-in relays with enhanced features for even more applications

The G2RS relay sets new standards in feature design and reliability. These slimline interface relays give enhanced features and flexibility for more user-friendly installation, commissioning and operation. G2RS comes with standard nameplate and mechanical indicator.

- Space saving - 16 mm with socket
- SPDT type 10 A, DPDT type 5 A
- LED indicator, colour coded green for DC versions, red for AC versions
- Test button, momentary and lockable, blue for DC, red for AC versions
- Screwless clamp-terminal sockets available



Ordering information

Contact Form	Diode	LED indicator	Test button	Gold Clad 3 um	Model (□□□ = Coil Voltage + AC/DC)	Common Coil Voltages ^{*1}	
						DC	AC
SPDT (1 pole)	no	no	no	no	G2R-1-S□□□(S)	24	230
	no	yes	no	no	G2R-1-SN□□□(S)	12, 24	24, 110, 230
	no	yes	yes	no	G2R-1-SNI□□□(S)	24	12, 24, 110, 230
	no	yes	yes	yes	G2R-1-SNI-AP3□□□(S)		230
	yes	no	no	no	G2R-1-SD□□□(S)	24	
	yes	yes	no	no	G2R-1-SND□□□(S)	12, 24	
	yes	yes	yes	no	G2R-1-SNDI□□□(S)	24	
	yes	yes	yes	yes	G2R-1-SNDI-AP3□□□(S)	24	
DPDT (2 pole)	no	no	no	no	G2R-2-S□□□(S)	24	24, 110, 240
	no	yes	no	no	G2R-2-SN□□□(S)	12, 24, 48	24, 110, 230
	no	yes	yes	no	G2R-2-SNI□□□(S)	12, 24	12, 24, 110, 230
	no	yes	yes	yes	G2R-2-SNI-AP3□□□(S)		230
	yes	no	no	no	G2R-2-SD□□□(S)	12, 24	
	yes	yes	no	no	G2R-2-SND□□□(S)	12, 24	
	yes	yes	yes	no	G2R-2-SNDI□□□(S)	12, 24	
	yes	yes	yes	yes	G2R-2-SNDI-AP3□□□(S)	24	

*1 Other coil voltages available. Please see specifications

Accessories

Contact form	Surface-mounting socket DIN-rail			Back-mounting socket
	Screw-less clamp terminal	Clip for screw-less clamp terminal	Screw terminal	PCB terminals
SPDT (1 pole)	P2RF-05S (R99-11name plate (option))	P2CM-S (option)	P2RF-05-E	P2R-05P
DPDT (2 pole)	P2RF-08S (R99-11name plate (option))	P2CM-S (option)	P2RF-08-E	P2R-08P

Specifications

Coil ratings

Rated voltage		Must operate voltage % of rated voltage	Must release voltage	Max. voltage	Power consumption (approx.)
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

Technical data

Item	1-pole	2-pole
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 °C to 70 °C (no icing or condensation)	
Size in mm	35.5Hx13Wx29D	

Contact ratings

Number of poles	1-pole		2-pole	
Load	Resistive load	Inductive load	Resistive load	Inductive load
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.			



Versatile plug-in relay that sets the standard

Since they were first introduced, over 500 million of these mini power relays have rolled off the production line. This truly versatile relay has become the standard, bringing enhanced features and flexibility for more user-friendly installation, commissioning and operation.

- 10 A (DPDT) and 5 A (4PDT) contact types, gold-clad contacts (MY4)
- Mechanical and LED indication
- Push-to-test button - momentary and lockable
- Labelling facility
- Hermetically sealed (MYH) and latching (MY2K) and PCB types available



Ordering information

Contact Form	Diode	LED indicator	Lockable test button	Model (□□□ = Coil Voltage + AC/DC)		Common Coil Voltages ^{*1}	
				Standard Coil Polarity	Reversed Coil Polarity	DC	AC
DPDT	no	no	no	MY2□□□(S)		12, 24	12, 24, 110/120, 220/240
				MY2N□□□(S)		24	24, 220/240
				MY2IN□□□(S)		12, 24	24, 110/120, 220/240
	yes	yes	no	MY2N-D2□□□(S)		24	
				MY2IN-D2□□□(S)		24	
					MY2IN1□□□(S)	24	
4PDT	no	no	no	MY4□□□(S)		12, 24, 48 100/110	12, 24, 48/50, 110/120, 220/240
				MY4N□□□(S)		12, 24, 100/110	24, 110/120, 220/240
				MY4IN□□□(S)		12, 24	12, 24, 48/50, 110/120, 220/240
	yes	yes	yes		MY4IN1□□□(S)	24	
				MY4N-D2□□□(S)		12, 24	
				MY4IN-D2□□□(S)		24	
					MY4IN1-D2□□□(S)	24, 48	

^{*1} Other coil voltages available. Please see specification.

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

Accessories

Contact form	Front Mounting Socket DIN-rail Screwless Clamp	Clip for Screw-less clamp terminal	Label	Socket bridge
DPDT (2 pole)	PYF08S	PYCM08S	R99-11 name plate (option)	PYDM-08SR / SB
4DPDT (4 pole)	PYF14S	PYCM14S	R99-11 name plate (option)	PYDM-14SR / SB

Contact form	Front Mounting Socket DIN-rail / Screw mounting		Metal Spring Clip	Plastic Holding Clip	Label
	Input Common / NO-NC	Out- / input separated			
DPDT (2 Pole)	PYF14-ESN	PYF14-ESS	PYC-0	PYC-35	PYC TR1
4PDT (4 pole)	PYF14-ESN	PYF14-ESS	PYC-0	PYC-35	PYC TR1
DPDT (2 Pole)	PYF08A-E / PYF08A-N ^{*1}				
4PDT (4 pole)	PYF14A-E / PYF14A-N ^{*1}				

^{*1} Clip PYC-A1 (option), except MY2IN type, these use clip PYC-E1 (option).

Specifications

Coil ratings

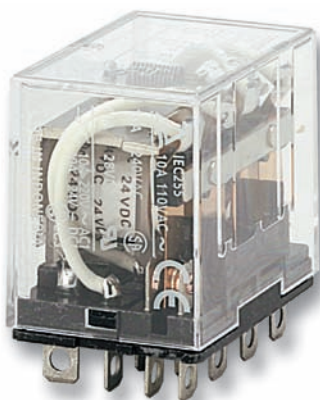
Rated voltage		Must operate voltage	Must release voltage	Max. voltage	Power consumption (approx.)
		% of rated voltage			
AC	6 V, 12 V, 24 V, 48 / 50 V	80% max	30% min.	110%	1.0 to 1.2 VA (60 Hz)
	110 / 120 V, 220 / 240 V				0.9 to 1.1 VA (60 Hz)
DC	6 V, 12 V, 24 V, 48 V, 100 / 110 V		10% min.		0.9 W

Contact ratings

Item	2-pole		4-pole		4-pole (bifurcated)	
	Resistive load	Inductive load	Resistive load	Inductive load	Resistive load	Inductive load
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

Operating time	20 ms max.
Release time	20 ms max.
Dielectric strength	2,000 VAC
Ambient temperature	Operating: -55 °C to 70 °C (no icing)
Size in mm	28Hx21.5Wx36D



A miniature power relay

The LY series is equipped with arc barrier and built-in diode. LY comes in single-, double-, three- and four-pole models. The available mounting types are DIN-rail by socket, PCB & flange mounting.

- SPDT, DPDT, 3PDT and 4PDT contact types
- DIN-rail by socket, PCB and flange mounting types available
- 10 A rated load



Ordering information

Contact form	LED indicator	Diode	Terminals			Model ^{*1} (□□□ = Coil Voltage + AC/DC)	Common Coil Voltages ^{*2}	
			Plug-in / Solder	PCB	Upper-Mounting Plug-in/solder		DC	AC
DPDT (2 Pole)	no	no	no	yes	no	LY2-0□□□	24	
			yes	no		LY2□□□	12, 24	12, 24, 48, 100/110, 110/120, 220/240
	yes	yes	no		yes	LY2F□□□		220/240
			yes		no	LY2N□□□	24	
3PDT (3 Pole)	no	no				LY2N-D2□□□	24	
4PDT (4 Pole)	no					LY3□□□	24	
	yes	yes				LY4□□□	12, 24, 100/110, 125	24, 100/110, 230
						LY4N-D2□□□	24	n/a

^{*1} For other options like CR suppression please see specifications.

^{*2} Other coil voltages available. Please see specification.

Accessories

Contact form	Model				
		Front-connecting socket for DIN-rail / Screw terminals	Clip	Back Connecting socket	
				Plug-in/solder terminals	PCB Terminals
SPDT / DPDT (1, 2 Pole)	PTF08A-E		PYC-A1	PT08	PT08-0
3PDT (3 Pole)	PTF11-A		PYC-A1	PT11	PT11-0
4PDT (4 Pole)	PTF14A-E		PYC-A1	PT14	PT14-0

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)
	100 / 110 V, 110 / 120 V, 200 / 220 V, 220 / 240 V				0.9 to 1 VA (60 Hz)
	DC 6 V, 12 V, 24 V, 48 V, 100 / 110 V		10% min.		0.9 W
3	AC 6 V, 12 V, 24 V, 50 V, 100 / 110 V, 200 / 220 V	80% max.	30% min.	110%	1.6 to 2.0 VA (60 Hz)
	DC 6 V, 12 V, 24 V, 48 V, 100 / 110 V				1.4 W
4	AC 6 V, 12 V, 24 V, 50 V, 100 / 110 V, 200 / 220 V	80% max.	30% min.	110%	1.95 to 2.5 VA (60 Hz)
	DC 6 V, 12 V, 24 V, 48 V, 100 / 110 V				1.5 W

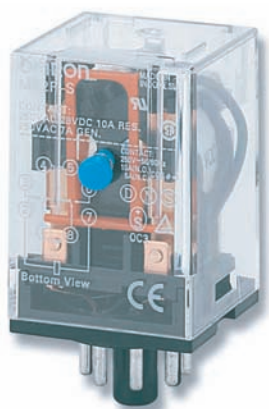
Technical data

Operating time	25 ms max.
Release time	25 ms max.
Dielectric strength	1,000 VAC
Ambient temperature ^{*1}	-25 °C to 70 °C

^{*1} 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	Inductive load	Resistive load	Inductive load	Resistive load	Inductive load
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
					10 mA at 5 VDC	
Failure rate (reference value)	100 mA at 5 VDC					
Mechanical life	AC: 50,000,000 operations min., DC: 100,000,000 operations min.					
	1-, 2-, 4-pole: 200,000 operations min., 2-pole: 500,000 operations min.					



Exceptionally reliable general-purpose relay

The MK relay breaks relatively large load currents despite its small size. The silver contacts ensure a long life (min. 100,000 operations). Standard models are UL, CSA, SEV, DEMKO, NEMKO, SEMKO, TÜV (IEC) and VDE and conform to CENELEC standards.

- 8-pin DPDT and 11-pin 3PDT contact types
- Mechanical indicator and LED indicators
- Push-to-test button
- Diode and varistor surge suppression
- 10 A rated load

Ordering information

Contact Form	Mechanical Indicator & Push to Test Button & Dust Cover	LED Indicator	Diode	Model ^{*1} (□□□ = Coil Voltage + AC/DC)	Common Coil Voltages ^{*2}	
					DC	AC
DPDT (2 Pole)	yes	no	no	MK2P-S□□□	12, 24, 110,	24, 110, 230
		yes		MK2PN-S□□□	24	24, 230
3PDT (3 Pole)		no		MK3P5-S□□□	12, 24, 48, 110	12, 24, 110, 230
			yes	MK3PD-5-S□□□	24	
		yes	no	MK3PN-5-S□□□	12, 24	24, 110, 230
			yes	MK3PND-5-S□□□	24	

^{*1} Many various terminal arrangements possible please see specifications.

^{*2} Other coil voltages available. Please see specifications.

Accessories

Contact Form	Surface Mounting Socket for DIN-rail / Screw mounting	Clip
DPDT (2 Pole)	PF083A-E	PFC-A1
3PDT (3 Pole)	PF113A-E	PFC-A1

Specifications

Coil ratings

Rated voltage		Must operate voltage % of rated voltage	Must release voltage	Max. voltage	Power consumption (approx.)
AC	6 V, 12 V, 24 V, 50 V, 100 V, 110 V 120 V, 200 V, 220 V, 230 V, 240 V	80% max.	30% min.	90% to 110%	2.3 VA (60 Hz) 2.7 VA (50 Hz)
DC	6 V, 12 V, 24 V, 48 V, 100 V, 110 V		15% min.		1.5 W

Contact ratings

Load	2- or 3-pole	
	Resistive load	Inductive load
Contact material	Ag	
Rated load	10 A at 250 VAC 10 A at 28 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, 280 W	1,750 VA
Mechanical life	10,000,000 operations min.	

Technical data

Operating time	AC: 20 ms max., DC: 30 ms max.
Release time	20 ms max.
Dielectric strength	2,500 VAC (coil-contact)
Ambient temperature	Operating: -10 °C to 40 °C (no icing or condensation)
Size in mm	34.5Hx34.5Wx52.5D



A high-capacity multi-pole relay used like a contactor

With a rated load current of 25 A due to the miniature hinge for maximum switching power, the G7J can switch both motor loads as well as resistive and inductive loads. G7J has no contact chattering for momentary voltage drops up to 50% of its rated voltage.

- 4PST-NO, 3PST-NO/SPST-NC or DPST-NO/DPST-NC contact types
- Quick-connect, PCB or screw terminals
- 25 A rated load
- Compatible with momentary voltage drops
- Can be used like a contactor



Ordering information

Contact form	Mounting		Terminal ^{*1}		Model ^{*2} (□□□ = Coil Voltage + AC/DC)	Common Coil Voltages ^{*3}	
	PCB	W-bracket mounting	PCB	Screw		DC	AC
4PST-NO	yes	no	yes	no	G7J-4A-P□□□	24	200/240
	no	yes	no	yes	G7J-4A-B□□□	24	
3PST-NO / SPST-NC	yes	no	yes	no	G7J-3A1B-P□□□	24	
	no	yes	no	yes	G7J-3A1B-B□□□	24	
DPST-NO / DPST-NC	yes	no	yes	no	G7J-2A2B-P□□□	24	

^{*1} Quick-connect also available for W-Bracket mounting upon request.

^{*2} For other options like Bifurcated Contacts please see specifications.

^{*3} Other coil voltages available. Please see specifications.

Accessories

Name	Model	Applicable relay
W-bracket	R99-04 for G5F	G7J4-A-B, G7J-3A1B-B, G7J-4A-T, G7J-3A1B-T, G7J-2A2B-T

Specifications

Coil ratings

Rated voltage		Must operate voltage % of rated voltage	Must release voltage	Max. voltage	Power consumption (approx.)
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	Inductive load	Resistive load
Contact material	Ag alloy		
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.		

Technical data

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

Solid state relays

Omron offers a comprehensive range of solid state relays (SSRs) that provides the perfect load switching for temperature control applications. These SSRs are a fast, reliable and cost-effective partner to our temperature controllers.

Combinations of temperature controller and SSR are available to handle almost any application, including heater bands for plastics extrusion processes, packaging machinery and heater elements in general manufacturing.

What switching capacity is required?

Up to 90 A power relay

Multi-channel power controller

Number of phases?

Single-phase

Three-phase

Up to 8 solid state relays

Type and size?

Compact flat pack style up to 90 A

Integrated heat sink, replaceable powercartridge up to 60 A

Integrated heat sink

G3NA

G3PA

G3PB

G3PB

G3ZA



Now there's a clever way to regulate heater power

G3ZA – compact and easy to integrate!

The G3ZA can control up to 8 solid state relays (SSRs) via a single RS-485 2-wire link to your PLC or PC. There's no need for conversion units or digital output cards – the G3ZA automatically converts the power control signal into a more manageable trigger signal for standard SSRs.

This multi-channel power controller uses a special trigger method and offset control to provide precise heater power regulation. It's faster than standard SSR switching, and it's less noisy and more cost-effective than phase angle control. Available in four versions, the compact G3ZA is easy to install, program and operate.



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Category		Control panel mounting type				Power regulator
Selection criteria						
	Model	G3NA	G3PA	G3PB	G3PB	G3ZA
	Type of load	Normal resistors Middle and long wave IR heater Transformers and inductors		Normal resistors Middle and long wave IR heater	Normal resistors	Depends on the SSR used Distributes loop / control output levels (mV%) to SSRs
	1-phase control	■	■	■		Depends on the SSR used
	2-phase control				■	Depends on the SSR used
	3-phase control				■	Depends on the SSR used
	Function	Heater control, motor control	Heater control	Heater control	Heater control	Intelligent power control
	Max. current rating	50 A	60 A	45 A	45 A	Depends on the SSR used
	Load voltage / current [VAC]					
Load voltage / current [VAC]	24 to 240	■	■			
	100 to 240			■		■
	200 to 480	■	■	■	■	■ 400 to 480
Load voltage / current [VDC]	5 to 200	■				
Input voltages [VDC or VAC]	5 to 24 VDC	■	■			
	12 to 24 VDC		■	■	■	
	24 VAC		■			
	100 to 120 VAC	■				
	200 to 240 VAC	■				
Features	Built-in heat sink		■	■	■	
	Zero-cross	■	■	■	■	
	Built-in varistor	■			■	
	LED operation indicator	■	■	■	■	■
	Protective cover	■	■	■	■	
	3-phase loads via 3 single-phase SSRs	■	■		■	
	Replaceable power cartridge	■	■			
	Alarm output					■
	Built-in failure detection		■			■
	SSR open circuits detection					■
	SSR short circuits detection					■
Mounting	DIN-rail	■	■	■	■	■
	Screw	■	■	■	■	■
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■ Standard

□ Available

□ No / not available



A wide range of models with 5 to 90 A output currents

All models feature the same compact dimensions to provide a uniform mounting pitch. A built-in varistor effectively absorbs external surges. The operation indicator enables monitoring operation.

- 5 - 90 A output current
- 24 - 480 VAC / 5 - 200 VDC output voltages
- Built-in varistor
- Operation indicator (red LED)
- Protective cover for greater safety



Ordering information

Applicable output load		Zero cross function	Isolation	Rated input voltage	Must operate voltage	Must release voltage	Load current with / without heatsink at 40 °C	Model
24 to 240 VAC	5 A	Yes	Phototriac	5 to 24 VDC	4 VDC max.	1 VDC min.	0.1 - 5 A / 0.1 - 3 A	G3NA-205B-UTU DC5-24
			Photocoupler	100 to 120 VAC 200 to 240 VAC	75 VAC max. 150 VAC max.	20 VAC min. 40 VAC min.		G3NA-205B-UTU AC100-120 G3NA-205B-UTU AC200-240
	10 A		Phototriac	5 to 24 VDC	4 VDC max.	1 VDC min.		0.1 - 10 A / 0.1 - 4 A
			Photocoupler	100 to 120 VAC 200 to 240 VAC	75 VAC max. 150 VAC max.	20 VAC min. 40 VAC min.	G3NA-210B-UTU AC100-120 G3NA-210B-UTU AC200-240	
	20 A		Phototriac	5 to 24 VDC	4 VDC max.	1 VDC min.	0.1 - 20 A / 0.1 - 4 A	
			Photocoupler	100 to 120 VAC 200 to 240 VAC	75 VAC max. 150 VAC max.	20 VAC min. 40 VAC min.		G3NA-220B-UTU AC100-120 G3NA-220B-UTU AC200-240
			40 A	Phototriac	5 to 24 VDC	4 VDC max.		1 VDC min.
	Photocoupler			100 to 120 VAC 200 to 240 VAC	75 VAC max. 150 VAC max.	20 VAC min. 40 VAC min.	G3NA-240B-UTU AC100-120 G3NA-240B-UTU AC200-240	
	75 A			Phototriac	5 to 24 VDC	4 VDC max.	1 VDC min.	1 - 75 A / 1 - 7 A
			Photocoupler	100 to 240 VAC			G3NA-275B-UTU AC100-240	
	90 A		Phototriac	5 to 24 VDC			1 - 90 A / 1 - 7 A	G3NA-290B-UTU DC5-24
			Photocoupler	100 to 240 VAC				G3NA-290B-UTU AC100-240
5 to 200 VDC	10 A	No	Photocoupler	5 to 24 VDC	4 VDC max.	1 VDC min.	0.1 - 10 A / 0.1 - 4 A	G3NA-D210B-UTU DC5-24
				100 to 240 VAC	75 VAC max.	20 VAC min.		G3NA-D210B-UTU AC100-240
200 to 480 VAC	10 A	Yes		5 to 24 VDC	4 VDC max.	1 VDC min.	0.2 - 10 A / 0.2 - 4 A	G3NA-410B DC5-24
				100 to 240 VAC	75 VAC max.	20 VAC min.		G3NA-410B AC100-240
	20 A			5 to 24 VDC	4 VDC max.	1 VDC min.	0.2 - 20 A / 0.2 - 4 A	G3NA-420B DC5-24
				100 to 240 VAC	75 VAC max.	20 VAC min.		G3NA-420B AC100-240
	40 A			5 to 24 VDC	4 VDC max.	1 VDC min.	0.2 - 40 A / 0.2 - 6 A	G3NA-440B DC5-24
				100 to 240 VAC	75 VAC max.	20 VAC min.		G3NA-440B AC100-240
	50 A			5 to 24 VDC	4 VDC max.	1 VDC min.	0.2 - 50 A / 0.2 - 6 A	G3NA-450B DC5-24
	75 A			5 to 24 VDC	75 VAC max.	20 VAC min.	1 - 75 A / 1 - 7 A	G3NA-475B-UTU DC5-24
				100 to 240 VAC				G3NA-475B-UTU AC100-240
	90 A			5 to 24 VDC			1 - 90 A / 1 - 7 A	G3NA-490B-UTU DC5-24
	100 to 240 VAC			G3NA-490B-UTU AC100-240				

Bold = preferred stock item

Accessories

Name	Model	Applicable SSRs
One-touch mounting plates	R99-12 FOR G3NA	
Mounting bracket	R99-11 FOR G3NA	G3NA-240B, G3NA-440B
Slim models enabling DIN-rail mounting	Y92B-N50	G3NA-205B, G3NA-210B, G3NA-D210B, G3NA-410B
	Y92B-N100	G3NA-220B, G3NA-420B
	Y92B-N150	G3NA-240B, G3NA-440B
Slim models enabling DIN-rail mounting	Y92B-P250	G3NA-450B
	Y92B-P250NF	G3NA-275B-UTU, G3NA-290B-UTU, G3NA-475B-UTU, G3NA-490B-UTU
Low-cost models	Y92B-A100	G3NA-205B, G3NA-210B, G3NA-D210B, G3NA-220B, G3NA-410B, G3NA-420B
	Y92B-A150N	G3NA-240B, G3NA-440B
	Y92B-A250	G3NA-440B

Bold = preferred stock item

Specifications

Operating voltage range	5 to 24 VDC: 4 to 32 VDC 100 to 120 VAC: 75 to 132 VAC 200 to 240 VAC: 150 to 264 VAC
Output ON voltage drop	G3NA-2: 1.6 V (RMS) max. G3NA-4: 1.8 V (RMS) max. G3NA-D2: 1.5 V max.
Leakage current	5 mA (100 V) / 10 mA (200 V) G3NA-D2: 5 mA max. (200 VDC)
Load voltage range	200 to 480 VAC: 180 to 528 VAC 24 to 240 VAC: 19 to 264 VAC 5 to 200 VDC: 4 to 220 VDC
Ambient temperature	Operating: -30 to 80 °C
Operate & release time	1/2 of load power source cycle + 1 ms max. (DC input) 1/2 of load power source cycle + 1 ms max. (DC input)
G3NA-D2	1 ms max. (DC input; release 5 ms), 30 ms max. (AC input)
Size in mm	58Hx43Wx27D



Extremely thin relays with integrated heat sinks

Optimum design of the heat sink has contributed to the downsizing of this product. The power element cartridges of G3PA are easily replaceable for easy maintenance. G3PA can be mounted on a DIN-rail or using screws.

- 10 - 50 A output current
- 240 - 480 VAC output voltages
- Applicable with 3-phase loads
- Replaceable power element cartridges
- All features can be delivered with or without heat sink



Ordering information

Rated output load	Zero cross function	Rated input voltage	Rated voltage	Operating voltage range	Input current impedance	Voltage level		Size in mm (HxWxD)	Model
						Must operate voltage	Must release voltage		
24 to 240 VAC	10 A	Yes	5 to 24 VDC	5 to 24 VDC	4 to 30 VDC	7 mA max.	4 VDC max.	1 VDC min.	G3PA-210B-VD DC5-24
	20 A								G3PA-220B-VD DC5-24
	40 A								G3PA-240B-VD DC5-24
	60 A								G3PA-260B-VD DC5-24
	10 A	24 VAC	24 VAC	19.2 to 26.4 VAC	1.4 kΩ ±20%	19.2 VAC max.	4.8 VAC min.	100x27x100	G3PA-210B-VD AC24
	20 A								G3PA-220B-VD AC24
	40 A								G3PA-240B-VD AC24
	60 A								G3PA-260B-VD AC24
180 to 400 VAC	20 A	12 to 24 VDC	12 to 24 VDC	9.6 to 30 VDC	7 mA max.	9.2 VDC max.	1 VDC min.	100x37x100	G3PA-420B-VD DC12-24
	30 A							100x47x100	G3PA-430B-VD DC12-24
200 to 480 VAC	20 A							100x37x100	G3PA-420B-VD-2 DC12-24
	30 A							100x47x100	G3PA-430B-VD-2 DC12-24
	50 A							100x110x100	G3PA-450B-VD-2 DC12-24

Bold = preferred stock item

Accessories

Replacement parts: power device cartridges

Carry current	Load voltage range	Model	Applicable SSR
10 A	19 to 264 VAC	G32A-A10-VD DC5-24	G3PA-210B-VD DC5-24
		G32A-A10-VD AC24	G3PA-210B-VD AC24
20 A		G32A-A20-VD DC5-24	G3PA-220B-VD DC5-24
		G32A-A20-VD AC24	G3PA-220B-VD AC24
40 A		G32A-A40-VD DC5-24	G3PA-240B-VD DC5-24
		G32A-A40-VD AC24	G3PA-240B-VD AC24
60 A		G32A-A60-VD DC5-24	G3PA-260B-VD DC5-24
		G32A-A60-VD AC24	G3PA-260B-VD AC24

Replacement parts: power device cartridges

Carry current	Load voltage range	Model	Applicable SSR
20 A	150 to 440 VAC	G32A-A420-VD DC12-24	G3PA-420B-VD DC12-24
30 A		G32A-A430-VD DC12-24	G3PA-430B-VD DC12-24
20 A	180 to 528 VAC	G32A-A420-VD-2 DC12-24	G3PA-420B-VD-2 DC12-24
30 A		G32A-A430-VD-2 DC12-24	G3PA-430B-VD-2 DC12-24
50 A		G32A-A450-VD-2 DC12-24	G3PA-450B-VD-2 DC12-24

Bold = preferred stock item

Current flow	Model	Applicable SSR
10 A	G32A-D20	G3PA-210B-VD, G3PA-210BL-VD, G3PA-220B-VD, G3PA-220BL-VD, G3PA-420B-VD, G3PA-420BL-VD
20 A		
30 A	G32A-D40	G3PA-430B-VD, G3PA-430BL-VD, G3PA-240B-VD, G3PA-240BL-VD
40 A		

Specifications

Isolation	Phototriac coupler
Indicator	Yes
Ambient temperature	Operating: -30 °C to 80 °C
Load voltage range	200 - 480 VAC: 180 to 528 VAC 24 - 240 VAC: 19 to 264 VAC 180 to 400 VAC: 150 to 440 VAC
Output ON drop	1.6 V (RMS) max.
Operate time	0.5 of load power source cycle + 1 ms max. (DC input, -B models) 1.5 of load power source cycle + 1 ms max. (AC input) 1 ms max. (-BL models)
Release time	0.5 of load power source cycle + 1 ms max. (DC input) 1.5 of load power source cycle + 1 ms max. (AC input)



Compact, slim-profile SSR with heat sink for heater control

The compact design of G3PB has been achieved by optimising the shape of the heat sink. The G3PB range provides you with a choice between DIN-rail mounting and screw mounting.

- Single and three phase, 15 - 45 A output current
- 100 - 480 VAC output voltages
- Applicable with 1-, 2- and 3-phase loads
- All features can be delivered with or without heat sink
- Conforms to CE marking, EN (VDE approval), CSA and VDE standards



Ordering information

Phases	Main circuit voltage	Rated output load	Applicable load current (at 40 °C)	Permissible I ² t (half 60 Hz wave)	Applicable heater capacity (with class - 1 AC resistive load)	Size in mm (HxWxD)	Number of poles	Model number
1	100 to 240 VAC	15 A	0.1 - 15 A	128 A ² s	6 kW max.	100x22.5x100		G3PB-215B-VD DC12-24
		25 A	0.1 - 25 A	1,350 A ² s	10 kW max.			G3PB-225B-VD DC12-24
		35 A	0.5 - 35 A		14 kW max.	100x44.5x100		G3PB-235B-VD DC12-24
		45 A	0.5 - 45 A		18 kW max.			G3PB-245B-VD DC12-24
	200 to 480 VAC	15 A	0.1 - 15 A	128 A ² s	6 kW max.	100x22.5x100		G3PB-515B-VD DC12-24
		25 A	0.1 - 25 A	1,350 A ² s	10 kW max.			G3PB-525B-VD DC12-24
		35 A	0.5 - 35 A		14 kW max.	100x44.5x100		G3PB-535B-VD DC12-24
		45 A	0.5 - 45 A		18 kW max.			G3PB-545B-VD DC12-24
3	100 to 240 VAC	15 A	0.2 - 15 A	260 A ² s	5.1 kW max.	150.5x80x150.5	3	G3PB-215B-3N-VD DC12-24
							2	G3PB-215B-2N-VD DC12-24
		25 A	0.2 - 25 A	2,660 A ² s	8.6 kW max.	150.5x80x150.5	3	G3PB-225B-3N-VD DC12-24
							2	G3PB-225B-2N-VD DC12-24
		35 A	0.5 - 35 A		12.1 kW max.	150.5x80x150.5	3	G3PB-235B-3N-VD DC12-24
							2	G3PB-235B-2N-VD DC12-24
		45 A	0.5 - 45 A		15.5 kW max.	150.5x110x150.5	3	G3PB-245B-3N-VD DC12-24
						150.5x80x150.5	2	G3PB-245B-2N-VD DC12-24
	200 to 480 VAC	15 A	0.5 - 15 A	260 A ² s	12.5 kW max.	150.5x80x150.5	3	G3PB-515B-3N-VD DC12-24
							2	G3PB-515B-2N-VD DC12-24
		25 A	0.5 - 25 A	1,040 A ² s	20.7 kW max.	150.5x80x150.5	3	G3PB-525B-3N-VD DC12-24
							2	G3PB-525B-2N-VD DC12-24
		35 A	0.5 - 35 A		29.0 kW max.	150.5x80x150.5	3	G3PB-535B-3N-VD DC12-24
							2	G3PB-535B-2N-VD DC12-24
		45 A	0.5 - 45 A		37.4 kW max.	150.5x110x150.5	3	G3PB-545B-3N-VD DC12-24
						150.5x80x150.5	2	G3PB-545B-2N-VD DC12-24

Bold = preferred stock item

Specifications

Rated input voltage	12 to 24 VDC
Operating voltage range	9.6 to 30 VDC
Rated input current (impedance)	10 mA max. (at 24 VDC)
Zero cross function	Yes
Must operate voltage	9.6 VDC max.
Must release voltage	1 VDC min.
Isolation method	Phototriac coupler
Operation indicator	Yes (yellow)
Load voltage range	200 to 480 VAC models: 180 to 528 VAC 100 to 240 VAC models: 75 to 264 VAC
Operate time	1/2 of load power source cycle +1 ms max.
Release time	1/2 of load power source cycle +1 ms max.
Leakage current	10 mA (at 200 VAC)
Ambient temperature	Operating: -30 °C to 80 °C



Multi-channel power controller = smarter SSR usage

The G3ZA receives manipulated variables generated by control loops or manual settings via a simple-to-wire RS-485. It regulates the heater power with high precision by driving up to eight standard SSRs. Moreover, the offset control reduces peak power in the supply net.

- Multi-channel power controller
- Controls up to eight standard solid state relays
- Easy integration with PLC
- Compact size
- Available with heater alarms (four channels) or without (eight channels)



Ordering information

Name	Number of control channels	Heater burnout detection	Load power supply voltage	Model
Multi-channel power controller	4	Supported	100 to 240 VAC	G3ZA-4H203-FLK-UTU
			400 to 480 VAC	G3ZA-4H403-FLK-UTU
	8	Not supported	100 to 240 VAC	G3ZA-8A203-FLK-UTU
			400 to 480 VAC	G3ZA-8A403-FLK-UTU

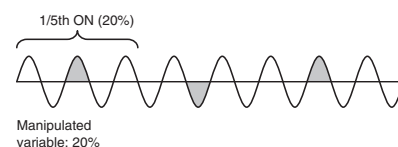
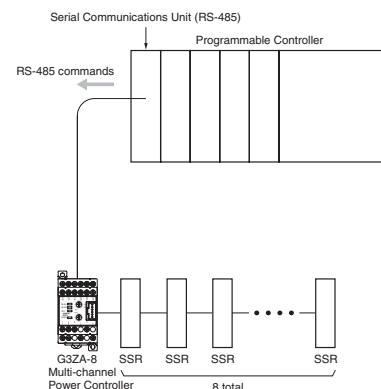
Accessories

Name	Hole diameter	Model
Current transformer (CT)	5.8 dia.	E54-CT1
	12.0 dia.	E54-CT3

Bold = preferred stock item

Specifications

Item	Load power supply voltage range	
	100 to 240 VAC	400 to 480 VAC
Power supply voltage	100 to 240 VAC (50 / 60 Hz)	
Operating voltage range	85 to 264 VAC	
Power consumption	16 VA max.	
Load power supply voltage	100 to 240 VAC	400 to 480 VAC
Load power supply voltage range	75 to 264 VAC	340 to 528 VAC
Manipulated variable input	0.0% to 100.0% (via RS-485 communications)	
Current transformer input	Single-phase AC, 0 to 50 A (primary current of CT)	
Trigger output	One voltage output for each channel, 12 VDC ±15%, max. load current: 21 mA (with built-in short-circuit protection circuit)	
Alarm output	NPN open collector, one output Max. applicable voltage: 30 VDC Max. load current: 50 mA Residual voltage: 1.5 V max. Leakage current: 0.4 mA max.	
Indications	LED indicators	
Ambient operating temperature	-10 °C to 55 °C (with no icing or condensation)	
Ambient operating humidity	25% to 85%	
Storage temperature	-25 °C to 65 °C (with no icing or condensation)	
Performance		
Current indication accuracy	±3 A (for models with heater burnout detection)	
Insulation resistance	100 MΩ min. (at 500 VDC) between primary and secondary	
Dielectric strength	2,000 VAC, 50 / 60 Hz for 1 min between primary and secondary	
Vibration resistance	Vibration frequency: 10 to 55 Hz, acceleration: 50 m/s ² in X, Y, and Z directions	
Shock resistance	300 m/s ² three times each in six directions along three axes	
Weight	Approx. 200 g (including terminal cover)	
Degree of protection	IP20	
Memory protection	EEPROM (non-volatile memory) (number of writes: 100,000)	
Installation environment	Overvoltage category III, pollution degree 2 (according to IEC 60664-1)	
Approved standards	UL508 (Listing), CSA22.2 No. 14 EN50178 EN61000-6-4 (EN55011: 1998, A1: 1999 Class A, Group 1) EN61000-6-2: 2001	
Size in mm	76Hx45Wx111D	



Optimum cycle control

- Optimum cycle control is performed by driving SSRs according to load power detection and trigger signals. (Zero-cross SSRs are used.)
- Noise is suppressed while ensure high-speed response by turning outputs ON and OFF each half cycle to achieve high-precision temperature control.

Low voltage switch gear

The J7 family of contactors, thermal overload relays, and motor protection circuit breakers is designed using state-of-the-art technology, and produced to a very high quality. These products are tough and reliable. The motor contactor range up to 37 kW can operate in temperatures from -40°C to $+90^{\circ}\text{C}$! They offer impressive power-handling capabilities on very compact footprints.

Constructed according to European and International standards, these contactors, thermal overload relays and motor protection circuit breakers conform to EN / IEC and are approved by UL / CSA, enabling them to be used in any part of the world.

They are suitable for any industrial application and will appeal to panel builders, OEMs and engineers in the automotive, chemical and heavy power industries looking for the best choice in top-quality products from one supplier.

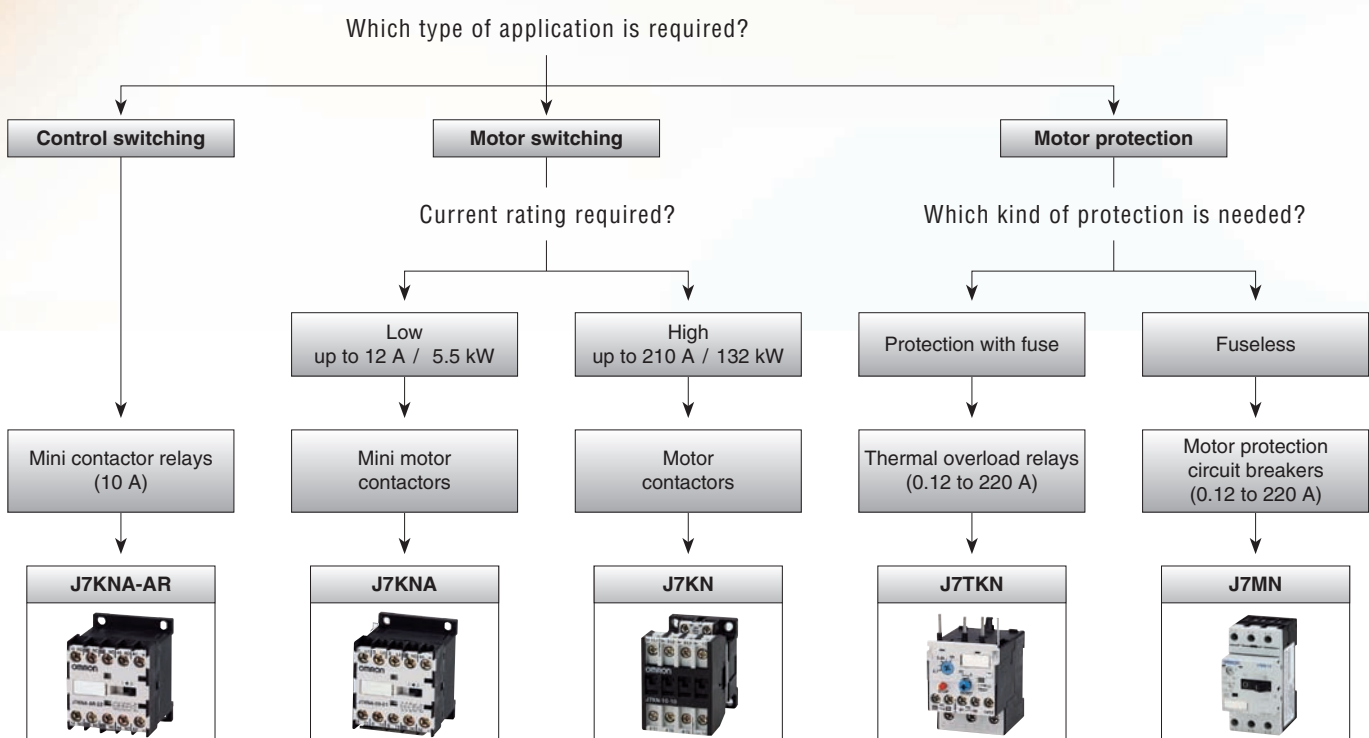




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Selection table

Category		Mini contactor relay		
Selection criteria				
	Model	J7KNA-AR-40	J7KNA-AR-31	J7KNA-AR-22
	Mounting	35 mm DIN-rail or base		
	Distinction number according to EN 50011	40E	31E	22E
	AC15 230 V [A]	3	3	3
	AC15 400 V [A]	2	2	2
	Thermal rated current I _{th} [A]	10	10	10
Auxiliary contacts	Thermal overload relay			
	Integrated auxiliary contacts	4 NO	3 NO + 1 NC	2 NO + 2 NC
	Additional auxiliary contacts block	J73-KN-A-11 (1 NO + 1 NC) J73-KN-A-02 (2 NC) J73-KN-A-40 (4 NO)		
AC power consumption of coils	Inrush [VA]	25	25	25
	Sealed [VA]	4 - 5	4 - 5	4 - 5
DC power consumption of coils	Inrush [W]	2.5	2.5	2.5
	Sealed [W]	2.5	2.5	2.5
Cable cross-section	Solid or stranded [mm ²]	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5
	Flexible [mm ²]	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5
	Cables per clamp	2	2	2
Auxiliary contact	I _{th}	10 A	10 A	10 A
	AC15 at 230 V	3 A	3 A	3 A
Features	Rated insulation voltage U _i	690 VAC	690 VAC	690 VAC
	AC operated	■	■	■
	DC operated	■	■	■
	4 pole version	□	□	□
	Short circuit protection	20 A	20 A	20 A
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Category		Mini motor contactor		Motor contactors						
Selection criteria										
	Model	J7KNA-09	J7KNA-12	J7KN-10	J7KN-14	J7KN-18	J7KN-22	J7KN-24	J7KN-32	J7KN-40
	Mounting	35 mm DIN-rail or base								
	AC1 up to 690 V [A]	20		25		32		50	65	80
	Motor AC3 up to 400 V [A]	9	12	10	14	18	22	24	32	40
	Motor AC3 380 - 415 V [kW]	4	5.5	4	5.5	7.5	11	11	15	18.5
	Motor AC3 660 - 690 V [kW]	4	5.5	5.5	7.5	10	10	15	18.5	18.5
Auxiliary contacts	Thermal overload relay	J7TKN-A		J7TKN-B				J7TKN-C		
	Integrated auxiliary contacts	1 NO / 1 NC	1 NO / 1 NC	1 NO / 1 NC	1 NO / 1 NC	1 NO / 1 NC	1 NO / 1 NC			
	Additional auxiliary contacts block	J73KN-AM-11 (1 NO + 1 NC) J73KN-AM-02 (2 NC) J73KN-AM-22 (2 NO + 2 NC)		J73KN-B-10 (1 NO) J73KN-B-01 (1 NC)				J73KN-B-10 (1 NO) J73KN-B-01 (1 NC) J73KN-C-11S (1 NO + 1 NC)		
AC power consumption of coils	Inrush [VA]	25	25	33 – 45	33 – 45	33 – 45	33 – 45	90 – 115	90 – 115	90 – 115
	Sealed [VA]	4 – 5	4 – 5	7 – 10	7 – 10	7 – 10	7 – 10	9 – 13	9 – 13	9 – 13
DC power consumption of coils	Inrush [W]	2.5	2.5	75	75	75	75	140	140	140
	Sealed [W]	2.5	2.5	2	2	2	2	2	2	2
Cable cross-section	Solid or stranded [mm ²]	0.75 – 2.5	0.75 – 2.5	0.75 – 6	0.75 – 6	0.75 – 6	0.75 – 6	1.5 – 25	1.5 – 25	1.5 – 25
	Flexible [mm ²]	0.75 – 2.5	0.75 – 2.5	1 – 4	1 – 4	1 – 4	1 – 4	2.5 – 16	2.5 – 16	2.5 – 16
	Cables per clamp	2	2	2	2	2	2	1	1	1
Auxiliary contact	I _{th}	10 A	10 A	16 A	16 A	16 A	16 A			
	AC15 at 230 V	3 A	3 A	12 A	12 A	12 A	12 A			
Features	Rated insulation voltage U _i	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC
	AC operated	■	■	■	■	■	■	■	■	■
	DC operated	■	■	■	■	■	■	■	■	■
	4 pole version	■								
	Short circuit protection	20 A	20 A	25 A	25 A	25 A	25 A			
	Page	173		174						

Low voltage switch gear

Category		Motor contactors							
Selection criteria									
	Model	J7KN-50	J7KN-62	J7KN-74	J7KN-85	J7KN-110	J7KN-150	J7KN-175	J7KN-200
	Mounting	35 mm DIN-rail or base			Base				
	AC1 up to 690 V [A]	110	120	130	150	170	200	250	350
	Motor AC3 up to 400 V [A]	50	62	74	85	110	150	175	200
	Motor AC3 380 - 415 V [kW]	22	30	37	45	55	75	90	110
	Motor AC3 660 - 690 V [kW]	30	37	45	55	55	75	110	132
Auxiliary contacts	Thermal overload relay	J7TKN-D			J7TKN-E		J7TKN-F		
	Integrated auxiliary contacts				2 NO + 2 NC	2 NO + 2 NC	1 NO / 1 NC	1 NO / 1 NC	2 NO + 2 NC
AC power consumption of coils	Additional auxiliary contacts block	J73KN-B-10 (1 NO) J73KN-B-01 (1 NC) J73KN-C-11S (1 NO + 1 NC)							
	Inrush [VA]	140 – 165	140 – 165	140 – 165	280 – 350	350 – 420	550	550	1100
DC power consumption of coils	Sealed [VA]	13 – 18	13 – 18	13 – 18	16 – 23	23 – 29	130	130	66
	Inrush [W]	200	200	200	170	320	160	160	530
Cable cross-section	Sealed [W]	6	6	6	2	4	5	5	21
	Solid or stranded [mm ²]	4 – 50	4 – 50	4 – 50	10 – 70	10 – 70	95	120	185
	Flexible [mm ²]	10 – 35	10 – 35	10 – 35	6 – 50	16 – 50	Screw	Screw	Screw
Auxiliary contact	Cables per clamp	1	1	1	1	1	1	1	1
	I _{th}	16 A	16 A		16 A	16 A	10 A	10 A	10 A
Features	AC15 at 230 V	12 A	12 A		12 A	12 A	3 A	3 A	3 A
	Rated insulation voltage U _i	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC	690 VAC
	AC operated	■	■	■	■	■	■	■	■
	DC operated	■	■	■	■	■			
Short circuit protection	4 pole version								
	Short circuit protection				25 A	25 A	10 A	10 A	10 A
Page		174							

■ Standard

□ Available

□ No / not available

Selection table

Category		Motor protection circuit breaker																							
Selection criteria																									
	Model	J7M N- 12- E16	J7M N- 12- E2	J7M N- 12- E25	J7M N- 12- E32	J7M N- 12- E4	J7M N- 12- E5	J7M N- 12- E63	J7M N- 12- E8	J7M N- 12- 1	J7M N- 12- 1E2 5	J7M N- 12- 1E6	J7M N- 12- 2	J7M N- 12- 2E5	J7M N- 12- 3E2	J7M N- 12- 4	J7M N- 12- 5	J7M N- 12- 6E3	J7M N- 12- 8	J7M N- 12- 10	J7M N- 12- 12	J7M N- 25- E16	J7M N- 25- E2	J7M N- 25- E25	J7M N- 25- E32
	Family	J7MN-12																				J7MN-25			
	Type	Switch type																				Rotary type			
	Current range	0.11 - 12 A																				0.16 - 25 A			
	Rated current [A]	0.16	0.2	0.25	0.32	0.4	0.5	0.63	0.8	1	1.25	1.6	2	2.5	3.2	4	5	6.3	8	10	12	0.16	0.2	0.25	0.32
	Suitable for motors 3 ~ 400 V [kW]			0.06	0.09		0.12	0.18		0.25	0.37	0.55	0.75		1.1	1.5		2.2	3	4	5.5			0.06	0.09
	Current thermal overload release [A]	0.11 – 0.16	0.14 –0.2	0.18 – 0.25	0.22 – 0.32	0.28 –0.4	0.35 –0.5	0.45 – 0.63	0.55 –0.8	0.7– 1	0.9– 1.25	1.1– 1.6	1.4– 2	1.8– 2.5	2.2– 3.2	2.8– 4	3.5– 5	4.5– 6.3	5.5– 8	7 – 10	9 – 12	0.11 – 0.16	0.14 –0.2	0.18 – 0.25	0.22 – 0.32
	Setting range instantaneous short-circuit release [A]	2.1	2.6	3.3	4.2	5.2	6.5	8.2	10	13	16	21	26	33	42	52	65	82	104	130	156	2.1	2.6	3.3	4.2
	Short-circuit breaking capacity at 3 ~ 400V [kA]	100																	50			100			
Accessories	Transverse auxiliary contact block	J73MN-11F																							
	Auxiliary contact block for left hand side mounting	J73MN-11S																							
	Signalling switch for left hand side mounting																					J73MN-T-11S			
	Undervoltage release	J74MN-U-N1																							
	Shunt release	J74MN-S-N2																							
	Moulded plastic enclosures (IP55)	J74MN-PF12																				J74MN-PF25			
	Moulded plastic front plates (IP55)	J74MN-P12																				J74MN-P25			
	Holder for front plate																					J74MN-PH			
	Door-coupling rotary mechanisms (black and red / yellow)																					J74MN-DC-B			
	Emergency-stop door-coupling rotary mechanisms (red / yellow)																					J74MN-DC-RY			
	Three-phase busbar system up to 5 MPCB	J74MN-L3-1/2, J74MN-L3-1/3 J74MN-L3-1/4 J74MN-L3-1/5																							
	Line side terminal	J74MN-TC12																				J74MN-TC25			
	Shroud	J74MN-DS																							
	Adapter for mechanical fixing of MPCB and contactor	J74MN-HU																							
	Link module	J74KN-VD-12																				J74KN-VD-25			
Terminal block	J74MN-TB25																								
Page	178																								

Low voltage switch gear

Motor protection circuit breaker



J7 MN-25-E4	J7 MN-25-E5	J7 MN-25-E63	J7 MN-25-E8	J7M N-25-1	J7M N-25-1E2 5	J7M N-25-1E6	J7M N-25-2	J7 MN-25-2E	J7 MN-25-3E	J7 MN-25-4	J7 MN-25-5	J7 MN-25-6E3	J7 MN-25-8	J7 MN-25-10	J7M N-25-12E 5	J7 MN-25-16	J7 MN-25-20	J7 MN-25-22	J7 MN-25-25	J7 MN-50-25	J7 MN-50-32	J7 MN-50-40	J7 MN-50-45	J7 MN-50-50	J7 MN-100-63	J7 MN-100-75	J7M N-100-90	J7M N-100-100
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J7MN-25																				J7MN-50					J7MN-100			
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Rotary type																												
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0.16 - 25 A																				32 - 50 A					45 - 100 A			
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0.4	0.5	0.63	0.8	1	1.25	1.6	2	2.5	3.2	4	5	6.3	8	10	12.5	16	20	22	25	25	32	40	45	50	63	75	90	100
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	0.12	0.18		0.25	0.37	0.55	0.75		1.1	1.5		2.2	3	4	5.5	7.5			11	11	15	18.5	18.5	22	30	37	37	45
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0.28	0.35	0.45	0.55	0.7	0.9	1.1	1.4	1.8	2.2	2.8	3.5	4.5	5.5	7	9	11	14	17	20	18	22	28	36	40	45	57	70	80
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-0.4	-0.5	-	-0.8	1	1.25	1.6	2	-	-	-	-	6.3	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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		0.63						2.5	3.2	4	5			10	12.5	16	20	22	25	25	32	40	45	50	63	75	90	100
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5.2	6.5	8.2	10	13	16	21	26	33	42	52	65	82	104	130	163	208	260	286	325	325	416	520	585	650	819	975	1170	1235
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J73MN-11F																												
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J73MN-11S																												
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J73MN-T-11S																												
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J74MN-U-N1																												
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J74MN-S-N2																												
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J74MN-PF25																												
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J74MN-P25																												
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J74MN-PH																												
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J74MN-DC-B																												
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J74MN-DC-RY																												
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J74MN-L3-1/2 J74MN-L3-1/3																												
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J74MN-L3-1/4																												
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J74MN-L3-1/5																												
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J74MN-TC25																												
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J74MN-DS																												
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J74MN-HU																												
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J74KN-VD-25																												
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J74MN-TB25																												
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■ Standard

□ Available

□ No / not available



Main mini contactor relay, 4-pole

Three basic units can be combined with different additional auxiliary contacts. 4-pole, 6-pole and 8-pole versions in different configurations are possible as well as different coil voltages (AC and DC). Accessories such as suppressors are available.

- Mirror contacts
- Screw fixing and snap fitting (35 mm DIN-rail)
- Rated current = 10 A (I_{th})
- Suitable for electronic devices (DIN 19240)
- Finger proof (BGV A2)



Ordering information

Operation	Contacts		Distinctive number according to DIN EN 50011	Ratings		Thermal rated current I _{th} , A	Model	Coil voltage ^{*1} , replace □□□ with:				
	NO	NC		AC15 230 V A	400 V A							
4-pole, with screw terminals								VAC			VDC	
AC	4	0	40 E	3	2	10	J7KNA-AR-40 □□□	24	110	230		
	3	1	31 E	3	2	10	J7KNA-AR-31 □□□	24	110	230		
	2	2	22 E	3	2	10	J7KNA-AR-22 □□□	24	110	230		
DC solenoid	4	0	40 E	3	2	10	J7KNA-AR-40 □□□				24D	110D
	3	1	31 E	3	2	10	J7KNA-AR-31 □□□				24D	110D
	2	2	22 E	3	2	10	J7KNA-AR-22 □□□				24D	110D
DC solenoid with diode	4	0	40 E	3	2	10	J7KNA-AR-40 □□□□				24VS	
	3	1	31 E	3	2	10	J7KNA-AR-31 □□□□				24VS	
	2	2	22 E	3	2	10	J7KNA-AR-22 □□□□				24VS	

^{*1} Other coil voltages available on request

Bold = preferred stock item

Accessories

Contacts		Ratings		Thermal rated current I_{th} , A	Model
NO	NC	AC15 230 V A	400 V A		
1	1	3	2	10	J73KN-A-11
0	2	3	2	10	J73KN-A-02
4	0	3	2	10	J73KN-A-40
2	2	3	2	10	J73KN-A-22

Bold = preferred stock item

Specifications

Suffix to contactor type e.g. J7KNA-09-10-24	Voltage marking at the coil for		Rated control voltage U_s range for			
	50 Hz V	60 Hz V	50 Hz min. V	max. V	60 Hz min. V	max. V
24	24	24	22	24	24	24
110	110 - 115	120 - 125	110	115	120	125
230	220 - 230	240	220	230	240	250

Size in mm	57.5Hx45Wx49D
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Motor contactors from 4 - 5.5 kW for normal duty switching

This modular system consists of main contactors and additional contact blocks. The basic units can be combined with auxiliary contacts (top mounting). Reversed versions, including integrated mechanical interlock, are available as well as 3-main-pole and 4-main-pole versions.

- 4 kW and 5.5 kW versions are available
- Different coil voltages (AC and DC)
- Mini and normal-size versions are available
- The contactors can be mounted with screw fixing and snap fitting on a DIN-rail
- All components are finger proof

Ordering information

Operation	Poles	Rating AC2, AC3			Rated current		Auxiliary contact		Overload relay	Size in mm (HxWxD)	Model	Coil voltage *1, replace □□□ with:				
		380 V 400 V 415 V kW	500 V kW	660 V 690 V kW	AC3 400 V A	AC1 690 V A										
							NO	NC								
AC / DC solenoid	3	4	4	4	9	20	1	0	J7TKN-A	57.5x45x49	J7KNA-09-10 □□□	24	110	230	400	24D
							0	1	J7TKN-A		J7KNA-09-01 □□□	24	110	230	400	24D
		5.5	5.5	5.5	12	20	1	0	J7TKN-A		J7KNA-12-10 □□□	24	110	230	400	24D
							0	1	J7TKN-A		J7KNA-12-01 □□□	24	110	230	400	24D
	4	4	4	4	9	20	0	0	J7TKN-A		J7KNA-09-4 □□□	24	110	230	400	24D
DC solenoid with diode	3	4	4	4	9	20	1	0	J7TKN-A		J7KNA-09-10 □□□					24VS
							0	1	J7TKN-A		J7KNA-09-01 □□□					24VS
		5.5	5.5	5.5	12	20	1	0	J7TKN-A		J7KNA-12-10 □□□					24VS
							0	1	J7TKN-A	J7KNA-12-01 □□□					24VS	
AC / DC solenoid	3 reversing contactors	4	4	4	9	20	0	1	J7TKN-A	57.5x94.5x50	J7KNA-09-01 W □□□	24	110	230	400	24D
		5.5	5.5	5.5	12	20	0	1	J7TKN-A		J7KNA-12-01 W □□□	24	110	230	400	24D
DC solenoid with diode		4	4	4	9	20	0	1	J7TKN-A		J7KNA-09-01 W □□□					24VS
		5.5	5.5	5.5	12	20	0	1	J7TKN-A		J7KNA-12-01 W □□□					24VS

*1 Other coil voltages available on request

Bold = preferred stock item

Accessories

Auxiliary contacts				
Contacts		Rated current		Model
NO	NC	AC15 230 V	400 V	
1	1	3 A	2 A	J73KN-AM-11
0	2	3 A	2 A	J73KN-AM-02
2	2	3 A	2 A	J73KN-AM-22
Auxiliary contacts for reversing contactors				
1	1	3 A	2 A	J73KN-AM-11V
1	1	3 A	2 A	J73KN-AM-11X
Link modules between MPCB & contactors				
For MPCB J7MN12 / J7MN25				J74MN-VK1 12-25
Insulated wiring system for J7KNA				
Reversing or parallel contactors				J75-WK11
Star-delta combination				J75-WK12

Bold = preferred stock item

Specifications

Suffix to contactor type e.g. J7KNA-09-10-24	Voltage marking at the coil for		Rated control voltage U _s range for				Main contacts	J7KNA-09-□□□	J7KNA-12-□□□
	50 Hz V	60 Hz V	50 Hz min. V	max. V	60 Hz min. V	max. V	Rated insulation voltage U _i	690 VAC	690 VAC
24	24	24	22	24	24	24	Making capacity I _{eff} at U _s = 690 VAC	165 A	165 A
110	110 - 115	120 - 125	110	115	120	125	Breaking capacity I _{eff} cos φ = 0,65	400 VAC 500 VAC 690 VAC	100 A 90 A 80 A
230	220 - 230	240	220	230	240	250	Mechanical life AC operated	5 x 10 ⁶	5 x 10 ⁶
							DC operated	15 x 10 ⁶	15 x 10 ⁶
							Short time current 10 s current	96 A	120 A



Motor contactors from 4 - 110 kW for normal and heavy-duty switching.

This modular system consists of main contactors and additional contact blocks. The basic units can be combined with auxiliary contacts. DC-DC versions, integrated mechanical interlock, are available as well as 3-main-pole and 4-main-pole versions.

- Basic units can be combined with auxiliary contacts (top/side mounting)
- 3-main-pole and 4-main-pole versions are possible
- The power range covers 4 to 110 kW
- Different coil voltages (AC and DC)

Ordering information

Operation	Poles	AC3 400 V rated motor current	Rating AC2, AC3			Rated current	Auxiliary contact		Overload relay	Size in mm (HxWxD)	Model	Coil voltage *1, replace □□□ with:					
			380 V 400 V 415 V kW	500 V kW	660 V 690 V kW		AC1 690 V A	NO				NC	VAC			VDC	
AC / DC	3	10 A	4	5.5	5.5	25	1	0	J7TKN-B	67x45x82.5	J7KN-10-10 □□□	24	110	230	400	24D	110D
			4	5.5	5.5	25	0	1			J7KN-10-01 □□□	24	110	230	400	24D	110D
		14 A	5.5	7.5	7.5	25	1	0			J7KN-14-10 □□□	24	110	230	400	24D	110D
			5.5	7.5	7.5	25	0	1			J7KN-14-01 □□□	24	110	230	400	24D	110D
		18 A	7.5	10	10	32	1	0			J7KN-18-10 □□□	24	110	230	400	24D	110D
			7.5	10	10	32	0	1			J7KN-18-01 □□□	24	110	230	400	24D	110D
		22 A	11	10	10	32	1	0	J7KN-22-10 □□□	24	110	230	400	24D	110D		
			11	10	10	32	0	1	J7KN-22-01 □□□	24	110	230	400	24D	110D		
		24 A	11	15	15	50	0	0	J7TKN-C	78x45x104.5	J7KN-24 □□□	24	110	230	400	24D	110D
		32 A	15	18.5	18.5	65	0	0			J7KN-32 □□□	24	110	230	400	24D	110D
		40 A	18.5	18.5	18.5	80	0	0			J7KN-40 □□□	24	110	230	400	24D	110D
		60 A	22	30	30	110	0	0	J7TKN-D	112x60x113	J7KN-50 □□□	24	110	230	400	24D	110D
		62 A	30	37	37	120	0	0			J7KN-62 □□□	24	110	230	400	24D	110D
		74 A	37	45	45	130	0	0			J7KN-74 □□□	24	110	230	400	24D	110D
		85 A	45	55	55	150	2	2	J7TKN-E	134x90x119	J7KN-85-22 □□□	24	110	230	400		
											J7KN-85-21 □□□					24D	110D
		110 A	55	75	55	170	2	2			J7KN-110-22 □□□	24	110	230	400		
								J7KN-110-21 □□□					24D	110D			
DC operated solenoid motor contactor	3	10 A	4	5.5	5.5	25	1	0	J7TKN-B	67x45x82.5	J7KNG-10-10 □□□					24D	110D
			4	5.5	5.5	25	0	1			J7KNG-10-01 □□□					24D	110D
		14 A	5.5	7.5	7.5	25	1	0			J7KNG-14-10 □□□					24D	110D
			5.5	7.5	7.5	25	0	1			J7KNG-14-01 □□□					24D	110D
		18 A	7.5	10	10	32	1	0			J7KNG-18-10 □□□					24D	110D
			7.5	10	10	32	0	1			J7KNG-18-01 □□□					24D	110D
		22 A	11	10	10	32	1	0	J7KNG-22-10 □□□					24D	110D		
			11	10	10	32	0	1	J7KNG-22-01 □□□					24D	110D		
		24 A	11	15	15	50	0	0	J7TKN-B J7TKN-C	78x45x104.5	J7KNG-24 □□□					24D	110D
32 A	15	18.5	18.5	65	0	0	J7KNG-32 □□□							24D	110D		
40 A	18.5	18.5	18.5	80	0	0	J7KNG-40 □□□							24D	110D		
AC / DC		150 A	75	75	75	230	0	0	J7TKN-F	170x110x162	J7KN-151 □□□	24	110	230	400	24	110
		175 A	90	90	90	250	0	0			J7KN-176 □□□	24	110	230	400	24	110
		200 A	110	132	132	350	2	2			J7KN-200-21 □□□	24	110	230	400	24	110
AC for fuse- less load feeders	3	10 A	4	5.5	5.5	25	1	0		67x45x82.5	J7KN-10-10 □□□ VK3	24	110	230	400	24D	110D
			4	5.5	5.5	25	0	1			J7KN-10-01 □□□ VK3	24	110	230	400	24D	110D
		14 A	5.5	7.5	7.5	25	1	0			J7KN-14-10 □□□ VK3	24	110	230	400	24D	110D
			5.5	7.5	7.5	25	0	1			J7KN-14-01 □□□ VK3	24	110	230	400	24D	110D
		18 A	7.5	10	10	32	1	0			J7KN-18-10 □□□ VK3	24	110	230	400	24D	110D
			7.5	10	10	32	0	1			J7KN-18-01 □□□ VK3	24	110	230	400	24D	110D
		22 A	11	10	10	32	1	0			J7KN-22-10 □□□ VK3	24	110	230	400	24D	110D
			11	10	10	32	0	1			J7KN-22-01 □□□ VK3	24	110	230	400	24D	110D

^{*1} Other coil voltages available on request

Bold = preferred stock item

Operation	Poles	AC3 400 V rated motor current	Rating AC2, AC3		Rated current	Auxiliary contact		Overload relay	Size in mm (HxWxD)	Model	Coil voltage ^{*1} , replace □□□ with:						
			380 V 400 V 415 V kW	AC1 400 V kW		AC1 690 V A	NO				NC	VAC				VDC	
AC	4	10 A	4	17.5	25	0	0		67x45x82.5	J7KN-10-4 □□□	24	110	230	400			
		14 A	5.5	17.5	25	0	0			J7KN-14-4 □□□	24	110	230	400			
		18 A	7.5	22	32	0	0			J7KN-18-4 □□□	24	110	230	400			
		22 A	11	22	32	0	0			J7KN-22-4 □□□	24	110	230	400			
DC solenoid mo- tor contactor	4	10 A	4	17.5	25	0	0		67x45x82.5	J7KNG-10-4 □□□					24D	110D	
		14 A	5.5	17.5	25	0	0			J7KNG-14-4 □□□					24D	110D	
		18 A	7.5	22	32	0	0			J7KNG-18-4 □□□					24D	110D	
		22 A	11	22	32	0	0			J7KNG-22-4 □□□					24D	110D	
AC / DC		150 A	75	159	230	0	0		170x110x162	J7KN-151-4 □□□	24	110	230	400	24	110	
		175 A	90	173	250	0	0			J7KN-176-4 □□□	24	110	230	400	24	110	

*1 Other coil voltages available on request **Bold** = preferred stock item

Accessories

Auxiliary contact blocks	Rated operational current			Contacts		Model
Suitable for:	AC15 230 V A	AC15 400 V A	AC1 690 V A	NO	NC	
J7KN-10... to -74...	3	2	10	1	-	J73KN-B-10
	3	2	10	-	1	J73KN-B-01
	3	2	10	-	-	J73KN-B-10U
	3	2	10	-	-	J73KN-B-01U
	6	4	25	1	-	J73KN-B-10A
	6	4	25	-	1	J73KN-B-01A
J7KN-151... to -176...	3	2	10	1	1	J73KN-D-11F
	3	2	10	2	2	J73KN-D-22F
	3	2	10	1	1	J73KN-D-11S
J7KN-24... to KN-110 and J7KN-200	3	2	10	1	1	J73KN-C-11S
	3	2	10	2	2	J73KN-E-22
Pneumatic timers	Function		Time range	Contacts		Model
Suitable for:				NO	NC	
J7KN-10... to -40...	ON-delay		0.1 - 40 s	1	-	J74KN-B-TP40DA
	ON-delay		10 - 180 s	1	-	J74KN-B-TP180DA
	OFF-delay		0.1 - 40 s	-	1	J74KN-B-TP40IA
	OFF-delay		10 - 180 s	-	1	J74KN-B-TP180IA
Mechanical interlocks	Interlocks contactor with contactor					Model
Mounting	Model + Model					
Horizontal	J7KN-10 to -40 + J7KN-10 to -40					J74KN-B-ML
	J7KN-24 to -74 + J7KN-24 to -74					J74KN-C-ML
	J7KN-85 to -110 + J7KN-85 to -110					J74KN-D-ML
	J7KN-151 to -176 + J7KN-151 to -176					J74KN-E-ML

Suppressor units	Type		Applicable coil voltage	Model	
Suitable for contactors					
J7KNA	AC / DC	Varistor snap-on coil terminals	110 - 230 V	J74KN-A-VG230	
J7KN10-J7KN22	AC / DC		250 - 415 V	J74KN-A-VG400	
J7KN10-J7KN74	AC / DC	Varistor snap-on top of contactor	110 - 230 V	J74KN-B-VG230	
	AC / DC		250 - 415 V	J74KN-B-VG400	
J7KNA	AC / DC	RC-unit snap-on contactor	12 - 48 V	J74KN-D-RC24	
	AC / DC		48 - 127 V	J74KN-D-RC110	
	AC / DC		110 - 230 V	J74KN-D-RC230	
J7KN10-J7KN74	AC / DC	RC-unit snap-on contactor	12 - 48 V	J74KN-C-RC24	
	AC / DC		48 - 127 V	J74KN-C-RC110	
	AC / DC		110 - 230 V	J74KN-C-RC230	
J7KN85-J7KN110	AC / DC	RC-unit to fix via fixing band or adhesive strip with contactor	12 - 24 V	J74KN-B-RC48	
	AC / DC		110 - 250 V	J74KN-B-RC230	
	AC / DC		250 - 415 V	J74KN-B-RC400	
Additional terminals single pole		Cable cross-sections to clamp (mm ²)			Model
Suitable for contactors		Solid or stranded	Flexible	Flexible with multi-core cable end	
J7KN50 - KN74		4 - 35	6 - 25	4 - 25	J74KN-LG-9030
J7KN151 - KN176		16 - 120		16 - 95	J74KN-LG-11224
Terminal covers		Specification			Model
Suitable for contactors					
J7KN151 - KN176		One unit			J74KN-LG-10404
Marking systems		Specification			Model
Description					
Marking plate		2-section without marking, divisible			J74KN-P487-1
Marking plate		4-section without marking, divisible			J74KN-P245-1

Specifications

Coil voltages	Suffix to contactor type:								
Contact type	20	24	48	90	110	180	230	400	500
J7KN-10 to J7KN-74		yes	yes		yes	yes	yes	yes	yes
J7KN-85 to J7KN-110	yes	yes	yes	yes	yes	yes	yes	yes	yes
J7KN-151 to J7KN-200		yes	yes		yes		yes	yes	

Bold = standard coil voltages



Thermal overload relays for J7 contactors

J7TKN relays protect motors against thermal overload. They can be mounted on the contactor or separately. The relays comply with IEC 947 (single-phase sensitivity).

- Series of overload relays covering a setting range from 0.24 A to 220 A
- All components are finger proof

Ordering information

Applicable contactors	Setting range		Size in mm (HxWxD)	Model
	D.O.L. (A)	Star-delta (A)		
J7KNA-09..., J7KNA-12...	0.12 - 0.18		38.8x48.5x77	J7TKN-A-E18
	0.18 - 0.27			J7TKN-A-E27
	0.27 - 0.4			J7TKN-A-E4
	0.4 - 0.6			J7TKN-A-E6
	0.6 - 0.9			J7TKN-A-E9
	0.8 - 1.2			J7TKN-A-1E2
	1.2 - 1.8			J7TKN-A-1E8
	1.8 - 2.7			J7TKN-A-2E7
	2.7 - 4			J7TKN-A-4
	4 - 6	7 - 10.5		J7TKN-A-6
	6 - 9	10.5 - 15.5		J7TKN-A-9
	8 - 11	14 - 19		J7TKN-A-11
	10 - 14	18 - 24		J7TKN-A-14
J7KN-10... to J7KN-40...	0.12 - 0.18		63.5x45x70	J7TKN-B-E18
	0.18 - 0.27			J7TKN-B-E27
	0.27 - 0.4			J7TKN-B-E4
	0.4 - 0.6			J7TKN-B-E6
	0.6 - 0.9			J7TKN-B-E9
	0.8 - 1.2			J7TKN-B-1E2
	1.2 - 1.8			J7TKN-B-1E8
	1.8 - 2.7			J7TKN-B-2E7
	2.7 - 4			J7TKN-B-4
	4 - 6	7 - 10.5		J7TKN-B-6
	6 - 9	10.5 - 15.5		J7TKN-B-9
	8 - 11	14 - 19		J7TKN-B-11
	10 - 14	18 - 24		J7TKN-B-14
	13 - 18	23 - 31		J7TKN-B-18
	17 - 24	30 - 41		J7TKN-B-24
	23 - 32	40 - 55		J7TKN-B-32
J7KN-24... to J7KN-40...	28 - 42	48 - 73	47x67x90	J7TKN-C-42
J7KN-50... to J7KN-74...	40 - 52	70 - 90	57x69x93	J7TKN-D-52
	52 - 65	90 - 112		J7TKN-D-65
	60 - 74	104 - 128		J7TKN-D-74
J7KN-85... to J7KN-150...	60 - 90	104 - 156	101x107x102	J7TKN-E-90
	80 - 120	140 - 207		J7TKN-E-120
J7KN-175... to J7KN-200...	100 - 150	175 - 260	113x190x176	J7TKN-F-150
	140 - 220	240 - 380		J7TKN-F-210

Bold = preferred stock item

Accessories

Busbar sets		
For overload relays	For contactors	Model
J7TKN-F-150	J7KN-151, J7KN-176	J74TK-SU-176
J7TKN-F-210	J7KN-200	J74TK-SU-200

Sets for single mounting				
For overload relays	Cable cross-section to clamp (mm ²)			Model
	Solid or stranded	Flexible	Flexible with multi-core cable	
J7TKN-A	0.75 - 6	0.75 - 4	0.5 - 4	J74TK-M
J7TKN-B	0.75 - 6	0.75 - 4	0.5 - 4	J74TK-SM

Bold = preferred stock item

Specifications

Type		J7TKN-A	J7TKN-B	J7TKN-C	J7TKN-D	J7TKN-E	J7TKN-F
Rated insulation voltage U _i		690 VAC					
Permissible ambient temperature	Operation	-25 to 60 °C					
	Storage	-50 to 70 °C					
Trip class according to IEC 947-4-1		10 A				20 A	
Cable cross-section Main connector	Solid or stranded mm ²	0.75 - 6 0.75 - 2.5	0.75 - 6	0.75 - 10	4 - 35		
	Flexible mm ²	0.75 - 4 0.5 - 2.5	1 - 4	0.75 - 6	6 - 25		
	Flexible with multi-core cable end mm ²	0.5 - 2.5 0.5 - 1.5	0.75 - 4	0.75 - 6	4 - 25		
Cables per clamp	Number	1 + 1	2	2	1		
Auxiliary connector	Solid mm ²	0.75 - 2.5					
	Flexible mm ²	0.5 - 2.5					
	Flexible with multi-core cable end mm ²	0.5 - 1.5					
Cables per clamp	Number	2					
Auxiliary contacts							
Rated insulation voltage U _i	same potential	690 VAC					
	different potential	440 VAC			250 VAC		440 VAC
Rated operational current I _e Utilization category AC15	24 V	5 A	3 A	4 A		5 A	
	230 V	3 A	2 A	2.5 A	2.5 A	3 A	3 A
	400 V	2 A	1 A	1.5 A	1.5 A	2 A	2 A
	690 V	0.6 A	0.5 A	0.6 A			
Rated operational current I _e Utilization category DC13	24 V	1.2 A	1 A	1.2 A			
	110 V	0.15 A					
	220 V	0.1 A					
Short circuit protection (without welding 1 kA)	Highest fuse rating gL (gG)	6 A	4 A	6 A			
Setting range		to 23 A	All	28 - 42 A	52 - 65 A	All	
Power loss per current path (max.)	Minimum setting value	1.1 W	1.1 W	1.3 W	2.9 W	1.1 W	
	Maximum setting value	2.3 W	2.3 W	3.3 W	4.5 W	2.5 W	



J7MN is a range of motor-protection circuit breakers from 0.11 - 100 A

J7MN starters protect motors against thermal overload and short circuit. Additional auxiliary contacts (standard and trip indicating) are available, optional are: undervoltage and shunt release; insulated enclosures for surface and flush mounting; lockable rotary handles and 3-phase common links.

- Available rated operational currents of 12 A, 25 A, 50 A and 100 A
- Switching capacity is 50 kA / 415 V for all versions
- OMRON offers four different-sized versions
- MPCBs can be mounted with screw fixing and snap fitting on a DIN-rail
- All components are finger proof

Ordering information

Rated current In A	Suitable for motors 3 ~ 400 V kW	Current setting range		Short-circuit breaking capacity at 3 ~ 400 V kA	Size in mm (HxWxD)	Model
		Thermal overload release A	Instantaneous short-circuit release A			
0.16	-	0.11 - 0.16	2.1	100	90x45x76	J7MN-12-E16
0.2	-	0.14 - 0.2	2.6	100		J7MN-12-E2
0.25	0.06	0.18 - 0.25	3.3	100		J7MN-12-E25
0.32	0.09	0.22 - 0.32	4.2	100		J7MN-12-E32
0.4	-	0.28 - 0.4	5.2	100		J7MN-12-E4
0.5	0.12	0.35 - 0.5	6.5	100		J7MN-12-E5
0.63	0.18	0.45 - 0.63	8.2	100		J7MN-12-E63
0.8	-	0.55 - 0.8	10	100		J7MN-12-E8
1	0.25	0.7 - 1.1	13	100		J7MN-12-1
1.25	0.37	0.9 - 1.25	16	100		J7MN-12-1E25
1.6	0.55	1.1 - 1.6	21	100		J7MN-12-1E6
2	0.75	1.4 - 2.2	26	100		J7MN-12-2
2.5	-	1.8 - 2.5	33	100		J7MN-12-2E5
3.2	1.1	2.2 - 3.2	42	100		J7MN-12-3E2
4	1.5	2.8 - 4	52	100		J7MN-12-4
5	-	3.5 - 5	65	100		J7MN-12-5
6.3	2.2	4.5 - 6.3	82	100	97x45x91	J7MN-12-6E3
8	3	5.5 - 8	104	50		J7MN-12-8
10	4	7 - 10	130	50		J7MN-12-10
12	5.5	9 - 12	156	50		J7MN-12-12
0.16	-	0.11 - 0.16	2.1	100		J7MN-25-E16
0.2	-	0.14 - 0.2	2.6	100		J7MN-25-E2
0.25	0.06	0.18 - 0.25	3.3	100		J7MN-25-E25
0.32	0.09	0.22 - 0.32	4.2	100		J7MN-25-E32
0.4	-	0.28 - 0.4	5.2	100		J7MN-25-E4
0.5	0.12	0.35 - 0.5	6.5	100		J7MN-25-E5
0.63	0.18	0.45 - 0.63	8.2	100		J7MN-25-E63
0.8	-	0.55 - 0.8	10	100		J7MN-25-E8
1	0.25	0.7 - 1	13	100		J7MN-25-1
1.25	0.37	0.9 - 1.25	16	100		J7MN-25-1E25
1.6	0.55	1.1 - 1.6	21	100		J7MN-25-1E6
2	0.75	1.4 - 2	26	100		J7MN-25-2
2.5	-	1.8 - 2.5	33	100		J7MN-25-2E5
3.2	1.1	2.2 - 3.2	42	100		J7MN-25-3E2
4	1.5	2.8 - 4	52	100		J7MN-25-4
5	-	3.5 - 5	65	100		J7MN-25-5
6.3	2.2	4.5 - 6.3	82	100		J7MN-25-6E3
8	3	5.5 - 8	104	100		J7MN-25-8
10	4	7 - 10	130	100		J7MN-25-10
12.5	5.5	9 - 12.5	163	100		J7MN-25-12E5
16	7.5	11 - 16	208	50		J7MN-25-16
20	-	14 - 20	260	50		J7MN-25-20
22	-	17 - 22	286	50		J7MN-25-22
25	11	20 - 25	325	50		J7MN-25-25

Bold = preferred stock item

Rated current In A	Suitable for motors 3 ~ 400 V kW	Current setting range		Short-circuit breaking capacity at 3 ~ 400 V kA	Size in mm (HxWxD)	Model
		Thermal overload release A	Instantaneous short-circuit release A			
25	11	18 - 25	325	50	140x55x144	J7MN-50-25
32	15	22 - 32	416	50		J7MN-50-32
40	18.5	28 - 40	520	50		J7MN-50-40
45	-	36 - 45	585	50		J7MN-50-45
50	22	40 - 50	650	50		J7MN-50-50
63	30	45 - 63	819	50	165x70x169	J7MN-100-63
75	37	57 - 75	975	50		J7MN-100-75
90	-	70 - 90	1,170	50		J7MN-100-90
100	45	80 - 100	1,235	50		J7MN-100-100

Bold = preferred stock item

Accessories

Description	Version	For circuit breaker	Type
Transverse auxiliary contact block			
Contact block	1 NO + 1 NC	All	J73MN-11F
Auxiliary contact block for left hand side mounting (max. 1 pc. per circuit breaker)			
Contact block	1 NO + 1 NC 9 mm	All	J73MN-11S
Signalling switch for left hand side mounting (max. 1 pc. per circuit breaker)			
Signalling switch	1 NO + 1 NC each Individual tripped and short-circuit signalling	J7MN-25 J7MN-50	J73MN-T-11S
Auxiliary releases for right hand side mounting (max 1 pc. per circuit breaker)			
Undervoltage release. Trips the circuit breaker when the voltage is interrupted. Prevents the motor from being restarted accidentally when the voltage is restored, suitable for EMERGENCY STOP according to VDE 0113	AC 50 Hz	AC 60 Hz	
	110 V	120 V	All
	230 V	240 V	All
	400 V	400 V	All
Shunt release. Trips the circuit breaker when the release coil is energized	50 / 60 Hz 100% ON	50 / 60 Hz, DC 5 s ON	
	210 - 240 V	190 - 330 V	All
Terminal block			
Terminal block	Up to 600 V according to UL 489 not for transverse auxiliary contact block	J7MN-25 J7MN-100	J74MN-TB25 J74MN-TB100

Note: For enclosures & front plates, insulated 3-phase busbar systems and components & mounting parts for fuseless load feeders, please refer to the datasheet.

Bold = preferred stock item

Specifications

Type		J7MN-12	J7MN-25	J7MN-50	J7MN-100
Number of poles		3	3	3	3
Max. rated current Inmax (= max. rated operational current I _e)	A	12	25	50	100
Permissible ambient temperature	Storage / transport	-50 °C to 80 °C			
	Operation	-20 °C to 70 °C			
Rated operational voltage U _e	V	690			
Rated frequency	Hz	50 / 60			
Rated insulation voltage U _i	V	690			
Rated impulse withstand voltage U _{imp}	kV	6			
Utilization category	IEC 60 947-2 (circuit breaker)	A			
	IEC 60 947-4-1 (motor starter)	AC-3			
Class	According to IEC 60 947-4-1	10			
DC short-circuit breaking capacity (time constant t = 5 ms)	1 conducting path DC 150 V	10 kA			
	2 conducting paths in series DC 300 V	10 kA			
	3 conducting paths in series DC 450 V	10 kA			
Degree of protection	According to IEC 60 529	IP20	IP20	IP20	IP20
Phase failure sensitivity	According to IEC 60 947-4-1	Yes			
Explosion protection	According to EC Directive 94/19/EC	Yes			
Isolator characteristics	According to IEC 60 947-3	Yes			
Main and EM. STOP switch characteristics	According to IEC 60 204-1 (VDE113)	Yes			
Safe isolation between main and auxiliary circuits	Up to 400 V + 10%	Yes			
	Up to 415 V + 5%	Yes			
According to DIN VDE 0106 Part 101					
Mechanical endurance	Operating cycles	100,000	100,000	50,000	50,000
Electrical endurance		100,000	100,000	25,000	25,000
Max. operating frequency per hour (motor starts)	1 / h	15	15	15	15
Permissible mounting position		Any, according to IEC 60 447 start command "I" right-hand side or top			

Monitoring products

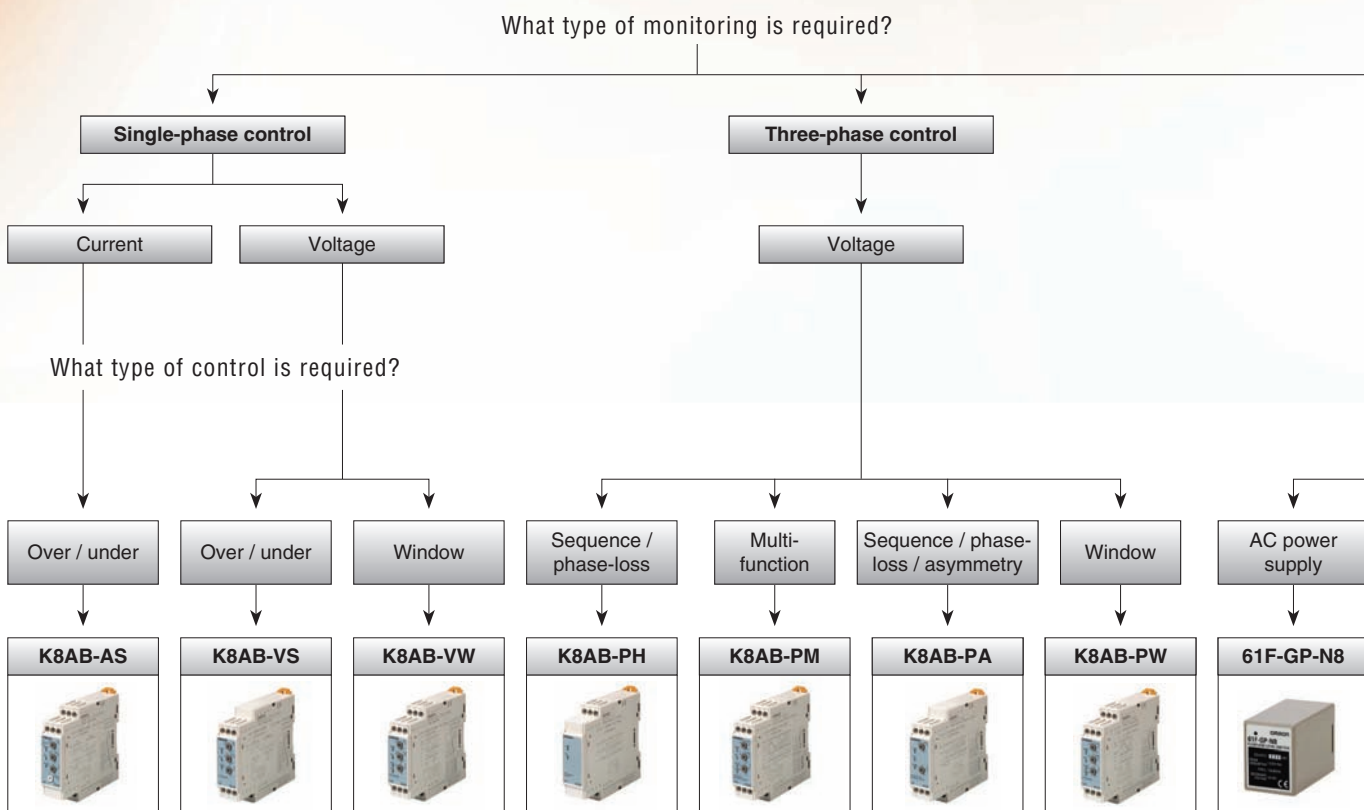
A complete new monitoring product range in 22.5 mm housing

The smart way to protect your system!

The K8 series offers a complete range of first-class quality monitoring products, all in compact 22.5 mm wide DIN-rail housing. The K8 series includes single-phase relays that monitor current or voltage variations, three-phase relays that monitor phase-sequence, phase asymmetry, phase-loss or voltage variations, and a conductive level controller.

With innovative features, these relays provide timely warnings of system errors. This series of just eight models offers you a flexible one-stop-shopping solution for your monitoring requirements.

Typical applications include monitoring generator voltages, providing chain breakage protection for conveyors, checking battery voltage, protecting pumps against idle running, monitoring phase sequence or phase loss on escalators, and monitoring liquid levels in tanks.



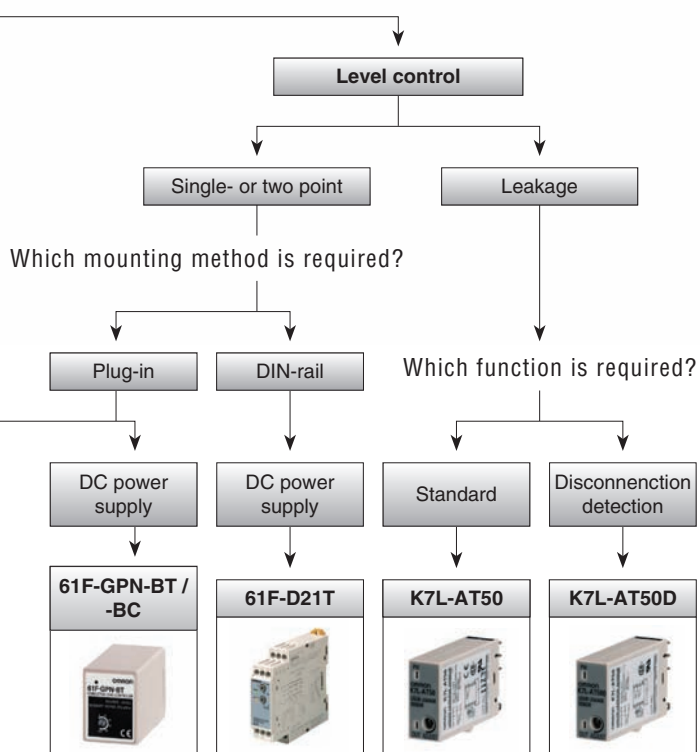
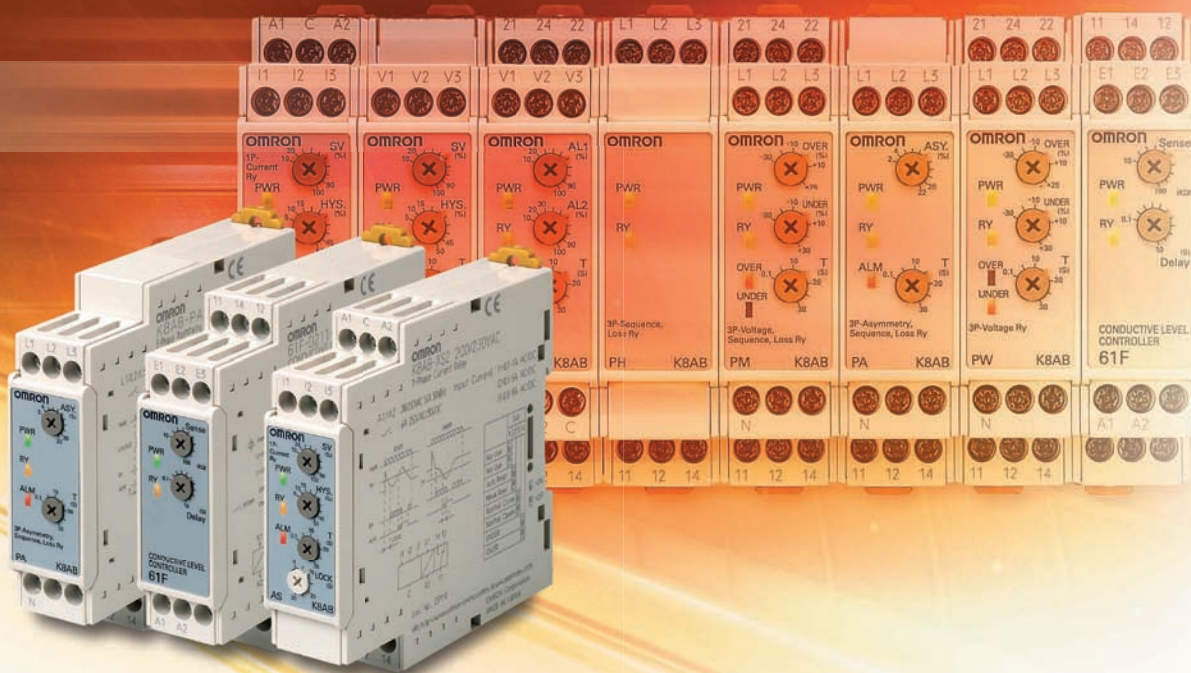


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Leakage controller	K7L	195

Selection table

Category		1-phase current	1-phase voltage		Phase-sequence phase-loss	3-phase phase-sequence phase-loss	3-phase asymmetry and phase-sequence phase-loss
Selection criteria							
	Model	K8AB-AS	K8AB-VS	K8AB-VW	K8AB-PH	K8AB-PM	K8AB-PA
	Detection method	Conductive					
	Specialty	Ideal for current monitoring for industrial heaters and motors.	Ideal for voltage monitoring for industrial facilities and equipment.	Ideal for voltage monitoring for industrial facilities and equipment.	Ideal for phase-sequence and phase-loss monitoring for industrial facilities and equipment.	Ideal for monitoring 3-phase power supplies for industrial facilities and equipment.	Ideal for 3-phase voltage asymmetry monitoring for industrial facilities and equipment.
	Sensing range (configurable)	20 mA to 10 A, current transformer: 100 / 200 A	60 mV to 600 V	60 mV to 600 V	Same as supply voltage		
Supply voltage AC	24 VAC	■	■	■			
	100 VAC						
	110 VAC						
	115 VAC	■	■	■			
	120 VAC						
	200 VAC						
	220 VAC						
	230 VAC	■	■	■			
	240 VAC						
	200 - 500 VAC				■		
	200 - 240 VAC					■ (-PM1, 3-wire)	■ (-PA1, 3-wire)
	115 - 138 VAC					■ (-PM1, 4-wire)	■ (-PA1, 4-wire)
Supply voltage DC	24 VDC	■	■	■			
	12 .. 24 VDC						
	Transistor NPN						
	Transistor PNP						
Control output	Relay	■ (1 SPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)
	LED operation indicator	■	■	■	■	■	■
Features	Adjustable sensitivity						
	Electrode types						
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3-phase voltage	Conductive level controller				Liquid leakage sensor amplifier	
						
K8AB-PW	61F-GP-N8	61F-GPN-BT	61F-GPN-BC	61F-D21T	K7L-AT50	K7L-AT50D
Conductive						
Ideal for monitoring 3-phase power supplies for industrial facilities and equipment.	Single or two-point	AC sine wave between electrodes for stable detection with no electrolysis	AC sine wave between electrodes for stable detection with no electrolysis	Ideal for level control for industrial facilities and equipment	Sensor amplifier, AC sine wave between electrodes for stable detection with no electrolysis	Sensor amplifier with disconnection detection function
Same as supply voltage	4 to 50 kΩ	0 to 100 kΩ	1 to 100 kΩ	10 to 100 kΩ	0 to 50 MΩ	1 to 50 MΩ
☐	☐			☒		
☐	☐					
☐	☐					
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☐	☐					
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☐	☐			☒		
☐	☐					
☐	☐					
☐	☐					
☒ (-PW1, 3-wire)						
☒ (-PW1, 4-wire)						
☒ (-PW2, 3-wire)						
☒ (-PW2, 4-wire)						
		☒	☒			
					☐	☐
			☒		☒	☒
					☒	☒
☒ (2 SPDT)	☒	☒	☒	☒		
☒	☒	☒	☒	☒	☒	☒
		☒	☒		☒	☒
	Electrode holder: PS-□S, PS-31, BF-1 and BS-1				Liquid leakage sensor band F03-16PE	
190	191	193		194	195	



Standard



Available



No / not available



Single-phase current relay

These single-phase current relays monitor over- and undercurrents. Manual resetting and automatic resetting are supported by one relay. The start-up lock and operating time can be set separately. The relay warning status is easily monitored with the LED indicator.

- Single-phase current relay
- In 22.5 mm wide industrial housing
- Under or over control
- Supply voltages: 24 VAC / 24 VDC / 115 VAC / 230 VAC
- Easy wiring with ferrules



Ordering information

Measuring current	Supply voltage	Model
2 to 20 mA AC / DC, 10 to 100 mA AC / DC, 50 to 500 mA AC / DC	24 VDC	K8AB-AS1 24 VDC
	24 VAC	K8AB-AS1 24 VAC
	100-115 VAC	K8AB-AS1 100-115 VAC
	200-230 VAC	K8AB-AS1 200-230 VAC
0.1 to 1 A AC / DC, 0.5 to 5 A AC / DC, 0.8 to 8 A AC / DC	24 VDC	K8AB-AS2 24 VDC
	24 VAC	K8AB-AS2 24 VAC
	100-115 VAC	K8AB-AS2 100-115 VAC
	200-230 VAC	K8AB-AS2 200-230 VAC
10 to 100 A AC, 20 to 200 A AC	24 VDC	K8AB-AS3 24 VDC
	24 VAC	K8AB-AS3 24 VAC
	100-115 VAC	K8AB-AS3 100-115 VAC
	200-230 VAC	K8AB-AS3 200-230 VAC

Accessories

Bold = preferred stock item

Current transformer	Input range	Applicable relay	Model
	10 to 100 A AC, 20 to 200 A AC	K8AB-AS3	K8AC-CT200L

Note: The K8AB-AS3 is designed to be used in combination with the K8AC-CT200L (direct input not possible)

Specifications

Ambient temperature		Operating: -20 °C to 60 °C (with no condensation or icing), storage: -40 °C to 70 °C (with no condensation or icing)
Operating voltage range		85% to 110% of rated operating voltage
Rated power supply frequency		50 / 60 Hz $\pm$ 5 Hz (AC power supply)
Output relays (SPDT)	Resistive load	6 A at 250 VAC ($\cos\phi = 1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi = 0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Life expectancy	Mechanical: 10,000,000 operations, electrical: make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Operating power	Non-isolated power supply	24 VDC (1 W)
	Isolated power supply	24 VAC (3 VA), 100 to 115 VAC (4 VA), 200 to 230 VAC (5 VA)
Operate (SV)	Operating value setting range	10% to 100% of maximum rated input value
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% to 50% of operating value
	Resetting method	Manual reset / automatic reset (switchable) Manual reset: turn OFF operating power for 1 s or longer
Operating time (T)		0.1 to 30 s (value when input rapidly changes from 0% to 120%)
Operating power ON lock (LOCK)		0 to 30 s (value when input rapidly changes from 0% to 120%, lock timer starts upon input 30% of SV)
Setting accuracy		$\pm$ 10% of full scale
Time error		$\pm$ 10% of set value (minimum error: 50 ms)
Input frequency		K8AB-AS1 / -AS2: DC input, 45 to 65 Hz; K8AB-AS3: 45 to 60 Hz
Continuous input	K8AB-AS1 / -AS2	Continuous input: 115% of maximum input, 10 s max.: 125% of maximum input
	K8AB-AS3	Continuous input: 240 A, 30 s max.: 400 A, 1 s max.: 1,200 A
Indicators		Power (PWR): green LED, relay output (RY): yellow LED, alarm outputs (ALM): red LED
Size in mm		90Hx22.5Wx100D



Single-phase voltage relay

These single-phase voltage relays are for monitoring over- and undervoltages. Manual resetting and automatic resetting are supported by one relay. Relay warning status can easily be monitored using the LED indicator.

- Single-phase voltage relay
- In 22.5 mm-wide industrial housing
- Under or over control
- Supply voltages: 24 VAC / 24 VDC / 115 VAC / 230 VAC
- Easy wiring with ferrules



Ordering information

Measuring voltage	Supply voltage	Model
6 to 60 mV AC / DC, 10 to 100 mV AC / DC, 30 to 300 mV AC / DC	24 VDC	K8AB-VS1 24 VDC
	24 VAC	K8AB-VS1 24 VAC
	100-115 VAC	K8AB-VS1 100-115 VAC
	200-230 VAC	K8AB-VS1 200-230 VAC
1 to 10 VAC / VDC, 3 to 30 VAC / VDC, 15 to 150 VAC / VDC	24 VDC	K8AB-VS2 24 VDC
	24 VAC	K8AB-VS2 24 VAC
	100-115 VAC	K8AB-VS2 100-115 VAC
	200-230 VAC	K8AB-VS2 200-230 VAC
20 to 200 VAC / VDC, 30 to 300 VAC / VDC, 60 to 600 VAC / VDC	24 VDC	K8AB-VS3 24 VDC
	24 VAC	K8AB-VS3 24 VAC
	100-115 VAC	K8AB-VS3 100-115 VAC
	200-230 VAC	K8AB-VS3 200-230 VAC

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Storage temperature		-40 °C to 70 °C (with no condensation or icing)
Operating voltage range		85% to 110% of rated operating voltage
Rated power supply frequency		50 / 60 Hz ±5 Hz (AC power supply)
Output relays	Resistive load	6 A at 250 VAC (cosφ= 1), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC (cosφ= 0.4), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
	Electrical life	Make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Mounting		Mounted to DIN-rail or via M4 screws
Operating power	Non-isolated power supply	24 VDC (1 W)
	Isolated power supply	24 VAC (4 VA), 100 to 115 VAC (4 VA), 200 to 230 VAC (5 VA)
Operate (SV)	Operating value setting range	10% to 100% of maximum rated input value
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% to 50% of operating value
	Resetting method	Manual reset / automatic reset (switchable) Manual reset: turn OFF operating power for 1 s or longer
Operating time (T)		0.1 to 30 s (value when input rapidly changes from 0% to 120%)
Power ON lock (LOCK)		1 s or 5 s error ±0.5 s (value when input rapidly changes from 0% to 100%. The operating time is the shortest at this point)
Setting accuracy		±10% of full scale
Time error		±10% of set value (minimum error: 50 ms)
Input frequency		40 to 500 Hz
Input impedance		K8AB-VS1: 9 kΩ min., K8AB-VS2: 100 kΩ min., K8AB-VS3: 1 MΩ min.
Indicators		LED power (PWR): green LED, relay output (RY): yellow LED, alarm output (ALM): red LED
Output relays		One SPDT relay (6 A at 250 VAC, resistive load)
Size in mm		90Hx22.5Wx100D



Single-phase voltage relay, window type

For monitoring over- and undervoltages simultaneously. Manual resetting and automatic resetting are supported by one relay. Separate settings and outputs are supported for over- and undervoltages. Relay warning status can easily be monitored with the LED indicator.

- Single-phase voltage window relay
- In 22.5 mm-wide industrial housing
- Under and over, low / low or high / high control
- Supply voltages: 24 VAC / 24 VDC / 115 VAC / 230 VAC
- Easy wiring with ferrules



Ordering information

Measuring voltage	Supply voltage	Model
6 to 60 mV AC / DC, 10 to 100 mV AC / DC, 30 to 300 mV AC / DC	24 VDC	K8AB-VW1 24 VDC
	24 VAC	K8AB-VW1 24 VAC
	100-115 VAC	K8AB-VW1 100-115 VAC
	200-230 VAC	K8AB-VW1 200-230 VAC
1 to 10 V AC / DC, 3 to 30 V AC / DC, 15 to 150 V AC / DC	24 VDC	K8AB-VW2 24 VDC
	24 VAC	K8AB-VW2 24 VAC
	100-115 VAC	K8AB-VW2 100-115 VAC
	200-230 VAC	K8AB-VW2 200-230 VAC
20 to 200 V AC / DC, 30 to 300 V AC / DC, 60 to 600 V AC / DC	24 VDC	K8AB-VW3 24 VDC
	24 VAC	K8AB-VW3 24 VAC
	100-115 VAC	K8AB-VW3 100-115 VAC
	200-230 VAC	K8AB-VW3 200-230 VAC

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Storage temperature		-40 °C to 70 °C (with no condensation or icing)
Operating voltage range		85% to 110% of rated operating voltage
Rated power supply frequency		50 / 60 Hz $\pm$ 5 Hz (AC power supply)
Output relays (SPDT)	Resistive load	6 A at 250 VAC ($\cos\phi = 1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi = 0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
	Electrical life	Make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Mounting		Mounted to DIN-rail or via M4 screws
Operating power	Non-isolated power supply	24 VDC (1 W)
	Isolated power supply	24 VAC (4 VA), 100 to 115 VAC (4 VA), 200 to 230 VAC (5 VA)
Operation (AL1 and AL2)	Operating value setting range	10% to 100% of maximum rated input value
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Manual reset / automatic reset (switchable) Manual reset: turn OFF operating power for 1 s or longer
Operating time (T)		0.1 to 30 s (value when input rapidly changes from 0% to 120%)
Power ON lock (LOCK)		1 s or 5 s error $\pm$ 0.5 s (value when input rapidly changes from 0% to 100%)
Setting accuracy		$\pm$ 10% of full scale
Time error		$\pm$ 10% of set value (minimum error: 50 ms)
Input frequency		40 to 500 Hz
Input impedance		K8AB-VW1: 9 k Ω min., K8AB-VW2: 100 k Ω min., K8AB-VW3: 1 M Ω min.
Indicators		Power (PWR): green LED, relay output (RY): yellow LED, alarm outputs (ALM 1 / 2): red LED
Output relays		Two SPDT relays (6 A at 250 VAC, resistive load), normally closed operation (normally ON)
Size in mm		90Hx22.5Wx100D



3-phase sequence, phase-loss relay

K8AB-PH simultaneously monitors phase sequence and phase loss for 3-phase 3-wire power supplies. The relay warning status can easily be monitored using the LED indicator. Suitable for industrial facilities and equipment.

- 3-phase sequence, phase-loss relay
- Monitors both functions at once
- Measuring range: 200 to 500 VAC
- Power supply voltage is the same as measuring voltage
- Operation reaction time: 0.1 s maximum



Ordering information

Rated input voltage	Model
200 to 500 VAC	K8AB-PH1

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Storage temperature		-40 °C to 70 °C (with no condensation or icing)
Altitude		2,000 m max.
Voltage fluctuation range		85% to 110% of rated input voltage
Input frequency		50 / 60 Hz $\pm$ 5 Hz (AC power supply)
Output relays	Resistive load	6 A at 250 VAC ($\cos\phi = 1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi = 0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
Electrical life		Make: 50,000 times, break: 30,000 times
Terminal screw tightening torque		1.2 Nm
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Mounting		Mounted to DIN-rail or via M4 screws
Rated input voltage	Non-isolated	200 to 500 VAC (15 VA)
Phase-sequence, phase-loss operating time		0.1 s max. (value when rated operating voltage changes quickly from 0% to 100%) (relays are normally ON and turn OFF for phase-sequence or loss phase errors)
Resetting method		Automatic reset
Input frequency		45 to 65 Hz
Input impedance		100 k Ω min.
Indicators		Power (PWR): green LED, relay output (RY): yellow LED
Output relays		One SPDT relay (6 A at 250 VAC, resistive load)
Size in mm		90Hx22.5Wx100D



3-phase voltage, phase-sequence, phase-loss relay

K8AB-PM monitors overvoltages, undervoltages, phase sequence and phase loss for 3-phase, 3-wire or 4-wire power supplies, in one unit. This relay features a switch setting for 3-phase, 3-wire or 3-phase, 4-wire power supply.

- Worldwide power specifications supported by one unit
- Phase sequence, phase loss: operation reaction time 0.1 s maximum
- Overvoltages or undervoltages: operation time setting from 0.1 to 30 s
- Relay warning status can easily be monitored using the LED indicator
- Easy wiring with ferrules

CE

Ordering information

Rated input		Model
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AB-PM1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AB-PM2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Ambient operating humidity		25% to 85%
Voltage fluctuation range		85% to 110% of rated input voltage
Input frequency		50 / 60 Hz ± 5 Hz (AC power supply)
Output relays	Resistive load	6 A at 250 VAC ($\cos\phi = 1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi = 0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
Electrical life		Make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Mounting		Mounted to DIN-rail or via M4 screws
Rated input voltage	K8AB-PM1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AB-PM2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC, 3-phase, 4-wire mode: 220, 230, 240, 277 VAC
Operation (overvoltage or undervoltage)	Operating value setting range	Overvoltage = -30% to 25% of maximum rated input voltage ^{*1} Undervoltage = -30% to 25% of maximum rated input voltage ^{*1}
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Automatic reset
Operating time (T)	Overvoltage / undervoltage	0.1 to 30 s (value when input rapidly changes from 0% to 120%)
	Phase-sequence, phase-loss	0.1 s max. (value when input rapidly changes from 0% to 100%)
Power ON lock (LOCK)		1 s or 5 s error ± 0.5 s (value when input rapidly changes from 0% to 100%. The operating time is the shortest at this point)
Setting accuracy		$\pm 10\%$ of full scale
Time error		$\pm 10\%$ of set value (minimum error: 50 ms)
Input frequency		45 to 65 Hz
Input impedance		100 k Ω min.
Indicators		Power (PWR): green LED, relay output (RY): yellow LED, alarm outputs (ALM 1 / 2): red LED
Output relays		Two SPDT relays (6 A at 250 VAC, resistive load), normally closed operation (normally ON) (separate outputs possible for overvoltages and undervoltages)
Size in mm		90Hx22.5Wx100D

^{*1} The rated input voltage is switched with a switch



3-phase asymmetry, phase-sequence, phase-loss relay

Monitors voltage asymmetry, phase sequence and phase loss for 3-phase 3-wire or 4-wire power supplies, in one unit.

- Worldwide power specifications supported by one unit
- Phase sequence, phase loss: operation reaction time 0.1 s maximum
- Asymmetry: operation time setting from 0.1 to 30 s
- Reset method: automatic
- Power ON lock: 1 s or 5 s

CE

Ordering information

Rated input		Model
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AB-PA1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AB-PA2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Storage temperature		-40 °C to 70 °C (with no condensation or icing)
Altitude		2,000 m max.
Voltage fluctuation range		85% to 110% of rated input voltage
Input frequency		50 / 60 Hz $\pm$ 5 Hz (AC power supply)
Output relays	Resistive load	6 A at 250 VAC ($\cos\phi = 1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi = 0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
	Electrical life	Make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Rated input voltage	K8AB-PA1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AB-PA2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC, 3-phase, 4-wire mode: 220, 230, 240, 277 VAC
Asymmetry operation (ASY.)	Operating value setting range	Asymmetry rate: 2% to 22%
	Operating value	100% operation at set value Asymmetry operating value = rated input voltage x asymmetry set value [%] The asymmetry operation will function when the difference between the highest and lowest voltage phases equals or exceeds the asymmetry operating value
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Automatic reset
Operating time (T)	Asymmetry	0.1 s to 30 s (value when input rapidly changes from 0% to 120%)
	Phase-sequence, phase-loss	0.1 s max. (value when input rapidly changes from 0% to 100%)
Power ON lock (LOCK)		1 s or 5 s (value when input rapidly changes from 0% to 100%. The operating time is the shortest at this point)
Setting accuracy		$\pm$ 10% of full scale
Time error		$\pm$ 10% of set value (minimum error: 50 ms)
Input frequency		45 to 65 Hz
Input impedance		100 k Ω min.
Indicators		Power (PWR): green LED, relay output (RY): yellow LED, alarm outputs (ALM 1 / 2): red LED
Output relays		One SPDT relay (6 A at 250 VAC, resistive load), normally closed operation (normally ON)
Size in mm		90Hx22.5Wx100D



3-phase voltage relay

Monitors overvoltages and undervoltages for 3-phase 3-wire or 4-wire power supplies, in one unit. Switch setting for 3-phase 3-wire or 3-phase 4-wire power supply.

- Overvoltages or undervoltages: operation time setting from 0.1 to 30 s
- Relay warning status can easily be monitored using the LED indicator
- Separate outputs possible for overvoltages and undervoltages
- Reset method: automatic
- Power ON lock: 1 s or 5 s

CE

Ordering information

Rated input		Model
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AB-PW1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AB-PW2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Bold = preferred stock item

Specifications

Ambient operating temperature		-20 °C to 60 °C (with no condensation or icing)
Storage temperature		-40 °C to 70 °C (with no condensation or icing)
Altitude		2,000 m max.
Voltage fluctuation rang		85% to 110% of rated input voltage
Input frequency		50 / 60 Hz $\pm$ 5 Hz (AC power supply)
Output relays	Resistive load	6 A at 250 VAC ($\cos\phi=1$), 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1 A at 250 VAC ($\cos\phi=0.4$), 1 A at 30 VDC (L / R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
	Electrical life	Make: 50,000 times, break: 30,000 times
Crimp terminals		Two solid wires of 2.5 mm ² , two crimp terminals of 1.5 mm ² with insulation sleeves, can be tightened together
Degree of protection		Terminal section: IP20, rear case: IP40
Case color		Munsell 5Y8/1 (ivory)
Case material		ABS resin (self-extinguishing resin) UL94-V0
Weight		200 g
Rated input voltage	K8AB-PW1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AB-PW2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC, 3-phase, 4-wire mode: 220, 230, 240, 277 VAC
Operation (overvoltage and undervoltage)	Operating value setting range	Overvoltage = -30% to 25% of maximum rated input voltage ^{*1} Undervoltage = -30% to 25% of maximum rated input voltage ^{*1}
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Automatic reset
Operating time (T)	Overvoltage / undervoltage	0.1 to 30 s (value when input rapidly changes from 0% to 120%)
Power ON lock (LOCK)		1 s or 5 s (value when input rapidly changes from 0% to 100%. The operating time is the shortest at this point)
Setting accuracy		$\pm$ 10% of full scale
Time error		$\pm$ 10% of set value (minimum error: 50 ms)
Input frequency		45 to 65 Hz
Input impedance		100 k Ω min.
Indicators		Power (PWR): green LED, relay output (RY): yellow LED, alarm outputs (ALM 1 / 2): red LED
Output relays		Two SPDT relays (6 A at 250 VAC, resistive load), normally closed operation (normally ON) (separate outputs possible for overvoltages and undervoltages)
Size in mm		90Hx22.5Wx100D

^{*1} The rated input voltage is switched with a switch



Compact plug-in (8-pin) level controller

The 61F-GP-N8 can be used for single- or two-point level control of conductive materials, both liquids and solids. These products are equipped with a red LED operation indicator.

- Low-voltage (AC) electrodes (8 VAC or 24 VAC)
- Operation range: 4 - 15 k Ω , 70 - 300 k Ω
- Detection method: conductive
- Probes need to be ordered separately
- Conforms to EMC and LVD directives, UL / CSA approved



Ordering information

Application	Type	Model number
Ordinary purified water or sewage water	General purpose type	61F-GP-N8 24AC
		61F-GP-N8 110AC
		61F-GP-N8 230AC
Ordinary purified water, where the distance between sewage pumps and water tanks or between receiver tanks and supply tanks is long or where remote control is required	Long-distance type	2 km
		61F-GP-N8L 24AC 2KM
		61F-GP-N8L 110AC 2KM
		61F-GP-N8L 230AC 2KM
	4 km	61F-GP-N8L 24AC 4KM
		61F-GP-N8L 110AC 4KM
		61F-GP-N8L 230AC 4KM
Liquids with high specific resistance such as distilled water	High sensitivity type	61F-GP-N8H 24AC
		61F-GP-N8H 110AC
		61F-GP-N8H 230AC
Liquids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals	Low sensitivity type	61F-GP-N8D 24AC
		61F-GP-N8D 110AC
		61F-GP-N8D 230AC
Ordinary purified or sewage water, with two-wired-type electrode holder (incorporating a resistor of 6.8 k Ω)	Two-wired type	61F-GP-N8R 24AC
		61F-GP-N8R 110AC
		61F-GP-N8R 230AC

Bold = preferred stock item

Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Model
For city water and other general use. Easy-to-replace separate versions for maintenance.	Flange	Phenol resin	70 °C	3	PS-3S
When mounting space is limited. Special 3-pole holder of small size and light weight.	Screw	Phenol resin		3, 300 mm 3, 1,000 mm	PS-31-300MM PS-31-1000MM
Use for sewage, sea water, etc., having a low specific resistance.	Flange	Ceramics	150 °C (without water drips or vapor on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	PTFE	250 °C (without water drips or vapor on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Model
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Model
Purified city water, industrial water, sewage	Equivalent to SUS 304 (AISI-304)	Electrode (1 m long)	1 line		F03-01 SUS201
		Connecting nut			F03-02 SUS201
		Lock nut			F03-03 SUS201
Purified city water, industrial water, sewage, dilute alkaline solution	SUS316 (AISI-316)	Electrode (1 m long)	2 lines		F03-01 SUS316
		Connecting nut		6	F03-02 SUS316
		Lock nut		316	F03-03 SUS316

Bold = preferred stock item

Specifications

Model	61F-GP-N8	61F-GP-N8L	61F-GP-N8H	61F-GP-N8D	61F-GP-N8R
Supply voltage	24, 100, 110, 120, 200, 220, 230 or 240 VAC; 50 / 60 Hz				
Operating voltage range	85% to 110% of rated voltage				
Interelectrode voltage	8 VAC		24 VAC	8 VAC	
Interelectrode current	Approx. 1 mA AC max.		Approx. 0.4 mA AC max.	Approx. 1 mA AC max.	
Power consumption	Approx. 3.5 VA max.				
Response time	Operate: 80 ms max., release: 160 ms max.				
Cable length	1 km max.	2 km max. 4 km max.	50 m max.	1 km max.	800 m max.
Control output	1 A, 250 VAC (inductive load: $\cos\phi=0.4$), 3 A, 250 VAC (resistive load)				
Ambient temperature	Operating: -10 °C to 55 °C				
Life expectancy	Electrical: 100,000 operations min., mechanical: 5,000,000 operations min				
Size in mm	49.4Hx38Wx84D				



Compact plug-in (11-pin) level controller (DC supply)

This controller is for single- or two-point level control. 24 VDC supply allows for usage in locations without AC power supply. Relay contact chattering usually caused by waves has been eliminated by using open collector output, reducing contact wear.

- Adjustable sensitivity: operation range: 0 - 100 k Ω
- Red LED for operation indicator
- Conforms to EMC and LVD directives
- UL / CSA approved
- Probes need to be ordered separately



Ordering information

Product name	Output	Model
Conductive level controller	Open collector (NPN)	61F-GPN-BT 24VDC
	Relay contact (SPST-NO)	61F-GPN-BC 24VDC
Front socket		PF113A-E

Bold = preferred stock item

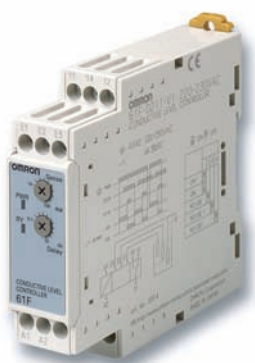
Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Model
For city water and other general use. Easy-to-replace separate versions for maintenance.	Flange	Phenol resin	70 °C	3	PS-3S
When mounting space is limited. Special 3-pole holder of small size and light weight.	Screw	Phenol resin		3, 300 mm 3, 1000 mm	PS-31-300MM PS-31-1000MM
Use for sewage, sea water, etc., having a low specific resistance.	Flange	Ceramics	150 °C (without water drips or vapor on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	PTFE	250 °C (without water drips or vapor on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Model
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Model
Purified city water, industrial water, sewage	Equivalent to SUS 304 (AISI-304)	Electrode (1 m long)	1 line		F03-01 SUS201
		Connecting nut			F03-02 SUS201
		Lock nut			F03-03 SUS201
Purified city water, industrial water, sewage, dilute alkaline solution	SUS316 (AISI-316)	Electrode (1 m long)	2 lines		F03-01 SUS316
		Connecting nut		6	F03-02 SUS316
		Lock nut		316	F03-03 SUS316

Bold = preferred stock item

Specifications

Model	61F-GPN-BT	61 F-GPN-BC
Rated voltage	24 VDC	
Allowable voltage range	85% to 110% of the rated voltage	
Interelectrode voltage	5 VAC max.	
Error	For scale of 0: +10 k Ω , for scale of 100: $\pm$ 10 k Ω	
Release resistance	200% max. of the operation resistance	
Switching between supply and drainage	Terminals 7 and 8 open: automatic drainage operation; terminals 7 and 8 shorted: automatic supply operation	
Output specifications	Open collector (NPN) 30 VDC, 100 mA max.	SPST-NO; 5 A, 240 VAC (resistive load) 2 A, 240 VAC (inductive load: $\cos\phi = 0.4$)
Life expectancy		Electrical: 100,000 operations min. Mechanical: 20,000,000 operations min.
Wiring distance	100 m max.	
Ambient operating temperature	-10 °C to 55 °C	
Response time	Operating: 1.5 s max., releasing: 3.0 s max.	
Size in mm	49.4Hx38Wx84D	



22.5 mm wide conductive level controller

- The 61F-D21T is a conductive level controller in a 22.5 mm wide industrial housing. Via DIP switches its function (supply or drainage) can be selected. This product is for single- or two-point level control.
- Time delay function up to 10 s
- Supply voltages: 24 VAC / 115 VAC / 220 to 230 VAC
- Control output: relay 6 A at 250 VAC resistive load
- Probes cable length: max. 100 m from controller
- LED indicator: green for power ON, yellow for output relay



Ordering information

Supply voltage	Model
24 VAC	61F-D21T-V1 24 VAC
115 VAC	61F-D21T-V1 115 VAC
220 to 230 VAC	61F-D21T-V1 220 to 230 VAC

Bold = preferred stock item

Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Model
For city water and other general use. Easy-to-replace separate versions for maintenance.	Flange	Phenol resin	70 °C	3	PS-3S
When mounting space is limited. Special 3-pole holder of small size and light weight.	Screw	Phenol resin		3, 300 mm 3, 1000 mm	PS-31-300MM PS-31-1000MM
Use for sewage, sea water, etc., having a low specific resistance.	Flange	Ceramics	150 °C (without water drips or vapor on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	PTFE	250 °C (without water drips or vapor on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Model
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Model
Purified city water, industrial water, sewage	Equivalent to SUS 304 (AISI-304)	Electrode (1 m long)	1 line		F03-01 SUS201
		Connecting nut			F03-02 SUS201
		Lock nut			F03-03 SUS201
Purified city water, industrial water, sewage, dilute alkaline solution	SUS316 (AISI-316)	Electrode (1 m long)	2 lines		F03-01 SUS316
		Connecting nut		6	F03-02 SUS316
		Lock nut		316	F03-03 SUS316

Bold = preferred stock item

Specifications

Rated voltage	24 VAC, 115 VAC, 220 to 230 VAC
Operating voltage range	85% to 110% of rated voltage
Voltage between electrodes	6 VAC p-p (approx. 20 Hz)
Power consumption	5 VA max.
Operating resistance	10 kΩ to 100 kΩ (variable)
Reset resistance	250 kΩ max.
Response time	Approx. 0.1 to 10 s (variable)
Cable length	100 m max. with completely insulated (600 V) cable with 3 conductors (0.75 mm ²)
Control output	6 A at 250 VAC for resistive load at 20 °C, 1 A at 250 VAC for inductive load cosφ= 0.4 at 20 °C
Indicators	Green LED: power, yellow LED: control output
Ambient temperature	Operating: -20 °C to 60 °C, storage: -30 °C to 70 °C (with no condensation or icing)
Size in mm	90Hx22.5Wx100D



Ultra-miniature liquid leakage sensor amplifier

This very compact plug-in leakage controller fits into OMRON's G2R 8-pin sockets (P2RF-08-E). K7L detects a wide variety of liquids, ranging from water to liquid chemicals with low conductivity.

- Operation range: up to 50 MΩ
- Four sensing ranges available
- Detection method: conductive
- Two LEDs: green for power supplied, red for output indication
- Conforms to EMC and LVD Directives, UL / CSA approved

Ordering information

Product name	Characteristics	Model number
Liquid leakage sensor amplifier	Standard	K7L-AT50
	With disconnection function set	K7L-AT50D
	With disconnection function set sensor amplifier only	K7L-AT50D-S

Bold = preferred stock item

Product name		Characteristics	Model number
Sensors	Sensing band	Standard model (material polyethylene)	F03-16PE 5M
		For temperature and chemical resistance (material polyethylene PTFE)	F03-16PT 5M
		For flexibility and superior workability (material; plastic fiber braided cable)	F03-16SF 5M
		For flexibility and visual confirmation of leakage (material; plastic fiber braided cable)	F03-16SFC 5M
	Point sensor	Easier to wipe off than the band type	F03-16PS
		Electrodes have PTFE coating to resist chemicals	F03-16PS-F

Bold = preferred stock item

Accessories

Product name	Characteristics	Model number
Terminal blocks (10 pcs)		F03-20
DIN-rail mounted socket	With finger protection	P2RF-08-E
	Without finger protection	P2RF-08

Bold = preferred stock item

Product name		Characteristics	Model number
Mounting brackets and stickers	Sensing band stickers	Used for F03-16SF(C)	F03-25
		Used for F03-16PE (adhesive tape)	F03-26PES
		Used for F03-16PE (screws) (30 pcs)	F03-26PEN
		Used for F03-16PT (screws)	F03-26PTN
	Point sensor mounting brackets	Used for F03-16PS	F03-26PS

Bold = preferred stock item

Specifications

Rated power supply voltage	12 to 24 VDC (allowable voltage fluctuation range: 10 to 30 VDC)
Operate resistance	0 Ω to 50 MΩ, variable Range 0: 0 to 250 kΩ Range 1: 0 to 600 kΩ Range 2: 0 to 5 MΩ Range 3: 0 to 50 MΩ
Release resistance	105% min. of operate resistance
Output configuration	NPN open-collector transistor output with 100 mA at 30 VDC max.
Wiring distance	Connecting cable: 50 m max. Sensing band length: 10 m max.
Ambient temperature	Operating: -10 °C to 55 °C
Power consumption	1 W max.
Response time	Operate: 800 ms max., release: 800 ms max.
Weight	Approx. 14 g
Disconnection detection function (K7L-AT50D & K7L-AT50D-S only)	Detection signal: 10 VDC max., 200 ms, detection time: 10 s max. Release: by resetting the power supply
Size in mm	28.8Hx12.8Wx46D

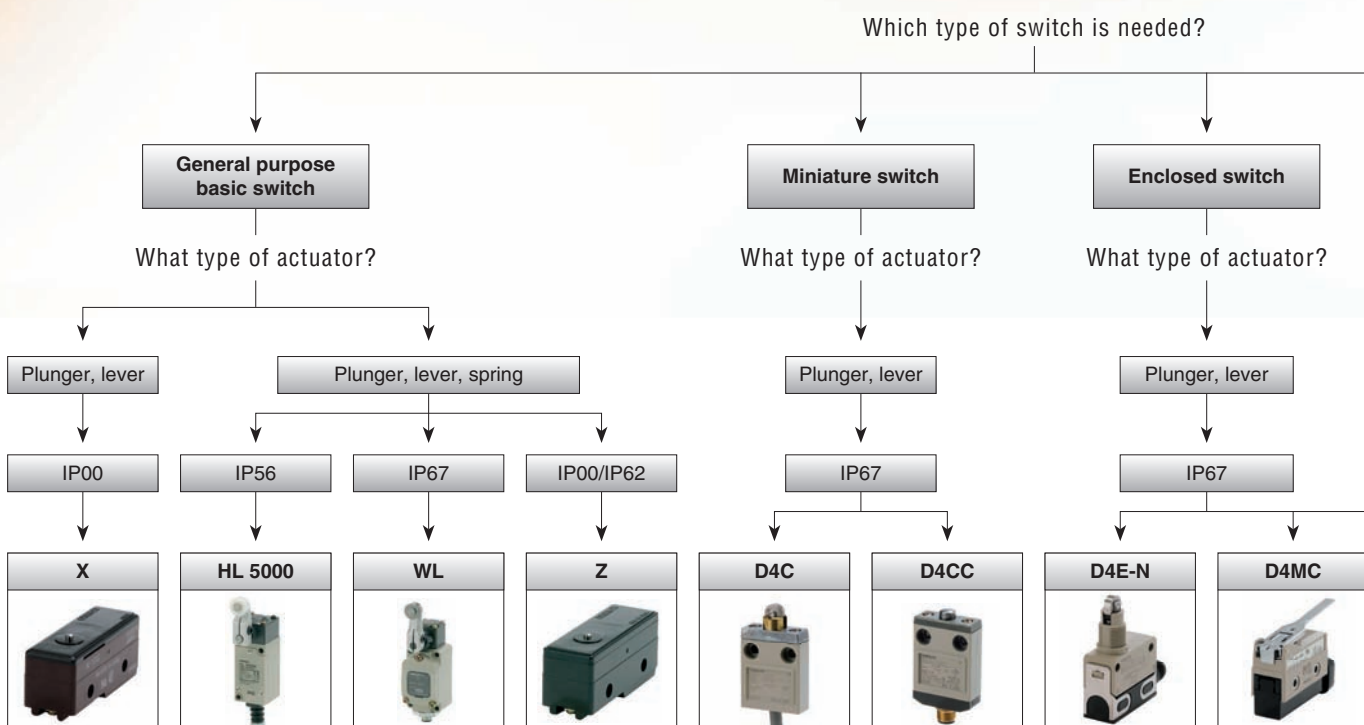
Limit switches

Omron designs and manufactures an extensive range of high-quality limit switches that bring easier, more effective switching solutions to machines and systems.

Models are available with a variety of roller lever heads, as well as various types of plunger heads. Better seals, higher resistance to shock and stronger covers make these switches the perfect solution for any industrial application, even in extreme environmental conditions.

These general purpose limit switches are ideal for use in applications across the industry including lifts, garages, production lines, safety doors, machine tools, automotive, security, domestic goods and vending machines.

- More contacts for increased functionality
- Compact, space-saving design without compromising on safety performance
- Robust construction for operating in the harshest of conditions
- Cost-effective, high-performance switches meeting the highest safety standards
- UL / CSA, TÜV, BIA, SUVA approvals
- Designed for global use





Special purpose basic
switch for control of
independent circuits

What type of actuator?

Plunger, lever

IP00

SHL

ZC-55

DZ



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	Z	211

Selection table

			Type	General purpose basic switch	Two circuit limit switch	Enclosed switch	Miniature limit switch	Small sealed switch	Enclosed switch	
Selection criteria										
	Model			HL-5000	WL	D4C	D4CC	D4E-N	D4MC	
	Category			General purpose switches	Special purpose switches					
	Degree of protection	IEC			IP65			IP67		
		JIS			Jet-proof			Immersion-proof		
	Rated current [A]	5 VDC								
		12 to 24 VDC								
		30 VDC			5		4	1	1	6
		125 / 250 VDC								
		24 VAC								
		115 VAC								0.5
		125 VAC			5	10	5	1	5	10
100 to 240 VAC										
250 VAC			5	10	5			10		
480 VAC				10				3		
500 VAC				10						
Features	Microload type				0.1 A	0.1 A		0.1 A	0.1 A	
	Operation indicator				■	■	■			
Actuators	Adjustable rod lever		■							
	Adjustable roller lever		■							
	Bevel plunger					■	■			
	Center roller lever						■			
	Coil spring		■							
	Cross roller plunger					■	■			
	Fork lever lock				■					
	Hinge lever								■	
	Hinge roller lever								■	
	Hinge cross roller lever									
	Horizontal plunger				■					
	Horizontal roller plunger				■					
	Horizontal ball plunger				■					
	Leaf spring									
	Long hinge lever									
	Low force hinge lever									
	Low force wire hinge lever									
	One-way action hinge roller lever									
	One-way action short hinge roller lever								■	
	One-way action roller lever							■		
	Panel mount plunger						■		■	
	Panel mount pin plunger						■			
	Panel mount roller plunger						■		■	
	Panel mount cross roller plunger						■		■	
	Pin plunger						■	■		
	Plastic rod							■		
	Reverse hinge lever									
	Reverse hinge roller lever									
	Reverse short hinge roller lever									
	Roller leaf spring									
	Roller lever									
	Roller lever		■				■		■	
	Roller plunger						■	■	■	
	Sealed cross roller plunger						■	■	■	
	Sealed plunger		■				■	■	■	
	Sealed plunger roller		■		■	■	■	■		
	Short hinge cross roller lever									
	Short hinge lever								■	
	Short hinge roller lever									
	Short spring plunger									
Side plunger				■						
Side roller plunger horizontal				■						
Side roller plunger vertical				■						
Slim spring plunger										
Spring plunger										
Top ball plunger				■						
Top plunger				■						
Unidirectional short hinge roller lever										
Variable rod lever		■								
Variable roller lever		■		■						
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Type			Enclosed switch		Special purpose basic switch	General purpose basic switch		
Selection criteria								
	Model		SHL55	ZC-55	DZ	X - 10	Z - 1..	
	Category		Special purpose switches				General purpose switches	
	Degree of protection	IEC	IP67		IP00		IP00 / IP62 (drip-proof)	
		JIS	Immersion-proof					
	Rated current [A]	5 VDC						
		12 to 24 VDC						
		30 VDC	5	6				
		125 / 250 VDC				10 / 3 A		
		24 VAC						
		115 VAC	0.4	0.5	0.5			
		125 VAC	10	10	10		15	
100 to 240 VAC								
250 VAC		10	10	10		15		
480 VAC	2		2		0.1			
500 VAC								
Features	Microload type		0.1 A				0.1 A	
	Operation indicator							
Actuators	Adjustable rod lever							
	Adjustable roller lever							
	Bevel plunger							
	Center roller lever							
	Coil spring							
	Cross roller plunger							
	Fork lever lock							
	Hinge lever		■	■	■	■	■	
	Hinge roller lever		■	■	■	■	■	
	Hinge cross roller lever						■	
	Horizontal plunger							
	Horizontal roller plunger							
	Horizontal ball plunger							
	Leaf spring						■	
	Long hinge lever						■	
	Low force hinge lever		■			■	■	
	Low force wire hinge lever						■	
	One-way action hinge roller lever		■	■				
	One-way action short hinge roller lever		■	■				
	One-way action roller lever							
	Panel mount plunger		■	■		■	■	
	Panel mount pin plunger		■			■		
	Panel mount roller plunger		■	■		■	■	
	Panel mount cross roller plunger		■	■		■	■	
	Pin plunger		■	■	■	■	■	
	Plastic rod							
	Reverse hinge lever					■	■	
	Reverse hinge roller lever					■	■	
	Reverse short hinge roller lever					■	■	
	Roller leaf spring						■	
	Roller lever							
	Roller lever							
	Roller plunger							
	Sealed cross roller plunger			■				
	Sealed plunger							
	Sealed plunger roller			■				
	Short hinge cross roller lever						■	
	Short hinge lever		■	■		■	■	
	Short hinge roller lever		■	■	■	■	■	
	Short spring plunger						■	
	Side plunger							
	Side roller plunger horizontal							
	Side roller plunger vertical							
	Slim spring plunger						■	
	Spring plunger						■	
	Top ball plunger							
	Top plunger							
	Unidirectional short hinge roller lever						■	
Variable rod lever								
Variable roller lever								
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Economical, miniature limit switch

With a highly rigid, dust- and drip-proof construction, HL-5000 can be used in a variety of heavy industrial applications.

- Highly rigid construction (head and cover snugly fit in box)
- Smooth operation with greater overtravel
- Easy-to-wire conduit-opening design
- Models with grounding terminals conform to the CE marking
- Jet-proof IP65



Ordering information

Application		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	Size in mm (HxWxD) excluding actuator	Model
Roller lever		7.35 N	0.98 N	20°	50°	12°		82.4x33x34	HL-5000G
Adjustable roller lever		7.35 N	0.98 N	20°	50°	12°			HL-5030G
Adjustable rod lever		7.35 N	0.98 N	20°	50°	12°			HL-5050G
Sealed plunger		8.83 N	1.47 N	1.5 mm	4 mm	1 mm	30 ±0.8 mm	60.6x33x34	HL-5100G
Sealed roller plunger		8.83 N	1.47 N	1.5 mm	4 mm	1 mm	40 ±0.8 mm		HL-5200G
Coil spring		1.47 N		30 mm					HL-5300G

Bold = preferred stock item

Specifications

Ratings	Non-inductive load				Inductive load			
Rated voltage	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 A		1.5 A	0.7 A	3 A		2 A	1 A
250 VAC	5 A		1 A	0.5 A	3 A		1.5 A	0.8 A
12 VDC	5 A		3 A		4 A		3 A	
24 VDC	5 A		3 A		4 A		3 A	
Inrush current	NC				24 A max.			
	NO				12 A max.			
Degree of protection	IP65							
Life expectancy	Mechanical: 10,000,000 operations min. (under rated conditions)							
Operating speed	5 mm / s to 0.5 m / s (HL-5000)							
Operating frequency	Mechanical: 120 operations/min, electrical: 30 operations/min							
Rated frequency	50 / 60 Hz							
Ambient temperature	Operating: -5 °C to 65 °C (with no icing)							
Ambient humidity	Operating: 95% max.							
Weight	Approx. 130 to 190 g							



Wide selection of two-circuit limit switches

A wide selection of models is available, including overtravel models with greater OT, lamp-equipped models for checking operation, low-temperature and heat-resistant models and micro-load models. Various plungers and levers are also available.

- Two-circuit limit switch
- Direct and pre-wiring
- Metal housing, immersion-proof IP67
- Ground terminal models are approved by EN and IEC and bear the CE marking
- UL, CSA



Ordering information

Actuator		Ground terminal	
		No	Yes
Adjustable roller lever: standard		WLCA12	WLCA12-G
Adjustable roller lever: standard		WLCA12-2	WLCA12-2G
Adjustable roller lever: overtravel 90°		WLCA12-2N	WLCA12-2NG
Roller lever: standard model (R38)		WLCA2	WLCA2-2G
Rod lever: standard		WLCA2-2	WLCA2-G
Rod lever: overtravel 90°		WLCA2-2N	WLCA2-2NG
Roller lever: standard, standard model (R50)		WLCA2-7	WLCA2-7G
Roller lever: standard, standard model (R63)		WLCA2-8	WLCA2-8G
Fork lever lock: protective, WL-5A100		WLCA32-41	WLCA32-41G
Fork lever lock: protective, WL-5A104		WLCA32-43	WLCA32-43G
Adjustable rod lever: standard		WLCL	WLCL-G
Adjustable rod lever: overtravel 90°, 25 to 140 mm		WLCL-2N	WLCL-2NG
Plunger: top plunger		WLD	WLDG
Plunger: top roller plunger		WLD2	WLD2-G
Plunger: top ball plunger		WLD3	WLD3-G
Adjustable rod lever: overtravel, high sensitivity, 80°, 350 to 380 mm		WLGL	WLGL-G
Flexible rod: coil spring		WLNJ	WLNJ-G
Flexible rod: coil spring, resin rod		WLNJ-2	WLNJ-2G
Flexible rod: coil spring, multi-wire		WLNJ-30	WLNJ-30G
Flexible rod: steel wire		WLNJ-S2	WLNJ-S2-G
Plunger: horizontal roller plunger		WLSD2	WLSD2-G
Plunger: horizontal ball plunger		WLSD3	WLSD3-G
Plunger: horizontal plunger		WLSD	WLSD-G

Note: For other model please refer to the datasheet

Bold = preferred stock item

Specifications

Rated voltage	Carry current	Current		Volt-amperes	
		Make	Break	Make	Break
120 VAC	10 A	60 A	6 A	7,200 VA	720 VA
240 VAC		30 A	3 A		
480 VAC		15 A	1.5 A		
600 VAC		12 A	1.2 A		

Agency	Standard	File No.
UL	UL508	E76675
CSA	CSA C22.2 No. 14	LR45746
TÜV Rheinland	EN60947-5-1	R9551016

Size in mm	68.7Hx40Wx42D (excluding the actuator)
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Type	Rated voltage	Non-inductive load				Inductive load			
		Resistive load		Lamp load		Inductive load		Motor load	
		NC	NO	NC	NO	NC	NO	NC	NO
Standard, overtravel (except high-sensitivity models), and high-precision models.	125 VAC	10 A		3 A	1.5 A	10 A		5 A	2.5 A
	250 VAC	10 A		2 A	1 A	10 A		3 A	1.5 A
	500 VAC	10 A		1.5 A	0.8 A	3 A		1.5 A	0.8 A
	8 VDC	10 A		6 A	3 A	10 A		6 A	
	14 VD	10 A		6 A	3 A	10 A		6 A	
	30 VDC	6 A		4 A	3 A	6 A		4 A	
	125 VD	0.8 A		0.2 A	0.2 A	0.8 A		0.2 A	
Overtravel (high-sensitivity models)	250 VDC	0.4 A		0.1 A	0.1 A	0.4 A		0.1 A	
	125 VAC	5 A							
	250 VAC	5 A							
	125 VDC	0.4 A							
	250 VD	0.2 A							



Compact, 16 mm-thick, cable-type switch

The D4C range of switches offers a wide choice of actuators. All switches are liquid and dust resistant, conforming to IEC IP67. Various types are available: pre-wired, low temperature, viscosity resistant, etc.

- Enclosed miniature limit switch, only 16 mm thick
- Metal housing with triple-sealed construction
- LED indicator for easy monitoring
- Ganged mounting for multiple switching
- Mechanical life expectancy = 10 million, switching / min = 30



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	Standard cable models
								S-FLEX VCTF Cable 3 m
Pin plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	15.7±1 mm	D4C-1201
Sealed plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	24.9±1 mm	D4C-1231
Roller plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	28.5±1 mm	D4C-1202
Sealed roller plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	34.3±1 mm	D4C-1232
Crossroller plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	28.5±1 mm	D4C-1203
Sealed crossroller plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	34.3±1 mm	D4C-1233
Coil spring		1.47 N		15°				D4C-1250
Roller lever		5.69 N	1.47 N	25°	40°	3°		D4C-1220
Roller lever (high-sensitivity model)		5.69 N	1.47 N	10±3°	50°	3°		D4C-1224
Center roller lever plunger		6.67 N	1.47 N	10±3°	50°	3°		D4C-1260

Note: For other product specifications please refer to the datasheet

Bold = preferred stock item

Specifications

Agency	Standard	File number
TÜV Rheinland	EN60947-5-1	R9451333/J9950970
UL	UL508	E76675
CSA	CSA C22.2 No. 14	LR45746

Model	Rated voltage	Non-inductive load				Inductive load				Inrush current	
		Resistive load		Lamp load		Inductive load		Motor load		NC	NO
		NC	NO	NC	NO	NC	NO	NC	NO		
D4C-1□□□	125 VAC	5 A	5 A	1.5 A	0.7 A	3 A	3 A	1.3 A	1.3 A	20 A max.	10 A max.
	250 VAC	5 A	5 A	1 A	0.5 A	2 A	2 A	1.5 A	0.8 A		
	8 VDC	5 A	5 A	2 A	2 A	5 A	4 A	3 A	3 A		
	14 VD	5 A	5 A	2 A	2 A	4 A	4 A	3 A	3 A		
	30 VDC	4 A	4 A	2 A	2 A	3 A	3 A	3 A	3 A		
	125 VD	0.4 A	0.4 A	0.05 A	0.4 A	0.4 A	0.4 A	0.05 A	0.05 A		
	250 VDC	0.2 A	0.2 A	0.03 A	0.2 A	0.2 A	0.2 A	0.03 A	0.03 A		

Note: For other loads, please refer to the datasheet

Degree of protection	IP67
Durability	Mechanical: 10,000,000 operations min. Electrical: 200,000 operations min. (5A at 250 VAC, resistive load)
Operating speed	0.1 mm to 0.5 m / s (in case of plunger) 1 mm to 1 m / s (in case of roller lever)
Operating frequency	Mechanical: 120 operations / min Electrical: 30 operations / min
Short-circuit protective device (SCPD)	10 A fuse type gG (IEC269)
Ambient temperature	Operating: -10 °C to 70 °C (with no icing)
Weight	With 3 m VCTF cable: 360 g; with 5 m VCTF cable: 540 g
Size in mm	49 or 51.5Hx34Wx16D (excluding the actuator)



Compact, 16 mm thick connector-type switch

The D4CC family of limit switches comes as standard with a triple-seal construction (IP67), cable connectors for easy switch replacement and an operation indicator for easy monitoring.

- Miniature limit switch
- Various models including roller lever
- Switches are only 16 mm thick with connector
- Cable connectors for easy switch replacement
- Immersion proof; IEC IP67, UL and CSA (type 3, 4 and 13)



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	1 A at 125 VAC Without indicator	1 A at 30 VDC Without indicator
Pin plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	15.7 ±1 mm	D4CC-1001	D4CC-3001
Roller plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	28.5 ±1 mm	D4CC-1002	D4CC-3002
Crossroller plunger		11.77 N	4.41 N	1.8 mm	3 mm	0.2 mm	28.5 ±1 mm	D4CC-1003	D4CC-3003
High-sensitivity roller lever		5.69 N	1.47 N	10 ±3°	50°	3°		D4CC-1024	D4CC-3024
Sealed pin plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	24.9 ±1 mm	D4CC-1031	D4CC-3031
Sealed roller plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	34.3 ±1 mm	D4CC-1032	D4CC-3032
Sealed crossroller plunger		17.65 N	4.41 N	1.8 mm	3 mm	0.2 mm	34.3 ±1 mm	D4CC-1033	D4CC-3033
Plastic rod		1.47 N		15°				D4CC-1050	D4CC-3050
Center roller lever		6.67 N	1.47 N	10 ±3°	50°	3°		D4CC-1060	D4CC-3060

Accessories

Type	Appearance	Number of conductors	Cable length	Model
VAC		4	2 m	XS2F-A421-D90-A
			5 m	XS2F-A421-G90-A
			10 m	XS2F-A421-J90-A
VDC			2 m	XS2F-D421-D80-A
			5 m	XS2F-D421-G80-A
			10 m	XS2F-D421-J80-A

Bold = preferred stock item

Specifications

Rated voltage	Carry current	Current		Volt-amperes	
		Make	Break	Make	Break
120 VAC	1.0 A	3.6 A	3.6 A	432 VA	72 VA

Agency	Standard	File number
UL	UL508	E76675
CSA	CSA C22.2 No. 14	LR45746

Rated voltage	Non-inductive load				Inductive load			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	1 A	1 A	1 A	0.7 A	1 A	1 A	1 A	1 A
30 VDC	1 A	1 A	1 A	1 A	1 A	1 A	1 A	1 A

Degree of protection	IP67
Durability	Mechanical: 10,000,000 operations min., electrical: 200,000 operations min. (1 A at 125 VAC, resistive load)
Operating speed	Plunger: 0.1 mm to 0.5 m / s, roller lever: 1 mm to 1 m / s
Operating frequency	Mechanical: 120 operations/min, electrical: 30 operations/min
Ambient temperature	Operating: -10 °C to 70 °C (with no icing)
Weight	Approx. 120 g (in the case of D4CC-1002)
Size in mm	57 or 59.5Hx34Wx16D (excluding the actuator)



Slim, compact sealed switch

D4E-N comes with flat springs that improve the lever ratio of the built-in switch, ensuring smooth snap action and long life expectancy. Its one-touch connector eliminates the need for tedious wiring operations and reduces downtime.

- Protection cover protects the built-in switch from dust and oil
- Plunger incorporates a tough, long-lasting seal cap
- Minute load model with gold cladding is optimal for electronic control
- IP67



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	One-touch connector type		Screw terminal type
								General purpose		General purpose
								AC	DC	
Roller plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	31.4 ±0.8 mm	D4E-1A00N	D4E-1A10N	D4E-1A20N
Crossroller plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	31.4 ±0.8 mm	D4E-1B00N	D4E-1B10N	D4E-1B20N
Plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	25.4 ±0.8 mm	D4E-1C00N	D4E-1C10N	D4E-1C20N
Sealed roller plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	41.3 ±0.8 mm	D4E-1D00N	D4E-1D10N	D4E-1D20N
Sealed crossroller plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	41.3 ±0.8 mm	D4E-1E00N	D4E-1E10N	D4E-1E20N
Sealed plunger		11.77 N	4.90 N	1.5 mm	3 mm	(0.1 mm)	30 ±0.8 mm	D4E-1F00N	D4E-1F10N	D4E-1F20N
Roller lever		3.92 N	0.78 N	2 mm	4 mm	(0.3 mm)	23.1 ±0.8 mm	D4E-1G00N	D4E-1G10N	D4E-1G20N
One-way action roller lever		3.92 N	0.78 N	2 mm	4 mm	(0.3 mm)	34.3 ±0.8 mm	D4E-1H00N	D4E-1H10N	D4E-1H20N

Bold = preferred stock item

Accessories

Type	Number of conductors	Current	Cable length	Applicable models	Model
Straight	4	AC	2 m	D4E-□□00N	XS2F-A421-D90-A
			5 m		XS2F-A421-G90-A
	4	DC	2 m	D4E-□□10N	XS2F-D421-D80-A
			5 m		XS2F-D421-G80-A

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load				Microload	
	Resistive load		Lamp load		Inductive load		Motor load		Resistive load	
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 (1) A		1.5 (1) A		3 (1) A		2 (1) A	1 (1) A	0.1 A	
250 VAC	5 (1) A		1.5 (1) A		3 (1) A		1 A	0.5 A		
8 VDC	5 (1) A				1.5 (1) A				0.1 A	
14 VDC	5 (1) A				1.5 (1) A				0.1 A	
30 VDC	5 (1) A				1.5 (1) A				0.1 A	
125 VDC	0.5 A				0.05 A					
250 VDC	0.25 A				0.03 A					

Note: The above current ratings are for a standard current and the values in parentheses are for models with a connector

Agency	Standard	File number
UL	UL508	E76675
CSA	CSA C22.2 No. 14	LR45746
TÜV Rheinland	EN60947-5-1	R9551015

Degree of protection	IP67
Durability	Mechanical: 10,000,000 operations min., electrical: 500,000 operations min. (5 A at 250 VAC, resistive load) 5,000,000 operations min. (10 mA at 24 VDC, resistive load)
Operating speed	0.1 mm to 0.5 m / sec
Operating frequency	Mechanical: 120 operations/min Electrical: 30 operations/min
Ambient temperature	Operating: -10 °C to 80 °C (with no icing)
Weight	Approx. 86 g (in case of roller plunger)
Size in mm	32.9Hx18Wx57D (excluding the actuator)



Economical, high-utility enclosed switch

D4MC provides users with high precision and a long life (10,000,000 mechanical operations). It is sealed with a gasket diaphragm without use of any adhesive or pin, making it suitable for applications demanding higher mechanical strength and for dust-proof and drip-proof applications.

- Various models, plungers and levers available
- Panel-mount versions have the same operating position as the Z basic switch
- IP67, UL, CSA



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	Model
Panel mount plunger		5.88 N	0.98 N	1.6 mm	5 mm	0.2 mm	21.8 ±1.2 mm	D4MC-5000
Panel mount roller		5.88 N	0.98 N	1.6 mm	5 mm	0.2 mm	33.4 ±1.2 mm	D4MC-5020
Panel mount crossroller		5.88 N	0.98 N	1.6 mm	5 mm	0.2 mm	33.4 ±1.2 mm	D4MC-5040
Short hinge lever		2.55 N	0.34 N	---	2.5 mm	1.7 mm	25 ±1 mm	D4MC-1020
Hinge lever		1.67 N	0.25 N	---	4 mm	3 mm	25 ±1 mm	D4MC-1000
Hinge roller lever		1.96 N	0.39 N	---	5 mm	3 mm	40 ±1 mm	D4MC-2000
Short hinge roller		2.94 N	0.39 N	---	2 mm	1.5 mm	40 ±1 mm	D4MC-2020
One-way action short hinge roller		2.94 N	0.39 N	---	2 mm	1.5 mm	50 ±1 mm	D4MC-3030

Note: Use molded terminal models when using the switch under one of the following conditions:
dusty, high amount of dripping oil or high humidity

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	10 A		3 A	1.5 A	10 A		5 A	2.5 A
250 VAC	10 A		2.5 A	1.25 A	10 A		3 A	1.5 A
480 VAC	3 A		1.5 A	0.75 A	2.5 A		1.5 A	0.75 A
8 VDC	10 A		3 A	1.5 A	6 A		5 A	2.5 A
14VDC	10 A		3 A	1.5 A	6 A 0.75		5 A	2.5 A
30 VDC	6 A		3 A	1.5 A	5 A		5 A	2.5 A
125VDC	0.5 A		0.4 A		0.05 A		0.05 A	
250 VDC	0.25 A		0.2 A		0.03 A		0.03 A	

Rated voltage	Carry current	Current	
		Make	Break
120 VAC	10 A	60 A	6 A
240 VAC		30 A	3 A

Degree of protection	IP67 (NEMA250: 6.6P)
Life expectancy	Mechanical: 10,000,000 operations min., electrical: 500,000 operations min.
Operating speed	0.05 mm / s to 0.5 m / s (at panel mount plunger)
Operating frequency	Mechanical: 120 operations/min, electrical: 20 operations / min
Pollution degree (operating environment)	3 (IEC947-5-1)
Protection against electric shock	Class II
PTI (tracking characteristics)	175
Switch category	D (IEC335)
Rated operating current (I _e)	10 A
Rated operating voltage (U _e)	250 VAC
Ambient temperature	Operating: -10 °C to 80 °C (with no icing)
Weight	Approx. 71 g (at panel mount plunger)
Size in mm	45Hx21.7Wx55D (excluding the actuator)



Subminiature, enclosed IP67 switch

The SHL switch features a long life and high precision due to its built-in coil spring, housed in rigid zinc die-cast alloy casting. Its mechanical life expectancy is 10 million operations.

- Alternating contact
- Micro load and general load
- Switching / min = 30
- Immersion-proof IP67
- IEC, EN, UL



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	Standard model	Micro voltage
Plunger		9.81 N	1.96 N	1.5 mm	2 mm	0.5 mm	34 ±0.8 mm	SHL-D55	SHL-D55-01
Panel mount plunger		9.81 N	1.96 N	1.5 mm	2 mm	0.5 mm	34 ±0.8 mm	SHL-Q55	SHL-Q55-01
Panel mount roller plunger		9.81 N	1.96 N	1.5 mm	2 mm	0.5 mm	43 ±0.8 mm	SHL-Q2255	SHL-Q2255-01
Panel mount crossroller plunger		9.81 N	1.96 N	1.5 mm	2 mm	0.5 mm	43 ±0.8 mm	SHL-Q2155	SHL-Q2155-01
Short hinge lever		3.14 N	0.78 N	8 mm	3 mm	2.5 mm	21.5 ±1 mm	SHL-W55	SHL-W55-01
Hinge lever		2.35 N	0.44 N	13 mm	5 mm	4 mm	21.5 ±1 mm	SHL-W155	SHL-W155-01
Short hinge roller lever		3.92 N	0.78 N	8 mm	3 mm	2.5 mm	33 ±1 mm	SHL-W255	SHL-W255-01
Hinge roller lever		2.55 N	0.49 N	13 mm	5.5 mm	4 mm	33.5 ±1 mm	SHL-W2155	SHL-W2155-01
One-way action short hinge roller lever		3.92 N	0.78 N	8 mm	3 mm	2.5 mm	44.5 ±1 mm	SHL-W355	SHL-W355-01
One-way action hinge roller lever		2.55 N	0.49 N	13 mm	5.5 mm	4 mm	44.5 ±1 mm	SHL-W3155	SHL-W3155-01

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load				Inrush current	
	Resistive load		Lamp load		Inductive load		Motor load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	10 A		1.5 A		3 A		2.5 A		15 A max.	
250 VAC	10 A		1.5 A		2 A		1.5 A			
480 VAC	2 A		—		—		—			
8 VDC	10 A		2 A		5 A		2 A			
14 VDC	10 A		2 A		5 A		2 A			
30 VDC	5 A		1.5 A		1.5 A		1.5 A			
125 VDC	0.4 A		0.4 A		0.05 A		0.05 A			
250 VDC	0.2 A		0.2 A		0.03 A		0.03 A			

Agency	Standard	File number
UL	UL508	E76675
CSA	CSA C22.2 No. 14	LR45746
TÜV Rheinland	EN60947-5-1	R9451332

Degree of protection	IP67 (EN60947-5-1)
Durability	Mechanical: 10,000,000 operations min., electrical: 500,000 operations min.
Operating speed	0.1 mm to 0.5 m / s (hinge lever models)
Operating frequency	Mechanical: 120 operations / min, electrical: 30 operations / min
Rated frequency	50 / 60 Hz
Pollution degree (operating environment)	3 (EN60947-5-1)
Short-circuit protective device (SCPD)	10 A fuse type gG (IEC269)
Conditional short-circuit current	100 A (EN60947-5-1)
Conventional enclosed thermal current (I_{the})	5 A (EN60947-5-1)
Ambient temperature	Operating: -10 °C to 80 °C (no icing)
Weight	Approx. 62 to 72 g
Size in mm	32.9Hx17.5Wx73.5D (excluding the actuator)



Small, high-precision enclosed switch

The ZC-55 switch is a modified version of the Z basic switch as a built-in switch. The mounting pitch is the same. It requires less operating force than conventional limit switches. ZC-55 is economical and has a long life expectancy.

- Metal housing
- Alternating contact
- Switching / min = 20
- Immersion-proof IP67
- UL, CSA and EN



Ordering information

Actuator		Operating force max. (OF)	Release force max. (RF)	Pre travel (PT)	Over travel (OT)	Movement differential (MD)	Operating position (OP)	Model
Plunger		11.8 N	4.90 N	1.5 mm	2.4 mm	0.2 mm	32.4 ±0.8 mm	ZC-D55
Panel mount plunger		11.8 N	4.90 N	1.5 mm	3 mm	0.2 mm	32.2 ±0.8 mm	ZC-Q55
Panel mount roller plunger		11.8 N	4.90 N	1.5 mm	4 mm	0.2 mm	32.2 ±0.8 mm	ZC-Q2255
Panel mount crossroller plunger		11.8 N	4.90 N	1.5 mm	5 mm	0.2 mm	32.2 ±0.8 mm	ZC-Q2155
Sealed roller plunger		6.86 N	1.67 N	1.5 mm	2.5 mm	0.2 mm	47.4 ±0.8 mm	ZC-N2255
Sealed crossroller plunger		6.86 N	1.67 N	1.5 mm	2.5 mm	0.2 mm	47.4 ±0.8 mm	ZC-N2155
Short hinge lever		3.92 N	0.78 N	6 mm	1 mm	28.5±1.2 mm	34.7 mm	ZC-W55
Hinge lever		2.75 N	0.59 N	8.4 mm	1.4 mm	28.5±1.2 mm	36.7 mm	ZC-W155
Short hinge roller lever		3.92 N	0.78 N	6 mm	1 mm	43±1.2 mm	49.2 mm	ZC-W255
Hinge roller lever		2.75 N	0.59 N	8.4 mm	1.4 mm	43±1.2 mm	51.3 mm	ZC-W2155
One-way action short hinge roller lever		3.92 N	0.78 N	6 mm	1 mm	53±1.2 mm	59.2 mm	ZC-W355
One-way action hinge roller lever		2.75 N	0.59 N	8.4 mm	1.4 mm	53±1.2 mm	61.2 mm	ZC-W3155

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load				Agency	Standard	File number
	Resistive load		Lamp load		Inductive load		Motor load				
	NC	NO	NC	NO	NC	NO	NC	NO			
125 VAC	10 A		3 A	1.5 A	10 A		5 A	2.5 A	UL	UL508	E76675
250 VAC	10 A		2.5 A	1.25 A	10 A		3 A	1.5 A			
8 VDC	10 A		3 A	1.5 A	6 A		5 A	2.5 A			
14 VDC	10 A		3 A	1.5 A	6 A		5 A	2.5 A	CSA	CSA C22.2 No. 14	LR45258
30 VDC	6 A		3 A	1.5 A	5 A		5 A	2.5 A			
125 VDC	0.5 A		0.4 A	0.4 A	0.05 A		0.05 A	0.05 A			
250 VDC	0.25 A		0.2 A	0.2 A	0.03 A		0.03 A	0.03 A	TÜV Rheinland	EN60947-1, EN60947-5-1	J9650089

Degree of protection	IP67
Durability	Mechanical: 10,000,000 operations min., electrical: 500,000 operations min.
Operating speed	0.05 mm to 0.5 m / s (at pin plunger)
Operating frequency	Mechanical: 120 operations/min, electrical: 20 operations/min
Pollution degree (operating environment)	3 (IEC947-5-1)
PT1 (tracking characteristics)	175
Rated operating current (I _e)	10 A
Rated operating voltage (U _e)	250 VAC
Ambient temperature	Operating: -10 °C to 80 °C (with no icing)
Weight	Approx. 92 g (in case of ZC-Q22(21)55)
Size in mm	41Hx21.7Wx55D (excluding the actuator)



DPDT basic switch for controlling two independent circuits

DZ switches are ideal for switching circuits operating on two voltages and for controlling two independent circuits. DZ is interchangeable with OMRON Z basic switches, as both switches are identical in mounting-hole dimensions, mounting pitch and pin-plunger position.

- Incorporates two completely independent built-in switches
- IP00



Ordering information

Actuator		Over travel (OT)	Solder terminal	Screw terminal
Pin plunger		0.13 mm min.	DZ-10G-1A	DZ-10G-1B
Hinge lever		1.6 mm min.	DZ-10GW-1A	DZ-10GW-1B
Short hinge roller lever		0.9 mm min.	DZ-10GW22-1A	DZ-10GW22-1B
Hinge roller lever		1.2 mm min.	DZ-10GW2-1A	DZ-10GW2-1B

Note: For other models please refer to the datasheet

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load				Inrush current	
	Resistive load		Lamp load		Inductive load		Motor load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	10 A		2 A	1 A	6 A		2.5 A	1.5 A	30 A max.	15 A max.
250 VAC	10 A		1.5 A	0.7 A	4 A		1.5 A	1 A		
8 VDC	10 A		3 A	1.5 A	6 A		2 A	2.5 A		
14 VDC	10 A		3 A	1.5 A	6 A		2 A	2.5 A		
30 VDC	10 A		3 A	1.5 A	4 A		1.5 A	1.5 A		
125 VDC	0.5 A		0.5 A		0.05 A		0.05 A			
250 VDC	0.25 A		0.25 A		0.03 A		0.03 A			

Agency	Standard	File number
UL	UL508	E41515
CSA	CSA C22.2 No. 55	LR21642

Operating speed	0.1 mm to 1 m / s (at pin plunger)
Operating frequency	Mechanical: 240 operations / min, electrical: 20 operations / min
Durability	Mechanical: 1,000,000 operations min., electrical: 500,000 operations min.
Ambient temperature	Operating: -25 °C to 80 °C (with no icing)
Weight	Approx. 30 to 50 g
Size in mm	30Hx17.4Wx49.2D



Direct-current switch with built-in magnetic blow-out

X switches incorporate a small permanent magnet in the contact mechanism to deflect the arc to effectively extinguish it. These switches have the same shape and mounting procedure as the Z basic switches.

- General-purpose basic switch
- Direct-current switch with built-in magnetic blow-out
- IP00



Ordering information

Actuator		Solder	Screw
Pin plunger		X-10G	X-10G-B
Slim spring		X-10GS	X-10GS-B
Short spring		X-10GD	X-10GD-B
Panel mount		X-10GQ	X-10GQ-B
Panel mount		X-10GQ22	X-10GQ22-B
Panel mount cross		X-10GQ21	X-10GQ21-B
Leaf spring		X-10GL	X-10GL-B
Short hinge lever		X-10GW21	X-10GW21-B
Hinge lever		X-10GW	X-10GW-B
Low-force hinge		X-10GW4	X-10GW4-B
Short hinge roller		X-10GW22	X-10GW22-B
Hinge roller lever		X-10GW2	X-10GW2-B
Reverse hinge		X-10GM	X-10GM-B
Reverse short		X-10GM22	X-10GM22-B
Reverse hinge		X-10GM2	X-10GM2-B

Bold = preferred stock item

Specifications

Rated voltage	Non-inductive load				Inductive load				Agency	Standard	File number
	Resistive load		Lamp load		Inductive load		Motor load		UL	UL508	E41515
	NC	NO	NC	NO	NC	NO	NC	NO	CSA	CSA C22.2 No. 55	LR21642
8 VDC	10 A		3 A	1.5 A	10 A	10 A	5 A	2.5 A			
14 VDC	10 A		3 A	1.5 A	10 A	10 A	5 A	2.5 A			
30 VDC	10 A		3 A	1.5 A	10 A	10 A	5 A	2.5 A			
125 VDC	10 A		3 A	1.5 A	7.5 A	6 A	5 A	2.5 A			
250 VDC	3 A		1.5 A	0.75 A	2 A	1.5 A	2 A	1.5 A			
Operating speed	0.1 mm to 1 m / s										
Operating frequency	Mechanical: 240 operations/min, electrical: 20 operations/min										
Durability	Mechanical: 1,000,000 operations min., electrical: 100,000 operations min.										
Degree of protection	IP00										
Degree of protection against electric shock	Class I										
Proof tracking index (PTI)	175										
Ambient temperature	Operating: -25 °C to 80 °C (with no icing)										
Weight	Approx. 27 to 63 g										
Size in mm	24.2Hx49.2Wx17.5D (excluding the actuator)										



Standard high-precision switch

Z basic switches provide a large switching capacity of 15 A with very high repeat accuracy. They come in a wide range of variations in contact form for your selection: basic, split-contact, maintained-contact and adjustable-contact gap types.

- General-purpose basic switch
- A series of standard models for micro loads is available
- High-precision switching
- A wide range of variations in contact
- Drip-proof IP00 / IP62

Ordering information

Ratings	Contact gap	Actuator		Model	
				Solder terminal	Screw terminal
15 A	0.5 mm	Pin plunger		Z-15G	Z-15G-B
		Short spring plunger		Z-15GD	Z-15GD-B
		Leaf spring (high OF)		Z-15GL	Z-15GL-B
		Roller leaf spring		Z-15GL2	Z-15GL2-B
		Reverse hinge lever		Z-15GM	Z-15GM-B
		Reverse hinge roller lever		Z-15GM2	Z-15GM2-B
		Reverse hinge short roller lever		Z-15GM22	Z-15GM22-B
		Panel mount plunger (medium OP)		Z-15GQ	Z-15GQ-B
		Panel mount plunger (low OP)		Z-15GQ3	Z-15GQ3-B
		Panel mount plunger (high OP)		Z-15GQ8	Z-15GQ8-B
		Panel mount cross roller plunger		Z-15GQ21	Z-15GQ21-B
		Panel mount roller plunger		Z-15GQ22	Z-15GQ22-B
		Slim spring plunger		Z-15GS	Z-15GS-B
		Hinge lever (low OF)		Z-15GW	Z-15GW-B
		Hinge roller lever		Z-15GW2	Z-15GW2-B
		Short hinge lever		Z-15GW21	Z-15GW21-B
		Short hinge roller lever		Z-15GW22	Z-15GW22-B
		Unidirectional short hinge roller lever (low OF)		Z-15GW2277	Z-15GW2277-B
		Hinge roller lever (large roller)		Z-15GW25	Z-15GW25-B
		Hinge lever (medium OF)		Z-15GW3	Z-15GW3-B
		Low-force hinger lever		Z-15GW4	Z-15GW4-B
		Hinge lever (high OF)		Z-15GW32	Z-15GW32-B
		Short hinge cross roller lever		Z-15GW49	Z-15GW49-B
		Hinge cross roller lever		Z-15GW54	Z-15GW54-B

Note: Many other types are also available, please refer to the full datasheet.

Bold = preferred stock item

Specifications

Agency	Standard	File number
UL	UL508	E41515
CSA	CSA C22.2 No. 55	LR21642
TÜV Rheinland	EN61058-1	R9451585
Degree of protection	General purpose: IP00, drip-proof: IP62	
Degree of protection against electric shock	Class I	
Proof tracking index (PTI)	175	
Switch category	D (IEC335-1)	
Ambient operating temperature	General purpose: -25 °C to 80 °C (with no icing) Drip-proof: -15 °C to 80 °C (with no icing)	
Size in mm	24.2Hx49.2Wx17.5D (excluding the actuator)	

Pushbutton switches

Our pushbutton switches include models from 16 mm to 22 mm in diameter. Available in different varieties of shapes, sizes, colours and functions, this pushbutton switch range allows you to select the right product for your application.

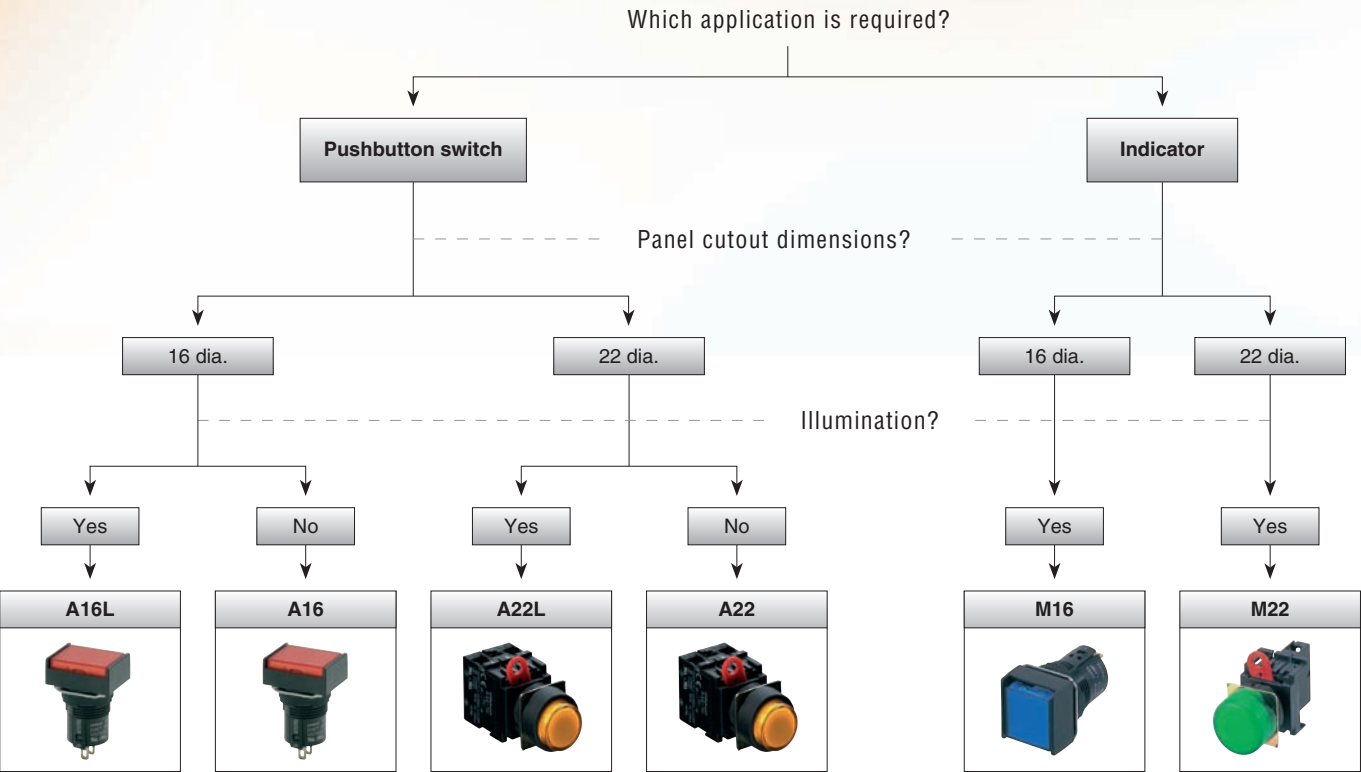
Omron's pushbutton switches feature:

- Range of installation diameters 16 to 22 mm
- Versions with safety standard IP40 and IP65, oil-tight
- Very low installation depth: only 28.5 mm
- 1 or 2 SPDTs
- Variety of shapes: rectangular, square, round
- Illuminated and non-illuminated variants



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Category		Pushbutton switch		Indicator	
Selection criteria					
	Model	A16	A22	M16	M22
	Mounting	Nut-mounting			
	Size	16 mm	22 mm	16 mm	22 mm
	Shape				
Pushbutton colour	Incandescent lamp-lighted	Red	■	■	■
		Yellow	■	■	■
		Pure yellow	■	■	■
		Green	■	■	■
		White	■	■	■
		Blue	■	■	■
	LED-lighted	Red	■	■	■
		Yellow	■	■	■
		Pure yellow	■	■	■
		Green	■	■	■
		White	■	■	■
		Blue	■	■	■
	Non-lighted	Red	■		
		Yellow	■		
		Green	■		
		White	■		
		Blue	■		
		Black	■		
Features	Momentary operation	■	■		
	Self-holding	■	■		
	Number of contacts	2	6		
	IP rating	IP40 / IP65	IP65	IP40 / IP65	IP65
	Legend plate	■	■	■	■
Switch ratings [A]	125 VAC	5	10		
	250 VAC	3	6		
	30 VDC	3	10		
	Rated load	5 A at 125 VAC, 3 A at 250 VAC, 3 A at 30 VDC	10 A at 110 VAC, 6 A at 220 VAC		
Terminals	Solder	■		■	
	PCB			■	
	Screw-less Clamp			■	
Operating voltage	5 VDC	■	■	■	■
	12 VDC	■	■	■	■
	24 VDC	■	■	■	■
Form	SPDT	■			
	DPDT	■			
	SPST-NO		■		
	SPST-NC		■		
	SPST-NO + SPST-NC		■		
	DPST-NO		■		
	DPST-NC		■		
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■ Standard

□ Available

□ No / not available



16 mm pushbutton switch

These subassembled pushbutton switches have a modular construction: pushbutton + case + lamp (if applicable) + switch. A16 is a nut-mounted pushbutton switch with a short mounting depth of less than 28.5 mm below panel.

- Wide variety of control and signal devices: lighted, non-lighted and buzzer
- Quick and easy assembly, snap-in switch
- Wide range of switching capacity from standard load to micro load
- High reliability, IP65
- UL, cUL, CSA and VDE approved, conforms to EN60947-5-1 and IEC947-5-1



Ordering information

Type	Colour	Degree of protection					
		IP40			Oil-resistant IP65		
		Rectangular	Square	Round	Rectangular	Square	Round
Non-lighted LED Incandescent lamp	Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
	Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
	Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
	White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
Non-lighted LED	Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA
	Black	A16L-JB	A16L-AB	A16L-TB	A165L-JB	A165L-AB	A165L-TB
Non-lighted / incandescent lamp	Green	A16L-JGY	A16L-AGY	A16L-TGY	A165L-TGY	A165L-AGY	A165L-TGY
	Green	A16L-JG	A16L-AG	A16L-TG	A165L-JG	A165L-AG	A165L-TG

Bold = preferred stock item

Cases

Appearance	Classification			Model	
				IP40	Oil-resistant IP65
	IP40	Momentary operation	Rectangular (2-way guard)	A16-CJM	A165-CJM
			Square	A16-CAM	A165-CAM
			Round	A16-CTM	A165-CTM
	Alternate operation		Rectangular (2-way guard)	A16-CJA	A165-CJA
			Square	A16-CAA	A165-CAA
			Round	A16-CTA	A165-CTA

Switches

Appearance	Classification				Model	
	Lighted / non-lighted (common use)	Standard load / microload (common use)	SPDT	Solder terminal	A16-1	
			DPDT		A16-2	
				SPDT	PCB terminal	A16-1P
				DPDT		A16-2P
					DPDT	Screw-less clamp

Switches with reduced voltage lighting

Appearance	Classification				Model
	100 V	Standard load / microload (common use)	SPDT	Solder terminal	A16-T1-1
			DPDT		A16-T1-2
	100 V 200 V		DPDT	Screw-less clamp	A16-T1-2S
					A16-T2-2S

Lamps

Type	Colour	5 VDC	12 VDC	24 VDC
LED	Red	A16-5DSR	A16-12DSR	A16-24DSR
	Yellow	A16-5DSY	A16-12DSY	A16-24DSY
	Green	A16-5DSG	A16-12DSG	A16-24DSG
	White ^{*1}	A16-5DSW	A16-12DSW	A16-24DSW
	Blue	A16-5DA	A16-12DA	A16-24DA
Type		5 VAC / VDC	12 VAC / VDC	24 VAC / VDC
Incandescent lamp		A16-5	A16-12	A16-24

Bold = preferred stock item

^{*1} Use the white LED together with white or pure yellow pushbuttons.

Accessories

Name	Appearance	Classification	Remarks	Model
Switch guards		For rectangular models	Cannot be used with the dust cover	A16ZJ-5050
		For square and round models		A16ZA-5050
Dust covers		For rectangular models	Cannot be used with the switch guard	A16ZJ-5060
		For round models		A16ZA-5060
		For round models		A16ZT-5060
Panel plugs		For rectangular models	Used for covering the panel cutouts for future panel expansion	A16ZJ-3003
		For square models		A16ZA-3003
		For round models		A16ZT-3003

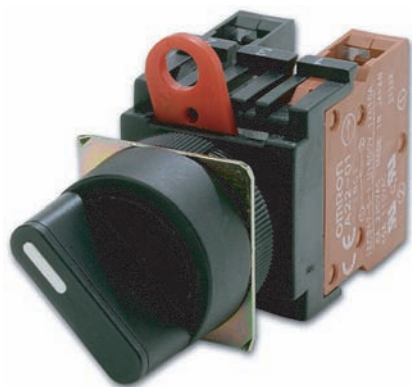
Bold = preferred stock item

Specifications

Allowable operating frequency	Mechanical	Momentary operation: 120 operations / minute max. Alternate operation: 60 operations / minute max.
	Electrical	20 operations / minute max.
Durability	Mechanical	Momentary operation: 2,000,000 operations min. Alternate operation: 200,000 operations min.
	Electrical	100,000 operations min.
Ambient temperature		Operating: -10 °C to 55 °C (with no icing or condensation) Storage: -25 °C to 65 °C (with no icing or condensation)
Weight		Approx. 10 g (in the case of a lighted DPDT switch with solder terminals)
Size in mm		Round / square: 18Hx18Wx28.5D rectangular: 18Hx24Wx28.5D

Operating characteristics	Pushbutton switch			
	IP40		Oil-resistant IP65	
	SPDT	DPDT	SPDT	DPDT
Operating force (OF) max.	2.45 N	4.41 N	2.94 N	4.91 N
Releasing force (RF) min.	0.29 N			
Total travel (TT)	Approx. 3 mm			
Pretravel (PT) max.	2.5 mm			
Lock stroke (LTA) min.	0.5 mm			

Item		Screw-less clamp			
Recommended wire size		0.5 mm ² twisted wire or 0.8 mm dia. solid wire			
Usable wires and tensile strength	Twisted wire	0.3 mm ²	0.5 mm ²	0.75 mm ²	1.25 mm ²
	Solid wire	0.5 mm dia.	0.8 mm dia.	1.0 mm dia.	
	Tensile strength	10 N	20 N	30 N	40 N
Length of exposed wire		10 ±1 mm			



22 mm pushbutton switch

A22 comes in a wide variety of shapes and colours and is installable in 22-dia. or 25-dia. panel cutouts. The switch unit can easily be mounted. A22 is mounted using either open-type (fork-type) or closed-type (round-type) crimp terminals.

- Finger-protection mechanism on switch unit provided as standard feature
- Increased wiring efficiency with three-row mounting of switch blocks
- IP65 oil-resistant (non-lighted models), IP65 (lighted models)
- Lighted and non-lighted, flat, projection and half- and full-guard versions
- EN60947-5-1, UL and cUL approved



Ordering information

Pushbutton

Illumination	Colour	Flat type	Projection type	Full-guard type	Half-guard type	Square / projection type	Square / full-guard type	Round / mushroom type (30-dia. head)	Round / mushroom type (40-dia. head)
Non-lighted	Red	A22-FR	A22-TR	A22-GR	A22-HR	A22-CR	A22-DR	A22-SR	A22-MR
	Green	A22-FG	A22-TG	A22-TG	A22-HG	A22-CG	A22-DG	A22-SG	A22-MG
	Yellow	A22-FY	A22-TY	A22-GY	A22-HY	A22-CY	A22-DY	A22-SY	A22-MY
	White	A22-FW	A22-TW	A22-GW	A22-HW	A22-CW	A22-DW	A22-SW	A22-MW
	Blue	A22-FA	A22-TA	A22-GA	A22-HA	A22-CA	A22-DA	A22-SA	A22-MA
Lighted	Red		A22L-TR	A22L-GR	A22L-HR	A22L-CR	A22L-DR		
	Green		A22L-TG	A22L-GG	A22L-HG	A22L-CG	A22L-DG		
	Yellow		A22L-TY	A22L-GY	A22L-HY	A22L-CY	A22L-DY		
	White		A22L-TW	A22L-GW	A22L-HW	A22L-CW	A22L-DW		
	Blue		A22L-TA	A22L-GA	A22L-HA	A22L-CA	A22L-DA		
Buttons size in mm		29.7 dia. x 12D	29.7 dia. x 19D	29.7 dia. x 19D	29.7 dia. x 12/18.5D	29.8 mm ² x 18D	29.8 mm ² x 18D	30 dia. x 32D	40 dia. x 32D

Bold = preferred stock item

Switches

Switch operation	Contacts	Non-lighted models	Lighted models			
			With voltage reduction unit		With voltage reduction unit	
			110 VAC	220 VAC	110 VAC	220 VAC
Momentary	SPST-NO	A22-10M	A22L-10M	A22L-10M-T1	A22L-10M-T2	
	SPST-NC	A22-01M	A22L-01M	A22L-01M-T1	A22L-01M-T2	
	SPST-NO+SPST-NC	A22-11M	A22L-11M	A22L-11M-T1	A22L-11M-T2	
	DPST-NO	A22-20M	A22L-20M	A22L-20M-T1	A22L-20M-T2	
	DPST-NC	A22-02M	A22L-02M	A22L-02M-T1	A22L-02M-T2	
Alternate	SPST-NO	A22-10A	A22L-10A	A22L-10A-T1	A22L-10A-T2	
	SPST-NC	A22-01A	A22L-01A	A22L-01A-T1	A22L-01A-T2	
	SPST-NO+SPST-NC	A22-11A	A22L-11A	A22L-11A-T1	A22L-11A-T2	
	DPST-NO	A22-20A	A22L-20A	A22L-20A-T1	A22L-20A-T2	
	DPST-NC	A22-02A	A22L-02A	A22L-02A-T1	A22L-02A-T2	

Switch blocks

	Standard load	Model
Switch blocks	SPST-NO	A22-10
	SPST-NC	A22-01
	DPST-NO	A22-20
	DPST-NC	A22-02

Bold = preferred stock item

Lamp - LED

AC / DC	LED light	Operating voltage			
		6 V	12 V	24 V	24 V superbright
DC	Red	A22-6DR			
	Green	A22-6DG			
	Yellow ^{*1}	A22-6DY			
	Blue	A22-6DA			
AC	Red	A22-6AR			
	Green	A22-6AG			
	Yellow ^{*1}	A22-6AY			
	Blue	A22-6AA			
AC and DC	Red		A22-12AR	A22-24AR	A22-24ASR
	Green		A22-12AG	A22-24AG	A22-24ASG
	Yellow ^{*1}		A22-12AY	A22-24AY	A22-24ASY
	Blue		A22-12AA	A22-24AA	A22-24ASA

^{*1} Used when the pushbutton colour is yellow or white

Lamp - incandescent lamp

Operating voltage		
5 VAC / VDC	12 VAC / VDC	24 VAC / VDC
A22-5	A22-12	A22-24

Bold = preferred stock item

Accessories

				Remarks	Model
Lamp sockets	Direct lighting			Used when changing the lighting method (LED only)	A22-TN
	Voltage-reduction lighting		220 VAC		A22-T2
Mounting latches	For momentary models			Order mounting latches only when mounting switch blocks or lamp sockets are purchased individually	A22-3200
Legend plate frames	Large size	With snap-in legend plate, without text, black		Snap-in legend plate is acrylic	A22Z-3333
		Without snap-in legend plate			A22Z-3330
Sealing caps	For projection models			Used to prevent dust or water from entering the operation unit (pushbutton, etc.), color: opaque, material: silicon	A22Z-3600T
Three-throw spacer				Used when mounting three non-lighted switches	A22Z-3003
Control boxes (enclosures)	Exclusively for A22		One hole	Do not use DPST-NO or DPST-NC switches, material: polycarbonate resin	A22Z-B101
			Two holes		A22Z-B102
			Three holes		A22Z-B103
Snap-in legend plates	Standard size	Without text	White	Attached to the standard-size legend plate frame, material: acrylic	A22Z-3443W
			Transparent		A22Z-3443C
		White text on black background	ON		A22Z-3443B-5
			OFF		A22Z-3443B-6
			DOWN		A22Z-3443B-8
	Large size	Without text	POWER ON	A22Z-3443B-9	
			White	Attached to the large-size legend plate frame, material: acrylic	A22Z-3453W
	Transparent	A22Z-3453C			
	For emergency stop switch	60-dia. round plate with black letters on a yellow background	"EMERGENCY STOP" is engraved on the plate. Used as an emergency stop switch legend plate		A22Z-3466-1
90-dia. round plate with black letters on a yellow background		A22Z-3476-1			
Lamp extractor				Rubber tool used to easily replace lamps	A22Z-3901
Tightening wrench				Tool used to tighten nuts from the back of the panel	A22Z-3905

Bold = preferred stock item

Specifications

Recognized organization	Standards	File number
UL, cUL	UL508	E41515
—	EN60947-5-1	—

Contact ratings (standard load)

Rated carry current (A)	Rated voltage	Rated current (A)			
		AC15 (inductive load)	AC12 (resistive load)	DC13 (inductive load)	DC12 (resistive load)
10	24 VAC	10	10		
	110 VAC	5	10		
	220 VAC	3	6		
	380 VAC	2	3		
	440 VAC	1	2		
	24 VDC			1,5	10
	110 VDC			0,5	2
	220 VDC			0,2	0,6
	380 VDC			0,1	0,2

Contacts (microload)

Rated applicable load	Minimum applicable load
50 mA at 5 VDC (resistive load)	1 mA at 5 VDC

LED indicators without voltage reduction unit

Rated voltage	Rated current	Operating voltage
6 VDC	60 mA (20 mA)	6 VDC ±5%
6 VAC	60 mA (20 mA)	6 VAC / VDC ±5%
12 VAC / VDC	30 mA (10 mA)	12 VAC / VDC ±5%
24 VAC / VDC	15 mA (10 mA)	24 VAC / VDC ±5%

Super-bright LED indicator

Rated voltage	Rated current	Operating voltage
24 VAC / VDC	15 mA	24 VAC / VDC ±5%

Incandescent lamp

Rated voltage	Rated current	Operating voltage
6 VAC / VDC	200 mA	5 VAC / VDC
14 VAC / VDC	80 mA	12 VAC / VDC
28 VAC / VDC	40 mA	24 VAC / VDC
130 VAC / VDC	20 mA	100 VAC / VDC

Voltage-reduction lighting

Rated voltage	Operating voltage	Applicable lamp (BA8S/13□ gold)
110 VAC	95 to 115 VAC	LED Lamp (A22-24A□)
220 VAC	190 to 230 VAC	

		Pushbutton switches		Emergency stop switches		Knob-type selector switches		Key-type selector switch
		Non-lighted	Lighted	Non-lighted	Lighted	Non-lighted	Lighted	Non-lighted
Allowable operating frequency	Mechanical	Momentary operation: 60 operations / minute max.		30 operations/minute max.		Manual release: 30 operations / minute max., automatic release: 30 operations / minute max.		
	Electrical	30 operations / minute max.				30 operations/minute max.		
Durability (number of operations min.)	Mechanical	Momentary operation: 5,000,000		Momentary operation: 300,000		500,000	100,000	500,000
	Electrical	500,000		300,000		500,000	100,000	500,000
Ambient temperature	Operating	-20 °C to 70 °C	-20 °C to 55 °C	-20 °C to 70 °C	-20 °C to 55 °C	-20 °C to 70 °C	-20 °C to 55 °C	-20 °C to 70 °C
	Storage	-40 °C to 70 °C	-40 °C to 70 °C	-40 °C to 70 °C	-40 °C to 70 °C	-40 °C to 70 °C	-40 °C to 70 °C	-40 °C to 70 °C
Degree of protection		IP65 (oil-resistant)	IP65	IP65 (oil-resistant)	IP65	IP65 (oil-resistant)	IP65	IP65 (oil-resistant)
Size in mm (in-panel only)		34Hx34Wx54.7D, 34Hx34Wx72.7D for DPST switches						



Indicators with a mounting aperture of 16 mm

The M16 series of nut-mounted indicators comes in rectangular, square and round versions. Due to its modular construction, assembly is quick and easy. M16 comes in a wide variety of control and signal devices with a wide range of switching capacities, from general load to micro load.

- LED, incandescent and neon lamp
- Snap-in switch unit
- Short mounting depth, less than 28.5 mm below panel
- High reliability, IP65
- UL, CSA and VDE approved, conforms to EN60947-5-1



Ordering information

Pushbutton

Type	Display colour	IP40			IP65 oil-resistant		
		Rectangular	Square	Round	Rectangular	Square	Round
LED Incandescent lamp	Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
	Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
	Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
	White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
LED Incandescent lamp	Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA
	Green	A16L-JGY	A16L-AGY	A16L-TGY	A165L-JGY	A165L-AGY	A165L-TGY
	Green	A16L-JG	A16L-AG	A16L-TG	A165L-JG	A165L-AG	A165L-TG

Bold = preferred stock item

Lamp

Type	Colour	Operating voltage		
		5 VDC	12 VDC	24 VDC
LED	Red	A16-5DSR	A16-12DSR	A16-24DSR
	Yellow	A16-5DSY	A16-12DSY	A16-24DSY
	Green	A16-5DSG	A16-12DSG	A16-24DSG
	White	A16-5DSW	A16-12DSW	A16-24DSW
	Blue	A16-5DA	A16-12DA	A16-24DA
Type		5 VAC / VDC	12 VAC / VDC	24 VAC / VDC
Incandescent lamp		A16-5	A16-12	A16-24

Case

Classification		Model
IP40	Rectangular	A16-CJM
	Square	A16-CAM
	Round	A16-CTM
IP65 oil-resistant	Rectangular	A165-CJM
	Square	A165-CAM
	Round	A165-CTM

Socket

Classification	Model	
Solder terminals	M16-0	
PCB terminals	M16-0P	
Screw-less clamp	M16-S	
Solder terminals	Voltage-reduction lighting	100 V M16-T1
Screw-less clamp		100 V M16-T1-S
		200 V M16-T2-S

Specifications

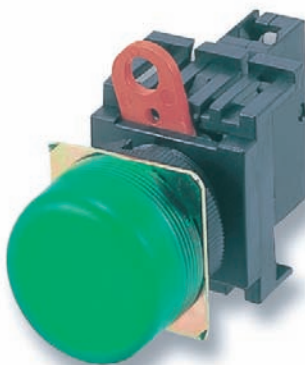
Allowable operating frequency	Mechanical	Momentary operation: 120 operations / minute max., alternate operation: 60 operations / minute max.
	Electrical	20 operations / minute max.
Durability	Mechanical	Momentary operation: 2,000,000 operations min., alternate operation: 200,000 operations min.
	Electrical	100,000 operations min.
Degree of contamination	3 (IEC947-5-1)	
Ambient temperature	Operating: -10 °C to 55 °C (with no icing or condensation)	
	Storage: -25 °C to 65 °C (with no icing or condensation)	
Weight	Approx. 10 g (in the case of a lighted DPDT switch with solder terminals)	
Size in mm	Round / square: 18Hx18Wx28.5D rectangular: 18Hx24Wx28.5D	

Agency	Standards	File number
UL, cUL	UL508	E41515

Ratings

Superbright LED			
Rated voltage	Rated current	Operating voltage	Built-in limiting resistance
5 VDC	30 mA (15 mA)	5 VDC ±5%	33 Ω (68 Ω)
12 VDC	15 mA	12 VDC ±5%	270 Ω (560 Ω)
24 VDC	10 mA	24 VDC ±5%	1,600 Ω (2,000 Ω)

Incandescent lamp		
Rated voltage	Rated current	Operating voltage
6 VAC / VDC	60 mA	5 VAC / VDC
14 VAC / VDC	40 mA	12 VAC / VDC



Nut-mounted, 22 mm indicator, with high-visibility, illuminated buttons

The M22 series of indicators comes in 22 or 25 mm-diameter round versions. They can easily be mounted and removal of the socket unit is also easy. The finger-protection mechanism on the lamp is provided as a standard feature. M22 indicators can be equipped with an LED or incandescent lamp.

- Available in 5 colours
- Super-bright LEDs for all versions
- Lamp sockets with or without transformers
- UL and cUL approved



Ordering information

Display

Appearance	IP65 oil-resistant	
	Colour of display	Model
Round / flat	Red	M22-FR
	Green	M22-FG
	Yellow	M22-FY
	White	M22-FW
	Blue	M22-FA
Square / projection	Red	M22-CR
	Green	M22-CG
	Yellow	M22-CY
	White	M22-CW
	Blue	M22-CA

Socket unit

Voltage-reduction circuits	
Without voltage reduction unit	With voltage reduction unit (220 VAC)
M22-00	M22-00-T2

Lamp

AC / DC	LED light	Operating voltage			
		6 V	12 V	24 V	24 V superbright
AC	Red	A22-6DR			
	Green	A22-6DG			
	Yellow	A22-6DY			
	Blue	A22-6DA			
DC	Red	A22-6AR			
	Green	A22-6AG			
	Yellow	A22-6AY			
	Blue	A22-6AA			
AC and DC	Red		A22-12AR	A22-24AR	A22-24ASR
	Green		A22-12AG	A22-24AG	A22-24ASG
	Yellow		A22-12AY	A22-24AY	A22-24ASY
	Blue		A22-12AA	A22-24AA	A22-24ASA

Incandescent lamp	6 VAC / VDC	12 VAC / VDC	24 VAC / VDC	100 VAC / VDC
	A22-5	A22-12	A22-24	A22-H1

Bold = preferred stock item

Accessories

M22 uses the same accessories as A22. Please refer to the relevant information in the corresponding section for the A22.

Specifications

Recognized organization	Standards	File number
UL, cUL	UL508	E41515

LED lamp

Rated voltage	Rated current	Operating voltage
6 VDC	60 mA (20 mA)	6 VDC ±5%
6 VAC	60 mA (20 mA)	6 VAC ±5%
12 VAC / VDC	30 mA (10 mA)	12 VAC / VDC ±5%
24 VAC / VDC	15 mA (10 mA)	24 VAC / VDC ±5%

Incandescent lamp

Rated voltage	Rated current	Operating voltage
6 VAC / VDC	200 mA	5 V
14 VAC / VDC	80 mA	12 V
28 VAC / VDC	40 mA	24 V
130 VAC / VDC	20 mA	100 V

Superbright LED indicator

Rated voltage	Rated current	Operating voltage
24 VAC / VDC	15 mA	24 VAC / VDC ±5%

Voltage-reduction lighting

Rated voltage	Rated current	Operating voltage
110 VAC	95 to 115 VAC	LED lamp (A22-24□)
220 VAC	190 to 230 VAC	

Ambient temperature	Operating: -20 °C to 55 °C, storage: -40 °C to 70 °C
Degree of protection	IP65
Electric shock protection class	Class II
PTI (tracking characteristic)	175
Degree of contamination	3 (IEC947-5-1)
Size in mm	Button: 29.7 dia.x16D, switch: 34Hx34Wx54.7D