

Industrial Automation Guide 2016



Industrial Products & Systems

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Targeted Technologies

Creating maximum output with minimum input

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

industrial.omron.eu/technologies



PROplus Line

If you have a complex application or one where you need to address special needs, then the PROplus Line is the answer. That's because PROplus products are designed to be customizable.

The possibility to modify a PROplus product means you can adapt your solution to meet a specific application, process or machine. This is the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

For example, the PROplus 4000 series is designed to be modified to meet a specific application, process or machine. This is the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

The new ES-NH temperature controller is designed to be modified to meet a specific application, process or machine. This is the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

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The 361° Approach

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

Technologies

Creating maximum output with minimum input

Whatever type of automated machinery you are specialized in, you know that there are many ways to innovate. You are already aware that there are many possible areas for improvement. But where do you start? Where do you focus your efforts? Where can you make the biggest difference with the least amount of effort?

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

Technologies

Sysmac: the all-in-one platform

We know that machine builders prefer different product solutions for different challenges. But this can cause hierarchy headaches and communications issues. That's why we developed Sysmac: a single unified platform that is open, scalable, flexible, and totally focused on maximizing the speed and flexibility of machines. A platform that integrates robotic, motion and sequential logic control into a single multitasking system.

[Learn more](#)

361°: the perfect match

When it comes to sensors and components, we know that our customers all have different needs. That's why our product development in this area is driven by the 361° Approach. It produces product families that offer a total all-round choice. From quality products suited to standard environments to specialist devices that can handle extremes. A full circle of choice, all with an extra degree of quality and proven reliability.

[Learn more](#)



The 361° portfolio

PRO Line
PROplus products are designed for specialty applications or customer demands.

[Learn more](#)



LITE Line

LITE sensors are the effective solution for maximum quality.

[Learn more](#)



Related product news



With new G2B sensors, you only pay for what you need. Optimizing relative proximity sensors in the new G2B range has been specifically designed to offer a cost-effective sensing solution or standard sensing conditions, making it unnecessary to buy more sensors than you actually need.

[Learn more](#)

Related product news



ES16 - Omron's new photo sensors combine simplicity with performance.

Drawing on our experience of manufacturing over a million production sensors a year, we have developed a new generation of photo sensors that combine simple selection, an excellent reliability, versatility, rugged construction and value for money.

[Learn more](#)

Related product news



RS-485 Control: New step towards the full integration of automation equipment.

The new RS-485 Control is a significant step towards the full integration of automation equipment. It is designed to be used in conjunction with the RS-485 Control and the RS-485 Control is a significant step towards the full integration of automation equipment.



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Welcome to our world

Our best-in-class devices for your automation system

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

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

Here you will find:

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

Find information fast!

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Industrial Automation Guide 2016

	Omron at a glance	3
	The 361° Approach	4
	Sysmac: A fully integrated platform	6
	Product selection table	8
Automation systems	Machine automation controller	12
	Programmable logic controllers (PLC)	26
	Remote I/O	54
	Human machine interfaces (HMI)	68
	I/O cables and terminal blocks	82
	Ethernet cables and accessories	91
Motion & Drives	Motion controllers	96
	Servo systems	112
	Robots	170
	Frequency inverters	202
Sensing	Photoelectric sensors	236
	Mark and Color sensors	278
	Lightcurtains and area sensors	284
	Fiber optic sensors and amplifiers	292
	Inductive sensors	324
	Mechanical sensors/Limit switches	344
	Rotary encoders	358
	Cable connectors	366
Quality control & Inspection	Inspection & Ident systems	370
	Measurement sensors	426
Safety	Emergency stop and control devices	462
	Safety limit switches	472
	Safety door switches	480
	Safety sensors	506
	Safety logic control systems	544
	Safety outputs	566
Control components	Temperature controllers	574
	Power supplies	596
	Uninterruptible power supplies (UPS)	614
	Timers	622
	Counters	632
	Programmable relays	642
	Digital panel indicators	650
	Energy monitoring devices	660
	Photovoltaic	674
Switching components	Electromechanical relays	682
	Solid state relays	696
	Low voltage switchgear	706
	Monitoring products	722
	Pushbutton switches	750
Software	Software	766
	Outline of Major Standards	772
	Index	775

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

Kazuma Tateisi, founder of Omron

Omron at a glance

200.000 products ranging
input, logic and output

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

7%

Investment in Research & Development

Innovation track
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

210

Locations worldwide

22

Countries in EMEA

Working for the
benefit of society



Close to your needs

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

Your needs, our focus

Solutions perfectly matching your needs

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

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

361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

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

The extra degree of advantage

Three distinct lines of sensors and components

Three distinct lines

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

Optimized reliability

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

Solutions that perfectly match your needs

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

Optimized costs

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

Why an extra 1°?

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



Sysmac: A fully integrated platform

Integration and Functionality

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

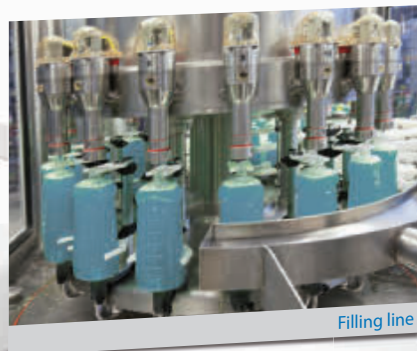


Machine Automation Controller

FACTORY
AUTOMATION

MACHINE
CONTROL

Motion



Filling line

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

Safety



Assembly

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

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



Information



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

✓ Integrated Automation Control:

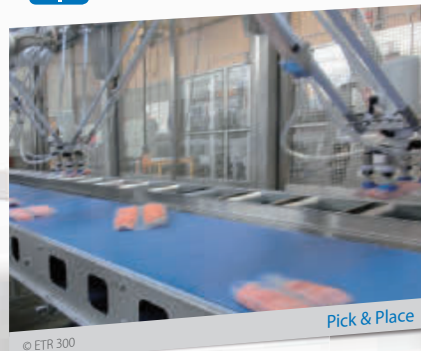
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

Vision



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

Robotics



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

Sensing



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

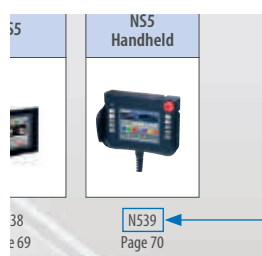
Product selection table

Automation systems				
	12 Machine automation controller	26 Programmable logic controllers (PLC)	54 Remote I/O	68 Human machine interfaces (HMI)
				
	96 Motion controllers	112 Servo systems	170 Robots	202 Frequency inverters
Sensing				
	236 Photoelectric sensors	278 Mark and Color sensors	284 Lightcurtains and area sensors	292 Fiber optic sensors and amplifiers
				
	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
	462 Emergency stop and control devices	472 Safety limit switches	480 Safety door switches	506 Safety sensors
				
	574 Temperature controllers	596 Power supplies	614 Uninterruptible power supplies (UPS)	622 Timers
Switching components				
	682 Electromechanical relays	696 Solid state relays	706 Low voltage switchgear	722 Monitoring products
				
	766 Software			
Software				

Switching components

Find information fast!

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

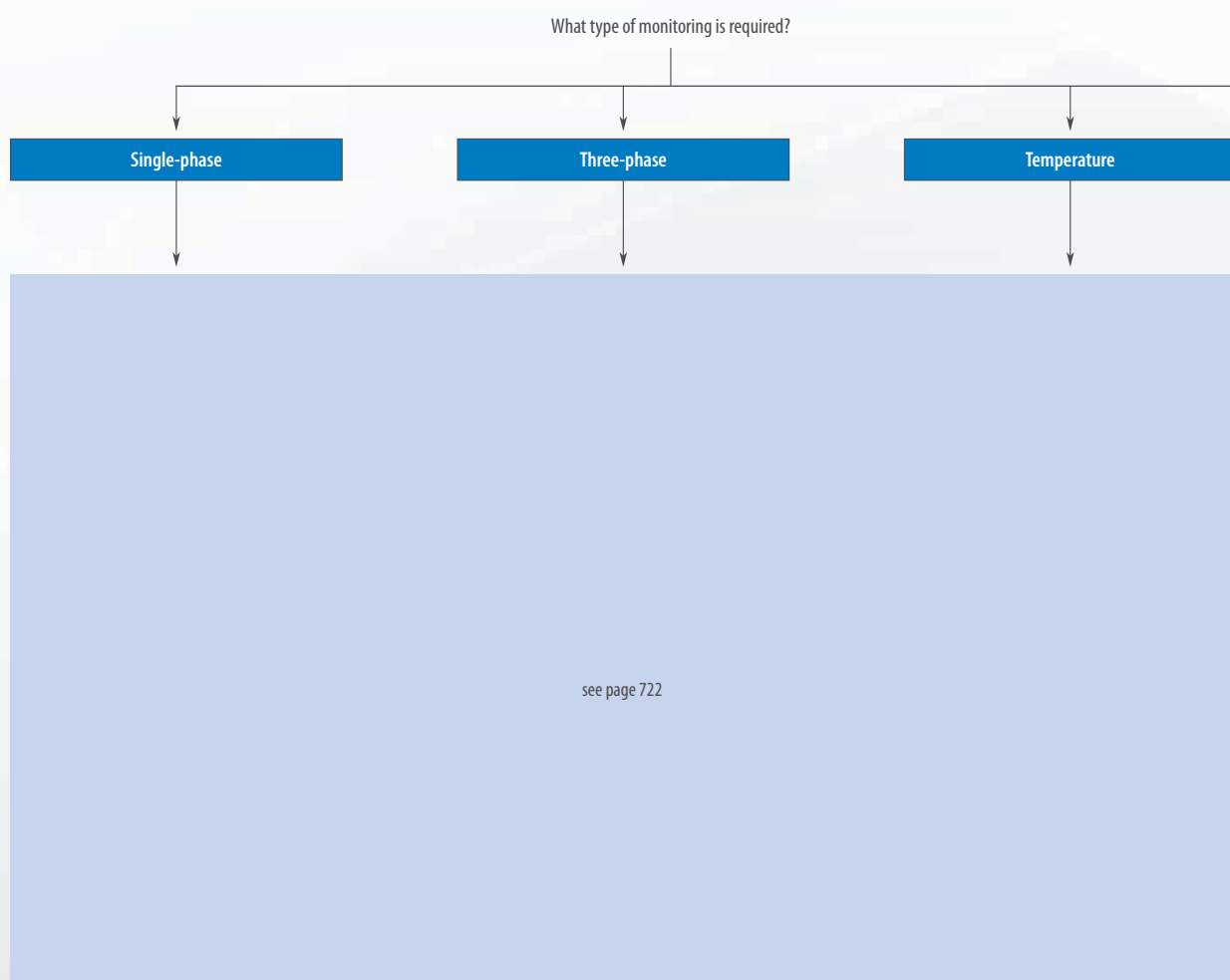


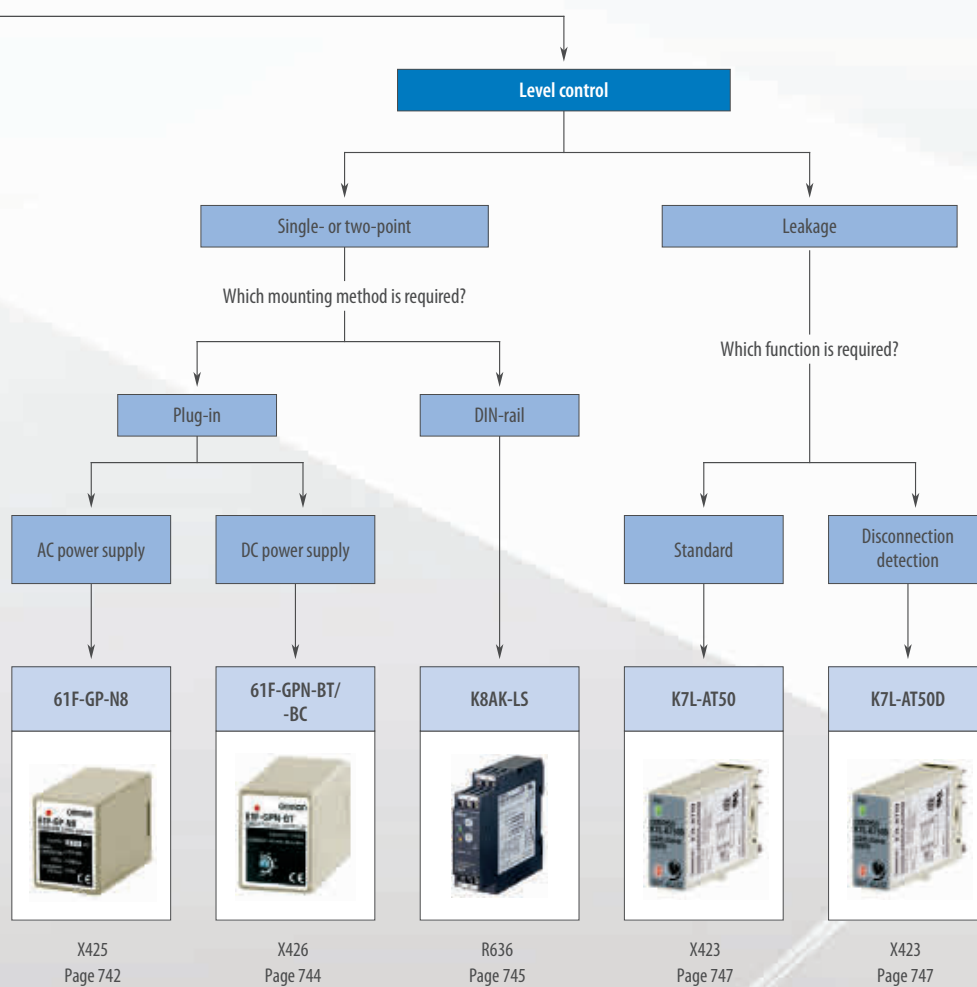
Quick Link

Switching components





Electromechanical relays	682	Monitoring products	722
Selection table	684	Selection table	726
Industrial plug-in relays		1-phase control	
G2RV	687	K8AK-AS	729
G2R-_-S	689	K8AK-AW	730
MY	691	K8AK-VS	731
LY	693	K8AK-VW	732
MKS	694	3-phase control	
MKS(X)	683	K8AK-PH	733
Industrial high power relays		K8DS-PH	734
G7J	695	K8AK-PM	735
G7L	683	K8DS-PM	736
G7Z	683	K8AK-PA	737
Solid state relays	696	K8DS-PA	738
Selection table	698	K8DS-PZ	739
Panel mounted		K8DS-PU	740
G3RV	700	K8AK-PW	741
G3R-I/-O	701	Level Control	
G3NA	702	61F-GP-N8	742
G3PA	704	61F-GPN-BT/-BC	744
G3PE	705	K8AK-LS	745
G3PH	696	K7L	747
G3PF	696	Temperature monitor	
G3PW	697	K8AK-TS/-PT	748
G3ZA	697	K8AK-TH	749
Low voltage switchgear	706	Pushbutton switches	750
Selection table	708	Selection table	752
Mini contactor relays		Pushbutton switches	
J7KNA-AR	713	A16	753
Mini motor contactors		A22N	755
J7KNA	714	Key-type selector switches	
Motor contactors		A22NK	757
J7KN	715	Knob-type selector switches	
Thermal overload relays		A22NS/NW	759
J7TKN	717	Indicators	
Motor protection circuit breakers		M16	762
J7MN	719	M22N	763









Monitoring products





Selection table






Category		1-phase current		1-phase voltage		3-phase voltage phase-sequence/phase-loss		3-phase voltage phase-sequence/phase-loss over/under	
									
Model		K8AK-AS	K8AK-AW	K8AK-VS	K8AK-VW	K8AK-PH	K8DS-PH	K8AK-PM	K8DS-PM
Selection criteria	Specialty	Ideal for current monitoring for industrial heaters and motors.		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.	
	Sensing range (configurable)	20 mA to 8 A, 100 or 200 A with current transformer		1 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	—	—	—	—	—	—	—	—
	100 to 240 VAC	■	■	■	■	—	—	—	—
	200 to 480 VAC	—	—	—	—	■	■	—	—
	200 to 240 VAC	—	—	—	—	—	—	■ (-PM1, 3-wire)	■
	115 to 138 VAC	—	—	—	—	—	—	■ (-PM1, 4-wire)	—
	380 to 480 VAC	—	—	—	—	—	—	■ (-PM2, 3-wire)	■
220 to 277 VAC	—	—	—	—	—	—	■ (-PM2, 4-wire)	—	
Supply voltage DC	24 VDC	■	■	■	■	—	—	—	—
	12 to 24 VDC	—	—	—	—	—	—	—	—
Control output	Transistor NPN	—	—	—	—	—	—	—	—
	Transistor PNP	—	—	—	—	—	—	—	—
	Relay	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 DPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)
Features	LED operation indicator	■	■	■	■	■	■	■	■
	Adjustable sensitivity	—	—	—	—	—	—	—	—
	Electrode types	—	—	—	—	—	—	—	—
Page/Quick Link		729/R634	730/R635	731/R642	732/R646	733/R638	734/R645	735/R643	736/R648

3-phase voltage phase-sequence, loss and asymmetry		3-phase voltage phase-sequence, loss, asymmetry and over/under		3-phase voltage over/under	Temperature thermistor, phase- sequence and loss	Temperature thermistor	Temperature thermo-couple and PT
							
K8AK-PA	K8DS-PA	K8DS-PZ	K8DS-PU	K8AK-PW	K8AK-PT	K8AK-TS	K8AK-TH
Ideal for 3-phase voltage asymmetry monitoring for industrial facilities and equipment.		Ideal for monitoring 3-phase power supplies for industrial facilities and equipment		Ideal for monitoring 3-phase power supplies for industrial facilities and equipment.	Monitor temperature rise through internal motor		Compact and slim relay ideal for temperature alarms and monitoring
Same as supply voltage					100 to 240 VAC 24 VAC/DC		100 to 240 VAC 24 VAC/DC
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■ Standard

□ Available

— No/not available

Category		Conductive level controller				Liquid leakage sensor amplifier	
							
Model		61F-GP-N8	61F-GPN-BT	61F-GPN-BC	K8AK-LS	K7L-AT50	K7L-AT50D
Selection criteria	Specialty	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
	Sensing range (configurable)	4 to 50 kΩ	0 to 100 kΩ	1 to 100 kΩ	10 to 100 kΩ	0 to 50 MΩ	1 to 50 MΩ
Supply voltage AC	24 VAC	<input type="checkbox"/>	–	–	<input type="checkbox"/>	–	–
	100 VAC	<input type="checkbox"/>	–	–	–	–	–
	110 VAC	<input type="checkbox"/>	–	–	–	–	–
	115 VAC	–	–	–	–	–	–
	120 VAC	<input type="checkbox"/>	–	–	–	–	–
	200 VAC	<input type="checkbox"/>	–	–	–	–	–
	220 VAC	<input type="checkbox"/>	–	–	–	–	–
	230 VAC	<input type="checkbox"/>	–	–	–	–	–
	240 VAC	<input type="checkbox"/>	–	–	–	–	–
	100 to 240 VAC	–	–	–	<input checked="" type="checkbox"/>	–	–
	200 to 480 VAC	–	–	–	–	–	–
	200 to 240 VAC	–	–	–	–	–	–
	115 to 138 VAC	–	–	–	–	–	–
	380 to 480 VAC	–	–	–	–	–	–
	220 to 277 VAC	–	–	–	–	–	–
Supply voltage DC	24 VDC	–	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	–	–
	12 to 24 VDC	–	–	–	–	<input type="checkbox"/>	<input type="checkbox"/>
Control output	Transistor NPN	–	–	<input checked="" type="checkbox"/>	–	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Transistor PNP	–	–	–	–	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Relay	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (1 SPDT)	–	–
Features	LED operation indicator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Adjustable sensitivity	–	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	–	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Electrode types	Electrode holder: PS-S, PS-31, BF-1 and BS-1				Liquid leakage sensor band F03-16PE	
Page/Quick Link		742/X425	744/X426		745/R636	747/X423	

■ 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/DC, 100 to 240 VAC
- Easy wiring with ferrules

Ordering information

Measuring current	Supply voltage	Order code
2 to 20 mA AC/DC, 10 to 100 mA AC/DC, 50 to 500 mA AC/DC	24 VAC/DC	K8AK-AS1 24 VAC/DC
	100 to 240 VAC	K8AK-AS1 100-240 VAC
0.1 to 1 A AC/DC, 0.5 to 5 A AC/DC, 0.8 to 8 A AC/DC	24 VAC/DC	K8AK-AS2 24 VAC/DC
	100 to 240 VAC	K8AK-AS2 100-240 VAC
10 to 100 A AC, 20 to 200 A AC	24 VAC/DC	K8AK-AS3 24 VAC/DC
	100 to 240 VAC	K8AK-AS3 100-240 VAC

Accessories

Current transformer	Input range	Applicable relay	Order code
	10 to 100 A AC, 20 to 200 A AC	K8AK-AS3	K8AC-CT200L

Note: The K8AK-AS3 is designed to be used in combination with the K8AC-CT200L (direct input not possible)

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°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 (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
Mechanical life		10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Operating power	Isolated power supply	2.0 VA/1.1 W max. at 24 VAC/DC, 4.6 VA max. at 100 to 240 VAC
Operate (SV)	Operating value setting range	10% to 100% of maximum measuring current
	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
Operating power ON lock (LOCK)		0 to 30 s (The startup lock timer starts when the input has reached approximately 30% or more of the set value.) Note: Enabled only for overcurrent operation
Repeat error	Operating value	±0.5% full scale (at 25°C and 65% humidity, rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Input frequency range	K8AK-AS1/-AS2	DC input or AC input (45 to 65 Hz)
	K8AK-AS3	AC input (45 to 65 Hz)
Overload capacity	K8AK-AS1/-AS2	Continuous input at 120% of maximum input, 1 s at 150%
	K8AK-AS3	Continuous input at 120%, 30 s at 200%, and 1 s at 600% with an OMRON CT (K8AC-CT200L)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



Single-phase current relay, window type


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 window relay
- In 22.5 mm wide industrial housing
- Under and over control
- Supply voltages: 24 VAC/DC, 100 to 240 VAC
- Easy wiring with ferrules

Ordering information

Measuring current	Supply voltage	Order code
2 to 20 mA AC/DC, 10 to 100 mA AC/DC, 50 to 500 mA AC/DC	24 VAC/DC	K8AK-AW1 24 VAC/DC
	100 to 240 VAC	K8AK-AW1 100-240 VAC
0.1 to 1 A AC/DC, 0.5 to 5 A AC/DC	24 VAC/DC	K8AK-AW2 24 VAC/DC
	100 to 240 VAC	K8AK-AW2 100-240 VAC
10 to 100 A AC, 20 to 200 A AC	24 VAC/DC	K8AK-AW3 24 VAC/DC
	100 to 240 VAC	K8AK-AW3 100-240 VAC

Accessories

Current transformer	Input range	Applicable relay	Order code
	10 to 100 A AC, 20 to 200 A AC	K8AK-AW3	K8AC-CT200L

Note: The K8AK-AW3 is designed to be used in combination with the K8AC-CT200L (direct input not possible)

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°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 (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
Mechanical life		10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Operating power	Isolated power supply	2.0 VA/1.1 W max. at 24 VAC/DC, 4.6 VA max. at 100 to 240 VAC
Operate (SV)	Operating value setting range	10% to 100% of maximum measuring current
	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
Operating power ON lock (LOCK)		0 to 30 s (The startup lock timer starts when the input has reached approximately 30% or more of the set value.) Note: Enabled only for overcurrent operation
Repeat error	Operating value	±0.5% full scale (at 25°C and 65% humidity, rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Input frequency range	K8AK-AW1/-AW2	DC input or AC input (45 to 65 Hz)
	K8AK-AW3	AC input (45 to 65 Hz)
Overload capacity	K8AK-AW1/-AW2	Continuous input at 120% of maximum input, 1 s at 150%
	K8AK-AW3	Continuous input at 120%, 30 s at 200%, and 1 s at 600% with an OMRON CT (K8AC-CT200L)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



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/DC, 100 to 240 VAC
- Easy wiring with ferrules

Ordering information

Measuring current	Supply voltage	Order code
1 to 10 VAC/DC, 3 to 30 VAC/DC, 15 to 150 VAC/DC	24 VAC/DC	K8AK-VS2 24 VAC/DC
	100 to 240 VAC	K8AK-VS2 100-240 VAC
20 to 200 VAC/DC, 30 to 300 VAC/DC, 60 to 600 VAC/DC	24 VAC/DC	K8AK-VS3 24 VAC/DC
	100 to 240 VAC	K8AK-VS3 100-240 VAC

Specifications

Ambient operating temperature		-20 to 60°C (with no condensation or icing)
Storage temperature		-25 to 65°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 (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
	Electrical life	50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Operating power	Isolated power supply	2.0 VA/1.1 W max. at 24 VAC/DC, 4.6 VA max. at 100 to 240 VA
Operate (SV)	Operating value setting range	10% to 100% of maximum measuring voltage
	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
Power ON lock (LOCK)		1 s or 5 s (Switched using DIP switch) (value when input rapidly changes from 0 to 100%. The operating time is the shortest at this point)
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and 65% humidity, rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Input frequency		40 to 500 Hz
Overload capacity		Continuous input at 115% of maximum input, 10 s at 125% (up to 600 VAC)
Indicators		LED power (PWR): Green LED, relay output (RY): Yellow LED, alarm output (ALM): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



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/DC, 100 to 240 VAC
- Easy wiring with ferrules

Ordering information

Measuring current	Supply voltage	Order code
1 to 10 VAC/DC, 3 to 30 VAC/DC, 15 to 150 VAC/DC	24 VAC/DC	K8AK-VW2 24 VAC/DC
	100 to 240 VAC	K8AK-VW2 100-240 VAC
20 to 200 VAC/DC, 30 to 300 VAC/DC, 60 to 600 VAC/DC	24 V AC/DC	K8AK-VW3 24 VAC/DC
	100 to 240 VAC	K8AK-VW3 100-240 VAC

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°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 (2 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
	Electrical life	50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Operating power	Isolated power supply	2.0 VA/1.1 W max. at 24 VAC/DC, 4.6 VA max. at 100 to 240 VAC
Operation (AL1 and AL2)	Operating value setting range	10% to 100% of maximum measuring voltage
	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
Power ON lock (LOCK)		1 s or 5 s (Switched using DIP switch)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM 1/2): Red LED
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and 65% humidity, rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Input frequency		40 to 500 Hz
Overload capacity		Continuous input at 115% of maximum input, 10 s at 125% (up to 600 VAC)
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



3-phase sequence, phase loss relay

The K8AK-PH1 monitoring relay is designed to monitor 3-phase 3-wire supplies. It simultaneously monitors phase sequence and phase loss during start up as well as phase loss during operation. The output relay releases when alarm conditions are detected, and the warning status can easily be monitored using the LED indicator. Suitable for industrial facilities and equipment.

- Monitors phase sequence and phase-loss simultaneously
- Measuring range: 200 to 480 VAC
- Power supply voltage is the same as measuring voltage
- Operation reaction time: 0.1 s maximum

Ordering information

Rated input voltage	Order code
200 to 480 VAC	K8AK-PH1

Specifications

Ambient operating temperature		-20 to 60°C (with no condensation or icing)
Storage temperature		-25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × DPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 130 g
Rated input voltage		Three-phase, three-wire mode, 200 to 480 VAC
Reversed phase and phase loss operating time		0.1 s max.
Resetting method		Automatic reset
Overload capacity		Continuous input: 528 VAC
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



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

The K8DS-PH1 is a monitoring relay designed at 17.5 mm slim by simplified functions for 3-phase 3 wire supplies. It simultaneously monitors phase sequence and phase loss during start up as well as phase loss during operation. The output relay releases when alarm conditions are detected, and the warning status can easily be monitored using the LED indicator.

- Monitors phase sequence and phase-loss simultaneously
- Measuring range: 200 to 480 VAC
- Power supply voltage is the same as measuring voltage
- Operation reaction time: 0.1 s maximum

Ordering information

Rated input voltage	Order code
200 to 480 VAC	K8DS-PH1

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC UL 94 V-0
Weight		Approx. 60 g
Rated input voltage		Three-phase, three-wire mode, 200 to 480 VAC
Reversed phase and phase loss operating time		0.1 s max.
Resetting method		Automatic reset
Overload capacity		Continuous input: 500 VAC
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size (H × W × D)		80 × 17.5 × 74 mm



3-phase voltage, phase sequence, phase loss relay

K8AK-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

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AK-PM1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AK-PM2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Input frequency		50/60 Hz (AC power supply)
Output relays (2 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
	Electrical life	50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Rated input voltage	K8AK-PM1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AK-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
	Phase-sequence, phase-loss	0.1 s max.
Power ON lock (LOCK)		1 s or 5 s (Changed with the DIP switch)
Overload capacity		Continuous input at 115% of maximum input, 10 s at 125% (up to 600 VAC)
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM 1/2): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100

*1 The rated input voltage is switched with a switch



3-Phase voltage, phase sequence, phase-loss and over-/undervoltage relay

The K8DS-PM is the simplified 3-phase monitoring relay, 3-wire circuits with one unit. It can monitor undervoltages, overvoltages, phase sequence and phase-loss.

- Greater resistance to inverter noise
- One SPDT output relay, 5 A at 250 VAC (resistive load)
- World-wide power specifications supported by one unit (Set with a rotary switch)
- Relay status can be monitored using LED indicator

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8DS-PM1
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8DS-PM2

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC
Degree of protection		Terminal section: IP20
Case material		PC UL94 V-0
Weight		Approx. 65 g
Rated input voltage	K8DS-PM1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC
	K8DS-PM2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC
Operation (overvoltage or undervoltage)	Operating value setting range	Overvoltage = –30% to 25% of maximum rated input voltage Undervoltage = –30% to 25% of maximum rated input voltage
	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
	Phase-sequence, phase-loss	0.1 s max.
Power ON lock (LOCK)		1 s ±0.5 s
Overload capacity		Continuous input: 500 V
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green, Relay output (RY): Yellow LED, OVER/UNDER: Red
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		80 × 17.5 × 74



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

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AK-PA1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AK-PA2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 130 g
Rated input voltage	K8AK-PA1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AK-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
	Phase-sequence, phase-loss	0.1 s max.
Power ON lock (LOCK)		1 s or 5 s (Changed with the DIP switch)
Overload capacity		Continuous input at 115% of maximum input, 10 s at 125% (up to 600 VAC)
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM 1/2): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



3-Phase voltage, phase sequence, loss and asymmetry

The K8DS-PA is the simplified 3-phase monitoring relay, 3-wire circuits with one unit. It can monitor voltage asymmetry with 3-phase sequence and loss at the same time.

- Greater resistance to inverter noise
- One SPDT output relay, 5 A at 250 VAC (resistive load)
- World-wide power specifications supported by one unit (Set with a rotary switch)
- Relay status can be monitored using LED indicator

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8DS-PA1
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8DS-PA2

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
	Electrical life	50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC UL94 V-0
Weight		Approx. 65 g
Rated input voltage	K8DS-PA1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC
	K8DS-PA2	3-phase, 3-wire mode: 380, 400, 415, 480 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 to 30 s
	Phase-sequence	0.1 s ±0.5 s
	Phase-loss	0.1 s max.
Power ON lock (LOCK)		1 s ±0.5 s
Overload capacity		Continuous input: 500 V
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green, Relay output (RY): Yellow, Alarm outputs (ALM): Red
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA: C22.2 No. 14, CCC: GB14048.5
Size (H × W × D)		80 × 17.5 × 74 mm



3-Phase asymmetry, phase sequence, phase-loss and over-/undervoltage relay

The K8DS-PZ is the simplified 3-phase monitoring relay, 3-wire circuits within one unit. It can monitor undervoltages, overvoltages, voltage asymmetry, phase sequence and phase-loss.

- Greater resistance to inverter noise
- One SPDT output relay, 5 A at 250 VAC (resistive load)
- World-wide power specifications supported by one unit (Set with a rotary switch)
- Relay status can be monitored using LED indicator

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8DS-PZ1
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8DS-PZ2

Specifications

Ambient operating temperature		-20 to 60°C (with no condensation or icing)
Storage temperature		-25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Input frequency		50/60 Hz (AC power supply)
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC
Degree of protection		Terminal section: IP20
Case material		PC UL94 V-0
Weight		Approx. 65 g
Rated input voltage	K8DS-PZ1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC
	K8DS-PZ2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC
Operation (overvoltage or undervoltage)	Operating value setting range	Overvoltage/undervoltage: 2% to 30% of rated input voltage
	Operating value	100% operation at set value
Asymmetry operation (ASY.)	Operating value setting range	Asymmetry rate: 5% 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 to 30 s
	Overvoltage/undervoltage	0.1 to 30 s
	Phase-sequence, phase-loss	0.1 s ±0.05 s, 0.1 s max.
Power ON lock (LOCK)		1 s ±0.5 s
Overload capacity		Continuous input: 500 V
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green, Relay output (RY): Yellow LED, Alarm output: Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA: C22.2 No.14
Size in mm (H × W × D)		80 × 17.5 × 74



3-phase voltage asymmetry, phase-sequence, phase-loss and undervoltage relay

The K8DS-PU is the simplified 3-phase monitoring relay, 3-wire circuits within one unit. It can monitor undervoltages, asymmetry, phase sequence and phase loss.

- Greater resistance to inverter noise
- One SPDT output relay, 5 A at 250 VAC (resistive load)
- World-wide power specifications supported by one unit (Set with a rotary switch)
- Relay status can be monitored using LED indicator

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8DS-PU1
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8DS-PU2

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Altitude		2,000 m max.
Voltage fluctuation range (UNDER)		Undervoltage 30 to 25% of rated input voltage
Input frequency		50/60 Hz (AC power supply)
Output relays (1× SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC
Degree of protection		Terminal section: IP20
Case material		PC UL94 V-0
Weight		Approx. 65 g
Rated input voltage	K8DS-PU1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC
	K8DS-PU2	3-phase, 3-wire mode: 380, 400, 415, 480 VAC
Operation (overvoltage or undervoltage)	Operating value setting range	Undervoltage = –30% to 25% of maximum rated input voltage
	Operating value	100% operation at set value
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Automatic reset
Operating time (T)	Asymmetry	0.1 to 30 s
	Phase-sequence	0.1 s ±0.5 s
	Phase-loss	0.1 s ±0.05 s
Power ON lock (LOCK)		0.1 s ±0.5 s
Overload capacity		Continuous input: 500 V
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, UNDER: Red
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		80 × 17.5 × 74



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

Ordering information

Rated input		Order code
3-phase 3-wire mode	200, 220, 230, 240 VAC	K8AK-PW1
3-phase 4-wire mode	115, 127, 133, 138 VAC	
3-phase 3-wire mode	380, 400, 415, 480 VAC	K8AK-PW2
3-phase 4-wire mode	220, 230, 240, 277 VAC	

Specifications

Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°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 (AC power supply)
Output relays (2 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Rated input voltage	K8AK-PW1	3-phase, 3-wire mode: 200, 220, 230, 240 VAC, 3-phase, 4-wire mode: 115, 127, 133, 138 VAC
	K8AK-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
Power ON lock (LOCK)		1 s or 5 s (Changed with the DIP switch)
Overload capacity		Continuous input at 115% of maximum input, 10 s at 125% (up to 600 VAC)
Repeat accuracy	Operating value	±0.5% full scale (at 25°C and an ambient humidity of 65% at the rated power supply voltage, DC or 50/60 Hz sine wave input)
	Operating time	±50 ms (at 25°C and 65% humidity, rated power supply voltage)
Indicators		Power (PWR): Green LED, relay output (RY): Yellow LED, alarm outputs (ALM 1/2): Red LED
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100

^{*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 to 15 k Ω , 70 to 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	Order code
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
DIN-rail mounting socket		PF083A-E
Back-connecting socket		PL08

Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Order code
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	PPS	150°C (without water drips or vapour on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	PFA	250°C (without water drips or vapour on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Order code
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Order code
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

Specifications

Item	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: Cosφ = 0.4), 3 A, 250 VAC (resistive load)				
Ambient temperature	Operating: -10 to 55°C				
Life expectancy	Electrical: 100,000 operations min., mechanical: 5,000,000 operations min				
Size in mm (HxWxD)	49.9x38x70				



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 to 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	Order code
Conductive level controller	Open collector (NPN)	61F-GPN-BT 24VDC
	Relay contact (SPST-NO)	61F-GPN-BC 24VDC
Front socket		PF113A-E

Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Order code
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	PPS	150°C (without water drips or vapour on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	PFA	250°C (without water drips or vapour on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Order code
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Order code
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

Specifications

Item	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 to 55°C	
Response time	Operating: 1.5 s max., releasing: 3.0 s max.	
Size in mm (HxWxD)	49.9x38x70	



22.5 mm wide conductive level controller

The K8AK-LS1 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/DC and 100 to 240 VAC
- Control output: Relay 5 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	Order code
24 VAC/VDC	K8AK-LS1 24VAC/DC
100 to 240 VAC	K8AK-LS1 100-240 VAC

Accessories

Electrode holders					
Applications	Mounting style	Insulator material	Max. temperature	Number of electrodes	Order code
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	PPS	150°C (without water drips or vapour on the electrode holder surface)	1	BF-1
For resistance to high pressure. Use in tanks with high temperature or pressure.	Screw	Fluoro resin	250°C (without water drips or vapour on the surface of the electrode holder)	1	BS-1
Electrode separators				Number of electrodes	Order code
				1	F03-14 1P
				3	F03-14 3P
Electrodes, connecting, and lock nuts					
Applicable liquids	Material	Component	Indication mark	Inscription	Order code
Purified city water, industrial water, sewage	Equivalent to SUS304 (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

Specifications

Item		K8AK-LS
Ambient operating temperature		–20 to 60°C (with no condensation or icing)
Storage temperature		–25 to 65°C (with no condensation or icing)
Operating voltage range		85% to 110% of rated operating voltage
Rated power supply frequency		50/60 Hz (AC power supply)
Output relays	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 5 A, 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS
Weight		Approx. 150 g
Operating resistance		10 k Ω to 100 k Ω (variable)
Reset resistance		250 k Ω max.
Response time		Approx. 0.1 to 10 s (variable)
Cable length		100 m max. with completely insulated (600 V) cabtire cable with 3 conductors (0.75 mm ²)
Indicators		Green LED: Power, Yellow LED: Control output
Applicable standards	Conforming standards	EN 61010-1 Installation environment (pollution level 2, installation category II)
	EMC	EN 61326-1
	Safety standards	EN 60664-1UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100



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 M Ω
- 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	Order code
Liquid leakage sensor amplifier	Standard	K7L-AT50
	With disconnection function set	K7L-AT50D
	With disconnection function sensor amplifier only	K7L-AT50D-S

Product name		Characteristics	Order code
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

Accessories

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

Product name		Characteristics	Order code
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

Specifications

Rated power supply voltage	12 to 24 VDC (allowable voltage fluctuation range: 10 to 30 VDC)
Operate resistance	0 Ω to 50 M Ω , variable Range 0: 0 to 250 k Ω Range 1: 0 to 600 k Ω Range 2: 0 to 5 M Ω Range 3: 0 to 50 M Ω
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 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 (H×W×D)	28.8×12.8×46



Thermistor motor protection relay

The K8AK-TS is the temperature monitoring relay based on the thermistor detection and can protect the motor from overheating.

The K8AK-PT gives further functionalities such as temperature, 3-phase sequence and loss monitoring and contributes to the overall safety 3-phase motor's operation.

- DIN 22.5-mm-sized K8AK-PT relays
- Side-by-side mounting of K8AK-PT relays
- Specially designed for internal motor monitoring, no setting required
- Test/Reset button for confirmation of output operation
- Monitoring also performed for thermistor disconnections and short circuits
- Manual or automatic resetting with the same relay

Ordering information

Rated input		Order code
Temperature monitoring	24 VAC/DC	K8AK-TS1 24 VAC/DC
Phase sequence, phase loss and temperature monitoring	100 to 240 VAC	K8AK-PT1 100-240 VAC
		K8AK-TS1 100-240 VAC

Specifications

Ambient operating temperature		-20 to 60°C (with no condensation or icing)
Storage temperature		-25 to 65°C (with no condensation or icing)
Input frequency		50/60 Hz (AC power supply)
Output relays (2 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC
	Maximum contact voltage	250 VAC or 30 VDC
	Maximum contact current	5 A
	Maximum switching capacity	1,250 VA, 150 W
	Mechanical life	10,000,000 operations
Electrical life		50,000 operations at 250 VAC or 30 VDC
Degree of protection		Terminal section: IP20
Case material		PC and ABS UL94 V-0
Weight		Approx. 150 g
Rated input voltage		3-phase, 3-wire mode: 200 to 480 VAC
Reset method		Manual reset/automatic reset (switchable) ^{*1}
Operating time (T)	Phase-sequence on three-phase voltage input	0.1 s ±0.05 s
	Phase loss on three-phase voltage input	0.1 s max. (when the voltage changes rapidly from 100 to 0% of rated voltage)
	PTC thermistor input	0.2 s max.
Overload capacity		Continuous input: 528 V
Indicators		Power (PWR): Green, PH alarm outputs (ALM): Red, TS alarm outputs (ALM): Red
Applicable standards	Conforming standards	EN 60947-5-1 Installation environment (pollution level 2, installation category III)
	EMC	EN 60947-5-1
	Safety standards	UL 508 (Recognition), Korean Radio Waves Act (Act 10564), CSA and CCC
Size in mm (H × W × D)		90 × 22.5 × 100

^{*1} Manual reset method: Press the TEST/RESET button.



Protect your heating application

This temperature monitoring relay was designed specially for monitoring abnormal temperatures to prevent excessive temperature increase and to protect equipment. K8AK-TH provides temperature monitoring in a slim design with a width of just 22.5 mm.

- Simple function settings using DIP switch
- Selectable alarm latch and SV setting protection
- Multi-input support for thermocouple or Pt100 and Pt1000 sensor input
- Changeover relay: fail-safe selectable
- Alarm status identification with LED

Ordering information

Input type	Temperature setting range	Setting unit	Supply voltage	Size in mm (H×W×D)	Order code
Thermocouple/ Pt100 and Pt1000	0 to 999°C/F	1°C/F	100 to 240 VAC	90×22.5×100	K8AK-TH11S AC100-240
			24 VAC/VDC		K8AK-TH11S AC/DC24
Thermocouple	0 to 1,800°C 0 to 3,200 °F ^{*1}	10°C/F	100 to 240 VAC		K8AK-TH12S AC100-240
			24 VAC/VDC		K8AK-TH12S AC/DC24

^{*1} Setting range depending on sensor type selected

Specifications

Item		100 to 240 VAC 50/60 Hz	24 VAC 50/60 Hz or 24 VDC
Allowable voltage range		85 to 110% of power supply voltage	
Power consumption		5 VA max.	2 W max. (24 VDC), 4 VA max. (24 VAC)
Sensor inputs	K8AK-TH11S	Thermocouple: K, J, T, E; platinum-resistance thermometer: Pt100, Pt1000	
	K8AK-TH12S	Thermocouple: K, J, T, E, B, R, S, PLII	
Output relay		One SPDT relay (5 A at 250 VAC, resistive load)	
External inputs (for latch setting)	Contact input	ON: 1 kΩ max., OFF: 100 kΩ min.	
	Non-contact input	ON residual voltage: 1.5 V max., OFF leakage current: 0.1 mA max. Leakage current: Approx. 10 mA	
Setting method		Rotary switch setting (set of three switches)	
Indicators		Power (PWR): Green LED, relay output (ALM): Red LED	
Other functions		Alarm mode (upper limit/lower limit), output normally ON/OFF selection, output latch, setting protection, fail-safe operation selectable, temperature unit °C/°F	
Ambient operating temperature		−20 to 55°C (with no condensation or icing)	
Storage temperature		−25 to 65°C (with no condensation or icing)	
Setting accuracy		±1% of full scale	
Hysteresis width		2°C	
Output relays (1 × SPDT, normally closed operation)	Resistive load	5 A at 250 VAC or at 30 VDC	
	Maximum contact voltage	250 VAC or 30 VDC	
	Maximum contact current	5 A	
	Maximum switching capacity	1,250 VA, 150 W	
	Mechanical life	10,000,000 operations	
	Electrical life	50,000 operations at 5 A, 250 VAC or 30 VDC	
Sampling cycle		100 ms	
Weight		160 g	
Degree of protection		IP20	
Memory protection		Non-volatile memory (number of writes: 1,000,000)	
Safety standards	Approved standards	EN 61010-1 (Pollution level 2, overvoltage category II)	
	Application standards	EN 61326-1, UL 61010-1, Korean Radio Waves Act (Act 10564), CSA/CAN/CSA C22.2 No.14, CCC: GB14048.5	
Crimp terminals		Two solid wires of 2.5 mm ² or two ferrules of 1.5 mm ² with insulation sleeves can be tightened together	
Case material		PC and ABS	
Mounting		Mounted to DIN-rail	
Size in mm (H×W×D)		90×22.5×100	