

MEASURING AND MONITORING RELAYS



Slim Models for Monitoring Current and Voltage

realizing



Measuring and Monitoring Relays
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Monitoring Relays**

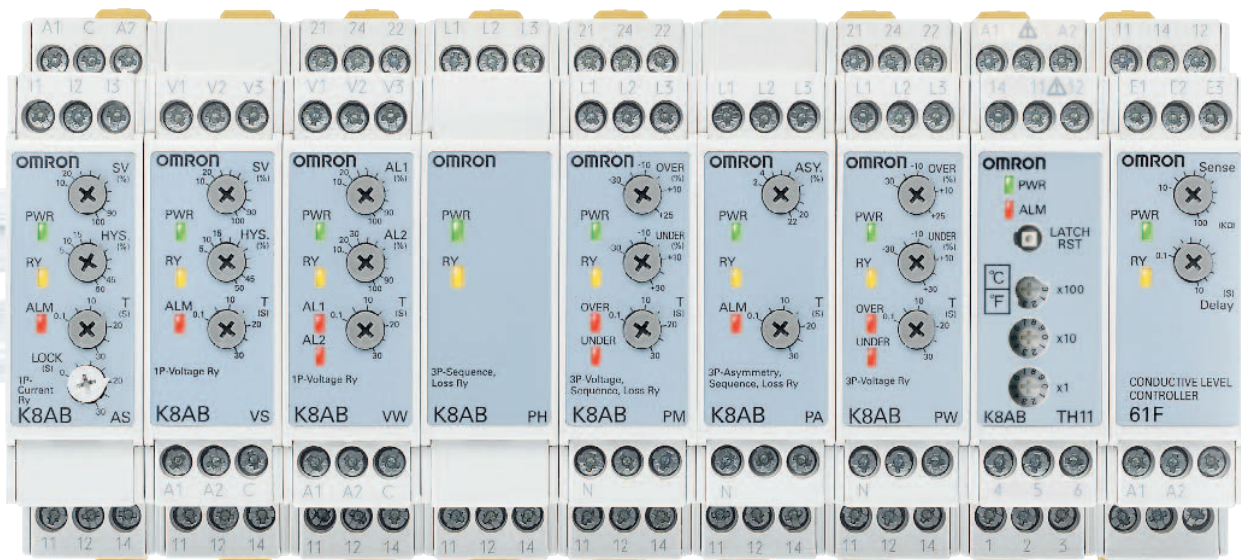
K8AB

Industry First!

Measuring and Monitoring Relays

Two SPDT Outputs Available in New Models DIN Sized at 22.5 mm


Industrial manufacturing facilities and equipment today require more precise risk management and maintenance than ever before. With its field-proven history of highly reliable monitoring devices, OMRON has responded with DIN-sized (22.5 mm) Low-voltage Monitoring and Liquid Level Control Relays. Nine slim models featuring a variety of innovative new functions offer accurate current and voltage monitoring to avert manufacturing line problems.



Measuring and Monitoring Relays


K8AB

Nine New Low-voltage Monitoring Relays DIN-sized at 22.5 mm Provide A More Co



- Over or under current
- Manual/automatic reset
- Normal ON/normal OFF
- ON delay and operation time

1-Phase Current Relay
K8AB-AS




- Over or under voltage
- Manual/automatic reset
- Normal ON/normal OFF
- ON delay and operation time

1-Phase Voltage Relay
K8AB-VS



- Over and under voltage
- Pre-alarm warning mode
- ON delay and operation time

1-Phase Voltage Relay
K8AB-VW



- 200 to 500 VAC with a single K8AB-PH
- Power supply/output relay status indicators

3-Phase Sequence, Loss Relay
K8AB-PH

Selection guide

Model	Functions						Output relays	Operation			Indications	Safety standards								
	1-phase power supply		3-phase power supply																	
	Over or under current (switchable)	Over or under voltage (switchable)	3-phase power supply with 3 wires	3-phase power supply with 3 wires	3-phase power supply with 3 or 4 wires (switchable)	3-phase power supply with 3 or 4 wires (switchable)							3-phase power supply with 3 or 4 wires (switchable)	3-phase power supply with 3 or 4 wires (switchable)	Conductive Level Controller					
		Over and under voltage (window comparator)	Phase sequence	Phase loss	Phase sequence	Phase loss	Asymmetry	Over and under voltage (window comparator)	Conduct Level Control	One SPDT relay	Two SPDT relays	Operation level setting	Operation time setting	Individual upper/lower limit settings (individual outputs)	Function selection (DIP switch)	Pre-alarm warning mode	Power indicator/operating status indicator	Trip warning indicator (flashing alarm indicator)	CE (See note.)	UL
K8AB-AS	■									■		■	■		■		■	■	■	■
K8AB-VS		■								■		■	■		■		■	■	■	■
K8AB-VW			■								■	■	■	■	■	■	■	■	■	■
K8AB-PH				■	■					■		■	■		■		■	■	■	■
K8AB-PM				■	■	■	■	■	■	■		■	■	■	■		■	■	■	■
K8AB-PA				■	■	■	■	■	■	■		■	■	■	■		■	■	■	■
K8AB-PW								■	■	■		■	■	■	■		■	■	■	■
NEW K8AB-TH	Temperature Monitoring Relay (with Selectable Upper-limit Alarm and Lower-limit Alarm)									■		■	■		■		■	■	■	■
61F-D21T									■	■		■	■		■		■	■	■	■

Note: CE mark compliance certified by third party.



Comprehensive Lineup



- 3-/4-wire selection for 3-phase power supply
- Input range selection

3-Phase Asymmetry Sequence, Loss Relay
K8AB-PA



- Over and under voltage
- All-in-one configuration
- 3-/4-wire selection for 3-phase power supply
- Input range selection

3-Phase Voltage, Sequence, Loss Relay
K8AB-PM



- Over and under voltage
- 3-/4-wire selection for 3-phase power supply
- Input range selection

3-Phase Voltage Relay
K8AB-PW



NEW

- Prevention of excessive temperature rise and monitoring of abnormal temperatures
- Thermocouple/PT100 (multi-input)
- SPDT relay output
- Output latch function

Temperature Monitoring Relay
K8AB-TH



- Variable operating resistance
- Water supply/draining selection
- Operation time setting

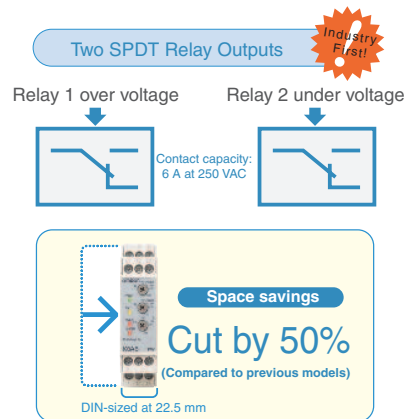
Conductive Level Controller
61F-D21T

1 Slim 22.5-mm Design Features Two SPDT Relay Outputs (K8AB-VW, K8AB-PM, and K8AB-PW)

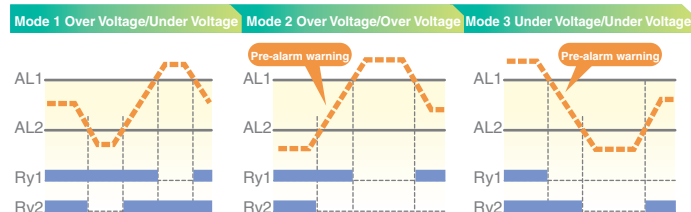
Provides individual over voltage and under voltage settings and outputs. **1-3-phase Power Supply**

Many customers require the individual upper and lower limit outputs that are normally available only in larger 45-mm relays. For the first time from any manufacturer, OMRON has achieved this and more in a slim-body design measuring just 22.5 mm. These relays not only offer advantages such as 3-phase power supply compatibility and a resistive load contact capacity of 6 A at 250 VAC, but they also reduce panel production cost because they use 50% less space than previous models.

* The relay output capacity for the K8AB-TH is 3 A at 250 VAC (resistive load).



2 Pre-alarm Monitoring Mode Provides Advanced Warning (K8AB-VW Only)



In plants and other sites that operate 365 days a year, unexpected shutdowns must be kept to an absolute minimum. OMRON addresses this problem with the K8AB-VW featuring a pre-alarm monitoring mode that can be set to two levels for two outputs. K8AB-VW makes scheduled maintenance possible because the pre-alarm monitoring mode provides advance warning of impending trip alarms.

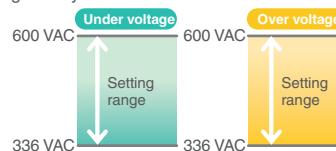
3 Expanded Setting Range Ensures Over Voltage and Under Voltage Monitoring Flexibility

Over voltage and under voltage can be set for the full span of the allowable input range, so over voltage and under voltage can now be monitored with flexibility.

* The setting range for operation time can be set within -30% to +25% of the range selected using the DIP switch on the Unit.

Example: K8AB-PW 3-phase Voltage Relay

- Rated input voltage
- Three-phase, three-wire Mode
- 480-VAC setting



• Usable as a Simple Sensor Controller Accepts 4 to 20 mA or 0 to 10 V inputs.

• Compatible with Commercial CTs

The K8AB-AS 1-Phase Current Relay can be used with commercial CTs for current measurement.

	CT current on secondary side	Applicable model
Commercial CTs	0 to 1 A AC	K8AB-AS2
	0 to 5 A AC	

OMRON-compatible CT: K8AC-CT200L
Only the K8AB-AS3 can be used for AC operation at both 100 and 200 A.

• DIP Switch Function Selection

Various relay functions can be selected using a DIP switch. This means that the number of models required can be reduced to 1/8 what it had been simply by installing a relay like the K8AB-AS. An added advantage is that it reduces the inventory of maintenance parts.

Example: K8AB-AS 1-Phase Current Relay

	DIP switch	Function
Resetting method	SW2	OFF Manual reset
		ON Automatic reset
Relay drive method	SW3	OFF Normally open
		ON Normally closed
Operating mode	SW4	OFF Over current
		ON Under current

* The operating time can be set to 0.1 to 30 s.
* SW1 is not used.



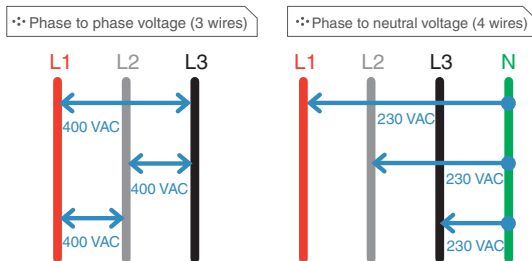
4

Single K8AB Monitors 3-phase Power Supply with 3 or 4 Wires (K8AB-PM, K8AB-PA, and K8AB-PW)

OMRON Low-voltage Monitoring Relays can be used to monitor 3-phase power supplies with 3 or 4 wires simply by changing DIP switch settings.

A Single K8AB Can Monitor a 3-phase Power Supply Anywhere in the World

Reduces Maintenance Parts Inventory

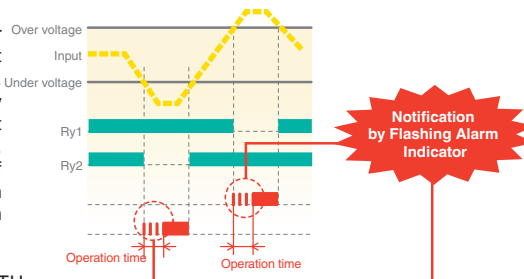


	SW3		ON	ON	OFF	OFF	
	SW4		ON	OFF	ON	OFF	
K8AB-P□1	SW2	ON	P-P	200 V	220 V	230 V	240 V
		OFF	P-N	115 V	127 V	133 V	138 V
K8AB-P□2	SW2	ON	P-P	380 V	400 V	415 V	480 V
		OFF	P-N	220 V	230 V	240 V	277 V

5

Operation Level Indication by Flashing Alarm Indicator

Checking the operating status has never been convenient because of the time it takes to reach the preset operation time. The K8AB eliminates this problem by featuring a flashing alarm indicator that clearly indicates the operating status. This has greatly simplified the task of checking on-site status particularly when operation settings are changed or an error occurs.



Going to trip soon!

Flashing The trip alarm operates when the input reaches the operation range and the preset operation time has elapsed.

Lit Indicates a continuous trip.

* Excluding the K8AB-PH and K8AB-TH.

•• DIN Track Mounting

Gang-mounting is also possible.



Wire Connection

2 × 2.5 mm² solid or 2 × 1.5 mm² standard ferrules.

Compliance with International Standards

A third party has certified CE mark compliance. This device is in compliance with UL certification requirements.



Application Examples

Measuring and Monitoring Relays

Chain Breakage Protection for Conveyors K8AB-AS

Relay output:
6 A at 250 VAC
(resistive load)

Alarm

CT Over current detection

K8AB-AS
Instantaneous
over current monitoring

Motor

Foreign object

Locked conveyor

• Purpose
When the motor locks up, its rotational torque may break the chain. To prevent that from happening, the relay must trip the instant it detects a motor lock error. A thermal relay cannot be used for chain protection because it takes too long to start operating.

• Advantages
The K8AB-AS offers effective alarms because it starts operating in 0.1 s or less.

(If a motor is used as the load, be careful that the inrush current does not exceed the allowable input range.)

Battery Voltage Checking K8AB-VS

Battery

Alarm

K8AB-VS
Under voltage
monitoring

• Purpose
The K8AB-VS is used to check battery charge levels.

• Advantages
The K8AB-VS can detect when the battery charge is low.

(The 24-VDC model of the K8AB-VS is not insulated between the inputs and the power supply. Use an insulated power supply when using this model.)

Protection against Idle Running of a Submersible Pump K8AB-AS

Relay output:
6 A at 250 VAC
(resistive load)

Alarm

CT Under current detection

K8AB-AS
Under current
monitoring

Pump

Submersible pump

idle pump operation

• Purpose
A submersible pump will malfunction if it begins to operate out of water, so instantaneous detection of this kind of idle operation is essential.

• Advantages
The K8AB-AS can detect idle pump operation by detecting under current levels.

Monitoring the Control Power Supply at Communication Bases K8AB-VW

220 VAC

K8AB-VW
Over and Under Voltage
Monitoring

Power supply
monitoring

24 VDC

Alarm

Wireless
communications base

Over voltage

Under voltage

Voltage
input level

Over voltage
alarm indicator

Under voltage
alarm indicator

Over voltage
alarm relay

Under voltage
alarm relay

T1: 1 s or 5 s selection (Timer when the control power supply is turned ON.)

• Purpose
Communications bases must be carefully monitored because the effects of a power outage or voltage drop would be highly detrimental to communications. This is why the K8AB-VW monitors the control panel power supply for over voltage and under voltage levels.

• Advantages
It can detect over voltage and under voltage as well as output individual over voltage and under voltage alarms using SPDT relays.

Bulb Burnout Detection K8AB-AS

Power supply

K8AB-AS
Under current
monitoring

Under current detection

Bulb

External CT

Alarm

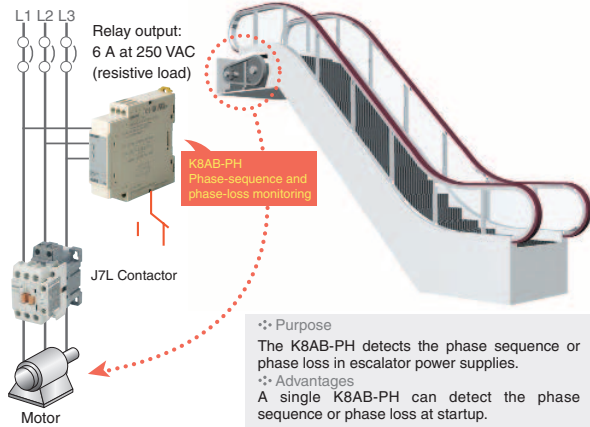
• Purpose
The K8AB-AS is used to detect burned out light bulbs.

• Advantages
The K8AB-AS can detect burned out light bulbs by detecting under current levels. The Relay's sensitivity can be adjusted to detect burned out light bulbs even in applications where multiple light bulbs are used.

(The 24-VDC model of the K8AB-VW is not insulated between the inputs and the power supply. Use an insulated power supply when using this model.)

Monitoring Phase Sequence/ Phase Loss for Escalators

K8AB-PH

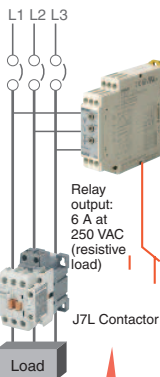


- Purpose
The K8AB-PH detects the phase sequence or phase loss in escalator power supplies.
- Advantages
A single K8AB-PH can detect the phase sequence or phase loss at startup.

(Phase loss during motor operation cannot be detected.)

Monitoring Compressor Power Supplies

K8AB-PM



• Purpose

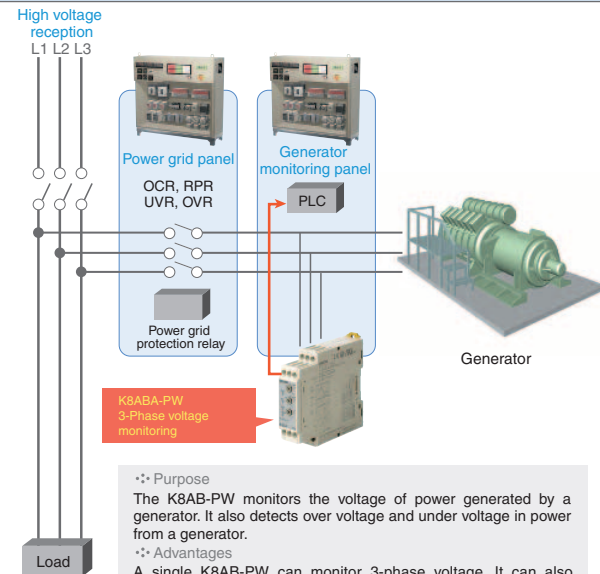
Compressors cannot operate correctly under conditions such as under voltage, asymmetry voltage, phase loss, or phase sequence. The K8AB-PM can be used to monitor 3-phase voltage, the phase sequence, and phase loss.

• Advantages

A single K8AB-PM can monitor over voltage, under voltage, the phase sequence and phase loss in 3-phase voltage. It can also output individual alarms for over voltage or under voltage using an SPDT relay. The K8AB-PM is able to recognize which alarm has occurred.

Monitoring Generated Voltage

K8AB-PW



• Purpose

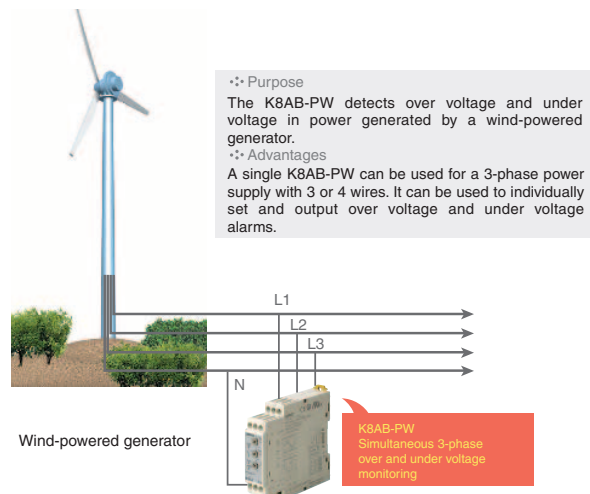
The K8AB-PW monitors the voltage of power generated by a generator. It also detects over voltage and under voltage in power from a generator.

• Advantages

A single K8AB-PW can monitor 3-phase voltage. It can also output individual alarms for over voltage and under voltage using SPDT relays because it features two outputs with SPDT relays. The voltage measurement range can be switched from 200 to 480 VAC and the K8AB-PW can be switched to monitor phase voltage or line voltage.

Monitoring Voltage Generated by Wind-powered Generators

K8AB-PW



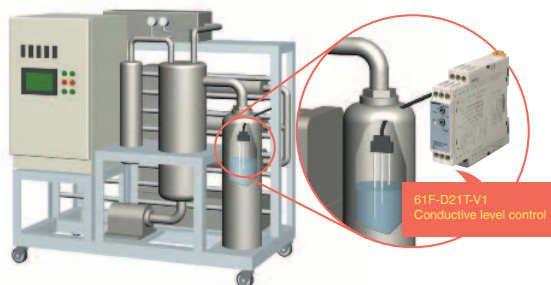
• Purpose

The K8AB-PW detects over voltage and under voltage in power generated by a wind-powered generator.

• Advantages

A single K8AB-PW can be used for a 3-phase power supply with 3 or 4 wires. It can be used to individually set and output over voltage and under voltage alarms.

Controlling the Liquid Level in a Tank



• Purpose

The 61F-D21T-V1 can be used to control the liquid level in a tank.

• Advantages

- Because the sensitivity resistance can be adjusted from 10 to 100 kW, there is no need to change models to match different liquid types and concentrations.
- You can also set the operation time in a range of 0.1 to 10 seconds to prevent operating errors due to chattering.
- Water supply and draining control can be changed by DIP switch.

Product name	Model	Nominal input	Supply voltage	Output relays	Housing	
1-Phase Current Relay	K8AB-AS1	I1-COM: 2 to 20 mA AC/DC I2-COM: 10 to 100 mA AC/DC I3-COM: 50 to 500 mA AC/DC	24 VDC	One SPDT relay	DIN 22.5 mm	
			24 VAC			
			100 to 115 VAC			
			200 to 230 VAC			
	K8AB-AS2	I1-COM: 0.1 to 1 A AC/DC I2-COM: 0.5 to 5 A AC/DC I3-COM: 0.8 to 8 A AC/DC	24 VDC			
			24 VAC			
			100 to 115 VAC			
	K8AB-AS3	I2-COM: 10 to 100 A AC I3-COM: 20 to 200 A AC *1	24 VDC			
			24 VAC			
		100 to 115 VAC				
		200 to 230 VAC				
1-Phase Voltage Relay	K8AB-VS1	V1-COM: 6 to 60 mV AC/DC V2-COM: 10 to 100 mV AC/DC V3-COM: 30 to 300 mV AC/DC	24 VDC	One SPDT relay		
			24 VAC			
			100 to 115 VAC			
			200 to 230 VAC			
	K8AB-VS2	V1-COM: 1 to 10 V AC/DC V2-COM: 3 to 30 V AC/DC V3-COM: 15 to 150 V AC/DC	24 VDC			
			24 VAC			
			100 to 115 VAC			
	K8AB-VS3	V1-COM: 20 to 200 V AC/DC V1-COM: 30 to 300 V AC/DC V1-COM: 60 to 600 V AC/DC	24 VDC			
			24 VAC			
		100 to 115 VAC				
		200 to 230 VAC				
1-Phase Voltage Relay	K8AB-VW1	V1-COM: 6 to 60 mV AC/DC V2-COM: 10 to 100 mV AC/DC V3-COM: 30 to 300 mV AC/DC	24 VDC	Two SPDT relays		
			24 VAC			
			100 to 115 VAC			
			200 to 230 VAC			
	K8AB-VW2	V1-COM: 1 to 10 V AC/DC V2-COM: 3 to 30 V AC/DC V3-COM: 15 to 150 V AC/DC	24 VDC			
			24 VAC			
			100 to 115 VAC			
	K8AB-VW3	V1-COM: 20 to 200 V AC/DC V1-COM: 30 to 300 V AC/DC V1-COM: 60 to 600 V AC/DC	24 VDC			
			24 VAC			
		100 to 115 VAC				
		200 to 230 VAC				
Phase-sequence, Phase-loss Relay	K8AB-PH1	200 to 500 VAC	Same as the input voltage.	One SPDT relay		
3-Phase Voltage, Phase-sequence, Phase-loss Relay	K8AB-PM1	200, 220, 230, or 240 VAC	Same as the input voltage.	Two SPDT relays		
	K8AB-PM2	380, 400, 415, or 480 VAC				
3-Phase Asymmetry, Phase-sequence, Phase-loss Relay	K8AB-PA1	200, 220, 230, or 240 VAC		One SPDT relay		
	K8AB-PA2	380, 400, 415, or 480 VAC				
3-Phase Voltage Relay	K8AB-PW1	200, 220, 230, or 240 VAC		Two SPDT relays		
	K8AB-PW2	380, 400, 415, or 480 VAC				
Temperature Monitoring Relay	K8AB-TH11S	Thermocouple/Pt100 (0 to 399°C/F)		100 to 240 VAC	One SPDT relay	
	K8AB-TH12S	Thermocouple (setting unit of 10°C/F)		100 to 240 VAC		
	K8AB-TH11S	Thermocouple/Pt100 (0 to 399°C/F)		24 V AC/DC		
	K8AB-TH12S	Thermocouple (setting unit of 10°C/F)	24 V AC/DC			

*1 The K8AC-CT200L CT is required to use the K8AB-AS3. Use the K8AB-AS to use a commercially available CT.

*2 Insulation is provided for AC power supply, but not for DC power supply.

Product name	Model	Operating resistance	Supply voltage	Output relays	Housing
Conductive Level Controller	61F-D21T-V1	10 to 100 kΩ	24 VAC	One SPDT relay	DIN 22.5 mm
			115 VAC		
			220 to 230 VAC		

- The application examples provided in this catalog are for reference only. Check functions and safety of the equipment before use.
- Never use the products for any application requiring special safety requirements, such as nuclear energy control systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, or other application involving serious risk to life or property, without ensuring that the system as a whole has been designed to address the risks, and that the OMRON products are properly rated and installed for the intended use within the overall equipment or system.

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