

MEASURING AND MONITORING RELAYS



Slim Models for Monitoring Current and Voltage



Measuring and Monitoring Relays
**Measuring and
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. Eight 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

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



- 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			
K8AB-AS	■						One SPDT relay	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 1.)	UL
K8AB-VS		■					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 1.)	UL
K8AB-VW			■				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 1.)	UL
K8AB-PH				■	■		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 1.)	UL
K8AB-PM				■	■	■	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 1.)	UL
K8AB-PA				■	■	■	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 1.)	UL
K8AB-PW						■	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 1.)	UL
61F-D21T							Conductive Level Controller	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 1.)	UL

Note 1: CE mark compliance certified by third party.
 Note 2: UL certification pending.



Comprehensive Lineup

 <ul style="list-style-type: none"> 3-/4-wire selection for 3-phase power supply Input range selection 3-Phase Asymmetry Sequence, Loss Relay <p>K8AB-PA</p>	 <ul style="list-style-type: none"> 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 <p>K8AB-PM</p>	 <ul style="list-style-type: none"> Over and under voltage 3-/4-wire selection for 3-phase power supply Input range selection 3-Phase Voltage Relay <p>K8AB-PW</p>	 <ul style="list-style-type: none"> Variable operating resistance Water supply/draining selection Operation time setting Conductive Level Controller <p>61F-D21T</p>
--	--	--	--

1

Slim 22.5-mm Design Features Two SPDT Relay Outputs

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.

Two SPDT Relay Outputs *Industry First!*

Relay 1 over voltage Relay 2 under voltage

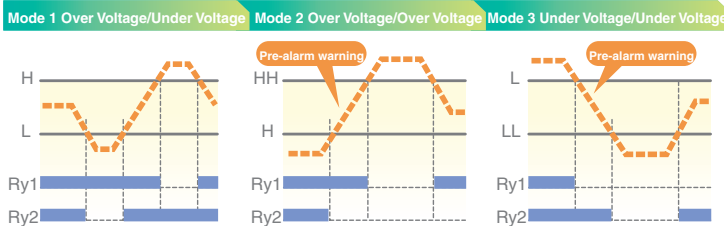
Contact capacity: 6 A at 250 VAC

Space savings
Cut by 50%
(Compared to previous models)

DIN-sized at 22.5 mm

2

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

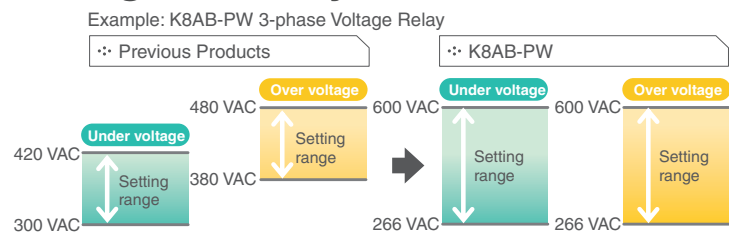


In plants and other sites that operate 365 days a year, unexpected shutdowns must be kept to an absolute minimum. OMRON addresses this with the K8AB-VW featuring a two-level pre-alarm monitoring mode with individual trip outputs and pre-alarm warning settings (H/HH alarm and L/LL alarm). The K8AB-VW makes scheduled maintenance viable 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

The highly restrictive voltage settings that posed such a problem in the past are no longer a concern. OMRON's new Relays offer full-span over voltage and under voltage range settings for unprecedented voltage monitoring flexibility.



- 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.

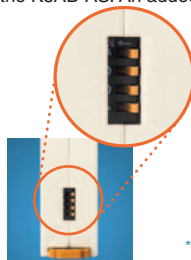
	CT current on secondary side	Applicable model
Commercial CTs	0 to 1 A AC	K8AB-AS2
	0 to 5 A AC	

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
Reset mode	SW2	OFF Manual reset
		ON Automatic reset
Relay operation mode	SW3	OFF Normally open
		ON Normally closed
Monitoring mode	SW4	OFF Over current
		ON Under current

* A single K8AB-AS can be used for both instantaneous and time delay operation.
* SW1 is not used.

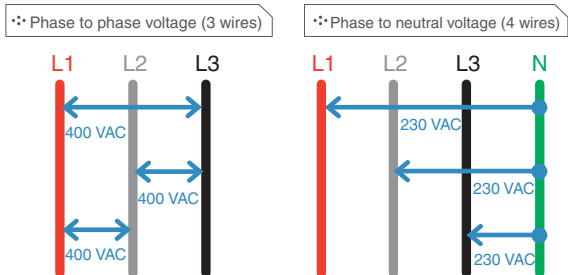


4

Single K8AB Monitors 3-phase Power Supply with 3 or 4 Wires

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



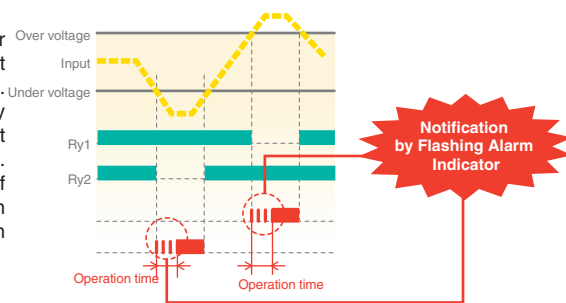
Reduces Maintenance Parts Inventory

	SW3		ON	ON	OFF	OFF	
	SW4		ON	OFF	ON	OFF	
K8AB-PW1 (240 V)	SW2	ON	P-P	200 V	220 V	230 V	240 V
		OFF	P-N	115 V	127 V	133 V	138 V
K8AB-PW2 (480 V)	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.



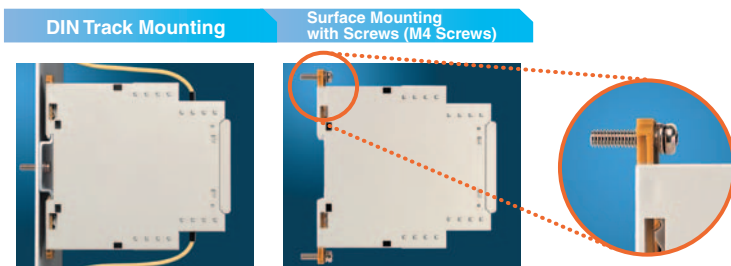
Going to trip soon!

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

Lit Indicates a continuous trip.

Each K8AB Mounts Two Ways

The K8AB can be surface-mounted with screws by sliding out the DIN Track hooks.



* 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. Approval for UL certification is pending.



Application Examples

Measuring and Monitoring Relays ❖❖

Chain Breakage Protection for Conveyors K8AB-AS

Locked conveyor

L1 L2 L3
J7L Contactor
CT Over current detection
K8AB-AS Instantaneous over current monitoring
Motor

Foreign object

❖❖ 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 chain protection because it starts operating in 0.1 s or less.

Battery Voltage Checking K8AB-VS

Battery

K8AB-VS Under voltage monitoring

Alarm

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

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

Protection against Idle Running of a Submersible Pump K8AB-AS

Idle pump operation

L1 L2 L3
J7L Contactor
CT Under current detection
K8AB-AS Under current monitoring
Pump

Submersible pump

❖❖ Purpose
A submersible pump must be turned OFF as soon as it begins to operate out of water, or it will immediately malfunction. 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

Alarm

Wireless communications base

Power supply monitoring

24 VDC

Over voltage

Voltage input level

Under voltage

Over voltage alarm indicator

Under voltage alarm indicator

Over voltage alarm relay

Under voltage alarm relay

Flashing

Lit

T

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 also output individual over voltage and under voltage alarms using SPDT relays, and can provide a pre-alarm warning output to eliminate system down time.

Bulb Burnout Detection K8AB-AS

Power supply

K8AB-AS Under current monitoring

Under current detection

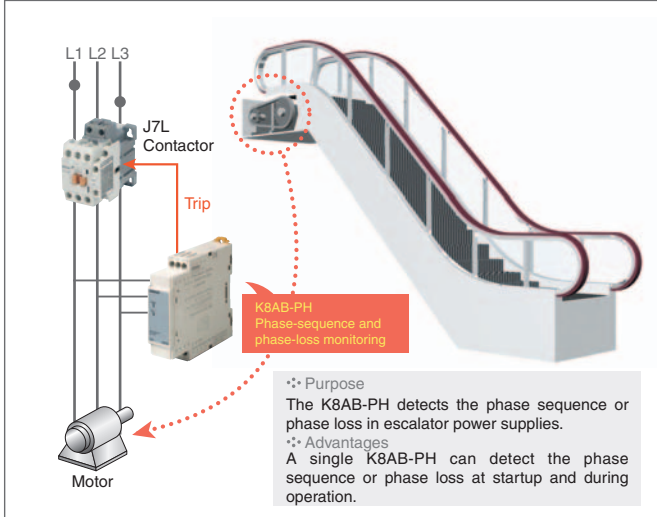
Bulb

External CT

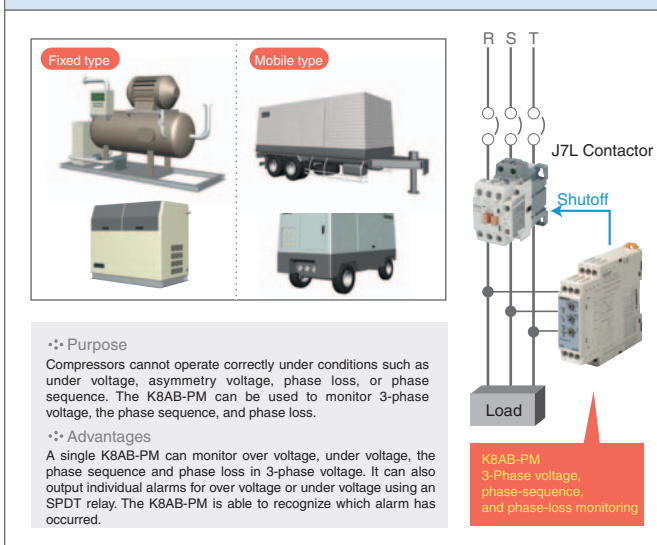
❖❖ Purpose
The K8AB-AS is used to detect burned out light bulbs.

❖❖ 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.

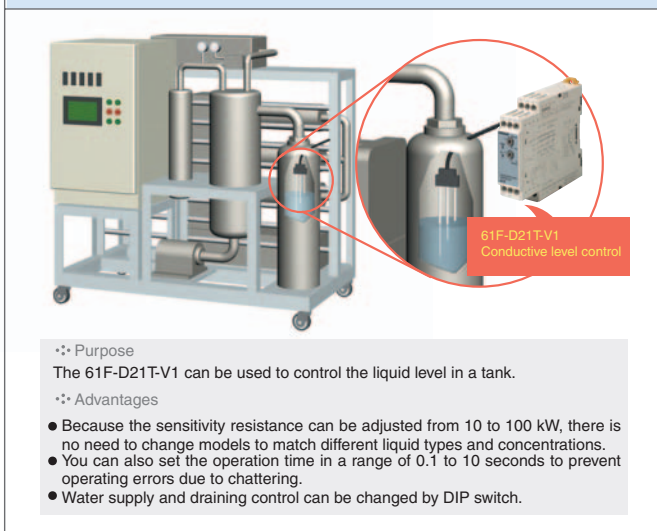
Monitoring Phase Sequence/Phase Loss for Escalators **K8AB-PH**



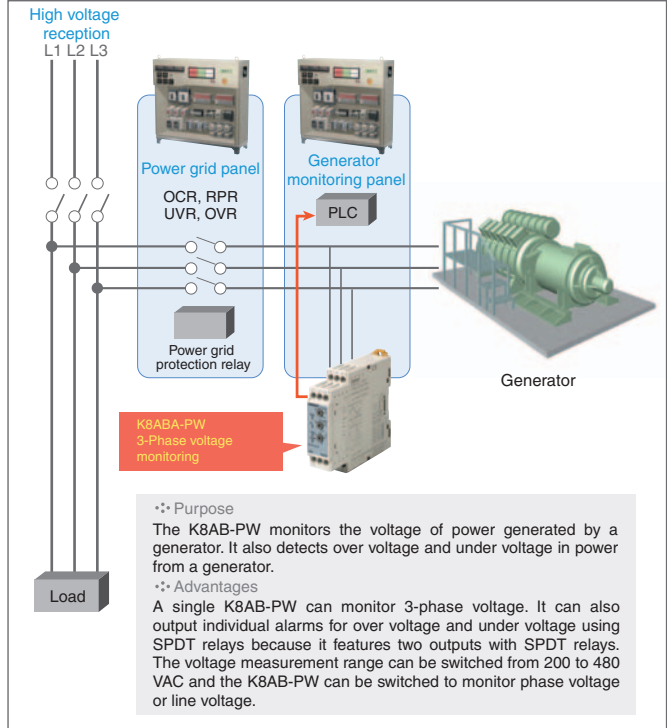
Monitoring Compressor Power Supplies **K8AB-PM**



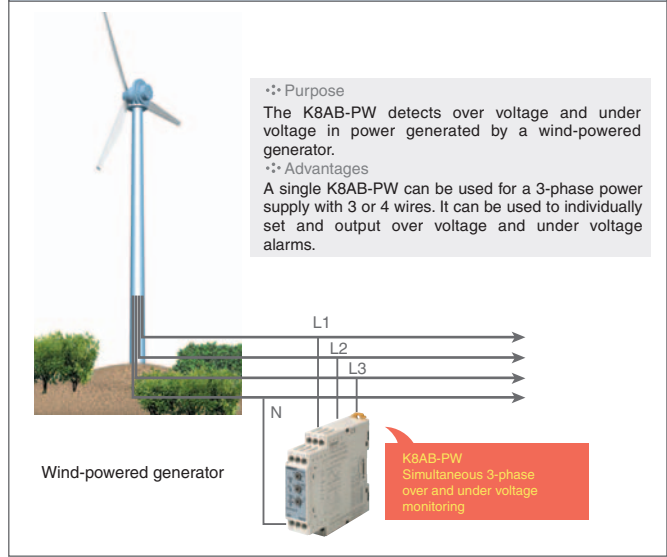
Controlling the Liquid Level in a Tank **61F-D21T-V1**



Monitoring Generated Voltage **K8AB-PW**



Monitoring Voltage Generated by Wind-powered Generators **K8AB-PW**



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					
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					
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					
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
3-Phase Asymmetry, Phase-sequence, Phase-loss Relay	K8AB-PM2	380, 400, 415, or 480 VAC	One SPDT relay		
				3-Phase Voltage Relay	K8AB-PA1
K8AB-PA2	380, 400, 415, or 480 VAC				
		K8AB-PW1	200, 220, 230, or 240 VAC		
K8AB-PW2	380, 400, 415, or 480 VAC				

*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.

OMRON Corporation Industrial Automation Company

Industrial Devices and Components Division H.Q.
Industrial Control Components Department

Shiokoji Horikawa, Shimogyo-ku,
Kyoto, 600-8530 Japan
Tel: (81)75-344-7119/Fax: (81)75-344-7149

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, NL-2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
1 East Commerce Drive, Schaumburg, IL 60173
U.S.A.
Tel: (1)847-843-7900/Fax: (1)847-843-8568

OMRON ASIA PACIFIC PTE. LTD.
83 Clemenceau Avenue,
#11-01, UE Square,
239920 Singapore
Tel: (65)6835-3011/Fax: (65)6835-2711

OMRON CHINA CO., LTD. BEIJING OFFICE
Room 1028, Office Building,
Beijing Capital Times Square,
No. 88 West Chang'an Road,
Beijing, 100031 China
Tel: (86)10-8391-3005/Fax: (86)10-8391-3688

Authorized Distributor: