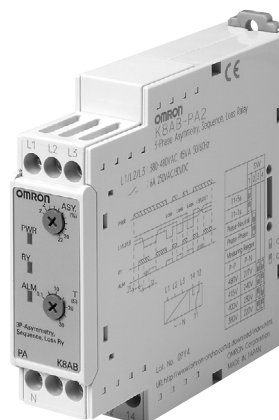


Three-phase Asymmetry and Phase-sequence Phase-loss Relay K8AB-PA

Ideal for 3-phase voltage asymmetry monitoring for industrial facilities and equipment.

- Monitor voltage asymmetry, phase sequence, and phase loss for three-phase 3-wire or 4-wire power supplies with just one Unit.
- Switch setting for 3-phase 3-wire or 3-phase 4-wire power supply.
- One SPDT output relay, 6 A at 250 VAC (resistive load).
- World-wide power specifications supported by one Unit (switchable).
- Relay warning status easily monitoring using LED indicator.
- Easy wiring with ferrules
2 × 2.5 mm² solid or 2 × 1.5 mm² standard ferrules.
- CE mark compliance certified by third party.
UL certification pending.



CE

Model Number Structure

■ Model Number Legend

K8AB-□□

1 2 3

1. Basic Model

K8AB: Measuring and Monitoring Relays

2. Functions

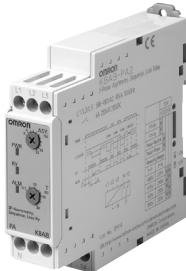
PA: Three-phase Asymmetry and Phase-sequence Phase-loss Relay.

3. Rated Input Voltage

- 1: AC 115, 127, 133, 138, 200, 220, 230, 240
- 2: AC 220, 230, 240, 277, 380, 400, 415, 480

Ordering Information

List of Models

Three-phase Asymmetry and Phase-sequence Phase-loss Relay	Rated input (See note 2.)		Model
	3-phase 3-wire mode	AC 200, 220, 230, 240	K8AB-PA1
	3-phase 4-wire mode	AC 115, 127, 133, 138	
	3-phase 3-wire mode	AC 380, 400, 415, 480	K8AB-PA2
	3-phase 4-wire mode	AC 220, 230, 240, 277	

Note: 1. Three-phase 3-wire or 4-wire and the input range are switched using a switch.
2. The power supply is shared with the rated input voltage.

Ratings and Specifications

Ratings

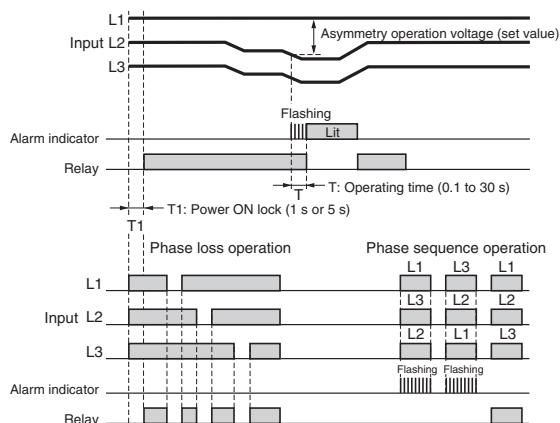
Rated input voltage	K8AB-PA1	Three-phase, three-wire mode: 200, 220, 230, 240 VAC Three-phase, four-wire mode: 115, 127, 133, 138 VAC
	K8AB-PA2	Three-phase, three-wire mode: 380, 400, 415, 480 VAC Three-phase, four-wire mode: 220, 230, 240, 277 VAC
Asymmetry operation (ASY.)	Operating value setting range	Asymmetry rate: 2% to 22%
	Operating value	100% operation at set value Asymmetry operating value = Rated input voltage x Asymmetry set value [%] The asymmetry operation will function when the difference between the highest and lowest voltage phases equals or exceeds the asymmetry operating value.
Reset (HYS.)	Hysteresis	5% of operating value (fixed)
	Resetting method	Automatic reset
Operating time (T)	Asymmetry	0.1 s to 30 s (Value when input rapidly changes from 0% to 120%.)
	Phase sequence, phase loss	0.1 s max. (Value when input rapidly changes from 0% to 100%.)
Power ON lock (LOCK)		1 s or 5 s (Value when input rapidly changes from 0% to 100%. The operating time is the shortest at this point.)
Setting accuracy		±10% of full scale
Time error		±10% of set value (Minimum error: 50 ms)
Input frequency		45 to 65 Hz
Input impedance		100 kΩ min.
Indicators		Power (PWR): Green LED, Relay output (RY): Yellow LED, Alarm outputs (ALM1/2): Red LED
Output relays		One SPDT relay (6 A at 250 VAC, resistive load) , normally closed operation (normally ON)

Cat. No. N147-E1-01 Three-phase Asymmetry and Phase-sequence Phase-loss Relay **K8AB-PA**

Connections

■ Wiring Diagram

Voltage Asymmetry and Phase Sequence/Phase Loss Operation Diagram

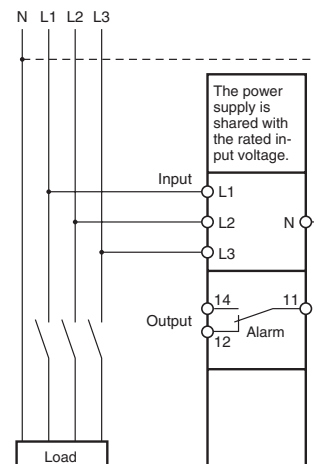


Note: 1. The K8AB-PA output relay is normally operative.
2. The power ON lock prevents unnecessary alarms from being generated during the instable period when the power is first turned on. There is no relay output during timer operation.

Calculating the Asymmetry Operating Voltage

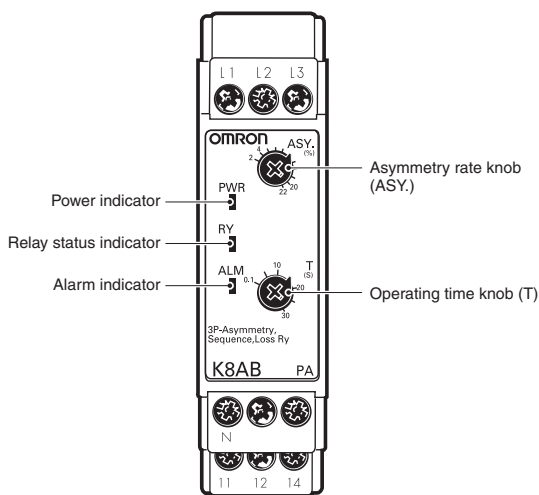
Asymmetry operation condition = (Highest voltage – Lowest voltage) > Asymmetry operating voltage
Asymmetry operating voltage = Rated input voltage (V) × Asymmetry set value (%)

Note: The rated input voltage is selected and set with the DIP switch.



Nomenclature

■ Front



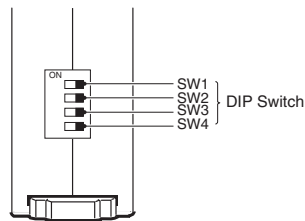
Indicators

Item	Meaning
Power indicator (PWR: Green)	Lit when power is being supplied.
Relay status indicator (RY: Yellow)	Lit when relay is operating (normally lit).
Alarm indicator (ALM: Red)	Asymmetry voltage error indicator The indicator flashes to indicate the error status after the input has exceeded the threshold value while the operating time is being clocked.

Setting Knobs

Item	Usage
Asymmetry rate knob (SV)	Used to set the asymmetry rate to 2% to 22%.
Operating time knob (T)	Used to set the operating time to 0.1 to 30 s.

Bottom



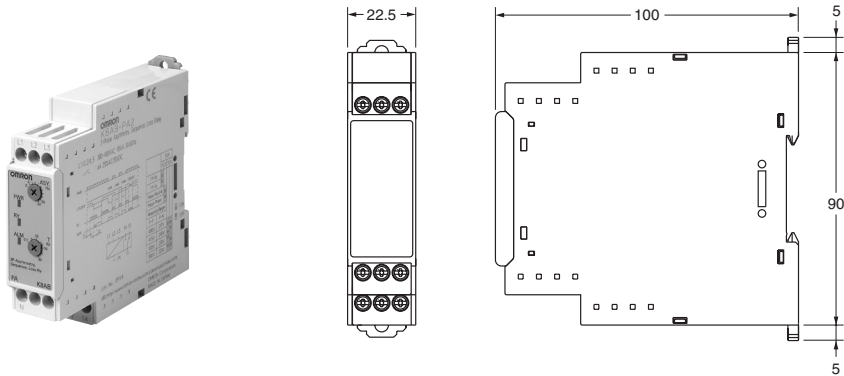
DIP Switch Functions

		Function		Default
SW1	Power ON lock time	OFF	1 s	OFF
		ON	5 s	
SW2	Monitoring mode selector	OFF	3-phase 3-wire power monitoring mode	OFF
		ON	3-phase 4-wire power monitoring mode	

SW3	SW4	Function		Default	
			3-phase 3-wire mode	3-phase 4-wire mode	SW3 SW4
OFF	OFF	Rated input voltage switch (K8AB-PA1)	200 VAC	115 VAC	OFF OFF
ON	OFF		220 VAC	127 VAC	
OFF	ON		230 VAC	133 VAC	
ON	ON		240 VAC	138 VAC	
OFF	OFF	Rated input voltage switch (K8AB-PA2)	380 VAC	220 VAC	OFF OFF
ON	OFF		400 VAC	230 VAC	
OFF	ON		415 VAC	240 VAC	
ON	ON		480 VAC	277 VAC	

Dimensions

K8AB-PA



Safety Precautions

■ Precautions for Safe Use

Make sure to follow the instructions below to ensure safety.

1. Do not use or keep this product in the following environments.
 - Outdoors, or places subject to direct sunlight or wearing weather.
 - Places where dust, iron powder, or corrosive gases (in particular, sulfuric or ammonia gas) exist.
 - Places subject to static electricity or inductive noise.
 - Places where water or oil come in contact with the product.
2. Make sure to install this product in the correct direction.
3. There is a remote risk of electric shock. Do not touch terminals while electricity is being supplied.
4. Make sure to thoroughly understand all instructions in the Instructions Manual before handling this product.
5. Make sure to confirm terminal makings and polarity for correct wiring.
6. Tighten terminal screws firmly using the following torque.
Recommended torque: 0.54 N·m
7. Operating ambient temperature and humidity for this product must be within the indicated rating when using this product.
8. There is a remote risk of explosion. Do not use this product where flammable or explosive gas exists.
9. Make sure that no weight rests on the product after installation.
10. To enable an operator to turn off this product easily, install switches or circuit breakers that conform to relevant requirements of IEC60947-1 and IEC60947-3, and label them appropriately.

■ Precautions for Correct Use

For Proper Use

1. Do not use the product in the following locations.
 - Places subject to radiant heat from heat generating devices.
 - Places subject to vibrations or physical shocks.
2. Make sure to use setting values appropriate for the controlled object. Failure to do so can cause unintended operation, and may result in accident or corruption of the product.
3. Do not use thinner or similar solvent for cleaning. Use commercial alcohol.
4. When discarding, properly dispose of the product as industrial waste.
5. Only use this product within a board whose structure allows no possibility for fire to escape.

About Installation

1. When wiring, use only recommended crimp terminals.
2. Do not block areas around the product for proper dissipation of heat. (If you do not secure space for heat dissipation, life cycle of the product will be compromised.)
3. To avoid electrical shocks, make sure that power is not supplied to the product while wiring.
4. To avoid electrical shocks, make sure that power is not supplied to the product when performing DIP switch settings.

Noise Countermeasures

1. Do not install the product near devices generating strong high frequency waves or surges.
2. When using a noise filter, check the voltage and current and install it as close to the product as possible.
3. In order to prevent inductive noise, wire the lines connected to the product separately from power lines carrying high voltages or currents. Do not wire in parallel with or on the same cable as power lines.
Other measures for reducing noise include running lines along separate ducts and using shield lines.

To avoid faulty operations, malfunctions, or failure, observe the following operating instructions.

1. When turning on the power, make sure to realize rated voltage within 1 second from the time of first supply of electricity.
2. Make sure to use power supply for operations, inputs, and transformer with the appropriate capacity and rated burden.
3. Maintenance and handling of this product may only be performed by qualified personnel.
4. Distortion ratio of input wave forms must be 30% or less. Use of this product with circuits that have large distortion in wave forms may result in unwanted operations.
5. Using this product for thyristor controls or inverters will result in errors.
6. When setting the volume, adjust the control from the minimum side to the maximum side.

Warranty and Application Considerations

Read and Understand this Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

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Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN 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.

Disclaimers

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability*.

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. N147-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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