

Model K8AB-PA

Measuring & Monitoring Relay

English Instructions Manual

Thank you for purchasing an OMRON product. In this Instructions Manual, you will find information about this product's features, capabilities, and operating instructions. Please observe the following when using this product.

- This product is designed for use by qualified electrical engineer.
- Read and understand this Instructions Manual thoroughly, and make proper use of this product.
- Keep this Instructions Manual for future reference.

OMRON Corporation

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Precautions for Safe Use

Make sure to follow the instructions below to ensure safety.

- 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.
- Make sure to install this product in the correct direction.
- There is a remote risk of electric shock. Do not touch terminals while electricity is being supplied.
- Make sure to thoroughly understand all instructions in the Instructions Manual before handling this product.
- Make sure to confirm terminal markings and polarity for correct wiring.
- Ensure that terminal screws have been tightened firmly. Recommended torque : 0.49 N · m Assured torque : 0.59 N · m
- Operating ambient temperature and humidity for this product must be within the indicated rating when using this product.
- There is a remote risk of explosion. Do not use this product where flammable or explosive gas exists.
- Make sure that no weight rests on the product after installation.
- 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.
- For DC input, use a SELV power-supply capable of overcurrent protection. Specifically, a SELV power-supply has a double or reinforced insulation for input and output, and output voltage of 30Vr.m.s with 42.4V at peak or DC60V maximum. Recommended power-supply : Model S8VS-06024 (Omron product)
- Do not turn a setting volume beyond the scope of movement.

Precautions for Correct Use

- For Proper Use**
 - 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.
 - 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.
 - Do not use thinner or similar solvent for cleaning. Use commercial alcohol.
 - When discarding, properly dispose of the product as industrial waste.
 - Only use this product within a board whose structure allows no possibility for fire to escape.
 - This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.
- About Installation**
 - When wiring, use only recommended crimp terminals.
 - 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.)
 - To avoid electrical shocks, make sure that power is not supplied to the product while wiring.
 - To avoid electrical shocks, make sure that power is not supplied to the product when performing DIP switch settings.
- Noise Countermeasures**
 - Do not install the product near devices generating strong high frequency waves or surges.
 - When using a noise filter, check the voltage and current and install it as close to the product as possible.
 - 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.**
 - Properly connect phase sequence.
 - When turning on the power, make sure to realize rated voltage within 1 second from the time of first supply of electricity.
 - Make sure to use power supply for operations, inputs, and transformer with the appropriate capacity and rated burden.
 - Maintenance and handling of this product may only be performed by qualified personnel.
 - 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.

- The type K8AB-PA can only detect phase interruption when the interruption occurs on the side where power supply exists from the point of connection, and interruption on the loading side cannot be detected.
- This product cannot be used for thyristor controls or inverters.
- When setting the volume, adjust the control from the minimum side to the maximum side.

Applicable Standards

| | |
|--|--|
| Installation environment | Installation Category III, Pollution Degree 2 |
| Application Standard | EN60255-5/-6 |
| Safety Standard | EN60664-1 |
| EMC | (EMI) EN61326+A1 Industrial applications |
| | Terminal interference wave voltage CISPR11 Group1, ClassA : CISPR16-1/-2 |
| | Electromagnetic interference wave CISPR11 Group1, ClassA : CISPR16-1/-2 |
| | (EMS) EN61326+A1 Industrial applications |
| | Electrostatic discharge EN61000-4-2 : 4kV(Contact) 8kV(In air) |
| | Radiating radio-frequency electromagnetic field EN61000-4-3 : 10V/m 1kHz Sine Wave Amplitude Modulation (80MHz to 1GHz) |
| | Burst EN61000-4-4 : 2kV(Power Line) 1kV(I/O Signal line) |
| | Surge EN61000-4-5 : 1kV with line (Power Line) 2kV with ground (Power Line) |
| | Conducted RF EN61000-4-6 : 3V(0.15 to 80MHz) |
| | Power frequency magnetic field immunity EN61000-4-8 : 30A/m |
| Voltage dip/Short interruptions EN61000-4-11 : 0.5 Cycle, 0.180" each polarity 100% (Rated Voltage) | |

Overview

This product is an electric controller for outputting an alarm upon detection of three-phase voltage.

[3-phase Asymmetry, Phase-sequence, Phase-loss Relay]

Specifications

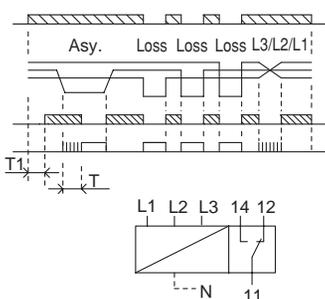
Rating

| | |
|---------------------------------------|--|
| Dielectric Resistance | 20MΩ minimum (at 500V) Between electric circuit and case |
| Dielectric Withstanding Voltage | 2000V for 1 minute Between electric circuit and case |
| Noise Immunity | ±1,500V on power-supply terminals in normal or common mode(Square wave with 1 ns at rearing Pulse duration 1 μs/100ns) |
| Permissible Voltage Variability Range | 85 to 110% of rated power-supply voltage |
| Vibration Resistance | Vibrations : 10 to 55Hz, Acceleration : 50m/s ² , X,Y,Z Directions : 5 min X 10 scanning |
| Shock Resistance | 150m/s ² (however, 100m/s ² at relay contact point) 3 times each in 3 axis and 6 directions |
| Input Range | -PA1 P-P AC200/220/230/240V P-N AC115/127/133/139V |
| | -PA2 P-P AC380/400/415/480V P-N AC219/231/240/277V |
| | -PA1 25VA maximum |
| | -PA2 45VA maximum |
| Input Load | -PA1 25VA maximum -PA2 45VA maximum |
| Overload Capacity | 115% of maximum input within range (continuous)/125%, 10s |

Output Rating

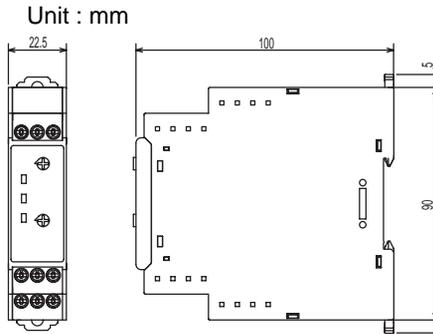
| | | |
|---|--|---------------------------------------|
| Relay Output | Rated Load | Resistance Load : AC250V 6A, DC30V 6A |
| | Maximum Contact Point Voltage | AC250V, DC30V |
| | Maximum Contact Point Current | AC6A, DC6A |
| | Maximum Opening and Closing Capacity | 1500VA, 180W |
| | Minimum Applicable Load (P Level) | DC5V, 10mA *Reference value |
| | Mechanical Life | 10 million times minimum |
| Electrical Life (Ambient temperature condition : +20°C) | Make 50 thousand time, Break 30 thousand times | |

Time Chart

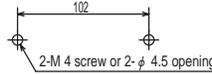


Installation

Diagram of Outside Dimensions



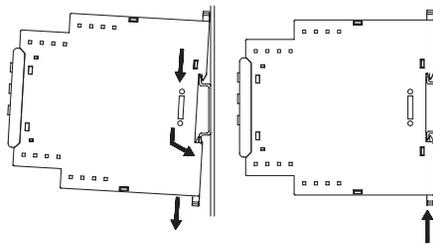
*Installation Procedure : Attaching to the DIN rail or attaching with front screws
*Measurements for attachment with front screws



*When attaching with front screws, draw out hooks on the bottom of the product to the left and right sides.

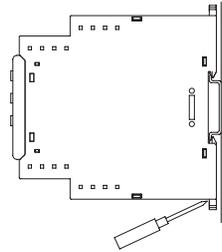
Installation Procedure

- Pull down the hook, and then fasten the upper tab onto the rail, fitting in the unit until the hook locks into place.



Uninstallation Procedure

- Using a flathead screwdriver or a similar tool, pull out the hook downward and lift the unit from the bottom.



Fixing Bracket

- Attach the type K8AB to the DIN rail.
 - DIN Rail Type PFP-100N (1,000mm) Type PFP-50N (500mm)

Recommended Crimp Terminal

| Recommended Crimp Terminal | Recommended Cable Diameter |
|---------------------------------------|----------------------------|
| AI 1,5-8BK (Phoenix Contact product) | AWG#16 |
| AI 1-8RD (Phoenix Contact product) | AWG#18 |
| AI 0,75-8GY (Phoenix Contact product) | AWG#18 |

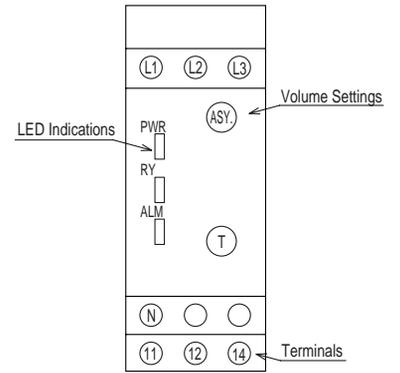
List of DIP Switch settings

| | SW | | | |
|------------------|-----|---|---|---|
| | 1 | 2 | 3 | 4 |
| T1=5s | ☐ | ☐ | ☐ | ☐ |
| T1=1s | ☐ | ☐ | ☐ | ☐ |
| Phase-Neutral | ☐ | ☐ | ☐ | ☐ |
| Phase-Phase | ☐ | ☐ | ☐ | ☐ |
| Measuring Ranges | | | | |
| P-P | P-N | | | |
| A | E | ☐ | ☐ | ☐ |
| B | F | ☐ | ☐ | ☐ |
| C | G | ☐ | ☐ | ☐ |
| D | H | ☐ | ☐ | ☐ |

Note : For the parts A through H, refer to the table below.

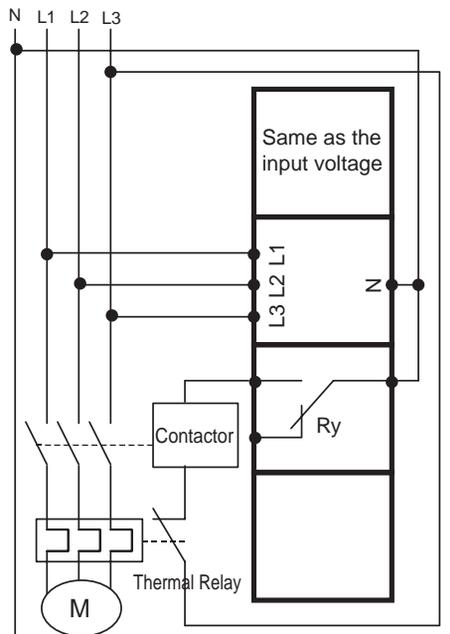
| Type | A | B | C | D | E | F | G | H |
|----------|------|------|------|------|------|------|------|------|
| K8AB-PA1 | 240V | 230V | 220V | 200V | 138V | 133V | 127V | 115V |
| K8AB-PA2 | 480V | 415V | 400V | 380V | 277V | 240V | 230V | 220V |

Terminal Connections



| Name | Terminal Name | Description |
|-----------------|---------------|---|
| Terminals | L1 | Input of three-phase voltage R-phase |
| | L2 | Input of three-phase voltage S-phase |
| | L3 | Input of three-phase voltage T-phase |
| | N | Input of three-phase voltage Neutral (Wiring necessary only for a three-phase four-wire system) |
| Volume Settings | 11 | Common for contact point output |
| | 12 | b-contact output |
| | 14 | a-contact output |
| LED Indications | ASY | Disequilibrium setting (2 to 22%) |
| | T | Operating time setting |
| | PWR | Power indication |
| LED Indications | RY | Contact point output status Light-on = 11-14 conduction |
| | ALM | Alarm operation status Light-on = Alarm output status |

Wiring Diagram



Suitability for use

OMRON shall not be responsible conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product. 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 PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

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