

**BEFORE USE ....**

Thank you for choosing us. Before use, please check contents of the package you received as outlined below. If you have any problems or questions with the product, please contact our sales office or representatives.

**■ PACKAGE INCLUDES:**

Angle sensor alarm (body + base socket) .....(1)

**■ MODEL NO.**

Confirm Model No. marking on the product to be exactly what you ordered.

**■ INSTRUCTION MANUAL**

This manual describes necessary points of caution when you use this product, including installation, connection, and basic maintenance procedures.

**■ CONNECTING WITH ANGLE SENSOR**

The unit must be adjusted in combination with the angle sensor that is actually used. Adjust input while monitoring with a multimeter connected to the terminal 6. Then, take appropriate measures for preventing short circuit. For details, refer to the sections of "CALIBRATION" and "ADJUSTMENT PROCEDURE."

**POINTS OF CAUTION**

**■ POWER INPUT RATING & OPERATIONAL RANGE**

- Locate the power input rating marked on the product and confirm its operational range as indicated below:  
**AC power:** Rating  $\pm 10\%$ , 50/60  $\pm 2$  Hz, approx. 2VA  
**DC power:** Rating  $\pm 10\%$ , approx. 2W  
 or 85 – 150V, approx. 2W for 110V rating

**■ GENERAL PRECAUTIONS**

- Before you remove the unit from its base socket or mount it, turn off the power supply and input signal for safety.

**■ ENVIRONMENT**

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside a proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -5 to +60°C (23 to 140°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

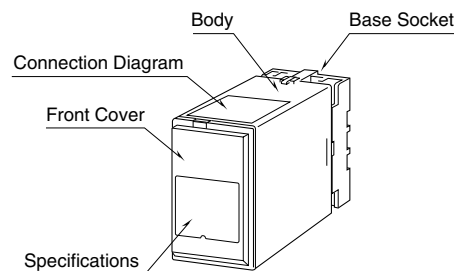
**■ WIRING**

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

**■ AND ....**

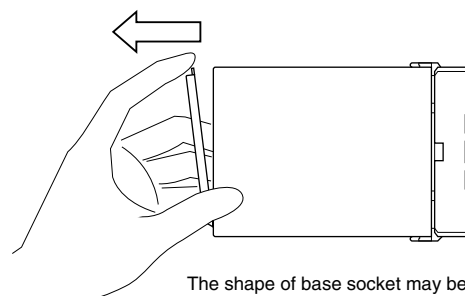
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

**COMPONENT IDENTIFICATION**



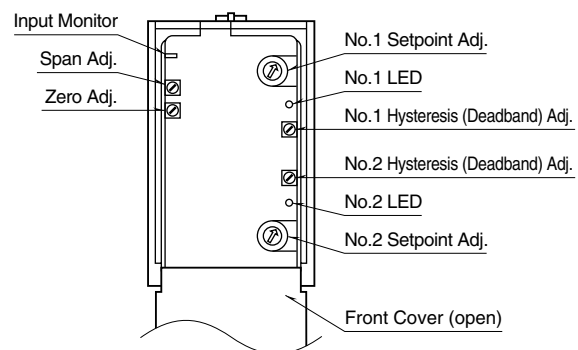
**■ HOW TO OPEN THE FRONT COVER**

Hang your finger on the hook at the top of the front cover and pull toward you.



The shape of base socket may be different for some models.

**■ FRONT PANEL CONFIGURATIONS**



**• Input Monitor**

**• Span Adj.**

**• Zero Adj.**

**• No. 1 Setpoint Adj.**

Used for adjusting No. 1 alarm setpoint.

**• No. 1 LED**

Turns on when No. 1 alarm is tripped.

**• No. 1 Deadband (hysteresis) Adj.**

Used for adjusting No. 1 deadband (hysteresis) within 1 – 100%.

**• No. 2 Deadband (hysteresis) Adj.**

Used for adjusting No. 2 deadband (hysteresis) within 1 – 100%.

**• No. 2 LED**

Turns on when No. 2 alarm is tripped.

**• No. 2 Setpoint Adj.**

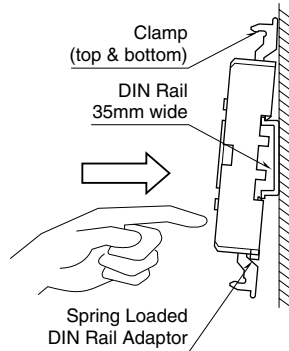
Used for adjusting No. 2 alarm setpoint.

## INSTALLATION

Detach the yellow clamps located at the top and bottom of the unit for separate the body from the base socket.

### ■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adaptor is at the bottom. Hang the upper hook at the rear side of base socket on the DIN rail and push in the lower. When removing the socket, push down the DIN rail adaptor utilizing a minus screwdriver and pull.



### ■ WALL MOUNTING

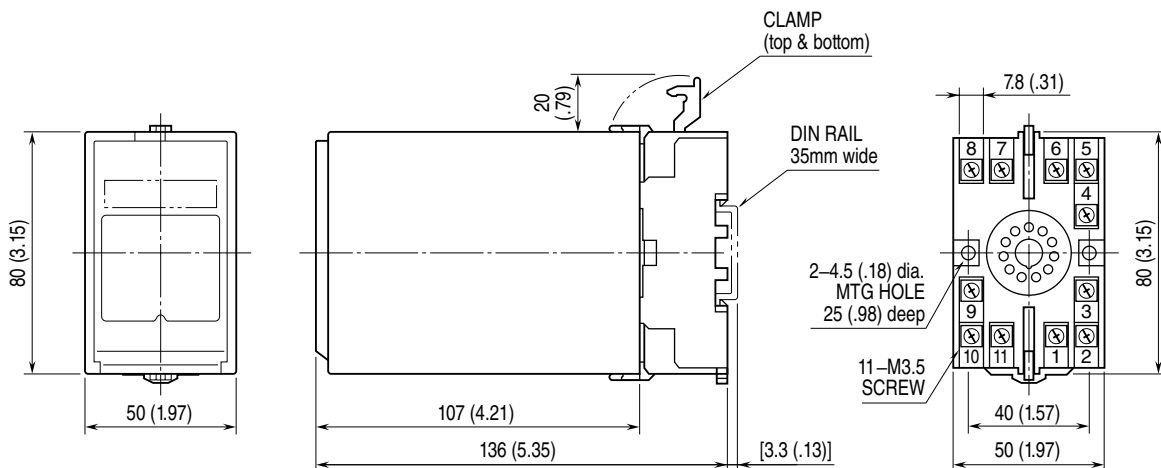
Refer to “EXTERNAL DIMENSIONS.”

Shape and size of the base socket are slightly different with various socket types.

## TERMINAL CONNECTIONS

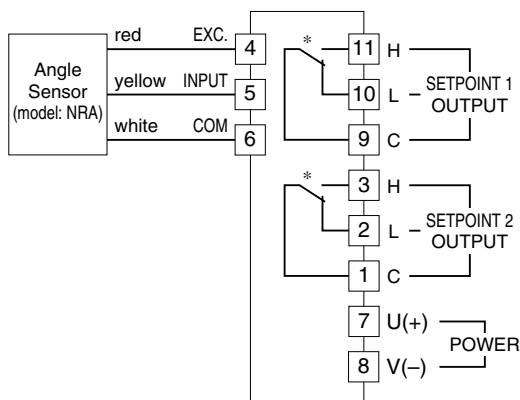
Connect the unit as in the diagram below or refer to the connection diagram on the top of the unit.

### ■ EXTERNAL DIMENSIONS unit: mm (inch)



• When mounting, no extra space is needed between units.

### ■ CONNECTION DIAGRAM

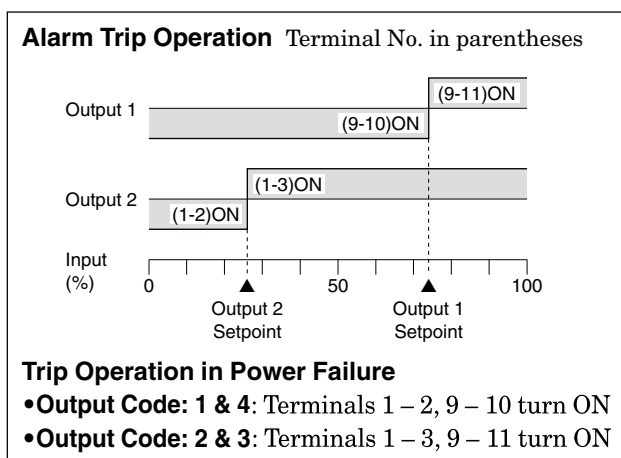


\*Relay status for output codes “1” & “4”, at power OFF.

## CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Power input voltage: Check voltage across the terminal 7 – 8 with a multimeter.
- 3) Input: Check voltage across the terminal 5 (+) – 6 (–) with a multimeter.
- 4) Excitation: Check voltage (5V  $\pm$ 2%) across the terminal 4 (+) – 6 (–) with a multimeter.
- 5) Relay operation: Check that the relays operates according to input signals as shown in the figure below.
- 6) Output load: Check that the output load is 380V AC/120VA or 125V DC/30W at the maximum. For use with inductive load, external protection is recommended.

## ALARM TRIP OPERATION



## CALIBRATION

This unit is calibrated at the factory with reference input. Thus, the unit must be calibrated in combination with the angle sensor that is actually used. Use a signal source and measuring instruments of sufficient accuracy level.

### ■ HOW TO CALIBRATE THE INPUT MONITOR

Connect the unit to the angle sensor and turn the power supply on, and wait for at least 10 minutes until the unit warms up before starting calibration.

Adjust output voltage across the input monitor terminal (+) and the terminal 6 (–).

- 1) ZERO: Adjust the input angle to 0% and adjust output to 0V. \*1
- 2) SPAN: Adjust the input angle to 100% and adjust output to 4V. \*1
- 3) Check ZERO output again with applying 0% input.
- 4) When ZERO value is changed, repeat the above procedure 1) – 3).

\*1. When alarm setpoints cannot be set close to 0% or 100%, adjust output voltage so as to be slightly higher than 0V (approx. 0.005V) for ZERO or slightly lower than 4V (approx. 3.995V) for SPAN.

## ADJUSTMENT PROCEDURE

### ■ ALARM SETPOINT AND DEADBAND (HYSTERESIS)

- 1) Apply a simulated input signal corresponding to the alarm setpoint.
- 2) For a Hi (Lo) setpoint, turn the setpoint adj. from 100% (0%) until the relay trips.
- 3) Decrease (increase) the input signal by desired deadband width.
- 4) Turn the deadband adj. from 100% (0%) until the relay is released.

## MAINTENANCE

Perform calibration according to the procedures below for regular maintenance:

### ■ CALIBRATION OF INPUT MONITOR

- 1) Warm up the unit for at least 10 minutes.
- 2) Apply 0%, 25%, 50%, 75% and 100% input angles.
- 3) Confirm that voltage across the input monitor terminal (+) and the terminal 6 (–) becomes 0, 1, 2, 3, and 4V corresponding to the respective input angles.
- 4) When the voltage is deviated, recalibrate the unit according to the procedure of “CALIBRATION” explained earlier.

### ■ CALIBRATION OF ALARM OUTPUT

Warm up the unit for at least 10 minutes.

#### • Hi Setpoint

Increase the input signal from a value lower than the setpoint and check that the trip point remains within the accuracy described in the data sheet.

#### • Lo Setpoint

Decrease the input signal from a value higher than the setpoint and check that the trip point remains within the accuracy described in the data sheet.

When the trip points are shifted, please contact our sales office or representatives.

## LIGHTNING SURGE PROTECTION

We offer a series of lightning surge protector for protection against induced lightning surges. Please contact us to choose appropriate models.