

BEFORE USE

Thank you for choosing M-System. 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 M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Signal conditioner(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.

POINTS OF CAUTION**■ GENERAL PRECAUTIONS**

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

■ ENVIRONMENT

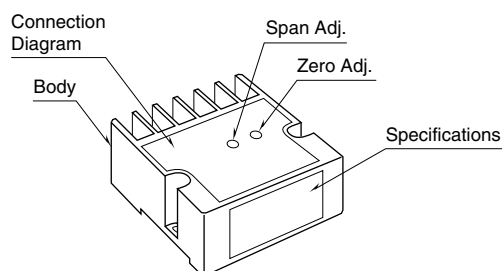
- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -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.

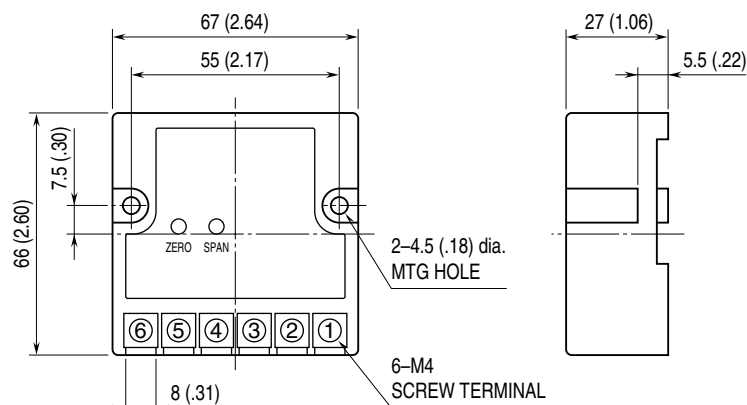
COMPONENT IDENTIFICATION**INSTALLATION**

Refer to "EXTERNAL DIMENSIONS."

TERMINAL CONNECTIONS

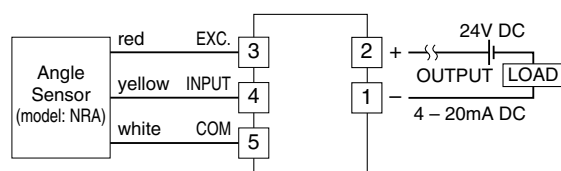
Connect the unit as in the diagram below or refer to the connection diagram on the front of the unit.

EXTERNAL DIMENSIONS unit: mm (inch)



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

CONNECTION DIAGRAM



WIRING INSTRUCTIONS

SCREW TERMINAL

Torque: 1.2 N·m

CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Input: Check voltage across the terminal 4 (+) – 5 (–) with a multimeter.
- 3) Excitation: Check voltage (5V ±0.5%) across the terminal 3 (+) – 5 (–) with a multimeter.
- 4) Output: Check that the load is within the permissible limit including wiring resistance.

$$\text{Load Resistance } (\Omega) = \frac{\text{Supply Voltage (V)} - 12 \text{ (V)}}{0.02 \text{ (A)}} \\ \text{(including leadwire resistance)}$$

ADJUSTMENT PROCEDURE

The PNT unit is calibrated at the factory with reference input. Be sure to calibrate the transmitter together with an angle sensor which is used with the unit.

When connecting with the angle sensor, adjust so that 50% (approx. 2.5V output) mechanical rotating angle of the sensor coincides with 50% of the actual operating range.

HOW TO CALIBRATE THE OUTPUT SIGNAL

Before calibration, connect the transmitter to the angle sensor, turn the power supply on, and warm up for more than 10 minutes.

Use measuring instruments with sufficient accuracy.

- 1) With 50% input angle, adjust Zero so that output becomes 50%.

See Fig. 1.

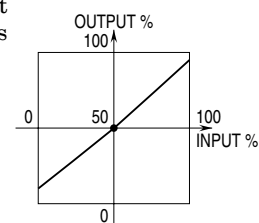


Fig. 1

- 2) With the input angle set to 100% of the actual operating range, adjust Span so that output becomes 100%.

See Fig. 2

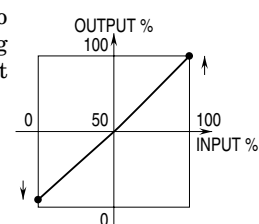


Fig. 2

3) Again, with 50% input angle, confirm that output is $50 \pm 0.5\%$. If the output deviates from $50 \pm 0.5\%$, repeat the steps 1) and 2).

4) Set the input angle to 0%.
If output deviates from 0%,
adjust Zero so that output
becomes 0%.

See Figure 3.

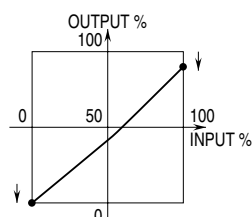


Fig. 3

5) Set the input angle to 100%.
If output deviates from
100%, adjust Zero so as to
compensate a half of the de-
viation.

See Figure 4.

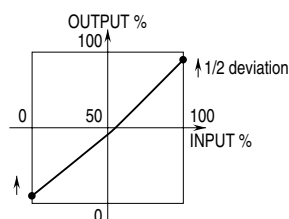


Fig. 4

6) With 100% input angle, ad-
just Span to compensate the
other half of the deviation in
order to obtain 100% output.

See Figure 5.

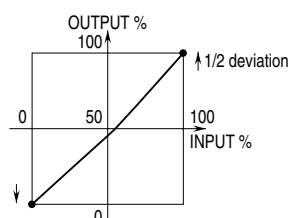


Fig. 5

7) Apply 0% and 100% input signals and confirm output changes accordingly. If the output deviates from the input, repeat the steps 4) to 6).

Note: For ease of illustration, a linearity error of the sensor angle is expressed in an excessive manner in each graph.

MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input angle. Check that the output signal for the respective input angle remains within accuracy described in the data sheet. When the output is out of tolerance, recalibrate the unit according to the "ADJUSTMENT PROCEDURE" explained earlier.

LIGHTNING SURGE PROTECTION

M-System offers a series of lightning surge protector for protection against induced lightning surges. Please contact M-System to choose appropriate models.