INSTRUCTION MANUAL

DC ALARM
(thumbwheel switch adjustment)

MODEL **M2SED**

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.

This equipment is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety (e.g. safety or accident prevention systems) or of reliability (e.g. vehicle control or combustion control systems).
For safety, installation and maintenance of this equipment must be conducted by qualified personnel.

■ PACKAGE INCLUDES:

Signal conditioner
(body + base socket + input resistor).....(1)
Input resistor is provided only with current input type.

■ 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.

■ SYMBOLS USED ON THE PRODUCT AND IN THIS MANUAL

⚠ The symbol indicated on the equipment, means that the user must refer to the related parts in the manual for safe operation of the equipment. It is essential to read the instructions wherever the symbol appears in the manual.

⚠ **WARNING**: is reserved for conditions and actions that can cause serious or fatal injury.
⚠ **CAUTION**: is reserved for conditions and actions that can cause injury or instrument damage.

⚠ WARNING

■ INSULATION CLASS

Insulation class of this unit is as follows.
- Input to power: reinforced insulation (300 V)
- Output to power: reinforced insulation (300 V)
- Input to output: basic insulation (300 V)
  (Reinforced insulation (150 V) for UL)

For basic insulation, if insulation failure may result in equipment, hazardous voltage may result to signal input and then electric shock may cause.
Prior to installation, prepare supplemental insulation (equivalent basic insulation) between signal input and external circuits.

⚠ CAUTION

■ REGARDING SAFETY

If the equipment is used in a manner not specified by us, the protection provided by the equipment may be impaired.

■ CONFORMITY WITH EU DIRECTIVES, UK LEGISLATION OR UL

- This equipment is suitable for
  - Measurement Category II (output, transient voltage 2500V) (output, transient voltage 1500 V for UL)
  - Installation Category II (transient voltage 2500V)
  - Pollution Degree 2

  Prior to installation, check that the insulation class of this unit satisfies the system requirements.
- Altitude up to 2000 meters.
- The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE/UKCA/UL requirements. Failure to observe these requirements may invalidate the CE/UKCA/UL conformance.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE/UKCA requirements in regard to the whole system and employ additional protective measures* to ensure the CE/UKCA conformity.
  * For example, installation of noise filters and clamp filters for the power source, input and output connected to the unit, etc.
- Install lightning surge protectors for those wires connected to remote locations.

■ SIGNAL INPUT

This terminal is used for signal input.
Do not connect or measure to the circuits including transient voltage max. 2500V.
Refer to “INPUT SPECIFICATIONS” in detail.

■ OUTPUT TERMINAL

Never use the output terminal under any load that exceeds the rated values. Otherwise it will impair prescribed performance and cause burning of the equipment itself.

■ WIRING

- For wiring connection, refer to “TERMINAL CONNECTIONS” and wire correctly. Fire, electric shock and failure cause if wire are incorrectly connected.
- 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.

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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 M2: 100-240 V AC, 50-60 Hz, ≤ 3-5 VA
(85-264 V AC, 47-66 Hz)

DC Power rating R: 24 V DC (24 V DC±10%), ≤ 3W
R2: 11-27 V DC, ≤ 3W
(CE, UKCA and UL not available)
P: 110 V DC (85-150 V DC), ≤ 3W

■ 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 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 +55°C (23 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
• Be sure that the ventilation slits are not covered with cables, etc.

■ 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.
• Never use the internal relay under any load that exceeds the rated contact values including the switching capacities (contact voltage and contact current).
Otherwise it will impair prescribed performance (insulation failure, contact welding, contact failure) and cause burning of the Relay itself.

INPUT SPECIFICATIONS

■ DC CURRENT

shunt resistor attached toinput terminals (0.5 W)
A: 4 – 20 mA DC

■ DC VOLTAGE

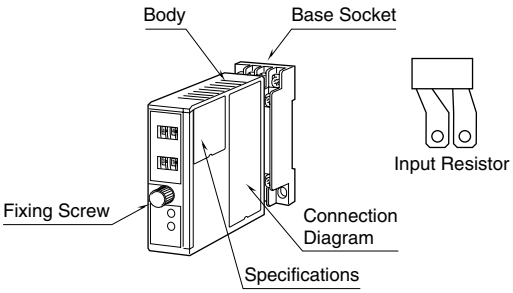
4: 0 – 10 V DC
5: 0 – 5 V DC
6: 1 – 5 V DC

OUTPUT SPECIFICATIONS

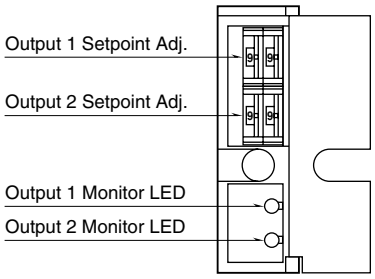
■ RELAY CONTACT

100 V AC @5 A (cos ø = 1)
120 V AC @5 A (cos ø = 1)
240 V AC @2.5 A (cos ø = 1)
(UL not available (120 V AC ≤ 5 A for UL))
30 V DC @5 A (resistive load)

COMPONENT IDENTIFICATION



■ FRONT PANEL CONFIGURATION



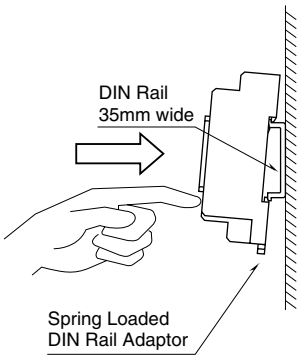
The front cover cannot be turned open by 180 deg. when there is no extra space between units.

INSTALLATION

Loosen the fixing screw at the front of the unit in order to separate the body from the base socket.

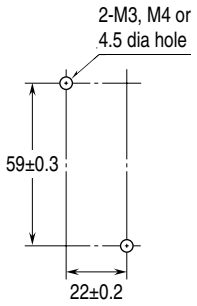
■ DIN RAIL MOUNTING

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

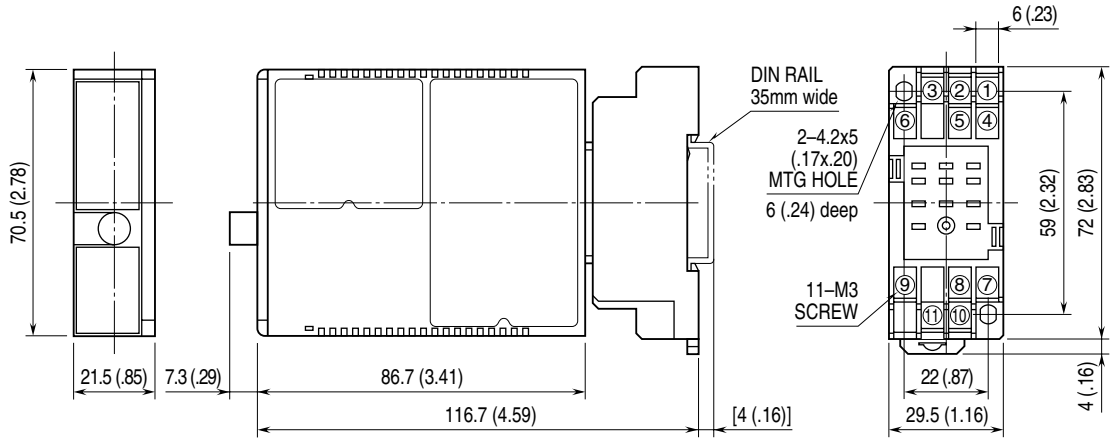
- Install using M3 or M4 screw with referring to the following dimension.
- Install by screw that is securely fastened or equivalent means.



TERMINAL CONNECTIONS

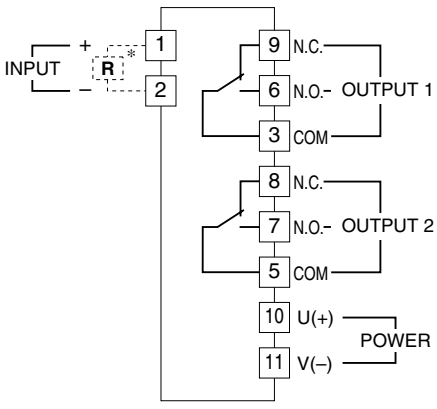
Connect the unit as in the diagram below or refer to the connection diagram on the side of the unit.
When an input resistor is provided with the module, attach it together with input wiring to the input screw terminals.

■ EXTERNAL DIMENSIONS unit: mm (inch)



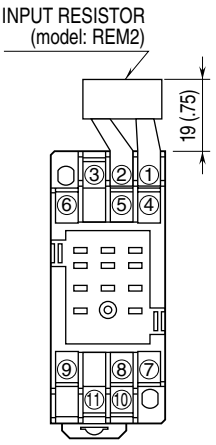
• When mounting, no extra space is needed between units.

■ CONNECTION DIAGRAM



*Input shunt resistor attached for current input.

■ TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached
for current input.

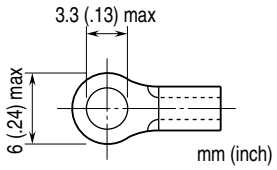
WIRING INSTRUCTIONS

■ SCREW TERMINAL

Torque: 0.8 N·m

■ SOLDERLESS TERMINAL

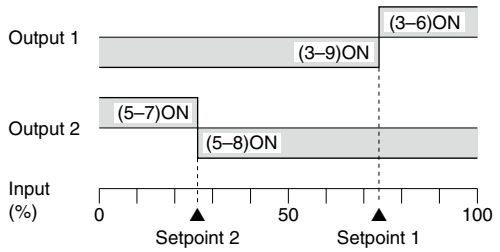
Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable.
Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)
Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd



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 10 – 11 with a multimeter.
3) Input: Check that the input signal is within 0 – 100% of the full-scale.
4) Check that the output load is 240V AC/600VA or 120V DC/150W (120V AC/600VA or 120V DC/150W for UL) at the maximum. For maximum relay life with inductive loads, external protection is recommended.

Alarm Trip Operation Terminal No. in parentheses



Trip Operation in Power Failure: Terminals 3 – 9 and 5 – 8 turn on.

SETPOINT ADJUSTMENTS

Turn the thumbwheel switches until desired figures in percent are shown. Output 1 is for Hi trip, while Output 2 is for Lo. Monitor LED turns on when the coil is energized ([input] > [setpoint] for Output 1, [input] < [setpoint] for Output 2).

MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Warm up the unit for at least 10 minutes.

- **Hi Alarm**
  Increase the input signal from a value lower than the setpoint and check that the relay trips at the setpoint.
- **Lo Alarm**
  Decrease the input signal from a value higher than the setpoint and check that the relay trips at the setpoint.

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.