INSTRUCTION MANUAL

POTENTIOMETER TRANSMITTER
(2 channel, PC programmable)

MODEL **M1EXM-2**

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:

Potentiometer transmitter (body) .....(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 detailed operation regarding settings. For detailed explanations, please refer to the Model M1EXM-2 operating manual (EM-5983-B).
The M1EXM-2 is programmable using a PC. For detailed information on the PC configuration, refer to the M1ECFG users manual (EM-5981).
The M1ECFG Configurator Software and the operating manual (EM-5983-B) are downloadable at our web site.

POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

- This equipment is suitable for Pollution Degree 2 and Installation Category II (transient voltage 2500V). Reinforced insulation (signal input or output to power input: 300V) is maintained. Prior to installation, check that the insulation class of this unit satisfies the system requirements.
- Altitude up to 2000 meters.
- The equipment must be mounted inside a panel.
- The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE requirements. Failure to observe these requirements may invalidate the CE 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 requirements in regard to the whole system and employ additional protective measures* to ensure the CE 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.

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
  100 – 240V AC rating: 85 – 264V, 47 – 66 Hz,
  ≤ 7VA at 100V AC
  ≤ 10VA at 200V AC
  ≤ 12VA at 264V AC
  24V DC rating: 24V ±10%, ≤ 4W
  110V DC rating: 85 – 150V, ≤ 4W

■ GENERAL PRECAUTIONS

- Before you remove the unit from its base 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 10 to 85% RH in order to ensure adequate life span and operation.
- Be sure that the ventilation slits are not covered with cables, etc.

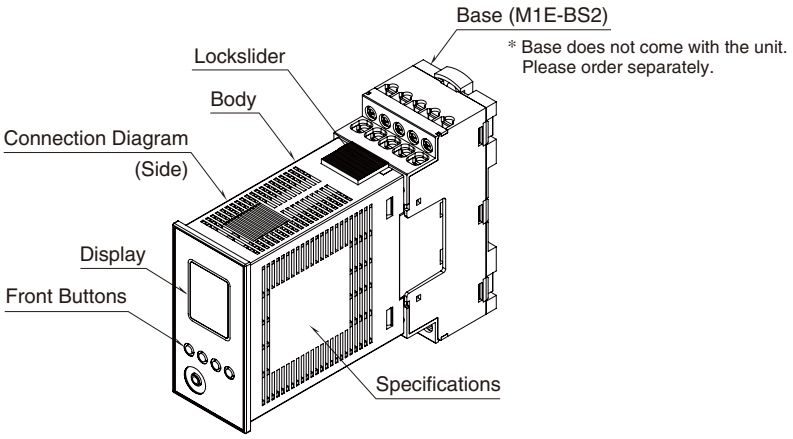
■ WIRING

- 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.

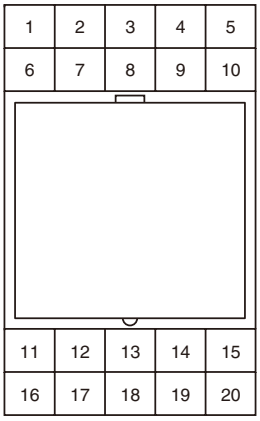
■ AND ....

- 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.
- With voltage output, do not leave the output terminals shortcircuited for a long time. The unit is designed to endure it without breakdown, however, it may shorten appropriate life duration.

COMPONENT IDENTIFICATION



■ TERMINAL ASSIGNMENTS



No.	FUNCTION	No.	FUNCTION
1	Unused	11	Ch1 Output +
2	Unused	12	Ch1 Output –
3	Ch1 Potentiometer input 3	13	Unused
4	Ch1 Potentiometer input 2	14	Ch2 Output +
5	Ch1 Potentiometer input 1	15	Ch2 Output –
6	Unused	16	Unused
7	Unused	17	Unused
8	Ch2 Potentiometer input 3	18	Unused
9	Ch2 Potentiometer input 2	19	Power U (+)
10	Ch2 Potentiometer input 1	20	Power V (–)

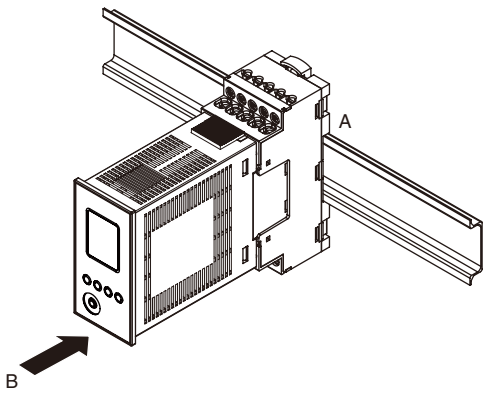
INSTALLATION

The unit can be removed from the base by pulling out while pressing the lockslider on the top thereof.
The base does not come with the unit. Please order separately.

■ DIN RAIL MOUNTING (PARALLEL)

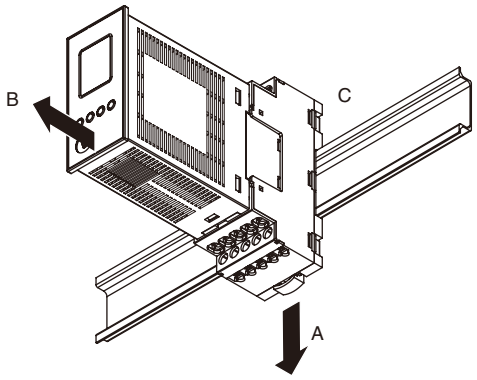
• Mounting the unit

A) Hook the upper hook at the rear side of the base onto the DIN rail.
B) Push the lower part of the unit in the direction of the arrow until the base is firmly fixed to the DIN rail.



• Removing the unit

A) Push down the lower slider using a minus screwdriver.
B) Pull out the lower part of the unit.
C) Remove the upper part of the unit from the DIN rail.



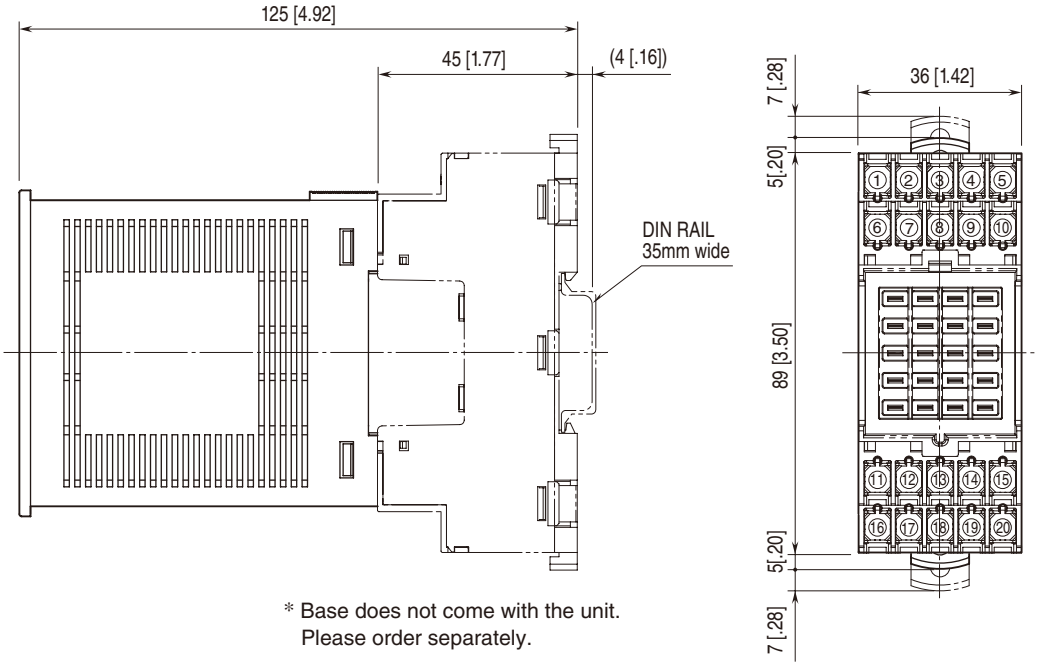
■ WALL MOUNTING

Refer to "MOUNTING REQUIREMENTS unit: mm [inch]" on page 3.
Pull out the upper and lower sliders from the base and fix them with M4 screws (Torque: 1.4 N·m).

TERMINAL CONNECTIONS

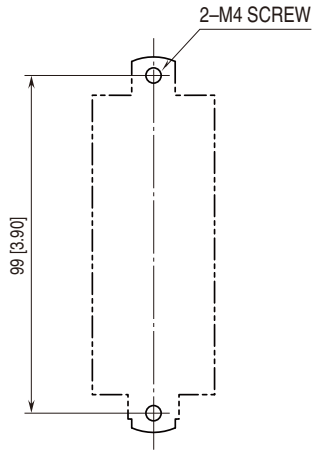
Connect the unit as in the diagram below or refer to the connection diagram on the side of the unit.

■ EXTERNAL DIMENSIONS unit: mm [inch]

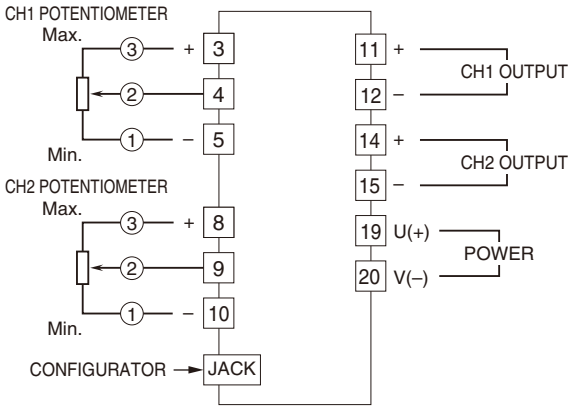


* Base does not come with the unit.
Please order separately.

■ MOUNTING REQUIREMENTS unit: mm [inch]

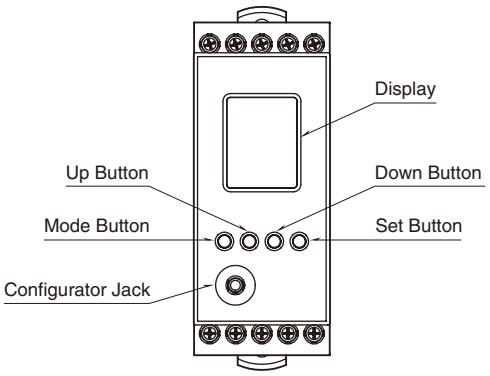


■ CONNECTION DIAGRAM



* Mounting requirements for base.

EXTERNAL VIEWS



COMPONENT	FUNCTION
Display	Indicates present values, setting values and abnormal information. Two types of present values are displayed respectively at the upper and lower parts according to setting.
Mode button	Shifts from Measuring mode to each setting mode. The destination changes depending on how long the button is held down. Pressing Mode button for ≥ 2 seconds returns to Measuring mode from each setting mode.
Set button	Shifts the setting value of each setting parameter item to a setting changeable state. When at setting changeable state, used to move through the digits of setting value and to enter (save) the setting value.
Up button	Shifts through setting parameter items and to increase or select the setting value.
Down button	Shifts through setting parameter items and to decrease or select the setting value.
Configurator Jack	Used to perform configuration with M1E configurator software (model: M1ECFG). When using the software, set the Lockout setting of the unit to 'Lock'.

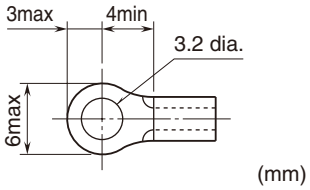
WIRING INSTRUCTIONS FOR BASE

■ SCREW TERMINAL

Torque: 0.5 N·m

■ SOLDERLESS TERMINAL

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable.
Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd (Solderless terminals with insulation sleeve do not fit)
Applicable wire size: 0.25 to 1.65 mm^2



(mm)

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 19 – 20 with a multimeter.
3) Input: Check that the input signal is within 0 – 100% of the full-scale.
4) Output: Check that the load resistance meets the described specifications.

MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Without linearization, warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input signals in this order. Check that the output signals for the respective input signals remain within accuracy described in the data sheet.
When the output signal is out of accuracy, perform Teach setting if the displayed input value is out of accuracy and perform output fine adjustment if the displayed input value is correct.

To perform the output fine adjustment, take the following steps with referring to the operating manual (EM-5983-B) when adjusting with front buttons or referring to the M1ECFG users manual (EM-5981) when adjusting with M1E Configurator Software (model: M1ECFG).

• OUTPUT FINE ADJUSTMENT

1) Set the input signal to 0 %, and adjust the output signal to 0 % by [82]/[182] Output Zero fine adjust.
2) Set the input signal to 100 %, and adjust the output signal to 100 % by [83]/[183] Output Span fine adjust.
3) Again set the input signal to 0 %, confirm the output signal.
4) If the output signal is shifted, repeat the procedure from 1) to 3).

LIGHTNING SURGE PROTECTION

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