Autonics

Panel Meters (Indicator)

M4N Series
PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

EAC

Features

- Input options (by model)
  - Input options: DC voltage, DC current
- Auto-zero adjustment and hold display value function
- Max display value: 1999
- 7-segment LED display
- Compact size: DIN W 48 × H 24 mm
- Power supply: 5 VDC⎓, 12 - 24 VDC⎓

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow instructions may result in serious injury or death.

01. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime / disaster prevention devices, etc.)**
Failure to follow this instruction may result in personal injury, economic loss or fire.
02. **Do not use the unit in the place where flammable / explosive / corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
03. **Install on a device panel to use.**
Failure to follow this instruction may result in fire.
04. **Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
05. **Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
06. **Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.

⚠ **Caution** Failure to follow instructions may result in injury or product damage.

01. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
02. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire.
03. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'.
Otherwise, It may cause unexpected accidents.
- Power supply should be insulated and limited voltage / current or Class 2, SELV power supply device.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Keep away from high voltage lines or power lines to prevent inductive noise.
In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
Do not use near the equipment which generates strong magnetic force or high frequency noise.

Connection with the line filter	Connection with the varistor
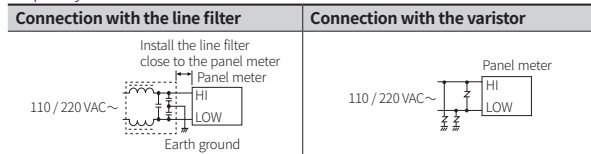
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

Product Components

- Product (+ bracket, 10-pin hirose connector)
- Instruction manual

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics webstie.

| M | 4 | N | - | ❶ | - | ❷ | ❸ |

❶ Input type
DV: DC voltage
DA: DC current
DI: DC 4 - 20 mA (scaling meter)

❷ Power supply
0: 5 VDC⎓ ± 10 %
1: 12 - 24 VDC⎓ ± 10 %

❸ Measurement input

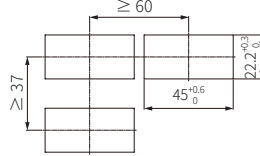|	DC voltage input F.S.	DC current input F.S.
1	199.9 mV	199.9 µA
2	1.999 V	1.999 mA
3	19.99 V	19.99 mA
4	199.9 V	199.9 mA
X	Option	Option

Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
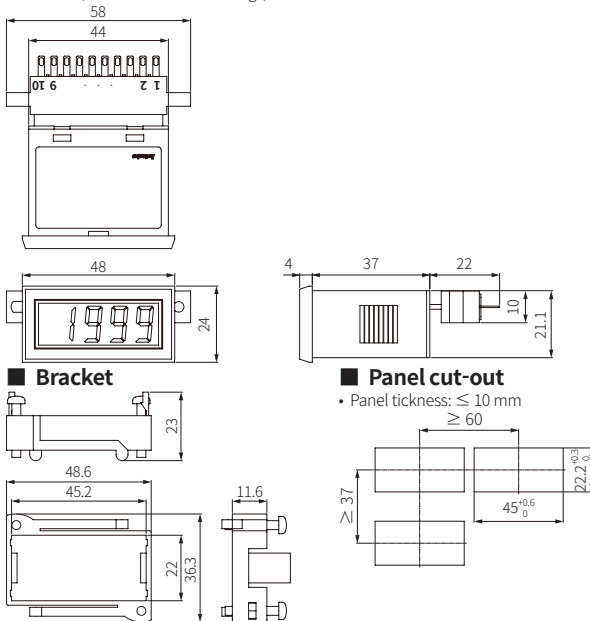

■ **Bracket**

■ **Panel cut-out**
- Panel tickness: ≤ 10 mm

Connections

- Socket pin no. 9, NC terminal, is not connected at inside.
- When 1 or -1 flashes with a certain measurement input, disconnect power supply and then check the cables.
- When changing the position of the decimal point, disconnect swithcing pattern point on PCB and change the decimal point in the external terminal socket. If changing only at the external terminal socket not disconnecting switching pattern point on PCB, it displays both set point: one from PCB, one from the external terminal socket.

SOURCE   [Select decimal point position]
5 VDC⎓, 12 - 24 VDC⎓
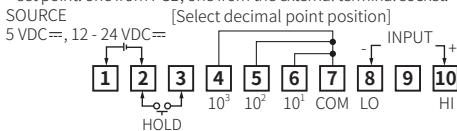
Specifications

Model	M4N-DV-□□	M4N-DA-□□	M4N-DI-□X
Input type	DC voltage	DC current	DC 4 - 20 mA
Max. allowable input	≈ 150 % F.S. for each measured input range		
Display method	7-segment (red) LED (character height: 10 mm)		
Display accuracy	0.2 % F.S. rdg ± 1-digit		
Sampling time	2.5 times / sec		
Display scale	-1999 (4-digit)		
Operation method	Dual integral method		
Sampling cycle	300 ms		
Response speed	≈ 2 sec (0 to 1999)		
Unit weight	≈ 44 g		
Approval	EAC		

Power supply	5 VDC⎓ ± 10 % / 12 - 24 VDC⎓ ± 10 % model
Power consumption	2 W
Insulation resistance	≥ 100 MΩ (500 VDC⎓ megger)
Dielectric strength	2,000 VAC∼ 50 / 60 Hz for 1 min
Noise immunity	±100 V square wave noise (pulse width: 1 µs) by the noise simulator
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 1 hours
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 min
Shock	300 m/s² (≈ 30 G) in each X, Y, Z direction for 3 times
Shock (malfunction)	100 m/s² (≈ 10 G) in each X, Y, Z direction for 3 times
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

Decimal Point

The displaying decimal point is set in the product by your order. (10[1]: DOT1, 10[2]: DOT2, 10[3]: DOT3)
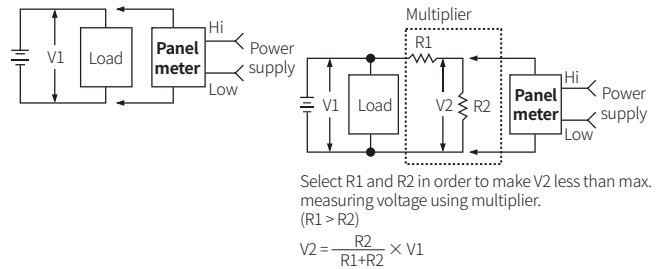- DP□ pattern points on PCB are not related with the decimal point. Do not change the soldering.
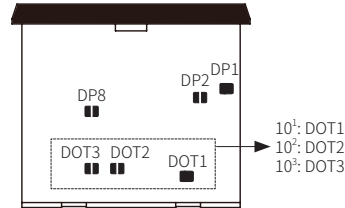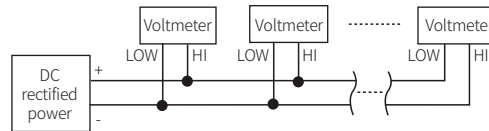

10^1: DOT1
10^2: DOT2
10^3: DOT3

Connections of Applications

■ DC voltmeter connection

- V1 (measuring voltage): ≤ 200 VDC⎓
- V1 (measuring voltage): ≥ 200 VDC⎓

Select R1 and R2 in order to make V2 less than max. measuring voltage using multiplier.
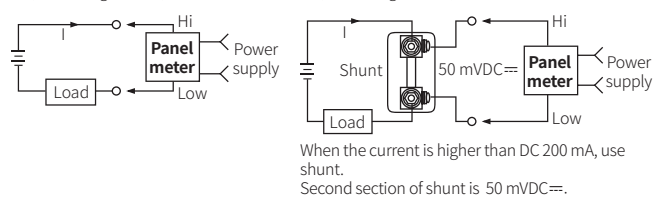(R1 > R2)

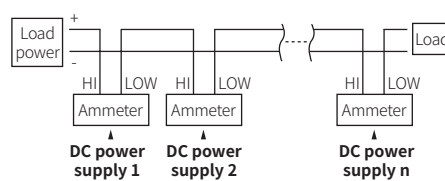$$V2 = \frac{R2}{R1+R2} \times V1$$

- In case of using muliple voltmeter

It is available using several voltmeters with providing one DC power. However, the potential difference between - of measurement iput and - of power may cause an error.

■ DC ammeter connection

- I (measuring current): ≤ DC 200 mA
- I (measuring current): ≥ DC 200 mA

When the current is higher than DC 200 mA, use shunt.
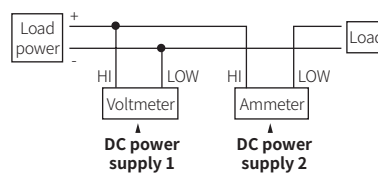Second section of shunt is 50 mVDC⎓.

- In case of using multiple ammeter

Ammeter cannot be used with above connection, provide power separately.

■ Simulaneous connection of voltmeter and ammeter

- Connect the separated power supply each.
- (-) terminal of the power and (-) terminal of measurement input are shorted.
  In case of using same power supply, measurement error or overcurrent may occur.

■ Scaling meter connection