

Indicator / Thumbwheel Switch Panel Meters

M4W Series

INSTRUCTION MANUAL

TCD210077AA

Autonics

Thank you for choosing our Autonics product.

Read and understand the instruction manual and manual thoroughly before using the product.

For your safety, read and follow the below safety considerations before using.

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

Keep this instruction manual in a place where you can find easily.

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

Follow Autonics website for the latest information.

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.

- 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.

- 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.

- Install on a device panel to use.**
Failure to follow this instruction may result in fire or electric shock.

- Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire or electric shock.

- Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.

- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire or electric shock.

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

- When connecting the power / measurement input and relay output, use AWG 24 (0.20 mm²) to AWG 15 (1.65 mm²) cable or over and tighten the terminal screw with a tightening torque of 0.98 to 1.18 N m. Use the wiring suitable for the load current capacity.**
Failure to follow this instruction may result in fire or malfunction due to contact failure.

- Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.

- 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 or electric shock.

- 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.
- 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

Ordering Information

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

M 4 W 1 - 2 3 - 4

1 Output

No mark: Indicator

1P: Single setting

2P: Dual setting

2 Input type

DV: DC voltage

AV: AC voltage

DA: DC current

AA: AC current

W: Power

T: Rotation

S: Speed

DI: Scaling (DC 4 - 20 mA)

3 AC measurement method

No mark: AVG

R: RMS

4 Measurement input

Refer to measurement input

specifications.

Measurement Input Specifications

| Measurement input | Input type | | | | | | | |
|-------------------|-------------|-------------|----------|----------|-------------------|-------------------|-------------------|-----------------|
| | DV | AV | DA | AA | W ⁽⁰¹⁾ | T ⁽⁰²⁾ | S ⁽⁰²⁾ | DI |
| No mark | - | - | - | - | - | - | - | 1999 |
| 1 | 199.9 mVDC≐ | 199.9 mVAC~ | 199.9 μA | 19.99 mA | 199.9 W | 1999 rpm | 1999 m/min | - |
| 2 | 1.999 VDC≐ | 1.999 VAC~ | 1.999 mA | 19.99 mA | 1.999 kW | 1999 rpm | 1999 m/min | - |
| 3 | 19.99 VDC≐ | 19.99 VAC~ | 19.99 mA | 1.999 A | 19.99 kW | - | - | - |
| 4 | 199.9 VDC≐ | 199.9 VAC~ | 199.9 mA | 19.99 A | 199.9 kW | - | - | - |
| 5 | 300 VDC≐ | - | 1.999 A | 19.99 A | - | - | - | - |
| 6 | - | 400 VAC~ | 19.99 A | 1999 A | - | - | - | - |
| 7 | - | - | 199.9 A | - | - | - | - | - |
| 8 | - | - | 1999 A | - | - | - | - | - |
| DX | - | - | - | - | - | - | - | DC input option |
| AX | - | - | - | - | - | - | - | AC input option |
| XX | Option | Option | Option | Option | Option | Option | Option | Option |

01) This specification is based on the transducer with 0 - 10 VDC≐ output.

When the output of transducer is DC 4 - 20 mA or 1 - 5 VDC≐, use the scaling meter.

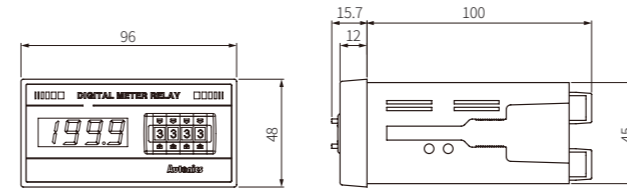
02) This specification is based on the tachogenerator with 0 - 10 VDC≐ or 0 - 10 VAC~ output.

Product Components

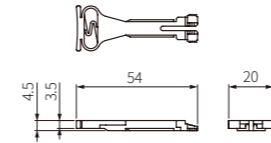
- Product (+ bracket)
- Instruction manual

Dimensions

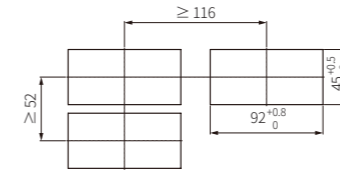
- Unit: mm, For the detailed drawings, follow the Autonics website.
- Following items are based on single setting model.



Bracket

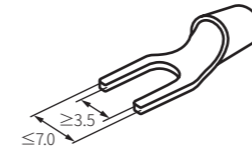


Panel cut-out



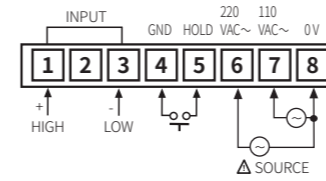
Cautions during Wiring

- Unit: mm, Use terminals of size specified below.

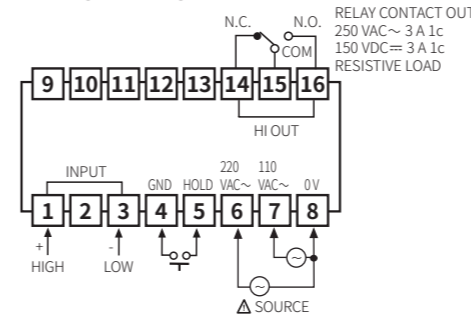


Connections

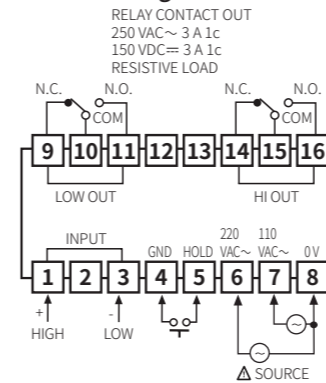
Indicator



Single setting



Dual setting



Power option



Specifications

| Input type | DC voltage | AC voltage | DC current | AC current | Power | Rotation, speed | Scaling |
|----------------------|---|------------|------------|------------|-----------|----------------------------|--------------|
| Max. allowable input | ≤ 300 VDC≐ | ≤ 400 VAC~ | ≤ DC 2 A | ≤ AC 5 A | ≤ 10 VDC≐ | ≤ 10 VDC≐ ≤ 10 VAC~ | DC 4 - 20 mA |
| | ≈ 150 % F.S. for each measured input range ⁰¹⁾ | | | | | | |
| Display method | 7-segment (red) LED (character height: 14 mm) | | | | | | |
| Display accuracy | Dependent on the input type | | | | | | |
| DC input | ± 0.2 % F.S. rdg ± 1-digit | | | | | ± 0.3 % F.S. rdg ± 1-digit | |
| AC input | ± 0.5 % F.S. rdg ± 1-digit | | | | | | |
| Display scale | 1999 | | | | | | |
| Sampling time | 2.5 times / sec | | | | | | |
| Response speed | ≈ 2 sec (0 to 1999) | | | | | | |
| Sampling cycle | 300 ms | | | | | | |
| Operation method | Dual integral method | | | | | | |
| Unit weight | Dependent on the output type | | | | | | |
| Indicator | ≈ 168 g | | | | | | |
| Single setting | ≈ 253 g | | | | | | |
| Dual setting | ≈ 278 g | | | | | | |
| Approval | EUL | | | | | | |

01) At 400 VAC~ input: ≈ 120 % F.S. for each measured input range

| Output type | Indicator | Single setting | Dual setting |
|-----------------------------|---|-------------------------------|-------------------------------|
| Power supply ⁰¹⁾ | 110 / 220 VAC~ ± 10 % 50 / 60 Hz | | |
| Power consumption | Dependent on the input type | | |
| DC input | 2 W | 3 W | 3 W |
| AC input | 4 VA | 5 VA | 5 VA |
| Contact capacity | - | 250 VAC~ 3 A, 150 VDC≐ 3 A | 250 VAC~ 3 A, 150 VDC≐ 3 A |
| Contact composition | - | 1c × 1 | 1c × 2 |
| Insulation resistance | ≥ 100 MΩ (500 VDC≐ megger) | | |
| Dielectric strength | 2,000 VAC~ 50 / 60 Hz for 1 min | | |
| Noise immunity | ± 1 kV 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/s ² (≈ 30 G) in each X, Y, Z direction for 3 times | | |
| Shock (malfunction) | 100 m/s ² (≈ 10 G) in each X, Y, Z direction for 3 times | | |
| Relay life cycle | Mechanical: ≥ 10,000,000 operations Electrical: ≥ 100,000 operations (250 VAC~ 3A resistive load) | | |
| Ambient temperature | -10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation) | | |
| Ambient humidity | 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation) | | |

01) Power supply 24 - 70 VDC≐, 100 - 240 VAC~ 50 / 60 Hz options are also available to order.

Error

- When 1999 or -1999 flashes with a certain measurement input, disconnect power supply and then check the cables.