Panel Meters (Indicator)

M5W 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.

Features

- Max. display value: 19999
- Linear display based on input specification
- Display output values (0 - 10 VDC⎓) from power converters (options available for DC 4 - 20 mA, 1 - 5 VDC⎓)
- RMS or AVG value selection (AC voltage)
- 7-segment LED display
- DIN standard size models

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 or electric shock.

04. 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.

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 or electric shock.

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

01. When connecting the power / measurement input and relay output, use AWG 24 (0.20 mm^2) to AWG 15 (1.65 mm^2) cable or over and tighten the terminal screw with a tightening torque of 0.98 to 1.18 N m.
Failure to follow this instruction may result in fire or malfunction due to contact failure.

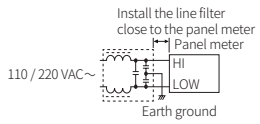
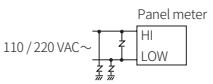
02. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.

03. 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.

04. 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 webstie.

M 5 W - ❶ - ❷

❶ Input type
DV: DC voltage
DA: DC current
W: Power
T: Rotation
S: Speed
DI: Scaling (DC 4 - 20 mA)

❷ Measurement input
Refer to measurement input specifications.

Measurement Input Specifications

Measurement input	Input type					
	DV	DA	W [01]	T [02]	S [02]	DI
No mark	-	-	-	-	-	19999
1	199.99 mVDC⎓	199.99 μA	199.99 W	19999 rpm	19999 m / min	-
				0 - 10 VDC⎓	0 - 10 VDC⎓	
2	1.9999 VDC⎓	1.9999 mA	1.9999 kW	-	-	-
3	19.999 VDC⎓	19.999 mA	19.999 kW	-	-	-
4	199.99 VDC⎓	199.99 mA	199.99 kW	-	-	-
5	300.0 VDC⎓	1.9999 A	1999.9 kW	-	-	-
6	-	19.999 A	-	-	-	-
7	-	199.99 A	-	-	-	-
8	-	1999.9 A	-	-	-	-
DX	-	-	-	DC input Option		-
XX	Option	Option	Option	-	-	Option

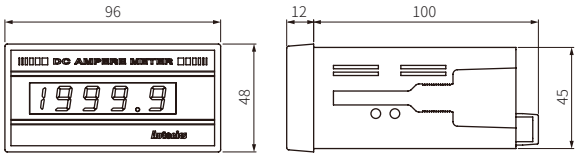
01) This specification is based on the transducer with 0 - 10 VDC⎓ output.
When the output of transducer is DC 4 - 20 mA or 1 - 5 VDC⎓, use the scaling meter.
02) This specification is based on the tacho generator with 0 - 10 VDC⎓ or 0 - 10 VAC~ output.

Product Components

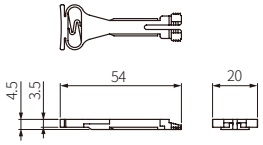
- Product (+bracket)
- Instruction manual

Dimensions

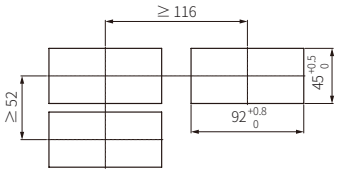
- Unit: mm, For the detailed drawings, follow the Autonics website.



■ Bracket

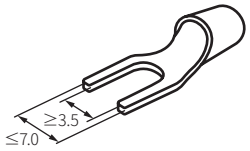


■ Panel cut-out

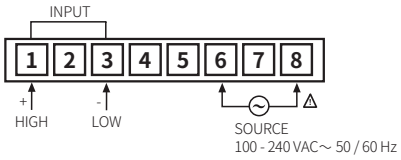


Cautions during Wiring

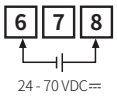
- Unit: mm, Use terminals of size specified below.



Connections



- **Power option**



Specifications

Input type	DC voltage	DC current	Power	Rotation, speed	Scaling
Max. allowable input	≤ 300 VDC⎓	≤ DC 2 A	≤ 10 VDC⎓	≤ 10 VDC⎓	DC 4 - 20 mA
	≈ 150 % F.S. for each measured input range				
Display method	7-segment (red) LED (character height: 14 mm)				
Display accuracy	± 0.2 % F.S. rdg ± 1-digit				
Display scale	19999				
Sampling time	2.5 times / sec				
Response speed	≈ 2 sec (0 to 19999)				
Sampling cycle	300 ms				
Operation method	Dual integral method				
Unit weight	≈ 172 g				
Certification	EAC				

Power supply [01]	100 - 240 VAC~ 50 / 60 Hz
Permissible voltage range	90 to 110 % of rated voltage
Power consumption	2 W
Insulation resistance	≥ 100 MΩ (500 VDC⎓ megger)
Dielectric strength	Between the charging part and the case: 3,000 VAC~ 50 / 60 Hz for 1 min
Noise immunity	± 1 the square wave noise (pulse width: 1 μs) by the noise simulator
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 1 hours
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz 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	0 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⎓ option is also available to order.

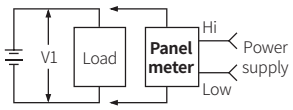
Error

- When 19999 or -19999 flashes with a certain measurement input, disconnect power supply and then check the cables.

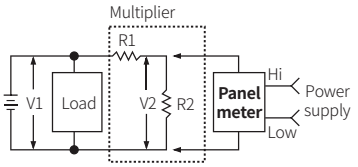
Connections of Applications

■ DC voltmeter connection

- V1 (measuring voltage): ≤ 300 VDC⎓



- V1 (measuring voltage): ≥ 300 VDC⎓

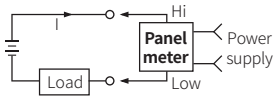


Select R1 and R2 in order to make V2 less than max. measuring voltage using multiplier.
(R1 > R2)

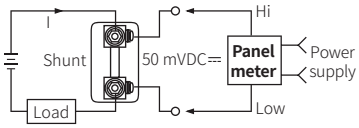
$$V2 = \frac{R2}{R1+R2} \times V1$$

■ DC ammeter connection

- I (measuring current): ≤ DC 2 A

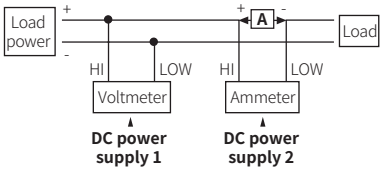


- I (measuring current): ≥ DC 2 A



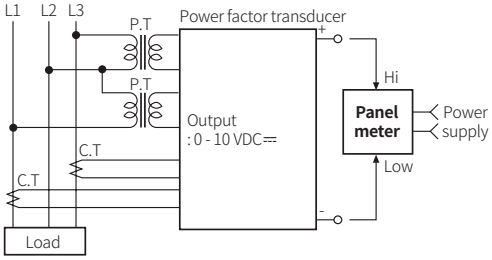
When the current is higher than DC 2 A, use shunt.
Second section of shunt is 50 mVDC⎓.

■ Simulaneous connection of voltmeter and ammeter

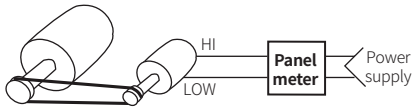


- **A**: Compared to measurement input range, higher measuring voltage needs a multiplier and lower measuring voltage needs a shunts.
- Connect the separated power supply each.
- (-) terminal of the power and (-) terminal of measurement input are shorted.
  In case of using same power supply, measurement error or overcurrent may occur.

■ Power meter connection



■ Rotation / Speed meter connection



Motor Tacho generator (T.G)

- Tacho generator (T.G)
  : This generator makes a voltage in proportion to revolution speed of motor. The panel meter receives the voltage and displays the number of revolution.

■ Scaling meter connection