Autonics

DIGITAL PANEL METER
M5W SERIES

INSTRUCTION MANUAL

Thank you for choosing our Autonics products.
Please read the following safety considerations before use.

▣ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.

※Safety considerations are categorized as follows.

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

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

※The symbols used on the product and instruction manual represent the following.
⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠Warning

1. **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 fire, personal injury, or economic loss.
2. **Install on a device panel to use.**
   Failure to follow this instruction may result in electric shock or fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in electric shock or fire.
4. **Check 'Connections' before wiring.**
   Failure to follow this instruction may result in fire.
5. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in electric shock or fire.

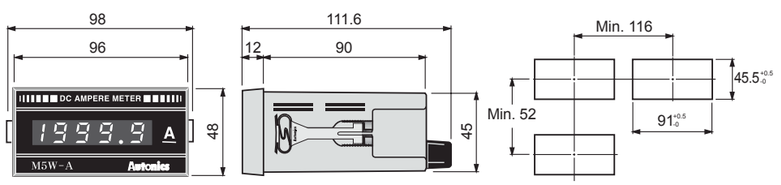
⚠Caution

1. **When connecting the power/measurement input, use AWG 24(0.20mm²) to AWG 15(1.65mm²) cable and tighten the terminal screw with a tightening torque of 0.98 to 1.18N·m.**
   Failure to follow this instruction may result in fire or malfunction due to contact failure.
2. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
3. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in electric shock or fire.
4. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in fire or explosion.
5. **Keep metal chip, dust, and wire residue from flowing into the unit.**
   Failure to follow this instruction may result in fire or product damage.

▣ Dimension

(unit: mm)

● Panel cut-out



※The above specifications are subject to change and some models may be discontinued without notice.
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

▣ Specifications

Model	M5W-AV-□	M5W-DV-□	M5W-AA-□	M5W-DA-□	M5W-W-□	M5W-T-□	M5W-S-□	M5W-DI-□
Max. allowable input	Max. 400VAC~	Max. 300VDC⎓	Max. AC 5A	Max. DC 2A	Max. 10VDC⎓	Tachogenerator(0-10V)		DC4-20mA
	150% for each input specification(at 400VAC~: 120%)							
Max. display range	Max. 19999							
Measurement function	AC voltage(RMS)	DC voltage	AC current(RMS)	DC current	AC watt	rpm	speed	Scale
Power supply	100-240VAC~ 50/60Hz(Option: 24-70VDC⎓)							
Allowable operation voltage	90 to 110% of rated voltage							
Power consumption	Approx. 4VA		Approx. 5VA				Approx. 4VA	Approx. 5VA
Display method	7Segment LED Display							
Sampling cycle	300ms							
A/D conversion method	Dual slope integral method							
Response time	2sec(0 to Max.)							
Sampling times	2.5 times/sec							
Insulation resistance	Over 100MΩ(at 500VDC megger)							
Dielectric strength	2000VAC 50/60Hz for 1 minute							
Noise immunity	±1kV the square wave noise(pulse width:1μs) by the noise simulator							
Vibration – Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 1 hour							
Vibration – Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 minutes							
Shock – Mechanical	300m/s²(approx. 30G) in each X, Y, Z direction for 3 times							
Shock – Malfunction	100m/s²(approx. 10G) in each X, Y, Z direction for 3 times							
Environment – Ambient temperature	0 to 50℃, storage: -25 to 65℃							
Environment – Ambient humidity	35 to 85%RH, storage: 35 to 85%RH							
Display accuracy	DC: F.S. ±0.2% rdg ±1Digit, AC: F.S. ±0.5% rdg ±1Digit							
Unit weight	Approx. 172g							

※Environment resistance is rated at no freezing or condensation.

▣ Ordering Information

M 5 W - A V - 6

Measuring input range	**Number**	Refer to measuring input range
Measurment function	**V**	Volt
	A	Ampere
	W	Watt
	T	Tachometer
	S	Line Speed
	I	Scaling
Measuring input	**D**	DC Type
	A	AC Type
Size	**W**	DIN Size W72 × H36mm
Digit	**5**	19999(4½ Digit)
Item	**M**	Meter

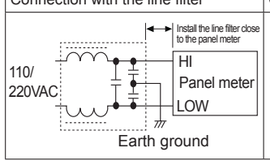
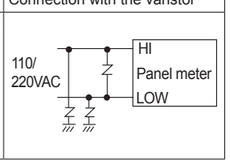
● Measuring input range

Range / Model	Blank	1	2	3	4	5	6	7	8	X
AV	—	199.99mV	1.9999V	19.999V	199.99V	400.0V	—	—	–	Option
AA	—	19.999mA	199.99mA	1.9999A	19.999A	199.99A	1999.9A	—	–	Option
DV	—	199.99mV	1.9999V	19.999V	199.99V	300.0V	–	—	–	Option
DA	—	199.99μA	1.9999mA	19.999mA	199.99mA	1.9999A	19.999A	199.99A	1999.9A	Option
W	—	—	1.9999kW	19.999kW	199.99kW	1999.9kW	—	—	–	Option
T	—	19999rpm	19999rpm	1: 0 to 10VDC measurement input 2: 0 to 10VAC measurement input X: measurement input except 1, 2						
S	—	19999 m/min	19999 m/min							
DI	19999	Option(Display:0~19999)								Option

※1: When the output of power converter is 10VDC, measuring input value is maximum. In case that output is DC4-20mA, scaling meter should be used.
※2: 1-5VDC measuring input is optional.
※Power converter should be used with Watt meter and Tachometer/Line speed meter should be used with Tacho-generator.
※When "⁞9999" or "-9999" is flashes with a certain measurement input, disconnect power supply and then check the cables.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
3. 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.

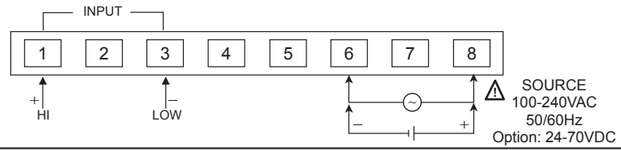
Connection with the line filter	Connection with the varistor
	

4. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

▣ Connections

※Use terminals of size specified below.

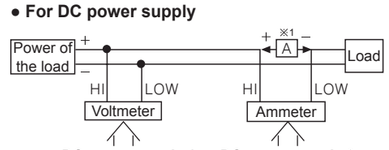
	a	b
<Forked>	Min. 3.5mm	Max. 7.0mm



▣ Connections of Applications

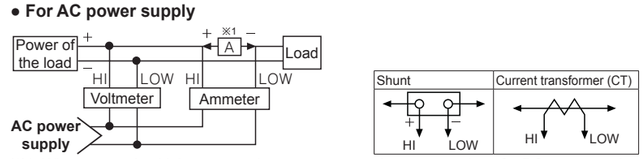
◎ Simultaneous connection of voltmeter and ammeter

● **For DC power supply**



※1: Compared to measurement input range, higher measuring voltage needs a multiplier and lower measuring voltage needs a shunt.
※When using voltmeter and ammeter simultaneously, connect the separated power supply each.
※(-) terminal of the power and (-) terminal of measurement input are shorted.

● **For AC power supply**



※1: When measuring higher current than measurement input, use a shunt for DC current and a current transformer (CT) for AC current.

▣ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, Co_2, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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