

Autonics DIGITAL PANEL METER M4W 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.

※⚠ symbol represents caution due to special circumstances in which hazards may occur.

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.

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 and relay output, 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.**
Use proper cables for the rated load current.
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.

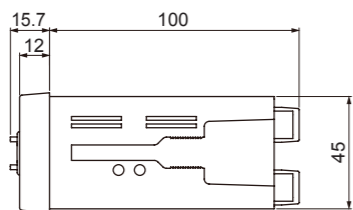
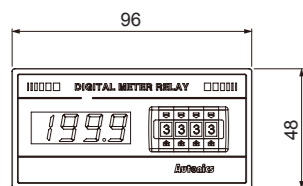
3. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in electric shock or fire.

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.

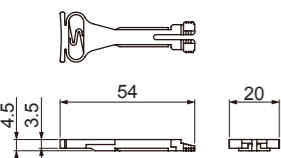
5. **Keep metal chip, dust, and wire residue from flowing into the unit.**
Failure to follow this instruction may result in fire or product damage.

Dimensions

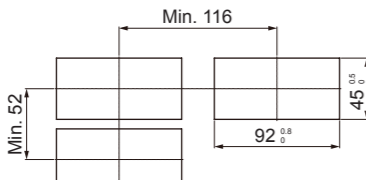
(unit: mm)



Bracket



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).

Ordering Information

M 4 W 1 P - AA R - 4

Measurement input / display scale	Number	Refer to "• Measurement input range"
AC measuring method	No-mark	Average value (AVG)
	R	Root mean square value (RMS)
Measurement function (input)	DV	DC voltage
	DA	DC current
	AV	AC voltage
	AA	AC current
	W	Power
	T	Rotation (tachometer)
	S	Speed (speed meter)
	DI	DC4-20mA (scaling meter)*1
	P	Power factor
	Output	No-mark
	1P	Single setting
	2P	Dual setting
Size	W	DIN W96×H48mm
Digit	4	1999 (3½-digit)
Item	M	Meter

※1: 1-5VDC measurement input is option.

Measurement input range

Input Function	No-mark	1	2	3	4	5	6	7	8	XX
DV	—	199.9mV	1.999V	19.99V	199.9V	300V	—	—	—	Option
DA	—	199.9μA	1.999mA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A	Option
AV(R)	—	199.9mV	1.999V	19.99V	199.9V	—	400V	—	—	Option
AA(R)	—	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A	—	—	Option
W*1	—	199.9W	1.999kW	19.99kW	199.9kW	—	—	—	—	Option
T(R)*2	—	1999rpm	1999rpm	—	—	—	—	—	—	Option
S(R)*2	—	1999 m/min	1999 m/min	—	—	—	—	—	—	Option
DI	1999	—	—	—	—	—	—	—	—	Option
P*3	—	-0.50 to 1.00	0 to 0.50	cosφ	—	—	—	—	—	Option

※1: Use the transducer. This specification is based on the transducer with 0-10VDC output. When the output of transducer is DC4-20mA or 1-5VDC, please use the scaling meter.

※2: Use the tachometer. This specification is based on the tachometer with 0-10VDC or 0-10VAC output.

※3: Use the power factor transducer.

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

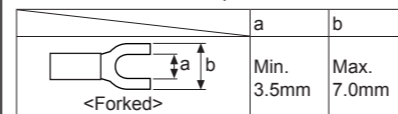
Specifications

Model	M4W-DV□	M4W-AV(R)□	M4W-DA□	M4W-AA(R)□	M4W-W□	M4W-T(R)□	M4W-S(R)□	M4W-DI□	M4W-P
Measurement function	DC voltage	AC voltage	DC current	AC current	Power	Rotation	Speed	Scaling	Power factor
Max. allowable input	Max. 300VDC=	Max. 400VAC~	Max. DC 2A	Max. AC 5A	Max. 10VDC=	Max. 10VDC=, max. 10VAC~	Max. 10VDC=, max. 10VAC~	DC4-20mA	DC4-20mA
Max. display range	150% for each input specification (at 400VAC~: 120%)								-0.50 to 1.00 to +0.50cosφ
Power supply	110/220VAC~ 50/60Hz (option: 100-240VAC~ 50/60Hz, 24-70VDC=)								
Allowable voltage range	90 to 110% of rated voltage								
Power consumption	DC input: 2W, AC input: 4VA (in case of the 1P/2P models, DC input: 3W, AC input: 5VA)								
Display method	7-segment LED display (red) (character height: 14mm)								
Display accuracy	DC input: F.S. ±0.2%rdg ±1-digit, AC input: F.S. ±0.5%rdg ±2-digit					F.S. ±0.3%rdg ±1-digit		F.S. ±3%rdg ±1-digit	
Sampling cycle	300ms								
A/D conversion method	Dual slope intergal method								
Response time	2 sec (0 to 1999)								
Sampling times	2.5 times/sec								
Relay contact capacity	M4W: None / M4W1P: 250VAC~ 3A, 150VDC= 3A, 1c / M4W2P: 250VAC~ 3A, 150VDC= 3A, 1c×2								
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							
	Malfunc ion	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 minutes							
Shock	Mechanical	300m/s ² (approx. 30G) in each X, Y, Z direction for 3 times							
	Malfunc ion	100m/s ² (approx. 10G) in each X, Y, Z direction for 3 times							
Relay life cycle	Mechanical	Min. 10,000,000 times							
	Electrical	Min. 100,000 times (250VAC 3A resistive load)							
Environment	Ambient temperature	-10 to 50°C, storage: -25 to 65°C							
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH							
Unit weight	M4W: approx. 168g (M4W-P: approx. 268g) / M4W1P: approx. 253g / M4W2P: approx. 278g								

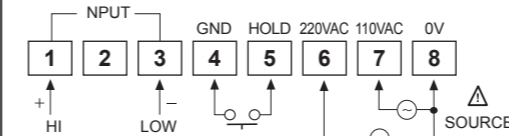
※Environment resistance is rated at no freezing or condensation.

Connections

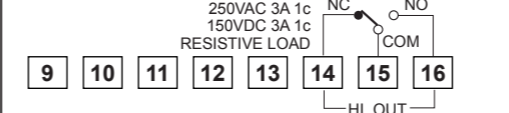
※Use terminals of size specified below.



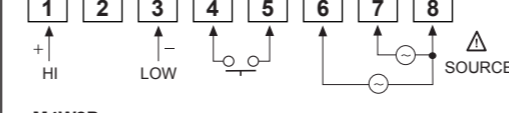
M4W



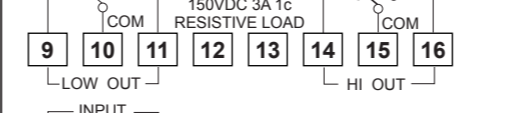
M4W1P



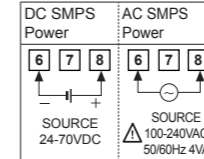
M4W2P



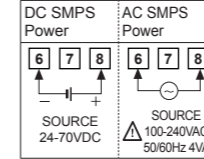
M4W-P



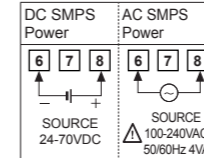
Power option



Power option



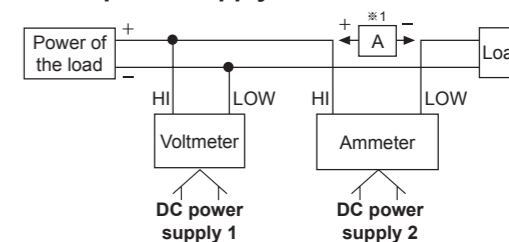
Power option



Connections of Applications

Simultaneous connection of voltmeter and ammeter

For DC power supply

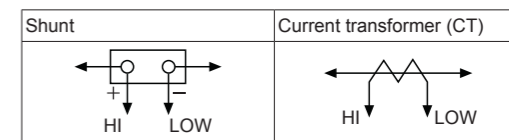
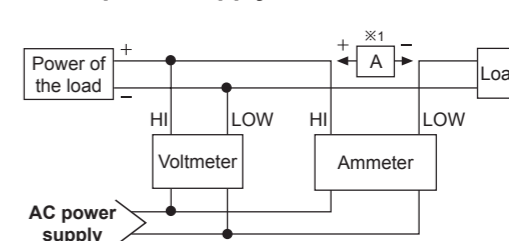


※1: Compared to measurement input range, higher measuring voltage needs a multiplier and lower measuring voltage needs a shunt.

※When using voltmeter and ammeter simultaneously, connect the separated power supply each.

※(-) terminal of the power and (-) terminal of measurement input are shorted.

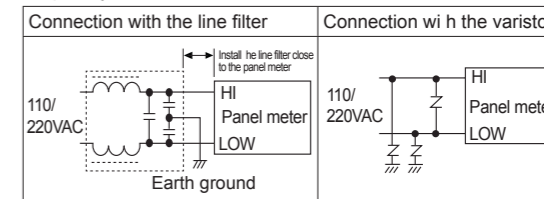
For AC power supply



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

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.



4. This unit may be used in the following environments.

- Ⓐ Indoors (in the environment condition rated in 'Specifications')
- Ⓑ Altitude max. 2,000m
- Ⓒ Pollution degree 2
- Ⓓ Installation category II

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., 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