**Autonics**

# DIGITAL PANEL METER
# M4W SERIES
## M A N U A L

Thank you very much for selecting Autonics products.
**For your safety, please read the following before using.**

## ▣ Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;

⚠ **Warning** Serious injury may result if instructions are not followed.

⚠ **Caution** Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.
⚠caution:Injury or danger may occur under special conditions.

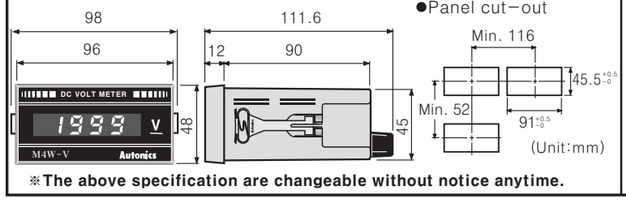
### ⚠Warning

1. **In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required.**
   It may result in serious damage, fire or human injury.
2. **It must be mounted on panel.**
   It may give an electric shock.
3. **Do not repair or check up when power on.**
   It may give an electric shock.
4. **Do not disassemble and modify this unit, when it requires. If needs, please contact us.**
   It may give an electric shock and cause a fire.
5. **Please check the number of terminal when connect power line or measuring input.**
   It may cause a fire.

### ⚠Caution

1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
2. **When wire connection, No.20AWG(0.50mm² ) should be used and screw bolt on terminal block with 0.74N • m to 0.90N • m strength.**
   It may result in malfunction or fire due to contact failure.
3. **Please observe specification rating.**
   It might shorten the life cycle of the product and cause a fire.
4. **Do not use the load beyond rated switching capacity of Relay contact.**
   It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
5. **In cleaning the unit, do not use water or an oil-based detergent.**
   It might cause an electric shock or fire that will result in damage to this product.
6. **Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray the sun, radiant heat, vibration, impact etc.**
   It may cause explosion.
7. **Do not inflow dust or wire dregs into inside of this unit.**
   It may cause a fire or mechanical trouble.
8. **Please connect properly after checking the polarity of measuring terminals.**
   It may cause a fire or explosion.

## ▣ Dimensions




※**The above specification are changeable without notice anytime.**

## ▣ Specifications

| Model | M4W-AV-□ M4W1P-AV-□ M4W2P-AV-□ | M4W-DV-□ M4W1P-DV-□ M4W2P-DV-□ | M4W-AA-□ M4W1P-AA-□ M4W2P-AA-□ | M4W-DA-□ M4W1P-DA-□ M4W2P-DA-□ | M4W-W-□ M4W1P-W-□ M4W2P-W-□ | M4W-T-□-□ M4W1P-T□-□ M4W2P-T□-□ | M4W-S-□-□ M4W1P-S□-□ M4W2P-S□-□ | M4W-DI M4W1P-DI M4W2P-DI | M4W-P |
|---|---|---|---|---|---|---|---|---|---|
| Max. allowable input | Max. AC400V | Max. DC300V | Max. AC5A | Max. DC2A | Max. DC10V | Tacho-generator output(0-10VDC) | | 1-5VDC, DC4-20mA | 4-20mA□DCDCDC |
| Max. display range | 150% for each input specification(At AC400V:120%) | | | | | | | | Max. 1999(Fixed decimal point) / -0.50 to 1.00 to +0.50cos ϕ |
| Measurement function | AC Voltage | DC Voltage | AC Ampere | DC Ampere | AC Watt | rpm | Speed | Scaling Meter□ | Power factor |
| Power supply | 110/220VAC 50/60Hz(Option:100-240VAC 50/60Hz, 24-70VDC) | | | | | | | | |
| Allowable voltage range | 90 to 110% of rated voltage | | | | | | | | |
| Power consumption | M4W : DC2W, AC4VA / M4W 1P, 2P : DC2W, AC5VA | | | | | | | | |
| Display method | 7Segment LED Display($3\frac{1}{2}$ Digit) | | | | | | | | |
| Sampling cycle | 300ms | | | | | | | | |
| A/D conversion method | Dual slope intergal method | | | | | | | | |
| Response time | 2sec.(0 to Max.) | | | | | | | | |
| Sampling times | 2.5 times/sec. | | | | | | | | |
| Insulation resistance | Min. 100MΩ(at 500VDC) | | | | | | | | |
| Dielectric strength | 2000VAC 50/60Hz for 1 minute | | | | | | | | |
| Noise strength | ±1kV the square wave noise(pulse width:1㎲) by the noise simulator | | | | | | | | |
| Vibration Mechanical | 0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour | | | | | | | | |
| Vibration Malfunction | 0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes | | | | | | | | |
| Shock Mechanical | 300m/s² (Approx. 30G) 3 times at X, Y, Z direction | | | | | | | | |
| Shock Malfunction | 100m/s² (Approx. 10G) 3 times at X, Y, Z direction | | | | | | | | |
| Ambient temperature | -10 to 50℃(at non-freezing status) | | | | | | | | |
| Storage temperature | -25 to 65℃(at non-freezing status)□ | | | | | | | | |
| Ambient humidity | 35 to 85%RH | | | | | | | | |
| Relay life cycle Mechanical | Min. 10,000,000 times | | | | | | | | |
| Relay life cycle Electrical | Min.100,000 times(250VAC 3A resistive load) | | | | | | | | |
| Output capacity | M4W : Non, M4W1P : Relay contact output 250VAC 3A 1c, M4W2P : Relay contact output 250VAC 3A 1c×2 | | | | | | | | |
| Display accuracy | DC : F • S ±0.2%rdg ±1Digit 23℃ ±5℃, AC : F • S ±0.5%rdg ±2Digit 23℃ ±5℃ | | | | | ±0.3%rdg ±1Digit 23℃ ±5℃ | | | F • S ±3% rdg 1Digit |
| Weight | M4W:400g, M4W1P:460g, M4W2P:496g | | | | | | | | |

## ▣ Ordering information

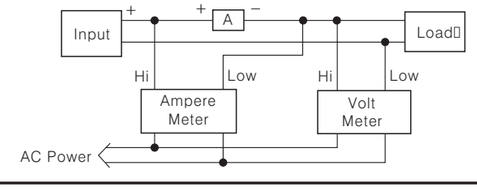
| M 4 W | | | | | | Main function |
|---|---|---|---|---|---|---|
| M | | | | | | Meter |
| 4 | | | | | | 4Digit($3\frac{1}{2}$)□ |
| W | | | | | | DIN Size W96 × H48mm |
| | 1 | P | | | | Indication type Single setting |
| | 2 | P | | | | Double setting |
| | | | D | | | DC Type |
| | | | A | | | AC Type |
| | | | | V | | Volt Meter |
| | | | | A | | Ampere Meter |
| | | | | W | | Watt Meter |
| | | | | T | | Tachometer |
| | | | | S | | Line Speed Meter |
| | | | | P | | Power factor Meter |
| | | | | | R | AVG value RMS value |
| | | | | | | Range |
| | | | | | X | Measuring range by each specification |

●Measuring range

| Range / Model | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| AV | 199.9mV□ | 1.999V | 19.99V | 199.9V | | 400V | | |
| AA | 19.99mA | 199.9mA | 1.999A | 19.99A | 199.9A | 1999A | | |
| DV | 199.9mV | 1.999V | 19.99V | 199.9V | 300V | | | |
| DA | 199.9㎂ | 1.999mA | 19.99mA | 199.9mA | 1.999A | 19.99A | 199.9A | 1999A |
| W□ | 199.9W | 1.999kW | 19.99kW | 199.9kW□ | 1999kW | | | |
| T□ | DC1999 | AC1999 | | | | | | |
| S | DC1999 | AC1999 | | | | | | |
| P | -0.50~ 1.00~0.50 | | | | | | | |

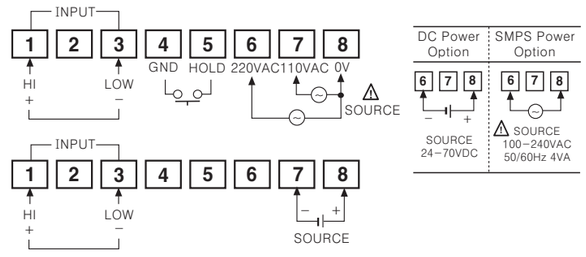
1. When measure over 2ADC, please use Shunt and measure over 5AAC, please use C • T(Current Transformer).
2. Power converter should be used with Watt meter and Tacho/Speed meter should be used with Tacho-generator.

## ▣ General block diagram




## ▣ Connections

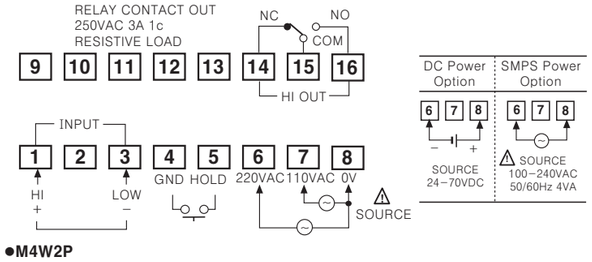
●**M4W**







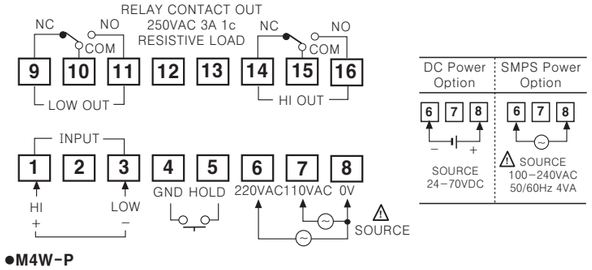
●**M4W1P**







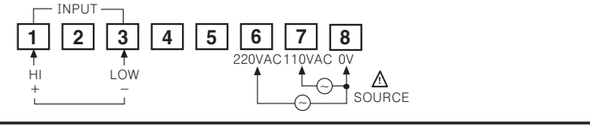
●**M4W2P**





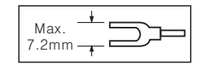


●**M4W-P**

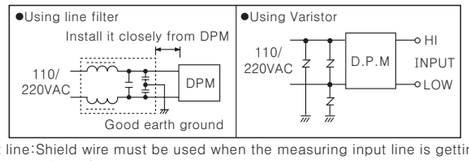



## ▣ Caution for using

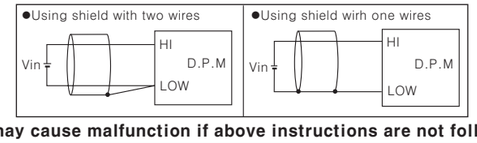
1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.




2. Please use the terminal(M3.5, Max. 7.2mm) when connect the AC power source.
3. Please use separated line from high voltage line or power line in order to avoid inductive noise.
4. Please install power switch or circuit breaker in order to cut the power supply.
5. The switch or circuit breaker should be installed near by users for safety.
6. Be sure to avoid using this unit near by machinery makes strong high frequency noise. (Welding machine, high capacity SCR unit etc.)
7. When input applied, if "1999" or "-1999" are displayed, it has some trouble with measuring input, please check the line after power off.
8. Noise inflow from power line can be serious problem for products driving of DPM by AC power. Even though there is condenser for protecting noise between lines in power transformer, but as small size product, it is very difficult to install protection components. Therefore, please install line filter, varistor or noise absorber in external lines when voltage failure occurred by power relay or magnet S/W operation, spark with high voltage.




9. Input line:Shield wire must be used when the measuring input line is getting longer or there are lots of noises.




※**It may cause malfunction if above instructions are not followed.**

## ▣ Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHO/LINE SPEED/PULSE METER
- DISPLAY UNIT
- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER
- LASER MARKING SYSTEM($CO_2$, Nd:YAG)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