

4-Digit Multi Panel Meters

MT4N Series
INSTRUCTION MANUAL

TCD210231AH

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.

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 mm²) to AWG 16 (1.30 mm²) cable or over and tighten the terminal screw with a tightening torque of 0.78 to 0.98 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.
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.
- Power supply should be insulated and limited voltage / current or Class 2, SELV power supply device.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Use twisted pair wire for communication line.
- 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.

MT 4 N - ① - ② ③

① Input type

DV: DC voltage⁰¹⁾
DA: DC current
AV: AC voltage⁰²⁾
AA: AC current⁰²⁾

② Power supply

E: 12 - 24 VDC ± 10 %,
12 - 24 VAC ± 10 % 50 / 60 Hz
4: 100 - 240 VAC ± 10 % 50 / 60 Hz

③ Preset output + Sub output

	Preset output	Sub output
N	None (indicator)	
0	Relay (OUT1 / 2)	-
1	NPN open collector (OUT1 / 2, GO)	-
2	PNP open collector (OUT1 / 2, GO)	-
3	Relay (OUT1)	Transmission (DC 4 - 20 mA)
4	Relay (OUT1)	RS485 communication
5	Relay (OUT1 / 2)	Transmission (DC 4 - 20 mA)

01) To measure the current over DC 500 mA, please select DV type because the shunt should be used.
02) In case of selecting frequency display, no output will be provided even if it is output support model.

Product Components

- Product
- Instruction manual

Manual

For proper use of the product, refer to the manuals and be sure to follow the safety considerations in the manuals.

Download the manuals from the Autonics website.

Software

Download the installation file and the manuals from the Autonics website.

■ DAQMaster

It is the comprehensive device management program for Autonics' products, providing parameter setting, monitoring and data management.

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

■ Input

• DC voltage

• DC current

• AC voltage

• AC current

■ Output

• 0: Relay

• 1: NPN open collector

• 2: PNP open collector

• 3: Relay + Transmission (DC 4 - 20 mA)

• 4: Relay + RS485 communication

• 5: Relay + Transmission (DC 4 - 20 mA)

Specifications				
Model	MT4N-DV-□□	MT4N-DA-□□	MT4N-AV-□□	MT4N-AA-□□
Input type	DC voltage	DC current	AC voltage ⁽¹⁾	AC current ⁽¹⁾
Max. allowable input	Dependent on the input type			
DC input	-5 to 110 % F.S. for each measured input range			
AC input	10 to 110 % F.S. for each measured input range			
Display method	7-segment (red) LCD ⁽²⁾ (character height: 9 mm)			
Display accuracy	Dependent on the ambient temperature			
23 ± 5 °C	± 0.1 % F.S. rdg ± 2 digit ⁽³⁾		± 0.3 % F.S. rdg ± 3 digit	
-10 to 50 °C	± 0.5 % F.S. rdg ± 3 digit			
Max. display range	-1999 to 9999 (4 digit)			
A / D conversion method	ΣΔ (Sigma Delta) ADC			
Sampling cycle	50 ms		16.6 ms	
Protection rating	IP54 (front part, IEC standard)			
Unit weight (packaged)	≈ 64 g (≈ 127 g)			
Certification	CE  ENEC ⁽⁴⁾			

01) Available frequency display, Display accuracy (23 ± 5 °C): ± 0.1 % F.S. rdg ± 2 digit
02) When using the unit at low temperature (below 0 °C), display cycle is slow due to charateristics of LCD. Control output operates normally.
03) 5 A terminal: ± 0.3 % F.S. rdg ± 3 digit
04) Except MT4N-DV/AV-E□ model

Preset output	None (indicator) / Relay / NPN open collector / PNP open collector output model
Relay	Contact capacity: 125 VAC~ 0.3 A, 30 VDC~ 1 A Contact composition: N.O (1a)
NPN / PNP open collector	Output capacity: ≤ 12 - 24 VDC~ ± 2 VDC~, 50 mA resistive load
Sub output	None (indicator) / Transmission (DC 4 - 20 mA) / RS485 communication output model
Transmission (DC 4 - 20 mA)	Resolution: 1/12,000 (load resistance: ≤ 600 Ω) Response time ⁰¹⁾ : ≤ 500 ms Output accuracy (23 ± 5 °C): ± 0.3 % F.S.
RS485 communication	Protocol: Modbus RTU

01) Based on the display cycle of 0.2 seconds.
Deviations may occur depending on the device environment and the display cycle of the product.
Response time: Time taken to proportional output to the rapidly changing input from 15 → 95 % or 95 → 15 %.

Model	MT4N-□-E□	MT4N-□-4□
Power supply	12 - 24 VDC~, 12 - 24 VAC~ 50 / 60 Hz	100 - 240 VAC~ 50 / 60 Hz
Permissible voltage range	90 to 110 % of rated voltage	
Power consumption	3 W / 5 VA ⁰¹⁾	5 VA
Insulation resistance	Between external terminal and case: ≥ 20 MΩ (500 VDC~ megger)	
Dielectric strength	Between the charging part and the case : 2,000 VAC~ 50 / 60 Hz for 1 min	Between the charging part and the case : 3,000 VAC~ 50 / 60 Hz for 1 min
Noise immunity	± 500 V square wave noise (pulse width: 1 μs) by the noise simulator	± 2 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 in each X, Y, Z direction for 2 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	
Relay life cycle	Mechanical: ≥ 5,000,000 operations Electrical: ≥ 100,000 operations (125 VAC~ 0.3A resistive load)	
Ambient temp.	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)	
Ambient humi.	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)	
Insulation type	Symbol: double or reinforced insulation (dielectric strength between the measurement input part and the power part: 1 kV)	

01) Except MT4N-□-E5: 5 W / 8 VA

Communication Interface	
■ RS485	
Comm. protocol	Modbus RTU
Application standard	Compliance with EIA RS485
Max. connection	31-unit (address: 01 to 99)
Comm. synchronous method	Asynchronous
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Comm. speed	1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps
Start bit	1-bit (fixed)
Data bit	8-bit (fixed)
Parity bit	None, Even, Odd
Stop bit	1-bit, 2-bit
EEPROM life cycle	≈ 1,000,000 operations (Erase / Write)

