

Loop-Power Panel Meters (Indicator)



M4NS, M4YS 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

- Loop-powered: power supplied by loop current
- Measured input: DC 4 - 20 mA
- Display range: -1999 to 9999
- High / low-limit display scale function
- Decimal point setting function
- Input high / low-value correction function
- Display peak value monitoring function
- Set peak value monitoring delay time
- Display cycle time setting (0.5 / 1 / 2 / 3 / 4 / 5 seconds)
- Error display function
 - M4NS: DIN W 48 × H 24 mm
 - M4YS: DIN W 72 × H 36 mm

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.
- 04. Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
- 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.

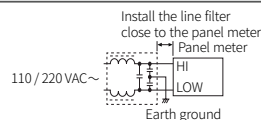
⚠ Caution Failure to follow instructions may result in injury or product damage.

- 01. When connecting the power / measurement input and relay output, use AWG 24 (0.20 mm²) to AWG 15 (1.65 mm²) 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.
- 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.

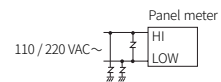
Cautions during Use

- 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.
- 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.

M 4 ① ② - ③ ④

① Size

N: DIN W 48 × H 24 mm
Y: DIN W 72 × H 36 mm

② Measurement method

S: Scaling

③ Power

N: Loop powered

④ Input type

A: Current (DC 4 - 20 mA)

Product Components

Model	M4NS-NA	M4YS-NA
Product components	Product, instruction manual	
Bracket	× 1	× 2

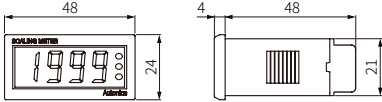
Sold Separately

- [M4YS-NA] Terminal protection cover: M7P-COVER

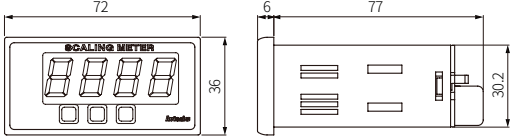
Dimensions

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

• M4NS-NA

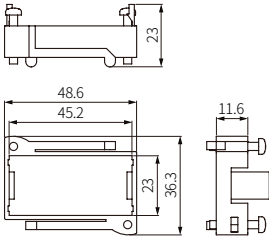


• M4YS-NA

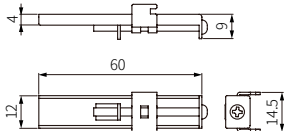


■ Bracket

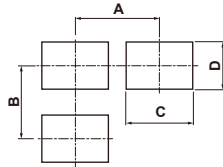
• M4NS-NA



• M4YS-NA



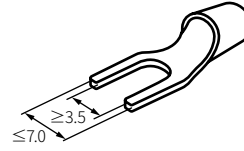
■ Panel cut-out



	A	B	C	D
M4NS-NA	≥ 60	≥ 37	45 ^{+0.3}	22.2 ^{+0.3}
M4YS-NA	≥ 91	≥ 40	68 ^{+0.7}	31.5 ^{+0.5}

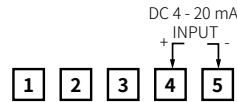
Cautions during Wiring

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

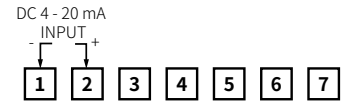


Connections

• M4NS-NA



• M4YS-NA



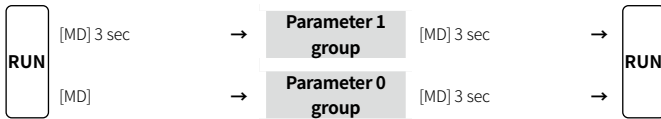
Specifications

Model	M4NS-NA	M4YS-NA
Input type	DC 4 - 20 mA	
Impedance between input lines ⁰¹⁾	≤ 600 Ω	
Display method	7-segment (red) LED (character height: 10 mm)	7-segment (red) LED (character height: 14 mm)
Display accuracy	Dependent on the ambient temperature	
25 ± 5 °C	0.3 % F.S. rdg ± 1-digit	
-10 to 50 °C	0.4 % F.S. rdg ± 1-digit	
Display scale	-1999 to 9999 (4-digit)	
Display cycle	0.5, 1, 2, 3, 4, 5 sec	
Resolution	1 / 12,000	
Unit weight	≈ 44 g	≈ 110 g
Certification	FRC	

01) Based on input power 24 VDC=

Power supply	Loop powered type
Insulation resistance	≥ 100 MΩ (500 VDC= megger)
Dielectric strength	Between the charging part and the case : 2,000 VAC ~ 50 / 60 Hz for 1 min
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/s ² (≈ 30 G) in each X, Y, Z direction for 3 times
Shock (malfunction)	100 m/s ² (≈ 10 G) in each X, Y, Z direction for 3 times
Ambient temperature	-10 to 50 °C, storage: -25 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

Mode Setting



Parameter Setting

- If any key is not entered for 60 sec in each parameter, it returns to RUN mode.
- [MD] key: Saves current setting value and moves to the next parameter.
- [◀] key: Checks fixed value / Changes setting digits.
- [▲] key: Changes setting values.

Parameter 1 group

Parameter	Display	Defaults	Setting range
1-1 Low-limit scale	L - 5 C	0400	-1.999 to 9.999, -19.99 to 99.99, -199.9 to 999.9, -1999 to 9999 • Low-limit display value for 4 mA input
1-2 High-limit scale	H - 5 C	2000	-1.999 to 9.999, -19.99 to 99.99, -199.9 to 999.9, -1999 to 9999 • High-limit display value for 20 mA input
1-3 Decimal point position	d o t	00.00	0000, 000.0, 00.00, 0.000
1-4 Low-limit display value correction	i n b.L	0000	-100 to 100 digit
1-5 High-limit display value correction	i n b.H	1000	0.900 to 1.100 %
1-6 Peak monitoring delay time	P E L t	0 1 5	0 to 30 sec
1-7 Display cycle	d i 5.t	0.5 5	0.5, 1.0, 2.0, 3.0, 4.0, 5.0 sec
1-8 Error display range	E.P.C t	3	0: HHHH / LLLL are displayed when input current is over 0% out DC 4 - 20 mA by high / low-limit 1: HHHH / LLLL are displayed when input current is over 1% out DC 4 - 20 mA by high / low-limit 2: HHHH / LLLL are displayed when input current is over 2% out DC 4 - 20 mA by high / low-limit 3: HHHH / LLLL are displayed when input current is over 3% out DC 4 - 20 mA by high / low-limit 4: L-SC / H-SC are displayed when input current is out of DC 4-20 mA
1-9 Lock	L o C	o F F	ON, OFF • Disable to change or set parameter but enable to check the setting value in parameter group.

Parameter 0 group

Parameter	Display	Defaults	Reset	Display condition
0-1 Display max. peak value	P E P H	2000	Press the [◀] key to reset.	1-6 Peak monitoring delay time: except 0
0-2 Display min. peak value	P E P L	400		

Error

Error display is released automatically when it is in the measured and display range.

Display	Description
HHHH	Turns on when the current display value exceeds the range of max. display value (9999 / 1999)
LLLL	Turns on when the current display value exceeds the range of min. display value (-1999 / 9999)

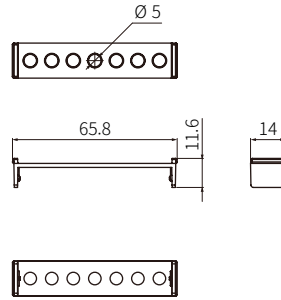
The error display range is different depending on the setting value of the 1-8 Error display range.⁰¹⁾

01) DC 4-20 mA (16 mA scale) input, based on 1-8 Error display range = 3
If the input current is 3% higher than 20 mA, 16 mA × 3% = 0.48 mA → 20 mA + 0.48 mA = 20.48 mA, so HHHH is displayed when the input current is over 20.48 mA.
If the input current is 3% lower than 4 mA, 16 mA × 3% = 0.48 mA → 4 mA - 0.48 mA = 3.52 mA, so LLLL is displayed when the input current is below 3.52 mA.

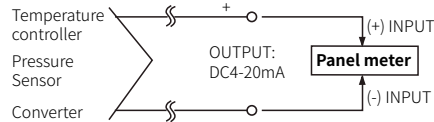
Sold Separately: Terminal Protection Cover

• Unit: mm

M7P-COVER



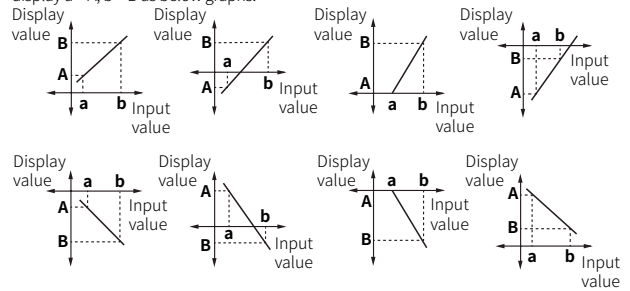
Connections of Applications



Function Description

High / Low-limit scale value

This function is to display setting of particular high / low-limit value in order to display high / low-limit value of measured input.
If measured inputs are a = DC 4 mA and b = DC 20 mA and particular values are A and B, it will display a = A, b = B as below graphs.



Error correction

It corrects display value error of measured input.

$$\text{Display value} = (\text{Measured value} \times \text{High-limit display value gradient correction}) + \text{Low-limit display value deviation correction}$$

• E.g.: When the input range DC 4 - 20 mA and the display range is 0 to 500.0

If the low-limit display value is 1.2 to 4 mA input, set -12 as deviation correction value to display 0.0 by adjusting offset of the low-limit display value.
The display value to 20 mA measured input varies by adjusting the offset of low-limit display value.

If this display value is 500.5, calculate 500.0 / 500.5 (desired display value / the display value), and set the 0.999 correction value as the high-limit display value gradient correction parameter to display 500.0 by adjusting gradient of high-limit value.

Display cycle

In some applications the measured input may fluctuate which in turn causes the display to fluctuate.
By adjusting the display cycle delay function time the operator can adjust the display time. For example, if the operator sets the display cycle time to 4 sec, the display value displayed will be the average input value over 4 sec and also will show any changes if any every 4 sec.

Max. / Min. peak value

It monitors max./min. peak value of display value based on the current displays value and then displays the data at the parameters.

When pressing [◀] keys at the parameters, the monitored data is initialized.

Set the delay time at peak monitoring delay time parameter in order to prevent malfunction caused by initial overcurrent or overvoltage, when monitoring the peak value.

Segment Table

The segments displayed on the product indicate the following meanings. It may differ depending on the product.

7 segment				11 segment				12 segment				16 segment			
0	0	l	l	0	0	l	l	0	0	l	l	0	0	l	l
1	1	J	J	1	1	J	J	1	1	J	J	1	1	J	J
2	2	K	K	2	2	K	K	2	2	K	K	2	2	K	K
3	3	L	L	3	3	L	L	3	3	L	L	3	3	L	L
4	4	M	M	4	4	M	M	4	4	M	M	4	4	M	M
5	5	N	N	5	5	N	N	5	5	N	N	5	5	N	N
6	6	O	O	6	6	O	O	6	6	O	O	6	6	O	O
7	7	P	P	7	7	P	P	7	7	P	P	7	7	P	P
8	8	Q	Q	8	8	Q	Q	8	8	Q	Q	8	8	Q	Q
9	9	R	R	9	9	R	R	9	9	R	R	9	9	R	R
A	A	S	S	A	A	S	S	A	A	S	S	A	A	S	S
b	B	T	T	b	B	T	T	b	B	T	T	Ḃ	B	Ṫ	T
c	C	U	U	c	C	U	U	c	C	U	U	Ĉ	C	Ū	U
d	D	V	V	d	D	V	V	d	D	V	V	Ḑ	D	Ṽ	V
E	E	W	W	E	E	W	W	E	E	W	W	Ĕ	E	Ŵ	W
F	F	X	X	F	F	X	X	F	F	X	X	Ḟ	F	Ẃ	X
G	G	Y	Y	G	G	Y	Y	G	G	Y	Y	Ĝ	G	Ẅ	Y
H	H	Z	Z	H	H	Z	Z	H	H	Z	Z	Ĥ	H	Ẇ	Z