Autonics

LCD Multi Panel Meters

MX4W 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

- LCD display with easy-to-read white PV characters

- Isolated input and power modules allow powering of multiple units using a single power supply

- Compact, space-saving design (rear-length: 20 mm)
  : reduced rear-length size by 80 % compared to same DIN size panel meters (MT4W)

- Various input options (by model)
  - Input options: DC / AC voltage, DC / AC current

- Maximum allowed input: 500 VDC⎓, 500 VAC∼, DC 5 A, AC 5 A

- Display range: -9999 to 9999

- High / low-limit display scale function

- AC frequency measurement (range: 0.100 to 1200 Hz)

- Preset output: OUT1, OUT2 (NPN / PNP open collector output)

- Power factor display / output function
  : displays analog outputs (1 - 5 V, 4 - 20 mA) from power factor converters as -0.50 to 1.00 to 0.50

- Various functions
  : peak display value monitoring, display cycle delay, zero-point adjustment, peak display value correction, etc.

- Power supply: 24 - 240 VAC∼ 50 / 60 Hz, 24 - 240 VDC⎓ universal

CE UK CA c ᴺᴸus

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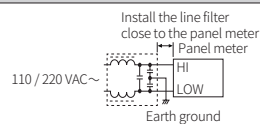
⚠ **Caution** Failure to follow instructions may result in injury or product damage.

01. **When connecting the power / measurement input and relay output, use AWG 24 (0.20 mm²) to AWG 15 (1.65 mm²) cable or over and tighten the terminal screw with a tightening torque of 0.78 to 0.98 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 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.
- 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
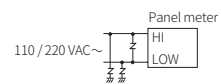
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics webstie.

| MX | 4 | W | - | ❶ | - | ❷ | ❸ |

❶ Input type
V: DC / AC voltage
A: DC / AC current
❷ Power supply
F: 24 - 240 VAC∼ / VDC⎓

❸ Preset output
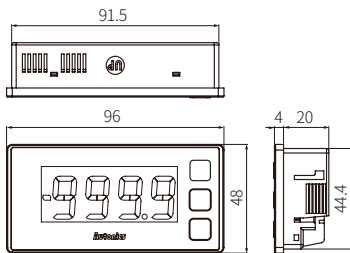N: Indicator
1: NPN open collector
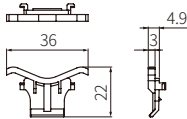2: PNP open collector

Product Components

• Product
• Bracket × 2

• Instruction manual
• Terminal cover × 1

Dimensions

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

91.5

96
48
44.4
4 20

■ Bracket

36
22
4.9
3

■ Panel cut-out

≥ 116
≥ 52
92 $^{+0.8}_{0}$
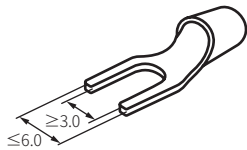45 $^{+0.6}_{0}$

■ Terminal cover

93.7
15.5
15.9
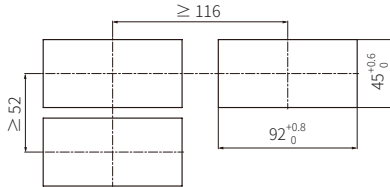
Cautions during Wiring

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

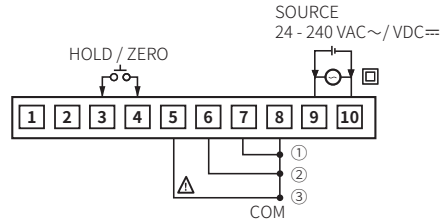≥3.0
≤6.0

• Input and output are insulated from the power.

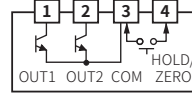| Option output and hold / zero	ADC input circuit and display part	Power
1 2 3 4	5 6 7 8	9 10

Connections

■ Input

• For using DC power, connect wires regardless of polarity.
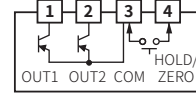• Indicator model does not have the hold / zero terminal.

HOLD / ZERO

SOURCE
24 - 240 VAC∼ / VDC⎓

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

① ② ③
COM

		MX4W-V-F□	MX4W-A-F□
①	DC	± 500 mVDC⎓ / ± 200 mVDC⎓ / ± 50 mVDC⎓	± 20 mA / 4 - 20 mA / ± 5 mA / ± 2 mA
	AC	0 - 500 mVAC∼ / 0 - 200 mVAC∼ / 0 - 50 mVAC∼	0 - 20 mA / 0 - 5 mA / 0 - 2 mA
②	DC	± 20 VDC⎓ / ± 5 VDC⎓ / 1 - 5 VDC⎓ / ± 2 VDC⎓	± 500 mA / ± 200 mA / ± 50 mA
	AC	0 - 20 VAC∼ / 0 - 5 VAC∼ / 0 - 2 VAC∼	0 - 500 mA / 0 - 200 mA / 0 - 50 mA
③	DC	± 500 VDC⎓ / ± 200 VDC⎓ / ± 50 VDC⎓	± 5 A / ± 2 A
	AC	0 - 500 VAC∼ / 0 - 200 VAC∼ / 0 - 110 VAC∼ / 0 - 50 VAC∼	0 - 5 A / 0 - 2 A

■ Output

• 1: NPN open collector

| 1 | 2 | 3 | 4 |
| OUT1 | OUT2 | COM | HOLD/ZERO |

• 2: PNP open collector

| 1 | 2 | 3 | 4 |
| OUT1 | OUT2 | COM | HOLD/ZERO |

Specifications

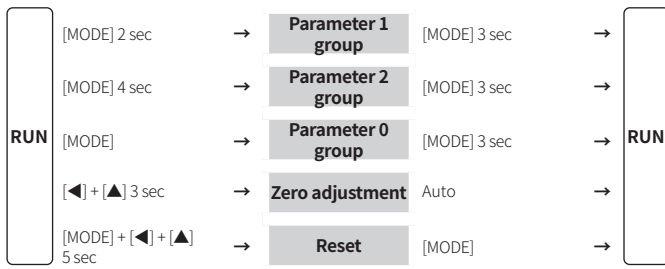| Model	MX4W-V-F□	MX4W-A-F□
Input type	DC / AC voltage	DC / AC current
Max. allowable input	Dependent on the input type	
+DC input	≈ -10 to 110 % F.S. for each measured input range	
-DC input	≈ -110 to 110 % F.S. for each measured input range	
AC input	≈ 10 to 110 % F.S. for each measured input range	
Display method	12-segment LCD [01] - measurement value display part: white, character height: 19 mm - other display parts: red, green, yellow (indicator: white)	
Display accuracy	Dependent on the ambient temperature	
23 ± 5 °C (DC input)	± 0.1 % F.S. rdg ± 2-digit	± 0.1 % F.S. rdg ± 2-digit [02]
23 ± 5 °C (AC input)	± 0.3 % F.S. rdg ± 3-digit	± 0.3 % F.S. rdg ± 3-digit
0 to 50 °C	± 0.5 % F.S. rdg ± 3-digit	± 0.5 % F.S. rdg ± 3-digit [03]
Display cycle	0.2 to 5.0 sec (select per 0.1 sec)	
Display scale	-9999 to 9999 (4-digit)	
A / D conversion method	ΣΔ (Sigma Delta) analog-to-digital converter	
Sampling cycle (DC input)	50 ms	
Sampling cycle (AC input)	16.6 ms	
Resolution	1 / 20,000	
Preset output	NPN / PNP open collector output model	
Load voltage	≤ 30 VDC⎓	
Load current	≤ 100 mA	
Residual voltage	NPN open collector output: ≤ 1 VDC⎓ / PNP open collector output: ≤ 2 VDC⎓	
Unit weight (packaged)	≈ 77 g (≈ 100 g)	
Approval	CE UK ⌐ 🇺🇱us	

01) When using the unit at low temperature (below 0 °C), display cycle is slow due to charateristics of LCD. Control output operates normally.
02) 5 A terminal: ± 0.3 % F.S. rdg ± 3-digit
03) 5 A terminal: ± 1 % F.S. rdg ± 3-digit

Power supply	24 - 240 VDC⎓ ± 10 %, 24 - 240 VAC∼ ± 10 % 50 / 60 Hz
Power consumption	DC: ≤ 3 W, AC: ≤ 5 VA
Insulation resistance	≥ 100 MΩ (500 VDC⎓ megger)
Dielectric strength	Between the charging part and the case: 3,000 VAC∼ 50 / 60 Hz for 1 min
Noise immunity	± 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
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	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)

Mode Setting

RUN	[MODE] 2 sec	→	**Parameter 1 group**	[MODE] 3 sec	→	RUN
	[MODE] 4 sec	→	**Parameter 2 group**	[MODE] 3 sec	→	
	[MODE]	→	**Parameter 0 group**	[MODE] 3 sec	→	
	[◀] + [▲] 3 sec	→	**Zero adjustment**	Auto	→	
	[MODE] + [◀] + [▲] 5 sec	→	**Reset**	[MODE]	→	

Parameter Setting

- Some parameters are activated / deactivated depending on the model or setting of other parameters. Refer to the description of each parameter.
- If any key is not entered for 60 sec in each parameter, it returns to RUN mode.
- After returning to RUN mode, press the [MODE] key within 2 sec, it returns to previous parameter.
- [MODE] 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	Display condition
1-1	Input type	dC AC	dC	DC, -DC, AC	-
1-2	Input range [01]	IN-R	500.0	[MX4W-V-F□] • Refer to Input Range and Display Range	1-1 Input type: DC, AC
			-500.0		1-1 Input type: -DC
			5.000	[MX4W-A-F□] • Refer to Input Range and Display Range	1-1 Input type: DC, AC
			-5.000		1-1 Input type: -DC
1-3	Display method	dISP	StNd	STND: standard, SCAL: scale, FREQ: frequency*, PF: power factor**	*1-1 Input type: AC **1-1 Input type: ±DC
1-4		IN-t	RMS	AVG, RMS	1-1 Input type: AC
1-5	High-limit display value gradient correction	SPAN	1.000	0.100 to 9.999 %	1-3 Display method: STND
1-6	Low-limit display value deviation correction	ZERo	00	-99 to 99	
1-7	Decimal point position	dot	000.0	[DC / AC voltage model] 0, 0.0, 0.00, 0.000	1-3 Display method: SCAL & * 1-7 Decimal point position: 0.0, 0.00, 0.000
			0.000	[DC / AC current model] 0, 0.0, 0.00, 0.000	
1-8	High-limit scale	H-SC	-	Display value against max. measurement input*	
1-9	Low-limit scale	L-SC	-	Display value against min. measurement input*	
1-10	High-limit display value gradient correction	SPAN	1.000	0.100 to 9.999 %	
1-11	Low-limit display value deviation correction [02]	ZERo	00	-99 to 99	
1-12	Decimal point position [03]	dot	000.0	[DC / AC voltage model] 0, 0.0, 0.00, 0.000	1-3 Display method: FREQ
			0.000	[DC / AC current model] 0, 0.0, 0.00, 0.000	
1-13	High-limit display value gradient correction	SPAN	1.000	0.100 to 9.999	
1-14	Exponent of SPAN	E.SPN	10-0	10-0: 10^0, 10-1: 10^{-1}, 10-2: 10^{-2}, 10 1: 10^1	
1-15	High-limit input value	H-RG	-	Max. value of input range	1-3 Display method: PF
1-16	Low-limit input value	L-RG	-	Min. value of input range	
1-17	Display unit	d.UNt	V	[DC / AC voltage model] V, MV, OFF	-
			A	[DC / AC current model] A, MA, HZ, OFF	

01) When changing input range, the following parameters are reset.
  - Parameter 1 group: display method, measurement method, decimal point position, high / low-limit scale, high-limit display value gradient correction, exponent of span, high / low-limit input value, display unit
  - Parameter 2 group: OUT1 / 2 output operation mode, OUT1 / 2 hysteresis
  - Parameter 0 group: OUT1 / 2 high-limit output setting value, OUT1 / 2 low-limit output setting value, max. / min. peak value
02) Low-limit display value deviation correction range is within -99 to 99 for D^0, D^{-1} digit regardless of decimal point position.
03) Display range is variable according to decimal point position.

Dot	Display range	Frequency measurement range
0	-9999 to 9999	1 to 1200 Hz
0.0	-999.9 to 999.9	0.1 to 99.9 Hz
0.00	-99.99 to 99.99	0.10 to 99.99 Hz
0.000	-9.999 to 9.999	0.100 to 9.999 Hz

■ Parameter 2 group

Parameter		Display	Defaults	Setting range	Display condition
2-1	OUT1 operation mode	oU1.t	oFF	[Preset output model] OFF, HIGH, LOW, HL, HL-G	-
2-2	OUT2 operation mode	oU2.t	oFF	[Preset output model] OFF, HIGH, LOW, HL, HL-G	-
2-3	OUT1 hysteresis	HYS.1	00.1	[DC / AC voltage model] Within 10 % of max. display range, digit	2-1 OUT1 operation mode: except OFF
			0.001	[DC / AC current model] Within 10 % of max. display range, digit	
2-4	OUT2 hysteresis	HYS.2	00.1	[DC / AC voltage model] Within 10 % of max. display range, digit	2-2 OUT2 operation mode: except OFF
			0.001	[DC / AC current model] Within 10 % of max. display range, digit	
2-5	Startup compensation time	St R.t	00.0	00.0 to 99.9 sec	-
2-6	Peak monitoring delay time	PE R.h	00 S	00 to 30 sec	-
2-7	Display cycle	di 5.t	0.2 S	0.2 to 5.0 sec	-
2-8	External input terminal	di -t	HoLd	[Preset output model] HOLD, ZERO	-
2-9	Lock	LoC	oFF	OFF: unlock, LOC1: lock parameter 1, LOC2: lock parameter 1, 2, LOC3: lock parameter 0, 1 and 2	-

■ Parameter 0 group

Parameter		Display	Defaults	Setting range [01]	Display condition
0-1	OUT1 high-limit output setting value	oU1.H	500.0	[DC / AC voltage & preset output model]	2-1 OUT1 operation mode: HIGH, HL, HL-G
			5.000	[DC / AC current & preset output model]	
0-2	OUT1 low-limit output setting value	oU1.L	000.0	[DC / AC voltage & preset output model]	1-1 Input type: DC, AC & 2-1 OUT1 operation mode: LOW, HL, HL-G
			0.000	[DC / AC current & preset output model]	
			-500.0	[DC / AC voltage & preset output model]	1-1 Input type: -DC & 2-1 OUT1 operation mode: LOW, HL, HL-G
			-5.000	[DC / AC current & preset output model]	
0-3	OUT2 high-limit output setting value	oU2.H	500.0	[DC / AC voltage & preset output model]	2-2 OUT2 operation mode: HIGH, HL, HL-G
			5.000	[DC / AC current & preset output model]	
0-4	OUT2 low-limit output setting value	oU2.L	000.0	[DC / AC voltage & preset output model]	1-1 Input type: DC, AC & 2-2 OUT2 operation mode: LOW, HL, HL-G
			0.000	[DC / AC current & preset output model]	
			-500.0	[DC / AC voltage & preset output model]	1-1 Input type: -DC & 2-2 OUT2 operation mode: LOW, HL, HL-G
			-5.000	[DC / AC current & preset output model]	
0-5	Display max. peak value [02]	H.PE h	0.0	Max. peak value in run mode	2-1 OUT1 operation mode: except OFF or 2-2 OUT2 operation mode: except OFF & 2-6 Peak monitoring delay time: except 00
0-6	Display min. peak value [02]	L.PE h	0.0	Min. peak value in run mode	

01) Setting range of OUT1 / 2 high / low-limit output setting value
  1-1 input type +DC = -10 to 110 % of display range
  1-1 input type -DC = -110 to 110 % of display range
  1-1 input type AC = 0 to 110 % of display range
02) Reset: Press [◀] + [▲] key for over 1 sec

Input Range and Display Range

When the max. input value is over the 100 %, it may result in input terminal damage.

■ DC / AC voltage model (input type: DC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
0.0 - 500.0 VDC⎓	0.0 to 500.0	500.0	4.062 MΩ
0 - 500 VDC⎓	0 to 500	500	
0.0 - 200.0 VDC⎓	0.0 to 200.0	200.0	
0 - 200 VDC⎓	0 to 200	200	
0.00 - 50.00 VDC⎓	0.00 to 50.0	50.00	162 kΩ
0.0 - 50.0 VDC⎓	0.0 to 50.0	50.0	
0.00 - 20.00 VDC⎓	0.00 to 20.00	20.00	
0.0 - 20.0 VDC⎓	0.0 to 20.0	20.0	
0.000 - 5.000 VDC⎓	0.000 to 5.000	5.000	
0.00 - 5.00 VDC⎓	0.00 to 5.00	5.00	
1.000 - 5.000 VDC⎓	1.000 to 5.000	1-5A	
1.00 - 5.00 VDC⎓	1.00 to 5.00	1-5b	
0.000 - 2.000 VDC⎓	0.000 to 2.000	2.000	
0.00 - 2.00 VDC⎓	0.00 to 2.00	2.00	
0.0 - 500.0 mVDC⎓	0.0 to 500.0	500.0	4 kΩ
0 - 500 mVDC⎓	0 to 500	500	
0.0 - 200.0 mVDC⎓	0.0 to 200.0	200.0	
0 - 200 mVDC⎓	0 to 200	200	
0.00 - 50.00 mVDC⎓	0.00 to 50.00	50.00	
0.0 - 50.0 mVDC⎓	0.0 to 50.0	50.0	

Decimals / Display range (SCAL):

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

■ DC / AC voltage model (input type: -DC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
-500.0 - 500.0 VDC⎓	-500.0 to 500.0	-500.0	4.062 MΩ
-500 - 500 VDC⎓	-500 to 500	-500	
-200.0 - 200.0 VDC⎓	-200.0 to 200.0	-200.0	
-200 - 200 VDC⎓	-200 to 200	-200	
-50.00 - 50.00 VDC⎓	-50.00 to 50.00	-50.00	162 kΩ
-50.0 - 50.0 VDC⎓	-50.0 to 50.0	-50.0	
-20.00 - 20.00 VDC⎓	-20.00 to 20.00	-20.00	
-20.0 - 20.0 VDC⎓	-20.0 to 20.0	-20.0	
-5.000 - 5.000 VDC⎓	-5.000 to 5.000	-5.000	
-5.00 - 5.00 VDC⎓	-5.00 to 5.00	-5.00	
-2.000 - 2.000 VDC⎓	-2.000 to 2.000	-2.000	
-2.00 - 2.00 VDC⎓	-2.00 to 2.00	-2.00	
-500.0 - 500.0 mVDC⎓	-500.0 to 500.0	-500.0	4 kΩ
-500 - 500 mVDC⎓	-500 to 500	-500	
-200.0 - 200.0 mVDC⎓	-200.0 to 200.0	-200.0	
-200 - 200 mVDC⎓	-200 to 200	-200	
-50.00 - 50.00 mVDC⎓	-50.00 to 50.00	-50.00	
-50.0 - 50.0 mVDC⎓	-50.0 to 50.0	-50.0	

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

■ DC / AC voltage model (input type: AC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
0.0 - 500.0 VAC∼	0.0 to 500.0	500.0	4.062 MΩ
0 - 500 VAC∼	0 to 500	500	
0.0 - 200.0 VAC∼	0.0 to 200.0	200.0	
0 - 200 VAC∼	0 to 200	200	
0.0 - 110.0 VAC∼	0.0 to 110.0	110.0	
0 - 110 VAC∼	0 to 110	110	
0.00 - 50.00 VAC∼	0.00 to 50.00	50.00	162 kΩ
0.0 - 50.0 VAC∼	0.0 to 50.0	50.0	
0.00 - 20.00 VAC∼	0.00 to 20.0	20.00	
0.0 - 20.0 VAC∼	0.0 to 20.0	20.0	
0.000 - 5.000 VAC∼	0.000 to 5.000	5.000	
0.00 - 5.00 VAC∼	0.00 to 5.00	5.00	
0.000 - 2.000 VAC∼	0.000 to 2.000	2.000	
0.00 - 2.00 VAC∼	0.00 to 2.00	2.00	
0.0 - 500.0 mVAC∼	0.0 to 500.0	500.0	4 kΩ
0 - 500 mVAC∼	0 to 500	500	
0.0 - 200.0 mVAC∼	0.0 to 200.0	200.0	
0 - 200 mVAC∼	0 to 200	200	
0.00 - 50.00 mVAC∼	0.00 to 50.00	50.00	
0.0 - 50.0 mVAC∼	0.0 to 50.0	50.0	

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

■ DC / AC current model (input type: DC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
0.000 - 5.000 A	0.000 to 5.000	5.000	0.02 Ω
0.00 - 5.00 A	0.00 to 5.00	5.00	
0.000 - 2.000 A	0.000 to 2.000	2.000	
0.00 - 2.00 A	0.00 to 2.00	2.00	
0.0 - 500.0 mA	0.0 to 500.0	500.0	0.87 Ω
0 - 500 mA	0 to 500	500	
0.0 - 200.0 mA	0.0 to 200.0	200.0	
0 - 200 mA	0 to 200	200	
0.00 - 50.00 mA	0.00 to 50.00	50.00	
0.0 - 50.0 mA	0.0 to 50.0	50.0	
0.00 - 20.00 mA	0.00 to 20.00	20.00	
0.0 - 20.0 mA	0.0 to 20.0	20.0	21.87 Ω
4.00 - 20.00 mA	4.00 to 20.00	4A20	
4.0 - 20.0 mA	4.0 to 20.0	4b20	
0.000 - 5.000 mA	0.000 to 5.000	5.000	
0.00 - 5.00 mA	0.00 to 5.00	5.00	
0.000 - 2.000 mA	0.000 to 2.000	2.000	
0.00 - 2.00 mA	0.00 to 2.00	2.00	

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

■ DC / AC current model (input type: -DC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
-5.000 - 5.000 A	-5.000 to 5.000	-5.000	0.02 Ω
-5.00 - 5.00 A	-5.00 to 5.00	-5.00	
-2.000 - 2.000 A	-2.000 to 2.000	-2.000	
-2.00 - 2.00 A	-2.00 to 2.00	-2.00	
-500.0 - 500.0 mA	-500.0 to 500.0	-500.0	0.87 Ω
-500 - 500 mA	-500 to 500	-500	
-200.0 - 200.0 mA	-200.0 to 200.0	-200.0	
-200 - 200 mA	-200 to 200	-200	
-50.00 - 50.00 mA	-50.00 to 50.00	-50.00	
-50.0 - 50.0 mA	-50.0 to 50.0	-50.0	
-20.00 - 20.00 mA	-20.00 to 20.00	-20.00	
-20.0 - 20.0 mA	-20.0 to 20.0	-20.0	21.87 Ω
-5.000 - 5.000 mA	-5.000 to 5.000	-5.000	
-5.00 - 5.00 mA	-5.00 to 5.00	-5.00	
-2.000 - 2.000 mA	-2.000 to 2.000	-2.000	
-2.00 - 2.00 mA	-2.00 to 2.00	-2.00	

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

■ DC / AC current model (input type: AC)

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL [01]	
0.000 - 5.000 A	0.000 to 5.000	5.000	0.02 Ω
0.00 - 5.00 A	0.00 to 5.00	5.00	
0.000 - 2.000 A	0.000 to 2.000	2.000	
0.00 - 2.00 A	0.00 to 2.00	2.00	
0.0 - 500.0 mA	0.0 to 500.0	500.0	0.87 Ω
0 - 500 mA	0 to 500	500	
0.0 - 200.0 mA	0.0 to 200.0	200.0	
0 - 200 mA	0 to 200	200	
0.00 - 50.00 mA	0.00 to 50.00	50.00	
0.0 - 50.0 mA	0.0 to 50.0	50.0	
0.00 - 20.00 mA	0.00 to 20.00	20.00	
0.0 - 20.0 mA	0.0 to 20.0	20.0	21.87 Ω
0.000 - 5.000 mA	0.000 to 5.000	5.000	
0.00 - 5.00 mA	0.00 to 5.00	5.00	
0.000 - 2.000 mA	0.000 to 2.000	2.000	
0.00 - 2.00 mA	0.00 to 2.00	2.00	

Decimals	Display range
0	-9999 to 9999
0.0	-999.9 to 999.9
0.00	-99.99 to 99.99
0.000	-9.999 to 9.999

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.
When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

Output Operation Mode

- The below describes based on OUT1.
- OUT1 and OUT2 of output operations are same. It operates individually by the set output operation mode.
- When changing output operation mode, high-limit / low-limit output setting value, hysteresis are reset.

MODE	Output operation	Preset output	
		ON	**OFF**
oFF	OUT	No output	
HI GH	OUT.H / Hys / OUT	OU1.H ≤ Display value	OU1.H - HYS.1 ≥ Display value
LoW	OUT.L / Hys / OUT	OU1.L ≥ Display value	OU1.L + HYS.1 ≤ Display value
HL	OUT.H / OUT.L / Hys / OUT	OU1.L ≥ Display value / OU1.H ≤ Display value	OU1.L + HYS.1 ≤ Display value / OU1.H - HYS.1 ≥ Display value
HL - G	OUT.H / OUT.L / Hys / OUT	OU1.L ≤ Display value ≤ OU1.H + HYS.1	OU1.L - HYS.1 ≥ Display value / OU1.H + HYS.1 ≤ Display value

Reset

01. Press the [◄] + [▲] + [▼] keys for over 5 sec. in run mode, INIT and NO flash alternately for 0.5 sec in turn.
02. Change the setting value as YES by pressing the direction keys.
03. Press the [MODE] key to reset all parameter values as default and to return to run mode.

Error

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

| Display	Description	Troubleshooting
HHHH	Flashes when measurement input is exceeded the max. allowable input (110 %)	Disconnect power supply and check the cables.
LLLL	Flashes when measurement input is exceeded the min. allowable input (-DC: -110 % / DC, AC: -10 %)	
d - HH	Flashes when measurement input is exceed the max. display value (9999)	Reset within the display range.
d - LL	Flashes when measurement input is exceed the min. display value (-9999)	
F - HH	Flashes when input frequency is exceeded the max. display value of measured range	
PF - H	Flashes when power factor display value to measured input is over than LAG 0.50	-
PF - L	Flashes when power factor display value to measured input is less than LEAD -0.50	
oVER	Flashes twice when it exceeds zero range (±99) and returns to run mode	Reset within the zero range.

Power Factor Display

- Power factor display is only available for DC input specifications.
- This function displays LEAD and LAG by analog output signal from the power factor transducer.
  - LEAD: current phase leads voltage phase
  - LAG: current phase lags behind voltage phase
- It is available to accept several outputs of the power factor transducer by high / low-limit input value analog output value setting in the power factor transducer.
- Power factor value is displayed as cosØ value -0.50 (LEAD) to 1.00 to 0.50 (LAG).
- Setting range: from min. to max. selected value from input range
- E.g.: When setting 200V in input range, high / low-limit input value are available to set from -200.0 to 200.0. When setting 20V, high / low-limit input value are available to set from -20.00 to 20.00. (high-limit input value > low-limit input value)
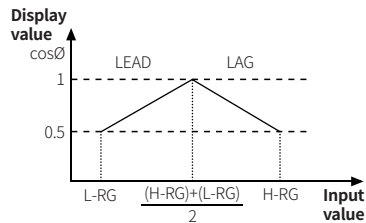

	Default	
	H-RG	**L-RG**
MX4W-V	500.0	000.0
MX4W-A	5.000	0.000

- E.g. 1: When the output of the power factor transducer is DC 4 - 20 mA
1. Connect the output to the input terminal 7 (+), 8 (-) of this unit, then set input range as 4-20.
2. When setting the input range as 4-20, low-limit input value is set as 4.00 and high-limit input value is set as 20.00 automatically.
3. If measured input is 4 mA, it displays -0.50. For 12 mA measured input, it displays 1.00 and for 20 mA, it displays 0.50.
- E.g. 2: When the output of the power factor transducer is 1 - 5 VDC
1. Connect the output to the input terminal 6 (+), 8 (-) of this unit, then set the input range as 1-5B.
2. Set high-limit input value as 5.00 and low-limit input value as 1.00 for the output of the power factor transducer.
3. If measured input is 1 V, it displays -0.50. For 3 V measured input, it displays 1.00 and for 5 V, it displays 0.50.
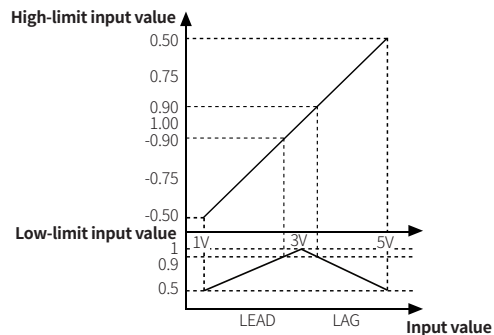
- E.g. 3: When LEAD value is smaller than -0.90, LAG value is smaller than 0.90, and OUT1 is used
1. Set OUT1 output operation mode as HL at parameter 2 group.
2. Set OUT1 high-limit output setting value as 0.90 and OUT1 low-limit output setting value as -0.90 at parameter 0 group.
3. OUT2 output operation mode is also same setting as OUT1 output operation mode.
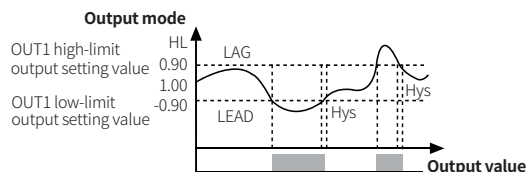
Function Description

■ Display method: frequency

It measures input signal frequency when it is AC input.
In order to measure frequency normally, input signal, over 10 % F.S. of the rated input range, should be supplied. Otherwise, it may not be measured normally.
The measurement range differs depending on the decimal point position.
It is available to adjust the high-limit display value gradient correction and exponent of SPAN at parameter setting.
• Accuracy of frequency measurement: below 1 kHz: F.S. ± 0.1 % rdg ± 2-digit,
from 1 k to 10 kHz: F.S. ± 0.3 % rdg ± 2-digit

■ High-limit display value gradient correction

This function is to correct a gradient of high / low-limit scale value.
And also can be used as correction function of high-limit scale value.
Adjustment range is setting value and multiply current gradient.

• E.g.: To display 5.000 when 20 VDC⎓ for input range 0.00 - 50.00 VDC⎓
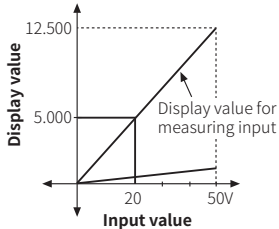
H-SC	L-SC	SPAN	Result
12.500	0.000	1.000	Disable
6.250	0.000	2.000	
3.125	0.000	4.000	20 VDC⎓ = 5.000
2.500	0.000	5.000	

1. Select input range = 50.0, decimal point position = 0.000 for measurement input in Parameter 1.
2. It has to be 12.500 at high-limit scale for 50 VDC⎓ in order to display 5.000 for 20 VDC⎓.
   But it is disable due to setting range is 9.999.
3. In this case, set as high-limit display value gradient correction × high-limit scale = 12.500.

• E.g.: To display -160.0 when -80 mA for input range -200 - 200 mA
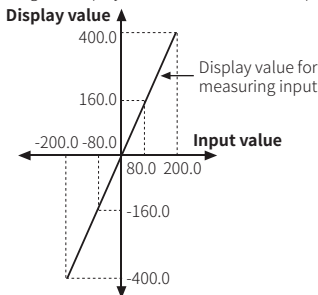
H-SC	L-SC	SPAN	Result
400.0	-400.0	1.000	
200.0	-200.0	2.000	-80 mA = -160.0
100.0	-100.0	4.000	
80.0	-80.0	5.000	

1. Select input type = -DC, input range = -200, decimal point position = 000.0 for measurement input in Parameter 1.
2. If set to display -80 mA as -160.0, the low-limit scale value × high-limit display value gradient correction at -200 mA must be -400.0. But it is disable due to setting range is 9.999.
3. In this case, set as high-limit display value gradient correction × high-limit scale = 400.0 and high-limit display value gradient correction × low-limit scale = -400.0.
• If the low-limit scale is set first set the high-limit scale = - (low-limit scale).
   If the high-limit scale is set first set the low-limit scale = - (high-limit scale).

■ 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 and b and particular values are A and B, it will display a = A, b = B as below graphs.
• When changing input range, it is changed automatically as factory default display range of the input range.

• In case of DC voltage / current input model and using minus input, they are displayed.
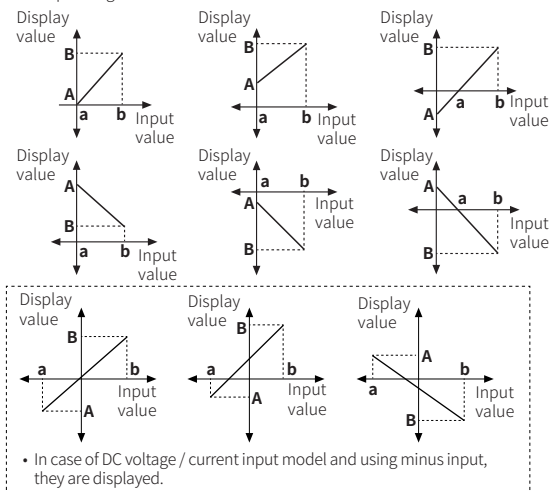
■ Zero adjustment

It adjusts the display value of the optional configured input value as zero by force.
Zero point error can be adjusted with 3 ways as below.
1. Direct input correction value at low-limit display value deviation correction parameter.
2. Press the [◀] + [▲] keys for 3 sec in RUN mode.
3. Set the external input terminal parameter to ZERO and short the Hold / Zero terminal.

■ Error correction

It corrects display value error of measured input.

> Display value = (Measured value × High-limit display value gradient correction) + Low-limit display value deviation correction

• E.g.: When the input range 0 to 500 VDC⎓ and the display range is 0 to 500.0

If the low-limit display value is 1.2 to 0 VDC⎓ input, set -12 as deviation correction value to display 0.0 by adjusting offset of the low-limit display value.
The display value to 500 VDC⎓ measured input varies by adjusting the offset of low-limit display value.
If this display value is 501.0, calculate 500.0 / 501.0 (desired display value / the display value), and set the 0.998 correction value as the high-limit display value gradient correction parameter to display 500.0 by adjusting gradient of high-limit value.

■ Startup compensation time

This time function limits the operation of an output until the measured input (overvoltage or inrush current) is stable at moment of power on. All outputs are OFF during startup compensation time setting after power is applied.

■ 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 the front direction keys at the same time for over 1 sec 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	I	I	0	0	I	I	0	0	I	I	0	0	I	I
I	1	J	J	I	1	J	J	I	1	J	J	I	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	B	B	T	T
C	C	U	U	C	C	U	U	C	C	U	U	C	C	U	U
d	D	V	V	d	D	V	V	d	D	V	V	D	D	V	V
E	E	W	W	E	E	W	W	E	E	W	W	E	E	W	W
F	F	X	X	F	F	X	X	F	F	X	X	F	F	X	X
G	G	Y	Y	G	G	Y	Y	G	G	Y	Y	G	G	Y	Y
H	H	Z	Z	H	H	Z	Z	H	H	Z	Z	H	H	Z	Z