DRW170183AC

Autonics LCD Display Multi Panel Meter
MX4W SERIES

INSTRUCTION MANUAL

Thank you for choosing our Autonics product.
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.

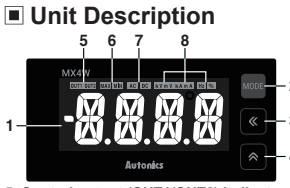
⚠ Caution

1. **When connecting the power/measurement input, use 24(0.20mm²) to AWG 15(1.65mm²) cable and tighten the terminal screw with a tightening torque of 0.78 to 0.98N·m.**
   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.

▣ Model

Model	Measurement input	Power supply	Output
MX4W-V-FN	DC/AC voltage	24-240VAC 50/60Hz, 24-240VDC	Indicator
MX4W-V-F1			NPN open collector output
MX4W-V-F2			PNP open collector output
MX4W-A-FN	DC/AC current		Indicator
MX4W-A-F1			NPN open collector output
MX4W-A-F2			PNP open collector output

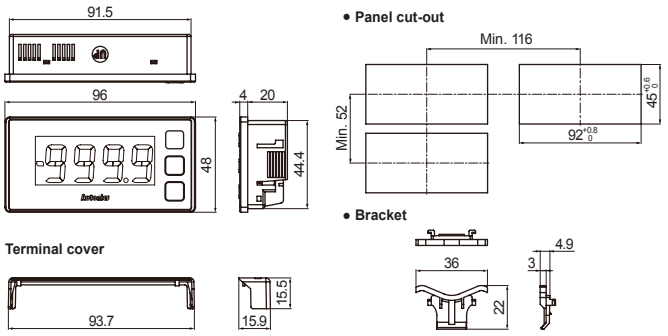
▣ Unit Description



1. **Measurement value display part**
2. **MODE key**
   : Press the key to enter parameter groups, return RUN mode, move parameters, or save the setting values.
3. **« key**
   : Press the key to move digits, enter parameters, or move parameter setting values.
4. **» key**
   : Press the key to change digit value, enter or change parameters, or chage the parameter setting value.
5. **Control output (OUT1/OUT2) indicator (red, indicator model: white)**
6. **MAX/MIN indicator (green, indicator model: white)**
   : When input is over/below the range, HHHH or LLLL appears.
7. **AC/DC indicator (green, indicator model: white)**
8. **Unit (V/mV/A/mA/Hz/%) indicator (yellow, indicator model: white)**

▣ Dimensions

(unit: mm)

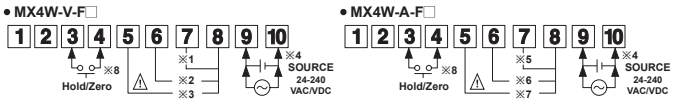


- Panel cut-out
- Bracket
- Terminal cover

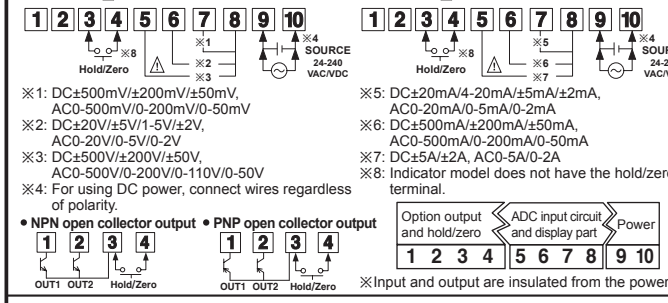
▣ Connections and Insulated Block Diagram

※Use terminals of size specified below.

	a	b
<Forked>	Min. 3.0mm	Max. 6.0mm



※1: DC±500mV/±200mV/±50mV, AC0-500mV/0-200mV/0-50mV
※2: DC±20V/±5V/1-5V/±2V, AC0-20V/0-5V/0-2V
※3: DC±500V/±200V/±50V, AC0-500V/0-200V/0-110V/0-50V
※4: For using DC power, connect wires regardless of polarity.
※5: DC±20mA/4-20mA/±5mA/±2mA, AC0-20mA/0-5mA/0-2mA
※6: DC±500mA/±200mA/±50mA, AC0-500mA/0-200mA/0-50mA
※7: DC±5A/±2A, AC0-5A/0-2A
※8: Indicator model does not have the hold/zero terminal.



※Input and output are insulated from the power.

▣ Specifications

Model		MX4W-V-F□	MX4W-A-F□
Measurement input		DC/AC voltage	DC/AC current
Max. allowable input		• DC input: approx. -110 to 110% of each measurement input range (when not using minus input: -10 to 110%) • AC input: approx. 110% of each measurement input range	
Power supply		24-240VAC~ 50/60Hz, 24-240VDC⎓	
Allowable voltage range		90 to 110% of the rated voltage	
Power supply		Max. 5VA (24-240VAC~ 50/60Hz), Max. 3W (24-240VDC⎓)	
Display method※1		12-segment (measurement value display part: white, character height: 19mm), other display parts (red, green, yellow, indicator model: white) LCD method	
Display accuracy		23℃±5℃ - DC input: ±0.1% F.S. ±2-digit, AC input: ±0.3% F.S. ±3-digit ※The terminal for 5A of current input, ±0.3% F.S. ±3-digit 0℃ to 50℃ - DC/AC input: ±0.5% F.S. ±3-digit ※The terminal for 5A of current input, ±1% F.S. ±3-digit	
Display cycle		0.2 to 5.0 sec (select per 0.1 sec)	
A/D conversion method		Sigma-Delta (∑-△) analog-to-digital converter	
Sampling cycle		DC input: 50ms (resolution 1/20,000), AC input: 16.6ms (resolution 1/20,000)	
Max. display range		-9999 to 9999 (4-digit)	
Preset output※2		NPN/PNP open collector output • Load voltage: max. 30VDC⎓ • Load current: max. 100mA • Residual voltage: max. 1VDC⎓ (NPN), max. 2VDC (PNP)	
AC measurement※3		Select RMS value/AVG value measurement methods	
Frequency measurement※3		Measurement range: 0.100 to 1200Hz (varies depending on the decimal point)	
Insulation resistance		Over 100MΩ (at 500VDC megger)	
Dielectric strength		3,000VAC 50/60Hz for 1 min (between all terminals and case)	
Noise immunity		±2kV the square wave noise (pulse width: 1μs) by the noise simulator	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min	
Shock	Mechanical	100m/s² (approx. 10G) in each X, Y, Z direction for 3 times	
	Malfunction	300m/s² (approx. 30G) in each X, Y, Z direction for 3 times	
Environment	Ambient temp.	-10 to 50℃, storage: -20 to 60℃	
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH	
Insulation type		Double insulation or reinforced insulation (mark: ⧈, dielectric strength between the measurement input part and the power part: 1kV)	
Approval		CE c UL us	
Weight※4		Approx. 100g (approx. 77g)	

※1: When using the unit at low temperature (below 0℃), display cycle is slow due to characteristics of LCD. Control output operates normally.
※2: Indicator model (MX4W-□-FN) does not have the function.
※3: AC, frequency measurement are available when input type is AC.
※4: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※**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).**

▣ Measurement Input

DC voltage				DC current			
Measurement input range	Display	Input impedance	Display range [SCAL]	Measurement input range	Display	Input impedance	Display range [SCAL]
0.0-500.0V	500.0	4.062MΩ	0.0 to 500.0	0.000-5.000A	5.000	0.02Ω	0.000 to 5.000
0-500V	500		0 to 500	0.00-5.00A	5.00		0.00 to 5.00
0.0-200.0V	200.0		0.0 to 200.0	0.000-2.000A	2.000		0.000 to 2.000
0-200V	200		0 to 200	0.00-2.00A	2.00		0.00 to 2.00
0.00-50.00V	50.00		0.00 to 50.00	0.0-500.0mA	500.0	0.87Ω	0.0 to 500.0
0.0-50.0V	50.0		0.0 to 50.0	0-500mA	500		0 to 500
0.00-20.00V	20.00	162kΩ	0.00 to 20.00	0.0-200.0mA	200.0		0.0 to 200.0
0.0-20.0V	20.0		0.0 to 20.0	0-200mA	200		0 to 200
0.000-5.000V	5.000		0.000 to 5.000	0.00-50.00mA	50.00		0.00 to 50.00
0.00-5.00V	5.00		0.00 to 5.00	0.0-50.0mA	50.0		0.0 to 50.0
1.000-5.000V	1-5A		1.000 to 5.000	0.00-20.00mA	20.00	21.87Ω	0.00 to 20.00
1.00-5.00V	1-5b		1.00 to 5.00	0.0-20.0mA	20.0		0.0 to 20.0
0.000-2.000V	2.000		0.000 to 2.000	4.00-20.00mA	4A20		4.00 to 20.00
0.00-2.00V	2.00		0.00 to 2.00	4.0-20.0mA	4b20		4.0 to 20.0
0.0-500.0mV	500.0	4kΩ	0.0 to 500.0	0.000-5.000mA	5.000		0.000 to 5.000
0-500mV	500		0 to 500	0.00-5.00mA	5.00		0.00 to 5.00
0.0-200.0mV	200.0		0.0 to 200.0	0.000-2.000mA	2.000		0.000 to 2.000
0-200mV	200		0 to 200	0.00-2.00mA	2.00		0.00 to 2.00
0.00-50.00mV	50.00		0.00 to 50.00	-5.000-5.000A	-5.000	0.02Ω	-5.000 to 5.000
0.0-50.0mV	50.0		0.0 to 50.0	-5.00-5.00A	-5.00		-5.00 to 5.00
-500.0-500.0V	-500.0	4.062MΩ	-500.0 to 500.0	-2.000-2.000A	-2.000		-2.000 to 2.000
-500-500V	-500		-500 to 500	-2.00-2.00A	-2.00		-2.00 to 2.00
-200.0-200.0V	-200.0		-200.0 to 200.0	-500.0-500.0mA	-500.0	0.87Ω	-500.0 to 500.0
-200-200V	-200		-200 to 200	-500-500mA	-500		-500 to 500
-50.00-50.00V	-50.00	162kΩ	-50.00 to 50.00	-200.0-200.0mA	-200.0		-200.0 to 200.0
-50.0-50.0V	-50.0		-50.0 to 50.0	-200-200mA	-200		-200 to 200
-20.00-20.00V	-20.00		-20.00 to 20.00	-50.00-50.00mA	-50.00		-50.00 to 50.00
-20.0-20.0V	-20.0		-20.0 to 20.0	-50.0-50.0mA	-50.0		-50.0 to 50.0
-5.000-5.000V	-5.000		-5.000 to 5.000	-20.00-20.00mA	-20.00	21.87Ω	-20.00 to 20.00
-5.00-5.00V	-5.00		-5.00 to 5.00	-20.0-20.0mA	-20.0		-20.0 to 20.0
-2.000-2.000V	-2.000		-2.000 to 2.000	-5.000-5.000mA	-5.000		-5.000 to 5.000
-2.00-2.00V	-2.00		-2.00 to 2.00	-5.00-5.00mA	-5.00		-5.00 to 5.00
-500.0-500.0mV	-500.0	4kΩ	-500.0 to 500.0	-2.000-2.000mA	-2.000		-2.000 to 2.000
-500-500mV	-500		-500 to 500	-2.00-2.00mA	-2.00		-2.00 to 2.00
-200.0-200.0mV	-200.0		-200.0 to 200.0				
-200-200mV	-200		-200 to 200				
-50.00-50.00mV	-50.00		-50.00 to 50.00				
-50.0-50.0mV	-50.0		-50.0 to 50.0				

AC voltage				AC current			
Measurement input range	Display	Input impedance	Display range [SCAL]	Measurement input range	Display	Input impedance	Display range [SCAL]
0.0-500.0V	500.0	4.062MΩ	0.0 to 500.0	0.000-5.000A	5.000	0.02Ω	0.000 to 5.000
0-500V	500		0 to 500	0.00-5.00A	5.00		0.00 to 5.00
0.0-200.0V	200.0		0.0 to 200.0	0.000-2.000A	2.000		0.000 to 2.000
0-200V	200		0 to 200	0.00-2.00A	2.00		0.00 to 2.00
0.0-110.0V	110.0		0.0 to 110.0	0.0-500.0mA	500.0	0.87Ω	0.0 to 500.0
0-110V	110		0 to 110	0-500mA	500		0 to 500
0.00-50.00V	50.00	162kΩ	0.00 to 50.00	0.0-200.0mA	200.0		0.0 to 200.0
0.0-50.0V	50.0		0.0 to 50.0	0-200mA	200		0 to 200
0.00-20.00V	20.00		0.00 to 20.00	0.00-50.00mA	50.00		0.00 to 50.00
0.0-20.0V	20.0		0.0 to 20.0	0.0-50.0mA	50.0		0.0 to 50.0
0.000-5.000V	5.000		0.000 to 5.000	0.00-20.00mA	20.00	21.87Ω	0.00 to 20.00
0.00-5.00V	5.00		0.00 to 5.00	0.0-20.0mA	20.0		0.0 to 20.0
0.000-2.000V	2.000		0.000 to 2.000	0.000-5.000mA	5.000		0.000 to 5.000
0.00-2.00V	2.00		0.00 to 2.00	0.00-5.00mA	5.00		0.00 to 5.00
0.0-500.0mV	500.0	4kΩ	0.0 to 500.0	0.000-2.000mA	2.000		0.000 to 2.000
0-500mV	500		0 to 500	0.00-2.00mA	2.00		0.00 to 2.00
0.0-200.0mV	200.0		0.0 to 200.0				
0-200mV	200		0 to 200				
0.00-50.00mV	50.00		0.00 to 50.00				
0.0-50.0mV	50.0		0.0 to 50.0				

※Display range of [SCAL] will vary depending on the decimal point.
(-9999 to 9999, -999.9 to 999.9, -99.99 to 99.99, -9.999 to 9.999)
※When changing measurement input type, oU□H/oU□L/H.PEAK/L.PEAK/dI SP/IN-t/dot/H-SC/L-SC/SPAN/ZERo/E.SPN/H-RG/L-RG/d.UNt/oU□t/HYS.□ parameters are reset.
※Frequency measurement range (AC voltage/current): 0.100 to 1200Hz
※Check the unit indicator when selecting measurement input type.
※Parameter setting order of input range [IN-P] is followed by the above table.
E.g.) AC current: 5.000 → 5.00 → 2.000 → ··· → 2.000 → 2.00
※When "HHHH" or "LLLL" is flashes with a certain measurement input, disconnect power supply and then check the cables.
※Connect to the input terminals whose 30% to 100% of the input range includs 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. When the max. input value is over the 100%, it may result in input terminal damage.

▣ Preset Output Operation Mode [PA 2 group: oU1t/oU2t]

Operation mode	Output operation	Description
oFF	OUT1 output: No output	No output
HIGH	OUT1.H, OUT1 output: Hysteresis (HYS)	ON period: Display value ≥ oU1H OFF period: Display value ≤ oU1H-HYS.1
LoW	OUT1.L, OUT1 output: Hysteresis (HYS)	ON period: Display value ≤ oU1L OFF period: Display value ≥ oU1L+HYS.1
HL	OUT1.H, OUT1.L, OUT1 output: Hysteresis (HYS)	ON period: Display value ≤ oU1L, Display value ≥ oU1H OFF period: Display value ≥ oU1L+HYS.1, Display value ≤ oU1H-HYS.1
HL-G	OUT1.H, OUT1.L, OUT1 output: Hysteresis (HYS)	ON period: Display value ≥ oU1L, Display value ≤ oU1H OFF period: Display value ≤ oU1H-HYS.1, Display value ≥ oU1H+HYS.1

※Set preset output mode separately for each OUT1/OUT2.
※OUT1/OUT2 are operated individually depending on the set preset output operation mode.
※High/low preset value parameters of the parameter 0 group appear by setting preset output operation mode.
※When changing preset output operation mode, oU□H/oU□L/HYS.□ are reset.

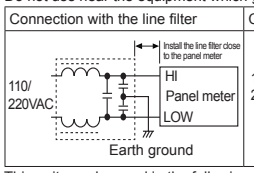
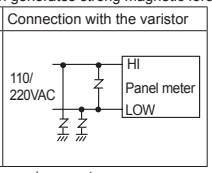
▣ Factory Defaults

Group	Parameter	MX4W-V (DC)	MX4W-V (±DC)	MX4W-V (AC)	MX4W-A (DC)	MX4W-A (±DC)	MX4W-A (AC)
PRO (PA 0 group)	oU1H※1	500.0	500.0	500.0	5.000	5.000	5.000
	oU1L※1	0.0.0.0	-500.0	0.0.0.0	0.0.0.0	-5.000	0.0.0.0
	oU2H※1	500.0	500.0	500.0	5.000	5.000	5.000
	oU2L※1	0.0.0.0	-500.0	0.0.0.0	0.0.0.0	-5.000	0.0.0.0
	H.PEAK	0.0	0.0	0.0	0.0	0.0	0.0
	L.PEAK	0.0	0.0	0.0	0.0	0.0	0.0
PA1 (PA 1 group)	dCAC	dC	-dC	AC	dC	-dC	AC
	IN-P	500.0	-500.0	500.0	5.000	-5.000	5.000
	dI SP	StNd	StNd	StNd	StNd	StNd	StNd
	IN-t	—	—	AVG	—	—	AVG
	dot	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0
	H-SC	500.0	500.0	500.0	5.000	5.000	5.000
	L-SC	0.0.0.0	-500.0	0.0.0.0	0.0.0.0	-5.000	0.0.0.0
	SPAN	1.000	1.000	1.000	1.000	1.000	1.000
	ZERo	0.0	0.0	0.0	0.0	0.0	0.0
	E.SPN	—	—	10-0	—	—	10-0
	H-RG	500.0	500.0	—	5.000	5.000	—
	L-RG	0.0.0.0	-500.0	—	0.0.0.0	-5.000	—
	dUNt	V	V	V	A	A	A
PA2 (PA 2 group)	oU1t※1	oFF	oFF	oFF	oFF	oFF	oFF
	oU2t※1	oFF	oFF	oFF	oFF	oFF	oFF
	HYS.1※1, ※2	0.0.1	0.0.1	0.0.1	0.0.0.1	0.0.0.1	0.0.0.1
	HYS.2※1, ※2	0.0.1	0.0.1	0.0.1	0.0.0.1	0.0.0.1	0.0.0.1
	StRt	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0
	PEAK	0.0 5	0.0 5	0.0 5	0.0 5	0.0 5	0.0 5
	dI St	0.2 5	0.2 5	0.2 5	0.2 5	0.2 5	0.2 5
	dI-t	HoLd	HoLd	HoLd	HoLd	HoLd	HoLd
	LoC	oFF	oFF	oFF	oFF	oFF	oFF

※1: Does not appear in indicator models.
※2: It will vary depending on input range [IN-P] setting.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
3. 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
	

4. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

▣ Zero Adjustment

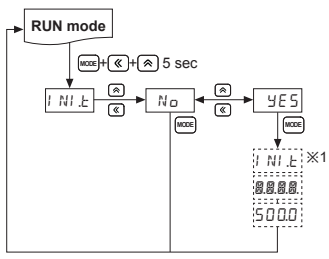
Forces the display value of measured input to 0 (Zero).
- Zero adjustment range: -99 to 99
- Zero adjustment method:

① Hold « + » keys for 3 sec at the same time.

② Set display holding/zero adjustment [dI-t] of parameter 2 group as zero adjustment [ZERo]. Short 3, 4 terminals and zero adjustment is available.

※When zero adjustment is completed by ① or ② method, the display part displays zero and the adjusted value is saved at [ZERo] of parameter 1 group automatically.
※If zero adjustment range is exceeded, the error [oVER] flashes twice and it returns to RUN mode, by maintaining previous setting value.

▣ Reset



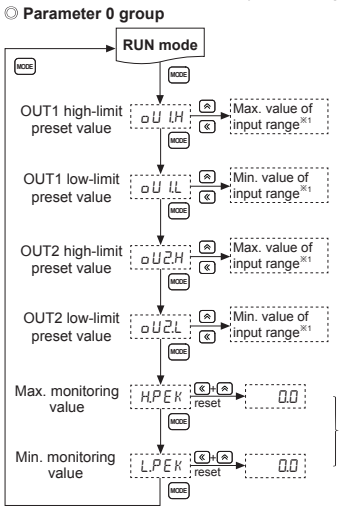
※1: Flashes twice sequentially and returns to RUN mode.

▣ Parameter Group

◎ **Parameter (0 to 2 group) setting**
1. Each parameter and corresponding setting value will flash alternately every 0.5 sec.
2. Press the MODE key to save the setting value and move to the next parameter.
3. If there is no key input for 60 sec, the unit will return to RUN mode.
4. Hold the MODE key for 3 sec to return to RUN mode.
5. Press the «, » keys to change the set value.
   («: moves digits, »: changes setting value)

※ : Dotted parameters may not appear by model type or other parameter settings.
※1. Refer to '▣ Measurement Input Type And Range'.

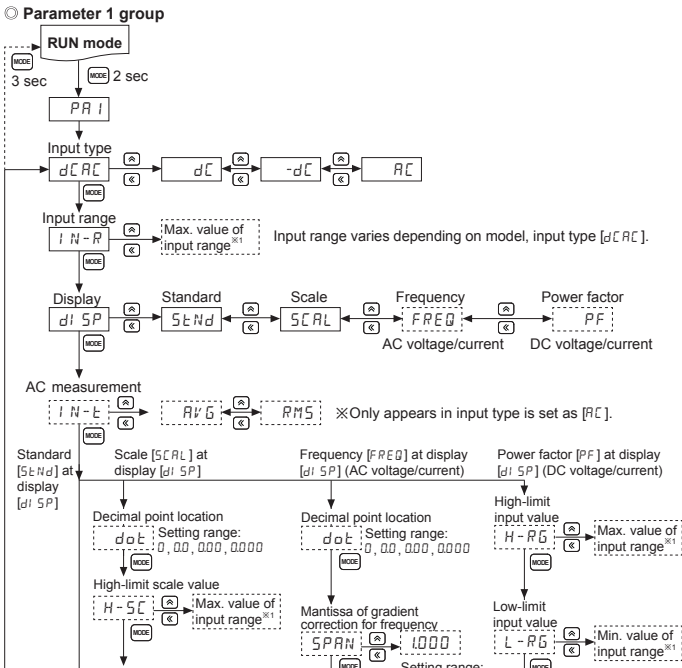
◎ **Parameter 0 group**



Does not appear when OUT1 preset output operation mode [oU1t] of parameter 2 group is set as OFF/LOW.
Setting range: -9999 to 9999
Does not appear when OUT1 preset output operation mode [oU1t] of parameter 2 group is set as OFF/HIGH.
Setting range: -9999 to 9999
Does not appear when OUT2 preset output operation mode [oU2t] of parameter 2 group is set as OFF/LOW.
Setting range: -9999 to 9999
Does not appear when OUT2 preset output operation mode [oU2t] of parameter 2 group is set as OFF/HIGH.
Setting range: -9999 to 9999

Do not appear when monitoring delay time [PEAK] of parameter 2 group is set as 00 sec [00 S]. Hold the «+» for over 1 sec, to reset the parameter.

◎ **Parameter 1 group**



◎ **Parameter 2 group**

Setting range:

oFF	Unlock	LoC2	Lock parameter 1, 2 groups
LoC1	Lock parameter 1 group	LoC3	Lock parameter 0, 1, 2 groups

▣ 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_2, Nd:YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometers/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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