Autonics

PANEL METER
MT4N SERIES

M A N U A L

CE

: Upgrade feature

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 machinery(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it is required to install fail-safe device.**
   It may cause a fire, human injury or property loss.
2. **It must be mounted on panel.**
   It may give an electric shock.
3. **Do not connect, inspect or repair terminals when it is power on.**
   It may give an electric shock.
4. **Do not disassemble or modify this unit. If needs, please contact us.**
   It may cause a fire and give an electric shock.
5. **Please check the number of terminal when connecting power or measured input.**
   It may cause a fire.

⚠ Caution

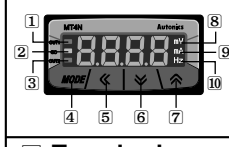
1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
   Use this product indoors only. Do not use the product outdoors or at locations subject to the temperatures or humidity outside.(Example: rain, dirty, frost, sunlight, condensation, etc.)
2. **When connecting wire, use AWG 20(0.50㎟) be used and tighten screw bolt on terminal block with 0.74 to 0.90N·m strength.**
   It may cause a malfunction or fire due to contact failure.
3. **Please observe the rated specification.**
   It might shorten the life cycle of the product and cause a fire.
4. **Do not use beyond of the rated switching capacity of relay contact.**
   It may cause insulation failure, contact melt, contact failure, relay broken and fire etc.
5. **In cleaning the unit, do not use water or an oil-based detergent.**
   It may cause a fire and give an electric shock.
6. **Do not use this unit in place where flammable or explosive gas, humidity, direct ray of the light, radiant heat, vibration or impact, etc. exists.**
   It may cause a fire or explosion.
7. **Do not inflow dust or wire dregs into the unit.**
   It may cause a fire or mechanical malfunction.
8. **Please wire properly after checking the polarity of measuring terminals.**
   It may cause a fire or explosion.

■ Ordering information

MT 4 N – DV – E N

Control output	N	Without output function
	0	Relay output(2 Contacts)
	1	NPN Open collector output(OUT1,GO,OUT2)
	2	PNP Open collector output(OUT1,GO,OUT2)
	3	Relay(OUT1)+PV transmission(DC4-20mA)output
	4	Relay(OUT2)+RS485 communication output
Power supply	E	12-24VDC/AC
	4	100-240VAC
Input	DV	DC Volt
	DA	DC Ampere
	AV	AC Volt
	AA	AC Ampere
Size	N	DIN W48×H24㎜
Digit	4	9999(4 Digit)
Item	MT	Multi Meter

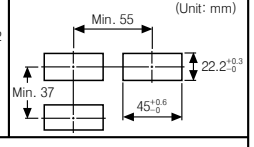
■ Front panel identification



1. OUT1: Preset output of OUT1
2. GO: Preset Go output of OUT1/OUT2
3. OUT2: Preset output of OUT2
4. MODE: MODE key
5. : Shift key
6. : Down key
7. : Up key
8. mV, V Unit
9. mA, A Unit
10. Hz Unit

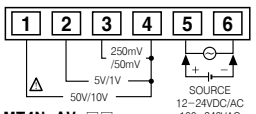
■ Panel cut-out

(Unit: mm)

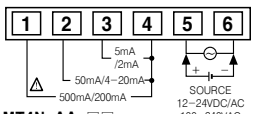


■ Terminal connection

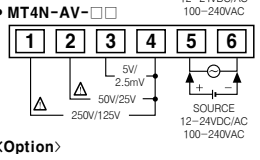
- **MT4N-DV-□□**



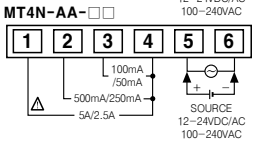
- **MT4N-DA-□□**



- **MT4N-AV-□□**

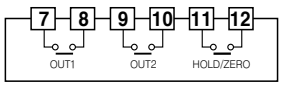


- **MT4N-AA-□□**

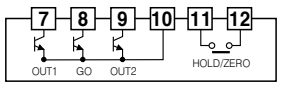


〈Option〉

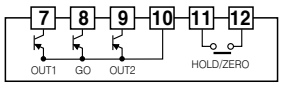
- **Relay output [MT4N-□□-□0]**



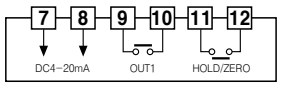
- **NPN Open Collector output [MT4N-□□-□1]**



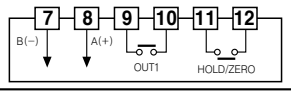
- **PNP Open Collector output [MT4N-□□-□2]**



- **Relay+Current(DC4-20mA) output [MT4N-□□-□3]**

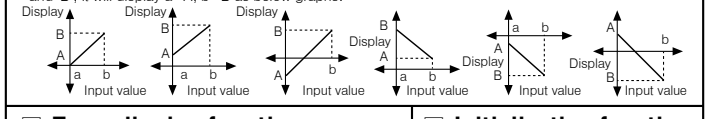


- **Relay+RS485 communication output [MT4N-□□-□4]**



■ Prescale function[PA1: H-SC / L-SC mode]

This function is to display setting(−1999 to 9999) 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.



■ Error display function

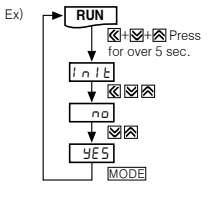
Display	Description
HHHH	Flashes when measured input is exceeded the max.allowable input(110%)
LLLL	Flashes when measured input is exceeded the min.allowable input(−10%)
d-HH	Flashes when display input is exceeded H-SC setting value
d-LL	Flashes when display input is exceeded L-SC setting value
F-HH	Flashes when input frequency is exceeded the max. display value of measuring range
ouEr	Flashes when it exceeds zero range(±99)

※ Zero adjusting error is returning to measuring mode after [ouEr] flashes twice.
※ Refer to "■ Measuring AC frequency function" for frequency measuring range.

■ Initialization function

It initializes parameter setting state. Press ◁+▽+△ keys simultaneously for over 5 sec. in RUN status, it returns to factory default value.

Ex)



■ Display cycle delay function [PA 2: dI S.t mode]

In some applications the measured input may fluctuate which in turn causes the display to fluctuate. By adjusting the display cycle delay function time in the dI S.t mode in parameter 2, the operator can adjust the display time within a range of 0.1 sec to 5 sec. For example, if the operator sets the display cycle time to 4.0 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.

■ Startup compensation timer function [PA 2: StRt mode]

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.
Setting range: 00.0 to 99.9 (Unit: sec.) Factory default: 00.0

※ The above specifications are subject to change without notice.

■ Specifications

Model	MT4N	
Power supply	12−24 VDC/AC	100~240 VAC
Power consumption	DC: 3W, AC: 5VA	5VA
Display method	7 Segment LCD Display, Character height: 9mm	
Display accuracy	23℃ ± 5℃ ☞ DC Type: F.S.±0.1% rdg±2digit / AC Type: F.S.±0.3% rdg±3digit DC/AC Type: Within F.S.±0.3% rdg±3digit only for Current 5A terminal −10℃ to 50℃ ☞ DC/AC Type: F.S.±0.5% rdg±3digit	
Input	DC Voltage/Current, AC Voltage/Current, AC Frequency	
Max. allowable input	110% F.S. for input spec.	
A/D conversion method	Practical oversampling using successive approximation ADC	
Sampling cycle	50ms(DC), 16.6ms(AC)(1/12,000)	
Max. display range	−1999 to 9999(4 Digit)	
Preset output	• Relay output ☞ Contact capacity: 125VAC 0.3A, 30VDC 1A/Contact composition: N.O(1a) • NPN/PNP Open Collector output ☞ 12−24VDC ±2V 50mA Max.(Load resistance)	
Sub output (Transmission output)	• RS485 communication output ☞ Baud rate: 1200/2400/4800/9600, Transmission method: 2 wires half duplex, Tuning method: Sub−synchronization, Protocol: Modbus type • DC4−20mA output ☞ Resolution: 12,000 division(Load resistance max. 600Ω)	
AC measuring function	Selectable RMS or AVG	
Frequency measuring function	Measurement range: 0.100 to 9999Hz(Differ according to decimal point position)	
Hold function※1	Includes(Outer hold function)	
Insulation resistance	Min. 20MΩ(at 500VDC megger)	
Dielectric strength	1000VAC for 1 minute (Between external terminal and case)	2000VAC for 1 minute (Between external terminal and case)
Noise strength	±2kV 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 direction for 2 hours	
Vibration — Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 10 minutes	
Shock — Mechanical	100m/s²(Approx. 10G) in X, Y, Z directions for 3 times	
Shock — Malfunction	300m/s²(Approx. 30G) in X, Y, Z directions for 3 times	
Environ−ment — Ambient temperature	−10 to 50℃, Storage: −20 to 60℃	
Environ−ment — Storage humidity	35 to 85%RH, Storage: 35 to 85%RH	
Insulation type※2	⧈	
Approval	CE	−
Unit weight	Approx. 64g	

※ 1: "⧈" Mark indicated that equipment protected throughout by double insulation or reinforced insulation.
※ 2: The indicator has no Hold function.
※ Environment resistance is rated at no freezing or condensation.

■ Specification of measured input and range

Type	Measured input and range		Input impedance	Standard [Stnd] Display rang [Fixed]	Praescale [SCAL] Display range [Variable]
DC Volt	0−50V	[50V]	434.35kΩ	0.00 to 50.00(Fixed)	−1999 to 9999(Variable) −199.9 to 999.9(Variable) −19.99 to 99.99(Variable) −1.999 to 9.999(Variable) (Display position will be different depending on decimal point position.)
	0−10V	[10V]	434.35kΩ	0.00 to 10.00(Fixed)	
	0−5V	[5V]	43.35kΩ	0.000 to 5.000(Fixed)	
	0−1V	[1V]	43.35kΩ	0.000 to 1.000(Fixed)	
	0−250mV	[250mV]	2.15kΩ	0.0 to 250.0(Fixed)	
	0−50mV	[50mV]	2.15kΩ	0.00 to 50.00(Fixed)	
DC Ampere	0−500mA	[500mA]	0.1Ω	0.0 to 500.0(Fixed)	
	0−200mA	[200mA]	0.1Ω	0.0 to 200.0(Fixed)	
	0−50mA	[50mA]	1.1Ω	0.00 to 50.00(Fixed)	
	4−20mA	[4-20mA]	1.1Ω	4.00 to 20.00(Fixed)	
	0−5mA	[5mA]	11.1Ω	0.000 to 5.000(Fixed)	
	0−2mA	[2mA]	11.1Ω	0.000 to 2.000(Fixed)	
AC Volt	0−250V	[250V]	1.109MΩ	0.0 to 250.0(Fixed)	
	0−125V	[125V]	1.109MΩ	0.0 to 125.0(Fixed)	
	0−50V	[50V]	222kΩ	0.00 to 50.00(Fixed)	
	0−25V	[25V]	222kΩ	0.00 to 25.00(Fixed)	
	0−5V	[5V]	22kΩ	0.000 to 5.000(Fixed)	
	0−2.5V	[2.5V]	22kΩ	0.000 to 2.500(Fixed)	
AC Ampere	0−5A	[5A]	0.01Ω	0.000 to 5.000(Fixed)	
	0−2.5A	[2.5A]	0.01Ω	0.000 to 2.500(Fixed)	
	0−500mA	[500mA]	0.1Ω	0.0 to 500.0(Fixed)	
	0−250mA	[250mA]	0.1Ω	0.0 to 250.0(Fixed)	
	0−100mA	[100mA]	0.5Ω	0.0 to 100.0(Fixed)	
	0−50mA	[50mA]	0.5Ω	0.00 to 50.00(Fixed)	

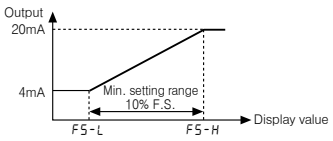
※Please wire proper terminal to its max. input voltage within 30 to 100% of input terminal.
When it is higher than input voltage, it may cause breakdown of terminal and over display range and the accuracy is decreased when it is connected to the terminal under 30%.

■ Monitoring peak display value function
[PA 0: H.PEK/L.PEK mode, PA 2: PEKt mode]

It monitors Max./Min. value of display value based on current display value and then display the data in H.PEK mode and L.PEK mode of parameter 0. Set delay time(0 to 30 sec.) in PEKt mode of parameter 2 in order to avoid caused by initial overcurrent or overvoltage, when monitoring the peak value. Delay time is 0 to 30 sec. and it starts to monitor the peak value after set time.
When ◁▽△ keys are pressed at H.PEK and L.PEK mode of parameter 0, it will be initialized.
※ Monitoring function is not indicated when setting the PEKt of parameter 2 as "0".

■ Current output(DC4-20mA) Scale adjustment function
[PA 2: FS-H/FS-L mode]

It sets current output for preset display value at the output current 4~20mA DC.
It sets display value for 4mA in FS.L and 20mA in FS.H and set range between FS-H and FS-L should be 10% F.S.(When it set as under 10% F.S., it changed as over 10% F.S. automatically.)Preset display value is fixed to output as 4mA at under FS-L and 20mA at over FS-H.



■ Measuring AC frequency function [PA 1: dI SP mode]

It measures input signal frequency when it is an AC input using fixed decimal point[PA1: dot mode]. Measuring range can be changed by setting and measuring range of decimal point position is as below chart. It is available to adjust upper gradient in [PA 1: InbH mode] and [PA 1: InbE mode]. In order to measure frequency normally, input signal, over 10% F.S. of measuring range, should be supplied. Please wire the proper measuring terminal.

①Measuring range

Decimal point position	0.000	0.00	0.0	0
Measurement range	0.100 to 9.999Hz	0.10 to 99.99Hz	0.1 to 999.9Hz	1 to 9999Hz

- 0.100 to 5000Hz: Display accuracy error within ±0.3%F.S.±2Digit
- 5000 to 9999Hz: Display accuracy error within ±1%F.S.±3Digit

② InbH: 0.100 to 9.999 (Gradient adjustment of high value)
③ InbE: 10-2, 10-1, 100, 101 (Index adjustment of InbH)

■ Error correction function
[PA 1: InbH/InbL mode]

It corrects display value error of measured input.
InbL : ±99 (Adjust deviation of low value)
InbH: 5.000 to 0.100(Correct gradient(%) of high value)
Display value=(Measured value × InbH)+InbL
Ex) Low value correction
When there is an application where there is a residual voltage of 1.2V, but a 0V display is desired, then it is possible by adjusting the InbL parameter setting to 12(offset correcting value or equal to 1.2V without decimal) that the desired display value of 0 can be achieved.
Ex) High value correction
When there is an application where the high actual value of display is 501 and exceeds the 500V display range, then it is possible by adjusting the InbH parameter setting to 0.998(calculated by desired value of 500/actual value of 501), that the desired value can be achieved.
※ The offset correction range of InbL is within -99 to 99 for D^{-0}, D^{-1} digit regardless of decimal point.

■ Zero adjustment function

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.
When zero point adjustment with front key and Hold terminal is finished normally, zero point of measuring terminal is displayed and the adjusted value is saved in InbL automatically.

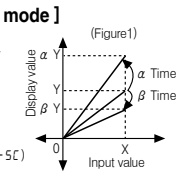
Oper−ation	Input correction value	Front key	Input external signal
Des−cription	PA 1: Direct input correction value method at Inb. L mode	Press both ◁, △ keys for 3 sec. at the measuring mode.	Short−circuit external Hold terminal no.11, 12 over min.50m. ※It is enable to use in option mode.

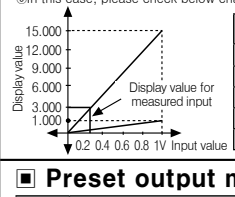
※Refer to description [■ Error correction function], [■ Error indication function] and [■ Parameter 2] for function and error.

■ Gradient correction function [PA 1: InbH mode]

It corrects a gradient of prescale value and display value.
(Figure 1)Display value Y can be adjusted as α, β times against X input value by correction function [InbH] and used as correction function of max. display value [H-SC]. Adjustment range is 0.100 to 5.000 and multiply current gradient by the value.

Ex) To display "3.000" in DC 200mV input for measured input specification as 0 to 1V,
①Select 0−1VDC for measured input in Parameter 1
②Standard specification in input: 0−1VDC and 1.000 therefore it has to be 15.000(H-SC) for 1VDC(Input) in order to display 3.000 for 200mVDC(input).
But it is unable due to setting range is 9.999.
③In this case, please check below chart. Please set as InbH × H-SC = 15.000





Setting method	H-SC	L-SC	InbH	Remark
①	Unavailable	0.000	1.000	–
②	7.500	0.000	2.000	In this case, any setting methods display same display value.
③	5.000	0.000	3.000	
④	3.750	0.000	4.000	
⑤	3.000	0.000	5.000	

■ Preset output mode [PA 2: oU1t / oU2t mode]

Mode	Output operation	Operation
oFF	OUT1 output (No output)	No output
HI	OUT1.H, OUT1 output (Hysterisis)	Period ON: Display value≥OUT1.H Period OFF: Display value≤OUT1.H−Hys
Lo	OUT1.L, OUT1 output	Period ON: Display value≤OUT1.L Period OFF: Display value≥OUT1.L+HYS
HL	OUT1.H, OUT1.L, OUT1 output	Period ON: Display value≤OUT1.L or Display value≥OUT1.H Period OFF: Display value≥OUT.L+Hys or Display value≤OUT.H+Hys
HL-G	OUT1.H, OUT1.L, OUT1 output	Period ON: OUT1.L≤Display value≤OUT1.H+Hys Period OFF: Display value≤OUT.L+Hys or Display value≥OUT.H+Hys

※ Set output mode separately for each OUT1/OUT2.
※ OUT1/OUT2 are operated individually depending on output operation mode.
※ Setting value mode of parameter group 0 is displayed depending on output operation mode.
※ GO outputs when the period both OUT1/OUT2 are off.(NPN/PNP Open collector output type)

■ Parameter

Parameter	Display	Function	Selectable RMS/AVG in AC type	Note
PA1 (Parameter 1)	In-t	Input type	Selectable RMS/AVG in AC type	Available AC type only.
	In-r	Input range	Input range selection	−
	dI SP	Display	Display type selection	Selectable: Stnd/SCAL/FrE9
	Stnd	Standard	Standard scale range	Display max. display value of Stnd
	FrE9	Frequency	Frequency display	Available AC type only.
	SCAL	Scale	Scale range	These are displayed in SCAL only and set max/min. display value(−1999 to 9999).
	H-SC	High scale	Set max. value of display range	
	L-SC	Low scale	Set min. value of display range	
	dot	Dot	Set decimal point position	It is displayed in SCAL/FrE9 only and set the position.
	d-Unit	Display unit lamp	Set display unit	Set range: mV/V/mA/A/Hz/off
	InbH	Input bias high	Correct High−limit gradient of display value	Stnd/SCAL Correction range: 0.100 to 5.000 FrE9 Correction range: 0.100 to 9.999
	InbL	Input bias low	Correct Low−limit gradient of display value	Correction range: −99 to 99
	InbE	Input bias exponent	Set display index of frequency mode	Set range: 10^{-2}/10^{-1}/10^{0}/10^{1}
PA2 (Parameter 2)	oU1t	Out1 type	Select output mode of OUT1	oFF/HI/Lo/HL/HL-G
	oU2t	Out2 type	Select output mode of OUT2	oFF/HI/Lo/HL/HL-G
	HYS.1	Out1 hysteresis	Select hysteresis of OUT1	Within 1 to F.S. 10%(Variable depending on set of input range and prescale.)
	HYS.2	Out2 hysteresis	Select hysteresis of OUT2	
	StRt	Startup compensation time	Set startup compensation time	Set range: 0.0 to 99.9 sec.
	PEKt	Peak time	Set monitoring delay time for peak value(sec)	Set range: 00 to 30 sec.
	dI St	Display time	Set sampling time(sec)	0.1 to 5.0 sec.(Variable by 0.1 sec.)
	CoLr	Color	Select color	rEd/Grn/YEL/r-G/G-r
	ZEro	Zero key	Enable zero adjustment key	No: Enable/disable zero adjustment key Yes: Enable zero adjustment key
	EuIn	Event input	Set external terminal(11, 12) function	Hold: Use external terminal as Hold terminal Zero: Use external terminal as zero adjustment terminal ※It is enable to use in option mode.
	FS-H	Full scale high	Set High−limit value output position of PV output	Min. set range: Min. 10% F.S.
	FS-L	Full scale low	Set Low−limit value output position of PV output	Max. set range: Max. FS-H 10%
	Adr5	Address	Set communication address	Set range: 01 to 99
	bPS	Bit per second	Set baud rate(bps)	Selectable: 1200/2400/4800/9600
	PrtY	Parity bit	Set parity bit	Selectable: None/Even/Odd
	StOP	Stop bit	Set stop bit	Set range: 1/2
	rSWt	Response waiting time	Set response waiting time	Set range: 5 to 99
	LoC	Lock	Enable lock status	Selectable: oFF/LoC1/LoC2/LoC3
PA0 (Parameter 0)	oU1H	OUT1 high preset	Set value of OUT1 High−limit output	Set the range within display range of Stnd/SCAL. For MT4N−DV/DA Type, set range of oU1H/oU2H and oU1L/oU2L is within −5 to 110%.
	oU1L	OUT1 low preset	Set value of OUT1 Low−limit output	
	oU2H	OUT2 high preset	Set value of OUT2 High−limit output	
	oU2L	OUT2 low preset	Set value of OUT2 Low−limit output	
	H.PEK	High peak	Max. value by data monitoring	◁ key is pressed, it will be returned to initial status.
	L.PEK	Low peak	Min. value by data monitoring	

■ Parameter setting

RUN — MODE key 2 sec. → PA1 — MODE key 2 sec. → PA2

※ Press MODE key for 2 sec. in RUN mode, [PA1](Parameter 1) is displayed.
※ Press MODE key for 4 sec. in RUN mode, [PA2] is displayed after [PA1].
When press MODE key is pressed continually, it stops displaying at [PA2].
※ It is advanced to current display parameter releasing MODE key at [PA1] or [PA2].
※ Press MODE key for 3 sec., it is returned to RUN at any position.
※ If any key is not touched for 60 sec. in each parameter, it will return to RUN mode.
※ After return to RUN mode, press MODE key within 2 sec., it will return to previous parameter.(Refer to the below descriptions for set parameter.)

■ Change the parameter setting value

1. Advance to the parameter to be changed when press MODE key continuously in RUN mode and release MODE key at the parameter.(Refer to "■ Parameter setting")
2. When press MODE key in each parameter, the initial mode of the parameter is displayed.(Refer to the description of each parameter.)
3. When press one of ◁, ▽, △ keys in display mode.

Ex) Mode In-r ◁▽△ Press one — Setting value 250u ◁▽△ Saved setting value flashes every 0.5 sec.

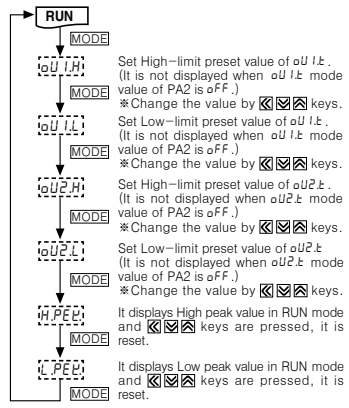
4. Change the set value by △ or ▽ key when setting value is flashed.

Ex) Change AC type measured input from 250V to 125V.

Mode In-r ◁▽△ Press one — Setting value 250u ◁▽△ — Setting value 125u — MODE → dI SP

5. When press MODE key to complete the change and it is advanced to the next mode after flashes 2 times.
6. When press MODE key for 3 sec. after change, it returns to RUN mode.

■ Parameter 0



If PEKt monitoring delay time in PA2 is '00', H.PEK and L.PEK are not displayed.

■ Parameter 1

PA1 — In-r — MODE — dI SP — MODE — In-t — MODE — Stnd

Select measured input specification. (Refer to "■Specification of measured input and range".)
Set display type for measured input as Stnd ↔ SCAL ↔ FrE9 and FrE9. It is only available for AC type.
Select measuring type for AC input type. Select rms ↔ AVG

〈Measured input specification for each model〉

Model	Measured input range
MT4N−DV	50V⇄10V⇄5V⇄1V⇄250mV⇄50mV⇄50V
MT4N−DA	500mA⇄200mA⇄50mA⇄4-20mA⇄5mA⇄2mA⇄500mA
MT4N−AV	250V⇄125V⇄50V⇄25V⇄5V⇄2.5V⇄250V
MT4N−AA	5A⇄2.5A⇄500mA⇄250mA⇄100mA⇄50mA⇄5A

〈When dI SP is Stnd〉: It shows max. display value of standard specification. Display value is fixed.

〈When dI SP is SCAL〉: dot — Set decimal point position. 0↔0.0↔0.00↔0.000 — MODE — H-SC — Set display value for max. input of measured input. — MODE — L-SC — Set display value for min. input of measured input. — MODE — d.Unit — Set display unit. Set range:mV/V/mA/A/Hz/off — MODE — InbH — Adjust High−limit display value gradient for max. input. Set range: 0.100 to 5.000 — MODE — InbL — Adjust Low−limit display value deviation for min. input. Set range: -99 to 99 — MODE

〈When dI SP is FrE9〉: dot — Set frequency measuring range. (Refer to "■ Measuring AC frequency function" .) — MODE — InbH — Adjust High−limit display value gradient for max. input. Set range: 0.100 to 9.999 — MODE — InbE — Set index for frequency display. Set range: 10-2↔10-1↔100↔101

■ Parameter 2

PA2

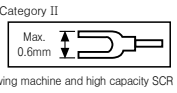
Select Preset output mode of OUT1 as oFF↔HI↔Lo↔HL↔HL-G. But, it is only displayed in OUT1 output included model. — MODE
Select Preset output mode of OUT2 as oFF↔HI↔Lo↔HL↔HL-G. But, it is only displayed in OUT2 output included model. — MODE
Select Preset hysteresis of OUT1 within 10% of F.S. But, it is not displayed when oU1t mode is oFF. — MODE
Select Preset hysteresis of OUT2 within 10% of F.S. But, it is not displayed when oU2t mode is oFF. — MODE
Set startup compensation time. Set range is 0.0 to 99.9 sec. — MODE
Set monitoring delay time within 00 to 30 sec. — MODE
Execute variable set display period by 0.1 sec. within 0.1 to 5.0 sec. — MODE
Select color with 5 modes.
rEd↔Grn↔YEL↔r-G↔G-r
•rEd, Grn, YEL : Display with 1 color.
•r-G, G-r : Color is changed when error is occurred. Ex) r-G : Red is standard and green when error is occurred.
※ Color is changed only when error in "■ Error display function" is occurred excluding 'over'. — MODE

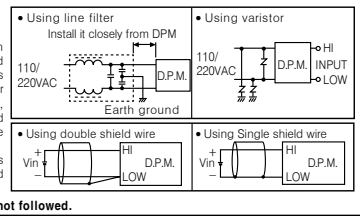
ZEro — MODE: Enable zero adjustment by front key operation to select YES. Press both ◁+△ keys simultaneously in 3 sec. The deviation value is saved in InbL automatically.
EuIn — MODE: Select between hold input by terminal 11, 12 and zero set by external signal.
•Hold: Hold display value
•ZEro: Zero adjustment by external signal
FS-H — MODE: Set High−limit value, 20mADC output position of PV output. ※When input range and prescale mode are changed, the set value of FS-H and FS-L is change automatically as max/min. value of input range.
FS-L — MODE: Set Low−limit value, 4mADC output position of PV output.
Adr5 — MODE: Set address of RS485 communication output within 01 to 99.
bPS — MODE: Set baud rate of RS485 communication output within 9600↔4800↔2400↔1200.
PrtY — MODE: Set parity bit. Set range: None / Even / Odd
StOP — MODE: Set stop bit. Set range: 1/2
rSWt — MODE: Set response waiting time. Set range: 5 to 99
LoC — MODE: Enable Lock function with 4 mode, oFF↔LoC1↔LoC2↔LoC3↔oFF.

oFF	Disable Lock function	LoC2	Lock parameter 1,2
LoC1	Lock parameter 1	LoC3	Lock parameter 0,1,2

■ Caution for using

1. Allowable installation environment
   ①If shall be used indoor ②Altitude Max. 2,000m ③Pollution Degree 3 ④Installation Category II
2. Use compression terminal(M3, Max. 6.0mm) to connect AC power.
3. Separate from high−tension line, power line to avoid inductive noise.
4. Install power switch or circuit breaker to on / off the power at once.
5. The switch or circuit breaker should be installed nearby users for safety.
6. Avoid to use the unit nearby machinery with high frequency noise, such as high frequency welder / sewing machine and high capacity SCR controller etc.
7. "HHHH" or "LLLL" is displayed, off the power and check lines.
8. Noise inflowing from power line can cause serious problem for D.P.M.(Digital Panel Meter) of AC power. It is hard to install protection circuit in the small unit even there is condenser to avoid noise between lines at primary of power transformer. Use noise absorber circuit such as line filter, varistor at external lines when abnormal voltage is occurred by power relay, magnet switch, high frequency equipment are operated in same lines.
9. Input line : Use shield wire when measured input line is extended or in a place with noise and open the non−used terminals.





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

■ Main products

- Proximity sensors
- Area sensors
- Photoelectric sensors
- Fiber optic sensors
- Door/Door side sensors
- Rotary encoders
- Sensor controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO_2, Nd:YAG)
- Laser welding/soldering system
- Counters
- Timers
- Display units
- Panel meters
- Pressure sensors
- Power controllers
- Graphic/Logic panels
- Temperature controllers

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EP-KE-77-0012G