Autonics

PANEL METER
MT4N SERIES
I N S T R U C T I O N   M A N U A L

CE

Thank you for choosing our Autonics products.
Please read the following safety considerations before use.

◼ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.

※Safety considerations are categorized as follows.
⚠ **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.

※The symbols used on the product and instruction manual represent the following
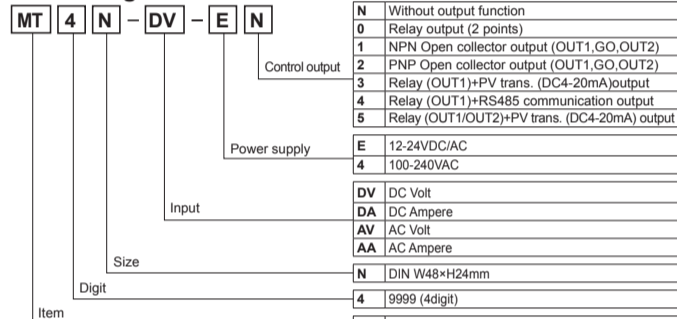⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ 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 personal injury, fire, or economic loss.
2. **The unit must be installed on a device panel before use.**
Failure to follow this instruction may result in electric shock.
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.
4. **Do not disassemble or modify the unit. Please contact us if necessary.**
Failure to follow this instruction may result in electric shock or fire.
5. **Check the terminal numbers before connecting the power source and measurement input.**
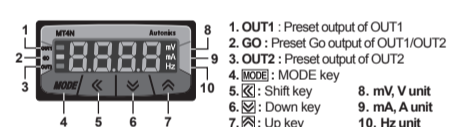Failure to follow this instruction may result in fire.

⚠ Caution

1. **Do not use the unit outdoors.**
Failure to follow this instruction may result in electric shock or shorten the life cycle of the unit.
2. **When connecting the power input and relay output cables, use AWG20 (0.05mm2) cables and make sure to tighten the terminal screw bolt above 0.74N.m to 0.90N.m.**
Failure to follow this instruction may result in fire due to contact failure.
3. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in electric shock or shorten the life cycle of the unit.
4. **Do not use loads beyond the rated switching capacity of the relay contact.**
Failure to follow this instruction may result in insulation failure, contact failure, contact bonding, relay damage, or fire.
5. **Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.**
Failure to follow these instructions may result in electric shock or fire.
6. **Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, and impact may be present.**
Failure to follow this instruction may result in fire or explosion.
7. **Keep dust and wire residue from flowing into the unit.**
Failure may result in fire or product malfunction.
8. **Check the polarity of the measurement input contact before wiring the unit.**
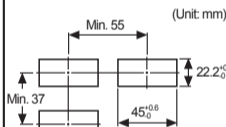Failure to follow this instruction may result in fire or explosion.
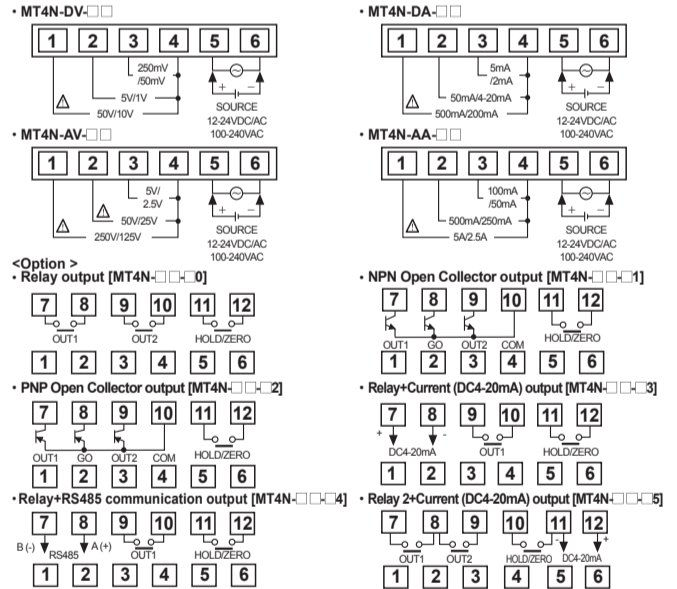
◼ Ordering Information

| MT | 4 | N | – | DV | – | E | N |

Control output	N Without output function
	0 Relay output (2 points)
	1 NPN Open collector output (OUT1,GO,OUT2)
	2 PNP Open collector output (OUT1,GO,OUT2)
	3 Relay (OUT1)+PV trans. (DC4-20mA)output
	4 Relay (OUT1)+RS485 communication output
	5 Relay (OUT1/OUT2)+PV trans. (DC4-20mA) output
Power supply	E 12-24VDC/AC
	4 100-240VAC
Input	DV DC Volt
	DA DC Ampere
	AV AC Volt
	AA AC Ampere
Size	DIN W48×H24mm
Digit	4 9999 (4digit)
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)
Min. 55
Min. 37
22.2⁺⁰·³
45°
45°

◼ Terminal Connection

・MT4N-DV-□□
250mV/50mV
5V1V
50V/10V
SOURCE 12-24VDC/AC 100-240VAC

・MT4N-DA-□□
5mA
50mA4-20mA
500mA/200mA
SOURCE 12-24VDC/AC 100-240VAC

・MT4N-AV-□□
5V/2.5V
25V
50V/125V
SOURCE 12-24VDC/AC 100-240VAC

・MT4N-AA-□□
100mA/50mA
500mA/250mA
5A/2.5A
SOURCE 12-24VDC/AC 100-240VAC

<Option>
・Relay output [MT4N-□□□0]
OUT1 OUT2 HOLD/ZERO
・NPN Open Collector output [MT4N-□□□1]
OUT1 GO OUT2 HOLD/ZERO
・PNP Open Collector output [MT4N-□□□2]
OUT1 GO OUT2 COM HOLD/ZERO
・Relay+Current (DC4-20mA) output [MT4N-□□□3]
DC4-20mA OUT1 HOLD/ZERO
・Relay+RS485 communication output [MT4N-□□□4]
B(-) RS485 OUT1 HOLD/ZERO
・Relay 2+Current (DC4-20mA) output [MT4N-□□□5]
OUT1 GO OUT2 HOLD/ZERO DC4-20mA
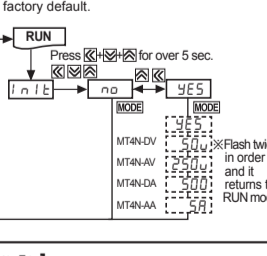
◼ Prescale Function [PA1: H-SC/L-SC]

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 measured range
ouEr	Flashes when it is exceed zero range (±99)

※Zero adjusting error is returning to measurement mode after ɓoᵤEᵣ flashes twice.
※Refer to "◼ AC frequency measured function" for frequency measured range.

◼ Initialization Function

This function is to initialize parameter as factory default.
RUN
Press ≪≫≪ for over 5 sec.
Init no YES
MT4N-DV / MT4N-AV / MT4N-DA / MT4N-AA → returns to RUN mode.

◼ Display Cycle Delay Function [PA2: dI St]

In some applications measured input may fluctuate which in turn causes the display to fluctuate. By adjusting the display cycle delay function time at dI St of 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 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 [PA2: Strt]

This time function limits the operation of an output with 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

◼ User Manual For Communication

Visit our website (**www.autonics.com**) to download the user manual for communication of MT series.
※**The above specifications are subject to change and some models may be discontinued without notice.**

◼ Specifications

Model	MT4N-DV-E□ / MT4N-DA-E□	MT4N-AV-E□ / MT4N-AA-E□	MT4N-DV-4□ / MT4N-DA-4□	MT4N-AV-4□ / MT4N-AA-4□
Measurement input	DC voltage, ampere	AC voltage, ampere, Frequency	DC voltage, ampere	AC voltage, ampere, Frequency
Power supply	12-24VDC/AC		100-240VAC	
Allowable voltage range	90 to 110%		90 to 110%	
Power consumption	DC: 3W, AC: 5VA For MT4N-□□E5 - DC: 5W, AC: 8VA		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			
Max. allowable input	110% F.S. for each measured input range			
A/D conversion method	Practical oversampling using successive approximation ADC			
Sampling cycle	Time delay: 50ms, Cycle: 16.6ms			
Max. display range	-1999 to 9999 (4digit)			
Preset output	Relay output - Contact capacity: 125VAC 0.3A, 30VDC 1A/Contact composition: N.O (1a) NPN/PNP Open Collector output - 12-24VDC/AV 50mA Max. (Load resistance)			
Sub output (Transmission output)	・RS485 communication output - Baud rate: 1200/2400/4800/9600, Communication method: 2-wire half duplex, Synchronous method: Start-synchronization, Protocol: Modbus type ・DC4-20mA output - Resolution: 12,000 division (Load resistance max. 600Ω)			
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: 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 minutes		
Shock	Mechanical	100m/s² (Approx. 10G) in X, Y, Z directions for 3 times		
	Malfunction	300m/s² (Approx. 30G) in X, Y, Z directions for 3 times		
Environment	Ambient temperature	-10 to 50℃, Storage: -20 to 60℃		
	Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH		
Insulation type	Double insulation or reinforced insulation (Mark: ⬜, Dielectric strength between the measuring input part and the power part : 1kV)			
Approval	CE		—	
Weight※1	Approx. 127g (approx. 64g)			

※1: The weight includes packaging. The weight in parentheses is for unit only.
※Environment resistance is rated at no freezing or condensation.

◼ Specification Of Measured Input And Range [PA 1: In-r]

Type	Measured input and range	Input impedance	Display range [Stnd]	Prescale Display range [SCAL]
DC Volt	0-50V [50V]	434.35kΩ	0.00 to 50.00 (fixed)	
	0-10V [10V]	434.35kΩ	0.000 to 10.000 (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	0.00 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]	101.1Ω	0.000 to 5.000 (fixed)	
	0-2mA [2mA]	101.1Ω	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]	200kΩ	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 [25V]	22kΩ	0.000 to 2.500 (fixed)	
AC Ampere	0-5A [5A]	0.01Ω	0.000 to 5.000 (fixed)	
	0-2.5A [25A]	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	0.00 to 100.0 (fixed)	
	0-50mA [50mA]	0.5Ω	0.00 to 50.00 (fixed)	

dot	Display range
0	-1999 to 9999
00	-199.9 to 999.9
000	-19.99 to 99.99
0000	-1.999 to 9.999

(Display range is variable according to decimal point position.)

※Please wire the proper terminal to its max. input within 30 to 100% of the input terminal. When it is higher than input, dielectric breakdown and HHHH appears. The accuracy is decreased when it is connected to the terminal under 30%.

◼ Monitoring Max./Min. Display Value Function
[PA 0: HPEE/LPEE, PA 2: PEEE]

It monitors max./min. value of display value based on the current displays value and then displays the data at HPEE, LPEE of parameter 0. Set the delay time (0 to 30 sec.) at PEEE of parameter 2 in order to prevent malfunction 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 the set time. When pressing any one of ≪≫≪ keys at HPEE, LPEE of parameter 0, the monitored data is initialized.
※Monitoring function is not indicate when the delay time is set as "00 S" at PEEE of parameter 2.

◼ Current Output (DC4-20mA) Scale Adjustment Function [PA 2: FS-H/FS-L]

It sets current output for the display value at the output current DC 4-20mA.
It sets display value for 4mA at FS-L and 20mA at FS-H and the range between FS-H and FS-L should be 10% F.S. (When it sets 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.
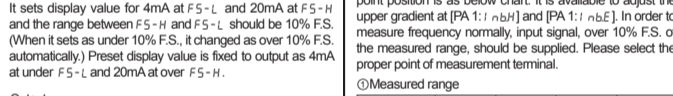
◼ AC Frequency Measurement Function [PA 1: dI SP]

It measures input signal frequency when it is AC input.
It uses fixed decimal point[PA 1: dot], measured range can be changed by setting and measured range of decimal point position is as below chart. It is available to adjust the upper gradient at [PA 1: InbH] and [PA 1: InbL] in order to measure frequency normally, input signal, over 10% F.S. of the measured range, should be supplied. Please select the proper point of measurement terminal.

①Measured 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

②Accuracy of frequency measurement:
Below 1kHz, F.S. ±0.1rdg ±2digit.
From 1kHz to 10kHz, F.S. ±0.3rdg ±2digit.
③I nbH: 0.100 to 9.999 [Gradient adjustment of high value]
④I nbL: 10⁻², 10⁻¹, 10⁰, 10¹ [Index adjustment of I nbH]

◼ Error Correction Function [PA 1: InbH/InbL]

It corrects display value error of measured input.
I nbL: ±99 [Adjust deviation of low value]
I nbH: 5.000 to 0.100 [Correct gradient (%) of high value]
Display value= (Measured value × I nbH) + I nbL
When the measured range is 0 to 500V, and the display range is 0 to 500.0. If the low display value is " I2 " to 0V input, set -I2 as the I nbL value to display "00" by adjusting the offset of the low value.
The display value to the 500V measured input varies by adjusting the offset of the low value. If this display value is "50.0", calculate 500.0/501.0 (the desired display value/the display value), and set the 0.998 correction value as the I nbH to display "500.0" by adjusting the gradient of the high value.
※The offset correction range of I nbL is within -99 to 99 for D⁰, D¹ 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 measurement terminal is displayed and the adjusted value at saved in I nbL automatically.

Operation	Input correction value	Front key	Input external signal
Description	PA 1: Direct input correction method at I nbL	Press both ≪≫ keys for 3 sec. at the RUN mode.	Short-circuit external Hold terminal no.11, 12

※Refer to description "◼ Error correction function", "◼ Error adjustment function 2" for function and error.

◼ Gradient Correction Function [PA 1: I nbH]

It corrects the 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 [I nbH] and used as correction function of max. display value [H-SC]. Adjustment range is 0.100 to 5.000 and multiply current gradient.

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 I nbH×H-SC = 15.000

(Example of gradient correction)

Setting method	H-SC	L-SC	I nbH	Note
①	Unavailable	5.000	1.000	In this case, any setting methods display the same display value.
②	7.500		2.000	
③	5.000		3.000	
④	3.750		4.000	
⑤	3.000		5.000	

◼ Preset Output Mode [PA 2: oU lt/oU2t]

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

※Set ouput 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	Note
PR1 (Parameter 1)	In-t Input type	Selectable RMS/AVG in AC type	Available AC type only.
	In-r Input range	Selection of input range	
	dI SP Display	Selection of display type	Setting range: Stnd, SCAL, FrEq
	Stnd Standard	Standard scale range	Display max. display value of Stnd
	FrEq Frequency	Frequency display	Available AC type only.
	SCAL Scale	Scale range	
	H-SC High scale	Set max. value of display range	These are displayed at SCAL only
	L-SC Low scale	Set min. value of display range	It sets max/min. value (-1999 to 9999).
	dot Dot	Set decimal point position	It is displayed in SCAL.FrEq only and set the position.
	dUnt Display unit lamp	Set display unit	Setting range: Au, u, AA, A, H1.uHF
	I nbH Input bias high	Correct High-limit gradient of display value	Stnd/SCAL: Correction range: 0.100 to 5.000
	I nbL Input bias low	Correct Low-limit gradient of display value	FrEq: Correction range: 0.100 to 9.999
	I nbE Input bias exponent	Set display index of frequency mode	Setting range: 10⁻², 10⁻¹, 10⁰, 10¹
	oU lt Out1 type	Select output mode of OUT1	Setting range: oFF, HI, Lo, HL, HL-G
	oU2t Out2 type	Select output mode of OUT2	Setting range: oFF, HI, Lo, HL, HL-G
	HYS1 Out1 hysteresis	Select hysteresis of OUT1	Within 1 to F.S. 10% (Variable depending on set of input range and prescale)
	HYS2 Out2 hysteresis	Select hysteresis of OUT2	
PR2 (Parameter 2)	StrE Startup compensation time	Set startup compensation time	Setting range: 00.0 to 99.9 sec.
	PEEE Peak time	Set monitoring delay time for peak value (sec)	Setting range: 00 to 30 sec.
	dI St Display time	Set sampling time (sec)	Setting range: 0.1 to 5.0 sec. (Variable by 0.1 sec.)
	CoLr Color	Select color	Setting range: rEd,Grn,YEL,r-G,G-r
	Eulr Zero key	Select range of front side zero adjustment key	HoLd: Use external terminal as Hold terminal YES: Use of front side zero adjustment key
	Eulr Event input	Set external terminal (11, 12) function	ZEro: Use external terminal as zero point adjustment terminal
	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. F.S.-10%
	Adr5 Address	Set communication address	Setting range: 01 to 99
	bPS Bit per second	Set baud rate (bps)	Setting range: 1200, 2400, 4800, 9600
	Prty Parity bit	Set parity bit	Setting range: nonE, EuEn, odd
	StP Stop bit	Set stop bit	Setting range: 1, 2
	r5tm Response wating time	Set response wating time	Setting range: 5 to 99
	LoC Lock	Enable lock status	Setting range: oFF, LoC1, LoC2, LoC3
PA0 (Parameter 0)	oU lH OUT1 high preset	Set value of OUT1 High-limit output	Setting range of Stnd/SCAL: For MT4N-DV/DA type, set range of oU lH/oU2H and oU lL, oU2L is within -5 to 110%.
	oU lL 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	
	HPEE High peak	Max. value by data monitoring	Initializes the monitored data value by pressing any one of ≪≫≪ keys.
	LPEE Low peak	Min. value by data monitoring	

◼ Parameter Setting

RUN
※Press MODE key in RUN mode and it enters PA 0 group.
※Press MODE key for over 3 sec. in RUN mode, it displays [PR 1].
※Press MODE key for over 5 sec. in RUN mode, it displays [PR2] after [PR 1].
When pressing MODE key continually, it stops displaying at [PR2].
※It is advanced to current display parameter releasing MODE key at [PR 1] or [PR 2].
※It is returned to current display, if you don't press MODE key in a parameter group, it returns to RUN mode.
※If any key is not entered for 60 sec. in each parameter group, it returns to RUN mode.
※After returning to RUN mode, press MODE key within 2 sec., it returns to previous parameter.
(Refer to the below descriptions of each parameter group.)
※PA 0 group cannot be entered when preset output mode of parameter of [PR2] group is OFF.

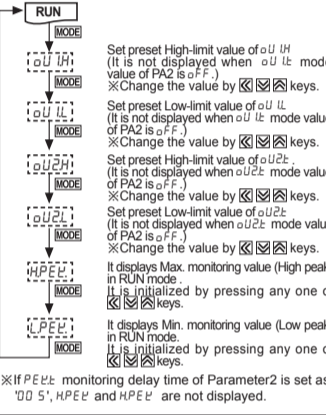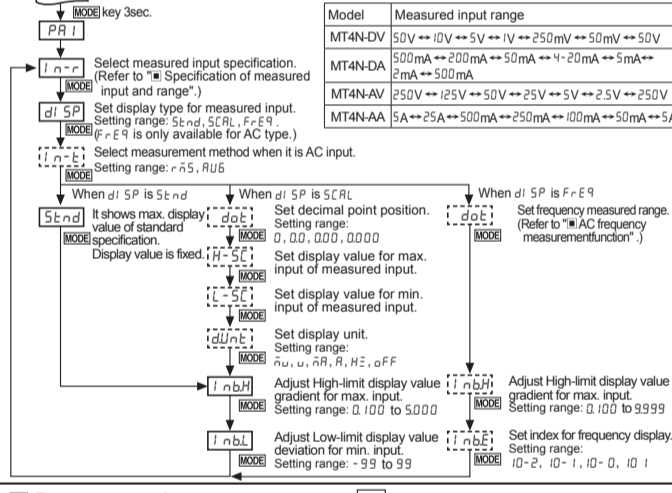## ◼ Change The Parameter Setting Value

1. Advance to the parameter to be changed when pressing MODE key continuously in RUN mode and releasing MODE key at the parameter. (Refer to "◼ Parameter setting")
2. When pressing MODE key in each parameter, the initial mode of the parameter is displayed. (Refer to the description of each parameter.)
3. When pressing one of ≪≫≪ keys in display mode, the saved setting value is displayed.

Ex)
In-r → (Press one) 250U The saved setting value flashes every 0.5 sec.

4. Change the setting value by ≪≫ or ≪ key when setting value flashes.
Ex) Change AC type measured input from 250V to 125V.
In-r → (Press one) 250U ⇄ 125U

5. When confirming the setting value with MODE key, the changed setting value flashes twice and enters into the next setting.
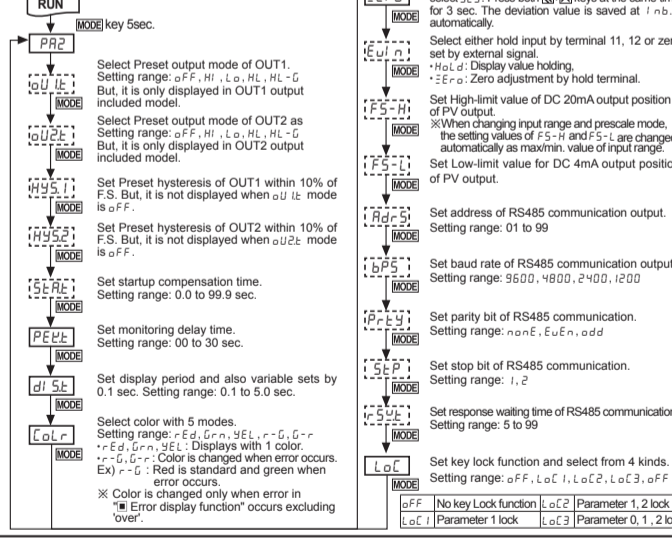6. It returns RUN mode from parameter by pressing MODE key for 3 sec.

◼ Parameter 0

RUN

oU lH Set preset High-limit value of oU lH (It is not displayed when oU lt mode value of PA2 is oFF.) ※Change the value by ≪≫≪ keys.

oU lL Set preset Low-limit value of oU lL (It is not displayed when oU lt mode value of PA2 is oFF.) ※Change the value by ≪≫≪ keys.

oU2H Set preset High-limit value of oU2H (It is not displayed when oU2t mode value of PA2 is oFF.) ※Change the value by ≪≫≪ keys.

oU2L Set preset Low-limit value of oU2L (It is not displayed when oU2t mode value of PA2 is oFF.) ※Change the value by ≪≫≪ keys.

HPEE It displays Max. monitoring value (High peak) in RUN mode. It is initialized by pressing any one of ≪≫≪ keys.

LPEE It displays Min. monitoring value (Low peak) in RUN mode. It is initialized by pressing any one of ≪≫≪ keys.

※If PEEE monitoring delay time of Parameter2 is set as "00 S", HPEE and HPEE are not displayed.

◼ Parameter 1

RUN MODE key 3sec.
PR1

In-r Select measured input specification. (Refer to "◼ Specification of measured input and range".)

dI SP Select display type for measured input. Setting range: Stnd, SCAL, FrEq (FrEq is only available for AC type.)

In-t Select measurement method when it is AC input. Setting range: rAS, AuG

When dI SP is rAS → **Stnd** It shows max. display value of standard specification. Display value is fixed.

When dI SP is SCAL → **dot** Set decimal point position. Setting range: 0.0 00.00 000.00 0000

H-SC Set display value for max. input of measured input.

L-SC Set display value for min. input of measured input.

dUnt Set display unit. Setting range: Au, u, AA, A, H1, oFF

InbH Adjust High-limit display value gradient for max. input. Setting range: 0.100 to 5.000

InbL Adjust Low-limit display value deviation for min. input. Setting range: -99 to 99

When dI SP is FrEq → **dot** Set frequency measured range. (Refer to "◼ AC frequency measurement function".)

InbH Adjust High-limit display value gradient for max. input. Setting range: 0.100 to 9.999

InbE Set index for frequency display. Setting range: 10⁻², 10⁻¹, 10⁰, 10¹

<Measured input specification for each model>

Model	
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 → 25A → 500mA → 250mA → 100mA → 50mA → 5A

◼ Parameter 2

RUN MODE key 5sec.
PA2

oU lt Select Preset output mode of OUT1. Setting range: oFF, HI, Lo, HL, HL-G But, it is only displayed in OUT1 output included model.

oU2t Select Preset output mode of OUT2. Setting range: oFF, HI, Lo, HL, HL-G But, it is only displayed in OUT2 output included model.

HYS1 Set Preset hysteresis of OUT1 within 10% F.S. But, it is not displayed when oU lt mode is oFF.

HYS2 Set Preset hysteresis of OUT2 within 10% F.S. But, it is not displayed when oU2t mode is oFF.

StrE Set startup compensation time. Setting range: 0.0 to 99.9 sec.

PEEE Set monitoring delay time. Setting range: 00 to 30 sec.

dI St Set display period and also variable sets by 0.1 sec. Setting range: 0.1 to 5.0 sec.

CoLr Select color with 5 modes. Setting range: rEd.Grn.YEL.r-G.G-r - rEd.Grn.YEL: Displays with 1 color. - r-G.G-r: Color is changed when error occurs. Ex) r-G: Red is standard and green when error occurs. ※ Color is changed only when error in "◼ Error display function" occurs excluding "over".

Eulr Enable zero adjustment by front key operation to select YES. Press both ≪≫ keys at the same time for 3 sec. The deviation value is saved at I nbL automatically.
- HoLd: Display value holding.
- ZEro: Zero adjustment by hold terminal.

FS-H Set High-limit value of DC 20mA output position of PV output. ※When changing input range and prescale mode, the setting values of FS-H and FS-L are changed automatically as maximin. value of input range.

FS-L Set Low-limit value for DC 4mA output position of PV output.

Adr5 Set address of RS485 communication output. Setting range: 01 to 99

bP5 Set baud rate of RS485 communication output. Setting range: 9600, 4800, 2400, 1200

Prty Set parity bit of RS485 communication. Setting range: nonE, EuEn, odd

StP Set stop bit of RS485 communication. Setting range: 1, 2

r5tm Set response waiting time of RS485 communication. Setting range: 5 to 99

LoC Set key lock function and select from 4 kinds. Setting range: oFF, LoC1, LoC2, LoC3
- oFF: No key Lock function
- LoC1: Parameter 1 lock
- LoC2: Parameter 1, 2 lock
- LoC3: Parameter 0, 1, 2 lock

◼ Cautions During Use

1. Please use the terminal (M3.5, Max.6.0mm) when connecting the AC power supply.
2. Please use separated line from high voltage line or power line in order to avoid inductive noise.
3. Please install power switch or circuit breaker in order to cut off the power supply.
4. The switch or circuit breaker should be installed near by users for safety.
5. Be sure to avoid using the following unit near by machinery making strong high frequency noise. (High frequency welder & Sewing machine, High capacity SCR unit etc.)
6. When input is applied, if "HHHH" or "LLLL" is displayed, then it can be displayed normally after power off.
7. Noise influencing from power line can cause serious problem for D.P.M. (Digital Panel Meter) driving by AC power supply. Even though there is condenser for protecting noise between lines at primary side of power transformer, but it is very difficult to install protection components at small size product like D.P.M. Therefore, please use noise absorber circuit such as line filter, varistor in external lines when voltage failure occurs by power noise, magnet S/W and high frequency equipment are operated in same line or surge occurs by spark of high voltage or thunder etc.
8. Input line: Shield wire must be used when the measuring input line is getting longer in the place occuring lots of noise.
9. Allowable installation environment
   ①If shall be used indoor   ②Altitude Max. 2000m
   ③Pollution Degree 2   ④Installation Category II
※Failure to follow these instructions may result in product damage.

・Using line filter Install it closely from D.P.M.
・Using Varistor

・Using Double shield wire ・Using Single shield wire

◼ Main 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, CO₂, Nd:yag)
- Laser Welding/Cutting System
- Temperature Controllers
- Controllers
- SSR/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate)Meters
- Display Units
- Sensor Controllers

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