

Autonics

PANEL METER MT4N SERIES

M A N U A L



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.

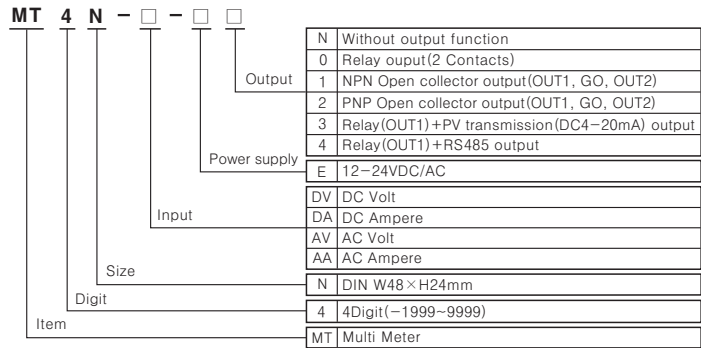
Warning

- 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 and damage of property.
It must be mounted on Panel.
It may give an electric shock.
Do not connect, inspect and repair terminals when it is power on.
It may give an electric shock.
Do not disassemble or modify this unit, please contact us when it is required.
It may cause a fire and give an electric shock.
Please check the number of terminal when connecting power or input.
It may cause a fire.

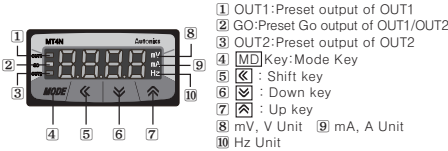
Caution

- This unit shall not be used outdoors.
It might shorten the life cycle of the product or give an electric shock.
When connecting wire, No.20AWG(0.50mm^2) should be used and tighten screw bolt on terminal block with 0.74N·m~0.90N·m strength.
It may cause a malfunction or fire due to contact failure.
Please observe the rated specification.
It might shorten the life cycle of the product and cause a fire.
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.
In cleaning the unit, do not use water or an oil-based detergent.
It may cause a fire and give an electric shock.
Do not use this unit in place where there are flammable or explosive gas, humidity, direct ray of the light, radiant heat, vibration and impact etc.
It may cause a fire or explosion.
Do not inflow dust or wire dregs into the unit.
It may cause a fire or mechanical malfunction.
Please connect properly after checking the polarity of measuring terminals.
It may cause a fire or explosion.

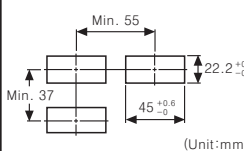
Ordering information



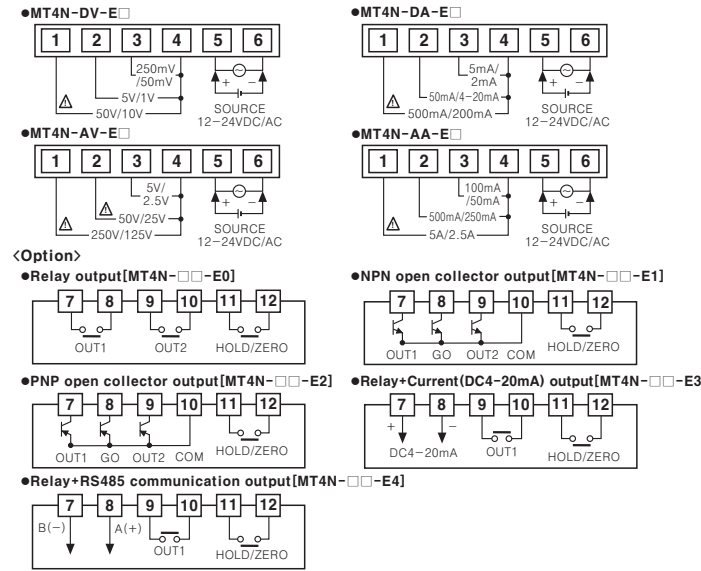
Front panel identification



Panel cut-out

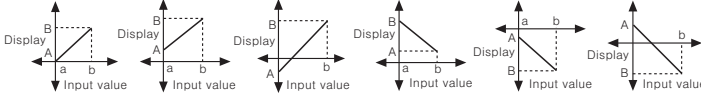


Terminal connection



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

This function is to display setting(-1999~9999) of particular High/Low-limit value in order to display High/Low-limit value of measuring input. If measuring inputs are a or b and particular values are A or B, it will display a=A, b=B as below graphs.



Error display function

Table with 2 columns: Display and Description. Rows include HHHH (exceeds max. allowable input), LLLL (exceeds min. allowable input), d-HH (exceeds max. display), d-LL (exceeds min. display), F-HH (exceeds max. measuring value), and ovEr (exceed zero adjustment range).

Display cycle delay function [PA2: dISk mode]

It is able to make stable display value by display cycle when measuring input value is fluctuated frequently. Change the delay time in dISk mode of Parameter 2. If select 4.0s, the display value is displayed every 4sec. averaging input value for 4sec.

Initialization function

It initializes parameter setting state. Press [MODE] keys for over 5sec in RUN status, it returns to the default value.
Run Press at the same time for 5sec.
The above specifications are changeable at anytime without notice.

Specifications

Specifications table for MT4N series, including Series, Power supply, Power consumption, Display method, Display accuracy, Input, Max. allowable input, A/D conversion method, Sampling cycle, Max. display range, Preset output, Sub output, AC measuring function, Frequency measuring function, Hold function, Insulation resistance, Dielectric strength, Noise immunity, Vibration, Shock, Ambient temperature, Storage temperature, Ambient humidity, Insulation type, Approval, and Weight.

Specification of measuring input and range

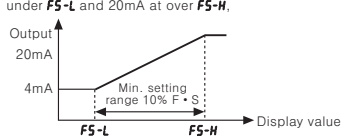
Table showing measuring input and range for DC Volt, DC Ampere, AC Volt, and AC Ampere, including input impedance, standard display range, and prescale display range.

Monitoring function for Peak display value [PA0: HPEk/LPEk mode, PA2: PEk mode]

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

Current output (4-20mADC) scale adjustment function [PA2: FS-H / FS-L mode]

It sets current output for preset display value at the output current 4~20mADC. It sets display value for 4mA and 20mA and set range between FS-H(FS-H) and FS-L(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 [PA1: dISP mode]

It measures input signal frequency when it is an AC input using fixed decimal point (PA1: dot mode) and measuring range can be changed by setting and measuring range of decimal point position is as [PA1: nbH mode] and [PA1: nbL mode]. In order to measure frequency normally, input signal, over 30% F · S of measuring range should be supplied. Please select the proper point of measuring terminal.

Error correction function [PA1: nbH / nbL mode]

It corrects display value error of measuring input. nbL: ±99 (Adjust deviation of low value). nbH: 5.000~0.100 (Correct gradient (%) of High value). Display value = (Measuring value × nbH) ÷ 100. Ex) When it is desired to measure input specification as 0~500V and display value as 0~500.0, it is able to remove the offset of Low display value to set -12 (Offset correcting value) in nbL. (When Low display value is [] 12 in 0V input.) Display value for measuring input (500V) is decided depending on offset adjustment of Low value. When set adjustment value of 0.998 in nbH calculating as 500.0/501.0 (Target display value / Current display value), in case, display value is adjusted and display value will be 500.0. (Target display value / Current display value)

Gradient correction function [PA1: nbH 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 (nbH) and used as correction function of max. display value (H-SC). Adjustment range is 0.100~5.000 and multiply current gradient by the value. Ex) When 4.00VDC, display 5.000 for measuring input 0~10.00V. (1) Set the decimal position as '0000' for prescale value. (2) In order to display 5.000 when measuring input is 4.00VDC, 12.500 will be displayed when max. input value is 10.00V, but it cannot set the max. setting value. (3) Set gradient correction setting value (nbH) = High scale value (H-SC) = 12.500 as follows. (4) It displays 5.000 when measuring input is 4.00V after set is finished.

Table showing setting methods for H-SC, L-SC, nbH, and nbL.

Preset output mode [PA2: ouLk / ou2k mode]

Table showing output operation for off, HI, Lo, HL, and HL-G modes, including period on/off and display value conditions.

Parameter

Parameter table listing parameters like Input type, Input range, Display type, Standard scale, Frequency display, Scale, High/Low scale, Dot, Input bias, Input bias low, Output type, Hysteresis, Zero key, Event input, Full scale High/Low, Address, Bit per second, Lock, and various output modes.

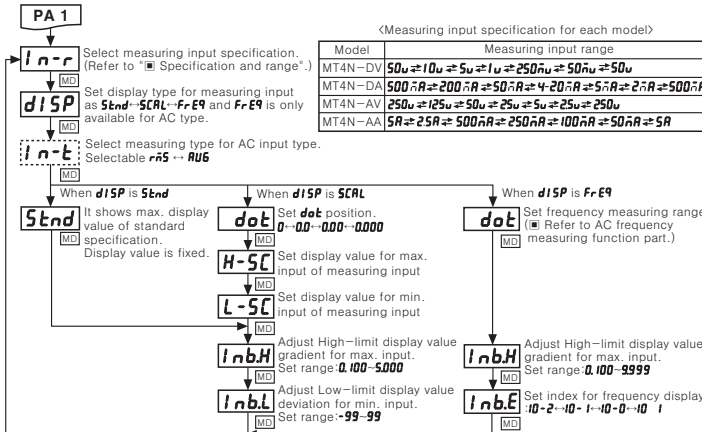
Parameter setting

- Run key is pressed for 2sec in RUN mode, PA 1 is displayed.
Run key is pressed for 5sec in RUN mode, PA 2 is displayed after PA 1.
If Run key is pressed continuously, it stops displaying at PA 1 or PA 2.
It is advanced to current display parameter releasing Run key at PA 1 or PA 2.
Run key is pressed for 3sec, it is returned to RUN at any position.
If any key is untouched for 60sec. in each parameter, it will return to RUN mode.
After return to RUN, press Run key within 2 sec., it will return to previous parameter. (Refer to the below descriptions for set parameter.)

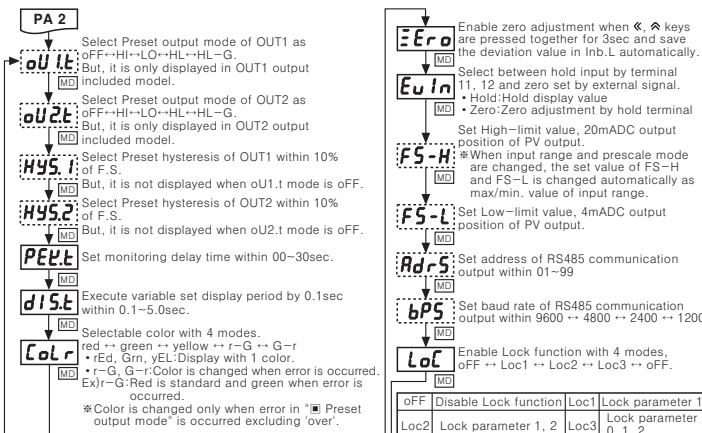
Change the parameter setting value

- Advance to the parameter to be changed when press Run key continuously in RUN mode and release Run key at the parameter. (Refer to "Parameter setting.")
When press Run key in each parameter, the initial mode of the parameter is displayed. (Refer to the description of each parameter.)
When press one of Run keys in display mode, saved setting value is displayed.
Change the set value by Run key when set value is flashed.
Change AC type measuring input from 250V to 125V.
When press Run key to complete the change and it is advanced to the next mode after flash 2 times.
When press Run key for 3sec. after change, it returns to RUN mode.

Parameter 1



Parameter 2



Caution for using

- Allowable installation environment
Altitude Max. 2000m
Use compression terminal (M3, Max. 6.0mm) to connect AC power.
Separate from high-tension line, power line to avoid inductive noise.
Install power switch or circuit breaker to on/off the power.
The switch or circuit breaker should be installed near by users for safety.
Avoid to use the unit near with machinery with high frequency noise, such as high frequency welder/sewing machine and high capacity SCR controller etc.
"HHH" or "LLL" is displayed, off the power to cut lines.
Noise inflowing from power line can cause serious problem for DPM 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.
Input line : Use shield wire when measuring input line is extended or in a place with noise and open the non-used terminals.

Major products

- PROXIMITY SENSOR, PHOTOELECTRIC SENSOR, AREA SENSOR, FIBER OPTIC SENSOR, DOOR/DOOR SIDE SENSOR, PRESSURE SENSOR, ROTARY ENCODER, SIGNAL CONVERTER, COUNTER, SWITCHING POWER SUPPLY, TEMPERATURE CONTROLLER, TEMPERATURE/HUMIDITY TRANSDUCER, POWER CONTROLLER, RECORDER, TACHOMETER/PULSE RATE METER, PANEL METER, INDICATOR, SIGNAL CONVERTER, COUNTER, TIMER, DISPLAY UNIT, GRAPHIC PANEL, STEPPING MOTOR & DRIVER & MOTION CONTROLLER, LASER MARKING SYSTEM (CO2, Nd:YAG)

Autonics Corporation logo and contact information, including address, phone numbers, and website.