

Autonics

SCALING METER

M4NS/M4YS SERIES

MANUAL



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.

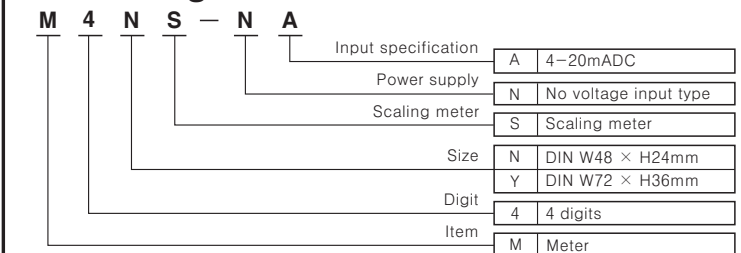
Warning

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required.
It may result in serious damage, fire or human injury.

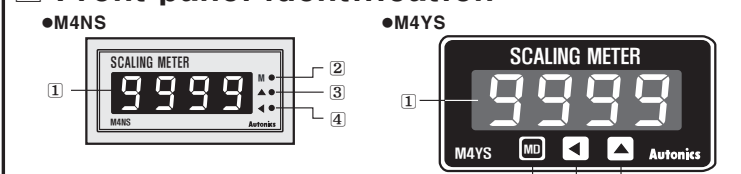
Caution

- It must be mounted on panel.
It may give an electric shock.
- Do not repair, check up or connect when power on and measuring input applied.
It may give an electric shock.
- Do not disassemble and modify this unit, when it requires. If needs, please contact us.
It may give an electric shock and cause a fire.
- This unit shall not be used outdoors.
It might shorten the life cycle of the product or give an electric shock.
- Please observe specification rating.
It might shorten the life cycle of the product and cause a fire.
- Be sure that there is not insulated between measuring input terminal and power terminal.
It may cause mechanical trouble of measuring target or result in product damage.
- Please wire properly after check polarity of power.
It may cause a fire or explosion and result in product damage.
- In cleaning the unit, do not use water or an oil-based detergent.
It might cause an electric shock or fire that will result in damage to this product.
- Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray the sun, radiant heat, vibration, impact etc.
It may cause explosion.
- Do not inflow dust or wire dregs into inside of this unit.
It may cause a fire or mechanical trouble.
- Please connect properly after checking the polarity of measuring terminals.
It may cause a fire or explosion.

Ordering information



Front panel identification



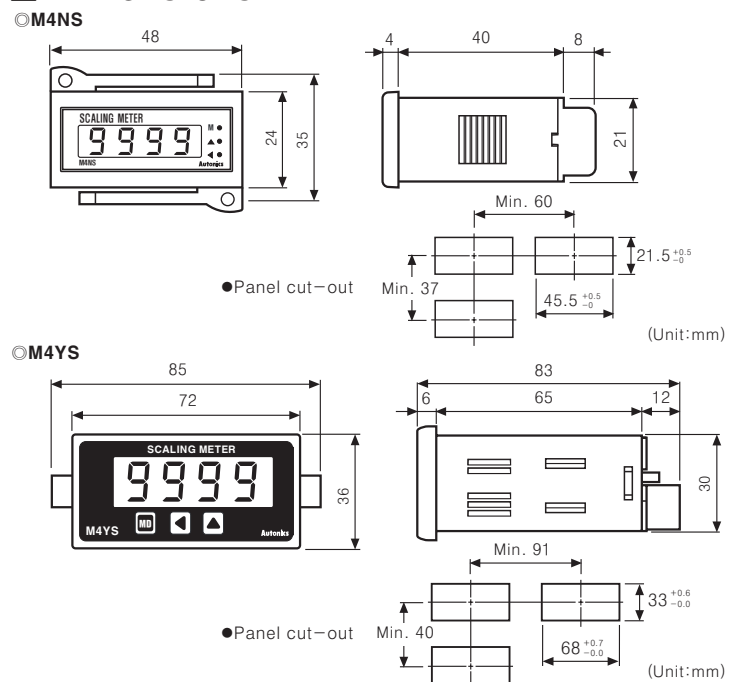
- Display value, Parameter, Error display
 - [MD]Key : When enter into Parameter group, return to RUN mode, After completing Parameter setting.
 - [Up] key : When enter into the status of Parameter setting
 - [Move] key : When enter into the status of Parameter setting and move Digit
- *The above specification are changeable without notice anytime.

Specifications

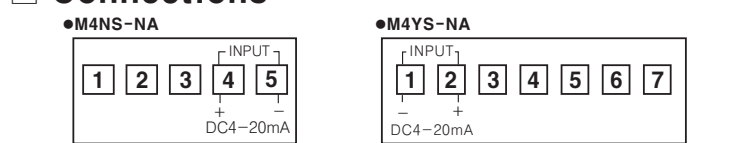
Model	M4NS-NA	M4YS-NA
Power supply	No voltage type	
Power consumption		
Display method	7Segment LED Display(4digit)	
Display accuracy	(Note1) 0.3% full scale of ± 1 Digit	
Display cycle	Selectable 0.5sec/1sec/2sec/3sec/4sec/5sec	
Resolution	12,000 resolution	
Max. display	-1999 to 9999	
Setting type	Front S/W key	
Input	4-20mADC	
Self-diagnosis function	Error display function(HHHH/LLLL)	
Insulation resistance	Min. 100M Ω (500VDC) between external terminal and case	
Dielectric strength	2000VAC for 1minute between external terminal and case	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10minute
Shock	Mechanical	300m/s ² (30G) in X, Y, Z directions for 3 times
	Malfunction	100m/s ² (10G) in X, Y, Z directions for 3 times
Ambient temperature	-10 to 50°C(at non-freezing status)	
Storage temperature	-25 to 60°C(at non-freezing status)	
Ambient humidity	35 to 85%RH	
Weight	Approx. 46g	Approx. 88g

(Note1) Ambient temperature(25°C \pm 5°C):0.3% full scale of ± 1 Digit (-10~+50°C:0.4% full scale of ± 1 Digit)

Dimensions

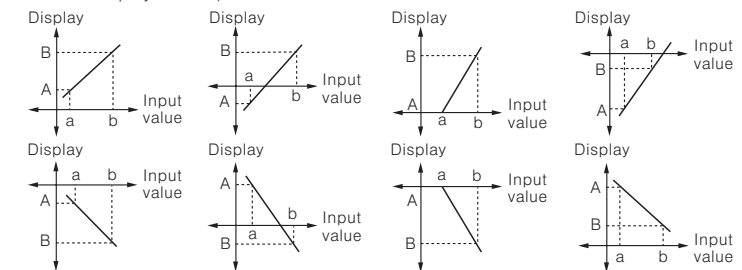


Connections

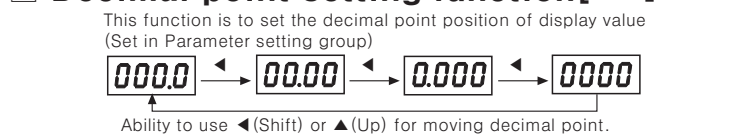


Prescale function

This function is to display the value with setting certain Hi/Low limit value against 4-20mADC input. For example If set a=4mADC, b=20mADC and A,B as display value, it will be displayed a=A, b=B.



Decimal point setting function[dot]

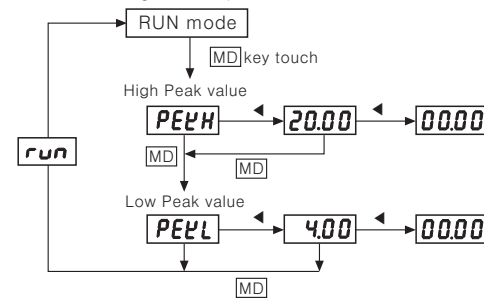


Correction function

(Parameter group : I_{nbH}/I_{nbL} mode)
This function is to adjust the error of display value after calculating scale value for measuring input and also correct the input error of sensor etc.
 I_{nbL} : -100 to 100 [Adjust deviation of Low value],
 I_{nbH} : 0.900 to 1.100 [Correct gradient(% of High value)]
Ex)When display value is 0.0 to 500.0 against 4-20mA input, if the display value is "1.2" for 4mA input, set -12(ignore the decimal point) as I_{nbL} value to display "0.0" So enable to remove offset of Low display value.
*When completed above Low value setting then apply 20mA, if the display value is "500.5, the correction value will be 0.999(5005/5000=0.999), set 0.999 as I_{nbH} value then enable to correct High value(50005 \times 0.999= 5000). Ignore the decimal point.

Monitoring mode for Peak display value

This function is to monitor Max. value and Min.value by current display value then display its Data in PE_{tH} mode and PE_{tL} mode.
Enable to set delay time in PE_{tL} mode to protect the wrong Data by initial over current and settable from 0 to 30sec. and start to monitor after delay time.
1. Pressing [MD] key to enter Monitoring mode in RUN mode.
2. Each Peak value will be shown by pressing [Up] key in Monitoring mode and Peak value will be initialized by pressing [Move] once more.
3. If no key touched for 60sec., it will return to RUN mode.
4. When do not use Monitoring function, set 00 5 for PE_{tL} in Parameter setting.



Display cycle delay function

It is difficult to display when the measuring input value is fluctuating. In this case it is able to make display value stable by delaying display cycle. Display cycle can be changed in dis_{t} mode of Parameter 2(Selectable 0.5s/1.0s/2.0s/3.0s/4.0s/5.0s). If select 5.0S, it will be the measuring input value on an average for 5sec., then display it every 5sec.

Error Display function

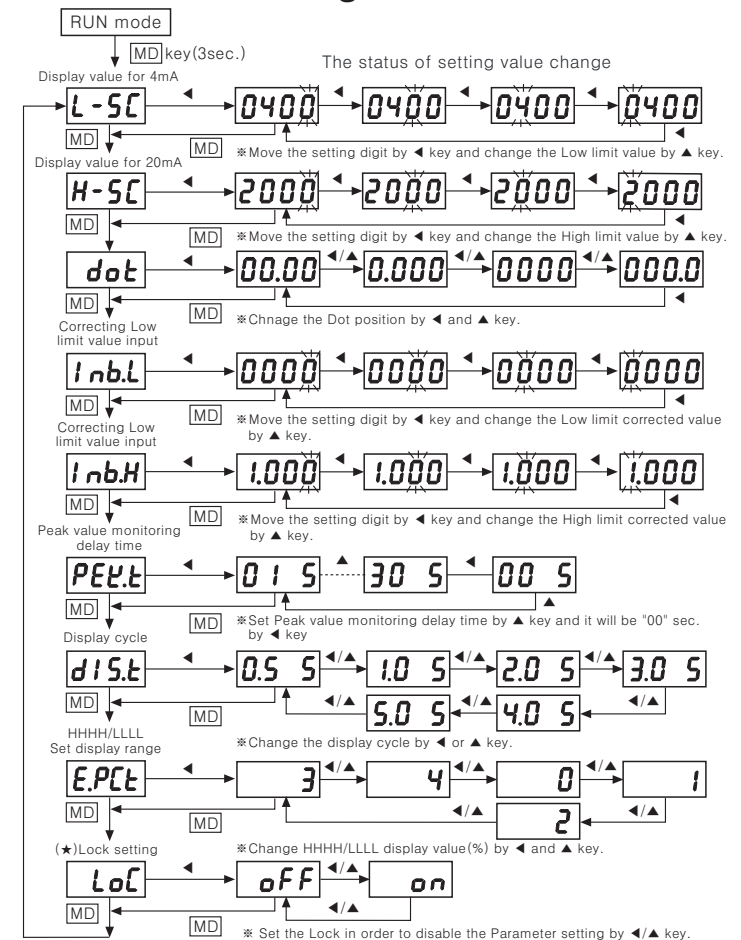
- Error display
 - When LLLL flickers
1)Input current is lower than 3% in 4-20mADC(16mA scale)
LLLL will flicker when it is under 3.52mA [16mA \times 3%=0.48mA] \rightarrow 4mA-0.48mA=3.52mA
2)When it is beyond Min. display value(-1999)[by display value]
 - When HHHH flickers
1)Input current is higher than 3% in 4-20mADC(16mA scale)
HHHH flickers [16mA \times 3%=0.48mA] \rightarrow 20mA+0.48mA=20.48mA.
When it is higher than 20.48mA.
2)When it is beyond Max. display value(9999)[by display value]
- Turn Error display off
LLLL and HHHH are displayed when input is out of measuring range, therefore it will be disappeared automatically when input returns to measuring range.
- Error setting and sort
It will display the error message according to the setting value which set % value against analog input range and set it in E_{Pct} mode by [Up] key.

$E_{Pct} 0$	LLLL / HHHH are displayed when it is over 0% out of 4-20mADC range
$E_{Pct} 1$	LLLL / HHHH are displayed when it is over 1% out of 4-20mADC range
$E_{Pct} 2$	LLLL / HHHH are displayed when it is over 2% out of 4-20mADC range
$E_{Pct} 3$	LLLL / HHHH are displayed when it is over 3% out of 4-20mADC range
$E_{Pct} 4$	L-SC / H-SC are displayed always when it is out of 4-20mADC range

Parameter

Display	Function	Setting range
L-SC	Low Scale	Low limit display value for 4mA input -1.999 to 9.999 -19.99 to 99.99
H-SC	High Scale	Hi limit display value for 20mA input -199.9 to 999.9
dot	Dot	Set Dot position -1999 to 9999
I_{nbL}	Correct Low-limit value of display value.	-100 to 100
I_{nbH}	Correct High-limit value of display value(%).	0.900 to 1.100
PE_{tL}	Peak Time	Set monitoring delay time 0 to 30sec
dis_{t}	Display time	Selectable sampling time(sec) Selectable 0.5/1.0/2.0/3.0/4.0/5.0
E_{Pct}	Error %	HHHH/LLLL display value range for input Selectable 0 to 3% or (4:Fixed H-SC/L-SC)
LoC	Lock	Set lock function Selectable ON, OFF

Parameter setting



- *Pressing [MD]key to complete the setting and move to next Parameter in status of changing setting value.
- *Pressing [MD] key for 2 sec. to move to RUN mode after displaying run .
- *If no key touched for 60sec., it will return to RUN mode.
- *[Lock] key lock setting
[off on] : Disable to change or set Parameter
[off on] : Disable to change or set Parameter but enable to check the setting value in Parameter group. Disable to enter into the status of change setting value by pressing [Up].

Factory specification

Parameter	Parameter display	Factory specification
Low limit display value for 4mA input	L-SC	0400
Hi limit display value for 20mA input	H-SC	2000
Set Dot position	dot	0000
Correction of Low limit value input	I_{nbL}	0000
Correction of Hi limit value input	I_{nbH}	1000
Peak value monitoring delay time	PE_{tL}	01 5
Display cycle	dis_{t}	05 5
Set % of HHHH/LLLL display range	E_{Pct}	3
Lock setting	LoC	off

Caution for using

- Please use separated line from high voltage line or power line in order to avoid inductive noise.
 - Please install power switch or circuit breaker in order to cut the power supply.
 - The switch or circuit breaker should be installed near by users for safety.
 - Be sure to avoid using this unit near by machinery makes strong high frequency noise. (Welding machine, high capacity SCR unit etc.)
 - Input line : Shield wire must be used when the measuring input line is getting longer or there are lots of noises.
- *It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER
- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHO/LINE SPEED/PULSE METER
- DISPLAY UNIT
- LASER MARKING SYSTEM(CO₂, Nd:YAG)

Autonics Corporation
http://www.autonics.com
Global Partner for IA

HEADQUARTERS :
41-5, Yongdang-ri, Ulsang-eup, Yangsan-si, Gyeongsang, 626-847, Korea

OVERSEAS SALES :
Bldg. 402 3rd Fl., Bucheon Techno Park, 193, Yakdae-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do, 420-734, Korea
TEL:82-32-610-2730 / FAX:82-32-329-0728
E-mail : sales@autonics.com

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