ϵ





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

Safety Considerations

se observe all safety considerations for safe and proper product operation to avoid hazards

Safety considerations are categorized as follows.

Marning 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.

▲ 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

- Do not use the unit outdoors.
 Failure to follow this instruction may result in electric shock or shorten the life cycle of the unit.
 Use the unit indoors only. Do not use the unit outdoors or at locations subject to the temperatures or humidity outside.(e.g.: rain, dirty, frost, sunlight, condensation, etc.)

 2. When connecting the power input or relay output, make sure to use AWG20(0.50mm²) and tighten the terminal screw bot labove 0.74 to 9.90N·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 shorten the life cycle of the unit or fire.

 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.
- 5. Do not use water or oil-based otergent 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 these instructions may result in electric shock or fire.

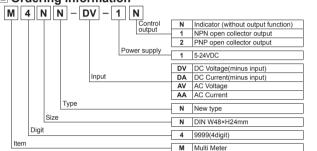
 7. Keep dust and wire residue from flowing into the unit.

 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





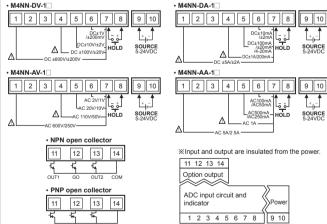
- 1. Measured value display
- 2. M : MODE key 3. ⊠ : Up key 4. ☑ : Shift key 5. OUT1(Red):
- OUT1 output indicator of preset 6. GO(Green):

- GO output indicator of preset
 7. OUT2(Red):
 OUT2 output indicator of preset
 8. Unit sticker

(unit: mm Dimension Transist output terminal XIndicator model (M4NN-□□-1N) does not have transistor output terminal Bracket Panel cut-out Min. 55

45^{+0.6}

■ Connections And Insulated Block Diagram



■ Monitoring Max./Min. Value [PA 0 group HPEE/LPEE, PA 2 group PEEE1 It monitors Max./Min. value of display value based on current display value and then display the data in HPEL mode and LPEL mode of parameter 0 group. Set delay time(0 to 30 sec.) in PELL mode of parameter 2 group 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.

WHOEL LEFE parameters are not displayed when monitoring delay time [PELL] of parameter 2 group is set as

as 0 sec. [00 5].

- Minus Input Display Setting [PA1 group ਨੇ! ਨ੫]
- When minus input is unnecessary, or when display 0 not to display minus input due to display minus input due to unstable input value around 0, set FF this minus input display function.
 When setting FF, low-limit value of input range is set 0 and it displays minus input as 0.

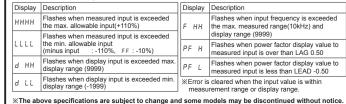
■ AC Frequency Measurement [PA1 group at 5P]

It measures input signal frequency when it is an AC input. It uses fixed decimal point by E parameter setting of parameter 1 group, measured range can be changed by setting and measured range of decimal point positis as below chart. It is available to adjust upper gradient at F bH and F bE of parameter 1 group. 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.

ı	 Measured range 							
ı	Decimal point position	0.000	0.00	0.0	0			
ı	Measurement range	0.100 to 9.999Hz	0.10 to 99.99Hz	0.1 to 999.9Hz	1 to 9999Hz			
ı	* Accuracy of frequency measurement: Below 1kHz, F.S. ±0.1rdg ±2digit. From 1 to 10kHz, F.S. ±0.3rdg ±2dig							

• l bH: 0.100 to 9.999 (gradient adjustment of high-limit value) • l bE: 10° , 10° , 10° , 10° (index adjustment of l bH)

■ Error Display



Specifications

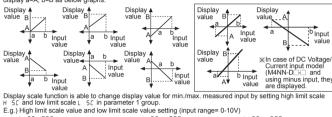
Model		M4NN-DV-1	M4NN-DA-1	M4NN-AV-1	M4NN-AA-1				
Power supply		DC Voltage	DC Current	AC Voltage, Frequency	AC Current, Frequency				
Max. allo	owable input	-110 to 110% of each measured input range (when not using minus input: -10 to 110%) Approx. 110% of each measured input							
Power s	upply	5-24VDC							
Allowable	voltage range	90 to 110% of the rated voltage (5V is fixed for lower limit)							
Power c	onsumption	Max. 3W							
Display	method	7 Segment LED Display(red), Character height : 11mm							
Display accuracy		In 23±5°C - DC type: ±0.1% F.S. ±2digit, AC type : ±0.3% F.S. ±3digit # 5A terminal of DA, AA type: Within ±0.3% F.S. ±3digit In -10 to 50°C - DC/AC type: ±0.5% F.S. ±3digit, Frequency: ±0.5% F.S. ±3digit # 5A terminal of DA, AA type: Within ±1% F.S. ±3digit							
Display	cycle	0.1 to 5.0 sec. (selecatable by 0.1 sec.)							
A/D conve	ersion method	Practical oversampling using successive approximation ADC							
Samplin	g cycle	50ms(resolution 1/12,	000)	16.6ms(resolution 1/12,000)					
Max. dis	splay range	-1999 to 9999(4 digit)							
Preset o	output ^{*1}	NPN/PNP open collector output: -Load voltage: max. 30VDC — Load current: max. 100mA -Residual voltage: max. 1VDC(NPN), max. 2VDC(PNP)							
AC mea	surement ^{**2}	_		Average value(AVG) measurement					
Frequen measure	ncy ement ^{×2}	_	Measured range: 0.100 to 9999Hz (variable by decimal point position)						
Insulation resistance		Min. 100MΩ(at 500VDC megger)							
Dielectric strength		2000VAC for 1 minute (between all terminals and case)							
		±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 of X, Y, Z direction for 2 hours							
VIDIGUOII	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z direction for 10 minutes							
Shock		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	Ambient temperature	-10 to 50°C, storage: -20 to 60°C							
-ment	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH							
Connection type		Plug/Socket terminal block (accessory)							
Insulation type		Double insulation or reinforced insulation (mark: □, Dielectric strength between the measuring input part and the power part : 1kV)							
Approval		C€							
Weight ^{*3}		Approx. 83.6g (approx. 46.8g)	Approx. 83.7g (approx. 46.7g)	Approx. 83.8g (approx. 46.9g)	Approx. 83.8g (approx. 46.9g)				

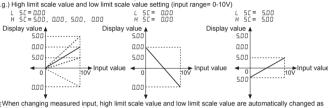
Indicator model(M4NN-__-1N) does not have output function.

※2: AC. Frequency measurement functions are only for AC measurement type.
※3: The weight is with packaging and the weight in parentheses is only unit weight.
※Environment resistance is rated at no freezing or condensation.

■ Prescale [PA1 group H 55/L 55]

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





When changing measured input, high limit scale value and low limit scale value are automatically changed as the default display range of the changed measured input.

■ Error Correction [PA 1 group ! nb.H/! nb.L]

- EFFOR COTTECTION [PA group | n.b.fl / n.b.]

 It corrects display value error of measurement input.

 I bit :-99 to 99 (adjust deviation of low-limit value)

 I bit :0.100 to 9.999 (correct gradient of high-limit value)

 Display value=(Measured value × I bit) + I bit

 E.g.) When the measured range is 0 to 500V, and the display range is 0 to 500.0. If the low display value is iz to 0 vi input, set -12 as I bit, value to display 0.0 by adjusting offset of the low-limit value.

 The display value to 500V measured input varies by adjusting the offset of low-limit value. If this display value is 50 tl, calculate 500.0/501.0 (desired display value/the display value), and set the 0.99 correction value as the I bit to display 500 by adjusting gradient of high-limit value.

 **The offset correction range of I bit is within -99 to 99 for 0 0 0 10 digit regardless of decimal point position [b].

 **Wight limit error correction function is available as "Gradient correction" and low limit error correction function is available as "Gradient correction" and low limit error correction
- function is available as "Zero adjustment".

■ Gradient Correction [PA 1 group 1 nb.H]

This function is to adjust gradient of standard display value or scale value for the input value within the measured input range. By adjusting gradient, it is available as "High limit error correction function".

As the below(Figure 1), in case of display gradient 1 for the measured input 100V, this function is to adjust display value by adjusting the gradient as 1.5 times or 0.5 times.

Set range: 0.100 to 9.999, factory default: 1.000 (unit: multiply)

Display value

E.g. 1) Gradient adjustment
①When the measured input is 100.0V in order to display 50.0, set 1500 nbH: (500 gradient correction set value [F BA] as 1500. This value is also applied for minus input. When the measured input is -100.0V in order to display 500. Set gradient correction set value [F BA] as 0.500. This value is also applied for principle of the order to display 500, set gradient correction set value [F BA] as 0.500. This value is also applied for plus input. When the measured input is 10.00 W if displays 1500. 1000 500 льн: 0500 -100V 100V Input value

(Figure1)

scale value.

②When the measured input is AC 2.000V in order to display 5000, 12.500 should be displayed when max. input value is 5.000V. However, it cannot set because the max. set value is 9.999.

Set as gradient correction set value [| _bH|>high scale value [H _5[]=12.500 5.000 as the following table. as the following table. \$After this set is finished, it displays 5000 when the measured input is 2.000V.

 6.250
 0.000
 2.000

 3.125
 0.000
 4.000

 2.500
 0.000
 5.000
 E.g. 3) Display scale setting [L 5L/H 5L] and gradient adjustment [L ЬН] (DC minus input) ①When the measured input DC -40mA at the input range DC -100.0 to 100.0mA and it displays 500, set decimal point position [L] as 0000 before setting the scale **▲**Display value 400.0 Input value -100.0 -40.0 Display value for measured input 400.0

400.0 -400.0 1.000 Unavailable to set because max. set value of L 5 [is 99.9 200.0 | -199.9 | 2.000 100.0 | -100.0 | 4.000 | In this case, any setting methods display the same display value.

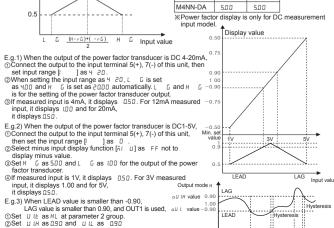
■ Power Factor [PF] Display [PA1 group H - 6/L - 6]

- This function displays LEAD and LAG by analog output signal from the power factor transducer.
 It is available to accept several outputs of the power factor transducer by high-limit[\(\mu\) \(\Gred\) \(\G
- analog output value setting in the power factor transducer.

 Power factor value is displayed as cos⊘ value -0.50(LEAD) to 1.00 to 0.50 (LAG).

 LEAD is when current phase leads voltage phase, LAG is when current phase lags LEAD and LAG are invalid power.
- lags behind voltage phase
- Set range: From min. to max. selected value from measurement input [//li>

E.g.) When setting 200 in I , H G and L G are available to set from 99.9 to 2000 When setting 0 , H G and L G are available to set from 0.00 to 0.00. (%H G <Factory default> Model H G M4NN-DV 500



at parameter 0 group.

U.E.L is also same setting as U.L.L.

Measured input Display Input Display range Note 4.694MΩ -600 to 600 4.694MΩ -199.9 to 200.0 794kΩ -100.0 to 100.0 input, set minus input [5. U] of parameter 1 group as FF. E.g.) When the display range is -600 to 600V, set \$\vec{\pi}\$. U of parameter 1 group as FF and this display range is 0 to 600V. 20-20V 794kΩ -19.99 to 20.00 79kΩ -10.00 to 10.00 79kΩ -1.999 to 2.000 7.5kΩ -1.000 to 1.000 7.5kΩ -199.9 to 200.0 Voltage 2 0.2 5R 2R R b Display range 200-200mV 0.01Ω -5.00 to 5.00 0.01Ω -1.999 to 2.000 0.1Ω -1.000 to 1.000 0.1Ω -199.9 to 200.0 5-5A ☐ -1999 to 9999 ☐ -199.9 to 999.9 ☐ -19.99 to 99.99 ☐ -19.99 to 99.99 ☐ -1.999 to 9.999 0.2R 200-200m/ 1.1Ω -100.0 to 100.0 1.1Ω -19.99 to 20.00 1.1Ω 4.00 to 20.00 11.1Ω -10.00 to 10.00 100-100mA Current 4 20 ※Please wire proper terminal to its max 11.1Ω -1.000 to 10.000 11.1Ω -1.999 to 2.000 5.011ΜΩ 0.0 to to 600.0 5.011ΜΩ 0.0 to 250.0 1.111ΜΩ 0.0 to 440.0 1.11ΜΩ 0.00 to 50.00 K-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%. 258 -50V 224kΩ 0.00 to 20.00 224kΩ 0.00 to 10.00 24kΩ 0.000 to 2.000 Voltage

0.25A 0. A 50AA ■ Display Cycle Delay [PA 2 group & 5.₺]

SR

0.5 R

■ Input Type And Range [PA 1 group In r]

In some applications the measured input may fluctuate which in turn causes the display to fluctuate. By adjusting the display cycle delay function time at d = 1.5 to f parameter 2 group, 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 is displayed the averaged input value over 4 sec. in every 4 sec.

24kΩ 0.000 to 1.000

0.01Ω 0.000 to 5.000 0.01Ω 0.000 to 2.500 0.05Ω 0.000 to 1.000

 0.1Ω
 0.0 to 500.0

 0.1Ω
 0.0 to 250.0

 0.5Ω
 0.0 to 100.0

 0.5Ω
 0.0 to 100.0

 0.5Ω
 0.00 to 50.00

Zero Adjustment

-500m/

Current

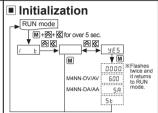
Forces the display value of measured input to 0(Zero).

• Zero adjustment range : -99 to 99

• Zero adjustment method : Press ☒ and ☒ key in RUN mode for 3 sec.

□. 15 for 3 sec. □.□□□ When zero point adjustment with front key and hold terminal is finished normally, zero point of measurement terminal is displayed and the adjusted value is saved in l bit automatically.

★ If zero adjustment range is exceeded, the error [ε] flashes twice and then move to RUN mode, maintainin previous settino value.



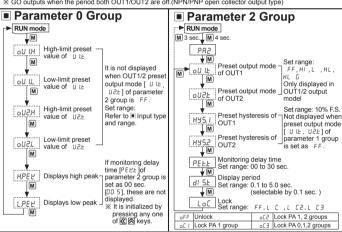
For the range setting of AC voltage when setting as 0 to 110V [@P] and using P.T for 440V/110VAC, 110V is input and 440V is displayed automatically by the set scale value

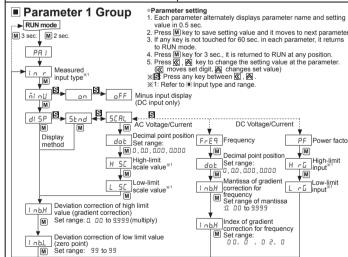
for P.T users' convenience

×Frequency measurement range

■ Preset Output Mode [PA2 group all LE/all 2.] Mode Output operation Period ON:
Display value ≤ U !L
Display value ≥ U !H
Period OFF:
Display value ≥ U !L + H35.
Display value ≤ U !H + H35. oFF OUT1.L OUT1 output HL OUT1.H Hysterisis
OUT1
output Period ON: Display value ≥ U I,H Period OFF: н Display value ≤ oU I.H- H y 5. OUT1.H OUT1.L OUT1 output Period ON: Display value ≤ U IL
Display value ≥ U IL
Period OFF:
Display value ≤ U IL - H y 5.
Display value ≥ U IH + H y 5. Period ON: Display value ≤ U IL Period OFF: HL G Lo

- * Set output mode separately for each OUT1/OUT2.
- Selfutiout Take operately foliedually depending on output operation mode.
 Selfut guide mode of parameter 0 group is displayed depending on output operation mode.
 Selfut guide mode of parameter 0 group is displayed off, which proposed period both OUT1/OUT2 are off, MPN/PNP open collector output type)





■ Factory Default									or indicate	or model.	
Туре	Parameters	M4NN-DV	M4NN-DA	M4NN-AV	M4NN-AA	Type	Parameters	M4NN-DV	M4NN-DA	M4NN-AV	M4NN-AA
PR (PA 1 group)	1	600	5R	600	5A	PR2 (PA	U UH ^{™1}	600	5.00	600.0	5.000
	ñl U			_	_		U IL *1	600	5.00	0000	0.000
	1 SP	5Ł	5Ł	5Ł	St		U2H ^{×1}	600	5.00	600.0	5.000
	Ł	0	0	0	0		U 2 L ×1	600	5.00	0.000	0.00.0
	H SC	600	500	500	5000		HPE L _{×1}	0	0.00	0.0	0.00.0
	L SC	600	500	0	D		L.PE L.*1	0	0.00	0.0	0.00.0
	1 БН	1000	1000	1000	1000		oU I. *1	FF	FF	FF	FF
	1 bl.	00	00	00	00		oU2. *1	FF	FF	FF	FF
				UU	UU		H95. I ^{×1}	_	_	_	_
	H G	600	500				HY5.2 ^{™1}	_	_	_	_
	L G	600	500				PE Ł.	00 5	00.5	00.5	00.5
	1 ь.Е			0.0	0.0		d 5.	0.2 5	0.2 5	0.2 5	0.2 5
							00	FF	FF	FF	FF

Caution During Use

- I. Please separate the unit wiring from high voltage lines or power lines to prevent inductive noise.

 I. Install a power switch or circuit breaker to control the power supply.

 The power switch or circuit breaker should be installed where it is easily accessible by the user.

 Be sure to avoid using the following unit hear by machinery making strong high frequency noise.

 (High frequency welder & Sewing machine, High capacity SCR unit etc.)

 When input is applied, if "HHH" or "LLLL" is displayed, there is some problem with measured input, please check the line after power off.

 Input line: Shield wire must be used when the measuring input line is getting longer in the place occurring lots of colors.
- This product may be used in the following environments

 Using double shield wire
 Using Single s Installation category II
 Failure to follow these instructions may result in product damage.

Major Products

Photoelectric Sensors
Fiber Optic Sensors
Fiber Optic Sensors
Door Sensors
Door Sensors
Door Side Sensors
Transperature Controllers
SSR/Fower Controllers
SSR/Fower Controllers
SSR/Fower Controllers
SSR/Fower Controllers
Timers
Tressure Sensors
Rotary Encoders
Tonnector/Sockels
Switching Mode Power Supplies
Control Switches/Lamps/Buzzers
O Terminal Biocks & Cabies
Sraphic Logic Panels
Siraphic Motors/Divers/Motion Controlers
Field Network Devices
aser Marting System
System
Siraphic Logic Panels
Siraphic Panel
Siraphic



D.P.M