M4V

▣Features

- ●Various input function
  (0−2V, 0−10V, 1−5V, 0−1mA, 4−20mA)
- ●Prescale function(High/Low scale setting)
- ●Max.display : −999 to 9999
- ●Error display function or self diagnosis function
- ●High quality by Microprocessor built−in
- ●Display accuracy : F · S ±0.2%, rdg ±1digit

⚠ **Please read "Caution for your safety" in operation manual before using.**

▣Ordering information

M 4 V − □

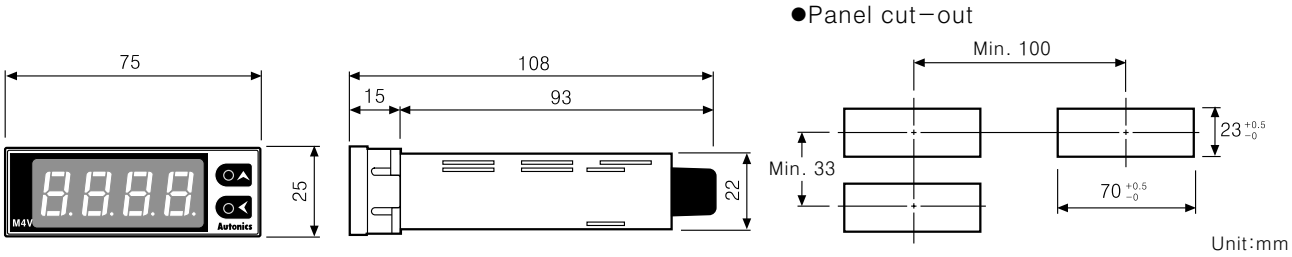
	Standard
X	Option
V	DIN Size W75 × H25mm
4	4 Digit
M	Meter

※Other specification is available by option.

▣Specifications

Model		**M4V**
Measurement function		DV Volt, DC Ampere, 4−20mADC, 1−5VDC
Power supply		12−24VDC
Operating voltage		90 ~ 110% of rated voltage
Power consumption		Approx. less than 2W
Display method		7 Segment red LED display(Segment height 14mm)
Display accuracy		0 ~ +50℃ : F · S ±0.2%(rdg ±1digit), −10 ~ 0℃ : F · S ±0.3%(rdg ±1digit)
Sampling time		0.5 sec.
Setting method		Scale set by front S/W key
Max. allowable input		150% of measurement input
Set−diagnosis		Error indication
Insulation resistance		Min. 100MΩ (at DC500V)
Dielectric strength		2000VAC 50/60Hz for 1 minute
Noise strength		±300V the square wave noise(pulse width:1μs) by the noise simulator
Vibra−tion	Mecanical	0.75mm amplitude at frequency of 10 ~ 50Hz in each of X, Y, Z directions for 1hour
	Malfunction	0.5mm amplitude at frequency of 10 ~ 50Hz in each of X, Y, Z directions for 10minutes
Shock	Mecanical	300m/s² (30G) in X, Y, Z direction for 3 times
	Malfunction	100m/s² (10G) in X, Y, Z directions for 3 times
Ambient temperature		−10 ~ +50℃(at non−freezing status)
Storage temperature		−20 ~ +60℃(at non−freezing status)
Ambient humidity		35 to 85%RH
Weight		Approx. 83g

▣Dimensions



▣Input and connection

Input	Display	Connection
0 – 2VDC	0-2U	DC0-2V, DC1-5V, DC0-10V; HI, LOW; SOURCE 12-24VDC (–, +); 1 2 3 4 5 6
1 – 5VDC	1-5U	
0 – 10VDC	0-10	
0 – 1mADC	InA	DC0-1mA; HI, LOW; SOURCE 12-24VDC (–, +); 1 2 3 4 5 6
4 – 20mADC	4-20	DC4-20mA; HI, LOW; SOURCE 12-24VDC (–, +); 1 2 3 4 5 6

▣Factory default setting

In-t	0-2U	dot	0.0
L-SC	0.0	In-b	00
H-SC	100.0	LoC	oFF

▣ERROR display

Display indicates "ERROR" when wrong measuring input value is applied.

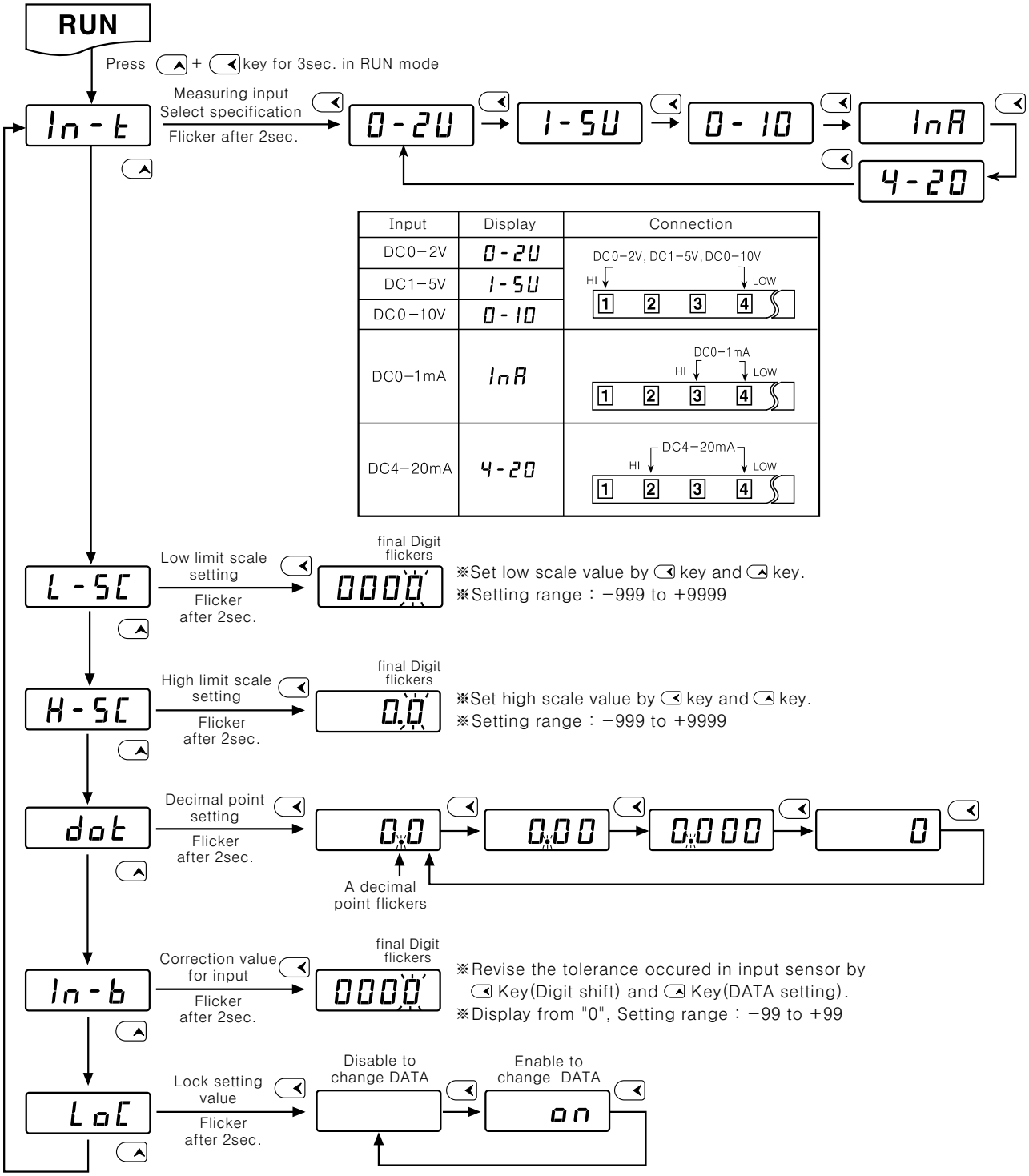
◎ERROR indication

- ●In case of lower value than measuring input value.
  Ex) In case of applying 2mADC when measuring input range is selected as 4 to 20mADC. – Flickers " **LLLL** "
- ●In case of higher value than measuring input value.
  Ex) In case of applying 22mA when measuring input range is selected as 4 to 20mA. – Flickers " **HHHH** "
- ●In case of damaging the memory chip by high frequency noise, strong surge noise. – Flickers " **Er-E** "

◎Clearance of ERROR indication

- ●"**HHHH**" and "**LLLL**" ERROR is to exceed measuring input range, therefore if measuring input value is applied within input range, ERROR message will be cleared automatically.
- ●"**oVEr**" is indicated by mis-connection or in case of occuring something wrong in measuring input. Please cut off the power and then check measuring input.
- ●"**Er-E**" is indicated when data programmed in memory chip is damaged.
  It is impossible to clear "Er-E" by end-user, therefore it must be repaired by our engineer.

▣Programming



◎How to change the setting value

1. When entering into MODE, change digit flickering by Key then set DATA value by Key.
2. After complete DATA value setting, please press Key for 2sec. then it will move to next MODE saving DATA.
3. Press Key for 2 sec. to return RUN mode after changing(setting) DATA value in each MODE.

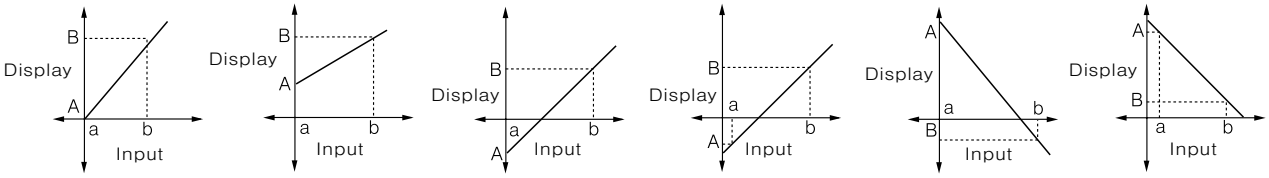
※Press KEY for 2sec., then it will retrun to RUN without change setting value.

※When cheking the setting value only in each mode. Press Key for 2 sec., then press for 2 sec. again.
(If press continuously, it will not advance to next mode and return to RUN mode)

※If no key touched for 60sec., it will return to RUN mode.

▣PRESCALE function

This function is to display setting(−999 to 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 display values are A or B, it will display a=A, b=B as below graph.



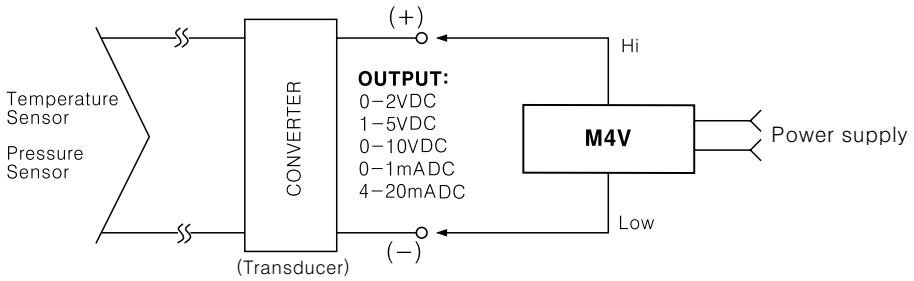
(Fig. 1) (Fig. 2) (Fig. 3) (Fig. 4) (Fig. 5) (Fig. 6)

Ex) Able to set the display value for input as certain value(Not "0") by using prescale function.

Measuring input	Prescale setting value	Display	Graph
DC0−10V	L−scale : 0 H−scale : 200	0 ~ 200	(Fig. 1)
	L−scale : 50 H−scale : 200	50 ~ 200	(Fig. 2)
	L−scale : −100, H−scale : 200	−100 ~ 200	(Fig. 3)
	L−scale : 200, H−scale : −50	200 ~ −50	(Fig. 5)

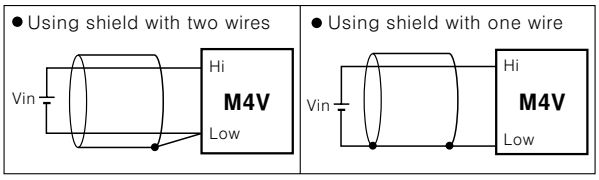
※L−SC(Low limit) : −999 ~ +9999, H−SC(High limit) : −999 ~ +9999
But, There must be offset "1" between L−SC and H−SC.

▣Application of connections



▣How to use properly

1. Please read this Catalog before buying Panel Meter.
2. Ambient condition
   - Please use this product under −10~50℃ of ambient operating temperature and less than 35~85RH of humidity. Moreover, use this item near normal temperature 20℃, the most important condition, which manages the accuracy.
   - Must avoid the condition of dew status by rapidly changing temperature.
   - Must avoid heavy vibration or shock.
   - Please avoid the place where there are dreg, dust, and chemical agent or gas, which is destructive to electrical parts.
   - Do not use this item where the voltage or noise is over the proper specification.
     It may cause malfunction.
3. Keeping method
   When you keep it, please avoid a direct ray of light and keep it under −20~60℃ of ambient operating temperature and less than 35~85RH of humidity. Wrapping and keeping it as sold is a good condition.
4. Input Line
   Shield wire must be used when the measuring input line is getting longer or there are lots of noises.



Autonics

DIGITAL PANEL METER
M4N 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

1. **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

1. **It must be mounted on panel.**
   It may give an electric shock.
2. **Do not repair, check up or connect when power on and measuring input applied.**
   It may give an electric shock.
3. **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.
4. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
5. **Please observe specification rating.**
   It might shorten the life cycle of the product and cause a fire.
6. **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.
7. **Please separate the power supply when use it as Volt meter and Ampere meter at the same time.**
   It may cause mechanical trouble of measuring target or result in product damage.
8. **Please wire properly after check polarity of power.**
   It may cause a fire or explosion and result in product damage.
9. **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.
10. **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.
11. **Do not inflow dust or wire dregs into inside of this unit.**
    It may cause a fire or mechanical trouble.
12. **Please connect properly after checking the polarity of measuring terminals.**
    It may cause a fire or explosion.

※The above specification are changeable without notice anytime.

■ Ordering information

M 4 N - D V - 0 1

Measuring input

1	199.9 (mV, ㎂)
2	1.999 (V, mA)
3	19.99 (V, mA)
4	199.9 (V, mA)
X	Option

0	Power supply 5VDC
1	Power supply 12-24VDC

※1

V	Volt Meter
A	Ampere Meter
I	1-5VDC, 4-20mADC

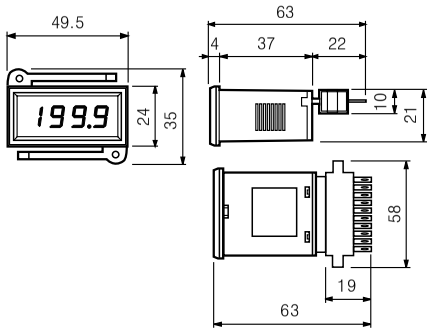
D	DC Type
N	DIN Size W48 X H24mm
4	3½digit
M	Meter

※1 M4N series cannot measure AC voltage.

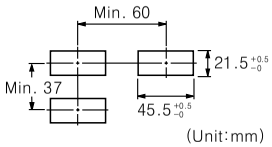
■ Specification

Model		M4N-DV-□□	M4N-DA-□□	M4N-DI-□□
Measurement function		DC voltage	DC Ampere	DC1-5V, DC4-20mA
Max.display range		Max. 1999(Fixed decimal point)		
Max.allowable input		150% of each input		
Power supply		5VDC ±10%, 12-24VDC ±10%		
Power consumption		DC:2W		
Display method		7Segment LED Display		
Display accuracy		F・S±0.2% rdg ±1digit		
Sampling cycle		300ms		
A/D conversion method		Dual slope intergal method		
Response time		2sec.(0 to Max.)		
Sampling time		2.5 times/sec.		
Insulation resistance		100MΩ Min. (at 500VDC)		
Dielectric strength		2000VAC 50/60Hz for 1 minute		
Noise strength		±2kV the square wave noise(pulse width:1㎲) by the noise simulator		
Vibra-tion	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1hour		
	Malfunction	0.5mm amplitude at frquency of 10 to 55Hz in each of X, Y, Z directions for 10minutes.		
Shock	Mechanical	300m/s² (30G) in X, Y, Z direction		
	Malfunction	100m/s² (10G) in X, Y, Z direction		
Ambient temperature		-10 to 50℃(at non-freezing condition)		
Storage temperature		-25 to 65℃(at non-freezing condition)		
Ambient humidity		35 to 85%RH		
Weight		Approx. 42g		

■ Dimension

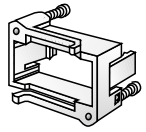


●Panel cut-out

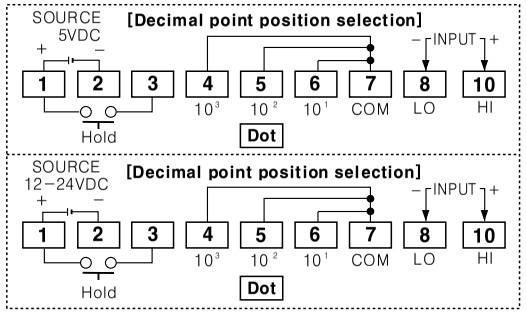


(Unit:mm)

●48×24 Bracket

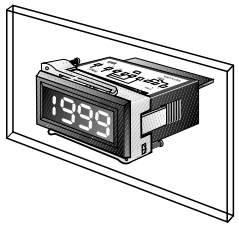


■ Connection



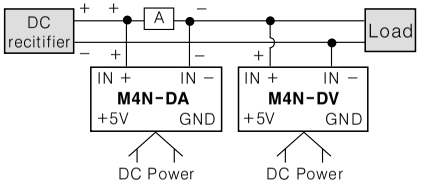
※In case of changing position of decimal point, disconnect switching pattern point on PCB and connect terminal contact according point to be changed.

■ Mounting



※Panel boad tickness should be less than 10.0mm.

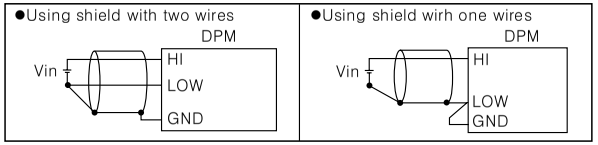
■ General block diagram



※In case of using volt meter and ampere meter in same panel system, be sure to seperate 5VDC adapter for each meters, but in case of using 2 or 3 set of the same kind of volt meter, they can be wired at same power(5VDC).
※Power line and input circuit is not isolated.

■ Caution for using

1. Please use separated line from high voltage line or power line in order to avoide inductive noise.
2. Please install power switch or circuit breaker in order to cut the power supply.
3. The switch or circuit-breaker should be installed near by users for safety.
4. Be sure to avoid using this unit near by machinery makes strong high frequency noise.(Welding machine high, capacity SCR unit etc.)
5. When input applied, if "1" or "-1" are displayed, it has some trouble with measuring input, please check the line after power off.
6. Input line : Shield wire must be used when the measuring input line is getting longer or there are lots of noises.



7. Please use insulated transformer for power supply.

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

■ Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER
- LINE SPEED METER
- DISPLAY UNIT
- PROXIMITY SWITCH
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

Autonics Corporation
http://www.autonics.net

■HEAD QUARTER :
41-5, Yongdang-Ri, Ungsang-Up, Yangsan-Shi, Kyung-Nam, Korea 626-847.
■TRADE DEPARTMENT :
511 Ansung B/D, 410-13, Shindolim-Dong, Kuro-Gu, Seoul, Korea 152-070
TEL:82-2-679-6585 / FAX:82-2-679-6556
■E-mail : sales@autonics.net

NO20020604-EP-KE-04-0010D

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fire or human injury.

en power on.

f terminal when connect power line or measuring

tdoors.
he product or give an electric shock.
er input and measuring input, the tightening strength ck should be over than 0.74N • m ~ 0.90N • m.
e due to contact failure.
rating.
he product and cause a fire.
se water or an oil-based detergent.
or fire that will result in damage to the product.
here there are flammable or explosive gas, humidity, at, vibration, impact etc.

gs into inside of this unit.
l trouble.
checking the polarity of measuring terminals.

●Panel cut-out

Display method		7Segment LED Display
Sampling cycle		300ms
A/D conversion method		Dual slope intergal method
Response time		2sec.(0 to Max.)
Input		——————— / DC0-10V(Converter output) / DC0-10V, AC0-10
Sampling times		2.5 times/sec.
Insulation resistance		Min. 100MΩ(at 500VDC)
Dielectric strength		2000VAC 50/60Hz for 1 minute
Noise strength		±1kV 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 directions for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes
Shock	Mechanical	300m/s² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s² (Approx. 10G) 3 times at X, Y, Z direction
Ambient temperature		0 to 50℃(at non-freezing status)
Storage temperature		-25 to 65℃(at non-freezing status)
Ambient humidity		35 to 85%RH
Display accuracy		DC:F • S ±0.2% rdg ±1Digit, AC:F • S ±0.5% rdg ±1Digit
Weight		Approx. 317g

■ Ordering information

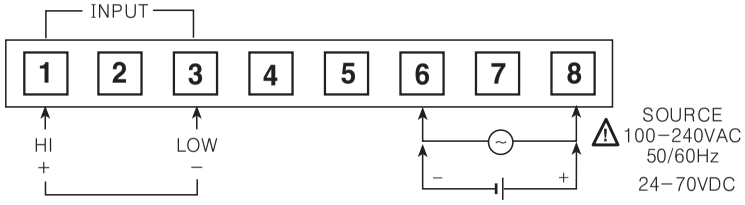
M	5	W	—	□	□	—	□	Main function
M								Meter
	5							4 1/2 digit
		W						DIN Size W96 × H48mm
				D				DC Type
				A				AC Type
					I			4-20mA
					V			Volt Meter
					A			Ampere Meter
					W			Watt Meter
					T			Tachometer
					S			Line Speed Meter
							□	Specification

●Measuring range

Model \ Range	1	2	3	4	5	6	7	8
AV	199.99mV	1.9999V	19.999V	199.99V	400.0V			
AA	19.999mA	199.99mA	1.9999A	19.999A	199.99A	1999.9A		
DV	199.99mV	1.9999V	19.999V	199.99V	300.0V			
DA	199.99㎂	1.9999mA	19.999mA	199.99mA	1.9999A	19.999A	199.99A	1999.9A
W		1.9999kW	19.999kW	199.99kW	1999.9kW			
T	DC0-10V	AC0-10V						
S	DC0-10V	AC0-10V						
DI	Option(Display:0 to 19999)							

1. When measure over DC 2A, please use Shunt and measure over AC 5A, please use C • T (Current Transformer).
2. Power converter should be used with Watt meter and Tacho/Speed meter should be used with Tacho-generator.

■ Connection

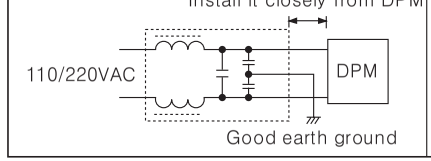


■ General block diagram

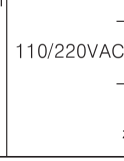
■ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Catergory Ⅱ.
2. Please use the terminal(M3.5, Max. 7.2mm) when connect the source.
3. Please use separated line from high voltage line or power line i
4. Please install power switch or circuit breaker in order to cut the
5. The switch or circuit breaker should be installed near by users f
6. Be sure to avoid using this unit near by machinery makes stron (Welding machine, high capacity SCR unit etc.)
7. When input applied, if "19999" or "-19999" are displayed, it h please check the line after power off.
8. Noise inflow from power line can be serious problem for produc Even though there is condenser for protecting noise betwee display unit as small size product, it is very difficult to install pr Therefore, please install line filter, varistor or noise absorber occurred by power relay or magnet S/W operation, spark with hi

●Using line filter

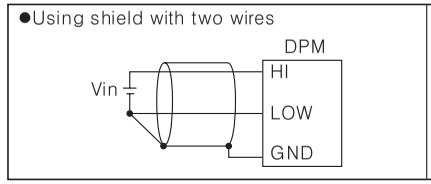


●Using Var



9. Input line:Shield wire must be used when the measuring input li noises.

●Using shield with two wires



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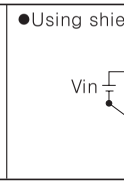

※It may cause malfunction if above instructio

■ Main products

■ COUNTER
■ TIMER
■ TEMPERATURE CONTROLLER
■ PANEL METER
■ TACHO/LINE SPEED/PULSE METER

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rs.
roduct or give an electric shock.
G(0.50mm²) should be used and 0.74N・m to 0.90N・m strength.
e to contact failure.
g.
roduct and cause a fire.
witching capacity of Relay contact.
act melt, contact failure, relay broken,

ter or an oil-based detergent.
fire that will result in damage to this

e there are flammable or explosive radiant heat, vibration, impact etc.

to inside of this unit.
ble.
hecking the polarity of measuring

Power supply		110/220VAC 50/60Hz(Option:100−240VAC 50/60Hz, 24−70VDC)
Allowable voltage range		90 to 110% of rated voltage
Power consumption		M4W : DC2W, AC4VA / M4W 1P, 2P : DC2W, AC5VA
Display method		7Segment LED Display(3 $\frac{1}{2}$ Digit)
Sampling cycle		300ms
A/D conversion method		Dual slope intergal method
Response time		2sec.(0 to Max.)
Sampling times		2.5 times/sec.
Insulation resistance		Min. 100MΩ(at 500VDC)
Dielectric strength		2000VAC 50/60Hz for 1 minute
Noise strength		±1kV 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 directions for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes
Shock	Mechanical	300m/s² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s² (Approx. 10G) 3 times at X, Y, Z direction
Ambient temperature		−10 to 50℃(at non−freezing status)
Storage temperature		−25 to 65℃(at non−freezing status)
Ambient humidity		35 to 85%RH
Relay life cycle	Mechanical	Min. 10,000,000 times
	Electrical	Min.100,000 times(250VAC 3A resistive load)
Output capacity		M4W : Non, M4W1P : Relay contact output 250VAC 3A 1c, M4W2P : Relay contact output 250VAC 3A 1c×2
Display accuracy		DC : F・S ±0.2%rdg ±1Digit 23℃ ±5℃, AC : F・S ±0.5%rdg ±2Digit 23℃ ±5℃ / ±0.3%rdg ±1Digit 23℃ ±5℃
Weight		M4W:400g, M4W1P:460g, M4W2P:496g

■ Ordering information

M 4 W	Main function
M	Meter
4	4Digit(3 $\frac{1}{2}$)
W	DIN Size W96 × H48mm
1 P	Indication type: Single setting
2 P	Indication type: Double setting
D	DC Type
A	AC Type
V	Volt Meter
A	Ampere Meter
W	Watt Meter
T	Tachometer
S	Line Speed Meter
P	Power factor Meter
Display method:	AVG value
R	RMS value
Range: X	Measuring range by each specification

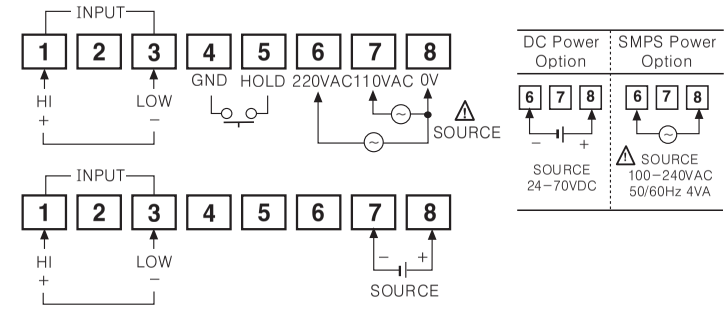
●Measuring range

Range / Model	1	2	3	4	5	6	7	8
AV	199.9mV	1.999V	19.99V	199.9V		400V		
AA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A		
DV	199.9mV	1.999V	19.99V	199.9V	300V			
DA	199.9㎂	1.999mA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A
W	199.9W	1.999kW	19.99kW	199.9kW	1999kW			
T	DC1999	AC1999						
S	DC1999	AC1999						
P	−0.50~1.00~0.50							

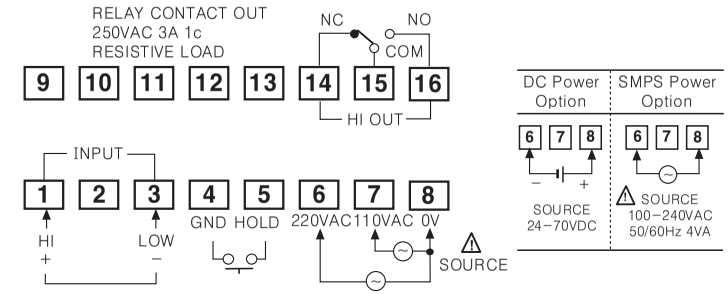
1. When measure over 2ADC, please use Shunt and measure over 5AAC, please use C・T(Current Transformer).
2. Power converter should be used with Watt meter and Tacho/Speed meter should be used with Tacho−generator.

■ Connections

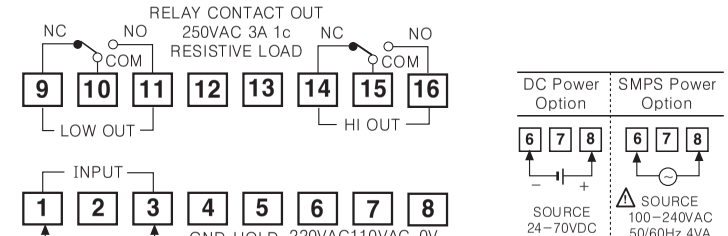
●M4W



●M4W1P

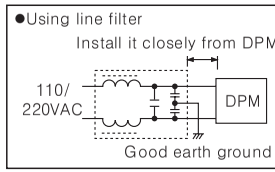


●M4W2P

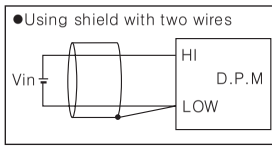


■ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.
2. Please use the terminal(M3.5, Max. 7.
3. Please use separated line from high inductive noise.
4. Please install power switch or circuit b
5. The switch or circuit breaker should be
6. Be sure to avoid using this unit near noise. (Welding machine, high capaci
7. When input applied, if "1999" or "−19 measuring input, please check the line
8. Noise inflow from power line can be se AC power. Even though there is conc power transformer, but as small size p components. Therefore, please install l lines when voltage failure occurred by with high voltage.



9. Input line:Shield wire must be used wh or there are lots of noises.



※It may cause malfunction if ab

■ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER
- ■ PANEL METER

■Features

- ●13 kinds of various operation modes
  : Revolution/Speed/Frequency, Absolute rate, Passing time, Error rate, Cycle, Density, Passing speed, Error ratio, Time width, Time interval, Interval, Integration, Length measurement(Except MP5M having 11 models)
- ●Various output function
  : Relay output, NPN/PNP open collector output, Low speed Serial output, BCD output, 4~20mA output, RS485 communication output
- ●Various functions
  : Prescale function, Data monitoring function, Hysterisis width setting function, Max./Min. value mornitoring function, Delay function, Auto zero time setting function, Lock setting function
- ●Max. display range : -19999 to 99999(MP5M:0~99999)
- ●Various display units : rpm, rps, Hz, kHz, sec, min, m, mm, mm/s, m/s, m/min, m/h, ℓ/s, ℓ/min, ℓ/h, %, counts, etc.
- ●Selectable voltage input(PNP) or No voltage input(NPN)
- ●50kHz High speed response function

⚠ **Please read "Caution for your safety" in operation manualbefore using.**

CE

■Ordering information

MP 5 S - 4 N

Output

		Main output(Comparative value output)	Sub output(Display value output)
S Type	N	Indication type	X
Y Type	N	Indication type	X
	1	NPN open collector five-stage output	X
	2	PNP open collector five-stage output	X
	3	X	BCD Dynamic
	4	X	PV transmission(4-20mADC)
	5	X	RS485 communication output
W Type	N	Indication type	X
	A	Relay five-stage(HH, H, GO, L, LL)	X
	1	Relay three-stage(H, GO, L)	X
	2	NPN open collector five-stage output	BCD Dynamic
	3	PNP open collector five-stage output	BCD Dynamic
	4	NPN open collector five-stage output	PV transmission(4-20mADC)
	5	PNP open collector five-stage output	PV transmission(4-20mADC)
	6	NPN open collector five-stage output	Low speed serial output
	7	PNP open collector five-stage output	Low speed serial output
	8	NPN open collector five-stage output	RS485 communication output
	9	PNP open collector five-stage output	RS485 communication output
M Type	N	Indication type	X
	1	Relay single(High-limit)output + NPN open collector output	X
	2	Relay double(High/Low-limit) output + NPN open collector output	X

Power supply

4	100-240VAC 50/60Hz

Size

S	DIN Size W48×H48mm
Y	DIN Size W72×H36mm
W	DIN Size W96×H48mm
M	DIN Size W72×H72mm

Digit

5	5digit(99999)

Series

MP	Pulse meter

※PNP open collector output : Option

▣Specifications (MP5S/ MP5Y/ MP5W Series)

Series		MP5S	MP5Y	MP5W
Display method		7 Segment LED(Zero blanking)		
Character size		W4 × H8mm	W6.8 × H13.8mm	
Max. indication		5digits(−19999 ~ 99999)		
Power supply		100−240VAC 50/60Hz		
Allowable operation voltage		Allowable operation voltage: 90 ~ 110%		
Power consumption		Approx. Min. 7.5VA(240VAC)	Approx. Min. 3.5VA(240VAC)	Approx. Min. 6VA
Power for external sensor		12VDC ±10%, 80mA		
Input frequency		• Non−contact input : Max. 50kHz(Pulse width:Each over 10㎲) • Contact input : Max. 45Hz(Pulse width:Over 11ms)		
Input level		[Voltage input] High : 4.5−24VDC, Low : 0−1.0VDC, Input impedance : 4.5kΩ [No−voltage input] Impedance at short−circuit : Max. 200Ω, Residual voltage : Max. 1V Impedance at open−circuit : Min. 100kΩ		
Measuring range		• Mode F1, F4, F7, F8, F9, F10 : 0.0005Hz ~ 50kHz • Mode F3 : 0.02s ~ 3,200s • Mode F2, F5, F6 : 0.01s ~ 3,200s • Mode F11, F12, F13 : 0 to 4 ×10^9 Count		
Measuring accuracy (23 ±5℃)		• Mode F1, F4, F7, F8, F9, F10 : F.S. ±0.05% rdg ±1Digit • Mode F2, F3, F5, F6 : F.S. ±0.01% rdg ±1Digit		
Display accuracy		0.05 / 0.5 / 1 / 2 / 4 / 8sec.(The same as update output cycle)		
Operation mode		Number of revolution/Speed/Frequency(F1), Passing time(F2), Cycle(F3), Passing speed(F4), Time width(F5), Time interval(F6), Absolute rate(F7), Error ratio(F8), Density(F9), Error rate(F10), Length measurement(F11), Interval(F12), Integration(F13) **※Please see the operating mode(F-18~21 page).**		
Prescale function		Direct input method(0.0001×10^{-9} to 9.9999×10^9)		
Hysterisis		**(Note1)** 0 to 9999		
Other function		• Lock setting function • Auto−Zero time setting function • Time unit selection function • Monitoring function : Memorize max. value • Memory retention function (Mode F13 applied only)	• Lock setting function • Monitoring delay function • Auto−Zero time setting function • Current output range selection(Current output type only) • Comparative output function(HH, H, GO, L, LL) • Time unit selection function • Deviation memory function(F output mode applied only) • Monitoring function : Memorize max. value or min. value • Remote/Local switching function(Communication output type only) • Data Bank switching function **(Note2)** • Memory retention function(Mode F13 applied only)	
Main output	Relay three−stage	———	———	250VAC 3A resistive load 3a
	Relay five−stage			250VAC 3A resistive load 5a
	NPN Open collector five−stage		12−24VDC 30mA Max.	12−24VDC 20mA Max.
	PNP Open collector five−stage			
Sub output	BCD Dynamic		NPN Open collector 12−24VDC 20mA Max.	NPN Open collector 12−24VDC 20mA Max.
	Low speed serial output		———	
	PV transmission		4−20mADC Load 600Ω Max.	4−20mADC Load 600Ω Max.
	RS485 communication		32 chennel, Mutual direction comunication function	
Memory		Non−volatile memory(Input times : Min. 100,000 times)		
Insulation resistance		Min. 100MΩ(at 500VDC) Between charge part and non−charge part		
Dielectric stength		2000VAC 60Hz 1minute (Between terminals of AC power and case, Between terminals of AC power and measuring terminals)		
Impulse noise stength		±2000V the square wave noise(pulse width:1㎲)by the noise simulator, Repeat frequency 60Hz		
Vibration	Mechanical	0.75mm amplitude at frequency of 10 ~55Hz in each of X, Y, Z directions for 2 hour		
	Malfunction	0.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 10 minutes		
Shock	Mechanical	300m/s² (30G) in X, Y, Z directions for 3 times		
	Malfunction	100m/s² (10G) in X, Y, Z directions for 3 times		
Relay life cycle	Malfunction	———	Min. 20,000,000 times	
	Mechanical	———	Min. 100,000 times(250VAC 3A Load current)	
Ambient temperature		−10 ~ +50℃(at non−freezing status)		
Storage temperature		−20 ~ +60℃(at non−freezing status)		
Ambient humidity		35 ~ 85%RH		
Weight		Approx. 130g	Approx. 135g	Approx. 230g

※**(Note1)** The hysteresis setting range is different by the place of decimal point set.
※**(Note2)** Data Bank switching function MP5W series only.

■Specifications (MP5M Series)

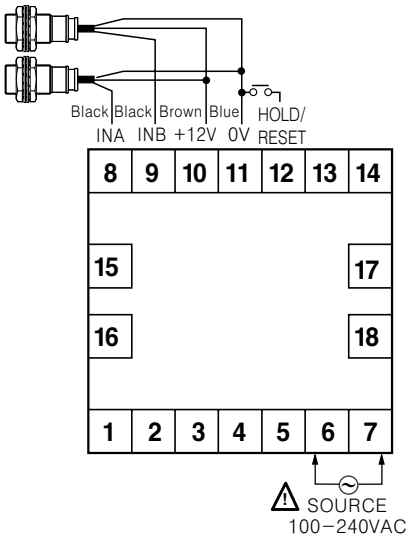
Model	MP5M	MP5M-41	MP5M-42
	Indication type	High-limit setting type	High/Low-limit setting type
Display method	7 Segment LED(Zero Blanking), Letter size : W4 X H8mm		
Max. indication	5digits(0.0001 to 99999)		
Power supply	100-240VAC 50/60Hz		
Allowable operation voltage	Allowable operation voltage: 90 ~ 110%		
Power consumption	Approx. min. 7.5VA(240VAC)	Approx. min. 8VA(240VAC)	
Power for external sensor	12VDC ±10%, 80mA		
Input frequency	• Non-contact input : Max. 50kHz(pulse width:over 10㎲) • Contact input : Max. 45Hz(pulse width:over 11ms)		
Input level	[Voltage input] High : 4.5-24VDC, Low : 0-1.0VDC, Input impedance : 4.5kΩ [No-voltage input] Impedance at short-circuit : Max. 300Ω, Residual voltage : Max. 1V Impedance at open-circuit : Min. 100kΩ		
Measuring range	• Mode F1, F4, F7, F8 : 0.0005Hz ~ 50kHz • Mode F3 : 0.02s ~ 3,200s • Mode F2, F5, F6 : 0.01s ~ 3,200s • Mode F9, F10, F11 : 0 to 4 ×10 ^{9}Count		
Measuring accuracy (23 ±5℃)	• Mode F1, F4, F7, F8 : F.S. ±0.05% rdg ±1Digit • Mode F2, F3, F5, F6 : F.S. ±0.01% rdg ±1Digit		
Display accuracy	0.05 / 0.5 / 1 / 2 / 4 / 8sec.(The same as update output cycle)		
Operation mode	Number of revolution/Speed/Frequency(F1), Passing time(F2), Cycle(F3), Passing speed(F4), Time width(F5), Time interval(F6), Absolute rate(F7), Density(F8), Length measurement(F9), Interval(F10), Integration(F11) **※Please see the operating mode(F-18~21page).**		
Prescale function	Direct input method(0.0001×10^{-9} ~ 9.9999×10^{9})		
Hysterisis	———	**(Note1)** 0 ~ 9999	
Other function	• Lock setting function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function (Mode F11 applied only)	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function (Mode F11 applied only) • High-limit output function(H)	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function (Mode F11 applied only) • Comparative output function(H, L) • Output mode selection fuction (S, H, L, B, I, F) • Deviation memory function (F output mode applied only)
Main output: Relay output	———	250VAC 3A resistive load 1a 1b	250VAC 3A resistive load 1a×2
Main output: NPN Open Collector		30VDC 100mA Max.	30VDC 100mA Max. ×2
Memory retention	Non-volatile memory(Input times : Min. 100,000 times)		
Weight	Approx. 275g	Approx. 310g	Approx. 330g

※Function part is same as MP5S, MP5Y, MP5W series.
※**(Note1)** The hysteresis setting range is different by the place of decimal point set.(See F-24 Page, hysteresis function.)

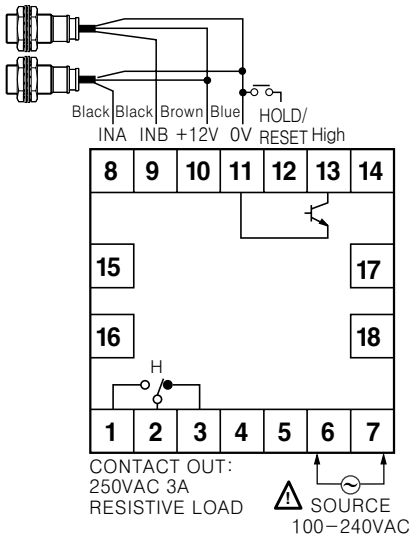
■Connections

◎MP5M Series

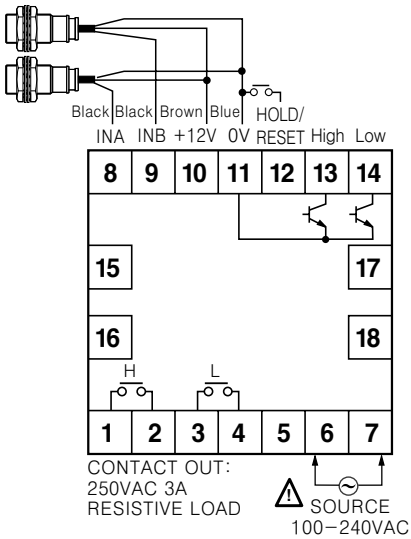
●MP5M-4N(Indication type)



●MP5M-41(High-limit setting type)



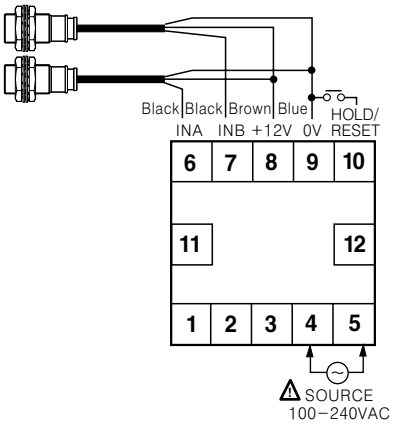
●MP5M-42(High/Low-limit setting type)



▣Connections

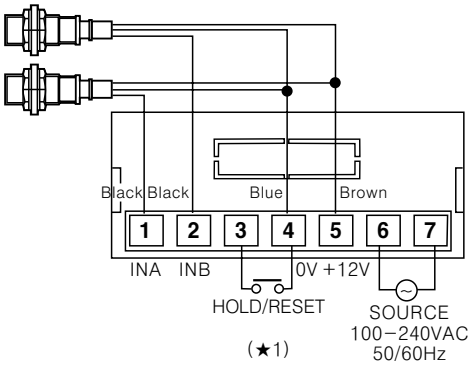
◎MP5S Series

●**MP5S-4N**(Indication type)

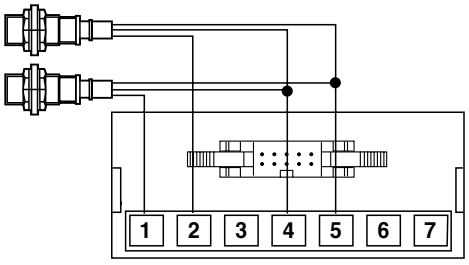


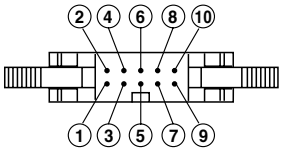
◎MP5Y Series

●**MP5Y-4N**(Indication type)



●**MAIN Output / SUB Output**





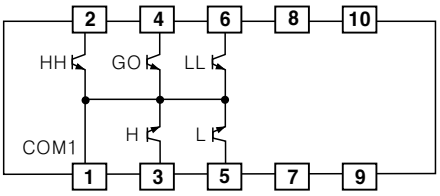
※Hirose Connector:
HIF3BD-10PA-2.54DS

※(★1)It is used for RESET terminal when an operation mode is F13.
(See the "Operating mode" F-21 page)

◈Main output(Connector)

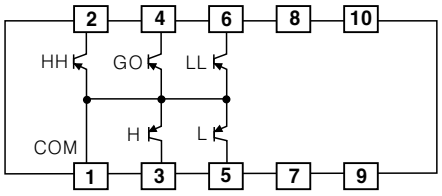
●**MP5Y-41**(NPN Open Collector output)

MAIN OUT
(NPN OPEN COLLECTOR)
12-24VDC Max. 30mA



●**MP5Y-42**(PNP Open Collector output)

MAIN OUT
(PNP OPEN COLLECTOR)
12-24VDC Max. 30mA

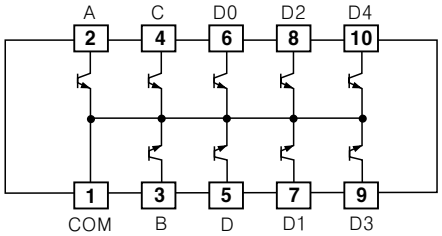


※Main output type & sub output type : option

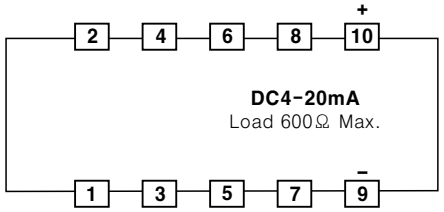
◈Sub output(Connector)

●**MP5Y-43**(BCD Dynamic output)

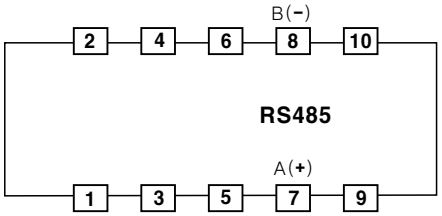
BCD OUT
(NPN OPEN COLLECTOR)
12-24VDC Max. 30mA



●**MP5Y-44**(PV transmission output)

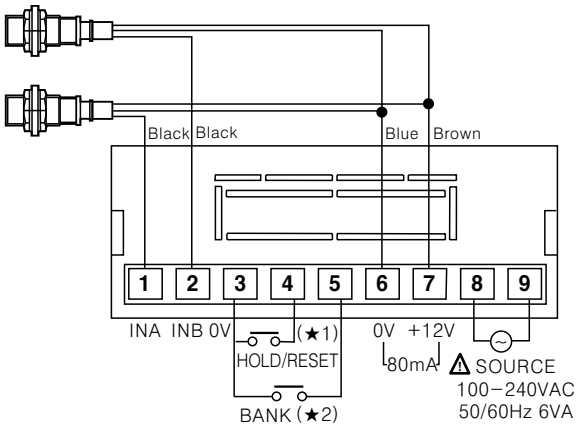


●**MP5Y-45**(RS485 communication output)

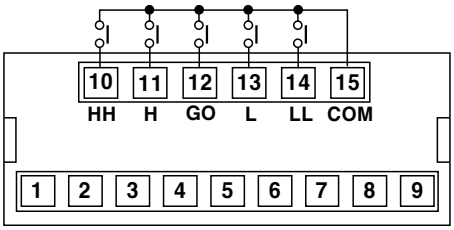


◎MP5W Series

●**MP5W-4N**(Indication type)

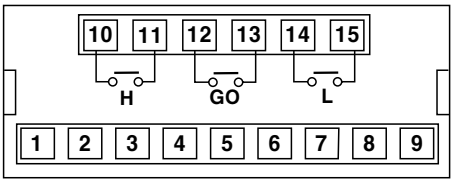


●**MP5W-4A**(RELAY Five-stage output)



CONTACT OUT:
250VAC 3A 1a
RESISTIVE LOAD

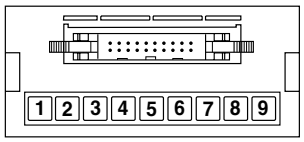
●**MP5W-41**(Three-stage output)

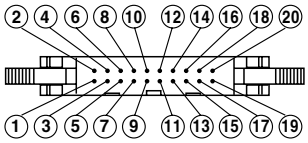


CONTACT OUT:
250VAC 3A 1a
RESISTIVE LOAD

※(★1)It is used for RESET terminal when an operation mode is F13. (See the "Operating mode" F-21 page)
※(★2)Please see F-24 page for BANK function.
※Main output type & sub output type : option

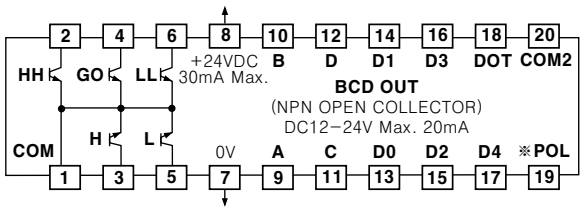
◈Main output+Sub output(Connector)





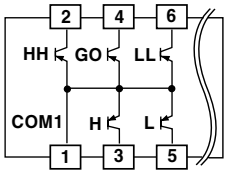
※Hirose Connetor:HIF3BA-20PA-2.54DS

●**MP5W-42/ MP5W-43**(NPN/PNP Open Collector output + BCD output)



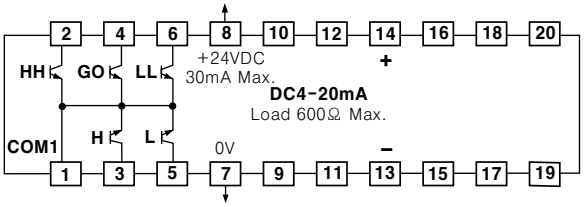
MAIN OUT
(NPN OPEN COLLECTOR
:12-24VDC Max. 20mA)

MAIN OUT
(PNP OPEN COLLECTOR
:12-24VDC Max. 20mA)



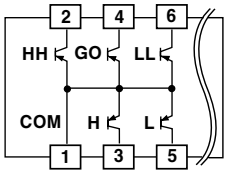
※POL signal is on when it is - display value

●**MP5W-44/ MP5W-45**(NPN/PNP Open Collector output + PV transmission output(4-20mADC) output)

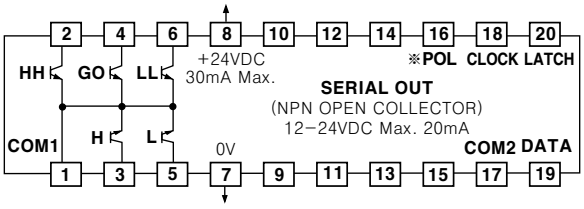


MAIN OUT
(NPN OPEN COLLECTOR
:12-24VDC Max. 20mA)

MAIN OUT
(PNP OPEN COLLECTOR
:12-24VDC Max. 20mA)

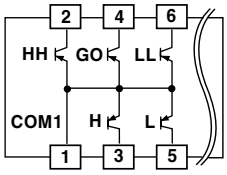


●**MP5W-46/ MP5W-47**(NPN/PNP Open Collector output + Low speed serial output)



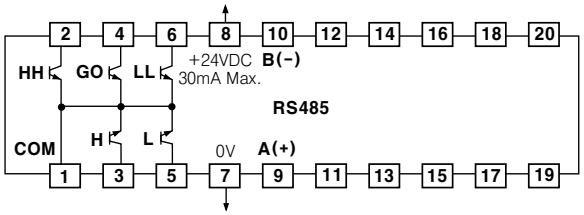
MAIN OUT
(NPN OPEN COLLECTOR
:12-24VDC Max. 20mA)

MAIN OUT
(PNP OPEN COLLECTOR
:12-24VDC Max. 20mA)



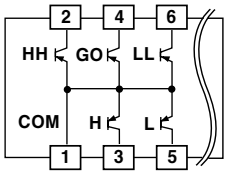
※POL signal is on when it is - display value

●**MP5W-48/ MP5W-49**(NPN/PNP Open Collector output + RS485 communication output)



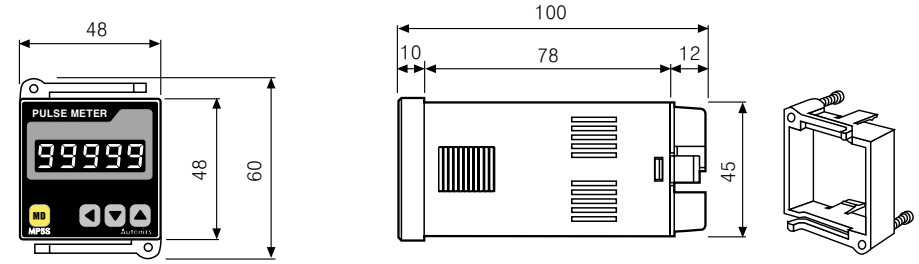
MAIN OUT
(NPN OPEN COLLECTOR
:12-24VDC Max. 20mA)

MAIN OUT
(PNP OPEN COLLECTOR
:12-24VDC Max. 20mA)

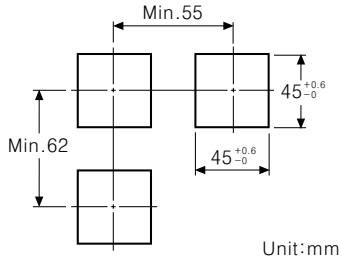


■Dimensions

●MP5S Series

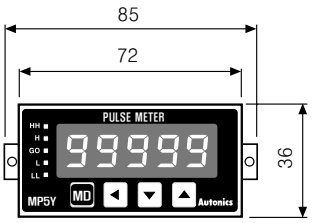


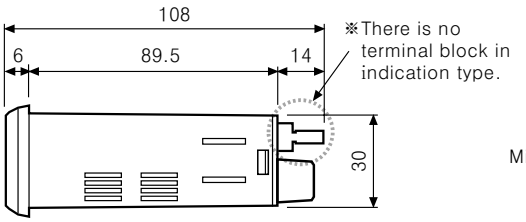
●Panel cut-out



Unit:mm

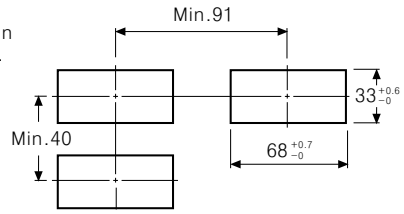
●MP5Y Series





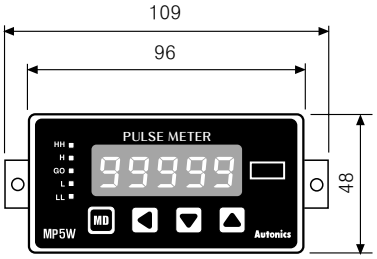
※Hirose Connetor :HIF3BD-10PA-2.54DS

●Panel cut-out

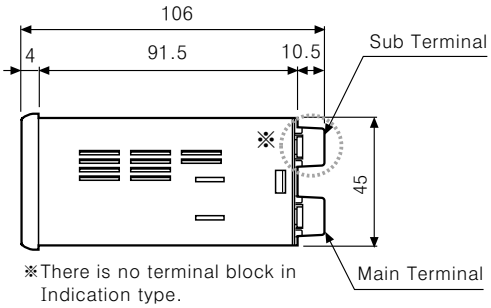


Unit:mm

●MP5W Series

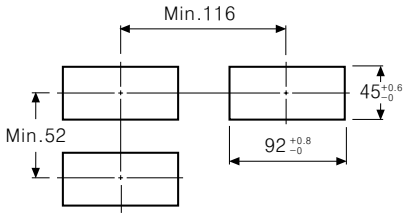


[Terminal type]



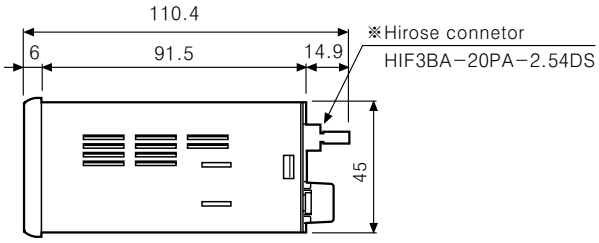
※There is no terminal block in Indication type.

●Panel cut-out

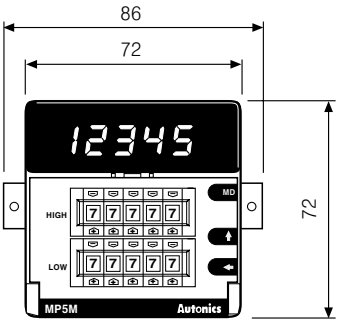


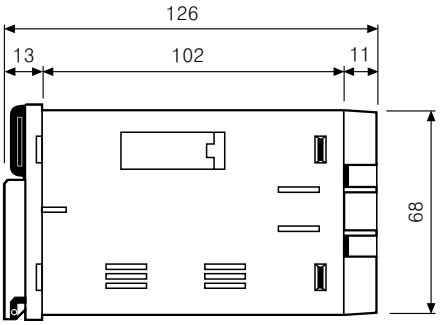
Unit:mm

[Connector type]

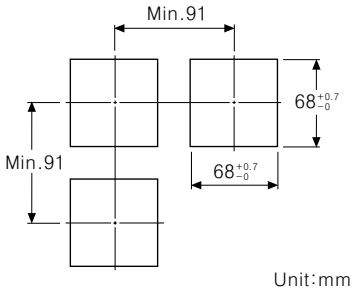


●MP5M Series





●Panel cut-out



Unit:mm

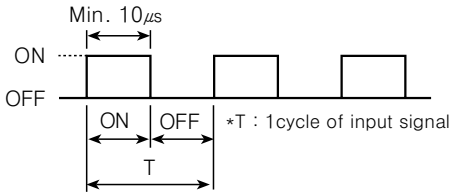
▣Input specification

◎Input signal

●Non-contact input

• Input frequency: **50kHz Max.**
Standard duty rate of input signal is 1:1, ON/OFF pulse width should be over 10㎲.

• Input voltage Level : ON voltage → 4.5-24V, OFF voltage → 0-1.0V



●Relay contact input

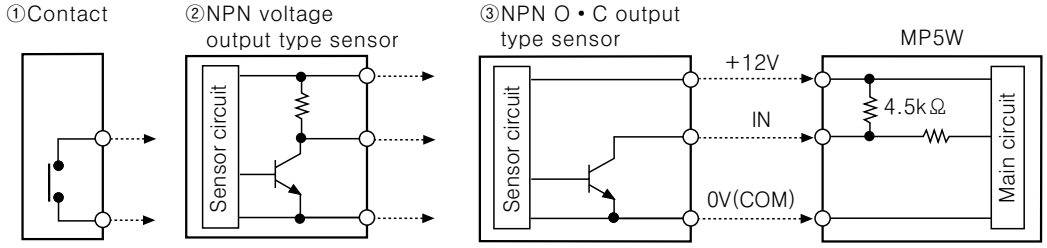
• Input frequency : **45Hz Max.**
ON/OFF pulse width should be over 11ms.

• Relay contact specification : Please use a relay contact that can carry the load current(min. 12VDC 2mA).

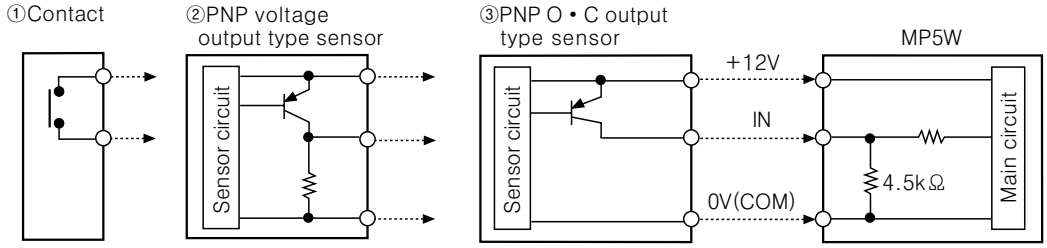
◎Input type

MP5W has NPN input and PNP input and you are able to select in Parameter 1 group.

1) When it is NPN input type



2) When it is PNP input type



※O • C is Open collector output.

▣Output specification(MP5Y/ MP5W Series)

◎BCD Dynamic output

●Output : Display value

●Output signal

BCD Data(A, B, C, D, DOT) ← A : Lowest bit
Dot : Highest bit

Digit Data(D0, D1, D2, D3, D4) ← D0 : Lowest digit
D4 : Highest digit

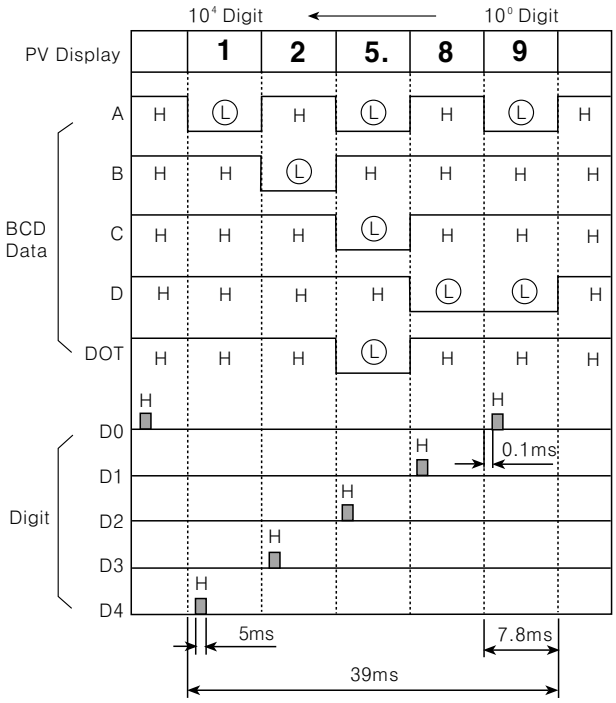
※There is no Dot data output in MP5Y-43, therefore decimal point should be mark in first display plate.

●Output type : NPN Open collector

●Rated load voltage : 12-24VDC

●Max. load current : 30mA(MP5Y)/20mA(MP5W)

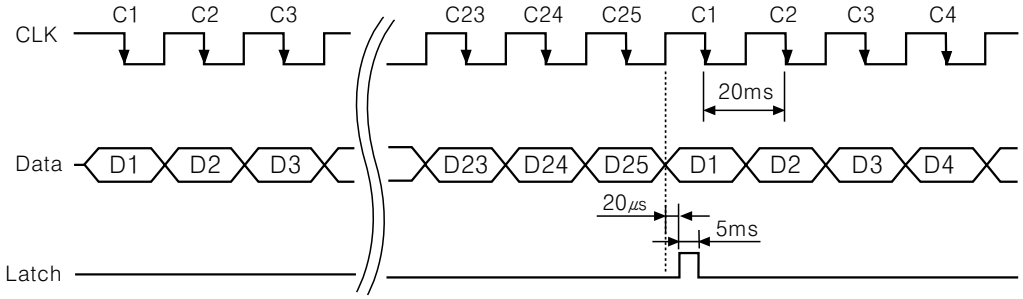
Ex) When BCD Dynamic output is 125.89



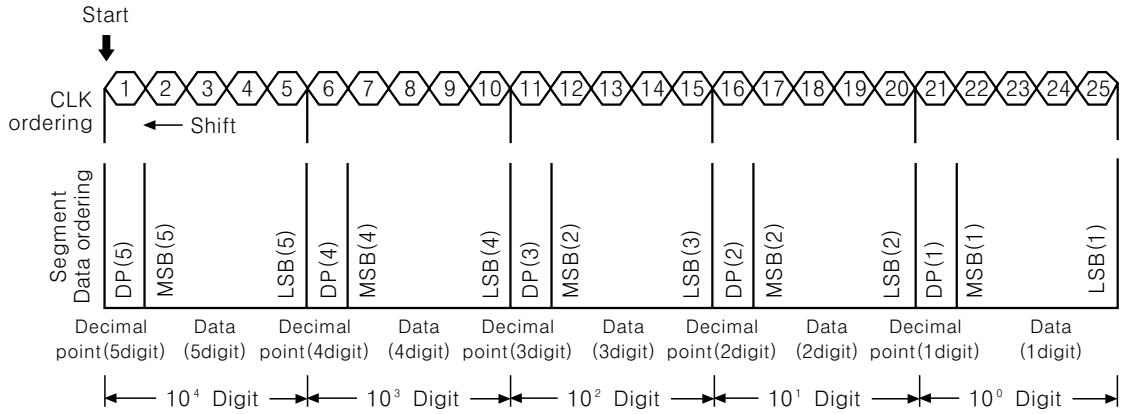
◎Low speed serial output

- ●Output : Display value
- ●Output signal : CLK, Data, Latch
- ●CLK cycle : 50Hz
- ●Output CLK bit : 25 bit
- ●Output Data bit : 25 bit
- ●Output form: NPN Open Collector
- ●Rated load voltag : 12−24VDC
- ●Max. load current : 30mA(MP5Y)/20mA(MP5W)

●Serial transmission time diagram

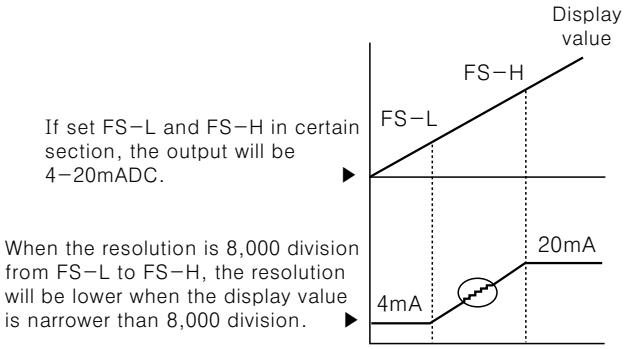


●Data output sequence when it is serial transmission



◎PV transmission output(4−20mADC)

- ●Application : Transmit the measured value
- ●Function : This function is to transmit 4−2mADC converted from measured display value between High limit output(FS−H) and Low limit(FS−L).
- ●Range of High/Low limit output setting
  - • High limit setting range(FS−H)
    : From min. to max within range of measurment
  - • Low limit setting range(FS−L)
    : From min. to max within range of measurment
- ●Resistive load : Max. 600Ω
- ●Resolution : 8000 division



◎RS485 communication output

- ●Address : 0 ~ 99 address(32 channels)
- ●Transmission speed(Baud rate) : 2400/4800/9600 bps
- ●Transmission code : ASCII
- ●Parity Bit : No
- ●Data Bit : 8 Bit
- ●Stop Bit : 1 Bit
- ●Communication items
  - • MP5W ← PC : Comparative value of each bank data, Prescale value and Peak value, RESET control
  - • MP5W → PC : Comparative value of each bank data, Prescale value and Peak value, Display value

※See page F−26 for communication data.

●HOUR METER

●TACHOMETER

ch for selecting Autonics products.

se read the following before using.

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review them before using this unit.

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ult if instructions are not followed.

aged, or injury may result if instructions are not followed.

the symbols used in the operation manual.
cur under special conditions.

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e that will result in damage to the product.

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L E 7 N − H F R

- R : Manual reset
- F : Free input voltage
- □ : No−voltage input
- H : DH : Day / H : Hour / M : min / S : sec
- N : DIN Size W48×H24mm
- 7 : 9999999(Digit)
- E : HOUR METER
- L : LCD display

t voltage
age input

8×H24mm
Digit)

▣ Input connection

Item / Input method	COUNTER / HOUR METER	TACHOMETER
No−voltage input	SIG. INPUT (1, 2) / RESET (3, 4) — Please use reliable contacts enough to flow 10 ㎂ current.	SIG. INPUT (1, 2) / RESET (3, 4) — Please use reliable contacts enough to flow 10 ㎂ current.
Voltage input type	SIG. INPUT (1, 2) / RESET (3, 4) — 24−240VAC, 6−240VDC	———

▣ Specification

●LA7N Series(COUNTER)

Model		LA7N−1	LA7N−2	LA7N−3	LA7N−4	LA7N−1R	LA7N−2R	LA7N−3R	LA7N−4R	LA7N−F	LA7N−FR
		No−oltage input								Free−voltage input	
Digit		7 Digit									
Operation method		Up mode only									
Power supply		3VDC(Battery built−in)									
Display		LCD Zero Blanking method(Display Size : H7mm × W3mm)									
Counting speed		1cps	30cps	1kcps	7kcps	1cps	30cps	1kcps	7kcps	20cps	
Reset	Manual(Front)	Non				Have				Non	Have
	External(Terminal)	Have									
INHIBIT input		• No−voltage input Impedance at short−circuit : Max. 10kΩ(ON) Impedance at open : Min. 500kΩ(OFF)								• INHIBIT input: Free−voltage input "H" level: AC type 24−240VAC, DC type 6−240VDC "L" level: AC type 0−1.5VAC, DC type 0−2VDC□	
Reset input											
Insulation resistance		Min. 100MΩ(at 500VDC)									
Dielectric strength		1000VAC 50/60Hz for 1 minute									
Vibra−tion	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour									
	Malfunction	0.3mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes									
Shock	Mechanical	300m/s² (Approx. 30G) 3 times at X, Y, Z direction									
	Malfunction	100m/s² (Approx. 10G) 3 times at X, Y, Z direction									
Ambient temperature		−10 to 55℃(at non−freezing status)									
Storage temperature		−25 to 65℃(at non−freezing status)									
Ambient humidity		35 to 85%RH									
Battery life cycle		Approx. 7 years at 25℃									
Weight		Approx. 55g									
Approval		CE								———	

●LE7N Series(HOUR METER)

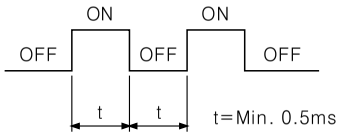
Model		LE7N−H	LE7N−S	LE7N−M	LE7N−HR	LE7N−HF	LE7N−SF	LE7N−MF	LE7N−HFR
		No−voltage input				Free−voltage input			
Digit		7 Digit							
Operation method		Up mode only							
Power supply		3VDC(Battery built−in)							
Display		LCD Zero Blanking method(Display Size : H7mm × W3mm)							
Time range		0.0h to 999999.9h	0.0h to 99h59m 59.9s	0.0h to 9999h 59.9m	0.0h to 999999.9h	0.0h to 999999.9h	0.0h to 99h59m 59.9s	0.0h to 9999h 59.9m	0.0h to 9999h 59.9m
Reset	Manual(Front)	Non			Have	Non			Have
	External(Terminal)	Have							
INHIBIT input		• No−voltage input Impedance at short−circuit : Max. 10kΩ(ON) Impedance at open : Min. 500kΩ(OFF)				• INHIBIT input : 24−240VAC, 6−240VDC			
Reset input									
Insulation resistance		Min. 100MΩ(at 500VDC)							
Dielectric strength		1000VAC 50/60Hz for 1 minute							

INHIBIT input		• No−voltage input Impedance at short−circuit Impedance at open : Min.
Insulation resistance		Min. 100MΩ(at 5
Dielectric strength		1000VAC 50/60Hz f
Vibra−tion	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz i
	Malfunction	0.3mm amplitude at frequency of 10 to 55Hz in e
Shock	Mechanical	300m/s² (Approx. 30G) 3 time
	Malfunction	100m/s² (Approx. 10G) 3 time
Ambient temperature		−10 to 55℃(at non−fre
Storage temperature		−25 to 65℃(at non−fre
Ambient humidity		35 to 85%F
Battery life cycle		Approx. 7 years
Weight		Approx. 55
Approval		CE

▣ Input signal

- In case of applying contact input as counter input, plea under 30cps.
- When any one signal width of ON & OFF is less than M not be working.
  Ex)If Max. counting speed is 1kcps, Min. signal width c

$$\text{Cycle} = \frac{1}{1\text{kHz}} = 1\text{ms}$$ Signal width of ON & OFF m



▣ Caution for using

1. Input signal line
   ①Shorten the cable distance between the sensor a
   ②Please shielded wire for input signal needed to b
   ③Please wire input signal line separated from powe
2. When test dielectric voltage and insulation resistan unit installed.
   ①Please isolate this unit from the circuit of control
   ②Please make all terminals of this unit short−circu
3. Do not use this unit at below places.
   ①Place where there are severe vibration or impact.
   ②Place where strong alkalis or acids are used.
   ③Place where there are direct ray of the sun
   ④Place where strong magnetic field or electric nois

※It may cause malfunction if above instruc

▣ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER
- ■ PANEL METER
- ■ TACHOMETER
- ■ LINE SPEED METER

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or injury may result if instructions are

symbols used in the operation manual.
nder special conditions.

eries(Nuclear power control, medical
mbustion apparatus, entertainment or
ng fail-safe device, or contact us for

man injury.

when power on and measuring input

nit, when it requires. If needs, please

fire.

ct or give an electric shock.

ct and cause a fire.
etween measuring input terminal and

uring target or result in product damage.
rity of power.
in product damage.
or an oil-based detergent.
t will result in damage to this product.
here are flammable or explosive gas,
heat, vibration, impact etc.

inside of this unit.
.
g the polarity of measuring terminals.

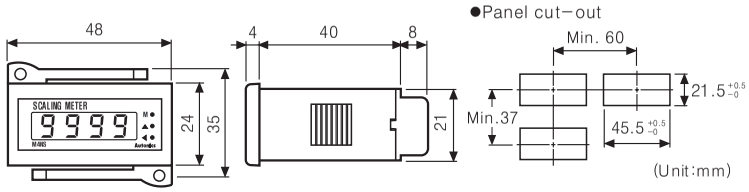
n

ecification	A	4-20mADC
wer supply	N	No voltage input type
ling meter	S	Scaling meter
Size	N	DIN W48 × H24mm
Digit	4	4 digit
Item	M	Meter

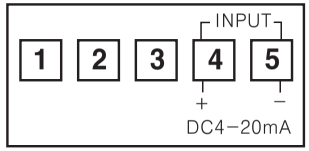
Input		4-20mADC
Self-diagnosis function		Error display function(HHHH/LLLL)
Insulation resistance		Min. 100MΩ(500VDC) between external terminal and case
Dielectric strength		2000VAC for 1minute between external terminal and case
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each 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/s² (30G) in X, Y, Z directions for 3 times
	Malfunction	100m/s² (10G) in X, Y, Z directions for 3 times
Ambient temperature		-10 to 50℃(at non-freezing status)
Storage temperature		-25 to 66℃(at non-freezing status)
Ambient humidity		35 to 85%RH
Weight		Approx. 46g

※**(Note1)**Ambient temperature : 0.3% full scale of ±1Digit
(-10~+50℃ : 0.4% full scale of ±1Digit)

■ Dimensions

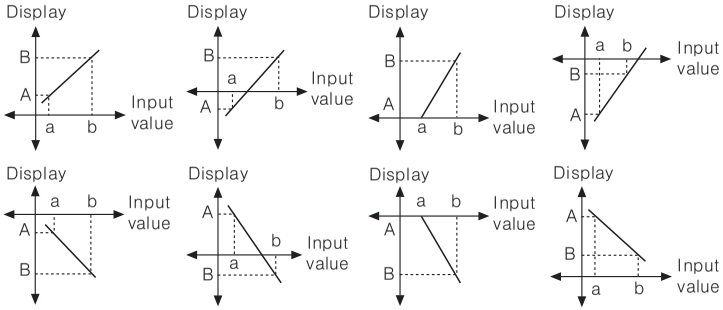


■ Connections



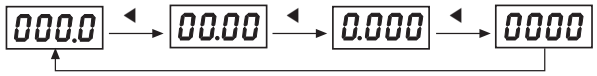
■ Prescale function

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]

This function is to set the decimal point position of display value
(Set in Parameter setting group)

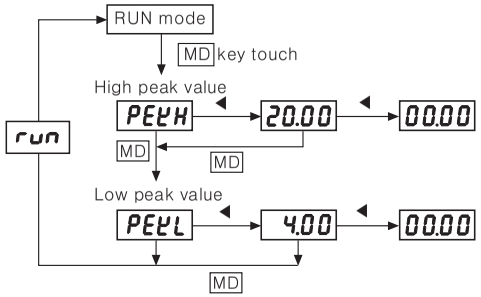


Ability to use ◀(Shift) or ▲(Up) for moving decimal point.

■ Correction function

(Parameter group : I nb.H/I nb.L mode)

4. When do not use Monitoring function, set **00 S** for **PEU.t** 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 **dISt** 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

1. Error display
   ①When **LLLL** flickers
   1)Input current is lower than 3% in 4-20mADC(16mA scale)
   LLLL will flicker when it is under 3.52mA [16mA×3%=0.48mA]
   → 4mA-0.48mA=3.52mA
   2)When it is beyond Min. display value(-1999)[by display value]
   ②When **HHHH** flickers
   1)Input current is higher than 3% in 4-20mADC(16mA scale)
   HHHH flickers [16mA×3%=0.48mA] → 20mA+0.48mA=20.48mA.
   When it is higher than 20.48mA.
   2)When it is beyond Max. display value(9999)[by display value]

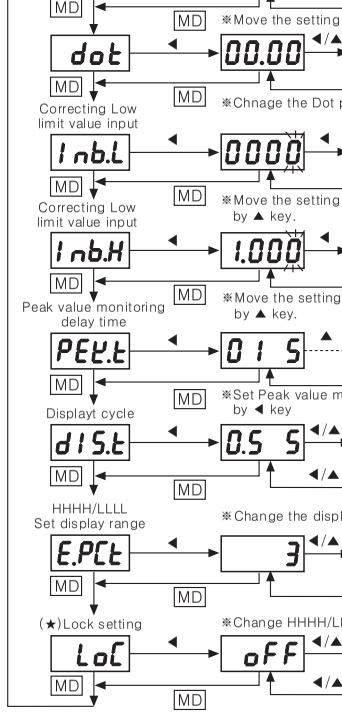
2. Turn Error display off
   LLLL and **HHHH** are displayed when input is out of measuring range, therefore it will be disappeared automatically when input returns to measuring range.

3. 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 ◀/▲ 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 ~ 9.999 -19.99 ~ 99.99 -199.9 ~ 999.9 -1999 ~ 9999
H-SC	High Scale	Hi limit display value for 20mA input	
dot	Dot	Set Dot position	
I nb.L	——	Correct Low-limit value of display value	-100 ~ 100
I nb.H		Correct High-limit value of	



※Pressing MD key to complete the setting changing setting value.
※Pressing MD key for 3 sec. to move to R
※If no key touched for 60sec., it will return
※(★)Key lock setting [oFF : Disable to cl
on : Disable to cl setting value status of cha

■ Factory specificat

Parameter
Low limit display value for 4mA input
Hi limit display value for 20mA input
Set Dot position
Correction of Low limit value input
Correction of Hi limit value input
Peak value monitoring delay time
Display cycle
Set % of HHHH/LLLL display range
Lock setting

■ Caution for using

1. Please use separated line from high volta noise.
2. Please install power switch or circuit break
3. The switch or circuit breaker should be ins
4. Be sure to avoid using this unit near by ma makes strong high frequency noise. (Welding machine, high capacity SCR unit
5. Input line : Shield wire must be used when measuring input line is getting longer or th lots of noises.

※**It may cause malfunction if above**

■ Main products

■ COUNTER
■ TIMER
■ TEMPERATURE CONTROLLER

ecting Autonics products.
the following before using.

fety

review them before using this unit.

low;

lt if instructions are not followed.

ed, or injury may result if instructions

symbols used in the operation manual.
r under special conditions.

achineries(Nuclear power control, , airplane, combustion apparatus, c), it requires installing fail-safe n on type required.
human injury.

wer on.

s unit, when it requires.

e a fire.
nal when connect power line or

rs.
roduct or give an electric shock.
G(0.50mm²) should be used and 0.74N・m to 0.90N・m strength.
e to contact failure.
g.
roduct and cause a fire.
witching capacity of Relay contact.
act melt, contact failure, relay broken,

ter or an oil-based detergent.
fire that will result in damage to this

e there are flammable or explosive radiant heat, vibration, impact etc.

to inside of this unit.
ble.
hecking the polarity of measuring

Power supply		110/220VAC 50/60Hz(Option:100−240VAC 50/60Hz, 24−70VDC)
Allowable voltage range		90 to 110% of rated voltage
Power consumption		M4W : DC2W, AC4VA / M4W 1P, 2P : DC2W, AC5VA
Display method		7Segment LED Display(3 $\frac{1}{2}$ Digit)
Sampling cycle		300ms
A/D conversion method		Dual slope intergal method
Response time		2sec.(0 to Max.)
Sampling times		2.5 times/sec.
Insulation resistance		Min. 100MΩ(at 500VDC)
Dielectric strength		2000VAC 50/60Hz for 1 minute
Noise strength		±1kV 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 directions for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes
Shock	Mechanical	300m/s² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s² (Approx. 10G) 3 times at X, Y, Z direction
Ambient temperature		−10 to 50℃(at non−freezing status)
Storage temperature		−25 to 65℃(at non−freezing status)
Ambient humidity		35 to 85%RH
Relay life cycle	Mechanical	Min. 10,000,000 times
	Electrical	Min.100,000 times(250VAC 3A resistive load)
Output capacity		M4W : Non, M4W1P : Relay contact output 250VAC 3A 1c, M4W2P : Relay contact output 250VAC 3A 1c×2
Display accuracy		DC : F・S ±0.2%rdg ±1Digit 23℃ ±5℃, AC : F・S ±0.5%rdg ±2Digit 23℃ ±5℃ / ±0.3%rdg ±1Digit 23℃ ±5℃
Weight		M4W:400g, M4W1P:460g, M4W2P:496g

■ Ordering information

M 4 W	Main function
M	Meter
4	4Digit(3 $\frac{1}{2}$)
W	DIN Size W96 × H48mm
1 P	Indication type: Single setting
2 P	Indication type: Double setting
D	DC Type
A	AC Type
V	Volt Meter
A	Ampere Meter
W	Watt Meter
T	Tachometer
S	Line Speed Meter
P	Power factor Meter
Display method: blank	AVG value
Display method: R	RMS value
Range: X	Measuring range by each specification

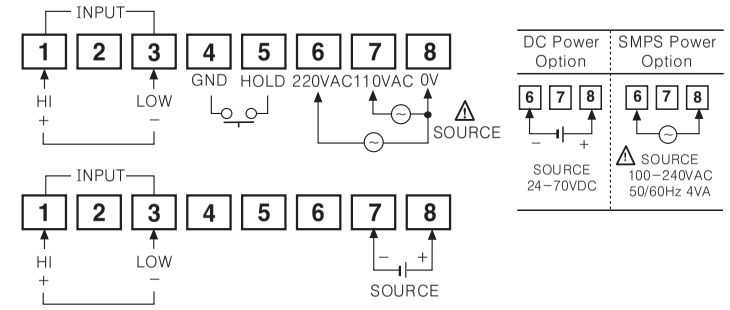
●Measuring range

Range / Model	1	2	3	4	5	6	7	8
AV	199.9mV	1.999V	19.99V	199.9V		400V		
AA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A		
DV	199.9mV	1.999V	19.99V	199.9V	300V			
DA	199.9㎂	1.999mA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A
W	199.9W	1.999kW	19.99kW	199.9kW	1999kW			
T	DC1999	AC1999						
S	DC1999	AC1999						
P	−0.50~1.00~0.50							

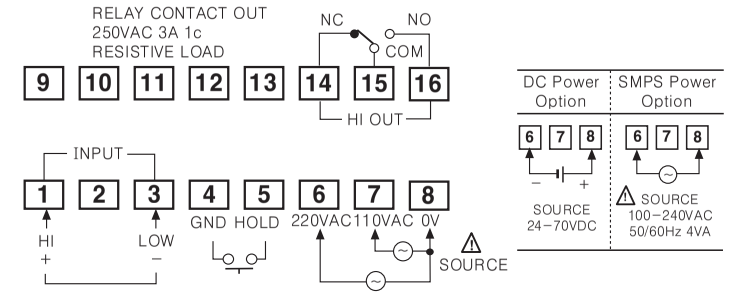
1. When measure over 2ADC, please use Shunt and measure over 5AAC, please use C・T(Current Transformer).
2. Power converter should be used with Watt meter and Tacho/Speed meter should be used with Tacho−generator.

■ Connections

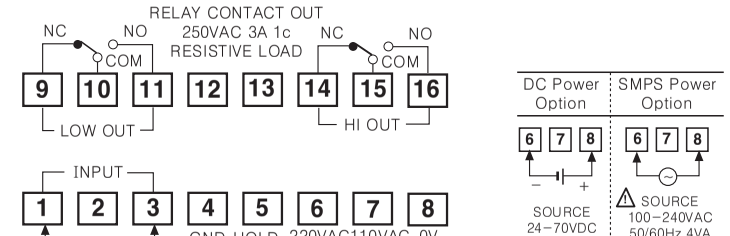
●M4W



●M4W1P

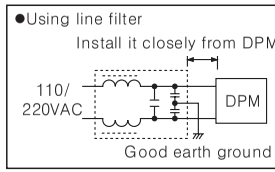


●M4W2P

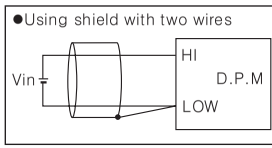


■ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.
2. Please use the terminal(M3.5, Max. 7.
3. Please use separated line from high inductive noise.
4. Please install power switch or circuit b
5. The switch or circuit breaker should be
6. Be sure to avoid using this unit near noise. (Welding machine, high capaci
7. When input applied, if "1999" or "−19 measuring input, please check the line
8. Noise inflow from power line can be se AC power. Even though there is conc power transformer, but as small size p components. Therefore, please install l lines when voltage failure occurred by with high voltage.



9. Input line:Shield wire must be used wh or there are lots of noises.



※It may cause malfunction if ab

■ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER
- ■ PANEL METER

Autonics

DIGITAL PANEL METER
M4Y SERIES

M A N U A L

Thank you very much for selecting Autonics products.
Please read this manual carefully before you use this unit.

■ 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 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.
2. **It must be mounted on panel.**
   It may give an electric shock.
3. **Do not repair, check up or connect when power on and measuring input applied.**
   It may give an electric shock.

⚠ Caution

1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
2. **Please observe specification rating.**
   It might shorten the life cycle of the product and cause a fire.
3. **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.
4. **Please separate the power supply when use it as Volt meter and Ampere meter at the same time.**
   It may cause mechanical trouble of measuring target or result in product damage.
5. **Please wire properly after check polarity of power.**
   It may cause a fire or explosion and result in product damage.
6. **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.
7. **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.
8. **Do not inflow dust or wire dregs into inside of this unit.**
   It may cause a fire or mechanical trouble.
9. **Please connect properly after checking the polarity of measuring terminals.**
   It may cause a fire or explosion.

※The above specification are changeable without notice anytime.

■ Ordering information

M 4 Y - D V □ - X

X	Measuring range by each specification
Indication type:	
	Mean value
R	RMS value
V	Volt Meter
A	Ampere Meter
W	Watt Meter
T	Tachometer
S	Line Speed Meter
I	Scaling Meter
F	Frequency Meter
D	DC Type
A	AC Type
Y	DIN Size W72 × H36mm
4	3½digit
M	Meter

●Measuring rane

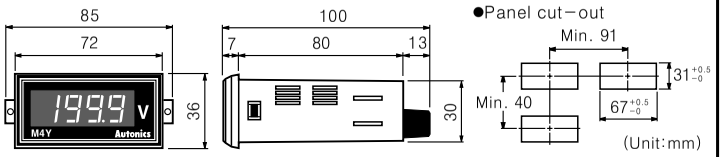
Type \ Range	1	2	3	4	5	6	7	8	X
AV(R)	199.9mV	1.999V	19.99V	199.9V		400V			Option
AA(R)	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A			Option
DV	199.9mV	1.999V	19.99V	199.9V	300V				Option
DA	199.9㎂	1.999mA	19.99mA	199.9mA	1.999A	19.99A	199.9A	1999A	Option
W	199.9W	1.999kW	19.99kW	199.9kW					Option
T(R)	1999rpm	1999rpm	Range 1 : 0 to 10VDC measurement input Range 2 : 0 to 10VAC measurement input Range X : measurement input except range1, range2						
S(R)	1999 m/min	1999 m/min							
I	Option(Display 0 to 1999)								
F	Indicate 0.5~300Hz when it is 30~300VAC.								

1. When measure over DC 2A, please use Shunt and measure over AC 5A, please use C • T (Current Transformer).
2. Power converter should be used with Watt meter and Tacho/Speed meter should be used with Tacho-generator.

■ Specification

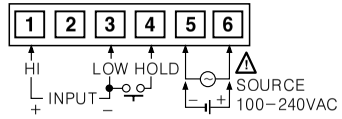
Model	M4Y-DV-□ M4Y-AV-□-□	M4Y-DA-□ M4Y-AA-□-□	M4Y-W-□	M4Y-T□-□ M4Y-S□-□	M4Y-DI	M4Y-F
Measurement function	DC, AC voltage	DC, AC current	AC watt	rpm, speed	Scaling	Frequency
Max. allowable input	Max. AC400V Max. DC300V	Max. AC5A Max. DC2A	Max. DC10V	Tacho-generator output(0-10V)	DC1-5V DC4-20mA	0.5 to 3000Hz, 30-300VAC
	150% per each range(AC400V:120%)					———
Max.display range	Max. 1999(Fixed decimal point)					
Power supply	100-240VAC ±10% 50/60Hz(Option:5VDC ±10%, 24-70VDC ±10%)					
Power consumption	DC:2W, AC:4VA					
Display method	7Segment LED Display					
Display accuracy	DC:F • S±0.2% rdg ±1digit, AC:F • S±0.5% rdg ±1digit					F • S±0.05% rdg ±1digit
Sampling cycle	300ms□					
A/D conversion method	Dual slope intergal method					
Response time	2sec.(0 to Max.)					
Sampling time	2.5 times/sec.					
Insulation resistance	100MΩ Min. (at 500VDC)					
Dielectric strength	2000VAC 50/60Hz for 1 minute					
Noise strength	±2kV the square wave noise(pulse width:1㎲) by the noise simulator					
Vibra-tion Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions 1hour					
Vibra-tion Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions 10minutes					
Shock Mechanical	300m/s² (30G) in X, Y, Z direction					
Shock Malfunction	100m/s² (10G) in X, Y, Z direction					
Ambient temperature	-10 to 50℃(at non-freezing condition)					
Storage temperature	-25 to 65℃(at non-freezing condition)					
Ambient humidity	35 to 85%RH					
Weight	Approx. 170g□					

■ Dimension

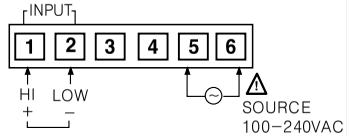


■ Connection

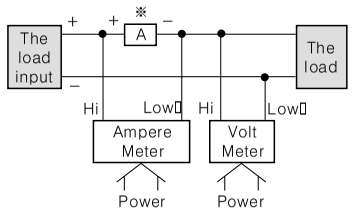
●M4Y



●M4Y-F



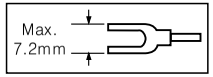
■ General block diagram

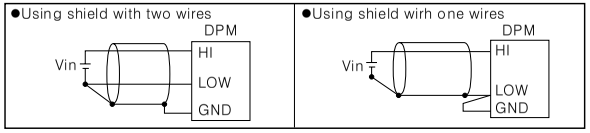


※When measure over DC 2A, please use Shunt and measure over AC 5A, please use C • T (Current Transformer).

■ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Catergory Ⅱ.
2. Please use the terminal(M3.5, Max.7.2mm) when connect the AC power source.
3. Please use separated line from high voltage line or power line in order to avoide inductive noise.
4. Please install power switch or circuit breaker in order to cut the power supply.
5. The switch or circuit breaker should be installed near by users for safety.
6. Be sure to avoid using this unit near by machinery makes strong high frequency noise. (Welding machine, high capacity SCR unit etc.)
7. When input applied, if "1999" or "-1999" are displayed, it has some trouble with measuring input, please check the line after power off.
8. Noise inflow from power line can be serious problem for products driving of DPM by AC power. Even though there is condenser for protecting noise between lines in power transformer, but this display unit as small size product, it is very difficult to install protection components. Therefore, please install line filter, varistor or noise absorber in external lines when voltage failure occurred by power relay or magnet S/W operation, spark with high voltage.
9. Input line : Shield wire must be used when the measuring input line is getting longer or there are lots of noises.





10. Please use insulated transformer for 5VDC type product.

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

■ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER
- ■ PANEL METER
- ■ TACHOMETER
- ■ LINE SPEED METER
- ■ DISPLAY UNIT
- ■ PROXIMITY SWITCH
- ■ PHOTOELECTRIC SENSOR
- ■ FIBER OPTIC SENSOR
- ■ PRESSURE SENSOR
- ■ ROTARY ENCODER
- ■ SENSOR CONTROLLER
- ■ POWER CONTROLLER
- ■ STEPPING MOTOR & DRIVER & CONTROLLER

Autonics Corporation
http://www.autonics.net

■HEAD QUARTER :
41-5, Yongdang-Ri, Ungsang-Up, Yangsan-Shi, Kyung-Nam, Korea 626-847.
■TRADE DEPARTMENT :
511 Ansung B/D, 410-13, Shindolim-Dong, Kuro-Gu, Seoul, Korea 152-070
TEL:82-2-679-6585 / FAX:82-2-679-6556
■E-mail : sales@autonics.net

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safety device etc), it requires
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or human injury.

power on.

this unit, when it requires.

use a fire.
rminal when connect power line

oors.
e product or give an electric shock.
r input and measuring input, the
olt on terminal block should be

ue to contact failure.
ting.
product and cause a fire.
ted switching capacity of Relay

ontact melt, contact failure, relay

water or an oil-based detergent.
fire that will result in damage to this

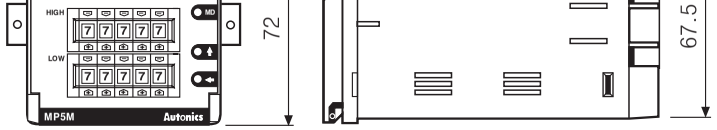
where there are flammable or

⑤ Output

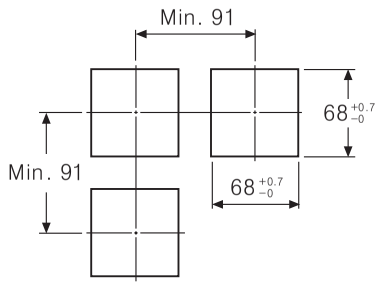
	Main output(Comparative value output)
N	Indication type only
1	Relay firsrt-stage(High-limit) output + NPN open collector output
2	Relay two-stage(High/Low-limit) output + NPN open collector output

■ Specifications

Model	MP5M-4N	MP5M-41	MP5M-42
	Indication	High-limit setting	High/Low-limit setting
Power supply	100-240VAC 50/60Hz		
Allowable operation voltage	90 to 110% of rated voltage		
Power consumption	Approx. 7.5VA(240VAC)	Approx. 8VA(240VAC)	
Power for external sensor	12VDC ±10%, 80mA		
Measuring accuracy (23 ±5℃)	• Mode F1, F4, F7, F8 : F.S. ±0.05% rdg ±1Digit • Mode F2, F3, F5, F6 : F.S. ±0.01% rdg ±1Digit		
Measuring range	• Mode F1, F4, F7, F8 : 0.0005Hz to 50kHz • Mode F3 : 0.02s to 3,200s • Mode F2, F5, F6 : 0.01s to 3,200s • Mode F9, F10, F11 : 0 ~ 4 ×10⁹ Count		
Input frequency	• Solid state input : Max. 50kHz(Pulse width:Min. 10㎲) • Contact input : Max. 45Hz(Pulse width:Min. 11ms)		
Input level	[Voltage input] High : 4.5-24VDC, Low : 0-1VDC, Input impedance : 4.5kΩ [No-voltage input] Short-circuit impedance : Max. 300Ω, Residual voltage : Max. 1V, Open-circuit impedance : Min. 100kΩ		
Max. indication	5Digit(0.0001 to 99999)		
Display method	7 Segment LED(Zero Blanking), Display Size : W4×H8mm		
Display accuracy	0.05 / 0.5 / 1 / 2 / 4 / 8sec.(The same as update output cycle)		
Operation mode	Number of revolution/Speed/Frequency(F1), Passing speed(F2), Cycle(F3), Passing time(F4), Time width(F5), Time difference(F6), Absolute rate(F7), Density(F8), Length measurement(F9), Interval(F10), Integration(F11)		
Prescale function	Direct input method(0.0001×10⁻⁹ to 9.9999×10⁹)		
Hysteresis	0 to 9999		
Other functions	• Lock setting function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function(Mode F11 applied only)	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function(Mode F11 applied only) • Comparative output function(H)	• Lock setting function • Monitoring function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function(Mode F11 applied only) • Comparative output function(H, L) • Output mode selection function (S, H, L, B, I, F) • Deviation memory function (F output mode)
Main output – High-limit setting – Relay output	————	250VAC 3A resistive load 1a 1b	————
Main output – High-limit setting – NPN open collector output		30VDC 100mA max.	————
Main output – High/Low-limit setting – Relay output		————	250VAC 3A resistive load 1a×2
Main output – High/Low-limit setting – NPN open collector output		————	30VDC 100mA max. ×2
Memory	Non-volatile memory(Input times : 100,000 times)		
Insulation resistance	Min. 100MΩ(Standard 500VDC) between terminal and case		
Dielectric strength	2000VAC 60Hz 1minute(Between terminals of AC power and case, Between terminals of AC power and measuring terminals)		
Impulse noise strength	±2000V the square wave noise(pulse width:1㎲) by the noise simulator R/S phase, repetition frequency 60Hz		
Vibra – Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hour		



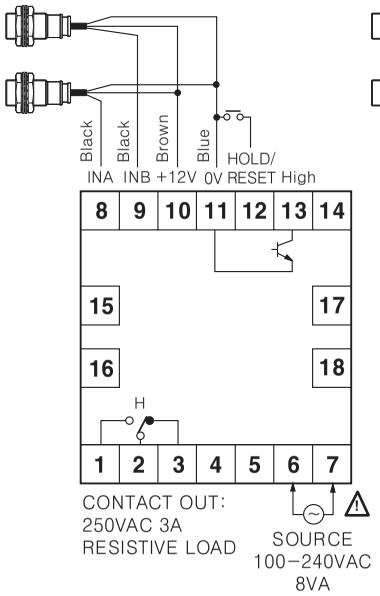
●Panel cut-out



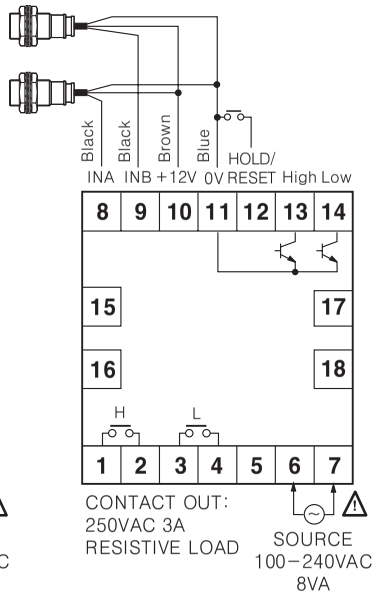
(Unit:mm)

■ Connection

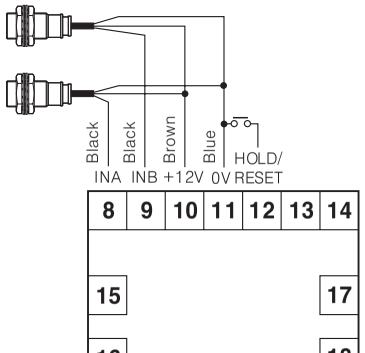
●High-limit setting(MP5M-41)

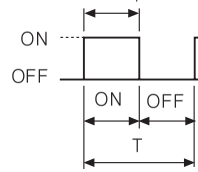


●High/Low-limit setting(MP5M-42)



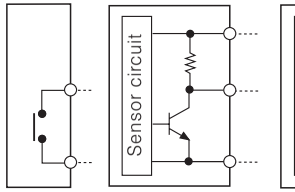
●Indication(MP5M-4N)



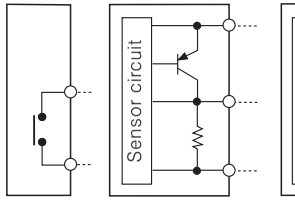


(2)Relay contact input
①Input frequency : 45Hz(Max.)
ON/OFF pul
②Relay contact specification :

2. Input type
MP5M has **NPN input and PNP**
-meter 1 group.
(1)NPN input type
①Contact ②NPN voltage output type sensor ③



(2)PNP input type
①Contact ②PNP voltage output type sensor ③



※O • C is Open collector outpu

■ Operation mode

●Select operation mode from nodE(
●There are 11 kinds of operation mo

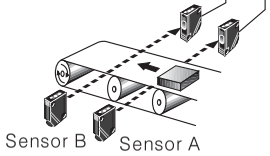
◎**Mode F1(Frequency/Number**
This mode is to display calculated
speed by measuring frequency o
1)Frequency(Hz) = f × α (α = 1
2)Number of revolution(rpm) = f
3)Speed(m/min) = f × α (α = 60
※L = The length of conveyor m

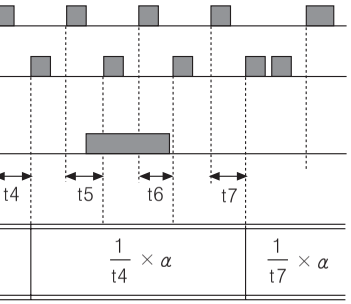
●Display value and display unit

Display value	Display unit	α (Prescale
Frequency	Hz	1
	kHz	0.00
Number of revolution	RPS	1
	rpm	60
Speed	mm / sec	1,000
	cm / sec	100
	m / sec	L
	m / min	60L
	km / hour	3.6L

L

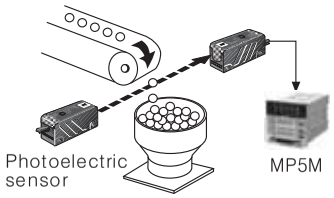
sec



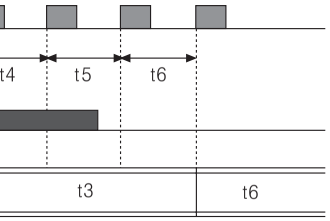


α : Prescale value
ta : It needs min. 20ms for return time

A is ON to the next ON of input A .



e unit) of Parameter 2.
.99sec.

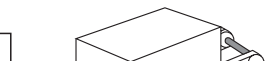


be over 20ms then able to measure.

n distance as measuring the time
ut A.

L[m]
ng distance within 1pulse cycle[m])

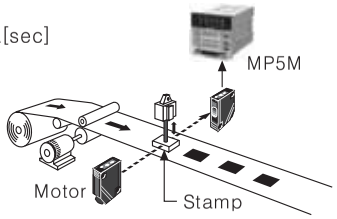
n distance[m]



※ α : Presale value

◎Mode F5(Time width)

It displays the ON time of input A.
Time width[T] = t
※t : ON measurement time of input A[sec]



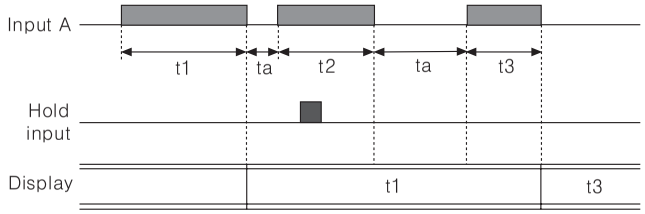
●Display value and display unit

Display value	Display unit	
	SEC	MIN
Passing time	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99999sec.	99999min.

※Display unit of factory default:999.99sec.

※Set the display unit at the t.unt(Time unit) of parameter 2.
※Display unit of factory specification : 999.99sec.

●Timing charts



※ta : It needs min. 20ms for return time.

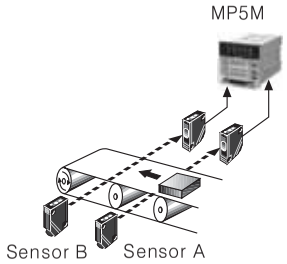
◎Mode F6(Time interval)

It displays the time from input A is ON to input B is ON.
Time difference(T) = t(ta to tb)
※t(ta to tb) : The measurement time from input A is ON to input B is ON[sec].

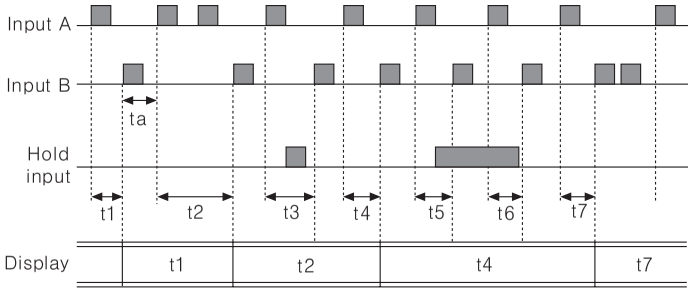
●Display value and display unit

Display value	Display unit	
	SEC	MIN
Passing time	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99999sec.	99999min.

※Display unit of factory default : 999.99sec.
※Display unit can be set at t.unt (Time unit) of Parameter 2.

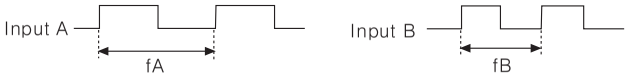


●Time chart



※ta : It needs min.20ms for return time.

●Time chart



$$\text{Display} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until Hold signal is OFF.

◎Mode F8(Error ratio)

It displays how many percentage(%) faster or late of Input B against Input A.

$$\text{Absolute rate} = \frac{\text{Input B} - \text{Input A}}{\text{Input A}} \times 100[\%]$$

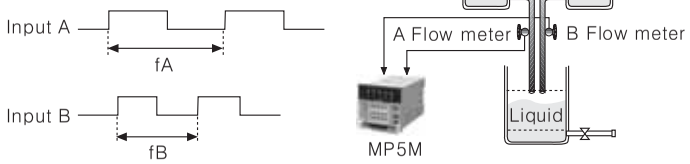
$$\text{Error rate} = \frac{(\text{Frequency of input B[Hz]} \times B\alpha) - (\text{Frequency of input A[Hz]} \times A\alpha)}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Error rate	%

※Aα : Prescale value of input A
Bα : Prescale value of input B

●Timing chart



$$\text{Display} = \frac{(\text{Frequency of input B[Hz]} \times B\alpha)}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until Hold signal is OFF.

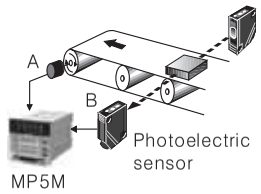
◎Mode F9(Length measurment)

It displays the number of Input A pulse while Input B is ON.
Length measurment = P × α
(※P : Number of input A pulse, α : Prescale value)

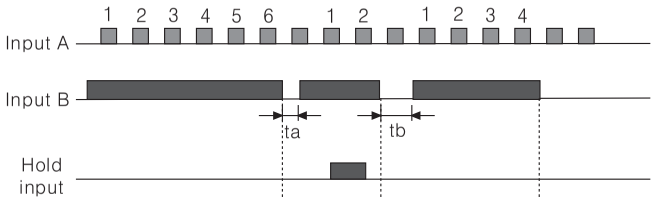
●Display value and display unit

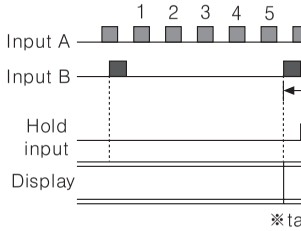
Display value	Display unit
Length measurment	Quantity[EA]
	mm
	cm
	m

※Factory default(Unit) : Quantity[EA]



●Time chart





※ta

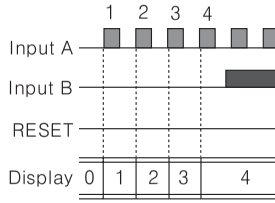
◎Mode F11(Integration)

It displays the counting value agains
Integration = P × α
※P : Pulse number of input A, α :

●Display value and display unit

Display value	Display unit
Interval	Quantity[EA]

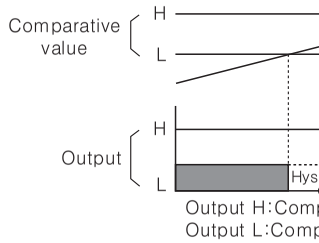
●Operation and Time chart
①It counts the number of Input A
②As input B is an enable input si
value of input A when it is ON a
when it is OFF.



▣ Output mode

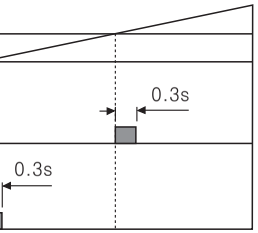
●Select output mode in out-t(Outp
●There are 2 stages output(H, L).
●There are 6 kinds of output mode
H(High) output mode, L(Low) outp
I(One shot)output mode, F(Deviat
●The setting value(H, L) should be
and it operates individually not rela
output mode(S, H, L, I).
●It is applied at MP5M-42 only. MP

◎ **S**(Standard) output mode[StArd]



◎ **H**(High) Output mode[out-h]

tive value H≥Display value
tive value L≥Display value



ative value H≤Display value
ative value L≤Display value

fixed as 0.3sec.
he shot) comparative output mode.

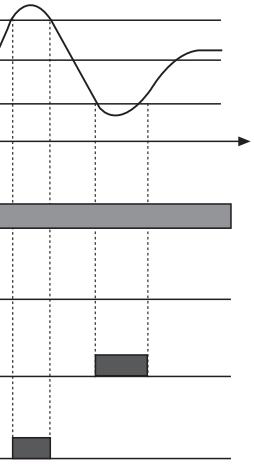
]
ing value and provide outputs when

ize the current display value as the
key in front.
the memorized the setting value by

alue for pressing ▲ key continuously.)
on by setting value.
ed until setting the next deviation

99999(The setting range will be
parameter. If set decimal point as
1 to 9999.9.)

Press (M+▲) Key at the same
time for memorizing the setting value



ative output limit function, output will

L.PEK		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X

●Parameter 1 group

Parameter 1	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
mode		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−A		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−b		X	◐	X	X	X	◐	◐	◐	◎	◎	◎
out−t		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
hyS		◐	X	X	X	X	X	◐	◐	X	X	X
GuAr.d	F.dEFy	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
	StAr.t	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
Auto.A		◐	X	X	◐	X	X	◐	◐	X	X	X
Auto.b		X	X	X	X	X	X	◐	◐	X	X	X
mEmo		X	X	X	X	X	X	X	X	X	X	◐

※"◎" : IN−b sensor will be set as nPnhF or PnPhF type only in mode F9, F10, F11.

●Parameter 2 group

Parameter 2	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
dot		◐	◐	X	X	X	X	◐	◐	◐	◐	◐
t.unt		X	X	◐	◐	◐	◐	X	X	X	X	X
PSC.A.X(Note1)		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐
PSC.A.y(Note1)		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐
PSC.b.X		X	X	X	X	X	X	◐	◐	X	X	X
PSC.b.y		X	X	X	X	X	X	◐	◐	X	X	X
dISP.t		◐	X	X	X	X	X	◐	◐	X	X	X

※(Note1)PSC. X, PSC. y are displayed in mode F1, F2, F4, F9, F10, F11.

●Parameter 3 group

Parameter 3	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
LoC		◐	◐	X	X	X	X	◐	◐	◐	◐	◐

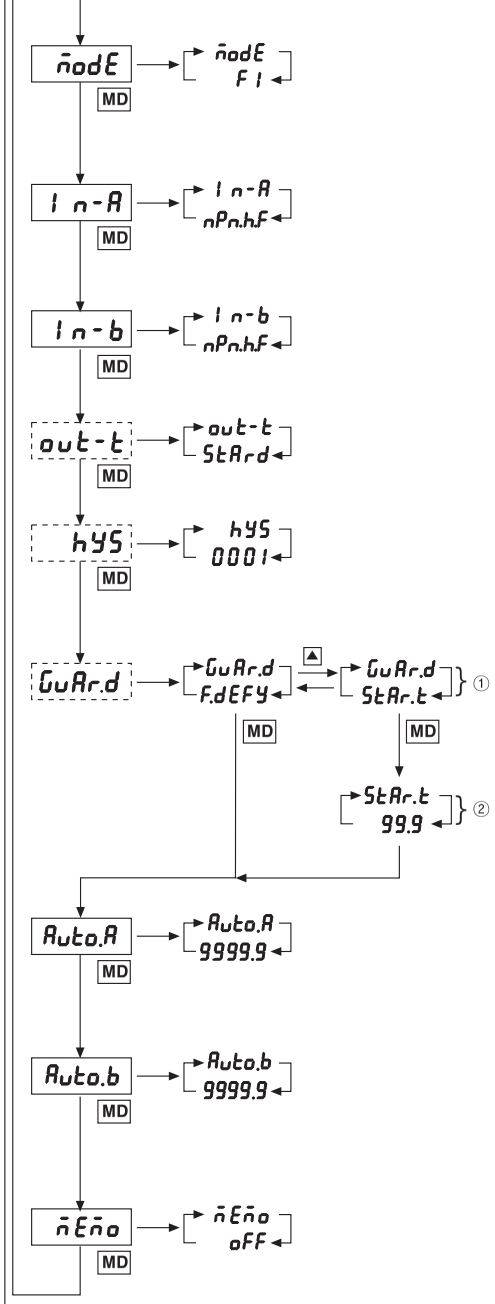
●Monitoring delay operation function chart by each output mode

out−t	StArd	out−h	out−L	out−b	out−I	out−F
Comparative output adjustment function.	◐	X	X	◐	X	◐
Starting correction timer function	◐	◐	◐	◐	◐	◐

■ Parameter

●Parameter 0 group

Menu and Parameter display	Parameter	Setting key
MD Touch RUN h.PEK → 99999 (MD) Parameter L.PEK → 00000 (MD)	It displays high peak value among the measuring values Display low peak value among the measuring values	●Reset If press ◀ key for 2sec. during h.PEK and L.PEK is flickering, the peak value display will be reset as the current measuring value then it will keep flickering. MD if touch once again, it will return L.PEK or **RUN**.



Select operation mode.	F1 to F11	▲ MD
Set the sensor type of input A.	• PNP transistor output type : PnPhF • Contact output type (L output) : PnPLF • NPN transistor output type : nPnhF • Contact output type (H output) : nPnLF	▲ MD
Set the sensor type of input B.		
Select the output mode. (★1)	StArd / out-h / out-L out-b / out-I / out-F	▲
Set the hysteresis for the output. (★2)	0 to 9999 (If decimal point is set in 0000.0, the range will be 0 to 999.9.	MD ◀ ▲ MD
Select the start compensating timer function or comparative output limit function. (★3)	① F.dEFY / StAr.t ②When select StAr.t When [StAr.t 99.9] is flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9 .	① ▲ MD ② ◀ ▲ MD
Set the Auto−zero time of INA input.	0.1 to 9999.9	◀ ▲ MD
Set the Auto−zero time of INB input.	0.1 to 9999.9	◀ ▲ MD
It sets the memory retention. The measuring value will be memorized when the power off. (F11 Mode only)	on : Memory retention oFF : No memory retention	▲ MD

※If you press MD key for 3 sec. in **RUN**, it will enter into parameter 1 group.
※The output mode is fixed as out-h type in F11 operation mode.
※(★1) is not shown is MP5M−41 and indicate type. But, MP5M−41 is fixed by S output mode.
Output mode out-h type in F11 mode of MP5M−42 is fixed.
※(★2)Hysteresis operation mode is able to be set in F1, F7 to F8 operation mode.
※(★3)It is able to select the comparative output[F.dEFY] limit function or starting correction[StAr.t] timer in monitoring d
When select the comparative output limit[F.dEFY] function, it will move to the next parameter[Auto.A] and when sele

dot 0000	Set decimal point position of display value	00000 00.000 0000.0 0.0000 000.00
t.unt t.SEC MD t.SEC 99.99 MD	It will be displayed in F3, F4, F5, F6 operation mode and set the time unit. (★1) ①Select the time unit ②Select the time range	SEC / MIN 999.99sec. / 999.99min. 9999.9sec. / 9999.9min. 99999sec. / 99999min.
SC.AH 0000	Set the prescale value of input A mantissa(X).	0.0000 to 9.9999
SC.Ay 0 00	Set the prescale value of input A an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})
SC.b.H 0000	Set the prescale value of input B mantissa(X).	0.0000 to 9.9999
SC.b.y 0 00	Set the prescale value of input B an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})
1 SP.t 0.05	Select the display cycle.	0.05, 0.5, 1, 2, 4, 8

◀ : Move the setting digit MD : Fix and move to the next parameter
① ▲ : Change the setting mode → t.SEC → t.min MD : Save ② ▲ : Change the setting value → 999.99 → 9999.9 → 99999 MD : Fix and move to the next parameter
◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter
◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter
◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter
◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter
◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter
▲ : Change setting value → 0.05 → 0.5 → 1 → 2 → 4 → 8 MD : Fix and move to the dot.

ng MD key for 4sec. in **RUN** mode.
or minute[t.min] in time until selection parameter[t.unt] then also selectable time range.
roup, the parameter will flicker by 1sec. cycle then move the setting digit by ◀ key and change the setting value by

ch parameter will flicker by 1sec. cycle and move to the next parameter by pressing MD key. If you press MD key for
will be set and return to **RUN**.

meter display	Parameter	Setting range	Setting key
A.3 for 2sec. then automatically. , if press MD key .	This is parameter 3 group.		
LoC oFF	Enable to lock the key for each parameter group	oFF : There is no key lock in all mode LoC.0 : P0 to 3 Lock LoC.1 : P1 to 3 Lock LoC.2 : P2 to 3 Lock LoC.3 : P3 Lock only	▲ : Change the setting mode → oFF → LoC.0 → LoC.1 → LoC.2 → LoC.3 MD : If pressing MD key for over 2sec., Data will be set and it will return to **RUN**.

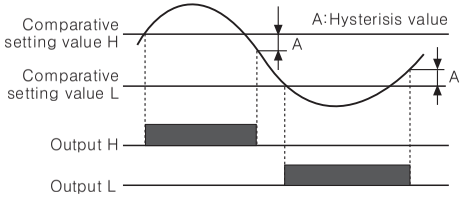
Prescale value(α)=15 a Mentissa(X)=1.5000, Exponent(y)=10^{-3}.
And also it is able to set α value as X=0.015, Y=10^{-3} then get the same display value.
※Display cycle can be selected at Parameter 2 group.

◎Display peak value monitoring function

This is to monitor max. value and min. value by current display value and display that data at h.PEU/L.PEU mode of Parameter 0 group.
- User can check saved value in Parameter 0 group. And High Peak(h.PEU) or Low Peak(L.PEU) will be continuously saved during checking.
- See Parameter 0 for Reset.

◎Hysteresis function

Set the Hysteresis value(A) for comparative setting value in order to prevent unstable operation due to output going ON/OFF frequently.

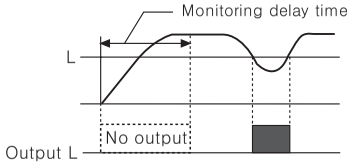


DOT position	Setting value
00000	0000 to 9999
0000.0	000.0 to 999.9
000.00	00.00 to 99.99
00.000	0.000 to 9.999
0.0000	0.000 to 0.9999

※You are able to set "0", but when set "0", the actual operation will be as "1".
※The initial setting value is 0001.
※You are able to set in the Parameter 1 group.

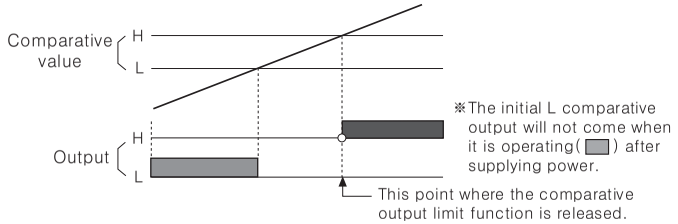
◎Monitoring delay time function

This function is for the stable control to limit L, LL outputs until certain output is come or to limit all outputs during the equipment is reaching a stable status against various change of input such as the staring current when the motor is running after power on. There are the starting correction timer function and comparative output limit function in the monitoring delay function.
(Select at GuAr.d mode of parameter 1 group)
- The starting correction timer function(StAr.t mode of Parameter 1 group)
  This function is to make the output not come out during the setting time.
  (Time setting range 0.0 to 99.9sec.)



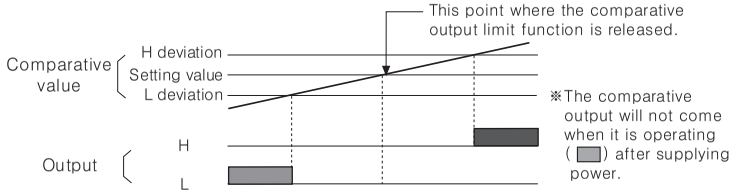
- Comparative output limit function(F.dEFY mode of Parameter 1 group)
  This function is to limit the L output before the H output of S, B, F output mode.

1)The output mode is S output mode, B output mode



※H, L can be different each other therefore H value may be equal or lower than L.

2)The output mode is F output mode



※The output mode is F output mode, the comparative output limit function will be released at the setting value(Standard setting).

This function is to lock LoC in Parameter
in order to prevent wrong setting.

SW1	Inne
ON / OFF 1 2	h0(Hardware Lock 0) : Enable to check and ch
ON / OFF 1 2	h1(Hardware Lock 1) : Enable to check the LoC But it is not possible to
ON / OFF 1 2	h2(Hardware Lock 2) : Disable to check and ch

※It is possible to lock or unlock after su

◎Display cycle selection function

This function is to change the display c
displays the average value of measuring

◎Time unit selection function

Enable to display PV value with firmed t
of various time.
- Time unit selection function can be se
  group.
- Applicable mode : Mode 3 to 6

※There is no DOT setting mode when s

◎Factory default

- Parameter3 group

Mode	Setting value
LoC	oFF

- Parameter2 group

Mode	Setting value	Mo
dot	00000	PSC
PSC. H	6.0000	dI S

※The specification may not be display
the operation mode and output spec

■ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.
2. Please use separated line from high
   inductive noise.
3. Please install power switch or circuit
4. The switch or circuit breaker should
5. Do not use this unit at below places
   ①Place where there are severe vibrat
   ②Place where there are direct ray of
   ③Place where strong magnetic field
6. Storage method
   When storing this unit for a long tim
   and keep this unit under circumstanc
7. Input line : Shield wire must be use
   the measuring input line is getting l
   or there are lots of noises.
8. Please put enough space between p
   line and terminal of measuring input

※It may cause malfunction if ab

■ Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHO/LINE SPEED/
  PULSE METER

ecting Autonics products.
the following before using.

fety

review them before using this unit.
follow;
sult if instructions are not followed.
naged, or injury may result if followed.
the symbols used in the operation
cur under special conditions.

th machineries(Nuclear power icle, train, airplane, combustion safety device etc), it requires ontact us for information on type

e or human injury.

power on.

this unit, when it requires.

ause a fire.
rminal when connect power line

oors.
e product or give an electric shock.
r input and measuring input, the olt on terminal block should be

due to contact failure.
ting.
e product and cause a fire.
ted switching capacity of Relay

ontact melt, contact failure, relay

water or an oil-based detergent.
fire that will result in damage to this

where there are flammable or

⑤ Size

3	DIN Size W48 × H48mm

④ Power supply

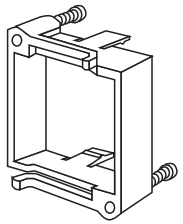
4	100-240VAC 50/60Hz

⑤ Output

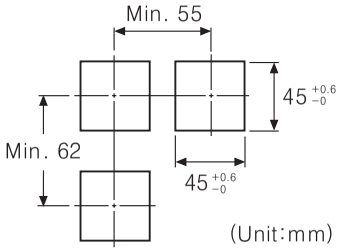
	Main output(Comparative value output)
N	Indication type only
2	Relay two-stage(High/Low-limit) output

■ Specifications

Model		MP5S-4N	MP5S-42
		Indication	High/Low-limit setting
Power supply		100-240VAC 50/60Hz	
Allowable operation voltage		90 to 110% of rated voltage	
Power consumption		Approx. 7.5VA(240VAC)	Approx. 8VA(240VAC)
Power for external sensor		12VDC ±10%, 80mA	
Measuring accuracy (23 ±5℃)		• Mode F1, F4, F7, F8, F9, F10 : F.S. ±0.05% rdg ±1Digit • Mode F2, F3, F5, F6 : F.S. ±0.01% rdg ±1Digit	
Measuring range		• Mode F1, F4, F7, F8, F9, F10 : 0.0005Hz to 50kHz • Mode F3 : 0.02s to 3,200s • Mode F2, F5, F6 : 0.01s to 3,200s • Mode F11, F12, F13 : 0 ~ 4 ×10⁹ Count	
Input frequency		• Solid state input : Max. 50kHz(Pulse width:Min. 10㎲) • Contact input : Max. 45Hz(Pulse width:Min. 11ms)	
Input level		[Voltage input] High : 4.5-24VDC, Low : 0-1VDC, Input impedance : 4.5kΩ [No-voltage input] Short-circuit impedance : Max. 300Ω, Residual voltage : Max. 1V, Open-circuit impedance : Min. 100kΩ	
Max. indication		5Digit(0.0001 to 99999)	
Display method		7 Segment LED(Zero blanking), Display size : W4×H8mm	
Display accuracy		0.05 / 0.5 / 1 / 2 / 4 / 8sec.(The same as update output cycle)	
Operation mode		Number of revolution/Speed/Frequency(F1), Passing speed(F2), Cycle(F3), Passing time(F4), Time width(F5), Time difference(F6), Absolute rate(F7), Error ratio(F8), Density(F9), Error(F10), Length measurement(F11), Interval(F12), Integration(F13)	
Prescale function		Direct input method(0.0001×10⁻⁹ to 9.9999×10⁹)	
Hysteresis		0 to 9999	
Other functions		• Lock setting function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function (Mode F13 applied only)	• Lock setting function • Monitoring function • Auto-Zero time setting function • Time unit selection function • Display value monitoring function • Memory retention function (Mode F13 applied only) • Comparative output function (H, L) • Output mode selection function(S, H, L, B, I, F) • Deviation memory function (F output mode)
Main output	Relay output	———	250VAC 3A resistive load 1a×2
Memory		Non-volatile memory(Input times : 100,000 times)	
Insulation resistance		Min. 100MΩ(Standard 500VDC) between terminal and case	
Dielectric strength		2000VAC 60Hz 1minute(Between terminals of AC power and case, Between terminals of AC power and measuring terminals)	
Impulse noise strength		±2000V the square wave noise(pulse width:1㎲) by the noise simulator R/S phase, repetition frequency 60Hz	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes	

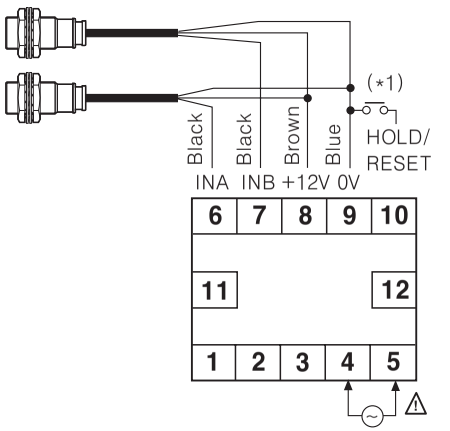


●Panel cut-out

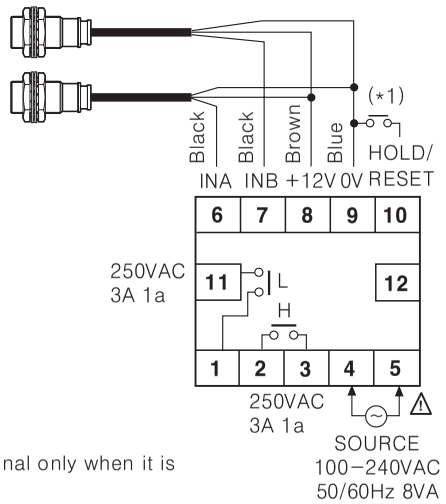


■ Connections

●Indication(MP5S-4N)



●High/Low-limit setting (MP5S-42)



※(*1) is used RESET terminal only when it is operation mode(F13).

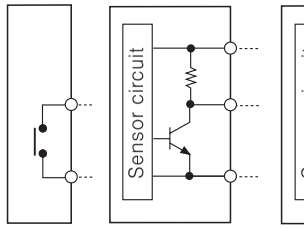
■ Input • Output

●Input specification

1. Input signal
(1)Solid state input
①Input frequency: 50kHz(Max.)
But, standard duty rate of input signal is 1:1,

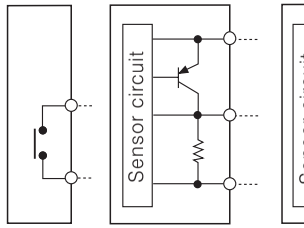
(1)NPN input type

①Contact ②NPN voltage output type sensor ③N



(2)PNP input type

①Contact ②NPN voltage output type sensor ③N



※O • C is Open collector output

■ Operation mode

●Select operation mode from ñodE(
●There are 13 kinds of operation m

◎Mode F1(Frequency/Number o

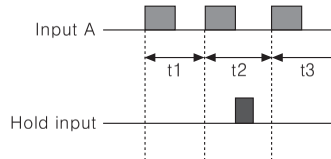
This mode is to display calculated f
speed by measuring frequency of In
1)Frequency(Hz) = f × α (α = 1[se
2)Number of revolution(rpm) = f ×
3)Speed(m/min) = f × α (α = 60L[s
※f : Number of input pulses per s
L = The length of conveyor m

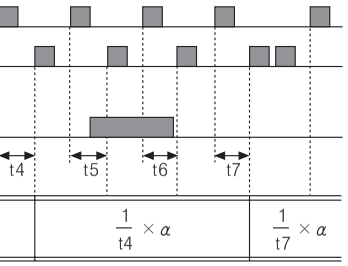
●Display value and display unit

Display value	Display unit	α (Prescal
Frequency	Hz	1
	kHz	0.00
Number of revolution	RPS	1
	rpm	60
Speed	mm / sec	1,00
	cm / sec	100
	m / sec	L
	m / min	60
	km / hour	3.6

※Display unit of factory default : rpm

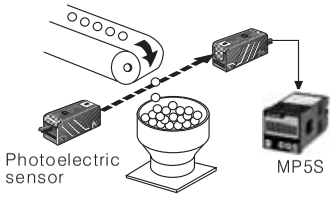
●Timing chart





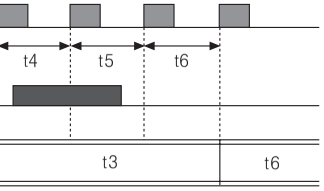
※α : Prescale value
ta : It needs min. 20ms for return time

s ON to the next ON of input A .



unit)

9sec.



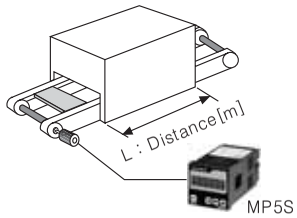
ment time[sec], L:Certain distance[m]

distance as measuring the time
A.

$$\frac{L[m]}{\text{ing distance within 1pulse cycle[m]}}$$

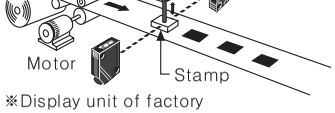
distance[m]

in
in
9min
9min
in



sec.
nit) of parameter 2.

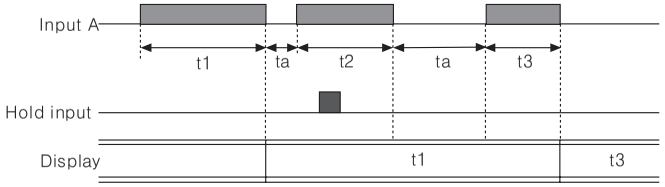
Passing time		
	99min 59.9sec	99hour 59.9min
	9hour 59min 59sec	999hour 59min
	99999sec	99999min



※Display unit of factory default:999.99sec.

※Set the display unit at the **t.unt**(Time unit) of parameter 2.
※Display unit of factory specification : 999.99sec.

●Timing chart



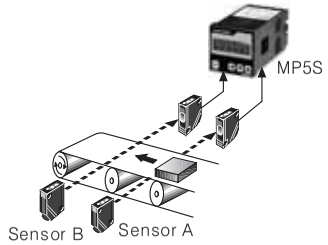
※ta : It needs min. 20ms for return time.

◎Mode F6(Time interval)

It displays the time from input A is ON to input B is ON.
Time difference(T) = t(ta to tb)
※t(ta to tb) : The measurement time from input A is ON to input B is ON[sec].

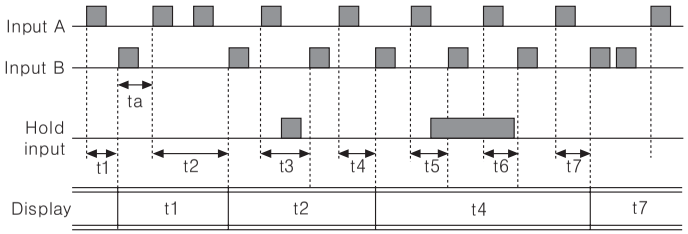
●Display value and display unit

Display value	Display unit	
	SEC	MIN
Passing time	999.99sec	999.99min
	9999.9sec	9999.9min
	99min 59.9sec	99hour 59.9min
	9hour 59min 59sec	999hour 59min
	99999sec	99999min



※Display unit of factory default : 999.99sec.
※Display unit can be set at **t.unt**(Time unit) of parameter 2.

●Timing chart



※ta : It needs min.20ms for return time.

◎Mode F7(Absolute rate)

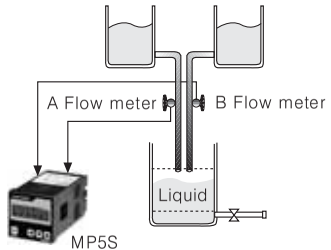
It displays how many percentage(%) faster or late, speed, volume etc. of Input B against input A.
Absolute rate = (Input B / Input A) × 100%

$$\text{Absolute rate} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Absolute rate	%

※Aα : Prescale value of input A
Bα : Prescale value of input B



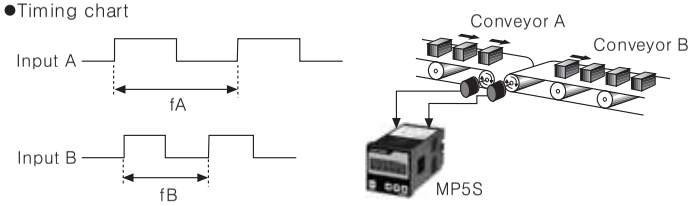
●Timing chart

●Display value and display unit

Display value	Display unit
Error rate	%

※Aα : Prescale value of input A
Bα : Prescale value of input B

●Timing chart



$$\text{Display} = \frac{(\text{Frequency of input B[Hz]} \times B\alpha) - (\text{Frequency of input A[Hz]} \times A\alpha)}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until hold signal is OFF.

◎Mode F9(Density)

It displays the density rate of input B against total sum of input A and input B.

$$\text{Density} = \frac{\text{Input B}}{\text{Input A + Input B}} \times 100[\%]$$

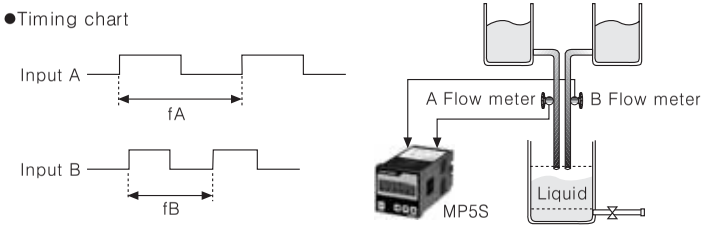
$$\text{Density} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Density	%

※Aα : Prescale value of input A
Bα : Prescale value of input B

●Timing chart



$$\text{Display} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until hold signal is OFF.

◎Mode F10(Error)

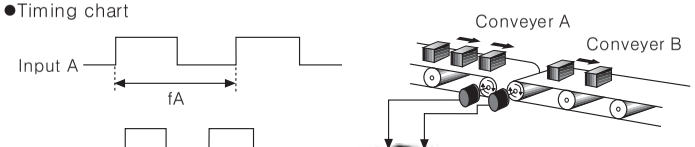
It displays the error between standard Input A and comparing Input B.
Error = Input B − Input A
Error = (Frequency of input B[Hz]×Bα) − (Frequency of input A[Hz]×Aα)

●Display value and display unit

Display value	Display unit
Error	END User setting unit

※Aα : Prescale of input A
Bα : Prescale of input B

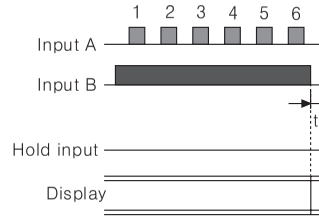
●Timing chart



m

※Factory default(Unit) : Quantity[EA

●Timing chart



※t

◎Mode F12(Interval)

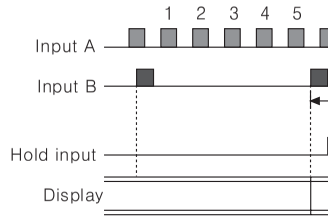
It displays the number of Input A pul
B is ON next.
Interval = P × α (※P : Number of in

●Display value and display unit

Display value	Display unit
Length measurment	Quantity[EA]
	mm
	cm
	m

※Factory default(Unit) : Quantity[EA

●Timing chart



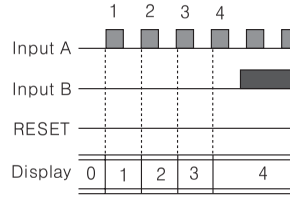
◎Mode F13(Integration)

It displays the counting value agains
Integration = P × α
※P : Pulse number of input A, α : P

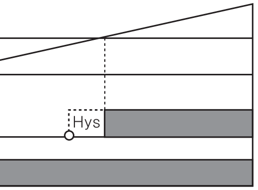
●Display value and display unit

Display value	Display unit
Interval	Quantity[EA]

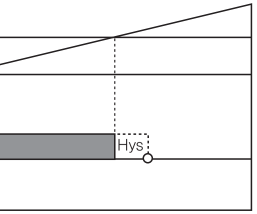
●Operation and Time chart
①It counts the number of input A p
②As input B is an enable input sig
value of input A when it is ON an
when it is OFF.
③If RESET input is ON, calculated



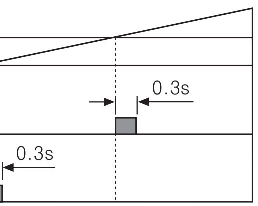
ative value L≥Display value



rative value H≤Display value
rative value L≤Display value



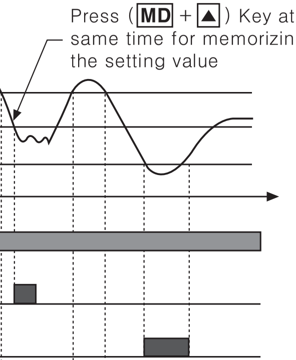
tive value H ≥ Display value
tive value L ≥ Display value



ative value H≤Display value
ative value L≤Display value
n fixed 0.3sec.
t) comparative output mode.

g value and provide outputs when it

the current display value as the setting
pressing(MD + ▲) key in front.
memorized the setting value by (▲)
alue for pressing ▲ key continuously.)
by setting value. (The set deviation will
tion again when power off.)
9999(The setting range will be changed
set decimal point as 0000.0, the



●Parameter 0 group

Parameter 0	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
PSt. h			◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. L		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
h.PEK		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
L.PEK		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X

●Parameter 1 group

Parameter 1	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
mode		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−A		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−b		X	◐	X	X	X	◐	◐	◐	◐	◐	◎	◎	◎
out−t		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
hyS		◐	X	X	X	X	X	◐	◐	◐	◐	X	X	X
GuAr.d	F.dEFy	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
	StAr.t	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
Auto.A		◐	X	X	◐	X	X	◐	◐	◐	◐	X	X	X
Auto.b		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
mEmo		X	X	X	X	X	X	X	X	X	X	X	X	◐

※"◎" : IN−b sensor will be set as nPn.h.F or PnP.h.F in mode F11, F12, F13.

●Parameter 2 group

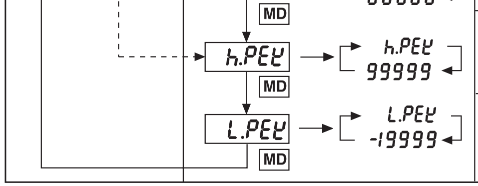
Parameter 2	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
dot		◐	◐	X	X	X	X	◐	◐	◐	◐	◐	◐	◐
t.unt		X	X	◐	◐	◐	◐	X	X	X	X	X	X	X
PSt. h		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. L		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSC.A.X **(Note1)**		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐
PSC.A.y **(Note1)**		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐
PSC.b.X		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
PSC.b.y		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
dISP.t		◐	X	X	X	X	X	◐	◐	◐	◐	X	X	X

※(Note1)PSC. X, PSC. y are displayed in mode F1, F2, F4, F11, F12, F13.

●Parameter 3 group

Parameter 3	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
LoC		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐

●Monitoring delay function operation chart by each output mode



Display high peak value among measuring values	
Display low peak value among measuring values	

●Res
If yo
or L
will
and
MD
to L

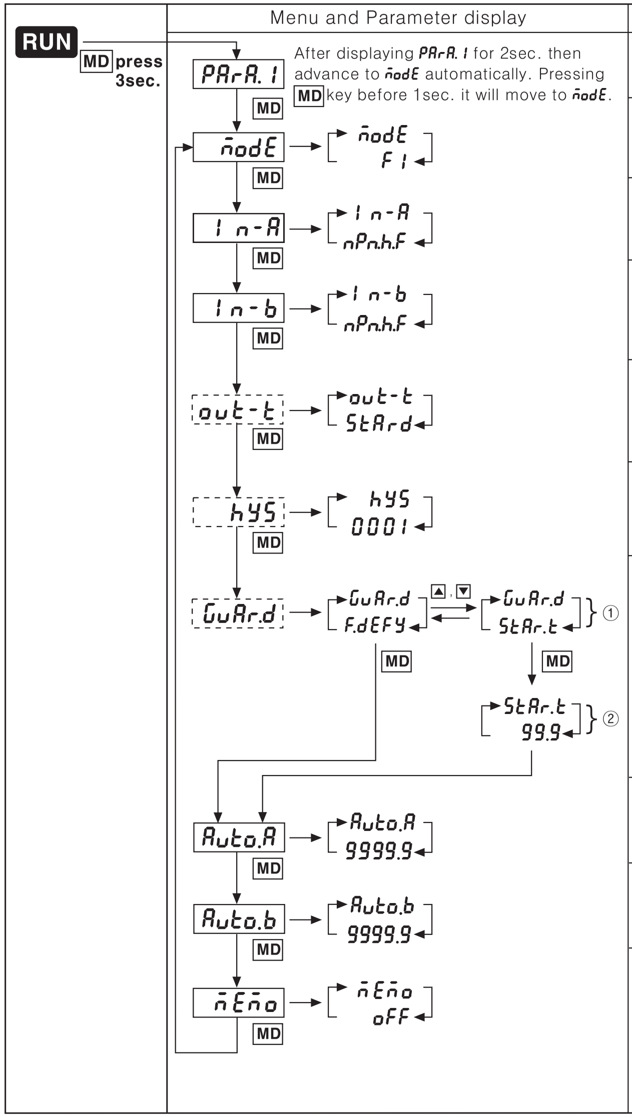
※When entering into parameter 0 group, the parameter name and data will be flickering by 1 sec, then move setting dig value by ▼, ▲ key.

※All data set by users will be shown[displayed] to 1 sec. cycle then move to the next parameter by pressing MD key.

※(★1)If you press MD key in **RUN** mode, it will enter into PSt. h at comparative output mode and h.PEK at indication type.

※ If pressing MD key for over 2sec. in every setting mode, data will be set and return to RUN and if you don't use the k and return to **RUN**.

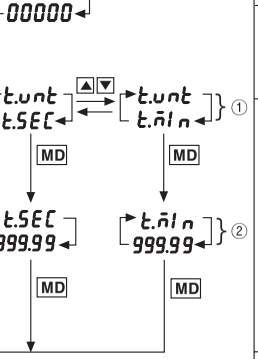
●Parameter 1 group



Parameter	Setting range
This is parameter 1 group.	
Select operation mode.	F 1 to F 13
Set the sensor type of input A.	• PNP transistor output type : PnP.h.F • Contact output type (L output) : PnP.L.F • NPN transistor output type : nPn.h.F • Contact output type (H output) : nPn.L.F
Set the sensor type of input B.	
Select the output mode.	StArd / out-h / out-L out-b / out-1 / out-F
Set the hysteresis for the output. (★1)	0 to 9999(If decimal point is set in 0000.0, the range will be 0.0 to 999.9.
Select the start compensating timer function or comparative output(L) limit function. (★2)	① F.dEFy / StAr.t ②When select StAr.t When [StAr.t 99.9] is flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9
Set the Auto−zero time of INA input.	
Set the Auto−zero of INB input.	0.1 to 9999.9
It sets the memory retention. The measuring value will be memorized when the power off. (Mode F13 only)	on : Memory retention oFF : No memory retention

※If you press MD key for 3 sec. in **RUN**, it will enter into parameter 1 group.

※When entering into parameter 0 group, the parameter name and data will be flickering by 1 sec, then move setting digi value by ▼, ▲ key.



Set decimal point position of display value	00000 00.000 0000.0 0.0000 000.00	◀ : Move the decimal point MD : Fix and move to the next parameter
It will be displayed in F3, F4, F5, F6 operation mode and set the time unit. (★1) ①Select the time unit ②Select the time range	SEC / MIN 999.99sec / 999.99min 9999.9sec / 9999.9min 99min 59.9sec / 99hour 59.9min 9hour59min 59sec / 999hour 59min 99999sec / 99999min	① ▼, ▲ : Change the setting value t.SEC → t.min MD : Save ② ▼, ▲ : Change the setting value 999.99 → 9999.9 → 99.59.9 → 9.59.59 (sec) → 999.59 (min) → 99999 MD : Fix and move to the next parameter
Set the comparative value H.	●F1, F2, F7, F9, F11, F12, F13 : 0 to 99999 ●F3 to F6 : 0 to Setting time range ●F8, F10 : −19999 to 99999	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
Set the comparative value L.		
Set the prescale value of input A mantissa(X).	0.0000 to 9.9999	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
Set the prescale value of input A an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
Set the prescale value of input B mantissa(X).	0.0000 to 9.9999	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
Set the prescale value of input B an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
Select the display cycle.	0.05, 0.5, 1, 2, 4, 8	▼, ▲ : Change the setting value 0.05 → 0.5 → 1 → 2 → 4 → 8 MD : Fix and move to the dot

t will enter parameter 2 group.

until as sec. [t.SEC] or min.[t.min] in t.unt parameter. Select the time range after selecting the time unit as sec. [t.SEC]

group, the parameter name and data value will be flickering by 1 sec then, move the setting digit by ◀ key and change

ach parameter will flicker by cycle (1 sec.) and move to the next parameter by pressing MD key.

very setting mode, data will be set and return to RUN then if no key is touched for 60 sec., data will be held as previous

5S−4N.

arameter display	Parameter	Setting range	Setting key
y PAr.3 for 2sec. then o FS-h automatically. o FS-h, if press y before 1sec.	This is parameter 3 group.		
LoC	Enable to lock the	oFF : There is no key lock in all mode LoC.0 : P0 to 3 Lock	▼, ▲ : Change the setting mode oFF → LoC.0 → LoC.1 → LoC.2 → LoC.3

PSC.AY (or PSC.b.X, PSC.b.Y) of Parameter 2 group.
Prescale value(α)=15, a Mentissa(X):1.5000, Exponent(y):10^{1}. And also it is able to set α value as X=0.015, Y=10^{3} then get the same display value.
※Display cycle can be selected at parameter 2 group.

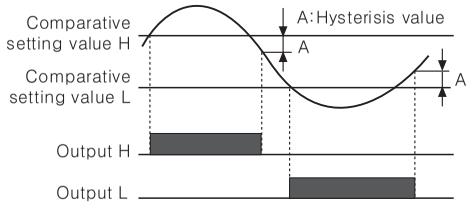
◎Display peak value monitoring function

This is to monitor max. value and min. value by current display value and display that data at h.PEY/L.PEY mode of parameter 0 group.

- User can check saved value in parameter 0 group. And high peak(h.PEY) or low peak (L.PEY) will be continuously saved during checking.
- See parameter 0 for reset.

◎Hysteresis function

Set the Hysteresis value(A) for comparative setting value in order to prevent unstable operation due to output going ON/OFF frequently.



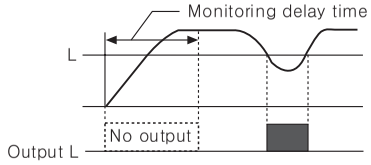
DOT position	Setting value
00000	0000 to 9999
0000.0	000.0 to 999.9
000.00	00.00 to 99.99
00.000	0.000 to 9.999
0.0000	0.000 to 0.9999

※You are able to set "0", but when set "0", the actual operation will be as "1".
※The initial setting value is 0001.
※You are able to set in the parameter 1 group.

◎Monitoring delay time function

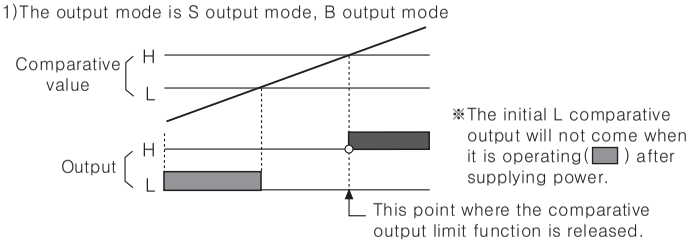
This function is for the stable control to limit L, LL outputs until certain output is come or to limit all outputs during the equipment is reaching a stable status against various change of input such as the staring current when the motor is running after power on. There are the starting correction timer function and comparative output limit function in the monitoring delay function. (Select at GuAr.d mode of parameter 1 group)

- The starting correction timer function(StAr.t mode of parameter 1 group)
  This function is to make the output not come out during the setting time.
  (Time setting range 0.0 to 99.9sec.)



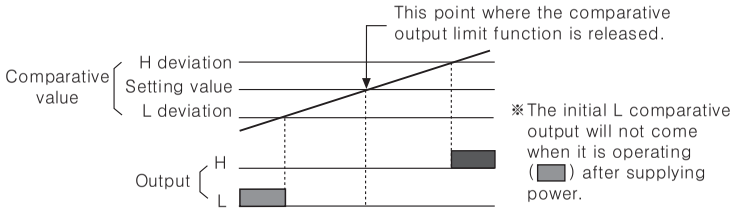
- Comparative output limit function(F.dEFY mode of parameter 1 group)
  This function is to limit the L output before the H output of S, B, F output mode.

1)The output mode is S output mode, B output mode



※H, L can be different each other therefore H value may be equal or lower than L.

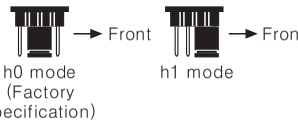
2)The output mode is F output mode



※The output mode is F output mode, the comparative output limit function will be released at the setting value(Standard setting).
※H deviation setting value > L deviation setting value,

This function is to lock LoC in parameter
order to prevent wrong setting.

- h0(Hardware Lock0) : Enable to check
  group.
- h1(Hardware Lock1) : Enable to check
  But it is not pos
- h2(Hardware Lock2) : Disable to chec
  group.
- It is possible to lock or unlock after su



◎Display cycle selection function

This function is to change the display cy
displays the average value of measuring

◎Time unit selection function

Enable to display PV value with firmed
in range of various time.

- Time unit selection function can be se
  −meter 2 group.
- Applicable mode : Mode 3 to 6

※There is no DOT setting mode when s
time unit display function.

◎Factory default

- Parameter 3 group

Mode	Setting value
LoC	oFF

- Parameter 2 group

Mode	Setting value	Mo
dot	00000	PSC
PSt. h	99999	PSC
PSt. L	00000	dI S

※The specification may not be displaye
specification.

▣ Caution for using

1. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.
2. Please use separated line from high
   inductive noise.
3. Please install power switch or circuit
4. The switch or circuit breaker should
5. Do not use this unit at below places
   ①Place where there are severe vibrat
   ②Place where there are direct ray of
   ③Place where strong magnetic field
6. Storage method
   When storing this unit for a long tim
   and keep this unit under circumstan
7. Input line : Shield wire must be use
   the measuring input line is getting
   or there are lots of noises.
8. Please put enough space between p
   line and terminal of measuring input

※It may cause malfunction if ab

▣ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER
- ■ PANEL METER
- ■ TACHO/LINE SPEED/
  PULSE METER

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or human injury.

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product or give an electric shock.
r input and measuring input, the
olt on terminal block should be

due to contact failure.
ing.
product and cause a fire.
water or an oil-based detergent.
fire that will result in damage to this

where there are flammable or

④ Power supply ····· 4 | 100-240VAC 50/60Hz

⑤ Output (Main Output ····· + Sub output)

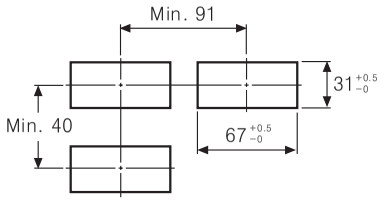
	Main output (Comparative value output)	Sub output(Display value output)
N	Indication type only	X
1	NPN open collector five-stage output	X
2	PNP open collector five-stage output	X
3	X	BCD Dynamic
4	X	PV Retransmission(4-20mADC)
5	X	RS485 communication

※PNP open collector output:Option

■ Specifications

Model	**MP5Y**
Power supply	100-240VAC 50/60Hz
Allowable operation voltage	90 to 110% of rated voltage
Power consumption	Approx. 3.5VA(240VAC)
Power for external sensor	12VDC ±10%, 80mA
Measuring accuracy (23 ±5℃)	• Mode F1, F4, F7, F8, F9, F10 : F.S. ±0.05% rdg ±1Digit • Mode F2, F3, F5, F6 : F.S. ±0.01% rdg ±1Digit
Measuring range	• Mode F1, F4, F7, F8, F9, F10 : 0.0005Hz to 50kHz • Mode F3 : 0.02s to 3,200s • Mode F2, F5, F6 : 0.01s to 3,200s • Mode F11, F12, F13 : 0 to 4 ×10 Count
Input frequency	• Solid state input : Max. 50kHz(Pulse width:Min. 10㎲) • Contact input : Max. 45Hz(Pulse width:Min. 11ms)
Input level	[Voltage input] High : 4.5-24VDC, Low : 0-1VDC, Input impedance : 4.5kΩ [No-voltage input] Short-circuit impedance : Max. 300Ω, Residual voltage : Max. 1V, Open-circuit impedance : Min. 100kΩ
Max. indication	5digit(-19999 to 99999)
Display method	7 Segment LED(Zero Blanking), Display Size : 6.8 × 13.8
Display accuracy	0.05 / 0.5 / 1 / 2 / 4 / 8sec.(The same as update output cycle)
Operation mode	Number of revolution/Speed/Frequency(F1), Passing speed(F2), Cycle(F3), Passing time(F4), Time width(F5), Time difference (F6), Absolute rate(F7), Error ratio(F8), Density(F9), Error(F10), Length measurement(F11), Interval(F12), Integration(F13)
Prescale function	Direct input method(0.0001×10^{-9} to 9.9999×10^{9})
Hysteresis	0 to 9999
Other functions	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Monitoring function : Memorize max. value or min. value • Current output range selection(Current output type only) • Remote/Local switching function(Communication output type only) • Comparative output function(HH, H, GO, L, LL) • Time unit selection function • Memory retention function(Mode F13 applied only) • Deviation memory function(F output mode applied only) **※Please see the last page for the detail.**
Output form	• Transistor output(NPN/PNP open collector) : Comparative output, Alarm output • BCD Dynamic output : Display value output • PV transmission output(4-20mADC) : Display value output • RS485 communication output(32 channel) : Display value output, Comparative output, PC setting function
Memory	Non-volatile memory(Input times : 100,000 times)
Insulation resistance	Min. 100MΩ(Standard 500VDC) between terminal and case
Dielectric strength	2000VAC 60Hz 1minute(Between terminals of AC power and case, Between terminals of AC power and measuring terminals)
Impulse noise strength	±2000V the square wave noise(pulse width:1㎲) by the noise simulator
	0.75mm amplitude at frequency of 10 to 55Hz

●Panel cut-out

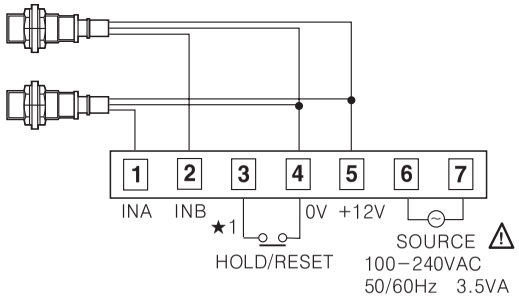


※Sub connector combinding socket Model No : HIF3BA-10D-2.54R

(Unit:mm)

■ Connections

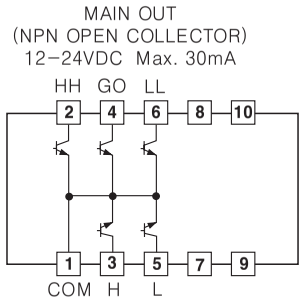
<Main terminal block>

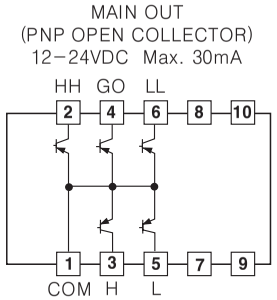


※(★1) is used RESET terminal only when it is operation mode(F13) (See the "■**Operation mode**")

<Main output(Comparative output) connector>

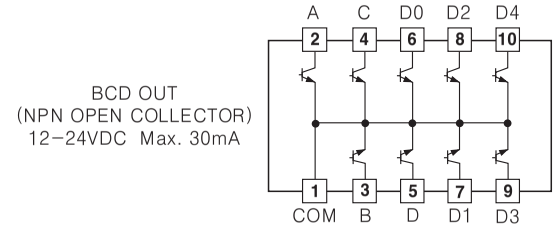
●NPN/PNP Open Collector output[MP5Y-41/MP5Y-42]





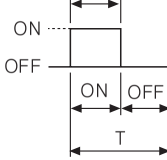
<Sub output(Display value output) connector>

●BCD output[MP5Y-43]



●PV retransmission(DC4-20mA) output[MP5Y-44]

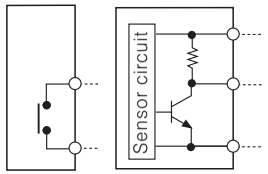
●RS485 communication output [MP5Y-45]



(2)Relay contact input
①Input frequency : 45Hz(Max.)
But, ON/OFF
②Relay contact specification : F
r

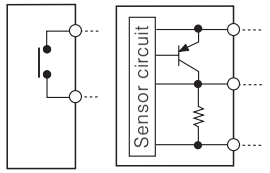
2. Input type
MP5Y has **NPN input and PNP in**
1 group.
(1)NPN input type

①Contact ②NPN voltage output type sensor



(2)PNP input type

①Contact ②PNP voltage output type sensor



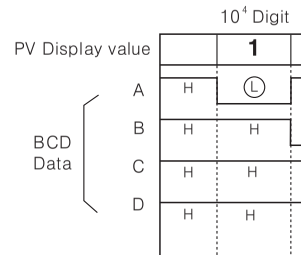
※O • C is Open collector output

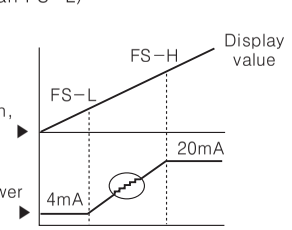
●Output specification

1. TR output
①Output : Comparative or alarm o
②Output method : NPN / PNP Ope
③Rated load voltage : 12-24VDC
④Max. load current : 30mA

2. BCD Dynamic output
①Output : Display value
②Output signal : BCD Data(A, B,
Digit Data(D0, D1
D4 : Highest digit
※There is no DOT Data output, ple
③Output type : NPN Open Collect
④Rated load voltage : 12-24VDC
⑤Max. load current : 30mA

Ex) When display value is 12589





l)
00/4800/9600 bps

⑥Stop Bit : 1 Bit

Prescale value and Peak value,

Prescale value and Peak value,

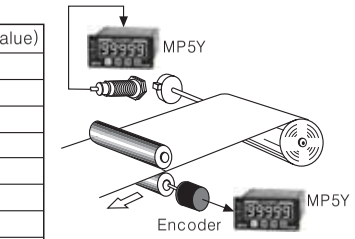
) of Parameter 1 group.

olution/Speed)

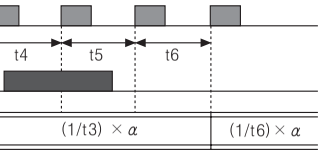
ncy or number of revolution, speed by

= 60[sec])

1 pulse cycle[m]



※Display unit of factory default : rpm

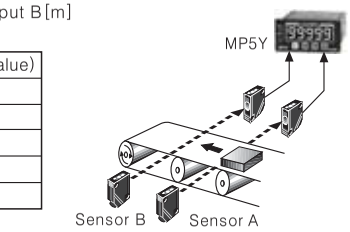


※ α : Prescale value

of input A and ON of input B.

between ON of input A and ON of input B.

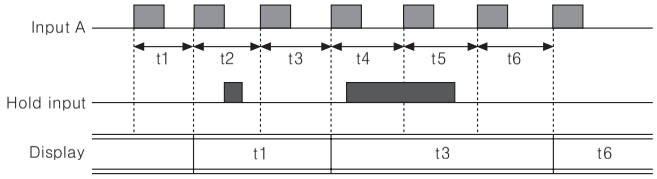
put B[m]



Cycle		
	99min. 59.9sec.	99hour 59.9min.
	9hour 59min. 59sec.	999hour 59min.
	99999sec.	99999min.

※Set the display unit at the t.unt(Time unit) of Parameter 2.
※Display unit of factory default : 999.99sec.

●Time chart



※t1, t2, t3, t4, t5, t6 should be over 20ms then able to measure.

◎Mode F4(Passing time)

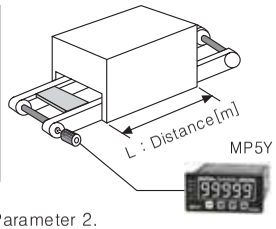
It displays the passing time of certain distance as measuring the time between ON and the next ON of Input A.

$$\text{Passing time[sec]} = t \times \alpha \left(\alpha = \frac{L[m]}{\text{Moving distance within 1pulse cycle[m]}}\right)$$

※t:Measurement time[sec], L:Certain distance[m]

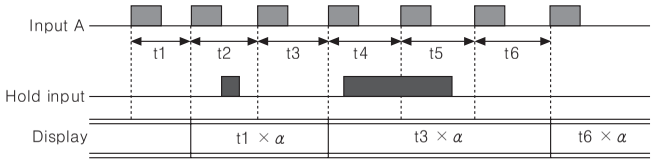
●Display value and display unit

Display value	Display unit	
	SEC	MIN
Passing time	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99hour 59.9sec.	99hour 59.9min.
	9hour 59min. 59sec.	999hour 59min.
	99999sec.	99999min.



※Display unit of factory default : 999.99sec.
※Set the display unit at the t.unt(Time unit) of Parameter 2.

●Time chart



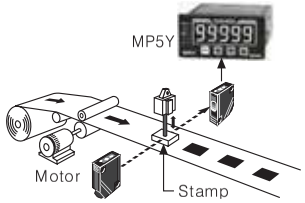
※ α : Presale value

◎Mode F5(Time width)

It displays the ON time of input A.
Time width[T] = t
※t : ON measurement time of input A[sec]

●Display value and display unit

Display value	Display unit	
	SEC	MIN
Passing time	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99hour 59.9sec.	99hour 59.9min.
	9hour 59min. 59sec.	999hour 59min.
	99999sec.	99999min.

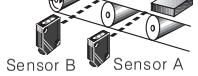


※Display unit of factory default : 999.99sec.

※Set the display unit at the t.unt(Time unit) of parameter 2.
※Display unit of factory default : 999.99sec.

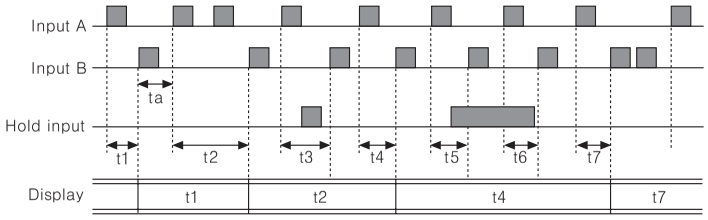
●Time chart

time		
	9hour 59min. 59sec.	999hour 59min.
	99999sec.	99999min.



※Display unit of factory default : 999.99sec.
※Display unit can be set at t.unt(Time unit) of Parameter 2.

●Time chart



※ ta : It needs min.20ms for return time.

◎Mode F7(Absolute rate)

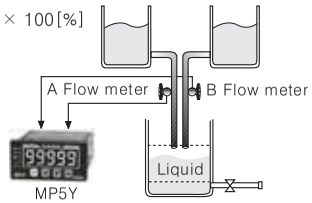
It displays how many percentage(%) faster or late, speed, volume etc. of Input B against input A)
Absolute rate = (Input B / Input A) × 100%

$$\text{Absolute rate} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

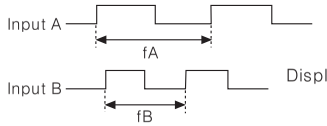
●Display value and display unit

Display value	Display unit
Absolute rate	%

※Aα :Prescale value of input A
Bα :Prescale value of input A



●Time chart



$$\text{Display} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until hold signal is OFF.

◎Mode F8(Error ratio)

It displays how many percentage(%) faster or late of Input B against Input A.

$$\text{Absolute ratio} = \frac{\text{Input B} - \text{Input A}}{\text{Input A}} \times 100[\%]$$

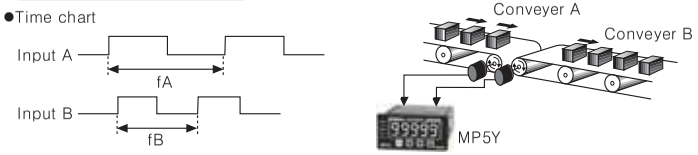
$$\text{Error ratio} = \frac{(\text{Frequency of input B[Hz]} \times B\alpha) - (\text{Frequency of input A[Hz]} \times A\alpha)}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Error rate	%

※Aα : Prescale value of input A
Bα : Prescale value of input B

●Time chart



$$\text{Display} = \frac{(\text{Frequency of input B[Hz]} \times B\alpha) - (\text{Frequency of input A[Hz]} \times A\alpha)}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$$

※Hold : Hold signal is ON, the display value will be held until hold signal is OFF.

◎Mode F9(Density)

It displays the density rate of input B against total sum of input A and input B.

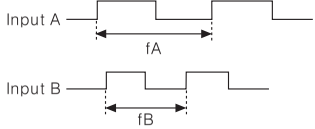
$$\text{Density} = \frac{\text{Input B}}{\text{Input A} + \text{Input B}} \times 100[\%]$$

$$\text{Density} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Density	%

※Aα : Prescale value of input A
Bα : Prescale value of input B



Display = (Frequency of input B[Hz] ×

※Hold : Hold signal is ON, the display v

◎Mode F11(Length measurment)

It displays the number of Input A pulse wh

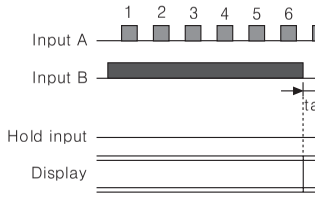
Length measurment = P × α (※P : Numb

●Display value and display unit

Display value	Display unit
Length measurment	Quantity[EA]
	mm
	cm
	m

※Factory default(Unit) : Quantity[EA]

●Time chart



◎Mode F12(Interval)

It displays the number of Input A pulse fro

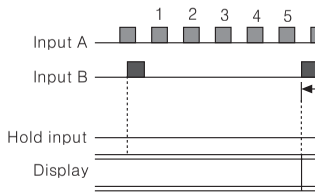
Interval = P × α (※P : Number of input A

●Display value and display unit

Display value	Display unit
Length measurment	Quantity[EA]
	mm
	cm
	m

※Factory default(Unit) : Quantity[EA]

●Time chart



◎Mode F13(Integration)

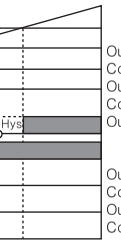
It displays the counting value against puls

Integration = P × α
※P : Pulse number of input A, α : Prescal

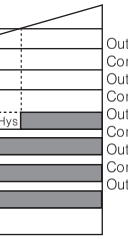
●Display value and display unit

Display value	Display unit
Interval	Quantity[EA]

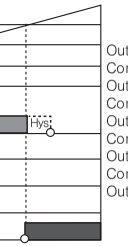
●Operation and Time chart
①It counts the number of input A pulse.
②As input B is an enable input signal it s
when it is ON and then it counts input
③If RESET input is ON, calculated count



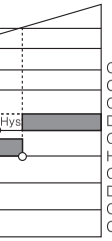
Output HH :
Comparative value HH≤Display value
Output H :
Comparative value H≤Display value
Output GO : When there are no HH, H, L, LL output, it will be ON.
Output L :
Comparative value L≥Display value
Output LL :
Comparative value LL≥Display value



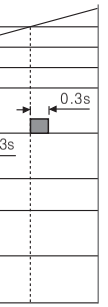
Output HH :
Comparative value HH≤Display value
Output H :
Comparative value H≤Display value
Output L :
Comparative value L≤Display value
Output LL :
Comparative value LL≤Display value
Output GO : When there are no HH, H, L, LL output, it will be ON.



Output HH :
Comparative value HH≥Display value
Output H :
Comparative value H≥Display value
Output L :
Comparative value L≥Display value
Output LL :
Comparative value LL≥Display value
Output GO : When there are no HH, H, L, LL output, it will be ON.



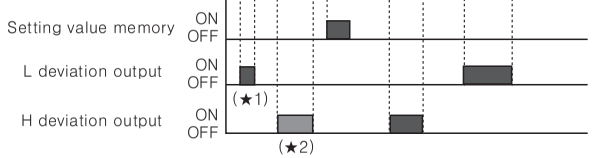
Output HH :
Comparative value HH≤Display value
Output H : Comparative value H≤ Display value<Comparative value HH
Output GO : When there are no HH, H, L, LL output, it will be ON.
Output L : Comparative value LL< Display value≤Comparative value L
Output LL :
Comparative value LL≥Display value



Output HH :
Comparative value HH≤Display value
Output H : Comparative value H≤ Display value<Comparative value HH
Output L : Comparative value L≤ Display value<Comparative value H
Output LL : Comparative value LL ≤ Display value < L

tput I mode.
as been fixed 0.3sec.
ne shot) comparative output mode.

alue and provide outputs when it exceeds



※(★1)When select the comparative output limit function, output will not be come.
※(★2)Output position may different from above graph as output coming under assuming the setting value memory is before the setting value memory point on above graph.
※There are no HH, GO, LL outputs in F output mode.
※Even thought set the deviation as "0(Zero)", it will actually work as 1 output mode.

▣ Operation chart by each Parameter group

●The display parameter are different by each operation mode, please see "▣ **Parameter**".
● ◐ : When select the operation mode, the parameter will be displayed.
X : When select the operation mode, the parameter will not be displayed.

●Parameter 0 group

Parameter 0	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
PSt.hh		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. h		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. L		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt.LL		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
h.PEK		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
L.PEK		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X

●Parameter 1 group

Parameter 1	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
mode		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−A		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
In−b		X	◐	X	X	X	◐	◐	◐	◐	◐	◎	◎	◎
out−t		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
hyS		◐	X	X	X	X	X	◐	◐	◐	◐	X	X	X
GuAr.d	F.dEFy	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
	StAr.t	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X
Auto.A		◐	X	X	◐	X	X	◐	◐	◐	◐	X	X	X
Auto.b		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
mEmo		X	X	X	X	X	X	X	X	X	X	X	X	◐

※"◎" : IN−b sensor will be set as nPnhF or PnPhF in mode F11, F12, F13.

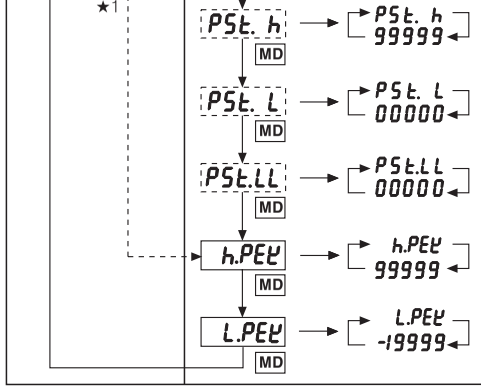
●Parameter 2 group

Parameter 2	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
dot		◐	◐	X	X	X	X	◐	◐	◐	◐	◐	◐	◐
t.unt		X	X	◐	◐	◐	◐	X	X	X	X	X	X	X
PSt.hh		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. h		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt. L		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSt.LL		◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
PSC.A.X (Note1)		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐
PSC.A.y (Note1)		◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐
PSC.b.X		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
PSC.b.y		X	X	X	X	X	X	◐	◐	◐	◐	X	X	X
dISP.t		◐	X	X	X	X	X	◐	◐	◐	◐	X	X	X

※(Note1)PSC. X, PSC. y are displayed in mode F1, F2, F4, F11, F12, F13.

●Parameter 3 group

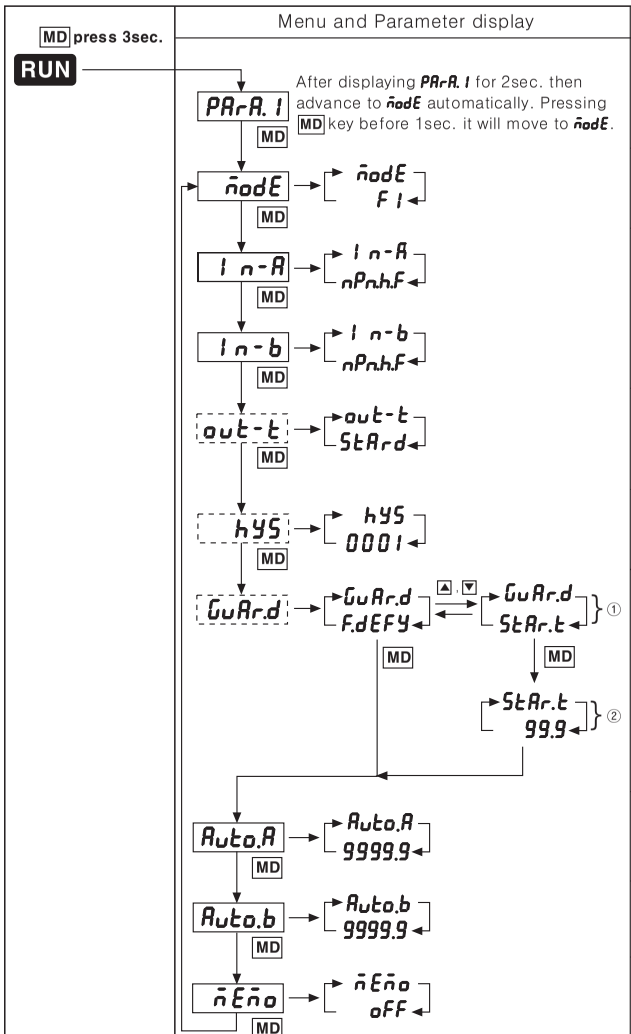
Parameter 3	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
FS−h		When it is PV retransmission output, it operates in all mode.												
FS−L														
Addr														



: 0 to 99999
●F3 to F6 : 0 to Setting time range
●F8, F10 : −19999 to 99999

※(★1)If you press MD key in **RUN** mode, it will enter into PSt.hh(F output mode:PSt. h) at comparative output me and h.PEK at indication t
※If pressing MD key for 2sec. in all setting, data will be saved then return to **RUN** mode. If no key is touched for 60sec., data will be held
※When entering into parameter 0, the parameter name and data will be flickering by 1sec. then moving the setting digit and changing the s
※It will show the set data to flicker by 1sec., then move to next parameter with touching MD key once.
※ [ ] parameter is not shown in MP5Y−4N, MP5Y−43, MP5Y−44, MP5Y−45.

●Parameter 1 group



Menu and Parameter display	Parameter	Setting range
	This is parameter 1 group.	
	Select operation mode.	F 1 to F 13
	Set the sensor type of input A.	• PNP transistor output type : PnPhF • Contact output type(L output) : PnPLF • NPN transistor output type : nPnhF • Contact output type(H output) : nPnLF
	Set the sensor type of input B.	
	Select the output mode.	StArd / out-h / out-L out-b / out-1 / out-F
	Set the hysteresis for the output. (★1)	0 to 9999(If decimal point is set in 0000.0, the range will be 0 to 999.9.
	Select the start compensating timer function or comparative output L, LL limit function. (★2)	① F.dEFY / StAr.t ②When select StAr.t When StAr.t 99.9 is flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9.
	Set the Auto−zero time of INA input.	0.1 to 9999.9
	Set the Auto−zero of INB input.	0.1 to 9999.9
	It sets the memory retention. The measuring value will be memorized when the power off. (Mode F13 only)	on : Memory retention off : No memory retention

t.unt / t.SEC ① ; t.unt / t.min ② (MD)	It will be displayed in F3, F4, F5, F6 operation mode and set the time unit. (★1) ① Select the time unit ② Select time range	SEC / MIN 999.99sec. / 999.99min. 9999.9sec. / 9999.9min. 99min.59.9sec. / 99hour59.9min. 9hour 59min.59sec. / 999hour59min. 99999sec. / 99999min.	① ▼,▲ : Change the setting mode MD : Save → t.SEC → t.min ② ▼,▲ : Change the setting value → 999.99 → 9999.9 → 99.59.9 → 9.59.59 (sec.) → 999.59 (min.) → 99999 MD : Fix and move to the next parameter
PSt.hh 99999	Set the comparative value HH.	●F1, F2, F7, F9, F11, F12, F13 : 0 to 99999 ●F3 ~ F6 : 0 to Setting time range ●F8, F10 : −19999 TO 99999	◀ : Move the setting digit ▼,▲ : Change the setting value MD : Fix and move to the next parameter
PSt. h 99999	Set the comparative value H.		
PSt. L 00000	Set the comparative value L.		
PSt.LL 00000	Set the comparative value LL.		
PSC.AH 1.0000	Set the prescale value of input A mantissa(X).	0.0000 to 9.9999	◀ : Move the setting digit ▼,▲ : Change the setting value MD : Fix and move to the next parameter
PSC.Ay 10 00	Set the prescale value of input A an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})	◀ : Move the setting digit ▼,▲ : Change the setting value MD : Fix and move to the next parameter
PSC.bH 1.0000	Set the prescale value of input B mantissa(X).	0.0000 to 9.9999	◀ : Move the setting digit ▼,▲ : Change the setting value MD : Fix and move to the next parameter
PSC.by 10 00	Set the prescale value of input B an exponent(y).	10 - 9 to 10 9 (10^{-9} to 10^{9})	◀ : Move the setting digit ▼,▲ : Change the setting value MD : Fix and move to the next parameter
dISP. t 0.05	Select the display cycle.	0.05, 0.5, 1, 2, 4, 8	▼,▲ : Change setting value → 0.05 → 0.5 → 1 → 2 → 4 → 8 MD : Fix and move to the P.bAnk

MD key for 5sec in **RUN** mode.
inute(t.min) in time until selection parameter(t.unt). then also selectable time range.
e parameter name and data value will flicker by cycle(1sec.). Then move the setting digit by ◀ key and change the setting value by ▼▲ key.
rameter will flicker by cycle(1sec.) and move to the next parameter by pressing MD key.
etting mode, data will be set and return to **RUN**.
N, MP5Y−43, MP5Y−44, MP5Y−45.

meter display	Parameter	Setting range	Setting key
3 for 2sec. then h automacally o FS-h, if press y 1sec. before.	This is parameter 3 group.		
FS-h 99999	Set the High−limit value of PV transmission output.	●F1, F2, F7, F9, F11, F12, F13 : 0 to 99999 ●F3, F6 : 0 to Setting time range ●F8, F10 : −19999 to 99999	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
FS-L 00000	Set the Low−limit value of PV transmission output.		
Addr 00	Set the communication Address.	00 to 99 (32 channel)	◀ : Move the setting digit ▼, ▲ : Change the setting value MD : Fix and move to the next parameter
bPS 2400	Select the communication speed.	2400 / 4800 / 9600	▼, ▲ : Change the setting value → 2400 → 4800 → 9600 MD : Fix and move to the next parameter
rEnot off	Select the Remote and the Local. (★1)	on : Use off : Not use	▼, ▲ : Change the setting mode → off → on MD : Fix and move to the next parameter
LoC	Enable to lock the key for	off : There is no key lock in all mode LoC.0 : P0 to 3 Lock	▼, ▲ : Change the setting mode → off → LoC.0 → LoC.1

Prescale value(α)=15 → Mentissa(X):1.5000, Exponent(y):10^{1}
And also it is able to set α value as X=0.1500, Y=10^{2} then get the same display value.
※Display cycle can be selected at parameter 2 group.

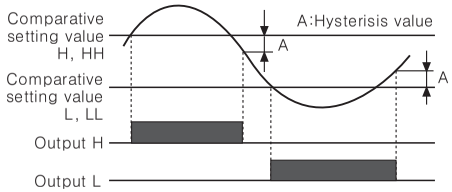
◎Display Peak value monitoring function

This is to monitor max. value and min. value by current display value, and display that Data at h.PEU/L.PEU mode of parameter 0 group.

- ●User can check saved value in parameter 0 group. And High Peak(h.PEU) value or Low Peak(L.PEU) will be continuously saved during checking.
- ●See Parameter 0 for Reset.

◎Hysteresis function

Set the Hysteresis value(A) for comparative setting value in order to prevent unstable operation due to output going ON/OFF frequently.



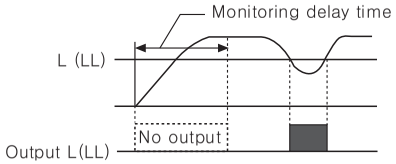
DOT position	Setting range
00000	0000 to 9999
0000.0	000.0 to 999.9
000.00	00.00 to 99.99
00.000	0.000 to 9.999
0.0000	0.000 to 0.9999

※You are able to set "0", but when set "0", the actual operation will be as "1".
※The initial setting value is 0001.
※You are able to set in the Parameter 1 group.

◎Monitoring delay time function

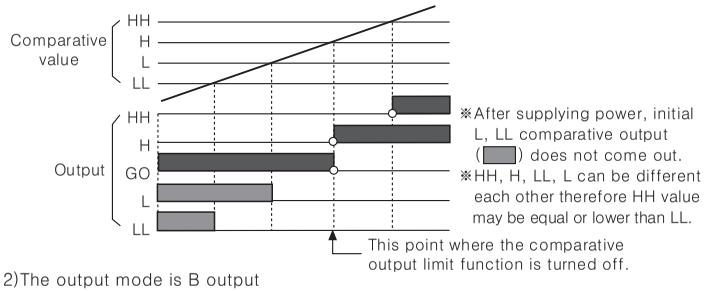
This function is for the stable control to limit LLL outputs until certain output is come or to limit all outputs during the equipment is reaching a stable status against various change of input such as the staring current when the motor is running after power on. There are no the starting correction timer function and comparative output limit function in the monitoring delay function. (Select in GuAr.d mode of parameter 1 group)

- ●The starting correction timer function(Parameter 1 group StAr.t mode)
  This function is to make the output not come out during the setting time.
  (Time setting range 0.0 to 99.9sec)

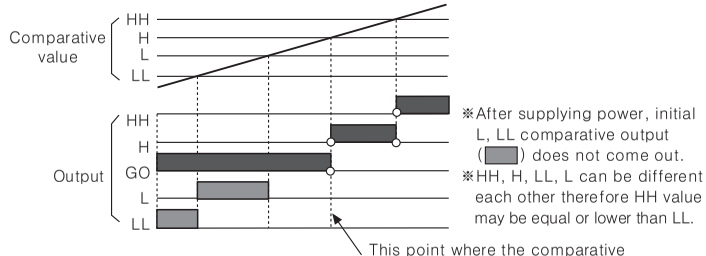


- ●Comparative output limit function(Parameter 1 group F.dEFY mode)
  Applicable output mode: S, B, F output mode
  This function is to limit the LL, L output before H or HH output.

1)The output mode is S output mode



2)The output mode is B output



This function is to set the enable or dis
in MP5Y.

- ●Off : No lock function
- ●LoC 0 : P0 to P3 Lock(Lock from Para
- ●LoC 1 : P1 to P3 Lock(Lock from Para
- ●LoC 2 : P2 to P3 Lock(Lock from Para
- ●LoC 3 : P3 Lock(Lock Parameter 3 on
- ※Lock setting is available in parameter

◎Inner hardware Lock setting func

This function is to lock LoC in Paramete
order to prevent wrong setting.

- ●h0(Hardware Lock0) : Enable to check group.
- ●h1(Hardware Lock1) : Enable to check But it is not pos
- ●h2(Hardware Lock2) : Enable to check 3 group
- ●It is possible to lock or unlock after sup

h0 mode(Factory specification) h1 mode

◎Display cycle selection function

This function is to change the display c
displays the average value of measuring

◎Time unit selection function

Enable to display PV value with firmed
in range of various time.

- ●Time unit selection function can be se parameter 2 group.
- ●Applicable mode : Mode 3 to 6
- ※There is no DOT setting mode when s time unit display function.

◎Factory default

●Parameter 3 group

Mode	Setting value
FS-h	99999
FS-L	00000
Addr	00
bPS	2400
rEnot	off
LoC	off

●Parameter 2 group

Mode	Setting value	Mo
dot	00000	PSt
PSt.hh	99999	PSt
PSt. h	99999	PSt
PSt. L	00000	dI S

※The specification mode and output

■ Caution for using

1. Installation environment
   ①If shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ.
2. Please use separated line from high inductive noise.
3. Please install power switch or circuit br
4. The switch or circuit breaker should be
5. Do not use this unit at below places.
   ①Place where there are severe vibration
   ②Place where there are direct ray of th
   ③Place where strong magnetic field or
6. Storage method
   When storing this unit for a long time, keep this unit under circumstances as
7. Input line
   Shield wire must be used when the me input line is getting longer or there are noises.
8. Please put enough space between pow terminal of measuring input.

※**It may cause malfunction if ab**

■ Main products

- ■ COUNTER
- ■ TIMER
- ■ TEMPERATURE CONTROLLER

ecting Autonics products.
the following before using.

fety

them before using this unit.

ructions are not followed.

jury may result if instructions are not followed.

nbols used in the operation manual.
er special conditions.

eries(Nuclear power control, medical mbustion apparatus, entertainment or ng fail-safe device, or contact us for

man injury

ower on.

unit, when it requires.

fire.
when connect power line or measuring

uct or give an electric shock.
.50mm²) should be used and screw to 0.90N · m strength.
contact failure.

uct and cause a fire.
tching capacity of Relay contact.
lt, contact failure, relay broken, fire etc.
or an oil-based detergent
at will result in damage to the product.
here are flammable or explosive gas, heat, vibration, impact etc.

inside of this unit.

g the polarity of measuring terminals.

n

□ – □ □
④ ⑤ ⑥

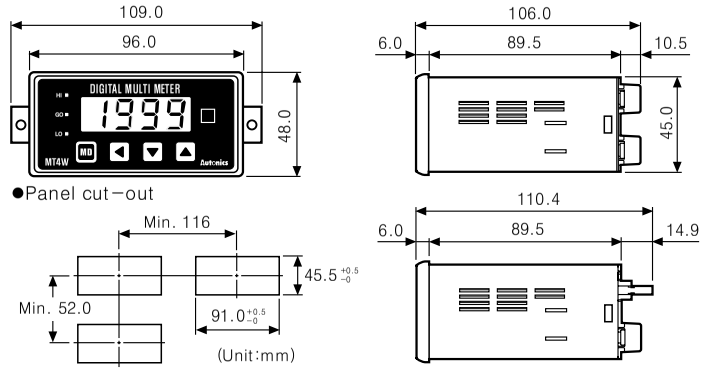
t)	Sub output(Display value output)
	X

■ Specifications

Model		MT4W
Power supply		100−240VAC 50/60Hz(90 to 110% of rated voltage)
Power consumption		5VA
Display method		7Segment LED Display(Red)
Display accuracy		(Note1) DC type:F • S ±0.1% Rdg ±2digit / AC type:F • S ±0.3% Rdg ±3digit } 23℃ ±5℃, 35 to 85%Rh
Input		VDC/ADC, VAC/AAC
Max. input		110% for input spec.
A/D conversion method		Dual slope intergal method
Sampling cycle		100ms(Resolution 1/12000)
Max. indication		−1999 to 9999(4digit)
Preset output	Realy output	• Contact capacity : 250VAC 3A, 30VDC 3A • Relay contact : N.O(1a)
	NPN open collector output	12−24VDC ±2V 50mA Max. (Resistive load)
	PNP open collector output	
Sub output (Transmission output)	RS485 communication output	• Baud rate : 1200/2400/4800/9600 bps • Transmission code : ASC II Code(7Bit) • Transmission method : 2wires half duplex • Synchroization method : Start−stop synchronization
	Serial output	NPN open collector output, 12−24VDC Max. 50mA (Resistive load)
	BCD output	
	4−20mA output	Resolution: 8000 division(Load resistance max. 600Ω)
AC measuring method		Selectable RMS or AVG
Hold function		Outer hold function
Insulation resistance		Min. 100MΩ(500VDC) between external terminal and case
Dielectric stength		2000VAC for 1minute between external terminal and case
Noise		±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 directions for 1hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2hours
Shock	Mechanical	100m/s² (10G) in X, Y, Z directions for 3 times
	Malfunction	300m/s² (30G) in X, Y, Z directions for 3 times
Relay life cycle	Mechanical	Min. 20,000,000 times
	Electrical	Min.100,000 times(250VAC 3A resistive load)
Ambient temperature		−10 to 50℃(at non−freezing status)
Storage temperature		−20 to 60℃(at non−freezing status)
Ambient humidity		35 to 85%RH
Weight		Approx. 211g

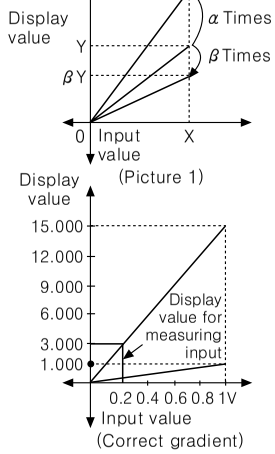
※(Note1)DC/AC type F • S ±0.3% Rdg ±2digit(0 to 50℃)
DC/AC type F • S ±0.5% Rdg ±3digit(−10 to 0℃)

■ Dimensions



■ 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 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 graph.



①Select 0 to 1VDC for measuring input in Parameter 1.
②Standard specification in input : 0 to 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 nb.H×H-SC=15.000

Setting	H-SC	L-SC	I nb.H	Other
①	Disable	0.000	1.000	———
②	7.500	0.000	2.000	It will be the same display value.
③	5.000	0.000	3.000	
④	3.750	0.000	4.000	
⑤	3.000	0.000	5.000	

■ Correction function[PA1 : I nb.H / I nb.L mode]

This function is for correcting display value error of measuring input.
I nb.L : ±99[Adjust deviation of Low value],
I nb.H : 5.000 to 0.100[Correct gradient(%) of High value]
Ex)When the user desires measuring input specification is 0 to 500V and display value is 0 to 500.0, it is able to remove the offset of Low display value to set −12(Offset correcting value) in I nb.L(When Low display value is □□ 1.2 in 0V input)
※The offset correction range of I nb.L is for D0⁻⁰, D1⁻¹ digit within −50 to +50 regardless of decimal point. And when High display value is 500.5 against 500V input, the offset correction value will be 5000/5005=0.999.
In this time if you put 0.999 in I nb.H, it is able to correct the gradient of High display value. (It does not calculate the decimal point)

■ Error display function

①HHHH : When measuring input is out of Max. allowable input range.
②LLLL : When measuring input is out of Min. allowable input range.
③d−HH : When display value is out of Max. display range(9999), then flickering.
④d−LL : When display value is out of Max. display range(−1999), then flickering.
※When HHHH or LLLL displayed, it can not enter into Parameter.
(It is able to enter into parameter within rated measuring range.)

■ Terminal ordering by output specification

Output / Output terminal	Preset output			Sub output			
	Relay output	NPN open collector output	PNP open collector output	RS485 output	Serial output	BCD output	4−20mA output
Terminal Type	◎						
20PIN HIROSE		◎	◎	◎	◎	◎	◎

※Preset output and Retransmission output are option according to structure of output.

■ Specification and range

Type	Measuring input and range	Input impedance	Standard[Stnd] Display range[Fixed]	Prescale[SCAL] Display range[Variable]
DC Volt	0−500V [500U]	5.2MΩ	0 to 500.0(Fixed)	−1999 to 9999 −199.9 to 999.9 −19.99 to 99.99 −1.999 to 9.999
	0−100V [100U]	5.2MΩ	0 to 100.0(Fixed)	
	0−50V [50U]	520kΩ	0 to 50.00(Fixed)	
	0−10V [10U]	520kΩ	0 to 10.00(Fixed)	
	0−5V [5U]	52kΩ	0 to 5.000(Fixed)	
	0−1V [1U]	52kΩ	0 to 1.000(Fixed)	
	0−50mV [0.05U]	10kΩ	0 to 50.00(Fixed)	
DC Ampere	0−5A [5A]	0.01Ω	0 to 5.000(Fixed)	
	0−500mA [0.5A]	0.1Ω	0 to 500.0(Fixed)	
	0−20mA [20mA]	2.5Ω	0 to 20.00(Fixed)	

Setting	Display value
PA 2 (Parameter 2)	
	HYS	0 1
	PEY.t	0 0
	d1S.t	0.2 S
	AdrS	0 1
	bPS	9600
	LoC	oFF
PA 0 (Parameter 0)	H.SEt	500.0
	L.SEt	0
	H.PEY	0
	L.PEY	0

※I n-t, oUt.t, HYS, AdrS, bPS, H.SEt, L.SEt ma

■ Preset output mod

Mode	Output operation
OFF	LO HI
L.St	ON H OFF ON LO GO
H.St	ON OFF H ON GO HI
LH.St	OFF ON OFF ON H OFF H ON LO GO HI
HH.St	ON OFF H ON OFF H ON GO LO HI
Ld.St	ON ON H OFF LO GO

※"H" means hysteresis and able to se among above comparison output ch
※It is only able to set Preset setting ra and L−SC setting range of H−SC/L− according to [I nb.H], preset setting r

■ Display cycle dela [PA 2 : d1S.t mode]

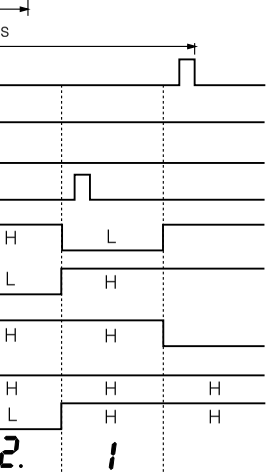
It is difficult to display when the measu it is able to make display value stable Display cycle can be changed in d1S.t 0.2s/0.5s/1.0s/2.0s/4.0s). If select 4.0 an average for 4sec., then display it ev

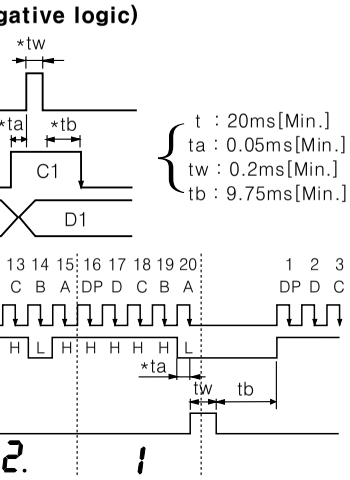
■ Monitoring function [PA 0 : H.PEY/L.PEY mode

This is to observe Max./Min. value of c then displays in H.PEY mode and L.PEY Set delay time(0 to 30sec.) in PEY.t n malfunction caused by initial over cur peak value. So it will monitor the value at H.PEY and L.PEY mode of parameter (

■ Retransmission fu

①RS485 communication output(32 ch





ow, Data will be saved.

tion	Note
S/AVG in AC	Indication in AC type only
easuring input	
splay type	Selectable Stnd or SCAL
range	Display Max. display value of Stnd.
of display range	These mode indicates at SCAL. It sets max. display value, Dot and min. display value. (−1999 to 9999)
f display range	
n	
igh−limit value(%).	Set range 0.100 to 5.000(%)
ow−limit value(%).	Set range −99 to +99
et function	Selectable oFF/L.St/H.St /LH.St/HH.St/Ld.St
value	Set range compensating 01 to 99
delay time	Set range compensating 00 to 30sec.
oling time(sec.)	Selectable 0.5/0.2/0.5/1.0/

PA 2

MD 1sec.

※After displaying PA1 or PA2 for 2 sec, then it move to the first mode. (See below how to set parameter)

■ Parameter 1

PA 1

Move after 2 sec.

In-t — It will display only AC Type. Selectable AVG ⇄ rMS

MD

In-r — Select measuring input specification. See specification chart of measuring input by each items.

※Specification chart of measuring input by each items

Item	Range of measuring input
MT4W−DV	500V ⇄ 100V ⇄ 50V ⇄ 10V ⇄ 5V ⇄ 1V ⇄ 0.05V ⇄ 500V
MT4W−DA	5A ⇄ 0.5A ⇄ 20mA ⇄ 4-20 ⇄ 2mA ⇄ 5A
MT4W−AV	500V ⇄ 110P(☆) ⇄ 50V ⇄ 5V ⇄ 500V
MT4W−AA	5A ⇄ 1A ⇄ 0.5A ⇄ 50mA ⇄ 5A

MD

dISP ⇄ Stnd → SCAL — Set the display method against measuring input and select whether it displays measuring input as 1:1(Standard) or change of it.

MD

Stnd — It shows max. display value of standard specification. Display value has been fixed.

SCAL

H-SC — It changes scale value by each measuring input. Set display value against max.Input

MD

L-SC — Set display value against min.input

MD

dot — Set DOT position. 0000 ⇄ 000.0 ⇄ 00.00 ⇄ 0.000

Inb.H — It corrects a gradient of High−limit display value against. Max. input. It is setting range is 0.100 to 5.000(times).

MD

Inb.L — It adjusts deviation of Low−limit display value against min.input. Setting range is −99 to +99.

※(☆)Standard specification. (110P is 440/110 P.T)

■ Parameter 2

PA 2

Move after 2 sec.

oUt.t — It displays when it is preset output type only and select output operation mode of preset output. oFF ⇄ L.St ⇄ H.St ⇄ LH.St ⇄ HH.St ⇄ Ld.St ⇄ oFF

MD

HYS — It displays when it is preset output type only. Set hysterisis of preset. Within range of 01 to 99.

MD

PEt.t — Set delay time of display value monitoring function. Setting range is 00 to 30sec.

MD

dIS.t — Select delay time of display cycle. Setting range is 0.1 ⇄ 0.2 ⇄ 0.5 ⇄ 1.0 ⇄ 2.0 ⇄ 4.0sec.

MD

AdrS — It shows when it is RS485 communication output among. sub−outputs only. Set the address of communication output. Setting range is from 01 to 99.

MD

H.PEt — It shows High−limit monitoring value during it is operating. It will be initialized by pressing ◀ key.

MD

L.PEt — It shows Low−limit monitoring value during it is operating. It will be initialized by pressing ◀ key.

※When the display value against measuring input reaches to be stable after supplying initial power, please initialize LPEt mode before using this unit. (If do not reset it, it can display Low−limit value as "0" cause of Peak value of Low−limit value is 0.)

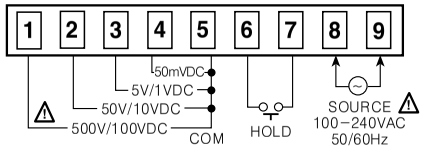
※When PEk.t of Parameter2 is set as"0", monitoring function is not displayed.

■ Change the parameter setting value

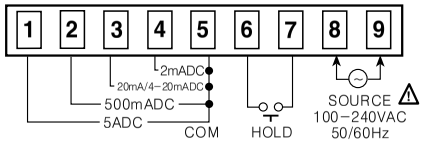
1. Press MD Key continuously while it is operating, then release the MD key at the parameter you want.
2. Press MD key at the parameter in order to change the mode of parameter. (See the Parameter 1, 2, 0)
3. Setting value and mode are flickering repeatedly.
   Ex) In-r ⇄ 500V — It shows that setting value is changeable to flicker it only.
4. When the current setting value and mode are flickering, if press ◀ key, only the current setting value is flickering.
   Ex) In-r ⇄ 500V ◀ 500V — It shows that setting value is changeable to flicker it only.
5. When the setting value is flickering, change the setting value with ▲ or ▼ key.
   Ex) In-r ⇄ 500V ◀ 500V ▼ ▲ 110P ▼ ▲ 50V ▼ 5V — It shows how to change the measuring input of AC Type.
6. After confirming the setting value by MD key, setting value and mode are flickering repeatedly.
7. When setting is completed, it will return from Parameter with pressing MD key for 3sec.

■ Terminal connection

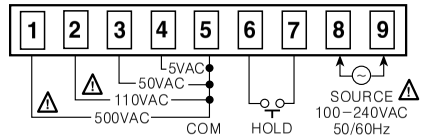
●MT4W-DV-4N



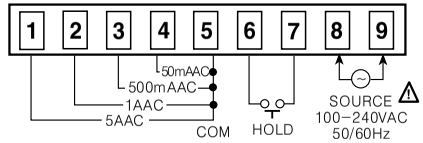
●MT4W-DA-4N



●MT4W-AV-4N

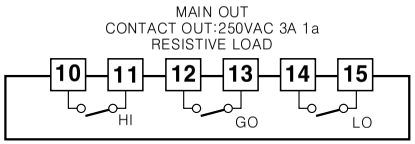


●MT4W-AA-4N

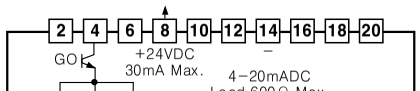


<Option>

●Relay output[MT4W-□□-41]



●NPN open collector output + Current output [MT4W-□□-44]



Main Out
(NPN Open Collector)
12−24VDC Max. 50mA

●PNP open collector output + Current output[MT4W-□□-45]

Main Out
(PNP Open Collector)
12−24VDC Max. 50mA

●PNP open collector output + Low speed serial output [MT4W-□□-47]

Main Out
(PNP Open Collector)
12−24VDC Max. 50mA

●PNP open collector output + BCD output[MT4W-□□-43]

Main Out
(PNP Open Collector)
12−24VDC Max. 50mA

●PNP open collector output + RS485 output[MT4W-□□-49]

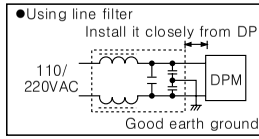
Main Out
(PNP Open Collector)
12−24VDC Max. 50mA

※Main Out is preset output.

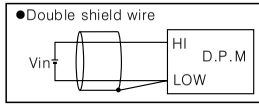
※POL:When display value is "−", it where v

■ Caution for using

1. Installation environment
   ①If shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Catergory Ⅱ.
2. Please use the terminal(M3.5, Max.7.2mm
3. Please use separated line from high voltag noise.
4. Please install power switch or circuit break
5. The switch or circuit breaker should be ins
6. Be sure to avoid using this unit near by m (Welding machine high capacity SCR unit
7. When input applied, if "HHHH" or "LL measuring input, please check the line af
8. Noise inflow from power line can be seric power. Even though there is condenser transformer, but this display unit as sn protection components. Therefore, pleas external lines when voltage failure occur Spark with high voltage.



9. Input line : Shield wire must be used wher there are lots of noises.



※It may cause malfunction if abov

■ Main products

■ COUNTER
■ TIMER

e read the following before using.

safety

nd review them before using this unit.

follow;

esult if instructions are not followed.

aged, or injury may result if instructions are not followed.

f the symbols used in the operation manual.

ccur under special conditions.

achinery(Nuclear power control, medical equipment, ion apparatus, entertainment or safety device etc), it vice.

or human injury

ir terminals when it is power on.

his unit, when it is required.

fire.

inal when connecting power line or measuring input.

oors.

product or give an electric shock.

VG(0.50mm²) should be used and tighten screw bolt n to 0.90N・m strength.

lue to contact failure.

cation.

product and cause a fire.

witching capacity of Relay contact.

act melt, contact failure, relay broken and fire etc.

water or an oil-based detergent

ire.

here there are flammable or explosive gas, humidity, vibration and impact etc.

into the unit.

alfunction.

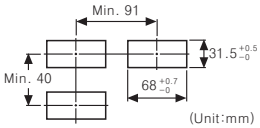
ecking the polarity of measuring terminals.

tification

utput indication of preset
utput indication of preset
utput indication of preset
Mode Key
:Control key

n Indication type.

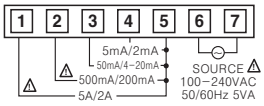
■ Panel cut-out



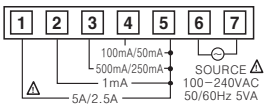
(Unit:mm)

tion

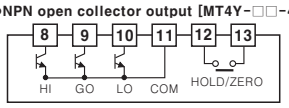
●MT4Y-DA-4□



●MT4Y-AA-4□

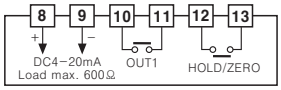


●NPN open collector output [MT4Y-□□-41]



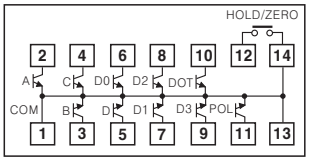
□□-42]

●Relay+Current(DC4-20mA) output [MT4Y-□□-43]



t

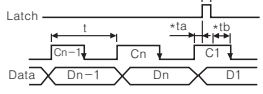
●BCD Dynamic output [MT4Y-□□-45]



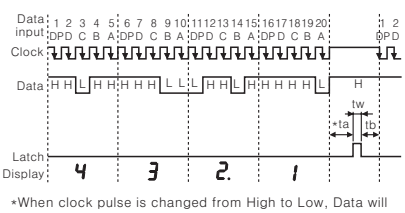
-46]

w-speed serial output and

◎Low-speed serial output(Negative logic)



t : 20ms
ta : 0.05ms
tw : 5ms
tb : 4.95ms



*When clock pulse is changed from High to Low, Data will be output.

n[PA1 : H-SC/L-SC mode]

999 to 9999) of particular High/Low-limit value in order to

	• DC4-20mA output ☞ Resolution: 8000 division(Load resistance max. 600Ω)		
AC measuring function	Selectable RMS or AVG		
Frequency measuring function	Measurement range:0.100~9999Hz(Fixed decimal point type)		
Hold function	Built-in(Outer hold function)		
Ambient temperature	−10 ~ 50℃(at non-freezing status)		
Storage temperature	−20 ~ 60℃(at non-freezing status)		
Ambient humidity	35 ~ 85%RH		

■ Specification and range

Type	Measuring input and range		Input impedance	Standard [Stnd] Display range [Fixed]	Prescale [SCAL] Display range [Variable]
DC Volt	0−500V	[500u]	4.33315MΩ	0.0~500.0(Fixed)	−1999~9999(Variable) −1999~9999(Variable) −1999~9999(Variable) −1999~9999(Variable) (Display point will be changed according to decimal point position.) ※Please connect proper terminal with max. input voltage is in 30~100% of the input voltage. When it is bigger than input voltage, it cause the terminal breakdown and over-range indication. The accuracy is decreased when it is connected to the terminal under 30%.
	0−100V	[100u]	4.33315MΩ	0.0~100.0(Fixed)	
	0−50V	[50u]	433.15kΩ	0~50.00(Fixed)	
	0−10V	[10u]	433.15kΩ	0.00~10.00(Fixed)	
	0−5V	[5u]	43.15kΩ	0.00~5.000(Fixed)	
	0−1V	[1u]	43.15kΩ	0.000~1.000(Fixed)	
	0−250mV	[025u]	2.15kΩ	0.00~250.00(Fixed)	
	0−50mV	[50mu]	2.15kΩ	0.00~50.00(Fixed)	
DC Ampere	0−5A	[5A]	0.01Ω	0.000~5.000(Fixed)	
	0−2A	[2A]	0.01Ω	0.000~2.000(Fixed)	
	0−500mA	[0.5A]	0.1Ω	0.0~500.0(Fixed)	
	0−200mA	[0.2A]	0.1Ω	0.00~200.0(Fixed)	
	0−50mA	[50mA]	1.0Ω	0.00~50.00(Fixed)	
	4−20mA	[20mA]	1.0Ω	00.00~20.00(Fixed)	
	0−5mA	[5mA]	10.0Ω	0.000~5.000(Fixed)	
	0−2mA	[2mA]	10.0Ω	0.000~2.000(Fixed)	
AC Volt	0−500V	[500u]	4.987MΩ	0.0~500.0(Fixed)	
	0−250V	[250u]	4.987MΩ	0.0~250.0(Fixed)	
	0−110V	[110P]	1.087MΩ	0.0~440.0(Fixed)	
	0−50V	[50u]	1.087MΩ	0.00~50.00(Fixed)	
	0−20V	[20u]	200kΩ	0.00~20.00(Fixed)	
	0−10V	[10u]	200kΩ	0.00~10.00(Fixed)	
	0−2V	[2u]	20kΩ	0.000~2.000(Fixed)	
	0−1V	[1u]	20kΩ	0.000~1.000(Fixed)	
AC Ampere	0−5A	[5A]	0.01Ω	0.000~5.000(Fixed)	
	0−2.5A	[25A]	0.01Ω	0.000~2.500(Fixed)	
	0−1A	[1A]	0.05Ω	0.000~1.000(Fixed)	
	0−500mA	[0.5A]	0.1Ω	0.0~500.0(Fixed)	
	0−250mA	[025A]	0.1Ω	0.00~250.0(Fixed)	
	0−100mA	[0.1A]	0.5Ω	0.00~100.0(Fixed)	
	0−50mA	[50mA]	0.5Ω	0.00~50.0(Fixed)	

■ Display cycle delay function [PA 2 : dISt mode]

It is difficult to read display value, in case, measuring input value is fluctuated frequently, it is also changed. In this case, it is able to make display value stable by delaying display cycle. Display cycle displaying time can be changed in dISt mode of Parameter 2.
If selecting 4.0s, the display value is displayed every 4sec. averaging input value for 4sec.

■ Monitoring function for Peak display value [PA 0 : HPEU/LPEU mode, PA 2 : PEUt mode]

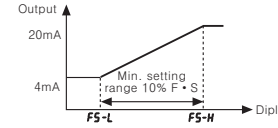
It observes Max./Min. value of display value by current display value and then display the data in HPEU mode and LPEU mode of parameter 0. Set delay time(0 to 30sec.) in PEUt mode of parameter 2 in order to prevent malfunction caused by initial over current or over voltage, when monitoring the peak value.
Delay time is 0~30sec. and it will monitor the peak value after setting time. If pressing ◀ ▼ ▲ key at HPEU and LPEU mode of parameter 0, it will be initialized.
※Monitoring function is not indicated when setting the PEk.t of parameter 2 as "0".

■ Initialization function

It initializes parameter setting state. When pressing ◀ ▼ ▲ key over 5 seconds at the same time in measuring mode, former changed state is canceled and it changes as initial state.

■ Current output (DC4-20mA) Scale adjustment function [PA2 : FS-H / FS-L mode]

It set current output for preset indication value at the output current DC4−20mA. It set output indiction value for 4mA and 20mA. Min.setting range between FS−H(FS-H) and FS−L(FS-L) is 10% F・S. (When it set as under 10% F・S, it changed as over 10% F・S automatically.) Present indication value is outputted fixedly 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. It uses fixed decimal point[PA1:dot mode], measuring range can be changed by setting and measuring range of decimal point place is as below.
It is available to adjust the upper inclination with[PA1: Inb.H mode] and [PA1:Inb.L mode]. In order to measure frequency normally, input signal, over 10% F・S of measuring range should be supplied. Please select the proper point of measuring terminal.

①Measuring range

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

②Inb.H:0.100~9.999[Inclination adjustment of high value]
③Inb.L:10−2, 10−1, 10−1[Index adjustment of Inb.H]

■ Error correction function [PA1 : Inb.H / Inb.L mode]

This function is for correcting display value error of measuring input.
Inb.L:±99[Adjust deviation of Low value],
Inb.H:5.000 to 0.100[Correct gradient(%) of High value]
Diplay value=(Measuring value×Inb.H) + Inb.L
Ex)When the user desires measuring input specification is 0 to 500V and display value is 0 to 500.0, it is able to remove the offset of Low display value to set −12(Offset correcting value) in Inb.L(When Low display value is "□□ 1.2" in 0V input)
Display value for measuring input(500V) is decided by offset adjustment of low value. In case display value is "501.0" display value will be 500.0 by adjusting the gradient of high display value if 0.998 of correcting value is set at Inb.H by calculating 500.0/ 501.1 (Target display value/Current display value)
※The offset correction range of Inb.L is within −99 to +99 for D⁻⁰, D⁻¹ digit regardless of decimal point.

■ Zero adjustment function

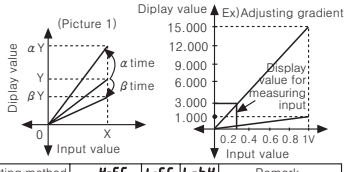
It sets the preset indication value as zero when min. input is supplied into the measuring terminal, zero error can be adjusted with 3 ways as below.
When zero adjustment adjustment with front key and Hold terminal is finished normally, zero of measuring terminal is displayed and the adjusted value is saved in Inb.L automatically.

Operation	Input correc-tion value	Front side key	Input external signal
Description	PA 1 : Direct input correc-tion value method at Inb.L mode.	Press ◀ ▲ key for 3sec. at the at measuring mode.	Short-circuit Hold terminal of external No. 12, 13 over min.50m.

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

■ Gradient correction function [PA1 : Inb.H mode]

This function is to correct a gradient of prescale value and display value. (Picture 1) Display value Y can be used as α , β times against X input value by correction function[Inb.H]. And also can be used as correction function of max. display value(H-SC). Adjustment range is 0.100 to 5.000 and multiply current gradient.
Ex)Input:200mVDC, Display:3.000 for MT4Y−DV type
①Select 0−1VDC for measuring input in Para-meter 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 Inb.H×H-SC=15.000



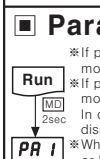
Setting method	H-SC	L-SC	Inb.H	Remark
①	Unavailable to set	0.000	1.000	———
②	7.500	0.000	2.000	It will be same display value whichever user choose the method among setting ways.
③	5.000	0.000	3.000	
④	3.750	0.000	4.000	
⑤	3.000	0.000	5.000	

■ Preset output mode[PA 2 : oUt.t mode]

Mode	Output operation	Operation

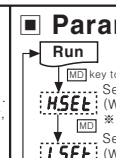
PA 2 (Para-meter 2)	dISt	Display time	Set sampling time(sec.)
	EZro	Zero Key	Set usage of front side zero adjustment key
	EuIn	Event Input	Set external terminal(6, 7) function
	FS-H	Full scale High	Set the upper value output point or PV output
	FS-L	Full scale Low	Set the lower value output point or PV output
	AdrS	Address	Set communication address
	bPS	Bit per second	Set baudrate(bps)
	LoC	Lock	Set lock function
PA 0 (Para-meter 0)	HSEt	High set	Set High setting value
	LSEt	Low set	Set Low setting value
	HPEU	High peak	Max. value by data monitorin
	LPEU	Low peak	Min. value by data monitorin

■ Parameter setting



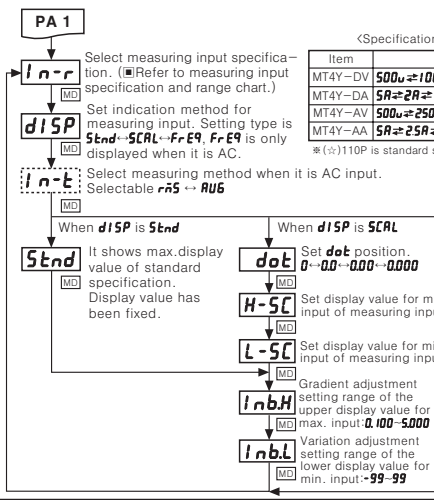
※If pressing MD key for 3sec. in RUN mode PA 1 is displayed.
※If pressing MD key for 4sec. in RUN mode, PA 2 will be displayed after PA 1. In case of pressing MD Key continually, display is stopped at PA 2.
※When it pulled out from MD key at PA1 or PA2, it will be entered into display parameter.
※It will returned to RUN when MD key is pressed for 3 second at each parameter.
※After returning to RUN, if MD key is pressed within about 2 seconds again, it is entered into PA1 or PA2 again. (Refer to the below each parameter setting description.)

■ Para



※When PEk.t o is not display

■ Parameter 1



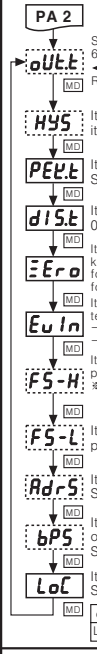
Select measuring input specifica-tion. (■Refer to measuring input specification and range chart.)
Set indication method for measuring input. Setting type is Stnd↔SCAL↔FrE9. FrE9 is only displayed when it is AC.
Select measuring method when it is AC input. Selectable rms ↔ AVG
It shows max.display value of standard specification. Display value has been fixed.
Set dot position. 0↔0.0↔0.00↔0.000
Set display value for m input of measuring inp
Set display value for mi input of measuring inpu
Gradient adjustment setting range of the upper display value for max. input:0.100~5.000
Variation adjustment setting range of the lower display value for min. input:-99~99

<Specification

Item	
MT4Y-DV	500u⇄10
MT4Y-DA	5A⇄2A⇄
MT4Y-AV	500u⇄250
MT4Y-AA	5A⇄25A⇄

※(☆)110P is standard s

■ Parameter 2



Set it when executing preset function it and there are 6 type of preset mode. oFF↔ L.St↔ H.St↔ LH.St ↔ HH.St↔ LL.St↔ Ld.St↔ oFF
Refer to preset function for output.
It is only displayed when selecting preset function, it sets preset hysteresis. Set range:10% F・S
It sets delay time of monitoring function. Setting range is 00 ~ 30sec.
It sets indication period and also variable sets by 0.1s within 0.1s~5.0s.
It decides to use zero point adjustment by front side key. In case of pressing ◀ + ▲ Key at the same time for 3sec., it sets commands and save variation value for SV in Inb.L automatically.
It decides to use between Hold input by No. 12, 13 terminal or zero point setting by external signal.
−Hold:Indication value holding,
−Zero:Zero point adjustment by hold terminal.
It sets the upper value which is the DC20mA output point of PV output.
※When changing input range and prescale mode, FS−H, FS−L SV is changed automatically as max. and min. value of input range.
It sets the lower value which is the DC4mA output point of PV output.
It selects Range of RS485 communication output. Set range:01~99
It selects Baud rate of RS485 communication output.
Selectable is 9600 ↔ 4800 ↔ 2400↔1200.
It sets key lock function and select from 4 kinds.
Selectable is oFF↔LoC1↔LoC2 ↔ LoC3↔oFF.

oFF	No key lock function	Loc2	Parameter 1, 2 lock
Loc1	Parameter 1 lock	Loc3	Parameter 0, 1, 2 lock

■ Caution for using

1. Allowable installation environment
①If shall be used indoor ③Pollution Degree 2
②Altitude Max. 2000m ④Installation Catergory II
2. Please use the terminal(M3.5, Max.7.2mm) when connec
3. Please use separated line from high voltage line or power
4. Please install power switch or circuit breaker in order to c
5. The switch or circuit breaker should be installed near by u
6. Be sure to avoid using this unit near by machinery makin (High frequency welder & Sewing machine, High capacity
7. When input is applied, if "HHHH" or "LLLL" are displayed, t input, please check the line after power off.
8. Noise inflowing from power line can cause serious problem for DPM 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

●Using line filter
Install it clos