



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

### Caution for your safety

- ※Please keep these instructions and review them before using this unit.
- ※Please observe the cautions that follow;
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- ※The following is an explanation of the symbols used in the operation manual.
- Caution:** Injury or danger may occur under special conditions.

### Warning

- In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.** It may cause a fire, human injury or damage to property.
- It must be mounted on panel.** It may give an electric shock.
- Do not repair or check up when power on.** It may give an electric shock.
- Do not disassemble and modify this unit, when it requires.** If needs, please contact us. It may give an electric shock and cause a fire.
- Please check the number of terminal when connect power line or measuring input.** It may cause a fire.

### Caution

- This unit shall not be used outdoors.** It might shorten the life cycle of the product or give an electric shock.
- When wire connection for power input and measuring input, the tightening strength for screw bolt on terminal block should be over than 0.74N·m ~ 0.90N·m.** It may result in malfunction or fire due to contact failure.
- Please observe specification rating.** It might shorten the life cycle of the product and cause a fire.
- In cleaning the unit, do not use water or an oil-based detergent.** It might cause an electric shock or fire that will result in damage to this product.
- Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray the sun, radiant heat, vibration, impact etc.** It may cause a fire or explosion.
- Do not inflow dust or wire dregs into inside of this unit.** It may cause a fire or mechanical trouble.
- Please connect properly after checking the polarity of measuring terminals.** It may cause a fire or explosion.

### Ordering information

MP	5	S	-	4	N
Output	N	Indicator	-	-	-
	1	NPN open collector quintuple output	-	-	-
Power supply	2	Indicator	BCD Dynamic	-	-
	4	Indicator	PV transmission output (DC4-20mA)	-	-
Size	S	Indicator	RS458 Communication output	-	-
	Y	Indicator	-	-	-
Digit type	5	Indicator	-	-	-
	MP	Indicator	-	-	-
Item	Pulse meter				

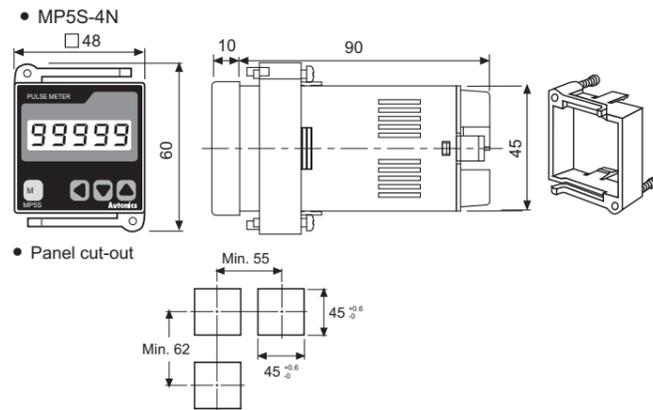
※PNP open collector output: Option

### Specifications

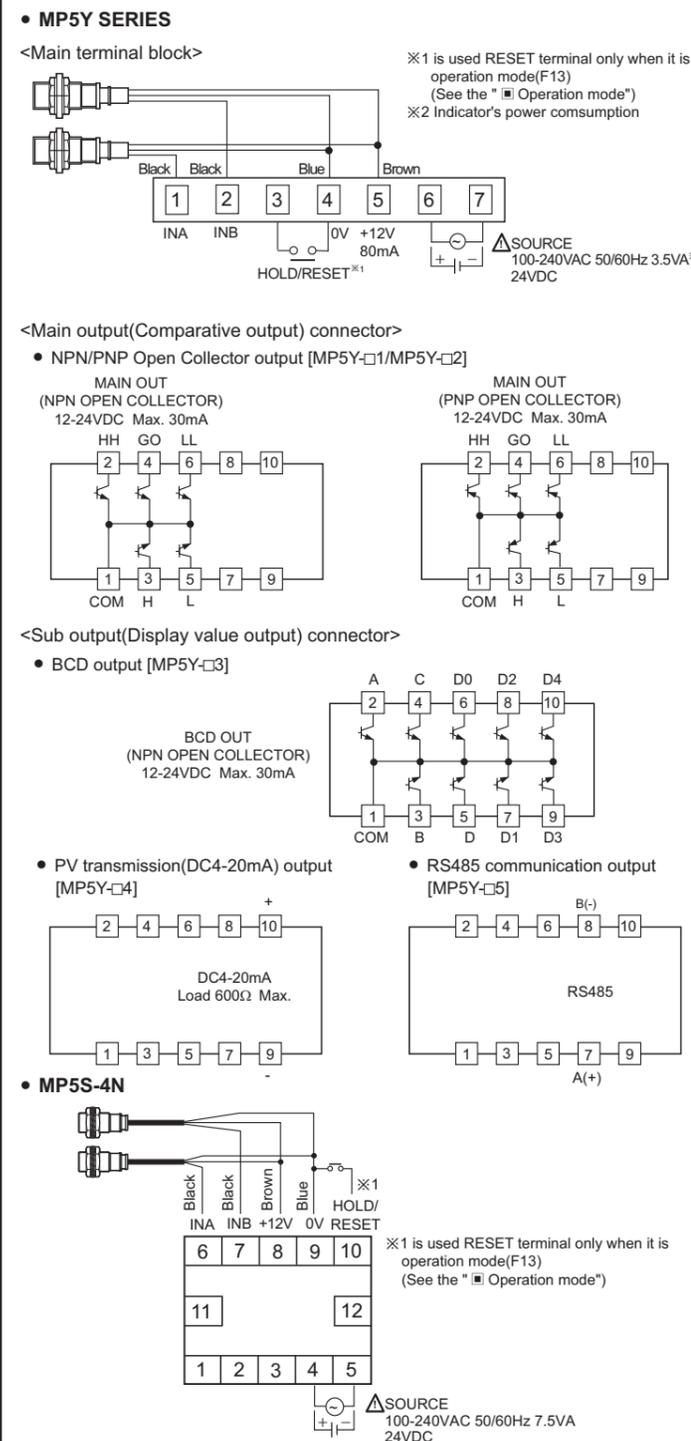
Series	MP5S-4N	MP5Y-4□	MP5Y-2□
Display method	7 Segment LED(Zero Blanking)		
Character size	W4 X H8mm	W7 X H14mm	
Max. indication	-19999 to 99999		
Power supply	100-240VAC 50/60Hz	24VDC	
Allowable operation voltage	90 to 110% of rated voltage		
Power consumption	Max 7.5VA	Max. 7V	Max. 6W
Power for external sensor	12VDC ± 10%, 80mA		
Input frequency	-Solid state input: Max. 50kHz(Pulse width:Min. 10μs) -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		
Measuring range	-Mode F1, F2, F7, F8, F9, F10: 0.0005Hz to 50kHz -Mode F3: 0.02s to 3,200s -Mode F4, F5, F6: 0.01s to 3,200s -Mode F11, F12, F13: 0 to 4 X10 <sup>9</sup> Count		
Measuring accuracy (23±5°C)	-Mode F1, F2, F7, F8, F9, F10: F.S. ± 0.05% rdg ± 1Digit -Mode F3, F4, 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 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(0.0001X10 <sup>-9</sup> to 9.9999X10 <sup>-9</sup> )		
Hysteresis	-	0 to 9999 ※1	
Other functions	-Lock setting function -Auto-Zero time setting function -Time unit selection function -Peak value monitoring value (Communication output type only) -Memory protection function (Mode F13 applied only)		
Main output	NPN open collector quintuple output	MP5Y-□ 1/□ 2: 12-24VDC 30mA Max.	
	PNP open collector quintuple output	-	
Sub output	BCD Dynamic	MP5Y-□ 3: NPN open collector 12-24VDC 30mA Max.	
	PV transmission	MP5Y-□ 4: DC4-20mA Load 600* Max. (Response time: Max. 800ms)	
	RS485 commu-nication	MP5Y-□ 5: 32 channels, Mutral direction communication function	
Memory	Non-volatile memory(Input times : 100,000 times)		
Insulation resistance	Min. 100MΩ (at 500VDC megger) between terminal and case		
Dielectric strength	2,000VAC 60Hz 1minute(Between terminals of AC power and case, Between terminals of AC power and measuring terminals)		
Impulse noise strength	± 2,000V the square wave noise(pulse width:1μs) by the noise simulator		
Vibra-tion	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hour	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes	
Shock	Mechanical	300m/s <sup>2</sup> (Approx. 30G) 3 times at X, Y, Z direction	
	Malfunction	100m/s <sup>2</sup> (Approx. 10G) 3 times at X, Y, Z direction	
Environ-ment	Ambient temperature	-10 to 50°C, Storage temperature: -20 to 60°C	
	Ambient humidity	35 to 85%RH, Storage humidity: 35 to 85%RH	
Approval	CE,		
Unit weight	Approx. 130g	Approx. 135g	

※1: The hysteresis setting range is changed by the setting position of decimal point.  
※Condition for use in environment is no freezing or condensation.

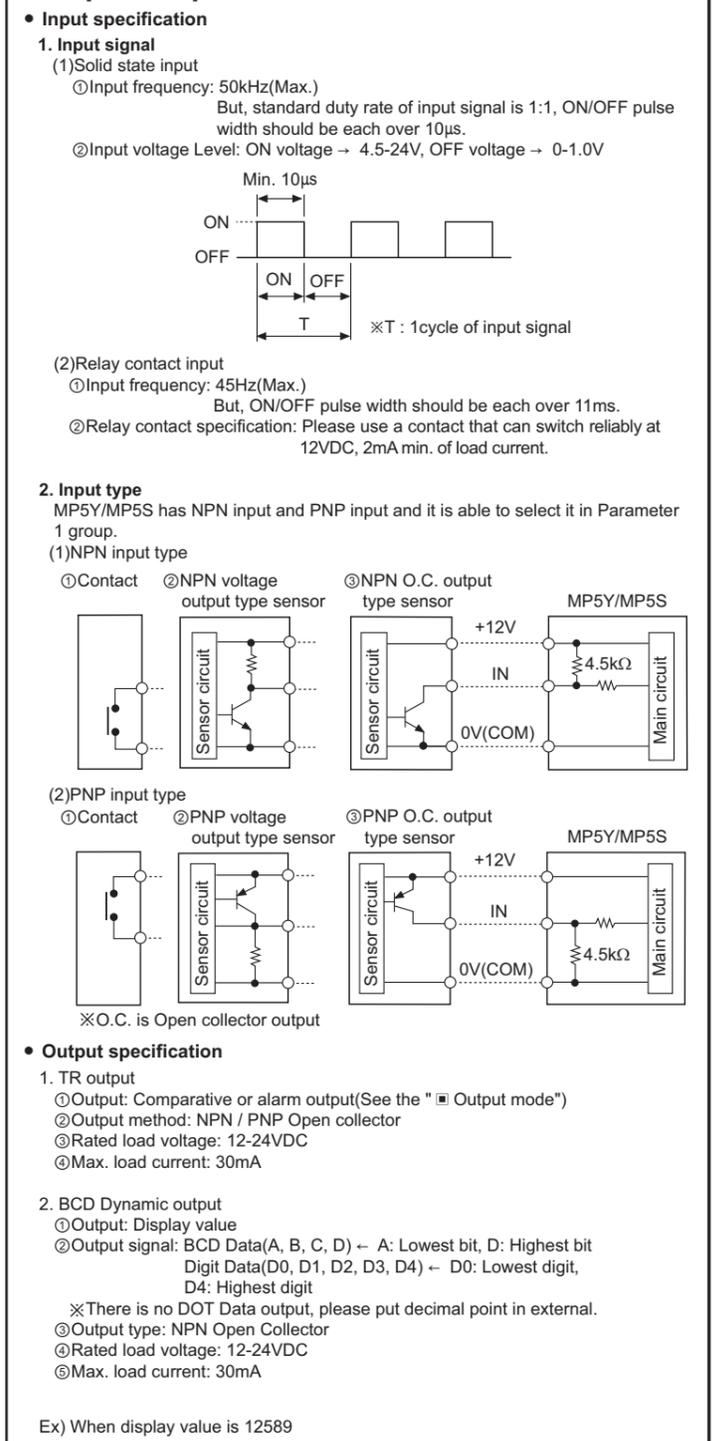
### Dimensions



### Connections



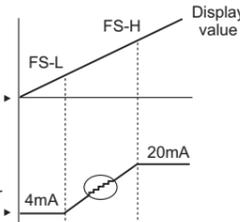
### Input/Output



3. PV transmission output(4-20mADC)

- ①Application: To transmit the measured value
- ②Function: This function is to transmit 4-20mADC converted from measured display value between High limit output(FS-H) and Low limit(FS-L).
- ③Range of High/Low limit output setting
  - High limit setting range(FS-H): From min. to max within range of measurement
  - Low limit setting range(FS-L): From min. to max within range of measurement (FS-H should be over "1" bigger than FS-L)
- ④Resistive load : Max. 600Ω
- ⑤Resolution : 8,000 divisions

If set FS-L and FS-H in certain section, the output will be 4-20mADC.



Revolution between FS-L and FS-H is 8,000, therefore if display value is narrower than 8,000 the resolution will be low.

6. RS485 communication output

- ①Address: 0 ~ 99 address(32 channel)
- ②Transmission speed(Baud rate): 2400/4800/9600 bps
- ③Transmission code: ASCII
- ④Parity Bit: No
- ⑤Data Bit: 8 Bit
- ⑥Stop Bit: 1 Bit
- ⑦Communication items
  - MP5Y ← PC: Comparative value, Prescale value and Peak value, RESET control
  - MP5Y → PC: Comparative value, Prescale value and Peak value, Display value

Operation mode

- Select operation mode from **mode** of Parameter 1 group.
- There are 13 kinds of operation mode.

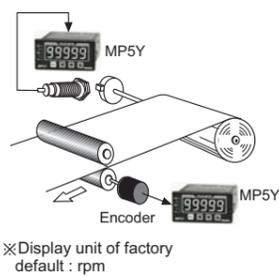
Mode F1(Frequency/Number of revolution/Speed)

This mode is to display calculated frequency or number of revolution, speed by measuring frequency of Input A,

- 1)Frequency(Hz) =  $f \times \alpha$  ( $\alpha = 1[\text{sec}]$ )
- 2)Number of revolution(rpm) =  $f \times \alpha$  ( $\alpha = 60[\text{sec}]$ )
- 3)Speed(m/min) =  $f \times \alpha$  ( $\alpha = 60L[\text{sec}]$ )
- ※L = The length of conveyor moved for 1 pulse cycle[m]

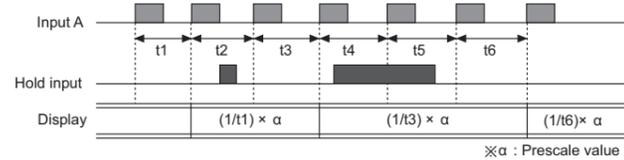
Display value and display unit

Display value	Display unit	$\alpha$ (Prescale value)
Frequency	Hz	1
	kHz	0.001
Number of revolution	rps	1
	rpm	60
Speed	mm / sec	1,000L
	cm / sec	100L
	m / sec	L
	m / min	60L
	km / hour	3.6L



※Display unit of factory default : rpm

Time chart



Mode F2(Passing speed)

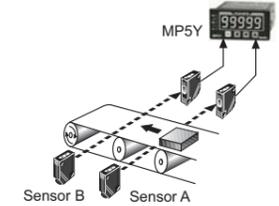
It displays the passing speed between ON of input A and ON of input B.

- Passing speed(V) =  $f \times \alpha$  ( $\alpha = L[\text{m}]$ )
- ※f : This is reciprocal number of the time between ON of input A and ON of input B.
- L : The distance between input A and input B[m]

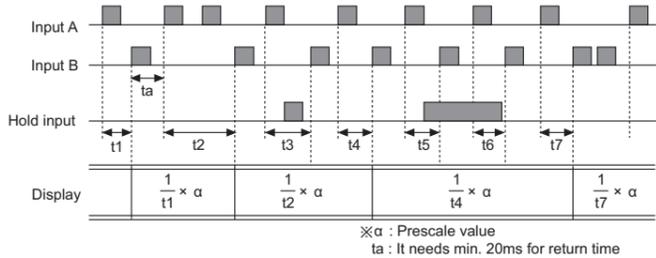
Display value and display unit

Display value	Display unit	$\alpha$ (Prescale value)
Passing speed	mm / sec	1,000L
	cm / sec	100L
	m / sec	L
	m / min	60L
	km / hour	3.6L

※Display unit of factory default : m/sec



Time chart



※ $\alpha$  : Prescale value  
ta : It needs min. 20ms for return time

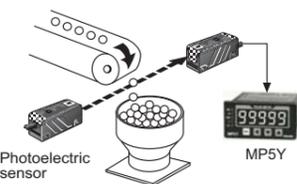
Mode F3(Cycle)

It displays the time from when input A is ON to the next ON of input A.

- Cycle(T) = t
- ※t : Measurement time[sec]

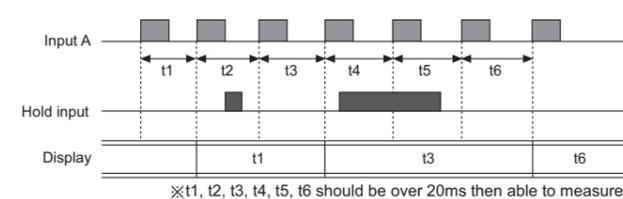
Display value and display unit

Display value	Display unit	MIN
Cycle	SEC	
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99min.	99hour 99min.
	99.9sec.	99.9min.
	9hour 59min. 59sec.	999hour 59min.
99999sec.	99999min.	



- ※Set the display unit at the **Unit**(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)

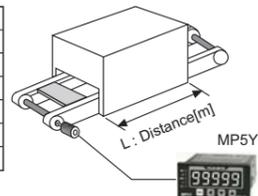
It displays the passing time of certain distance as measuring the time between ON and the next ON of Input A.

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

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

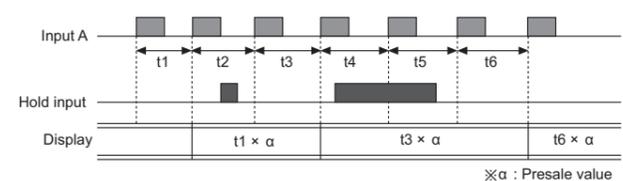
Display value and display unit

Display value	Display unit	MIN
Passing time	SEC	
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99min.	99hour 99min.
	99.9sec.	99.9min.
	9hour 59min. 59sec.	999hour 59min.
99999sec.	99999min.	



- ※Display unit of factory default : 999.99sec.
- ※Set the display unit at the **Unit**(Time unit) of Parameter 2.

Time chart



※ $\alpha$  : Prescale value

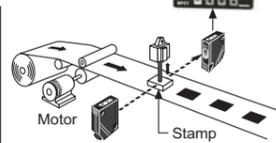
Mode F5(Time width)

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

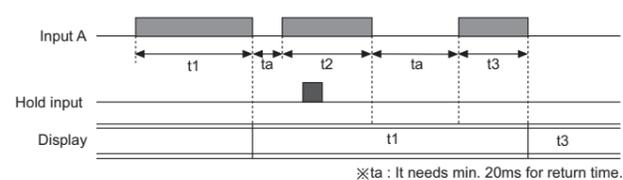
Display value	Display unit	MIN
Time width	SEC	
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99min.	99hour 99min.
	99.9sec.	99.9min.
	9hour 59min. 59sec.	999hour 59min.
99999sec.	99999min.	



※Display unit of factory default : 999.99sec.

- ※Set the display unit at the **Unit**(Time unit) of parameter 2.
- ※Display unit of factory default : 999.99sec.

Time chart



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

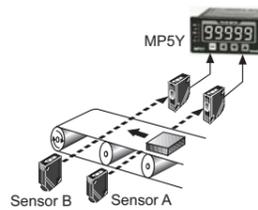
Mode F6(Time interval)

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]

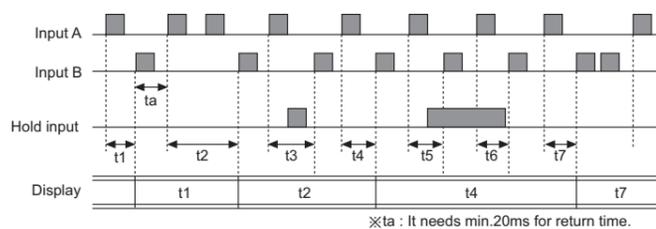
Display value and display unit

Display value	Display unit	MIN
Time interval	SEC	
	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.
- ※Display unit can be set at **Unit**(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)

$$\text{Absolute rate} = \left( \frac{\text{Frequency of input B}[\text{Hz}] \times \text{Ba}}{\text{Frequency of input A}[\text{Hz}] \times \text{Aa}} \right) \times 100\%$$

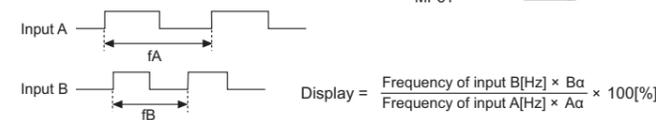
$$\text{Absolute rate} = \frac{\text{Frequency of input B}[\text{Hz}] \times \text{Ba}}{\text{Frequency of input A}[\text{Hz}] \times \text{Aa}} \times 100\%$$

Display value and display unit

Display value	Display unit
Absolute rate	%

- ※Aa : Prescale value of input A
- ※Ba : Prescale value of input B

Time chart



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

- ※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.

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

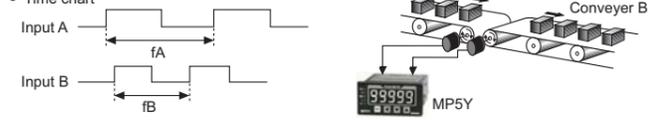
$$\text{Error ratio} = \frac{(\text{Frequency of input B}[\text{Hz}] \times \text{Ba}) - (\text{Frequency of input A}[\text{Hz}] \times \text{Aa})}{\text{Frequency of input A}[\text{Hz}] \times \text{Aa}} \times 100\%$$

Display value and display unit

Display value	Display unit
Error ratio	%

- ※Aa : Prescale value of input A
- ※Ba : Prescale value of input B

Time chart



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

- ※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.

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

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

Display value and display unit

Display value	Display unit
Density	%

- ※Aa : Prescale value of input A
- ※Ba : Prescale value of input B

Time chart



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

- ※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.

$$\text{Error} = \text{Input B} - \text{Input A}$$

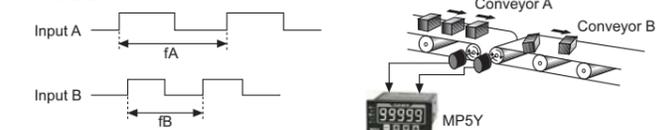
$$\text{Error} = (\text{Frequency of input B}[\text{Hz}] \times \text{Ba}) - (\text{Frequency of input A}[\text{Hz}] \times \text{Aa})$$

Display value and display unit

Display value	Display unit
Error	END User setting unit

- ※Aa : Prescale of input A
- ※Ba : Prescale of input B

Time chart



$$\text{Display} = (\text{Frequency of input B}[\text{Hz}] \times \text{Ba}) - (\text{Frequency of input A}[\text{Hz}] \times \text{Aa})$$

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

Mode F11(Length measurement)

It displays the number of Input A pulse while Input B is ON.

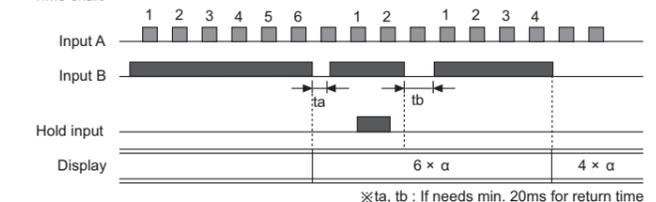
$$\text{Length measurement} = P \times \alpha \quad (\text{※P : Number of input A pulse, } \alpha : \text{Prescale value})$$

Display value and display unit

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

※Factory default(Unit) : Quantity[EA]

Time chart



※ta, tb : If needs min. 20ms for return time

Mode F12(Interval)

It displays the number of Input A pulse from Input B is ON to the time Input B is ON next.

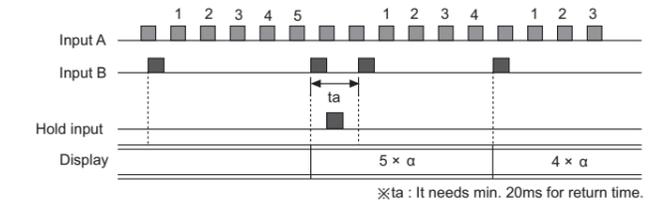
$$\text{Interval} = P \times \alpha \quad (\text{※P : Number of input A pulse, } \alpha : \text{Prescale value})$$

Display value and display unit

Display value	Display unit
Interval	Quantity[EA]
	mm
	cm
	m

※Factory default(Unit): Quantity[EA]

Time chart



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

Mode F13(Integration)

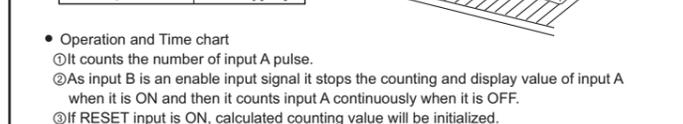
It displays the counting value against pulses of Input A.

$$\text{Integration} = P \times \alpha$$

- ※P : Pulse number of input A,  $\alpha$  : Prescale value

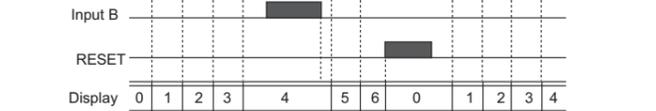
Display value and display unit

Display value	Display unit
Integration	Quantity[EA]



Operation and Time chart

- ①It counts the number of input A pulse.
- ②As input B is an enable input signal it stops the counting and display value of input A when it is ON and then it counts input A continuously when it is OFF.
- ③If RESET input is ON, calculated counting value will be initialized.

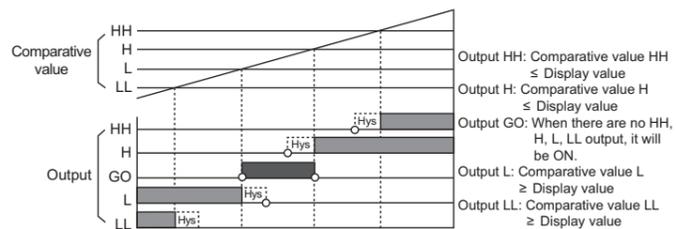


※ $\alpha = 1$  display value

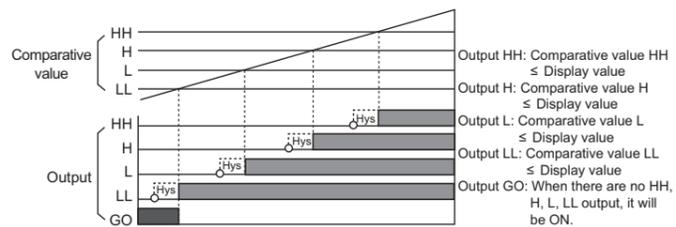
## Output mode

- Select output mode in **out-t** (Output type) of Parameter1 group.
- There are 5 stages output (HH, H, GO, L, LL).
- There are 6 kinds of output mode such as S(Standard) output mode, H(High) output mode, L(Low) output mode, B(Block) output mode, I(One shot) output mode, F(Deviation) output mode.
- Comparative value (HH, H, L, LL) can be set as  $LL < L < H < HH$  in B output mode and the other outputs can be operated separately in output (S, H, L, I) mode regardless of comparative (HH, H, L, LL) set value.

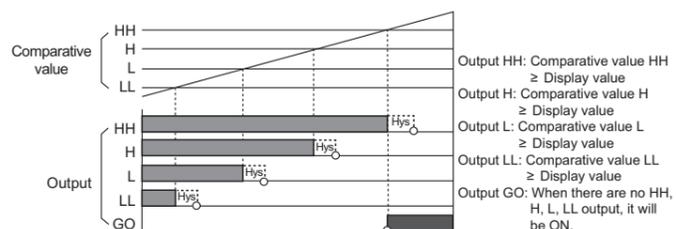
### S(Standard) output mode [out-r-d]



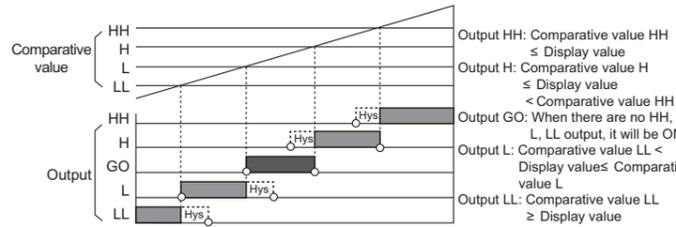
### H(High) output mode [out-h]



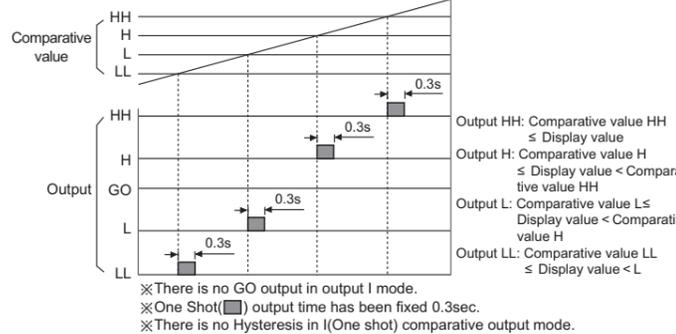
### L(Low) output mode [out-l]



### B(Block) output mode [out-b]



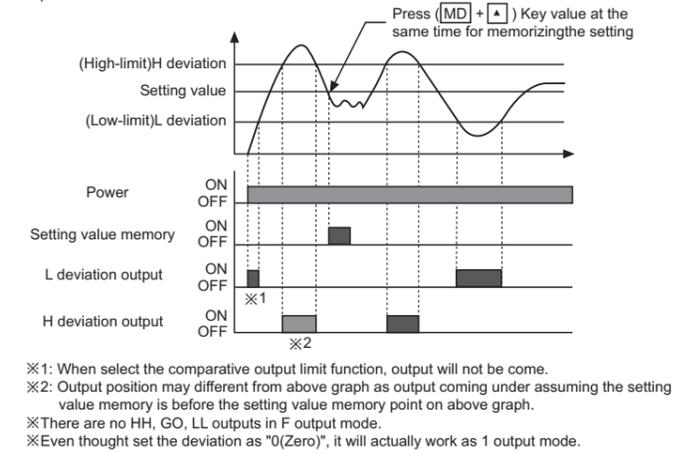
### I(One Shot) output mode [out-i]



### F(Deflection) output mode [out-f]

- This function is to memorize the setting value and provide outputs when it exceeds the deviation of H, L.
- The setting value memory: Memorize the current display value as the setting value by pressing **[MD] + [▲]** key in front.
  - Display the setting value: Check the memorized setting value by **[▲]** key. (Display the memorized setting value for pressing **[▲]** key continuously.)
  - Deviation setting: Set H(P5t.h), L(P5t.L) deviation by setting value. (The set deviation will be memorized until set the next deviation again when power off.)
  - Deviation setting range: 0.0001 to 99999 (The setting range will be changed by decimal point setting parameter. If set decimal point as 0000.0, the setting range will be 0.1 to 9999.9.)

## Operation



## 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.
- : 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
P5t.hh		●	●	●	●	●	●	●	●	●	●	●	●	●
P5t.h		●	●	●	●	●	●	●	●	●	●	●	●	●
P5t.L		●	●	●	●	●	●	●	●	●	●	●	●	●
P5t.LL		●	●	●	●	●	●	●	●	●	●	●	●	●
h.PEY		●	●	●	●	●	●	●	●	●	●	●	●	○
L.PEY		●	●	●	●	●	●	●	●	●	●	●	●	○

### Parameter 1 group

Parameter 1	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
nodE		●	●	●	●	●	●	●	●	●	●	●	●	●
in-r		○	○	○	○	○	○	○	○	○	○	○	○	○
in-b		○	○	○	○	○	○	○	○	○	○	○	○	○
out-t		○	○	○	○	○	○	○	○	○	○	○	○	○
hys		○	○	○	○	○	○	○	○	○	○	○	○	○
GuAr.d	F.dEFY	○	○	○	○	○	○	○	○	○	○	○	○	○
	StAr.t	○	○	○	○	○	○	○	○	○	○	○	○	○
Auto.a		○	○	○	○	○	○	○	○	○	○	○	○	○
Auto.b		○	○	○	○	○	○	○	○	○	○	○	○	○
neNo		○	○	○	○	○	○	○	○	○	○	○	○	○

※"○": IN-B sensor will be set as nPn.hF or Pn.hF 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
dat		○	○	○	○	○	○	○	○	○	○	○	○	○
tonE		○	○	○	○	○	○	○	○	○	○	○	○	○
P5t.hh		○	○	○	○	○	○	○	○	○	○	○	○	○
P5t.h		○	○	○	○	○	○	○	○	○	○	○	○	○
P5t.L		○	○	○	○	○	○	○	○	○	○	○	○	○
P5t.LL		○	○	○	○	○	○	○	○	○	○	○	○	○
P5CR.H	※1	○	○	○	○	○	○	○	○	○	○	○	○	○
P5CR.Y	※1	○	○	○	○	○	○	○	○	○	○	○	○	○
P5Cb.H		○	○	○	○	○	○	○	○	○	○	○	○	○
P5Cb.Y		○	○	○	○	○	○	○	○	○	○	○	○	○
dI SPt		○	○	○	○	○	○	○	○	○	○	○	○	○

※1: P5C.H, P5C.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
F5-h		○	○	○	○	○	○	○	○	○	○	○	○	○
F5-L		○	○	○	○	○	○	○	○	○	○	○	○	○
Rddr		○	○	○	○	○	○	○	○	○	○	○	○	○
bP5		○	○	○	○	○	○	○	○	○	○	○	○	○
rEnoE		○	○	○	○	○	○	○	○	○	○	○	○	○
LoC		○	○	○	○	○	○	○	○	○	○	○	○	○

Monitoring delay operation function chart by each output mode

out-t	StAr.d	out-h	out-l	out-b	out-i	out-f
Comparative output adjustment function.	○	○	○	○	○	○
Starting correction timer function	○	○	○	○	○	○

## Parameter

### Parameter 0 group

Menu and Parameter display	Parameter	Setting range	Setting key
<b>RUN</b> → <b>P5t.hh</b> → <b>99999</b>	Set HH comparative value.	● F1, F2, F7, F9, F11, F12, F13 : 0 to 99999 ● F3 to F6 : 0 to Setting time range ● F8, F10 : -19999 to 99999	<ul style="list-style-type: none"> <li>◀: Move the setting digit</li> <li>▶, ▲: Change the setting value</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>P5t.h</b> → <b>99999</b>	Set H comparative value.		
<b>P5t.L</b> → <b>00000</b>	Set L comparative value.		
<b>P5t.LL</b> → <b>00000</b>	Set LL comparative value.		
<b>h.PEY</b> → <b>99999</b>	Display high peak value among measuring values	● Reset If you press <b>[▲]</b> key for 2sec. while <b>h.PEY</b> or <b>L.PEY</b> is flickering, the Peak value display will be reset to the current measuring value and it will keep flickering. [MD] If you touch once again, it will return to <b>L.PEY</b> or <b>RUN</b> .	
<b>L.PEY</b> → <b>-19999</b>	Display low peak value among measuring values		

- ※1: If you press **[MD]** key in **RUN** mode, it will enter into **P5t.hh** (F output mode: **P5t.h**) at comparative output me and **h.PEY** at indication type.
- ※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 as previous value then return to **RUN** mode.
- ※When entering into parameter 0, the parameter name and data will be flickering by 1sec. then moving the setting digit and changing the setting value are available.
- ※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, MP5S-4N.

### Parameter 1 group

Menu and Parameter display	Parameter	Setting range	Setting key
<b>RUN</b> → <b>PAR.1</b> → <b>nodE</b> → <b>F1</b>	This is parameter 1 group.		
<b>nodE</b> → <b>F1</b>	Select operation mode.	F1 to F13	<ul style="list-style-type: none"> <li>▶, ▲: Change the setting mode <b>F1 → F2 → F13</b></li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>in-r</b> → <b>nPn.hF</b>	Set the sensor type of input A.	<ul style="list-style-type: none"> <li>PNP transistor output type : <b>PnPhF</b></li> <li>Contact output type(L output) : <b>PnPLF</b></li> </ul>	<ul style="list-style-type: none"> <li>▶, ▲: Change the sensor type</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>in-b</b> → <b>nPn.hF</b>	Set the sensor type of input B.	<ul style="list-style-type: none"> <li>NPN transistor output type : <b>nPnhF</b></li> <li>Contact output type(H output) : <b>nPnLF</b></li> </ul>	<ul style="list-style-type: none"> <li>▶, ▲: Change the sensor type</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>out-t</b> → <b>StAr.d</b>	Select the output mode.	<b>StAr.d / out-h / out-l</b> <b>out-b / out-i / out-f</b>	<ul style="list-style-type: none"> <li>▶, ▲: Change the sensor type</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>hys</b> → <b>0001</b>	Set the hysteresis for the output. ※1	0 to 9999 (If decimal point is set in 0000.0, the range will be 0 to 9999.)	<ul style="list-style-type: none"> <li>▶, ▲: Move the setting digit</li> <li>▶, ▲: Change the setting value</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>GuAr.d</b> → <b>F.dEFY</b> / <b>StAr.t</b>	Select the start compensating timer function or comparative output L, LL limit function. ※2	<ul style="list-style-type: none"> <li>① <b>F.dEFY / StAr.t</b></li> <li>② When select <b>StAr.t</b> When <b>StAr.t</b> is flickering by 1sec. cycle, set the starting correction time <b>00 to 999</b>.</li> </ul>	<ul style="list-style-type: none"> <li>▶, ▲: Change the setting mode <b>F.dEFY → StAr.t</b></li> <li>[MD]: Fix and move to the next parameter</li> <li>▶, ▲: Move the setting digit</li> <li>▶, ▲: Change the setting value</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>Auto.a</b> → <b>9999.9</b>	Set the Auto-zero time of INA input.	0.1 to 9999.9	<ul style="list-style-type: none"> <li>▶, ▲: Move the setting digit</li> <li>▶, ▲: Change the setting value</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>Auto.b</b> → <b>9999.9</b>	Set the Auto-zero of INB input.	0.1 to 9999.9	<ul style="list-style-type: none"> <li>▶, ▲: Move the setting digit</li> <li>▶, ▲: Change the setting value</li> <li>[MD]: Fix and move to the next parameter</li> </ul>
<b>neNo</b> → <b>off</b>	It sets the memory retention. The measuring value will be memorized when the power off. (Mode F13 only)	<b>on</b> : Memory retention <b>off</b> : No memory retention	<ul style="list-style-type: none"> <li>▶, ▲: Change the setting mode <b>on → off</b></li> <li>[MD]: Fix and move to the next parameter <b>nodE</b>.</li> </ul>

- ※1: Hysteresis operation mode is able to be set in F1, F7 to F10 operation mode.
- ※2: You are able to select the comparative output limit function or starting correction timer in monitoring delay function mode. When selecting the comparative output limit function, it will move to the next parameter and when selecting the starting correction timer you need to be set the starting correction time (00 to 999) so that it moves to the next parameter.
- ※If press **[MD]** key for 3 sec. in **RUN**, it will enter parameter 1 group.
- ※The output mode is fixed as **out-h** type in F13 operation mode.
- ※When entering into parameter 1 group, the parameter name and data will be flickering by 1 sec. then move setting digit by **[▶]** key or change the setting value by **[▶]** key.
- ※All data set by users will be shown [displayed] to 1sec. cycle then move to the next parameter by pressing **[MD]** key.
- ※If press **[MD]** key for over 2 sec. in every setting mode, data will be set and return to **RUN** and if you don't use the for 60sec. data will be remained and return to **RUN**.
- ※[ ] parameter is not shown in MP5Y-4N, MP5Y-43, MP5Y-44, MP5Y-45, MP5S-4N.

● Parameter 2 group

Menu and Parameter display	Parameter	Setting range	Setting key											
<p>After displaying <b>PAR.A.2</b> for 2sec, then advance to <b>PbAr.t</b> automatically. Pressing <b>[MD]</b> key before 1sec. it will move to <b>PbAr.t</b>.</p> <p><b>dot</b> → <b>00000</b></p> <p><b>t.un</b> → <b>t.SEC</b> → <b>t.n</b></p> <p><b>t.SEC</b> → <b>99999</b> → <b>t.n</b></p>	This is parameter 2 group.	00000 00000 00000 00000 00000 00000	<p>◀ : Move the decimal point</p> <p>[MD] : Fix and move to the next parameter</p>											
<p>It will be displayed in F3, F4, F5, F6 operation mode and set the time unit. ※1</p> <p>① Select the time unit ② Select time range</p>	<table border="1"> <tr> <th>SEC</th> <th>MIN</th> </tr> <tr> <td>999.99sec.</td> <td>999.99min.</td> </tr> <tr> <td>9999.9sec.</td> <td>9999.9min.</td> </tr> <tr> <td>99min.59.9sec.</td> <td>99hour59.9min.</td> </tr> <tr> <td>9hour 59min.59sec.</td> <td>999hour59min.</td> </tr> <tr> <td>99999sec.</td> <td>99999min.</td> </tr> </table>	SEC	MIN	999.99sec.	999.99min.	9999.9sec.	9999.9min.	99min.59.9sec.	99hour59.9min.	9hour 59min.59sec.	999hour59min.	99999sec.	99999min.	<p>① [▼], [▲] : Change the setting mode</p> <p>[MD] : Save → <b>t.SEC</b> → <b>t.n</b></p> <p>② [▼], [▲] : Change the setting value</p> <p>→ <b>999.99</b> → <b>9999.9</b> → <b>99.59.9</b></p> <p>→ <b>99999</b> → <b>9.59.59</b> (sec.)</p> <p>→ <b>999.59</b> (min.)</p> <p>[MD] : Fix and move to the next parameter</p>
SEC	MIN													
999.99sec.	999.99min.													
9999.9sec.	9999.9min.													
99min.59.9sec.	99hour59.9min.													
9hour 59min.59sec.	999hour59min.													
99999sec.	99999min.													
<p><b>PSt.hh</b> → <b>99999</b></p> <p><b>PSt.h</b> → <b>99999</b></p> <p><b>PSt.L</b> → <b>00000</b></p> <p><b>PSt.LL</b> → <b>00000</b></p>	Set the comparative value HH.	00000 to 99999	<p>◀ : Move the setting digit</p> <p>[MD] : Fix and move to the next parameter</p>											
<p><b>PSC.AH</b> → <b>60000</b></p> <p><b>PSC.AY</b> → <b>10 01</b></p> <p><b>PSC.bH</b> → <b>60000</b></p> <p><b>PSC.bY</b> → <b>10 01</b></p>	Set the comparative value H.	• F1, F2, F7, F9, F11, F12, F13 : 0 to 99999	<p>[▼], [▲] : Change the setting value</p> <p>[MD] : Fix and move to the next parameter</p>											
<p><b>dI SP.t</b> → <b>0.05</b></p>	Set the comparative value L.	• F3 to F6: 0 to Setting time range	<p>[MD] : Fix and move to the next parameter</p>											
	Set the comparative value LL.	• F8, F10: -19999 to 99999												
	Set the prescale value of input A mantissa(X).	00000 to 99999												
	Set the prescale value of input A an exponent(Y).	10 - 9 to 10 9 (10 <sup>-9</sup> to 10 <sup>9</sup> )	<p>[▼], [▲] : Change the setting value</p> <p>[MD] : Fix and move to the next parameter</p>											
	Set the prescale value of input B mantissa(X).	00000 to 99999												
	Set the prescale value of input B an exponent(Y).	10 - 9 to 10 9 (10 <sup>-9</sup> to 10 <sup>9</sup> )	<p>[▼], [▲] : Change the setting value</p> <p>[MD] : Fix and move to the next parameter</p>											
	Select the display cycle.	0.05, 0.5, 1, 2, 4, 8	<p>[▼], [▲] : Change setting value</p> <p>→ <b>0.05</b> → <b>0.5</b> → <b>1</b></p> <p>← <b>8</b> ← <b>4</b> ← <b>2</b></p> <p>[MD] : Fix and move to the next parameter <b>PbAr.t</b></p>											

※1: It is able to select second(**SEC**) or minute(**n**) in time until selection parameter(**t.un**), then also selectable time range.

※It will enter into parameter 3 if pressing **[MD]** key for 5sec in RUN mode.

※When enter into the parameter 2 group, the parameter name and data value will flicker by cycle(1sec.). Then move the setting digit by **[◀]** key and change the setting value by **[▼]**, **[▲]** key.

※The fixed data value set by user in each parameter will flicker by cycle(1sec.) and move to the next parameter by pressing **[MD]** key.

※If press **[MD]** key for over 2 sec. in every setting mode, data will be set and return to RUN.

※Parameter is not shown in MP5Y-4N, MP5Y-43, MP5Y-44, MP5Y-45, MP5S-4N.

● Parameter 3 group

Menu and Parameter display	Parameter	Setting range	Setting key
<p>Display <b>PAR.A.3</b> for 2sec, then move to <b>F5-h</b> automatically. Move to <b>F5-h</b>, if press <b>[MD]</b> key 1sec. before.</p> <p><b>F5-h</b> → <b>99999</b></p> <p><b>F5-L</b> → <b>00000</b></p> <p><b>Addr</b> → <b>00</b></p> <p><b>bPS</b> → <b>2400</b></p> <p><b>rEnot</b> → <b>oFF</b></p> <p><b>LoC</b> → <b>oFF</b></p>	This is parameter 3 group.		
	Set the High-limit value of PV transmission output.	• F1, F2, F7, F9, F11, F12, F13 : 0 to 99999	<p>◀ : Move the setting digit</p>
	Set the Low-limit value of PV transmission output.	• F3, F6 : 0 to Setting time range	<p>[▼], [▲] : Change the setting value</p>
	Set the communication Address.	00 to 99 (32 channel)	<p>[MD] : Fix and move to the next parameter</p>
	Select the communication speed.	2400 / 4800 / 9600	<p>[▼], [▲] : Change the setting value</p> <p>→ <b>2400</b> → <b>4800</b> → <b>9600</b></p> <p>[MD] : Fix and move to the next parameter</p>
	Select the Remote and the Local. ※1	on : Use oFF : Not use	<p>[▼], [▲] : Change the setting value</p> <p>→ <b>oFF</b> → <b>on</b></p> <p>[MD] : Fix and move to the next parameter</p>
	Enable to lock the key for each parameter group	oFF : There is no key lock in all mode LoC.0 : Parameter0 to 3 Lock LoC.1 : Parameter1 to 3 Lock LoC.2 : Parameter2 to 3 Lock LoC.3 : Parameter3 Lock only	<p>[▼], [▲] : Change the setting value</p> <p>→ <b>oFF</b> → <b>LoC.0</b> → <b>LoC.1</b></p> <p>← <b>LoC.3</b> ← <b>LoC.2</b></p> <p>[MD] : Fix and move to the next <b>F5-h</b>.</p>

※It will enter into parameter 3 if pressing **[MD]** key for 5sec in RUN mode.

※1: It is enable to set the remote or local function in communication output type. When select the remote(**rEnot**) function, the front keys are disabled.

※2: Pressing **[MD]** key at parameter 3, it will enter into **F5-h** or **Addr** (option function), **LoC** (Indication type only).

※When entering into the parameter 3 group, the parameter name and data value will flicker by cycle(1sec.). Then move the setting digit by **[◀]** key and change the setting value by **[▼]**, **[▲]** key.

※The fixed data value by user in each parameter will flicker by cycle(1sec.) and move to the next parameter by pressing **[MD]** key.

※If press **[MD]** key for over 2 sec. in every setting mode, data will be set and return to RUN mode then if no key is touched for 60sec. data will be held as previous value and return to RUN mode.

■ Function

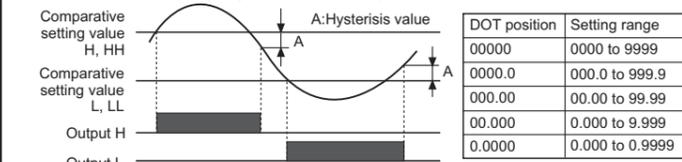
● Prescale function



• Prescale value(alpha =15) setting  
Set prescale value(alpha) as mentissa(X) and exponent(Y) at **P5C.AH**, **P5C.AY** (**P5C.bH**, **P5C.bY**) of parameter 2 group.  
Prescale value(alpha)=15 → Mentissa(X):1.5000, Exponent(Y):01  
And also it is able to set alpha value as X=0.1500, Y=02 then get the same display value.  
※Display cycle can be selected at parameter 2 group.

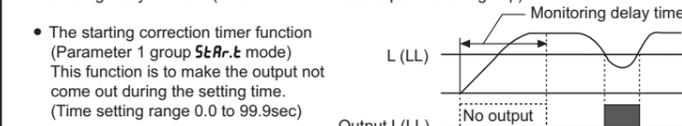
● Display Peak value monitoring function  
This is to monitor max. value and min. value by current display value, and display that Data at **h.PE/L.PE** mode of parameter 0 group.  
• User can check saved value in parameter 0 group. And High Peak(**h.PE**) value or Low Peak(**L.PE**) will be continuously 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.



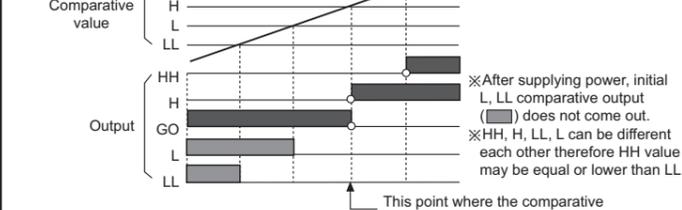
※You are able to set "0", but when set "0", the actual operation will be as "1".  
※The initial setting value is 0001.  
※You are able to set in the Parameter 1 group.

● 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 starting 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)

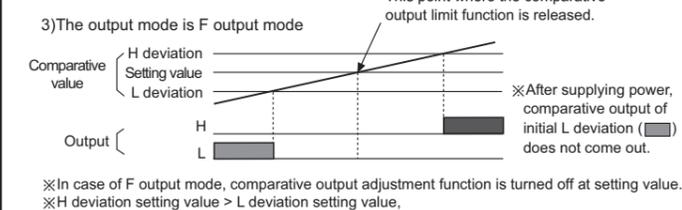
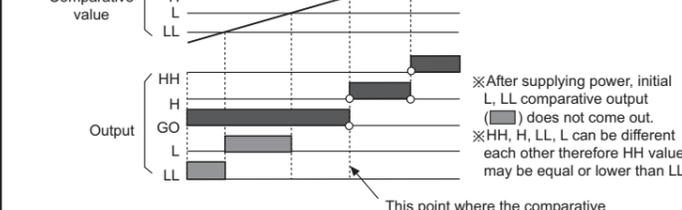


• The starting correction timer function (Parameter 1 group **StAr.t** mode)  
This function is to make the output not come out during the setting time. (Time setting range 0.0 to 99.9sec)

• Comparative output limit function (Parameter 1 group **FdEFY** 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



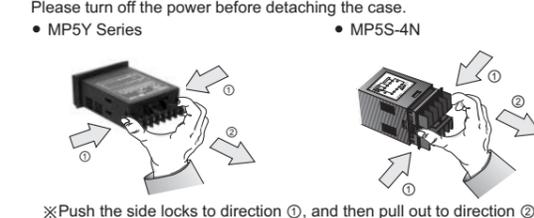
3)The output mode is F output mode

※In case of F output mode, comparative output adjustment function is turned off at setting value.  
※H deviation setting value > L deviation setting value, H deviation setting value < L deviation setting value

● Auto-Zero time setting function  
When you know the interval of input signal, Auto-zero time should be set as a little bit longer than that interval of input signal. If there is no pulse input within setting time(Auto-zero time), it regards as the input signal is cut off then make the value as "00000" forcibly.  
Note that the Auto-zero time setting should be longer than the narrowest interval of input pulse. Otherwise it may be difficult to make the display 0 value as "00000".

- Auto-zero time setting range(0.1 to 9999.9sec).
- When the display value is "00000", each output will be come against "0".
- Auto-Zero time setting is available in parameter 1 group.

● Case detachment



※Push the side locks to direction ①, and then pull out to direction ②.

● Lock setting function

This function is to set the enable or disable of each Parameter and mode changes.

Parameter	Parameter 0 group	Parameter 1 group	Parameter 2 group	Parameter 3 group
oFF	-	-	-	-
LoC 0	•	•	•	•
LoC 1	-	•	•	•
LoC 2	-	-	•	•
LoC 3	-	-	-	•

※ - : Unlock, • : Lock  
※Lock setting is available in Parameter 3 group.

● Inner hardware Lock setting function

This function is to lock **LoC** in Parameter 3 group by Inner hardware Lock function in order to prevent wrong setting.

Pin	LoC Mode	Remark
h0 (Hardware Lock0)	Check: ◯, Change: ◯	Factory default
h1 (Hardware Lock1)	Check: ◯, Change: ×	-
h2 (Hardware Lock2)	Check: ×, Change: ×	-

※Setting pin for Lock setting is located on internal PCB.

● Display cycle selection function

This function is to change the display cycle in range of 0.05/0.5/1/2/4/8 sec., and displays the average value of measuring value for the setting cycle.

● Time unit selection function  
Enable to display PV value with firm time unit in range of various time.

SEC	MIN
999.99sec.	999.99min.
9999.9sec.	9999.9min.
99min.59.9sec.	99hour59.9min.
9hour59min.59sec.	999hour59min.
99999sec.	99999min.

• Time unit selection function can be set in parameter 2 group.  
• Applicable mode : Mode F3 to F6  
※There is no DOT setting mode when set the time unit display function.

● Factory default

Mode	Setting value	Mode	Setting value	Mode	Setting value
node	F1 hYS 0001	dot	00000	PSt.LL	00000
Ln-ARnPhF	GuAr.d FdEFY	PSt.hh	99999	PSt.h	99999
out-t	StAr.d RuteR 99999	PSt.L	00000	PSt.LL	00000
		dI SP.t	0.05	Addr	01
		bPS	2400	rEnot	oFF
		LoC	oFF	LoC	oFF

• Parameter 1 group      • Parameter 2 group      • Parameter 3 group

※The specification may not be displayed due to the operation mode and output specification.

■ Caution for using

- Installation environment
  - ①It shall be used indoor      ③Pollution Degree 2
  - ②Altitude Max. 2000m      ④Installation Category II .
- Please use separated line from high voltage line or power line in order to avoid inductive noise.
- Please install power switch or circuit breaker in order to cut the power supply.
- The switch or circuit breaker should be installed near by users for safety.
- Do not use this unit at below places.
  - ①Place where there are severe vibration or impact.
  - ②Place where there are direct ray of the sun.
  - ③Place where strong magnetic field or electric noise are generated.
- Storage method  
When storing this unit for a long time, please avoid the direct ray of the sun and keep this unit under circumstances as -20 to 60°C, 35 to 85RH.
- Input line : Shield wire must be used when the measuring input line is getting longer or there are lots of noises.
- Please put enough space between power line and terminal of measuring input.

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

■ Main products

<ul style="list-style-type: none"> <li>Proximity sensors</li> <li>Area sensors</li> <li>Door/Door side sensors</li> <li>Counters</li> <li>Rotary encoders</li> <li>Power controllers</li> <li>Panel meters</li> <li>Graphic/Logic panels</li> <li>Temperature controllers</li> <li>Tachometer/Pulse(Rate) meters</li> <li>Temperature/Humidity transducers</li> <li>Stepping motors/drivers/motion controllers</li> <li>Laser marking system(CO<sub>2</sub>, Nd:YAG)</li> <li>Laser welding/soldering system</li> </ul>	<ul style="list-style-type: none"> <li>Photoelectric sensors</li> <li>Fiber optic sensors</li> <li>Pressure sensors</li> <li>Timers</li> <li>Display units</li> <li>Sensor controllers</li> </ul>
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