

Autonics



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

Caution for your safety

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

Warning

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required.**
It may result in serious damage, fire or human injury.
- 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.
- Do not use the load beyond rated switching capacity of Relay contact.**
It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
- 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.

※The above specification are changeable without notice anytime.

Ordering information

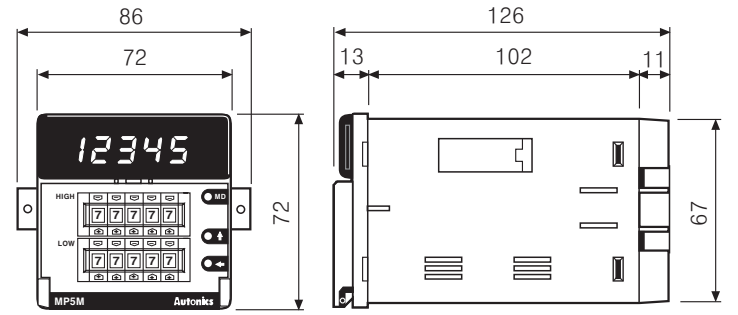
MP	5	M	-	4	N
Item	Size	Digit type	Power supply	Output	Main output(Comparative value output)
MP	4	5	100~240VAC 50/60Hz	1	Indication type only
	M			2	Relay first-stage(High-limit) output + NPN open collector output
				4	Relay two-stage(High/Low-limit) output + NPN open collector output
					100~240VAC 50/60Hz
					DIN W72 × H72mm
					99999(5 Digit)
					Pulse meter

Specifications

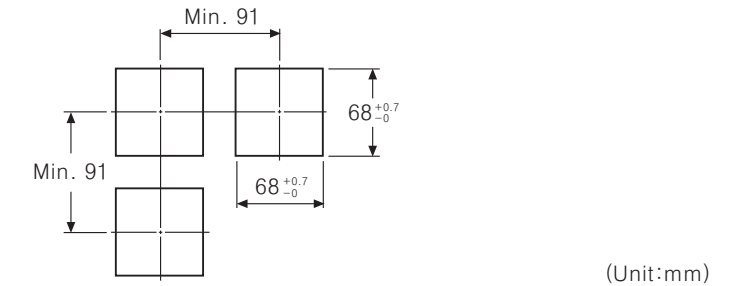
Model		MP5M-4N	MP5M-41	MP5M-42
		Indicator	High-limit setting type	High/Low-limit setting type
Display method		7 Segment LED(Zero Blanking), Display Size : W4×H8mm		
Max. indication		5Digit(0.0001 to 99999)		
Power supply		100~240VAC 50/60Hz		
Allowable operation voltage		90 to 110% of rated voltage		
Power consumption		Approx. 7.5VA(240VAC)	Approx. 8VA(240VAC)	
Power for external sensor		12VDC ±10%, 80mA		
Input frequency		• Solid state input : Max. 50kHz(Pulse width:Min. 10 μ s) • Contact input : Max. 45Hz(Pulse width:Min. 11ms)		
Input level		[Voltage input] High: 4.5~24VDC, Low: 0~1VDC, Input impedance : 4.5k Ω [No-voltage input] Short-circuit impedance : Max. 300 Ω , Residual voltage : Max. 1V, Open-circuit impedance : Min. 100k Ω		
Measuring range		• Mode F1, F2, F7, F8 : 0.0005Hz to 50kHz • Mode F3 : 0.02s to 3,200s • Mode F4, F5, F6 : 0.01s to 3,200s • Mode F9, F10, F11 : 0 ~ 4 × 10 ³ Count		
Measuring accuracy (23 ±5℃)		• Mode F1, F2, F7, F8 : 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), Density(F8), Length measurement(F9), Interval(F10), Integration(F11)		
Prescale function		Direct input method(0.0001×10 ⁻⁹ to 9.9999×10 ⁹)		
Hysteresis		—	0 to 9999 *1	
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	Relay output	—	250VAC 3A resistive load 1c	250VAC 3A resistive load 1a×2
	NPN open collector output		30VDC 100mA max.	30VDC 100mA max. ×2
Current transmission output response time		Max. 800ms		
Memory		Non-volatile memory(Input times : 100,000 times)		
Insulation resistance		Min. 100M Ω (at 500VDC megger)		
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 μ s) by the noise simulator R/S phase, repetition frequency 60Hz		
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 ² (Approx. 30G) 3 times at X, Y, Z direction		
	Malfunction	100m/s ² (Approx. 10G) 3 times at X, Y, Z direction		
Relay life cycle	Mechanical	—	Min. 10,000,000 operations	
	Electrical	—	Min. 100,000 times at 250VAC 3A(resistive load)	
Environ-ment	Ambient temperature	-10 to 50℃, Storage temperature: -20 to 60℃		
	Ambient humidity	35 to 85%RH, Storage humidity: 35 to 85%RH		
Approval		CE cULus		
Weight		Approx. 275g	Approx. 310g	Approx. 330g

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

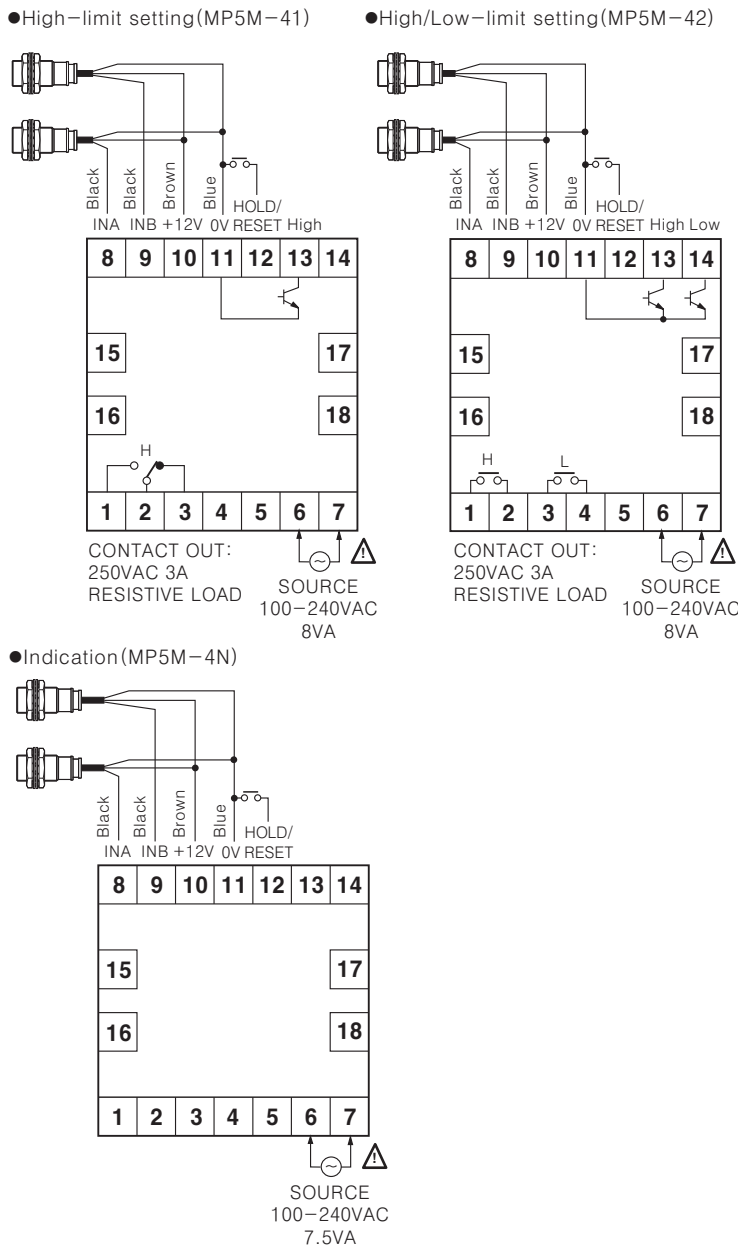
Dimensions



Panel cut-out



Connection

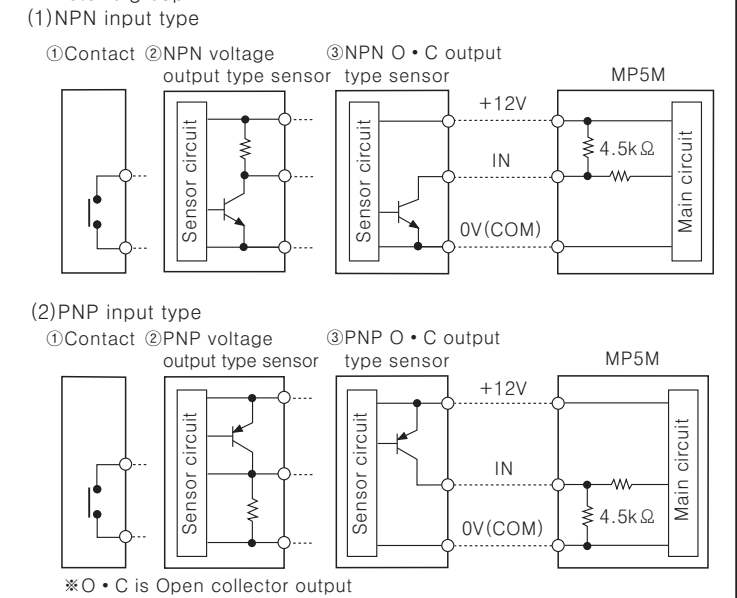


Input specification

- Input signal**
 - Solid state input
 - Input frequency: 50kHz(Max.)
Standard duty rate of input signal is 1:1,
ON/OFF pulse width should be each over 10μs.
 - 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 each over 11ms.
 - Relay contact specification: Please use a contact that can switch reliably at 12VDC, 2mA min. of load current.

Input type

MP5M has **NPN input and PNP input** and it is able to select it in Para-meter 1 group.



Operation mode

- Select operation mode from **ModE**(Mode) of Parameter 1 group.
 - There are 11 kinds of operation mode.
- F1Mode (Frequency/Number of revolution/Speed)**
- This mode is to display calculated frequency or number of revolution, speed by measuring frequency of Input A,
- Frequency(Hz) = $f \times \alpha$ ($\alpha = 1[\text{sec}]$)
 - Number of revolution(rpm) = $f \times \alpha$ ($\alpha = 60[\text{sec}]$)
 - Speed(m/min) = $f \times \alpha$ ($\alpha = 60[\text{sec}]$)
- ※L = The length of conveyor moved for 1 pulse cycle[m]
- Display value and display unit
- | Display value | Display unit | α (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
-

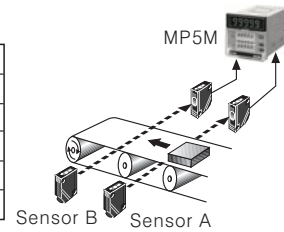
●F2 Mode(Passing speed)

It displays the passing speed between ON of input A and ON of input B.
Passing speed(V) = $f \times \alpha$ ($\alpha = L[m]$)
※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]

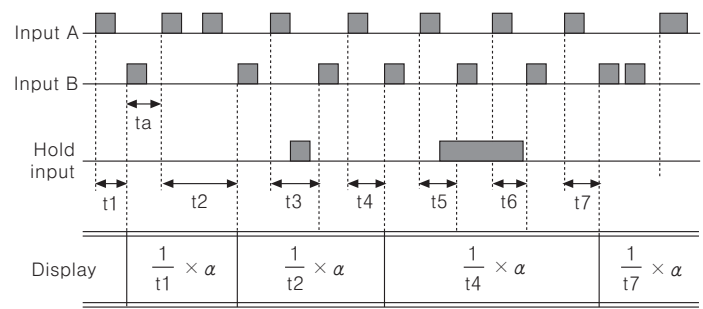
●Display value and display unit

Display value	Display unit	α (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



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

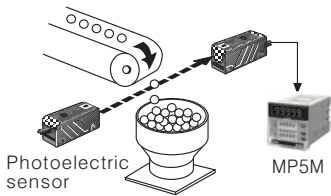
●F3 Mode(Cycle)

It displays the time from when input A is ON to the next ON of input A.
Cycle(T) = t
※t : Measurement time[sec]

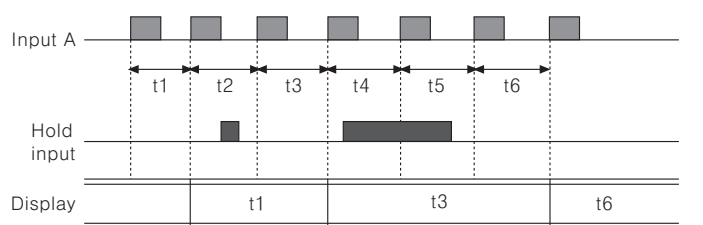
●Display value and display unit

Display value	Display unit	
Cycle	SEC	MIN
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	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.

●F4 Mode(Passing time)

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

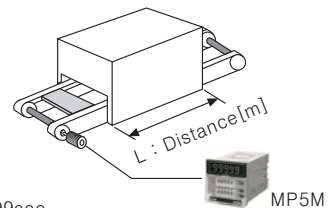
$$\text{Passing time[sec]} = t \times \alpha \left(\alpha = \frac{L[m]}{\text{Moving distance within 1 pulse cycle[m]}} \right)$$

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

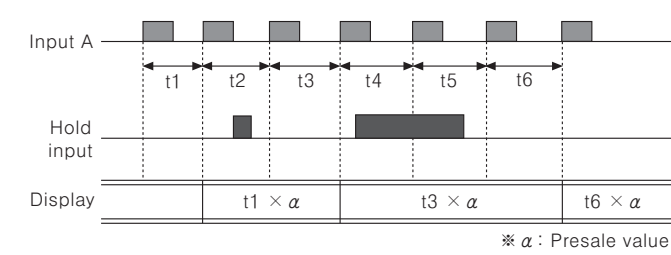
●Display value and display unit

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

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



●Time chart



※ α : Presale value

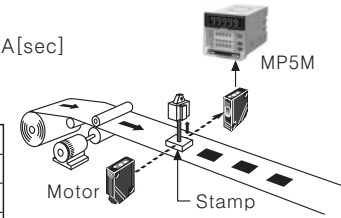
●F5 Mode(Time width)

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

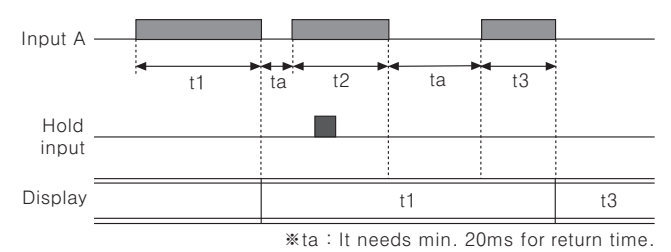
●Display value and display unit

Display value	Display unit	
Time width	SEC	MIN
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	99999sec.	99999min.

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



●Timing charts



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

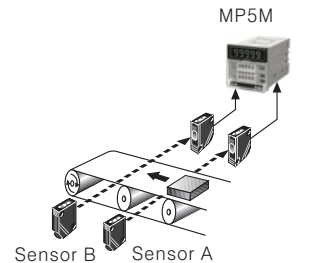
●F6 Mode(Time interval)

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

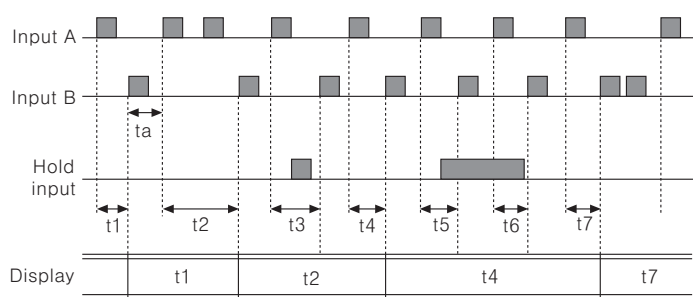
●Display value and display unit

Display value	Display unit	
Time interval	SEC	MIN
	999.99sec.	999.99min.
	9999.9sec.	9999.9min.
	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.

●F7 Mode(Absolute rate)

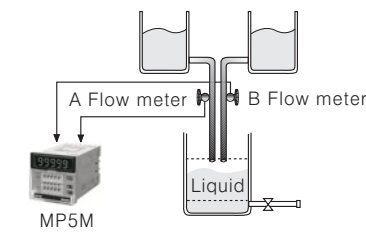
It displays how many percentage(%) faster or late, speed, volume etc. of Input B against input A.
Absolute rate = (Input B / Input A) × 100%

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

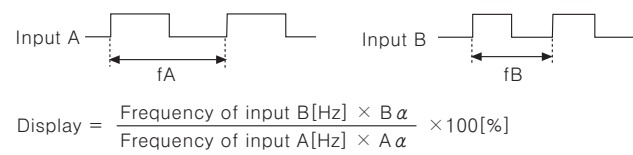
●Display value and display unit

Display value	Display unit
Absolute rate	%

※A α : Prescale value of input A
B α : Prescale value of input B



●Time chart



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

●F8 Mode(Density)

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

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

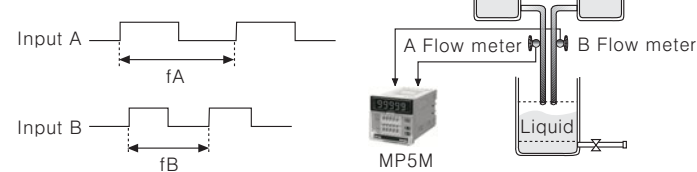
$$\text{Density} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$$

●Display value and display unit

Display value	Display unit
Density	%

※A α : Prescale value of input A
B α : 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.

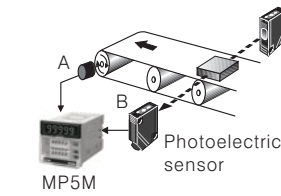
●F9 Mode(Length measurement)

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

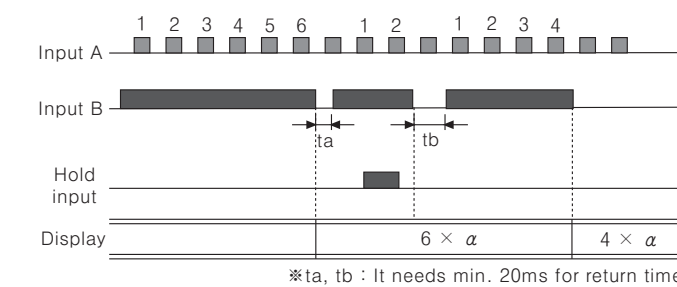
●Display value and display unit

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

※Factory default(Unit) : Quantity[EA]



●Time chart



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

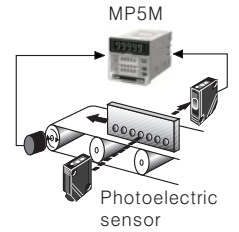
●F10 Mode(Interval)

It displays the number of Input A pulse from Input B is ON to the time Input B is ON next.
Interval = P × α (※P : Number of input A pulse, α : Prescale value)

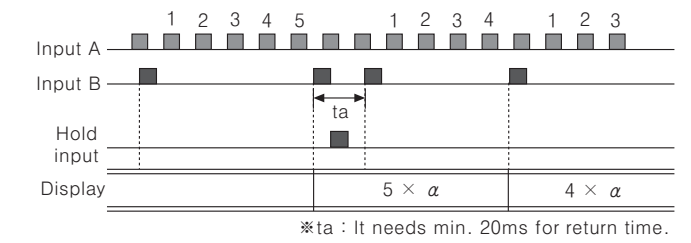
●Display value and display unit

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

※Factory default(Unit) : Quantity[EA]



●Time chart



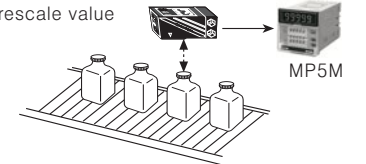
※ta : It needs min. 20ms for return time.

●F11 Mode(Integration)

It displays the counting value against pulses of Input A.
Integration = P × α
※P : Pulse number of input A, α : Prescale value

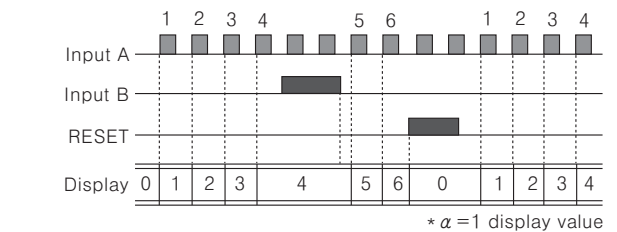
●Display value and display unit

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.

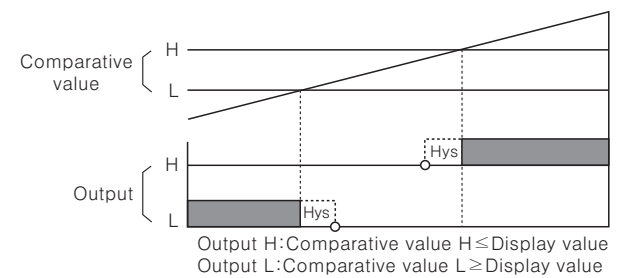


* α =1 display value

■ Output mode

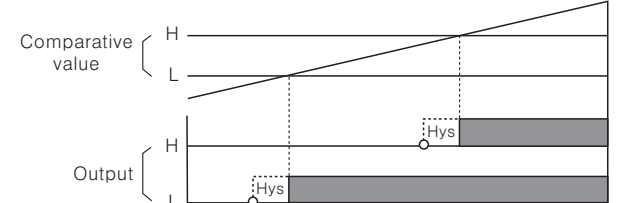
- Select output mode in **out-t**(Output type) of Parameter1 group.
- MP5M-41: S Output mode supported only
- MP5M-42: S, B H, L, I, F Output mode supported.
- Display value is H>L in B(Block) output mode and F(deviation) output mode and the other output mode can be operated separately regardless of display value.

○ S(Standard) output mode[**Std-Std**], B(Block) output mode[**out-b**]



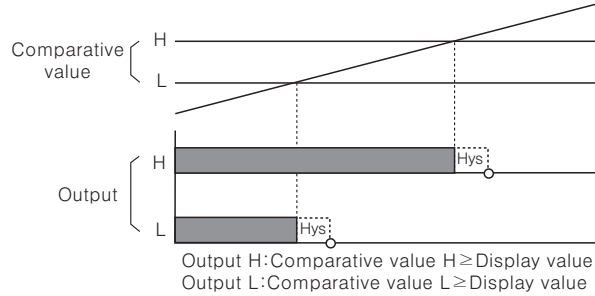
Output H:Comparative value $H \leq$ Display value
Output L:Comparative value $L \geq$ Display value

○ H(High) Output mode[**out-h**]

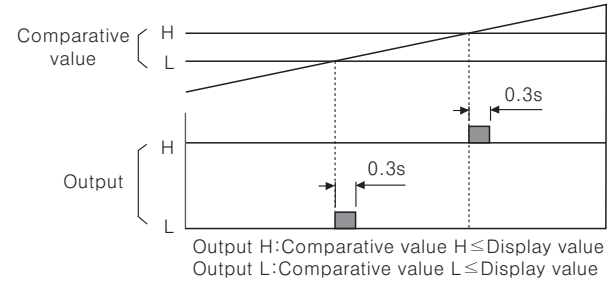


Output H:Comparative value $H \leq$ Display value
Output L:Comparative value $L \leq$ Display value

◎ **L(Low) output mode**[*out-L*]



◎ **I(One Shot) output mode**[*out-I*]

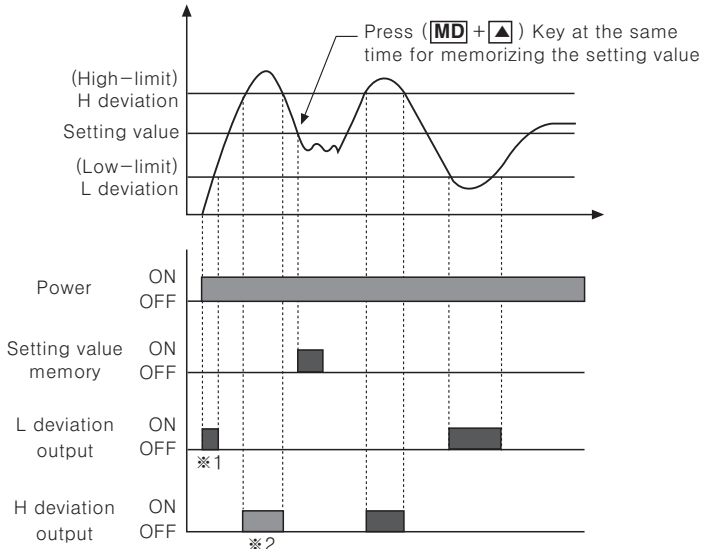


- ※One Shot(■) output time is fixed as 0.3sec.
- ※There is no Hysteresis in I(One shot) comparative output mode.

◎ **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.
- Displays the setting value : Check the memorized the setting value by ([**▲**]) key.
(It displays the memorized setting value for pressing [**▲**]key continuously.)
- Deviation setting : Set H, L deviation by setting value.
(The set deviation will be memorized until setting the next deviation again even though 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



- ※1: When select the initial comparative output limit function, output will not be come out.
- ※2: Output position may be different from above graph.
- ※Even thought you set the deviation as "0(Zero)", it will actually work as setting "1".

■ **Operation chart by each Parameter group**

- The display parameter are different by each operation mode, please see "■ **Parameter**" below.
- : 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
<i>hPEV</i>		●	●	●	●	●	●	●	●	●	●	X
<i>LPEV</i>		●	●	●	●	●	●	●	●	●	●	X

●**Parameter 1 group**

Parameter 1	Sub mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
<i>oadE</i>		●	●	●	●	●	●	●	●	●	●	●
<i>in-A</i>		●	●	●	●	●	●	●	●	●	●	●
<i>in-b</i>		X	●	X	X	X	●	●	●	○	○	○
<i>out-t</i>		●	●	●	●	●	●	●	●	●	●	X
<i>hYS</i>		●	X	X	X	X	X	●	●	X	X	X
<i>GuAr.d</i>	<i>F.dEFY</i>	●	●	●	●	●	●	●	●	●	●	X
	<i>StAr.t</i>	●	●	●	●	●	●	●	●	●	●	X
<i>AutoA</i>		●	X	X	●	X	X	●	●	X	X	X
<i>Auto.b</i>		X	X	X	X	X	X	●	●	X	X	X
<i>EEo</i>		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
<i>dot</i>		●	●	X	X	X	X	●	●	●	●	●
<i>tonE</i>		X	X	●	●	●	●	X	X	X	X	X
<i>P5C.A.H</i> ※1		●	●	X	●	X	X	●	●	●	●	●
<i>P5C.A.Y</i> ※1		●	●	X	●	X	X	●	●	●	●	●
<i>P5C.bH</i>		X	X	X	X	X	X	●	●	X	X	X
<i>P5C.bY</i>		X	X	X	X	X	X	●	●	X	X	X
<i>di SP.t</i>		●	X	X	X	X	X	●	●	X	X	X

- ※1 *P5C.H*, *P5C.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
<i>LoC</i>		●	●	X	X	X	X	●	●	●	●	●

●**Monitoring delay operation function chart by each output mode**

	<i>out-t</i>	<i>StAr.d</i>	<i>out-h</i>	<i>out-L</i>	<i>out-b</i>	<i>out-i</i>	<i>out-F</i>
Comparative output adjustment function.	●		X	X	●	X	●
Starting correction timer function	●	●	●	●	●	●	●

■ **Parameter**

●**Parameter 0 group**

	Menu and Parameter display	Parameter	Setting key
● Reset If press [◀] key for 2sec. during <i>hPEV</i> and <i>LPEV</i> 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 <i>LPEV</i> or RUN .		It displays high peak value among the measuring values	
		Display low peak value among the measuring values	

- ※If press [**MD**] key in **RUN** it will enter into *hPEV*.
- ※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 and return to **RUN** mode.
- ※When entering into parameter 0 the parameter name and data will be flickering by 1sec..
- ※It will show the set data to flicker by 1sec., then move to next Parameter with touching [**MD**] key once.

●**Parameter 1 group**

	Menu and Parameter display	Parameter	Setting range	Setting key																											
MD press 3sec. RUN PR-A.1 MD Display PR-A.1 for 2sec. then advance to oadE automatically pressing MD key before 1sec. it will move to oadE. oadE MD oadE F1 ln-A MD ln-A nPn.hF ln-b MD ln-b nPn.hF out-t MD out-t StAr.d hys MD hys 000.1 GuAr.d MD GuAr.d F.dEFY StAr.t StAr.t 99.9 ① ② Auto.A MD Auto.A 9999.9 Auto.b MD Auto.b 9999.9 neo MD neo oFF <tr><td>This is parameter 1 group.</td><td></td><td></td><td></td></tr> <tr><td>Select operation mode.</td><td>F1 to F11</td><td> ▲ : Change the setting mode F1 → F2 to F11 MD : Fix and move to the next parameter </td></tr> <tr><td>Set the sensor type of input A.</td><td> • PNP transistor output type : PnP.hF • Contact output type (L output) : PnP.L.F </td><td> ▲ : Change the sensor type nPn.hF → nPn.L.F → PnP.hF → PnP.L.F </td></tr> <tr><td>Set the sensor type of input B.</td><td> • NPN transistor output type : nPn.hF • Contact output type (H output) : nPn.L.F </td><td> MD : Fix and move to the next parameter </td></tr> <tr><td>Select the output mode. (★1)</td><td>StAr.d / out-h / out-L out-b / out-I / out-F</td><td> ▲ : Change the setting mode StAr.d → out-h → out-L out-f ← out-I ← out-b ← </td></tr> <tr><td>Set the hysteresis for the output. (★2)</td><td>0 to 9999 (If decimal point is set in 0000.0, the range will be 0 to 999.9.</td><td> MD : Fix and move to the next parameter ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter </td></tr> <tr><td>Select the start compensating timer function or comparative output limit function. (★3)</td><td> ① F.dEFY / StAr.t ②When select StAr.t When StAr.t is 99.9 flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9 . </td><td> ① ▲ : Change the setting mode F.dEFY → StAr.t MD : Fix and move to the next parameter ② ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter </td></tr> <tr><td>Set the Auto-zero time of INA input.</td><td>0.1 to 9999.9</td><td> ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter </td></tr> <tr><td>Set the Auto-zero time of INB input.</td><td>0.1 to 9999.9</td><td> ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter </td></tr> <tr><td>It sets the memory retention. The measuring value will be memorized when the power off. (F11 Mode only)</td><td>on : Memory retention oFF : No memory retention</td><td> ▲ : Change the setting mode on → oFF MD : Fix and move to the oadE </td></tr>	This is parameter 1 group.				Select operation mode.	F1 to F11	▲ : Change the setting mode F1 → F2 to F11 MD : Fix and move to the next parameter	Set the sensor type of input A.	• PNP transistor output type : PnP.hF • Contact output type (L output) : PnP.L.F	▲ : Change the sensor type nPn.hF → nPn.L.F → PnP.hF → PnP.L.F	Set the sensor type of input B.	• NPN transistor output type : nPn.hF • Contact output type (H output) : nPn.L.F	MD : Fix and move to the next parameter	Select the output mode. (★1)	StAr.d / out-h / out-L out-b / out-I / out-F	▲ : Change the setting mode StAr.d → out-h → out-L out-f ← out-I ← out-b ←	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 : Fix and move to the next parameter ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter	Select the start compensating timer function or comparative output limit function. (★3)	① F.dEFY / StAr.t ②When select StAr.t When StAr.t is 99.9 flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9 .	① ▲ : Change the setting mode F.dEFY → StAr.t MD : Fix and move to the next parameter ② ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter	Set the Auto-zero time of INA input.	0.1 to 9999.9	◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter	Set the Auto-zero time of INB input.	0.1 to 9999.9	◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter	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	▲ : Change the setting mode on → oFF MD : Fix and move to the oadE
	This is parameter 1 group.																														
	Select operation mode.	F1 to F11	▲ : Change the setting mode F1 → F2 to F11 MD : Fix and move to the next parameter																												
	Set the sensor type of input A.	• PNP transistor output type : PnP.hF • Contact output type (L output) : PnP.L.F	▲ : Change the sensor type nPn.hF → nPn.L.F → PnP.hF → PnP.L.F																												
	Set the sensor type of input B.	• NPN transistor output type : nPn.hF • Contact output type (H output) : nPn.L.F	MD : Fix and move to the next parameter																												
	Select the output mode. (★1)	StAr.d / out-h / out-L out-b / out-I / out-F	▲ : Change the setting mode StAr.d → out-h → out-L out-f ← out-I ← out-b ←																												
	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 : Fix and move to the next parameter ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter																												
	Select the start compensating timer function or comparative output limit function. (★3)	① F.dEFY / StAr.t ②When select StAr.t When StAr.t is 99.9 flickering by 1sec. cycle, set the starting correction time 0.0 to 99.9 .	① ▲ : Change the setting mode F.dEFY → StAr.t MD : Fix and move to the next parameter ② ◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter																												
	Set the Auto-zero time of INA input.	0.1 to 9999.9	◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter																												
	Set the Auto-zero time of INB input.	0.1 to 9999.9	◀ : Move the setting digit ▲ : Change the setting value MD : Fix and move to the next parameter																												
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	▲ : Change the setting mode on → oFF MD : Fix and move to the oadE																													

- ※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 delay function mode [*GuAr.d*].
When select the comparative output limit [*F.dEFY*] function, it will move to the next parameter [*AutoA*] and when select the starting correction time [*StAr.t*] you need to be set the starting correction time [0.0 ~ 99.9] so that it moves to the next parameter [*AutoA*].
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.
- ※[] parameter is not shown in MP5M-4N, MP5M-41. But, [*hYS*] at [] parameter is shown in MP5M-41.

●Parameter 2 group

Menu and Parameter display	Parameter	Setting range	Setting key								
MD Press for 4sec. RUN PR-R.2 MD MD ※1 dot MD t.unt t.unt t.SEC t.min t.SEC t.min PSC.AH MD PSC.AY MD PSC.bH MD PSC.bY MD di SP.t MD Display PR-R.2 for 2sec. then advance to dot automatically pressing MD key before 1sec. it will move to dot. ① ②	This is parameter 2 group. Set decimal point position of display value 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 Set the prescale value of input A mantissa(X). Set the prescale value of input A an exponent(y). Set the prescale value of input B mantissa(X). Set the prescale value of input B an exponent(y). Select the display cycle.	00000 00.000 0000.0 0.0000 000.00 <table><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>99999sec.</td><td>99999min.</td></tr></table> 000000 to 9.9999 10 - 9 to 10 9 (10⁻⁹ to 10⁹) 000000 to 9.9999 10 - 9 to 10 9 (10⁻⁹ to 10⁹) 0.05, 0.5, 1, 2, 4, 8	SEC	MIN	999.99sec.	999.99min.	9999.9sec.	9999.9min.	99999sec.	99999min.	◀ : 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 ▲ : Change setting value 0.05 → 0.5 → 1 8 ← 4 ← 2 MD : Fix and move to the dot.
SEC	MIN										
999.99sec.	999.99min.										
9999.9sec.	9999.9min.										
99999sec.	99999min.										

- ※1: It is able to select second[t.SEC] or minute[t.min] in time until selection parameter[t.unt] then also selectable time range.
- ※It will enter into parameter 2 if pressing **MD**key for 4sec. in **RUN** mode.
- ※When entering into the parameter 2 group, the parameter will flicker by 1sec. cycle 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 1sec. cycle and move to the next parameter by pressing **MD** key. If you press **MD** key for over 2sec. in every setting mode data will be set and return to **RUN**.

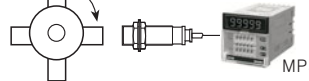
●Parameter 3 group

Menu and Parameter display	Parameter	Setting range	Setting key
	This is parameter 3 group.	—	—
Display PR-R.3 for 2sec. then move to LoC automatically. Move to LoC , if press MD key before 1sec.			
LoC	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	▲ : Change the setting mode → oFF → LoC.0 → LoC.1 LoC.3 ← LoC.2 MD : If pressing MD key for over 2sec., Data will be set and it will return to RUN .

- ※It will enter into parameter 3 if pressing **MD** key for 5sec in **RUN** mode.
- ※When entering into the parameter 3 group the parameter name and data value will flicker by 1sec. cycle then change the setting value by **▲** key.
- ※The fixed data value by user in each parameter will flicker by 1sec. cycle and be set and return to **RUN** mode by pressing **MD**key for over 2sec. then if no key is touched for 60sec. data will be held as previous value and return to **RUN** mode.

■ Function

○Prescale function

MP5M

$$\begin{aligned} \text{RPM} &= f \times \alpha \\ &= f \times 60 \times (1 / N) \\ &= f \times 60 \times (1 / 4) \\ &= f \times 60 \times 0.25 \\ &= f \times 15 \end{aligned}$$

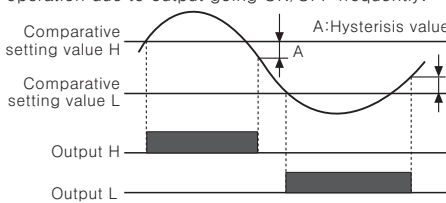
●How to set prescale value(α =15)
Set prescale value(α) to separate as a mantissa(X) and an exponent(Y) at **PSC.AH**, **PSC.AY**(or **PSC.bH**, **PSC.bY**) of Parameter 2 group.
Prescale value(α)=15 a Mantissa(X):1.5000, Exponent(y):01.
And also it is able to set α value as X=0.015, Y=03 then get the 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**) 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.

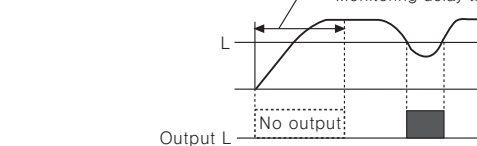


DOT position	Setting value
00000	0000 to 9999
0000.0	000.0 to 999.9
000.00	00.00 to 99.99
00.000	0.000 to 9.999
0.0000	0.000 to 0.9999

※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.

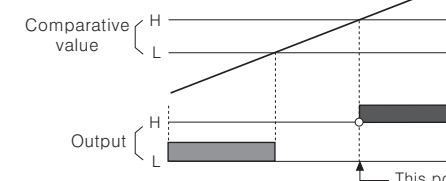
○Monitoring delay time function

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 starting 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 time 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(**FdEFY** mode of Parameter 1 group)
This function is to limit the L output before the H output of S, B, F output mode.

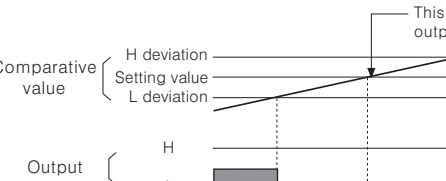
1)The output mode is S output mode, B output mode



※The initial L comparative output will not come when it is operating(■) after supplying power.
This point where the comparative output limit function is released.

※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 comparative output will not come when it is operating (■) after supplying power.
This point where the comparative output limit function is released.

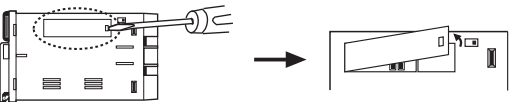
※The output mode is F output mode, the comparative output limit function will be released at the setting value(Standard setting).
※H deviation setting value > L deviation setting value,
H deviation setting value < L deviation setting value

○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 o ff 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 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".
●Set the time in **RuTab** and **RuTab** mode of parameter group1.

○DIP switch cover detachment

Please turn off the power before detaching the cover.



Push a lock part to front direction and widen it simultaneously.
※Be careful in order not to be wounded.

○Lock setting function

This function is to set the enable or disable of each Parameter and mode changes in MP5M.

Parameter	Parameter 0 group	Parameter 1 group	Parameter 2 group	Parameter 3 group	※ -: Unlock, ●: Lock
oFF	—	—	—	—	※Lock setting is available in Parameter 3 group.
LoC 0	●	●	●	●	
LoC 1	—	●	●	●	
LoC 2	—	—	●	●	
LoC 3	—	—	—	●	

○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.

	SW	LoC mode
h0 (Hardware Lock0)	1 2 ON ☐ OFF ☐	Check: ○, Change: ○
h1 (Hardware Lock1)	1 2 ON ☐ OFF ☐	Check: ○, Change: ×
h2 (Hardware Lock2)	1 2 ON ☐ OFF ☐	Check: ×, Change: ×

※It is possible to lock or unlock after supplied power in Inner hardware Lock setting.

○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 firmed time unit in range of various time.

	SEC	MIN
999.99sec.	999.99min.	
9999.9sec.	9999.9min.	
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

●Parameter1 group				●Parameter2 group				●Parameter3 group	
Mode	Setting value	Mode	Setting value	Mode	Setting value	Mode	Setting value	Mode	Setting value
ModE	F 1	hYS	000 1	dot	00000	PSC. Y	10 0 1	LoC	oFF
1 n-RnPhF	GuAr.d	FdEFY	000 1	PSC. H	6.0000	di SP.t	005		
out-t	StAr.d	RuTab	99999						

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

■ Caution for using

- Installation environment
 - ①It shall be used indoor
 - ②Altitude Max. 2000m
 - ③Pollution Degree 2
 - 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℃, 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

■ Proximity sensors ■ Area sensors ■ Door/Door side sensors ■ Counters ■ Rotary encoders ■ Power controllers ■ Panel meters ■ Graphic/Logic panels ■ Temperature controllers ■ Tachometer/Pulse(Rate) meters ■ Temperature/Humidity transducers ■ Stepping motors/drivers/motion controllers ■ Laser marking system(CO ₂ , Nd:YAG) ■ Laser welding/soldering system	■ Photoelectric sensors ■ Fiber optic sensors ■ Pressure sensors ■ Timers ■ Display units ■ Sensor controllers
---	---

Autonics Corporation
http://www.autonics.com

Satisfiable Partner For Factory Automation

■HEAD QUARTERS :
41-5, Yongdang-dong, Yangsan-si, Gyeongsang, 626-847, Korea

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

The proposal of a product improvement and development : product@autonics.com