Autonics

PULSE METER
MP5S/Y/W Series
INSTRUCTION MANUAL

MP5S MP5Y MP5W

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

■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in personal injury, economic loss or fire.
2. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in explosion or fire.
3. **Install on a device panel to use.**
   Failure to follow this instruction may result in fire or electric shock.
4. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in fire or electric shock.
5. **Check 'Connections' before wiring.**
   Failure to follow this instruction may result in fire.
6. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in fire or electric shock.

⚠ Caution

1. **When connecting the power/measurement input and relay output, use AWG 24(0.20mm²) to AWG 15(1.65mm²) cable and tighten the terminal screw with a tightening torque of 0.98 to 1.18N·m.**
   Use the wiring suitable for the load current capacity.
   Failure to follow this instruction may result in fire or malfunction due to contact failure.
2. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
3. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in fire or electric shock.
4. **Keep the product away from metal chip, dust, and wire residue which from flowing into the unit.**
   Failure to follow this instruction may result in fire or product damage.

■ Ordering Information

MP 5 Y - 4 N

Output:

		Main output (Comparative value output)	Sub output (Display value output)
S	N	Indicator	—
Y	N	Indicator	—
	1	NPN open collector quintuple output	—
	2	PNP open collector quintuple output	—
	3	Indicator	BCD dynamic output
	4	Indicator	PV transmission output (current output)
	5	Indicator	RS485 comm. output
	6	Relay triple output (H, GO, L)	—
W	N	Indicator	—
	A	Relay quintuple output (HH, H, GO, L, LL)	—
	1	Relay triple output (H, GO, L)	—
	2	NPN open collector quintuple output	BCD dynamic output
	4	NPN open collector quintuple output	PV transmission output (current output)
	5	PNP open collector quintuple output	PV transmission output (current output)
	8	NPN open collector quintuple output	RS485 comm. output
	9	PNP open collector quintuple output	RS485 comm. output

Power supply:

2	24VAC～ 50/60Hz, 24-48VDC⎓
4	100-240VAC～ 50/60Hz

Size:

S	DIN W48×H48mm
Y	DIN W72×H36mm
W	DIN W96×H48mm

Digits:

5	99999 (5-digit)

Item:

MP	Pulse meter

※**The above specifications are subject to change and some models may be discontinued without notice.**
※**Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, website).**

■ Specifications

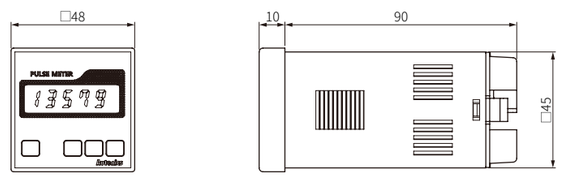
Series		MP5S	MP5Y	MP5W
Display method		7-segment LED (zero blanking method)		
Character size		W4×H8mm	W7×H14mm	
Display range		-19999 to 99999		
Power supply	AC voltage	100-240VAC～ 50/60Hz		
	AC/DC voltage	24VAC～ 50/60Hz, 24-48VDC⎓		
Power consumption	AC voltage	Max. 7.5VA (100-240VAC～ 50/60Hz)	Max. 9VA (100-240VAC～ 50/60Hz)	Max. 15VA (100-240VAC～ 50/60Hz)
	AC/DC voltage	Max. 6VA (24VAC～ 50/60Hz), Max. 4.5W (24-48VDC⎓)	Max. 7VA (24VAC～ 50/60Hz), Max. 6.2W (24-48VDC⎓)	Max. 11VA (24VAC～ 50/60Hz), Max. 7W (24-48VDC⎓)
Permissible voltage range		90 to 110% of rated voltage		
External power supply		Max. 12VDC⎓ ±10% 80mA		
Sub power supply		—		Max. 24VDC⎓ 30mA
Input frequency		·Solid state input 1: Max. 50kHz (pulse width: min. 10μs) ·Solid state input 2: Max. 5kHz (pulse width: min. 100μs) ※For F7, F8, F9, F10 operation mode, max. 1kHz (pulse width: min. 500μs) ·Contact input: Max. 45Hz (pulse width: min. 11ms)		
Input method		[Voltage input] High: 4.5-24VDC⎓, Low: 0-1VDC⎓, Input impedance: 3.9kΩ [No-voltage input] Short-circuit impedance: Max. 80Ω, Residual voltage: Max. 1VDC⎓, Open-circuit impedance: Min. 100kΩ		
Measurement range		·Operation mode F1, F2, F7, F8, F9, F10 : 0.0005Hz to 50kHz ·Operation mode F3, F4, F5, F6 : 0.01 to max. of each time range ·Operation mode F11, F12, F13, F16 : 0 to 99999 ·Operation mode F14, F15 : -19999 to 99999		
Measurement accuracy (23°C±5°C)		·Operation mode F1, F2, F7, F8, F9, F10 : F.S.±0.05%rdg±1-digit ·Operation mode F3, F4, F5, F6 : F.S.±0.01%rdg±1-digit		
Display cycle		OFF (for F2, F16 operation mode), 0.05, 0.5, 1, 2, 4, 8 sec (same as update output cycle)		
Operation mode		Frequency/Revolutions/Speed (F1), Passing speed (F2), Cycle (F3), Passing time (F4), Time interval (F5), Time differential (F6), Absolute ratio (F7), Error ratio (F8), Density (F9), Error (F10), Length measurement 1 (F11), Interval (F12), Accumulation (F13), Addition/Subtraction-individual input (F14), Addition/Subtraction-phase difference input (F15), Length measurement 2 (F16)		
Prescale function		Direct input method (0.0001×10^{-9} to 9.9999×10^{9})		
Hysteresis		0 to 9999※1		
Output: Main	Relay triple	—	250VAC～ 3A, 30VDC⎓ 3A resistive load	
	Relay quintuple		—	250VAC～ 3A, 30VDC⎓ 3A resistive load
	NPN/PNP open collector quintuple		Max. 30VDC⎓ 30mA	
Output: Sub	BCD dynamic		Max. 30VDC⎓ 30mA	
	PV transmission		DC4-20mA/DC0-20mA max. load 500Ω	
	Communication		RS485 communication output (Modbus RTU method)	
Memory retention		Non-volatile memory (number of inputs: 100,000 operations)		
Insulation resistance		Over 100MΩ (at 500VDC⎓ megger)		
Dielectric strength		2,000VAC～ 60Hz for 1 min		
Noise immunity		±2kV the square wave noise (pulse width: 1μs) by the noise simulator		
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 1 hour		
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min		
Shock	Mechanical	300m/s² (approx. 30G) in each X, Y, Z direction for 3 times		
	Malfunction	100m/s² (approx. 30G) in each X, Y, Z direction for 3 times		
Relay life cycle	Mechanical	—	Min. 10,000,000 operations	
	Electrical	—	Min. 100,000 operations (250VAC～ 3A resistive load)	
Environment	Ambient temp.	-10 to 50°C, storage: -20 to 60°C		
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH		
Approval		CE c UL us		
Weight※2		Approx. 191g (approx. 132g)	Approx. 230g (approx. 140g)	Approx. 334g (approx. 210g)

※1: Setting range will vary depending on the decimal point.
※2:The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

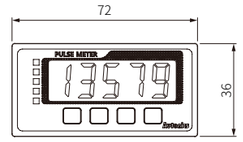
■ Dimensions

※Side dimensions of MP5Y/W differ by output type.

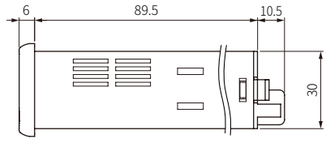
◎ **MP5S**



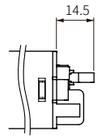
◎ **MP5Y**



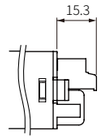
⊙ **MP5Y-□N**



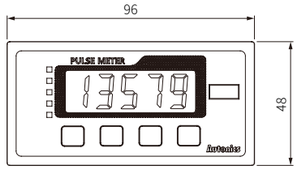
⊙ **MP5Y-□1/2/3/4/5**



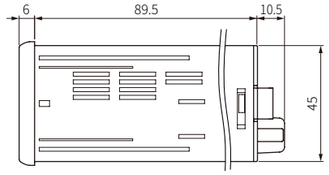
⊙ **MP5Y-□6**



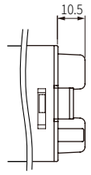
◎ **MP5W**



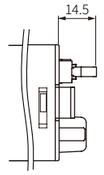
⊙ **MP5W-□N**



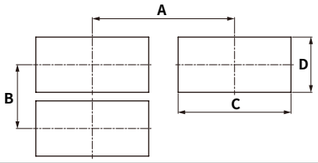
⊙ **MP5W-□A/1**



⊙ **MP5W-□2/4/5/8/9**



• **Panel cut-out**



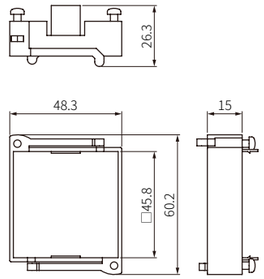
(unit: mm)

Series \ Size	A	B	C	D
MP5S	Min. 55	Min. 62	$45.5^{+0.5}_{0}$	$45.5^{+0.5}_{0}$
MP5Y	Min. 91	Min. 40	$68^{+0.7}_{0}$	$31.5^{+0.5}_{0}$
MP5W	Min. 116	Min. 52	$92^{+0.8}_{0}$	$45^{+0.6}_{0}$

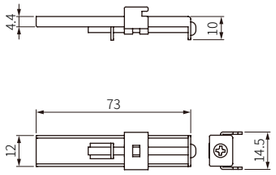
• **Bracket**

⊙ **For MP5S**

(unit: mm)

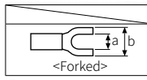


⊙ **For MP5Y/W**



■ Connections

※Terminal connections differ by power supply and output type of each series and model.
※Use terminals of size specified below.

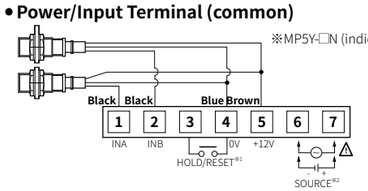


a	b
Min. 3.5mm	Max. 7.0mm

◎ **MP5Y**

• **Power/Input Terminal (common)**

※MP5Y-□N (indicator) only has 'Power/Input terminals'.



※1: Operation mode F1 to F12
: Display value HOLD
Operation mode F13 to F16
: Display value RESET

※2:

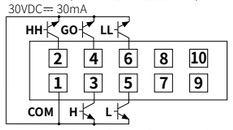
Model	Source
MP5Y-2□	24-48VDC⎓ 24VAC～ 50/60Hz
MP5Y-4□	100-240VAC～ 50/60Hz

• **Output Connector (MP5Y-□1 to 5)**

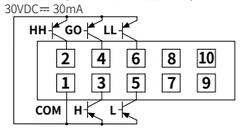
※Hirose connector: HIF3BA-10PA-2.54DS
※Connector socket specification: Contact the manufacture for the socket and cable.

	Specifications	Manufacture
Connector socket	HIF3BA-10D-2.54R	Hirose Electric

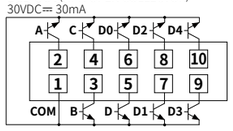
⊙ **MP5Y-□1 (NPN open collector output)**
MAIN OUT (NPN OPEN COLLECTOR)
30VDC⎓ 30mA



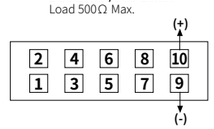
⊙ **MP5Y-□2 (PNP open collector output)**
MAIN OUT (PNP OPEN COLLECTOR)
30VDC⎓ 30mA



⊙ **MP5Y-□3 (BCD dynamic output)**
BCD OUT(NPN OPEN COLLECTOR)
30VDC⎓ 30mA

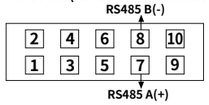


⊙ **MP5Y-□4 (PV transmission output)**
DC4-20mA/DC0-20mA
Load 500Ω Max.



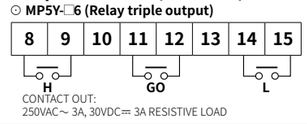
※Autonics display unit (DS/DA Series) is recommended for stable minus (-) sign display.

⊙ **MP5Y-□5 (RS485 communication output)**



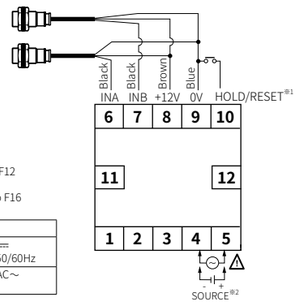
• **Output Terminal (MP5Y-□6)**

⊙ **MP5Y-□6 (Relay triple output)**



CONTACT OUT:
250VAC～ 3A, 30VDC⎓ 3A RESISTIVE LOAD

◎ **MP5S**



※1: Operation mode F1 to F12
: Display value HOLD
Operation mode F13 to F16
: Display value RESET

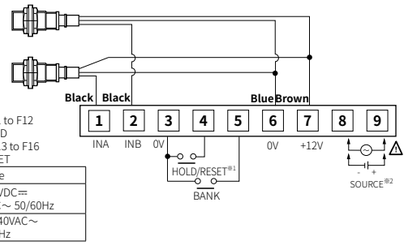
※2:

Model	Source
MP5S-2N	24-48VDC⎓ 24VAC～ 50/60Hz
MP5S-4N	100-240VAC～ 50/60Hz

◎ **MP5W**

• **Power/Input Terminal (Common)**

※MP5W-□N (indicator) only has 'Power/Input terminals'.



※1: Operation mode F1 to F12
: Display value HOLD
Operation mode F13 to F16
: Display value RESET

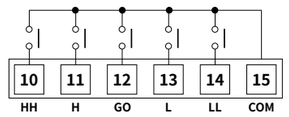
※2:

Model	Source
MP5W-2□	24-48VDC⎓ 24VAC～ 50/60Hz
MP5W-4□	100-240VAC～ 50/60Hz

• **Output Terminal (MP5W-□A/1)**

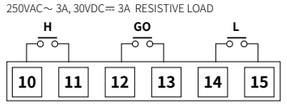
⊙ **MP5W-□A (Relay quintuple output)**

CONTACT OUT:
250VAC～ 3A, 30VDC⎓ 3A RESISTIVE LOAD



⊙ **MP5W-□1 (Relay triple output)**

CONTACT OUT:
250VAC～ 3A, 30VDC⎓ 3A RESISTIVE LOAD



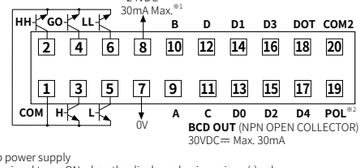
• **Output Connector (MP5W-□2/4/5/8/9)**

※Hirose connector: HIF3BA-20PA-2.54DS
※Connector socket specification: Contact the manufacture for the socket and cable.

	Specifications	Manufacture
Connector socket	HIF3BA-20D-2.54R	Hirose Electric
I/O cable (sold separately)	CO20-HP□-L, CO20-HP□-R	Autonics

⊙ **MP5W-□2 (NPN open collector + BCD dynamic output)**

MAIN OUT (NPN OPEN COLLECTOR)
30VDC⎓ 30mA
+24VDC⎓ 30mA Max.※1

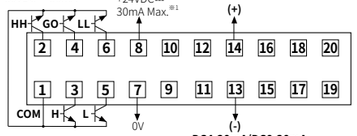


BCD OUT (NPN OPEN COLLECTOR)
30VDC⎓ Max. 30mA

※1: Sub power supply
※2: POL signal turns ON when the display value is a minus (-) value.
※Autonics display unit (DS/DA Series) is recommended for stable minus (-) sign display.

⊙ **MP5W-□4**
(NPN open collector + PV transmission output)

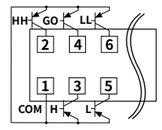
MAIN OUT (NPN OPEN COLLECTOR)
30VDC⎓ 30mA
+24VDC⎓ 30mA Max.※1



DC4-20mA/DC0-20mA
(Load 500Ω Max.)

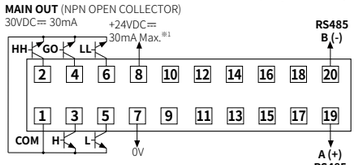
⊙ **MP5W-□5**
(PNP open collector + PV transmission output)

MAIN OUT (PNP OPEN COLLECTOR)
30VDC⎓ 30mA



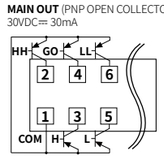
⊙ **MP5W-□8**
(NPN open collector + RS485 comm. output)

MAIN OUT (NPN OPEN COLLECTOR)
30VDC⎓ 30mA
+24VDC⎓ 30mA Max.※1



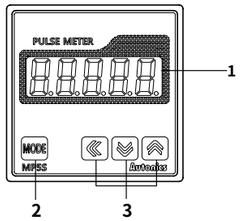
⊙ **MP5W-□9**
(PNP open collector + RS485 comm. output)

MAIN OUT (PNP OPEN COLLECTOR)
30VDC⎓ 30mA

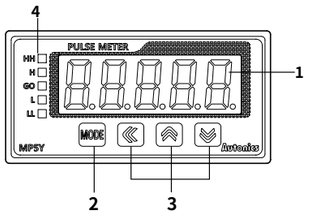


▣ Unit Description

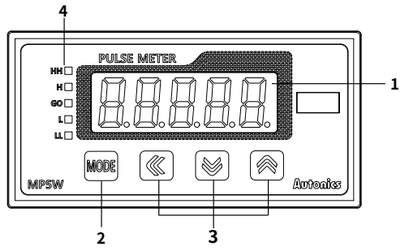
◎ MP5S



◎ MP5Y



◎ MP5W



1: Display component
Displays current value in RUN mode.
Alternately displays setting parameters and corresponding value in SETTING mode.

2: MODE key
In RUN mode, press the key once to check max./min. value.
In RUN mode, hold the key for over 2 sec to enter parameter groups.

3: ≪, ≫, ⌃ key
Select parameter groups, and select or setting values in the corresponding parameters.

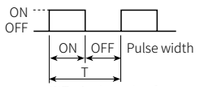
4: Output status indicator

▣ Input/Output Specifications

◎ Input Specifications

1. Input signal

Standard duty ratio of input signal is 1:1.



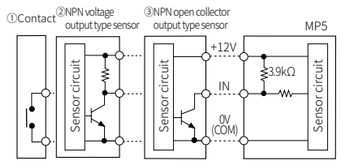
※T: single cycle of input signal

(1) Solid state input 1
Input frequency: Max. 50kHz (ON/OFF pulse width: min. 10μs of each)
(2) Solid state input 2
Input frequency: Max. 5kHz (ON/OFF pulse width: min. 100μs of each)
※For F7, F8, F9, F10 operation mode, max. 1kHz (ON/OFF pulse width: min. 500μs of each)
(3) Contact input
① Input frequency: Max. 45Hz (when each ON/OFF pulse width is over 11ms)
② Contact specifications: 12VDC⎓, stable switching of load current as small as 5mA

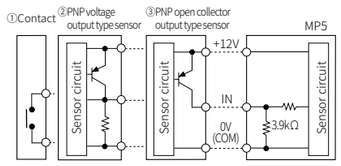
2. Input type [in-A, in-b]

MP5 allows selection between NPN input (solid state/contact) or PNP input (solid state/contact).

(1) NPN input type



(2) PNP input type



◎ Output Specifications

1. Relay output

① Output: Comparative or alarm output (refer to "▣ Output mode")
② Output type: Relay
③ Contact capacity: 250VAC～ 3A resistive load
④ Life cycle: [Mechanical] min. 10,000,000 operations (switching frequency 180 operations/min)
[Electrical] min. 100,000 operations (3A 250VAC～, 30VDC⎓ resistive load)
(switching frequency 20 operations/min)

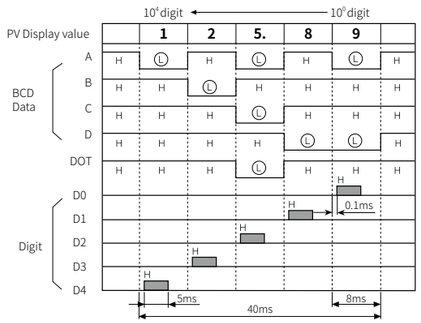
2. Transistor output

① Output: Comparative or alarm output (refer to "▣ Output mode")
② Output type: NPN/PNP open collector
③ Rated load voltage: 30VDC⎓
④ Max. load current: 30mA

3. BCD dynamic output(negative logic)

① Output: present value
② 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
③ Output type: NPN open collector
④ Rated load voltage: 30VDC⎓
⑤ Max. load current: 30mA
⑥ Dynamic COM cycle (T) = 40ms

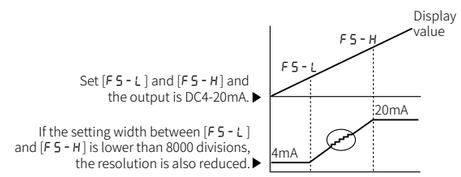
E.g.) To display value = 125.89 by BCD dynamic output



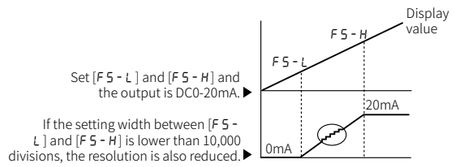
4. PV transmission output

① Application: transmit measured value
② Function: transmit measured value within setting range of high-limit output [FS-H] to low-limit output [FS-L] after conversion into **DC4-20mA** or **DC0-20mA** current.
③ Output range of high/low-limit
· High-limit [FS-H] range: From min. value to max. value within measurement range
· Low-limit [FS-L] range: From min. value to max. value within measurement range ([FS-H]≥[FS-L]+1)

(1) DC4-20mA transmission output
①Transmit measured value within setting range of high-limit output [FS-H] to low-limit output [FS-L] after conversion into DC4-20mA current.
②Resistive load: Max. 500Ω
③Resolution: 8000 divisions



(2) DC0-20mA transmission output
①Transmit measured value within setting range of high-limit output [FS-H] to low-limit output [FS-L] after conversion into DC0-20mA current.
②Resistive load: Max. 500Ω
③Resolution: 10,000 divisions

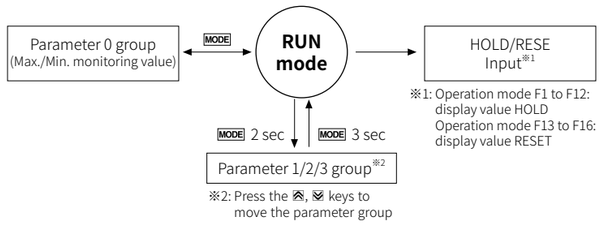


5. RS485 communication output

Comm. protocol	Modbus RTU	Comm. speed	2400, 4800, 9600 (default), 19200, 38400 bps
Connection method	RS485		
Application standard	Compliance with EIA RS485	Comm. response time	5 to 99ms (default: 20ms)
Max. connections	31 units (address: 1 to 99)	Start bit	1-bit (fixed)
Synchronization method	Asynchronous	Data bit	8-bit (fixed)
Comm. method	Two-wire half duplex	Parity bit	None (default), Even, Odd
Comm. distance	Max. 800m	Stop bit	1-bit, 2-bit (default)

※For more information about RS485 communication output specifications, refer to "▣ RS485 communication output".

▣ Parameter Groups



※1: Operation mode F1 to F12: display value HOLD
Operation mode F13 to F16: display value RESET

※2: Press the ⌃, ≫ keys to move the parameter group

- Press the ≪, ⌃, ≫ keys to select or set the desired value.
- Press the MODE key once after changing the setting value, to save the setting value and move to the next parameter.
- Hold the MODE key for 1.5 sec at any parameters to return to the select parameter group mode.
- Hold the MODE key for 3 sec to save the setting value and return to RUN mode after changing the setting value.
- If there is no key input for 60 sec while setting the parameters, the new settings are ignored, and the unit will return to RUN mode with previous settings.

※Each parameter and corresponding setting value will flash alternately every 0.5 sec.
※Input operation mode setting range for each parameter is different.
Please refer to '▣ Operation Mode by Parameter Groups'.

• Parameter 0 Group

Parameter	Description	Setting range	Factory default	Note
PSt.HH	HH comparative value※1	The setting range varies depending on the operation mode※2	99999	- The parameters are linked to the parameter 2 group - Only appears in comparative value output models
PSt.H	H comparative value		99999	
PSt.L	L comparative value		00000	
PSt.LL	LL comparative value※1		00000	
H.PEU	Max. monitoring value	—	99999	Reset(current value): Hold ≪ key over 2 sec
L.PEU	Min. monitoring value	—	-19999	

• Parameter 1 Group [PArA.1]

Parameter	Description	Setting range	Factory default	Note
nodE	Operation mode	F1 to F16	F1	
in-A	Input sensor type	nPn.HF : NPN solid state input 1 nPn.nF : NPN solid state input 2 nPn.LF : NPN contact input PnP.HF : PNP solid state input 1 PnP.nF : PNP solid state input 2 PnP.LF : PNP contact input	nPn.HF	Does not appear in indicator models
in-b				
oUt-t	Output mode	StArd : S (Standard) oUt-H : H (High) oUt-L : L (Low) oUt-b : B (Block) oUt-I : I (One-shot) oUt-F : F (Deflection)	StArd	
HYS	Output hysteresis※3	0000 to 9999	0001	
GuArd	Delay monitoring※4	F.dEFY: LL, L comparative output limit function	—	
		StArt: Start compensation timer function	—	
		StArt: Compensation time (0.0 to 99.9 sec)	0.0	
AUto.A	Auto-zero time (unit: sec)	0.1 to 99.99	99.99	Input A
AUto.b				Input B
nEno	Memory retention	oFF, on	oFF	

• Parameter 2 Group [PArA.2]

Parameter	Description	Setting range	Factory default	Note
P.bAnK	Data bank	1, 2	1	Only appear in MP5W
dot	Decimal point location of display value	0000.0, 000.00, 00.000, 0.0000	0000	
t.Unt	Tim unit, time range	t.SEC (sec): 999.99 : 999.99s; 9999.9 : 9999.9s; 99.99.9 : 99m 59.9s; 9.59.59 : 9h 59m 59s; 99999 : 99999s	999.99	
		t.min (min): 999.99 : 999.99m; 9999.9 : 9999.9m; 99.99.9 : 99h 59.9m; 9.59.59 : 999h 59m; 99999 : 99999m	999.99	
PSt.HH	HH comparative value※1	The setting range varies depending on the operation mode※2	99999	- The parameters are linked to the parameter 0 group - Only appears in comparative value setting models
PSt.H	H comparative value		99999	
PSt.L	L comparative value		00000	
PSt.LL	LL comparative value※1		00000	
PSC.AH	Input A prescale mantissa (x)	0.000 1 to 9.9999	6.0000	
PSC.AY	Input A prescale exponent (y)	10-9 (10⁻⁹) to 10 09 (10⁹)	10 01	
PSC.bH	Input B prescale mantissa (x)	0.000 1 to 9.9999	6.0000	
PSC.bY	Input B prescale exponent (y)	10-9 (10⁻⁹) to 10 09 (10⁹)	10 01	
diSP.t	Measured value display cycle (unit: sec)※5	0.05, 0.5, 1, 2, 4, 8	0.05	
CoUn.b	Input B setting value of operation mode F16 (INB)	1 to 99999	99999	Only appears in operation mode F16

• Parameter 3 Group [PArA.3]

Parameter	Description	Setting range	Factory default	Note
FS-H	Upper limit value of PV transmission output	The setting range varies depending on the operation mode※2	99999	Only appears in PV transmission output models
FS-L	Lower limit value of PV transmission output		00000	
nA	Current output specification (unit: mA)	4-20, 0-20	4-20	
Addr	Comm. address	01 to 99	01	Only appears in RS485 comm. output models
bPS	Comm. speed (unit: bps)	2400, 4800, 9600, 19200, 38400	9600	
PrtY	Comm. parity bit	nonE, EvEn, odd	nonE	
StP	Comm. stop bit	1, 2	2	
rSUt	Comm. response wait time	The setting range varies depending on the comm. speed※6	20	
ConU	Comm. write enable/disable	EnA (Enable), diSA (Disable)	diSA	
LoC	Lock	oFF : Unlock LoC.0 : Lock all LoC.1 : Parameter 1/2/3 lock LoC.2 : Parameter 2/3 lock LoC.3 : Parameter 3 lock	oFF	
nrSt	Parameter reset	EnA (Enable), diSA (Disable)	EnA	

※1: Does not appear in F output mode.
※2: Setting range by operation mode varies depending on the decimal point setting.

Operation mode	Setting range
F1, F2, F7, F9, F11, F12, F13, F16	0 to 99999
F3, F4, F5, F6	0.01 to setting time range
F8, F10, F14, F15	-19999 to 99999

※3: The setting range varies depending on the decimal point setting.
※4: Press ⌃ key to move parameters.
※5: Setting range oFF is available in operation mode F2, F16.
※6: Setting range by communication speed

Comm. speed (unit: bps)	Setting range (unit: ms)
2400	16 to 99
4800	8 to 99
9600, 19200, 38400	5 to 99

▣ Operation Mode by Parameter Groups

(◐: parameter display, X: no parameter display)

Group	Parameter \ Operation mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16
0 group	PSt.HH※1	Appears in all operation modes (F1 to F16).															
	PSt.H※2																
	PSt.L※2																
	PSt.LL※1																
	H.PEU	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X	◐	◐	X
	L.PEU	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X	◐	◐	X
1 group	nodE	Appears in all operation mode (F1 to F16).															
	in-A																
	in-b	X	◐	X	X	X	◐	◐	◐	◐	◐	◐	◐	◐	◐	X※3	◐
	oUt-t※2	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	●※4
	HYS※2	◐	X	X	X	X	X	◐	◐	◐	◐	X	X	X	X	X	X
	GuArd※2	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	X	X	X	X
	AUto.A	◐	X	X	◐	X	X	◐	◐	◐	◐	X	X	X	X	X	X
	AUto.b	X	X	X	X	X	X	◐	◐	◐	◐	X	X	X	X	X	X
	nEno	X	X	X	X	X	X	X	X	X	X	X	X	◐	◐	◐	◐
2 group	P.bAnK	Appears in all operation modes (F1 to F16). ※Only appears in MP5W.															
	dot	◐	◐	X	X	X	X	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
	t.Unt	X	X	◐	◐	◐	◐	X	X	X	X	X	X	X	X	X	X
	PSt.HH※1	Appears in all operation modes (F1 to F16).															
	PSt.H※2																
	PSt.LL※2																
	PSt.L※1																
	PSC.AH	◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
	PSC.AY	◐	◐	X	◐	X	X	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
	PSC.bH	X	X	X	X	X	X	◐	◐	◐	◐	X	X	X	X	X	X
	PSC.bY	X	X	X	X	X	X	◐	◐	◐	◐	X	X	X	X	X	X
	diSP.t	◐	▣※5	X	X	X	X	◐	◐	◐	◐	X	X	X	X	X	▣
	CoUn.b	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	◐
3 group	FS-H	※Only appears in PV transmission output models. Appears in operation modes (F1 to F16).															
	FS-L																
	nA																
	Addr	※Only appears in RS485 comm. output models. Appears in all operation modes (F1 to F16).															
	bPS																
	PrtY																
	StP																
	rEUt																
	ConU																
	LoC	Appears in all operation modes (F1 to F16).															
	nrSt																

※1: Only appears in only for quintuple output models.
※2: Only appears in triple, quintuple output models.
※3: The settings for in-b and in-A are applied.
※4: (●) F output mode[oUt-F] cannot be set.
※5: (▣) setting range: oFF, 0.05, 0.5, 1, 2, 4, 8

• Monitoring delay function by output mode

Output mode	S mode	H mode	L mode	B mode	I mode	F mode
Parameter	StArd	out-h	out-L	out-b	out-I	out-F
Comparative output limit	◐	X	X	◐	X	◐
Start compensation timer	◐	◐	◐	◐	◐	◐

▣ Operation Modes [mode]

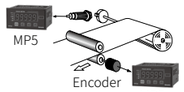
- Select operation mode from operation mode[mode] of parameter 1 group.
- MP5 has 16 operation modes.

◎ F1 Mode: Frequency/Revolutions/Speed

Measures the frequency of input A and displays the calculated frequency, revolutions, and speed.

1) Frequency(Hz)	= f × α	(α= 1[sec])
2) Revolutions(rpm)	= f × α	(α= 60[sec])
3) Speed(m/min)	= f × α	(α= 60L[sec])

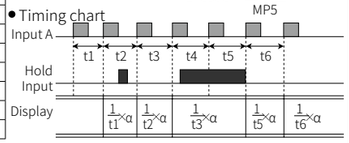
※L: travel distance of conveyor belt of 1 cycle[m]
α: prescale value
For multiple objects, $\alpha = \frac{60L}{N}$



- Display value and display unit

Display value	Display unit	α (prescale value)
Frequency	Hz	1
	kHz	0.001
Revolutions	rps	1
	rpm(default)	60
Speed	mm/sec	1,000L
	cm/sec	100L
	m/sec	1L
	m/min	60L
	km/hour	3.6L

- Timing chart

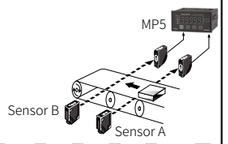


◎ F2 Mode: Passing Speed

Displays the passing speed between input A ON and input B ON.

Passing speed(V) = f × α(α= L[m])

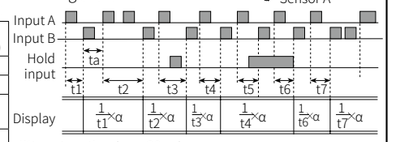
※f : reciprocal of time [sec] between input A(sensor) ON and input B(sensor) ON.
L: distance between input A(sensor) and input B(sensor) [m]
α: prescale value



- Display value and display unit

Display value	Display unit	α (prescale value)
Passing speed	mm/sec	1,000L
	cm/sec	100L
	m/sec (default)	1L
	m/min	60L
	km/hour	3.6L

- Timing chart

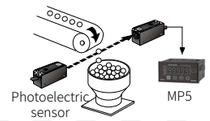


※ta: return time(over 20ms)

◎ F3 Mode: Cycle

Displays the measured time from input A ON to the next ON.

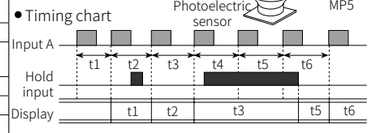
Cycle(T) = t　　※t: measurement time[sec]



- Display value and display unit([t.Unt] of parameter 2)

Display value	Display unit	
Cycle	SEC	MIN
	999.99s (default)	999.99m
	9999.9s	9999.9m
	99m 59.9s	99h 59.9m
	9h 59m 59s	999h 59m
	99999s	99999m

- Timing chart

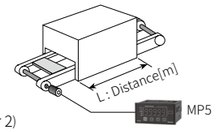


◎ F4 Mode: Passing Time

Measure the time from input A ON to the next ON, and displays the passing time of the arbitrary distance.

Passing time[sec]= t × α
$(\alpha = \frac{L[m]}{\text{Distance advanced in 1 pulse cycle[m]}})$

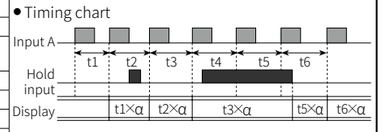
※t: measured time[sec], L: arbitrary distance[m]
α: prescale value



- Display value and display unit([t.Unt] of parameter 2)

Display value	Display unit	
Passing time	SEC	MIN
	999.99s (default)	999.99m
	9999.9s	9999.9m
	99m 59.9s	99h 59.9m
	9h 59m59s	999h 59m
	99999s	99999m

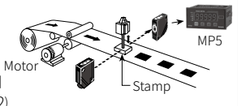
- Timing chart



◎ F5 Mode: Time Interval

Displays measured time of input A ON.

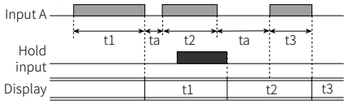
Time interval(T) = t　　※t: measured time of input A ON [sec]



- Display value and display unit([t.Unt] of parameter 2)

Display value	Display unit	
Time interval	SEC	MIN
	999.99s (default)	999.99m
	9999.9s	9999.9m
	99m 59.9s	99h 59.9m
	9h 59m 59s	999h 59m
	99999s	99999m

- Timing chart



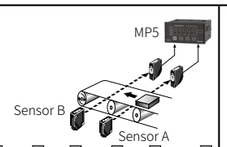
※ta: return time(over 20ms)

◎ F6 Mode: Time Differential

Displays measured time from Input A ON to Input B ON.

Time difference(T) = t(ta to tb)

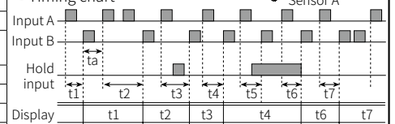
※t(ta to tb): measured time from input A ON to input B ON[sec]



- Display value and display unit([t.Unt] of parameter 2)

Display value	Display unit	
Time differential	SEC	MIN
	999.99s (default)	999.99m
	9999.9s	9999.9m
	99m 59.9s	99h 59.9m
	9h 59m 59s	999h 59m
	99999s	99999m

- Timing chart



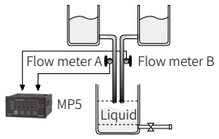
※ta: return time(over 20ms)

◎ F7 Mode: Absolute Ratio

Measures and displays relative speed, amount, speed, etc. of input B against input A in percentage(%).

Absolute ratio = (Input B / Input A) × 100%
$\text{Absolute ratio} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{\text{Frequency of input A[Hz]} \times A\alpha} \times 100[\%]$

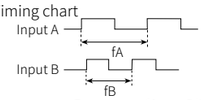
※Aα: prescale value of input A, Bα: prescale value of input B



- Display value and display unit

Display value	Display unit
Absolute ratio	%

- Timing 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: When the hold signal turns ON, the display value is maintained until the display cycle turns to hold OFF.

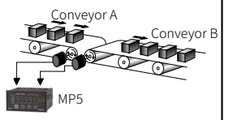
◎ F8 Mode: Error Ratio

Measures and displays the relative rate of input B against the reference value of input A in percentage(%).

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

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

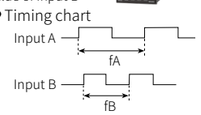
※Aα: prescale value of input A, Bα: prescale value of input B



- Display value and display unit

Display value	Display unit
Error ratio	%

- Timing chart



※Hold: When the hold signal turns ON, the display value is maintained until the display cycle turns to hold OFF.

◎ F9 Mode: Density

Measures and displays the density ratio (%) of input B against the total sum of input A and input B.

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

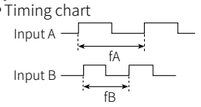
$\text{Density} = \frac{\text{Frequency of input B[Hz]} \times B\alpha}{(\text{Frequency of input A[Hz]} \times A\alpha) + (\text{Frequency of input B[Hz]} \times B\alpha)} \times 100[\%]$

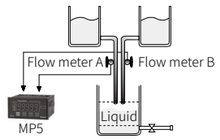
※Aα: prescale value of input A, Bα: prescale value of input B

- Display value and display unit

Display value	Display unit
Density	%

- Timing chart





※Hold: When the hold signal turns ON, the display value is maintained until the display cycle turns to hold OFF.

◎ F10 Mode: Error

Measures and displays the error of input B against reference value of input A.

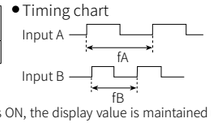
Error = Input B - Input A
Error = (Frequency of input B[Hz] × Bα) - (Frequency of input A[Hz] × Aα)

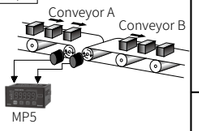
※Aα: prescale value of input A, Bα: prescale value of input B

- Display value and display unit

Display value	Display unit
Error	END User setting

- Timing chart





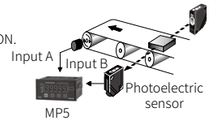
※Hold: When the hold signal turns ON, the display value is maintained until the display cycle turns to hold OFF.

◎ F11 Mode: Length Measurement 1

Measure and display the number of input A pulses during input B ON.

Length measurement = P × α

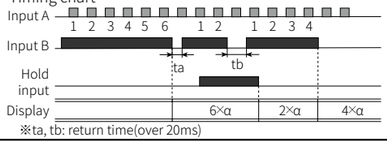
※P: number of input A pulses, α: prescale value



- Display value and display unit

Display value	Display unit
Length measurement	Quantity (default)
	mm
	cm
	m

- Timing chart

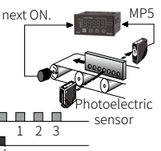


※ta, tb: return time(over 20ms)

◎ F12 Mode: Interval

Measures and displays the number of input A pulses from input B ON to the next ON.

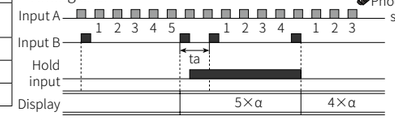
Interval = P × α　　※P: number of input A pulses, α: prescale value



- Display value and display unit

Display value	Display unit
Interval	Quantity (default)
	mm
	cm
	m

- Timing chart



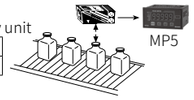
※ta: return time(over 20ms)

◎ F13 Mode: Accumulation

Measures and displays the counted value of input A pulses.

Accumulation = P × α

※P: number of input A pulses, α: prescale value

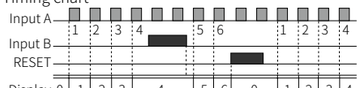


- Display value and display unit

Display value	Display unit
Accumulation	Quantity

- Operation
  ①Counts the number of input A pulses
  ②Input B is an enable input signal. During ON, the quantity and display value of input A will be held, and during OFF input A will be re-counted.
  ③When RESET input is ON, the integrated counted value will be reset to "0"

- Timing chart



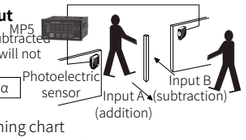
※α = 1 display value

◎ F14 Mode: Addition/Subtraction-Individual Input

Displays the counted value from added input A pulses and subtracted input B pulses. When there are two inputs simultaneously, it will not count.

Addition/Subtraction(individual input) = Input A × α - Input B × α

※α : prescale value of input A

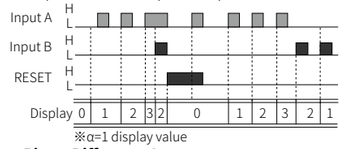


- Display value and display unit

Display value	Display unit
Addition/ Subtraction (individual input)	Quantity

- Operation and timing chart

Pulse of input A is added and pulse of input B is subtracted.

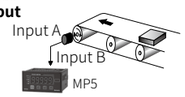


※α=1 display value

◎ F15 Mode: Addition/Subtraction-Phase Difference Input

When input A is Low, counting is added to the low of input B.
When input A is Low, counting is subtracted from the high of input B.

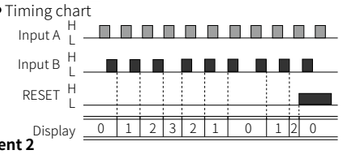
Addition/Subtraction(phase difference)
= Detects position and speed using A and B phases of encoder outputs as input.



- Display value and display unit

Display value	Display unit
Addition/ Subtraction (phase difference input)	Quantity

- Timing chart



◎ F16 Mode: Length Measurement 2

Measures and displays the number of pulses from input A until the value of input B reaches the setting value.

Length measurement 2 = P × α (until the setting value of input B)

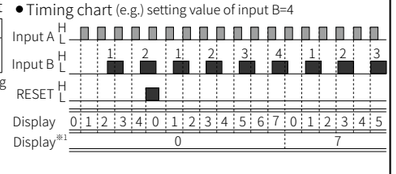
※P: number of input A pulses, α: prescale value

- Display value and display unit

Display value	Display unit
Length measurement 2	Quantity

※If input A and input B are ON during initial power supply, it will not count and only count the number of rising edge.
※Display value is renewed depending on the display cycle[dISP.t] setting.
※1: When the display cycle[dISP.t] setting is oFF, it will maintain the quantity of input A until the value of input B reaches the setting value of input B [CoUn.b].

- Timing chart (e.g.) setting value of input B=4

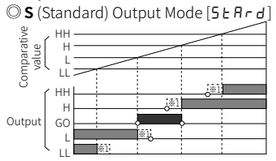


▣ Output Modes [out-t]

- MP5 Series supports 6 output modes. (There is no output mode in indicator models).
- Requirement for setting comparative value: (B output mode) LL<L<H<HH, (F output mode) L<H, (other output modes) individual output operation regardless of size or order of set comparative values.

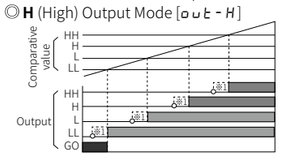
※1: hysteresis

◎ S (Standard) Output Mode [StAnd]



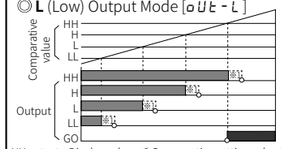
HH output : Display value ≥ Comparative setting value HH
H output : Display value ≥ Comparative setting value H
L output : Display value ≤ Comparative setting value L
LL output : Display value ≤ Comparative setting value LL
※GO output ON when there are no HH, H, L, LL outputs

◎ H (High) Output Mode [out-H]



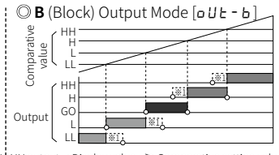
HH output : Display value ≥ Comparative setting value HH
H output : Display value ≥ Comparative setting value H
L output : Display value ≥ Comparative setting value L
LL output : Display value ≥ Comparative setting value LL
※GO output ON when there are no HH, H, L, LL outputs

◎ L (Low) Output Mode [out-L]



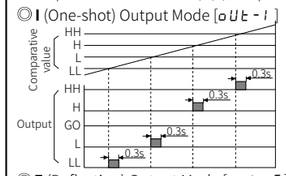
HH output : Display value ≤ Comparative setting value HH
H output : Display value ≤ Comparative setting value H
L output : Display value ≤ Comparative setting value L
LL output : Display value ≤ Comparative setting value LL
※GO output ON when there are no HH, H, L, LL outputs

◎ B (Block) Output Mode [out-b]



HH output : Display value ≥ Comparative setting value HH
H output : Comparative setting value HH > Display value ≥ Comparative setting value H
L output : Comparative setting value LL < Display value ≤ Comparative setting value L
LL output : Display value ≤ Comparative setting value LL
※GO output ON when there are no HH, H, L, LL outputs

◎ I (One-shot) Output Mode [out-I]

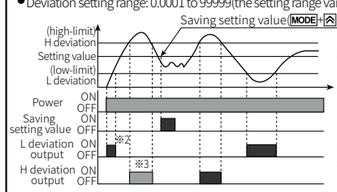


HH output : Display value ≥ Comparative setting value HH
H output : Comparative setting value HH > Display value ≥ Comparative setting value H
L output : Comparative setting value H > Display value ≥ Comparative setting value L
LL output : Comparative setting value L > Display value ≥ Comparative setting value LL
※No GO output　※One-shot output time is fixed at 0.3 sec.
※No hysteresis

◎ F (Deflection) Output Mode [out-F]

Transmits outputs when the saved setting value exceeds H deviation or L deviation.

- Saving setting value: press the MODE+⌂ keys to save as setting value.
- Checking setting value: press the ⌂ key to check the setting value.
- Setting deviation: Sets H deviation [P5t. H], and L deviation[P5t. L] of parameter group 0,2 with the setting value as reference. (The set deviation value is saved during Power OFF until it is re-set.)
- Deviation setting range: 0.0001 to 99999(the setting range varies depending on the decimal point[dot] setting.)
  E.g.) Decimal point[dot]: 0000.0, Setting range: 0.1 to 9999.9

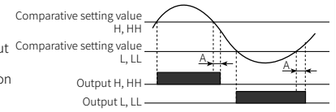


※2: When selecting initial comparative output limit function, it does not transmit outputs.
※3: The graph is assuming that there is a saved setting value prior to the setting value save point. The actual output position may be different.
※There are no HH, GO, LL outputs.
※The deviation can be set to "0" but the actual operation will be the same as "1".

▣ Functions

◎ Hysteresis [HYS]

Near the comparative setting value, the output may turn ON/OFF frequently and unstably.
To prevent this, hysteresis value is set based on the comparative setting value.
※A: hysteresis value
※The hysteresis value can be set to "0" but the actual operation value is "1"



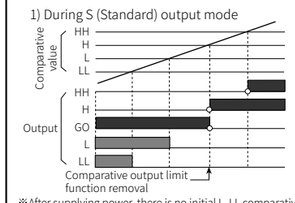
◎ Delay Monitoring [CUAr.d]

After supplying power, the starting current of motors and other inputs are changeable. This function allows stable control by limiting all outputs for a certain period of time, until the target measurement unit stabilizes. It may also control L,LL outputs until a specific output is reached.

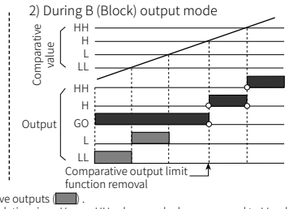
- Comparative output limiting function [F.dEFY]: Applicable in S(Standard), B(Block), F(Deflection) output modes only. : limits L, LL outputs before H or HH outputs.

※Initial L, LL outputs does not operate, so GO output operates.

1) During S (Standard) output mode

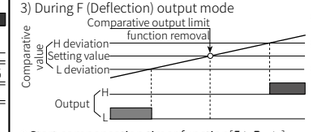


2) During B (Block) output mode



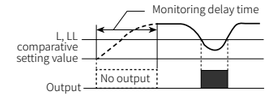
※After supplying power, there is no initial L, LL comparative outputs ▭.
※Each setting value of HH, H, LL, L is not related to their relative sizes. Hence, HH value may be lower or equal to LL value.

3) During F (Deflection) output mode



※After supplying power, there is no comparative output ▭ of L deviation.
※In F output mode, the comparative output limiting function is removed at the set value (standard setting)
※H and L deviation are not related to their relative sizes. (H deviation setting value > L deviation setting value, H deviation setting value < L deviation setting value)

- Start compensation timer function[StArt]
  Set monitoring delay time so that there is no output during the delay time.



◎ Auto-zero Time Setting [AUto.A, AUto.b]

When there is no input signal during auto-zero setting time, the display value is automatically set to 0(zero). Please set the auto-zero setting time so that it is longer than the interval of the slowest input signal. If the setting time is too long and there is no input signal, the rate at which the display value falls to 0(zero) decrease, and output response rate may slow down.

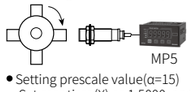
◎ Data bank [P.bAnk] (only for MP5W)

Comparative setting value and prescale value are saved as two types(data bank 1, 2) and can be selected for use by opening or shorting of terminals.

- Terminal 3, 5 open: use value of data bank 1
- Terminal 3, 5 short: use value of data bank 2

◎ Prescale [PSC.□. H, PSC.□. Y]

Displays values in required units or specific multiples by counting the number of input pulses, then multiplying the number of pulses or the length of pulses by variables(X×10y).



Number of revolutions(rpm) = f×α
= f×60×(1 / N)
= f×60×(1 / α)
= f×60×0.25
= f×15

※f: The number of input pulses per second[Hz],
α: Prescale value
N: The number of pulses per revolution

- Setting prescale value(α=15)
  Set mantissa(X) as 1.5000, and exponent(Y) as 1 for prescale value(α)=15.
  The same display value can be obtained with α value set as X=0.1500, and Y=2.

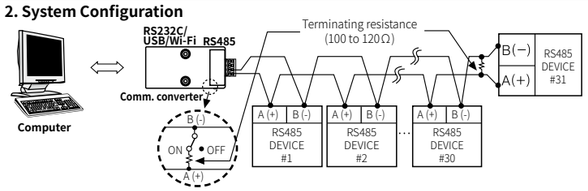
▣ RS485 Communication Output

- Applicable for models with RS485 communication output through sub output (MP5Y-□5, MP5W-□8/9). Please refer to '▣Ordering information'.

1. Communication Specifications

Comm. protocol	Modbus RTU	Comm. speed	2400, 4800, 9600 (default), 19200, 38400 bps
Connection method	RS485		
Application standard	Compliance with EIA RS485	Comm. response time	5 to 99ms (default: 20ms)
Max. connections	31 units (address: 1 to 99)	Start bit	1-bit (fixed)
Synchronization method	Asynchronous	Data bit	8-bit (fixed)
Comm. method	Two-wire half duplex	Parity bit	None (default), Even, Odd
Comm. distance	Max. 800m	Stop bit	1-bit, 2-bit (default)

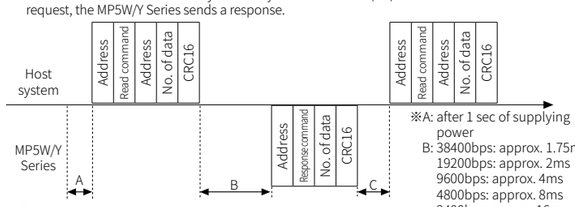
2. System Configuration



※It is recommended to use Autonics communication converter; SCM-WF48 (Wi-Fi to RS485·USB wireless communication converter, sold separately), SCM-US48I (USB to RS485 converter, sold separately), SCM-38I (RS232C to RS485 converter, sold separately).
Please use twisted pair wire, which is suitable for RS485 communication, for SCM-WF48, SCM-US48I and SCM-38I.

3. Communication Control Sequence

1. Communication sequence follows Modbus RTU protocol.
2. Communication with the host system can be established after 1 sec (1,000ms) of supplying power.
3. The initial transmission authority is held by the host device (PC). When the host device transmits a request, the MP5W/Y Series sends a response.



※A: after 1 sec of supplying power
B: 38400bps: approx. 1.75ms
19200bps: approx. 2ms
9600bps: approx. 4ms
4800bps: approx. 8ms
2400bps: approx.16ms
C: over 20ms

※The longer of the communication response wait time[r S U t] of parameter group 3 and response time of B is applied.

4. Cautions For Communication

1. Twisted pair wire (AWG24) is recommended for RS485 communication. When not using twisted pair wires, please make sure that A (+) and B (-) cable lengths are equal.
2. After connecting the communication cable, terminating resisters (100 to 120Ω) must be attached at both ends.

5. Communication Command And Block Definition

5-1. Read Coil Status (Func 01H), Read Input Status (Func 02H)

1) Query (Master)

Slave Address	Function (command)	Starting Address		No. of Points(no. of data)		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

2) Response (Slave)

Slave Address	Function (command)	Byte Count (no. of data byte)	Data(low)	Data	Data(high)	Error Check(CRC16)	
						Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

5-2. Read Holding Registers(Func 03H), Read Input Registers (Func 04H)

1) Query (Master)

Slave Address	Function (command)	Starting Address		No. of Points(no. of data)		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

2) Response (Slave)

Slave Address	Function (command)	Byte Count (no. of data byte)	Data		Data		Data		Error Check(CRC16)	
			High	Low	High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

5-3. Force Single Coil (Func 05H)

1) Query (Master)

Slave Address	Function (command)	Coil Address		Force Data		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

2) Response (Slave)

Slave Address (address)	Function (command)	Coil Address		Force Data		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

5-4. Preset Single Register (Func 06H)

1) Query (Master)

Slave Address	Function (command)	Register Address		Preset Data		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

2) Response (Slave)

Slave Address	Function (command)	Register Address		Preset Data		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

5-5. Preset Multiple Registers (Func 10H)

1) Query (Master)

Slave Address	Function (command)	Starting Address		No. of Register		Byte Count	Data		Data		Error Check (CRC16)	
		High	Low	High	Low		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

2) Response (Slave)

Slave Address	Function (command)	Starting Address		No. of Register		Error Check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

5-6. Exception Response-Error Code(exception processing)

Slave Address	Function (command) +80H	Exception code	Error Check(CRC16)	
			Low	High
1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

- When a communication error occurs, the highest bit from the received command (function) is set (1), a response command is sent, and the corresponding exception code is transmitted.

(1) ILLEGAL FUNCTION(Exception Code: 01H)
: Unsupported command
(2) ILLEGAL DATA ADDRESS(Exception Code: 02H)
: The requested start address does not match the transmission address of the device.
(3) ILLEGAL DATA VALUE(Exception Code: 03H)
: The number of requested data does not match the transmission number of the device.
(4) SLAVE DEVICE FAILURE(Exception Code: 04H)
: The requested command cannot be processed properly.(CRC)

6. Address Mapping Table

6-1. Read Coil Status(Func 01)

No.(Address)	Func	R/W	Parameter		Description	Setting range	Note
000001(0000)	01	R	HH	HH comparative output	Comparative output LED	0: OFF / 1: ON	
000002(0001)	01	R	H	H comparative output		0: OFF / 1: ON	
000003(0002)	01	R	GO	GO comparative output		0: OFF / 1: ON	
000004(0003)	01	R	L	L comparative output		0: OFF / 1: ON	
000005(0004)	01	R	LL	LL comparative output		0: OFF / 1: ON	
000006 to 000050	01	R	Reserved				

6-2. Read Input Status (Func 02)

No.(Address)	Func	R/W	Parameter		Description	Setting range	Note
100001(0000)	02	R		RESET(HOLD)	External input variables	RESET input status	
100002(0001)	02	R		BANK		BANK input status	
100003 to 100050	02	R	Reserved				

6-3. Read Input Registers (Func 04)

No.(Address)	Func	R/W	Parameter	Description	Factory default	Note
300001 to 300100	04	R	Reserved			
300101(0064)	04	R		Product number H	0	Dedicated model number
300102(0065)	04	R		Product number L	0	
300103(0066)	04	R		Hardware version	1	
300104(0067)	04	R		Software version	1	
300105(0068)	04	R		Model 1	"MP"	MP5Y-□5, MP5W-□8 (※MP5W-□9 displayed as MP5W-□8)
300106(0069)	04	R		Model 2	"5□"	
300107(006A)	04	R		Model 3	"-□"	
300108(006B)	04	R		Model 4	"□"	
300109(006C)	04	R		Model 5	" "	
300110(006D)	04	R		Model 6	" "	
300111(006E)	04	R		Model 7	" "	
300112(006F)	04	R		Model 8	" "	
300113(0070)	04	R		Model 9	" "	
300114(0071)	04	R		Model 10	" "	
300115(0072)	04	R	Reserved			
300116(0073)	04	R	Reserved			
300117(0074)	04	R	Reserved			
300118(0075)	04	R		Coil status start address	0000	
300119(0076)	04	R		Coil status quantity	0	
300120(0077)	04	R		Input status start address	0000	
300121(0078)	04	R		Input status quantity	0	
300122(0079)	04	R		Holding register start address	0000	
300123(007A)	04	R		Holding register quantity	0	
300124(007B)	04	R		Input register start address	0000	
300125(007C)	04	R		Input register quantity	0	
300126 to 300200	04	R	Reserved			

No.(Address)	Func	R/W	Parameter		Description	Setting range	Factory default
301001(03E8)	04	R	HH H GO L LL	Front Display LED	HH LED Display H LED Display GO LED Display L LED Display LL LED Display	0: OFF 1: ON 0: OFF 1: ON 0: OFF 1: ON 0: OFF 1: ON 0: OFF 1: ON	0-bit 1-bit 2-bit 3-bit 4-bit
301002(03E9) 301003(03EA)	04	R	PV		Measurement value	-19999 to 99999	
301004(03EB)	04	R	DOT		Decimal point	0: 0000.0 3: 00.000 1: 000.00 4: 0.0000 2: 00.000	
301005(03EC)	04	R	UNIT		Time range	0: 999.99s 5: 999.99m 1: 9999.9s 6: 9999.9m 2: 99m 59.9s 7: 99h 59.9m 3: 9h 59m 59s 8: 999h 59m 4: 99999s 9: 99999m	
301006(03ED)	04	R	MODE		Operation mode	0: F1 to 1: F2 14: F15 2: F3 15: F16	

6-4. Read Holding Registers(Func 03) / Preset Single Register(Func 06)/ Preset Multiple Registers(Func 16)

6-4-1. Comparative value settings and peak value check group

No.(Address)	Func	R/W	Parameter		Description	Setting range	Factory default
400001(0000) 400002(0001)	03/16	R/W	P S t. H H	Preset HH	HH comparative value	0 to 99999	99999
400003(0002) 400004(0003)	03/16	R/W	P S t. H	Preset H	H comparative value	0 to 99999	99999
400005(0004) 400006(0005)	03/16	R/W	P S t. L	Preset L	L comparative value	0 to 99999※1	00000
400007(0006) 400008(0007)	03/16	R/W	P S t. L L	Preset LL	LL comparative value	0 to 99999※1	00000
400009(0008) 400010(0009)	03/16	R/W	H. P E A	High peak	High peak value of measured value	99999※2	-
400011(000A) 400012(000B)	03/16	R/W	L. P E A	Low peak	Low peak value of measured value	-19999※2	-
400013 to 400050	03/06/16	R/W	Reserved				

※1: In operation modes F8, F10, F14, F15,the setting range is -19999 to 99999
※2: Max./Min. measurement value

6-4-2. Parameter 1 Group

No.(Address)	Func	R/W	Parameter		Description	Setting range	Factory default
400051(0032)	03/06/16	R/W	m o d E	Mode	Input operation mode	0: F1 to 1: F2 14: F15 2: F3 15: F16	0
400052(0033)	03/06/16	R/W	I n - A	Input A	Sensor type	0: n P n. H. F 1: n P n. m. F 2: n P n. L. F 3: P n P. H. F 4: P n P. m. F 5: P n P. L. F	0
400053(0034)	03/06/16	R/W	I n - b	Input B			
400054(0035)	03/06/16	R/W	o U t - t	Output type	Output mode	0: S t A r d 1: o U t - H 2: o U t - L 3: o U t - b 4: o U t - I 5: o U t - F	0
400055(0036)	03/06/16	R/W	H Y S	Hysteresis	Hysteresis value	1 to 9999	1
400056(0037)	03/06/16	R/W	G U A r. d	Output limit	Output limit function	0: F. d E F Y 1: S t A r. t	0
400057(0038)	03/06/16	R/W	S t A r. t	Start limit value	Start compensation timer value	0.0 to 99.9	0.0
400058(0039)	03/16	R/W	A U t o. A	Auto-zero A	Auto-zero time	0.1 to 9999.9	9999.9
400059(003A)	03/16	R/W					
400060(003B)	03/16	R/W	A U t o. b	Auto-zero B			
400061(003C)	03/16	R/W					
400062(003D)	03/06/16	R/W	m E m o	Memory	Memory retention	0: o F F 1: o n	0
400063 to 400100	03/06/16	R/W	Reserved				

6-4-3. Parameter 2 Group

No.(Address)	Func	R/W	Parameter		Description	Setting range	Factory default
400101(0064)	03/06/16	R/W	P. b A n K	Data bank	Data bank	0: 1 1: 2	0
400102(0065)	03/06/16	R/W	d o t	Dot	Decimal point	0: 0000.0 1: 000.00 2: 00.000 3: 0.0000 4: 0.0000	0
400103(0066)	03/06/16	R/W	t. U n t	Time unit	Time unit	0: t. S E C 1: t. m i n	0
400104(0067)	03/06/16	R/W	t. S E C	Time sec	Time range	0: 999.99 999.99s 1: 9999.9 9999.9s 2: 99.59.9 99m 59.9s 3: 9.59.59 9h 59m 59s 4: 99999 99999s 5: 999.99 999.99m 6: 9999.9 9999.9m 7: 99.59.9 99h 59.9m 8: 999.59 999h 59m 9: 99999 99999m	0
400105(0068) 400106(0069)	03/16 03/16	R/W R/W	P S t. H H	Preset HH	HH comparative value	0 to 99999	99999
400107(006A) 400108(006B)	03/16 03/16	R/W R/W	P S t. H	Preset H	H comparative value	0 to 99999	99999
400109(006C) 400110(006D)	03/16 03/16	R/W R/W	P S t. L	Preset L	L comparative value	0 to 99999※1	0
400111(006E) 400112(006F)	03/16 03/16	R/W R/W	P S t. L L	Preset LL	LL comparative value	0 to 99999※1	0
400113(0070) 400114(0071)	03/16 03/16	R/W R/W	P S C. A H	Prescale A Mantissa	Prescale A mantissa	0.0000 to 9.9999	6.0000
400115(0072)	03/06/16	R/W	P S C. A Y	Prescale A Exponent	Prescale A exponent	00 to 09: +(0 to 9) 10 to 19: -(0 to 9)	01
400116(0073) 400117(0074)	03/16 03/16	R/W R/W	P S C. b. H	Prescale B Mantissa	Prescale B mantissa	0.0000 to 9.9999	6.0000
400118(0075)	03/06/16	R/W	P S C. b. Y	Prescale B Exponent	Prescale B exponent	00 to 09: +(0 to 9) 10 to 19: -(0 to 9)	01
400119(0076)	03/06/16	R/W	d i S P. t	Display time	Display cycle	0: o F F 4: 2 1: 0.0 5 5: 4 2: 0.5 6: 8 3: 1	1
400120(0077) 400121(0078)	03/16 03/16	R/W R/W	C o U n. b	INB Setting value	Operation mode F16 INB	1 to 99999	99999
400122 to 400150	03/06/16	R/W	Reserved				

※1: In operation modes F8, F10, F14, F15, the setting range is -19999 to 99999

6-4-4. Parameter 3 Group

No.(Address)	Func	R/W	Parameter		Description	Setting range	Factory default
400151(0096) 400152(0097)	03/16	R/W	F S - H	Full scale High	High-limit value of PV transmission output	Setting range varies by model and operation mode※1	99999
400153(0098) 400154(0099)	03/16	R/W	F S - L	Full scale Low	Low-limit value of PV transmission output		0
400155(009A)	03/06/16	R/W	m A	mA	Transmission output spec.	0: 4 - 20(mA) 1: 0 - 20(mA)	0
400156(009B)	03/06/16	R/W	A d d r	Unit address	Communication address	1 to 99	1
400157(009C)	03/06/16	R/W	b P S	Bits per sec	Communication Speed	0: 2400 1: 4800 2: 9600 3: 19200 4: 38400	2
400158(009D)	03/06/16	R/W	P r t Y	Parity bit	Communication parity bit	0: n o n E 1: E v E n 2: o d d	0
400159(009E)	03/06/16	R/W	S t P	Stop bit	Communication stop bit	0: 1 1: 2	1
400160(009F)	03/06/16	R/W	r S U t	Response waiting time	Communication response waiting time	5 to 99(ms)	20
400161(00A0)	03/06/16	R/W	C o m. u	Communication write	Communication write enable/disable	0: d i S A 1: E n A	0
400162(00A1)	03/06/16	R/W	L o C	Lock	Lock	0: o F F 1: L o C. 0 2: L o C. 1 3: L o C. 2 4: L o C. 3	0
400163 to 400200	03/06/16	R/W	Reserved				

※1: High-limit/low-limit setting value of PV transmission output.
(varies by model and operation mode)

Series	Operation mode	Setting range
MP5Y MP5W	F1, F2, F7, F9, F11, F12, F13, F16	0 to 99999
	F3, F4, F5, F6	0 to set time range
	F8, F10, F14, F15	-1999 to 99999

▣ Comprehensive Device Management Program [DAQMaster]

DAQMaster is a comprehensive device management software for setting parameters and monitoring processes. DAQMaster can be downloaded from our website at www.autonics.com.

Item	Minimum specifications
System	IBM PC compatible computer with Pentium III or above
Operations	Windows 98/NT/XP/Vista/7/8/10
Memory	256MB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024×768 or higher
Others	RS232C serial port (9-pin), USB port

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VAC~, 24-48VDC⎓ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
4. Keep away from high voltage lines or power lines to prevent inductive noise.
   In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
5. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

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