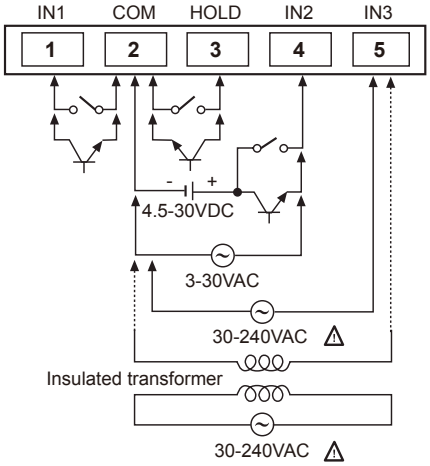
DIN W48×H24mm, Indication only, LCD pulse meter(RPM, RPS, Hz) [LR5N-B]

■ Specifications

Series		LR5N-B			
Appearances & Dimensions		[W48×H24×L54mm]			
Input type		No-voltage input	Voltage input 1		Voltage input 2
Input signal level		● Impedance at short-circuit: Max. 10kΩ, residual voltage: Max. 0.5V ● Impedance at open-circuit: Min. 500kΩ	DC	High voltage : 4.5-30VDC Low voltage : 0-2VDC	Voltage : 30-240VAC
			AC	Voltage : 3-30VAC	
Battery life cycle		Approx. over 3 years at 20℃ (replaceable)			
Display method		LCD zero blanking type(Height : 8.7mm)			
Digit		5digit			
Display range	RPM	1 to 10000RPM			
	0.1RPM	0.1 to 1000.0RPM			
	RPS	1 to 1000RPS			
	Hz	1 to 1000Hz			
	0.1Hz	0.1 to 100.0Hz			
Display accuracy		F.S. ±0.1% ±1digit			
HOLD function		Included(External HOLD terminal)			
Insulation resistance		Min. 100MΩ(at 500VDC megger)			
Dielectric strength		2000VAC 50/60Hz for 1 minute(Cutoff current=10mA)			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 1 hour			
	Malfunction	0.3mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 10 minutes			
Shock	Mechanical	300m/s²(approx. 30G) in each of X, Y, Z directions for 3 times			
	Malfunction	100m/s²(approx. 10G) in each of X, Y, Z directions for 3 times			
Protection		IP66(Front panel only)			
Environ -ment	Ambient temperature	-10 to 50℃, storage : -25 to 65℃			
	Ambient humidity	35 to 85%RH, storage : 35 to 85%RH			
Unit weight		Approx. 58g			

※Environment resistance is rated at no freezing or condensation.

■ Connections



※Please use reliable contacts enough to flow 5μA of current when using input signal or reset signal as a contact.
※IN1 - No-voltage input
IN2 - Voltage input
• DC voltage input
• AC voltage input : Display AC frequency.
IN3 - AC voltage input : Display AC frequency.
※Choose one among IN1, IN2 and IN3 to use.
※Caution for IN3 input: If apply high voltage over 50VAC, it may cause an electric shock. Insulated transformer whose turn ratio is 1:1 must be installed, or countermeasures must be provided.

High-performance, Digital Pulse Meter
[MP5S / MP5Y / MP5W / MP5M Series]

■ Ordering information

MP 5 S – 4 N

		Main output(Comparative value output)	Sub output(Display value output)
Output	S Type	N Indicator	—
	Y Type	N Indicator	—
		1 NPN open collector quintuple output	—
		2 PNP open collector quintuple output	—
		3 Indicator	BCD Dynamic
		4 Indicator	PV transmission output(DC4-20mA)
		5 Indicator	RS485 communication output
	W Type	N Indicator	—
		A Five relay(HH, H, GO, L, LL)	—
		1 Triple relay(H, GO, L)	—
		2 NPN open collector quintuple output	BCD dynamic
		3 PNP open collector quintuple output	BCD dynamic
		4 NPN open collector quintuple output	PV transmission output(DC4-20mA)
		5 PNP open collector quintuple output	PV transmission output(DC4-20mA)
		6 NPN open collector quintuple output	Low speed serial output
		7 PNP open collector quintuple output	Low speed serial output
		8 NPN open collector quintuple output	RS485 communication output
		9 PNP open collector quintuple output	RS485 communication output
	M Type	N Indicator	—
		1 Relay single(High-limit) output + NPN open collector output	—
		2 Relay dual(High/Low-limit) output + NPN open collector output	—
Power supply		2 24VDC(Only for MP5Y-24)	
		4 100-240VAC 50/60Hz	
Size		S DIN W48×H48mm	
		Y DIN W72×H36mm	
		W DIN W96×H48mm	
		M DIN W72×H72mm	
Digit		5 99999(5digit)	
Series		MP Pulse meter	

※PNP open collector output : Option

■ Specifications (MP5S / MP5Y / MP5W Series)

Series	MP5S-4N	MP5Y-24	MP5Y-4□	MP5W-4□
Appearances & Dimensions	[W48×H48×L90mm]	[W72×H36×L102mm]		[W96×H48×L100mm]
Display method	7 Segment LED display(Zero blanking type)			
Character size	W4 × H8mm	W6.8 × H13.8mm		
Max. indication	-19999 to 99999			
Power supply	100-240VAC 50/60Hz	24VDC	100-240VAC 50/60Hz	100-240VAC 50/60Hz
Allowable operation voltage	90 to 110%			
Power consumption	Max. 7.5VA	Max. 6W	Max. 7VA	Max. 6VA

■ Specifications (MP5S / MP5Y / MP5W Series)

Series		MP5S-4N	MP5Y-24	MP5Y-4□	MP5W-4□
Power for external sensor		12VDC ±10%, 80mA			
Input frequency		• Soild-state input : Max. 50kHz(Pulse width : Each over 10μs) • Contact input : Max. 45Hz(Pulse width : Over 11ms)			
Input level		[Voltage input] High : 4.5-24VDC, Low : 0-1.0VDC, Input impedance : 4.5kΩ [No-voltage input] Impedance at short-circuit : Max. 300Ω, Residual voltage : Max. 1V Impedance at open-circuit : Min. 100kΩ			
Measuring range		• Mode F1, F2, F7, F8, F9, F10 : 0.0005Hz to 50kHz • Mode F3 : 0.02s to 3,200s • Mode F4, F5, F6 : 0.01s to 3,200s • Mode F11, F12, F13 : 0 to 4 ×10 Count			
Measuring accuracy (23 ±5℃)		• Mode F1, F2, F7, F8, F9, F10 : F.S. ±0.05% rdg ±1digit • Mode F3, F4, F5, F6 : F.S. ±0.01% rdg ±1digit			
Display period		0.05 / 0.5 / 1 / 2 / 4 / 8sec.(It is same with period of output update.)			
Operation mode		Number of revolution/Speed/Frequency(F1), Passing speed(F2), Cycle(F3), Passing time(F4), Time width(F5), Time defference(F6), Absolute ratio(F7), Error ratio(F8), Density(F9), Error(F10), Length measurement(F11), Interval(F12), Multiplication(F13)			
Prescale function		Direct input method($0.000l\times10^{-9}$ to 9.9999×10^{9})			
Hysteresis※1		0 to 9999			
Other functions		• Lock setting function • Auto-Zero time setting function • Time unit selection function • Peak value monitoring function • Memory protection function (Mode F13 applied only)	• Lock setting function • Monitoring delay function • Auto-zero time setting function • Current output range selection(Current output type only) • Comparative output function(HH, H, GO, L, LL) • Time unit selection function • Deviation memory function(F output mode applied only) • Peak value monitoring function • Remote/Local switching function(Communication output type only) • Data bank switching function※2 • Memory protection function(Mode F13 applied only)		
Main output	Triple relay	—	—		250VAC 3A resistive load 3a
	Quintuple relay				
	NPN Open collector (Quintuple)		12-24VDC 30mA Max.		12-24VDC 20mA max.
	PNP Open collector (Quintuple)				
Sub output	BCD Dynamic	—	NPN Open collector 12-24VDC 30mA Max.		NPN Open collector 12-24VDC 20mA max.
	Low speed serial output	—	—		
	PV transmission	—	DC4-20mA Load 600Ω Max. (Response time : Max. 800ms)		DC4-20mA Load 600Ω Max.
	RS485 communication	—	31 channels, Mutual direction communication function		
Memory protection		Non-volatile memory(Input : Min. 100,000 times)			
Insulation resistance		Min. 100MΩ(at 500VDC megger) Between charge part and non-charge part			
Dielectric strength		2000VAC 60Hz 1minute(Between terminals of AC power and case, Between terminals of AC power and measuring input terminals)			
Impulse noise strength		±2000VAC R-phase, S-phase the square wave noise(pulse width : 1μs) by the noise simulator, repeat frequency 60Hz			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hour			
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 10 minutes			
Shock	Mechanical	300m/s²(approx. 30G) in each of X, Y, Z directions for 3 times			
	Malfunction	100m/s²(approx. 10G) in each of X, Y, Z directions for 3 times			
Relay life cycle	Malfunction	—	Min. 10,000,000 operations		
	Mechanical	—	Min. 100,000 operations(250VAC 3A load current)		
Environ -ment	Ambient temperature	-10 to 50℃, storage : -20 to 60℃			
	Ambient humidity	35 to 85%RH, storage : 35 to 85%RH			
Approval		CE c UL us	—	CE c UL us	CE c UL us
Weight ※3		Approx. 199.5g (approx. 141.5g)	Approx. 209g(approx. 117g)		Approx. 301.5g (approx. 177g)

※1: The hysteresis setting range is changed by the setting position of decimal point.
※2: Data bank switching function is in MP5W Series only.
※3: The weight with packaging and the weight in parentheses is only unit weight.

■ Specifications (MP5M Series)

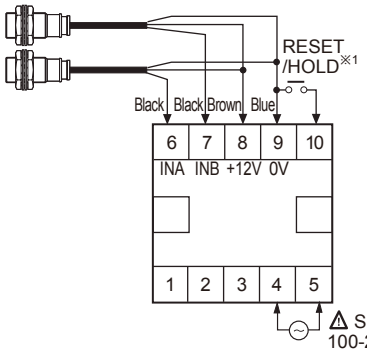
Model		MP5M-4N	MP5M-41	MP5M-42
		Indicator	High-limit setting type	High/Low-limit setting type
Appearances & Dimensions		CE c UL us [W72×H72×L113mm]		
Display method		7 Segment LED display(Zero blanking), Character size : W4 X H8mm		
Max. indication		0.0001 to 99999		
Power supply		100-240VAC 50/60Hz		
Allowable operation voltage		90 to 110%		
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 : over 10μs) • Contact input : Max. 45Hz(pulse width:over 11ms)		
Input level		[Voltage input] High : 4.5-24VDC, Low : 0-1.0VDC, Input impedance : 4.5kΩ [No-voltage input] Impedance at short-circuit : Max. 300Ω, Residual voltage : Max. 1V Impedance at open-circuit : Min. 100kΩ		
Measuring range		• Mode F1, 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 to 4 ×10^9 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 period		0.05 / 0.5 / 1 / 2 / 4 / 8sec.(It is same with period of output update.)		
Operation mode		Number of revolution/Speed/Frequency(F1), Passing speed(F2), Cycle(F3), Passing time(F4), Time width(F5), Time difference(F6), Absolute ratio(F7), Density(F8), Length measurement(F9), Interval(F10), Multiplication(F11)		
Prescale function		Direct input method(0.0001×10^{-9} to 9.9999×10^9)		
Hysteresis		—	0 to 9999	
Other function		• Lock setting function • Auto-Zero time setting function • Time unit selection function • Peak value monitoring function • Memory protection function (Mode F11 applied only)	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Time unit selection function • Peak value monitoring function • Memory protection function (Mode F11 applied only) • High-limit output function(H)	• Lock setting function • Monitoring delay function • Auto-Zero time setting function • Time unit selection function • Peak value monitoring function • Memory protection 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 applied only)
Main output	Relay	—	250VAC 3A resistive load 1c	250VAC 3A resistive load 1a×2
	NPN Open Collector		30VDC 100mA Max.	30VDC 100mA Max. ×2
Memory protection		Non-volatile memory(Input : Min. 100,000 operations)		
Approval		CE c UL us		
Unit weight		Approx. 275g	Approx. 310g	Approx. 330g

※MP5S, MP5Y, MP5W have same function.
※Environment resistance is rated at no freezing or condensation.

■ Connections

◎ MP5S Series

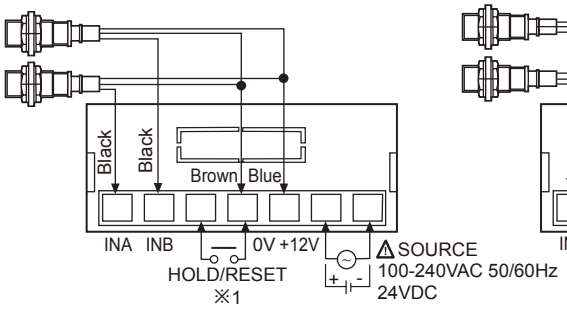
● **MP5S-4N**(Indicator)



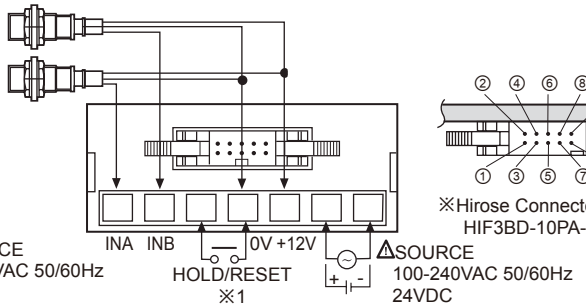
※1: It is used for RESET terminal when an operation mode is F13.

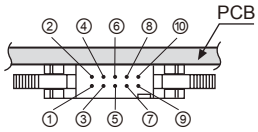
◎ MP5Y Series

● **MP5Y- □N**(Indicator)



● **MP5Y- □4 to □5**(Main/Sub output type)





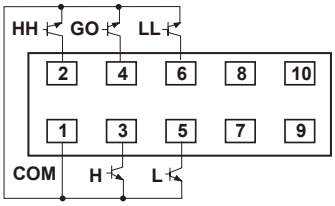
※Hirose Connector:
HIF3BD-10PA-2.54DS

※1: It is used for RESET terminal when an operation mode is F13.

● **Main output(Connector)**

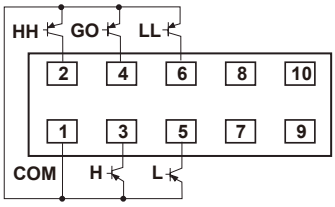
● **MP5Y- □1**(NPN open collector output)

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



● **MP5Y- □2**(PNP open collector output)

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

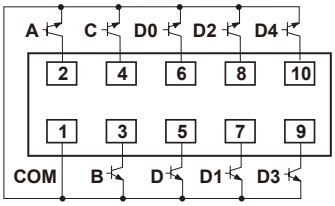


※Main output type & sub output type : Customizable

● **Sub output(Connector)**

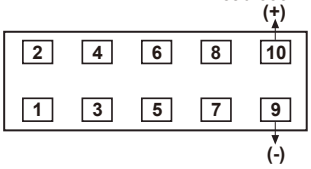
● **MP5Y- □3**(BCD dynamic output)

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

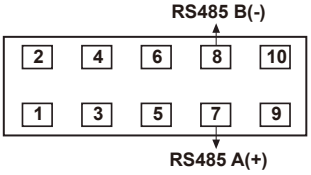


● **MP5Y- □4**(PV transmission output)

DC4-20mA
Load 600Ω Max.

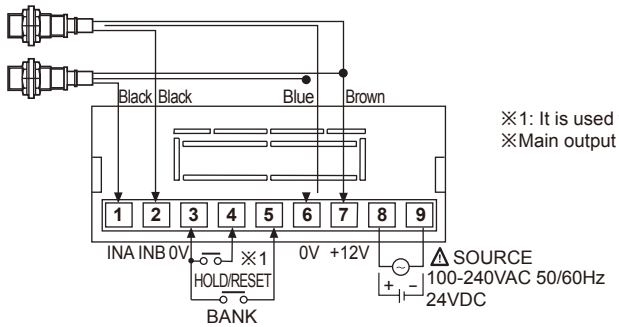


● **MP5Y- □5**(RS485 communication output)



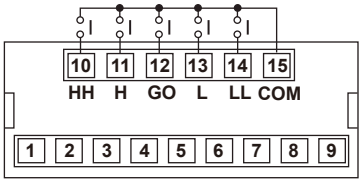
◎ MP5W Series

● **MP5W-□N**(Indicator)



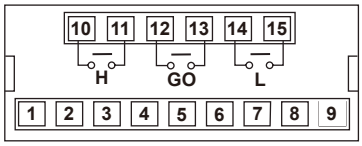
※1: It is used for RESET terminal when an operation mode is F13.
※Main output type & sub output type : option

● **MP5W- □A**(Five relay output)



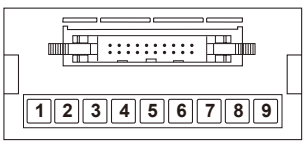
CONTACT OUT:
250VAC 3A 1a
RESISTIVE LOAD

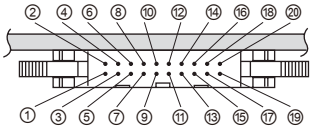
● **MP5W- □1**(Triple relay output)



CONTACT OUT:
250VAC 3A 1a
RESISTIVE LOAD

● **Main output+Sub output(Connector)**

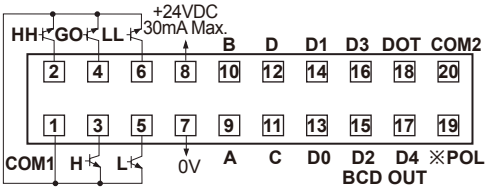




PCB
※Hirose connector pin header model of the unit
: HIF3BA-20PA-2.54DS
※Contact Hirose Electric to purchase socket and
wires of Hirose connector. [Socket : HIF3BA-20D-2.54R]

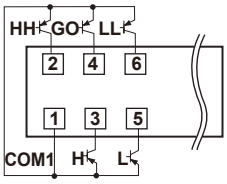
● **MP5W- □2/ MP5W- □3**(NPN/PNP open collector output + BCD output)

MAIN OUT
(NPN open collector
: 12-24VDC Max. 20mA)



(NPN open collector)
12-24VDC Max. 20mA

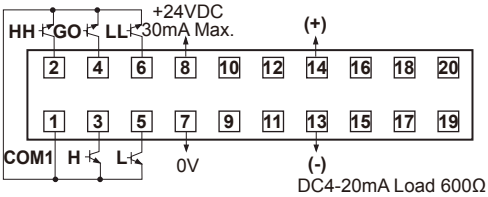
MAIN OUT
(PNP open collector
:12-24VDC Max. 20mA)



※POL signal is on when it is -(minus)
display value

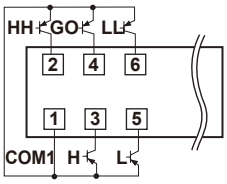
● **MP5W- □4/ MP5W- □5**(NPN/PNP open collector output + PV transmission output(DC4-20mA) output)

MAIN OUT
(NPN open collector
: 12-24VDC Max. 20mA)

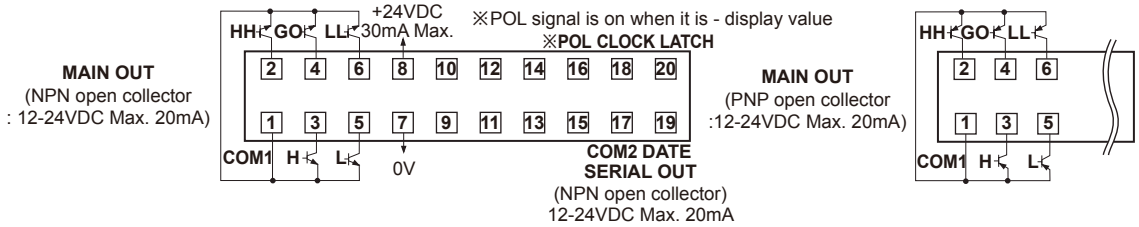


DC4-20mA Load 600Ω Max.

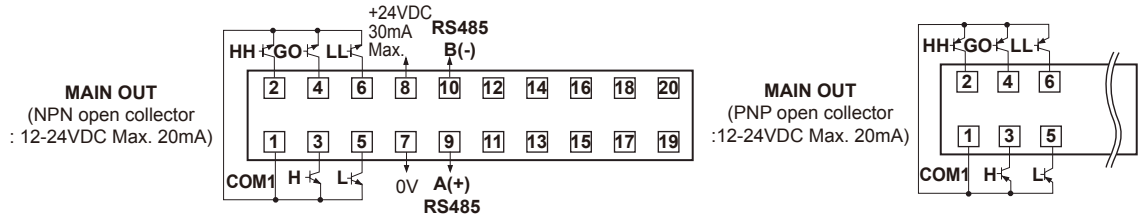
MAIN OUT
(PNP open collector
:12-24VDC Max. 20mA)



● **MP5W- □6/ MP5W- □7**(NPN/PNP open collector output + Low speed serial output)

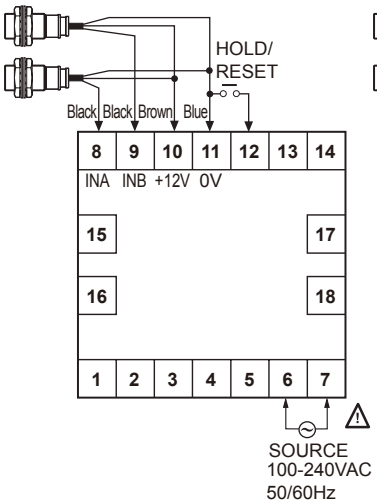


● **MP5W- □8/ MP5W- □9**(NPN/PNP open collector output + RS485 communication output)

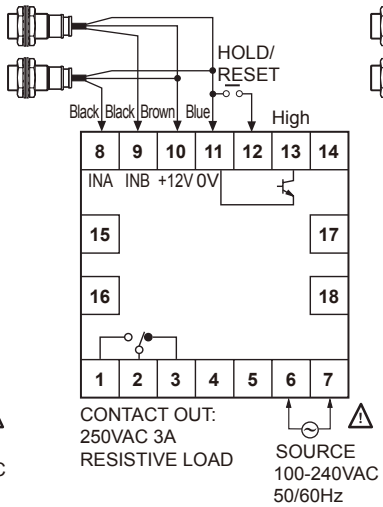
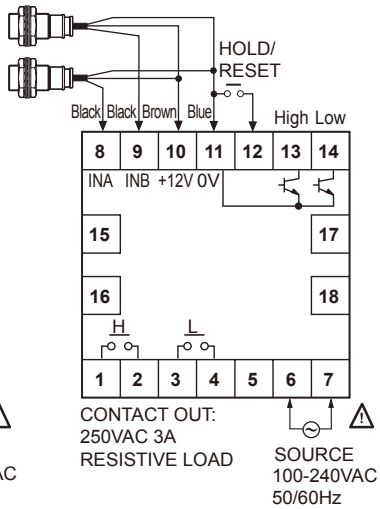


◎ MP5M Series

● **MP5M-4N**(Indicator)



● **MP5M-41**(High-limit setting type)



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