

LP1

Small size LCD pulse meters

- Small LCD Pulse Meters
- Rotation speed / Frequency measurement
- 5-digit display available
- External power not needed with the built-in battery
- Non-voltage or free voltage input
- IP66 (IEC 60529) degree of protection (front side)

Specification

Model		LP1		
Power supply		No power supply (built-in battery, exchangeable battery)		
Indication method		LCD Indication method, Zero blanking (letter height: 8.7mm)		
Battery life		Approximately more than 3 years (about 25 °C)		
Input type		Non voltage input (INA)	Voltage input (INB)	Voltage input (INC)
Input conditions		<ul style="list-style-type: none"> Remaining voltage when disconnected : Max. 0.5 V Max impedance when disconnected : Max. 10 kΩ Min impedance when connected : Min. 500 kΩ 	<ul style="list-style-type: none"> * AC voltage input : 3-30 V AC * DC voltage input High: 4.5-30 V DC Low 0-2 V DC 	·AC voltage input : 30-240 V AC
HOLD Input type		Non voltage input		
Measuring degree		±0.1% rdg ±1 digit		
Measuring range	rpm	1 ~ 10000 rpm		
	0.1 rpm	0.1 ~ 1000.0 rpm		
	rps	1 ~ 1000 rps		
	Hz	1 ~ 1000 Hz		
	0.1 Hz	0.1 ~ 100.0 Hz		
External setting switch		<ul style="list-style-type: none"> SW1-1 : rps / rpm, SW1-2 : ×1 / ×0.1 SW2-1 : RESET, SW2-2 : (rps, rpm) / Hz 		
External connection		terminal block (5 pin)		
Insulation resistance		Min. 100 MΩ (500 V d.c mega standard, between the electric conduction terminal and exposed non-charging metal part)		
Dielectric strength		2000 V a.c (50 / 60 Hz for 1 min, between the electric conduction terminal and exposed non-charging metal part)		
Vibration	Durability	10-55 Hz (1 minute cycle) double amplitude, each direction of X, Y, Z for 1 hour		
	Malfunction	10 - 55 Hz double amplitude, each direction of x, y, z for 10 min		
Shock	Durability	300 m/s ² each direction of x, y, z 3 times		
	Malfunction	100 m/s ² each direction of x, y, z 3 times		
Ambient temperature		-10 ~ 55 °C (no dew condensation, no icing)		
Storage temperature		-20 ~ 65 °C (no dew condensation, no icing)		
Ambient humidity		35 ~ 85 % R.H.		
Weight		approx 46 g (excluded the weight of box)		

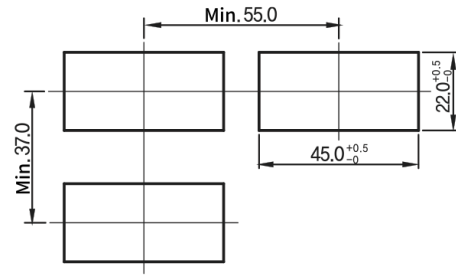
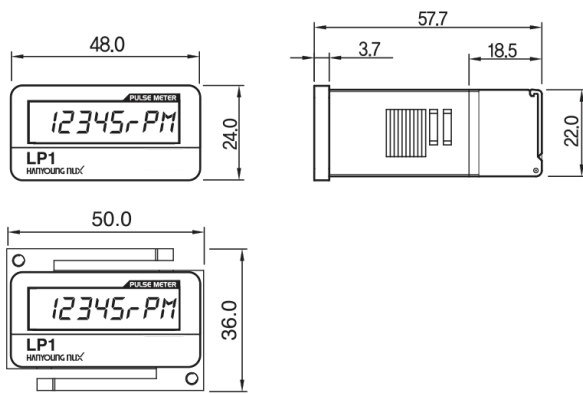
- In order to increase the battery life, please refer to the conditions above when replacing the battery

Dimension & Panel cutout

[Unit : mm]

■ Dimension

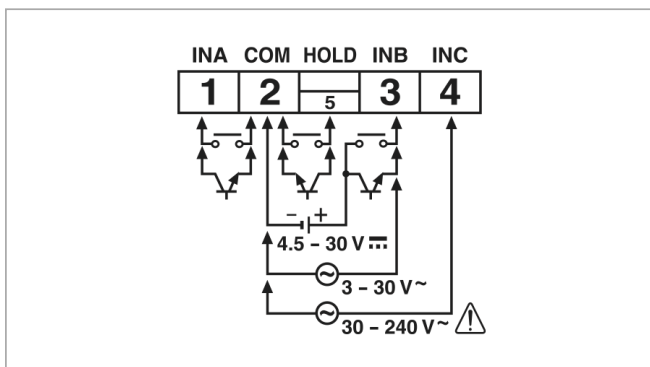
■ Panel cutout



Function explanation

RESET Function	It is used to change the operation mode and initialize the measuring value and the display value.
HOLD function	Display the display value on the LCD after fixing the present measured value, regardless of the signal input
rpm function	Display the rotation per minute by measuring the rotation speed of the rotation axis
rps function	Display the rotation per second by measuring the rotation speed of the rotation axis
Hz function	Measure the AC Line's frequency and display.
0.1 rpm function	After measuring the rotation speed of the rotation axis, display the rotation per minute from 0.1 to 1000.0 rpm
0.1 Hz function	Measure the AC Line's frequency and display it from 0.1 to 100.0 Hz

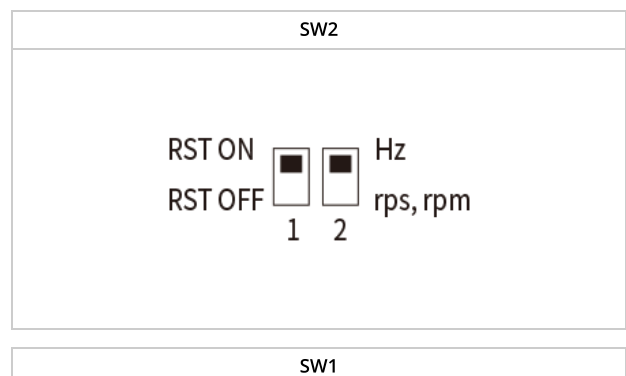
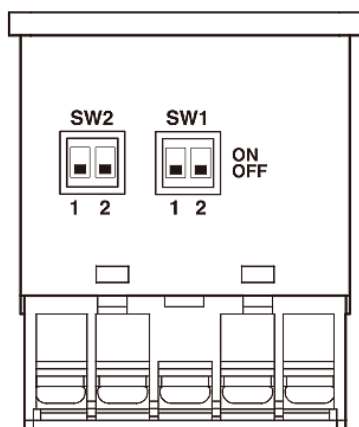
Connection diagram

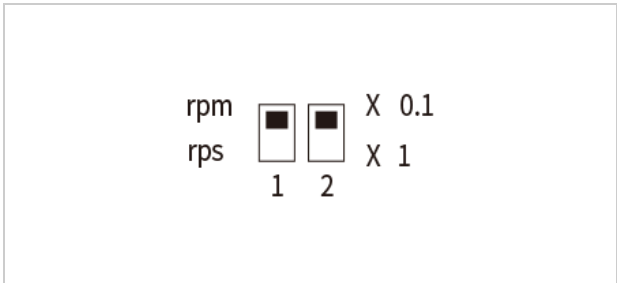


INA	Non voltage input
INB	Voltage input • DC Voltage input (4.5-30 V d.c.) • AC Voltage input (AC Line frequency, 3-30 V a.c.)
INC	Voltage input • AC Voltage Input (AC line frequency, 30-240 V a.c.)

* Please use only 1 input terminal among 3 input terminals like INA, INB, INC.

Operation mode





■ Operation mode setting

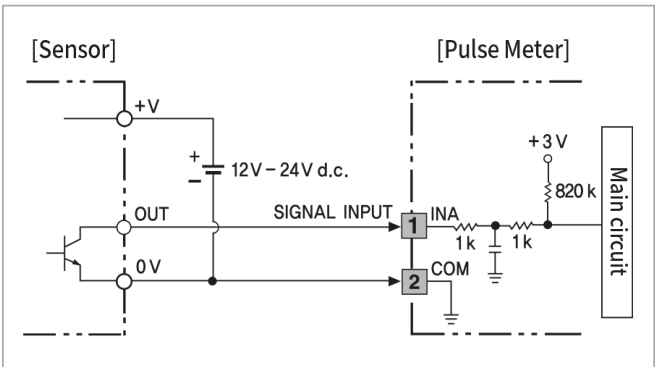
Operation mode		SW2		SW1		Measuring range
		1	2	1	2	
* rps	ON					1 ~ 1000 rps
	OFF					
rpm	ON					1 ~ 10000 rpm
	OFF					
0.1 rpm	ON					0.1 ~ 1000.0 rpm
	OFF					
Hz	ON					1 ~ 1000 Hz
	OFF					
0.1 Hz	ON					0.1 ~ 100.0 Hz
	OFF					
RST	ON					-
	OFF					

- Please select operation mode with using the SW1 and SW2
- When changing to operation mode, change SW2-1 (RESET) from ON to OFF then, operation mode is set.
- 'X 0.1' operation mode is not supported when setting rps operation mode
* rps operation mode is not set at default setting. When setting the SW2-1 (RESET)'s position ON, indicative value is not displayed on the front of LCD.

■ Input connection diagram

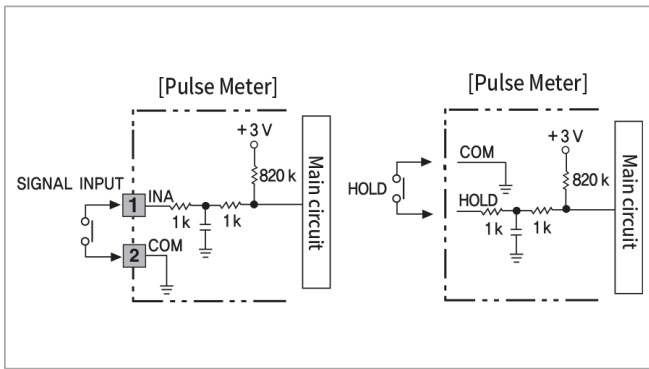
■ Non-voltage input

1. Non-connect input



- Please use NPN open collector output type for the sensor and supply power from the outside.
- Do not supply voltage to the terminal 1 (INA) and 2 (COM). It can cause malfunction or it may be destroyed.

2. Contact input

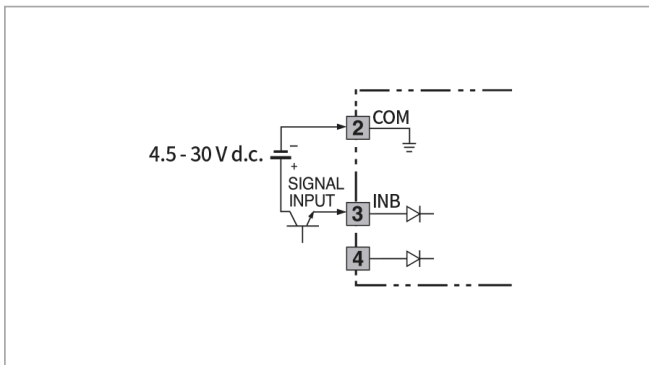


- Contact input (relay) must withstand 3 V d.c. 5uA
- Terminal 2 (COM) is GND terminal and it is connected inside
- HOLD function can be used as above method.

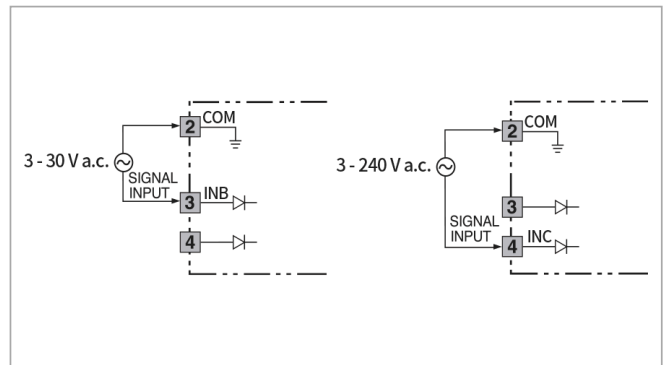
■ Voltage input

- INB (Terminal 3) : DC voltage input (4.5-30 V d.c.), AC voltage input (AC Line frequency, 3-30 V a.c.)
- INC (Terminal 4) : AC voltage input (AC Line frequency, 30-240 V a.c.)
- Contact input (relay) must withstand 3 V d.c. 5uA
- Please use only one from input terminals. It can cause malfunction or it may be destroyed. (Input terminal : INA, INB, INC)

■ DC voltage input

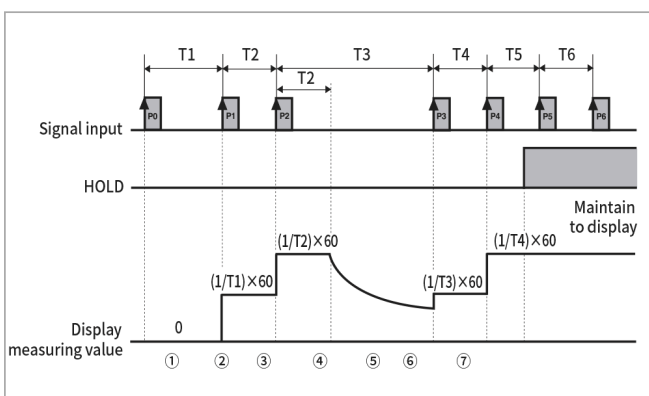


■ AC voltage input



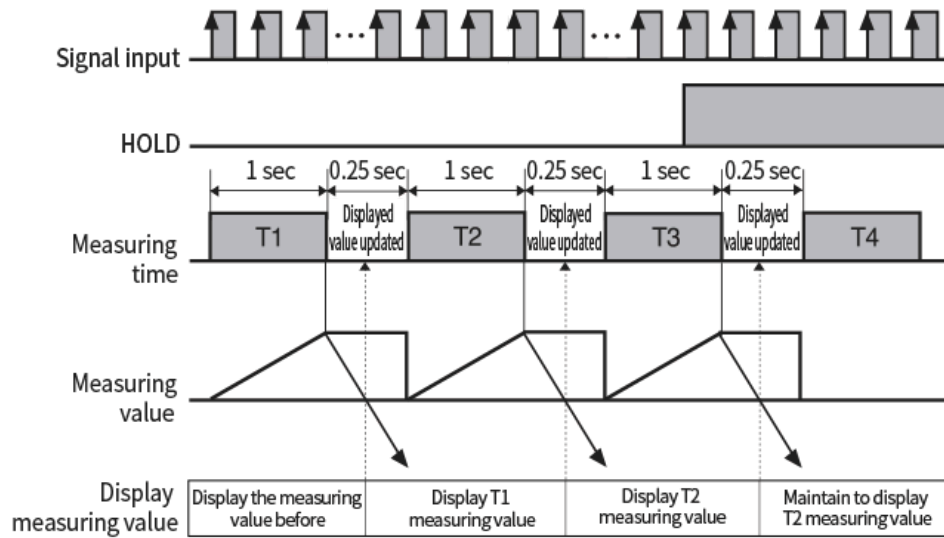
■ Operation chart

■ Setting rpm, 0.1rpm, 0.1Hz operation mode



- ① Display the measuring value for the signal that is input before ('0' is displayed since there is no signal input)
- ② Display the measuring value regarding the signal input, 'P0'
- ③ Display the measuring value regarding the signal input, 'P1'
- ④ Display value is gradually decreasing until signal is received as signal input is none within T2 time
- ⑤ Display the measuring value regarding the signal input, 'P2'
- ⑥ Display the measuring value regarding the signal input, 'P3'
- ⑦ Maintain the display of measuring value for signal input 'P3' since input status is HOLD.

■ Setting rps, Hz operation mode



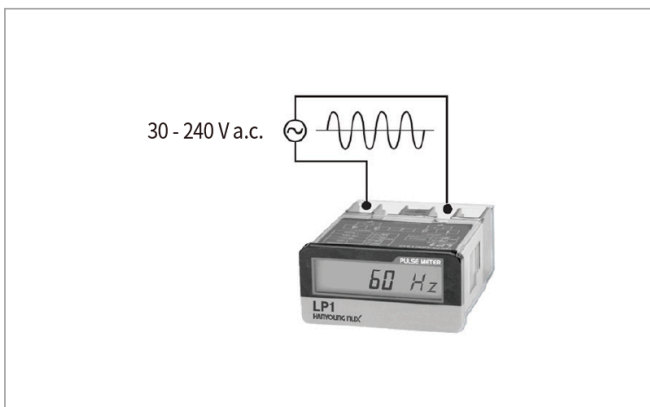
Example of use

Measuring of the number of revolutions



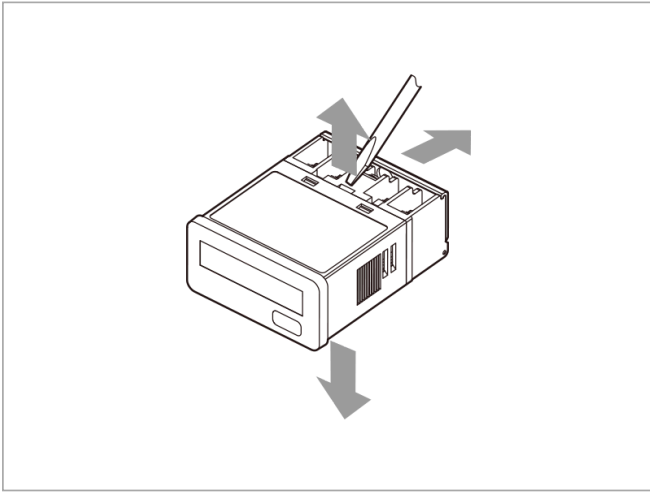
- Motor's number of revolutions is detected by proximity sensors and the value that is measured from it is displayed.
- * Non-voltage input (INA)
- * Voltage input (INB) : 4.5 - 30 V d.c.

Measuring of alternating current power source frequency



- AC Line's frequency in the industry site is detected and the value that is measured from it is displayed.
- * Voltage input (INB) : 3 - 30 V a.c.
- * Voltage input (INC) : 30 - 240 V a.c.

Things to consider when replacing batteries



- Please disconnect wires when replacing the batteries. There is possibility that you get electric shock if you touch the part where high voltage had been supplied.
- When replacing the batteries please perform with static electricity not charged on to the body
- Please use designated battery(CR2477 3V) only
- Order for replacing batteries
 - ① Please separate the upper and lower part of case Lock by using tools.
 - ② Please pull the body part of case
 - ③ After case being separated, replace the batteries. (cautious for the polarity)

