

Revolutions / Frequency Pulse Meters (Indicator)

LR5N-B Series

INSTRUCTION MANUAL

DRW170865AC

Autonics

Thank you for choosing our Autonics product.

Read and understand the instruction manual and manual thoroughly before using the product.

For your safety, read and follow the below safety considerations before using.

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Follow Autonics website for the latest information.

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. 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.

02. 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.

03. Install on a device panel to use.

Failure to follow this instruction may result in fire.

04. Do not connect, repair, or inspect the unit while connected to a power source.

Failure to follow this instruction may result in fire.

05. Check 'Connections' before wiring.

Failure to follow this instruction may result in fire.

06. Do not disassemble or modify the unit.

Failure to follow this instruction may result in fire.

07. Since lithium battery is embedded in the product, do not disassemble or burn the unit.

Failure to follow this instruction may result in explosion or fire.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. When connecting the measurement input, use AWG 24 (0.20 mm²) to AWG 15 (1.65 mm²) cable and tighten the terminal screw with a tightening torque of 0.98 to 1.18 N m.

Failure to follow this instruction may result in fire or malfunction due to contact failure.

02. Use the unit within the rated specifications.

Failure to follow this instruction may result in fire or product damage.

03. Use a dry cloth to clean the unit, and do not use water or organic solvent.

Failure to follow this instruction may result in fire.

04. Keep the product away from metal chip, dust, and wire residue which flow into the unit.

Failure to follow this instruction may result in fire or product damage.

Cautions during Use

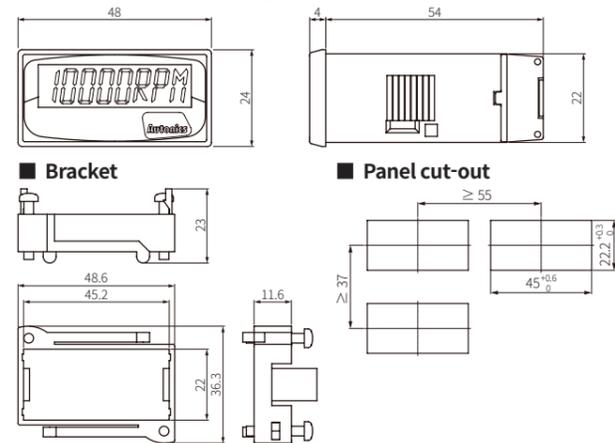
- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Keep away from high voltage lines or power lines to prevent inductive noise. The connection of this unit should be separated from the power line and high voltage line in order to prevent inductive noise.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000 m
 - Pollution degree 2
 - Installation category II

Product Components

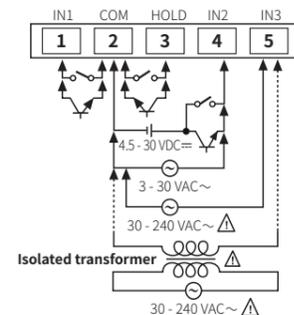
- Product (+ bracket)
- Instruction manual

Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.



Connections



Cautions during Wiring

- Unit: mm, Use terminals of size specified below.



- Use reliable contact enough to flow 5 μA of current when using contacts.
- Select one input among IN 1, IN 2, or IN 3.
- ⚠ Precautions of Input IN3
When supplying high voltage over 50 VAC~ into IN3, use the isolation transformer with 1:1 turn ratio or set up the counter plan or it may cause electric shock.

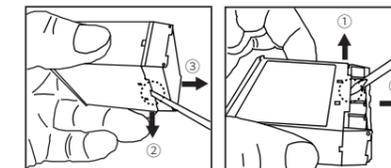
Specifications

Model	LR5N-B		
Display digits	4½-digit		
Display type	LCD Zero Blanking (character size: H 8.7 mm)		
Input type	IN 1: No-voltage input	IN 2: Voltage input 1	IN 3: Voltage input 2
Input signal level	Short-residual voltage : ≤ 0.5 V Short-circuit impedance : ≤ 10 kΩ Open-circuit impedance : ≥ 500 kΩ	High input voltage range : 4.5 - 30 VDC≐ Low input voltage range : 0 - 2 VDC≐ Voltage: 3 - 30 VAC~	30 - 240 VAC~
HOLD	YES		
Unit weight (packaged)	≈ 59 g (≈ 91.5 g)		

Power supply	Built-in battery (CR2477)	
Battery life cycle	≥ 3 years (at ≈ 20 °C)	
Insulation resistance	≥ 100 MΩ (500 VDC≐ megger)	
Dielectric strength	2,000 VAC~ 50 / 60 Hz for 1 min (Cutoff current = 10 mA)	
Vibration	0.75 mm double amplitude at frequency of 10 to 55Hz (for 1 minute) in each X, Y, Z direction for 1 hour	
Vibration (malfunc.)	0.3 mm double amplitude at frequency of 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 10 minute	
Shock	300 m/s ² (≈ 30 G) in each X, Y, Z direction for 3 times	
Shock (malfunc.)	100 m/s ² (≈ 10 G) in each X, Y, Z direction for 3 times	
Ambient temp.	-10 to 55 °C, storage: -25 to 65 °C (no freezing or condensation)	
Ambient humid.	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)	
Protection rating	IP66 (when using waterproof rubber for front panel), terminal cover (finger protector)	

Display unit	Display range	Display accuracy
RPM	1 to 10000 RPM	1 to 5000 RPM: F.S. ± 0.05 % ± 1-digit 5001 to 10000 RPM: F.S. ± 0.1 % ± 1-digit
0.1RPM	0.1 to 1000.0 RPM	F.S ± 0.05 % ± 1-digit
Hz	1 to 1000 Hz	F.S ± 0.1 % ± 1-digit
0.1Hz	0.1 to 100.0 Hz	
RPS	1 to 1000 RPS	

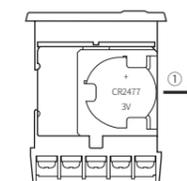
Detach the Case



- Hold up Lock part to direction ①, ② that top and bottom of the product with the tools, and pull the terminal to direction ③ to detach the case.

⚠ Caution: When using the tools, be careful not to be wounded.

Replace the Battery



- Detach the case and pull the battery (CR2477) toward direction ① to detach from the product.
- Insert a new battery with the correct alignment of polarity.

Cautions when using the lithium battery

- Use the battery for the specifications.
- Do not charge, short, disassemble, subject it to shock, heat.
- Check the polarity.
- Do not solder on a battery directly.
- Insulate a battery with tape to dispose.
- Do not store this unit in the place with the direct sunlight, high temperature and humidity.

DIP Switch Setting

- Select one among ×1, ×0.1, RPS by SW2.
- MUST shift SW 1 to RESET.
- Select one again between RPM / RPS and Hz by SW1.

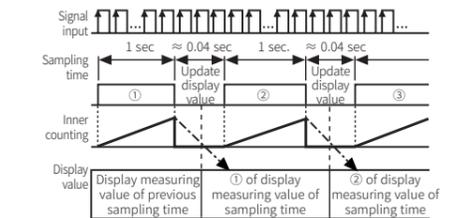


- When display range and unit in front display panel do not conform, move SW 1 to RESET and select RPM / RPS or Hz again.

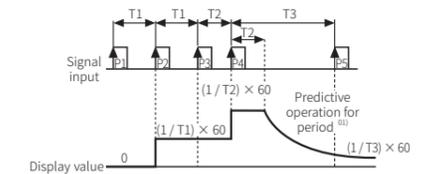
RPM	0.1 RPM	Hz	0.1 Hz	RPS

Operation Chart

Display range: RPS, Hz



Display range: 0.1 RPM, 0.1 Hz, RPM



01) It implements predictive operation for period without auto zero time setting function (if there is no pulse input within setting time, it displays the value as zero forcibly). If there is any input signal within certain time (T2), CPU considers input to be supplied, display value is decreased continuously.

Operation Mode

Frequency / revolutions

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

Display value	Display unit	α
Frequency	Hz	1
	0.1Hz	10
	RPM	60
Revolutions	0.1RPM	600
	RPS (default)	1

$$\text{Frequency (Hz)} = f \times \alpha \quad (\alpha = 1 [\text{sec}])$$

$$\text{Revolutions (rpm)} = f \times \alpha \quad (\alpha = 60 [\text{sec}])$$

