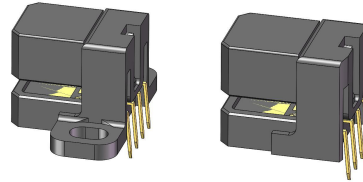


RS970 Series

Optical Encoder

Data Sheet



Description

RS970 series are a high performance optical 2-channel incremental encoder modules.

With an integrated precision encoder phase matrix receiver chip and light source, the module is capable of sensing rotational position and speed information in conjunction with a code disc.

RS970 series has linear (LPI) options: 20, 45, 90, 150, 180, 300, 360.

Features

- Photo-detector Array
- -40 ~ +85 °C Operating Temperature
- Multiple CPR options
- C-Shape Structure, Easy to Mount
- TTL Compatible
- 5V Supply

Applications

Typical applications include printers, plotters, servo motors, factory automation etc.

Note: Not recommended for use in safety critical application. Eg. ABS braking system.

Absolute Maximum Ratings

| Parameter | Symbol | Range |
|-----------------------|----------|---------------|
| Storage Temperature | T_s | -40 ~ +85 °C |
| Operating Temperature | T_A | -40 ~ +85 °C |
| Supply Voltage | V_{CC} | -0.5 ~ 7 V |
| Soldering Temperature | | ≤260°C (t≤5s) |
| Response Frequency | f | 200 KHz |
| Reverse Voltage | V_r | 5V |



Recommended Use Environment

| Parameter | Symbol | Range |
|-----------------------|-----------------|--------------------------------------|
| Operating Temperature | T | -40 ~ +85 °C |
| Power Supply | V _{CC} | Ripple voltage <100mV 4.5V ~ 5.5V |

Electrical Characteristics

Electrical Characteristics Under Recommended Operating Range, Typical at 25 °C

| Parameter | Symbol | Min. | Typ. | Max. | Units | Condition |
|---------------------------------|-----------------|------|------|------|-------|----------------------|
| Light Source Forward Voltage | V _f | 1.9 | 2 | 2.3 | V | I _f =20mA |
| Light Source Wavelength | λ _p | 650 | | 660 | nm | |
| Receiver Chip Operating Current | I _{CC} | | 10 | 20 | mA | |
| Low Level Output Voltage | V _{OL} | | 0.2 | 0.4 | V | |
| High Level Output Voltage | V _{OH} | 2.4 | 4.5 | | V | |
| A/B Rising Edge Time | t _r | | 120 | | ns | |
| A/B Falling Edge Time | t _f | | 20 | | ns | |
| AB Duty Cycle | D _t | 40 | 50 | 60 | % | |
| A/B Phase Difference | θ | 60 | 90 | 120 | °e | |

A/B Output Waveform Diagram

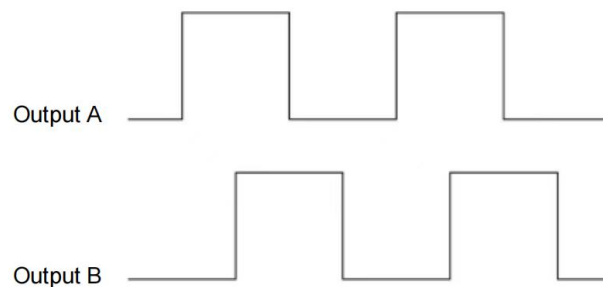


Fig.1 (Top View Module) Counterclockwise Rotation A/B Output Waveforms

Straight Lead Without Mounting Holes Dimensions

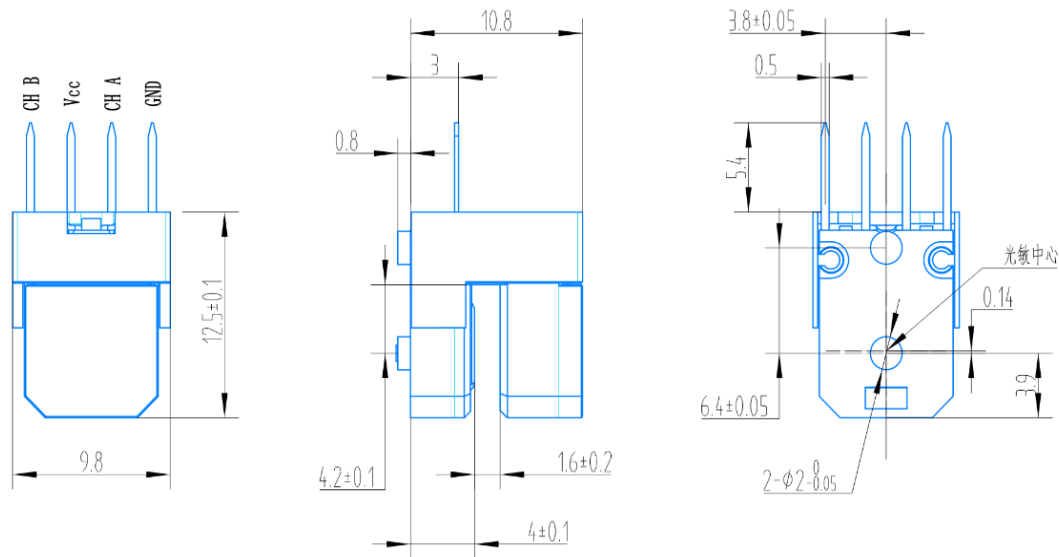


Fig.2 Straight Lead Without Mounting Holes Dimensions

Straight Lead With Mounting Holes Dimensions

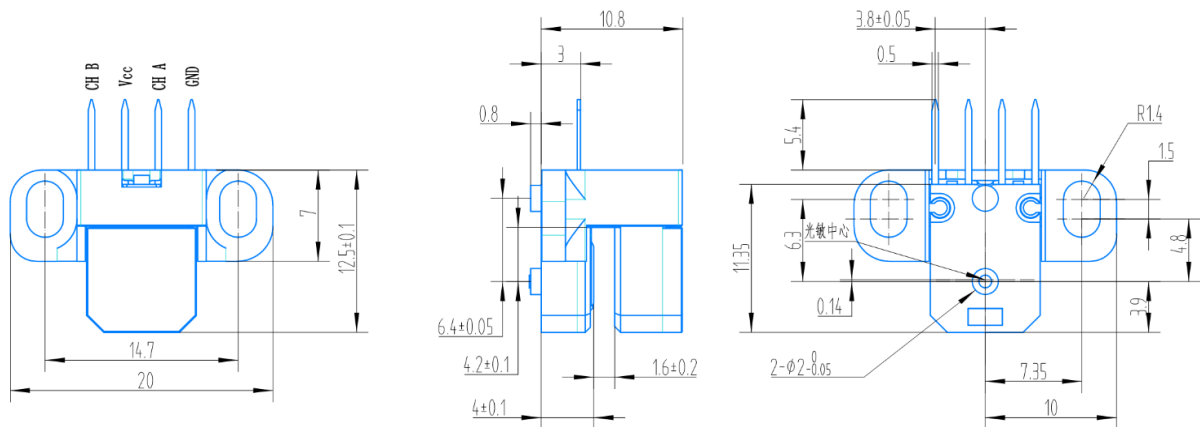


Fig.3 Straight Lead With Mounting Holes Dimensions

Bent Lead Dimensions

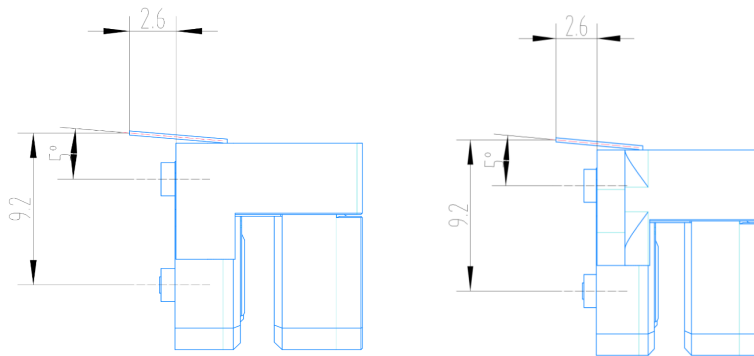


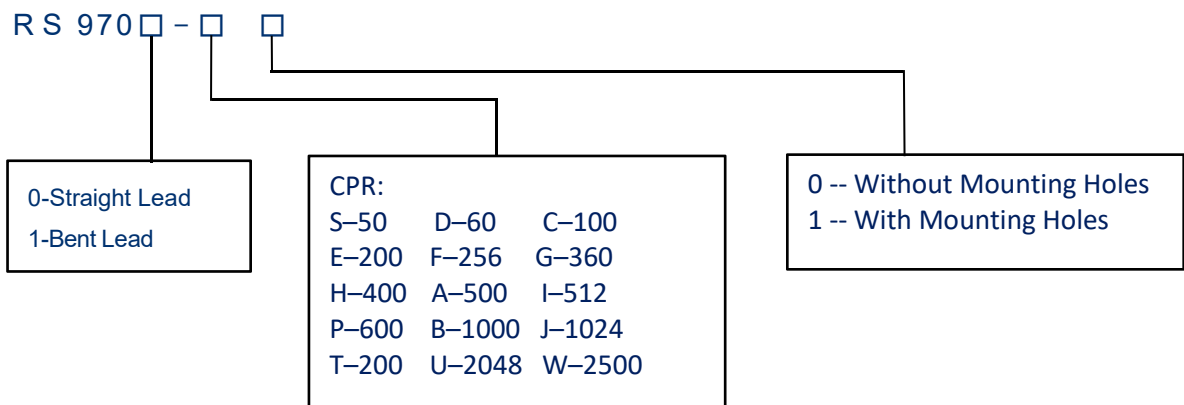
Fig.4 Bent Lead Dimension

Pin Definition

| Pin Name | Function | Input/Output |
|----------|-------------------|--------------|
| Vcc | Power Supply + 5V | Power Supply |
| CH A | A Channel output | Output |
| CH B | B Channel output | Output |
| Gnd | Ground | Ground |

Ordering Information

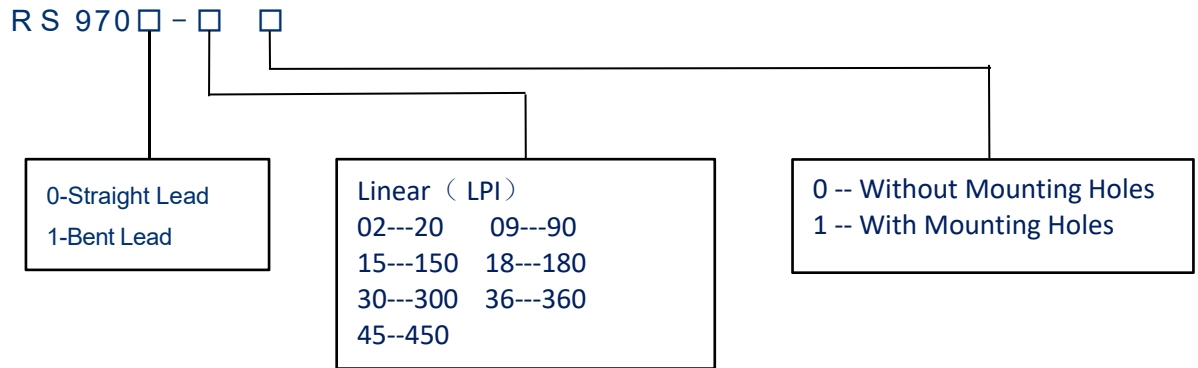
RS970 series is available in a variety of options, and the specific CPR selection is as follows, based on the optical radius (ROP) = 11mm.





Ordering Information

RS970 series linear type by LPI options are as follows.



Module Printing

