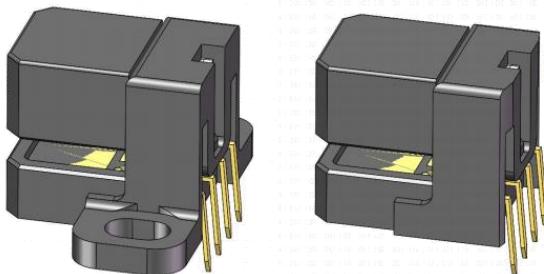


## INCREMENTAL OPTICAL ENCODER MODULES

### ➤ RS970x Series



The RS970 Series is a high-performance optical encoder module designed for precise motion control applications.

#### Applications

Typical applications include: Printers, Plotters, Servo motors, Factory automation equipment.

**Safety Notice:** Not recommended for use in safety-critical applications (e.g., ABS braking systems).

#### Features

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

#### Description

The RS970 series features a 2-channel incremental encoder module that combines an integrated precision encoder phase matrix receiver chip with a visible LED light source. This module accurately detects rotational position and speed when used with a compatible code disk.

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

#### Absolute Maximum Ratings

Parameter	Symbol	Range
Storage Temperature	T <sub>s</sub>	-40°C to +85°C
Operating Temperature	T <sub>A</sub>	-40°C to +85°C
Supply Voltage	V <sub>cc</sub>	-0.5V to 7V
Soldering Temperature	-	≤260°C ( t ≤ 5s )
Response Frequency	f	200 KHz
Reverse Voltage	V <sub>r</sub>	5V

#### Recommended Use Environment

Parameter	Symbol	Range
Operating Temperature	T	-40°C to +85°C
Power Supply	V <sub>cc</sub>	Ripple voltage <100mV 4.5V to 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	Vf	1.9	2	2.3	V	If=20mA
Light Source Wavelength	λp	650	-	660	nm	-
Receiver Chip Operating Current	Icc	-	10	20	mA	-
Low Level Output Voltage	V <sub>OL</sub>	-	0.2	0.4	V	-
High Level Output Voltage	V <sub>OH</sub>	2.4	4.5	-	V	-
A/B Rising Edge Time	t <sub>r</sub>	-	120	-	ns	-
A/B Falling Edge Time	t <sub>f</sub>	-	20	-	ns	-
A/B Duty Cycle	D <sub>t</sub>	40	50	60	%	-
A/B Phase Difference	θ	60	90	120	°e	-

## A/B Output Waveform Diagram

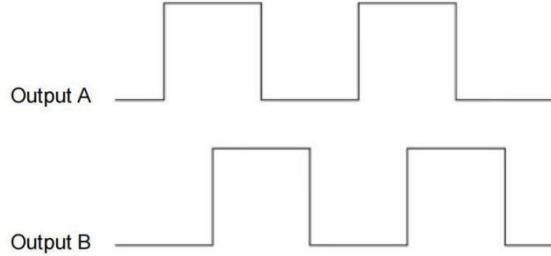


Fig.1 ( Top View Module ) COUNTERCLOCKWISE ROTATION A/B OUTPUT WAVEFORMS

## Straight Lead Without Mounting Holes Dimensions

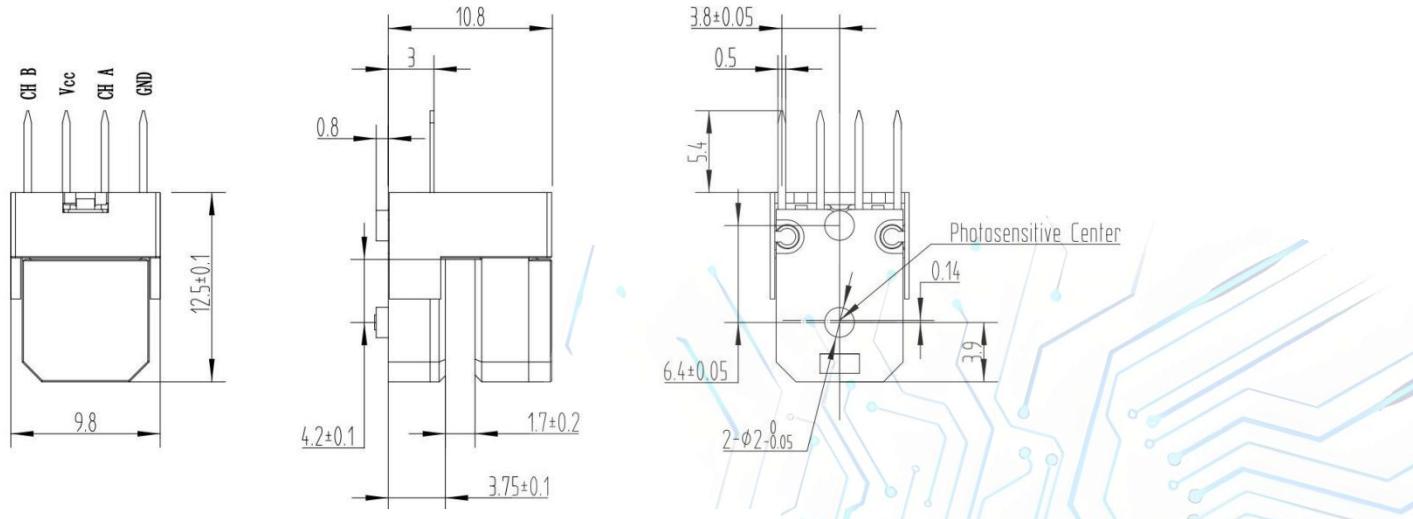


Fig.2 Straight Lead Without Mounting Holes Dimensions

### Straight Lead With Mounting Holes Dimensions

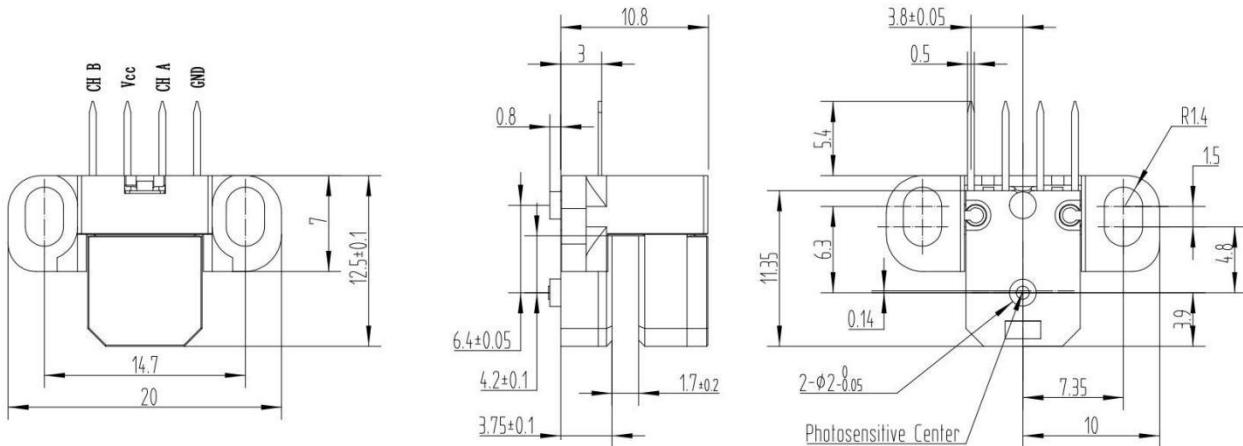


Fig.3 Straight Lead With Mounting Holes Dimensions

### Bent Lead Dimensions

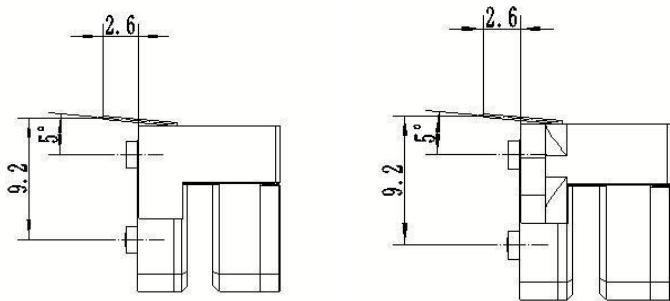
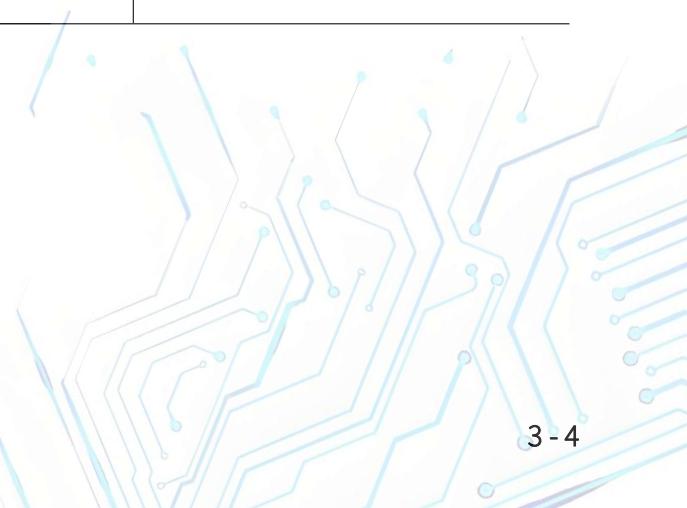


Fig.4 Bent Lead Dimension

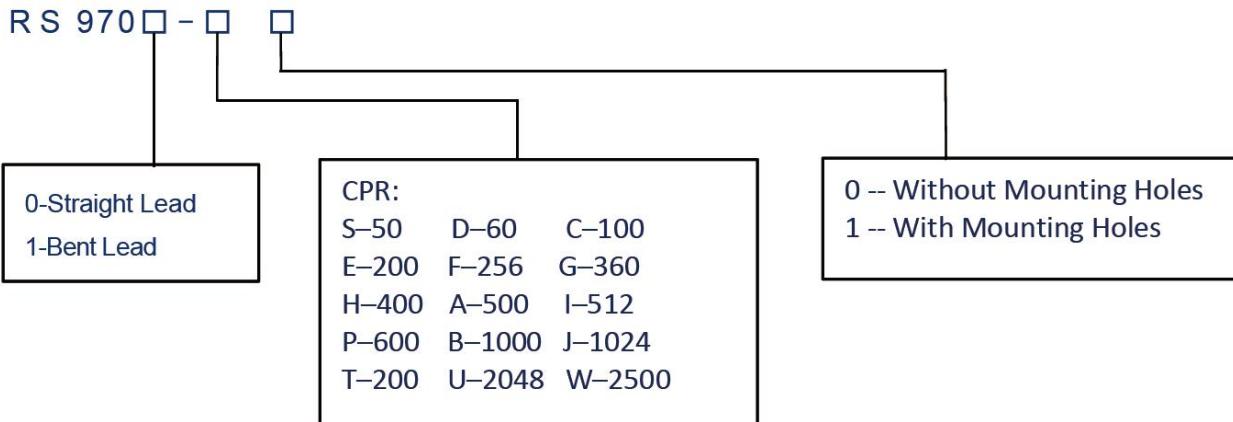
### Pin Definition

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

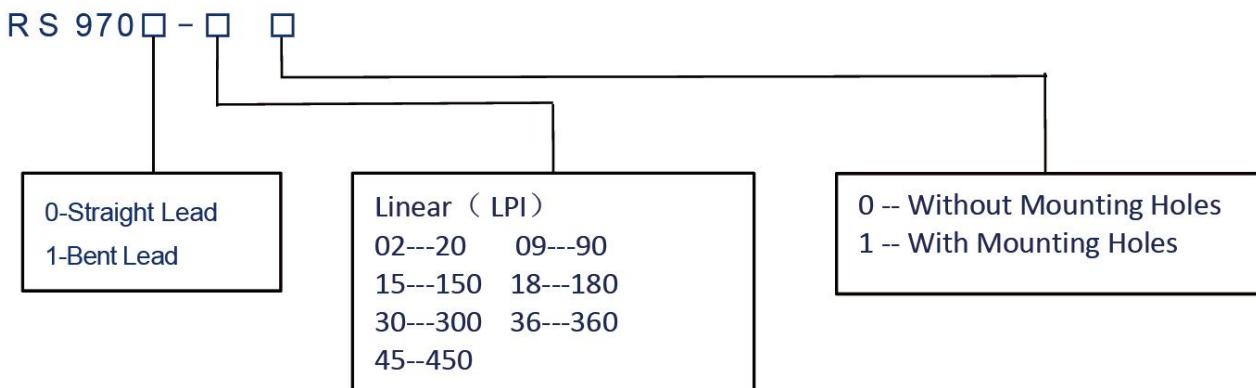


## ORDERING INFORMATION / PART NUMBER

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



RS970 series linear type by LPI options are as follows.



### Module Printing

