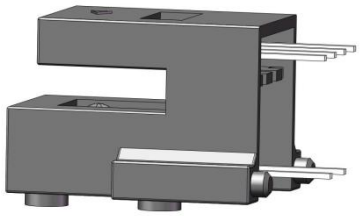
RK Series

Optical Encoder

Data Sheet



Description

RK series is a high performance, low cost, two-channel optical incremental encoder module. It consists of a highly collimated light source and a detector IC enclosed in a small C-shaped plastic package, matched with a code disc or codestrip, it provides information of rotary or linear position.

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

Features

- Photo-detector Array
- -20 ~ +85 ºC Operating Temperature
- Resolution Up to 600 CP
- C-Shape Structure,Easy to Mount
- TTL Compatible
- Single 5V Supply

Applications

Typical applications include printers, plotter copiers, office automation and industrial automation equipment.

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 ºC
Operating Temperature	T_A	-20 ~ +85 ºC
Supply Voltage	V_{cc}	-0.5 ~ 7 V
Soldering Temperature		≤260ºC (t≤5s)
Response Frequency	f	200KHz
Reverse Voltage	V_r	5V
Forward Current (650nm Light Source)	I_f	30mA
Forward Current (850nm Light Source)	I_f	70mA

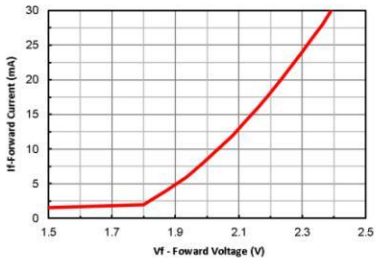
Operating Temperature	T	-20 ~ +85 ºC
Supply Voltage	V_{cc}	4.5 ~ 5.5V

Electrical Characteristics

Electrical Characteristics Under Recommended Operating Range,Typical at 25 ºC

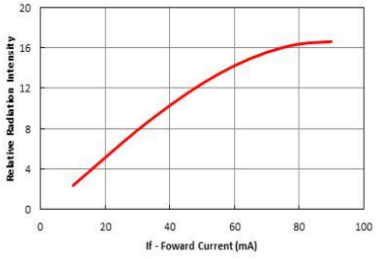
Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Light Source (650nm) Forward Current	V_f	1.8	2	2.3	V	If=20mA
Light Source (850nm) Forward Current	V_f	1.4		1.9	V	If=20mA
Light Source(650nm) Wavelength	λp	650		660	nm	If=20mA
Light Source(850nm) Wavelength	λp	840		860	nm	If=20mA
Supply Current	V_{cc}		10	15	mA	If=20mA
Low Level Output Voltage	V_{OL}		0.2	0.4	V	2kΩ Pull-up inside
High Level Output Voltage	V_{OH}	2.4	4.5		V	2kΩ Pull-up inside
A/B Rise Time	t_r		160		ns	2kΩ Pull-up inside CL=8PF
A/B Fall Time	t_r		20		ns	2kΩ Pull-up inside CL=8PF
AB Duty Ration	D_t	40	50	60	%	
A/B Phase Difference	θ	60	90	120	°e	

Light Source Characteristic Curve



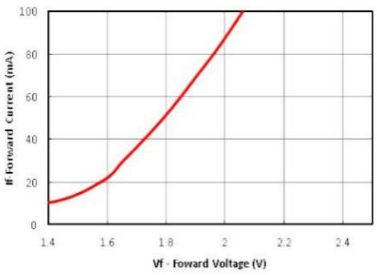
I-V Graph

Fig.1 650nm Forward Voltage And Forward Current



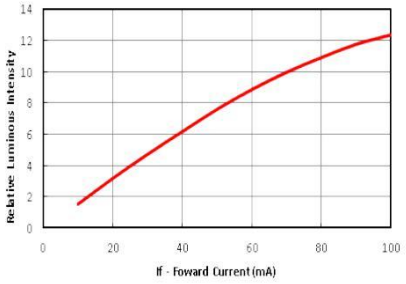
L- I Graph

Fig.2 650nm Forward Current And Relative Luminous Intensity



I-V Graph

Fig.3 850nm Forward Voltage And Forward Current



L- I Graph

Fig.4 850nm Forward Current And Relative Luminous Intensity

A/B Output Waveform Diagram

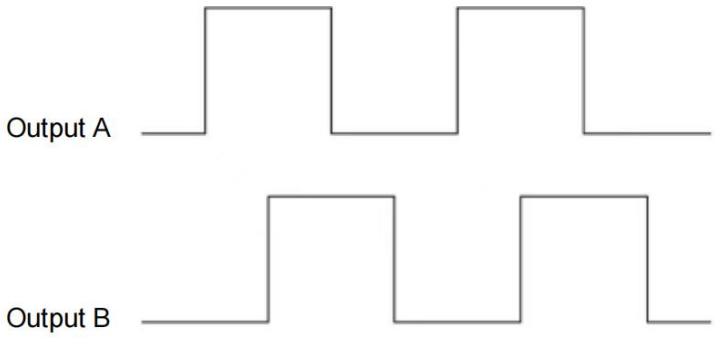


Fig.5 A/B Output Wave Form---Arrow direction

Straight Lead Dimensions (Unit: mm)

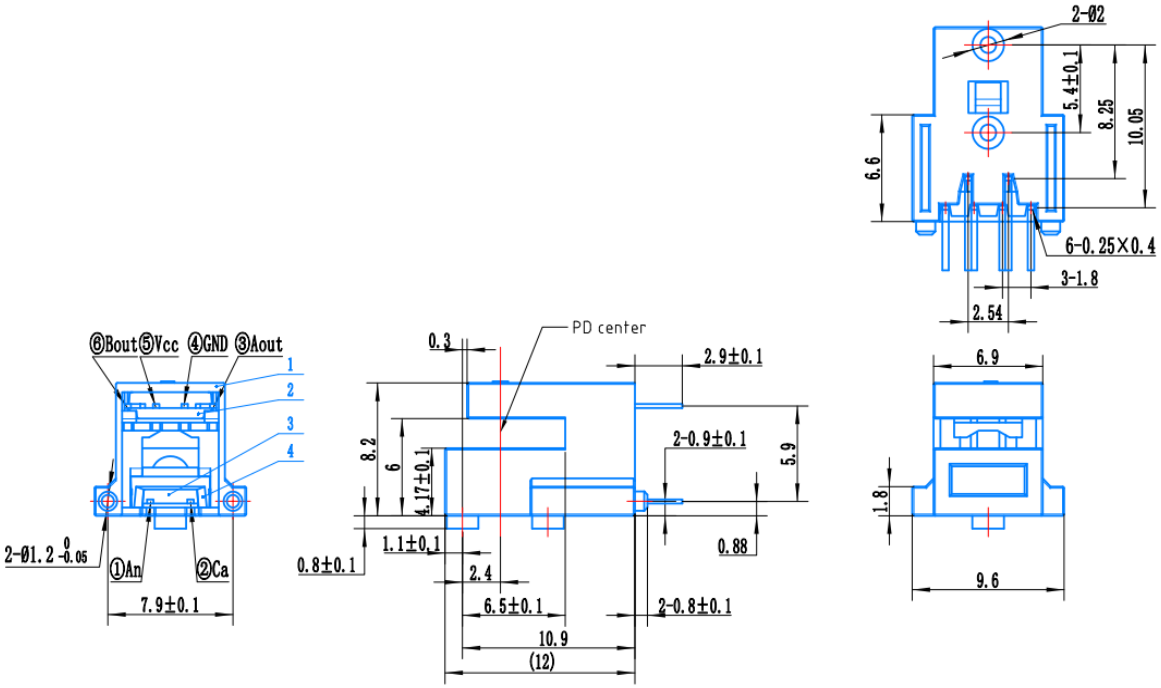


Fig.6 Straight Lead Dimensions Without Mounting Holes

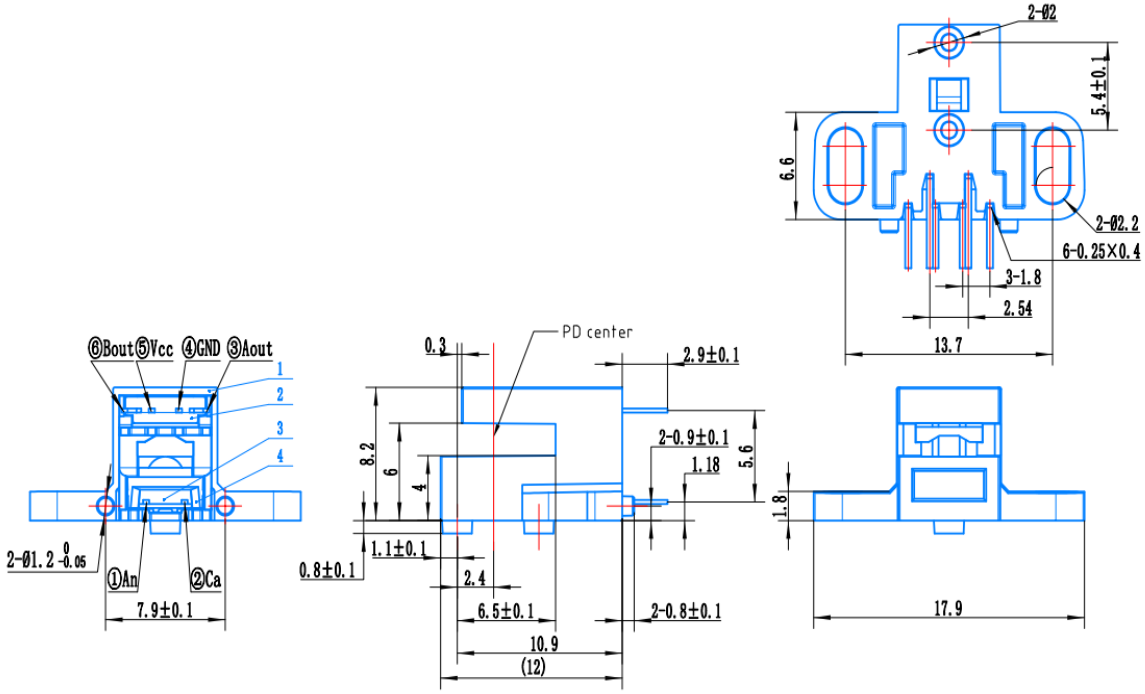


Fig.7 Straight Lead Dimensions With Mounting Holes

Bent Lead Dimension (Unit: mm)

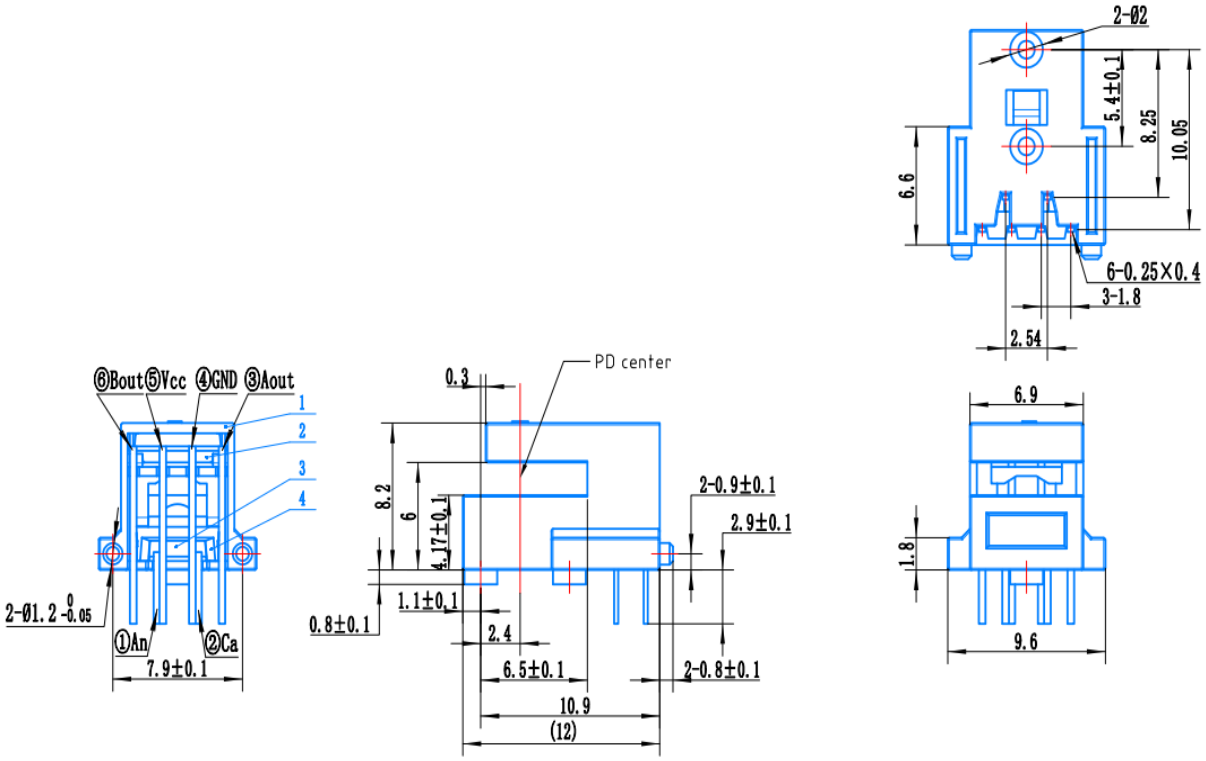


Fig.8 Bent Lead Dimension Without Mounting Holes

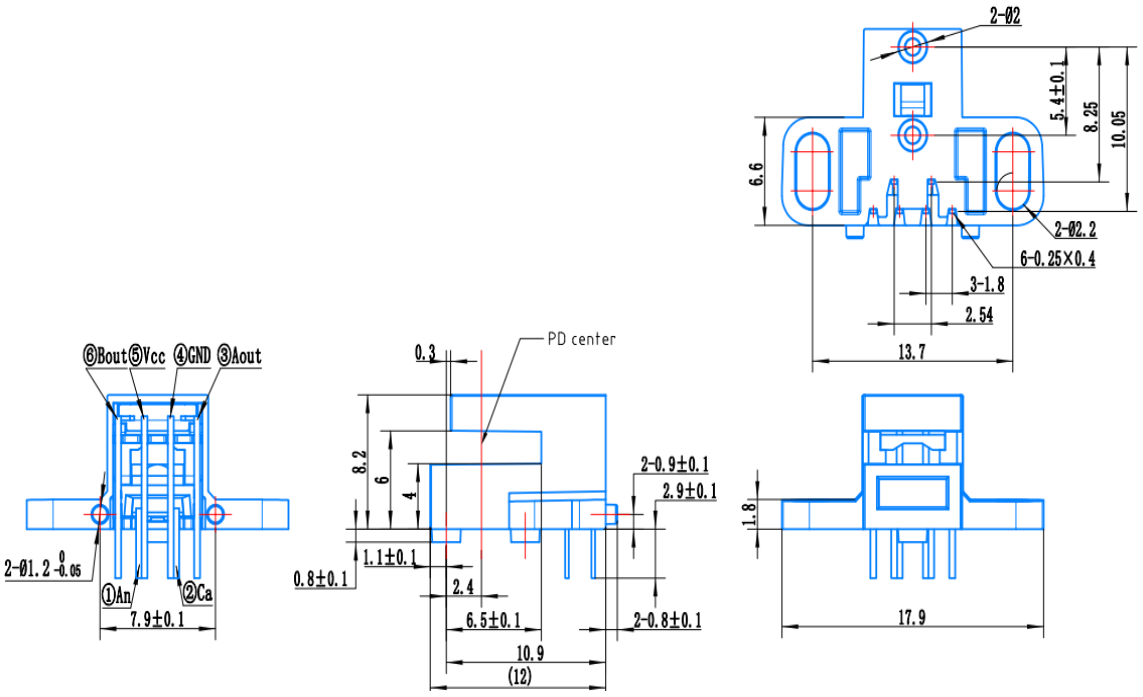


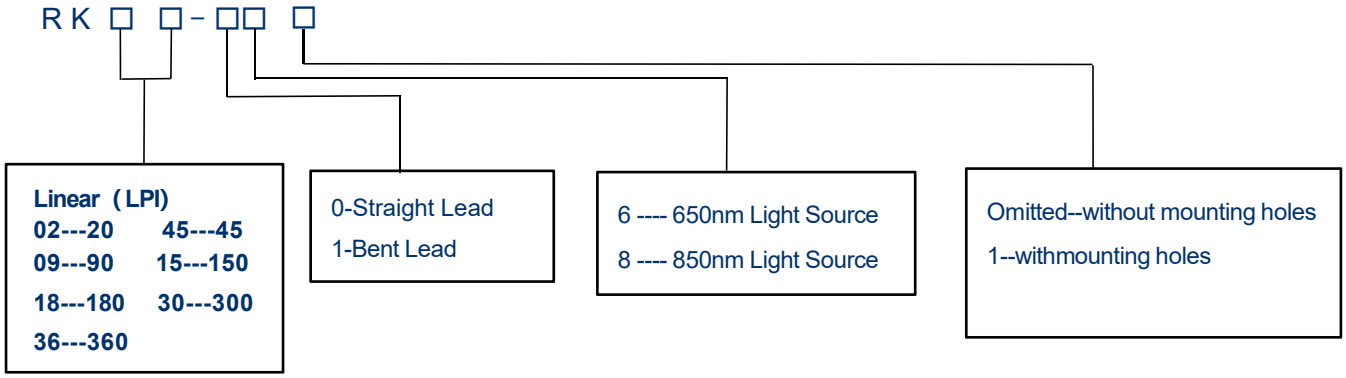
Fig.9 Bent Lead Dimension With Mounting Holes

Pin Definition

Pin Name	Function	Input/Output
An	Positive pole of light source (240 ohmcurrent limiting resistor is recommended, VCC=5V)	
Ca	Negative pole of light source	
Vcc	Power Supply +,5V	Power Supply
Aout	A Channel output, 2kΩ Pull-up inside	Output
Bout	B Channel output, 2kΩ Pull-up inside	Output
Gnd	Ground	Ground

Ordering Information

RK series is available in a variety of options, as shown in the table below.



Module Printing