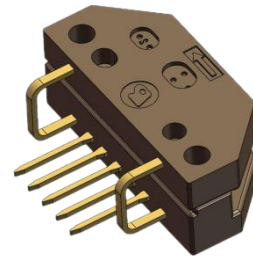


# RS9140 Series

## Optical Encoder

### Data Sheet



### Description

RS9140 series are three channel optical incremental encoder modules. The module consists of a lensed LED source and a detector IC in a small plastic package. Due to a high collimated light source and a precision photodetector array, with a matched codewheel or codestrip, the module provides the information of rotary motor.

RS9140 series have lots of CPR options based on optical radius(ROP)=11mm, standard CPRs: 100,200, 256, 360, 400, 500, 1000.

### Features

- Photodetector Array
- -40 °C~ +100 °C Operating Temperature
- Resolution Up to 1000 CPR
- C-Shape Structure,Easy to Mount
- No Signal Adjustment Required
- TTL Compatible
- Single 5V Supply

### Applications

Printers,Plotters,Servo Motor, Factory Automation.

*Note: Not recommend for use in life safety applications*

### Absolute Maximum Ratings

Parameter	Symbol	Range
Storage Temperature	T <sub>s</sub>	-40 °C~ +100 °C
Operating Temperature	T <sub>A</sub>	-40 °C~ +100 °C
Supply Voltage	V <sub>cc</sub>	-0.5 ~ 7 V
Output Voltage	V <sub>o</sub>	-0.5 ~ V <sub>cc</sub>
Response Frequency	f	200 KHz
Output Current per Channel	I <sub>o</sub>	-1 ~ 5 mA

## Recommended Operating Conditions

Parameter	Symbol	Range
Working Temperature	$T_A$	-40 °C~ +100 °C
Supply Voltage	$V_{CC}$	Ripple <100mV 4.5V ~ 5.5V
Shaft Perpendicularity Plus Axial Play	$V_{CC}$	-0.25mm~ 0.25mm
Shaft Eccentricity Plus Radial Play	$V_{CC}$	0.04mm

## Electrical Characteristics

All parameters over Recommended Range and Recommended Mounting Tolerances. Typical at 25° C.

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Module Operation Current		40	51	60	mA	
Detector Operating Current	$I_{CC}$		35	42	mA	
Low Level Output Voltage	$V_{OL}$		0.2	0.4	V	Internal 2kΩ pull-up resistor
High Level Output Voltage	$V_{OH}$	2.4	4.5		V	Internal 2kΩ pull-up resistor
A/B Rise Time	$t_r$		120		ns	Internal 2kΩ pull-up resistor CL=8PF
A/B Fall Time	$t_f$		20		ns	Internal 2kΩ pull-up resistor CL=8PF
A/B Duty Cycle	$D_t$	40	50	60	%	
A/B Phase Difference	$\theta$	60	90	120	°e	
Count Frequency	f			200	KHz	

## Waveform Diagram

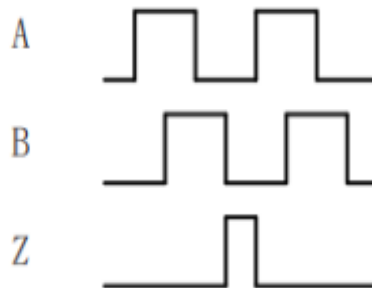


Fig.1 output waveform(in “ arrow ” direction)

## Mechanical Dimension Drawing

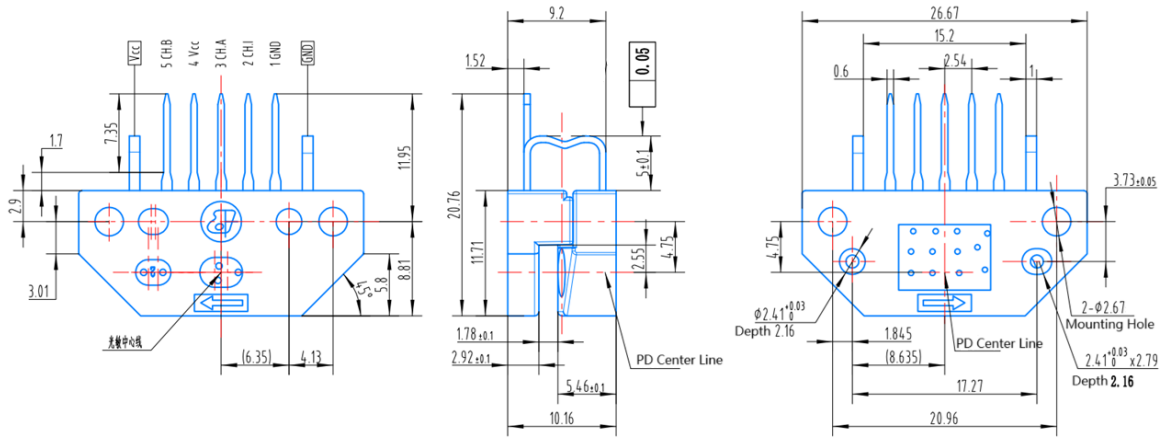


Fig.3 Mechanical Dimension

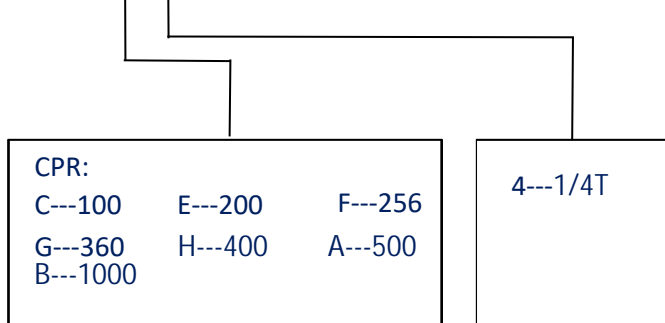
## Pin Definitions

Pin Name	Description	Input/Output
Vcc	+ 5V	Power Supply
CH A	A Channel output	Output
CH B	B Channel output	Output
GND	Ground	Power Supply
CH I	Index Output	Output

## Module Selections and Order Information

Three Channel Encoder Modules and Code disc with 11mm Optical Radius.

RS 9 1 4 0 - □ □



## Module Printing

