



RS91 Series

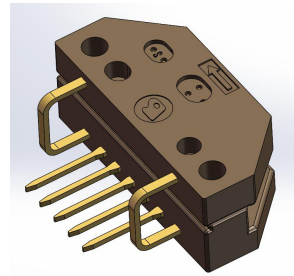
Optical Encoder

Datasheet

Description

RS91 series are three channel/two 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, the module provides the information of rotary motor .

RS91series have lots of CPR options based on optical radius(ROP)=11mm, standard CPRs: 100, 200, 256, 300, 360, 400, 500, 512, 600, 1000, 1024,2000, 2048,2500.



Features

- Photodetector Array
- -40 °C— +100 °C Operating Temperature
- Resolution Up to 2500 CPR
- C-Shape Structure, Easy to Mount
- No Signal Adjustment Required
- TTL Compatible
- Single 5V Supply

Applications

Printers , Plotters, Servo Motor, Factory Automation.

Note: 1. Not recommend for use in life safety applications.



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Absolute Maximum Ratings

Storage Temperature	Ts	-40 °C — +100 °C
Operating Temperature	TA	-40 °C — +100 °C
Supply Voltage	Vcc	-0.5V — 7V
Output Voltage	Vo	-0.5V — Vcc
Response Frequency	f	500KHz
Output Current per Channel	Io	-1 — 5 mA

Recommended Operating Conditions

Working Temperature	TA	-40 °C — 100 °C
Supply Voltage	Vcc	Ripple<100mV 4.5V — 5.5V
Shaft Perpendicularity Plus Axial Play		-0.25mm — 0.25mm
Shaft Eccentricity Plus Radial Play		0.04mm

Encoding Characteristics

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

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Module Operation Current		40	51	60	mA	
Detector Operating Current	I _{ccr}		35	42	mA	
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/Z Rise Time	t _r		120		ns	2KΩ pull-up resistor inside, CL=8PF
A/B/Z Fall Time	t _f		20		ns	2kΩ pull-up inside, CL=8PF
A/B Duty Cycle	Dt	40	50	60	%	
A/B Phase	θ	60	90	120	°e	
Count Frequency	f			500	KHz	



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Output Waveforms

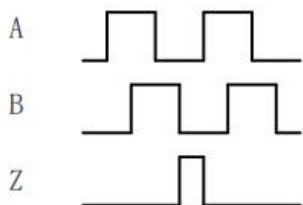


Fig.1 output waveform(in “arrow” direction)

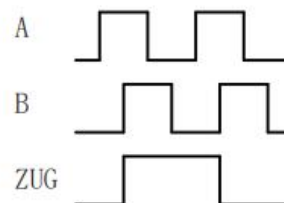


Fig.2 output waveform(in “arrow” direction)

Module Mechanical Dimensions

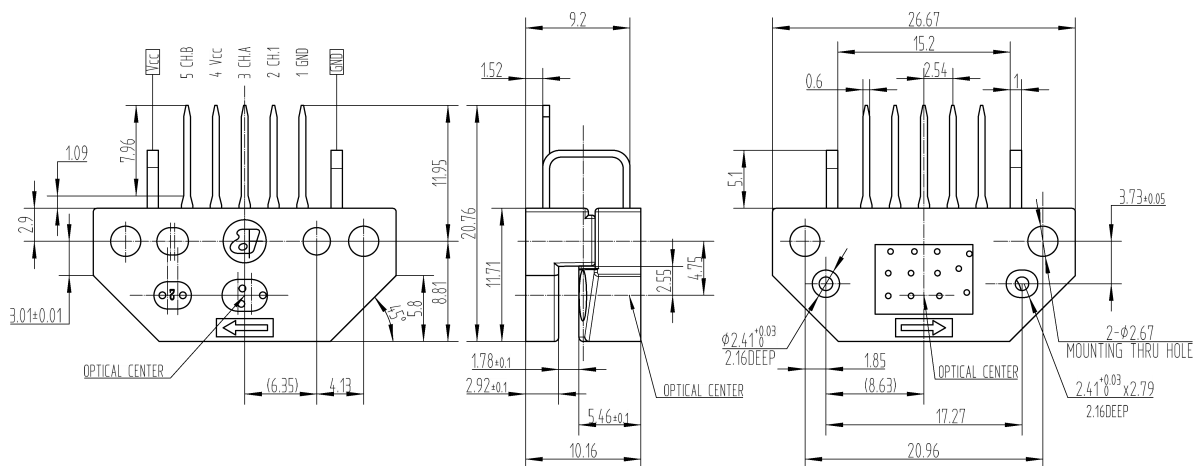


Fig.3 Mechanical Dimension

Pins Definitions

Pin Name	Description	Input/Output
Vcc	+5V	Power Supply
CH A	A-channel output, 2kΩ pull-up inside	Output
CH B	B-channel output, 2kΩ pull-up inside	Output
GND	0 V	Power Supply
CH I	Z-output/ZUG-output	output

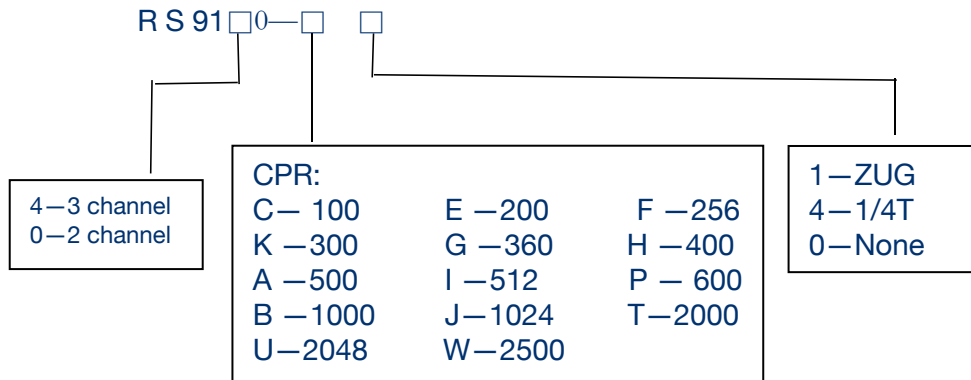
Note: 1. Z-output has two options, one is 1/4T(gated output), another is 1T (ungated signal----ZUG).
 2. The index bit output is selected by the last bit of the model to choose 1/4T or ZUG, the last bit 1 means Z output is ZUG, the last bit 4 means Z output is 1/4T



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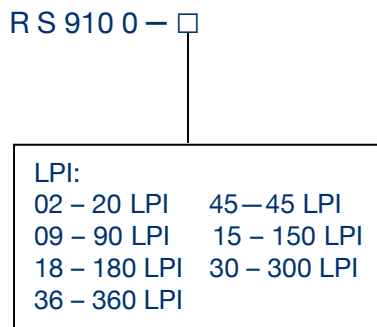
Modules Selections and Order Information

RS91Series have three channel and two channel encoder modules, 11mm Optical Radius.



Note: Z(Index) width of those products which CPRs are between 100CPR and 1024CPR is 1/4T . And for those products (CPR:2000---2400),ZUG(Index) width is 1T

RS91 series have linear options for two channel encoder module.



Raysilicon also provides customized options, please contact our distributions and our sales.

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