

# Series TRD-RV

## Size 20 Hollow Shaft Encoder w/Commutation



### FEATURES

- 2.0" O.D., Thru-Hollow shaft designed with 1.3" Thickness
- Hi-Res. up to 2500 P/R, 120 °C Operating Temperature
- Frequency Response 200 kHz
- Hub I.D. 6mm, 8mm, Unique Tapered 7.5-9.0mm(bet.15mm)
- Mounting B.C. 1.57" (40mm) only
- Commutation Signals: 2PR, 3PR, 4PR, 5PR
- Applications: DC Brushless, Brush or Stepper Motors
- Interchangeable with: Tamagawa OIH-48, EPC 260/15T Dynapar F18

### Electrical

Supply Voltage	5.0 ± 0.5vdc
Allowable Ripple	less than 1%
Current Consumption	less than 180mA
H-level voltage	Min. 2.3V
L-level voltage	Max. 0.5V
Output Channel	Main: A, B, Z Commutation: U, V, W
Output Signals	A, A not, B, B not, Z, Z not U, U not, V, V not, W, W not
Output Circuit	Linedriver 26C31 compatible
FrequencyResponse	200 kHz
Rise/Fall time	100 ns

### Environmental

Temperature	Operating: 0-120C, Storage: -20-120C
Humidity	35 to 90%
Vibration	10 to 2000Hz, 10G
Shock resistance	6 millisecond, half-sine, 75G
Withstand Voltage	500VAC
Insulation resistance	More than 50MOhm between 0v and GRD
Construction	IP40

Mating Connector	Housing: SHR-15V-S
Mating Connector	Contact Pin: SSH-003T-P0.2

### Outputs Specs.

Output Ch.A,B,Z	Incremental
Output wave form	Rectangular Pulse Signal
Flutter	0.1T Max.
Duty Ratio	50% less than 10%
Phase Shift	25% less than 10%
Index Z width	100% less than 50%
Commutation U,V,W	2PR,3PR,4PR,5PR
Flutter	0.01f maximum
Period	90deg.plus-minus 1deg.
Phase Shift	15deg.plus-minus 1deg.
Output position"C" mechanically	Plus-minus 1deg. It is aligned to the rising edge of U ch.with the center of Index Zch.

### PCB Connector

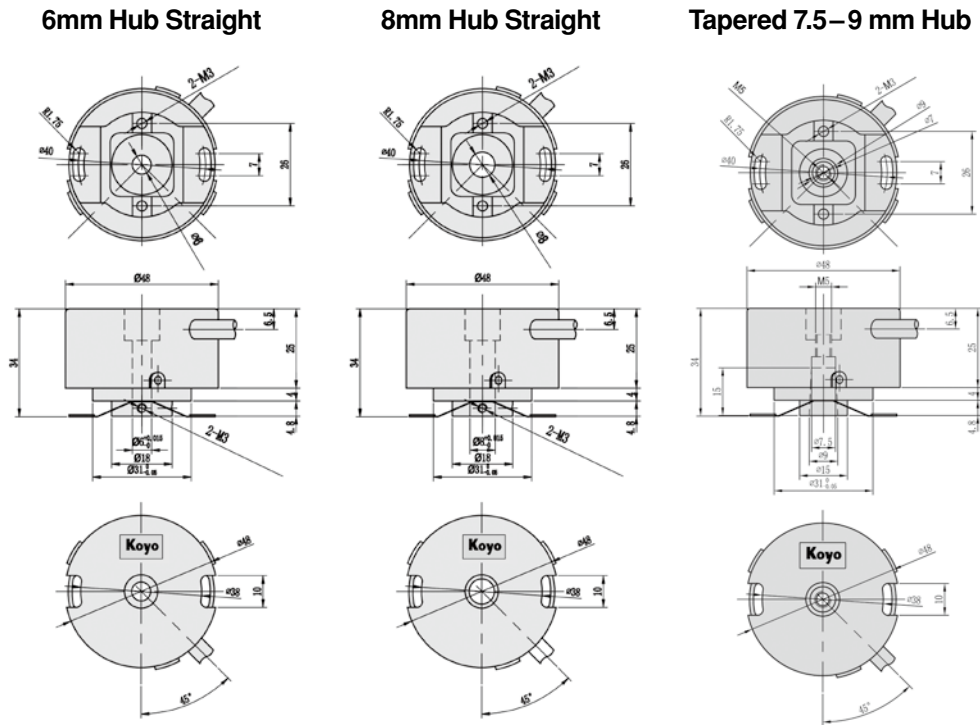
JST	15-Pin Connector: SM15B-SRSS	
PIN	WIRE COLOR	SIGNAL
1	Blue/Red	0V
2	Red/Blue	5V
3	Green	A not
4	Brown	A
5	Blue	B not
6	Orange	B
7	Black	Z
8	Yellow	Z not
9	White/Brown	U not
10	Brown/White	U
11	White/Gray	W not
12	Gray/White	W
13	Red/Orange	V not
14	Orange/Red	V
15	—	NC

### Mechanical

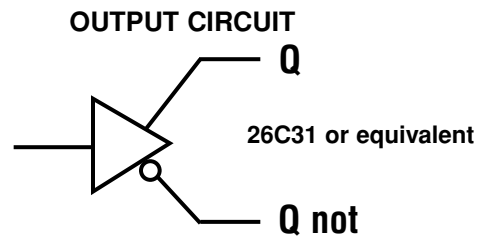
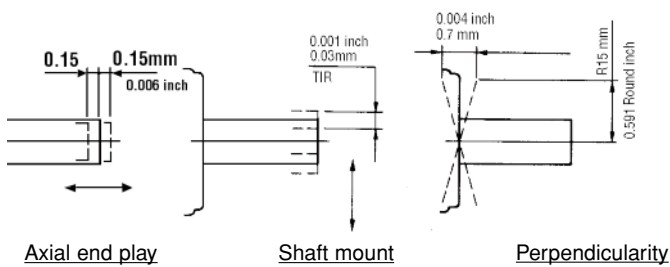
Rated Speed	7500 rpm
Starting Torque	less than 0.01Nm
Shaft Loading	Axial: 10N , Radial: 10N
Shaft Axial Play	± 0.005"
Shaft Runout	0.001"
Cable Material	Oil resistant PVC
Loan/Cross-section	0.089mm2 (AWG#28)
Material Base, body	20% glass filled PBT
Weight	82g

## SIZE 20 SERIES TRD-RV

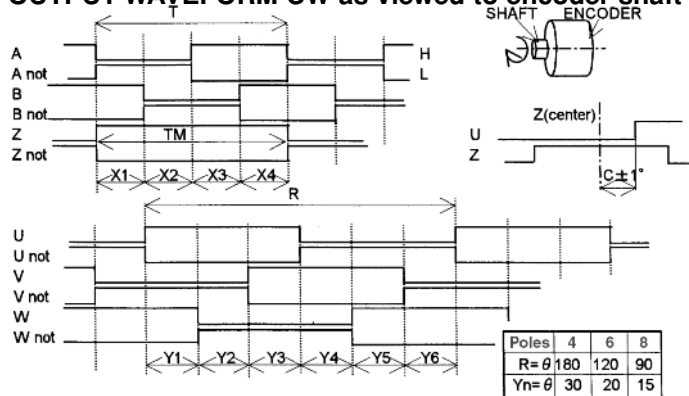
### Hollow Shaft Encoder w/Commutation



#### MOUNTING SHAFT SPECIFICATIONS (mm/inch)



#### OUTPUT WAVEFORM CW as viewed to encoder shaft



#### DIVISION ACCURACY

Symmetry (A, B)	$X1+X2=0.5T \pm 0.1T$ $X3+X4=0.5T \pm 0.1T$
Phase shift (A, B)	$Xn=0.25T \pm 0.1T$ (n=1, 2, 3, 4)
Signal width of Z ch.	$TM=1.0T \pm 0.5T$
Symmetry (U, V, W)	$R=\pm 1.0^\circ$ (mechanical angle) $Yn=0 \pm 1.0^\circ$ (mechanical angle) $C=\pm 1.0^\circ$ (mechanical angle) $Y1+Y2+Y3=0.5R \pm 0.03R$ $Y4+Y5+Y6=0.5R \pm 0.03R$ $Yn=0.1666R \pm 0.03R$

#### DIVISION ACCURACY OF SIGNAL

Accumulative Angle Error	$\leq 0.4T$
Pitch Error	$\pm 0.01T$
Adjacent Pitch Error	$\pm 0.02T$

T=360°/N N: Pulse per revolution

## Series TRD-RV / Size 20 Hollow Shaft Encoder

Model	Resolution	Output	Hub I.D.	Commutation Signals	Termination
TRD-RV	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	RZV	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

### ORDERING INFORMATION

<b>TRD-RV</b> Size 20 Hollow Shaft Encoder	500	<b>RZV:</b> Line Driver 5VDC	<b>6</b> = 6mm	<b>2PR</b> = 4 Poles	<b>NONE</b> = Std. 3ft. Pigtail Cable  <b>3704</b> = PCB JST 15pin conn. w/ 3ft Cable
	1000		<b>8</b> = 8mm	<b>3PR</b> = 6 Poles	
	1024		<b>T</b> = Tapered 7.5~9mm (bet. 15mm)	<b>4PR</b> = 8 Poles	
	2000			<b>5PR</b> = 10 Poles	
	2048				
2500	All Glass Disks				

### PRICING INFORMATION

	RESOLUTION		MECHANICAL	ELECTRICAL	TERMINATION
<b>TRDA-VA</b> Base price \$300.00	<b>500</b> <b>Thru</b> Add \$30.00 <b>2500</b>		<b>HUB I.D.</b> <b>6mm, 8mm</b> N/C	<b>Commutation</b> <b>4, 6, 8, 10 poles</b> N/C	<b>Std. 3 ft.</b> <b>Shielded Cable</b> N/C  <b>3704= PCB</b> <b>JST 15pin</b> <b>Conn.</b> Add \$20.00
			<b>T= Tapered</b> Add \$30.00		

These encoders for OEM users only.  
 Lead time and Qty D/C Pricing, consult factory.