

- PLC
- HMI
- SENSOR
- ENCODER**
- COUNTER
- INFORMATION

TRD-KL Series

Features

φ78 Absolute Type

- Space-saving type with sideward-exiting cable / connector
- Strengthened dustproof and waterjet-proof type that can be used in places exposed to water and oil
- Robust design that uses the strengthened spindle of a φ10 mm stainless steel shaft and an aluminum die-cast cover
- Gray code output that eliminates reading errors
- Use of a metal slit board delivers an impact resistance of 980 m/s².
- Installation using a servo mount convenient for origin adjustment is possible.



Model Number List

With Cable			With Connector		
Model Number	Resolution	Cable Length	Model Number	Resolution	Cable Length
TRD-KL180-Y	180 (8-bit)	2 m	TRD-KL180-YC2	180 (8-bit)	No
TRD-KL250-Y	250 (8-bit)		TRD-KL250-YC2	250 (8-bit)	
TRD-KL256-Y	256 (8-bit)		TRD-KL256-YC2	256 (8-bit)	
TRD-KL360-Y	360 (9-bit)		TRD-KL360-YC2	360 (9-bit)	
TRD-KL500-Y	500 (9-bit)		TRD-KL500-YC2	500 (9-bit)	
TRD-KL512-Y	512 (9-bit)		TRD-KL512-YC2	512 (9-bit)	
TRD-KL720-Y	720 (10-bit)		TRD-KL720-YC2	720 (10-bit)	
TRD-KL1000-Y	1,000 (10-bit)		TRD-KL1000-YC2	1,000 (10-bit)	
TRD-KL1024-Y	1,024 (10-bit)		TRD-KL1024-YC2	1,024 (10-bit)	

TRD-**KL** -**Y**

- Series classification
 - Resolution
 - Gray code output
 - Connection form
- Blank : Cable type
C2 : Connector type

Electrical Specifications

Model Number	TRD-KL <input type="text"/> -Y <input type="text"/>	
Power Supply	Supply Voltage	10 to 30 V DC
	Allowable Ripple	3% rms or less
	Consumption Current	70 mA or lower (No load)
Output Code	Gray binary	
Maximum Response Frequency	20 kHz	
Precision	(360 / (Resolution x 2))°	
Rotation Direction	Increase of output code in clockwise rotation (CW)	
Output	Output Form	NPN open collector output
	Output Logic	Negative logic (Active low)
	Residual Voltage	0.4 V or lower
	Sink Current	30 mA
	Load Supply Voltage	30 V DC or lower
Rise / Fall Time*	Not larger than 2.0 μs (Load resistance 1 kΩ)	

*Cable length 2 m, maximum load

Mechanical Specifications

Starting Torque	0.1 N·m or less (+20°C)
Moment of Inertia	1 x 10 ⁻⁵ kg·m ²
Shaft Allowable Load	Radial: 70N
	Thrust: 40N
Maximum Allowable Number of Revolutions (Note 1)	5,000 rpm
Cable	Outside diameter φ7.8 mm 12-core shielded oil-resistant vinyl chloride cable Core wire nominal cross-sectional area: 0.3 mm ²
Weight	Type with cable taken out from the side: Approx. 750 g (With 2 m cable) Connector type: Approx. 450 g

Note 1: Maximum number of revolutions that can be mechanically endured

Environmental Requirements

Use Ambient Temperature	-10 to +60°C
Storage Ambient Humidity	-25 to +80°C
Use Ambient Humidity	35 to 85% RH (No condensation)
Withstand Voltage	500 V AC 50/60 Hz 1 minute*
Insulation Resistance	10 MΩ or higher (500 V DC mega)*
Vibration Resistance (Endurance)	Displacement half amplitude: 0.75 mm, 10 to 55 Hz, 3 axial directions, each 1 h
Impact Resistance (Endurance)	980 m/s ² 11 ms, each 3 times in 3 axial directions
Protective Structure	IP65 (Dustproof and waterjet-proof type)

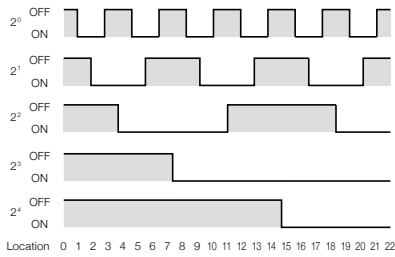
* The power supply, signal lines, and shield between the cases are excluded.

TRD-KL Series Specifications

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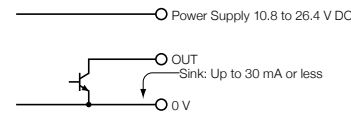
- Rotary Encoder Lineup
- Selection Guide
- Incremental Type
- Absolute Type**

Output Waveform



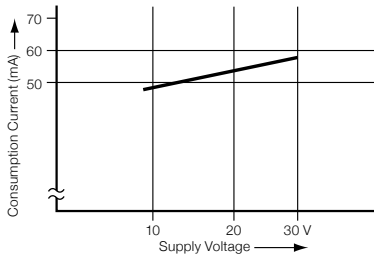
Output Circuit

Open Collector



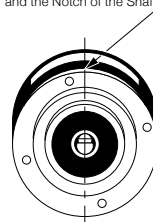
Electrical Characteristics (Typical)

Consumption current characteristics



Home Position

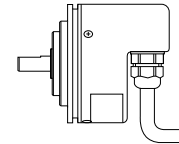
Match the Cover Installation Screw on the Nameplate Side and the Notch of the Shaft (Upward-pointing).



Connection

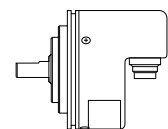
With Cable

Model Number	TRD-KL1024-Y TRD-KL1000-Y TRD-KL720-Y	TRD-KL512-Y TRD-KL500-Y TRD-KL360-Y	TRD-KL256-Y TRD-KL250-Y TRD-KL180-Y
Red	Power supply +12/24 V	←	←
Black	Power supply 0 V	←	←
Brown	Output	2 ⁰	←
Orange		2 ¹	←
Yellow		2 ²	←
Green		2 ³	←
Blue		2 ⁴	←
Purple		2 ⁵	←
Gray		2 ⁶	←
White		2 ⁷	←
Pink		2 ⁸	←
Light Blue	2 ⁹	(Not connected)	(Not connected)
Shield	GND	←	←

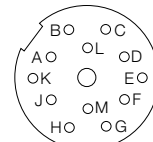


With Connector







Model Number	TRD-KL1024-YC2 TRD-KL1000-YC2 TRD-KL720-YC2	TRD-KL512-YC2 TRD-KL500-YC2 TRD-KL360-YC2	TRD-KL256-YC2 TRD-KL250-YC2 TRD-KL180-YC2
A	Power supply +12/24 V	←	←
B	Output	2 ⁰	←
C		2 ¹	←
D		2 ²	←
E		2 ³	←
F		2 ⁴	←
G		2 ⁵	←
H		2 ⁶	←
J		2 ⁷	←
K		2 ⁸	←
L	2 ⁹	(Not connected)	(Not connected)
M	Power supply 0 V	←	←



Connector
<Pin Assignment Figure>



*Figure Seen from Wiring Side (Back side)

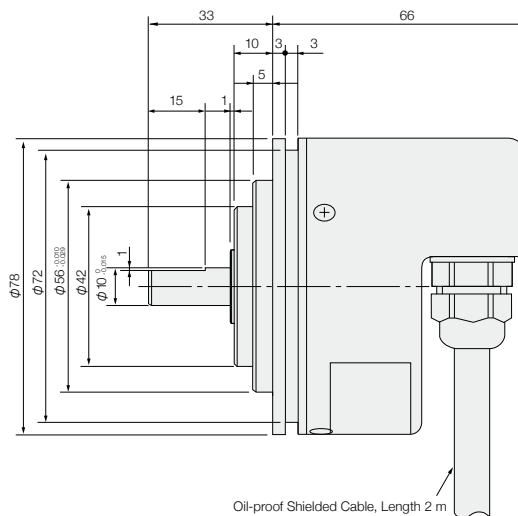
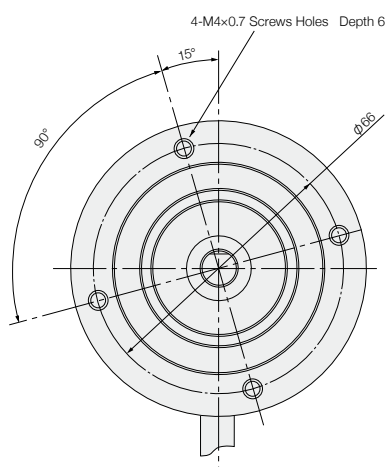
-  P L C
-  H M I
-  S E N S O R
-  E N C O D E R
-  C O U N T E R
-  I N F O R M A T I O N

TRD-KL Series

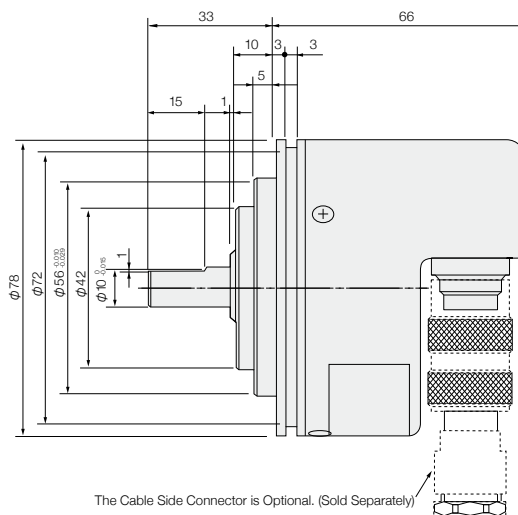
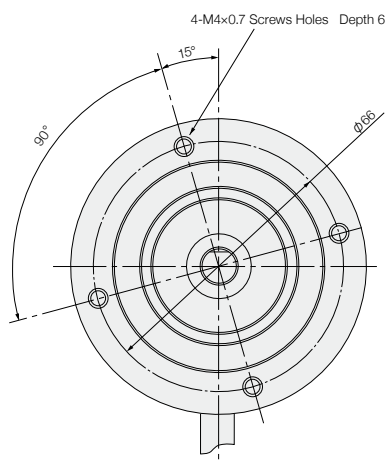
Dimensions

Dimensions (Unit: mm)

With Cable



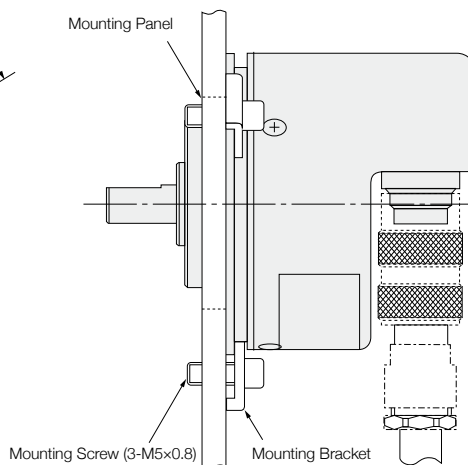
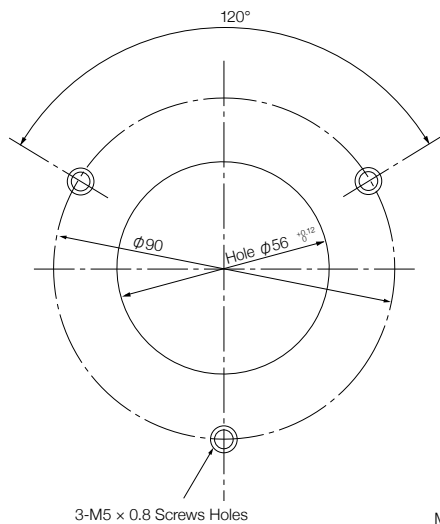
With Connector



- Rotary Encoder Lineup
- Selection Guide
- Incremental Type
- Absolute Type

- TRD-NA
- TRD-K
- TRD-KL

Servo Mount Metal Mounting State Diagram



Servo mount metal fixture KM-9 (Accessories)

