

TRD-KL Series

Features

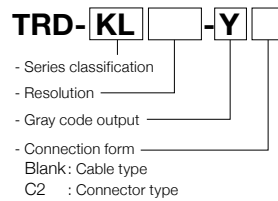
φ78 Absolute Type

- 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)	



Electrical Specifications

Model Number	TRD-KL -Y 	
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

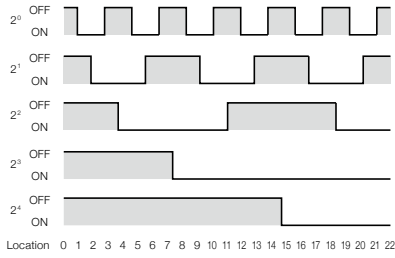
Use Ambient Temperature	-10 to +60°C
Storage Ambient Humidity	-25 to +80°C
Use Ambient Humidity	35 to 85% RH (No condensation)
Withstand Voltage	500 V AC 50/60 Hz 1 minute*
Insulation Resistance	10 MΩ or higher (500 V DC mega)*
Vibration Resistance (Endurance)	Displacement half amplitude: 0.75 mm, 10 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.

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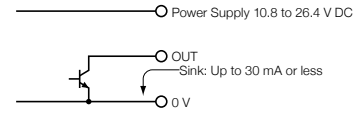
Specifications

Output Waveform



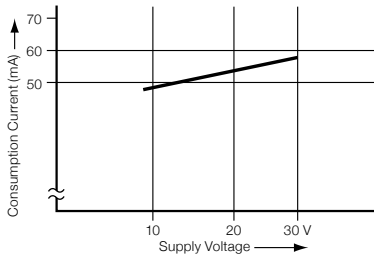
Output Circuit

Open Collector



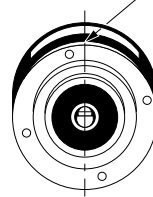
Electrical Characteristics (Typical)

Consumption current characteristics



Home Position

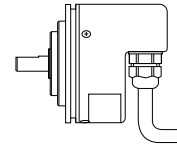
Match the Cover Installation Screw on the Nameplate Side and the Notch of the Shaft (Upward-pointing).



Connection

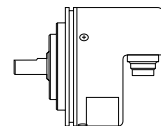
With Cable

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	←	←

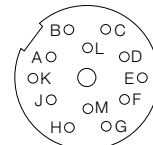


With Connector

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>



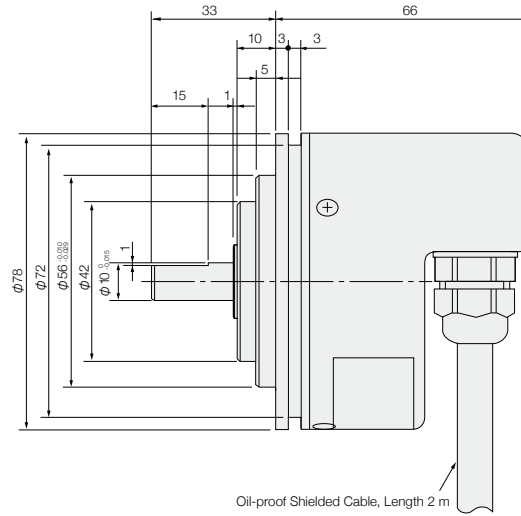
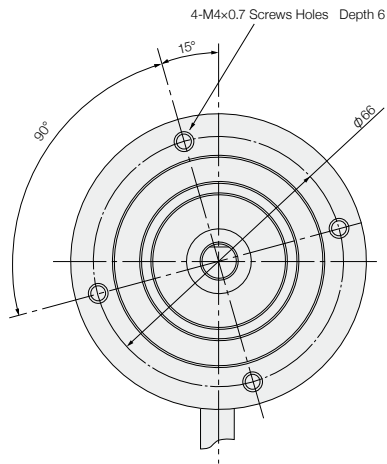
*Figure Seen from Wiring Side (Back side)

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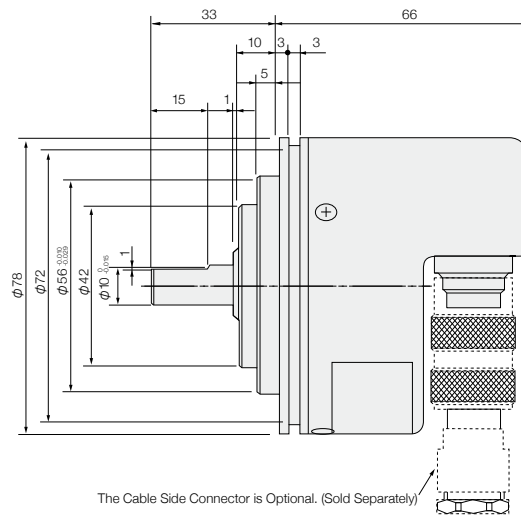
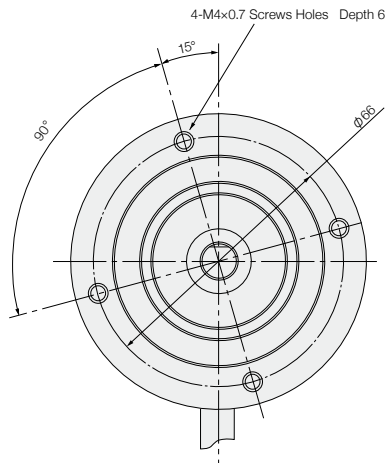
Dimensions

Dimensions (Unit: mm)

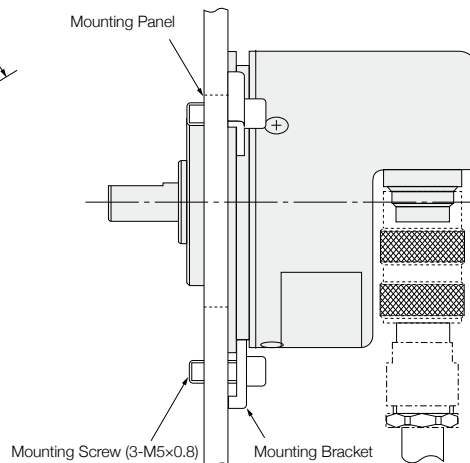
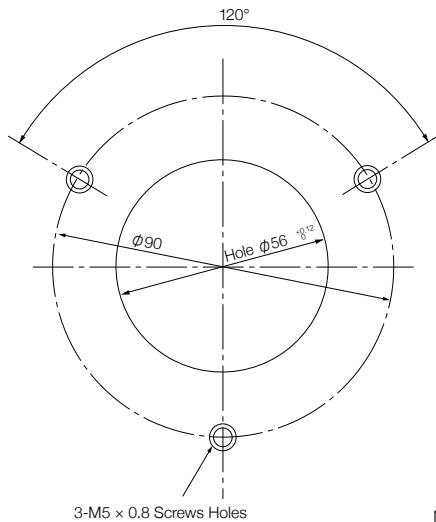
With Cable



With Connector



Servo Mount Metal Mounting State Diagram



Servo mount metal fixture KM-9 (Accessories)

