TRD-KL Series Absolute Encoders

■ Features

- Side cable and connector for minimum space
- Dust and splash proofed for operation not affected by water or oil
- ø10 mm strong stainless shaft and aluminum die-cast casing
- Accurate gray code output
- Shock resistant metal slit plate durable at 980 m/s^2
- Servo mounting is available for easy installation

■ List of model numbers

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)	–
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	1000 (10 bit)		**TRD-KL1000-YC2**	1000 (10 bit)	
TRD-KL1024-Y	1024 (10 bit)		**TRD-KL1024-YC2**	1024 (10 bit)	

■ Model numbering system

TRD- KL [ ] - Y [ ]

- Series
- Resolution (180, 250, 256, 360, 500, 512, 720, 1000, 1024)
- Connection
  Blank **:**With cable
  C2 **:**With connector
- Gray code output

■ Electrical specifications

Power source	**Power source voltage**	10 to 30 VDC
	Allowable ripple	3% rms max.
	Current consumption	70 mA max.
Output code		Gray binary
Max. response frequency		20 kHz
Precision		(360/resolution × 2)°
Direction		Output code increments in normal direction
Output	**Output type**	NPN open collector output
	Output logic	Negative (Low active)
	Residual voltage	0.4 V max.
	Inflow current	30 mA max.
	Load power voltage	30 VDC max.
Rise/Fall time		2.0 μs (at 1 kΩ load resistance) max.

■ Mechanical specifications

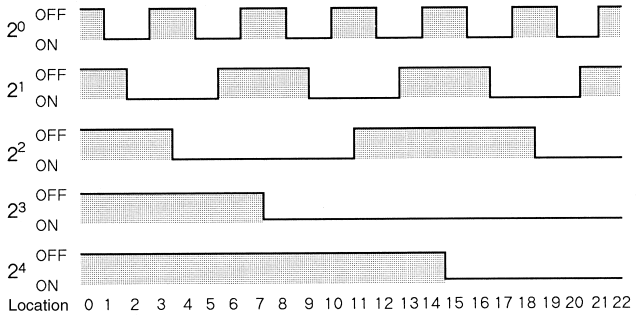
Initial torque	0.1 N•m (+20°C) max.
Moment of inertia	1 × 10^{-5} kg • m^2
Allowable load	Radial: 70 N
	Thrust: 40 N
Maximum allowable speed (Note 1)	5000 rpm
Cable	External diameter: ø7.8 mm 12-core oil resistant PVC cable Nominal section area of core: 0.3 mm^2
Weight	With side cable: Approx. 700 g (with 2 m cable) With connector: Approx. 450 g

Note 1: Highest sped that can support mechanical integrity of the encoder

■ Environmental requirements

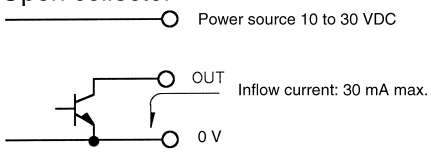
Ambient temperature	–10 to +60°C
Storage temperature	–25 to +80°C
Operating humidity	35 to 85% RH (with no dewing)
Voltage withstand	AC 500 V at 50/60 Hz for one minute (between terminals and case)
Insulation resistance	10 MΩ (measured with DC 500 V Megger) min.
Vibration resistance	Durable for one hour along three axes at 10 to 55 Hz with 0.75 mm amplitudes
Shock resistance	11 ms with 980 m/s^2 applied three times along three axes
Protection	IP65: Dust and splash proofed

■ Channel timing chart



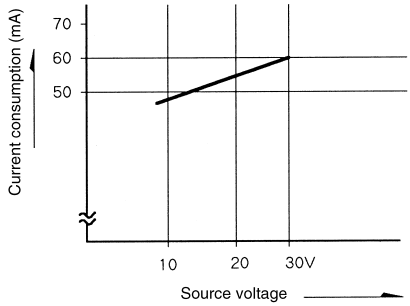
■ Output circuit

Open collector

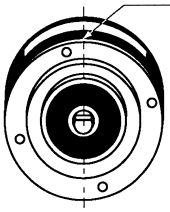


■ Electrical characteristics

Current consumption



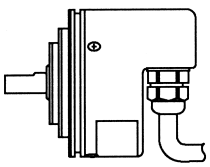
■ Home position



Align the upward notch of the shaft with the small screw fixing the cover on the name plate.

■ Terminal assignment

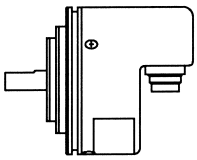
● With cable



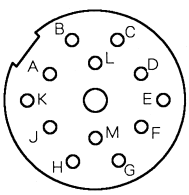
Shielded cable is not connected to the encoder body.

Model number / Color of core cable	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 source +12/24 V	←	←
Black	Power source 0 V	←	←
Brown	Outputs 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	←	Not connected
Light blue	2^9	Not connected	Not connected
Shield	GND	←	←

● With connector



Pin out of connector



* Rear view

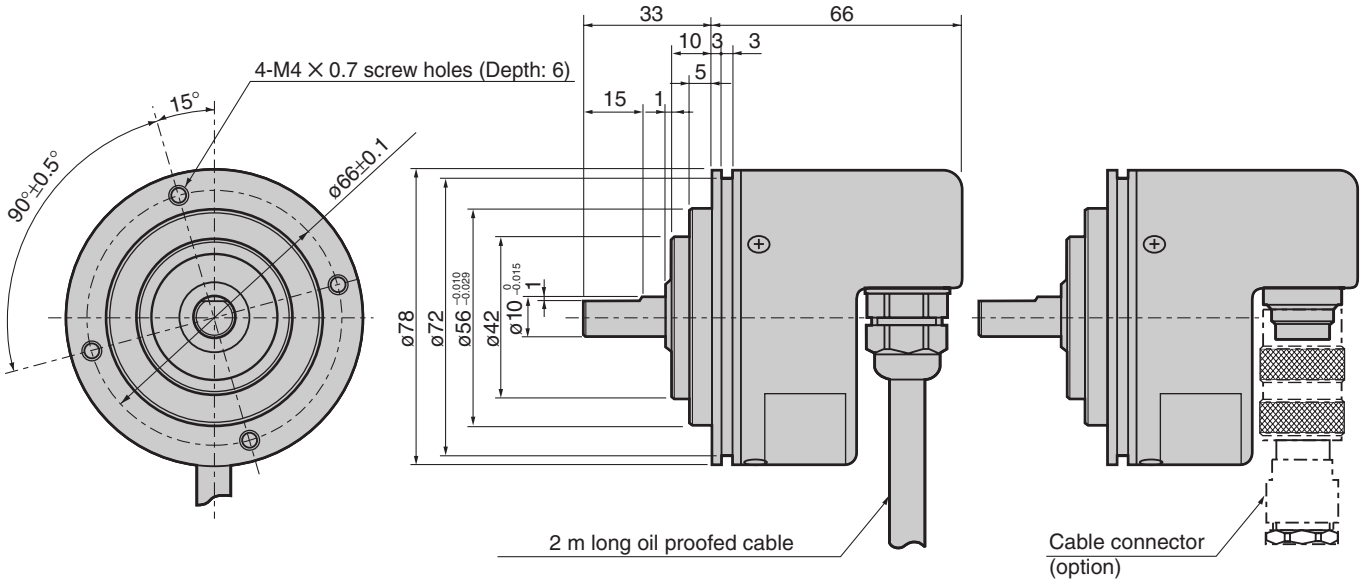
Model number / Pin number	TRD-KL1024-YC2 TRD-KL1000-YC2 TRD-KL720-YC2	TRD-KL512-YC2 TRD-KL500-YC2 TRD-KL360-YC2	TRD-KL256-YC2 TRD-KL250-YC2 TRD-KL180-YC2
A	Power source +12/24 V	←	←
B	Outputs 2^0	←	←
C	2^1	←	←
D	2^2	←	←
E	2^3	←	←
F	2^4	←	←
G	2^5	←	←
H	2^6	←	←
J	2^7	←	←
K	2^8	←	Not connected
L	2^9	Not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

External Dimensions

(in mm)

With cable
(TRD-KL□-Y)

With connector
(TRD-KL□-YC2)



Servo mount metal fixture