

VXT-E40S06-1024-L

Incremental Encoder | ø40 mm | 1024 PPR | Line Driver

Product Overview



The VXT-E40S06-1024-L is a 40 mm incremental rotary encoder with a ø6 mm solid shaft and a resolution of 1024 pulses per revolution. RS-422 line-driver outputs with complementary signals on three channels (A, B and Z index) reject electrical noise and support long cable runs to motion controllers, servo drives and CNC systems from a 5 V DC supply. A 2 m shielded radial cable, robust housing and ball-bearing shaft support make it well suited to continuous duty on industrial machines.

Key Features

- ✓ Resolution 1024 PPR, A/B quadrature + Z index
- ✓ Housing ø40 mm, ø6 mm solid shaft (g6)
- ✓ Line driver (RS-422 differential) output
- ✓ Supply voltage 5 V DC $\pm$ 5 %
- ✓ Response frequency up to 300 kHz
- ✓ Max. operating speed 6000 rpm
- ✓ Shaft load up to 30 N radial / 20 N axial
- ✓ 2 m shielded radial cable with open-ended leads
- ✓ Synchro flange with ø20 mm spigot, 3 × M3 mounting
- ✓ Operating temperature -20 ... +85 °C, IP54

Applications

CNC & Motion Control • Servo Feedback • Long Cable Runs in Noisy Environments • Printing & Converting • Robotics • High-resolution Positioning

Technical Specifications

GENERAL SPECIFICATIONS	
Encoder Type	Incremental rotary encoder, optical
Resolution	1024 pulses per revolution (PPR)
Output Channels	A, B (90° phase shift), Z (1 pulse/rev)
Output Circuit	Line driver (RS-422 differential)
Supply Voltage	5 V DC $\pm$ 5 %
Housing Diameter	ø40 mm
Shaft	ø6 mm solid shaft, g6, with flat
Connection	Radial cable, shielded, 2 m
Protection Degree	IP54

Technical Specifications (continued)

ELECTRICAL

Supply Voltage Vcc	5 V DC $\pm$ 5 %
Current Consumption	$\leq$ 100 mA
Output Voltage High VH	$>$ 3.5 V
Output Voltage Low VL	$\leq$ 0.7 V
Rise Time	$\leq$ 200 ns
Fall Time	$\leq$ 200 ns
Max. Response Frequency	300 kHz
Max. Electrical Speed	17578 rpm (300 kHz $\times$ 60 $\div$ 1024 PPR)
Max. Operating Speed	6000 rpm (lower of mechanical and electrical limit)
Output Protection	RS-422 compliant differential driver
Signal Interface	Use an RS-422 differential receiver; terminate long lines

SIGNAL CHARACTERISTICS

Duty Ratio	$X1 + X2 = 0.5 T \pm 0.1 T$; $X2 + X3 = 0.5 T \pm 0.1 T$
Phase Difference A–B	$Xn \geq 0.125 T$ ($n = 1 \dots 4$)
Absolute Angle Error	$\leq 0.2 T$
Cycle Error	$\leq 0.05 T$
Z Pulse Width	$1 T \pm 0.5 T$
Direction	CW viewed from shaft end: A leads B by 90°

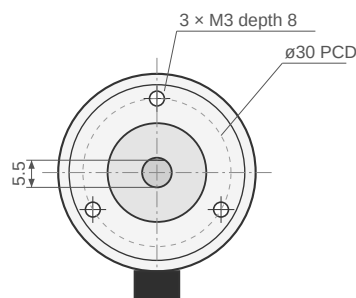
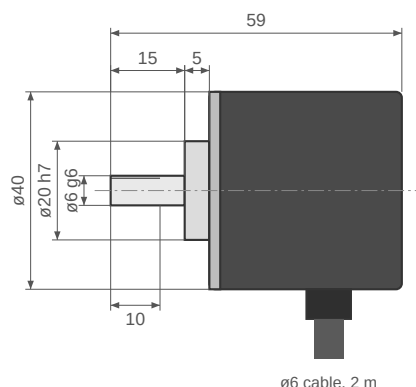
MECHANICAL

Max. Mechanical Speed	6000 rpm
Starting Torque	≤ 1 mN·m (at 25 °C)
Max. Shaft Load	Radial 30 N, axial 20 N
Moment of Inertia	40 g·cm ²
Shaft	Ø6 mm g6, solid, with flat
Mounting	3 $\times$ M3, depth 8 mm, equally spaced on Ø30 mm PCD
Cable	Ø6 mm shielded, 2 m, radial exit
Mass	approx. 135 g

ENVIRONMENT

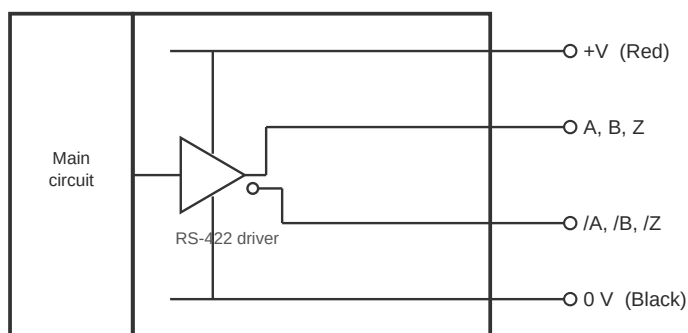
Operating Temperature	–20 ... +85 °C (–4 ... +185 °F)
Storage Temperature	–30 ... +90 °C
Relative Humidity	35 ... 85 % RH, non-condensing
Shock Resistance	50 m/s ² , 3 times each in X, Y, Z axes, 6 ms
Vibration Resistance	20 m/s ² , 10 ... 200 Hz, 2 h each in X, Y, Z axes
Protection Degree	IP54

Product Dimensions



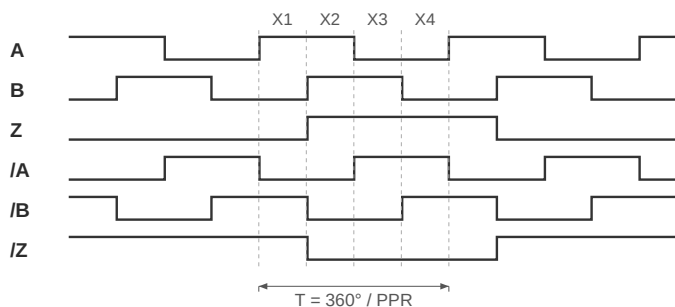
Unit: mm

Connection Assignment (Line Driver)



■ Red	+V	Supply voltage
■ Black	0 V	Ground (common)
■ Green	A	Output A
■ White	B	Output B
■ Yellow	Z	Output Z (index, 1 pulse/rev)
■ Brown	/A	Output A inverted
■ Grey	/B	Output B inverted
■ Orange	/Z	Output Z inverted
■ Shield	FG	Cable screen (connect to earth)

Output Waveform



Waveform shown for clockwise (CW) rotation viewed from the shaft end. Channel B lags channel A by 90° electrical; for counter-clockwise rotation B leads A. Complementary channels (/A, /B, /Z) are inverted copies of A, B and Z. The Z index pulse occurs once per revolution.

Ordering Information

Model Number	Resolution	Output	Supply / Cable
VXT-E40S06-1024-L	1024 PPR	Line driver, A/B/Z	5 V DC $\pm$ 5 %, 2 m

Code key: E40 = housing $\varnothing$ 40 mm • S06 = solid shaft $\varnothing$ 6 mm • 1024 = PPR • L = line driver

Notes

- Switch off the power supply before wiring. Connect the encoder strictly as per the connection assignment; incorrect wiring may damage the output circuit.
- Use an RS-422 differential receiver with paired inputs A & /A, B & /B, Z & /Z. Supply must stay within 5 V $\pm$ 5 %.
- Use a flexible coupling between the encoder shaft and the machine shaft, and do not exceed the permissible shaft loads. Do not hammer or apply shock to the shaft.
- Route the encoder cable away from power cables and inverters; earth the cable shield at the controller end.
- Dimensions are nominal. Specifications are subject to change without notice; please contact Voxintech for the latest specifications and certified drawings.