

VXT-E40S06-0500-NPN

Incremental Encoder | $\varnothing 40$ mm | 500 PPR | NPN Open Collector

Product Overview



The VXT-E40S06-0500-NPN is a 40 mm incremental rotary encoder with a $\varnothing 6$ mm solid shaft and a resolution of 500 pulses per revolution. NPN open-collector outputs on three channels (A, B and Z index), powered from a wide 8–26 V DC supply, connect directly to PLC high-speed counter inputs configured for NPN sensors. 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 500 PPR, A/B quadrature + Z index
- ✓ Housing $\varnothing 40$ mm, $\varnothing 6$ mm solid shaft (g6)
- ✓ NPN open collector output
- ✓ Supply voltage 8 ... 26 V DC
- ✓ 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 $\varnothing 20$ mm spigot, 3 × M3 mounting
- ✓ Operating temperature $-20 \dots +85$ °C, IP54

Applications

Packaging Machines • Printing Machines • Conveyors & Material Handling • Textile Machinery • Length & Speed Measurement • PLC High-speed Counter Inputs

Technical Specifications

GENERAL SPECIFICATIONS	
Encoder Type	Incremental rotary encoder, optical
Resolution	500 pulses per revolution (PPR)
Output Channels	A, B (90° phase shift), Z (1 pulse/rev)
Output Circuit	NPN open collector
Supply Voltage	8 ... 26 V DC
Housing Diameter	$\varnothing 40$ mm
Shaft	$\varnothing 6$ mm solid shaft, g6, with flat
Connection	Radial cable, shielded, 2 m
Protection Degree	IP54

Technical Specifications (continued)

ELECTRICAL

Supply Voltage Vcc	8 ... 26 V DC
Current Consumption	≤ 60 mA
Output Voltage High VH	> Vcc – 2.5 V (with external pull-up)
Output Voltage Low VL	≤ 0.7 V
Rise Time	≤ 500 ns
Fall Time	≤ 100 ns
Max. Response Frequency	300 kHz
Max. Electrical Speed	36000 rpm (300 kHz × 60 ÷ 500 PPR)
Max. Operating Speed	6000 rpm (lower of mechanical and electrical limit)
Output Protection	Short-circuit protection diode to 0 V
Signal Interface	Current-sinking (NPN) output; pull-up resistor required for voltage inputs

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 ... 4)
Absolute Angle Error	≤ 0.2 T
Cycle Error	≤ 0.05 T
Z Pulse Width	$1 T \pm 0.5 T$
Direction	CW viewed from shaft end: A leads B by 90°

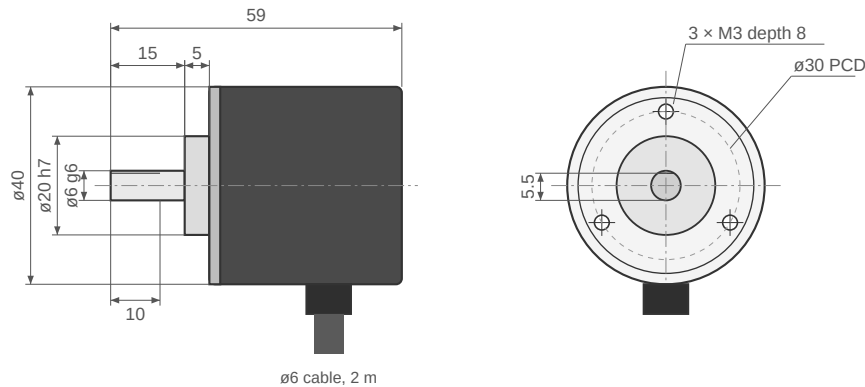
MECHANICAL

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 × M3, depth 8 mm, equally spaced on ø30 mm PCD
Cable	ø6 mm shielded, 2 m, radial exit
Mass	approx. 135 g

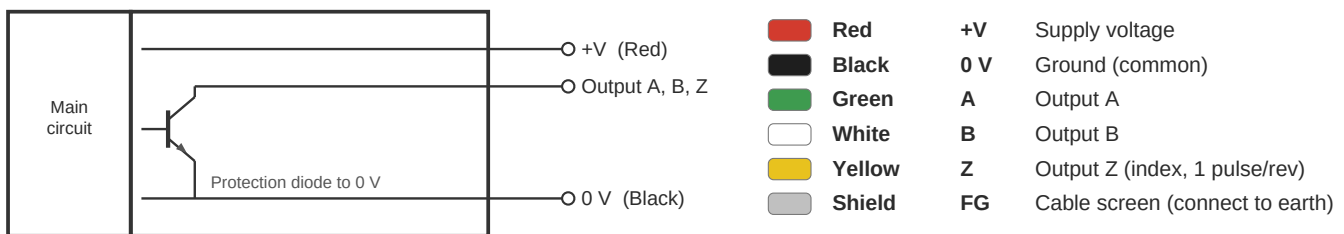
ENVIRONMENT

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

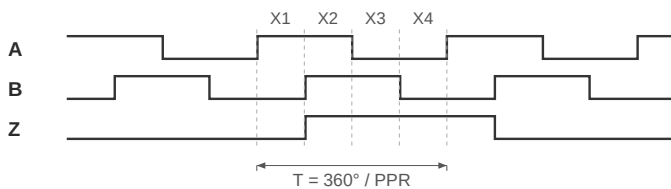
Product Dimensions



Connection Assignment (NPN Open Collector)



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. The Z index pulse occurs once per revolution.

Ordering Information

Model Number	Resolution	Output	Supply / Cable
VXT-E40S06-0500-NPN	500 PPR	NPN open collector, A/B/Z	8 ... 26 V DC, 2 m

Code key: E40 = housing ø40 mm • S06 = solid shaft ø6 mm • 0500 = PPR • NPN = NPN open collector

Notes

- Switch off the power supply before wiring. Connect the encoder strictly as per the connection assignment; incorrect wiring may damage the output circuit.
- NPN open-collector outputs sink current: connect to inputs configured for NPN sensors, or add a pull-up resistor to +V for voltage-type receivers.
- 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.