

Dynapar brand Encoder Series X25



CE
EN 61326-1

c UL us
File No. E116133,
Control No. 11X6

Technical Bulletin

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Dynapar™

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**ARE YOU AWARE THAT WE
SELL DYNAPAR BRAND
COUPLINGS?**



Our CPL Series of flexible shaft couplings ensure long encoder life by restricting transfer of mechanical, thermal, and electrical stress.

A full range of models is available. Each is designed to match specific encoders, and is supplied with input-shaft size adaptors.

Contact your local Dynapar or Hengstler Sales Office or our Customer Service Department 800.873.8731 for more information.

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: 1 to 5000 PPR (pulses/revolution)

Accuracy: (Worst case any edge to any other edge) ≤ 1024 PPR (metal disk): ± 7.5 arc-min.
 > 1024 PPR (glass disk): ± 2.5 arc-min.

Format: Two channel quadrature (AB) with optional Index (Z) and complementary outputs

Phase Sense: A leads B for CCW shaft rotation as viewed from the shaft end of the encoder

Quadrature Phasing: $90^\circ \pm 25^\circ$ electrical

Symmetry: $90^\circ \pm 25^\circ$ electrical

Index: 2540 PPR and below: $180^\circ \pm 25^\circ$ electrical; Greater than 2540 PPR: $90^\circ \pm 25^\circ$ electrical
Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

ELECTRICAL

Input Power:

5 to 26 VDC at 80 mA max., not including output loads

Outputs:

7273 Open Collector: 30 VDC max., 40 mA sink max.

7272 Push-Pull and Differential Line Driver: 40 mA sink or source

Frequency Response: 100 kHz min. (index 75 kHz min. for extended temperature range)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity and short circuit protected

Termination: Cable Exit

MECHANICAL

Shaft Sizes: 1/4" or 3/8"

Shaft Loading: 40 lbs. radial, 40 lbs. axial

Shaft Speed: 5,000 RPM max.

Shaft Runout: 0.001" max. TIR

Starting Torque: (max at 25 °C) 2.0 oz.-in

Moment of Inertia: 9.0×10^{-4} oz.-in-sec²

Housing and Cover: Cast Aluminum

Shaft Material: Stainless Steel

Disc Material: Glass or Mylar (PPR Dependant)

Weight: 4.5 lbs. (2.0 kg)

ENVIRONMENTAL

Operating Temperature: 0 to +70 °C;

Storage Temperature: -40 to +90 °C

Shock: 50 G's for 11 milliseconds duration

Vibration: 5 to 2000 Hz at 2 G's

Humidity: Up to 98% (non-condensing)

Enclosure Rating: NEMA4X/IP66 (Dust Proof, Washdown)

These rugged, high-performance, incremental optical encoders feature environmentally sealed, cast aluminum housings with 4-inch square flange mounting, and 1/2" conduit entry. A stainless steel shaft and anodized housing provide corrosion resistance. Electrical outputs are electronically compatible with almost all drives and PLC's. Differential line driver outputs are available for long cable runs (hundreds of feet) and higher noise immunity.

Series X25 encoders are designed for use in environments stated in: UL Class I, Group C: atmospheres such as ethyl ether and ethylene; UL Class I Group D: atmospheres such as acetone, ammonia, benzene, butane, cyclopropane, ethanol, gasoline, hexane, methanol, methane, natural gas, naphtha, and propane; Class II, Groups E, F & G: combustible metal dusts, including aluminum, magnesium, and their commercial alloys, and atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal, coal, or coke dusts, and combustible dusts including flour, grain, wood, plastic, and chemicals.

Classifications of hazardous locations are subject to the approval of the authority having jurisdiction. Refer to Article 500 of the National Electrical Code (NEC).

Mechanical & Environmental

Features

- Large stainless steel shaft (1/4" or 3/8") and shaft seal
- Heavy-duty cast aluminum housing, and an O-ring seal
- Heavy-duty ABEC precision bearings standard
- Up to 5000 RPM slew speed

Electrical Features

- Noise immune to ESD, RFI and electrical transients
- High current outputs
- Over-Voltage protection
- Reverse Voltage protection
- Output Short-Circuit Protection

IMPORTANT ENCODER INSTALLATION INFORMATION

Mounting the Encoder: The encoder should be mounted such that its shaft is in close as possible alignment with the axis of the driving machine or motor shaft. The two shafts should then be joined using a suitable, instrument grade, flexible shaft coupling.

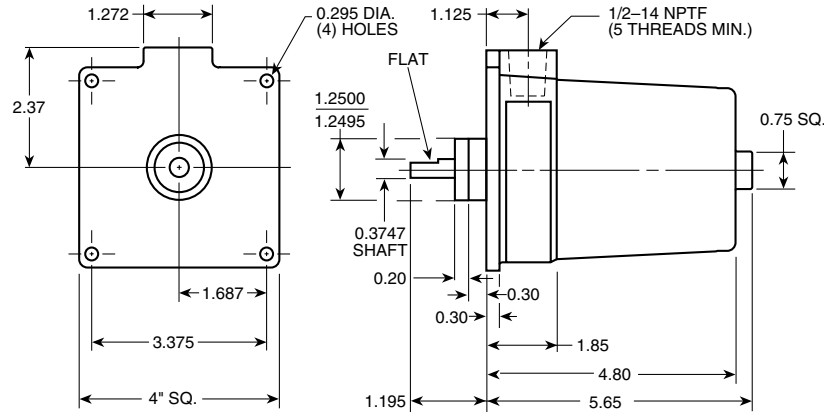
CAUTION: Rigidly coupling the encoder shaft to the driving shaft will cause failure of the encoder's or driving shaft's bearings.

Important Wiring Instructions: Use of shielded cable is recommended for all encoder installations. The shield should be connected to signal-ground at the receiving device only. **Connecting the shield at both ends can cause grounding problems that degrade system performance.** If possible, run the encoder cable through a dedicated conduit (not shared with other wiring). Use of conduit will protect the cable from physical damage and provide a degree of electrical isolation. Do not run the cable in close proximity to other conductors that carry current to heavy loads such as motors, motor starters, contactors, solenoids, etc. This practice can induce electrical transients in the encoder cable, potentially interfering with reliable data transmission.

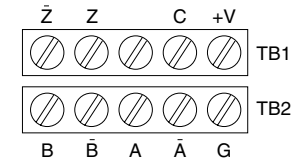
Refer to Electrical Connections table for wiring information. To avoid possible damage, do not connect or disconnect the encoder connector or wiring while power is applied to the system.

CAUTION: Unused encoder signal wires must be individually insulated and under no circumstances be in contact with ground, voltage sources, or other signal lines.

Approximate Dimensions (in inches)

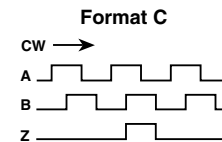
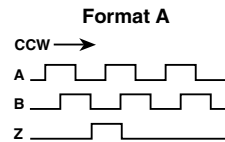


Terminal Board Connections

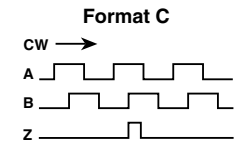
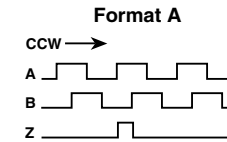


Screw terminals with pressure plates that accept #14 AWG to #22 AWG.

If Code 2 PPR < 2540



If Code 2 PPR >= 2540



Ordering Information

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: Pulses/Rev	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	
X25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
X25 Explosion Proof, Shielded Bearings with Shaft Seal	0001 0010 0012 0050 0060 0086 0100 0120 0200 0240 0250 0300 0360 0400	0500 0600 0720 0768 0800 1000 1024 1200 1250 1270 1500 1600 1800 1968	2000 2048 2400 2500 3000 3400 3600 3750 4000 4096 4800 5000	0 3/8" Shaft 1 1/4" Shaft	0 Single Ended, no Index, Format C 1 Single Ended, with Index, Format C 2 Differential, no Index, Format C 3 Differential, with Index, Format C 4 Single Ended, with Index, Format A 5 Differential, with Index, Format A
				0 5-26V in; 5-26V Open Collector with 2.2kΩ Pullup out 1 5-26V in; 5-26V Open Collector out 2 5-26V in; 5V Totem Pole out 3 5-26V in; 5V Line Driver out 4 5-26V in; 5-26V Line Driver out	