

# Series X25



- **Heavy duty industrial enclosure with 1/2" diameter conduit entry**
- **Up to 5000 PPR with optional marker**
- **Approved for National Electrical Code (NEC) Class 1 & 2, Divisions 1 & 2, Groups C,D,E,F,G**



File No. E116133,  
Control No. 11X6



EExdIIBT5



No. 98E.124525

## SPECIFICATIONS

### Electrical

**Code:** Incremental

**Resolution:** 1 to 5000 PPR (pulses/revolution)

**Accuracy:** (Worst case any edge to any other edge)  $\leq 1024$  PPR (metal disk):  $\pm 7.5$  arc-min.  
 $> 1024$  PPR (glass disk):  $\pm 2.5$  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

**Input Power:**

4.5 min. to 26 VDC max. 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.

**Electrical Protection:** Overvoltage, reverse voltage and output short circuit protected

**Noise Immunity:** Tested to EN50082-2 (Heavy Industrial) for Electro Static Discharge, Radio Frequency Interference, Electrical Fast Transients, Conducted and Magnetic Interference

### Mechanical

**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:**  $9.0 \times 10^{-4}$  oz-in-sec<sup>2</sup>

### 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:** to 98% without condensation

**Weight:** 4.5 lbs. (2.0 kg)

**Enclosure Rating:** NEMA4X/IP56 (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 a clear 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**

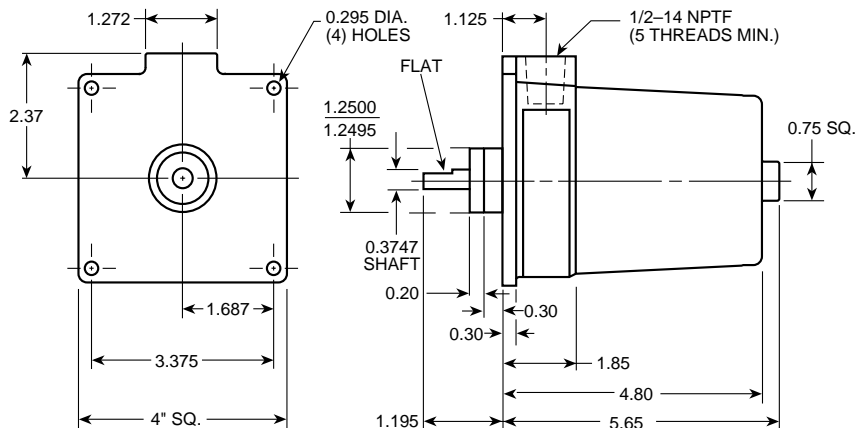
#### **Features**

- 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

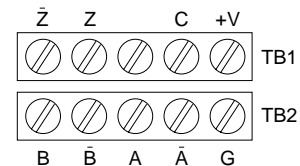
### **Electrical Features**

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

### Approximate Dimensions (in inches)

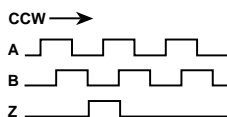


### Terminal Board Connections

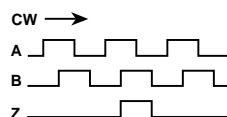


Screw terminals with pressure plates that accept #14 AWG to #22 AWG.

#### Format A

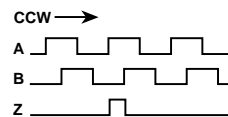


#### Format C

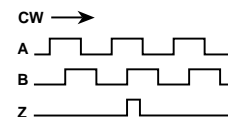


If Code 2 PPR > 2540

#### Format A



#### Format C



### 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
<b>X25</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>X25</b> Explosion Proof, Shielded Bearings with Shaft Seal	0001 0600 2000 0005 0635 2048 0010 0720 2400 0012 0768 2500 0025 0800 2540 0050 0900 3000 0060 1000 3400 0086 1024 3600 0100 1200 3750 0120 1250 4000 0180 1270 4096 0200 1500 4800 0240 1600 5000 0250 1800 0254 1968 0256 0300 0360 0400 0500 0512	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