

Series E11



- **Servo or face mount (1.1" diameter)**
- **Up to 1024 PPR with optional marker pulse**
- **Rugged all-metal housing**
- **Shielded cable standard**

The Series E11 ultraminiature incremental optical encoder is packaged for commercial and lighter-duty industrial applications. The E11 is industry-standard Size 11 (1.1" diameter), servo or face-mount, with a rugged metal housing. It includes precision bearings, an O-ring housing seal, and a rugged 1/8" diameter stainless steel shaft.

Series E11 incorporates the latest in micro-electronic packaging, LED light sources, and matched sensors. Outputs are designed to be compatible with most 5V TTL circuits with options for higher voltage 12 and 15 VDC. Shielded cable is standard.

Typical Applications

- Industrial equipment
- Assembly machinery
- Phototypesetters and printers
- Robotics
- Medical diagnostic equipment
- Motor-mounted feedback
- Computer peripherals
- Instrumentation

Mechanical and Environmental Features

- Durable metal housing
- O-ring housing seal
- Rugged 1/8" diameter stainless steel shaft
- Up to 5000 RPM
- 0 to 70°C operating temperature

Electrical Features

- Up to 1024 pulses per revolution including an optional marker pulse
- Higher electronic operating speed up to 100 kHz (Index to 50 kHz)
- LED light source and matched sensors
- Choice of 5, 12, or 15 VDC units

SPECIFICATIONS

Electrical

Code: Incremental

Resolution: 100 to 1024 PPR (pulses/revolution)

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

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

Accuracy: $\pm 3 \times (360^\circ \div \text{PPR})$ or ± 2.5 arc-min worst case pulse to any other pulse, whichever is less

Quadrature Phasing: $90^\circ \pm 36^\circ$ electrical

Symmetry: $180^\circ \pm 18^\circ$ electrical

Index: $360^\circ \pm 90^\circ$ electrical

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

Input Power:

5 VDC $\pm 5\%$ at 135 mA max.; 12 or 15 VDC $\pm 10\%$ at 100 mA max.; not including output loads

Outputs:

5 VDC TTL:

Logic "1" V_{OH} : 2.5 V min. at 10 TTL gate load or 10 mA source;

Logic "0" V_{OL} : 0.4 V max. at 20 mA sink

12 or 15 VDC CMOS:

Logic "1" V_{OH} : $V_{CC} - 1.5V$ min. at 200 Ω load or 10 mA source;

Logic "0" V_{OL} : 0.4 V max. at 20 mA sink

Frequency Response: 100 kHz min. data channels; 50 kHz min. Index channel

Mechanical

Bearing Life: 16×10^6 revolutions at max. load

Shaft Loading: 1 lb. radial, 1 lb. axial max.

Shaft Speed: 5,000 RPM max.

Starting Torque: 0.1 oz-in max. at 25 °C

Running Torque: 0.06 oz-in max. at 25 °C

Moment of Inertia: 4.5×10^{-6} oz-in-sec²

Weight: 3.0 oz. max.

Environmental

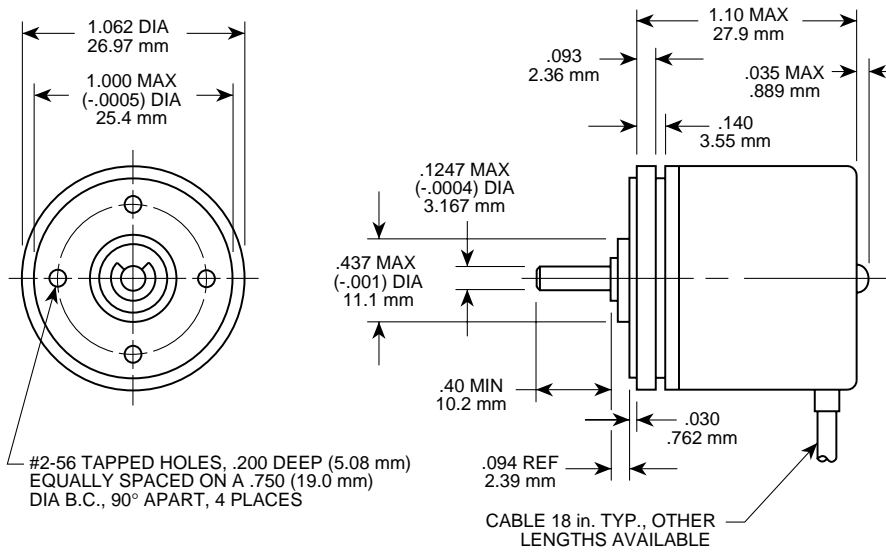
Operating Temperature: 0 to +70 °C

Storage Temperature: -25 to +70 °C

Humidity: to 98% without condensation

Enclosure Rating: NEMA12/IP54 (dirt tight, splashproof)

Approximate Dimensions (inches/mm)



Electrical Connections

Function (If Used)	Wire Color Code
Supply	Red
Common	Black
Signal A	White
Signal B	Green
Signal Z	Orange
Floating	Shield

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: Voltage	Code 6: Termination
E11	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E11 Size 11, Light Duty Enclosed	0100 0250 0256 0360 0500 0600 1000 1024	0 Sealed Bearing 1 Shielded Bearing	0 Unidirectional 2 Bidirectional, no Index 3 Bidirectional, with Index	0 5 VDC 1 12 VDC 2 15 VDC	0 18" Cable 1 3' Cable 2 6' Cable 3 10' Cable 4 15' Cable