

MODEL 960 – SINGLE TURN ABSOLUTE ENCODER



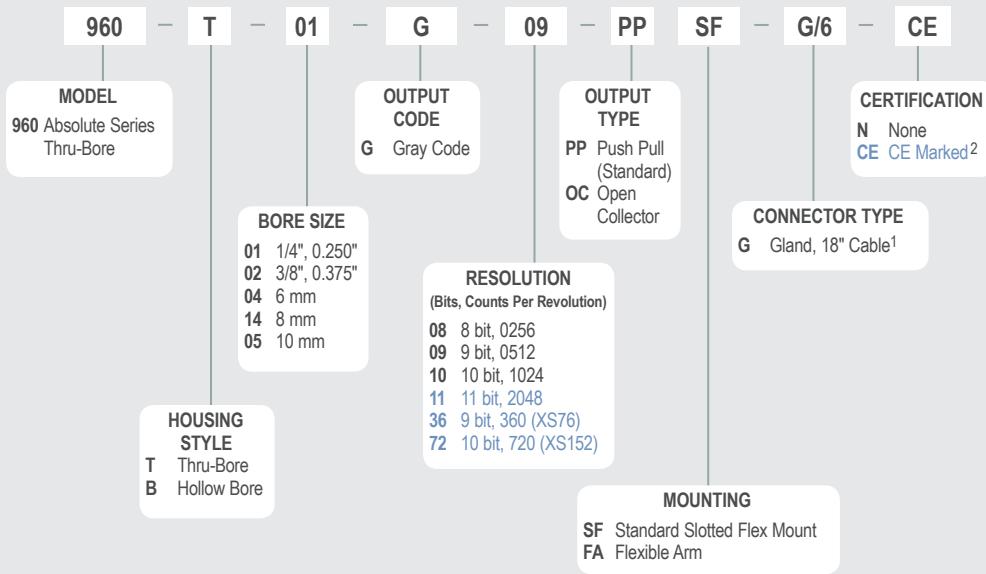
Ø2.0"

FEATURES
Low-Profile – 1.55"
Thru-Bore or Hollow Bore Styles
Industrial Grade, Heavy Duty Housing
State-of-the-Art Opto-ASIC Circuitry

The single turn Model 960 Absolute Series Encoder provides a unique solution to a wide variety of industrial applications requiring absolute position information. By providing a low profile package of just 1.55", as well as a variety of hollow and thru-bore sizes and an easy to use flexible mounting system, the Model 960 goes where traditional absolute encoders do not fit. In addition, its innovative Opto-ASIC circuitry, coupled with its digital output, make it an excellent choice in those applications plagued by an unusually high level of electrical noise. The Model 960 can easily be mounted directly on a motor shaft, bringing the advantage of absolute positioning in an all metal housing, while eliminating the fixtures, couplers and adapters required by other absolute encoder designs.

COMMON APPLICATIONS
Machine Tools, Robotics, Telescopes, Antennas, Rotary & X-Y Positioning Tables, Medical Scanners
Not recommended for new applications.
MODEL 960 ORDERING GUIDE

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.


NOTES:

1 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example:
G/6 = 6 feet of cable.

2 Please refer to Technical Bulletin [TB100: When to Choose the CE Mark](#) at encoder.com.

MODEL 960 SPECIFICATIONS

Electrical

Input Voltage..... 4.75 to 26 VDC max
 Regulation 100 mV peak-to-peak, max ripple at 0 to 10 kHz
 Input Current 100 mA max with no external load
 Output Format Absolute – Parallel Outputs
 Output Type Open Collector – 20 mA max per channel
 Push-Pull – 20 mA max per channel
 Code Gray Code, Excess Gray Code
 Max Frequency 25.6 kHz (LSB)
 Rise Time Less than 1 microsecond
 Resolution Up to 11 bit
 Accuracy..... ±1/2 LSB

Control

Directional Control... Field selectable for increasing counts (CW or CCW). Standard configuration user selects the applicable MSB wire for direction of count. Direction control option allows user to select count direction by applying 0 VDC to an encoder input. See *Wiring Table*.

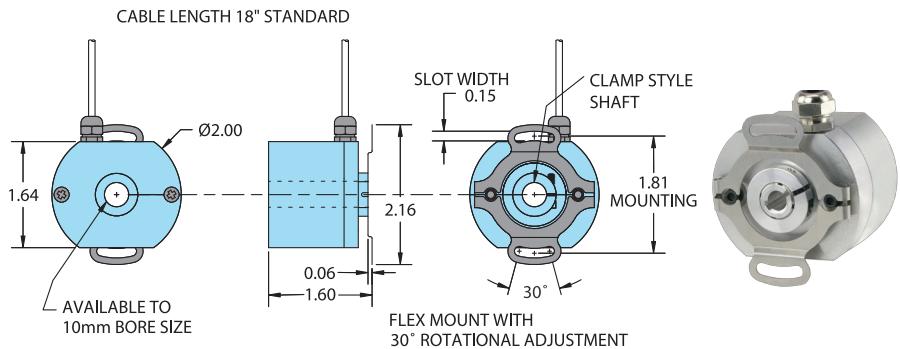
Mechanical

Max Shaft Speed..... 6000 RPM continuous
 Bore Size..... 0.250", 0.3125", 0.375", 6 mm, 8 mm, 10 mm
 Bore Tolerance -0.0000" / +0.0006"
 User Shaft Tolerances
 Radial Runout 0.007"
 Axial Endplay..... ±0.030"
 Starting Torque 0.3 oz-in typical for thru-bore
 0.14 oz-in typical for hollow bore
 Electrical Conn Gland with 18" cable (braid shield, 30 AWG conductors)
 Housing Aluminum with non-corrosive finish
 Mounting Slotted Flex Mount standard, Flex Arm optional
 Weight..... 7 oz typical

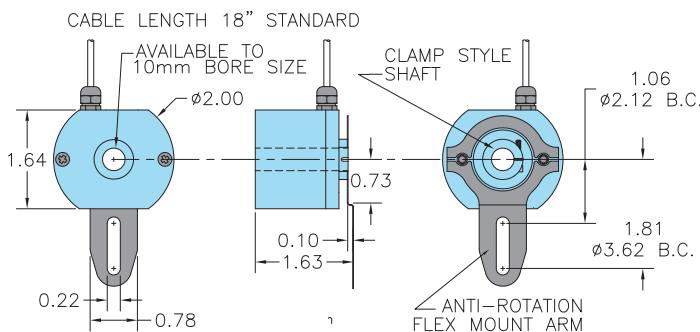
Environmental

Operating Temp 0° to 70° C
 Storage Temp -20° to 85° C
 Humidity..... 98% RH non-condensing
 Vibration..... 10 g @ 58 to 500 Hz
 Shock..... 20 g @ 11 ms duration
 Sealing..... IP50

MODEL 960 SLOTTED FLEX MOUNT (SF)



MODEL 960 WITH FLEX ARM (FA)



WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.
 Trim back and insulate unused wires.

Function	Gland Cable [†] Wire Color
Common	Black
+VDC	Red
S1 CW MSB	Brown
S1 CCW MSB	Yellow
S2	White
S3	Green
S4	Orange
S5	Blue
S6	Violet
S7	Gray
S8 LBS 8-bit	Pink
S9 LSB 9-bit	Red/Green
S10 LSB 10-bit	Red/Yellow
S11 LSB 11-bit	Turquoise
Direction Control**	Red/blue
Case Ground*	Shield

*CE Option only.

**Standard is CW increasing count (when viewed from shaft end, and using brown wire for MSB). Red/Blue is pulled up internally to 5 VDC. To reverse count direction, Red/Blue must be pulled to low (0 VDC). If 5 VDC is applied to Red/Blue, unit remains in standard CW increasing count mode. Count direction can also be reversed by using the yellow MSB wire instead of the Brown. At no time should voltage applied to Red/Blue exceed 5 VDC.

†Standard cable is 24 AWG conductors with foil and braid shield.