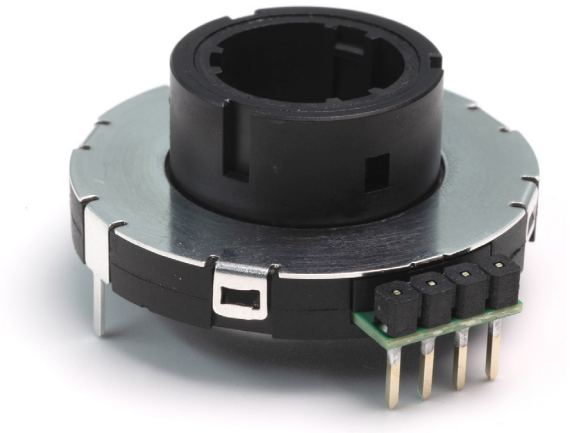
OPTICAL RING ENCODER

Higher Performance at a Competitive Cost

FEATURES

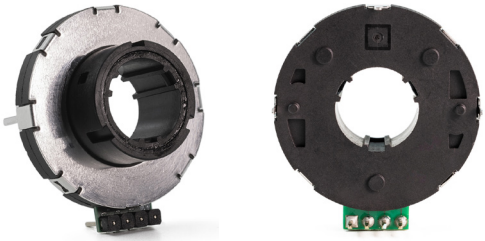
- 24 Pulses Per Revolution output
- Long life optical encoder far exceeds the typical life for competitors' mechanical contact products
- Center thru-hole allows for knob lighting and/or pushbutton
- Three standard torque options (no detent, low, and high)+
- PCB mount
- 3.3 V and 5 V options

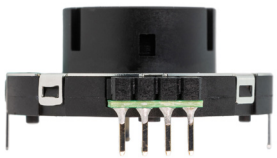


APPLICATIONS

Grayhill's Ring Encoder is ideal for applications that require extended rotational life, including:

- Ultrasound, patient monitoring, and other medical equipment
- Test and measurement equipment
- Global positioning/driver information systems
- Home appliances and other white goods





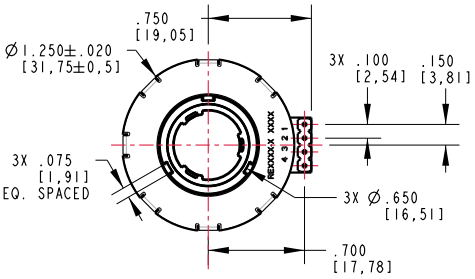
+ Customized torques available upon request.

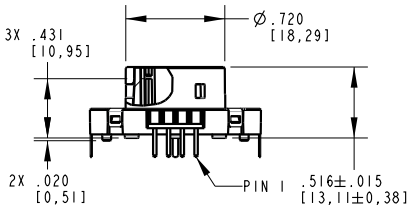
YOUR EXPERTS IN ROTATIONAL CONTROLS

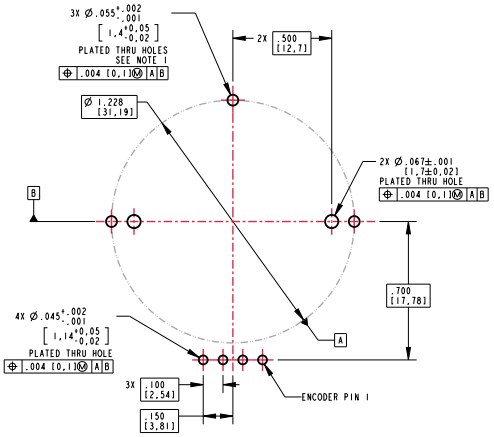
The Ring Encoder has a unique center thru-hole which makes it possible to easily add LED integration for knob illumination and/or a push-button switch. The long rotational life of the encoder makes it a perfect choice for high-use applications. The unit is designed to be compatible with both standard (5 V) and energy-efficient (3.3 V) circuits, making it a versatile option. The Ring Encoder features an integrated Schmitt trigger and pull-up resistor eliminating the need for these components to be integrated on the customer's PC board, saving both space and cost.

With Grayhill's Ring Encoder, you can enjoy dependable, long-lasting, and cost-effective performance in all your rotational applications.

DIMENSIONS in inches (and millimeters)

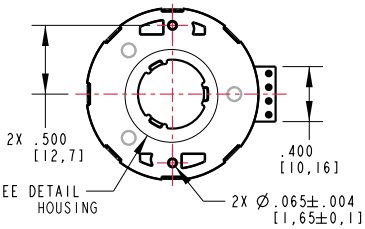


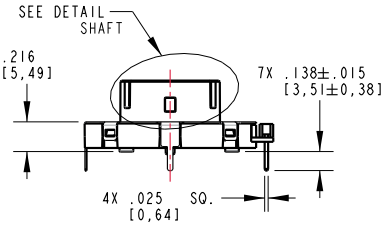


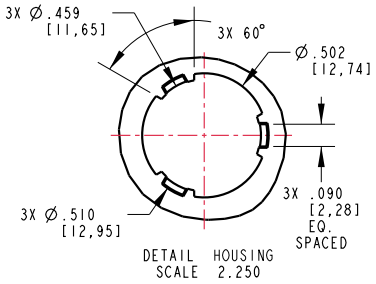


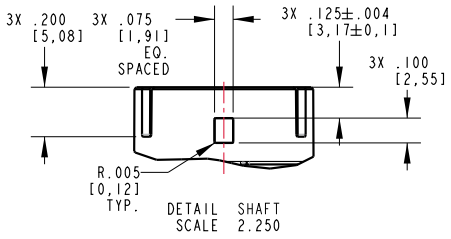
NOTES
1. FOR PROPER ESD PROTECTION, AT LEAST ONE OF THE THREE Ø.055 [1,4] HOLES SHOULD BE CONNECTED TO GROUND.

Suggested PC Board Mounting Pattern

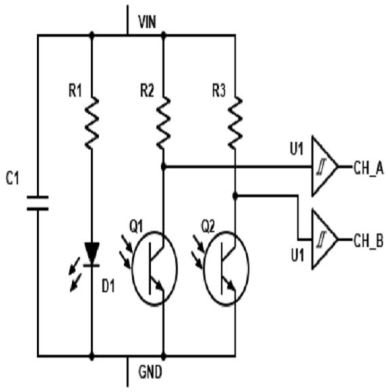




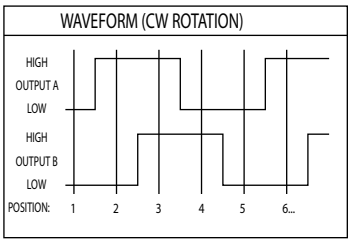


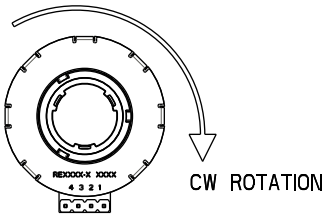


WAVEFORM AND TRUTH TABLE



ENCODER PINOUT	
PIN #	FUNCTION
1	GROUND
2	OUTPUT B
3	OUTPUT A
4	POWER





TRUTH TABLE (CW ROTATION)		
POSITION	OUTPUT A	OUTPUT B
1		
2	●	
3	●	●
4		●

BLANK = LOGIC LOW ● = LOGIC HIGH
CODE REPEATS EVERY FOUR POSITIONS.

SPECIFICATIONS

Environmental Specifications

Operating Temperature	-40 °C to 85 °C
Storage Temperature	-40 °C to 85 °C
Humidity	96 hrs @ 90-95% humidity @ 40 °C
Mechanical Vibration	Harmonic motion with amplitude of 15 g within a varied frequency of 10 to 2000 Hz for 12 hrs
Mechanical Shock	Test 1: 100 g for 6 ms half-sine wave with a velocity change of 12.3 ft/s Test 2: 100 g for 6 ms sawtooth wave with a velocity change of 9.7 ft/s
Soldering Requirements	Hand soldering recommended. Contact Grayhill regarding other soldering processes.

Rotary Electrical and Mechanical Specifications

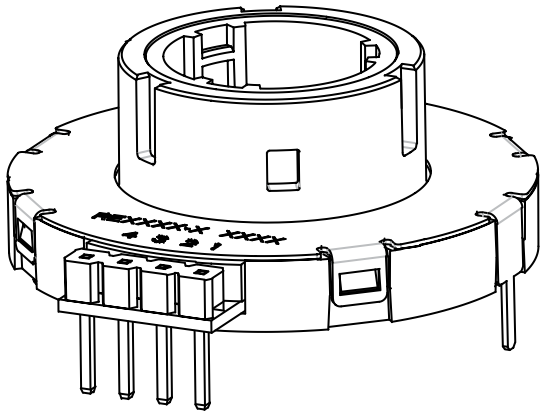
Operating Voltage	RE5 Style 5.00±0.25 Vdc RE3 Style 3.30±0.125 Vdc
Supply Current	15 mA maximum
Logic Output Characteristics	RE5 Style Logic high no less than 4.5 Vdc at 4.75 Vdc operating voltage Logic low shall be no greater than 0.5 Vdc at 5.25 Vdc operating voltage RE3 Style Logic high no less than 2.8 Vdc at 3.175 Vdc operating voltage Logic low shall be no greater than 0.5 Vdc at 3.425 Vdc operating voltage
Output	Push-pull outputs
Average Rotational Torque	Low = 1.0±0.5 in-oz throughout life High = 2.0± -1.4 in-oz throughout life
Mechanical Life	1,000,000 cycles of operation @ 30 RPM for detented version. 2,000,000 cycles of operation @ 30 RPM for non-detented version. 1 cycle is a rotation through all positions and a full return.
Terminal Strength	Header pullout force 5 lbs minimum
Solderability	95% free of pin holes & voids
Maximum rotational speed	100 RPM

Materials and Finishes

Housing	Glass-reinforced nylon 6
Shaft	Glass-reinforced nylon 6
Printed Circuit Board	NEMA grade FR4, double clad with copper, plated with gold over nickel
Solder	96.5% tin / 3% silver / 0.5% copper. No clean.
Header Pins	Gold flash over nickel plated brass

EMC Ratings

Radiated Immunity	Meets IEC 61000-4-3, level 3
Conducted Immunity	Meets IEC 61000-4-6, level 3
Radiated Emissions	Meets ANSI C63.4
Conducted Emissions	Meets EN 55022
Electrostatic Discharge	Meets IEC 61000-4-2
Power Frequency Magnetic Field	Meets IEC 61000-4-8



ORDERING INFORMATION

Available from your local Component Grayhill Distributor.
For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.

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Series

Style
5 = 5.0V
3 = 3.3V

Termination
P = .100" Header

Rotational Torque
L = Low Torque
H = High Torque
N = Non-Detented

Angle of Throw
15 = 15.00° – 24 positions