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Grayhill, Inc.
T101-5C0-110-M1

For any questions, you can email us directly:
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THE MULTI-TOUCH RING ENCODER WITH GRAYHILL INSTINCT TECHNOLOGY

A naturally human evolution
of the interface.

Grayhill

Pushbutton for selection

Multi-touch touchpad
for multiple functions
and selection

Backlit and colored
highlight ring

Proximity sensing

Sealed for
easy cleaning

USB connects to
CPU for decoding
gestures

Rugged, scratch
resistant surface

Rotating Ring Encoder

Instinct™ technology. Intuitively functional.

Grayhill Instinct is a set of multi-touch gesture recognition software tools that, when integrated with Grayhill physical components, creates more intuitive human interface solutions.

The Multi-Touch Ring Encoder combines a touchpad with multi-touch tracking, an optical encoder and pushbutton into one easy-to-use device. By combining gesture recognition technology with a ring encoder, we provide the ultimate in input flexibility. Menu search, selection, navigation and much more are all in one user interface that can be easily integrated into future devices.

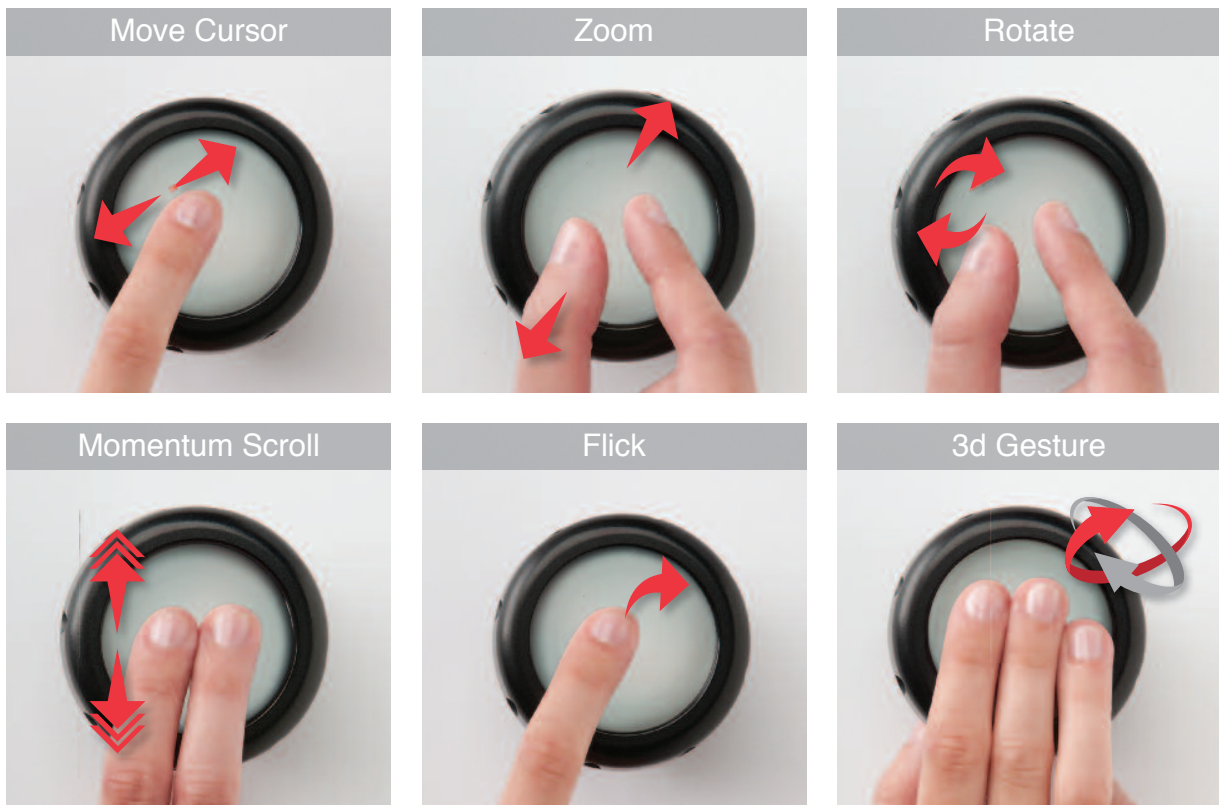## A shorter distance from mind to machine.

An intuitive, easy to use interface improves operator productivity. Our Instinct technology enables an operator's thoughts to be seamlessly communicated to the device. This allows faster interaction without needing to take eyes off of the screen. For the operator it makes controlling a machine easier to manage. And unlike touch screens, the display is left clean and unblocked. Plus, ergonomics are improved by consolidating all controls within easy reach.

Design uncluttered, easy-to-clean instruments using Grayhill's Multi-Touch Ring Encoder.

Let your fingers do the directing.

Finger gestures are a popular means of controlling contemporary electronic devices. Instinctive, memorable movements provide a variety of commands…all without the fingers leaving the touchpad. Grayhill's Instinct technology tracks up to five finger touches at a time. The Multi-Touch Ring Encoder combines the multi-touch touchpad with an optical encoder and a push button to offer even more functionality. Several gestures are shown below.

Move Cursor

Zoom

Rotate

Momentum Scroll

Flick

3d Gesture

An elegant engineering solution for controlling electronic equipment.
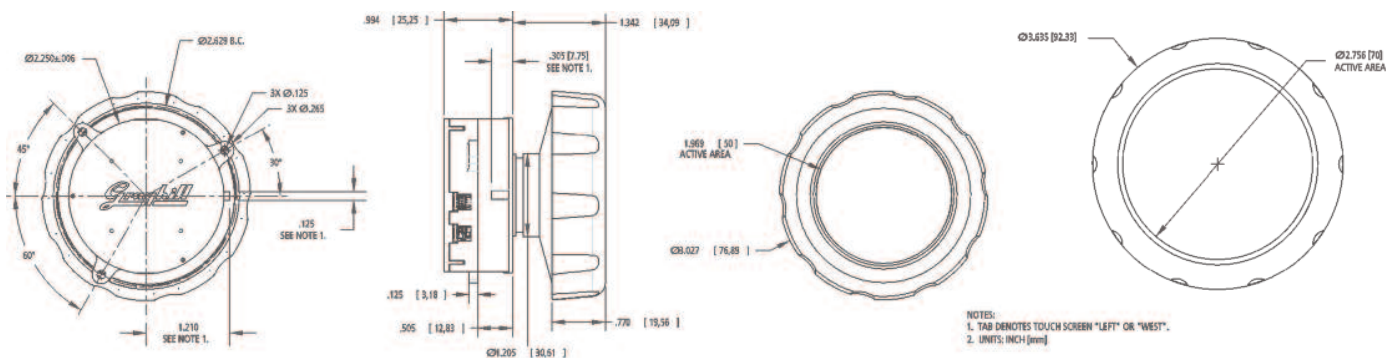
Simplicity in use and device design. The Multi-Touch Encoder can replace keypads, knobs, trackballs and switches. This makes for clean design and cuts costs of manufacturing. Combined with the Instinct gesture recognition library, the multi-touch encoder increases the engineer's flexibility in building functionality into any product.

Possible applications include:
• Medical devices
• Commercial aviation
• Off-highway vehicles
• Gaming

DIMENSIONS in inches (and millimeters)

NOTES:
1. TAB DENOTES TOUCH SCREEN "LEFT" OR "WEST".
2. UNITS: INCH [mm]

FEATURES

- Grayhill Instinct™ Gesture Recognition Technology
- Three devices in one:
  + Multi-Touch Touchpad
  + Optical Encoder
  + Pushbutton
- Impervious to cleaning solutions and disinfectants
- Easy to integrate into any device
- Rugged, scratch-resistant surfaces
- Backlit illumination and colored highlight ring
- Redundant quadrature and push button output
- Patent pending

SOFTWARE DEVELOPMENT KIT   Part Number T101-DEV1

Grayhill offers an Instinct Software Development Kit that provides the user with a common development platform for prototyping and evaluating different solutions. The Software Development Kit is comprised of a mounted Multi-Touch Ring Encoder, a standard USB cable and demo software.

ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-10°C to +60°C
Seal	IP65 knob with labyrinth seal through panel
Humidity	95% Humidity at 60°C for 240 hours
Chemical resistance (Resistance to accidental spills and disinfectants)	24 Hr exposure to betadine, Coffee, Water, Cola, NACL, Isopropyl Alcohol Betadine, Hydrogen Peroxide, "Quats," and Cidex

ELECTRICAL PERFORMANCE SPECIFICATIONS

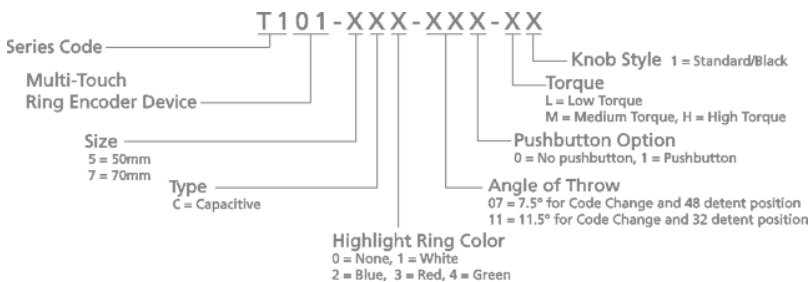|	
USB	2.0, 3.0 Compatible, Full speed HID Compliant
Operating Voltage	2.5 to 5.5 Vdc
Input Current	250mA max (at full backlight) @5V
Rotational Life	500,000 cycles minimum
Pushbutton Life	3,000,000 actuations minimum
Encoder Output	2-Bit Quadrature, Channel A leads Channel B by 90° electrically during CW rotation

ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS

Designed and tested for use in systems requiring IEC 60601-1	
RF Emissions	CISPR 11 Group 1 Class B
Electrostatic Discharge	IEC 61000-4-2 ±6kV Contact ±8kV Air
Electrical Fast Transient/Burst	IEC 6100-4-4 ±1kV Coupling Clamp
Power Frequency (50/60 Hz) Magnetic Field	IEC 6100-4-8 3 A/m
Conducted RF	IEC 61000-4-6 Level 1 - 120dBuV, 150 kHz to 80 MHz
Radiated RF	IEC 61000-4-3 3 V/M 80 MHz to 2.5 GHz

ORDERING INFORMATION

T 1 0 1 - X X X - X X X - X X

- Series Code
- Multi-Touch Ring Encoder Device
- Size
  5 = 50mm
  7 = 70mm
- Type
  C = Capacitive
- Highlight Ring Color
  0 = None, 1 = White
  2 = Blue, 3 = Red, 4 = Green
- Angle of Throw
  07 = 7.5° for Code Change and 48 detent position
  11 = 11.5° for Code Change and 32 detent position
- Pushbutton Option
  0 = No pushbutton, 1 = Pushbutton
- Torque
  L = Low Torque
  M = Medium Torque, H = High Torque
- Knob Style 1 = Standard/Black

Patent Pending
BLTN.1172
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PIN OUT	ENCODER
1	Output A
2	Output B
3	Pushbutton

PIN OUT	USB
1	+Vcc
2	USB Negative (D-)
3	USB Positive (D+)
4	Gnd

MATING CONNECTOR

Molex 501939-0400 and 501939-0300

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