GRAYHILL

Reimagining the user experience

Touch Encoder

www.grayhill.com

Grayhill, Inc. • 561 Hillgrove Avenue, LaGrange, Illinois 60525-5997, USA. • Phone: 708-354-1040 • Fax: 708-354-2820

Bulletin 1297 | Rev 1218 • Patents Applied and Pending

Touch Encoder Overview

Key Features

- Replaces many traditional user input devices (such as switches, keypads, pushbuttons, displays, etc.) with a simple, easy to use device
- Optimal front panel footprint
- Supported gestures: Tap + Swipe + Turn
- High resolution display: 245 PPI
- Quick user interface development
- Intuitive development platform
- Library of configurable standard widgets
- Stores hundreds of screens (32MB memory)
- Incorporates pictures: PNG, JPEG, etc.
- Field upgradable application and firmware over CAN J1939 and USB.
- Robust: sealed to IP67, high impact strength, chemical resistant
- 1,000,000 encoder cycles
- USB 2.0 or CAN J1939 communications

Materials

- Cover Lens: polyester
- Knob: 304 Stainless Steel with Options:
  Black Chrome Finish, Silcone Grip, or Nylon Glass Filled
- Rear Housing: Nylon
- Mounting Nut: Nylon
- RoHS 2018/863 compliant

Touchscreen/Display

- Optically bonded display and touchscreen for excellent sunlight readability
- Touchscreen construction: high resolution PCAP ITO

Grayhill, Inc. • 561 Hillgrove Avenue, LaGrange, Illinois 60525-5997, USA. • Phone: 708-354-1040 • Fax: 708-354-2820

Bulletin 1297 | Rev 1218 • Patents Applied and Pending

Technical Specifications

General

- Device Diameter (O.D.): 2.200 in (55.88 mm) Nominal
- Display Diameter (V.A.): 1.286 in (32,66 mm) Nominal
- Touchscreen: Projected Capacitive
- Display – Type: Round Color TFT LCD, 320 X 320
- Display – Brightness: 200 Cd/m2
- Positions/Revolution: 32 (Additional avalable upon request.)
- Connector Style: M12 5-Pin Connector or PC Board Connector

Mechanical

- Pushout Force (Max): 45 lbs (200 N)
- Pullout Force (Max): 45 lbs (200 N)
- Side Load Force: 45 lbs (200 N)
- Lens Hardness: 2H (4H Hardcoat available upon request)
- Lens Impact: IK5
- Mounting Torque (Nominal): 4 - 10 in-lbs
- Mounting Torque (Max): 14 in-lbs
- M12 Connector Torque (Max): 14 in-lbs
- M12 Connector Pullout: 15 lbs (66.7 N)
- Mounting Alignment (Maximum): < 1 Deg
- Weight (Production Unit): 4.25 oz (120.6 g)

Environmental

- Operating Temp. Range: -20 to 65 °C
- Storage Temperature: -30 to 70 °C
- Humidity: 95% @ 65 °C
- Mechanical Shock: ANSI EP455 5.14.1
- Seal (Electronics): IP67
- Vibration (Random): 50 - 2000 Hz, 2hr Each Axis ANSI EP455 5.15.2
- Chemical Resistance: Designed to survive repeated exposure to most chemicals found in Medical, Off-Highway, and Industrial applications
- Solar Radiation: ISO 4892.2 Method B

Electrical Function

	Standard Power	Rugged Power
Operating Voltage:	4.75 to 18 Vdc	4.75 to 24 Vdc
Max Operating Power:	1.5W @ Max	TBD
Memory:	32 MB	32 MB
Sleep Mode Wakeup Time:	500 mS	500 mS
Boot Time:	5 Sec.	5 Sec.
USB Interface:	2.0 Full Speed Composite Device	
CANbus Interfaces	J1939 Compliant	

Electrical Specifications

	Standard Power
Raditated Immunity:	IEC 61000-4-3 80-2700 MHZ 10 V/M
Conducted Immunity:	IEC 61000-4-6 Level 2 130 dBµV, 150 KHz to 80 MHz
ESD:	IEC 61000-4-2 8 KV Contact 15 KV Air
Power Frequency Magnic Field	Meets IEC 61000-4-8 100 A/m
Electrical Fast Transient / Burst: IEC 61000-4-4 ±1	IEC 61000-4-4 ±1 KV Coupling Clam
Conducted Emissions EN	EN 55011, EN55032 Class B
Radiated Emissions:	EN 55011, EN55032 FCC Part 15 Class B

Encoder Function

Initial Rotational Torque	3.50 ± 2.00 in-oz (Medium Option)
Rotational Life	1,000,000 Cycles
Detent Type	Ball Spring
Encoder Sensing	Hall Effect

Part Numbers

TE-XXXXX-XXXX

Note: Red items available upon request, contact sales for details

Blue items available, but additional leadtime and MOQ may apply

Size
S - Small (not avail.)
M - Med., 2.220 Dia.
L - Large (not avail.)

Position
24 - 15.0 Angle of throw
32 - 11.5 Angle of throw

Torque Options
L - Low torque
M - Med. torque
H - High torque

Output
U - USB
C - CAN J1939

Knob Style
1 - Diamond Knurl, 304 SS
2 - Brushed Finish, 304 SS
3 - Diamond Knurl, Black Chrome, 304 SS
4 - Brushed Finish, Black Chrome, 304 SS
5 - Silicone Grib on Burshed Knob, 304 SS
6 - Plasic Grip Over 304 SS Core, Style 1, Black

Connection style
1 - m12 5 Pos male circular, IP67
2 - PC Board mount, five, pos male, IP67

Display / Artwork
1 - 1.32[33,6] 320×320 TFT Display, Black/Silver ink
2 - 1.32[33,6] 320×320 TFT Display, Black ink
3 - 1.32[33,6] 320×320 TFT Display, Black / Silver ink Hardcoat
4 - 1.32[33,6] 320×320 TFT Display, Black ink Hardcoat

Platform
A - STM32, uClinox, Standard Power
B - STM32, uClinox, Rugged Power

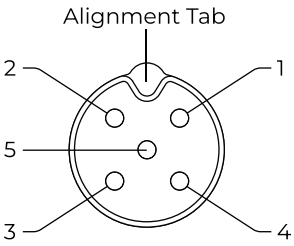
www.grayhill.com

Grayhill, Inc. • 561 Hillgrove Avenue, LaGrange, Illinois 60525-5997, USA. • Phone: 708-354-1040 • Fax: 708-354-2820

Bulletin 1297 | Rev 1218 • Patents Applied and Pending

Technical Specifications

Pin Numbering



Connector Output		
Pin #	USB	CAN
1	Mode	Mode
2	Vin	Vin
3	Gnd	Gnd
4	USB_D+	CAN_H
5	USB_D-	CAN_L

Utility Mode

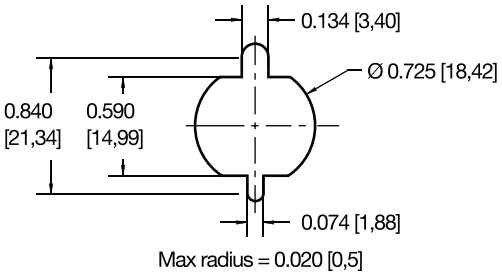
USB:
Utility mode runs on the Backup OS, and can be used to trouble shoot, program, and check version number.

CAN:
Utility mode runs on the Backup OS, and can be used to trouble shoot and check version number.

Mode pin truth @ power up	
Utility Mode	GND
Run mode	Open

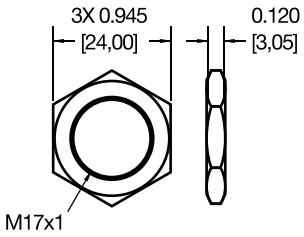
Mounting Information

Suggested mounting pattern
IN [MM]

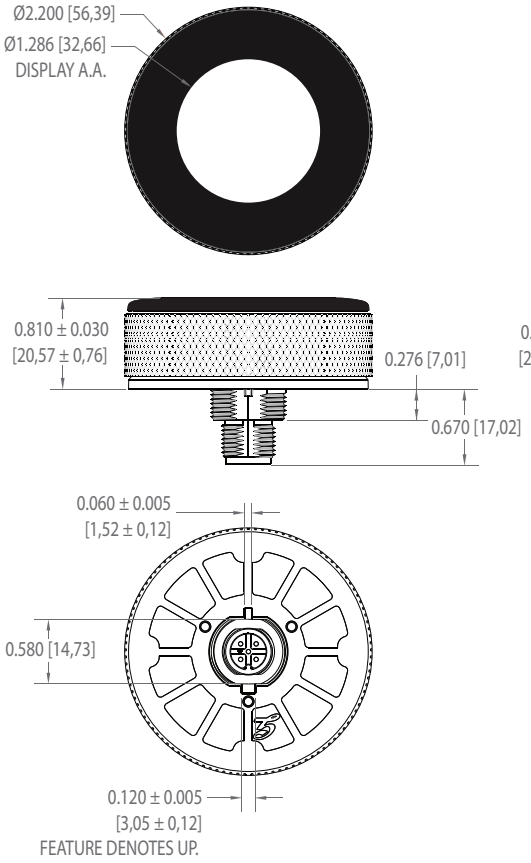


Max radius = 0.020 [0,5]

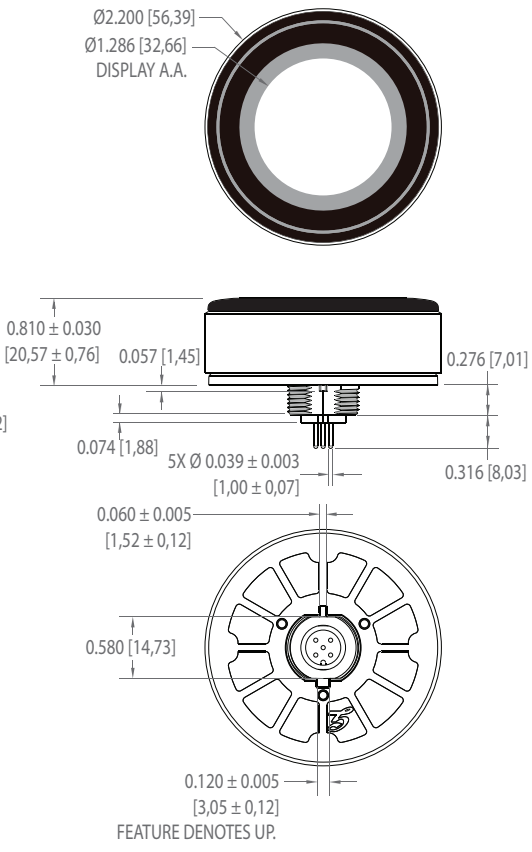
Standard plastic mounting nut
IN [MM]



Dimensions: TE-M32M1-X21X



Dimensions: TE-M32M2-X12X



Grayhill SDK

Grayhill SDK

Continuing in the success of the Touch Encoder Product Line, Grayhill is thrilled to announce the launch of its latest Touch Encoder Software Development Kit (SDK). With the Touch Encoder's unique display, touchscreen, and rotary knob design, this multifunctional control is both sleek and rugged and fast becoming the user-interface choice for many industries such as Avionics, Marine, Ag/Con, Recreational Vehicles, Industrial and Luxury Automotive. Our new SDK, designed to work seamlessly with the graphics creation tool GUIDE, represents a significant leap forward, offering a more plug-and-play experience that simplifies your development process.

Plug and Play Simplicity: Our SDK is engineered for effortless integration, requiring only power and USB-C cables to kickstart your development journey. Experience a smooth and hasslefree setup that streamlines your entire process.

Streamlined Communication for CAN J1939 customers: Say goodbye to third-party hardware dependencies when it comes to CAN J1939 communication. Our SDK eliminates the need for a separate piece of hardware, offering a unified solution that enhances both efficiency and cost-effectiveness.

Enhanced Development Speed: Accelerate your development timeline with our user-friendly SDK. Minimize setup complexities, allowing you to focus more on refining your application and bringing your ideas to market faster.

Package contents

- SDK
- Power Cable (Grayhill PN: T11927)
- Power Adapter (Grayhill PN: T11928)

Discover more

Get started with GUIDE:

TE - M32 - XX - SDK

Style:
0 - UNIT NOT INCLUDED
1 - UNIT INCLUDED

Output:
C - CAN (J1939)
U - USB

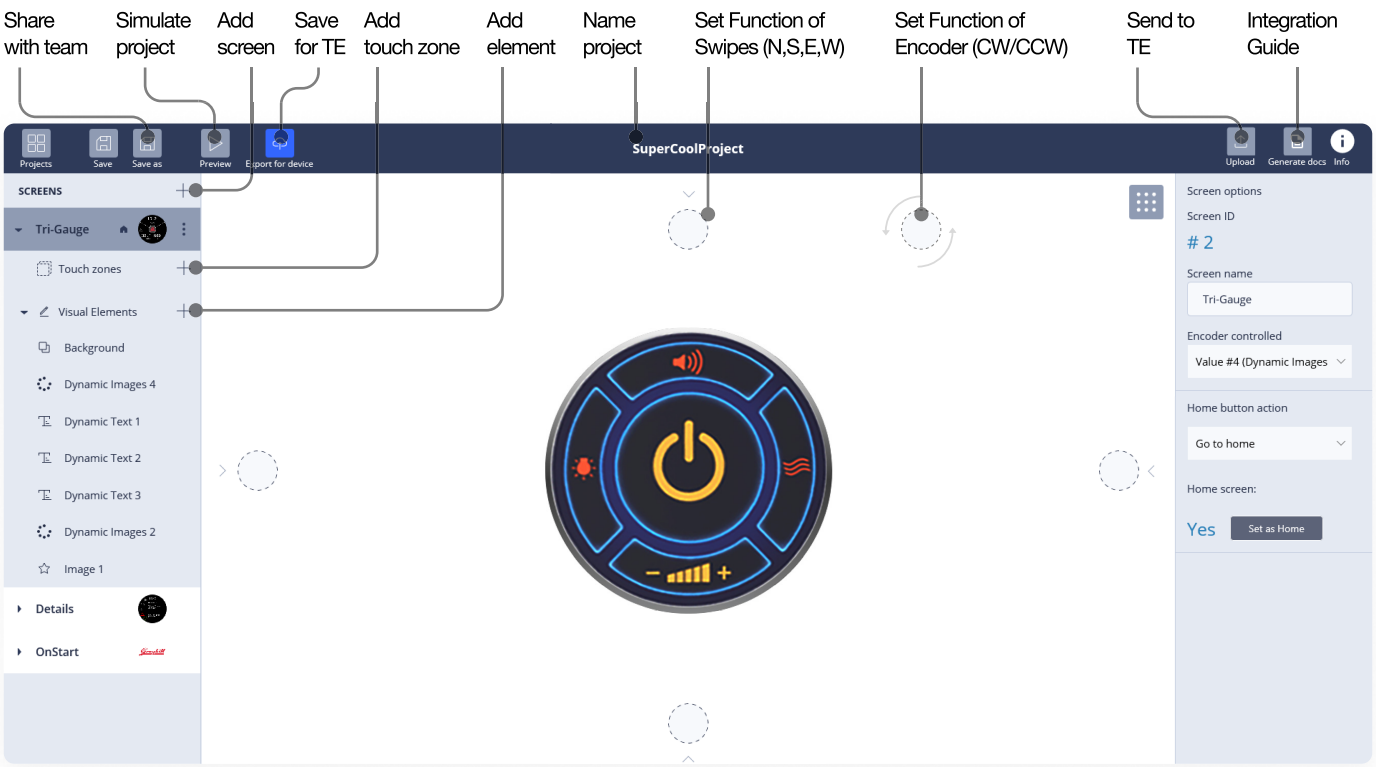
www.grayhill.com

Grayhill, Inc. • 561 Hillgrove Avenue, LaGrange, Illinois 60525-5997, USA. • Phone: 708-354-1040 • Fax: 708-354-2820

Bulletin 1297 | Rev 1218 • Patents Applied and Pending

Grayhill GUIDE software

Simple, intuitive project development using Grayhill GUIDE for PC



Get the Grayhill Guide App

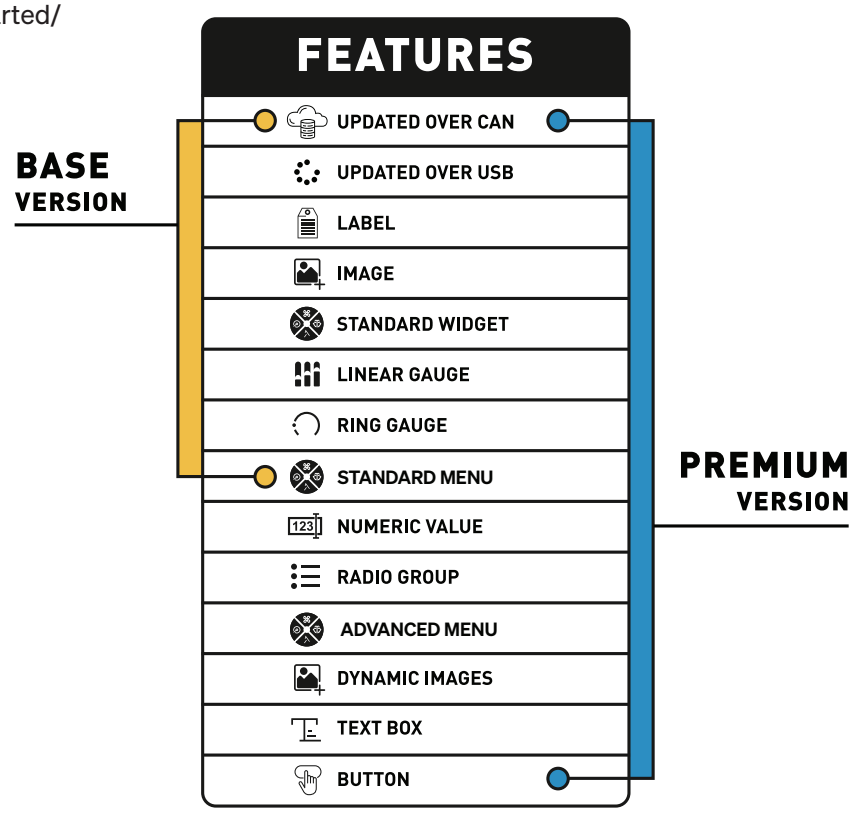
https://grayhill.com/touch-encoder-getting-started/

Premium Tool Kit

Unlock the full power of GUIDE with the Premium Tool Kit. With this Tool Kit developers will have access to all of the Grayhill tools shown in the table and have the freedom to design any Project they can sketch up. The Premium Tool Kit is perfect for customers who:

- Will design multiple Projects which require functionality not found in the Standard Widget Set
- Can benefit from rapid design iterations
- Want the power to quickly react to customer feedback and deploy an improved user experience

Guide App Features



www.grayhill.com

Grayhill, Inc. • 561 Hillgrove Avenue, LaGrange, Illinois 60525-5997, USA. • Phone: 708-354-1040 • Fax: 708-354-2820

Bulletin 1297 | Rev 1218 • Patents Applied and Pending