TOUCH ENCODER™

Reimagining the User Experience

OVERVIEW

The Touch Encoder replaces many traditional user input devices (such as switches, keypads, pushbuttons, displays, etc.) with a simple, easy-to-use device.

KEY FEATURES

- 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

TOUCHSCREEN/DISPLAY

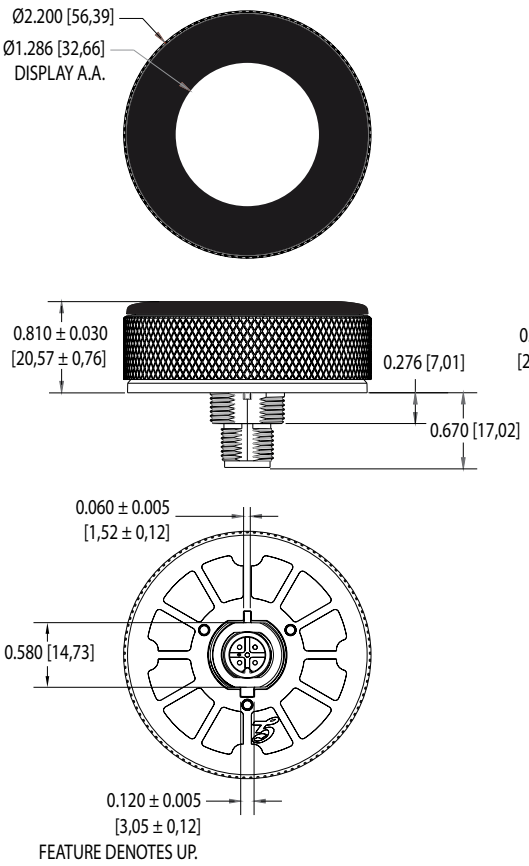
- Optically-bonded display and touchscreen for excellent sunlight readability
- Touchscreen construction: high-resolution PCAP ITO

MATERIALS

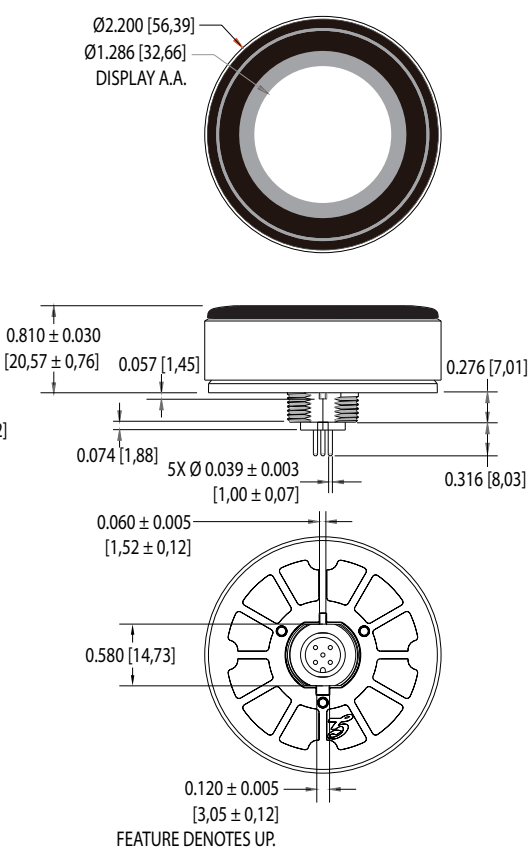
- Cover Lens: polyester
- Knob: 304 Stainless Steel with options: Black Chrome Finish, Silicone Grip, or Nylon Glass Filled
- Rear Housing: nylon
- Mounting Nut: nylon
- RoHS 2018/863 compliant

DIMENSIONS in inches (and millimeters)

TE-M32M1-X21X

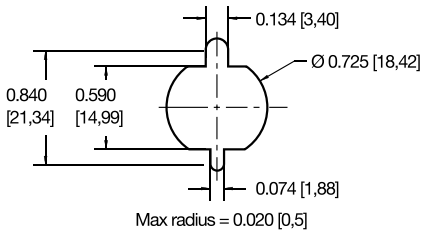


TE-M32M2-X12X

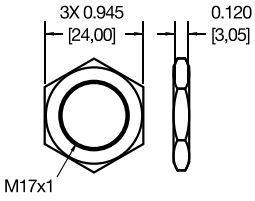


Mounting Information

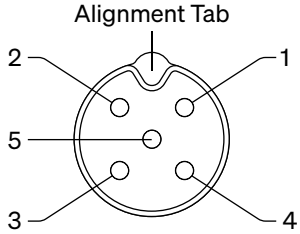
Suggested mounting pattern
IN [MM]



Standard plastic mounting nut
IN [MM]



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 troubleshoot, program, and check version number.

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

Mode Pin Truth at Power Up

Utility Mode	GND
Run Mode	Open

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, 320×320
Display: Brightness	200 Cd/m2
Positions/Revolution	32 (additional available upon request)
Connector Style	M12 5-pin connector or PC board connector

Mechanical Specifications

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 Specifications

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, 2 hr 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	1.5 W @ Max	TBD
Memory	32 MB	32 MB
Sleep Mode Wakeup Time	500 mS	500 mS
Boot Time	5 seconds	5 seconds
USB Interface	2.0 full speed composite device	
CAN Bus 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 Magnetic 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, EN 55032 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

ORDERING INFORMATION

Availability
Red items available upon request. Contact sales for details.
Blue items available, but additional lead time and MOQ may apply.

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Size
S = Small (not available)
M = Medium, 2.220 dia. knob
L = Large (not available)

Position
24 = 15.0˚ angle of throw
32 = 11.5˚ angle of throw

Torque Options
L = Low torque (not available)
M = Medium torque
H = High torque (not available)

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 Grip on Brushed Knob, 304 SS
6 = Industrial Nylon Grip over 304 SS core, Style 1, Black

Platform
A = STM32, μClinox, standard power
B = STM32, μClinox, rugged power

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

Connection Style
1 = m12 5 pos male circular, IP67
2 = PC board mount, 5 pos male, IP67

Output
C = CAN J1939
U = USB

Specifications are subject to change.
Patents applied and pending.

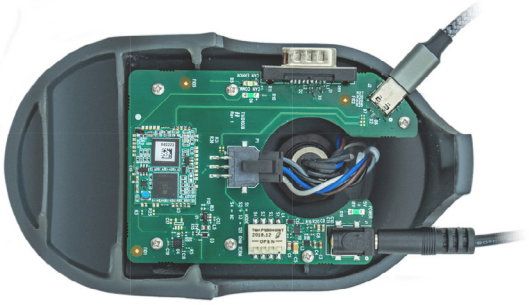
TOUCH ENCODER™ SDK

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 hassle-free 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.

Discover More
Get started with GUIDE:

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

T E - M 3 2 - X X - S D K

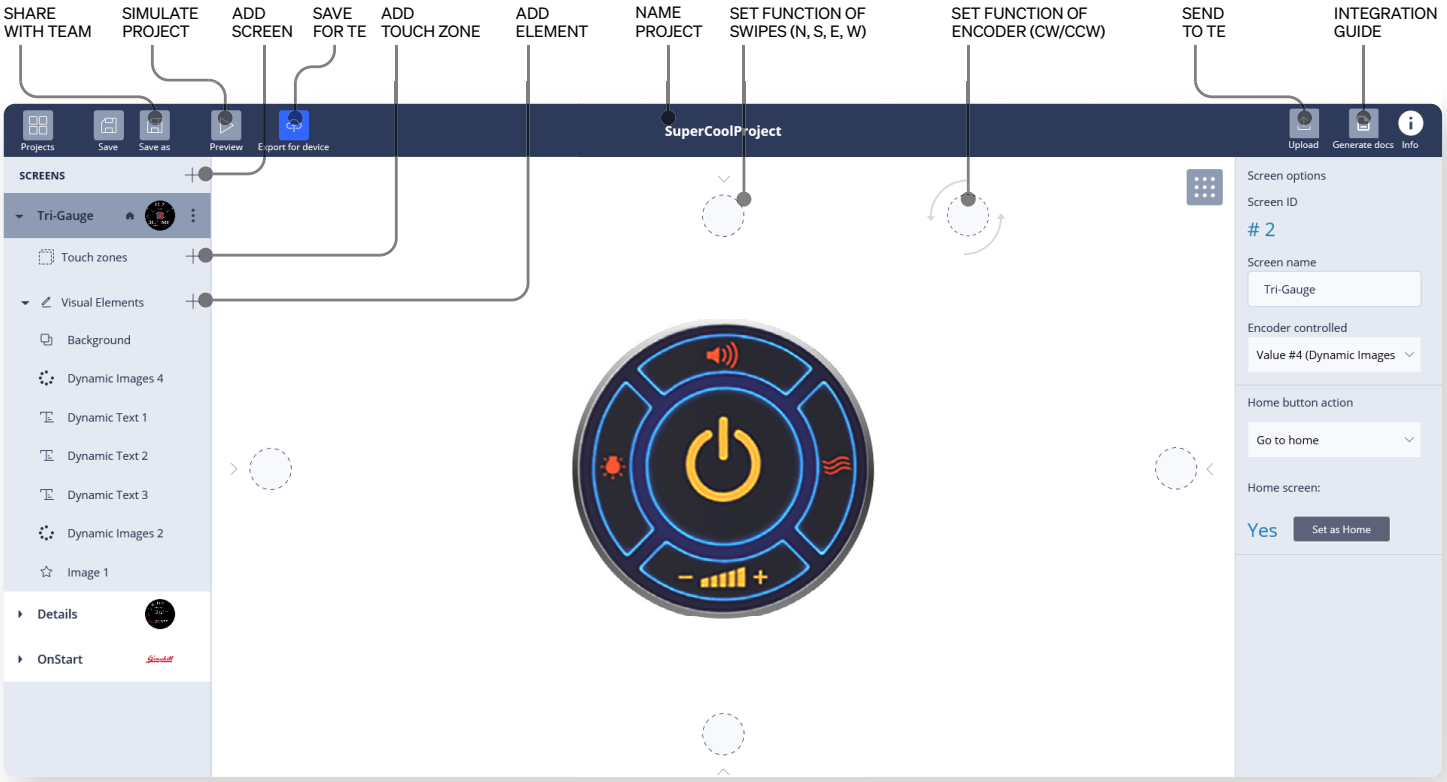
Style
0 = Unit not included
1 = Unit included

Output
C = CAN (J1939)
U = USB

Specifications are subject to change.
Patents applied and pending.

GUIDE SOFTWARE

Simple, Intuitive Project Development Using Grayhill GUIDE for PC



Get the Grayhill GUIDE App

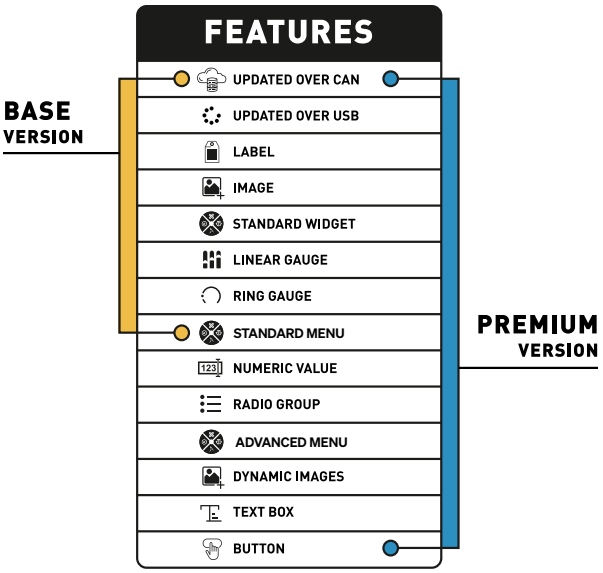
https://grayhill.com/touch-encoder-getting-started/

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



KNOB FINISHES GUIDE

Grayhill's Touch Encoder is offered in six standard knob finishes to suit a wide variety of applications. This sleek and rugged multifunctional control can easily be tailored with Black/Silver or all-Black artwork and an optional clear hardcoat. Custom styles are also available to create a unique look for any brand.

Diamond Knurl, 304 Stainless Steel

Brushed Finish, 304 Stainless Steel

Diamond Knurl, Black Chrome 304 Stainless Steel

Brushed Finish, Black Chrome 304 Stainless Steel

Black Industrial Nylon Grip over 304 Stainless Steel Core

Silicone Grip on Brushed Knob, 304 Stainless Steel

Specifications are subject to change.
Patents applied and pending.