



GRAYHILL

Reimagining the user experience

Touch Encoder



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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: panel sealed to IP67, high impact strength, chemical resistant
- USB 2.0 or CAN J1939 communications
- Easy panel installation: Adhesive install for minimal behind panel thickness

Materials

- Cover lens: chemically strengthened glass
- Rear housing: PBT+PC Blend
- RoHS 2018/863 compliant

Touchscreen/Display

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

Technical Specifications

General

Device Diameter (O.D.): 2.330 in (59.18 mm) Nominal
Display Diameter (V.A.): 1.320in (33.50 mm) Nominal
Touchscreen: Projected Capacitive
Display – Type: Round Color TFT LCD, 320 X 320
Display – Brightness: 200 Cd/m2
Connector Style: Molex 1053111305 or Amphenol AT04-6P

Mechanical

Side Load Force: 45 lbs (200 N)
Lens Hardness: >6H
Lens Impact: IK6
Connector Pullout: 15 lbs (66.7 N)
Mounting Alignment (Maximum): < 1.5 Deg for .005” tol
Weight (Production Unit): 1.23 oz (35.0 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
Panel Seal: IP67*contact sales for full IP67 seal
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	

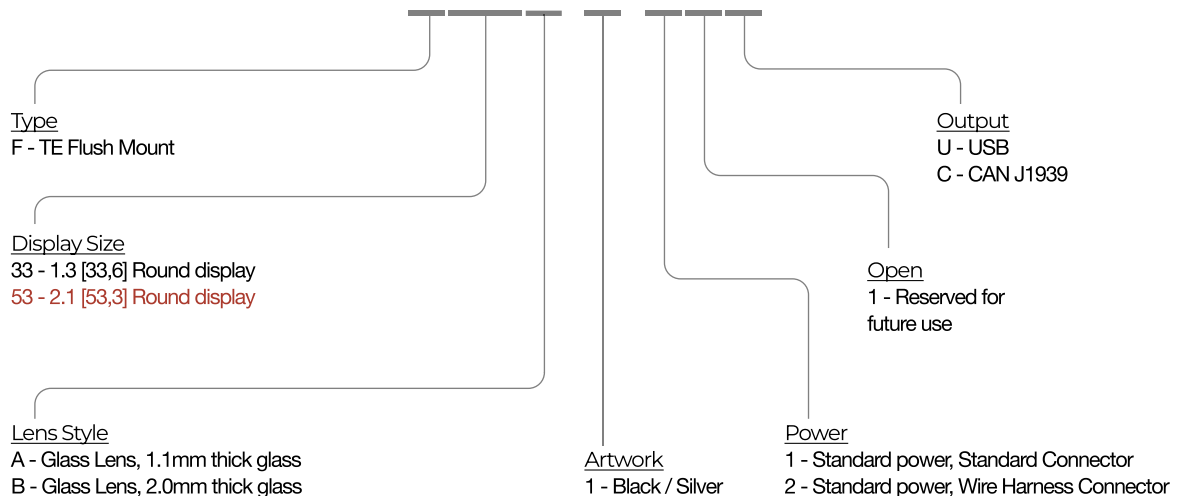
Electrical Specifications

Operating Voltage:	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

Part Numbers

TE-FXXX-X-XXX

Note Red items available upon request, contact sales for details

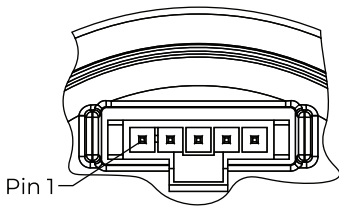


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Technical Specifications



Pin Numbering



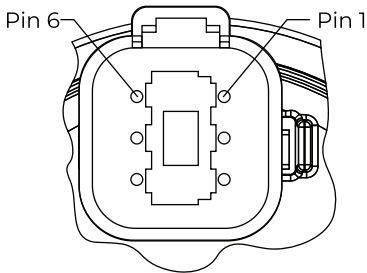
Connector Output		
Pin #	USB	CAN
1	USB_D-	CAN_L
2	USB_D+	CAN_H
3	MODE	MODE
4	GND	GND
5	Vin	Vin

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

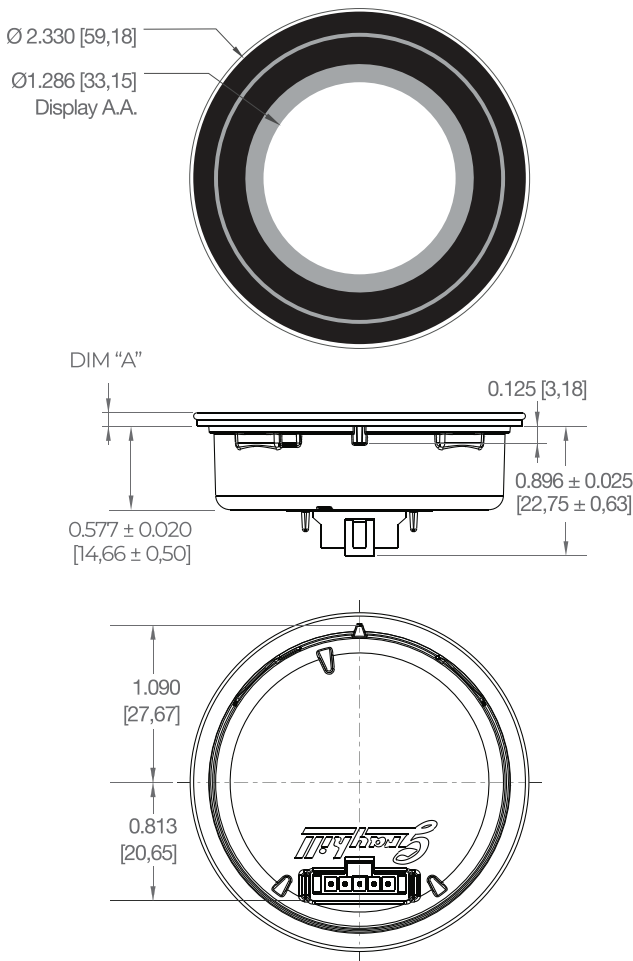


Connector Output			
Pin #	USB	CAN	Wire Color
1	Vin	Vin	Red
2	GND	GND	Black
3	USB +	CAN +	Yellow
4	USB -	CAN -	Green
5	MODE	MODE	Blue
6	NC	NC	-

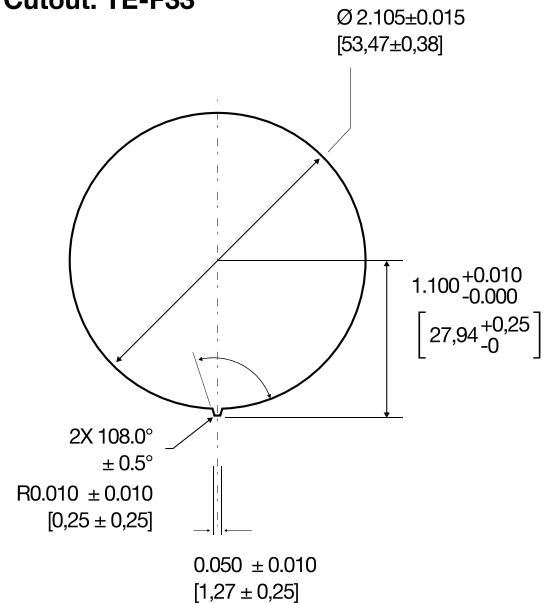
Part Number Dimensions

P/N	Dim "A"	Description
TE-F33A-X-XXX	.088 [2,24]	1.1 mm GLASS LENS
TE-F33B-X-XXX	0.124 [3,14]	2.0 mm GLASS LENS
TE-F53A-X-XXX	.088 [2,24]	1.1 mm GLASS LENS
TE-F53B-X-XXX	0.124 [3,14]	2.0 mm GLASS LENS

Dimensions: TE-F33X-X-11X



Cutout: TE-F33



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 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.

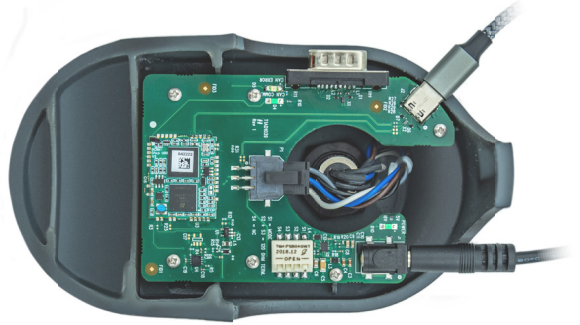
Enhanced Development Speed: Accelerate your development timeline with our user-friendly SDK. Minimize setup complexities, allowing you to focus more on refining your application and bringing your ideas to market faster.

Package contents

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

Discover more

Get started with GUIDE:



TE - F 3 3 B - X X - SDK

Style:

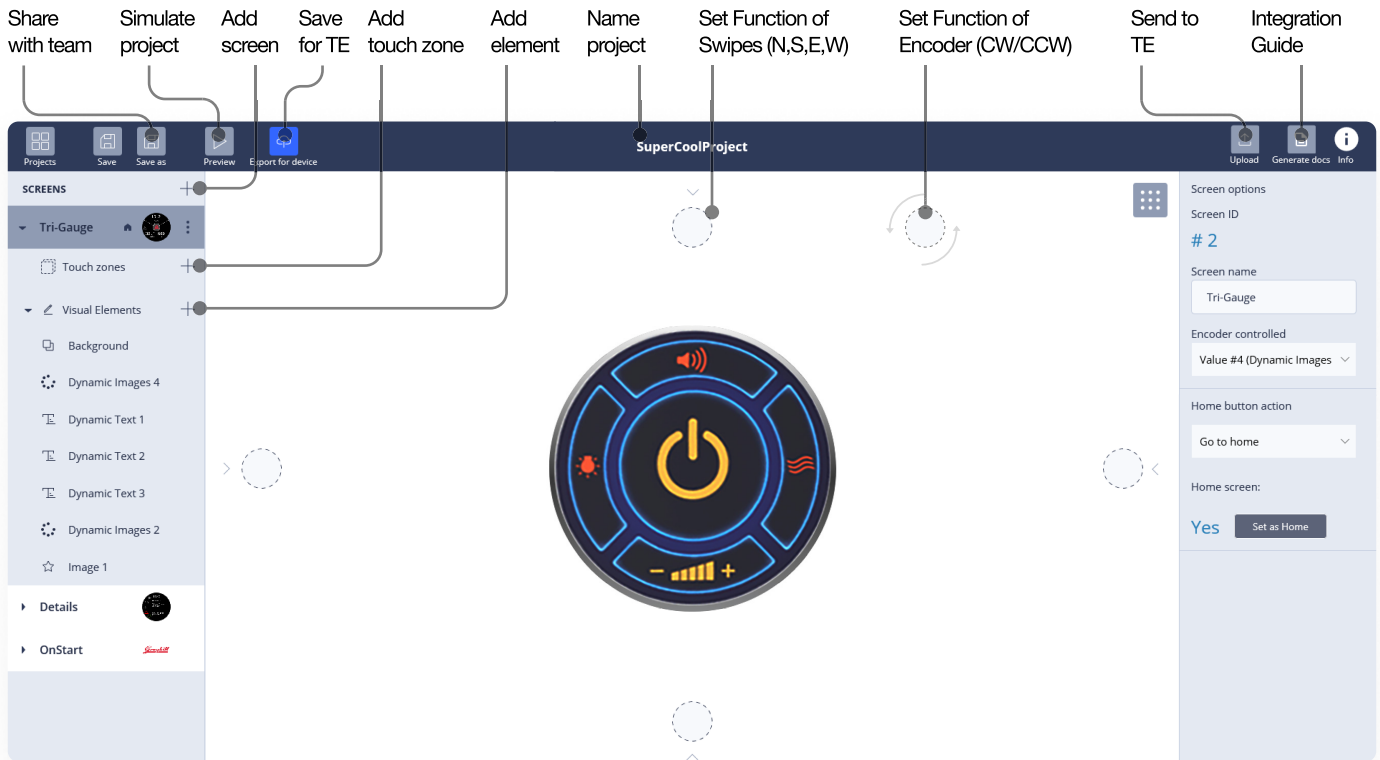
0 - UNIT NOT INCLUDED
1 - UNIT INCLUDED

Output:

C - CAN (J1939)
U - USB

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Simple, intuitive project development using Grayhill GUIDE for PC



Get the Grayhill Guide App

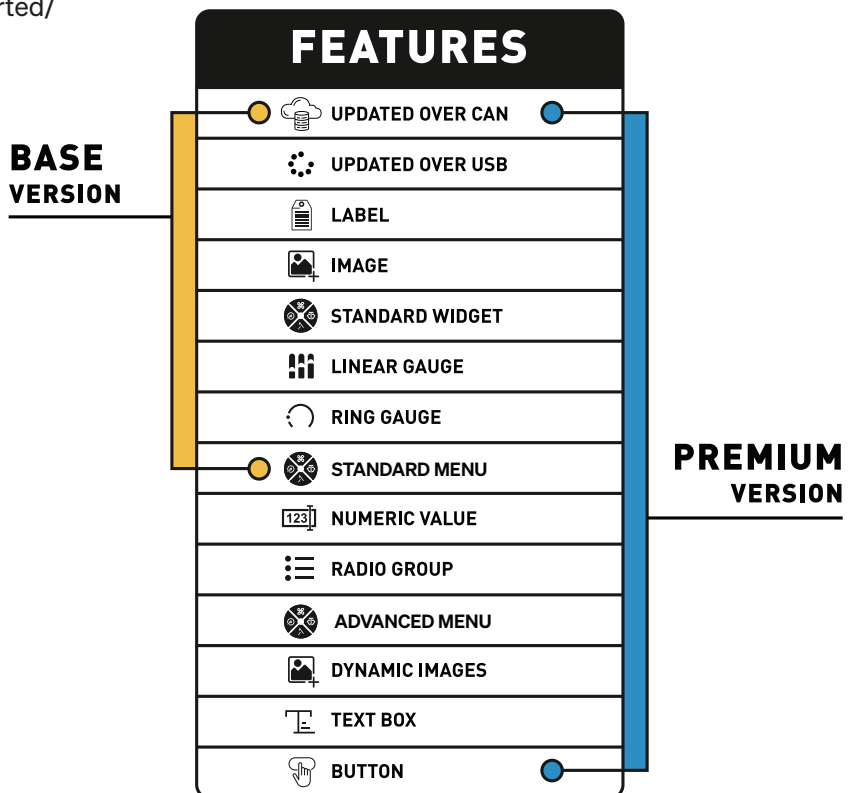
<https://grayhill.com/touch-encoder-getting-started/>

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



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