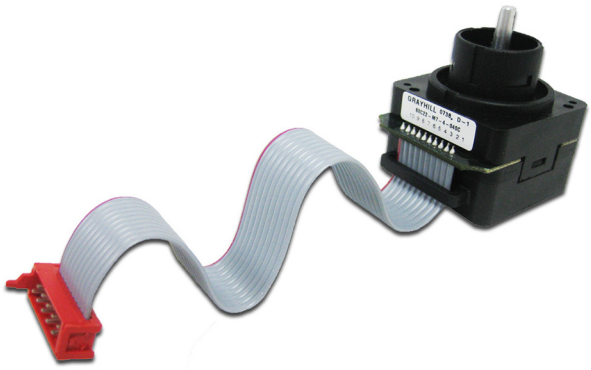
SERIES 60C
Multi-Function Joystick

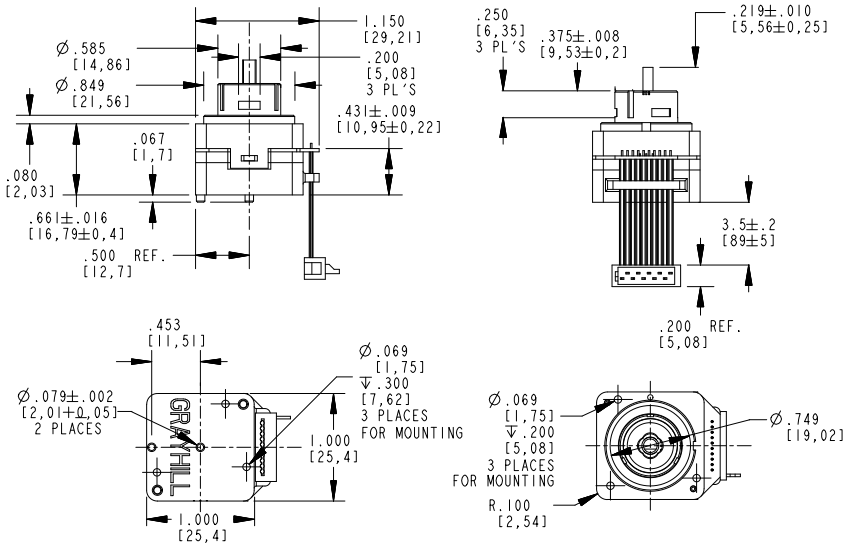


FEATURES
- Three-in-One Joystick, Optical Encoder and Pushbutton
- Compact Packaging
- Choices of Cable Length and Termination
- Customized Solutions Available

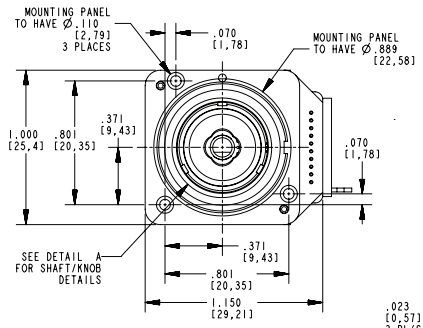
APPLICATIONS
- Avionics
- Medical Equipment
- Automotive Navigation, Information & Entertainment Equipment

DIMENSIONS in inches (and millimeters)

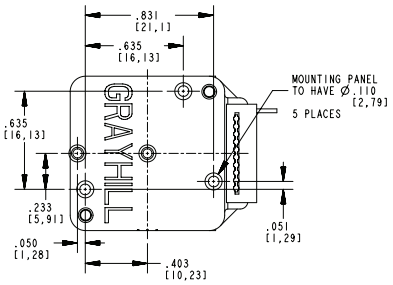
Unless otherwise specified, standard tolerance are:
Linear ± .025
Diameter ± .010
Angle ± 2.0°

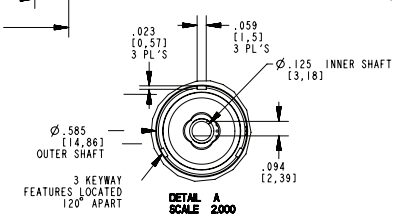


FRONT MOUNTING

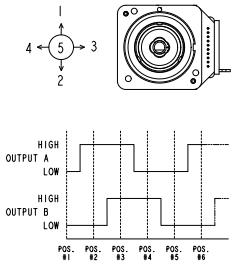


REAR MOUNTING





JOYSTICK OPERATION ENCODER WAVEFORM



TRUTH TABLE Standard Quadrature 2-Bit Code

○ INDICATES LOGIC HIGH
○ INDICATES LOGIC LOW

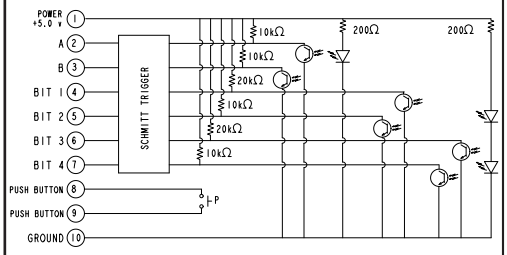
JOYSTICK

POSITION	BIT 1	BIT 2	BIT 3	BIT 4
1	○	◯	◯	◯
2	◯	◯	○	◯
3	◯	○	◯	◯
4	◯	◯	◯	○
5	◯	◯	◯	◯

ENCODER

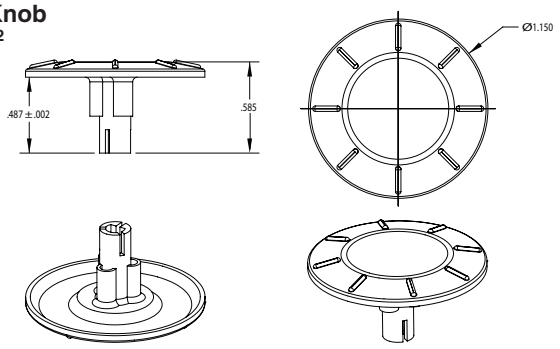
POSITION	OUTPUT A	OUTPUT B
#1	○	○
#2	◯	○
#3	◯	◯
#4	○	◯

SWITCH SCHEMATIC

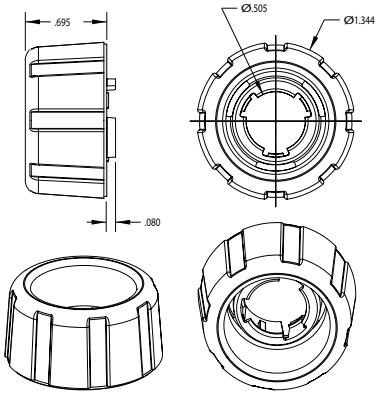


CONTROL KNOBS

Inner Knob
P/N 607702



Outter Knob
P/N 607703



SPECIFICATIONS

Rotary

Electrical and Mechanical Ratings

Operating Voltage: 5.00 ± 0.25 Vdc
Supply Current: 35mA TYP at 5 Vdc
Power Consumption: 175mW TYP at 5Vdc
Output: Direct output from inverting Schmitt trigger
Output Code: 2-Bit quadrature, channel A leads channel B by 90° in cw rotation
Logic Output Characteristics:
High: No less than 3.5 Vdc
Low: No greater than 1.0 Vdc
Mechanical Life: 500K rotational cycles (through all positions and a full return)
Rotational Torque: medium torque option 3.00±2.00 in-oz, torque shall be within 50% of initial value throughout life
Mounting Torque: 15 in-lbs. maximum
Shaft Push/Pull Out Force: 25 lbs minimum
Terminal Strength: 15 lbs terminal minimum

Joystick

Electrical and Mechanical Ratings

Operating Voltage: 5.00 ± 0.25 Vdc
Supply Current: 35mA at TYP at 5 Vdc
Power Consumption: 175mW TYP at 5Vdc
Output: Direct output from inverting Schmitt trigger
Logic Output Characteristics:
High: No less than 3.5 Vdc
Low: No greater than 1.0 Vdc
Mechanical Life: 500K cycles (through all positions and a full return)
Angle of Throw: 8° max. in all directions

Pushbutton

Electrical and Mechanical Ratings

Rating: 10 mA at 5 Vdc resistive
Contact Resistance: less than 10 ohms
Contact Bounce: < 4ms make, 10 ms break
Mechanical Life: 500K actuations minimum
Actuation Force: option 7 = 485 ± 115grams
Pushbutton Travel: 0.033 ± 0.015 inches to contact; 0.075 inches maximum

Environmental Ratings

Operating Temperature Range: -40°C to 85°C
Storage Temperature Range: -55°C to 100°C
Relative Humidity: 96 hours at 90-95% humidity at 40°C
Vibration: Harmonic motion with amplitude of 15g, within a varied 10 to 2000 Hz
Mechanical Shock:
Test 1: 100g for 6ms half-sine wave with a velocity change of 12.3 ft/s
Test 2: 100g for 6ms sawtooth wave with a velocity change of 9.7 ft/s
Thermocycle: 4 hours cycling between -40°C to 85°C

Materials and Finishes

Bushing: Thermoplastic
Shaft Outer: Thermoplastic
Upper Housing: Thermoplastic
Pushbutton Rocker: Thermoplastic
Pushbutton Actuator: Thermoplastic
Inner Shaft Slide: Thermoplastic
Slider Plate: Thermoplastic
Backplate: Thermplastic
Lightpipe, Joystick: Thermoplastic
Lightpipe, 16 pos: Thermoplastic
Centering Profile: Thermoplastic
Shaft Inner: Aluminum
Pins: Stainless steel
Barbed Rivet: Stainless steel
Detent Balls: Carbon steel 100 with nickel finish
Centering Balls: Carbon steel 100 with nickel finish
Detent Springs: Tinned music wire
Centering Springs: Tinned music wire
Cable ASM: .050 round conductor flat cable, PVC coated. Conductors are stranded, top-coated wire
Solder: 95.5% SN, 4% AG, 0.5% CU
Dome: Stainless steel
PCB 16 Pos: NEMA grade FR-4. Plating is gold or palladium over nickel
Infrared Emitter: Gallium aluminum arsenide
Phototransistor: Planar silicon
Resistor: Carbon film
Schmitt Trigger: RoHS Compliant TSSOP, 14 pin
Lubricating Grease: Nyogel 774L
Label: TT406 Thermal transfer cast film

OPTIONS

Contact Grayhill for custom terminations, rotational torque, number of positions, shaft configurations, and resolutions. Control knobs are also available.

ORDERING INFORMATION

60C22-M7-4-060S

Series
Angle of Throw: 22= 22.5° or 16 positions
Rotation Torque: M= Medium torque
Pushbutton: 7= 485 grams
Joystick: 4= Four directions

Termination: 0.050" center ribbon cable with; C= Connector*; S= 0.1" stripped end
Cable Length: 025 thru 250 in 1/2 inch increments, 060= 6.0 inch cable

* AMP p/n 1-215083-0. Mating connector is p/n 1-215079-0 for thru-hole or p/n 1-188275-0 for surface mount.

Available from your local Grayhill Distributor. For prices and discounts, contact a local sales office, an authorized distributor, or Grayhill.

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

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Email: org@lifeelectronics.ru

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