

FG series

Fixed Grip™ hand grip controllers •
fully customizable & ambidextrous operation



DISTINCTIVE FEATURES

Custom configured
Analog or USB outputs
Rugged hand operation
Readily available with TS series thumbstick
Operator presence paddle option



ENVIRONMENTAL SPECIFICATIONS

- Operating Temperature: -40 °C to +85 °C (-40 °F to +185 °F)
- Storage Temperature: -40 °C to +85 °C (-40 °F to +185 °F)
- Above panel sealing: Up to IP65 (subject to final specifications)
- EMC Immunity Level (V/M): EN61000-4-8:2009
- EMC Emissions Level: EN61000-4-3: 2006
- ESD: EN61000-4-2:2008



ELECTRICAL SPECIFICATIONS

- Electrical Resistive Load: 5 A (subject to selected switch)
- Electrical Inductive Load: 3 A (subject to selected switch)
- Low Level: 10 mA @ 30 mV (subject to selected switch)
- Electrical Life: 1 million cycles 5 A @ 28 VDC
Resistive snap-action (depending on selected switch)



MECHANICAL SPECIFICATIONS

- Operating Force: 7.5 N $\pm$ 2.0 N (1.69 lbf $\pm$ 0.11 lbf)
- Maximum Vertical Load: 1000 N (224.8 lbf)
- Maximum Horizontal Load: 600 N (134.9 lbf)
- Mechanical Angle of Movement: 40°
- Expected Life: 1 million lifecycles
- Mass/weight: 317.5 g (11.2 oz)

The company reserves the right to change specifications without notice.



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BUILD YOUR PART NUMBER

FG

SERIES

HANDLE

INDEX TRIGGER

INDEX TRIGGER GUARD

OPERATOR PRESENCE PADDLE

MOUNTING HARDWARE

1

Oval

N

None

M

Momentary

P

Proportional¹

D

DP/DT²

1

None

2

Red

3

Black

1

None

3

Mechanical paddle

2

Plate & Screws

TERMINATION

ELECTRICAL OUTPUT OR INTERFACE

SEALING

FACEPLATE

GRIP

A

22AWG 10in PTFE

B

28AWG 10in PTFE

U

USB A cable

1

Voltage output ¹

2

USB, game controller

5

USB, cursor emulation

A

None

B

IP63 ³

A

Two Pushbuttons

B

Four Pushbuttons

C

Five Pushbuttons

D

Six Pushbuttons

E

Eight Pushbuttons

F

Toggle Switch & Two Pushbuttons

G

Two Pushbuttons & Toggle Switch

H

Toggle Switch, Thumbwheel, Two Pushbuttons ⁴

J

Two Pushbuttons, Thumbwheel, Toggle Switch ⁴

K

Two Axis Miniature Joystick & Two Pushbuttons

L

Toggle Switch, Mini Joystick, Two Pushbuttons

M

Two Toggle Switches

N

Two Pushbuttons, Mini Joystick, Thumbwheel ⁴

P

Four Pushbuttons, Mini Joystick

Q

Two Pushbuttons, Mini Joystick, Toggle Switch

R

Thumbwheel, Mini Joystick, Two Pushbuttons ⁴

N

None

R

Right sided push button ⁴

L

Left sided push button ⁴

Notes:

¹ 0.5V to 4.5V output

² Double pole / double throw

³ Subjected to the faceplate configuration

⁴ Cannot be sealed (only for SEALING option A)

ABOUT THIS SERIES

Notes:

1. Dimensions are in mm/(inch)

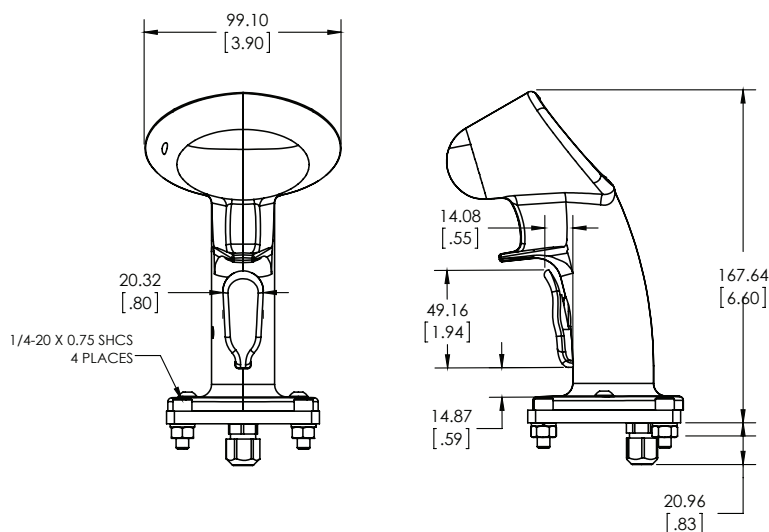
2. Faceplate:
The FG series Fixed Grip hand controller features a modular faceplate that can be customized for specific applications. Ambidextrous for most configurations, the faceplate may be populated with a variety of thumb actuated switches including momentary pushbuttons, latching pushbuttons, two or three way toggle switches, 4 or 5 way trims and miniature proportional joysticks. Every FG faceplate is custom configured to order. Please consult APEM for options.

3. Index Trigger:
The FG series Fixed Grip controllers may be equipped with or without an index trigger switch. Index trigger configuration options include a single pole normally open momentary switch, a double pole double throw tactile switch, or a proportional Hall effect device.
Index Trigger Options: N: None M: Momentary, single pole normally open P: Hall effect, 0.5V to 4.5V proportional output D: Double pole, double throw

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DIMENSIONS



HANDLE OPTIONS

FACEPLATE



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CW SERIES THUMBWHEEL



- Single axis proportional output
- Spring return
- P/N CWB1BK1A02A0

IM SERIES PUSHBUTTON



- Momentary & snap-action
- Sealed
- P/N IMR7Z462

MT SERIES TOGGLE SWITCH



- MOM-OFF-MOM
- P/N MTG72AD2

TS SERIES MINIATURE JOYSTICK



- Two axis proportional output
- P/N TS1R2S02A

GRIP



Option R: side
pushbutton RIGHT



Option L: side
pushbutton LEFT

EXAMPLE OF CONFIGURATIONS



Index trigger with
trigger guard



Index trigger



No index trigger



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USB OPTIONS

- Supply Voltage Range: 5.00 VDC
- Maximum current: 70 mA
- USB version: 2.0
- Connector style: USB-A

USB GAME CONTROLLER

Featuring USB 2.0 HID compliant interface, APEM's USB joysticks are recognized as standard HID "game controller" devices. Adhering to the HID specification, APEM's USB joysticks are plug-and-play with most versions of Windows. Joystick button and axis assignments are dependent upon the controlled application.

Features

- USB 2.0 HID compliant "game controller" device
- Easy to install and operate
- Functions determined by controlled application
- 12-bit (0 to 4095) axis resolution

Termination (supplied cable)

- USB Male Type A Connector (198 cm)
 - (72" +/-1") - overmolded cabled - Mini B to Male Type A USB connector (option 0U)
 - (84" +/-1") - overmolded cable - Male Type A USB connector (option 2U)

USB CURSOR EMULATION

The Cursor Emulation option converts multi-axis joystick output into a mouse or cursor control device. The Cursor Emulation option is ideal for vehicle applications subjected to dirt and high vibration which makes operating a traditional cursor control device difficult. Cursor simulation is only compatible with Window OS.

Features

- HID compliant "mouse" device

Button Function

- B1: Left Mouse Click
- B2: Right Mouse Click

Termination (supplied cable)

- USB Male Type A Connector (185 cm):
 - (72" +/-1") - overmolded cabled - Mini B to Male Type A USB connector (option 0U)

SUPPORTED OPERATING SYSTEMS: USB GAME CONTROLLER AND CURSOR EMULATION

Windows Operating System

- Windows 7
- Windows 8.1
- Windows 10

Linux Operating System

APEM's USB joysticks are compatible with Linux, although system compatibility is not guaranteed. The user is responsible for verifying specific Linux OS compatibility.

Custom Firmware

Custom configurations and firmware is available upon request. Available options include:

- 8-bit axis resolution
- 10-bit axis resolution
- Signed bit axis resolution
- Custom USB product name



VOLTAGE REGULATOR SPECIFICATIONS

The Voltage Regulator allows APEM's Hall effect joysticks to operate with a range of supply voltages.

Voltage Regulator - Unipolar

- Supply Voltage Range: 8-35 VDC
- Output Voltage Range: see output options
- Maximum Current: 90 mA

Voltage Regulator - Bipolar

- Supply Voltage Range: 11-35 VDC
- Output Voltage Range: ± 10 VDC
- Maximum Current: 90 mA

Termination (flying leads)

- 28 AWG 20.32 cm (8.0") ± 1.54 cm (1") PTFE

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