

CH
Products

an APEM Group Company

FG series

FIXED GRIP™ hand controllers



The FG Series of FIXED GRIP hand controllers provide rugged, yet ergonomic operation for the most demanding applications. Custom configured to order, the FG Series may be equipped, for example, with a miniature thumb operated two axes joystick, index trigger guard, and USB interface. The FG Series of FIXED GRIP controllers are ideal for off-road vehicle, marine, and military applications subject to high vibration.

KEY FEATURES

- ☐ **USB outputs available**
- ☐ **Rugged hand operation**
- ☐ **Sealed up to IP67**
- ☐ **Custom configured**
- ☐ **Available with optional programming utility**



FG series

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OPTION SELECTION

FG									
SERIES		INDEX TRIGGER		DEADMAN LEVER		TERMINATION		SEALING	
		N None M Momentary P Proportional ¹ D DP/DT ²		1 None 2 Proximity sensor ³		A 22AWG 10in PTFE B 28AWG 10in PTFE X Customer specified		A None B IP67	
	HANDLE		INDEX TRIGGER GUARD		MOUNTING HARDWARE		ELECTRICAL OUTPUT OR INTERFACE		
	1 Oval		1 None 2 Red 3 Black		1 None 2 Plate and screws		1 Voltage output 2 USB 3 CANbus 4 Joyball		

NOTES:

- 1 0.5V to 4.5V output
- 2 Double pole/double throw
- 3 Not available with trigger



Up to IP67 available.



Mounting accessories. Screws: 1/4-20 x 1.25in stainless steel screws, lock washers, and hex nuts

SPECIFICATIONS

ENVIRONMENTAL

Operating Temperature	–	-25°C to 85°C (-13°F to 185°F)
Storage Temperature	–	-40°C to 85°C (-40°F to 185°F)
Sealing	–	IP67
EMC Immunity Level (V/M)	–	IEC 61000-4-8:2009
EMC Emissions Level	–	IEC 61000-4-3:2006
ESD	–	IEC 61000-4-2:2008

STANDARD SWITCH CHARACTERISTICS/RATINGS

Electrical Resistive Load:	–	5A
Electrical Inductive Load:	–	3A
Dielectric Withstandind Voltage:	–	1050Vrms
Low Level:	–	10mA @ 30mV
Electrical Life:	–	25,000 cycles 5A @ 28VDC resistive snap-action
Mechanical Life:	–	1,000,000 cycles
Environmental Seal:	–	IP67
Action:	–	Momentary, snap-action
Operating Force:	–	7.5N+/-2.0N (1.69lbf+/-0.11lb)
Total Travel:	–	0.080 inch max
Over Travel:	–	0.010 inch min

NOTE:

All values are nominal

Note: The company reserves the right to change specifications without notice.

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FACEPLATE EXAMPLES

OVAL



1



2



3



4



5



6



7



8



9

HANDLE / INDEX TRIGGER

INDEX TRIGGER WITH TRIGGER GUARD



INDEX TRIGGER



NO INDEX TRIGGER



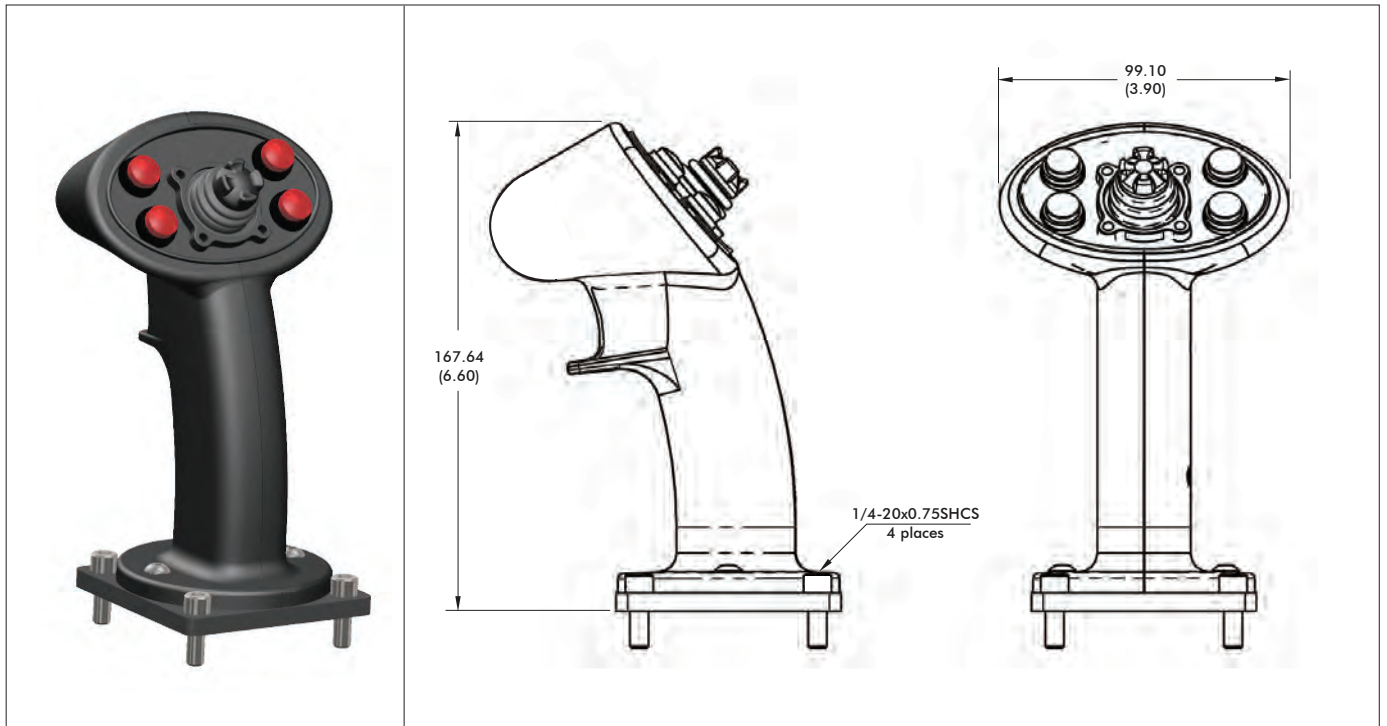
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DIMENSIONAL DRAWINGS



NOTES

1. Dimensions are in mm/(inch)

2. Faceplate

The FG 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 factory for options.

3. Index Trigger

The FG Series handle may be equipped with or without an index trigger switch. Index trigger configure 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

4. Deadman Lever

The Proximity Sensor is a person present “deadman” safety switch that works by means of capacitive sensing. Fitted inside the handle and sealed from the environment, the Proximity Sensor eliminates the need for a mechanical paddle lever.

Deadman Lever Option

- 1: None
- 2: Proximity Sensor

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CONFIGURATION OPTIONS - continued

OUTPUT OPTIONS

PLUG-AND-PLAY SOLUTIONS:

USB

Featuring USB 1.1 HID compliant interface, CH Products' USB FIXED GRIP controllers are recognized as standard HID "game controller" devices. Adhering to the HID specification, CH Products' USB FIXED GRIP controllers are plug-and-play with most versions of Windows and Linux. FIXED GRIP controller's buttons and axes assignments are dependent upon the controlled application.

FEATURES

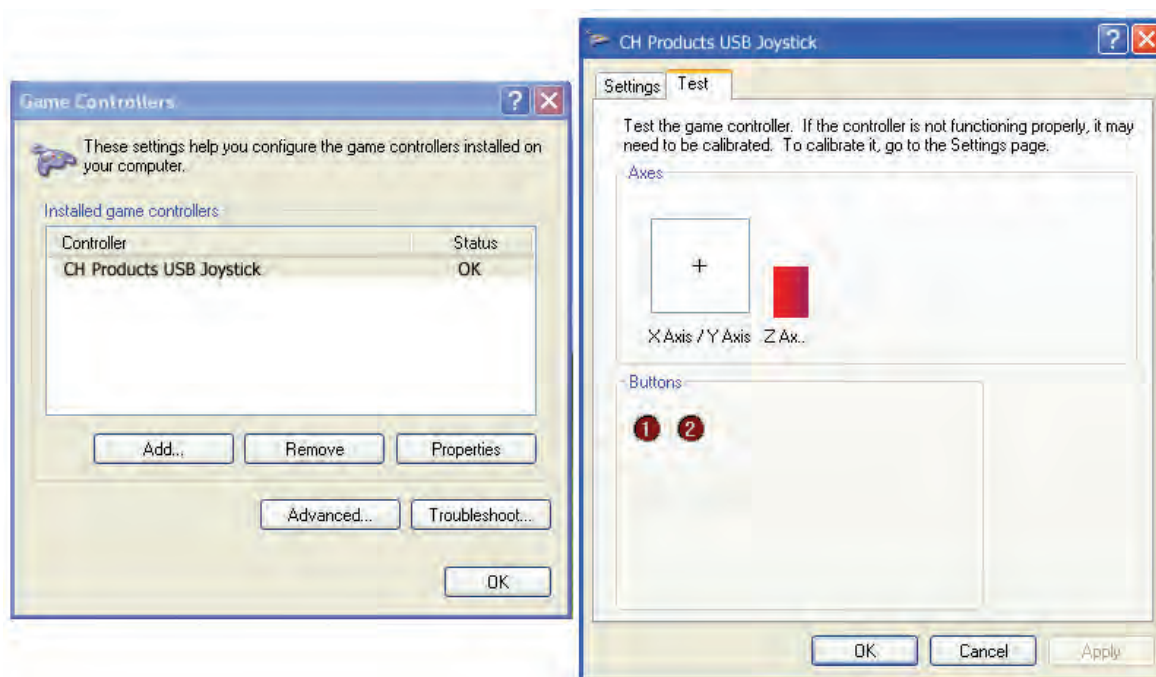
- USB 1.1 HID compliant "game controller" device
- Easy to install and operate
- Functions determined by controlled application
- Standard male type "A" connector

SUPPLIED WIRING

USB: USB Male Type A Connector with over-molded cable
(Optional ruggedized military connectors are available.)



USB Male Type A Connector



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CONFIGURATION OPTIONS - continued

ADDITIONAL OUTPUT OPTIONS

JOYBALL (CURSOR EMULATION)

The Joyball option converts multi-axis joystick output into a mouse, trackball, or cursor control device. The FIXED GRIP controller's internal microprocessor converts absolute axis position into a cursor velocity, which is translated as a relative trackball or mouse position. Supported protocols include Sun Microsystems (mouse systems 5vdc serial) and USB.

APPLICATIONS

The Joyball option is ideal for vehicle applications subjected to dirt and high vibration which make operating a traditional cursor control device difficult. The Joyball option is widely used in shipboard and military applications.

FEATURES

- HID compliant "pointing device"
- Plug-and-play with USB option
- Ideal for marine GPS and navigation
- Environmental sealing up to IP67

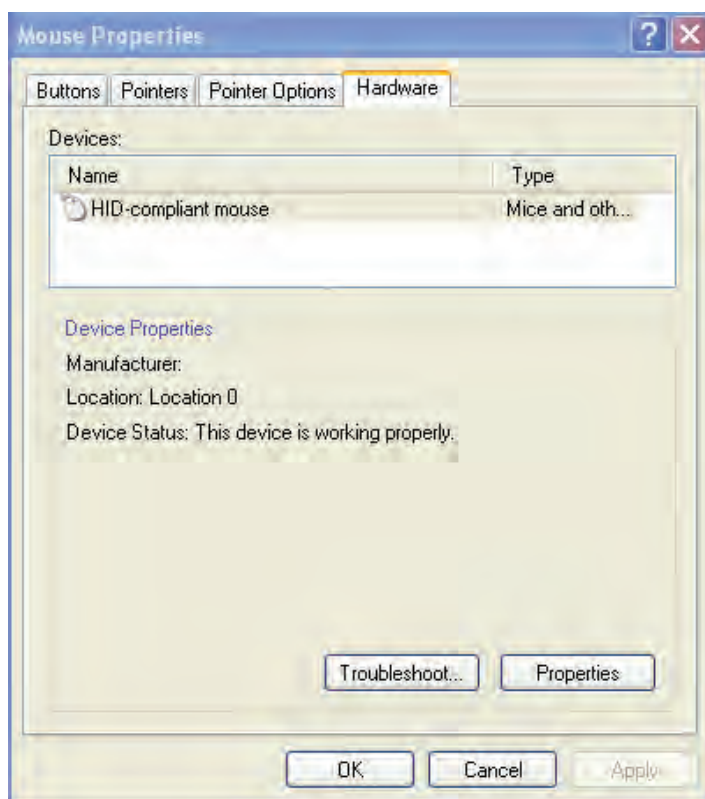
SUPPLIED WIRING

USB: USB Male Type A Connector with over-molded cable

SUN: SUN mini-DIN plug with overmolded cable and strain relief

I/O COMPLEMENT/ USER SPECIFIED PARAMETERS:

- USB 4 pushbuttons 2 or 3 axes (X,Y, and Z "scroll")
- SUN 2 pushbuttons and 2 axes (X, Y)



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CONFIGURATION OPTIONS

ADDITIONAL OUTPUT OPTIONS

CANbus J1939

CH Products FG CANbus joysticks conform to the SAE J1939 serial bus specification used for communications between electronic control units and vehicle components.

FEATURES

- CANbus J1939
- Extended I/O extension for up to 2 digital and 3 analog inputs.
- Accommodates a 6-40VDC power supply

ELECTRICAL SPECIFICATIONS

Supply Power:	-	6 – 40 VDC
Supply Current:	-	15mA min, +5mA per LED, +6mA per axis

WIRING SPECIFICATION

Red Wire	-	Supply Power
Black Wire	-	Ground
Green Wire	-	CAN high data
White Wire	-	CAN low data
Blue Wire	-	Identifier Select
Orange Wire	-	Identifier Select

CONNECTOR OPTIONS:

- Cable assembly with Deutsch DT04 style plugs
- External I/O harnessing per customer specification

CAN_{bus} CONFIGURATION CHART

- Contact factory for assistance

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Note: The company reserves the right to change specifications without notice.