

CJ series

Ergonomic multifunction joysticks

Distinctive features and specifications



- ☐ Hall effect sensors
- ☐ Ergonomic and versatile design
- ☐ 1 and 2 axis configurations
- ☐ Redundant outputs available
- ☐ Available with CAN bus and USB outputs
- ☐ Industry common mounting cutout and hole pattern

MECHANICAL (FOR X AND Y AXIS)

- Break Out Force: 5.6N (1.26lbf)
- Operating Force: 7.6N (1.70lbf)
- Maximum Applied Force: 649.4N (146lbf)
- Mechanical Angle of Movement: 40° (±20°)
- Expected Life: 10 million cycles
- Material: Glass reinforced nylon
- Lever Action (Centering): Spring centering

ENVIRONMENTAL

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

ELECTRICAL SENSOR

- Supply Voltage Range: 5.00V±0.01V
- Ratiometric output voltage: See options
- Reverse Polarity Max: -10V
- Transient Overvoltage Max: 16V
- Output Impedance: 2Ω
- Return to Center Voltage Tolerance: ±200mV initial
- Supply Current: 13mA per sensor

STANDARD PUSHBUTTON SWITCH CHARACTERISTICS/RATINGS

- Max Current / Voltage Rating with Resistive Load: 400mA 32VAC - 100mA 50VDC - 125mA 125VAC
- Low Level: 10mA @ 30mV (depending on the chosen switch)
- Electrical Life: 1 million cycles 5A @ 28 VDC resistive snap-action (depending on the chosen switch)
- Mechanical Life: 1 million cycles
- Environmental Seal: IP67
- Action: Momentary, pushbutton
- Operating Force: 7N±3N (1.57lbf±0.67lbf)
- Total Travel: 1.9mm (0.07in)±0.3mm (0.01in)

CAN OUTPUT VERSION

- Supply Voltage Range (VDC): 6V to 35V
- CAN Versions: CAN bus J1939, CANopen

NOTES:

- All values are nominal.
- Exact specifications may be subject to configuration.
- Contact Technical Support for the performance of your specific configuration.

CJ series

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Overview

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SERIES	Lower Face Buttons	Operator Deadman Lever	Spring Tension	Output Options	Additional Options		
N	None	N	None	00	0V to 5V	N	None
A	One switch in position A	D	Deadman Paddle	01	0.5V to 4.5V	V	Voltage Regulator ²
B	One switch in position B			02	0.25V to 4.75V	E	Environmental Sealing*
C	One switch in center			03	1V to 4V		
W	Two switches			04	0V to 5V - Sensor 1 0V to 5V - Sensor 2		
X	Custom ¹			05	0.5V to 4.5V - Sensor 1 0.5V to 4.5V - Sensor 2		
				06	0.25V to 4.75V - Sensor 1 0.25V to 4.75V - Sensor 2		
				07	1V to 4V - Sensor 1 1V to 4V - Sensor 2		
				08	0V to 5V - Sensor 1 5V to 0V - Sensor 2		
				09	0.5V to 4.5V - Sensor 1 4.5V to 0.5V - Sensor 2		
				10	0.25V to 4.75V - Sensor 1 4.75V to 0.25V - Sensor 2		
				11	1V to 4V - Sensor 1 4V to 1V - Sensor 2		
				13	USB		
				14	Cursor Emulation		
				15	CAN bus J1939		
				16	CANopen		
				XX	Custom ¹		
	Upper Face Buttons	Limiter Plate					
	0	S	Square				
	1	R	Round				
	2	X	Slotted				
	3	Y	Slotted				
	4	P	Plus				
	5	D	Diamond				
	6	G	Guided Feel Square				
	X	H	Guided Feel Round				

NOTES:

1. Contact Technical Support for custom options.
2. Not available on dual output.



*Environmental sealing level available up to IP63.
Dependent upon handle configuration.



Mounting accessories. Standard hardware includes: 4 Phil. screws (6-32x7/8).

LOWER FACE BUTTONS



N



A



B



C

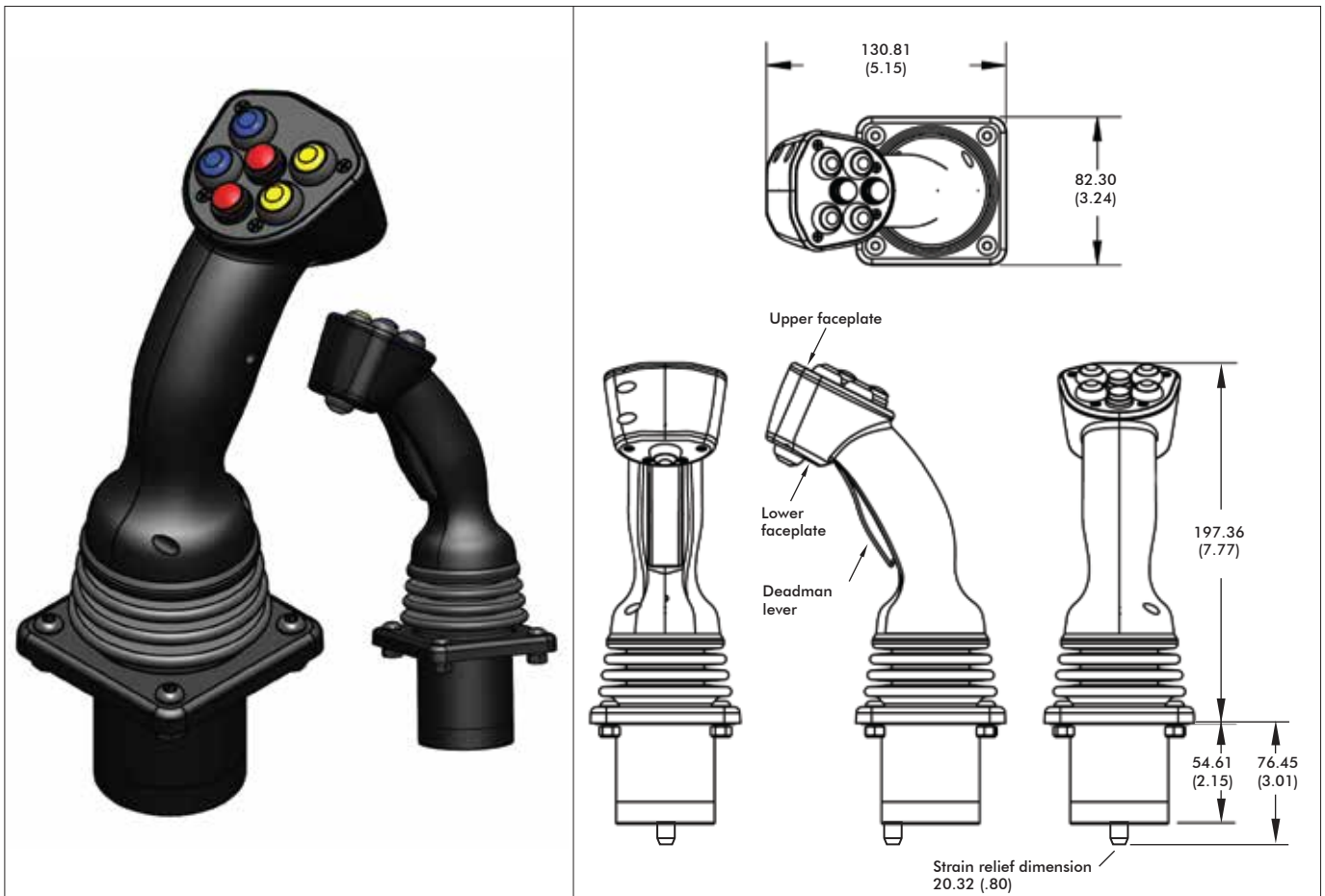


W

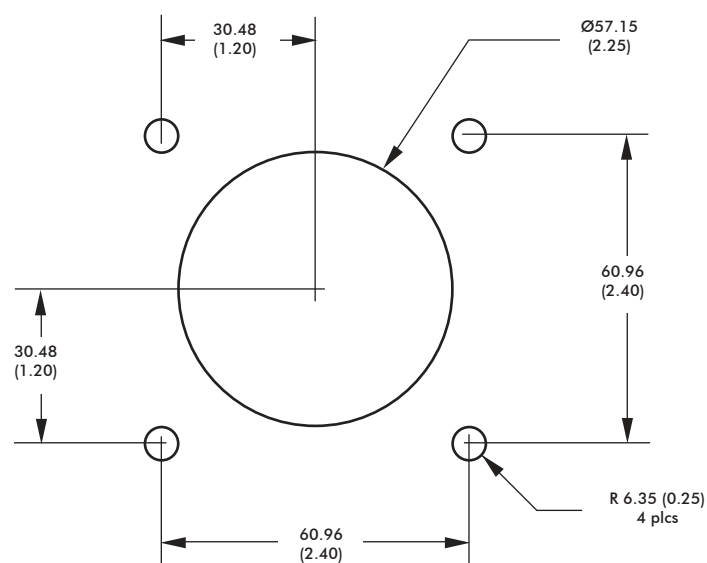
CJ series

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Overview



STANDARD PANEL CUTOUT DIMENSIONS



NOTE:

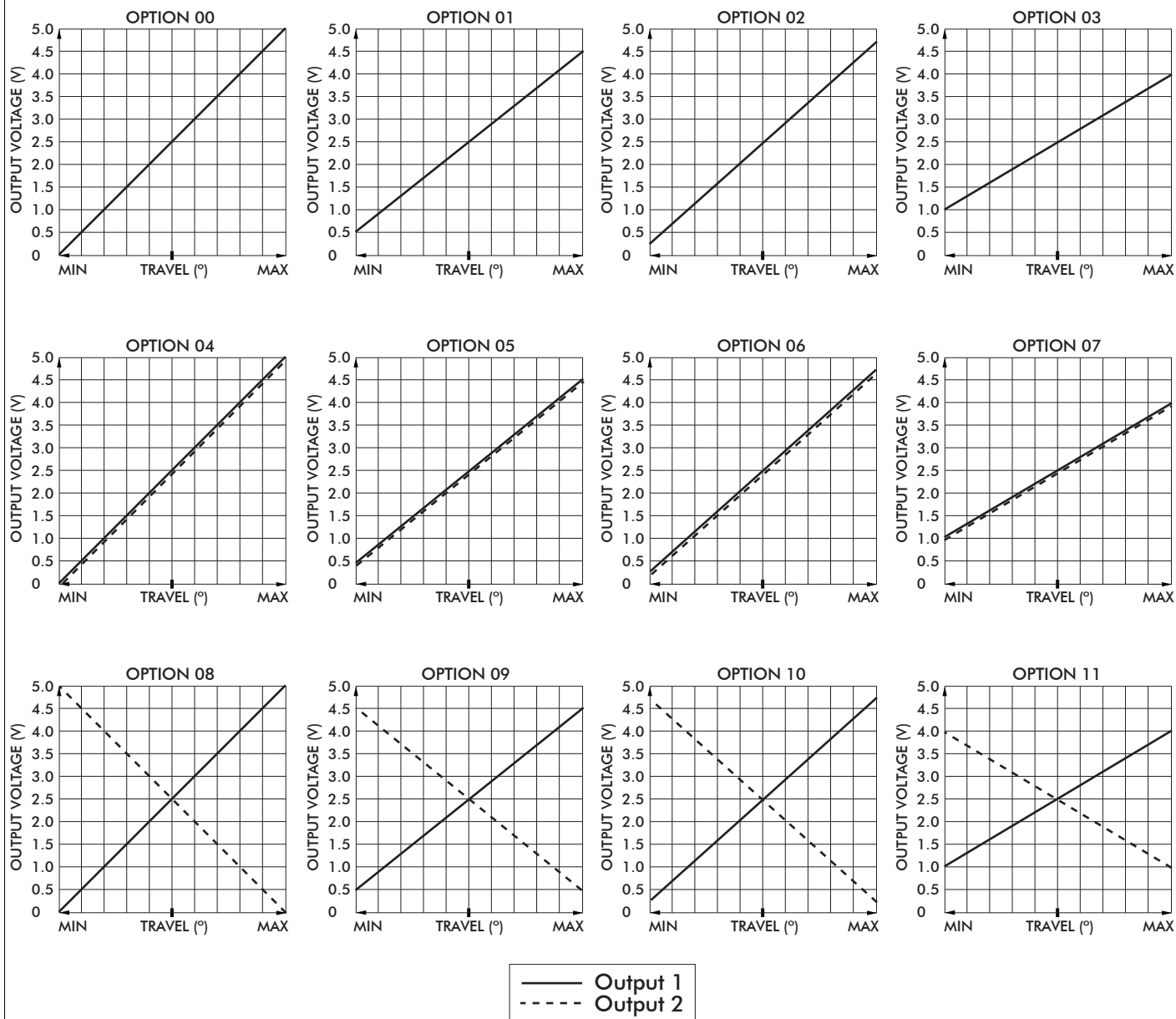
Dimensions are in mm/(in).

CJ series

Ergonomic multifunction joysticks

Overview

VOLTAGE OUTPUT OPTIONS¹



¹ Voltage outputs are ratiometric to supply voltage

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

CJ series

Ergonomic multifunction joysticks

Overview

USB

USB

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

SUPPLIED WIRING

USB: USB Male Type A Connector with overmolded cable

CURSOR EMULATION

The Cursor Emulation option converts multi-axis joystick output into a mouse, trackball, or cursor control device. The joystick's internal microprocessor converts absolute axis position into a cursor velocity, which is translated as a relative trackball or mouse position.

APPLICATIONS

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

FEATURES

- HID compliant "pointing device"
- Plug-and-play with USB option

SUPPLIED WIRING

USB: USB Male Type A Connector with overmolded cable

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CAN BUS

CAN bus J1939

APEM’s CJ CAN bus joysticks conform to the SAE J1939 serial bus specification used for communications between electronic control units and vehicle components. The CJ CAN bus option provides I/O extension for up to 24 digital and 11 analog inputs.

ELECTRICAL SPECIFICATIONS	
• Supply Voltage:	6VDC to 35 VDC
• Supply Current:	15mA min, +5mA per LED, +10mA 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 LSB
• Orange Wire:	Identifier Select MSB

ENVIRONMENTAL	
• Operating temperature:	-25°C to +70°C (-13°F to +158°F)
• Storage temperature:	-40°C to +70°C (-40°F to +158°F)

CONNECTOR OPTIONS:

- Cable assembly with Deutsch DTM04 style connectors

CAN bus CONFIGURATION

- Contact Technical Support for assistance

CANopen

- Contact Technical Support for assistance with CANopen configuration.

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Overview

ADDITIONAL OUTPUT OPTIONS

VOLTAGE REGULATOR

The Voltage Regulator is a multi-wired analog option used to mate to a variety of industrial control voltages. The Voltage Regulator may be used when the supply or output voltage is greater than 5V or when bipolar output is required.

User Specified Output Voltage:

- 0-5VDC
- 0-10VDC
- ± 5 VDC
- ± 10 VDC

ELECTRICAL SPECIFICATIONS

- Supply Voltage: (Output Voltage + 1VDC) to 30VDC
- Supply Current: 90mA max



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