CS3
MULTI-AXIS JOYSTICK

The CS3 is an extremely rugged joystick in an ultra-compact and versatile design. The durable housing and center pivot design make this device resistant to abuse and ideally suited for high duty cycle applications.

STANDARD FEATURES
- Compact and rugged construction design
- Proprietary blend, ultra-tough boot
- Compression style spring return with directional feel
- Environmentally sealed mounting and corrosion resistant components

JOYSTICK OPERATION
- AXIS OPTIONS
- HANDLE TRAVEL OPTIONS
- SHAFT DIAMETER OPTIONS

MOUNTING
- MOUNTING STYLE OPTIONS
- MOUNTING FOOTPRINT / DIMENSIONS

OUTPUT / COMMUNICATIONS
- OUTPUT OPTIONS & SPECIFICATIONS
  • HALL-EFFECT
  • 4-20 mA
  • CAN BUS

HANDLES
- HANDLE OPTIONS & COMPATABILITY

SPECIFICATIONS
- DIMENSIONS
- MECHANICAL SPECIFICATIONS
- ENVIRONMENTAL SPECIFICATIONS
## JOYSTICK OPERATION

### AXI S OPTIONS

<table>
<thead>
<tr>
<th>Single Axis</th>
<th>Dual Axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part #: CS3E</td>
<td>Part #: CS3V</td>
</tr>
</tbody>
</table>

### Handle Travel Options

<table>
<thead>
<tr>
<th>Open Gate</th>
<th>Cross Gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>+/- 20° handle deflection</td>
<td>+/- 20° handle deflection in each axis</td>
</tr>
</tbody>
</table>

### JOYSTICK ACTION

**Spring Return**

- Returns to center

### Shaft Diameter Options

<table>
<thead>
<tr>
<th>Standard</th>
<th>Heavy Duty (CS3HD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.32 IN  [8 MM]</td>
<td>.40 IN [10 MM]</td>
</tr>
</tbody>
</table>

- Standard shaft that allows up to 8 wires.
- Heavy duty shaft that allows up to 16 wires.
## Hall-Effect

### Standard
- **Supply Voltage:** 4.5 - 5.5 VDC
- **Output Voltage:** Ratiometric 0.5 - 2.5 - 4.5 V ±0.15 V @ 5.0 V Supply
- **Output Current:** 10 mA
- **Power Consumption:** 7 mA typical (5 - 10 mA max)

### Redundant
- **Supply Voltage:** 4.5 - 5.5 VDC
- **Output Voltage:** Redundant - Ratiometric 0.5 - 2.5 - 4.5 V ±0.15 V compatible or identical @ 5.0 V Supply
- **Output Current:** 10 mA (max)

### Hall-Effect Connector Specifications & Pin Layouts

#### CS3E (1-Axis) Connector
- 20 AWG, UL1430 wire with AMP Mate-N-Lock connector (1-480707-0), 4" lead length

#### CS3V (2-Axis) Connector
- 20 AWG, UL1430 wire with Molex mini-fit connector (39-01-2100), 14" lead length

### CAN BUS*
- **CAN Open** OR **J1939** OR **Basic CAN**
- **Analog Inputs:** 4
- **Digital Inputs:** 8
- **Digital Outputs:** 2

**CAN Open**
- **Supply Voltage:** 18 - 30 VDC
- **Output Current:** 4 mA (min) 12 mA (center) 20 mA (max)

**J1939**
- **Supply Voltage:** 18 - 30 VDC
- **Output Current:** 4 mA (min) 12 mA (center) 20 mA (max)

**Basic CAN**
- **Supply Voltage:** 18 - 30 VDC
- **Output Current:** 4 mA (min) 12 mA (center) 20 mA (max)

*Compatible with panel mounting only.
# MOUNTING

## MOUNTING STYLE OPTIONS

### DROP-IN MOUNTING
Mounts from above.

![Drop-in mounting diagram]

**DI**

### PANEL MOUNTING
Mounts from below.

![Panel mounting diagram]

**P1**

**P2**

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All dimensions in inches [mm] and are subject to change.

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1. ESS408 CAN int

2. If your controll

3. Consult factory for oth

4. MG27 HANDLE BH HANDLE RHS HANDLE WITH ESS408 CAN

5 hol

6. Mounts from above.

7. Mounts from below.

8. with 2.1250 [54.00] c

9. for drop-in monting

10. for panel mounting

11. handle

12. board must b

13. e

14. for FG3

15. handle

16. option add 1" [25.4mm] to th

17. e

18. All dimensions in inches [mm] and are subject to change.
## HANDLE OPTIONS

### BH
Lever handle with optional:
- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Side) Lever Actuated Momentary Push Button

**DI** **P1** **P2**  **HEIGHT:** 4.9”

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### FG -3
Fighter grip handle with optional:
- Rocker Switches
- Thumbwheels
- Push Buttons
- Trigger

**DI**  **HEIGHT:** 7.5”

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### FG -4
Fighter grip handle with optional:
- Rocker Switches & Thumbwheels
- Push Buttons
- Trigger
- Hand Rest
- Twist Function

**DI**  **HEIGHT:** 8”

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### MG1
T Handle with optional:
- Side Push Button

**DI**  **HEIGHT:** 2.9”

---

### MG13
Twist handle with optional:
- Side Push Button

**DI** **P2**  **HEIGHT:** 3.2”

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### MG27
Options:
- Extended or Recessed Push Button

**DI** **P3** **P2**  **HEIGHT:** 3.9”

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### ROUND BALL
Standard handle

**DI** **P1** **P2**  **HEIGHT:** 2.4”

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### RH
Rocker handle with handrest and optional:
- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Top) Maintained Push Button
- (Side) Momentary Push Button

**DI** **P2**  **HEIGHT:** 5.7”

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### RHS
Rocker handle with optional:
- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Top) Maintained Push Button

**DI** **P3** **P2**  **HEIGHT:** 4.7”

---

### TH30
Twist handle

**DI** **P3** **P2**  **HEIGHT:** 3.9”

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**CUSTOM HANDLES**
Contact us today to learn more about our engineering & design services.

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**MOUNTING STYLE COMPATIBILITY:**
- **DI** DROP-IN MOUNTING
- **P1** PANEL MOUNTING STYLE 1
- **P2** PANEL MOUNTING STYLE 2

*Handle heights shown are for panel mounting styles. Add 0.7” for drop-in mounting.*
### MECHANICAL DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical Life</strong></td>
<td>20 million life cycles</td>
</tr>
<tr>
<td><strong>Handle Travel</strong></td>
<td>±20 degrees</td>
</tr>
<tr>
<td><strong>Gear Ratio</strong></td>
<td>Direct drive</td>
</tr>
</tbody>
</table>
| **Standard (CS3) Shaft** | 2.4” [61mm] shaft length  
                          | 0.32” [8mm] shaft diameter                |
| **Heavy Duty (CS3HD) Shaft** | 2.4” [61mm] shaft length  
                          | 0.40” [10mm] shaft diameter               |

### ENVIRONMENTAL DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-13° to +158°F [-25° to +70°C]</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-40° to +158°F [-40° to +70°C]</td>
</tr>
<tr>
<td><strong>IP Rating</strong></td>
<td>IP54</td>
</tr>
<tr>
<td><strong>EMC Emissions</strong></td>
<td>Complies with EN61000-6-4:2007: Class A Group 1, 80 – 1000 MHz</td>
</tr>
<tr>
<td><strong>EMC Immunity</strong></td>
<td>Complies with or exceeds EN61000-6-2:2005 expanded to include: RFI Immunity of 100 V/M @ 80 – 1000 MHz ESD Immunity of 15 Kv air, 8 Kv contact</td>
</tr>
</tbody>
</table>

"Wired handles require additional 1” [25.4 mm] of clearance at the base of the shaft to ensure that the wire service loop can operate unobstructed in all directions."