

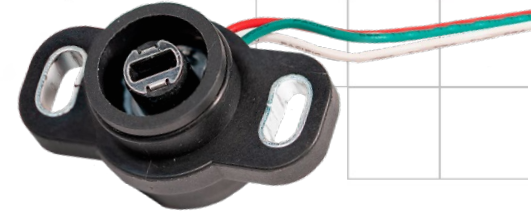
Series 285S/N

Flange Mount Non-Contacting Position Sensor

- Compact 45 mm x 22 mm size
- Hall-effect technology
- Extended rotational life (10 Million cycles)
- Wide temperature range (-40°C to +125°C)
- Precision linearity ($\pm 0.5\%$ and $\pm 0.25\%$ options)
- Dust & water protection (IP50, 54 and 67 options)
- Single and dual output

Applications

- Actuator motor position feedback
- Medical treatment chair and patient platform position feedback
- Flow valve position feedback
- Foot pedal and twist throttle controls
- Steering and lift & shuttle controls



Ordering Information

| Series | Shaft Type | Shaft Length | Shaft Trim | Bearing Style | Output Type | Linearity | Operating Voltage | IP Rating | Rotation Angle | Termination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|--|------------|---------------|-------------|---------------------|-------------------|--|----------------|-------------------|---|-------------------|---|-----------|---|------|---|------|---|-----------|--|---|------|-------|---|----------------|---|------|-------|---|--------------------------|---|---------------------------|---|------------------------|---|-------------------------|--|------|-------|---|-------------|---|--------------|--|------|-------|---|-------|---|------|---|------|-------|---|------|---|------|---|------|---|------|-------|---|--------------|--|-------|-------|-----|-------|---|------|------|------|---|------|------|------|---|------|------|-----|---|------|------|------|
| 285 | S | C | F | S | A | A | B | 4 | C | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>Shaftless</td> </tr> <tr> <td>S</td> <td>w/Shaft</td> </tr> </tbody> </table> | Code | Spec. | N | Shaftless | S | w/Shaft | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>20 mm</td> </tr> <tr> <td>D</td> <td>25 mm</td> </tr> <tr> <td>2</td> <td>3/4"</td> </tr> <tr> <td>3</td> <td>7/8"</td> </tr> <tr> <td>N</td> <td>Shaftless</td> </tr> </tbody> </table> | Code | Spec. | C | 20 mm | D | 25 mm | 2 | 3/4" | 3 | 7/8" | N | Shaftless | | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>S</td> <td>Sleeve bearing</td> </tr> </tbody> </table> | Code | Spec. | S | Sleeve bearing | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Single analog output, CW</td> </tr> <tr> <td>B</td> <td>Single analog output, CCW</td> </tr> <tr> <td>C</td> <td>Dual analog output, CW</td> </tr> <tr> <td>D</td> <td>Dual analog output, CCW</td> </tr> </tbody> </table> | Code | Spec. | A | Single analog output, CW | B | Single analog output, CCW | C | Dual analog output, CW | D | Dual analog output, CCW | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>$\pm 0.5\%$</td> </tr> <tr> <td>B</td> <td>$\pm 0.25\%$</td> </tr> </tbody> </table> | Code | Spec. | A | $\pm 0.5\%$ | B | $\pm 0.25\%$ | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>3.3V*</td> </tr> <tr> <td>B</td> <td>5.0V</td> </tr> </tbody> </table> <p>*Available with 360° EEA only.</p> | Code | Spec. | A | 3.3V* | B | 5.0V | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>IP50</td> </tr> <tr> <td>5</td> <td>IP54</td> </tr> <tr> <td>6</td> <td>IP67</td> </tr> </tbody> </table> | Code | Spec. | 4 | IP50 | 5 | IP54 | 6 | IP67 | <table border="1"> <thead> <tr> <th>Code</th> <th>Spec.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>250 mm wires</td> </tr> </tbody> </table> | Code | Spec. | 1 | 250 mm wires | <table border="1"> <thead> <tr> <th>Code*</th> <th>Total</th> <th>EEA</th> <th>Stops</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>270°</td> <td>260°</td> <td>270°</td> </tr> <tr> <td>B</td> <td>320°</td> <td>310°</td> <td>320°</td> </tr> <tr> <td>C</td> <td>360°</td> <td>360°</td> <td>N/A</td> </tr> <tr> <td>D</td> <td>200°</td> <td>125°</td> <td>200°</td> </tr> </tbody> </table> <p>*Codes A, B, and C available with shaft. Codes D available with shaftless version only.</p> | Code* | Total | EEA | Stops | A | 270° | 260° | 270° | B | 320° | 310° | 320° | C | 360° | 360° | N/A | D | 200° | 125° | 200° |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N | Shaftless | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | w/Shaft | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 20 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 25 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3/4" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 7/8" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N | Shaftless | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | Sleeve bearing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | Single analog output, CW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | Single analog output, CCW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | Dual analog output, CW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | Dual analog output, CCW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | $\pm 0.5\%$ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | $\pm 0.25\%$ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 3.3V* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 5.0V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | IP50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | IP54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | IP67 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 250 mm wires | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code* | Total | EEA | Stops | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 270° | 260° | 270° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 320° | 310° | 320° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 360° | 360° | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 200° | 125° | 200° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Code | Spec. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F | Flatted (6 mm dia.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | Flatted (1/4" dia.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | Round (6 mm dia.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | Round (1/4" dia.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N | Shaftless | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Electrical Specifications

Sensor Function

| Parameter | Condition & Remarks | Min | Typical | Max | Unit |
|--------------------------------|---------------------|------|---------|------|------|
| Output | Analog | | | | |
| Independent Linearity | | -0.5 | | +0.5 | % |
| Hysteresis | V _{sup} | | | 0.2 | % |
| Output Voltage | V _{sup} | 5% | | 95 | % |
| Output Overvoltage Limits | | -6 | | +18 | VDC |
| Output Current | | -8 | +1 | +8 | mA |
| Output Load | | 5 | 10 | | kΩ |
| Input Voltage | | -10 | 5 | +10 | VDC |
| Supply Voltage Absolute Limits | | -18 | | +18 | VDC |
| Supply Current | | | 10 | 15 | mA |
| Resolution | 12 BIT at 360° | | | | |
| Dielectric Strength | 1 minute | | | 750 | VDC |
| Insulation Resistance | 500 VDC | 1000 | | | MegΩ |
| Electrostatic Discharge (ESD) | HBM | -4 | | +4 | kV |

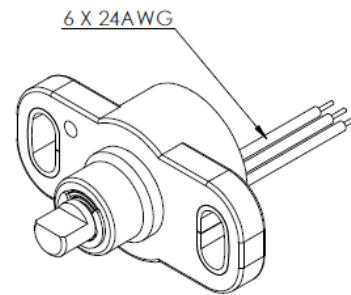
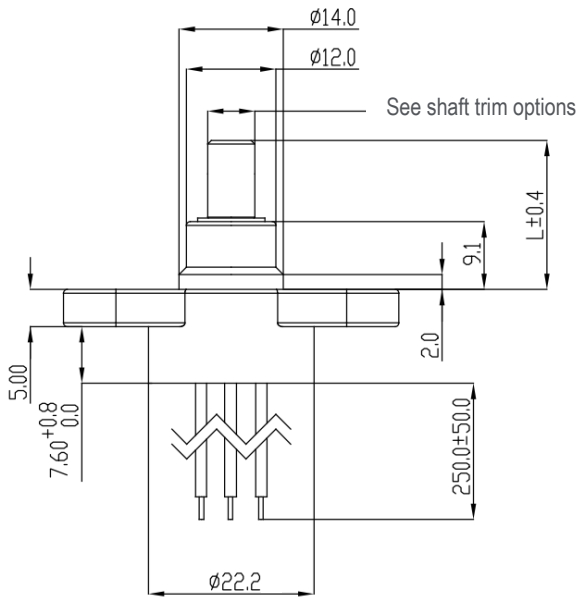
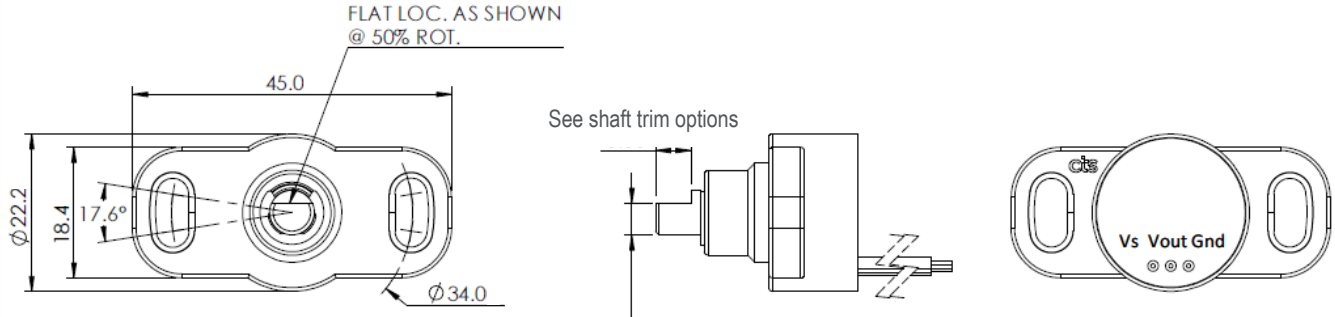
Mechanical and Environmental

| Parameter | Condition & Remarks | Min | Typical | Max | Unit |
|------------------------------|---|------------|---------|------|--------|
| Operating Temperature Range | | -40 | | +125 | °C |
| Storage Temperature Range | | -40 | | +140 | °C |
| Rotational Life | | 10,000,000 | | | cycles |
| Rotational Torque | | | 72 | | gf-cm |
| Static Stop Strength | | 40 | | | in-oz |
| Total Mechanical Travel | | | | | |
| Without Stops | 360° continuous | | | | |
| With End Stops | 320°, 270°, 200° | | | | |
| Operating Speed | 120 RPM max. | | | | |
| Vibration | 30 Gs, 50 to 500 Hz | | | | |
| Panel Nut Tightening Torque | 25 in-lb maximum | | | | |
| IP Rating | 50, 54 or 67 | | | | |
| Push and Pull Shaft Strength | 13.6 kgf for 10 seconds | | | | |
| Soldering Condition | Maximum manual temperature, 350°C for 5 seconds | | | | |
| Marking | CTS logo, part number, date code | | | | |
| Packaging | Standard anti-static bulk packaging | | | | |
| Weight | 21 gm | | | | |

All testing is performed at room ambient conditions except as noted. Users should verify device actual performance in their specific applications. This product is compliant to RoHS3 Directive 2011/65/EU & 2015/863 Amendments of Annex II on 31 March 2015. Custom and value-added options available on request. Please contact your sales representative for additional information.

Mechanical Specifications

Series 285S Flange Mount, Single Output, with Shaft



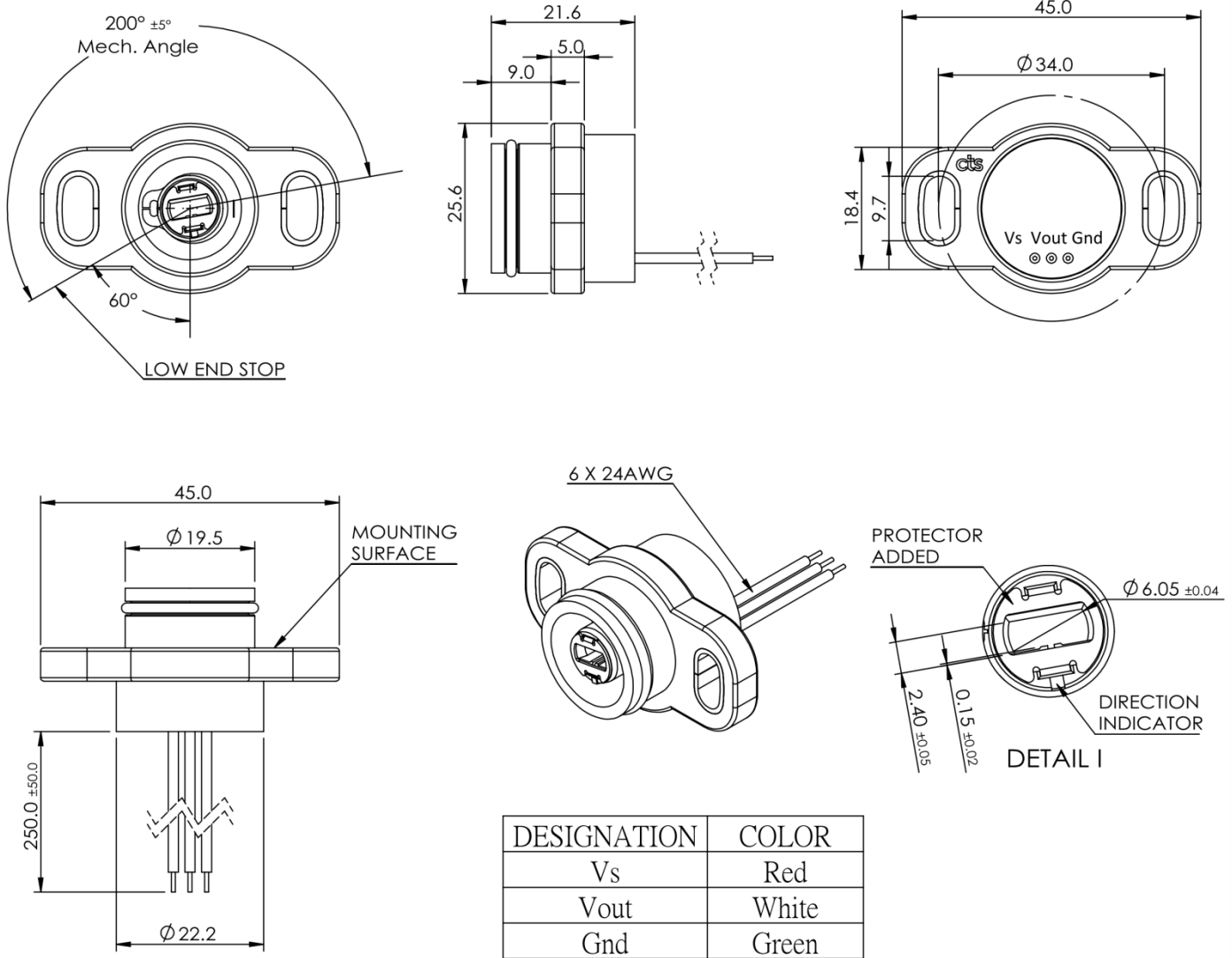
| DESIGNATION | COLOR |
|-------------|-------|
| Vs | Red |
| Vout | White |
| Gnd | Green |

TOLERANCE UNLESS OTHERWISE SPECIFIED

.X (1 PLACE) : ± 0.3
.XX (2 PLACE) : ± 0.13
ANGLE : ± 3°

Mechanical Specifications

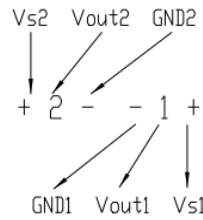
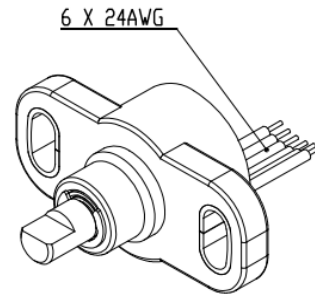
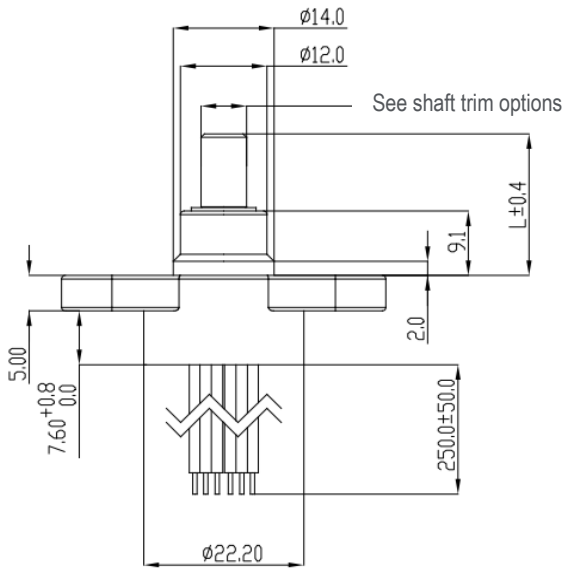
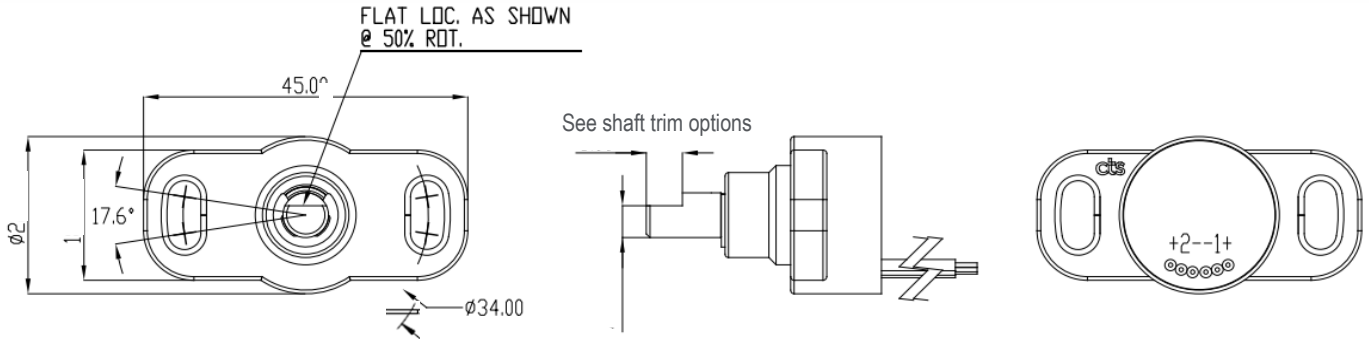
Series 285N Flange Mount, Single Output, Shaftless



TOLERANCE UNLESS OTHERWISE SPECIFIED
 .X (1 PLACE) : ± 0.3
 .XX (2 PLACE) : ± 0.13
 ANGLE : ± 3°

Mechanical Specification

Series 285S Flange Mount, Dual Output, with Shaft



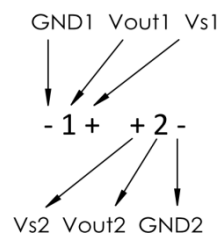
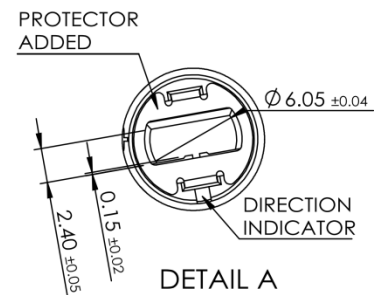
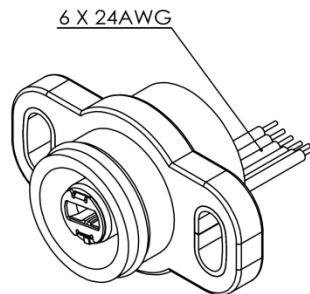
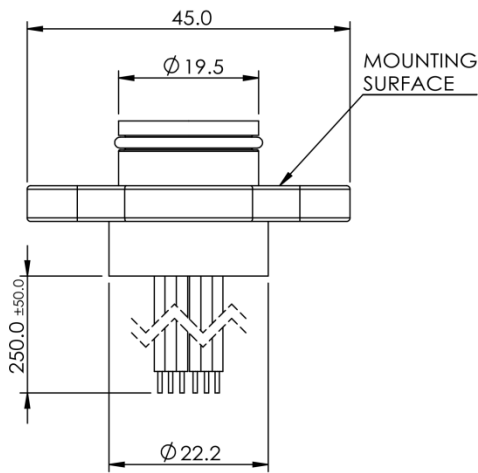
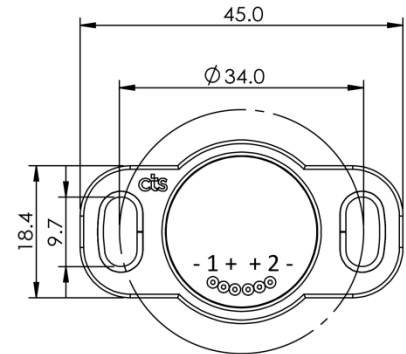
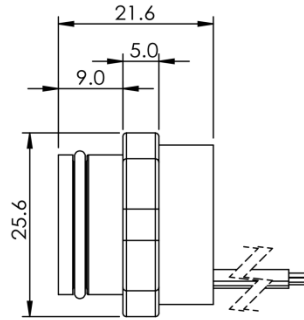
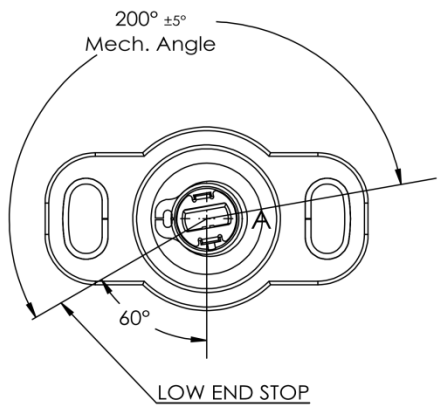
| DESIGNATION | COLOR |
|-------------|--------|
| Vs1 | Red |
| Vout1 | Blue |
| Gnd1 | Black |
| Vs2 | Yellow |
| Vout2 | White |
| Gnd2 | Brown |

TOLERANCE UNLESS OTHERWISE SPECIFIED

- .X (1 PLACE) : ± 0.3
- .XX (2 PLACE) : ± 0.13
- ANGLE : ± 3°

Mechanical Specification

Series 285N Flange Mount, Dual Output, Shaftless

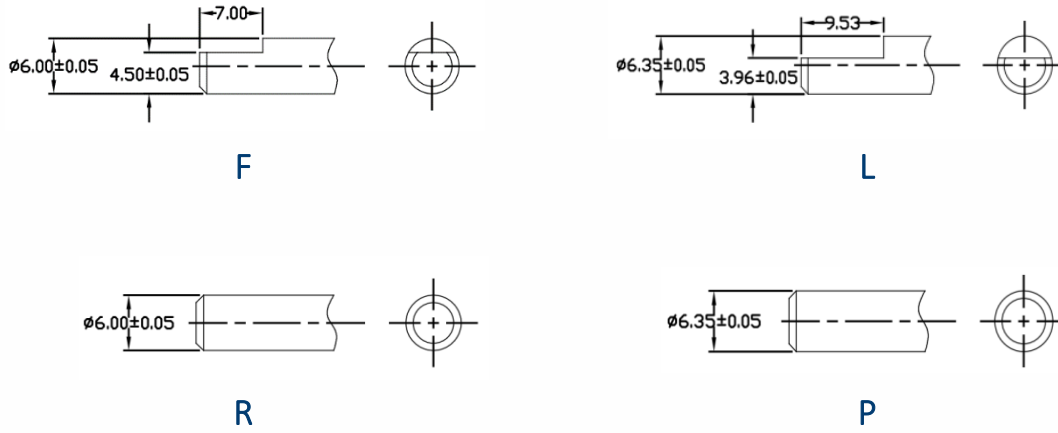


| DESIGNATION | COLOR |
|-------------|--------|
| Vs1 | Red |
| Vout1 | Blue |
| Gnd1 | Black |
| Vs2 | Yellow |
| Vout2 | White |
| Gnd2 | Brown |

TOLERANCE UNLESS OTHERWISE SPECIFIED

.X (1 PLACE) : ± 0.3
.XX (2 PLACE) : ± 0.13
ANGLE : ± 3°

Shaft Trim Options



Electrical Specification

Series 285 Flange Mount w/Shaft Single Output Graph

