31CS Series and 32CS Heavy Duty Series
CSA Intrinsically Safe Industrial Pressure Transmitters

For OEMs that need Intrinsically Safe pressure sensors with consistent high levels of performance, reliability and stability, the 31/32CS Series sputtered thin film units offer an unbeatable price performance ratio in a small package size. They feature all stainless steel wetted parts, a broad selection of electrical and pressure connections and a wide choice of electrical outputs.

Our manufacturing process includes the latest automated equipment, producing consistent sensor performance.

Additionally the 32CS Series transmitters feature a thicker diaphragm and a pressure restrictor to withstand the rigors of cavitation or extreme pressure spikes, delivering years of reliable and stable performance in pulsating applications.

The compact construction of both these series makes them ideal for installation where space is at a premium.

Specifications

Performance
- Long Term Drift: 0.2% FS/YR (non-cumulative)
- Accuracy: 0.25% FS
- Thermal Error:
  - 31CS: ±1.5% max, ±1% typical / 212°F (100°C)
  - 32CS: ±2% max
- Operating & Compensated Temperatures: -40°F to +176°F (-40°C to +80°C)
- Zero Tolerance, Max.: 0.5% of span
- Span Tolerance, Max.: 0.5% of span
- Fatigue Life: Designed for more than 100 M cycles

Mechanical Configuration
- Pressure Port: See under “How to Order,” last page
- Wetted Parts: 17-4 PH Stainless Steel
- Electrical Connection: See under “How to Order,” last page
- Enclosure: IP67 (IP65 for electrical code G)
- Vibration: BSEN 60068-2-6 (FC) Sine (20G)
- Shock: BSEN 60068-2-27 (Fa) (50G, 11ms)
- Approvals: CSA Certified Intrinsically Safe for use in:
  - Class I, Division 1, Groups C and D
  - CSA Zone 0 Ex ia IIB T4 Ga
  - When used in conjunction with a Zener safety barrier.
- Fully RoHS Compliant

EMC Specifications

EN55011:2007 Radiated Emissions: 30-230MHz 30dB µV/M @10M
230-1000MHz 37dB µV/M @10M

EN61000-4-2:2009 Electrostatic Discharge: ±4kV contact
±8kV air
EN61000-4-3:2006 Radiated Immunity: 10V/M 80-1000MHz
3V/M 1400-2000MHz
1V/M 2000-2700MHz
EN61000-4-4:2004 Fast Transients: ±0.25, 0.5, 1kV
EN61000-4-6:2007 Conducted Immunity: 3V 0.15 to 80MHz 80% 1kHz modulation

Individual Specifications

Voltage
- Output (3-wire): 0V min. to 10V max.
- See under “How to Order,” last page
- Supply Voltage: 1 Volt above full scale with minimum supply of 8V; maximum 30V @ 4.5 mA
- Source and Sinks: 2 mA

Current
- Output (2-wire): 4-20 mA
- Supply Voltage: 8-24 Volts measured at the input to the transducer terminals

Maximum Loop Resistance: (Supply Voltage – 8) x 50ohms
- See Graph

Ratiometric
- Output: 0.5 to 4.5V (Source and sink 2mA)
- Supply Voltage: 5 Vdc ±10% @ 4.5mA

### Pressure Capability

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>31CS</th>
<th>32CS</th>
<th>31CS</th>
<th>32CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-300 (7-20)</td>
<td>3.00 x FS</td>
<td>3.00 x FS</td>
<td>40 x FS</td>
<td>3.00 x FS</td>
</tr>
<tr>
<td>500-1,500 (40-100)</td>
<td>2.00 x FS</td>
<td>2.00 x FS</td>
<td>20 x FS</td>
<td>2.00 x FS</td>
</tr>
<tr>
<td>2,000-6,000 (140-400)</td>
<td>2.00 x FS</td>
<td>2.00 x FS</td>
<td>10 x FS</td>
<td>2.00 x FS</td>
</tr>
<tr>
<td>15,000 (1,000)</td>
<td>2.50 x FS</td>
<td>2.50 x FS</td>
<td>&gt; 60,000 PSI</td>
<td>2.50 x FS</td>
</tr>
<tr>
<td>25,000 (1,800)</td>
<td>1.70 x FS</td>
<td>1.70 x FS</td>
<td>40 x FS</td>
<td>1.70 x FS</td>
</tr>
<tr>
<td>30,000 (2,200)</td>
<td>1.40 x FS</td>
<td>1.40 x FS</td>
<td>—</td>
<td>1.40 x FS</td>
</tr>
</tbody>
</table>

*Proof Pressure (x Full Scale) and Burst Pressure (x Full Scale) are applicable up to 10,000 PSI (69 bar).*

### Pressure Ports

**SAE J1926/2:3/8-24**

<table>
<thead>
<tr>
<th>Dimensions in Inches</th>
<th>1/8”-27 NPT</th>
<th>1/8”-27 NPTF Dryseal</th>
<th>1/4”-18 NPT</th>
<th>1/4”-18 NPT Internal</th>
<th>1/4”-18 NPTF Dryseal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting Code</td>
<td>08</td>
<td>4D</td>
<td>02</td>
<td>0E</td>
<td>4C</td>
</tr>
<tr>
<td>Torque</td>
<td>2-3 TFFT*</td>
<td>2-3 TFFT*</td>
<td>2-3 TFFT*</td>
<td>2-3 TFFT*</td>
<td>2-3 TFFT*</td>
</tr>
</tbody>
</table>

**SAE J1926/2:7/16-20” Heavy Duty"**

<table>
<thead>
<tr>
<th>Dimensions in Inches</th>
<th>7/16”-20 UNF</th>
<th>7/16”-20 UNF with 37° Flare</th>
<th>SAE 4 Female 7/16” Schraeder</th>
<th>9/16-18&quot; Heavy Duty&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting Code</td>
<td>4N</td>
<td>1J</td>
<td>04</td>
<td>1G</td>
</tr>
<tr>
<td>Torque</td>
<td>18-20 NM</td>
<td>18-20 NM</td>
<td>15-16 NM</td>
<td>18-20 NM</td>
</tr>
</tbody>
</table>

### BSP & Metric

<table>
<thead>
<tr>
<th>Dimensions in MM</th>
<th>G1/4”-19 External</th>
<th>G1/4”-19 A Integral Face Seal</th>
<th>M12 x 1.5</th>
<th>M12x1.5 HP Metal Washer Seal</th>
<th>M14 x 1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting Code</td>
<td>01</td>
<td>05</td>
<td>OL</td>
<td>2T</td>
<td>OK</td>
</tr>
<tr>
<td>Torque</td>
<td>30-35NM</td>
<td>30-35 NM</td>
<td>28-30 NM</td>
<td>30-35 NM</td>
<td>2-3 TFFT*</td>
</tr>
</tbody>
</table>

*NPT Threads 2-3 turns from finger tight. Wrench tighten 2-3 turns.

**General Notes:**

1. The diameter of all cans is 19 mm (0.748”)
2. Hex is 22 mm (0.866”) Across Flats (A/F) for deep socket mounting.
### Electrical Connector

<table>
<thead>
<tr>
<th>Code R</th>
<th>Code E</th>
<th>Code 6</th>
<th>Code 8</th>
<th>Code G</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN #</td>
<td>Voltage Mode</td>
<td>Current Mode</td>
<td>Voltage Mode</td>
<td>Current Mode</td>
</tr>
<tr>
<td>1</td>
<td>$V_{\text{supply}}$</td>
<td>Supply</td>
<td>$V_{\text{supply}}$</td>
<td>Supply</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
<td>Return</td>
<td>$V_{\text{out}}$</td>
<td>No Connect</td>
</tr>
<tr>
<td>3</td>
<td>$V_{\text{out}}$</td>
<td>No Connect</td>
<td>Ground</td>
<td>Return</td>
</tr>
<tr>
<td>4</td>
<td>No Connect</td>
<td>No Connect</td>
<td>No Connect</td>
<td>No Connect</td>
</tr>
</tbody>
</table>

*This pin is used for temperature sensing output when this option is utilized. Otherwise, the pin is used for PE.*

### Current Output Mode (Load Resistor Range)

Minimum Resistor Value = 50-($+V - 24$) for $+V > 24V$

Maximum Resistor Value = 50-($+V - 8$) for $+V > 8V$
How to Order

Use the bold characters from the chart below to construct a product code

Series
31CS / 32CS - Pressure Transducer

Output
B - 4-20 mA
N - 0.5-4.5 V
T - 0.5-4.5 V Ratiometric

Pressure Range – psi
100PS - 0-100 psi
150PS - 0-150 psi
200PS - 0-200 psi
300PS - 0-300 psi
500PS - 0-500 psi
600PS - 0-600 psi
750PS - 0-750 psi

Pressure Range - bar
0007G - 0-7 bar
0010G - 0-10 bar
0016G - 0-16 bar
0025G - 0-25 bar
0040G - 0-40 bar
0060G - 0-60 bar
0100G - 0-100 bar

Notes:
1. For use with pull-up or pull-down resistors, contact factory.
2. Ranges 15,000 psi (1,000 bar) and above available with -2T pressure port only.
3. Pressure ports 0E and 1G are NOT available with the Restrictor option.
4. For electrical codes F & 3, specify cable length in meters.