

CS80

Intrinsically Safe Pressure Transducer

The CS80 pressure transducer is a high strength sensor designed for use in intrinsically safe areas. Approvals include CSA Class I, Division 1 Intrinsically Safe, Groups C, D (Class I, Zone 0 AEx ia IIB T4 Ga; Ex ia IIB T4 Ga) when used with an approved barrier. Groups A & B (Class I, Zone 0 AEx ia IIC T4 Ga; Ex ia IIC T4 Ga) approvals are available with millivolt output. All welded stainless steel construction and customizable configurations make the CS80 a versatile pressure transducer. The CS80 is an excellent solution for applications such as natural gas compression, oil exploration and Hydrogen compression and storage.



Features

- $\leq \pm 0.25\%$ BFSL accuracy
- Pressures from 50 PSI up to 30,000 PSI (See model CS81 for pressures below 50 PSI)
- One piece design
- Reverse polarity and EMI protection

Approvals:

- CSA Class I, Division 1, Groups C, D T4 (Groups A & B available with millivolt output only)
- Class I, Zone 0 AEx ia IIB T4 Ga (IIC available with millivolt output only)
- ANSI/UL 122701 Single Seal
- ABS (American Bureau of Shipping)

Applications

- Natural gas compression
- Oil exploration
- Hydrogen compression / storage
- Control panels

SPECIFICATIONS

Performance

Accuracy*	$\leq \pm 0.25\%$ BFSL
Stability (1 Year)	$\leq \pm 0.25\%$ of FS
Pressure Cycles	100 million
Overpressure	2X minimum
Burst Pressure	5X or 60,000 PSI, whichever is less

*Accuracy includes non-linearity, hysteresis and non-repeatability

Thermal

Operating Temperature	-40 to +80°C
Operating Temperature (Electrical connection "F", DIN 43650-A)	-20 to +80°C
Media Temperature	-40 to +125°C
Media Temperature (Electrical connection "F", DIN 43650-A)	-40 to +105°C
Storage Temperature	-40 to +125°C
Compensated Temperature	0 to +60°C
TC Zero	$\leq \pm 1\%$ FS
TC Span	$\leq \pm 1\%$ FS

Environmental

EMI/RFI Protection	Yes
IP Rating*	IP65 minimum
Vibration	10g, 20 to 2000Hz
Shock	100g, 11 msec, 1/2 sine

*IP rating is dependent on electrical termination selected.

Contact factory for more information.

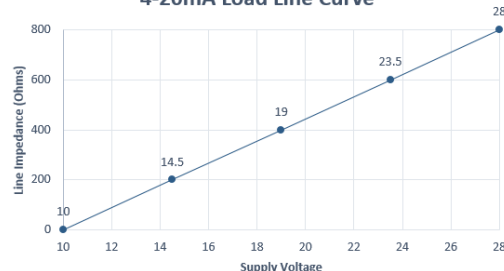
*IP rating applies when electrical connector is attached with the appropriate ingress protection.

Electrical

Output	4-20mA	1-5V, 1-6V	0.5-4.5V ratiometric	0.5-2.5V non-ratiometric	10 mV/V
Excitation	10-28VDC	10-28VDC	5VDC, +/-0.5V	3-5VDC, unregulated	5VDC, typical
Current Consumption	20mA, typical	<10mA	<10mA	≤ 3 mA	<5mA
Output Load	See page 2 for load line curve	5K Ohms, min	5K Ohms, min	5K Ohms, min	>1M Ohms
Frequency Response	~ 250 Hz	~ 1 kHz	~ 1 kHz	~ 1 kHz	~ 5 kHz
Zero Offset (of FS)	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 2\%$ max
Span Tolerance (of FS)	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 0.5\%$ typical $\leq \pm 1\%$ max	$\leq \pm 2\%$ max

For wiring information, visit <http://www.core-sensors.com/wiring>

4-20mA Load Line Curve

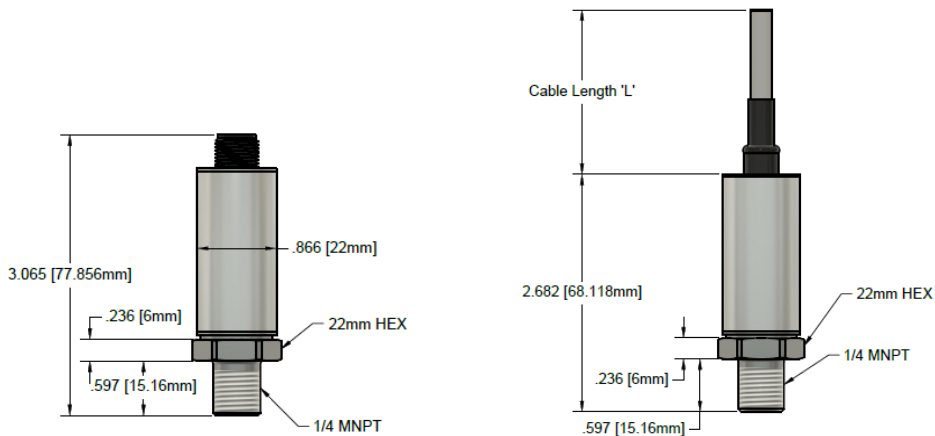


MODEL NUMBER CONFIGURATION

CS80- X X XXXXX X X X X XXX -XX	
Model Family CS80 - IS Pressure Transducer	Cable Length (Meters) 00 = No cable 01 = 1 meter 02 = 2 meters 03 = 3 meters
Process Connection 1 = 1/2" NPT Male 2 = 1/4" NPT Male 4 = 7/16-20 UNF Male 8 = F250C Female Autoclave ($\geq 10,000$ PSI) C = G1/4 Male, Form E	Options 000 = No Special Options
Wetted Material A = 316L SS B = 17-4PH C = Hastelloy C276 (special order item) D = Inconel 718 (special order item)	Electrical A = M12x1 B = Deutsch DT04-4P C = Packard 3-Pin D = Mini-DIN, Form C E = Deutsch DT04-3P F = DIN 43650, Form A L = Cable (See "Cable Length") Z = 1/2" Conduit w/ Cable Gland (See "Cable Length")
Pressure Range Insert 5-digit pressure code, max 30,000 PSI (i.e. 30000 = 30,000 PSI) Consult factory for pressures above 10,000 PSI	Output 1 = 1-5V 2 = 0.5-4.5V ratiometric 3 = 1-6V 4 = 4-20mA 8 = 0.5-2.5V non-ratiometric 9 = 10mV/V
Pressure Unit P = PSI B = Bar	
Pressure Reference G = Gauge V = Vacuum (Gauge) C = Vacuum (Sealed Gauge) S = Sealed Gauge	

* Ordering Example: CS80-2A00100PG1A000-00 (1/4" NPT Male, 316L SS, 0-100 PSI gauge, 1-5V, M12x1, Class I, Division 1 Intrinsically Safe)
 * Contact factory for custom configurations not shown

DIMENSIONS



*Dimensions are for reference only



We are committed to delivering the highest quality instrumentation on every order.

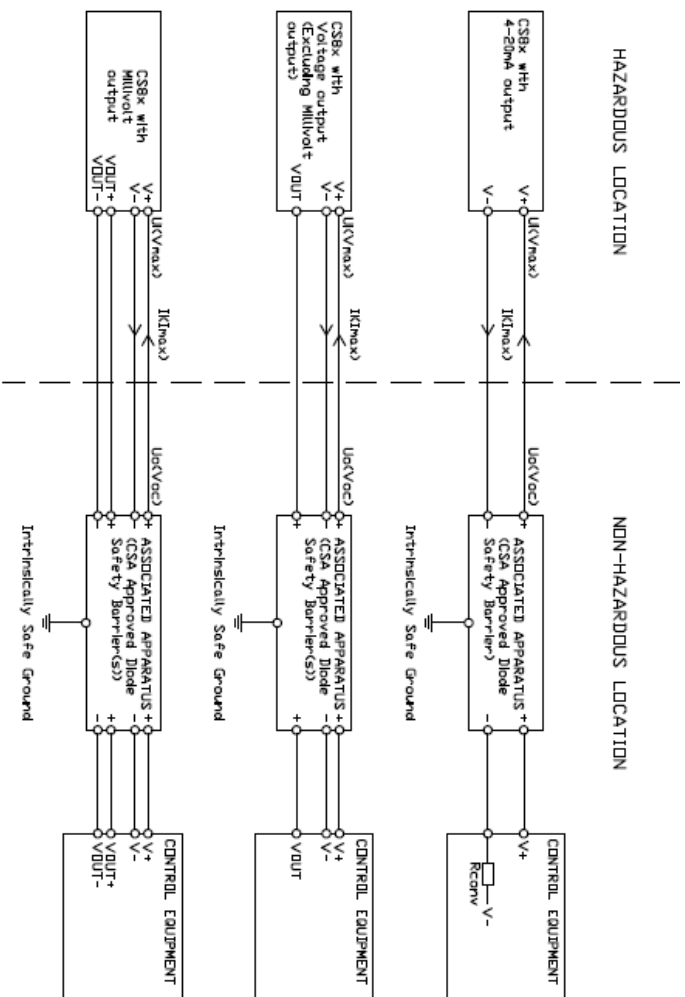
Core Sensors warrants that all items shipped will be free of defects in material and workmanship for a period of one (1) year from the date of shipment.

View complete warranty information online at www.core-sensors.com.



Caution must be taken when installing and operating the CS80 in known Class I, Division 1 hazardous locations. Please review the Intrinsically Safe Operating Instructions prior to installation. **Call Core Sensors at (862) 245-2673** if you are unsure about any of the instructions or to request a copy. Instruction manuals can also be found on the CS80 product web page.

ENTITY PARAMETERS



Applicable Markings for the Listed Models	IS Entity Parameters	Notes
Cl I Div 1, Grps C, D, 'Ex Ia' Cl I, Zn 0, AEx Ia IIB Model CS8x with 4-20mA or MilliVolt (regulated) Output	UI = 28V, II = 93mA, PI = 650mW, CI = 0.27uF, LI = 0 uH UI = 28V, II = 93mA, PI = 650mW, CI = 0.32uF, LI = 155 uH	with Integral Connector with Cable, up to 1000 ft
Cl I Div 1, Grps C, D, 'Ex Ia' Cl I, Zn 0, AEx Ia IIB Model CS8x with Voltage Output (Excludes 0-5V/ Ratiometric, MilliVolt)	UI = 28V, II = 93mA, PI = 650mW, CI = 0.543uF, LI = 0 uH UI = 28V, II = 93mA, PI = 650mW, CI = 0.549uF, LI = 23.30 uH	with Integral Connector with Cable, up to 150 ft
Cl I Div 1, Grps C, D, 'Ex Ia' Cl I, Zn 0, AEx Ia IIB Model CS8x with 0-5V Output	UI = 22 V II = 73mA, PI = 400mW, CI = 0.883uF, LI = 0 uH UI = 22V, II = 73mA, PI = 400mW, CI = 0.889uF, LI = 23.25 uH	with Integral Connector with Cable, up to 150 ft
Cl I Div 1, Grps C, D, 'Ex Ia' Cl I, Zn 0, AEx Ia IIB Model CS8x with Ratiometric Output	UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.258uF, LI = 0 uH UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.265uF, LI = 23.25 uH UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.265uF, LI = 23.25 uH	with Integral Connector with Cable, up to 150 ft
Cl I Div 1, Grps A, B, C, D, 'Ex Ia' Cl I, Zn 0, AEx Ia IIC Model CS8x with MilliVolt (unregulated) Output	UI = 28V, II = 93mA, PI = 650mW, CI = 0.004uF, LI = 0 uH UI = 28V, II = 93mA, PI = 650mW, CI = 0.01uF, LI = 23.25 uH	with Integral Connector with Cable, up to 150 ft

NOTE:

1. US installations must be in accordance with National Electrical Code (ANSI/NFPA 70, Article 504 and 505) and ANSI/ISA RP125 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations". Canadian installations must be in accordance with Canadian Electrical Code Part I.
2. Maximum non-hazardous location voltage supplied to the Associated Apparatus must not be more than 250 Vac or 250 Vdc.
3. Revisions to this drawing must be approved by CSA prior to release.
4. The Associated Apparatus must be a CSA certified barrier and must be installed according to the barrier's installation instructions.
5. The Associated Apparatus must meet all the following requirements:
 $U_o(Voc) \leq U_i(Vmax)$, $Isc(Io) \leq I_i(Imax)$, $P_o \leq P_i$, $CatCo \geq C_i + C_{cable}$, $LacLo \geq L_i + L_{cable}$
Special Condition of Safe Use: Potential
- 6.1. Under certain extreme circumstances, exposed plastic and unearthed metal parts of the enclosure of models CS8x may store an ignition capable of an electrostatic charge. Therefore, the user/installer shall implement provisions to prevent the buildup of electrostatic charge, i.e. locate the equipment where a charge-generating mechanism is unlikely to be present, and clean with a damp cloth.
- 6.2. Because the enclosure of CS8x is made from light metal, in rare cases, ignition sources due to impact and friction sparks could occur. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation and operation. Use care not to cause impacts or scrapes with other metal objects during installation.
- 6.3. The final user shall ensure appropriate earthing of the metallic accessories upon installation.
- 6.4. The end installation of the device in Hazardous area shall meet the requirements of CEC (for Canada) and NEC (for USA) for wiring method that is subject to acceptance of local authority having jurisdiction.
- 6.5. The equipment is for use under atmospheric conditions only, the permissible pressure range is 0.8 to 1.1 bar (80 to 110 kPa) and the permissible normal oxygen content is typically 21 %v/v.