

CS81

Intrinsically Safe Low Pressure Transducer

The CS81 pressure transducer is a high strength sensor designed for low pressure applications in intrinsically safe areas. Approvals include CSA Class I, Division 1 IS, Groups C, D T4 (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 CS81 a versatile pressure transducer. The CS81 is an excellent solution for low pressure measurements such as vapor recovery, external fuel tank monitoring and natural gas compression.



Features

- $\leq \pm 0.25\%$ BFSL accuracy
- Pressures from 2 PSI up to 50 PSI (See model CS80 for pressures above 50 PSI)
- Bi-directional pressures ranges available
- 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)
- ABS (American Bureau of Shipping)

Applications

- Natural gas compression
- Vapor recovery
- External fuel tank level monitoring
- Process control

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 245 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.

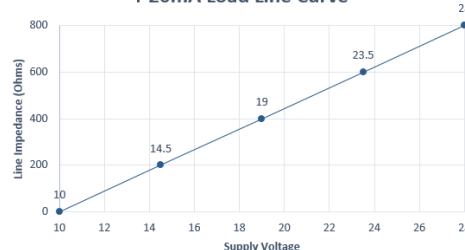
*IP rating applies when electrical connector is attached with the appropriate ingress protection.

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	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

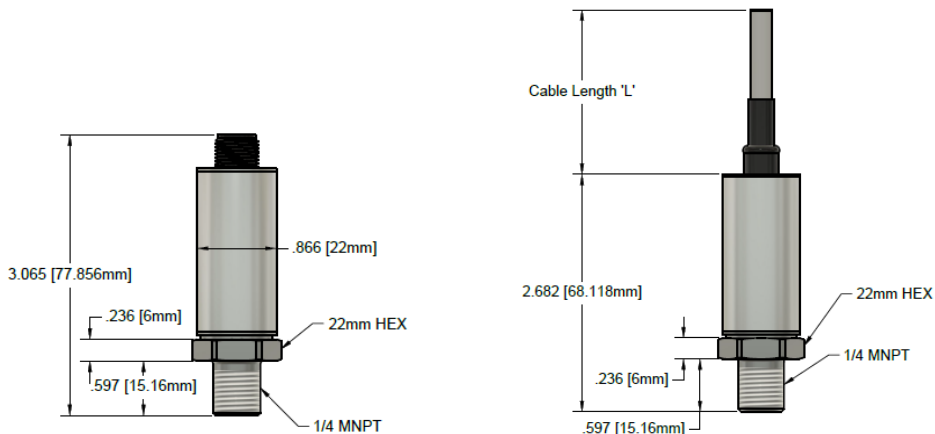


MODEL NUMBER CONFIGURATION

CS81- X X XXXXX X X X X XXX -XX	
Model Family CS81 - Low Pressure IS 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 C = G1/4 Male, Form E	Options 000 = No Special Options
Wetted Material A = 316L SS C = Hastelloy C276 (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 50 PSI (i.e. 00025 = 25 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 W = Inches of H2O	
Pressure Reference A = Absolute B = Bi-directional (Gauge) G = Gauge V = Vacuum (Gauge)	

* Ordering Example: CS81-2A00010PG4A000-00 (1/4" NPT Male, 316L SS, 0-10 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.

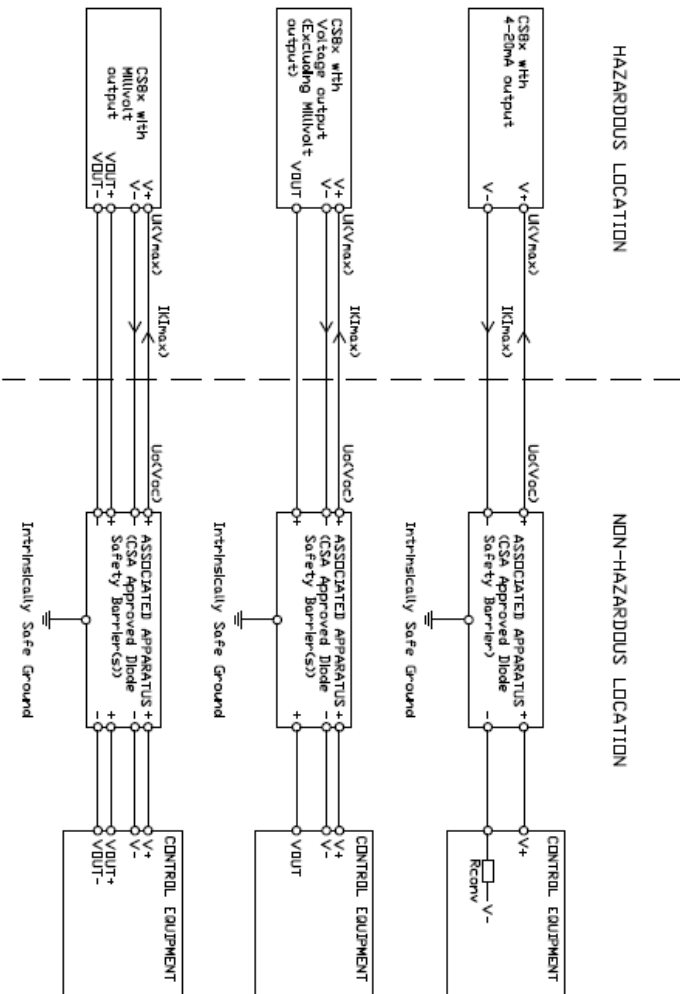
Core Sensors warrants that all items shipped will be free of defects in material and workmanship for a period of one (1) year from the date of shipment.

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



Caution must be taken when installing and operating the CS81 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 CS81 product web page.

ENTITY PARAMETERS



Applicable Markings for the Listed Models	IS Entity Parameters	Notes
CI I Div 1, Grps C, D, "Ex Ia" CI I, Zn 0, AEx Ia IIB Model CSBx 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
CI I Div 1, Grps C, D, "Ex Ia" CI I, Zn 0, AEx Ia IIB Model CSBx with Voltage Output (Excludes 0-xV, Ratiometric, Millivolt)	UI = 28V, II = 93mA, PI = 650mW, CI = 0.643uF, LI = 0 uH UI = 28V, II = 93mA, PI = 650mW, CI = 0.649uF, LI = 23.30 uH	with Integral Connector with Cable, up to 150 ft
CI I Div 1, Grps C, D, "Ex Ia" CI I, Zn 0, AEx Ia IIB Model CSBx with 0-xV Output	UI = 32 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
CI I Div 1, Grps C, D, "Ex Ia" CI I, Zn 0, AEx Ia IIB Model CSBx with Ratiometric Output	UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.258uF, LI = 0 uH UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.263uF, LI = 23.25 uH	with Integral Connector with Cable, up to 150 ft
CI I Div 1, Grps A, B, C, D, "Ex Ia" CI I, Zn 0, AEx Ia IIC Model CSBx 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:

- US Installations must be in accordance with National Electrical Code (ANSI/NFPA 70, Article 504 and 505) and ANSI/ISA RP12.6 'Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations'. Canadian Installations must be in accordance with Canadian Electrical Code Part I.
- Maximum non-hazardous location voltage supplied to the Associated Apparatus must not be more than 250 Vac or 250 Vdc.
- Revisions to this drawing must be approved by CSA prior to release.
- The Associated Apparatus must be a CSA certified barrier and must be installed according to the barrier's installation instructions.
- The Associated Apparatus must meet all the following requirements:
 The Associated Apparatus must meet all the following requirements:
 $Uo(Voc) \leq Uo(Vmax)$
 $Isc(Io) \leq Ilimax$
 $Po \leq Pi$
 $Ca(Co) \geq Ci + Ccable$
 $La(Lo) \geq Li + Lcable$
- Under certain extreme circumstances, exposed plastic and unearthed metal parts of the enclosure of models CSBx 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.
- Because the enclosure of CSBx 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. Use care not to cause impacts or scrapes with other metal objects during installation.
- The end user shall ensure appropriate earthing of the metallic accessories upon installation.
- The final 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.
- 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.