

CS84

Intrinsically Safe Differential Pressure Transducer

The CS84 differential pressure transducer is a high strength sensor designed for differential pressure measurements of liquids and gases in hazardous areas. The CS84 is certified to CSA Class I, Division 1, Groups C, D T4 (Class I, Zone 0 AEx ia IIB T4 Ga; Ex ia IIB T4 Ga) when used with an approved barrier. A 316L SS oil filled sensor element provides excellent stability over a wide operating temperature range while offering corrosion resistance against various liquids and gases. Differential pressure ranges up to 50 PSI are available with 1/4" MNPT or FNPT process connections.



Features

- $\leq \pm 0.4\%$ BFSL accuracy
- Differential pressures up to 50 PSI
- Max line pressure of 500 PSI
- 316L SS diaphragm / oil filled sensor element

Approvals

- CSA Class I, Division 1, Groups C, D T4
- Class I, Zone 0 AEx ia IIB T4 Ga; Ex ia IIB T4 Ga
- ABS (American Bureau of Shipping)

Applications

- Filtration
- Cryogenic bulk tank level measurement
- External fuel tank level measurement
- Compression systems
- Test Stands

SPECIFICATIONS

Performance

Accuracy*	$\leq \pm 0.4\%$ BFSL
Stability (1 Year)	$\leq \pm 0.25\%$ of FS
Pressure Cycles	4 million
Max Line Pressure**	500 PSI
Max Differential Pressure	50 PSI
Overpressure***	2X or 500 PSI, whichever is less, rated pressure
Burst Pressure***	3X rated pressure

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

** Max line pressure is the highest equal common mode pressure that can be applied to the sensor without damage.

*** Overpressure and burst pressure are the maximum differential pressure that can be applied to the high side or low side before damage to the sensor will occur.

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 +70°C
TC Zero	$\leq \pm 1.5\%$ FS
TC Span	$\leq \pm 1.5\%$ FS

Environmental

EMI/RFI Protection	Yes
IP Rating*	IP65 minimum
Vibration	20g, 20 to 5000Hz
Shock	100g, 11 msec, 1/2 sine

*IP rating is dependent on electrical termination selected. Contact factory for more information.

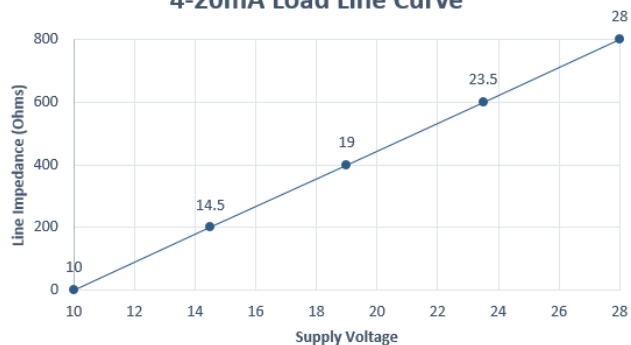
*IP rating applies when electrical connector is attached with the appropriate ingress protection.

Electrical

Output	4-20mA	1-5V, 1-6V	0.5-4.5V ratiometric	0.5-2.5V non-ratiometric
Excitation	10-28VDC	10-28VDC	5VDC, +/-0.5V	3-5VDC, unregulated
Current Consumption	20mA, typical	<10mA	<10mA	≤ 3 mA
Output Load	See load line curve	5K Ohms, min	5K Ohms, min	5K Ohms, min
Frequency Response	~ 250 Hz	~ 1 kHz	~ 1 kHz	~ 1 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
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

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

4-20mA Load Line Curve



MODEL NUMBER CONFIGURATION

CS84- X A XXXXX X D X X XXX -XX

Model Family

CS84 - C1/D1 Differential Transducer

Process Connection

A = 1/4" NPT Female

Z = 1/4" NPT Male

Wetted Material

A = 316L SS

Differential Pressure Range

Insert 5-digit pressure code, max 50 PSI
(i.e. 00050 = 50 PSI)

Pressure Unit

P = PSI

W = Inches H2O

Pressure Reference

D = Differential

Cable Length (Meters)

00 = No cable

01 = 1 meter

02 = 2 meters (standard)

03 = 3 meters

Options

000 = No Special Options

Electrical

A = M12x1

F = DIN 43650-A

D = Mini-DIN, Form C

L = Cable (See "Cable Length")

Z = 1/2" MNPT Conduit w/ cable gland
(See "Cable Length")

Output

1 = 1-5V

2 = 0.5-4.5V ratiometric

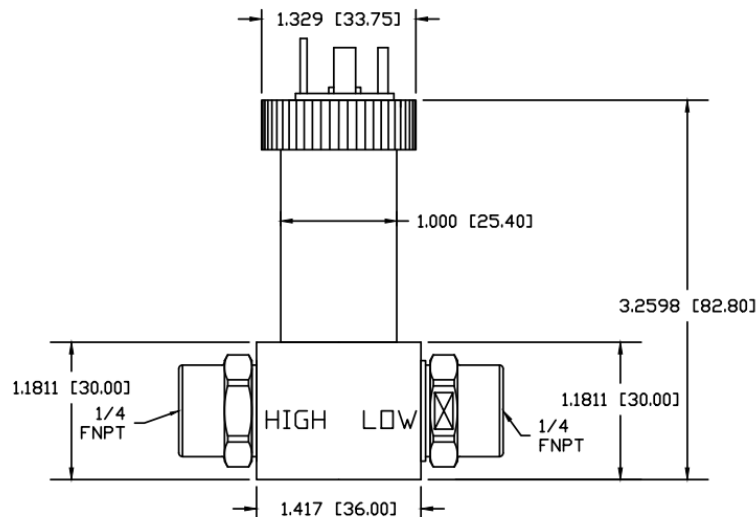
4 = 4-20mA

8 = 0.5-2.5V non-ratiometric

* Ordering Example: CS84-AA00100WD4F000-00 (1/4" NPT Female, 316L SS, 0-100 Inches H2O Differential, 4-20mA, DIN 43650, Form A, Class I, Division 1)

* 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.

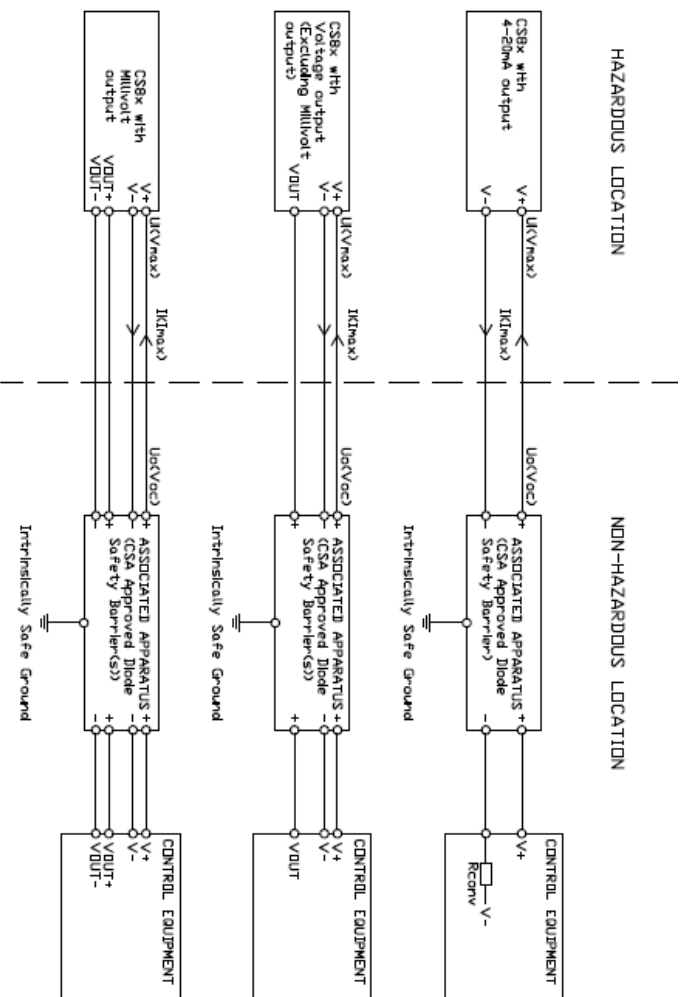
Core Sensors warrants that all items shipped will be free of defects in material and workmanship for a period of one (1) year from the date of shipment.

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



Caution must be taken when installing and operating the CS84 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. Operating instructions can also be found on the CS84 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 Electric 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.
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:
UL(Voc) \leq UL(Vmax) Isc(Lo) \leq Iik(Vmax) Po \leq Pi, CatCo) \geq C1 + C(cable) LatCo) \geq L1 + 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 end user shall ensure appropriate earthing of the metallic accessories upon installation.
- 6.4. 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.
- 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.