CS84

Intrinsically Safe Differential Pressure Transducer

FEATURES

- Differential pressures up to 50 PSI
- Line pressures up to 500 PSI
- Bi-directional pressure ranges available
- Wet/Wet

APPROVALS/CERTIFICATIONS

- 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)
- CE

*Note: Must use an approved barrier to maintain listed certifications.
See page 4 for entity parameters.

GREAT FOR....

- Filtration
- External fuel tank level measurement
- Compression systems

RoHS COMPLIANT

Assembled in USA

About the CS84

The **CS84 Intrinsically Safe Differential Pressure Transducer** is a high strength sensor designed for differential pressure measurements of liquids and gases in Class I, Division 1 Intrinsically Safe locations. The CS84 features an all welded stainless steel construction for a minimum IP65 rating. 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. A wide range of configurable options make the CS84 a versatile pressure transducer that can be designed to operate in some the harshest conditions.

Versatile Differential Pressure Measurement

The **CS84 Intrinsically Safe Differential Pressure Transducer** is the ideal solution for differential pressure measurement in hazardous applications such as filter condition monitoring, sealed tank level measurement, and flow measurement across an orifice.

The CS84 features a fully welded design without any internal O-rings or seals, **allowing for wet/wet, wet/dry, or dry/dry applications**.

Differential pressures are available as low as 1 PSID up to 50 PSID in both **uni-directional and bi-directional.**

Multiple electrical connections and outputs are available.

SPECIFICATIONS

Performance

Accuracy @ 25°C:*	≤ ± 0.25% BFSL ≤ ± 0.5% BFSL (2 PSI & below)
Stability (1 Year):	≤ ±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, configured differential pressure
Burst Pressure:***	3X configured differential pressure

** Accuracy includes non-linearity, hysteresis and non-repeatability*
*** Max line pressure is the highest 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 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
Compensated Temperature:	0 to +55°C
Storage Temperature:	-40 to +125°C
TC Zero:	≤ ± 1% of FS ≤ ± 2% of FS (2 PSI & below)
TC Span:	≤ ± 1% of FS ≤ ± 2% of FS (2 PSI & below)

Environmental

EMI/RFI Protection:	Yes
IP Rating:*	IP65 minimum
Vibration:	10g, 20 to 5000Hz
Shock:	100g, 11msec, 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 (Current)

Outputs:	4-20mA
Excitation:	10-28VDC
Current Consumption:	20mA, typical
Output Load:	0-800 Ohms @ 10-28VDC
Frequency Response (min):	~250Hz
Zero Offset (of FS):	≤ ± 0.5% typical ± 1% max
Span Tolerance (of FS):	≤ ± 0.5% typical ± 1% max

Electrical (Voltage)

Outputs:	1-5V 1-6V
Excitation:	10-28VDC
Current Consumption:	<10mA
Output Load:	5K Ohms, min
Frequency Response (min):	~1kHz
Zero Offset (of FS):	≤ ± 0.5% typical ± 1% max
Span Tolerance (of FS):	≤ ± 0.5% typical ± 1% max

Electrical (Ratiometric Voltage)

Outputs:	0.5-4.5V ratiometric
Excitation:	5VDC +/- 0.5V
Current Consumption:	<10mA
Output Load:	5K Ohms, min
Frequency Response (min):	~1kHz
Zero Offset (of FS):	≤ ± 0.5% typical ± 1% max
Span Tolerance (of FS):	≤ ± 0.5% typical ± 1% max

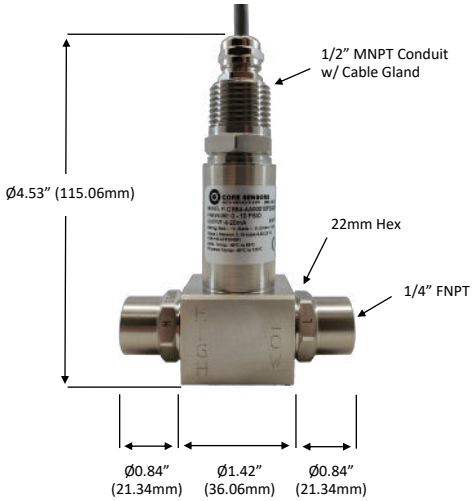
Electrical (Low Power Voltage)

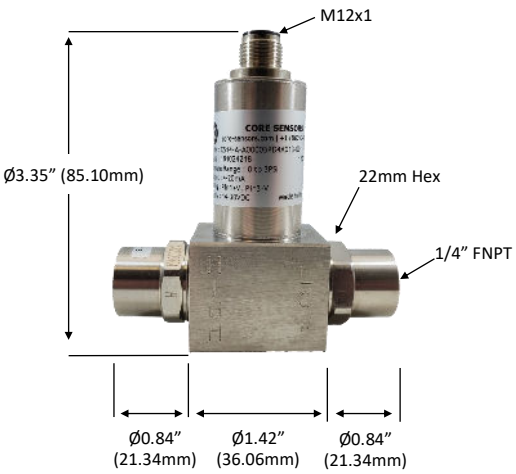
Outputs:	0.5-2.5V non-ratiometric
Excitation:	3-5VDC unregulated
Current Consumption:	≤ 3mA
Output Load:	5K Ohms, min
Frequency Response (min):	~1kHz
Zero Offset (of FS):	≤ ± 0.5% typical ± 1% max
Span Tolerance (of FS):	≤ ± 0.5% typical ± 1% max

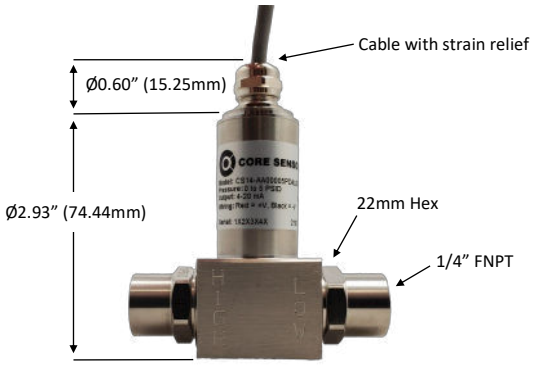
For wiring information, visit core-sensors.com/wiring

DIMENSIONS

*Dimensions are for reference only







MODEL NUMBER CONFIGURATION

CS84 - **X** **A** **XXXXX** **X** **X** **X** **X** **000** - **XX**

Wetted Material
A = 316L SS

Pressure Unit
P = PSI
W = Inches of H2O

Output
1 = 1-5V
2 = 0.5-4.5V ratiometric
4 = 4-20mA
8 = 0.5-2.5V non-ratiometric

Options
000 = No special options

Process Connection
A = 1/4" Female NPT
2 = 1/4" Male NPT

Differential Pressure Range
Insert 5-digit pressure code, max 50 PSI
i.e. 00050 = 50 PSID

Pressure Reference
D = Differential
B = Bi-directional

Electrical
A = M12x1
F = DIN 43650, Form A
D = Mini-DIN, Form C
L = Cable (See "Cable Length")
Z = 1/2" MNPT conduit w/ strain relief (See "Cable Length")

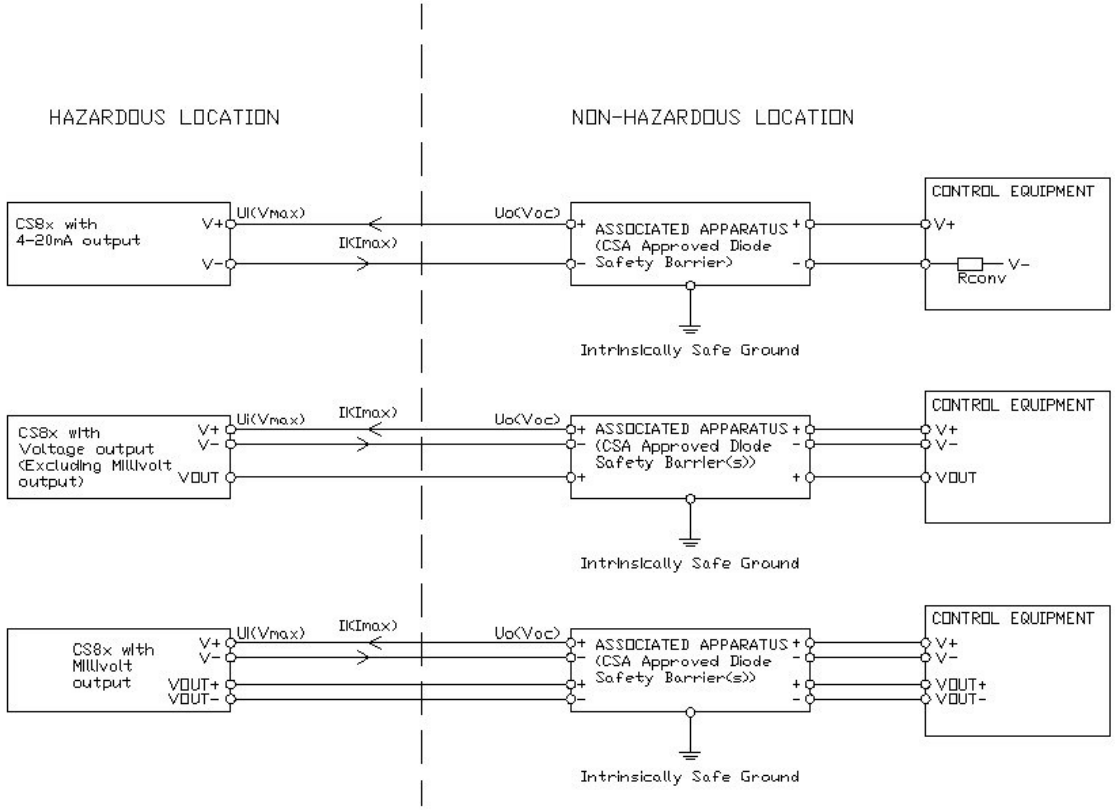
Cable Length (Meters)
00 = No cable
01 = 1 meter
02 = 2 meters
03 = 3 meters

Ordering Example: CS84-AA00010PD4A000-00 (1/4" Female NPT, 316L SS, 0-10 PSI differential, 4-20mA, M12x1)
Not all configurations are available. Our sales team can recommend the closest available configuration based on your requirements.
Contact Core Sensors for configurations not shown.
Visit our How To Buy page or contact us for a quote.

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 and Certificates of Compliance can be downloaded from the CS84 product web page at core-sensors.com.

Warranty information can be found online at core-sensors.com.

ENTITIY 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 Output	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.25uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.292uF, Li = 155 uH	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-xV, Ratiometric, Millvolt)	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.591uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.598uF, Li = 23.25 uH	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-xV Output	Ui = 22 V Ii = 73mA, Pi = 400mW, Ci = 0.811uF, Li = 0 uH	with Integral Connector
	Ui = 22V, Ii = 73mA, Pi = 400mW, Ci = 0.818uF, Li = 23.25 uH	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 or 0.5V - 2.5V Non-Ratiometric	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.239uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.245uF, Li = 23.25 uH	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 Millivolt (regulated) Output	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.357uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.364uF, Li = 23.25 uH	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 = 48pF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.007uF, Li = 23.25 uH	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 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:
   Uo(Voc) ≤ Ui(Vmax); Isc(Io) ≤ Ii(Imax); Po ≤ Pi; Ca(Co) ≥ Ci + Ccable; La(Lo) ≥ Li + Lcable
6. 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.