CORE SENSORS

CS82

Intrinsically Safe Submersible Pressure Transducer

The CS82 submersible pressure transducer is designed for liquid level measurements in intrinsically safe areas. Approvals include CSA Class I, Division 1 IS, Groups C, D (Class I, Zone 0 AEx ia IIB T4) when installed with an approved barrier. Stainless steel (316L and 304) construction and an Extruded ETFE cable jacket allows for installation in a wide variety of liquids. Precision welds and a high strength cable gland prevent liquids from entering the electronics. A wide diameter vent tube quickly equalizes the barometric pressure within the sensor body to ensure accurate level measurements. The CS82 is available in various output signals including 4-20mA loop powered for long distance transmissions and voltage outputs for low power and low current consumption applications.

Features

- ≤ ± 0.25% BFSL accuracy
- Pressures from 2 PSI up to 50 PSI
- Removable nose cone for threaded installation
- ETFE cable jacket for high corrosion resistance

Approvals

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

Applications

- Fuel tank level measurement
- Ballast tanks
- Depth measurement
- External fuel tank level monitoring
- Measurement in flood prone areas

SPECIFICATIONS

Performance

Accuracy*	≤ ±0.25% BFSL
Stability (1 Year)	≤ ±0.25% of FS
Pressure Cycles	100 million
Overpressure	2X minimum
Burst Pressure	5X or 250 PSI, whichever is less

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

Thermal

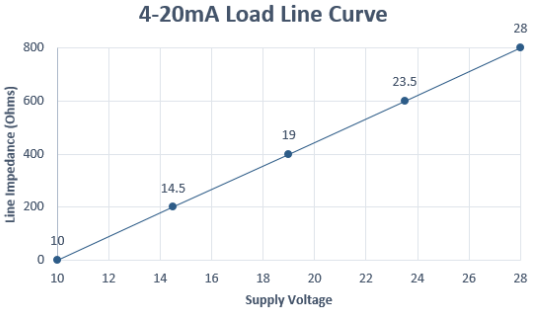
Operating Temperature	-40 to +80°C
Storage Temperature	-40 to +125°C
Compensated Temperature	0 to +55°C
TC Zero	≤ ±1% FS
TC Span	≤ ±1% FS

Environmental

EMI/RFI Protection	Yes
IP Rating	IP68
Vibration	10g, 20 to 2000Hz
Shock	100g, 11 msec, 1/2 sine

Electrical

Output	4-20mA	1-5V	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	≤3mA
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)	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max
Span Tolerance (of FS)	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max	≤ ±0.5% typical ≤ ±1% max



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

MODEL NUMBER CONFIGURATION

CS82- X A XXXXX X G X Z XXX -XX

Model Family
CS82 - Submersible IS Pressure Transducer

Process Connection
6 = Nose Cone
2 = 1/4" NPT Male

Wetted Material
A = 316L SS

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

Pressure Unit
P = PSI
B = Bar
W = Inches H2O

Pressure Reference
G = Gauge

Cable Length (Meters)
05 = 5 meters
10 = 10 meters
16 = 16 meters
20 = 20 meters
32 = 32 meters

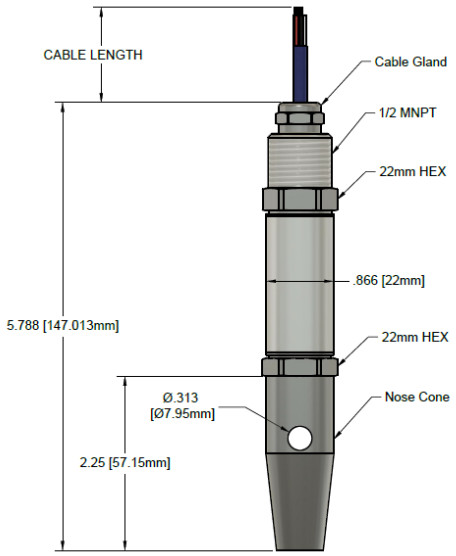
Options
000 = No Special Options

Electrical
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: CS82-6A00100WG4Z000-10 (Nose Cone, 316L SS, 0-10 Inches H2O, 4-20mA, Conduit w/ cable gland, 10 meters, C1/D1 IS)
* Contact factory for custom configurations not shown

DIMENSIONS



*Dimensions are for reference only

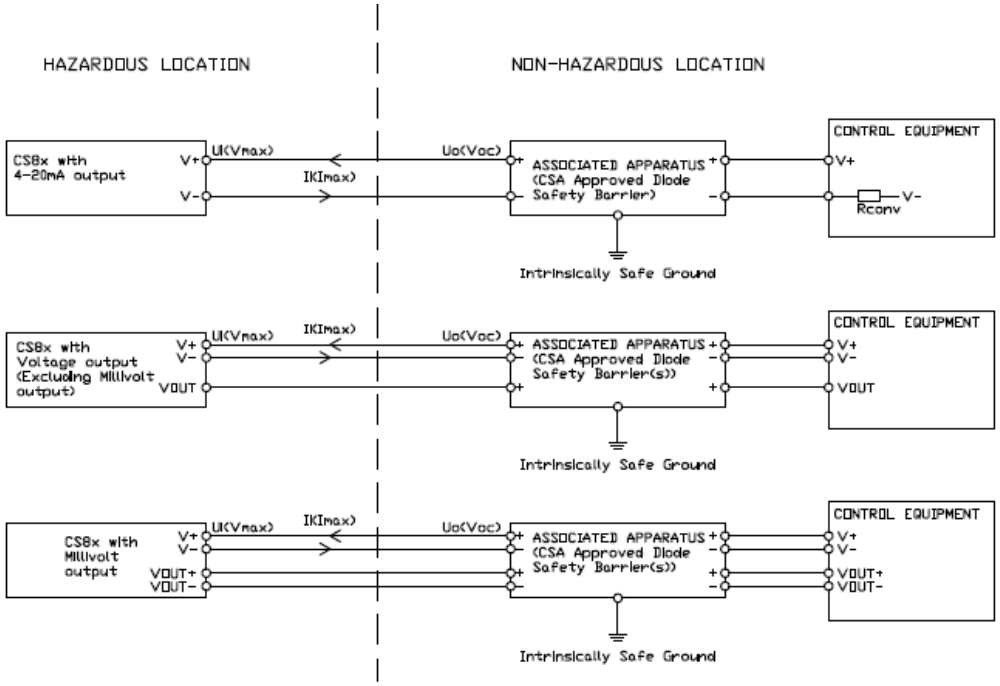
We are committed to delivering the highest quality instrumentation on every order.

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 CS82 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 CS82 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	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.32uF, 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 = 0.643uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.649uF, Li = 23.30 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 = 0.883uF, Li = 0 uH	with Integral Connector
	Ui = 22V, Ii = 73mA, Pi = 400mW, Ci = 0.889uF, 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	Ui = 4.94V, Ii = 504mA, Pi = 620mW, Ci = 0.258uF, Li = 0 uH	with Integral Connector
	Ui = 4.94V, Ii = 504mA, Pi = 620mW, Ci = 0.265uF, 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 = 0.004uF, Li = 0 uH	with Integral Connector
	Ui = 28V, Ii = 93mA, Pi = 650mW, Ci = 0.01uF, 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.