

# CS81

## Intrinsically Safe Low Pressure Transducer



The CS81 pressure transducer is a high strength sensor designed for low pressure measurements in intrinsically safe areas. The CS81 features an all welded stainless steel construction for a minimum IP65 rating. A wide range of configurable options makes the CS81 a versatile pressure transducer that can be configured to operate in some of the harshest conditions. Low power outputs are available which can operate off of 3-5VDC of unregulated power to extend battery life in remote applications. The CS81 is an excellent solution for applications such as external fuel tank monitoring, vapor recovery and natural gas compression.

### FEATURES

- Pressures from 1 PSI up to 49 PSI  
(See model CS80 for pressures 50 PSI and above)
- Bi-directional pressure ranges available
- Media isolated
- Reverse polarity and EMI protection

### APPLICATIONS

- External fuel tank monitoring
- Vapor recovery
- Process controls

### 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)
- CSA Class I, Division 1 Groups A, B, C, D T4 (millivolt only)  
Class I, Zone 0 AEx ia IIC T4 Ga (Ex ia IIC T4 Ga) (millivolt only)
- ABS (American Bureau of Shipping)
- CE

NOTE: Must use an approved barrier to maintain listed certifications. View [page 3](#) of this datasheet for entry parameters.

www.core-sensors.com - (862) 245-2673

## SPECIFICATIONS

### Performance @ 25°C

Accuracy*	≤ ±0.25% BFSL ≤ ±0.5% BFSL (2 PSI & below)
Stability (1 Year)	≤ ±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
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

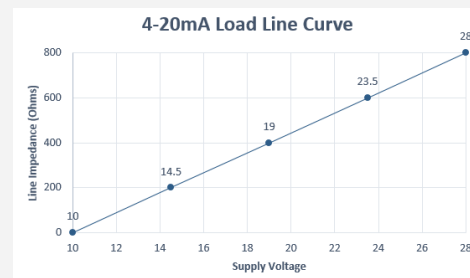
EMI/RFI Protection	Yes
IP Rating*	IP65 minimum
Vibration	10g, 20 to 2000Hz
Shock	100g, 11msec, 1/2 sine

\* 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

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



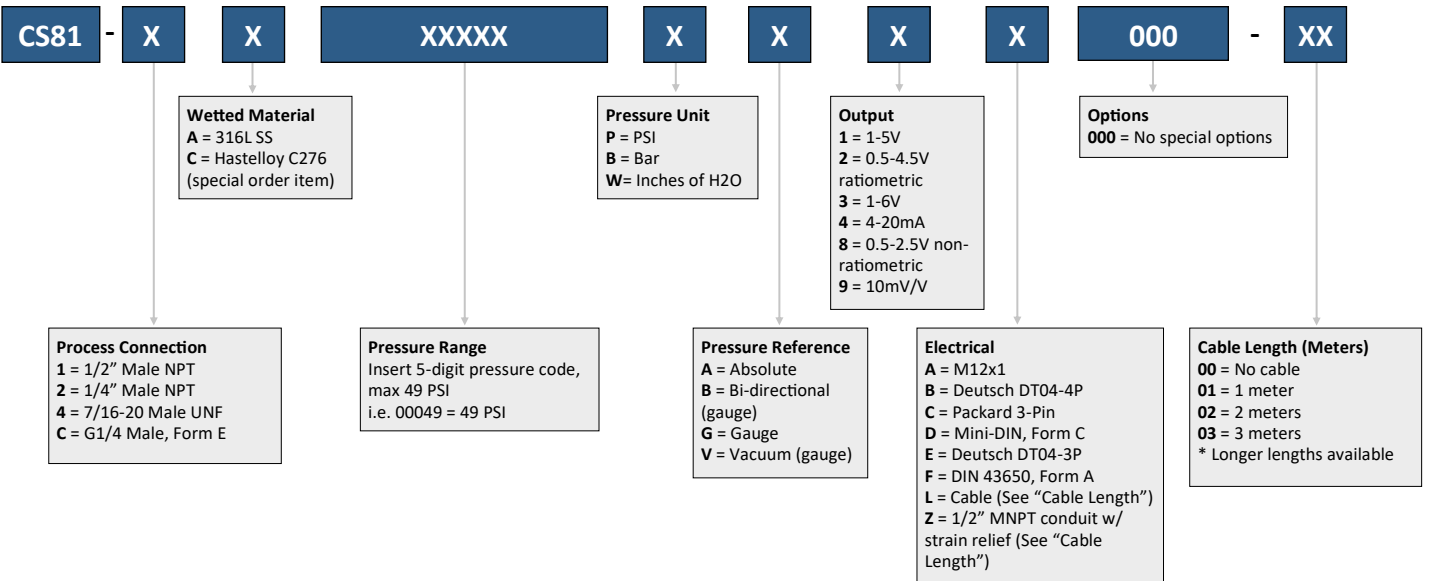
For wiring information, visit <https://www.core-sensors.com/wiring>

# DIMENSIONS



\*Dimensions are for reference only

# MODEL NUMBER CONFIGURATION



Ordering Example: CS81-2A00010PG4D000-00 (1/4" Male NPT, 316L SS, 0-10 PSI gauge, 4-20mA, Mini-DIN Form C)  
 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.

Warranty information can be found online at [www.core-sensors.com](http://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 and Certificates of Compliance can be downloaded from the CS81 product web page at [www.core-sensors.com](http://www.core-sensors.com).

# ENTITY PARAMETERS

HAZARDOUS LOCATION	NON-HAZARDOUS LOCATION	Applicable Markings for the Listed Models	IS Entity Parameters	Notes
		<p>CI I Div 1, Grps C, D, *Ex Ia*</p> <p>CI I, Zn 0, AEx Ia IIB</p> <p>Model CSBx with 4-20mA or Millivolt (regulated) Output</p>	<p>UI = 28V, II = 93mA, PI = 650mW, CI = 0.27uF, LI = 0 uH</p> <p>UI = 28V, II = 93mA, PI = 650mW, CI = 0.32uF, LI = 155 uH</p>	<p>with Integral Connector</p> <p>with Cable, up to 1000 ft</p>
		<p>CI I Div 1, Grps C, D, *Ex Ia*</p> <p>CI I, Zn 0, AEx Ia IIB</p> <p>Model CSBx with Voltage Output (Excludes 0-xV, Ratiometric, Millivolt)</p>	<p>UI = 28V, II = 93mA, PI = 650mW, CI = 0.649uF, LI = 2330 uH</p> <p>UI = 22 V, II = 73mA, PI = 400mW, CI = 0.883uF, LI = 0 uH</p>	<p>with Cable, up to 150 ft</p> <p>with Integral Connector</p>
		<p>CI I Div 1, Grps A, B, C, D, *Ex Ia*</p> <p>*Ex Ia*</p> <p>CI I, Zn 0, AEx Ia IIC</p> <p>Model CSBx with Millivolt (unregulated) Output</p>	<p>UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.258uF, LI = 0 uH</p> <p>UI = 4.94V, II = 504mA, PI = 620mW, CI = 0.263uF, LI = 2325 uH</p> <p>UI = 28V, II = 93mA, PI = 650mW, CI = 0.004uF, LI = 0 uH</p> <p>UI = 28V, II = 93mA, PI = 650mW, CI = 0.01uF, LI = 2325 uH</p>	<p>with Cable, up to 150 ft</p> <p>with Integral Connector</p> <p>with Cable, up to 150 ft</p>

## NOTE:

- US Installations must be in accordance with National Electrical Code (ANSI/NFPA 70, Article 504 and 505) and ANSI/TIA 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 Vdc 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:  
 5.1. The Associated Apparatus must be a CSA certified barrier and must be installed according to the barrier's installation instructions.  
 5.2. The Associated Apparatus must meet all the following requirements:  
 5.2.1.  $U(Voc) \leq U(Vmax)$ ,  $Isc(Io) \leq I(Ikmax)$ ,  $Po \leq Pi$ ,  $Ca(Co) \geq Ci + Ccable$ ,  $La(Lo) \geq Li + Lcable$   
 5.2.2. Under certain extreme circumstances, exposed plastic and unearthened 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.  
 5.2.3. 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. This shall be considered during installation and operation. Use care not to cause impacts or scrapes with other metal objects during installation.  
 5.2.4. The final user shall ensure appropriate earthing of the metallic accessories upon installation.  
 5.2.5. 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.