

### CLASS I, DIVISION 1 “Ex ia” INTRINSICALLY SAFE PRESSURE TRANSDUCER

CS80 - CS81 - CS82 - CS84



#### APPLICABLE STANDARDS:

CAN/CSA C22.2 No. 61010-1-12  
 CAN/CSA 60079-0:15 Ed. 6  
 CAN/CSA 60079-11:14 Ed. 6  
 ANSI/UL 61010-1 (3rd Edition)  
 ANSI/UL 60079-0:13 Ed. 6  
 ANSI/UL 60079-11:13 Ed. 6  
 ANSI/UL 122701 Ed. 3rd

#### All Outputs Excluding Millivolt (unregulated) & DIN 43650A:

Class I, Division 1, Groups C,D T4, Ex ia  
 Ex ia IIB T4 Ga  
 Class I, Zone 0, AEx ia IIB T4 Ga  
 Ambient Temp: -40 to +80°C  
 Process Temp: -40 to +125°C

#### All Outputs with DIN 43650A Only (Excluding Millivolt (unregulated))

Class I, Division 1, Groups C,D T4, Ex ia  
 Ex ia IIB T4 Ga  
 Class I, Zone 0, AEx ia IIB T4 Ga  
 Ambient Temp: -20 to +80°C  
 Process Temp: -40 to +105°C

#### Millivolt (unregulated) Only, Excludes DIN 43650A:

Class I, Division 1, Groups A,B,C,D T4, Ex ia  
 Ex ia IIC T4 Ga  
 Class I, Zone 0, AEx ia IIC T4 Ga  
 Ambient Temp: -40 to +80°C  
 Process Temp: -40 to +125°C

#### Millivolt (unregulated) with DIN 43650A Only

Class I, Division 1, Groups A,B,C,D T4, Ex ia  
 Ex ia IIC T4 Ga  
 Class I, Zone 0 AEx ia IIC T4 Ga  
 Ambient Temp: -20 to +80°C  
 Process Temp: -40 to +105°C



## WARNING! READ BEFORE INSTALLATION!



Caution must be taken when installing and operating the CS80, CS81, CS82 and CS84 in known Class I, Division 1, Groups A,B,C,D hazardous locations. Any mis-use or improper installation may impair the equipment's intended use and/or protection ratings.

Thoroughly read and understand the following instructions prior to installation.

Please call Core Sensors at (862) 245-2673 if you are unsure about any of the following precautions or instructions.

## WARNING INSTRUCTIONS



**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**ELECTROSTATIC DISCHARGE (ESD) Precaution** indicates user should take proper grounding precautions to prevent any potential damages from ESD.

## ELECTRICAL INSTALLATION (Installation électrique)



To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

**AVERTISSEMENT** - Pour éviter l'inflammation des atmosphères inflammables ou combustibles, débranchez l'alimentation avant de procéder à l'entretien.



Suitable for use in Class I, Division 1, Groups A (millivolt unregulated only), B (millivolt unregulated only), C, D, hazardous locations and non-hazardous locations only.

**AVERTISSEMENT** - Convient pour une utilisation en Classe I, Division 1, Groupes A (millivolt non églementé seulement), B (millivolt non églementé seulement)), emplacements dangereux C et D et emplacements non dangereux seulement.



The enclosure contains light metal. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation.

**AVERTISSEMENT** - L'enceinte est fabriquée en métal léger. Dans de rares cas, des sources d'inflammation dues à des chocs et à des étincelles de frottement peuvent se produire. Cela doit être pris en compte lors de l'installation.



Potential Electrostatic discharge hazard— See Special Conditions for Safe Use

**AVERTISSEMENT** - Risque potentiel de décharge électrostatique—Voir condition spéciale pour une utilisation sûre

## BARRIER INSTALLATION

Please contact factory to request a free copy of the Intrinsically Safe Installation drawing or visit [core-sensors.com](http://core-sensors.com) for a downloadable copy.

## SPECIAL CONDITIONS FOR SAFE USE

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.
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.
3. The end user shall ensure appropriate earthing of the metallic accessories upon installation.
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.
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.

## ENVIRONMENTAL RATINGS (61010-1)

Pollution Degree	3
Overvoltage Category	II
Maximum Use Altitude	2000m above sea level

## MOUNTING

The CS80 can be mounted in any orientation with negligible effects on the output.

The CS81, CS82, CS84 should be mounted with the process connection side facing down when possible. This is the orientation used during calibration. Low pressure transducers feature an oil-filled diaphragm which will cause changes in the output when the orientation is changed.

No special hardware or mounting plates are required.

## PROCESS CONNECTION INSTALLATION

For NPT threaded installations, Teflon tape or an equivalent sealant must be applied to the threads prior to installation.

Proper sealing elements such as O-rings must be installed prior to installation for non self-sealing threads, e.g. SAE. Chemical compatibility between the sealing element and media being measured must be confirmed prior to use.

The CS82 submersible style sensor may be lowered into the tank or measuring location without any modifications to the process connection. If the CS82 is being used externally to a tank or in a flood prone area where threaded installation is required, remove the nose cone to expose 1/4" MNPT threads. Apply the appropriate Teflon tape or equivalent sealant and install.

When tightening, use a wrench around the 22mm hex located above the process connection threads. **DO NOT** use the housing or electrical end of the sensor to tighten. See figure 1 below for the proper tightening location.

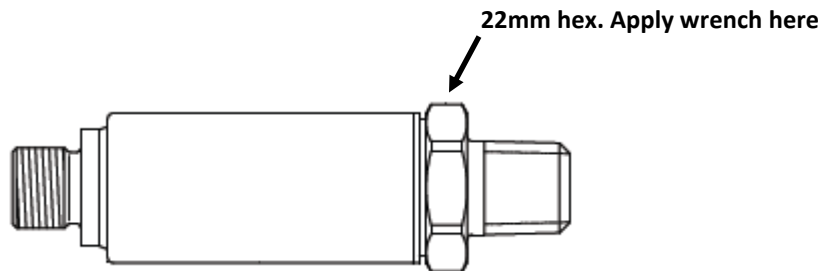


Figure 1

## MAINTENANCE/CLEANING

To prevent any unnecessary down-time and maximize the life-span of the pressure sensor:

- Ensure contacts of the electrical connections are dry and free from foreign debris. Use a dry cloth to wipe down the electrical contacts.
- Ensure pressure port is free from debris as any clogged debris can effect the accuracy of the readings. Rinse the pressure port with generic 70/30 water/alcohol mixture. Do not insert any probe, such as a screwdriver or even a cotton swab, into the pressure port as it may cause permanent damage to the pressure sensing elements.
- Inspect pressure sensor for any physical damage. If any is detected, discontinue use and contact factory.
- The CS8X has no field serviceable parts. Please contact factory if service is required.

## WIRING GUIDES

To avoid ignition of flammable or combustible atmospheres, ensure the following precautions are taken prior to and during the wiring process:

- Follow the proper ESD control procedures prior to handling the pressure transducer.
- Before making any electrical connections, ground the body of the pressure transducer.
- When uninstalling the pressure transducer, disconnect the ground last.
- Ensure that the wiring specifications conforms to local electrical code and has a temperature rating greater than 80°C.
- For pin identification, please refer to Wiring at Core-Sensors.com

### DIN 43650, FORM A

Electrical connection option “F”

Output	Pin 1	Pin 2	Pin 3	Wide Pin
Voltage (3-wire)	+V	Ground	Signal	Case
4-20mA (2-wire)	+V	-V	Case	N/A

### DEUTSCH DT04-3P

Electrical connection option “E”

Output	Pin A	Pin B	Pin C
4-20mA (2-wire)	+V	-V	Case

### MINI-DIN, FORM C

Electrical connection option “D”

Output	Pin 1	Pin 2	Pin 3	Wide Pin
Voltage (3-wire)	Signal	Ground	+V	Case
4-20mA (2-wire)	N/A	-V	+V	Case

### DEUTSCH DT04-4P

Electrical connection option “B”

Output	Pin 1	Pin 2	Pin 3	Pin 4
Voltage (3-wire)	+V	Ground	Signal	Case
4-20mA (2-wire)	+V	-V	N/A	Case

### M12X1 EUROFAST

Electrical connection option “A”

Output	Pin 1	Pin 2	Pin 3	Pin 4
Voltage (3-wire)	+V	Case	Ground	Signal
4-20mA (2-wire)	+V	Case	-V	N/A

### CABLE

Electrical connection option “L,P,Z”

Output	Red	Black	Green	White	Drain
mV (4-wire)	+V	Ground	+Signal	-Signal	Case
Voltage (3-wire)	+V	Ground	Case	Signal	N/A
4-20mA (2-wire)	+V	-V	Case	N/A	N/A

### PACKARD METRIPACK 150

Electrical connection option “C”

Output	Pin A	Pin B	Pin C
4-20mA (2-wire)	-V	+V	Case

### TURCK® MINI-FAST®

Electrical connection option “H”

Output	Pin 1	Pin 2	Pin 3	Pin 4
Voltage (3-wire)	Signal	+V	Case	Ground
4-20mA (2-wire)	-V	+V	N/A	Case

## TURCK® LOKFAST® M12

Electrical connection option “Y”

Output	Pin 1	Pin 2	Pin 3	Pin 4
Voltage (3-wire)	+V	Case	Ground	Signal
4-20mA (2-wire)	+V	Case	-V	N/A

## 6-PIN BENDIX

Electrical connection option “G”

Output	Pin A	Pin B	Pin C	Pin D	Pin E	Pin F
mV (4-wire)	+V	+Signal	-Signal	Ground	N/A	Case
Voltage (3-wire)	+V	Signal	N/A	Ground	N/A	Case
4-20mA (2-wire)	+V	-V	N/A	N/A	N/A	Case