

31CS Series and 32CS Heavy Duty Series CSA Intrinsically Safe Industrial Pressure Transmitters

For OEMs that need Intrinsically Safe pressure sensors with consistent high levels of performance, reliability and stability, the 31/32CS Series sputtered thin film units offer an unbeatable price performance ratio in a small package size. They feature all stainless steel wetted parts, a broad selection of electrical and pressure connections and a wide choice of electrical outputs.

Our manufacturing process includes the latest automated equipment, producing consistent sensor performance.

Additionally the 32CS Series transmitters feature a thicker diaphragm and a pressure restrictor to withstand the rigors of cavitation or extreme pressure spikes, delivering years of reliable and stable performance in pulsating applications.

The compact construction of both these series makes them ideal for installation where space is at a premium.

These transmitters are also fully RoHS compliant.

Specifications

Performance	
Long Term Drift	0.2% FS/YR (non-cumulative)
Accuracy	0.25% FS
Thermal Error	
31CS	±1.5% max, ±1% typical / 212°F (100°C)
32CS	±2% max
Compensated Temperatures	-4°F to +176°F (-20°C to +80°C)
Operating Temperatures	-40°F to +176°F (-40°C to +80°C)
Zero Tolerance, Max.	0.5% of span
Span Tolerance, Max.	0.5% of span
Fatigue Life	Designed for more than 100 M cycles
Mechanical Configuration	
Pressure Port	See under "How to Order," last page
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See under "How to Order," last page
Enclosure	IP67 (IP65 for electrical code G)
Vibration	BSEN 60068-2-6 (FC) Sine (20G) BSEN 60068-2-64 (FH) Random (14.1 Grms)
Shock	BSEN 60068-2-27 (Ea) (50G, 11ms)
Approvals	CSA Certified Intrinsically Safe for use in: Class I, Division 1, Groups C and D Class I, Zone 0 Ex ia IIB T4 Ga Class I, Zone 0 AEx ia IIB T4 Ga When used in conjunction with a Zener safety barrier
Weight	1.8 to 5.3 ounces (50-150 grams). Configuration dependant

EMC Specifications

Emissions Tests: EN61326-1:2006 and EN61326-2-3:2006	
EN55011:2007	Radiated Emissions: 30-230MHz 30dB µV/M @10M 230-1000MHz 37dB µV/M @10M
Immunity Tests: EN61326-1:2006 and EN61326-2-3:2006	
EN61000-4-2:2009	Electrostatic Discharge: ±4Kv contact ±8Kv air
EN61000-4-3:2006	Radiated Immunity: 10V/M 80-1000MHz 3V/M 1400-2000MHz 1V/M 2000-2700MHz
EN61000-4-4:2004	Fast Transients: ±0.25, 0.5, 1Kv
EN61000-4-6:2007	Conducted Immunity: 3V 0.15 to 80MHz 80% 1KHz modulation



Individual Specifications

Voltage	
Output (3-wire)	0V min. to 10V max. See under "How to Order," last page
Supply Voltage	1 Volt above full scale with minimum supply of 8V; maximum 30V @ 4.5 mA
Source and Sinks	2 mA
Current	
Output (2-wire)	4-20 mA
Supply Voltage	8-24 Volts measured at the input to the transducer terminals
Maximum Loop Resistance	(Supply Voltage - 8) x 50ohms See Graph
Ratiometric	
Output	0.5 to 4.5V (Source and sink 2mA)
Supply Voltage	5 Vdc ±10% @ 4.5mA

Pressure Capability

Pressure Range PSI (Bar)	Proof Pressure (x Full Scale)		Burst Pressure (x Full Scale)	
	31CS	32CS	31CS	32CS
100-300 (7-20)	3.00 x FS	3.00 x FS	40 x FS	
500-1,500 (40-100)	2.00 x FS		20 x FS	
2,000-6,000 (140-400)			10 x FS	
10,000 (700)	1.40 x FS	2.50 x FS	> 60,000 PSI (4,000 bar)	
15,000 (1,000)		1.70 x FS		
25,000 (1,800)		—		
30,000 (2,200)				

Pressure Ports

SAE

	1/8"-27 NPT	1/8"-27 NPTF Dryseal	1/4"-18 NPT	1/4"-18 NPT Internal	1/4"-18 NPTF Dryseal
Dimensions in Inches					
Fitting Code	08	4D	02	0E	4C
Torque	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*	2-3 TFFT*

	SAE J1926/2:3/8-24 w/O-Ring	7/16"-20 UNF w/O-Ring	7/16"-20 UNF with 37° Flare	SAE 4 Female 7/16" Schraeder	9/16-18 "Heavy Duty" w/O-Ring
Dimensions in Inches					
Fitting Code	4N	1J	04	1G	1P
Torque	18-20 NM	18-20 NM	15-16 NM	18-20 NM	18-20 NM

BSP & Metric

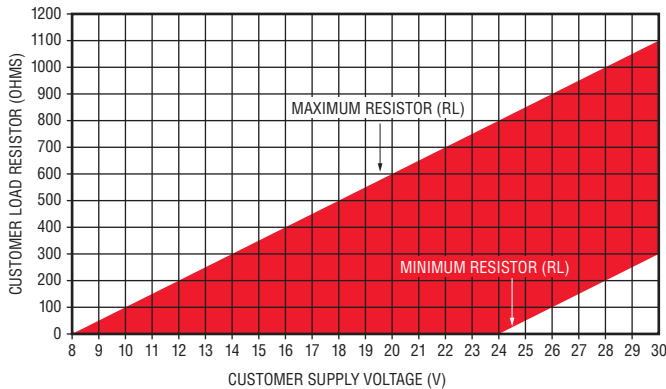
	G1/4"-19 External w/O-Ring	G1/4"-19 A Integral Face Seal	M12 x 1.5 w/O-Ring	M12x1.5 HP Metal Washer Seal	M14 x 1.5 w/O-Ring
Dimensions in MM					
Fitting Code	01	05	0L	2T	0K
Torque	30-35NM	30-35 NM	28-30 NM	30-35 NM	2-3 TFFT*

PRESSURE TRANSDUCERS

Electrical Connector

DIN 9.4 mm		M12 x 1P		Amp Superseal 1.5		Deutsch DT04-4P		DIN 43650A		
Code R		Code E		Code 6		Code 8		Code G		
Pin #	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode
1	V _{supply}	Supply	V _{supply}	Supply	V _{out}	No Connect	Ground	Return	V _{supply}	Supply
2	Ground	Return	V _{out}	No Connect	Ground	Return	V _{supply}	Supply	Ground	Return
3	V _{out}	No Connect	Ground	Return	V _{supply}	Supply	No Connect	No Connect	V _{out}	No Connect
4	No Connect	No Connect	No Connect	No Connect	—	—	V _{out}	No Connect	No Connect	No Connect

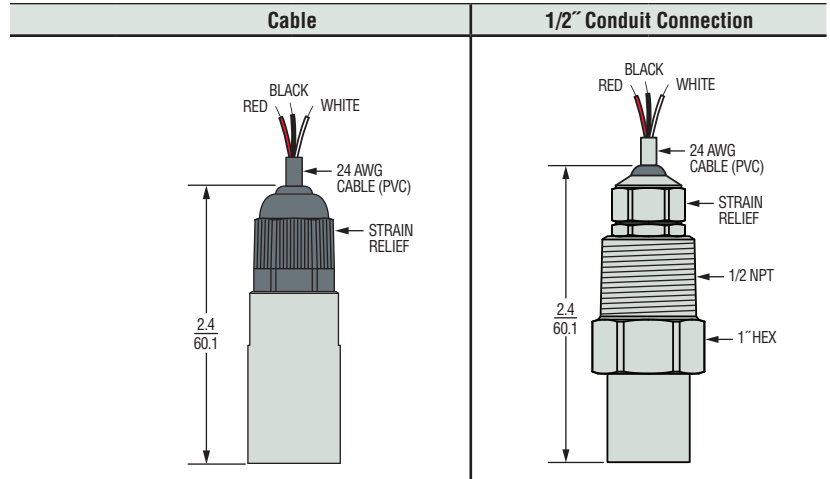
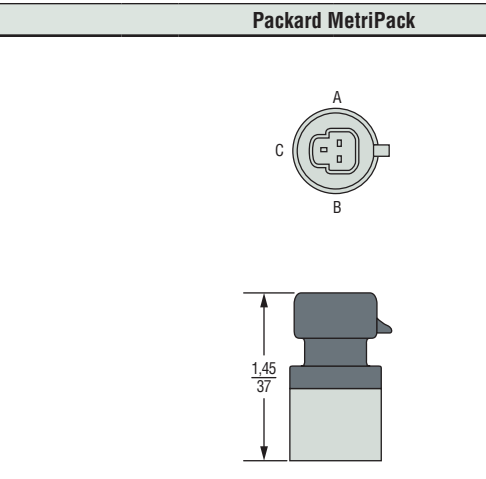
Current Output Mode (Load Resistor Range)



Minimum Resistor Value = $50 \cdot (+V - 24)$ for $+V > 24V$
 Maximum Resistor Value = $50 \cdot (+V - 8)$ for $+V > 8V$

PRESSURE TRANSDUCERS

Cable-Out Types



Code 9		
Pin ID	Voltage Mode	Current Mode
C	V _{out}	No Connect
A	Ground	Return
B	V _{supply}	Supply
—	—	—

Code F			Code 3	
Wire Color	Voltage Mode	Current Mode	Voltage Mode	Current Mode
Red	Supply	Supply	Supply	Supply
Black	Ground	Return	Ground	Return
White	V _{out}	No Connect	V _{out}	No Connect

How to Order

Use the **bold** characters from the chart below to construct a product code

Series **31CS** / **32CS** - Pressure Transducer

Output **B** - 4-20 mA **C** - 1-6 V **H** - 1-5 V
N - 0.5-4.5 V **R** - 0-5 V¹ **S** - 0-10 V¹
T - 0.5-4.5 V Ratiometric

Pressure Range - psi

100PG - 0-100 psiG	10CPG - 0-1,000 psiG	10KPS = 0-10,000 psiS
150PG - 0-150 psiG	15CPG - 0-1,500 psiG	15KPS - 0-15,000 psiS ²
200PG - 0-200 psiG	20CPS - 0-2,000 psiS	20KPS - 0-20,000 psiS ²
300PG - 0-300 psiG	25CPS - 0-2,500 psiS	25KPS - 0-25,000 psiS ²
500PG - 0-500 psiG	30CPS - 0-3,000 psiS	
600PG - 0-600 psiG	35CPS - 0-3,500 psiS	
750PG - 0-750 psiG	40CPS - 0-4,000 psiS	
	50CPS - 0-5,000 psiS	
	60CPS - 0-6,000 psiS	
	75CPS - 0-7,500 psiS	

Pressure Range - bar

0007G - 0-7 barG	0160S - 0-160 barS	1000S - 1,000 barS ²
0010G - 0-10 barG	0250S - 0-250 barS	1600S - 1,600 barS ²
0016G - 0-16 barG	0400S - 0-400 barS	
0025G - 0-25 barG	0600S - 0-600 barS	
0040G - 0-40 barG		
0060G - 0-60 barG		
0100G - 0-100 barG		

Notes:

- For use with pull-up or pull-down resistors, contact factory.
- Ranges 15,000 psi (1,000 bar) and above available with -2T pressure port only.
- Pressure ports **0E** and **1G** are NOT available with the Restrictor option.
- For electrical codes **F** & **3**, specify cable length in meters.

Cable Length (For electrical connections F & 3 only)

00 - No Cable	03 - 3 meters	10 - 10 meters
01 - 1 meter	04 - 4 meters	
02 - 2 meters	05 - 5 meters	

Optional Restrictor (32IS only)

R - Restrictor
0 - No Restrictor

Electrical Connection⁴

B - Industrial DIN 9.4 mm (mating connector not supplied)
E - M12 x 1P (4-Pin)
F - Cable version
G - Large DIN
R - Industrial DIN 9.4 mm (alternate pin out)
3 - 1/2" NPT Male Conduit
6 - Amp - Superseal 1.5 Series
8 - Deutsch DT04-4P
9 - Packard MetriPack

Pressure Port³

08 - 1/8-27 NPT External
02 - 1/4-18 NPT External
04 - 7/16-20 External (SAE #4, J514)
1J - 7/16-20 External (SAE #4, J1926-2)
0E - 1/4-18 NPT Internal
0K - M14 x 1.5 Straight
1G - Schrader SAE #4, 7/16" Internal
1P - SAE 6 (9/16"-18 UNF 2A)
4C - 1/4-18 NPTF External (Dryseal)
4D - 1/8-27 NPTF External (Dryseal)
4N - SAE 3 (3/8-24 UNF External)
01 - G1/4 External
05 - G1/4 External Soft Seal
0L - M12 x 1.5 (<1,000 bar, 15,000 psi)
2T - M12 x 1.5 (6g) (≥1,000 bar, 15,000 psi)