



# Series 536CR Low Power Pressure Transmitter

## General Instructions



### General

These instructions provide information for installation, process connection, electrical connection and field calibration of SOR Series 536CR Pressure Transmitters. The 536CR Pressure Transmitter consists of a field-proven pressure transducer and a reliable electronic circuit. The housing features external adjustments and stainless steel construction.

**NOTE:** This instrument is non-repairable. If you suspect that it is defective, contact the factory or the SOR representative in your area for a return authorization number.

### Installation

Ensure that wiring conforms to all applicable local and national electrical codes and install unit(s) according to relevant national and local safety codes.

Normally, line mounting provides adequate support for the instrument. *When the installation is complete, the external adjustments must be accessible.* (See Figure 2.) Determine whether the process connection or the electrical connection will be made first.

#### Making the Process Connection First

The process connection is threaded onto a fitting within an adequately supported process piping system. Use two open-end wrenches when connecting the pressure port to a process piping system: one wrench to hold the hex flats of the pressure connection, and the other to tighten the process fitting. Do not loosen the instrument pressure port from the housing.

#### Making the Electrical Connection First

The electrical connection may be installed on an adequately supported rigid conduit system. Use suitable locknuts (not provided) when mounting the instrument to an unthreaded (knockout) hole. Process connection pipe or tubing may be rigid or flexible. Securely connect the conduit pipe or fitting by holding the hex on the electrical connection while tightening.

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**WARNING:** Units in hazardous locations - prior to removal from service, make sure that the work area is declassified. Failure to do so could result in severe personal injury or substantial property damage.

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## Specifications

Design and specifications are subject to change without notice. For latest revision, see [www.sorinc.com](http://www.sorinc.com).

**Accuracy** (L, H & R) ..... ±0.25% URL  
(Upper Range Limit)

### Temperature effects

Compensated range ..... -20 to 160°F (-29 to 71°C)

Ambient limits ..... -40 to 185°F (-40 to 85°C)

Process limits ..... based on o-ring specifications  
(see table on page 6)

Storage ..... -40 to 185°F (-40 to 85°C)

Zero shift per 100°F @ -20 to 160°F ..... ±1% URL

Span shift per 100°F @ -20 to 160°F ..... ±1% URL

**Stability** ..... ≤0.5% URL/12 months

**Response time** ..... ≤25 ms

### External adjustability

Span turndown ratio ..... 5:1

Zero ..... ±10%

**Supply voltage** ..... 10 to 30 VDC

**Output** ..... 1 to 5 VDC

**Power supply effect** ..... ≤0.005% FSO/Volt

**Max. current consumption** ..... 1.5 mA

**Min. impedance** ..... 100K ohms

**Housing construction** ..... 316SS (CF8M)

### Electrical connection

Size ..... 1/2 NPT(M)

Termination ..... 24 AWG wire leads  
(optional terminal box)

**Circuit protection** ..... Reverse polarity, EMI/RFI

**Shipping weight** ..... 1.6 lbs (0.7 kg)

## Electrical Termination

Three-conductor shielded cable is provided as standard. If the optional screw terminal housing was specified, wire according to screw terminal designation below.

Wire Lead Color	Optional Terminal Designation	Connection
Red	+	10-30 VDC power supply
Black	-	Power supply return
White	1-6 VDC	1-5 VDC output (with respect to power supply return)
(shield)	GND	(ease ground) should be connected to earth ground

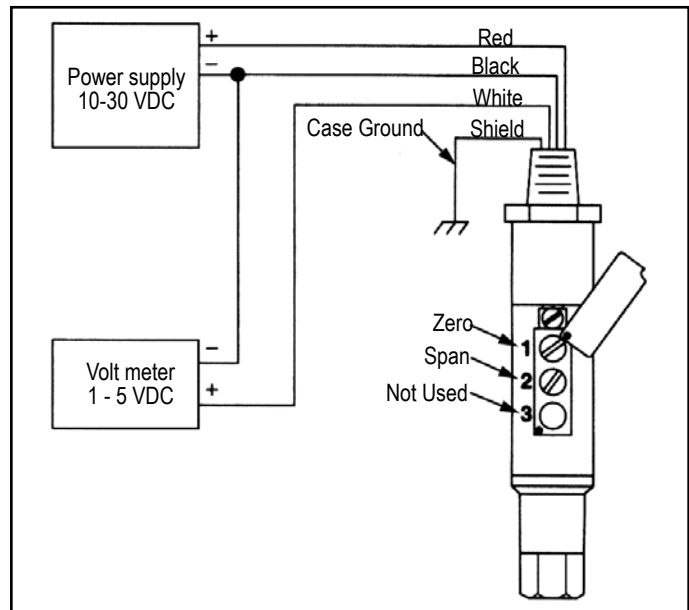


FIGURE 1

## Calibration

Two calibration screws (zero and span) are located underneath the adjustment cover. (See Figure 1.) Loosen the cover screws slightly (do not remove) and rotate the cover to reveal the adjustment screws.

Numbers on the enclosure identify the adjustment screws: 1, 2 and 3.

- Adjustment #1: Zero
- Adjustment #2: Span
- Adjustment #3: Not used

Unless specified otherwise, the transmitter is factory calibrated to 1 VDC @ 0 psi and 5 VDC at the top of the adjustable range specified on the nameplate.

### Calibration Procedure

The zero and span calibration procedure should be performed under ambient process temperature conditions.

A pressure source with a calibrated reference gage, a voltmeter and a DC voltage supply are required. (See Figure 1.) Note the adjustable range on the instrument nameplate. For both zero and span adjustments, turn the adjustment screw clockwise to increase, counterclockwise to decrease.

1. Connect the transmitter as shown in Figure 1. The case ground must be connected to the earth ground.
2. Apply pressure at which 1 VDC output is desired. (Zero may be adjusted  $\pm 10\%$  of the Upper Range Limit.)
3. With the pressure source steady at the desired zero level, rotate the zero adjustment (#1) for a 1 VDC indication on the voltmeter.
4. Apply pressure at which 5 VDC output is desired.

The span may be adjusted from 20 to 100% of the upper range limit specified on the nameplate. (Maximum turndown is 5:1.)

5. With the pressure source steady at the desired span level, rotate the span adjustment (#2) for a 5 VDC indication on the voltmeter.
6. Repeat Steps 2 through 5 as needed if offsetting 1 VDC from the normal zero point.

## Dimensions

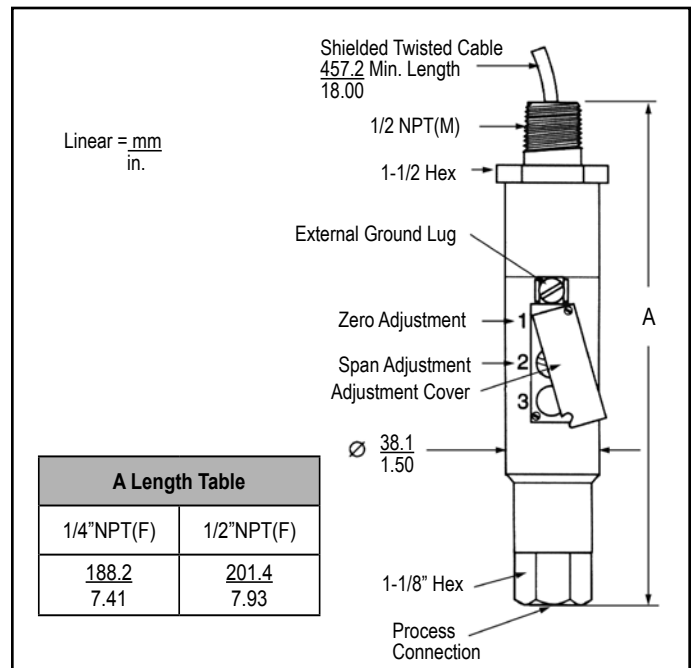


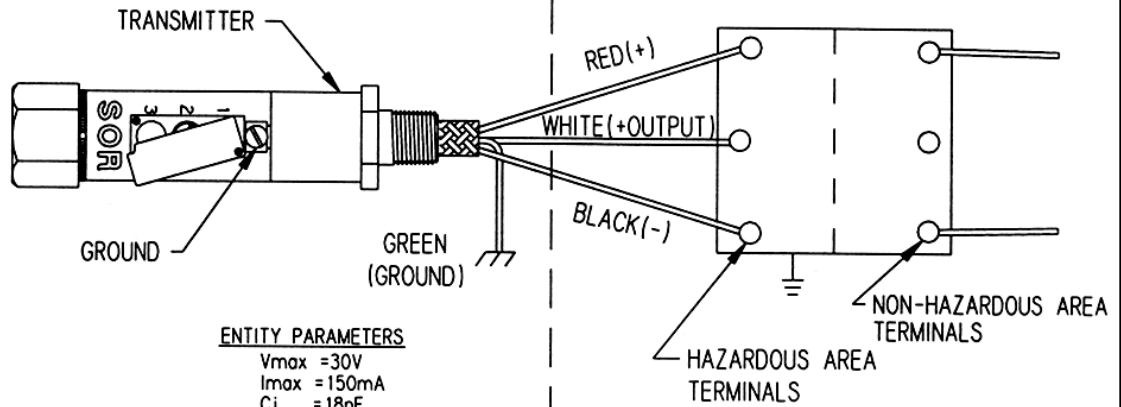
FIGURE 2

DRAWING NO. 9003-147

CONTROL DRAWING 9003-147  
 SERIES 536 TRANSMITTER  
 CSA CERTIFIED

HAZARDOUS LOCATION  
 CLASS I, II, III; DIV 1; GP A-G

NON-HAZARDOUS LOCATION



FOR INTRINSICALLY SAFE INSTALLATION, USE ONLY WITH A CSA CERTIFIED BARRIER WITH RATINGS AS FOLLOWS:

SIGNAL	U MAX	R MIN	APPROVED FOR CL I, II, III
SUPPLY (+)	22Vdc	180 OHM	GROUPS A, B, C, D E, F, G
	15Vdc	100 OHM	
OUTPUT RETURN (-)	10Vdc	50 OHM	
	10Vdc	50 OHM	

- NOTES: 1. FOR MULTI-BARRIER SYSTEMS, ALL BARRIERS MUST BE THE SAME POLARITY.  
 2. BARRIER GROUND AND TRANSMITTER GROUND MUST BE AT THE SAME POTENTIAL.  
 3. RETURN (-) MUST NOT BE CONNECTED TO BARRIER GROUND.

- BARRIERS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- BARRIER PARAMETERS MUST MEET THE FOLLOWING REQUIREMENTS:  
 $V_{oc} \leq V_{max}$        $C_a \geq C_i + C_{Cable}$   
 $I_{sc} \leq I_{max}$        $L_a \geq L_i + L_{Cable}$
- MAXIMUM NON-HAZARDOUS AREA VOLTAGE MUST NOT EXCEED 250V.
- INSTALL IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE. PART 1.

Exia INTRINSICALLY SAFE/SECURITE INTRINSEQUE  
 WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.  
 AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

THIS DRAWING NOT TO BE CHANGED WITHOUT CSA APPROVAL.

6 E0-3962  
 7 E0-  
 WDE  
 6-3-97

TITLE	BY	DATE	DRAWING NO.	REV
CONTROL DRAWING CSA APPROVED SERIES 534/536 TRANSMITTER	WDE	6-3-97	9003-147	7
	APPD	DATE	SHEET	OF
	JAC	6/3/97	2	2

# Model Number

536CR - VN -    - P2 -    -    -

### Pressure Range

psi	bar	
0 to..... 10	0 to 0.7	10
0 to..... 20	0 to 1.4	20
0 to ..... 50	0 to 3.5	50
0 to..... 100	0 to 7.0	11
0 to..... 200	0 to 14	21
0 to..... 500	0 to 35	51
0 to..... 1000	0 to 70	111
0 to..... 2000	0 to 140	211

### Process Connection Material

316SS.....  
 316LSS.....  
 Monel.....  
 Hastelloy B.....  
 Hastelloy C.....  
 Alloy 20.....

C  
Z  
A  
H  
J  
L

### Process Connection Size

1/4" NPT (F).....  
 1/2" NPT (F).....

1A  
2A

**Accessories**

BB .....Cleaned for industrial oxygen service  
 CS .....CSA Certified  
 NC .....NACE Compliance MR-01-75  
 PK .....Pipe Mounting Kit  
 PP .....Fiber tag attached to housing  
 RR .....Stainless steel tag wired to housing  
 TL .....Stainless steel terminal box w/terminal strip  
 TT .....Stainless steel oversized nameplate  
 VV .....Fungicidal varnish  
 YY .....Epoxy coating

P/N 9003-308 Mag driver for tamper proof zero and span adjustment

### O-Ring Material

ER .....EPR  
 AS .....Aflas  
 VT .....Viton  
 KZ .....Kalrez\*  
 VG .....Viton GLT  
 BN .....Buna-N  
 NE .....Neoprene

**Overrange Chart**

Range Des.	Range		Overrange	
	psi	bar	psi	bar
10	0 to 10	0 to 0.7	15	1.0
20	0 to 20	0 to 1.4	30	2.1
50	0 to 50	0 to 3.5	75	5.2
11	0 to 100	0 to 7.0	150	10.5
21	0 to 200	0 to 14	300	21
51	0 to 500	0 to 35	750	52
111	0 to 1000	0 to 70	1500	105
211	0 to 2000	0 to 140	3000	210

**O-Ring Temperature Limits**

	°F	°C
EPR	-40 to 200	-40 to 93
Aflas	32 to 250	0 to 121
Viton	0 to 250	-18 to 121
Kalrez*	40 to 250	4 to 121
Viton GLT	-20 to 250	-29 to 121
Buna-N	-40 to 200	-40 to 93
Neoprene	0 to 200	-18 to 93

\*Kalrez or equivalent Perfluoroelastomer (FFKM) o-rings





