



Series 536HS Low Power Pressure Transmitter

General Instructions

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.

WARNING: Units in Hazardous Locations — Prior to removal from service, make sure the work area is declassified. Failure to do so could result in severe personal injury or substantial property damage.

General

These instructions provide information for mounting, process connection, electrical connection and field calibration of SOR-Series 536HS Pressure Transmitters. The 536HS Pressure Transmitter consists of a field proven thin film 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 the instrument 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, the other to tighten the process fitting. Electrical connection may be rigid or flexible conduit.

Specifications

Design and specifications are subject to change without notice.

Accuracy (L, H & R) $\pm 0.25\%$ of Calibrated Span

Temperature effects

Compensated range -20 to 160°F (-29 to 71°C)
 Ambient limits -40 to 185°F (-40 to 85°C)
 Process limits -40 to 250°F (-40 to 121°C)
 Storage -40 to 185°F (-40 to 85°C)
 Zero shift per 100°F @ -20 to 160°F $\pm 1\%$ URL
 Span shift per 100°F @ -20 to 160°F $\pm 1\%$ URL

Stability $\leq 0.5\%$ URL / 12 months

Response time ≤ 25 ms

External adjustability

Span turndown ratio 5:1
 Zero $\pm 10\%$

Supply voltage 9 to 30 VDC

Output 1 to 5 VDC

Power supply effect $\leq 0.005\%$ 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	+	9-30 VDC power supply
Black	-	Power supply return
White	1-5VDC	1-5 VDC output (with respect to power supply return)
(shield)	GND	(case ground) should be connected to earth ground

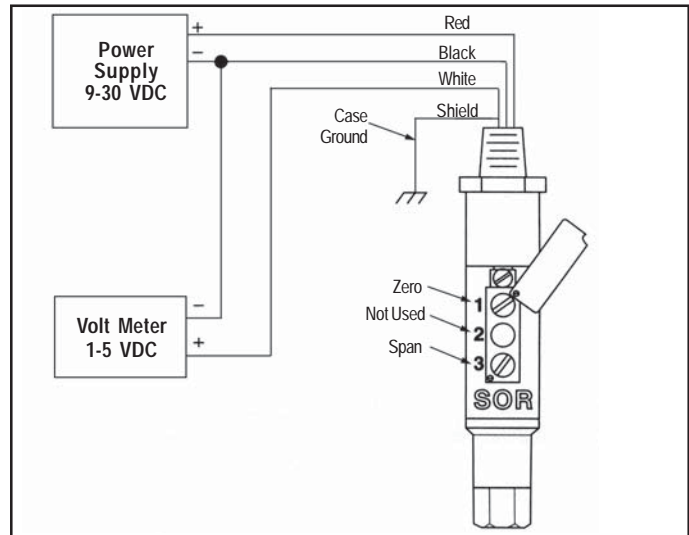


FIGURE 1

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: Not used
- Adjustment #3: Span

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.
Case ground must be connected to earth ground for EMI/RFI protection to perform properly.
2. Apply pressure at which 1 VDC output is desired. (Zero may be adjusted $\pm 10\%$ of calibrated span.)
3. With 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. Span may be adjusted from 20 to 100% of the upper range limit specified on nameplate. (Maximum turndown is 5:1.)
5. With pressure source steady at the desired span level, rotate the span adjustment (#3) 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.

If interaction occurs, turn zero and span 15 turns counterclockwise. Repeat Steps 2 through 6 above.

Dimensions

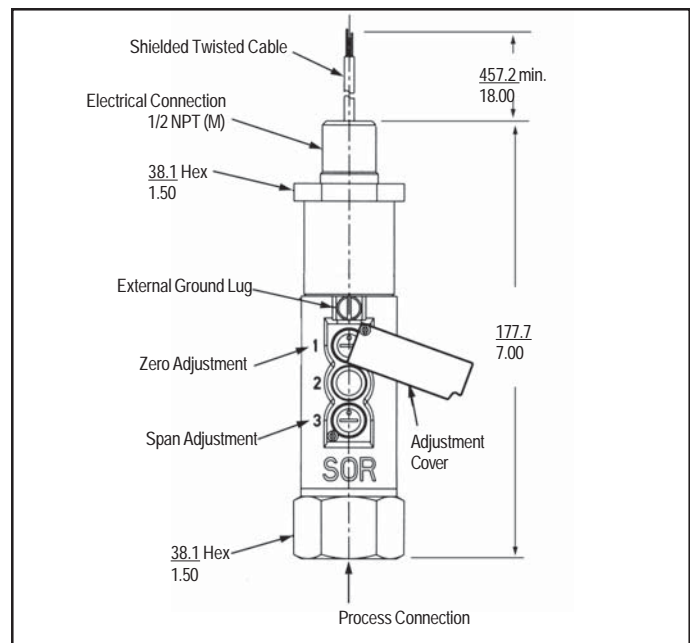


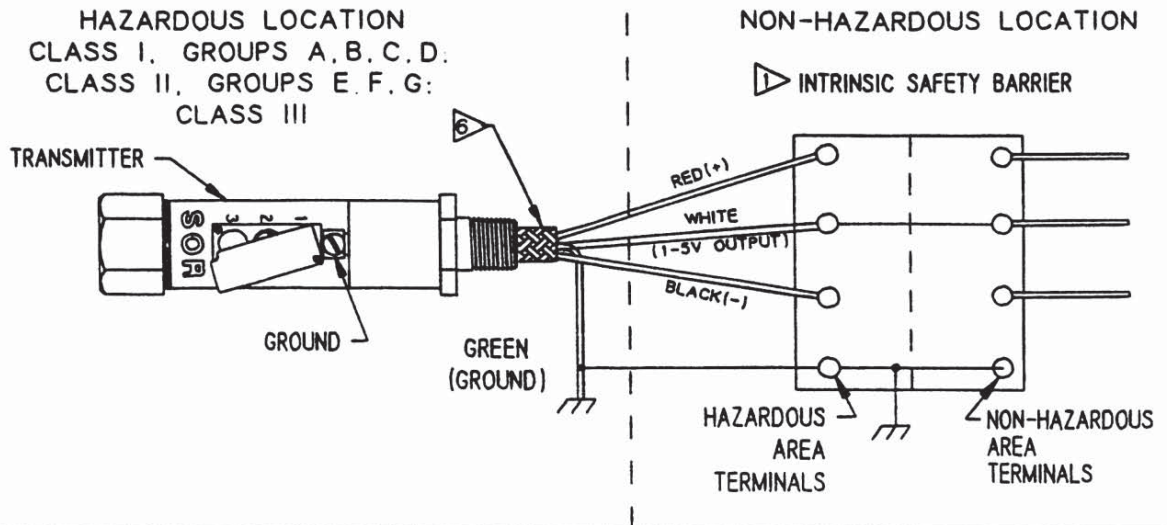
FIGURE 2

DRAWING NO. 9148-002

CONTROL DRAWING 9148-002

SERIES 536HS TRANSMITTER

CSA CERTIFIED



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

▷ ENTITY PARAMETERS

$V_{max} = 30V$
 $I_{max} = 150mA$
 $C_i = 62nF$ (including 150ft. integral cable)
 $L_i = 50\mu H$ (including 150ft. integral cable)
 $P_{max} = 1W$

2. BARRIERS MUST BE CSA CERTIFIED AND INSTALLED IN ACCORDANCE WITH MANUFACTURE'S INSTRUCTIONS
3. ONE 3-CHANNEL, TWO DUAL CHANNEL, OR THREE SINGLE CHANNEL BARRIERS MAY BE USED WHERE ALL CHANNELS HAVE BEEN CERTIFIED FOR USE TOGETHER WITH COMBINED ENTITY PARAMETERS THE FOLLOWING CONDITIONS MUST BE SATISFIED:

$$14.6V < V_{oC} \leq V_{max} \quad C_a \geq C_i + C_{Cable}$$

$$I_{sc} \leq I_{max} \quad L_a \geq L_i + L_{Cable}$$

4. MAXIMUM NON-HAZARDOUS AREA VOLTAGE MUST NOT EXCEED 250V.
5. INSTALL IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE, PART 1
- ▷ BELDEN CABLE P/N 9533 NEC CM PCCPT4 OR EQUIVALENT RATED AT 300V, 80deg C MINIMUM.
 MAXIMUM LENGTH 45M (150ft)
 CAPACITANCE OF 131 pF/M (40 pF/ft)
 INDUCTANCE OF 0.82 uH/M (0.25uH/ft)
 RESISTANCE OF 78.7 mΩ/M (24 mΩ/ft)
7. BARRIER GROUND AND TRANSMITTER GROUND MUST BE AT THE SAME POTENTIAL.

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

THIS DRAWING NOT TO BE CHANGED WITHOUT CSA APPROVAL.

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 jmb
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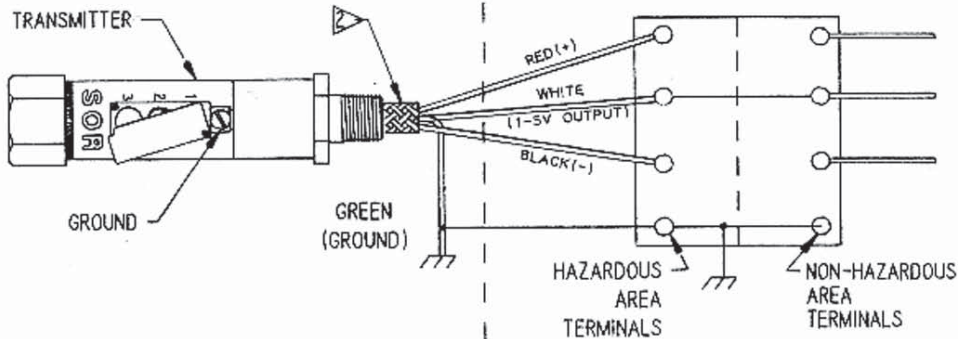
1	TITLE CONTROL DRAWING CSA APPROVED SERIES 536HS TRANSMITTER	BY jmb	DATE 8/31/00	DRAWING NO. 9148-002	REV 1
		APPD jac	DATE 8/31/00	SHEET 1	OF 1

DRAWING NO. 9148-003

CONTROL DRAWING 9148-003
SERIES 536HS TRANSMITTER
CENELEC APPROVED

HAZARDOUS LOCATION
 EEx ia IIC T4

NON-HAZARDOUS LOCATION



▷ ENTITY PARAMETERS:

- $U_i = 30V$
- $I_i = 150mA$
- $P_i = 1W$
- $C_i = 62nF$ (including 150ft integral cable)
- $L_i = 50uH$ (including 150ft integral cable)

▷ BELDEN CABLE P/N 9533 NEC CM PCC PT4 OR EQUIVALENT RATED AT 300V, 80°C MINIMUM

MAXIMUM LENGTH 45M (150ft).
 CAPACITANCE OF 131 pF/M (40 pF/ft).
 INDUCTANCE OF 0.82 uH/M (0.25 uH/ft).
 RESISTANCE OF 78.7 mΩ/M (24 mΩ/ft).

3. ONE 3-CHANNEL, TWO DUAL CHANNEL, OR THREE SINGLE CHANNEL BARRIERS MAY BE USED WHERE ALL CHANNELS HAVE BEEN CERTIFIED FOR USE TOGETHER WITH COMBINED ENTITY PARAMETERS. THE FOLLOWING CONDITIONS MUST BE SATISFIED:

$$14.6V < U_o \leq U_i \quad C_o \geq C_i + C_{Cable}$$

$$I_o \leq I_i \quad L_o \geq L_i + L_{Cable}$$

THIS DRAWING NOT TO BE CHANGED WITHOUT CENELEC APPROVAL.

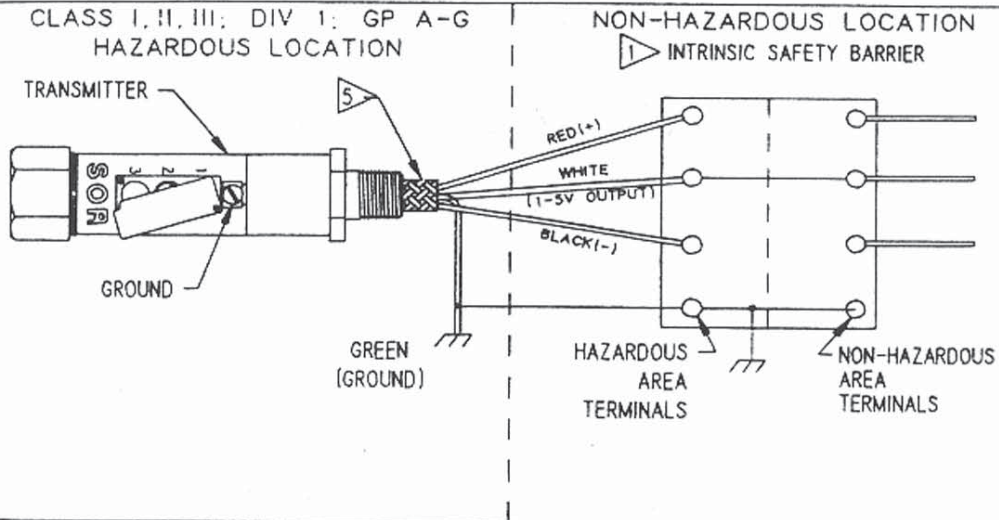
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TITLE CONTROL DRAWING CENELEC APPROVED SERIES 536HS TRANSMITTER	BY <i>gwig</i>	DATE 8/31/00	DRAWING NO. 9148-003	SHEET 1 OF 1
APPD <i>rac</i>		DATE 8/31/00		

DRAWING NO. 9148-004

CONTROL DRAWING 9148-004
SERIES 536HS TRANSMITTER
FM APPROVED

INTRINSICALLY SAFE (ENTITY)



ENTITY PARAMETERS	
V _{max} = 30V	14.6V ≤ V _{oc} or V _t ≤ V _{max}
I _{max} = 100ma (GP A-G)	I _{sc} or I _t ≤ 100ma for CL I, II, III; DIV 1; GP A, B, C, D, E, F, G
I _{max} = 150ma (GP C-G)	I _{sc} or I _t ≤ 150ma for CL I, II, III; DIV 1; GP C, D, E, F, G
P _{max} = 1W	$\left(\frac{V_{oc} \text{ or } V_t \times I_{sc} \text{ or } I_t}{4} \right) \leq 1W$
C _i = 62nf	SEE NOTE 1 * (includes 150ft integral cable)
L _i = 50uH	SEE NOTE 1 * (includes 150ft integral cable)
P _i = 1W	

NOTES:

1 ▷ FMRC ENTITY APPROVED BARRIER(S), USED IN AN APPROVED CONFIGURATION MUST SATISFY THE FOLLOWING CONDITIONS:

$$14.6V \leq V_{oc} \text{ or } V_t \leq V_{max} \quad C_a \geq C_i + C_{Cable}$$

$$I_{sc} \leq I_{max} \quad L_a \geq L_i + L_{Cable}$$

2. CONTROL EQUIPMENT CONNECTED TO BARRIER MUST NOT USE OR GENERATE MORE THAN 250 V_{rms} OR V_{dc}.
3. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSI/ISA PR12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL CODE (ANSI/NFPA 70).
4. ASSOCIATED APPARATUS MANUFACTURERS INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.

5 ▷ BELDEN CABLE P/N 9533 NEC CM PCCPT4 OR EQUIVALENT RATED AT 300V, 80°C MINIMUM

MAXIMUM LENGTH 45M (150ft).
 CAPACITANCE OF 131 pF/M (40 pF/ft).
 INDUCTANCE OF 0.82 uH/M (0.25 uH/ft)
 RESISTANCE OF 78.7 mΩ/M (24 mΩ/ft).

THIS DRAWING NOT TO BE CHANGED WITHOUT MUTUAL APPROVAL.

1 EO-

TITLE CONTROL DRAWING FM APPROVED SERIES 536HS TRANSMITTER	BY <i>JWL</i>	DATE 11/30/00	DRAWING NO 9148-004	REV 1
	APPD <i>JAC</i>	DATE 11/30/00	SHEET 1 OF 1	

Model Number

536HS - VN - P2 - -

Pressure Range

psi	bar	
0 to 1000	0 to 140 2K
0 to 5000	0 to 350 5K
0 to 10000	0 to 700 10K
0 to 15000	0 to 1000 15K

Process Connection Material

316SS

Process Connection Size

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

*Not available in 10K- 15K range

Accessories

- BB Cleaned for industrial oxygen service
- CI CENELEC Certified (EEx ia)
- CL CENELEC Certified (EEx d)
- CS CSA Certified
- FM FM Approved
- 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 with 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 adjustments

Overrange Chart

Range Des.	Range		Overrange	
	psi	bar	psi	bar
2K	0 to 2000	0 to 140	3000	210
5K	0 to 5000	0 to 350	7500	525
10K	0 to 10000	0 to 700	12000	840
15K	0 to 15000	0 to 1000	22500	1500

