

1-830 SERIES DISPLACEMENT TRANSMITTER

Operation & Maintenance Manual



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Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

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1.0 Overview

1.1 Introduction

This document contains information on the operation, installation and maintenance of the CEC Type 1-830 Displacement Transmitter. The instrument is manufactured by CEC Vibration Products Inc.

The 1-830 Displacement Transmitter accepts axial vibration signals from 3300/3300XL, 7200 type proximity probes or probes with equivalent electrical ratings. The probes signal is conditioned and a calibrated 4-20mA and negative 200mV/mil output proportional to displacement are provided. A GAP voltage is also provided for reference.

1.2 Description

The transmitter is housed in a plastic enclosure suitable for 35mm-din rail/surface mounting (see Figure 1-1). On the front of the transmitter are four electrical connectors: two positive force terminal blocks for the +24 VDC input, (+/-) Analog output, a BNC connector for the Buffered sensor output and one miniature threaded connector to interface with the proximity probe. There is also a multi-function green indicator light (XDCR OK) which illuminates when power and a sensor are properly connected to the transmitter and working correctly.

A buffered transducer output connection allows the user to connect across the vibration sensor for on-line vibration diagnostics and testing of the sensor. This connection is before the filtering allowing full spectrum analysis.

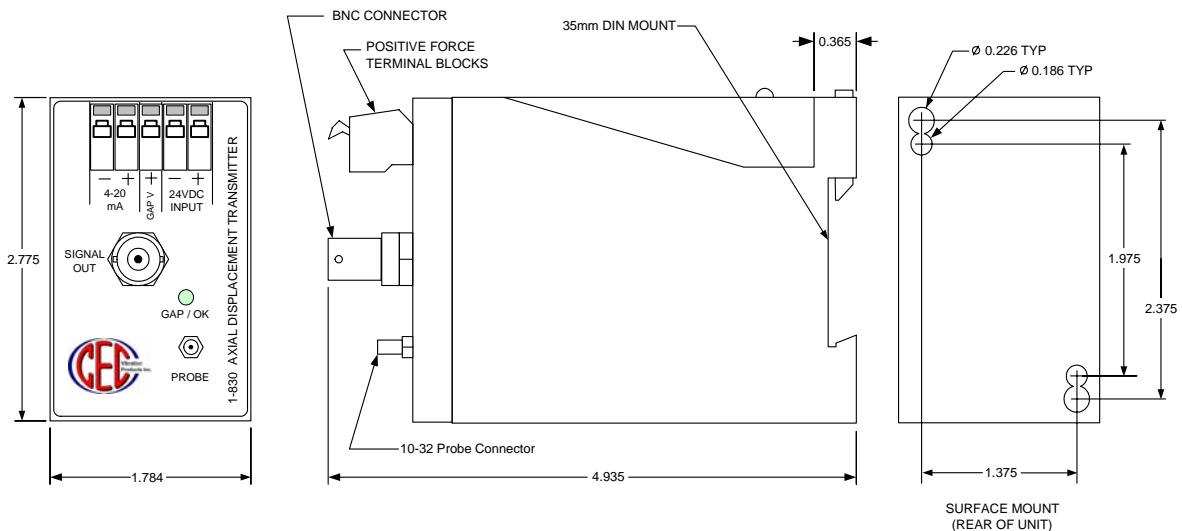


Figure 1-1 Dimensional Outline Drawing

Table 1.1 Specifications

Output (conditioned)	4-20 mA (Active Source)
Buffered Output	Buffered sensor output common is isolated from power and 4-20 mA output.
Bandpass Filtering	The 1-830 Transmitter contains a bandpass filter, which consists of a low-pass and a high-pass filter. Filter roll off is better than 42 dB/octave (High & Low Pass).
Power Input	18-32 VDC (Power on delay of 20msecs from zero to 7VDC and 40msecs from zero to 18VDC)
Temperature Range	
Operating	-40°F to +150°F (-40°C to +65°C)
Storage	-55°F to +200°F (-49°C to +94°C)
Probe Types	3300, 3300XL, 7200 or equivalent with the following parameters: $V_{max} \geq 10V$, $I_{max} \geq 20mA$, $C_t \leq 15nF$, $L_i \leq 200\mu F$, $P_{max} \geq 0.2W$
Connectors	Positive force terminal block contacts BNC 10/32 Miniature Threaded Connector
Weight	7 ounces maximum
Hazardous Area Rating	CSA C/US certified Class I, Division 2, Group A, B, C, D Temp code: T3C, Max Ambient 65°C ATEX certified II 3 G Ex nA II T3 KEMA 07EX0114X -40°C ≤ Ta ≤ 65°C Reference Installation Drawing 701280 See Appendix A

- I/O configuration on a particular 1-830 may be obtained from the unit's label or using the part number, reference Selection Guide on Page 5.

2.0 Installation

2.1 Mounting the Transmitter Case

The transmitter case is designed for quick mounting to a 35mm din rail. The case can be surface mounted via screw holes located at opposite corners (see Figure 2-2).

2.2 Electrical Connections

2.2.1 Connect the proximity probe to the mini-threaded connector labeled PROBE at the bottom front of the transmitter.

2.2.2 Connect the vibration monitoring test equipment to the desired output connection.

2.2.2.1 ANALOG OUTPUT (+ & -): Scaled 4-20mA proportional to peak to peak dynamic vibration, voltage reversal & short circuit protected terminal connection.

2.2.2.2 SIGNAL OUTPUT (BNC): Scaled -200mV/mil buffered signal output short circuit protected.

2.2.2.3 GAP Voltage: Reference to the Negative (-) 24VDC. The GAP Voltage is used to electrically set the system to the approximate center of its measurement range. While observing the dc voltage with an isolated meter, adjust the probe gap to obtain ~ -9Vdc.

2.2.3 Connect the 24 VDC input power to the two terminals (+ & -) 24VDC INPUT on the top of the vibration transmitter.

2.2.4 Apply power; the XDCR OK LED should flash. If power and transducer are connected correctly, the green XDCR OK light will stop flashing and remain on.

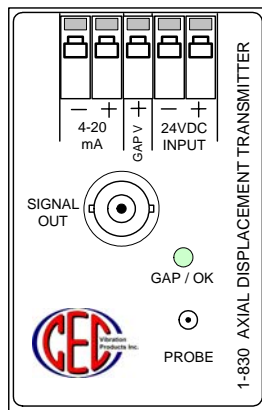


Figure 2-1 Front Panel

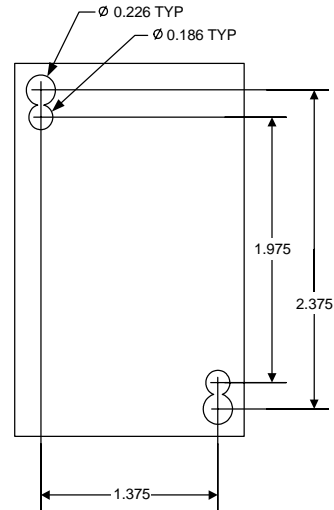


Figure 2-2 Surface Mount

2.3 Hazardous Environment Installation

2.3.1 For installation in a Division 2 hazardous area this equipment must be used within an overall system enclosure that is appropriately designed for the intended environment and rated at least IP54 or higher and where the final installation is acceptable to the local inspection authority having jurisdiction.

2.3.2 For installation in a Zone 2 hazardous area the transmitter must be installed in an enclosure with an degree of protection not less than IP 54 and where the final installation is acceptable to the local inspection authority having jurisdiction.

2.3.3 WARNINGS:



EXPLOSION HAZARD - Substitution of components may impair suitability for Class I, Division 2 operation.



EXPLOSION HAZARD - Do not connect or disconnect equipment unless power has been removed or the area is known to be non-hazardous.

This equipment is suitable for use in Class I, Division 2, Groups A,B,C,D hazardous locations or non-hazardous locations only.

3.0 Operation

There are no adjustments to be made on the model 1-830 displacement transmitters.

3.1 Transmitter Performance

During normal operation, the status LED will indicate constant Green. The conditions listed below shall result in the status LED going from Green to Red.

3.1.1 Probe too close to target: Output goes below 2.5mA if the gap is less than 20 mils (status LED – constant Red)

3.1.2 Shorted leads: Output goes below 2.5mA (status LED – constant Red)

3.1.3 Probe not connected or too far from target: Output goes above 20.5mA if the gap is greater than 80 mils (status LED – blinking Red)

4.0 Maintenance

4.1 General

There are no customer replaceable parts within the 1-830 Displacement Transmitter. The amplifier has been designed for trouble-free service under normal operating conditions. CEC warrants the equipment for one year from the date of purchase. Should your instrument require repair within the warranty period, you may contact our customer service representative at 626-938-0200.

5.0 Selection Guide

Using the following guide, select the desired parameters to build a part number:

CEC P/N 1 - 8 3 0 -				A	A	A
PROXIMITY PROBE TRANSMITTER						
A	INPUT TYPE (5mm or 8mm Tip)					
		<i>Probe Type</i>	<i>Target Material</i>	<i>System Length</i>		
	A05 =	3300	Incoloy	5m		
	A09 =	3300	Incoloy	9m		
	A14 =	3300	Incoloy	14m		
	B05 =	3300	4140 S.S.	5m		
	B09 =	3300	4140 S.S.	9m		
	B14 =	3300	4140 S.S.	14m		
	C05 =	7200	Incoloy	5m		
	C09 =	7200	Incoloy	9m		
	C14 =	7200	Incoloy	14m		
	D05 =	7200	4140 S.S.	5m		
	D09 =	7200	4140 S.S.	9m		
	D14 =	7200	4140 S.S.	14m		

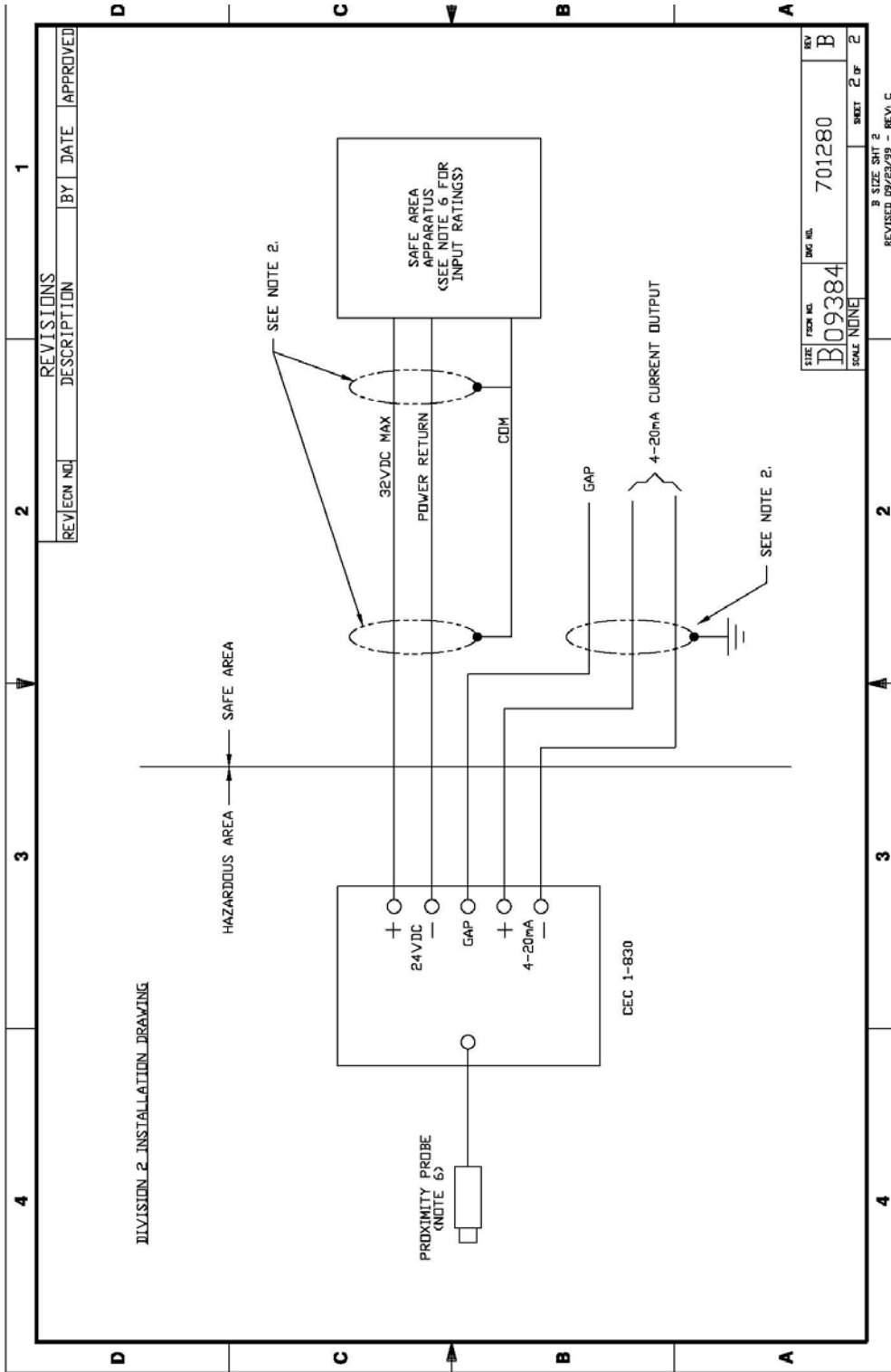
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Revised February 14, 2007

DWG. NO.: 701280

<p>ALL INFORMATION ON THIS DRAWING IS PROPRIETARY AND MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF CEC VIBRATION PRODUCTS.</p>	<p>CEC PART NUMBER: 1-830-AAAXX</p>	<p>REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>ECN NO.</th> <th>DESCRIPTION</th> <th>BY</th> <th>DATE</th> <th>APPROVED</th> </tr> <tr> <td>B</td> <td>33429</td> <td>ADDED 1-830 MATRIX DATA.</td> <td>ML</td> <td>4/25/07</td> <td></td> </tr> </table>	REV	ECN NO.	DESCRIPTION	BY	DATE	APPROVED	B	33429	ADDED 1-830 MATRIX DATA.	ML	4/25/07		<p>HISTORY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>ECN</th> </tr> <tr> <td>A</td> <td>33299</td> </tr> </table>	REV	ECN	A	33299																				
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DWG. NO.: 701280



REVISION NO.	DESCRIPTION	BY	DATE	APPROVED




SIZE	FORM NO.	DWG. NO.	REV.
B09384		701280	B
SCALE	NONE		SHEET 2 OF 2

B SIZE UNIT 3
REVISED 09/25/93 - REV. C

Typical Identification Label

SERIAL NO: 1000 CEC P/N: 1-830-B09 TARGET MATERIAL: 4140 STEEL SYSTEM INPUT: 9M, 3300 TYPE PROBE CURRENT OUTPUT: 4-20mA = 0-10 MILS GAP OUTPUT: 0 TO -16V, 15mA MAX. SCALE: -200mV / mil	CEC Vibration Products 746 Arrow Grand Cr. Covina, CA 91722 USA
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Typical Warning Label

CEC VIBRATION PRODUCTS MODEL 1-830	
INPUT POWER: 18-32 VDC @250mA MAX. Class I Division 2 Groups A, B, C, D Temperature Code T3C Maximum Ambient 65°C	
 II 3 G Ex nA II T3 KEMA 07ATEX0114X -40°C ≤ Ta ≤ 65°C, Install per drawing 701280	
WARNING- EXPLOSION HAZARD DO NOT CONNECT OR DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS SEE MANUAL FOR ADDITIONAL RATINGS	