

INSTRUCTION MANUAL

SM822P Potentiometer Input Two Wire Transmitter

SM822R Rheostat Input Two Wire Transmitter

SPECIFICATIONS:

1. Performance

- 1.1. Accuracy: $\pm 0.1\%$ of span includes effects of linearity, hysteresis, and repeatability relative to sensor input.
- 1.2. Thermal Effect:
 - a. Zero Shift of $\pm 0.02\%$ of Span / $^{\circ}\text{F}$
 - b. Span Shift of $\pm 0.02\%$ of Span / $^{\circ}\text{F}$
- 1.3. Power Supply:
 - a. Working Voltage of 7 to 35 VDC
 - b. Supply Voltage Effect $< \pm 0.001\%$ of Span / Volt
- 1.4. Loop Considerations
 - a. Loop Resistance Load Effect $< \pm 0.002\%$ of Span / 300 Ohms
 - b. Maximum Loop Resistance
 $R_L = (V_{\text{Supply}} - 7V) / 0.020A$
- 1.5. RFI immunity: Rated Class 3-C: 0.25% of span per SAMA PMC 33.1-1987-2abc
- 1.6. Frequency Response: -3dB @ 3Hz

2. Environment

- 2.1. Temperature Range:
 - a. Ambient -13° to 185°F
 - b. Storage -85° to 257°F
- 2.2. Humidity: 0 to 90% non-condensing

3. FM APPROVALS

Intrinsically Safe: Class I, Division 1, Groups A, B, C & D
Noninsensitive: Class I, Division 2, Groups A, B, C & D
Entity Parameters: $V_{\text{max}} = 32V$, $I_{\text{max}} = 150mA$,
 $C_i = 0mfd$, $L_i = 0mH$

4. Output

- 4.1. Standard Signal Range: 4 to 20 mA DC
- 4.2. Absolute Limit: 2 to 22 mA
- 4.3. Open Sensor Indication:
SM822R: Output $> 20mA$

5. Calibration

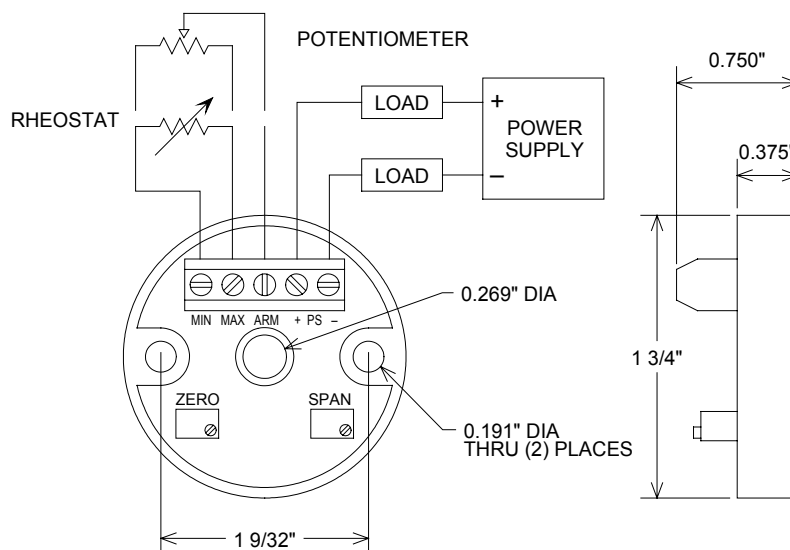
- 5.1. Calibration Range Adjustability:
 - a. Zero $\pm 10\%$ of nominal span
 - b. Span $\pm 25\%$ of nominal span
- 5.2. Standard Ranges:
 - a. SM822P:
-0001 Sensor from $1K\Omega$ to $100K\Omega$
-0002 Sensor from 70Ω to 2000Ω
-0011 Sensor from $1K\Omega$ to $100K\Omega$,
(Reversed Terminal Block)
 - b. SM822R:
-0103 Input $0/10K\Omega \pm 10\%$,
Output $20/4mA$
-0102 Input $0/1K\Omega \pm 10\%$,
Output $20/4mA$

6. Options

-M31S SNAPTRACK™ Mounting Bracket
-M31D DIN Rail Mount
-CHA Aluminum Connection Head
-CHN Nylon Connection Head
-CHX Explosion Proof Connection Head

7. Ordering Information

SM822P-<resistance range>-<option>
SM822R-<resistance range>-<option>



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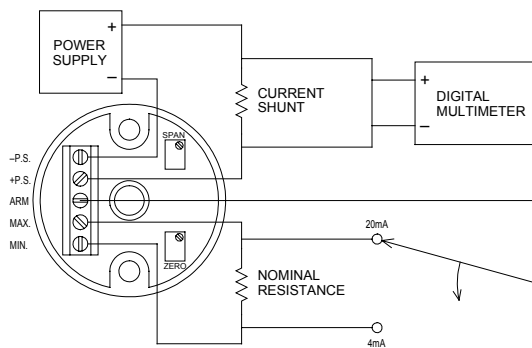
706 Bostwick Ave., Bridgeport, Ct. 06605
Tel. (203) 368-6751 Fax. (203) 368-3747
1-800-566-6822 <http://www.devarinc.com>

MANUAL SM822 REV. B

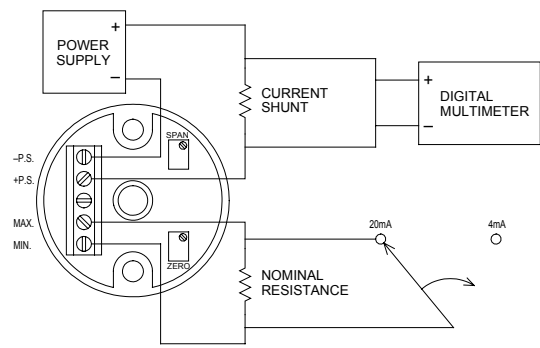
Calibration Procedure

- 1) Required Test Equipment:
 - A. Power Supply 24 Volt, 25mA minimum.
 - B. Ammeter able to display 20mA while resolving 1 μ A.
 - C. Resistor with a value near to the resistance of the potentiometer sensor.
 - D. Alligator clip jumper.
- 2) Identify transmitter input range, which may be obtained by referencing the dash number of the particular unit.
SM822P-0001 accepts 1K Ω to 100K Ω potentiometers.
SM822P-0002 accepts 70 Ω to 2000 Ω potentiometers.

SM822R-0103 accepts 10K $\pm$ 10% Rheostat.
SM822R-0102 accepts 1K $\pm$ 10% Rheostat.
- 3) Connect the device under test and the required test equipment as outlined below.
- 4) Set Top Of Output Range:
SM822P: Set the jumper between ARM and MAX.
SM822R: Apply minimum sensor input between MAX and MIN.
- 5) Adjust the span potentiometer to obtain the maximum range output: 20.000 mA.
- 6) Set Bottom Of Output Range:
SM822P: Set the jumper between ARM and MIN.
SM822R: Apply maximum sensor input between MAX and MIN
- 7) Adjust the zero potentiometer to obtain the minimum range output, typically 4.000 mA.
- 8) Repeat from step 4, until the transmitter reads true at steps 5 and 7 without adjustment.



SM822P TEST SETUP



SM822R TEST SETUP

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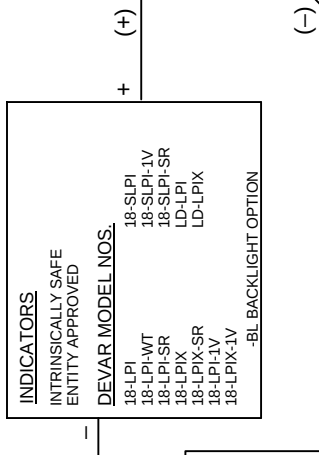
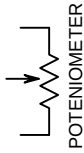
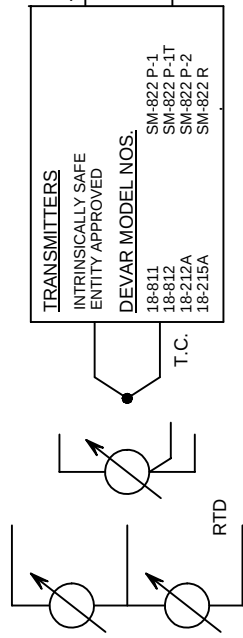
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MANUAL SM822 REV. B

H	ADD 18-SLPI, 18-SLPI-IV AND 18-SLPI-SR, ECN 3081A	02-08-95	AG	REV	SH 1	DWG NO.	515107
I	ADD LD-LPI, ECN 3154	01-22-98	AG	E			
J	ADD SM-822P-1, SM-822P-1T, SM-822P-2 & SM-822R, ECN 3208	09-09-98	AG	F			
K	ADD LD-LPIX & -BL BACKLIGHT OPTION, ECN 3319	09-13-05	AG	G			

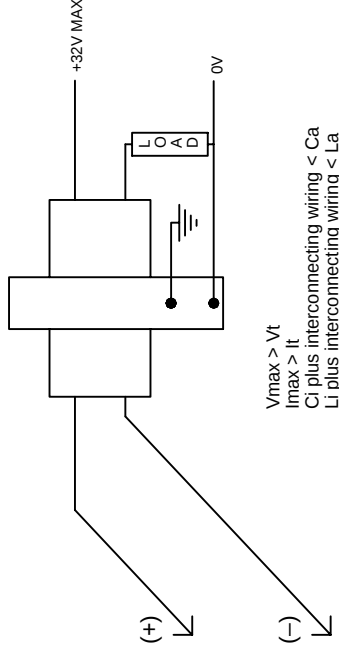
	DESCRIPTION	DATE	APPROVED
	RELEASE ECN 2828B	04-22-91	AG
	ADD 18-LPI-IVT, ECN 3027	02-26-92	AG
	32V WAS 30V, ECN 3081	02-07-95	AG

HAZARDOUS LOCATION



NON-HAZARDOUS LOCATION

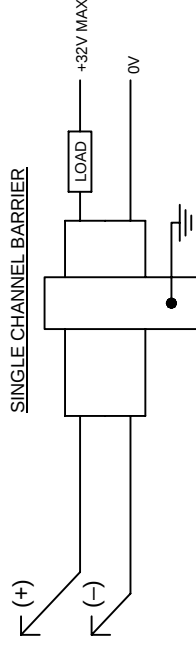
DUAL CHANNEL BARRIER



$V_{max} > V_t$
 $I_{max} > I_t$
 Ci plus interconnecting wiring < Ca
 Li plus interconnecting wiring < La

OR

SINGLE CHANNEL BARRIER



$V_{max} > V_{oc}$
 $I_{max} > I_{sc}$
 Ci plus interconnecting wiring < Ca
 Li plus interconnecting wiring < La

NOTES:

- HAZARDOUS LOCATION RATINGS: CLASS I, DIVISION 1, GROUPS A, B, C, D
- ENTITY PARAMETERS: $V_{max} = 32$ V, $I_{max} = 150$ mA, $C_i = 0$ μ F, $L_i = 0$ mH
- INSTALLATION OF THE SYSTEM MUST BE IN ACCORDANCE WITH ANSI/ISA RP12.6
- CONTROL ROOM INSTRUMENTATION TO OPERATE AT LESS THAN 250V rms
- DO NOT CONNECT mA METER TO TRANSMITTER TERMINALS UNLESS AREA IS KNOWN TO BE SAFE
- THE ABOVE UNITS ARE NONINCENDIVE FOR CLASS I, DIVISION 2, GROUPS A, B, C, D LOCATIONS WITH A V_{max} OF 32V. BARRIERS ARE NOT REQUIRED FOR DIVISION 2 OPERATION.
- NO REVISIONS WITHOUT PRIOR FACTORY MUTUAL APPROVAL



This Drawing is the sole property of DEVAR Inc., and is submitted on the understanding that the contents hereof are not published and are not to be disclosed. to third persons without prior permission.	UNSPECIFIED DIMENSION TOLERANCE DECIMAL ± 0.005 FRACTION $\pm 1/16"$ ANGLE $\pm 1/2$ DEGREE			CONTRACT NO.		DEVAR Inc.				706 Bostwick Avenue, Bridgeport, Conn. 06605 TEL: (203) 368-6751 FAX: (203) 368-3747					
	MATERIAL	-N/A-	PREPARED	RNT	08-16-05	INTERCONNECTING DIAGRAM TO INTRINSICALLY SAFE APPARATUS									
			CHECKED												
			MECH												
			ELEC												
	FINISH	-N/A-	DESIGN			DRAWING NO. 515107									
	APPROVED														
	NEXT ASSY NO.	NONE	APPROVED			SCALE		NONE		WT		SHEET 1 OF 1			
							SIZE		B		REV		K		