

DEVAR Inc.

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Model SM812

2-WIRE RESISTANCE
TRANSMITTER



SPECIFICATIONS

Performance

Input:..... Standard 100Ω Pt RTD, $\alpha = 0.00385$
Output Signal Range:..... 4 to 20 mADC
Open RTD Indication Output:.... >22mA
Absolute Limit:..... 2 to 25 mA
Accuracy:..... $\pm 0.1\%$ / span, includes effects of linearity, hysteresis,
and repeatability referred to temperature input.
Nonlinearity:..... 0.1% relative to a 100Ω Pt RTD, $\alpha = 0.00385$
Frequency Response:..... Output -3dB @ 3Hz Input

Thermal Effect

Zero Shift:..... $\pm 0.02\%$ / Span/°F
Span Shift:..... $\pm 0.02\%$ / Span/°F

Power Supply

Working Voltage:..... 8.5 to 35 VDC
Supply Voltage Effect:..... $< \pm 0.001\%$ / Span / Volt

Loop Considerations

Loop Resistance Load Effect:.... $< \pm 0.002\%$ / Span / 300 Ohms
Maximum Loop Resistance:..... $MLR(\Omega) = (V_{\text{Supply}} - 8.5V) / 0.020A$

RFI Immunity

Rated Class 3-C:..... 0.25% of span
per SAMA PMC 33.1-1987-2abc

Environment

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

Calibration Range

Zero:..... Minimum to Maximum in 2 segments
Span:..... Minimum to Maximum in 8 segments

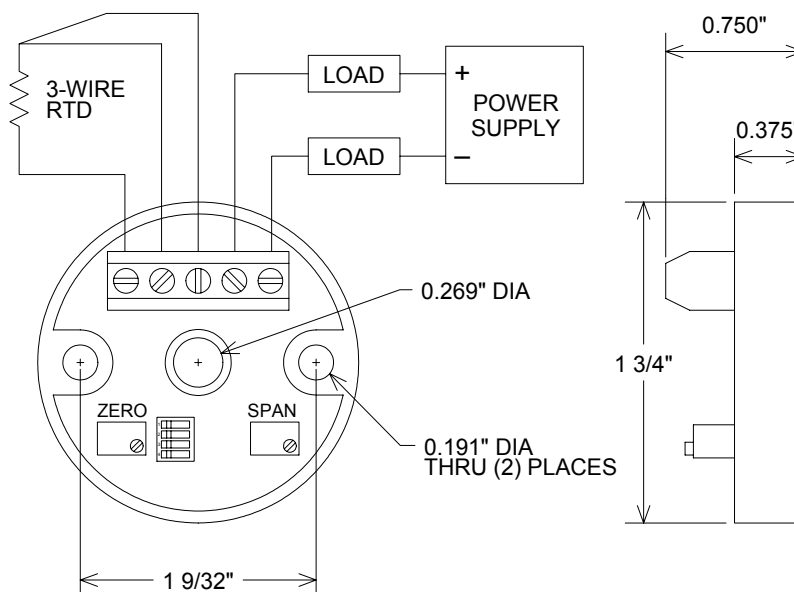
Options

SM812-0001	Zero Range -40/40°F, Span Range 150/500°F
SM812-0002	Zero Range -40/40°F, Span Range 300/1000°F
-M31S	SnapTrack™ Mounting Bracket
-M31D	DIN Rail Mounting Bracket
-CHN	Nylon Connection Head
-CHA	Aluminum Connection Head
-CHAS	Flip Top Connection Head
-CHX	Explosion Proof Connection Head
-RTDSF	Spring Loaded RTD (Specify Length)
-RTDBF	Brazed RTD (Specify Length)
-JB	Add Junction Box with Sensor

DIP SWITCH FUNCTION

ZERO ADJUSTMENT								
POSITION 4	ON				OFF			
ZERO RANGE	−40°F to −1°F				0° to 40°F			
SPAN SELECTION								
POSITION 3	ON	ON	ON	ON	OFF	OFF	OFF	OFF
POSITION 2	ON	ON	OFF	OFF	ON	ON	OFF	OFF
POSITION 1	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Model -0001	150°F	200°F	250°F	300°F	350°F	400°F	450°F	500°F
Model -0002	300°F	400°F	500°F	600°F	700°F	800°F	900°F	1000°F

TYPICAL INSTALLATION



CALIBRATION PROCEDURE

1) Required test equipment:

- Current measurement method with basic accuracy of 0.04% and resolution of 1μA.
- Power supply, 22 mA minimum. 24 VDC desired, 8.5V to 35V, depending on load resistance.
- RTD simulator accurate to within $\pm 0.5^\circ\text{F}$. The RTD can be simulated by decade resistor substitution box set to the appropriate values for the desired calibration. A table identifying the RTD temperature response is available upon request.

2) Identify transmitter temperature range by referencing the dash number and the DIP switch setting of the particular unit. Refer to the table on the next page.

3) Connect the device under test and the required test equipment as outlined on the attached wiring diagram.

4) Set the RTD simulator for the calibration range minimum temperature and adjust the Z(ero) potentiometer to obtain the minimum output of 4.000 mA.

5) Set the RTD simulator for the calibration range maximum temperature and adjust the S(pan) potentiometer to obtain the maximum output of 20.000 mA.

6) Repeat steps 4) and 5) until the device under test reads true without further adjustments.

$\alpha = 0.00385$, 100 Ω PT RTD Reference Data

Temp °F	RTD	Temp °F	RTD	Temp °F	RTD	Temp °F	RTD	Temp °F	RTD
-45	83.17	175	130.68	395	176.45	615	220.49	835	262.79
-40	84.27	180	131.74	400	177.47	620	221.47	840	263.74
-35	85.37	185	132.80	405	178.49	625	222.45	845	264.68
-30	86.47	190	133.86	410	179.51	630	223.43	850	265.62
-25	87.56	195	134.91	415	180.53	635	224.41	855	266.55
-20	88.66	200	135.97	420	181.54	640	225.38	860	267.49
-15	89.76	205	137.02	425	182.56	645	226.36	865	268.43
-10	90.85	210	138.08	430	183.57	650	227.34	870	269.36
-5	91.94	215	139.13	435	184.59	655	228.31	875	270.30
0	93.03	220	140.18	440	185.60	660	229.28	880	271.23
5	94.12	225	141.24	445	186.61	665	230.26	885	272.17
10	95.21	230	142.29	450	187.62	670	231.23	890	273.10
15	96.30	235	143.34	455	188.63	675	232.20	895	274.03
20	97.39	240	144.38	460	189.64	680	233.17	900	274.90
25	98.48	245	145.43	465	190.65	685	234.14	905	275.89
30	99.57	250	146.48	470	191.66	690	235.11	910	276.82
35	100.65	255	147.53	475	192.67	695	236.07	915	277.75
40	101.74	260	148.57	480	193.67	700	237.04	920	278.67
45	102.82	265	149.61	485	194.68	705	238.01	925	279.60
50	103.90	270	150.66	490	195.68	710	238.97	930	280.53
55	104.98	275	151.70	495	196.68	715	239.93	935	281.45
60	106.07	280	152.74	500	197.69	720	240.90	940	282.37
65	107.15	285	153.78	505	198.69	725	241.86	945	283.30
70	108.22	290	154.82	510	199.69	730	242.82	950	284.22
75	109.30	295	155.86	515	200.69	735	243.78	955	285.14
80	110.38	300	156.90	520	201.69	740	244.74	960	286.06
85	111.46	305	157.94	525	202.68	745	245.70	965	286.98
90	112.53	310	158.97	530	203.68	750	246.65	970	287.90
95	113.61	315	161.01	535	204.68	755	247.61	975	288.81
100	114.68	320	161.04	540	205.67	760	248.57	980	289.73
105	115.75	325	162.08	545	206.67	765	249.52	985	290.64
110	116.83	330	163.11	550	207.66	770	250.48	990	291.56
115	117.90	335	164.14	555	208.65	775	251.43	995	292.47
120	118.97	340	165.17	560	209.64	780	252.38	1000	293.38
125	120.04	345	166.20	565	210.63	785	253.33	1005	294.30
130	121.11	350	167.23	570	211.62	790	254.28	1010	295.21
135	122.17	355	168.26	575	212.61	795	255.23	1015	296.12
140	123.24	360	169.29	580	213.60	800	256.18	1020	297.03
145	124.31	365	170.31	585	214.59	805	257.13	1025	297.93
150	125.37	370	171.34	590	215.57	810	258.07	1030	298.84
155	126.43	375	172.36	595	216.56	815	259.02	1035	299.75
160	127.50	380	173.39	600	217.54	820	259.96	1040	300.65
165	128.56	385	174.41	605	218.53	825	260.91	1045	301.56
170	129.62	390	175.43	610	219.51	830	261.85	1050	302.46