



Carbon Dioxide Monitor Model 2008HRTD-N

Description:

The Valtronics Model 2008HRTD-N is a Non-Dispersive Infrared (NDIR) gas monitor, designed as a remote transducer-transmitter for continuous monitoring of Carbon Dioxide in the range of 0% to 20% CO₂ full scale.

The Optical Diffusion Head is completely unaffected by humidity, and requires no gas sampling pump. The transducer output may be interfaced to a controller unit via the linear 0 to 1 Volt, or the 4-20 mA output signal.

Model 2008HRTD-N Specifications:

Method:	NDIR (Non-dispersive Infra-Red) gas diffusion sample cell
Gas:	Carbon dioxide (CO ₂)
Range:	0-20% CO ₂
Accuracy:	±0.5% CO ₂ from 0-10% CO ₂ , ±5% of reading from mid to full scale
Repeatability:	±1% of full scale (challenge with same gas sample and assure zero)
External Power Source:	12 Volts DC @ 0.5 amp max (10.5 to 15.0 VDC absolute min/max)
Power Consumption:	3 watts typical @ 12.0 VDC
<u>Output Signals</u>	
Voltage output:	0 to 1 volt = 0 to 20% (linear scale data provided)
Current loop output:	4 to 20 mA = 0 to 20% (linear scale data provided), 300Ω max load res.
Electronic Response Time:	8 seconds typical to a step change in gas concentration ¹
Zero Noise at Constant Temperature: ...	Less than 10mV peak to peak (measured during any 20-sec. period) ²
Zero Drift at Constant Temperature:	Less than 2% of full scale per 24 hours (random not cumulative)
Zero Drift due to Ambient Temperature:	Less than 0.5% of full scale per degree Centigrade
Operating Temperature Range:	5 to 40 C (41 to 104 F) ³
Ambient Relative Humidity:	5 to 95% RH non-condensing ⁴
Storage Temperature range:	-40 to +70°C (-40 to +158°F)
Weight:	Less than 0.5 pound (0.23 kilogram)
<u>External Dimensions</u>	
PCB:	5 in. x 3.7 in. x 1 in. (12.7 cm x 9.4 cm x 2.54 cm) ⁵
Sample head and optics:	2.5 in. x 1.25 in. x 3 in. (6.35 cm x 3.175 cm x 7.62 cm) ⁶

¹ Gas response depends on gas diffusion physics

² See Application Note A18: How to avoid Ground Loops and electro-magnetic interference (EMI)

³ See Application Note A12: Measurement of gas levels at different altitudes and temperatures

⁴ See Application Note A30: Effect of Relative Humidity upon NDIR Volumetric Gas Measurement

⁵ See page 3 for mounting dimensions

⁶ See page 3 for mounting dimensions



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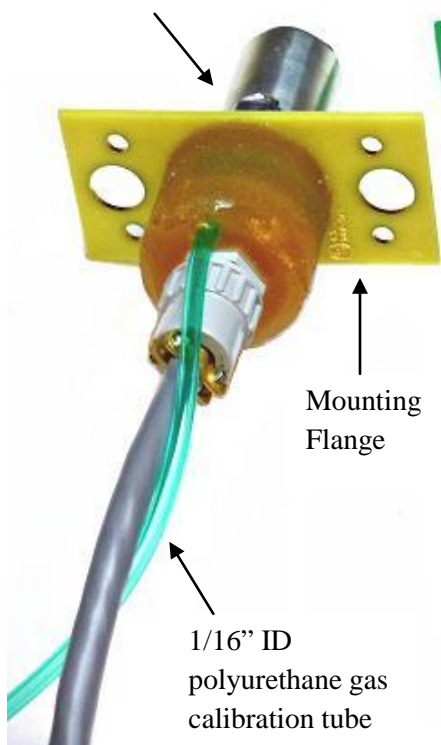
0 – 1V linear scale data for 0-20% CO₂

Gas in %	Output in volts			4-20mA output		
	Max.	Min.		Max.	Min.	
0.00	0.000	0.025	-0.025	4.00	4.40	3.60
0.40	0.020	0.045	-0.005	4.32	4.72	3.92
0.80	0.040	0.065	0.015	4.64	5.04	4.24
1.20	0.060	0.085	0.035	4.96	5.36	4.56
1.60	0.080	0.105	0.055	5.28	5.68	4.88
2.00	0.100	0.125	0.075	5.60	6.00	5.20
2.40	0.120	0.145	0.095	5.92	6.32	5.52
2.80	0.140	0.165	0.115	6.24	6.64	5.84
3.20	0.160	0.185	0.135	6.56	6.96	6.16
3.60	0.180	0.205	0.155	6.88	7.28	6.48
4.00	0.200	0.225	0.175	7.20	7.60	6.80
4.40	0.220	0.245	0.195	7.52	7.92	7.12
4.80	0.240	0.265	0.215	7.84	8.24	7.44
5.20	0.260	0.285	0.235	8.16	8.56	7.76
5.60	0.280	0.305	0.255	8.48	8.88	8.08
6.00	0.300	0.325	0.275	8.80	9.20	8.40
6.40	0.320	0.345	0.295	9.12	9.52	8.72
6.80	0.340	0.365	0.315	9.44	9.84	9.04
7.20	0.360	0.385	0.335	9.76	10.16	9.36
7.60	0.380	0.405	0.355	10.08	10.48	9.68
8.00	0.400	0.425	0.375	10.40	10.80	10.00
8.40	0.420	0.445	0.395	10.72	11.12	10.32
8.80	0.440	0.465	0.415	11.04	11.44	10.64
9.20	0.460	0.485	0.435	11.36	11.76	10.96
9.60	0.480	0.505	0.455	11.68	12.08	11.28
10.00	0.500	0.525	0.475	12.00	12.40	11.60
10.40	0.520	0.546	0.494	12.32	12.74	11.90
10.80	0.540	0.567	0.513	12.64	13.07	12.21
11.20	0.560	0.588	0.532	12.96	13.41	12.51
11.60	0.580	0.609	0.551	13.28	13.74	12.82
12.00	0.600	0.630	0.570	13.60	14.08	13.12
12.40	0.620	0.651	0.589	13.92	14.42	13.42
12.80	0.640	0.672	0.608	14.24	14.75	13.73
13.20	0.660	0.693	0.627	14.56	15.09	14.03
13.60	0.680	0.714	0.646	14.88	15.42	14.34
14.00	0.700	0.735	0.665	15.20	15.76	14.64
14.40	0.720	0.756	0.684	15.52	16.10	14.94
14.80	0.740	0.777	0.703	15.84	16.43	15.25
15.20	0.760	0.798	0.722	16.16	16.77	15.55
15.60	0.780	0.819	0.741	16.48	17.10	15.86
16.00	0.800	0.840	0.760	16.80	17.44	16.16
16.40	0.820	0.861	0.779	17.12	17.78	16.46
16.80	0.840	0.882	0.798	17.44	18.11	16.77
17.20	0.860	0.903	0.817	17.76	18.45	17.07
17.60	0.880	0.924	0.836	18.08	18.78	17.38
18.00	0.900	0.945	0.855	18.40	19.12	17.68
18.40	0.920	0.966	0.874	18.72	19.46	17.98
18.80	0.940	0.987	0.893	19.04	19.79	18.29
19.20	0.960	1.008	0.912	19.36	20.13	18.59
19.60	0.980	1.029	0.931	19.68	20.46	18.90
20.00	1.000	1.050	0.950	20.00	20.80	19.20

Accuracy = ±5% of reading from 10% to 20% and ±0.5% CO₂ from 0 to 10% CO₂

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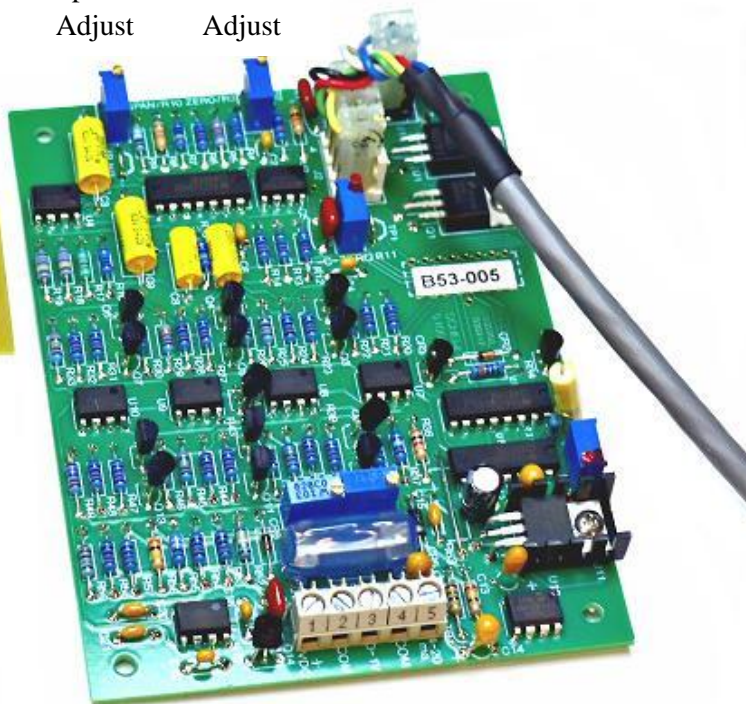
1" diameter, 1.625" long
Diffusion Head gas cell



Mounting
Flange

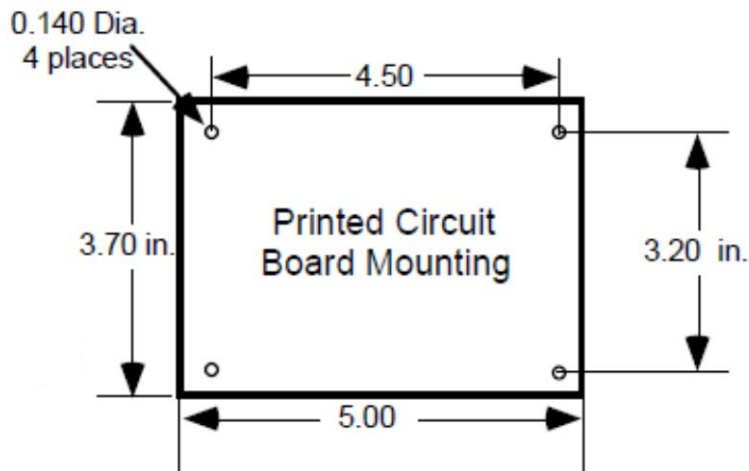
1/16" ID
polyurethane gas
calibration tube

Span Zero
Adjust Adjust



1. +12VDC
2. 12VDC return (-)
3. 0-1V signal
4. Signal Common
5. 4-20mA signal

Model 2008HRTD Mounting & clearance information



Diffusion head mounting
dimensions: 1.75" x 0.75",
.140" diameter mounting
holes