



# Carbon Dioxide Monitor

## Model 2006DHE 5000 ppm CO<sub>2</sub>

### Description:

The Valtronics Model 2006DHE is a Non-Dispersive Infrared gas monitor, designed as a remote transducer-transmitter for continuous monitoring of Carbon Dioxide in the range of 0 to 5000 ppm (0.5%) CO<sub>2</sub> full scale by volume.

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

### Model 2006DHE 5000 ppm CO<sub>2</sub> Specifications:

- Method: ..... N.D. I. R. (Non-dispersive Infra-red) gas diffusion sample cell
- Gas: ..... Carbon dioxide (CO<sub>2</sub>)
- Range: ..... 0-5000 ppm CO<sub>2</sub>
- Accuracy: ..... ± 5% of reading from mid to full scale (± 125 ppm CO<sub>2</sub> from 0-2500 ppm CO<sub>2</sub>)
- Repeatability: ..... ± 1% of full scale (challenge with same gas sample and assure zero)
- External Power Source: ..... 12 Volts D.C. @ 0.5 amp. max. (10.5 to 16.0 VDC absolute min./max.)
- Power Consumption: ..... 3 watts typical @ 12.0 VDC
- Output Signals, voltage output: .. 0 to 1 volt = 0 to 5000 ppm CO<sub>2</sub> **non-linear** ( see scale data )  
 current loop output: ... 4 to 20 mA = 0 to 5000 ppm CO<sub>2</sub> ( see scale data) **300 Ω max loop R**
- Electronic Response Time: ..... 8 seconds typical to a step change in gas concentration  
 gas response depends on gas diffusion physics  
 ..... See **Application Note A36** for Gas Calibration Instructions
- Zero Noise at Constant Temperature: ... Less than 10 mV peak to peak (measured during any 20 second period)
- Zero Drift at Constant Temperature: .... Less than 2% of full scale per 24 hours (random not cumulative)
- Zero Drift due to Ambient Temp.: ..... Less than 0.5% of full scale per degree Centigrade
- Operating Temperature Range: 5 to 40°C see **Application Note A12**
- Ambient Relative Humidity: ..... 0 to 95% RH non-condensing See **Application Note A30**
- Storage Temperature range: ..... 40 to +70°C (-40 to +158°F)
- Weight: ..... Less than 3 pounds
- External Dimensions:  
 Enclosure: ..... NEMA-4X Enclosure: 6.5" x 6.5" x 5"  
 ..... see page 3 for mounting



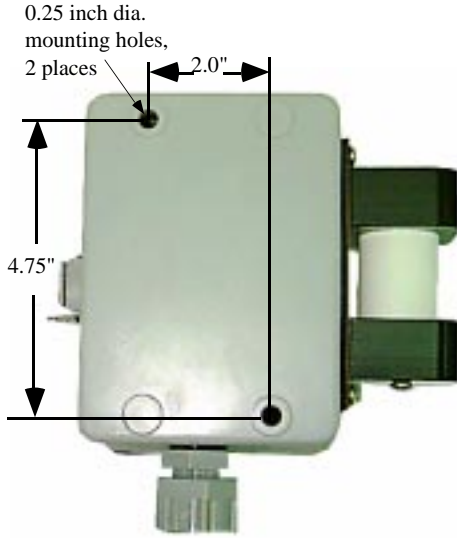


## Model 2006DHE 5000 ppm CO<sub>2</sub>

### VALTRONICS 2006DHE, 5000 ppm (0.5%) & 1 vol<sub>t</sub>

CO <sub>2</sub> in ppm	Output in volts	±125ppm CO <sub>2</sub>		4-20 mA			CO <sub>2</sub> in ppm	Output in volts	±5% of reading			4-20 mA			±5% of reading		
		Max	Min	output	Max	Min			in ppm	in volts	Max	Min	output	Max	Min		
0	0.000	0.033	-0.033	4.00	4.53	3.47	2550	0.674	0.708	0.640	14.78	15.32	14.24				
50	0.023	0.056	-0.010	4.37	4.90	3.84	2600	0.682	0.716	0.648	14.91	15.46	14.37				
100	0.046	0.079	0.013	4.74	5.26	4.21	2650	0.691	0.726	0.656	15.06	15.61	14.50				
150	0.068	0.101	0.035	5.09	5.62	4.56	2700	0.699	0.734	0.664	15.18	15.74	14.62				
200	0.089	0.122	0.056	5.42	5.95	4.90	2750	0.708	0.743	0.673	15.33	15.89	14.76				
250	0.109	0.142	0.076	5.74	6.27	5.22	2800	0.716	0.752	0.680	15.46	16.03	14.88				
300	0.128	0.161	0.095	6.05	6.58	5.52	2850	0.724	0.760	0.688	15.58	16.16	15.00				
350	0.147	0.180	0.114	6.35	6.88	5.82	2900	0.732	0.769	0.695	15.71	16.30	15.13				
400	0.166	0.199	0.133	6.66	7.18	6.13	2950	0.740	0.777	0.703	15.84	16.43	15.25				
450	0.184	0.217	0.151	6.94	7.47	6.42	3000	0.748	0.785	0.711	15.97	16.57	15.37				
500	0.201	0.234	0.168	7.22	7.74	6.69	3050	0.756	0.794	0.718	16.10	16.70	15.49				
550	0.218	0.251	0.185	7.49	8.02	6.96	3100	0.763	0.801	0.725	16.21	16.82	15.60				
600	0.235	0.268	0.202	7.76	8.29	7.23	3150	0.771	0.810	0.732	16.34	16.95	15.72				
650	0.251	0.284	0.218	8.02	8.54	7.49	3200	0.778	0.817	0.739	16.45	17.07	15.83				
700	0.266	0.299	0.233	8.26	8.78	7.73	3250	0.785	0.824	0.746	16.56	17.19	15.93				
750	0.282	0.315	0.249	8.51	9.04	7.98	3300	0.792	0.832	0.752	16.67	17.31	16.04				
800	0.297	0.330	0.264	8.75	9.28	8.22	3350	0.799	0.839	0.759	16.78	17.42	16.14				
850	0.311	0.344	0.278	8.98	9.50	8.45	3400	0.806	0.846	0.766	16.90	17.54	16.25				
900	0.326	0.359	0.293	9.22	9.74	8.69	3450	0.812	0.853	0.771	16.99	17.64	16.34				
950	0.339	0.372	0.306	9.42	9.95	8.90	3500	0.819	0.860	0.778	17.10	17.76	16.45				
1000	0.353	0.386	0.320	9.65	10.18	9.12	3550	0.826	0.867	0.785	17.22	17.88	16.56				
1050	0.366	0.399	0.333	9.86	10.38	9.33	3600	0.832	0.874	0.790	17.31	17.98	16.65				
1100	0.379	0.412	0.346	10.06	10.59	9.54	3650	0.838	0.880	0.796	17.41	18.08	16.74				
1150	0.392	0.425	0.359	10.27	10.80	9.74	3700	0.844	0.886	0.802	17.50	18.18	16.83				
1200	0.404	0.437	0.371	10.46	10.99	9.94	3750	0.851	0.894	0.808	17.62	18.30	16.94				
1250	0.416	0.449	0.383	10.66	11.18	10.13	3800	0.857	0.900	0.814	17.71	18.40	17.03				
1300	0.428	0.461	0.395	10.85	11.38	10.32	3850	0.863	0.906	0.820	17.81	18.50	17.12				
1350	0.440	0.473	0.407	11.04	11.57	10.51	3900	0.869	0.912	0.826	17.90	18.60	17.21				
1400	0.451	0.484	0.418	11.22	11.74	10.69	3950	0.875	0.919	0.831	18.00	18.70	17.30				
1450	0.462	0.495	0.429	11.39	11.92	10.86	4000	0.881	0.925	0.837	18.10	18.80	17.39				
1500	0.473	0.506	0.440	11.57	12.10	11.04	4050	0.887	0.931	0.843	18.19	18.90	17.48				
1550	0.484	0.517	0.451	11.74	12.27	11.22	4100	0.893	0.938	0.848	18.29	19.00	17.57				
1600	0.494	0.527	0.461	11.90	12.43	11.38	4150	0.899	0.944	0.854	18.38	19.10	17.66				
1650	0.505	0.538	0.472	12.08	12.61	11.55	4200	0.905	0.950	0.860	18.48	19.20	17.76				
1700	0.515	0.548	0.482	12.24	12.77	11.71	4250	0.911	0.957	0.865	18.58	19.30	17.85				
1750	0.525	0.558	0.492	12.40	12.93	11.87	4300	0.918	0.964	0.872	18.69	19.42	17.95				
1800	0.535	0.568	0.502	12.56	13.09	12.03	4350	0.924	0.970	0.878	18.78	19.52	18.04				
1850	0.545	0.578	0.512	12.72	13.25	12.19	4400	0.930	0.977	0.884	18.88	19.62	18.14				
1900	0.555	0.588	0.522	12.88	13.41	12.35	4450	0.937	0.984	0.890	18.99	19.74	18.24				
1950	0.564	0.597	0.531	13.02	13.55	12.50	4500	0.943	0.990	0.896	19.09	19.84	18.33				
2000	0.574	0.607	0.541	13.18	13.71	12.66	4550	0.949	0.996	0.902	19.18	19.94	18.42				
2050	0.583	0.616	0.550	13.33	13.86	12.80	4600	0.956	1.004	0.908	19.30	20.06	18.53				
2100	0.593	0.626	0.560	13.49	14.02	12.96	4650	0.962	1.010	0.914	19.39	20.16	18.62				
2150	0.602	0.635	0.569	13.63	14.16	13.10	4700	0.968	1.016	0.920	19.49	20.26	18.71				
2200	0.611	0.644	0.578	13.78	14.30	13.25	4750	0.974	1.023	0.925	19.58	20.36	18.80				
2250	0.620	0.653	0.587	13.92	14.45	13.39	4800	0.980	1.029	0.931	19.68	20.46	18.90				
2300	0.630	0.663	0.597	14.08	14.61	13.55	4850	0.986	1.035	0.937	19.78	20.56	18.99				
2350	0.639	0.672	0.606	14.22	14.75	13.70	4900	0.991	1.041	0.941	19.86	20.65	19.06				
2400	0.647	0.680	0.614	14.35	14.88	13.82	4950	0.996	1.046	0.946	19.94	20.73	19.14				
2450	0.656	0.689	0.623	14.50	15.02	13.97	5000	1.000	1.050	0.950	20.00	20.80	19.20				
2500	0.665	0.698	0.632	14.64	15.17	14.11											

Accuracy = ±5% of reading from 1500 to 3000 ppm CO<sub>2</sub> and ±125 ppm CO<sub>2</sub> from 0 to 1500 ppm CO<sub>2</sub> - chart revised on 12-18-95

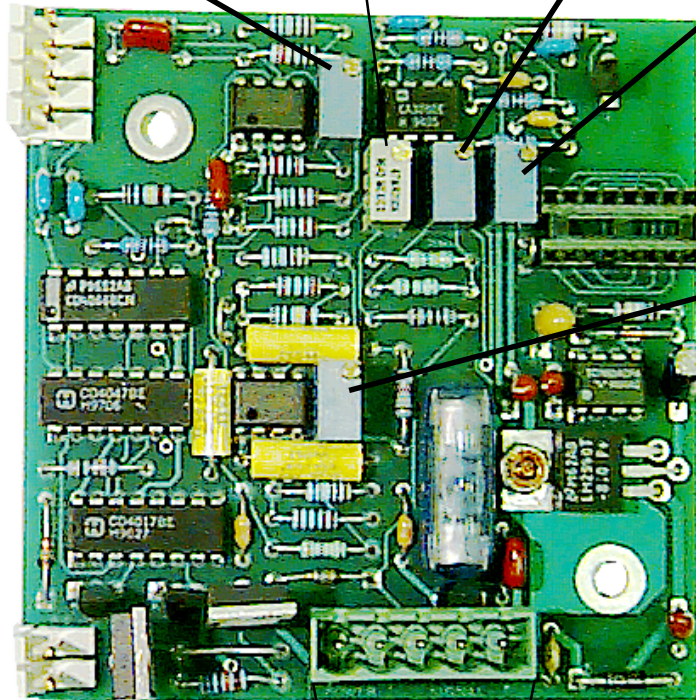


**coarse zero**  
adjust very slowly only if zero runs out of range

R7 **ZERO** Adj

R21 **20 mA** Adj

R24 **4 mA** Adj



R19 **SPAN** Adj

1. +12 VDC
2. 12 volt return (-)
3. 0-1 V output
4. Signal common
5. 4-20 mA output