



# Carbon Dioxide Monitor

## Model 2008LRTB-24VDC 1% CO<sub>2</sub>



### Description:

The Valtronics Model 2008LRT 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 1% CO<sub>2</sub> full scale.

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 linear 0 to 1 Volt, or the 4-20 mA output signal.

### Model 2008LRTB-24VDC 1% 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: ..... 0-1% (0-10,000ppm) CO<sub>2</sub>
- Accuracy: ..... ± 5% of reading from mid to full scale (± 0.025% CO<sub>2</sub> from 0-0.5% CO<sub>2</sub>)
- Repeatability: ..... ± 1% of full scale (challenge with same gas sample and assure zero )
- External Power Source: ..... 24 Volts D.C. @ 0.4 amp. max.( 20.0 to 26.0 VDC absolute min./max. )
- Power Consumption: ..... 4 watts typical @ 24.0 VDC
- Output Signals, voltage output: .. **0 to 1 volt** = 0 to 2% ( linear scale data provided)
- current loop output:... **4 to 20 mA** = 0 to 2% ( linear scale data provided)**300 Ω max loop resistance**
- Electronic Response Time: ..... 8 seconds typical to a step change in gas concentration
- gas response depends on gas diffusion physics
- Zero Noise at
- Constant Temperature: ..... Less than 10 mV peak to peak (measured during any 20 second period on V out)
- see VTI **Application Note A8** -How to avoid GROUND LOOPS & EMI
- 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) see **Application Note A12**
- Ambient Relative Humidity:..... 5 to 95% RH non-condensing , see **Application Note A30**
- Storage Temperature range: ..... 40 to +70°C (-40 to +158°F)
- Weight: ..... Less than 0.5 pound (0.23 kilogram)
- External Dimensions:
- PCB Card: ..... 3.7" x 5" x 1" see page 3 for mounting
- Sample head and optics: ..... 2" x 2", x 4.5" gas cell on a 9±1.5" cable, see page 3 for mounting



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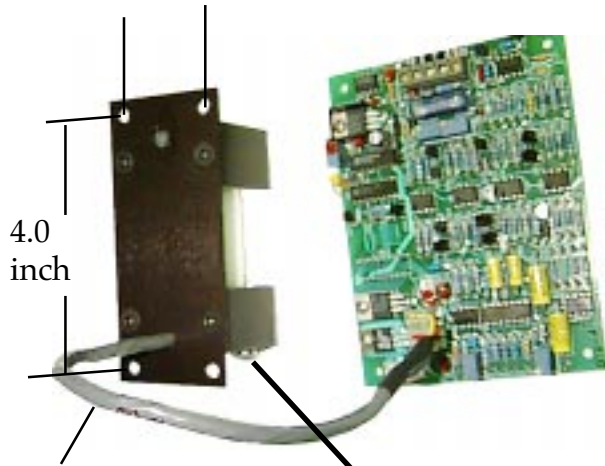
**VALTRONICS** & 1 volt full scale Accuracy = ±0.025% CO<sub>2</sub> from 0 to 0.5% CO<sub>2</sub> and ±5% of reading from 0.5 to 1% CO<sub>2</sub>

<b>Gas</b>				<b>±0.025% CO<sub>2</sub></b>			<b>4-20 mA</b>			<b>±0.025% CO<sub>2</sub></b>			
<b>in %</b>	<b>Output</b>												
<b>in %</b>	<b>in volts</b>	<b>Max</b>	<b>Min</b>	<b>output</b>	<b>Max</b>	<b>Min</b>	<b>output</b>	<b>Max</b>	<b>Min</b>				
0.00	0.000	0.025	-0.025	4.00	4.40	3.60							
0.01	0.010	0.035	-0.015	4.16	4.56	3.76							
0.02	0.020	0.045	-0.005	4.32	4.72	3.92							
0.03	0.030	0.055	0.005	4.48	4.88	4.08							
0.04	0.040	0.065	0.015	4.64	5.04	4.24							
0.05	0.050	0.075	0.025	4.80	5.20	4.40							
0.06	0.060	0.085	0.035	4.96	5.36	4.56							
0.07	0.070	0.095	0.045	5.12	5.52	4.72							
0.08	0.080	0.105	0.055	5.28	5.68	4.88							
0.09	0.090	0.115	0.065	5.44	5.84	5.04							
0.10	0.100	0.125	0.075	5.60	6.00	5.20							
0.11	0.110	0.135	0.085	5.76	6.16	5.36							
0.12	0.120	0.145	0.095	5.92	6.32	5.52							
0.13	0.130	0.155	0.105	6.08	6.48	5.68							
0.14	0.140	0.165	0.115	6.24	6.64	5.84							
0.15	0.150	0.175	0.125	6.40	6.80	6.00							
0.16	0.160	0.185	0.135	6.56	6.96	6.16							
0.17	0.170	0.195	0.145	6.72	7.12	6.32							
0.18	0.180	0.205	0.155	6.88	7.28	6.48							
0.19	0.190	0.215	0.165	7.04	7.44	6.64							
0.20	0.200	0.225	0.175	7.20	7.60	6.80							
0.21	0.210	0.235	0.185	7.36	7.76	6.96							
0.22	0.220	0.245	0.195	7.52	7.92	7.12							
0.23	0.230	0.255	0.205	7.68	8.08	7.28							
0.24	0.240	0.265	0.215	7.84	8.24	7.44							
0.25	0.250	0.275	0.225	8.00	8.40	7.60							
0.26	0.260	0.285	0.235	8.16	8.56	7.76							
0.27	0.270	0.295	0.245	8.32	8.72	7.92							
0.28	0.280	0.305	0.255	8.48	8.88	8.08							
0.29	0.290	0.315	0.265	8.64	9.04	8.24							
0.30	0.300	0.325	0.275	8.80	9.20	8.40							
0.31	0.310	0.335	0.285	8.96	9.36	8.56							
0.32	0.320	0.345	0.295	9.12	9.52	8.72							
0.33	0.330	0.355	0.305	9.28	9.68	8.88							
0.34	0.340	0.365	0.315	9.44	9.84	9.04							
0.35	0.350	0.375	0.325	9.60	10.00	9.20							
0.36	0.360	0.385	0.335	9.76	10.16	9.36							
0.37	0.370	0.395	0.345	9.92	10.32	9.52							
0.38	0.380	0.405	0.355	10.08	10.48	9.68							
0.39	0.390	0.415	0.365	10.24	10.64	9.84							
0.40	0.400	0.425	0.375	10.40	10.80	10.00							
0.41	0.410	0.435	0.385	10.56	10.96	10.16							
0.42	0.420	0.445	0.395	10.72	11.12	10.32							
0.43	0.430	0.455	0.405	10.88	11.28	10.48							
0.44	0.440	0.465	0.415	11.04	11.44	10.64							
0.45	0.450	0.475	0.425	11.20	11.60	10.80							
0.46	0.460	0.485	0.435	11.36	11.76	10.96							
0.47	0.470	0.495	0.445	11.52	11.92	11.12							
0.48	0.480	0.505	0.455	11.68	12.08	11.28							
0.49	0.490	0.515	0.465	11.84	12.24	11.44							
0.50	0.500	0.525	0.475	12.00	12.40	11.60							
0.51	0.510	0.536	0.485	12.16	12.57	11.75							
0.52	0.520	0.546	0.494	12.32	12.74	11.90							
0.53	0.530	0.557	0.504	12.48	12.90	12.06							
0.54	0.540	0.567	0.513	12.64	13.07	12.21							
0.55	0.550	0.578	0.523	12.80	13.24	12.36							
0.56	0.560	0.588	0.532	12.96	13.41	12.51							
0.57	0.570	0.599	0.542	13.12	13.58	12.66							
0.58	0.580	0.609	0.551	13.28	13.74	12.82							
0.59	0.590	0.620	0.561	13.44	13.91	12.97							
0.60	0.600	0.630	0.570	13.60	14.08	13.12							
0.61	0.610	0.641	0.580	13.76	14.25	13.27							
0.62	0.620	0.651	0.589	13.92	14.42	13.42							
0.63	0.630	0.662	0.599	14.08	14.58	13.58							
0.64	0.640	0.672	0.608	14.24	14.75	13.73							
0.65	0.650	0.683	0.618	14.40	14.92	13.88							
0.66	0.660	0.693	0.627	14.56	15.09	14.03							
0.67	0.670	0.704	0.637	14.72	15.26	14.18							
0.68	0.680	0.714	0.646	14.88	15.42	14.34							
0.69	0.690	0.725	0.656	15.04	15.59	14.49							
0.70	0.700	0.735	0.665	15.20	15.76	14.64							
0.71	0.710	0.746	0.675	15.36	15.93	14.79							
0.72	0.720	0.756	0.684	15.52	16.10	14.94							
0.73	0.730	0.767	0.694	15.68	16.26	15.10							
0.74	0.740	0.777	0.703	15.84	16.43	15.25							
0.75	0.750	0.788	0.713	16.00	16.60	15.40							
0.76	0.760	0.798	0.722	16.16	16.77	15.55							
0.77	0.770	0.809	0.732	16.32	16.94	15.70							
0.78	0.780	0.819	0.741	16.48	17.10	15.86							
0.79	0.790	0.830	0.751	16.64	17.27	16.01							
0.80	0.800	0.840	0.760	16.80	17.44	16.16							
0.81	0.810	0.851	0.770	16.96	17.61	16.31							
0.82	0.820	0.861	0.779	17.12	17.78	16.46							
0.83	0.830	0.872	0.789	17.28	17.94	16.62							
0.84	0.840	0.882	0.798	17.44	18.11	16.77							
0.85	0.850	0.893	0.808	17.60	18.28	16.92							
0.86	0.860	0.903	0.817	17.76	18.45	17.07							
0.87	0.870	0.914	0.827	17.92	18.62	17.22							
0.88	0.880	0.924	0.836	18.08	18.78	17.38							
0.89	0.890	0.935	0.846	18.24	18.95	17.53							
0.90	0.900	0.945	0.855	18.40	19.12	17.68							
0.91	0.910	0.956	0.865	18.56	19.29	17.83							
0.92	0.920	0.966	0.874	18.72	19.46	17.98							
0.93	0.930	0.977	0.884	18.88	19.62	18.14							
0.94	0.940	0.987	0.893	19.04	19.79	18.29							
0.95	0.950	0.998	0.903	19.20	19.96	18.44							
0.96	0.960	1.008	0.912	19.36	20.13	18.59							
0.97	0.970	1.019	0.922	19.52	20.30	18.74							
0.98	0.980	1.029	0.931	19.68	20.46	18.90							
0.99	0.990	1.040	0.941	19.84	20.63	19.05							
1.00	1.000	1.050	0.950	20.00	20.80	19.20							

Revised on 2-2-95

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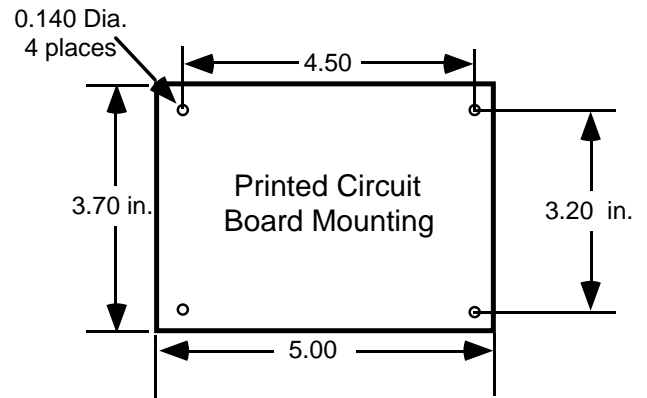
Gas Cell mounts through  
0.2" diameter holes  
4 places on 2.5 x 4" centers



0.25" dia. cable  
1" in from side  
and 0.75 inch in  
from end of  
mounting plate

**Gas Calibration Port:** A #10-32 screw may be removed and replaced by a #10-32 hose barb to flow calibration gas at about 0.3 to 0.5 LPM

## Mounting & clearance information



Coarse Zero adj

Clock Adj. (requires frequency counter)

4 mA Adj.

ZERO Adj.

- 5. 4-20 mA out
- 4. Sig Common
- 3. 0-1 V out
- 2. 24V return (-)
- 1. +24 VDC

SPAN Adj.

20 mA Adj.

