



# Carbon Dioxide Monitor

## Model 2015DH 20% CO<sub>2</sub>

### Description:

The Valtronics Model 2015DH is a Non-Dispersive Infrared gas monitor, designed for continuous monitoring of Carbon Dioxide in the range of zero to 20% CO<sub>2</sub> full scale. *See Application Note A34 for calibration instructions.*

The gas diffusion type of gas cell is completely unaffected by humidity as long as no condensation occurs. The transducer output may be interfaced to any controller unit using its analog 0 to 1 Volt output signal (see data attached). **Gas cell MUST stay with the serialized PC board as a MATCHED GAS CALIBRATED PAIR.**

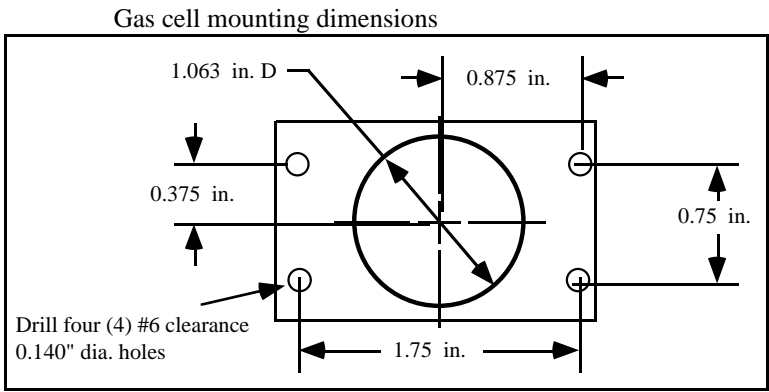
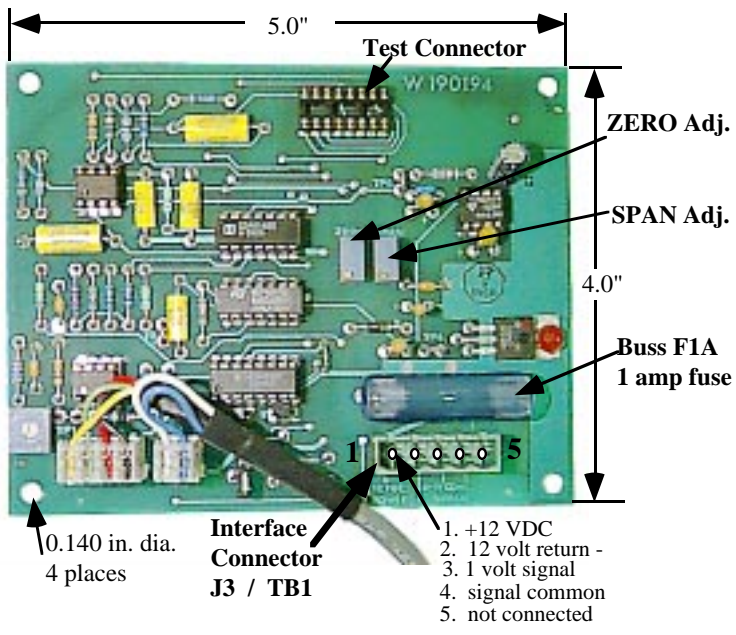
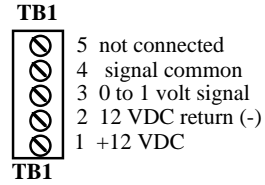
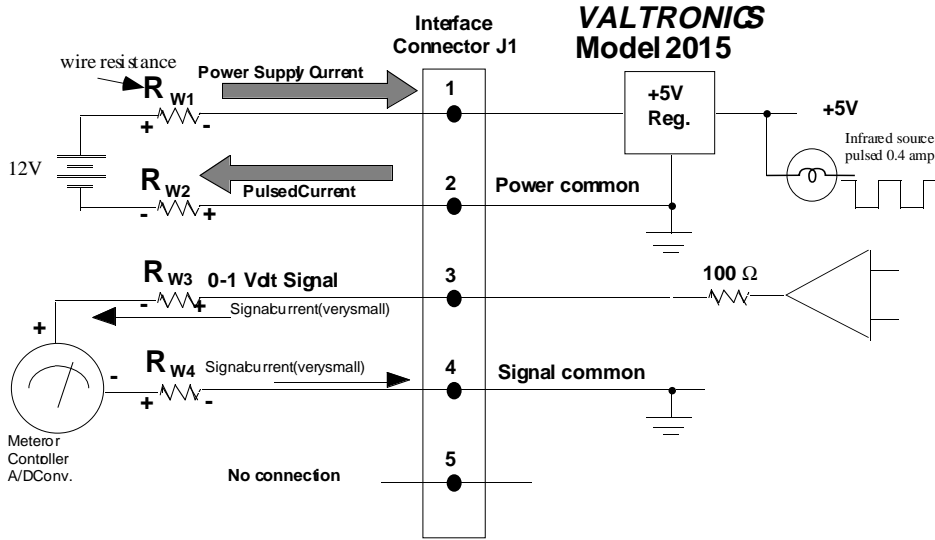
### Model 2015 DH 20% CO<sub>2</sub> Specifications:

- Method: ..... **N. D. I. R.** (Non-dispersive Infra-red) Gas Diffusion type gas cell
- Gas: ..... Carbon dioxide (CO<sub>2</sub>)
- Range: ..... 0-20% CO<sub>2</sub> (see Application Note A34 for calibration instructions)
- Accuracy: ..... ± 5% of reading from mid to full scale (± 0.5 CO<sub>2</sub> from 0-10% 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. (7.7 to 16.0 VDC absolute min./max.)  
see VTI Application Note A3 -How to avoid GROUND LOOPS & EMI
- Power Consumption: ..... 3 watts typical @ 12.0 VDC
- Output Signal: ..... 0 to 1 volt = 0 to 20% CO<sub>2</sub> (non-linear scale data attached)
- 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 time 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 (41° to 104°F) see VTI Application Note A12
- Storage Temperature range: ..... -40 to +70°C (-40 to +158°F)
- Operating Humidity Range: ..... 5 to 95% RH (non-condensing)
- Weight: ..... Less than 0.5 pound (0.23 kilogram)
- PCB Clearance Dimensions: ..... 4" x 5" x 2" (10.16 cm, x 12.7 cm, x 5.08 cm)





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**VALTRONICS** Data: Aug 7, 1992 **20% & 1 volt FS, |**

Gas in %	Output Voltage	±0.5% CO <sub>2</sub>		Gas in %	Output Voltage	±5% of reading	
		Min	Max			Min	Max
0.00	0.000	-0.037	0.037	10.20	0.743	0.706	0.780
0.20	0.042	0.005	0.079	10.40	0.751	0.713	0.789
0.40	0.080	0.043	0.117	10.60	0.758	0.720	0.796
0.60	0.114	0.077	0.151	10.80	0.765	0.727	0.803
0.80	0.146	0.109	0.183	11.00	0.772	0.733	0.811
1.00	0.174	0.137	0.211	11.20	0.779	0.740	0.818
1.20	0.201	0.164	0.238	11.40	0.786	0.747	0.825
1.40	0.225	0.188	0.262	11.60	0.793	0.753	0.833
1.60	0.248	0.211	0.285	11.80	0.799	0.759	0.839
1.80	0.270	0.233	0.307	12.00	0.806	0.766	0.846
2.00	0.290	0.253	0.327	12.20	0.812	0.771	0.853
2.20	0.309	0.272	0.346	12.40	0.819	0.778	0.860
2.40	0.327	0.290	0.364	12.60	0.825	0.784	0.866
2.60	0.345	0.308	0.382	12.80	0.831	0.789	0.873
2.80	0.361	0.324	0.398	13.00	0.837	0.795	0.879
3.00	0.377	0.340	0.414	13.20	0.843	0.801	0.885
3.20	0.393	0.356	0.430	13.40	0.849	0.807	0.891
3.40	0.407	0.370	0.444	13.60	0.854	0.811	0.897
3.60	0.422	0.385	0.459	13.80	0.860	0.817	0.903
3.80	0.436	0.399	0.473	14.00	0.865	0.822	0.908
4.00	0.449	0.412	0.486	14.20	0.870	0.827	0.914
4.20	0.462	0.425	0.499	14.40	0.875	0.831	0.919
4.40	0.475	0.438	0.512	14.60	0.880	0.836	0.924
4.60	0.487	0.450	0.524	14.80	0.885	0.841	0.929
4.80	0.499	0.462	0.536	15.00	0.889	0.845	0.933
5.00	0.511	0.474	0.548	15.20	0.895	0.850	0.940
5.20	0.522	0.485	0.559	15.40	0.900	0.855	0.945
5.40	0.533	0.496	0.570	15.60	0.905	0.860	0.950
5.60	0.544	0.507	0.581	15.80	0.909	0.864	0.954
5.80	0.555	0.518	0.592	16.00	0.914	0.868	0.960
6.00	0.565	0.528	0.602	16.20	0.919	0.873	0.965
6.20	0.575	0.538	0.612	16.40	0.923	0.877	0.969
6.40	0.585	0.548	0.622	16.60	0.928	0.882	0.974
6.60	0.595	0.558	0.632	16.80	0.932	0.885	0.979
6.80	0.604	0.567	0.641	17.00	0.937	0.890	0.984
7.00	0.613	0.576	0.650	17.20	0.942	0.895	0.989
7.20	0.622	0.585	0.659	17.40	0.946	0.899	0.993
7.40	0.631	0.594	0.668	17.60	0.951	0.903	0.999
7.60	0.640	0.603	0.677	17.80	0.955	0.907	1.003
7.80	0.649	0.612	0.686	18.00	0.960	0.912	1.008
8.00	0.657	0.620	0.694	18.20	0.965	0.917	1.013
8.20	0.665	0.628	0.702	18.40	0.969	0.921	1.017
8.40	0.674	0.637	0.711	18.60	0.973	0.924	1.022
8.60	0.682	0.645	0.719	18.80	0.978	0.929	1.027
8.80	0.690	0.653	0.727	19.00	0.982	0.933	1.031
9.00	0.698	0.661	0.735	19.20	0.986	0.937	1.035
9.20	0.705	0.668	0.742	19.40	0.990	0.941	1.040
9.40	0.713	0.676	0.750	19.60	0.994	0.944	1.044
9.60	0.721	0.684	0.758	19.80	0.997	0.947	1.047
9.80	0.728	0.691	0.765	20.00	1.000	0.950	1.050
10.00	0.736	0.699	0.773				

Chart Revised on 11-28-95 (tolerance 0 to 10% CO<sub>2</sub> to be 5% of 0.736 V)  
Accuracy = ±0.5% CO<sub>2</sub> from 0 to 10% CO<sub>2</sub> and ±5% of readings from 10 to 20%