



The CO₂ WALL-STAT™

Indoor Air Quality Sensor (IAQ)

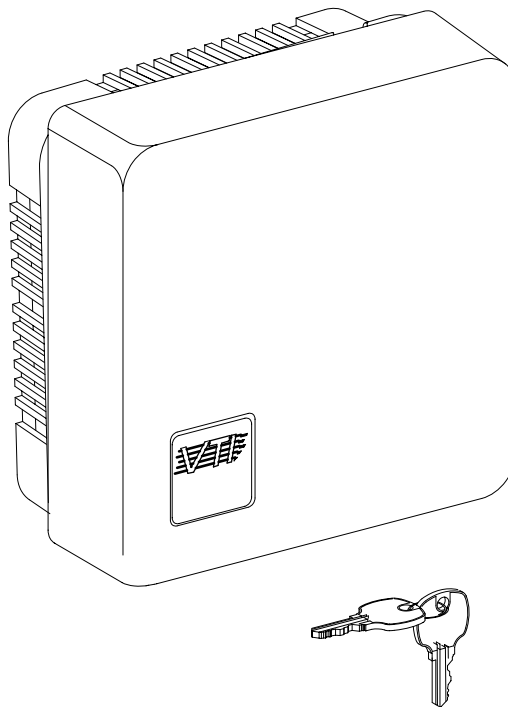
Model 6289WTP

Features:

The Ideal IAQ CO₂ Sensor with long term low maintenance operation

- No moving parts infrared sensor
- Convenient 24 VAC or DC operation
- Smallest, most compact size available
- Excellent long term stability
- Precision Calibration Gas Kit available
- No pump or particulate filters required
- Diffusion gas sampling
- Adjustable set point SPDT control relay
- Linear 0-5 VDC and 4-20 mA outputs
- LED's indicate power on and relay activation
- One minute warm up to fully stabilized operation
- Calibration gas port easily accessible
- Tamper resistant enclosure
- **Test Connector** installed as an **Option**

Model 6289WTP



Application:

HVAC

- Hospitals
- Offices
- Schools
- Theaters
- Indoor Sports Arenas

The VALTRONICS Model 6289WTP is a non-dispersive infrared carbon dioxide monitor for use as an indoor air quality sensor. It produces a control signal proportional to carbon dioxide concentration. This control signal is then used to provide remote control of the outdoor air dampers, thereby controlling the fresh air intake or varying the ventilation rates while still maintaining safe indoor air quality. It is housed in a tamper resistant enclosure with a lock and key.



The CO₂ WALL-STAT™ Indoor Air Quality Sensor Model 6289WTP

Description:

The Model 6289WTP consists of a patented no moving parts infrared CO₂ monitor in a tamper proof locking protective plastic case with louvers to allow free passage of air to the sensing cell inside. This sensing cell consists of a non-dispersive infrared carbon dioxide optical diffusion gas cell. It uses a pulsed infrared source and has no free air optical path. This configuration is designed for use as a wall mounted CO₂ sensor in HVAC control systems of all sizes from a single sensor up to a complete computer controlled multiple point system.

The 6289WTP has linear signal outputs of 0-5 Volts DC and a 4-20 mA current loop (no external power is required in the current loop) to connect to a computer or controller. Most building management systems and direct digital control systems are capable of interfacing with the Model 6289WTP.

Specifications: 6289WTP

- Method: N.D. I. R. (Non-dispersive Infra-red) Diffusion type gas sampling
- Gas: Carbon dioxide (CO₂)
- Range: 0-2,000 ppm (0.2%) CO₂
- Accuracy: ± 5% of reading from 1000 to 2000 ppm (±50 ppm at 1000 ppm and below)
- Repeatability: ± 1% of full scale (challenge with same gas sample and assure zero)
- External Power Source: 24 Volts A.C. or D.C. @ 0.5 amp. max. (20.0 to 30.0 VAC RMS or VDC)
See sheet 4 for wiring
- Power Consumption: 4.25 watts typical @ 24 V.A.C. (6 watts maximum)
- Adjustable set point,
factory set at 1000 ppm: SPDT Control relay (SPDT N.C. , N.O. 3Amp @250 VAC or 30 VDC)
- Set point is slide switch:..... (3 position) selectable: 800, 1000, or 1200 ppm or
internally jumper selected to be continuously variable
- Output Signals:
 - Voltage: 0 to 5 volt = 0 to 2000 ppm (linear scale data attached)
 - Current Loop: 4 to 20 mA = 0 to 2000 ppm (linear scale data attached) no external power
 - 9 pin "D" Test Connector:..... Output signals and diagnostic test point signals for external test set option
 - Zero Drift at Constant Temperature: Less than 100 ppm per year (random not cumulative)
 - Zero Noise @Constant Temperature: Less than 20 ppm peak to peak measured during any 10 to 20 second period
 - Zero Drift due to Ambient Temp.:..... Less than 10 ppm per degree Centigrade
 - Operating Temperature Range: .. 0 to 50°C (32° to 122°F) see **Application Note A12**
 - Storage Temperature Range: -40 to +70°C (-40 to +158°F)
 - Weight:..... Less than 0.5 pound (<0.23 kilogram)
 - Enclosure Dimensions:..... 5.75" x 5.75" x 2.5" (14.61 cm, x 14.61 cm, x 6.35 cm)



Accuracy = ±5% of reading from 1000 ppm to 2000 ppm and ± 50 ppm from 0 to 1000 ppm. Revised on 1-18-95

CO2 in ppm	Output in volts	±50 ppm CO2		4-20 mA output	CO2 in ppm	Output in volts	±5 % of reading		4-20 mA output	CO2 in ppm	Output in volts	±5 % of reading		4-20 mA output
		Min	Max				Min	Max				Min	Max	
0	0.000	-0.125	0.125	4.00	710	1.775	1.650	1.900	9.68	1410	3.525	3.349	3.701	15.28
10	0.025	-0.100	0.150	4.08	720	1.800	1.675	1.925	9.76	1420	3.550	3.373	3.728	15.36
20	0.050	-0.075	0.175	4.16	730	1.825	1.700	1.950	9.84	1430	3.575	3.396	3.754	15.44
30	0.075	-0.050	0.200	4.24	740	1.850	1.725	1.975	9.92	1440	3.600	3.420	3.780	15.52
40	0.100	-0.025	0.225	4.32	750	1.875	1.750	2.000	10.00	1450	3.625	3.444	3.806	15.60
50	0.125	0.000	0.250	4.40	760	1.900	1.775	2.025	10.08	1460	3.650	3.468	3.833	15.68
60	0.150	0.025	0.275	4.48	770	1.925	1.800	2.050	10.16	1470	3.675	3.491	3.859	15.76
70	0.175	0.050	0.300	4.56	780	1.950	1.825	2.075	10.24	1480	3.700	3.515	3.885	15.84
80	0.200	0.075	0.325	4.64	790	1.975	1.850	2.100	10.32	1490	3.725	3.539	3.911	15.92
90	0.225	0.100	0.350	4.72	800	2.000	1.875	2.125	10.40	1500	3.750	3.563	3.938	16.00
100	0.250	0.125	0.375	4.80	810	2.025	1.900	2.150	10.48	1510	3.775	3.586	3.964	16.08
110	0.275	0.150	0.400	4.88	820	2.050	1.925	2.175	10.56	1520	3.800	3.610	3.990	16.16
120	0.300	0.175	0.425	4.96	830	2.075	1.950	2.200	10.64	1530	3.825	3.634	4.016	16.24
130	0.325	0.200	0.450	5.04	840	2.100	1.975	2.225	10.72	1540	3.850	3.658	4.043	16.32
140	0.350	0.225	0.475	5.12	850	2.125	2.000	2.250	10.80	1550	3.875	3.681	4.069	16.40
150	0.375	0.250	0.500	5.20	860	2.150	2.025	2.275	10.88	1560	3.900	3.705	4.095	16.48
160	0.400	0.275	0.525	5.28	870	2.175	2.050	2.300	10.96	1570	3.925	3.729	4.121	16.56
170	0.425	0.300	0.550	5.36	880	2.200	2.075	2.325	11.04	1580	3.950	3.753	4.148	16.64
180	0.450	0.325	0.575	5.44	890	2.225	2.100	2.350	11.12	1590	3.975	3.776	4.174	16.72
190	0.475	0.350	0.600	5.52	900	2.250	2.125	2.375	11.20	1600	4.000	3.800	4.200	16.80
200	0.500	0.375	0.625	5.60	910	2.275	2.150	2.400	11.28	1610	4.025	3.824	4.226	16.88
210	0.525	0.400	0.650	5.68	920	2.300	2.175	2.425	11.36	1620	4.050	3.848	4.253	16.96
220	0.550	0.425	0.675	5.76	930	2.325	2.200	2.450	11.44	1630	4.075	3.871	4.279	17.04
230	0.575	0.450	0.700	5.84	940	2.350	2.225	2.475	11.52	1640	4.100	3.895	4.305	17.12
240	0.600	0.475	0.725	5.92	950	2.375	2.250	2.500	11.60	1650	4.125	3.919	4.331	17.20
250	0.625	0.500	0.750	6.00	960	2.400	2.275	2.525	11.68	1660	4.150	3.943	4.358	17.28
260	0.650	0.525	0.775	6.08	970	2.425	2.300	2.550	11.76	1670	4.175	3.966	4.384	17.36
270	0.675	0.550	0.800	6.16	980	2.450	2.325	2.575	11.84	1680	4.200	3.990	4.410	17.44
280	0.700	0.575	0.825	6.24	990	2.475	2.350	2.600	11.92	1690	4.225	4.014	4.436	17.52
290	0.725	0.600	0.850	6.32	1000	2.500	2.375	2.625	12.00	1700	4.250	4.038	4.463	17.60
300	0.750	0.625	0.875	6.40	1010	2.525	2.399	2.651	12.08	1710	4.275	4.061	4.489	17.68
310	0.775	0.650	0.900	6.48	1020	2.550	2.423	2.678	12.16	1720	4.300	4.085	4.515	17.76
320	0.800	0.675	0.925	6.56	1030	2.575	2.446	2.704	12.24	1730	4.325	4.109	4.541	17.84
330	0.825	0.700	0.950	6.64	1040	2.600	2.470	2.730	12.32	1740	4.350	4.133	4.568	17.92
340	0.850	0.725	0.975	6.72	1050	2.625	2.494	2.756	12.40	1750	4.375	4.156	4.594	18.00
350	0.875	0.750	1.000	6.80	1060	2.650	2.518	2.783	12.48	1760	4.400	4.180	4.620	18.08
360	0.900	0.775	1.025	6.88	1070	2.675	2.541	2.809	12.56	1770	4.425	4.204	4.646	18.16
370	0.925	0.800	1.050	6.96	1080	2.700	2.565	2.835	12.64	1780	4.450	4.228	4.673	18.24
380	0.950	0.825	1.075	7.04	1090	2.725	2.589	2.861	12.72	1790	4.475	4.251	4.699	18.32
390	0.975	0.850	1.100	7.12	1100	2.750	2.613	2.888	12.80	1800	4.500	4.275	4.725	18.40
400	1.000	0.875	1.125	7.20	1110	2.775	2.636	2.914	12.88	1810	4.525	4.299	4.751	18.48
410	1.025	0.900	1.150	7.28	1120	2.800	2.660	2.940	12.96	1820	4.550	4.323	4.778	18.56
420	1.050	0.925	1.175	7.36	1130	2.825	2.684	2.966	13.04	1830	4.575	4.346	4.804	18.64
430	1.075	0.950	1.200	7.44	1140	2.850	2.708	2.993	13.12	1840	4.600	4.370	4.830	18.72
440	1.100	0.975	1.225	7.52	1150	2.875	2.731	3.019	13.20	1850	4.625	4.394	4.856	18.80
450	1.125	1.000	1.250	7.60	1160	2.900	2.755	3.045	13.28	1860	4.650	4.418	4.883	18.88
460	1.150	1.025	1.275	7.68	1170	2.925	2.779	3.071	13.36	1870	4.675	4.441	4.909	18.96
470	1.175	1.050	1.300	7.76	1180	2.950	2.803	3.098	13.44	1880	4.700	4.465	4.935	19.04
480	1.200	1.075	1.325	7.84	1190	2.975	2.826	3.124	13.52	1890	4.725	4.489	4.961	19.12
490	1.225	1.100	1.350	7.92	1200	3.000	2.850	3.150	13.60	1900	4.750	4.513	4.988	19.20
500	1.250	1.125	1.375	8.00	1210	3.025	2.874	3.176	13.68	1910	4.775	4.536	5.014	19.28
510	1.275	1.150	1.400	8.08	1220	3.050	2.898	3.203	13.76	1920	4.800	4.560	5.040	19.36
520	1.300	1.175	1.425	8.16	1230	3.075	2.921	3.229	13.84	1930	4.825	4.584	5.066	19.44
530	1.325	1.200	1.450	8.24	1240	3.100	2.945	3.255	13.92	1940	4.850	4.608	5.093	19.52
540	1.350	1.225	1.475	8.32	1250	3.125	2.969	3.281	14.00	1950	4.875	4.631	5.119	19.60
550	1.375	1.250	1.500	8.40	1260	3.150	2.993	3.308	14.08	1960	4.900	4.655	5.145	19.68
560	1.400	1.275	1.525	8.48	1270	3.175	3.016	3.334	14.16	1970	4.925	4.679	5.171	19.76
570	1.425	1.300	1.550	8.56	1280	3.200	3.040	3.360	14.24	1980	4.950	4.703	5.198	19.84
580	1.450	1.325	1.575	8.64	1290	3.225	3.064	3.386	14.32	1990	4.975	4.726	5.224	19.92
590	1.475	1.350	1.600	8.72	1300	3.250	3.088	3.413	14.40	2000	5.000	4.750	5.250	20.00
600	1.500	1.375	1.625	8.80	1310	3.275	3.111	3.439	14.48					
610	1.525	1.400	1.650	8.88	1320	3.300	3.135	3.465	14.56					
620	1.550	1.425	1.675	8.96	1330	3.325	3.159	3.491	14.64					
630	1.575	1.450	1.700	9.04	1340	3.350	3.183	3.518	14.72					
640	1.600	1.475	1.725	9.12	1350	3.375	3.206	3.544	14.80					
650	1.625	1.500	1.750	9.20	1360	3.400	3.230	3.570	14.88					
660	1.650	1.525	1.775	9.28	1370	3.425	3.254	3.596	14.96					
670	1.675	1.550	1.800	9.36	1380	3.450	3.278	3.623	15.04					
680	1.700	1.575	1.825	9.44	1390	3.475	3.301	3.649	15.12					
690	1.725	1.600	1.850	9.52	1400	3.500	3.325	3.675	15.20					
700	1.750	1.625	1.875	9.60										

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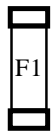
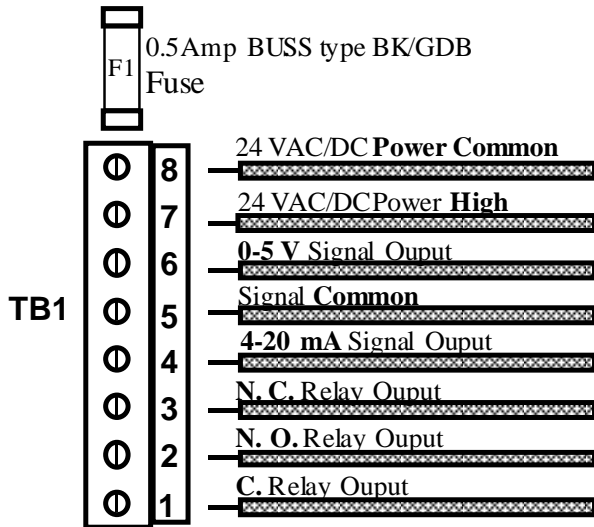
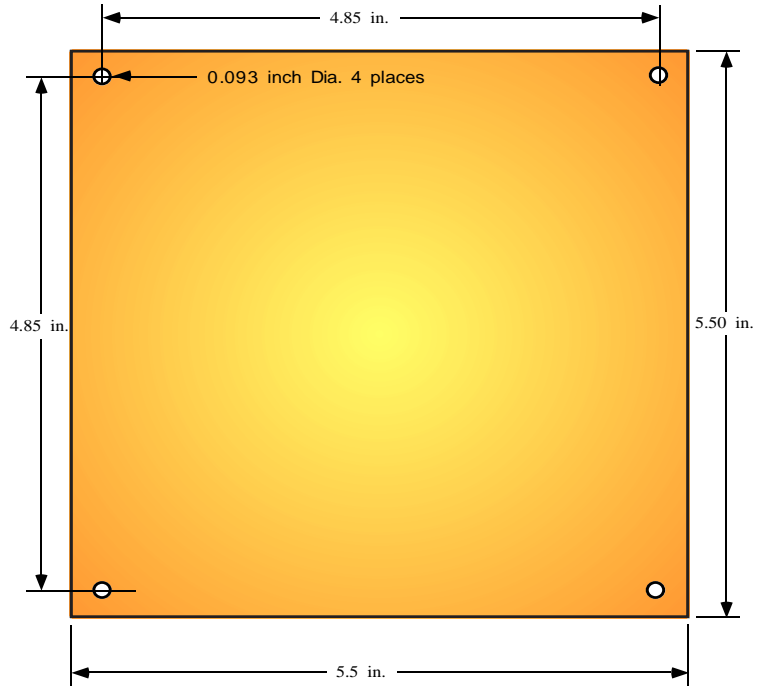


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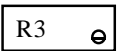
MOUNTING on the wall and wiring:

Remove the cover of the unit using the key provided. Locate the unit on a flat mounting surface of a wall near a return air grill. The area should be at least 5.5" square. Drill four 0.093 inch diameter ($\frac{3}{32}$) holes using the diagram on the right as a guide. Mount the tamper proof enclosure using the screws provided.

Using 22 AWG to 18 AWG (20 AWG typical) wire connected to terminal block TB1 (see diagram below and block diagram on right), pull the power, signal, and relay contact wires (you only need to wire the functions that you want to use) through the black strain relief provided.



0.5 Amp BUSS type BK/GDB Fuse



Set Point Adjustment

Calibration and preventive maintenance:

The units are delivered calibrated, using precision 1000±20 ppm certified carbon dioxide. They may be ordered for special high altitude calibration (Cities like Denver, CO where the CO₂ density is about 17% less than at sea level). See Application Note A12. Sensors should be checked every 6 to 12 months using our gas calibration kit. See Application Note A25 for details. The green 1/16 inch I.D. calibration tube is provided to make this simple and quick. The "9" Pin "D" **Test Connector** is installed as a **Option only**. Since the sensor gas cell works by diffusion and is mounted directly in the duct, dirt and dust will not build up in the sampling path like sample draw type units or sensors that require an aspiration box.

