VALTRONICS

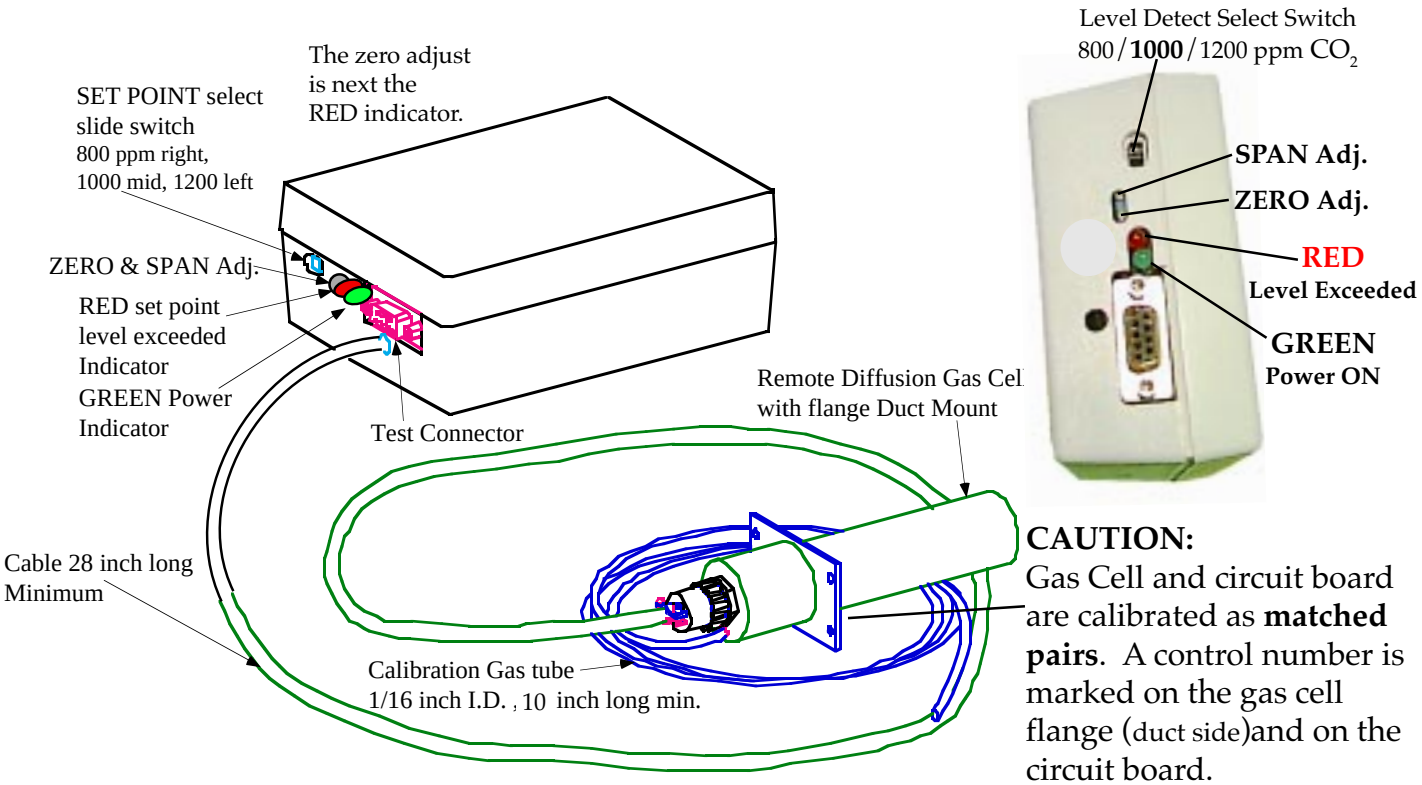
The CO_2 DUCT-STAT™ Indoor Air Quality Sensor (IAQ) Model 6289C

Features:

The Ideal IAQ CO_2 Sensor with long term low maintenance operation

- No moving parts infrared sensor
- Convenient 24 VAC or DC operation
- Smallest, most compact size available
- Remote sensor for easy duct mounting
- Precision Calibration Gas Kit available
- No pump or particulate filters required
- Diffusion gas sampling - duct flange mount
- Adjustable set point SPDT control relay
- Linear 0-5 VDC and 4-20 mA outputs
- LED's indicate power on and relay activation
- Fast warm up to fully stabilized operation
- Calibration gas port easily accessible
- Calibrate without removing cover
- **Test Connector** installed as an **Option**

Model 6289C



CAUTION:
Gas Cell and circuit board are calibrated as **matched pairs**. A control number is marked on the gas cell flange (duct side)and on the circuit board.

Application:

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

The ***VALTRONICS*** Model 6289C 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.

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The CO_2 DUCT-STAT™ Indoor Air Quality Sensor Model 6289C

Description:

The Model 6289C consists of a patented no moving parts infrared CO_2 monitor with the electronics in a protective plastic case and the sensing cell on a 28 inch cable for easy duct mounting. 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 duct mounted CO_2 sensor in HVAC control systems of all sizes from a single sensor up to a complete computer controlled multiple point system. See **Application Notes A27 & A41** about building commissioning and minimum flow rates of outside fresh air for CO_2 level control (demand control). Ref: **ASHRAE Standard 62-1989R**

The 6289C 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 6289C

Specifications: 6289C

Method: ..... N.D. I. R. (Non-dispersive Infra-red) Diffusion type gas sampling
Gas: ..... Carbon dioxide (CO_2)
Range: ..... 0-2,000 ppm (0.2%) CO_2
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. 50 or 60 Hz or D.C. @ 0.5 amp. max.(20.0 to 30.0 VAC RMS or VDC)
See Instruction Manual for wiring, test connector features, and theory of operation
Power Consumption: ..... 4.25 watts typical @ 24 V.A.C. (6 watts maximum)
Adjustable level detect SET point,
factory set at 1000 ppm: ..... SPDT Control relay (SPDT N.C. , N.O. 3Amp @250 VAC or 30 VDC)
SET POINT switch selectable: ..... (3 position) selectable: 800, 1000, or 1200 ppm or
internally jumper selected to be continuously variable from 200 to 2000 ppm
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**: ..... Removed Aug 2000 - **installed as an option only.**

Zero Drift at Constant Temperature: ..... Less than 100 ppm per year (random not cumulative)

Zero Noise at Constant Temperature: ..... Less than 20 ppm peak to peak measured during any 20 second period

Zero Drift due to Ambient Temperature: 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)
Operating Humidity Range ..... 0 to 95% RH non-condensing see **Application Note A30**
Weight: ..... Less than 0.5 pound (<0.23 kilogram)
External Dimensions: ..... Note: Remote sensor and control enclosure are **matched calibrated pairs**
Enclosure: ..... 4" x 5" x 2" (10.16 cm, x 12.7 cm, x 5.08 cm)
Remote Sensor with ..... Calibration gas tube is 1/16 inch I.D. and 12 inch long minimum
Duct mountable flange: ..... 28 inch min. cable, 1" inch diameter cell protrudes approx. 3.3" into duct

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PPM CO_2	Output V	Max	Min	4-20 mA	Max	Min
0	**0.000**	0.125	-0.125	**4.00**	4.4	3.6
50	**0.125**	0.250	0.000	**4.40**	4.80	4.00
100	**0.250**	0.375	0.125	**4.80**	5.20	4.40
150	**0.375**	0.500	0.250	**5.20**	5.60	4.80
200	**0.500**	0.625	0.375	**5.60**	6.00	5.20
250	**0.625**	0.750	0.500	**6.00**	6.40	5.60
300	**0.750**	0.875	0.625	**6.40**	6.80	6.00
350	**0.875**	1.000	0.750	**6.80**	7.20	6.40
400	**1.000**	1.125	0.875	**7.20**	7.60	6.80
450	**1.125**	1.250	1.000	**7.60**	8.00	7.20
500	**1.250**	1.375	1.125	**8.00**	8.40	7.60
550	**1.375**	1.500	1.250	**8.40**	8.80	8.00
600	**1.500**	1.625	1.375	**8.80**	9.20	8.40
650	**1.625**	1.750	1.500	**9.20**	9.60	8.80
700	**1.750**	1.875	1.625	**9.60**	10.00	9.20
750	**1.875**	2.000	1.750	**10.00**	10.40	9.60
800	**2.000**	2.125	1.875	**10.40**	10.80	10.00
850	**2.125**	2.250	2.000	**10.80**	11.20	10.40
900	**2.250**	2.375	2.125	**11.20**	11.60	10.80
950	**2.375**	2.500	2.250	**11.60**	12.00	11.20
1000	**2.500**	2.625	2.375	**12.00**	12.40	11.60
1050	**2.625**	2.756	2.494	**12.40**	12.82	11.98
1100	**2.750**	2.888	2.613	**12.80**	13.24	12.36
1150	**2.875**	3.019	2.731	**13.20**	13.66	12.74
1200	**3.000**	3.150	2.850	**13.60**	14.08	13.12
1250	**3.125**	3.281	2.969	**14.00**	14.50	13.50
1300	**3.250**	3.413	3.088	**14.40**	14.92	13.88
1350	**3.375**	3.544	3.206	**14.80**	15.34	14.26
1400	**3.500**	3.675	3.325	**15.20**	15.76	14.64
1450	**3.625**	3.806	3.444	**15.60**	16.18	15.02
1500	**3.750**	3.938	3.563	**16.00**	16.60	15.40
1550	**3.875**	4.069	3.681	**16.40**	17.02	15.78
1600	**4.000**	4.200	3.800	**16.80**	17.44	16.16
1650	**4.125**	4.331	3.919	**17.20**	17.86	16.54
1700	**4.250**	4.463	4.038	**17.60**	18.28	16.92
1750	**4.375**	4.594	4.156	**18.00**	18.70	17.30
1800	**4.500**	4.725	4.275	**18.40**	19.12	17.68
1850	**4.625**	4.856	4.394	**18.80**	19.54	18.06
1900	**4.750**	4.988	4.513	**19.20**	19.96	18.44
1950	**4.875**	5.119	4.631	**19.60**	20.38	18.82
2000	**5.000**	5.250	4.750	**20.00**	20.80	19.20

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The CO_2 DUCT-STAT™ Indoor Air Quality Sensor Model 6289C

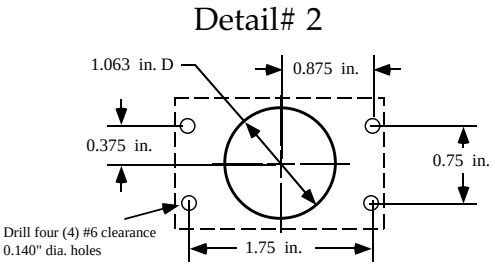
Using 22 AWG to 14 AWG (20 AWG typical) wire connected to terminal block TB1 (see diagram below), pull the power, signal, and relay contact wires (you only need to wire the functions that you want to use) through the 0.50 inch access hole.

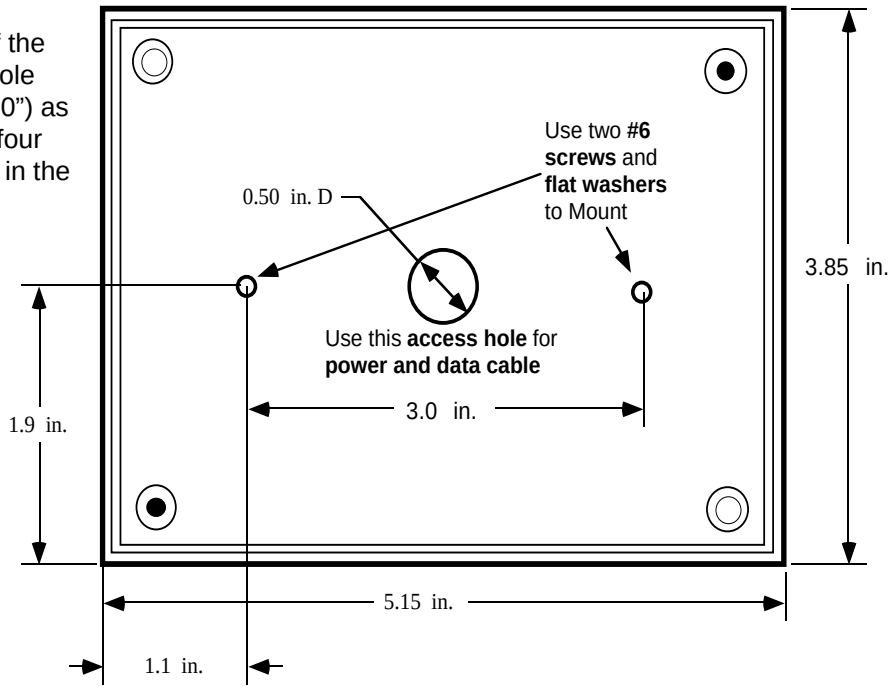
MOUNTING on the wall and wiring:

Remove the back cover of the unit using a broad bladed flat screwdriver to pry the cover near the two black press fit type studs .

Locate the control unit on a flat mounting surface. The area should be about 5.25 x 4 inches. Drill two 0.093 inch diameter ($^3/_{32}$) holes using the drawing below as a guide. Mount the enclosure using two #6 screws and flat washers through the 0.125 inch diameter holes on either side of the 1/2 inch diameter cable access hole.

Mount the remote sensor through the wall of the duct by punching a 1 & 1/16 inch diameter hole and drilling four (4) #6 clearance holes (0.140") as shown in Detail# 2. Mount the sensor using four (4) #6 sheet metal screws through the holes in the sensor flange.





Using 22 AWG to 14 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 0.50 inch access hole. See the Model 6289C Installation Guide for more detailed instructions. CAUTION: DO NOT connect external power in the 4-20 mA current loop.

See Application Notes A25, A26, A27, and A41 for information about preventive maintenance and building commissioning.