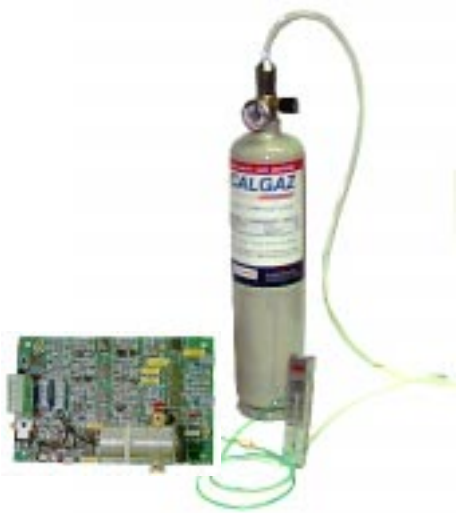
CO_2 Calibration Instructions - Analog Flow Thru Gas Cells



NOTE: Gas calibration should be done a minimum of once every (**6**) six months (at least **ZERO** calibration). If you keep a calibration log book and record how much zero & span drift occur, you can verify if the calibration interval is correct. You may find that ZERO calibration every 6 months and SPAN once a year is sufficient to maintain accuracy.

NOTE: Refer to product spec sheet for **ZERO** & **SPAN** adjustment locations.

1. Remove protective cap from top of nitrogen cylinder. Push and thread pressure regulator valve onto cylinder outlet. Nitrogen is **ZERO** gas. Fresh air is about **0.04%(400ppm)** CO_2.
2. Connect plastic tubing from pressure regulator outlet to flow meter inlet. (bottom connection of flow meter)
3. Connect plastic tubing from flow meter outlet (top connection) to inlet side of gas cell.
4. Make sure unit to be tested is powered on and has had a 5 minute warm-up.
5. Connect voltmeter to either 0-1V or 0-5V output. (See product spec sheet for details)
6. Make sure flow meter is in a vertical/upright position. Open flow valve slowly while observing flow meter.
7. Adjust the flow to between 250 - 350 ml/min (Cal kit regulator should limit flow to about 300mLPM).
8. After 3 minutes of continuous nitrogen flow, observe voltage signal output and adjust **ZERO** potentiometer (**0.00 +/-0.05 volts**) as required.
9. Turn off flow valve and remove pressure regulator valve from nitrogen cylinder.
10. Replace nitrogen cylinder with CO_2 cylinder containing **SPAN** gas (0.1% CO_2 for 0.2% FS, 0.5% CO_2 for 1% FS, 1% CO_2 for 2% or 3% FS, 2% CO_2 for 5% FS, 5% CO_2 for 10% FS (FS = full scale))
11. Open flow valve and observe voltage signal output. (See product spec sheet scale data for voltage reading)
12. Allow **SPAN** gas to flow until a stable reading is obtained. Adjust **SPAN** potentiometer as required. (See product spec sheet scale data for voltage reading)
13. Turn off flow valve and remove pressure regulator from cylinder.

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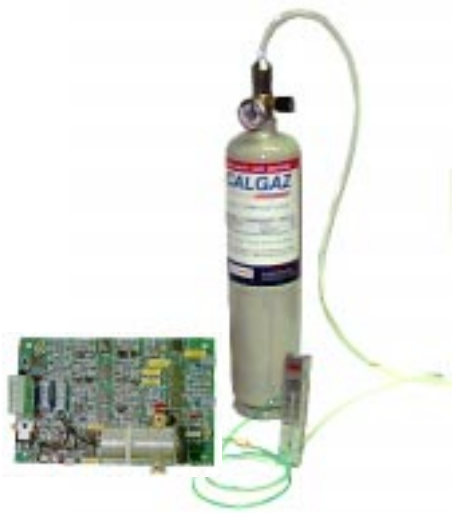

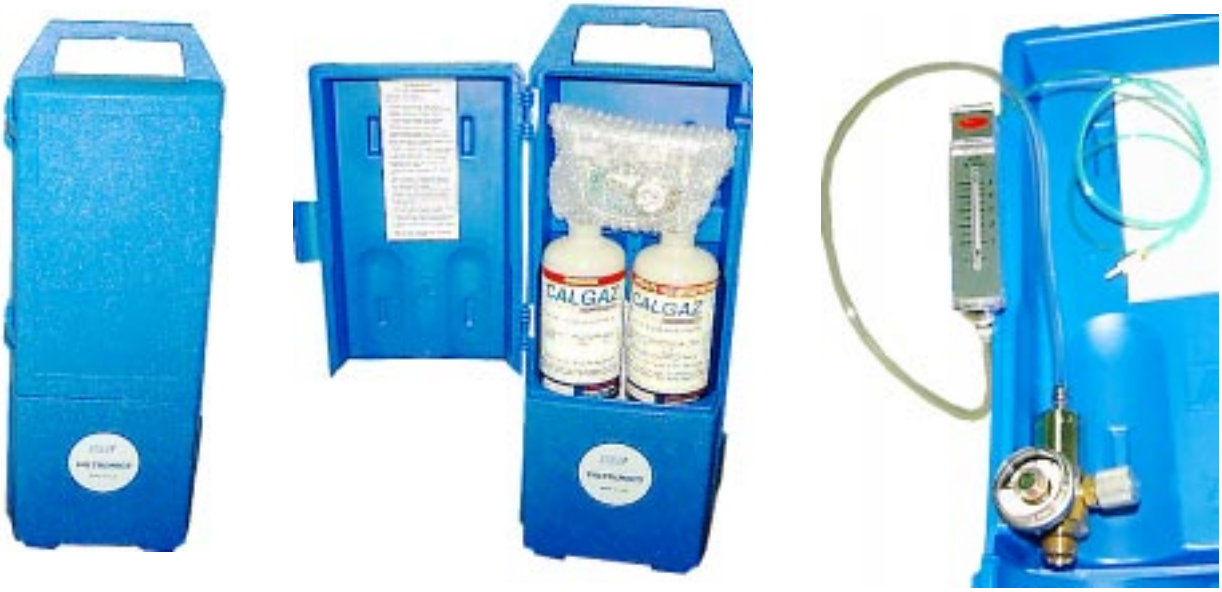

- **Field Calibration Kits** are available and consist of the following: (See **page 3** for part numbers)
  one tank with approx 8 hour supply of 99.8% N_2
  one tank with approx 8 hour supply of CO_2
  flow meter - 0 to 500 ml/minute range (Includes 2 plastic hose barbs)
  pressure regulator w/flow control valve - 0.3 L/min
  two plastic interconnect calibration gas tubes
  carrying case - 23 x 9 x 4.5 inches
  Concentrations of 0.1% (1000 +/-20 ppm certified) 0.2%, 0.5%, 1%, 5%, & 10% CO_2 are in stock and certified to be +/-2% of reading.
- Replacement gas tanks for CO_2 and N_2 are available.
  These 14" high 6D size tanks contain 3.6 ft^3 or 103 liters @70 degrees F and 1000 PSIG.
- Special gases and concentrations may be ordered with 3-6 week lead times depending on the specific gas ordered.

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NOTE: You should use a **tank value** near mid-scale and **not at full scale**.

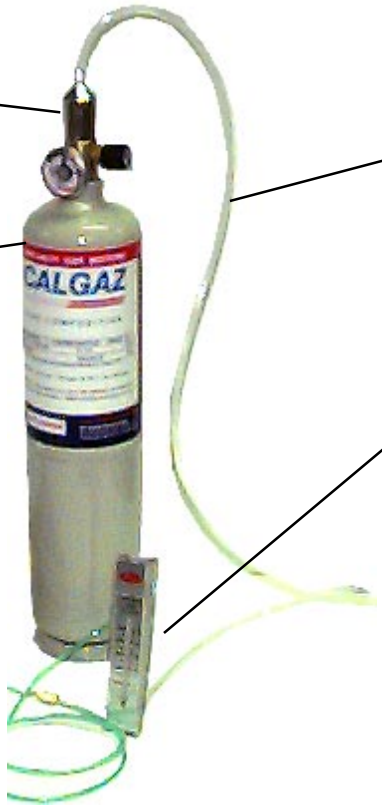
Examples: 0.1% CO_2 (1000 ppm) for a 0.2% (2000 ppm) full scale sensor.
1.0% CO_2 for a 3% full scale sensor.
5.0% CO_2 for a 10% full scale sensor.

Part Number	Calibration Kits
030181	**0.1%** (1000 ppm) CO_2 +/-2% of reading. **Certified** = **0.100**+/-**0.002**% CO_2
030337	**0.5%** (5000 ppm) CO_2 +/-2% of reading. **Certified** = **0.500**+/-**0.010**% CO_2
030338	**1.0%** (10,000 ppm) CO_2 +/-2% of reading. **Certified** =**1.000**+/-**0.020**% CO_2
030715	**2.0%** (20,000 ppm) CO_2 +/-2% of reading. **Certified** =**2.000**+/-**0.040**% CO_2
030339	**5.0%** (50,000 ppm) CO_2 +/-2% of reading. **Certified** =**5.000**+/-**0.100**% CO_2

Part Number	Replacement Certified Calibration Gas Cylinders
0616	**99.8%** (nitrogen) **N_2 tank** for **ZERO** calibration
0615	**0.1%** (1000 ppm) CO_2 **tank** for **SPAN** calibration on 2000 ppm sensor.
0610	**0.2%** (2000 ppm) CO_2 **tank** for **SPAN** calibration on 5000 ppm sensor.
0611	**0.5%** (5000 ppm) CO_2 **tank** for **SPAN** calibration on 1% sensor.
0836	**1.0%** (10,000 ppm) CO_2 **tank** for **SPAN** calibration on 2% or 3% sensor.
0856	**2.0%** (20,000 ppm) CO_2 **tank** for **SPAN** calibration on 3% or 5% sensor.
0612	**5.0%** (50,000 ppm) CO_2 **tank** for **SPAN** calibration on 10% sensor.
0837	**10%** (100,000 ppm) CO_2 **tank** for **SPAN** calibration on 20% sensor.

Pressure regulator flow control valve to limit flow to **300 ml** per minute.

Tank of Certified CO_2 with balance of nitrogen.



Two (2) #**0651** 3/16 ID x 3 ft long plastic tubes. One to bottom of flow meter & one from top of flow meter to the inlet hose barb on the gas cell.

0 to 500 ml (0.500 L/min) per min #**0290** flow meter with two #**0304** 3/8 NPT to 3/16 ID hose barbs.

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