*ISO9001:2000 Certified*

PEMTECH *Gas Detection Technology*

# *Ultra* 1000 Infrared
## Carbon Dioxide ($CO_2$) Sensor

## Features

- Low Maintenance
- 4-20mA Analog Output
- Optional RS485 MODBUS RTU Serial Communication
- 12-28 VDC Operation
- Automated Non-Intrusive Calibration
- Optional Adjustable Alarm Relay Contacts
- Liquid Crystal display with back light


## Description

Ultra 1000-IR series is a microprocessor based sensor for detection of Carbon Dioxide ($CO_2$) gas using Infrared sensor technology. The self- contained sensor features user friendly interface and menu driven calibration procedure and configuration.

Ultra 1000-IR uses NDIR (Non Dispersive Infrared) technique to monitor the $CO_2$ vapors. The detection principle is based on measuring the absorption of infrared radiation using dual wavelength infrared detectors. The IR detectors measure the intensity of two wavelengths, one absorbed by the target gases and other unaffected by the target gases. The gas concentration is determined by comparing the detector signals.

The complete sensor consists of a stainless steel sensor head assembly, a user connection board and a transmitter board assembly. All of the sensor electronics are enclosed in an explosion proof instrument box. Sensor also features a programmable alarm relay contact and Linear 4-20mA analog output.

# Ultra 1000-IR Carbon Dioxide Sensor

## Specifications

**Sensor Type**
NDIR (Non Dispersive Infrared) absoprtion

**Available Measuring Ranges**
0-5% , 0-10% & 0-50%

**Repeatability**
± 2 % Full scale

**Zero Drift**
< 2% per year

**Response Time**
T50 < 8 seconds
T90 < 15 seconds
with full scale gas applied

**Classification**
Class I, division 1, Groups B,C & D

**Operating Temperature**
-40°F to +158°F (-40°C to +70°C)

**Operating Humidity**
5% to 90% RH, non-condensing

**Status Indicators**
LC Display for gas concentration, Alarm relay status, calibration mode and sensor fault status.

**Mechanical Specifications**
Length: 7 inches (178 mm)
Width: 5 inches (127 mm)
Height: 4.5 inches (114 mm)

**Display**
2 lines by 8 Character LC Display with back light

**Input Power**
14-28 VDC. 24 VDC nominal

**Power Consumption**
90mA @ 24 VDC typical

**Alarm Relays**
Fully programmable. 0 to Full scale Range of the sensor. Latching or Non-Latching.

**Relay Ratings**
SPDT Form "C" type Relay contacts
5 Amps @ 250 VAC or 30 VDC

**Analog Output**
Linear 4-20mA (300 Ohms max. load)
2.0 mA - Calibration mode
< 1.0 mA - Sensor malfunction

**Interface**
RS-485 MODBUS RTU at 9600 Baud.

**Calibration**
Non-Intrusive activated by internal Magnetic switch

**Cable Entry Hub**
¾" NPT Female

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