



# OEM Digital NDIR CO<sub>2</sub> Sensor, Flow Through Gas Cell, Full Scale from 0 - 2% CO<sub>2</sub>

## Model 2015SPI-1-N

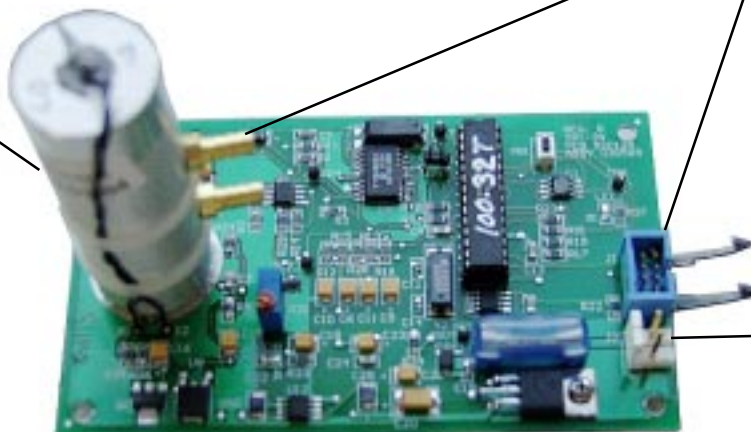
The **VALTRONICS** Model 2015SPI-1-N is an OEM NDIR CO<sub>2</sub> sensor with digital signal processing and temperature compensation. The firmware **VERSION** depends upon the specific customer interface requirements. The **SPI** (Serial Peripheral Interface) is described in Note A59 & A62. Each serial numbered sensor is individually gas calibrated and temperature compensated at the factory. **RS-232 Test Board** for field gas calibration (See **Application Note A66** ).

### Model 2015SPI-1-N Specifications:

- Method: ..... **NDIR** with Digital Signal processing and temperature compensation
- Gas: ..... **Carbon Dioxide (CO<sub>2</sub>)**
- Range: ..... **0-2% CO<sub>2</sub>** 16 bit A/D converter: Delta-Sigma Conversion Method
- Input Power ..... **+12 VDC** (@ 0.250 amp max., 0.135 amp ave., 16.0 volts max, 8.0 volts min)
- Accuracy: ..... 0 to **1.0±0.05% CO<sub>2</sub>** and 5% of reading from **1.0 to 2.0% CO<sub>2</sub>**.
- Resolution / Repeatability : ..... **±0.002% CO<sub>2</sub>** (challenge with same gas sample multiple times & assure zero).
- Stability: ..... Short term < 0.002% CO<sub>2</sub> in 20 sec. at constant temperatur.
- Zero Temperature Stability: ..... Less than 0.1% of full scale per degree C change from calibration temperature.
- Output/Input Signals: ..... Digital **SPI** (16 bit Serial Digital): See Notes **A59 & A62**
- Optional **RS232 Test Board**: ..... PCB for terminal com. with any PC , see **Application Note A66**
- LED** Indicators: ..... **IR** Source ON/OFF Indicator, Power ON indicator
- Operating Temperature Range: ..... 0 to 50°C (32° to 122°F) see **Application Note A12**
- Ambient Relative Humidity: ..... 0 to 95% RH non-condensing: see **Application Note A30**
- Storage Temperature range: ..... -40 to +70°C (-40 to +158°F)
- Weight: ..... Less than 0.25 pound (<0.11 kilogram )
- Clearance** Dimensions: PCB Card: **5.75 inch x 3.0 inch x 3.25 inch** vertical see page 3 for mounting

**Hose barbs** for 1/8 inch ID tube, **push** gas into cell at a rate between 0.3 to 1.0 LPM. Use **Hydrophobic Filter** immediately in front of inlet hose barb.

**Model # & Serial # label** on gas cell

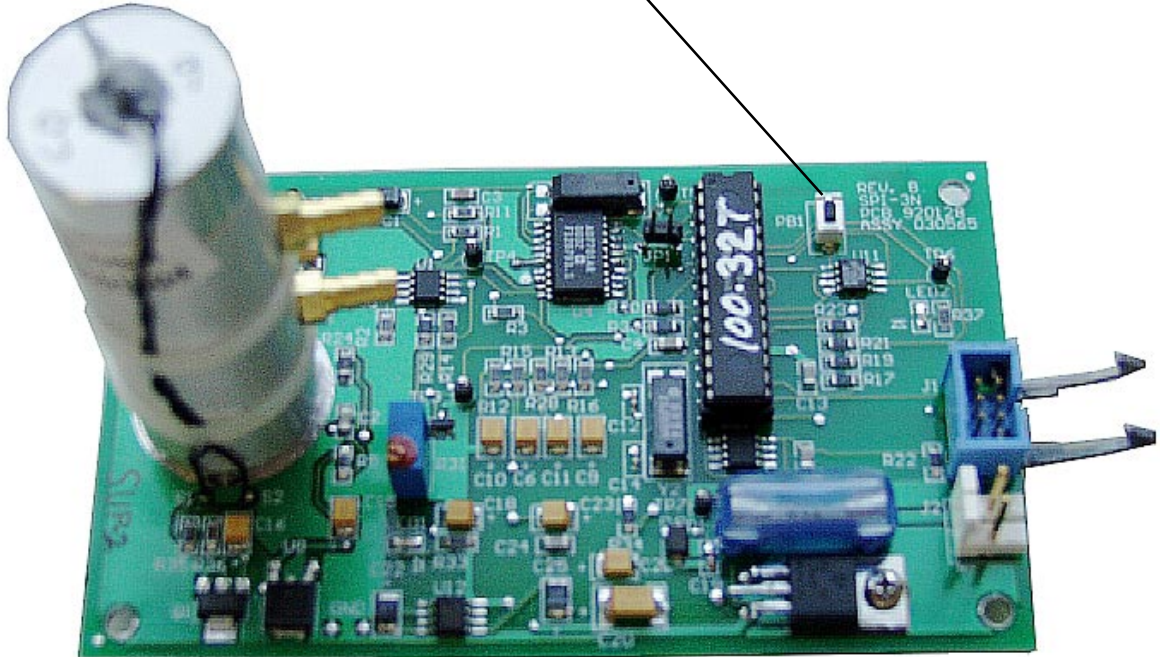


**J1: I/O connector:** Thomas & Betts 501-6-27ESR a 6 pin keyed header with ejector latches. See **Application Note A75** for interface connector part numbers

**J2:** 12 VDC input power 2 pin, 0.156 inch center header



**Note:** If JP1 is installed the sensor will go into **SLAVE** mode after a power on reset or the **RESET** switch is pressed

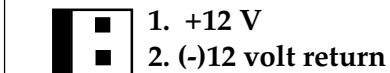
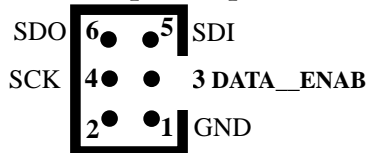


See **Application Note A67** for gas conditioning requirements and information about gas sample pumps and filters. Use a **Hydrophobic Filter** immediately in front of gas inlet hose barb. **Push** gas through the gas cell at a rate between 0.3 to 1.0 liter per minute. **Important Note:** Digital ground **Pin# 1** **MUST** be directly connected to the Master Microprocessor's digital ground, **NOT** just connected via the DC power supply common.



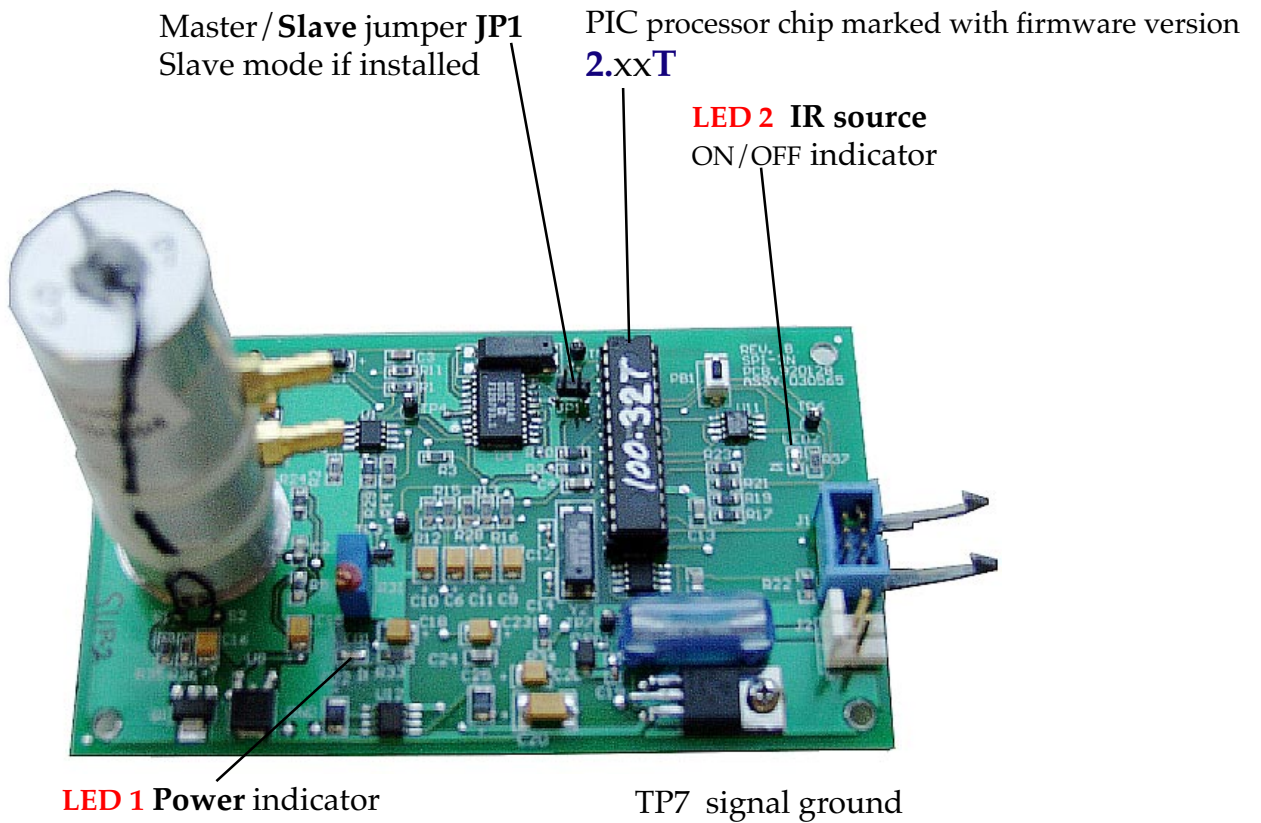
See **Application Note A75** for interface connector part numbers. Keep J1 interface cable shorter than 18 inches. See **Application Note A62** for 16 bit serial digital output timing diagram.

**J1: Output / Input**



**J2:** 12 VDC input power, 2 pin, 0.156 inch center header Panduit MLSS156-2-D-B.





Clearance Dimensions: 5.75 inches x 3.0 inches x 1.5 inches

**Note:** Provide **clearance** for the output hose barb, input flow adjust needle valve and an additional **0.75 inch** clearance for connector **J1** latches

