



## T6603-5 Safe-Air™ Plus CO2 Sensor Product Specification



### General Performance

Operating Temperature Range	5 to +30°C
Storage Temperature Range	-20 to +50°C
Operating Humidity Range	20 – 100% non-condensing
Output 1	UART
Output 2 (s/w selectable)	Open Collector Output (PWM or Threshold Detector)
Calibration <sup>±</sup>	Sensors will be shipped with ABC Logic™ turned on.

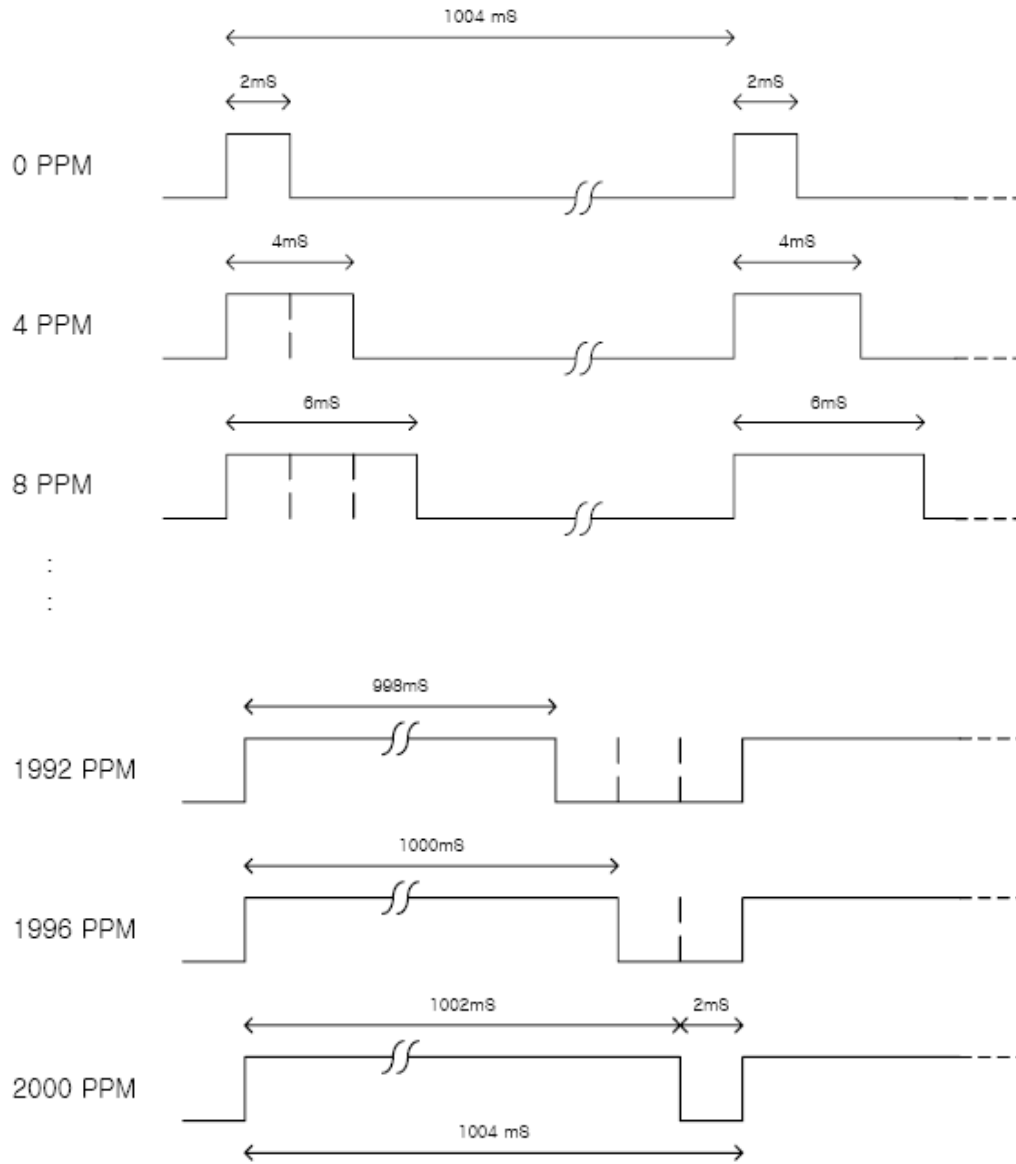
### Designed to Comply With:

Acceptance of Electronic Assemblies	IPC-A-610C, Level 3
HF Radiation Immunity	EN61000-4-3
Radiated Emissions	EN55022, Class B
2002/95/EC	RoHS
2002/96/EC	WEEE

# Electrical

Power Input	5.0 +/- 0.5 VDC
Average Current	< 60mA average
Peak Current	< 150mA
Connector (5-pin)	Pin 1 → Sensor UART RX Pin 2 → Sensor UART TX Pin 3 → V+ Pin 4 → V- Pin 5 → Open Collector Output
Connector Type	JST B5B-EH-A(LF)(SN)
Reverse Polarity Protection	None
UART Levels	
Sensor UART RX	0V to 3.3 V logic input
Sensor UART TX	0V to 3.3 V logic output
Default UART Protocol	RS-232 19.2 kbaud no parity 1 stop bit no flow control
Customer UART Command Set	Refer to T6603_UART_Protocol document PD0081. UART protocol to include “Self Diagnostics” command.
Open Collector Output	
Open Collector to Sensor Ground	5mA maximum
The Open Collector Output can be configured at the factory to be in either a PWM mode or a Threshold Detector mode. Both these output modes communicate the carbon dioxide level...	
Threshold Detector Output Mode (default values given factory customizable)	
Threshold Setpoint	750 PPM CO <sub>2</sub> in air +/- 150PPM CO <sub>2</sub> by volume
Nominal Threshold Hysteresis	100 PPM CO <sub>2</sub> by volume
Polarity	High when greater than threshold
PWM Output	
Open Collector to Sensor Ground	5mA maximum
Cycle period	1004 ms ±5%
Cycle Start High Level	2ms (nominal)
Mid-Cycle	1000ms ±5%
Mid-Cycle High Level Duration	Measurement / Full Measurement Range in seconds (continuous from high level at cycle start)
Cycle End Low Level	2ms (nominal)

Figure 1: PWM Output Graph



## Measurement Parameters:

Measurement Range:	0-2000ppm CO <sub>2</sub> by volume**
Resolution:	20ppm CO <sub>2</sub>
Accuracy:	±75ppm CO <sub>2</sub> @22°C (72°F) when compared against a certified factory reference or 10% of reading, whichever is greater***
Stability:	Sensor will maintain accuracy specifications with ABC logic turned on, given that it is at least 3 times in 21 days exposed to reference value (400PPM CO <sub>2</sub> concentration), and this reference value is the lowest concentration the sensor is exposed to.
Temperature Dependence:	0.5% FS per °C or ± 0.275% FS per °F
Non-linearity:	<2% Full Scale
Pressure Dependence:	0.13% of reading per mm Hg
Response Time	< 3 minutes for a 90% step change
Warm Up Time	< 3 minutes operational < 15 minutes full accuracy

\*\* When used in typical residential ambient air, consult factory if other gases or corrosive agents are part of the application environment.

\*\*\*Full accuracy to be achieved after three-week period utilizing ABC logic.

## Printed Circuit Board Dimensions

Mounting Holes: The sensor board shall have (4) mounting holes to mate with standard circuit board locking stand-offs.  
Hole diameter = 4mm (+0.2, -0.0mm).

Clearance diameter for stand-off = 5.2mm

