

Development Air Quality CAN Sensor

Overview

This CAN based Air Quality sensor outputs absolute pressure from 0.2 to 5.5 Bar, air temperature [1] from -30 to 120 °C, Volatile Organic Compounds (VOC) in ppb, equivalent CO2 [2] (eCO2) in ppm, H² in ppm, absolute air water content in mg/m³ and dew point temperature in °C. The unit features a replaceable air filter.

The configurable CAN bus speed and address along with the supplied DBC file allows easy integration into almost any vehicle with a CAN bus. This sensor can be used to analyse local air quality, for example it can be used in battery systems to detect early failures due to cell venting or vehicle HVAC systems.

The choice of 6 pin IP67 connector or 300mm pig tail, wide ranging input voltage and the small size and mass of the unit allows easy interface into most vehicles.

Pressure Sensor	Range	0.2 to 5.5	Bar
	Resolution	0.0001	Bar
	Accuracy (0.2 to 0.3 Bar)	+3	%FSS
	Accuracy (0.3 to 1.1 Bar)	0.0005	Bar
	Accuracy (1.1 to 5.5 Bar)	+3	%FSS
	Max Update Rate	20	Hz
Air Temperature [1]	Range	-30 to 123	°C
	Resolution	0.3	°C
	Accuracy	+1	°C
	Max Update Rate	20	Hz
Volatile Organic Compounds (VOC's)	Range	0 to 65534	ppb
	Resolution	2	ppb
	Accuracy (Worse Case)	15 [3]	%
	Max Update Rate	20	Hz
Equivalent CO2 (eCO2) [2]	Range	0 to 65534	ppm
	Resolution	2	ppm
	Accuracy (Worse Case)	15 [3]	%
	Max Update Rate	20	Hz
H2	Range	0 to 1000	ppm
	Resolution	0.02	ppm
	Accuracy (Worse Case)	10[3]	%
	Max Update Rate	20	Hz
Absolute Humidity [4]	Range	0 - 35000	mg/m ³
	Resolution	70	mg/m3
	Accuracy (Worse Case)	3	%FSS
	Max Update Rate	20	Hz
Dew Point	Range	0-100	°C
	Resolution	0.5	°C
	Accuracy (Worse Case)	+2	°C
	Max Update Rate	20	Hz

Environment	Operating temperature	-20 to +80	°C
	Dust and Water Ingress	IP65	
Mechanical Shock (Max Values)	Duration < 200µs	10000	g
	Duration < 1ms	2000	g
	Free Fall Distance	1.8	m

Mass		30	grams
Dimensions	Height x Width x Length	22x40x45	mm

CAN [5]	Baud Rates	1000, 500, 250	kbps
	Address Range [6]	1 (0x01) to 2042 (0x7FA). Default = 0x30A	decimal (Hex)

Power	Voltage Range	9-14	V
	Current (Sleep)	110 (10mA)	mA @ 12V
Input Pins	Voltage Range	2-28	V

Cable Variant (standard is 300mm in length)		
AWG	26	
Wire Spec	Raychem 55	
Cable Jacket	TE Flame Retardant -75 to +150 °C	
OD	3.1mm +-0.1mm	
Connector Variant		
On Unit	B06B-JWPF-SK-R	
Mating [7]	06R-JWPF-VSLE-D	
Crimp	SWPR-001T-P025	
Pin Outs		
Wire Colour	Pin No.	Function
Brown	1	Not Used
Red	2	Supply Voltage
Black	3	Ground
Green	4	CAN High
White	5	CAN Low
Yellow	6	Factory Reset [8]

[1] Air Temperature Accuracy is dependent on installation, heat from the sensor can affect this.

[2] eCO2 values are derived from H2 and should only be used in HVAC applications.

[3] % of meas. value, sensor drift is 1.3% of measured value per year of operation, 90% of the sensors will be within the typical accuracy tolerance.

[4] Humidity only valid from 0 to 80 °C IC temperature.

[5] The default settings are 1000kbps and start address 778 (0x30A), the unit has no CAN termination.

[6] The unit uses 4 CAN address which are in consecutive order from address that the unit is set to.

[7] This connector is not supplied with the unit.

[8] To reset the unit to factory settings pull this from 2.5v to supply voltage on unit power up.