

Overview

Cell Guard is a CAN based sensor that can measure absolute pressure, air temperature, Volatile Organic Compounds (VOCs), absolute air water content, relative humidity, dew point temperature and acceleration.

The configurable CAN bus speed and address along with the supplied CAN DBC file allows easy integration into almost any battery system to detect early failures due to cell venting or formation of moisture within a battery pack. The unit features a low power mode in which it monitors the environment but does not transmit on CAN unless a threshold is reached at which point it reverts to normal mode. It also features a low side drive function pin capable of 500mA that can be triggered if a wake signal is generated.

The 5-pin automotive rated Molex Nano-Fit Power connector, small size and mass allows easy interface into most vehicles and energy storage systems. The unit is developed in accordance with ISO26262 and has been tested to automotive standards which include: ISO7637-2 2011, ISO 16750- 2 2012 and ISO 16750-4 2010.

| | | | |
|---|---------------------------|------------------|-------------------|
| Pressure Sensor | Range | 0.3 to 1.2 | Bar |
| | Resolution | 0.0001 | Bar |
| | Accuracy (0.3 to 1.1 Bar) | 0.0005 | Bar |
| | Max Update Rate | 50 | Hz |
| Air Temperature [1] | Range | -40 to 125 | °C |
| | Resolution | 1 | °C |
| | Accuracy | +1 (+2 at 24VDC) | °C |
| | Max Update Rate | 5 | Hz |
| Volatile Organic Compounds (VOC's) | Range | 0 to 65535 | Raw |
| | | 0 to 6553.5 | ppm |
| | Accuracy (Worse Case) | 15 [2] | % |
| | Max Update Rate | 1 | Hz |
| Absolute Humidity [3] | Range | 0 - 35000 | mg/m ³ |
| | Resolution | 70 | mg/m3 |
| | Accuracy (Worse Case) | 5 | %FSS |
| | Max Update Rate | 5 | Hz |
| Dew Point | Range | 0-100 | °C |
| | Resolution | 0.5 | °C |
| | Accuracy (Worse Case) | +3 | °C |
| | Max Update Rate | 5 | Hz |
| Relative Humidity[3] | Range | 0-100 | % |
| | Resolution | 0.5 | % |
| | Accuracy (Worse Case) | 3 | % |
| | Max Update Rate | 5 | Hz |
| Accelerometer [4] | Range | -24 to +24 | g |
| | Resolution | 0.01 | g |
| | Accuracy (Worse Case) | 0.1 | g |
| | Max Update Rate | 200 | Hz |

| Connector | |
|-------------|--|
| MF (family) | Molex (Nano Fit) |
| On Unit | 1053131205 |
| Mating | 1053071205 |
| Crimp | 1053001200 (24-26 AWG) 1053002200 (20-22 AWG) |
| Pin Outs | |
| Pin No. | Function |
| 1 | Ground |
| 2 | Supply Voltage |
| 3 | CAN Low |
| 4 | CAN High |
| 5 | SW Configured Function [9] |

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

[2] % 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, stated accuracy is valid up to 100ppm

[3] Humidity accuracy valid from 0 to 80 deg C IC temperature and 5 to 95% RH

[4] Not normally fitted, only on variant with accelerometer option selected

[5] For the VOC the stated accuracy is achievable between -10 and 50 degrees C. Nominal max temperature range is -20 to 55 degrees C for maximum life, absolute max for sensor die temperature is 70 degrees C (air temp can be greater)

[6] The default settings are 500kbps and start address 778 (0x30A), the unit has no CAN termination

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

[8] The function pin is protected to transients up to 40VDC but is not current limited, please ensure load is not above 500mA

[9] The function of this pin is assigned when configuring the unit please refer to the manual

[10] Only the range of 9-16V has been tested to ISO standards. Outside of this range is not tested to ISO standards.

| | | | |
|--------------------|---------------------------|------------|----|
| Environment | Operating temperature [5] | -20 to +70 | °C |
|--------------------|---------------------------|------------|----|

| | | | |
|-------------------|-------------------------|----------------|-------|
| Mass | | 15 | grams |
| Dimensions | Height x Width x Length | 11.5 x 55 x 63 | mm |

| | | | |
|------------|-------------------|--|---------------|
| CAN | Baud Rates [6] | 1000, 500, 250, 125 | kbps |
| | Address Range [7] | 1 (0x01) to 2042 (0x7FA). Default = 0x30A | decimal (Hex) |

| | | | |
|---------------------------|---------------------|----------------|----------|
| Power | Voltage Range | 9 to 32[10] | VDC |
| Power - Output Pin | Current (low power) | 35mA (7.5 mA) | mA @ 12V |
| | Voltage Range [8] | 9 to 32 | V |
| Output Pin | Current | 500 | mA |
| | Type | Low Side Drive | NA |

Part Number Ordering Details

Default Part Number: **CGA0P1G1H1V1**

*16 to 32VDC is not tested to ISO standards

