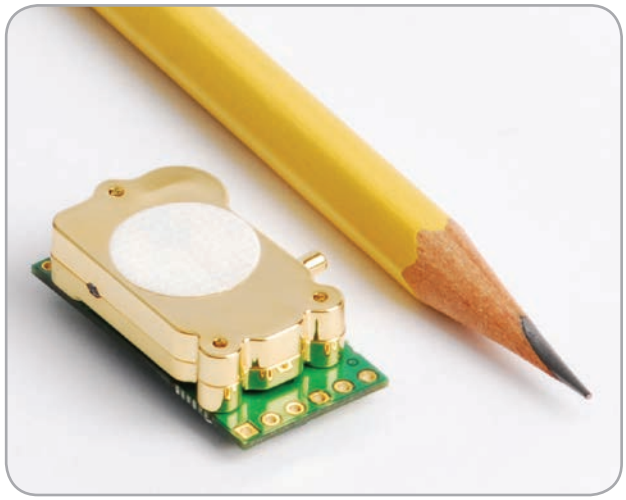
TELAIRE®

# Telaire T6713 Series $CO_2$ Module

## NDIR $CO_2$ Module designed for applications that require high accuracy in a compact package



The Telaire® T6713 $CO_2$ Series is ideal for applications where $CO_2$ levels need to be measured and controlled for indoor air quality and energy saving applications such as demand control ventilation.

All units are factory calibrated to measure $CO_2$ concentration levels up to 5000 ppm.

### Features

- An affordable gas sensing solution for OEMs.
- Eliminates the need for calibration in most applications with Telaire's patented ABC Logic™ software. Lifetime calibration warranty.
- A reliable sensor design based on 20 years of Engineering and manufacturing expertise.
- Flexible $CO_2$ sensor platform designed to interact with other microprocessor devices.
- Small compact design allowing simple product integration.

**Amphenol**

**Advanced Sensors**

# Telaire T6713 series $CO_2$ Module Specifications

### Method
Non Dispersive Infrared (NDIR), gold plated optics, diffusion sampling (with Telaire's Patented ABC Logic Self Calibrated Algorithm)

### Measurement Range [2]
0 to 5000 ppm

### Dimensions
1.18in X 0.787in X 0.34in
(30mm X 15.6mm X 8.6mm)

### Accuracy [1] [5]
400-5000 ppm +/- 30 ppm ± 3% of reading
400-2000 ppm +/- 25 ppm ± 3% of reading

### Temperature Dependence
5 ppm per °C or 0.5% of the reading per °C, whichever is greater

### Stability
< 2% of FS over life of sensor (15 years typical)

### Pressure Dependence
0.13% of reading per mm Hg

### Calibration Interval
Not required

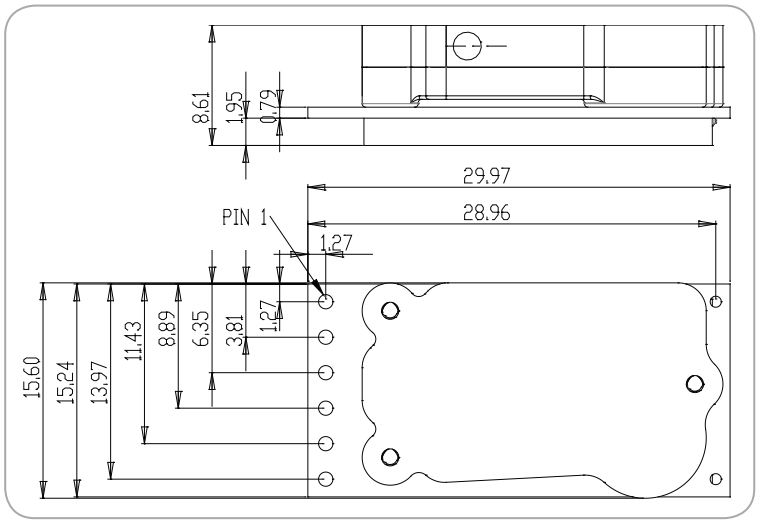
### Response Time
< 3 minutes for 90% step change typical

### Signal Update
Every 5 seconds

### Warm Up Time
- < 2 minutes (operational)
- 10 minutes (maximum accuracy)

### Operating Conditions
- 14°F to 140°F (-10°C to 60°C)
- 0 to 95% RH, non-condensing

### Storage Conditions
-22°F to 158°F (-30°C to 70°C)




*All dimensions in millimeters (mm)*

## Output

### Digital [3]
$I^2C$ slave up to 100kHz
UART @ 19200 Baud w/Modbus support

### PWM Output Mode
Two options:
- Cycle period 1002 ms (~1Hz)
- 40 us (25kHz)

### Power Supply Requirements [4]
- 4.5-5.5 VDC
- Peak 200mA (155mA typical)
- Average 25mA (20mA typical)

### Interface Connections
Designed for six (6) pin male header with 0.1 in (2.54 mm) spacing. Header not included.

Notes:

(1) Tolerance based on span gas of ±2%, which adds to the uncertainty, tested at Standard Ambient Temperature and Pressure (SATP).

(2) Subjecting sensors to environments less than 400 ppm for more than 15 minutes may affect accuracy due to ABC Logic algorithm.

(3) Please call for detailed product specifications.

(4) Based on nominal 5VDC input voltage. For best performance, DC supply should be a regulated, low noise power source.

(5) The module may exhibit a tolerance addition of ±60ppm when first installed. This will be corrected by the ABC Logic in first weeks of operation.

Automatic Background Logic, or ABC Logic, is a patented self-calibration technique that is designed to be used in applications where concentrations will drop to outside ambient conditions (400ppm) in a 7 day period.

Full accuracy to be achieved utilizing ABC Logic. With ABC Logic enabled, the sensor will typically reach its operational accuracy after 24 hours of continuous operation. Sensor will maintain accuracy specifications with ABC Logic enabled, given that it is at least four times in 21 days exposed to a reference level of 400ppm.

*Note: Applies when used in typical residential ambient air. Consult Telaire if other gases or corrosive agents are part of the application environment.*

## Pin Designations

| Connector Pin-Out | Function/Alternate |
|---|---|
| 1 | TX (UART) / I2C_SDA |
| 2 | RX (UART) / I2C_SCL |
| 3 | V+ |
| 4 | V- / GND |
| 5 | PWM Output |
| 6 | No Connect / Ground / 10k pull down to select interface / RS485 Flow Control |

## Handling and Installation

The T6713 $CO_2$ OEM modules are infrared gas sensors on a printed circuit board and should be treated carefully. Precautions should be taken to observe specified limits and prevent damage from electrostatic discharge or rough handling. Please refer to ANSI/ESD S20. 20-1999 for more information on preventing ESD damage and IPC 610 Rev. D for more information on proper electronic assembly practices.

## Calibration

Telaire does not recommend the customer recalibrate the T6713 module after installation. The sensor ABC Logic algorithm will begin after 24 hours, adjusting the sensor measurement resulting in sensor-to-sensor consistency. If immediate consistency is desired, the sensors may be single point calibrated using pre-mixed reference gas or ambient air measured by a reference sensor.

## Available Models

| Part Number | Sampling Method | Measurement Range |
|---|---|---|
| T6713 | Diffusion | 0-2000ppm |
| T6713-5k | Diffusion | 0-5000ppm |

## Safety

Before installing, handling, using, or servicing this product, please consult the data sheet and application notes. The product shall be used only within power supply and electrical input and output limits as specified by the datasheet and application guide. Improper use of the product may result in product damage and property loss and/or personal injury. In use of the product, the customer has sole responsibility for designing and implementing a solution which will ensure safe operation (including review of appropriate reliability or required redundancy, mitigation of failure modes, and/or meeting appropriate standards). The customer is responsible for review of any special conditions for use including, but not limited to, environmental conditions, electrical supply, residual risk, etc). The sensor is designed for benign environments. The performance and reliability may be negatively affected in environments that contain corrosive or caustic gases including but not limited to Ammonia, Chlorine, NOx and Ozone. Telaire makes no warranty, representation or guarantee regarding the suitability of this product for any particular application, including safety critical applications. Nor does Telaire assume any liability arising out of the application or use in any product or circuit. Telaire specifically disclaims all liability without limitation consequential or incidental damages. No statuary or fitness for particular purpose shall be implied.

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