TELAIRE®

Ventostat® Wall Mount



Telaire Wall Mount CO_2, Humidity and Temperature Transmitters

Features:

- Patented, Absorption Infrared Gas sensing engine provides high accuracy in a compact low cost package.
- Patented ABC Logic™ self-calibration system eliminates the need for manual calibration in most applications.
- Lifetime CO_2 calibration guarantee when using ABC Logic™.
- Mounting plate with two-piece terminal blocks provide quick, easy wiring.
- Gas permeable, water resistant CO_2 diffusion filter prevents particulate and water contamination of the sensor.
- Locking screw secures cover and sensor to the mounting bracket for tamper resistance.
- Dual simultaneous analog outputs (V & mA) available for CO_2.
- BACnet™ output versions
- Sensors are shipped factory calibrated.
- Temperature sensor on all models.
- Modern enclosure with customized branding available.
- CO_2, humidity and temperature models.
- Two-piece design allows unit to be replaced without the need for rewiring.

Amphenol
Advanced Sensors

Controlled Ventilation

Ventilation is an important part of maintaining a comfortable, healthy, productive environment for people. Improper ventilation can have a negative impact on occupant health and performance, increase the risk from litigation, and/or waste energy. Demand-controlled ventilation using CO_2 sensors prevents energy losses from over-ventilation while maintaining indoor air quality. The most energy savings potential is in buildings where occupancy fluctuates during a 24-hour period. Numerous organizations now require and/or recommend CO_2-based ventilation control in different commercial HVAC applications. Some utility companies also offer rebates to building owners for installing CO_2 sensors.

Wall mount sensors are used to control a specific area such as a conference room, classroom, meeting hall, etc. The Telaire 8000 Ventostat series are easy to install and have a clean, modern look that suits most indoor environments.

Ordering Information

Examples:
T8100-D ABC Logic, display
T8100-D-BAC ABC Logic, display,BACnet
T8200-HD Dual channel, Humidity, Display
T8300-BAC ABC Logic, pitotot tube, BACnet
T8100-DB ABC Logic, display, black case

The Telaire 8000 Ventostat series is available in a number of configurations. The primary configuration is determined by the type of CO_2 sensor included.

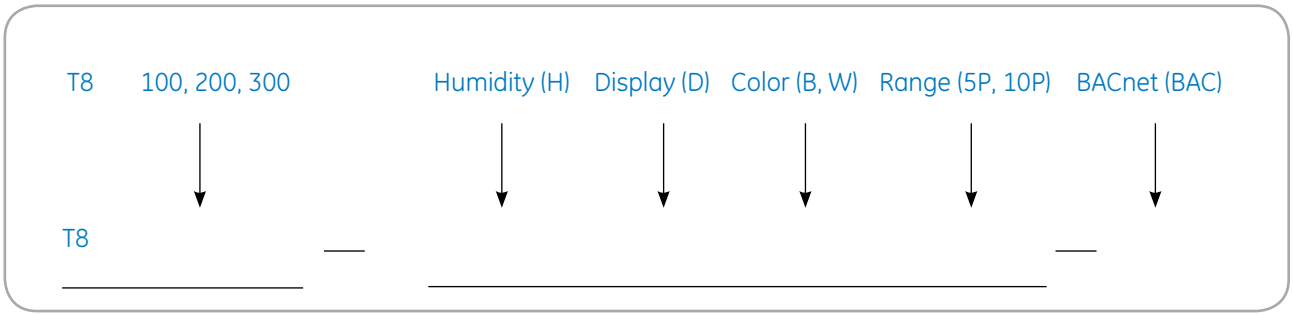
T8100 — uses a single channel sensor using Telaire patented ABC Logic for lifetime calibration. Single-channel sensors are used in spaces where there is not full-time occupation (most applications).

T8200 — uses a dual-channel optical system and three-point calibration process for enhanced stability, accuracy and reliability. Used in applications where there is full-time occupation 24 hours a day.

T8300 — uses a single channel sensor with pitot tube kit for duct measuring of CO_2. ABC Logic enabled.

Notes:

1. *This product is intended to be used in occupied building HVAC applications.*
2. *This product is not designed or intended for use in safety critical functions.*



Note: Not all combinations are available, i.e., T8300 with humidity. Please see www.ventostat.com to see the latest list of available part numbers.

Note: T8100-5P-R versions are conformally coated.





Black versions are for applications such as movie theaters

Wall Mount Specifications

Sensing Method
- Non-dispersive infrared (NDIR) absorption
- Gold-plated optics
- Patented ABC Logic self calibration algorithm

CO_2 Measurement Range
T8100/T8200/T8300
0 to 2000 ppm (0 ppm = 0 V, 4 mA;
2000 ppm = 10/5V, 20 mA)
T8100/T8200/T8300 - 5P models
0 to 5000 ppm (0 ppm = 0 V, 4 mA;
5000 ppm = 10/5V, 20 mA)
T8200 (10P models) 0 to 10,000 ppm
(0 ppm = 0 V, 4 mA; 10,000 ppm = 10/5V, 20 mA)
T8200 (20P models) 0 to 20,000 ppm
(0 ppm = 0 V, 4 mA; 20,000 ppm = 10/5V, 20 mA)

CO_2 Accuracy
± 30ppm or 3% of the reading shown, whichever is higher *

Power Supply Requirements
18-30 VAC RMS, 50/60 Hz, or 10.8 to 42 VDC,
polarity protected

Power Consumption
Typical 0.7 W at nominal voltage of 24V AC RMS

Temperature Dependence
0.2% FS per °C (±0.11% per °F)

Stability
T8100/T8300 - Single Channel
<2% of FS over life of sensor (15 years)

T8200 - Dual Channel
<5% of FS or <10% reading annual over life of sensor
(10 years)

Pressure Dependence
0.135% of reading per mm Hg

Warranty
24 months on mechanical defects
Calibration - lifetime warranty for T8100 and T8300 series

Certifications
CE and RoHS compliant

Signal Update
Every 5 seconds

**$C0_2$ accuracy statement excludes standard gas used for calibration that has an accuracy of 2%. In addition, there is a potential digital to analog error of up to 1%.*

CO_2 Warm-up Time
- < 2 minutes (operational)
- 10 minutes (maximum accuracy)

Operating Conditions
- 32°F to 122°F (0°C to 50°C)
- 0 to 95% RH, non-condensing

Storage Conditions
-40°F to 158°F (-40°C to 70°C)

Flammability Classification
UL94 5VA

Passive Thermistor Type (not Bacnet version)
NTC 10 K Ω thermistor

Thermistor Accuracy
±1°C (15° to 35°C)

RH Sensing Element
Capacitive polymer sensor

RH Range
0% to 99% RH (non-condensing)

RH Accuracy (25°C)
±2.5% RH (20 to 80% RH)
±3.5% RH (<20% and >80% RH)

Active Temperature Accuracy
±0.8°C @ 22°C

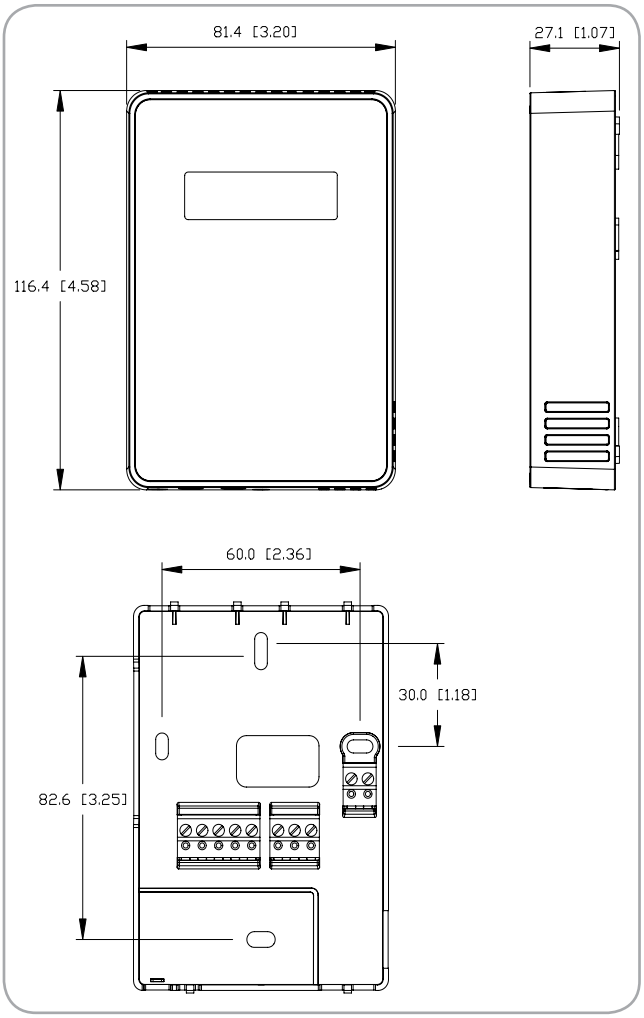
Active Temperature Range
32°F to 122°F (0 to 50°C)

Note: Active analog output standard and only available on T8100-R and T8100-H versions.

Output

Analog Version
- 0 to 10 V (100 Ω output impedance) and
- 4 to 20mA (R_L maximum 500 Ω) available simultaneously

BACnet Version
- MS/TP
- RS485
- Baud rates 38400 or 9600



Ventostat wall mount dimensions

Sensor Accuracy & Field Calibration

CO_2 ABC Logic Self Calibration

T8100 and T8300 single channel sensors employ the patented ABC (Automatic Background Calibration) Logic self-calibration system. ABC Logic virtually eliminates the need for manual calibration in applications where the indoor CO_2 level drops to outside levels during unoccupied periods (e.g. during evening hours). ABC Logic is a special software routine in the sensor that remembers the background readings for 14 consecutive evenings, calculates if there is a sensor drift, and then corrects for it.

With ABC Logic enabled, the sensor will typically reach its operational accuracy after 25 hours of continuous operation at a condition that is exposed to ambient reference levels. Sensors will maintain accuracy specifications with ABC Logic enabled, given that it is at least three times in 14 days exposed to the reference value and this reference value is the lowest concentration to which the sensor is exposed.

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

CO_2 Calibration Guarantee

Telaire is serious about minimizing maintenance, so each single-channel sensor (T8100/T8300) comes with a lifetime calibration guarantee. And each dual channel sensor has a two-year calibration guarantee (T8200).

Calibration Interval

For T8100 and T8300 series, no calibration is required due to ABC Logic. For T8200 series, annual calibration is recommend for the best accuracy. However, most applications using T8200 series could extend the calibration interval. For the humidity sensor, no calibration is required. Replacement humidity sensors are available.

If a Telaire 8000 series single channel sensor drifts out of calibration range, it can be sent back to Telaire for a free factory calibration. Further information on the guarantee is available on our website.

T8200 – Dual Channel

The T8200 dual channel sensor can be described as a CO_2 channel that measures gas concentration and a reference channel that measures the sensor signal intensity. The dual channel sensor performs periodic self-calibrations using the reference channel. The self-calibrations are approximately every 24 hours. During the self-calibration the sensor ppm reading is frozen, it will not react to changing CO_2. The calibration time is adjustable but nominally two minutes.

Telaire recommends periodic gas calibration depending on the application accuracy requirements. While the reference channel corrects for changes over time, a field calibration using nitrogen gas or alternatively ambient calibration will immediately restore the highest level of accuracy. Refer to the calibration manual for details.

Multi Measurement

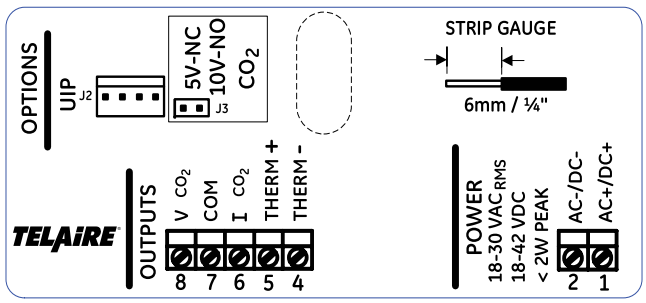


Display versions scroll between ppm CO_2, %RH Humidity and °F Temperature when the option is selected.

Wiring Features

Non-Display Wiring

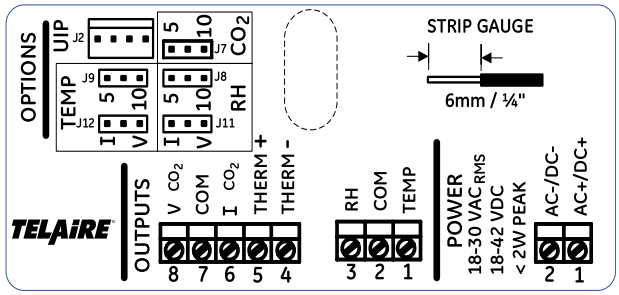
No display, basic functionality for CO_2 and passive thermistor only.



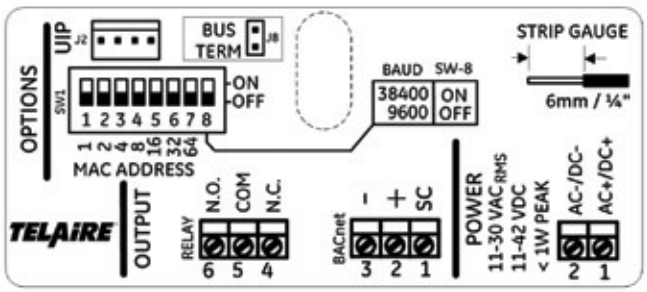
Non-Display Wiring

Display Wiring

Digital display, functions of CO_2 and thermistor are standard. Humidity and active temperature options are available. Display scrolls all measurements that are included.



Display Wiring



BACnet Wiring

BACnet™

Smaller Enclosures

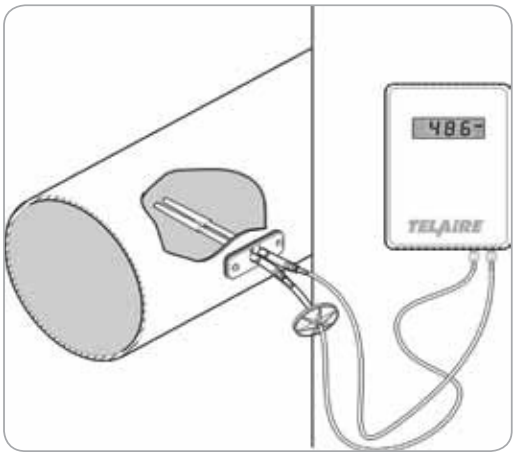
Smaller enclosure versions are available for regional preferences.



Dimensions: 81.4 mm x 86.4 mm

8300 Pitot Tube Configuration

The pitot tube kit is used for duct measurement of CO_2. The pitot tube is installed in the duct and the sensor is mounted remotely, which allows for easy access.



Pitot Mounting Configuration



T8300-D with Pitot

Enhanced Field Serviceability

The Ventostat 8000 series features a field-replaceable Relative Humidity (RH) sensor tip module that allows the end user to replace the sensor on-site while maintaining ±2.5% RH accuracy. The user simply powers off the unit, installs the new sensor module and powers back the unit. This virtually eliminates the need for time consuming and costly factory calibration, while reducing downtime during service intervals to near zero. The sensor is protected from dust contamination by a specially designed filter as shown in the photo below.





T8300 with Pitot

Ventostat Accessories

Enclosure Specifications

T1508 Aspiration Box for Duct Mounting

The Model 1508 is designed for in-duct sampling of CO_2 concentrations at flow rates greater than 400 fpm. Clear cover allows for observation of the sensor. They will accommodate any of the Ventostat 8100 or 8200 series, and can be used for temperature and RH when fitted. Enclosure is screwed to the duct with probe inserted into air stream. Air sampling probe is 1-inch (25.4mm) diameter and 8-inch (203.2mm) long. Enclosure (ABS plastic) has knockouts for conduit connection. Note: Wiring penetrations must be sealed prior to use. CO_2 sensor not included.



T1508 Aspiration Box for Duct Mounting

T1505 Splash Resistant Enclosure

The Model 1505 is designed to protect the 8000 series in damp or wet environments as might occur in agricultural, industrial or food processing environments. This enclosure (ABS plastic) is designed to protect the sensor from dripping or sprayed water. Any wall mount model of the Ventostat 8000 series sensor can be installed inside the enclosure. The transparent cover allows for viewing of the sensor/display. Four diffusion ports allow for entry of CO_2. Knockouts are provided for conduit connection. Response time of the sensor is slowed to approximately 30 minutes to measure a 90% step change in concentrations. Enclosure is designed to screw directly to a wall. CO_2 sensor not included.

T1552 Outside Air Enclosure

The Model 1552 is a rugged weatherproof enclosure (ABS plastic), designed to allow the 8000 series sensor to operate in an outdoor environment and/or where ambient temperatures are below freezing. The 1552 is ideal for monitoring outside air or CO_2 as a surrogate for combustion fumes in parking garages, tunnels and loading docks. This enclosure features a temperature control circuit and internal heaters to maintain the sensor within its normal operating temperature range, even if temperatures outside the enclosure are as low as -20°F (-29°C). Four diffusion ports allow for entry of CO_2. Response time of the sensor is slowed to approximately 30 minutes to measure a 90% step change in concentrations. Enclosure is designed to screw directly to a wall. CO_2 sensor not included. Power consumption is 24V, 1.5 Amp (max), and includes the Ventostat 8000 series.



T1505 Splash Resistant Enclosure and
T1552 Outside Air Enclosure

Ventostat UIP Software

The Ventostat UIP software allows you to modify the standard settings on the T8100, T8200 and T8300 series products.

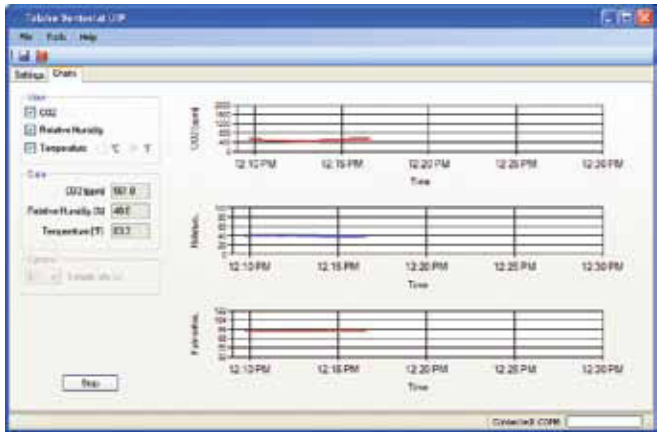
The software features:

- Altitude adjustment for maximum accuracy performance
- Analog output adjustment
- Single point and span gas calibration
- Turn on and off ABC Logic™
- Change temperature display units
- Graphing and logging of CO_2, temperature and %RH (H Versions only)

The software can be used by distributors to make modifications to the Ventostat prior to shipping to the customer, as well as to make adjustments in the field. The USB cable supplies power to the Ventostat, negating the need for a separate power supply.

The T2090 UIP software kit is supplied with a USB-to-Ventostat cable and software CD.





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	Part No	Description
	T8100-E	Wallmount CO2 Sensor for standard ventilation applications with ntc.
	T8100-E-D	Wallmount CO2 Sensor for standard ventilation applications, digital CO2 display and ntc.
	T8100-E-H	Wallmount CO2 Sensor for standard ventilation applications with active temp and humidity, and ntc.
	T8100-E-HD	Wallmount CO2 Sensor for standard ventilation applications active temp and hum outputs, digital display.
	T8100-E-D-R	Wallmount CO2 Sensor for standard ventilation applications active temp and hum outputs, digital display, low voltage relay.
	T8100-NS	Wallmount CO2 Sensor for standard ventilation applications with ntc and Night setback. US size case.
	T8100-NSP	Wallmount CO2 Sensor for standard ventilation applications with ntc, potentiometer, and Night setback. US size case.
	T8100-E-BAC	Wallmount CO2 Sensor for standard ventilation applications with BACnet MS/TP output.
	T8100-E-D-BAC	Wallmount CO2 Sensor for standard ventilation applications with BACnet MS/TP output and digital display.
	T8100-E-H-BAC	Wallmount CO2, Humidity, & Temp Sensor for standard ventilation applications with BACnet MS/TP output.
	T8100-E-HD-BAC	Wallmount CO2, Humidity, & Temp Sensor for standard ventilation applications with BACnet MS/TP output & digital display.
*	T8100-E-H-MOD	Wallmount CO2, Humidity, & Temp Sensor for standard ventilation applications with Modbus output.
*	T8100-E-HD-MOD	Wallmount CO2, Humidity, & Temp Sensor for standard ventilation applications with Modbus output & digital display
	T8200-E	Wallmount CO2 Sensor for 24/7 ventilation applications with ntc.
	T8200-E-D	Wallmount CO2 Sensor for 24/7 ventilation applications with digital CO2 display and ntc.
	T8200-E-HD	Wallmount CO2 Sensor for 24/7 ventilation applications with active temperature and humidity outputs, digital display.
	T8200-E-D-5P-R	Wallmount CO2 Sensor for 24/7 ventilation applications (0~5k) with digital CO2 display, relay, and ntc.
	T8200-E-BAC	Wallmount CO2 Sensor for 24/7 ventilation applications with BACnet MS/TP output.
	T8200-E-D-BAC	Wallmount CO2 Sensor for 24/7 ventilation applications with BACnet MS/TP output and digital display.
	T8200-E-H-BAC	Wallmount CO2, Humidity, & Temp Sensor for 24/7 ventilation applications with BACnet MS/TP output.
	T8200-E-HD-BAC	Wallmount CO2, Humidity, & Temp Sensor for 24/7 ventilation applications with BACnet MS/TP output & digital display.
	T8300-B	Kit to sample duct air via pitot tube and measure CO2 in normal ventilation applications. Black US size case.
	T8300-DB	Kit to sample duct air via pitot tube and measure CO2 in normal ventilation applications with digital display. Black US size case.
	T8300-B-BAC	Kit to sample duct air via pitot tube and measure CO2 in normal ventilation applications. BACnet MS/TP Output. Black US size case.
	T8300-DB-BAC	Kit to sample duct air via pitot tube and measure CO2 in normal ventilation applications with digital display BACnet MS/TP Output. Black US size case.
	T8100-B	Wallmount CO2 Sensor for standard ventilation applications with ntc. Black US Size Case.
	T8100-DB	Wallmount CO2 Sensor for standard ventilation applications, digital CO2 display and ntc. Black US size case.
	T8100-HDB	Wallmount CO2 Sensor for standard ventilation applications active temp and hum outputs, digital display. Black US Size Case.
	T8200-B	Wallmount CO2 Sensor for 24/7 ventilation applications with ntc. Black US Size Case.

	T8200-DB	Wallmount CO2 Sensor for 24/7 ventilation applications with digital CO2 display and ntc. Black US Size Case.
	T8200-HDB	Wallmount CO2 Sensor for 24/7 ventilation applications with active temperature and humidity outputs, digital display. Black US Size Case.
	T8700-E	Wallmount Temp and Humidity Sensor with ntc.
	T8700-E-D	Wallmount temp and Humidity Sensor with digital display and ntc.
*	T8700-E-MOD	Wallmount Humidity Sensor with Modbus Output
	T8041	Ventostat Duct Probe CO2 Transmitter (0-10V Output, <150mm duct)
	T8042	Ventostat Duct Probe CO2 Transmitter (0-10V Output, >150mm duct)
	T5100-E-V	Wallmount CO2 Sensor (factory set 10v, 5v available by jumper GE branding)
	T5100-E-I	Wallmount CO2 Sensor (4-20 mA, EU Case, GE branding)
	T5100-E-LED	Wallmount CO2 Sensor with LED (factory set 10v, 5v available by jumper GE branding)
	T8013	Airestat CO2 Transmitter. (85-230V supply) 6 colour LED indication, 230V rated output switch.
	T9002	Vaporstat Dew Point Sensor
	Part No	**Sensor Accessories**
	T1505	Water Resistant 1505 - Wall mount NEMA 3-R enclosure to protect sensor from excessive moisture or water spray. ABS plastic enclosure, four diffusion ports allow for entry of CO_2, knockouts are provided for conduit connection.
	T1552	Outside Air 1552 - Rugged weatherproof enclosure (ABS plastic), designed to protect sensor from excessive moisture or water spray. It is ideal for monitoring outside air or CO_2 as a surrogate for combustion fumes in parking garages, tunnels and loading docks.
	T63164	Calibration Cerificate. Please note this *must* be ordered with the relevent sensor
	T63139	24V international power adaptor suitable for supplying T5000, T8000, and T9000 series sensors. Customer will need to install wiring to sensor.
	T2090	Ventostat User Interface Program (UIP) including disc and USB connection cable.
	Part No	**Handheld Monitors**
	T7001	Standard CO_2/Temperature Monitor Battery (4 AA) powered sensor, large ppm display, 0-4 V output, with calibration/flow through port and *no* power adaptor.
	T7001Di	RH & Datalogger Combines the Telaire 7001 and a built-in RH/Temp Datalogger, Interface Cable & Graphing Software. This combo allows for measuring, recording and graphing CO_2, Temp and RH. Package includes international power adapter (62933).
	T7001i	Standard CO_2/Temperature Monitor Battery (4 AA) powered sensor, large ppm display, 0-4 V output, with calibration/flow through port. Package includes international power adapter (62933).
	T7001SKi	AQ/DCV Starter Kit Standard CO_2/Temperature Monitor, Adapter, Interface Cable and CD Containing Real Time Graphing Software & IAQ Reference Library. Package includes international power adapter (62933).
	Part No	**Handheld Accessories**
	T2077	Data Logger & Software that attaches to the back of the 7001 and is equipped with a custom cable to read CO_2 levels via the RJ-45 connection. One additional port is available to record a fourth gas. Includes datalogging software. May also be used as standalone to measure RH and temperature.
	T2080	Real Time Software program that displays and graphs real-time CO_2 levels at a user adjustable time interval. The program records CO2 levels in a sequential format but does not record the time of the measurement. CO_2 View™ allows the user to perform a zero and span calibration (gases sold separately) on the Telaire® 7001 CO_2 sensor. Supplied with interface cable.
	T2070	3 ft Voltage output cable (RJ-45) with the two stripped leads (temperature and CO_2) to connect to any other device accepting a 0-4V output. One lead connects to the back of the Telaire 7001 while the stripped lead connects to a third party device. Voltage output cable with 2 pigtail leads to connect to standard dataloggers.