

### Features

- Battery Life Indicator
- Digital Display
- Direct USB Interface
- AC Power connection via USB
- Configurable Alarms
- Ability to manually reset statistics
- 16 month battery life at 10 Minute Reading Rate

### Benefits

- Digital Display Provides Instant Access to Current Readings and Statistics
- Minimal Long-Term Maintenance
- Readings Displayed in User Selected Measurement Unit
- Time and Money Saving with Battery Life Management
- Continuous Monitoring
- E-mail, Text Message and Audible Alerts Provide Assurance and Quality Control

### Applications

- Incubator Monitoring
- Building Studies (hospitals, schools, offices)
- HVAC System Testing
- Agricultural Studies
- Indoor Air Quality (IAQ) Studies

The Element CO2 is a wireless data logger that measures and records carbon dioxide, humidity, and temperature levels in a variety of growing applications. This data logger is ideal for use in air quality studies including HVAC studies, as well as day to day monitoring of plant growing cycles.

The Element CO2 data logger comes with a 16 foot cable connected to the CO sensor, making it ideal for placement around various sized grow rooms to ensure consistent, optimum levels. The logger features an LCD screen which provides instant access to current readings, as well as minimum, maximum, and average statistics.

The device also features configurable alarms, battery life indicator, and the ability to reset statistics without impacting the data collection. The logger features a convenient wall mount, while the CO2 sensor is equipped with dual lock for easy and secure placement and effortless mobility.

Temperature recorded on the Element CO2 can be expressed in °C, °F, °R, or K while humidity can be shown in %RH, mg/ml, and Dew Point. Carbon dioxide can be expressed as either ppm or as a percentage. All units can be viewed on both the LCD screen as well as in the software.

By determining the levels of carbon dioxide, improvements can be made to the ventilation systems and optimum grow environments can be ensured.

The Element CO2 can be used as a standalone data logger, or used wirelessly to transmit collected data back to a central PC for real time monitoring. Cloud monitoring is also possible with MadgeTech Cloud Services.

The Element CO2 can be used as a single wireless data logging system, or can be expanded to a large scale system including hundreds of data loggers. The Element CO2 utilizes the latest version of the MadgeTech 4 Data Logger Software to analyze data or generate reports in graphs or tabular formats. Summary and statistic views are also available for further analysis, as well as the capability to export to Excel®.



## MadgeTech Data Logger Software

**Key**

- A** Graph View
- B** Tabular Data View
- C** Statistics
- D** Properties
- E** Copy to Excel

The screenshot displays the MadgeTech 4 software interface. It features a main window with a menu bar (File, Device, Report) and a toolbar. The central area is divided into three overlapping views: a graph view (A) showing temperature and humidity trends over time, a tabular data view (B) showing a list of data points with columns for Time, Time Zone, Date, and Delta, and a statistics window (C) displaying summary data for CO2, Humidity, and Temperature. A 'Report' window (E) is also visible, showing options for report generation and export to Excel.

### Software Features:

- Multiple graph overlay
- Statistics
- Digital calibration
- Zoom in/ zoom out
- Lethality equations (F0, PU)
- Mean Kinetic Temperature
- Full time zone support
- Data annotation
- Min./Max./Average lines
- Data table view
- Automatic report generation
- Summary view

# Element CO2 Specifications\*

\*SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. SPECIFIC WARRANTY REMEDY LIMITATIONS APPLY.  
CALL 1-603-456-2011 OR GO TO WWW.MADGETECH.COM FOR DETAILS.

## Carbon Dioxide (CO<sub>2</sub>)

<b>Measurement Range:</b>	0 ppm to 200,000 ppm
<b>Measurement Resolution:</b>	10 ppm
<b>Calibrated Accuracy:</b>	70 ppm ± 5% of the reading
<b>Sensor Warm Up Time:</b>	30 seconds

## Temperature

<b>Measurement Range:</b>	0 °C to +55 °C (+32 °F to +131 °F)
<b>Measurement Resolution:</b>	0.08 °C
<b>Calibrated Accuracy:</b>	±1 °C

## Humidity

<b>Measurement Range:</b>	0 %RH to 95 %RH
<b>Measurement Resolution:</b>	0.08 %RH
<b>Calibrated Accuracy:</b>	±3 %RH from 25 %RH to 75 %RH @ 25 °C, 7 %RH otherwise

## General

<b>Reading Rate:</b>	1 reading every second up to 1 reading every 24 hours
<b>Memory:</b>	10,752 readings per channel
<b>LED Functionality:</b>	<ul style="list-style-type: none"> <li>Green LED blinks every 5 seconds to indicate unit is logging</li> <li>Blue LED blinks every 15 seconds to indicate unit is in wireless mode</li> <li>Red LED blinks every 1 second to indicate alarm condition</li> </ul>
<b>Memory Wrap Around:</b>	Yes
<b>Start Modes:</b>	Immediate Start & Delayed Start
<b>Battery Type:</b>	Ultralife 9V Lithium included; <b>user replaceable</b>
<b>Battery Life:</b>	Approximately 16 months typical at a 10 minute reading rate
<b>Approvals:</b>	US (FCC), CA (IC), CE, South Korea (KCC), China (CMIIT), Japan (LCIE)
<b>Time Accuracy:</b>	±1 minute/month @ 25 °C

**BATTERY WARNING:** Battery may leak, flame or explode if disassembled, shorted, charged, connected together, mixed with used or other batteries, exposed to fire or high temperature. Discard used battery promptly. Keep out of reach of children.

<b>Computer Interface:</b>	USB to mini USB, 250,000 baud for standalone operation or RFC1000/RFC1000-CE/RFC1000-IP69K required for wireless operation
<b>Operating System Compatibility:</b>	XP SP3/Vista/Windows 7/Windows 8
<b>MadgeTech Software Compatibility:</b>	<ul style="list-style-type: none"> <li>Standard Software version 4.2.1.1 or later</li> <li>Secure Software version 4.2.0.1 or later</li> </ul>
<b>Operating Environment:</b>	<ul style="list-style-type: none"> <li>0 °C to +55 °C (+32 °F to +131 °F)</li> <li>0 %RH to 95 %RH non-condensing</li> <li>0.002 PSIA to 100 PSIA</li> </ul>
<b>Dimensions:</b>	<ul style="list-style-type: none"> <li>Data logger: 3.0 in x 3.5 in x 0.95 in (76.2 mm x 88.9 mm x 24.1 mm)</li> <li>Sensor: 1.98 in x 1.98 in x 1.15 in (50.3 mm x 50.3 mm x 29.2 mm)</li> <li>Cable Length: 16 ft (192 in)</li> </ul>
<b>Weight:</b>	140 g (4.9 oz)
<b>Enclosure Material:</b>	ABS Plastic
<b>Alarm:</b>	User configurable audible, on-screen, email and text (SMS) alarms. Alarm Delay: A cumulative alarm delay may be set in which the device will activate the alarm (via LED) only when the device has recorded a user specified time duration of data.
<b>Audible Alarm Functionality:</b>	1 Bleep per second for reading alarm above/below threshold

## Wireless

<b>RF Frequency:</b>	2.45 GHz IEEE 802.15.4 ultra-low power wireless transceiver with fully bi-directional communication
<b>Band:</b>	ISM band 2.405-2.475 GHz Operation (channels 11 through 25) @ 250 kbps data rate
<b>Transceiver Sensitivity: (RFC1000)</b>	-95 dBm typical
<b>Transmission Distance: (to data loggers)</b>	<ul style="list-style-type: none"> <li>RFC1000, RFC1000-CE &amp; RFC1000-IP69K</li> <li>2,000 ft max. outdoors - line of sight unobstructed</li> <li>500 ft max. indoors - typical urban environment</li> </ul>
<b>Transmission Distance: (to other RFC1000's)</b>	<ul style="list-style-type: none"> <li>RFC1000</li> <li>4,000 ft max. outdoors - line of sight unobstructed</li> <li>1,000 ft max. indoors - typical urban environment</li> <li>RFC1000-CE</li> <li>2,500 ft max. outdoors - line of sight unobstructed</li> <li>700 ft max. indoors - typical urban environment</li> <li>RFC1000-IP69K</li> <li>4,000 ft max. outdoors - line of sight unobstructed</li> <li>1,000 ft max. indoors - typical urban environment</li> </ul>

## Ordering Information

MODEL	DESCRIPTION
Element CO2	Wireless CO <sub>2</sub> , Humidity & Temperature Data Logger
RFC1000	Wireless RF transceiver/repeater. USB to mini USB adapter & power supply included
RFC1000-CE	Wireless RF transceiver/repeater, CE approved for Europe. USB to mini USB adapter & power supply included
RFC1000-IP69K	Wireless RF transceiver/repeater, splash proof with an IP69K rating. USB to mini USB adapter included
U9VL-J	Replacement battery for Element CO2
Calibration Certificate	Calibration Certificate available for data logger

For Quantity Discounts call (603) 456-2011 or email [sales@madgetech.com](mailto:sales@madgetech.com)

### Countries approved for use, purchase and distribution of the Element CO2:

Australia, Austria, Belgium, Bulgaria, Canada, Chile, China, Columbia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Estonia, Finland, France, Germany, Greece, Honduras, Hungary, Iceland, Ireland, Israel, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, New Zealand, Norway, Peru, Poland, Portugal, Romania, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, The Netherlands, Turkey, United Kingdom, United States, Venezuela, Vietnam