



A160 Temp/RH/CO₂ Data Logger

PRODUCT MANUAL

Item # 3611A



Spectrum
Technologies, Inc.

CONTENTS

Model Specifications	2
Description	3
Installation and Operation	4
Connecting to the Computer	7
SpecWare Software	8
Trouble Shooting	10
Warranty	12

SPECIFICATIONS

Logger Capacity	15,999 data points (5,333 per sensor)
CO ₂ Range	0 to 9999 ppm
CO ₂ Accuracy	±50ppm ±5% of reading from 0 to 2000 ppm, else unspecified
Pressure Dependence	+0.16% of reading per 1 hPa deviation from normal pressure of 1000 hPa
Temperature Range	14 to 140°F (-10 to 60°C)
Temperature Accuracy	±1.0°F (±0.6°C)
Humidity Range	5.0 to 95.0% RH (avoid condensation)
Humidity Accuracy	±3% RH at 77°F (25°C) (10 to 90% RH, else ±5% RH)
Warm up	30 seconds
Power Supply	100-240VAC adapter to 5VDC 500mA
Dimensions (w/o A/C adapter)	4.75x4x4in (12x10.5x10.5cm)

For customer support, or to place an order, call Spectrum Technologies at (800)248-8873 or (815)436-4440 between 7:30 am and 5:30 p.m. CST, FAX at (815)436-4460, or E-mail at info@specmeters.com.

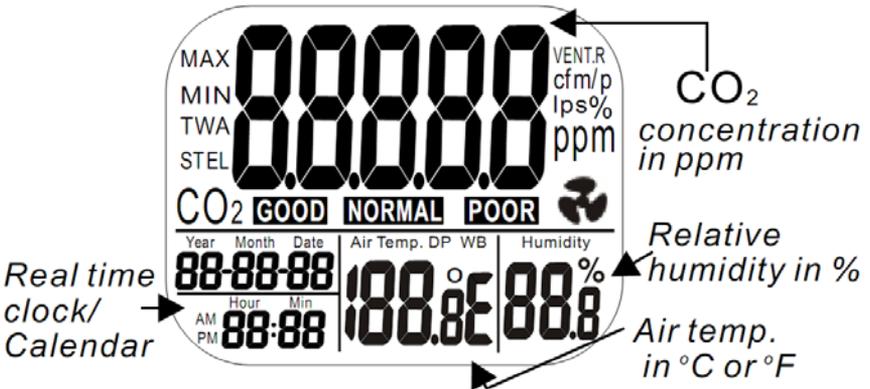
Spectrum Technologies, Inc
12360 S Industrial Dr. East
Plainfield, IL 60585
www.specmeters.com

Thank you for purchasing a WatchDog Model A160 A-Series Data Logger. This manual describes how to use your WatchDog Logger and keep it working accurately for many years. Read this manual thoroughly in order to get effective performance from your data logger.

The A160 logger also has a comprehensive LCD display with controls. Pages 3-6 describe the operation of the display LCD and controls. Pages 7-9 describe the logger function.

DESCRIPTION

LCD DISPLAY



Symbols

ppm	The scale of the CO ₂ value
GOOD	CO ₂ is in good level
NORMAL	CO ₂ is in normal level
POOR	CO ₂ is in poor level
Air Temp.	Air temperature
Humidity %	Unit of air relative humidity
°E (C/F)	Celsius/Fahrenheit of temp.
MAX/MIN	Maximun/Minimum readings
	Icon of CO ₂ alarm

CONTROL BUTTONS

- SET** -Enter setup mode.
-Save and finish settings.
- ESC** -Exit setup page / mode.
-Terminate calibration / datalogging
- RESET** -Press to clear the MAX/MIN records.
- LOG/▲** -Select mode or increase value in setup
-Start data logging
- MIN/MAX▼** -Activate MAX, MIN function.
-Select mode or decrease value in setup.
- ▲** +
SET +
MIN/MAX▼ -Enter CO₂ calibration.

INSTALLATION AND OPERATION

Power On/Off

Plug in the adaptor and the meter turns on automatically with a short beep, then displays current CO₂, temperature, and humidity readings on the LCD.

Taking a Measurement

The meter measures continuously and updates the LCD every second. With a significant environmental change, the CO₂ sensor requires 2 minutes, and the RH sensor 10 minutes to respond. Note: Do not hold the meter close to the face because exhalation affects the CO₂ reading.

MIN, MAX

Press "MIN/MAX▼" to switch between the normal, minimum, and maximum readings. Press and hold "RESET" for at least 1 second to reset the minimum and maximum values.

Alarm

An audible alarm can sound when CO₂ concentration exceeds user-set limits. It beeps and the fan icon displays on the LCD when the CO₂ level goes over the upper limit. The sound can be stopped by pressing any button.

Setup

In normal mode, hold down the SET button for at least 1 second to enter setup mode. To exit setup, press the ESC button.

P1.0 Set CO₂ Alarm

When entering setup mode, “CO₂” and “P1.0” are displayed on the LCD. Press SET again to enter “P1.1” to set upper limit for the GOOD indicator on the LCD. Press “LOG▲” to increase or “MIN/MAX▼” to decrease the value.

Press SET again to enter “P1.2” to set the CO₂ alarm lower limit (when the level drops below this, the alarm will automatically stop). The current value will be blinking on the LCD. Press “LOG▲” to increase or “MIN/MAX▼” to decrease the value.

Press SET again to enter “P1.3” to set the CO₂ alarm upper limit (exceeding this triggers the alarm). The current value will be blinking on the LCD. Press “LOG▲” to increase or “MIN/MAX▼” to decrease the value (in a plant growth environment, this should probably be set as high as possible (5000) to effectively disable the alarm). Press SET to save the values, or ESC to exit without saving.

P2.0 Set Temperature Units

From the P1.0 display, press “LOG▲” to change to the P2.0 screen. Press SET to enter “P2.1” to set the temperature units. The current units, “°C” or “°F”, will be displayed on the lower middle area of the LCD. Press “LOG▲” or “MIN/MAX▼” to switch between “°C” and “°F”. Press the SET button to save the setting, or ESC to exit without saving.

P3.0 Real Time Clock

From the P1.0 display, press “LOG▲” twice to change to the P3.0 screen. Press SET to enter “P3.1” to set the real time clock. The year will be blinking. Press “LOG▲” or “MIN/MAX▼” to set the year. Press the SET button to save the setting, or ESC

to exit without saving. Repeat for (P3.2) month, (P3.3) day, (P3.4) 12/24 hour, (P3.5) hour, and (P3.6) minute.

P4.0 Reset

From the P1.0 display, press “LOG▲” three times to reset the A160 to default settings. Press SET to enter “P4.1” to reset the settings. Press “LOG▲” or “MIN/MAX▼” to change to “Yes”. Press the SET button to save the setting, or ESC to exit without saving.

CO₂ Manual Calibration

Manual calibration should be done outdoors on a sunny day with fresh air and plenty of ventilation, resulting in a CO₂ value of about 400 ppm. Do not calibrate on a rainy day because high humidity will affect the CO₂ level. Do not calibrate in places with crowds of people or in the vicinity of high concentration CO₂ sources such as ventilation outlets or fireplaces.

Place the A160 in the calibration site and turn it on. Press and hold “SET”, “LOG▲”, and “MIN/MAX▼” for at least 1 second to enter CO₂ calibration mode. “400ppm” and “CO₂” will be blinking on the LCD. Wait about 30 minutes. The blinking will stop after the calibration completes. Press and hold “RESET” for more than 1 second to exit the calibration process.

CONNECTING TO THE COMPUTER

NOTE: The A160 logger requires SpecWare version 9.03 or above. If you are already running a version of SpecWare 9, an update to the latest version is available as a free download on the SpecWare 9 update page at www.specmeters.com.

The A160 and other A-Series loggers do not use the standard gray PC interface cable that accompanies SpecWare Software. Instead, you need the A-Series PC Connection Cable (Item 3661A). The cable is a serial USB cable and requires that you install the driver prior to its use. The driver is included on the SpecWare Software installation CD for SpecWare 9 Pro or Basic, Version 9.01 Build 206 or greater, as well as on the SpecWare 9 update page at www.specmeters.com.

After installing the drivers, if you plug in the cable before you start SpecWare (or leave it plugged in), SpecWare will automatically find the COM port used by the cable.

The 2.5mm stereo pin connects to the jack on the back of the data logger.

*The **only time** you must have the WatchDog connected to the computer is during the launching and downloading of the data logger. After the logger has been launched, and/or downloaded, disconnect the logger and place it in the environment you wish to monitor.*

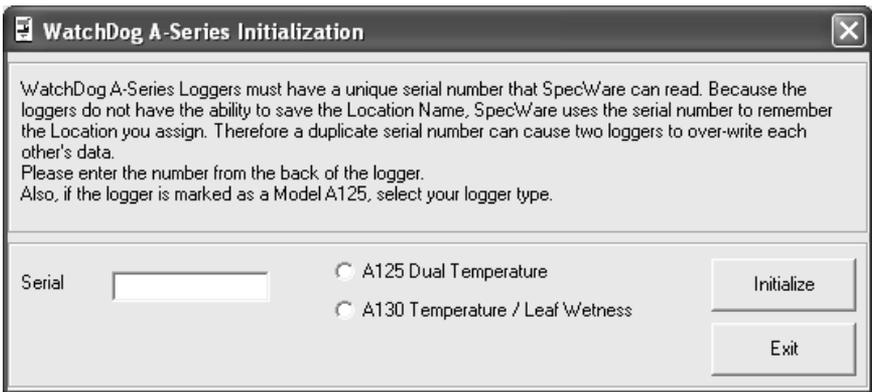
SPECWARE SOFTWARE

SpecWare software version 9.03, and above support the WatchDog A160 logger. Previous builds of SpecWare 9 can be updated via the free downloads available at www.specmeters.com. The software version can be checked by selecting “About SpecWare” from the Help menu.

Complete details on the software are included in the SpecWare Software manual which is available as a pdf document on the installation CD (and accessible via the Help menu). The following sections summarize the most commonly used functions.

Initializing the Serial Number and Logger Type

The first time that an A-Series logger is read by SpecWare, an initialization screen will open. Enter the serial number printed on the bottom of the logger. Because you have an A160, the A125/A130 options are ignored.



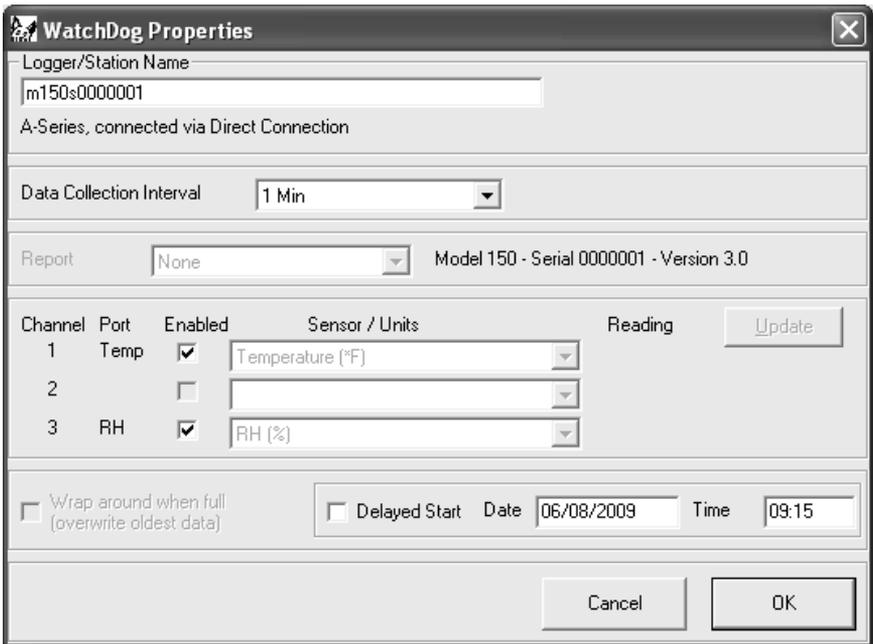
The screenshot shows a dialog box titled "WatchDog A-Series Initialization". The text inside reads: "WatchDog A-Series Loggers must have a unique serial number that SpecWare can read. Because the loggers do not have the ability to save the Location Name, SpecWare uses the serial number to remember the Location you assign. Therefore a duplicate serial number can cause two loggers to over-write each other's data. Please enter the number from the back of the logger. Also, if the logger is marked as a Model A125, select your logger type." Below the text is a "Serial" label followed by an empty text input field. To the right of the input field are two radio button options: "A125 Dual Temperature" and "A130 Temperature / Leaf Wetness". At the bottom right of the dialog are two buttons: "Initialize" and "Exit".

Logger Location Names

SpecWare maintains a list of A-Series logger serial numbers and their corresponding location names. As a result, the first time an A-Series logger is connected on a PC, SpecWare will ask for a location name. If you are planning to launch loggers with one PC and read them with another, you may wish to use the default name of *model-number-serial-number* to make tracking easier.

Launching Loggers

The launch screen is used to configure the logger so it can collect data. The launch screen can be accessed by selecting the “Launch WatchDog A-Series” option from the Logger menu or clicking the icon on the



SpecWare toolbar.

Select the logging interval (ranging from 1 to 120 minutes), and ensure all channels are enabled before clicking “Ok” to launch the logger.

IMPORTANT! The A160 does not begin logging until you press and hold the “LOG” button for two seconds. The LCD will alternate between “rEC” and the CO2 value to indicate it is logging.

Downloading The Loggers

The download sequence is initiated by selecting the “Get WatchDog A-Series data” option from the Logger menu or by clicking the icon on the SpecWare toolbar. When the download is complete, the data will be saved in the location defined for that logger. “End” will flash on the LCD to show the download was complete. Press and hold the “ESC” button to return to the normal display.

Charts/Reports

Whenever a file is opened, SpecWare will automatically generate a chart. You will be given the choice of which parameters are to be plotted. The Tools menu gives you access to a variety of standard and user-defined (SpecWare Pro only) reports.

TROUBLE SHOOTING

The A160 logger will not power on.

1. Check that the AC adapter is plugged in to an outlet and the A160.
2. Use a paper clip or toothpick to press “reset” on the base of the logger.

The readings on the LCD don't change.

1. Check to see if the display is in maximum or minimum mode.

“Bat” and the green LED keep flashing.

1. The adaptor output voltage is not 5VDC ($\pm 10\%$), 500mA. Please ensure you are using the correct adapter.

Why won't the logger connect with the computer?

1. The COM Port settings may need to be changed in SpecWare software.

I accidentally sprayed water on my A160.

1. If you haven't done so already, unplug the AC adapter. Shake any water out of the A160. Set the A160 in a ventilated area for at least a day, preferably more. Do not plug it in until you are confident that any water has evaporated. Water damage is not covered under warranty.

LCD Error Codes

CO₂ Reading:

- E01 The CO₂ sensor is damaged.
Contact your distributor regarding repair.
- E02 The CO₂ reading is under the lower limit.
Recalibrate the A160. If this reappears, then contact your distributor regarding repair.
- E03 The CO₂ reading is above the upper limit.
Put the A160 in fresh air for 5 minutes. If it still appears, recalibrate the unit. If this fails, contact your distributor for repair.
- E17 ABC mode of CO₂ sensor has failed and might cause incorrect CO₂ readings.
Contact your distributor regarding repair.

- End The download of logged data has successfully completed. Press and hold the “ESC” button for two seconds to return to the normal display.
- rEC (alternating with the CO₂ value) The A160 is logging data. If you want to stop logging, press and hold the “ESC” button for two seconds.

Air Temperature Reading:

- E02 Air temperature measurement is below the lower limit. Put the meter in regular room temperature for 30 minutes. If this still appears, then contact your distributor regarding repair.
- E03 Air temperature is above the upper limit. Put the meter in regular room temperature for 30 minutes. If this still appears, then contact your distributor regarding repair.
- E31 Temperature sensor or measuring circuit has failed. Contact your distributor regarding repair.

Relative Humidity Reading

- E04 Air Temperature measurement has an error code. Refer to the above temperature error codes for problem resolution.
- E11 The RH calibration has failed. Contact your distributor regarding recalibration and repair.
- E34 RH sensor or measuring circuit has failed. Contact your distributor regarding repair.

WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, or unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.



This equipment has been manufactured for
Spectrum Technologies, Inc.
12360 S. Industrial Dr. East
Plainfield, IL 60585 USA

The Manufacturer's **DECLARATION OF CONFORMITY** is on file at the above address, and certifies conformity to the following:

Model Number: A110, A125, A130, A150, A160
Description: WatchDog A-Series Data Loggers
Type: Electrical Equipment for Measurement, Control, and Laboratory Use
Directive: 2004/108/EC
Standards: EN 61326-1 (2006)
CISPR11
EN 61000-4-2 (1995/A1:1998/A2:2001)
EN 61000-4-3 (2006)

Spectrum[®] ***Technologies, Inc.***

12360 S. Industrial Dr. E
Plainfield IL 60585
(800) 248-8873 or (815) 436-4440
Fax (815) 436-4460
E-Mail: info@specmeters.com
www.specmeters.com