

# Temp / RH / CO<sub>2</sub> Hand-Held Meter

## PRODUCT MANUAL

Item # 3440



**Spectrum<sup>®</sup>**  
**Technologies, Inc.**

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Thank you for purchasing the Temp/RH/CO<sub>2</sub> Hand-Held Meter. With an NDIR (non-dispersive infrared) CO<sub>2</sub> sensor, this unit is stable for long-term monitoring. Please read this manual thoroughly before using your meter.

## SPECIFICATIONS

<b>CO<sub>2</sub></b>	
Range	0 to 5000 ppm
Accuracy	±50ppm, ±5% of reading
Pressure Dependence	+1.8% reading / 10hPa deviation from 1000hPa
<b>Temperature</b>	
Range	-14 to 140°F (-10 to 60°C)
Accuracy	±0.9°F (±0.6°C)
<b>Humidity</b>	
Range	0 to 99.9% RH
Accuracy	±3% (10-90%), ±5%(other)
Warm up	30 seconds
Power	4 AA batteries (or 9VDC, 1A adaptor, not incl.)
Battery life	24 hours (alkaline)

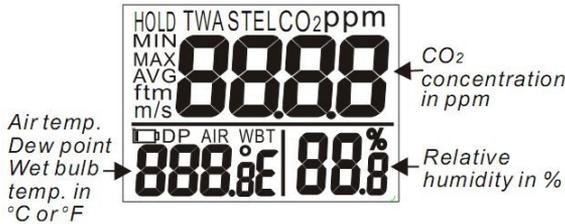
# BATTERY

Install the 4 AA batteries into the battery compartment on the rear and make sure they are in correct polarity.

When the battery voltage gets low, the battery icon and “Lob” will appear on the LCD, and the beeper will sound (press any key to stop the beeps).



# LCD DISPLAY



## Symbols

<b>HOLD</b>	Readings are frozen
<b>TWA</b>	Time weighted average (8 hours)
<b>STEL</b>	Short-term exposure limit (15 min wt avg)
<b>MIN/MAX</b>	Minimum/Maximum readings
<b>DP</b>	Dew point temperature
<b>AIR</b>	Air temperature
<b>WBT</b>	Wet bulb temperature

# KEYPAD

-  Turns on and off the meter.  
 Enters setup mode.  
 Sets as non-sleep mode with  .
-  Exits setup page/mode.  
 Enters CO<sub>2</sub> calibration with  .  
 Enters RH calibration with  .
-  Freezes the current readings.  
 Cancels data hold function.
-  Activates or cancels the backlight.  
 Selects unit or increases value in setup.
-  Selects AIR, DP, WBT temps display.  
 Selects unit or decreases value in setup.
-  Activates MIN, MAX, STEL, TWA function.  
 Saves and finishes settings.

# OPERATION

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## **Power On/Off**

Press the On/Off/Set key to turn the meter on or off. During warm-up, it will perform a 30 second countdown, then will display current CO<sub>2</sub>, temperature, and humidity. The meter turns off automatically after 20 minutes of inactivity. To bring the meter to non-sleep mode, press and hold SET and HOLD for 2 to 3 seconds. You should see a character (n) appear on the LCD display. At this point, let go of the buttons to cancel the automatic power-off function.

## **Taking a Measurement**

The meter measures continuously and updates the LCD every second. With a significant environmental change, the CO<sub>2</sub> sensor requires 30 seconds, and the RH sensor 30 minutes to respond. **Note:** Do not hold the meter close to the face because exhalation affects the CO<sub>2</sub> reading.

## **Switch Temperature Measurement**

Press the DP/WBT key to cycle the temperature display between air, dew point, and wet bulb temperatures.

## **Data Hold**

Press the HOLD button to freeze the readings. HOLD will display on the LCD. Press HOLD again to cancel the hold function.

## **Backlight**

Hold the MODE button for more than 1 second to activate and cancel the backlight function.

## **MIN, MAX, STEL, TWA**

Press the M<sub>x</sub>/AV button to switch between the normal, minimum, maximum, and weighted average readings.

In MIN and MAX modes, minimum and maximum readings for CO<sub>2</sub>, air/dew point/wet bulb temperature, RH will display. In STEL and TWA modes, the display shows the weighted average of the CO<sub>2</sub> readings for the past 15 minutes (STEL) or 8 hours (TWA), as well as the current readings for air/dew point/wet bulb temperature, and RH.

## **Data Hold**

The data hold function works in both IR and probe modes. In IR measurement, just release MEAS button, the meter stops measuring and holds the last reading until next measurement is taken or power off. To hold the data in probe measurement, release MEAS button and wait until it gets the stable reading. Then the “HOLD” icon will display on the top of LCD along with the held reading.

## **Setup**

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

### **P1.0 Set CO<sub>2</sub> Alarm**

When entering setup mode, “AL” and “P1.0” are displayed on the LCD. Press the M<sup>N</sup><sub>X</sub>/AV button to enter “P1.1” to set the CO<sub>2</sub> alarm threshold. The current value will be blinking on the LCD. Press MODE (up-arrow) to increase the value, or DP/WBT (down-arrow) to decrease it. Press the M<sup>N</sup><sub>X</sub>/AV button to save the value, or CAL/ESC to exit without saving.

The meter features audible alarm to warn by emitting 80dB beeps when the CO<sub>2</sub> concentration exceeds the limit. The alarm can be stopped by pressing any button except SET. It will also stop when readings fall below the set value.

### **P3.0 Set Temperature Units**

From the P1.0 display, press MODE (up-arrow) or DP/WBT (down-arrow) to change to the P3.0 screen (“Unit” will display on the LCD). Press the M<sup>N</sup><sub>X</sub>/AV button to enter “P3.1” to set the temperature units. The current units, “°C” or “°F”, will be displayed on the lower left area of the LCD. Press MODE (up-arrow) or DP/WBT (down-arrow) to switch between “°C” and “°F”. Press the M<sup>N</sup><sub>X</sub>/AV button to save the setting, or CAL/ESC to exit without saving.

To exit setup, press the CAL/ESC button.

## **CO<sub>2</sub> Calibration**

The meter is calibrated at the factory to a standard 400ppm CO<sub>2</sub> concentration. It is suggested to do a manual calibration regularly to maintain good accuracy. The calibration should be done during sunny weather in fresh outdoor air that is well-ventilated.

**CAUTION:** Do not calibrate the meter in the air with an unknown CO<sub>2</sub> concentration. It will be calibrated as 400ppm, which can lead to inaccurate measurements.

Place the meter in the calibration site. Turn on the meter and hold down CAL/ESC and MODE simultaneously to enter CO<sub>2</sub> calibration mode. “400ppm” and “CAL” will blink on the LCD while performing the calibration. Wait about 5 minutes for the calibration to complete, which is indicated by the blinking stops and LCD returns to normal mode. To abort the calibration, turn off the meter at any time.

**NOTE:** Ensure the batteries are at full power during the calibration to prevent interruption or a failed calibration.

## **RH Calibration**

Humidity calculations on the meter can be recalibrated using 33% and 75% salt solutions. Ambient conditions should be at 25°C or 77°F, with stable humidity.

Plug the sensor probe into a 33% salt bottle. Hold down the CAL/ESC and DP/WBT buttons until “CAL” is blinking on the LCD display. In approximately 60 minutes “CAL” will stop blinking, indicating the end of this phase. To skip the 75% recalibration, press CAL/ESC to exit.

Plug the sensor probe into the 75% salt bottle, then press the M<sup>N</sup><sub>X</sub>/AV button. “CAL” will blink on the LCD until the calibration is completed in approximately 60 minutes.

The 33% calibration can be skipped by pressing MODE (up-arrow) or DP/WBT (down-arrow) during the first 5 minutes of the 33% calibration step above.

# TROUBLESHOOTING

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## Unable to power on

Press the On/Off/Set key for more than 0.3 seconds and try again. Check whether the batteries have good contact and the correct polarity.

## Readings do not change

Check whether data hold function was activated (HOLD icon at the left top).

## Slow sensor response

Check whether the air flow channels on the back of the meter are blocked.

## Error messages

E01: CO<sub>2</sub> sensor damaged.

E02: The value is under range.

E03: The value is over range.

E04: Error code for dew point or wet bulb accompanying a primary sensor failure code.

E07: Too low voltage to measure CO<sub>2</sub>.  
Replace batteries.

E11: Retry humidity calibration.

E17: Retry CO<sub>2</sub> calibration.

E31: Temperature sensor damaged.

E34: Humidity sensor damaged.

# 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: 3440  
Description: Temp/RH/CO2 Hand-Held Meter  
Type: Electrical Equipment for Measurement, Control, and Laboratory Use  
Directive: 2004/108/EC  
Standards: EN 61326-1 (2006)  
EN 61000-3-2 (2006)  
EN 61000-3-3 (1995/A1:2001/A2:2005)  
EN 61000-4-2 (1995/A1:1998/A2:2001)  
EN 61000-4-3 (2006) /-4(2004) /-5(2006)  
EN 61000-4-6 (1996/A1:2001) /-11(2004)

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