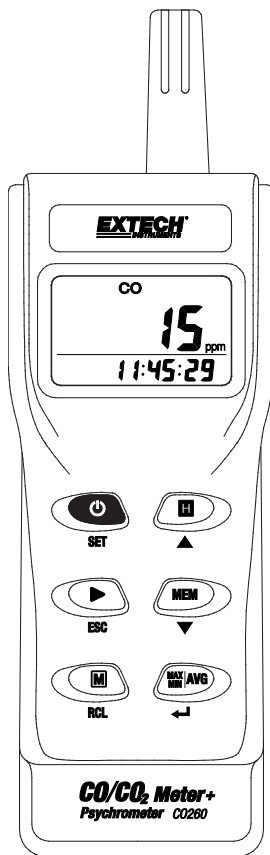


# EXTECH<sup>®</sup>

# USER MANUAL

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

### Model CO260



## ***Introduction***

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Thank you for selecting the Extech CO260 Meter. The CO260 measures CO<sub>2</sub> (Carbon Dioxide) levels, CO (Carbon Monoxide) levels, air temperature, and relative humidity. The CO260 also displays dew point and wet bulb temperatures, generated from calculations performed on temperature and humidity measurements. The CO260 is an ideal instrument for indoor air quality (IAQ) analysis.

This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website ([www.extech.com](http://www.extech.com)) to check for the latest version and translations of this User Manual, Product Updates, and Customer Support.

## ***Features***

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- Adjustable carbon monoxide warning level
- Designed with NDIR (non-dispersive infrared)
- Long life electrochemical sensor
- Audible and visual alarm
- Backlit LCD for easy viewing in dimly lit areas
- Low battery indicator
- Auto power off
- Mini-USB connector
- Manual and automatic recording

## ***Safety Information***

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### **IMPORTANT CARBON DIOXIDE (CO) SAFETY NOTES**

- The CO260 Carbon Monoxide Monitor is intended for general purpose Air Quality monitoring only and has not been certified for use pursuant to any state or city safety Carbon Monoxide Alarm or Monitoring requirements.
- The CO260 Carbon Monoxide Monitor has not been tested by an independent lab to comply with the UL 2034 or IAS 6-96 standard.
- It is the responsibility of the customer to obtain and apply current local, state, and national regulations regarding CO alarms, monitoring and testing.
- Electromagnetic (EMI) interference may cause erratic meter readings; do not place meter near areas of high EMI when taking CO measurements.
- Recovery time is required after the meter has been exposed to high levels of CO, the longer the exposure, the longer the recovery time.



**Warning: Carbon monoxide is life threatening even at relatively low concentrations; learn and recognize the effects of CO poisoning (see table below). Do not use this meter as a personal safety-monitoring device.**

## Effects of Carbon Monoxide (CO) poisoning

**Warning:** Ensure that the meter is powered, at room temperature, and in an area free of Carbon Monoxide (CO) before starting measurements. If not, the meter will read incorrectly when subsequently measuring CO.

0-1 PPM	Normal background levels
9 PPM	Maximum allowable short-term exposure
50 PPM	Maximum allowable continuous exposure level in any 8-hour period, according to OSHA
200 PPM	Mild headache, fatigue, nausea, and dizziness after 2-3 hours
400 PPM	Frontal headache within 1-2 hours, life threatening after 3 hours
800 PPM	Dizziness, nausea, convulsions within 45 minutes. Unconsciousness within 2 hours. <b>DEATH WITHIN 2 TO 3 HOURS</b>
1600 PPM	Headache, dizziness, nausea within 20 minutes, <b>DEATH WITHIN 1 HOUR</b>
3200 PPM	Headache, dizziness, nausea within 5-10 minutes. <b>DEATH WITHIN 25-30 MINUTES</b>
6400 PPM	Headache, dizziness, nausea within 1-2 minutes. <b>DEATH WITHIN 10-15 MINUTES</b>
12800 PPM	<b>DEATH WITHIN 1 TO 3 MINUTES</b>

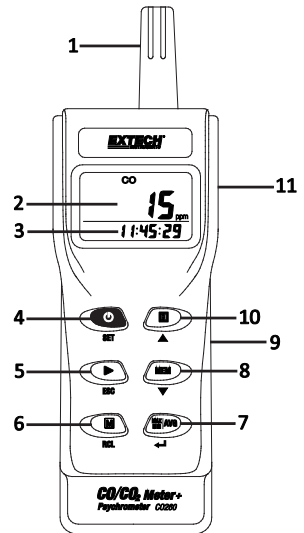
## Regulatory exposure limits for Carbon Dioxide (CO<sub>2</sub>)

- ASHRAE Standard 62-1989: 1000ppm: CO<sub>2</sub> concentration in occupied buildings should not exceed 1000ppm.
- OSHA: 5000ppm: Time weighted average over five 8-hour workdays should not exceed a CO<sub>2</sub> concentration of 5000ppm.
- UK Building bulletin 101 (BB101): 1500ppm: CO<sub>2</sub> concentration averaged over a full school day (i.e., 9:00am to 3:30 pm) should not exceed 1500ppm.
- Germany, Japan, Australia, UK: 5000ppm: the 8-hour weighted average limit for occupational exposure is 5000ppm for CO<sub>2</sub> concentration.
- EPA Taiwan (Type 1): Indoor areas such as department stores, theaters, restaurants, libraries should not exceed an average of 1000ppm CO<sub>2</sub> concentration over an 8-hour period.
- EPA Taiwan (Type 2): Indoor areas with special requirements for good air quality such as schools, hospitals, and day care centers have a maximum suggested CO<sub>2</sub> level of 600ppm.

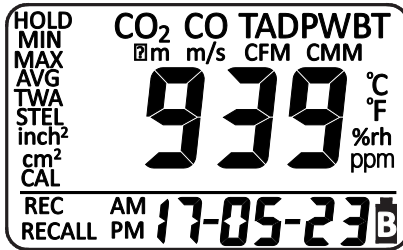
# Descriptions

## METER

1. Temperature and Humidity sensor
2. Primary display
3. Secondary display
4. Power and Set button
5. Start and Escape button
6. Mode and Recall button
7. Min-Max-Avg and Enter button
8. Memory and Down button
9. CO/CO<sub>2</sub> sensors and battery compartment (on back)
10. Hold and Up button
11. AC Adaptor and mini-USB port











## LCD DISPLAY




## LCD SYMBOLS

CO <sub>2</sub>	Carbon dioxide
CO	Carbon monoxide
TWA	Time weighted average (8 hours)
STEL	Short-term exposure limit (15-minute weighted average)
HOLD	Freezes current reading on display
MIN/MAX	Minimum/Maximum readings
□	Low battery indicator
DP	Dew point temperature
TA	Air temperature
WBT	Wet bulb temperature
%RH	Relative humidity
C or F	Celsius/Fahrenheit temperature
CAL	Calibration Mode
REC	Manual/automatic data logging
RECALL	View manually logged data

## KEYPAD DESCRIPTION

 <p><b>SET</b></p>	<p><b>Power ON/OFF, SET</b>            Short press to power the Meter ON or OFF            With the meter OFF, long press to enter setup mode            Long press /SET and H/▲ to enable or disable APO</p>
 <p><b>ESC</b></p>	<p><b>START/ESCAPE</b>            Short press to exit setup mode            Long press to begin data logging</p>
 <p><b>RCL</b></p>	<p><b>MODE/RECALL</b>            Short press to change the display modes            Long press to recall manually stored readings</p>
 <p><b>H</b> ▲</p>	<p><b>HOLD/UP ARROW</b>            Short press to freeze or unfreeze reading on the display            Short press in setup mode to select units or increase a value            Long press /SET and H/▲ to enable or disable APO</p>
 <p><b>MEM</b> ▼</p>	<p><b>MEMORY/DOWN ARROW</b>            Short press to save readings into memory            Short press in setup mode to select units or decrease a value</p>
 <p><b>MIN</b>   <b>MAX</b>   <b>AVG</b> ←</p>	<p><b>MIN/MAX/AVG/TWA/STEL, SAVE</b>            Short press to select MIN, MAX, TWA, STEL function            Short press in setup mode to save settings</p>

## Battery Installation

- Four (4) 'AA' batteries or an AC/DC adaptor power the meter.
- Install the batteries into the rear battery compartment observing correct polarity.
- When the adaptor is used, the batteries are disconnected from the meter circuitry. The adaptor cannot be used to charge rechargeable batteries.
- When battery voltage is low, the battery symbol (  ) appears. Replace the batteries promptly.

## ***Powering the Meter***

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Short press the **U/SET** button to turn the meter ON or OFF. At power up, the meter emits a short beep and performs a 30-second warmup before entering normal operating mode. After the countdown, the primary LCD digits will display the current readings. The secondary display will alternate between the current date and time.

## ***Taking Measurements***

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The meter begins measuring in the selected mode, when powered on; the sensors respond once per second. If the operating environment changes (example: from high to low temperature), wait 30 seconds for the CO<sub>2</sub> sensor and up to 30 minutes for the relative humidity sensor to respond.

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

1. Short press the **M/REL** button to change the mode to CO<sub>2</sub> if necessary.
2. Trace the CO260 around the area of the suspected leak.
3. The meter indicates the presence of carbon dioxide (CO<sub>2</sub>) in ppm in the primary display. The secondary display indicates the current date and time alternately.

NOTE: Do not hold the meter close to your mouth or any other source of CO<sub>2</sub>.

### **Measuring Carbon Monoxide (CO)**

1. Short press the **M/REL** button to change the mode to CO, if necessary.
2. Trace the CO260 around the area of the suspected leak.
3. The meter indicates the presence of carbon monoxide (CO) in ppm in the primary display. The secondary display indicates the current date and time alternately.
4. The display will flash, and an audible beep is emitted at 25 ppm alerting the user to dangerous CO levels. The higher the concentration of CO, the faster the beep frequency. The display will stop flashing once the measured CO is below the alarm limit value.

### **Measuring Air Temperature and Calculating Dew point and Wet bulb**

1. Short press the **M/REL** button to change the mode to air, dew point, or wet bulb temperature.
2. Trace the CO260 in the testing area.
3. The primary display indicates the air temperature, dew point, or wet bulb temperature depending on the selected mode. The secondary display indicates the current date and time alternately.
4. Note that Dew Point and Wet Bulb Temperature displays are calculations made from Air Temperature and Relative Humidity measurements.

### **Measuring Relative Humidity %**

1. Short press the **M/REL** button, if necessary, to change the mode to Relative Humidity.
2. Place the CO260 in the testing area.
3. The primary display indicates the relative humidity measurement, and the secondary display indicates the current date and time alternately.

## Advanced Functions

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### Data Hold

Short press the **H/▲** button to freeze the readings on the display. The "HOLD" icon flashes in the top left of the display. Short press the **H/▲** button again to unfreeze the readings on the display.

**Note:** HOLD function is not operational in Min/Max/Avg mode.

### Display Backlight

The meter is equipped with a backlight for easy viewing in dimly lit areas. The backlight will activate for 10 seconds by pressing any button.

### MIN, MAX, STEL, TWA Recording

In normal operating mode, short press the **MXMN/AV/←** button to view the minimum, maximum, weighted average, and current readings. With each short press of the **MXMN/AV/←** button, the meter displays the MIN, MAX, STEL, TWA, or current value along with elapsed timer, in sequence. Short press the **▶/ESC** button to return to the normal operating mode.

In MIN and MAX modes, the meter shows the lowest (minimum) or highest (maximum) reading in the primary display.

In STEL and TWA modes, the main display shows the weighted average of readings for the past 15 minutes (STEL) or 8 hours (TWA). TWA and STEL mode are only operational in CO<sub>2</sub> mode.

In CURRENT mode, the primary display shows the current readings. The secondary display shows the elapsed timer. Press the **▶/ESC** button to exit and return to the normal operating mode.

#### NOTES:

1. If the meter is ON for < 15 minutes, the STEL value will be the weighted average of readings taken since power on. Similarly, for the TWA mode when the meter has been ON for < 8 hours, the display only shows a weighted average of the readings up to the moment.
2. The CO260 requires at least 5 minutes calculating STEL and TWA. The display shows "----" during the first 5 minutes from power ON.
3. While in HOLD mode, the STEL and TWA values will continue to update every 5 minutes.
4. Hold, Record, and Recall functions are not operational while in Min/Max/Avg mode.
5. TWA and STEL will function only in CO<sub>2</sub> mode.
6. The unit of measure can be changed while in Min/Max mode.

## Manual Data Recording

The CO260 has 99 memory locations for storing readings one at a time.

1. While in normal operating mode or Hold mode, short press the **MEM/▼** button to store a reading. The REC icon flashes on the display for approximately 3 seconds. The primary display briefly shows the memory location.
2. All measurement types are saved, not only the currently displayed measurement type. (For example, when recording CO, the CO<sub>2</sub>, %RH, and air temperature will be recorded).
3. In cases where the readings are changing rapidly, short press the **H/▲** button to freeze the readings on the display before recording.

Note: Manual recording is not available when in the Min/Max mode.

## Recalling Manually Stored Readings

The meter can recall up to 99 saved readings.

1. From the normal operating mode, long press the **M/REL** button until 'Recall' flashes on the display.
2. Short press the **H/▲** or **MEM/▼** buttons to scroll through the memory locations. The selected memory location will flash for approximately 3 seconds and then the stored reading will display.
3. Short press the **M/REL** button to change the displayed measurement parameter.
4. The secondary display shows the time and date that the data was recorded.
5. To exit memory recall mode, short press the **►/ESC** button.

## Automatic Datalogging

The CO260 automatically records CO<sub>2</sub>, CO, Temperature, or RH readings and can store up to 32,000 records. The sample rate can be set from 1 second to 4 hours 59 minutes and 59 seconds. See 'Setup Mode' for information on setting the sample rate.

1. After the sample rate is selected, long press the **►/ESC** button to begin logging. The 'rec' icon flashes and the primary display shows the real time value. The secondary display shows the current time and date alternately.
2. Short press the **M/REL** button to select a different measurement mode.
3. To exit the datalogger mode, long press the **►/ESC** button. The 'rec' icon stops flashing.

Notes: Previous records are overwritten any time logging is started.

The **M/REL** button is the only button that is operational while in datalogging mode.

## CO Alarm

The meter features an audible alarm (80 db) that warns when CO concentration exceeds the set limit. The beeper stops when the readings fall below the limit. The meter beeps again if the value exceeds the limit. See the section 'Setup Mode' for more information.

## Auto Power OFF (APO)

The meter turns off automatically after 20 minutes of inactivity. To override APO, long press both the **⏻/SET** and **H/▲** buttons while powering the meter, until "n" appears in the display.

NOTE: Auto power off is not operational while in calibration mode.



## Setup Mode

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While the meter is OFF, long press the **⏻/SET** button to enter the setup mode. To exit the setup mode, short press the **▶/ESC** button at any time. The Setup parameters are explained below.

### P10 Clearing the Manual Recording Memory

Clearing the memory will erase **ALL** the manually stored records.

1. Upon entering setup mode, P10 and “CLr” are displayed.
2. Short press the **MXMN/AV/↵** button to advance to P11.
3. Short press the **H/▲** or **MEM/▼** button to select YES or NO. ‘YES’ will erase all the manually stored records.
4. Short press the **MXMN/AV/↵** button to save the selection and return to P10.
5. Short press the **▶/ESC** button to exit without saving.
6. Short press the **H/▲** button to advance to the next step.

### P20 Setting the CO Alarm

1. When in alarm setup mode, P20 and “ALAR” are displayed. Short press the **H/▲** button to advance to P20, if necessary.
2. Short press the **MXMN/AV/↵** button to advance to P21 and to set the CO alarm threshold. The current set value will blink on the display.
3. Short press the **H/▲** button to increase or the **MEM/▼** button to decrease the value. The alarm range is 15 to 200ppm and each press of the button will advance 5ppm.
4. Short press the **MXMN/AV/↵** button to save the selection and return to P20.
5. Short press the **▶/ESC** button to exit without saving.
6. Short press the **H/▲** button to advance to the next step.

### P30 Changing the Temperature Units

1. When in temperature setup mode, P30 and “unit” are displayed. Short press the **H/▲** button to advance to P30 if necessary.
2. Short press the **MXMN/AV/↵** button to advance to P31, to change the temperature units. The current temperature unit displays on the LCD.
3. Short press the **H/▲** or **MEM/▼** button to toggle between °C and °F.
4. Short press the **MXMN/AV/↵** button to save the setting and return to P30.
5. Short press the **▶/ESC** button to exit without saving.
6. Short press the **H/▲** button to advance to the next step.

### P40 Setting the Datalogging Sampling Rate

1. When in datalogging setup mode, P40 and “rAtE” are displayed. Short press the **H/▲** button to advance to P40 if necessary.
2. Short press the **MXMN/AV/↵** button to advance and to set the sampling rate for datalogging. The **hour** digit will blink in the secondary display.
3. Short press the **H/▲** button to increase the time or short press the **MEM/▼** button to decrease the time.

4. Short press the **MXMN/AV/↵** button to save the setting and advance to the **minute** setup.
5. Short press the **H/▲** button to increase the time or short press the **MEM/▼** button to decrease the time.
6. Short press the **MXMN/AV/↵** button to save the setting and advance to the **second** setup.
7. Short press the **MXMN/AV/↵** button to save the settings and return to P40.
8. Short press the **▶/ESC** button to exit without saving.
9. Short press the **H/▲** button to advance to the next step.

Note: The sampling rate can be set from 1 second up to 4 hours 59 minutes and 59 seconds.

## P50 Changing the Barometric Pressure Compensation

1. When in pressure setup mode, P50 and “PrES” are displayed. Short press the **H/▲** button to advance to P50 if necessary.
2. Short press the **MXMN/AV/↵** button to set the pressure compensation value for the CO<sub>2</sub> measurement. The current pressure compensation value in hPa will flash.
3. Short press the **H/▲** or **MEM/▼** button to adjust the barometric pressure value. The pressure compensation range is from 70 to 199 kPa.
4. Short press the **MXMN/AV/↵** button to save the setting and return to P50.
5. Short press the **▶/ESC** button to exit without saving.
6. Short press the **H/▲** button to advance to the next step.

## P60 Setting the Real-Time Clock

1. When in Real-Time Clock mode, P60 and “rtC” are displayed. Short press the **H/▲** button to advance to P60 if necessary.
2. Short press the **MXMN/AV/↵** button to advance to P61 and set the time format to 12-hour or 24-hour. The current time format will flash.
3. Short press the **H/▲** or **MEM/▼** button to toggle the format.
4. Short press the **MXMN/AV/↵** button to save the setting and to advance.
5. The **year** will flash in the secondary display. Short press the **H/▲** or **MEM/▼** button to change the value.
6. Short press the **MXMN/AV/↵** button to save the setting and advance to the **month**.
7. Short press the **H/▲** or **MEM/▼** button to change the value.
8. Short press the **MXMN/AV/↵** button to save the setting and advance to the next step.
9. Repeat the above steps for the **month/day/hour/minute/second** setup.
10. Short press the **MXMN/AV/↵** button to save the selection and return to P60.
11. Short press the **▶/ESC** button to exit the setup mode.

## ***Calibration***

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### **RH CALIBRATION**

The meter is calibrated to a standard 33% and 75% salt solution. Calibration must be performed in a controlled temperature environment of 77°F (25°C).

**CAUTION:** Do not enter the calibrate mode without the sensor inserted in a calibration salt bottle. The meter will lose its current calibration data and will become inoperable. Contact Extech to order calibration salts or to inquire about calibration services.

#### **33% Calibration**

1. Plug the sensor probe into the 33% salt bottle.
2. Long press the ►/ESC, MEM/▼ and ⏻/SET buttons simultaneously to enter calibration mode.
3. In calibration mode, “CAL” and the current value (32.8% if at 77°F [25°C]) will blink.
4. The meter is now calibrating and will finish in approximately 60 minutes (the current value will stop blinking when finished). “CAL” will continue to blink.
5. To abort the calibration, power the meter OFF at any time.

#### **75% calibration**

1. After the 33% calibration, plug the sensor probe into a 75% salt bottle.
2. Long press the **MXMN/AV/↵** button to enter 75% calibration.
3. “CAL” and the current value (75.3% if at 77°F [25°C]) will flash.
4. The meter is now calibrating and will finish in approximately 60 minutes (the displayed values will stop flashing when finished). The meter powers OFF automatically when calibration is complete.
5. To abort the calibration, power OFF the meter at any time.

## ***PC Interface and Software***

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Check the software download page of the website [www.extech.com/software/downloads](http://www.extech.com/software/downloads) for the latest version of the PC software. Instructions for use are provided in the software HELP utility.

## Specifications

Function	Range	Resolution	Accuracy
CO <sub>2</sub>	0 to 5000ppm	1 ppm	± (5%rdg + 30ppm)
	5001 to 9999ppm	1 ppm	Not specified
	Pressure dependence: +1.6% of reading per kPa deviation from normal pressure (100kPa)		
CO	< 100 ppm	1 ppm	± (10ppm)
	101 to 500 ppm	1 ppm	± (10%rdg)
	501 to 1000 ppm	1 ppm	± (20%rdg)
Temperature	-20 to 60°C	0.1°	± 0.6°C
	-5 to 140°F	0.1°	± 0.9°F
Humidity	0.1 to 99.9%	0.1%RH	± 3% (10 to 90%) @25°C ± 5% (all other ranges) @77°F (25°C)
Wet Bulb	-5 to 59.9°C 23 to 140°F	0.1°	Calculated from RH and Temperature
Dew Point	-20 to 59.9°C -4 to 140°F	0.1°	

<b>Display</b>	LCD with backlight
<b>Display size</b>	1.0 x 1.7 in. (26 x 44 mm)
<b>Warm-up period</b>	30 seconds
<b>Response Time</b>	CO <sub>2</sub> : < 30 seconds (90% step change) CO: < 60 seconds (90% step change) Tair: < 2 minutes (90% step change) RH: < 10 minutes (90% step change)
<b>Sensor Type</b>	CO <sub>2</sub> : NDIR (non-dispersive infrared) technology Humidity: Capacitance sensor Temperature (air): Thermistor
<b>Operating Conditions</b>	-4 to 122°F (-20 to 50°C) CO <sub>2</sub> sensor 32 to 122°F (0 to 50°C) CO sensor -4 to 122°F (-20 to 50°C) all other parameters
<b>Storage Conditions</b>	-4 to 140°F (-20 to 60°C); 10 to 90% RH non-condensing
<b>Power Supply</b>	4 x 1.5V 'AA' batteries or AC adaptor (9V)
<b>Battery Life</b>	approx. 24 hours (alkaline batteries)
<b>Dimensions / Weight</b>	8.1 x 2.8 x 2.2 in. (205 x 70 x 56 mm) / 7.1 oz. (200g)

## Troubleshooting

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Error	Problem	Solution
<b>Display</b>	No display when pressing power button	Ensure that batteries are properly installed with correct polarity
		Press and hold power button to retry
		Replace batteries
		Open the battery compartment and, using a small metal tip, press the reset button
<b>Display</b>	Readings frozen on display	Check to see if data hold function is activated. Press Hold button to deactivate.
<b>Display</b>	Slow Response	Check for air flow blockage to sensors
<b>E01/E33</b>	CO <sub>2</sub> sensor is not working	Replace the battery
<b>E02</b>	Measurement is below the range of the meter	Check readings in a different location
<b>E03</b>	Measurement is above the range of the meter	Check readings in a different location
<b>E04</b>	Data error	Contact Extech for service
<b>E11</b>	Humidity calibration error	Retry humidity calibration
<b>E16</b>	CO calibration error	Contact Extech for service
<b>E31</b>	A/D or temperature sensor failure	Contact Extech for service
<b>E32</b>	Memory failure	Contact Extech for service
<b>E33</b>	A/D or humidity sensor failure	Contact Extech for service
<b>E33</b>	Measurement circuit failure	Contact Extech for service

## Maintenance

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### CLEANING AND STORAGE

1. Clean the meter with a damp cloth and mild detergent when necessary. Do not use solvents or abrasives.
2. Store the meter in an area with moderate temperature and humidity (refer to the operating and storage temperature ranges in the specifications section).

## ***Two-year Warranty***

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*Teledyne FLIR warrants this Extech brand instrument to be free of defects in parts and workmanship for **two years** from date of shipment (a six-month limited warranty applies to sensors and cables). To view the full warranty text please visit:*

<https://www.flir.com/support-center/warranty/instruments/extech-product-warranty/>.

## ***Calibration and Repair Services***

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Teledyne FLIR offers **calibration and repair services** for the Extech brand products we sell. We offer NIST traceable calibration for most of our products. Contact us for information on calibration and repair availability, refer to the contact information below. Annual calibrations should be performed to verify meter performance and accuracy. Product specifications are subject to change without notice. Please visit our website for the most up-to-date product information:

[www.flir.com/landing/extech/](http://www.flir.com/landing/extech/).

## ***Contact Customer Support***

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Customer Support - Local Telephone List: <https://support.flir.com/contact>

Obtain a Return Material Authorization (RMA): <https://customer.flir.com/Home>

Contact Customer Service: <https://support.flir.com/ContactService>

Technical Support Center: <https://support.flir.com>

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