

Formaldehyde Thermo-Hygrometer

Model FM200



Introduction

Thank you for selecting the Extech Instruments Model FM200. The FM200 measures Formaldehyde CH₂O (HCHO) concentration, Air Temperature, and Relative Humidity. The alarm feature alerts the user when the Formaldehyde 0.08ppm limit is exceeded.

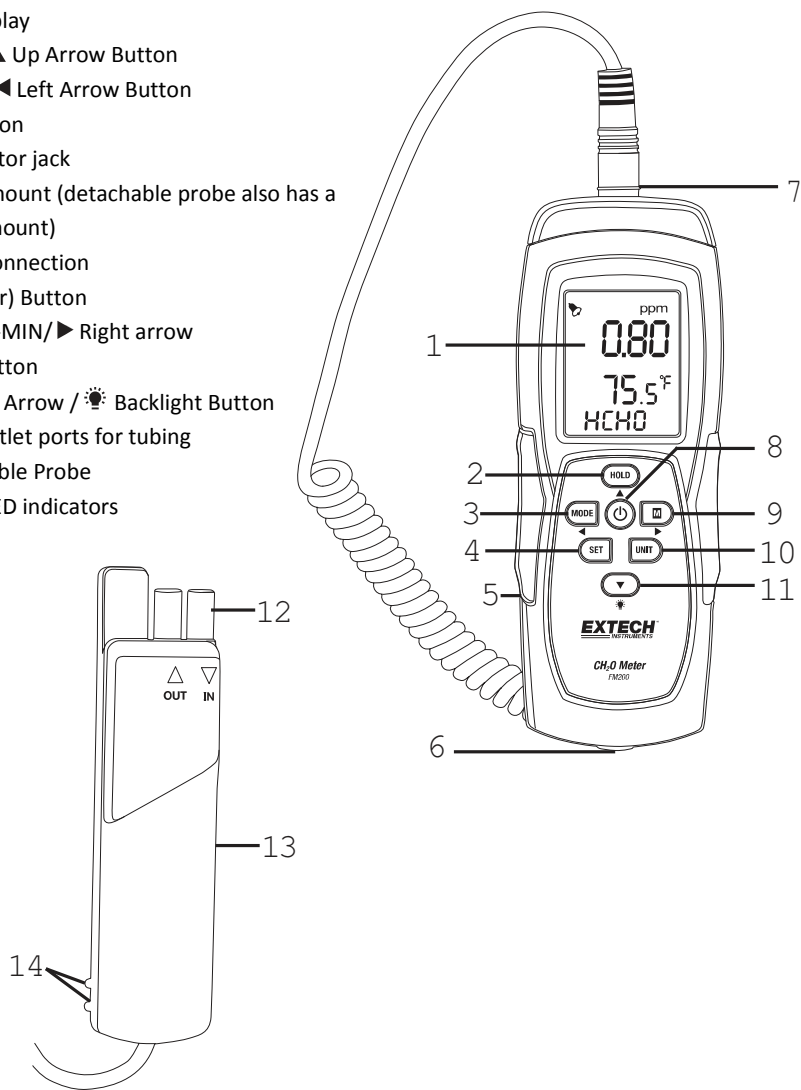
This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide, Product Updates,

Features

- Measures Formaldehyde, Temperature, and Relative Humidity
- Built-in fan to quickly intake gas via pliable tube
- Pliable tube available for restricting samples
- Triple line, large LCD display
- Display Backlight function for working in dimly lit areas
- Automatic temperature compensation
- Hold function freezes current readings
- Store and recall maximum and minimum readings
- Self-calibration feature
- Auto power off after 15 minutes of inactivity conserves battery energy
- HCHO high alarm threshold setting with audible beeper
- Electrochemical sensor, capable of measuring up to 5ppm of HCHO
- Tripod mount on sensor and meter

Meter Description

1. LCD Display
2. HOLD/ ▲ Up Arrow Button
3. MODE/ ◀ Left Arrow Button
4. SET Button
5. AC adaptor jack
6. Tripod mount (detachable probe also has a Tripod mount)
7. Probe connection
8. ⏻ (Power) Button
9. ▣ MAX-MIN/ ▶ Right arrow
10. UNIT Button
11. ▼ Down Arrow / ☀ Backlight Button
12. Inlet/Outlet ports for tubing
13. Detachable Probe
14. Probe LED indicators



Note: Battery compartment located on back of the meter. A tripod mounting port is available on the back of the external probe.

Operation

External Probe and Status LED indicators

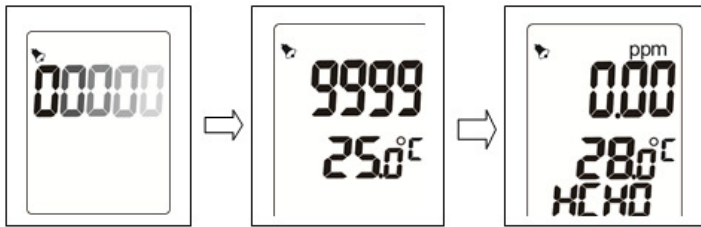
Attach the External Probe to the connector at the top of the meter. The status indicators on the Probe will flash red when the Sampling Fan is on, solid red when the Sampling Fan is off, and green when the Probe is connected to the meter and functioning normally. The user can connect the supplied tubing to the External Probe's INLET/OUTLET ports. A Tripod Mount is located on the back of the External Probe (in addition to the one at the bottom of the meter).

Powering on the meter

Momentarily press the \odot button to power on the meter. Alternatively, use the AC/DC adaptor to power the meter. When powered on, the meter LCD shows "0000" for a period of time (depending on the period of time the meter has been inactive). The meter then counts from "9999" down to "0000".

Once the meter reaches "0000", the HCHO level will be shown along with the Temperature/Humidity readings (Temperature and RH% displays alternate every 3 seconds).

Note: For short term measurements, battery power can be used. For datalogging or long term usage, use the AC/DC adaptor to conserve battery energy.



Auto Power Off & Disable

The meter will automatically turn off after 15 minutes of inactivity. To disable the auto power off function: with meter OFF, press and hold the **HOLD** button first, followed by the \odot button. The LCD will show "n", and will then return to normal measurement mode.

Turning the Sampling Fan ON/OFF

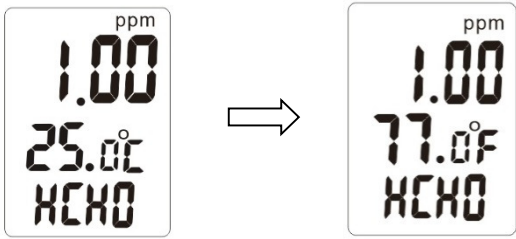
Press the SET button to toggle the air sampling fan ON and OFF. When the fan is ON its motion will generate an audible sound and a vibration.

MAX-MIN Memory

Momentary presses of the MAX/MIN button step through Maximum value, Minimum value, and then back to the normal operating mode. Press and hold the **HOLD** button to clear the maximum or minimum memory values (depending on which mode is displaying) and then return to the normal operating mode as just described. The meter will then begin recording new maximum and minimum readings.

Changing Temperature Units °C/°F

Momentarily press the **UNIT** button (while the temperature is being displayed) to switch between °C and °F units.



High Alarm with Beeper

The alarm threshold range is 0.00 to 5.00ppm. The meter defaults to a 0.08ppm HCHO alarm threshold. To enter the alarm threshold setting mode, press and hold the **SET** button. Press the **HOLD** / ▲ button to increase the value or press the ▼ / 🔔 button to decrease the value. Press the **MODE** / ◀ button to select the digit to the left and press the □ / ▶ button to select the digit to the right. Press and hold the **SET** button to save the changes. The LCD display will show “**SAVE**” and return to its normal mode of operation.



Note: A bell icon is shown on the top left corner of the LCD display when the alarm is armed. Momentarily press the **POWER** button to arm or disarm the alarm.

Hold Function

Press the **HOLD** button to freeze the current readings on the screen during normal measurement mode. The HOLD icon will display when HOLD is activated. In the HOLD mode, some functions are temporarily disabled (MAX/MIN and units selection). Press the **HOLD** button again to return to normal operation.

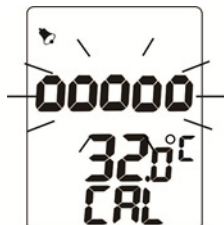
Backlight Function

Press the **▼ / ☼** button to activate the display backlighting. Power off the meter to disable the backlight function or press the **▼ / ☼** button again.

Self-Calibration (HCHO)

Power the meter and hold the **MODE** button to enter the calibration mode. "CAL" will begin flashing on the LCD display. Note that the calibration period is approximately 5 minutes.

IMPORTANT: Please perform the Calibration in an absolutely clean air environment with no HCHO present.



Temperature and Humidity Offset

While the meter is off, press and hold the **MODE + ☼ + ⏏ + ⏻** buttons all simultaneously until the LCD shows 0.0°C and **SET**. Use the **HOLD / ▲** button to increase the value and the **▼ / ☼** button to decrease the value. To skip the temperature adjustment, momentarily press the **SET** button. Follow the same steps for the RH% offset. Press and hold the **SET** button to save the adjustment values. The **LCD** will display "SAVE". To complete the offset, reset the meter (cycle power OFF then ON).

Note: The maximum offset ranges are ±9.9°C/F and ±9.9%RH.



Maintenance

Low Battery

When the battery icon appears on the LCD, the batteries must be replaced.

In a downward motion, slide the rear battery compartment cover off of the meter housing.

Remove the old batteries and replace with new batteries (all of the same type) observing correct polarity. This meter uses six (6) 1.5V AAA batteries.

Battery Safety Reminders

- Please dispose of batteries responsibly; observe local, state, and national regulations.
- Never dispose of batteries in a fire; batteries may explode or leak.
- Never mix battery types; install new batteries of the same type.

Error Display Codes

The following errors may appear on the FM200.

ERR-1: Temperature or humidity sensor is damaged or sensor communication error

ERR-2: HCHO, Temperature, or humidity readings are out of range

If the sensor is subjected to a high concentration of HCHO or other sensitive chemicals listed in the Sensor Cross Sensitivity table, it will read ERR2.

Let the sensor run for a few hours in clean air and the meter will read normal again.

HCHO Level Guidelines (for general reference only)

0.03 ppm	Average outdoor level
0.10 ppm	Recommend upper limit for residences by ASHRAE , ANSI, EPA, NIOSH for STEL
0.40 ppm	Recommended upper limit for residential homes
0.50 ppm	OSHA workplace limit
0.75 ppm	OSHA TWA limit
0.80 ppm	Level at which most people first detect odor
2.00 ppm	OSHA STEL limit

Specifications

HCHO Measurement Range	0.00 to 5.00ppm
HCHO Accuracy	±5% of reading ±0.03ppm (baseline drift)
	Accuracy Note: Accuracy meets NIOSH acceptance criterion within ±25% of the true value at 95% confidence level
HCHO Resolution	0.01 ppm
Temp. Measurement range	0°C to 50°C (32°F to 122°F)
Temperature Resolution	0.1°C (0.1°F)
Relative Humidity Range	10 to 90% RH
RH Resolution	0.1% RH
Temperature Accuracy	±1.0°C (2.0°F)
Relative Humidity Accuracy:	±5% (20 to 80%RH) otherwise the accuracy is ±7%
Power	AAA batteries x 6 pcs or AC/DC adaptor (supplied)
Meter Dimensions	160 x 60 x 40 mm (6.3 x 2.4 x 1.6 in.)
LCD Dimensions	42 x 33.5mm (1.65 x 1.32 in.)
Weight	181.4 g (6.4 oz.)

Sensor Cross Sensitivity table

Substance	Cross Sensitivity (%)
CO	1
H2S	No Data
H2	0.1
SO2	12
NO2	No Data
NO	No Data
CL2	-3
C2H4	No Data
NH3	0.0
CO2	0.0
Ethanol, methanol	50
Phenol	7
Water Vapor	0.0*

*NB: Within specified range. Step changes in %RH produce short term transient response

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