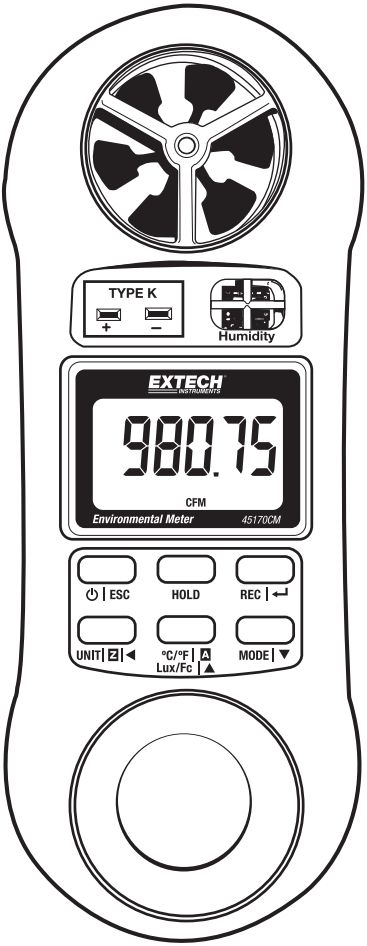
EXTECH INSTRUMENTS

USER GUIDE

5-in-1 Environmental Meter with CFM/CMM

Model 45170CM



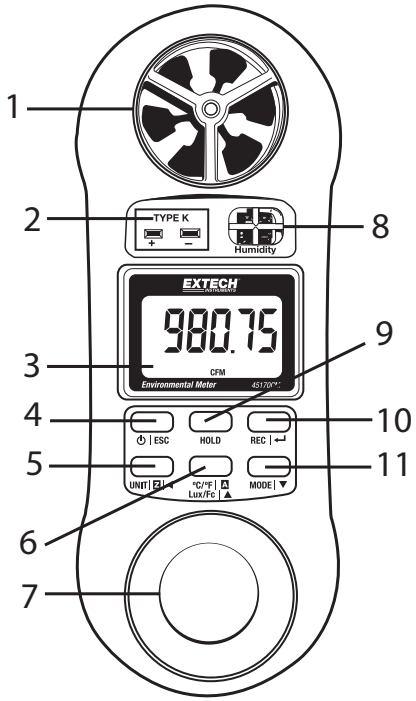
Introduction

Thank you for choosing the Extech Model 45170CM, 5-in-1 Environmental Meter. The 45170CM measures Air Flow, Air Velocity, Relative Humidity, Temperature, and Light Level. 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, and Customer Support.

Meter Description

1. Vane Airflow Sensor
2. Type K Thermocouple Input Jack
3. Display
4. Power / ESC Button
5. Unit /Zero/◀ Button
6. C°/F° / Lux/Ft-cd / Area / ▲Button
7. Light Sensor
8. RH and Air Temperature Sensors
9. Hold Button
10. Rec / Enter Button
11. Mode / ▼ Button

Note: Battery compartment on back of meter.



Power ON-OFF

Press the Power/ESC button to turn power ON or OFF. The meter will perform a short self-test when it is switched ON. If the meter does not switch ON, please check the status of the battery.

Measurements

A. Air Velocity Measurements

1. Use the **Mode** button to step to the Anemometer mode (An). In Anemometer mode, the display will show Air Velocity and Temperature.
2. Press **Unit** button to select desired unit of measure (FPM, MPH, KNOT, KM/H, or M/S).
3. Face the Air Flow Sensor into the source of the air stream.
4. Allow time for the reading to stabilize and then note the value on the display.

B. Relative Humidity and Ambient Air Temperature Measurements

1. Use the **Mode** button to step to the RH mode (rH). In RH mode, the display will show the Relative Humidity reading (upper right) and the Temperature reading (lower left).
2. Press the **°C/°F** button to select the desired temperature unit of measure.

C. Temperature Measurements Using Type K Thermocouple

1. Use the **Mode** button to step to the Type K Temperature mode (tP). In Temperature mode, the display will show only the thermocouple temperature.
2. Plug the thermocouple into the meter's thermocouple input jack on the face of the meter. If no thermocouple is connected, or if the thermocouple is defective, the meter will display dashes.
3. Press the **°C/°F** button to select the desired temperature unit of measure.

D. Light Measurements

1. Use the **Mode** button to step to the Light Meter mode (Light). For convenience, the LCD display is orientated 180° from all of the other function displays.
2. Press the **Lux/Ft-cd** button to select Lux or Footcandle units of measure.
3. Before making measurements 'zero' the meter by blocking the light sensor (to cause a 'no light' condition) and pressing the **Z** button. The reading should zero.
4. To measure light, position the meter so that the light source shines as directly as possible on the meter's light sensor dome. Note the reading on the display.

E. Airflow (CFM, CMM) Measurements

1. Use the **Mode** button to select the Air Flow mode (AirFL). In Airflow mode, the meter can measure the volume of air moving through a duct, for example. The display will show the CFM (cubic feet per minute) or CMM (cubic meters per minute) unit icon on the bottom of display. Use the UNIT button to toggle CFM and CMM units.
2. Press the Area button (A) and then use the ◀ and ▲▼ buttons to program the area value. Press the REC / Enter button to save the area value. See the 'Useful Equations' section for help on calculating the area of a duct or other airway.
3. For air flow measurements the area units are meters squared or feet squared. The lower display will show m-2 (for CMM) or F-2 (for CFM).
4. The area setting range is 0.001 to 30.000 meters squared or 0.01 to 322.92 feet squared.
5. After programming the area, face the anemometer sensor into the wind source and note the CFM or CMM air volume reading.

MIN, MAX, Data Recording Function

1. Press the **Rec** button once. The REC symbol will appear on the display. This starts the Min/Max Data Recording session**.**
2. Press **Rec** again and the **REC MAX** symbol, along with the maximum value, will appear on the display.
3. Press the **Rec** again and the **REC MIN** symbol, along with the minimum value, will appear on the display.
4. To erase (reset) the recorded Max or Min values press the **HOLD** button once (while in the Record mode with either the MAX or the MIN icon showing).
5. Press and Hold the **Rec** button for 2 seconds to exit the Min/Max Data Record Mode and to return to the normal mode. **REC** and **MAX/MIN** icons will disappear.

Data Hold

Press the **HOLD** button to freeze the reading in the display. The 'HOLD' icon will appear on the upper right-hand side of the display. Press the HOLD button again to return to normal operation (the 'HOLD' hold icon will disappear).

Auto Power OFF

The meter will automatically turn off after 10 minutes if no keys are pressed during this period. Note that the Auto power off function is disabled in the Max/Min recording mode.

Battery Replacement

When the low battery icon appears or when the meter will not switch ON please replace the battery. The battery compartment is located on the back of the meter, secured by a Phillips head screw. Open the compartment and replace the 9V battery observing correct polarity. Do not switch the meter ON until the battery compartment is secured with the screw.

Never dispose of used batteries or rechargeable batteries in household waste. As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

Useful Equations

Area equations:

$A = W * H$

$A = \pi * R^2$

Cubic equations:

CFM (ft^3/min) = Air Velocity (ft/min) x Area (ft^2)
CMM (m^3/min) = Air Velocity (m/sec) x Area (m^2) x 60

Specifications

Measurement Specifications

Measurement	Range	Resolution	Accuracy
MPH (Miles per hour)	0.9 to 67.0MPH	0.1MPH	≤ 3937 ft/min: ±3% F.S. > 3937 ft/min: ±4% F.S
km/hr (kilometers per hour)	1.4 to 108.0 km/h	0.1km/h	
Knots (nautical miles per hour)	0.8 to 58.3 knots	0.1knots	
m/sec (meters per second)	0.4 to 30.0 m/s	0.1 m/s	
ft/min (feet per minute)	80 to 5910 ft/min	1ft/min	
CMM	54,000 CMM	0.001 CMM	
CFM	1,908,400 CFM	0.001 CFM	
Temperature / Thermistor	0 to 50°C (32 to 122°F)	0.1°F/C	± 1.2°C (± 2.5°F)
Temperature / Thermocouple	-148 to 2372°F -100 to 1300°C	0.1°F 0.1°C	± (1% + 2°F) ± (1% + 1°C)
Relative Humidity	10.0 to 95.0%	0.1%	±4% RH (from 10% to 70%RH) ±4%rdg +1.2% RH (> 70% RH)
Light (Auto Ranging)	0 to 2,200 Lux	1 Lux	±5% rdg +8 digits
	1,800 to 20,000 Lux	10 Lux	
	0 to 204.0 Fc	0.1 Fc	
	170 to 1,860 Fc	1 Fc	

General Specifications

Display	Dual, Multifunction LCD display
Sensors	RH: Thin film capacitance humidity sensor Temperature: Thermistor (or optional external Type K Thermocouple) Air sensor: Low friction vane wheel Light: Photo diode with color correction
Min/Max	Min/Max recalls the highest/lowest reading
Data Hold	Data Hold freezes the display
Operating conditions	0 to 50°C (32 to 122°F) / < 80% RH
Power supply	9 Volt Battery
Dimensions / Weight	Instrument: 156 x 60 x 33mm (6.1 x 2.4 x 1.3”) Vane: 31mm (1.2”) diameter / 160 g (5.7 oz)

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