

# User's Guide



## Cup Thermo-Anemometer

### Model AN400

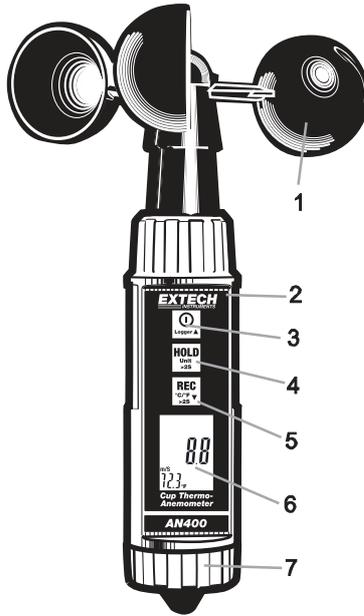


## Introduction

Congratulations on your purchase of the Extech Cup Thermo-Anemometer. The AN400 measures air velocity in five units of measure: feet per minute (ft/min), meters per second (m/sec), miles per hour (MPH), kilometers per hour (km/hr), & nautical miles per hour (knots). The low-friction cup vane freely rotates in response to air flow. An internal thermistor allows the AN400 to measure air temperature in Centigrade or Fahrenheit units. This meter is shipped fully tested and calibrated and with proper use will provide years of reliable service.

## Meter Description

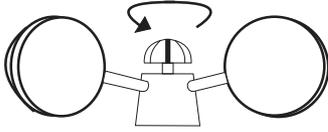
1. Cup vane
2. Temperature sensor
3. POWER: On/Off  
Logger: Store data with "REC" in display  
▲: Step through and recall stored data
4. HOLD: Freeze display  
Unit: Select measured units
5. REC: Enter Max/Min or Logger mode  
°C/°F: Select measured units  
▼: Step through and recall stored data
6. LCD display
7. Battery compartment cap



## Operation

### Connecting the Vane Cup

1. Place the cup vane on the top of the meter housing.
2. Rotate the top screw in a counter-clockwise direction until the screw is secured.



### Meter Power

1. Press the POWER button to turn the meter on. If the display does not switch on, check that four AAA batteries are installed. To access the battery compartment, remove the battery cover by rotating it in a counter-clockwise direction.
2. Press the POWER button to turn the meter off.
3. The meter is equipped with an AUTO POWER OFF feature. The meter automatically shuts off after 10 minutes to conserve battery energy. To disable this feature, press the REC button to enable the MIN/MAX function.

### Measuring Air Velocity and Temperature

1. Hold the meter vertically and place the cup sensor in the air stream under test.
2. Read the Air Velocity and Temperature measurements directly on the LCD display.

**Note:** The temperature sensor is located in the upper right of the front panel. To avoid affecting the temperature reading, hold the lower portion of the meter when making measurements.

### Selecting the Temperature unit of measure (°C/°F)

Press and Hold (>2 seconds) the REC/°C/°F key to toggle the temperature unit of measure. The display will indicate the currently selected unit of measure.

**Note:** Temperature unit of measure cannot be changed if the Data Hold or Record function is on.

### Selecting the Air Velocity unit of measure

To change the unit of measure for Air Velocity measurement, press and hold (>2 seconds) the HOLD/Unit button. The display will sequence through the measurement units. When the desired unit of measure is displayed, release the button. The current setting will be retained even after the meter is powered off.

**Note:** Unit of Measure cannot be changed if the Data Hold or Record function is on.

### Data Hold

To freeze the LCD display, momentarily press the HOLD button. The 'HOLD' icon will appear on the LCD and the reading will remain unchanged. Momentarily press the HOLD button again to return to normal operation (the 'HOLD' icon will switch off).

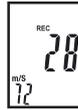
### Record and Recall MIN / MAX Function

1. To begin capturing the Minimum (MIN) and Maximum (MAX) air velocity and temperature readings, momentarily press the REC key. The "REC" icon will be displayed.
2. Now, use the REC button to toggle the view from MIN to MAX and from MAX to MIN readings. The 'RECMAX' or 'REC MIN' will appear along with the recalled reading for convenience.
3. To delete the maximum or minimum value and record a new value, momentarily press the HOLD button while in either "RECMAX" or "REC MIN" mode.
4. To return to normal operation, press and hold the REC button until the "REC", 'MAX', and 'MIN' icons switch off.

### Datalogging

Datalogging allows the user to store and recall up to 100 readings with the press of a button.

1. Momentarily press the REC button to display the "REC" icon in the display.
2. Press the Logger button to manually store a single reading into memory. The location number of the reading will appear in the main display (memory locations remaining will appear in the lower display) for 2 seconds and then the normal display will return.



3. To exit the datalogger, press and hold the REC button for >2 seconds. The "REC" icon will disappear.
4. To recall the stored data, momentarily press the HOLD button to display the "HOLD" icon.
5. Momentarily press the REC button to display the total number of data points stored in memory. "ttL" will also appear in the lower display.
6. Use the ▲ and ▼ buttons to scroll through the memory locations to view the logged readings. The "units" display will flash while in the recall mode.
7. The memory location will first appear in the display followed by the reading.
8. To exit the recall data function, press the momentarily HOLD button.



**Note:** The selected "unit of measure" icon will flash continuously when the meter is in recall mode.

### Clearing Stored Data

1. Press and hold the REC button while turning the meter on to clear memory.
2. The LCD will indicate "n" in the main display and "CLr" in the lower display.
3. Momentarily press the ▼ button to display "Y" and "CLr".
4. Press the HOLD/Unit button. When the LCD indicates "nuLL" and "CLr", the memory has been cleared.

## Maintenance

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### Battery Replacement

The AN400 is powered by four 1.5V AAA batteries. When the low battery icon  appears on the LCD or if the display does not switch on when the POWER button is pressed, replace or install the batteries.

1. Twist off the battery compartment cap by rotating it counter-clockwise.
2. Replace the four AAA batteries observing polarity.
3. Replace the battery compartment cap.

### Cleaning and Storage

Wipe the meter and vane with a damp cloth as needed. Do not apply abrasive, solvents, or other cleaners to the surface of the meter or vane. Store with the battery removed and avoid extreme temperature and humidity.

## Warranty

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*EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website at [www.extech.com](http://www.extech.com) for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.*

## Calibration and Repair Services

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Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Service Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.



### **Support line (781) 890-7440**

Technical support: Extension 200; E-mail: [support@extech.com](mailto:support@extech.com)

Repair & Returns: Extension 210; E-mail: [repair@extech.com](mailto:repair@extech.com)

### **Product specifications subject to change without notice**

For the latest version of this User's Guide, Software updates, and other up-to-the-minute product information, visit our website: [www.extech.com](http://www.extech.com)  
Extech Instruments Corporation, 285 Bear Hill Rd., Waltham, MA 02451

## Specifications

<b>Circuit description</b>	Custom LSI microprocessor design
<b>Display</b>	Dual function 9999 count LCD display
<b>Measurement units</b>	m/s, km/h, ft/min, knots, mph, Temperature °C/°F
<b>Data hold</b>	Freezes reading on the display
<b>Sensor Structure</b>	Air velocity sensor: Cup vane arm with low-friction ball-bearing design. Temperature sensor: Precision thermistor
<b>Memory Recall</b>	Record and Recall Maximum (MAX) and Minimum (MIN) readings
<b>Data Logger</b>	Manual store/recall of up to 100 data points
<b>Auto Power off</b>	After 10 minutes
<b>Sampling Time</b>	Approx. 1 second
<b>Water Resistance</b>	IP65
<b>Operating Temperature</b>	32 °F to 122 °F (0 °C to 50 °C)
<b>Operating Humidity</b>	Max. 80% RH
<b>Power Supply</b>	4 x 1.5V AAA batteries
<b>Power Consumption</b>	Approx. 6.8mA DC (typical battery life: approx. 150 hrs)
<b>Weight</b>	0.4 lbs. (181g)
<b>Dimensions</b>	Main instrument: 7.5 x 1.6 x 1.3" (190 x 40 x 32mm) Cup Vane: 5.3" (135mm) diameter

### Air Velocity Range Specifications

Measurement	Range	Resolution	Accuracy (of full scale)
ft/min (feet per minute)	144 – 6895 ft/min	1 ft/min	± (2% + 40 ft/min)
m/s (meters per second)	0.9- 35.0 m/s	0.1 m/s	± (2% + 0.2 m/sec)
km/h (kilometers per hour)	2.5 - 126.0 km/h	0.1 km/h	± (2% + 0.8 km/hr)
mph (miles per hour)	1.6 - 78.2 mph	0.1 mph	± (2% + 0.4 mph)
knots (nautical miles per hour)	1.4 to 68.0 knots	0.1 knots	± (2% + 0.4 knots)

### Temperature Range Specifications

Range	Resolution	Accuracy
32°F to 122°F (0°C to 50°C)	0.1°F (0.1°C)	± 1.5°F (0.8°C)

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