User's Manual

查询"407412"供应商

EXTECH INSTRUMENTS

Hygro Thermo-Anemometer

Model 407412

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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 to 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 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.*

Introduction

Congratulations on your purchase of Extech's Hygro Thermo-Anemometer. This Heavy Duty meter measures and displays Air Velocity + Temperature and Relative Humidity + Temperature. Air flow can be displayed in the following units of measure: feet per minute, meters per second, miles per hour, kilometers per hour, and knots. Temperature and RH units are displayed in ^{o}C/^{o}F and % units respectively. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Specifications

General Specifications

Display	Dual function, 4-digit (9999 count) LCD display
Units of measure	m/s (meters per second), km/hr (kilometers per hour), ft/min (feet per minute), knots (nautical miles per hour), mile/hr (miles per hour); Temperature: °C/°F; Humidity: %RH
Data hold	Holds reading on the LCD display when button is pressed
Sensors	Air velocity sensor: Twisted vane arm with low friction ball bearing; Temperature: Precision thermistor; Humidity: Thin film capacitor
Max/Min Record	Records highest and lowest readings for later recall
Data Output	RS-232 serial PC interface
Operating Temp.	32°F to 122°F (0°C to 50°C)
Operating Humidity	Max. 80% RH
Power Supply	9V battery
Power Consumption	Approx. 8.3 mA DC
Weight	0.77 lbs. (350g)
Dimensions	Meter: 7.1x2.8x1.3" (180 x 72 x 32mm); Anemometer Probe: 0.7" (17mm) Diameter x 6.7" (170mm)
Accessories	Anemometer/temperature and RH Probes, 9V battery, & case

Range Specifications

Air velocity

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Measurement	Range	Resolution	Accuracy (% of reading)
ft/min (feet/min)	80 - 4921 ft/min	1 ft/min	± (2% + 20 ft/min)
m/s (meters/sec)	0.4 - 25.00 m/s	0.01 m/s	± (2% + 0.2 m/sec)
km/h (kilometers/hour)	1.4 - 90.0 km/h	0.1 km/h	± (2% + 0.2 km/hr)
mph (miles/hour)	0.9 - 55.9 mph	0.1 mph	± (2% + 0.2 mph)
knots (nautical miles/hour)	0.8 to 48.6 knots	0.1 knots	± (2% + 0.2 knots)

Temperature

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

Relative Humidity

Range	Resolution	Accuracy
10 to 70% RH	0.1%	±3% RH
70 to 95% RH	0.1%	±4% RH

Meter Description

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1. Sensor Input plug – The Anemometer sensor and the Humidity sensor use the same jack at the top of the meter.
2. RS-232 PC Interface jack
3. LCD Display
4. Keypad (see below)

   POWER Press to turn the meter ON or OFF

   HOLD Press to freeze the currently displayed reading

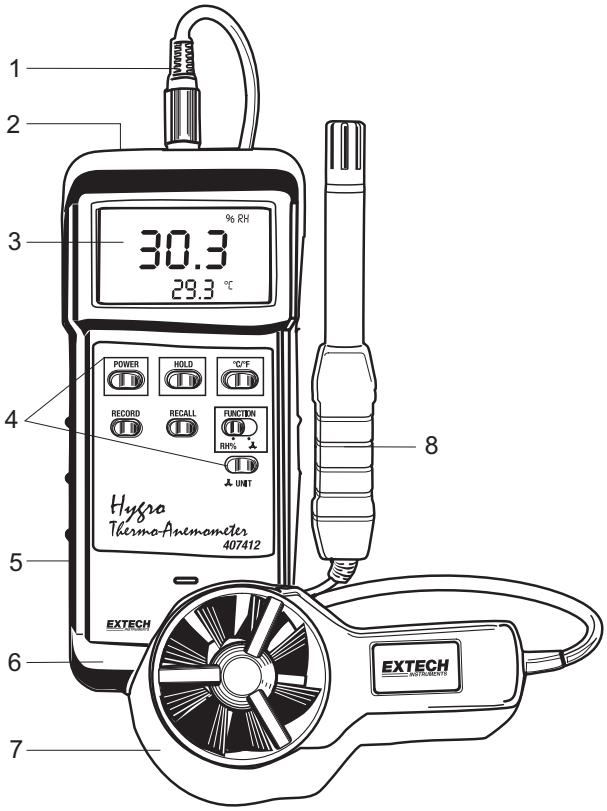
   C/F Press to select the temperature unit of measure

   RECORD Press to track the MAX and MIN readings

   RECALL Press to retrieve the current MAX and MIN memory

   FUNCTION Select Humidity (left position) or Air Velocity (right position)

   UNIT Select the unit of measure for Air Velocity
5. Battery compartment and tilt sand are located on the back of the meter
6. Rubber protective jacket
7. Vane Anemometer sensor
8. Humidity sensor



Anemometer and Temperature Operation

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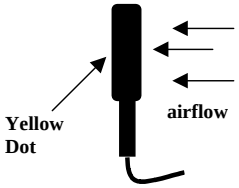
1. Insert the vane probe into the meter's input jack at the top of the meter.
2. Press the POWER button to turn the instrument on.
3. Select Anemometer (Air Velocity) operation by placing the function slider switch to the vane icon△.
4. Select the temperature units by pressing the °C/°F button. The LCD display will indicate '°C' or '°F' as selected.
5. Select the air velocity unit of measure by pressing the UNIT button. With each press the display scrolls through the units (m/s, km/hr, ft/min, knots, & mile/h).
6. For maximum accuracy, the yellow dot must be on the exhaust side of the vane as shown.
7. The meter's LCD will indicate Air Velocity + Temperature.



Relative Humidity and Temperature Operation

1. Insert the Relative Humidity probe in the input jack at the top of the meter.
2. Press the POWER button to turn on the instrument.
3. Select the Humidity mode of operation by placing the function slider switch to the RH% position.
4. Select the temperature units by pressing the °C/°F button. The LCD display will indicate '°C' or '°F' as selected.
5. Hold the probe by the handle in the area to be monitored. The meter will display Relative Humidity + Temperature.
6. Note that humidity measurements take several minutes to stabilize.

Data Hold

Press the DATA HOLD button to freeze the displayed reading. The DH icon will appear on the LCD while Data Hold is engaged. Press the DATA HOLD button again to resume normal operation.

Min/Max Record Mode

When selected, the Record mode stores the highest (Max) and lowest (Min) readings for later recall. To use Record mode:

1. Press the RECORD button. The REC indicator will appear on the LCD display.
2. Start a measurement session.
3. After the measurement session, press the RECALL button to view the highest (Max) reading recorded since the RECORD button was pressed. The MAX indicator will appear to inform the user that the displayed reading is the highest value recorded.
4. Press the RECALL button again to view the lowest reading encountered since the RECORD key was pressed (the MIN indicator will appear on the LCD to inform the user that the reading displayed is the lowest value recorded).
5. Press RECORD again to return the meter to normal operation. All stored data will be cleared and the REC/MIN/MAX icons will disappear from the LCD.
6. Note that putting the meter into the Record mode defeats the Auto Power Off feature.

RS-232 PC Interface

The RS-232 serial data port (3.5mm phono jack) is located at the top of the meter next to the sensor input jack. The PC interface hardware is intended for use with the Extech Data Acquisition software package, Part Number 407001 which includes Windows™ 95 / 98 / ME / NT / 2000 compatible software and PC interface cable. For more information, contact Extech or refer to the 407001 User's Manual.

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Auto Power Off feature

The Auto Power Off feature automatically turns the meter off after approximately 10 minutes. To defeat this feature, place the meter in Record mode by pressing the RECORD key once (the REC icon will appear on the LCD). The meter will remain powered as long as the meter is in the RECORD mode.

Battery Replacement

When it is time to replace the 9V battery, the low battery indicator (LBT) appears in the left-hand corner of the LCD display. Note that reliable readings can be obtained for several hours after the first appearance of the low battery indicator.
To replace the battery:

1. Remove the meter's protective rubber holster.
2. Open the battery compartment on the back of the meter using a small coin or a flat blade screwdriver.
3. Replace the 9V battery, close the compartment, and replace the holster.

Relative Humidity and Temperature Calibration

1. Turn the meter on and select the Humidity mode (RH %) using the Function switch.
2. Use a temperature simulator or calibrator to apply 0.0 ºC to the meter and adjust VR3 for a display of 0.0 ºC.
3. Change the input to 25.0 ºC and adjust VR1 for a display of 25.0 ºC.
4. Change the input to 50.0 ºC and verify a display of 50.0 ºC. Readjust VR3 & VR1 if necessary.
5. Connect the humidity probe to the unit and place the probe in a controlled 33% RH environment. Let stabilize for a minimum of 30 minutes and adjust VR5 for a reading of 33.0% RH.
6. Place the probe in a 75% RH environment for a minimum of 30 minutes and adjust “R6 for a reading of 75.0% RH.
7. Verify that the temperature reading is within the published specifications. If not, perform calibration steps 2 and 3, above, again.

Calibration and Repair Services

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.

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Support line (781) 890-7440
Technical support: Extension 200; E-mail: support@extech.com
Repair & Returns: Extension 210; E-mail: repair@extech.com

Product specifications subject to change without notice

For the latest version of this User Guide, Software updates, and other Up-to-the-minute product information, visit our website: www.extech.com

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Appendix

Area equation for rectangular or square ducts

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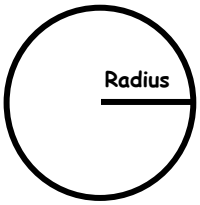
Height (H)

Width (W)

Area (A) = Width (W) x Height (H)

Area equation for circular ducts



Area (A) = π x r^2

Where π = 3.14 and r^2 = radius x radius

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

NOTE: Measurements made in *inches*
must be converted to *feet* or *meters* before using the above formulae.

Unit of Measure Conversion Table

	m/s	ft/min	knots	km/h	MPH
1 m/s	1	196.87	1.944	3.6	2.24
1 ft/min	0.00508	1	0.00987	0.01829	0.01138
1 knot	0.5144	101.27	1	1.8519	1.1523
1 km/h	0.2778	54.69	0.54	1	0.6222
1 MPH	0.4464	87.89	0.8679	1.6071	1