

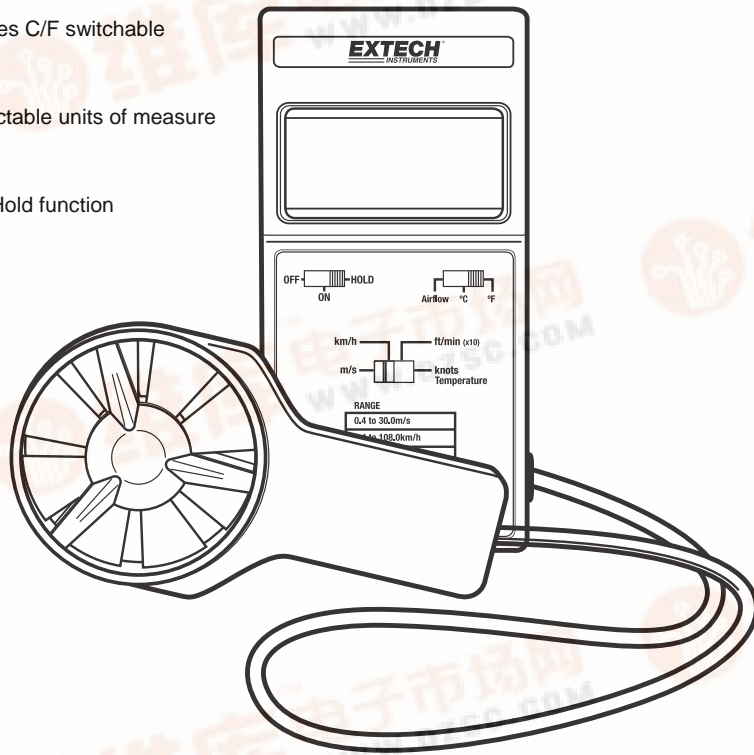
User's Guide



Vane Anemometer

Model 451112

- Measures Air Velocity & Temperature
- Degrees C/F switchable
- 6 selectable units of measure
- Data Hold function



Introduction

Congratulations on your purchase of Extech's Vane Anemometer. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Specifications

General Specifications

Display	0.7" (18mm) 3-1/2 digit (1999 count) LCD
Measurement	m/s (meters per second), km/h (kilometers per hour), ft/min (feet per minute), knots (nautical miles per hour), Temp. °C/°F
Data hold	Freezes present value on display when selected
Sensor Structure	Air velocity sensor: Conventional twisted vane arm with balanced, low-friction ball-bearing design Temperature sensor: Thermister
Ambient	32 °F to 122 °F (0 °C to 50 °C); <80%
Power Supply	9V battery (Heavy duty type)
Power Current	Approx. 9 mA DC
Weight	12 oz. (325 g) (including battery)
Dimensions	Main instrument: 6.6 x 3.2 x 1.2" (180 x 72 x 32 mm) Sensor Head: Round, 2.8" (72 mm) Dia. Sensor Cable: 39" (1m) length

Range Specifications

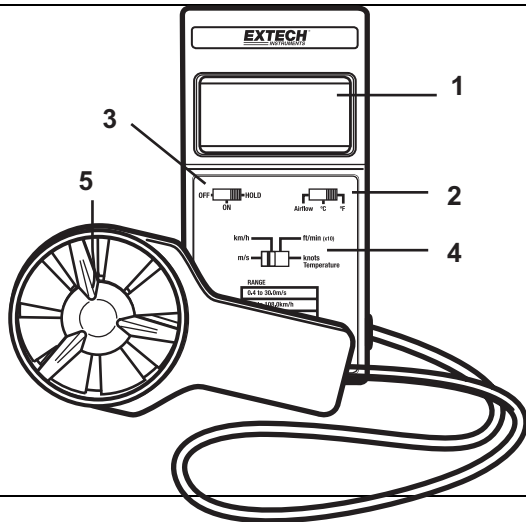
Measure	Range	Resolution	Accuracy
m/s	0.4 – 30.0 m/s	0.1 m/s	± (2% + 0.2 m/s)
km/h	1.4 – 108.0 km/h	0.1 km/h	± (2% + 0.6km/hr)
ft/min	80 – 5910 ft/min *	10 ft/min	± (2% + 40 ft/min)
knots	0.8 – 58.3 knots	0.1 knots	± (2% + 0.4 knots)
Temp.	0 to 60°C / 32 to 140°F	0.1°C / 0.1°F	0.8°C / 1.5°F

* Multiply displayed ft/min readings by a factor of 10

Front Panel Description

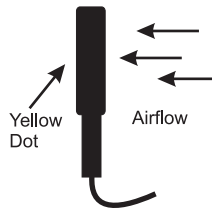
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1. LCD Display
2. °C/ °F /Airflow selection
3. ON/OFF/Data Hold Switch
4. Airflow unit selection
5. Sensor head



Operation

1. Move the "OFF/ON/HOLD" switch to the ON position to apply meter power.
2. Select temperature or airflow via the "°C/°F /airflow" switch. The display will indicate temperature or airflow.
3. Select the air velocity units using the "Airflow Units" switch, airflow will display in "m/s", "km/h", "ft/min", or "knots" as selected. Note that displayed ft/min readings must be multiplied by 10.
4. When measuring, the air should be striking the vane on the side of the vane without the yellow dot (see diagram).
5. Data Hold: During measurements, moving the "OFF/ON/HOLD" switch to the "Hold" position will freeze the displayed value. Move the switch back to "ON" to cancel the HOLD function.



Battery Replacement

When the display indicates "BAT" (low battery), replace the battery. To replace the battery:

- a. Remove rear screw (bottom, center), slide the Battery Cover off, and remove battery.
- b. Replace with 9V battery (heavy duty type) and reinstall the cover and rear screw.
- c. Make sure the battery cover is secured after changing the battery.

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 Care Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.

Warranty

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.



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
Extech Instruments Corporation, 285 Bear Hill Road, Waltham, MA 02451

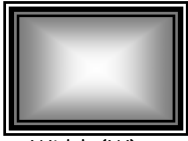
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Useful Equations and Conversions

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Area equation for rectangular or square ducts

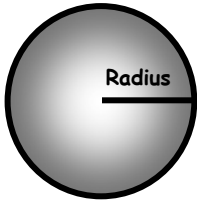


Height (H)

Width (W)

$$\text{Area (A)} = \text{Width (W)} \times \text{Height (H)}$$

Area equation for circular ducts



Radius

$$\text{Area (A)} = \pi \times r^2$$

Where $\pi = 3.14$ and $r^2 = \text{radius} \times \text{radius}$

Cubic equations

$$\begin{aligned} \text{CFM (ft}^3/\text{min)} &= \text{Air Velocity (ft/min)} \times \text{Area (ft}^2) \\ \text{CMM (m}^3/\text{min)} &= \text{Air Velocity (m/sec)} \times \text{Area (m}^2) \times 60 \end{aligned}$$

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