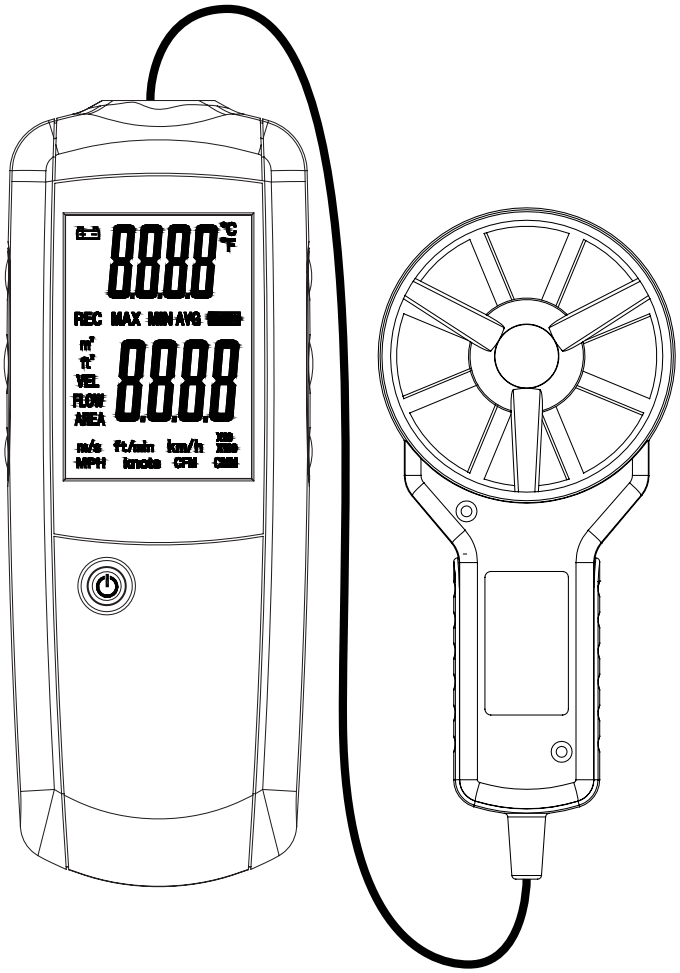
User Manual

DIGI-SENSE™

CFM/CMM Vane Thermoanemometer

with NIST-Traceable Calibration

Model 20250-14



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THE STANDARD IN PRECISION MEASUREMENT

Introduction

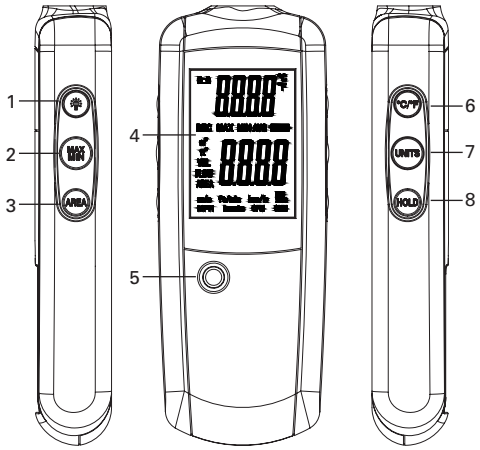
The Digi-Sense CFM/CMM Vane Thermoanemometer (Model 20250-14) measures air velocity, airflow (volume), and temperature. The large, easy-to-read backlit LCD includes primary and secondary displays plus numerous status indicators. The meter features 2 memory locations (1 for CFM and 1 for CMM) to store and recall commonly used area sizes. The instrument is fully tested and calibrated to NIST-traceable standards. Careful use of this meter will provide years of reliable service.

Unpacking

Check individual parts against the list of items below. If anything is missing or damaged, please contact your instrument supplier immediately.

1. Meter
2. Anemometer vane sensor on 3.9 ft (120 cm) cable
3. Three AAA batteries
4. User manual
5. NIST-traceable calibration report with data

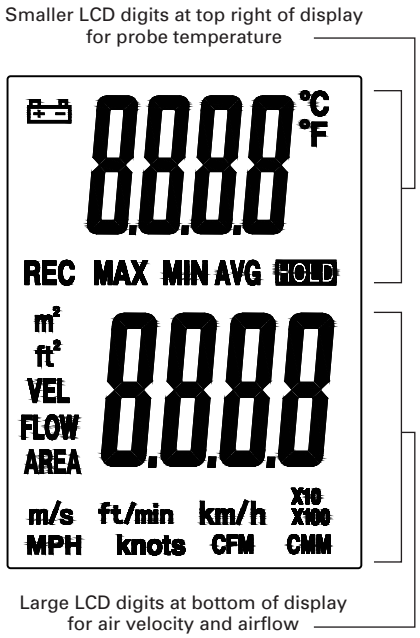
Meter Description



1. **BACKLIGHT** button: Press to turn the backlight on and off.
2. **MAX/MIN** button: Use to record and store the highest, lowest, and average air velocity or airflow readings.
3. **AREA** button: Press and hold to manually enter the area of a duct in CFM or CMM mode. In AREA mode, used to select memory locations.
4. LCD
5. **Power on/off** button
6. **°C/°F** button: Press to unlock the display. Press to switch between °C and °F units. Meter will beep three times to indicate change.
7. **UNITS** button: Press to select the mode of operation. In VEL mode, the meter displays air *speed*. In FLOW mode, the meter displays air *volume*.
8. **HOLD** button: Press to freeze the displayed velocity and flow reading. Press again to unlock Hold function.

Display Layout

- : Low-battery indicator
- **°C / °F:** temperature units of measure
- **REC:** indicates that min/max function is running (air velocity or airflow measurement)
- **MAX:** maximum hold for air velocity or airflow measurement
- **MIN:** minimum hold for air velocity or airflow measurement
- **AVG:** air averaging mode
- **HOLD:** data hold for air velocity or airflow measurement
- **VEL:** indicates that meter is in air velocity mode
- **FLOW:** indicates that meter is in airflow mode
- **AREA** (m^2, ft^2): units for area dimensions
- **m/s, ft/min, km/h, MPH, knots:** air velocity units of measure
- **CFM/CMM:** airflow units of measure
- **X10, X100:** multipliers for air flow readings

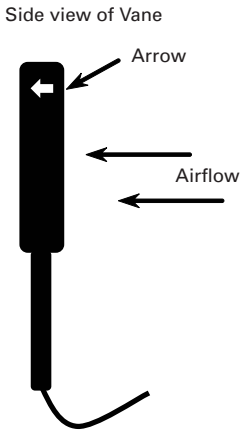


Setup and Operation

Connecting the Vane

1. The vane plug is inserted in meter's sensor jack at the top of meter. The plug and jack are keyed so that the plug can only fit in the jack one way.
2. Turn the plug carefully until it lines up with the jack and then firmly push the plug into place. Do not apply undue force or try to twist the plug side-to-side.
3. If the vane is not connected to the meter properly or if the sensor is defective, the LCD will indicate "**OL**" in place of a temperature reading.

Setup and Operation (continued)

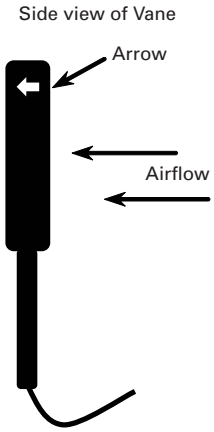


Air Velocity Measurements (Single Point)

1. Turn on the meter using the **On/Off** button.
2. Press **UNITS** button to select the desired unit of measure. **Note:** At power-up the meter will display the last unit of measure previously entered.
3. Place the sensor in the air stream. Ensure that the air enters the vane as indicated by the arrow sticker placed inside the vane.
4. View the readings on the LCD. The large main bottom display shows the air velocity reading. The upper right subdisplay shows the temperature reading.

Airflow Measurements (CFM / CMM)

1. Turn on the meter using the **On/Off** button.
2. Press the **UNITS** button to select the desired airflow units: CFM (cubic feet per minute) or CMM (cubic meters per minute). **Note:** At power-up the meter will display the last unit of measure previously entered.
3. Place the sensor in the air stream. Ensure that the air enters the vane as indicated by the arrow sticker placed inside the vane. Refer to the diagram. The large main LCD display shows the Air Velocity reading. The upper right LCD subdisplay shows the temperature reading.



The meter has 2 memory locations (1 for CFM and 1 for CMM) that can be used to store commonly used area sizes that you can recall at anytime.

1. Press the **AREA** button until meter beeps twice. The leftmost digit of the bottom display will begin to flash.
2. Press the **MAX/MIN** button to move the decimal point.
3. Use the **UNITS** button to change the value of the first flashing digit (0–9).
4. Press the **HOLD** button to move to the next digit.
5. After all of the digits are entered, press and hold the **AREA** button (until it beeps twice) to save the setting into memory and return to CFM or CMM measuring mode.

Setup and Operation (continued)

Data Hold (Air Velocity/Airflow)

1. While taking measurements, press the **HOLD** button to freeze the air velocity/air flow reading.
2. The **HOLD** indicator will appear in the middle of the LCD.
3. Press **HOLD** button again to return to normal operation.

MAX/MIN/AVG Record (Air Velocity/Airflow)

This allows the user to record and view the highest (MAX), lowest (MIN), and average (AVG) readings.

1. Press the **MAX/MIN** button. The **MAX** indicator and **REC** indicator along with the maximum reading will appear on the LCD and the meter will begin keeping track of the MAX, MIN, and Average values.
2. Press the **MAX/MIN** button again to view the minimum reading. The **MIN** indicator along with the minimum reading will appear on the LCD.
3. Press the **MAX/MIN** button again to view the average reading. The **AVG** indicator along with the average reading will appear on the LCD.
   Note: Average recording will stop automatically after 2 hours, and the upper LCD subdisplay will show OFF (only in the average mode).
4. Press the **MAX/MIN** button again to display current readings. Now only **REC** is displayed and the meter will continue recording MAX/MIN/AVG readings.
5. To clear and stop MAX/MIN/AVG recording and return to normal operation, press and hold the **MAX/MIN** button until the meter beeps twice.

Automatic Power-Off

To conserve battery life, the meter automatically turns off after 20 minutes. To disable this feature:

1. Turn the meter off.
2. Press and hold the **BACKLIGHT** button while turning the meter on.
3. “dis APO” will appear in the display. The Auto power-off feature will now be disabled.

Note: Auto power-off is re-enabled each time the meter is turned on. Also note that Auto power-off is disabled in CFM/CMM or Average mode.

Specifications

Air velocity	Range	Resolution	Accuracy
m/s (meters per sec)	0.40 to 30.00 m/s	0.01 m/s	±(3% + 0.20 m/s)
ft/min (feet per minute)	80 to 5900 ft/min	1 ft/min	±(3% + 40 ft/m)
km/h (kilometers per hour)	1.4 to 108.0 km/h	0.1 km/h	±(3% + 0.8 km/h)
MPH (miles per hour)	0.9 to 67.0 MPH	0.1 MPH	±(3% + 0.4 MPH)
knots (nautical MPH)	0.8 to 58.0 knots	0.1 knots	±(3% + 0.4 knots)
Airflow	**Range**	**Resolution**	**Area**
CFM (cubic feet per min)	0 to 999,900 ft^3/min	0.001 to 100	0.000 to 999.9 ft^2
CMM (cubic meters per min)	0 to 999,900 m^3/min	0.001 to 100	0 .000 to 999.9 m^2
Air temperature	**Range**	**Resolution**	**Accuracy**
	32 to 122°F (0 to 50°C)	0.1°F/C	4.0°F (2.0°C)

Circuit	Custom LSI microprocessor circuit
Display	Dual-function 16 mm 4-digit LCD
Sampling rate	Approximately 1 reading per second
Sensors	Air velocity/flow sensor: Conventional angled vane arms with low-friction ball bearing Temperature sensor: NTC-type precision thermistor
Automatic power-off	Unit shuts off automatically after 20 minutes to preserve battery life
Operating temperature	32 to 122°F (0 to 50°C)
Operating humidity	<80% RH, noncondensing
Storage temperature	14 to 140°F (–10 to 60°C)
Storage humidity	<80% RH, noncondensing
Weight	7 oz (200 g)
Dimensions	Meter: 6¾" x 2½" x 1" (16 x 6.2 x 2.1 cm) Vane sensor head: 2¾" (7 cm) diameter Cable length: 3.9 ft (1.2 m)
Power	Three AAA batteries
Battery life	Typically 40 hrs. Battery life will be reduced significantly if the backlight is used continuously.
Battery current	Approximately 8.3 mA DC

Maintenance, Recalibration, and Repair

Battery Replacement

When the low-battery icon appears on the LCD, the three AAA batteries must be replaced.

1. Disconnect the sensor.
2. The battery compartment is located on the back of the instrument. The plastic cover must be removed with a screwdriver.
3. Replace the three AAA batteries.
4. Close and rescrew the plastic cover.

It is recommended that Digi-Sense products are calibrated annually to ensure proper function and accurate measurements; however, your quality system or regulatory body may require more frequent calibrations. To schedule your recalibration, please contact InnoCal, an ISO 17025 calibration laboratory accredited by A2LA.

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