# MANUAL DE INSTRUÇÕES DO ANEMÔMETRO DIGITAL MODELO AN-3040

**Leia atentamente as instruções contidas neste manual antes de iniciar o uso do anemômetro**

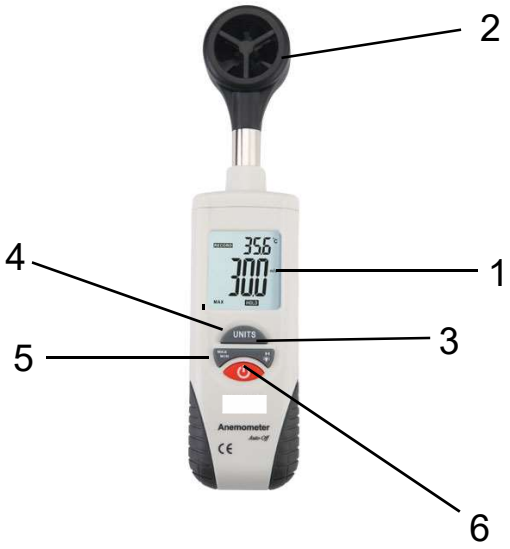
# *Introduction*

Congratulations on your purchase of the AN-3040 Anemometer.The AN-3040 Anemometer 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). An internal Type K sensor allows AN-3040 to measure air temperature in Celsius or Fahrenheit units. The 16" (406mm) flexible gooseneck provides easy access for air velocity and temperature measurement in difficult to reach locations. This meter is shipped fully tested and calibrated and with proper use will provide years of reliable service.

# *Meter Description*

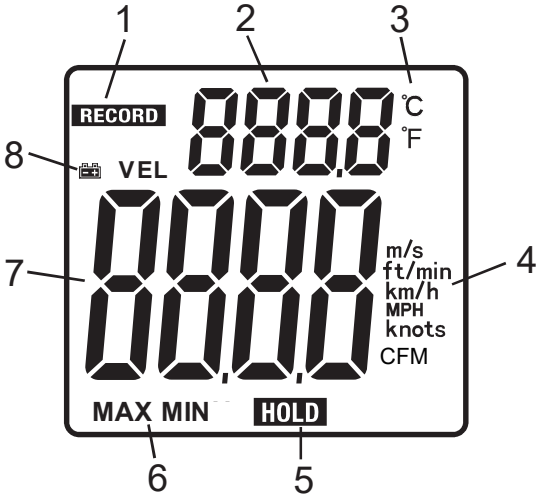
1. LCD display
2. Vane sensor
3. Hold/Backlight key
4. Units/°F/°C key
5. Max/Min key
6. On/Off key

**Note:** Battery compartment is on rear of unit




**Display**

1. MAX MIN Record mode
2. Temperature display
3. Temperature display
4. Velocity units
5. Hold mode
6. MAX or MIN mode
7. Velocity display
8. Low battery indicator



# *Operation*

**Meter Power**

1. Press the POWER button to turn the meter on. If the display does not switch on, check that a fresh 9V battery is installed.
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 15 minutes to conserve battey energy.

**Measuring Air Velocity and Temperature**

1. Place the sensor in the air stream under test.
2. Read the Air Velocity and Temperature measurements directly on the LCD.
3. To calculate Air Volume in CFM (cubic feet per minute) or CMM (cubic meters per minute) refer to the ‘Useful Equations and Conversions’ section.

**Selecting the Temperature unit of measure ($^{o}$C/$^{o}$F)**

Press and hold the UNITS key for 3 seconds to select the temperature unit of measure. The meter will beep twice and the display will indicate the currently selected unit of measure.

**Selecting the Air Velocity unit of measure**

Press the UNITS key to change the unit of measure for Air Velocity measurements. The display will reflect the current selection. A list of measurement units is printed in the specifications later in this manual.

**Data Hold/Backlight**

To freeze the LCD display, momentarily press the HOLD key. 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).

Press and hold the key for 3 seconds to turn the backlight on/off.

**Record and Recall MAX / Min Function**

1. To begin capturing the Maximum (MAX) and Minimum (MIN) air velocity and temperature readings, press the MAX/MIN key and the ‘RECORD’ icon will appear in the display.
2. Now, use the MAX/MIN key to toggle the view from MIN to MAX to RECORD. The ‘MAX’ or ‘MIN’ will appear along with the recalled reading for convenience. In RECORD mode, the meter will display the current reading but will continue to capture MAX and MIN readings.
3. To return to normal operation, press and hold the MAX/MIN key for 3 seconds to clear and stop MAX/MIN recording. The meter will beep twice and the ‘MAX’/‘MIN’ and ‘RECORD’ icons will switch off.

# *Maintenance*

**Battery Replacement**

When the battery power falls low, the low battery icon  will appear on the LCD. Replace the 9V battery by removing the Phillips screw on the battery compartment door and accessing the battery compartment. Ensure that the compartment cover is securely fastened when finished.

**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.

# *Specifications*

| | |
|---|---|
| **Circuit description** | Custom LSI microprocessor design |
| **Display** | Dual function 8888 count LCD display |
| **Measurement units** | m/s, km/h, ft/min, knots , mph, Temperature: $^{o}$C/$^{o}$F CFM |
| **Data hold** | Freezes reading on the display |
| **Sensor Structure** | Air velocity sensor: Conventional twisted vane arm with low-friction ball-bearing |
| **Memory Recall** | Record and Recall Maximum/Minimum (MAX/MIN) readings |
| **Auto Power off** | After 15 minutes with disable feature |
| **Operating Temperature** | 32 °F to 122 °F (0 °C to 50 °C) |
| **Operating Humidity** | Max. 80% RH |
| **Power Supply** | 9V battery |
| **Power Consumption** | Approx. 8.3mA DC |

**Air Velocity Range Specifications**

| Measurement | Range | Resolution | Accuracy (% of reading) |
|---|---|---|---|
| ft/min (feet per minute) | 80 - 5900 ft/min | 1 ft/min | ± (3% + 40 ft/min) |
| m/s (meters per second) | 0.40 - 30.00 m/s | 0.01 m/s | ± (3% + 0.20 m/sec) |
| km/h (kilometers per hour) | 1.4 - 108.0 km/h | 0.1 km/h | ± (3% + 0.8 km/hr) |
| mph (miles per hour) | 0.9 - 67.0 mph | 0.1 mph | ± (3% + 0.4 mph) |
| knots (nautical miles per hour) | 0.8 - 58.0 knots | 0.1 knots | ± (3% + 0.4 knots) |

**Temperature Range Specifications**

| Range | Resolution | Accuracy |
|---|---|---|
| 32$^{o}$F to 122$^{o}$F (0$^{o}$C to 50$^{o}$C) | 0.1$^{o}$F (0.1$^{o}$C) | ± 4.0$^{o}$F (2$^{o}$C) |

# *Useful Equations and Conversions*

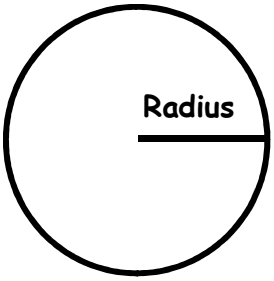
**Volume Measurements**

To determine CFM (cubic feet per minute) or CMM (cubic meters per minute) in a duct, the area of the duct must first be measured (use the equations below). Then multiply an air velocity measurement by the area measurement to obtain CFM or CMM.

**Area equation for rectangular or square ducts**


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

**Area equation for circular ducts**




**Area (A) = x $r^2$**

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

**Cubic equations**

$$CFM\ (ft^3/min) = Air\ Velocity\ (ft/min) \times Area\ (ft^2)$$

**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 |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