



Series 471 Digital Thermo Anemometer

Specifications - Installation and Operating Instructions



Introduction

The Series 471 Digital Thermo Anemometers are versatile dual function hand-held battery operated instruments that quickly and easily measure air velocity in four field selectable ranges – feet per minute (FPM) or meters per second (MPS) – plus air temperature in °F or °C. High contrast LCD display shows both range selected and present velocity.

The stainless steel probe ($\frac{5}{16}$ " dia.) with comfortable hand grip is etched with insertion depth marks from 0-8 inches and 0-20 cm on the Model 471-1.

The Model 471-2 and 471-3 probes extend to 33 inches (83cm). The probe tip on the Model 471-3 is bendable up to 90 degrees in any direction for easy access in hard-to-reach locations. A $\frac{7}{16}$ " (111 mm) hole is required for full probe insertion. When extending or collapsing the tip, be sure the connecting cable moves freely through the opening at the base of the handle. For optimum accuracy, be sure to extend the tip a minimum of $2\frac{1}{2}$ " (6.36 cm) for all measurements.

Also note that with all models the two openings in the tip must be parallel to air flow for best accuracy. A convenient way to assure proper alignment when tip is out of view (such as inside a duct) is to note the orientation relative to the handle before insertion.

Battery Installation

To install the 9 volt alkaline battery, first remove the two screws and end cap at the bottom of unit. Attach the battery clip to the battery and place it inside the case. Be careful not to pinch wires when putting battery in place. Replace cover and sealing gasket. If wrist strap will be used, install "Z" shaped clip under one of the screw heads before securing. Do not overtighten screws. Snap wrist strap to the clip.

PHYSICAL DATA

Specified Accuracy Temperature Limits:

59 to 86°F (15-30°C). Outside this range add 0.11% per °F (0.2% per °C).

Flow Temperature Range: 32-200°F, 0-100°C.

TEMPERATURE MEASUREMENT: 0 to 200°F, -17 to 100°C

Temperature Accuracy: $\pm 2^\circ\text{F}$, 1°C .

Resolution: 0.1°

Ambient Temperature Limits: 32 to 104°F, 0-40°C.

Storage Temperature Limits: -40 to 176°F, -40 to 80°C.

Probe: $\frac{5}{16}$ " [8.13 mm] diameter probe with integral hand grip and 6 ft. [15.2 cm] coiled cord.

Length of probe: Model 471-1=10" [25.4 cm]; Models 471-2 and 471-3= 33" [83 cm].

Power Source: 9 volt alkaline battery, included.

Housing Size: $6\frac{1}{8}$ "H x $2\frac{13}{16}$ "W x $2\frac{29}{32}$ "D (166 x 71 x 23 mm).

Weight, Battery Included: 12 ounces (340 grams).

Carrying Case: $2\frac{3}{8}$ "H x $13\frac{1}{2}$ "W x $10\frac{1}{2}$ "D (60 x 343 x 267 mm).

Air Velocity Ranges

Range Number	Velocity, FPM	Velocity, MPS	Accuracy*
1	0-500	0-3.0	$\pm 3\%$ F.S.
2	0-1500	0-7.0	$\pm 3\%$ F.S.
3	0-5000	0-30	$\pm 4\%$ F.S.
4	0-15000	0-70	$\pm 5\%$ F.S.

*Temperature Range for velocity accuracy specified is 59 to 86°F (15 to 30°C). Outside this range add 0.11% per °F (0.2% per °C).

On-Off Operation

The on-off control is a toggle function. Press the ON/OFF key once to turn unit on and again to turn it off. If the Series 471 is left on for approximately 2 $\frac{1}{2}$ minutes with no activity, the device will turn off automatically to conserve battery life.

Display Backlight

The Series 471 includes a standard backlight display to improve visibility under poor lighting conditions. The instrument must first be switched off before this feature can be activated. Next, press and hold the ON/OFF key down. After about 1 second, the backlight will switch on and remain lighted for approximately 2 minutes. It will then automatically shut off to conserve battery life.

Selecting Velocity or Temperature Measurement

To switch between velocity and temperature measurement, press the VELOCITY/TEMP key.

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Selecting Units of Measurement

The Series 471 will display velocity or temperature in either English or metric units. Velocity can be expressed in your choice of feet per minute (FPM) or meters per second (MPS). Temperature can be indicated in either °F or °C. Currently selected units will be indicated on the display. To change units press the UNITS key. Units selected will remain in memory even when power is shut off.

Selecting Velocity Range

Four velocity ranges can be selected in either English or metric units. Choose a range where typical readings fall within the center to upper portion of the span. The range selected will be shown in smaller characters in the lower left corner of the display. To change ranges, press the RANGE key until the required one is shown. Each time the range is changed, the display velocity will momentarily read zero until the sensor stabilizes with the new range.

Low Battery Indicator

A weak battery can cause improper operation and/or inaccurate measurements. A low battery indicator is included on the display to warn when the battery needs

to be replaced. Although the unit might appear to operate and indicate properly, accuracy of readings cannot be assured when the LO BAT indicator is displayed. Replace the exhausted battery with a fresh alkaline type such as Duracell® MN1604, Eveready® 522 or equivalent. Zinc carbon types are not recommended because of their significantly shorter life and increased potential for leakage. Do not leave exhausted batteries in the unit due to possible leakage and resulting damage.

Probe Care and Cleaning

Always cover the tip when not in use by fully collapsing the telescoping sections or sliding up the cover attached to the 471-1. Use only clean, dry particulate free air. Although probe requires little maintenance, occasional cleaning may be necessary for best accuracy.

Caution: Tip is fragile and must not be touched. Do not use brushes, cotton swabs, etc. to clean. Remove battery before cleaning. Provide adequate ventilation and gently bathe the probe tip in a small container of denatured alcohol. Wash briefly, avoiding extended soaking. Remove from bath and gently shake off excess. Allow to completely air dry before replacing battery and returning to service. Do not use pressurized cleaners or compressed air, both of which could cause permanent damage.