# HOT WIRE ANEMOMETER

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# 1. FEATURES

* Thermal anemometer, available for very low air velocity measurement.
* Slim probe, ideal for grilles & diffusers.
* Combination of hot wire and standard thermistor, deliver rapid and precise measurements even at low air velocity value.
* Microprocessor circuit assures maximum possible accuracy, provides special functions and features.
* Super large LCD with dual function meter's display, read the air velocity & temp. at the same time.
* Heavy duty & compact housing case.
* Records Maximum and Minimum readings with recall.
* Data hold.
* Operates from OO6P DC 9V battery.
* RS 232 PC serial interface.
* The portable anemometer provides fast, accurate readings, with digital readability and the convenience of a remote probe separately.
* Multi−functions for air flow measurement : m/s, km/h, ft/min, knots. mile/h.
* Build in temperature °C, °F measurement.
* Thermistor sensor for Temp. measurement, fast response time.
* Used the durable, long−lasting components, including a strong, light weight ABS−plastic housing case.
* Deluxe hard carrying case.
* Applications : Environmental testing, Air conveyors, Flow hoods, Clean rooms, Air velocity, Air balancing, Fans/motors/blowers, Furnace velocity, Refrigerated case, Paint spray booths.

# 2. SPECIFICATIONS

## 2-1 General Specifications

| | |
|---|---|
| Circuit | Custom one-chip of micro-processor LSI circuit. |
| Display | * 13 mm(0.5") Super large LCD display.<br>* Dual function meter's display. |
| Measurement | m/s (meters per second)<br>km/h (kilometers per hour)<br>ft/min (feet/per minute)<br>knots (nautical miles per hour)<br>mile/h(miles per hour)<br>Temp.- °C, °F.<br>Data hold. |
| Sensor Structure | *Air velocity :*<br>   Tiny glass bead thermistor. |
| | *Temperature :*<br>   Precision thermistor. |
| Memory | Maximum and Minimum with recall. |
| Sampling Time | Approx. 0.8 sec. |
| Data Output | RS 232 PC serial interface. |
| Operating Temperature | 0 °C to 50 °C(32 °F to 122 °F). |
| Operating Humidity | Less than 80% RH. |
| Power Supply | 1.5 V AAA (UM-4) battery x 6 PCs.<br>(Alkaline or heavy duty type). |

| | |
|---|---|
| Power Current | Approx. DC 30 mA. |
| Weight | 355 g/0.78 LB. |
| Dimension | Main instrument:<br>  180 x 72 x 32 mm    ( 7.1 x 2.8 x1.3 inch ). |
| | Telescope Probe :<br>  Round, 12 mm Dia x 280 mm ( min. length ).<br>  Round, 12 mm Dia x 940 mm ( max. length ). |
| Accessories Included | Instruction manual.........................1 PC.<br>Telescope Probe...........................1 PC.<br>Hard carrying case.................... 1 PC. |

## 2-2 Electrical Specifications (23 ± 5 °C)

**A. Air velocity**

| Measurement | Range | Resolution | Accuracy |
|---|---|---|---|
| m/s | 0.2-20.0 m/s | 0.1 m/s | ± ( 5% + 1d ) |
| km/h | 0.7-72.0 km/h | 0.1 km/h | reading |
| ft/min | 40-3940 ft/min | 1 ft/min | or |
| mile/h | 0.5-44.7 mile/h | 0.1 mile/h | ± ( 1% + 1d ) |
| knots | 0.4-38.8 knots | 0.1 knots | full scale |

Note:

m/s — meters per second km/h — kilometers per hour
ft/min — feet/per minute    knots — nautical miles per hour
mile/h — miles per hour        (international knot)

**B. Temperature**

| | |
|---|---|
| Measuring Range | 0 °C to 50 °C/32 °F to 122 °F |
| Resolution | 0.1 °C/0.1 °F |
| Accuracy | 0.8 °C/1.5 °F |

**Remark :**
Spec. tested under the environment RF Field Strength
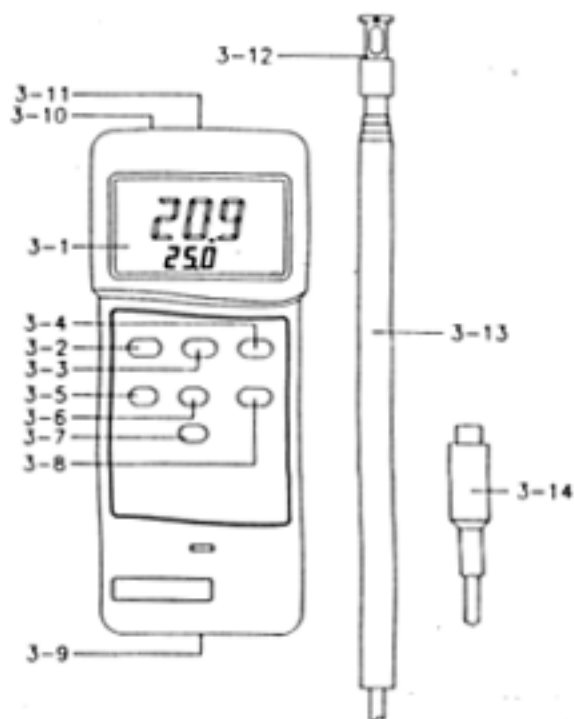less than 3 V/M & frequency less than the 30 MHz only.

# 3. FRONT PANEL DESCRIPTION



Fig. 1

3-1 Display
3-2 Power Off/On Button
3-3 Data Hold Button
3-4 °C/°F Button
3-5 Memory "Record" Button
3-6 Memory "CALL" Button
3-7 Zero Button
3-8 Unit Button
3-9 Battery Compartment/Cover
3-10 RS232 Output Socket
3-11 Probe Input Socket
3-12 Sensing Head
3-13 Probe Handle    3-14 Probe Plug

# 4. MEASURING PROCEDURE

1) Connect the " Probe's Plug " (3−14, Fig. 1) to the
   " Probe Input Socket " (3−11, Fig.1).
2) Power on the meter by push the " Power On/Off Button "
   (3−2, Fig.1) once a while.

   *Attention :*
   *Each time before POWER ON, it should slide the*
   *sensor cover ( 3−12, Fig. 1 ) to the up position to*
   *let the air velocity sensor isolated from the*
   *environment, refer Fig. 2.*

3) Select the desired temperature units, using the " °C/°F
   Button " (3−4, Fig. 1).
4) Select the desired air velocity units, m/s, km/h, ft/min,
   knots, mile/h, using the " Unit Button " (3−8, Fig. 1).
5) Zero setting :
   a. On the " Sensing Head " (3−12, Fig. 1), slide the sensor
      cover to the up position to let the air velocity sensor isolated
      from the environment, refer Fig. 2.
   b. Push the " Zero Button " (3−7, Fig. 1) to let
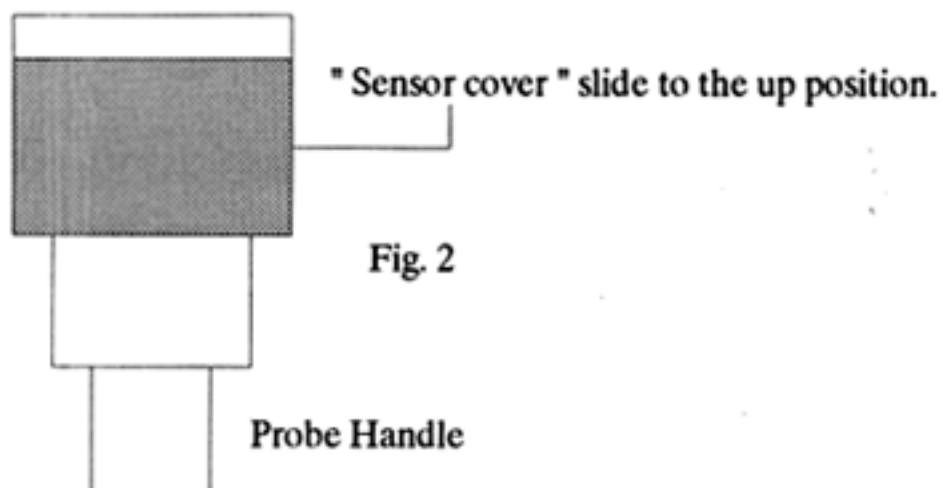      the reading value of air velocity show zero value.

" Sensor cover " slide to the up position.

Fig. 2

Probe Handle

5

5) a. Slide the sensor cover to the down position, let the air velocity sensor to contact the air, refer Fig. 3.

b. Extent the telescope probe to the convenient length, refer Fig. 4

air velocity sensor
( *do not touch by fingers or tools* )

" Sensor cover " slide to the low position when make the measurement
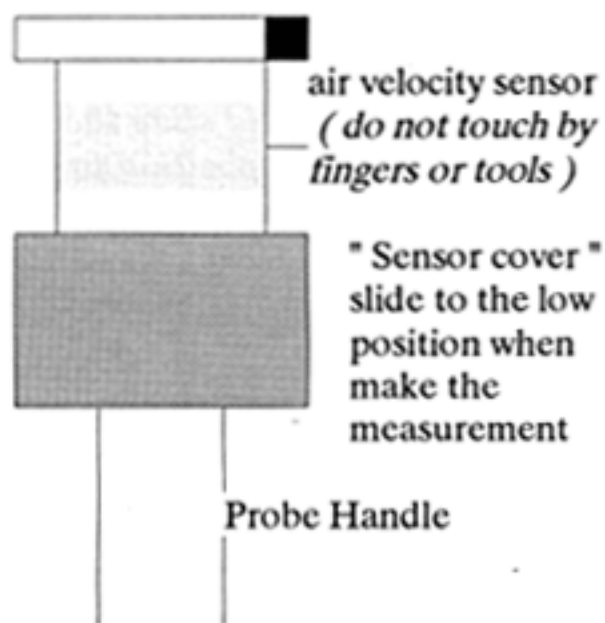
Probe Handle

Fig. 3

Fig. 4

## Caution !!!

*Do not use the fingers or any tools to touch the air velocity sensor, otherwise the meter may happen the permanent damage.*

6) Direction of the sensor head :

There is a mark on the top of the " Sensor Head ", When
make the measurement, then this mark should against the
measured wind, refer Fig. 6, Fig. 7. When sensor head
face against the measurement air, then the upper display
will show the air velocity value. The lower display will
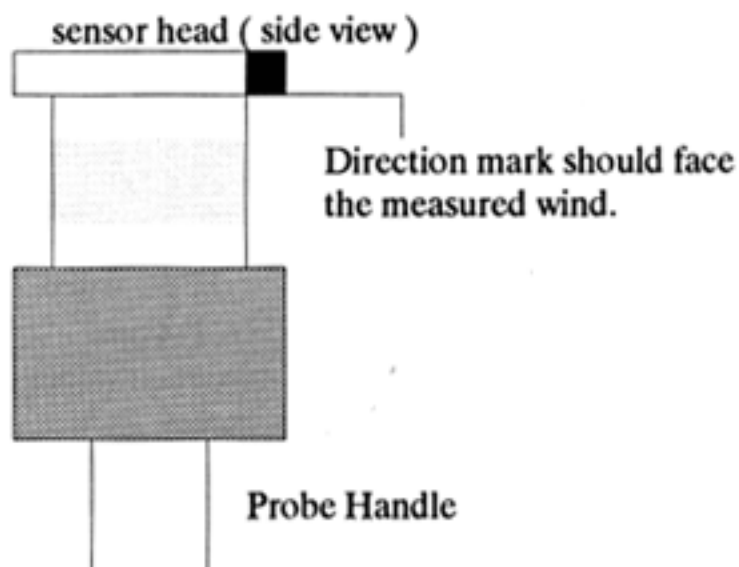show the temperature value.

sensor head ( side view )

Direction mark should face
the measured wind.

Probe Handle

Fig. 6

sensor head ( top view )

Direction mark should face
the measured wind.
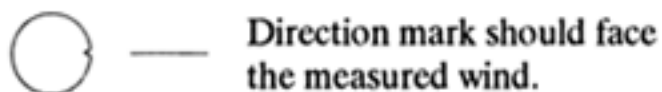
Fig. 7

7) Data Hold :
   a. During measurement, pushing the " Data Hold
      Button " (3−3, Fig. 1) will hold the display values &
      the LCD will show the " D.H " symbol.
   b. To cancel the Data Hold function, Press the Data
      Hold Button once more.
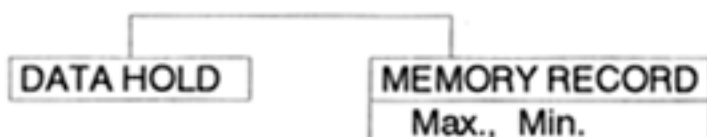
8) Data Record ( Max. & Min. reading )
   a. The Data Record function displays the maximum &
      minimum readings. To start the Data Record
      function, press the " Record Button " (3−5, Fig. 1)
      once. " REC " symbol will appear on the LCD
      display.

   b. With the " REC " symbol indicated on the display
      * Push the " CALL Button " (3−6, Fig. 1) once,
        then the " Max " symbol with the maximum values
        recorded will appear on the LCD display.
      * Push the " CALL Button " once again, the " Min "
        symbol with the minimum values recorded will
        appear on the LCD display.
      * To de−activate the Data Record function, Press
        the " Record Button " (3−5, Fig. 1) once again.
        All associated anunciators will disappear from the
        display.

**(9) For quick measurement, follow the procedures shown below :**

**Main procedures :**

| Power On | * Select the °C or °F<br>* Determine the display unit | *Zero* |
|---|---|---|
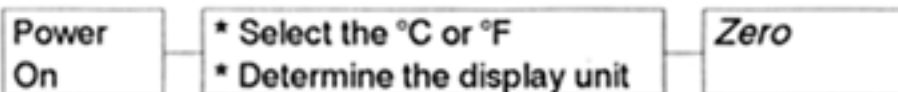
**Optional measuring procedures :**

| DATA HOLD | MEMORY RECORD<br>Max., Min. |
|---|---|

# 5. RS232 PC SERIAL INTERFACE

The instrument features an RS232 output via 3.5 mm
" RS232 Output Socket " (3−10, Fig. 1).

The connector output is a 16 digit data stream which
can be utilized to the user's specific application.

**An RS232 lead with the following connection will
be required to link the instrument with the PC
serial input.**

| Meter | PC |
|-------|----|
| (3.5 mm jack plug) | (9W 'D" Connector) |

Center Pin...........................................Pin 2
Ground/shield.......................................Pin 5

**The 16 digit data stream will be displayed in the
following format :**

D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

**Each digit indicate the following status :**

| D0 | End Word |
|----|----------|
| D1 to D4 | Upper Display reading, D1=LSD, D4=MSD |
| D5 to D8 | Lower Display reading, D5=LSD, D8=MSD |
| D9 | Decimal Point(DP) for Upper display. 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP |
| D10 | Decimal Point (DP) for lower display 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP |

| D11 & D12 | Anunuciator for Upper Display | | |
|---|---|---|---|
| | 00 =No Symbol | 07 = mg/L | 14 =mS |
| | 01 =° C | 08 = m/s | 15 =Lux |
| | 02 =° F | 09 = Knots | 16 =Ft−cd |
| | 03 = % | 10 = Km/h | 17 =dB |
| | 04 = % RH | 11 = Ft/min | 18 =mV |
| | 05 = % PH | 12 = mile/h | |
| | 06 = % O 2 | 13 = uS | |
| D13 | Anunuciator for Lower Display | | |
| | 0 =No Symbol          1 =° C          2 = ° F | | |
| D14 | Reading Polarity for the Display | | |
| | 0 = Both upper & lower display value are "+". | | |
| | 1 = Upper "−", Lower  "+". | | |
| | 2 = Upper "+", Lower  "−". | | |
| | 3 = Both upper & lower display value are "−". | | |
| D15 | Start Word | | |

# 6. BATTERY REPLACEMENT

1) When the left corner of LCD display show " LBT ", it is necessary to replace the battery. However, in−spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
2) Slide the " Battery Cover " (3−9, Fig. 1) away from the instrument and remove the battery.
3) Install the 1.5 V AAA (UM−4) battery x 6 PCs. Please use the Alkaline or heavy duty type battery. When install the batteries should be care for the battery polarity. After install the batteries, then reinstate the battery cover.