Hot-Film Anemometer
instruction manual

Precaution

➤ Thank you for purchasing our company Hot-Film Anemometer

➤ This manual provides relative information on how to use the Hot-Film Anemometer and warning in operation, Pls make some simple test measurement to ensure proper performance of the unit

➤ To make the best use of this anemometer ,read this manual before use it .Pls keep this manual handy for reference

Specific Declarations:
  a. The product design and the manual updating, repairing by technician authorized by us, do not try any alternations or repair attempts.
  b. Dispose of battery should in accordance with local laws and regulations.

IntelliSafe CE SGS UKAS MANAGEMENT SYSTEMS 005

Maintenance & warranty

1. Maintenance:

➢ Replacing the battery and product maintenance:

   a. Remove the battery from the unit if it is not required for extended periods of time in order to avoid damage to the battery compartment and the electrode resulting from a leaking battery.

   b. After power on, if a symbol " 🔲 "appears on the LCD, indicates that you should replace the battery in order to avoid inaccurate measuring reading.

     Otherwise the battery is very possible leak that will seriously damage the unit life.

     The battery compartment is on the down rear of the unit, open the battery door, replace the old battery for a new 9V one (notice the battery polarity), close the battery door with a screw knife to lock up.

   Cleaning the casing：

➢ Never use alcohol or thinner to clean the unit casing that will especially erode the LCD surface; just clean the unit lightly as needed with little clean water.

➢ Never impact the unit or used on humidity condition.

➢ Do not store or use the unit in following locations where the unit may be subject to:

   a. Splashes of water or high levels of dust.

   b. Air with high salt or sulphur content.

   c. Air with other gases or chemical materials.

   d. High temperature or humidity (above50℃, 90%,) or direct sunlight.

   2. Warranty:

➢ About relative warranties please read provided warranty card.

➢ We disclaims any liability due to: transportation damages; incorrect use or operation; manipulation, alterations or repair attempts; without warranty card, invoice.

CONTENTS

1、Before use notice

Carefully unpack your kit and ensure that you have the following Items .In case that any items is missing or if you find any mismatch or damage .promptly contact your local dealer .

➤ Hot - Film Anemometer------------------------------- 1pcs
➤ Sensor side machine--------------------------------- 1pcs
➤ Software disc for Hot - Film Anemometer---------- 1pcs
➤ USB computer connecting cable ------------------- 1pcs
➤ 9V battery   --1pcs
➤ English instruction manual ------------------------- 1pcs
➤ Power adapter---1pcs
➤ PP packing box   ---------------------------------- 1pcs

3. Other items

Familiar trouble shooting

The following is a list of actions to be taken if the unit is not working properly:

1). Screen is blank
Check the battery is inserted correctly. open the battery door on the bottom rear of the unit. The " + "   " - " symbois on the battery should match the corresponding " + " " - " symbols on the inside of the battery compartment.

2). If the unit can not connect to PC normally, please check the USB cable is ok, if the cable can not be used formally, please replace for a new one.

3). If the unit can not read the wind flow value properly, please check if the probe is block or not.

4). If the unit can not read the wind temperature value properly, please check if the heat resistor is fall off or damaged by manual.

5). If the unit can not read data properly, please check it is operated under the rule temperature and humidity situation.

📄 Note:
When not connecting to PC, the unit will power off automatically after 10 minutes if no any operation after power on.

7). Download of measurement data:
   Click the " Import Data " in " File " menu bar or
   Import Data button on tool bar will enter download
   contact interface of measured data, click the Import
   button on bottom to import the stored data into
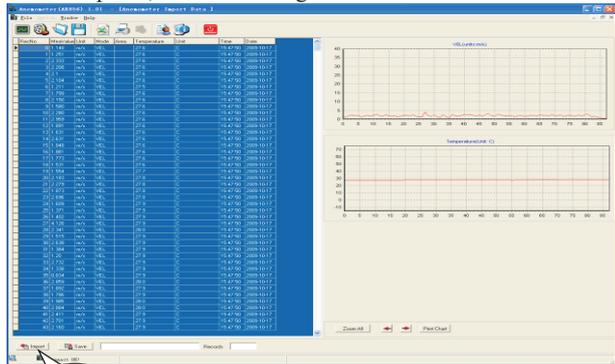   computer, as shown in figure 10:

Figure 10

➢ Button introduction:

BUTTON	Function
Import	Click to download data from anemometer. In download process, please don't switch over the picture in order to avoid appearing over time mistake " Over Time ".
Save	Click to save the downloaded data, input file name in pop-up window, click to save then. (Saved as LAB format)
ZOOM ALL	Click which display all wind velocity and temperature wave graphic
←	Click it the wind velocity and temperature move left side
→	Click it the wind velocity and temperature move right side
Print graph	Click it can print measurement data curve graphic

Features

➢ Slender sensor suitable for small space measurement

➢ Hot wire sensor applied in high precision speed measurement

➢ Wind velocity / wind temperature / air flow measurement

➢ Wind velocity / wind temperature / air flow unit conversion

➢ Measurement of maximum and minimum wind velocity / air flow

➢ Data holding, storing and deleting function

➢ Low battery indicating function

➢ Auto power off function (Power off automatically if no any operation for 5 Minutes)

➢ Memory of 500 records

➢ Backlight function

➢ Connecting to PC by USB cable

➢ Audio key pressing alert

➢ Large LCD display

➢ Wind handle can elongate

➢ Application: environment measurement, air transport, air conditioning monitoring system and measurement.
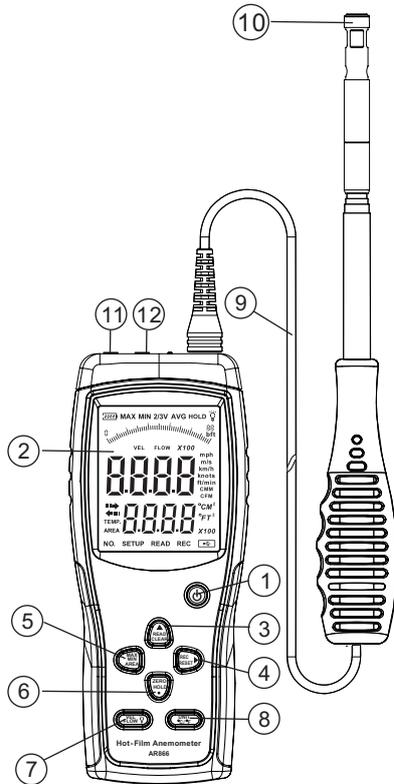
➤ You can also print measurement data and wind velocity / flow curve graph, and export excel data file, for details please see help file.
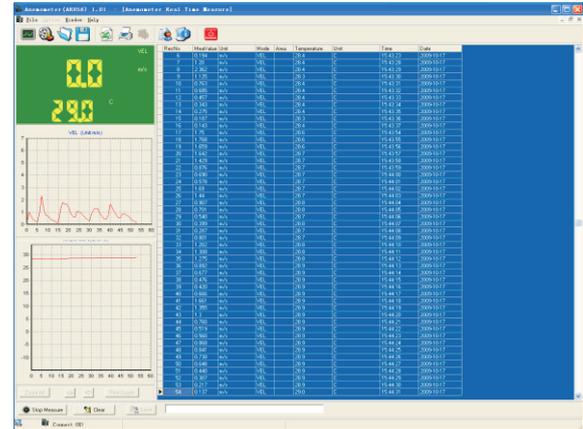

Figure 9

➤ Button introduction:

Button	Function
Start to Measure	Click to start real time measurement
Stop Measure	Click to stop real time measurement
Clear	Click to clear out real time measured data
Save	Click to store real time measured data, input file name in pop-up window, click to save, then also may click FILE\SAVE. (Saved as LAB format)
ZOOM ALL	Click which display all wind velocity and temperature wave graphic
←	Click it the wind velocity and temperature move left side
→	Click it the wind velocity and temperature move right side
Print Graph	Click it can print wind velocity and temperature wave graphic

4). Insert one end of the connecting cable into the USB
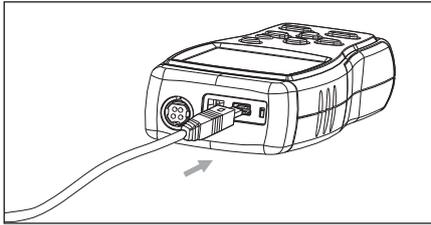interface of the top anemometer host,
as shown in figure 7:

Figure 7

5). Insert other end of the connecting cable into free
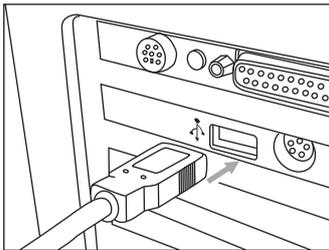interface port of on the computer back,
as shown in figure 8:

Figure 8

6). Online real time measurement:

➤ Click " real time measure " in " File " menu or ,
real time measure bottom in toolbar will popup
following picture, as shown in figure 9, enter real
time measuring mode .

1) (⏻)key: press once to power on, again to power off

2) LCD display

3) (READ/CLEAR)Read record data / clear log data

4) (REC/RESET)Recording data / reset

5) (MAX/MIN/AREA) Maximum / minimum / input area key

6) (ZERO/HOLD) Data hold / clear key

7) (VEL/FLOW)Wide volume / speed conversion key

8) (UNIT/°C/°F)Temperature / wind volume unit conversion key

9) Connecting wire

10) Sensor

11) USB interface: insert one end of the connecting cable
to this interface, another to the available USB port of the
computer.

12) An external power socket.

📄NOTE:
Aforesaid key function descriptions are simple
introduction.
pls read operation instructions parts for details.

LCD Display
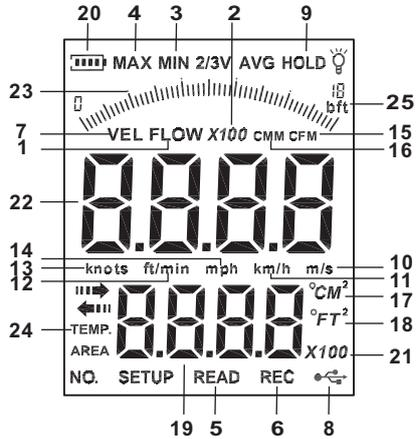
1). FLOW : When measuring wind flow, this symbol appears.
2). X100 : If measured value is over 9999, the symbol " X10 " or" X100" will appear.
3). MIN : Showing minimum values.
4). MAX : Of maximum value measurement (one of the wind flow measuring method)
5). READ : This symbol will appear. While read stored record data.
6). REC : Recording the using number and signals
7). VEL : When measuring wind velocity, this symbol will appears.
8). USB : When connecting PC with USB cable, this symbol appears.
9). HOLD : Data holding
10). m/s : Wind velocity unit (meter / second)
11). km/h : Wind velocity unit (kilometer / hour)

Order	Order function
Real Time Measure	Real time data measurement, the measured data will real time be shown on the computer.
Open	Open measurement data file that is saved as the LAB format
Save	Save real time measurement data
Import Data	Import data stored in the anemometer to computer
Export To Excel	Export the saved data to excel.
Printer Setup	Printer setup
Print Data Sheet	Print data sheet

➤ Tool bar introduction as shown in following figure:

| Button	Function
	Real time data measurement, the measured data will real time be shown on the computer.
	Import data stored in the anemometer to computer
	Open measurement data file that is saved as the LAB format
	Save real time measurement data
	Export the saved data to excel.
	Print the recorded data
	System setup
	Help
	System information
	Close the software

Operation Explanations
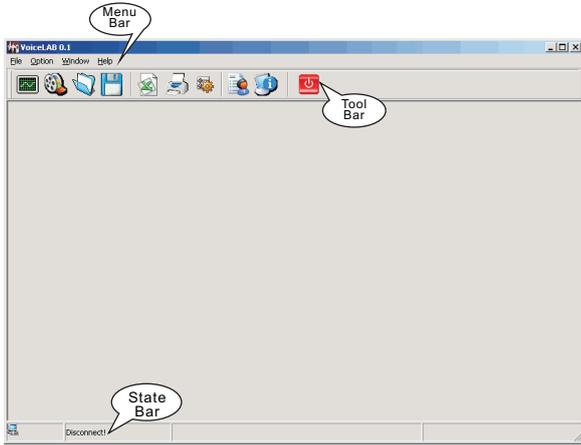
Figure 5

➤ Menu Introduction as below as show in figure6:

File menu bar:

Figure 6

📄 NOTE:
You can check if anemometer is connected well with the computer on the state bar:
Connect ok : connection in good state
Disconnect : failed in connection

12) **ft/min** : Wind velocity unit (foot /minute)

13) **knots** : Wind velocity unit (sea mile/hour)

14) **mph** : Wind velocity unit (mile/hour)

15) **CFM** : Wind flow unit (cube foot/minute)

16) **CMM** : Wind flow unit (cube meter/minute)

17) °**CM**^{2} : " M^2 "is used to indicate duct area in square meter when in flow function " ℃ "Is used to indicate wind temperature in metric.

18) °**FT**^{2} : " °FT^2 " is used to indicate duct area in square feet when in flow function ; °F is used to indicate wind temperature in metric.

19) 🔢 : Duct area display area

20) 🔋 : Low battery indicating symbol, please replace battery if this symbol appeared.

21) **X100** : If measured value is over 9999, the symbol " X10 " or " X100 " will appear.

22) 🔢 : Wind velocity and flow display area

23) 〰 : Wind speed wind dynamic indicator

24) **TEMP** : Wind temperature signal

25) **bft** : Wind strength grade

Specification

1. Wind velocity range：

Unit	Wind Velocity	Resolution	Lowest Point of start value	Accuracy
m/s	0.0-40.0	0.01	0.01	(±1%±1d) Full range or (5%±1d) Read
Ft/min	0.0-7874	1	60	
Knots	0.0-77.76	0.1	0.6	
Km/h	0.0-144.0	0.1	1.0	
Mph	0.0-67.20	0.1	0.7	

2. Wind flow range：

CMM⊔0-999900m^3/min

CFM⊔0-999900 ft^3/min

Unit	Range	Resolution	Area
CFM(FT^3/MIN)	0-999900	0.001-100	0.001-9999
CMM(M^3/MIN)	0-999900	0.001-100	0.001-9999

3. Unit conversion：

	m/s	Ft/min	Knots	Km/h	Mph
1m/s	1	196.87	1.944	3.60	2.24
1ft/min	0.00508	1	0.00987	0.01829	0.01138
1knots	0.5144	101.27	1	1.8519	1.1523
1km/h	0.2778	54.69	0.54	1	0.6222
1mph	0.4464	87.89	0.8679	1.6071	1

4. Air temperature range :

Wind temperature

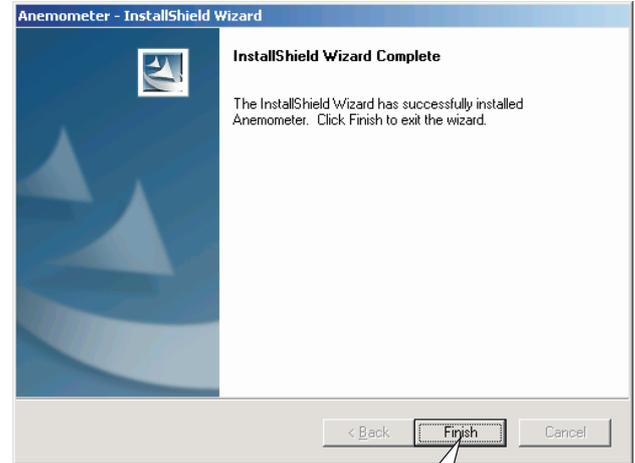| Unit	Scale	Resolution	Accuracy
℃	0.0-45.0	0.1	±1.0⊥
℉	32.0-113.0	0.1	±1.8沈

Figure 4   **Finish**

➤ Click " Finish " to complete the software installation ,and the program will be automatically generated on the PC. The name "Anemometer (For AR866) "

3.Software Introduction
➤ Double click the software quick way on the table top (start by menu, the route is Start /Programme /smart sensor / Amemometer /Amenometer) software interface showing as below as show in figure5:

➤ Input your user name and company name ,click " NEXT " to enter next step , installation interface as below as show in figure3:
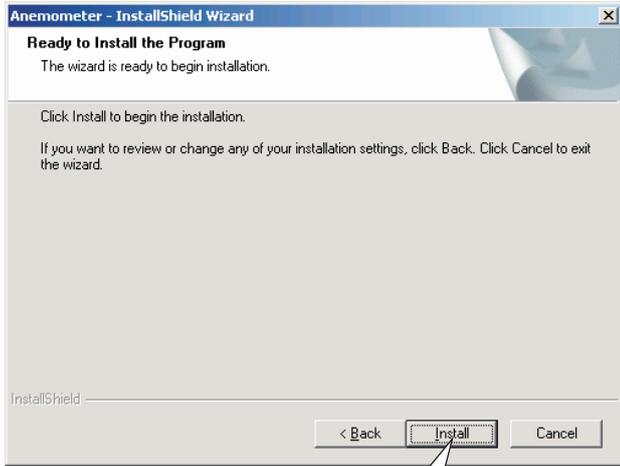

Figure 3

➤ Click " INSTALL" to install the program in your hard disk ,then showing the interface as below and show in figure4:

📄 Note:
If you want to delete this software , pls open " Controlling Panel " then double check "add/delete program" choose "Anemometer " on the list then click the "delete" button.

5. Operation conditions :

	Temperature	Humidity
Host	0-50℃ (32℉~122℉)	≤80% RH
Sensor	0-60℃ (32℉~140℉)	

6. Probe conditions :

Temperature	-40℃~60℃ (-40℉~140℉)
Humidity	≤80%RH

7、Power supply : 9V battery or power adapter

8、Low battery indicating : 7.0v±0.2V

9、Stand by current ≤20uA

10、Operating current ≤120mA(in general 60mA)

11、Battery use life :1HR (continuous use)

12、Dimensions:
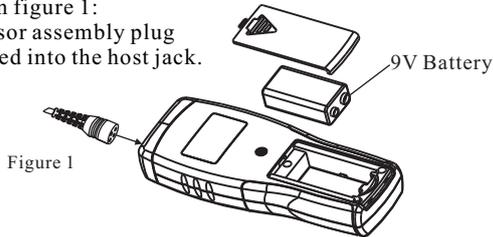   Meter :66*159*31mm

13、Net weight : 153.5G (not included battery)

2、Operation

Measurement of wind velocity and temperature

➤ Remove the battery door , and install the battery properly as shown in figure 1:

➤ The sensor assembly plug is inserted into the host jack.

9V Battery

Figure 1

➤ Press the " ⏻ " key, all the symbols will be shown on the screen for 1 second, System will start the preheat process, count down will shown on display, after 10 second finish count down. then the unit goes into current wind velocity and temperature measuring mode, the LCD screen shows as following figure:

Figure 2

-09-
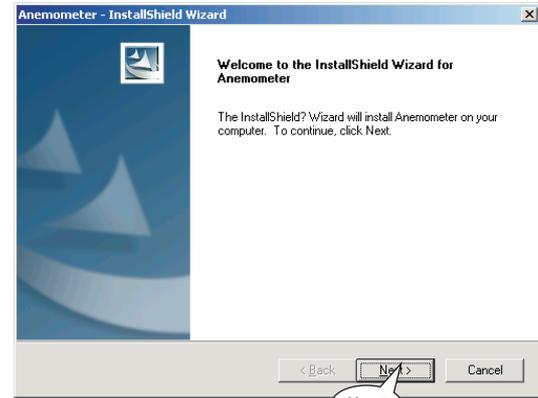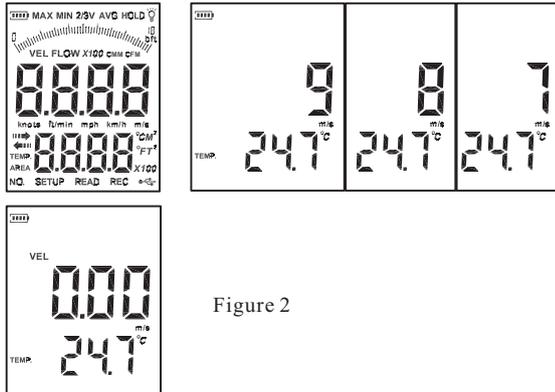
Figure 1

➤ Press " Next STEP " showing the customer information as show in figure2:

Figure 2

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## CONNECTION WITH PC

1.Requirement of computer configuration:
CPU : Pentium 600MHZ or above ;
One free available USB connecting Interface;
the lowest screen resolution of monitor is 800*600 (or much higher),color mode;
at least 8MB available memory;
at least 50MB available disk memory;
Operation system : MICROSOFT WINDOWS 98/ME/ 2000/XP HOME/XP PROFESSIONAL 32BIT

2. Install the software from the disc:
➢ Place the attached disc in your disc driver open the disc driver plate symbol , double click the " setup .exe " program logo , enter program installation window ,click " NEXT " enter next interface ,as show in figure1.

➢ Select your desired wind velocity and temperature unit
（1）Press the " UNIT " key, the wind flow unit will be auto change from (m/s 、 km/h 、 ft/min、knots、mph), (default unit is m/s)
（2）Press the " ℃/℉ " ，the temperature will be change between℃/℉mode, defaulted as ℃.

➢ Hold the anemometer with your hand , place the probe in the air flow with the air direction matching the direction of the arrow printed on the walls of the probe.

Duct area   Wind direction

Figure 3
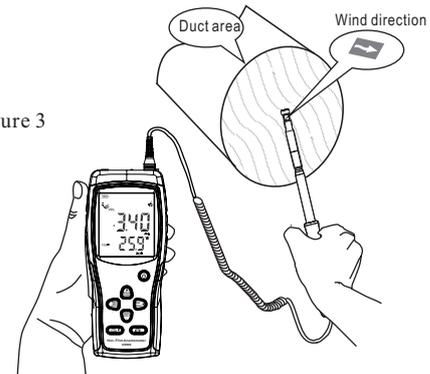
（1）Wait for two seconds , to make the data stable
（2）Want to get more accurate data, please try to keep the sensor and the wind direction in a straight line, and the central position of sensor in air.
（3）Press the " 💡 "key long by 3 seconds to turn on backlight function , Signal will be display on the LCD, then press the " 💡 " key long by 3 seconds once again to turn off backlight , signal will disappear .

➤ Wind /Air temperature measurement
    1、Wind temperature will test out when testing wind
       velocity , small pattern will showing along with
       the display of " TEMP " symbol.
    2、Press button ℃/℉ to switch ℃/℉ or (number "6" key).

➤ The zero function: when the environment changes, data
generation offset or in a specific environment, can be
press the" ZERO " button for 3 seconds to make reading
zero (zero function only in the use of effective), after
shutdown, this function disable.

📄 Note:
    a. If current is in wind flow measuring mode (on the
       left top of the LCD will show " FLOW "), you can
       turn it into wind velocity measuring mode by pressing
       the " VEL/FLOW " key, vice versa.
    b. The defaulted setting is wind velocity measuring
       mode " VEL " at each power on.

➤ Clearing the stored data:
    Press down the " CLEAR " key for 5 seconds then a " CLA "
    Logo will be shown on the LCD ,all the stored data
    being cleared. As shown in figure11:

Figure 11
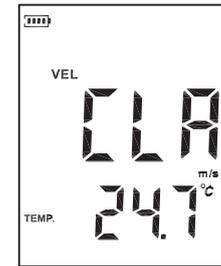
📄 **Note :**
    a.You should press the " REC " key to finish the recording ,
       otherwise the recording will in invalid.
    b.The maximum number of readings can be stored 500.

Operation
Explanations

Date holding /storeage/reading and clearing

➤ Data holding:
When taking measurement of wind velocity and flow, press the " HOLD " key to freeze the data , press the " HOLD " key again return to normal operation.

➤ Data storage:
In any state, press the" REC " button, the meter began to store data, and then press " REC " button to stop the storage data.
1. Continuous recording of data set: in wind speed measurement press the" AREA" button for 3 seconds and display0m / S, press the " ▲ ", "0" into"1", then press the "▲", key to exit.
2. Single record data set: and the operation of similar, as long as the "1" to "0" press the"▲ " key to exit.

➤ Reading data stored sequentially:
Press the " READ " key, you can read the stored data in memory sequentially, the LCD will first shows serial number then shows the data. Press " RESET " key to return normal operation.   as shown in figure 10:
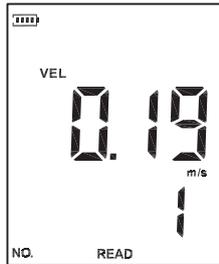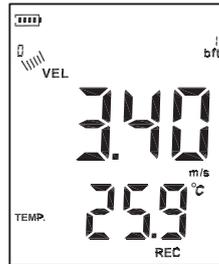
Figure 9

Figure 10

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Measurement of wind flow

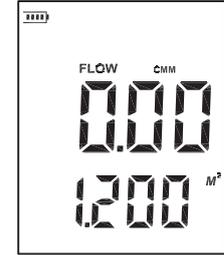➤ Press the " VEL/FLOW " key to get into " FLOW " mode, at this time the LCD screen as shown in figure 4:

(if the area value has been set before , the last setting will be shown)

Figure 4

➤ Select your desired unit of wind flow and duct area:
a. Press the " UNIT " key, the wind flow unit will convert between CMM and CFM (the defaulted unit is CMM)
b. Press the " UNIT " key, the area unit will convert between" M2 " and " Ft2 ". (the defaulted unit is " M2 ")
c. Area unit: " M2 " and " Ft2 " will convert according with the conversion of the wind flow unit. If wind flow unit is CMM, the area unit will be " M2 "; If wind flow unit is CFM, the area unit will be " Ft2 ".

➤ Press the "AREA" key long by 3 seconds, LCD above 4 numbers will change into 1, see Figure 5, then input the duct area, such as 1.2, first press the key " ▲" to the left one is 1, then press" ● " the decimal point key, then press " ▶ " shift key to make the LCD display"1.0 ", then press the " ▲ " key"0" to "2" and then press "▶" shift key two times, so that the LCD display"1.200", and press the " ▶ " key shift confirmation, at this time the LCD screen as shown in figure 4:
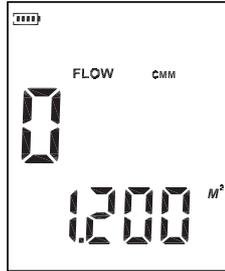
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Operation
Explanations

Figure 5

▷ Place the probe in the duct area, take measurement of current wind flow value right away. As shown in figure 7:
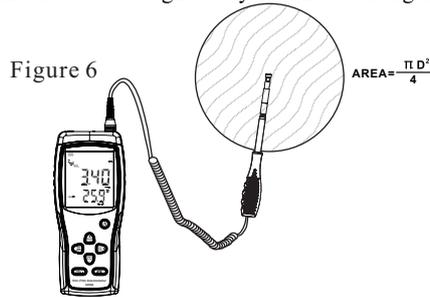
Figure 6

$$AREA = \frac{\pi D^2}{4}$$

▷ Wind flow calculate formula : Flow =velocity *(Free Area)
▷ Testing wind velocity : The Bar graphic (showing on the middle of LCD)was subject to the increasing wind flow/ velocity

🗐 Note:
   a. without enter the duct area will lead to failing in taking measurement of the wind flow.
   b. If wind flow is larger than 9999, the LCD screen will show x10 or x100, and the measured value is also x10 or x100.

▷ In wind flow and velocity measuring process, press the " MAX/MIN " key to obtain the maximum and minimum values, press again to exit. For example:

   1.When measuring maximum value of wind velocity, a " MAX " will be shown on the upper left LCD screen, as shown in figure 7:
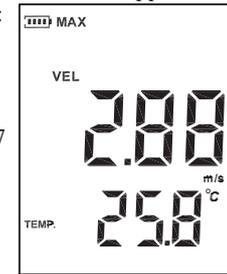
Figure 7

   2.When measuring minimum value of wind velocity, a " MIN " will be shown on the upper LCD screen, as shown in figure 8:
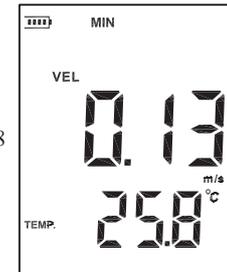
Figure 8

🗐 Note:
   Operation of Max/Min wind flow measurement is the same as wind velocity.

Operation Explanations