

**NDTKALA.CO**<sup>®</sup>

Non-Destructive Test (NDT) Equipment



تامین تجهیزات و مواد مصرفی تست های غیر مخرب، ایران

۰۲۱-۷۱۰۵۳۸۸۸ | ۰۹۱۲۰۲۶۶۲۷۰



MODEL: GM8903

## HOT WIRE ANEMOMETER INSTRUCTION MANUAL



# CONTENTS

## 1、 Before Use

- Check up ----- (01)
- Features ----- (02)
- Diagram of the unit ----- (03)
- LCD Displays----- (05)
- Specifications----- (07)

## 2、 Operation

- Measurement of wind velocity and temperature-- (09)
- Measurement of wind flow ----- (11)
- Measurement of 2\3 V max wind flow ----- (13)
- Measurement of average wind flow ----- (14)
- Measurement of Max/Min wind Flow ----- (16)
- Holding/Storing/Reading and Clearing the data--(17)
- Connection With PC -----(19)

## 3、 Other Items

- Trouble Shooting -----(27)
- Maintenance & Warranty -----(28)

# 1、 Before Use Notice

## Check up

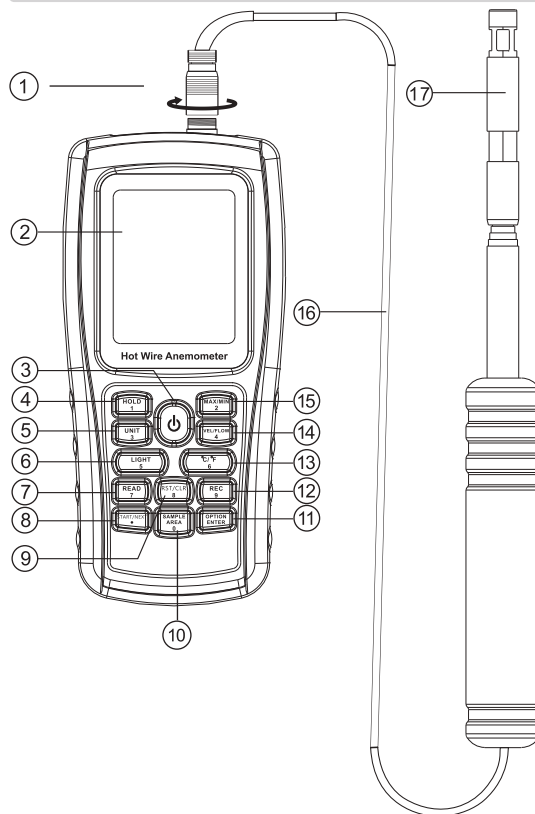
Thank you for purchasing our Hot Wire Anemometer! Carefully unpack your kit and ensure that you have the following Items .In case that any item is missing or if you find any mismatch or damage ,promptly contact your local dealer .














- Hot Wire Anemometer unit----- 1pcs
- Yellow sticker pockt ----- 1pcs
- Probe----- 1pcs
- Software Disc For Anemometer ----- 1pcs
- USB Computer connecting cable ----- 1pcs
- 1.5V AAA alkaline battery ----- 4pcs
- English Instruction Manual ----- 1pcs
- Cloth pouch -----1pcs

## Features

- Measurement of wind velocity, temperature and flow
- Unit conversion of wind velocity, temperature and flow
- Measurement of maximum and minimum wind velocity
- Measurement of 2/3 Vmax and average wind flow
- Data holding, storing and deleting function
- Low battery indicating function
- It turns off automatically within 10 minutes if there is no further operation. it will not turn off automatically if there is powered by USB source.
- Memory of 350 records
- Backlight
- Connecting to PC with USB cable
- Audio key pressing alert
- Large LCD display

## Diagram of the unit



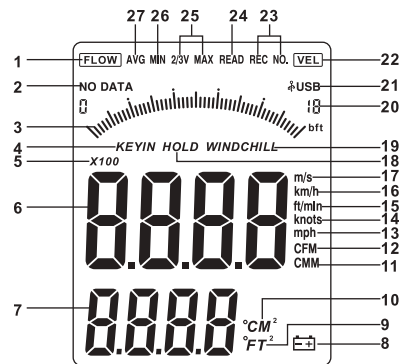
- 1). Connector (With direction indicator)
- 2). LCD display
- 3).  : ON/ OFF key
- 4).  :Data holding key
- 5).  :Unit transform key
- 6).  :Backlight on/off key
- 7).  :Data read key
- 8).  :Measuring key for average value of wind flow
- 9).  :Reset key in READ mode/clear recorded
- 10).  :Duct area input and sampling time setting key
- 11).  :Wind flow AVG 2/3 MAX and figure input
- 12).  :Data record key
- 13).  :Temperature unit switch
- 14).  :Wind velocity/flow transform key
- 15).  :Max/Min value switch
- 16). Connecting wire
- 17). Probe





#### NOTE:

Aforesaid key function descriptions is brief introduction.  
pls read operation instructions parts for details.

## LCD Display



1.  : Air flow symbol
2. **NO DATA** : No data store symbol
3. Dynamic indicator bar of velocity or air flow
4. **KEYIN** : Enter duct area values symbol
5. **X100** : Air multiplier
6. Wind velocity and air flow display area
7. Duct area display area/Wind temperature display
8.  : Low battery icon
9. **FT<sup>2</sup>** : Indicating duct area in square feet when in flow function ; °F is used to indicate wind temperature in metric;

10. **°CM<sup>2</sup>** : Indicating duct area in square meter in flow function, "°C " is used to indicate wind temperature in metric.
11. **CMM** : Wind flow unit (cube meter / minute)
12. **CFM** : Wind flow unit (cube foot / minute)
13. **mph** : Wind velocity unit (mile / hour)
14. **knots** : Wind velocity unit (sea mile / hour)
15. **ft/min** : Wind velocity unit (foot / minute)
16. **km/h** : Wind velocity unit (kilometer / hour)
17. **m/s** : Wind velocity unit (meter / second)
18. **HOLD** : Data hold
19. **WINDCHILL** : Chill index
20. **WINDCHILL** : Data-sampling interval recorded
21. **USB** : When connecting PC with USB cable, this symbol appears
22. **VEL** : Wind velocity symbol
23. **REC NO.** : Recording the using number and signals
24. **READ** : Read stored data symbol
25. **2/3V MAX** : 2/3 of maximum value measurement (one of the wind flow measuring method)
26. **MIN** : Showing minimum values
27. **AVG** : When measuring average values (one of the wind flow measuring Method) this symbol appears.

## Specifications

### 1. Wind Velocity Range :

Unit	Wind Velocity	Resolution	Lowest Point of start value	Accuracy
m/s	0.0-30.0	0.001	0.3	±3%±0.1
Ft/min	0.0-5860	0.01/0.1/1	60	±3%±20
Knots	0.0-55.0	0.01/0.01	0.6	±3%±0.2
Km/h	0.0-90.0	0.001	1.0	±3%±0.4
Mph	0.0-65	0.001/0.01	0.7	±3%±0.2

### 2. Wind flow range :

CMM: 0-999900m<sup>3</sup> /min

CFM: 0-999900 ft<sup>3</sup> /min

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

### 3. Unit Conversatin :

	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
°C	0.0-45.0	0.1	±1.0°C
°F	32.0-113.0	0.1	±1.8°F

## 5. Operation Conditions :

	Temperature	Humidity
Host	0-50°C (32°F~122°F)	≤80% RH
Sensor	0-60°C (32°F~140°F)	

## 6. Storage Conditions :

Temperature	-40°C~60°C (-40°F~140°F)
Humidity	≤80%RH

## 7. Power supply : AAA 1.5V Alkaline battery \*4

## 8. Low battery indicating : 4V±0.2V

## 9. Stand by current 0uA

## 10. Operating Current ≤60mA

## 11. Battery use life :20H (Continuous Use )

## 12. Dimensions:

Meter :77x36x164mm

Probe: 30.5x30.5x305MM

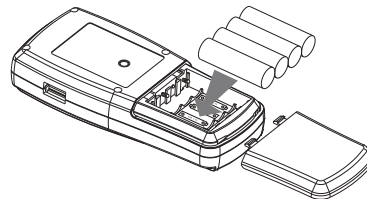
30.5x30.5x1000MM(Elongated)


## 13. Net Weight : 330G (Not Included Battery )

# 2. Operation Instruction

## Measurement of Wind Velocity and Temperature

- Open the battery door , and install the batteries properly as shown in following figure:

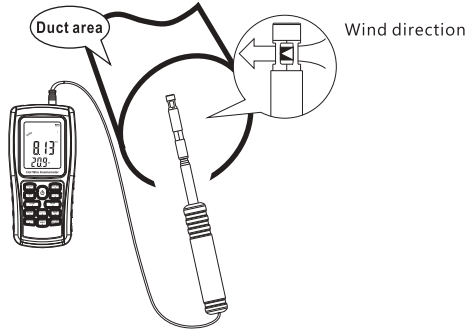


- Long Press The "  " key 1 second, all the symbols will be shown on the screen for , then the unit goes into current wind velocity and temperature measuring mode, the LCD screen as shown in following figure:



- Select your desired wind velocity and temperature unit :
  - 1). Press the " UNIT " key, the wind flow unit changes among m/s 、 km/h 、 ft/min、 knots、 mph,(default unit is m/s);
  - 2). Press the " °C/°F " , the temperature changes between °C/°F mode(defaulted as °C).

- Hold the Anemometer with your hand , place the probe in the air flow with the air direction matching the direction of the arrows printed on the inner walls of the probe ( please do not extrude the sensor tip, which may cause the inaccuracy measurement )



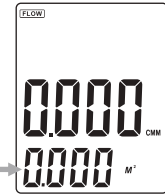
- 1). Wait for 2 seconds with the unit is ready for use.
- 2). Place the probe in the same direction of the wind to capture the accurate data ,temperature within 20°C
- 3). Press the LIGHT key to activate or deactivate the backlight. In measuring, press the LIGHT key to light up the LED and the LED will be turned off within 7 seconds if there is no further operation on the keys.

- Wind /Air Temperature Measurement:

- 1). Small probe pattern will showing along with the display of "TEMP" symbol.
- 2). Press button °C/°F(or number 6 key) to Switch °C/°F .

## Measurement of Windflow

- Press the "VEL/FLOW" key to get into "FLOW" mode, the LCD screen as shown in following figure :

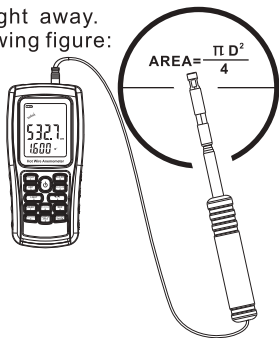


(If the area value has been set before, the last setting will be shown )

- 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 M<sup>2</sup> and FT<sup>2</sup> . (the defaulted unit is M<sup>2</sup> )
  - c. Area unit: M<sup>2</sup> and FT<sup>2</sup> will convert accordingly with the conversion of the wind flow unit.  
If wind flow unit is CMM, the area unit will be M<sup>2</sup>;  
If wind flow unit is CFM, the area unit will be FT<sup>2</sup> .
- Press the "AREA " key, the 4 digitals on the upper LCD disappears at this time press numeric keys to input a new duct area, such as 1.6, then press the "ENTER" key to confirm. At this time the LCD screen as shown in following figure:



- Place the probe in the duct area to measure current wind flow value right away. As shown in following figure:



- Wind Flow Calculate Formula : Flow =velocity \*(Free Area)
- Testing Wind velocity : The bar icon (showing on the middle of LCD )changes accordingly with wind Flow/Velocity

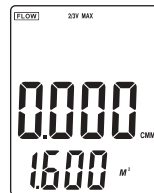


Note:

- failing to enter the duct area leads to failure of measurement of the wind flow.
- If wind flow is larger than 9999, the LCD screen will show x10 or x100, indicating the measured value multiplied by x10 or x100.

## Measurement of 2/3 Vmax Wind Flow

- Press the "VEL/FLOW" key to enter into "FLOW" mode;
- Select your desired unit by pressing the UNIT key, for example: select CMM for wind flow unit, M<sup>2</sup> for area unit;
- Press the "AREA" key, letter on the LCD will disappeared at this time you can input duct area, such as 1.6, press "ENTER" key to confirm;
- Press again the "OPTION" key to select "2/3 Vmax", here the LCD screen as shown in following figure:



- Aim the probe of the attached unit at duct area properly, take measurement of 2/3 V max wind flow right away, press again the "OPTION" key exit to measurement of 2/3 max wind flow.  
2/3 Max Wind flow calculate formula:
- FLOW =2/3\*Max wind Velocity \*duct Area



## Measurement Of Average Wind Flow

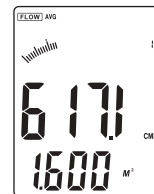
- Press the "VEL/FLOW" key to get into "FLOW" mode;
- Select your desired unit by pressing the UNIT key, for example: select CMM for wind flow unit, M<sup>2</sup> for area unit;
- Press the "AREA" key, letter on the LCD will disappear at this time you can input duct area, such as 1.6, press "ENTER" key confirm;
- Press again the "OPTION" key to select "AVG", here the LCD screen as shown in following figure:



- Aim the probe at certain point of duct area properly, press the "NEXT" key, on the right bottom of the LCD will show serial number, in the meantime you can take measurement of the first group wind flow values. As shown in following figure:



- Then select another test point, press the NEXT key to take measurement of the second group average wind flow values. Repeat above steps to measure as many as 12 groups of average wind flow values. As shown in following figure:



- Once again press the "OPTION" key exit to measurement of average wind flow.
- Average Wind flow calculate formula  
Flow = 1/N Σ (Velocity)\*(free Area)



### Note

The average value only displays by pressing NEXT key, if there is wind in the duct Area, then the LCD Screen will show the measured Average Wind flow

## Max and min measurement

- 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 LCD screen, as shown in following figure:



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



Note:

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

## Date holding /Storage/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:
  - 1). Instantaneous (one-shot) data storage: under "VEL" state, set the sampling rate=0 by pressing "SAMPLE" key and in put a "0" sampling time and then press "ENTER". Now, each time "REC" is pressed, the present reading will be stored.
  - 2). Automatic data storage: under "VEL" state, press the "SAMPLE" key and input sampling rate, (the sampling rate from 1~99 seconds using the numeric keys to enter your desire rate,) then press the "ENTER" key to confirm. Press the "REC" key to begin storing readings in every sampling rate. The "REC" icon will appear on the LCD indicating the data storage function being activated. Press again the "REC" key to finish data storage.
  - 3). Press "REC" Key to stop recording.
- Reading data stored sequentially:
  - 1). Press the "READ" key, you can read the stored data in memory sequentially, the LCD will first shows serial number then shows the data.
  - 2). Press "RST" key to return normal operation.  
As shown in following figure:



- Reading Data stored In memory Randomly:  
On read Status ,Press the "SAMPLE" Key and enter the number of the record in questions and press "ENTER" Key then the desired data will be displayed Press " RESET" Key to exit As shown in following figure:
- Clearing the Stored data:  
Press down the "CLEAR" Key for 5 seconds then CRL appears on the LCD indicating , all the stored data being Cleared. As shown in following figure:



**Note :**

- a. In instantaneous data storage mode, you should first press "SAMPLE" Key and input "0" second , then press "ENTER" to finish the rate set up.
- b. Press the "REC" Key to finish the recording, otherwise the recording will be invalid.
- c. The maximum number of readings can be stored 500.
- d. If your reading number is bigger than the total quantity of data stored in memory ,the LCD will shows the last stored.

## 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/7
- 2). Install the software from the disc:  
Place the attached Disc in your disc driver open the disc driver plate symbol , double click the " Anemometer setup .exe " . To enter into Program installation window, click "NEXT" , as show in following figure:



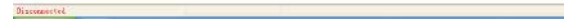
- Please follow the install shield wizard and click on "NEXT", and select " Create a desktop icon".
- Until "Finish" is shown, select "Run Anemometer" to complet software installation, as figure below:



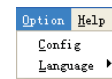
**NOTE:**

- 1). Double click the software shortcut on the desktop ( to start from menu, the route is Start /Programme / Anemometer ) ;
- 2). If you want to delete this software ,please open " Controlling Panel " then double click "add/delete program" Choose "Anemometer" on the list then click the "delete" button.

3). Software interface:



- Menu introduction as shown in following figure:  
 File menu bar:    Option menu bar:    Helpmenu bar:



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



#### Remark:



Language in : English / Traditional Chinese/ Simplified Chinese. The default setting is in English, from English into Simplified Chinese or Traditional Chinese can be setting directly; If change Simplified Chinese or Traditional Chinese into English, you need to re-start running the software.

○ Tool bar introduction as shown in following figure:




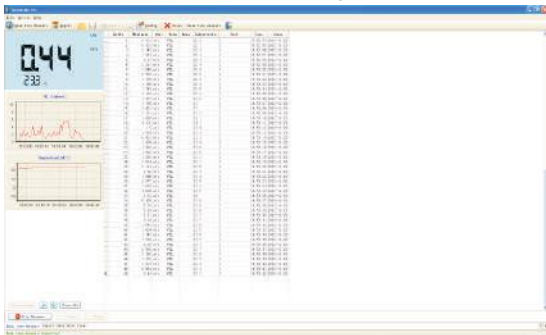
Button	Function
	Real time data measurement, the measured data will be real time as shown on the computer.
	Import data stored in the anemometer to computer
	Open measurement data file that is saved as the LAB format
	Save real time measurement data
	Export the saved data to Excel.
	Print the recorded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

4). Insert one end of the connecting cable into the USB interface of the top anemometer host; Insert other end of the connecting cable into free interface port of on the computer back,

- If the unit connect with PC: LCD will display  USB symbol;
- If the unit dis-connect with PC:  USB symbol will not shown.









5). Real time measurement:


- Click on "File/Real Time Measure" or tool bar  button to entre real time measurement mode; Press "Start to Measure" button to start measurement and record data, shown as follow figure:

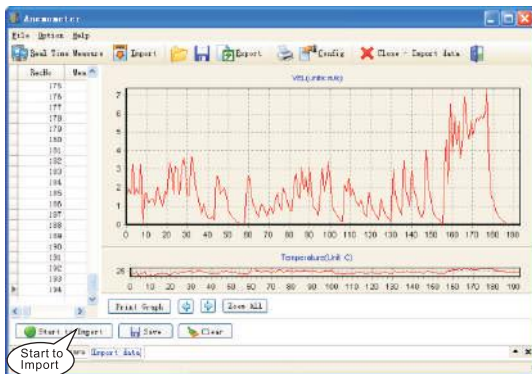


- To stop real time measurement, click on "Stop Measure".



○ Button introduction:

Button	Function
	Click to start real time measurement
	Click to stop real time measurement
	Click to clear out real time measured data
	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)
	Click to display all wind velocity and temperature wave graphic
	Click to move Wind Velocity and Temperature left side
	Click to move Wind Velocity and Temperature right side
	Click it to print right wind velocity and temperature wave graphic

- 6). 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 start to Import button on bottom to import the stored data into computer, as shown in following figure:



- Button introduction:

BUTTON	Function
	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".
	Click to save the downloaded data, input file name in pop-up window, click to save then. (Saved as LAB format)

## 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 “+” “-” symbols 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.

## 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, indicating 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 new battery (notice the battery polarity), close the battery door.
- Cleaning the casing:
- Never use alcohol or thinner to clean the unit casing, which will especially erode the LCD surface; just clean the unit lightly as needed with little clean water.
- Never impact the unit or use 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 (above 50°C, 90%,) or direct sunlight.

### 2). Warranty:

About relative warranties please read provided warranty card.

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

### 3). Specific Declarations:

- a. Our company shall hold no any responsibility resulting from using output from this product as an direct or indirect evidence.
- b. The product design and the manual updating, repairing by technician authorized by us, do not try any alternations or repair attempts.
- c. Disposal of battery should in accordance with local laws and regulations.