

ENGLISH

User manual



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1. SAFETY PRECAUTIONS AND PROCEDURES

This apparatus conforms to EMC standards relating to electronic measuring instruments. For your own safety and that of the apparatus, you must follow the procedures described in this instruction manual and carefully read all the notes preceded by the symbol .

Strictly keep to the following instructions before and during measurements:

- Do not effect measurements in environments with explosive gas, fuels or dust
- Do not submit the measuring probe to excessive mechanical stress
- **Do not touch the probe inner fan to avoid damaging it**
- Do not effect any measurement in case of unusual conditions of the instrument such as deformation, breakage, leakage of substances, absence of display reading etc.

The following symbols are used on the instrument and in this manual:



Caution: refer to the instructions reported on this manual; improper use may damage the apparatus or its components.

1.1. PRELIMINARY

- Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.
- Only the accessories supplied with the instrument guarantee compliance with the safety standards. They must be in good conditions and must be replaced, if necessary, with identical models.
- Do not effect measurements beyond the limits specified in this manual.
- Check that batteries have been placed correctly.

1.2. DURING USE

Carefully read the following recommendations and instructions:



CAUTION

No compliance with the Warnings and/or Instructions may damage the apparatus and/or its components or injure the operator.

- Use the meter and the probes only within the ranges specified in this manual and in the probes' ones.
- Do not perform any measurement on materials under voltage. This could damage the instrument.
- If during a measurement the read value or sign never changes, please verify if the HOLD function is active.

1.3. AFTER USE

- When the measurements are completed switch OFF the instrument.
- Remove batteries when the apparatus remains unused for long periods.

2. GENERAL DESCRIPTION

The HT4000 meter can perform the following measurements:

- Air speed measurement with 30 mm diameter external probe
- Airflow measurement in m^3/min (CMM) and ft^3/min (CFM)
- Air temperature measurement in $^{\circ}\text{C}/^{\circ}\text{F}$ with external probe
- Relative humidity measurement %RH with external probe
- Atmospheric pressure measurement with internal sensor
- Maximum, minimum and average (AVG) values
- Data HOLD
- Internal memory with 99 locations for measurement storing
- Back light
- Auto power OFF

Each function could be selected via the relative key. The selected quantity appears on a high-contrast liquid crystal display with indication of measurement unit and of the active functions. There are also the function keys, for their use please see § 4.3.

3. PREPARATION FOR USE

3.1. INITIAL

The instrument has been checked from every point of view before shipment. Every care has been taken to make sure that the instrument reaches you in perfect conditions.

However, it's advisable to make a rapid check in order to detect eventual damages, which may have occurred in transit. Should this be the case, enter immediately the usual claims with the carrier.

Make sure that all the accessories listed in § 6.3 are contained in the package. In case of discrepancies contact the dealer.

In case of returning of the tester, please keep to the instructions given in § 7.

3.2. POWER SUPPLY

The instrument is battery supplied by 1 battery 9V type 9V NEDA 1604 IEC 6F22 JIS 006P included in the package. Battery life: about 100 hours. When battery is low, the symbol "" appears on the display. Replace it immediately, following the instructions given in § 5.2.

3.3. CALIBRATION

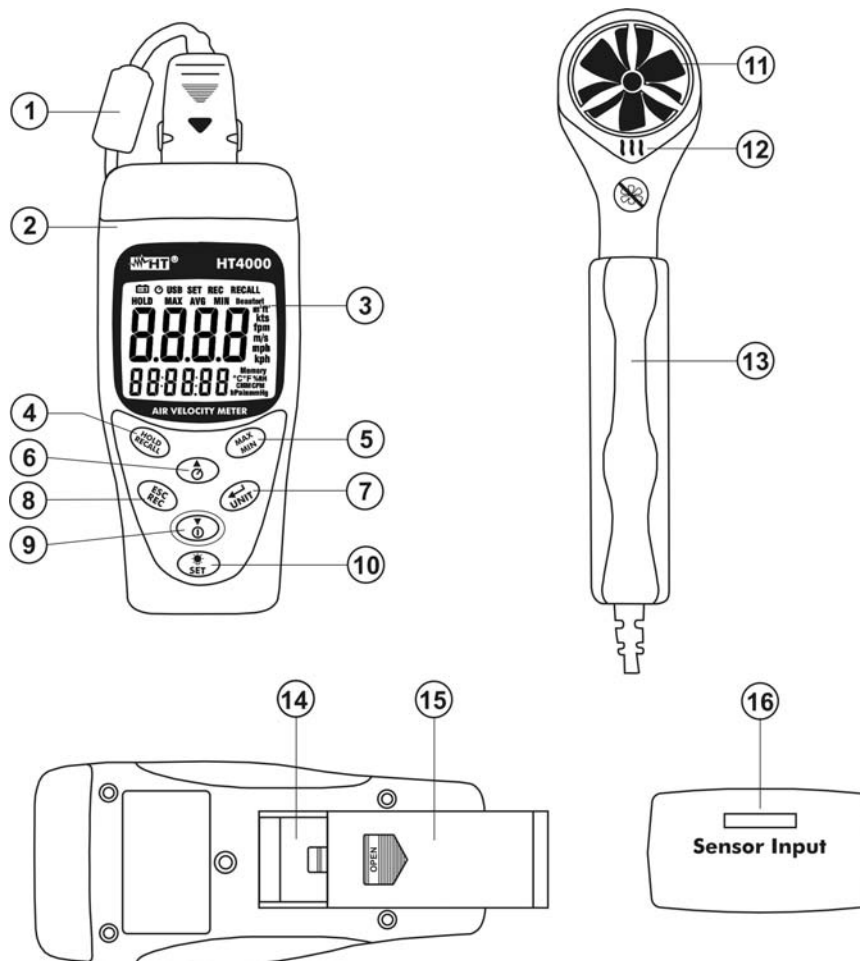
The instrument complies with the technical features listed in this manual. Its performances are guaranteed for one year.

3.4. STORAGE

In order to guarantee the accuracy of the measurements, after a period of storage in extreme environmental condition, wait for the necessary time so that the instrument returns to normal measuring conditions (see § 6.2.1).

4. OPERATING INSTRUCTIONS

4.1. INSTRUMENT DESCRIPTION



LEGEND:

1. External probe terminal
2. Internal sensor for atmospheric pressure measurement
3. LCD display
4. **HOLD/RECALL** key
5. **MAX MIN** key
6. **▲/⏻** key
7. **⬅️/UNIT** key
8. **ESC/REC** key
9. **▼/⏻** key
10. **⚙️/SET** key
11. Sensor fan
12. Sensor for temperature/humidity measurement
13. Probe handle
14. Battery compartment
15. Battery compartment cover
16. External probe input terminal

Fig. 1: Instrument description

4.2. DISPLAY DESCRIPTION



LEGEND:

1. Low battery indication
2. Indication of active Auto Power OFF
3. Main display measuring unit
4. Secondary display measuring unit
5. Secondary display
6. Main display
7. Symbols for internal functions

Fig. 2: Display description

4.3. FUNCTION KEY DESCRIPTION

4.3.1. ▼/ⓘ key

The key ▼/ⓘ has a dual function:

- ⓘ → Just press it to turn on the instrument. Press it for a longer time to turn off the instrument.
- ▼ → If the key is pressed cyclically you can select the quantities on secondary display (temperature, humidity, CMM/CFM and atmospheric pressure). The same key is also used for programming (see § 4.6)

4.3.2. HOLD / RECALL key

The key **HOLD / RECALL** has a dual function:

- **HOLD** → Press it to activate function Data HOLD that is to say freezing of the measured quantity value. The message "**HOLD**" is displayed. Press again to quit. The key is not active when programming the instrument, selecting measuring unit and recalling data to display.
- **RECALL** → Press the key for a longer time to recall the values of stored data to display (see § 4.9)

4.3.3. ▲/⓪ key

The key ▲/⓪ has a dual function:

- ▲ → If the key is pressed cyclically you can select the quantities on secondary display (temperature, humidity, CMM/CFM and atmospheric pressure). The key is used inside the programming as well (see § 4.6)
- ⓪ → Press and hold the key to disable the function Auto power OFF. The symbol "⓪" disappears. The function is automatically activated at every restart. The key is not active when programming the instrument, selecting measuring unit and recalling data to display.

4.3.4. MAX MIN key

By pushing **MAX MIN** key the parameter's maximum, minimum and average values are measured and they can be shown cyclically when pressing **MAX MIN** key. The display shows the symbol linked to the selected function: The symbol "MAX" for maximum value, "MIN" for minimum value and "AVG" for average value. On the main display the Max, Min or AVG values are displayed and dynamically updated. Push **MAX MIN** key for some seconds to quit this mode. The key is not active when programming the instrument, selecting measuring unit and recalling data to display.

4.3.5. ESC / REC key

The key **ESC / REC** has many functions:

- **REC** → Just press the key to store the displayed result. (see § 4.8)
- **ESC** → It permits to quit cancellation mode of internal memory (see § 4.10)
- It permits to set the measurement values of volumetric flow. (see § 4.6)

4.3.6. / UNIT key

The key  / UNIT has many functions:

- **UNIT** → Press and hold to select the measuring unit of quantities on the main display (see § 4.4.2)
-  → Just press to confirm selection of the measuring unit
- It permits setting the measurement values of the volumetric flow (see § 4.6)
- It permits to confirm cancellation of internal memory (see § 4.10)
- It permits to activate/disable the automatic shutdown of display backlight (see § 4.4.1)

4.3.7. / SET key

The key  / SET has a dual function:

-  → Just press to activate or deactivate display backlight
- **SET** → Press and hold to enter the set-up area for volumetric flow measurement. Backlight and memory cancellation

4.3.8. Check of displayed symbols as well as Firmware version

When the instrument is off press and hold the key  / . The instrument displays all symbols. Releasing the key the instrument displays the internal firmware version for one second before going to next screen.

4.4. PRELIMINARY OPERATIONS

4.4.1. Activation of display backlight

Just press the key  / **SET** to activate or deactivate display backlight which shuts off automatically after approx. 30s.

To activate or deactivate the function of display auto power off operate as follows:

1. Press and hold the key  / **SET** to enter the setting mode.
2. Use the arrow keys  or  to select "**bLiGHt**"
3. Press the key  / **UNIT** to set the display AutoOff"
4. Use the arrow keys  or  to able "**on**" or disable "**off**" the function
5. Press the key  / **UNIT** to confirm the function and quit the mode

4.4.2. Change of measuring unit

The instrument permits to change the measuring unit on both main display and secondary display (when measuring press the arrow keys  or  to go from one display to the other). Act as follows:

1. Press and hold the key  / **UNIT**. The measuring unit flashes on main display.
2. Press again and hold the key  / **UNIT**. The measuring unit flashes on secondary display.
3. Use the arrow keys  or  to select the measuring units: **m/s, mph, kph, Beaufort, kts, fpm** on main display or the measuring units: **°C, °F** (with external probe connected with the instrument) and **hPa, mmHg, in Hg** on secondary display (with external probe not connected with the instrument)
4. Press the key  / **UNIT** to confirm selection and quit the mode

4.5. MEASUREMENT OF AIR SPEED AS WELL AS TEMPERATURE/HUMIDITY



CAUTION



Do not touch the fans in the upper side of the external sensor to avoid any damage.



Fig. 3: Measurement of air speed and temperature/humidity

1. Connect the external probe with the upper side of the instrument through the corresponding terminal (see Fig. 1 – part 1)
2. Turn on the instrument pressing the key ①
3. Set the desired measuring unit relative to measurement of air speed and air temperature/humidity (see § 4.4.2)
4. Place the external probe parallel to air flow in the direction indicated by the arrow on its top (see Fig. 3)
5. The value of air speed is indicated on main display
6. The value of air temperature/humidity measured by the sensor of the external probe (see Fig. 1 – part 12) is shown on secondary display
7. Press the key **HOLD / RECALL** to hold the reading on display
8. For the use of the functions MAX, MIN and AVG see § 4.3.4
9. To save air speed measurement see § 4.8

4.6. MEASUREMENT OF AIR FLOW



CAUTION



Do not touch the fans in the upper side of the external sensor to avoid any damage.

1. Connect the external probe with the upper side of the instrument through the corresponding terminal (see Fig. 1 – part 1)
2. Turn on the instrument pressing the key ①
3. Set the desired measuring unit relative to measurement of air speed (see § 4.4.2)
4. Press and hold the key  / **SET** to enter the setting mode
5. Use the arrow keys ▲ or ▼ and scroll “ArEA”
6. Press the key ← / **UNIT** to enter the setting pipe area
7. Use the keys **ESC / REC** and ← / **UNIT** to select flashing digits on display and the arrow keys ▲ or ▼ to increase or decrease the value of pipe area. The maximum/minimum value to be set is **1.5m² / 0.096m²** or **16.15ft² / 1.03ft²**
8. Press the key ← / **UNIT** to confirm the area value.
9. Select the measuring unit CMM or CFM on secondary display (see § 4.4.2)
10. Place the external probe parallel to air flow in the direction indicated by the arrow on its top (see Fig. 3)
11. The value of air speed is shown on the instrument's main display
12. The value of air flow is shown on the instrument's secondary display.
13. Press the key **HOLD / RECALL** to hold the reading on display
14. For the use of the functions MAX, MIN and AVG see § 4.3.4

4.7. MEASUREMENT OF ATMOSPHERIC PRESSURE

The instrument carries out the measurement of atmospheric pressure by means of the internal sensor placed on its top (see Fig. 1 – part 2)

1. Turn on the instrument pressing the key ①
2. Set the measuring unit of atmospheric pressure on secondary display (see § 4.4.2) scrolling among **hPa (ettoPascal = mbar)**, **mmHg** or **inHg**
3. The pressure value is shown on secondary display.

4.8. SAVING OF RESULTS

The instrument is capable of storing data relative to air speed measurement into the internal memory (max 99 locations).

1. When the result is shown on main display press the key **ESC / REC**
2. The instrument shows an instantaneous message "**Memory**" on secondary display as well as the memory location where the result is saved

4.9. RECALL OF RESULTS TO DISPLAY

1. Press and hold the key **HOLD / RECALL**
2. The instrument displays the messages "**Recall**", "**Memory**" and the result value along with the memory location on secondary display
3. Press the arrow keys **▲** or **▼** to increase or decrease the number of memory location.
4. Press and hold the key **HOLD / RECALL** to quit the mode

4.10. CANCELLATION OF INTERNAL MEMORY

1. Press and hold the key  / **SET** to enter the setting mode
2. Use the arrow keys **▲** or **▼** and scroll "**CLEAR**"
3. Press the key **←** / **UNIT** to enter the cancellation mode. The instrument displays the message "**Yes**".
4. Confirm pressing the key **←** / **UNIT** or press the key **ESC / REC** to quit without deleting.

5. MAINTENANCE

5.1. GENERAL INFORMATION

1. This digital meter is a precision instrument. Whether in use or in storage, please do not exceed the specification requirements to avoid any possible damage or danger during use
2. Do not place this meter in high temperature or expose to direct sunlight
3. Be sure to turn the meter off after use. For long time storage, remove the battery to avoid leakage of battery liquid that would damage the interior parts

5.2. BATTERY REPLACEMENT

When LCD displays the symbol "⎓" replace battery.



CAUTION

Only expert and trained technicians must perform this operation. Remove all the probes from the devices under test before replacing the battery.

1. Switch OFF the instrument.
2. Remove the temperature probe
3. Remove the battery cover
4. Carefully remove the battery from the battery fastener
5. Set the new battery into battery fastener, and return it to the battery case
6. Replace the battery cover
7. Use the appropriate battery disposal methods for Your area

5.3. CLEANING

For cleaning the instrument use a soft dry cloth. Never use a wet cloth, solvents or water, etc.

5.4. END OF LIFE



CAUTION: this symbol indicates that equipment, its accessories and battery shall be subject to a separate collection and proper disposal.

6. TECHNICAL SPECIFICATIONS

6.1. CHARACTERISTICS

Accuracy is indicated as [%rdg + values] at 23°C ± 5°C <80%RH

Air speed measurement with external probe

Meas. units	Range	Resolution	Accuracy
m/s	0.4 ÷ 25	0.1	±(2%rdg+ 0.2)
Km/hr (kph)	1.5 ÷ 90		±(2%rdg+ 0.8)
mph	0.9 ÷ 55		±(2%rdg+ 0.4)
Knots (kts)	0.8 ÷ 48		
ft/min (fpm)	79 ÷ 4921	1	±(2%rdg+ 40)
Beaufort	1 ÷ 10		- -

Airflow measurement with external probe

Meas. units	Range	Resolution	Accuracy
CMM	0 ÷ 9999	1	- -
CFM			- -

Air humidity measurement with internal sensor

Meas. units	Range	Resolution	Accuracy
%RH	20 ÷ 80	0.1	±3.5%RH
	<20, > 80		±5%RH

Air temperature measurement with internal sensor

Meas. units	Range	Resolution	Accuracy
°C	-20 ÷ 60	0.1	±1°C
°F	-4 ÷ 140		±1.8°F

Atmospheric pressure measurement with internal sensor

Meas. units	Range	Resolution	Accuracy
hPa	350 ÷ 1100	0.1	±2hPa
mmHg	263 ÷ 825		±1.5mmHg
inHg	10.3 ÷ 32		±0.1inHg

6.1.1. General data

Mechanical characteristics

Dimensions of instrument (LxWxH):	130 x 56 x 38 mm ; (5 x 2 x 1 in)
Dimensions of external probe	195(L) x 47 (W) x 30(H) ; (8 x 2 x 1 in)
Length of external probe's cable:	950mm (37 in)
Weight of instrument (including battery):	160g (6 ounces)
Weight of external probe:	100g (4 ounces)

Supply

Battery type:	1x9V alkaline NEDA 1604 IEC 6F22 JIS 006P
Low battery indication:	"  "
Battery life:	about 100 hours
Auto power off:	after 15 minutes of idleness

Display

Main display:	4 LCD, decimal point and backlight
Secondary display:	6 LCD, decimal point and backlight

Memory

max 99 locations

6.2. ENVIRONMENTAL CONDITIONS

6.2.1. Climatic conditions

Reference temperature:	23°C ± 5°C ; (73°F ± 41°F)
Operating temperature:	5°C ÷ 40 °C ; (41°F ÷ 104°F)
Operating humidity:	<80%RH
Storage temperature:	-10°C ÷ 50°C ; (14°F ÷ 122°F)
Storage humidity:	<70%RH
Max height of use:	2000m (6562 ft)

This instrument complies with the requirements of the EMC Directive 2004/108/CE
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6.3. ACCESSORIES

- Instrument HT4000
- External probe
- Carrying bag
- Battery
- User manual

7. SERVICE

7.1. WARRANTY CONDITIONS

This equipment is guaranteed against material faults or production defects, in accordance with the general sales conditions. During the warranty period (one year), faulty parts may be replaced. The manufacturer reserves the right to decide either to repair or replace the product.

In case of returning of the instrument, all transport charges must be paid by the customer. The instrument must be accompanied by a delivery note indicating the faults or reasons of returning. The returned tester must be packed in its original box. Any damage occurred in transit because of lack of original packaging will be debited to the customer.

The manufacturer is not responsible for any damage against persons or things.

Accessories and batteries are not covered by warranty.

The warranty won't be applied to the following cases:

- Faults due to improper use of the equipment.
- Faults due to combination of the tester with incompatible equipment.
- Faults due to improper packaging.
- Faults due to servicing carried out by a person not approved by the company.
- Faults due to modifications made without explicit authorization of our technical department.
- Faults due to adaptation to a particular application not provided for by the definition of the equipment or by the instruction manual.

The contents of this manual cannot be reproduced in any form without our authorization.

Our products are patented. Our logotypes are registered. We reserve the right to modify characteristics and prices further to technological developments.

7.2. SERVICE

If the equipment doesn't work properly, before contacting the SERVICE, test the battery the probes and change them if necessary.

If the equipment still doesn't work, make sure that your operating procedure complies with the one described in this manual.

In case of returning of the instrument, all transport charges must be paid by the customer.

The instrument must be accompanied by a delivery note indicating the faults or reasons of returning. The returned tester must be packed in its original box. Any damage occurred in transit because of lack of original packaging will be debited to the customer.