



Air velocity Pressure Humidity Air flow Temperature

DIRECTIONS FOR USE

CLASS 300

New

SMART MULTI-FUNCTIONS DEVICES

CE

VT 300, 300 PRO and 300 ST





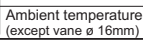
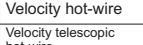
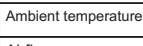
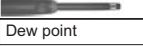
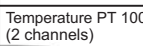


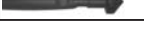
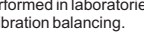

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TECHNICAL SPECIFICATIONS

The VT 300 is a multi-function instrument, compatible with all SMART PRO probes, and with all thermocouple K temperature probes. The SMART PRO probes are supplied with calibration or adjusting certificate (last calibration date display when connected). They are automatically recognized when connected, and are fully interchangeable.

		Units of measure	Measuring ranges	Accuracies**	Resolutions
THERMO ANEMO A HELICE	 Velocity vane Ø100mm	m/s, fpm	0,20 to 3m/s 3,1 to 35m/s	±2% of reading ±0,06m/s ±2% of reading ±0,2m/s	0,01m/s 0,1m/s
	 Velocity vane Ø70mm	m/s, fpm	0,3 to 35m/s	±2% of reading ±0,1m/s	0,1m/s
	 Velocity vane Ø16mm	m/s, fpm	0,6 to 40m/s	±2% of reading ±0,1m/s	0,1m/s
	Ambient temperature (except vane ø 16mm)	°C, °F, K	-20 to +80°C	±2% of reading ±0,1°C	0,1°C
	Airflow	m ³ /h, cfm, l/s, m ³ /s	0 to 65000m ³ /h	±3% of reading ±10m ³ /h	1m ³ /h
THERMO ANEMO A FIL CHAUD	 Velocity hot-wire	m/s, fpm	0 to 3m/s 3,1 to 30m/s	±3% of reading ±0,03m/s ±3% of reading ±0,1m/s	0,01m/s 0,1m/s
	 Velocity telescopic hot-wire	m/s, fpm	0 to 3m/s 3,1 to 30m/s	±3% of reading ±0,03m/s ±3% of reading ±0,1m/s	0,01m/s 0,1m/s
	Ambient temperature	°C, °F, K	-20 to +80°C	±2% of reading ±0,1°C	0,1°C
	Airflow	m ³ /h, cfm, l/s, m ³ /s	0 to 65000m ³ /h	±3% of reading ±10m ³ /h	1m ³ /h
THERMO HYGRO	 Humidity	%RH, g/kg	3 to 98%RH	±1% of reading ±1,5%RH	0,1%RH
	 Dew point	°C, °F, K	-20 to +80°C	±2% of reading ±0,1°C	0,1°C
	 Ambient temperature	°C, °F, K	-20 to +80°C	±2% of reading ±0,1°C	0,1°C
THERMOMETRE	 Temperature PT 100 (2 channels)	°C, °F, K	-100 to +400°C	±2% of reading ±0,1°C	0,1°C
	 Thermocouple K* (2 channels)	°C, °F, K	-200 to -40°C -39 to +999°C +1000 to +1300°C	±1% of reading ±1,2°C ±0,5% of reading ±0,8°C ±1% of reading ±1,2°C	0,1°C 0,1°C 1°C
TACHY	 Optic	tr/min, rpm, m/min,	60 to 50000tr/min	±0,5% of reading ±1tr/min	1tr/min
	 Contact	ft/min, ln/min	4 to 2500m/min 30 to 20000tr/min	±2% of reading ±1m/min	0,1m/min 1 tr/min

* The thermocouple K probes do not use the SMART PRO system.

** Performed in laboratory conditions, accuracies mentioned in this document will be guaranteed, subject to the same conditions or to a calibration balancing.

HYGROMETRY PROBE :

Maximum interval guaranteed* :

EMG (GAL) = ±2,70 %RH between 18 and 28°C (general field)

Range of measurement : 3 to 98%RH
Drift at short time : better than 1%RH / year
Response time : 10 seconds

$$* EMG = Et + Ehl + k (uet^2 + ur^2 + ud^2 + us^2) / 2$$

As per the 2000/2001 hygrometer chart :

uet : uncertainty of calibration = ± 0,55%RH

ur : uncertainty of resolution = ± 0,003%RH

ud : uncertainty of manufacturing = ± 0,17%RH

us : repetition of comparison = 0,11%RH

Et : difference due to thermal deflection = ± 0,28%RH

Ehl : difference due to hysteresis and linearity = ± 1,25%RH

k : expansion factor = 2%RH

DISPLAY :
Graphic, with automatic backlighting. Size 66 x 33 mm.

HOUSING :
Shock-proof, made of ABS/PC, with Elastomer edges.

KEYPAD :
Made of Elastomer : 4 keys and one control knob.

CONNECTIONS :
Connectors : mini-DIN secured plugs.
Thermocouple K connectors : compensated miniature plugs
Numeric connection output : USB.

COMMUNICATION MODE :
RS 232.

MEASURING ELEMENTS :
Vane anemometer : Hall effect sensor
Hotwire anemometer : thermistance with negative temperature factor.
Hygrometry : capacitive element
Pt 100 temperature : Pt 100 class A
Thermocouple temperature : Thermocouple K class 1
Optical tachometry : optical detection (phototransistor)
Contact tachometry : ETC type adaptor fitting optical tachometry probe.

CONFORMITY :
Electromagnetical compatibility (norm NF EN 61326-1)

POWER SUPPLY :
4 Alcaline batteries 1,5 V LR6

WORKING ENVIRONMENT :
Neutral gas

WORKING TEMPERATURE :
From 0 to 50°C.

STORAGE TEMPERATURE :
From 0 to 50°C.

DIMENSIONS :
183 x 100 x 40 mm

WEIGHT :
450 g

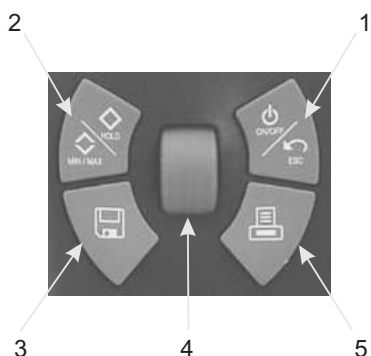
LANGUAGES AVAILABLE :
French, English, Spanish, Portuguese, Italian, German, Dutch.

INTRODUCTION

► Description :

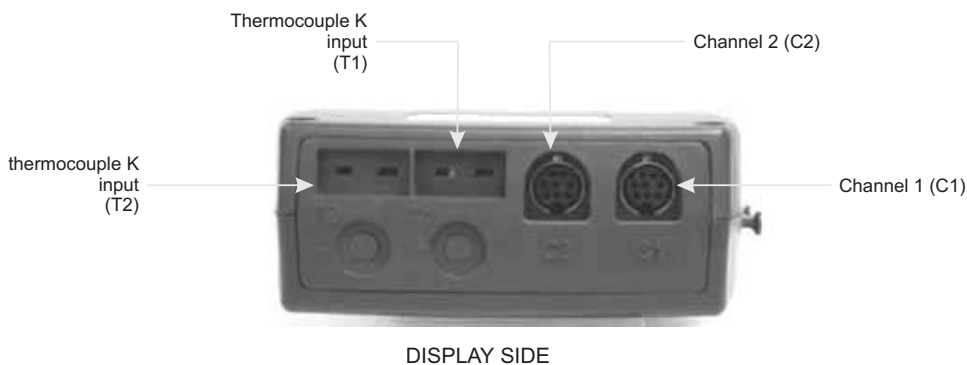


► **Keyboard :**



1. ON/OFF : Switch on / switch off the instrument.
ESC : Return to the previous page or on the last validated data.
2. Press 1 time : HOLD function, freeze the current measure.
Press 2 times : show the values minimum and maximum measured.
Press 3 times : return to the current menu measure.
3. Recording : allow to memorize data.
4. Press on the control knob to validate.
Browse the menu by scrolling down the knob.
5. Print out of data on a printer.

► **Connections :**



USB port for connection to the printer and joining to a PC

- **Channel 1 (C1)** : Connection of the hot-wire air velocity, vane air velocity, hygrometry, tachometry (optic or contact), and Pt 100 temperature probes.
- **Channel 2 (C2)** : Connection of a second PT100 probe.
- **T1 and T2** : Connection of thermocouple K probes

INTRODUCTION OF THE MENU

To switch on the instrument, press the key "ON/OFF".

The screen shows the name of the device, its serial number, its calibration date, the date and hour (see photo below).



To access to one menu, connect the corresponding probe. If this one uses the SMART PRO system, the screen shows the type of the connected probe, and its calibration or adjusting date. To access to the menu press on the knob. To return to the homepage, disconnect the probe.

To switch off the instrument, press some seconds on the "ON/OFF" key.

TEMPERATURE MENU

When you connect your probe(s) (see connections p. 3), the screen shows its characteristics. It is possible to connect up to 2 probes PT100 and 2 probes thermocouple K at the same time. Press then on the knob to enter in the menu temperature, the measured value is shown in the screen and the following menu appears on the last line (by browsing the menu by scrolling down the knob):

- Units
- Delta T (only if 2 probes of identical technology are connected)

To validate a function, press on the knob when the wished function is shown on the screen.

**Display : T1 and T2 : thermocouple K probes
C1 and C2 : PT100 probes**

- **Units** :
See p. 6
- **Delta T** :
See p. 7

HOT-WIRE ANEMOMETRY MENU

When you connect a hot-wire probe, the screen shows its characteristics (do not forget to slide below the protective tube on a level of the sensitive element). Press then on the knob to enter in the menu hot-wire anemometry, the screen shows the measured values in air velocity and in temperature, and the next menu appears on the last line (by browsing the menu by scrolling down the knob) :

- Units
- Automatic average
- Point / point average
- Automatic point / point average
- Airflow (rectangular, circular, airflow cones)
- Delta T (only if one PT100 probe is connected on C2)

To validate a function, press on the knob when the wished function is shown on the screen.

- **Units :**
See p. 6
- **Automatic average :**
See p. 7
- **Point / point average :**
See p. 7
- **Automatic point / point average :**
See p. 7
- **Airflow :**
See p. 7
- **Delta T :**
See p.7

VANE ANEMOMETRY MENU

When you connect a vane probe, the screen shows its characteristics. Press then on the knob to enter in the menu vane anemometry, the screen shows the measured values in air velocity and in temperature (for the Ø16mm vane probe, only the air velocity appears) and the next menu appears on the last line (by browsing the menu by scrolling down the knob) :

- Units
- Automatic average
- Point / point average
- Automatic point / point average
- Airflow (rectangular, circular, cone : only for the vane Ø100 mm probe)
- Delta T (only if one Pt100 probe is connected on C2 and if you use a vane probe Ø70 or 100mm)

To validate a function, press on the knob when the wished function is shown on the screen.

- **Units :**
See p. 6
- **Automatic average :**
See p. 7
- **Point / point average :**
See p. 7
- **Automatic point / point average :**
See p. 7
- **Airflow :**
See p. 7
- **Delta T :**
See p.7



HYGROMETRY MENU

When you connect a hygrometry probe, the screen shows its characteristics. Press then on the knob to enter in the hygrometry menu, the screen shows the measured values in humidity, temperature, absolute humidity and dew point temperature and the next menu appears on the last line (browse the menu by scrolling down the knob):

- Units
- Psychrometry
- Contact dew point temperature (only if a PT100 probe is connected)
- Delta T (only if a PT100 probe is connected)

To validate a function, press on the knob when the wished function is shown on the screen.

➤ **Units :**

See p. 6

➤ **Psychrometry :**

When you access to the sub-menu "Psychrometry", the display shows the temperature, the humid temperature (Tw), the humidity, the absolute humidity (ρ_v) and the enthalpy (i). To come out of the psychrometry menu, press on "ESC".

➤ **Contact dew point temperature :**

When you enter to this sub-menu, the screen shows the temperature of the PT100 probe (external), the temperature of the contact dew point (Td), the humidity and the temperature integrated in the hygrometry probe. To come out of the dew point temperature menu, press on "ESC".

➤ **Delta T :**

See p. 7

TACHOMETRY MENU

When you connect a tachometry probe, the screen shows its characteristics. Press then on the knob to enter in the tachometry menu. Browse the menu by scrolling down the knob, then select the type of the tachometry probe you have connected (optic or contact). If you use an optical probe, it is necessary to mark the turning part with a little piece of reflective tape. The screen shows the measured value and the next menu appears on the last line:

- Units

To validate this function, press on the knob.

➤ **Units :**

See p. 6

SUB-MENUS

➤ **Units :**

Browse the different available units by scrolling down the knob and validate pressing on the knob. When you have the choice between various parameters (velocity and temperature, for example), you have to validate each unit of measure.

➤ **Delta T :**

When 2 PT100 probes or 2 thermocouple K probes are connected, you have the possibility of calculate the Delta T which corresponds to the difference between the temperature measured by C1 (or T1) and C2 (or T2). If 2 PT100 probes and 2 thermocouple K probes are connected at the same time, the screen shows 2 delta T. To come out of this function, press the touch "ESC".
Reminder: possible only between 2 probes of identical technology.

➤ **Automatic average :**

This function allows to calculate the average value that the device measured in an interval of chosen time. When "Departure" appears on the screen, press on the knob to start the calculation. The screen registers the sold time. To stop and reach the result, press again on the knob. The results are registered on the screen: average (s), minimum value (s), maximum value (s), standard deviation(s) as well as the duration of the calculation. Press on "ESC" to return to the previous page (by pressing on the knob, you begin a new calculation).

➤ **Point / point average :**

This function allows to calculate the average value of various points which you will have validated. The scrolling down menu allows to validate a point or to reach the average of points previously validated. To validate a point, press on the knob. Validate as many points as necessary, then by means of the knob, choose "Average" and validate. The screen shows then: average(s), count of validated points, minimum value(s), maximum value(s) and standard deviation(s). To show the values of the various points, press on the knob. Press then on "ESC": once to return to the previous display, twice to begin another calculation and three times to go out of the menu "point / point average".

➤ **Automatic point / point average :**

This function allows to calculate the average value of various points, calculated themselves on a duration beforehand defined.
It is necessary to choose at first the duration on which will be calculated each of the points; browse the figures by scrolling down the knob and validate every number by pressing on the knob. Once the duration validated, the scrolling down menu gives you access to the validation of points and to the average. Proceed then in the same way as for the calculation of "average point / point" (previous paragraph).

➤ **Airflow :**

When you enter in this menu, it is necessary to begin by selecting the type of diffuser : rectangular, circular or cone (with hot-wire probe and vane Ø100 mm probe) by scrolling down the knob

- **Rectangular** : browse then the units of measurement by scrolling down the knob and validate. Enter the length of the diffuser. Browse each figure by scrolling down the knob and validate pressing on the knob (to return to the previous figure, press on "ESC"). Proceed in the same way for the width.

You have access to a new scrolling down menu :

- Units (see p. 6)
- Automatic average (see p. 7)
- Point/point average (see p. 7)
- Automatic point/point average (see p. 7)



- **Circular** : browse then the units of measurement by scrolling down the knob and validate. Enter the diameter of the diffuser. Browse each figures by scrolling down the knob and validate pressing on the knob. You have access to a new scrolling down menu :

- Units (see p. 6)
- Automatic average (see p. 7)
- Point/point average (see p. 7)
- Automatic point/point average(see p. 7)

- **Cones (for hot-wire and vane Ø100 mm anemometry) :**

- *For hot-wire anemometry* : Select the reference of the cone used (K35, K75,...) by the means of the knob, then the mode of ventilation (exhaust or supply). Validate, the measure appears and the screen shows the following menu :

- Units (see p.6)

- *For vane Ø100 mm anemometry* : The screen displays "K25 cone". Validate, the measure appears and the screen shows the following menu :

- Units (see p.6).

SETTINGS

To reach the various settings, switch on the device (do not connect a probe). Press then on "ON / OFF".

The following scrolling down menu appears :

- Date and hour
- Retro-lighting
- Contrast
- Keys Beep
- Languages
- Automatic stop

To validate a function, press on the knob when the wished function is shown on the screen.

➤ **Date and hour** :

Use the knob to settle each figures of the date and of the hour, and validate at each time pressing on the knob. To return to a figure previously validated, press on "ESC".

➤ **Retro-lighting** :

It is possible to activate or to deactivate the retro-lighting of the display : by means of the knob choose "ON", "OFF" or "automatic" and press to validate. To go out of this menu, press on "ESC".

➤ **Contrast** :

By the means of the knob, adjust the contrast of the screen from 0 to 7 and validate by pressing on the knob.

➤ **Keys beep** :

It is possible to activate or to deactivate the tone of keys. Validate the chosen option by pressing on the knob.

► **Languages :**

By the means of the knob, browse the different available languages and validate pressing on the knob.

► **Automatic stop :**

It is possible to cancel the automatic stop of the device or to settle it. For that purpose, use the scrolling down knob and choose "OFF" to cancel the automatic stop or choose a value (by slice of 15 minutes).

When you restore data on PC, the automatic stop does not work, but at the end of the load, the device goes out automatically.

DATA RECORDING, PRINTING AND DELETING

Before enter in the menu "recording", it is necessary to connect the probes that will be used. Enter in the menu which you wish to record. Press the key "Recording" (see p. 3) to reach the menu "Datalogger". At the bottom of the screen appears the following scrolling down menu:

- New
- Print.
- Delete

It is thus possible to print data, to record or to delete them.

► **New :**

This function allows to register a new campaign of measures. It is necessary to enter first of all the name of the file (12 characters at most). Browse the letters by scrolling down the knob and validate every character by pressing on the knob or by choosing the symbol ◀ if you enter less than 12 characters. Choose then if you wish a manual or automatic recording of the data (by means of the knob).

- **Manual recording :** validate as many points as you wish by pressing on the knob (the number of registered points is indicated on the last line). Press on the key "Recording" to stop the recording. If you really wish to stop, choose "Yes" and to continue to register points, click on "No" (by means of the knob).

- **Automatic recording:** By means of the knob, choose the interval of time between the recording of each of the points (the minimum is of 5 seconds). Choose then the duration on which points are going to be registered (validate the number of days, hours and minutes) then validate. The recapitulative appears on the screen. To begin the recording, press twice on the knob. Once the ended recording, the device switches of. To stop the current recording, press on "Recording". If you really wish to stop, choose "Yes" and to continue the recording, click on "No" (by means of the knob).

To restore the data registered on a PC, switch on the device (without any probe) and connect the cordon on the port USB (see p. 3). **During the recordings, the automatic stop of the device does not work, but at the end of the procedure, it will switch off automatically.**



➤ ***Print :***

When "Print" is validated, by means of the knob, choose the campaign which you wish to print and validate by pressing on the knob. Go out of the menu "printing" by pressing on "ESC".

➤ ***Delete :***

This function allows to delete the campaigns of measure stored in the device. To enter in the menu "delete", validate by pressing on the knob. Then, always by means of the knob, choose to cancel or to confirm the demand.

GUARANTEE

KIMO provides a one-year guarantee, starting from the date on which the appliance was originally purchased, that any new appliance will be free of any manufacturing or structural defects. This guarantee does not cover defects resulting from incorrect handling or from any repairs which may be made by persons other than the manufacturer.

Any defects covered by this guarantee will be repaired free of charge. An estimate will be provided for any damage not covered by this guarantee. The customer's prior approval will be requested before any repairs are done.

KIMO will see to the replacement of any constituent parts of this appliance.

Any appliance, whether under guarantee or not, must be returned carriage paid. A letter detailing the faults defected should be sent with the appliance whenever possible.

CALIBRATION

All KIMO devices are calibrated in our premises and supplied with a calibration certificate, as per the AFNOR FD X 07-012 norms, in accordance with the National Standards.

In order to comply with standards of Quality Assurance, measuring devices should be checked annually.

Ref. NT Ang - VT 300 - 11/02 C

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