USER MANUAL

MADE IN ITALY

Temp7 PT100 √io
Temp7 K/T √io
Temp7 NTC √io

Summary

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1. Safety information

- ***Meaning of warning words and symbols***

This manual contains extremely important safety information, in order to avoid personal injury, damage to the instrument, malfunctions or incorrect results due to failure to comply with them. Read entirely and carefully this manual and be sure to familiarize with the tool before starting to work with it.
This manual must be kept near to the instrument, so that the operator can consult it easily, if necessary.
Safety provisions are indicated with warning terms or symbols.

- ***Reporting terms***

ATTENTION for a medium-risk hazardous situation, which could lead to serious injury or death, if not avoided.

ATTENTION for a dangerous situation with reduced risk which can cause material damage, data loss or minor or medium-sized accidents, if not avoided.

WARNING for important information about the product.

NOTE for useful information about the product.

Warning symbols:

Attention

This symbol indicates a potential risk and warns you to proceed with caution.

Attention

This symbol draws attention to a possible danger **from electric current.**

Attention

The instrument must be used following the indications of the reference manual. Read instructions carefully.

Advice

This symbol draws attention to possible damage to the instrument or instrumental parts.

Note

This symbol highlights further information and tips.

- ***Additional documents providing safety information***

The following documents can provide the operator with additional information to work with the measuring system safely:

- specific notes on product safety.

- ***Use according to destination***

This instrument is designed exclusively for temperature measurements both in the laboratory and directly in the field.
Pay attention to the technical specifications shown in the INSTRUMENT FEATURES / TECHNICAL DATA table; any other use is to be considered unauthorized.
This instrument has left the factory in perfect technical and safety conditions.
The regular functionality of the device and the operator safety are guaranteed only if all the normal laboratory safety standards are respected and if all the specific safety measures described in this manual are observed.

- ***Basic requirement for safe use***

The regular functionality of the device and the operator safety are guaranteed only if all the following indications are respected:

- the instrument can be used in accordance with the specifications mentioned above only;
- the instrument must operate exclusively in the environmental conditions indicated in this manual;
- the only part of the instrument that can be opened by the user is the battery compartment. Perform other operations only if explicitly authorized by the manufacturer.

- ***Unauthorised use***

The instrument must not run, if:

- it is visibly damaged (for example due to transportation);
- it has been stored for a long period of time in adverse conditions (exposure to direct light, heat sources or places saturated by gas or vapours) or in environments with conditions different from those mentioned in this manual.

- ***Device maintenance***

If used correctly and in a suitable environment, the instrument does not require maintenance procedures.
It is recommended to occasionally clean the instrument case with a damp cloth and a mild detergent.
This operation must be performed with the instrument off and by authorized personnel only.
The housing is in ABS / PC (acrylonitrile butadiene styrene / polycarbonate). This material is sensitive to some organic solvents, for example toluene, xylene and methyl ethyl ketone (MEK).
If liquids get into the housing, they could damage the instrument.
Do not open the instrument housing: it does not contain parts that can be maintained, repaired or replaced by the user. In case of problems with the instrument, contact your local distributor.
It is recommended to use original spare parts only. Contact your local distributor for information. The use of non-original spare parts can lead to malfunction or permanent damage to the instrument. Moreover, the use of spare parts not guaranteed by the supplier can be dangerous for the user himself.

- ***Responsibility of the instrument owner***

The person who owns and uses the tool or authorizes its use by other people is the owner of the tool and is responsible for the safety of all users of the tool and third parties.
The owner of the instrument must inform users of the use of the same safely in their workplace and on the management of potential risks, also providing the required protective devices.
When using chemicals or solvents, follow the manufacturer's safety data sheets.

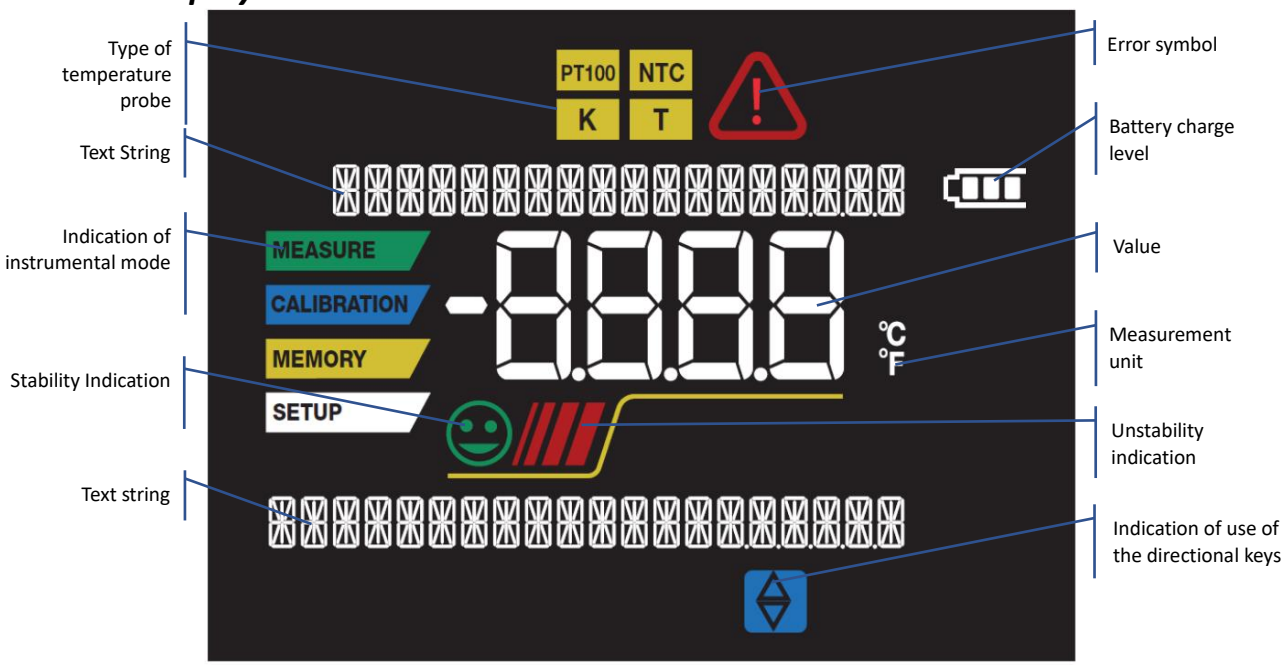
2. Instrumental Features

- ***Datasheet***

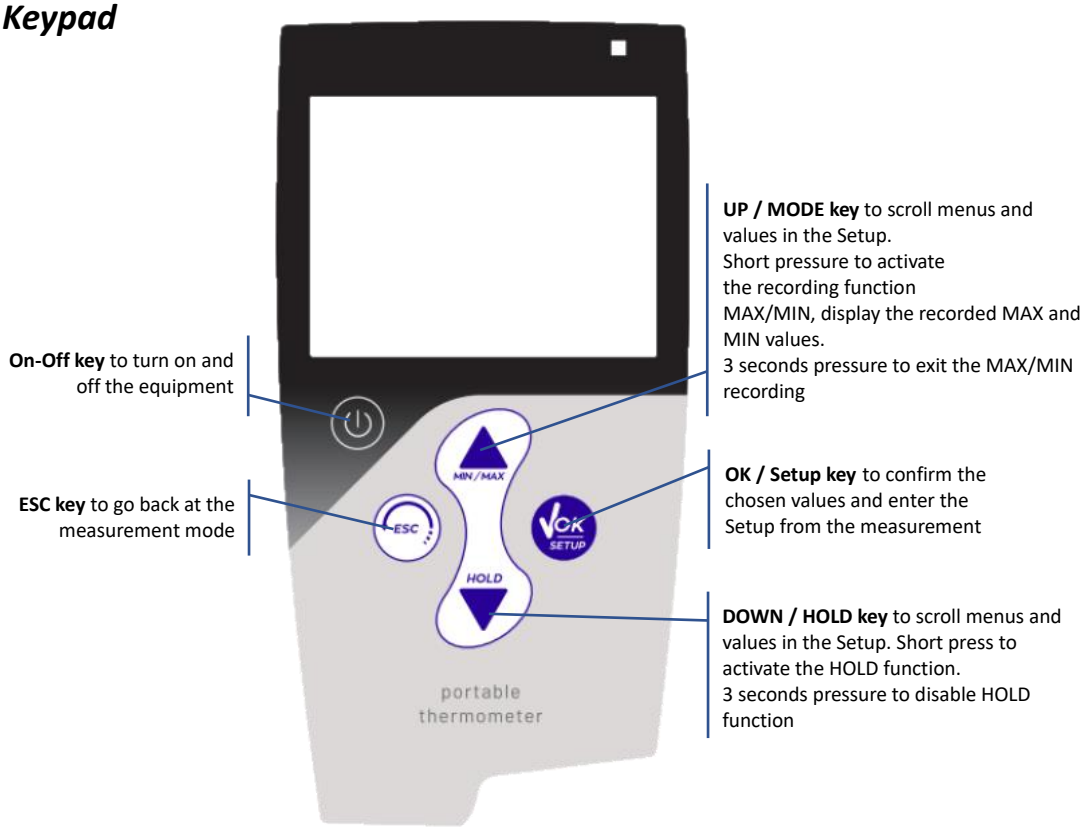
		Instruments		
		Temp7 PT100 Vio	Temp7 K/T Vio	Temp7 NTC Vio
Temperature	Probes	PT100	Thermocouple K e T	NTC 30KΩ
	Input	Single connector 3 pin	Single connector ANSI	Single connector CINCH / RCA
	Range of measurement	-200…+999 °C	Thermocouple K: -200…+1350 °C Thermocouple T: -250…+400 °C	-50,0…+150,0 °C
	Resolution	0,1 °C (da -99,9 a +199,9) 1 °C on the full scale	0,1 °C (da -99,9 a +199,9) 1 °C on the full scale	0,1 °C
	Accuracy	±2 °C (-200…-100 °C) ±0,2 °C (-99,9…+199,9 °C) ±2 °C (+200…+999 °C)	±0,1% of the read / ±0,4 °C (over –150 °C) ±0,25% of the read / ±1 °C (below –150 °C)	±0,2 °C
System	Display	High-definition colours LCD, Backlit		
	Brightness setup	Manual		
	Sleep Mode	Yes		
	Auto turn off	Yes, 20 minute (deactivable)		
	LED Indication	Yes		
	Measurement stability	Yes		
	HOLD function	Yes		
	Read MAX/MIN	Yes		
	Offset regulation	Yes		
	Working conditions	Temperature: 0…+60 °C Humidity: <95% U.R. (not steamed)		
	Maximum altitude	2000 m		
	Dimensions	185 x 85 x 45 mm		
	Weight	400 g		
	IP grade	IP 56		
	Sound level during standard operation	< 80 dB		
	Power supply	3 x 1,5V “AA” alkaline		
	Battery life	> 550 hours		
	Reference legislation	EMC 2014/30/UE RoHS 2011/65/EU EN 61326-1		

3. Instrument Description

- ***Display***



- ***Keypad***



- ***LED***

All instruments are equipped with a two-color LED (red and green) that provide the user with important information about the system status:

Function	LED	Description
Power on	**GREEN**	*Fixed on*
Power off	**RED**	*Fixed on*
Instrument in Standby	**GREEN**	*Flashing every 20 s*
Stable Measurement	**GREEN**	*Flashing every 3 s*
Error during measurement	**RED**	*Flashing every 3 s*
Confirmation of one selection	**GREEN**	*On for 1 s*

4. Setup

- ***Supplied components***

The instrument is always supplied inside the specific carrying case; the version without sensor is always supplied with:

instrument with batteries, screwdriver, user manual.

There are versions with sensor already included. Contact your local distributor to be updated on the correct composition of the sales kit.

- ***Start-up***

- The device leaves the factory ready to be used by end-user.
- Batteries are included.

- ***Switching On/Off***

Turn on the system by pressing the button  . The display initially activates all segments and then appears:

- model and firmware of the instrument;
- settings related to the most important parameters;
- the instrument switches on temperature measuring mode;
- to switch off the instrument, press the key  in measure mode.

- ***Batteries replacement***

The instrument works with 3 AA 1.5V batteries.

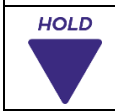
To proceed with the replacement:

1. Turn off the instrument;
2. turn the instrument downwards, with the part of the connectors resting on a support plane, so that the battery-stop cap faces up, towards the user;
3. holding down the battery stopper with two fingers, with the screwdriver provided, completely unscrew the screw close to the battery symbol;
4. Remove the battery stopper cap with the help of the lanyard;
5. Remove the 3 exhausted batteries and insert the new ones. Pay attention to the correct polarity. Follow the diagram above the battery symbol in the rear compartment of the instrument;
6. Reinsert the battery stopper cap; always hold it with two fingers, insert the screw and tighten.

- ***Instrument transportation***

The instrument is always supplied with the appropriate carrying case. Use the original case only, to transport the instrument. If you need to buy it again, contact your local distributor.
The interior of the case is shaped to be able to house the instrument and the sensors still connected.

- ***Keys Function***

Key	Press	Function
	Short	Press to turn the device on or off
	Short	In measure mode, press to enter the setup. In the setup menus, press to select the desired program and / or value
	Short	In setup mode, press to go back to measurement mode
	Short	MAX/MIN memory activation, MAX value display and MIN value display. It is used to scroll and change the parameters of the Setup menu
	Long-Press (3 sec)	3 seconds pressure to turn off MAX/MIN recording
	Short	Activation and deactivation of HOLD function. It is used to scroll and change the parameters of the Setup menu

IMPORTANT:

- **When the Sleep mode is active (by default after two minutes of inactivity of the instrument) press any key to reactivate the brightness of the display.**
- **Only at this point do the keys regain their function.**

- ***Input / Output Connection***

Use only original accessories and guaranteed by the manufacturer.
Contact your local distributor for further support.

Temp7 PT100 Vio upper panel

Temp7 K/T Vio upper panel

Temp7 NTC upper panel

Read user manual before connecting the probes

- ***Display symbols and icons***

Symbols	Description
PT100 NTC K T	Type of probe connected
	Error in measurement
	Battery charge indication
	Measurement stability indicator
	The bars scroll if the measurement is not stable
	Press the directional keys to change the parameter or value on the display

5. Device Operation

On the left side of the display through a string of different colors is always indicated in which mode the tool is located.

String	Meaning
MEASURE	The instrument is in measure mode.
MEMORY	The instrument is in the recall phase of the recorded MAX or MIN value or the HOLD function is active.
SETUP	The user is in the setup mode. The configuration menus can concern the characteristics of the parameters or the general setting of the instrument

6. Setup Menu

SETUP

- *In measure mode, press the key* OK SETUP *to enter SETUP mode, select the parameter you want to edit by using the directional keys and confirming with* OK SETUP *;*
- *Within the selected menu, move between the different programs using the directional buttons and press the button* OK SETUP *to access the submenu you want to edit;*
- *The icon* *indicates that the value or parameter to choose is editable using the directional keys.*
- *Using the keysi* MIN/MAX *and* HOLD *choose the desired option or change the numerical value and confirm with* OK SETUP *;*
- *Press the key* ESC *to return to the previous menu.*

• Structure of the Setup menu

P7.0 TEMP SETTINGS

P7.1 Thermocouple (only for Temp7 K/T Vio)
P7.2 Offset settings
P7.6 Reset settings

P9.0 SETTINGS

P9.1 Temperature unit
P9.3 Backlight mode
P9.4 Brightness
P9.5 Sleep mode
P9.8 Reset settings
P9.9 Auto off

7. Temp settings parameter

SETUP

- In measure mode press OK SETUP to access the SETUP menu;
- Press the button OK SETUP to access the **TEMP SETTINGS P7.0 menu**;
- Move with the keys MIN/MAX and HOLD to select the program you want to access.

In the table below is the structure of the Setup menu for the parameter, for each program are reported the options that the user can choose and the default value:

Temp settings Menu

Program	Description	Options	Factory Default Settings
P7.1	THERMOCOUPLE	K – T	K
P7.2	OFFSET SETTINGS	± 5 °C (±10 °C per Temp7 K/T Vio)	---
P7.6	RESET SETTINGS	YES – NO	NO

P7.1 Thermocouple (only for Temp7 K/T Vio)
Go to this Setup to set the type of thermocouple used (K - T).

P7.2 Offset settings
Go to this Setup to set offset.

***Note**: Access the menu only with the temperature probe connected.*
If menu P 7.2 is accessed without a temperature sensor connected,

the display will show the error message: "CONNECT THE PROBE", accompanied by the flashing icon ⚠ .

***Note**: For the Temp7 K/T Vio thermometer, pay particular attention to the type of thermocouple connected and the lit yellow icon at the top of the display. Depending on the type of probe set, the Offset of the probe will be changed.*

P7.6 Reset settings
Access this Setup to reset the parameters in the Temp settings menu.
The reset will reset all values to the default values shown in the table above.

***Note**: When the reset is complete, the instrument returns to measurement mode and the parameters are reset to their default settings.*

8. Instrument Setup Menu

SETUP

- In measurement mode press to access the SETUP menu OK SETUP to access the SETUP menu;
- Press the MIN/MAX or HOLD key to move to the **SETTINGS** menu **P9.0**;
- Press the OK SETUP button to access the menu;
- Use the MIN/MAX and HOLD buttons to select the programme you wish to access.

The table below shows the structure of the Setup menu for the parameter, for each programme the options that the user can choose and the default value are listed:

Menù Settings Composition

Program	Description	Options	Factory Default settings
P9.1	TEMPERATURE UNIT	°C - °F	°C
P9.3	BACKLIGHT MODE	INDOOR / OUTDOOR	INDOOR
P9.4	BRIGHTNESS	LOW / NOR / HIGH	NOR
P9.5	SLEEP MODE	2 MIN / 5 MIN / OFF	2 MIN
P9.8	RESET SETTINGS	YES / NO	NO
P9.9	AUTO OFF	YES / NO	YES

P9.1 Temperature unit

Access this Setup to set the unit of temperature measurement (°C - °F).

***Note**: By setting a different unit of measurement, the offset will also be converted to the new unit of measurement. Offset correction is visible when the instrument is switched on.*

P9.3 Backlight mode

Access this setup menu to select the contrast mode to use for the display backlight:

- **INDOOR (In)** – Default option - Recommended if you use the device indoors;
- **OUTDOOR (Out)** – Recommended if you use the device outdoors.

P9.4 Brightness

Access this setup menu to choose between three different levels of display brightness:

- **LOW** – low;
- **NORMAL** – medium;
- **HIGH** – high.

***Note**: Keeping the display bright always adversely affects battery life.*

P9.5 Sleep mode

Access this setup menu to select whether and after how long activating the device Sleep mode.

- **OFF**: Sleep mode off;
- **2 MIN**: The instrument enters Sleep mode if no key is pressed for 2 minutes;
- **5 MIN**: The instrument enters Sleep mode if no key is pressed for 5 minutes.

When the device is in Sleep mode, the brightness of the display is reduced to a minimum, significantly saving battery consumption.

***Note**: To exit from the Sleep mode and return the display to normal brightness, press ANY button. Once the display brightness is activated, the buttons reacquire their function (paragraph "Key function").*

P9.8 Reset settings

Access this setup menu to restore the instrument to factory conditions, as referred to the above chart.

P9.9 Auto-off

Access this setup menu to activate or deactivate the auto-shutdown of the instrument.

- **YES:** The instrument automatically turns off after **20 minutes** of inactivity;
- **NO:** The instrument remains always on, even if you are not using it.

***IMPORTANT**: The correct and systematic use of parameters P9.3 / P9.4 / P9.5 / P9.9 allows to significantly lenghten battery life.*

9. Temperature measurement

- ***First start-up***

The following parameters must be set when switching on for the first time:

Choose the unit of meas. to use	°C - °F	P 9.1	Tutti i modelli
Choose the type of probe to be used	K / T	P 7.1	Solo Temp7 K/T

***Note**: For further settings please refer to the Setup Menu.*

- ***Measurement***

Always connect the probe before switching on the instrument.

Switch on the instrument with key. After the initial self-diagnosis, the instrument goes directly into measurement. Position the probe at the point to be measured and wait for stability.

When the reading becomes stable, the icon appears on the display. If this icon does not appear and there are scrolling red bands do not consider the reading as the final value. Always wait for measurement stability.

If the temperature sensor is not connected, the following message appears “CONNECT THE PROBE”, accompanied by the flashing of .

- ***MAX/MIN Function***

During the measurement press the MIN/MAX button to start recording the minimum and maximum value. The display will flash "MIN/MAX REC".

Press the key once MIN/MAX to see the maximum value reached up to that moment, press it another time to see the minimum value reached up to that moment. Pressing again will return the instrument to record the MAX/MIN value with the flashing letters.

To exit MAX/MIN recording, press and hold the button for at least 3 seconds, “MIN/MAX REC" will disappear from the display.

***Note**: If auto power off is set, then the instrument will switch off after 20 minutes. If you wish to record the minimum and maximum values over a longer period, you must disable auto power off P9.9.*

- ***HOLD Function***

During measurement press the HOLD button to stop the reading. HOLD appears on the display and the reading stops. Press again to unlock reading.

***Note**: During MAX/MIN value recording the HOLD function is disabled.*

***Note**: during the MAX/MIN function (recording and recalling values) and HOLD the appearance of a smile indicates that the measurement at that time is stable. If there are red bands then the measurement is not stable.*

***Note**: during the MAX/MIN (recording and recalling values) and HOLD functions, if the probe is disconnected, the display switches to measurement mode and the message "CONNECT THE PROBE" will appear on the display, accompanied by the flashing of the icon .*

10. Other Features

- ***Automatic switch-off***

The instrument shuts down automatically after 20 minutes of inactivity. To disable automatic shutdown
To disable automatic shutdown, go to parameter P9.9 in the Setup menu and select Off.

- ***Offset adjustment***

All instruments are factory pre-calibrated and remain stable over time, but in the event of a reading error, the instrument can be recalibrated to eliminate this error.
To recalibrate the instrument at 0.0°C proceed as follows:

- prepare ice with double-distilled water;
- place the ice cubes in a 500ml beaker up to half its volume;
- add double-distilled water until it reaches ¾ of its volume;
- place the beaker on a magnetic stirrer under gentle agitation;
- immerse the probe in the beaker, ensuring that it is immersed in water and does not touch the wall of the beaker;
- cover the beaker with polystyrene to isolate the water/ice mixture from the air as much as possible;
- stir for about 10 minutes;
- in this way a temperature of 0°C is reached.

If the instrument reads 0.0°C (± measurement chain accuracy) then the instrument is operating correctly and no adjustment is required, if not, go to the Setup menu P7.2, adjust the value using the arrows and confirm with the key. MIN/MAX or HOLD arrows and confirm with the key OK SETUP.
In the centre of the display, the corrected temperature is displayed in large letters, while the partial value of the adjustment is displayed below it.
The adjustment affects the entire measurement scale, e.g. if you correct by -1.0°C, then the measurement shifts by -1.0°C over the whole range.
The setting made in this way remains in the memory both after switching off the instrument and when replacing the batteries.
If the probe is replaced, reset the factory calibration from the Setup menu P7.6, and proceed with the new calibration if necessary.

***Note**: if there is no probe connected, it is not possible to change the offset.*

A "CONNECT THE PROBE" error will be displayed, accompanied by a flashing icon ⚠ .

11. Warranty

- ***Warranty period and limitations***

- The manufacturer of this device and its accessories offers the final consumer of the new device the five-year warranty from the date of purchase, in the event of state-of-the-art maintenance and use;
- During the warranty period, the manufacturer will repair or replace defective components;
- This warranty is valid only and exclusively on the electronic parts of the device and does not apply, if the product has been damaged, used incorrectly, exposed to radiation or corrosive substances, if foreign materials have penetrated inside the product or if changes have been made, which have not been authorized by the manufacturer.

12. Disposal of electrical devices

This equipment is subject to the regulations for electronic devices.
Dispose of in accordance with local regulations.