

USER MANUAL

12 CHANNEL DATALOGGER TEMPERATURE METER

PCE-T 1220

ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

SAFETY NOTES

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- » The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- » The instrument may only be used if the environmental conditions (temperature, relative humidity, ...) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- » Note, that strong electromagnetic fields can temporarily impair the measuring accuracy of the device.
- » Do not expose the device to shocks or strong vibrations.
- » The case should only be opened by qualified PCE Instruments personnel.
- » Never use the instrument when your hands are wet.
- » You must not make any technical changes to the device.
- » The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- » The device must only be used with accessories from PCE Instruments or equivalent.
- » Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- » Do not use the instrument in explosive atmospheres.
- » The measurement range as stated in the specifications must not be exceeded under any circumstances.
- » Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

Safety-related instructions the non-observance of which can cause damage to the device or personal injury carry a safety symbol.



General warning sign

Non-observance can cause damage to the device and injuries to the user.

TECHNICAL SPECIFICATIONS

Measurement range	B-type: +600 ... +1800 °C E-type: -200 ... +850 °C J-type: -200 ... +1050 °C K-type: -200 ... +1370 °C N-type: -200 ... +1300 °C R-type: 0 ... +1750 °C S-type: 0 ... +1750 °C T-type: -200 ... +400 °C
Accuracies at 23 °C ±5 °C	B-type: ±(0.05 % + 1 °C / 1.8 °F) E-type: ±0.6 °C / ±1.1 °F J-type: ±(0.04 % + 0.3 °C / 0.5 °F) K-type: ±(0.04 % + 0.3 °C / 0.5 °F) N-type: ±0.6 °C / ±1.1 °F R-type: ±(0.05 % + 1 °C / 1.8 °F) S-type: ±(0.05 % + 1 °C / 1.8 °F) T-type: ±0.6 °C / ±1.1 °F
Resolution	0.1 °C
Data logger	Various start / stop triggers Possible measuring intervals 2 s ... 12 h 100 data records (up to 100,000 readings per data record)
Display	7" LCD
Units	°C, °F, K
Menu languages	English, German, French, Spanish, Italian, Dutch, Portuguese, Turkish, Polish, Russian, Chinese, Japanese, Danish
Operating / storage conditions	Temperature: -20 °C ... +65 °C Humidity: 10 % RH ... 95 % RH, non-condensing
Power supply	Internal: rechargeable LiPo battery (3.7 V, 10.000 mAh) External: USB 5 VDC, 500 mA
Battery life	approx. 10 days (depending on display brightness)
Dimensions	248 x 145 x 50 mm
Weight	730 g

DELIVERY CONTENTS

- 1 x Temperature data logger PCE-T 1220
- 12 x K type wire probe (TF-500)
- 1 x USB cable
- 1 x USB pen drive with manual and PC software
- 1 x Accessory bag
- 1 x Quick start guide

OPTIONAL ACCESSORIES

Article Number	Description
TF-106	Penetration- / immersion probe
TF-509	Surface probe (self-adhesive)
PCE-SP-202	Surface temperature probe
TF-513	Magnetic surface probe
TF-109	Crocodile clip probe

More sensors can be found on our website: <https://www.pce-instruments.com>.

SYSTEM DESCRIPTION

The PCE-T 1220 temperature data logger is suitable for measuring and monitoring temperatures with thermocouples of types B, E, J, K, N, R, S and T. The measuring device has 12 input sockets so that temperatures can be measured, compared and monitored simultaneously with 12 thermocouples. In addition to the current measured value, the maximum value, minimum value and average value are also shown on the 7" display. All 12 channels can be monitored simultaneously or viewed individually. It is possible to follow data for each channel graphically and see statistical information about temperature. The channels can also be compared with each other, whereby the current measured value of a channel and the differences to a reference channel are displayed. Other functions of the PCE-T 1220 include a data logger function for recording measured values over longer periods of time. With the PC software included in the scope of delivery, the stored data can be transferred from the measuring device to the computer where it can be graphically displayed, analyzed and archived. The device is powered by an internal LiPo battery, which can be charged via the USB socket using standard USB power supply units. The battery life is approx. 10 days, depending on the brightness setting.

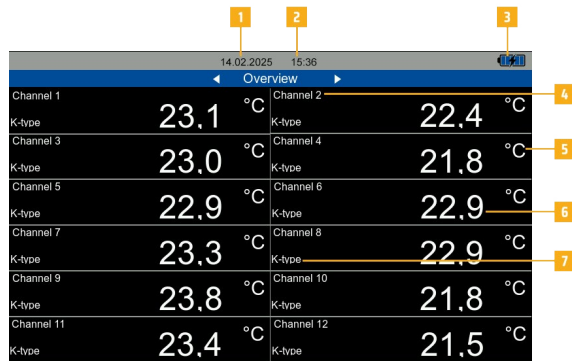
Device

- 1 - Thermocouple sockets
- 2 - Keypad
- 3 - Display
- 4 - USB-C socket



Display

- 1 - Date
- 2 - Time
- 3 - Battery status
- 4 - Channel indication
- 5 - Unit of each channel
- 6 - Measured temperature
- 7 - Type of selected thermocouple

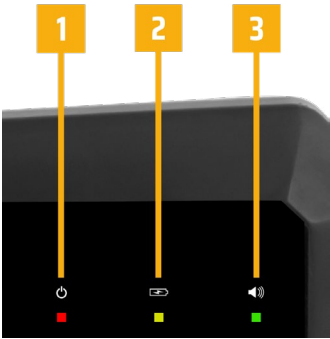


Function keys

Button	Name	Function
	Power Button	Power Off or On
	Left Button	Navigate left
	Menu Button	Go to menu
	Up Button	Navigate Up
	Back Button	Navigate to previous menu, cancel
	Right Button	Navigate Right
	REC Button	Start data logger
	Down Button	Navigate Down
	OK Button	Confirm action

Status LEDs

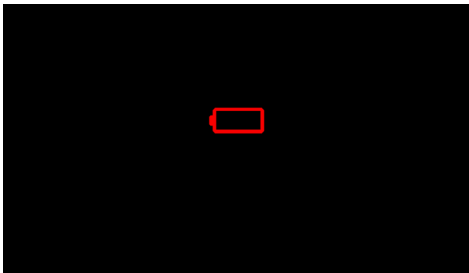
Number	Name	Function
1	Power LED	
2	Charging LED	When illuminated charger is connected, when flashing the battery is charged
3	Alarm LED	



GETTING STARTED

Power supply

An internal LiPo battery serves as the power supply. With a fully charged battery, an operating time of approximately 30 hours is possible at 100% brightness of the display. When the device is recording with screen saver on and all 12 channels are sampled one per 10 minutes device can operate over 20 days on a single battery charge. The battery is charged via the USB port type C at the bottom of the device and suitable USB chargers can be used. The charging process can be shortened by switching the meter off during the charging process. The current charge level of the batteries is displayed in the status bar at the top right. As soon as the battery level is no longer sufficient for proper operation of the device, it switches off automatically and the screen shown below is displayed.



Preparation

Before the meter is switched on, a sensor should be connected to it. To do this, insert the plug of the thermocouple into one of the input sockets on the top of the meter. The instrument has an automatic sensor recognition function. If no sensor is connected, the message **No sensor** appears instead of the measured value and the respective memory functions are deactivated. This display can also be used to diagnose a cable break. To start the instrument, press the ON/OFF key once. The start-up screen is displayed for approx. 2 seconds and the meter then switches to measuring mode. To switch off the device, press and hold ON/OFF until the display turns off.



OPERATION

Change channel and mode

By pressing the Left or Right button you can switch between channels, overview and differenced.

Measurement overview

After switching on the meter, the measurement overview is automatically displayed. Here, you can see for each channel which thermocouple type is set and which temperatures are currently being measured. If no sensor is connected or recognised by the device, **No sensor** is displayed instead of the measured value. This allows you to always see the measured temperatures of all activated channels at a glance.

29.01.24 01:02	
Overview	
Channel 1 K-type	24,5 °C
Channel 2 K-type	No sensor
Channel 3 K-type ▼	25,1 °C
Channel 4 K-type	No sensor
Channel 5 K-type	No sensor
Channel 6 K-type	No sensor
Channel 7 K-type	No sensor
Channel 8 K-type	No sensor
Channel 9 K-type	No sensor
Channel 10 K-type	No sensor
Channel 11 K-type	No sensor
Channel 12 K-type	No sensor

Statistics overview

This screen shows the statistics from each channel in addition to the current readings at a glance. These include the maximum value, the minimum value and the average value of the measured temperatures. By holding down the OK key, all statistics of the active channels can be reset.

Measurement overview of individual channels

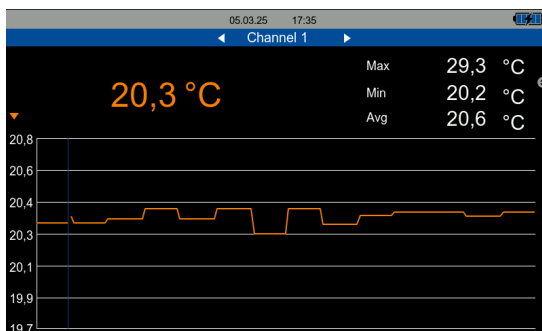
On the following screens, each activated channel can be observed individually. The current measured value, the set thermocouple type, the maximum value, the minimum value and the average value of the measured temperatures are displayed there.

Differences

If you are on one of the screens for monitoring a single channel, it is possible to compare the measured values of the other channels with the measured value of the current channel. To do this, use the DOWN arrow key to switch to the Differences screen. The measured value of the current channel is displayed there and below the measured value, the differences of the measured values of each further activated channel to the measured value of the current channel are displayed. To leave the Differences screen, use the Up-arrow key to return to the statistics screen of the channel.

Graphical and statistics view

By pressing button Up or Down you can switch the view to graphical view with statistics for this channel. By holding down the OK key, the statistics of the channel can be reset



Making a measurement

To carry out a measurement, the thermocouples must be plugged into the sockets of the activated channels at the top of the meter. The channels are numbered from 1 to 12 from left to right (view of the front side with screen). The thermocouple plug must always be inserted the correct way round in order to obtain correct measurement results and not to damage the sockets. For this purpose, there is a „+“ at the socket into which the part of the plug marked with a „+“ must be inserted.



ATTENTION

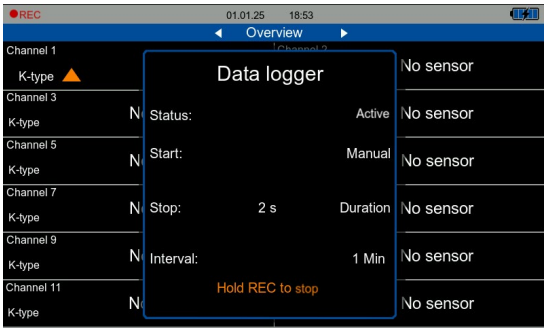
If a thermocouple plug is inserted into a socket the wrong way round, this will damage the socket and also display incorrect readings.

In measurement mode, the measurement is carried out continuously and the current measured values are displayed on the screen. If a threshold value is activated, exceeding the threshold value is indicated by a color change of the current measured value and an arrow in the same color. If the arrow points upwards, the upper threshold value has been exceeded. If the arrow points downwards, the value has fallen below the lower threshold value.

DATENLOGGER

Pressing REC button invokes data logger popup menu. The current status of the data logger, all set parameters and the information that the data logger is started by holding down the REC key are displayed there.

Depending on the start condition, the data logger starts automatically when set start time has been reached. A measurement in progress is indicated by the message REC in the upper left corner of the display and a flashing red circle.



The measured values can be observed in the same way as in regular measuring mode. To do this, the data logger info window can be exited with the BACK key. Depending on the stop condition set, the data logger stops either automatically after reaching the stop time or after the desired duration or after holding down the REC key again. Even if a time or duration has been set as the stop condition, a running measurement can always be stopped by pressing the REC key. Depending on the duration of the recording, ensure that the battery is sufficiently charged. The device can also be operated with the help of the USB charger so that measurements can be made over a long period of time. The data records can then be read out from the meter and displayed using the PC software.

MENU

The main menu can be opened at any time with the MENU key. The arrow keys are used to navigate between the menu items, which can be activated with the OK key. Submenus can be exited again with the BACK key. The main menu of the PCE-T 1220 consists of the submenus Measurement, Alarm, Data logger, Settings, Calibration, Manual and Info. The submenus are explained in more detail in the following chapters.

Measurement

In the Measurement submenu, the options relevant for the measurement can be set for each channel: activate channel, select thermocouple type, activate and set offset.

For different views of the measurements, the arrow keys can be used to switch between several screens. To make a correct measurement, the desired measurement parameters must first be set in the menu. These include the channels used, the thermocouple types and, if required, the offset that shall be applied to the measurement channel.

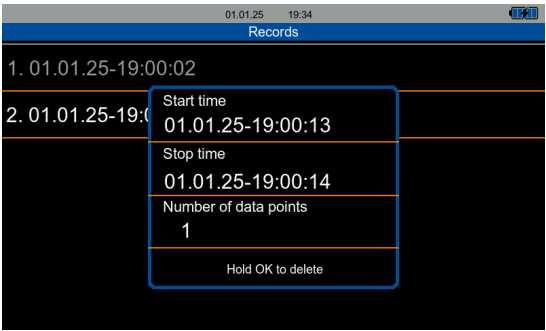
If changes are made in the menu, the new settings are applied when returning to measuring mode and are displayed accordingly. These are also retained when the instrument is switched off and on again.

Alerts

In the Alert submenu, an upper and a lower threshold value can be set for each channel. If these threshold values are exceeded during a measurement, this is indicated by an orange measured value and an orange arrow in front of the measured value. If the arrow points upwards, the upper threshold value has been exceeded. If the arrow points downwards, the lower threshold value has fallen below.

Datenlogger

In this menu, you can change the settings for the data logger. The data logger can be started either manually by pressing a key or automatically from a date and time that is set in this menu. Data logger start time can be set up to a round second. The data logger can be stopped manually or programmed to stop by date and time (with accuracy to round second) or for a duration (with one second resolution). Sampling interval can be set to be in seconds, minutes or hours. The records menu shows a list of recordings, pressing OK button shows details for the selected record. Holding OK button down for 5 seconds gives an option to delete the selected record.



Settings

This Menu is been used to make general setting to the device. The user has the option to set units, decimal separator, data & time, display, language auto power off and factory reset.

Units

In the sub-item Units, you can choose between the International System of Units (SI) and the Anglo-American System of Units (US).

Date and Time

You can change the date and time.

Display



Decimal separator

Decimal separator allows you to select either a point or a comma as decimal character for measured values.

Screen saver

The display brightness can be adjusted between 50 % and 100 %. Screen saver allows you to dim the display brightness after a period of time or even completely turn off the display. Turning off the display does not interrupt the data logger recording.

Pressing any key resets the brightness to the originally set value. Furthermore, the settings for time formatting of the graph can be made.

Language

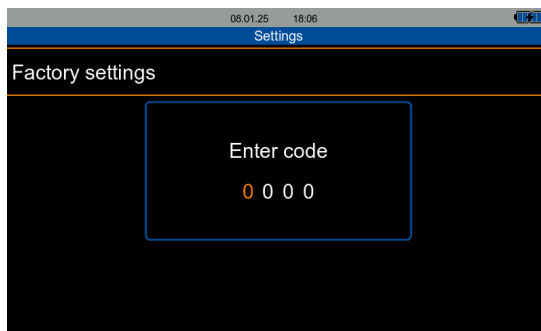
The menu languages available are English, German, French, Spanish, Italian, Dutch, Portuguese, Turkish, Polish, Russian, Chinese, Japanese and Danish.

Auto power off

With the help of this option, an automatic power off of the device can be set. You can choose between 1 minute, 5 minutes and 15 minutes. After this time has elapsed, the meter switches off automatically and pressing any key resets the timer. In addition, automatic power off can be completely deactivated.

Factory settings

With the help of this option, the instrument can be reset to its factory settings. A distinction is made between device settings, calibration and data. These can each be reset separately. When resetting the device settings, default values for the measurement parameters and the remaining menu options are loaded. A previously performed calibration is retained. To prevent unintentional resetting of the calibration, this menu is protected with the same code as is used for calibration. The code is 1402.



When resetting the calibration, a previously performed and saved calibration is deleted and a default calibration for the instrument is selected. It is recommended to perform a new calibration afterwards. The reset must be explicitly accepted by ticking the dialogue box.

SOFTWARE

With the help of the PC software, the saved data of the data logger can be transferred from the device to the PC, displayed and archived.

For further instructions of the software please read the dedicated software manual.



CALIBRATION

Device must be sent to PCE Instruments for calibration.

MAINTENANCE

In case you experience any errors or problems with the device, please contact PCE Instruments.

TROUBLESHOOTING

Reset language

Turn the device off. Press and hold the return button then switch the device on. Now the device automatically starts in English language and switches in to language menu.

Firmware update

If you update the firmware of the device sometimes it may be left in firmware update mode. To return to normal operation you have to press Menu and Power buttons simultaneously.

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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