

# USER MANUAL

## MOISTURE ANALYSER

PCE-UX 3011 / PCE-UX 3011G / PCE-UX 3011Q /  
PCE-UX 3011HQ / PCE-UX 3031

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](http://www.pce-instruments.com)

## INTENDED USE

The PCE-UX moisture meters are only intended for the rapid determination of moisture and dry matter in solid, pasty, and liquid substances using the thermogravimetric method. A sample is dried using infrared heat radiation while being weighed.

## FEATURES

### Common features of all PCE-UX devices:

- » Short measuring time
- » Gentle and uniform sample drying
- » High reproducibility
- » Automatic or time-controlled termination of measurement
- » Drying programs (optional)

### PCE-UX 3011/ PCE-UX 3011Q/ PCE-UX 3011HQ

- » Temperature-controlled infrared radiant heaters 250 W, 40 ... 200 °C
- » Infrared quartz radiators 375 W, 105 ... 360 °C / 600 °C
- » Stainless steel drying tray 111 mm diameter

### PCE-UX 3031

- » Special device for the gypsum industry
- » 2 temperature-controlled radiators for separate determination of free and chemically bound moisture in gypsum products
- » Temperature range: 40 ... 360 °C
- » Stainless steel drying dish 111 mm diameter

### PCE-UX 3081/ PCE-3081WQ

- » Special device for particularly large samples, e.g. in the chipboard industry
- » 2 temperature-controlled ceramic radiators
- » Temperature range: 40 ... 220 °C / 300 °C
- » Stainless steel drying tray 245 x 120 mm

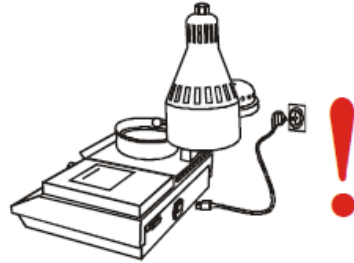
## SAFETY INSTRUCTIONS

Transport the device in an upright position only and do not expose it to impacts.  
Always operate the device horizontally on a vibration-free surface and avoid drafts.

Never touch the hot (glowing) radiator,  
risk of injury!



Disconnect the power plug before working on  
the device (e.g., replacing the lamp).  
Only allow trained personnel to perform any  
work on the device.



Do not place heat-sensitive material next to the  
device, as this may cause a fire.



Take particular care with flammable measuring  
materials! Consult the manufacturer if  
necessary.



Make sure that no sample parts fall next to the  
dish rack.  
Carefully vacuum up any particles with a  
vacuum cleaner.



Only use special PCE-Ux accessories.

Do not move the device during measurement, as this will result in measurement errors.

Do not leave any material on the weighing pan when no measurement is to be taken.

Only ship the devices in their original box with the original packaging material.

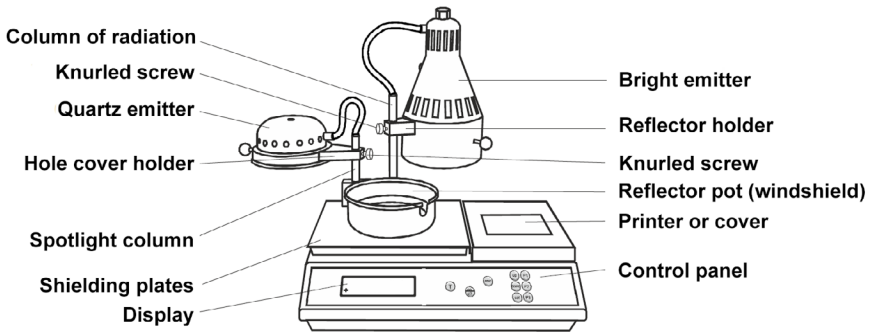
PCE-Ux moisture analyzers are individual devices and are not intended to control ongoing production processes. This is done at the user's own risk.

The temperature set on the moisture analyzer refers to the heat radiation that hits the sample to be dried.

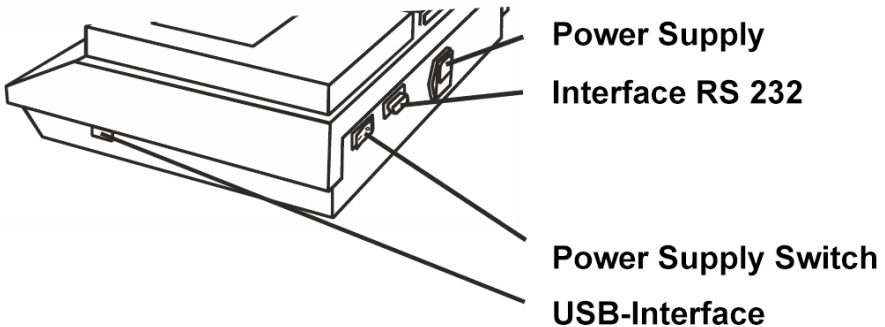
**Heat radiation is an electromagnetic wave that transfers energy.** This energy generates heat in the sample, which causes moisture to be released from the sample. The temperature is therefore used to set the energy that releases moisture from the material. (The higher the temperature, the higher the energy).

The set temperature is not the same as the temperature to which the material or the environment heats up. The material or ambient temperature is only a consequence of the drying process and cannot therefore be regarded as the cause of drying.

## OVERVIEW



## CONNECTIONS



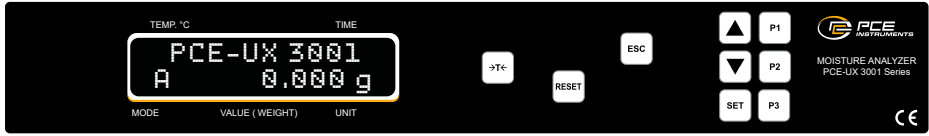
## START-UP

Please refer to the installation instructions in the appendix when commissioning the PCE-3011HQ.

- 1. 1** Place the device on a surface that is as level as possible, protected from drafts, and free of vibrations. The most suitable locations are in corners of rooms, rooms with only one entrance, and on heavy tables on concrete floors. Remove the protective film from the front foil; it will be difficult to remove later.
- 1. 2** First, adjust the **height** and **position** of the radiator. The **mark** on the column must be directly above the reflector holder or the perforated hood holder. At the same time, place the radiator centrally above the reflector pot. To do this, slightly loosen the knurled screw at the rear of the reflector holder. Then tighten the knurled screw again by hand so that it sits in the groove.
- 1. 3** Now swing the radiator back as far as it will go (bright radiator to the right, quartz radiator to the left). **Avoid turning it forcefully beyond the resistance**, as this will damage the device. Insert the tray holder.
- 1. 4** Next, place one of the two dry bowls supplied onto the bowl holder using the bowl tongs. The recess in the reflector pot serves as a gap for easy insertion of the bowl.
- 1. 5 Check that the voltage specified on the type plate corresponds to the local mains voltage!**
- 1. 6** Plug the connection cable into the device socket and a suitable earthed power outlet. The device can be switched on or off using the main switch on the rear of the device after the power has been connected. The device software version is displayed until the weight display appears after switching on. When switching on the device, the tray holder and drying tray should be in place.
- 1. 7** To prevent measurement errors in the weighing system, the device should be left switched on for 20 minutes before actual operation to allow for heat compensation. If the weight values on the display change in the milligram range, this is normal during this phase.
- 1. 8** PCE-UX moisture analyzers are delivered in such a way that in most cases the material to be measured can be determined immediately. If you do not obtain a satisfactory result, the measurement parameters can be adjusted.

# OPERATION

## Display and buttons



**>T<** Tare button and zeroing the weight display

**▲** Button for entering the menu & navigating within the menu

**P1** Degree of purity in gypsum

**RESET** Button for resetting the processor program

**▼** Button for entering the menu & navigating within the menu

**P2** Program memory optional

**ESC** Key for exiting menu levels

**SET** Key for confirming the entry

**P3** For determining residual glow (optional)

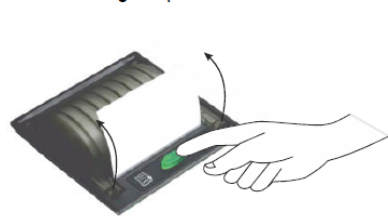
## Operating the printer

If using an external printer, first connect the printer to the mains, then switch on the humidity monitor.

Line feed



Change Paper



## Menu

Factory settings:

Temperature:

45 °C (45°C / 360 °C)

Automatic switch-off with parameters:

Weight reduction 5 mg

Interval 45 sec

Start of interval 3 min

Quartz heater 12 mg/ 15 sec/ 3 min

Buzzer sounds at end of measurement

## SETTINGS IN THE MENU

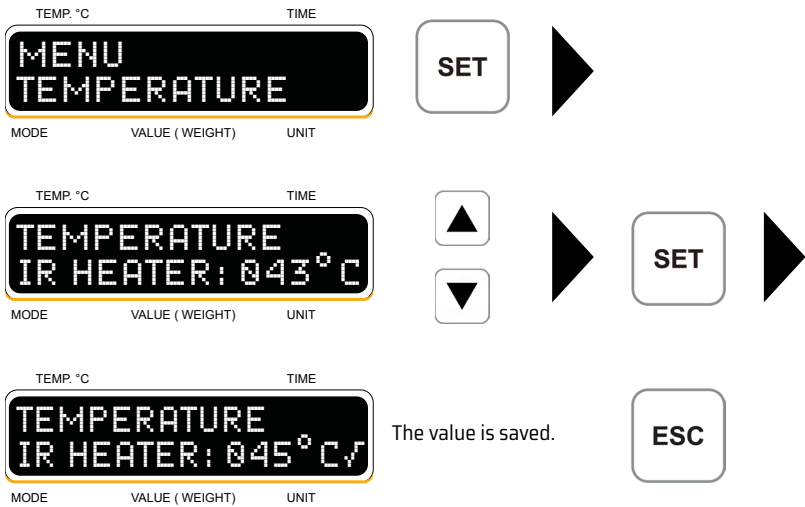
The menu for the device's default settings can be accessed using the UP or DOWN buttons.

This manual assumes that the menu items are accessed in the order shown when using the DOWN button. The menu has a consistent structure:

- UP or DOWN > Set the parameters
- SET > Confirm and return to the previous menu level if necessary
- ESC > Return from menu level until you exit the menu

If you accidentally confirm an incorrect entry with "SET," press "ESC" and "SET" to reselect the menu item and change it.

### TEMPERATURE SETTING





The following settings can be made here:

### 1. Weight loss in mg

A value should be set here that corresponds to approx. 0.1% of the tare weight, e.g. 10 g tare weight, 10 mg

TEMP. °C      TIME

AUTOMATIC  
WEIGHT LOSS mg

MODE      VALUE (WEIGHT)      UNIT

SET

TEMP. °C      TIME

WEIGHT LOSS mg  
07 mg

MODE      VALUE (WEIGHT)      UNIT

▲

▼

SET

TEMP. °C      TIME

WEIGHT LOSS mg  
08 mg ✓

MODE      VALUE (WEIGHT)      UNIT

The value is saved.

ESC

If the weight loss is  $\leq$  the mg specified here during the interval specified below, the measurement is terminated when at least the time since the start of the query has elapsed.

### 2. Query interval in seconds

An interval should be selected here that is not too short but also not unreasonably long for drying the sample. In most cases, 20 to 30 seconds are sufficient, but no/10 ... 99 seconds are also possible.

TEMP. °C      TIME

AUTOMATIC  
WEIGHT LOSS mg

MODE      VALUE (WEIGHT)      UNIT

▼

TEMP. °C      TIME

AUTOMATIC  
INTERVAL SEC.

MODE      VALUE (WEIGHT)      UNIT

SET

TEMP. °C      TIME

INTERVAL  
19 SEC

MODE      VALUE (WEIGHT)      UNIT

▲

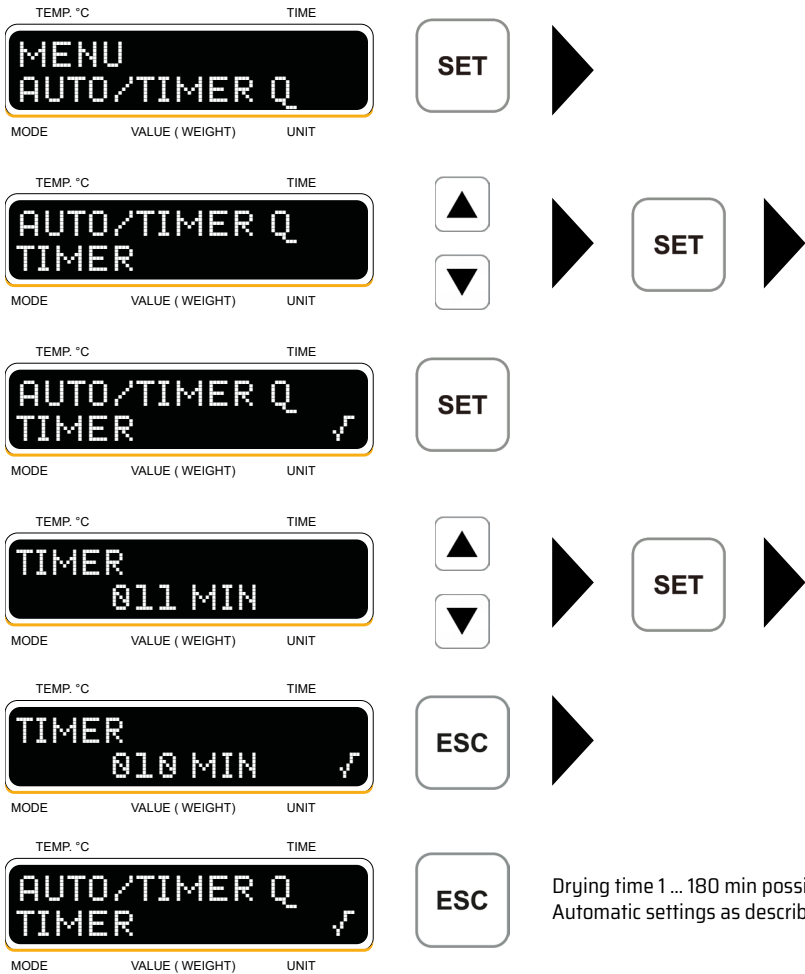
▼

SET



**Timer setting** as described below for quartz emitter.

The values for the bright emitter and the quartz emitter (PCE-UX 3031 only) are entered independently of each other. Both emitters can be controlled independently of each other via the automatic mode or the timer.



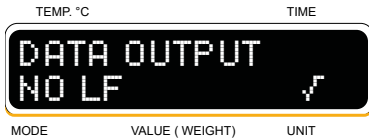




## Data output for external printer (third-party product)



With Linefeed, an additional LF is sent via the interface (factory setting without LF).



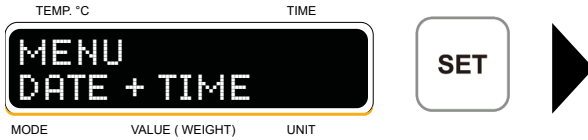
## Device identity number



Enter a number up to 9999 that you can use to identify the device. Each digit can be selected individually.

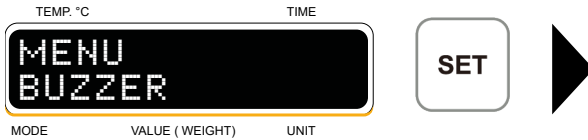


## Date and time

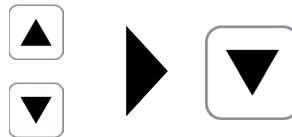


Set the day using „UP/DOWN“ then press “SET”  
Set the month using „UP/DOWN“ then press “SET”  
Set the year using „UP/DOWN“ then press “SET”  
Set the hour using „UP/DOWN“ then press “SET”  
Set the minutes using „UP/DOWN“ then press “SET”  
The date and time will appear on the printout.

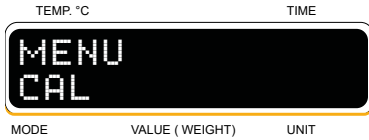
## Buzzer



Use „UP/DOWN“ and “SET” to deactivate  
or activate the buzzer, then press “SET”  
and then “ESC.”



## Calibrating the scale



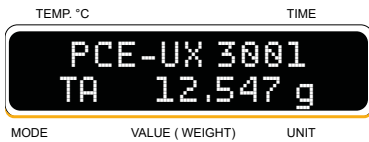
Follow the menu, use a 200 g weight F1 for calibration.



The tray must be empty.



## Language



The first two letters in the second line stand for automatic (A) and timer (T). They indicate which setting is selected for which radiator. Combinations:

- AA = automatic quartz radiator/automatic bright radiator,
- TA = timer quartz radiator/automatic bright radiator,
- TT = timer quartz radiator/timer bright radiator,
- AT = automatic quartz radiator/timer bright radiator.

## SAVE DRYING PARAMETERS IN PROGRAM MEMORY

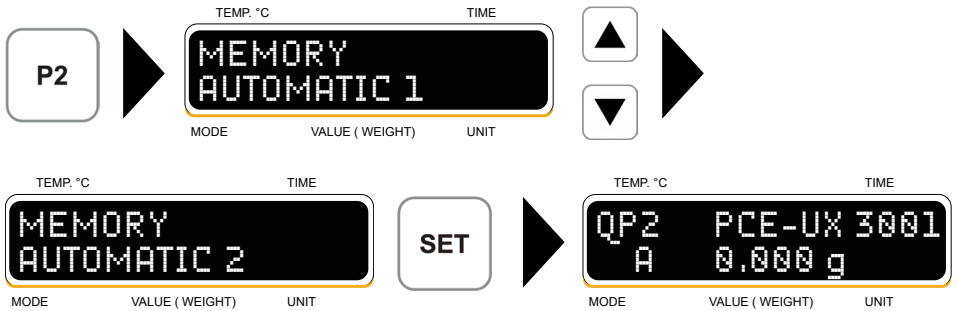
Using the PCE-UX 3031D as an example:

If your device has a program memory, the display will show "HP" and a number from 1 to 9 in the top left corner for the PCE-UX 3011 model, "QP" and a number from 1 to 9 for the PCE-UX 3011Q and PCE-UX 3011HQ models, For type PCE-UX 3031, either "HP" and a number from 1-9 for the radiant heater, or "QP" and a number from 1-9 for the quartz heater



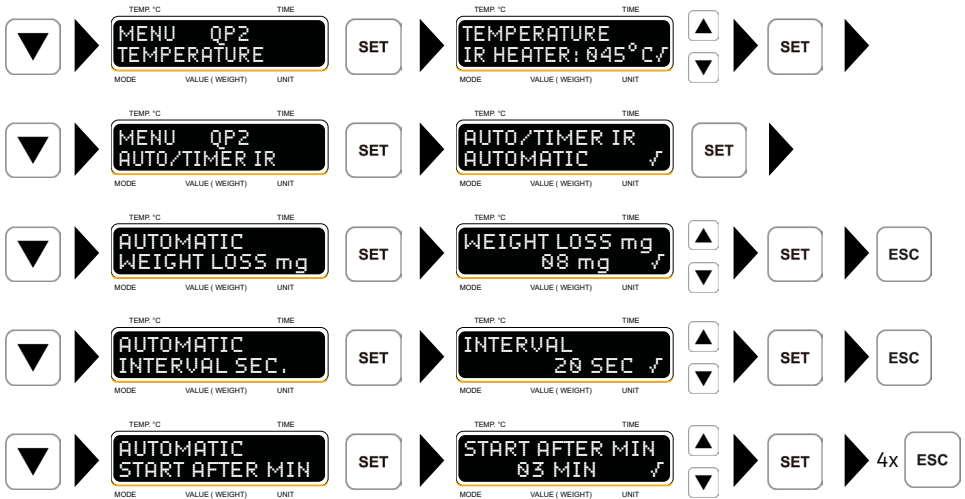
Depending on which radiator the program memory was activated for at the factory, this is the bright radiator.

The standard parameters are set at the factory under program item 1.  
 The respective drying parameters can be saved or changed using the P2 button.  
 Drying parameters are: temperature and the parameters of the automatic mode or the timer.



Here you can choose between the 9 memory locations.  
 Then use the menu to set the **temperature, weight reduction, query interval, and query start.**

All other parameters and settings are not saved individually for the memory location.

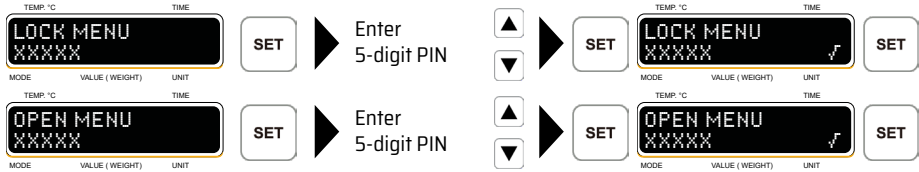


Changes to the quartz emitter's unit of measurement, printer settings, data output, device ID, date and time, buzzer and language, as well as temperature and automatic mode parameters will have no effect on the settings in the program memory for the bright emitter.

**The menu can be locked to prevent accidental adjustment of the drying parameters.**

The “CAL” menu item remains available even when the menu is locked.

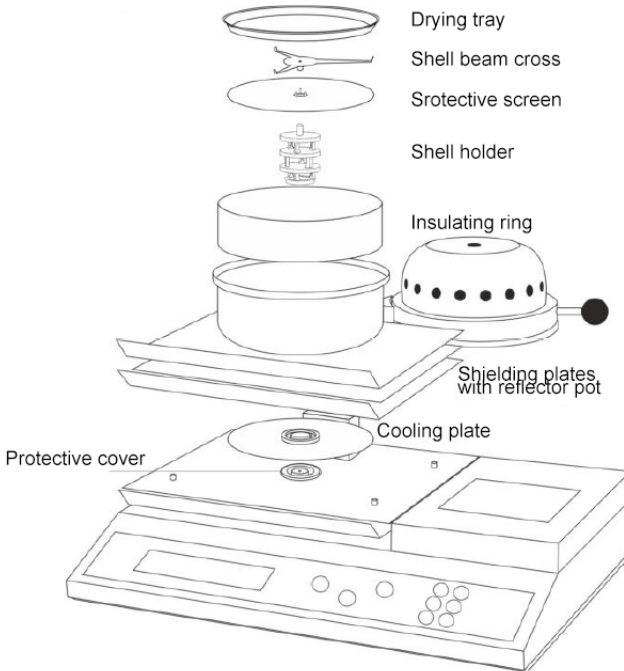
The menu can be locked and unlocked as follows: Press and hold the “SET” button for 5 seconds:



The PIN must consist of numbers.

If you forget your PIN, you can obtain a new one from PCE Instruments.

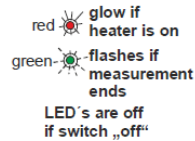
## STRUCTURE PCE-UX 3011HQ



## PROCEDURE FOR DETERMINING MOISTURE CONTENT

The device is connected to the mains and switched on with the drying tray in place; the display shows a weight value.

1. Set the balance to zero using the tare button; display: "0.000 g." Distribute approximately 10 g of sample material evenly on the tray and wait until the display stops moving.
2. Swivel the radiator over the sample. The radiator switches on after a short moment and drying begins. On devices with a built-in printer, the header data is now printed. The sample is dried until the weight is constant, then the radiator switches off automatically. On devices with a printer, the time and measured value are then printed. To regulate the temperature, the bright radiator is dimmed and the quartz radiator is clocked. It is therefore normal for the quartz radiator to switch on and off during the measurement. If no measurement is to be taken, always ensure that the radiator is swiveled all the way back!



3. The measured values are displayed as long as the radiator is above the sample.

After determining the crystal water content of gypsum, press the "P1" button to display the degree of purity as long as the radiator has not been swung back.

**Do not move the device from its position during measurement, otherwise measurement errors will occur.**

The built-in printer prints the following at the start of the measurement:

Model, device ID  
Date, time  
Radiator temperature,  
Timer or switch-off parameters,  
Weight

and after the measurement is complete and the radiator has been swung back:

Measured value,  
Measurement time,  
Material, ...  
Sign

Use a cooled drying dish for each measurement.

If the measurement is terminated prematurely, the display shows:



For materials that are difficult to remove from the tray after drying, or that are to be ashed on the PCE-UX 052 at 550°C, we recommend using **aluminum trays**, which can be produced quickly and inexpensively from aluminum foil using the **PCE-UX foil press**.

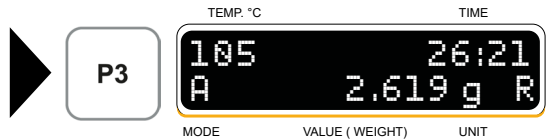
### Determination of ignition residue in conjunction with the PCE-UX 052 quick asher (special version G)

To determine the ignition residue, first determine the dry substance as described in the section “Procedure for moisture determination.”

The TS measurement is complete.



Before swinging the spotlight back:



Pressing the P3 key saves the weight of the dried sample (and the TS value in %).

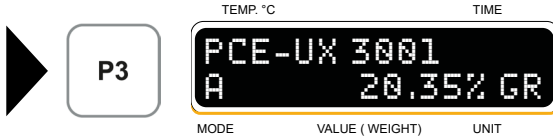
Swivel the spotlight back.



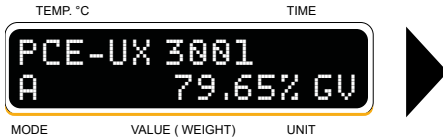
Place the sample complete with the sample container in the PCE-UX rapid asher and ashes.

**Do not use the moisture analyzer for any other purpose in the meantime, otherwise the TS value will be lost.**

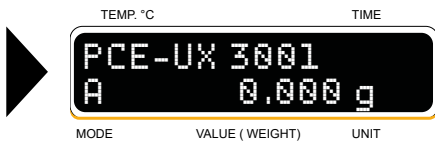
After ashing, place the sample with the container on the weighing pan of the moisture analyzer and press P3. (Allow the sample to cool in the desiccator if necessary).



With UP/DOWN, you can choose between annealing residue (GR), annealing loss (GV), and the previously determined value of the dry substance (TS) and its residual weight (RT).



Pressing the ESC key resets the device to weighing mode. If a built-in printer is available, GR and GV are now printed out.



A new measurement can be started.

Only one glow residue determination can be performed at a time; parallel measurements of multiple samples with the same device are not possible.

## DATA INTERFACE

In addition to the display, weighing data, temperature, and drying data are output via the standard USB and serial interface.

A computer must be connected.

Special software is required for data transfer to a PC: **UX Channel**

### Interface description

Type:	V24 RS 232 serial data transfer and USB
Transfer rate:	9600 baud
Number of bits:	8 data bits 1 stop bit
Parity check:	none
Handshake:	none

### Data transfer with USB

If the computer to which the data is to be sent is connected to the Internet, a driver is automatically installed and a COM interface is created after connecting to the moisture analyzer.

If this is not the case, the driver must be installed manually in the device manager.

Special software is required for data transfer to a PC:

### UX Channel

The data can be exported in four different data formats: **.xls; .html; .xml; .txt**

Installation and operation are very simple:

Connect the devices, insert the CD into the PC, and the installation is self-explanatory.

If the built-in printer is used at the same time, the print image may not appear optimal. However, all data will be printed.

## ACCESSORIES

Stainless steel drying tray	10000282	Sample carrier PCE-UX 3011/ 3031 (2 pieces included)
Tray tongs	10000230	for lifting the tray (included)
Power cord	H1000190	Power connection (included)

## CONSUMABLES

Thermal paper <10 years	10000234	with built-in printer
Aluminum foil, approx. 30 µ	H1000017	to protect the drying tray

# MENU STRUCTURE AT A GLANCE VIA THE UP BUTTON

## Menu

### Menu Language

Language, ENGLISH

### Menu CAL

Calibrate? SET or ESC <set>

If scale is empty, press SET! <set>

Please wait; place 500g on the scale, then press SET <set>

Please wait; remove 500g, then wait

CAL complete! Press SET <set>

### Menu Buzzer

Buzzer activated / deactivated

### Menu Date + time

Date Day . Month . Year, time Hour : Minutes

### Menu ID

Device ID 9999

Device ID, 0000

### Menu Data output

Data output, without LF / with LF

### Menu Printer

Printer, number of prints

Number of prints, \_ prints

Printer, interval

Printout, every \_ sec

### PreFlash menu (only possible with bright radiator)

Preflash, on/off

Preflash, pre-temp., \_ °C

Preflash, remaining weight, \_\_%

### Unit of measurement menu

Unit of measurement, humidity

### Auto/Timer menu

Auto/Timer Quartz, **automatic**

Automatic, decrease mg

Decrease mg, \_ mg

Automatic, interval sec

Interval sec, \_ sec

Automatic, start min

Start min, \_ min

Auto/timer Bright, **timer**




Auto/timer Bright, \_ min

### Menu Temperature

Temperature, bright 170°C (also K-radiator)

Temperature, quartz 360 °C

## POSSIBLE ERRORS

Error	Cause	What you can do
<b>Display</b>		
No display on the screen:	Preload too small or too large, shell support and/or shell missing	Place empty drying tray on tray support cross
	Unstable location	Place on a vibration-free surface
	Draught	Protect from drafts
	Shell support area dirty	Carefully clean the area around the tray support
	Memory loss	
	Scale defective	Contact PCE Instruments
	Scale not receiving power	Contact PCE Instruments
	Scale not connected to control board	Contact PCE Instruments
	Scale defective	Contact PCE Instruments
	System error	Switch off the device at the mains switch and switch it on again. Contact PCE Instruments if necessary.
Incorrect device type is shown on the display.	Memory loss	Contact PCE Instruments
<b>Printer</b>		
No printout	Number of prints is set to "0"	Set the number of prints to "1", for example.
	Printer defective	Contact PCE Instruments
	No data transfer	Contact PCE Instruments
No line feed	Line feed button or printer defective	Contact PCE Instruments
	Connection to printer is interrupted	Contact PCE Instruments

<b>Error</b>	<b>Cause</b>	<b>What you can do</b>
<b>Menu</b>		
Drying parameters cannot be entered	Menu is locked	Unlock the menu, contact the responsible person, or contact PCE Instruments.
Menu lock cannot be released	5-digit PIN to unlock the menu is incorrect	Contact PCE Instruments
<b>Measure</b>		
Radiator does not switch on	Radiator defective	Change lamp
	Temperature sensor defective	Contact PCE Instruments
Measurement with quartz emitter ends too early	Temperature sensor defective	Contact PCE Instruments
Infrared emitter does not switch off	Relay S202501 defective	Contact PCE Instruments
Measurement does not end	Shut-off criteria incorrectly set	Check shutdown criteria
	Timer incorrectly set	Check timer setting
	Scale defective	Contact PCE Instruments
<b>Scale</b>		
Device cannot be calibrated	Memory loss	Contact PCE Instruments
Incorrect weight values	Memory loss	Contact PCE Instruments
Scale cannot be calibrated	Preload too small or too large, shell support and/or shell missing.	Place empty drying tray on tray support cross
	Unstable location	Place on a vibration-free surface
	Draught	Protect from drafts
	Shell support area dirty	Carefully clean the area around the tray support
	Scale setting incorrect	Contact PCE Instruments
	Scale defective	Contact PCE Instruments

<b>Error</b>	<b>Cause</b>	<b>What you can do</b>
Scale is running	Unstable location	Place on a vibration-free surface
	Draught	Protect from drafts
	Shell carrier environment dirty	Carefully clean the area around the shell support
<b>Other</b>		
Spotlight does not remain swiveled back	Adjusting screw on column holder too loose	Screw in the adjusting screw slightly.

## CARE AND MAINTENANCE

- » Make sure that no dirt particles get into the device.
- » Always keep the shell carrier environment clean.
- » Do not clean with compressed air.
- » Do not overload the scale; max. weight 220 g.
- » Protect the device from moisture and impact.
- » After replacing the quartz heater, a temperature adjustment should be carried out.

## TECHNICAL SPECIFICATIONS

### Scale:

Weighing range	up to 220 g
Resolution	0.1 g
Sample volume	max. 95 cm <sup>3</sup>
Weighing pan	110 mm round

### For moisture determination:

Initial weight	any from approx. 5 g, recommended from 10 g
Radiator power	Infrared radiator 250 watts Quartz radiator 375 watts
Automatic switch-off	Automatic drying until weight is constant, according to 3 criteria Separately adjustable for I-radiators and Q-radiators: Start of query, query interval, weight loss/query interval
Temperature	Infrared emitter adjustable from 40°C to 170°C Quartz emitter adjustable from 100°C to 360°C
Measurement evaluation	% moisture % dry matter % moisture ATRO g solid/kg
Measurement accuracy	0.1% readable

### Communication:

Data output	V24 RS 232/ USB
Data output	All weighing and measurement data GLP-compliant with start time, variable Interval printout optional, date, time, total measurement time, etc.
With software	UX Channel transferable to PC as .xls file in Microsoft Excel, .PDF file.

### For operation:

Power supply	230 V 2% / + 15 %
Mains frequency	48 ... 63 Hz
Power consumption	250 watts ... 375 watts depending on model
Dimensions	approx. W 385 x D 275 x H 420 mm overall
Weight	approx. 9.0 kg

**PCE-UX moisture analyzers are individual devices and are not intended to control ongoing production processes. We accept no liability for production errors caused by incorrect measurements!**

## ACCESSORIES

Stainless steel drying tray	10000282	Sample carrier PCE-UX 3011/ 3031 (2 pieces included)
Tray tongs	10000230	for lifting the tray (included)
Power cord	H1000019	Power connection (included in delivery)
Calibration weight F1 200 g	10000403	For calibrating the scale
Aluminum foil 130 mm x 0.3 mm	H1000017	For placing on the drying tray
Foil press	10000062	for shaping the aluminum foil
<b>Software</b>	UX Channel	for transferring data to a PC
<b>Consumables</b>		
Thermal paper <10 years	100000234	with built-in printer
Infrared radiator 250 W	H1000013	Spare part
Quartz radiator 375 W	10000139	Spare part

## 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.

## PCE INSTRUMENTS CONTACT INFORMATION

### Germany

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