

Basic information

Intended use

PCE-UX moisture analysers are solely designed to quickly measure moisture and dry matter in solid, viscous and fluid substances using thermogravimetric analysis. A sample is weighed while being dried by infra-red heat.

Common features for all PCE-UX devices:

Short measurement time, gentle and even drying of samples, high reproducibility

Automatic or time-controlled measurement shut-off

PCE-UX 3081/ PCE-3081WQ

Special device for extra large samples,
e.g. in the chipboard industry
2 temperature-controlled ceramic heaters
Temperature range: 40 – 220 °C/ 300 °C
Stainless steel drying tray 240 x 110 mm



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

Temperature-controlled infra-red heater 250 V
Temperature range: 40 – 200 °C/ 360 °C/600
Stainless steel drying tray 111 mm diameter



PCE-UX 3031

Special device for gypsum industry
2 temperature-controlled heaters for separate measurement of
free and chemically bound moisture in gypsum products
Temperature range: 40 – 360 °C
Stainless steel drying tray 111 mm diameter



Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ

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Operating instructions for moisture analysers

PCE-UX 3081

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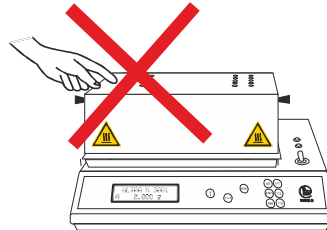
Safety instructions

Always transport the device in an upright position and protect it from impact.

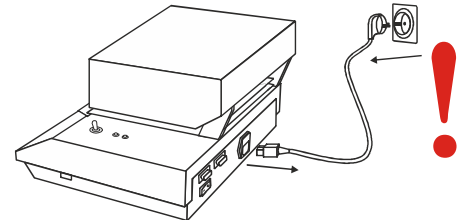
Always operate the device on a level surface, using a vibration-free base.

Avoid draughts.

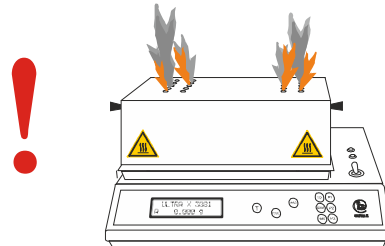
Never touch the (luminous) heater when it is hot, as there is a risk of injury!



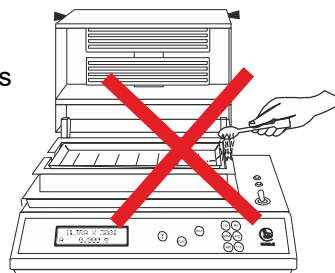
Always disconnect the plug from the mains supply before performing any work on the device (e.g. changing the heater)! Repairs should only be carried out by a qualified technician.



Please take extra care when using flammable samples! You may need to contact the manufacturer for advice.



Please be careful not to drop any sample particles next to the tray support plate.



Carefully remove any particles with a vacuum cleaner.

Only use accessories specifically designed for use with PCE-UX devices.

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

Do not leave any substances in the measuring tray, if they are not being measured.

Devices should only be shipped in the original packaging using the original packaging material.

PCE-UX moisture analyzers are stand-alone units and are not designed to be used in continuous production runs. Any such use is at your own risk.



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Warranty

PCE Instruments undertakes to repair faulty devices within the warranty period, free-of-charge, if the defect is a manufacturing fault. This warranty covers the repair of spare parts and working hours required. It does not cover normal wear-and-tear and soiling and staining of the device. a&p instruments will not accept any freight costs.

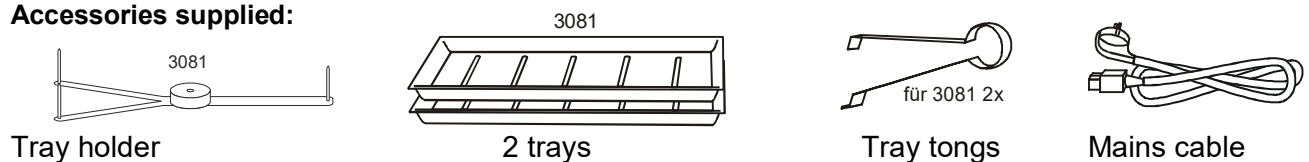
This warranty does not apply to:

improper use of the device,
use of the device for purposes other than those stated by a&p instruments,
mechanical damage or damage caused by fluids or sample matter,
incorrect set up or wrong electrical wiring,
mechanical damage of the load cell e.g. as a result of being overloaded

Transport, packaging, installation site

- Please check the packaging and device for any damage upon delivery.
- Please retain the original packaging in case you need to return the goods to a&p instruments.
- Please only use the original packaging when returning the goods.

Accessories supplied:

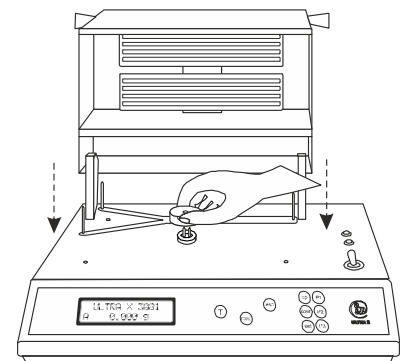
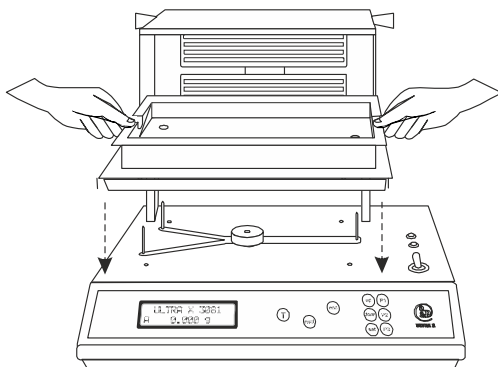


Start-up

1. Place the device on a stable, vibration-free surface, as level as possible and protected from draughts. The most suitable locations are the corners of a room, rooms with only one entrance and heavy tables on concrete floors. Remove the protective film from the front foil.
1. 2. Swing the heater back until the resistance.
1. 3. Place the tray holder on the device:



First place the tray holder carefully on the two pins, the distance between the housing and the tray holder should be approx. 1.5 – 2 mm. Do not exert too much power on the balance!



Then put on the shielding plate unit.

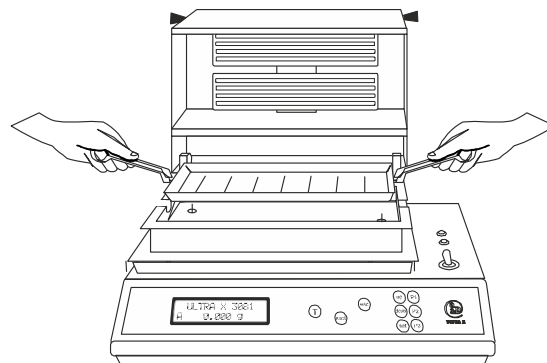
To remove the tray holder, first carefully lift up the shielding plates and then carefully pull out the tray holder in the middle with very slight tilting movements, do not exert too much power!

Operating instructions for moisture analysers

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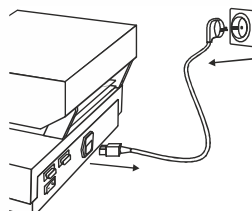
PCE-UX 3081WQ

1. 4. Next place one of the two drying trays supplied on the tray holder using one or two sets of tongs. The notch in the reflector tray acts as an access gap for easy positioning of the tray.



1. 5. Check that the voltage indicated on the type plate matches the local mains voltage.

1. 6. The power cable is inserted into the device's power jack and a suitable earthed mains supply. After the power supply has been connected, the device can be switched on or off using



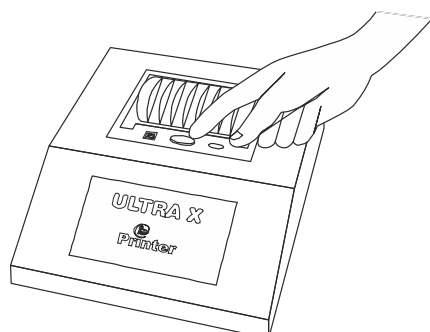
the on/ off button on the back of the device. Once the device is switched on, the current software version is shown, followed by the weight display.



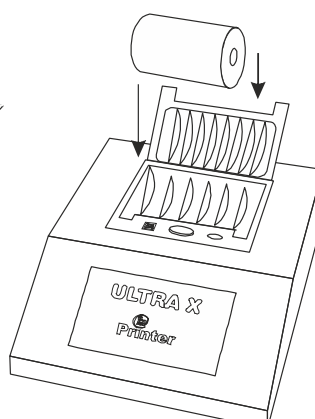
1. 7. In order to prevent weighing system measuring errors, the device should be switched on 20 minutes before being used to allow for heat compensation. If weight values vary in the display's milligram range during this period, this is considered normal within this phase. If the device is switched off using the reset (on/ off) button, it does not require a warm-up period, if switched on again with the same button.
1. 8. PCE-UX moisture measuring devices are supplied, so that in most cases substances can be measured immediately. If you are not satisfied with the result, the measurement parameters can be adjusted:

Printer

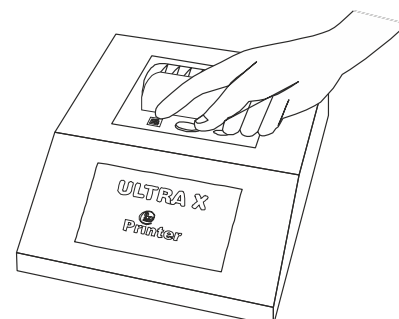
Open Cover:
Hold the green glowing button
and lift the plastic cover



Change Paper



Line feed



The PCE-UX Thermo paper is stable for 10 years.

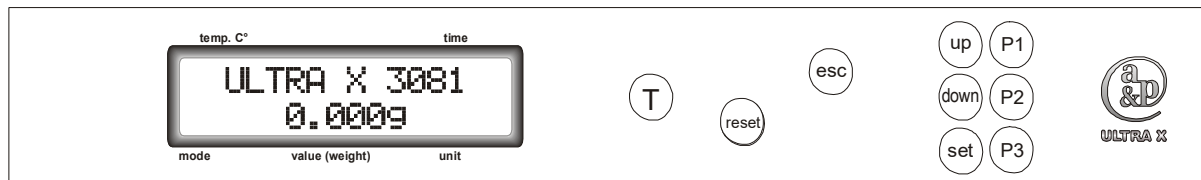
Operating instructions for moisture analysers

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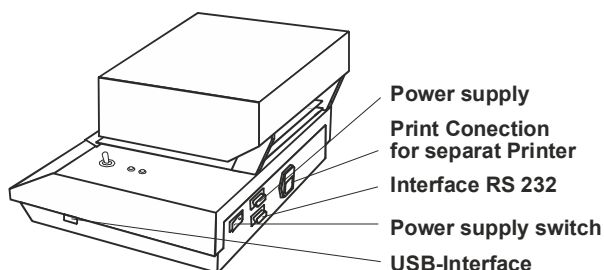
Operation

Display and buttons



- | | | | | | |
|--------------|---|-------------|---|-----------|---|
| T | Tare button for setting the weight readout back to zero | up | Button for accessing and scrolling through the menu | P1 | percentage purity only for PCE-UX 3031 |
| reset | Button for resetting the processor programme | down | Button for accessing and scrolling through the menu | P2 | programm memory (otional) |
| esc | Button for exiting menu levels | set | Button for confirming entries | P3 | residue on ignition only for PCE-UX 3011G |

Ports:



Menu

Factory settings:

Temperature: 3081 PCE-UX 3081WQ
40 – 200°C 105 – 360 °C


Automatic shut-off with parameters:

Weight loss 50 mg/ Query interval 45 secs / Start of query 5 mins

Buzzer switched on when measuring process is complete

Menu settings

The device's Preferences menu can be accessed using the 'up' or 'down' button.

In this instruction manual, it is assumed that the 'down' button  follows the menu item sequence.

The menu is operated using a standard structure:

- | | | |
|------------|---|---|
| UP or DOWN | ▶ | Set parameters |
| SET | ▶ | Confirmation of menu level and if required, return to previous menu level |
| ESC | ▶ | Return to previous menu level and exit from menu |

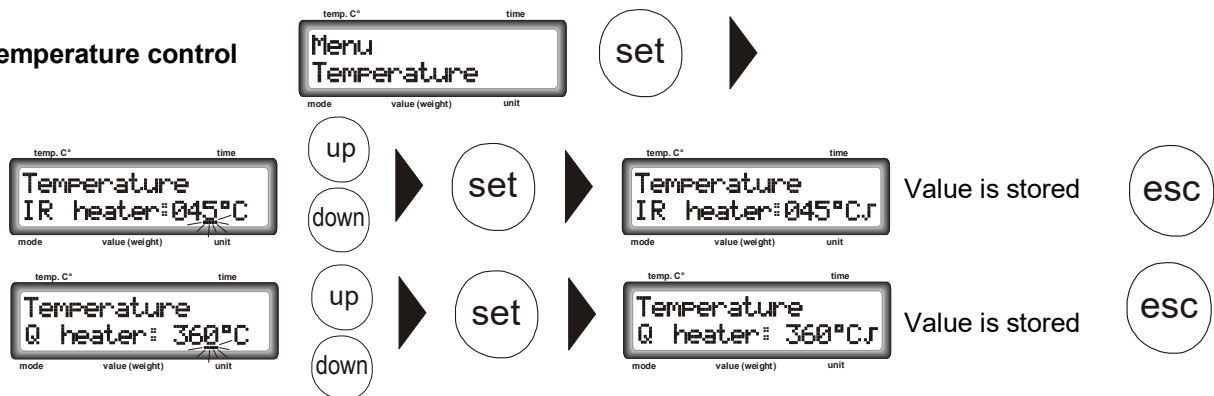
If you confirm a wrong entry with 'set', press 'esc' and 'set' to reselect and change the menu item.

Operating instructions for moisture analysers

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Temperature control



The temperature that is set on the device relates to the thermal radiation that hits the sample to be dried.

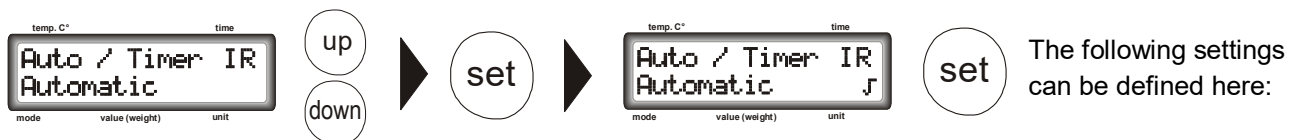
The thermal radiation is an electromagnetic wave for the transmission of energy. As this energy creates heat in the sample, the moisture evaporates from the sample. The temperature is used to set the energy that allows the moisture to evaporates from the material (more temperature is more energy).

The set temperature is not to be equated with the temperature to which the material or the environment heats up.- The material or ambient temperature is a consequence of the drying process, not the cause of the drying.

Automatic shut-off or timer

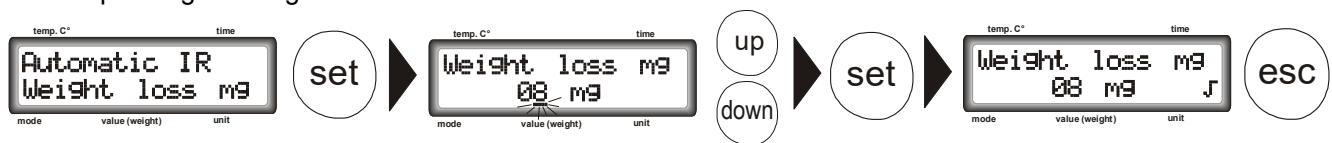


The automatic mode dries the sample until a constant weight is reached and then switches off the heater.



1. Weight loss in mg

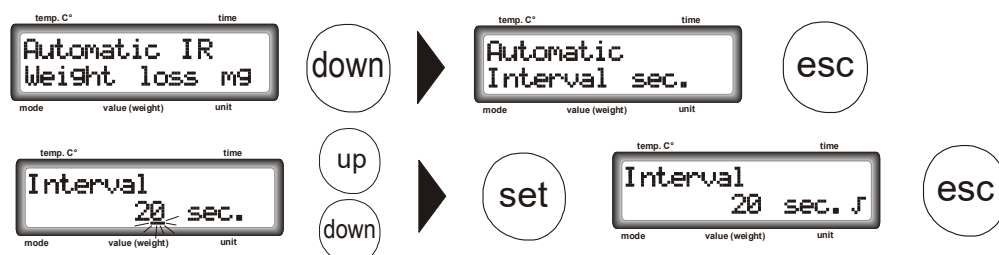
a value should be defined here which corresponds to approx. 0.1 % of the original sample e.g. original sample 10 g = 10 mg



When the weight loss \leq the mg weight specified here within the interval period defined below, the measurement is completed, if at least the start of query time limit has expired.

2. Query interval in secs.

an interval should be selected here, so that the sample is not dried for too short a period but also not for far too long. A period of 20 to 30 secs is normally adequate. None /10-99 secs can be selected.



Operating instructions for moisture analysers

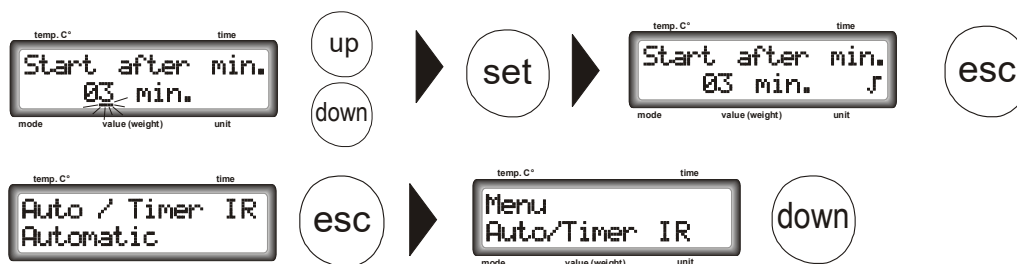
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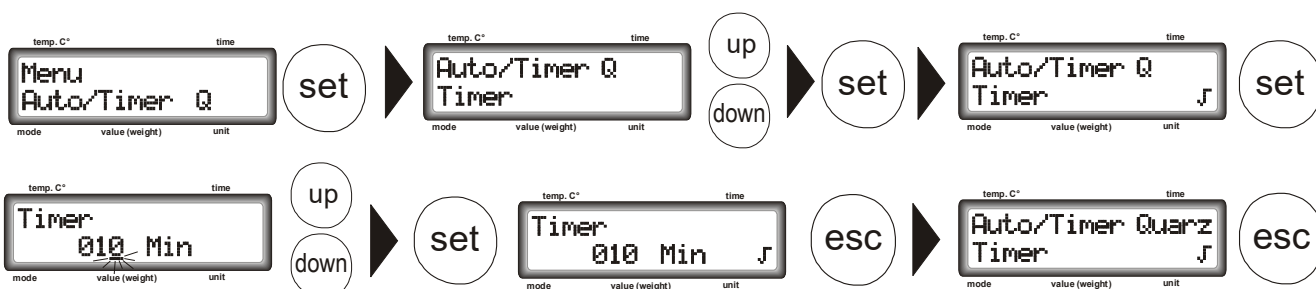


3. Start of query in minutes

Specify the drying period required for the samples without automatic mode. The factory-set 3 minutes are usually adequate. This value should be increased for extremely low temperatures, so that the device does not switch itself off prematurely. This affects the PCE-UX 3031 in particular, when free moisture is being measured at 45°C. You can select 1-99 mins.



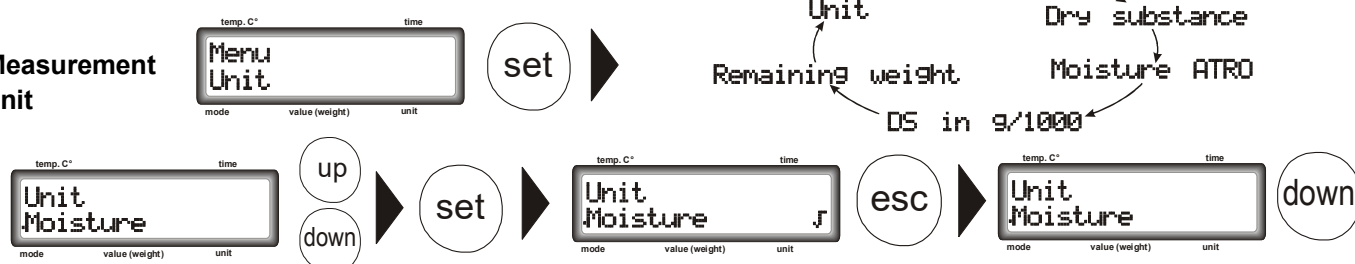
The timer setting is the same as described for the quartz heater.



It is possible to select a drying time of 1 – 180 mins

The automatic settings are the same as described for radiant heaters.

Measurement unit



During measurement, the device optionally displays:

- % moisture
- % dry matter (TS)
- % moisture Atro (), i.e. moisture related to the dry matter
- Dry matter (TS) in g/1000g
- Weight loss g (V)
- Residual weight g (R) (current weight)

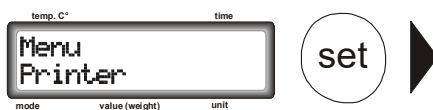
Example: 50 % moisture = 100 % Atro
25 % moisture = 33.3 % Atro
75 % moisture = 300 % Atro

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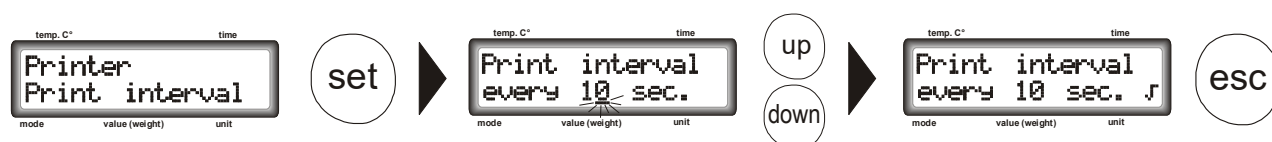
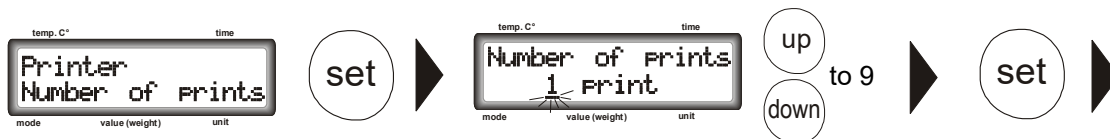
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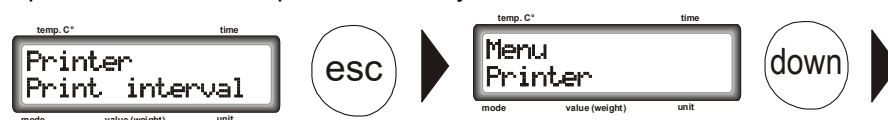
Printer options



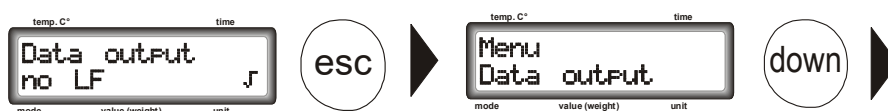
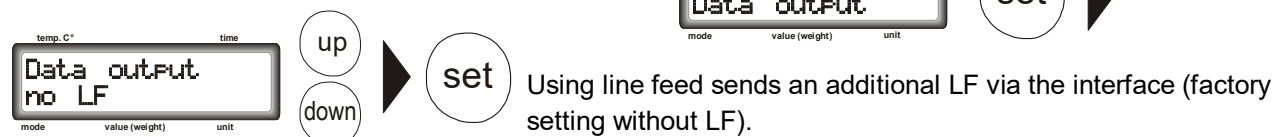
For devices without a printer, the number of prints must be set to '1'!



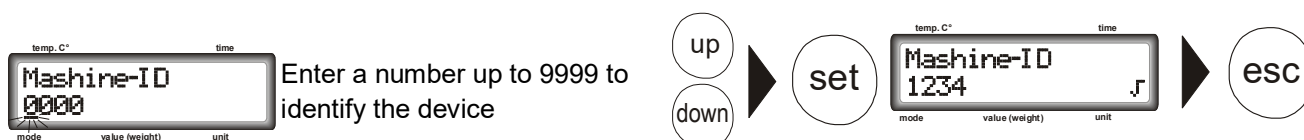
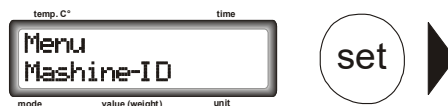
It is possible to select no printout or every 10 – 99 secs.



Data output for external printer (other manufacturer)



Device ID number



Each digit can be selected separately.

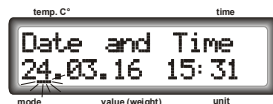


Operating instructions for moisture analysers

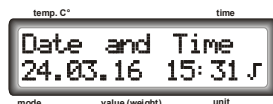
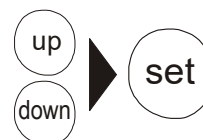
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Date and time



Use 'up'/'down' to set the date and press 'set'.
 Use 'up'/'down' to set the month and press 'set'.
 Use 'up'/'down' to set the year and press 'set'.
 Use 'up'/'down' to set the hour and press 'set'.
 Use 'up'/'down' to set the minutes and press 'set'.



The date and time are shown on the printout

Buzzer



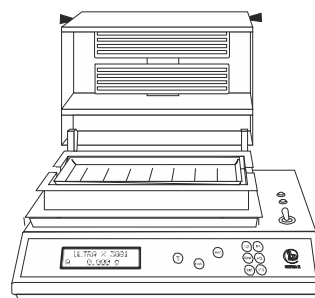
Use 'up'/'down' and 'set' to activate or deactivate the buzzer, then press 'set' followed by 'esc'.



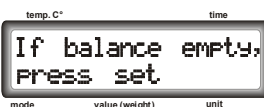
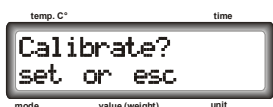
Calibrating the scales



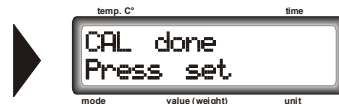
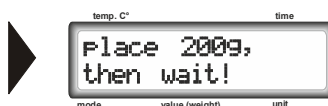
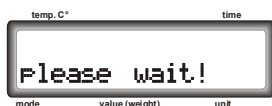
Tray carrier and tray must be on the balance!



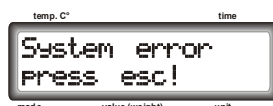
Follow the menu instructions and use a F1 weight to calibrate the scales.



Tray being used must be empty.



If the display shows



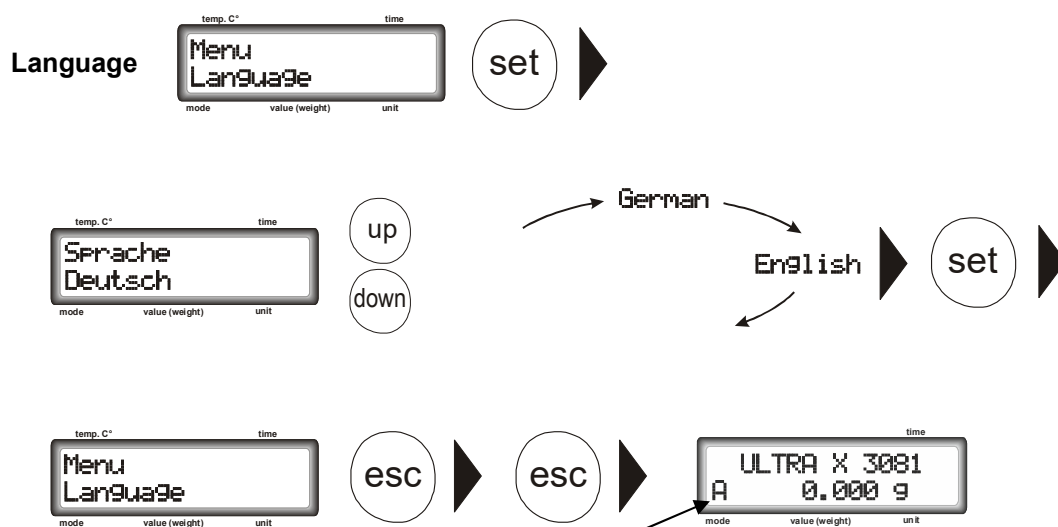
switch the power switch off and on, and try it again.

The reason for this, please look at "potential errors" on page 15

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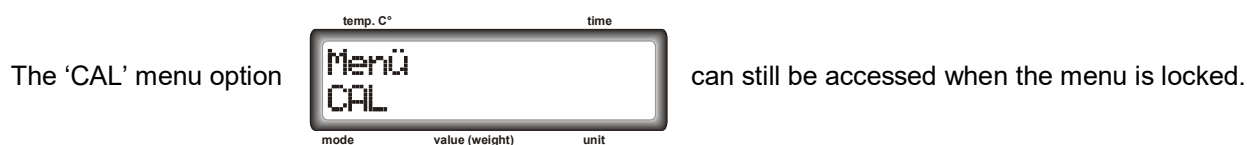
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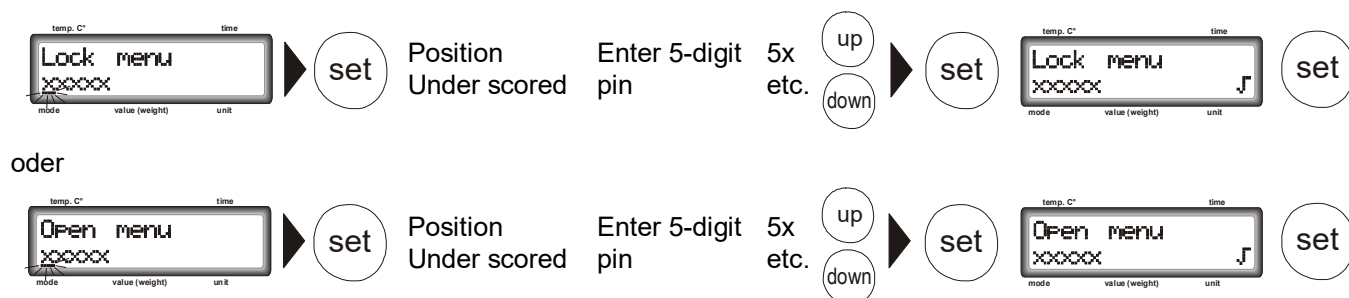
The first two letters on the second line stand for Automatic (A) and Timer (T).

You can also lock the menu to prevent accidental changes to drying parameters.



The menu can be locked or unlocked as shown below:

Press and hold the 'set' button for 5 secs:



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

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Saving drying parameters in the program memory

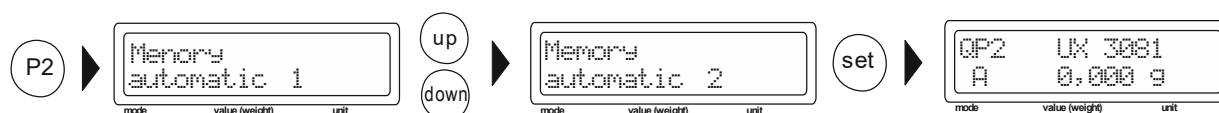
If your device has a program memory, appears in the top left of the display "QP" for type PCE-UX3081 and PCE-UX3081WQ and a number of 1-9.



depending on which heater the program memory was activated for from the manufacturer, here for the infra-red heater.

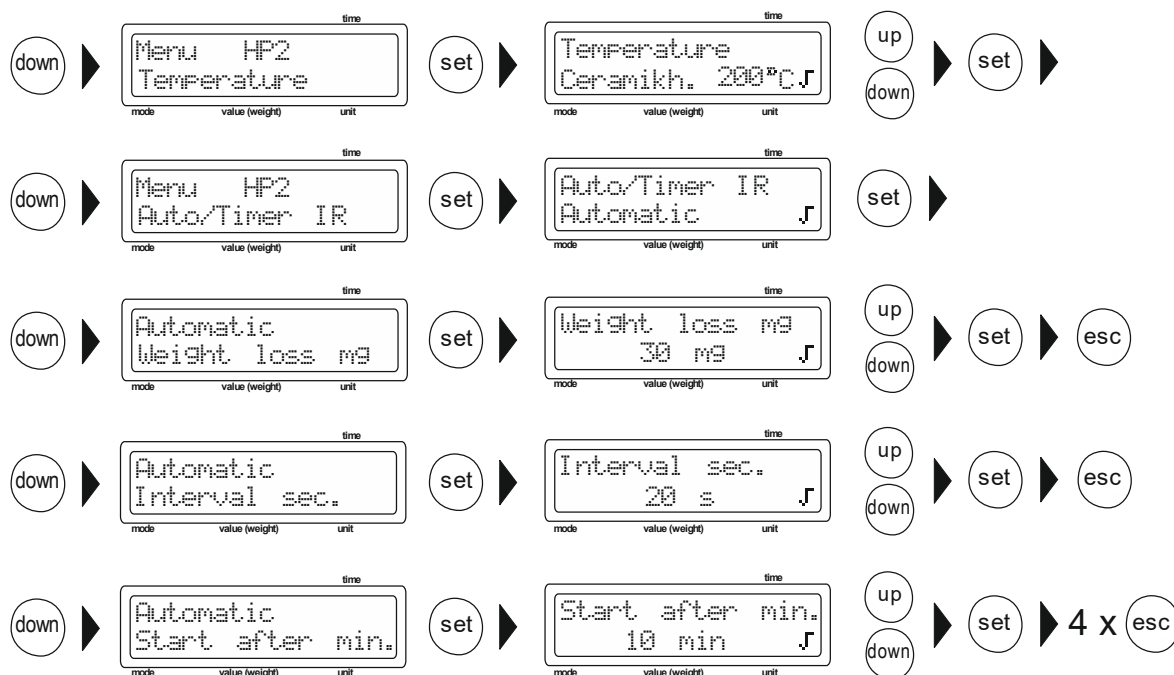
The standard parameters are set from the manufacturer at the program memory place 1.

The different drying parameters can be saved or be changed with button **P2**.
Drying parameters are: temperature and the parameters of the automatic or the timer.



Here you can choose between the 9 memory places.

Then the menu set the temperature, the weight loss, the query interval and the query start.
All other parameters and settings are not saved individually to the memory place.



Changes for the quartz heater to the unit of measurement, printer settings, data output, device ID, date and time, Buzzer and language, same as temperature and the parameters of the automatic system affect all program memories at the same time.

Operating instructions for moisture analysers

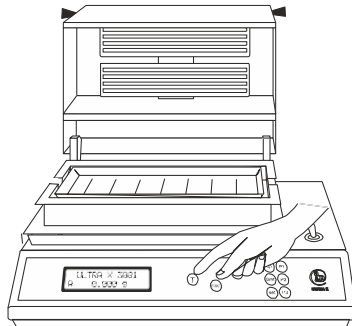
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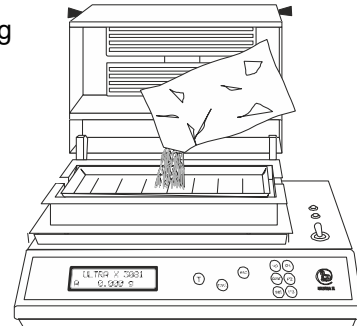
Moisture analysis process

The device should be connected to the mains supply and switched on with a drying tray. A weight value is displayed.

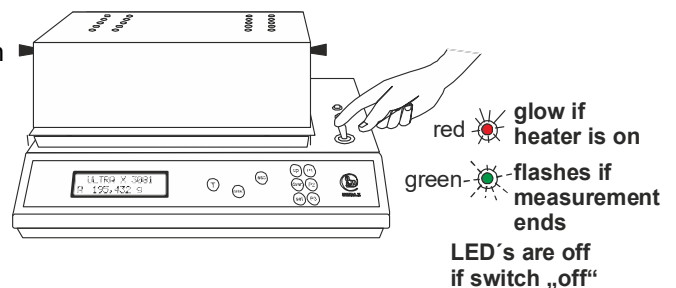
Set scales to zero using the 'tare' button, display '0.000 g'.



Evenly distribute approx. 50 - 200 g sample matter in the tray and wait for the readout to stop.



- Swing the heater over the sample, switch on the heater switch and the drying phase begins. Header data is now printed for devices with a built-in printer. The sample is dried until it has reached a constant weight; the heater then switches off automatically. The time and measurement value is printed for devices with a printer. If you do not wish to make any measurements, please always ensure that the heater is swung back to its rearmost position!



- Measurement values are displayed for the entire length of time the heater is positioned above the sample.



The device should not be moved from its position during measurement, as this causes measurement errors.

The external printer prints the following at the start of the measurement:

Model, device ID,
date, time,
heater temperature,
timer or shut-off parameters, initial weight.

And after the device has finished measuring, once the heater has been swung back to its rearmost position:

Measurement value,
measurement time,
substance,
initials

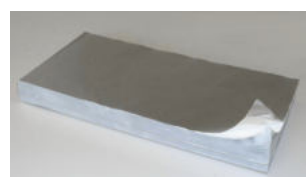
Please ensure drying trays have cooled down before using for measurement.

If the measurement ends before it is complete, the display shows:



to sample weight.

For substances which are difficult to remove from the tray after being dried, we recommend using foil trays, which can be made quickly and economically from aluminum foil using the PCE-UX foil press.



Operating instructions for moisture analysers

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Data interface

Weighing data, temperature and drying data are also shown on the display via a standard USB flash drive and serial interface.

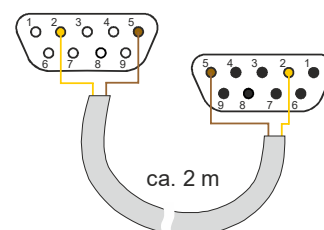
Depending on the model, a separate PCE-UX 3092 printer or a computer can be connected to the device.

Interface description

Model: V24 RS 232 serial data transmission and USB flash drive

Transmission rate: 9600 baud
Number of bits 8 data bits
1 stop bit
Parity check none
Handshake none

Data cable
Moisture balance - DataChannel



Data transmission using a USB flash drive

If the computer receiving the data has an internet connection, the system automatically installs a driver and creates a COM interface, as soon as the computer is connected to the moisture analyser. If this is not the case, the driver must be manually installed in the device manager.

Special software is required for transmitting data to a PC:

ULTRA X DataBridge

Data can be exported in four different data formats: .xls; .PDF.

The software is extremely easy to install and use:

Connect devices, place CD in PC, the installation is self-explanatory.

Accessories:	Order no.:	Application:
Stainless-steel drying tray	10000282	Sample containers (supplied)
Tray tongs	10000230	for lifting the tray (2supplied)
Mains cable	H1000190	Mains connection (supplied)

Consumables:

Printing paper 58 mm	10000234	for printer
Aluminum foils 260 x 130	H1000013	to protect the drying tray
Foil press 230 x 110	10000063	to forming the aluminum foils

Spare Parts:

Ceramic heater 250W	10000405	for PCE-UX 3081
Ceramic heater 400W	10000318	for PCE-UX 2081WQ

Operating instructions for moisture analysers

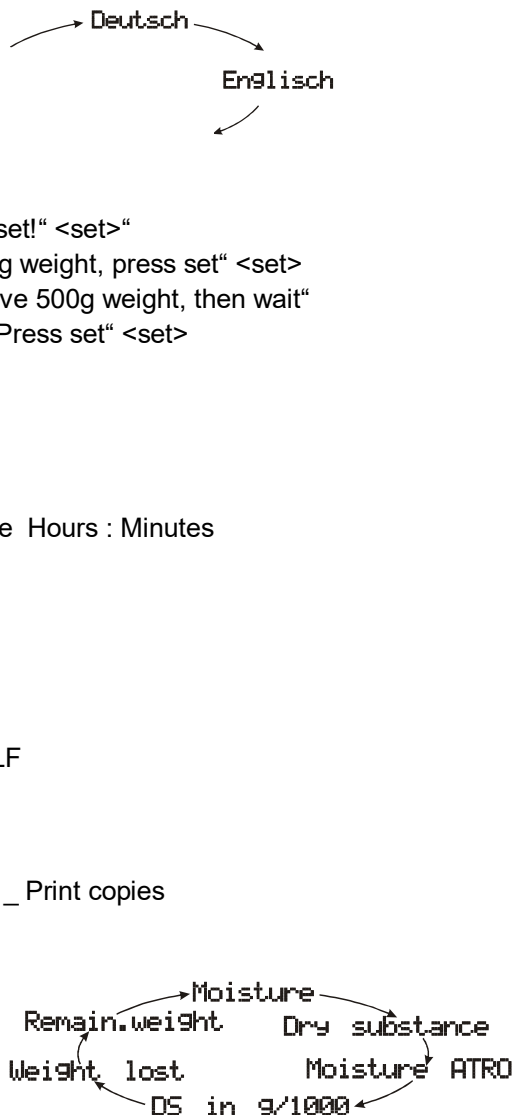
PCE-UX 3081

PCE-UX 3081WQ

Overview of menu setup via the UP button

Menu

- ▶ Menu language
 - ▶ Language, GERMAN
- ▶ Menu CAL
 - ▶ „Calibrate? Set or esc“ <set>
 - ▶ „If scales are empty, press set!“ <set>
 - ▶ „Please wait“; „Add 500 g weight, press set“ <set>
 - ▶ „Please wait“; „Remove 500g weight, then wait“
 - ▶ „CAL completed! Press set“ <set>
- ▶ Menu buzzer
 - ▶ Buzzer activated / deactivated
- ▶ Menu date + time
 - ▶ Date. Day . Month . Year Time Hours : Minutes
- ▶ Menü ID
 - ▶ Device ID 9999
 - ▶ Device ID, 0000
- ▶ Menu data output
 - ▶ Data output, without LF / with LF
- ▶ Menu printer
 - ▶ Printer, Number of print copies
 - ▶ Number of print copies, _ Print copies
 - ▶ Printer, Interval
 - ▶ Printout, every __ secs
- ▶ Menu Measurement unit
 - ▶ Measurement unit, moisture
- ▶ Menu Auto/ Timer
 - ▶ Auto/ Timer quartz, **Automatic mode**
 - ▶ Automatic mode, weight loss mg
 - ▶ weight loss mg, __ mg
 - ▶ Automatic mode, Interval secs
 - ▶ Interval secs, __ secs
 - ▶ Automatic mode, Start mins
 - ▶ Start mins, __ mins
 - ▶ Auto/ Timer radiant heater, **Timer**
 - ▶ Auto/ Timer radiant heater, __ mins
- ▶ Menu Temperature
 - ▶ Temperature, Ceramic heater


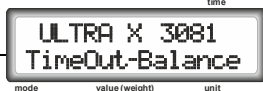




Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ

Potential errors

Error	Reason	Solution
Display		
Display blank:	Initial load too small or large, Tray support and / or tray missing	Place empty drying dray on centre of tray support,
	Location with too much disturbance	Place on a vibration-free surface
	Draught	Protect from draughts
	Area around tray support is dirty	Carefully clean area around tray support
	Scale is faulty	Contact PCE Instruments
	Scale without power	Contact PCE Instruments
	Scale is not connected to control card	Contact PCE Instruments
	Scale is faulty	Contact PCE Instruments
Scale continuing to run:	Location with too much disturbance	Place on a vibration-free surface
	Draught	Protect from draughts
	Area around tray holder is dirty	Carefully clean area around tray holder
	Scale is faulty	Contact PCE Instruments
Menu		
Drying parameters cannot be entered, only	Menu is locked	Unlock menu lock, contact the person responsible or PCE Instruments
		
Menu lock cannot be unlocked	5-digit pin for unlocking menu lock is incorrect	Contact PCE Instruments
Scale		
Scale cannot be tared	Weight within minus range	Switch off device, place empty tray on balance and switch on again
	Weight difference less than 16 mg or more than 16 mg	Less than 16 mg set to zero, press button briefly More than 16 mg tare, press and hold
Scale cannot be calibrated:	Initial load too small or large, tray holder and / or tray missing.	Place empty drying dray on centre of tray holder,
	Location with too much disturbance	Place on a vibration-free surface
	Draught	Protect from draughts
	Area around tray holder is dirty	Carefully clean area around tray holder
	Scale setting is incorrect	Contact PCE Instruments
	Scale is faulty	Contact PCE Instruments
	System error Calibration process has stopped	Disconnect device from mains and switch on again.

Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ

Error	Reason	Solution
Measuring		
Heater will not switch on:	Heater is faulty	Change heater
	Temperature sensor is faulty	Contact PCE Instruments
Infrared heater will not switch off	S202S01 relay is faulty	Contact PCE Instruments
	Automatic shut-off is set incorrectly	Check shut-off settings
	Timer is set incorrectly	Check timer settings
Measurement not completing	Shut-off settings incorrect	Check shut-off settings
	Timer settings incorrect	
Printer		
No printout	Printer is faulty or	Contact PCE Instruments
	no data transmission	Contact PCE Instruments
No linefeed	Linefeed button or printer is faulty	Contact PCE Instruments
	No connection to printer	Contact PCE Instruments
Printout invisible	No thermal paper	Use the thermal paper from PCE
	Printing unit or printer board is faulty	Contact PCE Instruments
Printout too light	Printing unit is dirty	Contact PCE Instruments

Care and maintenance

Please ensure that no pollutants enter the device.

Always keep the area around the tray holder clean.

Do not use compressed air to clean the device.

Do not overload the scales, max. 400 g.

Protect device from moisture and impact.

For ideal care and maintenance, we recommend taking out a service contract.

Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ

Technical data

Scale:

Weight range	400g
Resolution	0.1 g
Sample volume	max. 360 cm ³
Weighing tray	240 x 110 mm

For moisture analysis:

Initial weight	any weight from approx. 5 g, recommended from 10 g
Heater capacity	Ceramic heater 2x 250 watts (3081) 2x 400 watts (3081 WQ)
Automatic shut-off	Automatic drying to a constant weight, using 3 factors for I heaters and Q heaters, which can be set separately: Query start, query interval, weight loss/ query interval
Temperature	Ceramic heater adjustable from 40°C to 180 °C (3081) 105°C to 360 °C (3081QW)
Measuring units	% moisture % dry matter % ATRO moisture g solid matter/ kg
Reading accuracy	0.1% readable

Communication:

Data terminal	V24 RS 232/ USB
Data output	all weight and measuring data meet GLP requirements with a start time, optional variable interval printout, date, time, total measuring time etc.

Using **ULTRA X DataBridge** software can be transmitted to a PC as a
.xls file in Microsoft Excel,
.PDF file.

For operating the device:

Mains connection	230 V 2%/ + 15 %
Mains frequency	48-63 Hz
Power input	250 watts – 850 watts, depending on the model
Dimensions	approx. B 385 x D 275 x H 420 mm
Weight	approx. 9 kg/ 15 kg (3081 model)

Technical data subject to change without notice

PCE-UX moisture analysers are stand-alone units and not suitable for use in continuous production runs. We shall not accept any liability for incorrect readings!

Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ

Accessories:

	Order no.:	Use:
AV drying tray, large	10000288	Sample carriers (2 trays supplied)



Tray tongs	10000230	for lifting the tray (supplied)
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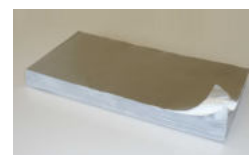
Mains cable	H1000019	Mains connection (supplied)
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Calibration weight F1 200 g	10000403	for calibrating the scales
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Aluminium foil 130 mm x 260 mm	H1000013	for placing on the drying tray
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Foil press	10000062	for shaping aluminium foil
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Software

DataBridge for transmitting data to a PC

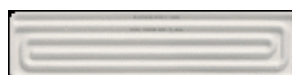
Consumables:

Printing paper 58 mm thermal, stable for 10 years	10000234	for printer
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Ceramic heater 250 W	10000405	Spare part
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Ceramic heater 400 W	10000318	Spare part
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Operating instructions for moisture analysers

PCE-UX 3081

PCE-UX 3081WQ



Disposal

For the disposal of batteries in the EU, the 2006/66/EC 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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