

USER MANUAL

MOISTURE ANALYSER

PCE-UX 3081 / PCE-UX 3081WQ

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

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

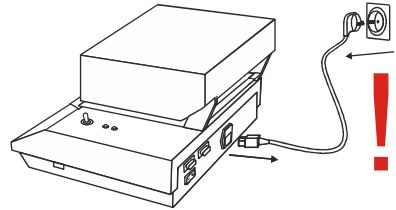
SAFETY INSTRUCTIONS

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.

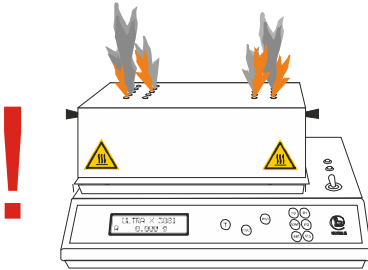
Never touch the hot radiator, risk of injury!



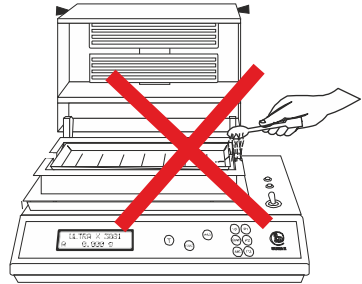
Before working on the device (e.g., replacing the lamp), disconnect the power plug!
Only trained specialists should perform any work on the device.



Take special care with flammable substances!
Maintain a safe distance from combustible objects.



Make absolutely sure that no sample particles fall next to the tray support.
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.

START-UP

1. 1. Place the device on a surface that is as level as possible, protected from drafts, and firm and vibration-free. The most suitable locations are in corners of rooms, rooms with only one entrance, and heavy tables on concrete floors. Remove the protective film from the front film, as it will be difficult to remove later.

1. 2. Now swing the spotlight back as far as it will go.

1. 3 Insert the shell holder:

First, carefully place the shell holder on the two tips. (The distance between the housing and the shell holder should be at least 1.5 mm.) Do not apply excessive pressure to the scale! Then carefully place the shielding plate unit on top, avoiding contact with the tips if possible.

To remove the pan support, first carefully lift the shielding plates and then carefully pull out the pan support in the middle with very slight rocking movements. Do not use excessive force!

1. 4. Next, place one of the two dry pans supplied onto the pan holder using the pan tongs. The recess in the windshield tray serves as a gap for easy placement of the shell.

1. 5. Check that the voltage specified on the type plate corresponds to the local mains voltage!

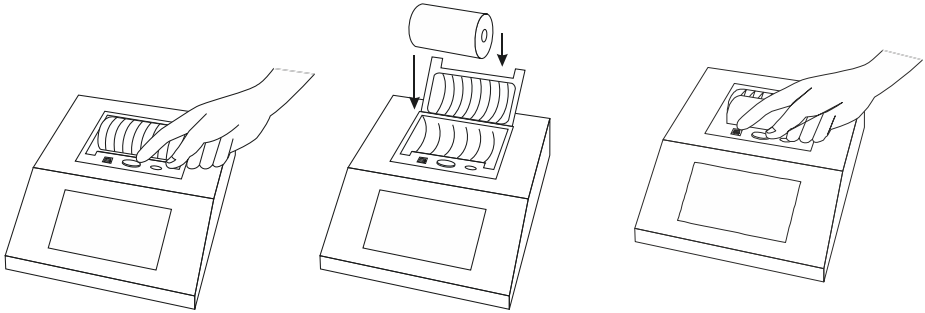
1. 6. Plug the connection cable into the device's mains socket and a suitable earthed mains socket. Once the power is connected, the device can be switched on or off using the main switch on the back of the device. The device software version is displayed until the weight display appears after switching on.

1. 7. To rule out measurement errors in the weighing system, the device should be left switched on for 20 minutes before actual operation for the purpose of heat compensation. If the weight values in the display change in the milligram range during this time, this is normal.

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 with printer

First connect the external printer to the moisture analyzer using the cable supplied, then connect it to the mains and switch on the moisture analyzer. If the printout is upside down, press <reset>.



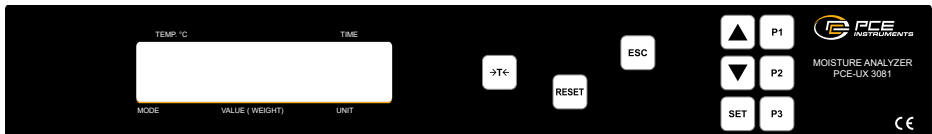
Open the lid:
Press and hold the green button
and lift the plastic lid.

Load paper

Line feed

OPERATION

Display and buttons



>T< Tare button and zeroing the weight display

▲ Button for entering the menu & navigating within the menu

P1 Unoccupied

RESET Button for resetting the processor program

▼ Button for entering the menu & navigating within the menu

P2 Program memory optional

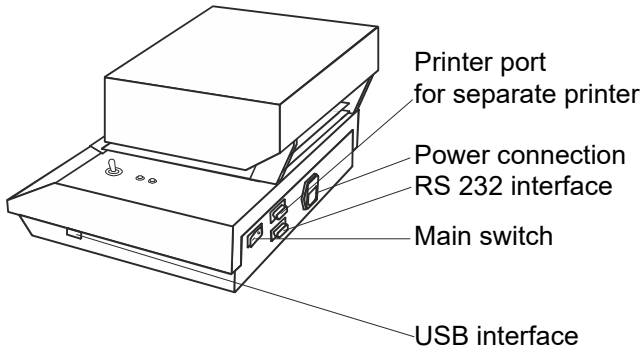
ESC Key for exiting menu levels

SET Key for confirming the entry

P3 Unoccupied

When switching on the device, the tray support and drying tray should be in place.

Connections:



Menu

Factory settings:

Temperature:	3081	3081WQ
	40°C ... 200°C	105°C ... 360 °C

Automatic switch-off with parameters:	Weight loss 50 mg
	Query interval 45 sec
	Query start 5 min

Buzzer activated at end of measurement

SETTINGS IN THE MENU

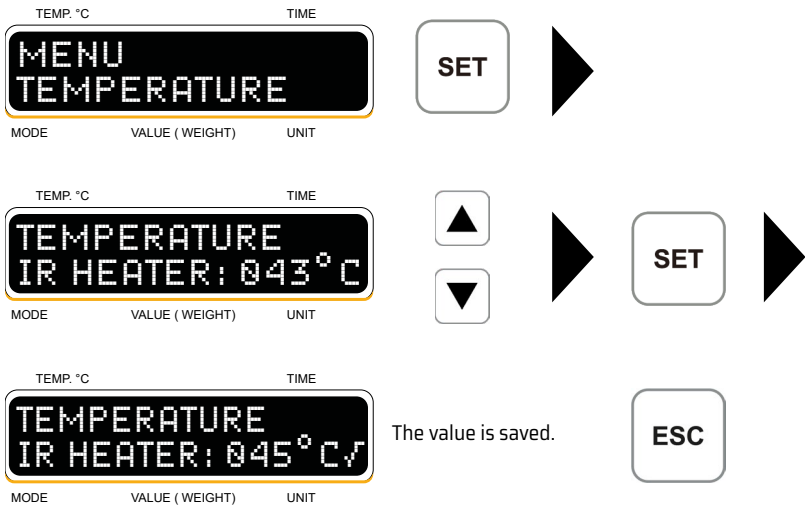
The menu for the device's default settings can be accessed using the UP or DOWN buttons.

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

Unit of measurement



Moisture
Dry matter
Moisture ATRO
TS in g/1000
Residual weight
Weight gain



During measurement, the device displays the following options:

- % moisture (F)
- % dry matter (DM)
- % moisture Atro (A), i.e. moisture relative to dry matter

Example: 50% moisture = 100% Atro
25% moisture = 33.33% Atro
75% moisture = 300% Atro

- Dry matter (DM g/1000 g)
- Weight loss g (V)
- Residual weight g (R) (current weight)
- Weight gain (GZ)

After measuring gypsum, the purity level can be displayed by pressing the <P1> key.

Printer settings



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



up to 9



No printing or printing every 10 ... 99 seconds possible.

Data output for external printer (third-party product)



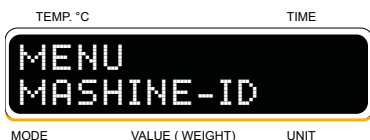
With Linefeed, an additional LF is sent via the interface (factory setting without LF).



Device identity number



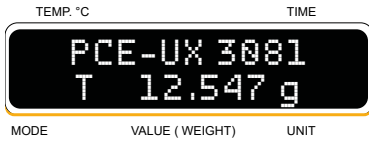
Enter a number up to 9999 that you can use to identify the device. Each digit can be selected individually.



Language



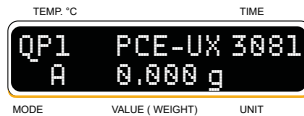
German /
English



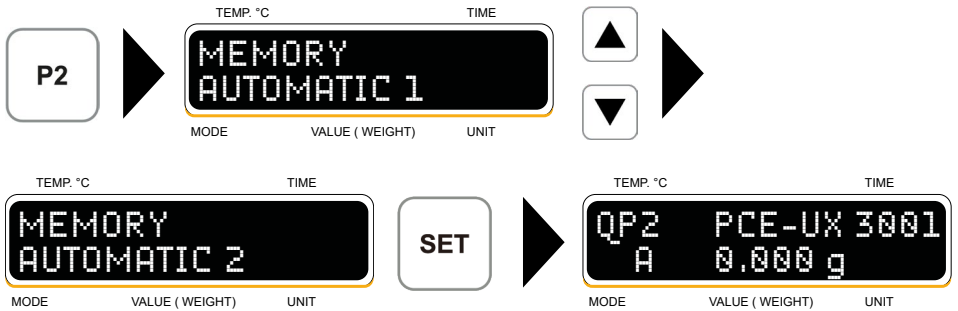
The letter in the second line stands for automatic (A) or timer (T).

SAVE DRYING PARAMETERS IN PROGRAM MEMORY

If your device has a program memory, QP and a number from 1-9 will appear in the top left corner of the display for the PCE-UX 3081 and PCE-UX 3081WQ models.

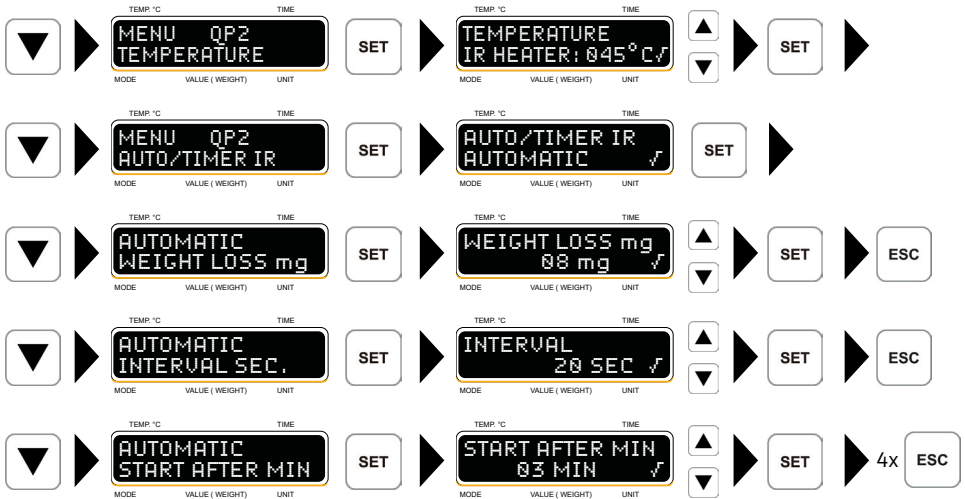


The standard parameters are set at the factory under program item 1.
 The respective drying parameters can be saved or changed using the P2 button.
 Drying parameters are: temperature and the parameters of the automatic mode or the timer.



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.

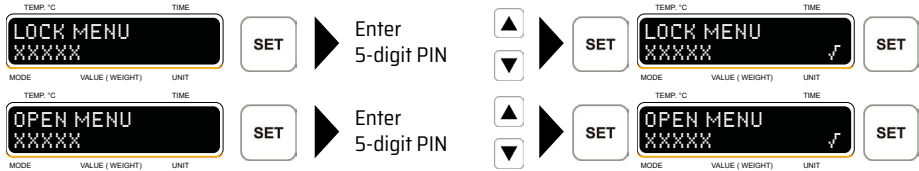


Changes to the quartz emitter's unit of measurement, printer settings, data output, device ID, date and time, buzzer and language, as well as temperature and automatic mode parameters will have no effect on the settings in the program memory for the bright emitter.

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.

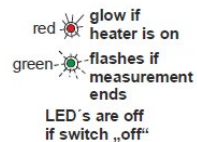
PROCEDURE FOR DETERMINING MOISTURE CONTENT

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

- » Set the balance to zero using the tare button; display: “0.000g.” Distribute approximately 50g to 200g of sample material evenly on the dish and wait for the display to stabilize.
- » Swivel the radiator over the sample. Press the radiator switch and drying begins. If a printer is connected, the header data is now printed. The sample is dried until the weight is constant, then the radiator is automatically switched off. The printer then prints the time and measured value. If no measurement is to be taken, always ensure that the radiator is swiveled all the way back!

The measured values are displayed until the radiator switch is set to OFF.

Do not move the device 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,
Weighing

and after the measurement is complete, after the radiator has swung back:
Measured value,
Measurement time,
Material,
Signum

Use a cooled drying dish for each measurement.

If the measurement is terminated prematurely, the display shows:



Für Materialien die sich nach dem Trocknen nur schwer von der Schale entfernen lassen, oder auf dem PCE-UX 052 bei 550°C verascht werden sollen, empfehlen wir **Aluschalen** zu verwenden, die schnell und kostengünstig aus Alufolien mit der **PCE-UX Folienpresse** hergestellt werden können.

DATA INTERFACE

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

A computer must be connected.

Special software is required for data transfer to a PC: **PCE-UX DataChannel**

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

Large AV drying tray	10000288	Sample carrier UX 3081 (2 pieces included in delivery)
Tray tongs	10000230	for lifting the tray (included in delivery)
Power cord	H1000190	Power connection (included in delivery)

CONSUMABLES

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

SPARE PARTS

Ceramic heater 250W	10000405	for 3081
Ceramic heater 400 W	10000318	for 3081WQ

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

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**


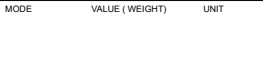


Auto/timer Bright, _ min

Menu Temperature

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

Temperature, quartz 360 °C

POSSIBLE ERRORS

Error	Cause	What you can do
Display		
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.
	Memory loss	Contact PCE Instruments
Incorrect device type is shown on the display.	Memory loss	Contact PCE Instruments
Printer		
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

Error	Cause	What you can do
Menu		
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
Measure		
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
Scale		
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

Error	Cause	What you can do
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
Other		
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 400 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 400 g
Resolution	0.001 g
Sample volume	max. 360 cm ³
Weighing pan	240 x 110 mm

For moisture determination:

Weighing range	Any weight from approx. 50 g, recommended from 100 g
Radiator power	Ceramic radiator 2x 250 watts (model PCE-UX 3081) 2x 400 watts (model PCE-UX 3081WQ)
Automatic switch-off	Automatic drying until weight is constant, according to 3 criteria Start of query, query interval, weight loss/query interval
Temperature	Ceramic radiator from 40°C to 200 °C (PCE-UX 3081) 105°C to 360 °C (PCE-UX 3081WQ) adjustable
Measurement evaluation	% moisture % dry matter % moisture ATRO g solids/kg
Measurement accuracy	0.01% 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:

Mains connection	230 V 2% / + 15 %
Mains frequency	48 to 63 Hz
Power consumption	500 watts to 850 watts, depending on model
Dimensions	approx. W 385 x D 275 x H 420 mm overall
Weight	approx. 15 kg

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

ACCESSORIES

Large AV drying tray	10000288	Sample carrier PCE-UX 3081 (2 pieces included in delivery)
Tray tongs	10000230	for lifting the tray (included in delivery)
Power cord	H1000019	power connection (included in delivery)
Calibration weight F1 200 g	10000403	for calibrating the scale
Aluminum foil 130 mm x 260 mm	H1000013	for placing on the drying tray
Square foil press	10000063	for shaping the aluminum foil
Software	DataChannel	for transferring data to a PC
Consumables		
Thermal paper <10 years	100000234	with built-in printer
Ceramic radiator 250 W	10000405	Spare part
Ceramic radiator 400 W	10000318	Spare part
Ceramic radiator 600 W		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.

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