

Basic information

Intended use

ULTRA X 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 ULTRA X devices:

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

Automatic or time-controlled measurement shut-off

UX 3081/ 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



UX 3011/ 3011Q/ 3011HQ

Temperature-controlled infra-red heater 250 W/ 375 W

Temperature range: 40 – 200 °C/ 360 °C/600 °C

Stainless steel drying tray 111 mm diameter



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

UX 3081

UX 3081WQ



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Operating instructions for moisture analysers UX 3081 UX 3081WQ

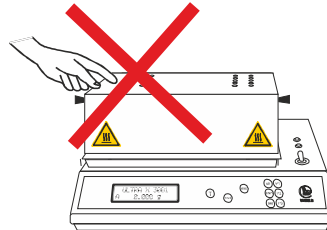
Safety instructions

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

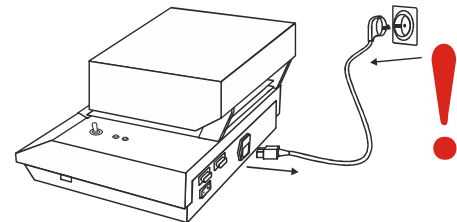
Always operate the device on a level surface, using a vibration-free base.

Avoid draughts.

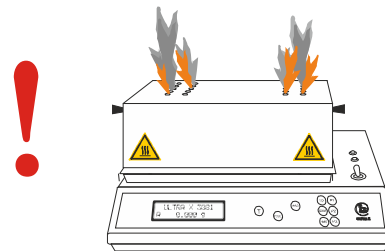
Never touch the (luminous) heater when it is hot, as there is a risk of injury!



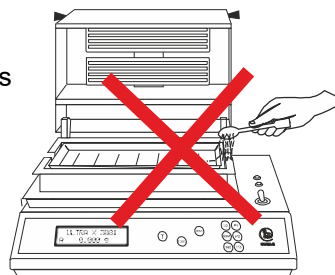
Always disconnect the plug from the mains supply before performing any work on the device (e.g. changing the heater)!
Repairs should only be carried out by a qualified technician.



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 ULTRA X 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.

ULTRA X 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

a&p 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.

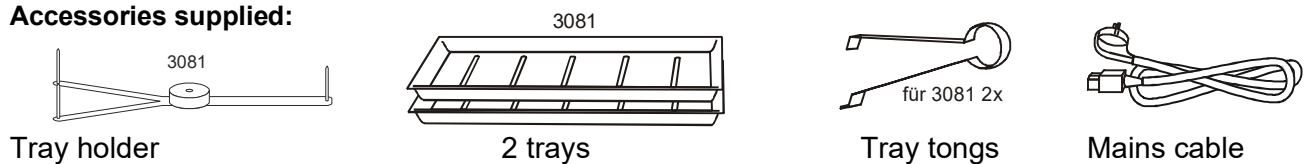
This warranty does not apply to:

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:

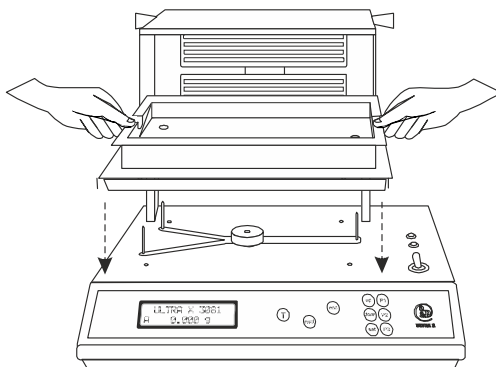
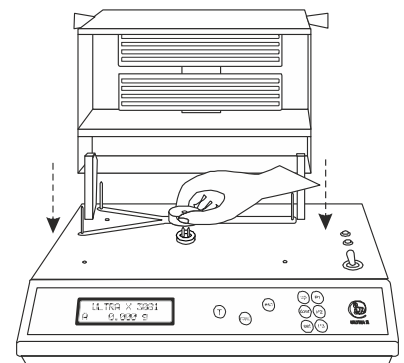


Start-up

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!

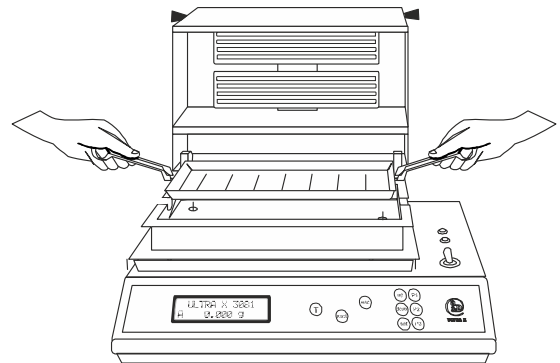


Then put on the shielding plate unit.

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!

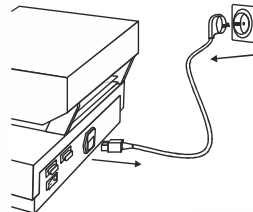
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1. 4. Next place one of the two drying trays supplied on the tray holder using one or two sets of tongs. The notch in the reflector tray acts as an access gap for easy positioning of the tray.



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



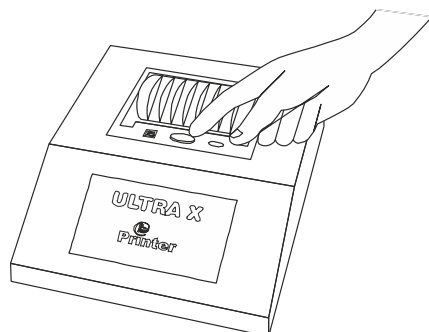
the on/ off button on the back of the device. Once the device is switched on, the current software version is shown, followed by the weight display.



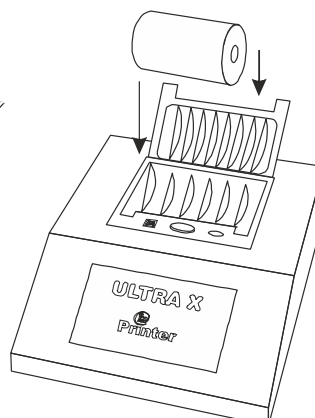
1. 7. In order to prevent weighing system measuring errors, the device should be switched on 20 minutes before being used to allow for heat compensation. If weight values vary in the display's milligram range during this period, this is considered normal within this phase. If the device is switched off using the reset (on/ off) button, it does not require a warm-up period, if switched on again with the same button.
1. 8. ULTRA X 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

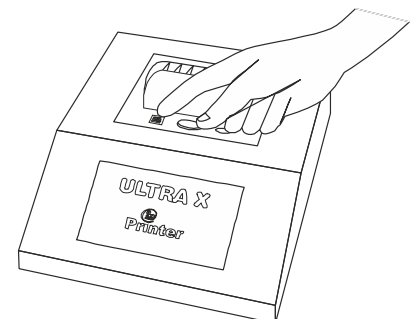
Open Cover:
Hold the green glowing button
and lift the plastic cover



Change Paper



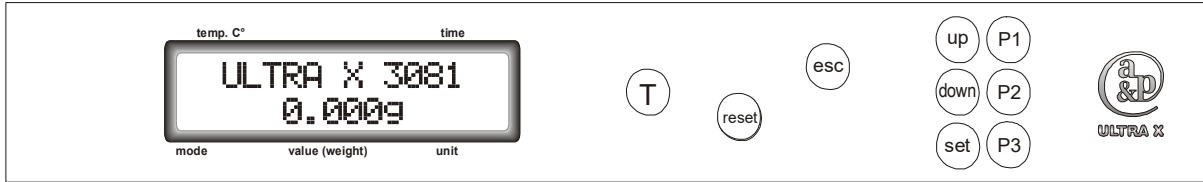
Line feed



The ULTRA X Thermo paper is stable for 10 years.

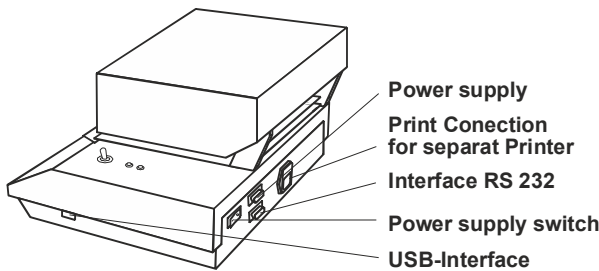
Operation

Display and buttons



- Tare button for setting the weight readout back to zero
- Button for resetting the processor programme
- Button for exiting menu levels
- Button for accessing and scrolling through the menu
- Button for accessing and scrolling through the menu
- Button for confirming entries
- percentage purity only for UX 3031
- programm memory (otional)
- residue on ignition only for UX 3011G

Ports:



Menu

Factory settings:
 Temperature: 3081 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.

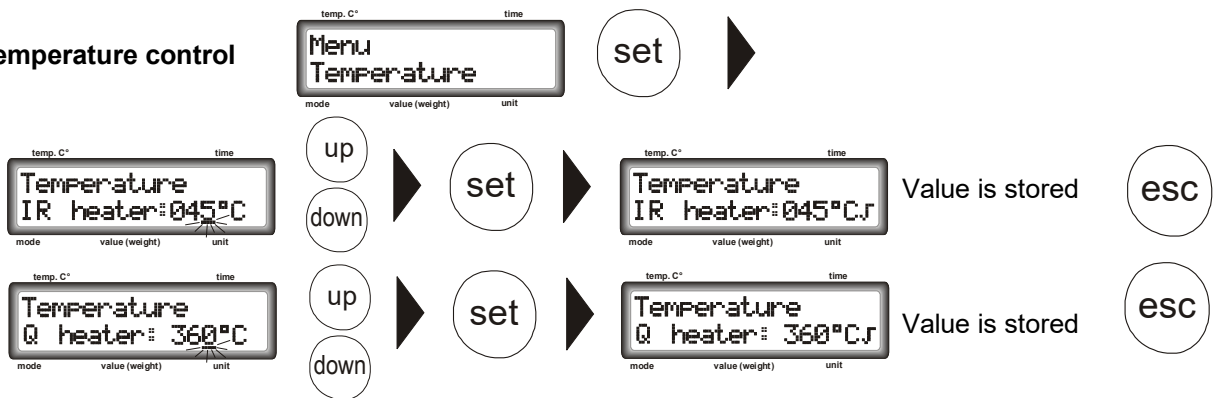
In this instruction manual, it is assumed that the 'down' button follows the menu item sequence.

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.

Temperature control

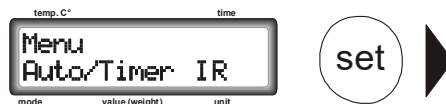


The temperature that is set on the device relates to the thermal radiation that hits the sample to be dried.

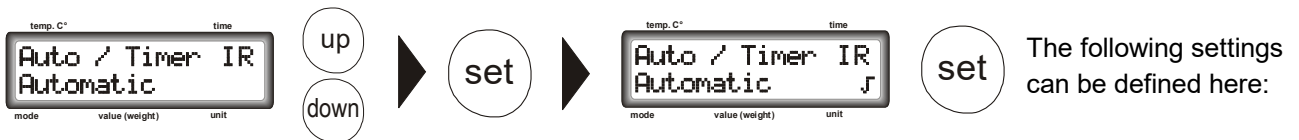
The thermal radiation is an electromagnetic wave for the transmission of energy. As this energy creates heat in the sample, the moisture evaporates from the sample. The temperature is used to set the energy that allows the moisture to evaporates from the material (more temperature is more energy).

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

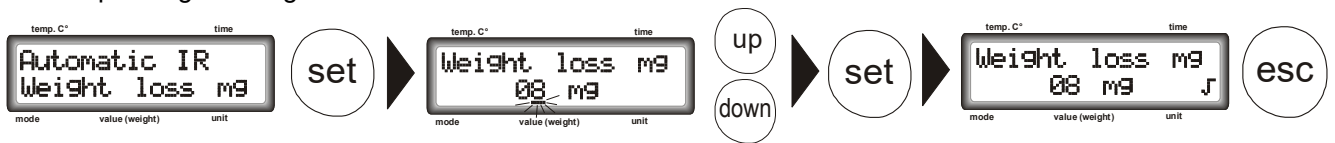


The automatic mode dries the sample until a constant weight is reached and then switches off the heater.



1. Weight loss in mg

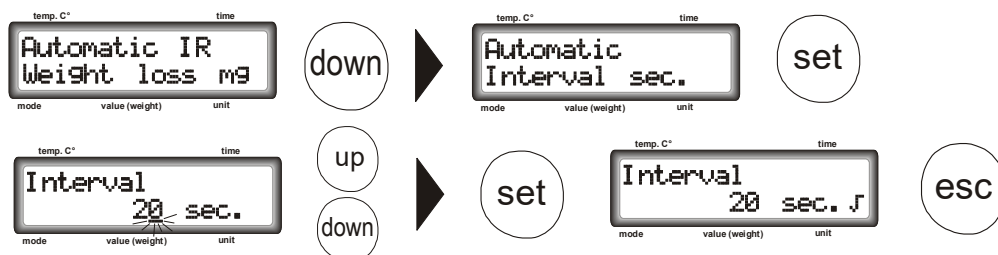
a value should be defined here which corresponds to approx. 0.1 % of the original sample e.g. original sample 10 g = 10 mg



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.

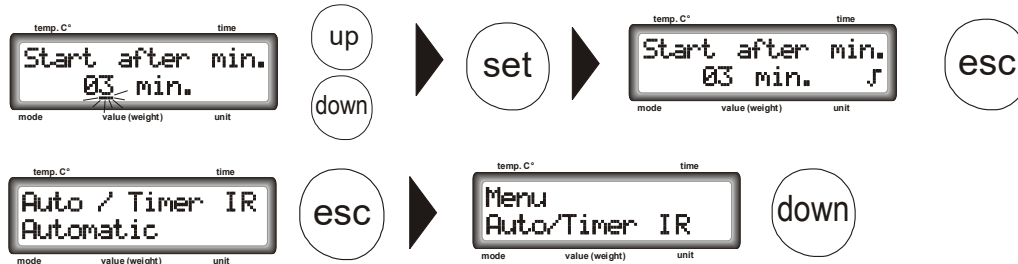


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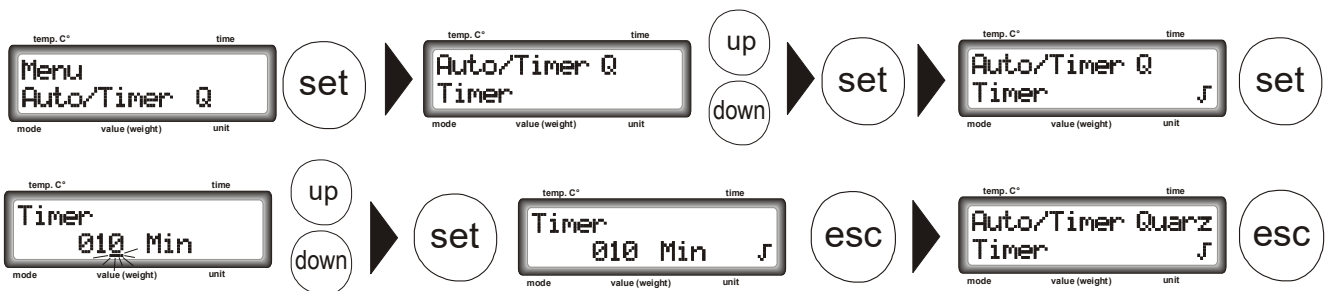


3. Start of query in minutes

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 UX 3031 in particular, when free moisture is being measured at 45°C. You can select 1-99 mins.

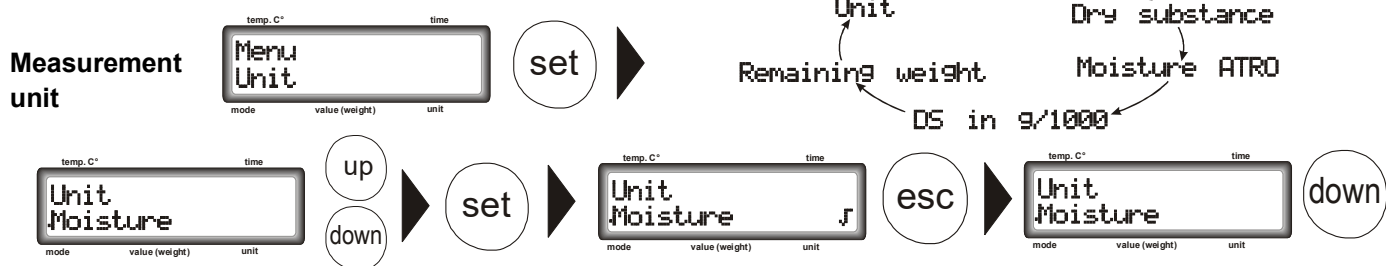


The timer setting is the same as described for the quartz heater.



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

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



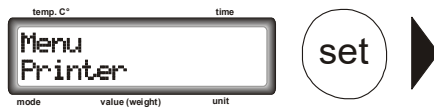
During measurement, the device optionally displays:

- % 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)

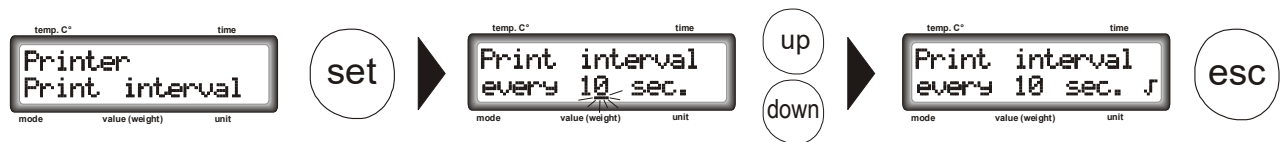
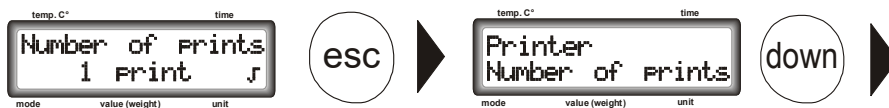
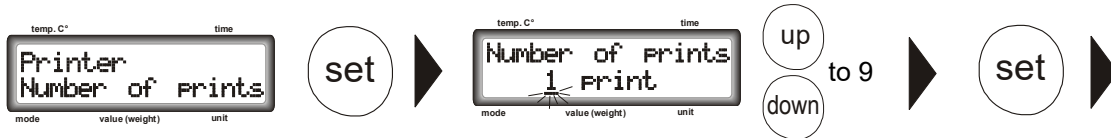
Example: 50 % moisture = 100 % Atro
25 % moisture = 33.3 % Atro
75 % moisture = 300 % Atro

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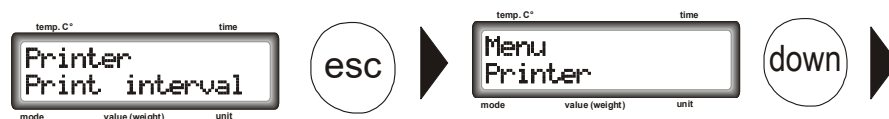
Printer options



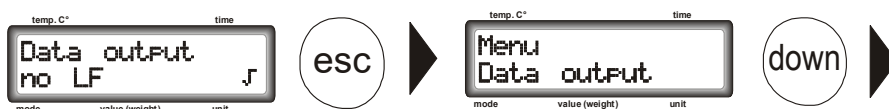
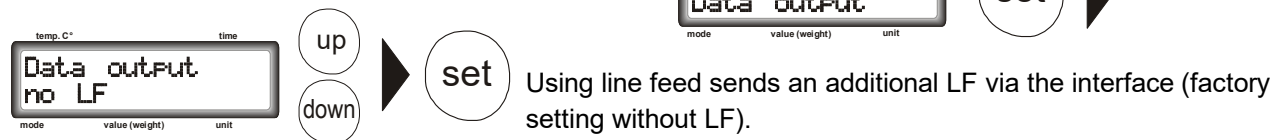
For devices without a printer, the number of prints must be set to '1'!



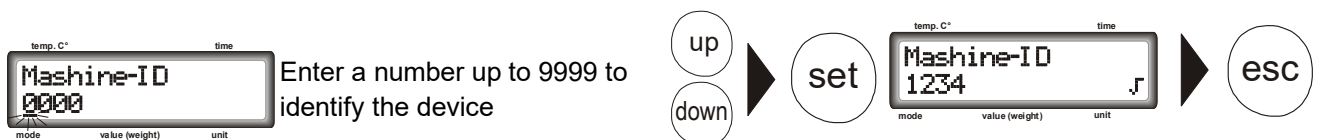
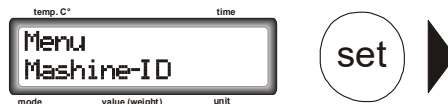
It is possible to select no printout or every 10 – 99 secs.



Data output for external printer (other manufacturer)



Device ID number

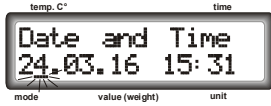


Each digit can be selected separately.

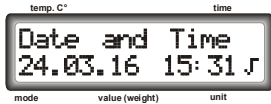
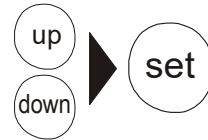


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Date and time

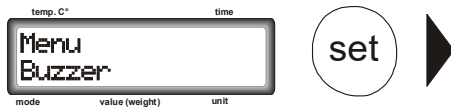


Use 'up'/'down' to set the date and press 'set'.
Use 'up'/'down' to set the month and press 'set'.
Use 'up'/'down' to set the year and press 'set'.
Use 'up'/'down' to set the hour and press 'set'.
Use 'up'/'down' to set the minutes and press 'set'.



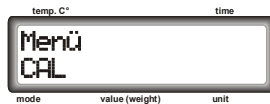
The date and time are shown on the printout

Buzzer

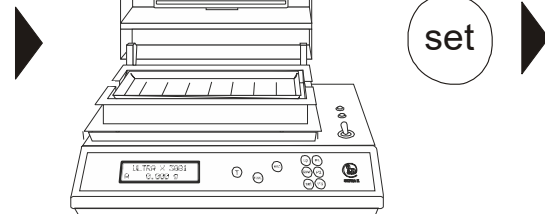


Use 'up'/'down' and 'set' to activate or deactivate the buzzer, then press 'set' followed by 'esc'.

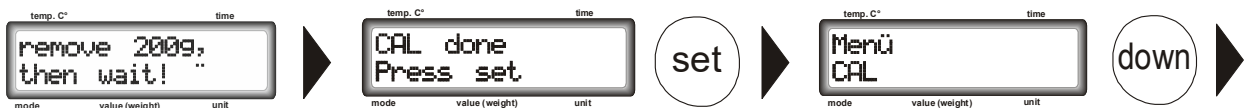
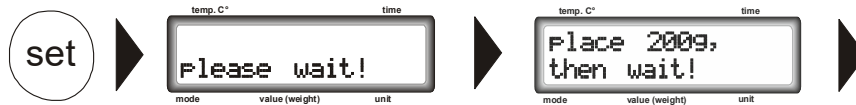
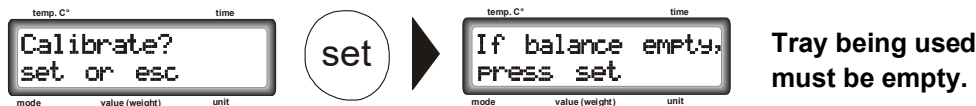
Calibrating the scales



Tray carrier and tray must be on the balance!



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



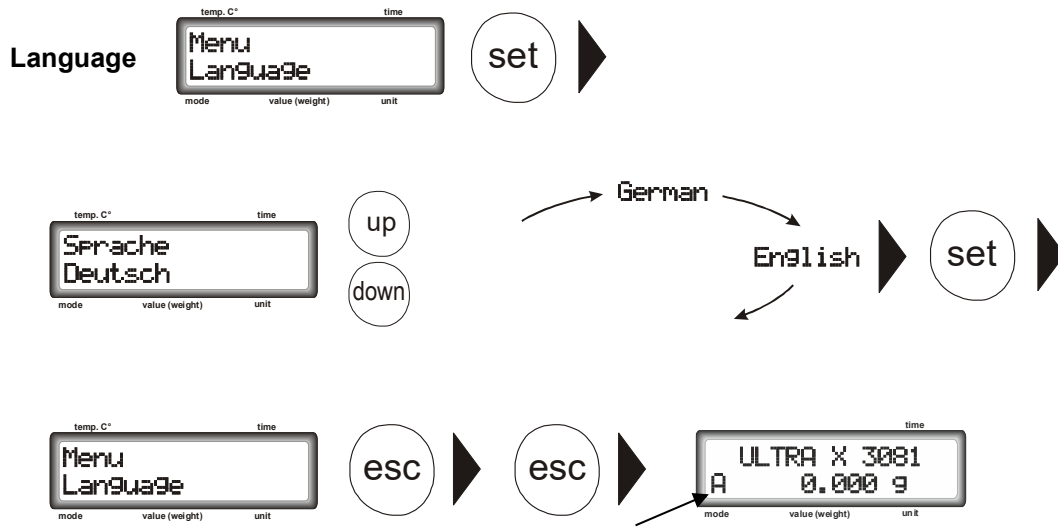
If the display shows



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

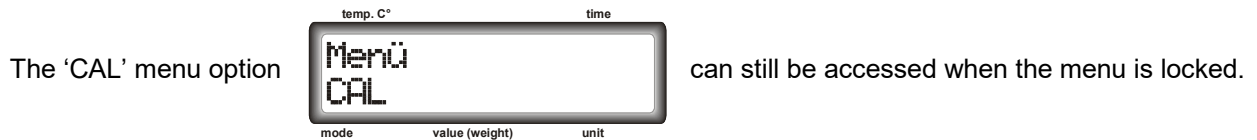
The reason for this, please look at "potential errors" on page 15

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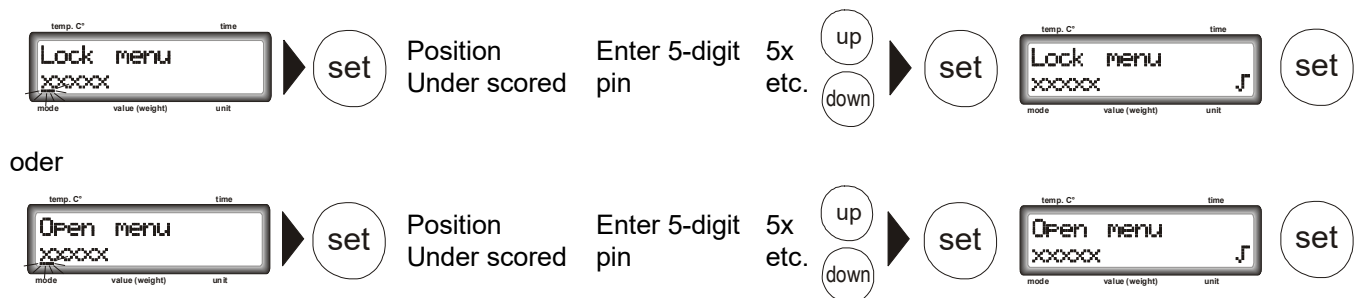
The first two letters on the second line stand for Automatic (A) and Timer (T).

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:

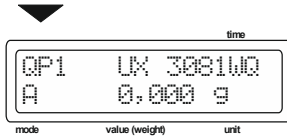


If you forget the PIN, you can obtain a new one from a&p instruments.

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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 UX3081 and UX3081WQ and a number of 1-9.

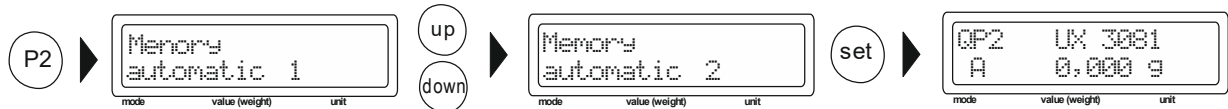


depending on which heater the program memory was activated from the manufacturer, here for the infra-red heater.

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

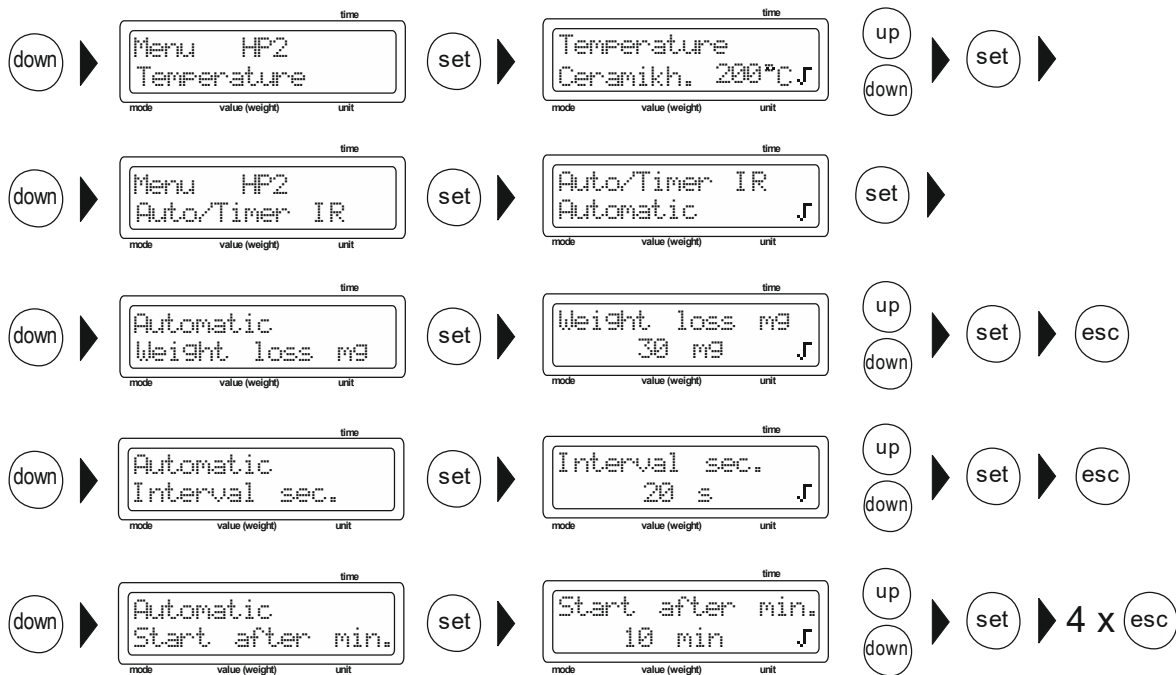
The different drying parameters can be saved or be changed with button P2 .
Drying parameters are: temperature and the parameters of the automatic or the timer.

P2



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.



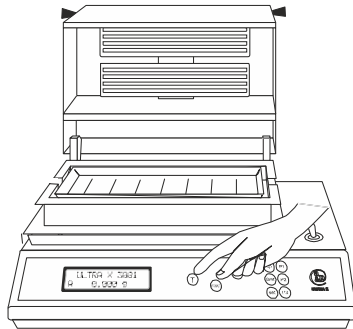
Changes for the quartz heater to the unit of measurement, printer settings, data output, device ID, date and time, Buzzer and language, same as temperature and the parameters of the automatic system affect all program memories at the same time.

Operating instructions for moisture analysers UX 3081 UX 3081WQ

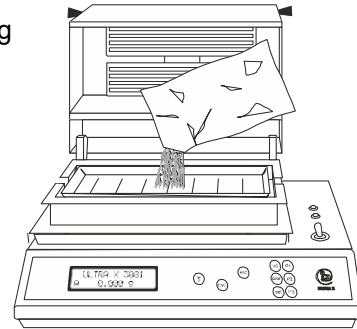
Moisture analysis process

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

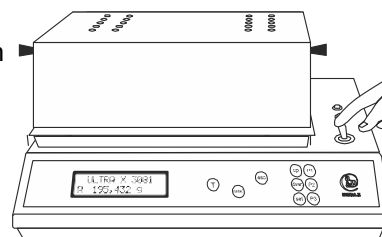
Set scales to zero using the 'tare' button, display '0.000 g'.



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!



red LED glow if heater is on
green LED flashes if measurement ends
LED's are off if switch „off“

- 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

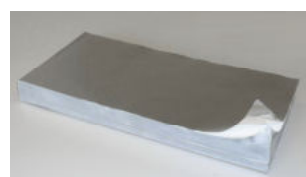
Please ensure drying trays have cooled down before using for measurement.

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 ULTRA X foil press.



Operating instructions for moisture analysers UX 3081 UX 3081WQ

Data interface

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

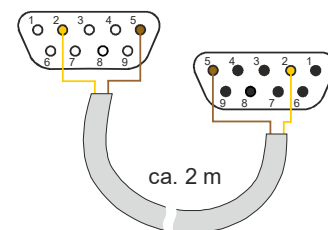
Depending on the model, a separate UX 3092 printer or a computer can be connected to the device.

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:

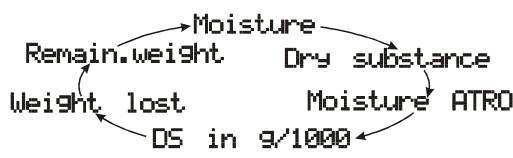
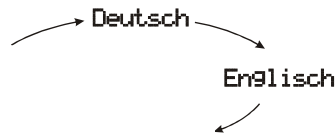
| | | |
|---------------------|----------|------------|
| Ceramic heater 250W | 10000405 | for 3081 |
| Ceramic heater 400W | 10000318 | for 2081WQ |

Operating instructions for moisture analysers UX 3081 UX 3081WQ

Overview of menu setup via the UP button


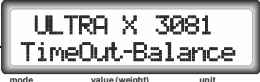


Menu

- ▶ 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
UX 3081
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 a&p instruments |
|  | Scale without power | Contact a&p instruments |
| | Scale is not connected to control card | Contact a&p instruments |
| | Scale is faulty | Contact a&p 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 a&p instruments |
| Menu | | |
| Drying parameters cannot be entered, only | Menu is locked | Unlock menu lock, contact the person responsible or a&p instruments |
|  | | |
| Menu lock cannot be unlocked | 5-digit pin for unlocking menu lock is incorrect | Contact a&p instruments at a.ukena@apinstruments.de |
| 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 tare 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 a&p instruments |
| | Scale is faulty | Contact a&p instruments |
|  | System error Calibration process has stopped | Disconnect device from mains and switch on again. |

| Error | Reason | Solution |
|-------------------------------------|--|--------------------------------|
| Measuring | | |
| Heater will not switch on: | Heater is faulty | Change heater |
| | Temperature sensor is faulty | Contact a&p instruments |
| Infrared heater will not switch off | S202S01 relay is faulty | Contact a&p 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 no data transmission | Contact a&p instruments |
| | | Contact a&p instruments |
| No linefeed | Linefeed button or printer is faulty | Contact a&p instruments |
| | No connection to printer | Contact a&p instruments |
| Printout invisible | No thermal paper | Use the thermal paper from a&p |
| | Printing unit or printer board is faulty | Contact a&p instruments |
| Printout too light | Printing unit is dirty | Contact a&p 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.

Disposal

The devices can be sent to a&p instruments for disposal.

Do not dispose of with household waste!

Operating instructions for moisture analysers UX 3081 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

ULTRA X 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
UX 3081
UX 3081WQ**

Accessories:

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



| | | |
|------------|----------|------------------------------------|
| Tray tongs | 10000230 | for lifting the tray (supplied) |
|------------|----------|------------------------------------|



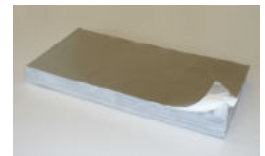
| | | |
|-------------|----------|--------------------------------|
| Mains cable | H1000019 | Mains connection (supplied) |
|-------------|----------|--------------------------------|



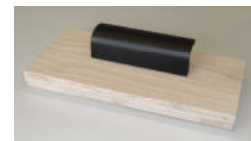
| | | |
|-----------------------------|----------|-------------------------------|
| Calibration weight F1 200 g | 10000403 | for calibrating the scales |
|-----------------------------|----------|-------------------------------|



| | | |
|--------------------------------|----------|--------------------------------|
| Aluminium foil 130 mm x 260 mm | H1000013 | for placing on the drying tray |
|--------------------------------|----------|--------------------------------|



| | | |
|------------|----------|----------------------------|
| Foil press | 10000062 | for shaping aluminium foil |
|------------|----------|----------------------------|



| | |
|-----------------|--|
| Software | DataBridge for transmitting data to a PC |
|-----------------|--|

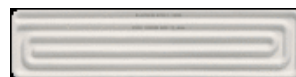
Consumables:

| | | |
|--|----------|-------------|
| Printing paper 58 mm thermal, stable for 10 years | 10000234 | for printer |
|--|----------|-------------|



| | | |
|----------------------|----------|------------|
| Ceramic heater 250 W | 10000405 | Spare part |
|----------------------|----------|------------|

| | | |
|----------------------|----------|------------|
| Ceramic heater 400 W | 10000318 | Spare part |
|----------------------|----------|------------|



Operating instructions for moisture analysers
UX 3081
UX 3081WQ

