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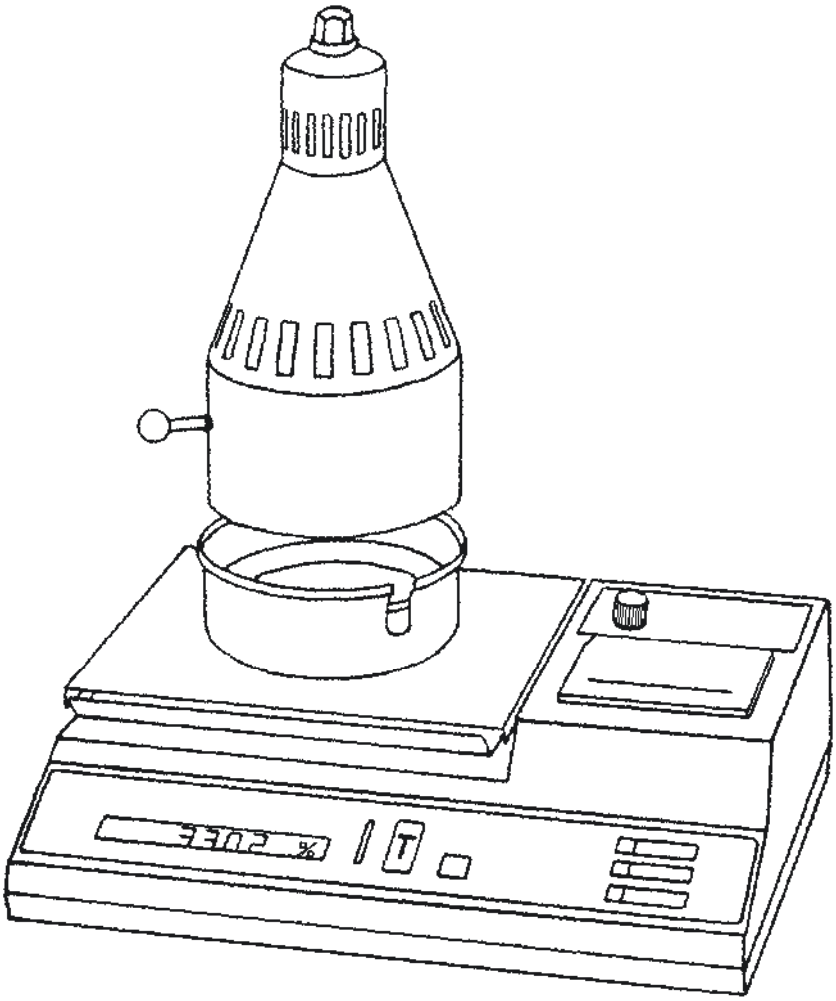
# Instruction Manual
# Series 2001



**Thank you very much for purchasing your new ULTRA X moisture tester.**
**Please read the following instructions carefully.**

[Geben Sie ein Zitat aus dem Dokument oder die Zusammenfassung eines interessanten Punktes ein. Sie können das Textfeld an einer beliebigen Stelle im Dokument positionieren. Verwenden Sie die Registerkarte 'Textfeldtools', wenn Sie das Format des Textfelds 'Textzitat' ändern möchten.]

ULTRA X instruments normally work for many years. Should it be necessary however to send the device to our service department, please use the **original packing** or ask us for a new one.

The **warranty** requires that the devices are handled according to their sensitiveness. The devices have a built-in mg-balance and may not be exposed to strong shocks. **A broken weighing cell does not come under the warranty.**

**Safety advices**

Transport the instrument only in the upright position
Do not expose the instrument to heavy shocks
Operate the instrument always horizontally and on a vibration-free surface
Parts of sample material shall not fall between the pan holder and the housing, that will hinder the balance.
Never touch the hot radiator, there is a risk of injury!
Pull out the mains plug before maintaining the instrument
Maintenance should only be done by experts in electric equipment
Take special care when drying inflammable sample materials
Use only accessories in ULTRA X quality
Dispatch the instrument only in the original packing

## 1. Starting

1.1. Place the instrument on a horizontal, firm and vibration-free surface.

1.2. (Not for UX 2081 types)
Set the radiator's height with the calibration stick to 7 – 8 cm between the reflector's edge and the top surface of the housing. Loosen the screw at the reflector holder and move the reflector up into the correct position.

1.3. Swing back the radiator and place a drying pan onto the pan holder by using the special steel tong (UX 2081 types come along with two tongs)

1.4. Check the local mains voltage to the instrument's voltage shown on the identification plate on the backside of the instrument.

1.5. Connect the instrument to the mains.

1.6. Start the instrument with the Standby button.

## 2. First measurement with the factory settings

There are only three steps to do:

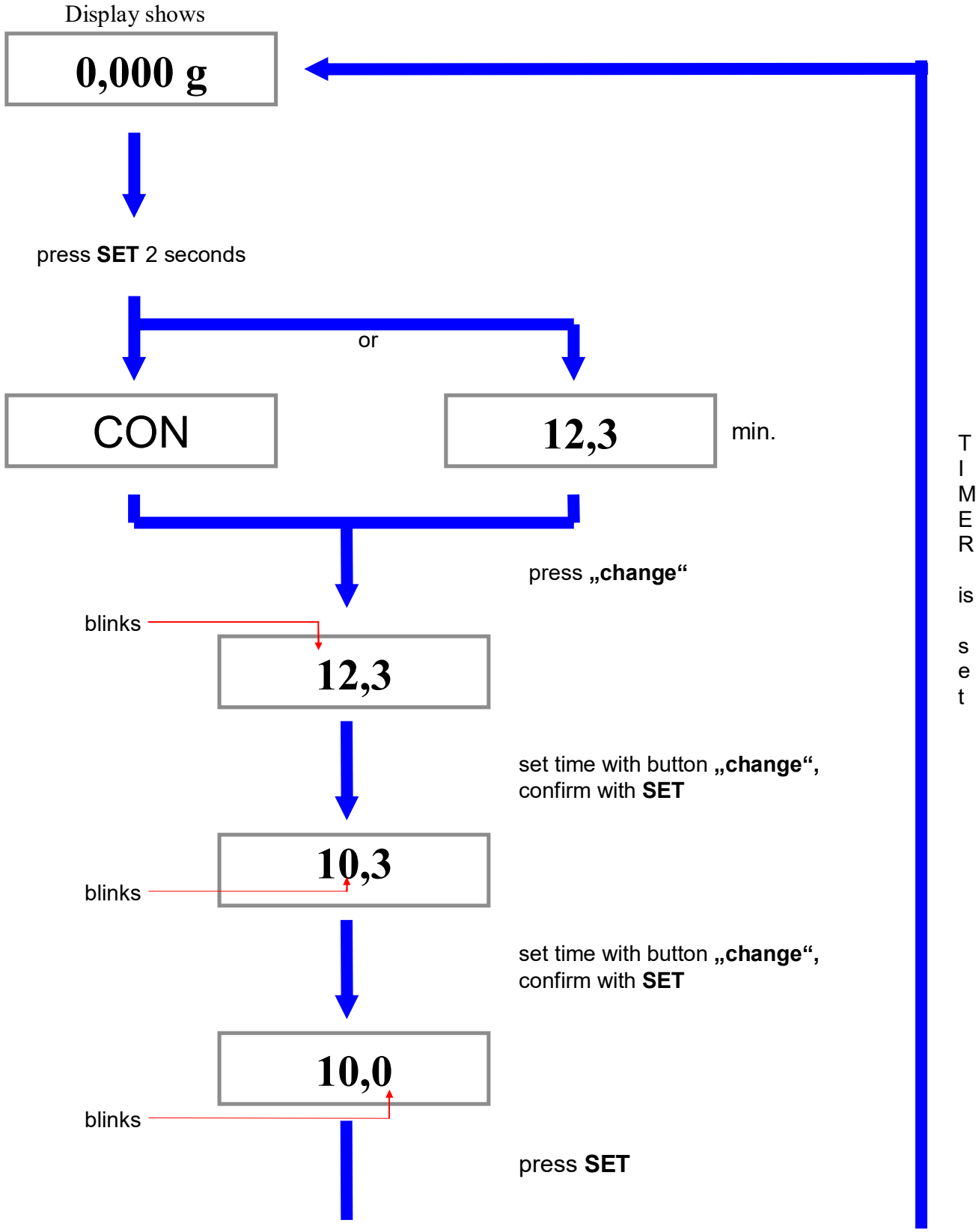
2.1 Tare the balance to zero with the Tare button.
2.2 Place your sample material on the drying pan and spread it out to an equal surface for a good drying Wait some seconds until the weight is shown steady in the display.
2.3 Swing the radiator over the sample.

In this mode the sample will be dried until no more moisture evaporates and the instrument will stop the drying process automatically.
The automatic parameters are set to " 8 mg weight loss, 20 sec interval, 1 min start interval".
That means, the instrument will start the drying process ,wait 1 minute after the start (start interval) until the weight loss is registered by the processor and it will stop the drying process when in between 20 seconds ( measuring interval) less than 8 mg weight loss happened.
Of course these parameters (and some more) can be adjusted to your demands.

## 3. Drying by timer or automatic function (Konsta Stop) ?

Most materials can be measured by using the automatic stop function. There are only a few materials (e.g. sugar, jam), which could irritate the automatic function and need the timer for a fixed drying time. Please use the timer only when your material cannot be dried with correct reproducible results.

## Konsta-Stop (automatic mode) or Timer




Timer set to 00,0 sets the instruments into the automatic mode.

## 4. Parameter setting

Different parameters can be adjusted by using the Tare together with the Change button. This is only possible with the radiator in the backwards position and the display showing the weight.
Push the Tare button very short will tare the balance to zero, push it some seconds will start the parameter setting mode. Each push on the Tare button now will take you to the next parameter. Changes are done by using the Change button. This mode can be stopped at any time by using the SET button.
If you have reached the settings level accidentally, press the SET button and you are back in the weighing mode.

# Settings level

| | DISPLAY shows | SETTINGS can be changed by using the „Change“ button | MEANING | |
|---|---|---|---|---|
| Press „Tara“ button for two seconds → | PNr. | **0000**; 1000, ...9000 (Standard is no sample no.) | Sample no., (0001,0002,...) | STOP BY SET BUTTON |
| | ⇓ IA | 0“→6“→**12“**→30“ Sek.→1’→2’→4’ min. | Printing in intervals | |
| | ⇓ **FEUCHTE (HU)** | Atro (AO); Dry Matter (dM); Per 1000(PM) | Results [1] | |
| | ⇓ Print | **0**; 1; 2; 3 prints | Number of prints *To send data via the interface, „Print“ has to be set at least to „1“ !* | |
| KONSTA STOP [2] → | ⇓ GAb | 4; **8**; 16; 32 mg | Weight loss | |
| | ⇓ AIn | 10“, **20“**; 45“; 70“ sec | Weight loss in how many seconds | |
| → | ⇓ Abn | 0,3’; **1’**; 2’; 3’ min | Start of detecting weight loss | |
| | ⇓ PFl | **aus**, 0, ....100% (dM) | Preflash [3] *for very wet samples to shorten drying time !* | |
| | ⇓ Heat | 0, ....100% Power **75 %** | Power of radiator: *with 250W radiator up to app. 160°C UX 2011 Q up to app. 360°C* | |
| | ⇓ Delay | **0**, .... 9 sec. | Time delay, until the balance´ display will be steady ! | |

| | | |
|---|---|---|
| CAL<br>⇓<br>Stb<br>⇓<br>Uhr,<br>Datum,<br>Monat, Jahr<br>⇓<br>Config<br>⇓<br>0,000 g | 1 (very calm), **2**, 3,<br>4 (turbulent) | Calibrating the balance<br><br>Stability *of the balance*<br><br>Set time and date<br><br>Settings can be printed by the<br>„**Change**“button |

***Standard Settings are underlined and bold***

**[1)]Meaning of the results:**

**„FEUCHTE“ (HU)**: moisture content in % of the sample weight.
**„FESTSTOFF“ (dM)**: dry matter (solids) in % of the sample weight
**„ATRO“ (AO)**: moisture relative to the solids, e.g. 50 % moisture and 50 % solids mean 100 % ATRO, a German abbreviation used in the chipboard industry.
**„PER 1000“ (PM)**: g solids per 1000 g sample weight, e.g. 15 % solids mean 150 PM, a value which is used in German waste water plants.

**[2]) Automatic function (Konsta Stop) parameters:**

“**GAB**” is the weight loss in mg, possible are 4; 8; 16; 32 mg. This parameter depends mostly on the sample weight. For an accuracy of measurement of approx. 0,1 % this parameter has to be set correctly. E.g. a sample weight of approx. 4 – 8 g needs a setting to 4 mg, because 4 mg is 0,1 % of 4 g.

| Sample weight | Recommended setting |
|---|---|
| 4 – 8 g | 4 mg |
| 8 – 16 g | 8 mg |
| 16 – 32 g | 16 mg |
| over 32 g | 32 mg |

“**AIn**” is the reading interval in seconds. This parameter depends on how fast (or slow) the sample material will loose it’s weight during the drying process. For materials with a faster weight loss the parameter has to be set to small value (4 or 8 sec). Please make some tries to find out the best value for this parameter. The goal should be, that the sample should dry as fast as possible, but it should dry also completely.

“**Abn**” is the time delay after which the automatic function will start to ask the balance for the weight loss. This parameter should be set to a higher value than 1 minute (standard), if the sample has to be dried with very low temperature and therefore the weight loss will start after a longer period than 1 minute.

Please note that the standard settings will be correct for the most materials with sample sizes of approx. 10 g, which is our recommendation as a good sample weight.

[3]) "**PFl**" is the **"PreFlash**" feature, which is useful for very wet samples to shorten the measuring time. This parameter is set to a certain value for the remaining dry substance. E.g. a material has moisture of 90 % and dry material of 10 %, the parameter should be set to 30 %. Then the radiator will start to dry with full energy (100 %) and when the value of 30 % dry substance is reached, it will dry to the automatic stop with a lower energy set by the parameter "Heat". Results has to be set to "dM" in that case. Users in waste water plants often use this feature.

## 5. Drying temperature

The drying temperature can be set by adjusting the menu item "Heat" to an exact value of % energy. This means % of 230 Volt power. Of course there is a certain connection between the power and the temperature.

**Radiation power in % and sample temperature (250 W radiator)**

100 % 160 – 170$^0$ C

90 % 140 – 150$^0$ C

80 % 130 – 140$^0$ C

70 % 120 – 130$^0$ C

60 % 110 – 120$^0$ C

50 % 85 – 95$^0$ C

40 % 70 – 80$^0$ C

30 % 55 – 65$^0$ C

20 % 45 – 50$^0$ C

10 % 40 – 45$^0$ C

Please take into consideration, that the sample temperature is depending very much on the quality and mostly on the colour of the sample. A light sample will get much less hot than a dark sample. Therefore the temperatures are only approximate.

The radiator's power can be changed also during a measurement. Press the „Tara" button and the „Set" button at the same time. Use the turn switch to set the power in %. The value is shown in the display.

(For UX 2031 models only)
Only the bright radiator is adjustable, the quartz radiator dries only with 100 % power.

6. Calibration of the balance

| Display shows | |
|---|---|
| CAL | Press the „**change“** button, after a few seconds the value of the calibration weight appears in the display.<br><br>Place the calibration weight on the middle of the scale pan.<br><br>Display disappears.<br><br>After a few seconds appears --- 200,000 g |

## 7. Getting correct measuring values

7.1. Very important is a good preparation of the sample material. It should be homogeneous and no bigger parts should be there. Parts of more than 5 mm diameter can stay wet in the middle and incorrect values are the results.
7.2. Different material should be crushed or rasped and liquids should be well stirred.
7.3. Use a cold drying pan for every new measurement. A cold sample on a hot pan will cause a weight loss even before the start of the measurement.
7.4. We recommend a sample weight of at least 4 g. The greater the sample weight, the better reproducible your measurement will be.
7.5 Try to find out the best drying temperature to reach short measuring times and good results.
7.6 It is recommended to have some reference values by using the standard method with drying cabinet and separate balance.
7.7. For drying liquids or sticky materials we recommend to use aluminium foils as sample trays to keep the stainless steel pans free from sample remains. See list of accessories.

## 8. Cleaning and maintenance

8.1 Please transport the instruments very careful. The built-in balance is very sensitive against shocks.
8.2 Clean the heater and the surfaces of the instrument only with a wet duster. Plug out the mains cable before cleaning the radiator.
8.3 Any maintenance should only be done by authorized persons.

## 9. Failures shown in the display

| | |
|---|---|
| ERR 2 | No sample on the pan |
| ERR 3 | Overflow in ATRO range |
| ERR 4 | No pan on the balance, pan holder touches housing |
| ERR 5 | Overflow sample weight |
| ERR 10 - ERR 16 | Place is not calm, pan holder is bent, dirt around pan holder |
| others | Contact a& p service department |

Other problems

Weight display runs continually and the small “g” does not appear.
The reason can be vibrations or too much air movement around the instrument or there is dirt around the pan holder or this part is damaged or in contact with the housing.

The instrument shows other irregular reactions, e.g. the radiator cannot be regulated or the parameters are lost.
Switch off and on the instrument
Check if the correct type of instrument is shown (2011, 2031 or 2081)
If there is shown only “20_1”, the instrument has lost its memory
Set the dimmer knob with the white line to the right side
Push the buttons “Set, Show and Change” together at the same time until a “beep” sounds
Set the correct instruments type with the Tare button
Leave this mode with the Set button
Set all parameters with the Tare and Change button again.
The instrument should now work correct again.

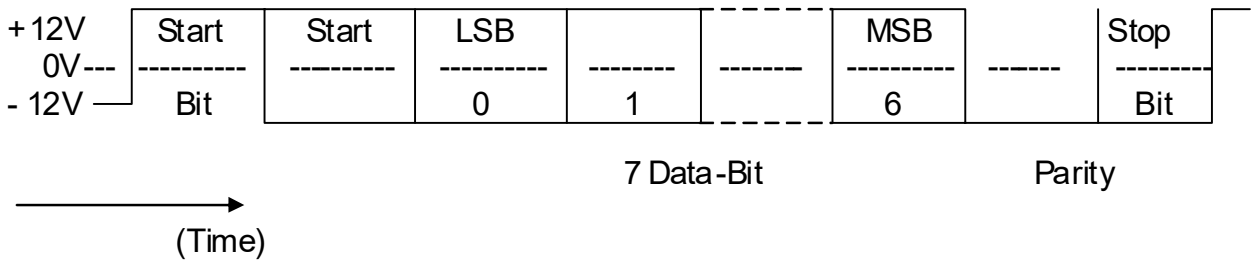
If there are other problems or if you have any questions left, please contact

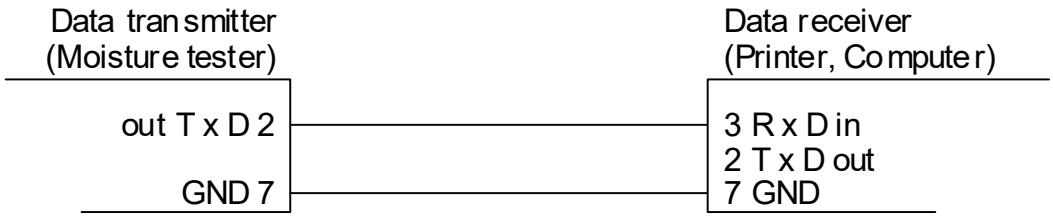
**DESCRIPTION OF INTERFACE FOR ULTRA X SERIES 20 . 1**

( U X 2011 / U X 2031 / U X 2081 )

| | |
|---|---|
| 1. Interface type: | RS 232 / V.24 unidirectional |
| 2. Transmission speed: | 1200 Baud |
| 3. Interface operation: | Asynchronous |
| 4. Data length: | 7 Bit |
| 5. Parity: | Space |
| 6. Output format: | 36 printed characters/ lines<br>with Line Feed for line change |
| 7. Handshake: | non-existent |
| 8. Echo: | non-existent |

The data correspond to the V 24 agreements for serial asynchronous data transmission.
The structure of a data word follows from the following sketch:




Connector assignment: 2 = transmitting 7 = G N D (3 = without function)

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