

# User manual



# grain moisture analyser FSA

version 1.2  
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2015

## Design of the device



# Startup

Before starting the device, please read through this manual carefully.

## **Original packaging and freight forwarder**

The FSA device is a high-precision measuring instrument containing a weighing cell. Therefore, careful handling and a protected transport have to be ensured.

The device without exception has to be shipped in the original packaging with the provided transport lock. The packed device has to be carried only by a freight forwarder. Any other packaging and any other way of transport (parcel service, post etc.) must not be used.

For eventual damages in transit due to inadequate packaging or missing transport lock we as manufacturer refuse any liability.

If the original packaging is not available any more, please contact Schaller GmbH in order to guarantee a safe transport.

## Transport lock

At devices from serial number 0050, at delivery a transport lock is mounted. Before starting the first measurement, the transport lock has to be removed. For that, remove the 2 screws marked on the picture below. To loosen the screws carefully turn the device.

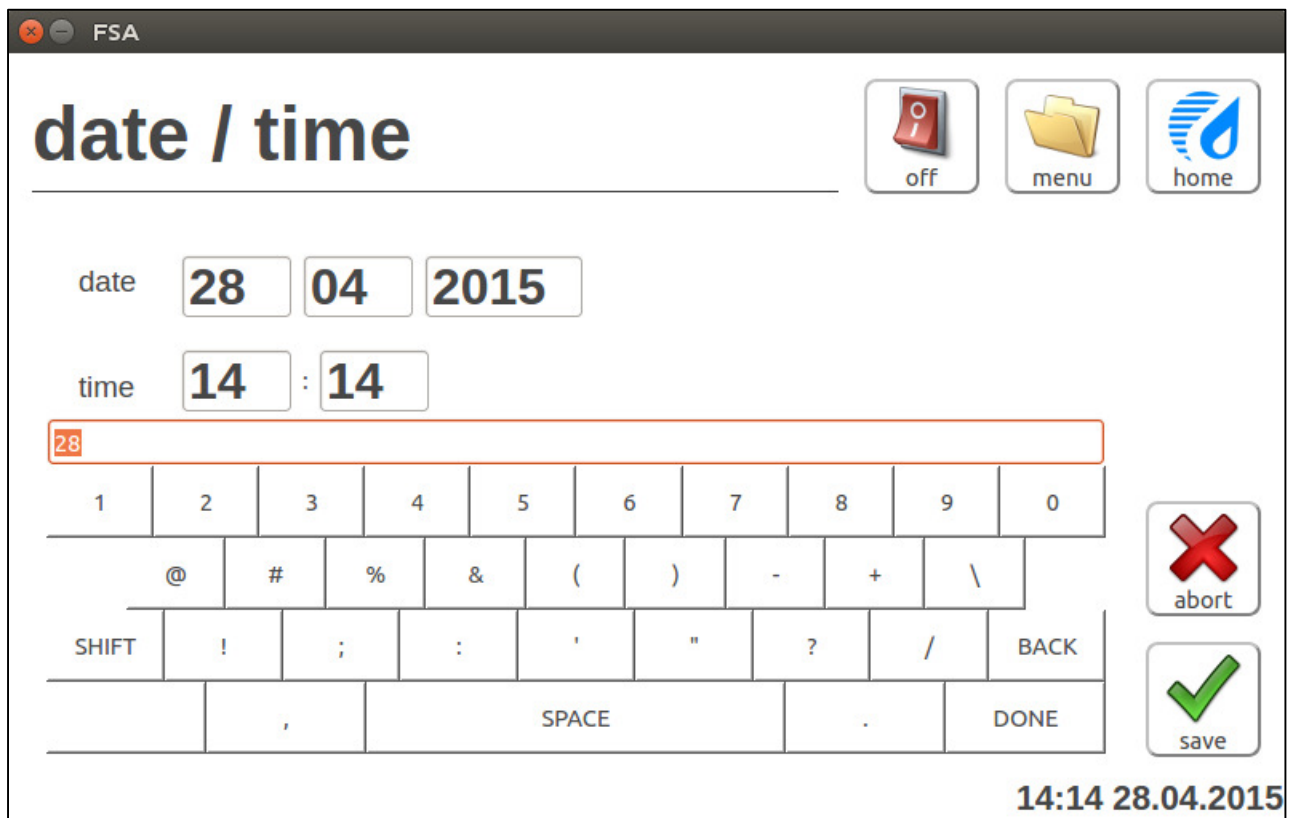


**ONLY REMOVE THE 2 MARKED SCREWS!!**

# Initial operation

When switching on the first time, some parameters have to be setted. After the device has finished the self-test of all components, first of all the desired menu language has to be chosen.





Then set the current date and time.



If desired, your company's name and a note can be entered.

## Operation

The touch display can be operated with your finger or a pen. Please don't touch the display with a sharp object.

After switching on, the device automatically starts a self-check of all components. If an error occurs, please follow the instructions on the display.



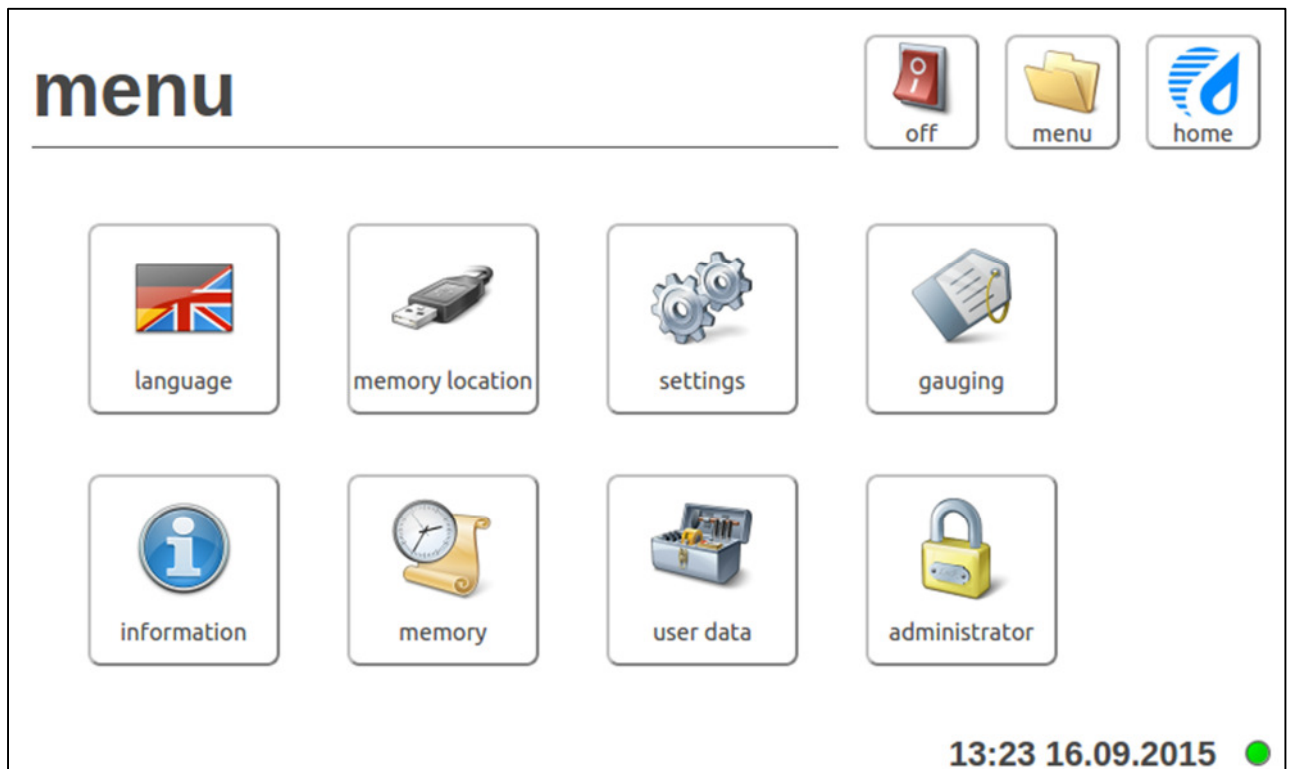
By clicking on the button „Measurement“ a new measurement can be effected.

By clicking on the button „menu“ you can enter the main menu of the device. All possible settings in the main menu are illustrated separately later in this manual.

In the bottom left corner the current version number is displayed.

The bottom right corner shows the current date and time, as setted when first starting the device.

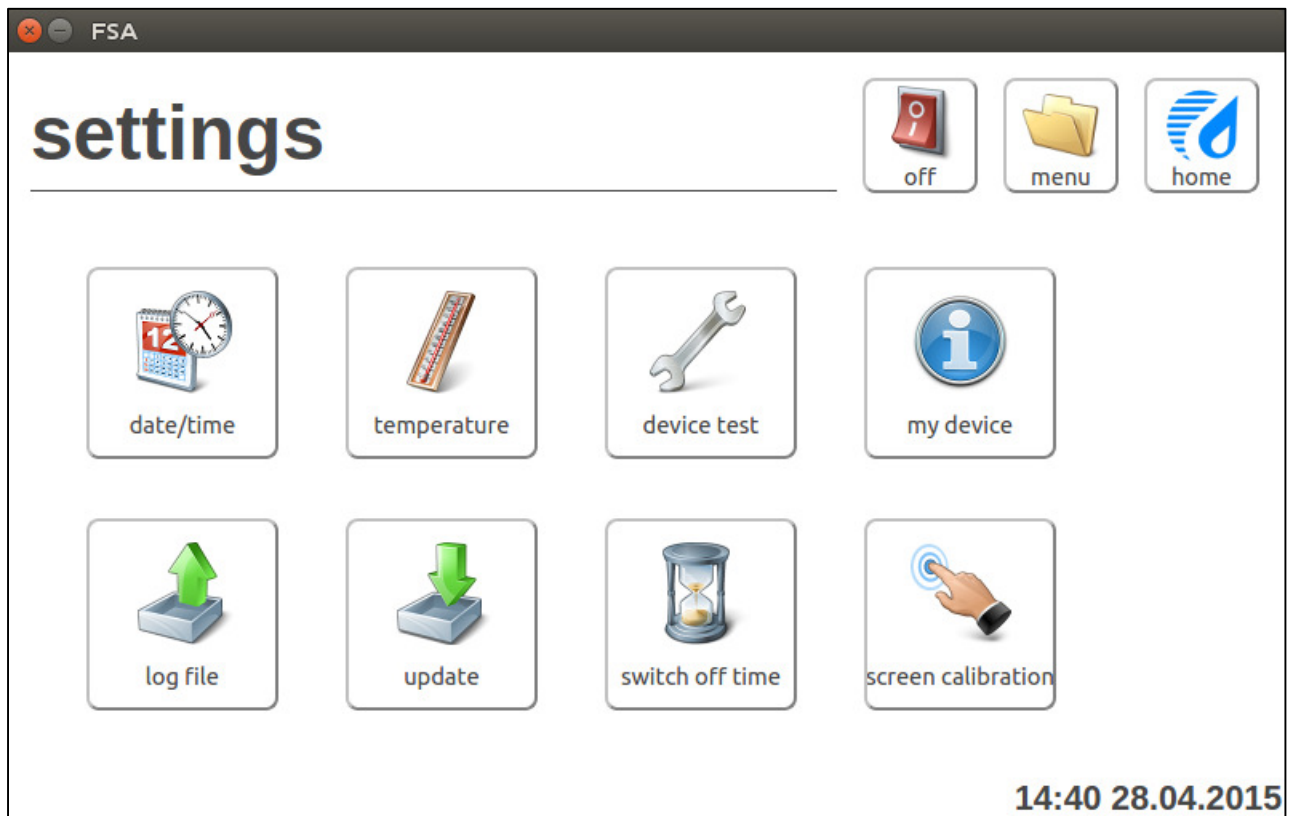
# Overview main menu



In the main menu all device parameters can be set.

- Languages
  - English
  - German
  - French
  - Italian
  - Portuguese
  - Slovenian
  - Spanisch
  - Roman
- Memory location
  - USB
  - network (not implemented yet)
- Settings (separate details later)
- Information
  - Up-to-date device information
- Memory
  - All measurements are saved automatically
- User data
  - Supplier's data and measuring values can be deleted
- Administrator (only for Schaller GmbH)

# Settings



In the general settings, the following modifications can be made:

- date / time
- temperature
  - °Celsius
  - °Fahrenheit
- device test
  - Motor test chamber
  - Motor test flap
  - General device test with optional test equipment
    - moisture sensor
    - scale
- My device
  - The owner of the device is indicated on the printout
- Log file
  - can be sent to Schaller GmbH in case of an error
- Update
  - Updates can be imported from an USB flash drive
- Switch-off time
  - After this time (in minutes) the display switches off automatically (NOTE: only the display, not the device itself)
- Screen calibration
  - New calibration of the touch display

## Calibration curves

product	comment	measuring range
corn	machine harvested	8..50%
rye		8..25%
triticale		8..25%
wheat		8..25%
durum wheat		8..25%
buckwheat peeled		5..20%
spelt peeled		8..25%
spelt unpeeled	with husk	8..20%
millet peeled	food millet peeled	5..20%
millet unpeeled	food millet unpeeled	8..20%
sorghum millet		8..40%
barley	spring and winter barley	8..25%
oats		5..25%
rape		4..18%
soybeans		8..25%
field beans	also called horse beans	8..20%
sunflower seeds	unpeeled	4..20%
pumpkin seeds		3..15%
rice peeled		8..20%
linseed		5..14%
field peas		8..20%
scarlet runner beans		10..40%

On request further products can be calibrated. For that, please contact Schaller GmbH. You can also use the product finder on our website [www.humimeter.com](http://www.humimeter.com) to find out if your desired product has already been calibrated and is available optionally.

## Determination of reference water content

The FSA device determines the water content, which means that it calculates the moisture referred to the total mass:

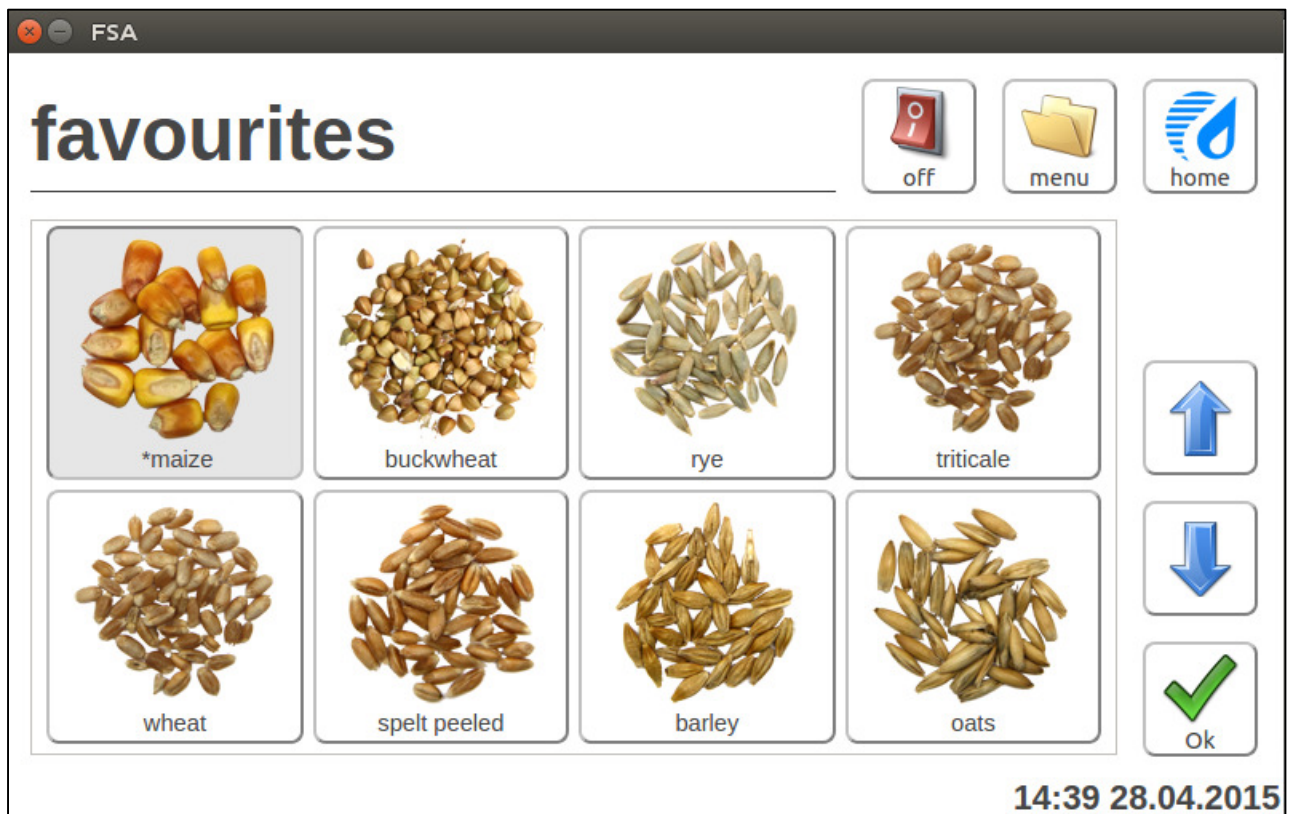
$$\%WG = \frac{M_n - M_t}{M_n} \times 100$$

$M_n$ : Mass of the sample before drying

$M_t$ : Mass of the dried sample

$\%WG$ : Water content (according to the norm valid for the relevant product)

## Favourites



If desired, the mainly measured products can be saved as favourites. These products are listed at the beginning of the product list.

## Creating a supplier

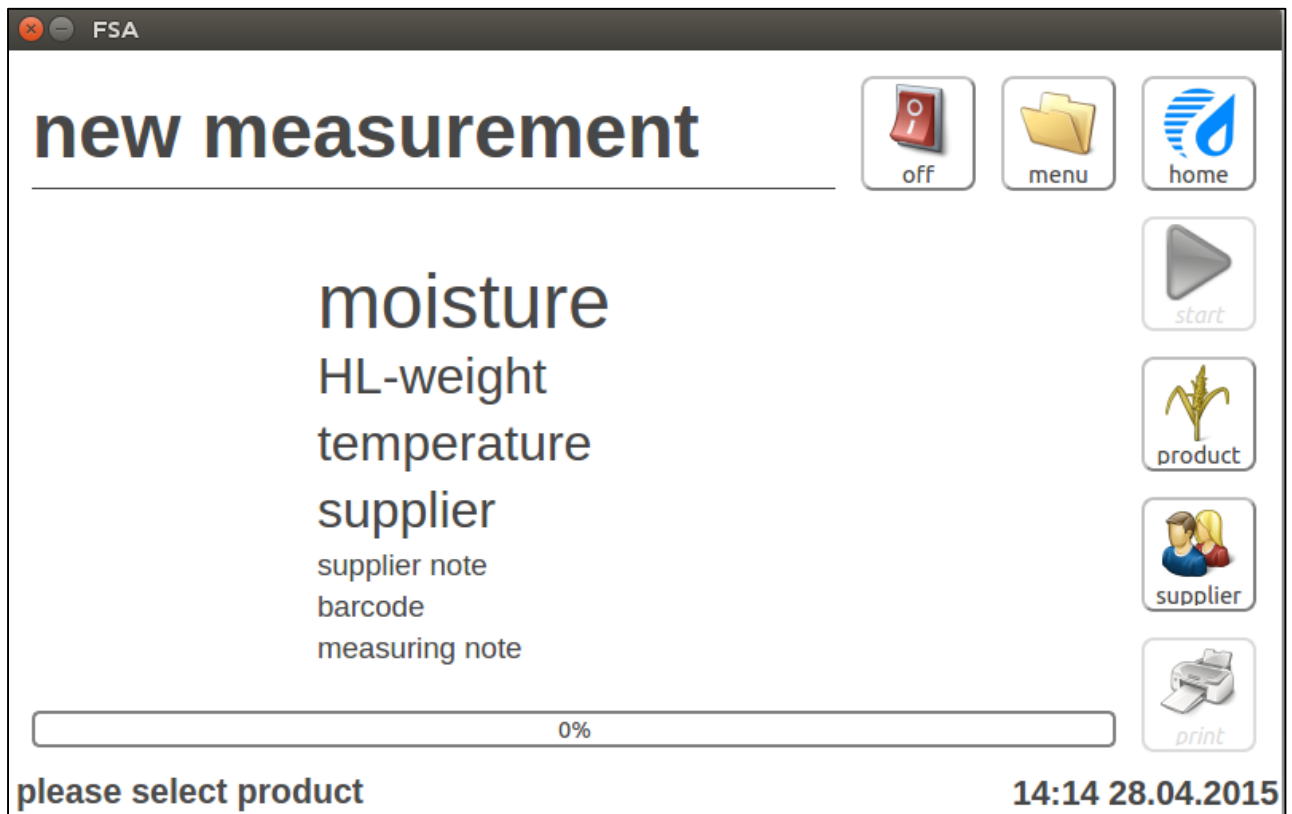
Before executing a measurement, supplier's data from various suppliers can be entered. The supplier's data is saved together with the measuring data and can also be found at the printout. The supplier's data can be modified or deleted at any time.

The first line is empty. This line can be used when you don't want to indicate a supplier's name.

You also have the possibility to read in your samples with a barcode scanner. The barcode data is also saved and can be found at the printout too.

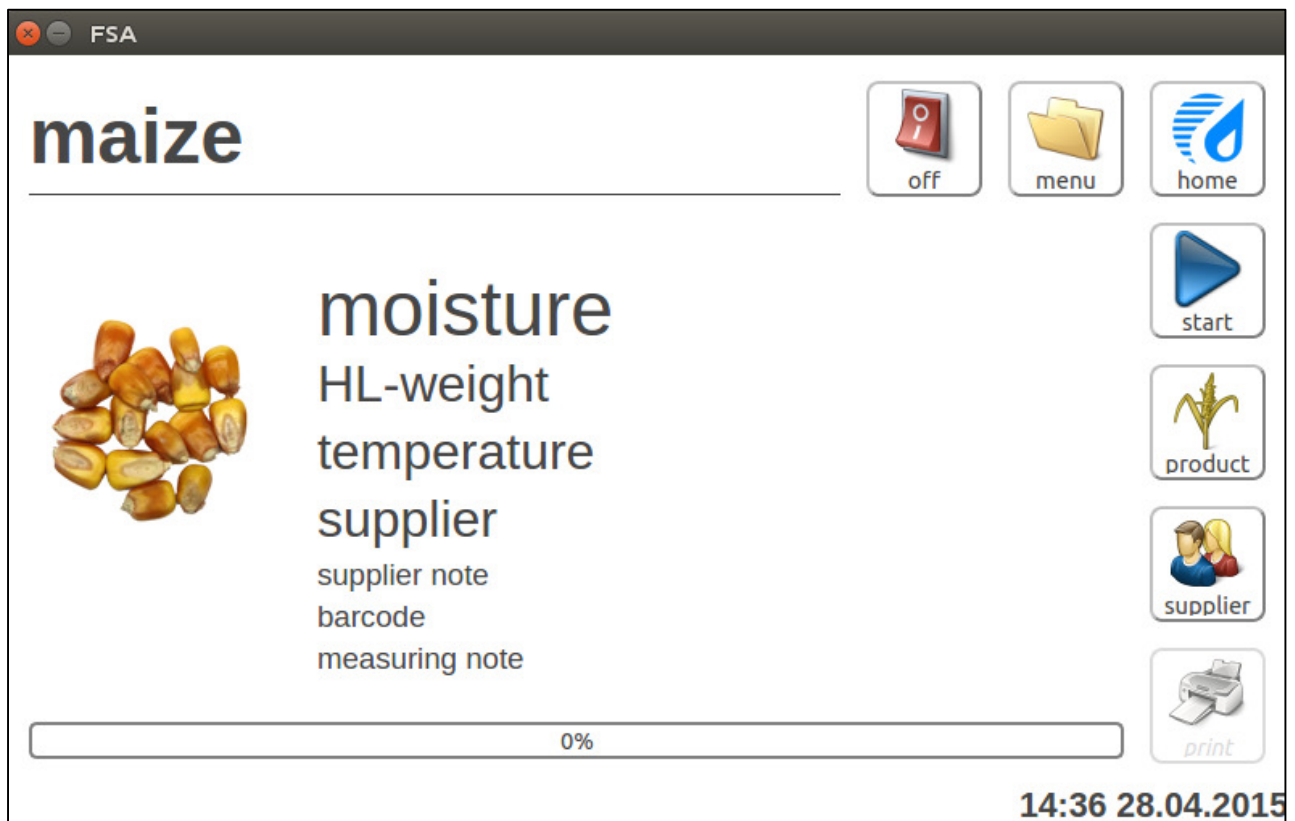
All these fields have to be chosen before starting a measurement.

# Measuring procedure



At first press the button „product“. Now select the product to measure from the list of calibration curves stored in the device by touching the picture. Effecting a measurement without selecting a product is not possible!





Now fill the material filling funnel with the sample to measure (approx. 450 ml). Otherwise it may happen that there is **not enough material in the measuring chamber** and a new measurement has to be started.






Now press the button „Start“. The measuring procedure will take about 30 seconds.

As soon as the measurement is completed, the display shows the measuring results. Supplier's data, barcode and a note have to be selected before starting a measurement.

# Mais



**Feuchte** 15.63%

HLG 75.4 kg/hl

Temperatur 26.8 °C

Lieferant Musterlieferant

Lieferantennotiz

Barcode

Meßnotiz

Menü

Home

Start

Sorte

Lieferant

Drucken

100%

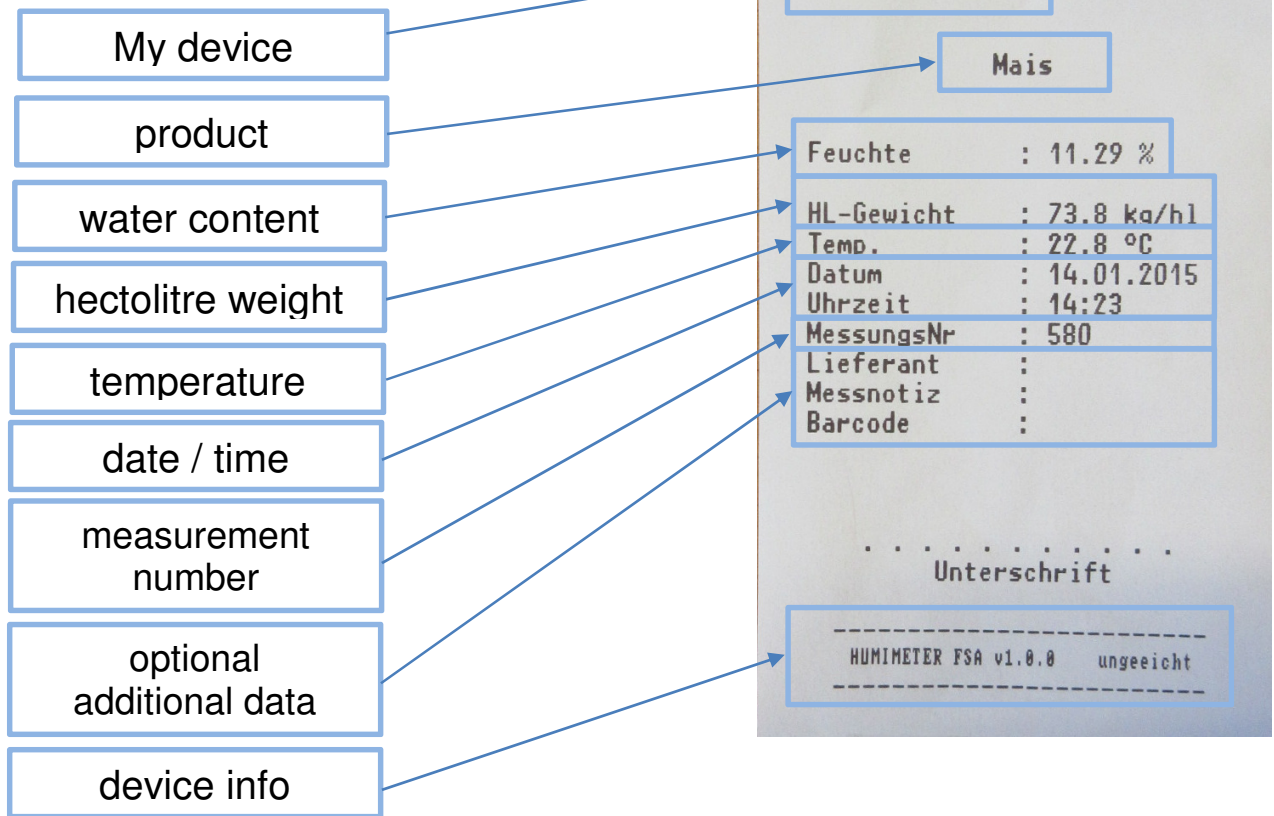
Bitte Lade leeren16:15 24.01.2014

Finally empty the drawer. Only then a new measurement can be started.



## Printing measuring data

By pressing the button „Print“ the last measuring value is printed automatically.



## Exchanging the thermal paper roll

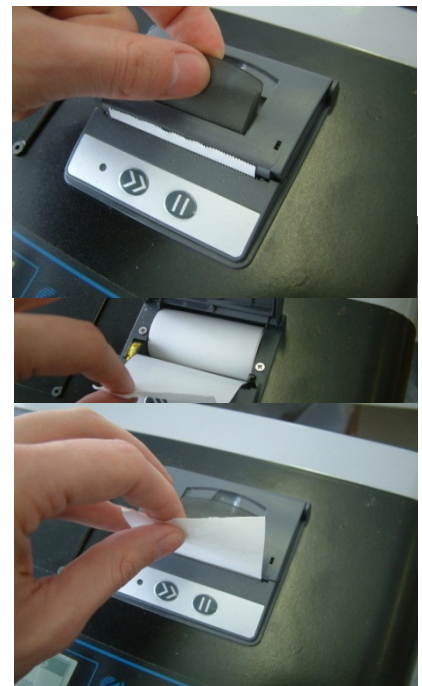
For exchanging the thermal paper roll, lift the flap as shown on the picture until the cover opens.

Then remove the empty roll.

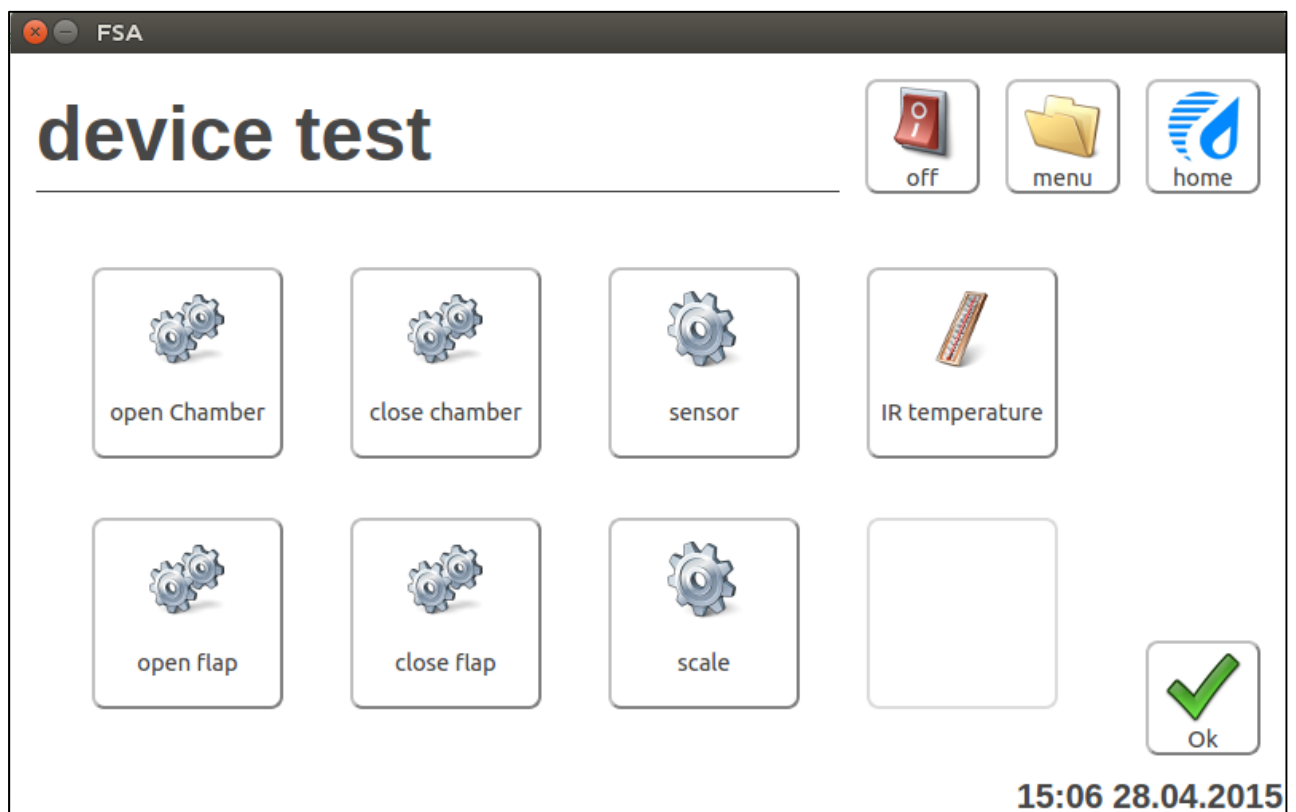
Now insert a new, opened roll with the open side facing the front side (see picture).

To prevent a crumpling of the paper, hold the paper tight while closing the cover.

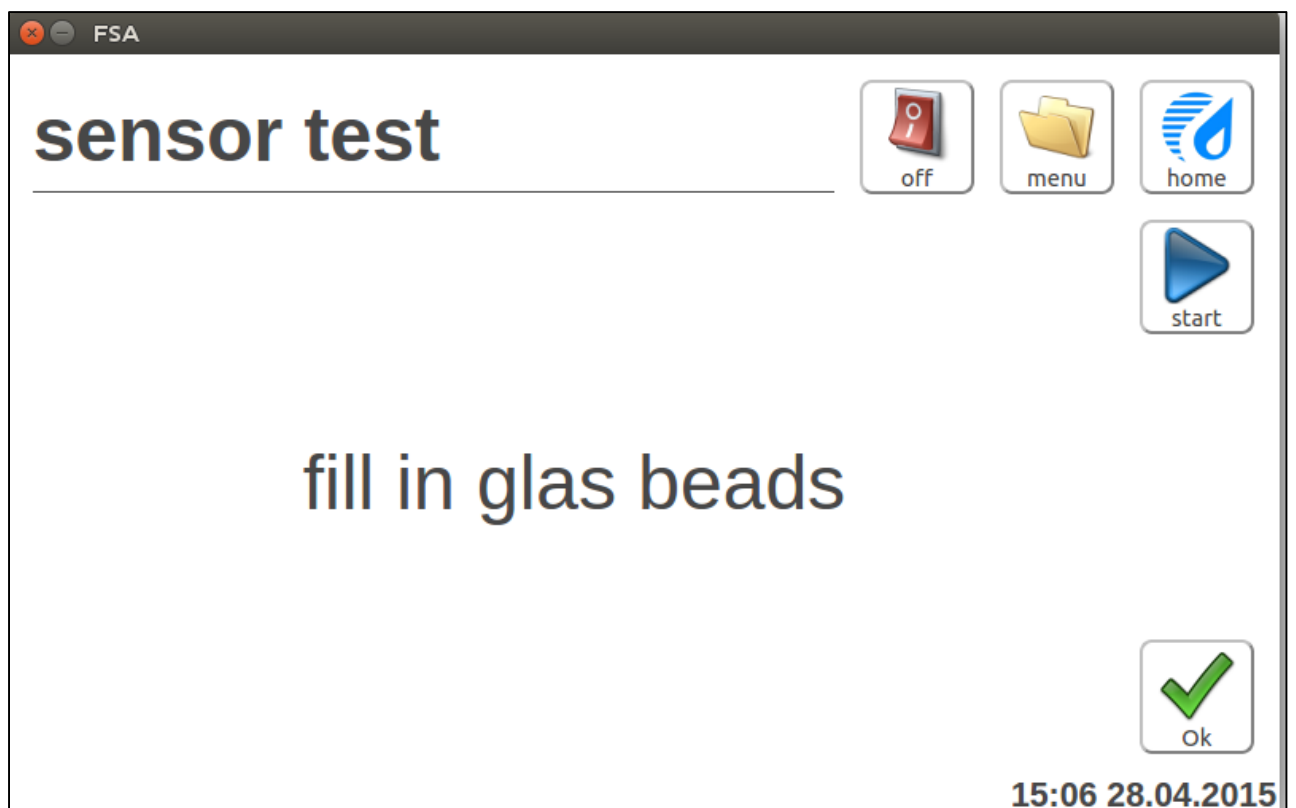
Now the printing can continue.



## Device test (ISO measuring device check)



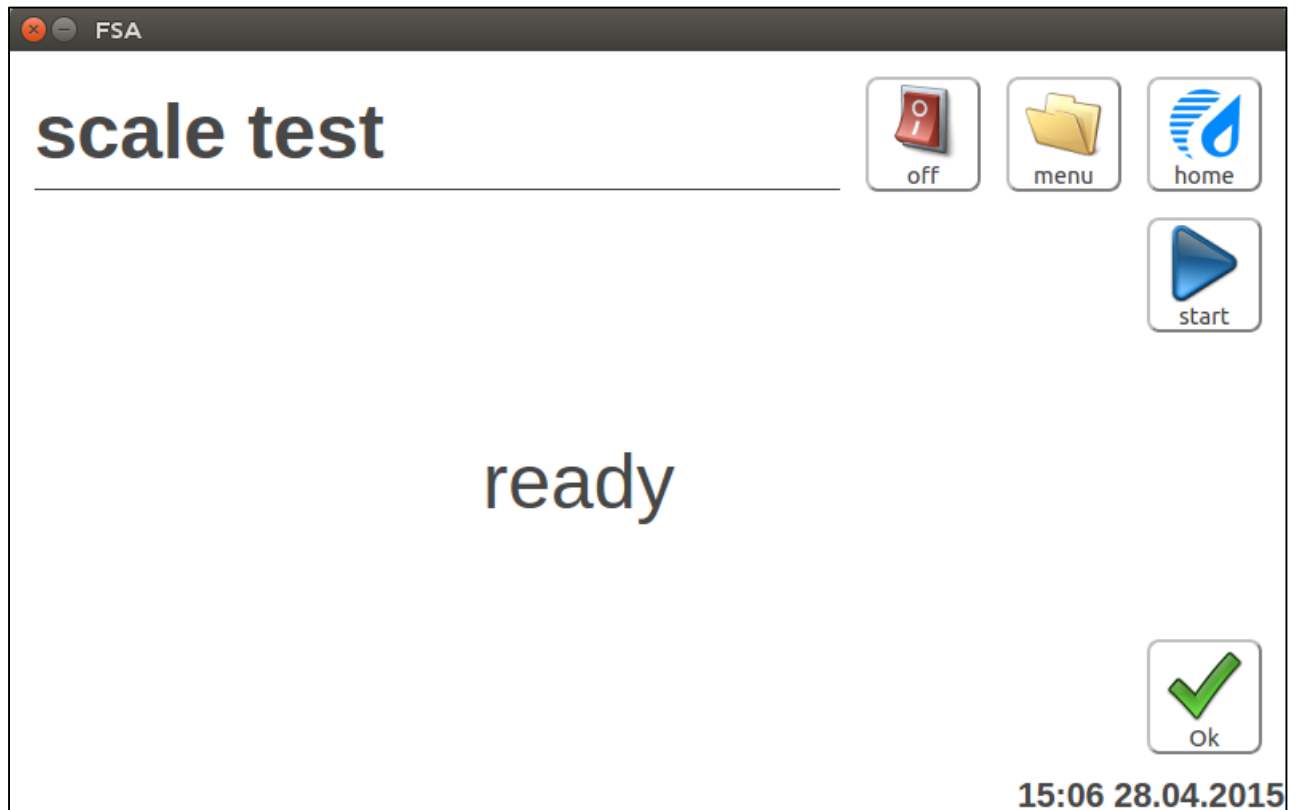
### Sensor test:



Insert the delivered glass beads (no other material!) into the material filling funnel. After pressing the start button, the device effects the measurement.

When the measurement is finished, the display shows the measuring results. Next to the measuring value a green rectangle is displayed (in case the value is ok) or a red rectangle (in case the value is not ok).

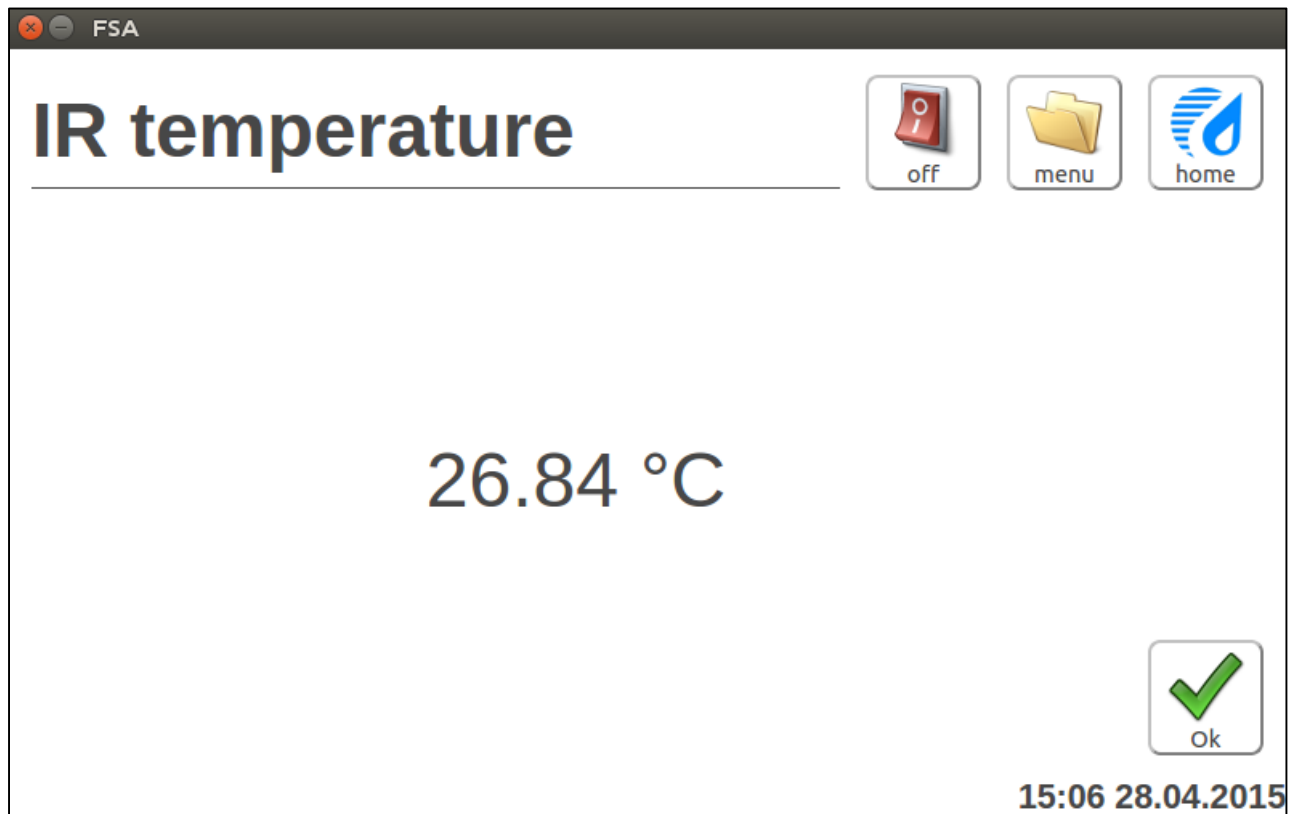
## Scale test:



The scale test measures two points:

1. Value without check weight (tara value):  
For this test press the Start button. The device determines the 0g value itself. If there is a too big deviation the device will show an error including the gram value (red = not ok).
2. Value with delivered check weight:  
The check weight has to be positioned in the center of the measuring cell. The dimensions of the check weight correspond to the width of the measuring cell. NOTE: The check weight must not have any contact with the material filling funnel! For starting the test, press the Start button. When the test is completed, the current value (in gram) is shown on the display. As described in the sensor test, a green or red rectangle is displayed (green = ok, red = not ok).

## Infrared temperature:



Shows the current infrared temperature in the measuring chamber of the device.

## **Exemption from liability**

For misreadings and wrong measurements and resulting damages we refuse any liability. This is a device for the quick determination of moisture. The moisture depends on multiple conditions and multiple materials. Therefore we recommend a plausibility check of the measuring results. Each device includes a serial number and the guarantee stamp. If those are broken, no claims for guarantee can be made.

## Update

It is possible to update the software or the product calibration curves.

If you receive an update from Schaller GmbH, the update file has to be copied into the main directory via USB flash drive.

To do the update you have to plug in the USB drive into the FSA. Then you have to navigate under Menu -> Settings -> Update

After pressing the update button please follow the instruction shown on the FSA display



Press ok to start the update. The device reboots automatically and is ready for use then.

## Technical data

<b>Resolution of display</b>	0.01% water content 0.1 °C temperature 0.1kg/hl hectolitre weight
<b>Measuring range</b>	3 to 50% water content (depending on the product)
<b>Operation temperature</b>	0 °C to +40 °C
<b>Storage temperature</b>	0 °C to +50 °C
<b>Temperature sensor</b>	Infrared (non-contact)
<b>Temperature compensation</b>	automatic
<b>Sample volume</b>	approx. 450ml
<b>Power supply</b>	100-240 VAC, 1 A, 50-60 Hz
<b>Plug</b>	Schuko plug CEE 7/7
<b>Display</b>	7 inch colour touch display
<b>Dimensions (BxTxH)</b>	44 x 31 x 43 cm
<b>Weight</b>	approx. 15 kg
<b>Protection class</b>	IP 40
<b>Scope of supply</b>	<b>FSA</b> Schuko cable measuring cup 0.5l 5 thermal paper rolls for printer

## Device maintenance instructions

To provide a long life of your device please do not expose it to strong mechanical loads or heat e.g. dropping it or direct sunlight exposure. Clean your device using a **dry cloth**. The measuring chamber needs to be cleaned with a **dry and soft brush**.

Any kind of wet cleaning damages the device. The instrument is **not rainproof**. Keep it in dry areas.

In case of frequent measurements of dusty materials, the device can also be cleaned with dry compressed air.

The device without exception has to be shipped in the original packaging with the provided transport lock. The drawer has to be removed from the device and added separately packed. The packed device has to be carried only by a freight forwarder. Any other packaging and any other way of transport (as well as the transport without transport lock) leads to the loss of warranty.

## **!!IMPORTANT! Please read**

### **Most common reasons for misreadings**

- **Product temperature out of application range**  
Material of a temperature **below 0 °C** resp. **above +40 °C** (32 to 104 °F) may cause faulty measurements. The storage of cold material in a warm storage area usually creates condensed water which may lead to major measuring errors.
- **Wrong calibration curve**  
Before measuring your sample, please double-check the correct selection of the calibration curve.
- **Wet or mouldy material**
- **Stored and fermented corn silage from whole grains may lead to higher measuring values**
- **Surrounding temperature out of specified range**  
Measurements out of specified range are not possible.
- **Before the first startup, the transport lock has to be removed!**
- **The return of the device resp. any other transport has to be effected only in the original packaging by a freight forwarder**