

Precisa

■ The Balance of Quality ■

prepASH

Drying
and Ashing Device



Serial Number S/N: _____

Installation Date: _____

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1 Introduction

1.1 General Information about the Operating Instructions

The prepASH 129 ashing and drying device is simple to use. Please read the operation manual carefully and thoroughly in order to understand and make the most optimum use of the many features and possibilities offered by prepASH 129 in your daily routine.




This operation manual contains reproductions of the screen and switch surface icons, which are intended to make it easier to find information.

Dangers and notices are indicated in Chapter 2 Safety page 3

2 Safety

2.1 Representation and Symbols

Important safety-related instructions are highlighted visually at the appropriate points below:

 DANGER
Warning of a possible danger which may lead to death or to serious injury
 CAUTION
Warning of a possible danger which may lead to minor injury or damage
 NOTE
Tips and important rules on how to use the ashing unit correctly.

2.2 Safety instructions

- When using the ashing device in surroundings with increased safety requirements, pay careful attention to the appropriate regulations.
- Only set it up in a room which is adequately spacious, dry and well ventilated.
- Only operate the device upright on its stand and on a stable, level base.
- Atmospheric contamination may only be non-conductive. Short-term conductivity caused by condensation may only arise occasionally.
- The device may not be operated or stored in a corrosive or explosive atmosphere (dust, steam, gas).
- Never operate the device with a faulty mains lead.
- Never lay the mains cable over sharp corners and edges or hot surfaces.
- If there is any reason to believe that it is no longer possible to operate the device safely, unplug it immediately from the electricity supply (pull out the mains cable) and secure it so that it cannot be operated inadvertently.
- During operation and maintenance work, take particular care with hot parts, in particular in the area of the furnace chamber (risk of burning).
- When the furnace chamber is opened whilst the machine is in operation or after the end of the trial, very hot air will escape, and the furnace chamber will radiate intense heat.
- Do not place or stand objects of any kind on the lid of the ashing device. Do not subject the lid to any mechanical pressure. Heat must be allowed to radiate freely from the machine during operation.
- Sample type: do not ash any explosive samples.
- Have an electrician check that the entire electrical system is working properly before the ashing device is first commissioned, after maintenance and servicing work on the electrical system and at intervals of at least every four years.

3 Description of the Device

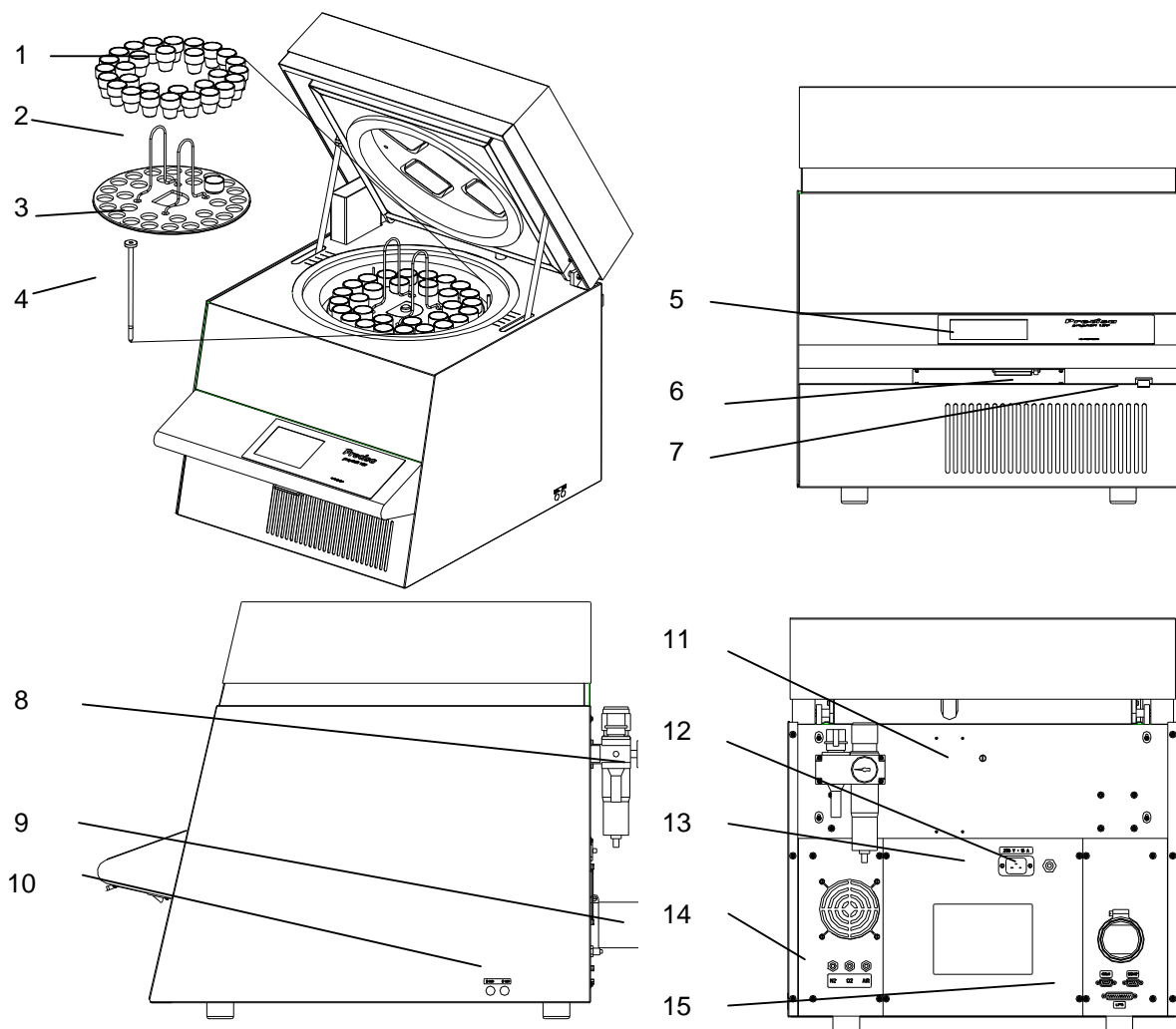
3.1 Proper Use

The ashing device should only be used for weighing, drying and ashing of solid materials and liquids. The max. permissible load of the integrated balance should never be exceeded, otherwise the balance may be damaged.

If the ashing device is used in combination with other Precisa devices or with other makes of devices, it is imperative that you follow the instructions for the safe and proper use of the auxiliary devices.

3.2 Structure and Function

3.2.1 Structure of the Ashing Device



- | | |
|---|---|
| 1 Crucible | 9 Exhaust gas nozzle |
| 2 Plate holder | 10 Process gas flow control |
| 3 Sample plate | 11 Inlet for temperature sensor |
| 4 Balance pan | 12 Miniature circuit breaker |
| 5 Touch screen | 13 Mains connection |
| 6 Flash card | 14 Process gas and compressed air connections |
| 7 Master switch | 15 PC / printer ports |
| 8 Maintenance unit with a compressed air connection | |

3.2.2 Functions of the Ashing Device

The prepASH 129 ashing device is simple to operate. It facilitates the quick and reliable drying / ashing of liquid, porous or solid materials. The device works using thermo gravimetric principles.

The most important basic features of the ashing device include:

- Simultaneous automatic drying, ashing and weighing of up to 29 samples.
- Simultaneous measuring and logging of all samples throughout the entire measurement procedure.
- Automatic compensation for lift.
- 5.7" VGA color touch screen for simple operation and clear display.
- Temperature range of 50 °C to 1000 °C.
- Connection to an external balance for weighing in the samples.
- Flash card for storage of results.

3.3 Technical data

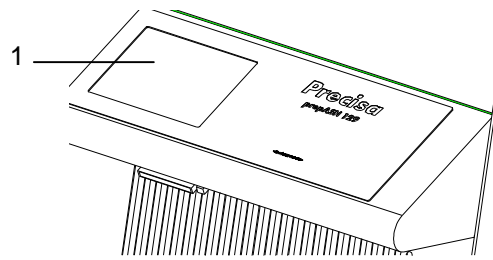
- **Mains connection**
 - 230 VAC (+15/-20 %); 50 to 60 Hz
 - 15 A
- **Power consumption**
 - 3300 VA
- **Balance system**
 - Weighing range: 120 g
 - Number of samples: 1 - 29
 - Resolution: 0.0001
 - Unit: g
- **Heating system**
 - Ceramic infrared radiator
 - Temperature range: 50 °C – 1000 °C
 - Temperature stability: \pm +/- 2%
 - Temperature curves are individually configurable
 - Time to steady-state: 0 – 6 h
 - Dwell time: 0 – 20 h
 - Auto stop: 0.1-100 mg/min, mg/30min, mg/60min
- **Results**
 - Weight loss in %, ‰, g
 - Weight loss to the pre-interval in %, ‰, g
 - Residual weight in %, ‰, g
 - Residual weight to the pre-interval in %, ‰, g
- **Monitoring**
 - Acoustic
 - Alarm output for external monitoring
- **Gas requirements**
 - Oxygen: 99.5 % purity, 3 bar (\pm 10 %), 0 – 9 l / min
 - Nitrogen: 99.5 % purity, 3 bar (\pm 10 %), 0 – 9 l / min
 - Compressed air, oil-free and without condensation, 6 bar (\pm 10 %)
- **Furnace atmosphere**
 - Oxygen, nitrogen or compressed air
 - Flow rate is measured electronically
- **Data outputs**
 - RS232 port for a PC (COM1)
 - RS232 port for an external balance (COM2)
 - Centronics port for a printer (LPT1)
 - Alarm output (floating double-throw contact)
- **Operation and display**
 - 5.7" VGA color touch screen
 - Menu-guided operation

- **Printout via an optional printer**
 - Graphics
 - Table
- **Memory capacity**
 - EEPROM (internal): 15 method memory
 - Flash card (external): 100 method memory and 100 measured data memory
- **Weight and dimensions**
 - Weight 57 kg
 - Dimensions H(H)xWxD / 620(980)x590x830 mm
(H) Height with the sample chamber open
- **Requisite footprint**
 - WxD / 590x830 mm
(Requires a margin of 15 cm for safety)
- **Permissible ambient conditions**
 - Temperature: 5 °C – 35 °C
 - Relative humidity: 25 % - 85 %, non-condensing

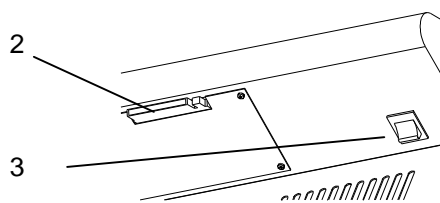
If you have any questions regarding the technical data or require detailed technical information about your ashing device, contact your local Precisa agent.

3.4 Controls and connections

3.4.1 Front controls



The touch screen (1) enables simple, menu-guided control. Both tables and graphics are displayed in color. All device settings can be changed easily via the touch screen display.



The master switch is located on the underside of the control panel (3).

The flash card (2) can be used to transfer settings and results to another prepASH.

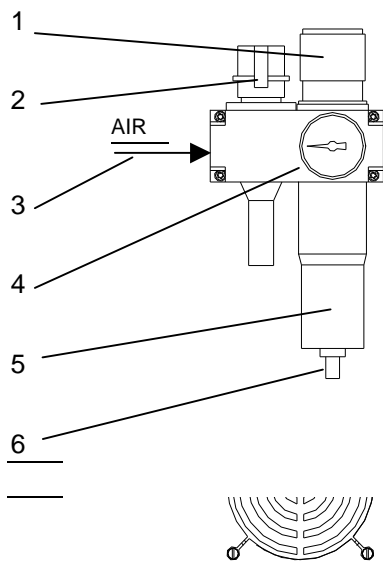
3.4.2 Rear controls and connections

! DANGER

The ashing device is operated from a 230 V AC supply. The electrical wiring work should be carried out by a qualified electrician.
 The exhaust gas hose must be fed outdoors in order to discharge harmful waste gases from the furnace chamber safely.

! CAUTION

The pneumatic system for the prepASH must not be operated on pure oxygen (danger of a strong reaction between oxygen and oil).



The oil-free compressed air can be connected to the maintenance unit (3). You are advised to use a compressed-air hose with an inner diameter of 6 mm.

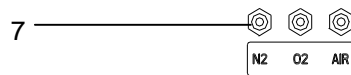
Use the controller (1) and the pressure gauge (4) to adjust the pressure in line with the pneumatic supply to the device.

Check the filter (5) at regular intervals for dirt and condensation. The filter must be emptied manually to ensure that no condensation enters the device (6).

The pneumatic system can be vented or disconnected from the compressed air network via the switch-on valve (2).

The process gases can be fed in via the terminal connections (7) with hoses (DxTh. / 4x0.75mm). The compressed air inlet (AIR) is connected to the maintenance unit in the factory.

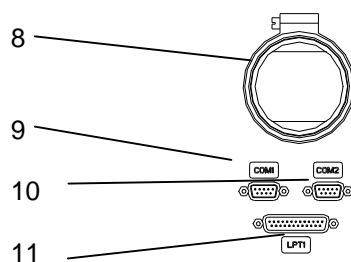
CAUTION working with oxygen and nitrogen.



The supplied hose is fitted to the exhaust gas nozzle (8) using the clip, and the other end is fed into an exhaust system.

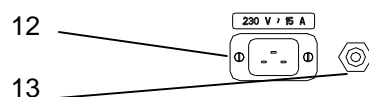
A PC can be connected to the COM1 serial port (9), and an external balance can be connected to COM2 (10).

A printer can be connected via the parallel port LPT1 (11).



The supplied plug must be fitted by an electrician. The pre-assembled mains cable can be inserted into the plug connector (12).

The miniature circuit breaker (13) causes the device to cut out in the event of an overload. Once the fault has been investigated and rectified, the miniature circuit breaker can be pushed back in.



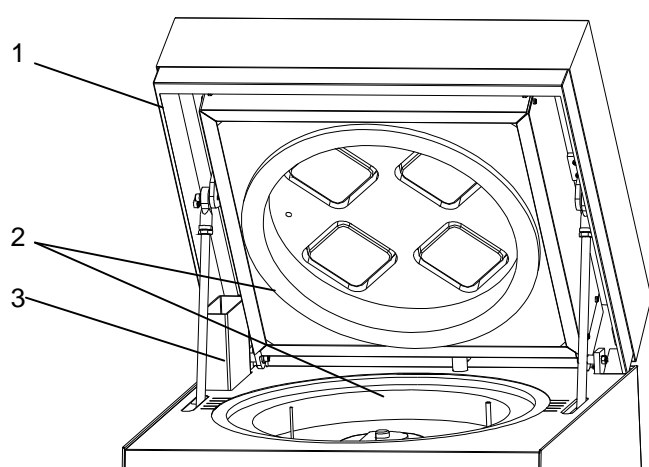
3.5 Furnace Chamber

⚠ CAUTION

The parts inside the furnace chamber and the metal covers will become hot. Take care when opening and loading the furnace chamber. Always use the supplied holder for removing the sample plate from the device. If you are removing individual crucibles, always use the supplied tongs (this will also help you to avoid rogue measurements).

❗ NOTE

Handle the sample plate, crucible and balance pan with care. These parts are made from ceramic and can be damaged easily. Take care not to damage the insulation when you load the device.

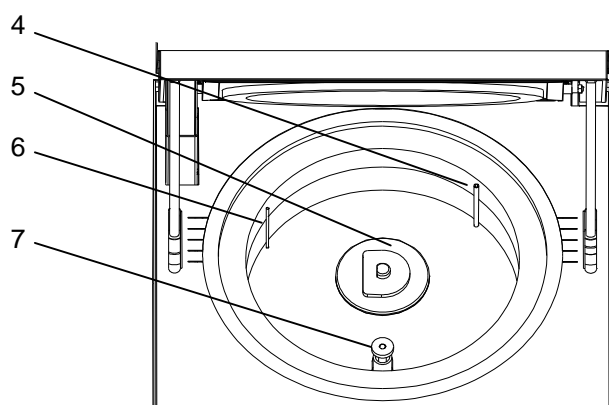


The entire furnace chamber is lined with insulating inserts (2).

The suction device (3) is in the back left.

The circlip (1) prevents jamming when the lid is closed.

CAUTION: Watch out for hot parts when you are handling the device.



When the sample plate is removed, the following parts are visible.

The process gases (N₂, O₂ or compressed air) are fed inside the sample chamber by means of the lance (4).

The sample plate sits on the rotary axle (5).

The temperature sensor (6) measures the temperature inside the furnace chamber.

The balance pan (7) is inserted into a protective pipe.

3.6 Optional Accessories

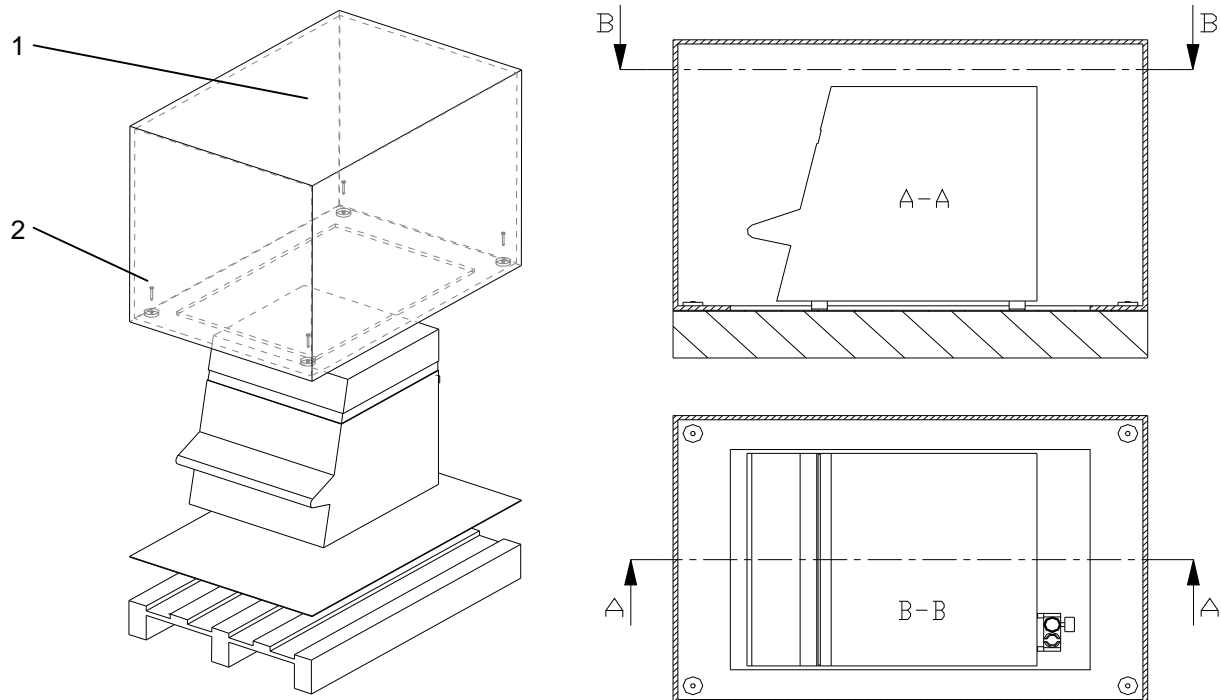
Part Number	Designation	Quantity	Comments
PN 3950-066	Printer	1	For printing out prepASH data
PN 3950-065	Printer cable	1	Connecting a printer to prepASH
PN 3950-067	PC cable	1	Connecting a computer to prepASH
340-7204	Flash card	1	2 MB
340-5001	Crucible	1	

4 Commissioning

4.1 Unpacking

Observe the following points when you unpack the ashing device in order to avoid damage:

- Check the ashing device for any external visible signs of damage immediately after you unpack it. If you find that it has been damaged in transit, notify your Precisa service agent immediately.
- Read these Operating Instructions carefully before starting to work with the ashing device and pay particular attention to the safety instructions (see section 2 "Safety" on page 3).



Unpacking the prepASH

1. Open the box (1) at the top
2. Remove all the padding and accessories
3. Undo the 4 screws (2) on the base of the cardboard box
4. Lift off the cardboard box

! NOTE

Retain the packaging. If the device is delivered to the factory by a transport firm for repair after a lengthy period of use, this may only be done in the original packaging. If devices are not properly packaged, they may sustain considerable damage in transit.

4.2 Scope of delivery

Once you have unpacked all the parts, check that the delivery is complete.

Designation	present yes / no
Ashing device	
Sample plate	
30 crucibles	
Balance pan	
2 sample holders	
Crucible tongs	
Mains plug	
Plug alarm	
Flash card	
Exhaust gas hose	
Clip for the exhaust gas hose	
Calibration weight 50 g (± 0.1 mg)	

4.3 Choosing a Suitable Location

In order to ensure that your ashing device functions properly and safely, select a location that complies with the permissible ambient conditions (see section 3.3 "Technical Data" on page 5) and also fulfils the following criteria:

- The room in which it is installed must be adequately spacious (minimum room capacity of 10 m³) and must be well ventilated.
- Observe the following safe distances from neighbouring devices, equipment and walls: space of at least 15 cm around the sides and at least 1.5 m from the ceiling.
- Put the ashing device on a solid, firm horizontal base, where it is not exposed to vibration.
- Ensure that the ashing device cannot be knocked over.
- Do not expose the ashing device to direct sunlight.

NOTE

The ashing device is a precision instrument. Ensure that the device is not badly shaken. Vibrations from neighbouring devices can corrupt the ashing device's measurements.

4.4 Assembly and Connection

NOTE

All the parts must be attached without exerting undue force. Do not apply any undue force. If you have any problems, the Precisa customer service representative will be happy to assist.

The ashing device does not come fully assembled. Carry out the steps in the sequence outlined below:

1. Arrange to have an electrician assemble the plug:
L → Phase 230 VAC
E → Earth
N → Neutral
2. If necessary, have the alarm plug made up (e.g. connect a pilot lamp). Use pins 1 and 3.
3. Remove the protective stoppers from the requisite connections (process gases and waste gas nozzle) on the back of the device.
4. Attach the compressed air, the process gases, the mains cable, the waste gas hose and, if necessary, the alarm plug to the designated connection points (see section 3.4.2 "Rear Controls and Connections" on page 7).
5. Regulate the pressure of the compressed air supply using the attached maintenance unit (see section 3.4.2 "Controls and Connections on the Back" on page 7).

DANGER

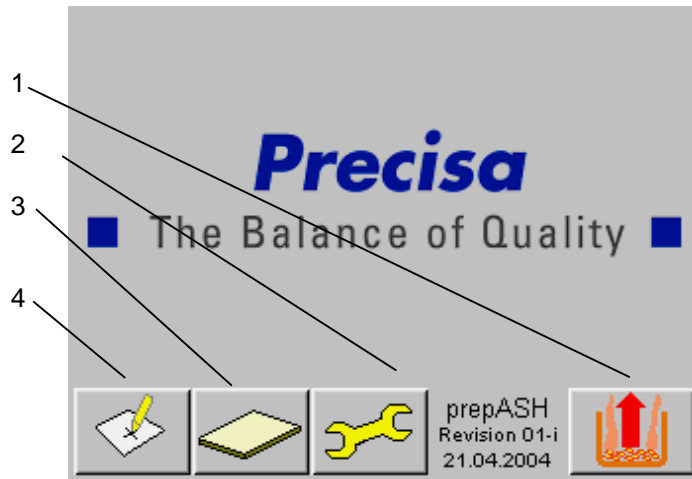
The ashing device is operated with a 230 V AC supply. The electrical wiring work should be carried out by a qualified electrician.

Have the electrician check that existing electrical installations are in good working order and that fuses and cable cross sections are sufficient for the connection data on the rating plate for the ashing device.

The exhaust gas hose must be fed into an exhaust system in order to discharge harmful waste gases from the furnace chamber safely.

In order to continue the assembly process, you need to start the ashing device and open the furnace chamber.

6. Press the master switch on the front device (see section 3.4.1 Front controls on page 6)
7. As the weighing pan is not in place, the unit cannot start properly. Wait until the error message appears and confirm. Now, in the service mode, the hood may be opened. (Administrator password: 83710).
8. Remove the balance protection plug and slide in the weighing pan support. Restart the device (on-off main switch). The start-up screen appears.



Touch button (1) to enter the user interface for drying and ashing (see section 5 "Software: First Steps" on page 13).

Button (2) takes you to service mode for the device.

Button (3) takes you to the formatting page.

Settings can be defined on-screen via button (4).

Access authorization is required for service mode and for the screen settings.

4.5 Gravimetric calibration

Before use, the balance must be adjusted according to acceleration of the earth specific to the place of use. It is recommended to calibrate the balance regularly. The procedure is described in the section marked 12.1 Balance Calibration page 35

4.6 Gas Adjustment

The gas flow must be regulated after adjustment of pressure. This procedure is described in chapter 12.2 Gas adjustment and hood control page 36

4.7 Mechanical calibration

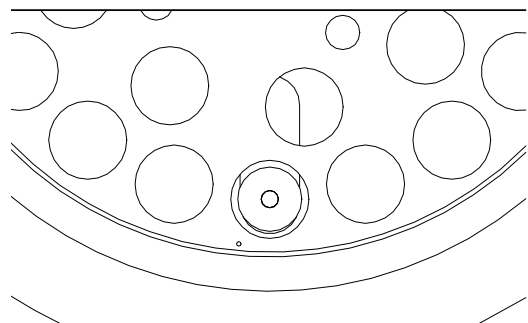
Mechanical adjustment is made at the factory. The lifting and turning movements of the turntable are tested by the technician installing the device.

4.8 Inserting the turn-table

Carefully place the sample plate on the rotary axis.

NOTE

The small hole in the sample plate must lie to the left of the balance pan (refer to figure on the right).

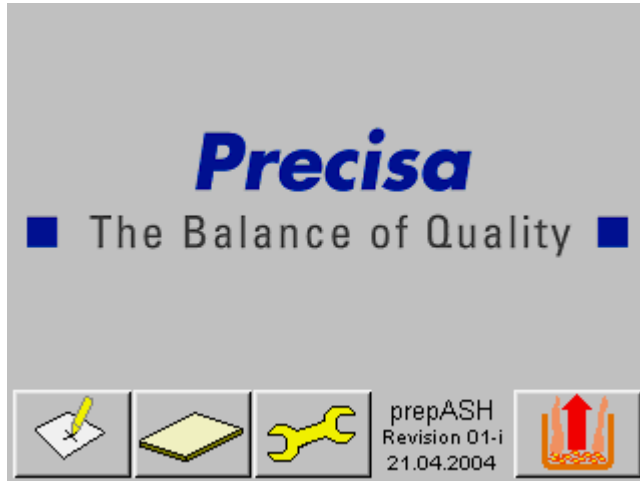


The ashing device is now ready to be used.

5 Software: First Steps

5.1 Program Start

You can also switch the terminal on by pressing the mains switch on the ashing device. The start page appears on the screen.

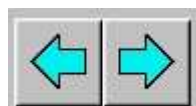


The software is started by touching the *prepASH* button.

The other three buttons lead to screen and service and calibration settings. Users must be authorized to access these (12 "Configuration / Calibration" page35)

5.2 prepASH Controls

5.2.1 Buttons



You can switch between the main menu pages in the prepASH user interface by touching the *arrow* buttons. Unless otherwise described, these program instructions move along one page to the right every time.



Open files



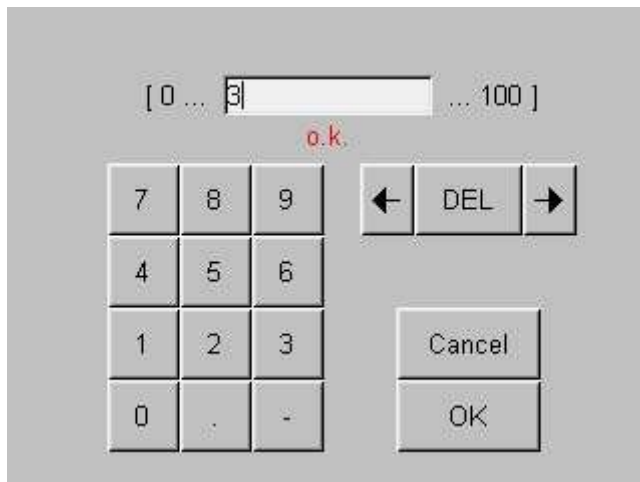
Save files



Delete files, groups

5.2.2 Numerical Entry

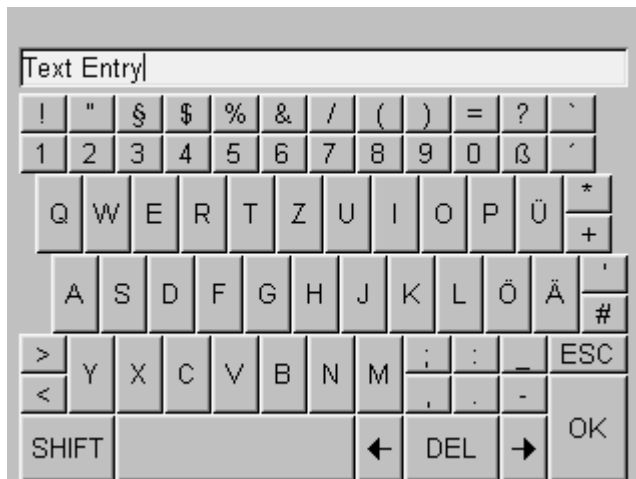
Numerical values need to be entered at various points in the program. The Numerical Entry window appears when you tap the relevant field or number which needs to be changed.



The number entered appears in the white box. The numbers to the left and right of it show the maximum and minimum entries in this entry range. Incorrect entries can be corrected using the arrow and *DEL* buttons.

5.2.3 Text Entry

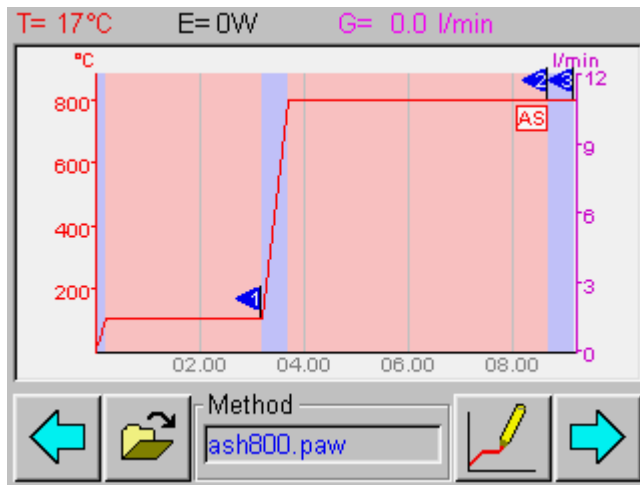
The Text Entry window appears when you tap the text entry field.



The entered text appears in the white field. Corrections can be made using the arrow and *DEL* buttons. *ESC* ends the text entry without saving the entry; *OK* ends the text entry and saves the text.

5.3 prepASH User Interface

An existing program can be opened or new programs created on the prepASH user interface.



5.3.1 Display Bar

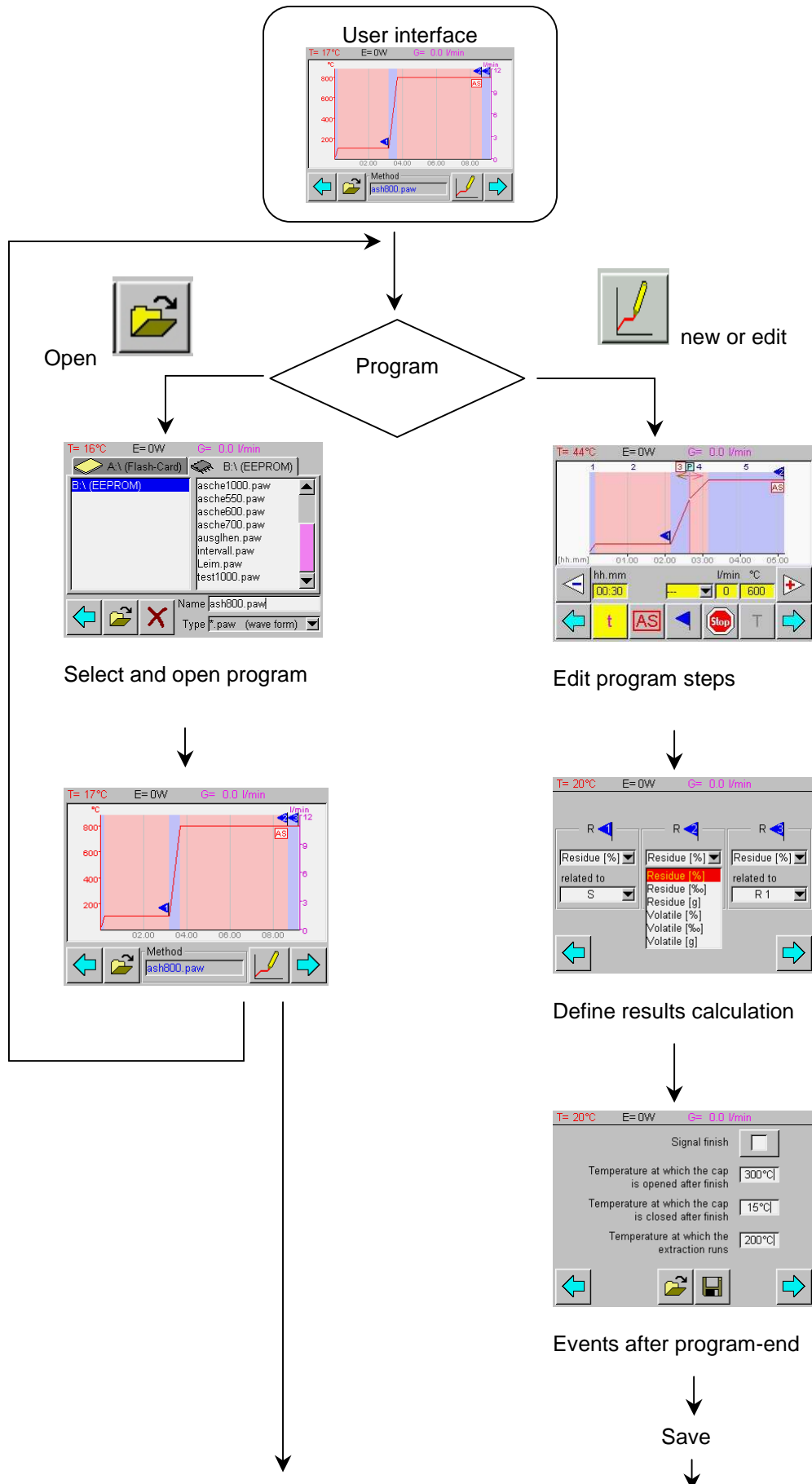


The display bar appears at the very top of the user interface and always remains visible on the main menu pages.

It shows the current temperature and power values, as well as the gas flow rate.

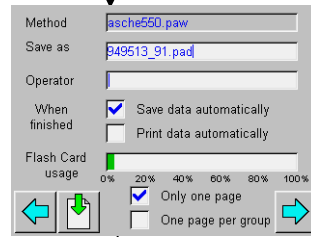
5.3.2 Flow Chart

The sequence of the main menu pages is illustrated in the flow chart.

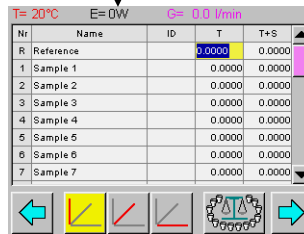


↓
Program Execution
↓

Automatic saving and printing



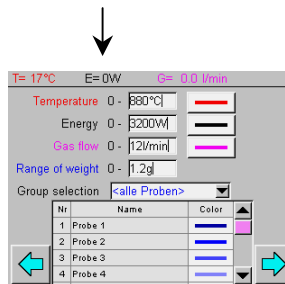
Sample information



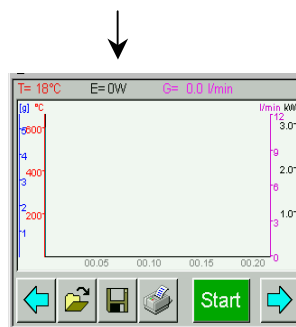
Initial weighing/Group assignment



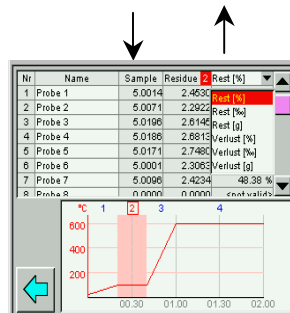
Graphics setting



Start page/Results printout



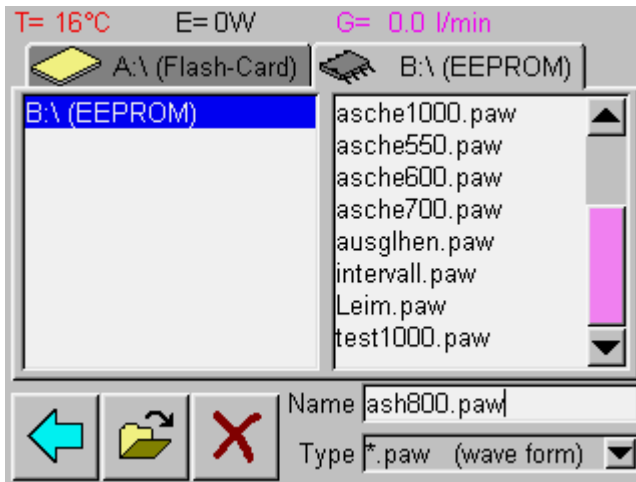
Numerical control



5.3.3 Program Selection



If you touch the *Open* icon, the program selection appears.

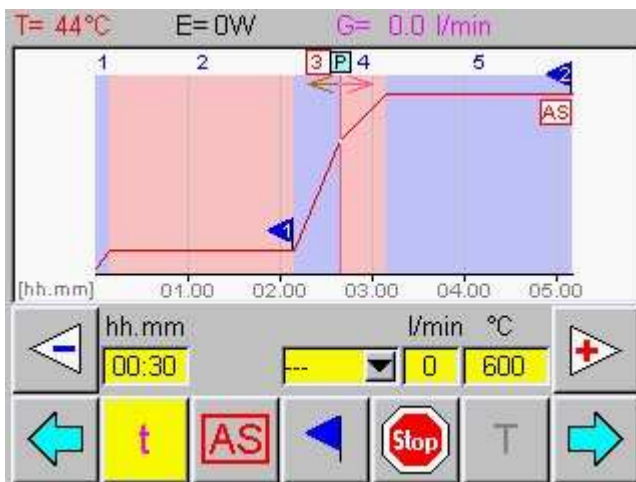


Select the program you require and open it by pressing the *Open* icon.

5.3.4 Program Editor



The choice of control parameters for each stage of the program is described in detail in the Program Editor section (see section 6 "Program Editor" on page18).



5.3.5 Program Execution

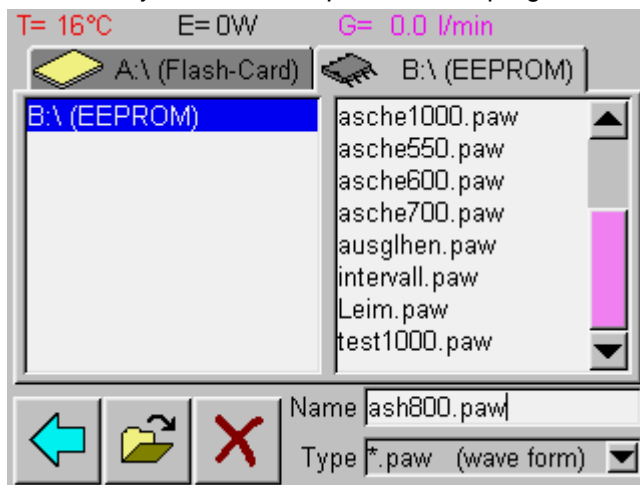
The first page that appears is the sample data acquisition, followed by graphics settings and, finally, the program execution page with the Start icon.

The individual steps are described in the section on program executions (see section 7 "Program Execution" on page 21).

6 Program Selection



If you touch the *Open* icon, the program selection appears.



Select the desired program by touch. The chosen program will be highlighted in blue. The program is opened by again touch the *Open* symbol.

prepASH is now ready to operate (see Ch. 8 Program Executionpage 23).

7 Program Editor



The program editor is opened by tapping on  in the prepASH user interface.

Here you may adjust the temperature program. The temperature program consists of several program steps in which the parameters may be defined.

7.1 Program level

When you create a program, first of all select the program step in which the parameter settings are to be active. A program supports up to 10 steps.



Switch from one step to another by touching the *Step* buttons. The program step currently set is shown in the graphic in a red box.

During the program sequence, prepASH processes all the steps in order in which parameter settings have been edited and then automatically switches to the cool-down step.

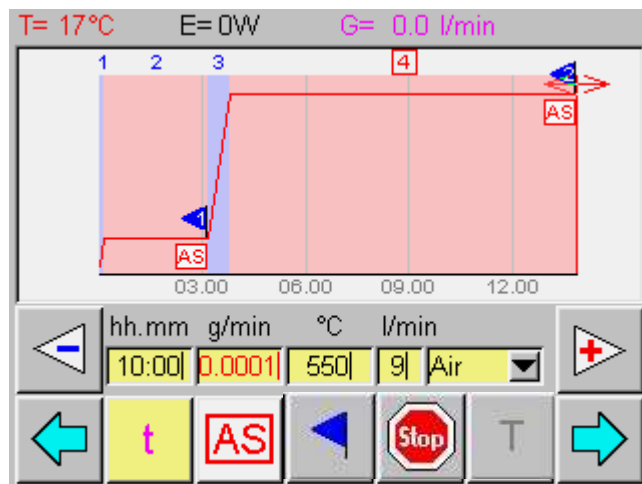
7.1.1 Parameter selection

Every section of the program contains, among other things, time and temperature settings, which are defined via the parameter selection control fields.

The values can either be set by drawing lines in the diagram or by entering numerical values.

The *Number Entry* window appears when you tap in the relevant number. Alternatively, the value can be entered.

There is a sample program contained in section 8.6.6 Log, page 30.



Labelling of the buttons

t = Time interval

Duration of the program step

Blue Flag

Blue flags are used to select the program steps at the end of which the weights are accessible for residue calculation. Up to 3 flags can be set (the original weight is available and does not have to be additionally marked). The weight is normally marked after the end of drying and ashing.

AS = Auto stop

The program step is ended early once all the samples have reached the selected constant weight (weight [mg] per unit of time [min, 30 min, 60 min]).

Stop

At the end of the step the program is interrupted and the hood is opened as soon as the chosen temperature has been arrived (see 7.3 Events on completion of the program). The sample disk can be taken out of prepASH and ashing additives given to the sample. Press "continue" to continue the program. The hood is closed automatically.

Gas

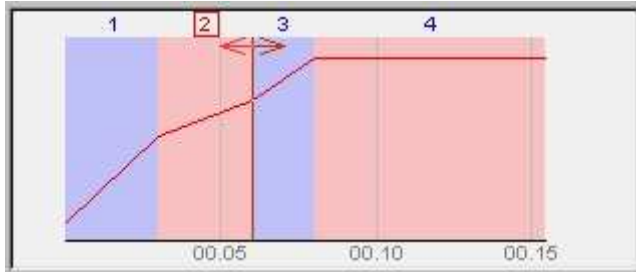
Three gas connections (air, nitrogen, oxygen) enable the atmosphere to be set during the program sequence. The possible gas flow rates are 0, 3, 6 or 9 l/min.

T = Temperature

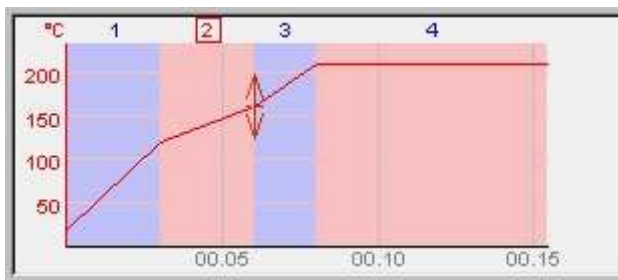
Temperature [$^\circ\text{C}$] at the end of the program step. This is achieved by a linear temperature gradient, starting from the end temperature of the previous program step, lasting the duration of the program step.

7.1.2 Graphical setting

The time and temperature are input graphically by tapping in values with one of the bottom buttons. A double arrow appears on the graphic display. The selected parameter for the program section is changed by dragging the double arrow.

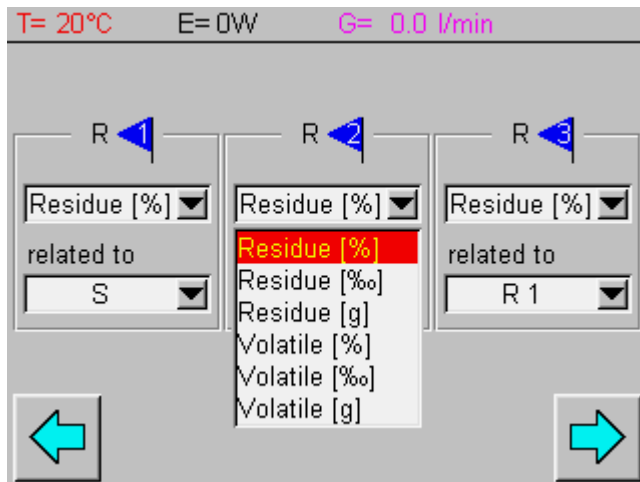


Setting the time for program step 2



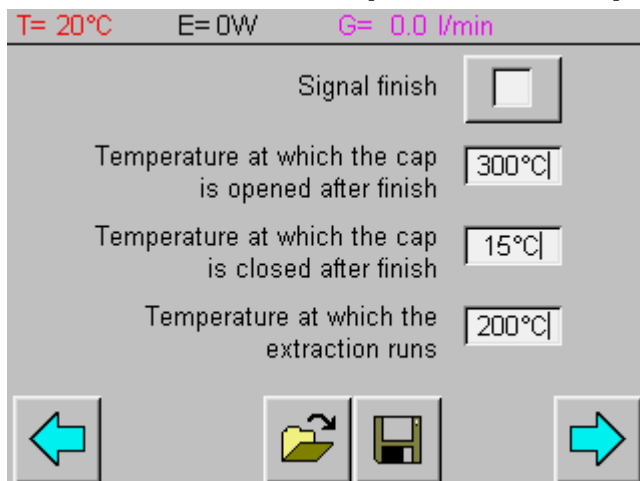
Setting T for program step 2

7.2 Calculating losses and residue



Define the way in which each result is displayed individually in the selection menu. Each result can be calculated as residue or loss, in terms of per cent, per mil or as an absolute amount in grams. The results may be relative to the starting weight (S, Sample) or to any earlier result (R1, R2, Residue).

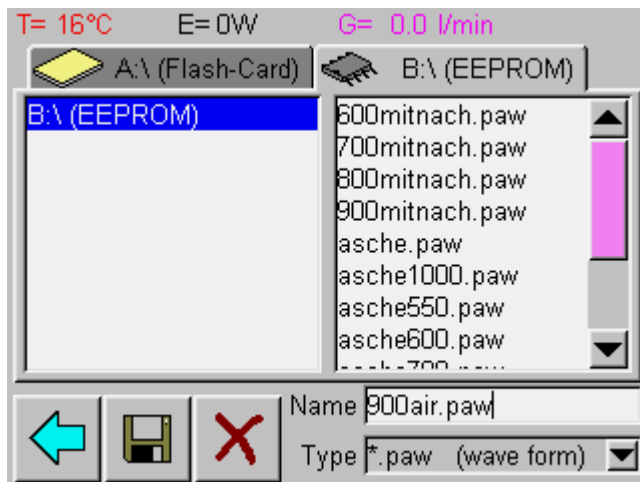
7.3 Events on completion of the program



On the next page you can enable a sound to signal the end of the program and set the temperatures for opening the lid (<800 °C) and for activating and deactivating the suction. If a VAC1000 pump is connected the pump is running whenever the the extraction runs

7.4 Program memory

This method is saved on the flash card or EEPROM with the .paw extension.



Touch the name box to activate it. Enter the file name and save it by touching the Save icon.

8 Program Execution

8.1 Sample Chamber Hood

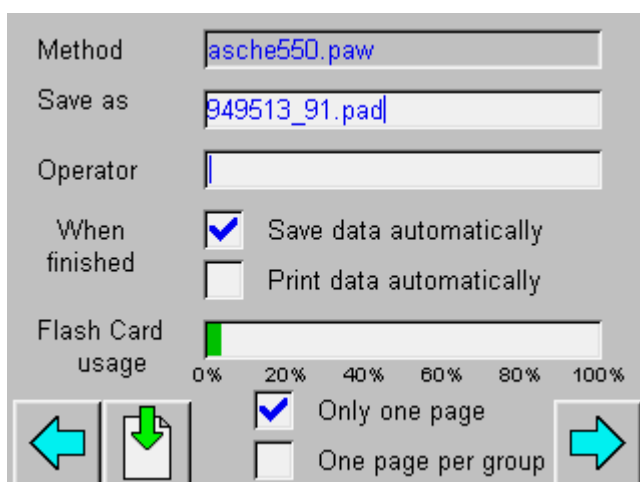
The sample chamber lid is opened by means of compressed air. The three possible settings for the hood (closed, half-closed, open) can be controlled by software.



For safety reasons the hood cannot be opened at temperatures > 800 °C. It closes automatically during the tare process and when the temperature program is started.

8.2 Defaults

Once the measurement has been completed, the data can be automatically saved to the flash card and be printed. Specify the file name and select the required options by touching the appropriate box.



8.3 Sample Data

The data on the samples is entered in the sample table.

Tare



Touch the balance icon to determine the tare weight of all the existing crucibles.

T= 20°C E= 0W G= 0.0 l/min

Nr	Name	ID	T	T+S
R	Reference		0.0000	0.0000
1	Sample 1		0.0000	0.0000
2	Sample 2		0.0000	0.0000
3	Sample 3		0.0000	0.0000
4	Sample 4		0.0000	0.0000
5	Sample 5		0.0000	0.0000
6	Sample 6		0.0000	0.0000
7	Sample 7		0.0000	0.0000

T= 20°C E= 0W G= 0.0 l/min

Nr	Name	ID	T	T+S
R	Reference		29.8134	29.8134
1	Sample 1		30.7030	30.7030
2	Sample 2		30.5599	30.5599
3	Sample 3		29.8083	29.8083
4	Sample 4		30.5898	30.5898
5	Sample 5		30.5115	30.5115
6	Sample 6		29.8059	29.8059
7	Sample 7		0.0000	0.0000

⚠ CAUTION

The sample chamber hood automatically closes after the tare button is touched.

R = Reference The empty crucible is weighed for the purposes of lift correction during each measuring cycle.

Name The name of the sample can be entered in the text field after the tare process in the sample sequence or can be entered directly before the sample is first weighed on the starting-weight page.

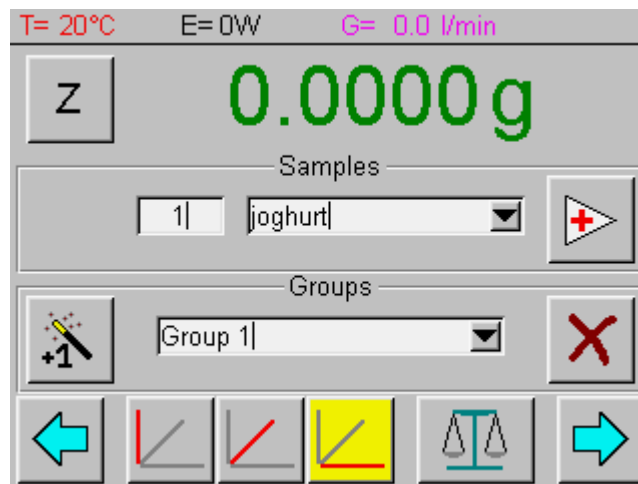
ID Zusätzliche Identifizierung, z.B. Tiegelnummer

T Tare: empty weight of crucible

T+S Tare + Weight of sample
The sample weight is automatically calculated using this program.

The entry takes place on the next menu page.

8.4 Weighing in



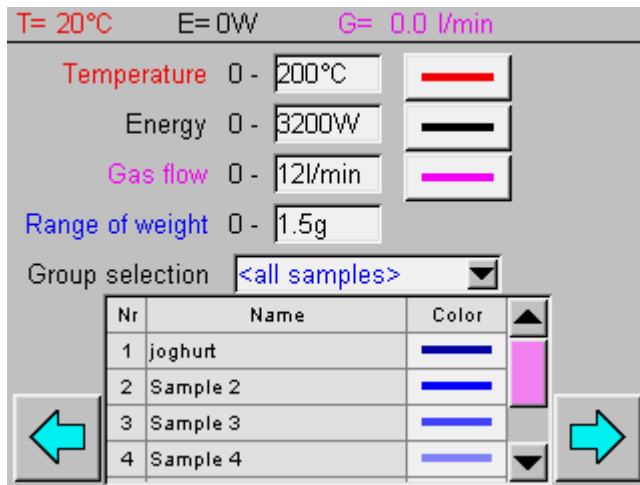
The selected sample can be assigned to a group. The measured data statistics can be saved via all the samples or a group-by-group basis.

1. Select the sample or sample 1.
2. Enter the sample name (if you haven't already done so via the table).
3. Define the group (additional groups can be added by touching the magic wand and can be renamed by clicking on them).
4. If necessary, set the balance to zero by touching Z. This is compensating for a possible balance drift and is automatically done before every weighing of the reference crucible during the run. Re-zeroing the balance doesn't affect the stored tara values of the crucibles.
5. Pour the sample into the relevant crucible.



6. If the crucible is removed from the rotary plate in order to pour the sample in, the sample is first weighed by touching the balance button. The crucible is re-centred by lifting the sample disc. The next sample is moved into place by touching the forward arrow. The reading is not copied from the balance until it has stabilized.
If the starting weigh-in takes place directly on the balance pan, the reading can be copied by touching the forward arrow button. The next sample is also moved into place. Accept the data on the last sample by touching the blue forward arrow.
7. All the boxes are available again once the balance has stabilized.
8. Repeat steps 1 (2resp.) -5 for all the samples.

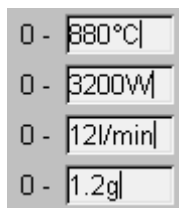
8.5 Selecting the Parameter Display in the Diagram



Parameter Display

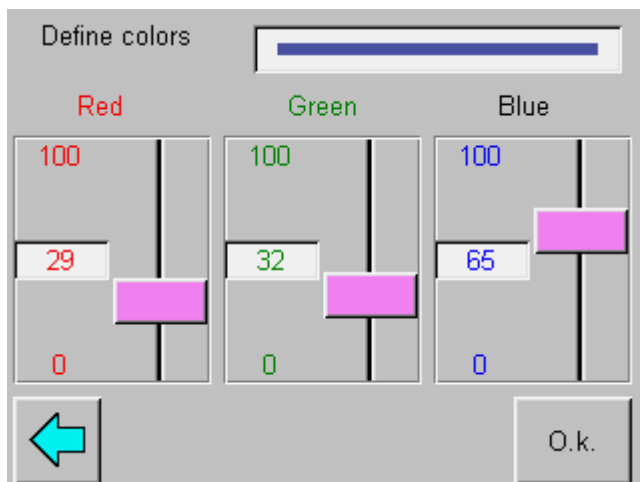
The temperature, power and gas flow parameters are displayed in real time in the diagram. They can also be hidden by tapping the appropriate buttons.

The color of the weight display can be set for every sample. In order to do this, tap the color being changed.



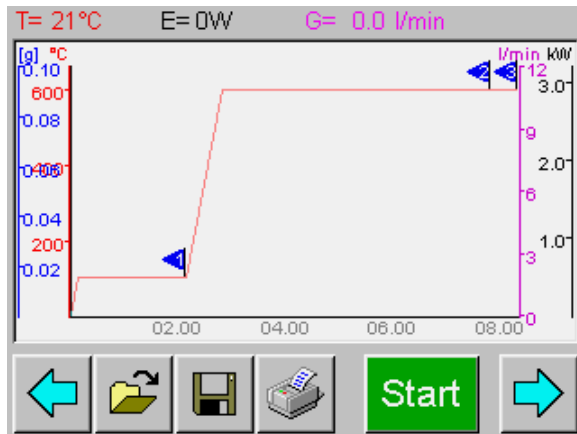
X-Axis scaling

The software recommends the scaling. These may be changed by entering the numerical values. Enlargements of direct sections of the graphics are possible. (see 8.6.2 „During the Measurement“ page 27)



The required color can be defined via the three settings, red, green and blue.

8.6 Starting and Evaluating the Temperature Program



8.6.1 Starting Drying/Ashing

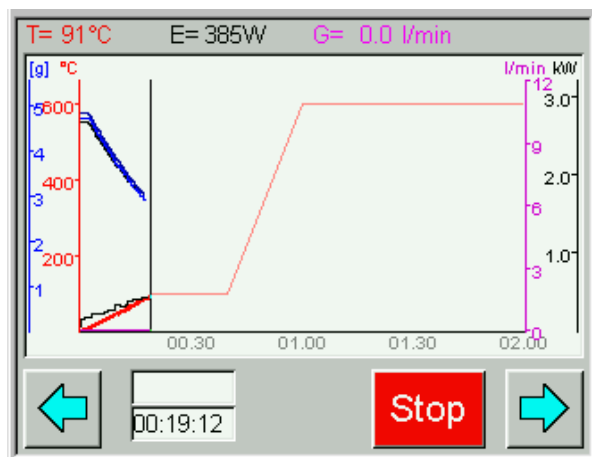
Start the measurement by clicking on Start.

⚠ CAUTION

The sample chamber hood automatically closes after the tare button is touched

8.6.2 During the Measurement

The current status of the parameters is shown in the display bar. The weight trend for the samples is recorded graphically.

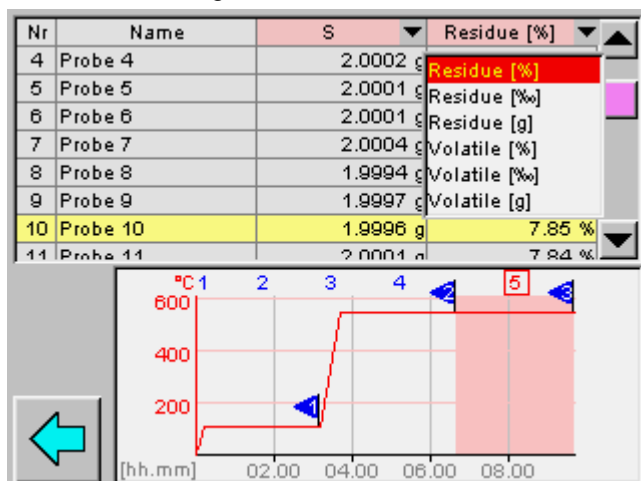


Zoom

An extract of the graph can be selected via a bypass. Touch the magnifying glass to return to the whole picture.

Numerical Display

The sample weights are available in numerical form on the next page. The results display format can be selected during the measurement.



Touch the program step in the graph to display it. The active program step is highlighted in red in the graph, and the number is boxed in red. The requested weights are then automatically displayed in the table at the end of the time interval (the last ones measured during the current program step).

The temperature curve default can be changed during the measurement. In order to do this, scroll back to the prepASH user interface and then select the *Program Editor*.

8.6.3 Program End

A sound is emitted to signal the end of the program, provided this setting has been selected in the program. The ventilation keeps running until the selected temperature has been reached.

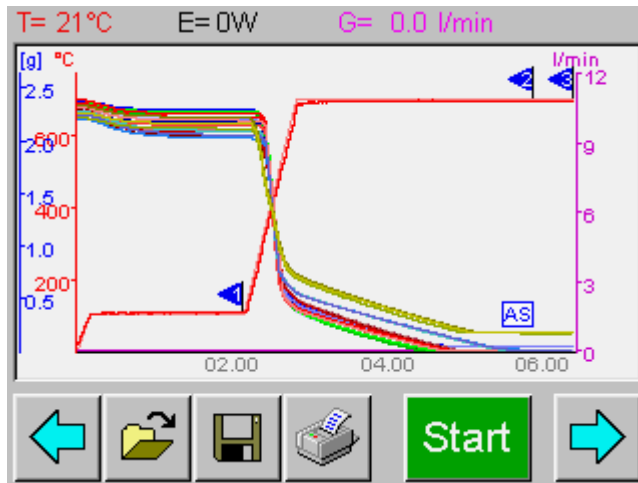
⚠ CAUTION

The sample chamber hood opens automatically once the temperature selected in the program has been reached.

Do not place anything on top of the prepASH.

The parts inside the furnace chamber and the metal covers will become hot. Be very careful to avoid contact.

Always use the supplied holder for removing the sample plate from the device. If you are removing individual crucibles, always use the supplied tongs (this will also help you to avoid spurious measurements).



The measured data can now be saved, and the measurement log can be printed out (or this data may be automatically printed and saved if this setting has been defined).

8.6.4 Saving the Results

After you touch the Save button, you are prompted to enter the file name. Once you have entered the file name, click on the Save button again in order to save it.

8.6.5 Printing the Results

The print dialog is opened by touching the Printer button. Select which group to print in the group selection (options include <all samples>). The type of calculation can be selected here again for the printout.



All samples (or the group selected) are printed in one page. Statistics (average and standard deviation) are also calculated for all the samples.



The statistics and printout take place individually for each group.

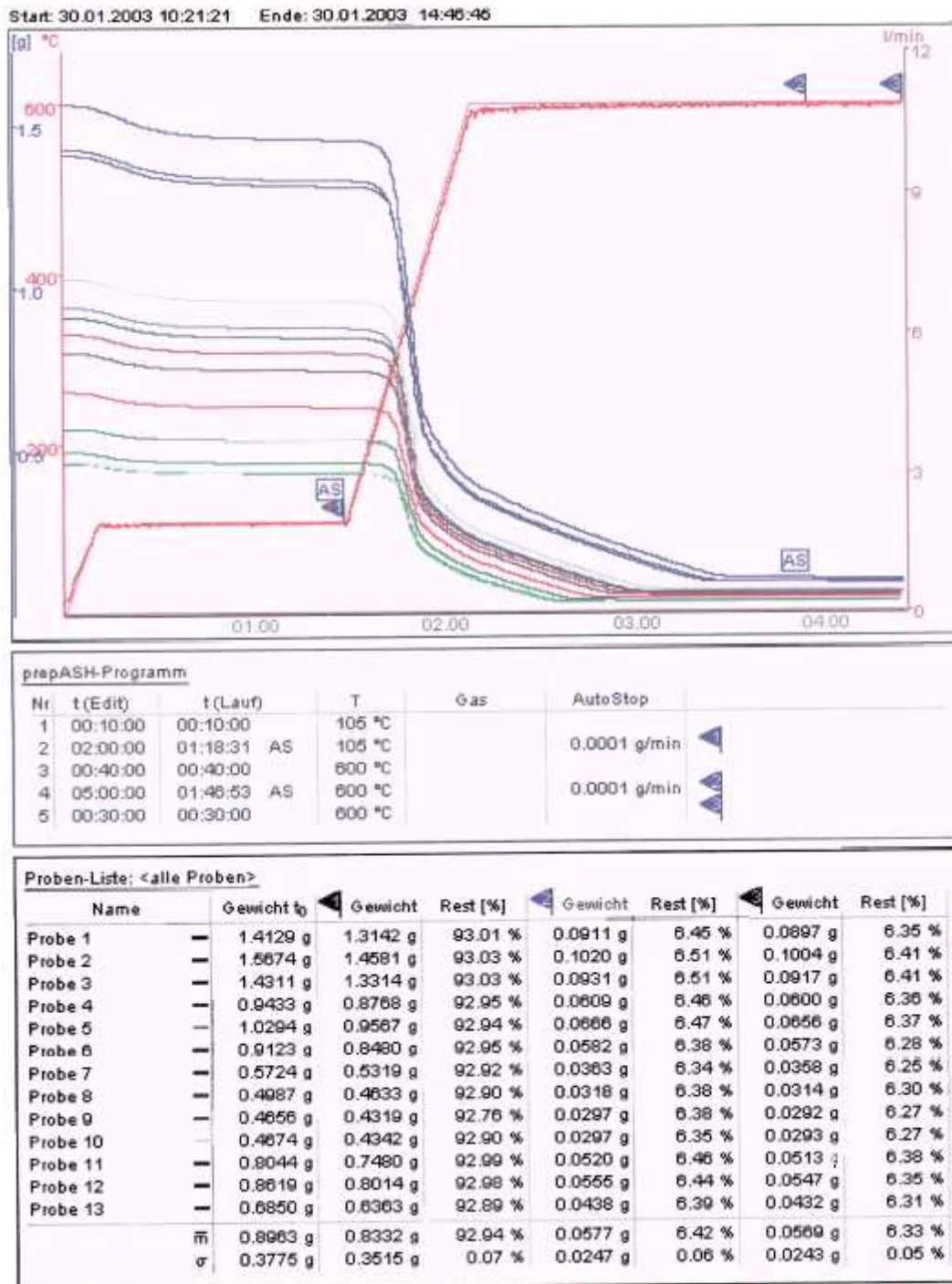
8.6.6 Log

The log header contains details of the date and time at which the measurement starts and finishes.

The measurement sequence graph is printed in the first window. It displays the weight patterns for the samples, as well as the temperature pattern. The power can be displayed as an option.

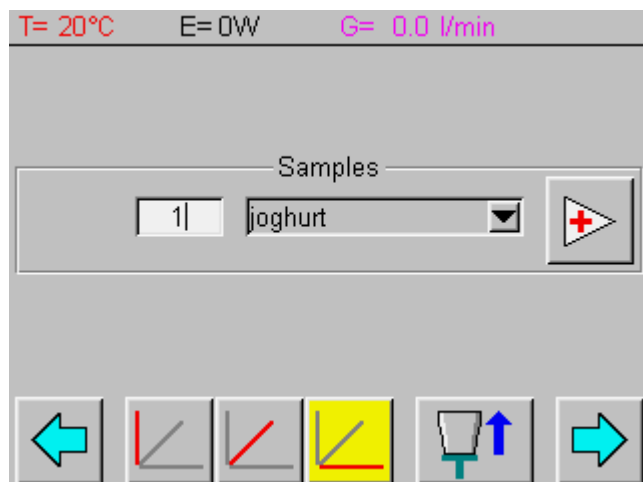
The prepASH program is described numerically in the second window. For this purpose the set time t(edit), the actual duration (t(run)), and the temperature and gas settings, as well as the auto stop criteria are logged for each step of the program.

The sample list is contained in the third window. It contains the weights at the program steps, as well as the calculated residues and losses. The sample list also contains the statistical data (average \bar{m} and the standard deviation σ).



8.7 removal of sample

After measurement, you may remove the samples for further analysis.



There are now two possibilities:



The sample is placed in the position closest to the front. Samples 1-19 are located in the outer circular row, samples 20-29 are in the inner circular row.

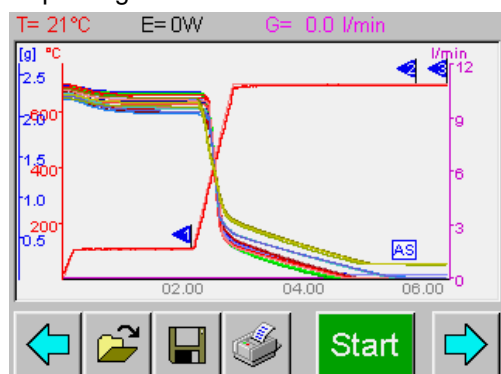


If you prefer to have the selected sample presented, please select the mode Sample Removal with retracted turntable. The selected sample is presented (without having been weighed).

Select the desired specimens by entering the corresponding position or by selection of the sample in the pop-up window, using the specimen name. The next position is advanced by using the push-button.

8.8 open and re-print historic runs (pad files)

To open historic runs (pad.files) turn the pages with the blue flash until you get to the result page. Here you can open the files and re-print the data. You have the possibility to change the calculation before re-printing



9 Calculations

$$\text{Sample} = (\text{Tare} + \text{Sample}) - \text{Tare}$$

$$\text{Residue [g]} = \text{End weight [g]}$$

$$\text{Residue[\%]} = \frac{\text{End weight}}{\text{Starting weight}} \times 100\%$$

$$\text{Residue[‰]} = \frac{\text{End weight}}{\text{Starting weight}} \times 1000\text{‰}$$

$$\text{Loss[g]} = \text{Starting weight [g]} - \text{End weight [g]}$$

$$\text{Loss[\%]} = \frac{\text{Starting weight} - \text{End weight}}{\text{Starting weight}} \times 100\%$$

$$\text{Loss[‰]} = \frac{\text{Starting weight} - \text{End weight}}{\text{Starting weight}} \times 1000\text{‰}$$

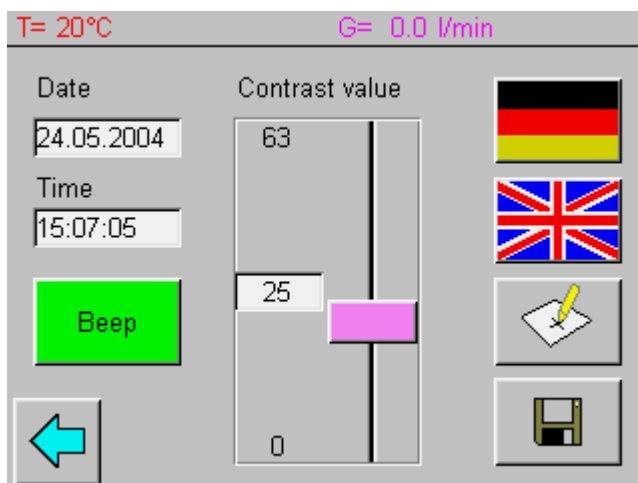
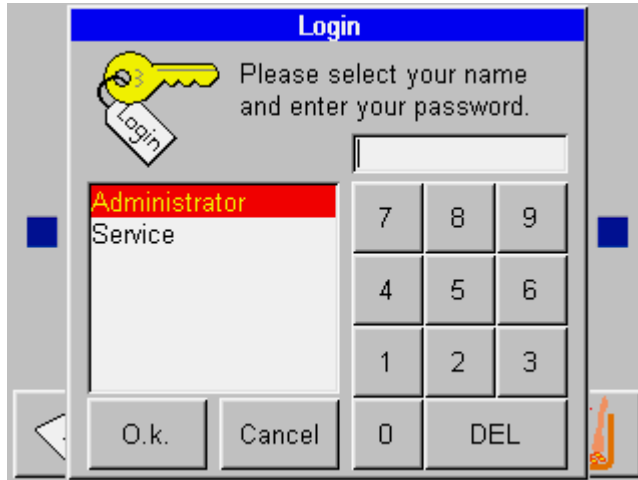
$$\text{Average } \bar{m} = \frac{\sum x_i}{n}$$

$$\text{Standard deviation } \sigma = \sqrt{\frac{n\sum x_i^2 - (\sum x_i)^2}{n(n-1)}}$$

10 Screen settings / Language selection



The screen settings are opened by touching the switch surface. Log in by entering the password (Administrator: 83710).



Date / Time

The date is entered in the format dd.mm.yyyy; the time in the format hh:mm:ss.

Beep (Buzzer)

The acoustic signal can be switched off using the switch surface Buzzer

Contrast


The screen contrast is adjusted to the light conditions using the slide switch.

Language

Select language by touching appropriate flag.

Screen calibration



Calibrate the Touch Screen using -ICON. Follow the instructions on the screen. Touch each cross until it fades away. By doing this, you are selecting the center and four corner points of the screen.

NOTE

Do not interrupt the calibration before complete

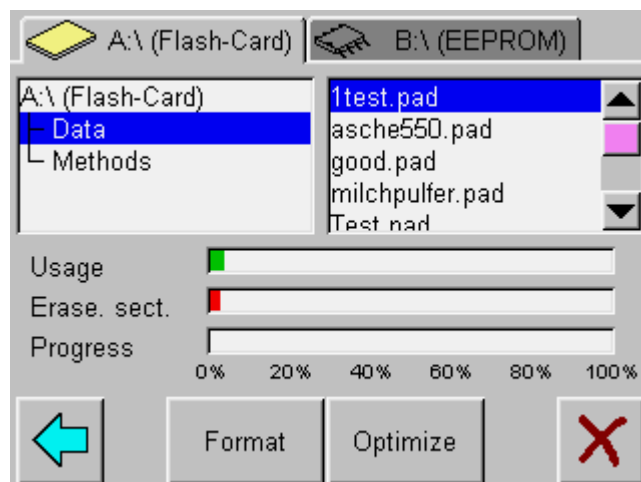
Speichern - Save

Changes in the screen settings must be saved otherwise the previously valid settings will remain active.

11 Formatting



The format page is opened by touching the switch surface of the start page. On this page it is possible to format, optimise or erase the storage mode Eeprom and Flash Card.



Format: To format the storage mode

NOTE

After formatting, all data are lost. You are requested to confirm.

Optimize: If there is any indication in the area Erasible Sectors, the data can be re-arranged according to available storage space.



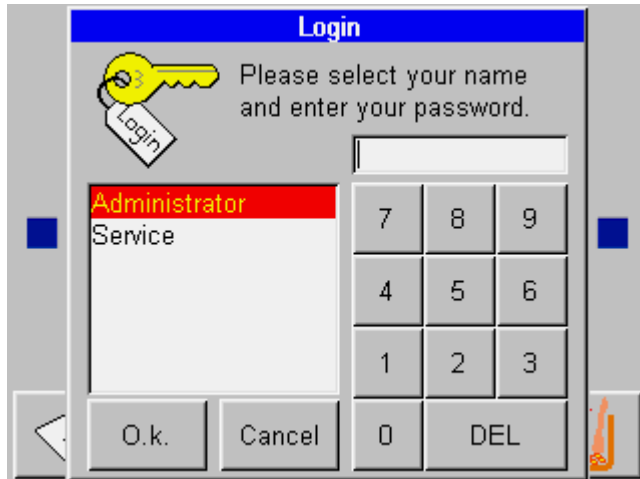
Erases the highlighted data.

12 Configuration / Calibration



To activate Configuration and Calibration click on the surface switch

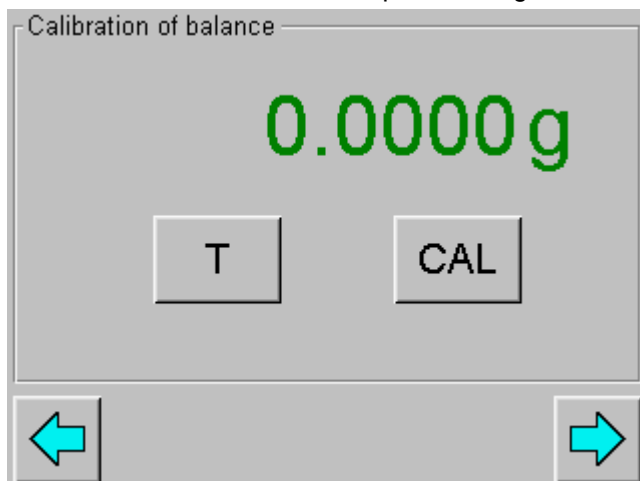
You will be asked for your password (Administrator: 83710)..



12.1 Balance Calibration

The balance is calibrated by the following steps.

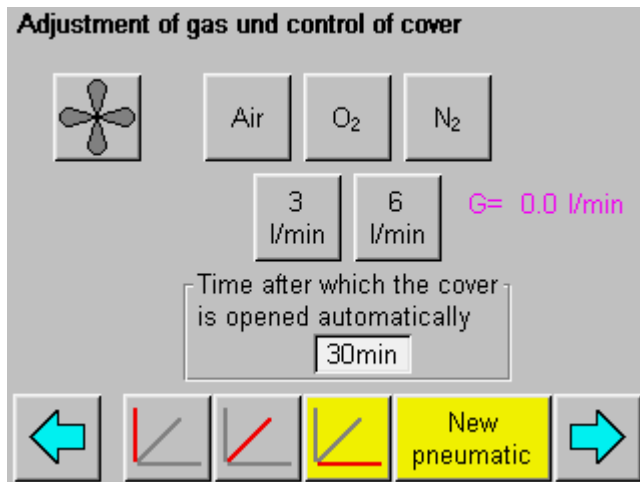
If the hood is closed, it can be opened using the next side.



1. Tare the balance by touching the *T* button.
2. Start the calibration by touching the *Cal* button.
 - The device performs a zero point measurement. (--- 0 g ---) flashes in red.
 - After the zero point measurement, the display flashes the calibration weight* (--- 50 g ---) in blue.
 - Place the calibration weight on the pan.
 - The display flashes.
 - Once the display stops flashing, this indicates that the calibration has ended. The value of the calibration weight is displayed

* With the help of Intelligent Calibration Mode (ICM), the device can detect the size of the calibration weight, which make it possible to perform a precise calibration with different sized weights (in 10 gram increments).

12.2 Gas adjustment and hood control

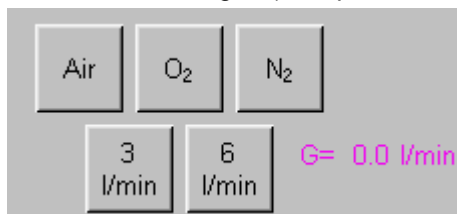


Testing the Exhaust Fan



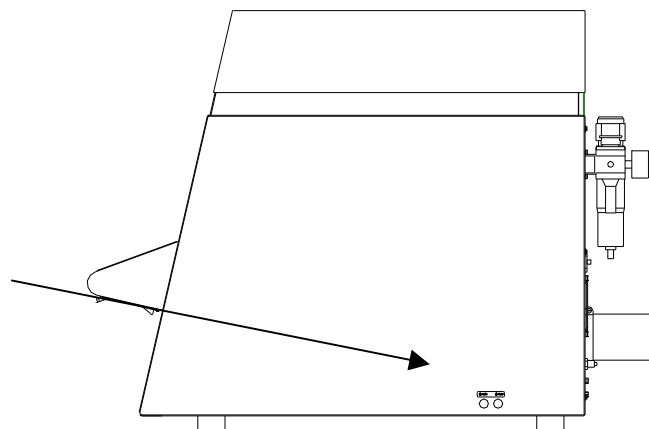
Gas adjustment:

Open a valve by touching the corresponding switch surface. The effectively measured gas flow is indicated on the right. (Inlet pressure: Air 6 bar, O2 and N2: 3 bar)

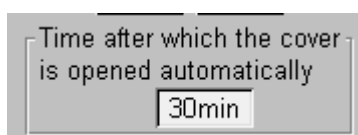


If necessary, regulate the flow of the valve (right hand side of the prepASH).

Increase flow by turning anti-clockwise.

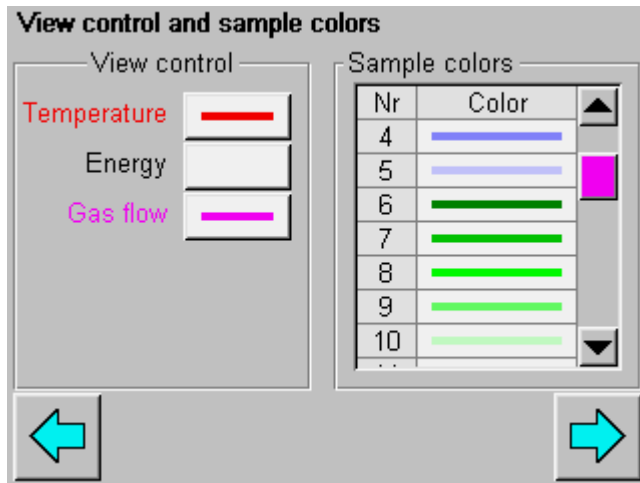


Hood opening time:



The program allows the user to select the temperature at which the hood is half-opened after the analysis. Here the user can program the time interval between half and fully opened hood.

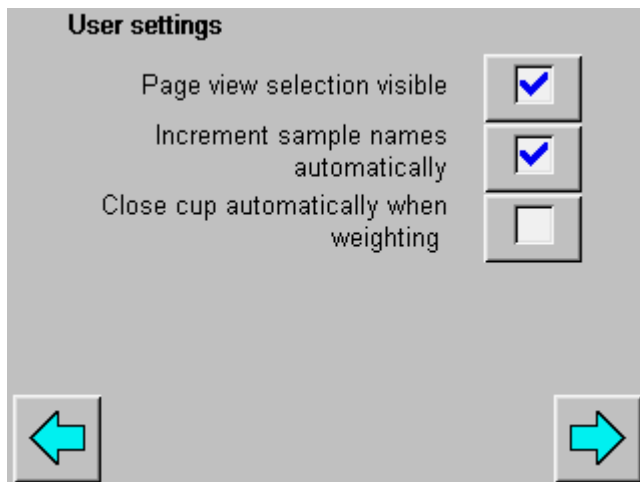
12.3 View control and sample colors



Configuration settings of the display on the screen and print-out.

- Fading in or out of temperature, performance and gasflow curves
- Colors of the weight progress curves of the specimen

12.4 User control



Page view selection visible:

Page display control is also available in the program set up

Increment sample names automatically

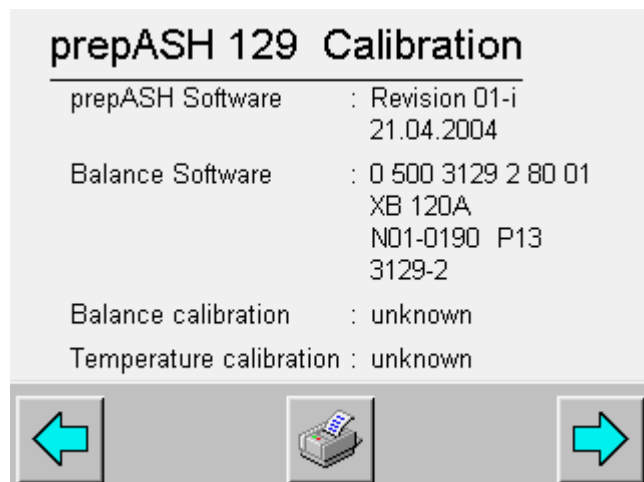
If the specimen name ends with a digit, all the following will be allocated appropriate increments.

Close cup automatically when weighting

Not yet implemented.

12.5 Calibration report

A calibration report is available on the next page



12.6 Temperature calibration

Temperature calibration is password protected. Please consult a Precisa service technician.

13 Maintenance and Service

DANGER

Disconnect the ashing device from the mains during all maintenance work (pull out the plug) and ensure that the device cannot be switched on inadvertently.

In order to guarantee operational safety, the ashing device must be inspected every 4 years at least by an electrician from your Service Centre to ensure that it is in good working order.

Other maintenance is generally limited to regular cleaning.

13.1 housing

The housing can be cleaned on the outside with a damp cloth.

13.2 Sample chamber

Clean the sample chamber with a vacuum cleaner after taking out the parts inside (sample plate, crucible, balance pan). Take care of the sensitive insulating and heating radiators. Avoid damage with the suction tube.

NOTE

The high temperatures may cause cracks to appear in the insulation inserts. This is normal.

13.3 airing

! NOTE

The airing has to be cleaned every 6 months to insure sufficient airing of the furnace chamber.

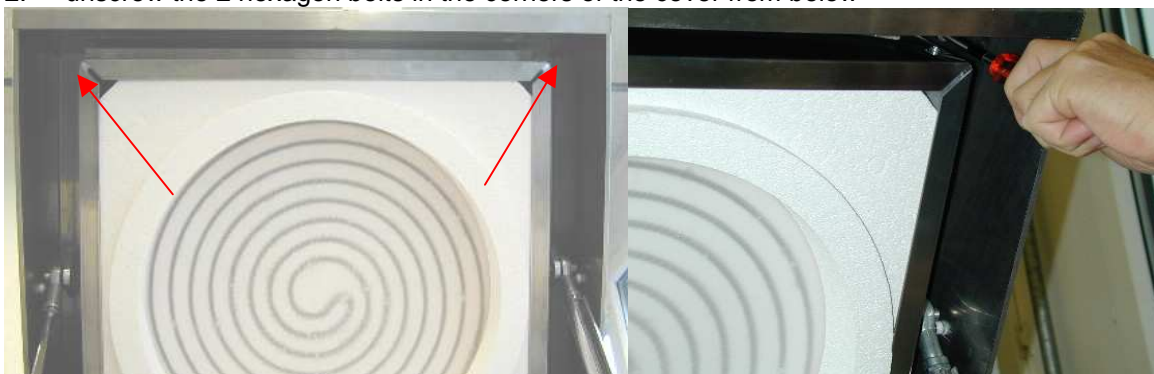
Tools


- Pin type socket wrench (width across flats 7 mm)
- Phillips screw driver

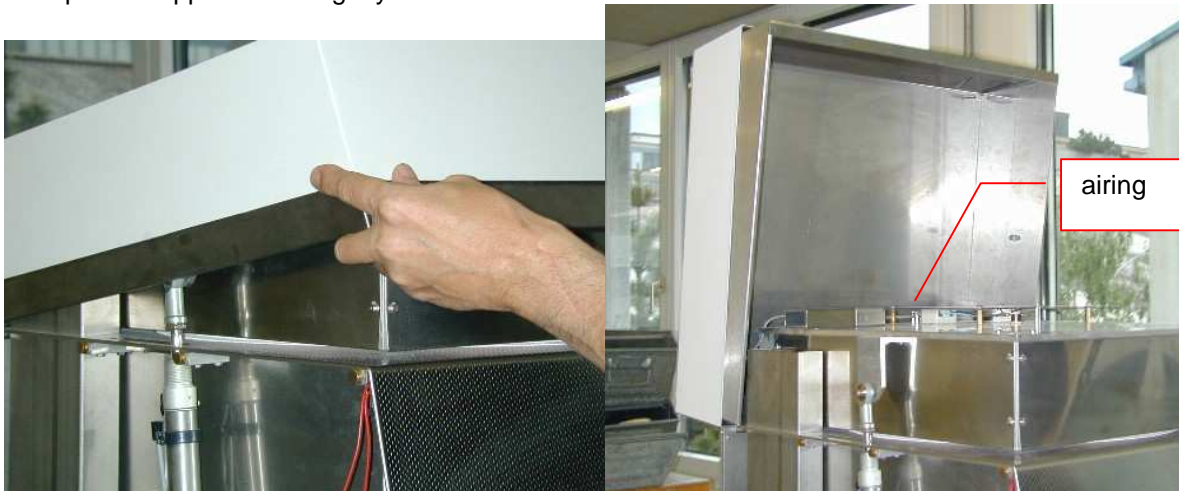
Remove upper cover



1. open the hood by software
2. unscrew the 2 hexagon bolts in the corners of the cover from below



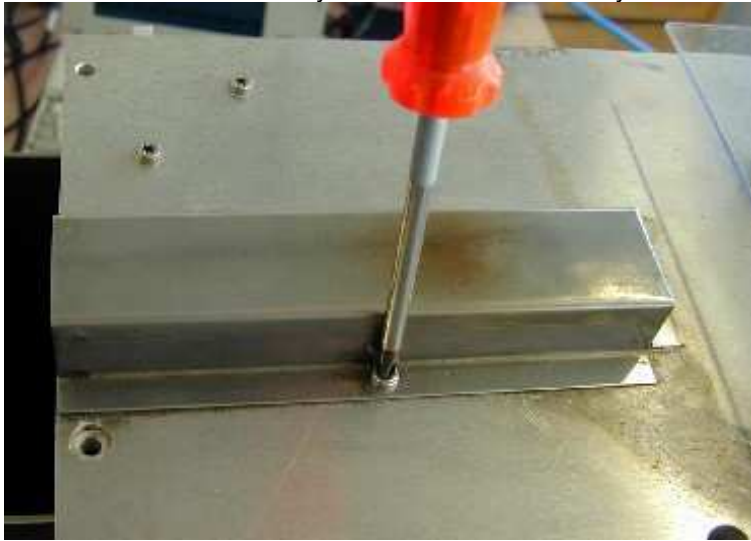
3. close the cover by software
4.  **Important:** disconnect the prepASH from the mains
5. pull the upper cover slightly forwards and tilt it back.




6. the airing is accessible.

Cleaning the airing

7. unscrew the airing and clean it mechanically.
8. If needed also clean the prepASH side.
9. The ceramic tube may be cleaned mechanically



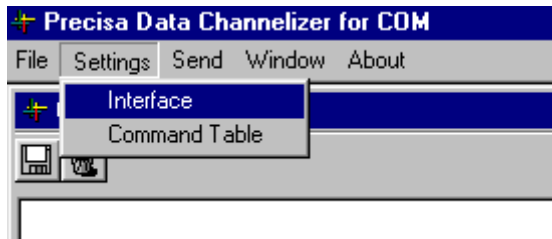
Reinstall the upper cover

10. Tilt the upper cover down on to the hood.
11.  plug in the mains cable and turn on the instrument
12. open the hood by software.
13. Fix the upper cover on to the hood (hexagon bolts)
14. The device is now ready for use.

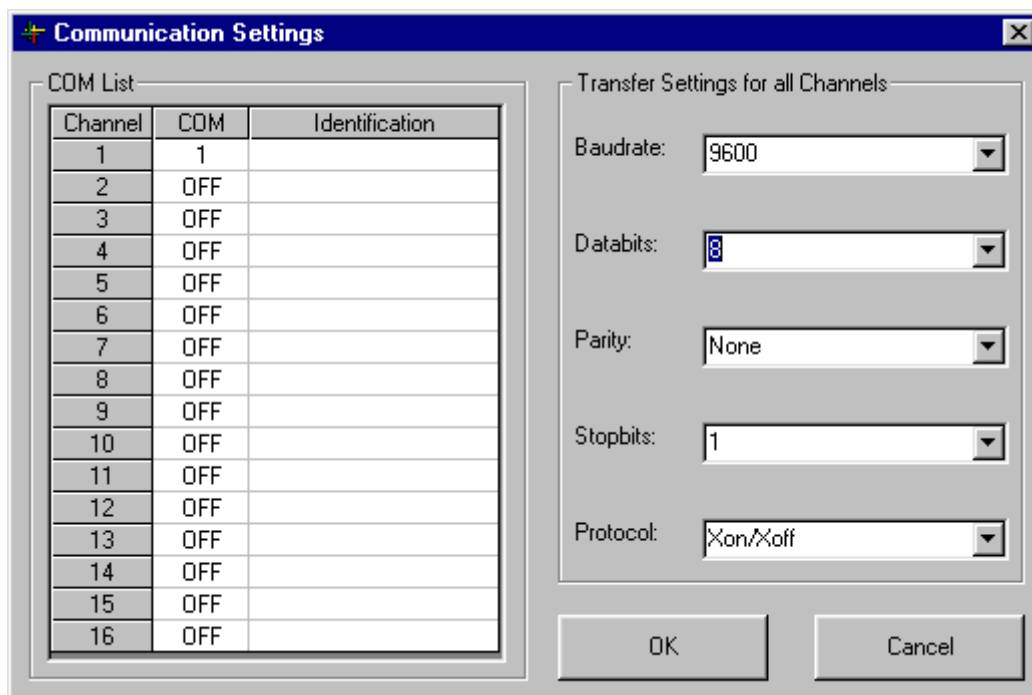
14 Datachannelizer for COM (optional)

14.1 Install/Interface settings

1. Install Software (follow instructions on the screen)
2. open the program
3. Choose Interface Settings (settings will be stored)

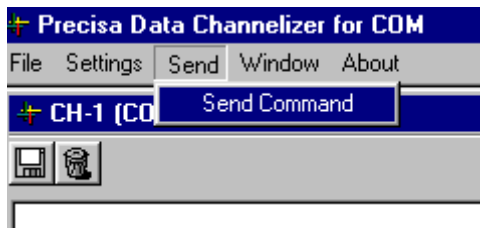


4. Write the Interface from your PC in the cell Channel/COM (e.g. 1 for com1)
5. Set the Transfer settings as shown below: 9600/8/none/1/non/Xon/Xoff




14.2 Data Transfer from prepASH

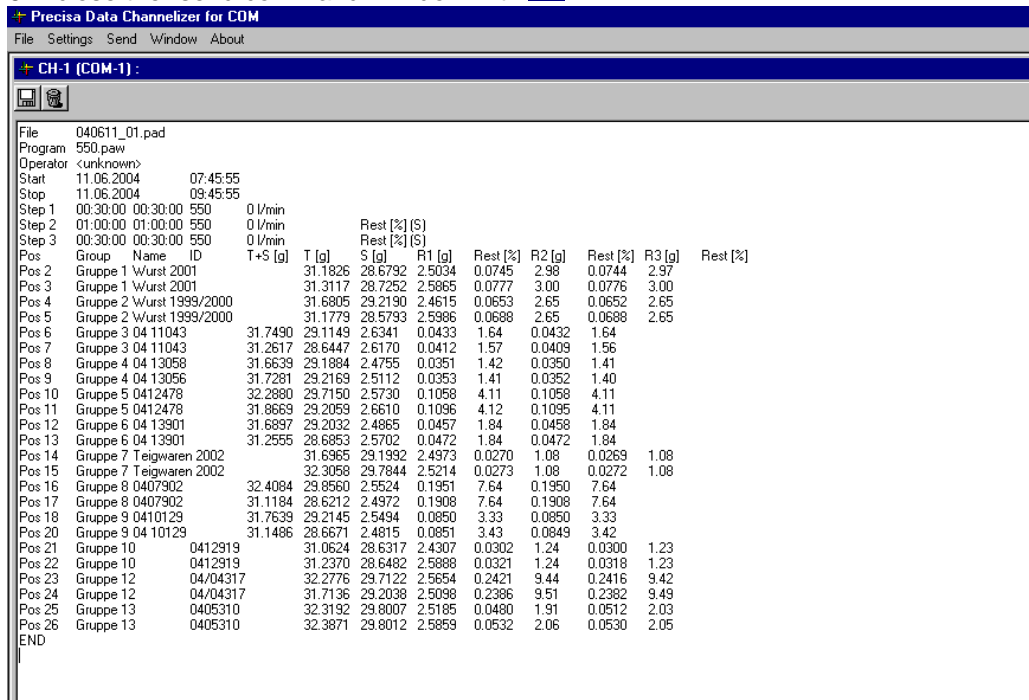
1. Connect the PC to the prepASH (com2) with a Zero-Modem-Cable (included in prepASH delivery)
2. **Open the file to be transferred in the prepASH terminal**
3. open the menu Send/send command in Datachannelizer:



4. Enter the command „DISK1“



5. Execute the command with „SEND“. The data are transmitted.
6. close the “send command” window with 



7. Save data 

Data can be exported e.g. into Excel (tabstop)

Microsoft Excel - Mapped

File Bearbeiten Ansicht Einfügen Format Extras Daten Fenster ?

A1 =

1	Precisa Data Channelizer for COM Version 1.0.0													
2	Copyright Precisa Instruments AG, Moosmattstrasse 32, 8953 Dietikon, Switzerland													
3														
4	Date 11.06.04 Time 08:09:37													
5														
6														
7														
8														
9	File	040610_01.pad												
10	Program	103_550.paw												
11	Operator	<unknown>												
12	Start	10.06.04	08:16:19											
13	Stop	10.06.04	17:58:20											
14	Step 1	00:10:00	00:10:00	103	0 l/min									
15	Step 2	05:00:00	05:00:00	103	0	l/min 0.5 mg/30min Rest [%] (S)								
16	Step 3	00:30:00	00:30:00	550	0 l/min									
17	Step 4	05:00:00	04:02:01	550	0	mg/30min Rest [%] (S)								
18	Pos	Group	Name	ID	T+S [g]	T [g]	S [g]	R1 [g]	Rest [%]	R2 [g]	Rest [%]	R3 [g]	Rest [%]	
19	Pos 2	Gruppe 1	Wurst 2001		31.1826	28.6792	2.5034	1.2492	49.9	0.0748			2.99	
20	Pos 3	Gruppe 1	Wurst 2001		31.3117	28.7252	2.5865	1.2734	49.23	0.0786			3.04	
21	Pos 4	Gruppe 2	Wurst 1999/2000		31.6805	29.219	2.4615	0.9975	40.52	0.0655			2.66	
22	Pos 5	Gruppe 2	Wurst 1999/2000		31.1779	28.5793	2.5986	1.0641	40.95	0.0694			2.67	
23	Pos 6	Gruppe 3	04 11043		31.749	29.1149	2.6341	0.7779	29.53	0.0439			1.67	
24	Pos 7	Gruppe 3	04 11043		31.2617	28.6447	2.617	0.7772	29.7	0.0423			1.62	
25	Pos 8	Gruppe 4	04 13058		31.6639	29.1884	2.4755	0.6283	25.38	0.0355			1.43	
26	Pos 9	Gruppe 4	04 13056		31.7281	29.2169	2.5112	0.6418	25.56	0.0362			1.44	
27	Pos 10	Gruppe 5		412478	32.288	29.715	2.573	1.5688	60.97	0.1066			4.14	
28	Pos 11	Gruppe 5		412478	31.8669	29.2059	2.661	1.6024	60.22	0.1102			4.14	
29	Pos 12	Gruppe 6	04 13901		31.6897	29.2032	2.4865	2.3873	96.01	0.0461			1.85	
30	Pos 13	Gruppe 6	04 13901		31.2555	28.6853	2.5702	2.4657	95.93	0.0477			1.86	
31	Pos 14	Gruppe 7	Teigwaren 2002		31.6965	29.1992	2.4973	2.273	91.02	0.0272			1.09	
32	Pos 15	Gruppe 7	Teigwaren 2002		32.3058	29.7844	2.5214	2.2947	91.01	0.0277			1.1	
33	Pos 16	Gruppe 8		407902	32.4084	29.8561	2.5523	2.4189	94.77	0.1972			7.73	
34	Pos 17	Gruppe 8		407902	31.1184	28.6212	2.4972	2.3675	94.81	0.1927			7.72	
35	Pos 18	Gruppe 9		410129	31.7639	29.2145	2.5494	2.419	94.89	0.0855			3.35	

Tabellen1 / Tabelle2 / Tabelle3

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