Software Manual

E64 WS

Espresso Home Grinder

Description of Software, - Functions & Related Updating Processes.

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1 General

This manual is based on release 1.12-5 applicable to the following products: E64WS GbS.

The purpose of this manual is to guide the user through the menu, explaining the available functions and how to use them effectively. Specifically, it covers the following topics:

1. **First Power-Up of the Grinder**
   This section provides a step-by-step guide for powering up the device for the first time. It explains how to connect the grinder, verify that it is properly powered, and initiate the power-up process. After the initial power-up, it is essential to configure the grinder settings to meet your specific needs. This includes adjusting the grind size, calibrating the dose, and, if necessary, connecting external devices (e.g., apps or monitoring systems).

2. **Navigating the Menu**
   A detailed explanation of how to navigate the device's menu, the available options, and how to modify settings to optimize daily use. This section also provides tips on personalizing the device based on your preferences.

3. **Software Updates**
   New software releases are available via the Mahlkönig Sync Cloud. The grinder can be set to download and install software updates automatically or manually, depending on user preference. For further details, please refer to the "Software Download" section.

4. **Grind-by-Sync**
   The Grind by Sync grinder is designed to connect with other coffee machines in various ways, such as cloud-to-cloud, WiFi, or cabled connections. When connected, the espresso machine and grinder exchange data, allowing the grind size to be adjusted automatically. If the shot runs too fast (indicating a coarse grind), the grinder algorithm refines the grind. If the shot runs too slow (indicating a fine grind), the grinder adjusts to a coarser grind.

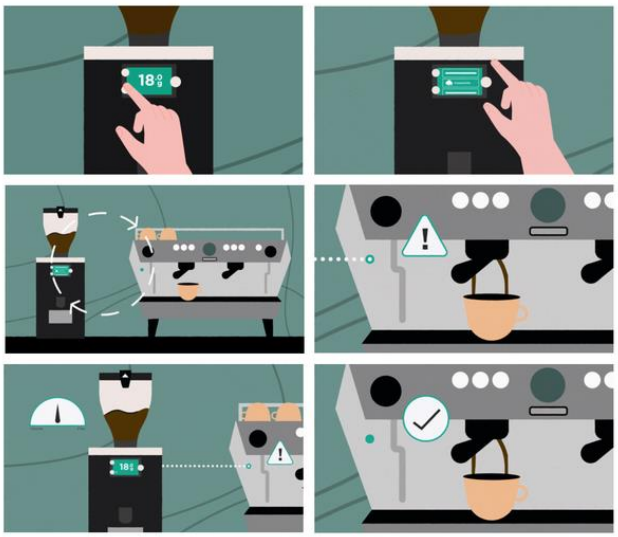


Figure 1; Schematic representation of devices used in Grind by Sync technology

1.1 User Profiles

Role	Password	Description
Owner with connectivity rights	To be set	Gives access to all menus. The password can be confirmed as an empty password. If a password is set, this must have at least 8 digits, 1 Capital letter, 1 lower case, 1 number.
Owner without connectivity rights	Not set or logged out	Gives access to the entire menu functions but not to the connectivity menu.

1.2 Device setup after production and first power up

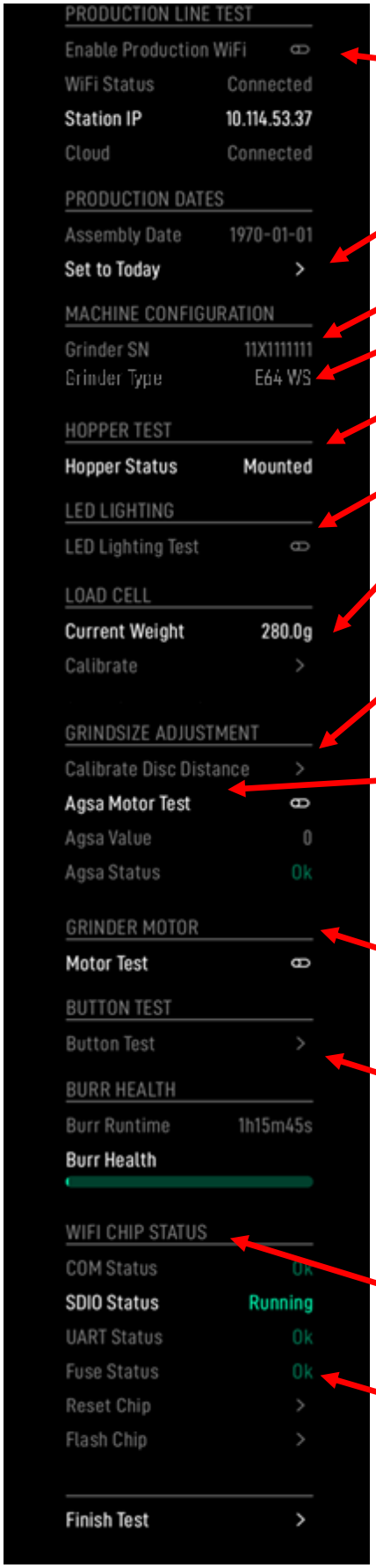
When a grinder is first powered up or when a display is replaced, the first screen that appears is the assembly page, further described under the Service Menu. After powering the grinder follow these steps. On the open menu page:

1. Enable production WiFi, this will connect the grinder to the predefined WiFi network (only if WiFi is available and with a **2.4GHz Band**).
2. Set an Assembly Date clicking on Set to Today.
3. Insert Grinder Serial Number
4. Change Grinder Type
5. Run the listed test
6. Confirm that the test is finished once you are done.

Please note that to finalize the process, it is necessary to change the **grinder type (**Figure 2**)** . All the required steps are available from the Production Line Test shown in Figure 3.



Figure 2; Change Grinder Type.



Enable production WiFi: will connect the machine to the Wi-Fi

Assembly Date: To set or view the assembly date. If selected it brings to an alert where the selection can be confirmed. Once it is confirmed the assembly date is set.

Grinder SN: choose a serial number for the grinder

Grinder Type: choose a specific type from a list

Hopper Status: (Mounted/Dismounted)

LED lighting test: (On/Off) It turns the light on and off to check if it works

Load Cell: If selected brings to Load Cell – Calibration described at the beginning of this section.

Grindsize Adjustment: If selected brings to DDD sensor – Calibration described at the beginning of this section. It shows if the sensor used is an analog or digital sensor and the value measured in microns.

AGSA Test: It performs a test of the AGSA motor moving the motor clockwise and anticlockwise a few times. At the end gives the status of the motor and the value of the encoder in microns.

Motor Test: (ON OFF) It turns on the motor for a short time to check if it works correctly.

Button Test: It allows to perform a test on all the buttons of the grinder.

WiFi chip status: It shows the status of several components used from the Wi-Fi system.

Reset Chip: It allows a reboot of the chip

Figure 3; Production Line Test Menu.

1.3 General User interaction

Once the device is switched-on via the power switch, the logo as shown in Figure 4 (left) will appear. Immediately afterwards, a black screen will appear with the word 'Hello' written on it. After a few seconds, the HMI will be loaded, during this phase the LED light will turn on and off and the display main screen will appear on the left side.

When the device is switched on, the software will by default be set to be used by an owner with access to all the settings.

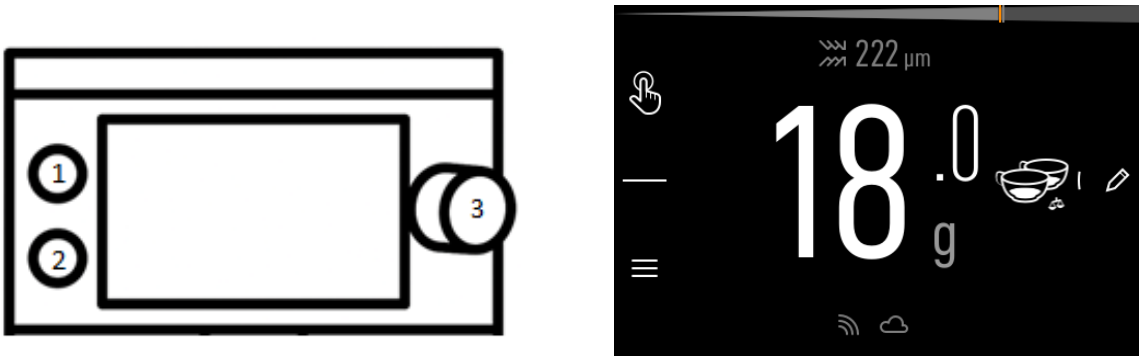
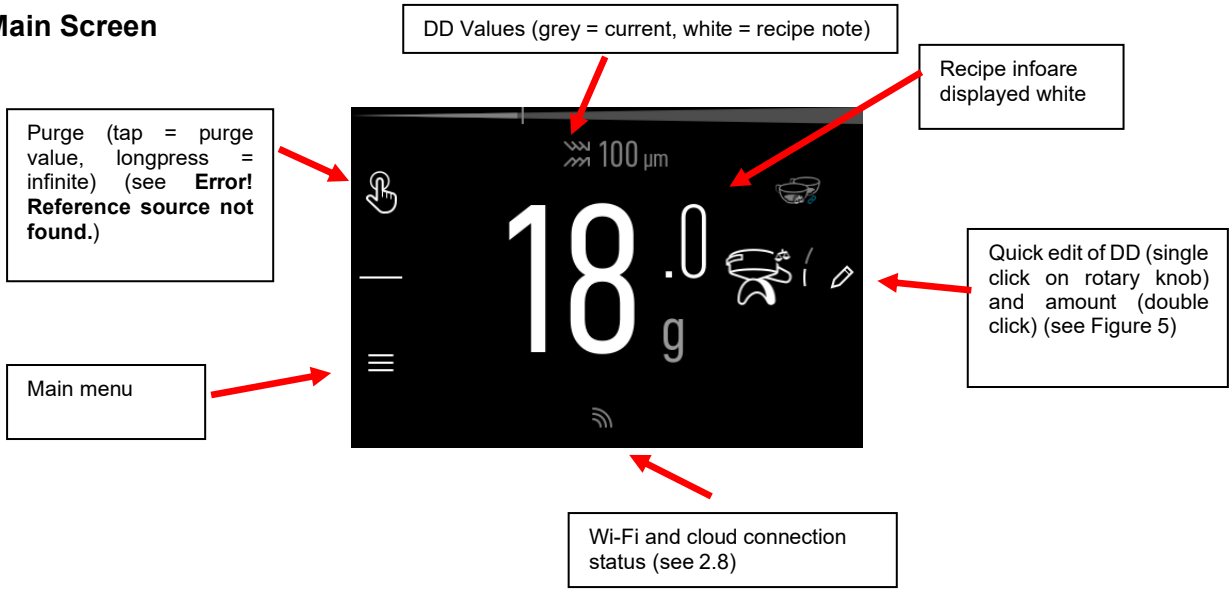


Figure 4; left: Display buttons (1 & 2) and Rotary Knob (3). right: Home Menu screen.

Below is the meaning of the icons on the Main Menu and the different ways of interacting with the menu using the interaction buttons. Taking Figure 4 (right) as a reference, we will call in this manual:

1. Upper left button.
2. Bottom left button.
3. Rotary Knob.

Main Screen



2 Grinder HMI – Functionalities

2.1 Edit Recipe (Quick Edit Disc Distance)

The quick edit Disc Distance is used to change the disc distance to the individual recipe selected. It can be access pushing the Rotary Knob and it appears as in Figure 5.

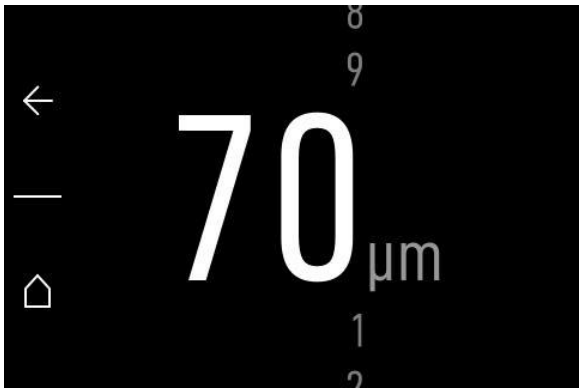


Figure 5; Quick Edit Disc Distance of a single recipe.

2.2 Main Menu

The Main menu can be accessed pushing the top left button. The main functions are grouped in this menu and organized in several sub-menus shown in Figure 6.
The use of the submenus is described individually below.

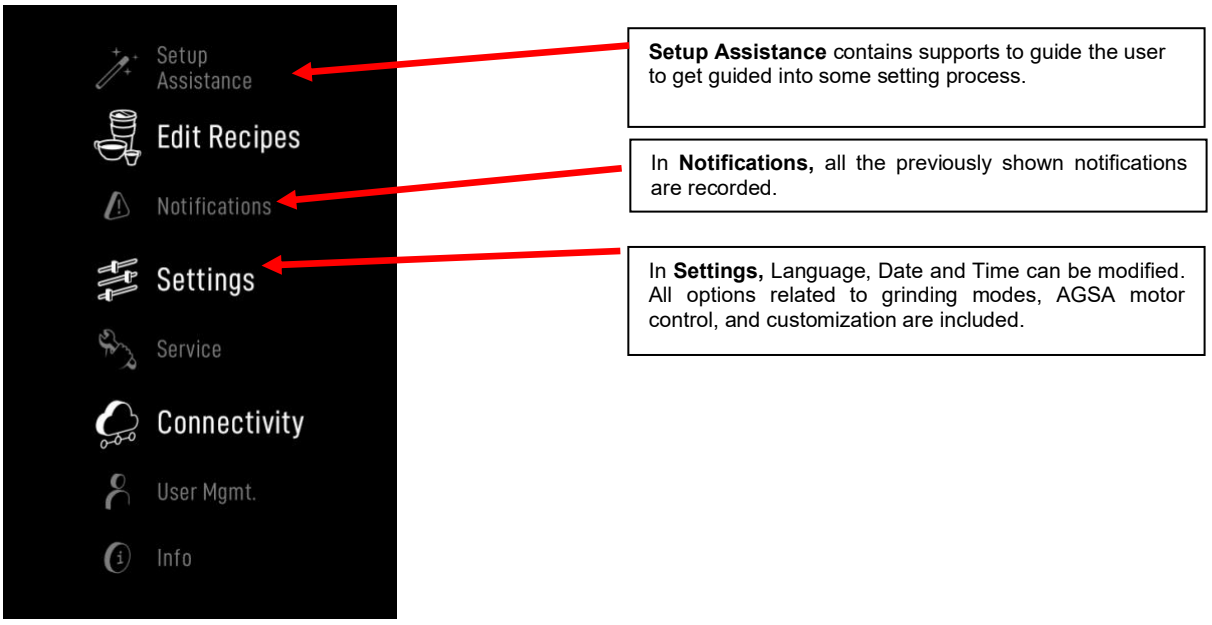


Figure 6; Sub-menus shown in the Main Menu page

2.3 Setup Assistance

In this section of the menu, it is possible to activate guided setup paths for configuring some of the grinder's features, such as cloud and WiFi connections, dialling in the first recipe.

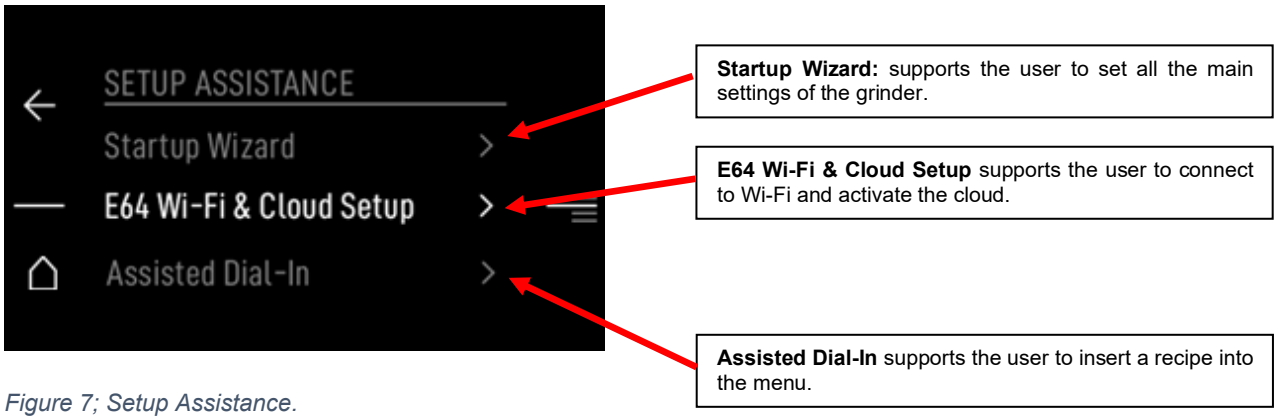


Figure 7; Setup Assistance.

2.3.1 Startup Wizard

The Startup Wizard is a guided process that allows the user to set some of the grinder's operating parameters. In particular, the Startup Wizard enables the selection of the grinder name at power-on, the choice and connection of the WiFi network, and the dial-in process for the first recipe.

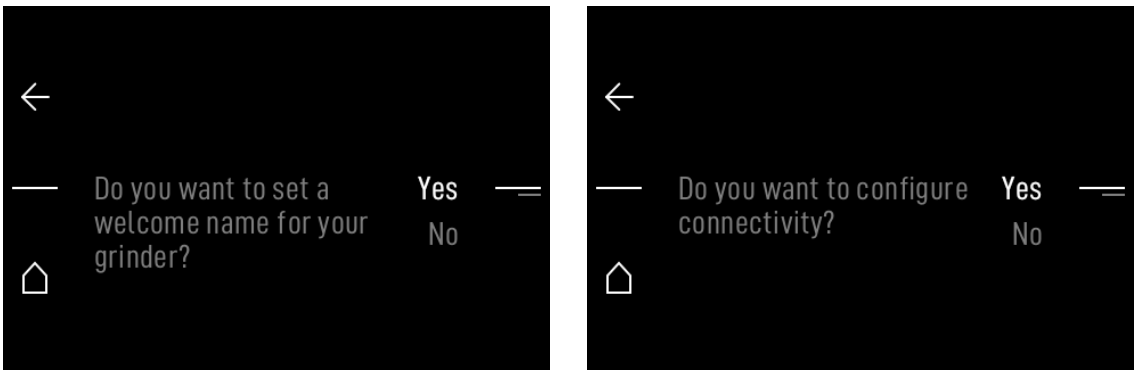


Figure 8; Startup Wizard. Grinder name and connectivity configuration.



Figure 9; Startup Wizard. First recipe dial in.

2.3.2 E64 WiFi & Cloud Setup

It is possible to configure the WiFi and the cloud using this option in the wizard menu. If the app-based mode is selected, the QR code can be scanned with the app. This procedure leads to the grinder onboarding process, which also includes connecting to WiFi. If the Manually option is selected instead, the user is taken to the WiFi configuration page, where a network can be selected and the password entered to establish the connection.



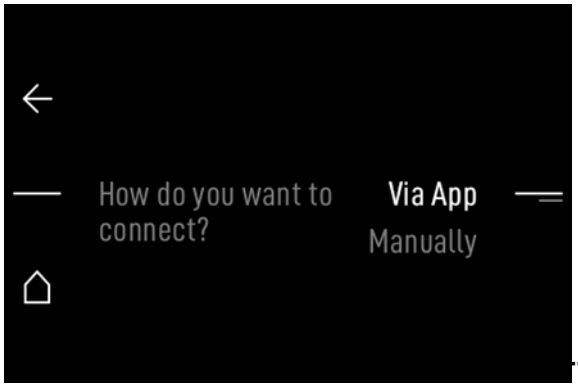


Figure 10; Startup Wizard. Cloud connection.

2.3.3 Assisted Dial-In

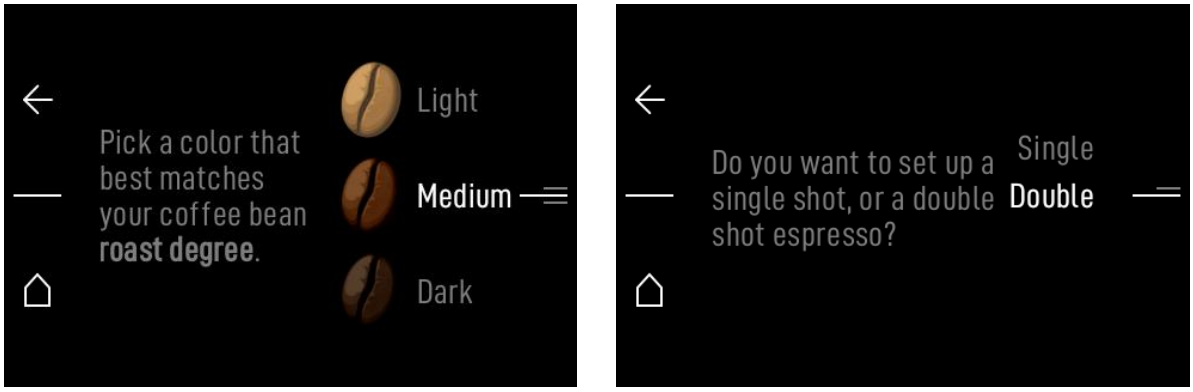


Figure 11; Assisted Dial-In. Coffee color and Single/Douple Espresso choice.



Figure 12; Assisted Dial-In. Grind Weight and beverage weight choice.

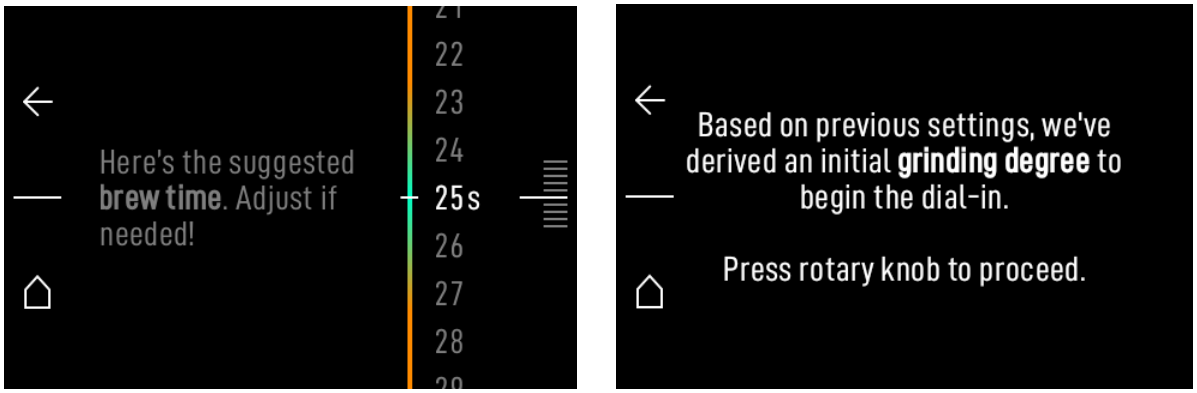


Figure 13; Assisted Dial-In. Brew Time and Confirmation of suggested grinding degree.

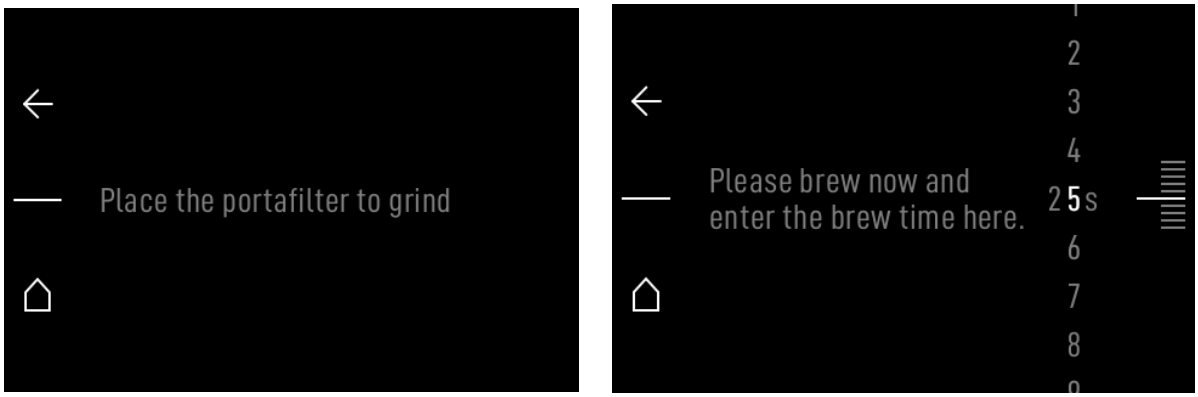


Figure 14; Assisted Dial-In. Refine process and communication of new recipe with the coffee machine.

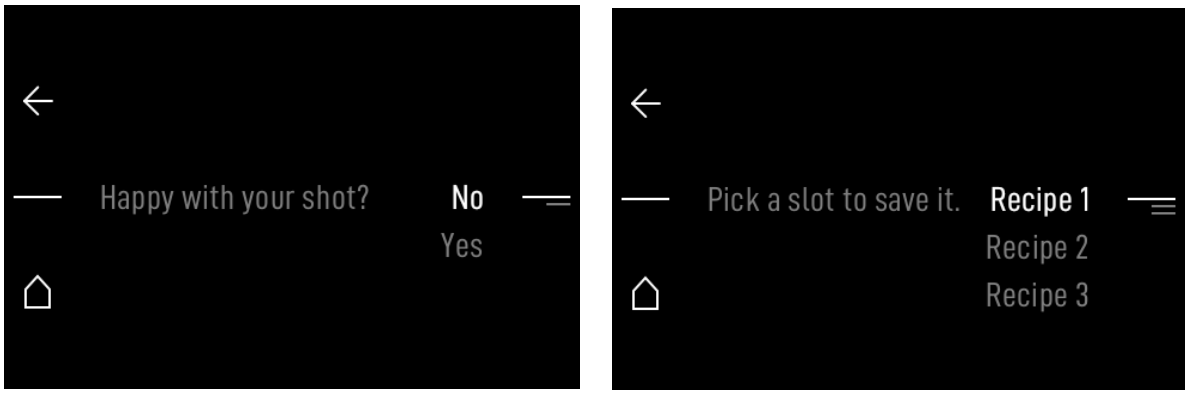
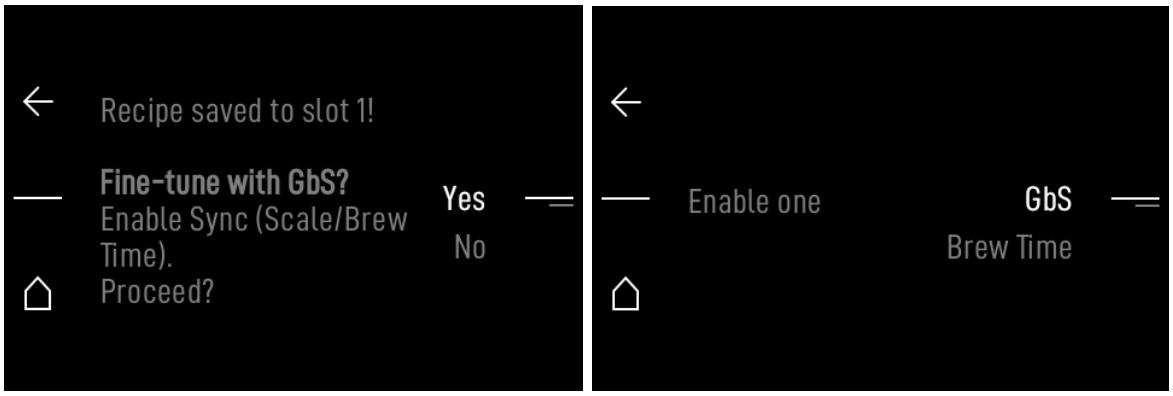
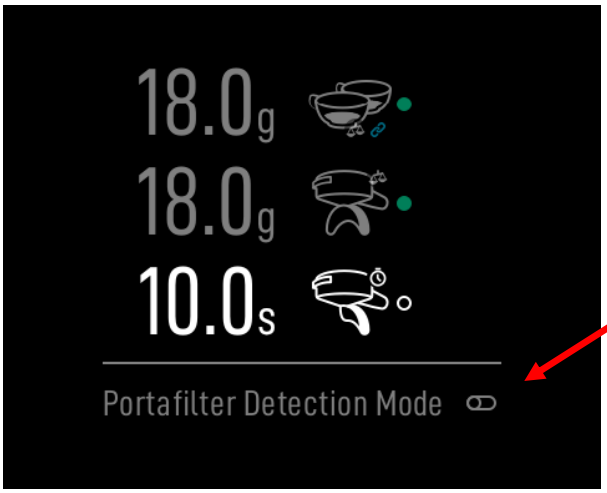


Figure 15; Assisted Dial-In. Recipe allocation.



2.4 Recipes

In this menu it is possible to edit recipes, decide which ones to show in the home menu and manage the recognition of portafilters.



If Portafilter Detection Mode is active it is possible to record a PF into the machine as described in this paragraph.

Figure 16; Edit Recipes Menu

The Edit Recipe menu contains a maximum of 3 recipes which can be edited. Each recipe has 1 value, an icon and a switch. The first value indicates the most important parameter of the recipe, and can be defined as a time based a weight based or a manual-based recipe
The icon to the right can be chosen as a reminder of the portafilter saved in the recipe, and the last element to the right displays whether the recipe is shown or not in the main menu.

The last item on the Recipes Menu is the **Portafilter Management** section. Selecting a recipe with the Rotary Knob will lead to the **Recipe Menu.**

Portafilter Management: Switch detection mode ON and OFF. Once the detection mode is on, a submenu with the switcher for detection mode and a list of the saved portafilter is shown reporting the respective number, weight and tolerance required. If detection mode is active, the option “Add Portafilter” will appear in the same menu as shown in Figure 18(left).

Each recipe in the list presents some icon and a dot. The green dot at the end means that the recipe is displayed in the Home. The icons provide additional information about the settings of the individual recipe. The icons are associated to the recipe's mode as shown in Figure 17. It is possible to recognize in the displayed recipes the three different icons, one with a clock, one with a scale, and one with a hand which are associated with Time Mode, Weight Mode, and Manual Mode.

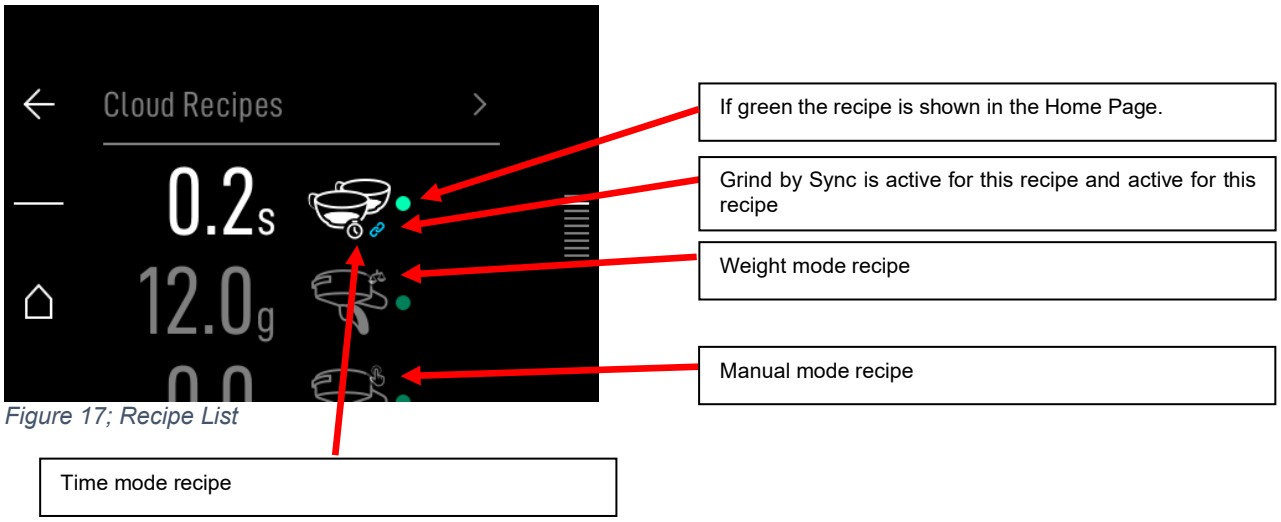


Figure 17; Recipe List



Figure 18; (Left) Portafilter Management menu. (Right) Portafilter weight value page

Add Portafilter option brings to a new page as shown in Figure 18 (right). Once the portafilter is inserted its weight is measured through the load cell. If the weight is within the tolerance range of a saved portafilter, the alert shown in Figure 19 (left) will appear. If the value does not overlap with any saved portafilter weight, a new portafilter management page will be created and saved as shown in Figure 19 (right). In the page, the portafilter number, the weight value, the editable tolerance limit, and the delete option are reported.

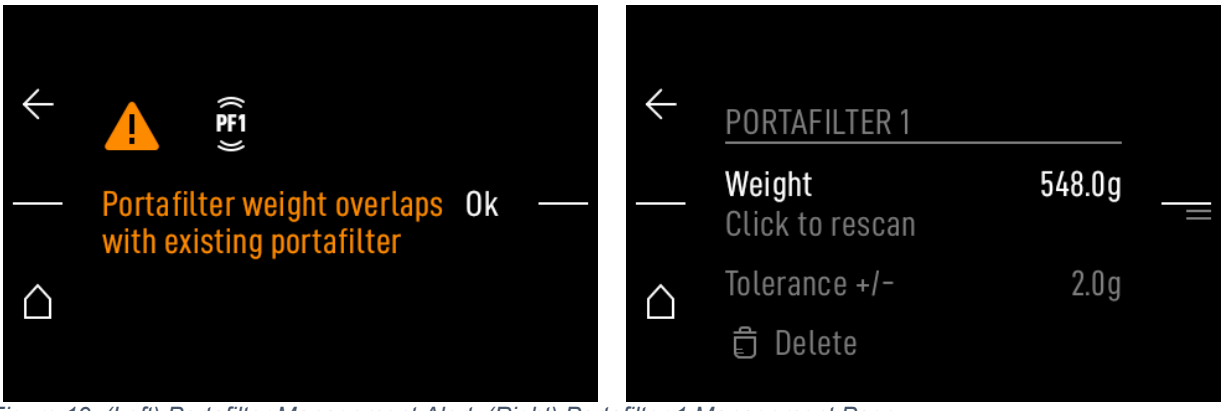


Figure 19; (Left) Portafilter Management Alert. (Right) Portafilter 1 Management Page

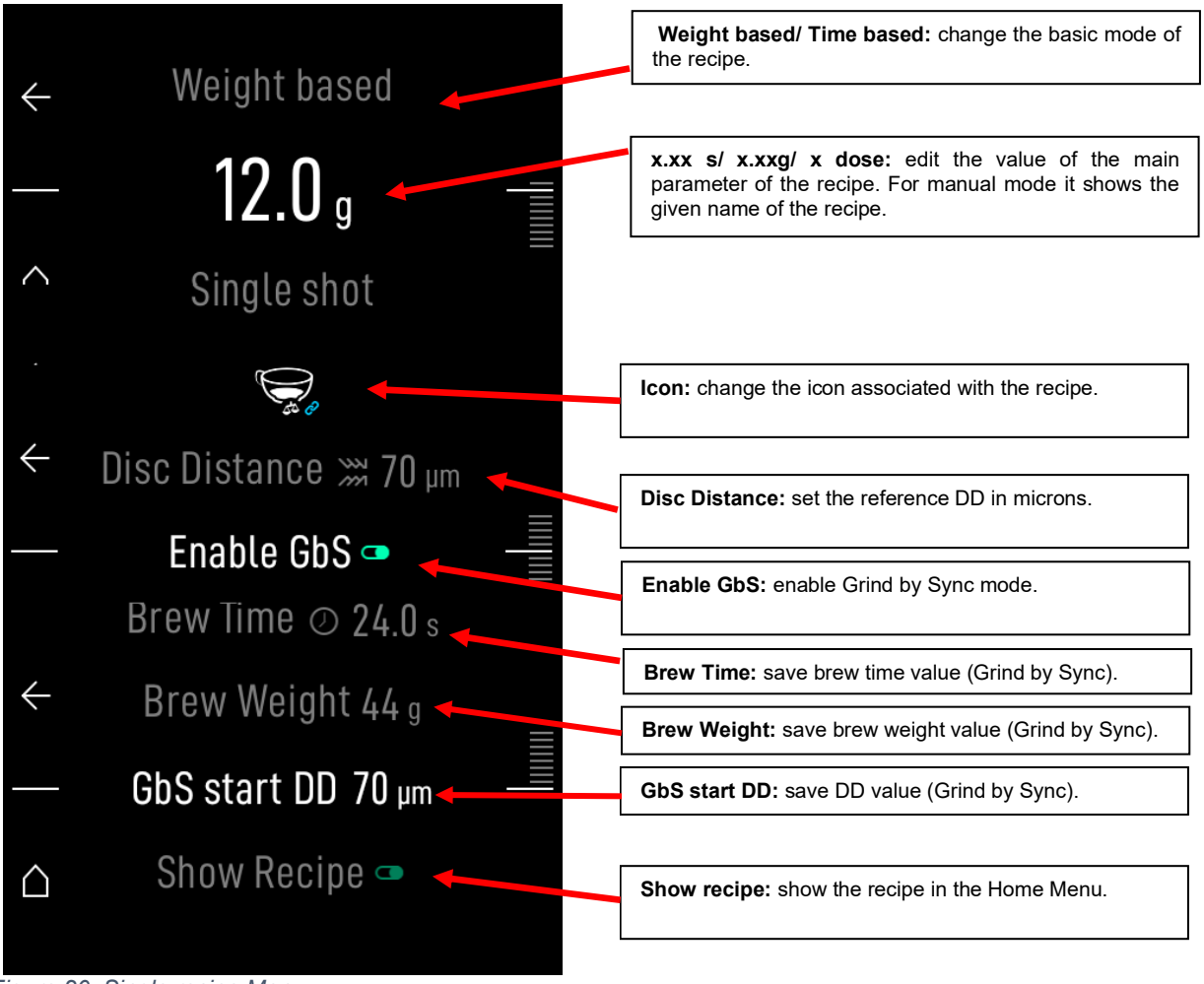
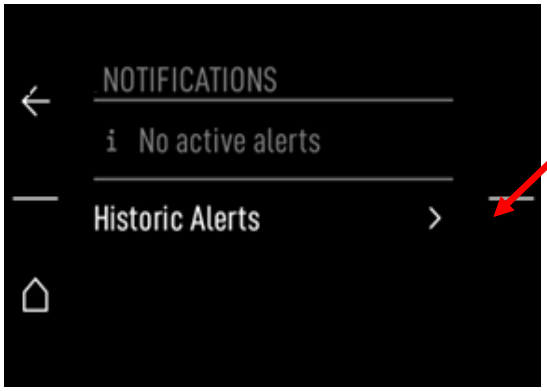


Figure 20; Single recipe Menu

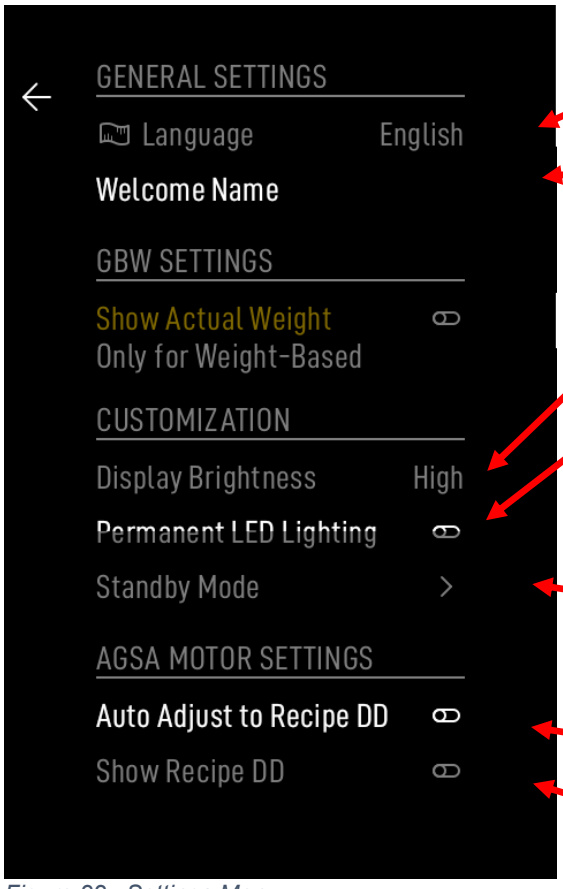
2.5 Notifications



Historic Alerts: It is possible to review the alerts that have been recorded from the most recent to the oldest.

Figure 21; Alerts and Notifications Menu

2.6 Settings



Language: to select the language for the whole User Interface.

Welcome name: to change the name displayed during the start up of the grinder.

Display Brightness: Select a level of brightness of the screen from low to high.

Permanent LED lighting: To set the LED on with fixed light.

Standby Mode: see next page.

Auto Adjust to Recipe DD: Refresh DD each time the recipe is changed, ON as default, can be disabled.

Show Recipe DD: Refresh DD each time the recipe is changed, ON as default, can be disabled.

Figure 22; Settings Menu.

2.6.1 Standby Settings

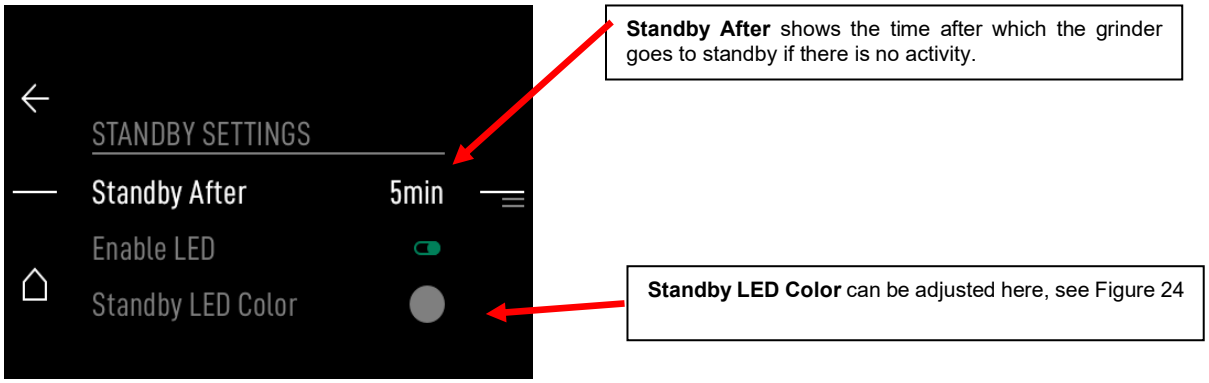


Figure 23; Standby Menu

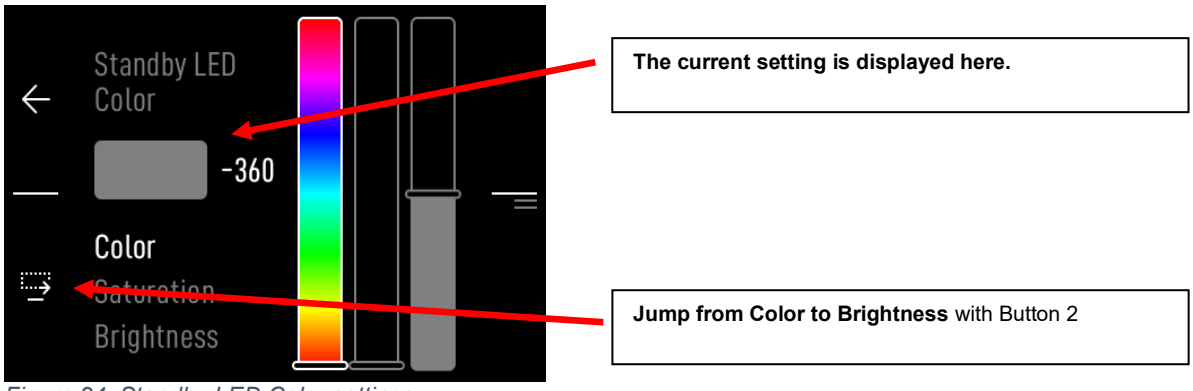


Figure 24: Standby LED Color settings

2.7 Service

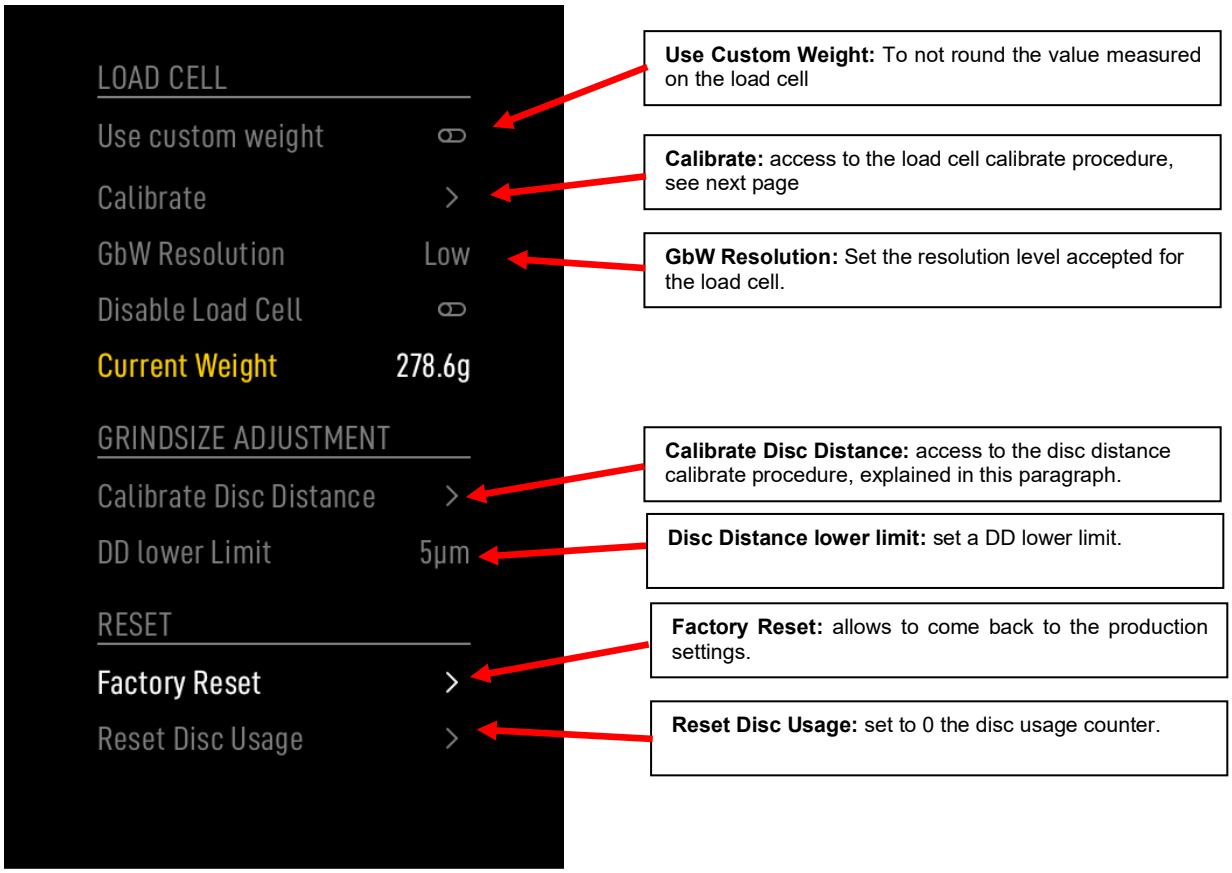


Figure 25; Service Menu

Load Cell - Calibrate: Calibrate the load cell using the given instructions as shown in Figure 26.



Figure 26; Load Cell calibration process

The portafilter holder must be removed and not in contact with the holder so that the load cell can evaluate the scale zero. Once the reference weight has been used, the grinder performs a calibration of the weight measuring instrument. This process is called calibration and once it is done correctly, the screen will show 'calibration complete' in green.

2.7.1 Calibration of Disc Distance

Allows access to instructions guiding the DDD calibration process.



Figure 27; Disc Distance Calibration Process

2.7.2 Reset Factory - Reset

Returns to factory configuration. Selection leads to an alert where choice can be confirmed. Note, this deletes all settings and recipes.

EMERGENCY FACTORY RESET: In case a password is changed from the default and is lost, there is a hard key reset possibility:

- Remove the hopper from the grinder
- Switch the grinder off
- Press both buttons (1 & 2), keep them pressed for 15 s while switching the grinder on
- The grinder shows the Factory Reset page where the factory reset can be confirmed.

2.8 Connectivity

The connectivity menu provides access to all features where the grinder is connected to a network and can interact with other devices. Specifically, from the connectivity menu as seen in Figure 25, it is possible to access several settings.

Please note: This device requires a **2.4 GHz WiFi band** for connection. It is not compatible with 5 GHz networks. If you are using a dual-band router, please ensure that your mobile device is connected to the 2.4 GHz frequency during the setup process.

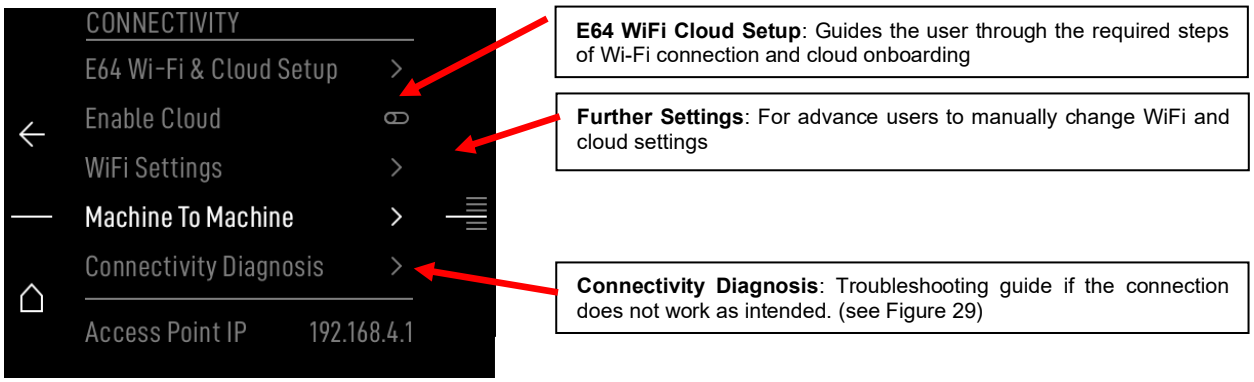
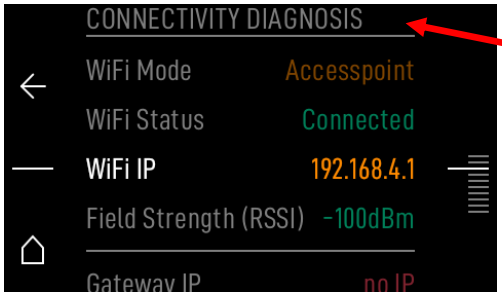


Figure 28; WiFi Settings menu

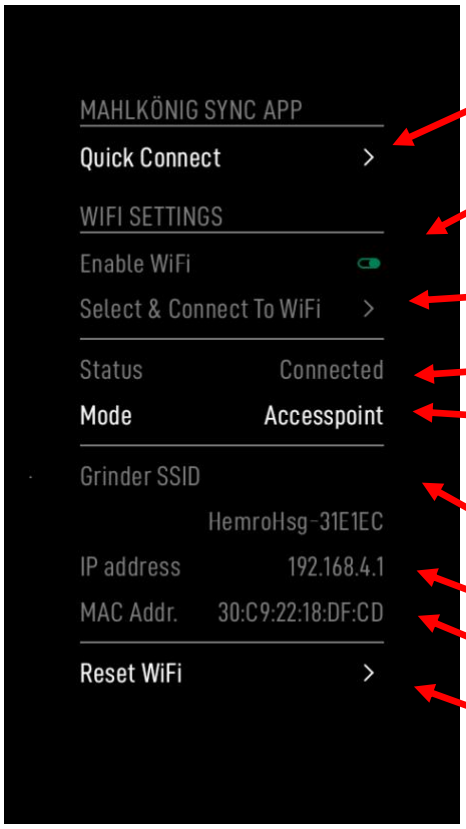


Diagnosis: The diagnosis page shows the status chain from grinder to cloud (top to bottom). Failures are displayed red and indicate something is wrong at that place. Orange text shows a potential setting is leading to the displayed value.

Rotary Knob click on an entry leads to troubleshoot suggestions.

Figure 29; Connectivity Diagnosis

2.8.1 WiFi settings:



Quick connect: Through this option it is possible to generate a QR Code if the device is in access mode. The device can be connected to the Mahlkönig app.

Enable WiFi: Enables and disables the WiFi connection options of the device.

Select and Connect to WiFi: It shows the status of several components used from the Wi-Fi system. Begins the scan of available Wi-Fi networks. Those found are shown in a list as in Figure 31

Status: Connection status to the WiFi network

Mode: Shows whether the device is used in access point mode or station mode. In the default option, the device is set as an access point. It is possible to connect to the device using the password kingxxxx where xxxx is the last digit of the grinder serial number.

Grinder SSID: shows the name of the WiFi network.

IP Address: shows the numerical device's identifier in the network.

MAC Address: The unique identifier assigned to the device's network

Reset Wi-Fi: resets all WiFi settings

Figure 30; WiFi Settings page

Scan for WiFi: begins the scan of available WiFi networks. Those found are shown in a list as in Figure 31.

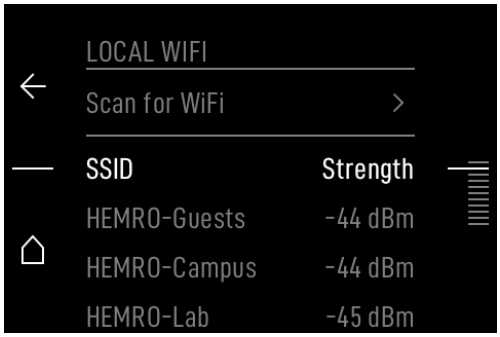


Figure 31; WiFi scan page

2.8.2 Machine to Machine

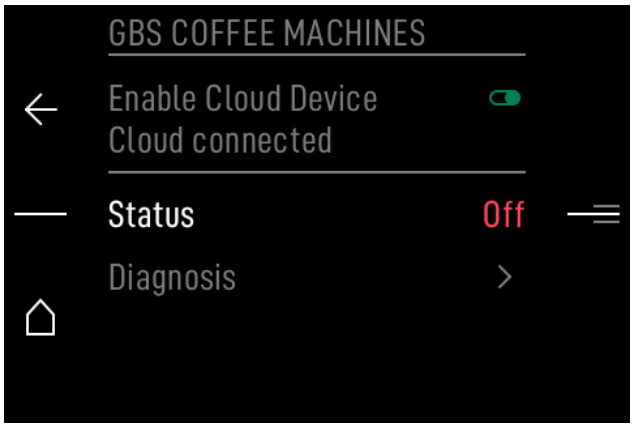


Figure 32; Machine to Machine

From this menu, it is possible to turn cloud communication between devices on and off. Select “Enable Cloud Device” for connection with a Mahlkönig Sync Scale or any other device.

Station IP (number): The IP address identifies the device on the network. this number also allows access to the device via a web user interface as described in chapter 4.

2.9 User Management

In this menu it is possible to set a password for the user. The password can be confirmed as an empty password. If a password is set, this must have at least 8 digits including: 1 Capital letter, 1 lower case, 1 number. The menu appears as shown in Figure 33; User Management Menu in Owner mode.. The “i" icon indicates the current mode of access to the device.

The menu has the following functions:

Login: log in in a different user mode. Available: Owner

Change password: If logged in as Owner allows to change the password into a new one.

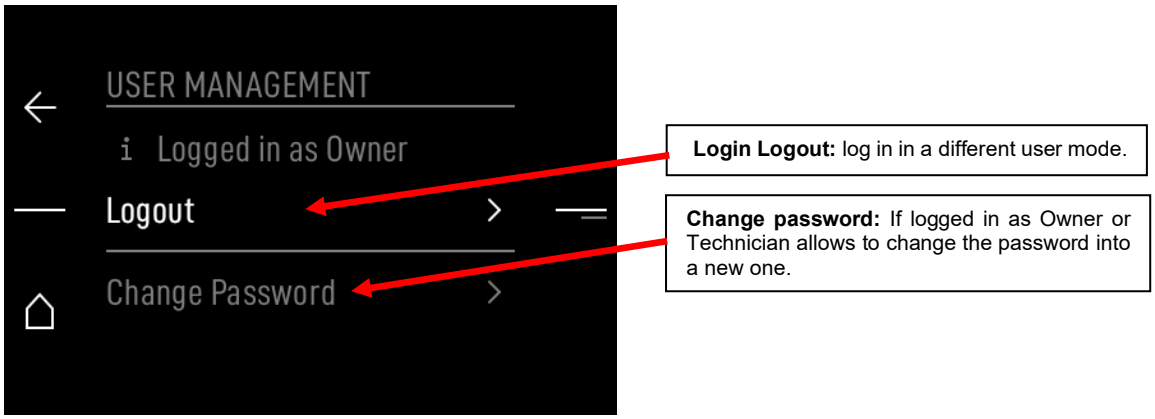


Figure 33; User Management Menu in Owner mode.

2.10 Info

This section displays key grinder features and the current usage status of the burrs.

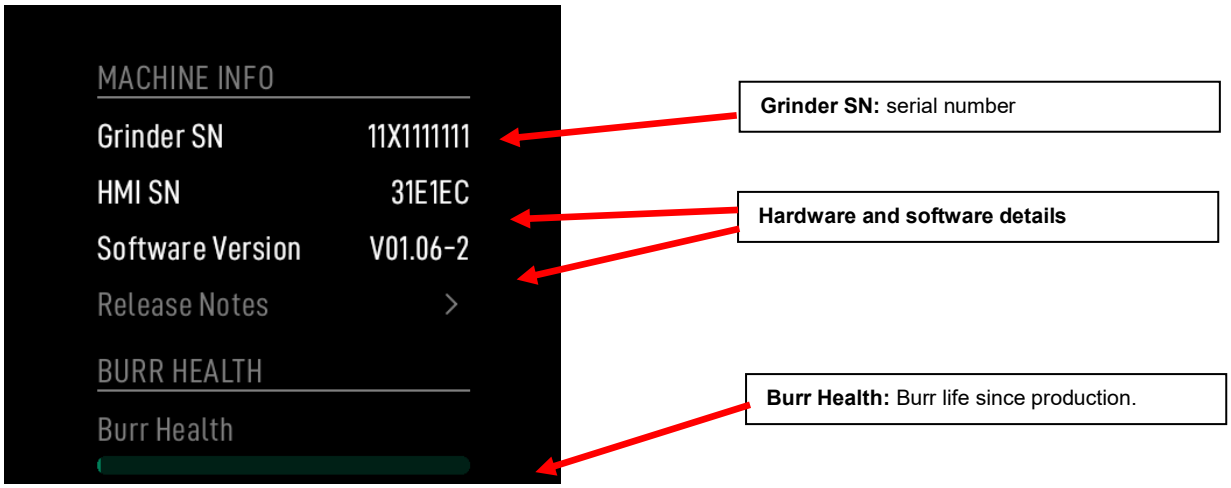


Figure 34; Machine Info

3 Web User Interface – Functionalities

There are two ways to access the web user interface: using the grinder as an access point and using the grinder as a station mode.

Access point: Allows you to generate your own network to which you can connect with a device, e.g. a laptop. This mode allows the device to be used even in the absence of an external WiFi network.

Station mode: Allows the device to connect to an external network. In this mode, the web user interface can be used without losing the Internet connection.

3.1 Connect Grinder to Existing Network (Station Mode)

Select the Main Menu with the lower button. Scroll with the wheel to “Connectivity” and select. This menu option is only visible if logged in as owner or technician. In the menu connectivity select “WiFi Settings” as shown in **Error! Reference source not found.**.



Figure 35; How to access WiFi Settings Menu.

The standard procedure involves before use, a WiFi reset. After performing a reset, the option enable WiFi can be activated.

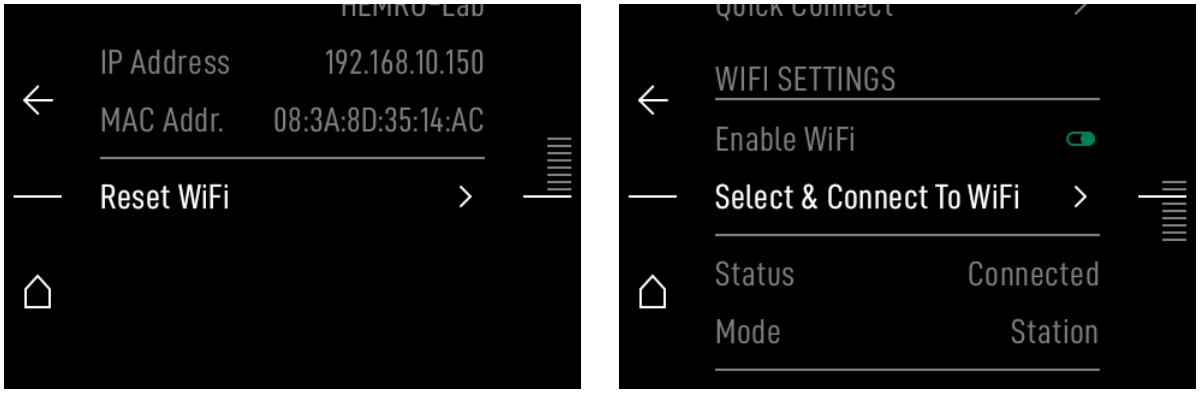


Figure 36; Standard procedure for WiFi activation.

Through the Select & connect to a WiFi option you can connect your device to your preferred WiFi network. After connecting to the network, the display shows the page illustrated in Figure 37. This page provides the network name, IP address, and MAC address.

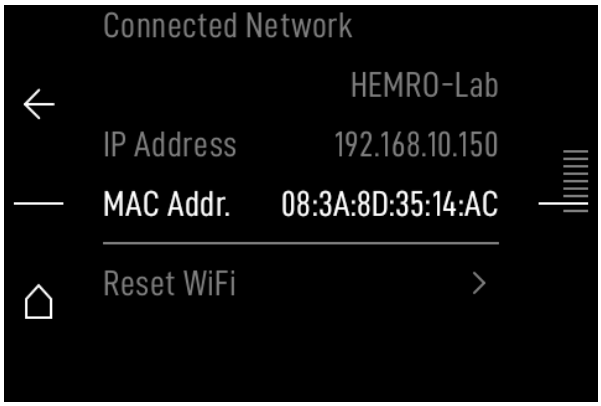


Figure 37; Info screen about WiFi details.

With this address it will then be possible to access the web user interface as described in section The Web User Interface.

3.2 Connect Grinder to Device (Access Point Mode)

When WiFi is reset, by default the device will be in accesspoint mode.This mode allows the grinder to generate its own WiFi network which will have as its name HemroHSG-XXXXXX where XXXXXX is the serial number of the device´s HMI, visible in the info section (see 2.10 Info). It is possible to connect to the device using the password kingxxxx where xxxx is the last 4 digits of the HMI serial number. Once connected to the WiFi generated by the grinder you will be able to access the web user interface (next chapter).



Figure 38; Connect to grinder WiFi

3.3 The Web User interface

Once connected to WiFi, an IP address is associated to the device. This address allows access to a web interface with which it is possible to communicate with the device and to perform software updates. The IP address can be found in the last item of the connectivity menu in the grinder.

The IP address must then be entered in the search bar on your web browser as shown in the figures below. This will first take you to a security page, click on **advanced**, and subsequently on **continue to IP** , which will take you to the web user interface access page. The page has two panels, the first for logging in and the second allowing access to a web page via QR code. On the log in page the access mode between shop owner and technician can be selected.

Once the IP is typed into the browser address bar (without https//, only “10.112.51.180”), the browser might require a confirmation to connect to that IP:

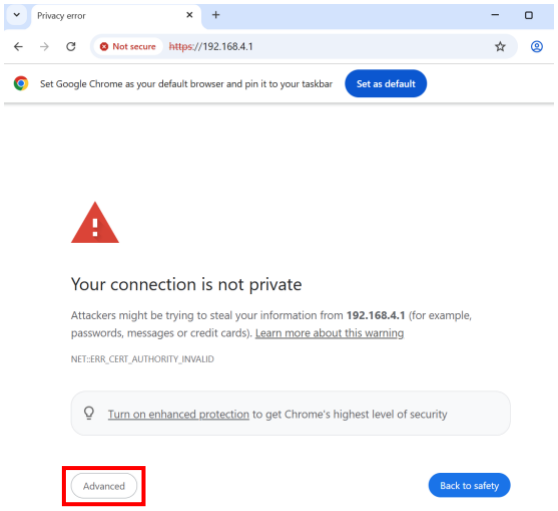


Figure 39; Web Interface login (Google Chrome recommended).

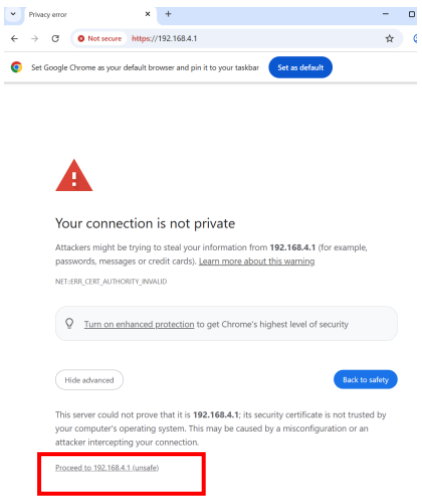


Figure 40; Web Interface access confirm.

This confirmation can be given via “Advanced” and “Continue to…”:

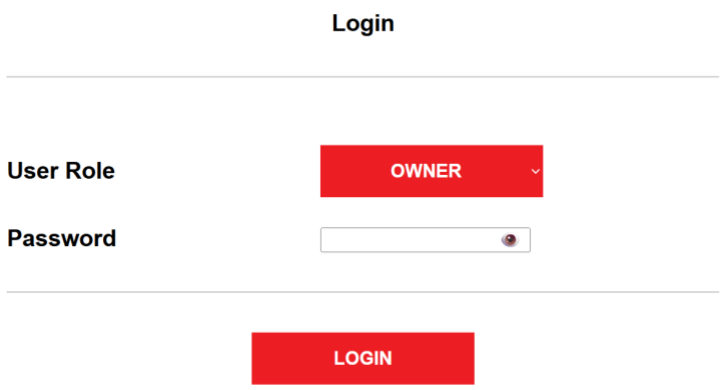


Figure 41; Web interface login

Note: Further description of the Web UI is not given in this document as this is reserved for skilled technicians and support. Mishandling the configuration of the grinder can result in permanent damage to the grinder electronics!

3.4 Software Update

If the grinder is connected to the cloud, it will prompt you to update the software once a new version is available.

3.4.1 Settings for automatic update by cloud

To ensure the grinder automatically proposes updates, you must:

1. Set a password. It can be either blank or meet the minimum requirements (8 characters, including at least one lowercase letter, one uppercase letter, and one number). The key is that a password must be set.
2. Enable the cloud via the **Connectivity > E64 WiFi & Cloud Setup** menu, and follow the instructions outlined in paragraph 2.3.2.

3.4.2 Settings for manual update using web interface

For grinders not connected to the cloud, there is the option of updating via Web Interface. For doing the update manually, the update file (.swu) is needed. It can be found on the Mahlkönig product website.

1. Download the update file and store it on your device (laptop or mobile)
2. Connect to the grinder and open the Web Interface as described in 3.3
3. Go to the “Firmware update” section and select the downloaded .swu file.

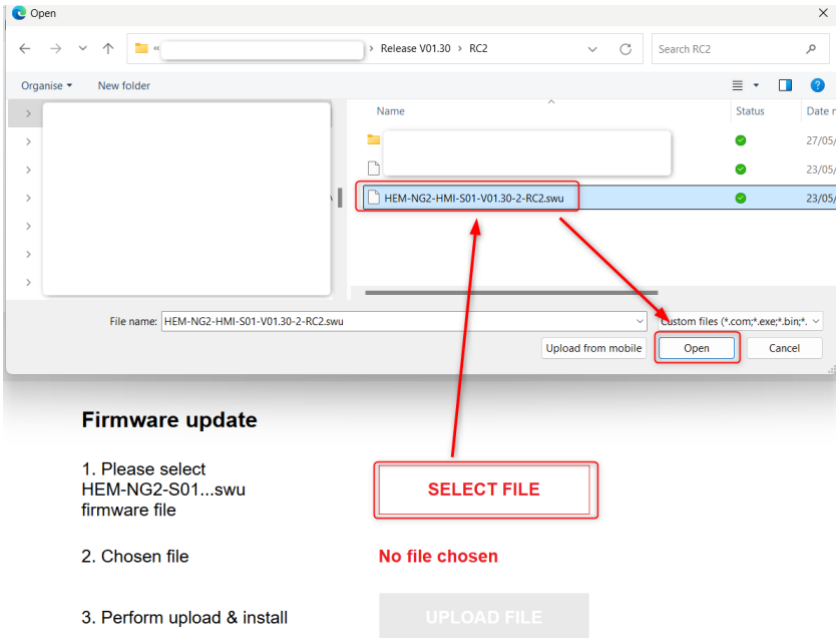


Figure 42; Load the software file to the Web Interface

Then, upload the file to the grinder which will start the update process:



Figure 43; Upload .swu file to the grinder.

4. The update will take approximately 5-10 minutes; status updates are shown in the web interface an on the grinder.

   After the update, your device will lose the connection to the grinder as it reboots.

3.5 Testing page

Navigate to the Service panel. Open Testing

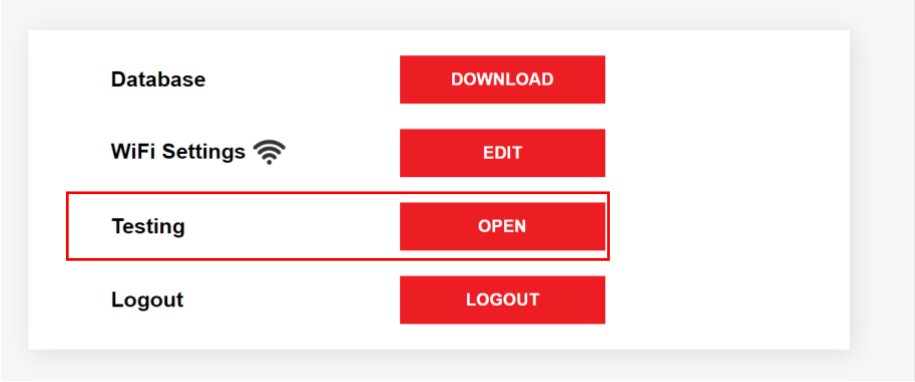


Figure 36; Service Panel

Following page should appear. Here you can monitor the current weight, which can serve as well for monitoring the WiFi signal.

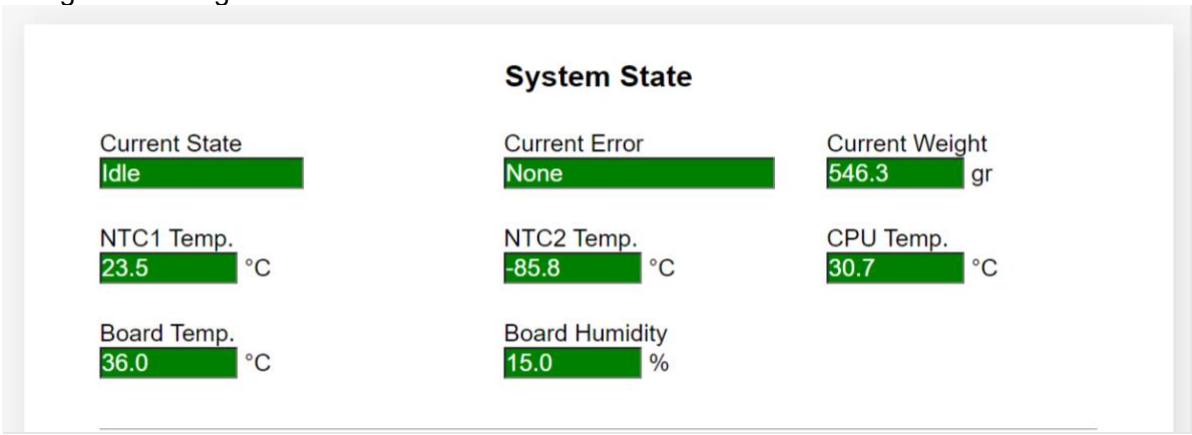
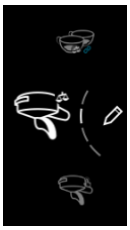


Figure 37; Monitoring page

Interaction icons

Interaction icons are used to show the functions of the interaction buttons.



The **Recipes panel** shows the different saved recipes that can be selected. It is possible to navigate through the displayed recipes by *rotating* the Rotary Knob.
Single Click on the Rotary Knob will enter the disc distance adjustment.
Double Click on the Rotary Knob will enter the amount adjustment (grams or seconds).



The **Grind on demand** can be activated by pressing the upper left button. The duration for a tap is the “Purge Value” in “Grinder Settings”, a long press leads to grinding until the button is released.



The **Main Menu** can be accessed via the bottom left button.

Recipe icons

The recipe icons are used to display all the essential information concerning the selected recipe.



The horizontal line displays the distance between the discs on the scale from 0 to 300 microns. Recipe DD (disc distance) is only shown if activated.



Disc Distance:, white value shows the disc distance as saved on the recipe (if activated).



Shows the main parameter of the selected recipe: weight if in GbW mode; time if in GbT mode.

Status icons

The icons on the bottom of the Main Menu are the status icons. They provide information on the general conditions of the grinder.



Shows the temperature measured on the HMI board.



Shows the status of the cloud connection.



Shows the strength of the WiFi connection.

Menu navigation

Through the display buttons it is possible to navigate through the Quick Menu and the Main Menu. The buttons are associated with different icons that suggest their functionality. Below are the navigation icons and their meaning.



Icon associated with the bottom-left button. Return to the Home menu.



Icon associated with the up-left button. Return to the previous sub-menu.



Icon associated with the bottom left button. Select a next/previous digit or character.



Icon associated with the Rotary Knob. Rotating the Rotary Knob different items can be selected.

Interaction tools

In the menus, some tools are used to change values, usually a number, an alpha-numeric code or the status of a switch. This section describes these interaction tools:

Keyboard

An example of a keyboard is the one shown in Figure 38. It is used to enter a password and be able to access functions restricted to technicians and owners, for example.

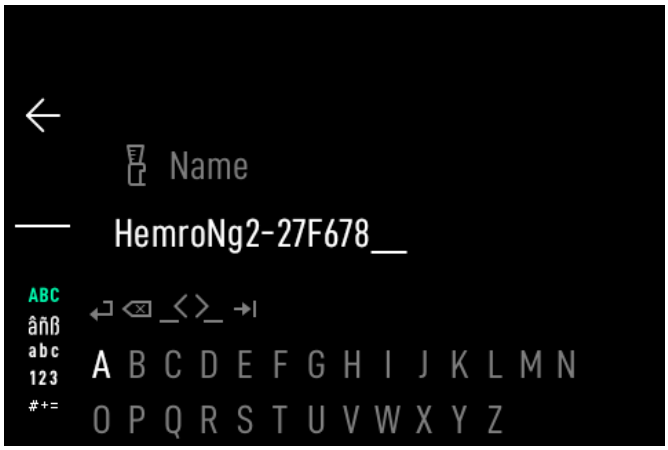


Figure 38; Keyboard Tool.

The meaning of the icons is shown below:



Enter the password.



Delete the last character.

Return with the cursor to the end of the string



Open upper-case keyboard with letters
Open special letters keyboard
Open lower-case keyboard with letters
Open number keyboard
Open symbols keyboard

Changing numerical values

Changing numerical values is possible by rotating the Rotary Knob. The system allows to modify the value by increasing or decreasing the last digit. Pressing the Rotary Knob saves the change.



Figure 39; Setting a value using the Rotary Knob.

Enable Icon

The switch is generally represented by the icon and is used to turn a function ON or OFF. It is possible to change the state of the switch by pressing the Rotary Knob.