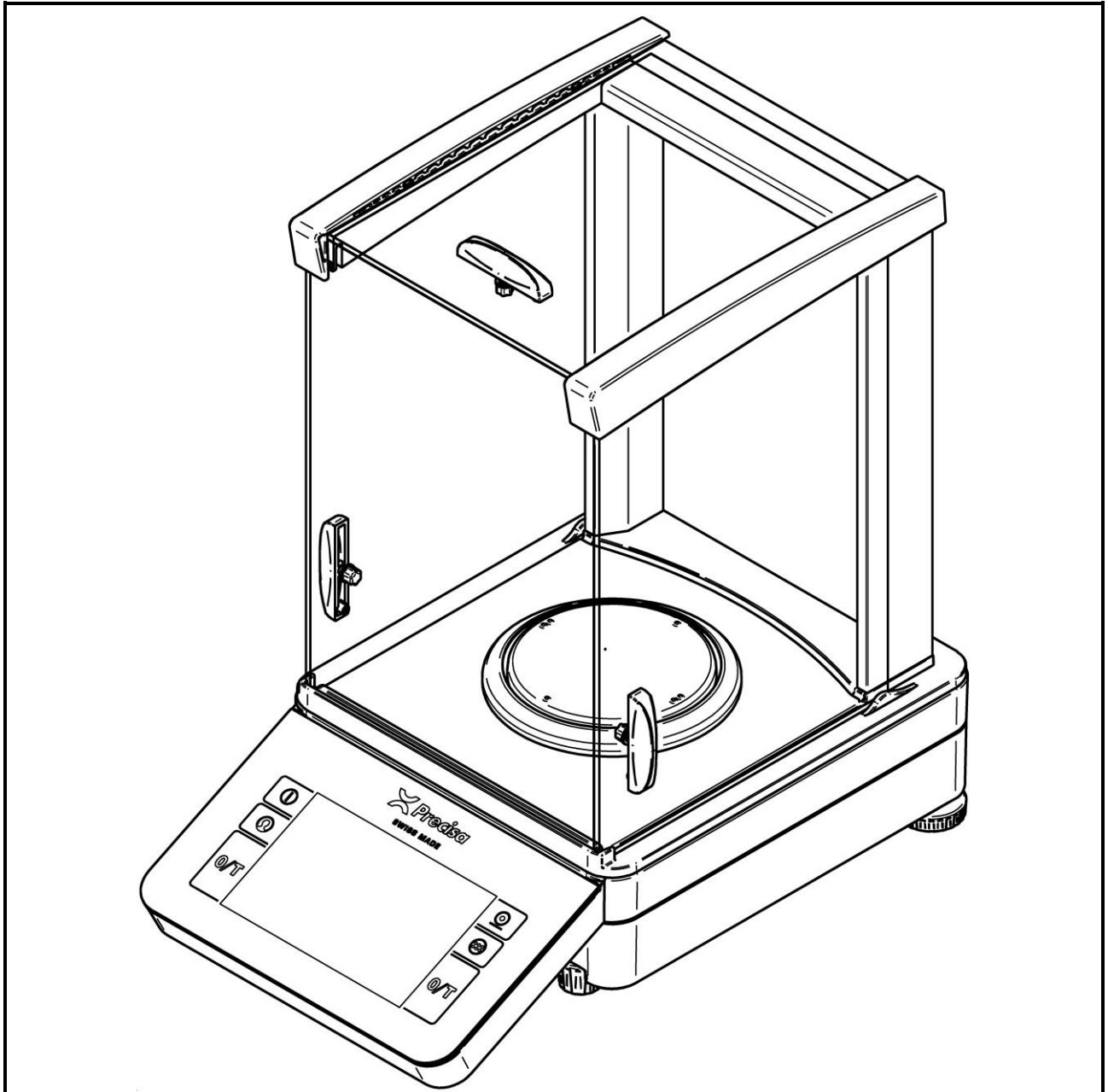


SWISS MADE

520 PT



Operating Instructions

350-8182-000 draft 2

Identification

Operating Instructions, Precisa 520, Semi-micro and analytical balances PT

Item number 350-8182-000

Index draft 2

February 2021

Subject to technical modifications

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1 Your new balance

Thank you for purchasing a new Precisa balance from the 520 series.

1.1 About this manual

This manual has been written to help you working with your new balance. Read this manual thoroughly before use and keep it where all those who use the instrument will read it.

1.1.1 Symbols and conventions

**DANGER**

Warning of a possible danger which can lead to death or serious physical injuries.

**WARNING**

Warning of a possibly dangerous situation which can lead to less severe injuries or damage.

**NOTE**

Tips and important rules on the correct operation of the balance.

1.1.2 Illustrations and buttons

Illustrations and screenshots shown in this manual may differ from actual display.

Keys, Icons, soft buttons or functions to be pushed, held or selected are printed between quotations marks e.g. call up 'Adjustment' or specially marked e.g. press **[ON/OFF]**, press **(Help)** or hold **{Transfer}**.

1.2 Unpacking

Our balances are delivered in packages which provide optimum protection during transportation. In order to avoid damage, attention must be given to the following points when unpacking the balance:

- Unpack the balance carefully. It is a precision instrument.
- When outside temperatures are very low, the balance should be first stored for some hours in the unopened transport package in a dry room at normal temperature, so that no condensation settles on the balance when unpacking.
- Check the balance immediately after unpacking for externally visible damage. Should you find transport damage, please inform your services representative immediately.
- If the balance is not to be used immediately after purchase but only at a later time, it should be stored in a dry place where fluctuations in temperature are as low as possible.

**NOTE**

Retain the original packaging in order to avoid damaging the balance during shipping or transport and to enable the balance to be stored in ideal conditions (5 .. 40°C / 41 .. 104°F) when out of use for long periods.

1.3 Transport and shipping

- Your balance is a precision instrument. Treat it with care.
- Avoid shaking, severe impacts and vibrations during transportation.

- Ensure that there are no significant temperature fluctuations during transportation and that the balance does not become damp (condensation).

**NOTE**

The balance should preferably be dispatched and transported in the original packaging to avoid transportation damage.

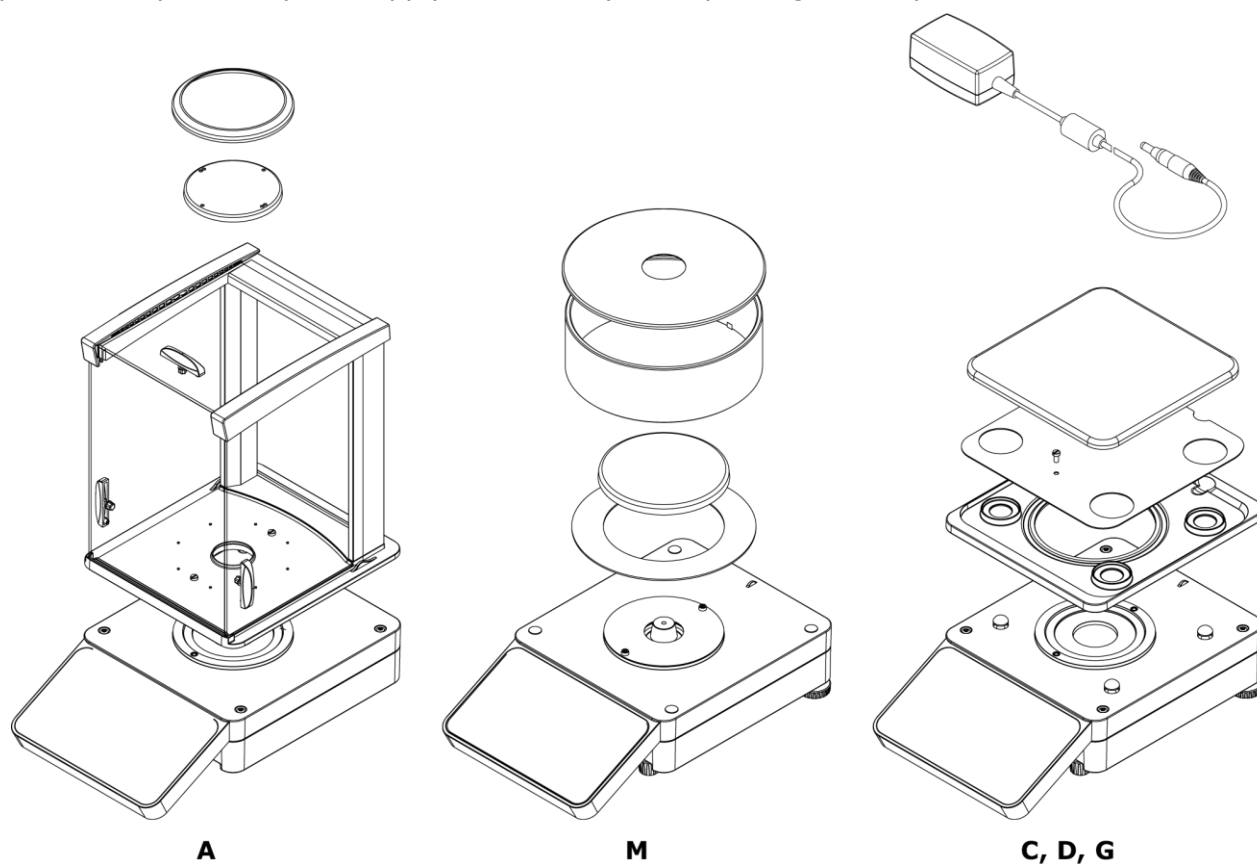
1.4 Storage

When taking the balance out of service for an extended period, disconnect it from the mains, clean it thoroughly and store it in a place which meets the following conditions:

- No violent shaking, no vibrations
- No significant temperature fluctuations
- No direct solar radiation
- No moisture

1.5 Inspection and assembly

Inspect delivery for complete supply immediately on unpacking all components



Components supplied, depending on balance type

- Balance
- Pan holder
- Weighing pan
- Protective ring for A
- Centring ring for M balances
- Protection and shield plate for C, D, G balances
- Draft shield for A or M balances
- Power adaptor
- Protection cover for the balance
- Short instructions

1.6 Safety instructions and conformity

1.6.1 Safety instructions

When the balance is used in environments with increased safety requirements, the relevant precautions must be taken.

- The balance must only be operated with a power adapter and power cable in perfect conditions.
- The balance may only be operated with the power adapter and power cable supplied.
- Be sure to hold the plug, not the cable, when disconnecting the device from an electrical outlet.
- If the cable, the power adapter or its cable is damaged, unplug the device immediately from the electrical outlet and keep it from inadvertent operation.
- If safe operation of the balance is not possible, it must be disconnected from the power supply and secured against unintentional use.
- Do not operate the device in an area subject to explosion risks or caustic atmospheres.
- Take care when handling with liquids, that no liquid is split into the inside of the balance, on connections of the device, on the power cable and the power adapter. Should this although happen, unplug the device immediately from the electrical outlet and keep it from inadvertent operation. The balance may only be operated again after a re-check made by a service technician.
- The device may only be used for weighing of solid materials, of liquids filled into secure containers, and for running applications designed especially for the device (e.g. density determination).
- Do not exceed the maximum permissible load of the balance.

When using the balance in combination with other appliances made by the original manufacturers as well as with appliances produced by other manufacturers, the current regulations for the safe use of the relevant attachments and their application in accordance with instructions must always be observed.



DANGER

Before connecting the device to the mains, be sure that the operating voltage stated on the device and on the power adapter and power cable agrees with the local mains voltage. If it doesn't, the equipment must not be connected to the mains at all!



NOTE

If any damage or injury occurs, liability and responsibility rest with the user.

1.6.2 Conformity

The device has been manufactured and tested in accordance with the standards and directives set out in the enclosed certificate of conformity.




Declaration of conformity

**Declaration of conformity for apparatus with CE mark
Konformitätserklärung für Geräte mit CE-Zeichen Déclaration de
conformité pour appareils portant la marque CE Declaración de
conformidad para aparatos con disitintivo CE
Dichiarazione di cofnromità per apparecchi contrassegnati con la marcatura CE**

English	We hereby declare that the product to which this declaration refers conforms with the following standards.
Deutsch	Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
Français	Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
Español	Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
Italiano	Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

Electronic Balance: **Precisa Series 520 PT** **Precisa Series 520 PB**

Mark applied	EU Directive	Standards
	2014/30/EU 2014/35/EU	EN61326 EN61010

Date: 12.06.2020

Signature:



R. Grolimund R & D Manager

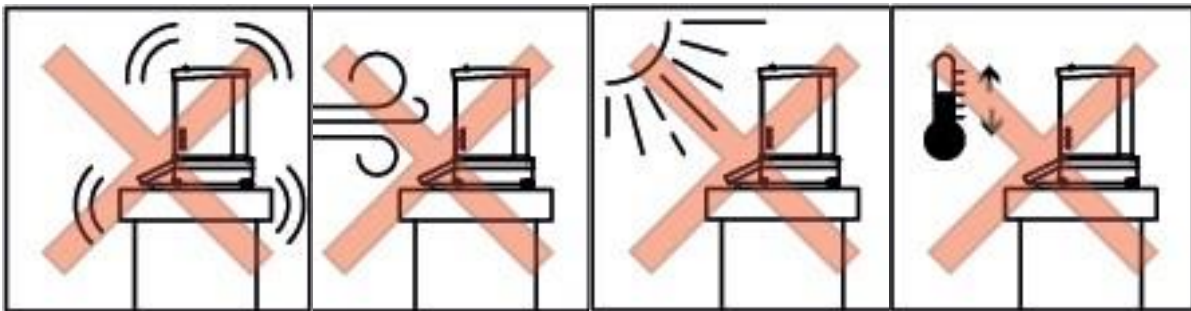
Precisa Gravimetrics AG , Moosmattstrasse 32 , Postfach 352 , CH-8953 Dietiko

2 Basics

2.1 Choosing a suitable location

The balance location must be chosen in such a way as to guarantee perfect operation of your balance, so that the allowable ambient conditions and prerequisites are met and maintained:

- Place the balance on a solid, firm and vibration-proof, horizontal base.
- Protect the balance from direct solar radiation.
- Avoid drafts and excessive temperature fluctuations.
- Ensure the balance cannot be shaken or knocked over.

**NOTE**

With difficult conditions (where the balance may be easily shaken or subject to vibration) the balance can nevertheless provide accurate results through suitable adjustment of the stability control, see 2.2.

2.2 Stability control

For setting all different weighing parameters:

- Enter the application screen,
- Call up 'Settings',
- Call up 'Weighing parameters',
- Set all parameters upon your requirements.

**NOTE**

Pressing (Help,?) calls up the contextual help which provides detailed information about the point you currently are. For quitting help, press (Close).

2.3 Turning on the balance

The following safety recommendations must be observed when connecting the balance to the mains:

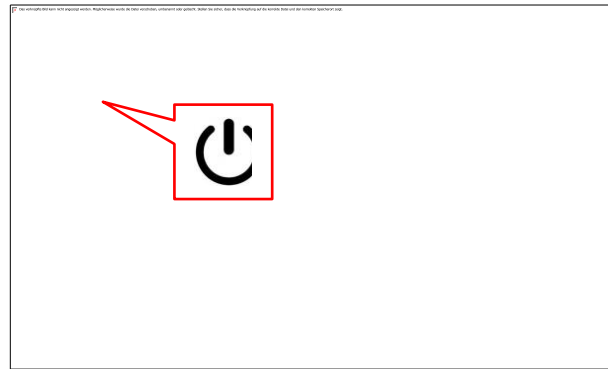
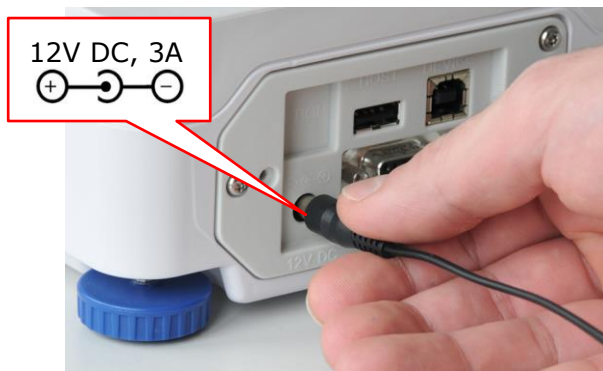


DANGER

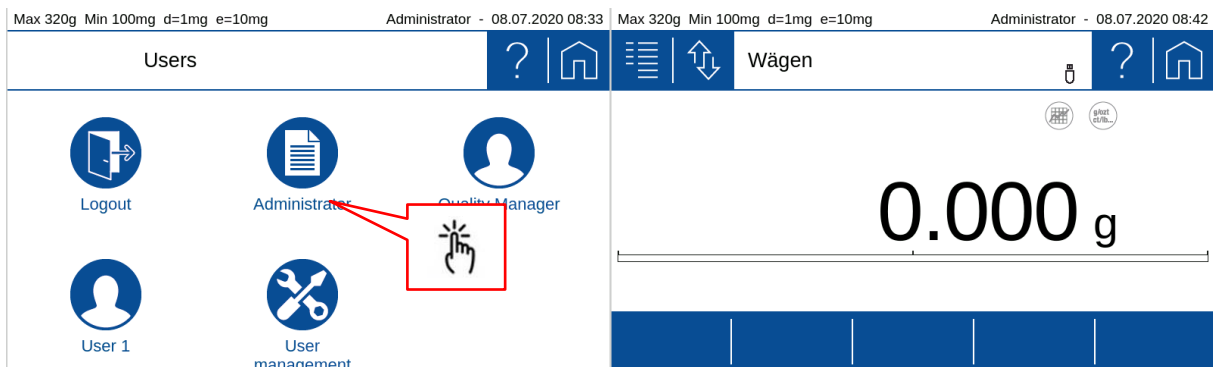
The balance may only be operated with the power adapter and power cable supplied.

Before connecting the device to the mains, be sure that the operating voltage stated on the device and on the power adapter and power cable agrees with the local mains voltage. If it doesn't, the equipment must not be connected to the mains at all!

- Connect the balance to the mains with the supplied power adapter and power cable.
- Turn on the balance by pressing **[ON/OFF]**. The balance starts-up and halts at the user screen.



- Select Administrator by calling up 'Administrator'. The balance starts-up executing the Weighing application.



NOTE

If users already have been defined the user screen will appear after starting up



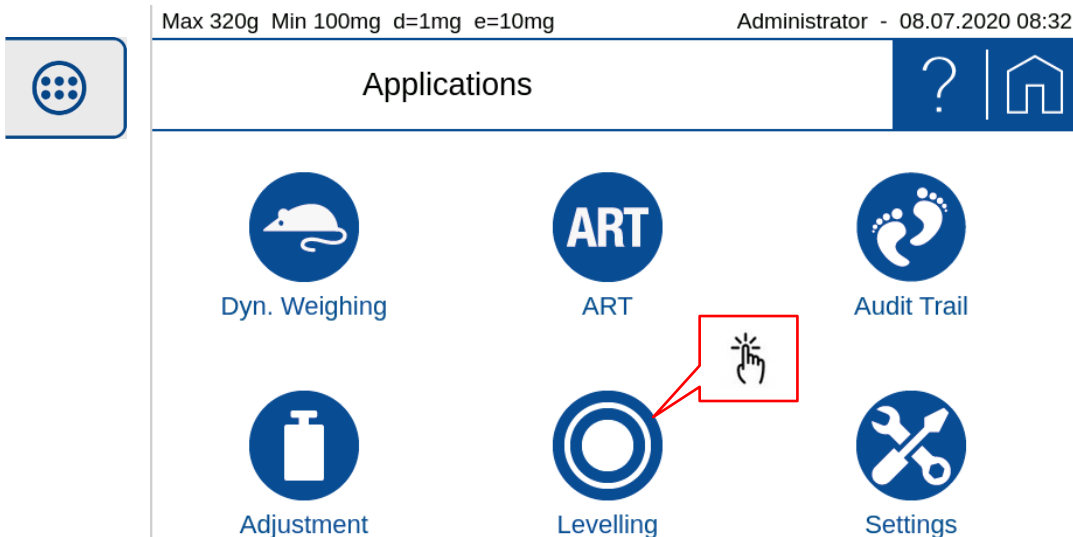
NOTE

In order to get exact measurements, ensure the balance has reached its operating temperature, see 2.6.

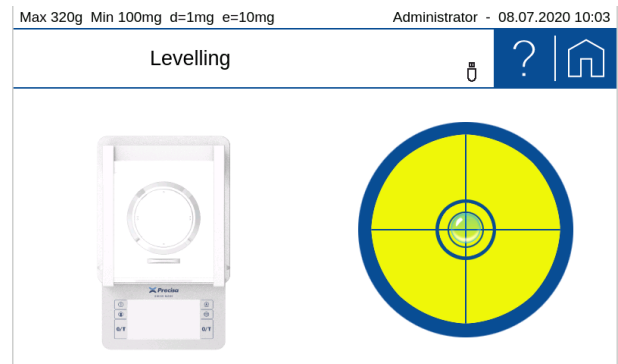
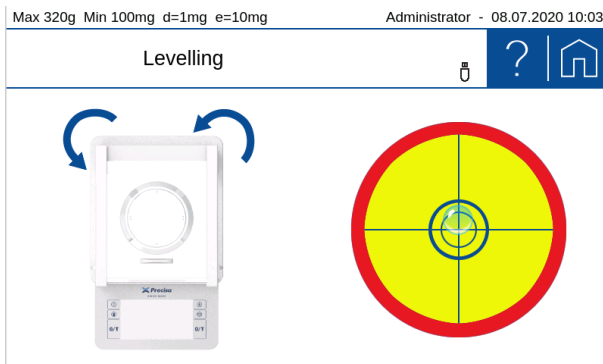
2.4 Levelling

To function properly, the balance must be precisely horizontal. Thatfor it is equipped with an electronic levelling device which makes appear a visual warning on the display if the balance is tilted outside the internally stored levelling tolerances. To readjust the levelling

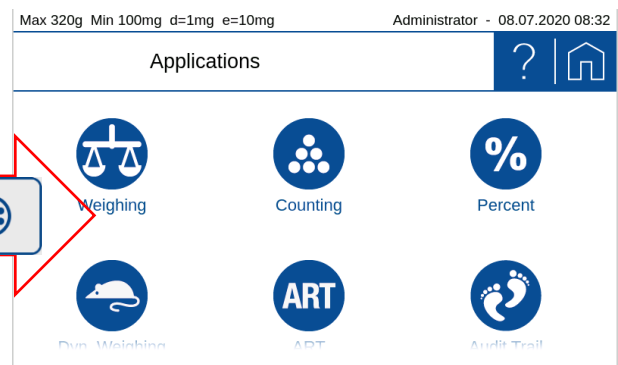
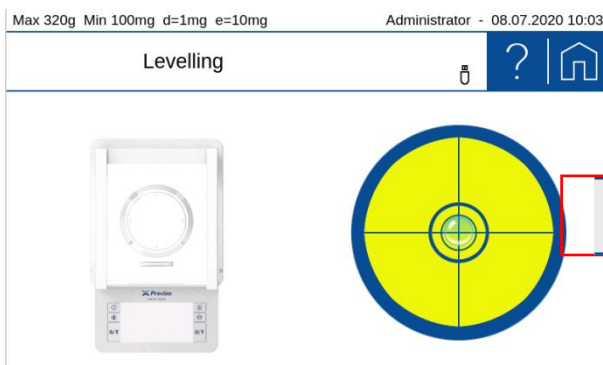
- Enter the application applications screen and Call up 'Levelling'.



- Keep adjusting the levelling feet as instructed by the display, until the bubble is right in the center of the displayed bubble level.



- Enter the application screen for returning to the weighing application.



NOTE

In order to get exact measurements, the balance must again be carefully levelled after each relocation.



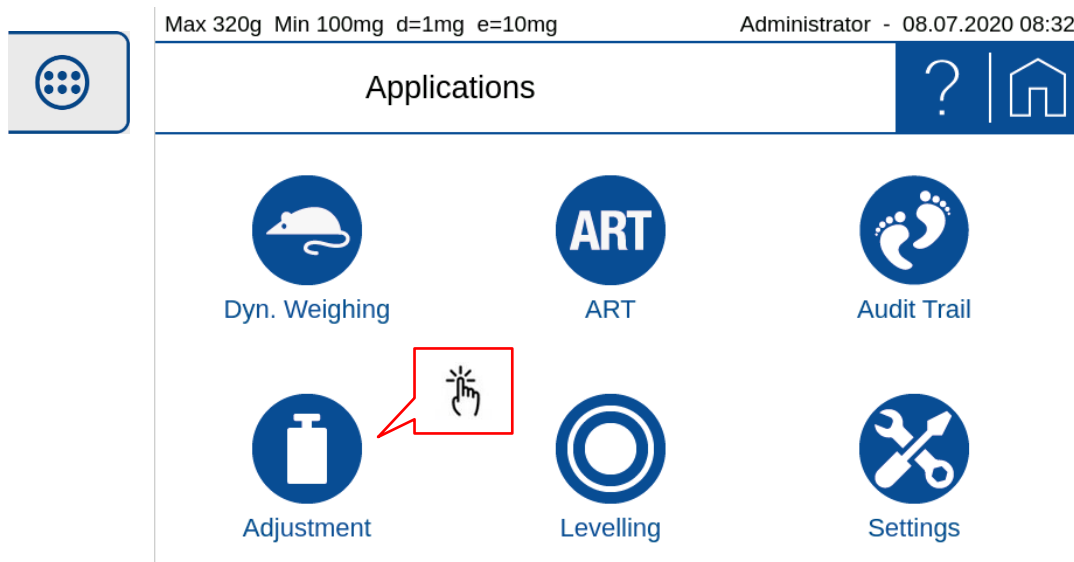
NOTE

Pressing (Help,?) calls up the contextual help which provides detailed information about the point you currently are. To close, press (Close).

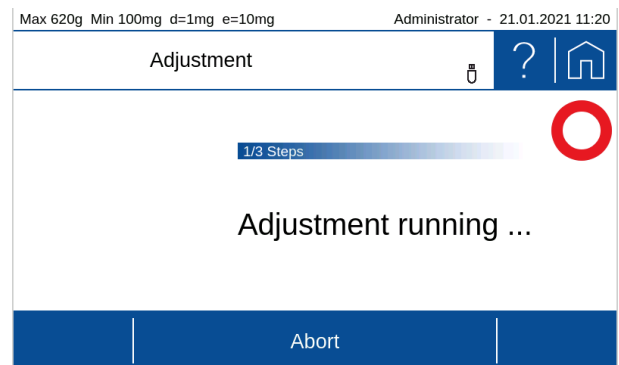
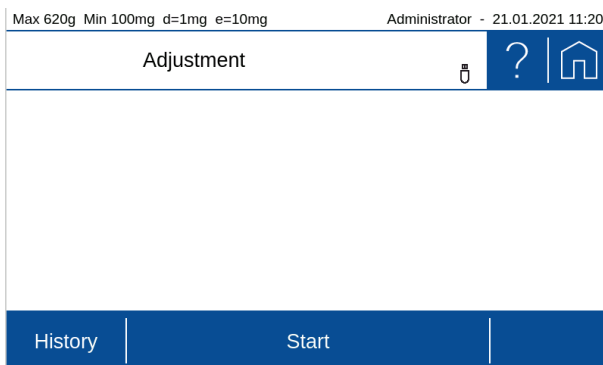
2.5 Adjusting the balance

Since the earth's gravity is not the same everywhere, each balance must - in accordance with the underlying physical weighing principle - be adjusted to compensate for the gravity at each location. This adjustment process must be carried out on initial installation and after each subsequent relocation. In order to get exact measurements, it is recommended moreover, that the balance should also be adjusted periodically.

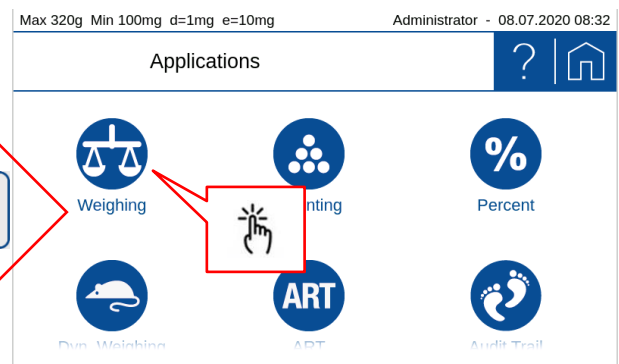
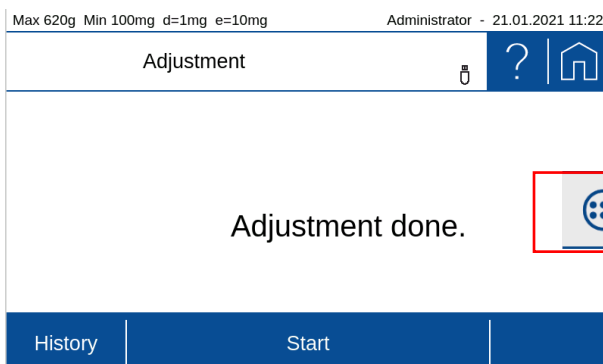
- Ensure the balance has reached its operating temperature.
- Enter the application applications screen and Call up 'Adjustment'.



- Press **{Start}** ⇒ the balance automatically adjusts itself by means of the built-in self calibration system (SCS). When this is done it shows the message 'Adjustment done'.



- As soon as calibration has been completed, the message 'Calibration completed' appears.
- Open the application screen and call up 'Weighing'.



If you start the adjustment by a softkey within an application, quit the adjustment with the softkey (**Close**).

**NOTE**

The balance must be adjusted on initial installation and after every relocation.

If you work in accordance with Good Laboratory Practice (GLP), observe the prescribed intervals between calibrations (adjustments).

For setting all different adjustment modes,

- Open application screen,
- Call up 'Settings',
- Scroll down, call up 'Adjustment',
- Press 'Adjustment mode' and
- Select the mode you wish.

**NOTE**

Pressing (Help,?) calls up the contextual help which provides detailed information about the point you currently are. For quitting help, press (Close).

2.6 Working with the balance

Always choose a suitable location for the balance as described in chapter 2.1.

Before starting to work with the balance, always ensure the balance has been warming-up for at least two hours. Best never disconnecting it from the mains, just turning off its display by pressing **[ON/OFF]** when not in use, see 2.7 Turning off the screen, restarting and turning off the balance. When restarting to work with the balance again, turn on the screen and place and remove full load for a moment, in order to reduce possible mechanical tensions.

Place all loads always carefully and, whenever possible, in the center of the weighing pan!

**NOTE**

In order to get exact measurements, always choose a suitable location for the balance, ensure its draft shield works properly, ensure it has reached its operating temperature, ensure it is levelled and adjusted, and place loads carefully in the center of the weighing pan.

2.7 Turning off the screen, restarting and turning off the balance

When the balance is running, the **[ON/OFF]** switch has two functions.

Pressing **[ON/OFF]** briefly turns the screen off and on. When not using the balance, this is the best way for saving the screen and keeping the balance always at operating temperature at the same time.

Holding **[ON/OFF]** for a few seconds calls up the power mode window, giving you the possibility to restart the balance or to abort the process.

For turning the balance totally off, disconnect it from the mains.

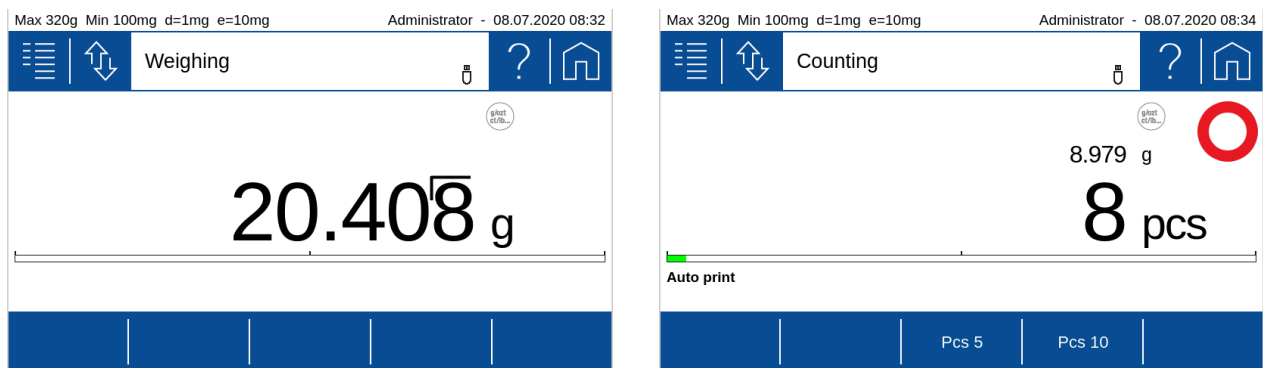
**DANGER**

Be sure to hold the plug, not the cable, when disconnecting the balance from an electrical outlet!

2.8 Verified balances

Verified balances are provided with the EC/OIML certification, or meet the local verification regulations.

On verified balances, the balance range and certain weighing functions differ from standard.



NOTE

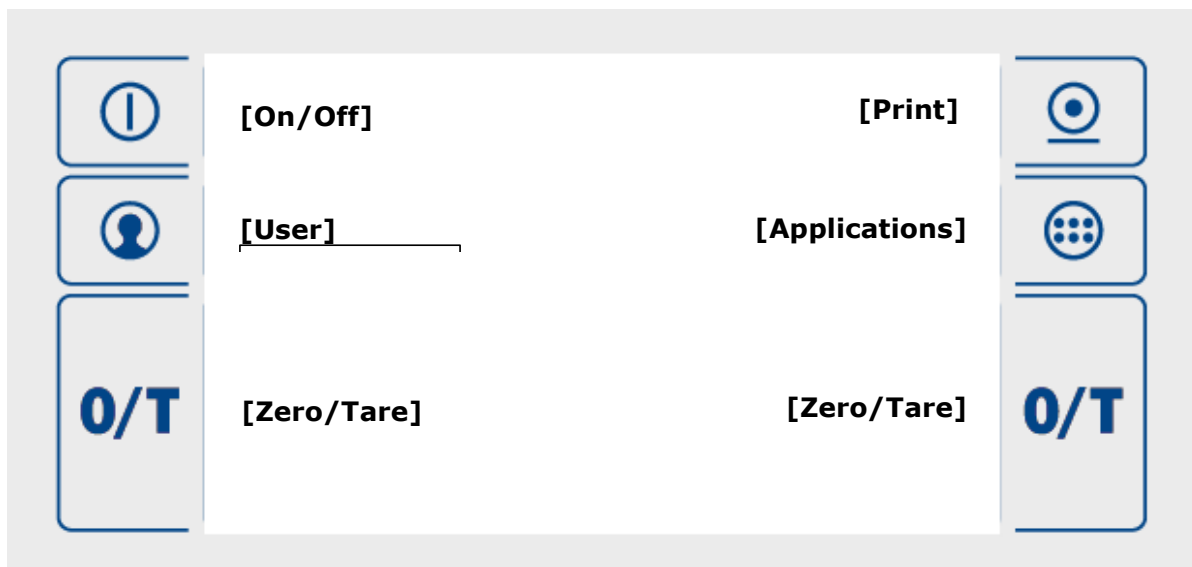
Your local dealer will be happy to assist you at any time if you have any questions about verifying your balance or working with verified balances.

3 Discover the Capabilities of the balance

The balance is equipped with a high resolution touch screen panel and 6 fix integrated operation keys. The ease of operation is maintained by a highly intuitive user Interface. The touch panel is operable through standard laboratory rubber and silicon gloves as well as cotton gloves.

3.1 Keypad

The 6 fixed operation keys serves to perform the most used operations as:

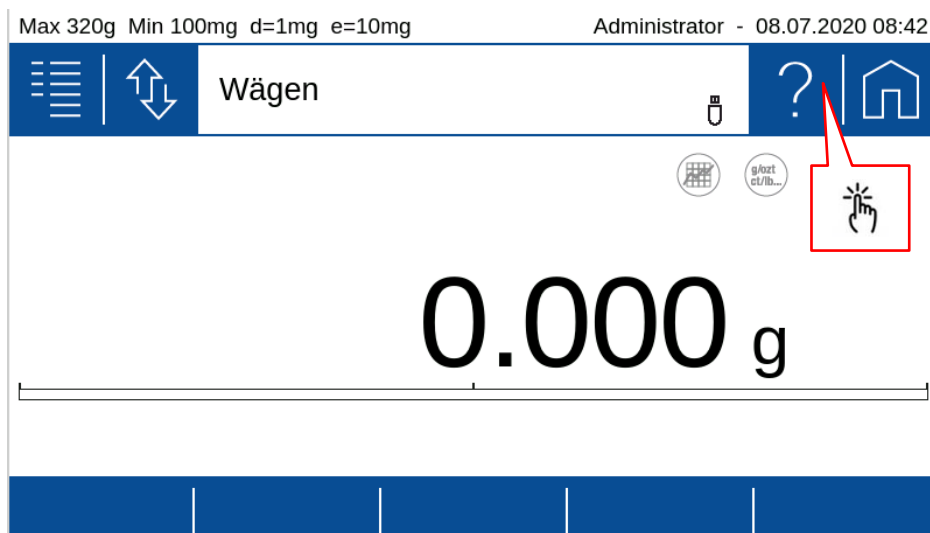


3.2 Operation of Touch Screen

The series 520 balances is equipped with a high resolution Touch Screen panel. The ease of operation is maintained by a highly intuitive user interface.

3.3 Help, ?

No matter where you are, press the **(Help,?)** icon to get context-sensitive help.

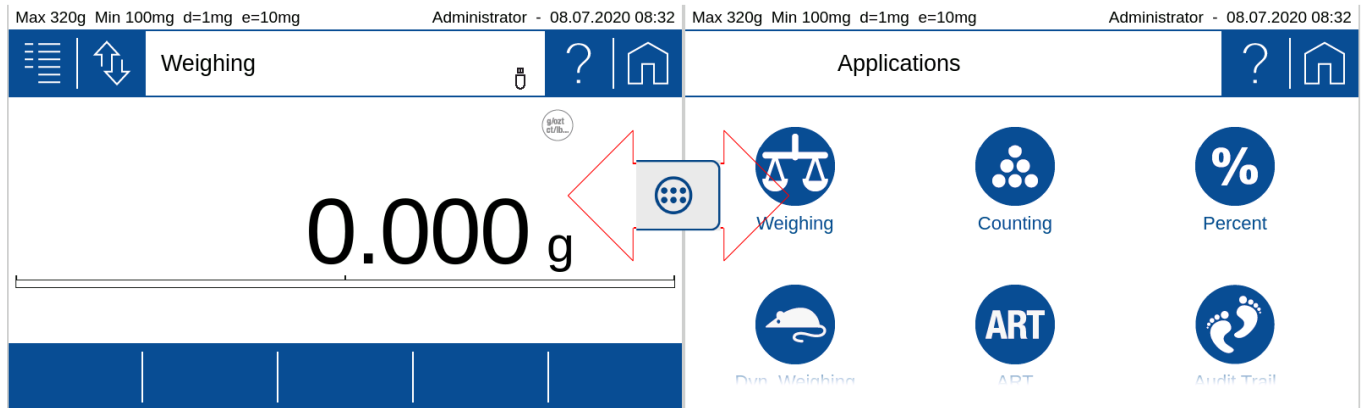


3.4 Navigation

There are 3 main screens:

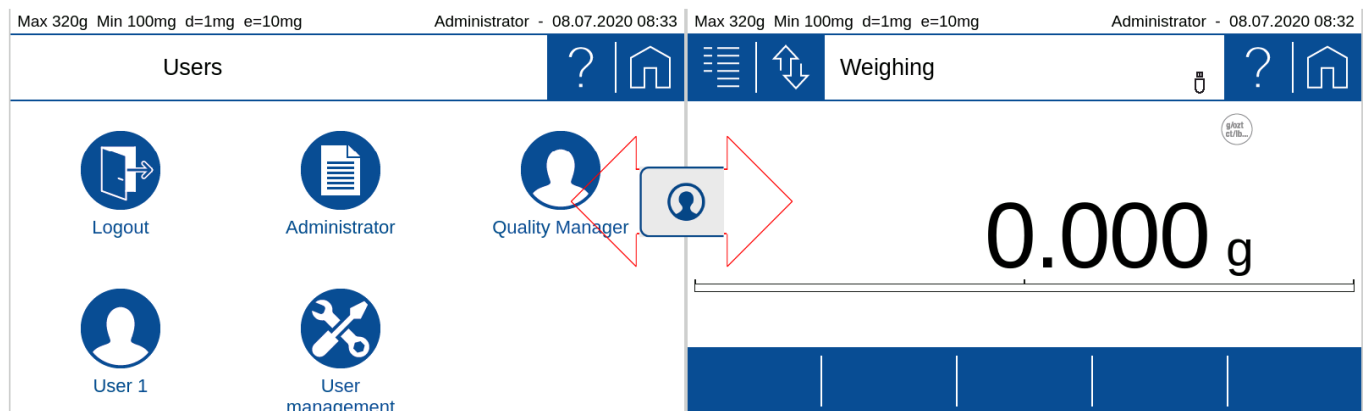
- Current application screen where you perform the weighings and measurements (weighing, counting, ...)
- Application screen to choose the application and the device settings.
- User screen to select the user or to define new users

Press the [Applications] key to enter the application screen.



- Click on an **[Applications]** key icon to open the chosen application.
- If you don't want to change application you can go back to the current application with the **(Home)** key.

Press the [User] key to enter the user screen



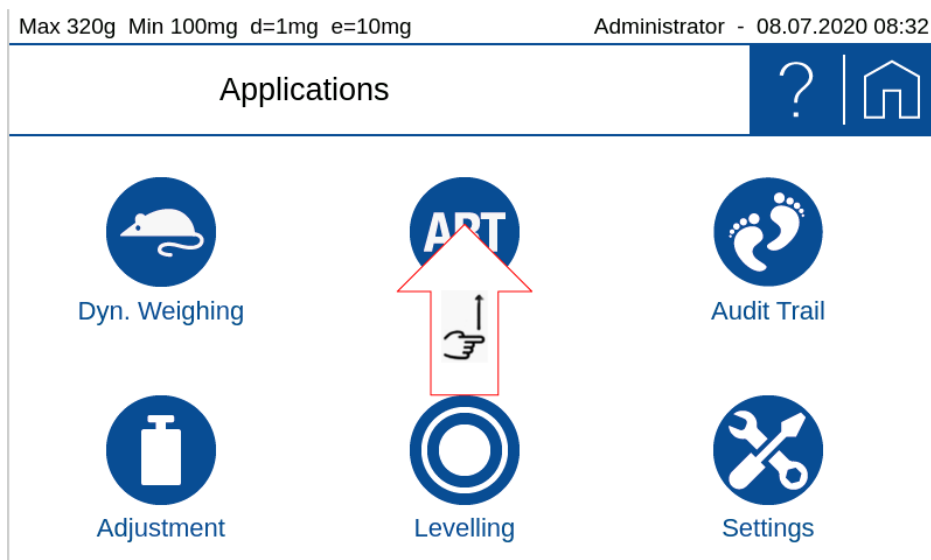
Click the **(Home)** icon to go back to the weighing application.



NOTE

If you have already defined users, the user screen might be shown after starting up. In this case you have to choose first a user to enter the balance software and as consequence no (Home) icon is shown.

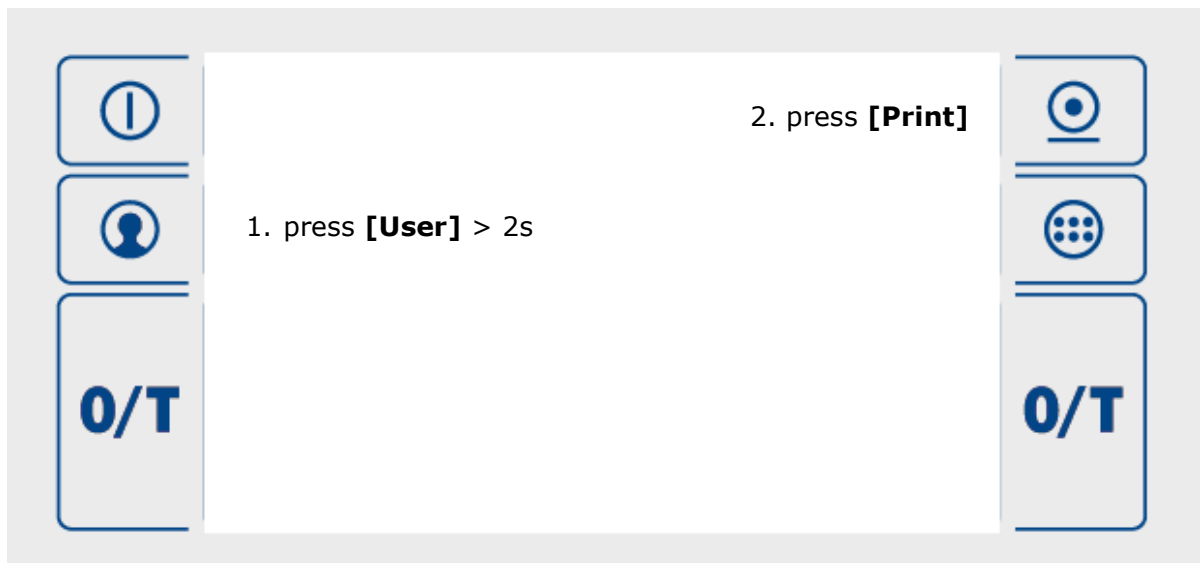
Vertical scrolling is performed by a simple pan. Typically used for screens with more than 12 Icons or for menu items exceeding the standard screen height.



3.5 Screen shot

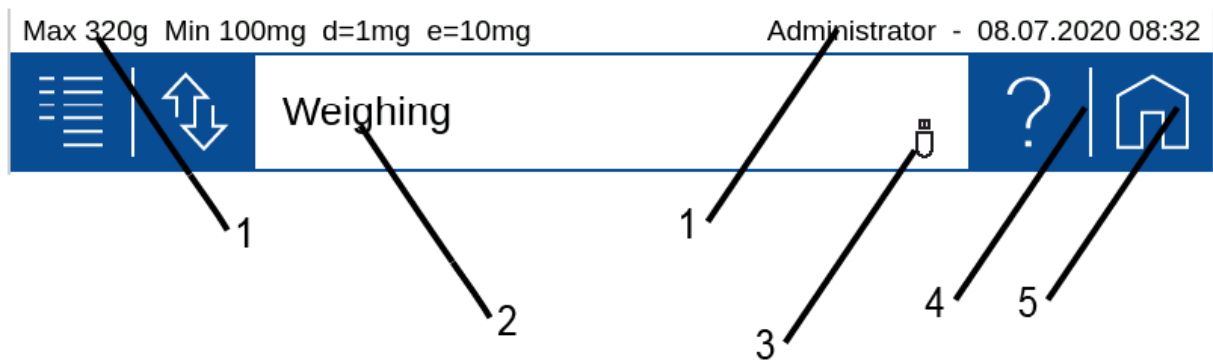
To create meaningful SOP's or in a discussions with customers service and support a screen shot is often very useful. To save a screen shot:

- Plug a USB memory stick into the USB HOST connector on the back side of the balance,
- press the **[User]** key for about 2seconds,
- press the **[PRINT]** key until a sound informs the screen shot is saved on the USB memory stick in the folder "screenshot" as bitmap ".BMP".



4 The basic structure of the screen

Some components of the screen are always present and therefore fix positioned.



4.1 Header

In the header line, the balance-specific data such as the maximum weighing range "Max", the minimum weight "Min", the readability "d", the verification interval "e", the user 'Administrator', date and time are displayed

4.2 Designation of the applications or the current application

Here it's shown where you are. This can be the user screen, the application screen or the screen of the current application, which is indicated with the currently running application, e.g. 'Weighing', 'Counting', 'Density determination', 'Adjustment' etc.

4.3 Auxiliary information

Symbols for connected peripherals such as keyboard, UBS stick, etc. or active network connections or a WLAN are displayed here.

4.4 Help, ?



The help is context-sensitive. Consequently, by tapping the **(Help,?)** icon, the help appropriate to the application or the current screen or application is loaded and displayed.

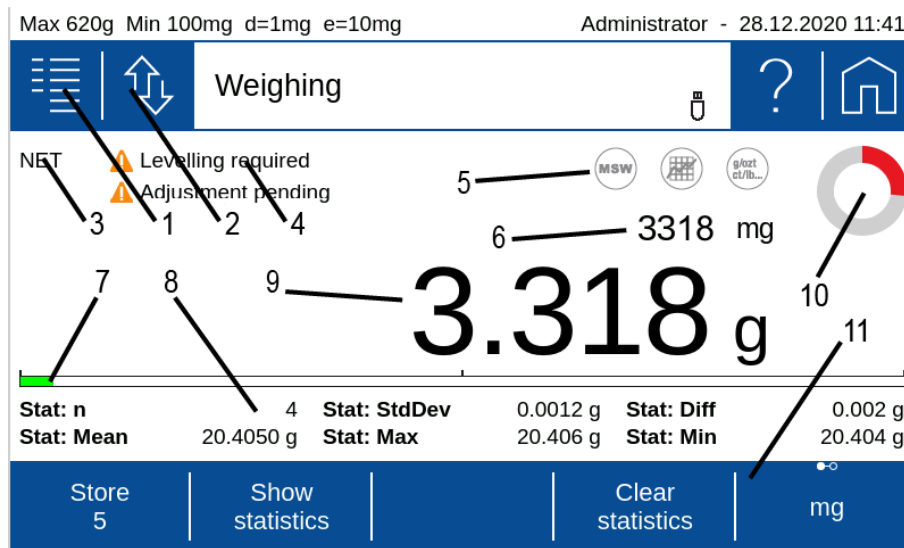
4.5 Home



The **(Home)** icon leads back to the set application from any situation. This is extremely helpful in more complex hierarchies, which can be exited very quickly.

5 Current application screen

Depending on the application and its settings, various components are displayed on the screen.



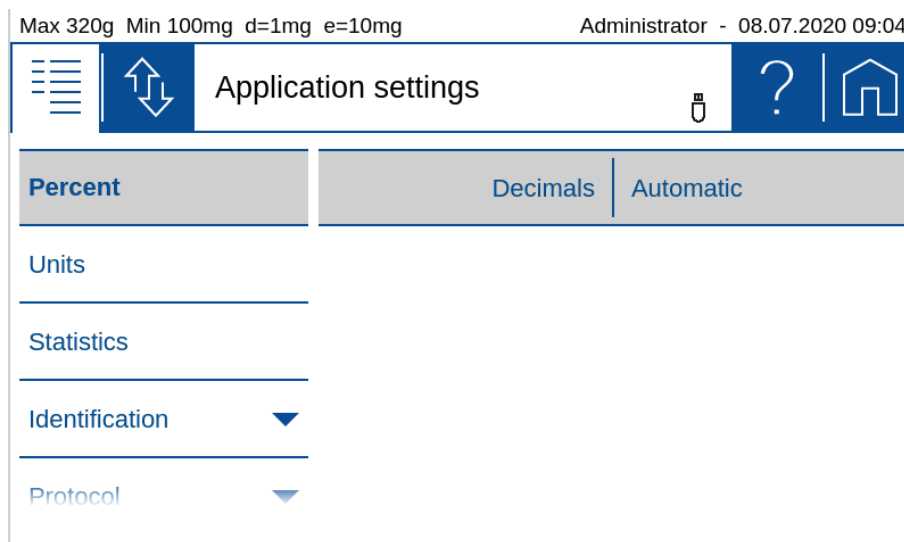
5.1 Context Menu, Add On's

By tapping the context menu, the Add-On functions and other specific settings available for the current application are opened. The Add-On and settings can be set and saved separately for each application.

With an Add-On, the functionality of applications can be expanded. A typical example is the Add-On 'Statistics', which statistically evaluates the weighed values.

The Add-On are:

- **Percent** stands for the current application and is used to set the functions belonging to the application. There is no function here for normal weighing
- **Units** to enable a quick display of the weight in a second unit, see 7 Add-On: Units / Free Conversion.
- **Statistics** to statistically evaluate the determined values, see 8 Add-On: Statistics
- **Identification** to add additional information to the measured values, e.g. a batch number, a measured value counter and much more, see 9 Add-On: Identification.
- **Protocol** to adapt the printout of the application, see 10 Add-On: Protocol and 6.3 Protocol, GLP Header, GLP Footer.



**NOTE**

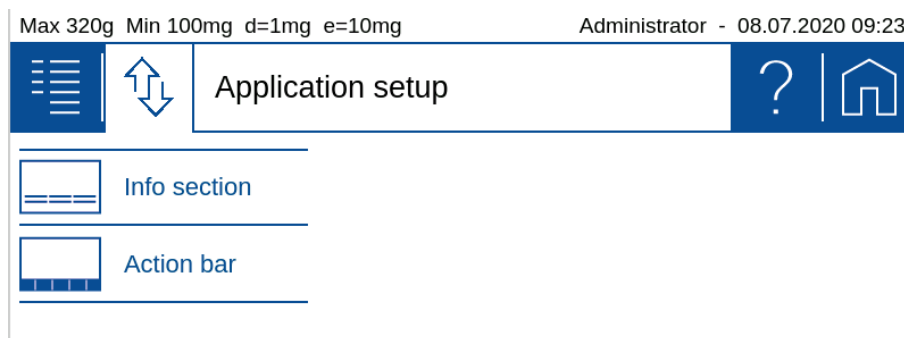
Further information on Add-On settings can be found in the cross-reference.

5.2 Customizer Tab

The Customizer Tab leads to an easy to handle screen layout and protocol editor. By providing drag and drop features, additional buttons, info-lines or protocol stacks can be executed fast and intuitively.

The following are available for adaptation:

- **Information** area to display various information on the screen, see 5.8 Info section
- **'Action bar'** to trigger frequently used functions by pressing a soft button, see 5.11 Action bar and soft button customizing



5.3 Status symbol

Symbols for the status of the balance are displayed here:

- **NET** indicates that the balance has been tared and the displayed value is the net weight.
- **PT** indicates that an externally entered tare value is stored in the balance.

5.4 Notes

At this point, notices such as are displayed. that the scale should be leveled or adjusted.

- Level the balance, 2.4 Levelling
- Adjust the balance, 2.5 Adjusting the balance

5.5 Active Add-On's and Functions, MSW

At this point the activated Add-On will be shown with the corresponding icon.

Basically, all applications can be extended in their functionality by so-called Add-On. A typical example is the Add-On 'Statistics', which statistically processes the values measured, for example, in the 'Weighing' application.

The 'MSW' symbol stands for the activated minimum sample weight and is also displayed here. The minimum sample weight is not activated in the context menu but in the global settings of the scale. We do so because the minimum sample weight should mostly apply to all weighings and not only for a specific application, see 6.7 Minimal Sample Weight and Quality Management, MSW

5.6 Second display

For certain applications, the weight is displayed here. For example, in the application counting in the main display shows the number of pieces and in the second display the actual weight.

5.7 Capacity display

Graphic display how much of the entire weighing range is being used.

5.8 Info section

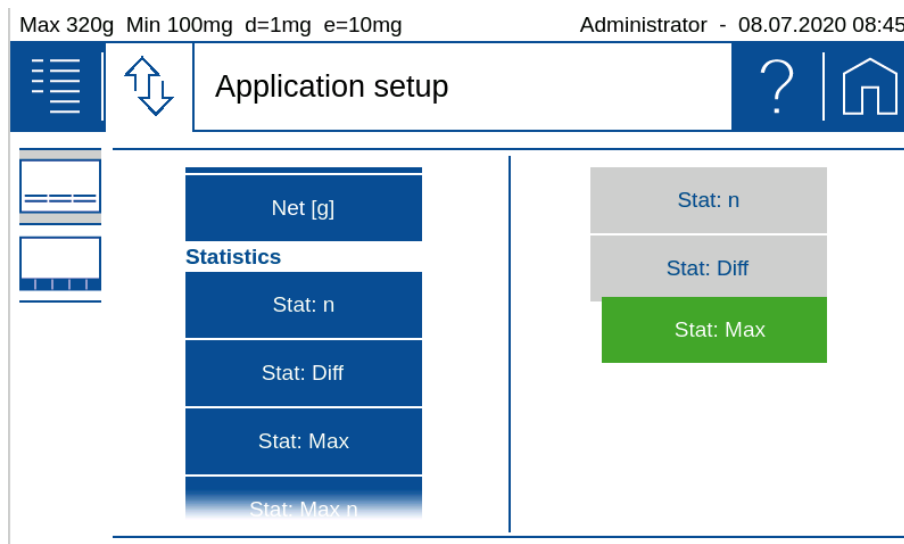
Various information is available that can be displayed in the notification area. The layout can be set and saved separately for each application.

To ensure easy orientation, the information or components divided into groups:

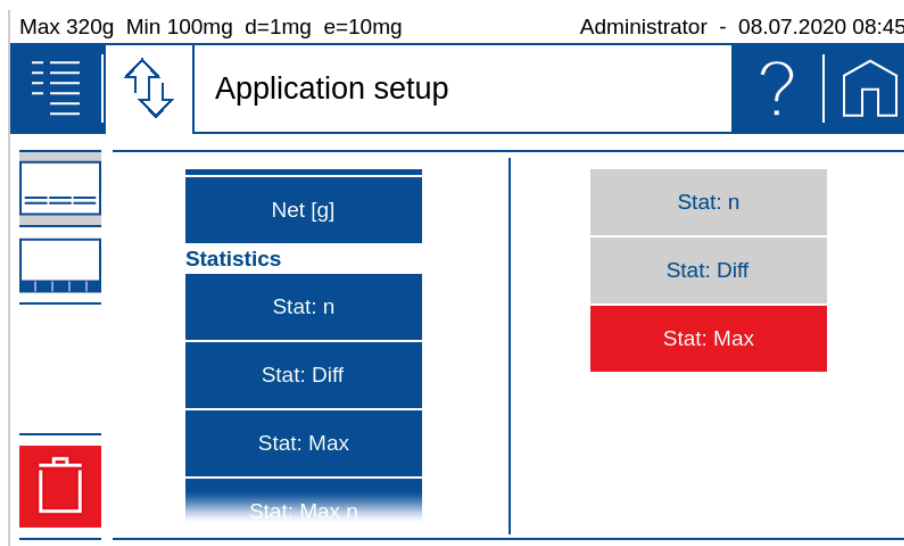
- **Measurement** contains the information about the measurement such as the current net weight or the status of the automatic printout if this is set in the measurement log.
- **Statistics** contains information on statistics such as the number of values, the difference between the maximum and minimum value, the mean, the standard deviation, etc.
- **Identification** contains the information on the various defined identifications or labels such as batch number, measured value counter, etc.

5.8.1 Define the layout

- If you click on a module on the left, it is attached to the list on the right.
- If a block in the list on the right is held for approx. 2 seconds, it appears green and can be moved.



- If you click on a module on the right it appears red and is deleted by pressing the trash can.



5.9 Main display

The value that matches the application is shown in large format in the main display. Appropriate work instructions and notes are displayed during a workflow.

5.10 Stability Indicator

The stability indicator combines a variety of functions such as the release of results, an indication of the environmental conditions and a prediction of when a stable display of the weight value has been reached.

After a weight change, the indicator appears as a red annulus, which decreases with increasing stability. Basically, a weight value is considered to be stable and thus valid if the indicator (red ring) is no longer visible. In case the indicator decreases only very slow or not at all, this means the weighing is disturbed e.g. by drafts, vibrations of the location or other influences, see 2.1 Choosing a suitable location

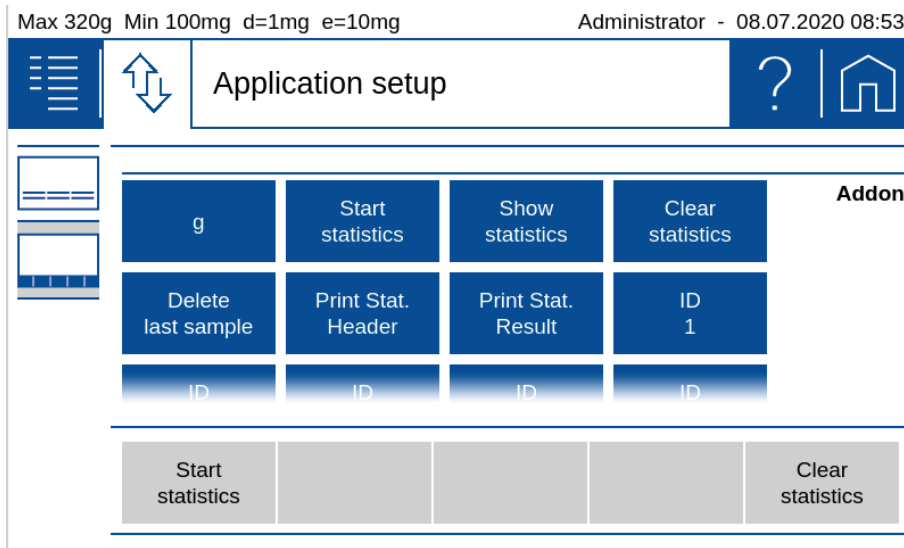
5.11 Action bar and soft button customizing

The 520 Series provides an extensive list of dedicated soft buttons. By using the customizer they can be placed in a pre-defined area on the screen, called 'Action bar'.

When a soft button is pressed it performs the assigned function. In each application you may assign a choice of various functions to the soft button of the 'Action bar'.

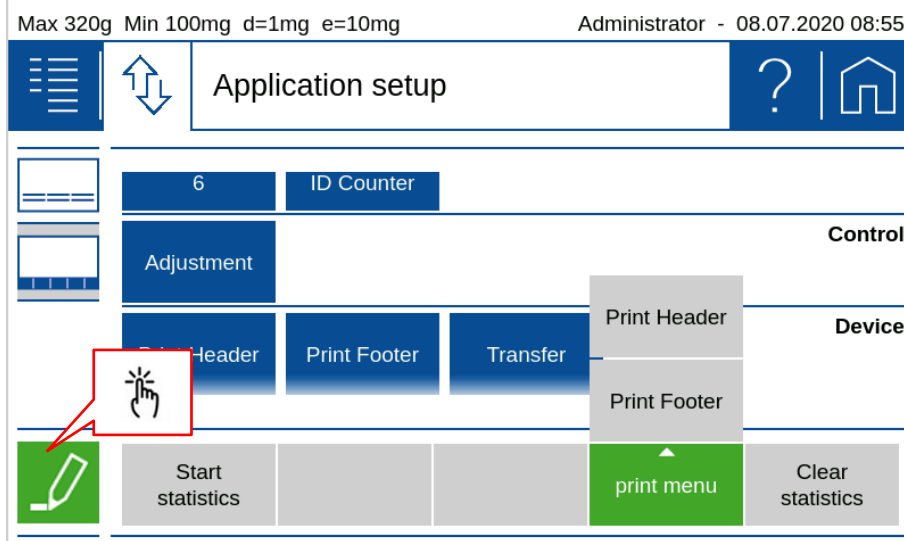
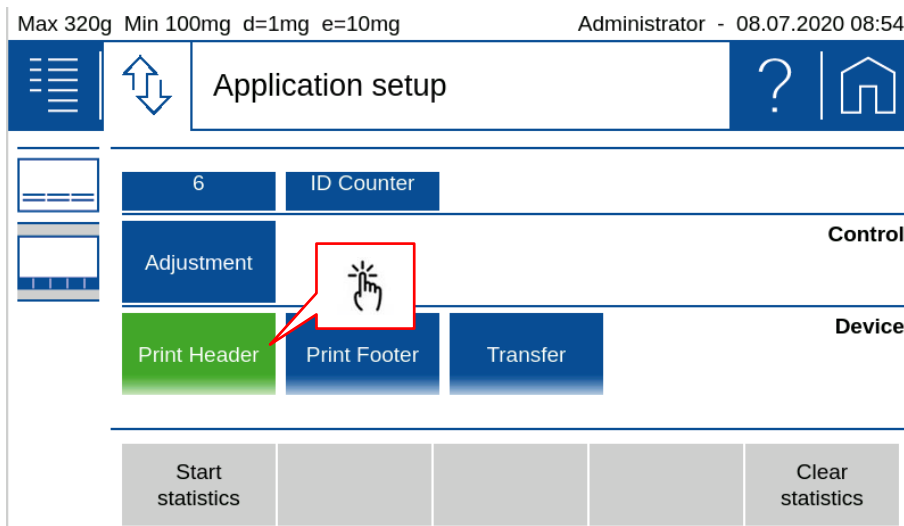
To ensure easy orientation, the functions are divided into groups:

- **Addon** contains functions for the Add-On such as switch to the second unit, start statistics, delete statistics ... or e.g. to enter any identification.
- **Control** contains the functions for adjustment.
- The **device** contains the functions for controlling printing, data transfer etc.

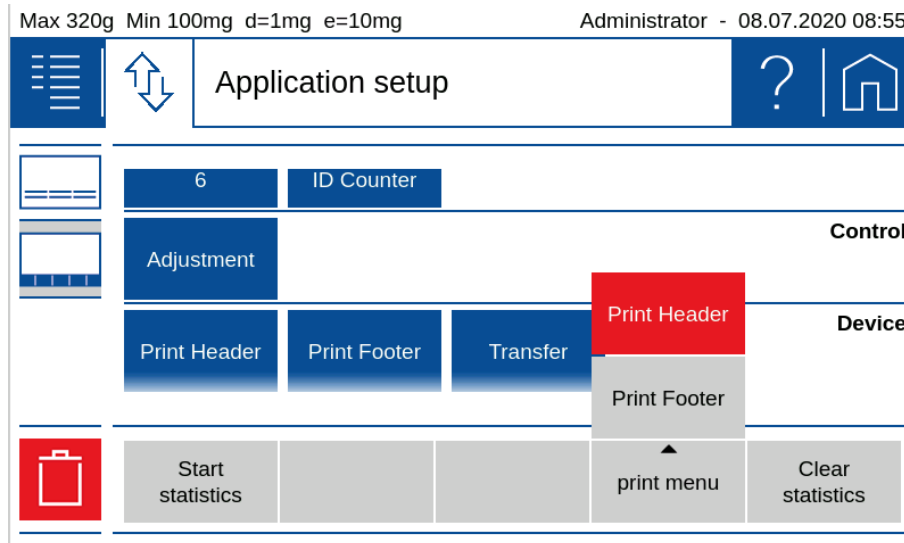


5.11.1 Define soft buttons

- By selecting a function the background colour changes to green. This indicates that the function is ready to be placed as a soft button on the 'Action bar'.
- If a second function is positioned on an occupied soft button, a group is formed. This group can be given a name with the pencil.



- If a soft button from the 'Action bar' is select, it appears red and is deleted by pressing the trash can icon.



5.12 Warnings, status reports

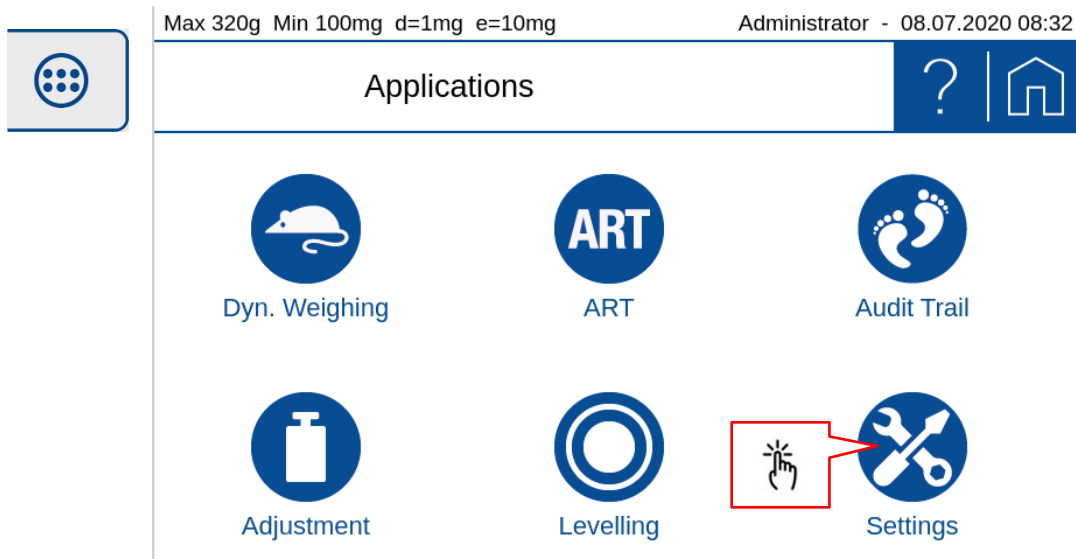
At this point, warnings are displayed, e.g. that the minimum weight has not yet been reached or status messages about the printing process.

- Minimum sample weight, see 6.7 Minimal Sample Weight and Quality Management, MSW
- Printout active, waiting for printout,... see 10 Add-On: Protocol

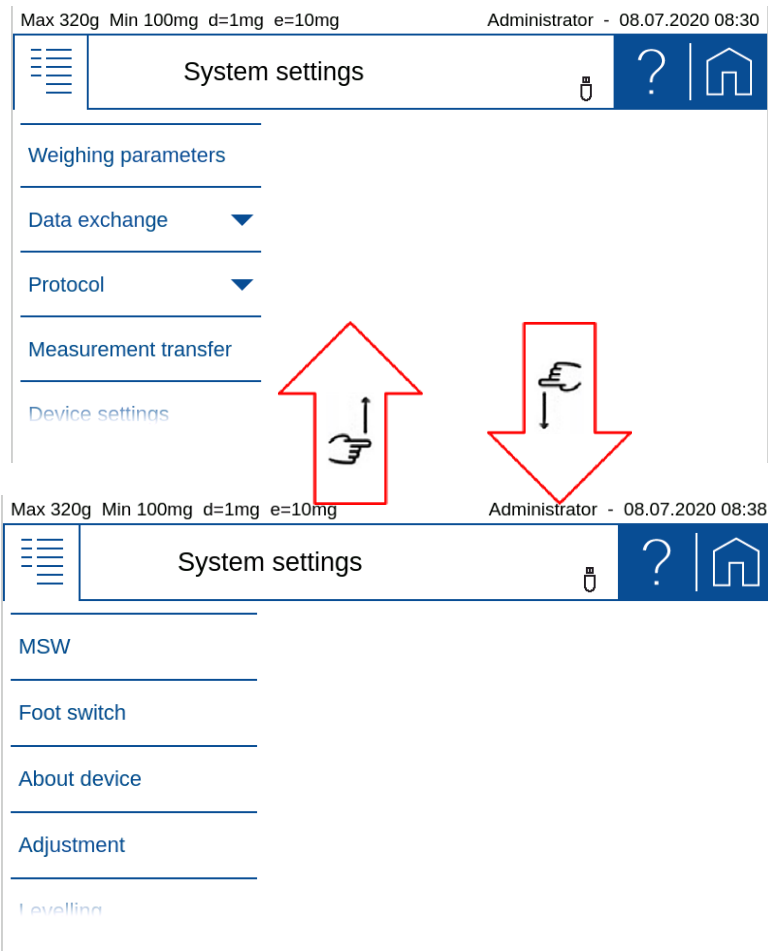
6 System Settings

The basic settings of the balance can be found on the application screen.

- Enter the application applications screen and call up 'Settings'.

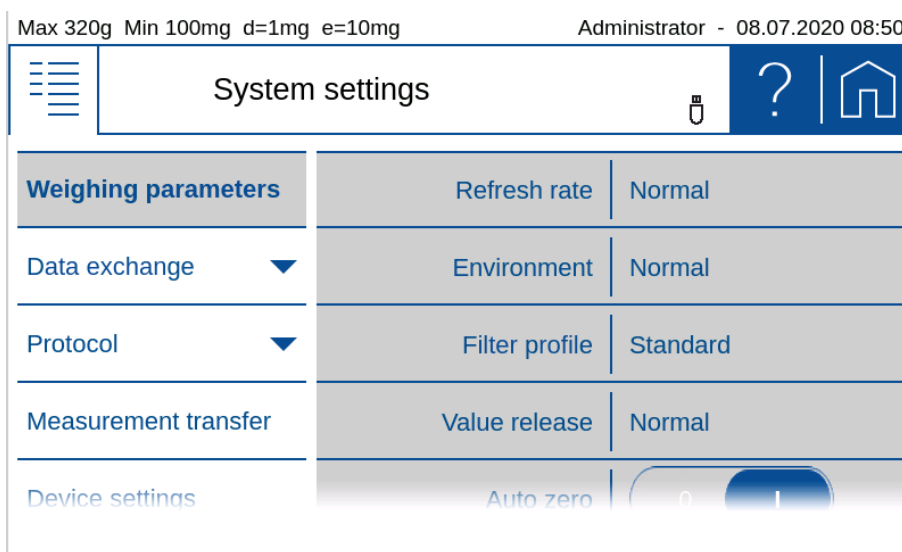


- Swiping up and down gives you access to all system settings.



6.1 Weighing parameter

To ensure proper operation of your balance, the balance location must be selected so that the permissible ambient conditions are met. Individual adjustments of the weighing parameters allow further improvements to be achieved.



NOTE

Further information on settings can be found in the context help.

6.1.1 Refresh rate

The value set defines the period after which each new measurement is displayed. For the definition of this period, the quality of the balance location is crucial. The stability control must also be set appropriately.

- **Extra Slow:**
For best results where response time is less important
- **Slow:**
Increased repeatability
- **Normal:**
Best suited for most of the applications
- **Fast:**
Fast response where repeatability is less important

6.1.2 Environment

Adjust the balance to the quality of the balance location.

- **Uncritical:**
Best suited for very stable environment conditions
- **Normal:**
Ideal for most environments
- **Critical:**
For harsh and unstable conditions

6.1.3 Filter profile

The filter profiles are used to adapt the transient response of the balance to the special requirements of the application, e.g. for slow processes such as weight loss due to evaporation or dynamic processes such as dosing applications with liquids or powders.

- **Standard:**
For all standard weighing applications. Optimal for most applications regarding speed and repeatability
- **Dosing:**
Optimal for dosing with liquids or powder. Ultra fast response also to very small changes in weight

6.1.4 Value release

The value release defines when the weighing result is recognized as stable and reliable. In addition, there are settings from very slow for highly reproducible results in which the speed is subordinate to very fast if a quick value release is necessary to e.g. to recognize a trend.

- **Very slow:**
For best results where response time is less important
- **Slow:**
Increased repeatability
- **Normal:**
Best suited for most of the applications
- **Fast:**
Fast response where repeatability is less important
- **Very fast:**
For application where speed has highest priority

6.1.5 Auto zero

When the automatic zero-correction is activated the balance holds a stable zero (e.g. even with fluctuations in room temperature) within a certain level of zero drift.

6.1.6 Quick tare

The balance executes a fast tare, even at not yet stabilized weight.

6.1.7 Zero range

For certain applications an individual zero range is beneficial. This is a very useful feature in combination of a combined **[Zero/Tare]** key. Thus the range of zeroing or taring can be controlled within certain limits.

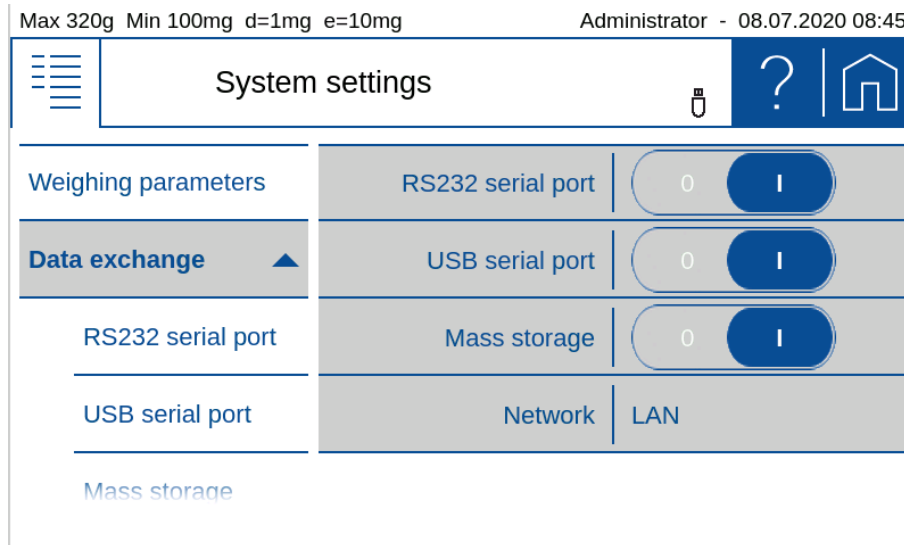
6.2 Data exchange

There are several channels for data exchange and the two modes protocol or Measurement transfer available. For example, parallel a protocol via the serial interface on a printer and a protocol as a text or CSV file on a mass storage / memory stick connected to the USB interface. A 'Measurement transfer' of the individual values to a PC or to a LIMS could also be triggered on the network channel at the push of the soft button **{Transfer}**.

The following channels are available:

- **RS232 serial port:** DB9 connector on the back side of the balance
- **USB serial port:** USB DEVICE connector on the back side of the balance
- **Mass storage or memory stick:** USB HOST connector on the back side of the balance

- **Network:** LAN connector on the backside of the balance or with an USB-WLAN adapter plugged into the USB HOST connector

**NOTE**

If a channel is not physically available, the transfer may take a long time, because the balance only stops the transfer after a certain timeout.

**NOTE**

Further information on settings can be found in the context help.

6.2.1 RS232 serial Port

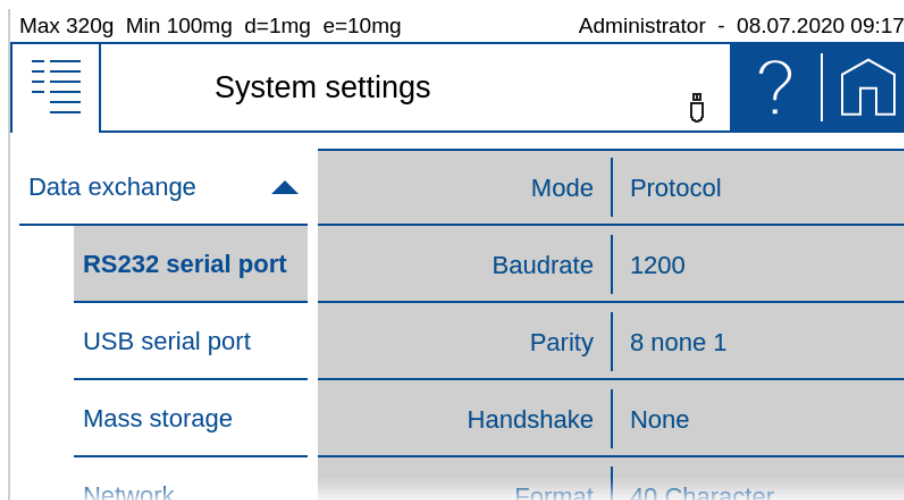
For a correct data transmission to a printer or another device it must be connected to the DB9 connector on the back side of the balance and the usual parameters of an RS232 / V24 serial interface must be set.

Baudrate, parity and handshake must match with the interface parameters of the connected peripheral device. In an environment with high levels of interference, it is recommended to keep the baudrate as low as possible.

6.2.1.1 Mode 'Protocol'

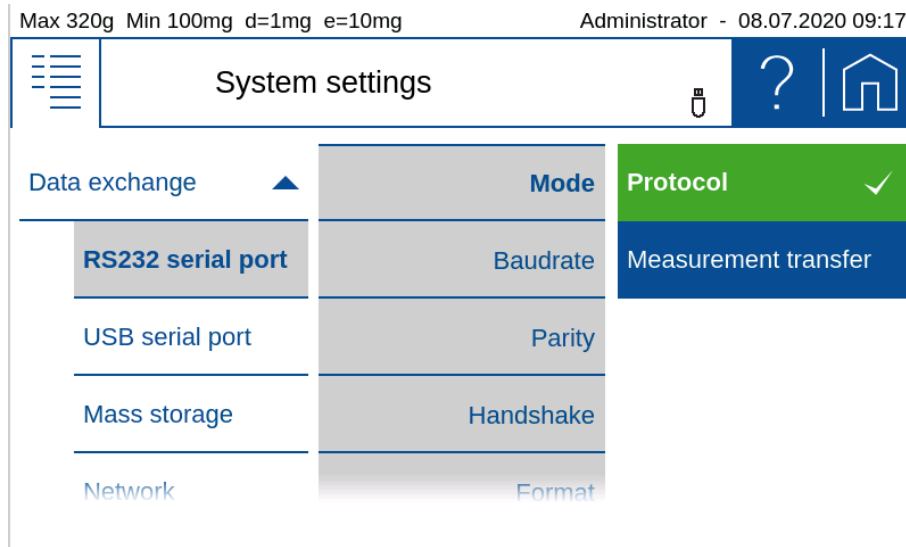
In this mode, the protocol as defined for the application is output. It is triggered automatically or with the **[Print]** key, as set in the active application.

With the format setting, the width of the log can be adjusted, e.g. on a printer with 40 or 24 characters.

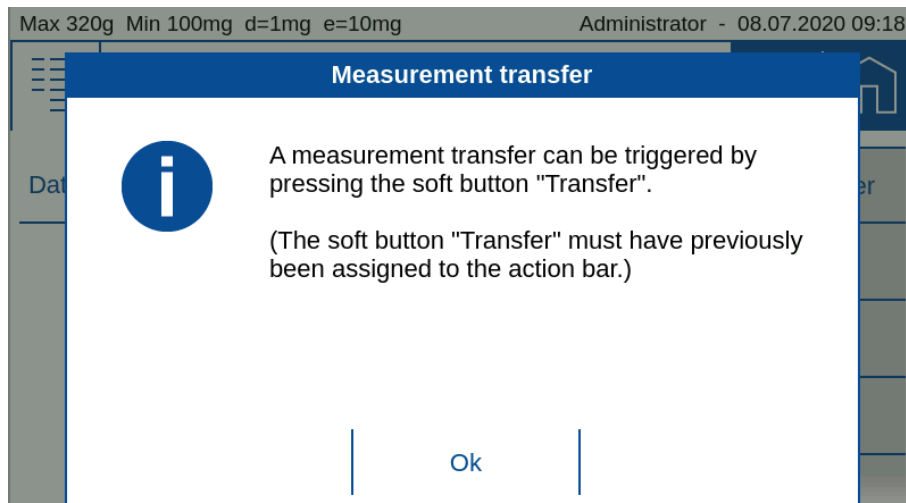


6.2.1.2 Mode 'Measurement transfer'

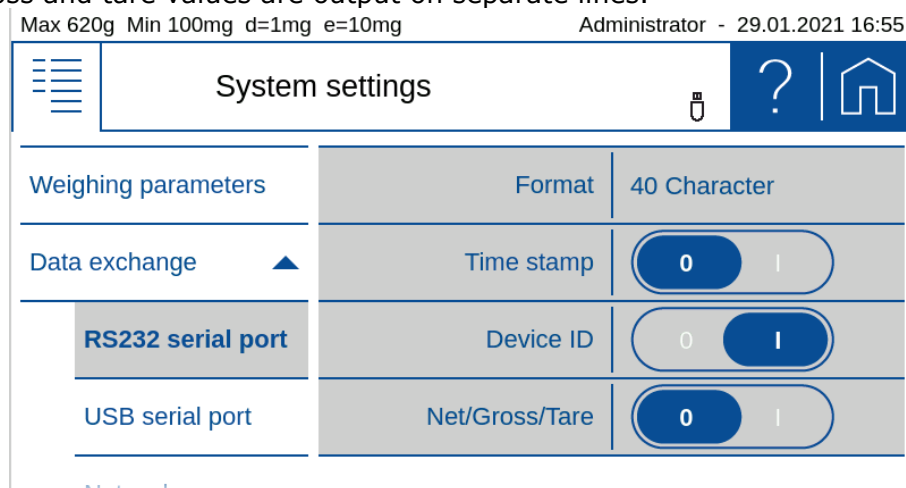
In this mode, the current weight value is transferred at the push of a soft button, if desired with a time stamp, device ID, net / gross / tare. For the definition of the format of the measured value transmission, see 6.4 Measurement transfer.



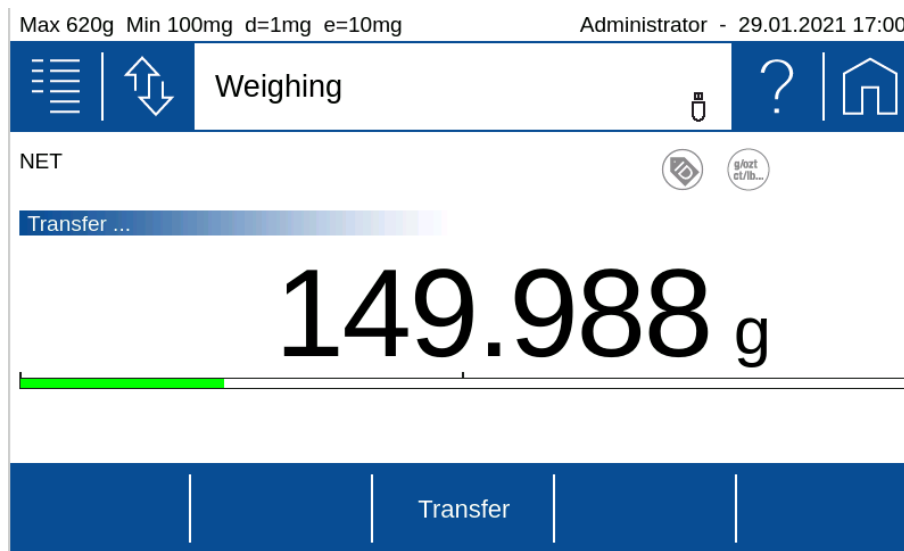
The soft button **{Transfer}** must be activated in the 'Action bar' (see 5.11 Action bar and soft button customizing) for the measurement transfer.



'Time stamp', 'Device ID' and 'Net/Gross/Tare' are optionally output with the measured value, whereby the gross and tare values are output on separate lines.



Press the soft button **{Transfer}** to transfer the current value.



6.2.2 USB serial Port

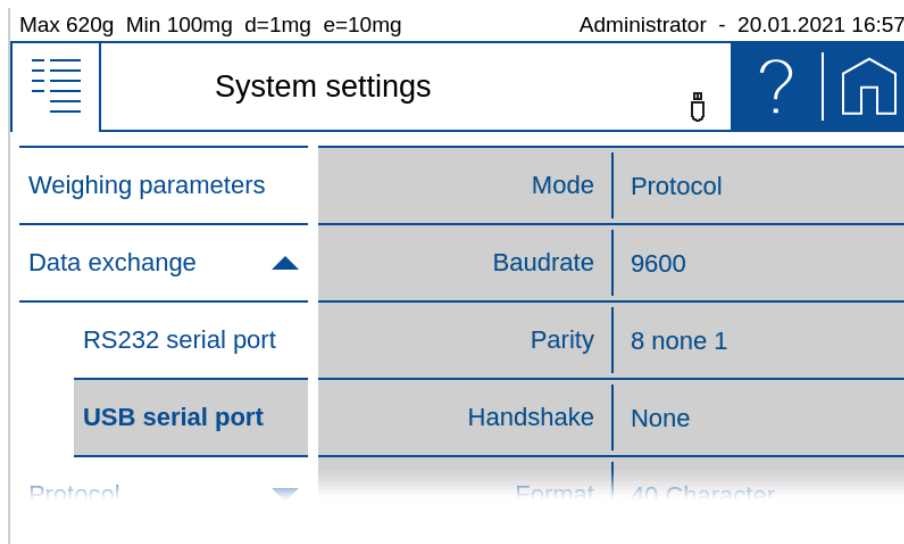
For a correct data transmission to a PC it must be connected to the USB DEVICE connector on the back side of the balance and the usual parameters of a serial interface must be set.

Baudrate, parity and handshake must match with the interface parameters of the connected peripheral device. In an environment with high levels of interference, it is recommended to keep the baudrate as low as possible.

6.2.2.1 Mode 'Protocol'

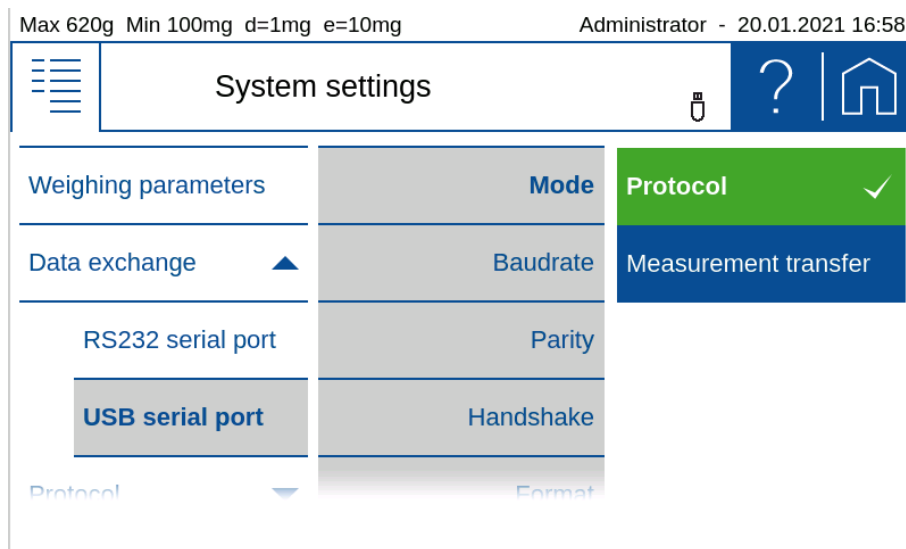
In this mode, the protocol as defined for the application is output. It is triggered automatically or with the **[Print]** key, as set in the active application.

With the format setting, the width of the log can be adjusted, e.g. on a printer with 40 or 24 characters.

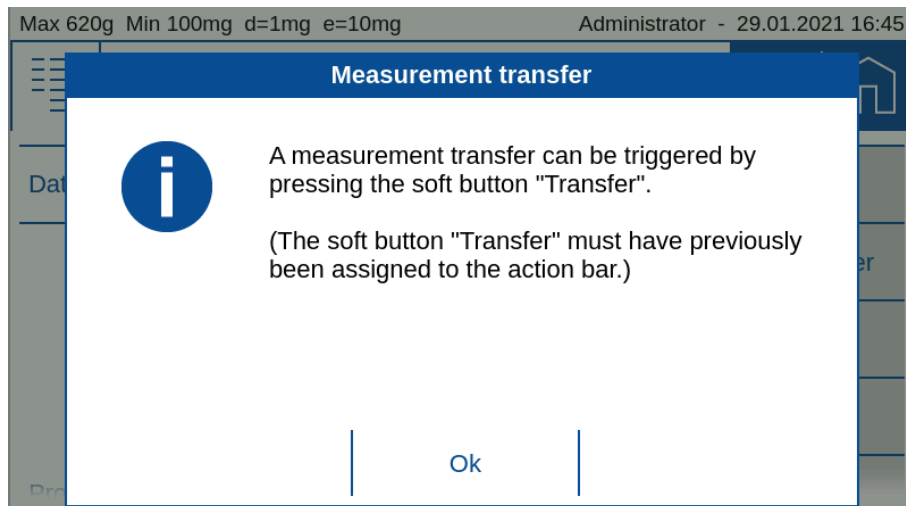


6.2.2.2 Mode 'Measurement transfer'

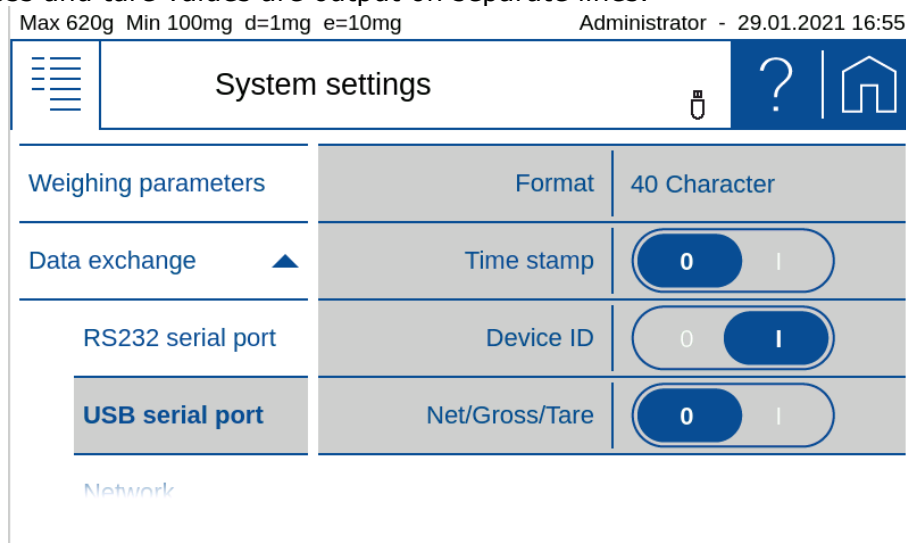
In this mode, the current weight value is transferred at the push of the soft button **{Transfer}**, if desired with a time stamp, device ID, net / gross / tare. For the definition of the format of the measured value transmission, see 6.4 Measurement transfer.



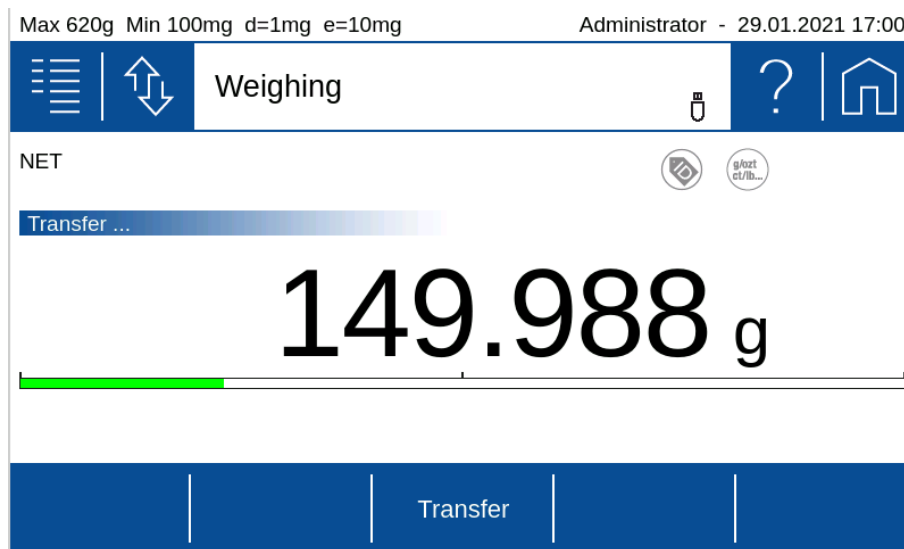
The soft button **{Transfer}** must be activated in the 'Action bar' (see 5.11 Action bar and soft button customizing) for the measurement transfer.



'Time stamp', 'Device ID' and 'Net/Gross/Tare' are optionally output with the measured value, whereby the gross and tare values are output on separate lines.



Press the soft button **{Transfer}** to transfer the current value.



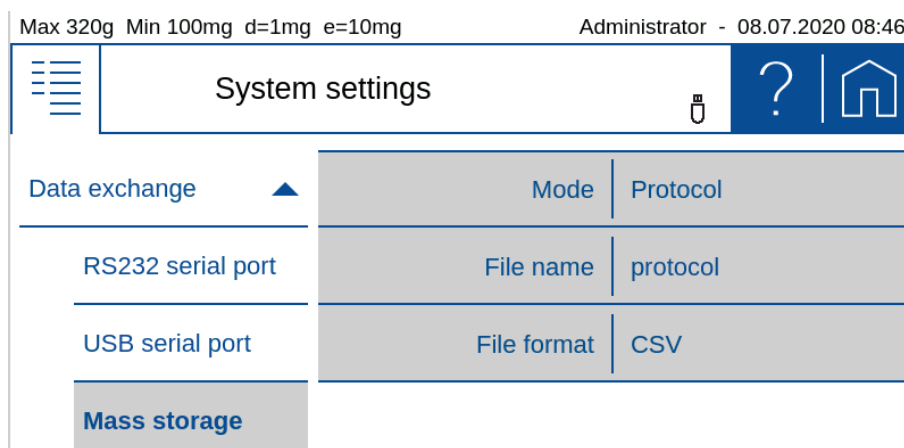
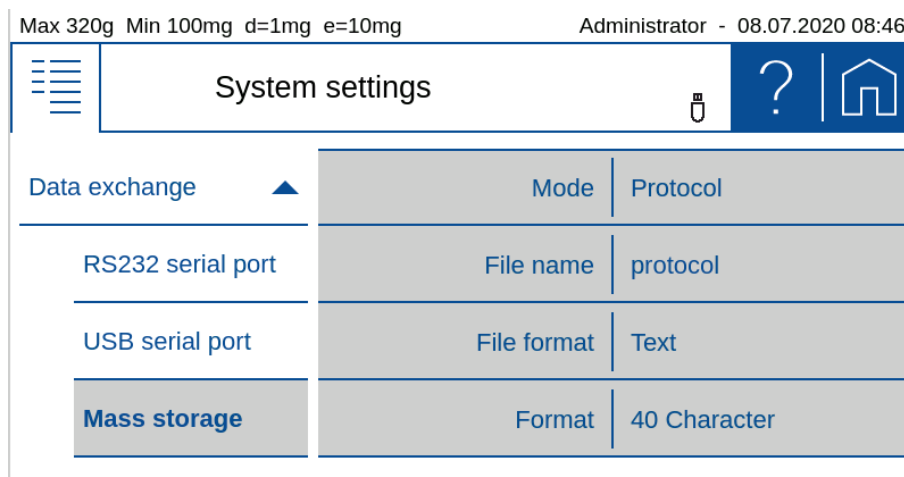
6.2.3 Mass storage

Select 'Mass storage' to transfer the data to a USB stick. If an existing USB flash drive is used, the log or measured value output (depending on the setting) is saved in a file on the stick in the selected format.

6.2.3.1 Mode 'Protocol'

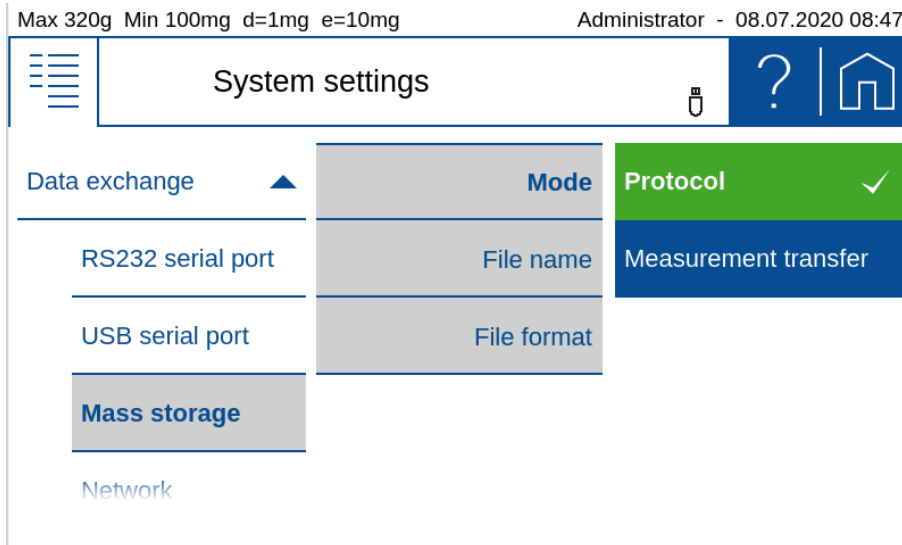
In this mode, the protocol defined for the application is saved into a file on the mass storage, depending on the setting, automatically or with the **[Print]** key.

In addition to the file name, the file format text "txt" or comma separated values ".csv" can be selected. For the text file format, the width of the log can also be selected with 40 or 24 characters.

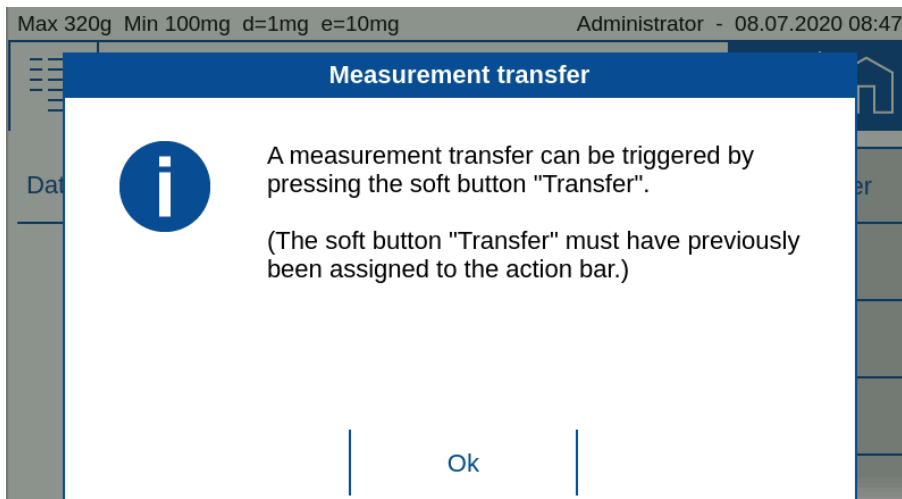


6.2.3.2 Mode 'Measurement transfer'

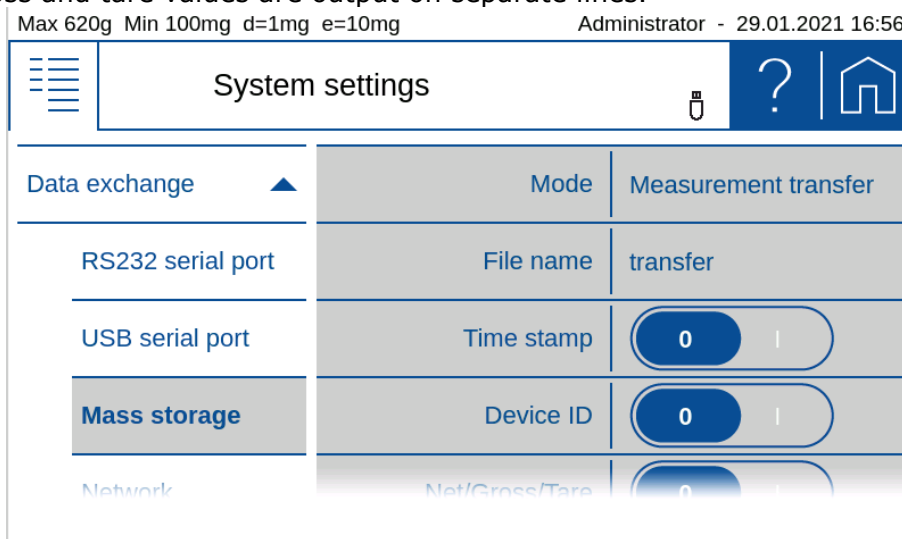
In this mode, the current weight value is transferred at the soft button **{Transfer}**, if desired with a time stamp, device ID, net / gross / tare. For the definition of the format of the measured value transmission, see 6.4 Measurement transfer.



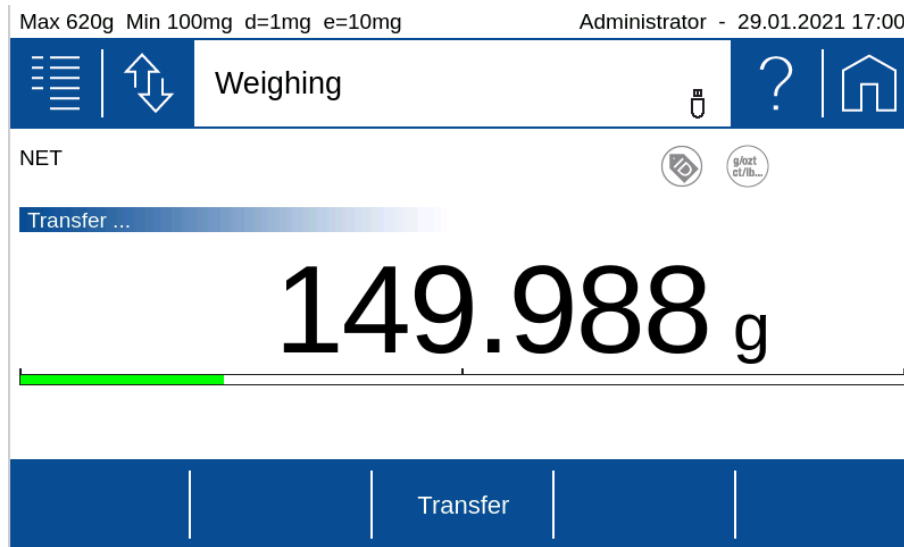
The soft button **{Transfer}** must be activated in the 'Action bar' (see 5.11 Action bar and soft button customizing) for the measurement transfer.



'Time stamp', 'Device ID' and 'Net/Gross/Tare' are optionally output with the measured value, whereby the gross and tare values are output on separate lines.



Press the soft button **{Transfer}** to transfer the current value.



6.2.4 Network

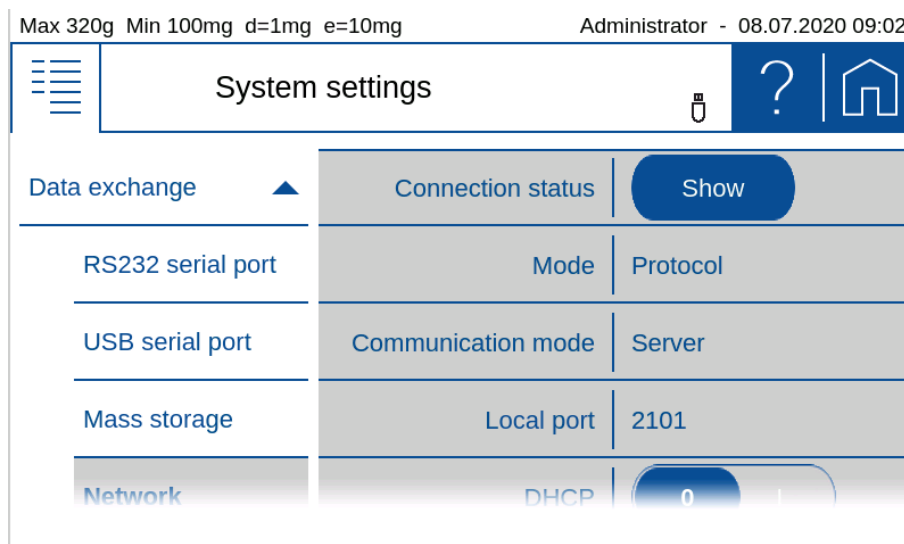
The balance can be integrated into a network. For this purpose, a LAN cable or a USB WLAN adapter must be plugged at the bottom side of the balance terminal. For correct data transmission, the usual parameters of a network connection must be set appropriately on the scale and the receiver.

6.2.4.1 Connection status

Click to display and print out the network connection status and settings.

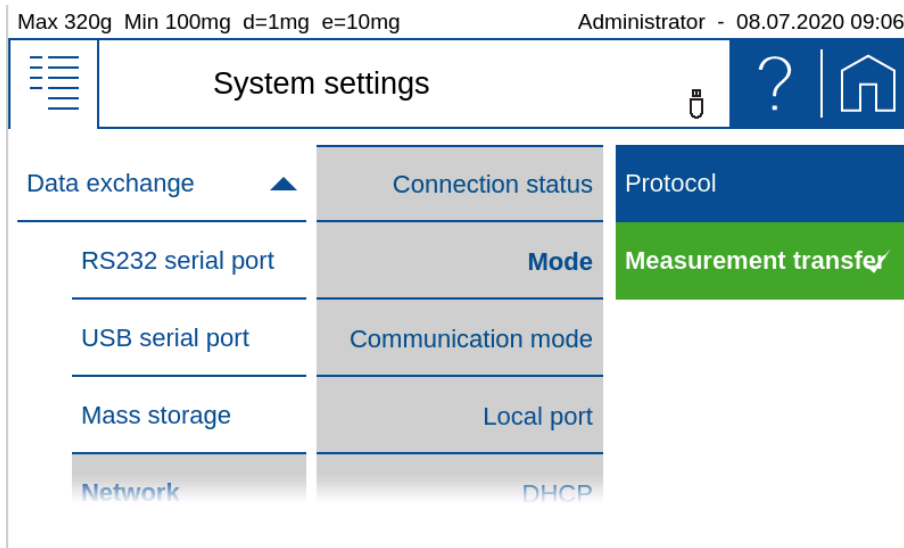
6.2.4.2 Mode 'Protocol'

In this mode, the protocol as defined for the application is output. It is triggered automatically or with the **[Print]** key, as set in the active application.

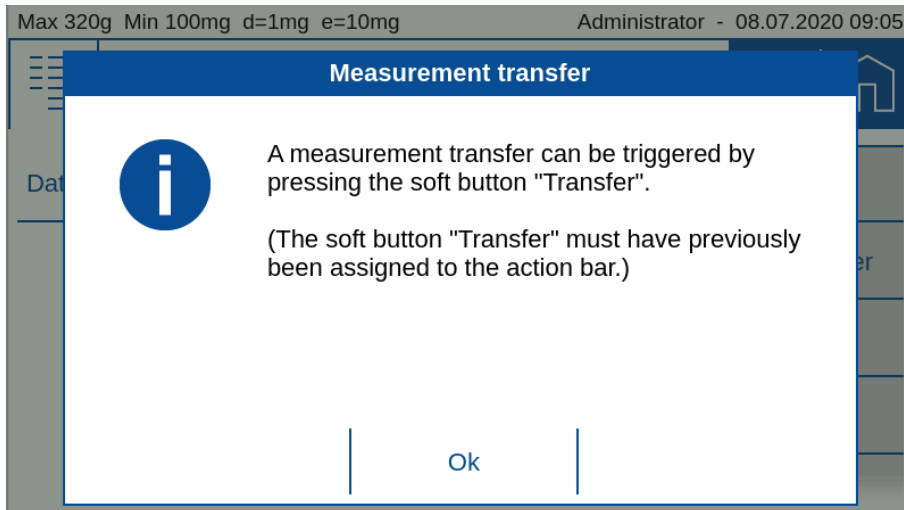


6.2.4.3 Mode 'Measurement transfer'

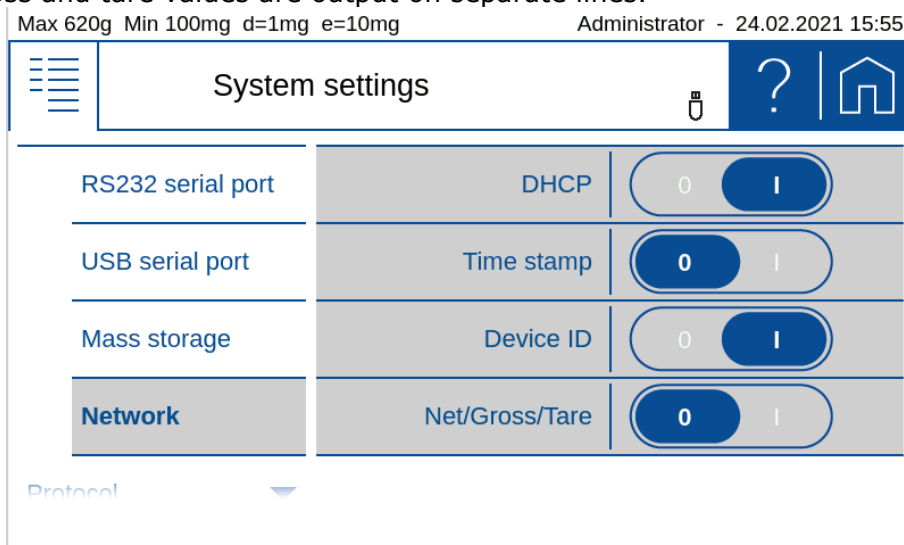
In this mode, the current weight value is transferred at the soft button **{Transfer}**, if desired with a time stamp, device ID, net / gross / tare. For the definition of the format of the measured value transmission, see 6.4 Measurement transfer.



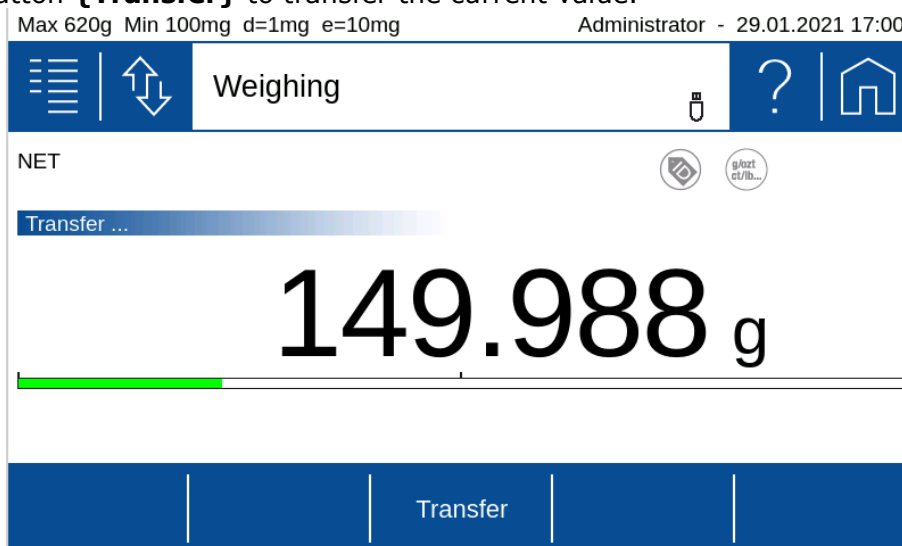
The soft button **{Transfer}** must be activated in the 'Action bar' (see 5.11 Action bar and soft button customizing) for the measurement transfer.



'Time stamp', 'Device ID' and 'Net/Gross/Tare' are optionally output with the measured value, whereby the gross and tare values are output on separate lines.



Press the soft button **{Transfer}** to transfer the current value.



6.2.4.4 Mode of the communication

Server (mostly used)

The Server communication mode is used when a PC, LIMS or other device wants to connect to the balance. It is recommended to use a static IP address, as the balance can always be reached with the same address. Further details about the setup and the local port can be found below.

Client

The Client communication mode is used when the balance wants to connect to a passive device such as a printer. The use of an automatic IP address provided by a DHCP server is usually sufficient, since the address of the balance is not relevant. Further details about the setup and the remote host port as well as the remote host address can be found below.

Using DHCP or a static IP address

To connect the balance to the network, the details must be discussed with the network administrator. It is important to know whether to assign to the balance a static IP address or an automatic IP address from a DHCP server. In addition, the network administrator knows the port of the remote terminal of the network connection; for Precisa printers or software, this is normally port 2101 or 4001.

If an automatic IP address of the DHCP server is sufficient, switching on DHCP automatically connects the balance into the network.

In case a static IP address must be used, the network administrator knows the settings of the IP address, subnet mask and default gateway.

Connecting to the LAN or WLAN

In case you have selected in the menu 'Data Exchange' WLAN the additional entry 'WiFi list' appears in the selection. Press 'Set' to select the network with the password, according your network administrator.

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:02

System settings

Data exchange ▲

Connection status	Show
RS232 serial port	Mode Protocol
USB serial port	Communication mode Server
Mass storage	Local port 2101
Network	DHCP <input type="radio"/>

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:04

System settings

Data exchange ▲

DHCP	<input checked="" type="radio"/>
RS232 serial port	Static IP address 192.168.0.084
USB serial port	Subnet mask 255.255.255.0
Mass storage	Default gateway 192.168.0.009
Network	

Max 320g Min 10mg d=0.1mg e=1mg Administrator - 30.07.2019 08:04

Wi-Fi networks

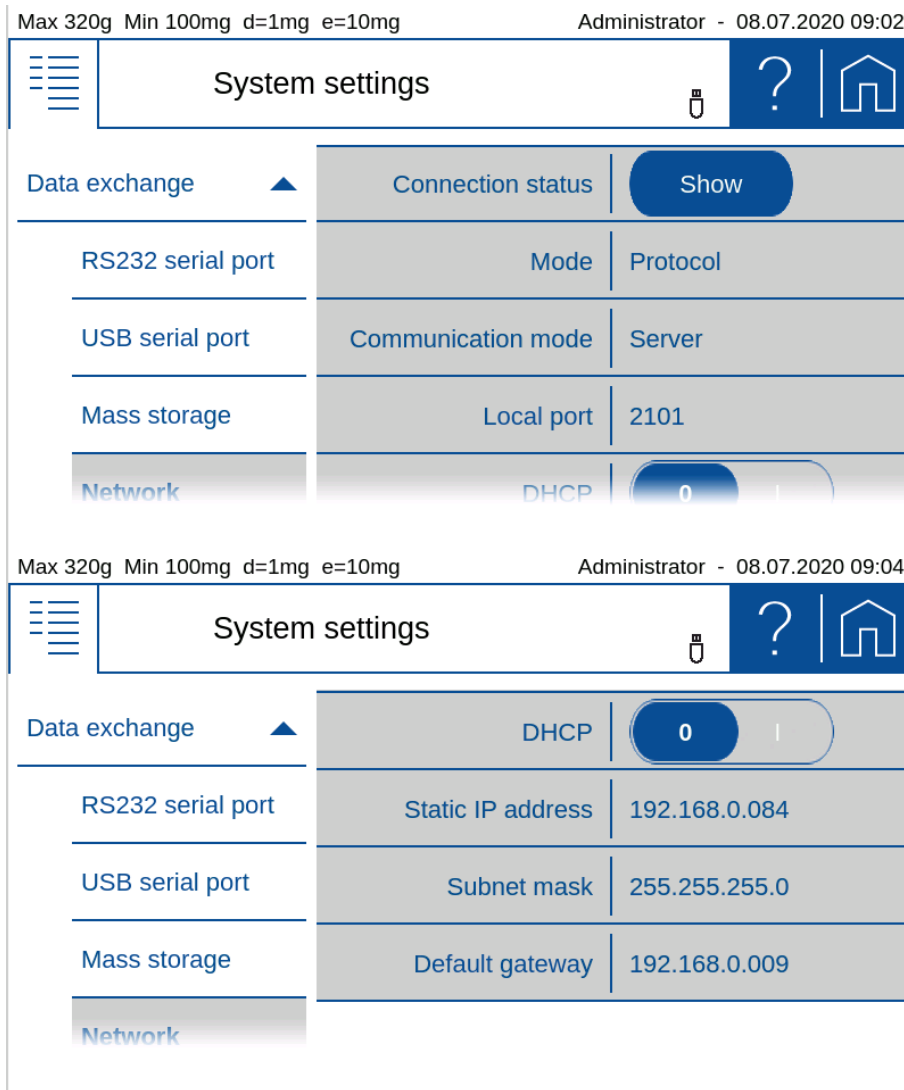
wlan-4stock	<input checked="" type="checkbox"/>	Connected
DIRECT-X3CLX-3300 Series	<input type="checkbox"/>	Connect
sdfiber	<input type="checkbox"/>	Connect
sdfiber_Guest	<input type="checkbox"/>	Connect
Guests	<input type="checkbox"/>	Connect

Scan Close

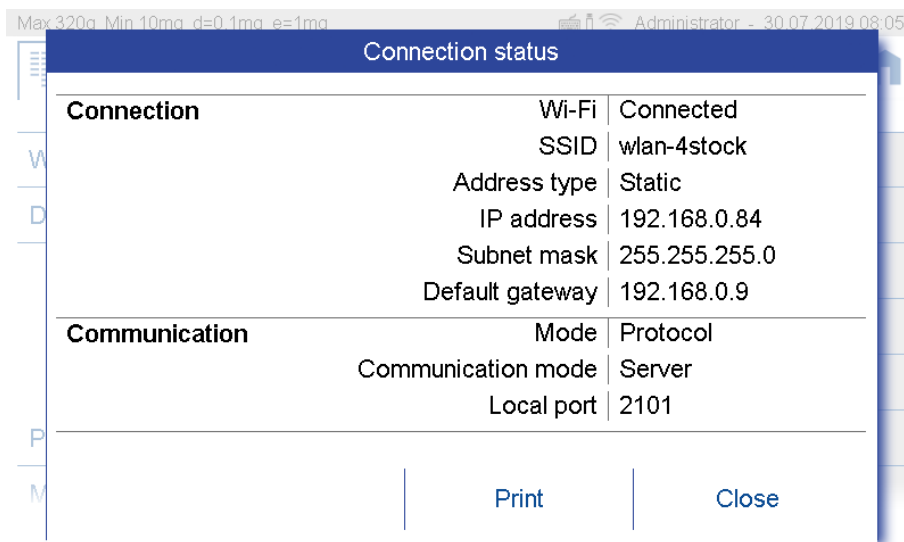
Setting Up in Server Communication Mode (mostly used)

In this mode, a device connects to the balance. In addition to the IP address of the balance, the device must also know the local port of the balance. If this is not explicitly given, use port 2101.

- Mode of data output as 'Protocol' or 'Measurement transfer'
- Local port of the balance which must be set on the other device



Connection status of the balance as a Server with LAN and DHCP set in the mode 'Protocol'.



Connection status of the balance as a Server with LAN and DHCP set in the mode 'Measurement transfer'.

Connection status		
Connection	LAN	Connected
	MAC address	00:14:2D:61:E4:15
	Address type	DHCP
	IP address	192.168.0.74
	Subnet mask	255.255.255.0
	Default gateway	192.168.0.9
Communication	Mode	Measurement transfer
	Communication mode	Server
	Local port	2101

Close

Setting Up in Client Communication Mode

In this mode, the balance connects to a device, or often to a printer. To do this, the balance must know the IP address and the local port of the printer. If this is not explicitly given, use port 4001.

- **Mode** of data output as 'Protocol' or 'Measurement transfer'
- **Remote host address** or network name of the device to which the balance is to connect
- **Remote host port** or the local port to which the scale is to connect onto the device

System settings		
RS232 serial port	Connection status	Show
USB serial port	Mode	Protocol
Mass storage	Communication mode	Client
Network	Remote host address	192. 168. 0. 114
Protocol	Remote host port	4001

Connection status of the balance as a Server with LAN and DHCP set in the mode 'Protocol'.

Connection status		
Connection	LAN	Connected
	Address type	DHCP
	IP address	192.168.0.129
	Subnet mask	255.255.255.0
	Default gateway	192.168.0.9
Communication	Mode	Protocol
	Communication mode	Client
	Remote host	192.168.0.114
	Remote port	4001
		Print
		Close



NOTE

Further information on settings can be found in the context help.

6.3 Protocol, GLP Header, GLP Footer

An application protocol consists of a header, the output of the measurement and the footer.

In many companies it is common to use a uniform appearance for the header and footer. So that this layout does not have to be defined separately in all applications, the GLP header and the GLP footer can be defined here once. If the GLP header and the GLP footer should not be available for the application, they are deactivated here.

Max 320g Min 100mg d=1mg e=10mg		Administrator - 08.07.2020 08:37	
System settings		?	
Weighing parameters	GLP Header	0	<input checked="" type="checkbox"/>
Data exchange	GLP Footer	0	<input checked="" type="checkbox"/>
Protocol			
	GLP Header		
	GLP Footer		



NOTE

Further information about defining a protocol can be found in 10 Add-On: Protocol.



NOTE

Further information on settings can be found in the context help.

For example, a protocoll might look like this:

Company
 Street 123
 8953 Dietikon
 Abt: Development

Date/Time 05.07.2018 09:24:58

Device-ID	Laboratory 1
User	Administrator
ID 1:	
Net value	+ 17.6017 g
Gros value	+ 17.6017 g
Tare value	0.0000 g

Levelling	levelt
Adjustment	Gut
Last adjustment	23.08.1918 06:42

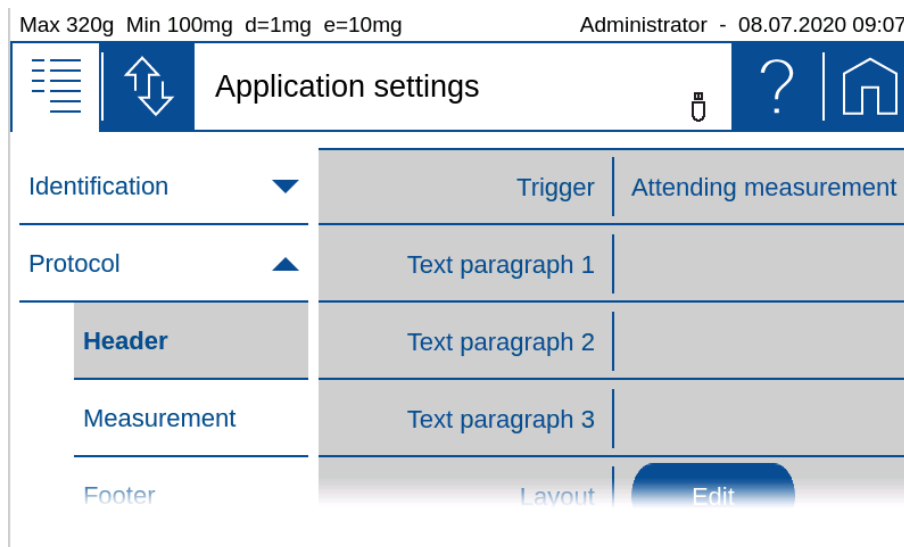
Signatur

Checked

.....

6.3.1 GLP Header

The globally available GLP header consists of header-specific text sections 1 to 3 and various modules that are available for the layout of the GLP header.

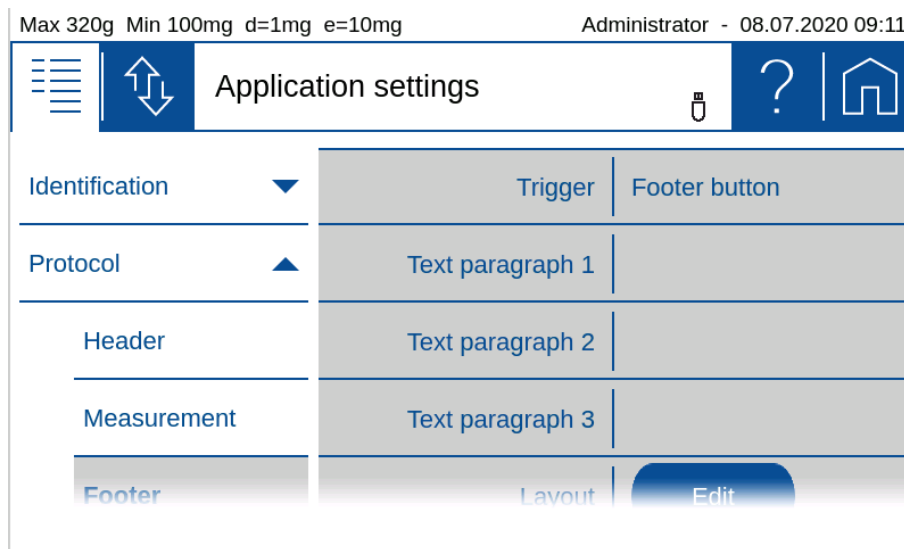


To ensure easy orientation, the building blocks are divided into groups:

- **General** contains blocks such as Date, time, user, the 3 text sections 1..3, line rewriting, etc.
- **Application** contains blocks for the application.
- **Device** contains blocks such as Device ID, device name, etc.

6.3.2 GLP Footer

The globally available GLP footer consists of footer-specific text sections 1 to 3 and various building blocks that are available for the layout of the GLP footer.



To ensure easy orientation, the building blocks are divided into groups:

- **General** contains blocks such as Date, time, user, the 3 text sections 1..3, line rewriting, etc.
- **Control** contains blocks such as the status of the leveling, the status of the adjustment and the date of the last adjustment.

6.3.3 Define text paragraph of GLP header-and GLP-footer

The description of how a text section is defined can be found in 10 Add-On: Protocol resp.10.4 Protocol text paragraph.

6.3.4 Define layout der GLP-header and GLP footer

A description of how a protocol layout is defined can be found in 10 Add-On: Protocol resp.10.5 Protocol items.

6.4 Measurement transfer

Here you can set the format of the measured value for 'Data exchange' with 'Measurement transfer' see 6.2 Data exchange.

- **Symbol** indicates whether the symbols for net, gross, tare, etc. are transferred.
- **Symbol width** is the number of characters or placeholders for the symbols
- **Value width** is the width of the weight value including the decimal places
- **Decimal places** which are transferred in the weight value, not available decimal places are filled with '0'
- **Value sign** always or only for negative numbers
- **Value sign position** left-justified (- xx.xx) or directly before the weight value (-xx.xx)
- Value decimal separator with point or comma
- **Unit** transferred on or off
- **Unit width** in number of characters or how many placeholders, right-justified
- **End character** with <CR> <LF>, <CR> only or <LF> only

Max 320g Min 100mg d=1mg e=10mg		Administrator - 08.07.2020 09:14	
System settings			
Weighing parameters	Symbol	0 <input checked="" type="radio"/> I	
Data exchange	Symbol width	1	
Protocol	Value width	10	
Measurement transfer	Value decimal	3	
Device settings	Value sign	Only negative	
Max 320g Min 100mg d=1mg e=10mg		Administrator - 08.07.2020 09:15	
System settings			
Weighing parameters	Value sign position	-xx.xx	
Data exchange	Value decimal separator	Point	
Protocol	Unit	0 <input checked="" type="radio"/> I	
Measurement transfer	Unit width	3	
Device settings	End character	CRLF	

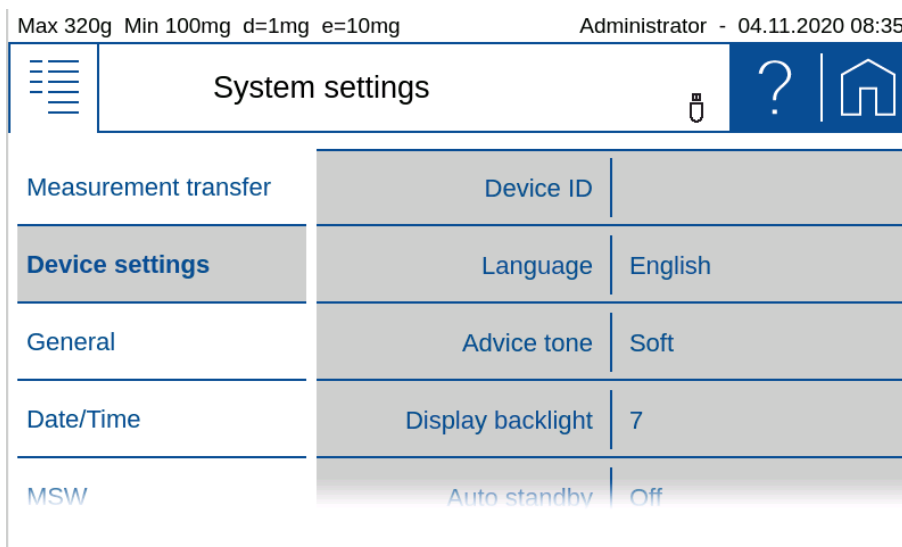
**NOTE**

If a channel is not physically available, the transfer may take a long time, because the scale only stops the transfer after a certain timeout.

**NOTE**

Further information on settings can be found in the context help.

6.5 Device settings



General settings can be changed in the Device Settings menu.

6.5.1 Device ID

Allows to put in an alpha-numerical identification (max. 20 characters) which is also displayed during the start-up sequence, when the balance is switched on.

6.5.2 Language

Defines the dialogue language English*, German, French, ...

6.5.3 Advice tone

Adjust the volume (mute, soft, loud).

6.5.4 Display Backlight

Adjusts the level (1-7) of display backlight for adaption to different ambient light situations

- **1 Low** for low light emission environment
- **7 High** best suited for working place with high light emission

6.5.5 Auto standby Off / On

Select if and when the scale is to be put into standby mode when not in use. If selected you can choose the time to go into standby mode from 1 min to 1 h.

6.5.6 Device reset

Here the device can be reset to factory settings. All user and administrator data will be deleted. Before the reset, you must confirm a security question.

6.6 Setting Date and Time

Allows for all users to set date and time as well as set the format.

- **Date format:**
The date can be displayed in two formats:

- Classic form (dd.mm.yyyy): e.g. 12.01.2017 (12 January 2017)
- USA Format (mm.dd.yyyy): e.g. 2017.02.08 (8 February 2017)

- **Time format:**

The time can be displayed in two formats:

- 24 hours: Time representation based on the 24 hours model (ex.19:16, 04:10 etc)
- 12 hrs: Time representation based on the 12 hrs model (e.g. 09:02 am, 02:10 pm etc)

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 08:33

System settings

Measurement transfer	Date format	dd.mm.yyyy
Device settings	Set Date	<input type="button" value="Edit"/>
General	Time format	24 hours
Date/Time	Set Time	<input type="button" value="Edit"/>

MSW

- **Set Date / Set Time:**

Setting the date/time

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 08:34

Set date

2036	Sep	02
2037	Oct	03
2020	Nov	04
2021	Dec	05
2022	Jan	06

Ok Cancel

Max 320g Min 100mg d=1mg e=10mg Administrator - 04.11.2020 08:35

Set time

06	33
07	34
08	35
09	36
10	37

Ok Cancel

Note:

The internal clock is equipped with a backup battery, which guarantees perfect functioning for several years. If the time or dates are incorrect after a cold start, in most cases this indicates the end of the lifespan of the backup battery. This must be replaced by qualified personnel.

6.7 Minimal Sample Weight and Quality Management, MSW

With the minimum wine scale MWS, weighing can always be ensured in accordance with required QS guidelines such as GLP, GMP or USP (United States Pharmacopeia).

Max 320g Min 100mg d=1mg e=10mg Administrator - 04.11.2020 08:39

System settings

Date/Time	MSW	0 1
MSW	Minimum weight [g]	0.820
About device	Refresh rate	Normal
Levelling	Environment	Normal
	Filter profile	Standard

Max 320g Min 100mg d=1mg e=10mg Administrator - 04.11.2020 08:40

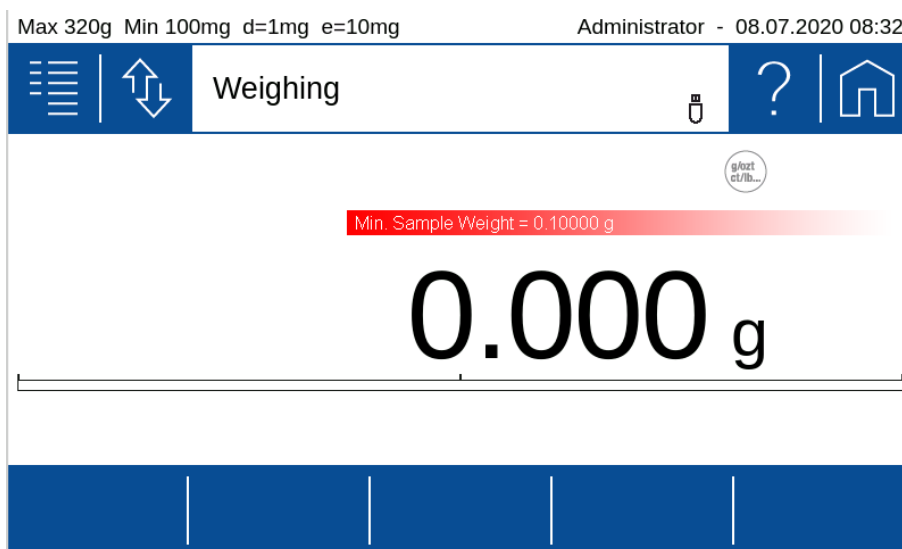
System settings

Date/Time	Filter profile	Standard
MSW	Value release	Normal
About device	Notes	
Levelling	Expiry date	01.01.2000
	Expiry warning	1 month

- **Minimum sample** weight use or not
- **Minimum weight i [g]** is the minimum weight that is required in tare range i
- **Expiry date** when a new check of the minimum sample weight according to your QM system is due. We certainly recommend checking once a year.

In many applications only very small quantities are used, thus, only a small part of the balance's weighing capacity is used. The smaller the used sample quantity, the greater the relative uncertainty of the measurement. Therefore the minimum weight which is required is determined on the basis of the QM criteria and of the statistical data from repeated weighing procedures. The minimum weight which is required is determined on the basis of the QM criteria and of the statistical data from repeated weighing procedures.

If the weight is below the minimum weight a warning is appears on the balance display warning you of this; these values are also marked in the printout.



The required minimum weights should be determined on the basis of the QM specifications by means of the statistical analysis of certain series of measurements. The balance's own 'Statistics' function could be used for this purpose, for example. It is used to perform and subsequently log the requisite series of measurements. Once the minimum weight(s) has/have been determined, it/they can be input into the balance. Up to three tare ranges can be defined with the corresponding minimum weights.

The balance's weighing modes, as well as measuring time and stability, are also fixed in such a way as to guarantee compliance with tolerances in future measurements. Minimum weight and weighing modes cannot be changed by the user.

The values which are input can be logged by means of a configuration status print and could, along with the report on the statistical measurement series, be used as a QM certificate.

If work is performed on the basis of the minimum weight application, this serves to ensure that the weighing results conform to the certificate specifications and, thus, to your QM guidelines.

The minimum weight is dependent on the ambient conditions. Therefore, it must be determined on-site and must be reviewed periodically. The following parameters influence the minimum weight:

Calculation of the Minimum Weight = $k * R / U$

R: Repeatability means the calculated standard deviation of at least 10 measurement of the same small weighed on-site. For USP the value must always be at least $0.41d$.

K: The extension factor. The factor is defined by the user or is defaulted. (USP = 2)

U: Relative uncertainty (USP = 0.1 %)

6.7.1 USP Chapter 41, Determination, Calculation

Minimum Weight = $k * R / U$

To determine and calculate the minimum weight according USP 41 the following settings have to be taken for $k=2$ and $U=0.1\%$. In addition, no value $<0.41d$ may be used for the determined repeatability. 'd' corresponds to the last digit on the right of the weight display of the balance or for a balance with a readability of 1 mg, $d = 1\text{ mg}$ and W would therefore be $R \geq 0.41\text{ mg}$.

6.8 Setting Foot switch

Different type of foot switches can be attached to the balance over the USB type A connector on the back side of the balance to enable to trigger functions by a foot instead by hand.

The image shows two screenshots of the 'System settings' interface. The top screenshot, dated 24.12.2020 14:23, shows the 'Foot switch' settings. The 'Device type' is set to 'None', 'Left function' is 'Single switch', and 'Right function' is 'Double switch' (indicated by a green checkmark). The bottom screenshot, dated 20.01.2021 16:56, shows the 'Foot switch' settings with 'Device type' set to 'Print' (indicated by a green checkmark), 'Function left' set to 'Tare', and 'Function right' set to 'Zero'. Other options include 'Zero/Tare' and 'Stat. capture'.

Device type

Define the type of foot switch what is attached

Function left / right

Define the function of the switches:

- Print: Start a printout => the same function as the **[Print]** key
- Tare: Tare the balance, if the current load on the balance is out of the zero range => in this case the same function as the **[Zero/Tare]** key
- Zero: Zero the balance, if the current load on the balance is within the zero range => in this case the same function as the **[Zero/Tare]** key
- Zero/Tare: Zero or tare the balance => exactly the same function as the **[Zero/Tare]** key
- Stat. capture: Stores the current weight into the statistics, if the Add-On 'Statistics' is activated

6.9 Device

Here you will find information about the device, which consists of a touch terminal and the weighing sensor.

In the device information you find the overview with the product name, the serial number, the current software version, the installed accessories and the installed applications.

In the terminal and sensor updates you can see the history of installed updates.

The screenshot shows the 'Adjustment' screen of a weighing system. At the top, it displays 'Max 620g Min 100mg d=1mg e=10mg' and 'Administrator - 21.01.2021 11:20'. The main area is titled 'Adjustment' and has a blue bar at the bottom with 'History' and 'Start' buttons. A 'Device information' pop-up window is open, showing the following details:

Device information		
Terminal	Name	HF 225SM-DR
	Number	8200116
	Base	1.1.1.2930213967
	Legally relevant ID	1.0.1
Sensor	Version	F00-0000 P12
	Check number	0330
	Hardware	HW V1.00
	Accessories	SCS
		Levelling Draft shield
	Print	Close

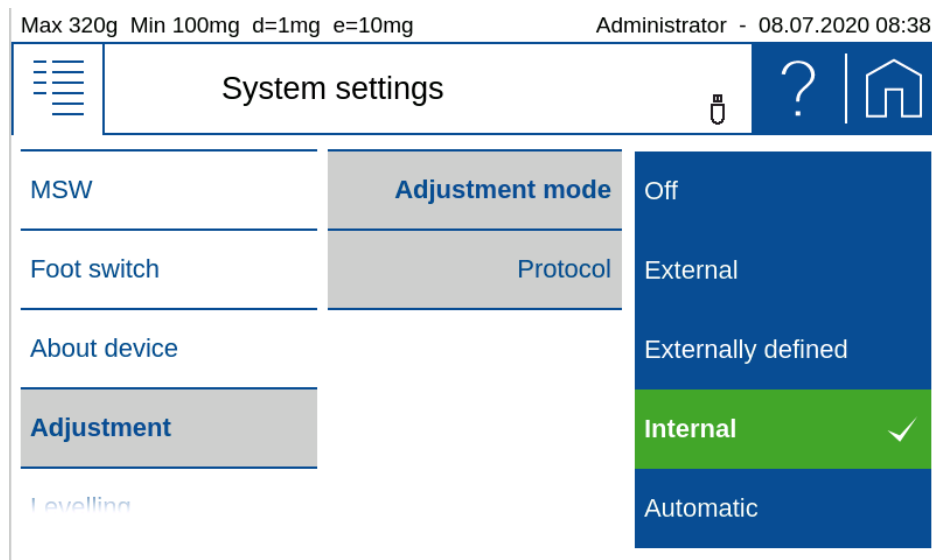
At the bottom of the pop-up, there are 'Print' and 'Close' buttons. The background shows a partially visible 'Adjustment' screen with a status bar at the bottom displaying 'Max 225g Min 1mg d=0.01/0.1mg e=1/10mg' and 'Administrator - 19.06.2020 08:30'.

6.10 Adjustment

Various factors influence the weighing system, e.g. gravity, air temperature, air pressure, humidity, etc. In order to achieve and guarantee the most accurate weighing results over time, the weighing system should therefore be routinely readjusted.

Due to the numerous adjustment modes and their settings, you can set the balance so that it always meets your requirements.

With the automatic adjustment mode, the greatest interference effects are automatically minimized or eliminated or the balance at least warn you that an intervention is necessary.



Common settings:

- **Protocol:**

After the adjustment, a protocol is output via the corresponding interface. If the balance is integrated in an EDP system, this can lead to problems, which is why the output can be suppressed with the Protocol setting.



NOTE

Further information on settings can be found in the context help.



NOTE

Indipendent to these adjustment modes, the balance can always be adjusted explicitly in the Adjustment application, see 2.5 Adjusting the balance.

6.10.1 Adjustment mode off

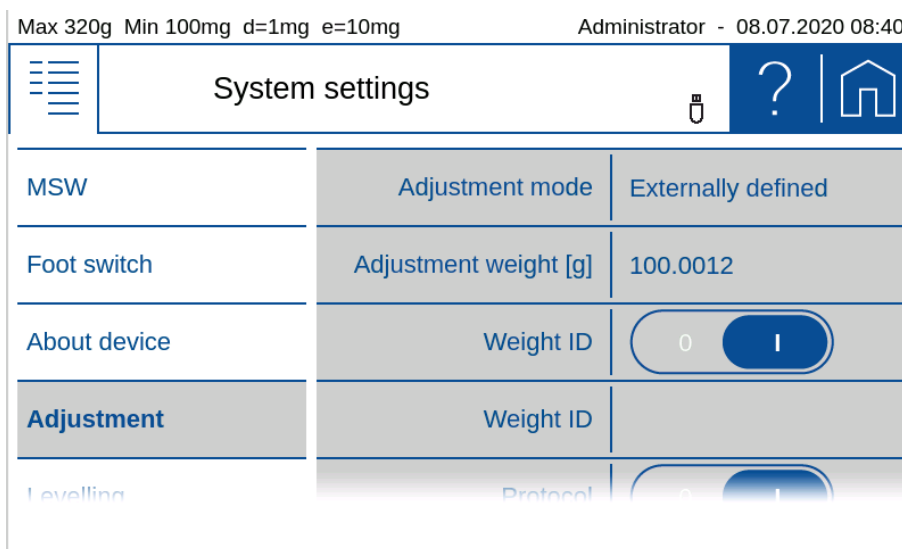
This modus prevents the balance from adjustment.

6.10.2 Adjustment mode external

If you have very precise standard calibration weights which correspond to the accuracy of the balance, you can adjust the balance with these weights if necessary. Depending on the type of balance, calibration weights in 10g, 50g and 100g steps can be used.

6.10.3 Adjustment mode External Defined

The real value of an external weight can be entered here. This is often used for weights with a known deviation from the nominal weight. By using this feature the systematic error can be eliminated.



6.10.4 Adjustment mode Internal

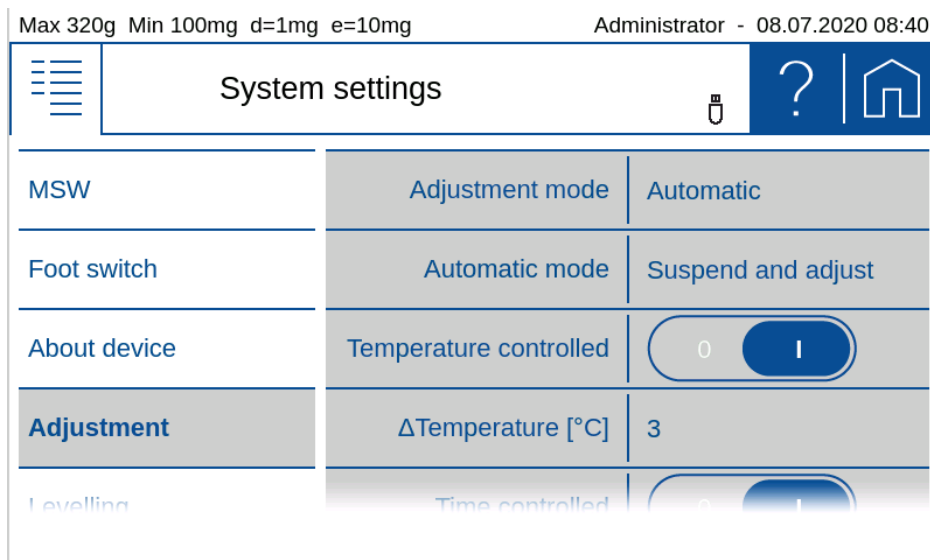
The adjustment is triggered manually and executed by the internal weight SCS.

6.10.5 Adjustment mode Automatic

The balance can be set so that it automatically adjusts with the built-in weight or at least indicates that an adjustment is necessary.

To trigger the adjustment and determining the behavior of the balance various settings are available, some of which can also be combined.

- **Automatic:**
As soon as an adjustment has been triggered, the balance shows a warning that the balance should be adjusted or operation is suspended and the balance starts to adjust automatically.
- **Temperature controlled:**
The balance monitors the current ambient temperature. If the deviation from the ambient temperature during the last adjustment is greater than the threshold, an adjustment is triggered.
- **Delta temperature:**
Threshold at which deviation triggers a new adjustment.
- **Time controlled:**
Always triggers an adjustment at the set time.
- **Time:**
Time when the time-controlled adjustment should take place.

**NOTE**

Indipendent of these adjustment modes, the balance can always be adjusted explicitly in the Adjustment application, see 2.5 Adjusting the balance.

6.11 Setting Levelling

The balance must be set up exactly horizontally in order to function properly. The balance is therefore equipped with an electronic level indicator for level control and two rotating feet, which can be used to compensate for small differences in height or unevenness in the balance area.

The leveling itself is carried out in the leveling application, see chapter 2.4 Levelling.

In order to achieve and guarantee the most accurate weighing results over time, the balance can be set so that the correct position is continuously monitored and the balance indicates when an intervention is necessary or is even blocked until the scale is correctly leveled again.

Various settings are available to determine the monitoring of the position and the behavior of the scale.

- **OFF:**
No warning
- **Warning:**
As soon as it is determined that leveling is necessary, the scale shows a warning until the scale is correctly leveled.
- **Suspend and level:**
As soon as the leveling is necessary, the operation is stopped until the scale is correctly leveled.

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:28

System settings

Date/Time

MSW

About device

Levelling

Levelling mode

Off

Warning ✓

Suspend and level

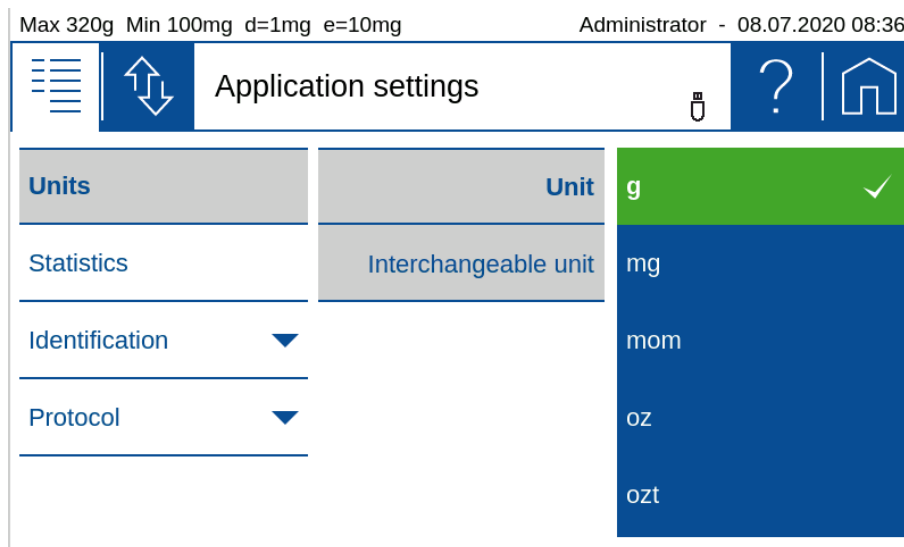


NOTE
Further information on settings can be found in the context help.



NOTE
Indipendent of this monitoring, the balance can always be adjusted explicitly in the LEvelling application.

7 Add-On: Units / Free Conversion



7.1 Unit

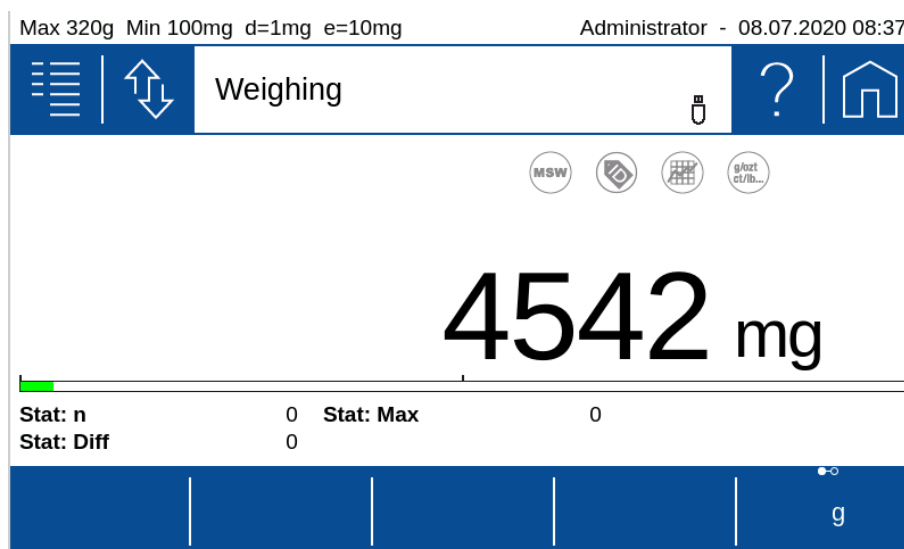
With the aid of the Add-On function 'Units' you can display and print out the measuring result in different units. The activity of the Add-On function is indicated in current application screen by a small icon.

7.2 Interchangeable unit

With interchangeable unit you have a second display available. With the soft button you can switch between the displays of the two units back and forth.

Set the soft button (the set unit is displayed in the Add-On) in order to switch between the units of change in the application.

Remark: Further information can be found in the context help of the soft button Management.



7.3 Unit with free conversion

For some applications non standard units or customized units are needed.

By using one of the basically named as 'Unit1' until 'Unit4' a free unit with the following settings can be made.

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 08:38

Application settings

Units	Unit	U1
Statistics	Display unit name	U1
Identification	Protocol unit name	Gram
Protocol	Factor	1
	Format	0.00000

Max 320g Min 10mg d=0.1mg e=1mg Administrator - 18.12.2018 08:52

Application settings

Units	Unit	gr
Statistics	Display unit name	gr
Identification	Protocol unit name	grsp
Protocol	Factor	1.88
	Format	0,00000
	Rounding steps	1
	Reciprocal	<input type="radio"/> 0 <input type="radio"/> 1

- **Display unit name:**
Name of the units displayed in the units list
- **Unit Name:**
Name of the units displayed in the units list. The designation of a free unit is restricted to prevent misinterpretations with the standard units.
- **Print Unit:**
Designation of the printed free unit. The length of the name is limited to 5 figures.
- **Factor:**
Conversion factor for which is multiplied/divided by the net-value
- **Format:**
Number of digits
- **Reciprocal:**
Depending on the settings, the result is calculated as follows:
- **Reciprocal:**
 - Off: Free unit = Factor x net value [g]
 - On: Free unit = 1/Factor x net value [g]

8 Add-On: Statistics

The statistics function logs all measuring data in order to provide you any time with a wide range of statistical information for a series of measurements. All data can be displayed and printed out upon your requirements.

To use this Add-On efficiently, you should adapt the scale to your needs using the customizer. Assign the 'Action bar' with soft buttons of the functions what this Add-On provides, such as: **{Save}**, **{Delete Last Sample}**, **{Show}**, **{Print Statistics}**, **{Delete Statistics}**, etc. Define the appearance of the Info section with the statistics information such as mean value, standard deviation, number, maximum, etc.

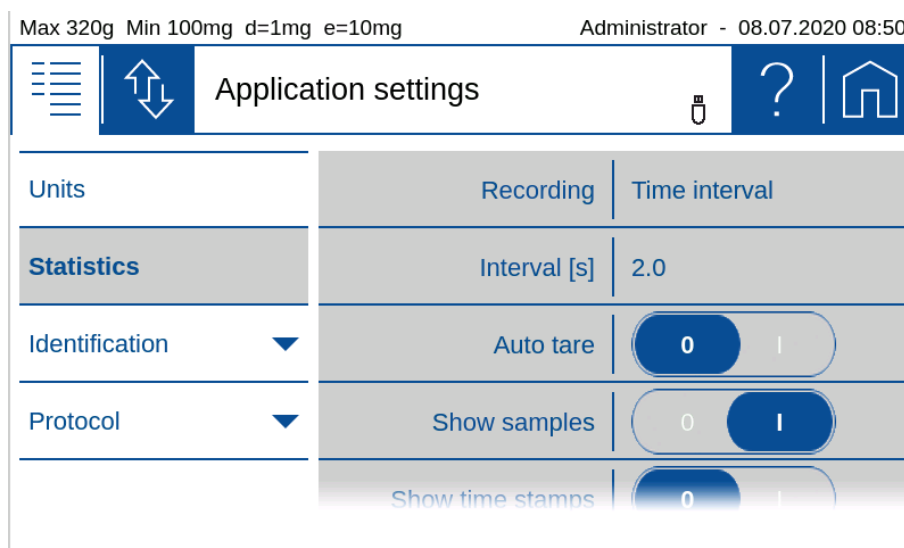
8.1 Statistics General settings

- **Max. n:**
Number of measurements after which the recording is terminated. The numerical value is entered via the displayed keyboard.
- **Auto Tare:**
After a weight value has been stored, the balance is tared.
Not possible for automatic value recording with time interval.
- **Show sample:**
When activated, the individual measured values are displayed.
- **Show time stamps**
Only possible with activated sample display. The measured values are displayed with a time stamp.

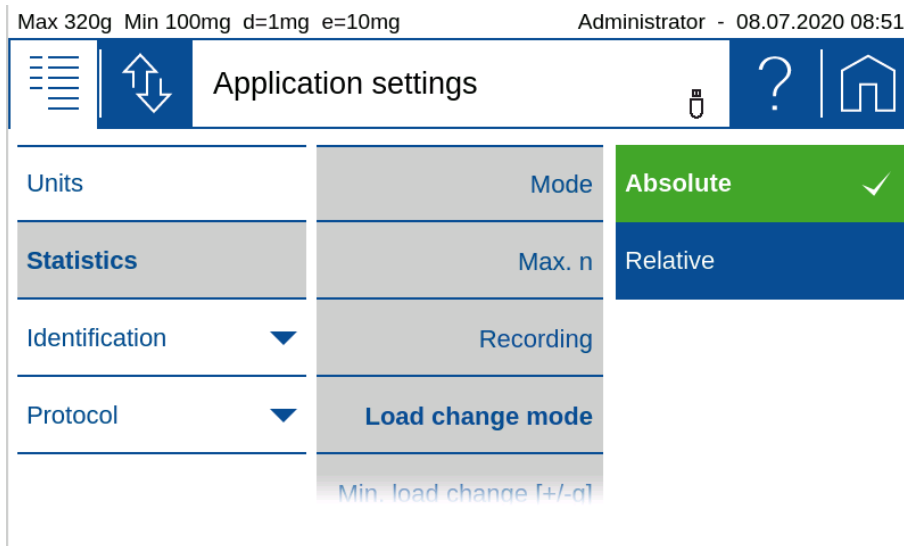
8.2 Statistics Recording settings

The data recording can be carried out either manually or automatically in a variety of ways:

- **Manually:**
Manual Value are stored by pressing a soft button. Depending on the settings the soft button must be activated first.
- **Time interval:**
Time-interval Stores value automatically after a defined time interval. The time range must be within 1 and 600 s



- **Load-change-Mode absolute and relative:**



Load-change-Mode absolute:

In this mode the load change must exceed a certain limit to be recognized as such. Enter the minimum load change between measurements in g. This setting is not possible for automatic value acquisition with time interval.

Load-change-Mode relative:

The percentage value defines both the range which must be left between measurements and the limits within which the sample values must lie.

This mode allows the measurement of series with samples of the same weight, e.g. a series with samples of 100 g, where the first sample is used as reference. When the next sample is placed on the weighing pan, the weight must be below 50 g or above 150 g for a short time in between (load change +/- 50%) and the weight of all subsequent samples must be in the range between 50 g and 100 g (sample range +/- 50%).

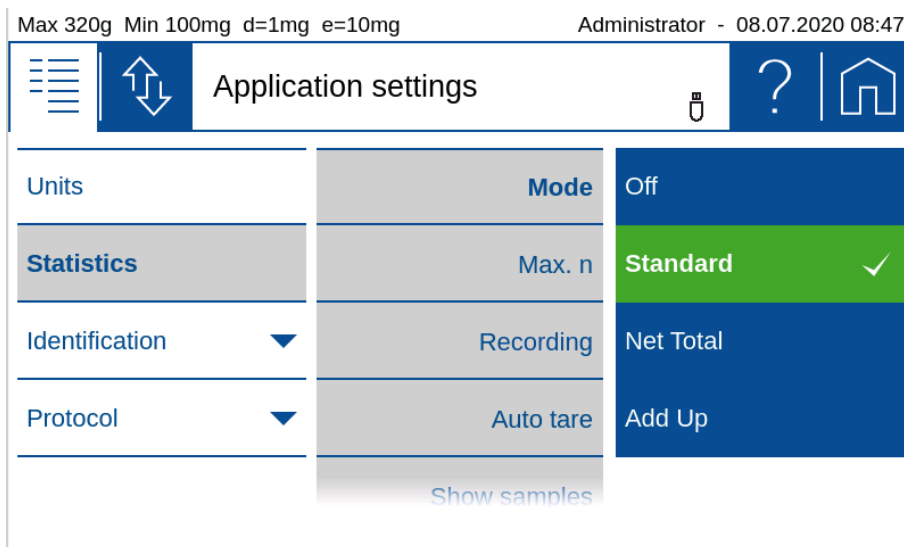
8.3 Statistics Mode

By selecting a mode, the Add-On function Statistics is switched on for the current application, in mode off the Add-On is not active.

The different modes cause the Add On to be preset for frequent applications:

- **Standard:**

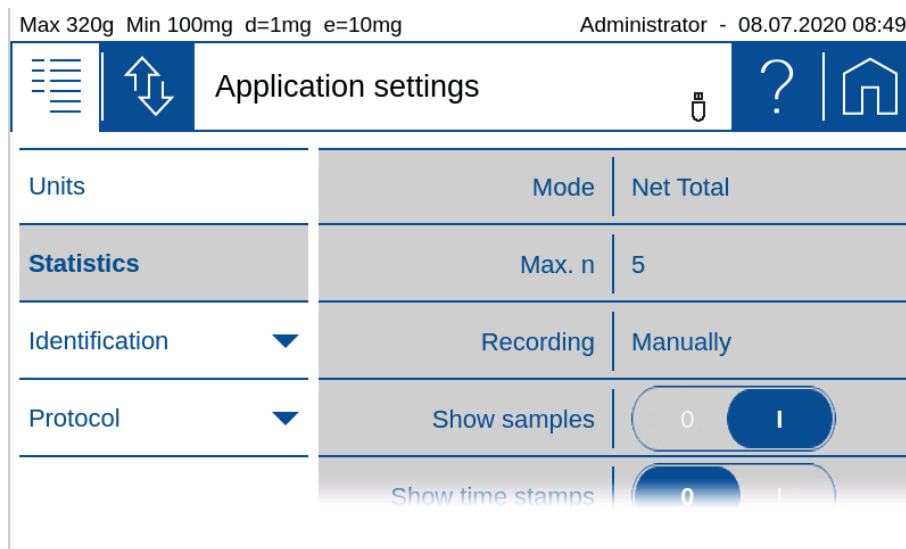
Normal statistics without special additional functions.



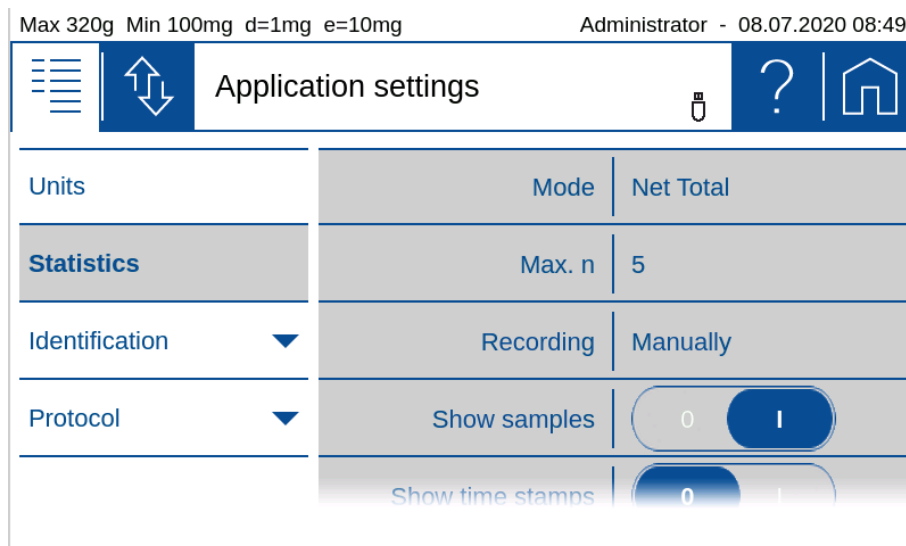
- **Net Total:**

Serves to mix or weigh different components directly in one container on the scale.

- The automatic tare is activated and is performed after each recorded sample.
- Only the total and the number of samples or components are displayed as the result.



- Add Up:**
 Serves for different components which in total exceed the weighing capacity and are mixed or weighed in a separate container.
 - The automatic tare is switched off.
 - Only the total and the number of samples or components are displayed as the result.



9 Add-On: Identification

With the Add-On function 'Identification' you can insert free identifications, labels, batch numbers or sample counters for measured values and much more into your protocol. The same information can also be shown on the display, see 5.3 Status symbol

Symbols for the status of the balance are displayed here:

- **NET** indicates that the balance has been tared and the displayed value is the net weight.
- **PT** indicates that an externally entered tare value is stored in the balance.

9.1 Notes

At this point, notices such as are displayed. that the scale should be leveled or adjusted.

- Level the balance, 2.4 Levelling
- Adjust the balance, 2.5 Adjusting the balance

9.2 Active Add-On's and Functions, MSW

9.3 At this point the activated Add-On will be shown with the corresponding icon.

Basically, all applications can be extended in their functionality by so-called Add-On. A typical example is the Add-On 'Statistics', which statistically processes the values measured, for example, in the 'Weighing' application.

The 'MSW' symbol stands for the activated minimum sample weight and is also displayed here. The minimum sample weight is not activated in the context menu but in the global settings of the scale. We do so because the minimum sample weight should mostly apply to all weighings and not only for a specific application, see 6.7 Minimal Sample Weight and Quality Management, MSW

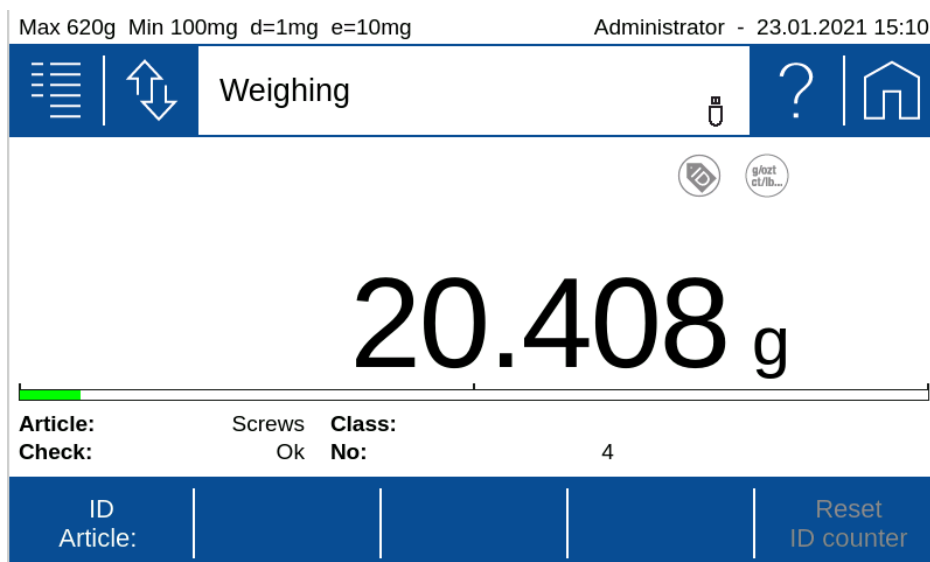
Second display

For certain applications, the weight is displayed here. For example, in the application counting in the main display shows the number of pieces and in the second display the actual weight.

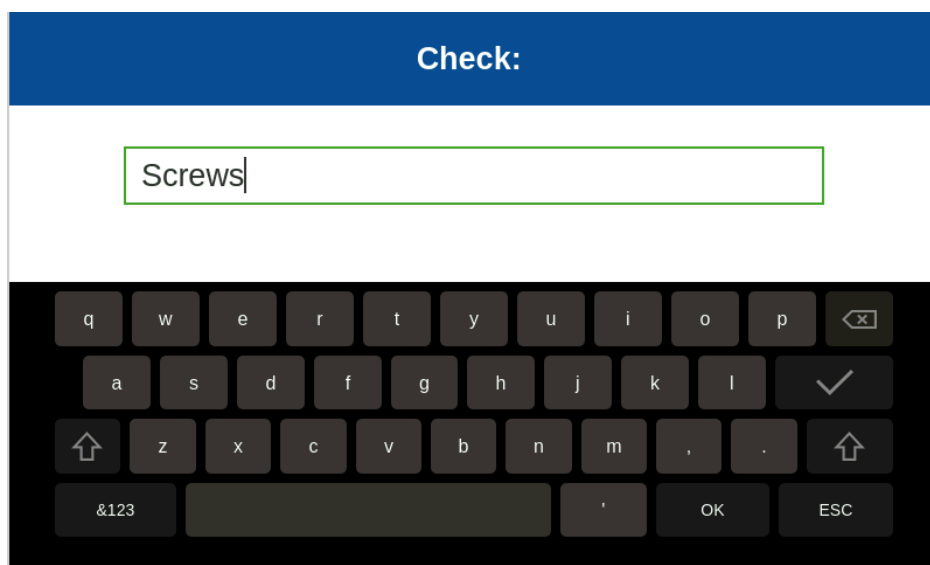
Capacity display

Graphic display how much of the entire weighing range is being used.

Info section Identifications can be used in many different ways as e.g. different types of articles are to be tested in different lots and different quantities/samples of the article per lot. The number is entered e.g. with a barcode reader, the lot number per keyboard and the number of the sample is counted automatically.

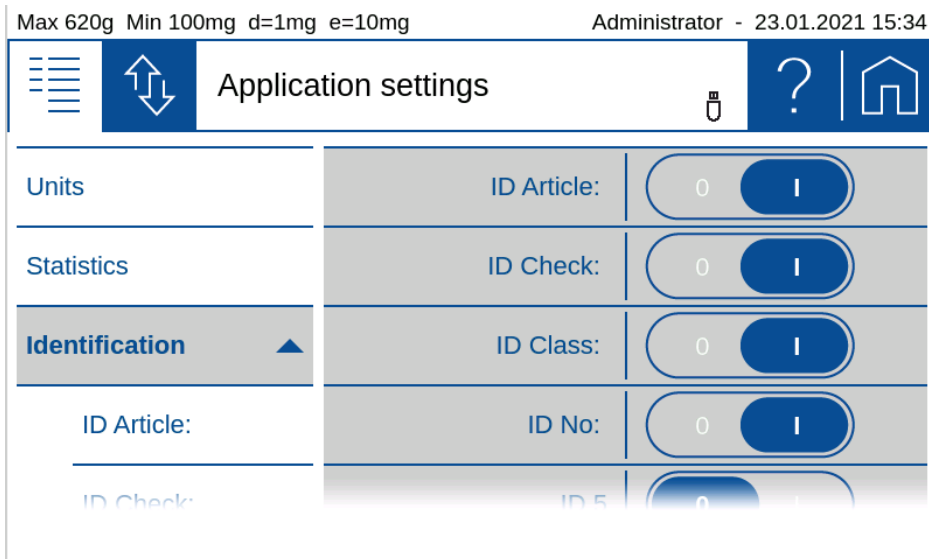


To change the content of an identifier you can place the soft button **{Transfer}** on the 'Action bar' or use 'Auto entry' what open a text field automatically for each printout.

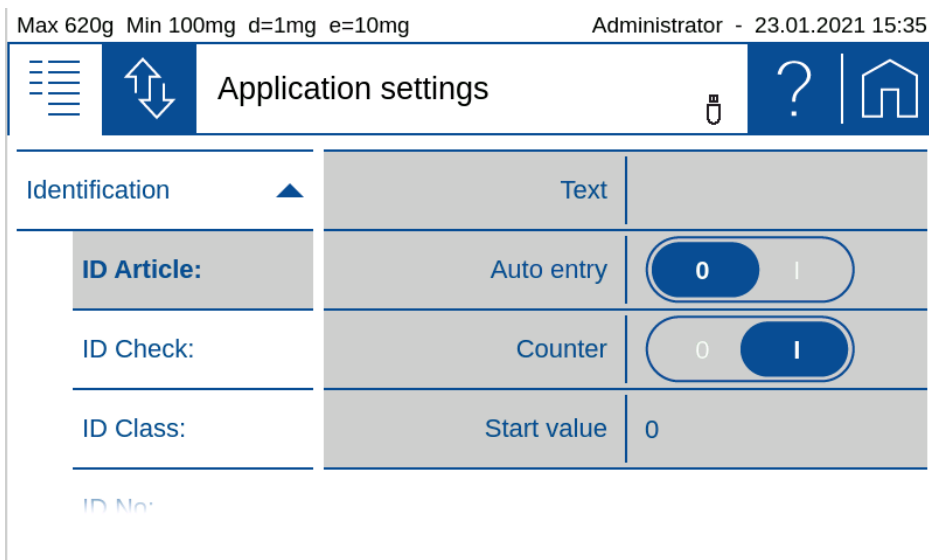
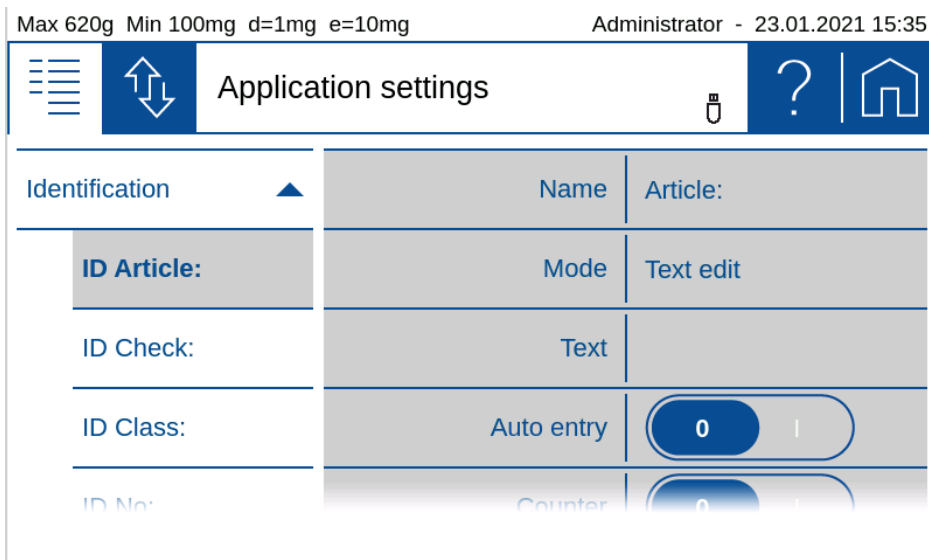


9.4 Setting up identifications

The behavior of the identifications can be defined in many different by selection of one of the available identifications. The identifications has default names ID 1, ID 2, ID 3, ... what is other then showed here.



Once an identification has been selected the menu as below appears to set it according to the requirement.



- Name:**
 Is the name of the identification which is shown on the display and the printout, e.g. Batch, sample, no. This name always remains the same.

- **Mode: see 9.4.1** Identification, Mode
Describes how the identification behaves, see below.
- **Text:**
Enter the default text
- **Auto entry** (not available for mode fixed text):
 - On: Before printing, the text field is automatically opened for editing
 - Off: Identification to be processed must be opened using a soft button.
- **Counter:**
Switches on the counter what is printout after the name and the text content. Additional it enables to enter a start value for the counter what is increment before each printout
- **Start value:**
For automatic incrementation of counter

9.4.1 Identification, Mode

Describes how identification works:

- **Text fixed:**
The text cannot be changed.
- **Text edit:**
The text can be changed, the change is retained for all subsequent weighings until it is overwritten.
- **Text volatile:**
The text can be changed, but the changes are not stored and only apply to one printout. Therefore a trigger shall be defined to print out the data for a measurement.

9.4.2 Example for Identifications

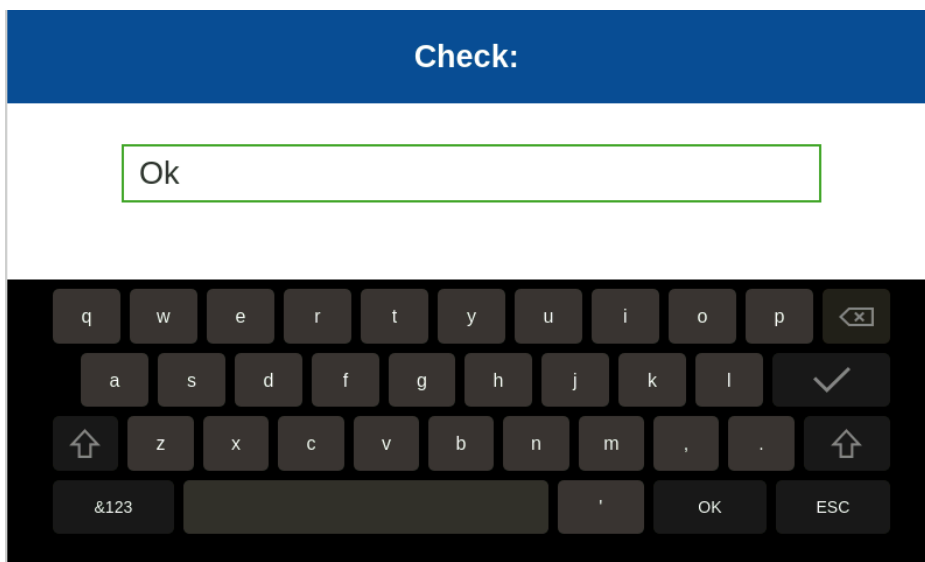
- Identifier ID 1 is used as to printout the article name what can be changed anytime by pressing the soft button **{ID Article:}** on the 'Action bar'
- Identifier ID 2 is used to printout a check has passed with "Ok" or "No" what needs to be input for each weighing
- Identifier ID 3 is used to printout a classification about how the check was passed with "A", "B", ... what needs to be input for each weighing
- Identifier ID 4 is used to printout a counter for the checks

Setting	ID 1	ID 2	ID 3	ID 4
Name	Article:	Check:	Class:	No:
Mode	Text edit	Text edit	Text volatile	Text fixed
Text	-	Ok	-	-
Auto entry	Off	On	On	Off
Counter	Off	Off	Off	On
Start value	-	-	-	0

Report with identifier set as above for 4 checks

To get such as report printout you need to place the identifiers in the protocol layout with the Add-On 'Protocol'.

As soon as the **[Print]-key** is pressed an input field pops up to input the check result and another one to input the classification.



The report for 4 subsequent weightings could look like this:

Article: Screws
Check: Ok
Class: A
No: 1
+ 20.407 g

Article: Screws
Check: Ok
Class: B
No: 2
+ 20.405 g

Article: Screws
Check: No
Class:
No: 3
+ 20.400 g

Article: Screws
Check: Ok
Class: A
No: 4
+ 20.408 g



NOTE
Further information on settings can be found in the context help.

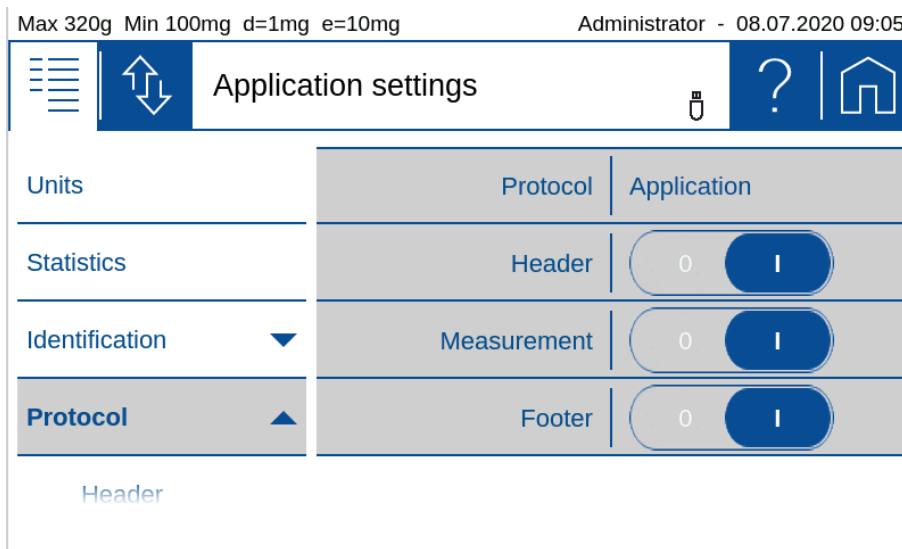
10 Add-On: Protocol

A protocol consists of the 3 blocks header, measurement with the corresponding outputs and the footer and must be defined separately for each application.

The following description is for all blocks header, measurement and footer very much identical.

Each of the blocks:

- Must be activated (on/off switch)
- Needs a trigger that controls the time of the printout.
- Must be filled with content as text paragraphs and layout with various protocol items.

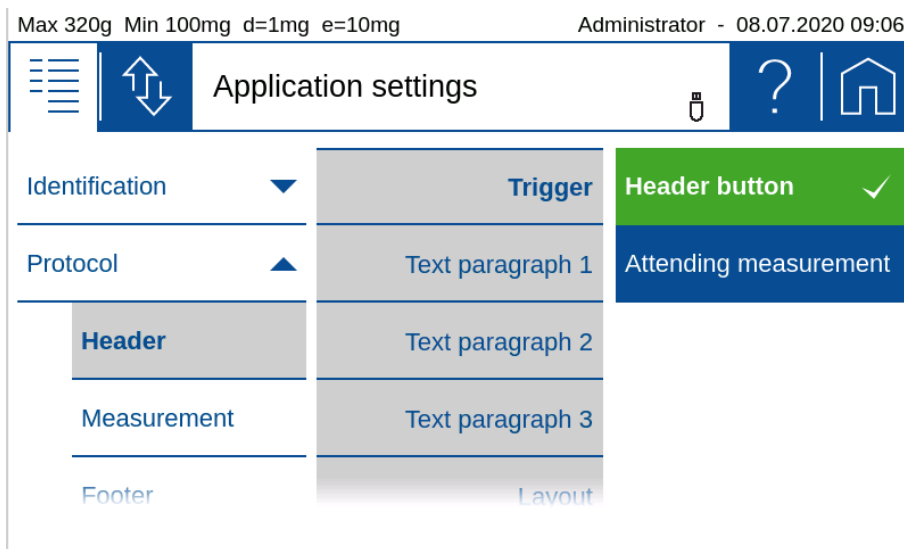


- **Header:**
Is usually printed out at the beginning with information about company, laboratory, device identification, date, time, batch, etc.
The 'GLP header' block is a globally available header what is defined in the system settings, see 6.3 Protocol, GLP Header, GLP Footer.
- **Measurement:**
Is printed out after the measurement of the weight resp. the determined value.
- **Footer:**
Is usually printed out at the end with information about the user, signature, information about the status of the device such as Adjusted on ...
The 'GLP footer' block is a globally available footer what is defined in the system settings, see 6.3 Protocol, GLP Header, GLP Footer.

10.1 Protocol Header

The header is usually printed out at the beginning with information about the company, laboratory, device identification, date, time, batch, etc.

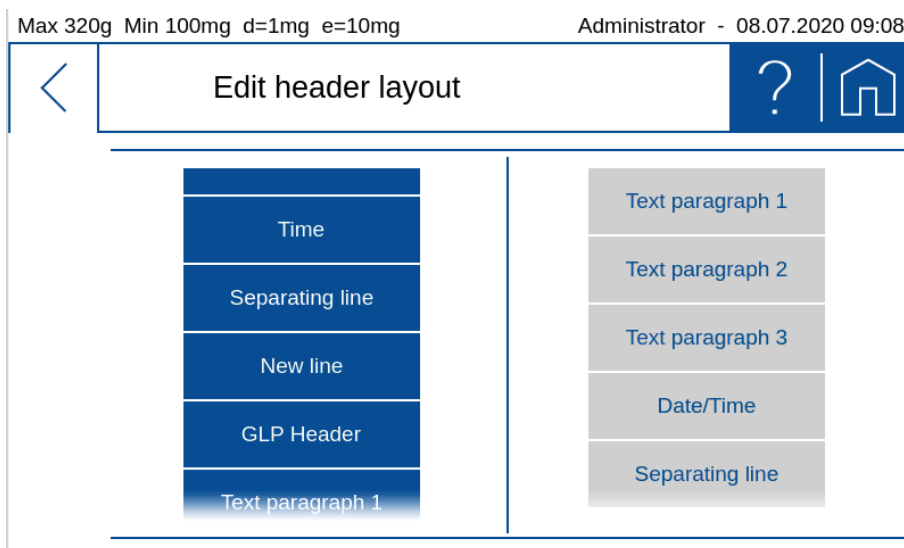
The trigger for the printout must be defined.



- **Header button:**
The header is print out immediate after pressing the soft button for printing the header. Therefore you need to place this soft button onto the 'Action bar' what can be found in the group 'Device', see 5.11 Action bar and soft button customizing.
- **Attending the measurement:**
The header is print out immediate before the measurement of the application.

The layout can be change by pressing 'Edit' what is displayed right from 'Layout". In the edit mode you will find various items to choose from. Please note the text paragraphs are also items and must therefore be placed in the layout to appear at the correct place in the printout.

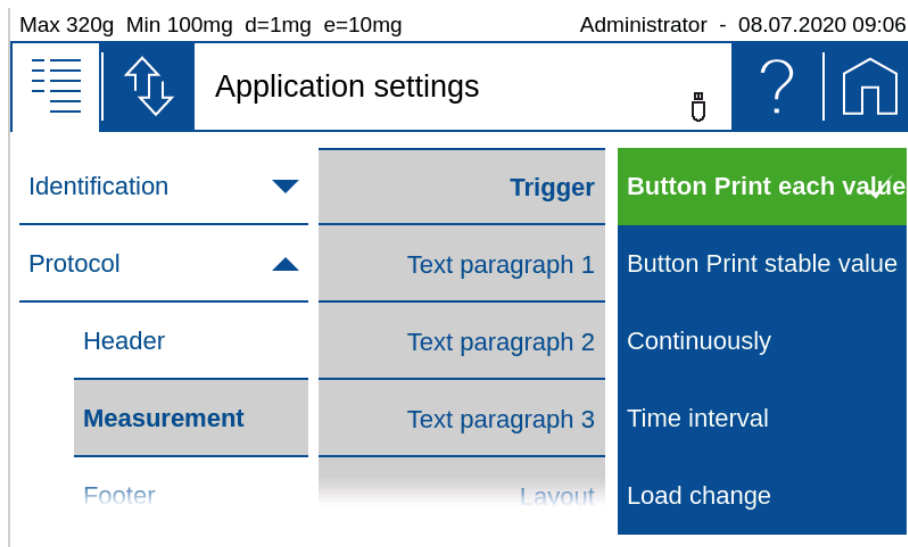
Example of a header block



10.2 Protocol Measurement

The measurement block is usually printed once a weight or value has been measured or a value determined.

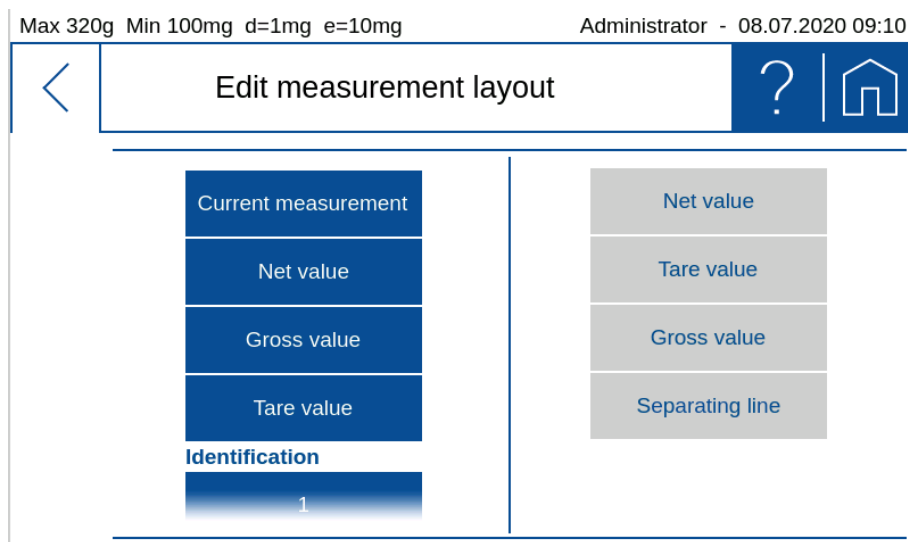
The trigger for the printout must be defined.



- **Button Print each value:**
After pressing the **[Print]** key once, immediate printout, even if the scale has not yet released the weight value as stable and thus valid.
- **Button print stable value:**
After pressing the **[Print]** key, one-time printout as soon as the weight value has been approved by the scale as stable and valid.
- **Continuously:**
After pressing the **[Print]** key start/stop a continuous printout of the displayed weight in the speed of the repetition rate, which is set in the weighing parameters, see 6.1.1 Refresh rate.
- **Time interval:**
After pressing the **[Print]** key start/stop a continuous printout of the displayed weight in time with the interval.
- **Load change:**
After pressing the **[Print]** key start/stop printout of the displayed weight, whenever a new weight is placed on the scale and the weight value is approved as stable and valid.
To do this, a load change mode must be set as an absolute value in grams or in% of the first load.

The layout can be change by pressing **(Edit)** what is displayed right from 'Layout'. In the edit mode you will find various items to choose from. Please note the text paragraphs are also items and must therefore be placed in the layout to appear at the correct place in the printout.

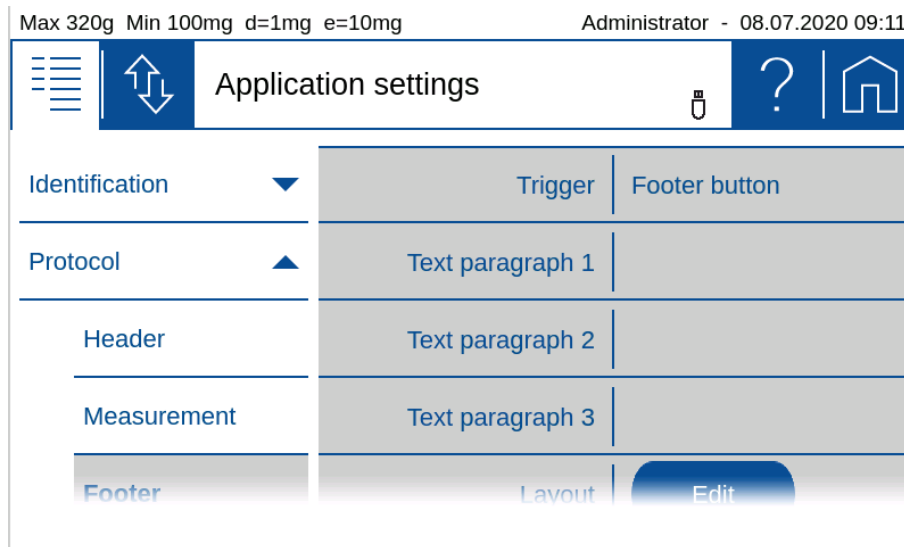
Example of a measurement block



10.3 Protocol Footer

The footer is usually printed out at the end with information about the user, signature, information about the status of the device as e.g. Adjusted on ..., etc.

The trigger for the printout must be defined.

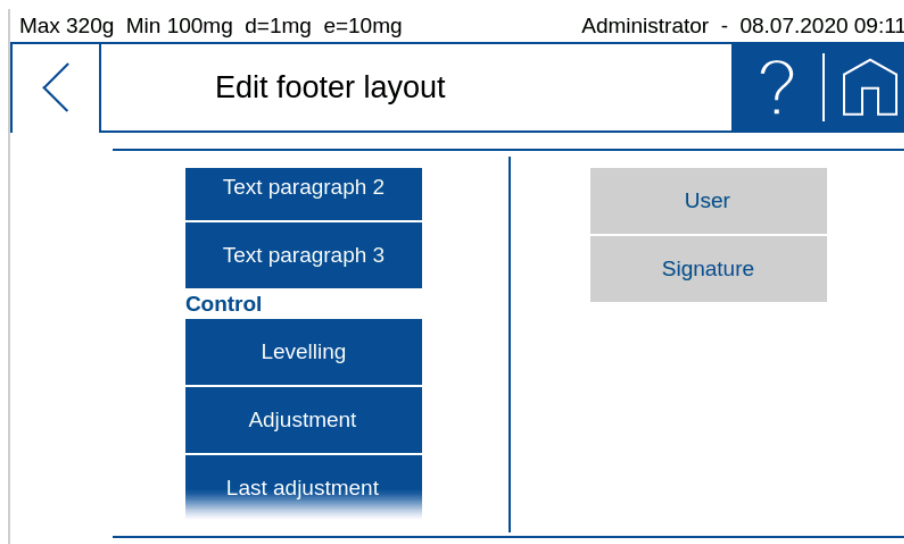


- Footer button:**
 The footer is print out immediate after pressing the soft button for printing the footer. Therefore you need to place this button onto the 'Action bar' what can be found in the group 'Device', see 5.11 Action bar and soft button customizing.
- Attending the measurement:**
 The header is print out immediate after the measurement of the application.

The layout can be change by pressing (**Edit**) hat is displayed right from 'Layout'".

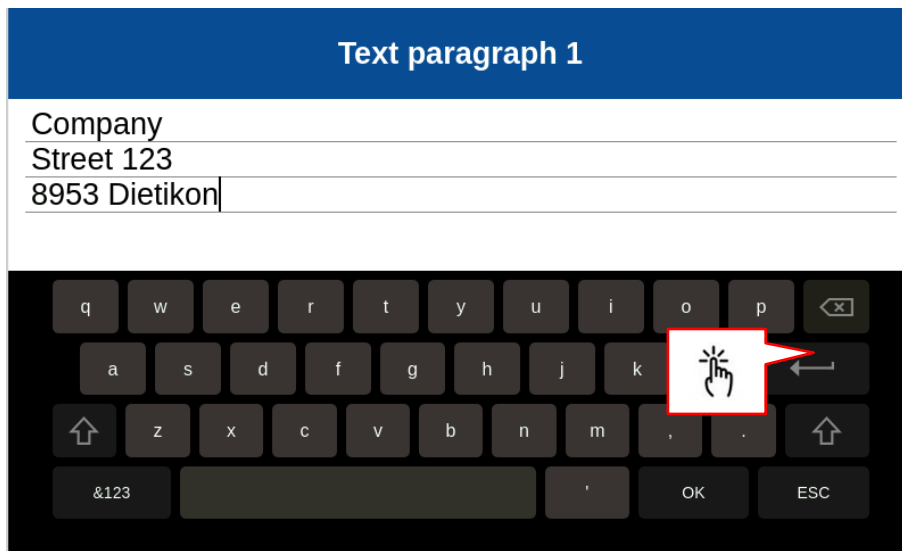
In the edit mode you will find various items to choose from. Please note the text paragrap are also items and must therefore be placed in the layout to appear at the correct place in the printout.

Example of a footer block



10.4 Protocol text paragraphs

Text paragraphs can be defined as multi-line text blocks. Press the marked symbol to insert a line break in the text section. The line break is then displayed as "↵".



10.5 Protocol items

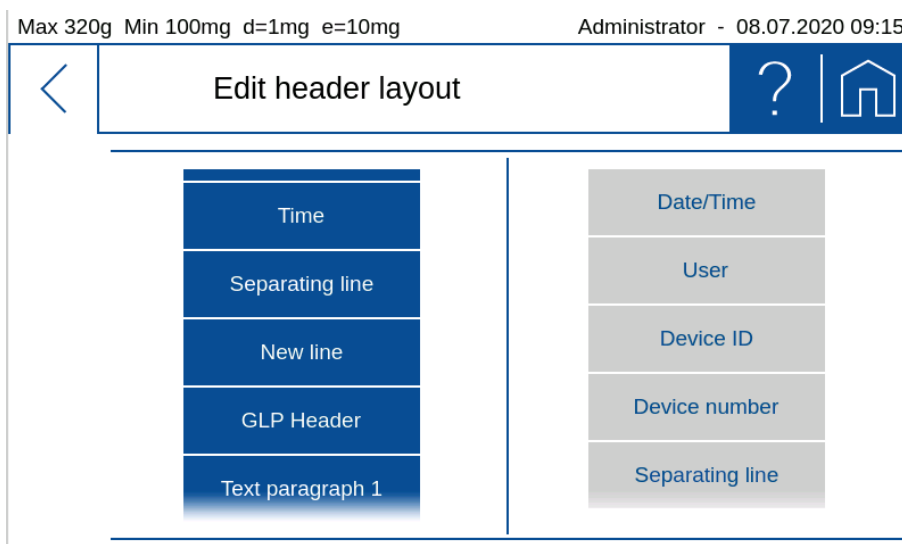
Most protocol items are self-explanatory or have a description of where they are defined.

To ensure easy orientation, the building blocks are divided into groups:

- **General** contains date, time, user, GLP header resp. GLP footer, paragraphs, line breaks, etc.
- **Device** contains information about the balance such as device ID, device name etc.
- **Identification** contains freely programmable information such as identifications, labels, batch numbers, measured value counters, etc., see 9 Add-On: Identification.
- **Application** contains information about the application.
- **Measurement** contains the application-specific measured value, the net value, gross value, tare value etc.
- **Statistics** contains the information on statistics such as number of values, mean value, standard deviation, difference between the maximum and minimum value, etc.
- **Control** contains blocks such as the status of the leveling, the status and the date of the last adjustment, as well as further information, etc.

10.5.1 Insert Protocol items

By clicking the **(Edit)** button an extensive selection of pre-defined text/functions items are presented on the left side. By selecting one this is moved to the right side.



Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:10

< Edit measurement layout ? | Home

Current measurement	Net value
Net value	Tare value
Gross value	Gross value
Tare value	Separating line
Identification	
1	

10.5.2 Move items

The items can be moved by drag & drop functionality, but it has been hold for approx. 2S until it appears in green.

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:16

< Edit header layout ? | Home

Time	Date/Time
Separating line	User
New line	Device ID
GLP Header	Device number
Text paragraph 1	Separating line

10.5.3 Deletes items

By selecting an item this turns to red. Pressing the waste bin symbol deletes it.

Max 320g Min 100mg d=1mg e=10mg Administrator - 08.07.2020 09:17

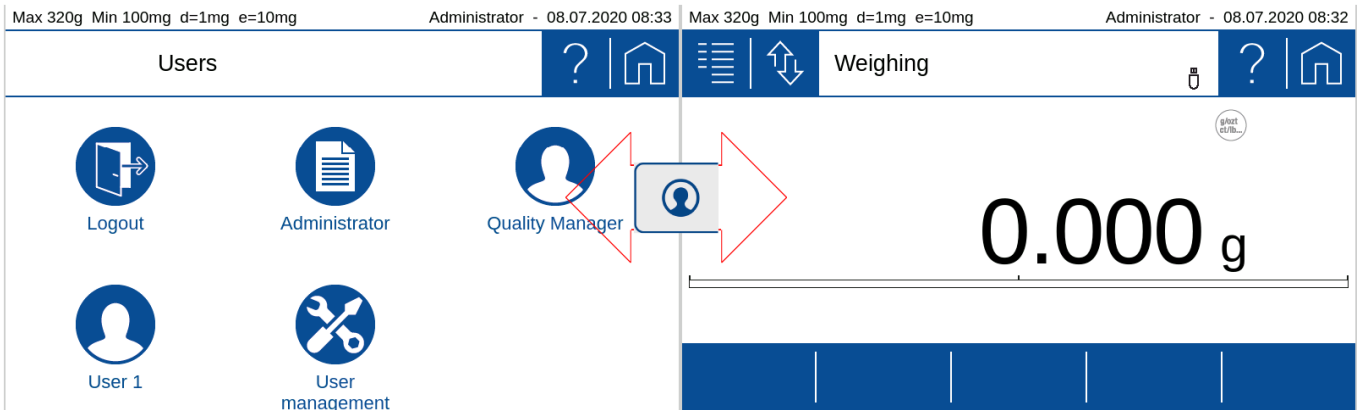
< Edit header layout ? | Home

Time	Date/Time
Separating line	User
New line	Device ID
GLP Header	Separating line
Text paragraph 1	Device number

Waste bin icon

11 Workign with Users

The balance includes a user friendly user management. The user menu allows defining different password protected user profiles. New profiles can be created based on existing user profiles or create a complete new individually profile. Existing user profiles can be deleted or changed. Only the administrator can create, edit or delete a profile where the user itself can change only his name and password beside the application specific settings – if this is not restricted by the administrator.

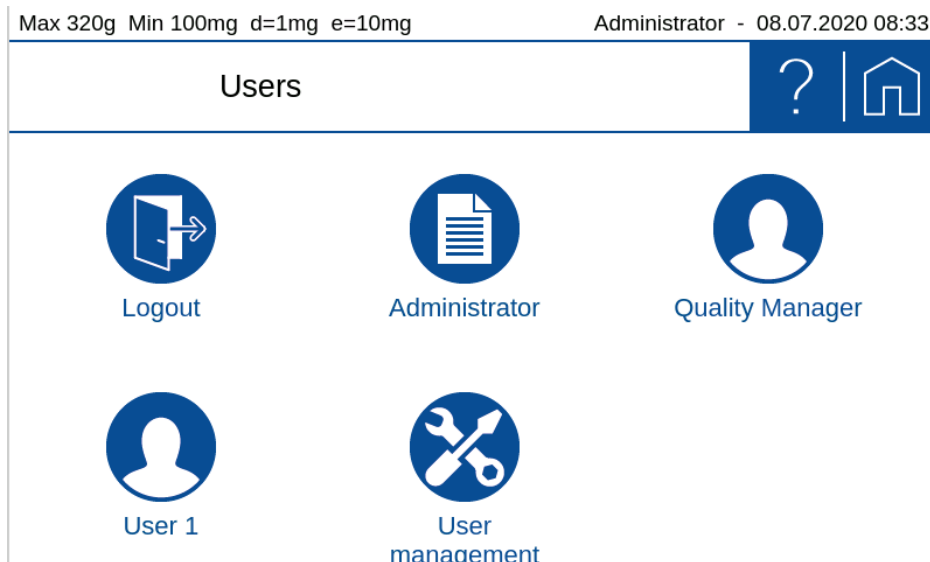


In case in the last row icons of user profiles are faded out, this indicates more users are to choose below by a vertical flick.

By selecting one of the users the customized settings are applied and all subsequent settings are stored in this user profile.

11.1 Change/select user

By clicking a user, his profile settings are loaded and the balance switches to the standard application.



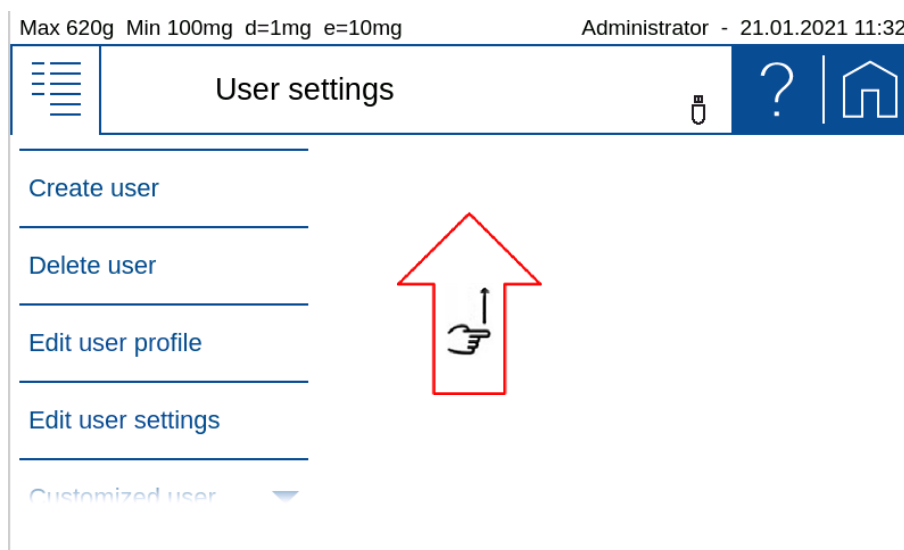
Navigating back to the Applications Screen is executed by pressing the **[Applications]** key.

11.2 User management

An administrator can create users, delete users, edit user profiles or edit user settings. New user profiles are created based on an existing profiles or predefined profile templates. A normal user can change only his profile name and password.

The menu offers the following options:

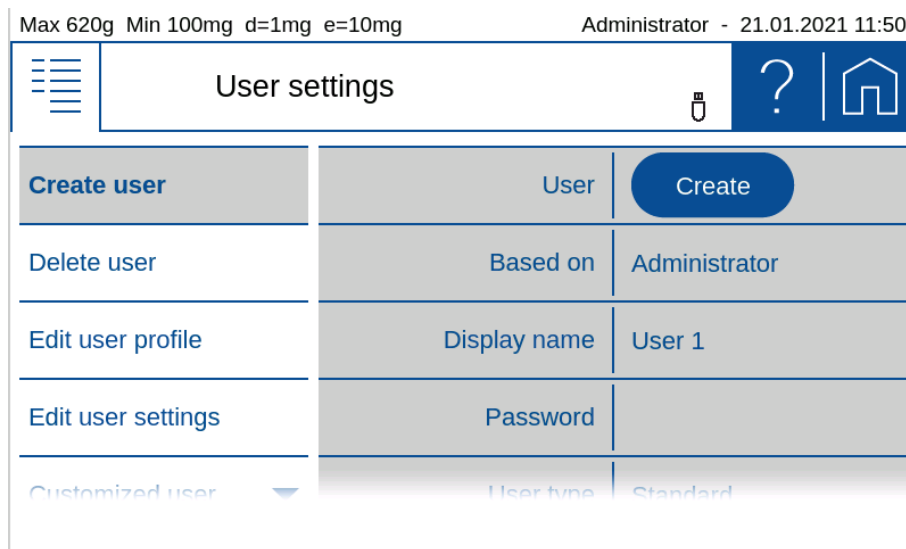
- **Create user** (for administrators only):
Create a new users
- **Delete user** (for administrators only):
Delete an existing users
- **Edit user profile:**
Edit an existing user profile means define his access to applications, functions and settings. A normal user can change only his name and password.
- **Edit user settings** (for administrators only):
Edit the setting of an existing user means like define the specific settings in functions and applications, what is is mainly used for restricted user.
- **Customized user** (for administrators only):
Predefine a user access levels template with special settings compared to the already available templates 'Standard', 'Restricted' and 'Quality Manager'.



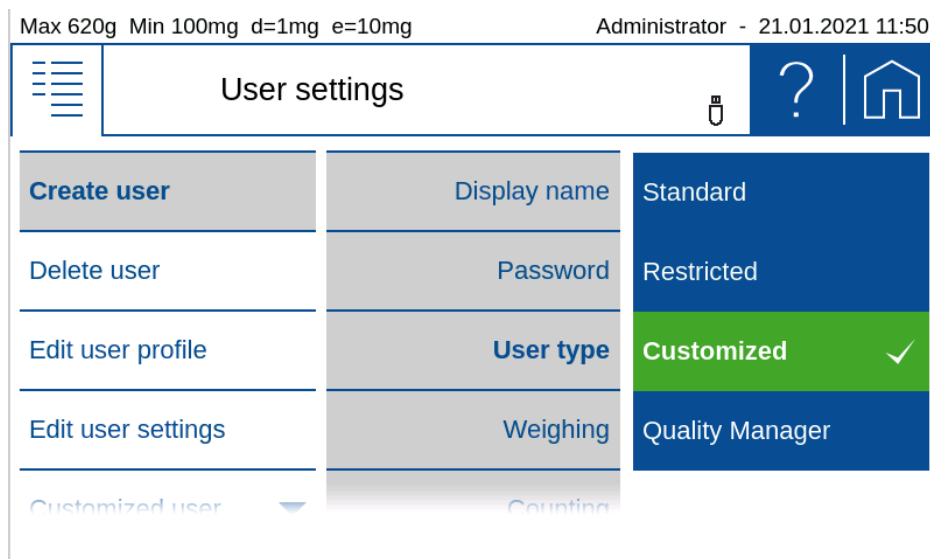
Swipe up and down to access all settings.

11.2.1 Creating a user (for administrators only)

Creating a new user profile is basically done by a copy of an existing profile. However individual settings can be made afterwards. You're guided through the creation process by several steps. In addition, the new name and password are set, the access level respectively. Access depth defined and the individual applications and access rights to special settings unlocked or blocked.



- **User:**
Click on create to create the user as it is currently defined and displayed here.
- **Based On:**
Defines from which user/administrator a copy is taken from. If you create a user the very first time, the copy template is the administrator profile
- **Display name:**
Sets the name displayed as an alphanumeric data entry. This can be accomplished by the virtual keyboard or the by an external HID device (e.g. keyboard)
- **Password:**
Type in an alphanumeric string for the password. Important: Keep the password safe. However, if the password get lost, unlocking the profile is only possible for the administrator.
- **User type:**
The user management provides several predefined access levels as Standard, Restricted and Quality Manager. In most cases they will cover the standard requirements. In case other access levels are need, you can define a 'Customize user' and choose this as the type.



- **Standard:** Has access to all applications and its settings, but not to setting related to weighing performance, quality aspects or system settings
- **Restricted:** Has very limited access and can almost change nothing
- **Customized:** Has access as defined for the 'Customized user'
- **Quality Manager:** Access to all settings what has an effect on the weighing performance or quality matters as e.g. Minimum Sample Weight, GLP settings, Audit

Trail, ... Once a quality manager is created this option is no more available as only one quality manager is allowed.

Max 620g Min 100mg d=1mg e=10mg Administrator - 21.01.2021 11:50

Action	User type	Standard
Create user		
Delete user	Weighing	<input type="checkbox"/> <input checked="" type="checkbox"/>
Edit user profile	Counting	<input type="checkbox"/> <input checked="" type="checkbox"/>
Edit user settings	Percent	<input type="checkbox"/> <input checked="" type="checkbox"/>
Customized user	Dyn. Weighing	<input type="checkbox"/> <input checked="" type="checkbox"/>

Max 620g Min 100mg d=1mg e=10mg Administrator - 21.01.2021 11:51

Action	User type	Standard
Create user	Percent	<input type="checkbox"/> <input checked="" type="checkbox"/>
Delete user	Dyn. Weighing	<input type="checkbox"/> <input checked="" type="checkbox"/>
Edit user profile	Levelling	<input type="checkbox"/> <input checked="" type="checkbox"/>
Edit user settings	User	<input checked="" type="checkbox"/> Create
Customized user		

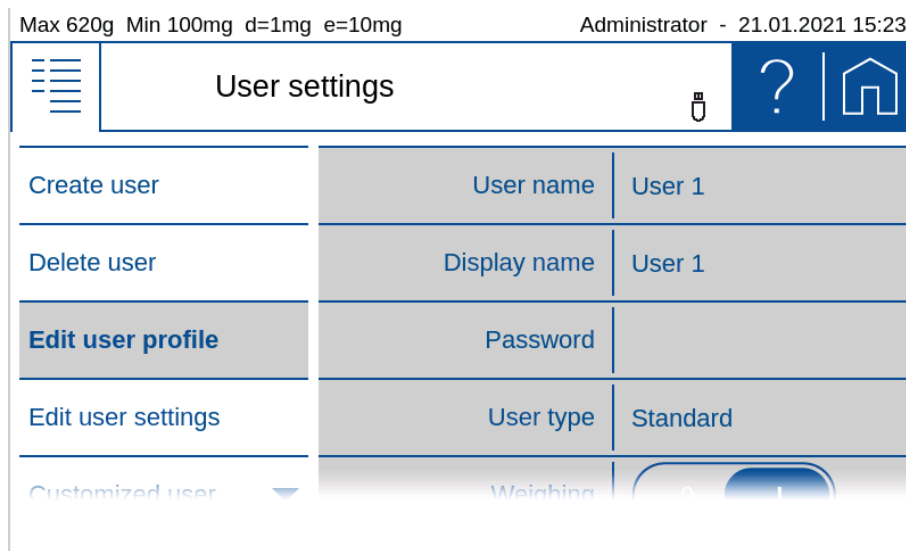
- **Weighing, Counting, Percent, ..., Leveling:**
Define what applications and functions are allowed for this user.
- **User Create:**
Finally create the user as defined here

11.2.2 Deleting a user (for administrators only)

By pressing the delete item a list with the existing users is popping up. After selecting the user a message box appears, asking for confirmation.

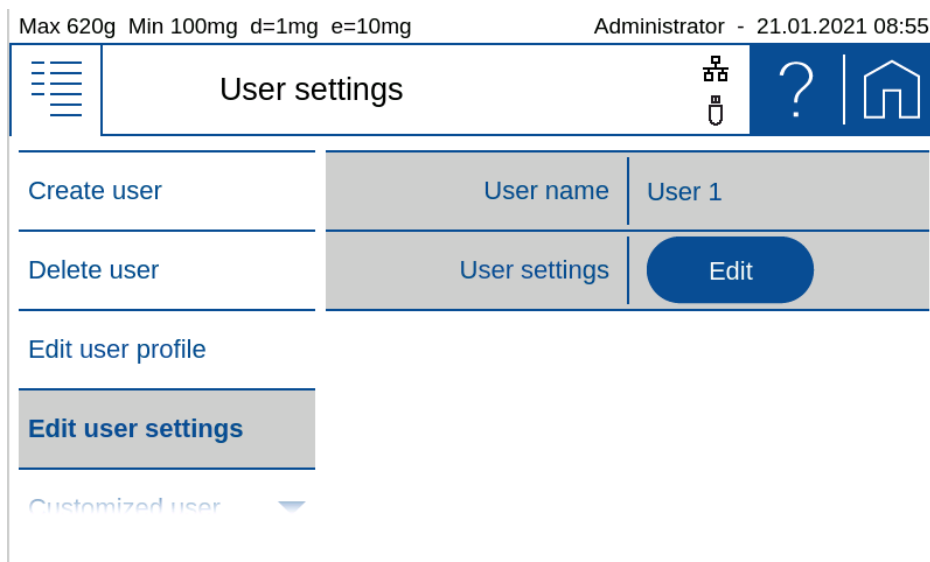
11.2.3 Edit user Profile

An already existing user profile can be edited to define access to applications, functions and settings. But a normal user can change only his name and password. Select the user to view and edit the current settings, as described in 11.2.1 Creating a user.



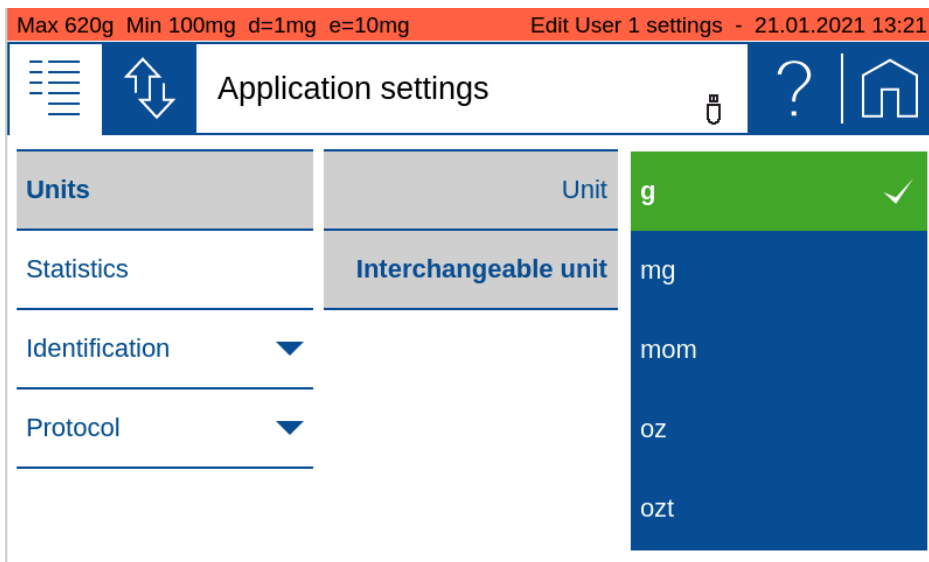
11.2.4 Edit user Settings (for administrators only)

Depending on the access authorization, the user is not allowed to make the settings himself. Here, as an administrator, you can set the settings for each user as you would be the user himself. For example, the administrator or QM manager can completely set the balance for a user.



- **User name:**
Select the user to edit
- **User settings Edit:**
Start to edit the settings of the selected user. The edit user settings mode is indicated by the red headline. To change settings operate the balance exactly the same as you do in normal operation and apply the settings. When leaving the edit user settings mode, all the current settings are preset for the selected user.

As long as the settings of another user are edited, the header appears in red.

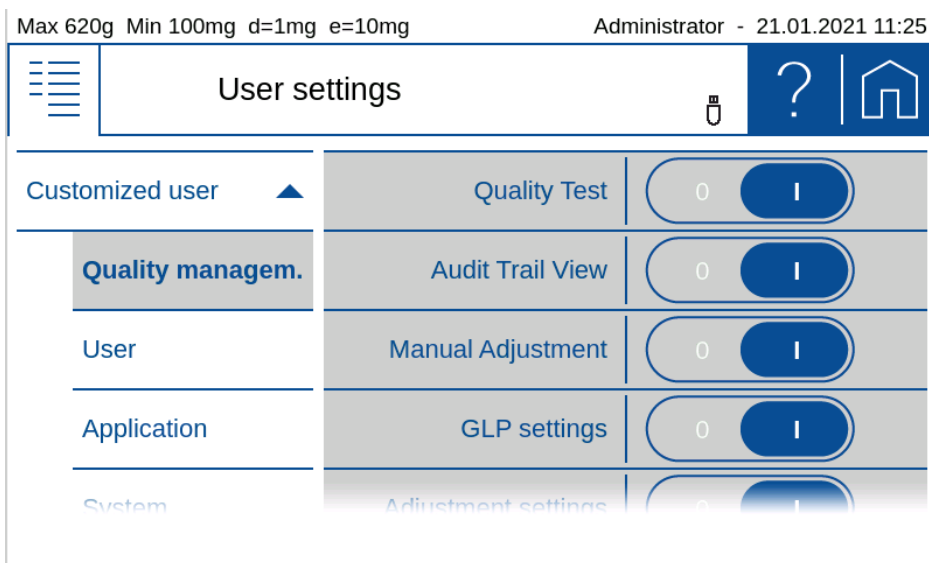


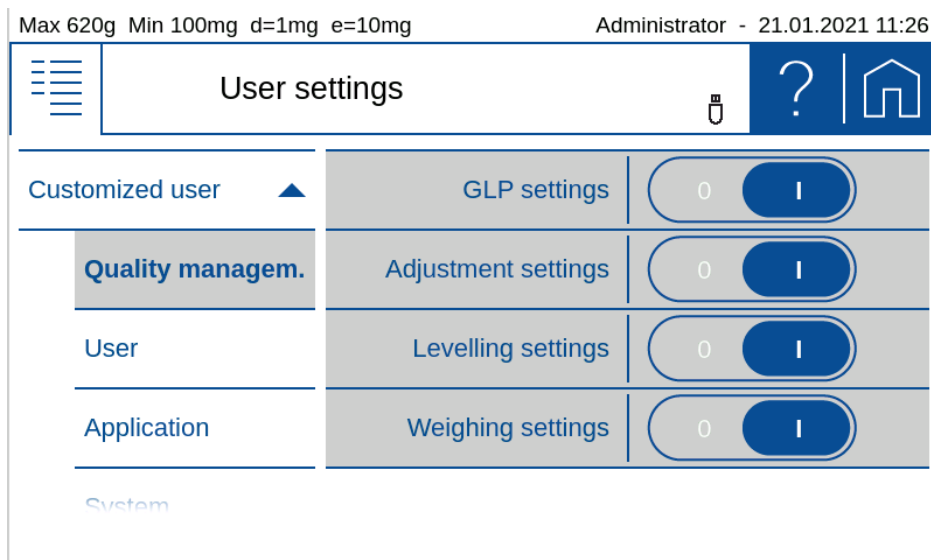
To stop editing the user settings **Logout** on the **Users Screen**

11.2.5 Customized user (for administrators only)

Customize user serves to predefine a user access levels template with special settings compared to the already available access levels templates Standard, Restricted and Quality Manager.

Quality management





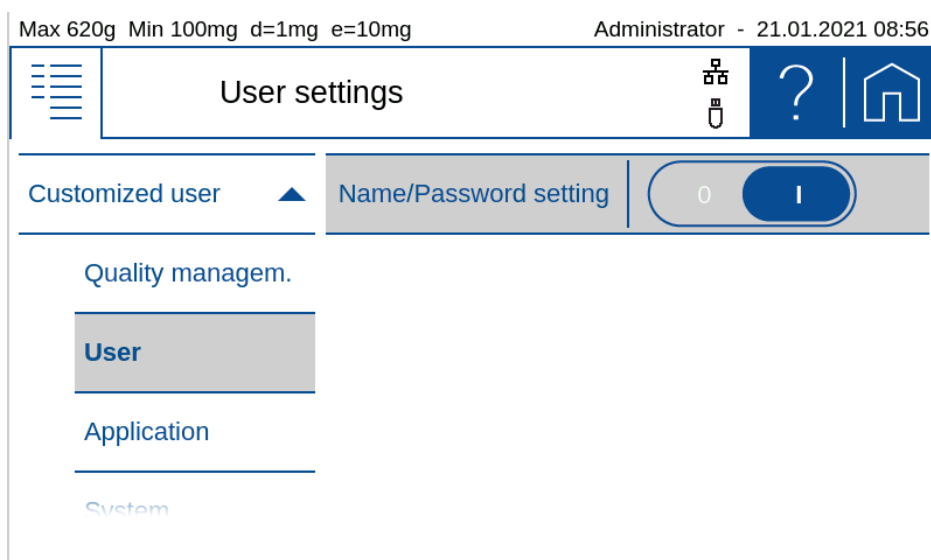
Predefine the access rights what are in relation of quality management matters:

- **Quality Test:** Access to applications and functions in relation to quality aspects like weighing performance as e.g. the application ART
- **Audt Trail View:** Access to audit trail viewer to view and export the audit trail
- **Manual Adjustments:** Access to perform a manual, non automatic, balance adjustment of the weighing system
- **GLP settings:** Access to change the GLP header and GLP footer for the protocol printout
- **Adjustment settings:** Access to change settings of the adjustment of the weighing system
- **Leveling settings:** Access to change settings of the leveling system. To level the balance is always allowed
- **Weighing settings:** Access to change settings of the balance weighing system and parameters

User

Predefine the access rights what are in relation with the user:

- **Name/Password setting:** Access to change the name and password of the user



Application

Max 620g Min 100mg d=1mg e=10mg Administrator - 21.01.2021 08:56

User settings

Customized user ▲	Application settings	0 <input type="checkbox"/>
Quality managem.	Units settings	0 <input type="checkbox"/>
User	Statistics settings	0 <input type="checkbox"/>
Application	Identification settings	0 <input type="checkbox"/>
System	Protocol settings	0 <input type="checkbox"/>

Max 620g Min 100mg d=1mg e=10mg Administrator - 21.01.2021 08:56

User settings

Customized user ▲	Statistics settings	0 <input type="checkbox"/>
Quality managem.	Identification settings	0 <input type="checkbox"/>
User	Protocol settings	0 <input type="checkbox"/>
Application	Info section/Action bar	0 <input type="checkbox"/>

Predefine the access rights what are in relation to the applications:

- **Statistics settings:** Access to change settings of the Add-On 'Statistics'
- **Identification settings:** Access to change settings of the Add-On 'Identification'
- **Protocol settings:** Access to change settings of the Add-On 'Protocol'
- **Info section/Action bar:** Access to change settings of the 'Info section' and 'Action bar'

System

Max 620g Min 100mg d=1mg e=10mg Administrator - 21.01.2021 08:57

User settings

Quality managem.	General settings	0 <input type="checkbox"/>
User	Periphery settings	0 <input type="checkbox"/>
Application	Set date/time	0 <input type="checkbox"/>
System		

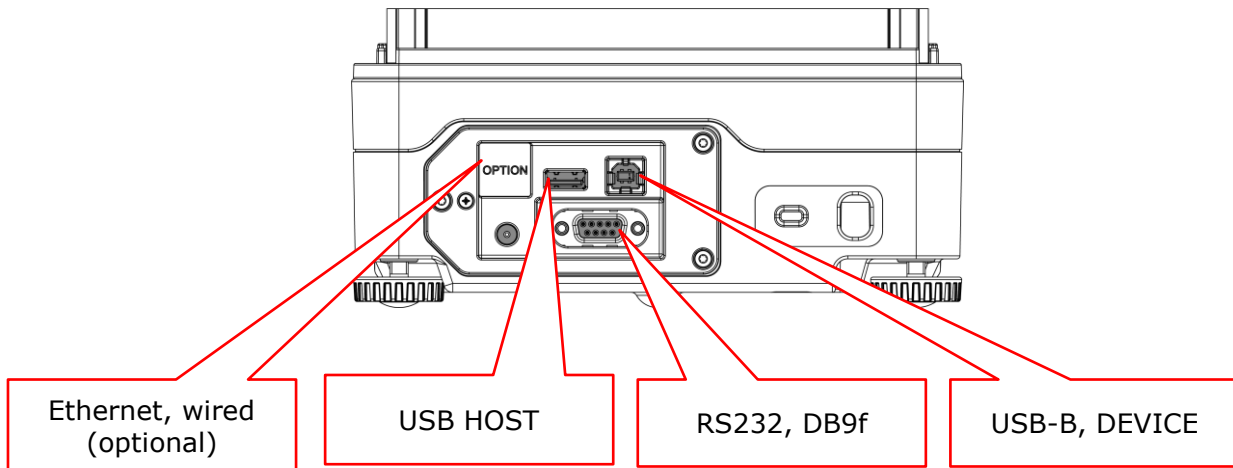
Predefine the access rights what are in relation to the system:

- **General settings:** Access to change general settings
- **Periphery settings:** Access to change settings in relation to of for peripheral connections
- **Set date/time:** Access to change date and time

12 Data transfer

12.1 Connection

The data can be transferred through different connections from the balance to a peripheral device. At the back of housing:



NOTE

The most common and simplest is data transmission via RS232 and the USB DEVICE.

All connections can be used bidirectional and individually independent of other connections.

12.2 Interface

Before transferring data, make sure that the interface settings of the balance and peripheral device match. On the balance side, see 6.2.1 RS232 serial Port and 6.2.2 USB serial Port.

12.3 Daten cables

Purpose	Order number	Specification
For RS232:	350-8672	Data cable DB9m-DB9f, length 1.5m, to PC/Printer LP 4024
For USB:	PN 3950-125	USB cable A-B, 1.5m, to PC

12.4 Remote command

Each remote command has to be closed with CR LF which corresponds to pushing the computer keyboards **[Enter]** key. Commands can be acknowledge with ACK1.

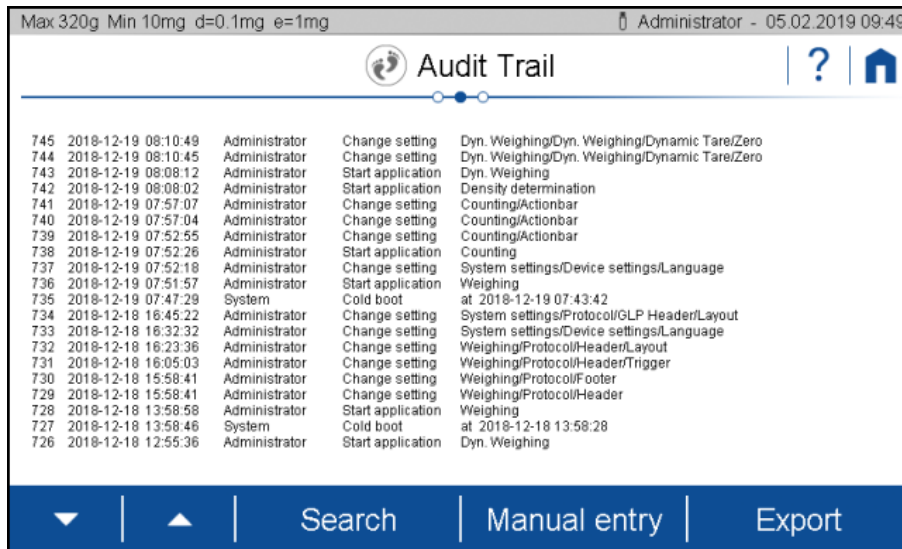
Command	Specification
ACK0:	Acknowledge sending mode Off
ACK1:	Acknowledge sending mode On
BINFO:	Print out Balance information
CAL	Start adjustment
FWHISPRINT	Print out Sensor update history

PDT	Print out date and time
PRT	Start printing (corresponds press «PRINT» key)
P0	Individually print each value (unstable)
P1	Individually print each value (stable)
P2 III	Print after change of load (III = min. load change necessary in g or in percent) E.g.: Exp. P2 12.3 or P2 50%
P3	Print after each display refresh (refresh rate)
P4 ttt.t	Print on time basis in s ttt.t in s, from 000.1s to 600.0s E.g.: P4 002.0 individual print out every 2s without waiting until stable.
SDTddmmyyhhmmss: Set date/time if Date format = ddmmyy	
SDTmmddyyhhmmss: Set date/time if Date format = mmddyy	
SOUND:	Beep tone
SOUNDI:	Info tone
SOUNDW:	Warn tone
T (ttt):	Tare or set tare to a specific value
Z0:	Auto-Zero mode Off
Z1:	Auto-Zero mode On
ZERO:	Zero balance (provided weight is stable and within the zero position range)

13 Audit Trail

The audit trail is a function embedded in the terminal software which automatically records and displays information about data generated, changed or deleted by the user or the system.

The audit trail is stored on the SD card in the terminal. There is no write access to the LOG files on the terminal.



13.1 Search data

Scroll with the arrows to the desired data record.

Data can be retrieved by date by clicking on Search and selecting the desired date.

Since the log entries and the file creation are strictly incremental, the temporal development can be recorded despite a faulty RTC (real-time clock).

13.2 Export

With an export function, audit trail logs can be stored externally. After connecting a USB stick (FAT32 file system formatted) to the terminal, the export function is enabled. Click the **(Export)** button.

Logged events:

- Cold boot with start time
- Warm boot
- Error message
- Change setting
- Service switch pressed
- System accessories changed
- System time changed
- System date changed
- Sensor changed
- Sensor firmware update
- Start Sensor Firmware update
- Terminal firmware update
- Support package created

- Calibration number update
- Delete user
- Create user
- Change application
- Change Action bar
- Change Info section
- Levelling
- Adjust spirit level
- Adjust
- CRW
- Linearization
- Manuel entry, Administrator and Service user only