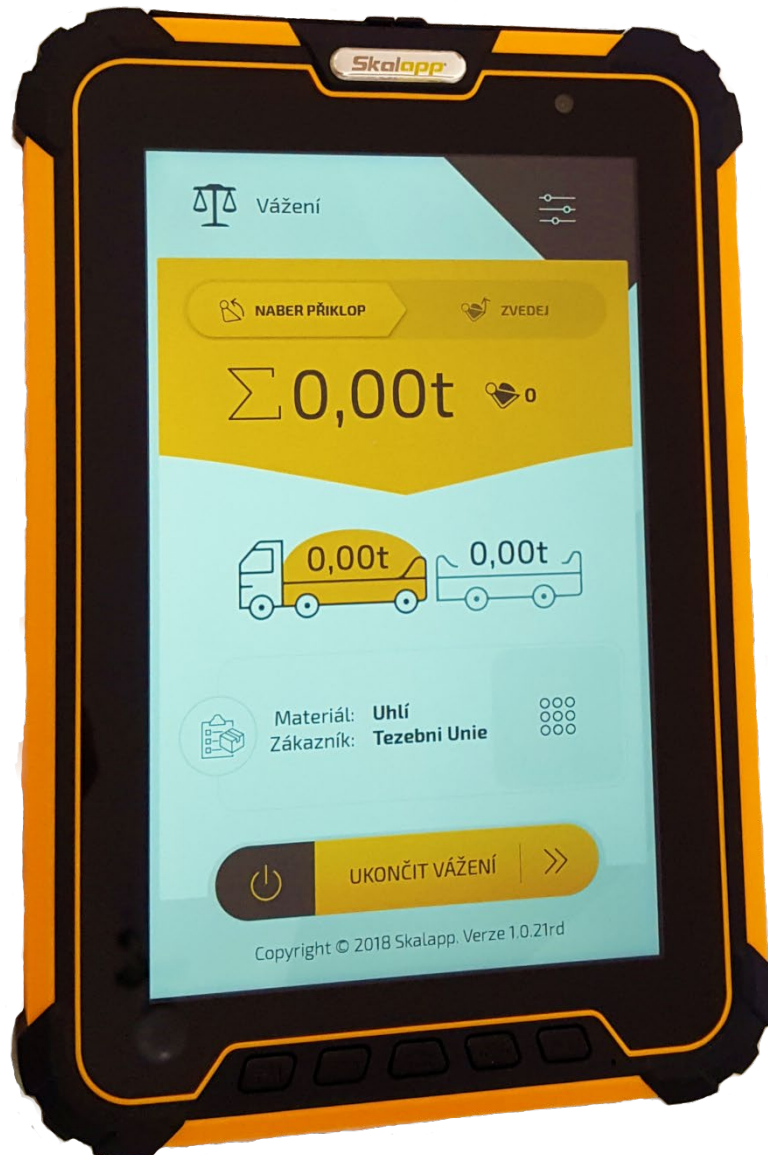# Skalapp – User's Manual

Due to continuous development activities, this manual may not fully correspond to the current appearance of the application and its range of functions.

Manufacturer:

VETRA International s.r.o.
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Contents

Using the manual

Read this entire manual before operating the scale and keep the instructions in an easily accessible location. If you misplace it, please request a new one from us.

Ensure these instructions are available to all persons using the scale. The scale operator is responsible for training all personnel who will use the scale. Training should strictly follow these instructions to ensure proper and safe operation.

Scope of installation

Skalapp Tablet	BaseBoard Computing Unit
Optional Tilt Sensor	2x SPS 500 Pressure Sensors
Bucket Position Sensor (O1)	Boom Position Sensor (K2)

- Kit to mount pressure sensors
- Cables to connect bucket and boom position sensors
- Cables to connect tablet
- User's Manual

Description of the installation

The scale consists of two *pressure sensors* that connect to the lifting cylinder for measuring pressure above and below the piston rod.

Bucket and boom position sensors check if the bucket is closed, as well as determine the weighing position and lifting speed.

The optional *tilt sensor* guarantees that weighing is carried out under approved conditions.

The BaseBoard computing unit collects sensor data to accurately compute the weight of the bucket load. The resulting data is then sent to the Skalapp tablet for display of the calculated weight, as well as configuration of scale settings via the scale interface.
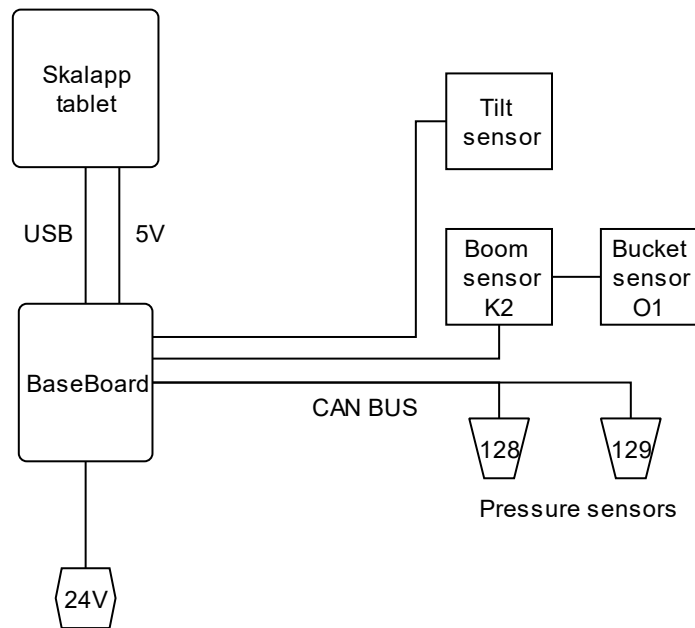
Intended use of the scale

- Determine the weight of bulk material on vehicles with hydraulic lifting mechanisms (e. g., wheel loaders or forklifts).

Important points to ensure scale accuracy

- Scale will not function correctly if material sticks to the loading bucket. It is therefore recommended to clean the loading bucket after each load to ensure accurate weighing.
- Weighing can be successfully carried out while machine is moving, but only during a smooth and bump-free ride
- Changes to the lifting boom, lifting cylinder, location of the position sensors, or attachment affect the scale accuracy and require immediate recalibration
- When weighing small amounts of material, compared to the machine's total loading capacity, deviations may be too large for the weight to be calculated accurately

Safety instructions

- Scale should only be used for its intended purpose
- Scale is subject to the same safety rules as the machine on which it is installed. Do not tamper with any scale components during machine operation, except for the Skalapp tablet, which is meant to be used as an interface to control the scale. Manipulation of the weighing system should only be carried out if the machine is switched off and only by the manufacturer or persons authorized and trained by the manufacturer.
- Exceeding a vehicle's or tralier's maximum loading capacity negatively impacts its safe operation and is not permitted. Always confirm the maximum loading capacity of vehicles/trailers being loaded and strictly comply with such limits.
- Scale is not approved for use in potentially explosive environments or environments containing aggressive substances (e. g. acids, alkalis, galvanizing baths)

Equipment disposal

- Never dispose of scale components in household waste containers
- Electronic devices should be disposed of separately and in an environmentally friendly manner.
- The BaseBoard computing unit includes a button battery, which is located under the screw-on cover of the unit, and should be removed before disposing of the device.

Technical Data

Rated voltage:	24 V DC
Power input:	max 1 A
Operating temperature:	From -10° C to +40° C
Humidity:	Up to 85% at 40° C, non-condensing
Nominal pressure:	0 - 500 bar
Destruction pressure:	> 2100 bar
Tablet Display:	8 " capacitive touch screen, 1280 x 800 pixels
Tablet Dimensions:	232 x 158 x 22 mm
Tablet weight:	810 g

Metrological characteristics

All metrological characteristics of the device (Max, Min, and scale interval calculation) are displayed in the footer of the scale interface.

If the scale is approved for commercial weighing, the application footer contains the accuracy class identification Y(b) and the type verification certificate.

If the scale acts as checkweigher, the data in the footer are displayed in red letters. Such scale shall not be used in for commercial transactions.

Switching tablet on/off

When the tablet is in sleep mode, you can simply start it by briefly pressing the POWER button on the side of the tablet.

If the tablet completely shuts off, hold down the POWER button for 3 seconds and wait for it to start.

To turn off the tablet, hold down the POWER button and select "Shut down" on the screen.

Charging the tablet

The tablet is typically connected to the baseboard computing unit, which both calculates bucket weight and powers/charges the tablet.

To optimize battery life, automatic charging of the tablet will start when battery capacity reaches 30% and will stop charging when capacity reaches 90%. Automatic charging is fully initiated by the scale and does not require any interaction by the user.

Make sure to switch off the tablet if the loader is stopped or if the battery circuit is switched off, as the tablet's battery could be completely discharged! Charging begins as soon as the machine's electrical circuit is switched on. In case of a full discharge, the tablet can be switched on again after about 30 minutes of charging and will be ready for use.

Launching the scale interface and logging in

The scale interface is pre-installed on the supplied tablet and is ready for immediate use.

The interface allows individual registration of drivers, with each receiving a unique PIN to login and begin use. Permission levels can also be assigned to each user.

There are two types of users in the factory settings:

- Admin (PIN)
- User (no PIN)

To login as an Administrator, tap the PIN field, enter your PIN (default PIN: 1234) and then tap the arrow icon next to the PIN number to confirm.

To login as a user, just tap the arrow icon to enter the scale interface.

Note 1: During scale configuration, the ability of users logging in without a PIN can be disabled. If anonymous login is disabled, the Administrator must create additional users and set their PINs to allow them to login to the scale interface.

Note 2: After user login, the scale must always be zeroed to ensure accuracy. However, if loading is active, its values are retained and the user can carry on with loading after zeroing is carried out.
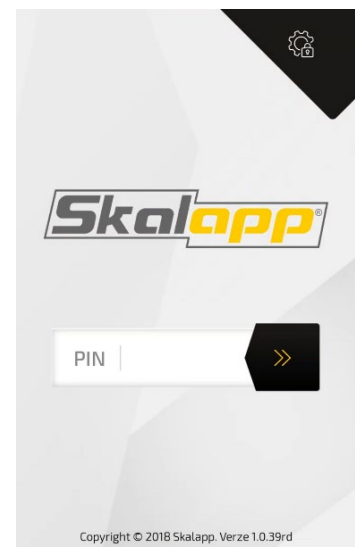
Zeroing

Zeroing the scale allows it to reset to current operating conditions (oil temperature, material stuck in bucket, etc.), thus ensuring accurate weighing.

The user is prompted to zero whenever:

- The scale is switched on
- Attachment is changed (see "Working with multiple attachments" section)
- A new login is performed
- Oil temperature increases/decreases by more than 10° C since the last zeroing
- Timeout is reached since the last zeroing (usually 60 min.)

We recommend setting mandatory zeroing at the end of each loading cycle (e. g. loading the truck) to account for material that may be stuck in the bucket.

Different attachments can be independently calibrated and assigned their own profile for future use. Zeroing is always required after changing an attachment.

Zeroing procedure:

1. Lower the boom with an empty bucket
2. Close the bucket
3. While machine is stationary, move the boom slowly and steadily through the weighing position
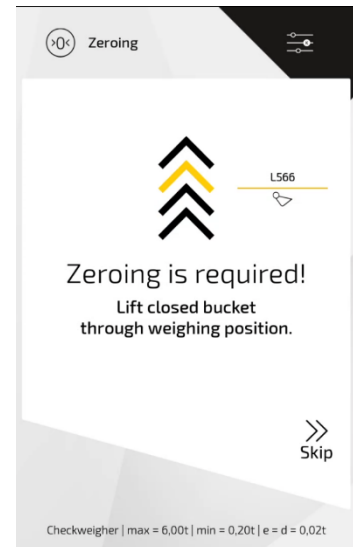
If zeroing is successful, "Zeroing successful" is displayed and the screen switches to weighing mode.

If zeroing fails, a message is displayed that describes the problem:

Bucket not closed➔ Close bucket
- Too large a difference in zero weight ➔ Clean stuck material from bucket
- Fast/slow lifting speed ➔ Perform lifting operation within defined speed range

Note: Users can manually select zeroing in the menu. When performing the zeroing procedure, all current loading data is retained.

Weighing page

The main page of the scale interface displays information about loading status, as well as allows for control of the scale.

Overview and key functions:

- Access to master menu
- Data from bucket position sensor
- Weight of current bucket load
- Number of buckets loaded
- Display of active attachment (with ability to change attachment)
- Current total load weight of truck and trailer (with ability to switch between both)
- View of basic data (with ability to revise data)
- Quick selection menu (total of 9 quick select categories)
- Sleep/Standby button
- Complete/Save weighing button
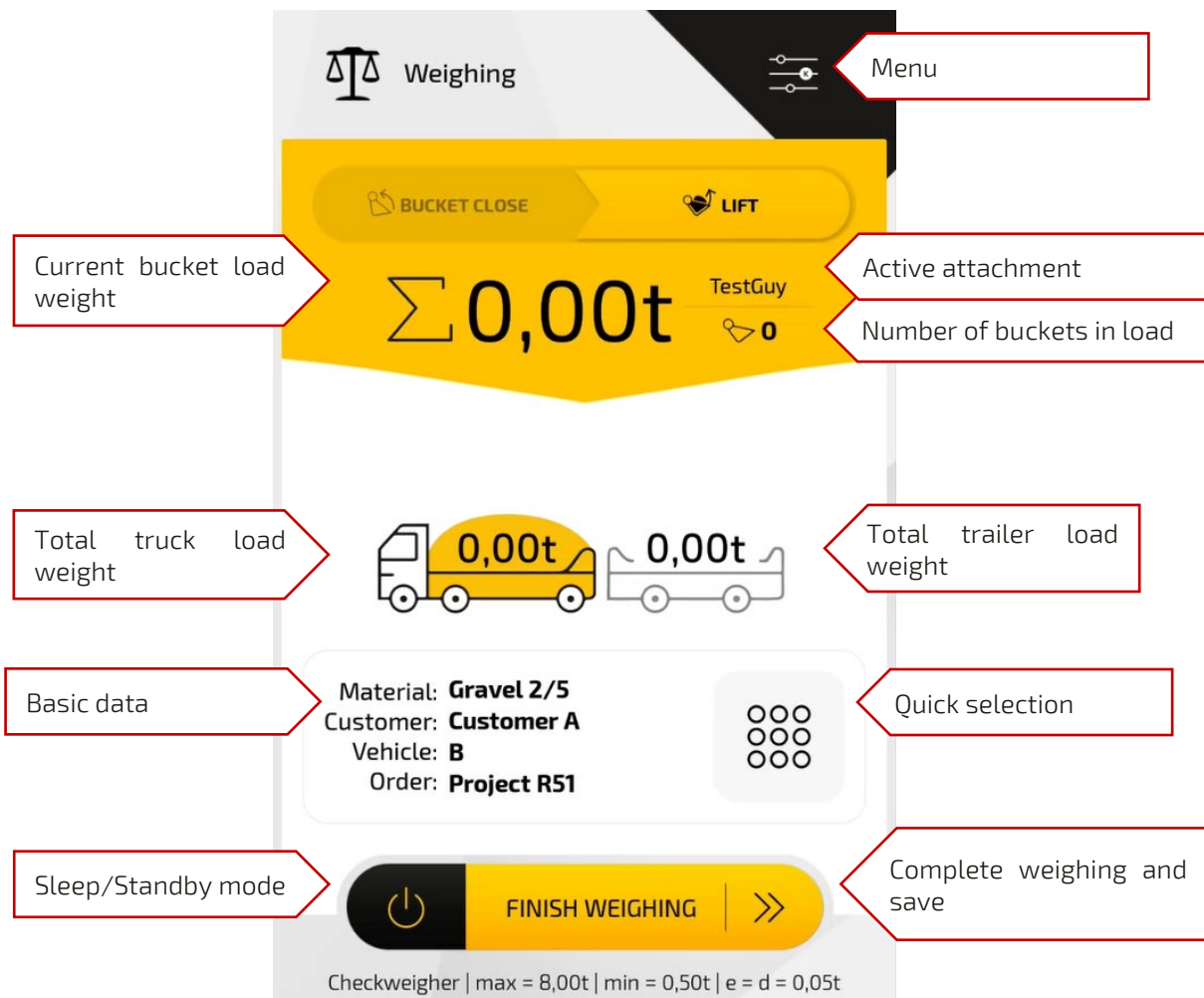
Loading

Use of the scale does not interfere with the normal loading procedure. Weighing is <u>automatic and does not require any control or interaction by the machine operator, so they can fully concentrate on their job.</u>

1. Lower the boom with an empty bucket and pick up the material
2. Close the bucket
3. Raise the boom through the weighing position at a slow and steady speed

After passing the weighing position, the scale interface gives an audible alarm to confirm successful weighing and displays the bucket weight.

<u>TIP</u>: You can select where the next bucket load will be emptied by tapping on the truck or trailer image.

4. Empty material at destination (e.g., truck)

After emptying the material at its destination, the scale automatically adds this bucket weight to the total truck/trailer load weight and switches back to the weighing page. Confirmation and addition of the bucket weight to the total truck/trailer load weight may be manually performed by pressing the "*Confirm*" button.

<u>Note</u>: As long as the "Fixed weight" page is displayed, the weight of the last bucket load is not added to the total truck/trailer load weight. The page shows the weight of the future total truck/trailer load weight (after adding the weight of the current bucket load).

While the "Fixed weight" is displayed, the bucket weight can be deleted without adding to the weight of the future total truck/trailer load.

<u>Example</u>: The current bucket weight can be deleted, material dumped out and a new load reweighed if the total load weight would exceed the maximum loading capacity of the truck or trailer. The bucket weight will only be added after dumping material on the target destination.
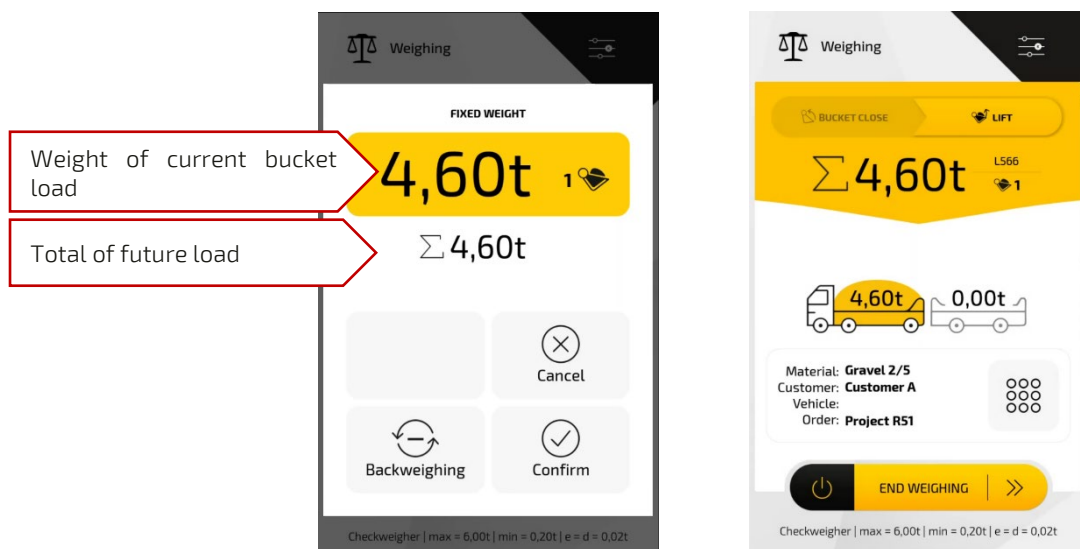
An error message will be displayed on the screen if conditions for accurate weighing are not met. A complete list of error messages can be found in the "Error messages and troubleshooting" section of this manual.

Example of an error message

Backweighing

If the complete contents of a bucket are not dumped on the target destination (e.g., it would not fit on the truck or trailer), and material is left in the bucket, the weight of the bucket load must be deducted from the weight of the total truck/trailer load. The "back weighing" function, which is always displayed after weighing, is used in this case.
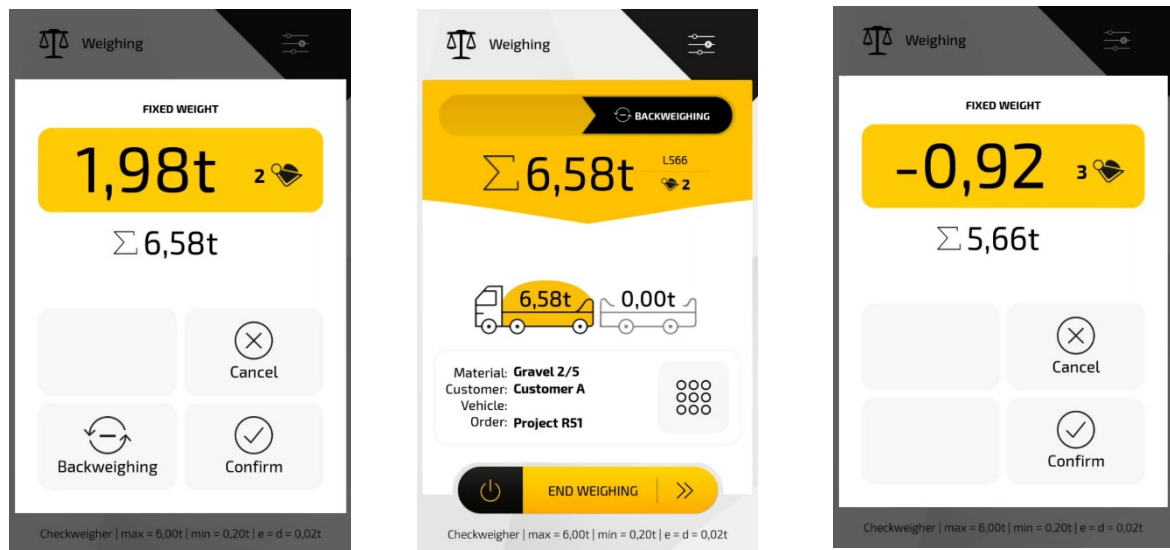

1. Load material in bucket and weigh it
2. Select the "Backweighing" function on the screen
3. When backweighing is activated, a notification is displayed on the scale interface that the weight of the next bucket load will be deducted from the weight of the previous bucket load.
4. Empty the contents of the current bucket load
5. Lower the bucket and weigh the remaining material
6. The weight of this material will be displayed in large numbers with a negative sign and will be deducted from the weight of the total truck/trailer load.
7. Manually confirm the deducted bucket weight or simply dump the material outside the truck for an automatic deduction.

Note: Backweighing is saved like a normal bucket load, except as a negative amount. Backweighing is therefore saved and transferred to the Skalapp Online portal (if you utilize it).

Selection of basic data

During loading, you can select basic data from any of the available categories (Material, Customer, Vehicle, Order, Delivery method) by tapping on it. Subsequently, it is possible to view all selected categories and revise them, if necessary.
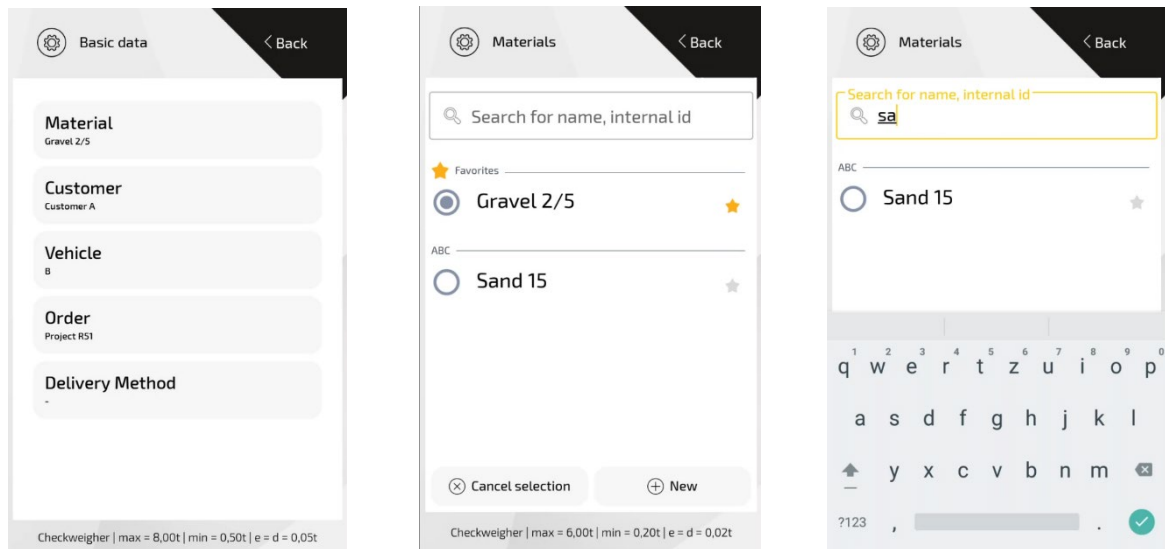

If you do not want to use one of the basic data items, tap on the "*Cancel selection*" button.

If you do not intend to use a certain basic data item, and do not want it displayed, it can be completely turned off in the settings section by tapping on the switch that's next to the basic data category (p. 18).

When selecting the basic data, you can create a new item by tapping on the "*New*" button. To edit an item, long press on it. For full administration (especially for selection of active basic data categories), select the "*Basic data*" item in the scale interface menu.

You can change/edit the basic data item at any time by long-pressing on it. A long press opens the details of the entry for full editing.
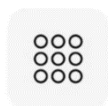
> TIP: Up to 9 quick selections of frequently used basic data combinations can be saved and accessed via the Quick Selection icon. Just tap on the item to set as one of the quick selections.

Quick selection settings

- To set up a quick selection, just tap it, fill in the settings, and save
- To edit an existing quick selection item, just long press it and an edit window will open

Completing the weighing operation

After the loading process is complete (e.g., truck is loaded), press the "FINISH WEIGHING" button and you will be taken to the "Finish weighing"page.

FINISH WEIGHING »

This page displays a summary of all information about the total truck/trailer load, which can be completed in several ways. In all cases, a record of all information will be stored in the scale's memory and can be traced back.
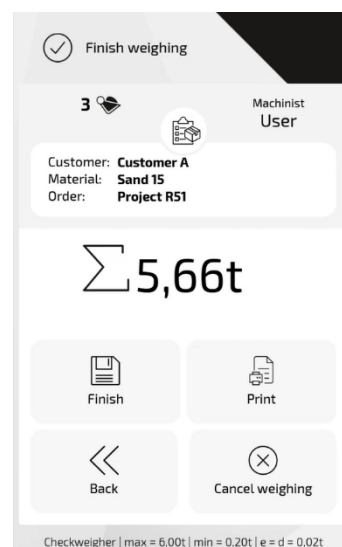
1. Pressing the "**Finish**" button will save all data and close the operation.
2. Pressing the „**Print**" button will both save and print the data on a connected printer. If more than one printing template is defined, a list of templates will be displayed before printing (more on template settings can be found in the "Working with printing templates" section).
3. The total truck/trailer load can be cancelled by pressing the "**Cancel weighing**" button. Even after cancelling the weighing, it will be saved in the application's memory with a "Cancel" flag.

TIP: You can edit basic data directly from the "Weighing complete" page by tapping on the basic data icon right above it.

After the total truck/trailer load is finished, the scale is ready for the next weighing operation. In the case of mandatory zeroing of the scale after loading is finished, the user will be prompted to carry out zeroing (see "Zeroing" section).

TIP: If multiple copies are selected, you will be asked after each printout if you want to print another copy.

Do you wish to print another copy?

DONE   PRINT NEXT
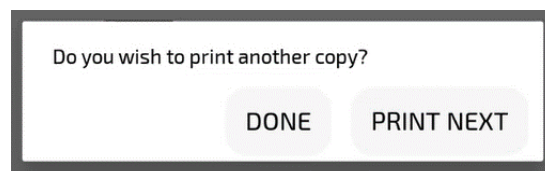
Standby mode

In some situations, it could be appropriate to switch off the weighing mode and use the machine without weighing (for example, when truck loading stops and internal material processing is performed, etc.).

This is done by switching the scale interface to Standby mode when all weighing functions are inactive, which then greys out the display. Tapping anywhere on the display returns the scale interface to normal operating mode. If the scale interface is in Standby mode for an extended amount of time, it will put itself to sleep and turn off the display. The interface can be woken up by briefly pressing the *Power button.*

Working with multiple attachments

The scale can be calibrated to work with multiple attachments (e.g., loading bucket, forks). Calibration of different attachments takes into account the different center of gravities and weight of the attachment itself, which are both necessary to achieve accurate weighing.

The active attachment's name, and its icon, are always displayed on the application's weighing page.

To use a different attachment, just tap the attachment icon on the "Zeroing" page for a list of available calibration profiles. After selecting the attachment, zeroing should be carried out. When this is complete, you can start weighing.

Changing the attachment can also be called up from the weighing page by tapping the attachment icon. After changing the attachment, you will be prompted to carry out zeroing before weighing can begin.

CAUTION: You cannot change the attachment if the load is not finished! In this case, you will be prompted to finish the loading before changing the attachment.
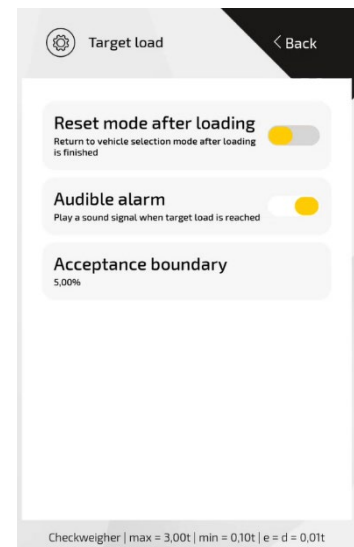
Target weight

The "Target weight" function constantly monitors the weight of the total truck/trailer load, displays the remaining quantity, and warns you when the set target weight has been achieved or exceeded.

The target weight function can be enabled in Settings »Advanced settings» Target weight, where its parameters can be set.

- Reset mode after loading - After activation, the target weight mode will be canceled when loading is finished
- Audible alarm – an audible notification that sounds when the target weight is achieved or exceeded
- Acceptance boundary - % fulfillment of the target weight when loading is considered fulfilled (when setting a 5% limit for a target weight of 25t, the load will be considered fulfilled if 23.75t to 26.25t is achieved)

Using Target weight

When the "Target weight" function is enabled, the function activation icon is displayed. After activation, the scale starts to monitor the target weight.
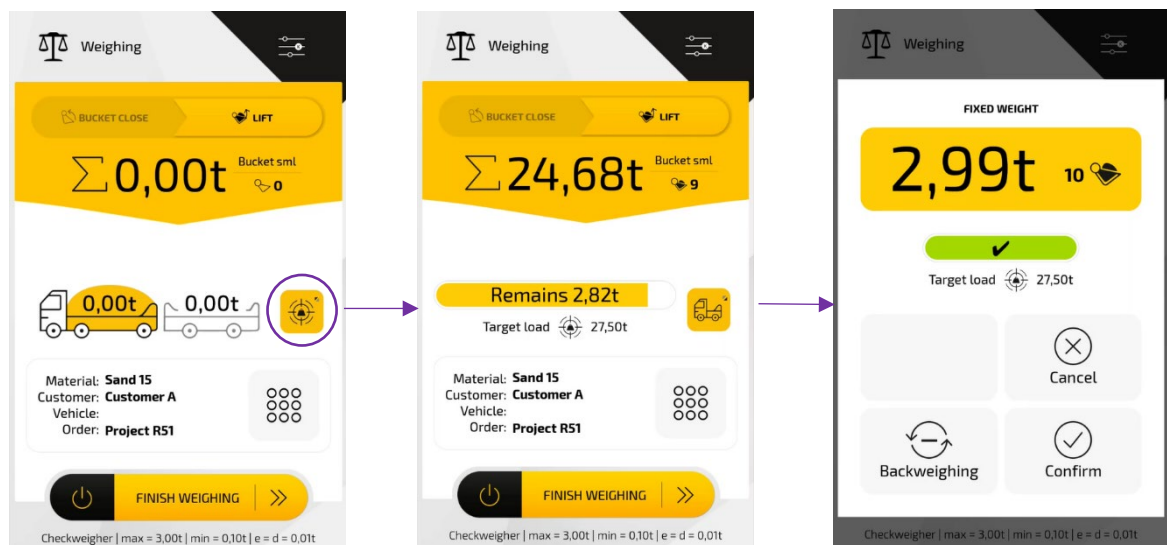
Press the "truck" button to cancel the target weight and return to normal loading mode.
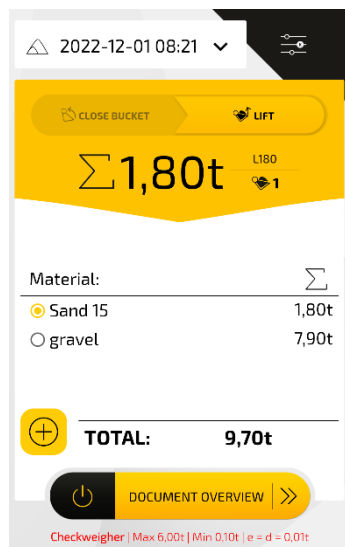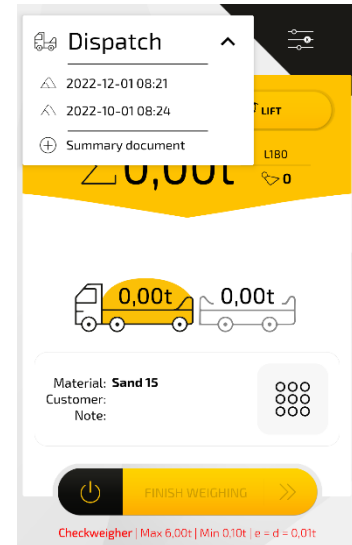
Summary document

Weighing in the summary document mode allows you to record several different materials within one activity. Up to ten summary documents can be active at once and can be switched between them. At the same time, it is possible to temporarily leave the summary document regime, carry out the "Dispatch" transaction (ie. loading of the vehicle) and return to the unfinished summary document.

To activate the "Summary document" function, go to the scale interface menu Settings » **Advanced features » Summary documents**.

If the "Summary document" function is active, a menu is available in the upper left part of the weighing window for quick selection between unfinished documents, dispatch, or for creating another summary document.

Each summary document is named and can be assigned any combination of basic data. Selected basic data will be stored in the scale's memory and transferred for further processing to the skalapp.online portal, if you use it.
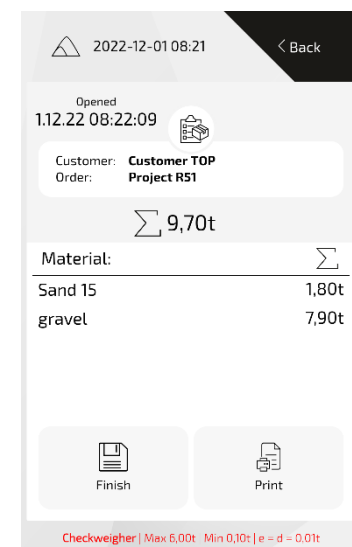
How to work with a summary document

1. Open the menu and select "+ Summary document"
2. Set name, basic data and save
3. Add material(s) to summary document
4. Select material and load
5. Switch material and load

Termination of the summary document

1. Press "Document overview"
2. Confirm termination either by Printout of the summary document or just by Finishing it.

On the document overview page, it is possible to additionally change its name and the basic data used by clicking on the icon above the window with their enumeration – just like with regular weighing.

Attention! Changing the base data will only affect new weighings. Weighing data already performed in the summary document cannot be retroactively edited.

Scale interface menu

The scale interface menu is displayed by swiping your finger from the right edge of the screen or by pressing the menu icon in the upper right corner of the screen.

- Clock display and setting
- Screen brightness
- Manual zeroing
- Interface settings
- Weighing data (Alibi records)
- Statistics
- User logout
- View user's daily performance
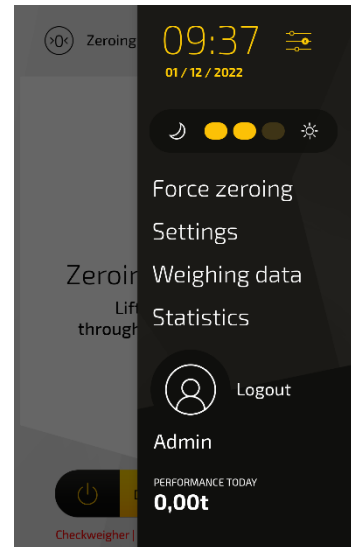
Scale interface settings
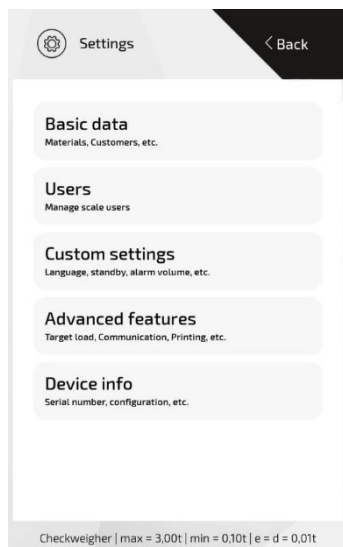
Settings and options of the interface are available to the user depending on their permission level. Administrators have access to all settings.

If the user does not have permission, the protected settings will not be displayed.
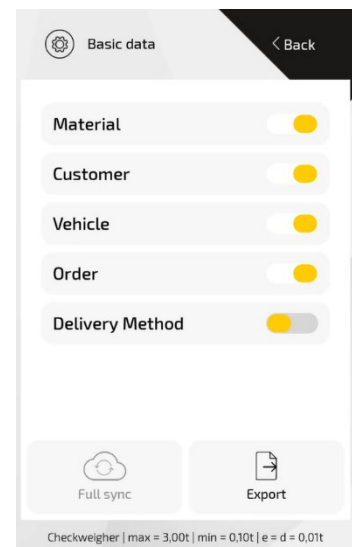
Basic data

A user with basic data management privileges can activate and deactivate basic data categories. Hiding unused items reduces on-screen clutter during loading.

After entering the selected category, individual basic data items (Materials, Customers, Vehicles, Orders, Delivery Methods) can be added, changed and deleted in the same manner as when modifying them during loading.

All basic data contains an "Internal ID" field, which allows you to fill in your own internal code, thereby allowing for easy pairing.

If synchronization with the skalapp.online portal is active, basic data is *automatically* synchronized with the portal and other scales without any user intervention. In exceptional cases (e.g., after installing a new scale or changing tablets), although normally not required, it may be necessary to synchronize data with the portal using the "Synchronize All" button, which is available to Admin users.

Users

It is possible to add, delete and change users of the scale. You can change the PIN for access to the scale and set permissions of individual users.

The following permissions are available:

- Editing basic data
- View statistics (in progress)
- Advanced scale settings
- User settings and their permissions

Note: Any user, regardless of authorization, can view "Device Information"

Custom settings
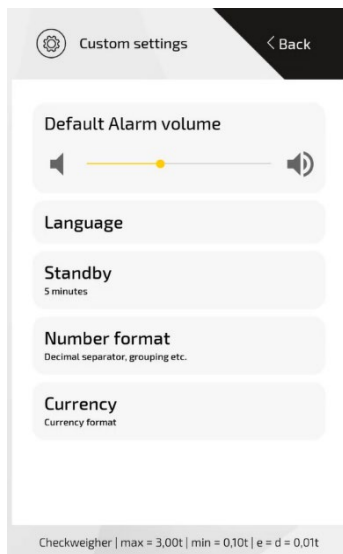
The "Custom settings" item is used to customize the scale interface to the specific needs of each user. You can set the language, delay after which the scale switches to Standby mode, and alarm volume.

You can decide how numbers are displayed (decimal and thousand separators).

Users with the highest "Admin" authorization can set parameters for the calculation of monetary amounts, i.e., select the currency symbol, its display, and method of rounding off the resulting values.

Tip: If weight is used to calculate amounts to be paid in cash, don't forget to set the rounding of numbers according to the smallest available monetary unit. In the case of Czech crowns, it will be whole crowns, i.e., 1.00. In the case of Euros, you can even select a single euro cent.
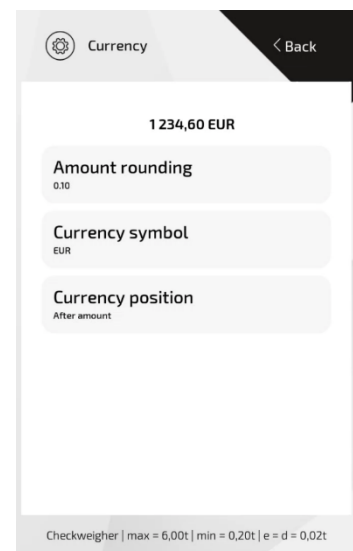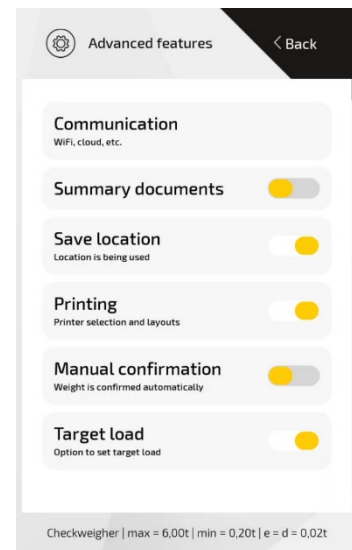
Advanced features

All advanced features that rarely change are available in this section.

On this page, you can activate the saving of geographical coordinates for individual data records. This function is especially useful when sending data to the skalapp.online cloud service, where geographical data can be further processed. We recommend disabling this function if you don't use data transfers.

Likewise, manual confirmation of each individual bucket load weight can be enforced. If activated, the weight of the bucket will not be automatically added. It will only be added to the total truck/trailer load after confirmation by the operator. For most applications, it is recommended to leave the scale in automatic mode and not use manual confirmation.

Advanced features » Communication
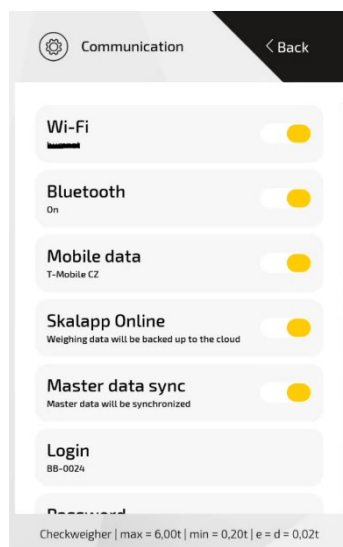
The wireless communication function is especially useful for sending weighing data to the Skalapp Online portal for processing or for connecting to a printer.

Wireless items can be turned on / off directly from the communication page by tapping the switch. For more detailed settings of individual items, tap on the relevant line and detailed settings will be displayed.

Wi-Fi settings

The procedure for connecting the tablet to a Wi-Fi network is the same as any Android or Apple phone. Tap "Wi-Fi" to display access points and their settings. After entering all information, you can return to the communication settings page by pressing the physical *back* button (second from the left) on the bottom of the tablet.

If you have an active connection to a Wi-Fi network, its name will be displayed on the overview page.

Mobile data settings

If your online service package includes skalapp.online with data connectivity, your tablet is already equipped with a special SIM card that provides global coverage and is already set up for immediate use.

If using your own SIM card,

a. it is necessary to insert the SIM card into the appropriate slot located under the rubber cover on the top of the tablet.
b. Tap on "Mobile data" to display the page with activation options, operator settings, and data limits (if applicable).
c. If the data connection is active, the name of the operator appears next to the item.

Connecting the scale *interface to the Skalapp Online portal*

If the tablet has a working Internet connection, weighing data can be transferred to the Skalapp Online portal.

After activating "*Skalapp Online"* (1), entering the "*Login*" name (2) and entering the "*Password"* (3), "Connection established" is displayed as the "*Connection status".*

In most cases, users also utilize "*Synchronization of basic data"*, i.e., the ability to change basic data in the Skalapp Online portal and automatically transfer data to the scale.

From the moment this is activated, all weighing records will be sent to the portal.

<u>TIP:</u> If the connection is interrupted, or the connection is not available in a given location, the scale still saves the weighing data and will transfer all data at the earliest opportunity, without you having to worry about it. The system only considers records sent when acknowledgment of successful receipt is received from the server.
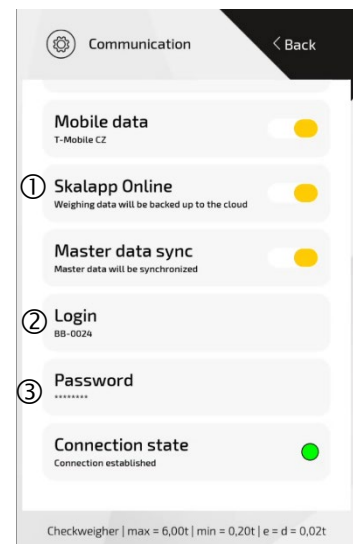
Advanced features » Printing

Print activation, and all its related settings, are accessible under "Printing".

Printer selection

To connect to a printer, it must be turned on and Bluetooth enabled. After pressing the "Printer" button, a list of available Bluetooth devices will be displayed. This setting is typically only needed once and will be performed by a service technician during installation of the scale.

Print copies

It is normally necessary to print several copies of the weighing ticket. In this case, activate the "Offer to print a copy" item. After printing the weighing ticket, the interface will ask if you want to print another copy until you reject the option. It is thus possible to print as many copies as you need very quickly.

Header text

The weighing ticket template contains a fixed layout of labels and data. For custom header settings (e.g., company identification), it is possible to set "Header text", which is a field for entering your own text. You can preview the resulting weighing ticket by tapping on the name of the relevant template.
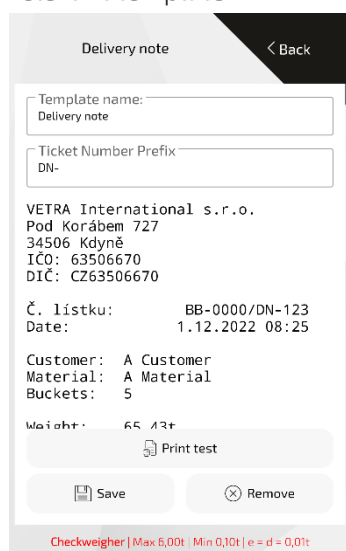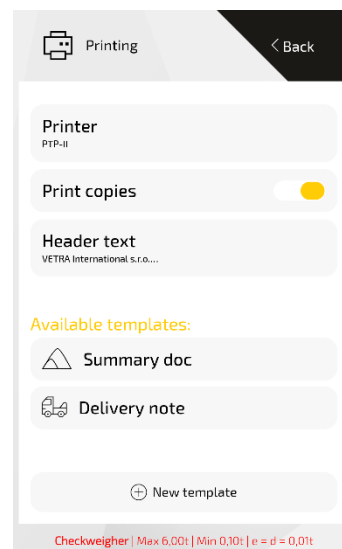
Working with printing templates

The weighing ticket layout is defined using a "template". After previewing the template (containing test data), a test print can be performed. For clarity, you can name the template by tapping its name and saving it. You can also delete the template.

A new print template can be imported into the application from an .XML file or preferably by scanning a QR code after pressing the "New template" button.
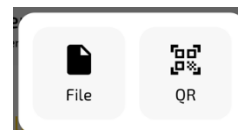
Device information, scale updates
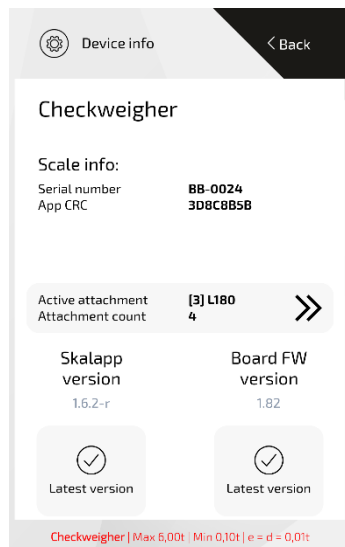
This page shows the serial number of the scale and information about its last calibration, as well as the software version of the scale interface and firmware for the BaseBoard computing unit.

For a scale, verified for commercial weighing, the checksums of the configuration and program memory and the identifiers of the pressure sensors used are also displayed.

If an administrator is logged in, and the tablet is connected to the Internet (via Wi-Fi or SIM card), the scale interface will check for availability of newer software versions and firmware. If an available update is found, the administrator can perform the update by pressing the button and following the on-screen instructions.

The scale that's intended for commercial weighing does not allow for software updates.

Weighing data

The memory contains a list of all completed truck/trailer loads, as well as canceled truck/trailer loads. All data is securely stored in memory and cannot be altered, thereby guaranteeing its authenticity.

In addition, the most important data (number, weight, date and time of loading, number of buckets) is stored directly in the memory of the BaseBoard computing unit and remains available for display, even if the tablet is replaced.

Records can be quickly searched by entering the number of the weighing ticket.

Export

Skalapp Online is used for more detailed processing and performance analysis. If you do not use this service, it is possible to export weighing data in .csv format.

After pressing the *Export* button, the page for searching for Bluetooth devices will open. By tapping on the relevant device (e.g., your mobile phone), transfer of the file will start.

Detail View
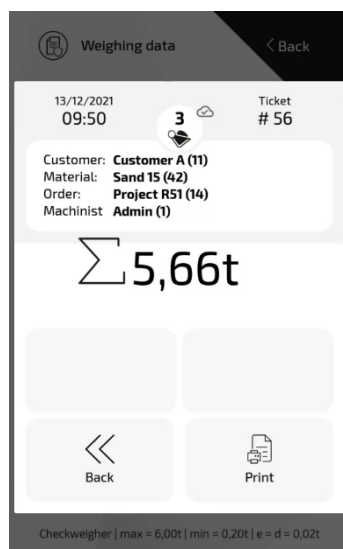
After opening details of the weighing record, it is possible to view all basic data attached to the record.

The cloud icon provides information on whether the record is sent, waiting to be sent, or not sent (if you do not use skalapp.online).

If a printer is connected, the "*Print*" button will be available, and you can print out a copy of the weighing ticket.
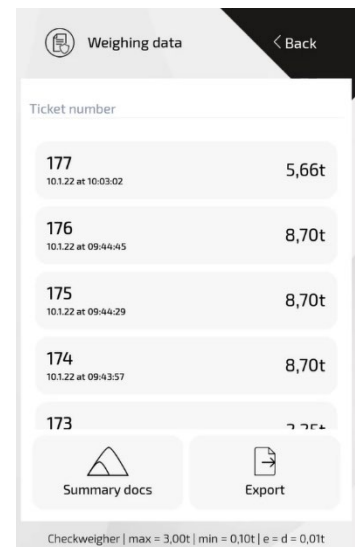
Termination of work with the scale

The "Standby" mode should be used during short work interruptions. In this mode, the scale interface will not be active and will not perform weighing operations. It is also possible to put the scale to sleep by briefly pressing the ⏻ button on the side of the tablet. In both cases, you can wake the scale interface by pressing the button ⏻ or tapping on the screen, whereby the interface will then be ready for immediate use.

When leaving the machine during a shift, it is advisable to log off the user. This is especially important if several people work with the machine and everyone uses their own PIN.

When work has been completed, and especially when disconnecting the battery circuit of the machine, always switch off the tablet with a longer press (3 seconds) on the Power button and confirm the "Off" option that appears on the screen. A complete shutdown protects the internal battery from being completely discharged and possibly damaged.
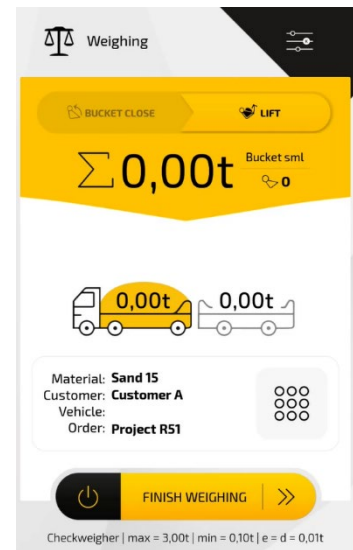
Loading example

The following screenshots of the scale interface show progress of a loading operation – from start to finish.
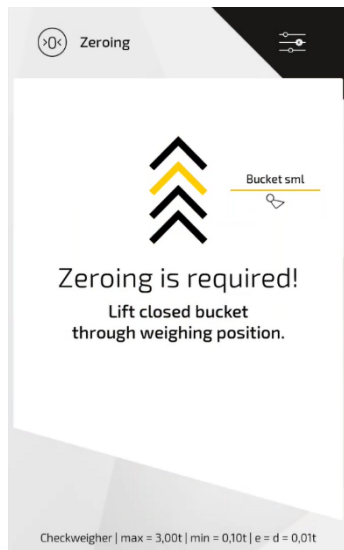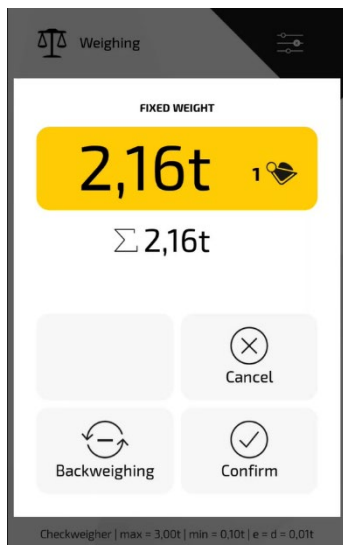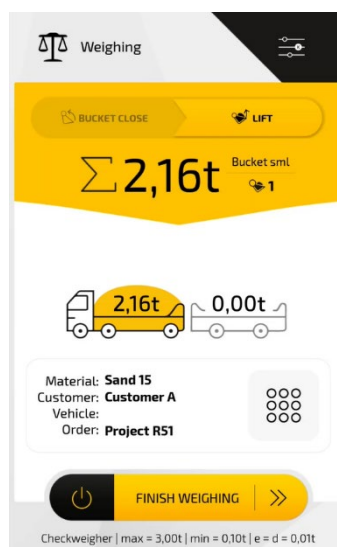

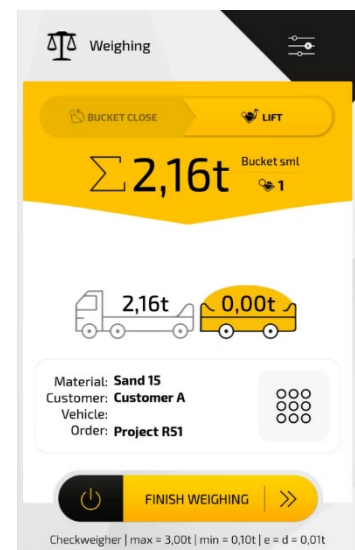*Zeroing after switching on*
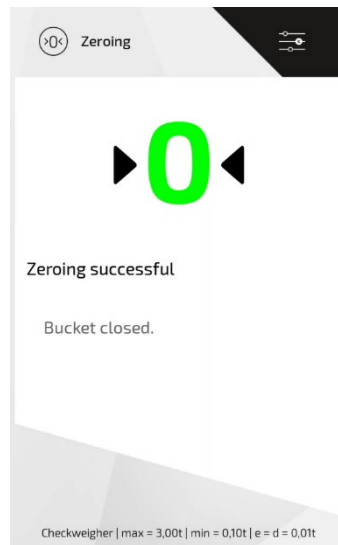
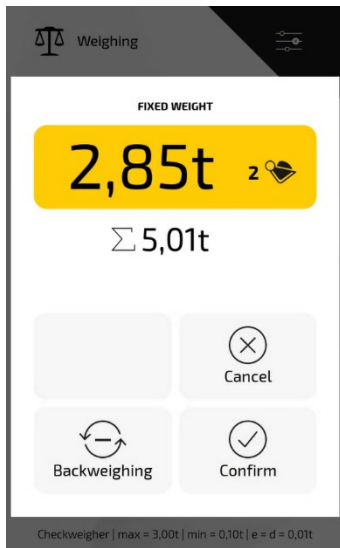*Successful zeroing*

Scale after zeroing
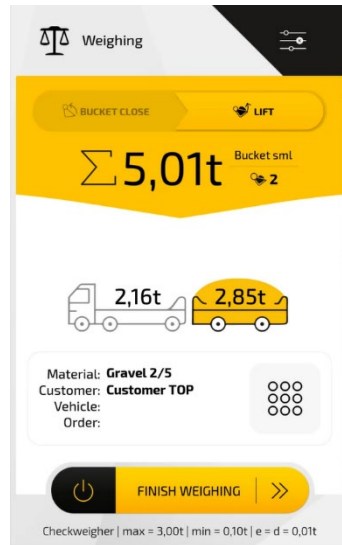

Weighing the first bucket load
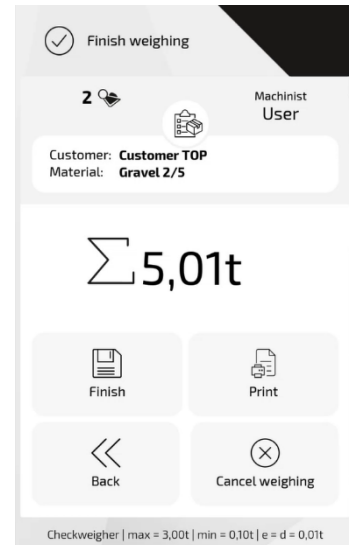

Emptying the first bucket load

Switching to the trailer

Weighing a second bucket load

After the second bucket load is added to the total truck/trailer load and basic data selected

„Finish weighing" confirmed and „Weighing complete" page displayed

Error messages and troubleshooting

During loading, the scale informs the user about the weighing status with an audible alarm and informational messages.

If weighing is not successful, the user is always informed of what caused the problem and how to resolve it.

Common error messages

- Bucket lifted too slow
- Bucket lifted too fast
- Minimum total truck/trailer load weight not reached
- Maximum total truck/trailer load weight exceeded
- Bucket not closed
- Stability error

Area to display messages
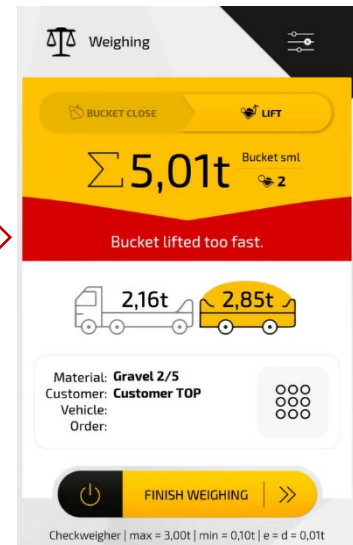
Critical error messages

- Scale disconnected
- Pressure too high
- Pressure too low
- Pressure sensor error

The tablet does not turn on

In this case, it's most likely the tablet was not turned off during downtime and the battery is completely discharged. Charging of the tablet will start immediately after activating the machine's electrical circuit. Try to turn on the tablet again after 30 minutes of charging.

Scale disconnected

The scale interface on the tablet has no connection to the BaseBoard computing unit. Make sure the cables are plugged into the tablet. Check the fuses of the machine where the scale is installed.

Pressure too high / Sensor error

Check the cable connections to the pressure sensors.