

BigFarmNet
manager

SiloCheckpro

Code No. 99-97-2916 GB

Edition: 07/2016

1	System description	1
1.1	Requirements to install the SiloCheckpro application	2
1.2	System limits	3
1.3	Installation examples	4
1.3.1	Data transfer by data cable	4
1.3.2	Wireless data transfer	6
2	Planning and preparation	7
2.1	Pin assignment	7
2.2	Installing the USB adapter	9
2.3	Programming the wireless modules	9
3	Configuration of the system	15
3.1	Adding the control computer and the application	15
3.2	Assigning an ID to the weighing box	19
3.2.1	Weighing box with known ID	22
3.2.2	Weighing box with unknown ID	25
3.3	Configuring settings in the Composer	28
3.4	Entering the COM port	32
3.5	Configuring the IO Manager	33
3.5.1	Creating connections	33
3.5.2	Starting the IO service	37
4	Configuration of the SiloCheckpro application	39
4.1	Calibrating	39
4.1.1	Calibrating with a weight	40
4.1.2	Calibrating with calibration data	43
4.2	Adjusting the silo weighing	45
4.2.1	Correction according to a known silo loading	45
4.2.2	Taring the silo weight	47
4.3	Activating SiloCheckpro functions	49
4.4	Setting threshold values	51
4.5	Silo states	53
5	Silo Manager	54
5.1	Silo data	55
5.2	Graphic view	59
5.3	General master data	61
5.3.1	Creating nutrients	61
5.3.2	Creating components	63
5.3.3	Adding suppliers	64
5.3.4	Settings for deliveries and consumption	66

- 5.4 Data export66
- 5.5 Data backup68
- 6 Alarm.70**
 - 6.1 Filtering alarms72
 - 6.2 Acknowledging an alarm73
 - 6.3 Alarm log75
 - 6.4 System-specific alarms.....77
- 7 Annex78**
 - 7.1 Overview connection.78
 - 7.2 Power supply with USB adapter.....79
 - 7.3 Wiring diagram.....80
 - 7.4 Power supply without USB adapter81
 - 7.5 Connection of the Info Matic Wireless module.....82
 - 7.6 Connection weighing box V 2.283
 - 7.7 Resetting the weighing box V 2.284
 - 7.8 XK3101 SiloCheckPro Quick Start: Serial Start port programming85
 - 7.9 XK3101 SiloCheckPro Quick Start: Calibration86
- 8 Notes.....87**

Copyright

This software is property of Big Dutchman International GmbH and protected by copyright. It may not be copied onto other media or be duplicated where this is not explicitly allowed in the license agreement or permitted in the sales agreement.

The user manual or parts thereof may not be copied (or reproduced by other means) or reproduced without approval. It is furthermore not permitted to misuse the products described herein and the corresponding information or to disclose these to third parties.

Big Dutchman reserves the right to modify the products and this user manual without prior notice. We cannot guarantee that you will be notified if your products or the manuals are modified.

© Copyright 2016 Big Dutchman

Liability

The manufacturer or distributor of the hardware and software described herein shall not be liable for any damage (such as the loss or disease of animals or the loss of other opportunities for profit) caused by failure of the system or incorrect use or operation.

We are constantly working on further developing the computer and the software and also consider user preferences. Please let us know if you have ideas or suggestions for improvement and modification!

Big Dutchman International GmbH

BU Pig

P.O. Box 1163

49360 Vechta

Germany

Phone: +49(0)4447-801-0 Fax: +49(0)4447-801-237 Email: big@bigdutchman.de

1 System description

SiloCheckpro is a system for weighing silos. Each weighed silo stands on weigh bars which weigh the silo. The weighing boxes are the interfaces that connect the weigh bars with the BigFarmNet Manager. Each silo has one weighing box.

Based on the changed weight of the silo, the program automatically detects when new feed is delivered or when feed is removed. This process is centralised at a PC. The program visualizes each silo to give you an overview of all silos.

You can check the content of your silos with the Silo Manager. The Silo Manager and the SiloCheckpro application provide the following functions:

- register a delivery automatically
- register a feed removal automatically
- calculate the expected storage duration of the silo contents
- see when a silo requires filling
- manager and archive suppliers and their prices per feedstuff
 - The extent of all deliveries and the costs are calculated automatically based on this information
- export all feed deliveries and removals as .csv or .xlsx files

Standard	Locked	Location	Name	Number	Enabled	Weighed	Connected	Priority	Critical fill level	Fill level	Show tips
		Sow house	Silo_Barley [2]	2		10,861.6 kg					
		Sow house	Silo_Barley [2]	2		11,977.8 kg					
		Sow house	Silo_Barley [3]	3		16,619.7 kg					
		Sow house	Silo_Barley [4]	4		14,400.5 kg					
		Sow house	Silo_Barley [20]	20		12,880.8 kg					
		Piglet rearing hou...	Silo_Corn [2]	2		9,958.6 kg					
		Rearing house	Silo_Corn [2]	2		11,374.4 kg					
		Sow house	Silo_Corn [9]	9		16,619.7 kg					
		Sow house	Silo_Corn [11]	11		14,400.5 kg					
		Sow house	Silo_Triticale [5]	5							
		Sow house	Silo_Rye [1]	1		612.0 kg					
		Sow house	Silo_Rye [6]	6		12,880.8 kg					
		Sow house	Silo_Rye [10]	10		1,927.0 kg					
		Piglet rearing hou...	Silo_Soya [3]	3		8,238.9 kg					

A SiloCheckpro system consists of the following components:

- PC (on site)
- BigFarmNet Manager program with the following software licenses:
 - Basic installation software
 - SiloCheck
- Power supply 24 VDC 5 A SiloCheck with RS485 interface
- Weighing boxes
- Weigh bars
- Data cable LIYCY 2 x 2 x 0.75 mm²
- Optional:
 - Power supply 24 VDC 5 A SiloCheck
 - Module InfoMatic Wireless Link central antenna
 - Module InfoMatic Wireless Link directional antenna

1.1 Requirements to install the SiloCheckpro application

No additional control computer is required for the SiloCheckpro application. The local computer on which the BigFarmNet Manager is installed (hereinafter referred to as Manager computer) controls how the weighing boxes function.

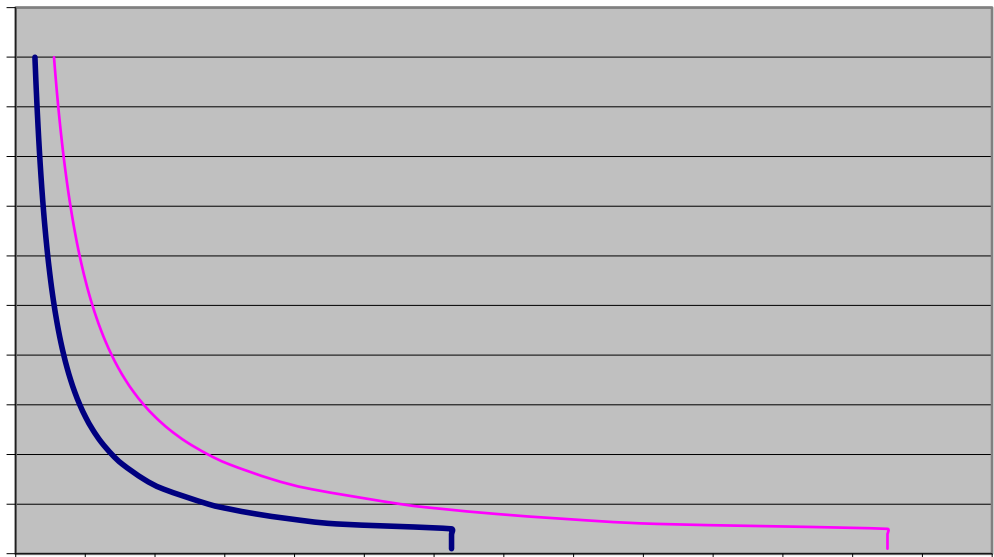
The following software licenses are **required** to run the SiloCheckpro application:

Code no.	BigFarmNet Manager license	Use
91-02-6563	BigFarmNet Manager – SiloCheck	1 per BigFarmNet network
91-02-6500	BigFarmNet Manager – Basic installation software	1 per BigFarmNet network

1.2 System limits

- Maximum of 2 COM ports
- Maximum of 89 weighing boxes per COM port
- 4 to 8 weigh bars per box
- Maximum of 99 silos
- Maximum cable length for RS485 bus: 1000 m
- Maximum range (wireless): radius of 1000 m

The diagram below shows the respective number of power supplies as a function of distance and number of the weighing boxes.



1.3 Installation examples

1.3.1 Data transfer by data cable

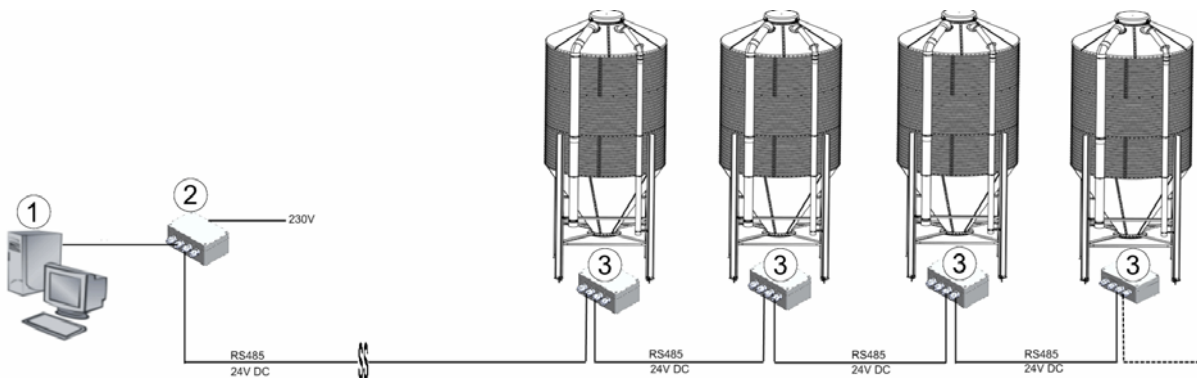


Figure 1-1: SiloCheck - RS485 network with four silos

1. PC
2. Power supply 24 VDC 5 A SiloCheck with USB port
3. Weighing box
4. USB cable from the PC to the USB port max. length 1 m



For detailed technical information on the power supply and the connections, please refer to the following chapters:

- 7.1 "Overview connection"
- 7.2 "Power supply with USB adapter"
- 7.3 "Wiring diagram"
- 7.4 "Power supply without USB adapter"
- 7.5 "Connection of the Info Matic Wireless module"
- 7.6 "Connection weighing box V 2.2"
- 7.7 "Resetting the weighing box V 2.2"

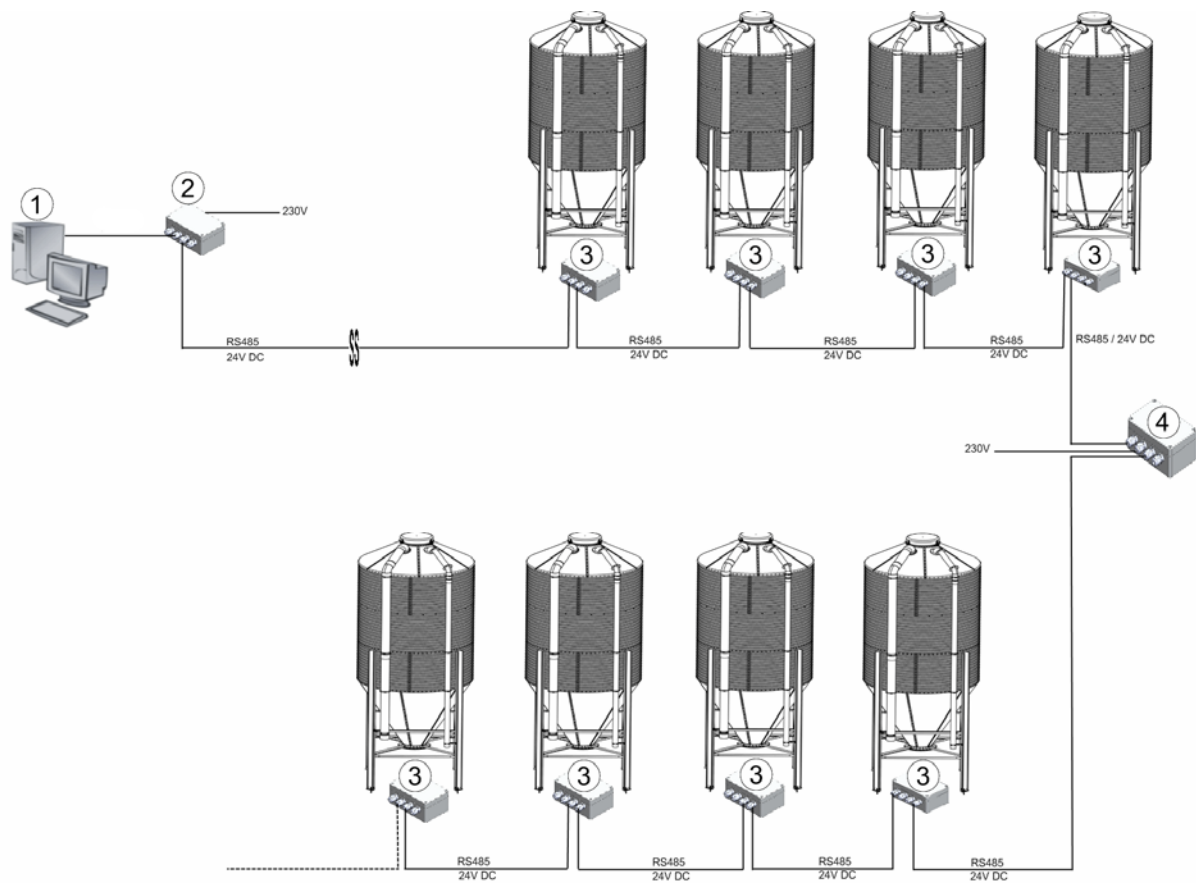


Figure 1-2: SiloCheck - RS485 network with eight silos

1. PC
2. Power supply 24 VDC 5 A SiloCheck with USB port or USB to 485 adapter
3. Weighing box
4. Additional power supply unit A
 - Power supply 24 VDC 5 A SiloCheck without USB port



An additional power supply unit is necessary where the 24 V power supply is no longer sufficient. This may be because of:

- voltage drop in the cable or
- high power consumption of too many weighing boxes

1.3.2 Wireless data transfer

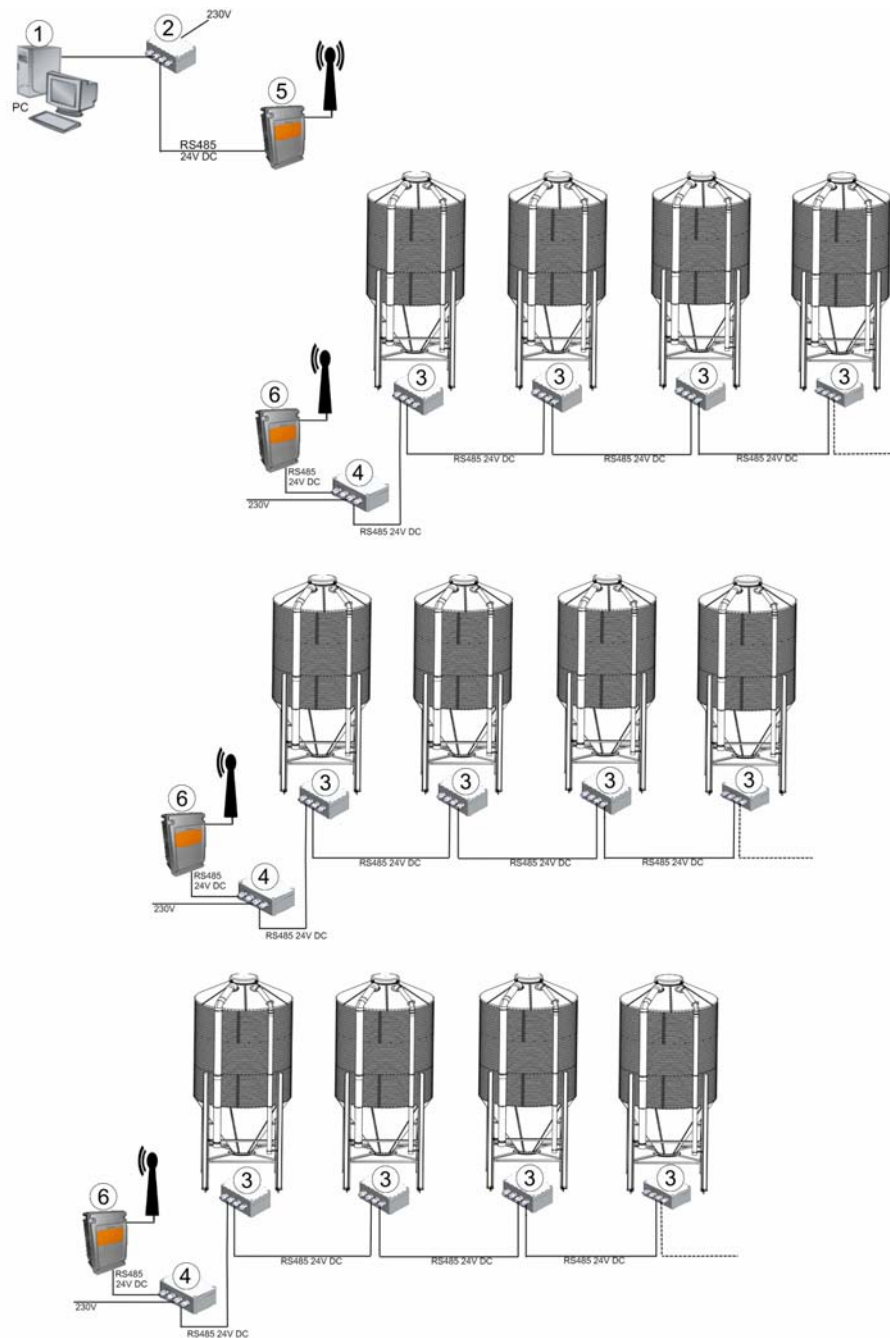


Figure 1-3: SiloCheck - RS485 network with four wireless modules and twelve silos

1. PC
2. Power supply 24VDC 5A SiloCheck with USB port
3. Weighing box
4. Power supply 24VDC 5A SiloCheck
5. Module InfoMatic Wireless Link central antenna
6. Module InfoMatic Wireless Link directional antenna

2 Planning and preparation

2.1 Pin assignment

- USB port (RS485 adapter): USOPTL4DR-LS
- All DIP switches set to "ON"



Figure 2-1: Info Matic Wireless module

Table 2-1: Power supply wireless module

Power supply	Colour	Info Matic Wireless module
+24 V	yellow	Pin L4
0 V (GND)	green	Pin L5

Table 2-2: Data connection wireless module with RS485 adapter

RS485 adapter USOPTL4DR-LS	Colour	Info Matic Wireless module
TDB (+)	white	Pin L1
TDA (-)	brown	Pin L2

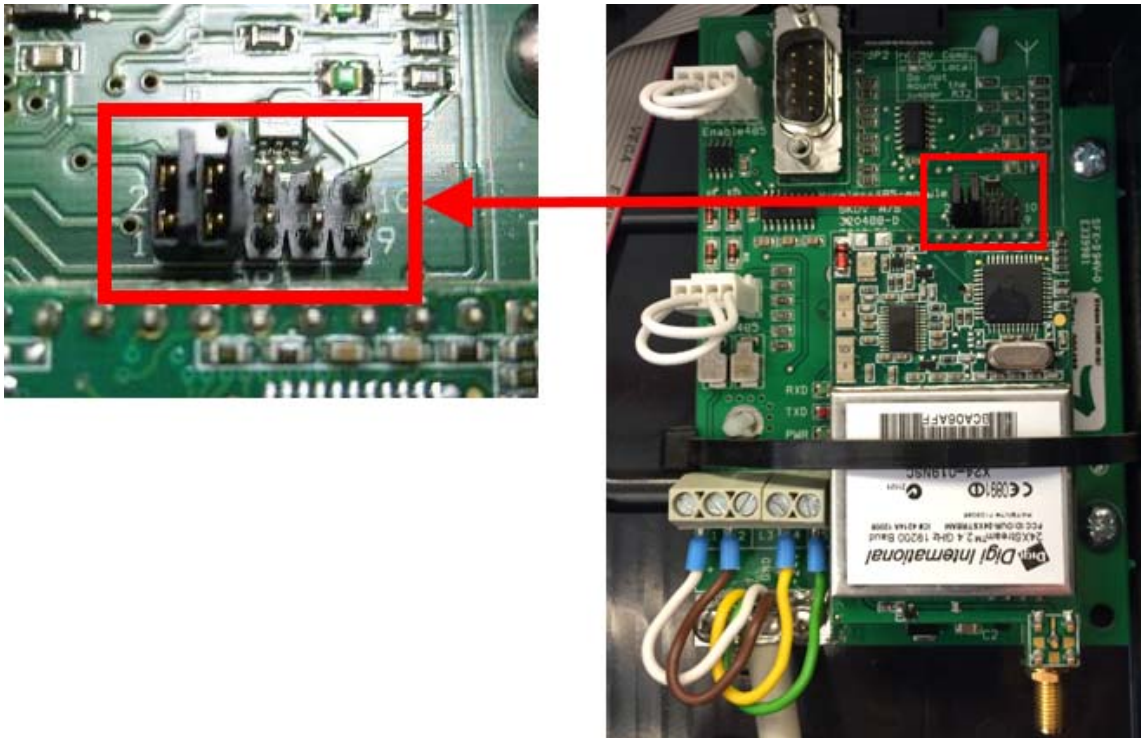


Figure 2-2: Coding plugs as delivered

Table 2-3: Power supply weighing box

Power supply	Colour	AD105 weighing box
0 V (GND)	green	Pin 1
+24 V	yellow	Pin 2

Table 2-4: Data connection weighing box with wireless module

Info Matic Wireless module	Colour	AD105 weighing box
Pin L1	white	Pin 3
Pin L2	brown	Pin 4

Table 2-5: Direct connection weighing box with RS485 adapter

RS485 adapter USOPTL4DR-LS	Colour	AD105 weighing box
TDB (+)	white	Pin 3
TDA (-)	brown	Pin 4

2.2 Installing the USB adapter

Before connecting the USB adapter, install the drive available on the supplied USB flash drive.



Install the driver first and then insert the USB adapter.

1. Go to the following directory:
Controller/PC/ULinx USB Driver/USB-to-Serial/BBelectronics/Windows
2. Start the installation program "dpinst32.exe" or "dpinst64.exe".
The installation program differs depending on your Windows operating system (32 bit or 64 bit).
3. Follow the instructions of the setup wizard.

2.3 Programming the wireless modules

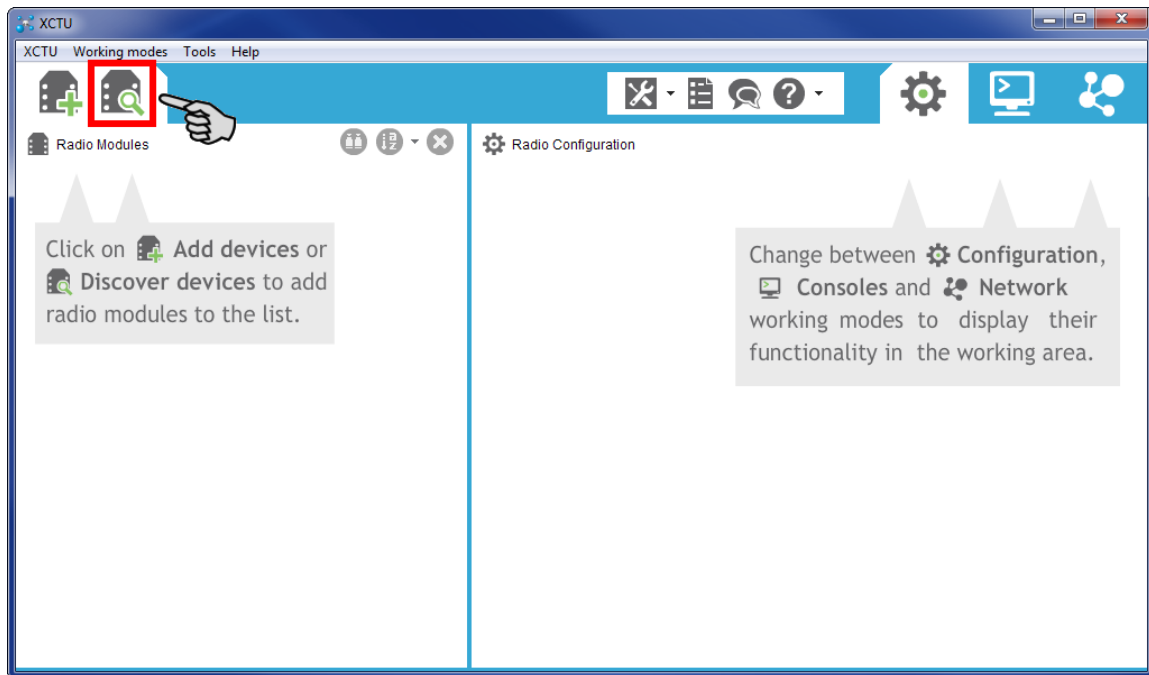
If SiloCheck*pro* is to transfer data wirelessly, the Info Matic Wireless modules are used. However, these wireless modules are not configured by default for SiloCheck*pro*. Each wireless module must be reprogrammed before use.



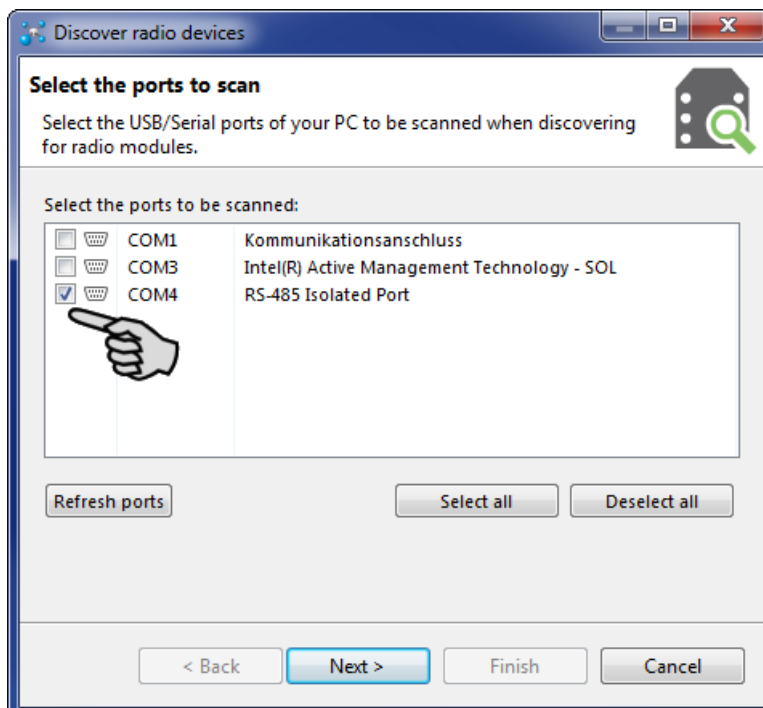
Program the wireless modules before installing them in the system.

1. Connect the wireless module with the USB adapter.
2. Start the setup "X-CTU_40003026_D.exe" from the directory Controller/PC/Wireless Link RS485/ on the supplied USB flash drive.
This opens the installation wizard.
3. Follow the instructions of the installation wizard to carry out the installation.
After successful installation, a desktop shortcut is created on your PC.
4. Start the program XCTU from your PC's desktop.

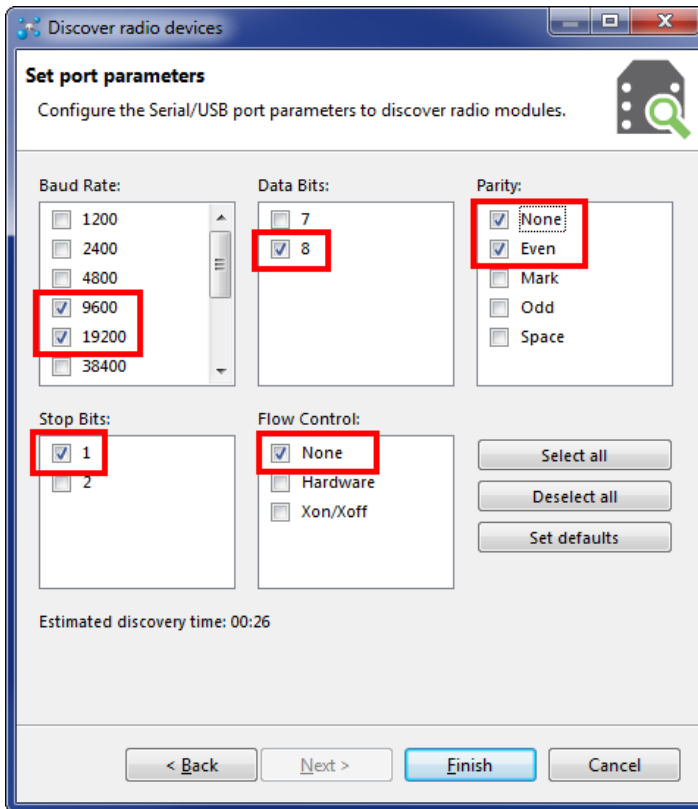
- Click on the search icon to search for the connected wireless module.



- Select the correct port at your PC.



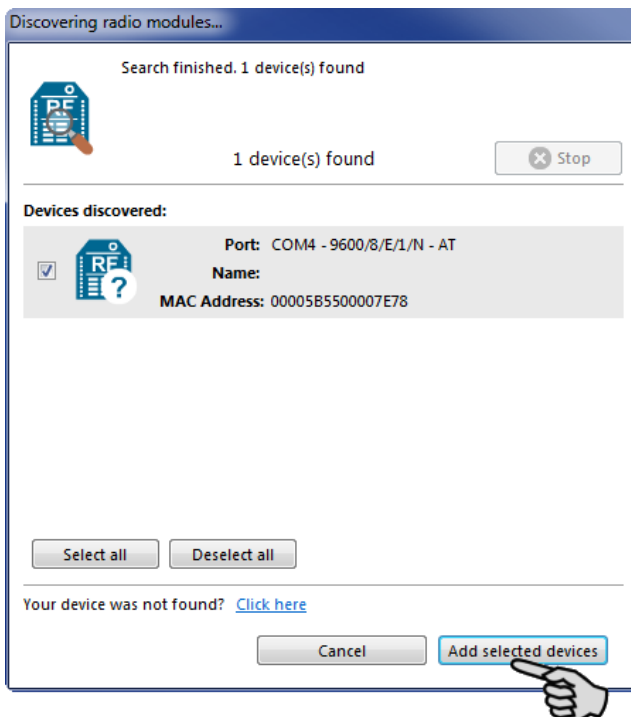
- Click on "Next".
- Set the parameters of the port as indicated in the screenshot below.



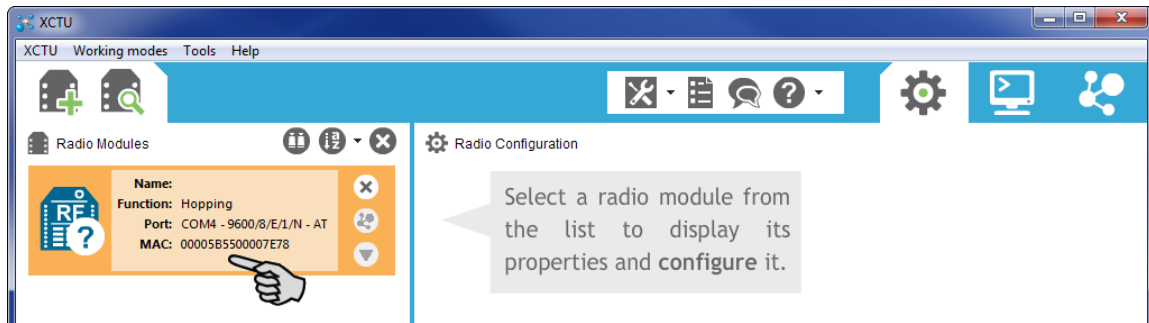
9. Click on "Finish".

The program now starts searching for the connected wireless module. The next window shows the search result.

10. Click on "Add selected devices" to add the detected wireless module.



11. In the list on the left, click on the wireless module to open the settings of the wireless module.



12. Configure the settings of the wireless module as follows:
- Scroll down until you reach "Serial Interfacing Options".
 - Change the value next to "BD Interface Data Rate" to **9600 (3)**.
 - Additionally, change the value "NB Parity" to **8-bit even parity (1)**.
 - Make sure that all wireless modules are configured with the same "HP Hopping Channel". Otherwise, the wireless modules will not be able to communicate. If the communication in the active Hopping Channel is interrupted, you can select a different one.

Radio Configuration [- 00005B5500007E78]

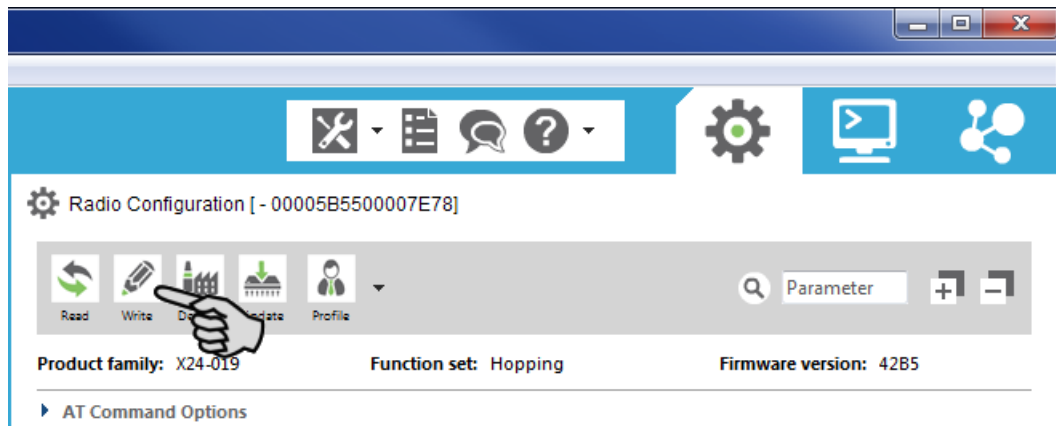
Read Write Default Update Profile

Parameter

Product family: X24-019 Function set: Hopping Firmware version: 42B5

- AT Command Options
- Diagnostic Commands
- Networking
 - Enable communications in a networked environment
 - DT Destination Address: 0
 - HP Hopping Channel: 0
 - MK Address Mask: FFFF
 - SY Time before Initialization: 0 x 100 ms
 - RN Delay Slots: 0 slots
 - RR Retries: 0
 - TT Streaming Limit: FFFF
 - ID Modem VID: 3332
- Serial Interfacing Options**
 - Allows changes to radio modem interfacing options
 - BD Interface Data Rate: 9600 [3]
 - RT DI2 Configuration: Disable [0]
 - FL Software Flow Control: No software flow control [0]
 - FT Flow Control Threshold: 16
 - CS DO2 Configuration: RS-485 enable high [3]
 - NB Parity: 8-bit even parity [1]
 - SB Stop Bits: 1 Stop Bit [0]
 - CD DO3 configuration: RX LED [0]
 - RO Packetization Timeout: 0 x 0.2 ms
- Sleep (Low Power)

- e) Click on "Write" in the upper bar to accept these settings.
Configuration has now been completed.



13. Close the XCTU program.
14. If necessary, connect the next wireless module and configure it as described above.

3 Configuration of the system



Before assigning IDs to the weighing boxes, the control computer and the SiloCheckpro application must be added. This step is necessary for the functions required for ID assignment to be activated.

3.1 Adding the control computer and the application

Before the system can be configured in accordance with the mechanical situation, the respective control computer and the application must be added to your farm system.



We recommend creating houses in the farm structure for the SiloCheckpro application. You can then easily see which silo is connected to which house as well as the content of each silo.

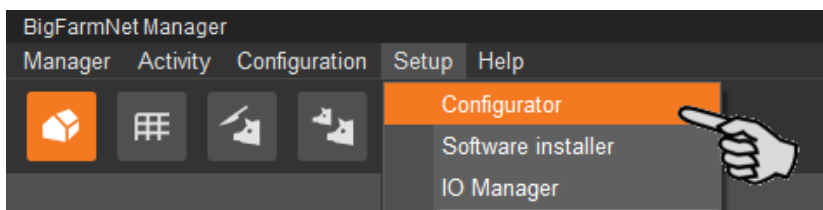
Sections or pens are not relevant.

To create a farm structure, please follow the instructions in the "BigFarmNet Manager – Installation/Configuration" manual.

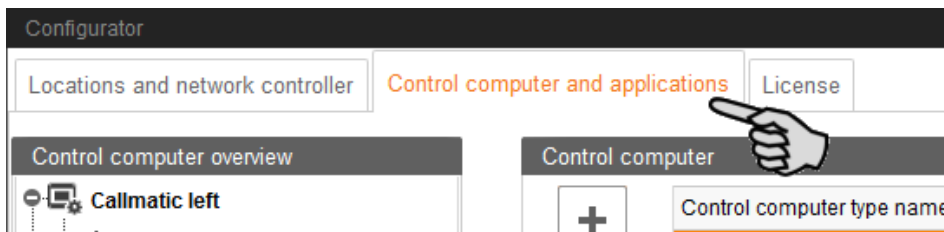
Proceed as follows:

1. Click on "Configurator" in the "Setup" menu.

This opens the "Configurator" window.




2. Click on the "Control computer and applications" tab.

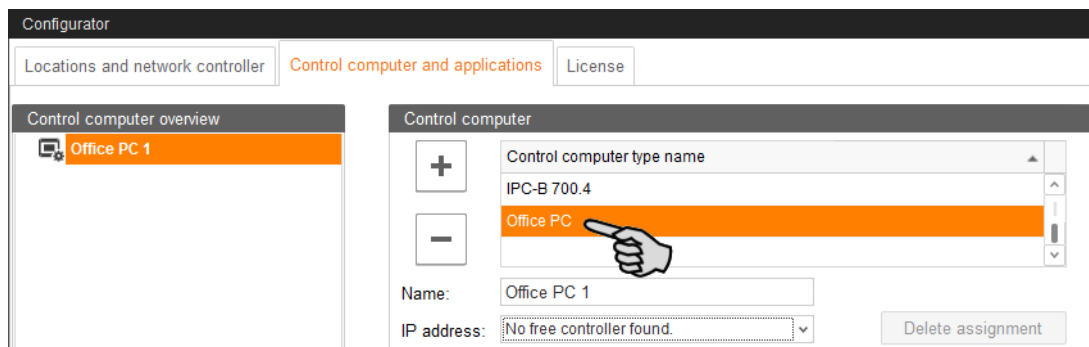


3. Select the correct control computer in the upper part of the window under "Control computer" and click on the plus button to the left.

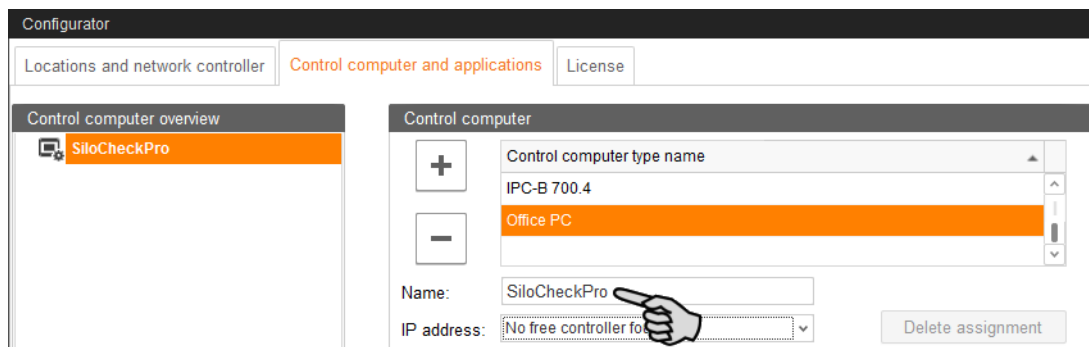
The control computer is now added in the left-hand part under "Control computer overview".



For SiloCheckpro, the PC with the BigFarmNet Manager is also the control computer. Select "Office PC" for this reason.



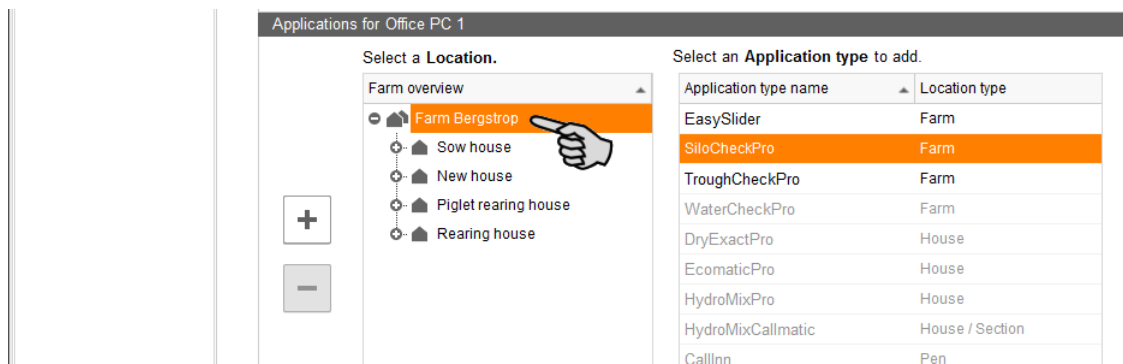
4. Enter a name for the control computer.



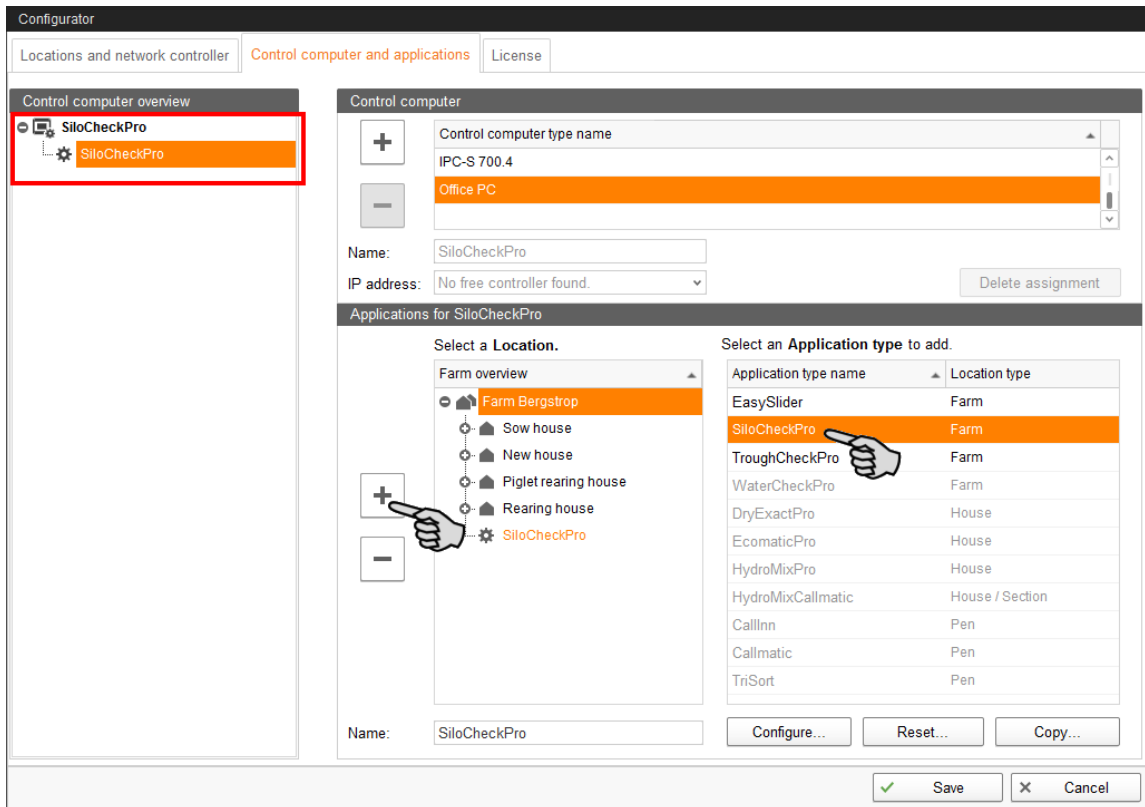
5. From the lower part of the window under "Application for Office PC 1", select the location where the system is to be used.

The applications available for selection depend on the selected location.

The SiloCheckPro application is added on the farm level.

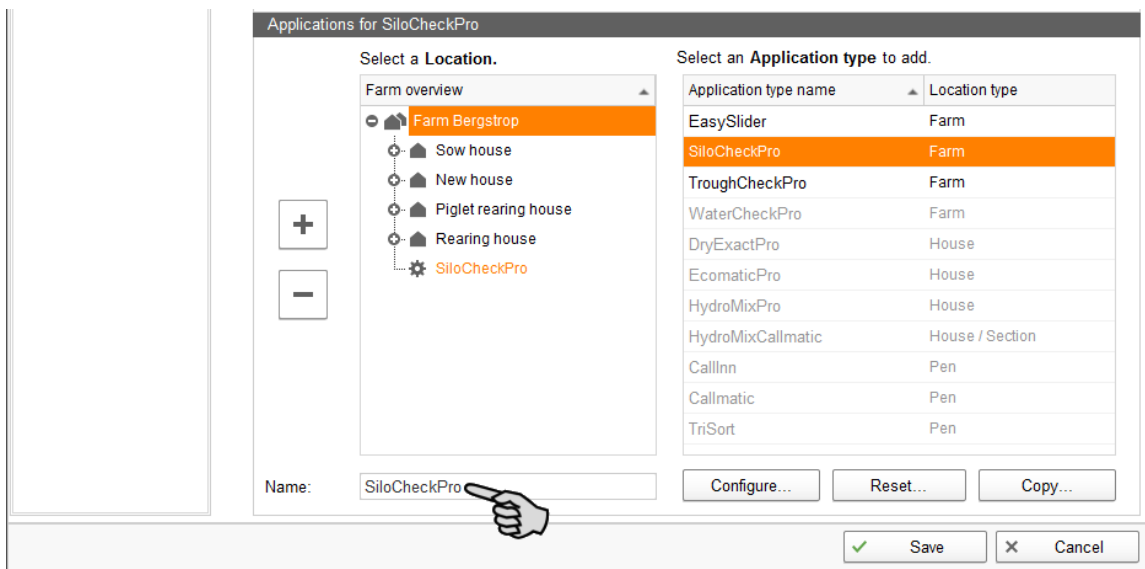


- Select the correct application in the table on the right and click on the plus button to the left.



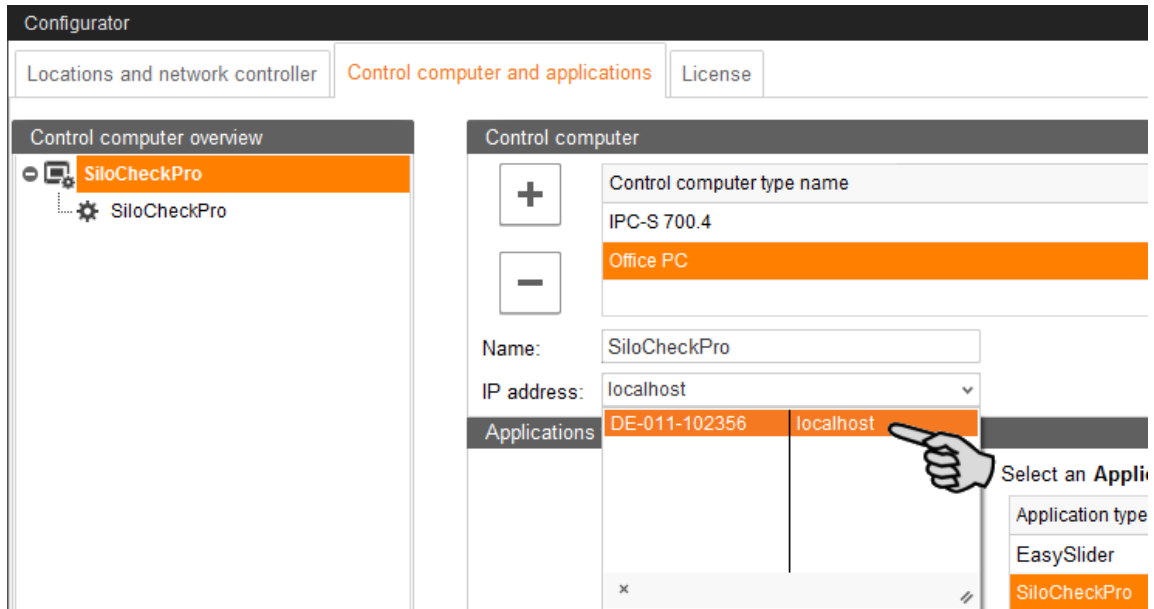
The selected application is assigned to the control computer in the left-hand part under "Control computer overview". In the structure, the control computer is displayed on the upper level and the respective application in the lower level.

- Enter a name for the application.

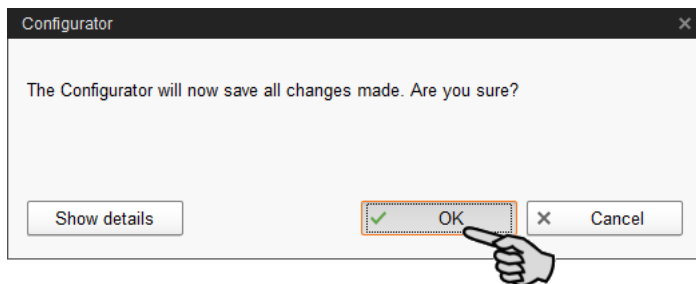


8. Click on the level of the control computer in the left-hand part of the window under "Control computer overview":
9. Assign the corresponding IP address to the control computer.

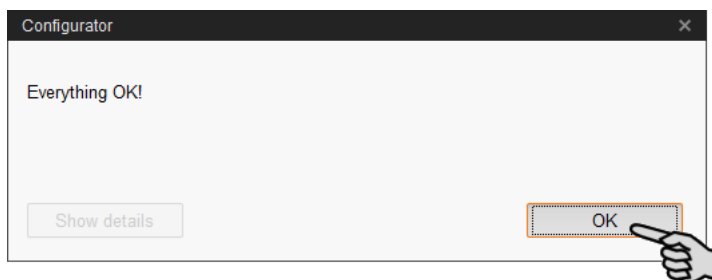
As the PC with the BigFarmNet Manager is also the control computer, select the IP address "localhost".



10. Click on "Save" in the bottom command bar of the "Configurator" window after having configured all settings.
11. Confirm these settings by clicking on "OK".



12. Confirm these settings again by clicking on "OK" in the next window.



3.2 Assigning an ID to the weighing box

The BigFarmNet Manager uses the ID to identify and distinguish the weighing boxes. Each weighing box must be given its own ID. The ID must be unambiguous for each COM port. Based on this ID, each weighing box is assigned to one silo.



Assign IDs to the weighing boxes **before** mounting the weighing boxes to the silos. This is because the weighing boxes are usually connected with your PC by USB individually and one after another to assign IDs.

All new weighing boxes have the ID 31 upon delivery.



Figure 3-1: AD105 weighing box



Figure 3-2: XK3101(N) weighing box



The XK3101(N) weighing box is to be used for the Asian market exclusively!

It is not possible to use the BigFarmNet Manager to assign IDs in this case.

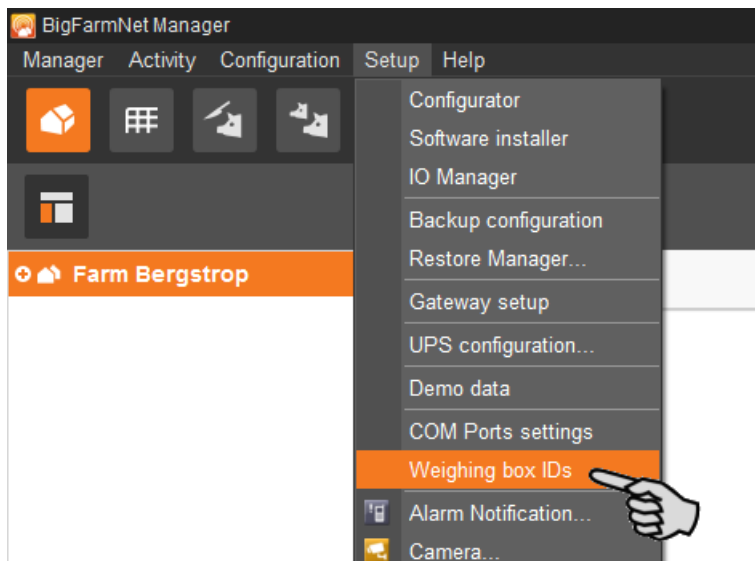
Instead, the IDs for these weighing boxes are entered using the function keys at the device:

Refer to the Quick Start instructions chapter 7.8 and the manufacturer's user manual on the supplied USB flash drive or CD.

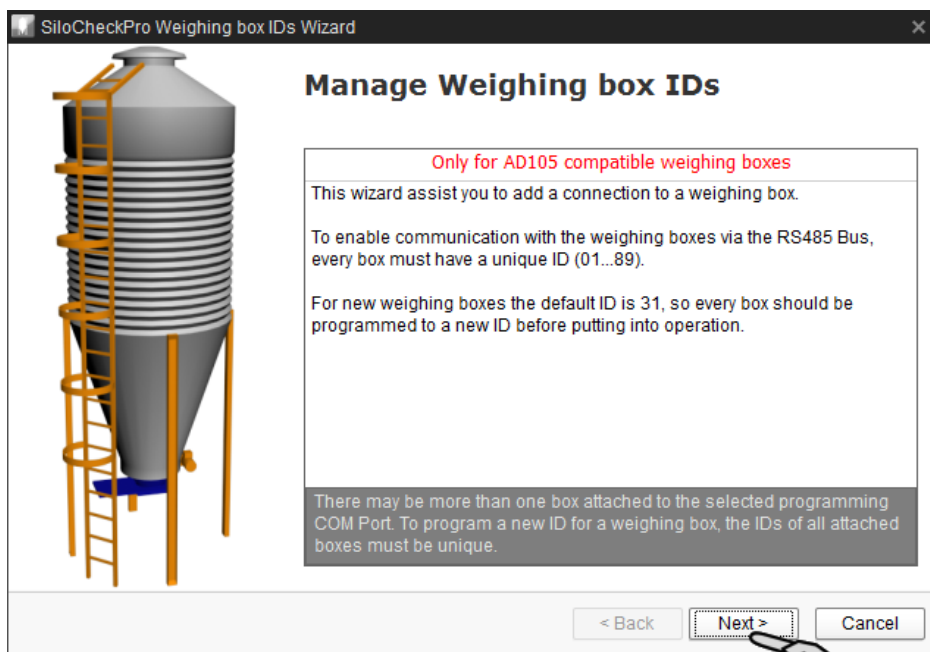
Proceed as follows to assign IDs:

1. Set all DIP switch of the RS485 adapter to "ON".
2. Connect the blue RS485 adapter with your PC using a USB port.
3. Connect the first weighing box with the RS485 adapter.
4. Start the BigFarmNet Manager if you have not done so yet.
5. Click on "Weighing box IDs" in the "Setup" menu.

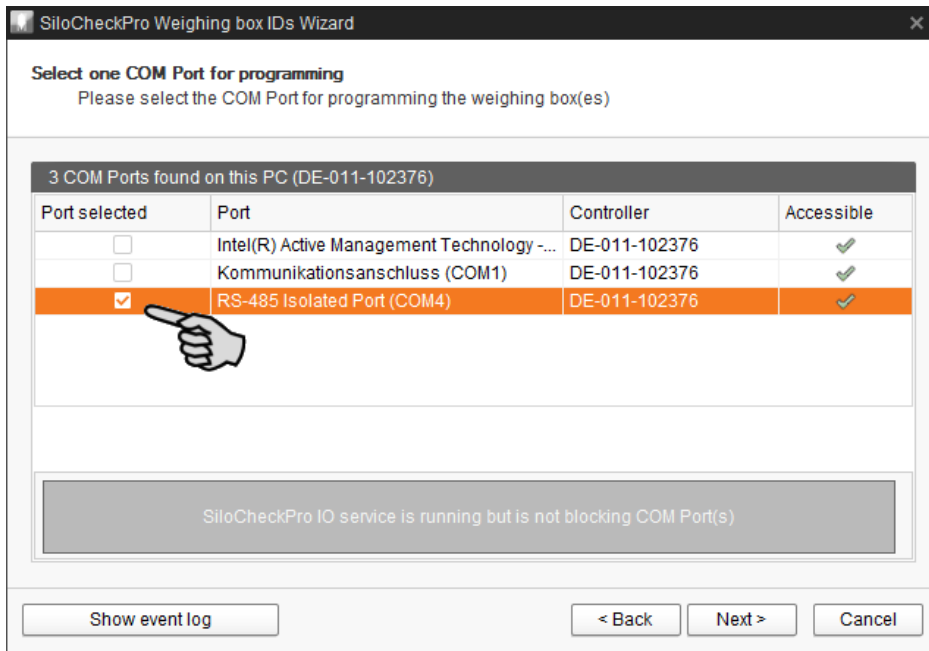
This opens the SiloCheckPro weighing box IDs wizard.



6. Click on "Next".



- In the next window, check the box for the COM port which displays the RS 485 adapter.

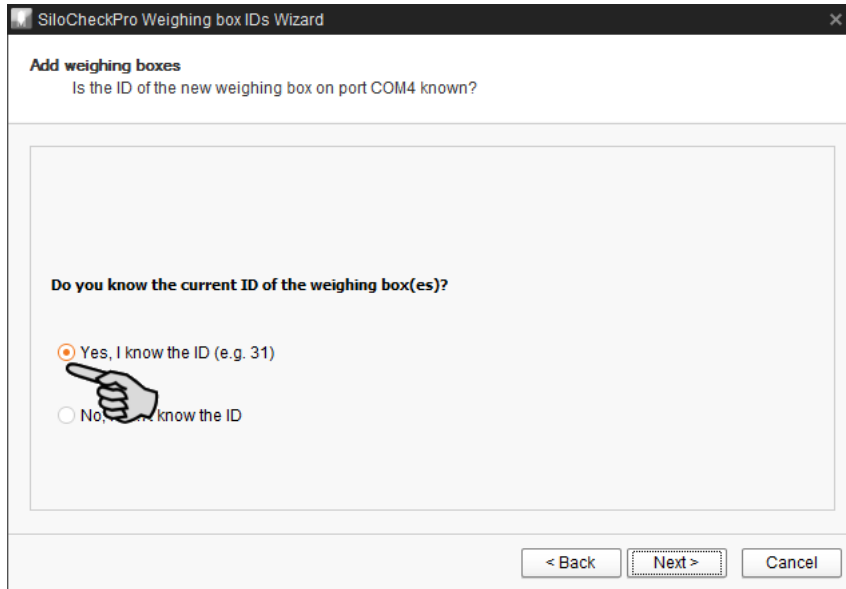


- Click on "Next".
- Depending on your situation, proceed with the instructions in chapter
 - 3.2.1 "Weighing box with known ID"Or:
 - 3.2.2 "Weighing box with unknown ID"

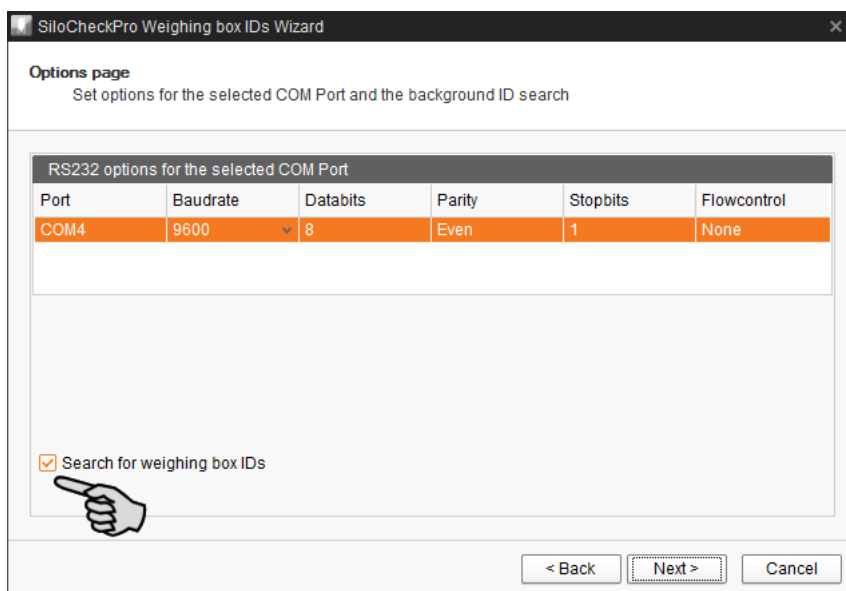
3.2.1 Weighing box with known ID

A weighing box with a known ID is either a new weighing box with the ID 31 or a used weighing box whose ID you know.

1. Click on "Yes, I know the ID (e.g. 31)".

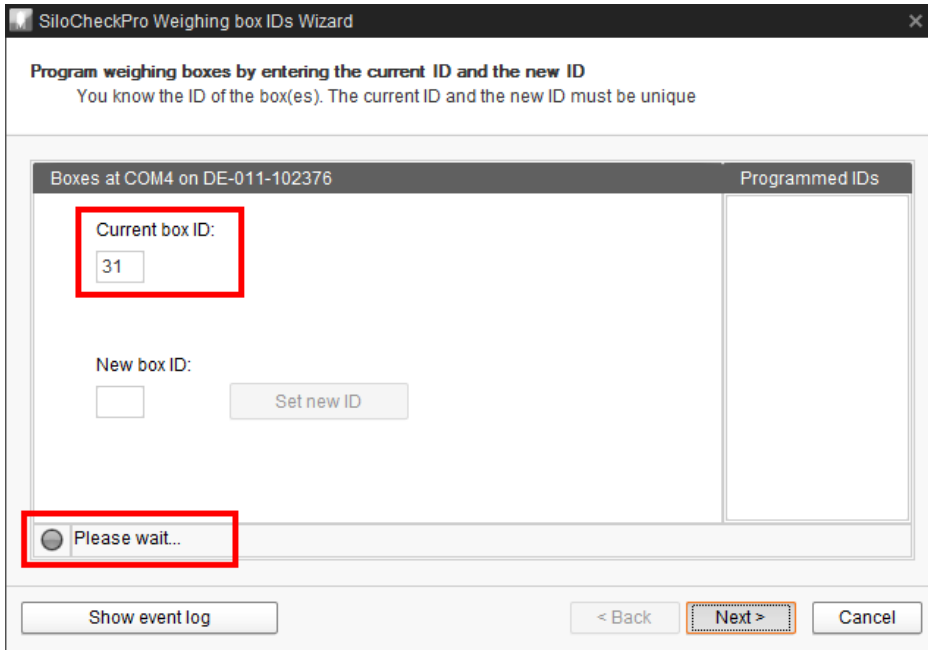


2. Click on "Next".
3. Make sure that the box "Search for weighing box IDs" is checked.
If necessary, check the box.

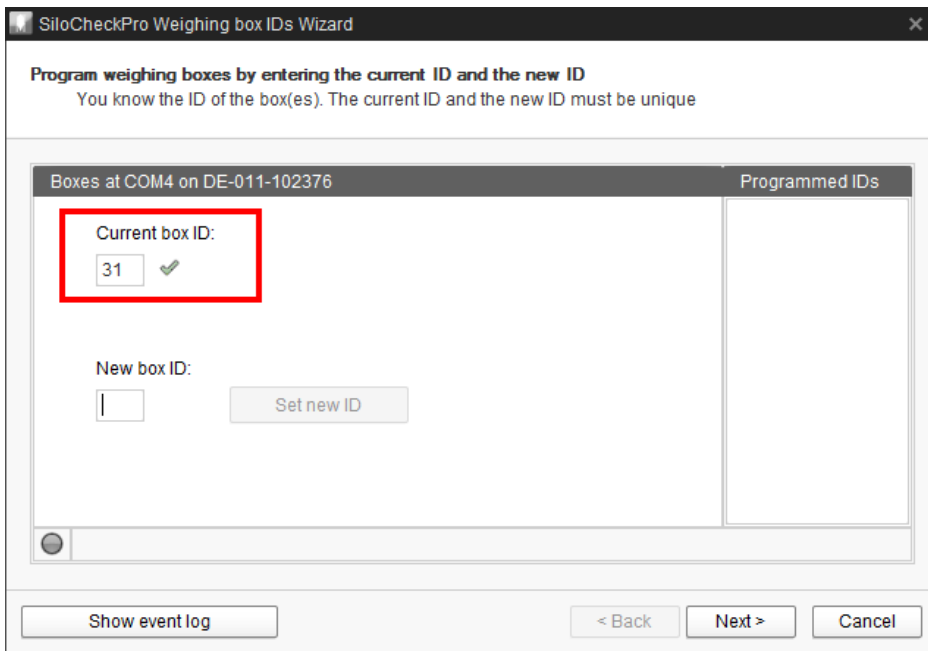


4. Click on "Next".

5. Wait until the search has been completed in the next window.
The wizard automatically searches for the standard ID 31 first.




After the search, either a green check mark or a red cross are displayed next to the input field "Current box ID":



- A green check mark indicates that the weighing box ID was detected.
 - A red cross indicates that the weighing box ID was not detected.
- Enter the known ID for "Current box ID" and the search starts again automatically.

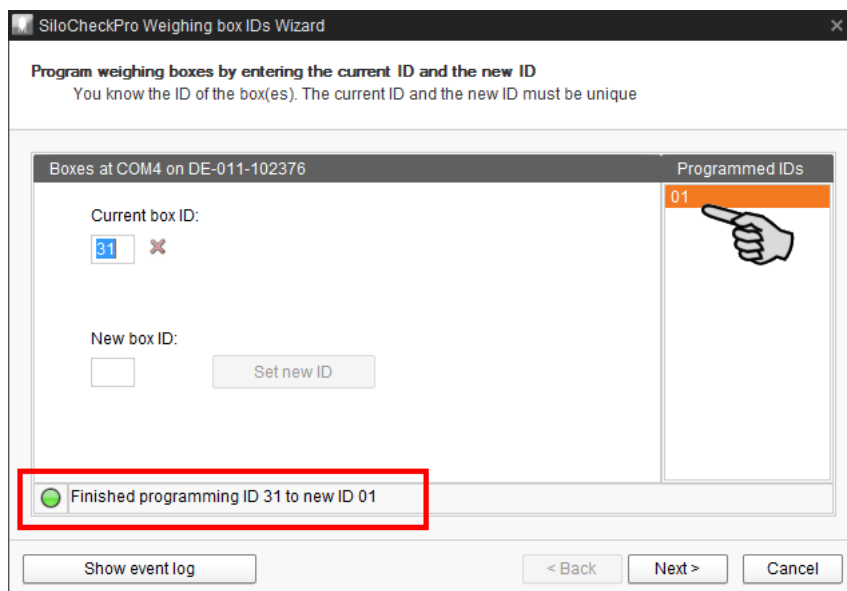
6. Enter the new ID in the field "New box ID".

Use the ID corresponding to the number of the intended silo, e.g. ID 01 for silo 1.

	<p>You can assign numbers between 01 and 89.</p> <p>Do not assign number 31, but leave number 31 unused for service. If a weighing box in use is defective, installing a new weighing box (ID 31) and configuring it is much easier.</p>
---	--

7. Click on "Set new ID."

The wizard assigns the new ID to the weighing box. The green dot indicates that the ID was assigned successfully. The new ID is shown in the right-hand part of the window under "Programmed IDs".



8. Disconnect the weighing box from the RS485 adapter.

The SiloCheckPro weighing box IDs wizard remains open.

9. **Use a water-proof marker to mark the new ID on the weighing box.**

This helps you to remember which ID you assigned to this weighing box and furthermore facilitates allocation to the specific silo.

10. Connect the next weighing box to the RS 485 adapter.

A search for the standard ID 31 starts automatically.

11. Assign an ID to all weighing boxes as described from point 5. .

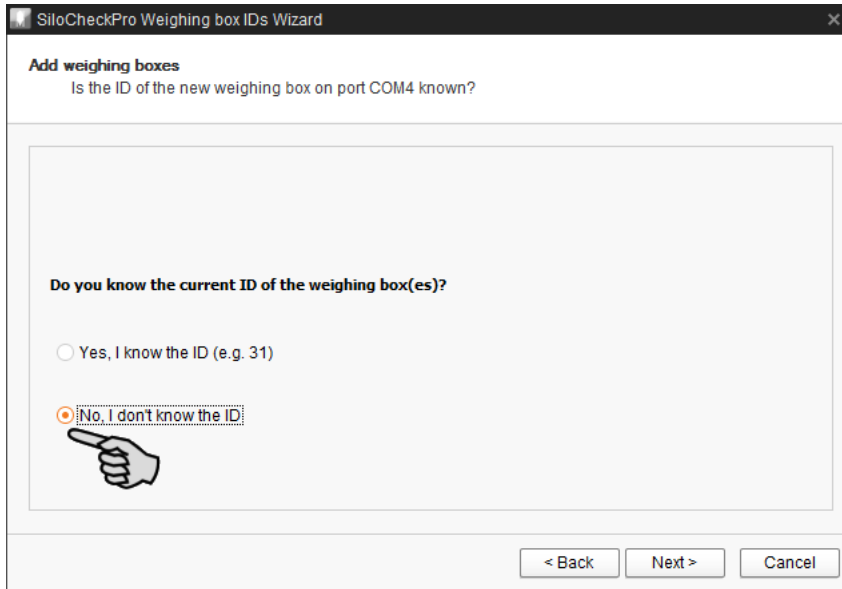
12. To finish, click on "Next".

13. Click on "Finish" in the next window.

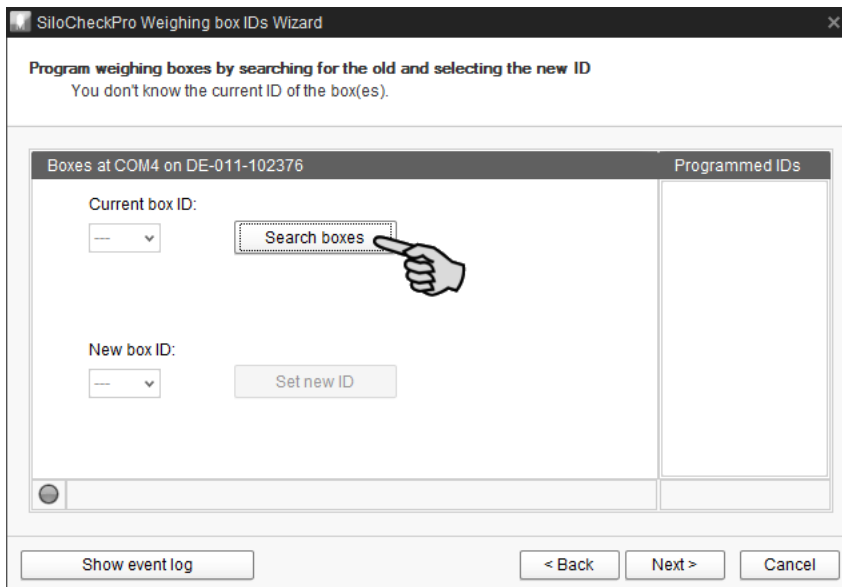
3.2.2 Weighing box with unknown ID

A weighing box with an unknown ID may, for example, be a used weighing box with a new function whose ID you do not know.

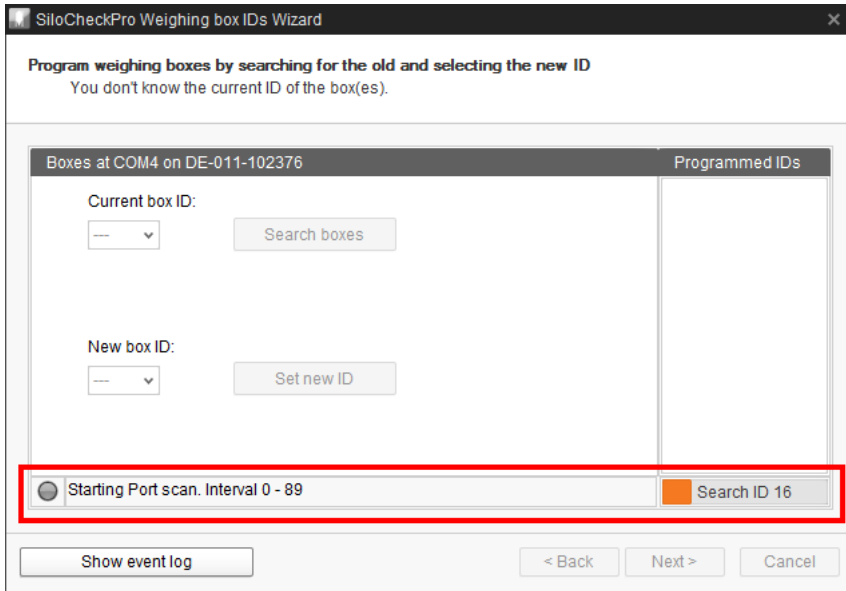
1. Click on "No, I don't know the ID".




2. Click on "Next".
3. Click on "Next" in the next window.
4. Click on "Search boxes" when the button becomes active after loading.



The wizard searches for the ID of the connected weighing box and will check all numbers from 01 to 89. The bar below the window "Programmed IDs" shows how the search is progressing. As soon as the wizard has found the existing ID of the weighing box, the ID is displayed under "Current box ID".

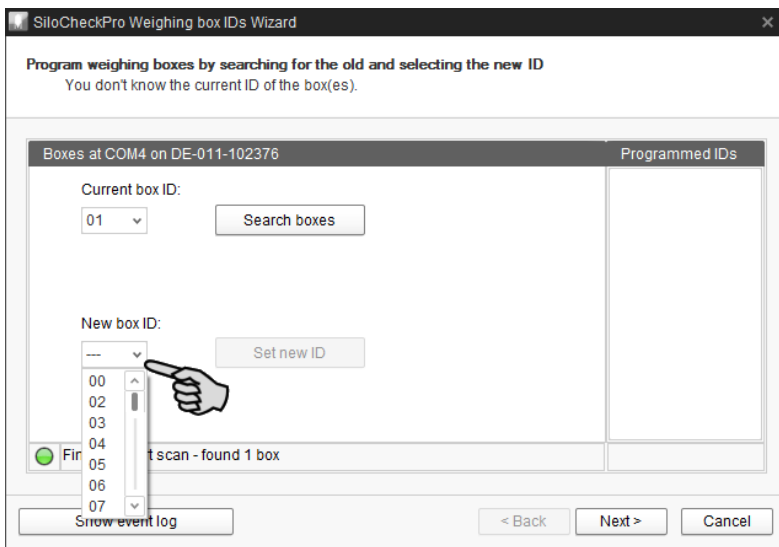


- From the drop-down menu under "New box ID", select a new ID. If possible, use the ID corresponding to the number of the intended silo.



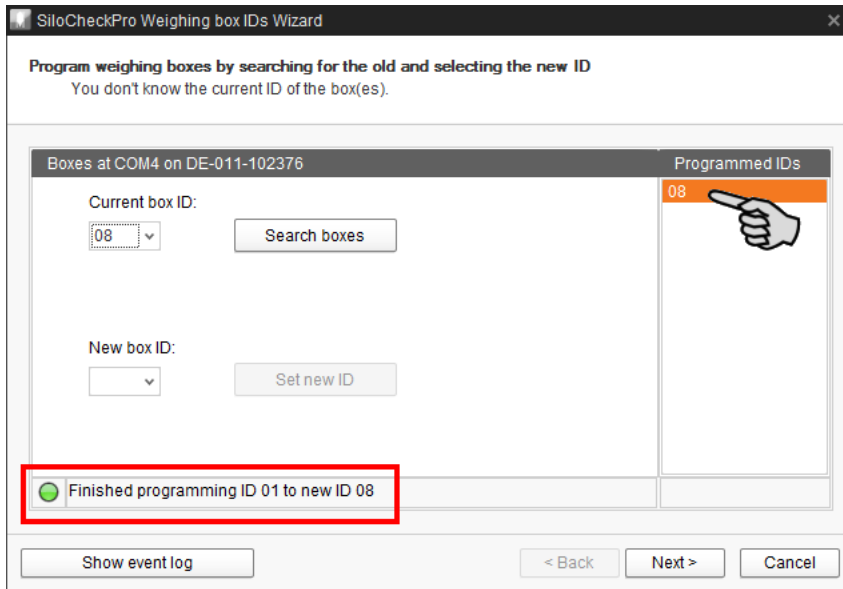
You can assign numbers between 01 and 89.

Do not assign number 31, but leave number 31 unused for service. If a weighing box in use is defective, installing a new weighing box (ID 31) and configuring it is much easier.



6. Click on "Set new ID."

The wizard assigns the new ID to the weighing box. The green dot indicates that the ID was assigned successfully. The new ID is shown in the right-hand part of the window under "Programmed IDs".



7. Disconnect the weighing box from the RS485 adapter.

The SiloCheckPro weighing box IDs wizard remains open.

8. **Use a water-proof marker to mark the new ID on the weighing box.**

This helps you to remember which ID you assigned to this weighing box and furthermore facilitates allocation to the specific silo.

9. Connect the next weighing box to the RS 485 adapter.

10. Assign an ID to all weighing boxes as described from point 4. .

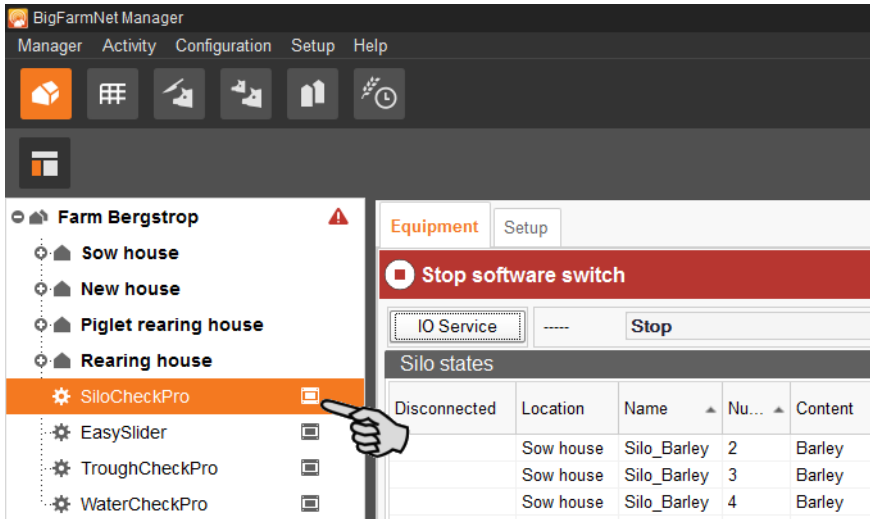
11. To finish, click on "Next".


12. Click on "Finish" in the next window.

3.3 Configuring settings in the Composer


The Composer is used to configure the system according to the mechanical situation. All functions of the installed system must usually be defined once here. Proceed as follows:

1. In the farm structure, click on the controller icon of the system you want to edit.

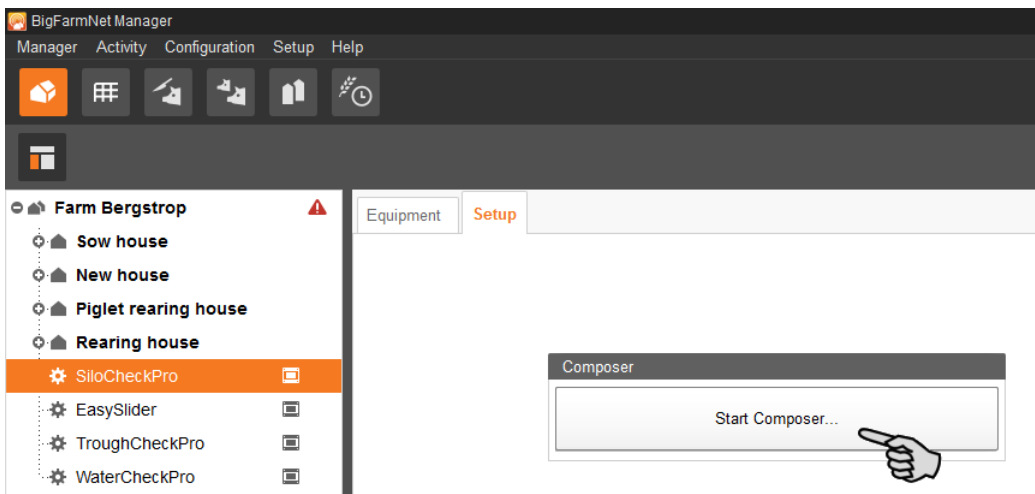




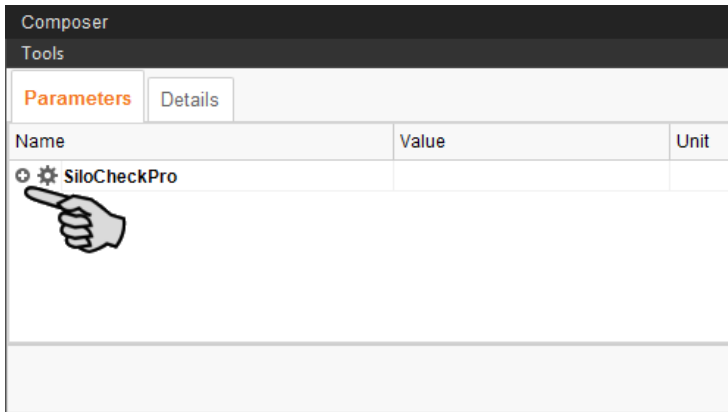
Check whether the application is running. If necessary, stop the application in BigFarmNet Manager by clicking on the "Stop" button.



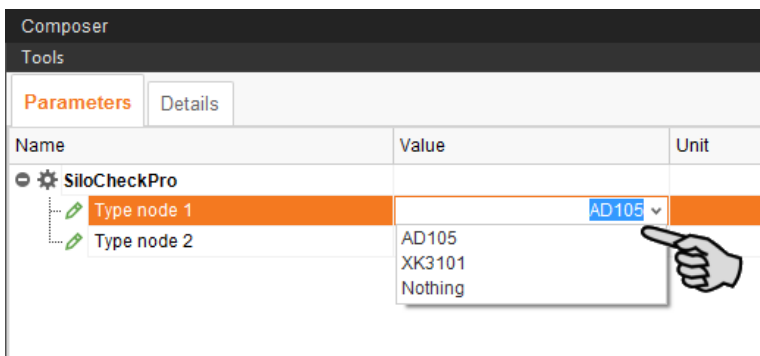
2. In the "Setup" tab, click on the "Start Composer" button.



- Click on the plus icon to see the different parameters.



- Select the node type for the USB port depending on the weighing box in use. The system supports up to two nodes. One USB interface can manage up to 89 silos.



- Click on the "Details" tab. Open the different silos by clicking on the plus icon. In the preset, 20 silos are assigned to the system. Below the silos, on subordinate levels, the weighing boxes and weigh bars are displayed.

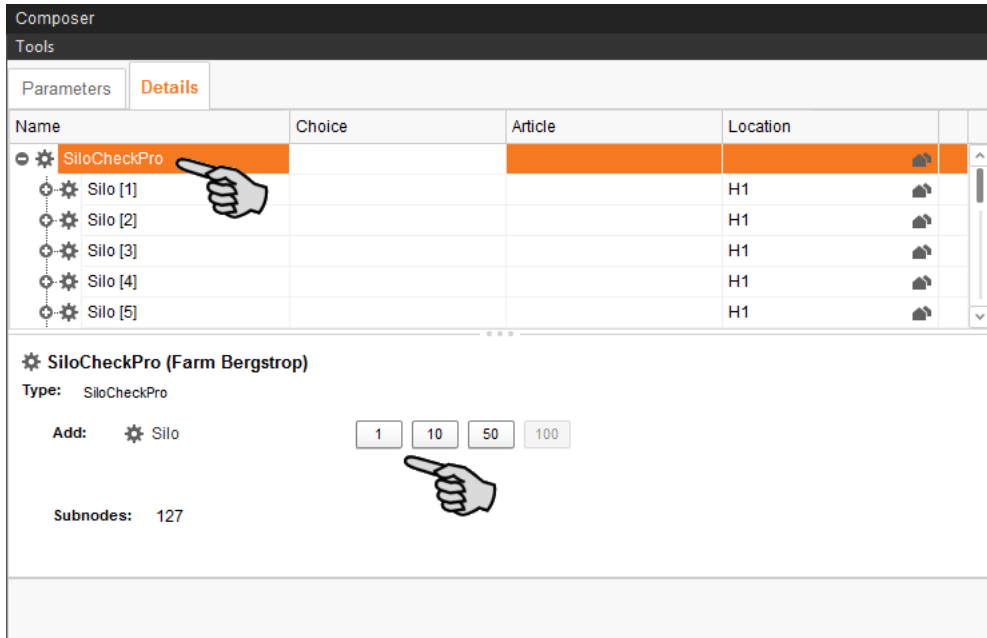


6. Configure the following settings in accordance with the installed system:

a) Adding a silo:

Click on the level "SiloCheckPro" and then on the button 1, 10 or 50 in the lower part of the window.

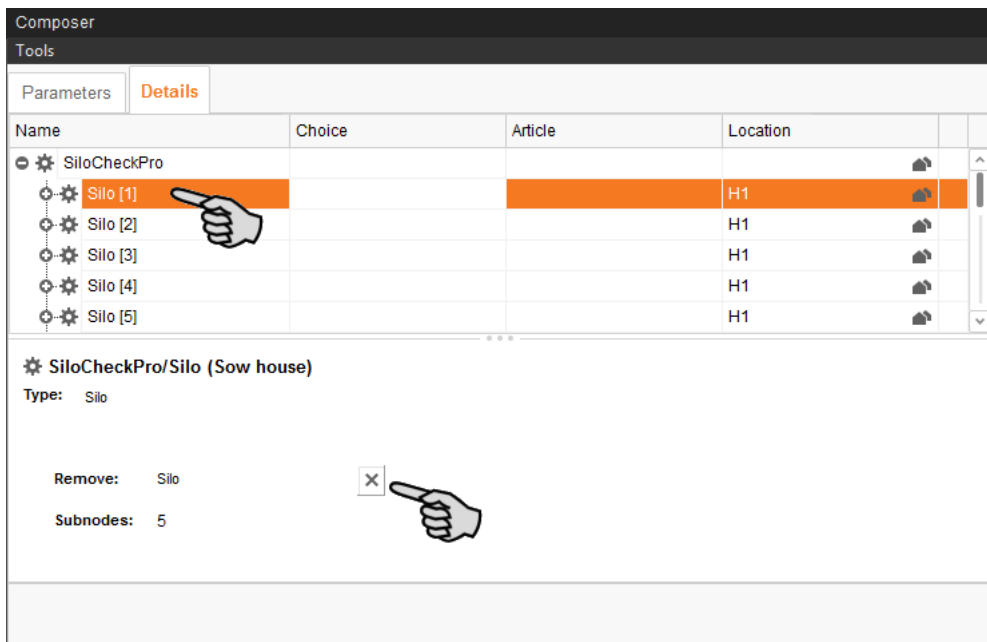
Use these buttons to add the specific number of silos.



b) Removing a silo:

Click on the silo and then on the "X" button in the lower part of the window.

Silos can only be removed individually.



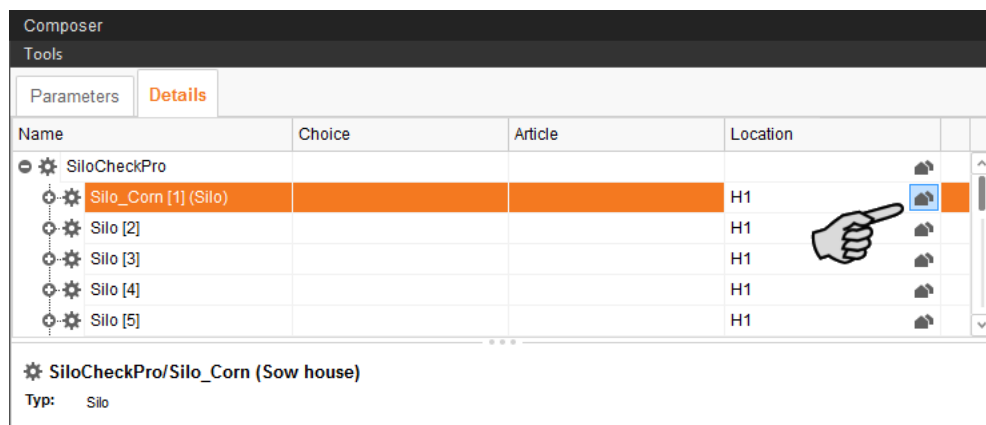
c) Entering a silo name:

Click on the silo and add, for example, its location or the future component (here: Silo_Corn").

For entering the silo name, please also refer to chapter 5.1 "Silo data".

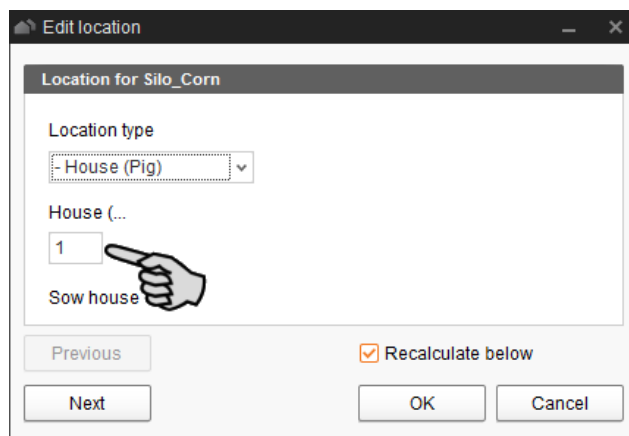
d) Specifying the silo location (where the silo is located):

Click on the house icon of the specific silo.



In the following window, enter the number of the correct location (house).

The selected location (house) is displayed in its entirety below the input field.



Click on "Next" to move to the next silo.

Or:

Click on "OK" after you have specified all locations.

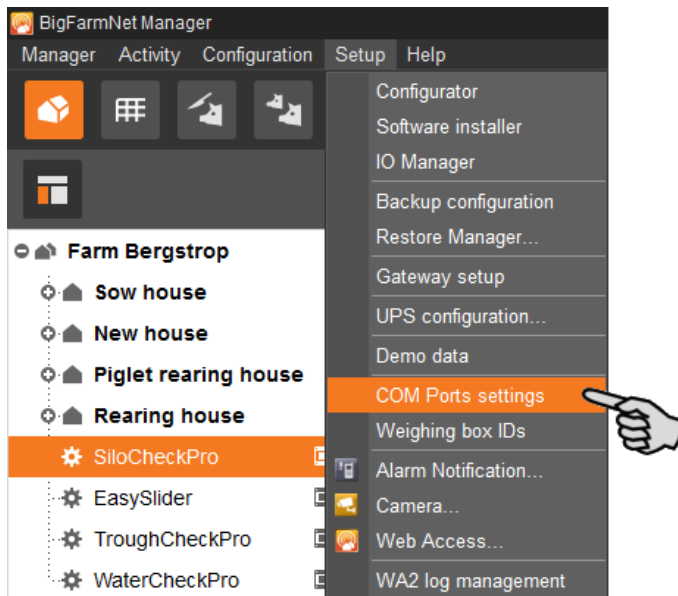
7. Click on "Save" to accept all settings for the Composer.

3.4 Entering the COM port

The COM port that the computer uses to communicate with the RS485 adapter must be entered in the BigFarmNet Manager. The corresponding name of the COM port is displayed in the second dialog window of the SiloCheckPro weighing box IDs wizard, see point 7. chapter 3.2 "Assigning an ID to the weighing box".

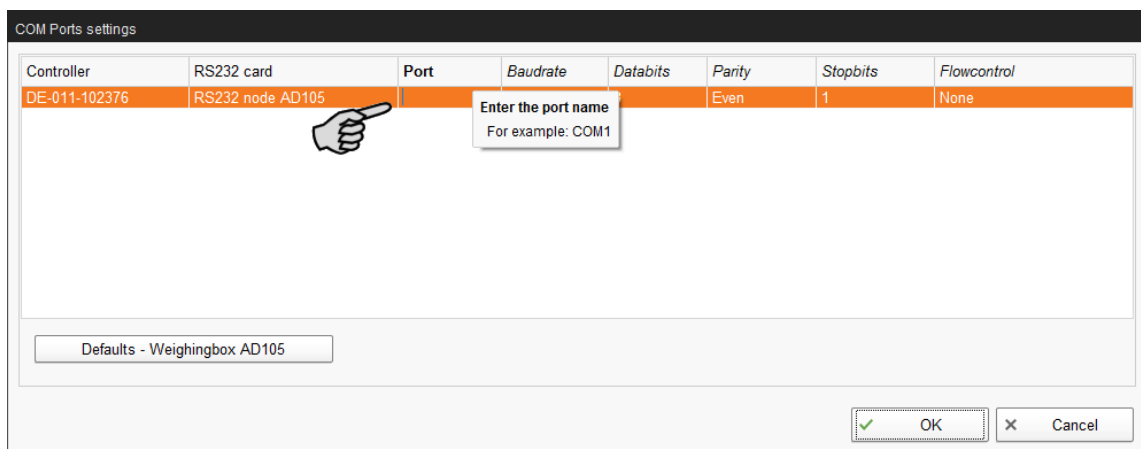
Proceed as follows:

1. Click on "COM Ports settings" in the "Setup" menu.



2. Use your keyboard to enter the name of the COM port into the column "Port".

When you move the mouse pointer over the input field, a tooltip provides helpful information for the input.



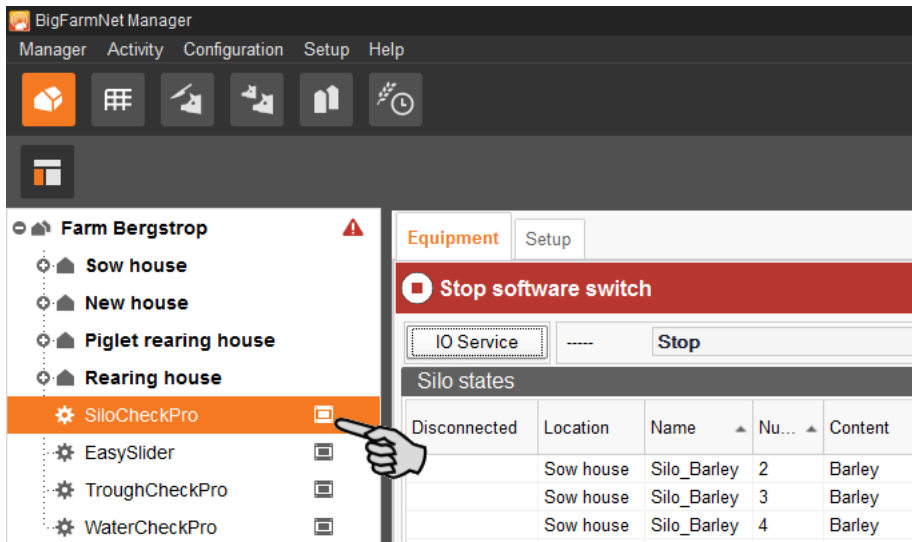
3. Click on "OK" to finish the input.

3.5 Configuring the IO Manager

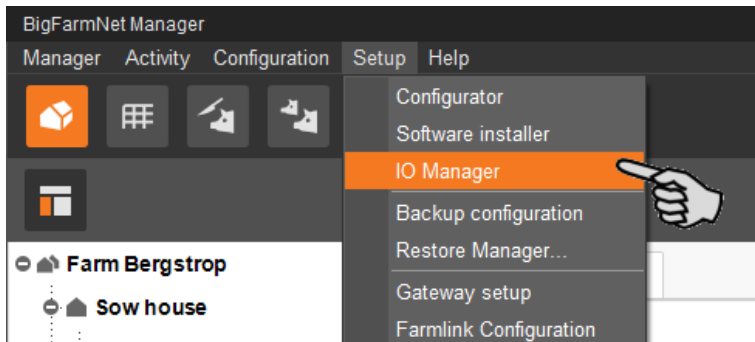
The control is set up in the IO Manager. Assign the functions of the system that were defined in the Composer in the previous step to the IO cards.

3.5.1 Creating connections

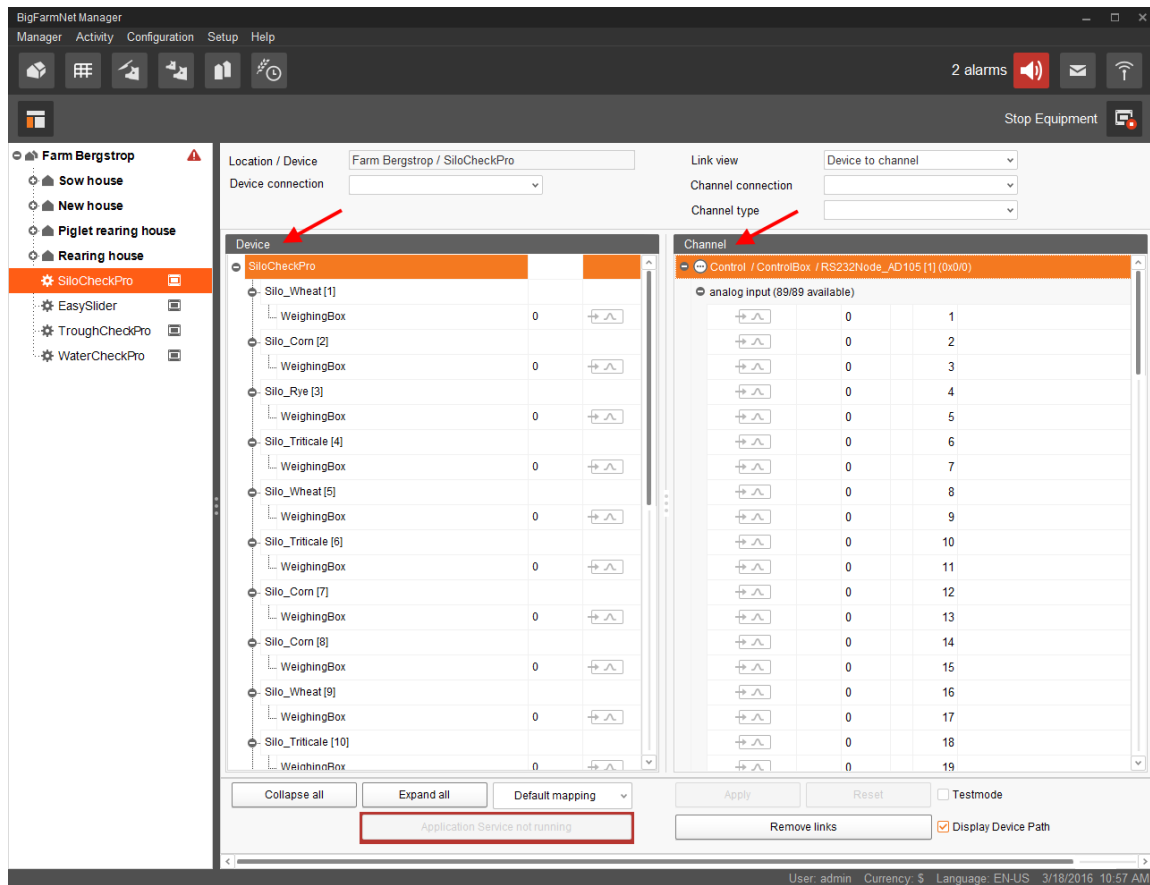
1. In the farm structure, click on the controller icon of the system you want to edit.



2. Click on "IO Manager" in the "Setup" menu.



The IO Manager opens in the application window. The left-hand part of the window shows the individual devices of the system under "Device". The right-hand part of the window displays the channels of the IO cards under "Channel".



The interfaces of the devices and the IO cards are indicated by the following icons:

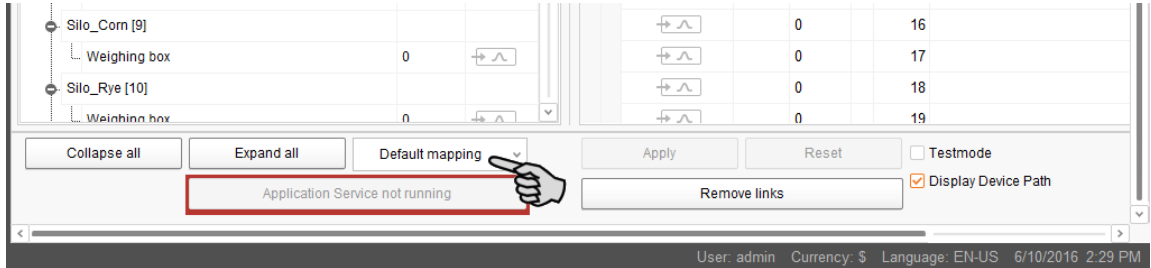
- Digital output
- Digital input
- Analog output
- Analog input
- Counter input
- Serial interface

Connected devices and channels are indicated by dark gray icons and a green arrow. Example:

Devices and channels that are not connected are grayed out. Example:

- If you want to maintain the given order when connecting the devices (weighing boxes) with the channels (nodes), click on "Default mapping" in the lower command bar.

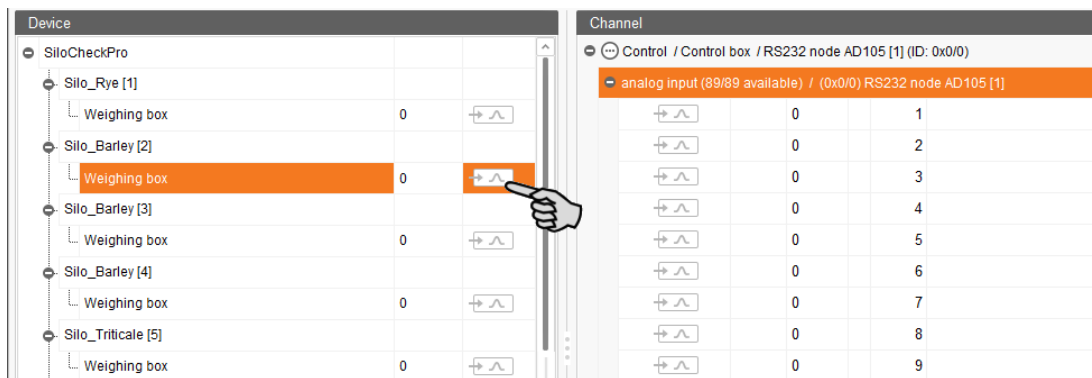
Weighing box 1 is then connected with node 1, etc.



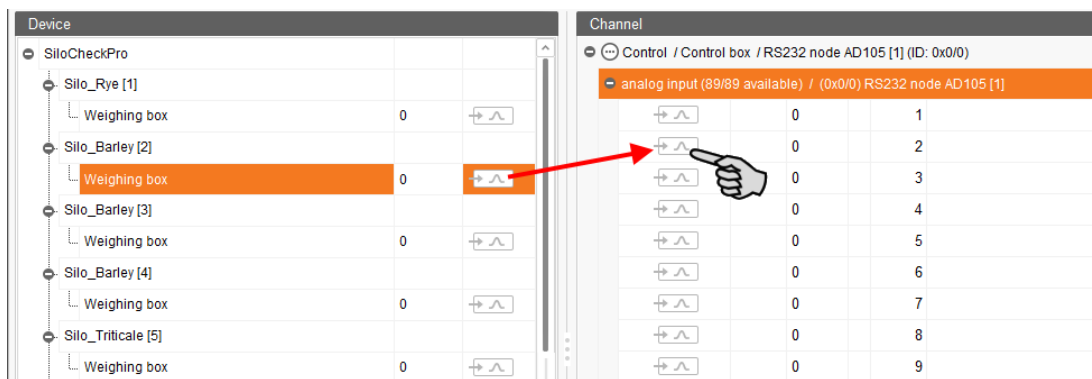
Or:

Create the connections manually:

- In the "Device" part of the window, click on the connecting icon of the weighing box and hold the mouse button.

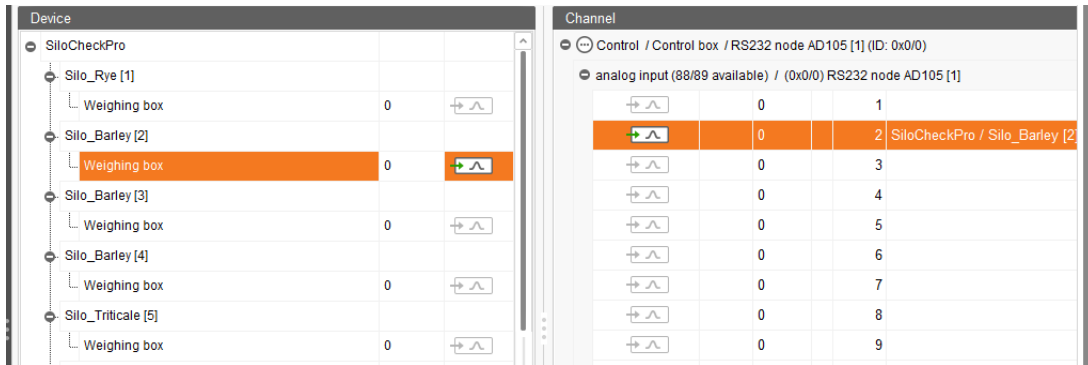


- Drag the mouse to the connecting icon of the desired node in the "Channel" part of the window.




- c) Release the mouse button.

The weighing box and the node are now connected.



- d) If you have created an incorrect connection, right-click on the corresponding connecting icon. Click on "Delete connection" in the context menu.



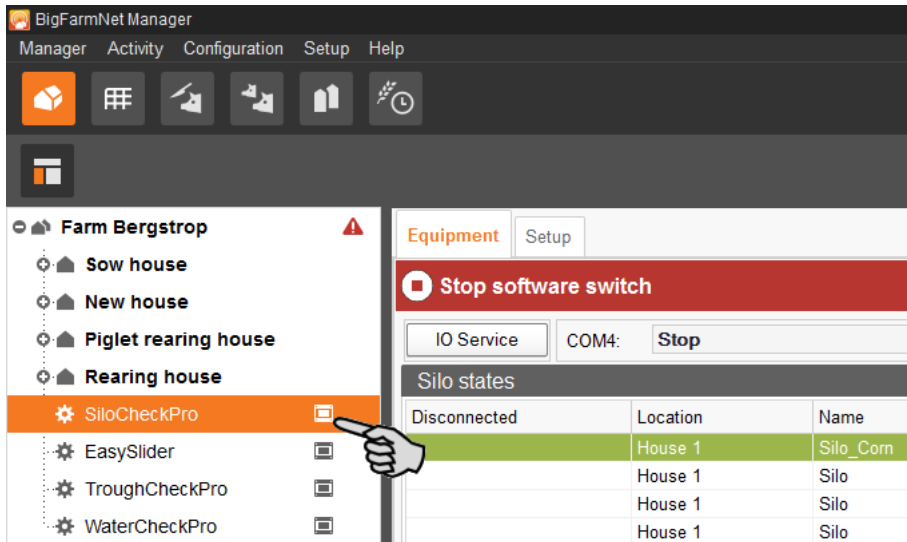
Checking connection:
Double-click on the respective device to mark the connected channel.

4. Click on "Save" in the bottom command bar after having established all connections.
5. Click on "Restart application" in the bottom command bar to start the control.

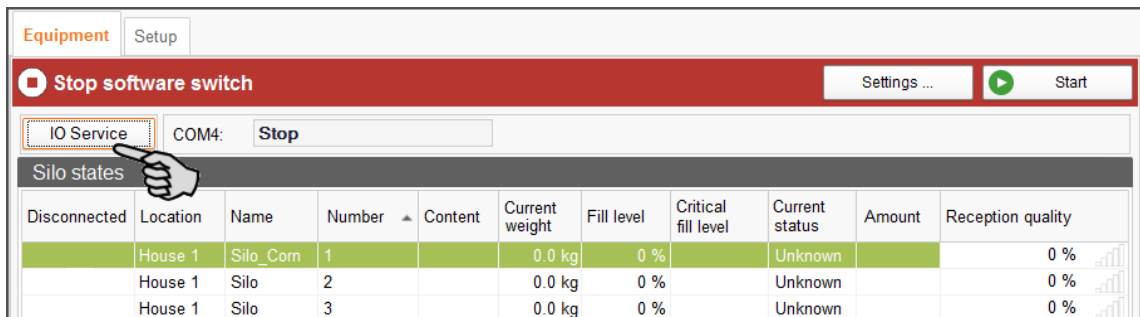
3.5.2 Starting the IO service

The IO service is pre-set to "Stop". This is to make sure that the COM port required for assigning IDs to the weighing boxes is not blocked by the IO service. Start the IO service as follows:

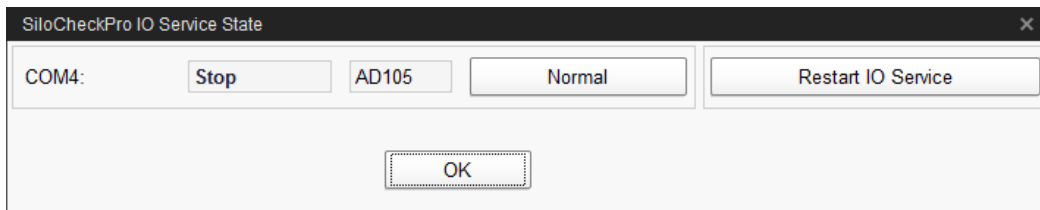
1. In the farm structure, click on the controller icon of the system you want to edit.



2. In the tab "Equipment", click on "IO Service".

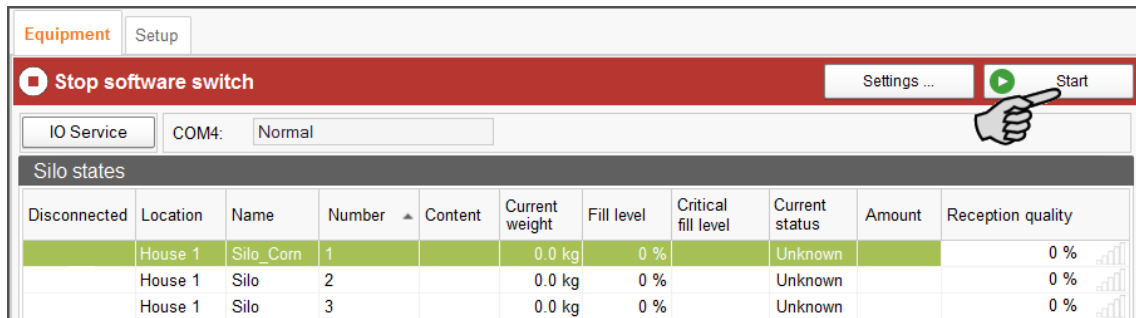


3. In the next window, click
 - a) on "Restart IO Service"
 - b) and then on "Normal".



4. Click on "OK" to close the dialog.

- In the right-hand part of the window, click on "Start" to start the SiloCheckpro application.



4 Configuration of the SiloCheckpro application

The general settings for different functions of the created silos are defined during configuration of the SiloCheckpro application, for example:

- Calibration of the weighing function
- Automatic detection of feed deliveries and removals
- Definition of threshold values



It is not possible to use the BigFarmNet Manager to calibrate or tare the XK3101 boxes. Weighing boxes of the type XK3101 must be calibrated and tared directly by means of the function keys at the device:

Refer to the Quick Start instructions chapter 7.9 and the manufacturer's user manual on the supplied USB flash drive or CD.

4.1 Calibrating

The weighing function of each silo is adjusted during calibration. Each silo must be calibrated before it is first filled.

Chapter 4.1.1 describes the standard calibration process with a weight.

Chapter 4.1.2 describes the calibration process re-using calibration data that was generated during the standard calibration process. This type of calibration may only be used for silos of the same type.

Where many silos are required, they are often of the same type. The silos are classified based on the number and type of the weigh bars, for example:

Silo type	Number of weigh bars	Type of weigh bar
Silo_N3_T5	3	5 t
Silo_N4_T3	4	3 t

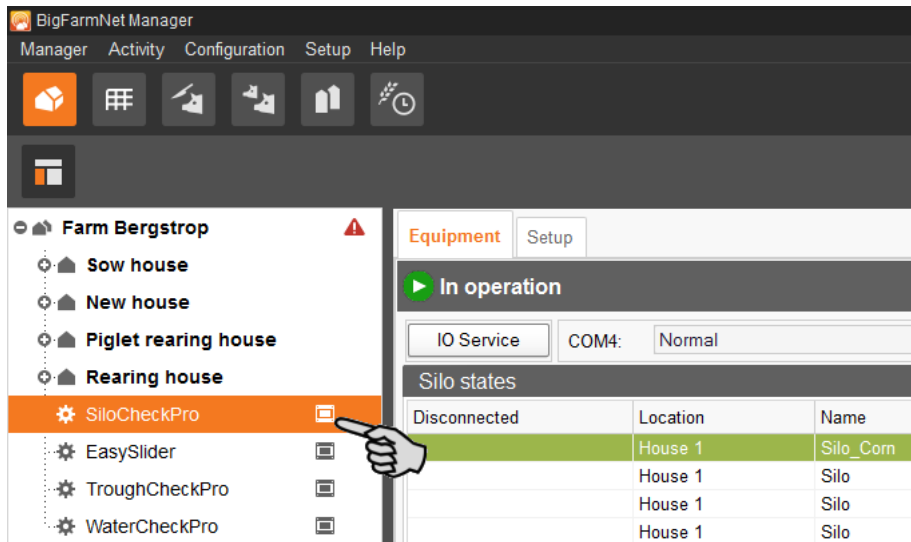
"Silo_N3_T5" uses three 5 t weigh bars.

"Silo_N4_T3" uses four 3t weigh bars.

Example: Five silos of the type "Silo_N3_T5" are installed on a farm. One silo is calibrated according to the standard method, see chapter 4.1.1. During this process, calibration data is generated, including "offset" and "slope". The values "Offset" and "Slope" are used to calibrate the other four silos and are directly entered into the corresponding input fields in the calibration dialog, see chapter 4.1.2.

4.1.1 Calibrating with a weight

1. In the farm structure, click on the controller icon of the system you want to edit.



2. Double-click on the correct silo in the table.

This opens the window "SiloCheckPro - Settings". The selected silo is marked.

3. Click on the "Calibrate" button.

This opens the window "Calibrate silo". The start weight is pre-set to 0.

4. Click on the button "Set" next to the start weight.

Calibrate silo

Current weight: kg **Silo_Corn [1]** New weight: kg

Calibrating values

Start weight: kg (hand icon pointing)

End weight: kg

Correction of the calibration factor according to a known silo loading

Actual weight: kg

Target weight: kg

Details weighing box

5. Load the silo with a calibration weight.
6. Enter the weight of the calibration weight in the input field next to "End weight".

7. Click on the button "Set" next to the end weight.
The weighing function of the silo is now calibrated. The calibration data has been generated.
8. If you want to use the generated calibration data to calibrate additional silos of the same type, click on the arrow pointing downwards to the right.
If you do not need the calibration data, go to point 10.

9. Write down the "Offset" and "Slope" values.

These values are necessary for the calibration process described in chapter 4.1.2 .

Calibrate silo

Current weight: kg **Silo_Corn [1]** New weight: kg

Calibrating values

Start weight: kg

End weight: kg


Correction of the calibration factor according to a known silo loading

Actual weight: kg

Target weight: kg

Details weighing box

Weighing box ID:	1	Raw Val:	59033
Weight Calib Start:	0.0 kg	Raw Val Calib Start:	39604
Weight Calib End:	1,000.0 kg	Raw Val Calib End:	59013
Offset:	39604	Slope:	19.409

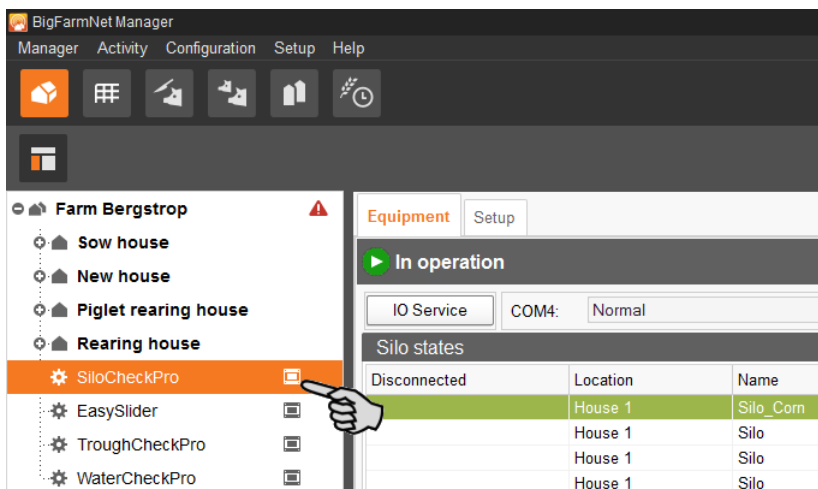


10. Click on "OK" to accept these settings.

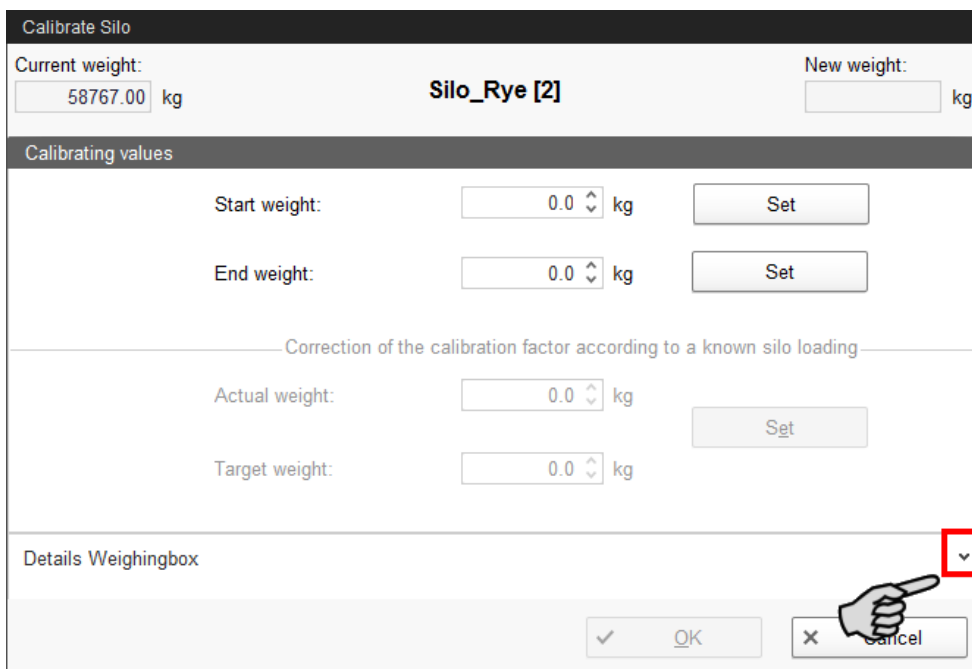
11. Remove the calibration weight from the silo.

4.1.2 Calibrating with calibration data

1. In the farm structure, click on the controller icon of the system you want to edit.



2. Double-click on the correct silo in the table.
This opens the window "SiloCheckPro - Settings". The selected silo is marked.
3. Click on the "Calibrate" button.
This opens the window "Calibrate silo".
4. Click on the arrow pointing down to the right.
The window expands to show the "Details weighing box".



5. Click into the input fields for "Offset" and "Slope" and enter the correct values.

Calibrate Silo

Current weight: 58767.00 kg Silo_Rye [2] New weight: kg

Calibrating values

Start weight: 0.0 kg Set

End weight: 0.0 kg Set

Correction of the calibration factor according to a known silo loading

Actual weight: 0.0 kg Set

Target weight: 0.0 kg

Details Weighingbox

WeighingBox ID:	2	Raw Val:	58767
Weight Calib Start:		Raw Val Calib Start:	
Weight Calib End:		Raw Val Calib End:	
Offset:	0	Slope:	1

OK Cancel

If calibration data is not yet available, the end weight is set to 1111.0 kg. The weighing function of the silo is now calibrated.

Calibrate Silo

Current weight: 58767.00 kg Silo_Rye [2] New weight: 1018.26 kg

Calibrating values

Start weight: 0.0 kg Set

End weight: 1111.0 kg Set

Correction of the calibration factor according to a known silo loading

Actual weight: 0.0 kg Set

Target weight: 0.0 kg

Details Weighingbox

WeighingBox ID:	2	Raw Val:	58767
Weight Calib Start:	0.0 kg	Raw Val Calib Start:	39031
Weight Calib End:	1,111.0 kg	Raw Val Calib End:	60564
Offset:	39031	Slope:	19.382

OK Cancel

6. Click on "OK" to accept these settings.
7. Calibrate additional silos in this manner, if necessary.

4.2 Adjusting the silo weighing

4.2.1 Correction according to a known silo loading

If the weight of a delivery or "loading" shown by SiloCheckpro does not match the actual amount delivered, the calibration factor must be adjusted in the calibration dialog.

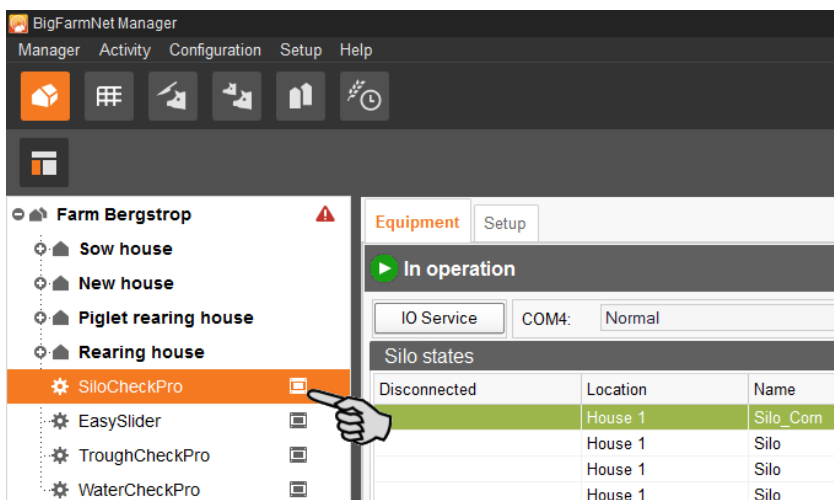
Example: In the Silo Manager, SiloCheckpro shows a delivery of 2,800.0 kg. According to the delivery note, however, 3,000 kg were delivered.

Locked	Location	Name	Number	Content type	Today (-)	Yesterday (-)	Forecast empty	Current weight	Critical fill level	Fill level
	House 1	Silo_Corn	1	Corn	0.0 kg	3,775.1 kg	0 days	5,800.0 kg		28%
	House 1	Silo_Rye	2	Rye	0.0 kg	144,705.7 kg	0 days	15,043.3 kg		100%
	House 1	Silo	3		0.0 kg	0.0 kg	0 days	0.0 kg		0%
	House 1	Silo	4		0.0 kg	0.0 kg	0 days	0.0 kg		0%
	House 1	Silo	5		0.0 kg	0.0 kg	0 days	0.0 kg		0%

Silo_Corn [1]		Date	Content type	Supplier	Delivery number	Price	Total cost	Amount
General		3/10/2016	Mais			0.00 €/kg	0.00 €	2,800.0 kg
Loading		3/09/2016	Mais			0.00 €/kg	0.00 €	500.1 kg
Unloading								
History								
Settings								

Correct the weight of the delivery as follows:

1. In the farm structure, click on the controller icon of the system you want to edit.



2. Double-click on the correct silo in the table.

This opens the window "SiloCheckPro - Settings". The selected silo is marked.

3. Click on the "Calibrate" button.

This opens the window "Calibrate silo".

4. Enter the weight of the delivered amount that is displayed by SiloCheckpro under "Actual weight".

For this example, the actual weight would be 2,800.0 kg.

5. Enter the correct weight of the delivered amount under "Target weight".

For this example, the target weight would be 3,000.0 kg.

Calibrate silo

Current weight: kg

Silo_Corn [1]

New weight: kg

Calibrating values

Start weight: kg

End weight: kg

Correction of the calibration factor according to a known silo loading

Actual weight: kg

Target weight: kg

Details weighing box

6. Click on the "Set" button.

The new weight is now displayed in the upper right corner under "New weight".

7. Click on "OK" to accept these settings.

4.2.2 Taring the silo weight

If the current weight of the silo shown by SiloCheckpro does not match the actual weight, the silo must be tared.

Example: SiloCheckpro shows 800.0 kg. However, the silo is empty and actually has a weight of 0 kg.

Locked	Location	Name	Number	Content type	Today (-)	Yesterday (-)	Forecast empty	Current weight	Critical fill level	Fill level
	House 1	Silo_Corn	1	Corn	3,775.1 kg	0.0 kg	0 days	800.0 kg		8%
	House 1	Silo_Rye	2	Rye	144,705.7 kg	0.0 kg	0 days	15,043.3 kg		100%
	House 1	Silo	3		0.0 kg	0.0 kg	0 days	0.0 kg		0%
	House 1	Silo	4		0.0 kg	0.0 kg	0 days	0.0 kg		0%
	House 1	Silo	5		0.0 kg	0.0 kg	0 days	0.0 kg		0%

Silo_Corn [1]

General	Name	Silo_Corn	Capacity	10,000.0 kg
Loading	Location	House 1	Current weight	801.1 kg
Unloading	Silo type	Dry feed		
History				
Settings				

Taring of the silo is carried out as follows:

1. In the farm structure, click on the controller icon of the system you want to edit.

The screenshot shows the BigFarmNet Manager interface. On the left, the 'Farm Bergstrop' structure is expanded to show 'SiloCheckPro'. A hand icon points to the controller icon next to 'SiloCheckPro'. On the right, the configuration panel for 'SiloCheckPro' is visible, showing 'Equipment' and 'Setup' tabs, 'In operation' status, 'IO Service' set to 'COM4: Normal', and a 'Silo states' table with columns for 'Disconnected', 'Location', and 'Name'. The table lists 'House 1' and 'Silo_Corn'.

2. Double-click on the correct silo in the table.


This opens the window "SiloCheckPro - Settings". The selected silo is marked.

3. Click on the "Tare" button.

This opens the window "Tare silo".

4. Enter a tare weight.

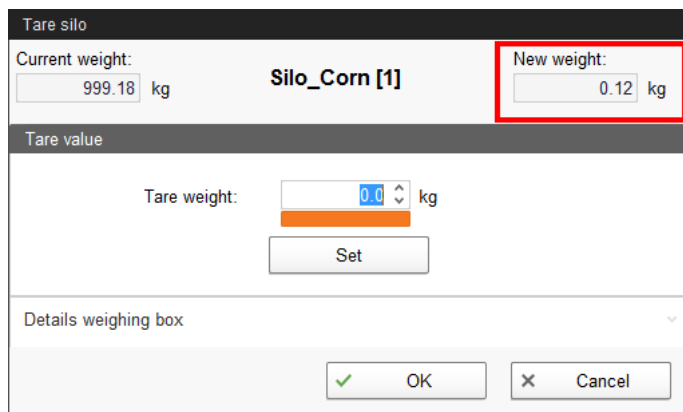
For this example, you would enter "0 kg" because the actual weight is 0 kg.



The screenshot shows the "Tare silo" window. At the top, it displays "Current weight: 999.06 kg" and "New weight:" with an empty input field. The silo name "Silo_Corn [1]" is centered. Below this is the "Tare value" section, which contains a "Tare weight:" input field with "0.0" and a hand icon pointing to it. A "Set" button is located below the input field. At the bottom, there is a "Details weighing box" section with "OK" and "Cancel" buttons.

5. Click on the "Set" button.

The new weight is now displayed in the upper right corner under "New weight".

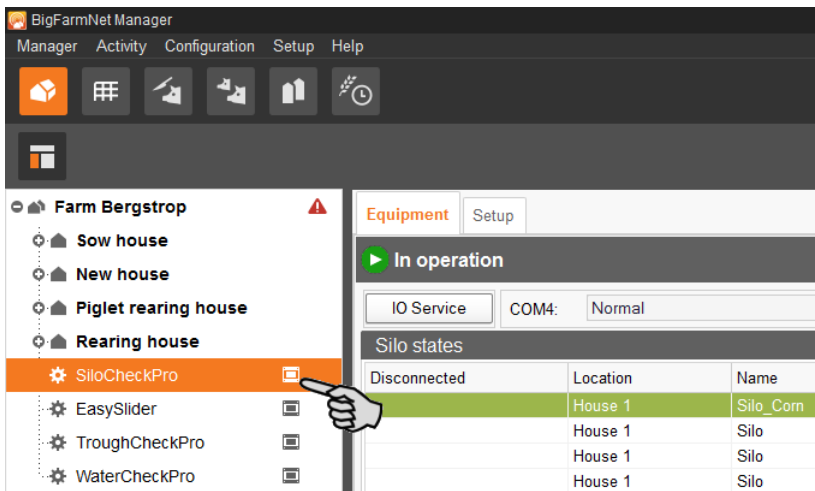


The screenshot shows the "Tare silo" window after the "Set" button has been clicked. The "New weight:" field now displays "0.12 kg" and is highlighted with a red box. The "Tare weight:" input field now shows "0.0" with a blue selection bar. The "Set" button is still visible below it. The "Details weighing box" section at the bottom remains the same with "OK" and "Cancel" buttons.

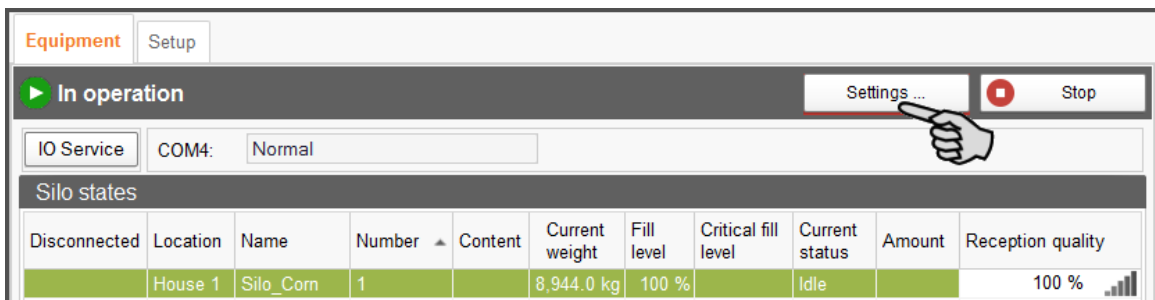
6. Click on "OK" to accept these settings.

4.3 Activating SiloCheckpro functions

1. In the farm structure, click on the controller icon of the system you want to edit.

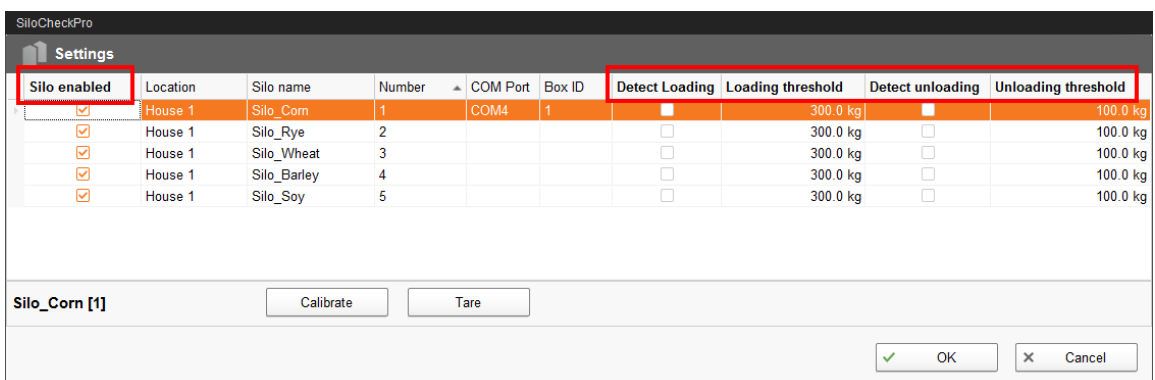



2. In the upper right corner under the "Equipment" tab, click on "Settings...".



3. Click on "Settings" again in the next window.

This opens the window "SiloCheckPro - Settings". The parameters in bold type describe the functions of the SiloCheckpro application and can be edited.




	<p>It is possible to configure the settings for multiple or all silos at the same time. Select the respective silos using the following key combinations:</p> <ul style="list-style-type: none"> • To select multiple silos individually: Press and hold Ctrl and click on each silo you want to select. • To select all silos: Press and hold Ctrl and then press A. <p>Confirm your inputs by pressing "Enter".</p>
---	---

- **Silo enabled:** SiloCheckpro monitors the silo when this box is checked.
- **Detect loading:** SiloCheckpro detects a delivery (loading) automatically based on the additional weight in the silo when this box is checked.
- **Loading threshold:** The value for additional weight starting from which SiloCheckpro detects a delivery (loading).

Select a value that is high enough to prevent that a weight change, e.g. caused by the weather, is incorrectly detected as silo loading.

- **Detect unloading:** SiloCheckpro detects a removal from the silo (unloading) automatically based on the silo's weight decrease when this box is checked.
- **Unloading threshold:** The value for weight decrease starting from which SiloCheckpro detects a removal of feed (unloading).

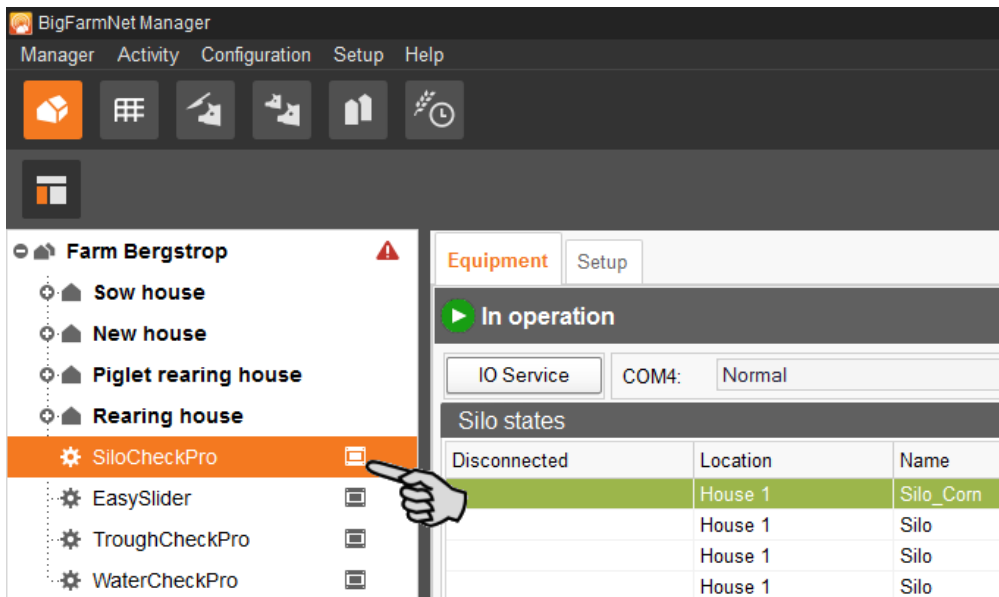
Select a value that is high enough to prevent that a weight change, e.g. caused by the weather, is detected as unloading of feed by error.

	<p>The parameters Detect loading and Detect unloading are pre-set to be inactive. Activating these parameters is recommended after calibration only to prevent incorrect detecting of a delivery or removal of feed.</p>
---	--

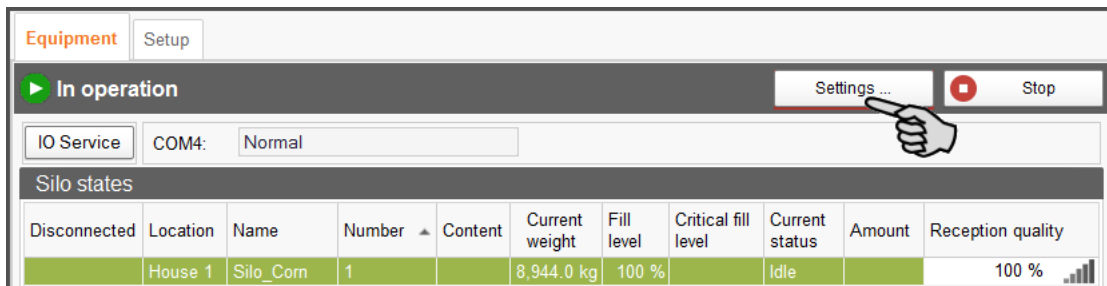
4. Click on "OK" after you have configured all settings.

4.4 Setting threshold values

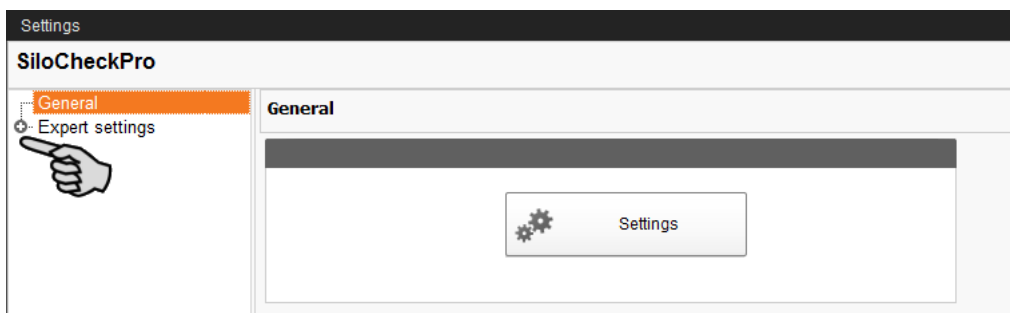
1. In the farm structure, click on the controller icon of the system you want to edit.



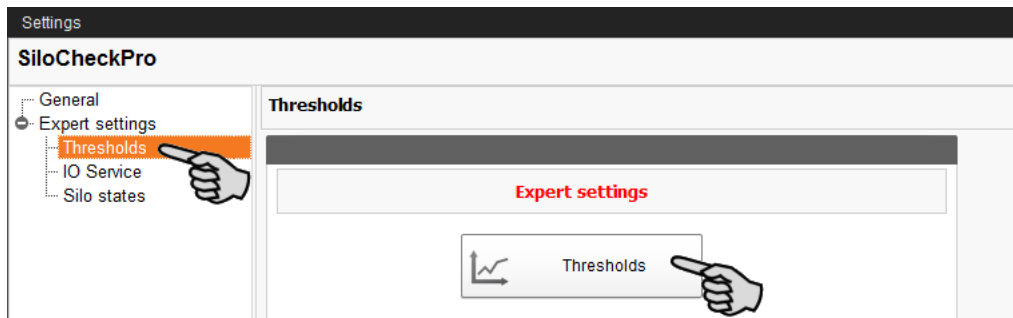
2. In the upper right corner under the "Equipment" tab, click on "Settings...".



3. Click on the plus icon next to "Expert Settings" in the left-hand part of the window.




4. Click on the button "Thresholds" under the parameter "Thresholds".



This opens the window "SiloCheckPro - Thresholds". The parameters in bold type describe the functions of the SiloCheckpro application.

Location	Silo name	Number	COM Port	Box ID	Idle	Idle delta M	Idle delta T	Use weight accuracy	Weight accuracy
House 1	Silo_Corn	1	COM4	1	<input checked="" type="checkbox"/>	5.0 kg	120 s	<input checked="" type="checkbox"/>	5.0 kg
House 1	Silo_Rye	2	COM4	2	<input checked="" type="checkbox"/>	5.0 kg	120 s	<input checked="" type="checkbox"/>	5.0 kg
House 1	Silo_Wheat	3	COM4	3	<input checked="" type="checkbox"/>	5.0 kg	120 s	<input checked="" type="checkbox"/>	5.0 kg
House 1	Silo_Barley	4	COM4	4	<input checked="" type="checkbox"/>	5.0 kg	120 s	<input checked="" type="checkbox"/>	5.0 kg
House 1	Silo_Soy	5	COM4	5	<input checked="" type="checkbox"/>	5.0 kg	120 s	<input checked="" type="checkbox"/>	5.0 kg

Expert settings



It is possible to configure the settings for multiple or all silos at the same time. Select the respective silos using the following key combinations:

- To select multiple silos individually: Press and hold Ctrl and click on each silo you want to select.
- To select all silos: Press and hold Ctrl and then press A.

Confirm your inputs by pressing "Enter".

5. Enter a weight under **Idle delta M** and a time under **Idle delta T**.
- a) Check the box **Idle**. This activates the following function:
 If the weight does not change by more than "Idle delta M" (weight) within "Idle delta T" (time), the silo becomes inactive. An inactive silo is in "idle state".
6. Enter a weight under **Weight accuracy**.

a) Check the box **Use Weight Accuracy**.

When this box is checked, weight changes are only reported if they are higher than the entered value. This function minimises the BigFarmNet Manager's workload.

7. Click on "OK" after you have configured all settings.

8. Click on "OK" to close the window "SiloCheckPro - Settings".

4.5 Silo states

If you click on the system controller in the farm structure, this opens the "Equipment" tab in the application window.

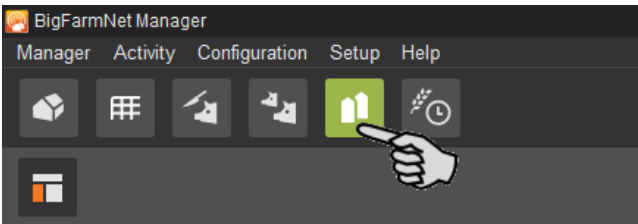
Disconnected	Location	Name	Number	Content	Current weight	Fill level	Critical fill level	Current status	Amount	Reception quality
	Sow house	Silo_Rye	1	Rye	612.0 kg	3 %	↓	Idle		100 %
	Sow house	Silo_Barley	2	Barley	10,861.6 kg	54 %		Idle		100 %
	Sow house	Silo_Barley	3	Barley	16,619.7 kg	83 %		Loading	789.0 kg	100 %
	Sow house	Silo_Barley	4	Barley	14,400.5 kg	72 %		Idle		100 %
	Sow house	Silo_Triticale	5	Triticale						0 %
	Sow house	Silo_Rye	6	Rye	12,880.8 kg	64 %		Idle		100 %
	Sow house	Silo_Soya	7	Soya	12,880.8 kg	64 %		Unloading	-125.0 kg	100 %
	Sow house	Silo_Corn	8	Corn	14,400.5 kg	72 %		Idle		100 %

The table displays all silos you have created. The column "Current status" shows one of the following states of the silo:

- **Unknown:** Currently initializing.
- **Idle:** Silo is idle, see chapter 4.4 "Setting threshold values".
- **Unloading:** Contents of the silo are being removed. The removed amount is indicated in the next column, "Amount".
- **Loading:** The silo is being filled. The additional amount is indicated in the next column, "Amount".
- **Increasing:** The silo weight is increasing, without this being recognized as a delivery. The set "Loading threshold" is not reached, see chapter 4.3 "Activating SiloCheckpro functions".
- **Decreasing:** The silo weight is decreasing, without this being recognized as a removal. The set "Unloading threshold" is not reached, see chapter 4.3 "Activating SiloCheckpro functions".

5 Silo Manager

With the Silo Manager, you can monitor and manage the data of all your silos. Open the Silo Manager by selecting the management area.



The tab "Silo Manager" opens in the application window. The table shows the current data for your silos:

- location and name of the silo
- the feed component contained in the silo
- the amounts of feed removed on the current day "Today" and the previous day "Yesterday"
- the time of the next expected silo filling under "Forecast empty"
- the current weight
- information on the fill level as a graph and as a percentage

Locked	Location	Name	Number	Content type	Today (-)	Yesterday (-)	Forecast empty	Current weight	Critical fill level	Fill level
	Piglet rearing house	Silo_Wheat	1	Wheat	0.0 kg	624.6 kg	16 days	9,958.6 kg		50%
	Sow house	Silo_Triticale	1	Triticale	0.0 kg	620.6 kg	13 days	8,238.9 kg		41%
	Rearing house	Silo_Wheat	1	Wheat	0.0 kg	630.1 kg	18 days	11,374.4 kg		57%
	Sow house	Silo_Rye	1	Rye	0.0 kg	622.9 kg	1 days	612.0 kg	88	3%
	Sow house	Silo_Barley	2	Barley	0.0 kg	609.2 kg	18 days	10,861.6 kg		54%
	Piglet rearing house	Silo_Corn	2	Corn	0.0 kg	622.7 kg	16 days	9,958.6 kg		50%
	Rearing house	Silo_Corn	2	Corn	0.0 kg	605.5 kg	18 days	11,374.4 kg		57%
	Sow house	Silo_Barley	2	Barley	0.0 kg	600.4 kg	20 days	11,977.8 kg		60%
	Piglet rearing house	Silo_Soya	3	Soya	0.0 kg	620.7 kg	13 days	8,238.9 kg		41%
	Sow house	Silo_Barley	3	Barley	0.0 kg	630.8 kg	26 days	16,619.7 kg		83%
	Sow house	Silo_Barley	4	Barley	0.0 kg	613.4 kg	23 days	14,400.5 kg		72%
	Sow house	Silo_Triticale	5	Triticale						
	Sow house	Silo_Rye	6	Rye	0.0 kg	614.9 kg	21 days	12,880.8 kg		64%
	Sow house	Silo_Soya	7	Soya	0.0 kg	616.8 kg	21 days	12,880.8 kg		64%
	Sow house	Silo_Corn	8	Corn	0.0 kg	588.8 kg	24 days	14,400.5 kg		72%
	Sow house	Silo_Corn	9	Corn	0.0 kg	606.7 kg	27 days	16,619.7 kg		83%
✗	Sow house	Silo_Rye	10	Rye	0.0 kg	621.7 kg	3 days	1,927.0 kg	88	10%

Silo_Wheat [1]	
General	Name: Silo_Wheat, Capacity: 20,000.0 kg
Loading	Location: Piglet rearing house, Current weight: 9,958.6 kg
Unloading	Silo type: Dry feed, Priority: 50
History	
Settings	

You may change the order of the silos based on the table's parameters. If you click on "Forecast empty", for example, the silos are sorted in ascending order according to the time of the expected next loading, starting with the lowest number of days.

The silo locations were defined during configuration of the system. If you click on a house in the farm structure, you will only see the silos of this house.

5.1 Silo data

Additional silo data is displayed in the lower part of the application window based on the following categories:

- General
- Loading (delivery)
- Unloading (consumption)
- History
- Settings

In the categories "Loading" and "Settings", it is possible to edit the data of the individual silos.



Add the missing silo information under "Settings" first. This information is basic data of your silos.

Settings

1. In the table, click on the silo you want to edit.
2. Under the category "Settings", click on "Edit".

Silo_Corn [1]			
General	Name	<input type="text" value="Silo_Corn"/>	Capacity <input type="text" value="1.0 kg"/>
Loading	Components	<input type="text"/>	Warning amount (relative) <input type="text" value="0.0 %"/>
Unloading	Recipes	<input type="text"/>	Warning amount (total) <input type="text" value="0.0 kg"/>
History	Weighed	<input checked="" type="checkbox"/>	
Settings			
<input type="button" value="Edit"/>			

3. Complete the following information:

- Name of the silo: Add the location, for example
- Components or recipes mean the content of the silo
- Capacity of the silo
- Warning amount (relative) or warning amount (absolute): If you enter one of these values, the other one is calculated automatically.

The relative warning amount refers to the silo's capacity.

If the silo weight falls below the absolute warning amount, the icon for a critical fill level comes up, see chapter 5.2 "Graphic view".

4. Click on "OK" after you have configured all settings.

Loading (delivery)

The category "Loading" shows the previous deliveries for the selected silos.

You may add, edit or delete deliveries here. You can also export the data as .csv or .xlsx file for further use if you click on the "Export" button.

Silo_Corn [1]							
	Date	Content type	Supplier	Delivery number	Price	Total cost	Amount
General	5/9/2016 2:00 AM	Corn	East Pig Food	10120	0.33EUR/kg	3,044.08 EUR	9,147.0 kg
Loading	4/30/2016 2:00 AM	Corn	East Pig Food	10121	0.40EUR/kg	3,681.04 EUR	9,133.0 kg
Unloading							
History							
Settings							

SiloCheckpro automatically records deliveries in the Silo Manager.

You only need to complete the information about the supplier and the price by clicking on "Edit". For the price, enter either the price per kg or the total price. The missing information is calculated automatically.

Delivery - Edit

Name: Silo_Corn [1] Capacity: 20,000.0 kg

Supplier: East Pig Food

Delivery no.: 10120

Delivery date: 5/9/2016 2:00 AM

Amount: 9,603.0 kg Corn

Dry matter fraction: 880.0 g/kg

Price: 0.33 €/kg

Total cost: 3,195.84€

OK Cancel

General

The "General" category shows general information on the selected silo.

Silo_Corn [1]

General Name: Silo_Corn Capacity: 20,000.0 kg

Location: Sow house Current weight: 16,619.7 kg

Silo type: Dry feed

Loading

Unloading

History

Settings

Unloading (consumption)

The "Unloading" category shows all quantities of feed removed from the selected silo up to now.

You may export the data as .csv or .xlsx file for further use if you click on the "Export" button.

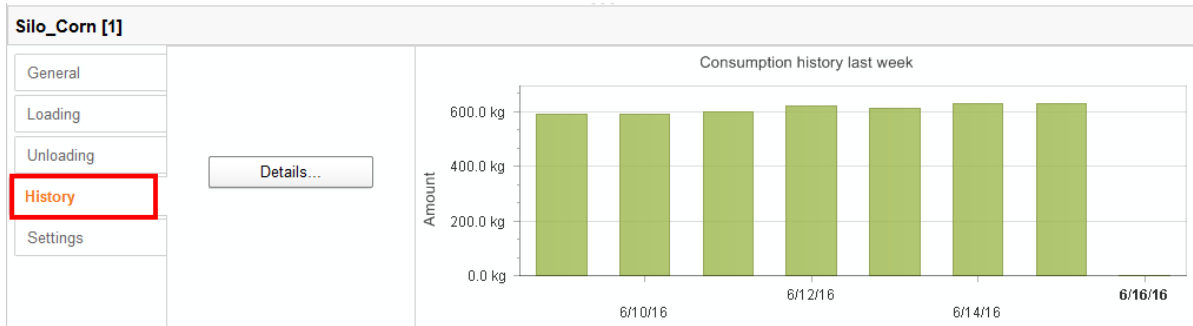
Silo_Corn [1]

Category	Date	Location	Content	Amount
General	6/15/2016 11:26 PM	Sow house	Corn	313.8 kg
Loading	6/15/2016 1:14 PM	Sow house	Corn	313.8 kg
	6/14/2016 11:20 PM	Sow house	Corn	315.1 kg
Unloading	6/14/2016 12:15 PM	Sow house	Corn	315.1 kg
	6/13/2016 9:25 PM	Sow house	Corn	203.8 kg
History	6/13/2016 5:27 PM	Sow house	Corn	203.8 kg
	6/13/2016 12:49 PM	Sow house	Corn	203.8 kg
Settings	6/12/2016 10:11 PM	Sow house	Corn	310.1 kg
	6/12/2016 1:10 PM	Sow house	Corn	310.1 kg

Export

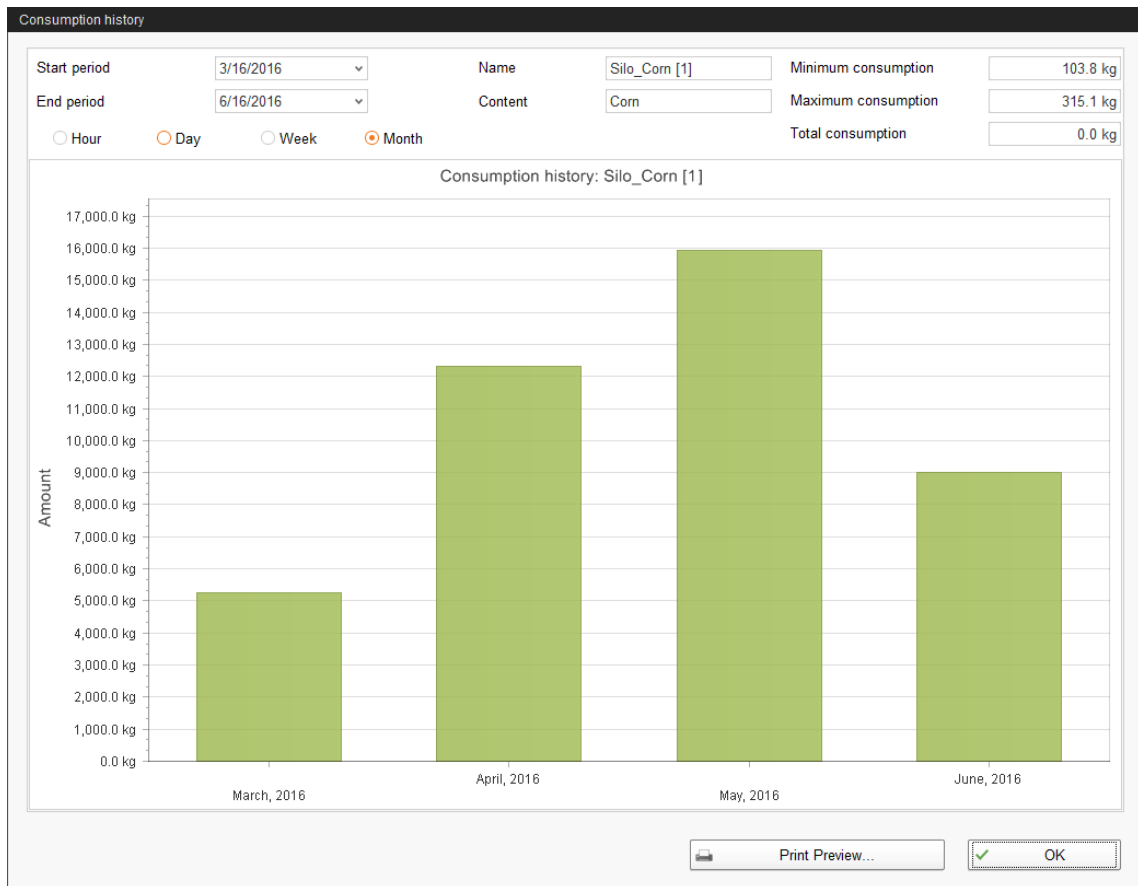
History

All feed removed from the selected silo in the past seven days is displayed in the "History" category as a bar chart.



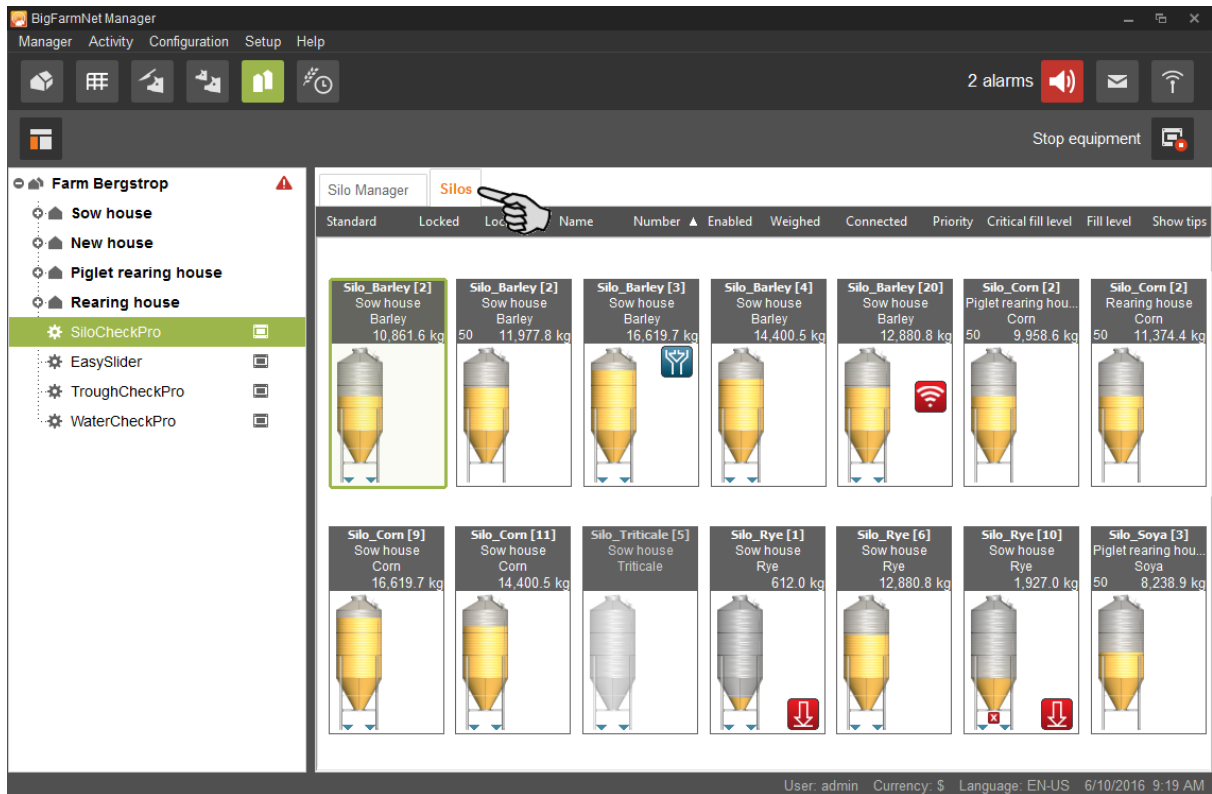
Clicking on the "Details" button opens the "Consumption history" window. You may select the time period for the consumption history freely and with more details in this window.

1. Under "Start time" and "End time", enter the desired dates.
2. Select a time period: Hour, day, week or month.
3. Clicking on the "Print Preview" button opens a print preview to print out the data.



5.2 Graphic view

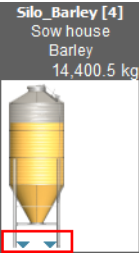
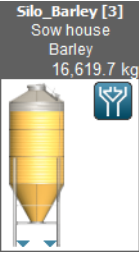
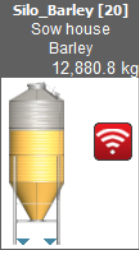


In the "Silos" tab of the Silo Manager, your silos are displayed graphically. Using the farm structure to the left, you can decide whether you want to display all silos (click on the farm level) or the silos of a specific house (click on the selected house).



You may also change the order of the silos. In the upper bar below the tabs, click on the parameter based on which you want to sort the silos.

The illustrations and icons provide the following information:

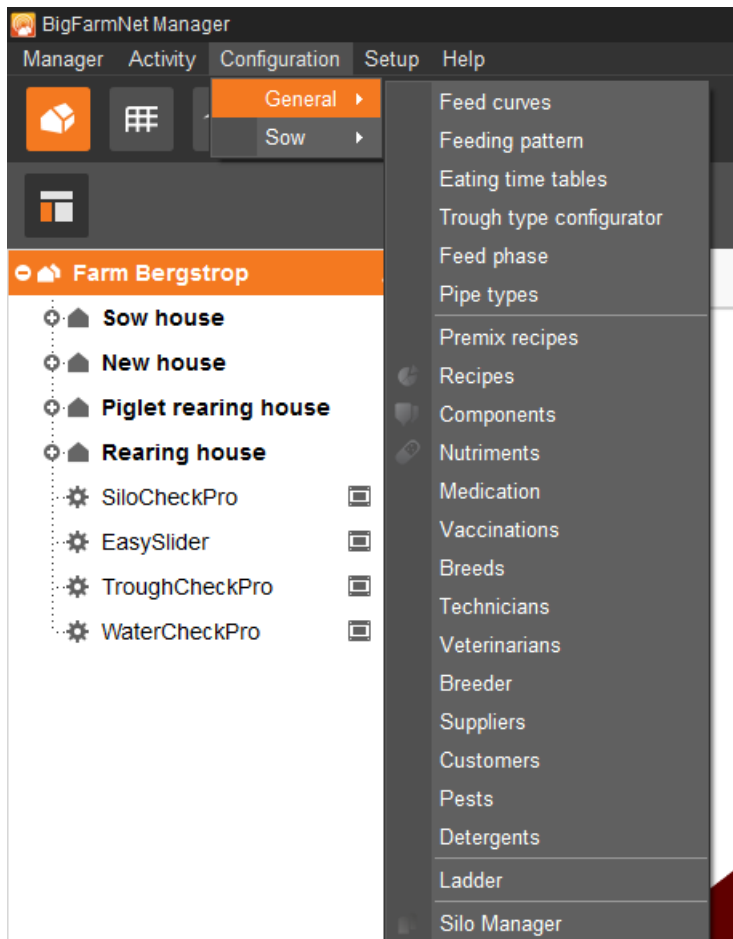
	<ul style="list-style-type: none"> Name of the silo Location Contents Current fill level in kg
	<ul style="list-style-type: none"> Graphic depiction of the fill level

 <p>Silo_Barley [4] Sow house Barley 14.400.5 kg</p>	<ul style="list-style-type: none"> Icon for weigh bars: silo is weighed by SiloCheckpro
 <p>Silo_Barley [3] Sow house Barley 16.619.7 kg</p>	<ul style="list-style-type: none"> Icon for deliveries (loading): silo is currently being filled
 <p>Silo_Barley [20] Sow house Barley 12.880.8 kg</p>	<ul style="list-style-type: none"> Wireless icon: data connection to the weighing box is interrupted
 <p>Silo_Rye [1] Sow house Rye 612.0 kg</p>	<ul style="list-style-type: none"> Icon for critical fill level: fill level has fallen below the set warning amount
 <p>Silo_Triticale [5] Sow house Triticale</p>	<ul style="list-style-type: none"> Illustration grayed out: monitoring by SiloCheckpro has been deactivated

5.3 General master data

Master data is defined as information which you only need to enter once and which remains valid for a longer time period. You can use the master data with different functions of the individual BigFarmNet applications. Components, feed curves and suppliers are master data, for example.

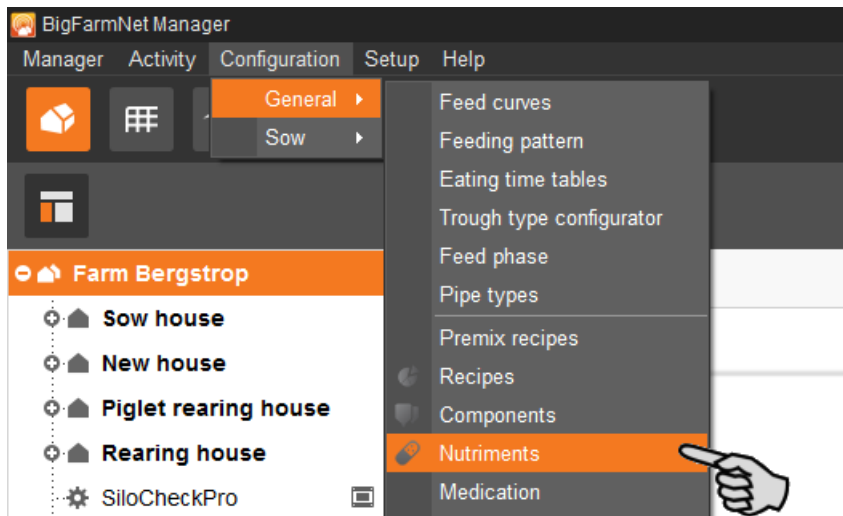
In the "Configuration" menu, click on "General" to access the list of master data.



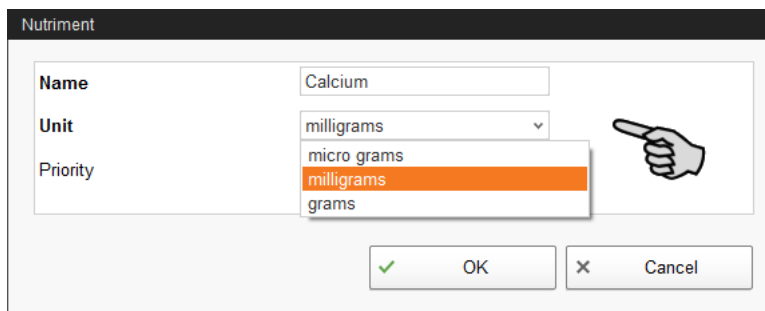
5.3.1 Creating nutrients

Nutrients include carbohydrates, fats and proteins, but also vitamins and minerals. The nutrients you create determine the nutritional value of the components. When you create a new component, all nutrients you created before will be listed. You can then enter the corresponding values per component, see chapter 5.3.2 "Creating components".

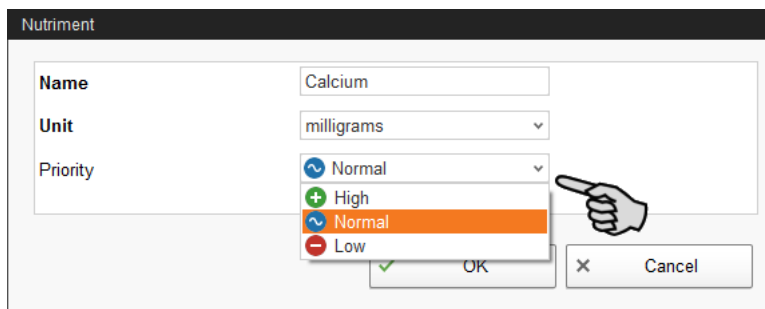
1. In the menu "Configuration" > "General", click on "Nutrients".



2. In the dialog window "Nutrients", click on "Add".
3. Enter a name for the nutrient and determine the unit.



4. As an option, you can also determine a priority for each nutrient. The nutrients can then be listed in ascending or descending order according to priority later on.

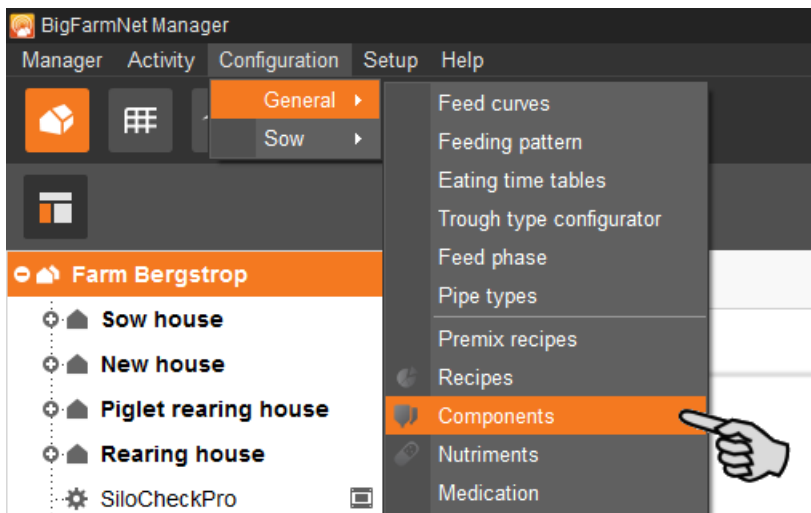


5. Accept these inputs by clicking on "OK".

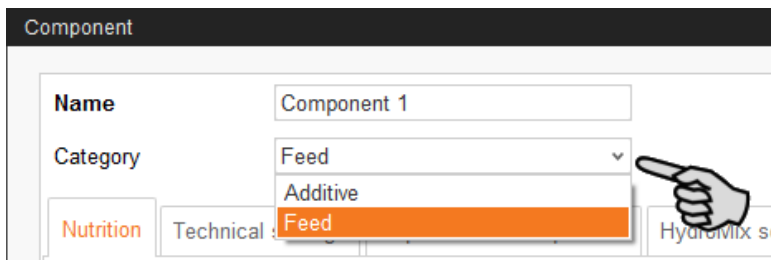
5.3.2 Creating components

Use the "Component" dialog to create different components and to add any corresponding information. Components are classified into the categories "Feed" and "Additive". Components in the category "Feed" can be the individual ingredient of a feed mix or a complete compound feed.

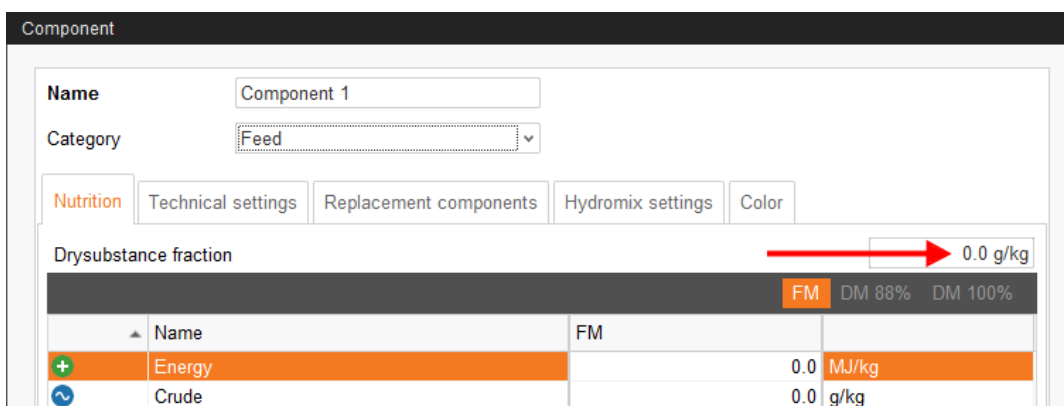
1. In the menu "Configuration" > "General", click on "Components".



2. In the dialog window "Components", click on "Add".
3. Enter a name for the component and select a category.



4. Under the first tab "Nutrition", enter the dry matter fraction of the component.



5. Only after entering the dry matter fraction can you choose one of the following quantities:

- FM = per fresh matter
- DM 88 % = in relation to 88 % dry matter
- DM 100 % = in relation to 100 % dry matter

If required, enter the energy content and the individual nutrient fractions in the table below (see 5.3.1 "Creating nutrients").

Component

Name:

Category:

Nutrition | Technical settings | Replacement components | Hydromix settings | Color

Drysubstance fraction:

		FM	DM 88%	DM 100%
+	Energy			12.6 MJ/kg
~	Crude			160.0 g/kg
~	Lysine			9.0 g/kg
~	Vitamin D3			0.0 mg/kg
~	Vitamin A			0.0 mg/kg



Your feed supplier will provide you with information on the dry matter fraction, energy content and ingredients of your feed.

5.3.3 Adding suppliers

1. In the menu "Configuration" > "General", click on "Suppliers".
2. In the dialog window "Suppliers", click on "Add".

The dialog window "Suppliers" lists all created suppliers which you can edit, copy or delete later on, if necessary.

3. Fill in the information for the supplier.

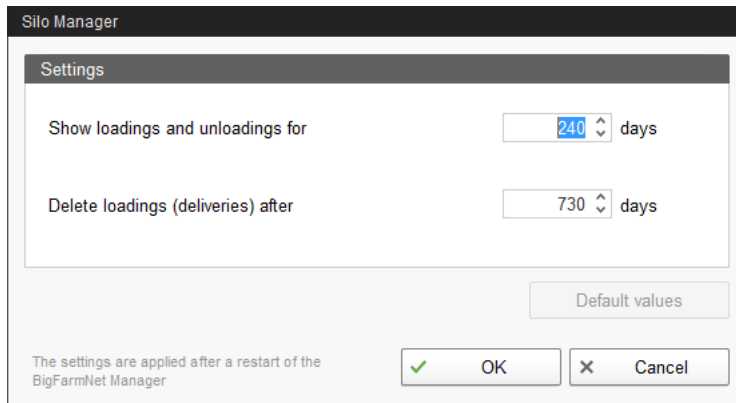
Supplier	
Code	East
Name	East Pig
Contact	
Address	
Street	One North Capitol, Suite 100
Postcode / PO Box	
Postcode / City	Indianapolis
Region	IN 46204-2288
Country	USA
Communication	
Phone no.	930-437-8704
Mobile no.	
Fax no.	930-437-8703
E-Mail	EAST-PIG@WEBNEW.US
Website	
Our Customer no	4456

4. Accept your inputs by clicking on "OK".

5.3.4 Settings for deliveries and consumption

Each delivery (loading) and consumption (unloading) for a silo is registered and available in the Silo Manager, see chapter 5.1 "Silo data". With time, a large amount of data will accumulate in the display window. Manage this data as follows:

1. In the menu "Configuration" > "General", click on "Silo Manager".
2. Enter the desired number of days for the specific settings.



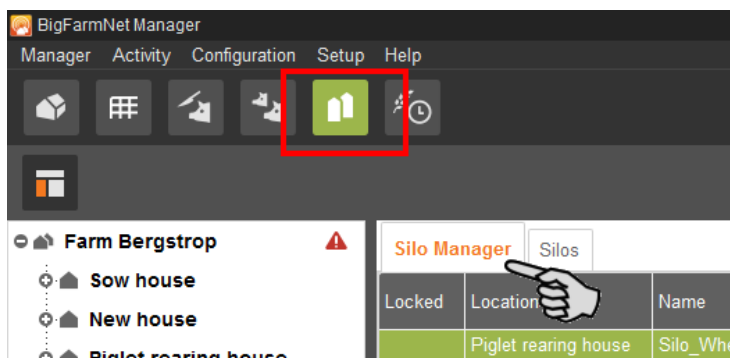
3. Click on "OK" to accept these settings.

5.4 Data export

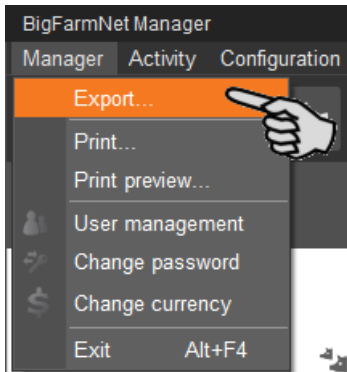
In the Silo Manager, you can export data of only the selected silos under the categories "Loading" and "Unloading", see chapter 5.1 "Silo data". However, you can also export the data of all silos at once or of the silo of one specific house only. This depends on which silos you have selected in the graphic view, see chapter 5.2 "Graphic view". The time period for the exported data can be selected freely.

Proceed as follows:

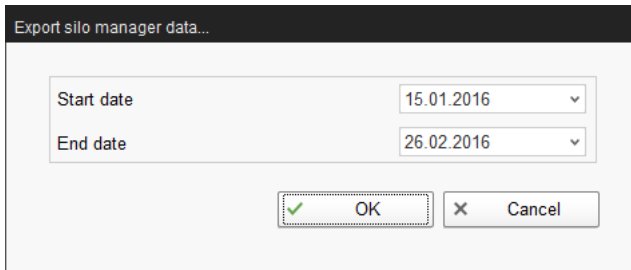
1. In the Silo Manager, click on the "Silo Manager" tab.



- Click on "Export" in the "Manager" menu.



- Select the time period for which you want to export data by entering the start and end dates.



- Click on "OK".
- Select one of the following file types:

- *.csv (text file)
- *.txt (text file)
- *.xlsx (Excel)

Exporting the data into a text file creates two files. One includes the deliveries, the other one the consumption.

Exporting to Excel creates an Excel file. The Excel file (book) will include two worksheets, one for deliveries and one for consumption.

- Enter a new file name, if necessary.

The default file name is "Silo Export_" + date and time of saving.

When exporting to text files, the file names will automatically be extended by "_Loading" and "_Unloading".

- Select the storage location and confirm with "OK".

5.5 Data backup

We recommend data backups in regular intervals. In case of a data loss, the backup can then be used to retrieve saved data. As storage location for the backup, we recommend using an external hard or flash drive.

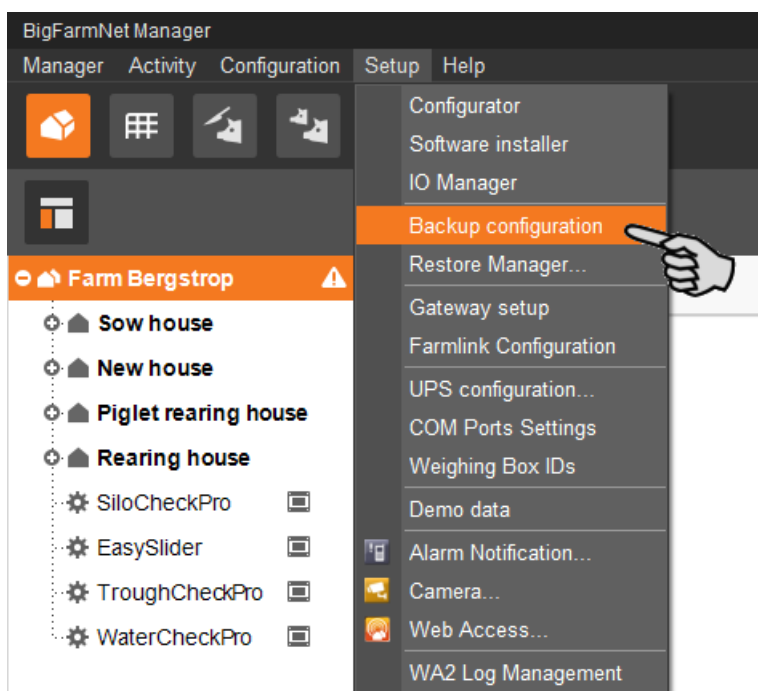
Remember that you can only retrieve the last data backup. Everything you have created or changed since then is not included in this backup. This means that the backup period should be determined depending on the amount of data you produce. You should find the ideal compromise between acceptable data loss and frequency of backups based on your individual needs.

The BigFarmNet Manager provides the following options for data backups:

- Manual backup, which you may carry out at any time when necessary.
- Automatic backup, for which you define a fixed backup period. The data is then backed up automatically according to the settings.

Open the settings dialog as follows:

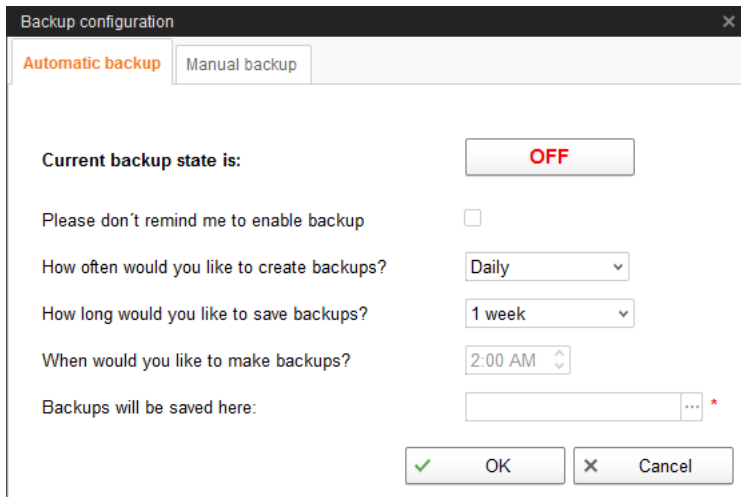
1. Click on "Data backup" in the "Setup" menu.



- In the window "Backup configuration", select the desired process using one of the two tabs:

Automatic backup

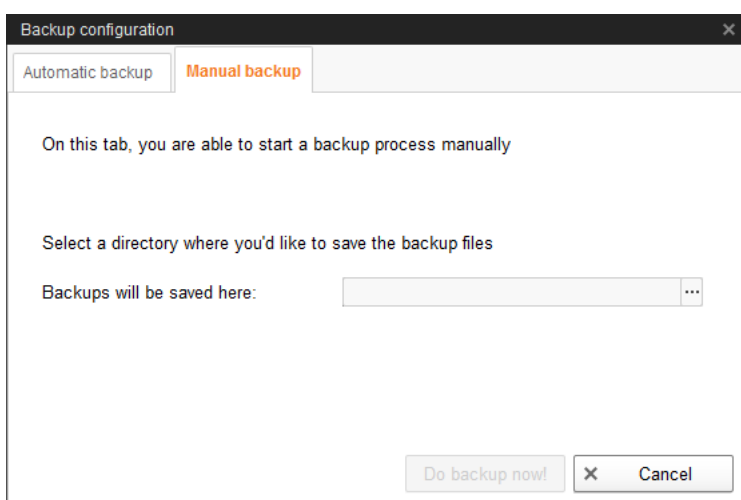
The automatic backup is pre-set to "OFF".



- Click on "OFF" to turn off the deactivation.
The button then switches to "ON".
- Determine the backup period.
- Select an external storage location.
- Click on "OK" to accept these settings.

Or:

Manual backup



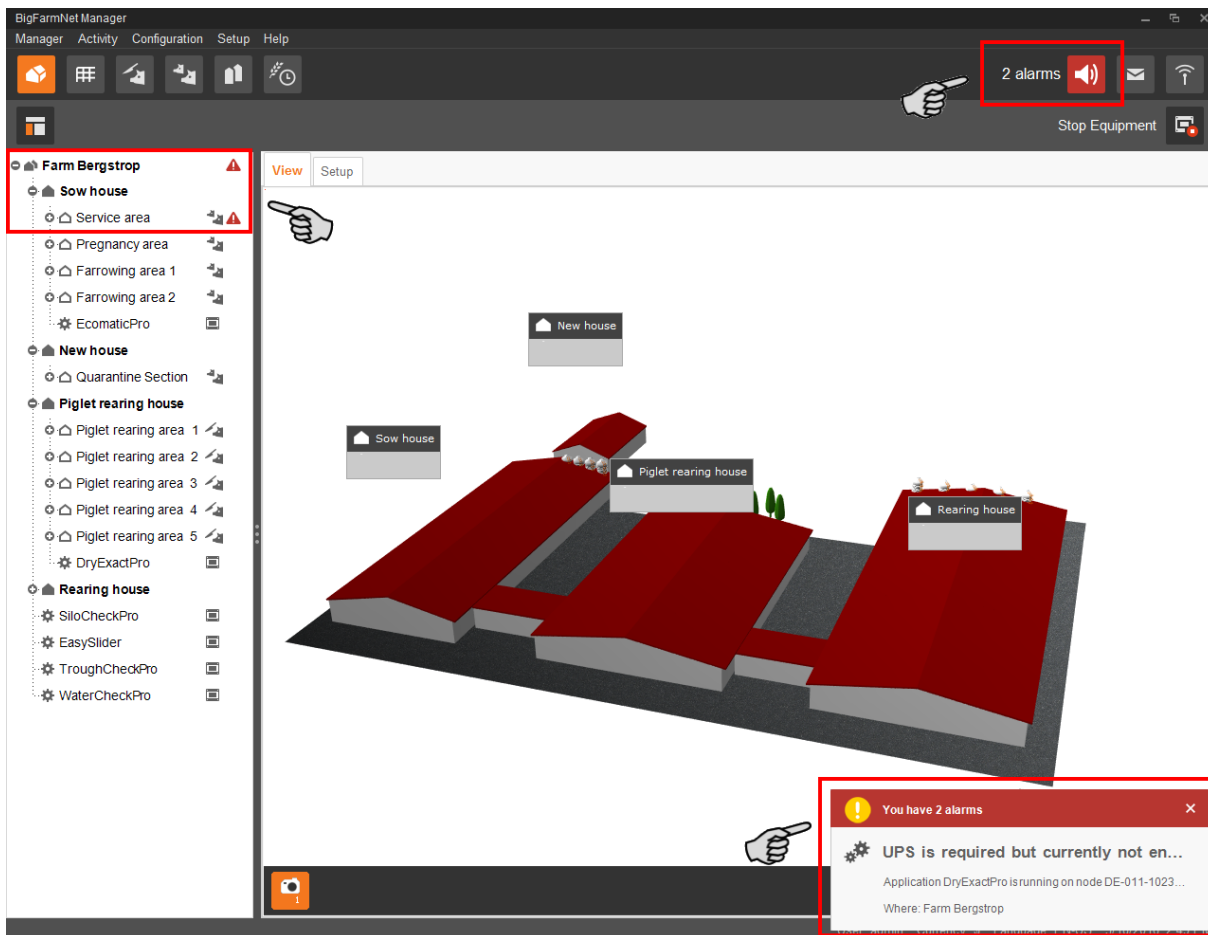
- Select an external storage location.
- Click on the now active button "Create backup now!"

6 Alarm

An alarm is triggered when the set values are not met during operation or when there are malfunctions. Warnings are also counted as alarms. Alarms are first registered by the control computer. The control computer then sends the alarm message to the BigFarmNet Manager.

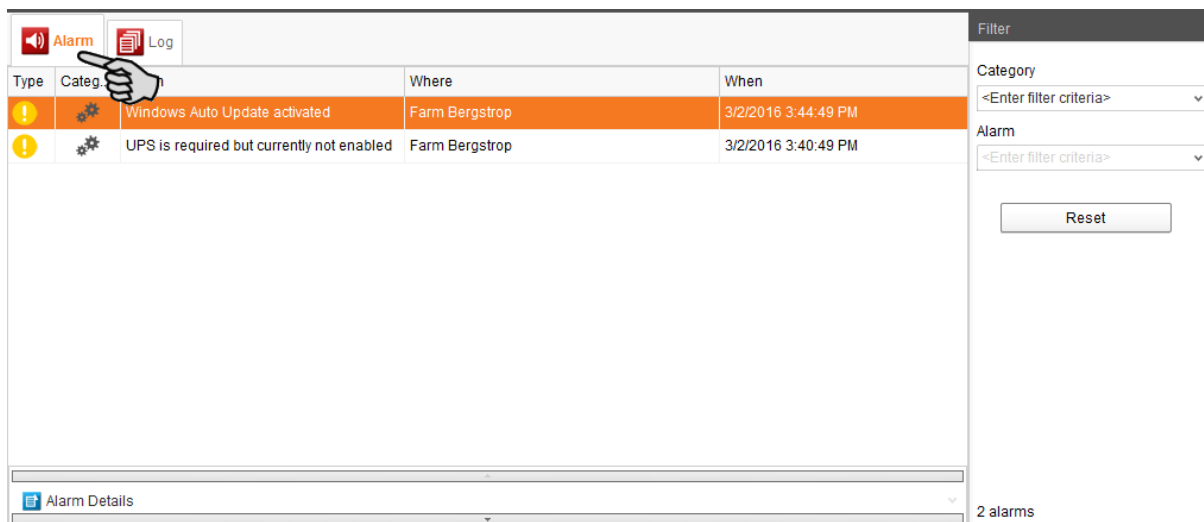
The BigFarmNet Manager indicates alarms as follows:

- Pop-up window: The window appears as soon as an alarm is registered, irrespective of the application the user is currently working in.
- Farm structure: Locations with a current problem are marked with a triangle in case of an alarm and with a circle in case of a warning.
- Tool bar: The number of alarms is shown next to the alarm icon.



Click on the pop-up window or the alarm icon in the tool bar to open the "Alarm" tab in the application window. The "Alarm" tab lists all active alarms and warnings.

If you click on a location with alarm or warning icon in the farm structure, the "Alarm" tab only shows problems active in the respective location.










The different alarms and warnings are shown in a list and ordered depending on when they occurred. The table columns contain the following information:

- Type: Alarm type
- Category: Alarm category
- Alarm: Alarm cause
- Where: Location of the alarm
- When: Time of occurrence

Alarm types

Icon	Status	Description
	Active alarm	Not acknowledged: Cause still exists.
	Inactive alarm	Not acknowledged: Cause no longer exists.
	Deactivated alarm	Acknowledged: Cause still exists.
	Ended alarm	Acknowledged: Cause no longer exists.
	Active warning	Not acknowledged: Cause still exists.
	Ended warning	Acknowledged: Cause no longer exists.
	Info	Information about an incident that has occurred.

Alarm categories

Icon	Category
	Climate: temperature, humidity
	Control, IO connection or test (system-specific)
	BigFarmNet system or CAN bus
	Dry feeding
	Liquid feeding
	SiloCheck system
	WaterCheck system



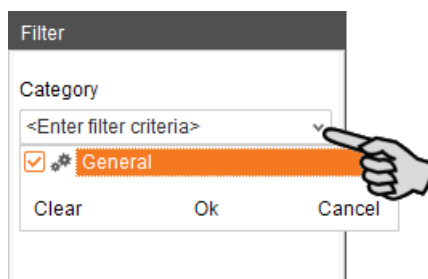
Always eliminate causes for alarms in the "Climate" category first.

6.1 Filtering alarms

Alarms can be filtered according to category as well as cause.

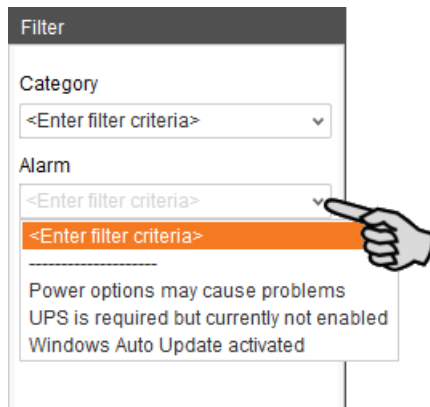
1. In the right-hand part of the window under "Filter", open the drop-down menu listing categories.

By default, all categories are selected.



2. Click on "Clear" to delete all check marks.
3. Check the boxes of the correct categories.
4. Click on "OK" to accept this selection.

- Under "Alarm", select the desired alarm cause from the drop-down menu.
The table then shows the desired alarms.



- To deselect the alarms, click on "Reset".
The table now lists all alarms.

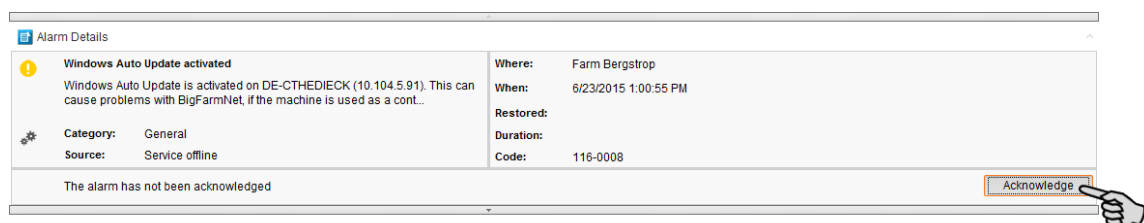
6.2 Acknowledging an alarm

Alarms can be acknowledged their cause has been eliminated. The alarm is marked with the corresponding icon (see alarm types) in the table and the system no longer requires action from the user.

- Click on the alarm you want to acknowledge to mark it.
- Click on "Alarm details" in the bottom part of the application window.



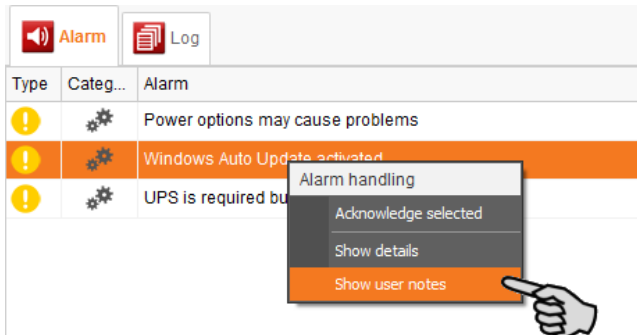
- Click on "Acknowledge".



- Click on "Acknowledge" again in the next window.
- If necessary, leave a note on the alarm.
This note may be helpful to later eliminate similar alarms.

- a) Click on the alarm for which you want to leave a note to mark it.
- b) Right-click to open the context menu and click on "Show user notes".

The window "User notes" opens in the lower part of the application window.




- c) Enter your note into the field "Feedback" or "Corrective action".



- d) Click on "Save".

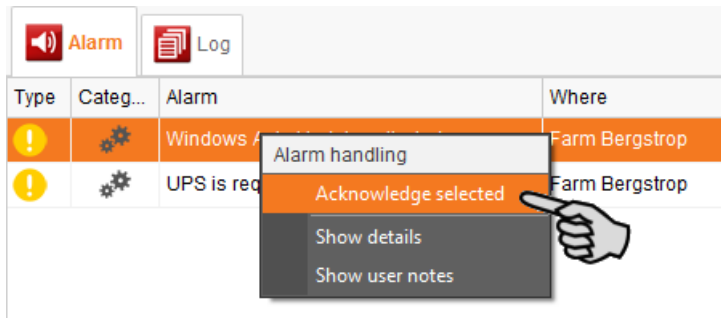
Or:



You can also acknowledge multiple alarms at the same time. Use the following key combination to select the respective alarms:

- To select a group of consecutive alarms: Click on the first alarm, press and hold the Shift key and then click on the last alarm you want to select.
- To select multiple alarms individually: Press and hold Ctrl and click on each alarm you want to select.
- To select all alarms: Press and hold Ctrl and then press A.

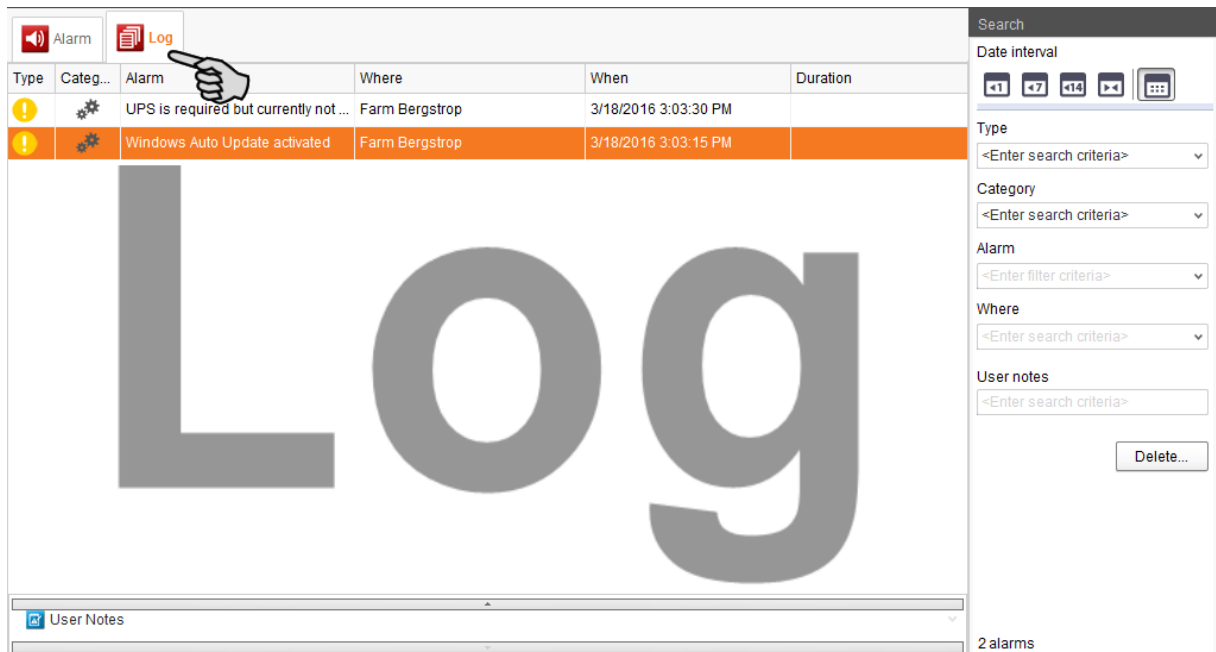
1. Select one or more alarms.
2. Right-click to open the context menu and click on "Acknowledge selected".



3. Click on "Acknowledge" in the next window.

6.3 Alarm log

The "Log" tab shows all alarms which have occurred since initial operation of the BigFarmNet Manager on your farm.

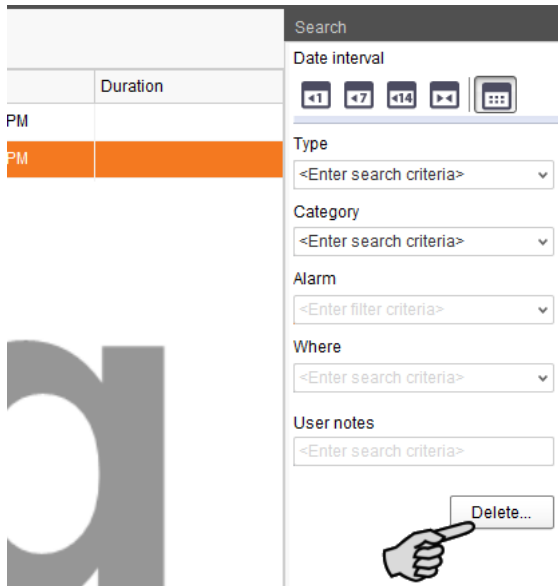


Use the search function to view selected alarms in this tab. The following search options are available in the right-hand part of the window under "Search":

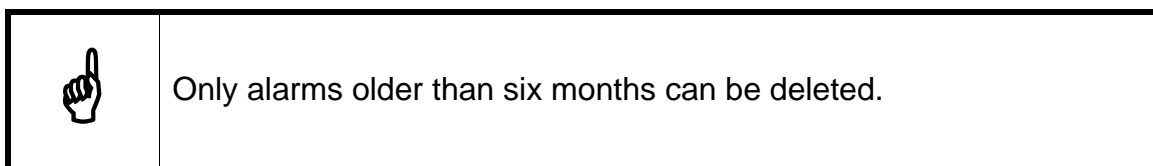
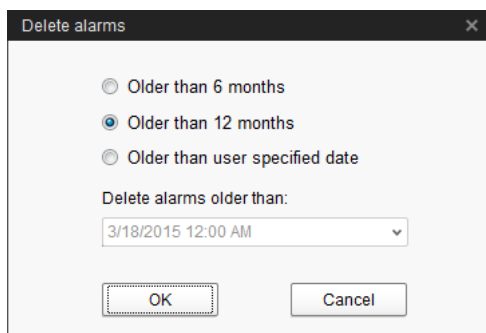
- Date interval: Time periods during which alarms may have occurred
- Type: Alarm type
- Category: Alarm category
- Alarm: Alarm cause
- Where: Location of the alarm
- User notes: provided user notes have been left

Deleting alarms

1. Click on "Delete..." in the right-hand part of the "Log" tab.



2. Click on the desired time period or enter a date.




3. Click on "OK".

All alarms of the selected time period are deleted, irrespective of whether specific alarms are currently selected via the search function.

6.4 System-specific alarms

The following table describes all possible alarms and warnings for SiloCheckpro:

Category	Alarm	Description	Possible cause
	Serial communication error	Serial device (X) caused an error	Adapter connection at PC (RS485 / USB) has been interrupted.

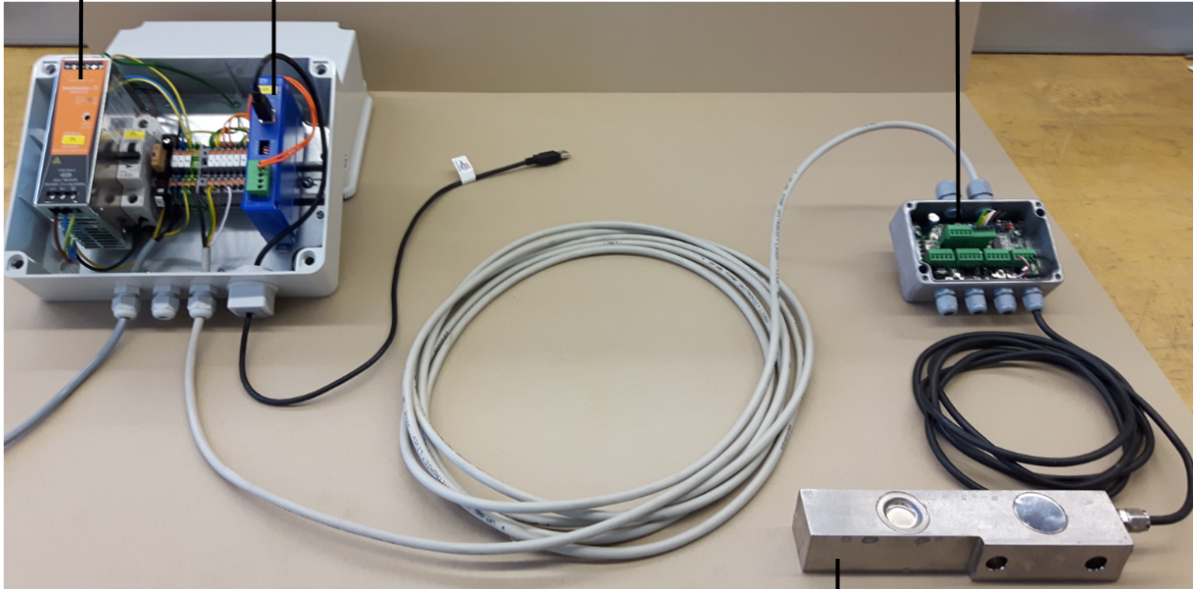
7 Annex

7.1 Overview connection

24 V power supply

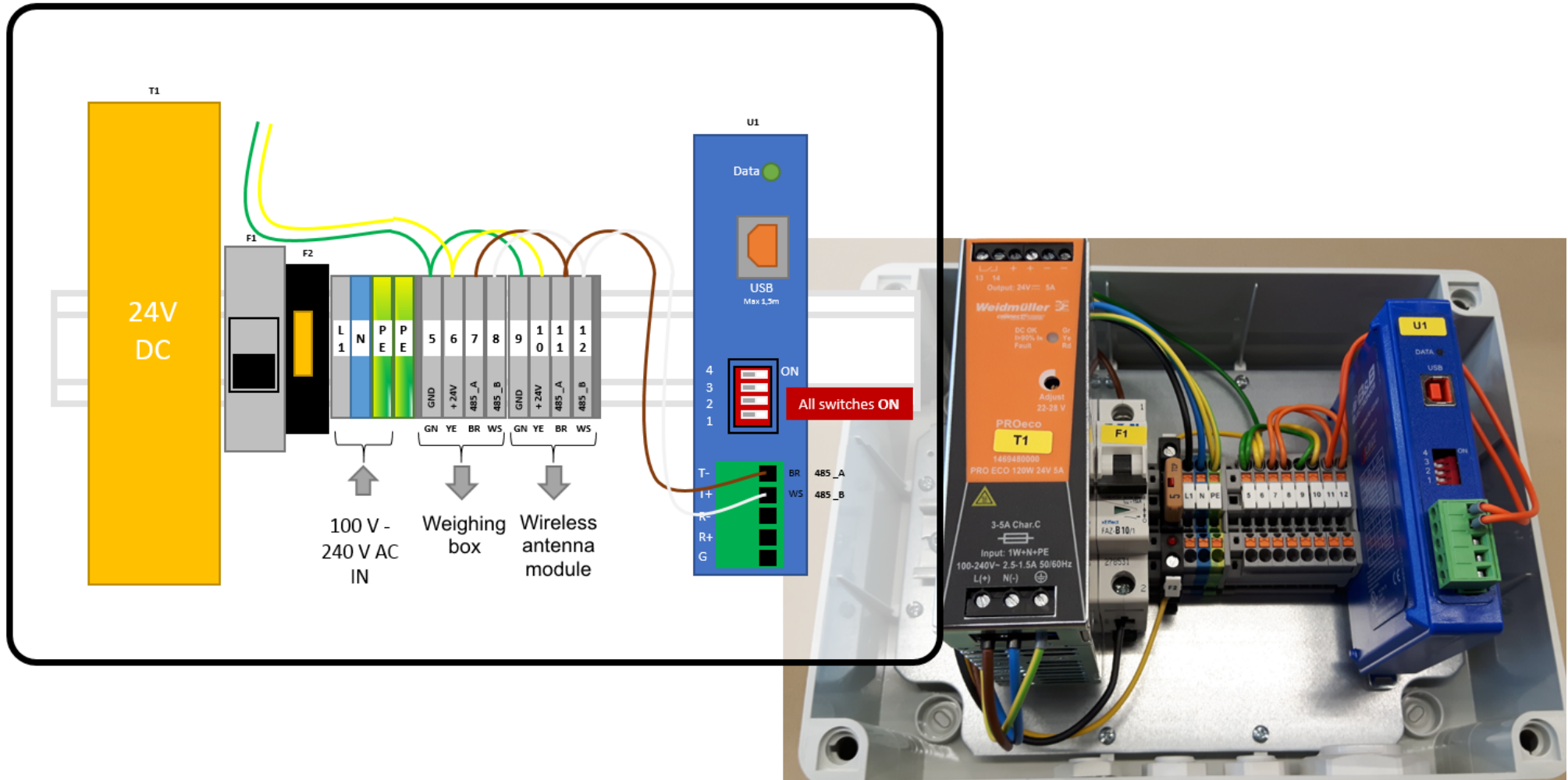
USB interface 485

Weighing scale electronics

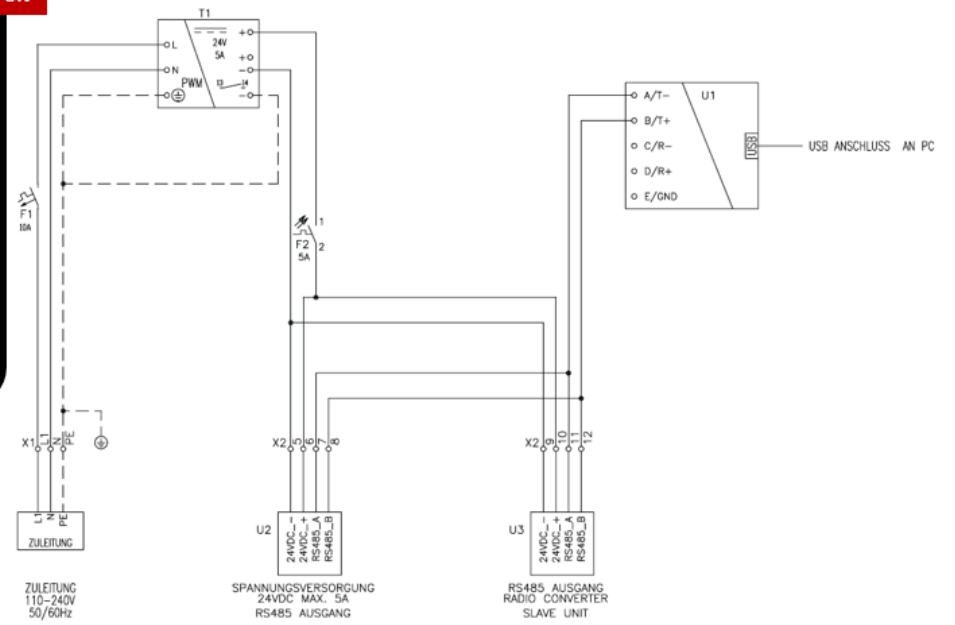
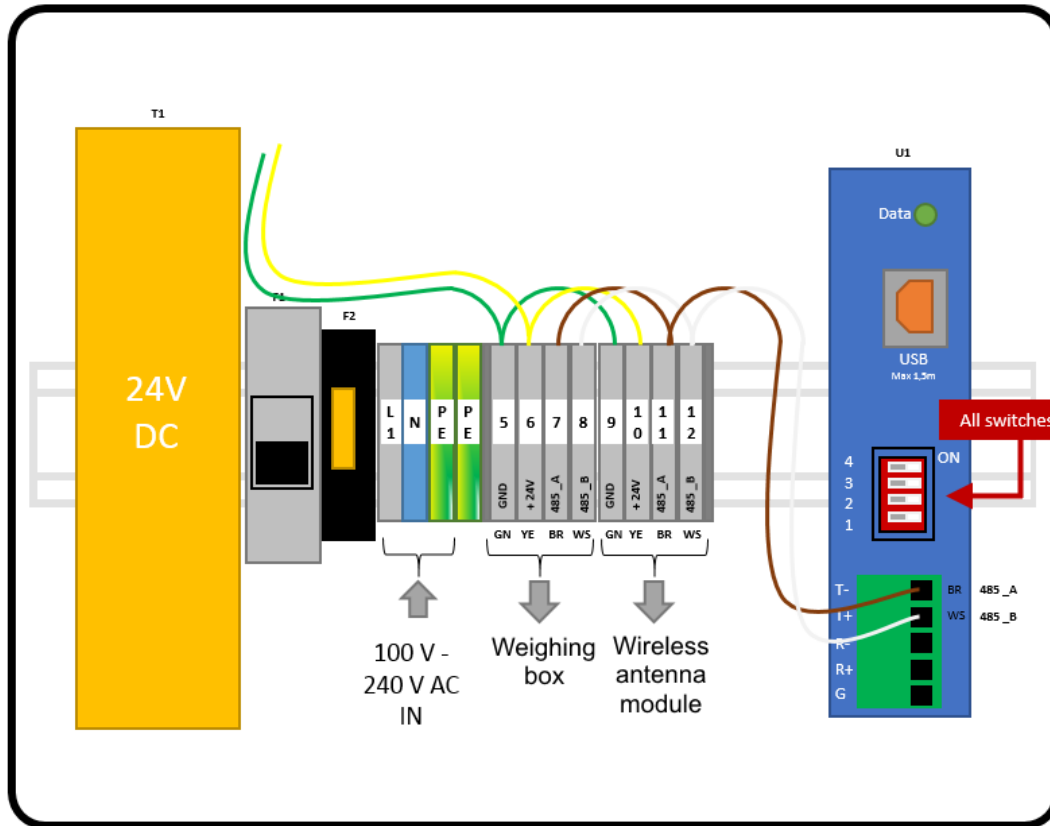


Weigh bar

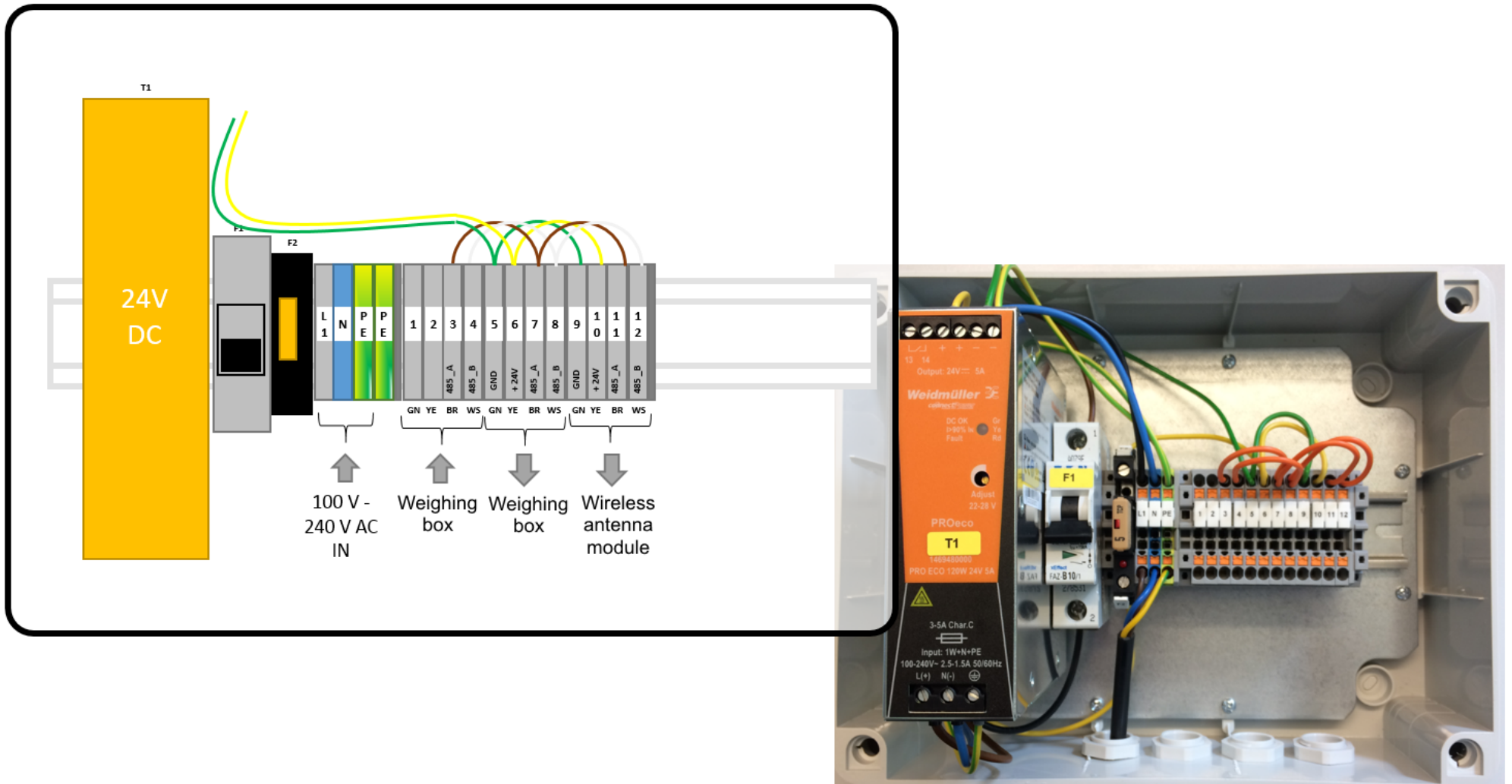
7.2 Power supply with USB adapter



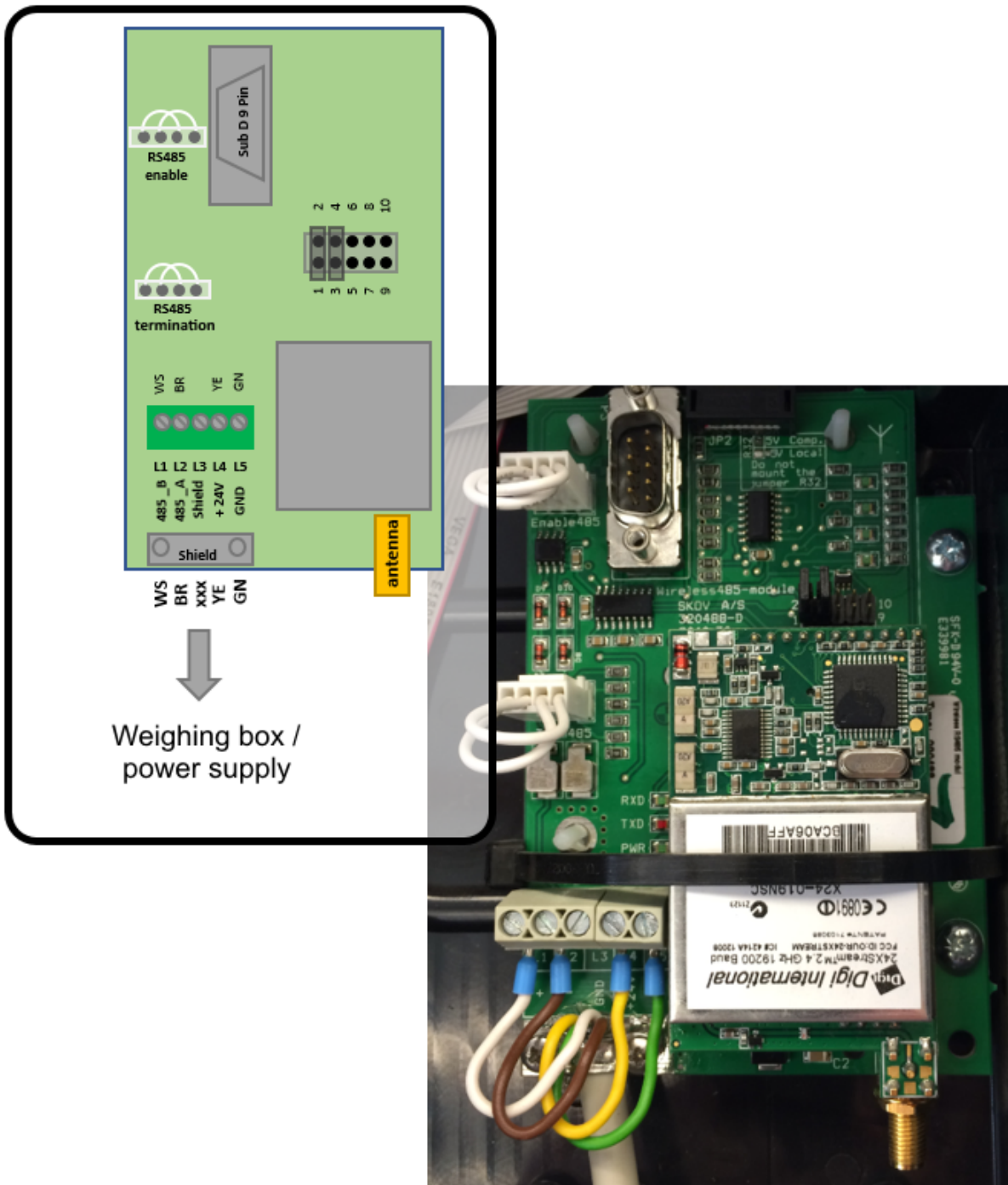
7.3 Wiring diagram



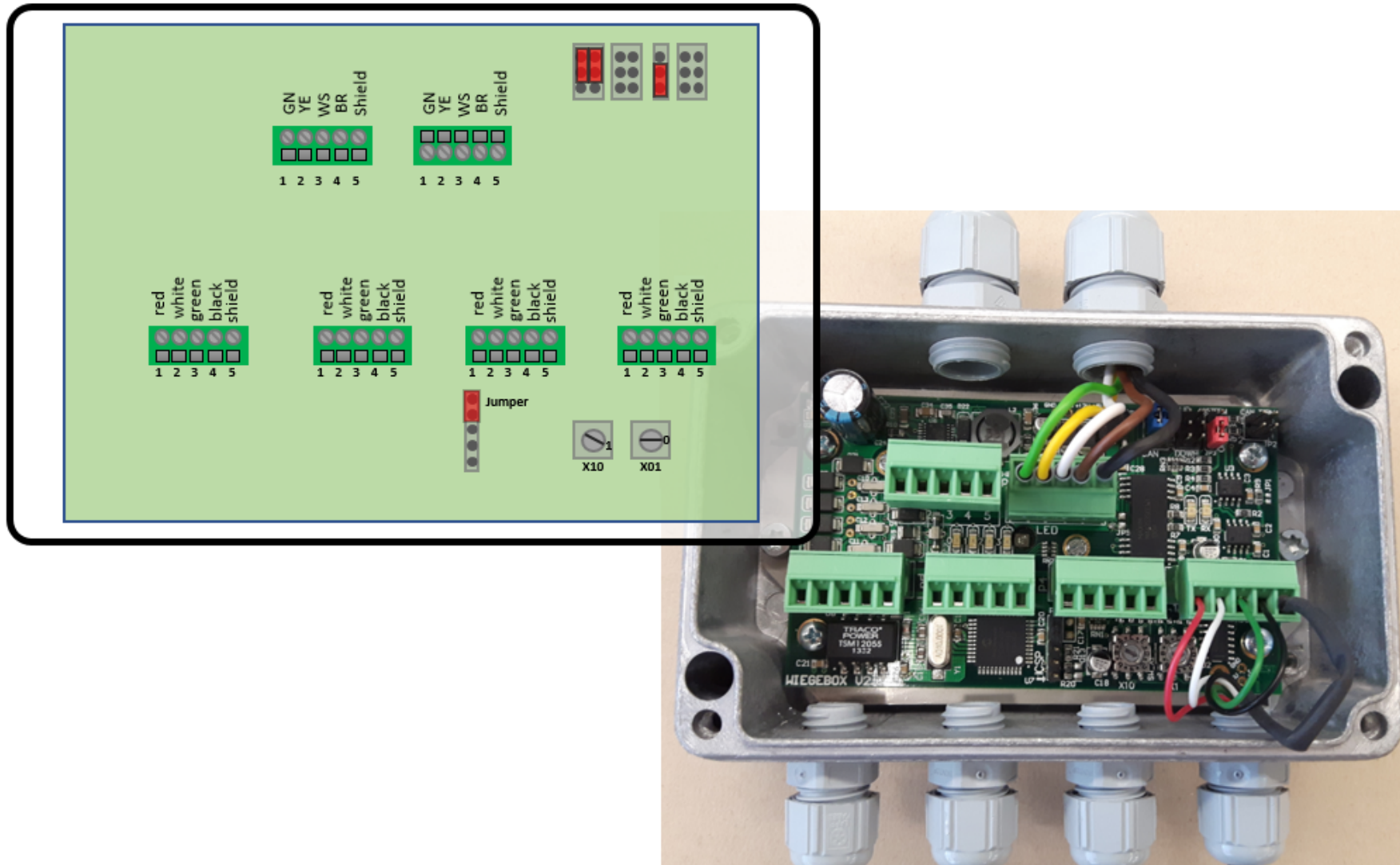
7.4 Power supply without USB adapter



7.5 Connection of the Info Matic Wireless module

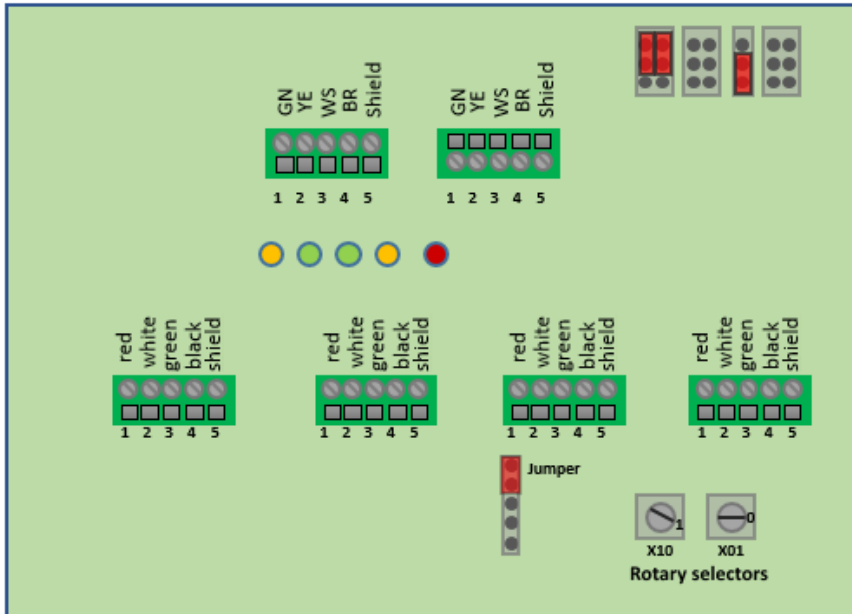


7.6 Connection weighing box V 2.2



7.7 Resetting the weighing box V 2.2

To reset the weighing box to the factory settings with ID 31, carry out the following steps:



1. Disconnect the box from the power supply.
The power is now off.
2. Remove the jumpers.
3. Set both rotary selectors to 0.
4. Connect the box to the power supply.
The box is now supplied with power and the LED chain flashes.
5. Wait for approx. 20 seconds.
6. Repeat the steps 1, 4 and 5.
This is to make sure that the ID is reset to 31.
7. Disconnect the box from the power supply.
The power is now off.
8. Set both rotary selects to factory settings:
 - X10 = 1
 - X01 = 0
9. Replace the jumpers.
10. Connect the box to the power supply.
The box is now supplied with power.

7.8 XK3101 SiloCheckPro Quick Start: Serial Start port programming

XK3101 SiloCheckPro Quick Start: Serial port programming

XK3101 communication parameters used in SiloCheckPro:

Serial port settings:

Baud rate: **9600** baud, Data bits: 8, Parity: none, Stop bits: 1, Flow control: none

Protocol: **Modbus**

Communication mode: **RS485**

Weighing box ID: Must be unique per COM port, range: **01...89**

XK3101: Programming the serial interface

Key	Display	Description
[FN] + [->0<-]	F I	Enter programming mode
2 x [FN]	F 3	
[PT]	F 3.1 X	X = baud rate Press [FN] until display shows <i>F3.1 3</i> Result: 9600 baud set
[PT]	F 3.2 X	X = communication protocol Press [FN] until display shows <i>F3.2 0</i> Result: Command mode, Modbus protocol set
[PT]	F3.3 XX	XX = indicator address (box ID) [FN] selects the flashing digit [->0<-] changes the digit value Every XK3101 must be programmed with a unique box ID per COM port Range: 01...89 Result: Box ID programmed
2 x [PT]	F4 (not F3.4)	Exit serial port programming...
2 x [FN]	ESC	
[PT]	Current weight	Serial port programming finished

For programming details see XK3101 user manual: Section 8.0 "Set Serial Interface"

Serial port wiring for RS485

Pin 1: T+

Pin 9: T-

For details see XK3101 user manual: Section 2.2.4 "Serial port connection"

USB-RS485 Adapter

Supported model: B&B USOPTL4DR-LS (ULinx USB Driver)

On the USOPTL4DR-LS all 4 dip switches have to be set to "on"

For details see: ULinx USB Driver Quick Start Guide

Wireless Module

Supported model: Wireless Link RS485

To enable a proper communication, all involved devices must be programmed to the same settings.

Meaning: COM port settings in SiloCheckPro, XK3101 and (if used) Wireless Link RS485 must be set to

Baud rate: **9600** baud, Data bits: 8, Parity: **none**, Stop bits: 1, Flow control: none.

For details in programming the Wireless Link RS485 via the X-CTU tool see: SiloCheckPro manual.

7.9 XK3101 SiloCheckPro Quick Start: Calibration

XK3101 SiloCheckPro Quick Start: Calibration

For SiloCheckPro, the XK3101 has to be calibrated in a way that only integer values are displayed, **floating point values** are **not** supported. To be able to calibrate the XK3101, the COM port pins 7 and 8 must be short-connected, therefore the XK3101 is delivered with a **programming plug**. The XK3101 supports several calibration methods, in this quick start guide the usual method via **“weights calibration”** is described. The first weight (**No LoAd**) has to be 0 kg, the second weight must be entered after measuring (**Add Ld I**).

XK3101: Weights calibration (calibration method 0)

Key	Display	Description
[FN] + [->0<-]	F I	Enter programming mode If F2 is already displayed: Press [->T<-] to go back to F I
[PT]	CAL X	X = last used calibration method Press [FN] until display shows CAL 0 Result: Weights calibration selected
[PT]	d X	X= last used division value Press [FN] until display shows d I <i>E2: see error codes</i> Result: Division value 1 set (no floating point values)
[PT]	C XXX	XXX = (Silo) capacity [FN] selects the flashing digit [->0<-] changes the digit value <i>E2: see error codes</i> The capacity is used for a correct bar graph display Result: Silo capacity set
[PT]	No LoAd	Display shows No LoAd The first reference value The silo must be empty, scale platform = 0 kg Optional: Press [FN] to skip this measurement (recalibration of a silo) Press [PT] to start measuring. Display shows - - - - - During measuring the bar graph will die out one by one ¹ Result: First reference value set <i>Ex: see error codes</i>
	Add Ld I	Display shows Add Ld I The second reference value. Add a known weight to the silo/scale platform. The weight must be entered in the next step after successful measuring. <i>Ex: see error codes</i> Optional: Press [->0<-],[>T<-],[PT] to skip this measurement (only re-correct zero) Press [PT] to start measuring. Display shows - - - - - During measuring the bar graph will die out one by one ¹
	XXX	XXX = current weight Enter the correct weight in kg (the known weight) [FN] selects the flashing digit [->0<-] changes the digit value Result: Second reference value set <i>Ex: see error codes</i>
[PT]	Add Ld 2	Skip this step. Press [->0<-] to finish the calibration Result: Calibration finished . The current weight will be shown

Common error codes:

- E2:** missing programming plug (calibration plug).
- E4:** Warning: Each division value less than 0.5uV. The second weight should probably be increased.
- E7:** incorrect weight, equal to 0 or more than the silo capacity.
- E8:** Weighing bar/load cell connected incorrectly (inverted signal).

For details see XK3101 user manual: Section 4 “Calibration” and Section 10 “Error Indication”

¹ If the bar graph is bright all the time, you need to check the scale platform. The measured weight should not fluctuate.

A

Acknowledging an alarm 73
Adding the application 15
Adding the control computer 15
Alarm 70
Alarm categories 72
Alarm log 75
Alarm types 71
Assignment of IDs to weighing box 19

C

Calibration 39
Capacity 55
COM port 32
Composer 28
Configuring the system 15

D

Data backup 68
Data export 66
Deleting an alarm 76
Drive USB adapter 9

E

Editing silo data 55

I

Ingredient 63
Installation examples 4
IO Manager 33

L

Loading (delivery) 56, 66

N

Nutrient 61

P

Pin 7
Power supply 7

S

Silo Manager 54
Silo weighing 45
SiloCheck alarms 77
SiloCheckpro functions 39
Starting the IO service 37
Supplier 64
System description 1
System limits 3
System requirements 2

T

Taring 47
Threshold values 39

U

Unloading (consumption) 57, 66

W

Warning 70
Warning amount 55
Wireless module 9

X

XCTU 9