

## Operating instructions

### Batch PR 5900/83



Translation of the original operating instructions

9499 050 59400

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#### Release 1.11

## **Foreword**

### **Must be followed!**

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# 1 Introduction

## 1.1 Read the manual

- Please read this manual carefully and completely before using the product.
- This manual is part of the product. Keep it in a safe and easily accessible location.

## 1.2 This is what operating instructions look like

- 1. - n. are placed before steps that must be done in sequence.
- ▶ is placed before a step.
- ▷ describes the result of a step.

## 1.3 This is what lists look like

- indicates an item in a list.

## 1.4 This is what menu items and softkeys look like

[ ] frame menu items and softkeys.

**Example:**

[Start]- [Applications]- [Excel]

## 1.5 This is what the safety instructions look like

Signal words indicate the severity of the danger involved when measures for preventing hazards are not followed.

### **DANGER**

#### **Warning of personal injury**

DANGER indicates death or severe, irreversible personal injury which will occur if the corresponding safety measures are not observed.

- ▶ Take the corresponding safety precautions.

### **WARNING**

#### **Warning of hazardous area and/or personal injury**

WARNING indicates that death or severe, irreversible injury may occur if appropriate safety measures are not observed.

- ▶ Take the corresponding safety precautions.

### **CAUTION**

#### **Warning of personal injury.**

CAUTION indicates that minor, reversible injury may occur if appropriate safety measures are not observed.

- ▶ Take the corresponding safety precautions.

**NOTICE****Warning of damage to property and/or the environment.**

NOTICE indicates that damage to property and/or the environment may occur if appropriate safety measures are not observed.

- Take the corresponding safety precautions.
- 

**Note:**

User tips, useful information, and notes.

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## 1.6 Hotline

Phone: +49.40.67960.444

Fax: +49.40.67960.474

eMail: [help@minebea-intec.com](mailto:help@minebea-intec.com)



## 2 Overview

### 2.1 General information

These operating instructions describe the configuration and operation of the "Batch" application.

For installation, basic configuration, and calibration of the device, please refer to the PR 5900 installation manual and the operating instructions.

### 2.2 Equipment supplied

#### 2.2.1 Components

The Batch product consists of the following components:

- Maxxis 5 basic unit with software "BIOS," "firmware" and application software "Batch", including license
- license for dosing E9 (PR 5900/93)
- Manuals in PDF format on CD-ROM

The "Batch" application requires installation of the following programs in the device:

- BIOS
- Firmware
- Application "Batch"

PR 1721/5x or PR 1721/7x fieldbus cards are supported, see Chapter [2.2.3](#).

#### 2.2.2 Accessories (not included with the equipment supplied)

- Plug-in cards for Option-1, Option-2, see Chapter [2.2.3](#)
- Software (license):
  - PR 1792/13 OPC server communication with license PR 5900/92
  - PR 1750/60 programming tool
- Scales:

A maximum of 4 scales can be controlled and displayed.

- PR 5900/10 (W1) Internal weighing electronics (max. 2)
- PR 5900/10 (WE1) Internal Ex weighing electronics (max. 1)
- Platform/scale with xBPI protocol (max. 3)

The digital load cells (of type Pendeco) are connected over a maximum of 2 serial RS-485 interfaces and a digital connection counter.

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**Note:**

The following weighing functions are **not** supported:

- The totalizing function (tandem scale):  $WP\ A + WP\ B = WP\ C$
  - Alibi memory
-

### 2.2.3 Plug-in cards

Product	Description	Position
<b>PR 5900/04</b> 2 x RS-485 serial inter- faces	The interface can be configured by software. For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2
<b>PR 5900/07</b> 1 analog input 1 analog output	Analog input: internal 14 bits binary = 20,000 counts, @ e.g. 0...20 mA/0...10 V Analog output: internal 16 bits = 65,536 counts, resolution of 20,000 @ 20 mA For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2
<b>PR 5900/10 (W1)</b> Weighing electronics	Internal weighing electronics for connecting load cells or weighing platforms in non-Ex areas. A maximum of two internal weighing electro- nics units can be inserted. For further information, refer to the PR 5900 installation manual.	WP A and/or WP B
<b>PR 5900/10 (WE1)</b> Weighing electronics with Ex approval	Internal weighing electronics for connecting load cells or weighing platforms in Ex areas. A maximum of one internal weighing electro- nics unit can be inserted. For further information, see Option WE1 ad- ditional information.	WP A
<b>PR 5900/12</b> 4 digital inputs 4 digital outputs	4 passive opto-decoupled inputs 4 relay outputs with potential-free change- over contacts For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2
<b>PR 5900/13</b> 4 digital inputs 4 digital outputs	4 active opto-decoupled inputs 4 relay outputs with potential-free change- over contacts For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2
<b>PR 5900/17</b> 6 digital inputs 8 digital outputs	6 passive opto-decoupled inputs 8 passive opto-decoupled outputs For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2
<b>PR 5900/32</b> 2 RS-232 serial interfa- ces	The interface can be configured by software. For further information, refer to the PR 5900 installation manual.	Option-1 and/or Option-2

<b>Product</b>	<b>Description</b>	<b>Position</b>
<b>CX1</b> Module with Ex approval	Connection for remote terminal PR 5900/6x, PR 5900/7x For further information, see Option CX1 additional information.	Remote Terminal
<b>PR 1721/51</b> ProfiBus-DP	ProfiBus DP V0 slave with 9.6 kbit/s...12 Mbit/s, baud rate auto-detection For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/54</b> DeviceNet	DeviceNet master-slave with 125, 250, and 500 kbit/s For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/55</b> CC-Link	CC-Link master-slave with 10 Mbit/s For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/56</b> ProfiNet I/O	ProfiNet I/O with 10 Mbit/s and 100 Mbit/s, auto-detection (10/100, HalfDX/FullDX) For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/57</b> EtherNet IP	EtherNet IP with 10 Mbit/s and 100 Mbit/s, auto-detection (10/100, HalfDX/FullDX) For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/76</b> ProfiNet I/O 2-port	ProfiNet I/O with 10 Mbit/s and 100 Mbit/s, auto-detection (10/100, HalfDX/FullDX) For further information, refer to the PR 5900 installation manual.	Option-FB
<b>PR 1721/77</b> EtherNet IP 2-port	EtherNet IP with 10 Mbit/s and 100 Mbit/s, auto-detection (10/100, HalfDX/FullDX) For further information, refer to the PR 5900 installation manual.	Option-FB

## 2.3 Function of application "Batch"

The Batch application is used for the batching of complex recipes.

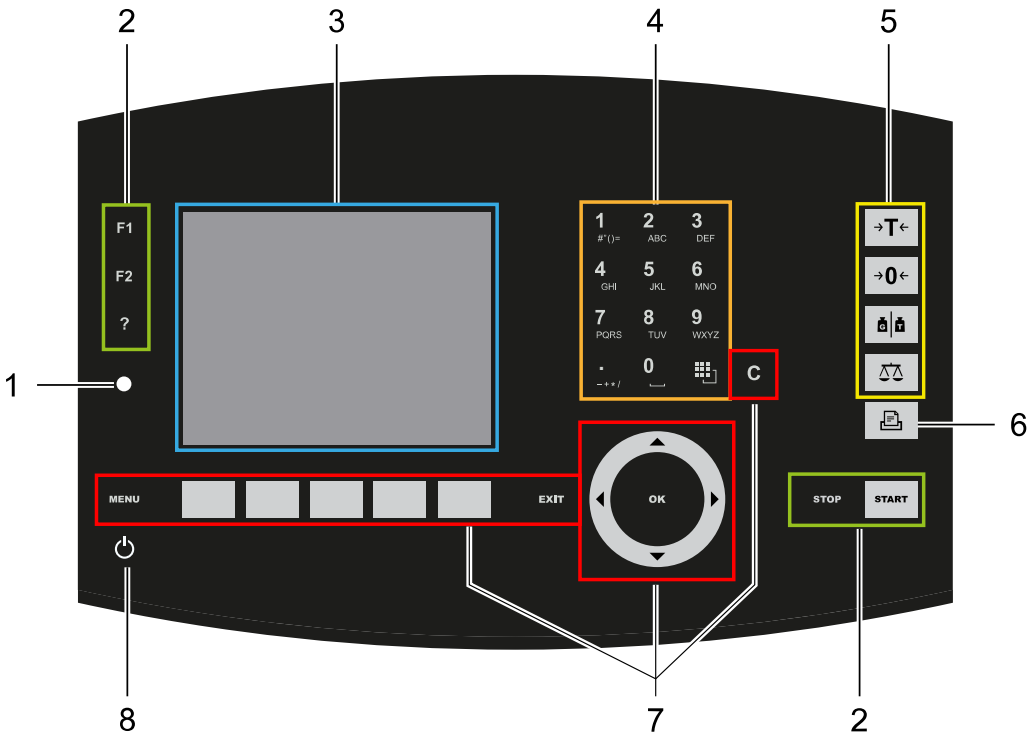
- User management with 3 hierarchy levels, log in using a password (see PR 5900 operating instructions).
- Use of up to 4 scales working in parallel (with xBPI protocol max. 3).
- Any recipes can be started via the remote start via digital inputs and via communication.
- Recipes can run "infinitely".
- Recipes can include materials from 4 scales which work automatically and in parallel.
- Recipes can contain any number of materials and lines.

- For manual batching, the lines of a recipe can be processed as free choice or sequential (defined order).
- During automatic batching, the scales can work in parallel or in sequence (defined order).
- There are 19 different material types.
- Some material types are defined for signals for process control.
- Analog signals can be exported and imported.
- Production can be carried out on the basis of an order, a recipe or a material.
- One order is processed at a time.
- Orders for manual recipes can be interrupted during processing.
- Separate printer for tickets (40 characters per line) and reports (line printer) are possible.
- Tickets generated:
  - Per recipe line for manual recipes (can be activated).
  - Once the recipe has been completed (can be activated).
- The recipes can be started remotely.
- Tickets and batch reports can be configured by line or can be customized using NLE (Nice Label Express).
- Long batch report printed in the background.
- Production report detailing amounts of recipe produced.
- Consumption report detailing amounts of materials consumed.
- Databases for materials, recipes and orders (with write protection for external access).
- Internal databases are hidden.
- Optional PC connection via OPC server (export reports).
- A simulation (which can be activated) checks the recipe before production.
- If the tolerance has been exceeded (or not met due to lack of material), the recipe can be recalculated in order to produce the desired ratio of materials.
- Tolerances are defined in % within the material; the values are incorporated into the recipe, but can be overwritten.
- Configurable digital and analog inputs and outputs.

3 Operating

3.1 Display and operating elements

3.1.1 Overview



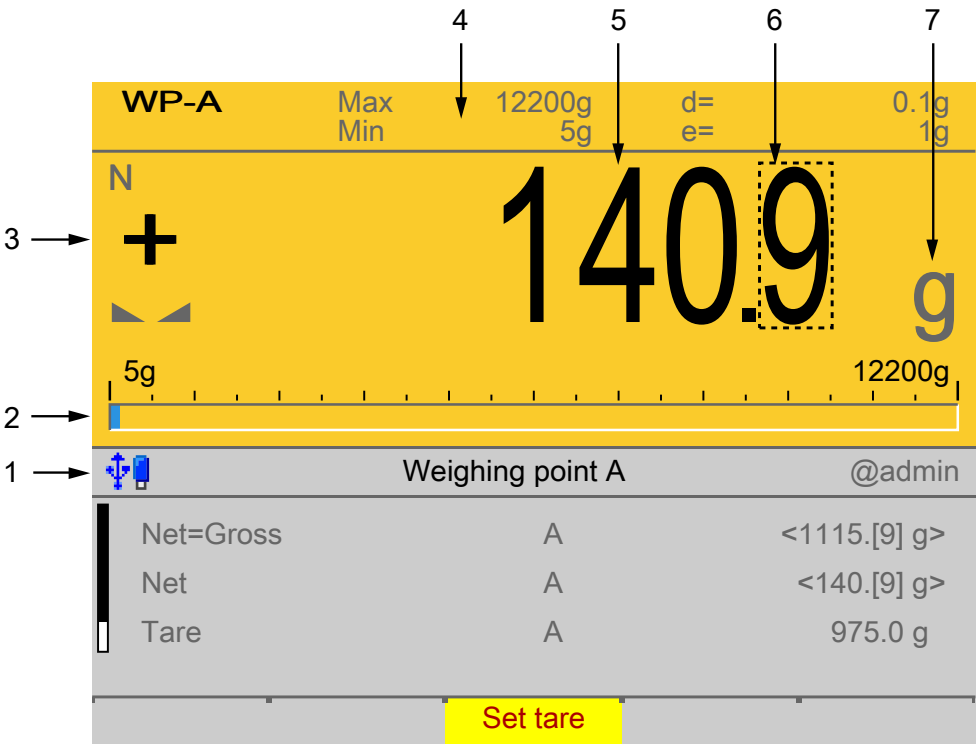
No.	Name
<b>Display elements</b>	
1	LED status display, see Chapter <a href="#">3.1.3</a>
3	5.7" TFT color display, see Chapter <a href="#">3.1.2</a>
<b>Operating elements, see Chapter <a href="#">3.1.4.1</a></b>	
2	Function keys
4	Alphanumeric keypad
5	Indicator keys
6	Application keys
7	Navigation/menu keys, incl. soft keys
8	On/off button

3.1.2 TFT user interface display

The TFT color graphics display can show weight values of up to 7 digits with decimal point and plus or minus sign. The available mass units are t, kg, g, mg, lb, or oz.







The lb and oz units are not permitted for use in legal metrology in the EU and EEC.

Below the weight display, the currently displayed weight is shown in a bar graph that indicates the percentage of the maximum capacity (Max). 0 is on the left, and 100% on the right.













No.	Description
1	Info line
2	Bar graph
3	Weight type/plus or minus sign/standstill
4	Status display
5	Weight value
6	Border around decimal place
7	Symbols/mass unit

Weight type/plus or minus sign	Description
B	Gross weight
G	Gross weight in NTEP or NSC mode
N	Net weight (Net = gross - tare)
T	Tare weight

Weight type/plus or minus sign	Description
<b>PT</b>	Preset tare, not tared
No display	<ul style="list-style-type: none"> <li>- Test value</li> <li>- Gross, not tared</li> </ul>
<b>User</b>	Additional weight display, application-dependent
<b>Setp</b>	Additional weight display, application-dependent
<b>Diff</b>	Additional weight display, application-dependent
<b>+</b>	Positive value
<b>-</b>	Negative value
<b>Standstill/zero/batching/monitoring</b>	<b>Description</b>
	Weight value standstill
<b>→0←</b>	The gross weight value is within $\pm\frac{1}{4}$ d of zero
	Batching mode: flashes when batching is "stopped"; rapid flashing indicates "error status"
	Pendeo load cells: Plausibility monitoring; the average deviation of the individual load cells is calculated
	Pendeo load cells: Temperature monitoring; 1–n load cells above or below permissible temperature
<b>Symbols/mass unit</b>	<b>Description</b>
	Value not permissible in legal metrology (e.g., 10x resolution, deactivated load cell)
<b>R1</b>	Range 1
<b>R2</b>	Range 2
<b>R3</b>	Range 3
<b>WP A</b>	Weighing point A
<b>WP B</b>	Weighing point B
<b>WP C</b>	Weighing point C
<b>WP D</b>	Weighing point D
<b>Max</b>	Maximum capacity (weighing range)
<b>Min</b>	Minimum weight
	Only if W&M is selected: Border around inadmissible decimal place.
t, kg, g, mg, lb, oz	These mass units are available.

**Status icons in the info line**

Icon	Description
	Remote control via VNC (Virtual Network Computing) is active.
	General warning
	<ul style="list-style-type: none"> <li>- The clock battery is empty.</li> <li>- The standby battery is empty.</li> </ul>
	The standby battery is too hot and is not charging. If this does not go away, the ambient temperature must be checked, see PR 5900 installation manual under [Technical data] - [Environmental influences] - [Ambient conditions] .
	<ul style="list-style-type: none"> <li>- An unsupported USB device is connected.</li> <li>- The maximum current of <math>i_{\max} = 200 \text{ mA}</math> has been exceeded.</li> </ul>
	Check newly connected devices.
	USB stick was recognized and is operational.
	Stick is in use and may <b>not</b> be removed.
	Conflict in the network settings of the IP address.
	Interface (CX1) was detected. However, there is no connection to the operator terminal.

**3.1.3 LEDs**

Operating status	Color	LED status	Description
Normal operation		Off	
System ready (standby)	Red	Continuous illumination	The display is switched off.
Power interruption <5 seconds	Red	Slow flashing	After 5 seconds, the device returns to normal operation.
Power interruption >5 seconds	Red	Fast flashing	The device is running a data backup. Once power is restored, the device returns to normal operation (LED off).
After the data backup, there is still a power interruption.		Off	The device switches off.
		Off	The device initiates a warm start, see PR 5900 operating instructions.







### 3.1.4 Operating elements

- Operation using the front-panel keys, see Chapter [3.1.4.1](#)
- Operation using the soft keys, see Chapter [3.1.4.2](#)
- Operation using the navigation keys, see Chapter [3.1.4.3](#)
- Operation using the PC keys, see Chapter [3.1.4.4](#)


#### 3.1.4.1 Operation using the front-panel keys

The following table shows the basic meanings of the symbols on the front-panel keys. Depending on the applications, the keys may also have other meanings.

##### Indicator keys




Key	Description
	<b>Set tare</b> The current gross weight is stored in the tare memory, provided that <ul style="list-style-type: none"> <li>- the weight value is stable.</li> <li>- the device is not in error status.</li> </ul> (Function is dependent on configuration)
	Sets gross weight to zero, provided that <ul style="list-style-type: none"> <li>- the weight value is stable.</li> <li>- weight is within zero setting range.</li> </ul> (Function is dependent on configuration)
	<b>Display gross/tare weight</b> Pressing the key switches to the next weight (only with tared scale). During calibration, pressing this key displays the weight for 5 seconds with 10x resolution.
	Switching of display between the weighing points: <ul style="list-style-type: none"> <li>- WP-A</li> <li>- WP-B</li> <li>- WP-C</li> <li>- WP-D</li> </ul>

##### Application keys

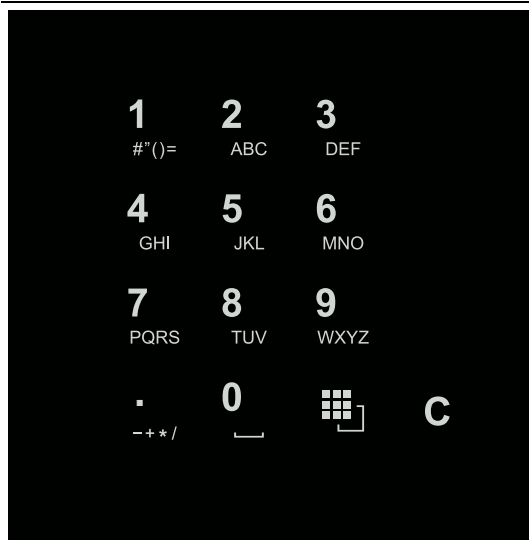
Key	Description
	Starts an application-specific printout. Configuration is performed in the application menu [Configuration] - [Print layout] - [...].

##### Navigation keys

Key	Description
▲	Scroll up in the menu.
▼	Scroll down in the menu.

Key	Description
◀	<ul style="list-style-type: none"> <li>- Cursor to the left</li> <li>- Selection</li> <li>- Exit menu window.</li> </ul>
▶	<ul style="list-style-type: none"> <li>- Cursor to the right</li> <li>- Selection</li> <li>- Confirm input/selection.</li> </ul>
<b>Menu keys</b>	
Key	Description
<b>OK</b>	Confirm input/selection.
<b>EXIT</b>	<ul style="list-style-type: none"> <li>- Cancel entry/selection (after a confirmation prompt) without saving the change.</li> <li>- Exit parameters/menu window.</li> </ul>
<b>C</b>	Pressing the delete key deletes individual characters (within an entry) or whole strings of characters.
Soft key 1 to 5	Select appropriate menu function, see also Chapter <a href="#">3.1.4.2</a> .
<b>MENU</b>	Switch to the operating menu.
<b>Function keys</b>	
Key	Description
<b>F1</b>	Assigned to a defined function (see system menu [System setup] - [Operating parameters]).
<b>F2</b>	Assigned to a defined function (see system menu [System setup] - [Operating parameters]).
<b>?</b>	Displays the relevant help window (not yet implemented for this application).
	<ul style="list-style-type: none"> <li>- Turns off the display.</li> <li>- Ignores all key presses.</li> <li>- LED is red.</li> </ul> <p>Pressing again will switch the display on again.</p>
	No function
	Same functions as the indicator key <b>EXIT</b> .

## Alphanumeric keypad



### Toggle key

Pressing switches between the following functions:

- ABC..  
Uppercase letters
- abc..  
Lowercase letters
- IME..  
Pinyin  
When Chinese has been selected or set under [Operating parameters] - [Input method].
- Hepburn  
When Japanese has been selected or set under [Operating parameters] - [Input method].
- 123..  
Numbers
- unit  
Units  
Select the unit using the cursor keys ▲/▼ and confirm using the key **OK**.

### Note:

It is also possible to select a unit by double-clicking on the shift key.

## 2

ABC

### Input without the character table

Pressing once displays the corresponding first character, e.g., "A", at the cursor position. After pressing twice, "B" is displayed at the cursor position and after pressing three times, "C" is displayed.

Press the cursor keys ▼/▲ to finish entering a character or wait approx. 2 seconds.

If only numeric values are required for input, letters are not enabled.

Press the cursor key ◀ within an entry to return to the previous character.

Press the cursor key ▶ within an entry to select the next character.

Within an entry, pressing the delete key **C** deletes the character to the left of the cursor.

Outside of an input, pressing the delete key **C** deletes the whole string of characters.



### Input with the character table

Double-clicking on the key displays the character table.

Only characters authorized for this input are displayed.

#### Note:

Only possible when entering text, not when entering numbers or weights.  
The switching function is turned off.

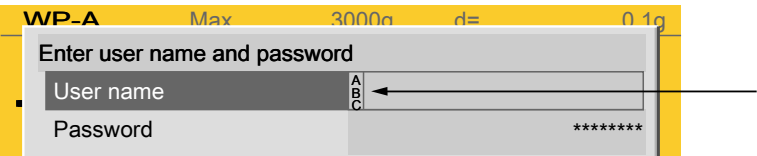
#### Procedure:

- Highlight the desired character with the cursor.
- The selected character is shown magnified in the field at the top right.
- Press the key **OK** to enter the character in the input field.
- Another double-click on the toggle key and other characters can be input as described previously.

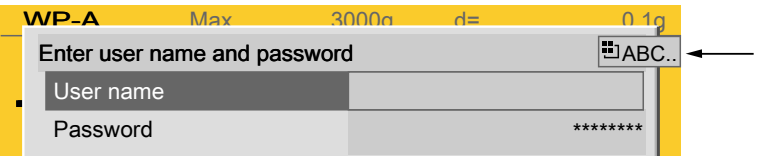
Input field

In principle:

If alphanumeric characters are already present in the input field of the selected line, they will be completely overwritten after immediate entry.  
If alphanumeric characters are already present in the input field of the selected line, you can press the cursor key ► to select the characters to be overwritten and overwrite them.



In front of the input field it is indicated whether numeric and/or alphabetic characters can be entered (see arrow).  
Switch to the input field using the cursor key ►.



The respective options are displayed (see arrow).

Note:

The character table is turned off.

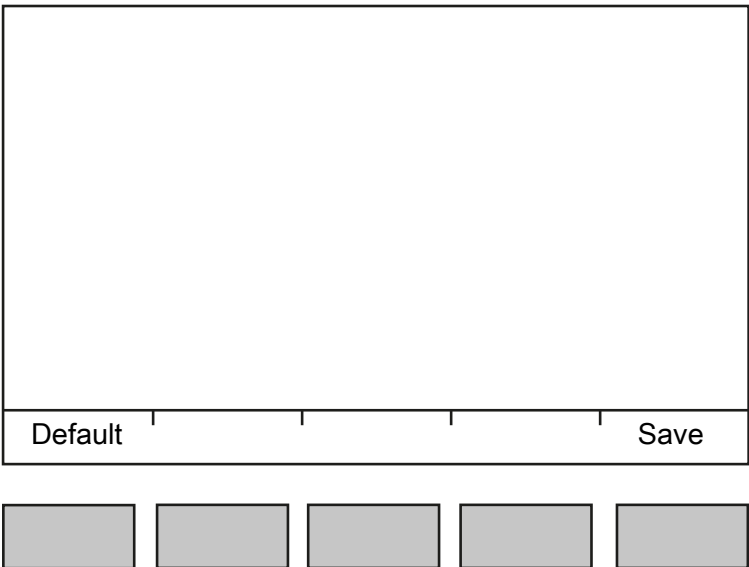
Keyboard shortcuts



Trigger a cold start, see also PR 5900 operating manual.

+  
EXIT

3.1.4.2 Operation using softkeys



The functions of the five softkeys below the graphic display are indicated in the bottommost text line of the display. Softkey functions shown in gray cannot be selected at the active menu level or with the current access privileges.

In the descriptions of operating sequences which entail the use of softkeys, the softkey function to be selected is shown in square brackets; the softkey symbol is not displayed; example: [Save].

### 3.1.4.3 Navigation key operation

#### Menu

The cursor keys, the **OK** and **EXIT** keys are used to navigate through the menus.

#### Parameters

Use the ▼/▲ cursor keys to select the individual parameters.

Use the **OK** key to confirm the selection.

The required values | texts are entered via the alphanumeric keys.

The **OK** key is used to check the ☒ box.




If the list of parameters is long, a vertical bar graph on the left (black and gray) shows which part of the list is displayed.

An existing selection list is indicated by an arrow ► following it.

The parameter is selected using the **OK** key.

### 3.1.4.4 Operation via PC keys

The device can also be operated using a PC keyboard. The corresponding key assignment is shown in the table below:

PC keyboard	Front keypad
F1	<b>F1</b>
F2	<b>F2</b>
F3	?
F4	<b>MENU</b>
F5...F9	Softkey 1...5
F10	
F11	
F12	
ESC	<b>EXIT</b>
Cursor keys: ↑, ↓, ←, →	▲, ▼, ◀, ▶
Enter key: ↵	<b>OK</b>
Backspace key: ←	<b>C</b>
Numeric keypad	Alphanumeric keypad

## 4 Setting up the application menu

### 4.1 Production

<b>Production</b>	
— <b>Start Order</b>	See Chapter <a href="#">4.1.1</a> .
— <b>Start Recipe</b>	See Chapter <a href="#">4.1.2</a> .
— <b>Batch individual material</b>	See Chapter <a href="#">4.1.3</a> .
— <b>Remote start via digital inputs</b>	See Chapter <a href="#">4.1.4</a> .
— <b>Remote start via communication</b>	See Chapter <a href="#">4.1.5</a> .

#### 4.1.1 Start order

<b>Production</b>	
— <b>Start order</b>	Produce selected order.
 <b>Start order</b>	
— <b>Order</b>	Select order.
— <b>Recipe/material</b>	Recipe/material is displayed or can be selected for the new order.
— <b>Set point</b>	Recipe/material set point can be altered.
— <b>Start</b>	Start production.
— <b>New</b>	Create order, see Chapter <a href="#">4.3.1</a> .
— <b>Delete</b>	Delete order.
— <b>Print</b>	
— <b>Print data of order "Order name"</b>	
— <b>Print a list of all orders</b>	
— <b>Print data of all orders</b>	
— <b>Print last line ticket</b>	
— <b>Print last order ticket</b>	
— <b>Print last batch report</b>	

#### 4.1.2 Start recipe

<b>Production</b>	
— <b>Start recipe</b>	Produce selected recipe.
 <b>Start recipe</b>	
— <b>Recipe</b>	Select recipe.
— <b>Set point</b>	Recipe set point can be altered.
— <b>Repeat</b>	Input: 1...998 times
<hr/>	
<b>Note:</b>	
If 999 is used, the recipe is set to "infinitely".	
<hr/>	
— <b>Start</b>	Start production.
— <b>Order</b>	Change to [Start order] in the menu.
— <b>Print</b>	Create new product in the database.
— <b>Print data of recipe "Recipe name"</b>	
— <b>Print a list of all recipes</b>	

- Print the data of all recipes
- Print last line ticket
- Print last recipe ticket
- Print last batch report

#### 4.1.3 Start single material

##### Production

- Start single material

Produce selected material.

##### Start single material

- Material
- Set point
- Start
- Print
  - Print data of material "Material name"
  - Print a list of all materials
  - Print the data of all materials
  - Print last line ticket
  - Print last order ticket
  - Print last batch report

Select material.

Material set point can be altered.

Start production.

#### 4.1.4 Remote production

##### Production

- Remote production

Start production via digital inputs. The function must have been previously activated under [Configuration]- [Parameters].

##### Remote production

- SPM address %MX
- Set ready bit
- Recipe name
- Set point
- Start
- SPM-
- SPM+

See SPM table in Chapter [12](#).

The corresponding input (rising edge) then starts the assigned recipe. Check the ☒ box to activate this function.

Select recipe.

Recipe set point

Start production.

Previous SPM address

Next SPM address

#### 4.1.5 Remote start via communication

##### Production

- Remote start via communication

Start production via communication using SPM addresses.

### 4.2 Print tickets and reports

##### Print tickets and reports

- Print last line ticket
- Print last order ticket
- Print last batch report



## 4.3 Databases

### Databases

- Create/edit order
- Create/edit recipe
- Create/edit material

see Chapter [4.3.1](#)  
 see Chapter [4.3.2](#)  
 see Chapter [4.3.3](#)

### 4.3.1 Create/edit order

#### Databases

- Create/edit order

Only possible if materials and at least one recipe have been created previously.

#### Create/edit order

- New
  - Order name
  - Product name
  - Recipe name
  - Set point
  - Repeat
  - Prompt for order
  - Default
  - Material name
  - Save
- Start
- Delete
- Print
  - Print data of order "Order name"
  - Print a list of all orders
  - Print data of all orders
  - Print last line ticket
  - Print last order ticket
  - Print last batch report

Create order.

Input: max. 18 alphanumeric characters.

Input: max. 18 alphanumeric characters.

If selected under [Configuration]- [Parameters].

Select recipe.

Recipe/material set point

Input: 1...998 times

---

#### Note:

If 999 is used, the recipe is set to "infinitely".

---

Input: max. 18 alphanumeric characters.

If selected under [Configuration]- [Parameters].

Settings are reset to factory settings.

Select material.

The input is saved.

Direct start of order

Delete order.

### 4.3.2 Create/edit recipe

#### Databases

- Create/edit recipe

---

#### Note:

When creating the first recipe, the recipe header can be entered directly and saved.

After this, when creating each further recipe, the soft key [New] must be pressed.

---

**Create/edit recipe****— New**

- Recipe name
- Type
- Create tidy up process
- Enabled by bit
- Activ bit
- Recalculate
- Default
- Save
- Line
- Section
- Material name
- Set point
- +Tolerance/-Tolerance
- Add to total of recipe
- Relative
- Insert
- Material
- Delete
- Line-/Line+

**— Edit****— Start****— Delete****— Print**

- Print data of recipe "Recipe name"
- Print a list of all recipes
- Print the data of all recipes
- Print last line ticket
- Print last recipe ticket
- Print last batch report

Create recipe; parameters are dependent on the recipe type.

Input: max. 18 alphanumeric characters.

Selection: automatic, sequential, free choice

Only if "automatic" was selected.

Only if "automatic" was selected.

Only if "automatic" was selected.

Only if "sequential" or "free choice" was selected.

Settings are reset to factory settings.

The input of the recipe header is saved. The recipe can then be processed further.

Consecutive recipe line numbers in the recipe

Only for "automatic"; for manual operation always "1"

Select material.

Set point of the material

Tolerance above/below set point in %

Check the ☒ box to add the relevant set points to the overall recipe total.

Check the ☒ box to qualify (convert) the set points.

Insert recipe line in order to insert the next material.

Create a new material.

Delete recipe lines.

Change to the previous/next recipe line.

Edit recipe, see parameters in the menu item [New].

Direct start of recipe

Delete recipe.

**4.3.3 Create/edit material****Databases****— Create/edit material****Note:**

When creating the first recipe, the recipe header can be entered directly and saved. After this, when creating each further recipe, the soft key [New] must be pressed.

**Create/edit material****— New****— Material name****— Type****— Scale name****— Preset****— Overshoot****— Material flow****— Restart mode****— +Tolerance/-Tolerance****— Time to wait****— Enabled by bit****— Activ bit****— Time to wait****— Check ident****— Dialog data type****— Output SPM address %MW****— Input SPM address %MW****— Unit of set point****— Decimals****— Set point 0/4 mA, 20mA****— Time out****— Duration****— +Tolerance/-Tolerance****— Default****— Save****— Start****— Delete****— Print**

Create material; parameters are dependent on the material type.

Input: max. 18 alphanumeric characters.

Selection:

No operation; Net filling; Net refilling; Net decrease; Gross filling; Gross decrease; Discharge; Register; Manual filling; Manual filling, no check; Timer; Stop; Wait for SPM; Set SPM; Reset SPM; Wait + reset SPM; Analog output; Analog input; dialog; Wait for analog input value

If selected under [Configuration]- [Parameters].

Weighing point A...D

Switch point from coarse to fine

Input: weight; adopt unit from the calibration.

Switch-off point before reaching the set point

Input: weight; adopt unit from the calibration.

Material flow monitoring

Performance when tolerance exceeded, post-batching

Selection: Mode 0...4

Tolerance above/below set point in %

Calming time before determining weight

Manual: Input address for "ready"

Automatic: Input address for the approval of batching

Calming time before determining weight

Only applies for the materials "Register" and "Dialog".

Check the ☒ box to activate the function.

Selection:

No dialog, Message only, Text, Integer number, Real number, Weight, Yes/No, New set point

For analog output only.

Only for analog input/wait for analog on.

Only for analog input/output/wait for analog on.

Only for wait for analog on.

Only for analog input/output/wait for analog on.

For dialog only.

Only for wait for analog on.

Only for wait for analog on.

Settings are reset to factory settings.

The input is saved.

Batch material.

Delete material.

- Print data of "Material name" material"
- Print a list of all materials
- Print the data of all materials
- Print last line ticket
- Print last order ticket
- Print last batch report

## 4.4 Application maintenance

### Application maintenance

- Set sequence number? (1) see Chapter [4.4.1](#)
- Production report see Chapter [4.4.2](#)
- Consumption report see Chapter [4.4.3](#)
- Delete database reports? (10) see Chapter [4.4.4](#)
- Clear printer buffer? (20) see Chapter [4.4.5](#)

### 4.4.1 Set sequence number? (1)

#### Application maintenance

- Set sequence number? (1) Input: 1...999999

### 4.4.2 Production report

#### Application maintenance

- Production report The materials produced for a recipe are added together and displayed.

#### Production report

- Recipe Select recipe
- Production Amount displayed only.
- Delete The amount produced for the selected recipe is deleted.
- All The amount produced for all recipes is deleted.
- Print The amount produced for all recipes are printed one below the other in a report.

### 4.4.3 Consumption report

#### Application maintenance

- Consumption report The consumed materials are added together and displayed.

#### Consumption report

- Material Select material.
- Consumption Amount displayed only.
- Delete The displayed amount is deleted.
- All The consumed amount of all materials is deleted.
- Print The consumed amounts for all recipes are printed one below the other in a report.

#### 4.4.4 Delete database reports? (10)

##### Application maintenance

##### — Delete database reports? (10)

##### Requirements:

Check the ☒ box to activate "Store report in database" under [Configuration]- [Parameters].  
The number of datasets is given in parentheses.  
Data is deleted once the security prompt is accepted.

#### 4.4.5 Delete printer buffer? (20)

##### Application maintenance

##### — Delete printer buffer? (20)

##### Requirements:

The number of datasets is given in parentheses.  
Data is deleted once the security prompt is accepted.

### 4.5 Configuration

#### Configuration

##### — inputs

See Chapter [4.5.1](#).

##### — Outputs

See Chapter [4.5.2](#).

##### — ModBus-TCP master

See Chapter [4.5.3](#).

##### — Limit values

See Chapter [4.5.4](#).

##### — Parameters

See Chapter [4.5.5](#)

##### — Print format

See Chapter [4.5.6](#).

##### — Simulation\*

See Chapter [4.5.7](#).

##### — Printing

See Chapter [4.5.8](#).

\* Only possible if the dosing license has been activated and the "Settings locked" parameter has not been enabled.

#### 4.5.1 Inputs

##### Configuration

##### — Inputs

Function assignment for installed input cards.

##### Inputs

##### — Option

Selection: Option-1, Option-2, Internal, remote terminal if necessary

##### — Type

Display only

##### — Further lines

depending on input type

##### — Default

Settings are reset to factory settings.

##### — Input-

Switch to the previous input.

##### — Input+

Switch to the next input.

##### — Save

The settings are saved.

#### 4.5.2 Outputs

##### Configuration

##### — Outputs

Function assignment for installed output cards.

**Outputs**— **Option**

Selection: Option-1, Option-2, Internal, remote terminal if necessary

— **Type**

Display only

— **Further lines**

depending on output type

— **Default**

Settings are reset to factory settings.

— **Output-**

Switch to the previous output.

— **Output+**

Switch to the next output.

— **Save**

The settings are saved.

**4.5.3 ModBus-TCP master****Configuration**— **ModBus-TCP master****ModBus-TCP master**— **Communication error**

Selection: Ignore message, Show message

— **ModBus-TCP module**

Selection: Phoenix 1...8

— **Activate module**

Check the ☒ box to activate the module. The menu expands.

— **IP address**

Enter the IP address of the module.

— **I/O type**

Selection: Digital input, Digital output

— **Input**

1...16

— **SPM address %MX**

See SPM table in Chapter [12](#).

— **Default**

Settings are reset to factory settings.

— **Input/Output -**

Switch to previous Input/Output.

— **Input/Output +**

Switch to next Input/Output.

— **Save**

The settings are saved.

**4.5.4 Limit values****Configuration**— **Limit values**

Define switch on/switch off points.

**Limit values**— **Scales**

Weighing point A...D

— **Limit value 1...2 On**

Enter 0...Max (maximum capacity);

Adopt unit from the calibration.

— **Limit value 1...2 Off**

Enter 0...Max (maximum capacity);

Adopt unit from the calibration.

— **Default**

Settings are reset to factory settings.

— **Save**

The settings are saved.

**4.5.5 Parameters****Configuration**— **Parameters**

Define the parameters for the applications.

**Parameters**— **Scale identifier**

Input: max. 18 alphanumeric characters

— **Start orders**

Check the ☒ box to activate this production type.

— **Start recipes**

	Check the <input checked="" type="checkbox"/> box to activate this production type. It is only possible to select from recipes that have already been created.
— <b>Start materials</b>	Check the <input checked="" type="checkbox"/> box to activate this production type. A single material can be batched.
— <b>Remote start via digital inputs</b>	Check the <input checked="" type="checkbox"/> box to start up to 8 recipes via digital inputs.
— <b>Product name</b>	Check the <input checked="" type="checkbox"/> box to query the name when creating the order and, if configured, to print it onto the tickets.
— <b>Fix comment</b>	The text is incorporated directly into the tickets. Input: max. 18 alphanumeric characters
— <b>Question about the order</b>	Input: max. 18 alphanumeric characters
— <b>Question about material</b>	Input: max. 18 alphanumeric characters
— <b>Recalculate</b>	Select rights for the recalculation of a recipe: Off, Operator, Supervisor, Administrator
— <b>Identification</b>	Select the format of the order, recipe and material names: Text, Numeric
— <b>Check recipe</b>	Check the <input checked="" type="checkbox"/> box to simulate the recipe with the specified recipe set point.
— <b>Line ticket</b>	Additional printouts are printed for each completed line of the order, provided that a material was transported. Selection: 0, 1...10 times
— <b>Order Ticket</b>	Tickets are printed for each order after completion. Selection: 0, 1...10 times
— <b>Batch report</b>	A summary report can be printed at the end of a recipe. This report can be detailed or minimal (one-line report). Selection: 0, 1...10 times
— <b>Long Report</b>	Check the <input checked="" type="checkbox"/> box to print out a detailed batch report.
— <b>Ticket printer</b>	Selection: No printer, Printer, Printer 1, Printer 2
— <b>Report printer</b>	Selection: No printer, Printer, Printer 1, Printer 2
— <b>Store report in database</b>	Check the <input checked="" type="checkbox"/> box to log a report in the database after any batching.
— <b>If database is full:</b>	This menu item is only displayed when <input checked="" type="checkbox"/> [Store report in database] was activated. Selection: Stop production, Delete oldest report Production continues if [Delete oldest Report] has been selected.
— <b>Delimiter</b>	The delimiter is written between automatically generated order names/recipe names and sequence numbers. Selection: ,, #, , , *, -, /, ^, [blank space], -, ~
— <b>Default</b>	Settings are reset to factory settings.
— <b>Save</b>	The settings are saved.

#### 4.5.6 Print layout

##### Configuration — Print layout

Define the individual print layouts.

##### Print layout — Print template — Line 1...40 — Insert — Delete — Default — Save

Line ticket, Order ticket, Report header, Report line, Report trailer  
Blank line, -----, Form feed, Order, Recipe, Line, Material, Reply from dialog, Set point, Actual value, Tolerance, Status, Scale, Ordered by, Weighed by, Start time, End time, Recalculated, Print time, Fix comment, Consumption, Sequence number  
Insert a blank line [blank] before the selected line.  
Delete highlighted line.  
Settings are reset to factory settings.  
The settings are saved.

#### 4.5.7 Simulation

##### Configuration — Simulation

Only possible if the dosing license has been activated and the "Settings locked" parameter has not been enabled.

##### Simulation — Weighing point A...D — Material flow — Default — Save

Check the ☒ box to activate the corresponding weighing point for the simulation.  
Only possible if a weighing point has been selected.  
Applies the weight value from the scale (in this case, g).  
Enter value for coarse flow, e.g.: 100 g/sec  
Settings are reset to factory settings.  
The settings are saved.

#### 4.5.8 Printing

##### Configuration — Printing

Print configuration.



## 5 Getting started

### 5.1 Safety instructions

#### **WARNING**

##### **Warning of a hazard area.**

- It is essential that the safety instructions in Chapter 2 of the PR 5900 Installation manual are read before installation and commissioning!

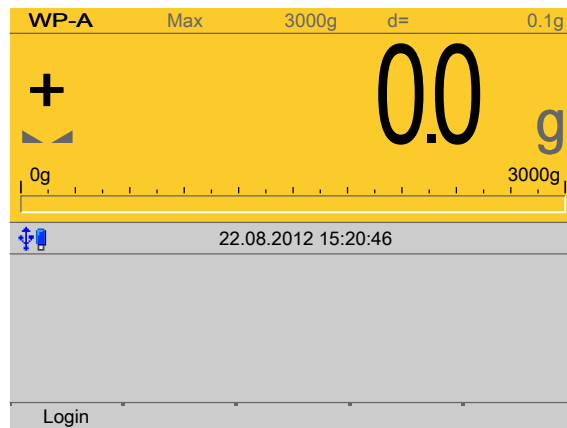
### 5.2 Switching on the device

The device can be set up as follows:

- Via keys on the front of the device
- Via an external PC keyboard
- Via a notebook/PC using the VNC software (included on the CD)

When the device is powered up, the following is shown on the display and/or notebook/PC:

<b>Checking... Booting... Restoring...</b>	The device is booting up.
<b>PR 5900</b>	<ul style="list-style-type: none"> <li>- The instrument type is displayed, PR 5900</li> <li>- BIOS version</li> <li>- Firmware version</li> <li>- Automatic display test</li> <li>- Weight display</li> </ul>
<b>No signal</b>	Error message: no load cells are connected, see also PR 5900 operating instructions.
<b>No values from scale</b>	Error message: no communication with the xBPI scale, see also PR 5900 operating instructions. Error message: unable to read weight values from the ADC (analog-digital converter); see also PR 5900 operating instructions.
<b>Scale not ready</b>	Error message: no load cells or scale connected, see also PR 5900 operating instructions.



The weight display is shown.

Check the date and time after first turning on the device, see PR 5900 operating instructions.

### 5.3 User login

User management is **not** activated by default.

Activate user management with the menu item [System setup] - [User management], see also PR 5900 operating instructions.

The application rights "Administrator", "Supervisor" and "Operator" are preset and cannot be changed.

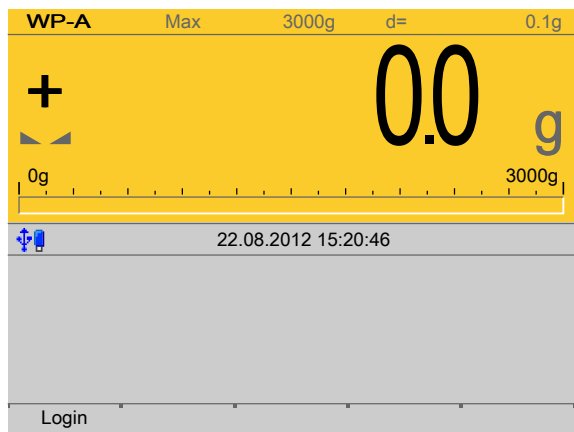
The application rights are defined as follows:

Access privilege	Operator	Supervisor	Administrator
Weighing	X	X	X
Create order	X	X	X
Change order	X	X	X
Delete order	X	X	X
Recalculation	X	X	X
Create material		X	X
Edit material		X	X
Delete material		X	X
Create recipe		X	X
Edit recipe		X	X
Delete recipe		X	X
Delete report data		X	X
Delete database report data			X
Clear printer buffer			X
System setup/Configuration			X
Application maintenance		X	X

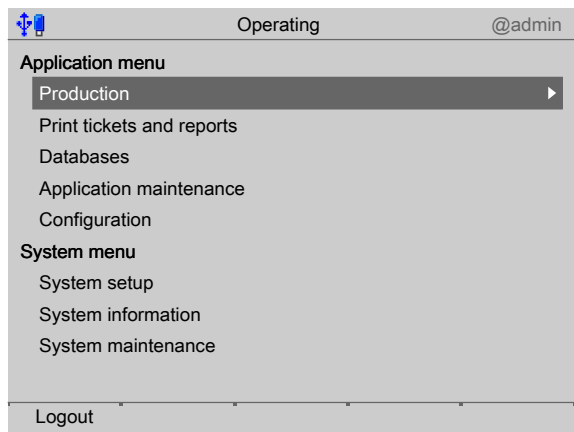
Access privilege	Operator	Supervisor	Administrator
	* Assign user under [Configuration]- [Parameters]- [Recalculation].		

**Note:**

An authorized user must log in to start or configure the application.



- 1. Press the [Login] soft key.
  - 2. Enter the password using the keyboard and confirm. If user management is not active, you only need to confirm.
    - ▷ The operating menu is displayed.
- The application and system menus are selected here.



- 3. Select and confirm the desired menu item using the cursor.

## 5.4 Configuration

### 5.4.1 General information

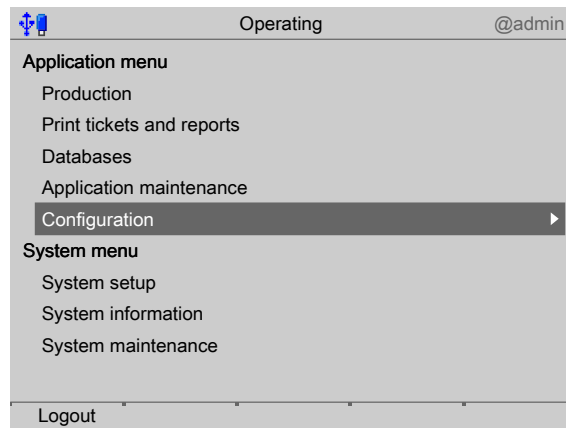
In this menu item, application is configured.

---

**Note:**

When user management is active, the configuration can only be performed if a user with application rights "Supervisor" or "Administrator" is logged in.

---



- Select and confirm [Configuration] using the cursor.

### 5.4.2 Configuring inputs

This function is required to configure the analog and digital inputs.

- Analog input, see Chapter [5.4.2.1](#)
- Digital inputs, see Chapter [5.4.2.2](#)
- I/O cards test, see Chapter PR 5900 operating instructions.

When changing the I/O card type, the configuration data remains unchanged. Functions for a non-installed scale can be selected, however, they are without effect.

The free and assigned SPM addresses are documented in Chapter [12](#).

If several inputs are assigned to an SPM address, the input with the higher number prevails.

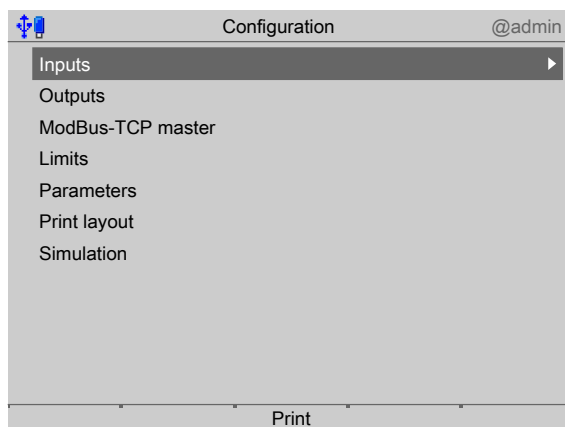
Option-1 = No. 1

Option-2 = No. 2

Built-in = No. 3

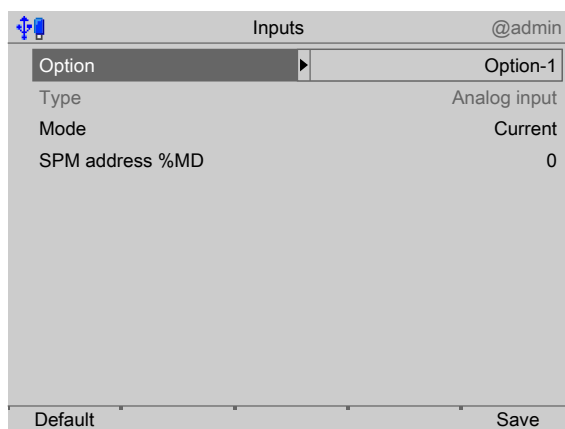
Unused inputs are ignored.

The card type and the available inputs and outputs are detected automatically.



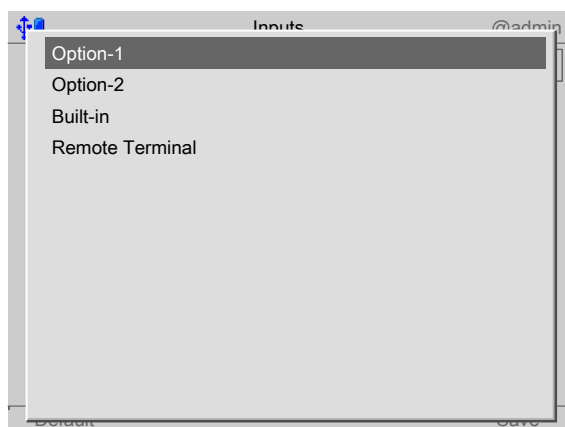
- In the operating menu, select and confirm [Configuration] - [Inputs].

#### 5.4.2.1 Analog input



1. Select and confirm [Option] using the cursor.

▷ A selection window opens.



2. Select and confirm the corresponding interface using the cursor.

Inputs		@admin
Option	Option-2	
Type	Analog input	
Mode	Current	
SPM address %MD	0	
Default		Save

3. Select and confirm [Mode] using the cursor.

▷ A selection window opens.

Inputs		@admin
Option	Option-2	
Type	Analog input	
Mode	Current	
SPM address %MD	0	
Default		Save

4. Select and confirm the appropriate input type using the cursor (see also PR 5900 operating instructions).

Inputs		@admin
Option	Option-2	
Type	Analog input	
Mode	Current	
SPM address %MD	127	
Default		Save

5. Select [SPM address %MD] using the cursor.
6. Use the keyboard to enter and confirm a free address %MD (see Chapter 12).
7. Press the [Default] soft key to return to the factory settings, if required.
8. Press the [Save] soft key to save the settings.

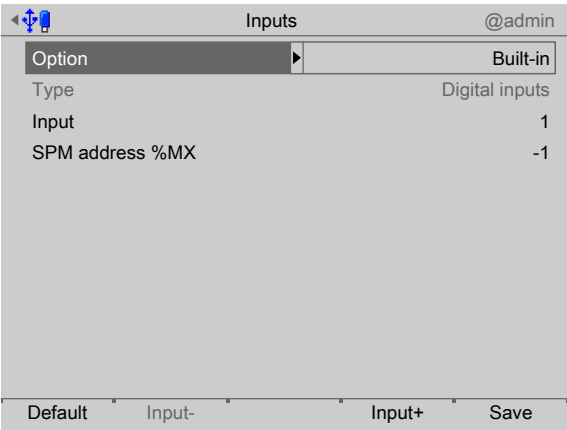
**Note:**

If the SPM address is equal to 0, the analog value is not written to the SPM.

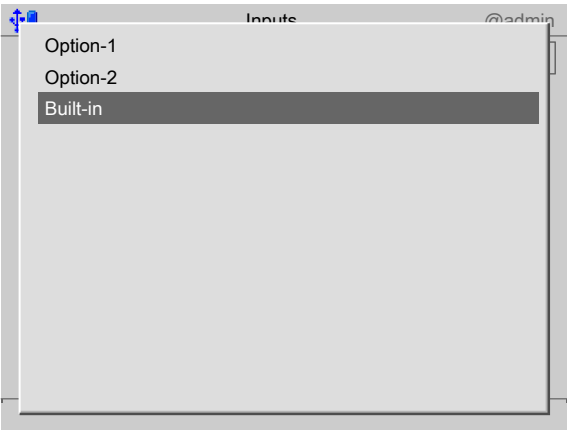
**General:**

No reserved SPM addresses are overwritten by the analog inputs.

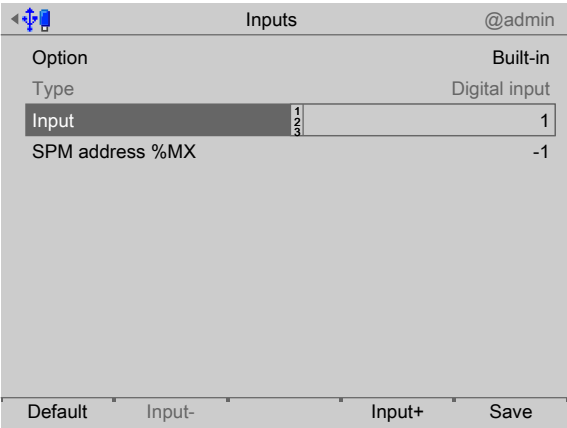
**5.4.2.2 Digital inputs**



- 1. Select and confirm [Option] using the cursor.  
▷ A selection window opens.

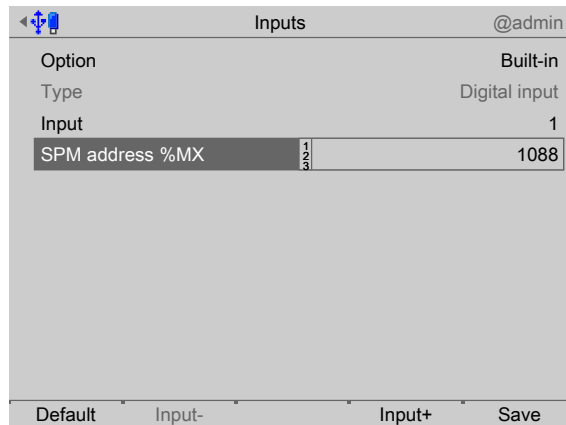


- 2. Select and confirm the corresponding interface using the cursor.



- 3. Select [Input] using the cursor.

## 4. Confirm input "1".



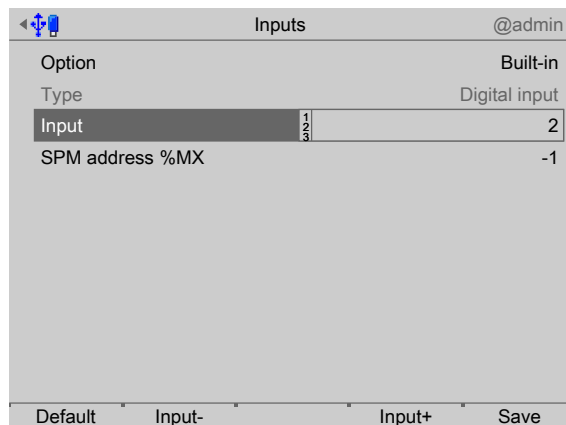
Inputs		@admin
Option		Built-in
Type		Digital input
Input	1	1
SPM address %MX	1088	

Default Input- Input+ Save

5. Select [SPM address %MX] using the cursor.
6. Use the keyboard to enter and confirm a free address %MX (see also PR 5900 operating instructions).

**Note:**

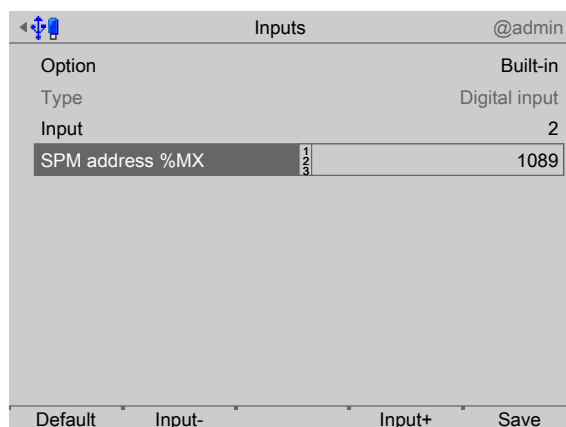
A negative address inverts the function.



Inputs		@admin
Option		Built-in
Type		Digital input
Input	2	2
SPM address %MX	-1	

Default Input- Input+ Save

## 7. Press the [Input+] soft key to configure the next input.



Inputs		@admin
Option		Built-in
Type		Digital input
Input	2	2
SPM address %MX	1089	

Default Input- Input+ Save

## 8. Select [SPM address %MX] using the cursor.



9. Use the keyboard to enter and confirm a free address %MX (see also PR 5900 operating instructions).
10. Configure inputs 3+4 in the same way.
11. Press the [Default] soft key to return to the factory settings, if required.
12. Finally, press the [Save] soft key to save the settings.

---

**Note:**

The value of the digital input is not written to the SPM if the address = 0 (inactive).

---

### 5.4.3 Configuring outputs

This function is required to configure the analog and digital outputs.

- Analog output, see Chapter [5.4.3.1](#).
- Adapting the analog output, see PR 5900 operating instructions.
- Digital inputs, see Chapter [5.4.3.3](#).
- I/O cards test, see PR 5900 operating instructions.

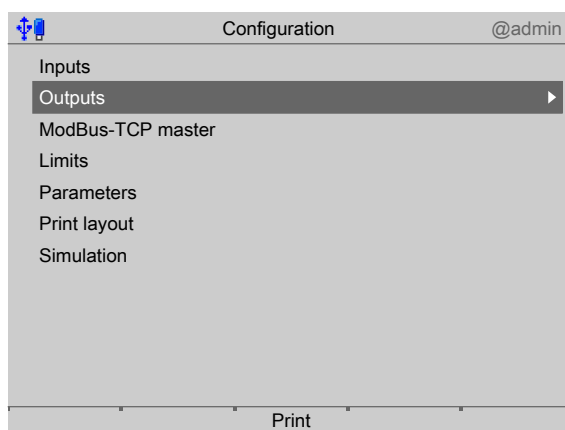
When changing the I/O card type, the configuration data remains unchanged. Functions for a non-installed scale can be selected, however, they are without effect.

The free and assigned SPM addresses are documented in Chapter [12](#).

The assignment of SPM addresses to a scale is only valid if the scale exists.

Non-allocated outputs are switched off.

The card type and the available inputs and outputs are detected automatically.



- In the operating menu, select and confirm [Configuration] - [Outputs].

### 5.4.3.1 Analog output

The weight value of the selected weighing point is transmitted to the output.

Option	Option-1
Type	Analog output
Data source	Weighing point A
Analog value	Gross
Range	4...20 mA
On ADC error	0 mA
On < zero	0 mA
On > MAX	20 mA

Default Save

1. Select and confirm [Option] using the cursor.

▷ A selection window opens.

Option-1  
Option-2  
Built-in  
Remote Terminal

2. Select and confirm the corresponding interface using the cursor.

▷ The factory settings are displayed.

Option	Option-1
Type	Analog output
Data source	Weighing point A
Analog value	Gross
Range	4...20 mA
On ADC error	0 mA
On < zero	0 mA
On > MAX	20 mA

Default Save

3. Configure the analog output in accordance with the table below.
4. Press the [Default] soft key to return to the factory settings, if required.
5. Press the [Save] soft key to save the settings.

**Analog output**

Menu item	Selection	Description
[Data source]	Weighing point A...D	Output of the weight values from scales A, B, C or D. 0...Max are converted into 0/4 mA...20 mA.
[Analog value]	Gross	Output of the gross value
	Net/Gross	Output of the net value, if tared; otherwise gross
	Net/0 mA	Output of the net value, if tared; otherwise 0 mA
	Net/4 mA	Output of the net value, if tared; otherwise 4 mA
[Range]	0...20 mA	Output of 0...Max as 0...20 mA
	4...20 mA	Output of 0...Max as 4...20 mA
[On ADC error]	0 mA	Set output to 0 mA.
	4 mA	Set output to 4 mA.
	20 mA	Set output to 20 mA.
	hold	The last output value is held.
[On < zero]	0 mA	Set output to 0 mA.
	4 mA	Set output to 4 mA.
	20 mA	Set output to 20 mA.
	hold	The last output value is held.
	linear	Only for [4...20 mA]: Output goes below 4 mA until the limit is reached.
[On > Max]	0 mA	Set output to 0 mA.
	4 mA	Set output to 4 mA.
	20 mA	Set output to 20 mA.
	hold	The last output value is held.
	linear	Output goes below 20 mA until the limit is reached.

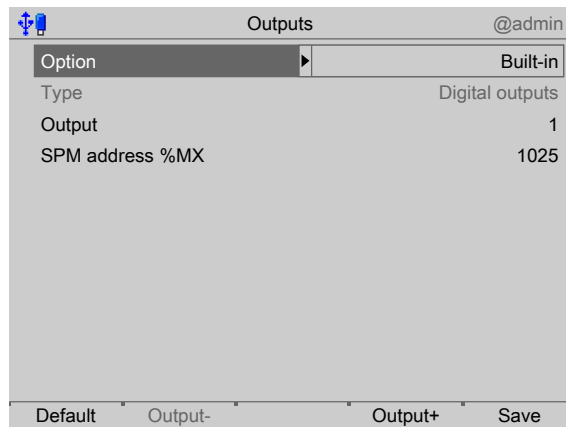
**5.4.3.2 Adapting analog output**

The analog output current on the receiving end (PLC) is generally fed through a resistor, measured as a voltage and then digitized. The output current can be adjusted in small ranges. This is required if small deviations from the nominal value occur in a connected PLC.

**Note:**

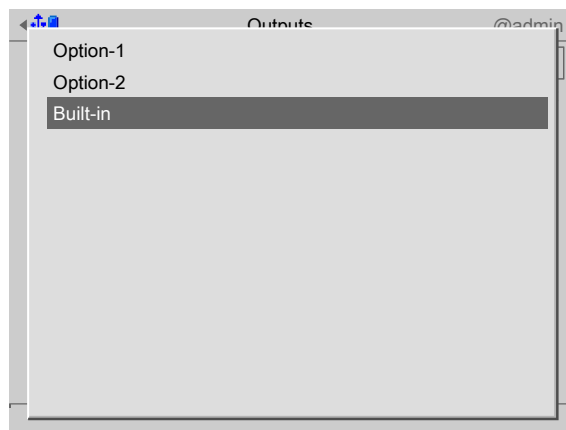
Adapting the analog output, see PR 5900 operating instructions.

### 5.4.3.3 Digital outputs

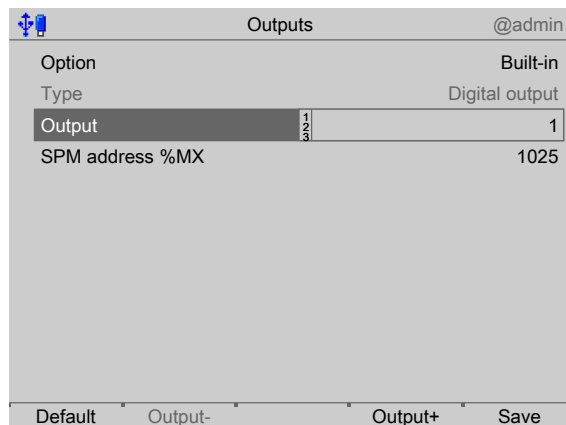


1. Select and confirm [Option] using the cursor.

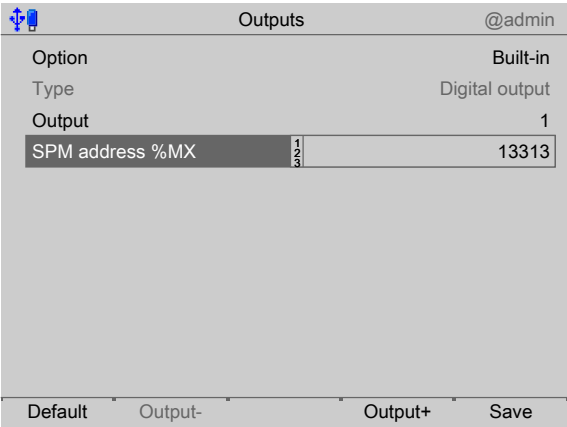
▷ A selection window opens.



2. Select and confirm the corresponding interface using the cursor.



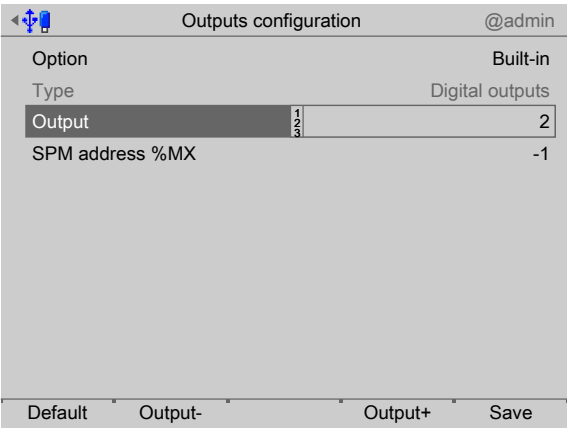
3. Select and confirm [Output] using the cursor.
4. Confirm output "1".



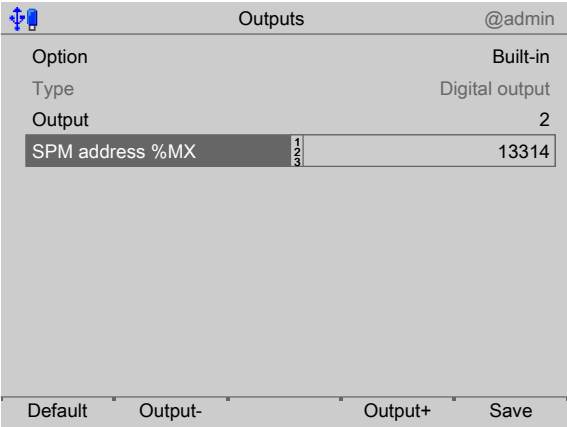
- 5. Select [SPM address %MX] using the cursor.
- 6. Using the keypad, enter and confirm a corresponding fixed or free address %MX (see also PR 5900 operating instructions) for the weighing point.

**Note:**

The SPM address %MX for an **unused** digital output = 0  
A negative address inverts the function.



- 7. Press the [Output+] soft key to configure the next output.



- 8. Select [SPM address %MX] using the cursor.

9. Using the keypad, enter and confirm a corresponding fixed or free address %MX (see also PR 5900 operating instructions) for the weighing point.
10. Configure outputs 3+4 in the same way.
11. Press the [Default] soft key to return to the factory settings, if required.
12. Finally, press the [Save] soft key to save the settings.

#### 5.4.4 Configuring the ModBus TCP master

In this application, the ModBus master supports up to 8 predefined ModBus modules.

- For supported modules, see Chapter [5.4.4.1](#)
- Configuration tool, see Chapter [5.4.4.2](#)
- Device configuration, see Chapter [5.4.4.3](#)

In the operating menu, select and confirm [Configuration] - [ModBus-TCP master] .

##### 5.4.4.1 Supported modules

###### Modules 1 - 4

Modules 1-4 relate in each case to the following module:

Phoenix Contact Inline Block IO (ILB ETH 24 DI16 DIO16-2TX)

They each offer 16 digital inputs and 16 digital outputs.

###### Modules 5 - 6

Modules 5-6 relate in each case to the following modules:

- Phoenix Contact Inline module (IL ETH BK DI8 DO4 2-TX-PAC)
- Phoenix Contact output module (IB IL 24 DO16-PAC)
- Phoenix Contact output module (IB IL 24 DO16-PAC)

They offer a total of 8 digital inputs and 36 digital outputs.

###### Modules 7 - 8

Modules 7-8 relate in each case to the following modules:

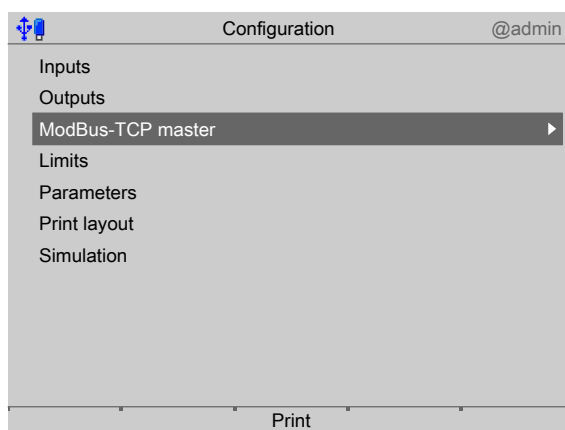
- Phoenix Contact Inline module (IL ETH BK DI8 DO4 2-TX-PAC)
- Phoenix Contact output module (IB IL 24 DO16-PAC)
- Phoenix Contact output module (IB IL 24 DO16-PAC)
- Phoenix Contact power supply (IB IL 24 PWR IN-PAC)
- Phoenix Contact output module (IB IL 24 DO16-PAC)

They offer a total of 8 digital inputs and a total of 52 digital outputs.

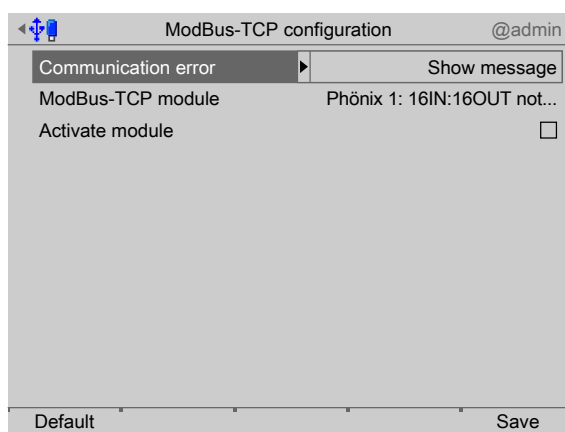
##### 5.4.4.2 Configuration tool

The modules must be configured in terms of hardware according to the Phoenix instructions. In addition, an IP address must be assigned to each terminal. Phoenix provides the "IPAssign.exe" configuration tool for that purpose.

### 5.4.4.3 Configuration on the device

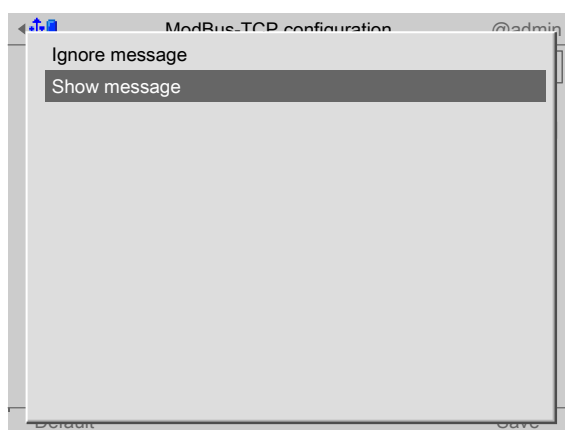


1. In the operating menu, select and confirm [Configuration] - [ModBus-TCP master].

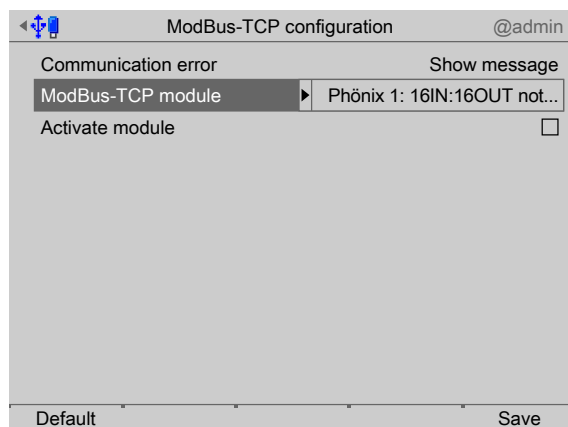


2. Select and confirm [Communication error].

▷ A selection window opens.

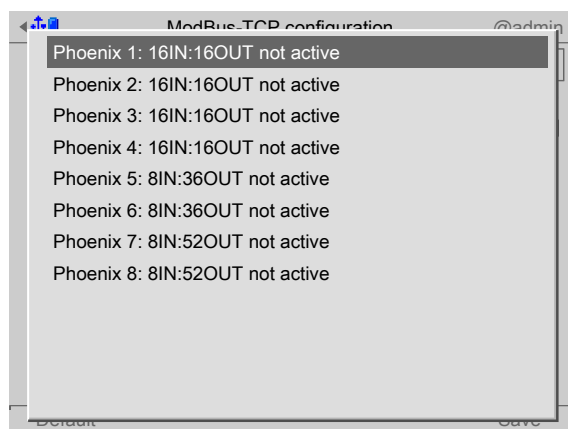


3. Select the appropriate function using the cursor (in this case, "Show message") and confirm.

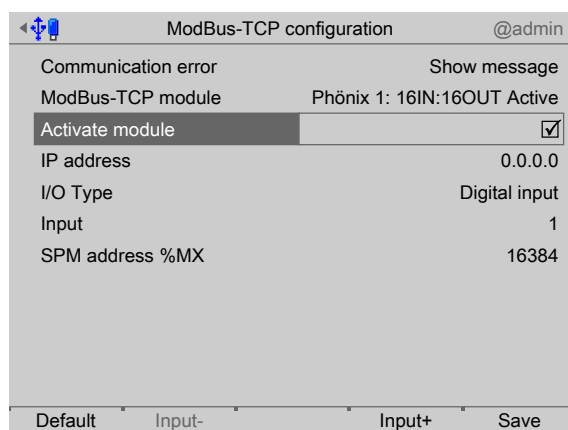


4. Select and confirm [ModBus Module] using the cursor .

▷ A selection window opens.



5. Select the appropriate function using the cursor (in this case, "Phoenix 1: ...") and confirm.



6. Check the ☒ box to activate the module.
7. Select and confirm the individual settings using the cursor.

**[IP address]**

Selection: speak with the responsible system administrator

**[I/O type]**

Selection: Digital input, Digital output



**[Input/Output]**

Selection: Input+/Output+ (higher), Input-/Output- (lower)

**[SPM address %MX]**

Set: Fixed SPM address, see Chapter 12.

8. Press the [Default] soft key to return to the factory settings, if required.
9. Finally, press the [Save] soft key to save the settings.

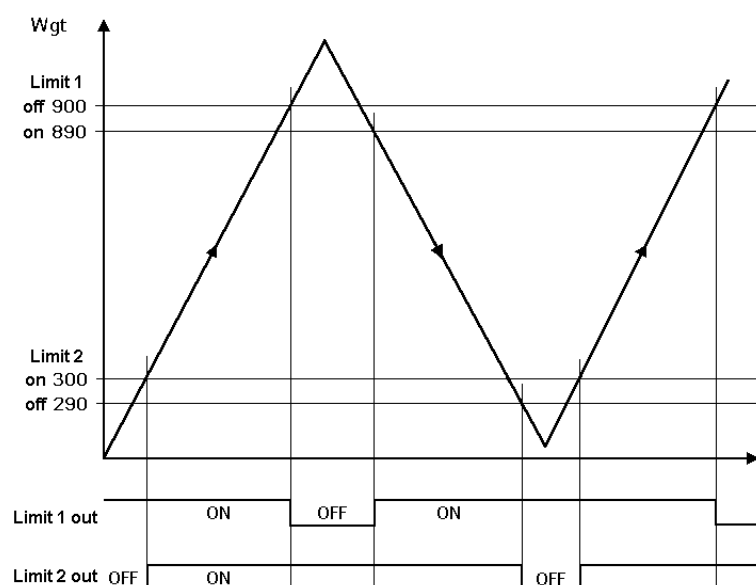
**5.4.5 Limit values: configuration**

Each limit consists of a switch-on and a switch-off point for definition of a hysteresis.

The 4- values for each weighing point are entered according to the same pattern. The values may be within  $-0,01 \times \text{Max}$  and  $1,01 \times \text{Max}$  for the related scale.

For the SPM addresses for the limits, see Chapter 12.

These do not have a function for batching.

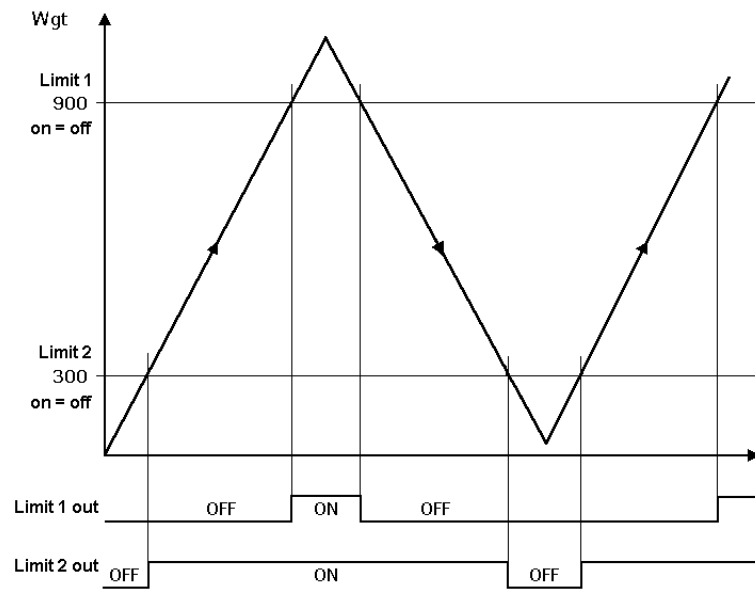
**Example 1:**

The output signal (Limit 1 out) of limit 1 switches OFF above a weight (Wgt) of 900 g.

The output signal (Limit 2 out) of Limit 2 switches OFF below 290 g.

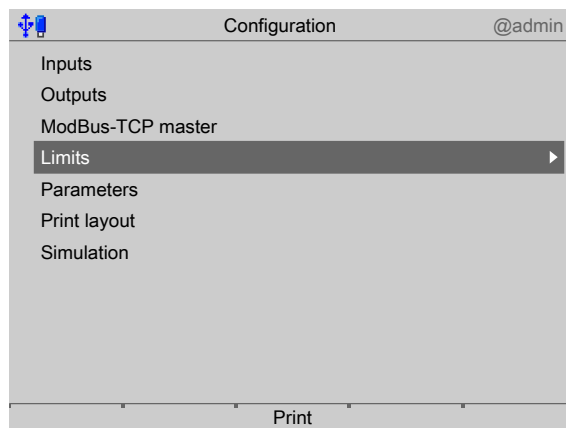
The two limit values have a hysteresis of 10 g.

In the event of a power failure both outputs turn to "off" ("OFF"), thus indicating underfill and overfill simultaneously.

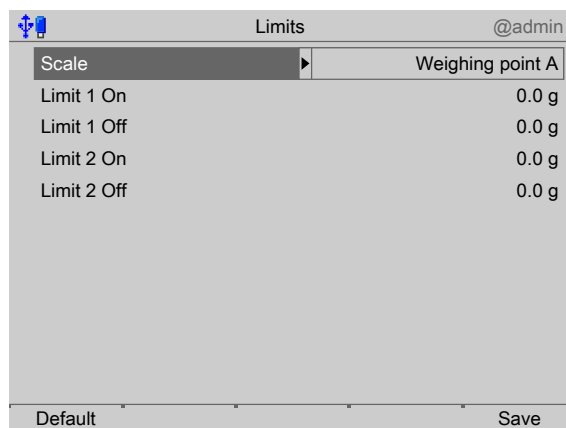
**Example 2:**

If the Limits 1 and 2 are the same for "On" and "Off" (on = off),

- switches output 1 (Limit 1 out) ON if the weight (Wgt) exceeds the value.
- switches output 2 (Limit 2 out) OFF if the weight falls below the value.

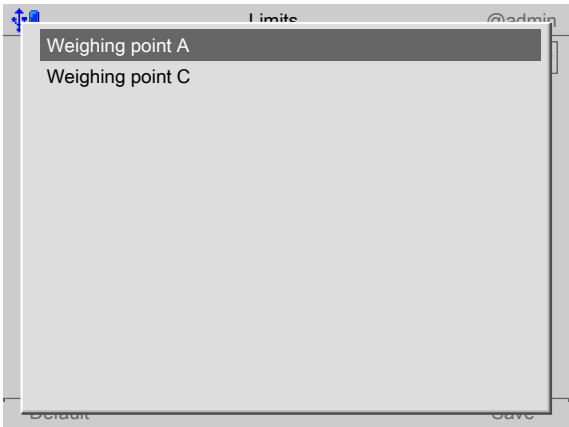


1. Select and confirm [Limits] using the cursor.

**Select weighing point**

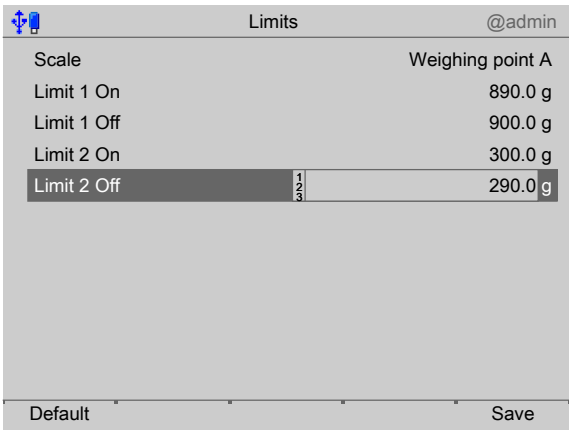
2. Select and confirm [Scale] using the cursor.

▷ A selection window opens.



3. Select and confirm the appropriate weighing point using the cursor.

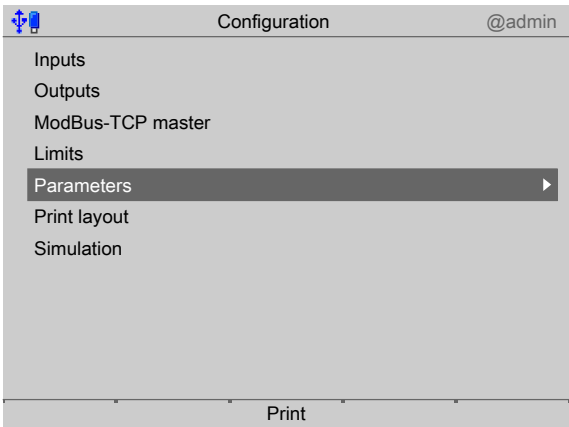
**Set limit values according to example 1**



- 4. Using the cursor, select appropriate lines.
- 5. Use the keyboard to enter and confirm the desired values (in this case: see example 1).
- 6. Press the [Default] soft key to return to the factory settings, if required.
- 7. Finally, press the [Save] soft key to save the settings.

**5.4.6 Parameters**

The parameters valid for all applications are configured in this menu item.



1. Use the cursor to select and confirm [Parameters].  
▷ A selection window opens.

2. Use the cursor to select and confirm the individual settings.

#### **[Scale identifier]**

Input: Max. 18 alphanumeric characters via keyboard.

#### **[Start orders]**

If activated, it is possible to work with orders. At least one of the options (Start orders/recipes/materials) must be activated. Start options that have been switched off will not be offered. If only one of the three options is still active then the selection dialog will be skipped and only the specified production type will be able to be carried out.

#### **[Start recipes]**

If activated, it is possible to work with recipes.

An order is automatically created so that the recipe can be batched. It is only possible to select from recipes that have already been created.

The order will be given the recipe's name (max. 18 characters) with the sequence number added (sequence number is at least 3 characters plus separator). The recipe name is then abbreviated accordingly.

#### **[Start materials]**

If activated, a single material can be batched. The material must already have been created.

A one-line recipe and an order are automatically created.

The recipe and order will be given the material's name (max. 18 characters) with the sequence number added (sequence number is at least 3 characters plus separator). The material name is then abbreviated accordingly.

#### **[Remote start via digital inputs]**

If activated, up to 8 recipes can be started via digital inputs, for details see Chapter [6.4.5](#).

#### **[Use product name]**

If activated, the name will be queried when creating the order and, if configured, printed in tickets.

The product name will be printed on the tickets under "Product". This name refers to the result of production. The product name is not significant for the production process.

#### [Fix comment]

The text entered here is incorporated directly into the tickets. If the corresponding text is left empty then the corresponding line is not printed.

#### [Prompt for order], [Prompt for material]

There is a prompt for the coefficients when creating an order or material. The significance of a coefficient may vary.

The prompt text that is used is entered here. If this text is left empty then there is no prompt.


#### [Recalculation]

An order for a free choice recipe can be recalculated in the case of batching outside of the tolerance. The settings determine whether or not this function is available for the user and which rights are necessary for this purpose:

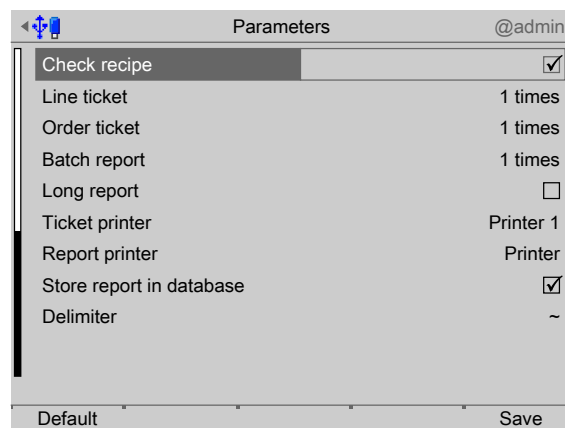
[Off]	No recalculation
[Operator]	Recalculation possible for operator, supervisor and administrator
[Supervisor]	Recalculation possible for supervisor and administrator
[Administrator]	Recalculation only possible for administrator

#### [Identification]

The input format for the order, recipe and material names can be chosen from [numeric] and [Text]. The definition influences the input mode. The identification is always saved as a string.

The  button can be used to switch to the other type. In the case of [Text], it is recommended that a PC keyboard should be connected.

Since the identification is stored as text, the operation can also be mixed (e.g. material and recipes for better readability as text, orders as a number).



#### [Check recipe]

If activated, the selected recipe is checked with the specified recipe set point.

In this case, the weight to be checked should not fall below the relevant max. of the scale or be negative.

As the connections between the scales in the recipe are not visible, the test run cannot identify when one scale is discharged into another one. Overloading of the scale cannot be recognized. In cases where material is removed without being added to the recipe, the test run could report overloading that will not occur in the actual process.

In this case and in similar cases, the test run must remain switched off.


Calculations using the recipe test run:

		<b>Tare</b>	<b>Set point</b>	<b>Test run</b>
Net filling	B1	B	T+SP	SIM+SP
Net refill	B2	T	T+SP	T+SP
Gross filling	B3	0	SP	SP
Net draining	B4	B	T-SP	T-SP
Gross draining	B6	B	SP	SP
Discharge	B8	B	0	0
Manual filling	D1	B	T+SP	SIM+SP
Manual, no check	D2	B	T+SP	SIM+SP
B: Gross, T: Tare, SP: Set point, SIM: weight to be checked				

#### [Line ticket]

The [Ticket printer] interface is used to set a printout for each completed line of the recipe (e.g. self-adhesive tickets), provided that a material has been transported. This function is activated by the input of the ticket number.

$n \geq 1$  time: For each line of the recipe, n tickets are printed.

$n = 0$  times: A ticket is created but not printed; access with the  button.

No line tickets are printed in the case of automatic recipes. This specification also applies for NLE. For print layouts see Chapter [5.4.7](#).

#### [Order Ticket]

Tickets can be printed after completion for each order via the [Ticket printer] interface. This function is activated by the input of the ticket number.

$n \geq 1$  time: For each order, n tickets are printed.

$n = 0$  times: A ticket is created but not printed; access with the  button.

The ticket is not issued if only one material was batched. This specification also applies for NLE. For print layouts see Chapter [5.4.7](#).

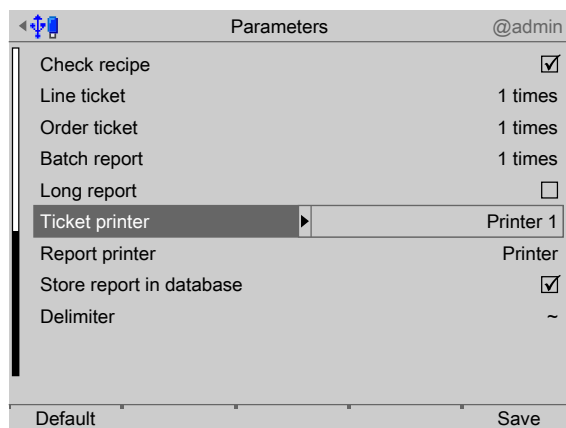
#### [Batch report]

The [Report printer] interface can be used to print a summary report at the end of a recipe. This report can be detailed or minimal.

**[Long Report]**

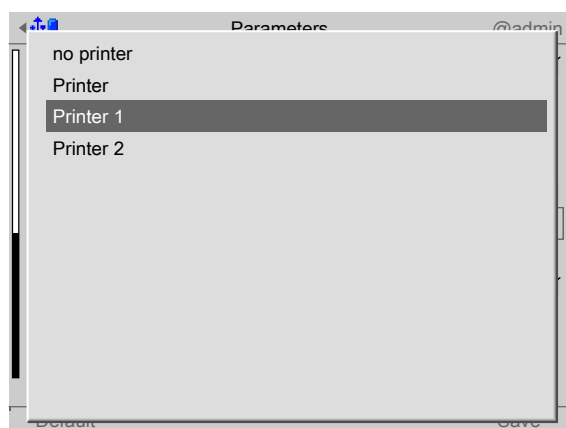
If activated, a long report (header and line information in one printout) is printed via the [Report printer] interface. This report can be configured with NLE.

If not activated, a one-line report will be printed comprising date/time, order, recipe and amount produced.



3. Use the cursor to select and confirm [Ticket printer], [Report printer].

▷ A selection window opens.



4. Use the cursor to select and confirm the appropriate printer.

Selection: no printer, Printer, Printer 1, Printer 2

This requires previous setup in the system menu under [System setup] - [Connected devices]

**Ticket printer:**

This printer is used for printing all tickets. The print width is limited to 40 characters per line.

**Report printer:**

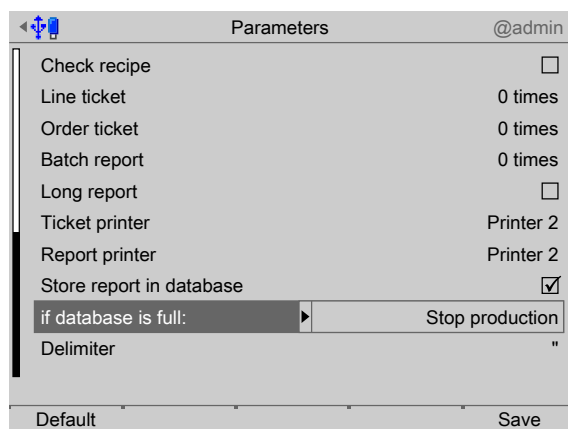
This line printer is used for printing all reports. The print width is limited to 80 characters per line.

**[Store report in database]**

If activated, all batching will be logged in the REPORT database. After each batching process, a record is made in the database.

An input with line number 0 is created as a summary for the recipe. If they cannot be collected, the inputs must be deleted, see Chapter 6.3.5.

In addition, the menu item [if database is full:] will be displayed.



### [if database is full:]

This menu item is only displayed if [Store report in database] was activated.

Selection: Stop production, Delete oldest report



[Stop production] is used to stop the production.

[Delete oldest report] is used to delete the oldest report from the database.

Production will continue.

### [Delimiter]

In a batch report, the delimiter is always written between automatically produced order names/recipe names and the sequence number.

Selection: ,, #, [Comma], \*, -, /, ^, [Space], -, ~

Example:

A material (flour) needs to be batched for a created recipe. An order is automatically created.

The order number consists of the recipe name + delimiter + sequence number preceded with zeros. This is followed by the material name and set point.

```
06.03.2013 14:55:17 R-Flour~014 R-Flour 500.0 g
```



**Example:**

A material needs to be batched without a created recipe.

An order is automatically created. The order number consists of the recipe name + delimiter + sequence number preceded with zeros. This is followed by the automatically created recipe name (identical to the order name) and the set point of the material.

```
06.03.2013 14:09:48    Flour~001    Flour~001    500.0 g
```

5. Press the [Default] softkey to return to the factory settings, if required.
6. Finally, press the [Save] softkey to save the settings.

### 5.4.7 Print layout

The arrangement of the tickets and batch reports is defined in a separate configuration module. Printouts from databases, such as those for materials or recipes are fixed and cannot be changed.

There are different ranges:

- Tickets that document a batching process are defined by lines. A line contains up to 39 characters. NLE (NiceLabelExpress) name: "TLine.lbl"
- Tickets that document an order/a recipe are defined by lines. A line contains up to 39 characters. NLE name: "TOrder.lbl"
- Header and trailer information for a batch report are defined by lines. A line contains up to 39 characters. NLE name: "RHeader.lbl" and "RTrailer.lbl"
- The lines of a batch report are defined by columns. The print width is determined by the total columns. The number of lines is determined by the recipe\*. NLE name: "RLine.lbl"

---

\* Materials with ID checking generate an additional line with the corresponding layout.  
Materials with a preceding dialog also generate an additional line with the corresponding layout.

---

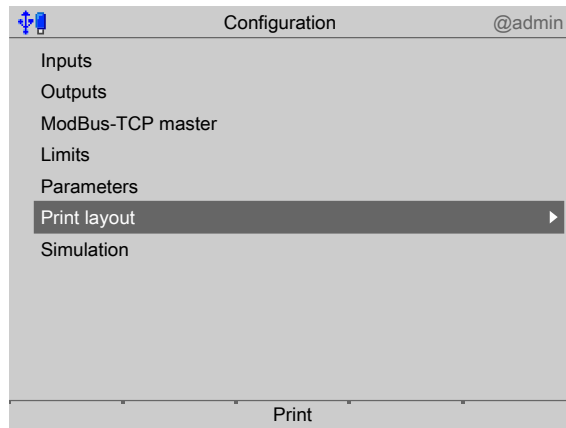
Only the permissible line contents for a range can be selected for it. For possible functions, see Chapters [10.3](#) and [10.4](#).

---

**Note:**

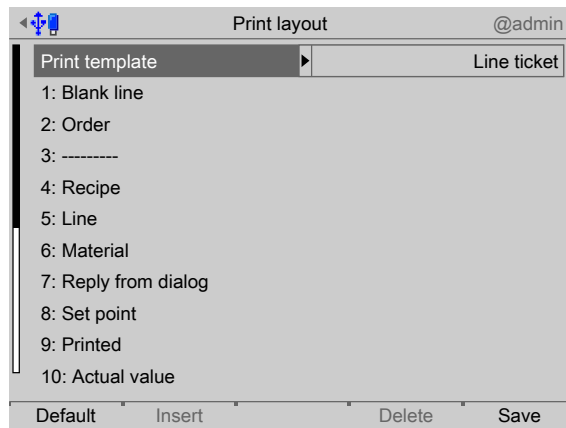
As soon as an NLE ticket is available for a range, the subsequent configuration is no longer significant. The printout is then completely determined by NLE.

---



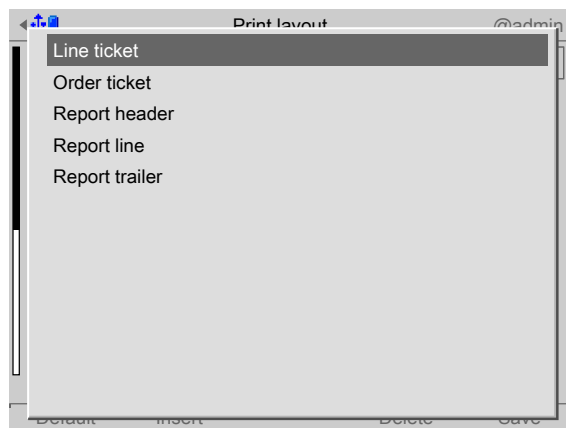
1. Use the cursor to select and confirm [Print layout].

▷ A selection window opens.



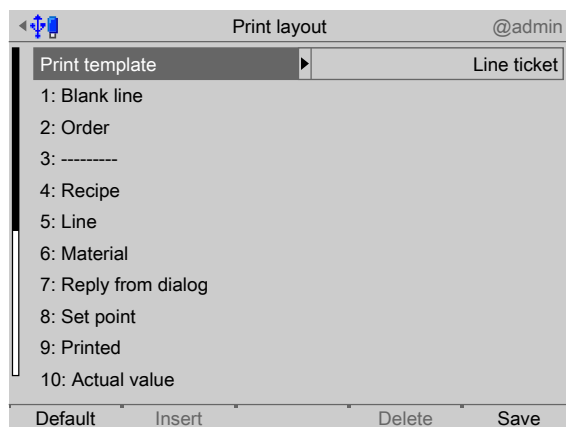
2. Select and confirm [Print template] using the cursor.

▷ A selection window opens.



3. Use the cursor to select and confirm the appropriate print template.

Selection: Line ticket (see Chapter [10.3.2](#)), Order ticket (see Chapter [10.3.3](#)), Report header (see Chapter [10.4](#)), Report line (see Chapter [10.4](#)), Report trailer (see Chapter [10.4](#))



4. Use the cursor to select and confirm the individual settings.

#### [Line 1...40]

Selection: Blank line, -----, Form feed, Order name, Product name, Recipe name, Recipe line number, Material name, Reply from dialog, Set point, Actual value, Tolerance (Ticket), Batch status, -Tolerance, +Tolerance, Scale name, Ordered by, Weighed by, Start time, Final time, Recalculated, Print time, Fix comment, Act. mat. cons., Tidy up, Sequence number

See also the following table.

5. Press the [Default] softkey to return to the factory settings, if required.
6. Finally, press the [Save] softkey to save the settings.

The following table shows the items that can be shown on the printouts.

Item	Line ticket	Order ticket	Batch report		
			Headers	(Columns in a) line	Trailers
[Blank line]	X	X	X	...	X
[-----]	X	X	X	...	X
[Form feed]	X	X	X	...	X
[Order name]	X	X	X	...	X
[Product name]	X	X	X	...	X
[Recipe name]	X	X	X	...	X
[Recipe line number]	X	...	...	X	...
[Material name]	X	...	...	X	...
[Reply from dialog]	X	...	...	X	...
[Set point]	X	X	X	X	X
[Actual value]	X	X	X	X	X
[Tolerance] (2 lines)	X	...	...	...	...

Item	Line ticket	Order ticket	Batch report		
			Headers	(Columns in a) line	Trailers
[Batch status]; characters: "#" = tolerance, "*" = aborted, "-" = skipped	X	X	X	X	X
[- Tolerance]	...	...	...	X	...
[+ Tolerance]	...	...	...	X	...
[Scale name]	X	X	X	...	X
[Ordered by]	X	X	X	...	X
[Weighed by]	X	X	X	...	X
[Start time]	X	X	X	...	X
[End time]	X	X	X	...	X
[Recalculated]]; character: "%"	X	X	X	X	X
[Print time]	X	X	X	...	X
Fix comment	X	X	X	...	X
[Act. mat. cons.]	...	...	...	X	...
[Tidy up]; character: "="	...	...	...	X	...
[Sequence number]	X	X	X	...	...

#### 5.4.8 Simulation

This function is needed in order to simulate the material flow of an automatic recipe without real materials.

It is possible to test whether the settings/links of the digital inputs and outputs have been parameterized correctly.

In a test structure, the process can be simulated in advance so that any necessary changes can be made before installation.

The dosing signals for Coarse, Fine and Discharge are also operated in the simulation. The speed of the coarse flow to be simulated is adjustable in units/minutes (e.g. 10 kg/min for a scale with kg graduations).

The batch direction (draining, filling) is detected.

The fine flow is carried out at approx.  $\frac{1}{5}$  of the speed of the coarse flow. The discharge is carried out at 5 times the speed of the coarse flow.

After a cold start, the simulation is off. The parameters are saved.

### **WARNING**

#### **Risk due to uncontrolled material flow!**

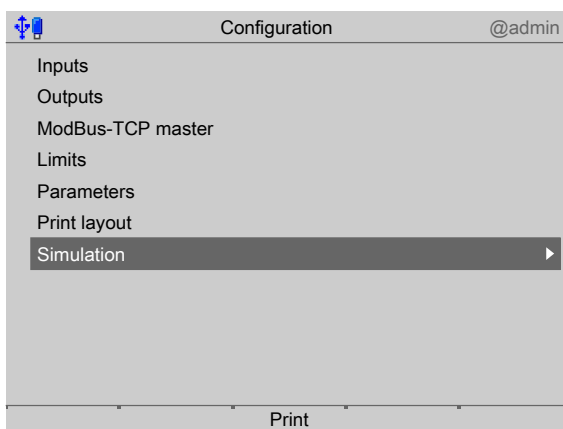
All signals are operated for real when the function is activated.

- The simulation may only be carried out in a test structure!

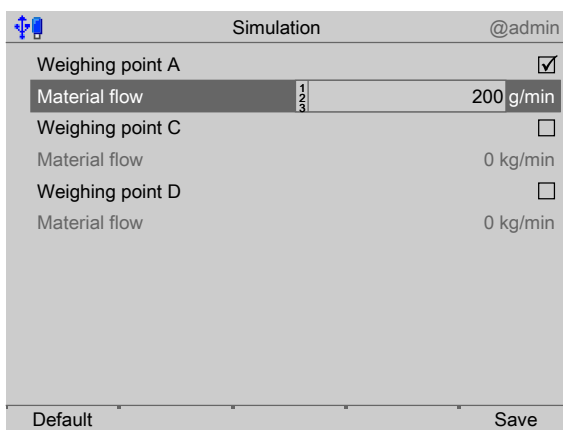
#### **Note:**

**A scale can only be simulated if the "Settings locked" parameter has not been activated under [System setup] - [Weighing points] - [Parameters].**

- After exiting the simulation, set the parameter "Settings locked" to reactivate overwrite protection via the software under [System setup] - [Weighing points] - [Parameters].



1. Use the cursor to select and confirm [Simulation].



2. Check the box ☒ to activate the simulation mode for the corresponding weighing point.
3. Enter the coarse flow speed.
4. Press the [Default] softkey to return to the factory settings, if required.
5. Press the [Save] softkey to save the settings for the simulation.
6. To start the recipe, see Chapter [6.4.3](#).
7. After the end of the test phase, deactivate the simulation and perform a cold start (see PR 5900 operating instructions) in order to switch off the simulation.

## 5.5 Switching off the device

This function is required to disconnect the device from the power immediately, e.g., to install an option card. The rechargeable battery is immediately deactivated.

---

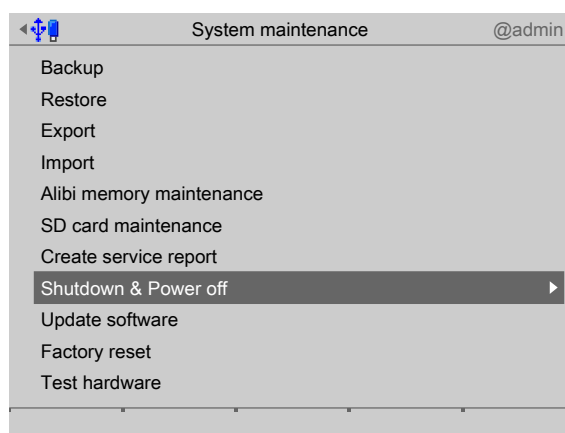
**Note:**

With a menu-driven shutdown, not all the content of the SD-RAM will be saved to a NAND flash memory.

When restarting, a cold start is forced. For example, database entries **no longer** exist.

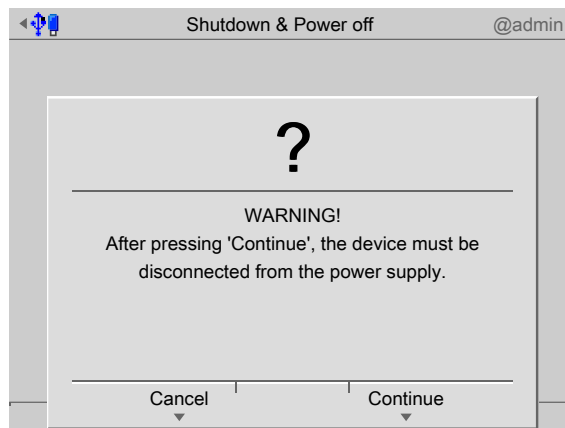
It is recommended to first make a backup on the SD card and/or export the data to a USB stick; see Chapter PR 5900 operating instructions.

---



1. In the operating menu, select and confirm [System maintenance] - [Shutdown & Power off].

▷ A prompt window opens.



2. Press the [Next] soft key.
3. Disconnect the power plug.

## 6 Application

### 6.1 General notes

Operation takes place via the application menu, see also Chapter [4](#).

The following functions are available:

- Production, see Chapter [6.4](#)
- Print tickets, see Chapter [10.3](#)
- Databases, see Chapter [6.2](#)
- Application maintenance, see Chapter [6.3](#)
- Configuration, see Chapter [5.4](#)

### 6.2 Databases

#### 6.2.1 Material

##### 6.2.1.1 General information

Before a recipe or an order can be created, the materials listed in it must be defined. Material in this sense is not only a product to be weighed, but also instructions which control the process.

Materials can be created, edited, deleted and printed. They can be listed in recipes.

Orders can be issued on the basis of a material and materials can be started directly without previously issuing an order.

##### 6.2.1.2 Use of materials

All control components are carried out precisely once, including in manual recipes, and are not activated again even after recalculation. Therefore if a recipe line, e.g. for switching off a machine, is "used", then this machine can no longer be switched off if it is later switched on by another line in the recipe.

Another example:

In a sequential recipe, mixing is carried out for a certain time using [Timer]. At the end of the recipe, post-batching is carried out after recalculation. The mixing time cannot be used again because it has been "used".

It is therefore highly recommended that, if possible, no control of the process should be included in manual recipes. It is better for these functions to be carried out by external components.

**6.2.1.3 Material types**

There are 20 different material types.

<b>Material type</b>	<b>II <sup>1)</sup></b>	<b>Mo <sup>2)</sup></b>	<b>Br</b>	<b>Ti</b>	<b>auR</b>	<b>tP</b>	<b>mRs</b>	<b>mRf</b>	<b>Or</b>	<b>C<sup>3)</sup></b>	<b>sWP</b>
NOP (no function)	0	...			X	X	X	X			
Net filling	1	B1	X	X	X	X	X	X	X	X	
Net refilling	2	B2	X	X	X					X	
Net decrease	3	B4	X	X	X		X**		X	X	
Gross filling	4	B3	X	X	X	X	X	X	X	X	
Gross decrease	5	B6	X	X	X	X	X	X**	X	X	
Discharge	6	B8			X	X	X	X**			
Register	7	Register	X	X			X	X	X	X	X
Manual filling	8	D1	X	X	X	X	X	X	X	X	X
Manual filling, no check	9	D2	X	X	X	X	X	X	X	X	X
Timer	10	D3	X		X	X	X	X			
Stop	11	D4			X	X					
Wait for SPM	12	D5			X	X	X**	X**			
Set SPM	13	D6			X	X	X*				
Reset SPM	14	D7			X	X	X*				
Wait + reset SPM	15	D8			X	X					
Analog output	16	A1	X		X	X	X	X*			
Analog input	17	A2	X		X	X	X				
Dialog	18	Dialog	X		X	X	X	X			
Wait for analog input	19	A3	X		X	X	X				



**Legend:**

<b>Abbreviation</b>	<b>Identifier</b>	<b>Abbreviation</b>	<b>Identifier</b>
<b>II</b>	Internal index	<b>mRs</b>	Manual recipe seq.
<b>Mo</b>	Mode	<b>mRf</b>	Manual recipe free
<b>Br</b>	Batch report	<b>Or</b>	Order, direct
<b>Ti</b>	Ticket	<b>C</b>	Consumption
<b>auR</b>	Autom. recipe	<b>sWP</b>	Select weighing point
<b>tP</b>	Tidy up process		
* These materials must only be implemented with extreme caution when used in manual recipes, in particular free choice recipes.			
** When used in manual recipes, in particular free choice recipes, these materials can only be used if certain conditions are met concerning mechanical/electrical equipment.			
1) Mode index: used in the material and report database.			
2) Designations as in the X series.			
3) The material actually transported is recorded.			

**6.2.1.4 Material parameters****6.2.1.4.1 Material table**

The following table shows which parameters are assigned to the different material types.

**Recipe editor**

<b>Material type</b>	<b>Internal index <sup>4)</sup></b>	<b>Set point <sup>5)</sup></b>	<b>Tolerance</b>	<b>Total</b>	<b>Relative/Recalc.</b>
NOP (no function)	0				
Net filling	1	kg	X	X	X
Net refilling	2	kg	X	X	X
Net decrease	3	kg	X	X	X
Gross filling	4	kg	X	X	X
Gross decrease	5	kg	X	X	X
Discharge	6				
Register	7			X	
Manual filling	8	kg	X	X	X
Manual filling, no check	9	kg		X	X
Timer	10	s			
Stop	11				
Wait for SPM	12				

Material type	Internal index <sup>4)</sup>	Set point <sup>5)</sup>	Tolerance	Total	Relative/Recalc.
Set SPM	13				
Reset SPM	14				
Wait + reset SPM	15				
Analog output	16	+ <sup>6)</sup>	X		X
Analog input	17	A2	X		X
Dialog	18	Dialog	X		X
Wait for analog input	19	X	X		

4) Mode index: used in the material and report database.

5) This unit is also used for preset point, overshoot, etc.

6) The unit for the set points can be t, kg, lb, etc; however if there are several scales they must all belong to the same group (e.g. metric).

### Material editor

Material type	<sup>7)</sup>	Sc	Pre	Ov	Res	Tol	Tim	SPi	SPo	uni	Sca	Coe	IDr	Dia	Ran	deP	SPT
NOP (no function)	0	X															
Net Filling	1	X	X	X	X	X	X	X	X			X		X			
Net refilling	2	X	X	X	X	X	X	X	X			X		X			
Net decrease	3	X	X	X	X	X	X	X	X			X		X			
Gross filling	4	X	X	X	X	X	X	X	X			X		X			
Gross decrease	5	X	X	X	X	X	X	X	X			X		X			
Discharge	6	X	X				X	X	X								
Register	7	X							X			X	X	X			
Manual filling	8	X				X		X <sup>8)</sup>	X			X	X	X			X
Manual filling, no check	9	X						X	X			X	X	X			X
Timer	10	X						X	X								
Stop	11	X							X								
Wait for SPM	12	X						X	X								
Set SPM	13	X							X								
Reset SPM	14	X							X								
Wait + reset SPM	15	X						X	X								

Material type	II <sup>7)</sup>	Sc	Pre	Ov	Res	Tol	Tim	SPi	SPo	uni	Sca	Coe	IDr	Dia	Ran	deP	SPT
Analog output	16	X							X <sup>9)</sup>	X	X						
Analog input	17	X						X <sup>10)</sup>		X	X						
Dialog	18	X							X					X			
Wait for analog input	19	X				X	X	X	X	X	X				X	X	X

**Legend:**

Abbreviation	Identifier	Abbreviation	Identifier
<b>II</b>	Internal index	<b>uni</b>	Unit
<b>Sc</b>	Scale	<b>Sca</b>	Scaling
<b>Pre</b>	Preset	<b>Coe</b>	Coefficient
<b>Ov</b>	Overshoot	<b>IDr</b>	Recording ID
<b>Res</b>	Restart mode	<b>Dia</b>	Dialog
<b>Tol</b>	Tolerance	<b>Ran</b>	Range
<b>Tim</b>	Time to wait in s	<b>deP</b>	Decimals
<b>SPi</b>	SPM on	<b>SPT</b>	SPM on tare
<b>SPo</b>	SPM off		

7) Mode index: used in the material and report database.

8) Confirms the batching of the manual components.

9) The set point is logged to this WORD address.

10) The value is read from this WORD address.

**Note:**

The common parameters for automatic batching are described in Chapter [6.2.1.4.3](#).

**6.2.1.4.2 NOP**

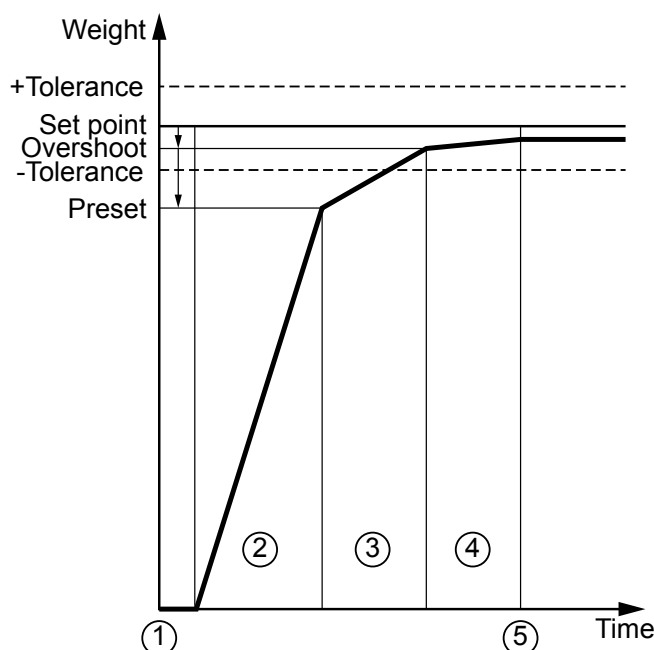
This material type (No Operation) does not do anything; it is simply used as a placeholder for a new recipe line. The minimum execution time for a line with this material is 200 ms.

**6.2.1.4.3 Net filling (B1)**

The scale is tared and then the amount listed in the process line is automatically (Coarse/Fine) added.

The overshoot can be automatically tracked in order to achieve optimum accuracy.

Net = gross - tare

**[Net filling] with dosing signals "Coarse/Fine" procedure**

- ① Taring:  
The current gross weight is saved as tare weight, and the net weight starts at zero.
- ② Coarse:  
A coarse flow (coarse and fine) is batched until the preset is reached.
- ③ Fine:  
A fine flow is batched until the switch-off point (overshoot) is reached.
- ④ Calming:  
Time to wait during which the overshoot is effective and scale vibrations may settle.
- ⑤ Tolerance checking:  
The weight is determined and checked against the tolerance values.

**[Preset]**

The preset determines the time (set point – overshoot – preset) for switching from Coarse to Fine (coarse flow valve closes) during the batching cycle.

**NOTICE****Warning of damage to property and/or the environment.**

The fine flow signal is also active during the coarse-flow phase.

- Use only the fine flow signal, if only one batching speed is required.

**[Overshoot] (OVS)**

All the material filled into the container after the fine flow valve has closed is known as overshoot.

When entering the start value for the overshoot, the “in-flight” material which is still on its way into the container must be taken into account. To prevent the set point from being exceeded due to overshoot when starting for the first time, the initial overshoot setting should be higher than expected.

Only the portion of the overshoot that flows in once the calming time has elapsed is recorded.

Overshoot calculation/correction only takes place if tolerance checking has been enabled.

**[Material flow]**

The parameter is used to monitor the material flow. If the specified value (in weight/min) is not reached then a warning (bit in the SPM is set, see Chapter 12) is issued.

In order to ensure that a warning is not received as soon as the coarse flow is switched on, the monitoring starts after 10 s. The monitoring is switched off if 0.0 is entered.

The specified value (in weight/min) refers to the coarse flow; for the fine flow 1/8 of the value is valid.

**[Time to wait]**

As the time to wait starts straight after the fine flow valve has closed, the time for the overshoot must be taken into account. The weighing system can be put into vibration by dynamic effects. To determine the weight correctly, a corresponding time in seconds must be selected for calming. Before starting a system for the first time, set a higher value for the time to wait in order to permit settling of the weight value before the tolerance check is performed.

The time to wait to be set depends primarily on the following characteristics:

- Time for the overshoot after the fine flow valve has closed
- Consistency of the material
- Characteristics of the infeed system
- Delays in the infeed system

**[Tolerance checking]**

The tolerance is specified as a percentage of the set point for each material and can be determined with [+Tolerance] for weight above set point and with [–Tolerance] for weight below set point.

---

**Note:**

In the event of automatic batching, the tolerance settings should be sufficiently large to ensure that overshoot optimization is executed.

A smaller tolerance does not improve the batching result.

---

Tolerance errors cause generation of a tolerance alarm that must be acknowledged. If a set point tolerance is exceeded then there is a production stop for a process step.

---

**Note:**

If [+Tolerance] and [–Tolerance] are set to 0, tolerance checking is omitted. Overshoot correction and/or post-batching are not performed.

The overshoot value remains unchanged!

---

**[Enabled by bit]**

SPM address %MX, see Chapter 12. The SPM address is entered when creating a material (may not be occupied by another function). An input is then assigned the same address during the input configuration.

A non-active input blocks the batching. The input can be used e.g. as feedback for the connected path.

If the SPM address is set to 0, the material is released immediately.

**[Activ bit]**

SPM address %MX, see Chapter 12. The SPM address is entered when creating a material (may not be occupied by another function). An output is then assigned the same address during the output configuration.

The corresponding bit is set as soon as the material is active. The status is independent of Enabled by bit.

**[Dialog data type]**

This parameter is only used if a dialog is configured.

The dialog can either take place before the batching or as a separate recipe line.

There are 8 different settings. The data recorded with the dialog (2...7) is only significant for the report.

In the case of 8, a query is started for set point change of the material:

No.	Selection	Description
1	No dialog	Dialog is switched off.
2	Message only	The message must be acknowledged or it will be displayed for a defined time.
3	Text	Enter free text.
4	Integer number	Enter integer, if necessary with dimension.
5	Real number	Enter floating point number, if necessary with dimension.
6	Weight	Enter weight value.
7	Yes/No	Prompt only.
8	New set point	Set point change, see Chapter <a href="#">8.8</a> .

**6.2.1.4.4 Restart modes**

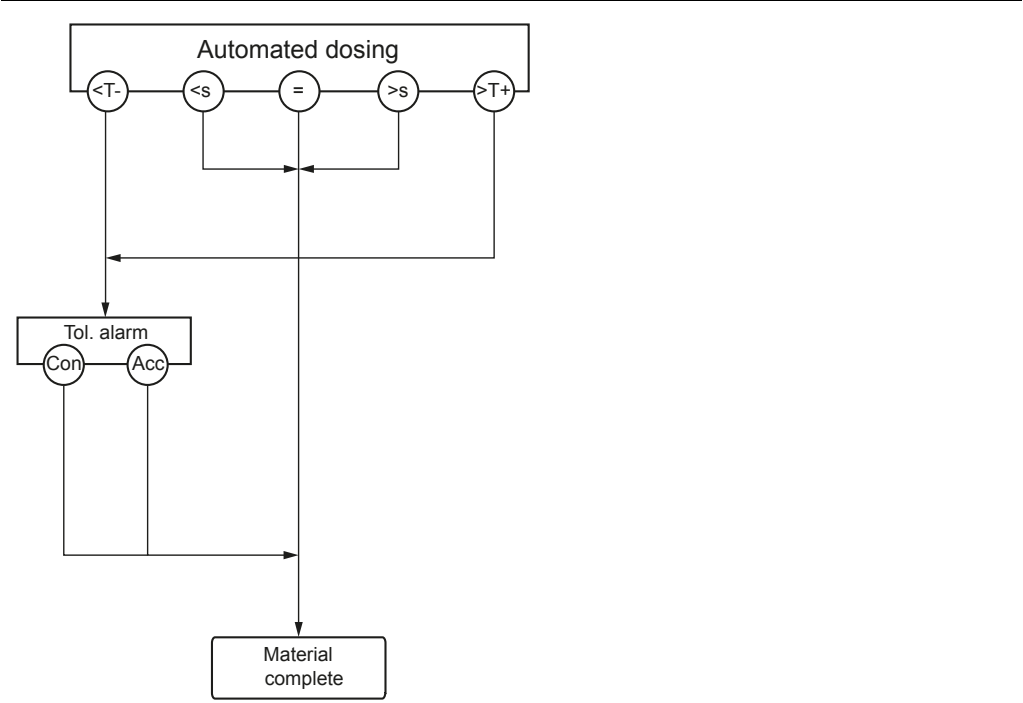
The restart modes determine the optimization process for the batched weight according to the tolerance control depending on the result, as well as for further batches of a material component.

Ideally, the batched weight will be the same as the set point for all restart modes, as no corrective measures are then required.

The following restart modes are available for the controller:

- RST Mode 0
- RST Mode 1
- RST Mode 2
- RST Mode 3
- RST Mode 4

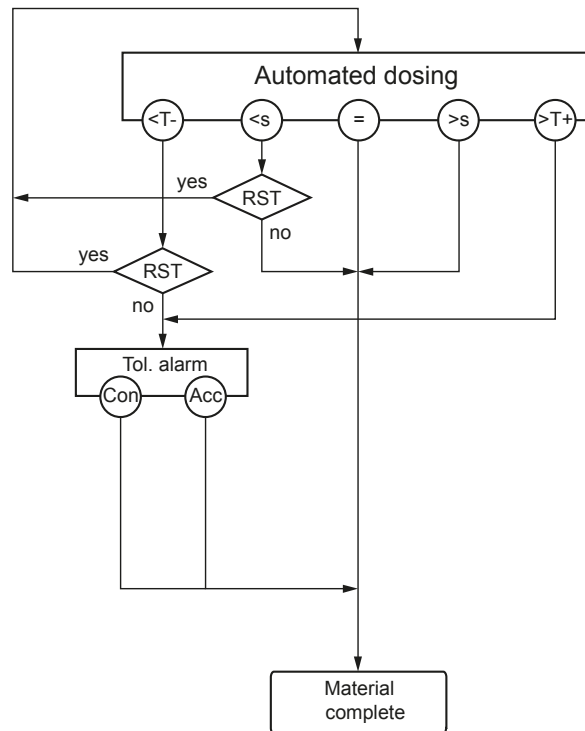
**Restart mode (RST Mode 0)**  
No post-batching and no overshoot correction.  
**RST Mode 0**



Symbol/abbreviation	Description
<T-	Below -tolerance limit
<s	Below set point
=	Set point reached exactly
>s	Above set point
>T+	Above +tolerance limit
Con	[Continue], accept over/under-batching.
Acc	[Accept], accept over/under-batching.
Tol. alarm	Tolerance alarm
Material complete	The batching for the material is complete.

**Restart mode (RST Mode 1)**

Post-batching but no overshoot correction.

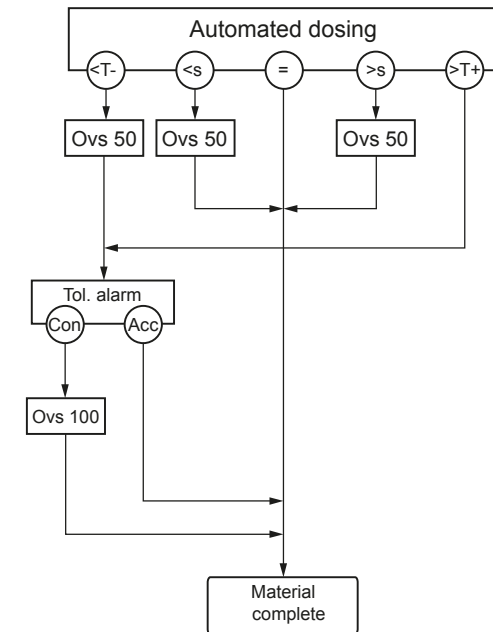
**RST Mode 1**

Symbol/abbreviation	Description
(<T-)	Below -tolerance limit
(<s)	Below set point
(=)	Set point reached exactly
(>s)	Above set point
(>T+)	Above +tolerance limit
(Con)	[Continue], accept over/under-batching.
(Acc)	[Accept], accept over/under-batching.
RST	Post-batching
yes/no	yes (overshoot smaller than difference)/no
Tol alarm	Tolerance alarm
Material complete	The batching for the material is complete.



**Restart mode (RST Mode 2)**

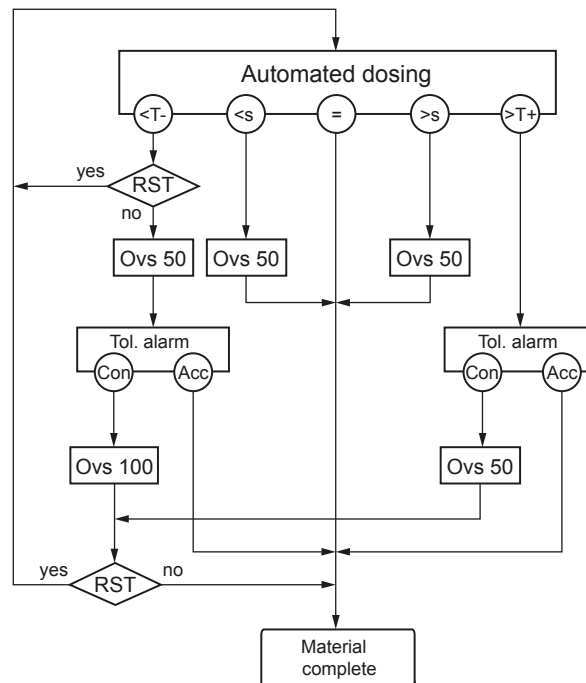
Overshoot correction but no post-batching.

**RST Mode 2**

Symbol/abbreviation	Description
	Below -tolerance limit
	Below set point
	Set point reached exactly
	Above set point
	Above +tolerance limit
	[Continue], accept over/under-batching.
	[Accept], accept over/under-batching.
OVS 50	Overshoot 50: Old overshoot – (set point - weight on tolerance check)/2
OVS 100	Overshoot 100: Old overshoot – (set point - current weight)
Tol alarm	Tolerance alarm
Material complete	The batching for the material is complete.

**Restart mode (RST Mode 3)**

First post-batching and then overshoot correction.

**RST Mode 3**

Symbol/abbreviation	Description
	Below -tolerance limit
	Below set point
	Set point reached exactly
	Above set point
	Above +tolerance limit
	[Continue], accept over/under-batching.
	[Accept], accept over/under-batching.
OVS 50	Overshoot 50: Old overshoot – (set point - weight on tolerance check)/2
OVS 100	Overshoot 100: Old overshoot – (set point - current weight)
RST	Post-batching

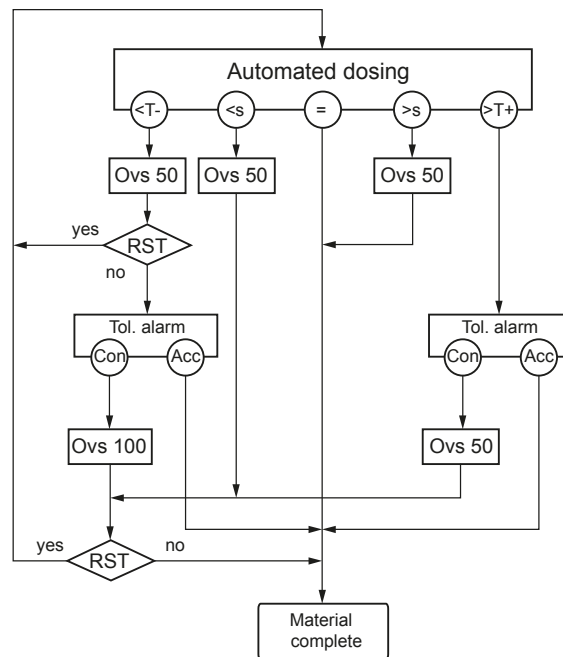
Symbol/abbreviation	Description
yes/no	yes (overshoot smaller than difference)/no
Tol alarm	Tolerance alarm
Material complete	The batching for the material is complete.

#### Restart mode (RST Mode 4)

First overshoot correction and then post-batching.

This mode is suitable for automatic sequences only.

#### RST Mode 4



Symbol/abbreviation	Description
$\textcircled{<T-}$	Below -tolerance limit
$\textcircled{<s}$	Below set point
$\textcircled{=}$	Set point reached exactly
$\textcircled{>s}$	Above set point
$\textcircled{>T+}$	Above +tolerance limit
$\textcircled{\text{Con}}$	[Continue], accept over/under-batching.
$\textcircled{\text{Acc}}$	[Accept], accept over/under-batching.

Symbol/abbreviation	Description
OVS 50	Overshoot 50: Old overshoot – (set point - weight on tolerance check)/2
OVS 100	Overshoot 100: Old overshoot – (set point - current weight)
RST	Post-batching
yes/no	yes (overshoot smaller than difference)/no
Tol alarm	Tolerance alarm
Material complete	The batching for the material is complete.

#### 6.2.1.4.5 Net refilling (B2)

The scale is not tared and is refilled to the specified net weight. A material of this type follows e.g. a line with a material which is hard to batch due to its consistency.

With the refill function, the same substance but with a better consistency is automatically brought to the precise set point.

- In the recipe the initial material does need to be qualified, but does not need to be included in the total for the recipe.
- This material type cannot be used in manual recipes because in each case it must be ensured that the tare value (from the previous batching) matches the desired result.

The other parameters and the process correspond to the type [Net filling], see Chapter [6.2.1.4.3](#).

#### 6.2.1.4.6 Gross filling (B3)

The scale is automatically refilled to the specified gross weight.

The other parameters and the process correspond to the type [Net filling], see Chapter [6.2.1.4.3](#).

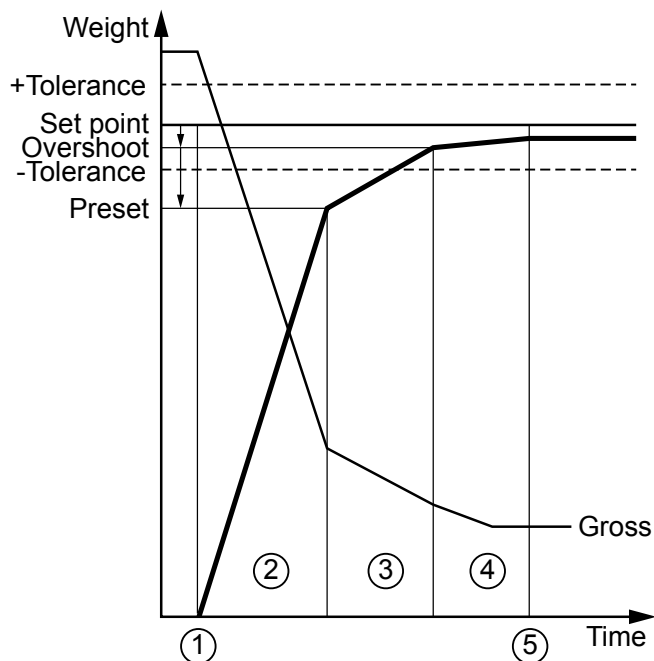
#### 6.2.1.4.7 Net decrease (B4)

The scale is automatically discharged up to the specified value. The other parameters and the process correspond to the [Net filling] mode; see Chapter [6.2.1.4.3](#).

Net = gross - tare

Tare = gross

### Sequence of [Net decrease] with dosing signals "coarse/fine"



- ① Taring:  
The current gross weight is saved as the tare and the net weight starts at zero.
- ② Coarse:  
A coarse flow (coarse and fine) is batched until the preset value is reached.
- ③ Fine:  
A fine flow is batched until the switch-off point (overshoot) is reached.
- ④ Calming:  
Time to wait during which the overshoot is effective and scale vibrations may settle.
- ⑤ Tolerance checking:  
The weight is determined and checked against the tolerance values.

#### 6.2.1.4.8 Gross decrease (B6)

The scale is automatically discharged up to the specified value.

##### Note:

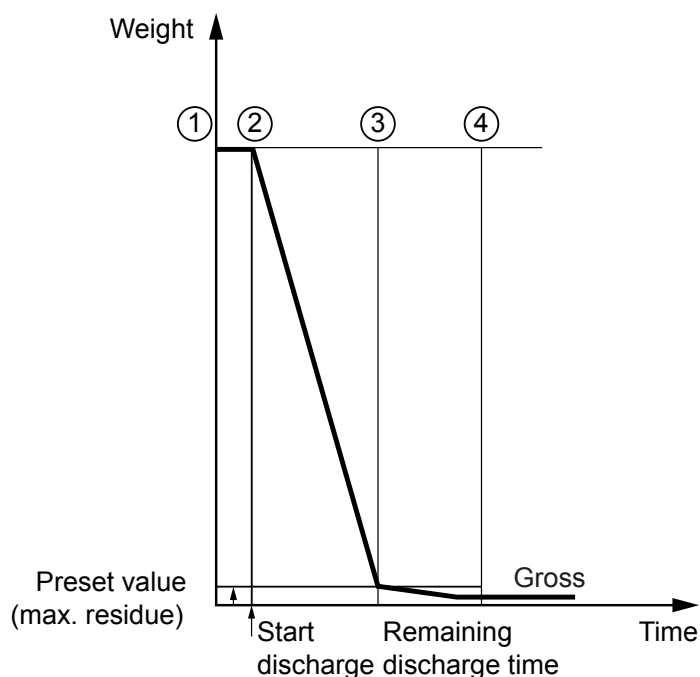
The use of this material type is only effective at precisely defined points in a recipe. Use in free choice recipes is therefore dubious. In addition, suitable mechanical/electrical equipment is needed.

The other parameters and the process correspond to the type [Net filling], see Chapter [6.2.1.4.3](#).

#### 6.2.1.4.9 Discharge (B8)

The aim here is to discharge the scale automatically and completely. The output stipulated under [Active bit] is set up to the maximum remainder specified under [Preset]. Once the remainder is reached, the time specified under [Time to wait] is waited in order to discharge the last remainder from the scale.

The remainder value should be greater than the expected remainder amount.

**[Drain] process**

- ① Scale set to Gross.
- ② Output discharge signal [Active bit].
- ③ Maximum remainder [Preset] reached.
- ④ Remainder discharge time [Calming time] expired. Output [Active bit] is reset.

**6.2.1.4.10 Manual filling (D1)**

A material is manually added; the amount is weighed and then checked for tolerance. Manual additions apply the actual value amount (no consideration of the plus/minus sign). This means that it is possible both to fill a container on the scale and to remove material from a weighed container.

**[Ready bit]**

SPM address %MX, see Chapter 12. The address is entered when creating a material (may not be occupied by another function). An input is then assigned the same address during the input configuration.

An activated input signals that the batching is complete. If the address is set to 0 then the ready signal must be issued via the keypad.

**[Active bit]**

SPM address %MX, see Chapter 12. A signal is given to the operator via an output that the material is active.

**6.2.1.4.11 Manual filling, no check (D2)**

A material is added manually and the specified set point is used as the actual value.

Manual additions apply the actual value amount (no consideration of the plus/minus sign).

The parameters correspond to those of [Manual filling], only the tolerance specification is omitted.

**6.2.1.4.12 Timer (D3)**

SPM address %MX, see Chapter 12. The timer is set for a specified time. The time starts when the input for the [Active bit] is activated.

**Note:**

This material type should be used with caution in manual recipes. Recipes which can be recalculated should not contain this material type.

**6.2.1.4.13 Stop (D4)**

An automatic recipe is held and the specific output is activated. The recipe is continued by the user.

The function can be used, for example, to take samples.

**6.2.1.4.14 Wait for SPM (D5)**

The material sets the [Active bit] until the specified SPM address [Ready bit] has been set.

**Note:**

Use in manual recipes requires appropriate mechanical/electrical equipment.

Use in free choice recipes is dubious because there may be a waiting period at any point in the recipe.

Sequential recipes which can be recalculated should not contain this material type.

**6.2.1.4.15 Reset SPM (D7)**

An SPM address %MX is reset, see Chapter 12. This means that conveyor belts, heating, suction systems, etc. can be switched off again.

**Note:**

[Reset SPM] and [Set SPM] must be viewed together.

Recipes which can be recalculated should not contain this material type.

**6.2.1.4.16 Wait + reset SPM (D8)**

This is used as a "handshake" function with internal functions.

**6.2.1.4.17 Analog output (A1)**

The set point is scaled using a linear function and specified in the SPM in the data type "WORD". SPM addresses %MX, see Chapter 12.

The range is 0...20 mA. The analog output value between 0/4 mA (Min) and 20 mA (Max) is scaled with a specified unit (e.g. rpm) to the set point at 0/4 mA (Setp04mA) and the set point at 20 mA (Setp20mA).

The set point from the recipe line is transferred into the batch report.

The scaling is adapted to the analog output card.

$$\text{SPM}_{\text{out}} = \frac{20000 \cdot (\text{set point} - \text{Setp04mA})}{\text{Setp20mA}}$$

**Use**

Set point specification e.g. for an external temperature regulator or determination of the speed of a mixer.

Apart from for scaling, the [Set point...] parameters are also used as a permitted input range for the set point in the recipe line.

### NOTICE

#### Warning of property and/or environmental damage.

These components should be used with caution in manual recipes.

- If, for instance, they are used to set the speed of a mixer, it must be ensured that a corresponding component that switches the mixer off again can still be carried out at the end of the recipe.
- Recipes which can be recalculated should not contain these components.

#### 6.2.1.4.18 Analog input (A2)

An analog input signal is imported and provided to the SPM in the "WORD" data type. SPM addresses %MX, see Chapter 12.

The range is 0...20 mA. The analog input value between 0/4 mA (Min) and 20 mA (Max) is scaled with a specified unit (e.g. °C) to the set point at 0/4 mA (Setp04mA) and the set point at 20 mA (Setp20mA).

The current value is transferred into the batch report.

The scaling is adapted to the analog input card.

$$\text{SPM}_{\text{in}} = \frac{20000 \cdot \text{analog input}}{20 \text{ mA}}$$

$$\text{current} = \frac{(\text{Setp20mA} - \text{Setp04mA}) \cdot \text{analog input}}{20 \text{ mA}} + \text{Setp04mA}$$

#### Use

Read a value from the SPM which stands for a process parameter, e.g. a temperature.

Under-control or over-control of the input set the recipe line to [On hold].

#### 6.2.1.4.19 Wait for analog input value (A3)

An analog input signal is imported and provided to the SPM in the "WORD" data type. SPM addresses %MX, see Chapter 12.

This material waits until the agreed condition for the agreed period is met.

The range can be selected to be 0...20 mA or 4...20 mA. The analog input value is scaled with a specified unit (e.g. °C) to the set point at 0/4 mA (Setp04mA) and the set point at 20 mA (Setp20mA).

The scaled current value is displayed on the device during the current recipe.

The set point and the tolerance ranges are shown in the bar graph until the material ends or is canceled.

The current value is incorporated into the batch report.

A linear function is used to scale the value to the application.

The scaling is adapted to the analog input card.



$$\text{SPM}_{\text{in}} = \frac{20000 \cdot \text{analog input}}{20 \text{ mA}}$$

$$\text{current} = \frac{(\text{analog input} - \text{min}) \cdot (\text{Setp20mA} - \text{Setp04mA})}{\text{max} - \text{min}} + \text{Setp04mA}$$

Min = 0/4 mA, Max = 20 mA

### Use

Wait for an analog value which shows a process parameter, e.g. a temperature value during a specified condition within a period of time.

The recipe line goes to [On hold] in the event of an input value under 0 mA/over 20 mA for 0...20 mA

or

under 2 mA/over 20 mA for 4...20 mA.

The recipe also goes to [On hold] if:

Max – Min < 10<sup>-6</sup>

or

(set point + pos. tolerance) – (set point – neg. tolerance) < (max - min) • 0.01.

### Coarse and fine

This material works in a similar way to [Net filling].

It is possible to use the [Active bit] to determine the status. The SPM logic function (AND conjunctions) must be used for this purpose, see Chapter 12.

Coarse and fine are also valid for this material:

Coarse is true as long as the material is active AND the analog input value is valid.

Fine is true as long as the material is active AND the analog input value is within the tolerance.

#### 6.2.1.4.20 Dialog

This type is used to hold a dialog with the user.

#### Example:

Material "Filling level"

Create/edit material		@admin
Material name	Filling level	
Type	Dialog	
Scale name	Weighing point A	
Activ bit	34	
Dialog data type	Integer number	
Message	Filling level	
Unit	cm	
<div> New Start Delete Print </div>		

#### [Active bit]

In this case: 34, see Chapter 12.

**[Dialog data type]**

Selection: , [Message only], [Text], [Integer number], [Real number], [Weight], [Yes/No]

**[Unit]**

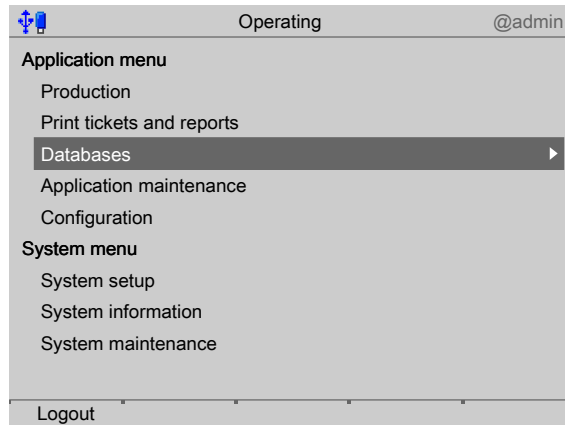
Only in the case of [Integer number] and [Real number].

**[Time out]**

Only in the case of [Message only].

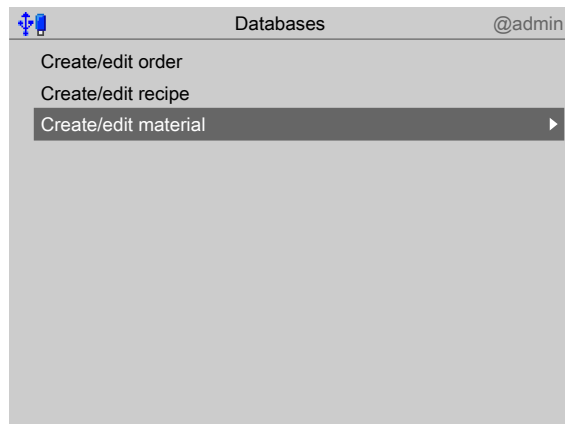
**6.2.1.5 Create material**

Materials are created under this menu item.



1. Use the cursor to select and confirm [Databases].

▷ A selection window opens.



2. Use the cursor to select and confirm [Create/edit material].

▷ A selection window opens.

The placeholder [NOP] will be displayed.

3. Press the [New] softkey to create a new entry.

4. Use the cursor to select and confirm the individual parameters.

#### **[Material name]**

Input: max. 18 alphanumeric characters

---

#### **Note:**

The field must not be left "empty" and must not include any control commands or quotation marks.

When making the input it must be considered that the last characters may be abbreviated by the sequence number (min. 4) (e.g. in the event of the direct start of a material).

---

#### **[Type]**

Selection: see Chapter [6.2.1.3](#)

#### **[Scale name]**

Selection: Weighing point A...D

#### **[Preset]**

Input: weight value; adopt unit from the calibration.

**[Overshoot]**

Input: weight value; adopt unit from the calibration.

**[Material flow]**

Material flow monitoring: monitoring is switched off if 0 is used.

Input: in g/min, kg/min ...; depending on the unit in the calibration

**[Restart mode]**

Performance when tolerance exceeded, post-batching.

Selection: Mode 0...4 (see Chapter [6.2.1.4.4](#))

**[+ Tolerance/- Tolerance]**

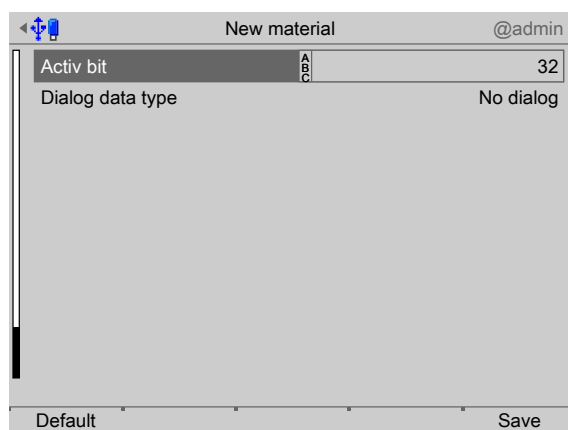
Input: in % above/below set point

**[Time to wait]**

Input: in s

**[Enabled by bit]**

Input: SPM address %MX; input address for "ready", see Chapter [12](#).

**[Activ bit]**

Input: SPM address %MX; input address for the release of batching, see Chapter [12](#).

**[Dialog data type]**

Selection: see Chapter [6.2.1.4.20](#)

5. Press the [Default] softkey to return to the factory settings, if required.
6. Finally, press the [Save] softkey to save the settings.

**6.2.1.6 Edit material**

In this menu item, you can edit the materials that have been created.

If parameters are changed, this will influence (with the exception of tolerance) existing recipes and orders (if they have not yet been started).

The display of the selected material varies according to the configuration or the mode of batching.

The tables of the characteristics and parameters of the different materials are listed in Chapters [6.2.1.3](#) and [6.2.1.4](#).

1. Using the cursor, select and confirm the desired material in the application menu under [Databases]- [Create/edit material].

Create/edit material		@admin
Material name	↔	Hard gold
Type		Net filling
Scale name		Weighing point A
Preset		20.0 g
Overshoot		10.0 g
Material flow		0.0 g/min
Restart mode		Mode 4
+ Tolerance		1 %
- Tolerance		1 %
Time to wait		3 s
Enabled by bit		22
New   Start   Delete   Print		

2. Using the cursor, select, change and confirm the individual parameters.

---

**Note:**

Apart from [Type], all the parameters of a material can be changed.

---

3. Press the [Default] softkey to return to the factory settings, if required.
4. Finally, press the [Save] softkey to save the settings.

### 6.2.1.7 Batching a Material

In this menu item, selected materials are batched.

1. Use the cursor to select and confirm the desired material under [Databases] - [Create/edit material] in the application menu.

Create/edit material		@admin
Material name	↔	Hard gold
Type		Net filling
Scale name		Weighing point A
Preset		20.0 g
Overshoot		10.0 g
Material flow		0.0 g/min
Restart mode		Mode 4
+ Tolerance		1 %
- Tolerance		1 %
Time to wait		3 s
Enabled by bit		22
New   Start   Delete   Print		

2. Press the [Start] softkey.
  - ▷ An input window opens.

The screenshot shows a window titled 'Create/edit material' with a user icon and '@admin' in the top right. The 'Material name' field is expanded, showing a green question mark and the text 'Order name: Hard gold~002'. Below this, the 'Set point' is displayed as '500.0 g'. At the bottom, there are buttons for 'New', 'Start', 'Delete', and 'Print'.

The material name is expanded to include the separator and the current sequence number (here: ~002).

3. Use the keyboard to enter and confirm the set point.
  - ▷ The entered set point is saved in the material database and is used as the suggested value in the event of a subsequent start.

#### 6.2.1.8 Delete material

In this menu item, selected materials are deleted.

---

#### Note:

A material cannot be deleted if it is listed in an order or recipe.

---

1. Using the cursor, select and confirm the desired material in the application menu under [Databases]- [Create/edit material].

The screenshot shows the 'Create/edit material' window with a list of material properties. The 'Material name' field is expanded, showing 'Hard gold'. The list includes: Type (Net filling), Scale name (Weighing point A), Preset (20.0 g), Overshoot (10.0 g), Material flow (0.0 g/min), Restart mode (Mode 4), + Tolerance (1 %), - Tolerance (1 %), Time to wait (3 s), and Enabled by bit (22). At the bottom, there are buttons for 'New', 'Start', 'Delete', and 'Print'.

2. Press the [Delete] softkey.
  - ▷ A prompt window appears.



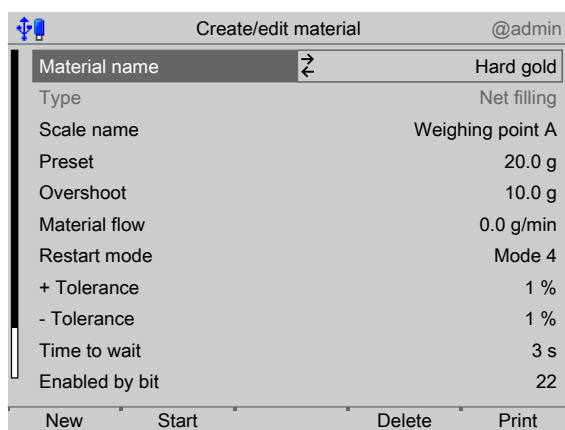
3. Press the [No] softkey, if necessary, in order to return to the menu.
4. Press the [Yes] softkey to delete the entry.
  - ▷ The material is permanently deleted and the next database entry is displayed.
5. Press the ESC/EXIT key to finish editing. The changes are saved.

#### 6.2.1.9 Print material

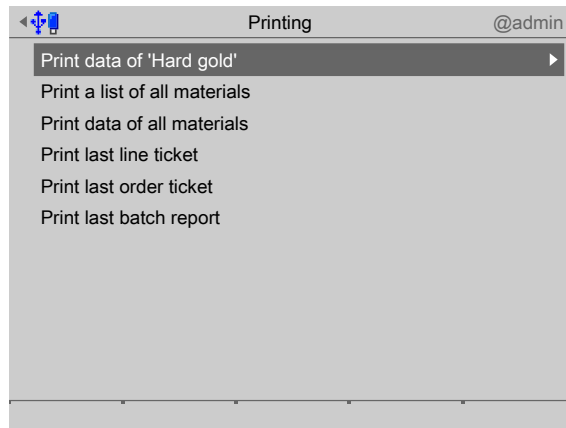
In this menu item, selected materials are printed.

##### Requirements:

- Printer setup in the system menu under [System setup]- [Connected devices]
  - Printer selection under [Configuration]- [Parameters]- [Report printer]
1. Using the cursor, select and confirm the desired material in the application menu under [Databases]- [Create/edit material].



2. Press the [Print] softkey.
  - ▷ A selection window opens.



3. Using the cursor, select and confirm the relevant line (here: Print data of "Material name").

▷ The result is printed.

```

Hard gold          03/12/2013 15:45:11
Changed at         03/12/2013 15:45:08
-----
Act. mat. cons.           0.0 g
Type                     Net filling
Scale name               Weighing point A
Preset                   20.0 g
Overshoot                10.0 g
Restart mode             Mode 4
+ Tolerance               1 %
- Tolerance               1 %
Time to wait             3 s
Material flow            0.0 g/min
Enabled by bit           22
Active bit               32
Dialog data type        No dialog

```

## 6.2.2 Recipe

### 6.2.2.1 General notes

The recipe describes the steps for the execution of an order.

When starting an order, the recipe is automatically expanded. In this case, the parameters of the order are transferred from the recipe line by line into a production instruction.

The instructions are saved as a docket in the database.

Recipes can be started directly without previously issuing an order.



---

**Note:**

Special notes if a liquid counter has been assigned to the weighing point.

At the beginning of the recipe the following materials must be used:

1st line: Set SPM

Activ bit = "Zero device" (WPA: 112, WPB: 4208, WPC: 8304, WPD: 12400)

2nd line: Reset SPM

Activ bit = "Zero device" (WPA: 112, WPB: 4208, WPC: 8304, WPD: 12400)

This way, the corresponding weighing point is set to zero before the batching.

---

**6.2.2.2 Recipe structure**

A recipe consists of a number of lines that is only limited by the memory size. Each line contains a reference to a material (raw material or control instruction). During the expansion, the parameters of the recipe line are expanded to include the parameters of the material.

The parameters of a line, together with the parameters of the material, produce a complete dataset to control a process step. Therefore there is less call to refer back to the recipe or the material database during production. Exception: Consumed amount and overshoot are updated.

Changes to the recipe or to the materials have no influence on the production following the expansion (important for manual recipes which are interrupted).

The structure of the OPC recipe database is described in Chapter [9.3.2](#).

Each line also contains the header information of the recipe:

- Recipe name
- Recipe type (free choice, sequential, automatic)
- Production start total (used at the start of an order)
- Total amount produced
- Internal characteristics

The remaining values describe the lines of the recipe:

- Section
- Recipe line no.
- Weighing point
- Material name
- Set point for the line
- Permitted tolerance
- Last change (by which user and when)
- Internal characteristics

**Properties**

<b>Parameters</b>	<b>Free choice</b>	<b>Sequential</b>	<b>Automatic</b>
Line ticket	(X)	(X)	
Order ticket	(X)	(X)	(X)
Batch report	(X)	(X)	(X)
Recipe name	X	X	X
Tidy up process			X
Recipe type	X	X	X
Recipe set point	X	X	X
Recipe line	X	X	X
Section	always 1	always 1	X
Material	X	X	X
Set point for the line	(X)	(X)	(X)
+ Tolerance, - Tolerance	(X)	(X)	(X)
Add to the total	X	X	X
Qualification/recalculation	(X)	(X)	(X)
( ) Can be switched on via configuration/not for all materials.			

The database is sorted according to the key fields "Name," "Clean" and "Line".

At the end of each line, the batching results are recorded in the docket and the line is marked as "completed".

The overshoot is updated in the material database and the transported amount is recorded.

At the end of the recipe, the amount of the recipe produced is calculated, and the report is prepared and forwarded to the printer buffer (to be printed out in the background).

**6.2.2.3 Recipe parameters****6.2.2.3.1 Recipe header****[Recipe name]**

Name of the recipe. The name must be unique because it is used as a key field in the database.

It is always saved as text and can be entered as numbers or text according to the configuration. Text form is recommended.

**[Recipe type]**

The type for the production of the recipe is selected from a list (see also Chapter [6.2.2.4](#)):  
[free choice] or [sequential] or [automatic]

**[Recalculate]**

Only for manual recipes [free choice] or [sequential].

This determines whether the recipe can be qualified again (see also Chapter [6.2.2.5.6](#)).

**[Set point]**

Total of all recipe lines (without tidy up part, [Add to total of recipe] must be activated) after a change to the recipe.

Otherwise, Last produced set point

**[Create/edit tidy up process]**

Only with [automatic].

This controls the editor in terms of switching between the editing of the normal recipe and the tidy up for the recipe (see Chapter [6.2.2.5.3](#)).

**[Enabled by bit]**

Only with [automatic].

This specifies the bit in the SPM for which the recipe waits as the enable signal before editing the first line. If bit 0 is set, there is no wait.

**[Active bit]**

Only with [automatic].

This specifies the bit in the SPM that is set as long as the recipe is active. If bit 0 is set, no bit is set in the SPM.

**6.2.2.3.2 Recipe lines****[Recipe lines number (L)]**

Number (e.g.  $\frac{2}{3}$ ) of the line. The line number can be increased or decreased using the softkeys [Line +] and [Line -] or can be entered directly.

**[Section (S)]**

Number of the recipe section in automatic recipes. The numbering should be ascending and without gaps in the range of 1...100 (gaps increase the runtime by around 0.2 s/section).

**[Material name]**

The name is used to select the material from the material database. The database entry determines the scale and the parameters linked to the material.

**[Set point]**

Depending on the type of material, this value may be missing or have its own dimension:

- Weight in kg, lb, etc. (according to the associated WP)
- Time in s
- Defined by the material (e.g. rpm) definiert

**[+ Tolerance, - Tolerance]**

The values specified in the recipe apply. For a new line the values are generated from the material database but can be changed in the recipe editor.

The absolute tolerance is at least 1 d. With an indication of 0.0%, no check is performed (see also Chapter [6.2.2.5.2](#)).

**[Add to total of recipe]**

This parameter determines whether the set point should be added to the recipe total.

**[Relative]**

This parameter determines whether the set point should be qualified during the calculation of the current set points. Once set, this line may also be recalculated in the case of manual recipes.

**[Type]**

The material type is specified during creation and is saved in the material database. It cannot be subsequently changed.

**[Scale name]**

The scale (weighing point A...D) is identified from the material database. The lines cannot be edited here.

**6.2.2.4 Recipe types****6.2.2.4.1 Free choice recipes [Free choice]**

A recipe is processed step by step under the user's direct control. The user can pick the next steps from the recipe.

A free choice recipe can be interrupted and continued again later. Other orders can be processed in the meantime.

Once configured, free choice recipes can be recalculated in the event of batching errors (see Chapter [6.2.2.5.6](#)).

The recipe can use several scales. However, only one scale is ever used at a time.

**6.2.2.4.2 Sequential recipes [Sequential]**

Sequential recipes are edited in a similar way to free choice recipes. Unlike in the case of free choice recipes, the order (ascending line numbers) must be followed in the case of sequential recipes. This is usually due to technical production-related requirements.

A sequential recipe can be interrupted and continued later. Other orders can be processed in the meantime.

Sequential recipes can be recalculated, but this means that the order will not be followed. If necessary, recalculation will have to be switched off for these recipes.

The recipe can use several scales. However, only one scale is ever used at a time.

**6.2.2.4.3 Automatic recipes [Automatic]**

Recipes are processed in sections. A section must be completed before the next one can begin. The order of the individual production instructions, including the parallel actions, is strictly governed by the recipe. If several scales are available, batching will be carried out in parallel within the section.

An automatic recipe can be discontinued, but not interrupted to be continued again later.

An automatic recipe cannot be recalculated.

**Note:**

For details on the recipe controller, see Chapter [6.2.2.5.7](#).

**Example**

Line no.	Section	Scale name	Material name	Set point	+ Tolerance	- Tolerance
1	1	Weighing point A	Batching material 1	10 kg	0.5 %	0.5 %
2	1	Weighing point A	Batching material 2	1.2 kg	0.5 %	0.5 %

Line no.	Section	Scale name	Material name	Set point	+ Tolerance	- Tolerance
3	1	Weighing point B	Batching material 3	1345 kg	1.0 %	1.0 %
4	2	Weighing point A	Discharging A into B			
5	2	Weighing point B	Mixing in B	600 s		
6	3	Weighing point B	Discharging B			
1	1**	Weighing point A	Discharging A into B			
2	2**	Weighing point B	Discharging B			
** = Tidy up process						

### Procedure

Line no.	Description
1	10 kg of material 1 is batched in scale A.
2	1.2 kg of material 2 is batched in scale A, after batching of material 1 has been completed.
3	1345 kg of material 3 is batched in scale B, at the same time as material 1 and/or material 2 are batched in scale A.
4	Scale A is discharged into scale B, after the batching of lines 1, 2 and 3 has been completed.
5	In parallel to the discharging of A into B, the mixer in scale B is switched on for 10 minutes.
6	B is discharged after the end of the mixing time. The recipe is completed as normal.
1**	This line is only edited if the recipe has been interrupted and [Tidy up process] has been requested. A is discharged after B.
2**	This line is only edited if the recipe has been interrupted and [Tidy up process] has been requested. B is discharged after A has been discharged into B.
** = Tidy up process	

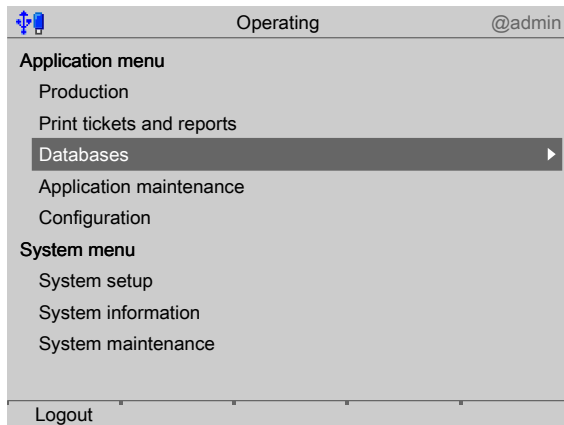
### 6.2.2.5 Recipe editor

The recipe editor is used to create, edit, delete and print recipes. The header and the lines can be edited.

A tidy up process (lines) can also be created for automatic recipes. Material types not available for the current recipe type are not available for selection.

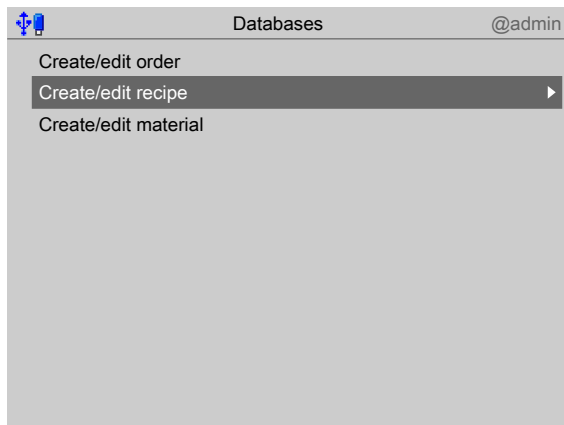
### 6.2.2.5.1 Create recipe

Recipes are created under this menu item.



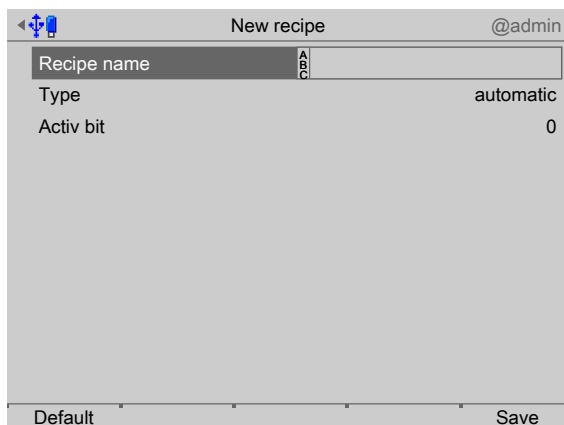
1. In the operating menu, use the cursor to select and confirm [Databases].

▷ A selection window opens.



2. Use the cursor to select and confirm [Create/edit recipe].

▷ A selection window opens.



3. Use the cursor to select and confirm the individual parameters.

The screenshot shows a 'New recipe' screen. At the top, there is a title bar with a back arrow, a cursor icon, the text 'New recipe', and a user icon with '@admin'. Below the title bar, there are three input fields: 'Recipe name' with the value 'Sugar bread', 'Type' with the value 'automatic', and 'Activ bit'. The 'Activ bit' field is a 3x3 grid. The first column contains the values 1, 2, and 3 from top to bottom. The second column contains the value 32. Below the input fields, there are two softkeys: 'Default' and 'Save'.

**[Recipe name]**

Input: max. 18 alphanumeric characters

**Note:**

The field must not be left "empty" and must not include any control commands or quotation marks.

When making the input it must be considered that the last characters may be abbreviated by the sequence number (min. 4) (e.g. in the event of the direct start of a recipe).

**[Type]**

Selection: see Chapter [6.2.2.4](#)

**Note:**

A recalculation can be activated in the case of [sequential] and [free choice] (see Chapter [6.2.2.5.6](#)).

**[Activ bit]**

In the case of automatic recipes, the SPM address for the hardware control of the recipe can also be entered (see Chapter [12](#)).

4. Press the [Default] softkey to return to the factory settings, if required.
  5. Finally, press the [Save] softkey to save the settings.
- ▷ The recipe header is created and the recipe can be directly edited.

**6.2.2.5.2 Edit recipe**

In this menu item, you can edit the recipes that have been created.

1. Use the cursor to select and confirm the desired recipe in the application menu under [Databases]- [Create/edit recipe].

2. Select, change and confirm the individual parameters using the cursor.

**[Recipe name]**

This line cannot be edited.

**[Tidy up process]**

These parameters are only available for automatic recipes. This line displays the current part of the recipe in the case of automatic recipes.

This function is deactivated in the case of manual recipes.

**[Recipe line number]**

This line shows the current line number/number of lines in the recipe.

The production and tidy up process are counted separately.

**[Section]**

This function is only available for automatic recipes.

For manual recipes, [Section] is set to 1.

**[Material name]**

The material is selected from the material database. The selection of the material starts for new lines with the first entry in the material database [NOP].

A change in the material may result in other parameters being displayed.

**[Set point]**

Input: corresponding weight

**[+Tolerance/-Tolerance]**

The permitted tolerances are initially copied from the material database and can be overwritten.

The selection of a new material sets the tolerance back to the value from the material database if 0% is listed in the recipe.

**[Type/Scale name]**

The values of the lines [Type] and [Scale] are taken from the material database; they provide information and cannot be edited.



**[Insert]**

Insert a new line in order to select an available material or create a new one.

**[Material]**

Create a new material without leaving the recipe editor.

**[Delete]**

Delete a recipe line.

**[Line- / Line+]**

Click backwards/forwards through the recipe.

When the end of the recipe is reached, the soft key [Line+] will automatically add a new line with material name [NOP] as a placeholder.

3. Press the ESC/EXIT key to finish editing. The changes are saved.

**[Create tidy up process]**

Check the ☒ box to activate the function. Whenever the tidy up process is edited, the box must be checked first. Only then will [editing] of the tidy up process be possible.

For tidying up a recipe, see Chapter [6.2.2.5.3](#).

**[Enabled by bit]**

In the case of automatic recipes, the SPM address for the hardware control of the recipe can still be entered (see Chapter [12](#)).

4. Press the ESC/EXIT key to finish editing. The changes are saved.

### 6.2.2.5.3 Tidying up a recipe (tidy up process)

The [Tidy up process] part of the recipe is carried out on request if a recipe has been discontinued. The recipe then consists of two parts which can both be edited.

When a recipe is discontinued, an unknown amount of material is still available in the container. This must be properly discharged. If necessary, the container must be cleaned using a rinsing recipe.

1. Use the cursor to select and confirm the desired recipe in the application menu under [Databases]- [Create/edit recipe].

The screenshot shows a screen titled 'Create/edit recipe' with a user icon and '@admin' in the top right. The screen displays a list of recipe parameters: 'Recipe name' (Super mix), 'Set point' (1000.0 g), 'Type' (automatic), 'Create tidy up process' (checked), 'Enabled by bit' (40), and 'Activ bit' (20). At the bottom, there are five buttons: 'New', 'Edit', 'Start', 'Delete', and 'Print'.

2. Select and confirm [Create tidy up process] in order to activate the parameter.
3. Press the [Edit] soft key.
  - ▷ A prompt window appears.

The screenshot shows a prompt window with a green question mark at the top. The text inside the window asks 'Create tidy up process?'. At the bottom, there are two buttons: 'Yes' and 'No'.

4. Press the [No] soft key, if necessary, in order to return to the menu.
5. Press the [Yes] soft key to create a new [Tidy up process] recipe part.
  - ▷ The box is checked and the [Tidy up process] line is grayed out to indicate that this recipe part is being edited.

The screenshot shows a menu titled 'Line' with a user icon and '@admin' in the top right. The menu items are: Recipe name (Super mix), Tidy up process (checked), Recipe line number (1/1), Section (1), Material name (NOP), and Type (No operation). At the bottom, there are buttons: Insert, Material, Delete, Line -, and Line +.

6. Select and confirm the material.

The tidy up process starts after the recipe has been discontinued.

Each working recipe can include a tidy up process and will remain saved.

Tidy up does not generate its own report.

The material used during the tidy up process is included in the report, but is not added to the amount produced and is not recorded in the production report.

7. Press the ESC/EXIT key to finish editing. The changes are saved.

#### 6.2.2.5.4 Delete recipe lines

In this menu item, selected recipe lines are deleted.

1. Use the cursor to select and confirm the desired recipe in the application menu under [Databases]- [Create/edit recipe].

The screenshot shows a menu titled 'Line' with a user icon and '@admin' in the top right. The menu items are: Recipe name (Sugar bread), Tidy up process (unchecked), Recipe line number (2/3), Section (1), Material name (Flour), Set point (1000.0 g), + Tolerance (1 %), - Tolerance (1 %), Add to total of recipe (checked), Relative (checked), and Type (Net filling). At the bottom, there are buttons: Insert, Material, Delete, Line -, and Line +.

2. Use the cursor to highlight [Recipe line number] and select the line to be deleted.

3. Press the [Delete] soft key.

In this example, the 2nd of 3 lines is deleted. The following lines automatically move up by one line.

The last and therefore only line of a recipe cannot be deleted.

4. Press ESC/EXIT to save the changes.

### 6.2.2.5.5 Delete recipe

In this menu item, selected recipes are deleted.

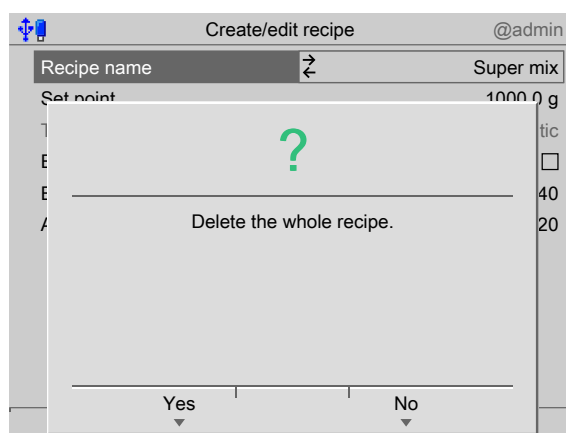
---

**Note:**

Recipes for which an order exists cannot be deleted.

---

1. Using the cursor, select and confirm the desired recipe in the application menu under [Databases]- [Create/edit recipe].
2. Using the cursor, highlight [Recipe name] and select the recipe to be deleted.
3. Press the [Delete] softkey.
  - ▷ A prompt window appears.



4. Press the [No] softkey, if necessary, in order to return to the menu.
5. Press the [Yes] softkey to delete the entry.
  - ▷ The recipe is permanently deleted and the next database entry is displayed.
6. Press the ESC/EXIT key to leave the menu.

### 6.2.2.5.6 Recalculation for manual recipes

Recalculation is only possible for manual recipes. The function is activated for the relevant user category under [Configuration] - [Parameters] - [Recalculate] .

If the material cannot be taken out of the scale again in the event of over-batching (e.g. liquid or small amounts together with other substances), it is sensible to recalculate the recipe in order to restore the proportions.

An order which is in production can be recalculated at any time, however at the latest when the last line is ready.

For operation before the end of the recipe, see Chapter [7](#).

**Example**

Line	Set point	Actual value	Tolerance	Factor	Set point corr	Set point diff	Batching
1	10.00	10.90	1.00	1.000	12.46	1.56	yes
2	5.00	6.23	0.20	1.246	6.23	0.00	no
3	6.00	7.00	0.50	1.167	7.48	0.48	no
4	15.00	14.50	0.20	1.000	18.69	4.19	yes
5	10.00	13.00	3.00	1.000	12.46	-0.54	no
46.00			Max.: 1.246	57.32			

**Procedure:**

- For values above the tolerance, the deviation is calculated as a factor for the recipe lines.  
Within the tolerance the factor is 1.
- The line with the biggest relative deviation is determined as a factor (here line 2 = max. = 1.246).  
Lines which do not have any +Tolerance specification are not considered.
- All set points are multiplied by this factor.  
Lines which do not have any -Tolerance specification are not changed.
- The difference from the set point is calculated for each line in consideration of the previously batched amount.
- If the deviation is bigger than the permitted tolerance then the line will be labeled as incomplete.  
The set point for the correction is the calculated difference.
- All lines that are not complete can be selected for editing (here lines 1 and 4).
- During batching, the batched net weight is added to the current actual value.

This procedure allows for any number of corrections. In the event of over-batching, the total amount of the recipe is enlarged by the appropriate factor on every correction. Only the operator can decide whether a correction is possible and sensible.

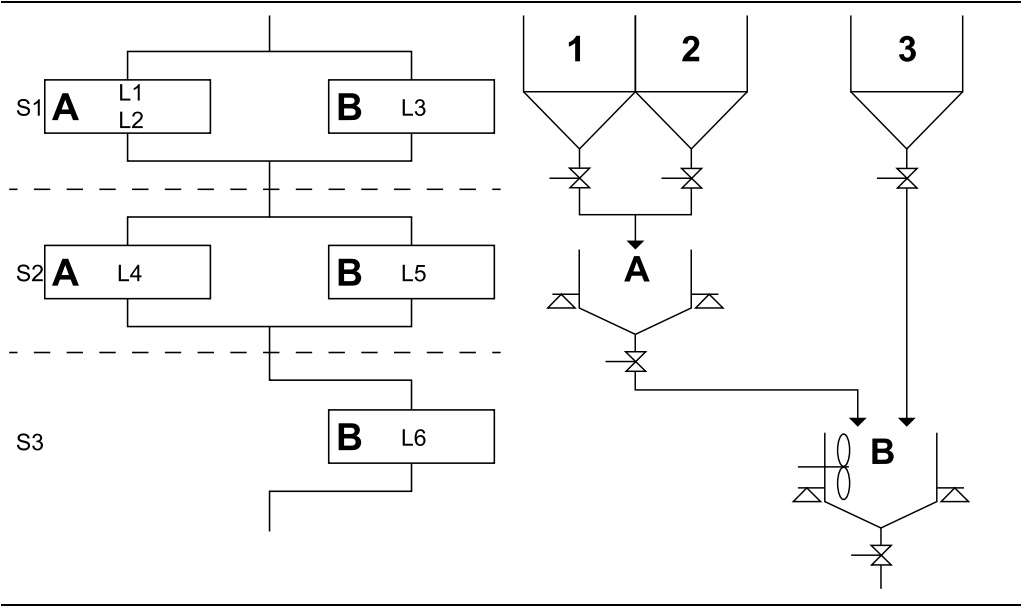
The ticket for the post-batching is labeled as [Recalculated]. It contains the total of all batching for this line along with the batch number of the last material taken.

It is assumed that in the case of line tickets individual drums are filled and that the correction is carried out in the original container. The new ticket therefore contains the new set point and actual value, and can replace the previous ticket. The operator who carried out the correction will be entered as the operator. The start date will be retained. In all cases an entry is made in the report database using the data from the ticket (if configured).

It is assumed that the order ticket is printed when a batch is produced in a container. The correction is carried out in this container. The new ticket therefore contains the new set point and actual value, and can replace the previous ticket. The start date will be retained.

6.2.2.5.7 Recipe controller for automatic recipes

Example



Example Sections		2013.03.25 14:05			
Type		automatic			
Total		4.500 kg			
Changed by		Admin			
Changed on		2013.03.25 14:05			
L	S	# Material	+	Set point %	+ Tolerance -
Tolerance					
1	1	A Product 1	+	1.000 kg %	2 % 2 %
2	1	A Product 2	+	1.500 kg %	2 % 2 %
3	1	B Product 3	+	2.000 kg %	1.5 % 1.5 %
4	2	A Discharge A			
5	2	B Mixing		65 s	
6	3	B Discharge B			

Editing order for the lines of a recipe

Section (S)	Sequentially in the recipe, i.e. all lines in a section need to be processed before the next section can be started.
Scale (A/B)	Within a section, the scales are processed in parallel so batching is carried out simultaneously.
Line (L)	If there are several lines for the same scale within one section then the lines are processed in ascending order one after the other.

If there are several weighing points, the times will not extend as a result of simultaneous processing.

### 6.2.2.5.8 Print recipe

Selected recipes are printed under this menu item.

**Requirements:**

- Printer setup in the system menu under [System setup] - [Connected devices]
  - Printer selection under [Configuration] - [Parameters] - [Report printer]
1. Use the cursor to select and confirm the desired recipe under [Databases] - [Create/edit recipe] in the application menu.

Create/edit recipe		@admin
Recipe name	Sugar bread	
Set point	1500.0 g	
Type	automatic	
Create tidy up process	<input type="checkbox"/>	
Enabled by bit	0	
Activ bit	32	

New Edit Start Delete Print

2. Press the [Print] softkey.
  - ▷ A selection window opens.

**Example 1: Recipe printout**

Printing		@admin
Print data of 'Sugar bread'		
Print a list of all recipes		
Print data of all recipes		
Print last line ticket		
Print last order ticket		
Print last batch report		

3. Select and confirm the appropriate line using the cursor (here: Print data of "Recipe name").
  - ▷ The result is printed.

```

Sugar bread          25.03.2013 16:10:59
Type                  automatic
Total                1500.0 g
Changed by            admin
Changed at            25.03.2013 11:30:41*

  L  S  #Material name      + Set point %      + Tol.    - Tol.
-----
  1  1  A Sanella           + 500.0 g %      1 %      1 %
  2  1  A Flour             + 1000.0 g %     1 %      1 %
  3  1  A Sugar             +   0.0 g %     1 %      1 %
  4  2  B Discharge B
  5  3  D Mixer D              5 s
  6  3  C Discharge C
  7  3  D Discharge D

Execute after aborting:
  1  1  B Discharge B
  2  1  C Discharge C
  3  2  D Discharge D

```

---

\* The change information relates to the most recent line in the recipe. Date/time represent the status of the recipe to which this printout corresponds and the user who produced this status.

---

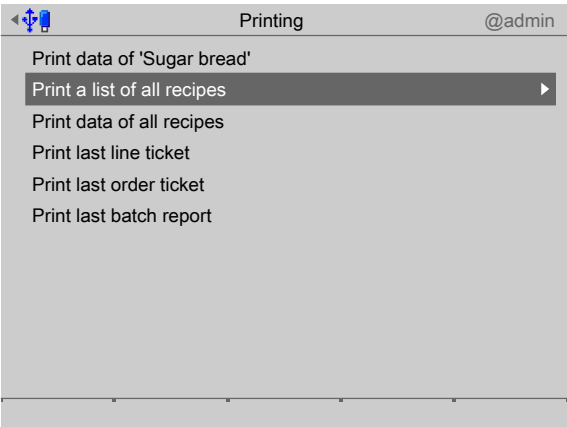
The printing date is next to the recipe name in the header of the printout. The header also contains information about the type, the last set point, the user who last changed the recipe and when this was. Manual recipes also have information about whether recalculation is possible in the header.

Each line contains:

- the line number (L)
- the section (S) – always 1 for manual recipes
- the scale name (#)
- the material name
- the specification (+) whether the recipe line is added to the recipe total during qualification
- the set point for this line
- the specification (%) whether the set point needs to be qualified
- the specification of the permitted tolerance (if possible)



Example 2: List of all recipes



- 4. Select and confirm the appropriate line using the cursor (here: Print the list of all recipes).
- ▷ The result is printed.

Recipe name	2013-03-25-14:48:26.13	Set point	Total
-----			
Almond cake	sequential	300.0 g	0.0 g
Nut ring cake	automatic	1000.0 g	0.0 g
Super mix	= automatic	1000.0 g	0.0 g
Sugar bread	= automatic	1500.0 g	0.0 g

All recipes are listed with their type, the last set point used and the previously produced amount.

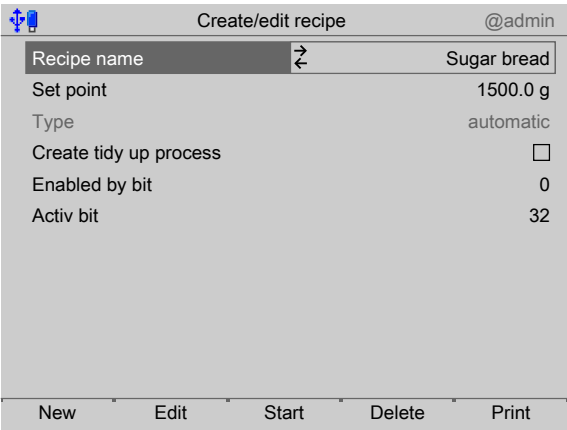
**Note:**

The"=" before the type specification marks recipes which have at least one [Tidy up process] recipe part.

6.2.2.5.9 Test recipe

In this menu item, selected recipes are tested.

- 1. Use the cursor to select and confirm the desired recipe in the application menu under [Databases]- [Create/edit recipe].



2. Press the [Start] soft key.

---

**Note:**

The proposed set point displayed is the total of all line set points entered.

---

## 6.2.3 Order

### 6.2.3.1 General notes

An order contains a reference to a recipe or material. In addition, a material name, comments and the user name are saved according to the configuration.

In the configuration, parameters that are not checked will be faded out in the forms. An order can specify a different target amount than the total materials in the recipe.

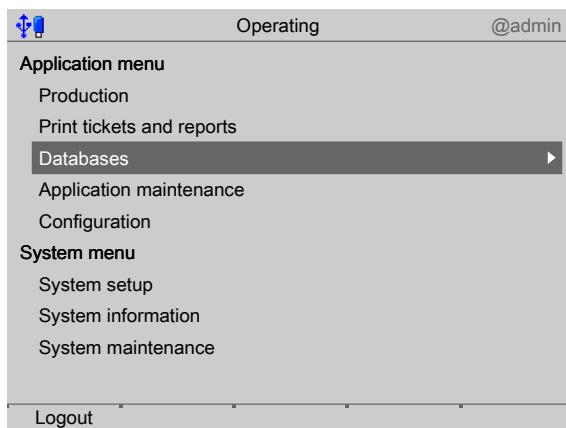
Several orders can refer to the same recipe. If an order has already been started then changes that are subsequently made will no longer have any effect on the recipe.

If they have not been completed, orders will be saved in a database.

The structure of the OPC ORDER database is described in Chapter [9.2.1](#).

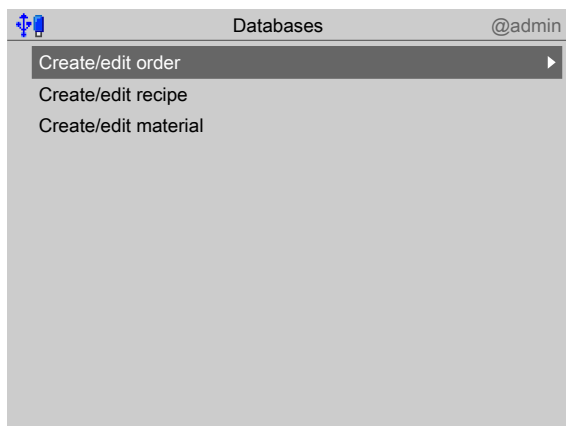
### 6.2.3.2 Create order

In this menu item, orders are created.



1. Using the cursor, select and confirm [Databases].

▷ A selection window opens.



2. Select and confirm [Create/edit order] using the cursor.

▷ A selection window appears with the last order created.

- Press the [New] softkey to create a new entry.

---

**Note:**

If no order has been saved then the [New order] menu will appear automatically.

---

- ▷ A selection window opens.

- Using the cursor, select and confirm the individual parameters.

**[Order name]**

Input: max. 18 alphanumeric characters

---

**Note:**

The field must not be left "empty" and must not include any control commands or quotation marks.

When making the entry it must be considered that the last characters may be abbreviated by the sequence number (min. 4) (e.g. in the event of the direct start of a recipe).

---

**[Product name/Prompt for order]**

Input: max. 18 alphanumeric characters

---

**Note:**

This is only possible if selected under [Configuration]- [Parameters].

---

**[Recipe name]**

The recipe is selected from the recipe database.

---

**Note:**

An order can be created on the basis of a recipe or a material. Switch between these options using the softkeys [Material] and [Recipe].

---

**[Set point]**

Input: recipe/material weight

**[Repeat]**

Input: 1...998 times

**Note:**

If 999 is used, the recipe is set to "infinitely".

**[Material]**

The material is selected from the material database.

**Note:**

An order can be created on the basis of a recipe or a material. Switch between these options using the softkeys [Material] and [Recipe].

If an order is created on the basis of a material, then the selection of the material types is restricted to "Weighing materials" excluding [Discharge] and [Net filling] (see also table in Chapter [6.2.1.3](#)).

5. Press the [Default] softkey to return to the factory settings, if required.
6. Finally, press the [Save] softkey to save the settings.
  - ▷ The recipe header is created and the recipe can be directly edited.

**6.2.3.3 Edit order**

In this menu item, you can edit the orders that have been created.

**Note:**

Only created orders which have not yet been started can be edited.

1. Use the cursor to select and confirm the desired order in the application menu under [Databases]- [Create/edit order].

Create/edit order		@admin
Order name	2013-03-25 GAK	
Product name	Almond cake	
Set point	1000.0 g	
Recipe name	Super mix	
Type	automatic	
No. correct?	Ok	

New Start Delete Print

2. Using the cursor, select, change and confirm the individual parameters.

**[Product name/Prompt for order]**

Input: max. 18 alphanumeric characters

**Note:**

This is only possible if selected under [Configuration]- [Parameters].

**[Set point]**

Input: recipe/material weight

3. Press the ESC/EXIT key to finish editing. The changes are saved.

**6.2.3.4 Delete order**

In this menu item, selected orders are deleted.

1. Use the cursor to select and confirm the desired order in the application menu under [Databases]- [Create/edit order].

The screenshot shows a menu titled 'Create/edit order' with a user icon and '@admin' in the top right. The menu contains the following fields and values:

Order name	2013-03-25 GAK
Product name	Almond cake
Set point	1000.0 g
Recipe name	Super mix
Type	automatic
No. correct?	Ok

At the bottom of the menu are four buttons: 'New', 'Start', 'Delete', and 'Print'.

2. Press the [Delete] softkey.
  - ▷ A prompt window appears.

The screenshot shows a prompt window titled 'Delete order.' with a large green question mark at the top. The text inside the window reads:

Delete order.:  
'2013-03-25 GAK'

At the bottom of the window are two buttons: 'Yes' and 'No'.

3. Press the [No] softkey, if necessary, in order to return to the menu.
4. Press the [Yes] softkey to delete the entry.
  - ▷ The order is permanently deleted and the next database entry is displayed.
5. Press the ESC/EXIT key to leave the menu.

### 6.2.3.5 Print order

In this menu item, selected orders are printed.

#### Requirements:

- Printer setup in the system menu under [System setup]- [Connected devices]
  - Printer selection under [Configuration]- [Parameters]- [Report printer]
1. Use the cursor to select and confirm the desired order in the application menu under [Databases]- [Create/edit order].

Create/edit order		@admin
Order name	2013-03-25 GAK	
Product name	Almond cake	
Set point	1000.0 g	
Recipe name	Super mix	
Type	automatic	
No. correct?	Ok	

New Start Delete Print

2. Press the [Print] softkey.
  - ▷ A selection window opens.

#### Example 1: Individual ticket

Printing		@admin
Print data of '2013-02-26 Day'		
Print a list of all orders		
Print data of all orders		
Print last line ticket		
Print last order ticket		
Print last batch report		

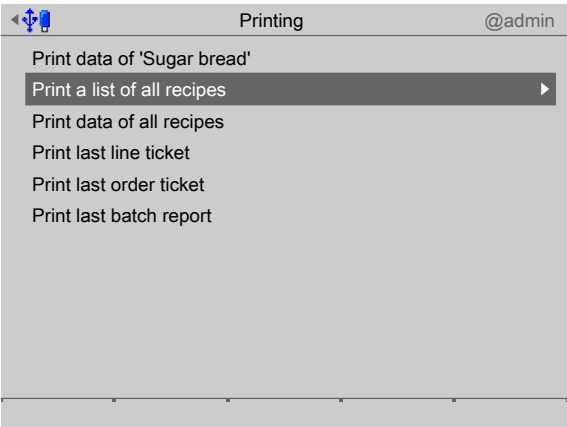
New Start Delete Print

3. Using the cursor, select and confirm the relevant line (here: Print data of "Order name").
  - ▷ The result is printed.

```

2013-02-26 Day      03/26/2013 13:04:37
Changed by          admin
Changed at          02/26/2013 09:54:58
-----
Material name       Sugar
Product name
Set point           300.0 g
In progress...     No
  
```

Example 2: List of all orders



4. Using the cursor, select and confirm the relevant line (here: Print the list of all orders).  
▷ The result is printed.

* Order name	03/26/2013 12:52:28
-----	
2013-02-26 Evening	1000.0 g
2013-02-26 Morning	1000.0 g
2013-02-26 Day	300.0 g
2013-03-25 GAK	1000.0 g

All available orders are listed with the date they were created and set point.

---

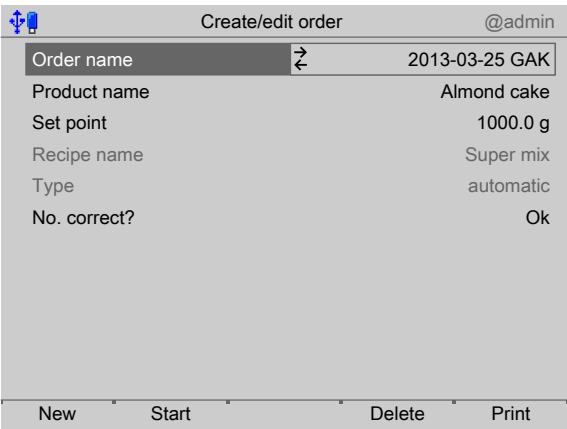
\* The asterisk indicates that an order has already been started but is not yet complete.

---

6.2.3.6 Test order

In this menu item, selected orders are tested.

1. Use the cursor to select and confirm the desired order in the application menu under [Databases]- [Create/edit order].



2. Press the [Start] soft key.

## 6.3 Application maintenance

### 6.3.1 General notes

---

**Note:**

Application maintenance can only be performed if a user of category "Supervisor" or "Administrator" is logged in.

---

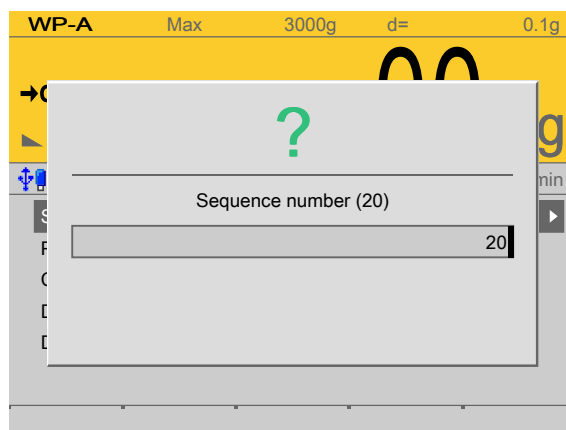
Material movements are recorded in the production and consumption report. According to the configuration, database entries are created after each order is processed. They are intended for transfer to AccessIt and, if necessary, will have to be deleted manually. This also applies for printing data which cannot be transferred to the printer.

### 6.3.2 Set sequence number

The sequence number is increased by each process (processing of an order). This number to be entered can be between 1 and 100000. During production, the sequence number can go up to a maximum of 999999.

When this function is called up, the highest sequence number is searched for in the databases. The value to be entered must be greater than this in order to ensure unique database entries.

1. In the application menu, under [Application maintenance], use the cursor to select and confirm the [Set sequence number?] menu item.
  - ▷ An input window appears.



2. Enter and confirm a number between 1 and 999999 using the keypad.
  - ▷ The new number is displayed and is used to identify the next operation.

---

**Note:**

Only if there is no pre-existing order, the database REPORT is empty and no printout is waiting on the printer can the sequence number be set to 1.

---

3. Press the ESC/EXIT key to leave the menu.



### 6.3.3 Production report

In this menu item, a production report is printed.

1. In the application menu, under [Application maintenance], use the cursor to select and confirm the [Production report] menu item.  
▷ A selection window opens.

Recipe name	Production
Almond cake	0.0 g

#### [Delete]

The amount of the recipe displayed under [Production] is deleted.

#### [All]

After a security prompt, the amounts for all recipes produced are deleted.

2. Press the [Print] softkey.  
▷ A printout will be produced via the report printer.

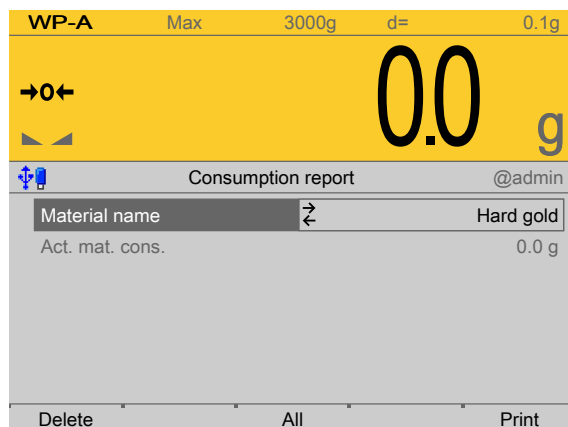
Production	03/26/2013 14:25:30
Recipe name	Production
-----	
Almond cake	0.0 g
Nut ring cake	0.0 g
Super mix	0.0 g
Sugar bread	0.0 g

3. Press the ESC/EXIT key to leave the menu.

### 6.3.4 Consumption report

In this menu item, a consumption report is printed.

1. In the application menu, under [Application maintenance], use the cursor to select and confirm the [Consumption report] menu item.  
▷ A selection window opens.

**[Delete]**

The amount of material displayed under [Act. mat. cons.] is deleted.

**[All]**

After a security prompt, the amounts of all materials consumed are deleted.

2. Press the [Print] softkey.

▷ A printout will be produced via the report printer.

```

Act. Mat. Cons.      03/26/2013 14:51:27

Material name      Act. Mat. Cons.
-----
Hard gold          0.0 g
Flour              0.0 g
Sannella           0.0 g
Sugar              0.0 g
  
```

3. Press the ESC/EXIT key to leave the menu.

### 6.3.5 Clear database reports

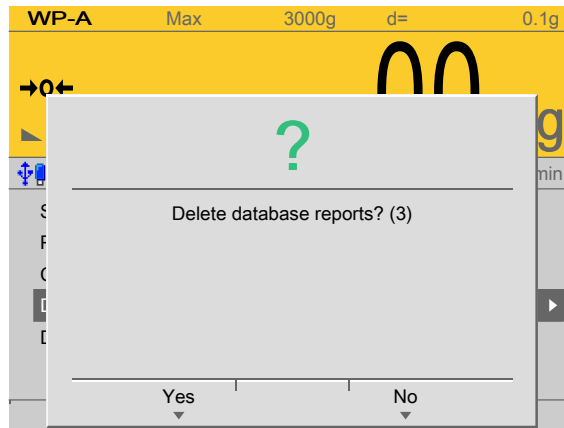
In this menu item, database reports are deleted.

The "Administrator" user category can also delete the relevant database (REPORT). If necessary, the function will have to be deactivated under [Configuration]- [Parameters]- [Store report in database].

1. In the application menu, under [Application maintenance], use the cursor to select and confirm the [Clear database reports?] menu item.

▷ A prompt window appears.

The number of datasets is given in parentheses.



2. Press the [No] softkey, if necessary, in order to return to the menu.
3. Press the [Yes] softkey to delete the entry.
  - ▷ The reports are permanently deleted.
4. Press the ESC/EXIT key to leave the menu.

### 6.3.6 Clear printer buffer

In this menu item, the printer buffer is deleted.

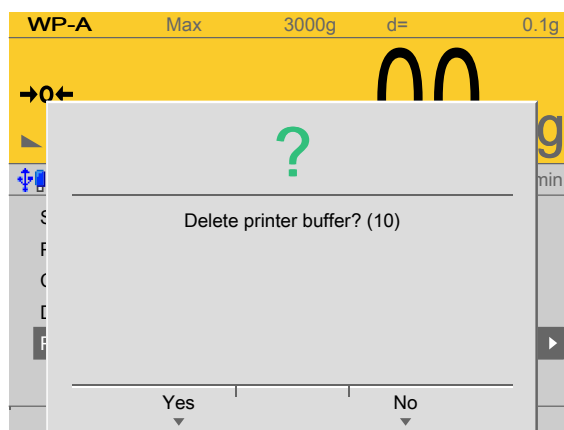
Batch reports are initially entered into a database (SPL) ready to be sent to the printer as part of a background process. An attempt is made by the printer buffer to start printing every second, without a time limit.

If the printer buffer is not able to print due to incorrect configuration of the interface, the reports build up and fill the memory unnecessarily.

The "Administrator" user category can clear the printer buffer.

1. In the application menu, under [Application maintenance], use the cursor to select and confirm the [Clear printer buffer?] menu item.
  - ▷ A prompt window appears.

The number of datasets is given in parentheses.



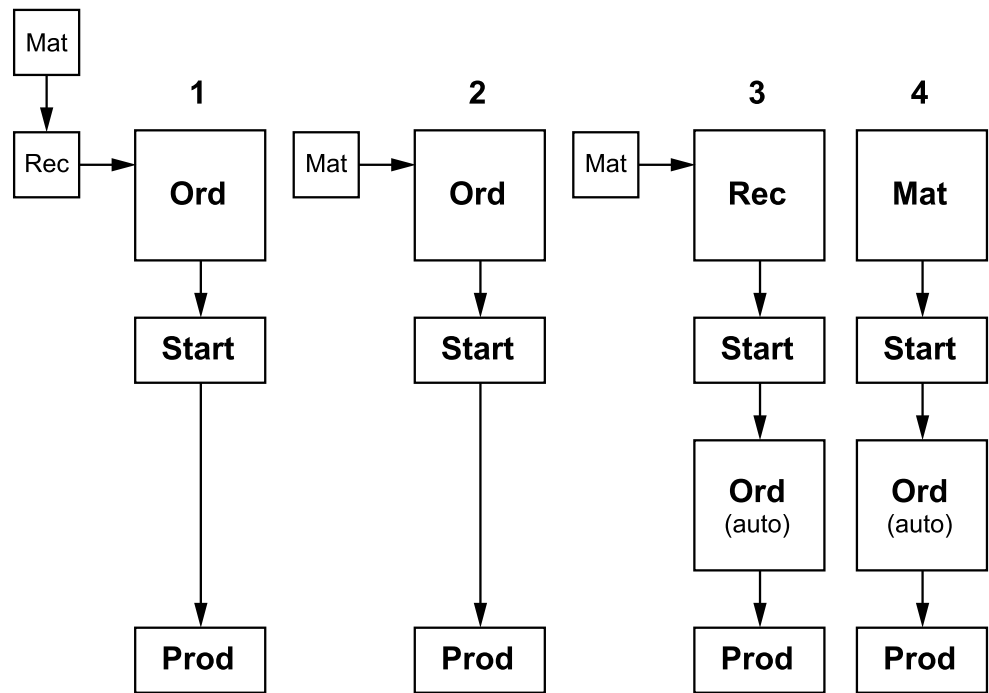
2. Press the [No] softkey, if necessary, in order to return to the menu.
3. Press the [Yes] softkey to delete the entry.
  - ▷ The datasets are permanently deleted.
4. Press the ESC/EXIT key to leave the menu.

6.4 Production

6.4.1 General notes

The following production modes are available:

- Start order (see Chapter 6.4.2)
- Start recipe (see Chapter 6.4.3)
- Batch single material (see Chapter 6.4.4)
- Remote start via digital inputs (see Chapter 6.4.5)
- Remote start via communication (see Chapter 6.4.6)



Code	Identifier	Code	Identifier
Mat	Material	Start	Start
Rec	Recipe	Prd	Production
Ord (auto)	Order (autom.)		

An order can be generated and started on the basis of a recipe (1) or material (2).

A recipe (3) or material (4) can also be started directly. An order is then created automatically.

The methods for starting can be activated under [Configuration] - [Parameters] , see Chapter 5.4.6.

A selection window opens.

### 6.4.2 Start order

The order must have been created before the start.

1. Select and confirm [Production]-[Start order] using the cursor.

▷ A selection window opens.

2. Select and confirm the relevant order (see also Chapters [6.2.3.2](#)/[6.2.3.3](#)) using the cursor.
3. Press the [New] soft key if necessary in order to create a new order. For entries see Chapters [6.2.3.2](#)/[6.2.3.3](#).
4. If necessary, change the set point.
5. If necessary, press the [Delete] soft key to delete the order.
6. Press the [Start] soft key to start the order processing.
 

▷ The order window appears.

WP-A		Max	3000g	d=	0.1g
—		0.2 g			
Order name	2013-02-26 Evening				
Recipe name	Almond cake				
Recipe line number	2				
Material name	Flour				
Scale name	Weighing point A				
Set point	1000.0 g				
Start		Recalculate		Print	

7. Press the [Start] soft key to actually start the order processing.
8. If necessary, press the [Recalculate] soft key to perform a recalculation, see Chapter [6.2.2.5.6](#).
9. If necessary, press the [Print] soft key.
  - ▷ A selection window opens.

WP-A		Max	3000g	d=	0.1g
→0←		0.0 g			
Printing		@admin			
Print data of '2013-02-26 Evening'					
Print a list of all orders					
Print data of all orders					
Print last line ticket					
Print last order ticket					
Print last batch report					

10. Select and confirm the relevant line using the cursor, see also Chapter [6.2.3.5](#).

### 6.4.3 Start recipe

A recipe can be started without an order previously having been produced on the basis of this recipe.

1. Select and confirm [Production]-[Start recipe] using the cursor.
  - ▷ A selection window opens.

WP-A		Max	3000g	d=	0.1g
→0←		0.0 g			
Start recipe		@admin			
Recipe name	Nut ring cake				
Product name					
Order name	Nut ring cake~020				
Set point	1000.0 g				
Repeat	1 times				
Type	automatic				
Start		Order		Print	

2. Select and confirm the relevant recipe (see also Chapter [6.2.2.5.1/6.2.2.5.2](#)) using the cursor.
  - ▷ The name of the order is formed from the recipe name and the sequence number (here: 020).

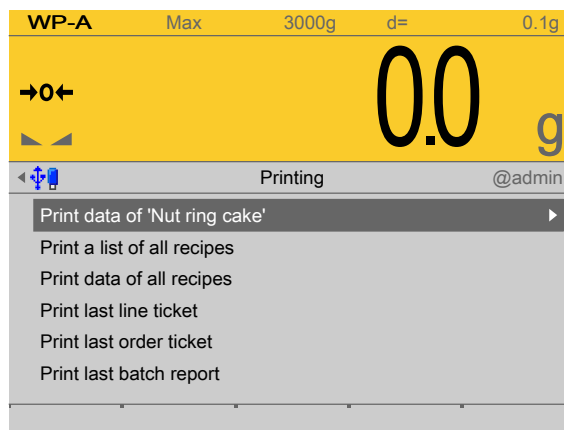
The type is determined by the recipe.

3. If necessary, change the set point.
4. If necessary, change the number of repetitions.

For automatic recipes, there can be 1...998 entries. If 999 is used, the recipe is set to "infinitely".

There will be a prompt for the "Enabled by bit" before the start of each batch.

5. Press the [Start] soft key to start the order processing.
6. Press the [Order] soft key to start an order from the database.
7. If necessary, press the [Print] soft key.
  - ▷ A selection window opens.



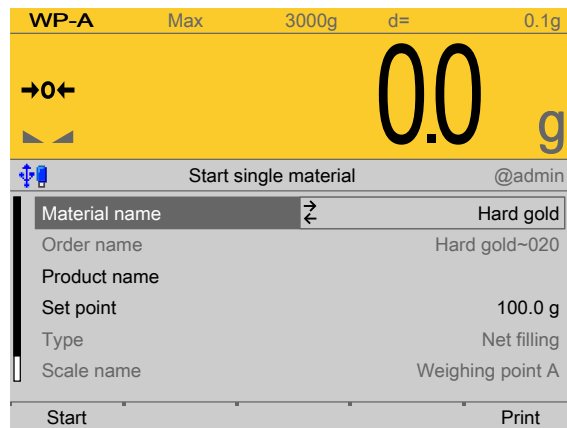
8. Select and confirm the relevant line using the cursor, see also Chapter [6.2.2.5.8](#).

#### 6.4.4 Start material

A single material can be started without a recipe or an order previously having been produced on the basis of this material.

The function is limited to materials which are batched according to the set point, for table see Chapter [6.2.1.3](#). A temporary recipe and a temporary order are created. Both of them are given the name of the material with the sequence number added.

1. Select and confirm [Production]-[Start single material] using the cursor.
  - ▷ A selection window opens.



2. Select and confirm the relevant material (see also Chapter [6.2.1.5](#)/[6.2.1.6](#)) using the cursor.

▷ The name of the order is formed from the material name and the sequence number (here: 020).

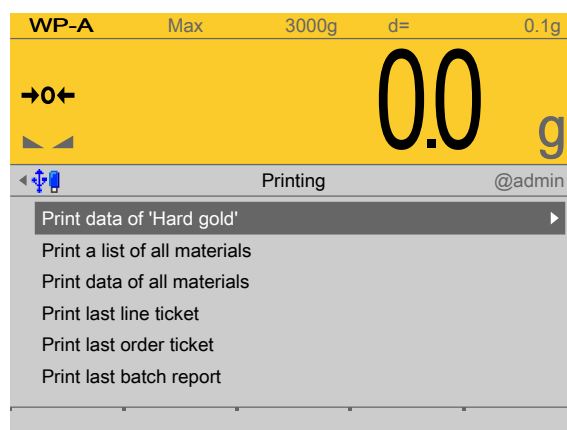
The type and the scale name are determined by the material.

3. If necessary, change the set point.

If the material has already been directly started once before, then the previous value is displayed as a suggestion. If a change is made then the new value is stored in the material database.

4. Press the [Start] soft key to start the order processing.
5. If necessary, press the [Print] soft key.

▷ A selection window opens.



6. Select and confirm the relevant line using the cursor, see also Chapter [6.2.1.9](#).

#### 6.4.5 Remote start via digital inputs

Eight different recipes (or the same one with different set points) can each be assigned an input. This input (rising edge) then starts the assigned recipe. This function must be previously activated under [Configuration] - [Parameters].

An example for a remote start is shown below.

##### Requirements:

All materials and recipes must be available in the database of the PR 5900.



### 6.4.5.1 Example: Start recipes via digital inputs

---

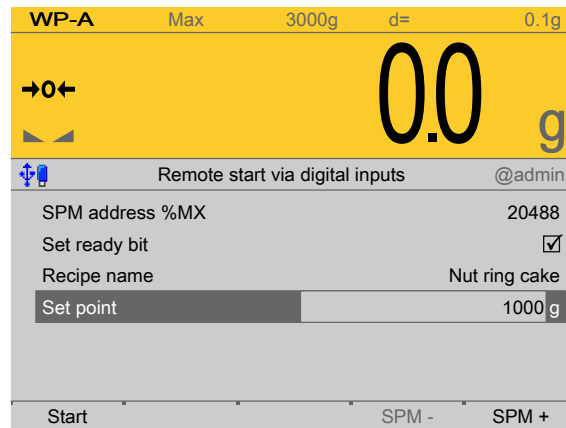
**Note:**

SPM addresses, see Chapter [12.10](#).

---

**Procedure:**

1. Use the cursor to select and confirm [Production]-[Remote start via digital inputs].  
 ▷ A selection window opens.



2. Use the cursor to select [SPM address %MX] and use the keyboard to enter a free SPM address (MX20488...20495, rising edge) for the start of the corresponding recipe (or use the [SPM +]/[SPM -] softkeys to select one).
3. Use the cursor to select and confirm [Set ready bit] to activate the SPM address.
4. Select recipe name and enter set point.
5. Configure all inputs to be used.
6. Press the [Start] softkey to go into standby for a start.

### 6.4.6 Remote start via communication

Selected recipes may be started via communication (e.g. OPC, ModBus, field bus).  
 An example for a remote start is shown below.

**Requirements:**

All materials and recipes must be available in the database of the PR 5900.

- Use the cursor to select and confirm [Production]-[Start recipe].

▷ A window opens.



#### 6.4.6.1 Example: Start recipes via communication

##### Note:

SPM address, see Chapter [12.10](#).

1. Write the recipe names to SPM addresses B2592...2609.
2. Write the recipe set point to SPM address D653.
3. Write the number of batches to SPM address D660.
4. Write SPM address X20528 (rising edge) in order to load the selected recipe.
5. Check whether this recipe name could be loaded.
  - ▷ The error status (SPM address B2567) must be 0.

The last error status is retained and must be reset with SPM address X20514.
6. Start the process with SPM address X20512 (Start/restart, rising edge).
7. Check whether the process has been started with the specified values.
  - ▷ The error status (SPM address B2567) must be 0.
8. If the start parameters are unchanged, restart the process with SPM address X20512 (Start/restart, rising edge).

#### 6.4.6.2 Filling status and checking for the process

The filling status and the checking for the whole process are available via SPM addresses B2560...2567, see Chapter [12.10](#).

The status information of all weighing points is available in bundled form via SPM addresses B2568...2575, see Chapter [12.10](#).

The status information of all weighing points is available individually via SPM addresses B4...7 (see Chapter [12.4](#)), B516...519 (see Chapter [12.5](#)), B1028...1031 (see Chapter [12.6](#)), B1540...1543 (see Chapter [12.7](#)).

**6.4.6.3 Filling reports**

The report data from the last executed process can be read in SPM addresses D726...733 and B2936.

If process status X20480 is active, the process is complete and the report data has been updated.

---

**Note:**

SPM address, see Chapter [12.10](#).

---

## 7 Operation and visualization of the recipes

### 7.1 General information

There are two types of visualization:

- Recipe view for automatically running recipes.
- Scale view for the batching of individual materials in automatic and manual recipes.

The different types require a different operation.

While production is running, the last batch report can be printed using the



button.

### 7.2 Free choice recipes

A free choice recipe allows the user to process the lines of the recipe in any order.

The user selects each line individually. One line of the recipe is processed at a time. The processing can be interrupted at any point.

Interrupted orders will be labeled as "In progress". An interrupted order can be continued later on, even if other orders have been processed in the meantime (see also Chapter [6.2.2.4.1](#)).

1. Use the cursor to select and confirm [Production]-[Start order].

▷ A selection window opens.



2. Use the cursor to select and confirm the relevant order (see also Chapter [6.2.3.2/6.2.3.3](#)).
3. Press the [New] softkey to create a new order, if required. For entries see Chapter [6.2.3.2/6.2.3.3](#).
4. If necessary, change the set point.
5. Press the [Delete] softkey to delete the order, if required.
6. Press the [Start] softkey.
  - ▷ A selection window opens.

7. Press the [Line +]/[Line -] softkey to select the line to be processed.
8. Press the [Start] softkey to carry out the batching line by line.
9. If necessary, press the [Recalc.] softkey to start a recalculation, see also Chapter [6.2.2.5.6](#).

### 7.3 Sequential recipes

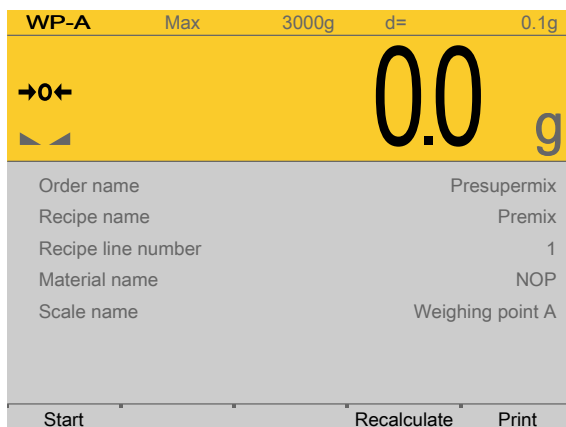
A sequential recipe forces the user to process the lines in the specified order.

The user must also approve each line for processing. One line of the recipe is processed at a time. The processing can be interrupted at any point.

Interrupted orders will be labeled as "In progress". An interrupted order can be continued later on, even if other orders have been processed in the meantime (see also Chapter [6.2.2.4.2](#)).


1. Select and confirm [Production]-[Start order] using the cursor.
  - ▷ A selection window opens.

2. Select and confirm the relevant order (see also Chapters [6.2.3.2](#)/[6.2.3.3](#)) using the cursor.
3. Press the [New] soft key if necessary in order to create a new order. For entries see Chapters [6.2.3.2](#)/[6.2.3.3](#).
4. If necessary, change the set point.
5. If necessary, press the [Delete] soft key to delete the order.
6. Press the [Start] soft key.
  - ▷ A selection window opens.



7. If necessary, press the [Recalculate] soft key to carry out a recalculation, see Chapter [6.2.2.5.6](#).
8. Press the [Start] soft key to carry out processing from line 1 to line n.

#### Note:

If it has been defined that the scale can be selected for the material, the  key can be used to switch between options.

## 7.4 Automatic recipes

An automatic recipe is processed in the order of the recipe.

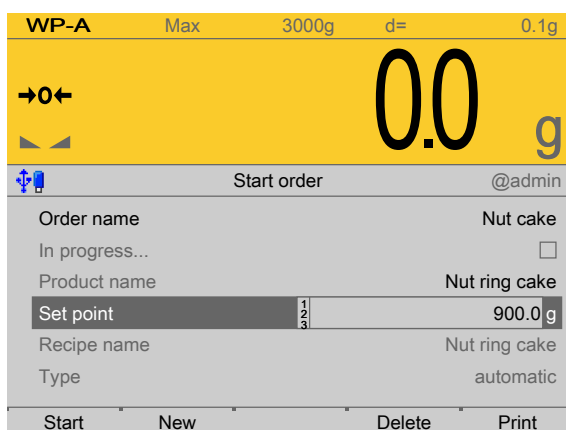
If necessary, interaction with the operator can take place during processing for "control materials" and release signals. The order and the dependencies of the production steps are saved in the recipe.

The operator can hold, continue or prematurely terminate the recipe. It is not possible to continue an order that has been interrupted at a later date.

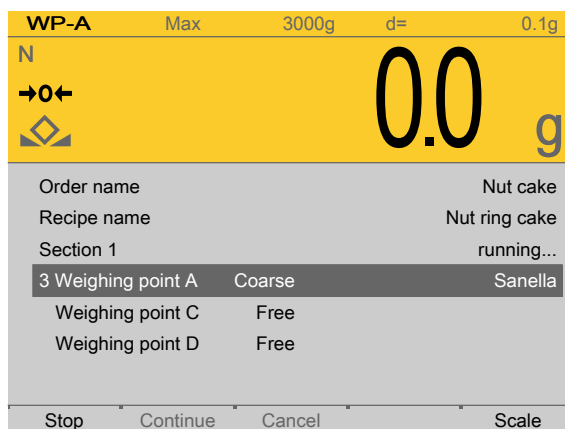
The **STOP** key is used to stop all scales irrespective of the current operation (see also Chapter [6.2.2.4.3](#)). For details on the recipes, see Chapter [6.2.2](#).

In the recipe view, the last batch report can be printed using the  button.

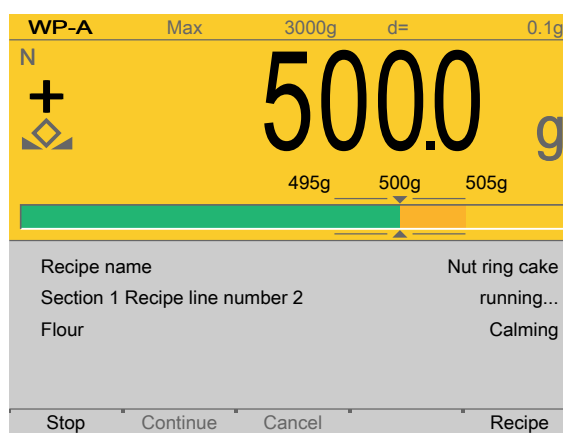
1. Select and confirm [Production]-[Start order] using the cursor.
  - ▷ A selection window opens.



2. Select and confirm the relevant order (see also Chapters [6.2.3.2](#)/[6.2.3.3](#)) using the cursor.
  3. Press the [New] soft key if necessary in order to create a new order. For entries see Chapters [6.2.3.2](#)/[6.2.3.3](#).
  4. If necessary, change the set point.
  5. If necessary, press the [Delete] soft key to delete the order.
  6. Press the [Start] soft key.
- ▷ The recipe view appears.



7. Press the [Scale] soft key.
- ▷ The current scale is visualized.



The bar graph shows the set point with tolerance limits.

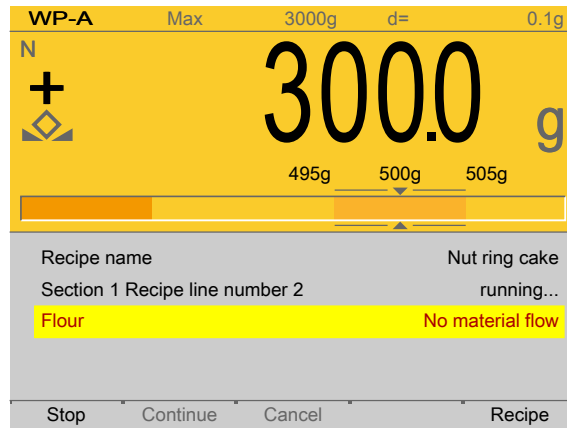
When within the tolerance, the bar turns green.

The diamond under the plus or minus sign for the current weight indicates batching operation.

#### 7.4.1 Material flow monitoring

If the flow monitoring for a material under [Database] - [Create/edit material] - [Material flow] is not equal to 0 (activated), the row will be marked in yellow if the value specified for the corresponding scale is not met.

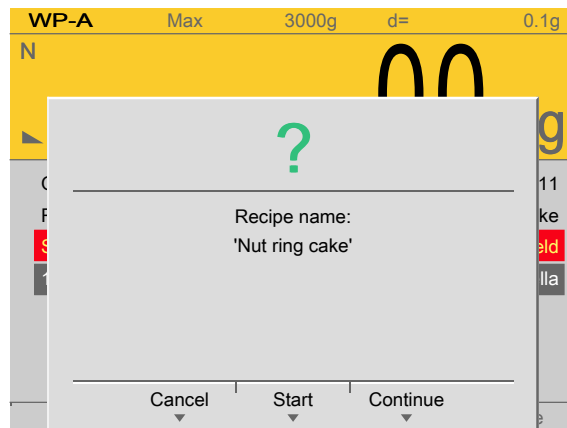
The signals for the coarse/fine control continue to be pending (batching continues) (see also Chapter [6.2.1.4.3](#)).



The line is marked in yellow.

### 7.4.2 Tidy up process

If an automatic recipe is interrupted by the tidy up process (see Chapter [6.2.2.5.3](#)) (e.g. via [Stop] and [Cancel]), then this message will appear.



#### [Cancel]

The recipe and the tidy up process will be canceled.

#### [Start]

The tidy up process will be started.

#### [Continue]

The tidy up process will not be started and the recipe will be continued.



### 7.4.3 Recipe repetition

Automatic recipes can be repeated automatically up to 998 times. If 999 is entered, the recipe will run "infinitely".

1. Select and confirm [Production]-[Start recipe] using the cursor.

▷ A selection window opens.

WP-A		Max	3000g	d=	0.1g
→0←		0.0 g			
Start recipe @admin					
Recipe name		Nut ring cake			
Product name		Nut ring cake			
Order name		Nut ring cake~039			
Set point		900.0 g			
Repeat		999 times			
Type		automatic			
Start		Active		Print	

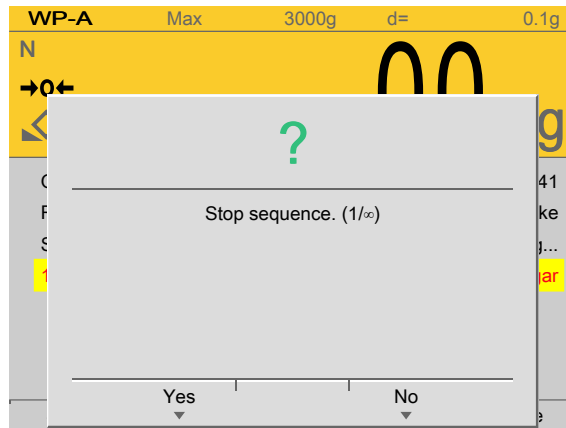
2. Select and confirm the relevant recipe (see also Chapter [6.2.2.5.1](#)/[6.2.2.5.2](#)) using the cursor.
3. If necessary, change the set point.
4. Use the keypad to enter the number of repetitions.
5. Press the [Start] soft key to start the order processing.

▷ A recipe view appears.

WP-A		Max	3000g	d=	0.1g
→0←		0.0 g			
Order name: Nut cake~041					
Recipe name (1/∞): Nut ring cake					
Section 1: running...					
1 Weighing point A		Reply		Sugar	
Weighing point C		Free			
Weighing point D		Free			
Stop		Continue		Cancel	
Reset		Scale			

6. Press the [Reset] soft key if the number entered is not the number of repetitions.

▷ A prompt window appears.




7. Press the [Yes] soft key to reset the number of repetitions.  
No action will be carried out if [No] is selected.
8. If necessary, press the [Stop] soft key to stop the batching process.
9. Press the [Continue] soft key to continue the batching process.

## 8 Operation and visualization of the scales

### 8.1 General information

The visualization of the scale is not dependent on the type of recipe produced. In the case of automatically processed recipes, the [Recipe] soft key can be used to switch to the recipe view and the [Scale] soft key can be used to switch back to the scale view.

The visualized data and the possible/necessary operation depend on the current process. There are 5 basic types. Information on the materials can be found in Chapter [6.2.1.3](#).

While production is running, the last batch report can be printed using the  button in the scale view.

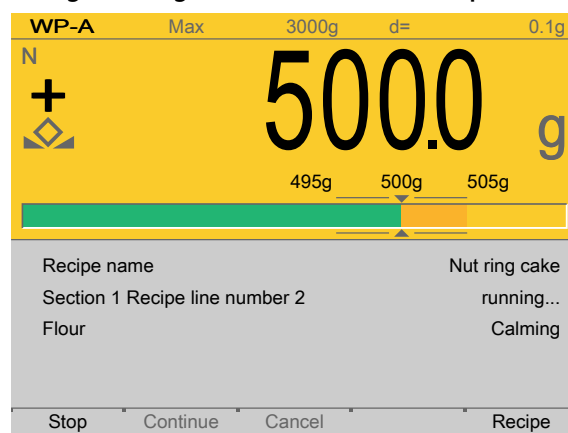
### 8.2 Bar graph and tolerance field

In the case of both automatic and manual batching, a bar graph appears over the weight display, which is always scaled to the set point for the current material.

The tolerance field is labeled and is always the same width irrespective of the absolute value. The set point is marked using 2 triangles and is always (even if the tolerance is not symmetrical) in the middle of the field.

As soon as the tolerance field is reached, the color changes from orange to green. If the field is exceeded, the bar graph becomes red.

If both tolerance values are set to 0, then no tolerance field is displayed and the bar graph changes from green to red when the set point is exceeded.



Set point: 500 g

Lower tolerance: 5 g

Upper tolerance: 5 g

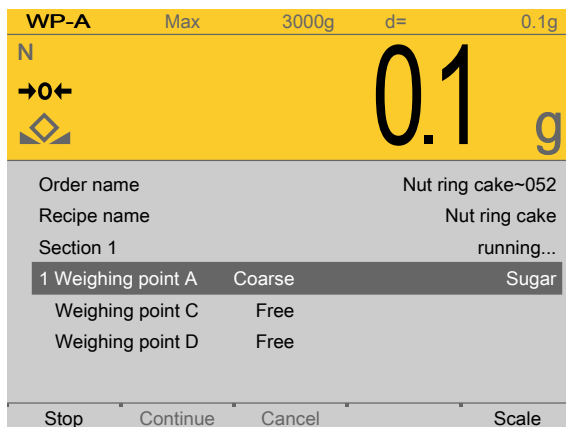
### 8.3 No operation and visualization (NOP)

The material [NOP] is only designed as a placeholder. If it is nonetheless used, it does not require any operation and is not visualized. After approx. 200 ms the system switches to the next material.

### 8.4 Automatic materials

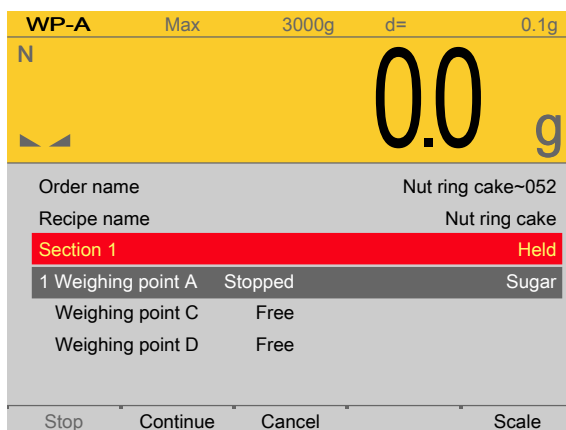
Automatic batching is valid for the material types [Net filling], [Net refilling], [Net decrease], [Gross filling] and [Gross decrease].

1. Press the [Recipe] soft key to change to the recipe view.
  - ▷ The statuses coarse, followed by fine, calming, ready and free, are displayed.



2. If the [Stop] soft key is pressed:
  - ▷ The message [Held] appears.

Correspondingly, if the tolerance is exceeded, the [Tolerance alarm] message appears.



If several scales are batching at the same time, only this recipe line will be held and the others will continue.

The material displays the status [Held] or [Tolerance alarm].

The signals [Coarse]/[Fine] are reset.

3. Press the [Continue] soft key to continue batching or accept/post-batch the tolerance (depending on the restart mode), see also Chapter [6.2.1.4.3](#).
4. If the [Cancel] soft key is pressed:
  - ▷ The material recorded up until that point will be registered and the next line of the recipe will be started.
5. If the material [Timer] is held with [Stop]:
  - ▷ The time is frozen.
6. If the [Continue] soft key is pressed:
  - ▷ The time that had not previously expired will be caught up.
7. If the [Cancel] soft key is pressed:
  - ▷ The timer will be terminated prematurely.

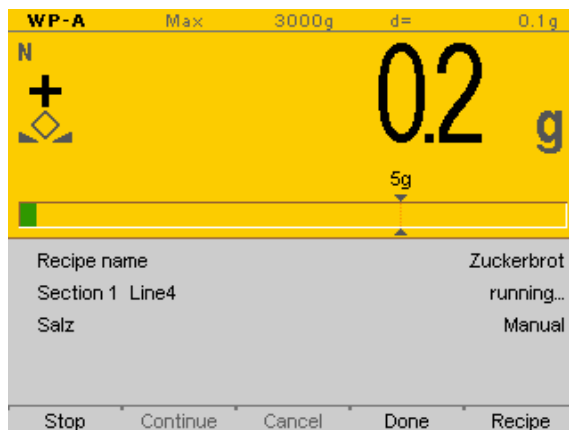
If the material flow monitoring is activated, then a warning will appear that cannot be acknowledged.

Batching will continue, see also Chapter [7.4.1](#).

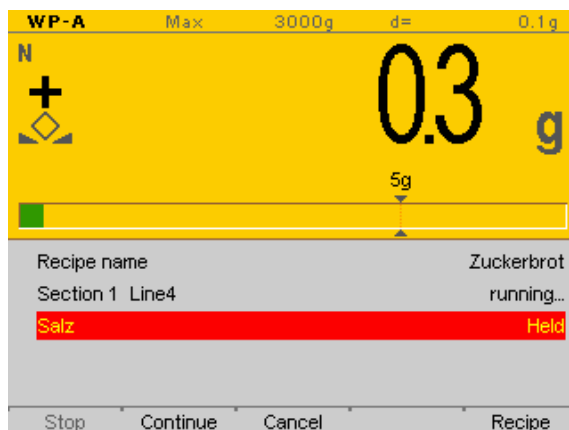
## 8.5 Manual materials

In the case of manual materials [Manual filling] and [Manual filling, no check], it is assumed in automatic recipes that the scale is tared at the time of display.

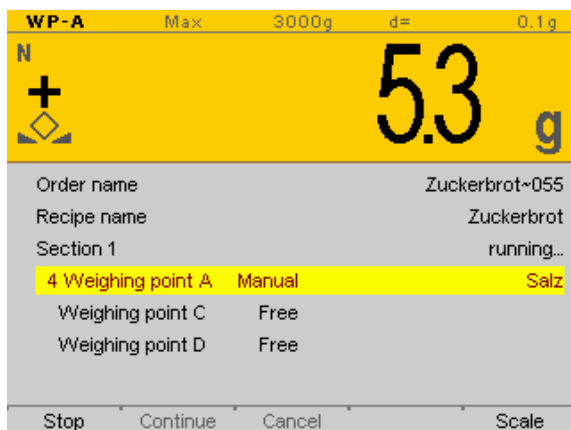
In the case of the manual recipe types [sequential] and [free choice], taring is carried out at the start of the recipe line.



1. Press the [Stop] soft key to hold the batching.
  - ▷ The message [Held] appears. The line is marked in red.



2. Material can be removed and the [Continue] soft key pressed in order to continue.
3. If the [Cancel] soft key is pressed:
  - ▷ The line will be closed.
4. If necessary, press the [Recipe] soft key to change to the recipe view.



The line highlighted in yellow is then displayed if operator intervention is required.

Depending on the material and the configuration, at this point it is possible e.g. to check identification or hold a dialog.

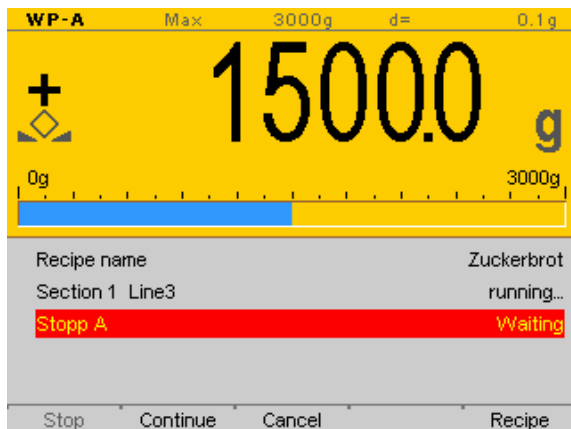
5. Press the [Scale] soft key to switch to the scale view.
6. Press the [Done] soft key to confirm that batching is complete.

## 8.6 Components for the control of the process sequence

For the material types [Stop], [Wait for SPM], [Set SPM], [Reset SPM], [Wait + reset SPM], [Analog input] and [Analog output], no/few parameters are displayed, e.g. no set point or no tolerance.

These material types are components which control the process.

1. Press the [Start] soft key to start the batching.
  - ▷ The automatic batching stops (here: material [Stop]). The line is marked in red.

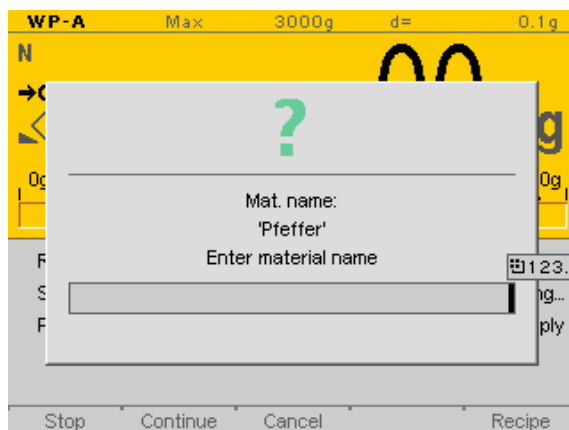


2. Press the [Continue] soft key to continue the batching.

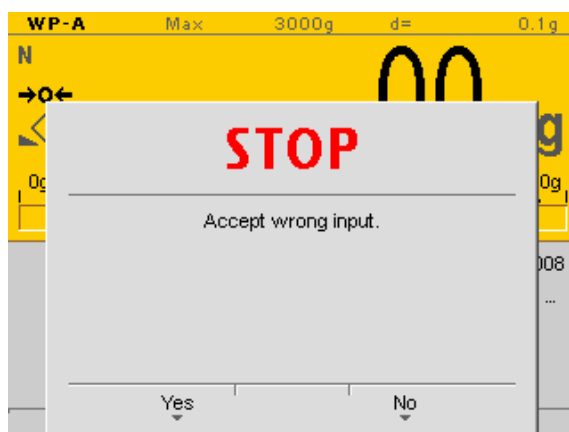
## 8.7 Dialog

This parameter is used for the material types [Register] and [Dialog].

If [Check ident] is activated when creating the material, an input window appears.

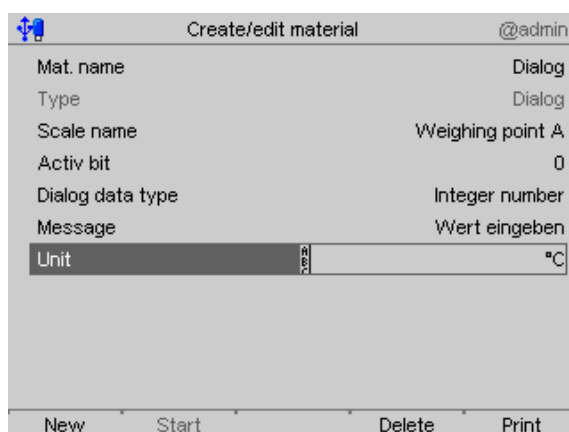


1. Enter/scan in the material name/ID and confirm.
  - ▷ If the input is incorrect, a prompt window appears.

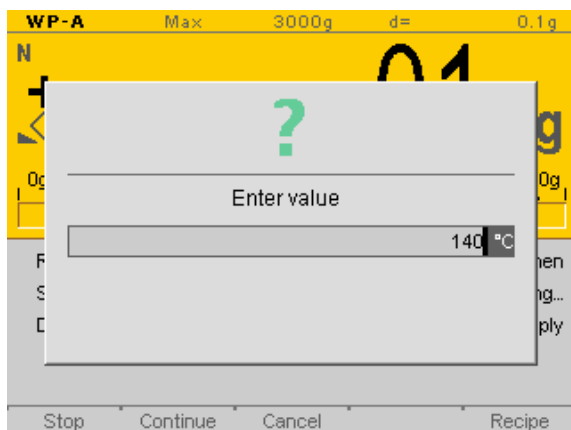


2. Press the soft key [Yes] in order to include the incorrect entry in the report.
3. Press the soft key [No] in order to query the material name again.
4. Perform the weighing operation.

The [Dialog data type] parameter has several options, see Chapter [4.3.3](#).



5. E.g. select and confirm [Integer number] in [Dialog data type].
6. Enter and confirm the text under [Message].
7. Select and confirm the relevant unit under [Unit].
  - ▷ The dialog appears in the recipe cycle.



#### 8. Enter the value using the keypad and confirm.

If the display is set to another scale in a dialog function, then the [Recipe] soft key is highlighted in yellow in order to signal to the operator that the [Recipe] soft key must be

used to switch to the recipe view or that the  button must be used to switch scale.

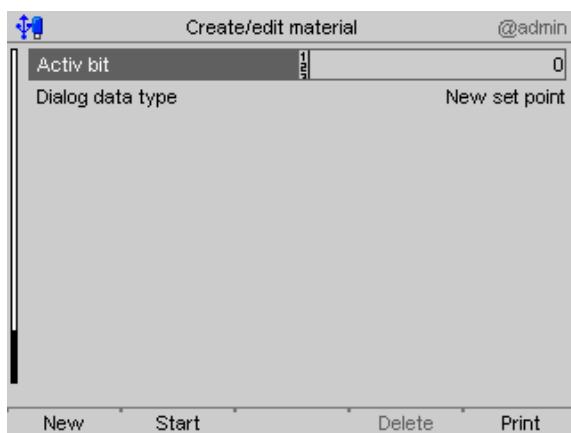
The result of a dialog is entered in the report database. If there is more than one result (e.g. ID and dialog), they will be separated using a semicolon. They will then be presented in separate lines in the batch report.

## 8.8 Change set point

It is possible to change the set point with the following material types:

- Net filling
- Net refilling
- Gross filling
- Manual filling
- Timer
- Analog output

#### Requirements:



1. In [Database]- [Create/edit material], enable set point change for the corresponding material, under [Dialog data type].



**Procedure:**

Start single material		@admin
Material name	↔	Grüner Pfeffer
Order name		Grüner Pfeffer~017
Product name		
Set point		500.0 g
Type		Net filling
Scale name		Weighing point A
Start		Print

2. Select and confirm the relevant material in the production menu.
3. Press the [Start] soft key.

▷ This will automatically switch to the scale view.

The input window opens. The set point saved in the database is displayed (here: 500.0 g).

WP-A Max 3000g d= 0.1g

0.0 g

Grüner Pfeffer: New set point

500.0 g

Stop Continue Cancel Recipe

4. Press the OK/ENTER key in order to keep the value.

WP-A Max 3000g d= 0.1g

0.0 g

Grüner Pfeffer: New set point

300 g

Stop Continue Cancel Recipe

5. Or enter and confirm the new set point using the keypad.
6. Production is continued and the tolerance check is carried out on the basis of the new set point. The new set point is included in the report; the recipe total is not changed.

## 9 OPC databases

### 9.1 General notes

The editing of the databases via OPC is divided into 3 classes.

#### Class 1

Databases with unrestricted access rights (read and write)

ORDER: New orders are stored here by the user.

REPORT: The batch reports from the system are saved here by line.

#### Class 2

Databases that can be read (read only)

MAT: Description of a material

REC: Description of the lines of all recipes

ORD: List of orders that are pending or in progress

#### Class 3

Databases that cannot be accessed (hidden)

WRK: Docket for active recipes.

TMP: Copy of the last batch report.

SPL: Printer buffer for batch reports.

### 9.2 Databases with unrestricted access rights

#### 9.2.1 Order (ORDER)

The user stores new orders here. The orders are checked over a period of approx. 1 s and moved to "ORD", with the addition of important internal parameters.

If the check shows that the order cannot be produced then the dataset is marked as defective and is not moved. The error must then be rectified or the dataset must be deleted.

#### Structure

```
T_ORDER      : STRUCT
  ID          : STR18;          (* order identification *)
  RecMat      : STR18;          (* name of the recipe/material *)
  Name        : STR18;          (* name of the product *)
  Text        : STR18;          (* configuration dependent data *)
  Setpoint    : REAL;           (* setpoint total recipe/material *)
  ChgBy       : STR18;          (* user has created *)
  Error       : INT;            (* <> 0 if order was not accepted *)
END_STRUCT;
```

Variable	Content during writing	Content in the event of a fault
ID	Identification of the order. Double identification is not possible.	unchanged
RecMat	Name of the recipe or material* as it has been saved in the REC or MAT databases.	unchanged

Variable	Content during writing	Content in the event of a fault
Name	Name of the product (for the reports), as included in the report.	unchanged
Text	Coefficient of the order, as included in the report.	unchanged
Set point	Set point for the recipe or material in "kg" (if necessary also in "lb" or "oz" in the case of a corresponding setting).	unchanged
ChgBy	Identification of the User, as included in the report.	unchanged
Error	0 (fixed!)	0: not yet edited
		1: double order (ID)
		2: recipe or material not found
* A search is first carried out for a matching recipe, then for a material.		

### 9.2.2 Report (REPORT)

The system saves a report for each processed recipe line here. The prerequisite is that this function has been activated under [Configuration]- [Parameters]- [Store report in database].

The system only writes to the database; it does not use the written data.

Normal usage is as follows:

- The system saves one or more records.
- The user reads the saved records.
- The user deletes the read records.

There is therefore a risk that when the function is activated, after a while this database will fill the entire memory if the records are not deleted, see also Chapter [6.3.5](#).

## Structure

```

T_REP      : STRUCT
  Sequence  : DINT;      (* sequence number *)
  Order     : STR18;     (* order identification *)
  Body      : BOOL;      (* only for sorting the report *)
  Clean     : BOOL;      (* was from cleaning recipe *)
  Line      : INT;       (* line number *)
  Done      : BOOL;      (* was done *)
  Name      : STR18;     (* name of the product *)
  Recipe    : STR18;     (* recipe *)
  Material  : STR18;     (* material *)
  Repl      : STR64;     (* result from dialog *)
  Scale     : STR20;     (* used scale *)
  WP        : INT;       (* WP index (internal) *)
  Mode      : INT;       (* batch mode index *)
  Recalc    : BOOL;      (* was recalculated *)
  Setp      : REAL;      (* set point *)
  Actual    : REAL;      (* actually dosed material *)
  Cons      : REAL;      (* consumption of this line *)
  Postol    : REAL;      (* abs. upper tolerance *)
  NegTol    : REAL;      (* abs. lower tolerance *)
  Unit      : STR8;      (* unit if not a weight *)
  User1     : STR18;     (* user who entered the order *)
  User2     : STR18;     (* name of weighing user *)
  Status    : INT;       (* dosing result status *)
  Begin     : DT;        (* dosing started at *)
  End       : DT;        (* dosing ready at *)
  Text      : STR20;     (* configuration dependent data ord/mat
  *)
  Copy      : BOOL;      (* TRUE if a copy is requested *)
  CRC       : UINT;      (* CRC from this record *)
END_STRUCT;

```

Variable	Contents
Sequence	Sequence number under which this order was edited (1...9999999.)
Order	Identification of the order.
Body	Used internally for the sorting of the database.
Clean	Line from the tidying up process.
Line	Line number in the recipe. The main part and tidy up part each start counting from 1. Line 0 contains summary data.
Done	This line has been edited (FALSE: e.g. left out due to "Cancel").
Name	Name of the product as entered in the order.
Recipe	Identification of the recipe.
Material	Identification of the material in this line.
Repl	Result of the material verification and dialog. Syntax: * [ID=<ident>][:][<prompt=<value><dimension>]]
Scale	Name of the scale from the configuration, if necessary with appended WP (e.g.: Batch-A).

Variable	Contents
WP	Index of the weighing point (A=1, B=2, etc.)
Mode	Index of the batching mode, see Chapter <a href="#">6.2.1.3</a> .
Recalc	This line has been recalculated.
Setp	Set point for this line "kg" for weights, "s" for timer. For analog inputs and outputs in accordance with the material definition.
Actual	Result of the batching in relation to the set point. **
Cons	Actually moved material (important in the case of components which do not re-tare).
PosTol	Relative upper tolerance limit (in %/100) for batching.
NegTol	Relative lower tolerance limit (in %/100) for batching.
Unit	Unit of the set point and actual values (for weights "kg", "lb" or "oz" or the material definition.)
User1	Name of the user who issued/changed the order.
User2	Name of the user who produced the line.
Status	Status of batching (0: no error, 1: outside the tolerance limits, 2: interrupted)
Begin	Start time for the production of this line (line 0 of the order).
End	End (time) of production
Text	Coefficient of the material (line 0 of the order).
Copy	Internal use
CRC	CRC for checking the integrity of the dataset.
*	"ID=" only if an incorrect ID has been entered; <prompt>, <value> and <dimension> originate from the material definition. ";" separates ID and dialog part if required.
**	The timer components are rounded to 0.1 s. Analog components are released with full resolution and scaled. Weights in kg/lb/oz.

## 9.3 Databases with read right

### 9.3.1 Material (MAT)

Each material occupies an entry in the database.

#### Structure

```

T_MAT      : STRUCT
  ID        : STR18;          (* name of material *)
  WP        : INT;            (* assigned WP, 0 = selected by
the user *)
  BMode     : INT;            (* code of batch mode *)
  Cons      : REAL;           (* consumption report *)
  Preset    : REAL;           (* preset *)
  OVS       : REAL;           (* overshoot *)
  Dens      : REAL;           (* density in kg/l, not yet used*)
  PTol      : REAL;           (* upper tolerance in % *)
  NTol      : REAL;           (* lower tolerance in % *)
  Calm      : REAL;           (* calming time *)
  Flow      : REAL;           (* min flow in kg/min *)
  AMin      : REAL;           (* set point for 0/4 mA *)
  AMax      : REAL;           (* setpoint for 20 mA *)
  Setp      : REAL;           (* set point for single material
dosing *)
  Unit      : STR8;           (* unit if has set point *)
  SPMIn     : INT;            (* enable bit *)
  SPMOut    : INT;            (* material select *)
  Dialog    : INT;            (* mode of dialog *)
  RstMode   : UINT;           (* restart mode for automatic
batching *)
  Text      : STR18;          (* comment *)
  dsp1      : STR18;          (* dialog prompt message *)
  dsp2      : STR8;           (* dimension for dialog *)
  Report    : BOOL;           (* report to database *)
  ConsRep   : BOOL;           (* has consumption report *)
  Ticket    : BOOL;           (* print a ticket *)
  DlgOnly   : BOOL;           (* material has a dialog only *)
  Auto      : BOOL;           (* usage in automatic recipes *)
  Clean     : BOOL;           (* usage in cleaning recipes *)
  Choice    : BOOL;           (* usage in real manual recipes *)
  Sequent   : BOOL;           (* usage sequential recipes *)
  Order     : BOOL;           (* usage to create an order *)
  ChkID     : BOOL;           (* verify material ID *)
  Protected : BOOL;           (* not be be deleted *)
  ChgBy     : STR18;          (* user has changed this line *)
  ChgAt     : DT;            (* at this date *)
END_STRUCT;

```

Variable	Contents
Sequence	Sequence number under which this order was edited (1...999999.)
Order	Identification of the order.
Body	Used internally for the sorting of the database.
Clean	Line from the tidying up process.

Variable	Contents
Line	Line number in the recipe. The main part and tidy up part each start counting from 1. Line 0 contains summary data.
Done	This line has been edited (FALSE: e.g. left out due to "Cancel").
Name	Name of the product as entered in the order.
Recipe	Identification of the recipe.
Material	Identification of the material in this line.
Repl	Result of the material verification and dialog. Syntax: * [ID=<ident>][,;][<prompt=<value><dimension>]]
Scale	Name of the scale from the configuration, if necessary with appended WP (e.g.: Batching A.)
WP	Index of the weighing point (A=1, B=2, etc.)
Mode	Index of the batching mode, see Chapter <a href="#">6.2.1.3</a> .
Recalc	This line has been recalculated.
Setp	Set point for this line "kg" for weights, "s" for timer. For analog inputs and outputs in accordance with the material definition.
Actual	Result of the batching in relation to the set point. **
Cons	Material actually moved (important in the case of components which do not re-tare).
PosTol	Relative upper tolerance limit (in %/100) for batching.
NegTol	Relative lower tolerance limit (in %/100) for batching.
Unit	Unit of the set point and actual values (for weights "kg", "lb" or "oz" or the material definition.)
User1	Name of the user who issued/changed the order.
User2	Name of the user who produced the line.
Status	Status of batching (0: no error, 1: outside the tolerance limits, 2: interrupted)
Begin	Start time for the production of this line (line 0 of the order).
End	End (time) of production
Text	Coefficient of the material (line 0 of the order).
Copy	Internal use
CRC	CRC for checking the integrity of the dataset.
*	"ID=" only if an incorrect ID has been entered; <prompt>, <value> and <dimension> originate from the material definition. "; separates ID and dialog part if required.
**	The timer components are rounded to 0.1 s. Analog components are released with full resolution and scaled. Weights in kg/lb/oz.

### 9.3.2 Recipe (REC)

The database contains one entry per line.

#### Structure

```

T_REC      : STRUCT
  ID        : STR18;      (* name of the recipe *)
  Clean     : BOOL;       (* is cleaning *)
  Line      : INT;        (* line number *)
  Section   : INT;        (* number of the section *)
  fixTol    : BOOL;       (* tolerance not yet changed by the
user *)
  Temp      : BOOL;       (* TRUE: delete if finished, manual
only *)
  Mat       : STR18;      (* name of the material *)
  Setp      : REAL;       (* set point of this line *)
  Total     : REAL;       (* last set point of the recipe *)
  Prod      : REAL;       (* production total *)
  PTol      : REAL;       (* upper tolerance *)
  NTol      : REAL;       (* lower tolerance *)
  CalcTotal : BOOL;       (* use the lie to calculate total *)
  Relative  : BOOL;       (* set point of line must be
recalculated *)
  Recalc    : BOOL;       (* recalculation allowed for this
recipe *)
  RMode     : INT;        (* must be done automatically, ... *)
  SPMIn     : INT;        (* enable bit *)
  SPMout    : INT;        (* material select *)
  ChgBy     : STR18;      (* user has changed this line *)
  ChgAt     : DT;        (* at this date *)
END_STRUCT;

```

### 9.3.3 Order (ORD)

There is one entry in the database per order. The entries are generated interactively or following checking from the "ORDER" database.

#### Structure

```

T_ORD      : STRUCT
  ID        : STR18;      (* order identification *)
  Sequence  : DINT;       (* sequence number *)
  RecMat     : STR18;      (* name of the recipe / material *)
  Mode      : INT;        (* how to do it *)
  isRec     : BOOL;       (* TRUE is assigned to a recipe *)
  WP        : INT;        (* WP = 0 is recipe / choice, >0 is
material *)
  Name      : STR18;      (* name of the product *)
  Text      : STR18;      (* configuration dependent data *)
  Setp      : REAL;       (* setpoint total recipe *)
  Expanded  : BOOL;       (* recipe was already expanded *)
  Active    : BOOL;       (* order is active *)
  ChgBy     : STR18;      (* user has created / changed this order
*)
  ChgAt     : DT;        (* at this date *)
END_STRUCT;

```



## 10 Printouts

### 10.1 General notes

The following printouts are available in PR 5900 using the Batch application:

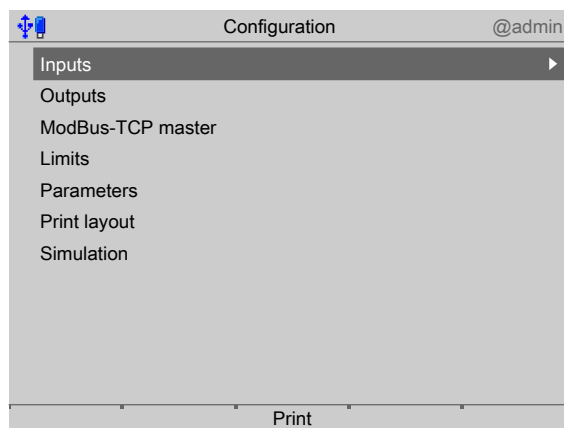
- Device configuration data, see PR 5900 operating instructions
- Batch configuration data, see Chapter [10.2](#)
- Tickets, see Chapter [10.3](#)
- Batch reports, see Chapter [10.4](#).

### 10.2 Batch-Configuration data

The option is available to print out the Batchconfiguration data. The configuration data is output to the printer configured in the [System setup] - [Connected devices] system menu under "General Devices" (see PR 5900 operating instructions).

The print width is limited to 39 characters per line. This means a ticket printer can also be used. When printing the first line, the program checks whether printing is possible. In the event of a printer failure during printing, a time-out of approximately 3 s is active for each print line.

The printout cannot be changed using "NiceLabelExpress." The printout reflects the current data status.



- Press the [Print] soft key or the  button to print out the configuration.


### 10.3 Tickets

#### 10.3.1 General notes

The configuration for tickets is performed in the [Configuration] - [Printout] - [Print template] menu, see Chapter [5.4.7](#).

To start printing, the application must be started.

If the weight value is within an inadmissible range (concerns mainly legal-for-trade devices), no printout is generated. If the weight value is permissible, the ticket is printed as configured.


The  button can be used to print the latest ticket at various points, even if it was switched off in the configuration.

In the application menu under [Print tickets and reports] - [Print last ...ticket], the ticket can also be printed.

The ticket is printed with 39 characters per line.

The items listed in the table in Chapter 10.3.1 can be included in the ticket by means of the configuration. The ticket can be printed multiple times according to the configuration.

The following ticket printout options are available:

- Per recipe line
- On completion of recipe processing (summary without individual lines)
- Tickets without NLE (NiceLabelExpress)
- Tickets with NLE (NiceLabelExpress)
- Multiple printout using the  button, provided no new ticket has been produced.

---

**Note:**

No line tickets are printed in the case of automatic recipes.

---

The following items are printed by line if no NLE ticket has been defined:

Item	Ticket		Note
	Lines	Order	
Blank	X	X	
Dotted line	X	X	
Form feed	X	X	
Order name	X	X	
Product name	X	X	Only if configured
Recipe name	X	X	
Line number in recipe	X		
Material name	X		
Reply from dialog	X		As 2nd line: Dialog and material identification (incorrect)
Setpoint	X	X	
Actual value *	X	X	
Tolerance (2 lines)	X		
Status of batching	X	X	

Item	Ticket		Note
	Lines	Order	
Scale name	X	X	The code for the weighing point is added to the line ticket e.g. "Batching device B".
Customer	X	X	
(Last) operator	X	X	
Start time	X	X	
End time	X	X	
Recalculated	X	X	Character in recipe line: "%"
Print time	X	X	
Order coefficient		X	
Material coefficient	X		
Text from the configuration	X	X	
Sequence number	X	X	
* The timer components are rounded to 0.1 s. Analog components are released with full resolution and scaled; weights according to the scale.			

### 10.3.2 Line ticket

This ticket is automatically printed at the end of each line (if configured under [Configuration]- [Parameters], with the exception of automatic recipes).

#### Example without NLE (NiceLabelExpress)

Scale name		Batch-A
-----		
Recipe name		Mandelkuchen
Recipe line number		2
Material name		Mehl
Dialog		
Set point		1000.0 g
Print time	2013-04-05	09:18:23
Actual value		999.9 g
+ Tolerance		1.0 %
- Tolerance		1.0 %
Batch status		
Ordered by		admin
Weighed by		admin
Start time	2013-04-05	09:17:53
Final time	2013-04-05	09:18:06

### 10.3.3 Order ticket

This ticket is automatically printed at the end of each order (if configured under [Configuration]- [Parameters]).

#### Example without NLE (NiceLabelExpress)

```
Order name          2013-02-26 Evening
-----
Recipe name         Almond cake
Sequence number     9
Set point           1000.0 g
Actual value        1000.0 g
Batch status
Scale name          PR 5900-Batching
Ordered by          admin
Weighed by          admin
Sequence number     9
Final time          2013-04-05 11:27:54
```


## 10.4 Filling reports

### 10.4.1 General notes

To start printing, the application must be started.

The batch report is automatically printed at the end of each line (if activated with the selection [once] under [Configuration] - [Parameters] ).



The  button can be used to print the latest ticket at various points, even if it was switched off in the configuration.

The report can also be printed in the application menu under [Print tickets and reports] - [Print last batch report] .

The report is printed with 80 characters per line.

### 10.4.2 Short report

The short batch report is a one-line report which, in addition to the date/time and weight, records the name of the order and recipe as well as the status.

This one-line report cannot be configured with NLE (NiceLabelExpress).

#### Example:

```
04/05/2013 11:27:54 2013-02-26 Evening Almond cake 1000.0 g
```

### 10.4.3 Long report

The data are taken from the docket (working database).

If the number of columns in a line is restricted in the configuration, a printout with 39 characters per line is possible.

Long reports can be configured with NLE (NiceLabelExpress), see Chapter [10.5](#).

In addition to the header data, for certain recipe lines, a line will be printed in the report for specific materials. The materials for which a report is issued are detailed in Chapter [6.2.1.3](#).

The configuration for the long batch report is performed under [Configuration]- [Print layout]- [Print template] (see also Chapter [5.4.7](#)).

The following items are printed by line if no NLE ticket has been defined:

Item	Long batch report			Note
	Headers	(Columns in a line)	Trailers	
Blank line	X		X	
Dotted line	X		X	
Form feed	X		X	
Order name	X		X	
Product name	X		X	Only if configured
Recipe name	X		X	
Line number in recipe		X		
Material name		X		
Reply from dialog		X		as 2nd line: Dialog and material identification (incorrect)
Set point	X	X	X	
Actual value	X	X	X	Related to the set point
Status of batching	X	X	X	Character in recipe line: "#" = tolerance "*" = canceled. "-" = skipped.
Scale name	X		X	
Customer	X		X	
(Last) operator	X		X	
Start time	X		X	
Final time	X		X	
Recalculated	X	X	X	Character in recipe line: "%"
Print time	X		X	
Order coefficient			X	

Item	Long batch report			Note
	Headers	(Columns in a line)	Trailers	
Material coefficient	X			
Text from the configuration	X		X	
+ Tolerance		X	X	
- Tolerance		X		
Tidy up		X		Character in recipe line: "="
Material consumed		X		Material actually transported

#### Example without NLE (NiceLabelExpress)

```

Order name           Almond cake~011
-----
Set point             2000.0 g
Actual value          2000.1 g
Batch status
Scale name            PR 5900-Batching
Ordered by            admin
Weighed by            admin
Start time            04/05/2013  15:02:48
Final time            04/05/2013  15:03:21

Material name         Set point      Actual value      Mat. cons.
-----
1 Sugar               500.0 g           499.9 g           499.9 g
2 Flour               1000.0 g          1000.1 g          1000.1 g
3 Sanella             500.0 g           500.1 g           500.1 g
-----
Print time            04/052013  15:03:22

```

## 10.5 Tickets and batch reports with NLE (NiceLabelExpress)

### 10.5.1 General notes

To create a user-defined log, the "NiceLabelExpress" program is required.

All variable contents (e.g., weights) and invariable texts (e.g., "Sequence number") for these logs are transmitted to the log using variables. In many cases this enables the user to create language adjustments for NLE with "Translatelt".

In this case, "NiceLabelExpress" does not need to be called up. A fixed structure of variables from the application is provided for "NiceLabelExpress."

In the case of tickets, all variables contain the data of the most recently edited line or order.

In batch reports, "Line" is printed as many times as there are lines that need to be printed in the report. Control instructions do not have any lines in the batch report. The relevant

data applicable for the lines are entered into the variables line, material, set point, actual, etc.

By default, no printouts are printed using "NiceLabelExpress" (= no NLE files integrated). If customer-designed NLE files are integrated, printing will take place via NLE with this layout. All data required for a printout will be made available for NLE.

---

**Note:**

An NLE layout is not included with the equipment supplied.

---

The names of the NLE files are:

- For line ticket: "TLine.lbl"
- For order ticket: "TOrder.lbl"
- For header of the batch report: "RHeader.lbl"
- For a line of the batch report: "RLine.lbl"
- For footer of the batch report: "RTrailer.lbl"

The data in the following table is available for all tickets and reports with "NiceLabelExpress."

Only use the data generated during the associated weighing operation.

**Data format**

WSTR20	=	Max. 20 alphanumeric characters. 9/18/30 are also allowed.
DINT	=	Double integer, pure numeric value
WEIGHT	=	Weight value with plus/minus sign and unit
Date	=	Current date and time

### 10.5.2 Table of available data

**Key Columns 1...5:**

**1 Line ticket, 2 Order ticket, 3 Batch report - header, 4 Batch report - footer, 5 Batch report - (columns in a line)**

Variable for NLE	Format	Description	1	2	3	4	5
Parameter content							
Order	WSTR18	Order name	X	X	X	X	
Sequence	DINT	Internal number	X	X	X	X	
Recipe	WSTR18	Recipe name	X	X	X	X	
Name	WSTR18	Product name	X	X	X	X	
Line	INT	Line number in recipe	X				X
Material	WSTR18	Material name	X				X
Repl	WSTR18	Input value, e.g. the LOT number	X				X
Recalc	WSTR8	Recipe has been recalculated.	X	X	X	X	

**Key Columns 1...5:**

**1 Line ticket, 2 Order ticket, 3 Batch report - header, 4 Batch report - footer, 5 Batch report - (columns in a line**

Variable for NLE	Formatdata	Description	1	2	3	4	5
Set point	WSTR18	Set point, related to the line or order depending on the printout.	X	X	X	X	X
Actual	WSTR18	Result of the batching (net), related to the line or order.	X	X	X	X	X
Cons	WSTR18	Material consumption (net)	X				X
PosTol	REAL	Relative upper tolerance in %	X				X
NegTol	WEIGHT	Relative lower tolerance in %	X				X
Status	WSTR18	Status (tolerance, cancel, recalculated)	X	X	X	X	X
SStatus	WSTR8	Status (short: "-", "*" or "#")					X
Clean	WSTR1	Identification for cleaning/tidying up					X
Scale	WSTR20	Scale name	X	X	X	X	
User1	WSTR18	Created the order.	X	X	X	X	
User2	WSTR18	Last user to carry out filling.	X	X	X	X	X
NowDate	WSTR18	Current date	X	X	X	X	X
NowTime	WSTR18	Current time	X	X	X	X	
BegDate	WSTR18	Beginning date	X	X	X	X	
BegTime	WSTR18	Start time	X	X	X	X	
EndDate	WSTR18	End date	X	X	X	X	
EndTime	WSTR18	End time	X	X	X	X	
TxtCnf	WSTR18	Text depending on the configuration	X	X	X	X	
TxtOrd	WSTR18	Order coefficient	X	X	X	X	
TxtMat	WSTR18	Material coefficient	X				



**Key Columns 1...5:**

**1 Line ticket, 2 Order ticket, 3 Batch report - header, 4 Batch report - footer, 5 Batch report - (columns in a) line**

Variable for NLE	Formatdata	Description	1	2	3	4	5
Parameter name							
TOrder	WSTR18	Fixed text	X	X	X	X	
TSeq	WSTR18	Fixed text	X	X	X	X	
TRecipe	WSTR18	Fixed text	X	X	X	X	
TName	WSTR18	Fixed text	X	X	X	X	
TLine	WSTR18	Fixed text	X				
TMat	WSTR18	Fixed text	X				
TMsg	WSTR18	Dialog prompt	X				
TSetp	WSTR18	Fixed text	X	X	X	X	
TActual	WSTR18	Fixed text	X	X	X	X	
TCons	WSTR18	Fixed text					
TRecalc	WSTR18	Fixed text	X	X	X	X	
TPTol	WSTR18	Fixed text	X				
TNTol	WSTR18	Fixed text	X				
TStatus	WSTR18	Fixed text	X	X	X	X	
TScale	WSTR18	Configurable text	X	X	X	X	
TUser1	WSTR18	Fixed text	X	X	X	X	
TUser2	WSTR18	Fixed text	X	X	X	X	
TNow	WSTR18	Fixed text	X	X	X	X	
TBegin	WSTR18	Fixed text	X	X	X	X	
TEnd	WSTR18	Fixed text	X	X	X	X	
TTxtOrd	WSTR18	Configurable text	X	X	X	X	
TTxtMat	WSTR18	Configurable text	X				

## 11 Fieldbus interface

### 11.1 General notes

The interface is configured under [System settings] - [Fieldbus parameters] .

There are two different access protocols.

#### **Scale protocol**

8 bytes for simple scale functions: Read weights and states.

The protocol and the functions of the firmware are described in the operating instructions PR 5900.

#### **SPM protocol**

This wider interface can be used to access all the data described in the SPM table.

The protocol and the functions of the firmware are described in the operating instructions PR 5900.

## 12 SPM

### 12.1 General information

The memory accessible to the user is the SPM (Scratch Pad Memory). This memory is used to store lots of internal data from which weights, statuses and reports can be read and control data can be written.

- System data are defined by the firmware and the respective application.
- The free user range can be used freely, for example, via the configuration of logical links.

The SPM table can be accessed via OPC and ModBus communication.

In addition, individual bits are copied back and forth between digital inputs and outputs and the SPM via the I/O configuration.

---

**Note:**

If a text is defined e.g. from SPM address B401, this must be defined in the OPC server from SPM address B400 so that the content actually begins at B401.

---

### 12.2 Elementary data types

The elementary data types are characterized by their bit width and possible value range. All commands of the data type BOOL are executed with a rising edge.

Data type	Description	Value range
BOOL	bool	0 (FALSE) or 1 (TRUE)
SINT	short integer	-128 to 127
INT	integer	-32768 to 32767
DINT	double integer	$-2^{31}$ to $2^{31}-1$
LINT	long integer	$-2^{63}$ to $2^{63}-1$
USINT	unsigned short integer	0 to 255
UINT	unsigned integer	0 to 65535
UDINT	unsigned double integer	0 to $2^{32}-1$
ULINT	unsigned long integer	0 to $2^{64}-1$
REAL	real number	$\pm 1.18\text{E}-38$ bis $3.4\text{E}38$ (with approx. 7 significant digits)
LREAL	long real number	$\pm 1.18\text{E}-308$ bis $3.4\text{E}308$ (with approx. 16 significant digits)
TIME	time duration	1 ms to $\pm 2^{47}$ ms
DATE	date (only)	1.1.1900 to 31.12.2099
TIME_OF_DAY	time of day (only)	00:00:00.00 to 23:59:59.99
DATE_AND_TIME	Date and time of day	see DATE and TIME_OF_DAY

Data type	Description	Value range
STRING	variable-long character string	max. 255 characters (ISO)
WSTRING	variable-long wide character string	max. 255 characters (Unicode)
BYTE	bit-sequence 8	...
WORD	bit-sequence 16	...
DWORD	bit-sequence 32	...
LWORD	bit-sequence 64	...

## 12.3 Addressing

The SPM table can be addressed via different counts. Bit addressing is used to count the individual bits (MX). Byte addressing is used to count individual bytes (MB), whereby, e.g. bits MX0...MX7 are identical to byte MB0.

Accordingly, addresses ML20, MD40-41, MW80-83, MB160-167 and MX1280-1343 contain the same data (see Chapter [12.11](#)).

Code	Data type	Address example
%ML	LWORD	L21
%MD	DINT	D42...43
%MW	WORD	W84...87
%MB	BYTE	B168...175
%MX	BOOL (bit)	X1344...1407

## 12.4 System data weighing point A

SPM address	Data type	R/W	Function
X0...X3	BOOL	R	Internal digital input 1...4
X8...11	BOOL	R	Internal digital output 1...4
X16...17	BOOL	R	Output limit 1...2
<b>B4</b>	<b>BYTE</b>	R	<b>Indicator status</b>
X32	BOOL	R	ADC error
X33	BOOL	R	> Max (FSD = Full Scale Deflection)
X34	BOOL	R	> Max + permitted range (OVL)
X35	BOOL	R	< zero
X36	BOOL	R	Zero $\pm \frac{1}{4}$ d
X37	BOOL	R	Within the zeroset range (ZSR)
X38	BOOL	R	The weight is stable
X39	BOOL	R	Weight < zero or > Max (FSD = Full Scale Deflection)

SPM address	Data type	R/W	Function
<b>B5</b>	<b>BYTE</b>	R	<b>ADC status</b>
X40	BOOL	R	Measuring signal negative (error 7)
X41	BOOL	R	Measuring signal >36 mV (error 3)
X42	BOOL	R	Internal arithmetic error; CAL data are perhaps faulty (error 1)
X43	BOOL	R	No or too low sense voltage (error 6)
X44	BOOL	R	No communication with xBPI scale (error 9)
<b>B6</b>	<b>BYTE</b>	R	<b>Command status</b>
X48	BOOL	R	Command error
X49	BOOL	R	Command active
X50	BOOL	R	Network failure signal
<b>B7</b>	<b>BYTE</b>	R	<b>Active status</b>
X56	BOOL	R	Test mode active
X57	BOOL	R	Calibration active
X58	BOOL	R	Instrument is tared
X59	BOOL	R	Pendeo only: parameter [Unbalanced check deviation]
X60	BOOL	R	Pendeo only: operation with a simulated load cell
X72	BOOL	R/W	Switch D11 to net weight.
X112	BOOL	W	Zero device.
X113	BOOL	W	Tare device
X114	BOOL	W	Reset the tare of the device
X115	BOOL	W	Start the test mode
X116	BOOL	W	Finish the test mode
X117	BOOL	W	Reset the power fail signal
X118	BOOL	W	Set fixed tare weight D31 as tare
X119	BOOL	W	Store the current gross weight in the preset tare memory (D31)
X121	BOOL	W	Reset error B19 = 0.
B16	SINT	R	Exponent Number of decimal places Example: 1.23 is displayed Exponent: 2
B17	SINT	R	Weight unit 1 = mg, 2 = g, 3 = kg, 4 = t, 5 = lb, 9 = oz
B18	SINT	R	Verification interval (for multi-interval/multi-range = d1 or e1)
B19	BYTE	R	Last weighing point error, see PR 5900 operating instructions.
B20	BYTE	R	Higher byte of product code (0x59)
B21	BYTE	R	Lower byte of product code (0x00)
B22	BYTE	R	Major part of version number (1.0)
B23	BYTE	R	Minor part of version number (1.0)

SPM address	Data type	R/W	Function
B31	BYTE	R	ADC status
D6	UDINT	R	Serial number (board number)
W14	INT	R	Counter will be increased for every measured value.
D8	DINT	R	Current gross weight
D9	DINT	R	Current net weight
D10	DINT	R	Current tare weight
D11	DINT	R	Current gross/net weight selected with X72
D12	DINT	R	Gross value with magnifier 100 (centi d)
D13	DINT	R	Tare value with magnifier 100 (centi d)
D14	DINT	R	Max weight (FSD = Full Scale Deflection)
D15	DINT	R	Min weight
D22	DINT	R	Current set point
D23	DINT	R	Activity counter, test of communication with device
D24	DINT	R	Limit 1 on
D25	DINT	R	Limit 1 off
D26	DINT	R	Limit 2 on
D27	DINT	R	Limit 2 off
D31	DINT	R/W	Preset tare memory (X118, X119)
X1024	BOOL	R	Weight is valid.
X1025	BOOL	R	Weighing point is active for batching.
X1026	BOOL	R	Batching stopped.
X1027	BOOL	R	Batching is in the calming time.
X1028	BOOL	R	Coarse flow
X1029	BOOL	R	Fine flow
X1030	BOOL	R	Discharge
X1031	BOOL	R	Direction for the simulation
X1032	BOOL	R	Reaction to rising edge: Restart after stopping.
X1033	BOOL	R	Combination command reaction to rising edge: Weighing point ongoing -> stop Weighing point stopped -> cancel
X1034	BOOL	R	Reaction to rising edge: Command for manual batching. A tolerance alarm may occur after the [Done] softkey. The [Cancel] and [Accept] softkeys then are shown. [Accept] can also be triggered by this bit.

SPM address	Data type	R/W	Function
X1035	BOOL	R/W	Batching alarm Material flow warning
X1036	BOOL	R	Tolerance alarm
<b>B130</b>	<b>BYTE</b>	R	<b>Recipe status: Bar graph of statuses</b>
X1040	BOOL	R	0...-Tolerance
X1041	BOOL	R	-Tolerance...Set point
X1042	BOOL	R	Set point...+Tolerance
X1043	BOOL	R	+Tolerance...Max
X1044	BOOL	R	-Tolerance...+Tolerance
A bar graph is shown in the status display during batching. For manual batching, these bits show where the batched quantity is located. As the bar graph is difficult to read from a distance, the status can be displayed locally e.g. by way of digital signals on lamps.			
W66	INT	R	Recipe status: active line number for this weighing point If a recipe uses multiple weighing points, they are active simultaneously/in parallel and the recipe has an active line number for each weighing point.
<b>L17</b>	<b>LWORD</b>	W	<b>SPM out</b>
X1088...1151	BOOL	R	Output
<b>L18</b>	<b>LWORD</b>	W	<b>SPM out AND coarse</b>
X1152...1215	BOOL	R	Output and coarse
<b>L19</b>	<b>LWORD</b>	W	<b>SPM out AND fine</b>
X1216...1279	BOOL	R	Output and fine
B168...185	BYTE	R	Recipe status: Material ID Material name that is active for this weighing point.

**Note:**

Freely assignable SPM addresses D40...D41, see Chapter [12.11](#).

**Note:**

The system variables (e.g. ST\_WGT\_A) for communication via OPC are described in operating instructions PR 1792 (Chapter 4 + 5).

## 12.5 System data weighing point B

SPM address	Data type	R/W	Function
X4096...4099	BOOL	R	Internal digital input 1...4
X4104...4107	BOOL	R	Internal digital output 1...4
X4112...4113	BOOL	R	Output limit 1...2
<b>B516</b>	<b>BYTE</b>	R	<b>Indicator status</b>
X4128	BOOL	R	ADC error
X4129	BOOL	R	> Max (FSD = Full Scale Deflection)
X4130	BOOL	R	> Max + permitted range (OVL)
X4131	BOOL	R	< zero
X4132	BOOL	R	Zero $\pm 1/4$ d
X4133	BOOL	R	Within the zeroset range (ZSR)
X4134	BOOL	R	The weight is stable
X4135	BOOL	R	Weight < zero or > Max (FSD = Full Scale Deflection)
<b>B517</b>	<b>BYTE</b>	R	<b>ADC status</b>
X4136	BOOL	R	Measuring signal negative (error 7)
X4137	BOOL	R	Measuring signal >36 mV (error 3)
X4138	BOOL	R	Internal arithmetic error; CAL data are perhaps faulty (error 1)
X4139	BOOL	R	No or too low sense voltage (error 6)
X4140	BOOL	R	No communication with xBPI scale (error 9)
<b>B518</b>	<b>BYTE</b>	R	<b>Command status</b>
X4144	BOOL	R	Command error
X4145	BOOL	R	Command active
X4146	BOOL	R	Network failure signal
<b>B519</b>	<b>BYTE</b>	R	<b>Active status</b>
X4152	BOOL	R	Test mode active
X4153	BOOL	R	Calibration active
X4154	BOOL	R	Instrument is tared
X4155	BOOL	R	Pendeo only: parameter [Unbalanced check deviation]
X4156	BOOL	R	Pendeo only: operation with a simulated load cell
X4168	BOOL	R/W	Switch D139 to net weight.
X4208	BOOL	W	Zero device.
X4209	BOOL	W	Tare device
X4210	BOOL	W	Reset the tare of the device
X4211	BOOL	W	Start the test mode
X4212	BOOL	W	Finish the test mode
X4213	BOOL	W	Reset the power fail signal
X4214	BOOL	W	Set fixed tare weight D159 as tare
X4215	BOOL	W	Store the current gross weight in the preset tare memory (D159)
X4217	BOOL	W	Reset error B531 = 0.



SPM address	Data type	R/W	Function
B528	SINT	R	Exponent Number of decimal places Example: 1.23 is displayed Exponent: 2
B529	SINT	R	Weight unit 1 = mg, 2 = g, 3 = kg, 4 = t, 5 = lb, 9 = oz
B530	SINT	R	Verification interval (for multi-interval/multi-range = d1 or e1)
B531	BYTE	R	Last weighing point error, see PR 5900 operating instructions.
B532	BYTE	R	Higher byte of product code (0x59)
B533	BYTE	R	Lower byte of product code (0x00)
B534	BYTE	R	Major part of version number (1.0)
B535	BYTE	R	Minor part of version number (1.0)
B543	BYTE	R	ADC status
D134	UDINT	R	Serial number (board number)
W270	INT	R	Counter will be increased for every measured value.
D136	DINT	R	Current gross weight
D137	DINT	R	Current net weight
D138	DINT	R	Current tare weight
D139	DINT	R	Current gross/net weight selected with X4168
D140	DINT	R	Gross value with magnifier 100 (centi d)
D141	DINT	R	Tare value with magnifier 100 (centi d)
D142	DINT	R	Max weight (FSD = Full Scale Deflection)
D143	DINT	R	Min weight
D150	DINT	R	Current set point
D151	DINT	R	Activity counter, test of communication with device
D152	DINT	R	Limit 1 on
D153	DINT	R	Limit 1 off
D154	DINT	R	Limit 2 on
D155	DINT	R	Limit 2 off
D159	DINT	R/W	Preset tare memory (X4214, X4215)
X5120	BOOL	R	Weight is valid.
X5121	BOOL	R	Weighing point is active for batching.
X5122	BOOL	R	Batching stopped.
X5123	BOOL	R	Batching is in the calming time.

SPM address	Data type	R/W	Function
X5124	BOOL	R	Coarse flow
X5125	BOOL	R	Fine flow
X5126	BOOL	R	Discharge
X5127	BOOL	R	Direction for the simulation
X5128	BOOL	R	Reaction to rising edge: Restart after stopping.
X5129	BOOL	R	Combination command reaction to rising edge: Weighing point ongoing -> stop Weighing point stopped -> cancel
X5130	BOOL	R	Reaction to rising edge: Command for manual batching. A tolerance alarm may occur after the [Done] softkey. The [Cancel] and [Accept] softkeys then are shown. [Accept] can also be triggered by this bit.
X5131	BOOL	R/W	Batching alarm Material flow warning
X5132	BOOL	R	Tolerance alarm
<b>B642</b>	<b>BYTE</b>	R	<b>Recipe status: Bar graph of statuses</b>
X5136	BOOL	R	0...-Tolerance
X5137	BOOL	R	-Tolerance...Set point
X5138	BOOL	R	Set point...+Tolerance
X5139	BOOL	R	+Tolerance...Max
X5140	BOOL	R	-Tolerance...+Tolerance
A bar graph is shown in the status display during batching. For manual batching, these bits show where the batched quantity is located. As the bar graph is difficult to read from a distance, the status can be displayed locally e.g. by way of digital signals on lamps.			
W322	INT	R	Recipe status: active line number for this weighing point If a recipe uses multiple weighing points, they are active simultaneously/in parallel and the recipe has an active line number for each weighing point.
<b>L81</b>	<b>LWORD</b>	W	<b>SPM out</b>
X5184...5247	BOOL	R	Output
<b>L82</b>	<b>LWORD</b>	W	<b>SPM out AND coarse</b>
X5248...5311	BOOL	R	Output and coarse
<b>L83</b>	<b>LWORD</b>	W	<b>SPM out AND fine</b>
X5312...5375	BOOL	R	Output and fine
B680...697	BYTE	R	Recipe status: Material ID Material name that is active for this weighing point.

**Note:**

Freely assignable SPM addresses D168...D169, see Chapter [12.11](#).

**Note:**

The system variables (e.g. ST\_WGT\_A) for communication via OPC are described in operating instructions PR 1792 (Chapter 4 + 5).

## 12.6 System data weighing point C

SPM address	Data type	R/W	Function
X8192...8195	BOOL	R	Internal digital input 1...4
X8200...8203	BOOL	R	Internal digital output 1...4
X8208...8209	BOOL	R	Output limit 1...2
<b>B1028</b>	<b>BYTE</b>	R	<b>Indicator status</b>
X8224	BOOL	R	ADC error
X8225	BOOL	R	> Max (FSD = Full Scale Deflection)
X8226	BOOL	R	> Max + permitted range (OVL)
X8227	BOOL	R	< zero
X8228	BOOL	R	Zero $\pm 1/4$ d
X8229	BOOL	R	Within the zeroset range (ZSR)
X8230	BOOL	R	The weight is stable
X8231	BOOL	R	Weight < zero or > Max (FSD = Full Scale Deflection)
<b>B1029</b>	<b>BYTE</b>	R	<b>ADC status</b>
X8232	BOOL	R	Measuring signal negative (error 7)
X8233	BOOL	R	Measuring signal >36 mV (error 3)
X8234	BOOL	R	Internal arithmetic error; CAL data are perhaps faulty (error 1)
X8235	BOOL	R	No or too low sense voltage (error 6)
X8236	BOOL	R	No communication with xBPI scale (error 9)
<b>B1030</b>	<b>BYTE</b>	R	<b>Command status</b>
X8240	BOOL	R	Command error
X8241	BOOL	R	Command active
X8242	BOOL	R	Network failure signal
<b>B1031</b>	<b>BYTE</b>	R	<b>Active status</b>
X8248	BOOL	R	Test mode active
X8249	BOOL	R	Calibration active
X8250	BOOL	R	Instrument is tared
X8251	BOOL	R	Pendeo only: parameter [Unbalanced check deviation]
X8252	BOOL	R	Pendeo only: operation with a simulated load cell
X8264	BOOL	R/W	Switch D267 to net weight.
X8304	BOOL	W	Zero device.
X8305	BOOL	W	Tare device
X8306	BOOL	W	Reset the tare of the device

SPM address	Data type	R/W	Function
X8307	BOOL	W	Start the test mode
X8308	BOOL	W	Finish the test mode
X8309	BOOL	W	Reset the power fail signal
X8310	BOOL	W	Set fixed tare weight D287 as tare
X8311	BOOL	W	Store the current gross weight in the preset tare memory (D287)
X8313	BOOL	W	Reset error B1043 = 0.
B1040	SINT	R	Exponent Number of decimal places Example: 1.23 is displayed Exponent: 2
B1041	SINT	R	Weight unit 1 = mg, 2 = g, 3 = kg, 4 = t, 5 = lb, 9 = oz
B1042	SINT	R	Verification interval (for multi-interval/multi-range = d1 or e1)
B1043	BYTE	R	Last weighing point error, see PR 5900 operating instructions.
B1044	BYTE	R	Higher byte of product code (0x59)
B1045	BYTE	R	Lower byte of product code (0x00)
B1046	BYTE	R	Major part of version number (1.0)
B1047	BYTE	BYTE	Minor part of version number (1.0)
B1055	BYTE	BYTE	ADC status
D262	UDINT	R	Serial number (board number)
W526	INT	R	Counter will be increased for every measured value.
D264	DINT	R	Current gross weight
D265	DINT	R	Current net weight
D266	DINT	R	Current tare weight
D267	DINT	R	Current gross/net weight selected with X8264
D268	DINT	R	Gross value with magnifier 100 (centi d)
D269	DINT	R	Tare value with magnifier 100 (centi d)
D270	DINT	R	Max weight (FSD = Full Scale Deflection)
D271	DINT	R	Min weight
D278	DINT	R	Current set point
D279	DINT	R	Activity counter, test of communication with device
D280	DINT	R	Limit 1 on
D281	DINT	R	Limit 1 off
D282	DINT	R	Limit 2 on

SPM address	Data type	R/W	Function
D283	DINT	R	Limit 2 off
D287	DINT	R/W	Preset tare memory (X8311, X8312)
X9216	BOOL	R	Weight is valid.
X9217	BOOL	R	Weighing point is active for batching.
X9218	BOOL	R	Batching stopped.
X9219	BOOL	R	Batching is in the calming time.
X9220	BOOL	R	Coarse flow
X9221	BOOL	R	Fine flow
X9222	BOOL	R	Discharge
X9223	BOOL	R	Direction for the simulation
X9224	BOOL	R	Reaction to rising edge: Restart after stopping.
X9225	BOOL	R	Combination command reaction to rising edge: Weighing point ongoing -> stop Weighing point stopped -> cancel
X9226	BOOL	R	Reaction to rising edge: Command for manual batching. A tolerance alarm may occur after the [Done] softkey. The [Cancel] and [Accept] softkeys then are shown. [Accept] can also be triggered by this bit.
X9227	BOOL	R/W	Batching alarm Material flow warning
X9228	BOOL	R	Tolerance alarm
<b>B1154</b>	<b>BYTE</b>	R	<b>Recipe status: Bar graph of statuses</b>
X9232	BOOL	R	0...-Tolerance
X9233	BOOL	R	-Tolerance...Set point
X9234	BOOL	R	Set point...+Tolerance
X9235	BOOL	R	+Tolerance...Max
X9236	BOOL	R	-Tolerance...+Tolerance
A bar graph is shown in the status display during batching. For manual batching, these bits show where the batched quantity is located. As the bar graph is difficult to read from a distance, the status can be displayed locally e.g. by way of digital signals on lamps.			
W578	INT	R	Recipe status: active line number for this weighing point If a recipe uses multiple weighing points, they are active simultaneously/in parallel and the recipe has an active line number for each weighing point.
<b>L145</b>	<b>LWORD</b>	W	<b>SPM out</b>
X9280...9343	BOOL	R	Output
<b>L146</b>	<b>LWORD</b>	W	<b>SPM out AND coarse</b>
X9344...9407	BOOL	R	Output and coarse

SPM address	Data type	R/W	Function
<b>L147</b>	<b>LWORD</b>	W	<b>SPM out AND fine</b>
X9408...9471	BOOL	R	Output and fine
B1192...1209	BYTE	R	Recipe status: Material ID Material name that is active for this weighing point.

**Note:**

Freely assignable SPM addresses D296...D297, see Chapter [12.11](#).

**Note:**

The system variables (e.g. ST\_WGT\_A) for communication via OPC are described in operating instructions PR 1792 (Chapter 4 + 5).

## 12.7 System data weighing point D

SPM address	Data type	R/W	Function
X12288...12291	BOOL	R	Internal digital input 1...4
X12296...12299	BOOL	R	Internal digital output 1...4
X12304...12305	BOOL	R	Output limit 1...2
<b>B1540</b>	<b>BYTE</b>	R	<b>Indicator status</b>
X12320	BOOL	R	ADC error
X12321	BOOL	R	> Max (FSD = Full Scale Deflection)
X12322	BOOL	R	> Max + permitted range (OVL)
X12323	BOOL	R	< zero
X12324	BOOL	R	Zero $\pm 1/4$ d
X12325	BOOL	R	Within the zeroset range (ZSR)
X12326	BOOL	R	The weight is stable
X12327	BOOL	R	Weight < zero or > Max (FSD = Full Scale Deflection)
<b>B1541</b>	<b>BYTE</b>	R	<b>ADC status</b>
X12328	BOOL	R	Measuring signal negative (error 7)
X12329	BOOL	R	Measuring signal >36 mV (error 3)
X12330	BOOL	R	Internal arithmetic error; CAL data are perhaps faulty (error 1)
X12331	BOOL	R	No or too low sense voltage (error 6)
X12332	BOOL	R	No communication with xBPI scale (error 9)
<b>B1542</b>	<b>BYTE</b>	R	<b>Command status</b>
X12336	BOOL	R	Command error
X12337	BOOL	R	Command active
X12338	BOOL	R	Network failure signal

SPM address	Data type	R/W	Function
<b>B1543</b>	<b>BYTE</b>	R	<b>Active status</b>
X12344	BOOL	R	Test mode active
X12345	BOOL	R	Calibration active
X12346	BOOL	R	Instrument is tared
X12347	BOOL	R	Pendeo only: parameter [Unbalanced check deviation]
X12348	BOOL	R	Pendeo only: operation with a simulated load cell
X12360	BOOL	R/W	Switch D395 to net weight.
X12400	BOOL	W	Zero device.
X12401	BOOL	W	Tare device
X12402	BOOL	W	Reset the tare of the device
X12403	BOOL	W	Start the test mode
X12404	BOOL	W	Finish the test mode
X12405	BOOL	W	Reset the power fail signal
X12406	BOOL	W	Set fixed tare weight D415 as tare
X12407	BOOL	W	Store the current gross weight in the fixed tare memory (D415)
X12409	BOOL	W	Reset error B1555 = 0.
B1552	SINT	R	Exponent Number of decimal places Example: 1.23 is displayed Exponent: 2
B1553	SINT	R	Weight unit 1 = mg, 2 = g, 3 = kg, 4 = t, 5 = lb, 9 = oz
B1554	SINT	R	Verification interval (for multi-interval/multi-range = d1 or e1)
B1555	BYTE	R	Last weighing point error, see PR 5900 operating instructions.
B1556	BYTE	R	Higher byte of product code (0x59)
B1557	BYTE	R	Lower byte of product code (0x00)
B1558	BYTE	R	Major part of version number (1.0)
B1559	BYTE	BYTE	Minor part of version number (1.0)
B1567	BYTE	BYTE	ADC status
D390	UDINT	R	Serial number (board number)
W782	INT	R	Counter will be increased for every measured value.
D392	DINT	R	Current gross weight
D393	DINT	R	Current net weight
D394	DINT	R	Current tare weight
D395	DINT	R	Current gross/net weight selected with X12360

SPM address	Data type	R/W	Function
D396	DINT	R	Gross value with magnifier 100 (centi d)
D397	DINT	R	Tare value with magnifier 100 (centi d)
D398	DINT	R	Max weight (FSD = Full Scale Deflection)
D399	DINT	R	Min weight
D406	DINT	R	Current set point
D407	DINT	R	Activity counter, test of communication with device
D408	DINT	R	Limit 1 on
D409	DINT	R	Limit 1 off
D410	DINT	R	Limit 2 on
D411	DINT	R	Limit 2 off
D415	DINT	R/W	Preset tare memory (X12406, X12407)
X13312	BOOL	R	Weight is valid.
X13313	BOOL	R	Weighing point is active for batching.
X13314	BOOL	R	Batching stopped.
X13315	BOOL	R	Batching is in the calming time.
X13316	BOOL	R	Coarse flow
X13317	BOOL	R	Fine flow
X13318	BOOL	R	Discharge
X13319	BOOL	R	Direction for the simulation
X13320	BOOL	R	Reaction to rising edge: Restart after stopping.
X13321	BOOL	R	Combination command reaction to rising edge: Weighing point ongoing -> stop Weighing point stopped -> cancel
X13322	BOOL	R	Reaction to rising edge: Command for manual batching. A tolerance alarm may occur after the [Done] softkey. The [Cancel] and [Accept] softkeys then are shown. [Accept] can also be triggered by this bit.
X13323	BOOL	R/W	Batching alarm Material flow warning
X13324	BOOL	R	Tolerance alarm



SPM address	Data type	R/W	Function
<b>B1666</b>	<b>BYTE</b>	R	<b>Recipe status: Bar graph of statuses</b>
X13328	BOOL	R	0...-Tolerance
X13329	BOOL	R	-Tolerance...Set point
X13330	BOOL	R	Set point...+Tolerance
X13331	BOOL	R	+Tolerance...Max
X13332	BOOL	R	-Tolerance...+Tolerance
A bar graph is shown in the status display during batching. For manual batching, these bits show where the batched quantity is located. As the bar graph is difficult to read from a distance, the status can be displayed locally e.g. by way of digital signals on lamps.			
W834	INT	R	Recipe status: active line number for this weighing point If a recipe uses multiple weighing points, they are active simultaneously/in parallel and the recipe has an active line number for each weighing point.
<b>L209</b>	<b>LWORD</b>	W	<b>SPM out</b>
X13376...13439	BOOL	R	Output
<b>L210</b>	<b>LWORD</b>	W	<b>SPM out AND coarse</b>
X13440...13503	BOOL	R	Output and coarse
<b>L211</b>	<b>LWORD</b>	W	<b>SPM out AND fine</b>
X13504...13567	BOOL	R	Output and fine
B1704...1721	BYTE	R	Recipe status: Material ID Material name that is active for this weighing point.

**Note:**

Freely assignable SPM addresses D424...D425, see Chapter [12.11](#).

**Note:**

The system variables (e.g. ST\_WGT\_A) for communication via OPC are described in operating instructions PR 1792 (Chapter 4 + 5).

## 12.8 Digital and analog inputs and outputs

SPM address	Data type	R/W	Function
D512	DINT	R	Digital input 1 (option-1)
D513	DINT	R	Digital input 2 (option-2)
D514	DINT	R	Digital input 3 (built-in)
D516	DINT	R/W	Digital output 1 (option-1)
D517	DINT	R/W	Digital output 2 (option-2)

SPM address	Data type	R/W	Function
D518	DINT	R/W	Digital output 3 (built-in)
D520	DINT	R	Analog input 1 (option-1)
D521	DINT	R	Analog input 2 (option-2)
D523	DINT	R/W	Analog output 1 (option-1)
D524	DINT	R/W	Analog output 2 (option-2)

## 12.9 ModBus TCP modules

SPM address	Data type	R/W	Function
<b>W1052</b>	<b>UINT</b>	R	Input module 1
X16832...16847	BOOL	R	Digital inputs 1...16
<b>W1053</b>	<b>UINT</b>	R	Input module 2
X16848...16863	BOOL	R	Digital inputs 1...16
<b>W1054</b>	<b>UINT</b>	R	Input module 3
X16864...16879	BOOL	R	Digital inputs 1...16
<b>W1055</b>	<b>UINT</b>	R	Input module 4
X16880...16895	BOOL	R	Digital inputs 1...16
<b>W1056</b>	<b>UINT</b>	R	Input module 5
X16896...16903	BOOL	R	Digital inputs 1...8
<b>W1057</b>	<b>UINT</b>	R	Input module 6
X16912...16919	BOOL	R	Digital inputs 1...8
<b>W1058</b>	<b>UINT</b>	R	Input module 7
X16928...16935	BOOL	R	Digital inputs 1...8
<b>W1059</b>	<b>UINT</b>	R	Input module 8
X16944...16951	BOOL	R	Digital inputs 1...8
<b>W1062</b>	<b>UINT</b>	R/W	Output module 1
X16992...17007	BOOL	R/W	Digital outputs 1...16
<b>W1063</b>	<b>UINT</b>	R/W	Output module 2
X17008...17023	BOOL	R/W	Digital outputs 1...16
<b>W1064</b>	<b>UINT</b>	R/W	Output module 3
X17024...17039	BOOL	R/W	Digital outputs 1...16
<b>W1065</b>	<b>UINT</b>	R/W	Output module 4
X17040...17055	BOOL	R/W	Digital outputs 1...16
<b>W1066</b>	<b>UINT</b>	R/W	Output module 5-0
X17056...17071	BOOL	R/W	Digital outputs 1...16
<b>W1067</b>	<b>UINT</b>	R/W	Output module 5-1
X17072...17087	BOOL	R/W	Digital outputs 17...32
<b>W1068</b>	<b>UINT</b>	R/W	Output module 5-2
X17100...17103	BOOL	R/W	Digital outputs 33...36

<b>SPM address</b>	<b>Data type</b>	<b>R/W</b>	<b>Function</b>
<b>W1069</b>	<b>UINT</b>	R/W	Output module 6-0
X17104...17119	BOOL	R/W	Digital outputs 1...16
<b>W1070</b>	<b>UINT</b>	R/W	Output module 6-1
X17120...17135	BOOL	R/W	Digital outputs 17...32
<b>W1071</b>	<b>UINT</b>	R/W	Output module 6-2
X17148...17151	BOOL	R/W	Digital outputs 33...36
<b>W1072</b>	<b>UINT</b>	R/W	Output module 7-0
X17152...17167	BOOL	R/W	Digital outputs 1...16
<b>W1073</b>	<b>UINT</b>	R/W	Output module 7-1
X17168...17183	BOOL	R/W	Digital outputs 17...32
<b>W1074</b>	<b>UINT</b>	R/W	Output module 7-2
X17184...17199	BOOL	R/W	Digital outputs 33...48
<b>W1075</b>	<b>UINT</b>	R/W	Output module 7-3
X17212...17215	BOOL	R/W	Digital outputs 49...52
<b>W1076</b>	<b>UINT</b>	R/W	Output module 8-0
X17216...17231	BOOL	R/W	Digital outputs 1...16
<b>W1077</b>	<b>UINT</b>	R/W	Output module 8-1
X17232...17247	BOOL	R/W	Digital outputs 17...32
<b>W1078</b>	<b>UINT</b>	R/W	Output module 8-2
X17248...17263	BOOL	R/W	Digital outputs 33...48
<b>W1079</b>	<b>UINT</b>	R/W	Output module 8-3
X17276...17279	BOOL	R/W	Digital outputs 49...52

## 12.10 Common SPM addresses

SPM address	Data type	R/W	Function
<b>B2560</b>	<b>BYTE</b>	R	<b>System status</b>
X20480	BOOL	R	Group report WP-A...D: Ready for remote start of the batching.
X20481	BOOL	R	Group report WP-A...D: A recipe is active.
X20482	BOOL	R	Group report WP-A...D: The batching processes have been stopped.
X20483	BOOL	R	Group report WP-A...D: Flow warning of a component
X20484	BOOL	R	Group report WP-A...D: Tolerance alarm
X20485	BOOL	R	Group report WP-A...D: The recipe has been stopped.
X20486	BOOL	R	Group report WP-A...D: The application is ready.
X20488...20495	BOOL	R/W	Remote start of a recipe (max. 8) via digital inputs
<b>For remote start via communication</b>			
<b>B2562</b>	<b>BYTE</b>	R	Recipe status 1: Exponent of set point Number of decimal places Example: 1.23 is displayed Exponent: 2
<b>B2563</b>	<b>BYTE</b>	R	Recipe status 2: Weight unit of set point 1 = mg, 2 = g, 3 = kg, 4 = t, 5 = lb, 9 = oz <b>Note:</b> A mix of metric and non-metric units at different weighing points is not possible.
<b>B2564</b>	<b>BYTE</b>	R/W	<b>Batching command 1</b>
X20512	BOOL	R/W	Start/Restart
X20513	BOOL	R/W	Stop/Cancel
X20514	BOOL	R/W	Reset error.
X20515	BOOL	R/W	Print last result.
X20516	BOOL	R/W	Switch to next weighing point.
<b>B2565</b>	<b>BYTE</b>	R	<b>Status</b>
X20520	BOOL	R	Weighing point A on the weight display
X20521	BOOL	R	Weighing point B on the weight display
X20522	BOOL	R	Weighing point C on the weight display
X20523	BOOL	R	Weighing point D on the weight display
<b>B2566</b>	<b>BYTE</b>	R/W	<b>Batching command 2</b>
X20528	BOOL	R/W	Load selected recipe.
X20529	BOOL	R/W	Disable recipe. It is possible to disable the remote start with a digital input signal.
B2567	BYTE	R	Last error, see Chapter <a href="#">12.10.1</a> .

SPM address	Data type	R/W	Function
<b>B2568</b>	<b>BYTE</b>	R	<b>Status weighing point A</b> Copy from local weighing point.
X20544	BOOL	R	Weight is valid.
X20545	BOOL	R	Weighing point is active for batching.
X20546	BOOL	R	Batching stopped.
X20547	BOOL	R	Batching is in the calming time.
X20548	BOOL	R	Coarse flow
X20549	BOOL	R	Fine flow
X20550	BOOL	R	Discharge
X20551	BOOL	R	Direction for the simulation
<b>B2569</b>	<b>BYTE</b>	R	<b>Status weighing point A</b> Flow warning
X20555	BOOL	R	Tolerance alarm
X20556	BOOL	R	Continue batching.
<b>B2570</b>	<b>BYTE</b>	R	<b>Status weighing point B</b> Copy from local weighing point.
X20560	BOOL	R	Weight is valid.
X20561	BOOL	R	Weighing point is active for batching.
X20562	BOOL	R	Batching stopped.
X20563	BOOL	R	Batching is in the calming time.
X20564	BOOL	R	Coarse flow
X20565	BOOL	R	Fine flow
X20566	BOOL	R	Discharge
X20567	BOOL	R	Direction for the simulation
<b>B2571</b>	<b>BYTE</b>	R	<b>Status weighing point B</b> Flow warning
X20571	BOOL	R	Tolerance alarm
X20572	BOOL	R	Continue batching.
<b>B2572</b>	<b>BYTE</b>	R	<b>Status weighing point C</b> Copy from local weighing point.
X20576	BOOL	R	Weight is valid.
X20577	BOOL	R	Weighing point is active for batching.
X20578	BOOL	R	Batching stopped.
X20579	BOOL	R	Batching is in the calming time.
X20580	BOOL	R	Coarse flow
X20581	BOOL	R	Fine flow
X20582	BOOL	R	Discharge
X20583	BOOL	R	Direction for the simulation
<b>B2573</b>	<b>BYTE</b>	R	<b>Status weighing point C</b> Flow warning
X20587	BOOL	R	Tolerance alarm
X20588	BOOL	R	Continue batching.

SPM address	Data type	R/W	Function
<b>B2574</b>	<b>BYTE</b>	R	<b>Status weighing point D</b> Copy from local weighing point.
X20592	BOOL	R	Weight is valid.
X20593	BOOL	R	Weighing point is active for batching.
X20594	BOOL	R	Batching stopped.
X20595	BOOL	R	Batching is in the calming time.
X20596	BOOL	R	Coarse flow
X20597	BOOL	R	Fine flow
X20598	BOOL	R	Discharge
X20599	BOOL	R	Direction for the simulation
<b>B2575</b>	<b>BYTE</b>	R	<b>Status weighing point D</b>
X20603	BOOL	R	Flow warning
X20604	BOOL	R	Tolerance alarm
X20605	BOOL	R	Continue batching.
W1288	INT	R	Recipe status WP A: current line number (= W66)
W1289	INT	R	Recipe status WP B: current line number (= W322)
W1290	INT	R	Recipe status WP C: current line number (= W578)
W1291	INT	R	Recipe status WP D: current line number (= W834)
B2592...2609	BYTE	R/W	Parameters for the remote start: Recipe name (18 alphanumeric characters)
D653	DINT	R/W	Parameters for the remote start: Recipe set point
D660	DINT	R/W	Parameters for the remote start: Number of batches
D726	DINT	R	Report: current weight value
D727	DINT	R	Report: Set point
D728	DINT	R	Report: current batch no.
D729	DINT	R	Report: Sequence number
D730	DINT	R	Report: Start date
D731	DINT	R	Report: Start time
D732	DINT	R	Report: Print end date
D733	DINT	R	Report: Print end time
B2936	BYTE	R	Report: Status ok = 0, tolerance alarm = 1, cancel = 2
B2942...2959	BYTE	R	Report: User name (18 alphanumeric characters)

### 12.10.1 Error numbers @ "LAST\_ERROR"

Number	Short name	Cause
0	ERR_NO	No error.
1	ERR_FATAL	Weight error; weighing point is faulty.
12	ERR_PRINT	Error during printing process. Connection with the printer is not possible.
14	ERR_FB_PARAM	Fieldbus parameters are invalid.
15	ERR_DB_LOAD	Error reading database entry, e.g. invalid recipe name.
16	ERR_DB_SAVE	Error on writing a database entry.
17	ERR_NOT_ALLOW	Fieldbus action is not permitted. Example: Starting filling during an ongoing filling process or starting filling when querying the system setup.
20	ERR_WGT	No valid weight, e.g.: Batching was started, but the xBPI scale is switched off or defective.
21	ERR_MODBUS	ModBus communication generates an error.

## 12.11 Freely assigned ranges

### Weighing point A

%ML	%MD	%MW	%MB	%MX							
				0	1	2	3	4	5	6	7
20	40	80	160	1280	1281	1282	1283	1284	1285	1286	1287
			161	1288	1289	1290	1291	1292	1293	1294	1295
		81	162	1296	1297	1298	1299	1300	1301	1302	1303
			163	1304	1305	1306	1307	1308	1309	1310	1311
	41	82	164	1312	1313	1314	1315	1316	1317	1318	1319
			165	1320	1321	1322	1323	1324	1325	1326	1327
		83	166	1328	1329	1330	1331	1332	1333	1334	1335
			167	1336	1337	1338	1339	1340	1341	1342	1343

### Weighing point B

%ML	%MD	%MW	%MB	%MX							
				0	1	2	3	4	5	6	7
84	168	336	672	5376	5377	5378	5379	5380	5381	5382	5383
			673	5384	5385	5386	5387	5388	5389	5390	5391
		337	674	5392	5393	5394	5395	5396	5397	5398	5399
			675	5400	5401	5402	5403	5404	5405	5406	5407
	169	338	676	5408	5409	5410	5411	5412	5413	5414	5415
			677	5416	5417	5418	5419	5420	5421	5422	5423
		339	678	5424	5425	5426	5427	5428	5429	5430	5431
			679	5432	5433	5434	5435	5436	5437	5438	5439

**Weighing point C**

%ML	%MD	%MW	%MB	%MX							
				0	1	2	3	4	5	6	7
148	296	592	1184	9472	9473	9474	9475	9476	9477	9478	9479
			1185	9480	9481	9482	9483	9484	9485	9486	9487
		593	1186	9488	9489	9490	9491	9492	9493	9494	9495
			1187	9496	9497	9498	9499	9500	9501	9502	9503
	297	594	1188	9504	9505	9506	9507	9508	9509	9510	9511
			1189	9512	9513	9514	9515	9516	9517	9518	9519
		595	1190	9520	9521	9522	9523	9524	9525	9526	9527
			1191	9528	9529	9530	9531	9532	9533	9534	9535

**Weighing point D**

%ML	%MD	%MW	%MB	%MX							
				0	1	2	3	4	5	6	7
212	424	848	1696	13568	13569	13570	13571	13572	13573	13574	13575
			1697	13576	13577	13578	13579	13580	13581	13582	13583
		849	1698	13584	13585	13586	13587	13588	13589	13590	13591
			1699	13592	13593	13594	13595	13596	13597	13598	13599
	425	850	1700	13600	13601	13602	13603	13604	13605	13606	13607
			1701	13608	13609	13610	13611	13612	13613	13614	13615
		851	1702	13616	13617	13618	13619	13620	13621	13622	13623
			1703	13624	13625	13626	13627	13628	13629	13630	13631

**Weighing point A-D**

%ML	%MD	%MW	%MB	%MX							
				0	1	2	3	4	5	6	7
323	646	1292	2584	20672	20673	20674	20675	20676	20677	20678	20679
			2585	20680	20681	20682	20683	20684	20685	20686	20687
		1293	2586	20688	20689	20690	20691	20692	20693	20694	20695
			2587	20696	20697	20698	20699	20700	20701	20702	20703
	647	1294	2588	20704	20705	20706	20707	20708	20709	20710	20711
			2589	20712	20713	20714	20715	20716	20717	20718	20719
		1295	2590	20720	20721	20722	20723	20724	20725	20726	20727
			2591	20728	20729	20730	20731	20732	20733	20734	20735





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Phone: +49.40.67960.303 | Email: [info@minebea-intec.com](mailto:info@minebea-intec.com)  
[www.minebea-intec.com](http://www.minebea-intec.com)

