sartorius
mechatronics

X5, X6 – Application
MIX Controller

Operating Manual
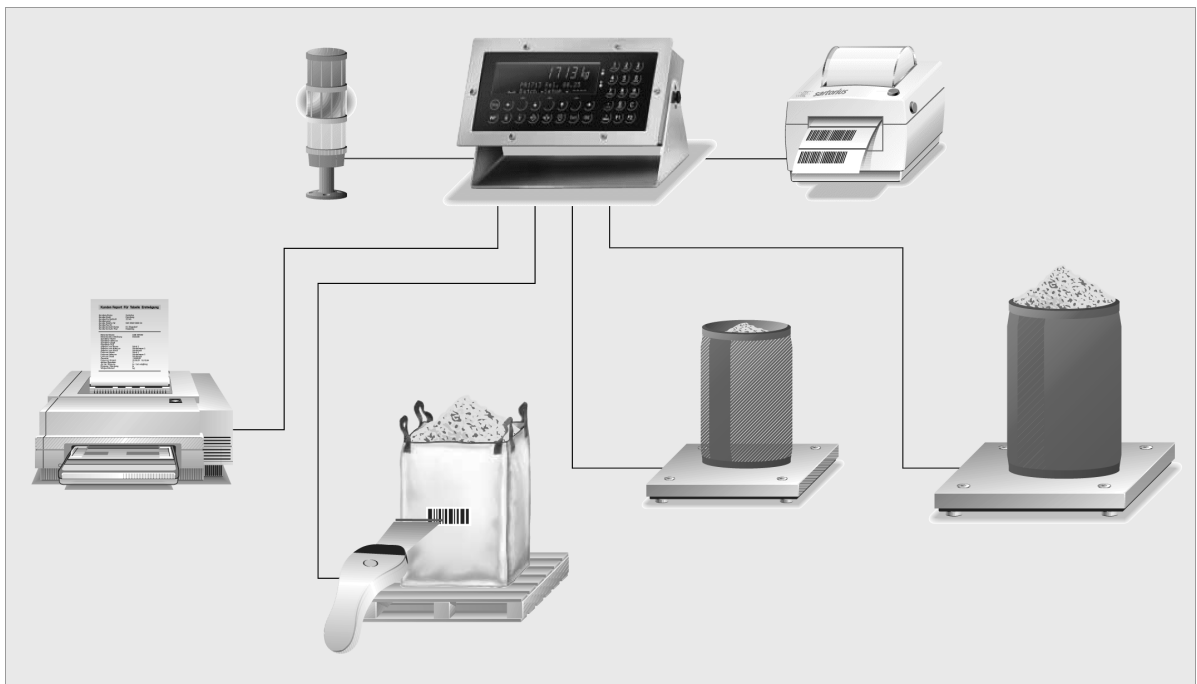
Operating Manual	9499 050 66001	Edition 1	12.02.2008
For PR 5610/60	Release 1.00		
For PR 5710/60	Release 1.00		

CONTENTS

SURVEY

1.1   General

1.1.1   Other manuals

This operating manual describes the operation of X5-MIX Controller and the differences for X6-MIX Controller. For installation, configuration and calibration, see the installation manuals of instruments PR 5610 for X5-MIX and PR 5710 for X6-MIX.

1.1.2   Instrument versions

The following MIX Controller versions are available:

Type number	Supply volt.	Description
PR 5610/60	230 VAC	X5-MIX Controller
PR 5610/61	24 VAC / DC	X5-MIX Controller 24 VAC / DC
PR 5610/62	230 VAC	X5-MIX Controller Ex Zone 2
PR 5610/62 115VAC	115 VAC	X5-MIX Controller 115 VAC, FM
PR 5610/63	24 VAC / DC	X5-MIX Controller 24 VAC / DC, Ex Zone 2, FM
PR 5710/60	230 VAC	X6-MIX Controller (19-inch, with full alphanumeric keypad)

1.2   Delivery state

The MIX Controller product comprises the following components:
- Basic unit according to table of versions (see chapter 1.1.2).
- PR1713/04 serial interface in Slot 2
- PR1713/05 memory extension 1Mbyte
- Application program MIX Controller with licence #109
- Licence PR1713/32 for batching with S88 phases
- Manuals in PDF-format on CD-ROM

Options for Slot 1... 3:
- PR1713/12, -/15, -/17 digital inputs and outputs
- PR1713/04 serial interface
- PR1713/13 DIOS master card in Slot 3, only for connection of a 2nd scale
- PR1713/06 analog output (max. 2 cards, Ethernet not possible in this case)

Options for Slot 4:
- PR1713/14 Ethernet (a 2nd analog output card is not possible in this case)

Software (optional)
- PR 1792/13 OPC server communication
- PR 1792/20 AccessIt

2nd scale (optional)
- External scale 'B'
  for Sartorius platform / scale with xBPI protocol or
  for PR 1720 transmitter via PR 1713/13 DIOS master card
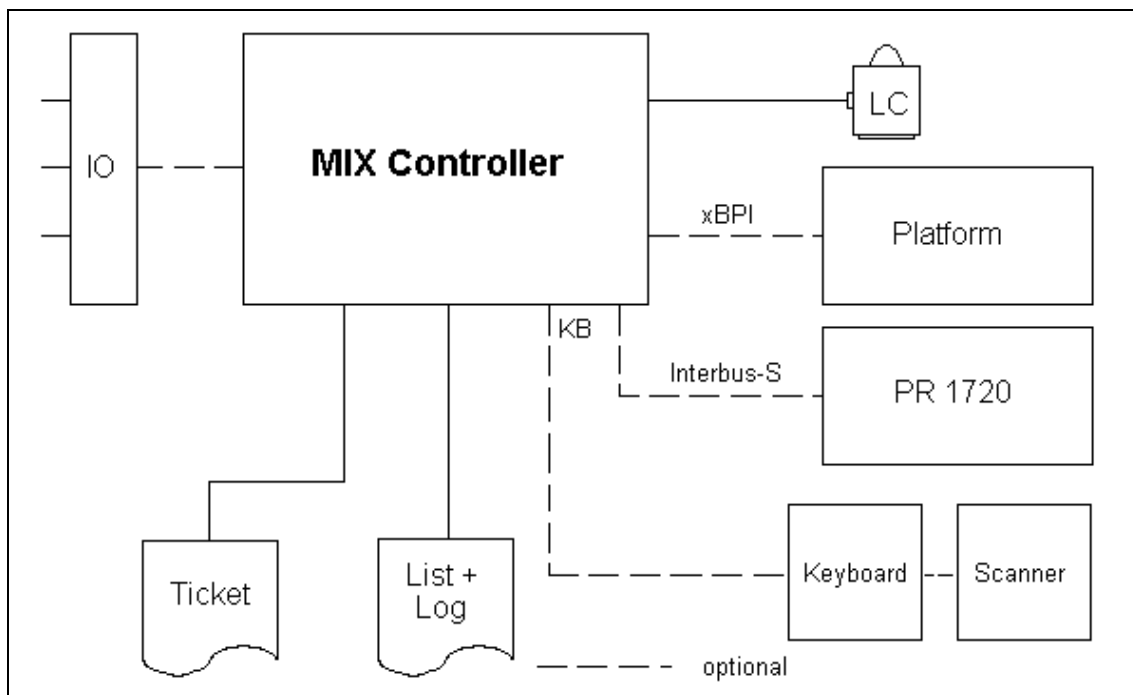
		Slot 1	Slot 2	Slot 3	Slot 4
PR1713/04	Serial I/O RS485/422 + RS232	●	● Standard	●	
PR1713/06	Analog out	● x1	● x1	● x1	
PR1713/08	BCD out / 24 out, 1 in	● x2	● x3	☻	
PR1713/12	Control I/O 4/4 opto	☻	●	●	
PR1713/13	DIOS master			●	
PR1713/14	Ethernet interface				● x1
PR1713/15	Control I/O 4/4 relay	☻	●	●	
PR1713/17	Control I/O 6/8	☻	●	●	

Symbol	Signification
● Standard	Fitted as standard after delivery
●	Can be fitted additionally
● x1	Note restrictions due to high power consumption !
● x2	Can be fitted additionally, covers the top connector of Slot 2.
● x3	Can be fitted additionally, covers the top connector of Slot 3.
☻	Preferred position (digital I/O is initialized, BCD card does not cover any connectors)
	Not supported by hardware or software

The MIX Controller requires:
1. Firmware 3.14 or higher
2. The MIX Controller application
3. Licence PR1713/32: batching with phases according to S88
4. Application licence 109

1.3   Restrictions

- Tandem scale function C = A + B is not supported.
- Using the PR1713/13 DIOS master card for process inputs and outputs is possible only on project basis.
- PR 1721 field bus cards (Profibus, Interbus-S, DeviceNet) are not supported.

1.4   MIX Controller functions

- Separate printer for tickets and reports (line printer)
- Tickets:
    - per recipe line (can be activated)
    - when finishing the recipe handling (can be activated)
- NLE (Nice Label Express) tickets can be output
- 3-level user management with PIN (can be activated)
- After selectable time, users with the privileges of an [operator] are logged out automatically (functions like a screen saver)
- Data bases for raw material, recipes, orders and line reports
- Line report for AccessIt (can be activated)
- PC connection via OPC server (for AccessIt) as an option
- For internal purposes, a work database with the lines of all active orders is kept.
- One order at a time is handled – also with 2 connected scales.
- The lines of a recipe can be handled with or without a defined order
- Orders can be interrupted during handling
- Batch modes:
    - Manual addition with configurable dialogue (e.g. batch number) and / or material ID verification
    - Net weighing (automatic) with configurable dialogue
- Control instructions in the recipe
    - Message
    - Dialog
- During batching, a weight bargraph can be displayed
- After exceeding the +tolerance (or when exceeding the -tolerance due to lack of material), the recipe can be recalculated, in order to reestablish the required material ratio.
- Tolerances are defined in per cent (%) in the material. The values are stored in the recipe, but can be overwritten in the recipe.
- Configurable digital and analog outputs
- Switch-over between / use of 2 scales

    [WP] can be pressed to switch over between WP A and WP B, provided that two weighing points were configured. If only one weighing point was configured, the scale is always "A". Identification is by means of LEDs on the instrument front panel. Another form of operation is not provided. Configuration parameters which relate to WP B are available only, if there is a second weighing point. The relevant weighing point can be determined dependent of material type.

2   OPERATOR INTERFACE

2.1   Display

On the **weight display**, 7-digit weight values with decimal point can be displayed. Weight units tons, kilograms, grams or lbs are selectable. In addition to the numeric output value, two text lines can be displayed. The remaining display symbols are shown in the following table.

Status display	Description	Status display	Description
B G	Gross weight display **Gross = net + tare** (G is active only in NTEP mode)	→0←	Weight within +/- ¼d
NET	Net weight display	◁▷	Weight standstill
T	The stored tare or initial weight is displayed.	◇	Batch is running
		◇ (blinking)	Blinking indicates an alarm.

2.2   Keypad

The symbols on the front panel keys have the following signification:

Indicator keys	Description
B	Gross weight is displayed while this key is pressed (*B – Brutto, German for Gross*).
T	Tare weight is displayed whilst this key is pressed.
→T←	Set tare and reset tare. The instantaneous gross weight is stored in the tare memory, provided that: - weight is at standstill - indicator is not in error status

Indicator keys	Description
⊙	Print out
WP	Toggle key for switching over between scale A or B
→0←	Set gross weight to zero, provided that: - standstill - within zero set range - not tared - batching not active

Menu keys	Description
Exit	Exit from menu, continue operation at next higher level.
⌒	Softkey: The function displayed above the key can be selected.
↓	Scroll down in the menu
↑	Scroll up in the menu
>More	Display of further menu functions indicated by the double arrow ⁑

Edit keys	Description
←	During editing: move cursor left or select values, when ⁑ is displayed.
→	During editing: move cursor right or select values, when ⁑ is displayed.
OK	Enter / execute / confirm
C	Backspace / delete

Function keys	Description
Stop	Stops the batch operation

Function keys	Description
F1	Programmable function key (not used with MIX Controller)
F2	Programmable function key (not used with MIX Controller)

2.2.1   Entry of alphanumeric characters

In the alphanumeric input mode, a blinking cursor is displayed in the input field. Now, material and recipe name can be entered alphanumerically, if [text] in [Setup]-[Config]-[Change]-[Parameter]-[ID codes] was set by the administrator. .

Several functions are allocated to each alphanumeric key. When pressing a key once, the first character, e.g. 'A' is displayed in the cursor position. After pressing twice, 'B' is displayed in the cursor position, and 'C' is displayed after pressing three times, etc. After the last possible character, the first one is displayed again.

When pressing another character key (also key arrow right ⬆), entry of a character is completed.
If only numeric values need to be entered, letters are not enabled. Therefore, input of values like 555 is possible by pressing the key three times without the arrow key.

Key X5	Character	Remark
1 #"( )=	#"( )=$?!%1	
2 ABC	ABCabc2	
3 DEF	DEFdef3	
4 GHI	GHIghi4	
5 JKL	JKLjkl5	
6 MNO	MNOmno6	
7 PQRS	PQRSpqrs7	
8 TUV	TUVtuv8	
9 WXYZ	WXYZwxyz9	
. −+*/	−+*/:;_'&,<>	Values with polarity sign are entered also by pressing the dot key ⬆, once for minus and twice for plus.
0 ÄÖÜ	ÄÖÜäöü0	Entry of a space is possible by pressing key ⬆ once.
C		By pressing the delete key ⬆, the relevant character is removed from the display.

2.3   Operating concept

For simplification, only the operation of the X5-MIX Controller is explained, because the operation of the X6-MIX Controller is nearly identical. Whenever necessary, differences are explained.

2.3.1   Operation via softkey

The MIX Controller operation is menu-guided. For this purpose, the controller is provided with a soft-key functionality : the function of the three softkeys with the arrow up ⌣ below the display is as described on the lower text line. For X6, the appearance of the softkey is ⬆.

```
MIX Controller
Start  ▪Setup  ▪Test
```

The double arrow ⁜ indicates that further functions can be displayed and called up by pressing keys ⬅ / ➡ or [More].

```
Order
  New   ⊹Modify⊹ Info
```

Exit from a menu to continue the operation at the next higher level is possible by pressing [Exit] .

2.3.2   Selection via scroll keys

Key arrow down ⬇ to go down or key arrow up ⬆ to go up in the menu can be pressed.

```
Setup
↓Config                  ↑
```

Press key [Exit] to leave the menu and to continue the operation at the next higher level.

Select the menu item displayed between ⁝⎯⎯⎯⎯⎯⁝ by pressing key [OK] .

Scroll keys left [↵] and right [↳] can be used to change e.g. parameter settings.
In the following example, the scroll keys are used for switching over from [No] to [Yes].

```
↓Use product name   ↑
      ↕ Yes         ↕
```

```
←                        →

              Exit)   OK)
```
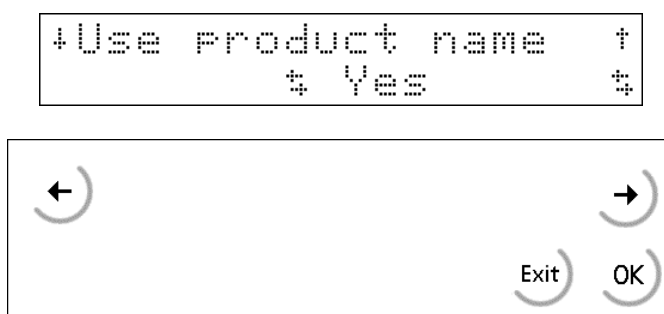
Press key [Exit] to leave the menu and to continue operation at the next higher level.

2.3.3   Quick selection

Rather than e.g. selecting a material from the material database by pressing the scroll keys [↓]/[↑], materials can be selected also using the material name.

```
Select material
↓A-Supersand-125    ↑
```
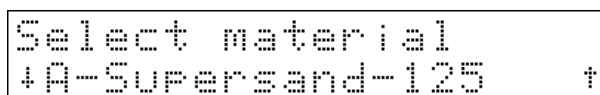
The first character of the material name can be entered to select the material the name of which starts with the entered character. If it is not possible to identify the material by entry of a single character, further characters must be entered, until the material can be identified clearly.

Example for selection of a material:

Material database	Direct selection with key **'B'**	Direct selection with keys **'B'** and **'C'**
A	B	BCT700
Azucar – 500	BA	Bulk – 200
B	BABX300	C
BA	BCT700	DEF
BABX300	Bulk - 200	Flour – 635
BCT700	C	Sugar – 100
Bulk – 200	DEF	
C	Flour - 635	
DEF	Sugar - 100	
Flour – 635		
Sugar – 100		

2.4   Entry via external PC keyboard or barcode reader

The MIX Controller has an alphanumeric keypad and a standard DIN connector for a PC keyboard or a barcode reader (scanner). Operation of the MIX Controller is possible also via the external PC keyboard / scanner. The two functions are equivalent and can be used in parallel.

PC keyboard	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Controller keypad	F1	F2		Stop	Exit		↓		↑		>More	☉

PC keyboard	←	↵	↑ ← ↓ →
Controller keypad	C	OK	↑ ← ↓ →

The factory setting of the external keyboard is for US keyboard.
For using a German keyboard, change the character set for German using [Strg][F2]. [Strg][F1] can be pressed to reestablish the factory setting (US).
The PC keyboard LEDs are not controlled.

The barcode reader can be connected instead of the keyboard at the rear keyboard connector.

PR 1713
PR 5610
PR 5710

Adapter cable

Barcodeleser / Scanner   **PS/2-m** **PS/2-f**   **5pole DIN-m**   **Keyboard**

socket
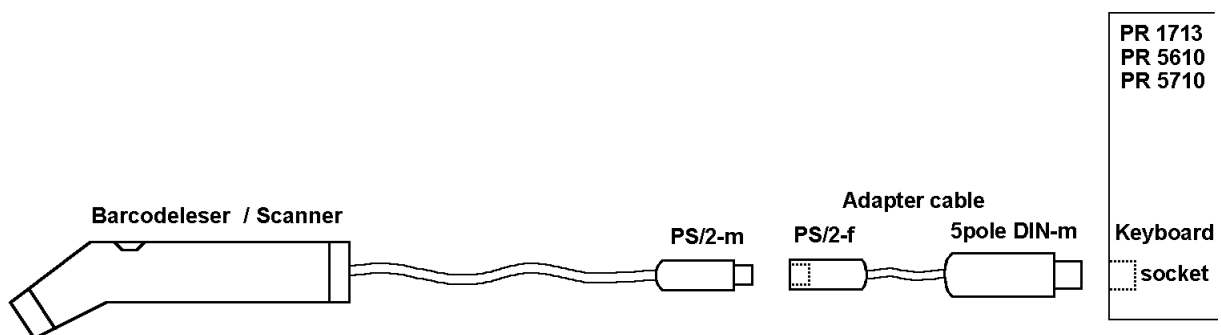
For detailed information, please, refer to the relevant installation manual.

3   MENU STRUCTURE

3.1   Setup menu

The setup menu can be selected by the 'administrator', provided that the PIN use is activated. Menu item [Config] excepted, the settings in menu [Setup] are described in the installation manual.

⚠	To prevent an operator from access to the boot menu and deletion of database contents, setting **[Reset on stop+exit] = [disabled]** in [Setup]-[Software Parameter] is indispensable.

Setup menu treep

```
    - Config                              see chapter 3.2
    - Weighingpoints                             |
    - Set Clock                                  |
    - Serial Ports                               |
    - Software Parameter                         |
    - License Setup                              |
    - Show Boardnumber                           |
    - Print Setupdata                            |
    - Print Last Fault              see installation manual
    - Refresh Display                      PR 5610
    - I/O Slots                                  |
    - Show Version                               |
    - Enable Download                            |
    - Reboot                                     |
    - Show Version                               |
    - Show memory                                |
    - Show last fault                            |
```

The following parameters are not relevant for the MIX Controller, however, they should be adjusted as follows in [Setup]-[Software Parameter]:

[Report to]   [none]
[S88.01 interface]   [off]
[Lines per recipe]   [1]
[Recipe simulation]   [disabled]
[Subrecipe]   [disabled]

3.2   Configuration menu for MIX Controller

The specific configuration data for the MIX Controller are entered in this menu. The data are stored in EAROM and are saved in case of power failure and cold start. When activating the PIN function by [Use PIN] = [Yes], the configuration menu can be selected only by the 'administrator'.

Press ⟳ to select [Setup] .

```
MIX Controller
Start ▪Setup ▪Test
```

Select [Config] and confirm it with OK.

```
Setup
↓Config                    ↑
```

3.2.1   Configuration menu tree

Config	Configuration for MIX Controller
- Change	
- Input config.	Function assignment for installed input cards
- Slot 1	Input configuration for Slot 1
- Slot 2	Input configuration for Slot 2
- Slot 3	Input configuration for Slot 3
- Output config.	Function assignment for installed output cards
- Slot 1	Output configuration for Slot 1
- Slot 2	Output configuration for Slot 2
- Slot 3	Output configuration for Slot 3
- Limit config.	
- WP-A: Limit 1 on	0 – FSD (full scale deflection)
- WP-A: Limit 1 off	0 – FSD
- WP-A: Limit 2 on	0 – FSD
- WP-A: Limit 2 off	0 – FSD
If WP B is also installed, further trigger points are displayed.	
- Parameter	
- Scale identifier	
- Use product name	No, yes
- Prompt comment 1	
- Prompt comment 2	
- Recalculation	No, yes
- ID codes	Text, numeric
- Ticket for lines	No, yes
- Lines layout	O_NRLMCSXA*+-WUVBED.
- Ticket for order	No, yes
- Order layout	O NR1SXA*12WUBED.
- Line printer	No printer, = ticket, Slot 1... 3, RS485| RS232,Builtin
- Print log	No, yes
- Log to database	No, yes
- Date format	DD.MM.YYYY, MM/DD/YYYY, YYYY.MM.DD
- Use PIN	Non, yes
- Logoff after	0, 1, ... 30000 s
- * Simulation	
- Simulation A	No, yes (entry of coarse flow rate)
- Simulation B	As A, if WP-B installed

* Only accessable if CAL switch is open

Config   Configuration for MIX Controller (page 2)
 – User
     – New
         – Name   max. 18 characters
         – New PIN   1111 ... 9999
         – Repeat PIN   1111 ... 9999
         – User is   Operator, supervisor, admin
     – Modify
         – Name   Select
         – New PIN   1111 ... 9999
         – Repeat PIN   1111 ... 9999
         – User is   Operator, supervisor, admin
     – Delete
         – Name   Select
         – Delete User ?   No, yes
 – Print   Configuration data print-out

4 CONFIGURATION

4.1 General

If the DIOS card is fitted, its fieldbus module type configuration is fixed. It is used only for connection of an external scale. Using the inputs and outputs is possible in the framework of a software project.

4.2 Switching on the MIX Controller

After switching on the supply voltage. "MIX Controller" appears on the alphanumeric display before activation of the main menu.

There are three possible ways to reach the boot menu:
1. Menu **[Setup]-[Reboot], [Warm]** start is possible
2. Press ⬚ when switching on the instrument
3. Press keys ⬚ + ⬚ , press (**[Setup]-[Software Parameter]-[Reset on stop+exit]** = 1 or 5 s.), whereby **[Warm]** start is not possible.

⚠	Please, note that you may make a **[Cold]** start only in case of emergency (e.g. after installation of a new options card), because all users, orders, recipes and materials etc., are deleted !

Further details are given in the relevant chapter of the installation manual.

4.2.1 Default settings

After [Erase], all settings (in EAROM) are reset to default. The command cannot be handled, if the CAL switch is set.

⚠	[Erase] will erase all entered data (materials, recipes, orders) and database contents. The calibration data and parameters are set to default, licence numbers (included on paper in the consignment) must be re-entered.

4.3 Selecting the configuration

Press [Setup].

```
MIX Controller
Start ▪Setup ▪Test
```

Press ⬚/⬚ to select [Config] and confirm it with ⬚.

```
Setup
↓Config              ↑
```

The configuration data are stored in RAM and are saved in EAROM.

```
Configuration
Change▪ User ▪Print
```

4.3.1 Inputs

Only Slot 1

Input no.	Function	Bit
1	Set WP–A to zero	16
2	Set tare WP–A	17
3	Reset tare WP–A	18
4		128

4.3.2 Outputs

4.3.2.1 Digital outputs (only for Slot 1)

Other slots are not predefined.

Output no.	Function	Bit
1	< neg. tol (below –tolerance)	19
2	> neg. tol and < pos. tol (within tolerance)	20
3	> pos. tol (above +tolerance)	21
4	> neg. tol and < setpoint (below setpoint, within tolerance)	22
5	> setpoint and < pos. tol (above setpoint, within tolerance)	23
6	Weight of WP-A is valid	32

4.3.2.2 Analog output (only for Slot 3)

Parameter	Value
Analog output of	WP-A gross weight
Range	4 ... 20 mA
ADC error	0 mA
< 0	0 mA
> FSD	0 mA

Other slots are not predefined.

4.3.3 Parameters

Parameter	Value
Scale identification	empty
Use product name	no
Prompt for comments	empty
Permit recalculation	no
Format of IDs	numeric
Print line ticket	no
Line ticket (line printer)	'O_NRLMCSXA*+-WUVBED.'
Print order ticket	no
Print order ticket (line printer)	'O_NR1SXA*12WUBED.'
Interface for line printer	no printer
Print out log	no
Write log into database	no
Date format	2004.09.06
Use PIN	no
Time until automatic log-out	0 s (no log-out)

4.4 Configuration data changing

Go the the configuration via [Setup]-[Config].Press [Change] to change the configuration parameters.

Select the configuration parameters by pressing ⊥/↑ and confirm the selection with ᴼᴷ.

```
Configuration
Change= User =Print
```

```
↓Input config.        ↑
```

4.4.1 Configuration parameters

The following configurations are selectable:
- Configuration of inputs and outputs
- Configuration of outputs
- Limit values
- Parameters

4.4.2　　Input configuration

Digital inputs for Slot 1 to 3 can be configured, the following functions are pre-defined:

Bit	WP	Function
0		None
2		Stop
16	A	Set zero
17	A	Set tare
18	A	Reset tare
24	B	Set zero
25	B	Set tare
26	B	Reset tare

Functions related to the tare weight are used only with indicator function.

The functions for scale "B" are active only, if a 2nd scale is connected.

If the DIOS card is fitted, its fieldbus module configuration is fixed. It is used only for connecting an external scale. The function of output can be allocated in the framework of a software project. Bits 256 ... 511 are available for material definition.

An input can be assigned to the individual functions. Generally, more than one input can be allocated to an input function. In this case, the input with a higher card number and / or input number will overrule. FALSE will be assigned to non-defined input functions.

The card type and the available inputs are detected automatically. Functions for a 2nd WP can be selected, however, they are without function unless a 2nd WP is connected.

The menu is reached after pressing [Setup]-[Config]-[Change], press [OK] to select [Input config.].

```
↓Input config.        ↑
```

Press [↓]/[↑] to select the card position.

```
Input config.
↓Slot 1  ↑    I/O
```

If a slot is not fitted with a card with digital inputs, a corresponding message is displayed. The card is not selectable for an input configuration.

```
Input config.
↓Slot 2  ↑ no input
```

Select input with [↓]/[↑] and determine the required function with the relevant SPM bit number.

```
Slot 1 Input   ↓ 1↑
SPM-Bit:          17
```

Configure further cards as described aboved. [Exit] finishes the entries for this slot position.

```
Input config.
↓Slot 1  ↑    I/O
```

[Exit] finishes the input configuration.

```
↓Input config.        ↑
```

Possible plug-in cards

PR1713/08	digital I/O type:	1 input
PR1713/12	digital I/O type:	4 inputs
PR1713/15	digital I/ relay O type:	4 inputs
PR1713/17	digital I/O type:	6 inputs

4.4.3   Digital output configuration

A function can be allocated to the individual inputs and outputs. Card type and available I/Os are detected automatically.

Bit	WP	Function
0	Device	Always TRUE
1	Device	Phase active
10	A	Limit 1
11	A	Limit 2
12	B	Limit 1
13	B	Limit 2
19	Manual	< - tol (below –tolerance)
20	Manual	> -tol and < +tol (within tolerance)
21	Manual	> +tol (above +tolerance)
22	Manual	> -tol and < setpoint
23	Manual	> setpoint and < +tol
32	A	Weight is valid
33	A	¼ d
34	A	Standstill
35	A	Tare set
36	A	Coarse
37	A	Fine
38	A	Discharge
39	A	Direction for simulation
40	B	Weight is valid
41	B	¼ d
42	B	Standstill
43	B	Tare set
44	B	Coarse
45	B	Fine
46	B	Discharge
47	B	Direction for simulation

The functions of scale "B" are active only, if B exists.

The traffic light is switched on only during manual batching.

The functions of scale "B" are active only, if B exists.

If the DIOS card is fitted, its fieldbus module type configuration is fixed. It is used only for connection of an external scale. The function of outputs can be allocated only in the framework of a software project.

Bits 256 ... 511 are available for the material definition.

Bits 128 ... 159 are mirrored into range 192 ... 255 with an AND function with coarse/fine. I.e. bits 192 ... 255 can be used only for automatic batching.

Bit	Bit AND coarse flow A	Bit AND fine flow A	Bit AND coarse flow B	Bit AND fine flow B
128 ... 143	192 ...207	208 ... 223		
144 ... 159			224 ... 239	240 ... 255

The menu is reached by pressing [Setup]-[Config]-
[Change].
Press ⟦OK⟧ to select [Output config.].

Select the card position with ⟦↓⟧/⟦↑⟧ .

Unless a card with digital outputs is fitted in a slot, a
corresponding message is displayed. The card is not se-
lectable for an output configuration.
Press ⟦↓⟧/⟦↑⟧ to select the output channel and deter-
mine the required function with the relevant SPM bit
number.

⟦Exit⟧ finishes the entries for this slot position. Configure
further plug-in cards as described above.

⟦Exit⟧ finishes the output configuration.

```
↓Output config.          ↑

```

```
Output config.
↓Slot 1   ↑      I/O
```

```
Output config.
↓Slot 2   ↑  no output
```

```
Slot  1 Output   ↓ ↓↑
SPM-Bit:         36
```

```
Output config.
↓Slot 1   ↑      I/O
```

```
↓Output config.          ↑

```

Possible plug-in cards

PR1713/08	digital I/O type:	24 outputs
PR1713/12	digital I/O type:	4 outputs
PR1713/15	digital I/ relay O type:	4 outputs
PR1713/17	digital I/O type:	8 outputs

4.4.4   PR1713/08 BCD card configuration

For mechanical reasons, the BCD card should be fitted in slot 3, see installation manual. Switch-over
from BCD to digital outputs deletes all output functions for this slot.
Card PR1713/08 is configurable as:
1. Digital output card with 24 outputs and an input.
2. BCD output of configured weight values of scale A or B.

4.4.4.1   PR1713/08 as a digital I/O card

For mechanical reasons, PR1713/08 should be fitted in Slot 3.

Select Slot 3 with ⟦↓⟧/⟦↑⟧ and press ⟦OK⟧ to confirm.

Press ⟦←⟧/⟦→⟧ to select [digital] and confirm it with ⟦OK⟧.

Continue operation as with other digital I/Os,
see chapter 4.4.3.

```
Output config.
↓Slot 3   ↑      I/O
```

```
↓Mode of output      ↑
       ↕   digital    ↕
```

```
Slot  3 Output   ↓ ↓↑
SPM-Bit:         36
```

4.4.4.2   PR1713/08 as a BCB output for weight value

For mechanical reasons, PR1713/08 should be fitted in Slot 3.

One of the following weight values can be displayed:
- gross weight
- net weight
- tare
- following the display on the instrument.

5 decades are displayed. With more than 5-digit scale, the most significant decade is not displayed. The data relate to the scale selected with parameter [Source of Data].

Bit	PIN	Con-nector	Signification	
0	1		1	
1	2		2	10**0
2	3		4	
3	4		8	
4	5		1	
5	6		2	10**1
6	7		4	
7	8		8	
8	9		1	
9	10		2	10**2
10	11	X 104	4	
11	12		8	
12	13		1	
13	14		2	10**3
14	15		4	
15	16		8	
16	17		1	
17	18		2	10**4
18	19		4	
19	20		8	
20	1		Negative	
21	2	X 105	Standstill	
22	3		Value valid	
23	4		Tare set	

Select Slot 3 with ⬇/⬆ and confirm it with OK.

```
Output config.
↓Slot 3  ↑   I/O
```

Press ⬅/➡ to select [BCD] and confirm it with OK.

```
↓Mode of output   ↑
  ↕    BCD    ↕
```

Select scale A [WP-A] or scale B [WP-B] by pressing ⬅/➡ and confirm it with OK.

```
↓Source of data:  ↑
  ↕    WP-A    ↕
```

Press ⬅/➡ to select [Gross] or [Net] or [Tare] or [as display] and confirm it with OK.

```
↓BCD value        ↑
  ↕    Gross   ↕
```

Press Exit to finish the slot configuration.

```
Output config.
↓Slot 3  ↑   I/O
```

4.4.5   Output configuration of analog card

An analog output (max. 2) can be fitted in Slot 1, 2 or 3. A scale is selected as a data source.

Press ⊡/⊡ to select the slot in which the PR1713/07 card is fitted and confirm it with ⊡.

```
Output config.
↓Slot 3 ↑    Analog
```

Select scale A [WP-A] or scale B [WP-B] with ⊡/⊡ and confirm it by pressing ⊡.

```
↓Source of data:   ↑
        ↕     WP-A    ↕
```

Select the weight value for the analog output by pressing ⊡/⊡.

```
↓Analog value      ↑
        ↕     Gross    ↕
```

Press ⊡/⊡ to select the range for the analog output.

```
↓Analog range      ↑
        ↕  0...20 mA  ↕
```

Select output behaviour in case of error with ⊡/⊡.

```
↓If ADC error      ↑
        ↕     0mA    ↕
```

Select output behaviour in case of weight below zero with ⊡/⊡.

```
↓If below zero     ↑
        ↕     0mA    ↕
```

Select output behaviour in case of weight above FSD with ⊡/⊡.

```
↓If above FSD      ↑
        ↕     0mA    ↕
```

[Analog value]	
[Gross]	Gross value output
[Net/gross]	Net value output. If tare was not set: gross output
[Net/0 mA]	Net value output. If tare was not set: output of 0 mA
[Net/4 mA]	Net value output. If tare was not set: output of 4 mA
[Net/20mA]	Net value output. If tare was not set: output of 20 mA

[Analog range]	
[4...20mA]	Output of 0... FSD as a 4... 20 mA signal
[0...20mA]	Output of 0... FSD as s 0... 20 mA signal

[If ADC error]	
[0mA]	If ADC error status: set output to 0 mA
[4mA]	If ADC error status: set output to 4 mA
[20mA]	If ADC error status: set output to 20 mA
[Hold]	If ADC error status: last output value remains unchanged

[If below zero]	
[0mA]	If weight below zero: set output to 0 mA
[4mA]	If weight below zero: set output to 4 mA
[20mA]	If weight below zero: set output to 20 mA
[Hold]	If weight below zero: last output value remains unchanged

[If above FSD]	
[0mA]	If weight above FSD: set output to 0 mA
[4mA]	If weight above FSD: set output to 4 mA
[20mA]	If weight above FSD: set output to 20 mA
[Hold]	If weight above FSD: last output value remains unchanged

Press ⊡ to leave the menu.

4.4.6   Limit value input

Select the menu for limit values.

```
↓Limit config.        ↑

```

Press ⬇/⬆ to select [WP: A limit 1 on].

```
↓WP-A: Limit 1 on   ↑
                 0  kg
```

After pressing ⏺, enter a numeric value for Limit 1.

```
↓WP-A: Limit 1 on   ↑
               100  kg
```

Definition of the limit values for Limit 1 off, Limit 2 on and Limit 2 off can be done accordingly.
For output addresses of Limit 1 and Limit 2, see chapter 4.4.3.
If a second scale (WP: B) is installed, 4 other values can be configured.
Example:

The output signal of limit contact 1 switches OFF above 900kg, limit contact 2 switches OFF below 290 kg. The limit contacts both have a hysteresis of 10 kg. With power failure (both limit contacts OFF), the contacts indicate underfill and overfill simultaneously.
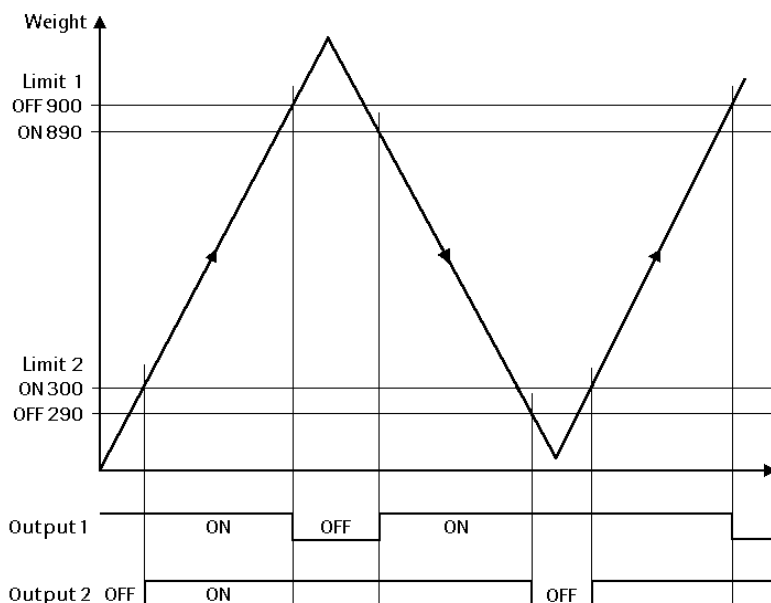
If the limit values for ON and OFF are equal, the limit contact switches ON, when the weight is above the value and OFF, when the weight drops below the value.
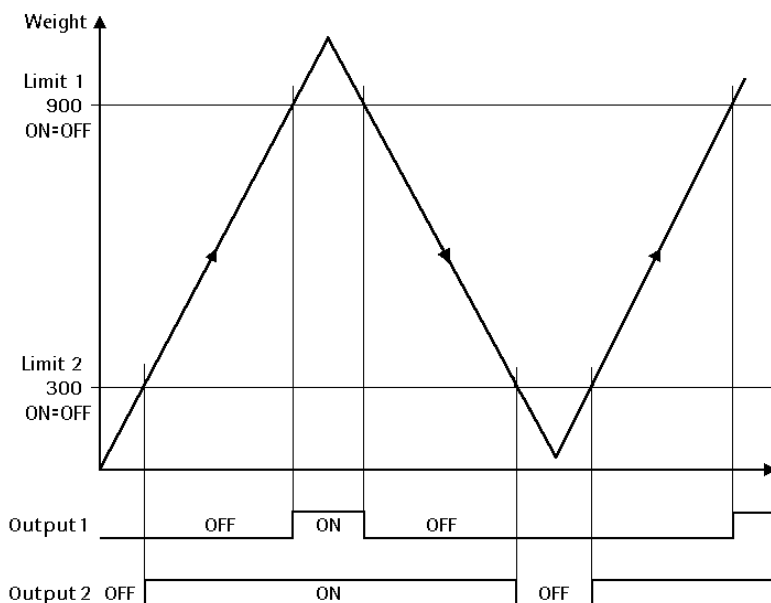
4.4.7   Parameters

The menus are reached with [Setup]-[Config]-[Change]-[Parameter], the parameters can be selected by pressing ⤓/⤒:

[Scale identifier] Scale identification name

The scale identification appears on the ticket print-out and in the log.

Input of an identification name with max.18 alphanu-
meric characters

```
↓Scale identifier   ↑
Analy.Station A-99
```

[Use product name] Product name

The product name can be printed out on the tickets in 'Product'.
[Yes]: When creating the order, the name is prompted
and printed out on tickets.
[No]: No prompt and no name print-out

```
↓Use product name   ↑
         ↕ No         ↕
```

[Prompt comment 1] Prompt for comment 1

Enter descriptive text with max. 18 alphanumeric char-
acters.
If the field is empty, no prompt is made.

```
↓Prompt comment 1   ↑
Customer order
```

[Prompt comment 2] Prompt for comment 2

The text which appears as a description of the input prompt when creating an order can be entered.
The entered text (without the description) is stored in the report database.

Enter prompt text with max. 18 alphanumeric charac-
ters.
If the field is empty, no prompt is displayed.

```
↓Prompt comment 2   ↑
Target bin
```

[Recalculation] Order recalculation

An order can be recalculated in case of batches with
exceeded tolerance.
Switch-on is with [Yes], switch-off is with [No].

```
↓Recalculation      ↑
         ↕ No         ↕
```

[ID codes] Ident code format

With entries via the instrument keypad, [numeric] should be selected in this item.

Format of material and order code
[numeric] – only digits or [text] – alphanumeric

```
↓ID codes           ↑
↕      numeric       ↕
```

In case of subsequent change of [text] into [numeric], identification is not possible any more, because only digits will be accepted subsequently.

[Ticket for lines] Print line ticket

Via the printer interface [Printer device at], self-
adhesive tickets per handled order line can be printed,
press [Yes] to activate the function.

```
↓Ticket for lines   ↑
         ↕ No         ↕
```

[Lines layout] Layout of lines

Contents and order of data in the default ticket of an
order line can be changed by means of a special charac-
ter string (see chapter 4.4.7.1).

```
↓Lines layout       ↑
O_NRLMCSXA*+-WUVBED.
```

[Ticket for order] Print order end ticket

Self-adhesive tickets per finished order can be printed
out via the printer interface [Printer device at],
the function is activated with [Yes].

```
↓Ticket for order   ↑
      ↕ No          ↕
```

[Order layout] Order end layout

A special character string (see chapter 4.4.7.1) can be
used to change the content and order of data in the
default ticket of the order end.

```
↓Order layout       ↑
O_NR1SXA*12WUBED.
```

[Lineprinter] Interface for line printer

Logs and lists are output on a separate line printer (80 characters/line). The interface must be config-
ured.

Possible settings:
- [No printer]
- [= ticket] on ticket printer (e.g. for test purposes)
- [Slot 1 ... Slot 3 RS485 | RS232]
- [Builtin]

```
↓Line printer       ↑
    ↕ Slot 1  RS232 ↕
```

[Print log] Print out log

Each batch can be printed out on the line printer. This
function must be activated.

```
↓Print log          ↑
         ↕ No       ↕
```

[Log to database] Write log into database

Each batch can be stored in the log database. After each batch, the MIX Controller writes into the da-
tabase. The entries are read by the PC and deleted. An administrator can delete in [Database]-[Report].

The function can be activated with [Yes].

```
↓Log to database    ↑
         ↕ No       ↕
```

[Date format] Date format

Press ⏎/➡ to select the format for date:
[2004.09.16] or [16.09.2004] or [09/16/2004]

```
↓Date format        ↑
      ↕ 2004.09.16 ↕
```

[Use PIN] Activate PIN code

When setting [Yes], a PIN for identification is required,
see chapter 4.5

```
↓Use PIN            ↑
         ↕ No       ↕
```

[Logoff after] Time until automatic logout

If the controller is not used during a defined time, the
logged in user is logged out automatically (only with
[Use PIN] = [Yes]). This function is **not** active during a
weighing operation, when a database search is running,
when an entry is made, ... (0 = off, 1, 2, ... 30000 s ~ 8
hrs)

```
↓Logoff after       ↑
            3600 s
```

4.4.7.1   Ticket layout coding

Character	Description
*	Batch status (OK, tolerance, ...)
+	Upper tolerance (not defined for order)
-	Lower tolerance (not defined for order)
.	Empty line
1	Comment 1 according to configuration
2	Comment 2 according to configuration
A	Batched amount line / order
B	Start time batch line / order
C	Batch number (from dialogue, not defined for order)
D	Print-out time
E	End of batch line / order
F	Form feed (^L)
L	Line number in recipe (not defined for order)
M	Name of material (not defined for order)
N	Name of product
O	Order identification
R	Name of recipe
S	Line / order setpoint
U	Person who has created the order
V	Person who has batched (not defined for order)
W	Scale description
X	Identification for recalculation
_	Dotted line

Coding only relates to the ticket layout unless printing is done with NLE.

4.5   User Management

Starting an application is associated with the log-in of an authorized user. Storage or print-out of all data is with the name of this user.
Finishing the application is done in two steps:
     1. The user has to log out.
     2. A user with administrator privileges can finish the application after entry of his PIN.
The user with name [Administrator] is created automatically. He has administrator privileges and cannot be deleted. For this, default setting is PIN 9999.

⚠	A PIN is prompted only, if the parameter in [Setup]-[Config]-[Change]-[Parameter]-[Use PIN] was set to [Yes].
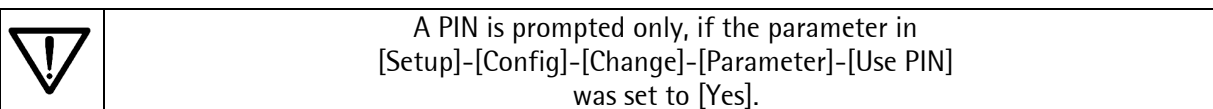
The menu is reached via [Setup]-[Config]-[User].
Editing is selected with [Modify].

```
User management
 New  ▪Modify▪Delete
```

The user database is 'hidden', i.e. access is not possible for AccessIt and terminal (L mode).

4.5.1   Privileges

The 3 user hierarchies with different privileges are:
- Administrator
- Supervisor
- Operator

Privilege	Operator	Supervisor	Administrator
Weighing	√	√	√
Creating an order	√	√	√
Editing an order		√	√
Deleting an order		√	√
Re-calculating setpoints		√	√
Creating material		√	√
Editing material		√	√
Deleting material		√	√
Creating a recipe		√	√
Editing a recipe		√	√
Deleting a recipe		√	√
Changing one's own PIN	√	√	√
Deleting report data			√
Creating a user			√
Editing a user			√
Deleting a user			√
Leaving application			√
Set-up/configuration			√

4.5.2   New user

Creating a new user is done with name, privileges and PIN by an administrator.

The menu is reached via [Setup]-[Config]-[User], select [New].

```
User management
  New  ▪Modify▪Delete
```

Enter the name (max. 18 characters) and confirm it with ⌗ᴏᴋ.

```
Name
Cook
```

```
Duplicate name
Cook
```

A message is displayed during approx. 3 seconds, if this name was already created.

Enter a 4-digit PIN (within 1111 and 9999) and press ⌗ᴏᴋ.

```
New PIN
                ****
```

The entry must be repeated:

```
Repeat PIN
                ****
```

Press ⌗/⌗ to select from [Operator], [Supervisor] or [Admin], confirm with ⌗ᴏᴋ.

```
User is
       ↕  Operator  ↕
```

4.5.3   User data modification

Privileges and PINs can be changed by the administrator. Existing PINs cannot be read by the administrator.

The menu is reached via [Setup]-[Config]-[User], select [Modify].

```
User management
  New  ▪Modify▪Delete
```

Press ⌗/⌗ to select the user name and confirm it with ⌗ᴏᴋ.

```
User
↓Cook               ↑
```

Enter a new PIN as described in chapter 4.5.2. Unless a new PIN is required, confirm it with ⌗ᴏᴋ.

Now, the privileges can be selected by pressing ⌗/⌗. Press ⌗ᴏᴋ to confirm.

```
User is
       ↕  Operator  ↕
```

4.5.4   User deletion

A user can be deleted by the administrator.

Go to the menu via [Setup]-[Config]-[User], Select [Delete].

```
User management
  New  ▪Modify▪Delete
```

Select the user who should be deleted by pressing ⌗/⌗. Confirm him with ⌗ᴏᴋ.

```
User
↓Cook               ↑
```

Press [Yes] if you want to delete the user.

```
Delete User ?
  Yes  ▪     ▪ No
```

4.5.5   User printing

A list of all users with their privileges can be printed out on the report printer. The PINs are not printed out.

4.5.6   User identification during production

Once logged in, a user is logged out automatically, if he did not use the instrument during a (pre-configured time. Checking is done at defined points of the work sequence where the operation can be continued without problems.

Select the user with ⊡/⊡ and press ⊡ to confirm him.

```
User
↓Cook                          ↑
```

The entry is hidden. The PIN is entered into the user database by the administrator and should be changed subsequently by the user, see chapter 4.5.7.

```
PIN
                            ****
```

```
Wrong PIN
```
is displayed during 3 seconds, if the PIN is faulty. A different PIN or a different user can be selected. Without valid PIN, neither exit from the program nor starting a weighing operation are possible.

Enter a valid PIN and confirm it with ⊡. The user can use the program with his entered privileges.

```
Access denied
```
is displayed during 3 seconds, if the actual user does not have the required privileges for an operation.

4.5.7   PIN changing during production

The initial PIN is determined only by the administrator. Subsequent PIN changing – independent of 'privileges' (see chapter 4.5.1) – can be done by the user himself.

MIX Controller menu

```
MIX Controller
  Mix   Orders
```

After pressing ⟦More⟧ and ⟦More⟧, you are in the maintenance menu. Select [PIN].

```
Maintenance
 PIN   Test
```

The entry is hidden.

```
New PIN
            ****
```

```
Not 1111 … 9999
            ****
```
This message is displayed during 3 seconds, if the new PIN is out of range.

Safety repetition

```
Repeat PIN
            ****
```

```
Wrong PIN
            ****
```
This message is displayed during 3 seconds in case of faulty repetition. The program is continued with the entry of a new PIN.
Press ⟦Exit⟧ to finish. The old PIN remains valid.

If the PIN entry was repeated correctly, the new PIN is valid.

```
Maintenance
 PIN   Test
```

4.5.8   Substitute PIN

If the PIN was lost, it is possible to generate a substitute PIN which can be used once. Calculation of the substitute PIN is based on the displayed service number and the calculation method available from Sartorius.

Press ⟦Exit⟧ instead of entering the PIN

```
PIN
            ****
```

Calculate the substitute PIN to be used once, enter it and press ⟦OK⟧ to confirm it.

```
Service #1234
               0
```

If the substitute PIN was entered correctly, e.g. the application program is finished.

```
MIX Controller
Start  Setup  Test
```

4.6   Configuration data print-out

Output of the configuration data is on the configured line printer. When printing the first line, check-ing whether printing was possible is done. A 2 s timeout for each print line is provided for the case of printer failure during printing. The print-out cannot be changed using 'Nice Lable Express' ..

Select [Print].

```
Configuration
Change= User =Print
```

The configuration data are printed out.

```
Printing ...
```

```
Could not print
```
This message is displayed during 2 seconds, if printing was not possible.

```
Configuration data  Mix Controller - 01.00.00
Date: 2004.10.16 15:41
---------------------------------------------


Input configuration
 Slot 1:            Digital input
  Input 1:          16
  Input 2:          17
  Input 3:          18
  Input 4:          130
  Input 5:          0
  Input 6:          0
 Slot 2:            No function
 Slot 3:            No function
Output configuration
 Slot 1:            Digital output
  Output 1:         19
  Output 2:         20
  Output 3:         21
  Output 4:         22
  Output 5:         23
  Output 6:         32
  Output 7:         0
  Output 8:         0
 Slot 1:            No function
 Slot 2:            No function

Limits
 WP-A: Limit 1 on   0.000 kg
 WP-A: Limit 1 off  0.000 kg
 WP-A: Limit 2 on   0.000 kg
 WP-A: Limit 2 off  0.000 kg
 WP-B: Limit 1 on   0 kg
 WP-B: Limit 1 off  0 kg
 WP-B: Limit 2 on   0 kg
 WP-B: Limit 2 off  0 kg

Parameter
 Name of the scale  X5-Scale-A
 Productname        on
 Comment 1
 Comment 2
 Identification     as text
 Print line ticket  on
 Print order ticket on
 Lineprinter        = Ticket
 Print log          on
 Log to database    on
 Use PIN            on
 Auto logoff after  30 s

User               Class
--------------------------------
Administrator      Admin
Cook               Supervisor
Schulze            Operator
```

4.7   Leaving the configuration

Press [Exit].

```
Configuration
Change= User =Print
```

If parameters were changed, the changes can be stored
and saved in EAROM with
[Yes]   or cancelled by pressing
[No]

Press [Exit] to continue configuration changing.

```
Store data ?
 Yes  =      = No
```

4.8   Simulation

Automatic batching (Net automatic, Discharge) can be simulated on scale A and B for
test/demonstration purposes. The configured scale values of the scale are used. The simulation can be
activated and de-activated. The simulation remains de-activated continuously, if the CAL switch is
closed. The data are not saved in EAROM.

Go to the simulation menu via [Setup]-[Config]-[Change]
with [↓]/[↑] and press [OK].

```
↓Simulation          ↑
```

For switching on per scale, press [←]/[→] to switch over
to [Yes] and confirm with [OK].

```
↓Simulation A
            ↕ No      ↕
```

Enter the required material flow speed and confirm it by
pressing [OK].

```
↓Coarse speed A     ↑
            10 kg/min
```

The speed of the coarse flow to be simulated is adjustable (in units / minute, e.g. 10 kg/min for a kg
scale). The simulation data are not included in the print-out.
Proceed accordingly with scale B (if installed).
The fine flow speed is 20% of the coarse flow speed with an overshoot of 0.5 seconds. The discharge
speed is the coarse flow speed multiplied by 20. During simulation, the dimension is not displayed by
the scale.

4.9   Analog test

The analog test is possible only for the built-in weight amplifier [internal ADC].
During calibration/adjustment, a test value is calculated and saved in EAROM automatically. This value
is scaled to FSD (e.g. 5000).
When activating the analog test, the load cell measuring signal is cut. The display is dependent on the
setting made in [Setup]-[Weighingpoints]-[WP A:Internal ADC]-[Calib]-[Param]-[Test mode]:
[Absolute]: The actual test value is displayed (e.g. 5000).
[Relative]: The difference between the initially stored and the actual test value is displayed (e.g. 0000).

Select the analog test from the main menu

```
MIX Controller
Start =Setup =Test
```

or from the maintenance menu with [Test].

```
Maintenance
 PIN  ↕ Test ↕
```

[Stop] or [Exit] stops the analog test.

```
Analog test active
      = Stop =
```

```
Analog test failure
```

This message is displayed during 3 seconds, if the WP
displayed by the LED cannot be switched to analog test
mode.

5   PROGRAM START

5.1   Procedure

For processing an order, the following steps are necessary:

1.   Create materials with [Mat]-[New].

2.   Create a recipe with [Recipe]-[New].
       All listed materials must have been created.

3.   Create an order with [Order]-[New].
       The referenced recipe must have been created.

4.   Process the order with [Mix].
       Select the order and press [Prod].
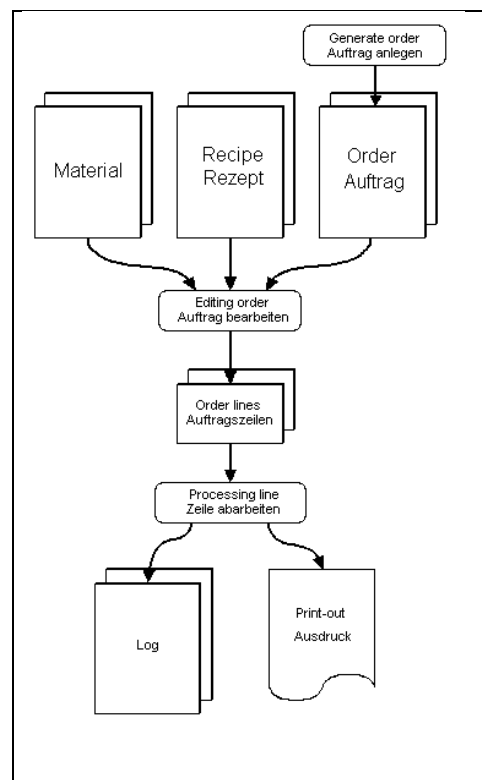
5.1.1   Principles

- Once started, an order cannot be changed any more.
  An exception is applicable to re-calculation, see chapter 5.6.3.
- Line tickets are used, if an order is filled into several containers.
- Order tickets are used, if an order must be batched into a single container.
- If possible, pressing key [⊙] generates a print-out which corresponds to the relevant simulation: list of all orders, lines of an order, …
- Names of materials, recipe and order can be text [text] or a number [numeric].
  If [ID codes] is set to [text], an external keyboard or a barcode reader should be connected, if possible (see chapter 2.4). Otherwise, we recommend setting to [numeric], if you don't have to enter comments and product names.
- If two scales are installed, the formats can be different. Unless the scale can be allocated, the format of the smaller scale is used for print-outs and the format of the bigger scale is used for set-points.
- It is indispensable to disable key combination [Stop] + [Exit] (see chapter 3.1) to prevent data loss and unauthorized exit from the application.

⚠	Please, note that the calibration data may be changed (e.g. for correction of a modified deadload) only with [Modify] after entry of materials, recipes and orders.

Order creation

An order must be created before it can be handled. Creating an order directly in the database via AccessIt! is also possible. The data transmitted by AccessIt! are not checked for plausibility by the application. Therefore, faulty data can cause unpredictable reactions.

For creating an order, the most important data are

* recipe name
* recipe total
* two comments (configurable)
* a multiplier [Repeat the order] for creating an order 1 to 99 times

After creating an order, the related recipe is disabled for handling. Changing materials of the recipe remains possible.

The order is stored in a database.

Order starting

An order from the list of created orders is selected for production, i.e. expanded, by the user. The related recipe is copied into the working database. Thereby, parameters from order, recipe and material database are combined. The setpoints are converted according to order total / recipe total.

	Changing a material **after start of the order** is without effect on this order.

Batching

The user selects the batches for the current order from the work database.

Sequential handling :   If the recipe has to be handled only sequentially, only the first – still unhandled – line of the recipe can be selected.

Free handling: If a recipe can be handled freely, the user can select any line of the current order.

Batching is done according to the batch mode. As configured, reports are made, before the next line can be handled.

Order interruption

Before starting a batch, order handling can be interrupted. The order remains selectable for handling.

Order continuation

Continuing an order is done by selecting it as for starting. All so far unhandled lines can be selected.

Recipe re-calculation

An interrupted recipe can be re-calculated (e.g. in case of overbatching of one or several lines or underbatching due to lack of material), to maintain the material ratio within the selected tolerance. Recipe re-calculation is possible as many times as necessary. This function can be activated during configuration. For details, see chapter 5.6.3.

Order completion

After handling the last line of a recipe, a report / ticket according to configuration is printed. Subsequently, the order is removed from the databases.

5.1.2   Start menu tree

```
Start                                       User log-in required for reaching the submenus
  ├ Mix                                     Select an order
  │   ├ Prod                                Produce the selected order
  │   ├ * Recalc                            Start re-calculation, only if [Recalculation] is set to [Yes]
  │   ├ Print
  │       ├ Order, Line                     Last ticket
  │       ├ List, Lines                     Order
  ├ Order
  │   ├ New
  │       ├ Name of new order               Enter the order name
  │       ├ Select recipe                   Select from already created recipes
  │       ├ * Name of product               Default is the name of the selected recipe, can be overwritten
  │       ├ Total                           Recipe total, default is the total of material setpoints
  │       ├ Repeat the order                Number of identical orders to be created
  │       ├ * prompt1                        Enter comment 1 after prompt text
  │       ├ * prompt2                        Enter comment 2 after prompt text
  │   ├ Modify                              Menu corresponds to [New], without repetitions
  │   ├ Info                                Display details of the selected order
  │   ├ Delete                              Selected order is deleted
  ├ Mat
  │   ├ * New
  │       ├ Name of material                Material name
  │       ├ Select mode                     [Manual], [Manual + dialog], [Message], [Dialog], [Discharge],[Net automat.]
  │       ├ Select scale                    Scale can be selected, if 2 WP are provided
  │       ├ Preset                          Switch-over point from coarse to fine  (automatic with Net)
  │       ├ Overshoot                       Switch-over point before reaching the setpoint (automatic with Net)
  │       ├ +Tolerance                      Tolerance above setpoint, 0 – FSD (Full scale deflection)
  │       ├ -Tolerance                      Tolerance below setpoint, 0 – FSD
  │       ├ Time to wait                    Calming time before weight determination (automatic with Net)
  │       ├ Set ready by bit                Output address for 'ready'
  │       ├ Enabled by bit                  Input address for material start enabling
  │       ├ Activates bit                   Output address for the material
  │       ├ Confirm. needed                 [No] or [Yes]
  │   ├ Modify                              Select material, menu corresponds to [New]
  │   ├ Print                               Selected material is printed
  │   ├ Delete                              Selected material is deleted
  ├ Recipe
  │   ├ New
  │       ├ Name of recipe                  Enter recipe name
  │       ├ Sequential                      With [No] :  free order of materials
  │       ├ Select material                 Select from already created materials
  │       ├ Set point                       Material quantity
  │       ├ + Tolerance                     Tolerance above setpoint, 0 – FSD
  │       ├ - Tolerance                     Tolerance below setpoint, 0 – FSD
  │   ├ Modify                              Select recipe, menu corresponds to [New]
  │   ├ Print                               Selected recipe is printed
  │   ├ Delete                              Selected recipe is deleted
  ├ Report
  │   ├ Delete all reports
  ├ PIN                                     Logged in user can change his PIN
  ├ Test                                    Start analog test
```

      * dependent on configuration settings / materials

5.2   Starting

Call up the user identification with [Start],
see chapter 4.5.6.

```
┌─────────────────────────┐
│MIX Controller           │
│Start ▪Setup ▪Test       │
└─────────────────────────┘
```

After successful log-in

```
┌─────────────────────────┐
│MIX Controller           │
│   Mix & Orders          │
└─────────────────────────┘
```

The orders are handled in this menu. The PIN can be changed by the user (see chapter 4.5.7).

When logging out with ⟨Exit⟩ in this menu, the instrument remains in the following menu:

In this menu, a new user or the present user can log in, for
details, see chapter 5.7.

```
┌─────────────────────────┐
│User                     │
│↓Cook                   ↑│
└─────────────────────────┘
```

Normally, leaving the program in order to make changes to the settings, e.g. input and output configu-
ration, user privileges, printer and scale settings, etc., should be done only by the administrator.

5.3   Material handling

Handling is done with [Start]-[Mat] in the application program.

Log-in was done correctly, other menu items can be
reached with 🔘.

```
MIX Controller
   Mix % Orders
```

Select [Mat] to reach the menu for material handling.

```
Database
 Mat  %Recipe%Report
```

New, Modify and Print can be selected.

```
Material
 New  %Modify% Print
```

Press 🔘 to go to the delete menu.

```
Material
       %Delete%
```

5.3.1   Material types (modes)

Survey of material types:

Function	Net automatic	Manual	Manual + dialog	Message	Dialog	Discharge
Select WP	yes	yes	yes	no	no	yes
Change WP	no	yes	yes	no	no	no
Check ID	no	yes	yes	no	no	no
Preset	yes	no	no	no	no	yes
Overshoot	yes	no	no	no	no	no
+ Tolerance	yes	yes	yes	no	no	no
- Tolerance	yes	yes	yes	no	no	no
Time to wait	yes	no	no	yes	no	yes
Enabled by bit	yes	no	no	no	no	yes
Ready bit	no	yes	yes	no	no	no
Activates bit	yes	yes	yes	no	no	yes
Setpoint	yes	yes	yes	no	no	no
Dialog mode [1]	no	no	2	1	4	3
Report in DB+LOG	yes	yes	yes	no	yes	no
Report on ticket	yes	yes	yes	no	no	no

Phase 0 : check of material name (ID)
Phase 1 : dialog (e.g. LOT)
Phase 2 : batching

---

[1]   1: Message in phase 1 (opt.: timeout), without [Go on],

          2: Dialog in phase 1, wait for [Go on], then phase 2

          3: No dialog in phase 1, wait for [Go on], then phase 2

          4: Dialog in phase 1, without [Go on], phase 2 and timeout

5.3.1.1   Manual

When determining the material, the scale which should be used or if selection should be done by the operator can be determined. Selection must be done before pressing [Go on].
Procedure:
1. Material verification by means of keyboard or barcode scanner (configurable)
2. Entry of a batch number by means of keyboard or barcode scanner (configurable dialogue)
Filling in the material
Confirming the weighing operation
Print ticket / report, store log

5.3.1.2   Manual + dialog

This material is a combination of manual (chapter 5.3.1.2) and dialog (chapter 5.3.1.4).

5.3.1.3   Message

The message defined in [Mat] – [New]/[Modify] – [Message] is displayed during the time determined in [Time to wait] and deleted subsequently. It can be finished with [OK] before elapse of the time.
If the time is set to 0 sec., the system is waiting until confirmation with [OK].
This component is not included in the report.

5.3.1.4   Dialog

This component is used only for data entry.
Procedure:
1. Display dialog according to dialog type.
2. Enter data, if necessary (keyboard or scanner) and confirm them.
Prompt text (= description of the entry) and entry are
- written into the report database (if configured) and
- output on the line printer (if configured).

5.3.1.5   Discharge

The scale entered in the material database is always used. The indicator is switched over to this scale automatically. The scale ([A-fixed] or [B-fixed]) must be determined, because the output signal (discharge) is related to the scale).

Procedure:
1. Switch over to 'Gross', if tare was set previously.
2. Output of discharge signal
3. When reaching the maximum residue (determined in [Preset]), waiting until
4. The remaining discharge time (determined in [Time to wait]) has elapsed.
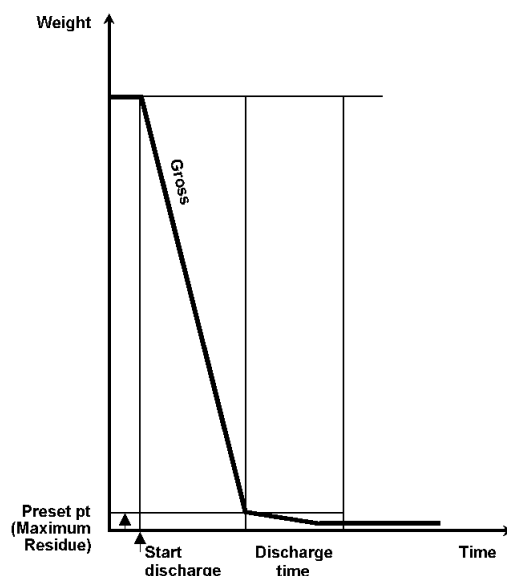
This component is not included in the report.

5.3.1.6   Net automatic

The scale ([A-fixed] or [B-fixed]) determined in [New]/[Modify] is used; fixed assignment is necessary because the output signals (coarse, fine etc.) are related to the scale. The instrument is switched over to the selected scale automatically before batching.
Procedure:
1.   Entry of a batch number by means of keyboard or barcode reader (configurable dialog)
2.   Automatic material filling in coarse or fine flow
3.   Print ticket / report, store log
Batching is done in restart mode 4.

Preset point
The preset point determines the time of switch-over (setpoint – overshoot – presetpoint) from coarse to fine (coarse flow valve is closed).
When using only one speed (only coarse) for batching, this value is not relevant, however, the 'Fine' signal must be connected!

⚠	The fine signal is active also during the 'coarse phase'. With batching at only one speed, **only** the **fine signal** must be used!

Overshoot
All material which reaches the hopper after closure of the fine valve is called overshoot. The initial value for the overshoot must be adjusted so that the material which is still on the way into the hopper will be taken into account. At the beginning, the overshoot should be set to a higher value than expected, in order to prevent the setpoint from being exceeded by the overshoot when starting for the first time.
Only the overshoot portion which has flown into the hopper until elapse of the calming time is taken into account. Overshoot calculation/correction will occur only, if tolerance checking is activated.

Calming time
As the calming time starts already after closure of the fine valve, the time for the overshoot must be taken into account. The system can be set into vibration due to dynamic effects. In order to determine the weight correctly nevertheless, a corresponding time in seconds for settling must be selected. Before the first start of a system, the calming time should be always a bit higher, in order to use a stabilized weight value for tolerance checking.
The calming time to be adjusted is dependent e.g. on the following factors

-   Time for the overshoot after closure of the fine flow valve
-   Material consistency (solid, lumpy, liquid)
-   Delays and properties of the supply system (screw, vibrator, valve)

Tolerance checking
The tolerance is specified in per cent of the setpoint per material and can be determined **with + tolerance for weight above setpoint** and **with – tolerance for weight below setpoint**.

⚠	The tolerances should not be too narrow, otherwise, overshoot optimization might not be done. A smaller tolerance does not lead to a better batch result!

Tolerance errors generate a tolerance alarm which must be acknowledged. An exceeded setpoint tolerance causes a production stop for a process step.

⚠	With + tolerance and – tolerance set to 0, no tolerance checking is done. Overshoot correction and/or post-batching are not done. The overshoot value remains unchanged.

Diagrams for batch sequence and overshoot correction (RST mode 4)
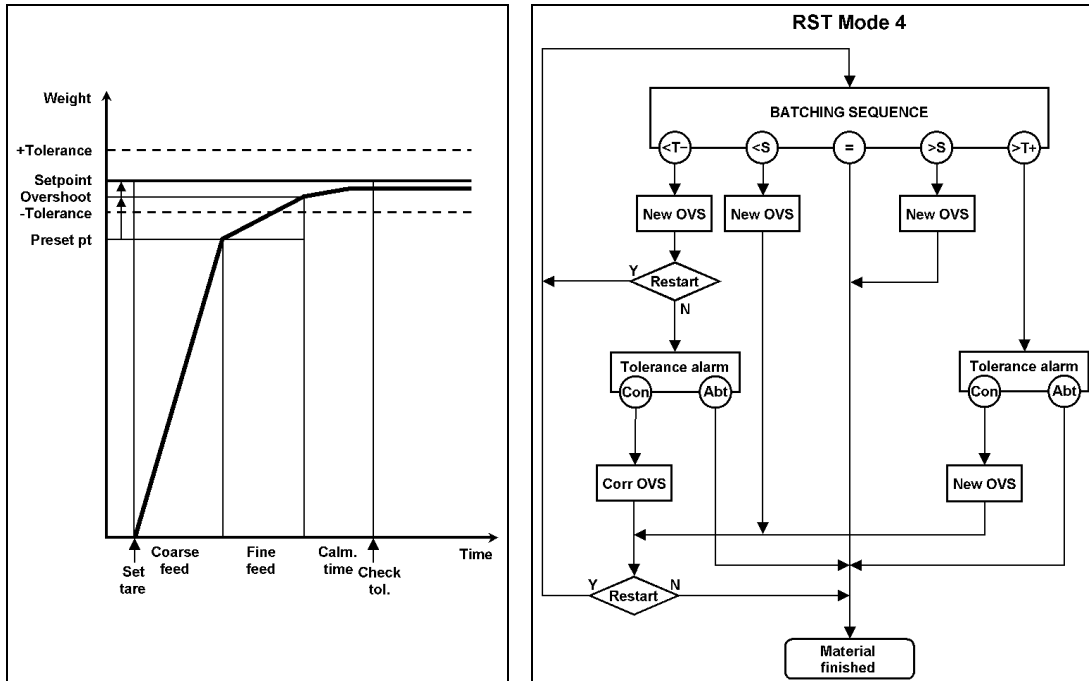
The [Net automatic] mode is used for charge batching applications based on the net weight with the following steps:

Set tare: The gross weight is stored as tare weight and the net weight starts at zero.
Preset pt.:   The coarse flow is switched off, the fine flow remains activated.
Coarse: The material is batched in coarse flow until reaching the preset point.
Fine: The material is batched in fine flow until reaching the switch–off point (overshoot).
Time to wait: Calming time during which the overshoot is effective and the scale vibrations can settle down.
Check tol.:   The batched weight is determined and checked against the tolerance values.

Abbreviations for overshoot correction used in the diagram

    (<T–)   (<S)   (=)   (>S)   (>T+)
 below –tol.   below setpoint   Setpoint reached exactly   above setpoint   above +tol

New OVS   =   old_overshoot -   (Setpoint – weight at tolerance check)/2
Corr OVS   =   old_overshoot -   (Setpoint – actual_weight)

Con   [Contin] Change overshoot, post-batch, if necessary
Abt   [Abort] Abort line, finish material

When exceeding the tolerance, the actual weight before tolerance alarm output is measured. When restarting, this weight is used for recalculating the overshoot. The operator can remove excessive material.
When the measured weight is below -tol after the calming time, a new overshoot is calculated. A setpoint difference higher than the overshoot causes post-batching.
If the weight after another waiting time until elapse of the calming time is within the tolerances and still below the setpoint, the overshoot is corrected again. Further correction is not possible.
With tolerance alarm, batching stops and the operator can make an intervention. Continue with [Contin] or cancel with [Abort].

5.3.2   Material creation

Dependent on the material mode, only part of the parameters is entered and the signification of items such as [Preset], [Time to wait] etc. can vary,
see also survey in chapter 5.3.1.

Select [New].

```
Material
  New  ‡Modify‡ Print
```

Enter the material name (with [ID code] = [text]), enter the material number with [numeric] and press OK. With [text], only the first 13 of max. 18 characters should be significant, because truncating to 13 characters will occur in the recipe editor.

```
Name of material
                  99
```

Select with ↵/→ , confirm with OK :
[Manual], [Manual + dialog], [Message], [Dialog], [Discharge], [Net automatic]

```
↓Select mode        ↑
↕       Manual      ↕
```

If 2 scales are available for the material: [fixed to A], [fixed to B], [free choice]), otherwise, the defined scale is entered, press OK to confirm.

```
↓Select scale       ↑
↕     fixed to A    ↕
```

Determine the switch-over point (0 ... FSD) from coarse to fine flow, press OK to confirm.

```
↓Preset             ↑
              0   kg
```

Enter the expected overshoot, confirm with OK (the overshoot is updated after batching).

```
↓Overshoot          ↑
              0   kg
```

Enter the permissible upper tolerance in % and press OK to confirm. This value is used when creating the recipe and can be overwritten.

```
↓+ Tolerance        ↑
            0.2 %
```

Enter the permissible lower tolerance in % and confirm it with OK. This value is used when creating the recipe and can be overwritten.

```
↓- Tolerance        ↑
            0.2 %
```

Enter the calming time (1 ... 30000 s) for weight determination in sec. and press OK.

```
↓Time to wait       ↑
               2  s
```

Range: 0 ... 511. To avoid conflicts, addresses 160 ... 175 and 256 ... 511 must be used purposefully. Enter the address of the enable bit and confirm it with OK.

```
↓Enabled by bit     ↑
                 0
```

For [Manual] and [Manual + dialog], the input for the 'ready' signal must be determined.

```
↓Set ready by bit
                160
```

Range: 0 ... 511. purposeful words are
addresses within 128 ... 143 for WP-A
addresses within 144 ... 159 for WP-B.
For information how to combine the bit with coarse and fine, see chapter 4.4.3, otherwise, use addresses 160 ... 175 and 256 ... 511. Enter the address of the material bit and confirm it with OK.

```
↓Activates bit      ↑
                129
```

Material identification before batching is with [Yes] and
[OK].

```
↓Confirm. needed    ↑
          ↕ No       ↕
```

Select the data type (Dialog / Manual + dialog) as [Integer], [Real], [Weight], [String], [OK] and confirm it.

```
↓Data to enter      ↑
↕       Integer      ↕
```

Enter text (in this case: Scan Code) for the dialogue into
line 1 and press [OK] to confirm it. Without entry, the line
is not printed in the standard ticket.
For material (Dialog and Manual + dialog), enter max. 8
alphanumeric characters as text for the dimension
(displayed on line 2) and confirm them with [OK].

```
↓Dialog message     ↑
Scan Code
```

```
↓Dimension          ↑
%
```

The material definition is finished, return to the previous
menu.

```
Material
  New  ↕Modify↕ Print
```

5.3.3 Material editing

Editing material parameters affects (tolerance excepted) existing recipes and orders (if not started so
far).

Select [Modify].

```
Material
  New  ↕Modify↕ Print
```

Select material with [↓]/[↑] and [OK].

```
Select material
↓A-Supersand-125    ↑
```

Dependent on material, [↔]/[↔] can be used to select
[fixed to A], [fixed to B] or [free choice].

```
Select scale
↕    fixed to A     ↕
```

Continue as for entry of a new material, see chapter 5.3.2.

5.3.4 Material deletion

A material can be deleted only, if it is not listed in a recipe.

Press [>More] to select another menu item

```
Material
  New  ↕Modify↕ Print
```

Press [Delete].

```
Material
       ↕Delete↕
```

```
Nothing to delete
```
is displayed during 3 seconds, if no material was created,
or if the materials are listed in recipes.

Press [↓]/[↑] to select a material and confirm it with [OK].

```
Select material
↓A-Supersand-125    ↑
```

[Yes] deletes the material,
press [No] for return to selection.

```
Delete
   Yes   ▪     ▪ No
```

New selection

```
Select material
↓A-Supersand-125    ↑
```

5.3.5   Material printing

Material survey

If no material was selected so far,

⊙ can be pressed to print a material survey.

```
Material
 New   ‡Modify‡ Print
```

```
Material          2004.10.16 10:58
--------------------------------------
A-Supersand-125    Manual
Discharge          Discharge
Coffeeepowder      Manual
Water              Net automatic
```

Single materials

Select [Print].

```
Material
  New   ‡Modify‡ Print
```

Select material with ↓/↑, press OK or ⊙ to start printing.

```
Select material
‡A-Supersand-125     ↑
```

```
A-Supersand-125       2004.10.16 10:58
--------------------------------------
Scale              X5-Scale-A
Batch mode         Manual
+ Tolerance        1 %
- Tolerance        1 %
Set ready by bit   0
Activates bit      0
```

5.4 Recipe handling

Handling is done in the application program [Start]-[Recipe]. Before a recipe can be created, all materials to be used in the recipe must have been created.

5.4.1 Recipe editor

A recipe comprises at least one line. If the last line (line 1 in this case) is deleted, the recipe is also deleted. Recipes which are included already in orders cannot be modified / deleted any more.

Log-in was correct, press ⟨More⟩ to go to other menu items.

```
MIX Controller
   Mix % Orders
```

The recipe editor can be reached with [Recipe].

```
Database
 Mat  %Recipe%Report
```

The menus for recipes are available.

```
Recipe
 New  %Modify% Print
```

Press ⟨More⟩ to reach deleting.

```
Recipe
       %Delete%
```

5.4.2 Recipe creation

An empty line which is stored only after editing is created.

Press [New].

```
Recipe
 New  %Modify% Print
```
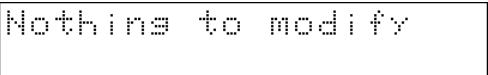
Enter the recipe name and press ⟨OK⟩.

```
Name of recipe
Golden mix
```

Continue as for editing a line, see chapter 5.4.3.

5.4.3 Inserting or editing a recipe line

Only recipes which are not listed in an order can be edited.

```
Nothing to modify
```
is displayed, if no recipe is enabled for editing (all recipes are listed in an order).

Inserting a line with ⟲ [Ins] is possible anywhere in the recipe. Insertion is before the displayed line number. For appending a line at the recipe end, the numbering is one line longer than the actual recipe. Editing this line, or inserting a line before this line are possible.
The operation for inserting[Ins] and modifying [Modify] is identical. Dependent on selected material, omission of individual parameters, or addition of further parameters are possible.

Select the number of the line to be inserted and press [Ins]. Inserting is **before** the selected line number. Already existing lines are shifted accordingly.

```
↓  1↑  --> new line
 Ins  #Modify#Delete
```

Only with line 1: determine whether the recipe should be handled freely [No] or in the order of lines [Yes]. Continue with ⟨OK⟩.

```
↓Sequential      ↑
%       No       %
```

Press ⟨↓⟩/⟨↑⟩ to select the material and confirm it with ⟨OK⟩.

```
Select material
↓A-Supersand-125  ↑
```

Enter the setpoint and press ⟨OK⟩.

```
↓Set point       ↑
           0  kg
```

Enter the tolerance above setpoint in % and confirm it with ⌜OK⌝. Default is the material tolerance.

```
↓  +  Tolerance          ↑
                      7 %
```

Enter the tolerance below setpoint in % and confirm it with ⌜OK⌝. Default is the material tolerance.

```
↓  -  Tolerance          ↑
                      5 %
```

Long material names are truncated to 13 characters in this display.

```
↓   2↑ Supersand-123…
  Ins   ▪Modify▪Delete
```

Press ⌜Exit⌝.

```
Recipe
  New  ↕Modify↕ Print
```

5.4.4   Recipe line deletion

Select a recipe line with ⌜↓⌝/⌜↑⌝ and press [Delete].

```
↓   2↑ Supersand-123…
  Ins   ▪Modify▪Delete
```

Safety prompt. Reply [Yes] to delete definitely, or [No] to return to recipe line selection.

```
Delete
  Yes   ▪      ▪ No
```

If the last (only) line of a recipe is deleted, the recipe is also deleted.

5.4.5   Recipe deletion

A recipe which is already listed in an order, cannot be selected for deleting.

Press ⌜More⌝ to reach deleting.

```
Recipe
  New  ↕Modify↕ Print
```

Press delete [Delete].

```
Recipe
       ↕Delete↕
```

```
Nothing to delete
```

Is displayed during approx 3 seconds, if no recipe is provided or recipes are listed in orders.

Recipes are displayed in alphabetic order. Select with ⌜↓⌝/⌜↑⌝ and confirm with ⌜OK⌝.

```
Select recipe
↓A-SUPERMIX           ↑
```

Press [Yes] to delete, or [No] for return to recipe selection.l

```
Delete
  Yes   ▪      ▪ No
```

Select another recipe for deleting or press ⌜Exit⌝ for return to the previous menu item.

```
Select recipe
↓A-SUPERMIX           ↑
```

5.4.6   Recipe printing

Recipe survey

If no recipe was selected so far, a recipe survey can be printed with ⊙.

```
Recipe
 New   %Modify% Print
```

```
List              2004.10.16 11:00
Recipe                 Total  Changed         by
------------------------------------------------------------------
Coffee                501.000 kg  2004.10.16 11:00  Cook
```

Single recipes

If a recipe was selected, the recipe lines are printed with ⊙.

```
Select recipe
↓A-SUPERMIX              ↑
```

Call up [Print].

```
Recipe
 New   %Modify% Print
```

Select the recipe you want to print (all recipes are selectable) and print it with ⊙ or OK.

```
Select recipe
↓A-SUPERMIX              ↑
```

```
Coffee             2004.10.16 11:00
Changed            2004.10.16 11:00 by Cook
Total                    501.000 kg

    Material            Set point  + Tolerance   - Tolerance
---------------------------------------------------------------
 1  Water               500.000 kg       1 %            1 %
 2  Coffeepowder          1.000 kg       2 %            2 %
 3  Discharge
```

5.5   Order handling

The following options are possible:

After logging in, press [Order].

```
MIX Controller
  Mix ⇕ Order⇕
```

Orders can be created or modified and information can be recalled.

```
Order
  New  ⇕Modify⇕ Info
```

Press ⌕ to reach deletion of an order:

```
Order
       ⇕Delete⇕
```

5.5.1   Order creation

In order to create a new order, the referenced recipe must be already existing.

Press [New].

```
Order
  New  ⇕Modify⇕ Info
```

Enter the name of the new order (max. 18 characters) and confirm it with ⌖.

```
Name of new order
Speed-Process/1000
```

Press ⬇/⬆ to select a recipe and confirm it with ⌖.

```
Select recipe
↓Supermix-100      ↑
```

Only if [Name of product] was set to [Yes], the recipe name is displayed and can be overwritten.

```
↓Name of product  ↑
Supermix-100
```

Enter the required recipe total (default is the setpoint sum) and confirm it with ⌖.

```
↓Total            ↑
              125  kg
```

Enter the required number of repetitions (1 ... 99, default 1) and confirm it with ⌖.

```
↓Repeat the order  ↑
              1 times
```

With more than 1 repetition, multiple orders are created with extension –01, –02 etc. The order name is truncated to 15 characters.

```
↓Speed-Process/1-01↑
```

The prompt text entered for comment 1 is displayed:
Enter comment 1 and confirm it with ⌖.

```
↓Customer order
AAAA-BBBB-CCCC-DDDD
```

The prompt text entered for comment 2 is displayed:
Enter comment 2 and confirm it with ⌖.

```
↓Target unit      ↑
ZZZZ-YYYY-XXXX-12345
```

The order is created with the available data (inclusive of user) and stored in the database, return to the order menu.

```
Order
  New  ⇕Modify⇕ Info
```

5.5.2   Order modification

Only created orders which were not started so far can be modified.

After [Modify], all orders which were not started so far are selectable.

```
Order
  New  %Modify% Info
```

```
Nothing to modify
```

is displayed, if no order can be modified.

Select the order (sorted alphabetically) which should be modified with ⬇/⬆ and confirm it with OK.

```
Select order
↓Speed-Process/2000↑
```

The same steps as for order creation (see chapter 5.5.1.) are carried out, modification of the order name and the number of repetitions are omitted. As soon as an exit with Exit is made, the modifications are valid.

```
Select recipe
↓Supermix-100        ↑
```

The user logged in instantaneously overwrites. The data set is modified in the database.

```
Order
  New  %Modify% Info
```

5.5.3   Order display

The items of an order can be displayed.

Press [Info] to reach the menu.

```
Order
  New  %Modify% Info
```

Press ⬇/⬆ to select the order which should be displayed and confirm it with OK.

```
Select order
↓Speed-Process/2000↑
```

Subsequently, order details can be displayed with ⬇/⬆.

```
↓Recipe            ↑
Supermix-100
```

5.5.4   Order deletion

All orders can be deleted. If an order is already active, an additional prompt is displayed. The order it-self is removed from the order list.

Press [Delete].

```
Order
      %Delete%
```

Select the order which should be deleted with ⬇/⬆ and confirm it with OK.

```
Select order
↓Speed-Process/2000↑
```

Press [Yes] to delete the order, or [No] to leave it un-changed.

```
Delete order
  Yes  ▪      ▪ No
```

Safety prompt if the order which should be deleted is al-ready in progress

```
Delete active order
  Yes  ▪      ▪ No
```

Return to order selection.

```
Select order
↓Speed-Process/4000↑
```

5.5.5   Order printing

Handling is done in [Start]-[Order] in the application program. Dependent on situation, either a list of all orders or all data of the selected order are printed.

Orders are printed out.

```
Printing ...
```

```
Could not print
```

is displayed during 2 seconds, unless printing is possible.

Order survey

Unless an order was selected so far, an order survey is printed with ⊙.

```
  List              2004.10.16 11:08
A Order             Recipe                   Total
-------------------------------------------------------
  Supermix-01       Coffee             501.000 kg
* Supermix-03       Coffee             501.000 kg
  Supermix-04       Coffee             501.000 kg
  Supermix-05       Coffee             501.000 kg
  Supermix-06       Coffee             501.000 kg
  Supermix-07       Coffee             501.000 kg
  Supermix-08       Coffee             501.000 kg
  Supermix-09       Coffee             501.000 kg
  Supermix-10       Coffee             501.000 kg
```

* The Asterisk indicates that the order has already been started, but is not finished up to now.

Single orders

If an order was already selected, all order lines are printed with ⊙.

```
Supermix-03        2004.10.16 11:08
-------------------------------------
Name of product
Recipe             Coffee
Total              501 kg
Done lines         2 of 3

     Material            Setpoint           Done
-------------------------------------------------------
 1 * Water              500.000 kg     500.000 kg
 2 * Coffeepowder         1.000 kg       0.500 kg
 3   Discharge            0.000 kg       0.000 kg
```

* The Asterisk indicates that the materials have already been processed.

5.6   Order processing

5.6.1   Order execution

Before weighing can be started, an order must have been created.

Logging in was done correctly, press [Mix].

```
MIX Controller
    Mix & Orders
```

```
No order
        ▪        ▪ Print
```
is displayed, if no order is waiting for being executed.

Up to this point, order changing is still possible and modifications of the material database are effective. As soon as an order is selected, it is considered as being in process. The recipe is expanded into the working area according to the order parameters.

Order selection

Select the order which should be handled with [↓]/[↑] and press [Prod].

```
↓Speed-Process/4000↑
Prod   ▪        ▪ Print
```

If [Recalculation] is set to [Yes], item [Recalc] is displayed additionally.

```
↓Speed-Process/4000↑
Prod   ▪Recalc▪ Print
```

Select the order line which should be handled and press [OK].

```
↓Supersand-125      ↑
Line              1 ↕
```

If the recipe is marked as sequential, the first still unhandled recipe line is displayed.
The display is dependent on the material type. Up to two dialogues can follow.

Material identification (Manual, Manual + dialog)
The material name for identification can be entered via the keypad (numerically, if possible), an external keyboard, or via a barcode reader (scanner).
For connection of the barcode reader, see chapter 2.4.
The identification was switched on with [Confirm. needed] = [Yes] per material.

Material requires identification.

```
Name of material
```

Enter (or scan) the material name/code and press [OK].
The entered name/code corresponds with the one of the material. The material is continued.

```
Name of material
Goldmist
```

```
Wrong material
```
is displayed during approx. 3 seconds, if the entered code does not correspond with the material code.

After the error message, the wrong name/code is displayed for correction.

```
Name of material
Goldmiss
```

Press [Exit] to cancel the material. The line can be called up again. With sequential recipes, the recipe is cancelled.

```
↓Supersand-125      ↑
Line              1 ↕
```

Batching can be started only, if the material name was entered or scanned correctly.

Dialog text (Manual + dialog, Dialog)

The [Dialogtext] (in this case: LOT for entry of the batch number) entered for [Manual + dialog] or [Dialog] is displayed, the entry is completed with [OK].

```
LOT
          4321567
```

When cancelling the entry with [Exit] , the value '---' is taken for the line report.

The format of the entry, which follows on the dialogue text, can be determined in [Data to enter] in the material:

[Integer]   integer number (dimension as defined in the material)
[Real]   number with decimal point (dimension as defined in the material)
[Weight]   weight with decimal point (dimension as weight scale)
[String]   18 alphanumeric characters
[OK]   confirmation with softkey [OK]

Before batching can be done, material name and setpoint are displayed.
The material name is displayed with max. 13 characters for display of the setpoint:

```
Supersand-125 200 kg
        #Go on #
```

Scale selection

The scale is selected (if the scale is marked as fixed, selection is not possible, or switching over to the scale is done automatically).
Put the container to be filled on the scale and press [Go on].
The scale is tared and the display format selected last is used. The display is determined by the material type.

Batching

Press [Exit] if you want to cancel the phase without further actions (no report, the line is not finished).

```
↓Supersand-125        ↑
Line                1 ↕
```

The order line is batched. During batching, display is dependent on type of material (see chapter 5.3.1) and instantaneous display setting (see chapter 5.6.1.1).

The phase is processed and the user presses [Exit] or [Stop].

```
Stopped
Contin# Skip # Abort
```

Continue the phase with [Contin].
Press [Skip] to cancel the phase without further actions. The line is not finished. Proceed accordingly for already batched material.
Press [Abort] to cancel the phase. A report is created. The line is marked as finished.

Line is finished

Batching of the line is finished (normally with [OK] with manual phase) and the weight is within the tolerance. A ticket as configured is printed and the log entry is written into the database. The line is marked as processed.

The first still unprocessed line of the order is displayed.

```
↓Goldmist             ↑
Line                2 ↕
```

Order is finished

The last order line was batched, all lines are within the tolerance.

```
Order was finished
        ▪  OK  ▪
```

Press [OK]. An order report according to configuration is printed. The order is removed from the databases and the following order is displayed.

```
↓Speed-Process/5000↑
Bearb ▪       ▪ Druck
```

Recalculation

With [Setup]-[Config]-[Change]-[Parameter]-[Recalculation] set to [Yes], recalculation for correction of the quantity is possible in case of weight above tolerance/below tolerance (see chapter 5.6.3).

The last line was batched and at least one line of the recipe is out of tolerance.

```
Order out of tol.
Recalc▪       ▪Accept
```

Press [Recalc], the recipe is recalculated.

```
Recalculation ...
```

All lines which are now out of tolerance are reactivated and must be batched with a difference setpoint.

```
↓Goldmist          ↑
Line             2 ↕
```

After handling the last line, the recipe is finished normally.

```
Order was finished
        ▪  OK  ▪
```

Order interruption

When pressing [Exit] at any point in the recipe, order handling is interrupted.

```
↓Speed-Process/5000↑
Prod  ▪Recalc▪ Print
```

5.6.1.1   Visualization

The following displays for process visualization are available. With bargraph, the difference weight is displayed.

Net automatic

Wait for enable (SPMin).

```
Goldauto
Status:    SPM input
```

After enabling, the difference related to the setpoint is displayed.

Difference from the setpoint

```
Goldauto
Diff:         47 kg
```

Press keys [←]/[→] to switch over cyclically to:
bargraph ... setpoint ... tolerance ... difference ... bargraph ....

Press [→] for bargraph without tolerance band (+ tol. and – tol. are 0). Each character stands for 1/15 of setpoint.

```
Goldauto
▪▪▪▪▪▪▪▪————————▓———
```

Bargraph with tolerance band.
The values before and behind the tolerance band repre-
sent a weight of (setpoint – neg. tolerance) / 12 each. The
tolerance band is stretched to 6 characters, i.e. each char-
acter stands for a weight of (pos. tolerance + neg. toler-
ance) / 6.

```
Goldauto
██████████████▓▓▓▓≡≡≡──
```

Signification of characters for bargraphs:

```
─   >  actual
█   <  actual
▓   >  -Tolerance
≡   <  +Tolerance
x   >  +Tolerance
```

Press ⟳ for setpoint.

```
Goldauto
Setpoint:      100 kg
```

Press ⟳ ⟳ for tolerance band

```
+Tol:           10 kg
-Tol            10 kg
```

Calming time

```
Goldauto
Dosing:    Calming
```

Tolerance alarm

```
Tolerance alarm
Contin█      █ Abort
```

Manual addition (Manual, Manual + dialog)

Difference from the setpoint

```
Silverhand
Diff:           67 kg
```

Now, you can switch over cyclically by pressing keys ⟲ / ⟳ as follows:
bargraph … setpoint … tolerance … difference … bargraph …….

Press ⟳ for bargraph without tolerance band
(+ tol. and – tol. are 0)

```
Silverhand
███████████████▓x──
```

or bargraph with tolerance band

```
Silverhand
██████████████▓▓▓≡≡≡──
```

Press ⟳ for setpoint.

```
Silverhand
Setpoint:       70 kg
```

Press ⟳ ⟳ for tolerance band.

```
+Tol:            2 kg
-Tol             2 kg
```

Tolerance alarm (10kg below setpoint), with [Retry]: add
material, with [Skip]: no registration, with [Accept]: ac-
cept tolerance.

```
Tolerance     -10 kg
Retry █ Skip █Accept
```

Wait for scale standstill (W&M).

```
Water
Status:    Waiting
```

5.6.2   Order printing

The following print-outs are possible:
-    the last ticket of a line of the last order
-    a list of all pending orders, started orders are marked with an asterisque.
-    the ticket which was printed at the end of the last order
-    information on the selected order, the already handled lines are marked with an asterisque.

Logging in was done correctly.
Press [Mix].

```
MIX Controller
   Mix & Orders
```

Select the order which should be printed with ⬇/⬆
and press [Print].

```
↓Speed-Process/4000↑
Prod   ▪      ▪ Print
```

[Order] prints the last order end ticket or
[Line] prints the last line ticket.

```
Print last ticket
Order & Line &
```

The line ticket to be printed contains the data of the phase handled last. In this ways, the data of a dialogue can also be documented (in the format of a line ticket). If no ticket was generated so far (e.g. because ticket print-out was not activated, or immediately after commissioning), an empty ticket is printed.

If key [> More] is pressed after [Print], a list of all orders with [List] or all lines of the current order with [Lines] can be printed.

```
Print order
 List & Lines&
```

The order of [Print last ticket] and [Print order] is perhaps interchanged, because the last status when pressing [Exit] is stored.

The print-out is done.

```
Printing ...
```

Press [Exit] to return to the previous menu.

```
↓Speed-Process/4000↑
Prod  ▪Recalc▪ Print
```

5.6.3   Recipe recalculation

Recalculation will take place only with setting [Yes] in [Setup]-[Config]-[Parameter]-[Recalculation]. An order can be recalculated at any time, at the latest, however, when the last line was handled and the end message is displayed. After confirmation of the end and printing out of a ticket, if any, the order is completed. The report in the database excepted (activation in [Log to database]) all order-related data are deleted.

Operation before recipe end

The user is logged in.
Press [Mix].

```
MIX Controller
   Mix & Orders
```

Select the order with ⬇/⬆ and press [Recalc].

```
↓Speed-Process/4000↑
Prod  #Recalc# Print
```

During calculation, the following message is displayed (approx. 2 seconds):

```
Recalculation ...
```

The setpoints are recalculated (see chapter 5.6.3.1) and marked as 'not finished', both with weight above tolerance and weight below tolerance (e.g. lack of material).

5.6.3.1   Example for recalculation

In case of weight above tolerance, removal of the material from the scale may be impossible (e.g. liquid or small quantities together with other materials). In these cases, recalculation of the recipe is purposeful.

Line	Setpoint	Actual value	Tolerance	Factor	Setpoint corr	Setpoint 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		

Recalculation is purposeful also, if no stocks of a material are available any more. If all other lines were within the tolerance, only this material is added.

Procedure:

1. With weight above tolerance, the difference for all recipe lines is calculated as a factor (weight within the tolerance or below the tolerance: factor is 1).
2. The line with the highest relative difference (factor) is determined (in this case: line 2 = Max. = 1,246). Lines without +tolerance are not taken into account.
3. All setpoints are multiplied with this factor. Lines without –tolerance are not changed.
4. The difference from the setpoint is calculated for each line – under consideration of the quantity batched so far.
5. If the setpoint tolerance is higher than the permitted tolerance, the line is marked as so far not readily handled. The setpoint for correction is the calculated difference.
6. All unfinished lines can be selected for handling (in this case, lines 1 and 4).
7. When batching, the batched net weight is added to the actual weight.

This procedure permits as many corrections as required. In case of weight above tolerance, the recipe total is increased by the corresponding factor at each correction. If a correction is possible and purposeful can be decided only by the user.

The ticket for postbatching is marked as 'recalculated'. It contains the total of all batches of these lines with the batch number of the last material.

Line tickets are considered to be related to batching into single containers and correction is considered as related to the initial container. I.e. the new ticket contains the new setpoint and actual value and can replace the previous ticket. The correcting operator is entered as operator. The start date remains unchanged. The ticket data are always entered into the report database (if configured).

In the line report (Log = line), each weighing operation is recorded individually, i.e. after recalculation, the difference from the previous weighing operation is recorded.

The order ticket is printed, when a mixture is made in one container. Correction will be done in this container. I.e. the new ticket contains the new setpoint and actual value and can replace the previous ticket. The start date remains unchanged.

5.6.4   PIN changing / test

The user has logged in correctly.

```
MIX Controller
  Mix & Order&
```

Press ![More] to reach the menus for editing of the material
or recipe database.
Material: see chapter 5.3, recipe: see chapter 5.4

```
Database
 Mat  &Recipe&Report
```

Press ![More] to go to the further menu,
[PIN] permits changing of the PIN for the logged in user,
see chapter 4.5.7.
Press [Test] to start the analog test, see chapter 4.8,

```
Maintenance
 PIN  & Test &
```

or press ![More] again.

```
MIX Controller
  Mix & Order&
```

5.7   User changing / logging out

After order handling, the user should log out. Log-out is without entry of the PIN.

Press ![Exit].

```
MIX Controller
  Mix & Order&
```

Pressing [Yes] will log out. Press [No] for return, no log-out
/ change of user.

```
Logout
 Yes  ▪      ▪ No
```

After logging out, logging in for a new user or for the pre-
vious one is possible.

```
User
↓Cook              ↑
```

Return with [No].

```
MIX Controller
  Mix & Order&
```

After logging out, an administrator can leave the application, see chapter 5.8.

5.8   Terminating the application

This function requires a user with 'administrator' privileges, if [Use PIN] was set to [Yes].

Press ![Exit].

```
MIX Controller
  Mix & Order&
```

Press [Yes].

```
Logout
 Yes  ▪      ▪ No
```

Select a user with 'administrator' privileges and press ![Exit].

```
User
↓Administrator     ↑
```

Enter the PIN and press ![OK].

```
PIN
              ****
```

The selected user has administrator privileges and the PIN
was correct. The application is closed.

```
MIX Controller
Start ▪Setup ▪Test
```

⚠ | To prevent changing of important initial data in menu [Setup], the application should not be terminated. Only the calibration data remain protected against data corruption, if the CAL switch was set (see also installation manual).

6   REPORTS

6.1   Report storage

For each weighing operation, a report in the database is written. In case of recalculation, this report may comprise several entries per recipe line. Rather than the differences, the reports marked as recalculated contain the total of all previous reports.

6.2   Report deletion

Only an 'administrator' can delete the reports.
This function is required, if the memory was filled with the report database without connection of a PC for subsequent data reading and deletion using AccessIt.

After log-in as an 'administrator', press ⏵.

```
MIX Controller
   Mix & Orders
```

Press [Report]

```
Database
  Mat  &Recipe&Report
```

```
Access denied
```

is displayed, if the logged in user is not provided with administrator privileges,
see chapter 4.5.1

Press [Yes] to delete all reports.
[No] remains without action.

```
Delete all reports
  Yes  ▪        ▪ No
```

Return to the previous menu item.

```
Database
  Mat  &Recipe&Report
```

7   TICKETS

Print-outs on the line printer are dependent on the actual situation and are started by pressing ⊙.
Print-outs on the ticket printer (printer specified in [Printer device at]) are started automatically according to configuration at the end of each line or at the recipe end. Two different tickets are possible. The data on the predefined print-outs are as defined in the structure used by NLE.

7.1   Line ticket

This ticket is printed at the end of each line (automatically, if configured).
The ticket predefined during configuration is shown below:

```
Order                            2906
-------------------------------------
Product  2               Mix Test
Recipe                          1
Line                            1
Material                 Manual add
LOT  3                     765765
Set point                0.250 kg
Recalculated                   No
Net                      0.254 kg
Status                         OK
+ Tolerance              0.025 kg
- Tolerance              0.025 kg
Scale                    X5-Scale A
Ordered by                 Moeller
Weighed by             Administrator
Begin            2004.10.16  16:06:05
End              2004.10.16  16:06:37
Printed          2004.10.16  16:06:37
```

For this, the configuration string is: 'O_NRLMCSXA*+-WUVBED.'
The contents of this ticket can be printed also by means of NLE, file name 'TL'.

7.2   Order ticket

The ticket is printed at the end of the order (automatically, if configured).

```
Order                            2906
-------------------------------------
Product  4               Mix Test
Recipe                          1
Set point                1.200 kg
Recalculated                  Yes
Net                      1.229 kg
Status                         OK
Scale                    X5-Scale A
Prompt 1  5               Sartorius
Prompt 2                  Plant 2
Scale                    X5-Scale A
Ordered by                 Mueller
Begin            2004.10.16  16:06:15
End              2004.10.16  16:10:59
Printed          2004.10.16  16:11:02
```

The configuration string for it is: 'O_NR1SXA*12WUBED.' The content of this database can be printed also using NLE, file name 'TO'.

---

[2]If the prompt is empty, the line is not printed.

[3]If the prompt is empty, the line is not printed.

[4]If the prompt is empty, the line is not printed.

[5]Comment lines are not printed, if the prompt is empty.

8 DATABASE STRUCTURE

The sum of the size of all databases is determined by the available memory capacity. The remaining memory is checked at several points of the program. With less than 20000 bytes, a warning message is displayed. With less than 5000 bytes, the requested function is not permitted.

The check points are:
Creation of a new material
Creation of a new recipe
Insertion of a new recipe line
Creation of an order
Start of order handling

```
Remaining memory
         18456 Bytes
```

Is displayed when the minimum remaining memory capacity is exceeded (less than 20000 bytes).

Generally, all databases (exception [User]) can be loaded or changed via AccessIt! These data are not checked for plausibility by the application. Therefore:

⚠	Using AccessIt can have impredictable consequences for the program. It is possible that faulty data may not be deleted at the instrument without COLD start.

The data types listed in the tables for the database contents comply with IEC 61131.

8.1 User database

Data creation is by the administrator in [Setup]-[Config]-[User]. The data of the database are used for user log-in and log-out.
A user requires 64 memory bytes.
This database is 'hidden', it cannot be displayed for protection of the PIN.

Field	Data type	Description
Name	STR18	User name
PIN	INT	PIN
Class	INT	Operator, supervisor or administrator
Protected	BOOL	TRUE: cannot be deleted (administrator)

8.2   Material database

A material requires max. 96 memory bytes.

Field	Data type	Description
Name	STR18	Material name
WP	INT	Scale code: 1 or 2. With 0, the scale can be selected freely for manual additions.
BMode	INT	See table below
Report	INT	See table below
Preset	REAL	Preset point in kg or lb
OVS	REAL	Overshoot in kg or lb
PTol	REAL	+ Tolerance in %/100
NTol	REAL	- Tolerance in %/100
Calm	REAL	Calming time or waiting time in s
SPMin	INT	Enable bit address
SPMout	INT	Material bit address
DMode	INT	See table below
Dialog	INT	See table below
RstMode	INT	Restart with automatic batching (4)
dsp1	STR20	Text for line 1 in dialogue
dsp2	STR8	Dimension for line 2 in dialogue
Check	BOOL	ID must be checked before batching
VALID	BOLL	Internal marking

BMode	
1	Net automatic
2	Manual
3	Manual + dialog
4	Message
5	Dialog
6	Discharge

Dialog	
0	No dialog
1	INTEGER read-in
2	REAL read-in
3	Weight read-in
4	Read in up to 20 text characters
5	Wait for OK

Report	
0	No report
1	DB and Log
2	Ticket + DB + Log

Dmode	
0	No dialog in phase 1
1	Message in phase 1
2	Dialog in phase 1
3	No dialog in phase 1
4	Dialog in phase 1, no [Go on]

8.3   Recipe database

A recipe line requires up to 128 memory bytes.

Field	Data type	Description
Name	STR18	Recipe name
Line	INT	Line number
New	BOOL	Internal marking of new lines
Mat	STR18	Material name
Setp	REAL	Line setpoint
Total	REAL	Last recipe total in kg (cannot be edited, default: total of all lines, updating is done when creating an order)
PTol	REAL	+ Tolerance in %/100, default: as material
NTol	REAL	– Tolerance in %/100, default: as material
Seq	BOOL	Flag: to be handled in the order of the recipe
ChgBy	STR18	User who has changed last
ChgAt	DT	Date of last change

8.4   Work database

All started orders are written into a database line by line. Order handling is from this database. After order end, these entries are deleted.
Every recipe line of a started order requires up to 352 memory bytes.

⚠	The work database may not be changed by AccessIt!

8.5   Order database

An order requires up to 160 memory bytes.

Field	Data type	Description
ID	STR18	Order number
Rec	STR18	Recipe name
Name	STR18	Product name (configurable)
Cmt1	STR20	Comment 1 (configurable)
Cmt2	STR20	Comment 2 (configurable)
User1	STR18	Name of the user who has created the order
Total	REAL	Setpoint of the recipe for this order in kg or lb
Active	BOOL	Order is being handled.
VALID	BOOL	TRUE, if the entry must be displayed (internally)

8.6   Report database

Reports are not changed by the operator. Only the administrator can remove all reports from the database, see chapter 6.2 (e.g. with continuous PC problems). Normally, entries are fetched and deleted by the PC using AccessIt.

A report requires up to 352 memory bytes per recipe line.

Field	Data type	Description
Order	STR18	Order
Sequence	DINT	Sequence number
Name	STR18	Product name
Recipe	STR18	Recipe name
Line	INT	Line number in the recipe
Material	STR18	Material name
Msg	STR20	Description for Repl field (configurable) [6]
Repl	STR18	E.g. LOT (configurable)
Scale	STR20	Used scale
Recalc	BOOL	Recipe was recalculated
Setp	WEIGHT	Line setpoint (determined during recipe expansion or recalculation)
Actual	WEIGHT	Batch result up to this report (total)
PosTol	WEIGHT	+ Tolerance in %/100
NegTol	WEIGHT	- Tolerance in %/100
User1	STR18	has created the order
User2	STR18	has weighed
Status	USINT	Result, summary 0 = O.K., 1 = skip, 2 = exceeded tolerance, 3 = cancelled
Begin	DT	Batch start
End	DT	End of batch
Cmt1	STR20	Comment 1 (configurable)
Cmt2	STR20	Comment 2 (configurable)
Report	INT	Internal for report creation
CRC	UINT	Checksum (for internal purposes)

---

[6]This text is used e.g. for writing the value in 'Repl', because this function can be defined separately for each material. The dialog phase also uses this text.

8.7   Nice Label Express (NLE)

Tickets can be printed directly or via NLE. The names of the NLE files are "TL.LBL" for the line ticket and TO.LBL for the order end ticket. If no layout generated by NLE exists, printing is done directly using a fixed format.
For creating a self-defined report, the Nice Label Express program is required. With these reports, all variable contents (e.g. weights) and fixed texts (e.g. "sequence number") are transferred to the report by means of variables. I.e. in many cases, the user can also create his language adaptations using Trans- lateIt for NLE. Calling up "Nice Lable Express" is not necessary. A fixed variable structure from the ap- plication is made available for "Nice Lable Express". All variables contain the data of the line or recipe handled last.

The following data are defined for NLE:

Name	Data type	Description
Order	STR18	Order name
Sequence	DINT	Internal number (criterion for distinction in the report database)
Recipe	STR18	Recipe name
Name	STR18	Product name
Line	INT	Line number in the recipe
Material	STR18	Material name
Repl	STR18	Input value, e.g. the LOT number
Recalc	STR8	The recipe was recalculated
Setpoint	WEIGHT	Setpoint used last
Actual	WEIGHT	Batch result (net weight)
PosTol	WEIGHT	Absolute +tolerance
NegTol	WEIGHT	Absolute -tolerance
Scale	STR20	Scale name
User1	STR18	Has created the order
User2	STR18	Has filled last
Status	STR18	Error status
NDate	STR18	Actual date
NTime	STR18	Actual time
BDate	STR18	Start date
BTime	STR18	Start time
EDate	STR18	End date
ETime	STR18	End time
Cmt1	STR20	Configuration-dependent function
Cmt2	STR20	Configuration-dependent function
TOrder	STR18	Fixed text Order
TSeq	STR18	Fixed text Number
TRecipe	STR18	Fixed text Recipe
TName	STR18	Fixed text Product

Name	Data type	Description
TLine	STR18	Fixed text Line
TMat	STR18	Fixed text Material
TMsg	STR18	Configurable text
TSetp	STR18	Fixed text Setpoint
TActual	STR18	Fixed text Net
TRecalc	STR18	Fixed text Recalculated
TPTol	STR18	Fixed text + Tolerance
TNTol	STR18	Fixed text + Tolerance
TStatus	STR18	Fixed text Status
TScale	STR18	Configurable text
TUser1	STR18	Fixed text Order by
TUser2	STR18	Fixed text Weighed by
TNow	STR18	Fixed text Printed
TBegin	STR18	Fixed text Start
TEnd	STR18	Fixed text End
TCmt1	STR18	Configurable text
TCmt2	STR18	Configurable text

9 ERROR MESSAGES

9.1 Error messages on the weight display

Error states of the internal analog section or of the connected (external) scale are output on the weight display. The error message relates to the scale indicated by the LED.

Error messages on the weight display

Error   1   Internal calculation overflow (faulty calibration)
Error   2   Measured voltage above FSD plus overload
Error   3   Measured voltage above 36mV. Cause can be also an error in the analog section, a load cell error or a load cell cable break.
Error   4   Weight value exceeds the display digits
Error   5   Weight value cannot be determined (e.g. scale is active)
Error   6   Sense signal too small
Error   7   Measured voltage is negative, e.g. wrong load cell connection
Error   8   ADC error, e.g. defective hardware, or overload
Error   9   No communication with the external scale
Error   11   Weight value from external scale not available
Error   15   Failure when checking the serial number of the external scale

10   INDEX