Manual

Weight controller type Flex-MF

Actual dosed

−0,030 kg

Zero

Tare

Setpoint: 0,200 kg

Recipe: Recipe 01
Status: Program stopped
Target: −
Actual: −

Start

Recipe

Return

Next-dos.

Prod-data

INDICATOR / CONTROLLER

FLEX

INDUSTRIAL INSTRUMENTATION

Table of contents.

Explanation of production screen.

Possible Indicator Errors:
```
------------   : Indicator not available.
= = = = =      : Maximum display value exceeded.
UUUUU          : Hardware Under load (loadcell defect?).
OOOOO          : Hardware Over load (loadcell defect?).
CCCCC          : No valid calibration available
```

Run mode
Coarse dosing output on
Tare active
Zero active
Fine dosing output on
Indicator stable
Dosing Busy output on

Sign

Create new zero level

Actual dosed

-0,030 kg

Zero   Tare

Create new Tare level

Actual setpoint
Actual recipe
Actual status
Actual target
Actual value

Setpoint: 0,200   kg

Recipe: Recipe 01
Status: Program stopped
Target: -
Actual: -

Start

Recipe

Start controller in run mode

Seclect/edit recipe

Return to main menu

Return   Next-dos.   Prod-data

Show dosed values

Start next dosing

PENKO

INDICATOR / CONTROLLER
FLEX

Wiring connection for Flex-MF model Flex.

Loadcell connection

Loadcell connection,
15p sub-D Female:

1. + Excitation
2. + sense
3. – Excitation
4. – Sense
5. + Signal
6. – Signal

Housing. Shield
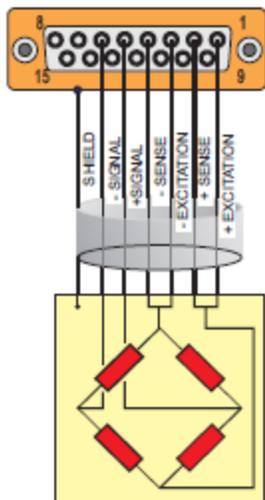
Loadcell connection
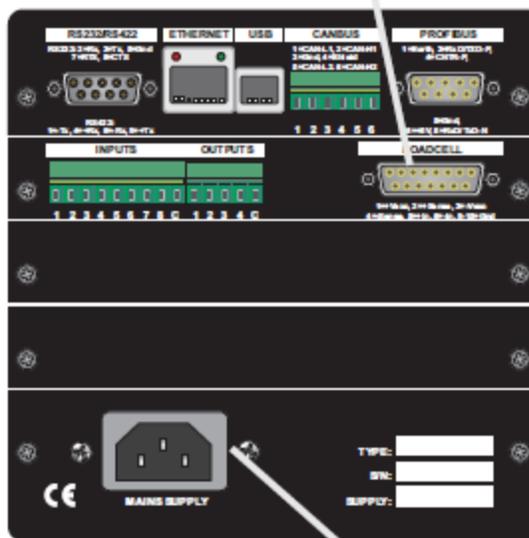
Digital Outputs:

COMMON FOR OUTPUTS
-0Vac or 0Vdc
-24Vac or 24Vdc
Common max.35V \ 0,5A

out1   out2   Out3   Out4   C
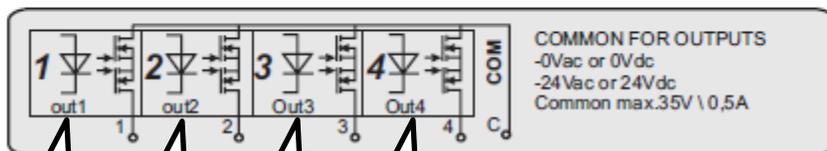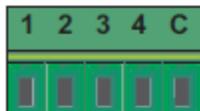
| Output Fine Dosing | Output Coarse Dosing | Output Dosing Ready | Output Dosing Busy |

**AC Power supply
230 Vac   50/60 Hz**

Digital Inputs:
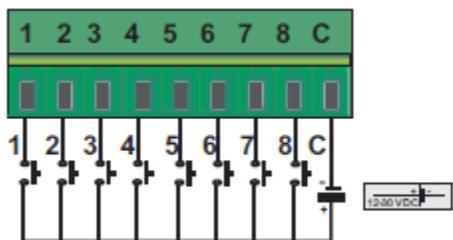
1 2 3 4 5 6 7 8 C

Input 1: Start (option)
Input 2: Stop (option)
Input 3: Start dosing
Input 4-8: Not used

12-00 VDC

Analog Outputs: (option)

1 2 3 4 5 6 7 8

+I1-   +I2-   +I3-   +I4-
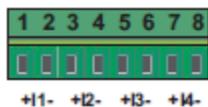
Current outputs, 0/4 - 20/24mA

| 16 Bit Analog output | 16 Bit Analog output | 16 Bit Analog output | 16 Bit Analog output |

+Current   Ground   +Current   Ground   +Current   Ground   +Current   Ground

+Iout 1   -Iout 1   +Iout 2   -Iout 2   +Iout 3   -Iout 3   +Iout 4   -Iout 4
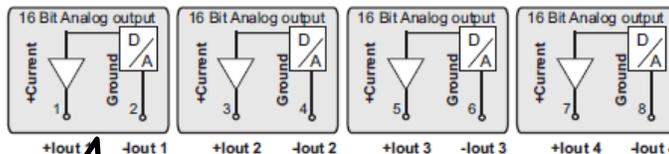
Analog output 1:
Fine/Coarse speed

Fine/Coarse Speed

Wiring connection for Flex-MF model Flex-2100.

Loadcell connection,
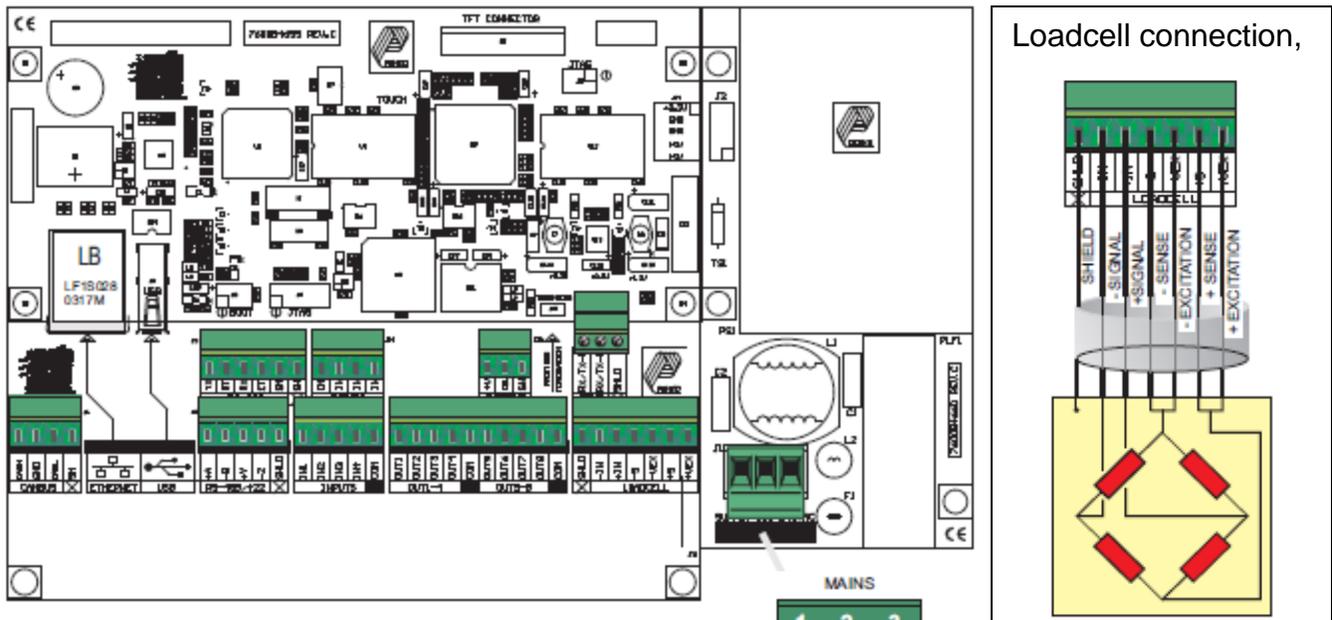
Digital Outputs:

AC Power supply
230 Vac   50/60 Hz
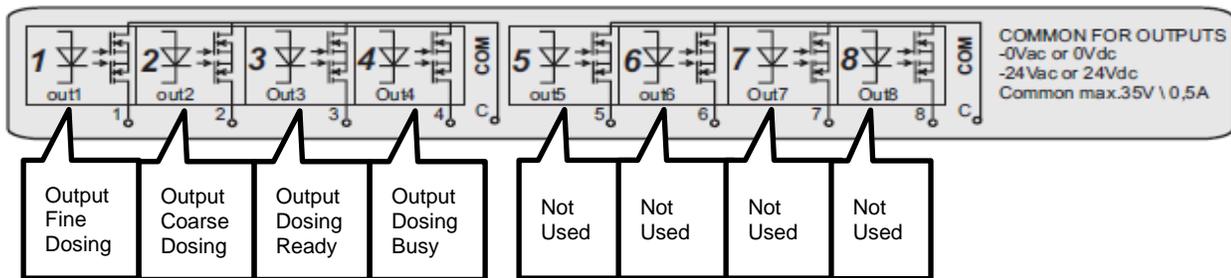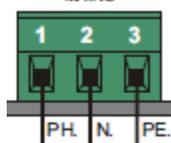
| 1 | 2 | 3 |
| PH. | N. | PE. |

| 1 out1 | 2 out2 | 3 Out3 | 4 Out4 | COM Cₒ | 5 out5 | 6 out6 | 7 Out7 | 8 Out8 | COM Cₒ | COMMON FOR OUTPUTS -0Vac or 0Vdc -24Vac or 24Vdc Common max.35V \ 0,5A |

| Output Fine Dosing | Output Coarse Dosing | Output Dosing Ready | Output Dosing Busy | Not Used | Not Used | Not Used | Not Used |

Digital Inputs:

Analog Output: (option)

Analog output:
Fine/Coarse speed

Fine/ Coarse Speed

Power supply
for analog output
18-30Vdc

Input 1: Start (option)
Input 2: Stop (option)
Input 3: Start dosing
Input 4-8: Not used

Selection Menu.

From the Selection menu it's possible to enter the several Screens.

The Configuration and System setting are locked by a password, log-in with the Log-in button first. To log-out, press the Log-out button.

Screen if Configuration and System settings are disabled:
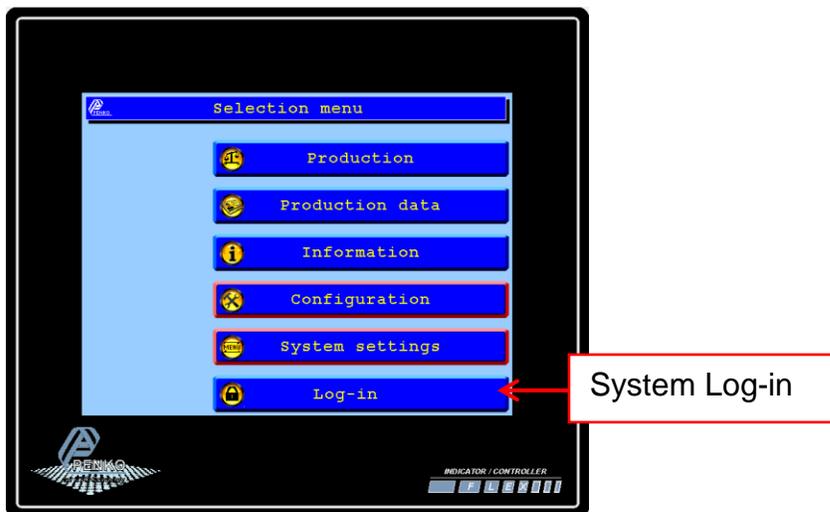
Screen if Configuration and System settings are enabled:
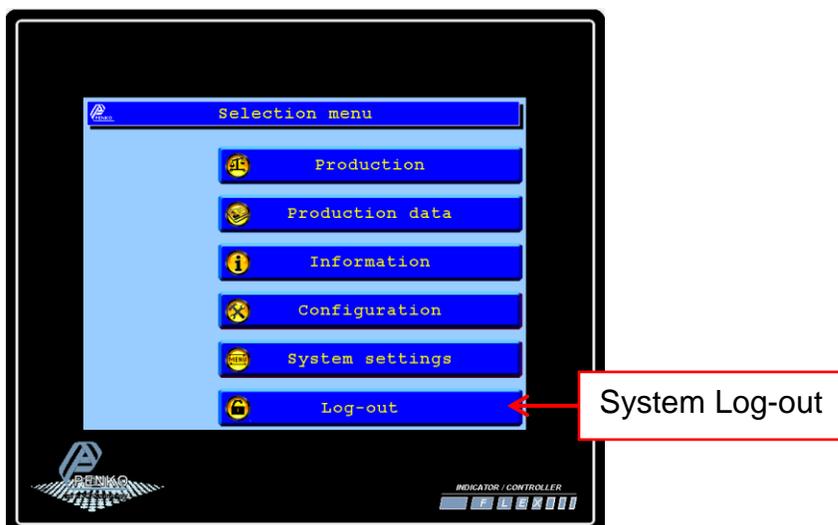
First use of the indicator.

Before using the controller, please setup the internal indicator first.

Login first to enter the System settings,
Default no password is selected.
The overall password is "25630".

```
┌──────────────────────────┐
│  Enter the System        │
│  settings.               │
└──────────┬───────────────┘
           ↓
┌──────────────────────────┐        The step size defines the scaled parts of the weight value.
│  Set the display         │        The display value will be round off to the nearest value with a
│  stepsize in the         │        valid step size.
│  indicator format menu.  │        Step size can be set at  1, 2, 5, 10, 20, 50, 100, 200, 500, 1000,
└──────────┬───────────────┘        2000 or 5000.
           ↓
┌──────────────────────────┐        The Decimal point defines the point position of the weight value.
│  Set the point position  │        Decimal point position can be set from NONE to 0,00000.
│  in the indicator        │
│  format menu.            │
└──────────┬───────────────┘
           ↓
┌──────────────────────────┐        To prevent overload by the user, the FLEX will not show any
│  Set the maximum         │        weight above this value.
│  display value of the    │        In certified mode the max load is not allowed to be more then
│  indicator               │        the maximum load + 9 scale parts.
└──────────┬───────────────┘
           ↓
┌──────────────────────────┐        All previous calibration points should first be deleted before
│  Delete previous         │        making a new calibration.
│  calibration points.     │
└──────────┬───────────────┘
           ↓
┌──────────────────────────┐        When all points are deleted, first calibrate the Dead load (0).
│  Calibrate the zero      │        Make sure the scale is completely empty and type 0 in the
│  point (deadload)        │        "Add/Replace" field by pressing the
│  In the calibration menu │        "Edit" button.
└──────────┬───────────────┘        To save the zero point press the "+ Activate" button.
           ↓                        The Dead load is calibrated now.
┌──────────────────────────┐        To calibrate the gain weight put a reference weight on the
│  Calibrate a gain point  │        scale.
│  (Reference weight)      │        Press the "Edit" button to type the exact reference weight in the
│  In the calibration menu │        "Add/Replace" field.
└──────────────────────────┘        To save the reference weight, press the " + activate button".
                                     The reference weight is calibrated now.
```

Calibration.

To calibrate the indicator, follow the next steps:

System settings

↓

System Setup

↓

Indicator Setup

↓

Calibration

↓

Enter CAL code → TAC:00000004 CAL:00000001

Enter the "CAL" code and press OK.
This "CAL" code is shown in the right upper corner.

↓

Points

↓

— Delete

Delete all old calibration points. Make sure all points are deleted.

↓

+ Activate

Make sure the weigher is empty and press the "+Activate" button to save the zero point

↓

→ EDIT

Press "EDIT" and put a reference weight on the weigher. Enter the weight of the reference weight and press OK.

↓

+ Activate

To save the second point, press the "+Activate" button.

Setup the filling configuration.

Before using the controller, please setup the configuration for your application first.

Login first to enter the System settings,
Default no password is selected.
The overall password is "25630".

Press the blue "Par." fields to enter the needed values.
Press the Question marks to open information about the parameter.
Press the "Default" button to reset to factory setting.
Press the "Return" button to return to the previous screen.

Open parameter information

Edit parameters

Scroll bar

Return to Previous screen

Reset to factory settings
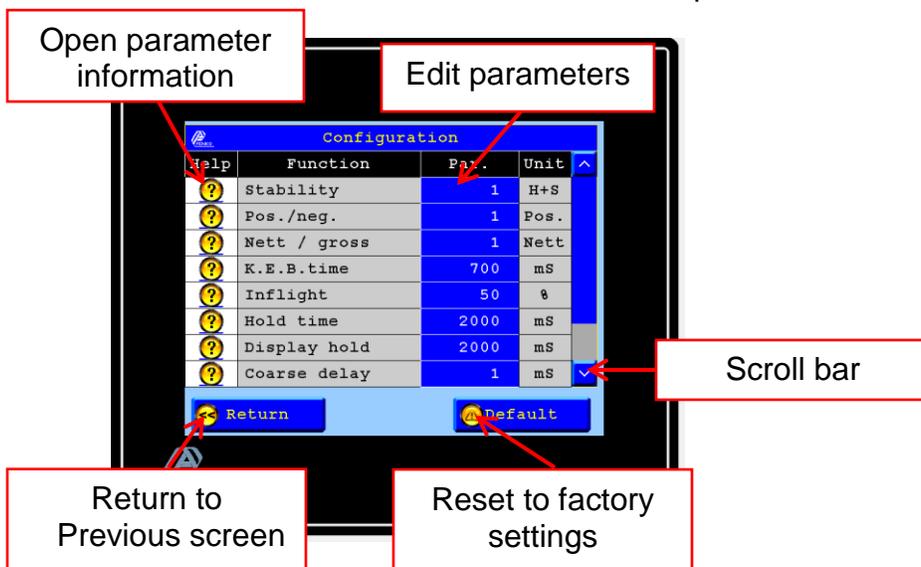
Use the scroll bar to enter the next values.
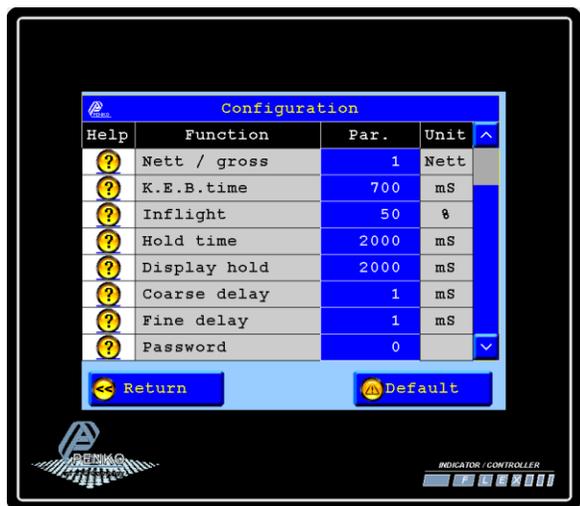
Factory settings:

Stability	:Hold time + Stable
Pos/neg	:Positive weighing
Nett/Gross	:Nett weighing
K.E.B.time	:700 msec
Inflight correction	:50 %
Hold time	:2000 msec
Display hold time	:2000 msec
Coarse delay	:1 msec
Fine delay	:1 msec
Password	:0 (disabled)

Configuration Parameters.

Stability   X

Weigher stability can be switch-
ed on or off.
This par. works together with
the H-time.
1= First H-time then stable
2= only H-time.
3= Stable or H-time.
4= first stable then H-time.

Positive / negative weighing   X

select if dosing is positive
(in dosing)

or,

select if dosing is negative
(out dosing)

1 = Positive weighing
2 = Negative weighing

Nett or Gross weighing   X

When weigher has to be set
to zero (tare), Nett has to be
Selected.
1 = Nett.
2 = Gross.

Kenetic blind time.   X

This is the time (miliseconds)
in which the kinetic energie,
after coarse turns of,
Dissapears.
KEBtime in milliseconds

KEBtime must be less then
remaining fine time.

Inflight correction   X

Inflight is the amount of pro-
duct, which is falling on the
weigher, after the Fine output
is switched off.
The correction value indicates
strenth of the correction (%).
Min = 0 Max = 50 %
0 means fixed inflight.

Hold time   X

This is the time the controller
waits before calculating the
really dosed value.
Wait after dose time = milli-
seconds.
The H-time works together with
the stability parameter.

Display hold time   X

After the dosing is finished
The display hold time starts.
The dosed value is froozen
for this time. after this time
the display is "live" again.
A new dosing can start during
this time.

Coarse output delay time   X

This is the time that the
coarse output waits after the
dosing starts.
Time in miliseconds.

Fine output delay time   X

This is the time that the fine
dosing waits when the dosing
Starts.
Time in milliseconds.

Change password   X

password to close
some page's

Zero is no password needed

Select/Edit Recipe.

To select a recipe, press the "recipe" button from the production screen.

Select a recipe by pressing on the recipe name in the blue fields.
Use the scroll bar to select the next recipes.
The screen will automatically return to the production screen after selection.

To edit a recipe Press the recipe number in the gray fields.
To enter the recipe edit screen the user must be logged in.
To return to the production screen without changes, press the "Return" button.
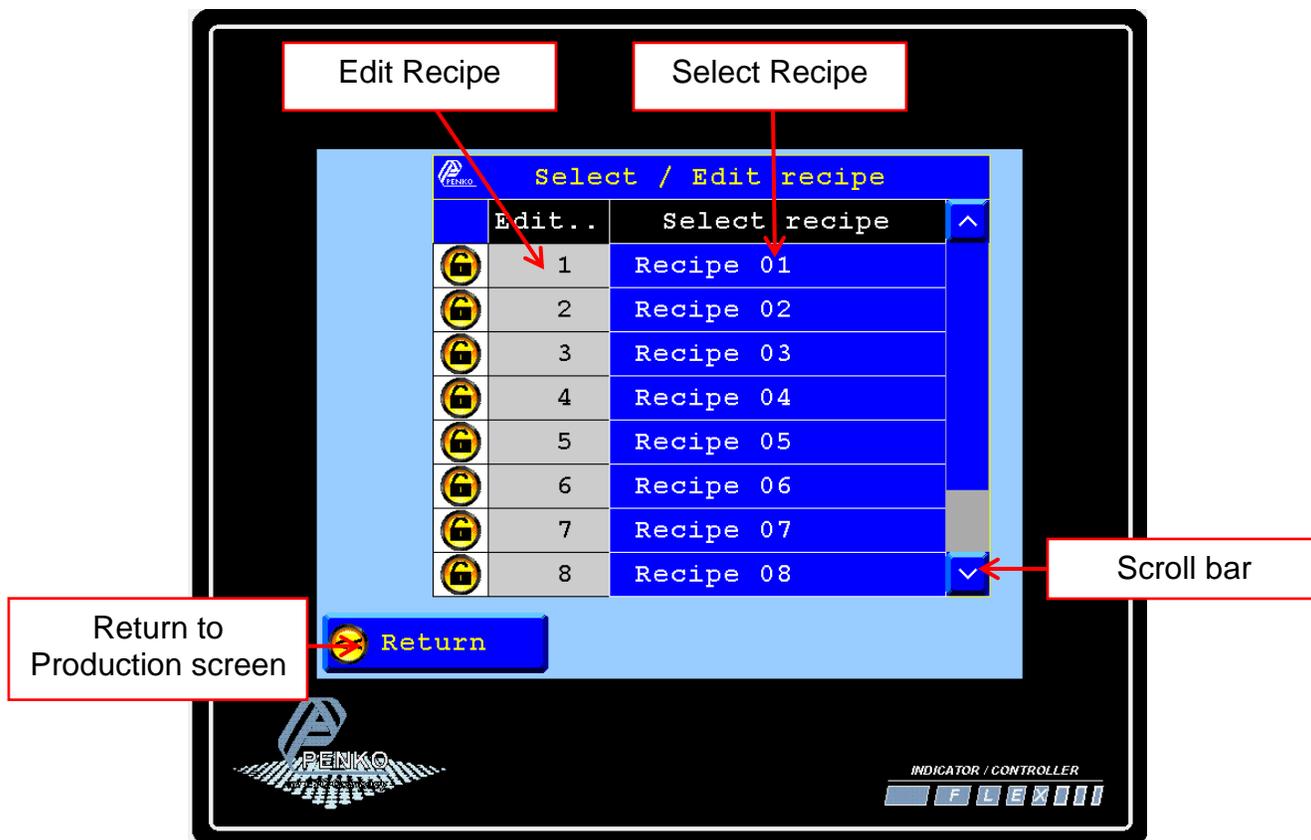
Edit Recipe parameters.

To edit the recipe name, press the recipe name button.
To edit a recipe parameter, press the value in the blue fields.
Press the question marks to open information about the parameter.
To return to the previous screen and save the recipe, press the "Return" button.

Recipe parameters.

```
Setpoint                    X
Setpoint is the amount of pro-
duct,which is wanted on/in the
weigher.
The selection Nett or gross and
in or out is made in the con-
figuration menu.
```

```
Turnover                    X
Coarse dosing stops when the
setpoint - turnover is reached.
The dosing continues in fine
mode.
Remaining time must be > KEBt
```

```
Inflight                    X
Inflight is the amount of pro-
duct, which is falling on the
weigher, after the Fine output
is switched off.
The correction strenght is set
in the configuration menu.
```

```
Coarse speed                X
During the coarse dosing mode
This value is used for analogue
output.
Min=   0.00 %
Max= 100.00 %
```

```
Fine speed                  X
During the fine dosing mode
this value is used for the
analogue output.
Min=   0.00 %
Max= 100.00 %
```

Production data.

To view the total dosed values, press the "production data" button.

To reset the subtotals, press the Subt." Button
To reset the totals and subtotals, press the "Total" button.
Press the question marks to open information about the parameter.
To return to the previous screen, press the "Return" button.

Open parameter information

Return to Previous screen

Help	Parameters	Subt.	Total
?	Std.dev.	0,0000	0,0000
?	Average	0,0000	0,0000
?	Total	0,000	0,000
?	Count	0	0

Return   Subt   Total

Reset sub totals   Reset totals
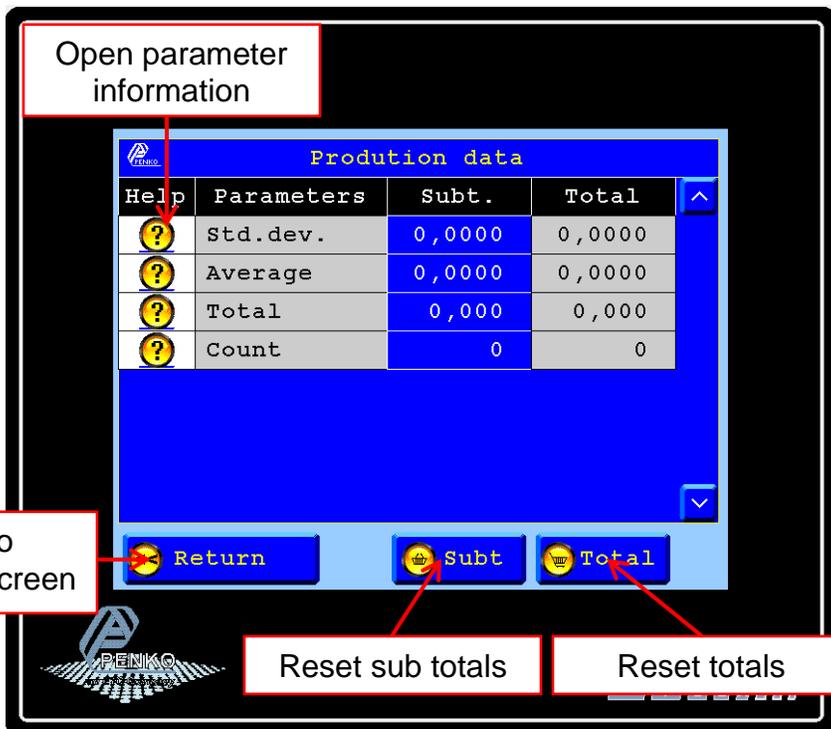
Standard deviation   X
The standard deviation shows how much variation there is from the average.
A low standard deviation indicates a high repeatability

Average   X
This is the average value from the dosed values.

The average should be as close as possible to the Setpoint.

Total   X
The total shows the total amount dosed .

Count   X
The count shows the amount of dosed

Information.

To view the Penko contact information, press the "information" button from the selection menu.
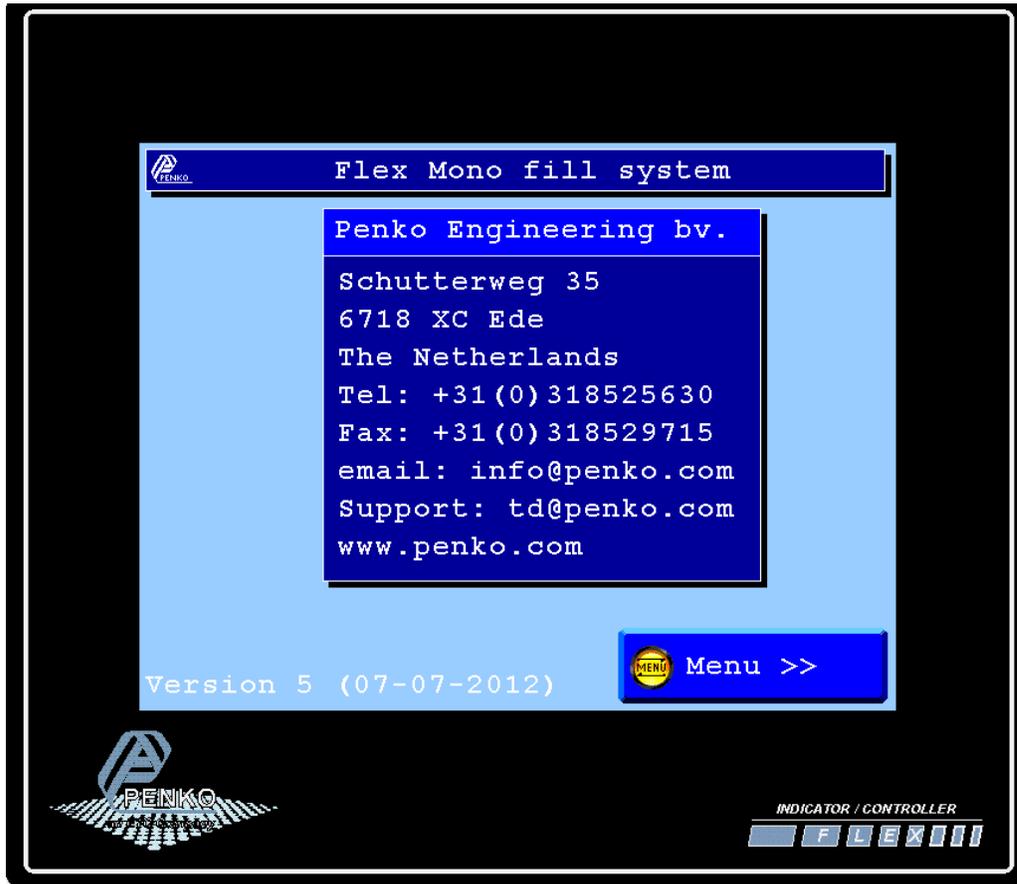
Sequence example.
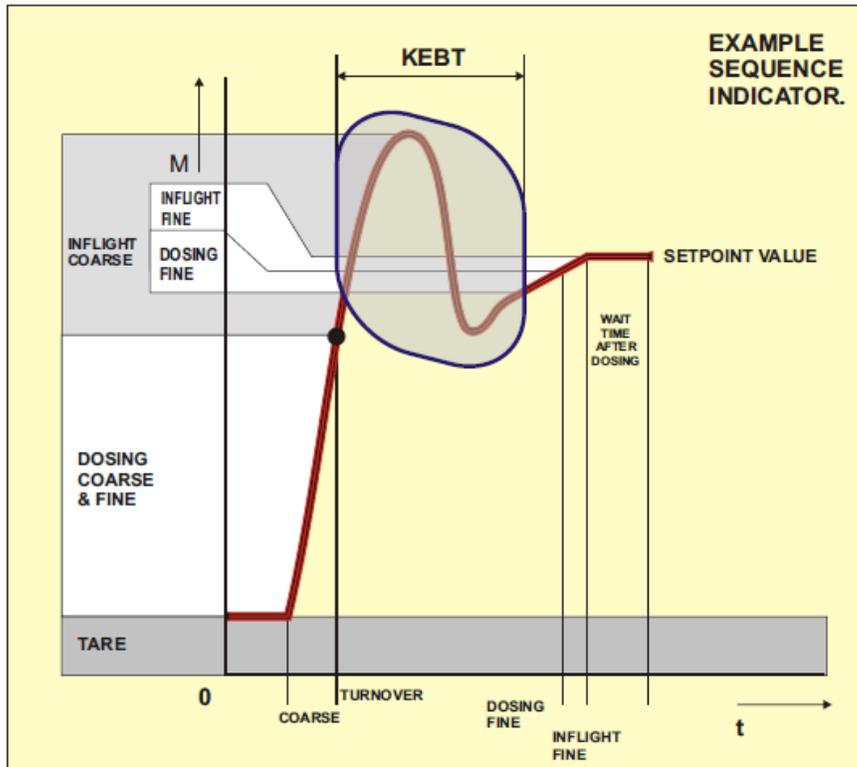
Sequence:

1. Start.
2. Wait for start dosing.(ready ON)
3. Start dosing (Input 3)
4. Dosing busy ON.
5. Tare (if Nett dosing is enabled).
6. Coarse and Fine delay.
7. Coarse and Fine dosing.
8. Dosing until Setpoint – Turnover.
9. Coarse dosing OFF.
10. K.E.B.Time.
11. Dosing Fine until Setpoint – Inflight.
12. Fine dosing OFF.
13. Wait for stable and Holdtime parameter.
14. Calculate new inflight.
15. Dosing Busy OFF.
16. Dosing ready ON.
17. Wait till input start dosing OFF.
18. Restart.

Profibus Data Explanation.

Status Information from the Controller:

1) 32 bit signed Integer / float   Gross Weight
2) 16 bit status information
   1 = tare active
   2 = preset tare active
   3 = new sample available
   4 = calibration invalid
   5 = calibration enabled
   6 = user certified operation
   7 = reserved
   8 = reserved
   9 = hardware overload detected
   10 = overload detected
   11 = stable signal
   12 = in stable range
   13 = zero corrected
   14 = center of zero
   15 = in zero range
   16 = zero tracking posible
3) 16 bit command/Reserve bits
4) 16 bits input status
   1 = Start
   2 = Stop
   3 = Start Dosing
   Others not use
5) 16 bits output status
   201 = Fine Dosing
   202 = Coarse Dosing
   203 = Ready
   204 = Dosing Busy
   Others not use
6) 32 bits marker status
   401 = Positive weighing
   402 = Negative weighing
   403 = Nett
   404 = H+S
   405 = H
   406 = H/S
   407 = S+H
   411 = Fine Maker
   412 = Coarse marker.
   Others not in Use

7) 32 bits signed integer,   Nett Weight
8) 32 bits signed integer,   Last Dosed
9) 32 bits signed integer,   Setpoint
10) 32 bits signed integer,   Dac Speed

Status Information from the PLC:

1) 16 bits Command/ Reserved Bits
          1 = zero reset command
          2 = zero set command
          3 = tare off
          4 = tare on
          5 = free
          6 = free
          7 = free
          8 = free
2) 32 bits Control markers
          969 = Start
          970 = Start Dosing
          971 = spare 1
          972 = spare 2
          973 = Used Setpoint from Profibus
          974 = Used Turnover from Profibus
          975 = Used Inflight from Profibus
          976 = Used Analoge from Profibus
          Others not in use.
3) 32 bits Signed integer,   Setpoint
4) 32 bits Signed integer,   Turnover
5) 32 bits Signed integer,   Inflight / Coarse Speed
6) 32 bits Signed integer,   Fine Speed