

PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



Manual:
FLEX2100



PENKO

an ETC Company

IMPORTANT SAFETY INFORMATION

READ THIS PAGE FIRST!

PENKO Engineering B.V. manufactures and tests its products to meet all applicable national and international standards. It is vital that this instrument is correctly installed, used, and maintained to ensure it continues to operate to its optimum specification.

The following instructions must be adhered to and incorporated into your safety program when installing, using, and maintaining PENKO products. Failure to follow the recommended instructions can affect the system's safety and may increase the risk of serious personal injury, property damage, and damage to this instrument and may invalidate the product's warranty.

- Read the instructions fully prior to installing, operating, or servicing the product. If this Instruction Manual is not the correct manual for the PENKO product you are using, call 0031(0)318-525630 for a replacement copy. Keep this Instruction Manual in a safe place for future reference.

- If you do not fully understand these instructions, contact your PENKO representative for clarification.

- Pay careful attention to all warnings, cautions, and instructions marked on and supplied with the product.

- Inform and educate your personnel about the correct installation, operation, and maintenance procedures for this product.

- Install your equipment as specified in the installation instructions of the appropriate Instruction Manual and as per applicable local and national codes. Connect all products to the proper electrical sources.

- To ensure correct performance, use qualified personnel to install, operate, update, program, and maintain the product.

- When replacement parts are required, ensure that qualified technicians use replacement parts specified by PENKO. Unauthorized components and procedures can affect the product's performance and may affect the continued safe operation of your processes. The use of non-specified 'look-alike' substitution parts may result in the risk of fire, electrical hazards, or improper operation.

- Ensure that all equipment doors are closed and protective covers are in place, except when maintenance is being performed by qualified persons, to prevent electrical shock and personal injury.

WARNING

ELECTRICAL SHOCK HAZARD

Installing cable connections and servicing this instrument require access to shock hazard level voltages which can cause death or serious injury.

Disconnect separate or external power sources to relay contacts before commencing any maintenance.

The electrical installation must be carried out in accordance with CE directions and/or any other applicable national or local codes.

Unused cable conduit entries must be securely sealed by non-flammable blanking plates or blind grommets to ensure complete enclosure integrity in compliance with personal safety and environmental protection requirements.

To ensure safety and correct performance this instrument must be connected to a properly grounded, three-wire power source.

Proper relay use and configuration is the responsibility of the user.

Do not operate this instrument without the front cover being secured. Refer any installation, operation or servicing issues to qualified personnel.

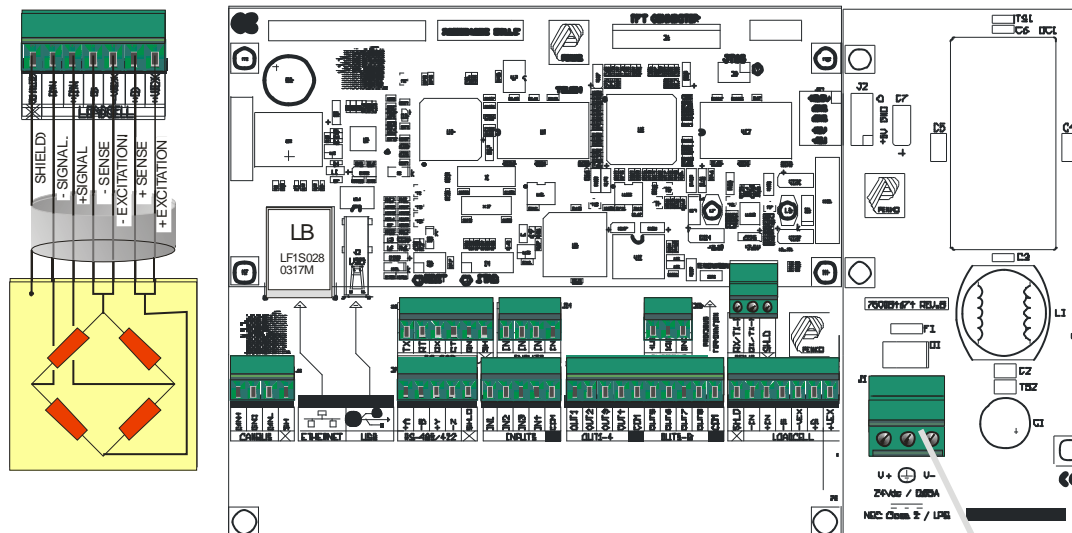
WWW.PENKO.COM

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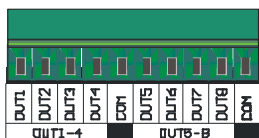
Email: info@PENKO.com

FLEX 2100

WIRING CONNECTIONS: LOADCELL(S), IN/OUTPUTS & POWER SUPPLY

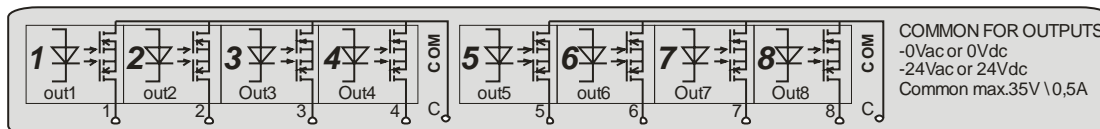


Digital outputs 1-8

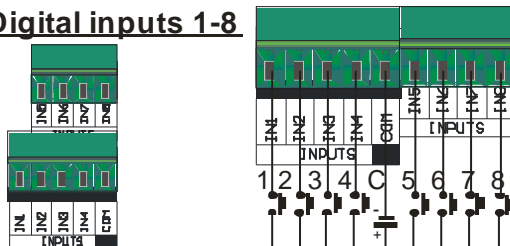


DC POWER SUPPLY VERSION

This product is intended to be supplied by a Class 2 or Limited Power Source, rated 10.8 - 31.2 Vdc, 0.65A@24Vdc.



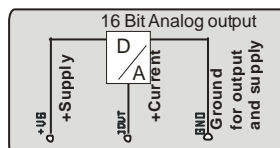
Digital inputs 1-8



Input 1 can be used as:
a normal input
as a counter input
(max. counter input speed 5000Hz)

18-28 VDC

Analog output mA (option)



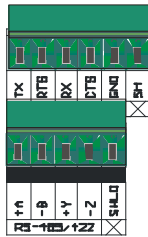
Power supply
for analog output
18-30Vdc

Wiring connections 01

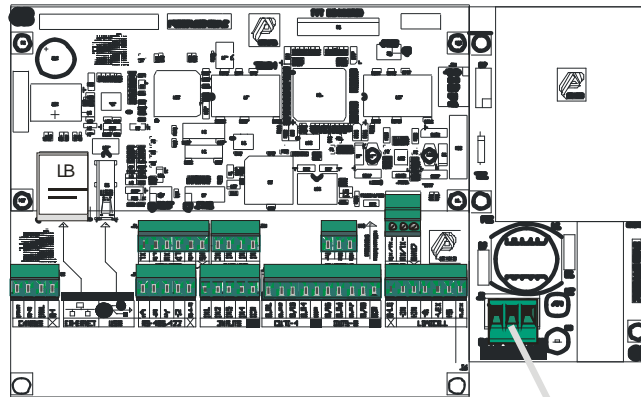
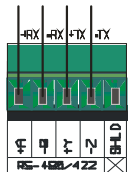


FLEX 2100

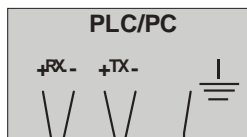
WIRING CONNECTIONS: COM. PORT RS232/422



COMMUNICATION RS422.



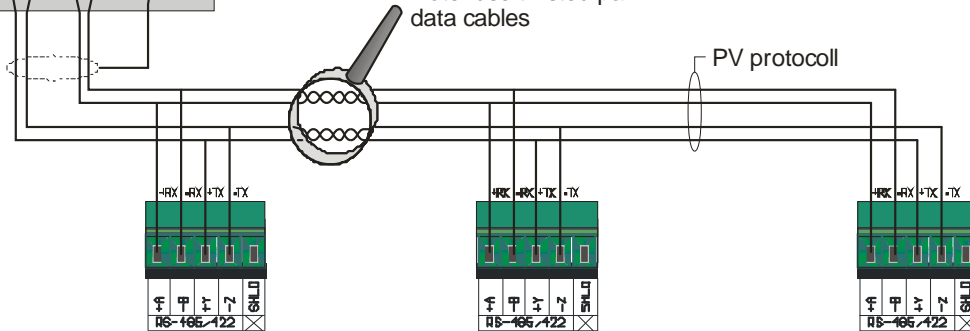
CE only; 100-240 Vac POWER SUPPLY VERSION



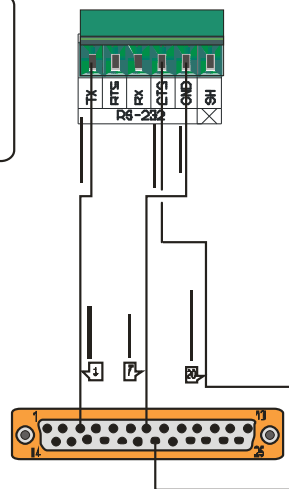
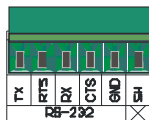
Rs422 PV protocol Example
example:

Note: use twisted pair
data cables

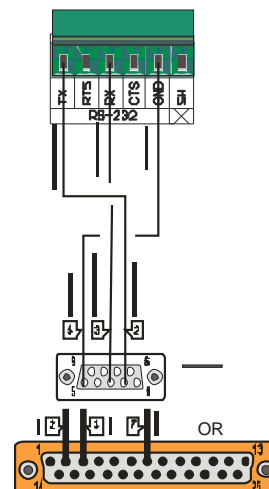
PV protocol



COMMUNICATION RS232.



CABLE FOR COMPORT
RS232 PRINTER



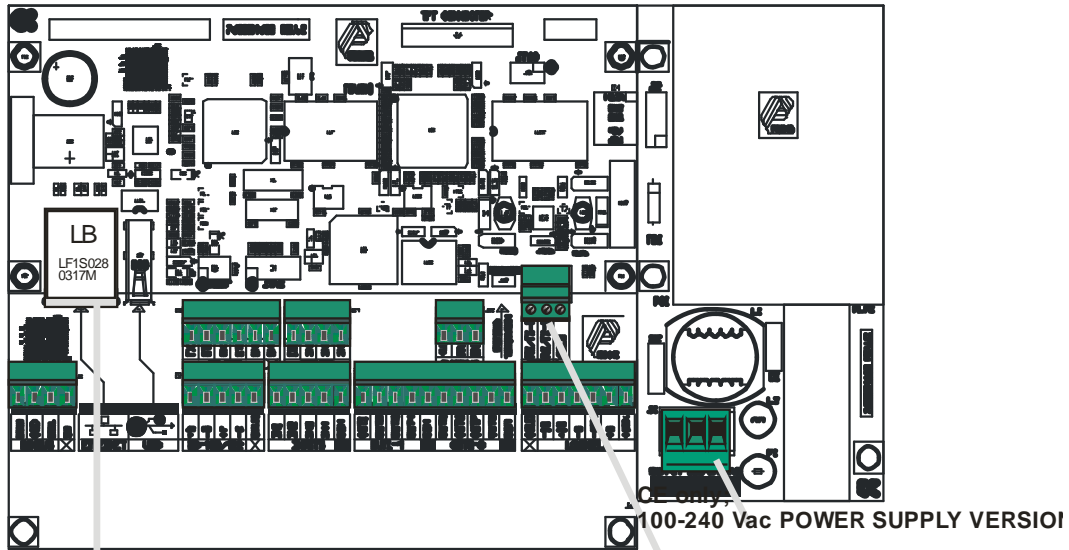
CABLE FOR COMPORT
RS232 PC/PV-PROTOCOL

Wiring connections 02



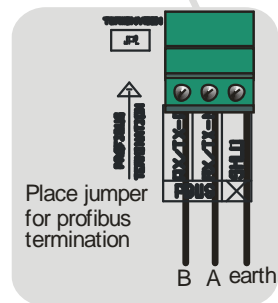
FLEX 2100

WIRING CONNECTIONS: PROFIBUS & ETHERNET



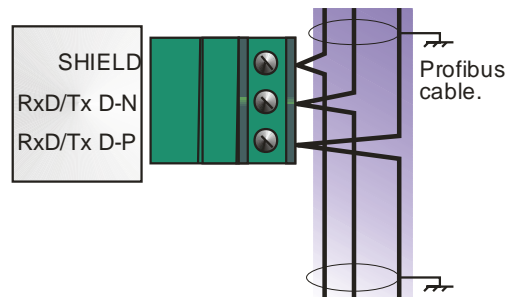
- 1 = td+
- 2 = td-
- 3 = rd+
- 4 = not used
- 5 = not used
- 6 = rd-
- 7 = not used
- 8 = not used

RJ-45 Ethernet connector
led functions:
Green= Link
Yellow= Active



Main board revision F
or higher has a double
dip switch for Profibus
termination

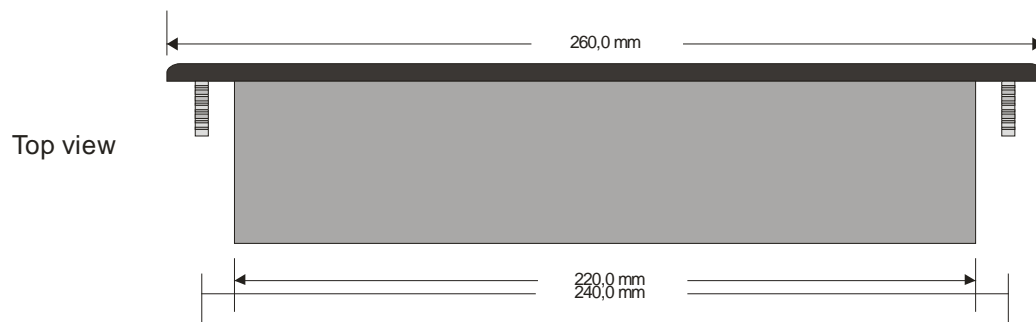
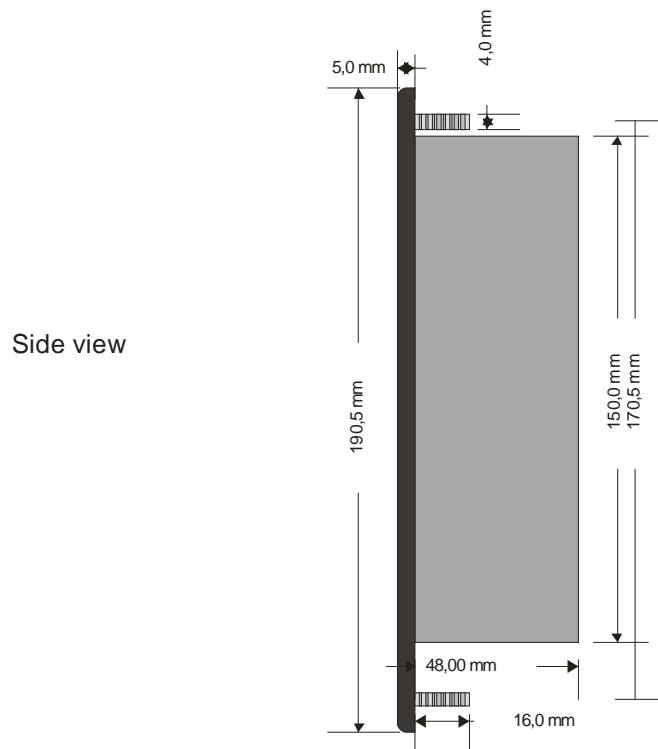
PROFIBUS PORT CONNECTIONS



Wiring connections 03

FLEX 2100

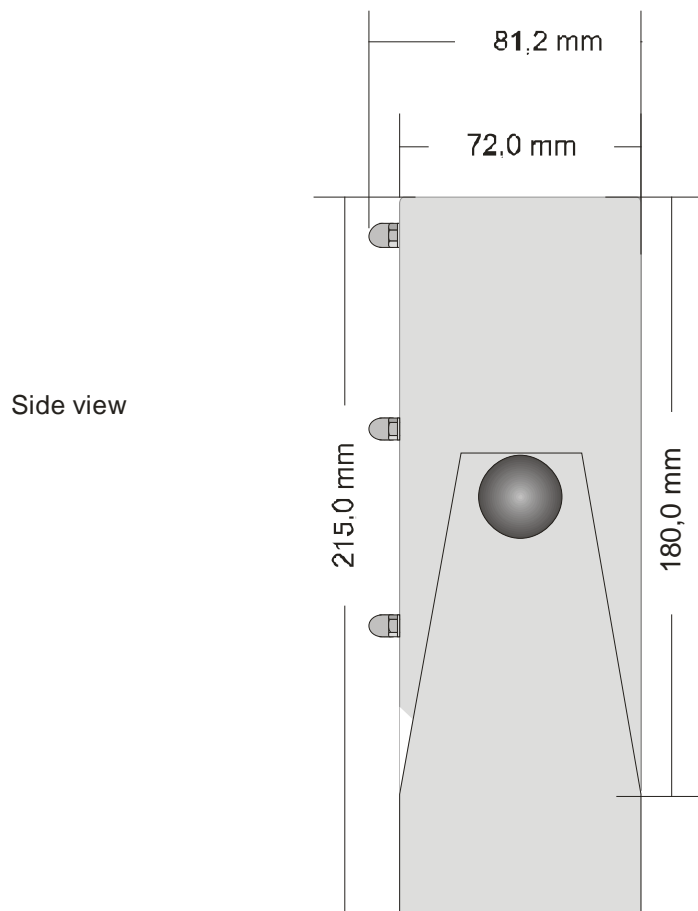
DIMENSIONS FLEX 2100 PANEL MOUNT



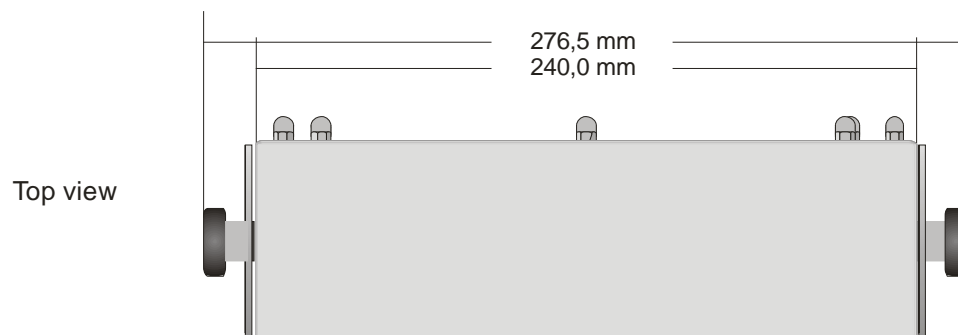
Dimensions 01

FLEX 2100

DIMENSIONS FLEX 2100 STAINLESS STEEL



Use appropriate bracket mounting screws with a total minimum strength of 6,8kg



Dimensions 02

FLEX 2100

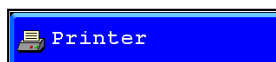
Button explanation:

The Penko Flex has different function keys.

Menu buttons:

Buttons to enter a menu are recognizable by other pictogram with text.

Examples:




Edit buttons:

Buttons to edit a parameter can be a -, + or edit button.

With the “-” button the parameter field will scroll down or decrement of the value. 

With the “+” button the parameter field will scroll up or increment of the value. 

With the edit button a keyboard will be opened to edit the selected parameter. 

Alphanumeric keyboard:



Numeric keyboard:



Leave menu buttons:

With the “cancel” button its possible to leave a menu without saving the changed parameters.

With the “OK” button its possible to leave a menu and save the changed parameters.

With the “Next>>” button its possible to go to the next screen with parameters of the selected menu.

With the “<<Prev” button its possible to go to the previous screen with parameters of the selected menu.



ON/OFF buttons.

Some function can be enabled or disabled, the buttons are recognizable by the red cross or green tickmark.



OFF/ Disabled



ON/ Enabled

Button explanation 01

FLEX 2100

Recipe Menu:

From this menu its possible to select and edit recipes.

To go to this menu, select “Recipe” from the Main menu.



Select 1 of the 4 tasks



Recipe Number:



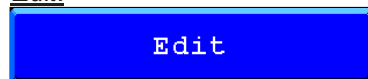
Here you can select the number of the recipe.

Name:



Here the name of the selected recipe will be shown.

Edit:



Here the selected recipe parameters can be changed.

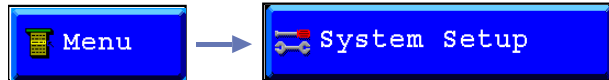
Recipe menu 01

FLEX 2100

System setup:

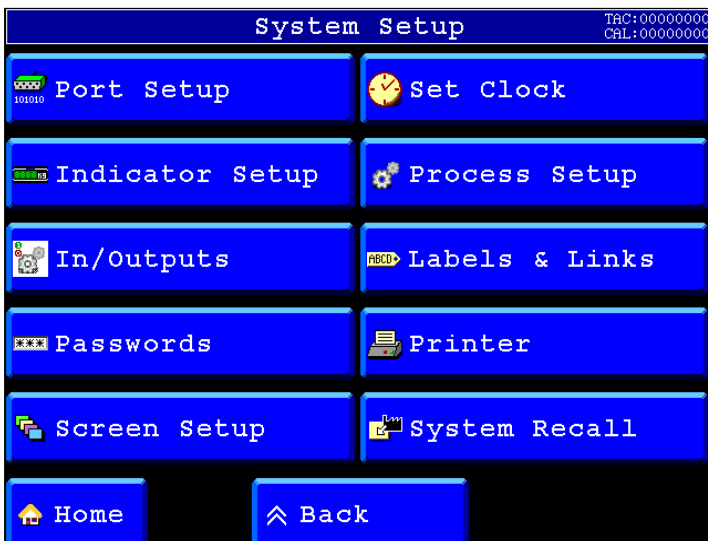
From this menu its possible to access all settings for the flex.

To go to this menu, select "System setup" from the Main menu.



Different options are:

- Port Setup
- Indicator Setup
- In/Outputs
- Passwords
- Screen Setup
- Set Clock
- Process setup
- Labels and links
- Printer
- System Recall



System setup 01

FLEX 2100

Port setup:

In the port setup it's possible to set up all communication ports and protocols.
To go to the port setup press the "Port Setup" button from the System setup.



RS 232 port:



In this menu all settings for the RS 232 comport can be set.
For settings, see below.

RS 422 port:



In this menu all settings for the RS 422 comport can be set.

For settings, see below.

Protocol:

In this field, several communication protocols can be selected.

Different protocols are: None, Printer, ASCII, TP Slave, TP Master, NPV Slave, NPV Master, INDICATOR, HL Viewteq, HL PLC, Modbus RTU, Modbus ASCII, Keyboard Custom.



Address:

To identify the device in a configuration with multiple devices an address has to be selected. (Not for all protocols)



Baudrate:

Select a speed for the protocol (Not for all protocols)



Parity:

Select a parity for the protocol

(Not for all protocols)



Stopbits:

Select the number of needed stopbits for the protocol

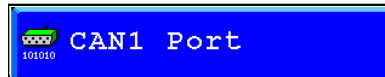
(Not for all protocols)



Port setup 01

FLEX 2100

CAN 1 port:



In this menu, all settings for the CAN comport can be set.

Protocol:

In this field, several communication protocols can be selected.

Different protocols are: None or Buslink



Baudrate:

Select a speed for the protocol



Buslink Address:

Up to 8 Flexes can communicate with each other, sharing inputs, outputs, markers and indicators.

In this parameter its possible to set the Buslink Address



Buslink Subaddress:

When using a subaddress, up to 40 flexes can communicate with eachother.

In this parameter its possible to set the Buslink subaddress.



USB port:



In this menu all settings for the USB comport can be set.

Protocol:

When the USB port is switched to device mode the Flex acts as an external serial port.

The USB device supports the following protocols:

- None
- Printer
- ASCII
- TP Slave
- USB Host
- Mouse/Keyboard

The first time the flex is connected to the PC, windows will ask for a driver. Then select the file Flexusb.inf to start the installation. This file is installed as part of th PI package.

USB Host

When the USB port is switched to host mode, a USB stick formatted with FAT16 or FAT filesystem can be used to load and store data on the stick.

When no printer port is selected, print commands will be stored as a text file on the usb stick with the name PRINTER.TXT.

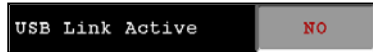
Reading and writing registers, indicators and recipes to the USB stick can be done using the PLC program commands FILEREAD and FILEWRITE.



Port setup 02

USB buslink active:

Tells if the USB buslink is active or the status of the USB Host.



The USB Port settings screen can show the following messages:

YES - USB device port is connected

NO - USB is disconnected

Ready - USB stick is connected and ready

Busy - USB stick is connected but busy

USB overcurrent - too much current draw from USB port

USB device unknown - device connected to the USB host port is not recognised.

Currently only FAT or FAT16 formatted USB sticks are supported.

File not found - Flex attempted to open a file that is not on the USB stick

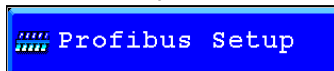
Invalid FAT Format - Currently only FAT or FAT16 formatted USB sticks are supported.

Reformat the stick with FAT filesystem

File error - File access failed

Disconnect USB - When the Flex switches from device to host, a connected PC must be disconnected first.

Profibus setup:



In this menu all settings for the Profibus comport can be set.

Channel:

To identify the device in the used configuration, a Channel has to be selected.



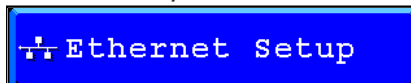
Format:

The profibus value can be shown as Integer (direct value without decimal point) or as Floating point (real value with decimal point).



FLEX 2100

Ethernet setup:



In this menu all settings for the Ethernet comport can be set.

IP Number:

Edit the ethernet IP number.



Subnet Mask:

Edit the ethernet Subnet mask



Gateway:

Edit the ethernet Gateway.



Speed:

The speed of the ethernet communication can be set at: 10 Mbps, 100Mbps or automatic detection.



Name:

In the "name" its possible to give the Flex a unique name within the ethernet communication.



DCHP:



With the DHCP its possible to let the network generate an IP address for the Flex.

When its disabled the flex will work with a fixed IP address.

When its enabled the flex will request an IP address from the network.

Port:

In the Port" the port number for the communication can be set.



Buslink Address:

Up to 8 Flexes can communicate with each other, sharing inputs, outputs, markers and indicators.

With this parameter its possible to set the Buslink Address.



Buslink subaddr:

When using a subaddress, up to 40 flexes can communicate with eachother.

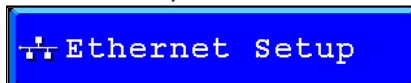
With this parameter its possible to set the Buslink subaddress.



Port setup 04

FLEX 2100

Ethernet setup:



In this menu all settings for the Ethernet comport can be set.

IP Number:

Edit the ethernet IP number.



Subnet Mask:

Edit the ethernet Subnet mask



Gateway:

Edit the ethernet Gateway.



Speed:

The speed of the ethernet communication can be set at: 10 Mbps, 100Mbps or automatic detection.



Name:

In the "name" its possible to give the Flex a unique name within the ethernet communication.



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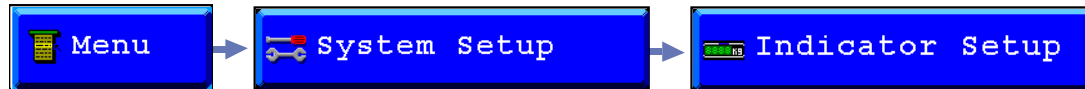


Port setup 04

Indicator setup

In the indicator setup it's possible to set all indicator parameters to make sure the indicator will act properly.

To reach this Setup see below



The different options are:

- Indicator
- Filter
- Calibration
- Indicators
- Recall
- External Devices



Indicator:

To change the different settings, select "indicator" from the indicator setup



Before its possible to enter this menu, the indicator will ask for the "TAC" code. This "TAC" code is shown in the upper right corner.



Indicator name:

With an indicator name, the indicator will be unique within the application. So it's easy to recognize it in the process and/or in the factory.

For example:

Silo 1, Scale, etc.

The indicator name can have a maximum of 16 characters.

To change the indicator name, press the "EDIT" button behind the name and change it.



Unit label:

The unit label defines the unit of measurement.

The unit label is the value of a quantity, chosen by convention as a reference for measuring quantities of the same kind.

For example:

,- t (ton) kg (kilo gram), g (gram), but can also be L (liter), lbs (pounds), etc.

The unit label can have a maximum of 4 characters.



Indicator set up 01

FLEX 2100

Formatting:

Formatting defines the way that the weigher value will be shown.
To change the formats of the indicator, press the "Formatting" button.



Step size:

The step size defines the scaled parts of the weight value.

Example: Weigher value is 2003 kg

Step size	Display value
1	2003 kg
2	2004 kg
5	2005 kg
10	2000 kg

The display value will be rounded off to the nearest value with a valid step size.

Step size can be set at 1, 2, 5, 10, 20, 50, 100, 200.



Decimal point:

The Decimal point defines the point position of the weight value.

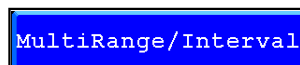
Example: value 2006 kg with a decimal point position of "2" will be shown as 20.06 kg

Decimal point position can be set from NONE to 0,00000.



MultiRange/Interval:

In the multirange/intervall the indicator can be set to change its stepsize when the weigher signal reaches a certain value.



Range:

This is the number of divisions when the indicator has to display using the next step size.

Auto ranging is disabled when range size is set to 0.



Step:

The biggest allowed step size must be set in the step field.



Indicator set up 02

FLEX 2100

Example: The normal step size is per 1, Range =100 and Step=50.

Indicator display	Step size per
0-100	1
100-200	2
200-500	5
500-1000	10
1000-2000	20
2000-5000+	50

The maximum preset tare only works, and this is also the biggest value, to the first level of the autorange when the indicator is set to certified. In this example the preset tare is valid to 100.

Mode:

The multi interval function has 2 modes, "Multi range" en "Multi interval".

With "Multi range" the highest shown stepsize will be reset after the signal has been lower or equal to "0".

With "Multi interval" the highest shown stepsize will be lowered when the signal reaches a lower range.



Operation Mode:

This parameter defines the operation mode of the unit.

The operation mode can be set at "Industrial" or Certified mode.

In industrial mode its always possible to change the indicator parameters and calibration settings.

In certified Mode the unit will be sealed by marks and also the weighing parameters will be blocked to comply with calibration laws.

A weighing unit must be certified when its used for measuring for trade aims.



Note: If certified mode is selected, the zero band = 4% (+2 and -2%)
Also zero suppressing is disabled.

Indicator set up 03

FLEX 2100

Max load:

To prevent overload by the user, the FLEX will not show any weight above this value.

In certified mode the max load is not allowed to be more than the maximum load + 9 scale parts.



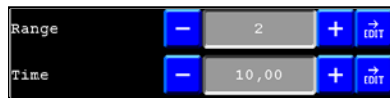
Stable condition:

The Flex will give a signal when the weigher value is stable within certain values.

The stable function can be set with 2 parameters:

- **Time** (milliseconds).
- **Range** (in the selected weigher unit)

The indicator will give the stable signal when it's within the **range** for the **settime**

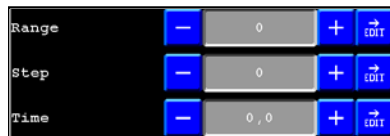


Zero tracking:

Zero tracking is able to tune the zero point back to zero when the scale becomes dirty.

The zero tracking can be set with 3 parameters:

- **Time**, the time that the signal has to be within the range to tune 1 step back to zero.
- **Range**, the maximum offset to tune back to zero.
- **Step**, the step size that will be tuned every **time** when the offset is within the Maximum **range**.



Indicator set up 04

FLEX 2100

Sample rate:

The sample rate defines the refreshment speed of the weighing signal.

For example:

If a weighing unit is filling bottles of milk with 1600 gram and the Sample rate is set to 1600 samples/sec the unit is able to fill this bottle in 1 second and see every gram of it, so a accuracy of +/- 1 gram has become possible.

If the same unit is set to a sample rate of 800 samples/sec the unit is still able to fill the bottle in 1 second but it now will see only the halve of the grams, so now a accuracy of +/- 2 gram has become possible.

To get the same accuracy with 800 sample/sec as with 1600 samples/sec the machine should be set to fill the bottles within 2 seconds.

Sample rate can be set at 10, 20, 25, 50, 100, 200, 400 , 800 or 1600 samples/sec.



Note: The accuracy of a weigher is always depending on the chosen load cells and the mechanical construction.

Certified text:

Certified text is only used when the weigher is certified and sealed by an authorized person.

The text will be shown in the weigher screens and will show information about; Serial number, number of calibration certificates, the minimum allowed weight value and the maximum allowed weight value.

This text can only be changed by an authorized person.



Class:

The class is only used when the weigher is certified and sealed by an authorized person and depends on the used load cells and the construction.

The class will be shown in the weigher screens.

The class can only be changed by an authorized person.



FLEX 2100

Filter:

Filters are used because in an industrial environment there are always vibrations.

- From machines in the building
- Motors on the weighing device
 - Mixers
 - vibrators
 - screws
 - Etc.
- From the buildings itself.

The purpose of a filter is to get the most steady and reliable weighing signal possible.

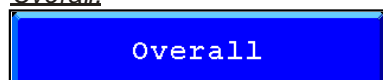


Before its possible to enter this menu, the indicator will ask for the "TAC" code. This "TAC" code is shown in the right upper corner.



Note: be aware that filters are not a miracle. Good mechanics are very important

Overall:



The overall filter effects the signal which is used in the device.

The overall filter can be set at 0, -6db, -12db, -18db, -24db, -30,db, -36db -42 db and -50 db, where 0 means no effect and -50 is the strongest damping.

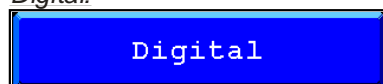
The sample rate has effect on the filter strength.

For fast dosing switch off this filter and use the Digital filter.

To prevent a loss of information or accuracy, don't set the overall filter higher than 24dB. When no accuracy is needed, a higher filter setting is allowed to enable extreme filtering.



Digital:



This filter is better known as Bessel filter. This filter only works with some sample rates.

The Digital filter can be set at None, Dynamic application and static application.

The Cutoff frequency can be set at 1,0Hz, 1,4Hz, 2,5Hz, 5,0Hz and 10Hz.



Filter settings 01

FLEX 2100

Filter:

Filters are used because in an industrial environment there are always vibrations.

- From machines in the building
- Motors on the weighing device
 - Mixers
 - vibrators
 - screws
 - Etc.
- From the buildings itself.

The purpose of a filter is to get the most steady and reliable weighing signal possible .

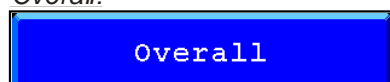


Before its possible to enter this menu, the indicator will ask for the "TAC" code. This "TAC" code is shown in the right upper corner.

Enter TAC code TAC:00000008
CRL:00000002

Note: be aware that filters are not a miracle. Good mechanics are very important

Overall:



The overall filter effects the signal which is used in the device.

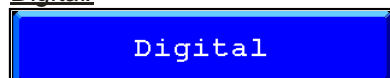
The overall filter can be set at 0, -6db, -12db, -18db, -24db, -30,db, -36db -42 db and -50 db, where 0 means no effect and -50 is the strongest damping.

The sample rate has effect on the filter strength.

For fast dosing switch off this filter and use the Digital filter.



Digital:



This filter is better known as bessell filter. This filter only works with some sample rates.

The Digital filter can be set at None, Dynamic application and static application.

The Cutoff frequency can be set at 1,0Hz, 1,4Hz, 2,5Hz, 5,0Hz and 10Hz.



Filter settings 01

Calibration:

Before an indicator can be used, the ADC (Analog Digital Converter) needs to be calibrated. This way it knows where to start and where to end.

The ADC converts the analog output from the load cells to a digital signal, this signal is used for all different calculations and to make it ready for readable information on the display.

To change and check the calibration, select "Calibration" from the indicator setup



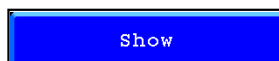
Before its possible to enter this menu, the indicator will ask for the "CAL" code. This "CAL" code is shown in the right upper corner.

Enter CAL code TWC:00000000
CAL:00000000

Show:

In the calibration "Show" its possible to see and check all calibration information.

To show measured sample, resulting weight and weigt x10, press the " Show" button.



CAL:

CAL means " Calibration code", every time the calibration is changed this number will increase with 1. When an indicator gets certified this number will be written on the device and is used by the controlling agency to see if the calibration isn't changed after sealing. So if an indicator is certified its not allowed to change the calibration by an non authorised person.

CAL 00000000

Points:

This field shows the amount of existing calibration points.

Its possible to have more then 2 calibration points. This is mostly used if the weigher signal in not linear.

Points 3

Sample:

Sample shows the direct value of the ADC (analog digital converter).

0 = minimum, 1000000 = maximum.

Sample 45736

Weight:

This field shows the actual weigher value.

Weight 10,00

Weight x 10:

This field shows the actual weigher value + an extra digit, so this weigher value is 10 times more accurate then the normal value.

This value is needed when the indicator gets certified.

Example:

The normal weigher value is 10,00 kg

The weigher value x 10 could be 10,002, 10,001, 10,000, 9,999 or 9,998 kg.

Weight 10x 10,002

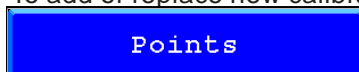
Press the "OK " button to leave this menu,.

Calibration menu 01

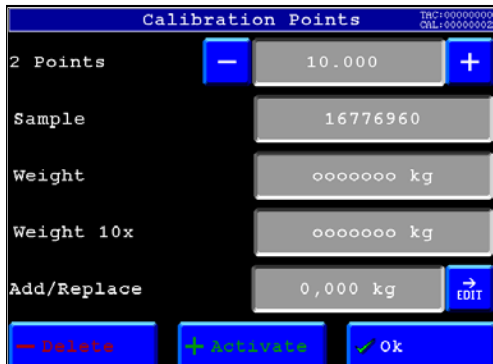
FLEX 2100

Points:

To add or replace new calibration points, press the “Add/Replace” button.



The first 4 fields will show the Weigher status (for explanation, see paragraph “show”)



If the indicator must be calibrated for the first time, its needed to delete the old calibration points first. To delete the points, press the “Delete” button.



When all points are deleted, first calibrate the Dead load (0).

Make sure the scale is completely empty and type 0 in the “Add/Replace” field by pressing the “Edit” button.

To save the zero point press the “+ Activate” button.

The Dead load is calibrated now and in the weight and weight x 10 field will appear the actual value.



To make sure the indicator works all right, its needed to calibrate the “Gain” weight. The Gain is the reference of the indicator to make the weigher signal a straight line.

To calibrate the gain weight put a reference weight on the scale.

It doesn't matter what mass it is, as long as it's known what the exact weight is.

Press the “Edit” button to type the exact reference weight in the “Add/Replace” field.

To save the reference weight, press the “+ activate button”.

The reference weight is calibrated now and in the weight and weight x 10 field will appear the actual reference weight.

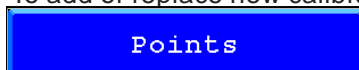


If more points are needed or need to be added later, repeat the gain calibration with an other reference weight.

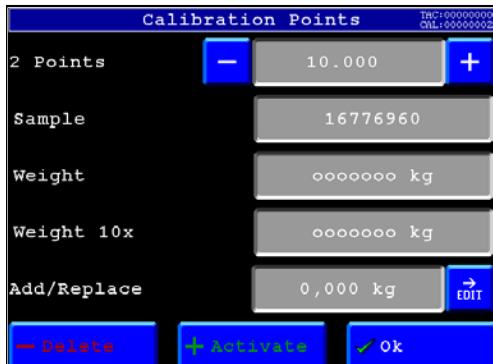
FLEX 2100

Points:

To add or replace new calibration points, press the “Add/Replace” button.



The first 4 fields will show the Weigher status (for explanation, see paragraph “show”)



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It doesn't matter what mass it is, as long as it's known what the exact weight is.

Press the “Edit” button to type the exact reference weight in the “Add/Replace” field.

To save the reference weight, press the “+ activate button”.

The reference weight is calibrated now and in the weight and weight x 10 field will appear the actual reference weight.

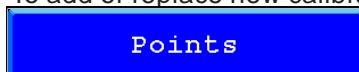


If more points are needed or need to be added later, repeat the gain calibration with an other reference weight.

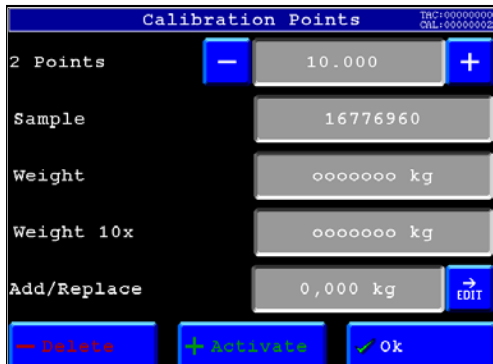
FLEX 2100

Points:

To add or replace new calibration points, press the “Add/Replace” button.



The first 4 fields will show the Weigher status (for explanation, see paragraph “show”)



If the indicator must be calibrated for the first time, its needed to delete the old calibration points first. To delete the points, press the “Delete” button.



When all points are deleted, first calibrate the Dead load (0).

Make sure the scale is completely empty and type 0 in the “Add/Replace” field by pressing the “Edit” button.

To save the zero point press the “+ Activate” button.

The Dead load is calibrated now and in the weight and weight x 10 field will appear the actual value.



To make sure the indicator works all right, its needed to calibrate the “Gain” weight. The Gain is the reference of the indicator to make the weigher signal a straight line.

To calibrate the gain weight put a reference weight on the scale.

It doesn't matter what mass it is, as long as it's known what the exact weight is.

Press the “Edit” button to type the exact reference weight in the “Add/Replace” field.

To save the reference weight, press the “+ activate button”.

The reference weight is calibrated now and in the weight and weight x 10 field will appear the actual reference weight.

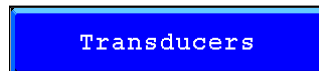


If more points are needed or need to be added later, repeat the gain calibration with an other reference weight.

FLEX 2100

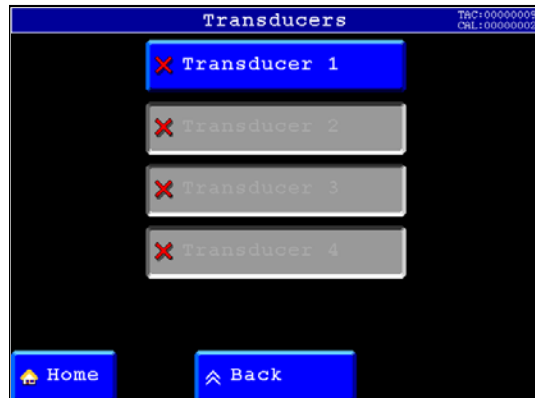
Transducers:

In this menu its possible to make a calibration with the information provided with new loadcells. So its not needed to calibrate the weiger with real weights.



When this function is used, normal calibration is disabled.

Its possible to set up a maximum of load cells.To setup the used load cells choose Transducer 1, 2, 3 or 4.



Output:

The Output value will be provided by the supplier of the loadcells.



Zero Balance:

The Zero Balance value will be provided by the supplier of the loadcells.



Type:

In this field the type of the loadcells can be edited.



Max Load:

The Max load value will be provided by the supplier of the loadcells.

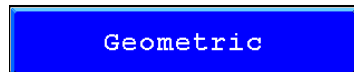


Calibration menu 04

FLEX 2100

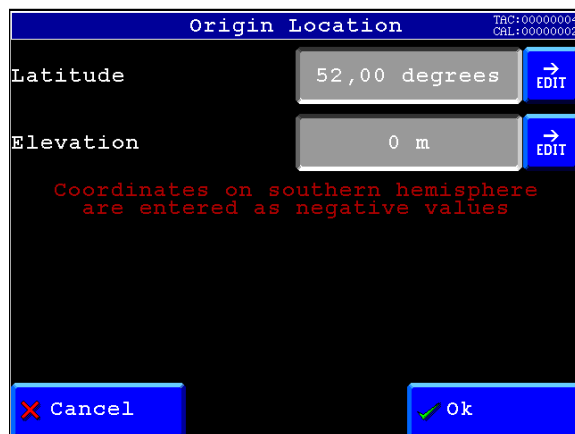
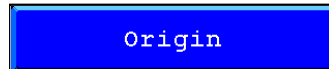
Geometric:

After Calibrating with the “Transducer” menu the geometric location and latitude of the place where the loadcells are fabricated and the install location must be filled in.



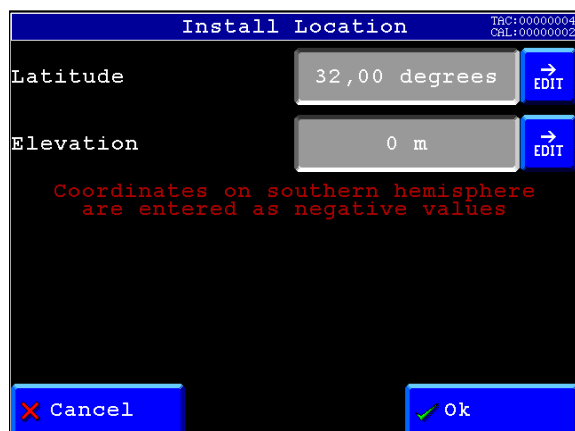
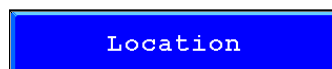
Origin:

In the "origin" menu, the latitude and Elevation of the place of fabrication of the loadcells can be entered.

A screenshot of the "Origin Location" screen. The title bar is blue with "Origin Location" in white. In the top right corner, it says "TAC:00000004" and "CAL:00000002". There are two input fields: "Latitude" with the value "52,00 degrees" and "Elevation" with the value "0 m". Each field has a blue "EDIT" button with a right arrow icon. Below the fields, red text reads: "Coordinates on southern hemisphere are entered as negative values". At the bottom, there are two buttons: "Cancel" with a red X icon and "Ok" with a green checkmark icon.

Location:

In the "location" menu, the latitude and Elevation of the place of installation can be entered.

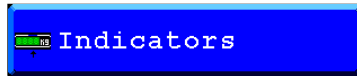
A screenshot of the "Install Location" screen. The title bar is blue with "Install Location" in white. In the top right corner, it says "TAC:00000004" and "CAL:00000002". There are two input fields: "Latitude" with the value "32,00 degrees" and "Elevation" with the value "0 m". Each field has a blue "EDIT" button with a right arrow icon. Below the fields, red text reads: "Coordinates on southern hemisphere are entered as negative values". At the bottom, there are two buttons: "Cancel" with a red X icon and "Ok" with a green checkmark icon.

Calibration menu 05

FLEX 2100

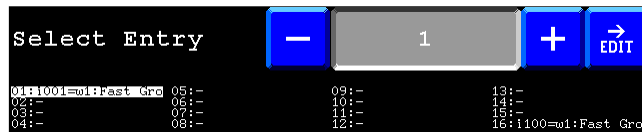
Indicators:

Here you can create and set-up indicators that you can use on your screens or in your program.



Select Entry:

Here you can select the entry you want to use to set up an indicator. There are 16 entry's that you can use.



Mode:

The different mode's you can use are:

- Weight (filtered net weigher value that can react on multirange/interval)
- Fast Gross (unfiltered gross weigher value)
- Fast Net (unfiltered net weigher value)
- Gross (filtered gross weigher value)
- Net (filtered net weigher value)
- Tare (tare value)
- Peak (highest reached weigher value can be reset by button peak reset)
- Valley (lowest reached weigher value can be reset by button valley reset)
- Weight x10 (filtered net weigher value shown with extra decimal that can react on multirange/interval)
- Fast Gross x10 (unfiltered gross weigher value shown with extra decimal)
- Fast Net x10 (unfiltered net weigher value shown with extra decimal)
- Gross x10 (filtered gross weigher value shown with extra decimal)
- Net x10 (filtered net weigher value shown with extra decimal)
- Tare x10 (tare value shown with extra decimal)
- Peak x10 (highest reached weigher value shown with extra decimal can be reset by button peak reset)
- Valley x10 (lowest reached weigher value shown with extra decimal can be reset by button valley reset)
- Sample (direct value got from the loadcell(s))

Make sure each indicator is only used once!!!



Indicator:

Here you can select the indicator you want to create.



Indicators 01

FLEX 2100

Recall:

To reset all indicator parameters back to factory settings, select “Recall” from the indicator menu.



Before its possible to enter this menu, the indicator will ask for the “TAC” code. This “TAC” code is shown in the right upper corner.

Enter TAC code TAC:00000008
CAL:00000002

Press the “OK” button to set the indicator parameters back to factory settings.
Press the “Cancel” button to leave without changing any parameters.



External Devices

This menu is reserved for future use.



After entering this menu, the following button is shown:

[0,000]=ind[0]

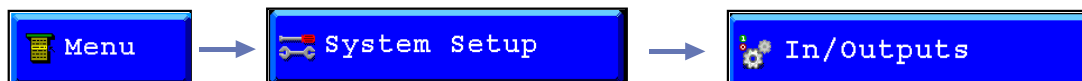
Indicator recall 01

FLEX 2100

In/Outputs:

In this menu its possible to setup the Inputs, Outputs and analog output for the different processes.

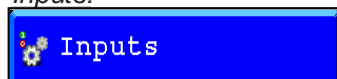
To go to this menu, select "In/Outputs" from the System setup menu.



Different options are:

- Inputs
- Outputs/Levels (only in Flex 2100 Indicator)
- DAC Setup
- DAC Calibrate
- USB Stick

Inputs:



All inputs can be configured to control different functions.

Different functions are:

- None (not used)
- Zeroset
- Zeroreset
- Tareset
- Tarereset
- Print
- Reset Peak
- Reset Valley
- Next screen
- Screen lock (Disables the touch screen)
- Start (Starts the program sequence)
- Stop (Stops the program sequence)
- Wait (Pauses the program sequence)

Select Entry:

In this field its possible to select the line to edit below in the screen.



01: In 0003= Reset Valley	09: None
02: In 0000= Zeroset	10: None
03: In 0000= Zeroset	11: None
04: In 0000= Zeroset	12: None
05: None	13: In 0000= Zeroset
06: None	14: None
07: None	15: None
08: None	16: None

Select Entry:

In this field its possible to select the function to link to the selected line.



Input:

In this field its possible to select the input to link to the selected line.



Inputs/Outputs 01

FLEX 2100

For Flex 2100 Indicator only!!!

Outputs/Levels:

To setup the outputs, press the “Outputs/levels” button.



Outputs/Level 1-8:

Here you can select the function of outputs 1-8.



Mode:

In this field its possible to select weigher mode that the output has to switch on.

Different modes are:

- Fast Gross kg (unfiltered gross weigher value)
- Fast Net kg (unfiltered net weigher value)
- Gross kg (filtered gross weigher value)
- Net kg (filtered net weigher value)
- Tare kg (tare value)
- Peak kg (highest reached weigher value can be reset by button peak reset)
- Valley kg (lowest reached weigher value can be reset by button valley reset)



Level:

In this field you can set the level at which the output will switch on.



Hysteresis:

In this field you can set the hysteresis for the outputs. (see diagram below)



Positive hysteresis:

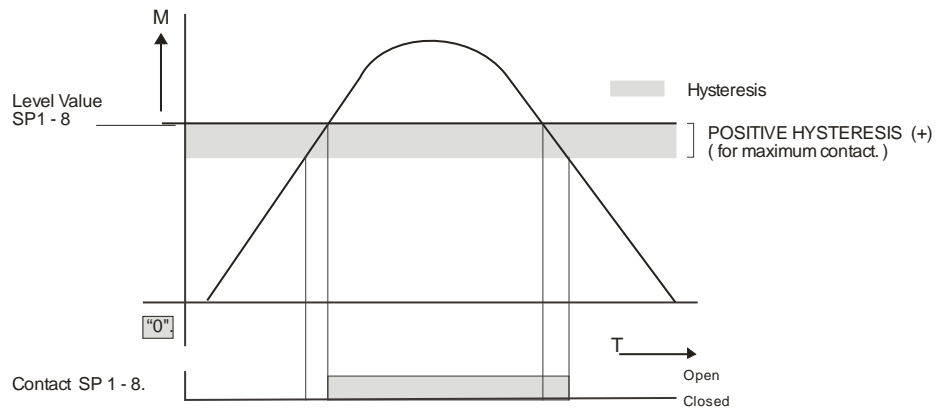
Contact opens at or above setpoint value. contact closed below setpoint value minus hysteresis

Negative hysteresis:

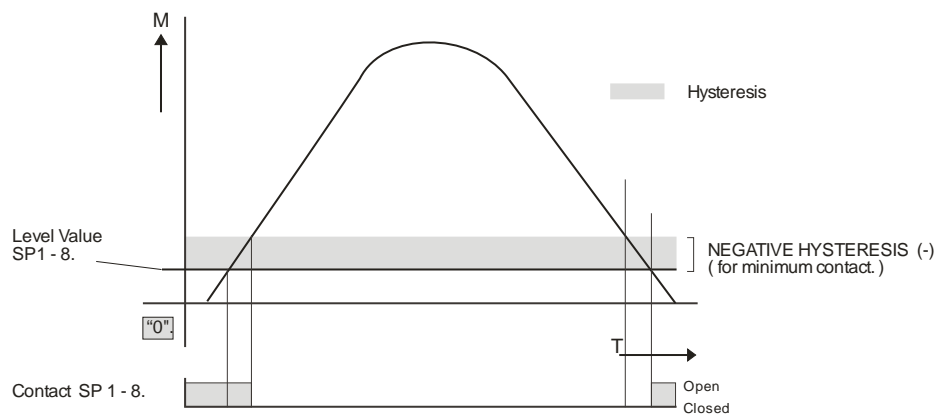
Contact closes at setpoint value plus hysteresis. contact closed below setpoint value minus hysteresis.

FLEX 2100

Positive hysteresis



Negative hysteresis



Inputs/outputs 03

FLEX 2100

DAC setup:

To configure the analog output, press the “DAC setup” button.



For Flex 2100 controller:

ExternalRegister:

In this field its possible to choose the external register which controls the level on the analog output.



Mode:

In this field its possible to select the needed output signal.

Different modes are:

- RAW (register value from 0 to 6500 will be calculated from 0 to 65000 parts)
- 0 - 24 mA (input value 0 to 24 mA will be calculated from 0 to 100,00%)
- 0 - 20 mA (input value 0 to 20 mA will be calculated from 0 to 100,00%)
- 4 - 20 mA (input value 4 to 20 mA will be calculated from 0 to 100,00%)
- 4 - 24 mA (input value 4 to 24 mA will be calculated from 0 to 100,00%)



For Flex 2100 Indicator:

Indicator:

In this field its possible to choose the Indicator which must be coupled to the analog output.



Mode:

In this field its possible to select the needed output signal.

Different modes are:

- RAW (register value from 0 to 6500 will be calculated from 0 to 65000 parts)
- 0 - 24 mA (input value 0 to 24 mA will be calculated from 0 to 100,00%)
- 0 - 20 mA (input value 0 to 20 mA will be calculated from 0 to 100,00%)
- 4 - 20 mA (input value 4 to 20 mA will be calculated from 0 to 100,00%)
- 4 - 24 mA (input value 4 to 24 mA will be calculated from 0 to 100,00%)



Minimum at:

In this field you can set up the minimum weight value at what the analog output is at its minimum output.



Maximum at:

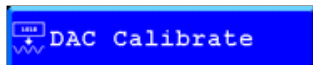
In this field you can set up the maximum weight value at what the analog output is at its maximum output.



FLEX 2100

DAC Calibrate (for FLEX2100 with DAC output only):

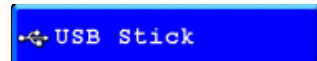
The calibration of the DAC is for authorized personel only and is password protected



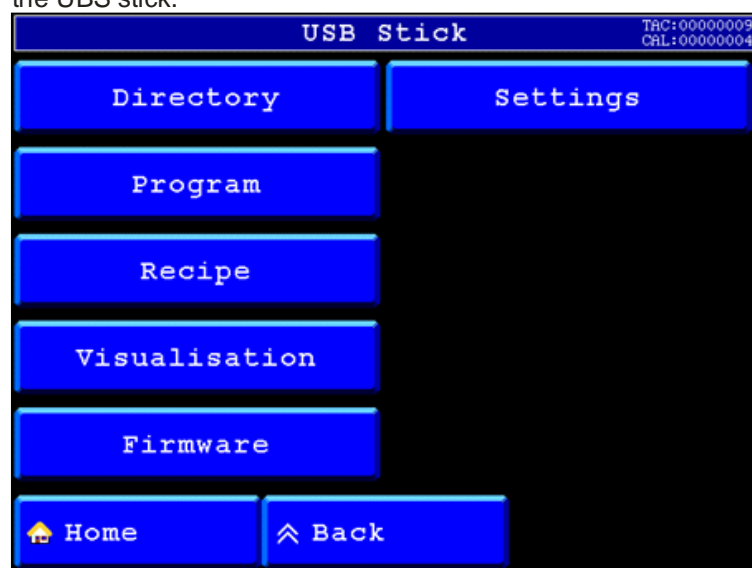
The FLEX2100 is factory calibrated. Contact PENKO if DAC calibration is needed.

USB Stick:

This menu is only enabled when the USB protocol in the port setup is to USB Host and a USB stick is inserted. It is possible to save and load data like recipes and visualisations.

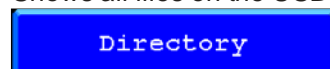


When entering one of the menu items, choose between load or save. Load will load the data from the USB stick into the FLEX2100, save will store data from the FLEX2100 onto the USB stick.



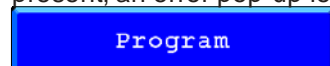
Directory:

Shows all files on the USB stick



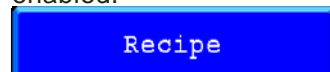
Program:

Load or save a .PRG file for each task. Select specific task or all tasks. If task is not present, an error pop-up for those task is shown.



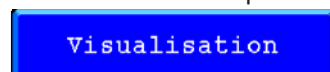
Recipe:

Load or save a .RCP file for a selected task. Only tasks which have recipe items are enabled.



Visualisation:

Load or save a .cmp file.

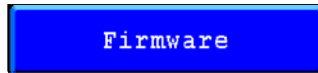


Inputs/outputs 04

FLEX 2100

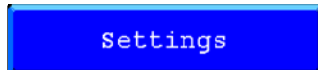
Firmware:

Load firmware onto the FLEX2100. This function is not yet supported.



Settings:

Load or save a .FDI file. Back ups can also be made using PI.



Inputs/outputs 05



FLEX 2100

Passwords:

In this menu it is possible to setup passwords to block access to certain parts of the menu.

To go to this menu, select "Passwords" from the System setup menu.

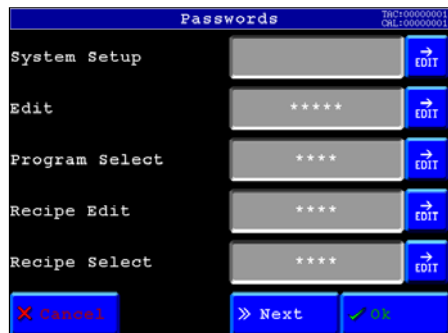


You are asked for a password. This is default turned off so you can just press "OK".
If there is a password set up fill it in here, and press "OK"



Now you can change (setup) passwords for the following menu options.

- System Setup (This blocks all menu options)
- Edit (This makes the menu read-only)
- Program Select (This blocks the option to select a different program)
- Recipe Edit (This blocks the option to change recipe parameters)
- Recipe Select (This blocks the option to select an other recipe)
- Set Time/Date (This blocks the option to change the time and date)



When changing a password you are asked to fill in a new password twice.

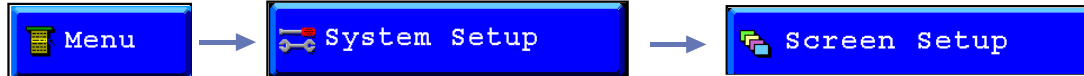
If the two passwords you filled in are not identical, the password will not be changed and you can try again.

FLEX 2100

Screen setup:

In this menu its possible to setup the four Main screens, operator buttons, screen coulours and calibrate the touchscreen..

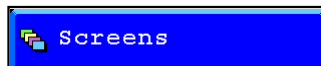
To go to this menu, select "Screen setup" from the System setup menu.



Different options are:

- Screens
- Buttons
- Colours
- Led Bar
- Calibrate screen
- Backlight&Buzzer
- Company Name

Screens:

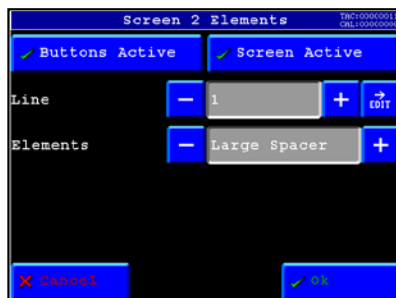


In this menu the four main screens can be set.

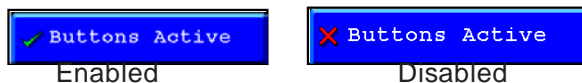


Screen 1-4:

To edit a screen, select a screen.



Buttons active:



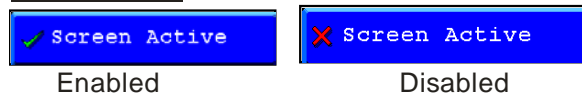
With this option its possible to enable or disable the menu/screen buttons in the selected screen.

In screen 1 the buttons are always active.

Screen setup 01

FLEX 2100

Screen active:



With this option its possible to enable or disable the selected screen.
Screen 1 is always active.

Line:

Each screen can display up to 7 different elements.
The real available lines are depending on the size of the used elements.

Different elements are:

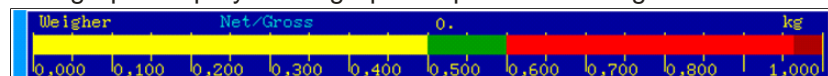
- Off: No element selected for this line.
- Small spacer: An empty line of 5 pixels.
- Large spacer: An empty line of 50 pixels.
- Large indicator: An indicator with big display which can show, Nett/tarre, gross, filtered nett, filtered gross, peak, valley and tare.



- Small indicator: An indicator with small display witch can be linked to, Nett/tarre, gross, filtered nett, filtered gross, peak, valley and tare.



- Bargraph: Displays a bargraph coupled to the weigher.



- Buttons: Displays the weigher buttons.



- I/O status: Displays the 4 outputs/levels.

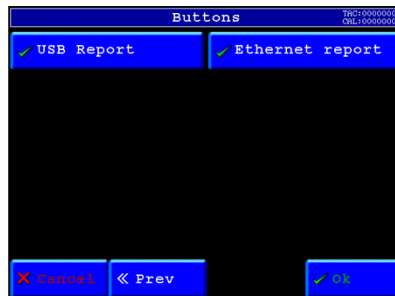
Screen setup 02

FLEX 2100

Buttons:



In this menu you can enable/disable buttons that are shown on the main screens.



Enable/disable:

By pressing the buttons, the button will be enabled/disabled.

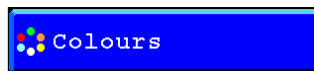


Enabled



Disabled

Colours:



In this menu it's possible to setup the colours of your Flex. this way it is possible to customize it to your own style.

Different options are:

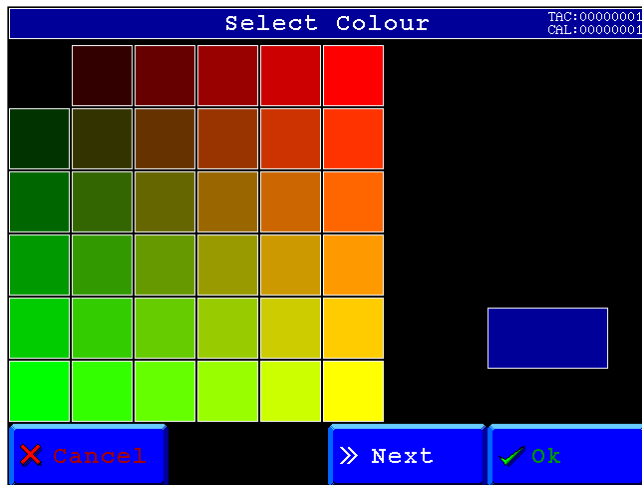
- Header Background
- Header Frame
- Header Text
- Screens Background
- Element Background
- Element Frame
- Element Text
- Element Labels
- Menu Background
- Menu Text
- Disabled Rtext
- Element Readout
- Button Face
- Recall Defaults

Screen setup 03

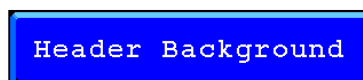
FLEX 2100

Select colour

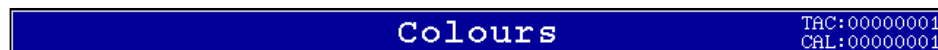
By pressing one of the buttons you can change the colour of that part of the flex screen.
The colour that is shown on the right site is the colour that you selected.



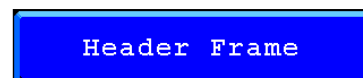
Header Background:



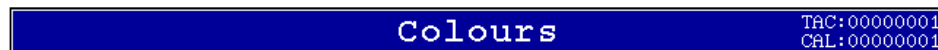
Here you can change the colour of the background of the header.



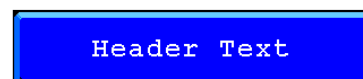
Header Frame:



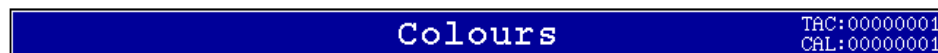
Here you can change the colour of the frame around the header and the TAC and CAL code



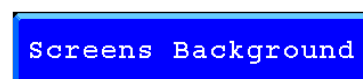
Header Text:



Here you can change the colour of the text that is in the header. (in this example "Colours")



Header Text:



Here you can change the colour of the background of the standard Flex screens. (not the custom screens)

Screen setup 04

Element Background:

Element Background

Here you can change the colour of the background of the standard elements on the standard Flex screens. The elements that are affected are:

- Large Indicator
- Small Indicator
- Bargraph
- History View
- Process Data

Element Frame:

Element Frame

Here you can change the colour of the frame around the standard elements on the standard Flex screens. The elements that are affected are:

- Large Indicator
- Small Indicator
- Bargraph
- History View
- Process Data

Element Text:

Element Text

Here you can change the colour of the text of the standard elements on the standard Flex screens. The elements that are affected are:

- Large Indicator
- Small Indicator
- Bargraph
- History View
- Process Data

Element Labels:

Element Labels

Here you can change the colour of the labels that are used in the standard elements on the standard Flex screens. The elements that are affected are:

- Large Indicator
- Small Indicator
- Bargraph
- History View
- Process Data

Menu Background:

Menu Background

Here you can change the colour of the background in the menu.

Menu Text:

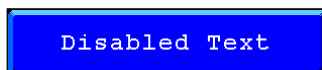
Menu Text

Here you can change the colour of the text on the menu buttons.

Screen setup 05

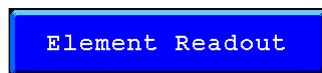
FLEX 2100

Disabled Text:



Here you can change the colour of text of units that are disabled in the menu

Element Readout:



Here you can change the colour of the readout text of the standard elements on the standard Flex screens. The elements that are affected are:

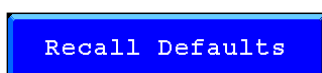
- Large Indicator
- Small Indicator
- Process Data

Button Face:



Here you can change the colour buttons in the menu and in the standard flex screens

Recall Defaults:



Here you can reset all colours to the factory default settings.

Led Bar:



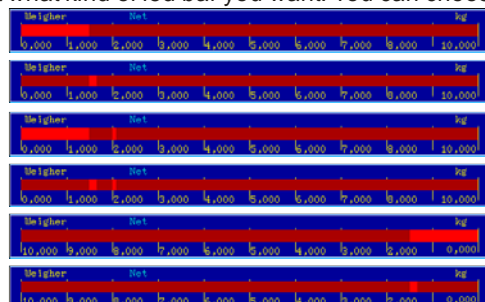
In this menu you can setup the Bargraph and the history view that you can place on your screen.

Bar Style:



Here you can select what kind of led bar you want. You can choose from:

- Bar
- Dot
- Bar Peak
- Dot Peak
- Bar Reversed
- Dot Reversed



Bar Levels:



Here you can select what kind of led bar you want. You can choose from:

- Normal
- CheckWeigher



Screen setup 06

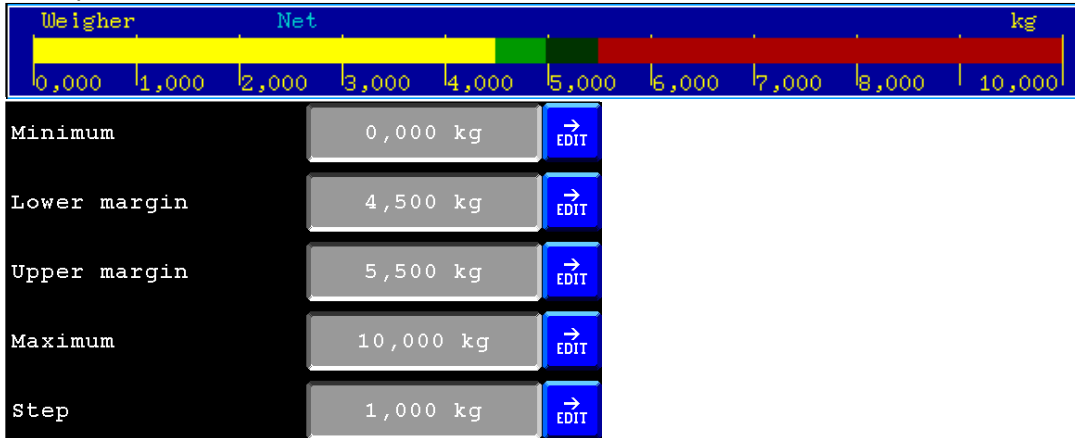
FLEX 2100

Set Levels:



Here you can setup the levels for the led bar. These are also the settings for the history view.

Example:

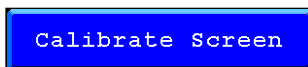


Marker Trigger:

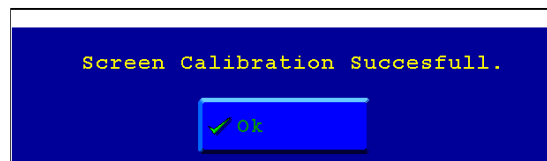
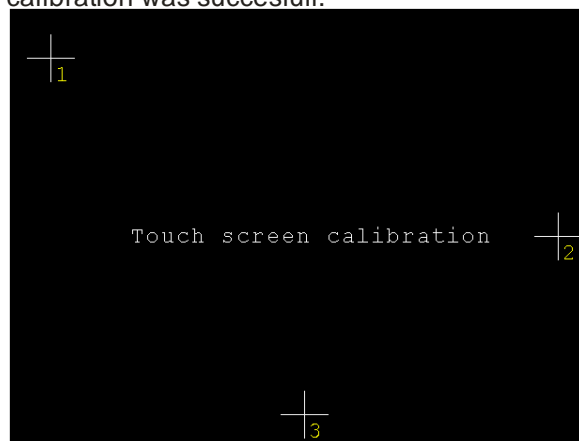


Here you can setup the marker that triggers the drawing of a new bar in the history view. everytime the marker is turned on or off a new bar appears.

Calibrate Screen:



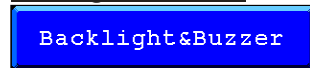
Here you can calibrate the touchscreen. press 1,2,3 in the right sequence in the middle of the cross to calibrate. When this is done correctly a popup screen will appear showing that he calibration was succesfull.



Screen setup 07

FLEX 2100

Backlight&Buzzer:



Here you can setup the backlight, the buzzer and the visualization update speed.

Level:

Here you can change the brightness of the Flex screen.

0=dark 255=bright



Key Beep:

Here you can enable/disable the key beep of the Flex.

When this is enabled every time you hit a button the flex gives a beep.



Key beep enabled

key beep disabled

Visualization priority:

Here you can setup the update speed of the visualization screens.

0=the program has higher priority as the visualization this makes the program little faster.

1=the program has the same priority as the visualization

2= the program has lower priority as the visualization, this will make the program a little slower.

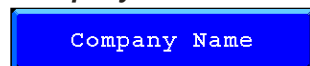


Decimal:

Set point or comma character for decimals.



Company Name:



Here you can setup your company information.

The information you can add is:

- Name
- Street
- City
- Telephone
- Fax
- Web address

This will appear in Info in the menu. See page 2-36 for an example.

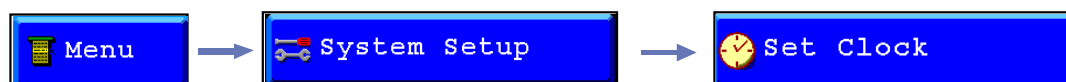
Screen setup 08

FLEX 2100



Set clock:

In this menu it's possible to setup the internal time and date.



Time:

Setup the internal time.



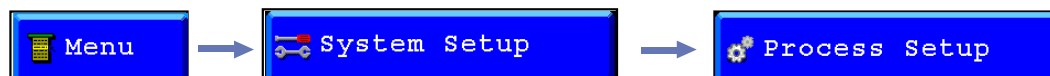
Date:

Setup the internal date.



Process Setup:

In this menu it is possible to setup the number of recipes that are enabled, and set up the E-mark marker and Extended register.



Recipes:

Setup the number of Recipes that is enabled.



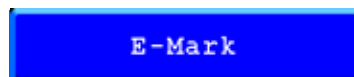
Floating point registers

Set the begin and end register number for the range of floating point registers



E-Mark settings:

Set the markers and extended registers for E-Mark



Marker for E-Mark:

Set the start marker for E-Mark. This and following 15 markers will be used for E-Mark.



Set clock/Process setup 01

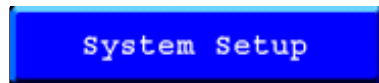
Extendend Register for E-Mark:

Set the start Extended register for the E-Mark. This and following 4 Extended registers will be used for E-Mmark.



System Setup

Enabled when Config Wizard is used in FLEX Builder. This will show the config items.



Labels & Links:

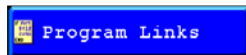
In this menu its possible to setup names for programs, recipes and indicators.



The diffrent options are:

- Program Links
- Recipe Links
- Indicator Links
- Labels

Program Links:



Here you can setup a name for the programs of the Flex.

Program Number:

Select the number of the program you want to change.



Name Link:

Select the number of the label you want to use for this program name.

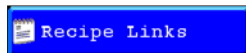


Name:

Here you can change the text of the label that will be used as a name for this program number.



Recipe Links:



Here you can setup a name for the recipes of the Flex.

Recipe Number:

Select the number of the recipe you want to change.



Name Link:

Select the number of the Label you want to use for this recipe name.



Process setup 02/Labels & Links 01

FLEX 2100

Name:

Here you can change the text of the label that will be used as a name for this recipe number.

A screenshot of a software interface showing a field labeled 'Name' with the text 'Recipe 1' and a blue 'OK' button to its right.

Indicator Links:

A blue rectangular button with the text 'Indicator Links' in white.

Here you can setup a name for the internal indicators of the Flex.

Indicator Number:

Select the number of the indicator you want to change.

A screenshot of a software interface showing a field labeled 'Program Number' with the value '1' and blue minus and plus buttons on either side, and a blue 'OK' button to the right.

Name Link:

Select the number of the Label you want to use for this indicator name.

A screenshot of a software interface showing a field labeled 'Name Link' with the value '111' and blue minus and plus buttons on either side, and a blue 'OK' button to the right.

Name:

Here you can change the text of the label that will be used for this indicator.

A screenshot of a software interface showing a field labeled 'Name' with the text 'Program 1' and a blue 'OK' button to its right.

Unit link:

Select the number of the Label you want to use for showing the indicators unit.

A screenshot of a software interface showing a field labeled 'Unit Link' with the value '141' and blue minus and plus buttons on either side, and a blue 'OK' button to the right.

Unit:

Here you can change the text of the label that will be used for this indicators unit (kg, lbs, pcs, etc.).

A screenshot of a software interface showing a field labeled 'Unit' with the text 'kg' and a blue 'OK' button to its right.

Labels:

A blue rectangular button with the text 'Labels' in white.

Here you can change (setup) texts for labels.

Label:

Select the number of the Label you want to change.

A screenshot of a software interface showing a field labeled 'Label' with the value '1' and blue minus and plus buttons on either side, and a blue 'OK' button to the right.

Name:

Here you can change the text of the label.

A screenshot of a software interface showing a field labeled 'Name' with the text 'TEXT 1' and a blue 'OK' button to its right.

Labels & Links 02

FLEX 2100

Printer:

To setup the printer settings, select "printer" from the System setup.



Setup:

In this menu the printer properties can be set.



Printer layout:

In the printer layout menu the way results are printed can be set.

Different layouts are:

- None (no printer ticket)
- Ticket (Results are printed under each other)
- Line (results are printed after each other)
- Custom (layout is programmed using PI)



Columns: Set the length of the printer ticket.



Rows:

Set the number of empty lines after printing.



Margin:

Set the number of empty spaces before printing.



Printer newline:

Set the end of line sequence selection.

Different settings are:

- None
- CR
- LF
- CR+LF
- CR+00
- Zebra ZPL II

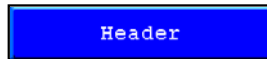


Printer settings 01

FLEX 2100

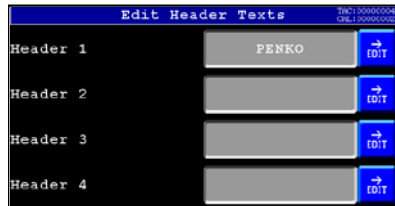
Header:

In this menu its possible to edit the header names that are printed at the top of each ticket.
Up to 4 headers can be set.



Header 1-4:

Edit the names of the 4 headers.

A screenshot of the "Edit Header Texts" screen. It has a title bar with "Edit Header Texts" and two small status icons. Below the title bar, there are four rows, each labeled "Header 1" through "Header 4" on the left. To the right of each label is a text input field. The first field contains the text "PENKO". To the right of each input field is a blue button with a right-pointing arrow and the word "EDIT" in white.

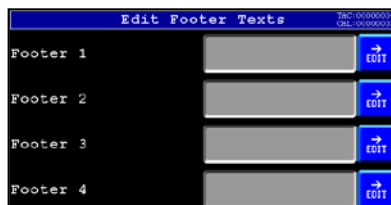
Footer:

In this menu its possible to edit the footer names that are printed at the bottom of each ticket.
Up to 4 footers can be set.



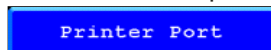
Footer 1-4:

Edit the names of the 4 footers.

A screenshot of the "Edit Footer Texts" screen. It has a title bar with "Edit Footer Texts" and two small status icons. Below the title bar, there are four rows, each labeled "Footer 1" through "Footer 4" on the left. To the right of each label is a text input field. To the right of each input field is a blue button with a right-pointing arrow and the word "EDIT" in white.

Printer Port

In this menu the printer port can be set.



Select if the printer is connected through RS232, RS422, USB PC connection or Ethernet.

For Ethernet, set the IP Number and Port of the printer.

A screenshot of the "Printer Port" settings screen. It has two rows. The first row is labeled "IP Number" on the left, followed by a text input field containing "00.000.000.000". The second row is labeled "Port" on the left, followed by a text input field containing "9100". To the right of each input field is a blue button with a right-pointing arrow and the word "EDIT" in white.

The Port Status will show the status of the connection with the printer.

The Next button brings up the port settings for the selected printer port.

Printer settings 02

Ethernet report:

The Ethernet report can be used to send a report form over ethernet to a printer, pc or PLC system. For this report a different layout can be programmed using PI. This connection needs its own IP-number, port number and newline settings

Ethernet report

USB Report

The USB report can be used to send a report to the USB stick. For this report a different layout can be programmed using PI. This report also has its own newline settings.

USB Report

System Recall:

To set all settings back to factory settings, select "System Recall" from the System setup.



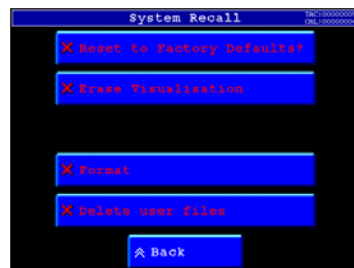
The settings can be reset in different ways:

Reset to Factory Defaults

Erase Visualisation.

Format

Delete user files



Reset to Factory Defaults?:

Resets the configuration parameters to factory default settings.

Reset to Factory Defaults

Erase Visualisation:

Deletes the visualisation program which is programmed using PI Flexbuilder.

Erase Visualisation

Format:

Erases the entire FLASH file system.

Format

Delete user files:

Deletes only the files created using the report module in the PLC program from the FLASH file system.

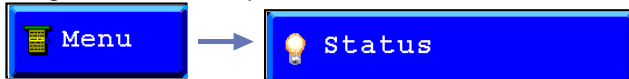
Delete user files

Printer settings 03/System Recall 01

FLEX 2100

Status:

Its possible to show the status of the inputs, outputs and indicator scope..
To go to this menu, press the "status"button from the main menu..



Board, I/O + markers, Indicators, Ext.Registers, Scope, Debug and Log

Board:

In this screen the installed boards are shown.



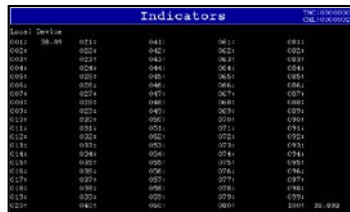
I/O + Markers:

In this screen the status of all in-, outputs and markers can be shown.



Indicators:

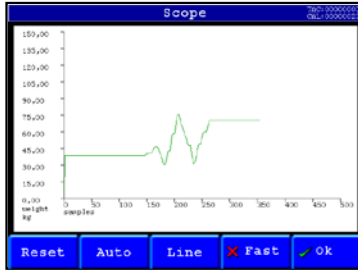
In this screen the available indicators can be shown.



FLEX 2100

Scope:

In this screen the indicator signal can be shown as scope..



Debug:

In this screen the cycle time can be shown.

```
Cycle Time: 683us
```

Log:

In this screen the cycle program can be shown. this can be used by PENKO for troubleshooting.

[illegible]

Status 02



PENKO

an ETC Company

FLEX 2100

Totals:

Here the Totals created on the program can be printed and reset.

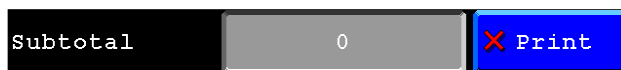


The different Totals are:

- Subtotal
- Total
- Day total
- Batch Total

Subtotal:

Here the Subtotal of the program will be shown you can print this from here directly.



Total:

Here the Total of the program will be shown you can print this from here directly.



Day total:

Here the Day total of the program will be shown you can print this from here directly.

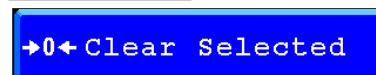


Batch total:

Here the Batch total of the program will be shown you can print this from here directly.

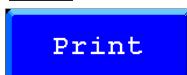


Clear selected:



When a total is selected and you press this button the total will be reset to 0.

Print:



When a total is selected and you press this button the total will be printed.

Totals 01

Info:

Here you find all the hardware and software versions that are installed, the license for this Flex 2100 and the certified information.

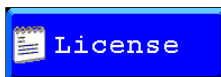


The information find here is:

- Hardware version (this is the version of circuitboards of the Flex 2100)
- Bootloader version (this is the Bootloader software versio)
- FPGA Videochip version (this is the videochip software version)
- Version (this is the Firmware version)\
- HWID (This is the hardware ID number)
- SFID (this is the software ID number)
- Serial Number (this is the serial number of the Flex 2100)
- MAC Address (this is the MAC address of the Ethernet chip)
- Software update trace counter (this is the number of time a new firmware is updated to the Flex 2100.
- User program CRC (this is the checksum on the program)

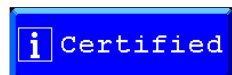


License:



Here you can see what kind of license the Flex 2100 has and here you can also change the license.

Certified:



Here you can see the certification information for when the Flex 2100 is used as a certified weigher.

FLEX 2100

Configuration Settings:

Indicator parameters:

Description	Default	Custom setting
<i>Indicator</i>		
Indicator name:		_____
Unit label:		_____
Operation Mode:		_____
Max Load:		_____
Sample Rate:		_____
Certified Text:		_____
Class:		_____
<i>Formatting</i>		
Step:		_____
Decimal point:		_____
<i>Multi Range/interval</i>		
Range:		_____
Max Step:		_____
Mode:		_____
<i>Stable Conditions</i>		
Range:		_____
Time:		_____
<i>Zero Tracking</i>		
Range:		_____
Step:		_____
Time:		_____

Filter parameters:

Description	Default	Custom setting
<i>Overall</i>		
Overall Filter:	0db	_____
<i>Digital</i>		
Digital Filter:	0	_____
Cutoff frequency:	0	_____
<i>Display</i>		
Filter Range:	4	_____
Display Filter:	1	_____
Display Rate:	3	_____
Display Suppress:	2	_____

FLEX 2100

Port Setup:

Description	Default	Custom setting
<u><i>Rs232 port</i></u>		
Protocol:		_____
Address:		_____
Baudrate:		_____
Parity:		_____
Stopbits:		_____
<u><i>Rs422 port</i></u>		
Protocol:		_____
Address:		_____
Baudrate:		_____
Parity:		_____
Stopbits:		_____
<u><i>CAN1 Port</i></u>		
Protocoll:		_____
Address:		_____
Baudrate:		_____
<u><i>USB Port</i></u>		
Protocoll:		_____
USB Link Active:		_____
<u><i>Profibus Setup</i></u>		
Channel:		_____
Format:		_____
<u><i>Ethernet setup</i></u>		
IP Number:		_____
Subnet Mask:		_____
Gateway:		_____
Speed:		_____
Name:		_____
DHCP:		_____
UDP Port:		_____
Buslink Address:		_____
Buslink Subaddress:		_____

FLEX 2100

In/Outputs:

Description	Default	Custom setting
<u>Inputs</u>		
Line 1:		_____
Function (line 1):		_____
Input (line 1):		_____
Line 2:		_____
Function (line 2):		_____
Input (line 2):		_____
Line 3:		_____
Function (line 3):		_____
Input (line 3):		_____
Line 4:		_____
Function (line 4):		_____
Input (line 4):		_____
Line 5:		_____
Function (line 5):		_____
Input (line 5):		_____
Line 6:		_____
Function (line 6):		_____
Input (line 6):		_____
Line 7:		_____
Function (line 7):		_____
Input (line 7):		_____
Line 8:		_____
Function (line 8):		_____
Input (line 8):		_____
<u>Outputs/Levels</u>		
Output 1 Mode:		_____
Output 1 Level:		_____
Output 1 hysteresis:		_____
Output 2 Mode:		_____
Output 2 Level:		_____
Output 2 hysteresis:		_____
Output 3 Mode:		_____
Output 3 Level:		_____
Output 3 hysteresis:		_____
Output 4 Mode:		_____
Output 4 Level:		_____
Output 4 hysteresis:		_____

Passwords:

Description	Default	Custom setting
System Setup:		_____
Edit:		_____
Set Clock/Date:		_____

Screen 1 Setup:

Description	Default	Custom setting
Buttons active:		_____
Screen active:		_____
<u>Line 1</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 2</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 3</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 4</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 5</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 6</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 7</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____

Screen 2 Setup:

Description	Default	Custom setting
Buttons active:		_____
Screen active:		_____
<u>Line 1</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 2</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 3</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 4</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 5</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 6</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<u>Line 7</u>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____

Screen 3 Setup:

Description	Default	Custom setting
Buttons active:		_____
Screen active:		_____
<i>Line 1</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 2</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 3</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 4</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 5</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 6</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 7</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____

Screen 4 Setup:

Description	Default	Custom setting
Buttons active:		_____
Screen active:		_____
<i>Line 1</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 2</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 3</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 4</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 5</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 6</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____
<i>Line 7</i>		
Elements:		_____
(Par 1) _____:		_____
(Par 2) _____:		_____

Configuration Settings 05

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Button Setup:

Description	Default	Custom setting
Zero:		_____
Tareset:		_____
Peak Reset:		_____
Start:		_____
Recipe:		_____
Tare:		_____
Print:		_____
Valley Reset:		_____
Stop:		_____

Ledbar Setup:

Description	Default	Custom setting
Bar Style:		_____
Bar Levels:		_____
Minimum:		_____
Maximum:		_____
Lower margin:		_____
Upper margin:		_____
Step:		_____

Appendix-A Error codes explained



- 2001 - Parameter error
- 2005 - Input value is not valid
- 2101 - Weigher not stable
- 2102 - Parameter exceeds maxload
- 2103 - Parameter below zero
- 2104 - Not in zero range
- 2105 - Arithmetic overflow occurred
- 2106 - A/D reads all 1's
- 2107 - A/D reads all 0's
- 2108 - Gain ref.< Zero ref.
- 2109 - Gain > 0.999984741211
- 2110 - Save error
- 2111 - Flash ROM exhausted
- 2112 - Error on header creation
- 2113 - Error on data write
- 2114 - Header validation failed
- 2115 - De-active old data fail

- 2601 - No program available
- 2603 - No recipes available
- 2116 - Load errors
- 2117 - Item not found in store
- 2118 - Error in stored data
- 2119 - Bad calibration
- 2120 - Action not enabled

Weigher error code:

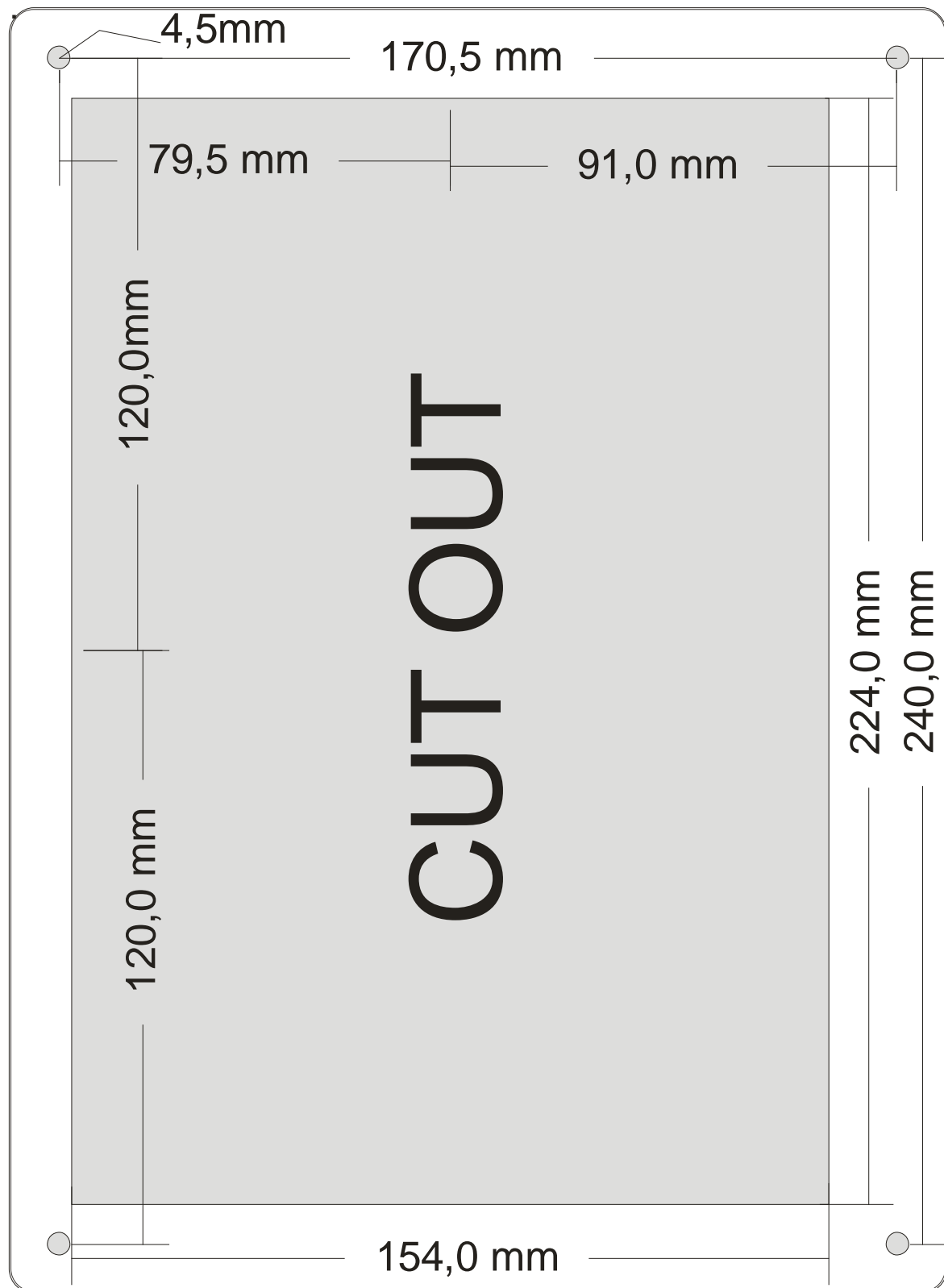
CCCCCCC	NO PROPER CALIBRATION AVAILABLE. (No calibration points available).
uuuuuuuu	UNDERFLOW. (A/D reads all 0's, check loadcell)
oooooooo	OVERFLOW. (A/D reads all 1's, check loadcell)
=====	DISPLAY OVERFLOW. (Exceed maximum display value) (IND-1)

Appendix-C: Profibus Protocol description.

Module = "weight" 0x28, 0x1E

```
; gross 32 bits inputs
; net 32 bits inputs
; tare 32 bits inputs
; status 16 bits inputs
; cmd 8 bits inputs
; level1 32 bits outputs
; level2 32 bits outputs
; cmd 8 bits outputs
;
;
; cmd bit definition:
; 1 = zero reset command
; 2 = zero set command
; 3 = tare off
; 4 = tare on
; 5 = free
; 6 = free
; 7 = free
; 8 = free
;
;
; status bit definition:
; 1 = hardware overload detected
; 2 = overload detected
; 3 = stable signal
; 4 = in stable range
; 5 = zero corrected
; 6 = center of zero
; 7 = in zero range
; 8 = zero tracking possible
; 9 = tare active
; 10 = preset tare active
; 11 = new sample available
; 12 = calibration invalid
; 13 = calibration enabled
; 14 = user certified operation
; 15 = level 1 active
; 16 = level 2 active
EndModule
```


Appendix-D: Cutout FLEX2100 panelmount



Appendix-D



About PENKO

At PENKO Engineering we specialize in weighing. Weighing is inherently chemically correct, independent of consistency, type or temperature of the raw material. This means that weighing any kind of material guarantees consistency and thus, it is essential to sustainable revenue generation in any industry.

As a well-established and proven solution provider, we strive for the ultimate satisfaction of custom design and/or standard applications, increasing your efficiencies and saving you time, saving you money.

Whether we are weighing raw materials, components in batching, ingredients for mixing or dosing processes, - or weighing of static containers and silos, or - in-motion weighing of railway wagons or trucks, by whatever means required during a process, we are essentially forming vital linkages between processes and businesses, anywhere at any time. We design, develop and manufacture state of the art technologically advanced systems in accordance with your strategy and vision. From the initial design brief, we take a fresh approach and a holistic view of every project, managing, supporting and/or implementing your system every step of the way. Curious to know how we do it? www.penko.com

Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:

http://penko.com/nl/publications_certificates.html

PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. Training sessions on request: www.penko.com/training



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