PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions

Manual:

FLEX Discontinue V3.2 Weight Controller

Type Totaliser (MID R107)

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, 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.

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FLEX Dis-Con Controller

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FLEX Dis-Con Controller

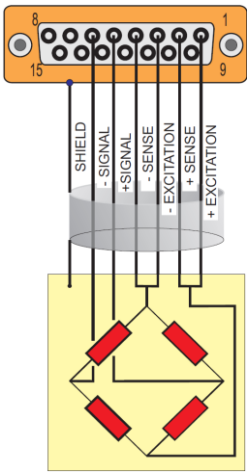
Wiring connection for FLEX Dis-con model FLEX.

Loadcell connection

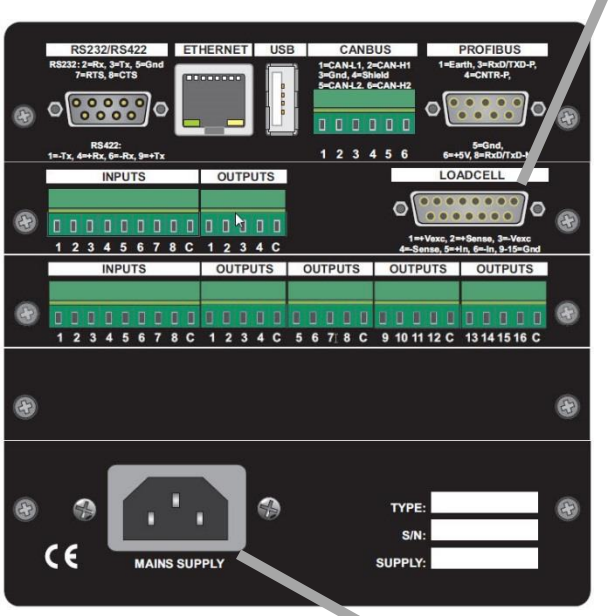
15p sub-D Female:

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

Housing. Shield

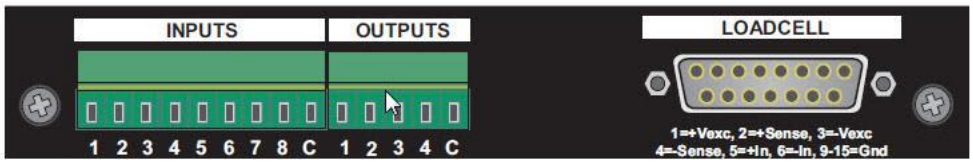


Loadcell connector

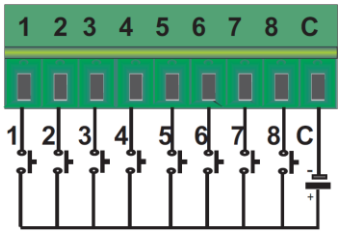


AC Power supply
230 Vac 50/60Hz

8 input 4 output ADC board:

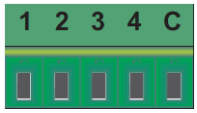


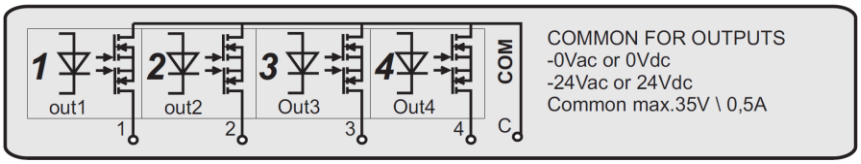
Digital Inputs:



Input 1: Start / Stop (option)
Input 2: Not used
Input 3: Abort dosing
Input 4: Last dosing
Input 5: Not used
Input 6: Not used
Input 7: Not used
Input 8: Not used

Digital Outputs:

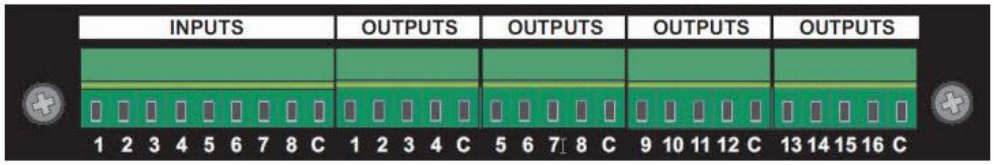




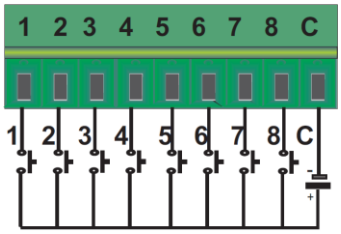
Output 1: Fine
Output 2: Coarse
Output 3: Release valve
Output 4: Ready

FLEX Dis-Con Controller

8 input 16 output board:

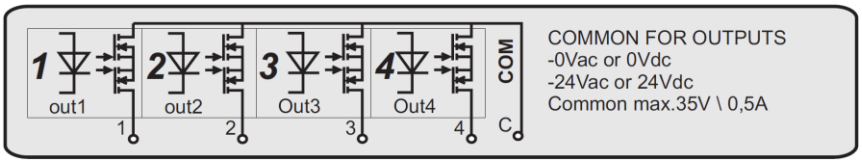


Digital Inputs:

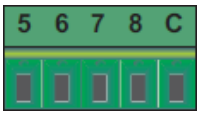


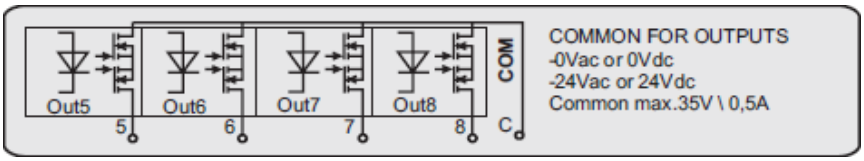
Input 1: Not used
Input 2: Not used
Input 3: Not used
Input 4: Not used
Input 5: Not used
Input 6: Not used
Input 7: Not used
Input 8: Not used

Digital Outputs:

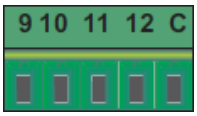


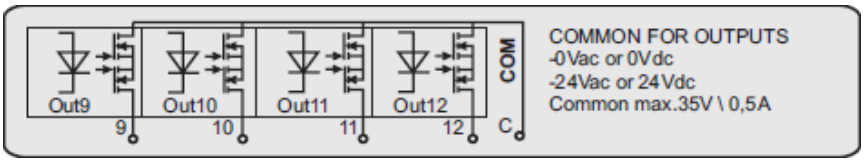
Output 1: Not used
Output 2: Not used
Output 3: Not used
Output 4: Program running





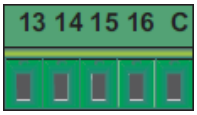
Output 5: Not used
Output 6: Not used
Output 7: Not used
Output 8: Not used

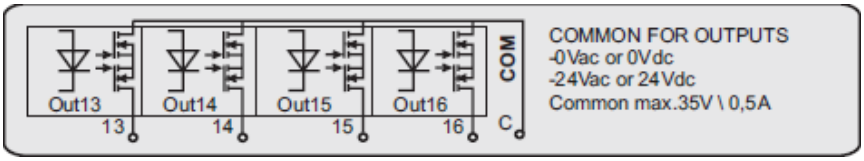




Output 9: Not used
Output 10: Not used
Output 11: Not used
Output 12: Not used

FLEX Dis-Con Controller





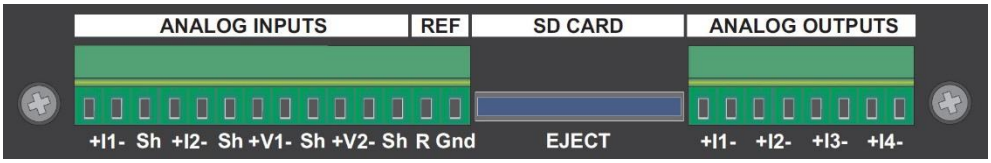
Output 13: Not used

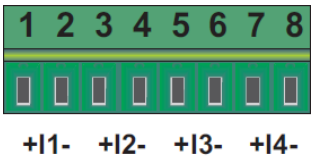
Output 14: Not used

Output 15: Not used

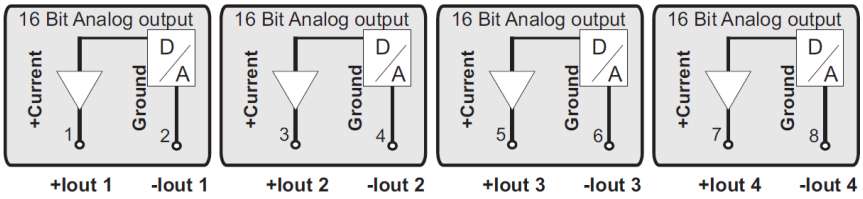
Output 16: Not used

Analog Output: (optional)





Current outputs, 0/4 - 20/24mA



Output 1: Not used

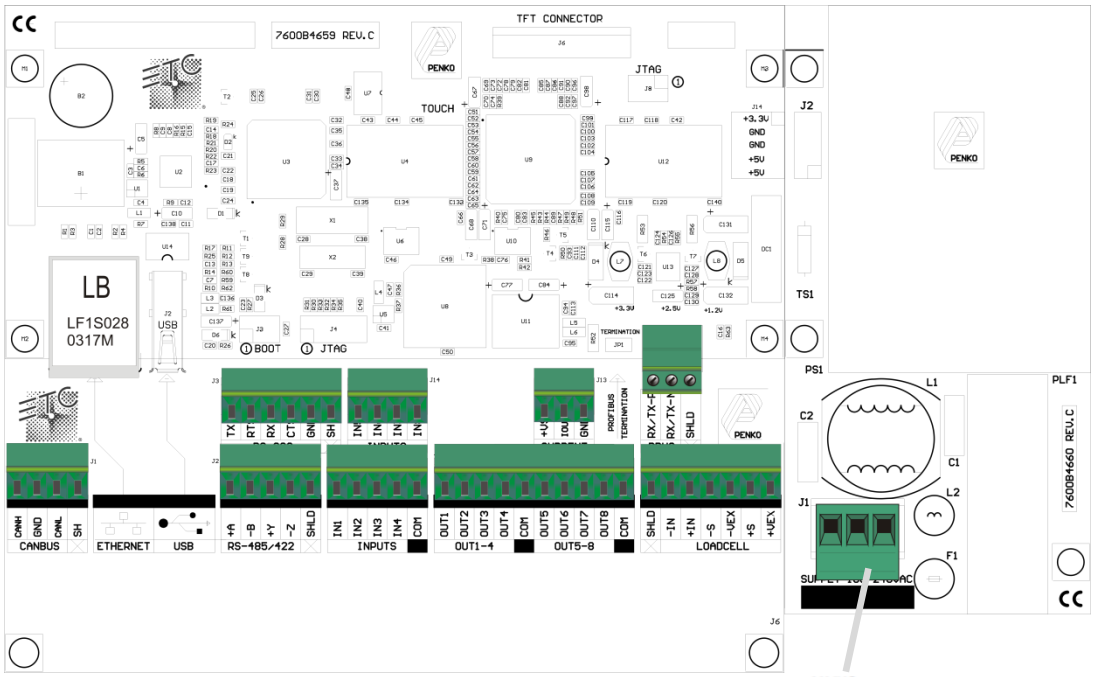
Output 2: Not used

Output 3: Not used

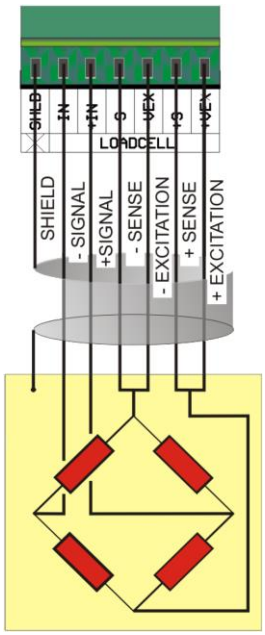
Output 4: Not used

FLEX Dis-Con Controller

Wiring connection for FLEX Dis-con model FLEX-2100.

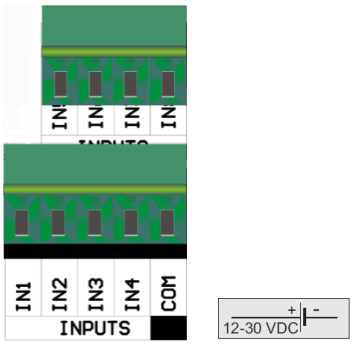


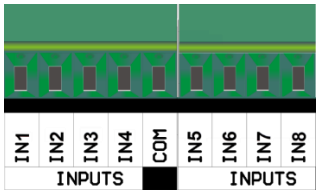
Loadcell Connection



AC Power supply
230 Vac 50/60 Hz

Digital Inputs:





Input 1: Start / Stop (option)

Input 2: Not used

Input 3: Abort dosing

Input 4: Last dosing

Input 5: Not used

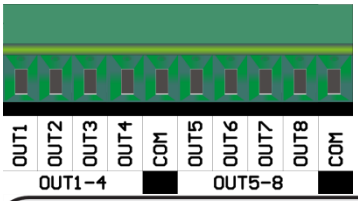
Input 6: Not used

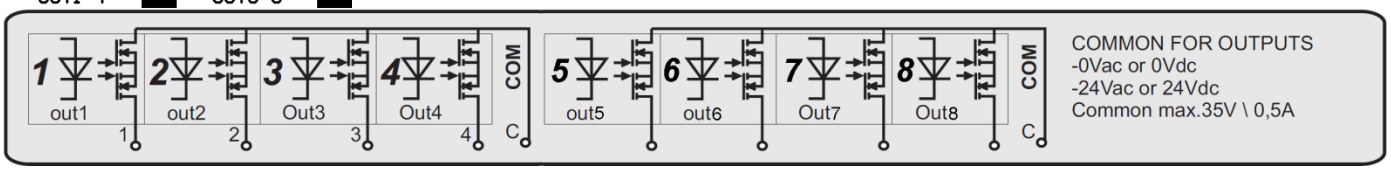
Input 7: Not used

Input 8: Not used

FLEX Dis-Con Controller

Digital Outputs:





Output 1: Fine

Output 2: Coarse

Output 3: Release valve

Output 4: Ready

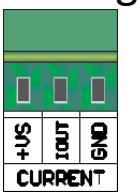
Output 5: Not used

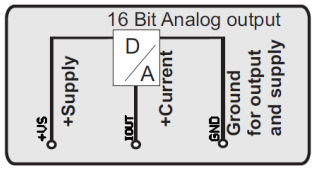
Output 6: Not used

Output 7: Not used

Output 8: Program running

Analog Output: (optional)





Power supply
For analog output
18-30Vdc

Output: Not used

FLEX Dis-Con Controller

Information

When the FLEX is started up, the FLEX will show the information screen. On this screen the PENKO information and the program version is shown. After 5 seconds the “Production” screen is shown or when the “Menu” button is pressed the “Selection Menu” is shown.

Language selection

Press on “Language” in the Information screen, now you can choose a language or press on Return to return to the Information screen.

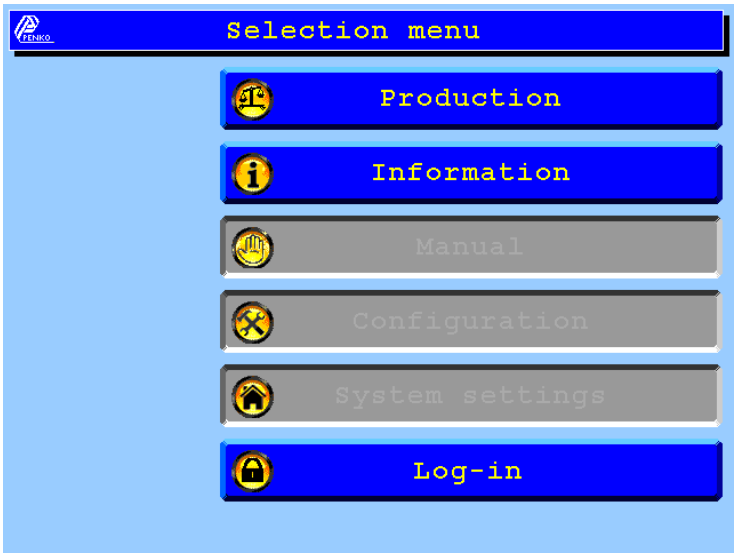
Selection Menu

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

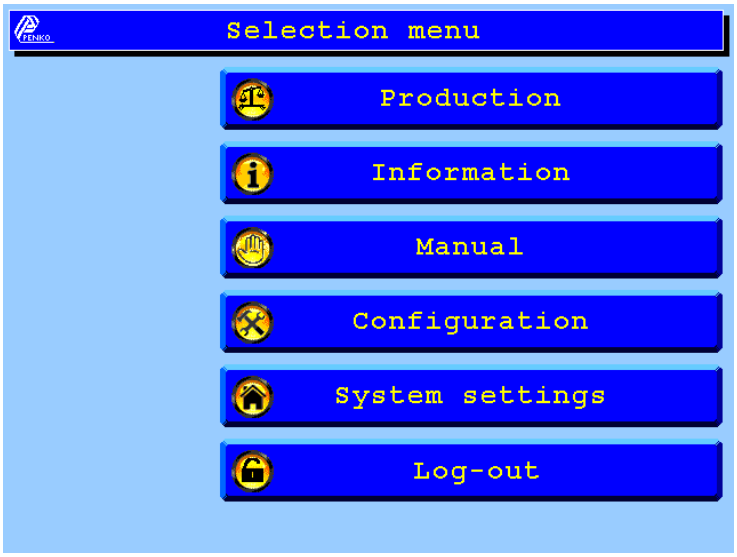
The Configuration, Manual, System setting and the ability to change the recipe parameters are locked by a password, log-in with the Log-in button first. To log-out, press the Log-out button.

It's only possible to enter the Manual screens when the program is stopped and the user is logged in.

Screen if Configuration and System settings are disabled:



Screen if Configuration, Manual and System settings are enabled:



FLEX Dis-Con Controller

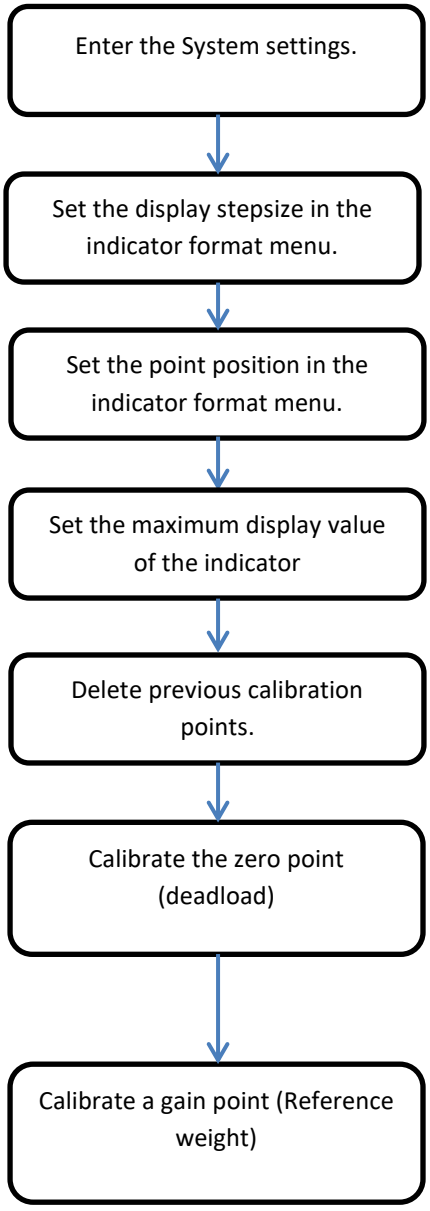
First use of the indicator

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”.



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

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

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

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

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.

All previous calibration points should first be deleted before making a new calibration.

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.

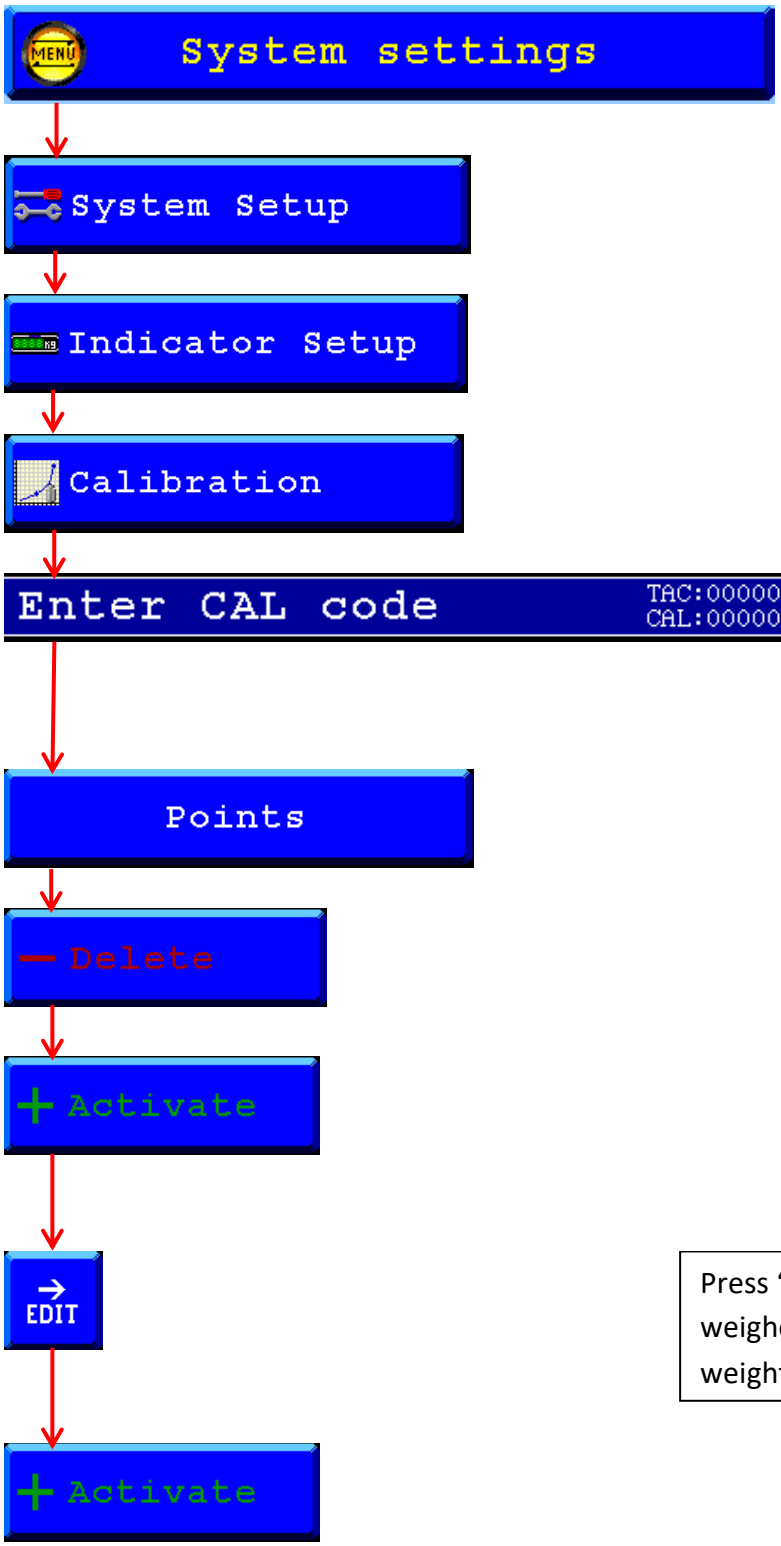
To calibrate the gain weight put a reference weight on the scale.

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

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

Calibration

To calibrate the indicator, follow the next steps:



Enter the “CAL” code and press OK. This “CAL” code is shown in the right upper

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

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

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

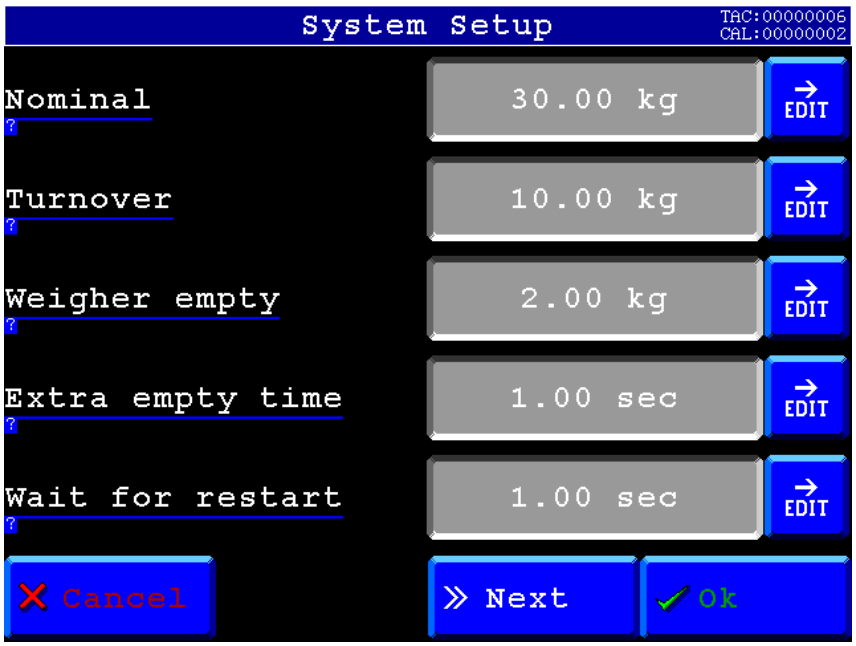
To save the second point, press the “+Activate” button.

Setup the Configuration

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

Login first to enter the Configuration, the default password is “0” this means that no password is needed. If the password is forgotten, the overall password is “25630”.

Button	Explanation
Cancel	Return to the “Selection Menu” without saving the parameters.
Next	Go to the next set of parameters.
Ok	Return to the “Selection Menu” and save the parameters.
Edit, -, +	Edit the parameter.



Default settings:	
Nominal	30.00kg
Turnover	10.00kg
Weigher empty	2.00kg
Extra empty time	1.00sec
Wait for restart	1.00 sec
Local/Remote	Local
Use Coarse/Fine	On
Password	0

Configuration Parameters

Nominal

Nominal is the weight used to reach the setpoint.
-
Example: when the setpoint is 30 kg and nominal is 10kg, it will dose 3 times 10 kg to reach the setpoint op 30 kg.

Turnover

When turnover is reached, the coarse dosing will switch to fine dosing.
-
The turnover is relative to the nominal.
Exampe: When the nominal is 10 kg and turnover is 1 kg the coarse dosing will switch to fine dosing at 9 k
-
The turnover is used at the last dosing to reach the setpoint.
Or when "Use Coarse Fine" is set to on, turnover is used for every dosing.

Weigher empty

The weight must be below this value to continue after dosing.

Extra empty time

Extra empty time will start after the empty level is reached.
-
The empty valve will stay open untill the extra empty time is elapsed.

Wait for restart

The time that is needed to close the empty valve.

Local/Remote

Select if the program is stand alone or Profibus, Modbus or Ethernet IP is used to start/stop the program and set the setpoint value.

Use Coarse/Fine

Set "Use coarse/fine" on when you want to use coarse and fine dosing for every dosing.
Set "Use coarse/fine" off when you want to use coarse and fine dosing for the last two dosings.

Password

Set a password to protect the Configuration, System Settings and ability to change the recipe parameters.
When password is zero, no password is active.

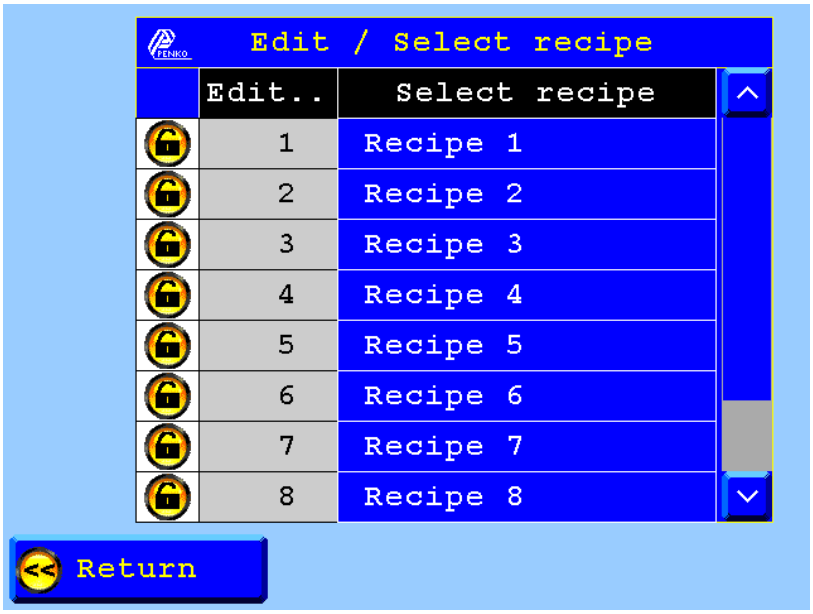
Select / Edit Recipe

Select recipe

To select a recipe, press the “Select / Edit 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.

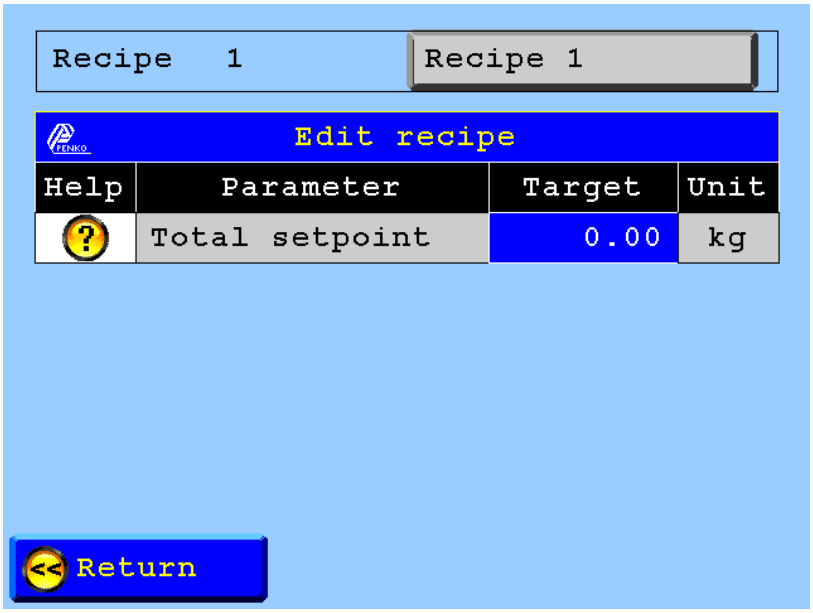
To enter the recipe edit screen the user must be logged in.



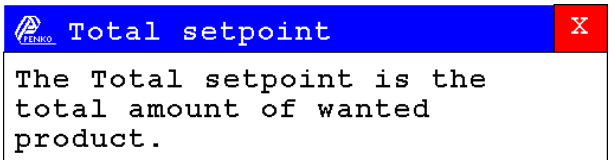
Edit recipe

To edit a parameter, press on the blue field under “Value”. To view more information about a parameter, press the question mark before the parameter.

If you want to change the recipe name, press on the gray field in the top right corner.



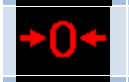
Information about the parameters:

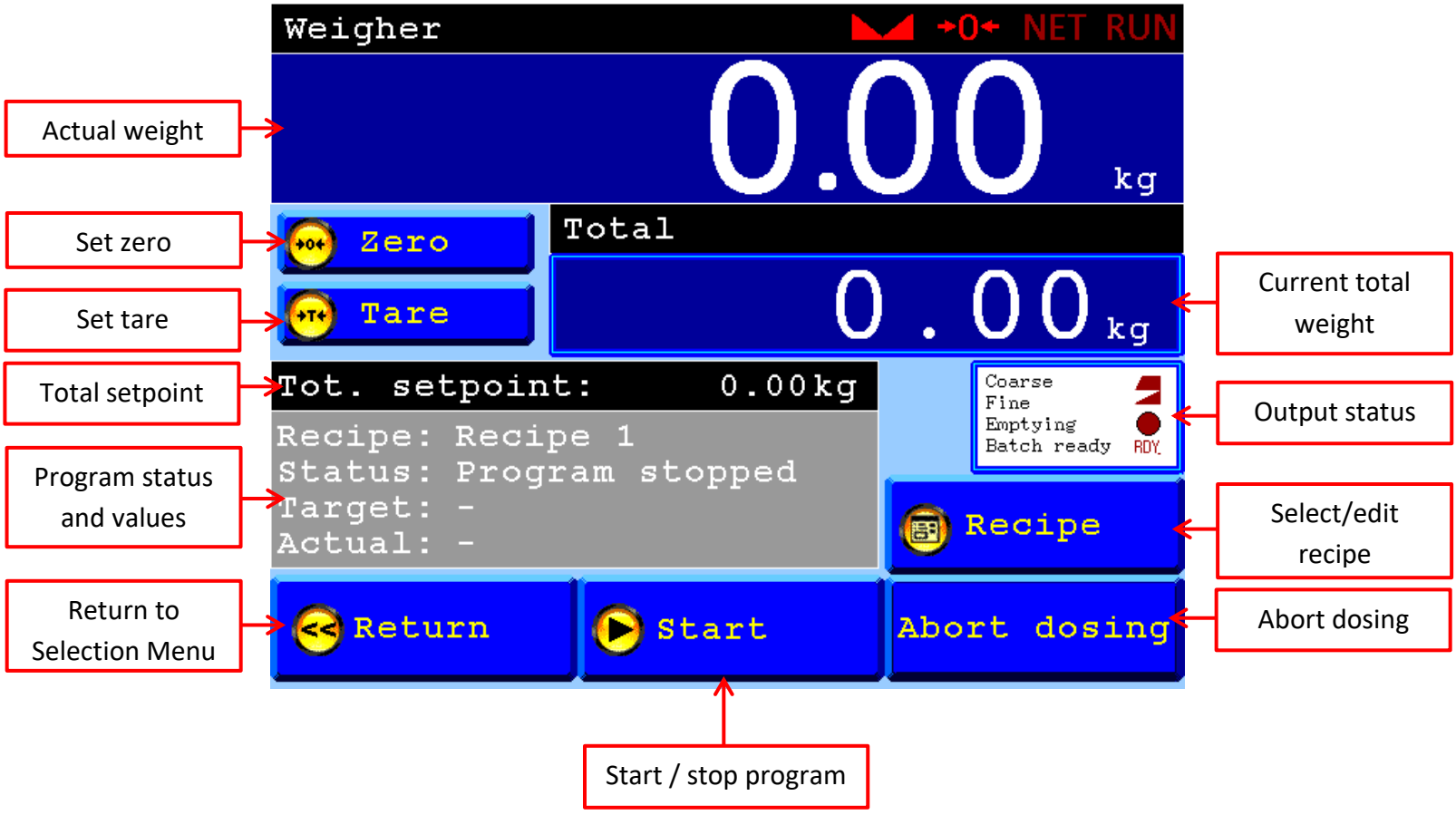


FLEX Dis-Con Controller

Production

To go to the production screen, press the “Production” button from the Selection Menu screen.

Icon:	Discription:
	Weight stable
	Weight is zero
	Tare active
	Program running



Certified

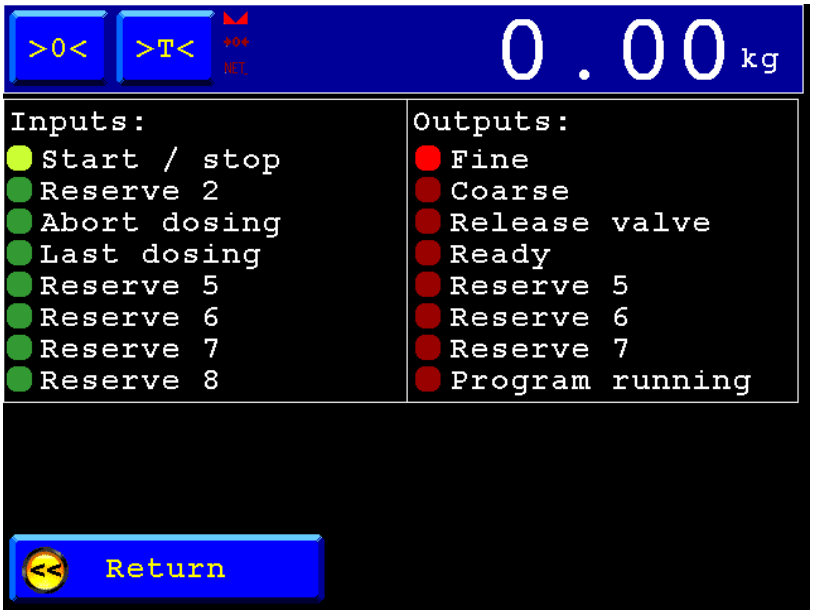
Go to the Information screen, press the “Certified” button. Here the “Weight full” and “weight empty” can be checked by activating the “Check weights” button. Now you have to accept every full and empy weight to get the “weight added” to the total weight.

When done, deactivate the “Check weights” button and press on Return to go back to the information screen.

Manual

When logged in and the program is stopped, you can press on “Manual” in the Selection menu. Here you can see the status of the inputs and switch on the outputs. Press on “Next”to proceed to the next screen.

When returned to the Selection menu the outputs will switch off.

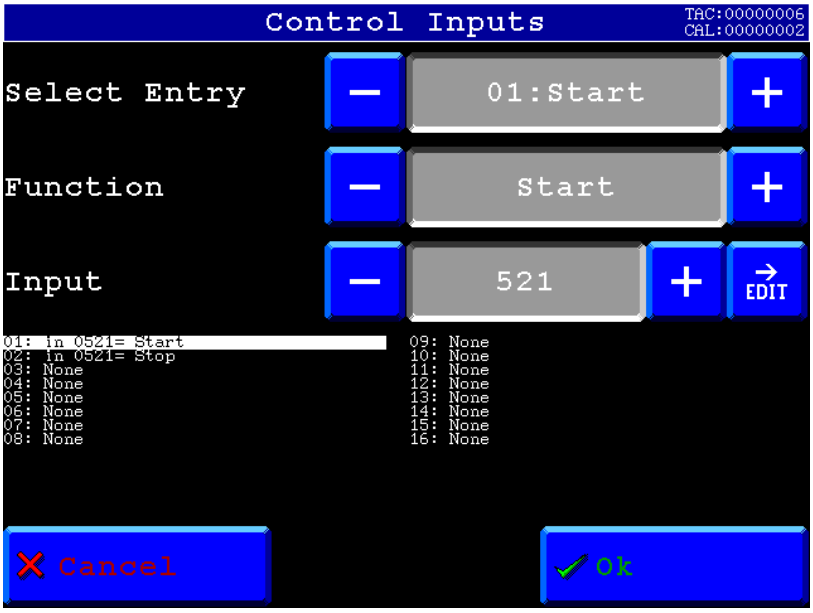


Start/Stop settings

To start and stop the Controller check the input settings. Go to “System settings” in the Selection menu. Press on “System Setup” and “In/Outputs”, then press on “Inputs”. Setup the inputs and press “OK”. Press “Home” to return to the Selection menu.

Note: You can only acces the System Setup when the program is stopped.

Input settings:



Program sequence

1. Wait for start signal.
2. Check if Total setpoint is zero.
3. If the Total setpoint is not equal to zero, go to step 4, if the Total setpoint is equal to zero go to step 12.
4. Dosing will start with the nominal setpoint, coarse and fine will be used depending on the configuration parameter “Use coarse/fine”.
5. When the nominal setpoint is reached, the dosing is stopped and the full weight is registered.
6. The release valve will open and the emptying will start until the configuration parameter “Weigher empty” is reached.
7. The release valve will remain open with the duration of the configuration parameter “Extra empty time”.
8. The empty weight is registerd and the net weight is calculated. The weight is added to the Total dosed weight.
9. Check if the remaining weight to dose is less than 2 times nominal weight, if not go to step 10.
    a. If yes then take the remaing weight and dived it by 2 and start dosing with coarse and fine dosing.
    b. Register full weight.
    c. Empty weight.
    d. Register empty weight and calculate net weight and add to Total dosed weight, calculate the remaining weight.
    e. Start the last dosing, dose the remaining weight with coarse and fine dosing.
    f. Register full weight .
    g. Empty weigher.
    h. Register empty weight and net weight is calculated. The weight is added to the Total dosed weight.
    i. The Ready signal is high until the program is stopped. The Ready signal will stay on for 1 more second.
10. Add net weight to Total dosed weight.
11. If not Ready than restart at step 2.
12. Start dosing coarse till nominal weight is reached.
13. Register full weight.
14. Release valve is switched on until Empty weigher level and extra time is reached.
15. Register empty weight and calculate net dosed weight.
16. Add net dosed weight to Total dosed weight.
17. Restart at step 12 until Last dosing signal is high.
18. The Ready signal is high until the Start / Stop bit is switched low, then the program is stopped.

Note: During dosing, abort the dosing immediately with the "Abort dosing" signal. This can be a pulse. The full weight is registered and emptied, now a new dosing will start.

Note: During dosing, use signal "Last dosing". This signal needs to remain on until the Ready signal is given. The dosing will continue until the nominal setpoint is reached, the full weight is registered and emptied, then the Ready signal is given.

Note: To abort a dosing immediately and end the Total dosing, give a "Abort dosing" signal pulse. And use signal "Last dosing", this signal needs to remain on until the Ready signal is given. The full weight is registered and emptied, then the Ready signal is given.

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 / stop (option)
    2 = Not used
    3 = Abort dosing
    4 = Last dosing
    5 = Not used
    6 = Not used
    7 = Not used
    8 = Not used

5) 16 bits output status
   - 201 = Fine
   - 202 = Coarse
   - 203 = Release valve
   - 204 = Ready
   - 205 = Not used
   - 206 = Not used
   - 207 = Not used
   - 208 = Program running

6) 32 bits marker status
   Not used

7) 32 bits signed integer, Total dosed weight
8) 32 bits signed integer, Last dosed weight
9) 32 bits unsigned integer, Alibi code only with end batch
10) 32 bits signed integer, Not used

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 / stop
   - 970 = Reserved
   - 971 = Abort dosing
   - 972 = Last dosing
   - 973 = Use Total setpoint from Profibus
   - 974 = Use Nominal setpoint from Profibus
   - Others not in use.

3) 32 bits Signed integer, Total setpoint
4) 32 bits Signed integer, Nominal setpoint
5) 32 bits Signed integer, External code
6) 32 bits Signed integer, Not used

Ethernet IP Data Explanation

Status information from the controller: In the example the instance 0x0374 (884) Control in is used.

Access	Name	Data type	Description
Get	Control In	STRUCT OF	
	Weigher	DINT WEIGHER DINT GROSS DINT NET DINT TARE DINT WEIGHERx10 DINT GROSSx10 DINT NETx10 DINT TAREx10 WORD FORMAT WORD STATUS	Display rate weigher data Fast Gross weight Fast Net weight Active Tare weight Display rate weigher data x10 Fast Gross weight x10 Fast Net weight x10 Active Tare weight x10 Format bits, see Weigher-Format word Status bits, see Weigher-Status word
	Indicator	ARRAY[10] OF INDICATOR	Read indicators, default start read at 1
	Register read	ARRAY OF DINT[10]	External Registers [10], default start read at 101 Register 1 = Total dosed weight Register 2 = Last dosed weight Register 3 = Alibi code (unsigned) Others not used
	Markers Input	BYTE ARRAY[4]	Markers 4x8=32 default read at 401-432 Not used

Weigher-Format word

Bit number	Description
#15	Signed/unsigned
	0 = Unsigned
	1 = Signed
#14	Zero suppressing
	0 = Nonzero suppressing
	1 = Zero suppressing
#11 - #8	Display step size
	0000 = Step 1
	0001 = Step 2
	0010 = Step 5
	0011 = Step 10
	0100 = Step 20
	0101 = Step 50
	0110 = Step 100
	0111 = Step 200
	1000 = Step 500
	1001 = Step 1000
	1010 = Step 2000
	1011 = Step 5000
#2 - #0	Decimal point position
	000 = 000000
	001 = 00000.0
	010 = 0000.00
	011 = 000.000
	100 = 00.0000
	101 = 0.00000

Weigher-Status word

Bit #	Called	Definition
0	OVERLOAD	Hardware overload/underload detected on loadcell
1	MAXLOAD	Overload detected on loadcell
2	STABLE	Weigher signal is stable
3	STABLE RANGE	Weigher signal is in stable range
4	ZERO SET	Weigher zero is corrected
5	ZERO CENTER	Weigher in center of zero range
6	ZERO RANGE	Weigher is in zero range, zero is possible

7	ZERO TRACK	Weigher signal is in zero tracking range, zero tracking is possible
8	TARE	Weigher tare is active
9	PRESET TARE	Weigher preset tare is active
10	SAMPLE	Used by internal process handling
11	BAD CAL	Calibration is bad, invalid, not available
12	CAL ENABLED	Calibration is enabled, used by internal process handling
13	INDUSTRIAL	If set weigher runs in industrial mode, if reset weigher runs certified operation mode
14	NOT LEVEL	Weigher system in blocking, warming up or scale is not level
15	RESERVED	Reserved mode always 0

Status information from the PLC , in the example the instance 0x0378 (888) Control out is used.

Access	Name	Data type	Description
Set	Control Out	STRUCT OF	
	Weigher 1 Control	ARRAY OF BYTE[2]	Weigher control word, see also Weigher-Control word
	Reserved Control	ARRAY OF BYTE[2]	Set to 0x0000
	Register write	ARRAY OF DINT[10]	External Registers [10] , default start write at 111 Register 1 = Total setpoint Register 2 = Nominal setpoint Register 3 = External code Others not used
	Markers Output	BYTE ARRAY[4]	Markers 4x8=32 default write at 433-464 433 = Start/Stop 434 = Reserved 435 = Abort dosing 436 = Last dosing 437 = Use Total setpoint from EIP 438 = Use Nominal setpoint from EIP Others not used

Weigher-Control word

Bit #	Called	Definition
0	ZERO_RESET*	Reset the actual zero weight, condition only possible in noncertified mode
1	ZERO_SET*	Activate new zero weight, condition stable signal
2	TARE_OFF*	Switch actual tare weight off
3	TARE_ON*	Activate new tare weight, condition stable signal
4	TARE_TOGGLE*	Toggle the Tare weight on condition stable signal, off condition none
5-16	RESERVED	Reserved bits always 0

** Remark: action on rising edge of bit*

Modbus Data Explanation

Below you will find a list with the data offset to read and weight the data. When writing data don't exceed the lenght of the data, this will cause a negative affect in the program.

	Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
0	Indicators	Read Input Registers (Function Code 04)	Cyclic, t#100ms	16#0064	38	Keep last Value		
1	Inputs	Read Discrete Inputs (Function Code 02)	Cyclic, t#100ms	16#0000	8	Keep last Value		
2	Outputs	Read Discrete Inputs (Function Code 02)	Cyclic, t#100ms	16#00C8	8	Keep last Value		
3	Markers read	Read Coils (Function Code 01)	Cyclic, t#100ms	16#0190	8	Keep last Value		
4	Markers write	Write Multiple Coils (Function Code 15)	Cyclic, t#100ms				16#01B0	8
5	Read Ext. Registers	Read Input Registers (Function Code 04)	Cyclic, t#100ms	16#03E8	20	Keep last Value		
6	Write Ext. Registers	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#03FC	20
7	Indicator status	Read Discrete Inputs (Function Code 02)	Cyclic, t#100ms	16#0440	16	Keep last Value		
8	Control	Write Multiple Coils (Function Code 15)	Cyclic, t#100ms				16#03E8	8

In the lists below the addresses are appointed without the offset. If you use the above list, you can use the lists below as stuctures.

0) Read Indicators (dint)

Indicator		Address		
		Code	Address	Combined
1	Gross weight	3x	101	300101
2	Not used	3x	103	300103
3	Net weight	3x	105	300105

1) Read Inputs (8 bits)

Inputs		Address		
		Code	Address	Combined
1	Start / Stop	1x	1	100001
2	Not used	1x	2	100002
3	Abort dosing	1x	3	100003
4	Last dosering	1x	4	100004
5	Not used	1x	5	100005
6	Not used	1x	6	100006
7	Not used	1x	7	100007
8	Not used	1x	8	100008

2) Read Outputs (8 bits)

Inputs		Address		
		Code	Address	Combined
1	Fine	1x	201	100201
2	Coarse	1x	202	100202
3	Release valve	1x	203	100203
4	Ready	1x	204	100204
5	Not used	1x	205	100205
6	Not used	1x	206	100206
7	Not used	1x	207	100207
8	Program gestarted	1x	208	100208

3) Read Markers (8 bits)

Markers		Address		
		Code	Address	Combined
1	Not used	0x	401	000401
2	Not used	0x	402	000402
3	Not used	0x	403	000403
4	Not used	0x	404	000404
5	Not used	0x	405	000405
6	Not used	0x	406	000406
7	Not used	0x	407	000407
8	Not used	0x	408	000408

4) Write Markers (8 bits)

Markers		Address		
		Code	Address	Combined
1	Start / Stop	0x	433	000433
2	Not used	0x	434	000434
3	Abort dosing	0x	435	000435
4	Last dosering	0x	436	000436
5	Use Total sepoint via Modbus	0x	437	000437
6	Use Nominal setpoint via Modbus	0x	438	000438
7	Not used	0x	439	000439
8	Not used	0x	440	000440

5) Read Ext. Registers (dint)

Ext. Registers		Address		
		Code	Address	Combined
1	Total gedosed weight	3x	1001	301001
2	Last gedosed weight	3x	1003	301003
3	Alibi code by end batch (Unsigned)	3x	1005	301005
4	Not used	3x	1007	301007
5	Not used	3x	1009	301009
6	Not used	3x	1011	301011
7	Not used	3x	1013	301013
8	Not used	3x	1015	301015
9	Not used	3x	1017	301017
10	Not used	3x	1019	301019

6) Write Ext. Registers (dint)

Ext. Registers		Address		
		Code	Address	Combined
1	Total setpoint	4x	1021	301021
2	Nominal setpoint	4x	1023	301023
3	External code	4x	1025	301025
4	Not used	4x	1027	301027
5	Not used	4x	1029	301029
6	Not used	4x	1031	301031
7	Not used	4x	1033	301033
8	Not used	4x	1035	301035
9	Not used	4x	1037	301037
10	Not used	4x	1039	301039

7) Read Indicator status (16 bits)

Indicator status		Address		
		Code	Address	Combined
1	Hardware overload	1x	1089	101089
2	Maximum load	1x	1090	101090
3	Stable weight	1x	1091	101091
4	Stable range	1x	1092	101092
5	Zero set	1x	1093	101093
6	Center of zero	1x	1094	101094
7	Zero range	1x	1095	101095
8	Zero track range	1x	1096	101096
9	Tare active	1x	1097	101097
10	Preset tare active	1x	1098	101098
11	New sample available	1x	1099	101099
12	Calibration invalid	1x	1100	101100
13	Calibration enabled	1x	1101	101101
14	Industrial mode	1x	1102	101102
15	Invalid weight	1x	1103	101103
16	Reserved	1x	1104	101104

8) Write Indicator control (8 bits)

Indicator control		Address		
		Code	Address	Combined
1	Zero reset	0x	401	000401
2	Zero set	0x	402	000402
3	Tare off	0x	403	000403
4	Tare on	0x	404	000404
5	Toggle tare	0x	405	000405
6	Preset tare	0x	406	000406
7	Reserved	0x	407	000407
8	Reserved	0x	408	000408

Notes

About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

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. A schedule of training sessions is found on: **www.penko.com/training**

PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden, Switzerland and Singapore.
A complete overview you will find on: **www.penko.com/dealers**

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