

PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions



How to...
Configure the analog in- and output on a
FLEX or FLEX 2ch. – 4ch.



an ETC Company

Table of Contents

FLEX or FLEX 2ch. – 4ch. Connection.....	3
Set up the FLEX or FLEX 2ch. – 4ch.....	4
Analog input	5
Analog output.....	8

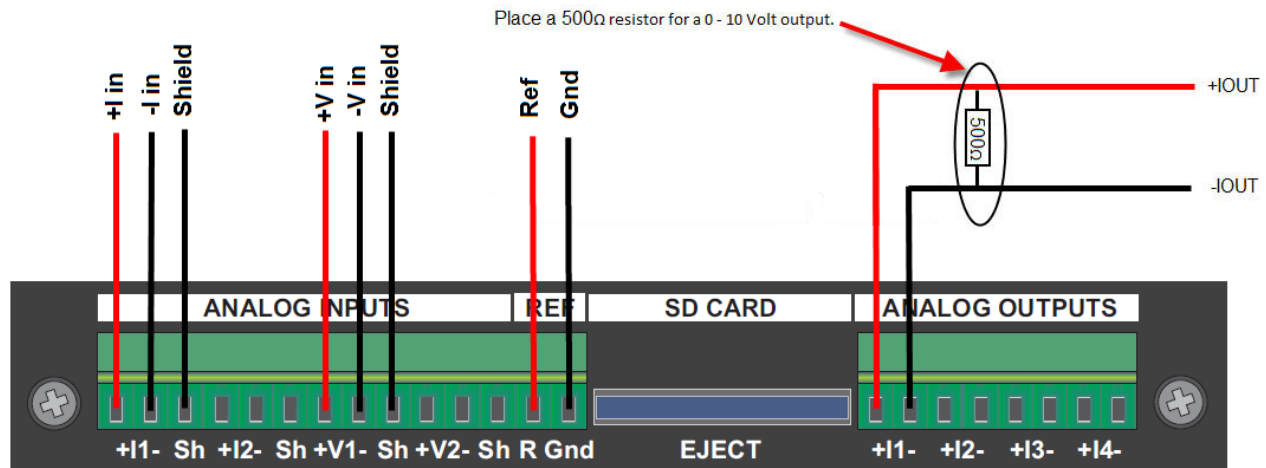
FLEX or FLEX 2ch. – 4ch. Connection

The analog in- and outputs are an option for the FLEX, FLEX 2ch. – 4ch. The 4 analog outputs are active outputs.

The FLEX, FLEX 2ch. – 4ch. has 4 analog inputs, 1 and 2 are mA inputs, 3 and 4 are Volt inputs .

The Ref and Gnd is a 10 volt reference.

In normal output configuration the FLEX, FLEX 2ch. – 4ch. will give out a mA signal but it is also possible to have a Volt output. This can be done by placing a resistor of 500 Ω parallel between IOUT and V-. If the **Range** is set to 0 – 20 mA the output will be 0,45 – 10 Volt.



PENKO How to...

Configure the analog in- and output on a FLEX or FLEX 2ch. – 4ch.

Set up the FLEX or FLEX 2ch. – 4ch

Go to **Menu** → **System Setup** → **In/Outputs**. If the card is not placed or not working the **ADC Setup** and **DAC Setup** will not be accessible.

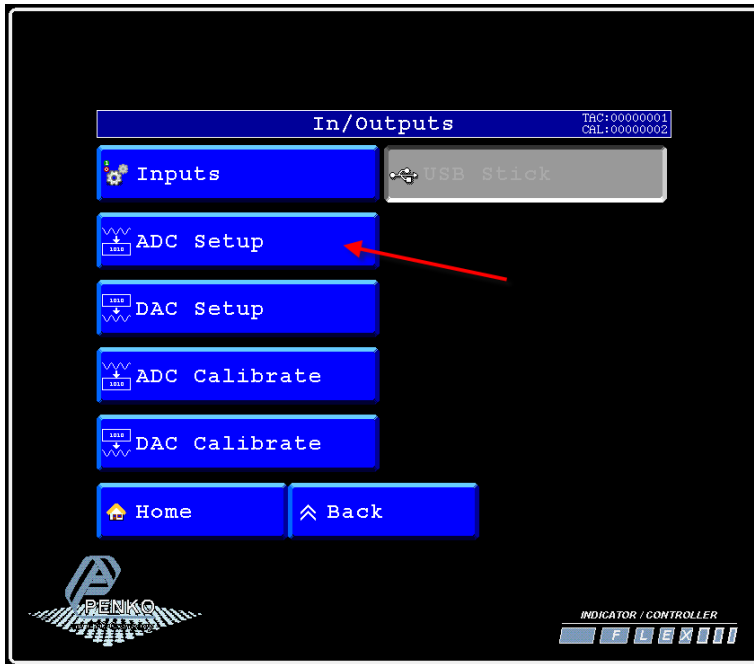


If everything is working ok the **ADC Setup** and **DAC Setup** will be accessible.

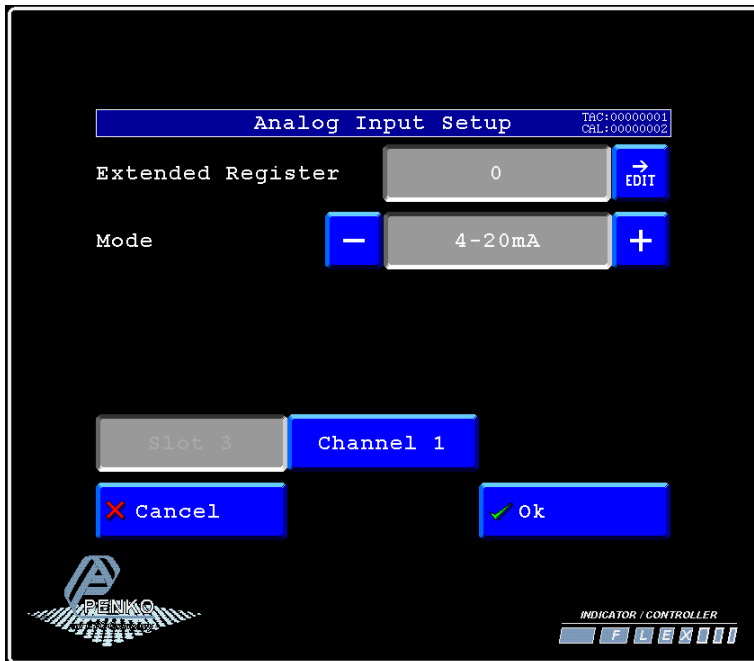


Analog input

Press on **ADC Setup**.



Set the **Extended Register** (register 0 – 100) and **Mode** to you desired settings.

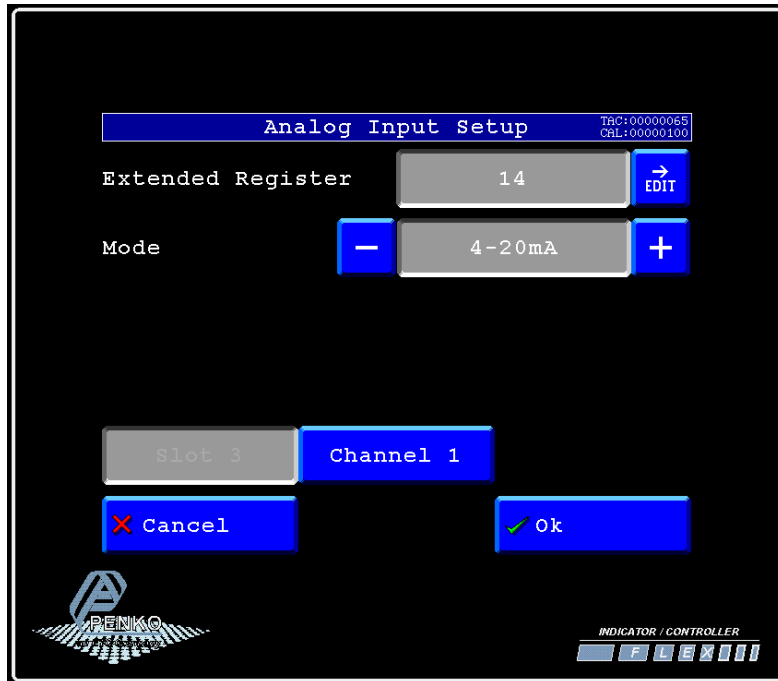


PENKO How to...

Configure the analog in- and output on a FLEX or FLEX 2ch. – 4ch.

Mode channel 1 and 2	Mode channel 3 and 4	Description
RAW	RAW	16 bit DAC value. For a custom calibration (controller version only)
	0 – 10 V	The minimum and maximum input of the analog input.
0 – 20 mA		The minimum and maximum input of the analog input.
0 – 24 mA		The minimum and maximum input of the analog input.
4 – 20 mA		The minimum and maximum input of the analog input.
4 – 24 mA		The minimum and maximum input of the analog input.

Press on **Channel 1** to proceed to channel 2, 3 and 4 (channel 1 and 2 are mA and channel 3 and 4 are V inputs). Press **OK** to save changes.



In the example above the **Extended Register** is set to Register 14 and the **Mode** is 4 – 20mA.

PENKO How to...

Configure the analog in- and output on a FLEX or FLEX 2ch. – 4ch.

Open **Pi Mach II** and go to **Indicator & Registers**. Now you can see the value of the ADC input of channel 1 at extended register 14. In this example 12mA is applied, which is exactly in between 4 and 20mA. So extended register will show 5001 this is 50,01%.

If the mode is set to RAW it will show the 16 bit ADC value.

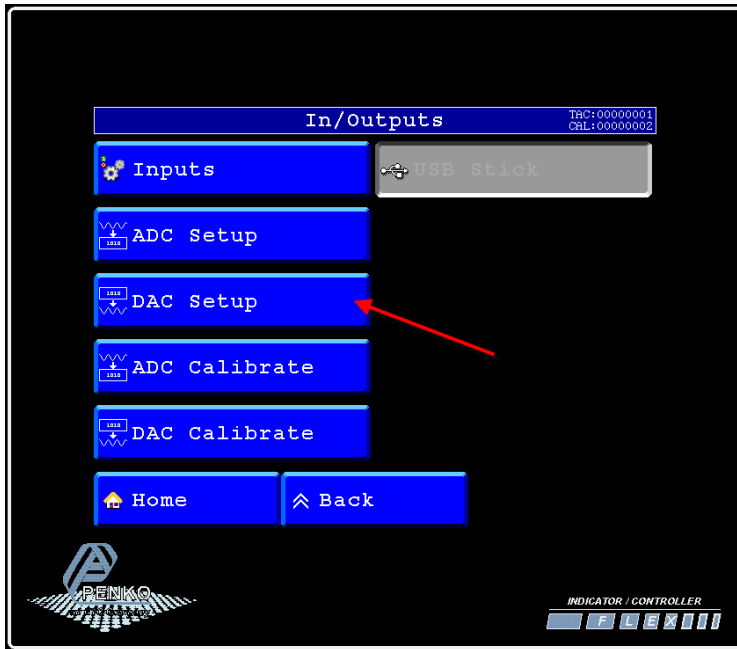
The screenshot shows the 'Indicator & Registers' window in the Pi Mach II software. The window title is 'Flex II, Device Version: 01.08, Build: 08, Serial: 13040104, Module Version: 00.00, Build: 00, Project: C:\Program Files\PI Mach II 72\'. The menu bar includes 'File', 'Project', 'Environment', 'View', 'Tools', and 'Help'. The toolbar contains icons for 'On-Line', 'Firmware Update Manager', 'Program Builder', 'Flex Builder', 'Watches', and 'Exit'. The main window displays two tables:

Indicators	Value
1 weight	2.30
2 Gross	NOT AVAIL
3 Nett	NOT AVAIL
4	NOT AVAIL
5	NOT AVAIL
6	NOT AVAIL
7	NOT AVAIL
8	NOT AVAIL
9	NOT AVAIL
10	NOT AVAIL
11	NOT AVAIL
12	NOT AVAIL
13	NOT AVAIL
14	NOT AVAIL
15	NOT AVAIL

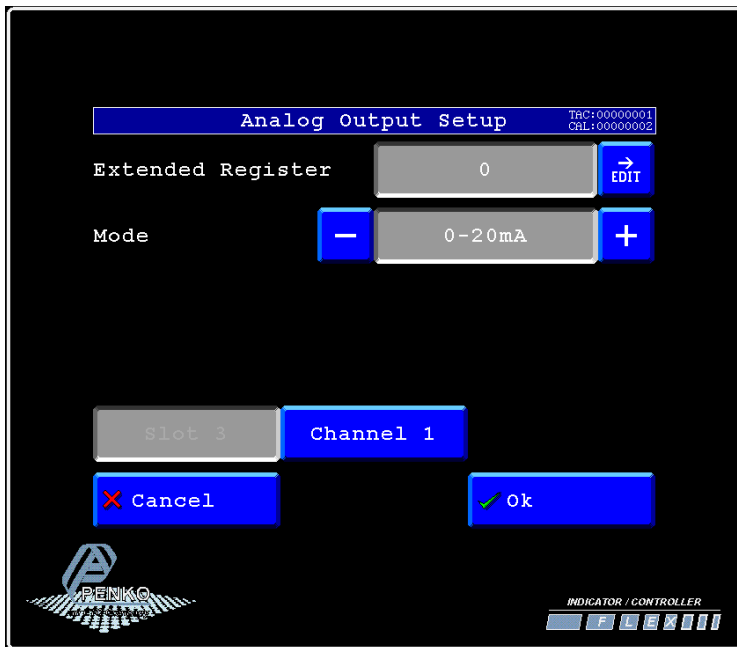
Ext. Registers	Value
1	2000
2	1000
3	2000
4	1000
5	2100
6	4
7	1
8	0
9	2
10	1
11	1
12	100
13	0
14	5001
15	0

Analog output

Press on **DAC Setup**.



Set the **Extended Register** (register 0 – 100) and **Mode** to you desired settings.

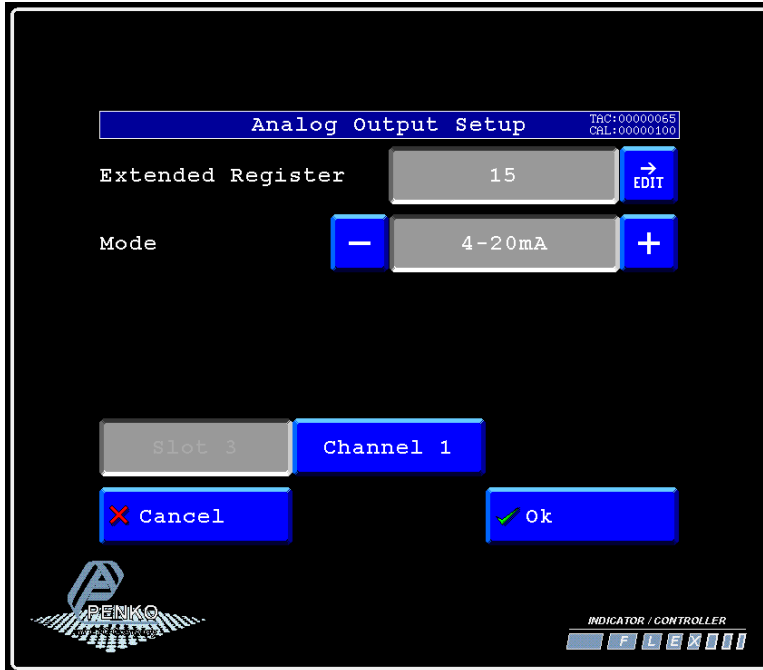


PENKO How to...

Configure the analog in- and output on a FLEX or FLEX 2ch. – 4ch.

Mode	Description
RAW	16 bit DAC value. For a custom calibration (controller version only)
0 – 20 mA	The minimum and maximum output of the analog output.
0 – 24 mA	The minimum and maximum output of the analog output.
4 – 20 mA	The minimum and maximum output of the analog output.
4 – 24 mA	The minimum and maximum output of the analog output.

Press on **Channel 1** to proceed to channel 2,3 and 4. Press **OK** to save changes.



In the example above the **Extended Register** is set to Register 15 and the **Mode** is 4 – 20mA.

PENKO How to...

Configure the analog in- and output on a FLEX or FLEX 2ch. – 4ch.

Open **Pi Mach II** and go to **Indicator & Registers**. Now you can fill in the value of the ADC output of channel 1 at extended register 15. The value you fill in is in percentage (0% = 0 and 100,00% = 10000). In the example below 5000 (50,00%) is filled in, the analog output will give out 12mA.

*If the mode is set to **RAW**, fill in the 16 bit ADC value (0% = 0 and 100% is 65535).*

Flex II, Device Version: 01.08, Build: 01, Serial: 12480026, Module Version: 03.19, Build: 01, Project: C:\Users\mrossum\Desktop\Test\

File Project Environment View Tools Help

On-Line Firmware Update Manager Program Builder Flex Builder Watches Exit

Display Control Tasks I/O Indicator & Registers Labels Results Printer Layout Printer Ticket

Indicators	Value
1	0.00
2	156.54
3	0.00
4	NOT AVAIL
5	NOT AVAIL
6	NOT AVAIL
7	NOT AVAIL
8	NOT AVAIL
9	NOT AVAIL
10	NOT AVAIL
11	NOT AVAIL
12	NOT AVAIL
13	NOT AVAIL
14	NOT AVAIL
15	NOT AVAIL
16	NOT AVAIL
17	NOT AVAIL
18	NOT AVAIL

Ext. Registers	Value
1	1013498703
2	1800318737
3	-119029131
4	2078804833
5	1013498703
6	1800318737
7	-119029131
8	2078804833
9	1013498703
10	1800318737
11 Tare x10	0
12 Tare	0
13 Net	0
14	0
15 DAC out	5000
16	1604848481
17	1013498703
18	1800318737



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

