PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions

Omega QuickStart manual

PENKO
an ETC Company

Omega QuickStart manual

CONTENTS

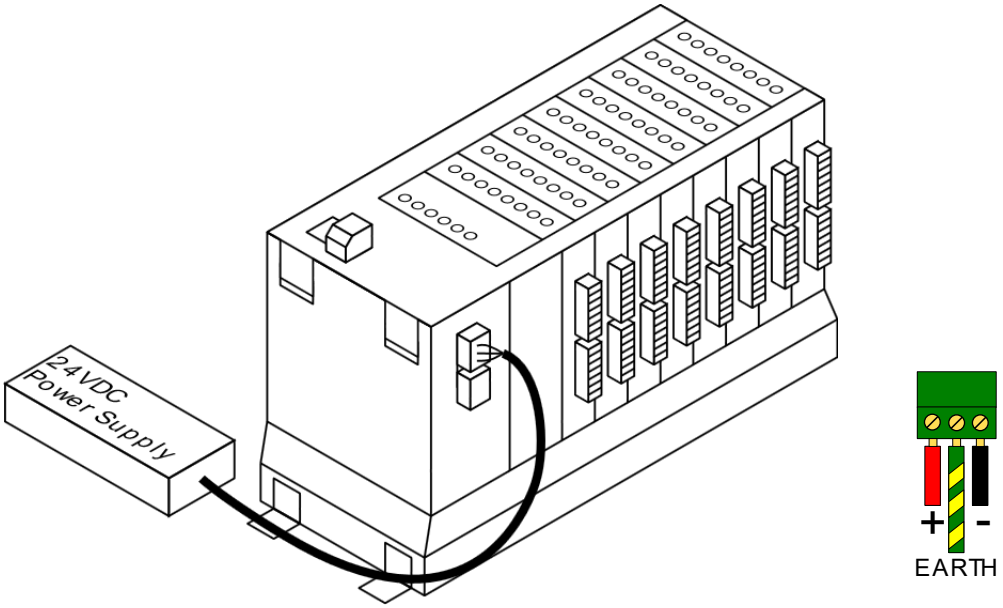
SYSTEM OVERVIEW

The Omega system can consist of multiple rack units. Each rack unit consists of:

- A Bus unit.
- One power supply.
- One CPU module.
- Up to 8 weigher or I/O modules.
- Unused slots are covered by a dummy module.

CONNECTING POWER

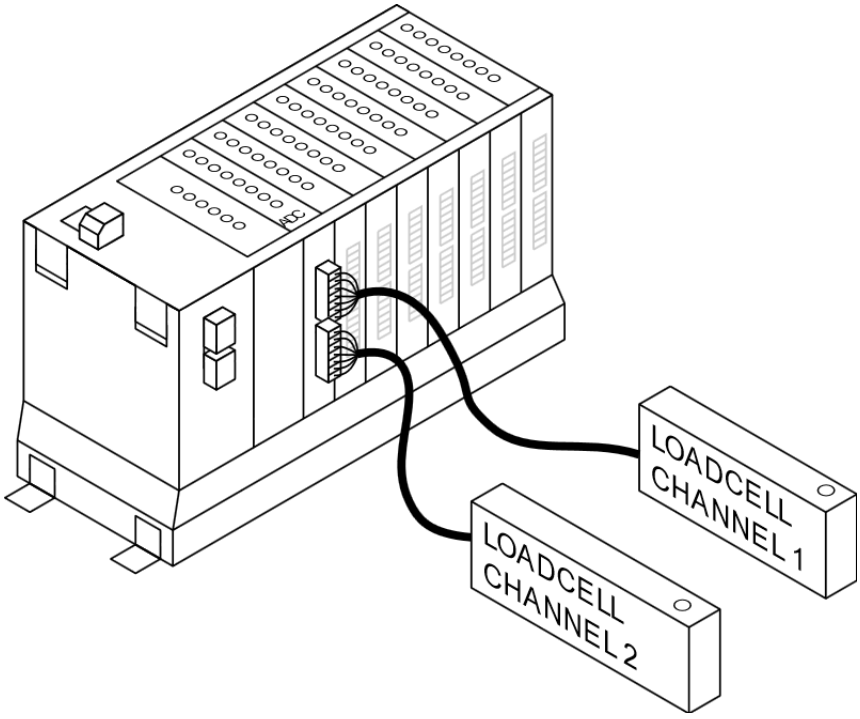
The Omega system uses a 24VDC nominal power supply. The applied voltage should be between 18 and 36Volts.

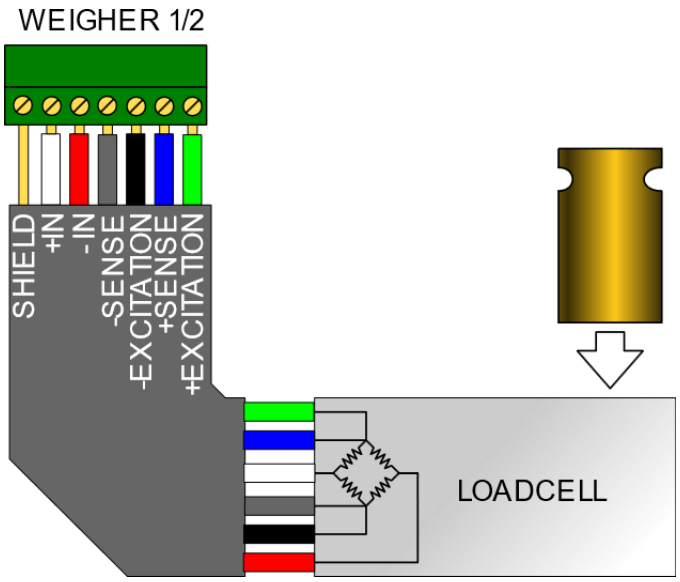


Two power connections are provided. Both connections are wired identically to provide power to the next unit in a multiple unit system.

CONNECTING A LOADCELL

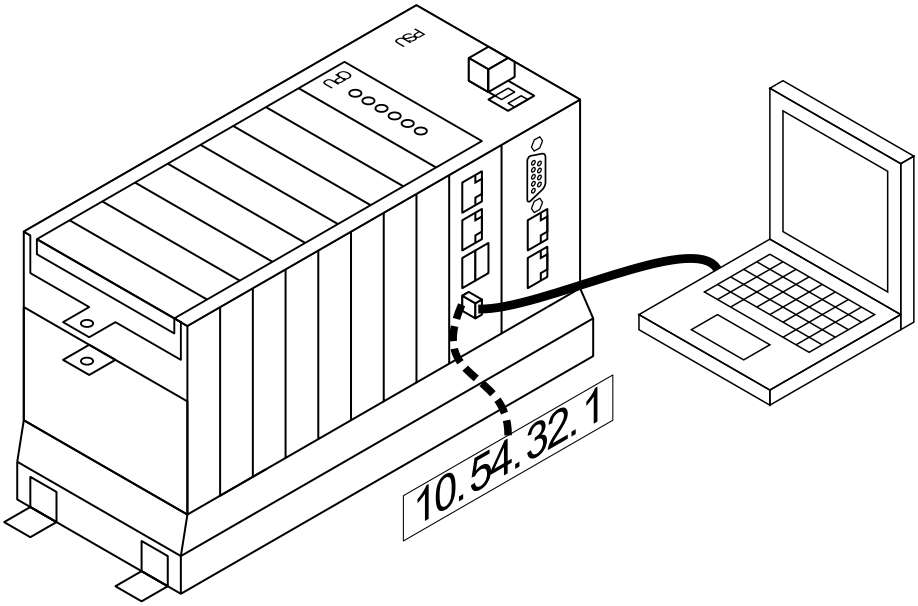
Each ADC+DIO or ADC+AIO module has two loadcell connections. The loadcell connects as following:



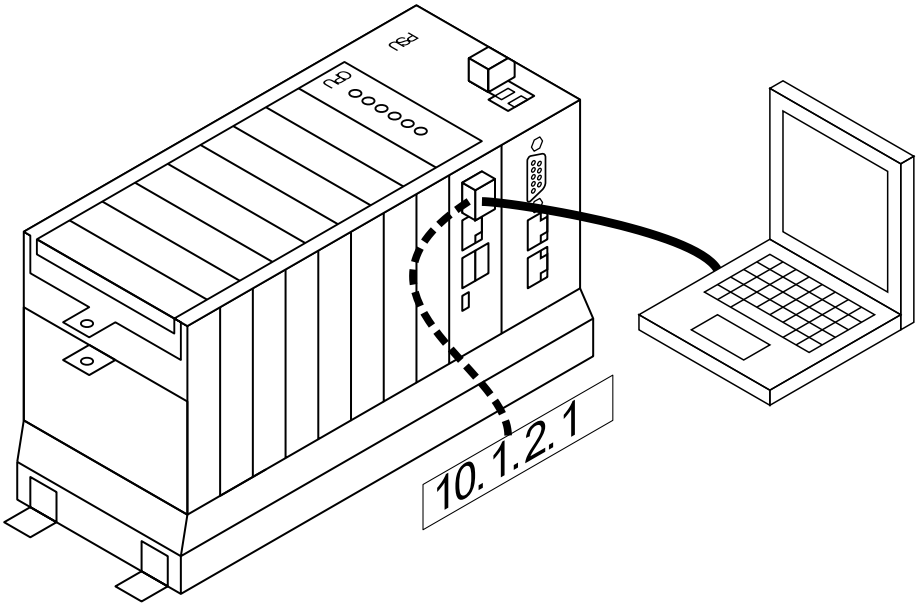


CONNECTING A LAPTOP

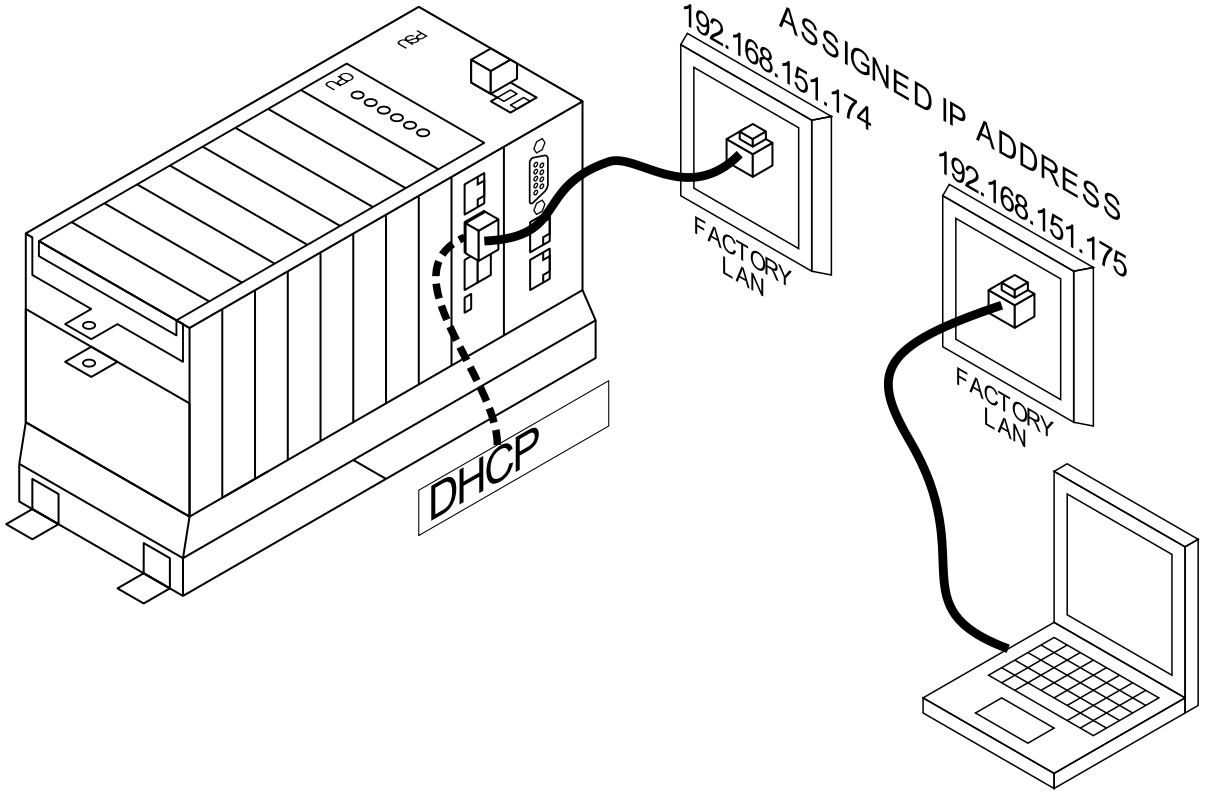
A laptop for initial setup can be connected to the USB3 connection of the CPU module. This requires a USB-A to Mini USB-B cable.



Alternately, a laptop can be connected to Ethernet 2.



CONNECTING TO THE FACTORY NETWORK



FIRST POWER UP

After applying power, the unit starts up. The OK led on the CPU lights up RED while in boot mode.

After a few seconds this LED blinks green in a heartbeat pattern to show that the application is running. After approximately 1,5 minutes the SD/INT LED stops flashing, and the unit is ready.

CONNECTING TO THE OMEGA

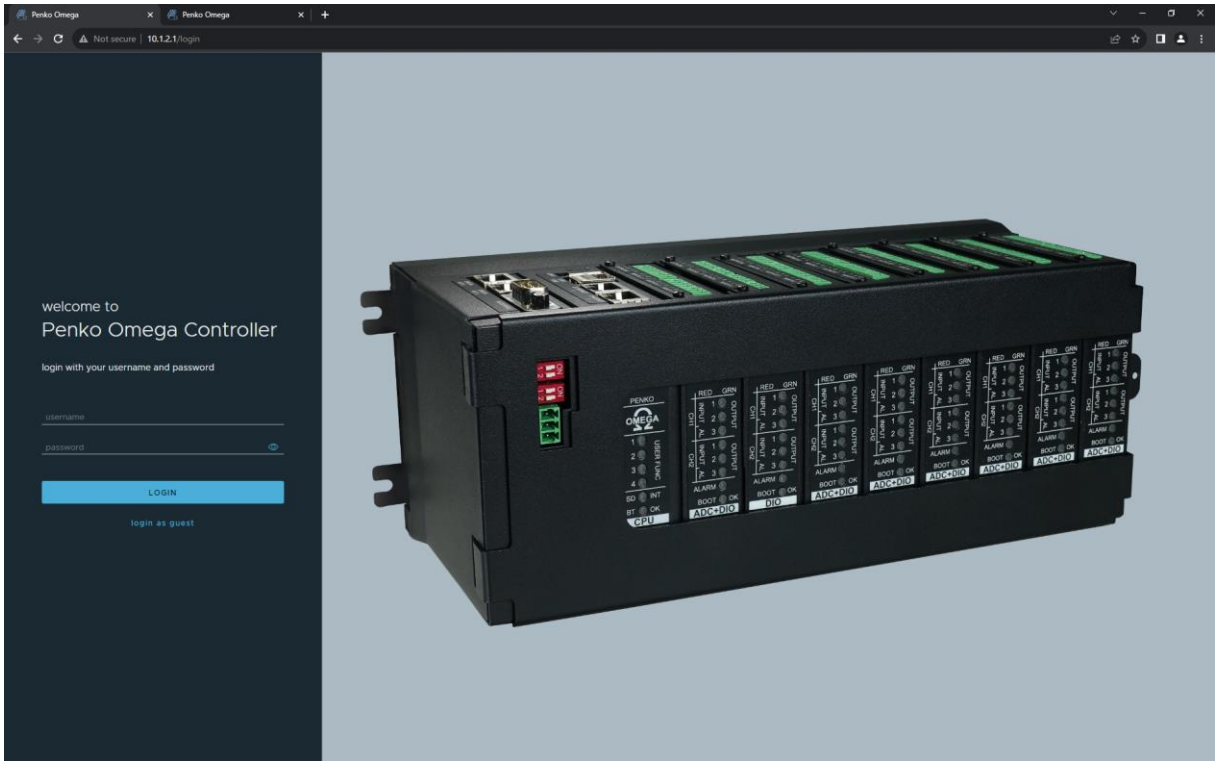
ETHERNET

When the laptop is connected to the Ethernet 2 port, the Omega will supply an IP address. Open your web browser (Edge, Chrome, Safari or Firefox) and type the address 10.1.2.1. This will open the Omega web interface.

When connected to the Ethernet 1 port, the factory LAN must supply an IP address through DHCP.

USB

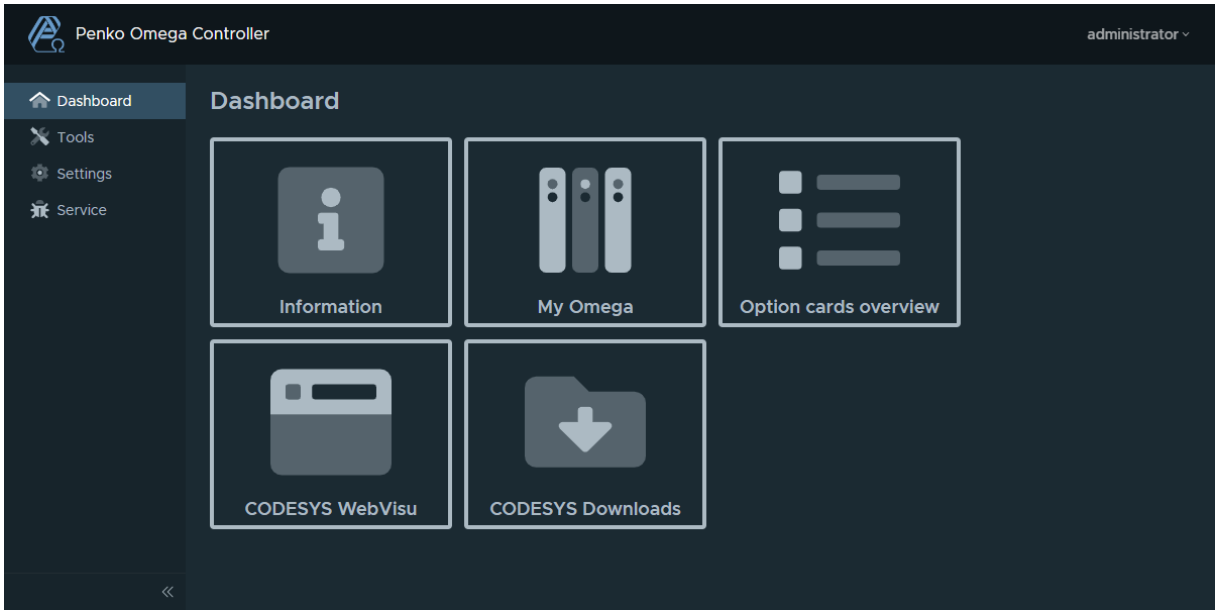
When the laptop is connected to the USB3 port, the PC will add a network adapter device over USB. Open your web browser (Edge, Chrome, Safari or Firefox) and type the address 10.54.32.1. This will open the Omega web interface.



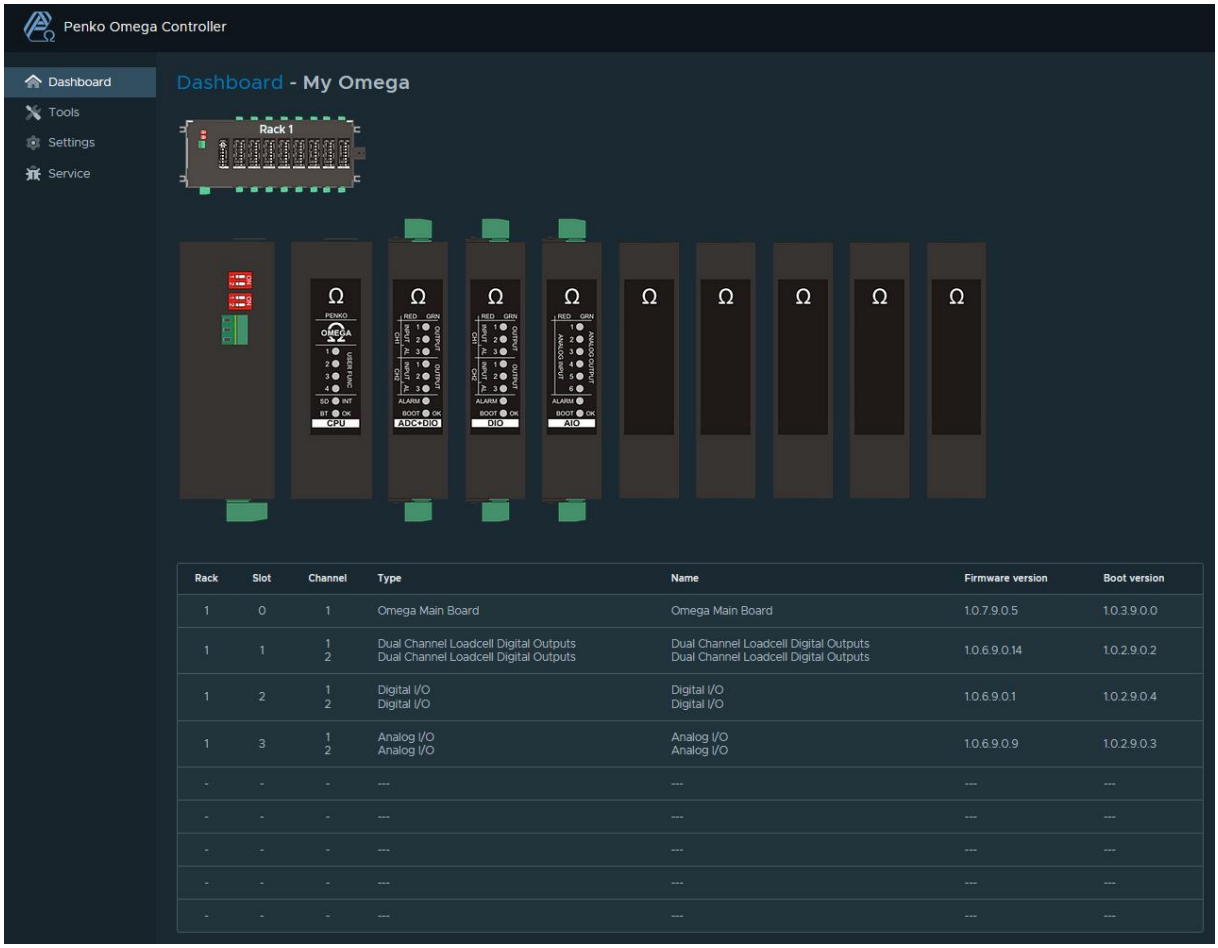
The default login is:

Username: **administrator**
Password: **administrator**

Then click **LOGIN**
After successful login the dashboard is shown:

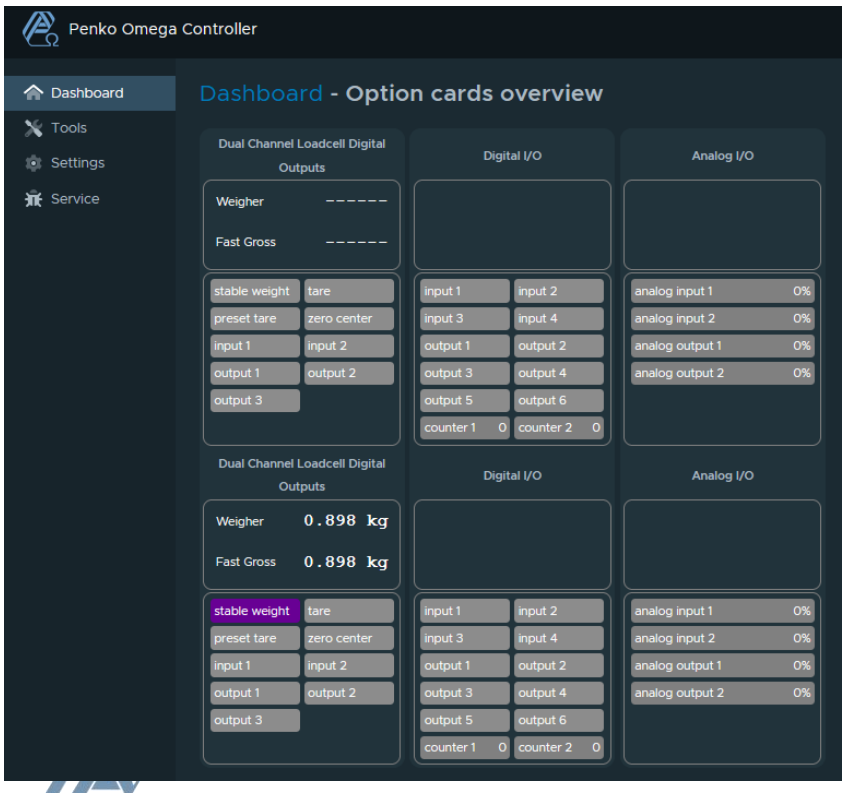


Click on “My Omega” to show an overview of the installed components.



Rack	Slot	Channel	Type	Name	Firmware version	Boot version
1	0	1	Omega Main Board	Omega Main Board	1.0.7.9.0.5	1.0.3.9.0.0
1	1	1 2	Dual Channel Loadcell Digital Outputs Dual Channel Loadcell Digital Outputs	Dual Channel Loadcell Digital Outputs Dual Channel Loadcell Digital Outputs	1.0.6.9.0.14	1.0.2.9.0.2
1	2	1 2	Digital I/O Digital I/O	Digital I/O Digital I/O	1.0.6.9.0.1	1.0.2.9.0.4
1	3	1 2	Analog I/O Analog I/O	Analog I/O Analog I/O	1.0.6.9.0.9	1.0.2.9.0.3
-	-	-	---	---	---	---
-	-	-	---	---	---	---
-	-	-	---	---	---	---
-	-	-	---	---	---	---
-	-	-	---	---	---	---

Click on “option cards overview” To shows a quick overview of all available channels. All weight, input output and status indicators are live values.



This example contains:

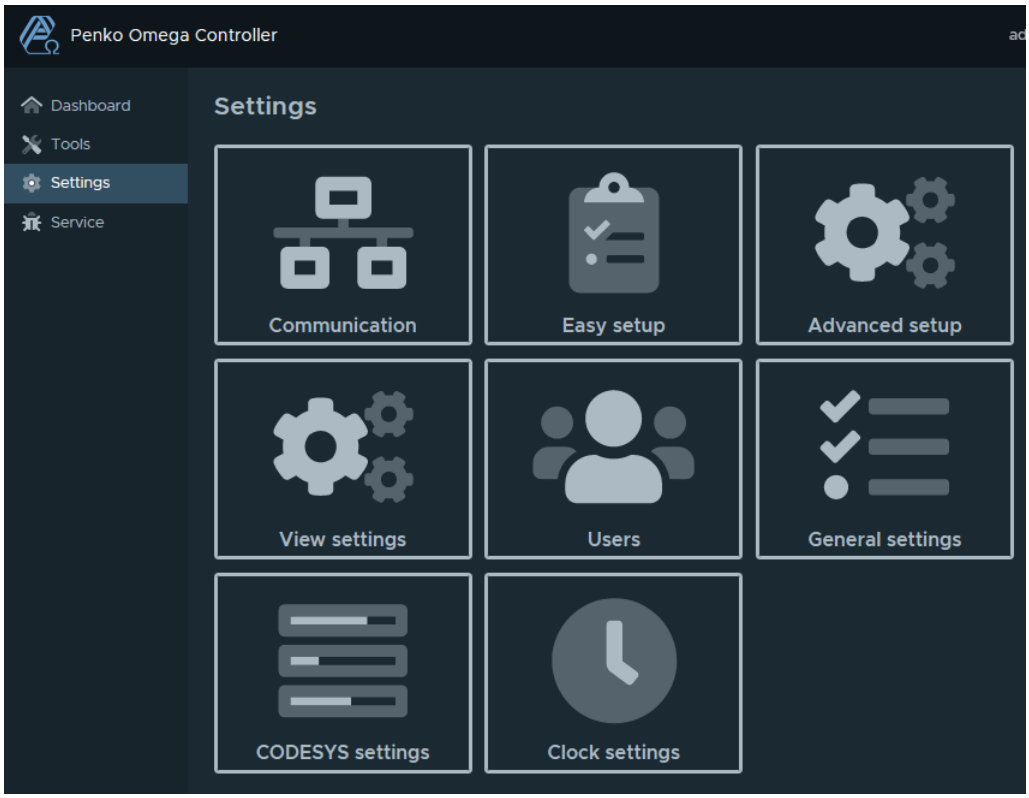
- dual loadcell and digital io module
- Digital I/O module
- Analog I/O module

Only the loadcell inputs are used to show a weight.

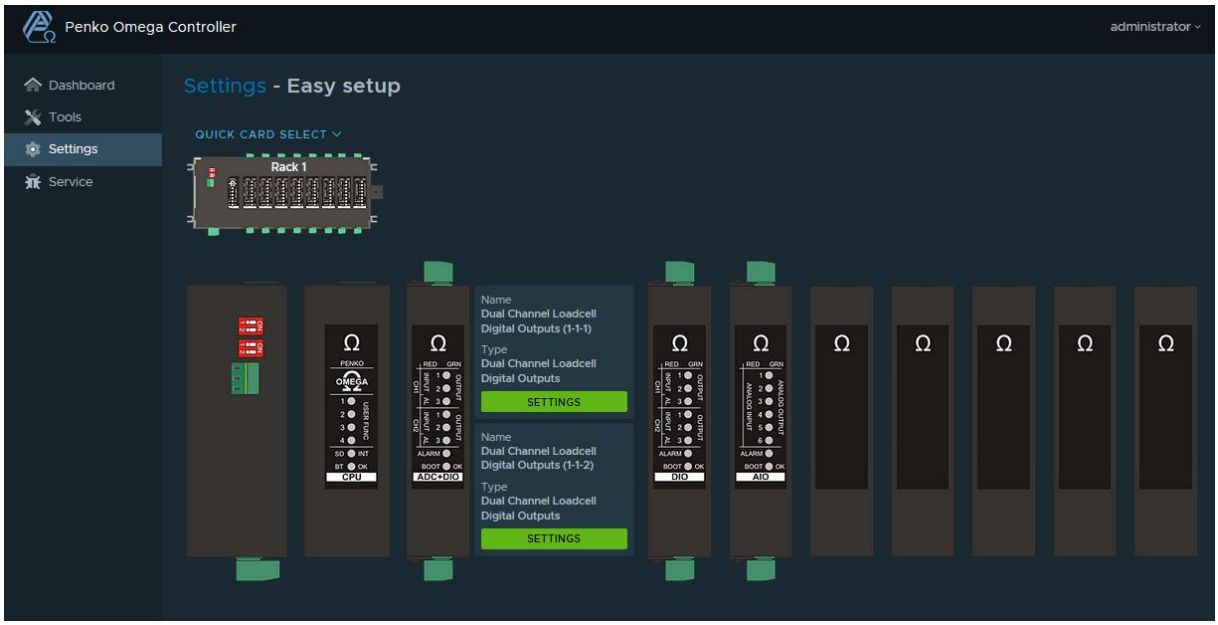
When a weigher is shown as “------” the following things can be wrong:

- No loadcell is connected.
- The loadcell is Wired wrong.
- Weight is above the maximum load.
- Weight is below the minimum load.
- The channel is not calibrated.

Click on “Settings”, followed by “Easy Setup”

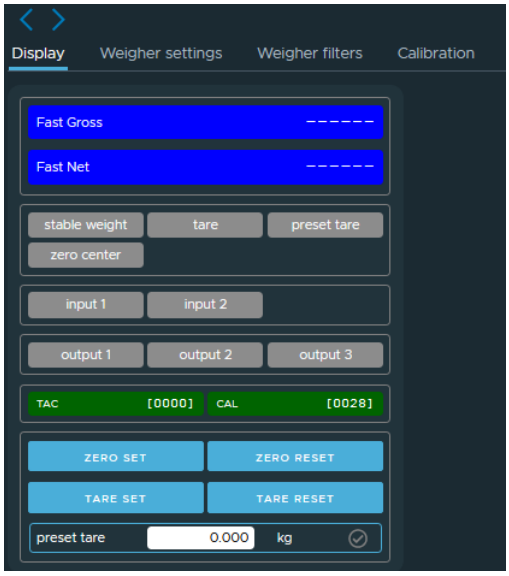


USING EASY SETUP TO CALIBRATE WEIGHERS

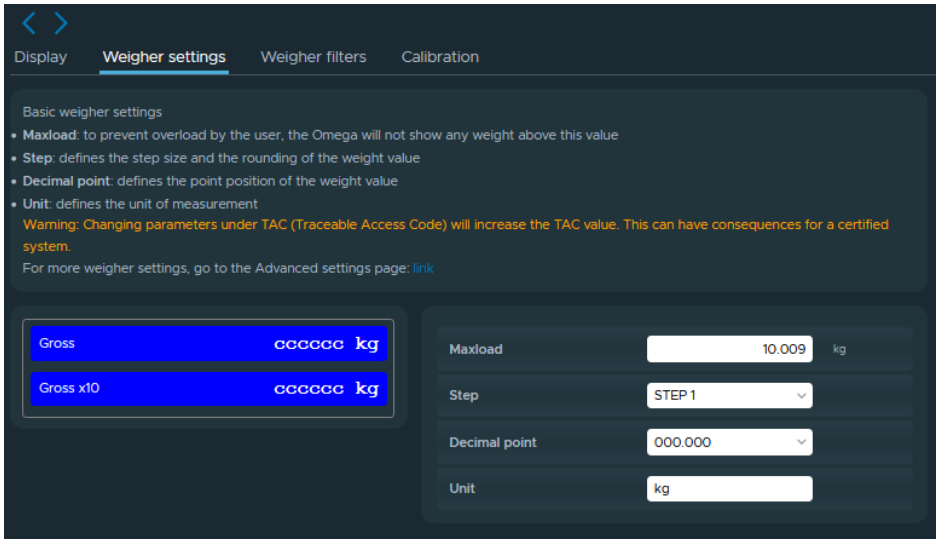


Now click on the “SETTINGS” for the “Dual Channel Loadcell Digital Outputs(1-1-1)” to start the setup for channel 1 of the first card.

The display tab shows that this channel has no valid weight “-------”

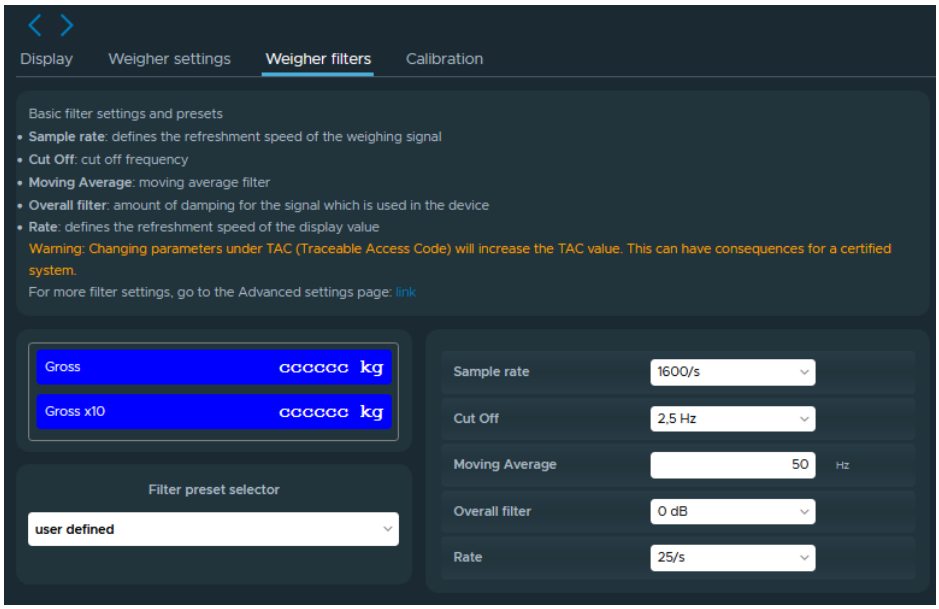


The Weigher settings tab allows changing the maximum load, display step, decimal point position and the weight unit. The weigher can be configured to show up to 3000 counts for certified installation or up to 10.000 counts for non-certified installations. Step sizes larger than 1 can be used to reduce the number of counts. Set the maxload and decimal point accordingly.

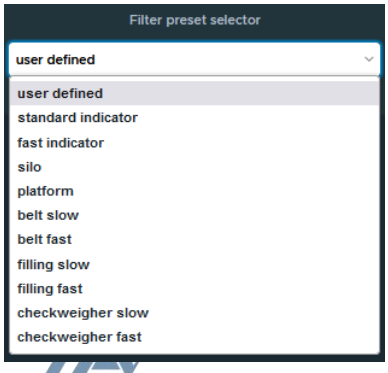


This tab shows the weight as “cccccc” which indicates the weigher is not correctly calibrated.

The Weigher filters tab allows fine tuning the weigher for different uses. Under “Filter preset selector” several standard use cases can be selected which fill in the appropriate parameters.

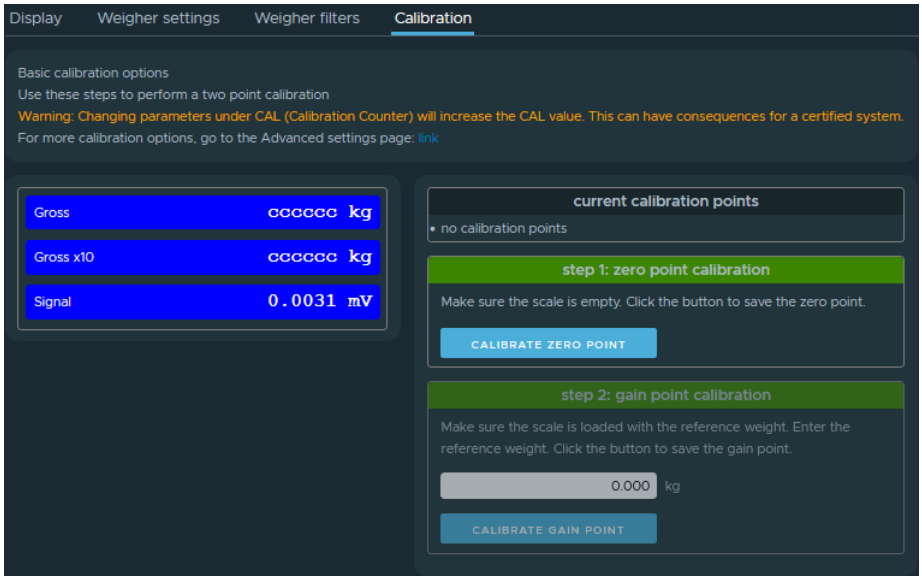


The filter parameters influence the reaction of the loadcell so this must be selected before calibrating the loadcell.



The Calibration tab is used to do a simple two-point calibration. The signal is at 0.0031mV which is close to 0mV. When a weight is applied to the loadcell this number will increase. The maximum loadcell output will be 20mV.

The frame “Current calibration points” shows that there are no calibration points yet, so we must enter these first.



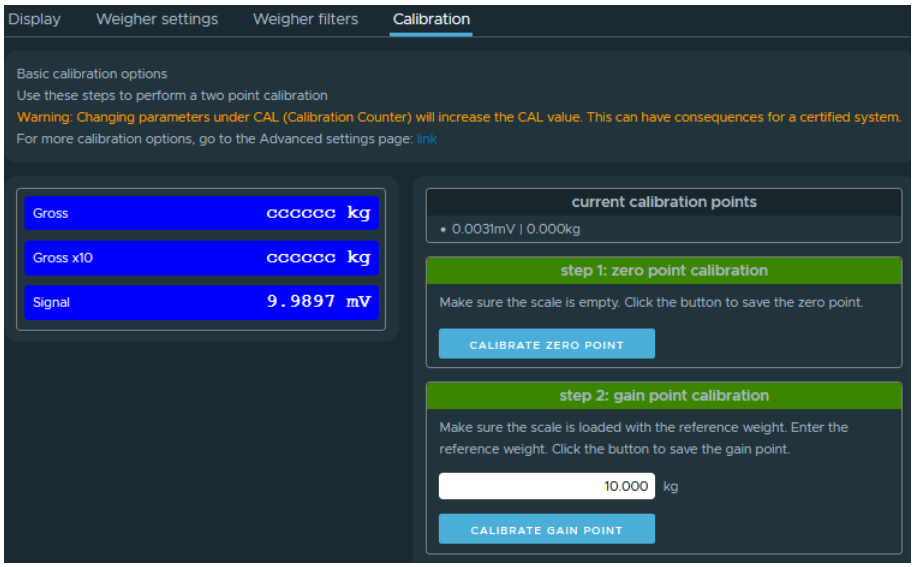
With the loadcell mounted to the weigher and no load on the scale, wait until the signal is stable and then click “Calibrate zero point” to store the signal at no load.

After a few seconds one calibration point will be shown.

After this, load the scale to close to its maximum load. Less weight can be used but this reduces the accuracy.

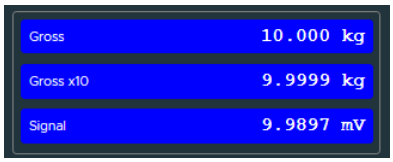
Enter the actual load placed on the scale. Leaving this value as 0 will overwrite the zero point calibration!

Wait until the signal is stable again and click “Calibrate gain point”



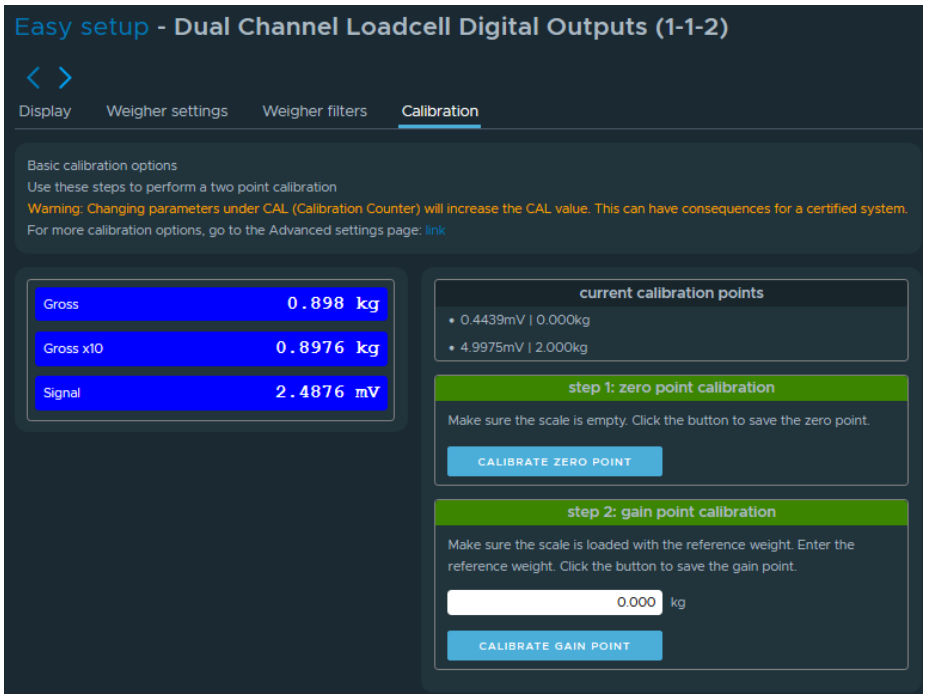
When the two points are too close together in either weight or signal, the message “Gain overflow” will be shown.

After a few seconds the gross will show the actual weight and gross x10 shows the higher resolution internal weight before rounding. Calibration for this channel is now complete.

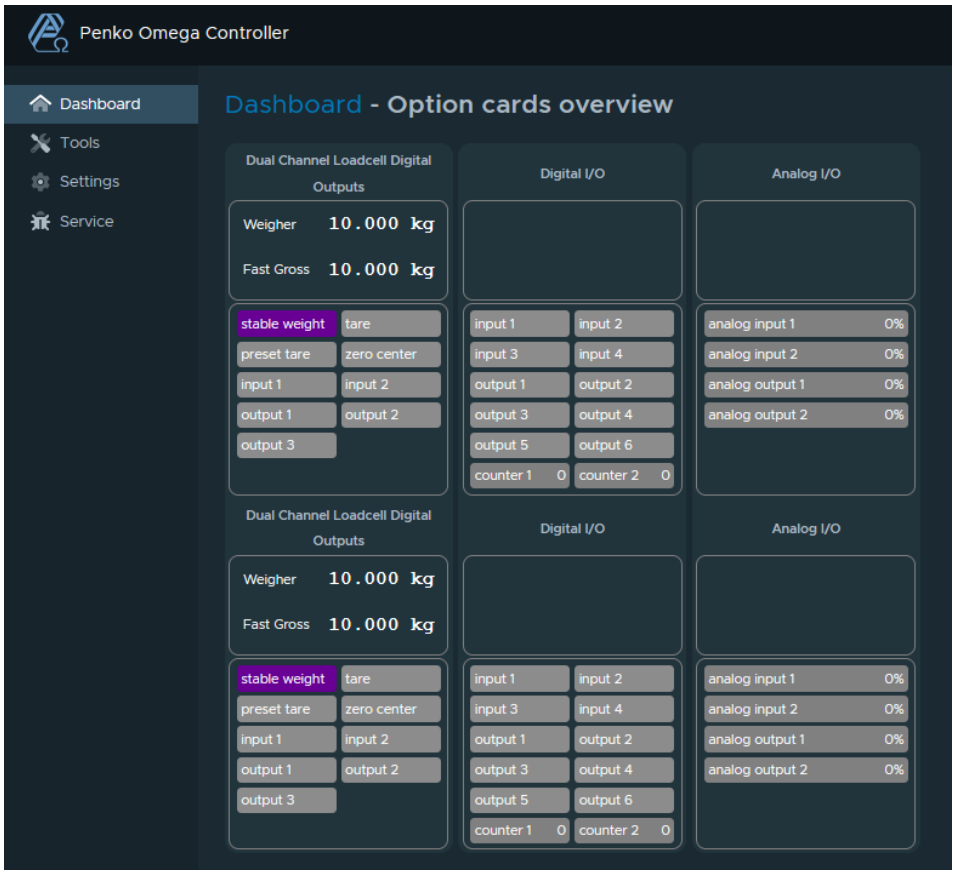


Using the  buttons it is possible to switch directly between weighers so we can switch to channel 2.

Check and adjust the “weigher settings” and “weigher filters” and repeat the zero and gain calibration for this channel to overwrite the old calibration points.



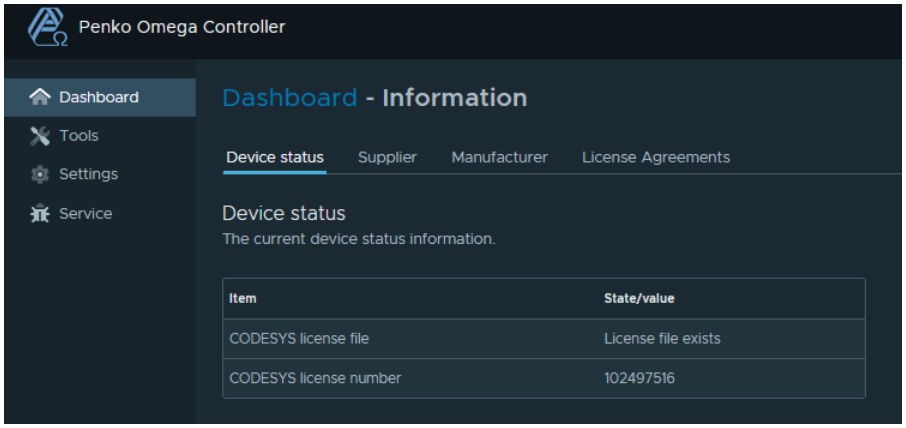
Return to “Dashboard->Option cards overview”, there the correct weight values are now shown:



NEXT STEPS

The Omega system is modular and programmable for any weighing and PLC function. More features for each module are available under “Settings->Advanced setup”. To use this please read “7600M1082-EN-R9 Manual Omega” which also describes all modules and their connections.

To check if the Omega system is shipped with a CodeSys license go to “Dashboard->information” and the “Device status” tab. The CPU module will have a silver CodeSys label with the same number on it.



To install the CodeSys programming environment on your PC, see “7600M1083-EN-R2 Manual CODESYS”.

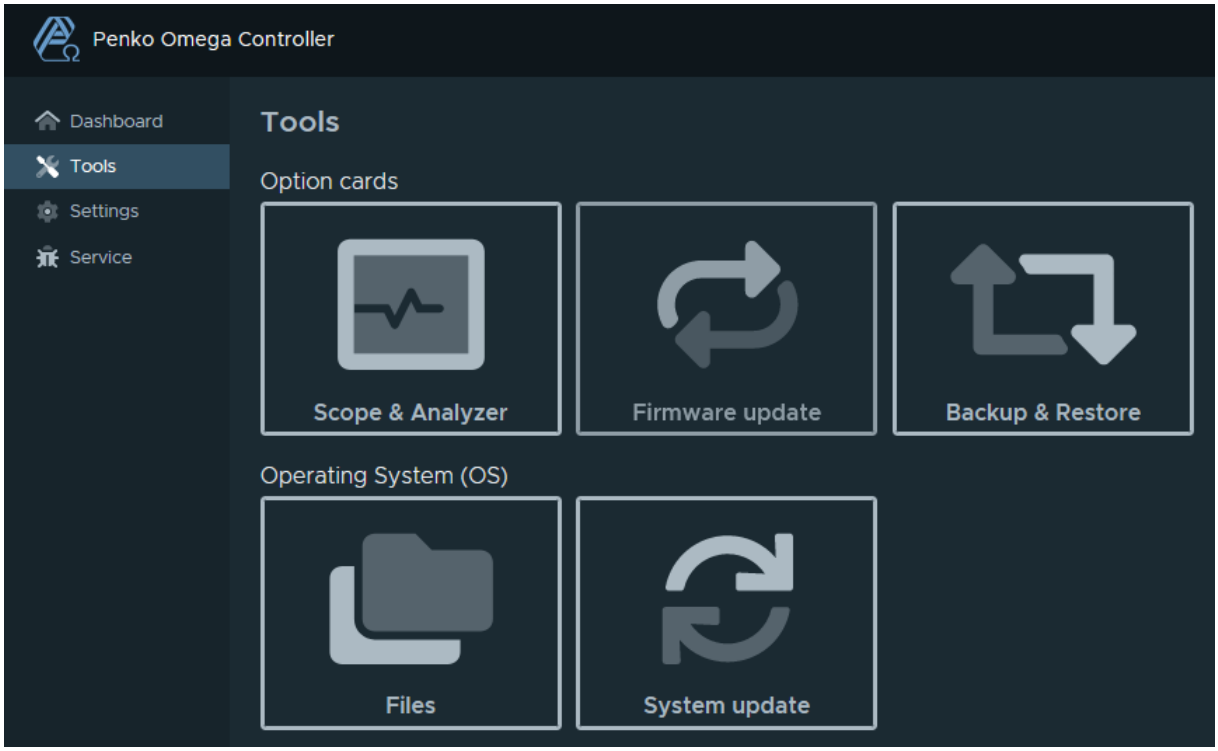
UPDATING THE OMEGA FIRMWARE

If needed the omega system firmware can be updated. For this you need several files:

- An .swu file for the main processor
- A .pip file for each type of module.

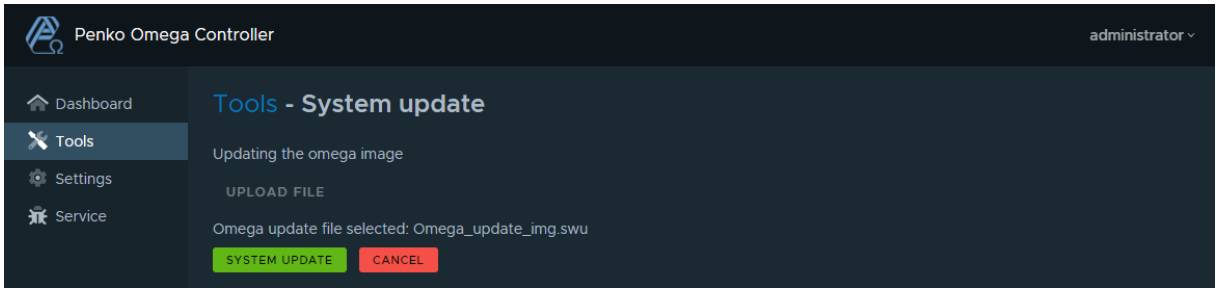
These files can be provided on request by our Professional Services department.

The CPU module can be updated from the ”tools”menu.

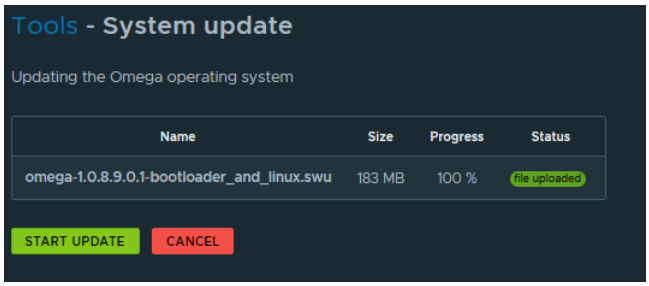


Then click “System update”.

The update omega menu can be used to update the omega CPU Module. To start the update process, press the UPLOAD FILE button. Only files with the extension “.swu” are supported, e.g. “omega_update_img.swu”.



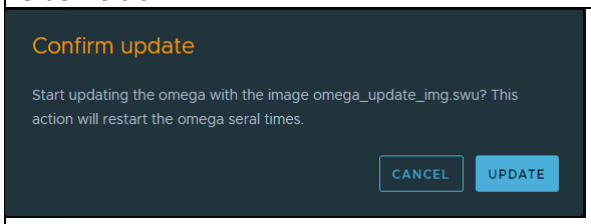
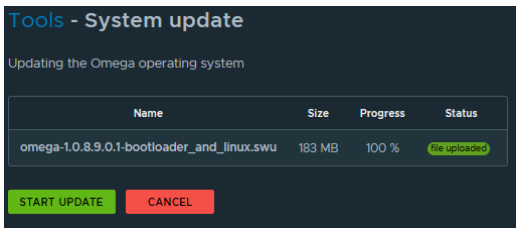
Uploading the file followed by “Validating file” can take up to a minute. When finished the uploaded file is shown.



To select another file press CANCEL.

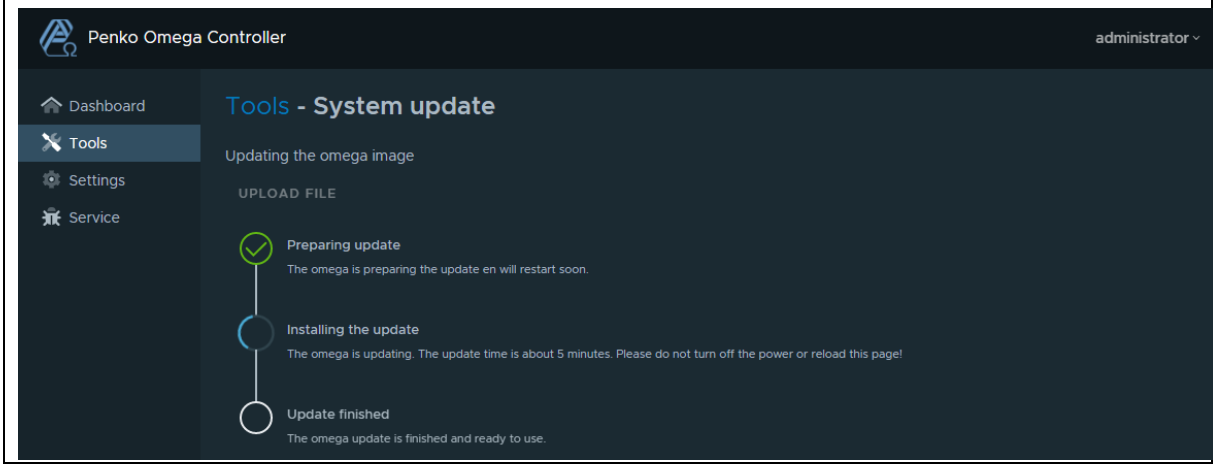
The update process looks different between versions 1.0.8.9.0.1 and earlier versions. Both are shown here.

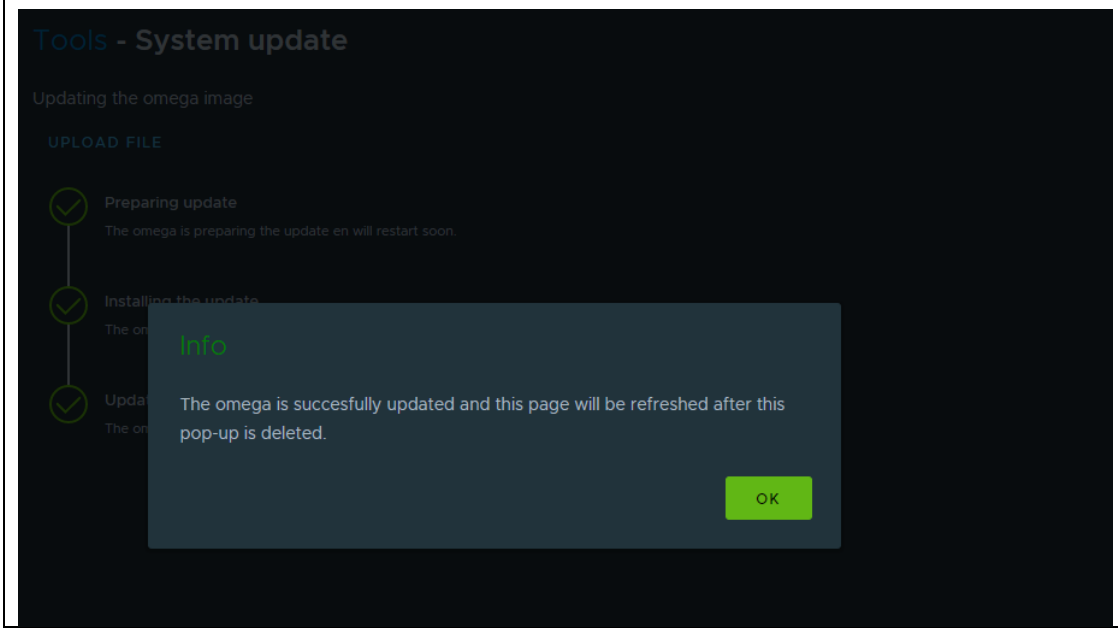
To start updating the CPU image press START UPDATE. A pop-up appears to confirm the update. When confirmed the update process starts and the progress is shown.

Older version	Version 1.0.8.9.0.1 and higher
	

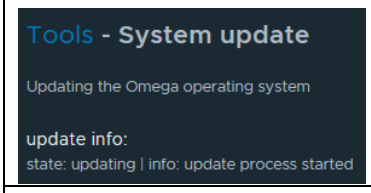
Updating the omega can take up to 5 minutes. Do not leave the page and wait till the update is finished.

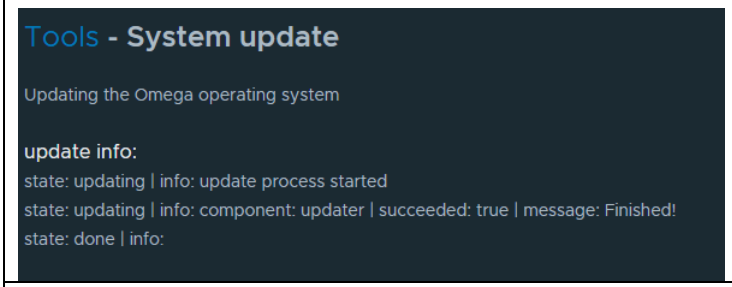
Older version

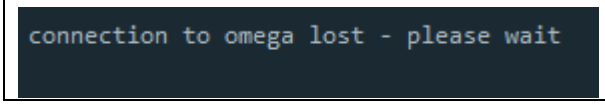




Version 1.0.8.9.0.1 and higher







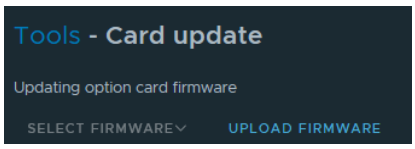
When finished a message appears to indicate that the update is finished. After confirming the page will be reloaded. If the update is not done after 6 minutes then the PC might have refused the connection. Disconnect the USB and reconnect and reload the page.

After a successful updated the browser returns to the system update page. Under Dashboard->My Omega the new version number is shown.

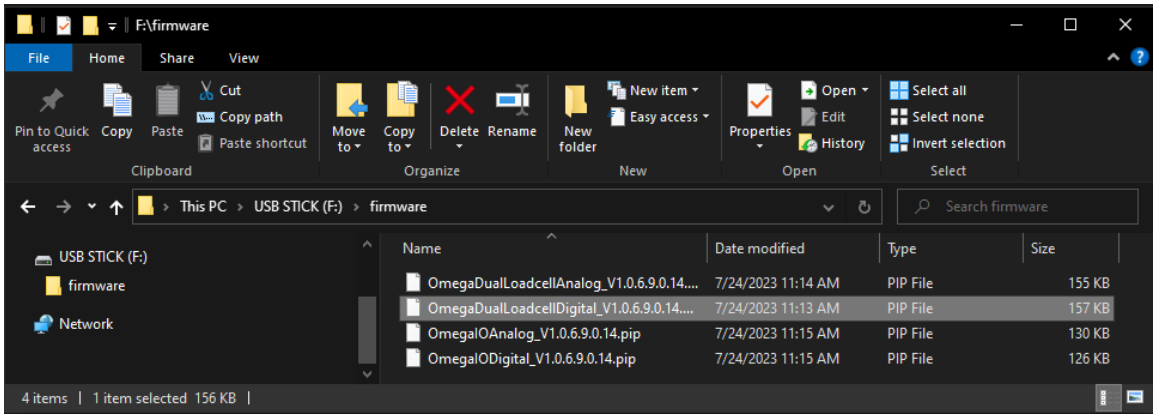
Now the cards can be updated.

Click on “Tools->Card update”.

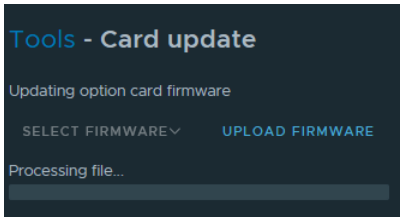
Then press “Upload firmware”



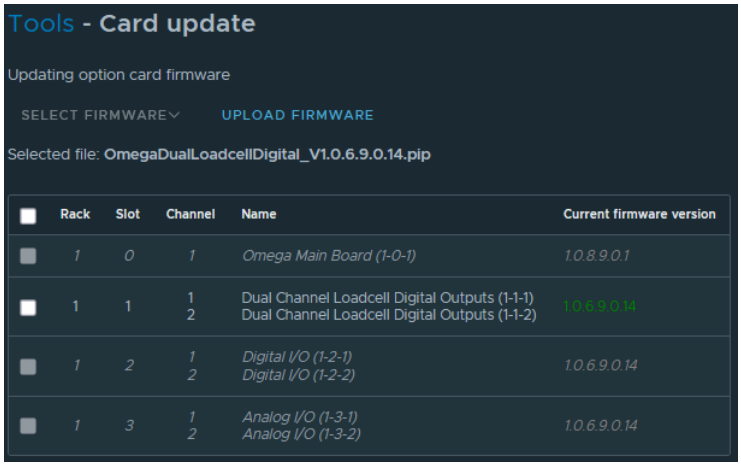
In this example we select the “OmegaDualLoadcellDigital_V1.0.6.9.0.14.pip” file on our PC.



Then press “UPLOAD FIRMWARE”.

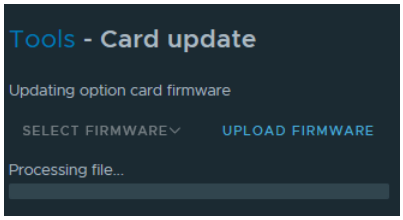


After processing, the green color shows that this card already has this version installed.

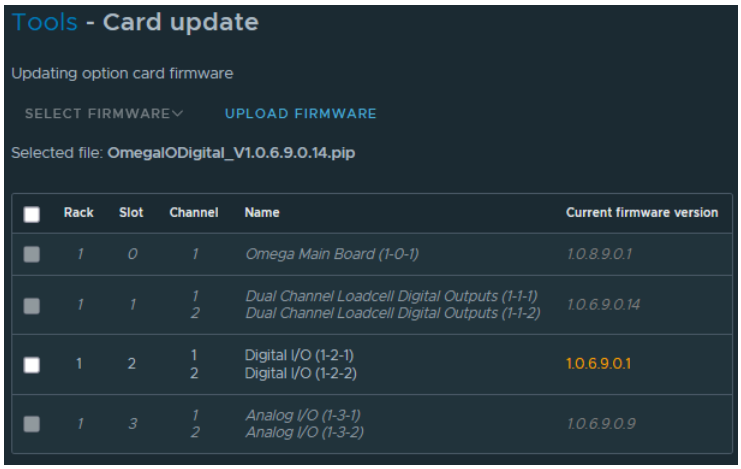


Press “UPLOAD FIRMWARE” again.

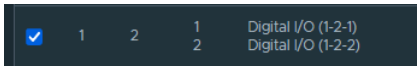
Now select the “OmegaIODigital_V1.0.6.9.0.14.pip” file on our PC.



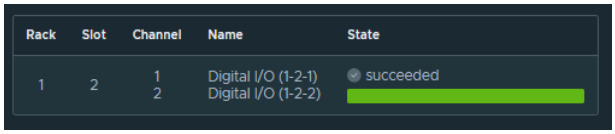
After processing, the orange version number shows that this card has an older version firmware and can be updated.



Select the Digital I/O module(s) and click “Update”. Checking the box in the column header will select all cards of this type



The file is uploaded from the CPU to the card and after the update “succeeded” is shown.



This process can be repeated for the other card types.

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 guaranties 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:

www.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

PENKO Distributor

A complete overview you will find on: www.penko.com/Find-A-Dealer

PENKO
an ETC Company

PENKO Engineering B.V. ▪ Schutterweg 35, NL 6718C Ede ▪ Tel +31 (0) 318525630 ▪ info@penko.com
Web ▪ www.penko.com ▪