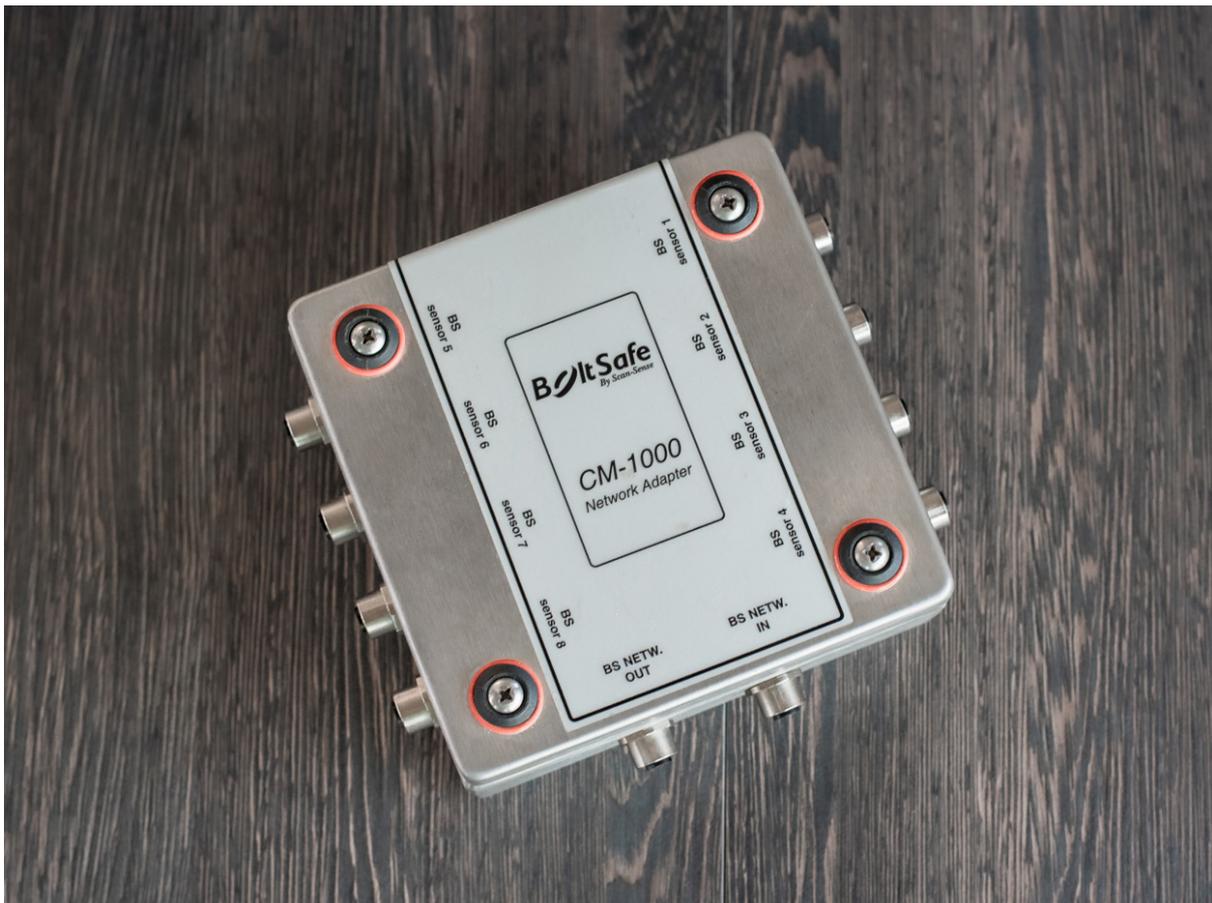


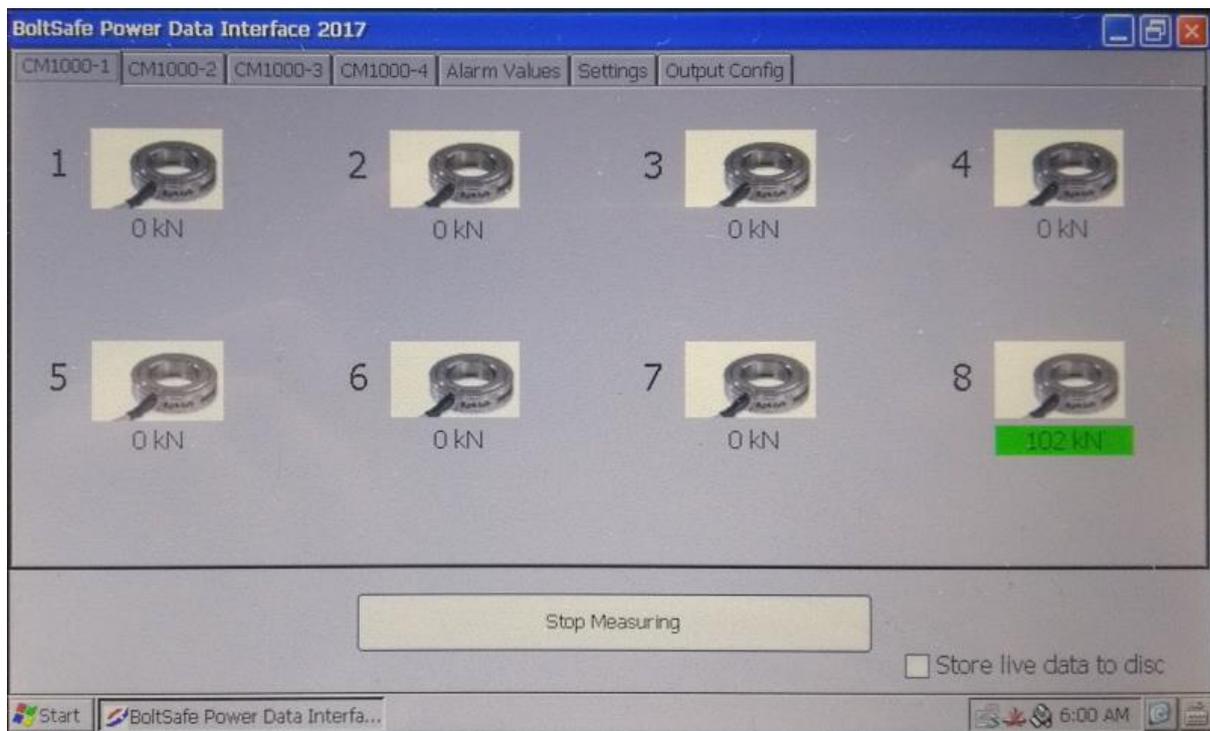
## Setting up the system

1. Connect the “BS NETW. IN” connector of the first CM-1000 box to the Power Data Interface – New Technology (PDI-NT box);
2. Connect the “BS NETW.IN” connector of the second, third, etc. CM-1000 box to the “BS NETW. OUT” connector of the previous CM-1000 box;
3. Make sure the last CM-1000 box in the network is an end box. An end box doesn't have a “BS NETW. OUT” connector;
4. Connect the BoltSafe CMS sensors to the CM-1000 boxes;
5. Plug in the PDI-NT box to the power supply.



## The PDI-NT software

After powering the PDI-NT, the software will start automatically. This can take a while. Depending on the number of CM-1000 boxes you have connected, you will get one to four tabs with sensor readings. Every CM-1000 box has its own tab. Below you find the image of a sensor where you see the current measuring value. Depending on the alarm value, this value is highlighted in red or green.



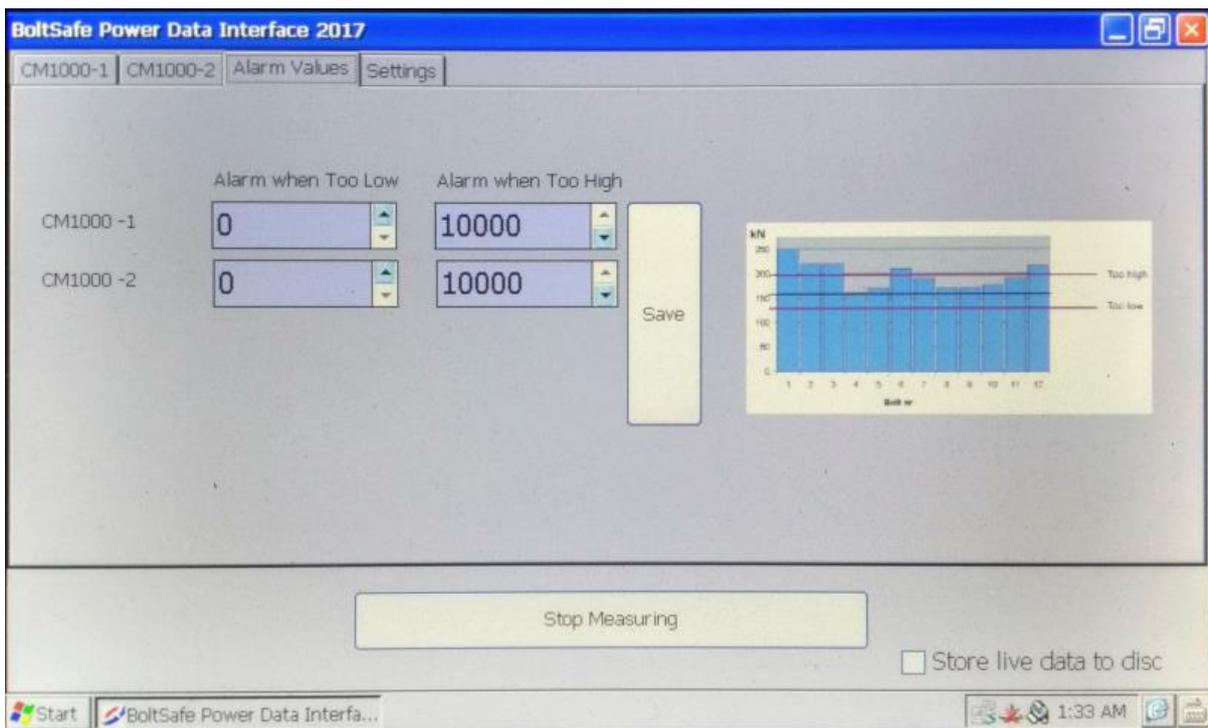
If you check the "Store live data to disc" box, the system starts to write a text file in the location set on the "Settings" tab. If this location does not exist, e.g. because there is no USB stick present, the box will automatically be unchecked.

**Note:** Values below 10% of the maximum sensor capacity are not a reliable measurement value



## Alarm values

On the “Alarm Values” tab, you can set the low and high alarm set points. You can change the alarm values with the up and down arrows or with the keypad. Press “Save” after you have made any changes.



When the measured value is below the value under “Alarm when Too Low” or above the value under “Alarm when Too High”, the measured value will be highlighted red on the CM-1000 tab. As an option, the PDI-NT can be provided with a relay output that is set when a sensor is in alarm mode. A light or sound signal can be set with this relay. You can set the behavior of the alarm on the “Settings” tab.



## Settings

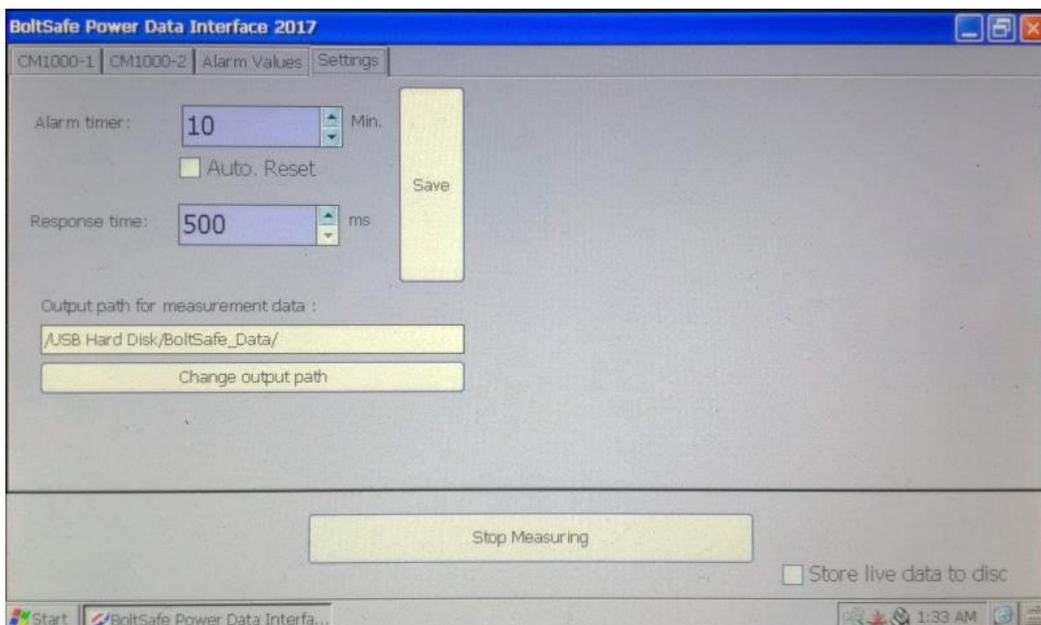
With the Alarm timer, it is possible to change how long the alarm remains on after the measuring value returns to a desirable value (between the low and high alarm set point). After the set time, the relay (when applicable) will switch off.

If the box “Auto. Reset” is checked, the measured value on the CM-1000 tab turns back to green after the set timer. If “Auto. Reset” is unchecked, the highlight remains red until the program is fully restarted. This way, you can see which sensors have been in alarm mode.

Response time indicates how fast the alarm reacts after a measuring value is outside the set points. We recommend a response time of at least 500ms. It can happen that the system misses one measurement and then shows 0 kN briefly. With a response timer you avoid unnecessary alarms.

If you want to store the measuring data to a text file, you need to choose the path to where you want to store it. This can be on the Hard Disk of the display, or on a USB Hard Disk that is connected to the display. By pressing “Change output path” you can choose the folder where you want to store the text file.

Press “Save” after you have made any changes.

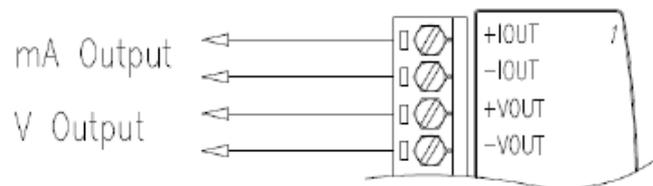


## Analog output (optional)

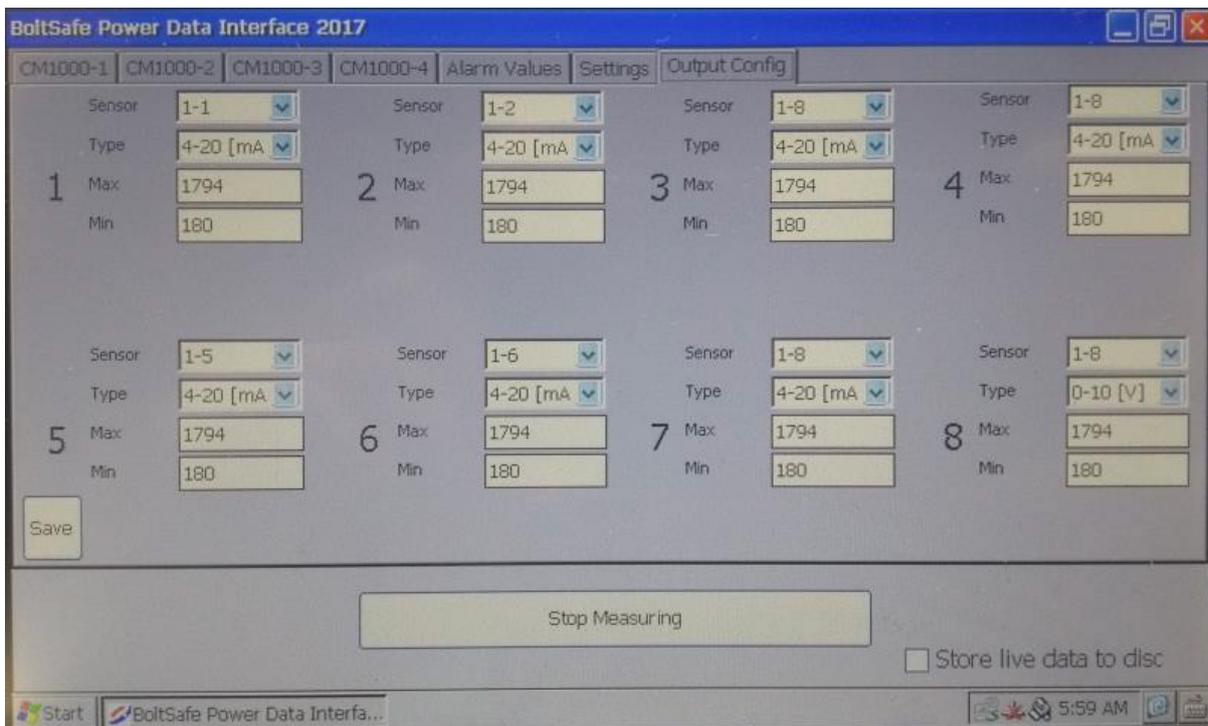
Inside the PDI-NT analog box, there are two I/O Modules of the type ADAM-4024. Depending on what type of output you want, you have to connect your data logger to I OUT or to V OUT. The table below indicates which output corresponds with which connection on the ADAM-4024.



	Left I/O module	Right I/O module
Output 1	OUT 0	
Output 2	OUT 1	
Output 3	OUT 2	
Output 4	OUT 3	
Output 5		OUT 0
Output 6		OUT 1
Output 7		OUT 2
Output 8		OUT 3



There are 8 analog outputs in the PDI-NT analog box. Select the “Output Config” tab to set the outputs. For every output, there are four options you can set.



1. Select the sensor. The first number represents the CM-1000 box number. The second number is the sensor on that box. For example, 2-5 means sensor 5 on CM-1000 box number 2;
2. Select the output type. You can choose between 0-10V, 0-20mA and 4-20mA;
3. Set the Maximum sensor value. This value will correspond with the maximum of the output, 10V or 20 mA;
4. Set the Minimum sensor value. This value will correspond with the minimum of the output, 0V, 0mA or 4mA.

You need to save any changes by pressing the “Save” button. After saving, the program needs to be closed and restarted.



## Calculation examples

$$\text{Output value} = \left( \frac{\text{Sensor value} - \text{Sensor min.}}{\text{Sensor max.} - \text{Sensor min.}} \right) \times (\text{Output max.} - \text{Output min.}) + \text{Output min.}$$

$$\text{Output value} = \left( \frac{550 \text{ kN} - 180 \text{ kN}}{1794 \text{ kN} - 180 \text{ kN}} \right) \times (20 \text{ mA} - 4 \text{ mA}) + 4 \text{ mA} = 7,668 \text{ mA}$$

$$\text{Output value} = \left( \frac{550 \text{ kN} - 180 \text{ kN}}{1794 \text{ kN} - 180 \text{ kN}} \right) \times (10 \text{ V} - 0 \text{ V}) + 0 \text{ V} = 2,292 \text{ V}$$

## Set up your data logger

Our sensors produce rounded values. Depending of the size of the sensor, the values will be indicated in steps from 2 kN up to 20 kN. We recommend setting up your data logger to round with the same steps as the output of the sensor. See the table below for the standard steps per sensor size.

Metric	Imperial	Steps
M20		2 kN
M22	7/8"	2 kN
M24	1"	2 kN
M27	1-1/8"	3 kN
M30		5 kN
M33	1-1/4"	5 kN
M36	1-3/8"	5 kN
M39	1-1/2"	5 kN
M42	1-5/8"	5 kN

Metric	Imperial	Steps
M45	1-3/4"	10 kN
M48	1-7/8"	10 kN
M52	2"	10 kN
M56	2-1/4"	15 kN
	2-1/2"	15 kN
M60		20 kN
M64		20 kN
M72	2-3/4"	20 kN

