ENGINEERING
TOMORROW

Operating Guide

NovoCon® Configuration Tool



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1. Introduction

The Danfoss NovoCon® Configuration Tool can be used for providing easy connection, commissioning and control of the NovoCon® actuators through a field bus connection. To communicate with the NovoCon® actuators on the network, a USB to RS485 cable and a PC with the Danfoss NovoCon® Configuration Tool software installed, are needed.



Figure 1

This document describes the wiring, installation procedure and how to use the NovoCon® Configuration Tool cable and software.

2. Getting started

Before getting started, please check if you have all listed components from the table below.

Equipment
NovoCon® actuator
Windows 10 computer
NovoCon® Configuration Tool cable
NovoCon® Configuration tool software

The latest version of the NovoCon® Configuration tool software can be downloaded from www.novocon.com

2.1. Electrical connection of the NovoCon® Configuration Tool

Check if the NovoCon® actuators are already powered by the network, according to specifications.

2.2. NovoCon® S connection to the PC

If you're using USB Configuration Tool, you should connect actuator as bellow (Figure 2).



Figure 2

NOTE: If you are using the Configuration Tool you need to provide the power from the network of NovoCon®.

In case the actuators are not powered from the network you can connect a 24V AC or DC power supply with a 6,5x2mm adaptor (+ on the inner connector) to the power connector mounted on the NovoCon® Configuration Tool cable.

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2.3. NovoCon® M, L or XL connection to the PC

If you're using new Configuration Tool, you should connect the NovoCon® M, L or XL, the figure shows a NovoCon® M actuator (Figure 3).



Figure 3

NOTE: If you are using the Configuration Tool you need to provide the power from the network of NovoCon®.

In case the actuators are not powered from the network you can connect a 24V AC or DC power supply with a 6,5x2mm adaptor (+ on the inner connector) to the power connector mounted on the NovoCon® Configuration Tool cable.

3. Installation

3.1. Windows driver installation

Step 1.

Plug-in the USB cable and you will receive text box message (Figure 4).



Figure 4

Step 2.

Click on the text box message and a new pop-up window will appear (Figure 5).

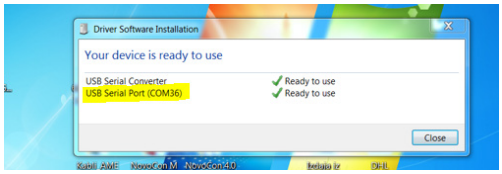


Figure 5

Please remember the COM port number, because it's going to be used in subsequent steps. (on Figure 5 the port number is COM36). This is our communication port which is used for communication with NovoCon®. Click 'Close'.

Step 3.

If the USB driver is installed properly you can also find the COM port number under Device manager (Control Panel → System and Security → Device manager).

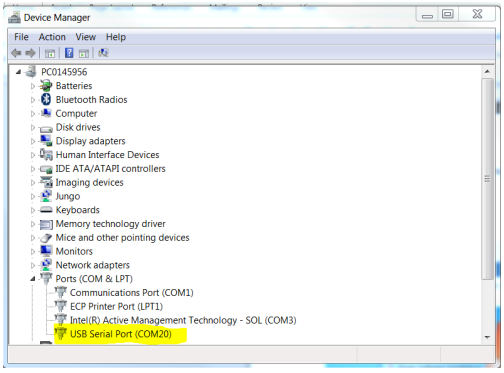


Figure 6

3.2. Increasing communication stability

For better and more stable communication (especially using the Modbus protocol), complete the following steps:

1. Go to Device Manager in your Windows taskbar searcher.

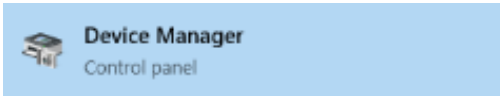


Figure 7

2. On the Device Manager window, go to the tab »Ports (COM & LPT) « and right click on the port you have connected your commissioning dongle (USB).

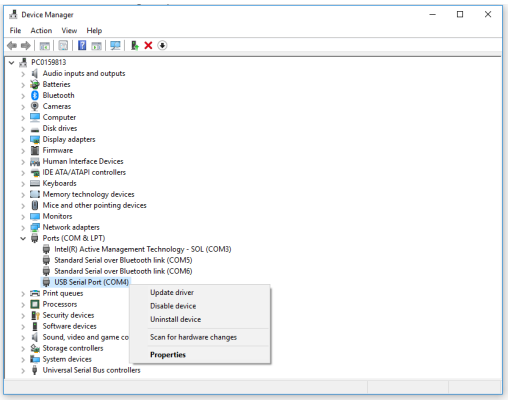


Figure 8

3. In the properties window of your COM port, click »port settings« and then »Advanced«.

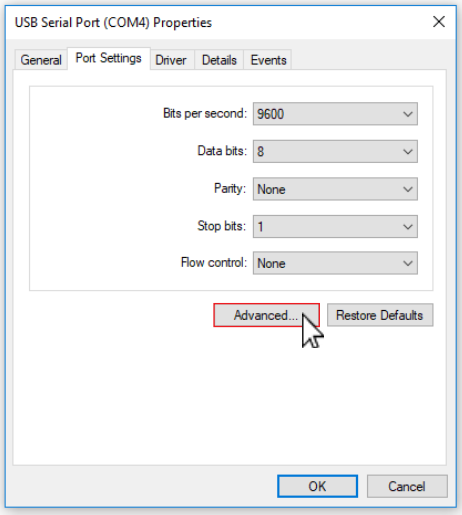


Figure 9

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3.2. Increasing communication stability *(continuous)*

4. In the »Advance Settings for COMX« change »Latency Timer (msec):« parameter to the lowest possible. In the example below, this is 1.

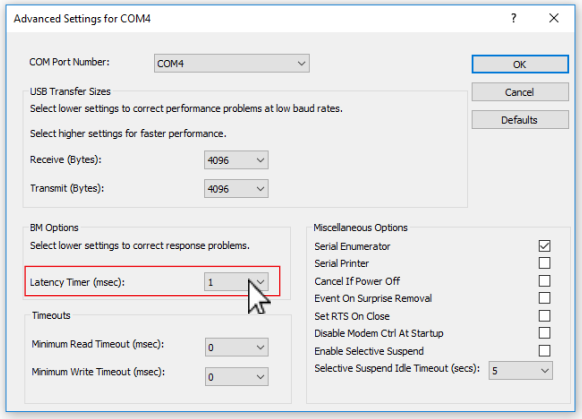


Figure 10

NOTE: This must be done for each Configuration Tool USB cable that you connect to the PC. If you connect a different Configuration Tool cable to the PC, this configuration must be performed again.

3.3. Setup of Modbus/BACnet communication

Either Modbus or BACnet communication protocol must be defined as the communication protocol for all NovoCon® devices on the network. This is set done manually by turning the 10th DIP switch on each NovoCon® S (or the 8th.DIP switch for NovoCon® M) to ON (Modbus) or OFF (BACnet). If Modbus is selected, the Modbus slave ID for each NovoCon® must then be set manually via the DIP switches. For more information, please refer to NovoCon® data sheets. All devices on the network may be powered up now.

3.4. Setup of PC Software

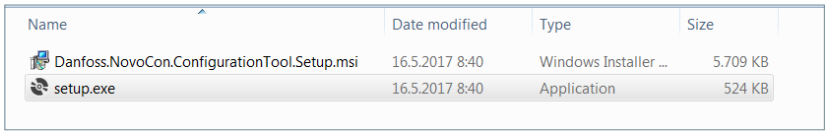


Figure 11

Double-click on setup.exe to start the installation. The installer will guide you through the installation of the NovoCon® Configuration Tool. After installation, the Danfoss NovoCon Configuration Tool icon should appear on your desktop.

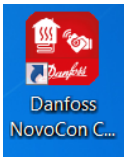


Figure 12

4. Modbus user interface

After double clicking on NovoCon® Configuration Tool icon, the following window will appear:

4.1 Connection settings

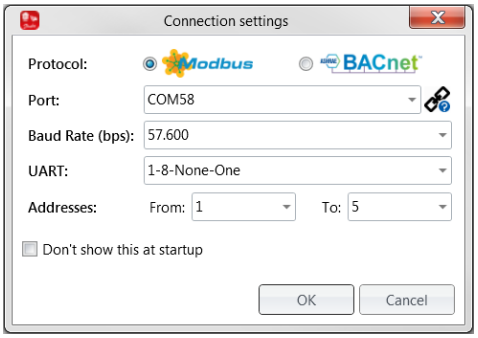


Figure 13

Step 1.
Protocol: From the radio buttons choose Modbus communication protocol.

Step 2.
Port: From the dropdown menu choose the correct COM port. The correct COM port can be checked by clicking on symbol and Device manager will open.

Step 3.
Baud rate: Set to network Baud rate.

Step 4.
UART: Leave unchanged/default.

Step 5.
Addresses: Set from 1 to the last device address on the network (address 0 is the PC)

Click OK to save the changes. The program should start searching for devices on the network. Every device that is found within the expected Modbus address range should then appear in the left column (Figure 14).

There are some key modules/elements in the NovoCon® configuration software tool:

1. **Configuration tab**
2. **Operation tab**
3. **Browser tab**
4. **Energy tab**
5. **Update software tab (Firmware Upgrade)**
6. **Import CSV Configuration**

NOTE: DISABLE sleep or low-power mode while PC is working/communicating with devices. Otherwise uploading settings or new software installation may interrupt the process!

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4.2 Configuration tab

Choose one of the NovoCons® from the list. The **CONFIGURATION tab** will be displayed. The most frequently used registers can now be set. This tab is used for fast configuration of the valve (Figure 14).

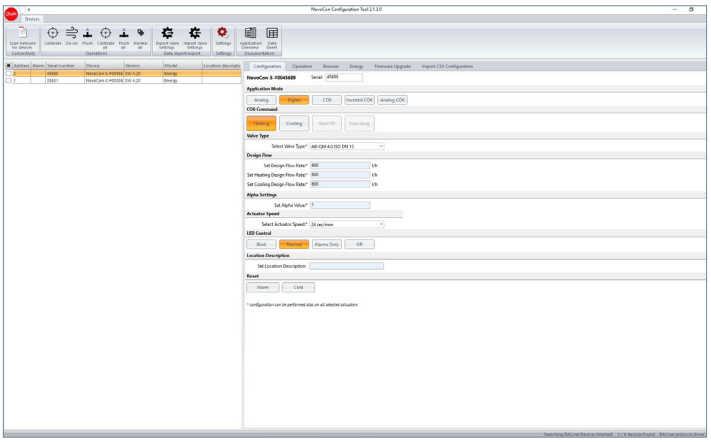


Figure 14

4.3 Operation tab

In the **OPERATION and ENERGY tab** the Application Mode, Energy Management Applications, the actual flow rate, the temperature inside actuator, the temperatures T1 and T2, as well as alarms can be set or read. From this tab it is possible to perform quick actions such as putting the actuator in normal, calibrate, flush and de-air modes. (Figure 15a and Figure 15b).

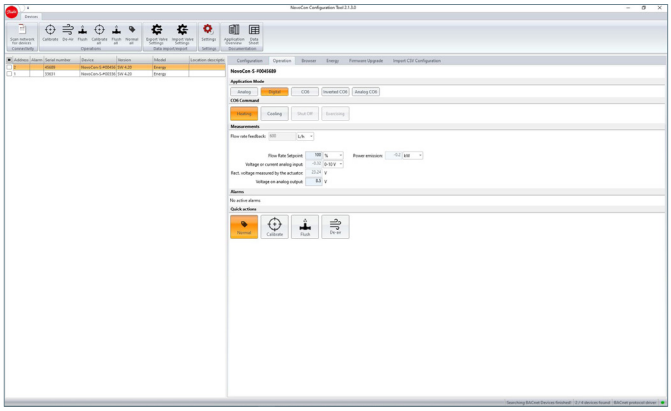


Figure 15a

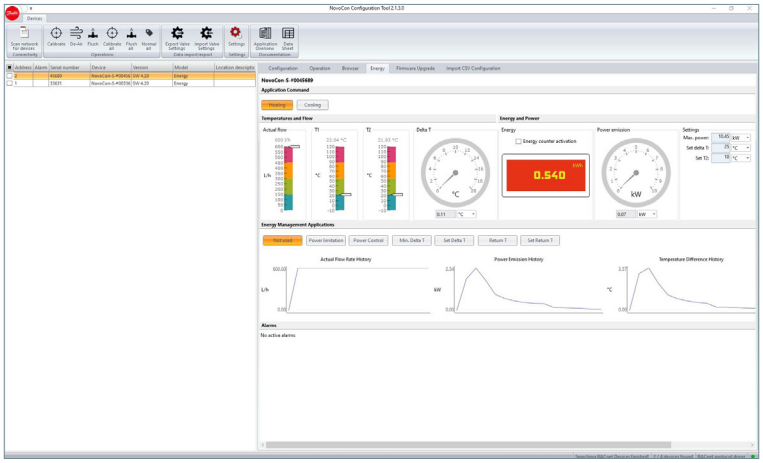


Figure 15b

4.4 Browser tab

In the **BROWSER tab** there is a list of all available Modbus registers. The Browser tab allows the user to configure more advanced settings. Predefined values for registers, that are not grayscale, can be set (Figure 16).

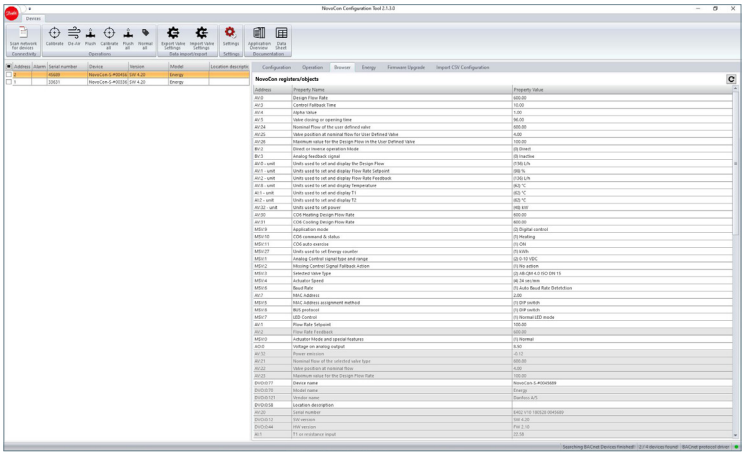


Figure 16

4.5 Firmware Upgrade tab

In the **FIRMWARE UPGRADE tab**, the selected NovoCons® may be updated to the latest compatible firmware, or indeed another compatible earlier firmware version. Selected NovoCons® may be updated individually or multiple at the same time by a broadcasting. This is done by checking the Broadcast checkbox (Figure 17).

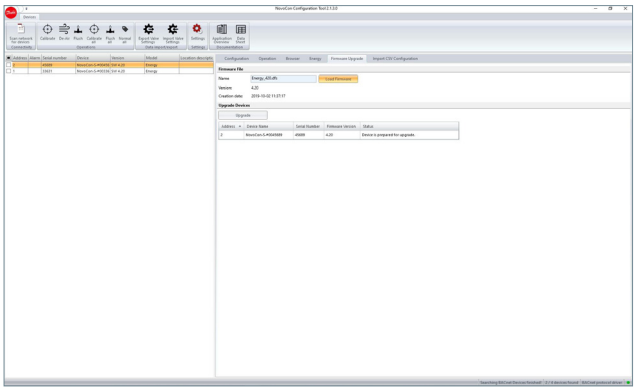


Figure 17

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4.6 Import CSV Configuration tab

In the **IMPORT CSV CONFIGURATION tab**, the selected NovoCons® may be linked with the user's CSV pre-settings. After linking and importing the CSV file on for selected NovoCons® the Import report may be opened or saved. Here it is possible to registers what were successfully written, as well as errors, warnings etc. (Figure 18).

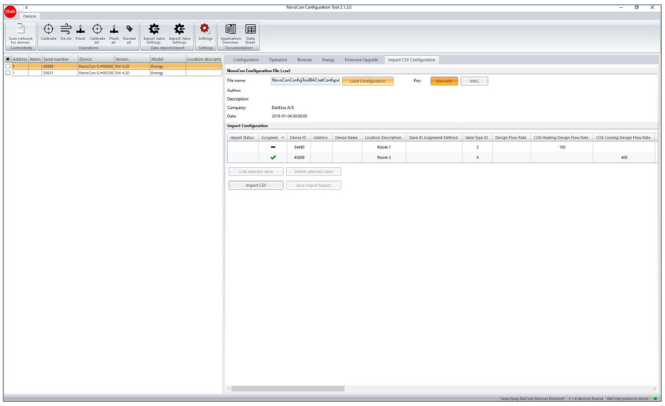


Figure 18

Excel template files for import of settings, are stored here: C:\Program Files (x86)\Danfoss\NovoCon Config Tool\CSVImport

File name: NovoConConfigToolBACnetConfiguration_**S4.04 and below**
- supports NovoCon® S up to SW ver. 4.04
- Valve table AB-QM ISO DN10LF – DN32 and ANSI DN½" LF - DN1¼" HF

File name: NovoConConfigToolBACnetConfiguration_**S**
- support NovoCon® S from SW ver. 4.10
- Valve table AB-QM 4.0 ISO DN 15LF – DN 32HF, AB-QM ISO DN 10LF – DN 32 and ANSI DN ½" LF - DN 1¼" HF

File name: NovoConConfigToolBACnetConfiguration_**M**
- support **NovoCon® M**
- Valve table NovoCon AB-QM ISO DN40 – DN100HF

File name: NovoConConfigToolBACnetConfiguration_**L_XL**
- support **NovoCon® L/XL**
- Valve table NovoCon AB-QM ISO DN125 – DN250HF

Save the settings in CSV format UTF-8.

Note: *Excel template files for importing settings on NovoCons are the same for Modbus and BACnet communication protocols.*

4.6 Import CSV Configuration tab *(continuous)*

The following steps will show how to transfer your .csv file to selected NovoCons®:

I. Select the NovoCon(s)® in which you want to import the CSV file (figure 19).

	Address	Alarm	Serial number	Device	Version	Location descript
☑	1		E310 V10 170510	NovoCon-S-#0028	4.00	
☐	2		E310 V10 170821	NovoCon-S-#0034	4.00	

Figure 19

II. Select the NovoCon® that you want to import the CSV file (figure 20):

1. Load the CSV file,
2. Select the actuator configuration,
3. Link the configuration to the selected NovoCon®,
4. Import the CSV file to a NovoCon®.

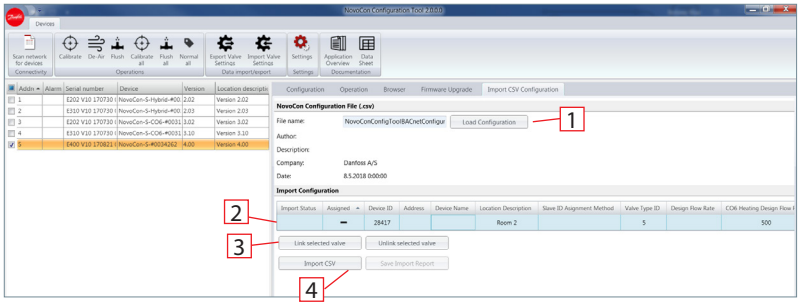


Figure 20

III. After importing the CSV file on to the actuator, the Import Report may be checked. This will show the correct\failure\warning imported data by clicking the exclamation mark in the Import Status window (figure 21). The report may be saved by clicking Save Import Report.

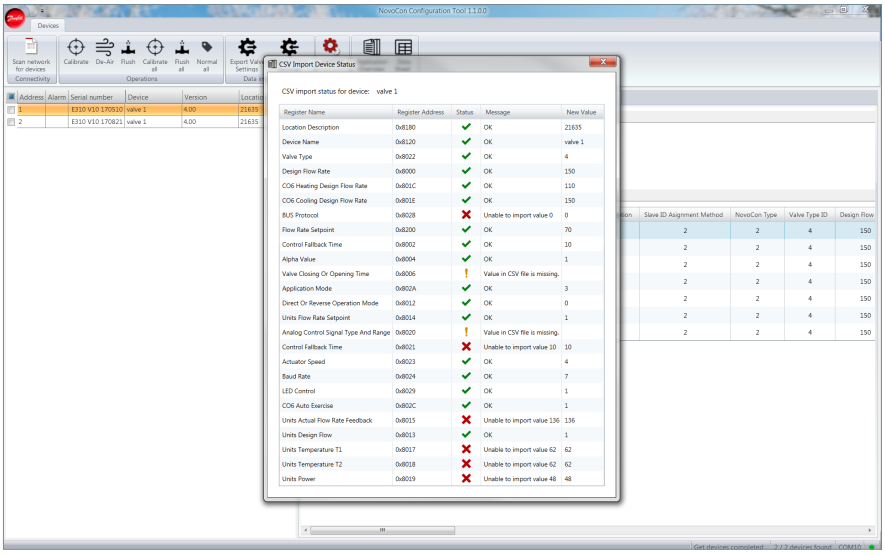


Figure 21

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5. BACnet user interface

After double click on the NovoCon Configuration Tool icon, following window will appear:

5.1. Connection settings

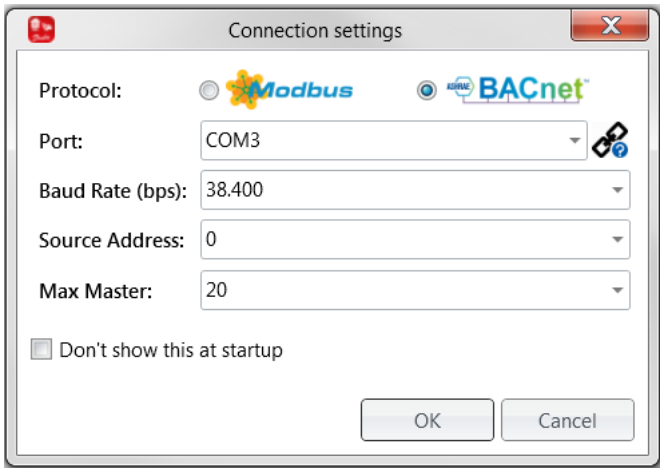


Figure 22

Step 1.
Protocol: From the radio buttons choose BACnet communication protocol.

Step 2.
Port: From the dropdown menu choose the COM port. The COM port number can be checked it by clicking on symbol and Device manager will open.

Step 3.
Baud rate: set to the network Baud rate.

Step 4.
Addresses: set from 1 to the last device address on the network (address 0 is the PC)

Click OK to save the changes. The program should start searching for devices on the network. Every device that is found within the stated BACnet address range should then appear in the left column (Figure 23).

There are some key modules/elements in the NovoCon® configuration software tool:

1. **Configuration tab**
2. **Operation tab**
3. **Browser tab**
4. **Energy tab**
5. **Update software tab (Firmware Upgrade)**
6. **Import CSV Configuration**

NOTE: DISABLE sleep or low-power mode while the PC is working/communicating with devices. Otherwise uploading settings or new software installations may be interrupted!

5.2. Configuration tab

Choose one of the NovoCons® from the list. The **CONFIGURATION tab** will be displayed. The most frequently used objects can now be set. This tab is used for fast configuration of the valve (Figure 23).

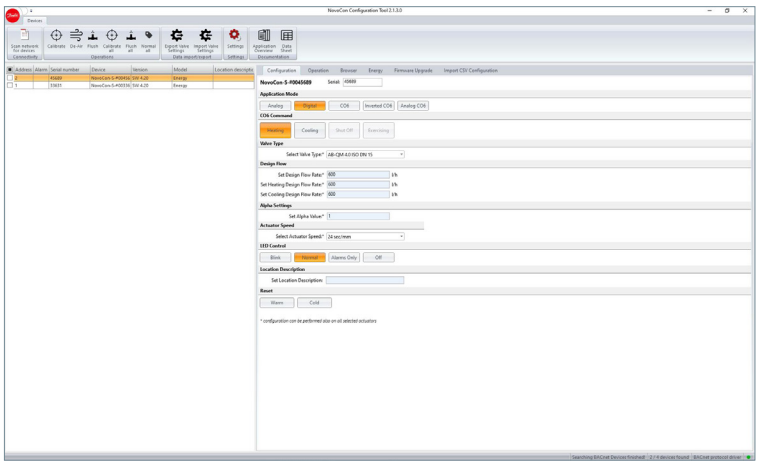


Figure 23

5.3. Operation tab

In the **OPERATION and ENERGY tab** the Application Mode, Energy Management Applications, the actual flow rate, the temperature inside actuator, the temperatures T1 and T2, as well as alarms can be set or read. From this tab it is possible to perform quick actions such as putting the actuator in normal, calibrate, flush and de-air modes. (Figure 24a and Figure 24b).

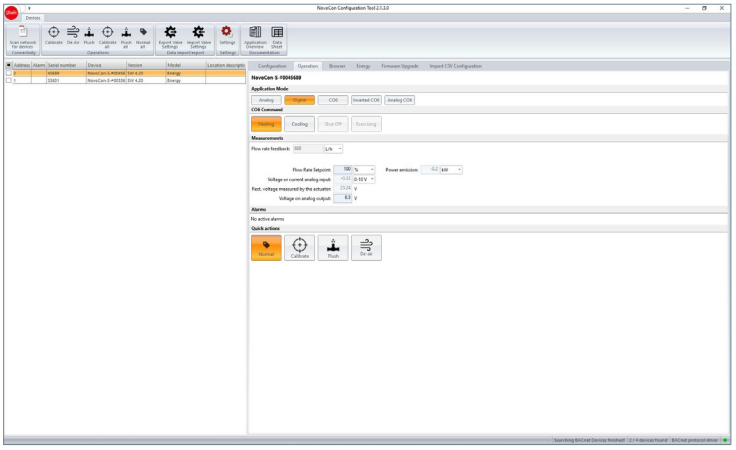


Figure 24a

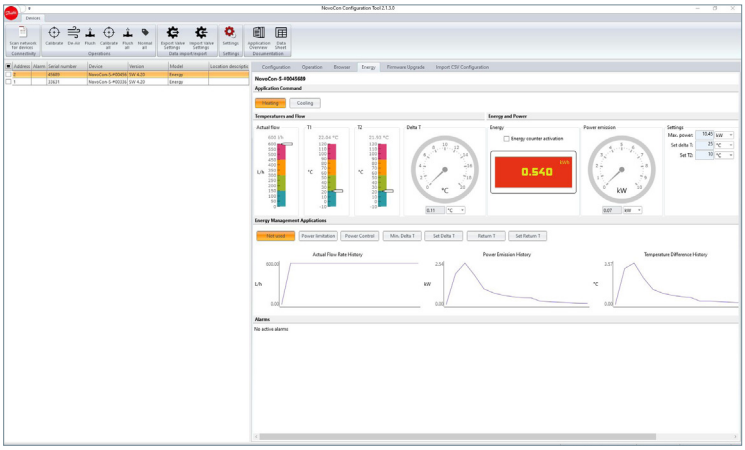


Figure 24b

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5.4. Browser tab

In the **BROWSER tab** there is a list of all available BACnet objects. The Browser tab allows the user to configure more advanced settings. Predefined values for objects, that are not grayscale, can be set (Figure 25).

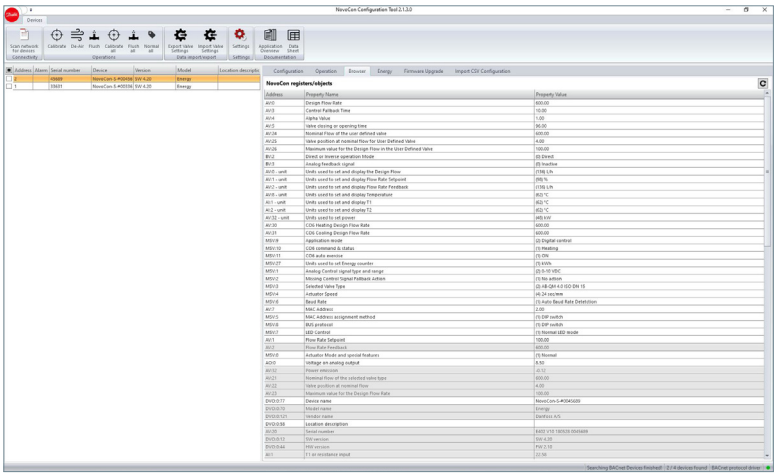


Figure 25

When moving with the mouse cursor over the objects list, little help pop-ups appear. In the bracket you get all of the information for the chosen object such as BACnet address (for example MSV:9), description and description of usage. This is the same information shown in the NovoCon® datasheet.

5.5. Firmware Upgrade tab

In the **FIRMWARE UPGRADE tab**, the selected NovoCons® may be updated to the latest compatible firmware, or indeed another compatible earlier firmware version. Selected NovoCons® will be updated one by one (Figure 25).

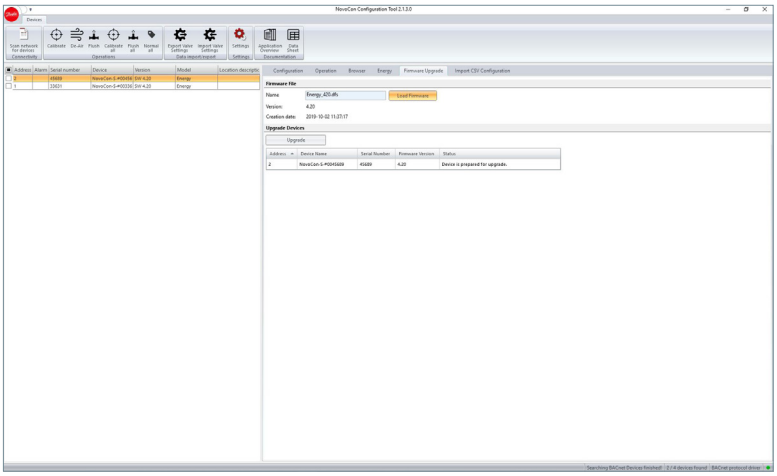


Figure 25

5.6. Import CSV Configuration tab

In the **IMPORT CSV CONFIGURATION tab**, the selected NovoCons® may be linked with the user's CSV pre-settings. After linking and importing the CSV file for selected NovoCons® the Import report may be opened or saved. Here it is possible to registers that were successfully written, as well as errors, warnings etc. (Figure 26).

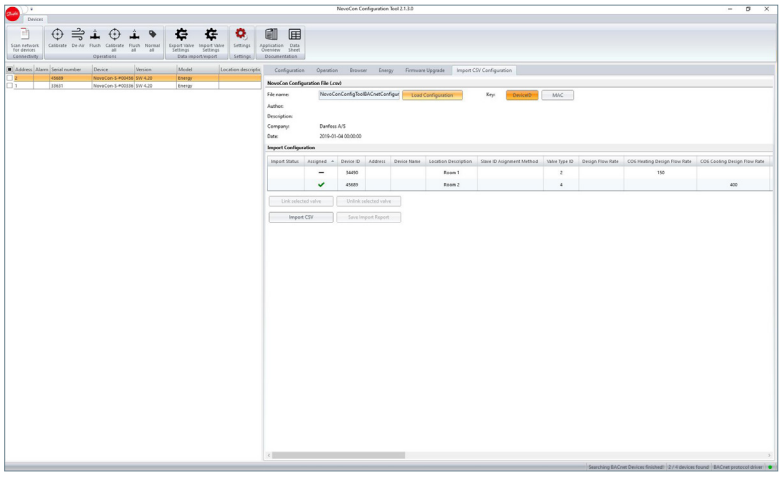


Figure 26

When moving with the mouse cursor over the objects list, little help pop-ups appear. In the bracket you get all of the information for the chosen object such as BACnet address (for example MSV:9), description and description of usage. This is the same information shown in the NovoCon ® datasheet.

File name: NovoConConfigToolBACnetConfiguration_**S4.04 and below**
- supports NovoCon® S up to SW ver. 4.04
- Valve table AB-QM ISO DN10LF – DN32 and ANSI DN½" LF - DN1¼" HF

File name: NovoConConfigToolBACnetConfiguration_**S**
- support **NovoCon® S from SW ver. 4.10**
- Valve table AB-QM 4.0 ISO DN 15LF – DN 32HF, AB-QM ISO DN 10LF – DN 32 and ANSI DN ½" LF - DN 1¼" HF

File name: NovoConConfigToolBACnetConfiguration_**M**
- support **NovoCon® M**
- Valve table NovoCon AB-QM ISO DN40 – DN100HF

File name: NovoConConfigToolBACnetConfiguration_**L_XL**
- support **NovoCon® L/XL**
- Valve table NovoCon AB-QM ISO DN125 – DN250HF

Save the settings in CSV format UTF-8.

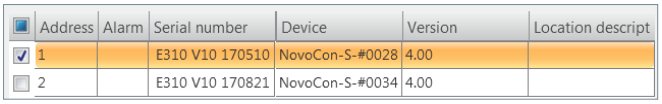
Note: *Excel template files for importing settings on NovoCons are the same for Modbus and BACnet communication protocols.*

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5.6. Import CSV Configuration tab *(continuous)*

Next few steps will show how to transfer your .csv file on selected NovoCon®:

I. Select NovoCon(s)® to which you want import CSV file (figure 27).



	Address	Alarm	Serial number	Device	Version	Location descript
☑	1		E310 V10 170510	NovoCon-S-#0028	4.00	
☐	2		E310 V10 170821	NovoCon-S-#0034	4.00	

Figure 27

II. Select NovoCon® that you want import CSV file (figure 28):

1. Load the CSV file,
2. Select actuator configuration,
3. Link configuration to selected NovoCon®,
4. Import CSV file to a NovoCon®.

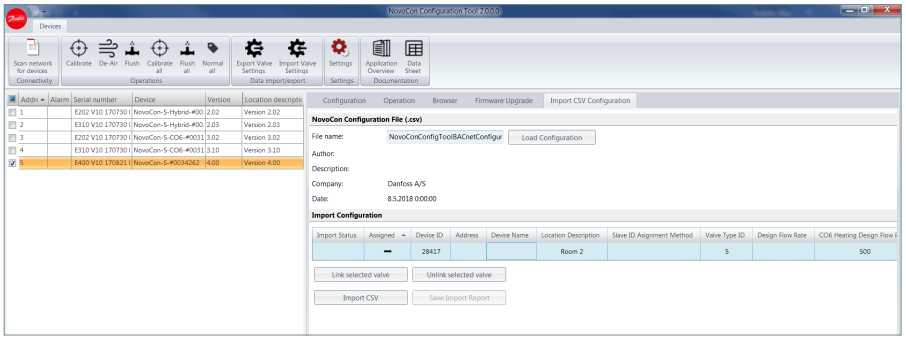


Figure 28

III. After importing the CSV file to the actuator, the Import Report may be checked. This will show the correct\failure\warning imported data by clicking the exclamation mark in the Import Status window (figure 29). The report may be saved by clicking Save Import Report.

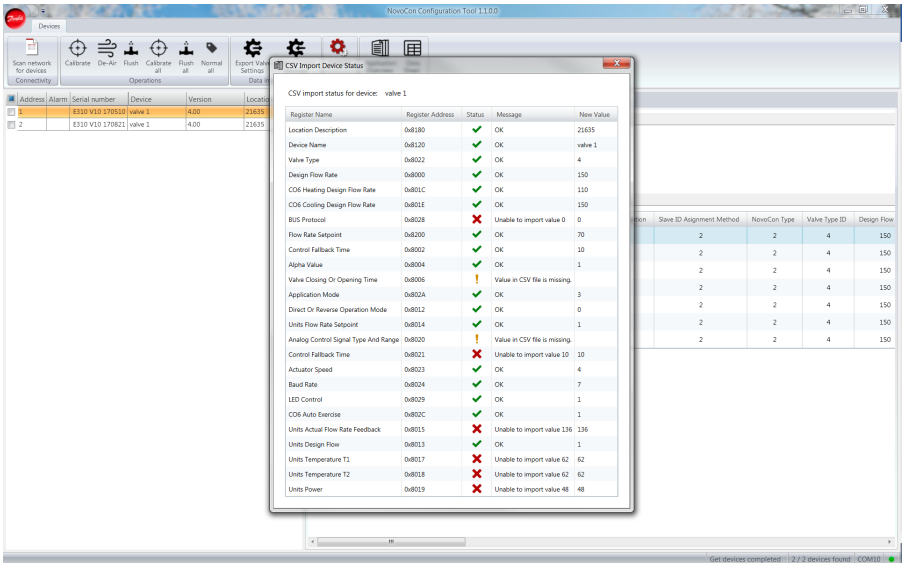


Figure 29

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