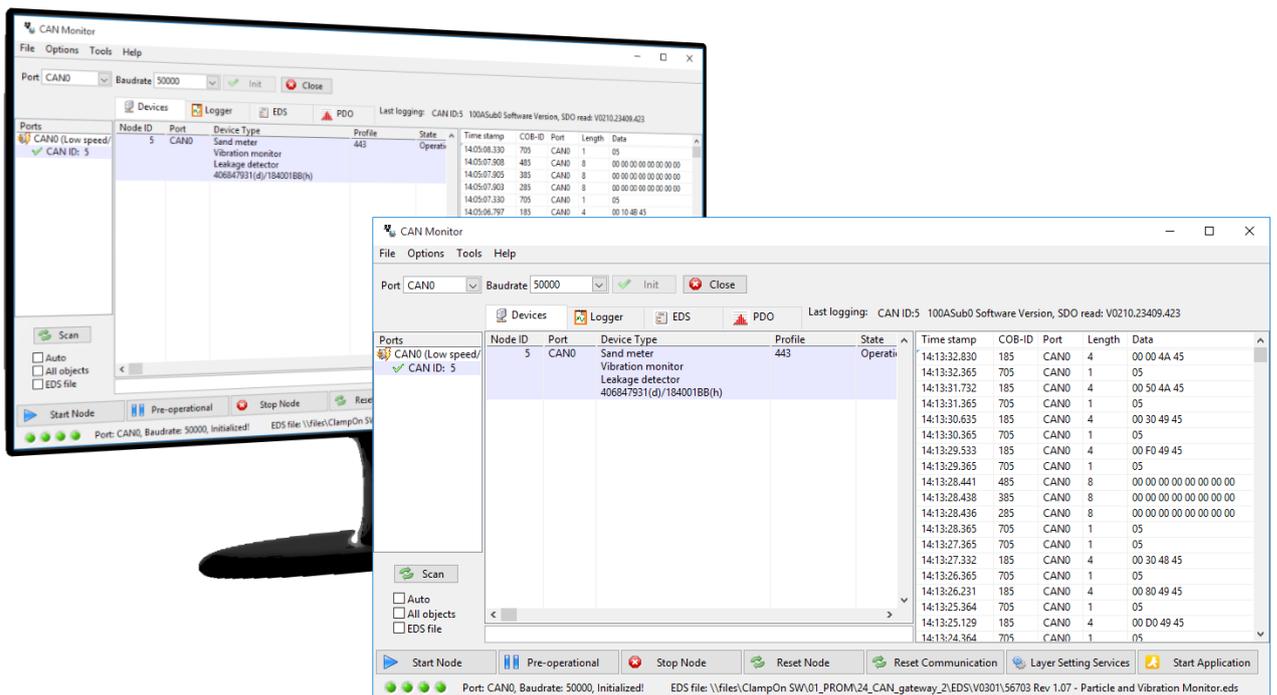


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GETTING STARTED

ClampOn CAN Monitor adds the functionality you need to turn your National Instruments CAN interface into a powerful test and monitoring solution.

To get started, install your CAN interface according to its user manual, and connect your slave device(s). A typical controller area network is shown in Figure 1 below:

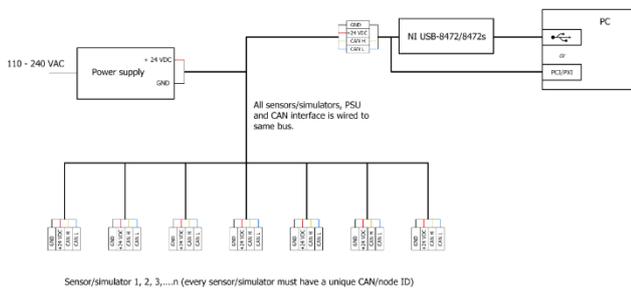


Figure 1: Hardware set-up

Installation

ClampOn CAN Monitor comes as an installation set for Windows. To install it simply double-click the setup.exe file and follow the installation guide. Once the installation is completed you can start the program from the Start menu. You can find it there under **All Programs\ClampOn\ClampOn CAN Monitor 2.x**

The first thing you will see when you launch the application for the first time is a license dialog.

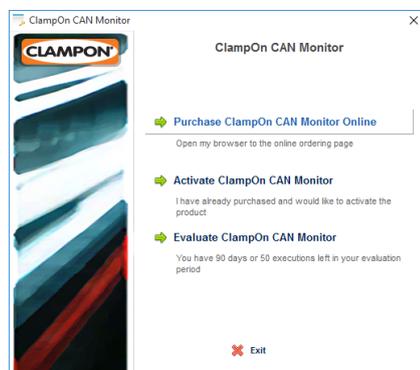


Figure 2: Licence dialog

The license dialog presents three options:

1. Purchase CAN Monitor Online

2. Activate CAN Monitor – if you already have a licence ID and password.
3. Evaluate CAN Monitor

Unless you have already decided to purchase the software, we recommend that you choose the evaluation option and give it a through test run to make sure it meets your requirements.

Main user interface

The next window you will see is the main user interface window:

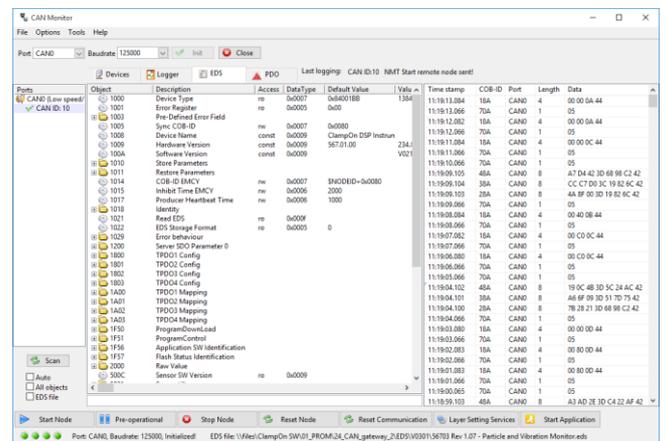


Figure 3: Main window

On the left you have a list of all the available NI CAN interface ports, and the slave devices you have added to them. Port settings can be adjusted in the menu above the port list. The centre part of the main window contains device info, and results of user actions. Network communication is logged and displayed in the rightmost part of window. At the bottom you have buttons to control the state of the CAN network/devices.

Some important symbols to know in this interface:

- Port connected
- Port closed
- Device communicating
- No communication with device last minute
- EMCY sent from device (not cleared)

BASIC USE

Connecting a slave device

The first thing you need to do to start communicating with a slave device is to initialize the interface you have connected it to:

1. Select the port from the **Port** drop-down menu.
2. Select the correct baud rate.
3. Press the **Init** button.

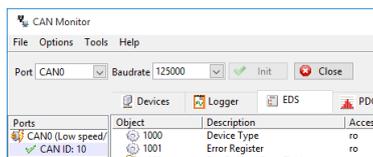


Figure 4: Port settings

With the port initialized you can add the device. Make sure you have the relevant Electronic Data Sheet (EDS) file of the device available before doing this:

1. Right-click on the port in the ports list and select **Add device**.
2. The software will now ask you for the EDS file it should associate with the device.

Reading and writing service data (SDOs)

To read service data from the added slave device, select it from the ports list, then select the objects you want to read from the dictionary on the **EDS-tab**. You can select multiple objects at the same time (Shift or Control-click). **Right-click** the selected objects and select **Read** from the right-click menu. The results will be displayed in the value-column of the EDS-tab.

To read all the (readable) SDOs of the device select the device from the ports list, tick off All objects in the scan-settings below the ports list, then select Scan from the right-click menu of the device. The results will be listed in value-column of the EDS-tab. (You can also click the Scan button, but this will not limit the reading to the chosen device.)

To write to an SDO you follow the same procedure, but can only select one object at a time. Select **Write** from the right-click menu to get an input dialog

where you can enter the value, which is then written when you click the Write button.

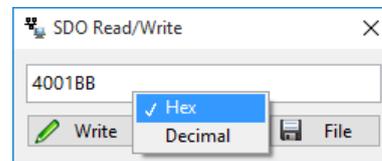


Figure 5: Read and write SDO.

You can also choose to write the content of a file to an object, the procedure for this is:

1. Select CAN device in ports list.
2. In the **EDS-tab** select the object you want to configure.
3. Press **Write From File** in the right-click menu. Browse to wanted file. (file will be treated as a binary file and read in big-endian order).

Finding a specific object in the dictionary

For quick access to a wanted object, use the filter box beneath the EDS tab. The filter box works as a text filter. You can make the filter case sensitive or not with the filter box right click menu.

Changing NMT state

Switch state of the CAN device with the NMT buttons located at the bottom of the main window.

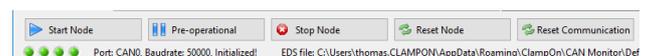


Figure 6: Switch NMT state

The buttons switch the selected CAN device between the three NMT states; pre-operational, operational and stopped.

Changing ID or baud rate of a device (LSS)

Click the **Layer Setting Services** button to open the configuration dialog.

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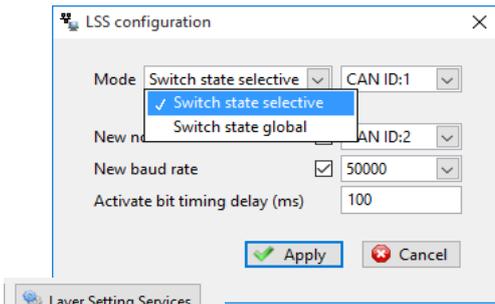


Figure 7: Change node ID and baudrate

1. Select the mode from the Mode drop-down.
2. Tick the New node ID checkbox and select the new node ID.
3. Tick the New baud rate checkbox and select the new baud rate.
4. Click **Apply**.

Press **Reset Communication** button after closing dialog to activate the new node ID.

Note: Using **Switch state global** mode will assign an identical node ID to all connected CAN devices.

Trending SDO and PDOs

One of the basic but most useful features of CAN Monitor is the ability to trend the values of service and process data objects (SDOs/PDOs).

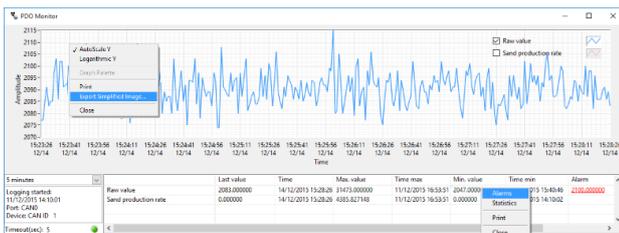


Figure 8: Trend window

SDOs can be trended by selecting **Trend** from the right-click menu of the object (in the EDS tab).

To quickly trend all process data objects from a device you can right-click on the device in the ports list and select **Trend**. To trend specific PDOs you select them

on the **PDO** tab, and choose **Trend** from the right-click menu there.

Note: Trending of PDOs is dependant of PDO mapping in the EDS-file.

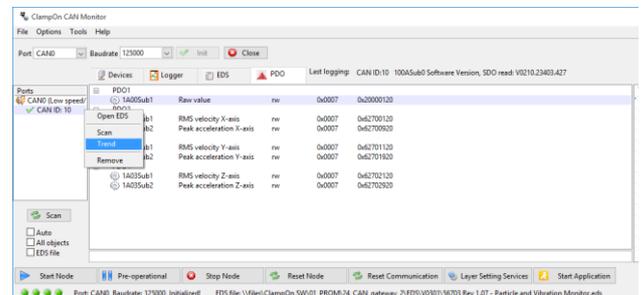


Figure 9: Start trending PDOs

The trend data is automatic saved to tab delimited text files. The log files are saved in:

C:\Users\

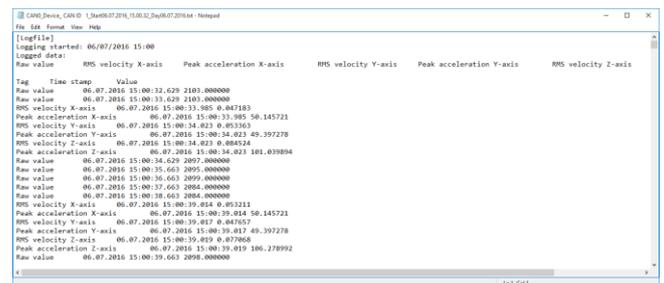


Figure 10: Log file example

Analyzing historical trends

You can view previous trend logs by selecting **Trend Analyser** from the **Tools** menu in the main window.

Click **Open log file** button and select the log file:

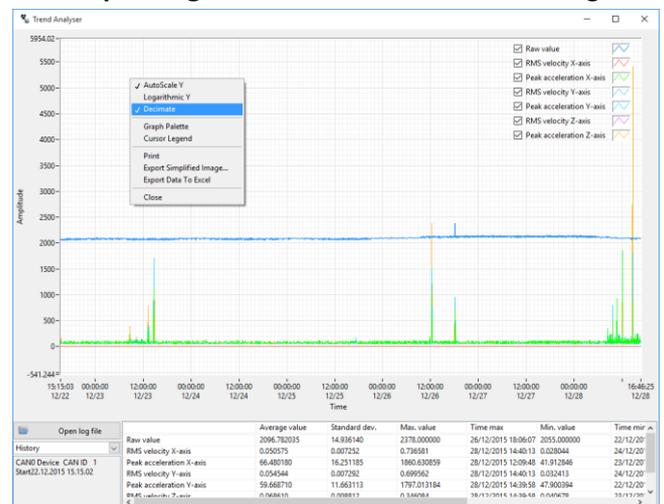


Figure 11: Trend analyser

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Communication log

The traffic on the CANbus network is displayed in the rightmost part of the main window. By default the traffic log will show all communication on all initialized ports. To only see certain types of traffic you can right-click on the list and select a filter:

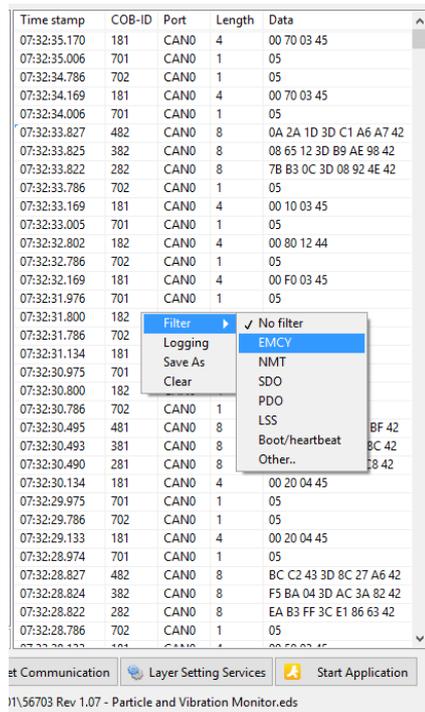


Figure 12: Communication log

To copy or save the displayed traffic log, right-click on the list.

Actions log

In the **Logger** tab you can see all actions and their results. You can save the list by right-clicking on it:

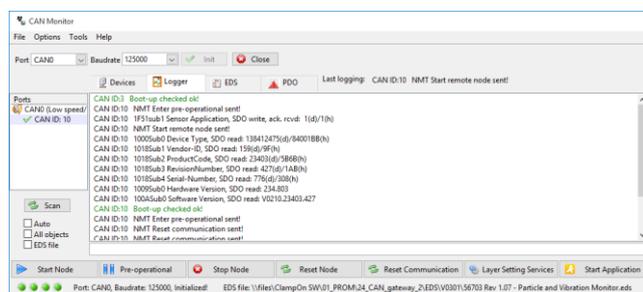


Figure 13: Actions and results.

Creating and using scripts

The scripting features of CAN Monitor can speed up your device testing.

An easy way to create a script is to record your actions. Go to the **Logger** tab and select **Record** in right click menu. Stop recording by unchecking **Record**. A text box will appear where you can add file instructions.

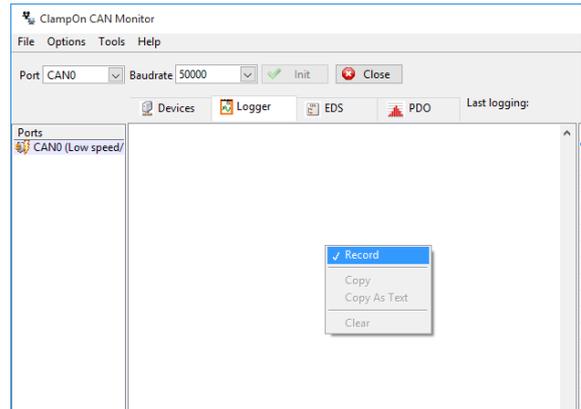


Figure 14: Record your actions

For better control you can create and/or edit scripts manually:

Select **Create Script** from Tools menu to open the **Create Script** tool. The tool uses drag and drop. Actions are dropped in the top window.

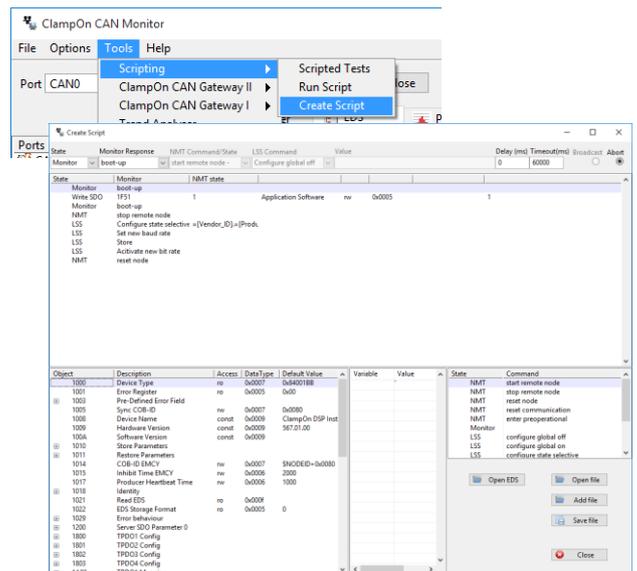


Figure 15: Create script

Press **Open EDS** button to load an applicable EDS-file., then drag objects from the EDS-file to add SDO read or SDO write actions.

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You can add NMT, LSS or Monitor actions by dragging them from the pre-defined list to the right. You can re-arrange the order of actions with drag and drop as well. See the software manual (document number 62-320-00124) section 12.1.1 for a detailed description of settings. When you are happy with the script click **Save file** to save it as a file.

To run a script, select the CAN device you want to run it against in the port list, then select **Run Script** from the Tools menu. Browse to your script and click OK.