

## How To Setup Dewesoft X DAQ Software



# How to enter the Settings?

Dewesoft has been developing leading data acquisition software for more than 20 years. [Dewesoft X](#) is the world's best data acquisition, recording, and data analysis software. Software received multiple international awards, is innovative, very easy to use, and requires no programming to acquire, store and analyze data from analog, digital, CAN, GPS, video, serial, and many other data sources.

After you have successfully [downloaded](#) and installed the Dewesoft software it is time to set it up according to your needs. To access the settings in [Dewesoft X](#), go to the top right corner of the program.

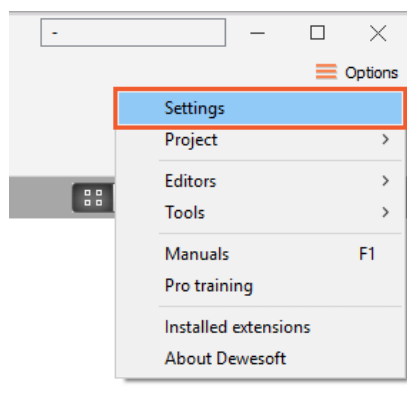


Image 1: Entering settings button

When you open the Settings, the following screen will appear, which shows us the basic structure:

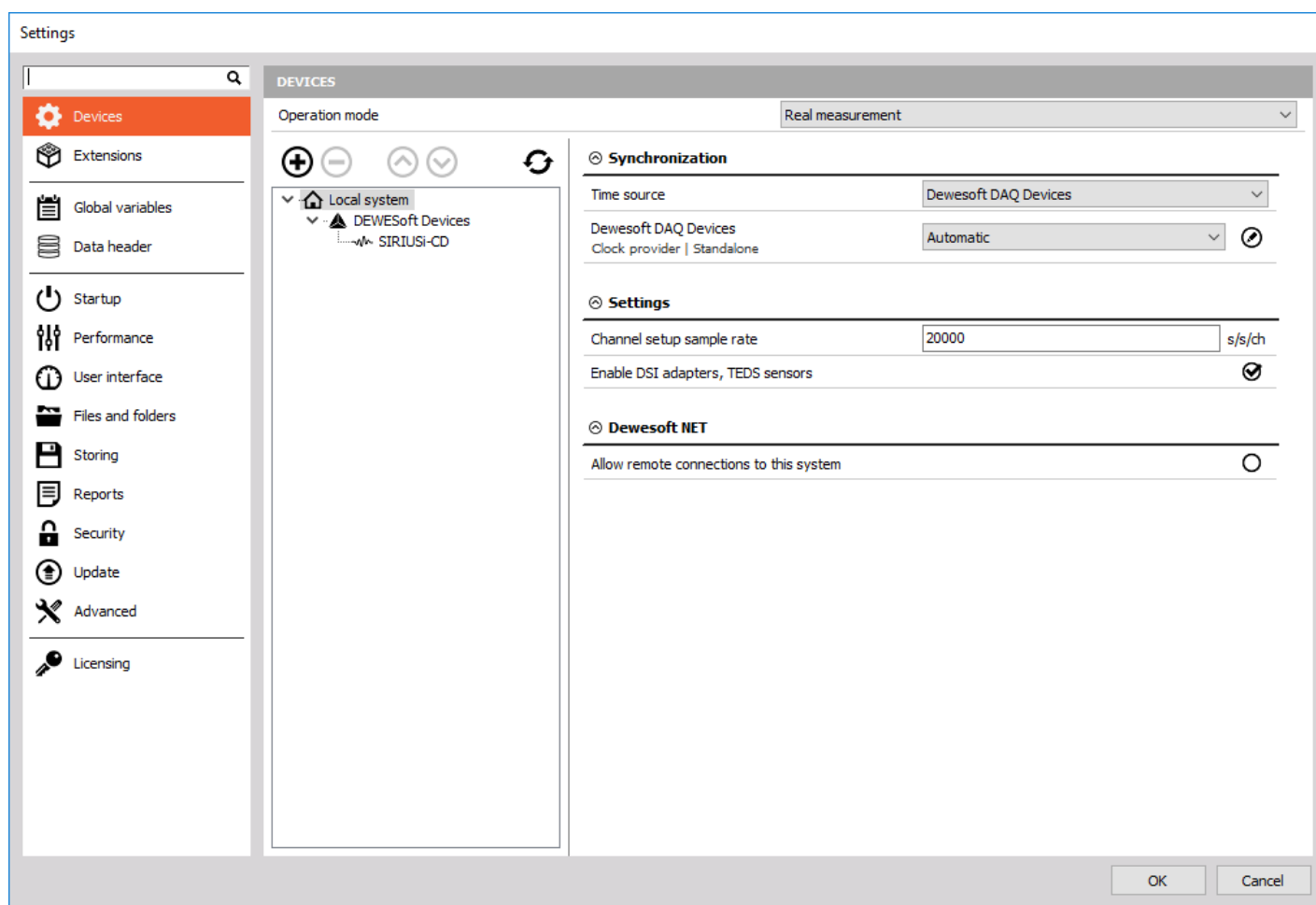


Image 2: Dewesoft settings structure

- Devices - view the connected DAQ devices (Real measurement mode) or simulate channels (Simulation mode) to make an offline setup.



Image 3: Dewesoft settings operation mode

- Real measurement (DAQ devices ([SIRIUS](#), [DEWE-43](#), [KRYPTON](#)) are used to acquire data.)
- Simulation (Simulation mode can be used when we don't have any DAQ devices connected to our system and we want to simulate different types of channels to make an offline setup.)
- Extensions - Add a plugin or extension according to your needs.
- Global variables - Define the channels, that can be used in a sequencer, math section, or in displays.
- Data header - Define the input fields for different operators.
- Startup - Allow multiple instances of [Dewesoft X](#) or load a setup or a sequence as soon as [Dewesoft X](#) starts.
- Performance - Select the application process priority, use multiple CPU cores, and define other performance characteristics.
- User interface - Adjust [Dewesoft X](#) according to your wishes - change the language, font size, background color, and many other settings.
- Files and folders - Define the starting folder where the setups, data files, and other database files are stored.
- Storing - Create a zipped data file to reduce the file size or use the video compression.
- Reports - Use your own company logo in reports when printing the data file.
- Security - Lock the settings with a password. A password can also be used to change the setup, editing sensors, stopping the measurement, changing the sequence, or leaving the full screen.
- Advanced - Set an advanced option for different areas, like hardware, visuals, math, diagnostics, and analysis.
- Licensing - Enter license number and register software. You can choose between online or offline registration. To receive a fully functional 30-day evaluation license for [Dewesoft X](#) software fill and submit the [form](#) on our [web page](#).

# How to setup the Real measurement?

In the Real measurement mode, we can see all the devices that are connected to our system.

All Dewesoft devices ([SIRIUS](#), [DEWE-43](#), [KRYPTON](#), [SBOX](#), [ECAT-SYNC JUNCTION](#)) are automatically recognized, but there are some devices, that can't be connected automatically.

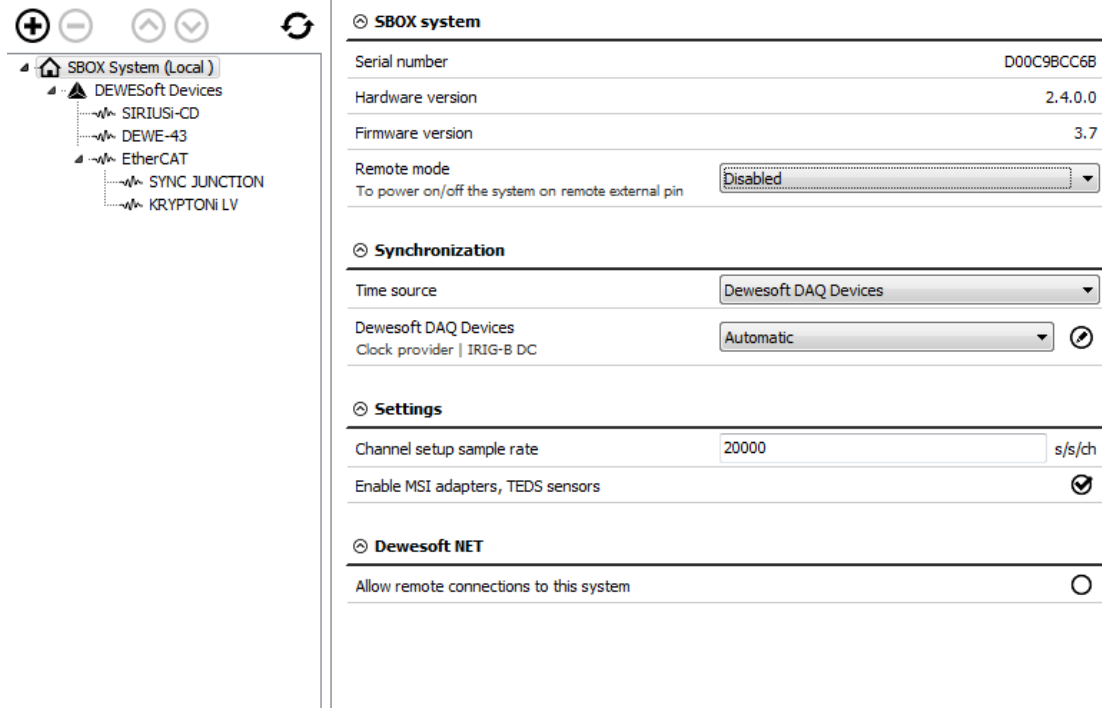


Image 4: Dewesoft settings

On the left side of the window, the structure of the system is shown. On the [SBOX](#) system, we connected USB devices ([SIRIUS](#), [DEWE-43](#)) and EtherCAT devices ([KRYPTON](#), [ECAT-SYNC JUNCTION](#)).

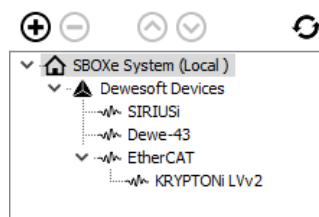


Image 5: Dewesoft settings Sbox system

With the plus button, we add devices that are not recognized automatically and with the minus button, we can remove them.

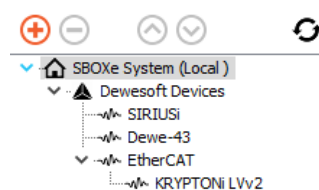


Image 6: Dewesoft settings add device

When adding a new device, we can select from Standard devices (Camera, CAN, Dewesoft NET, GPS),

Standard devices	Legacy devices
<b>Camera</b>	
DirectX	+
<b>CAN</b>	
Test CAN (replay mode)	+
Virtual CAN	+
<b>Dewesoft NET</b>	
Measurement unit	+
<b>GPS</b>	
Dewesoft RS232 (Topcon/Javad/NVS)	+
GPS replay	+
NMEA compatible GPS	+
Virtual GPS	+
<b>Plugin</b>	
ADMA Ethernet	+

Image 7: Adding standard devices

or from Legacy devices (CAN, GPS).

Standard devices	Legacy devices
<b>CAN</b>	
Vector	+
<b>GPS</b>	
Dewetron V-GPS	+
Leane V-SAT/Novatel	+
Microsat	+
Racelogic VBOX I	+

Image 8: Adding legacy devices

If we have multiple slices, we can rearrange their sort order with the up and down buttons.



Image 9: Changing order of the devices

With the refresh button, we scan the whole structure of a system again.

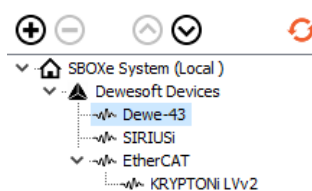


Image 10: Refreshing device list

On the right side of the window, the properties of devices are shown and some settings can also be changed.

## SBOX system

We can see the devices information (serial number, hardware, and firmware version).

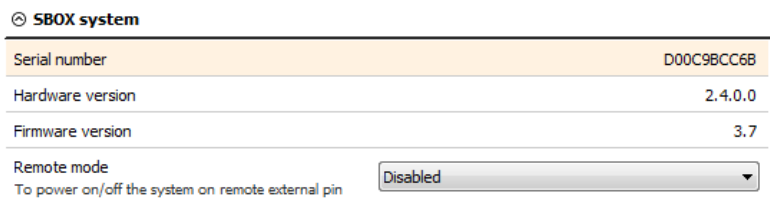


Image 11: Sbox system information

If the S-BOX system is used, the remote mode can be used to turn the [SBOX](#) on or off from the remote distance.

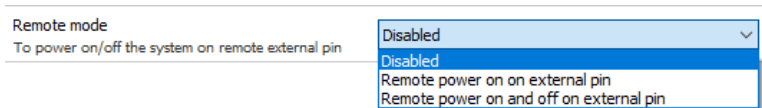


Image 12: Sbox remote mode settings

The connector for power supply on [SBOX](#) has three pins, one is for voltage, one for a ground connection and one is a remote signal.

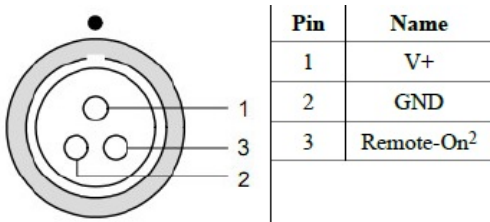


Image 13: Sbox power supply connector pinout

- Disabled: if the remote mode is disabled, [SBOX](#) can only be turned on or off by pressing the power button on the device.
- Remote power ON on external pin: The [SBOX](#) can be remotely turned on. When the voltage signal comes to pin for remote, the [SBOX](#) is turned on.
- Remote power ON and OFF on external pin: The [SBOX](#) can be remotely turned on or off. If the [SBOX](#) is off and the signal comes, it will be turned on. If the [SBOX](#) is on and the signal comes, it will be turned off.

In this case, we have connected multiple Dewesoft DAQ devices. If we select the DAQ device and click on it, we see the devices information (device number, serial number, hardware, and firmware version, temperature).

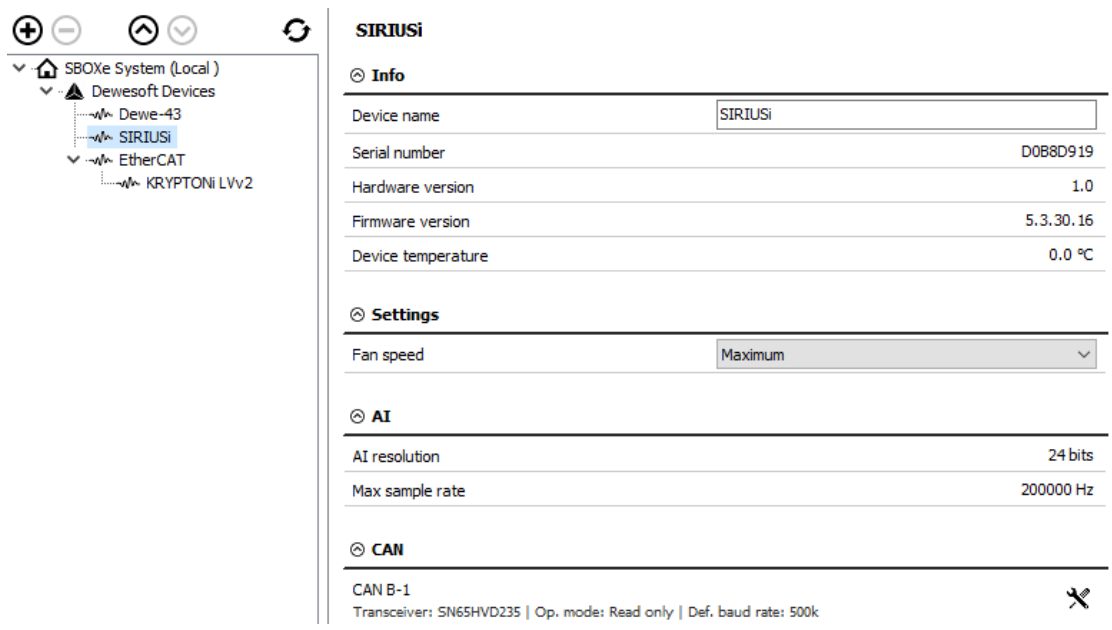


Image 14: Sirius system information

Bridge amplifier offset shows us the initial amplifier offset. [Sirius](#) connects the input short on and the offset is measured.

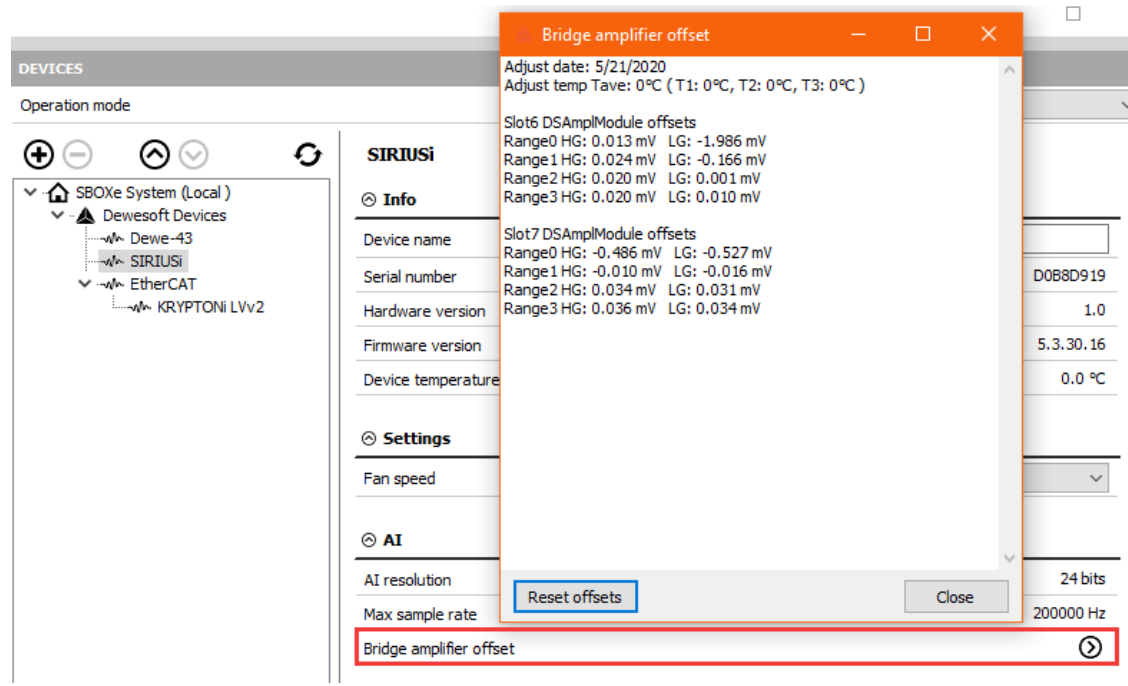


Image 15: Sirius bridge amplifier offset

With the button Reset offsets, we clear the initial amplifier bridge offsets.

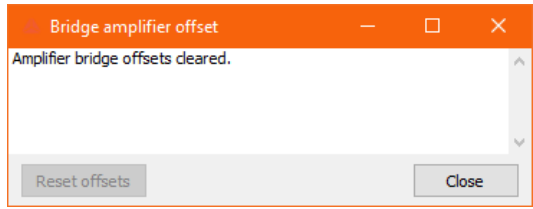


Image 16: Cleared Sirius bridge adapter offset

Fan speed can be set only to [Sirius](#) devices. We can choose from default, minimum or maximum. The custom speed is defined with the percentage of the maximum fan speed.

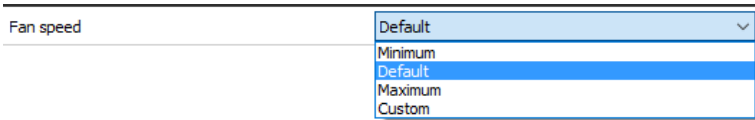


Image 17: Sirius fan speed settings

We can change the CAN baud rate and CAN operation mode (Read only or Read/Write/Acknowledge).

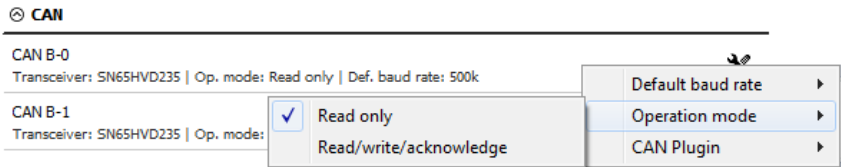


Image 18: CAN operation mode

## Watchdog timer

[Dewesoft X](#) is quite often used in a much critical application where the control system depends on the data acquisition system or the data acquisition system outputs alarms used to warn the user or switch off the test. In such cases, it is important to know the operation state of the data acquisition system. Watchdog is a safety feature to switch on the digital output when the system is in operation and switches off if the data acquisition system becomes unresponsive. A timeout can be set to delay switching of the watchdog. This feature can be used with any Sirius slice having Digital output. For [SIRIUS](#) 8xSTGM DB special watchdog hardware (DS-WDT) is available which has four relay outputs for directly switching on and off. Relays can be programmed as the watchdog or standard alarm/manual outputs.

The Watchdog functionality enables an external way to monitor the behavior of the [Dewesoft X](#) software. To be able to use the watchdog a [Sirius](#) slice with a Digital out is needed or when using a single slice, the Sync signals can also be used. The slice must be connected in order to set up the watchdog.

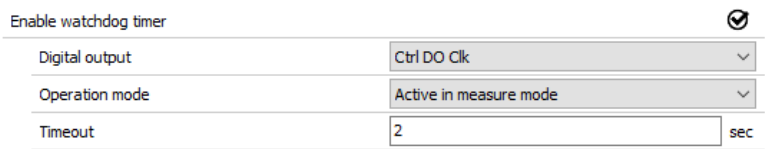


Image 19: Dewesoft watchdog timer

Once enabled, the output selection can be made. Default settings are:

- Digital output: Ctrl DO Clk
- Timeout: 2 sec
- Operation mode: Active in measure mode

Digital output menu selects on which digital output the watchdog functionality is enabled. When using the Watchdog module, which is connected to the Sirius slice via a 25 pin cable, this selector should be set to Ctrl DO 1.



*The watchdog can be only mapped to one digital output!*

The timeout value specifies the time in which the Dewesoft must reset the watchdog.

Operation mode can be selected from:

- Always active in measure mode - watchdog functionality is active while [Dewesoft X](#) is in measure mode
- Active in setup and measure mode - watchdog functionality is active while [Dewesoft X](#) is in channel setup and while in measure mode.
- Always active - watchdog is always active.

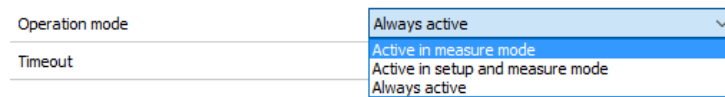


Image 20: Watchdog timer operation mode

Digital output menu selects on which digital output the watchdog functionality is enabled. When using the Watchdog module, which is connected to the [Sirius](#) slice via a 25 pin cable, this selector should be set to Ctrl DO 1. The watchdog can be only mapped to one digital output!

The watchdog is not active while in Analysis mode!

The watchdog behavior is as follows:

- When the slice is powered up, the module is in the Alarm state (Watchdog LED is RED). The slice does not retain any information about watchdog after power loss!
- When [Dewesoft X](#) is started and no watchdog functionality was set for the slice in a previous session the LED light is RED
- When the watchdog functionality is set, the following occurs:
  - Active in Ch. Setup is not set: The watchdog LED light is RED until the user switches to Measure mode; then the watchdog LED is GREEN. When switching back to channel setup mode the LED turns back to RED.
  - Active in Ch. Setup is set: The watchdog LED light is GREEN in both Channel setup and in Measure mode.
- When disconnecting the slice from USB or turning off [Dewesoft X](#) software the watchdog will trigger (after the preset time in case of disconnect or computer/software freeze or immediately when exiting Dewesoft). The LED light will turn RED

The watchdog module itself has 3 additional outputs that are user-controlled via the A/D module. The respective A/D outputs are CTRL DO 2, CTRL DO 3 and CTRL DO 4.

All four outputs are relay-based with a possibility to connect with a NO (Normally open) or NC (Normally closed) position.

When the watchdog has triggered or upon power up the watchdog relay is not energized meaning that the NO position is OPEN and the NC position is SHORTED.

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## DEWE-43

In [DEWE-43](#) settings, we can change the CAN baud rate and CAN operation mode (Read only or Read/Write/Acknowledge). We can also see its name of the device, serial number, hardware version, and firmware version.



Image 21: DEWE-43

## ECAT-SYNC-JUNCTION

[ECAT-SYNC-JUNCTION](#) works in the same way as other Dewesoft USB devices. It is automatically recognized within [Dewesoft X](#) software. By default, [ECAT-SYNC-JUNCTION](#) will be set up to synchronize [KRYPTON](#) EtherCAT and [SIRIUS](#) USB. The serial number and the firmware version can be seen and also updated.

SYNC JUNCTION	
<b>Info</b>	
Serial number	000000000
Firmware version	0.21
<b>Settings</b>	
Upgrade firmware	

Image 22: Sync junction system information

## KRYPTON

Under the [KRYPTON](#) section, serial number, hardware, and firmware versions are seen. Also, the firmware upgrade can be done.

KRYPTONi LV	
<b>Info</b>	
Serial number	D05A17FAEC
Hardware version	2.8.2.2
Firmware version	2.01
<b>Settings</b>	
Upgrade firmware	

Image 23: Krypton system information

# Channel setup sample rate

Channel setup sample rate defines the sample rate of channel setup. Channel setup sample rate does not run with the full acquisition sample rate but with the reduced one.

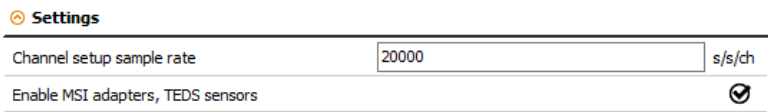


Image 24: Dewesoft channel setup sample rate

Let's take a look at a signal from a function generator (simple sine wave with 100 Hz). First, we let the channel setup sample rate at the default value, 20.000 s/s/ch.

When we enter the setup of the selected channel, we see the preview of the scope nicely.

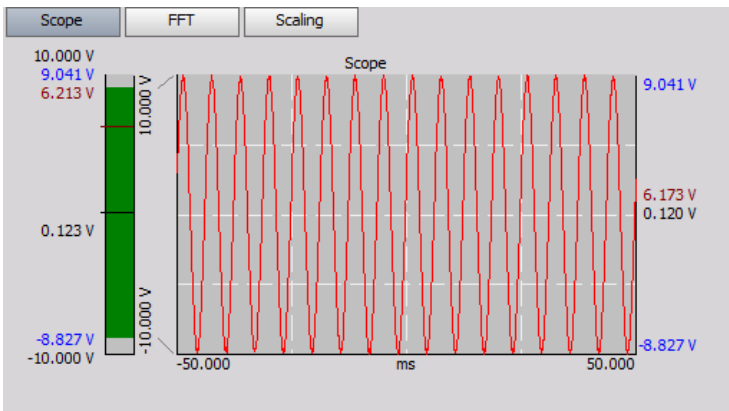


Image 25: Scope preview 20ks/s/ch

Then we change the channel setup sample rate to 10 s/s/ch.

Now, the preview of the channel does not show the proper form of the signal, because it is sampled with a lower frequency than it should be.

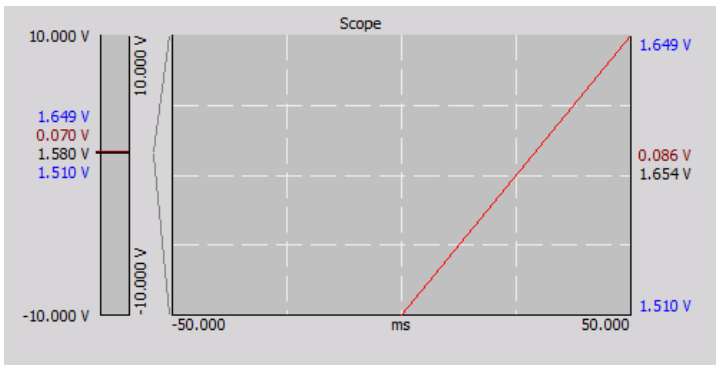


Image 26: Scope preview 10s/s/ch

# Which Synchronization types can be used?

The basic idea of synchronization is to provide a clock signal from a **time source**. **Clock slave** receives the signal from the clock provider and the devices are synchronized.

Devices can be synchronized in two different ways:

- Software synchronization - The software synchronization accuracy is around 2-10 ms, which is enough for simple temperature measurement. This synchronization solution requires no additional hardware.
- Hardware synchronization - It is a hardware solution that can synchronize all USB devices ([SIRIUS](#), [DEWE-43](#), ...) and [EtherCAT](#) devices.

We have connected one [SIRIUS](#), one [DEWE-43](#) and one [KRYPTON](#) measurement unit to the [SBOX](#)

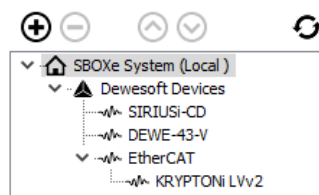


Image 27: Dewesoft settings  
device list

## Time source

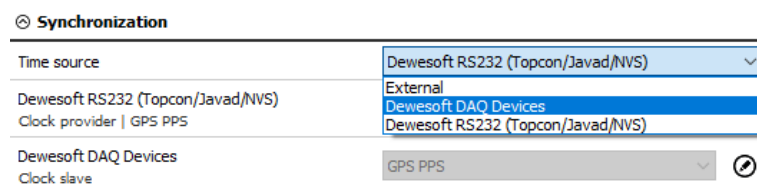


Image 28: Synchronization time source options

The time source provides a clock for synchronization. It can be selected from:

- Dewesoft DAQ devices (when we have a Dewesoft measurement device connected to our computer),
- External (Clock/Trigger, IRIG-B DC, NTP, GPS PPS),
- PC clock (when we have only a computer, without a measurement device),
- GPS devices (Dewesoft RS232 (Topcon/Javad/NVS), NMEA compatible GPS, ...).

Synchronization types are dependent and automatically adjusted from the DAQ devices connected to our system.

## Type of synchronization

If Dewesoft DAQ device is selected as a time source, a clock provider must be selected from:

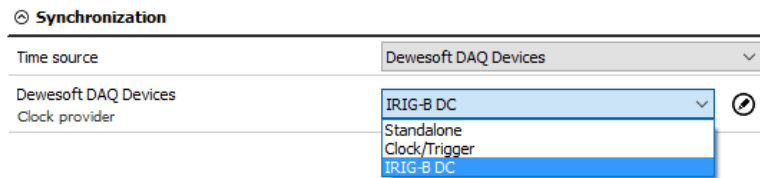


Image 29: Synchronization clock provider options

- Automatic - this option automatically selects the best option for synchronization regarding the hardware connected to the system.
- Standalone - only one device, there is no synchronization between devices needed.
- SoftSync - this synchronization solution requires no additional hardware. The accuracy is > 10 ms.
- Clock/Trigger - the clock of the device gives a trigger signal.
- IRIG-B DC - It contains time-of-year and year information in a BCD format (it contains the information about the absolute time). This is the best way to synchronize the devices because it is the most exact one.
- GPS PPS - Since the satellites are transmitting exact absolute time and better receivers usually output this pulse with high precision (below one microsecond), we can use this technology to synchronize remote systems - and there is no distance limit.
- NTP - Network Time Protocol (**NTP**) is a networking protocol for clock synchronization between computer systems. It is less accurate than other methods.

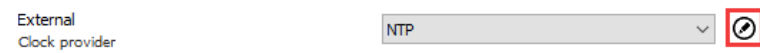


Image 30: External NTP clock provider

To enter the addresses of the NTP server click the edit button near the drop-down menu. If you want to have more devices synchronized via NTP protocol, the same server address must be entered in all of them.



Image 31: Check NTP servers

When you check NTP servers, the time and date of the server will show. If the server address is wrong, the check will fail.

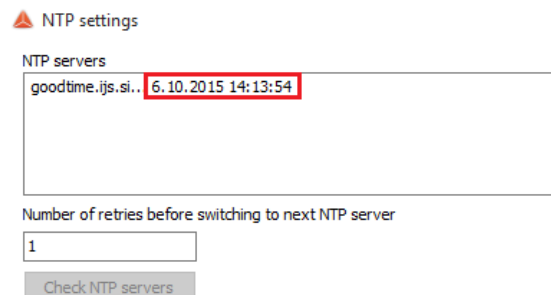
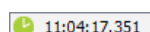


Image 32: NTP server response

If the synchronization via NTP is successful, you will see a green clock next to the time in measure mode.



## Synchronization between Dewesoft USB devices

	Accuracy	When to use	Device
<b>Clock/trigger</b>	< 1 Ås	stationary	Dewesoft, RoaDyn
<b>IRIG-B DC</b>	< 1 Ås	stationary	Dewesoft, Meinberg
<b>GPS PPS</b>	< 1 Ås	mobile	GPS receiver
<b>NTP</b>	< 10 ms	ethernet	NTP server
<b>SoftSync</b>	< 10 ms	when there is no external time source	/

Any Dewesoft device can be precisely synchronized by hardware ([SIRIUS](#), [DEWE-43](#), [MINITAURs](#), [DS-CAN2](#)).

When using the NET system, there are several possibilities that can be used for synchronization:

- Clock/trigger - relative time
- IRIG-B DC Master / IRIG-B DC Slave - absolute time
- GPS - absolute time
- NTP - absolute time

### Clock/trigger connection example

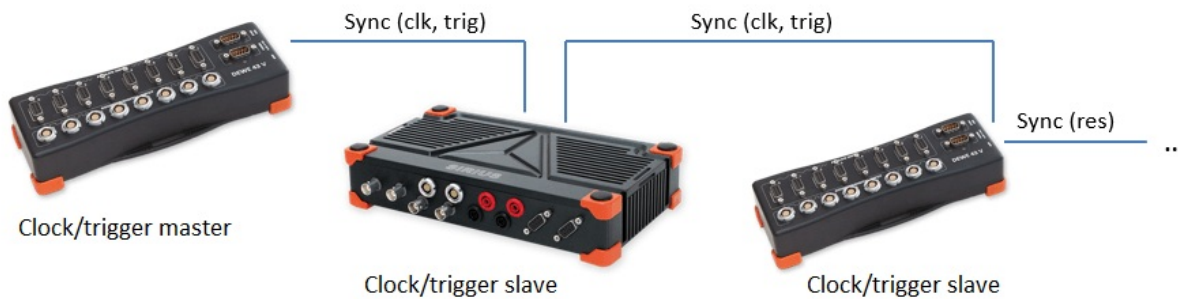


Image 34: Clock trigger connection example

### IRIG-B DC connection example of one unit

- a) The *Dewesoft device* as IRIG-B DC generator



Image 35: IRIG-B DC connection example

b) *External* IRIG-B DC provider



Image 36: IRIG-B DC external provider

## GPS PPS connection example of one unit

a) The *Dewesoft device* has a GPS receiver



Image 37: GPS PPS connection example from Dewesoft device

b) *External* GPS receiver



Image 38: GPS PPS connection example from GPS receiver

### NTP connection example of one unit

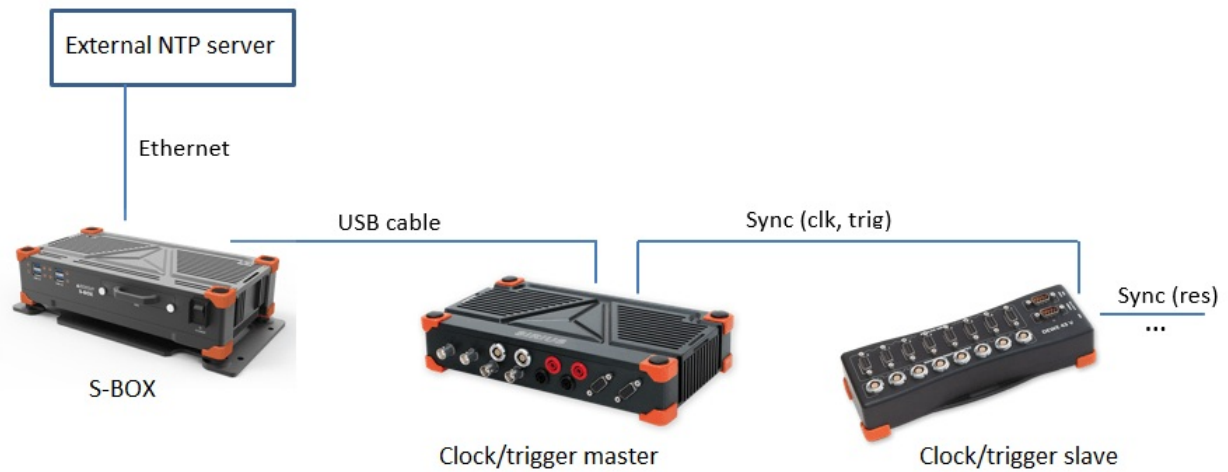


Image 39: NTP connection example

## Synchronization with [ECAT-SYNC-JUNCTION](#)

[ECAT-SYNC-JUNCTION](#) works in the same way as other Dewesoft devices. It is automatically recognized within the [Dewesoft X](#) software (supported in version X2 SP4). By default, [ECAT-SYNC-JUNCTION](#) will be set up to synchronize between [KRYPTON EtherCAT®](#) and [SIRIUS USB](#).

With [ECAT-SYNC-JUNCTION](#) several connection options are possible:

- Synchronization of [SIRIUS/DEWE-43 USB](#) with [KRYPTON/SIRIUS EtherCAT®](#) devices, where the accuracy of synchronization is < microsecond



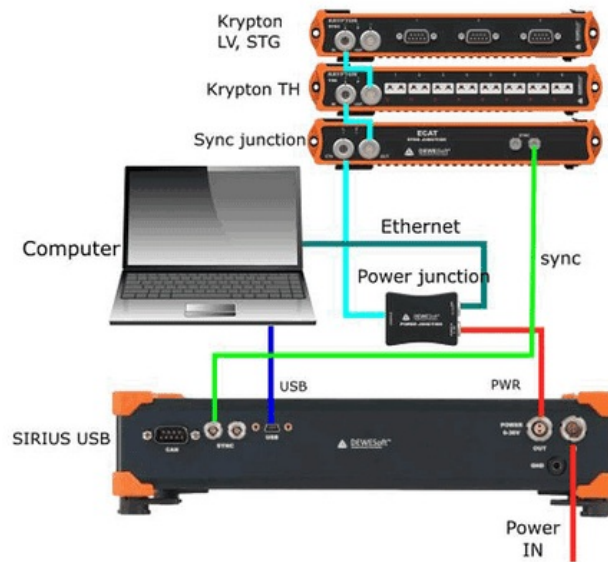


Image 40: USB and EtherCAT device synchronization

- Synchronization of [KRYPTON](#) module with external IRIG B DC triggering source

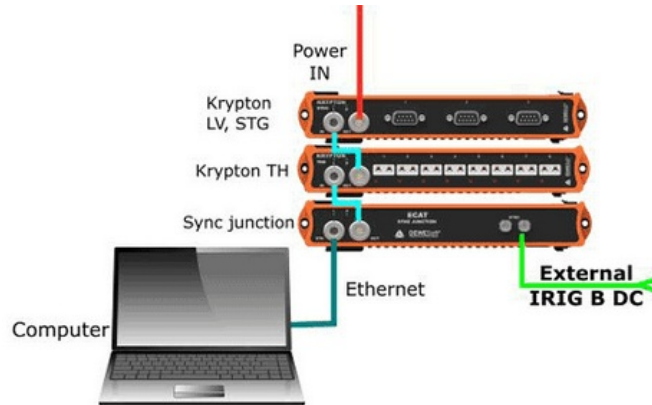


Image 41: EtherCAT external IRIG-B DC synchronization

- Synchronization of [KRYPTON](#) and [SIRIUS USB](#) with external IRIG B DC triggering source

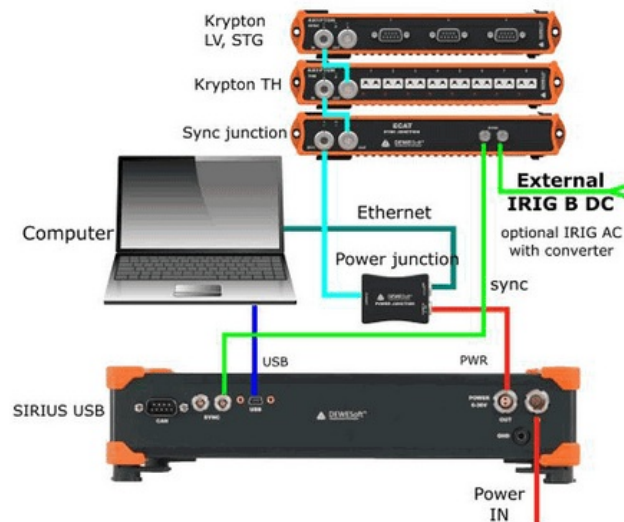


Image 42: EtherCAT and USB devices external IRIG-B DC synchronization

- Synchronization of [KRYPTON/SIRIUSiwe](#) with triggered cameras

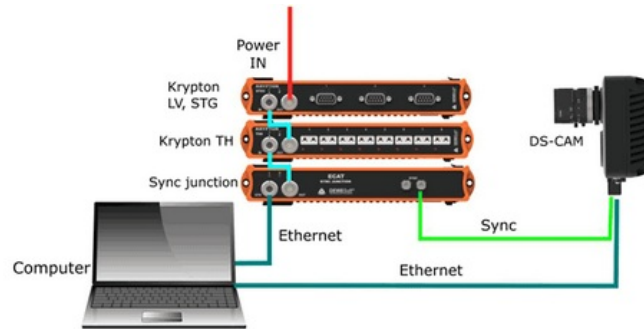


Image 43: EtherCAT chain triggering the camera

- Synchronization of [SIRIUS/DEWE-43 USB](#) with [KRYPTON/SIRIUSiwe](#) and triggered cameras

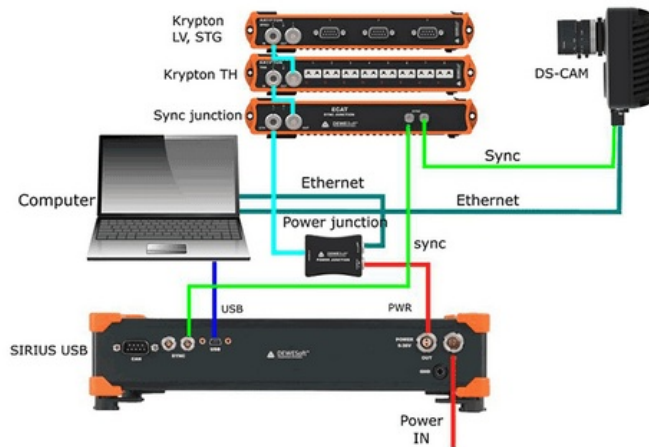


Image 44: EtherCAT and USB synchronization with the camera trigger

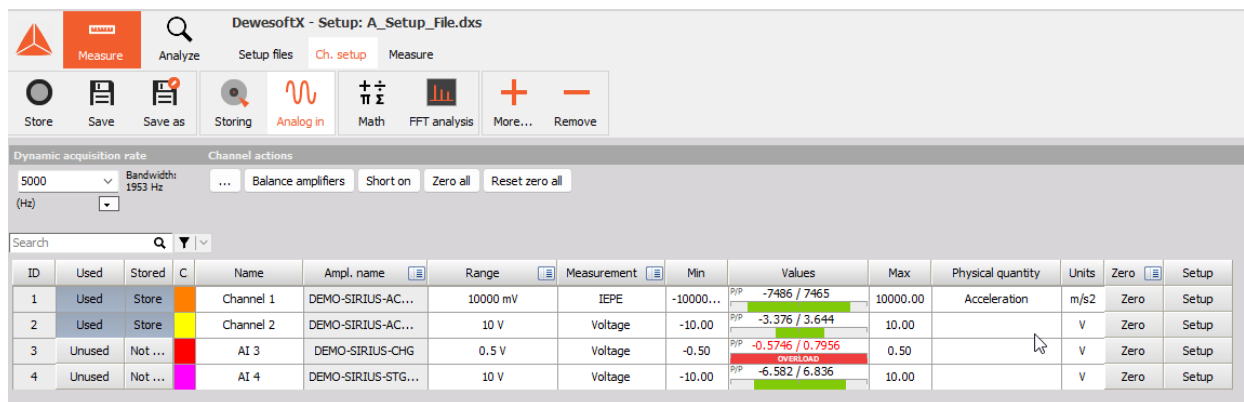
# What is a Setup file and what is a Project file?

In DewesoftX, we work with three types of files: the datafile, the setup file, and the project file. In this section, we will take a closer look at the setup file and the project file.

## The Setup file

When we are using the DewesoftX software, we are also working with Setup files. The purpose of a Setup file is very simple: **it is there so we have somewhere to store the setup**.

In other words, this is where all the settings from the **Measure mode**'s **Channels setup** tab and **Measure tab** are saved. These include the **Channels** we are using and all their **settings**, the **Channel Names**, their **Ranges** and **Sample rates**, and whether or not they are **stored** and **used** in the measurements. We also use the Setup file to store the information from each Channel's setup tab, such as the **Amplifier** and **Sensor info**. Additionally, the Setup is the place where we store all the **Storing conditions**, **Math formulas** we would like to use, and the **Modules** we are using, as well as the settings for each used Module. Lastly, this is where we save the configuration of our **Display screen** from the Measure tab, such as the types and the position of the used **Widgets**, all the **Widget settings**, and the types of **Displays** we want to use when running data acquisition.



The screenshot shows the 'Setup: A\_Setup\_File.dxs' window. It features a top toolbar with icons for Store, Save, Save as, Storing, Analog in, Math, FFT analysis, More..., and Remove. Below the toolbar, there's a 'Dynamic acquisition rate' section with a dropdown for 5000 Hz and a 'Channel actions' section with buttons for Balance amplifiers, Short on, Zero all, and Reset zero all. The main area is a table with columns: ID, Used, Stored, C, Name, Ampl. name, Range, Measurement, Min, Values, Max, Physical quantity, Units, Zero, and Setup. The table lists four channels: Channel 1 (Acceleration, 10000 mV, IEPE), Channel 2 (Voltage, 10 V, Voltage), AI 3 (Voltage, 0.5 V, Voltage), and AI 4 (Voltage, 10 V, Voltage). Each channel has a 'Values' column showing PIP and P/P values, and a 'Setup' column with a dropdown menu.

ID	Used	Stored	C	Name	Ampl. name	Range	Measurement	Min	Values	Max	Physical quantity	Units	Zero	Setup
1	Used	Store		Channel 1	DEMO-SIRIUS-AC...	10000 mV	IEPE	-10000...	PIP: -7486 / 7465 P/P: -3.376 / 3.644	10000.00	Acceleration	m/s <sup>2</sup>	Zero	Setup
2	Used	Store		Channel 2	DEMO-SIRIUS-AC...	10 V	Voltage	-10.00	PIP: -0.5746 / 0.7956 P/P: -6.582 / 6.836	10.00		V	Zero	Setup
3	Unused	Not ...		AI 3	DEMO-SIRIUS-CHG	0.5 V	Voltage	-0.50		0.50		V	Zero	Setup
4	Unused	Not ...		AI 4	DEMO-SIRIUS-STG...	10 V	Voltage	-10.00		10.00		V	Zero	Setup

Image 45: In a setup file, we can save the Channel setup settings ...

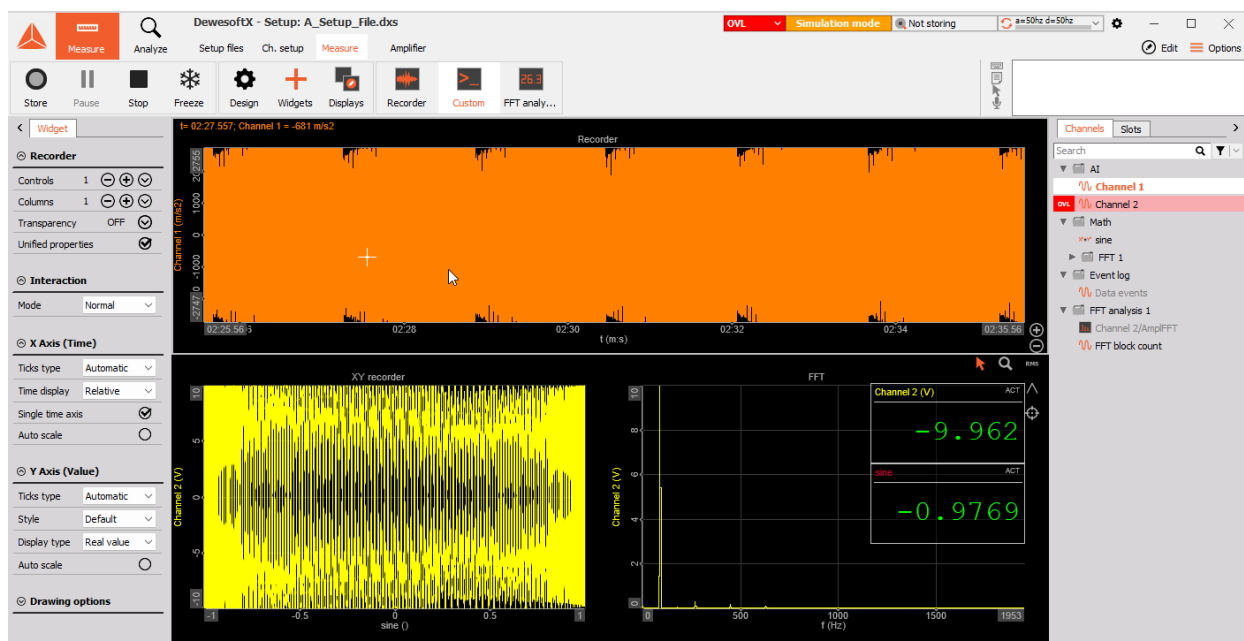


Image 46: ... as well as the Displays screen configuration

When we open DewesoftX, we get directed to the **Setup files** tab, which is where we can find all of our saved (pre-existing) setup files. It is also where we can find additional important information regarding each setup, such as its name, setup info, size, and the time the file was modified.

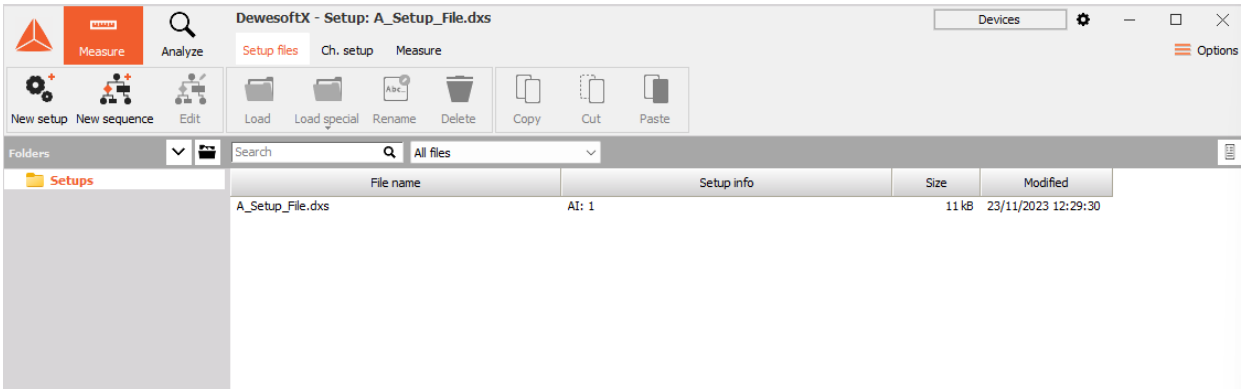


Image 47: The Setup files tab

The **default folder** is the **Setup folder** that is created when we first download DewesoftX, and is therefore by default located in the **Dewesoft folder**. If our setup file is located anywhere else on our computer, there is an additional option of looking through the files on our computer.

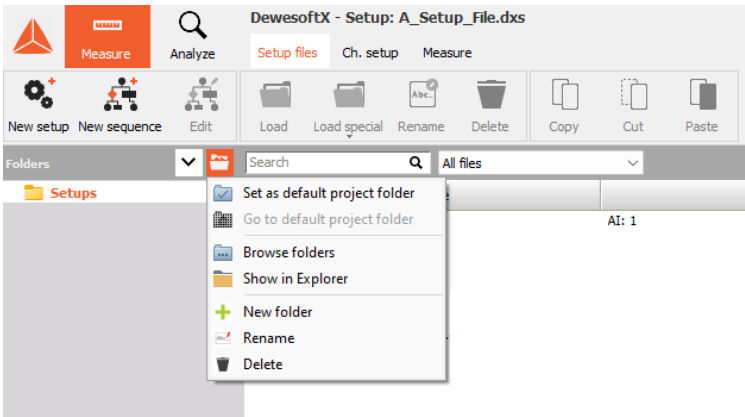


Image 48: Different folder options in the Setup files tab

If we want to **create a new setup file** or **modify a loaded Setup file**, we can simply press the **Channel setup** tab and modify whatever parameter, module, and part of the Measurement screen we would like to change. Once we are content with the changes, we can re-enter the Channel setup, and save the setup by pressing one of the buttons in the upper right corner. Pressing the **Save** button will overwrite the Setup file we have initially opened, and pressing the **Save as** button will create a new Setup file. If we have gone directly to the channel setup, we will create a new Setup file, regardless of which save button we choose to press.

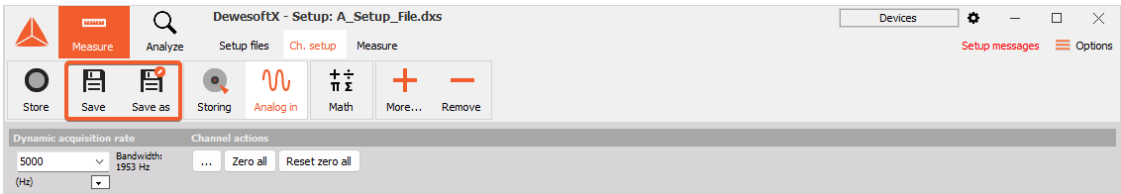


Image 49: The location of the Save and Save as buttons

# The Project file

Projects are an important part of the DewesoftX software because they include the **Hardware setup** and the **Program settings**. In other words, the Project is where we save the *starting setup*, *Security*, *Global variables*, *Data headers*, *Performance settings*, and *Advanced settings*. It is also a place where we store general information regarding the *devices*, such as which devices are connected to the computer and other information directly connected to the devices themselves, and the *Operation mode*.

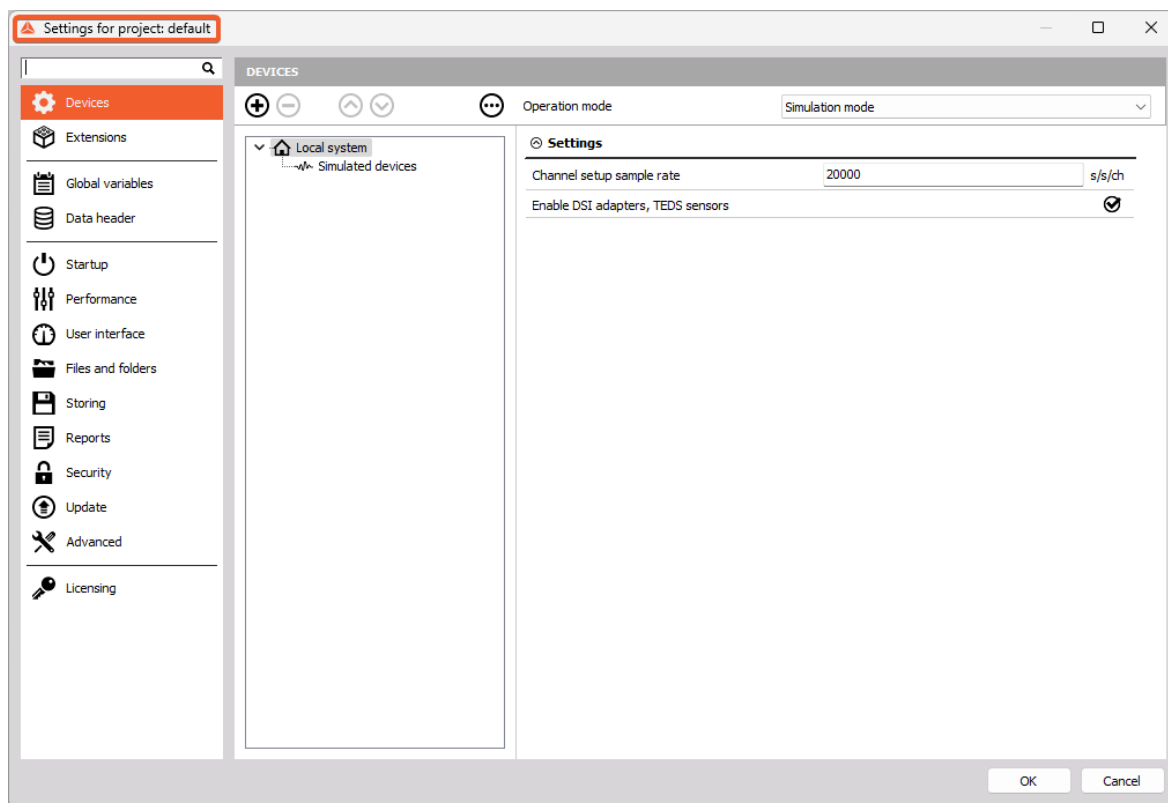


Image 50: The Settings tab for the selected Project

If we take a look at the Settings, we can see an **Extensions** tab and opening the tab displays all the Extensions we have available to use for Data acquisition. All the extensions are neatly organized in folders based on their main functionality: Export, Import, Math, Math application, Plugin, RT module, Visual control.

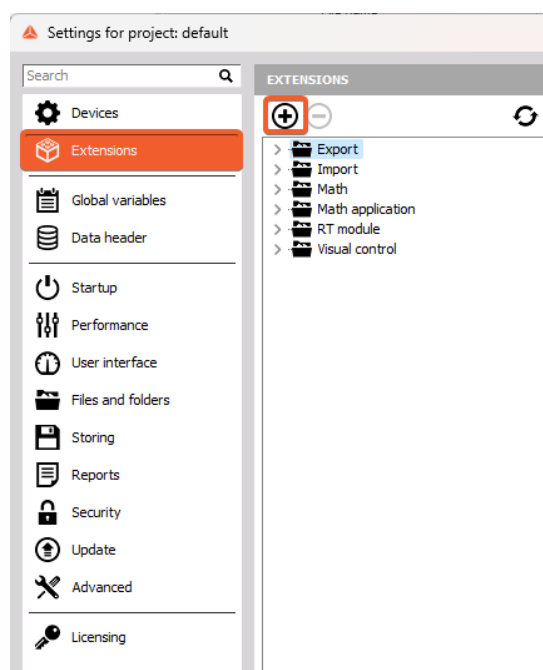


Image 51: An overview of the Extensions tab

Pressing the **+** button gives us an option to manage these extensions; we get an overview of all the **enabled** and **disabled extensions** and have the option to enable or disable any available extension we want. If you take a look at the extensions, you might notice that some options are permanently enabled, while others can also be disabled. You might also notice that these extensions were referred to as Modules when we were talking about the Setup files.

The distinction between a Setup and a Project is now clearly visible; within a Project, we get to select all the Extensions/Modules we want to be able to use. Within a setup, we choose which modules we are going to use and set them up for data acquisition.

We can manage our projects directly from DewesoftX by pressing the **Options** button and then going to **Project entry**. The project entry will give us a list of all available projects created so far. When we first start using DewesoftX, we only have one project file, named default. Once we have more projects, project entry allows us to switch between them simply by selecting a project we would like to use from the project list.

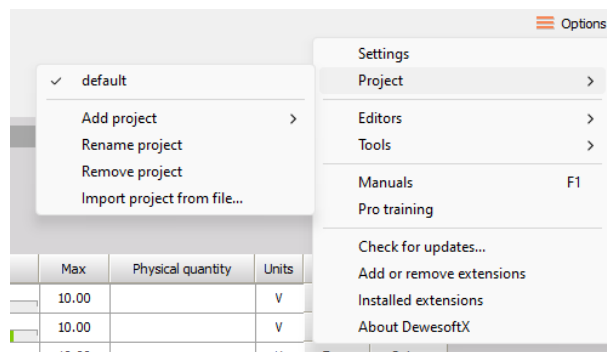


Image 52: An overview of the Project entry

The other options we have available are:

- **Add project** - This will create a new project and open the dialogue to name the project. The new project will not be created from scratch, but it will take all the settings of the currently selected project.
- **Rename project** - This menu item will open the dialogue box to rename the currently selected project.
- **Remove project** - This menu item will delete the currently selected project after user confirmation. Please note that there is no chance to reverse this operation.
- **Import project from file** - This menu item allows the user to to import the project from a setup file (.dxs), a data file (.dxd) or an XML setup (\*.xml). In order to move a project from one system to another, a project file (found in the system folder) can simply be copied. This option goes one step further and allows the project (added to every setup and data file) to be extracted from any file in the source system.

To sum up, inside a **Project**, we can save the **general Software settings** and the **main Hardware settings**, while the **Setup** enables us to save the **Chanel setups** and the **Display designs**.

The Project file is also an integral part of the Setup file; if we have a Setup file, we can use it to extract the Project file from it.

To **import a project from a datafile**, we have two options. If we would like to work with a *set Setup but also need to use the project the setup is tied to* (this is most common if we are using Global variables and/or Data Headers), we can do so from the **Setup files** tab, where we simply use the **Load special** button or right-click the desired Setup file, then choose the option to Import project and load the setup.

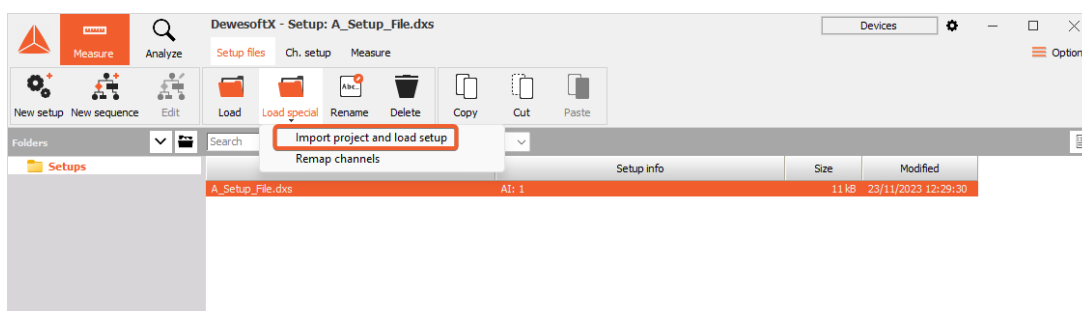


Image 53: The location of the Load special button

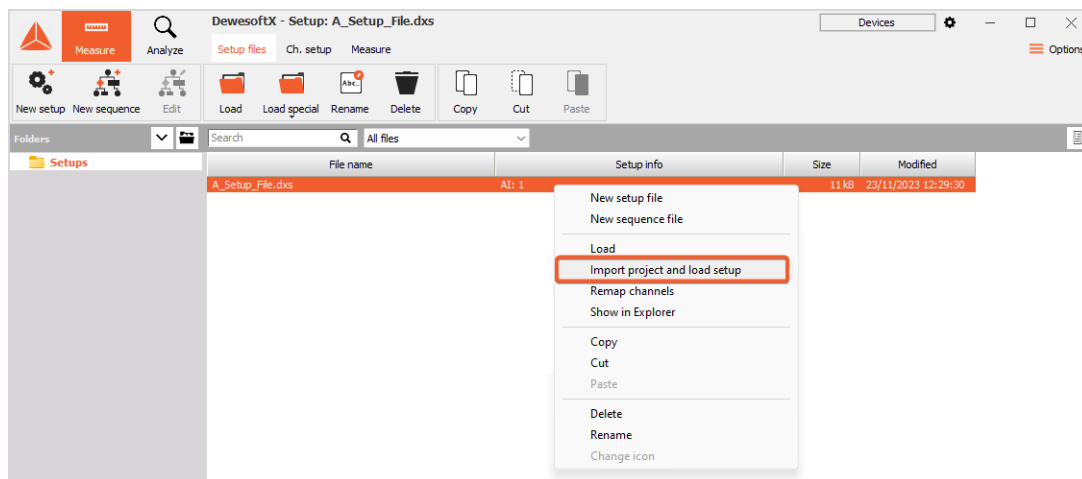


Image 54: The location of the *Import project and load setup* option

The other way to import a project is to press the **Options** button and go to the **project entry**. This will allow us to extract the project from any file in the source system, but unlike the first option, this does not automatically open the corresponding setup file; DewesoftX simply returns to the Setup files tab.

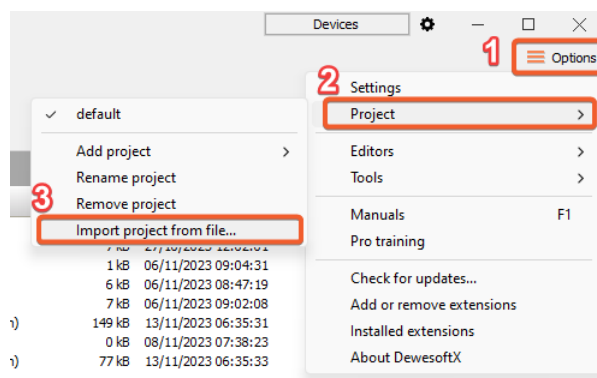


Image 55: Steps for importing a project from a file

Take caution when using these options, as in both cases, the currently opened project will be overwritten with the project file imported from the setup file.

# How to use Simulation mode?

[Simulation mode](#) can be used when we don't have any DAQ devices connected to our system and we want to simulate different types of channels to make an offline setup. It is especially useful when we want to modify or create a setup while no devices are connected, i.e. while we are in the office instead of the proving ground, and we want to make sure that the setup will not be corrupted in the process.

When we are operating in [Simulation mode](#), we can choose between three different modes of Simulated channels:

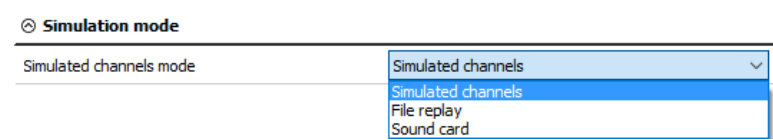


Image 56: Simulated channels mode selection

- Simulated channels - we define the number of analog in channels, counter channels, digital in channels, asynchronous analog out channels, and asynchronous digital out channels.

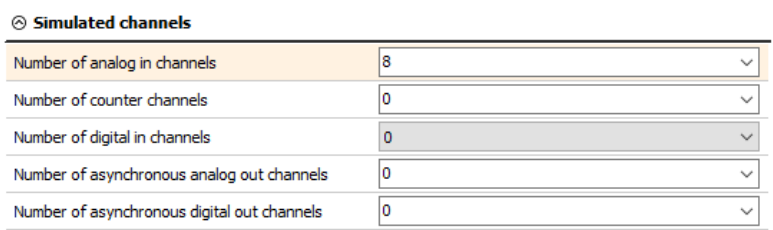


Image 57: Simulated channels

- File replay - we can replay files, that have already been recorded.

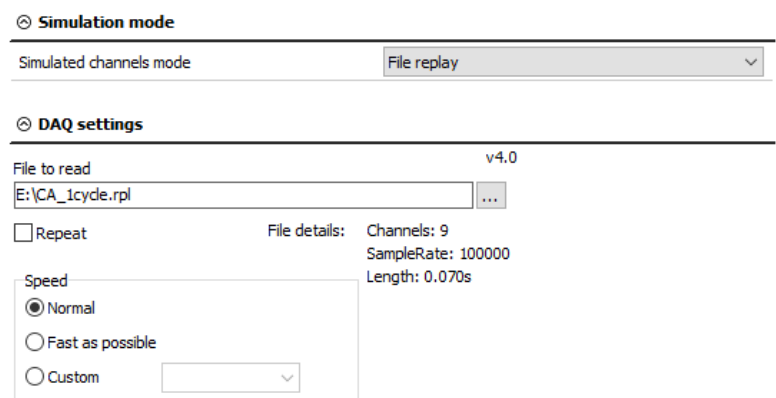


Image 58: File replay example

- Sound card - we can use the sound card in our computer to collect the data and make a measurement.



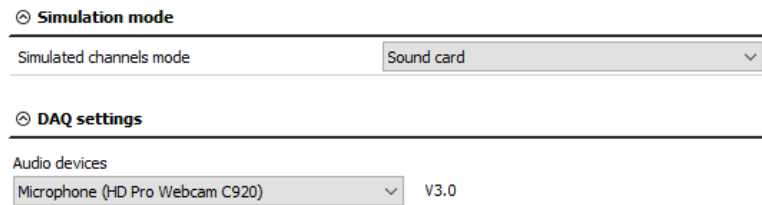


Image 59: Sound card example

## Creating a Setup file and a Project file

We will now demonstrate how DewesoftX behaves while in [Simulation mode](#) with the help of [Real measurement mode](#). Specifically, we will show you how to use [Simulation mode](#) to load a setup and to import a [project](#).

Let us first start by connecting a Dewesoft Data acquisition device to our computer. In our case, the connected device is a Sirius-XHS.

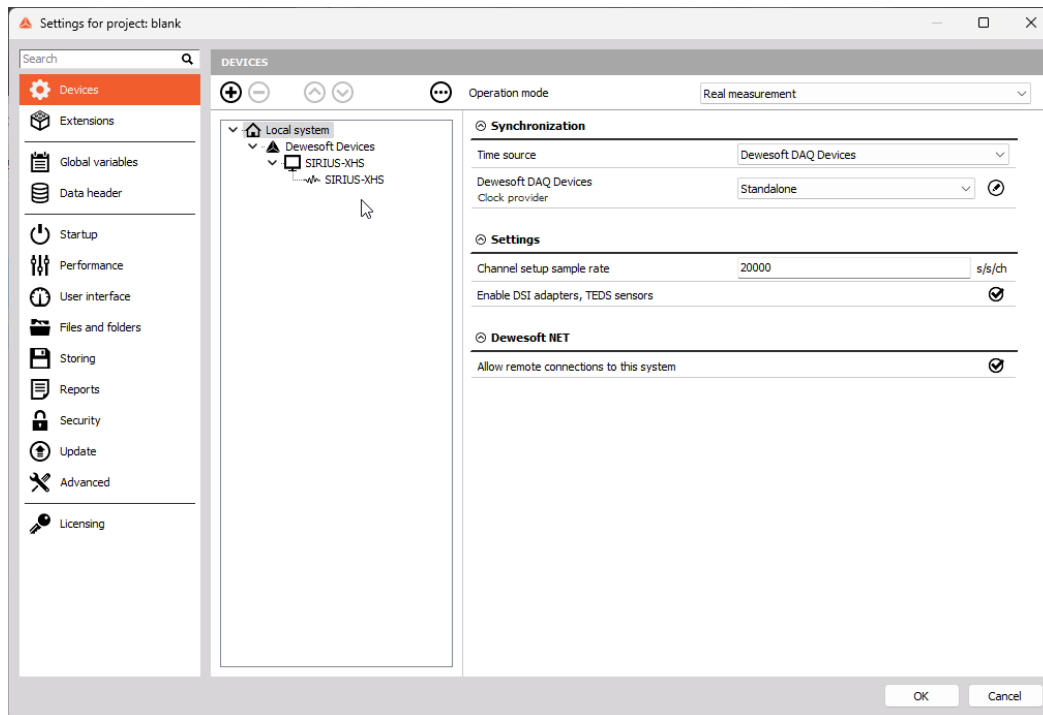


Image 60: Overview of connected devices

Then, open DewesoftX. Once the software loads, we will enter *Measure mode* and the *Setup files* tab. Navigate to the *upper-right corner*, where we can find an **Options** button. Press the button, go to the *Project tab*, and then add a new empty project. For the purpose of this demonstration, we named our new project "Project\_with\_device". Press **OK**.

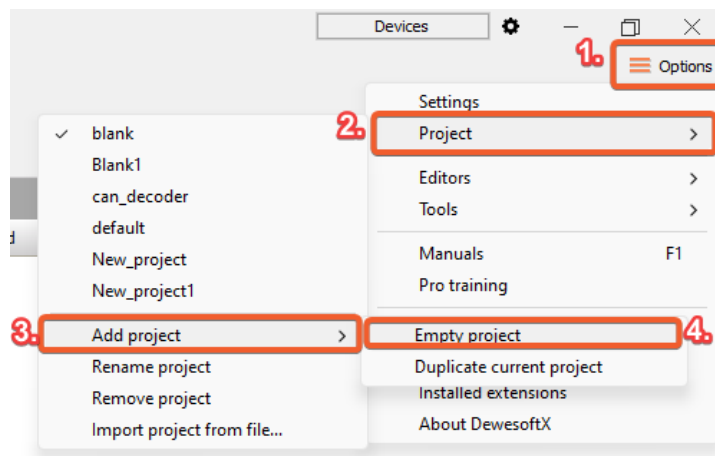


Image 61: Steps for making a new project

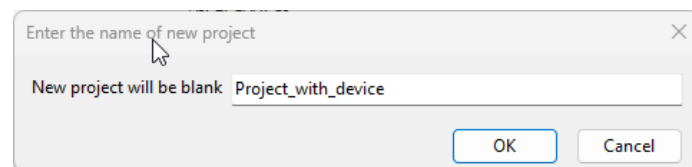


Image 62: Name of the new created project

After confirming the new Project, we will return to the Setup files tab in Measure mode. If we once again navigate to the Project options, we can see that we are now using the project we have just created.

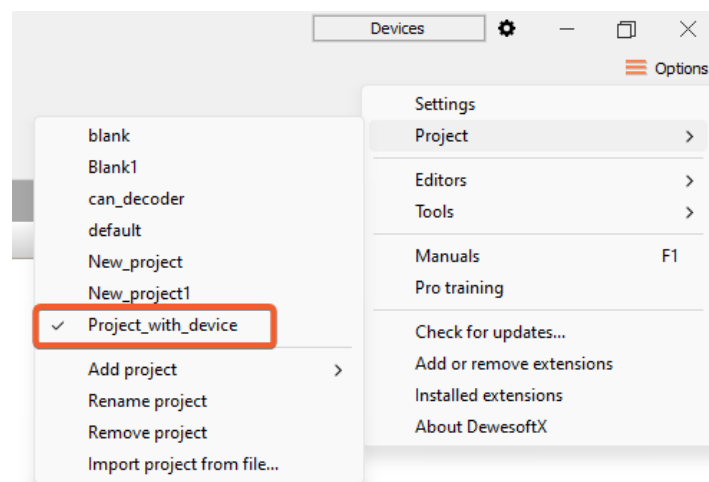


Image 63: Name of the new created project

We can now go ahead and create a new setup file. To do so, we can navigate to the *upper-left corner* and press the **New Setup** button.

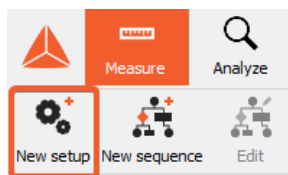


Image 64: the New Setup button

Since we are using DewesoftX in [Real measurement mode](#), and have a device connected, the Analog in tab will display all the channels that can be found on the device.

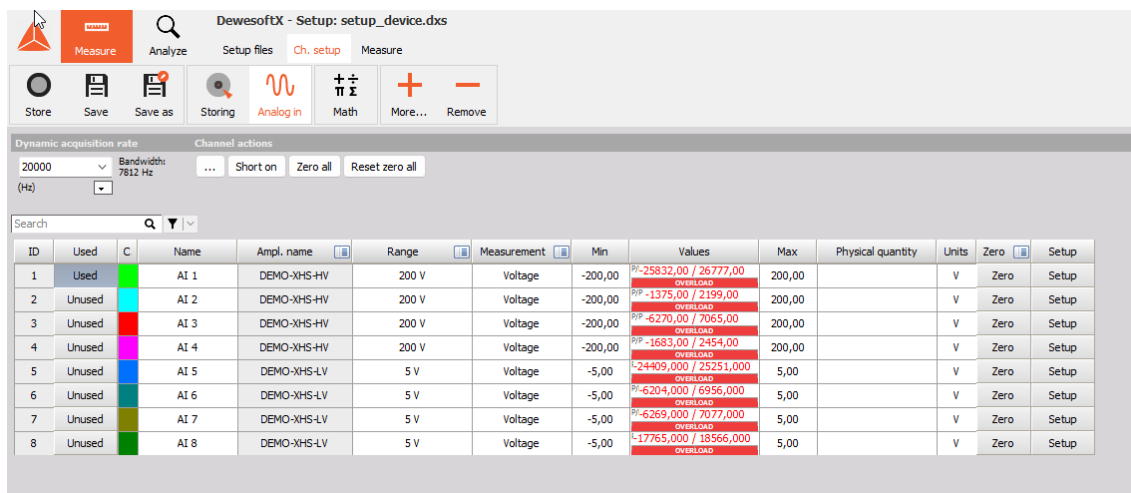


Image 65: View of the channels when the device is connected to a computer

To save a Setup, we can simply press the Save or Save as button. Let's save the setup as 'Setup\_device'.

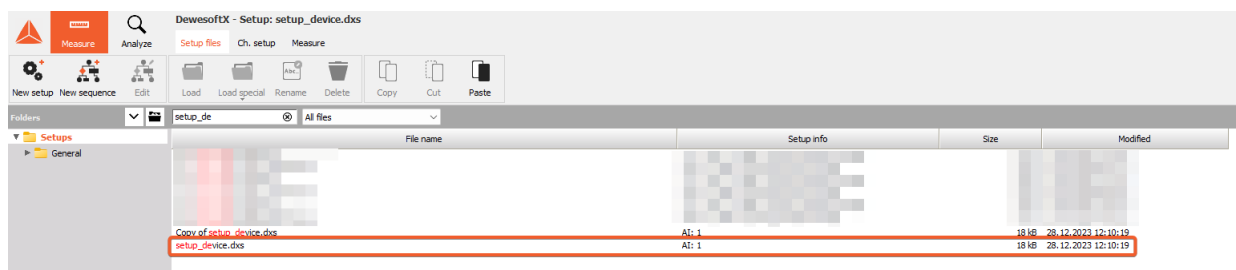


Image 66: Overview of the Setup files tab

With this step we have created a [project](#) file that we can modify to our needs, even if we do not have any DAQ devices connected.

Let us now exit DewesoftX and disconnect the device. If we try to re-enter DewesoftX, we will be greeted by a message: **unable to load project**. We get this error because the project has the device properties saved, and we currently do not have it connected to our system. We now have two options: we can choose to **ignore the warning**, which will change the project file, or choose **select another project**.

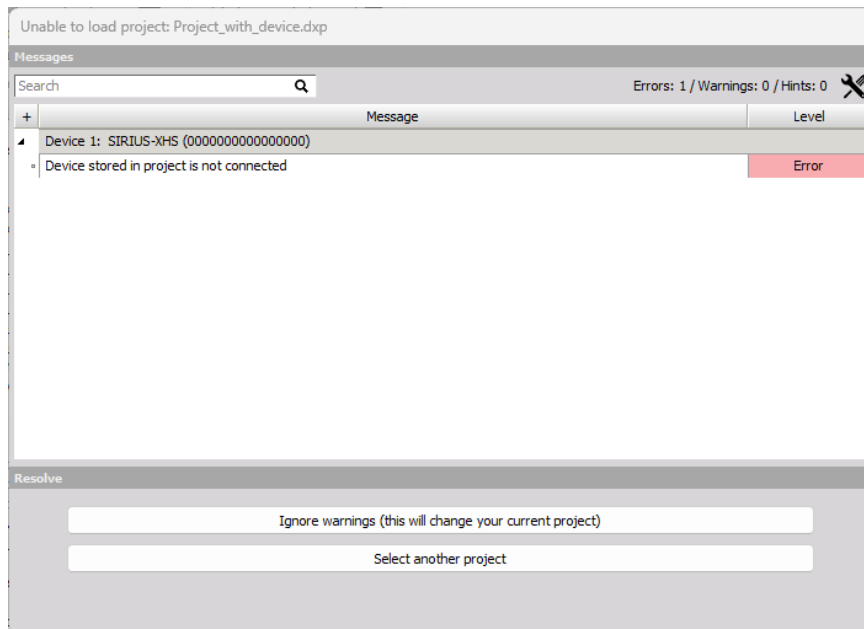


Image 67: The **Unable to load project** message we get if we try to open a project file while the proper device is not connected

If we choose to **ignore the warnings**, DewesoftX will open a modified version of the current project (in our case, *Project\_with\_device*). This means that we will still have all of our saved Security settings, Global variables, and Data headers. We will also retain the Security settings, Performance settings, and Advanced settings we saved to the project file. We will, however, notice a difference when we enter the **Device settings**. The operation mode of DewesoftX will still be set to **Real measurement**, but we will not have any devices connected, which means that we will have no channels available once we enter the Channel setup in Measure mode.

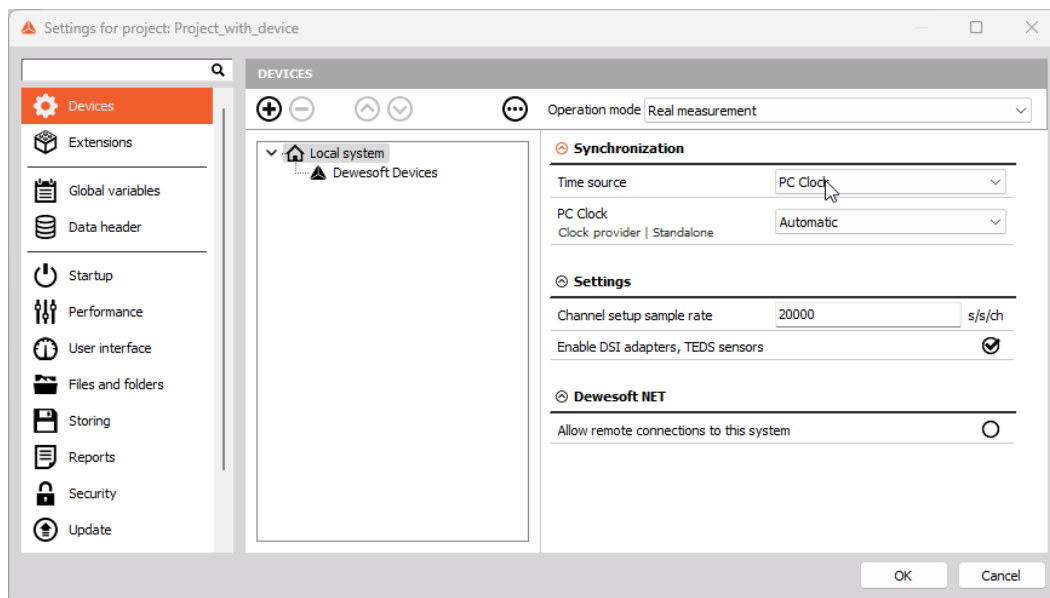


Image 68: The Devices tab, after choosing the *ignore the warnings* option

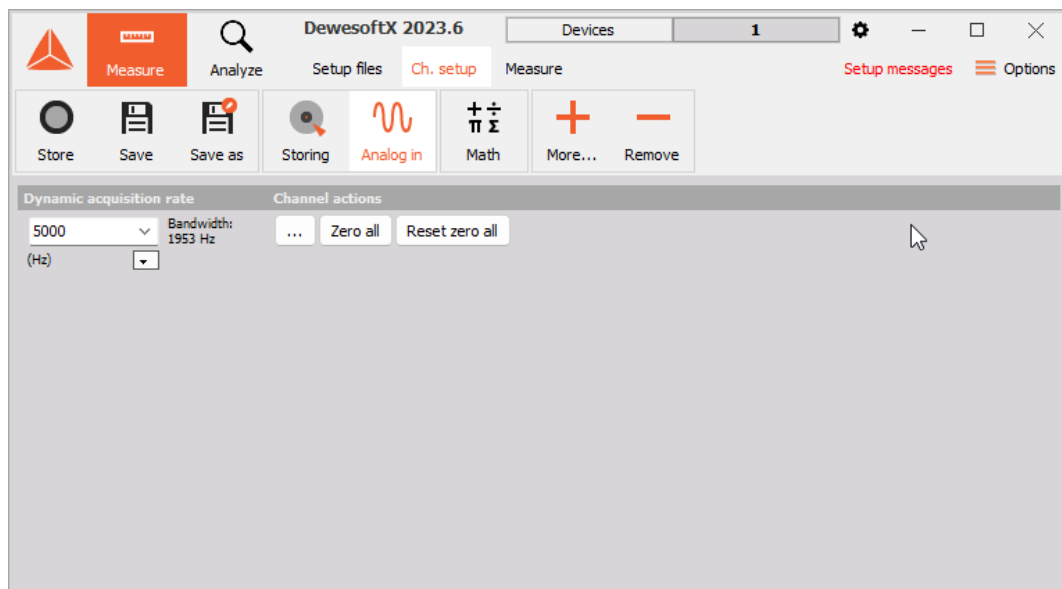


Image 69: The Ch. setup tab, after choosing the ignore the warnings option

We also have the option to **Select a different project**, where we have the option to choose between **creating a new project** or choosing a different **pre-made** one.

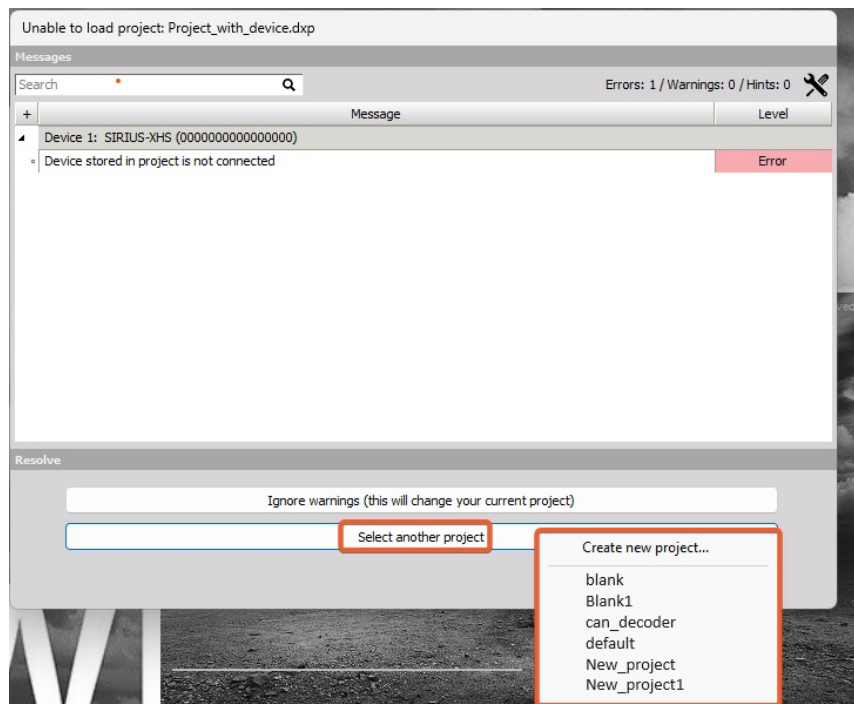


Image 70: When we press the Select another project button, we get to choose between a new project and a pre-made project

**Loading a pre-made project** will do just that-it will load different Hardware and Program settings from the ones we set previously in our project "Project\_with\_device". We should also keep in mind that if we were using this pre-made project with a device, we would get the warning in the image above.

If we choose to **create a new project**, our Operation mode will be set to **Real measurement** with no devices connected and our program settings will be set to default. This means that we will have to re-make all the Global variables, Data Headers, change our Advanced options and enabled/disabled Extensions list, ...

## Modifying a Setup file

Let's Ignore the warnings and load a modified version of "Project\_with\_device"

We are now still in **Real measurement mode**, but no devices are connected. It is therefore best if we **change** the operation mode to **Simulation mode**. In the *Setup files* tab, choose the Setup we created earlier- *Setup\_device*. Let's make a copy of it, then load the original. For now, let's load just the setup and ignore the project file.

Since we are in **Simulation mode**, we can Change the Amplifiers to whatever we want. But let's leave them as they are, and just change the other properties, such as their ranges, descriptions, ...

Measure

Analyze

Setup files

Ch. setup

Measure

Store

Save

Save as

Storing

Analog in

Math

More...

Remove

Dynamic acquisition rate

Channel actions

20000

Bandwidth:

7812 Hz

...

Short on

Zero all

Reset zero all

Search

Q

▼

ID	Used	C	Sample ...	Name	Description	Ampl. info	Ampl. name	Range	Measurement	Min	Values	Max	Physical quantity	Units	Zero	Setup
1	Used		20000	AI 1	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -8496,00 / 9263,00 OVERLOAD	200,00		V	Zero	Setup
2	Unused		20000	AI 2	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -30733,00 / 31552,00 OVERLOAD	200,00		V	Zero	Setup
3	Unused		20000	AI 3	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -13134,00 / 13954,00 OVERLOAD	200,00		V	Zero	Setup
4	Unused		20000	AI 4	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -27939,00 / 28796,00 OVERLOAD	200,00		V	Zero	Setup
5	Unused		20000	AI 5	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -13529,000 / 14159,000 OVERLOAD	5,00		V	Zero	Setup
6	Unused		20000	AI 6	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -21131,000 / 21921,000 OVERLOAD	5,00		V	Zero	Setup
7	Unused		20000	AI 7	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -16447,000 / 17286,000 OVERLOAD	5,00		V	Zero	Setup
8	Unused		20000	AI 8	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -9095,000 / 9876,000 OVERLOAD	5,00		V	Zero	Setup

Dynamic acquisition rate

Channel actions

20000

Bandwidth:

7812 Hz

...

Short on

Zero all

Reset zero all

Search

Q

▼

ID	Used	C	Sample ...	Name	Description	Ampl. info	Ampl. name	Range	Measurement	Min	Values	Max	Physical quantity	Units	Zero	Setup
1	Used		4000	Channel1	-	Voltage; 400 V;	DEMO-XHS-HV	400 V	Voltage	-400,00	PP -3836,0 / 4663,0 OVERLOAD	400,00		V	Zero	Setup
2	Unused		4000	AI 2	-	Voltage; 400 V;	DEMO-XHS-HV	400 V	Voltage	-400,00	PP -10314,0 / 11103,0 OVERLOAD	400,00		V	Zero	Setup
3	Unused		4000	AI 3	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -19330,00 / 20114,00 OVERLOAD	200,00		V	Zero	Setup
4	Unused		4000	AI 4	-	Voltage; 200 V;	DEMO-XHS-HV	200 V	Voltage	-200,00	PP -19318,00 / 20082,00 OVERLOAD	200,00		V	Zero	Setup
5	Unused		20000	AI 5	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -10916,000 / 11722,000 OVERLOAD	5,00		V	Zero	Setup
6	Unused		20000	AI 6	-	Voltage; 5 V; DC; Exc 2,5 V;	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -19319,000 / 20061,000 OVERLOAD	5,00		V	Zero	Setup
7	Unused		20000	AI 7	-	Voltage; 1 V; DC; Exc 2,5 V;	DEMO-XHS-LV	1 V	Voltage	-1,00	PP -5673,0000 / 6505,0000 OVERLOAD	1,00		V	Zero	Setup
8	Unused		20000	Channel8	-	Voltage; 1 V; DC; Exc 2,5 V;	DEMO-XHS-LV	1 V	Voltage	-1,00	PP -11579,0... / 12293,0000 OVERLOAD	1,00		V	Zero	Setup

Image 71: Analog in Channels before and after modifying their properties

After changing the analog in Channel properties, we should save the setup. (if we'd like, we can change other modules as well, add Math channels, and change the displays in measure mode.

If we now return to the *Setup files* tab, we can see that there are two options when loading a setup: the first one is the Classical **Load option**, which we have already done, and the second option is to **import a project and load the setup**. Importing the project then does just that-it imports the project and, with that, all the information that was stored on it. We must be careful when importing projects, since this action means that our currently open project will be overwritten with the project file imported from the setup file.

29

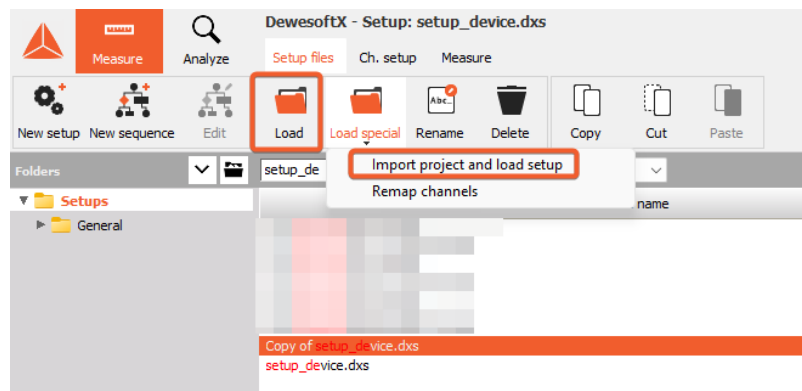


Image 72: There are two ways of loading a Setup file; one way is to load just the Setup file, with the other way we can import a project and load a setup

We can now **exit DewesoftX**, **reconnect the device**, and **re-enter DewesoftX** and switch back to **Real measurement** mode. Find the setup file we have adjusted, and open it. Let's now load the Setup file and enter Ch. Setup. We can now see that we retained all the settings we set in [Simulation mode](#).

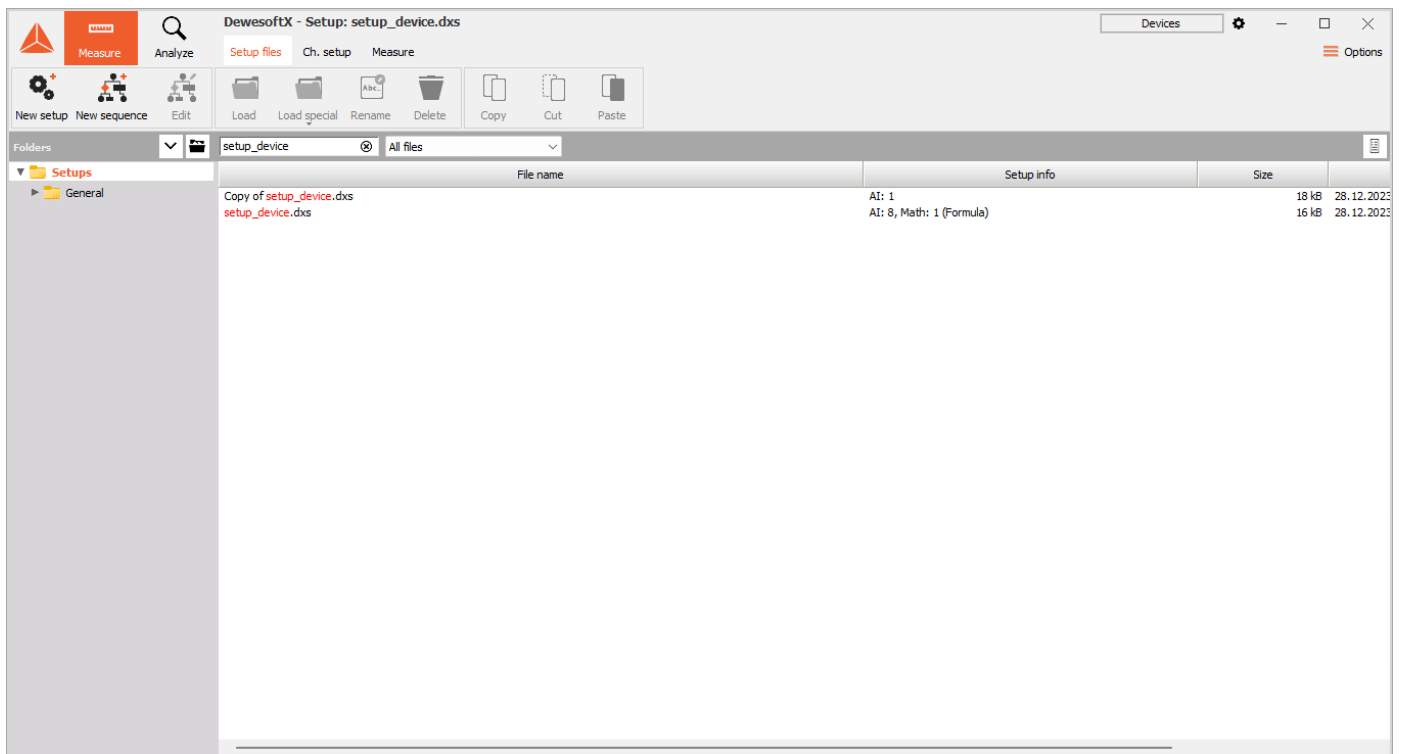


Image 73: All the settings we set in Simulation mode get retained when we open the setup in Real measurement mode while the device is connected

There is one clear distinction, though: once we are using Real measurement mode, we can no longer change the amplifiers of the channels, since we are directly influenced by the connected device.

**Simulation mode**

ID	Used	C	Name	Ampl. name	Range	Measurement	Value	Max	Physical quantity	Units	Zero	Setup
1	Used		Channel1	DEMO-XHS-HV	400 V	Voltage	-400,00	400,00		V	Zero	Setup
2	Used		AI 2	DEMO-XHS-HV		Voltage	-400,00	400,00		V	Zero	Setup
3	Used		AI 3	DEMO-XHS-HV		Voltage	-200,00	200,00		V	Zero	Setup
4	Used		AI 4	DEMO-XHS-HV		Voltage	-200,00	200,00		V	Zero	Setup
5	Used		AI 5	DEMO-XHS-LV	5 V	Voltage	-5,00	5,00		V	Zero	Setup
6	Used		AI 6	DEMO-XHS-LV	5 V	Voltage	-5,00	5,00		V	Zero	Setup
7	Used		AI 7	DEMO-XHS-LV	1 V	Voltage	-1,00	1,00		V	Zero	Setup
8	Used		Channel8	DEMO-XHS-LV	1 V	Voltage	-1,00	1,00		V	Zero	Setup

**Real measurement mode with connected device**

ID	Used	C	Name	Ampl. name	Range	Measurement	Value	Max	Physical quantity	Units	Zero	Setup
1	Used		Channel1	XHS-HV		Voltage	-400,00	400,00		V	Zero	Setup
2	Used		AI 2	XHS-HV		Voltage	-400,00	400,00		V	Zero	Setup
3	Used		AI 3	XHS-HV	200 V	Voltage	-200,00	200,00		V	Zero	Setup
4	Used		AI 4	XHS-HV	200 V	Voltage	-200,00	200,00		V	Zero	Setup
5	Used		AI 5	XHS-LV	5 V	Voltage	-5,00	5,00		V	Zero	Setup
6	Used		AI 6	XHS-LV	5 V	Voltage	-5,00	5,00		V	Zero	Setup
7	Used		AI 7	XHS-LV	1 V	Voltage	-1,00	1,00		V	Zero	Setup
8	Used		Channel8	XHS-LV	1 V	Voltage	-1,00	1,00		V	Zero	Setup

Image 74: It is possible to change amplifiers while in Simulation mode, but not while in Real measurement mode

We should now also take a look at what would happen if we loaded a setup file

- that has too many channels compared to the project file (simulation mode)
- where one channel's amplifier differed from the amplifier on the corresponding channel on the device.

If we have **more channels** than the device, the extra channels will simply be erased once the device is connected.



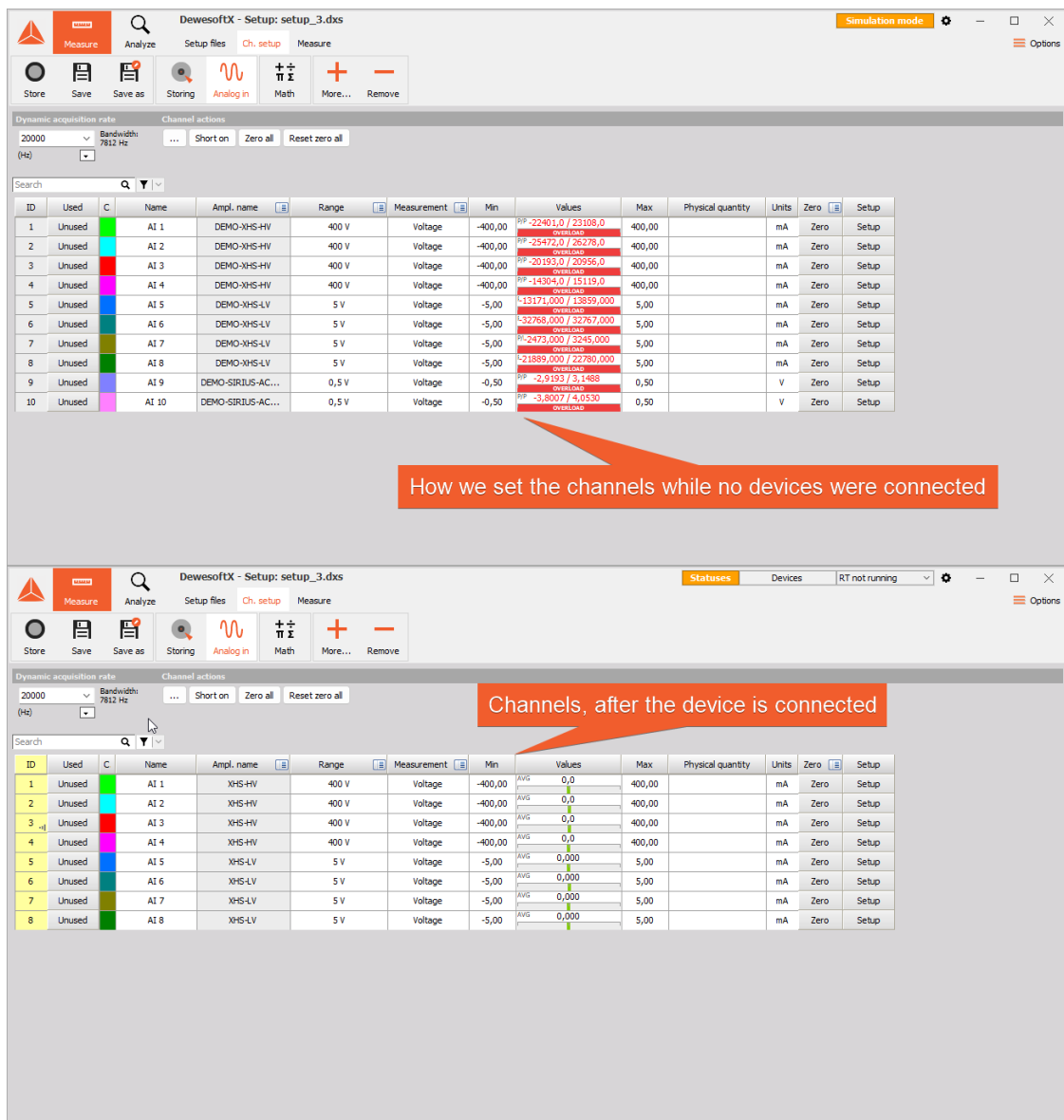


Image 75: How the channels were set in Simulation mode and how they appeared in Real measurement mode

If a channel has been set with a **different amplifier** in the Setup file than it is set on the device, the settings from the Setup will be overwritten by the default settings of the amplifier from the device that corresponds to said channel.

We also get a warning that the set amplifier is not supported on the device and that the set properties are therefore ignored.

**DewesoftX - Setup: setup\_3.dxs** Simulation mode

Measure Analyze Setup files Ch. setup Measure

Store Save Save as Storing Analog in Math More... Remove

Dynamic acquisition rate: 20000 (Hz) Bandwidth: 7812 Hz Channel actions: ... Balance amplifiers Short on Zero all Reset zero all

How we set the channels when the device was disconnected

ID	Used	C	Name	Ampl. name	Range	Measurement	Min	Values	Max	Physical quantity	Units	Zero	Setup
1	Unused	Green	AI 1	DEMO-SIRIUS-STG...	10 V	Voltage	-10,00	PP -2,266 / 2,510	10,00		mA	Zero	Setup
2	Unused	Blue	AI 2	DEMO-XHS-HV	400 V	Voltage	-400,00	PP -5054,0 / 5800,0 OVERLOAD	400,00		mA	Zero	Setup
3	Unused	Red	AI 3	DEMO-XHS-HV	400 V	Voltage	-400,00	PP -9707,0 / 10505,0 OVERLOAD	400,00		mA	Zero	Setup
4	Unused	Magenta	AI 4	DEMO-XHS-HV	400 V	Voltage	-400,00	PP -12374,0 / 13055,0 OVERLOAD	400,00		mA	Zero	Setup
5	Unused	Cyan	AI 5	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -3571,000 / 4445,000 OVERLOAD	5,00		mA	Zero	Setup
6	Unused	Teal	AI 6	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -1638,000 / 2429,000 OVERLOAD	5,00		mA	Zero	Setup
7	Unused	Dark Green	AI 7	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -3009,000 / 3723,000 OVERLOAD	5,00		mA	Zero	Setup
8	Unused	Dark Blue	AI 8	DEMO-XHS-LV	5 V	Voltage	-5,00	PP -5161,000 / 5928,000 OVERLOAD	5,00		mA	Zero	Setup
9	Unused	Light Green	AI 9	DEMO-SIRIUS-AC...	10 V	Voltage	-10,00	PP -1,887 / 2,152	10,00		V	Zero	Setup
10	Unused	Light Blue	AI 10	DEMO-SIRIUS-AC...	10 V	Voltage	-10,00	PP -8,731 / 8,999	10,00		V	Zero	Setup

The channels after we connected the device

Messages

Search

Errors: 0 / Warnings: 2 / Hints: 4

Message	Level
XHS-HV on AI 1	
loaded InputType (SE) not supported, property ignored.	Hint
loaded Excitation (0 V) not supported, property ignored.	Hint
could not set exact loaded Range (10 V), set to 200 V.	Warning
loaded LPFilter_Type (BE) not supported, property ignored.	Hint
could not set exact loaded LPFilter_Hz (ALIASFREE), set to Off.	Warning
loaded LPFilter_Order (2) not supported, property ignored.	Hint

Resolve

Remap channels

Close

Image 76: If we set the wrong amplifier, we get a warning

# What is Dewesoft NET and how to use it?

## Dewesoft NET

With [Dewesoft NET](#), your measurement system can be controlled remotely with the ease of use you couldn't imagine before. [Dewesoft NET](#) also serves as the center for Distributed Data Acquisition systems where you have multiple systems located either together or scattered across an entire continent. By enabling this option, you allow the remote connections to your system.



Image 77: Enable Dewesoft NET

Once the remote connections to your system are allowed, the system can be added as a measurement unit on the client.

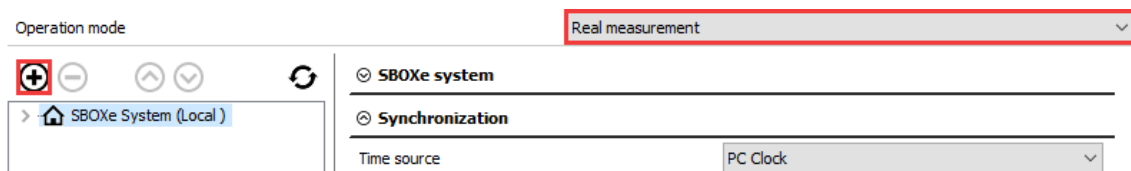


Image 78: Open add device window

Measurement units connected through the [Dewesoft NET](#) system can be found under Standard devices.

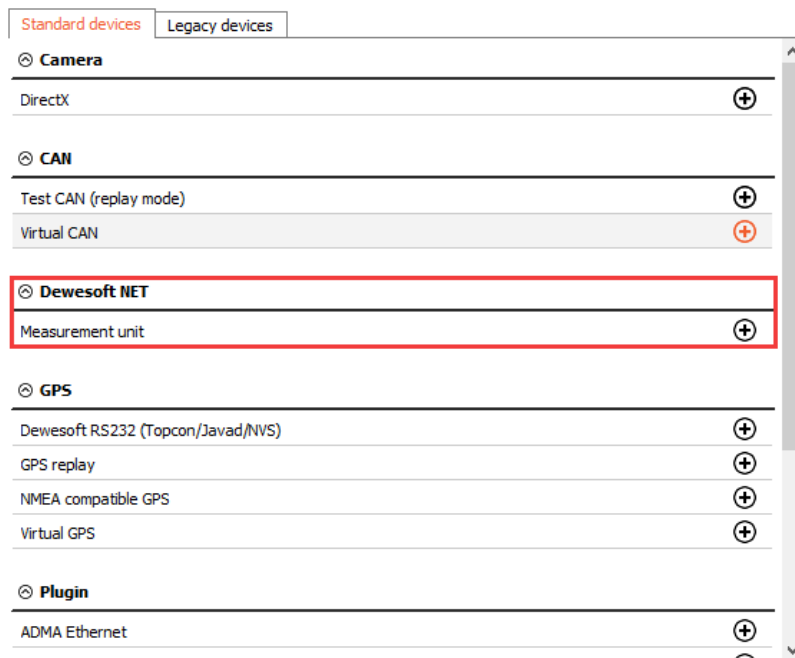


Image 79: Add Dewesoft NET measurement window

For more informations about the [Dewesoft NET](#) system, visit out [Dewesoft NET PRO training course](#).

# How to add Extensions?

If you want to enable plugins or extensions, please go to the Extensions section. Extensions are divided into five different sections:

- Export (export the datafiles to different formats, like ATI(.ati), Google earth(.kml), Broadcast wave format(.bwf), Standard data file.dat, Wave.wav, Technical data management(.tdm), ...)
- Import (DS NET USB log files or text files.)
- Math application (set additional settings to several additional math applications like balancing, CA, fatigue analysis, FFT analyzer, FRF, Power, ...)
- Plugin (enable several additional plugins like Polygon, Sound Power, Weather station, DS NET, Chapter 10, AutoExport, Control channels, Ethernet receiver, ...)
- Visual controls (information about different visual controls inside Dewesoft like FRF geometry, Modal circle, Polygon, Rotor balancer, Altitude indicator.)

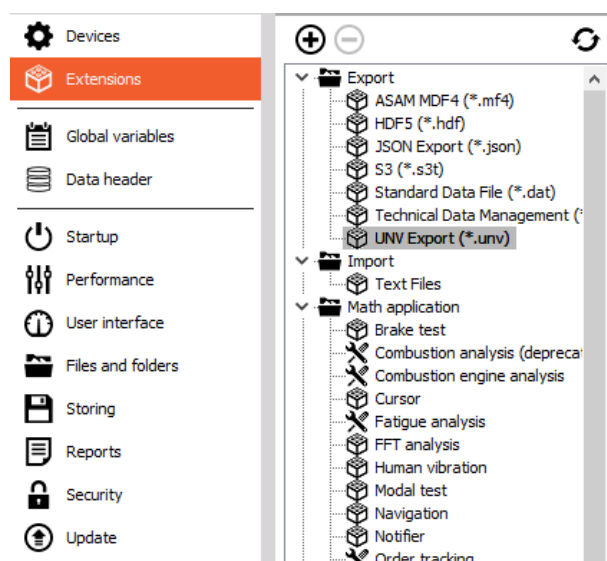


Image 80: Dewesoft extension list

To add a new extension, click the plus button. Here you can see plugins, that are disabled. To enable them, select the plugin and click on the Enable button.

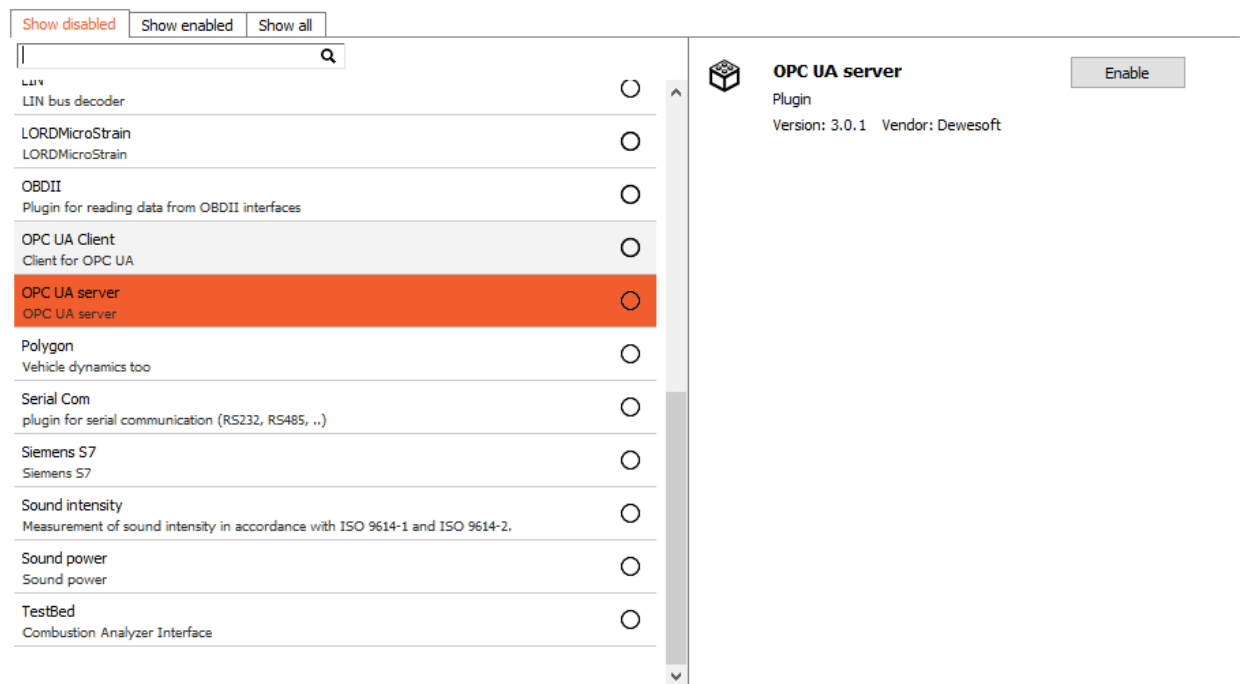


Image 81: Enable the extension in Dewesoft settings

When selecting all the needed Extensions, we can see some specific settings related to the selected plugin. To learn more about their meaning, please go to courses that are describing the specific section.

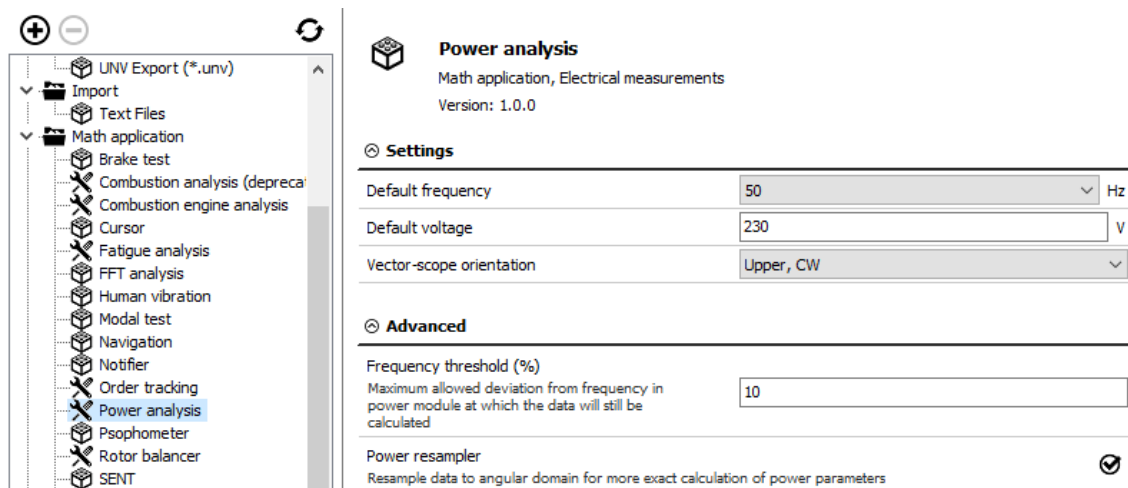


Image 82: Extensions specific settings

HINT: After enabling all the needed plugin, you have to refresh the list by clicking on the icon. After doing that, Dewesoft needs to be restarted.

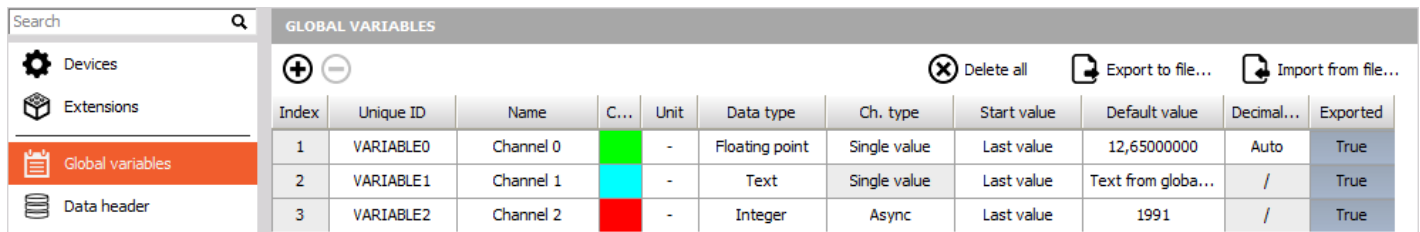


Image 83: Refresh extensions list



# What are Global Variables?

Global variables define the channels which can be used in a sequencer, math section, and displays. New variables can be added with a plus button.



Index	Unique ID	Name	C...	Unit	Data type	Ch. type	Start value	Default value	Decimal...	Exported
1	VARIABLE0	Channel 0		-	Floating point	Single value	Last value	12,65000000	Auto	True
2	VARIABLE1	Channel 1		-	Text	Single value	Last value	Text from globa...	/	True
3	VARIABLE2	Channel 2		-	Integer	Async	Last value	1991	/	True

Image 84: Global variables set-up

The Unique ID must be defined, which is used as a reference for all other places where internal variables are used. Channel name can be freely defined, we can define the color and the unit.

Data type can be:

- Floating point (floating decimal point, we can also define the number of decimal numbers)
- Integer (whole number)
- Text (text written by the user)

Channel Type can be:

- Single value (storing only one value per entire measurement)
- Async (adding value each time the channel changes from sequencer or math)

Start value can be selected from:

- Last value (variable will remember the last value)
- Default value (it will always start with the defined default number)

Default value describes what value the channel has when starting up.

# What is a Data Header?

Data header allows you to define input fields in which operators can enter additional not measured parameters at the start or end of the measurement.

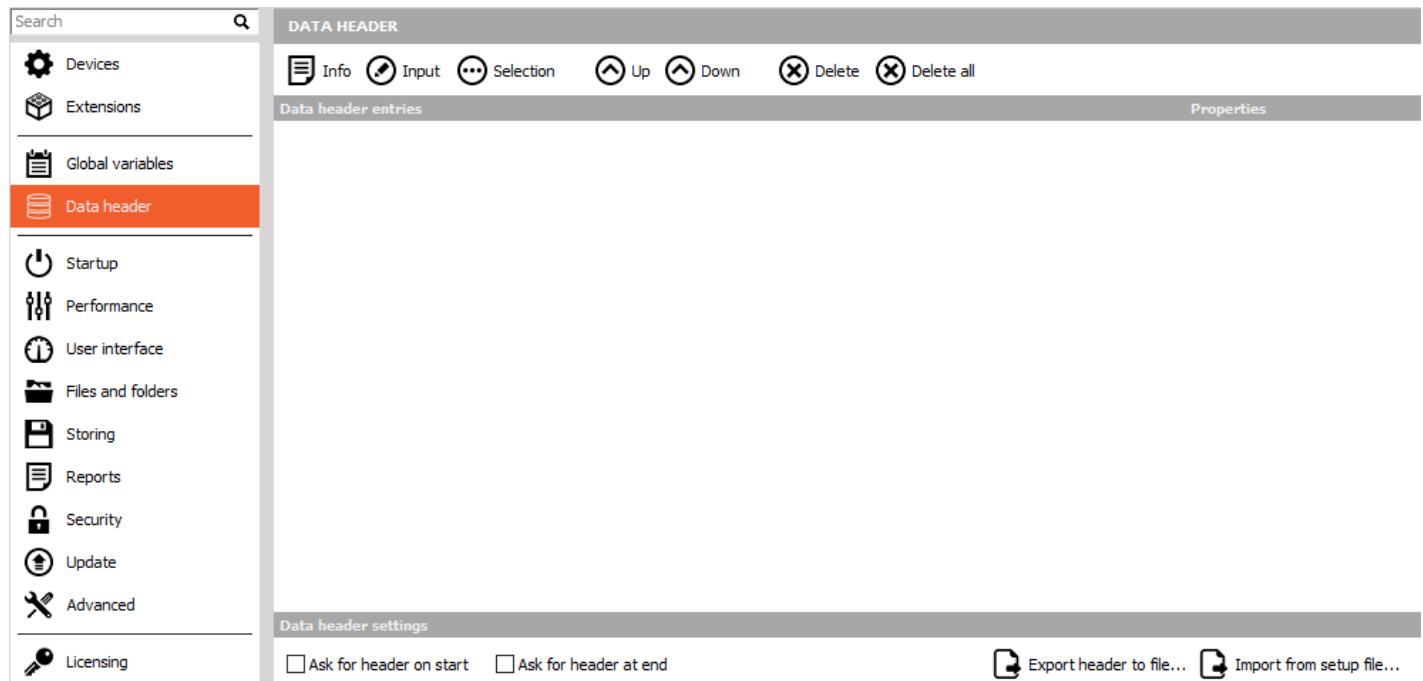


Image 85: Data header settings

In data header, we can define:

- **Info field**- The Info button adds a new line in the right section of the window. Just click in the new line and enter the desired text, for example 'File header information'.

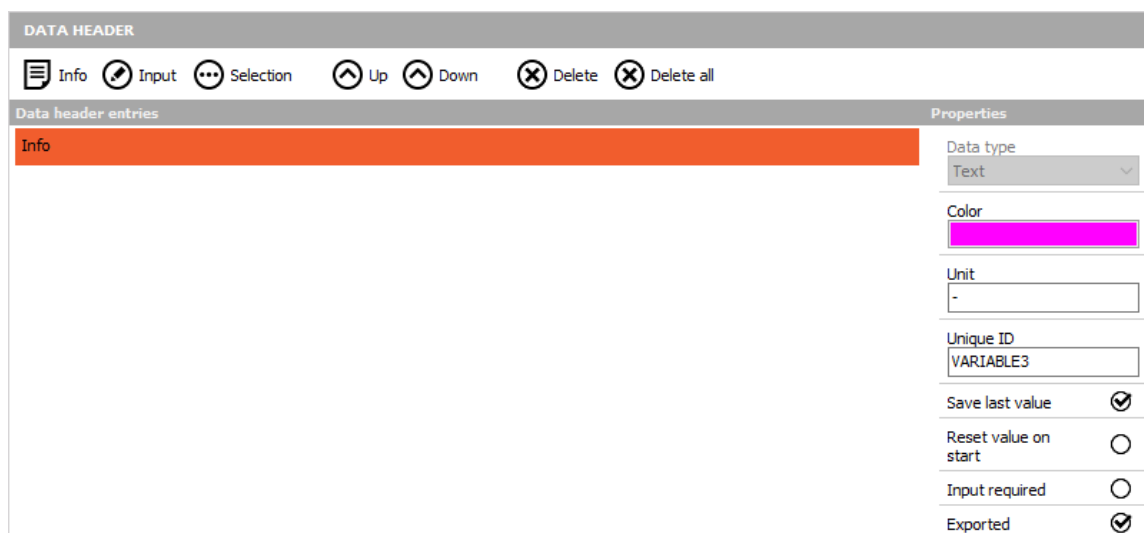


Image 86: Data header info field

- **Input field**- The Input field can be used for any single line values or comments (you can use it for example for location information...). Let's create a new field with the press on the Input icon and rename it (for example to 'Location'). To rename the field, just click on the name and overwrite it:



The screenshot shows the 'DATA HEADER' configuration window. At the top, there is a toolbar with icons for Info, Input, Selection, Up, Down, Delete, and Delete all. Below this is a section for 'Data header entries' with a table. The first entry is 'Input', which is highlighted in orange. To the right of the table is a 'Properties' panel for the selected 'Input' field. The properties include: Data type (Text), Color (a pink color swatch), Unit (-), Unique ID (VARIABLE3), Save last value (checked), Reset value on start (unchecked), Input required (unchecked), and Exported (checked).

DATA HEADER	
Info	Input
Selection	Up
Down	Delete
Delete all	
Data header entries	
Input	

Properties	
Data type	Text
Color	<span style="background-color: #FF69B4; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
Unit	-
Unique ID	VARIABLE3
Save last value	<input checked="" type="checkbox"/>
Reset value on start	<input type="checkbox"/>
Input required	<input type="checkbox"/>
Exported	<input checked="" type="checkbox"/>

Image 87: Data header input field

- **Selection field** -The Selection field can be used for creating a list of 'value' and is very useful when you have to use the same 'value' very often. This can be for example a list of user names or also a list of departments within your company. Let's create a new list with the press on the Selection icon and label it (for example 'User' - click on 'Selection' and overwrite it).

The screenshot shows the 'DATA HEADER' configuration window. The 'Data header entries' table now has a 'Selection' entry highlighted in orange. The 'Properties' panel for the 'Selection' field shows a dropdown menu with a blue background and a three-dot menu icon on the right.

DATA HEADER	
Info	Input
Selection	Up
Down	Delete
Delete all	
Data header entries	
Selection	

Image 88: Data header selection

Now you have to define the content of your list. To do that, press the three dots button on the right side and Create Selection. When the list window appears, enter the desired names in the New item field and press the Add item button.

The screenshot shows the 'Create selection list' dialog box. It has a title bar with a warning icon and a close button. The dialog is divided into two main sections: 'Current items' on the left, which is an empty list box, and 'New item' on the right. The 'New item' section contains a text input field with 'User 1' entered, and four buttons: 'Add item', 'Remove item', 'Move up', and 'Move down'. At the bottom right is an 'OK' button.

Image 89: Add item to the selection list

The name will appear in the list on the left side, in our example labeled User 1.

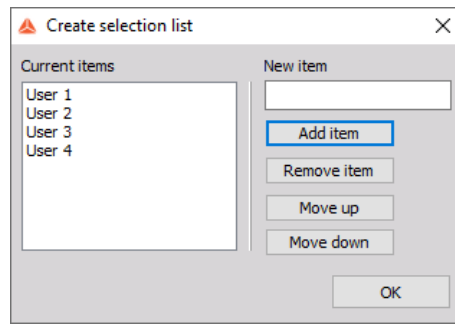


Image 90: List of items in the selection list

Enter as many names as required. You can also edit values directly on the list by selecting an item. To remove an item, just select it from the list on the left side and press the Remove item button. When all names are entered, press the OK button or press Cancel to reject all entries. The result of upper entries is the following drop-down list in the global header window:

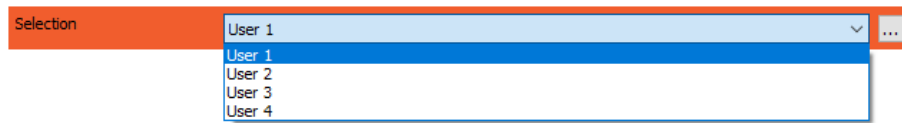


Image 91: Selection list dropdown

- **Position up/down-** With both buttons up and down, you can now change the position of the:
  - File name field
  - Comments field
  - Input field
  - Selection field
  - Info field (like created above)
- You can **change the position of fields** at any time. Just select it (the red box will appear) and move it up or down using the appropriate button.
- **Delete field** - To remove unused or non-required fields, select the field and press the Delete icon. The only field you can't delete is the File name entry field.

Under header settings, you can select whether to ask for the header on the start of the storing or at the end:

- Ask for header on start option will pop up a window with all entries before the start of storing.
- Ask for header at the end will open the same window when the measurement is stopped.



Image 92: Data header settings

You can also export the header to .xml file or import the header from the setup file.

If we have selected the option Ask for the header at the end, we get the window like in the picture below after we stop storing the data. We can

see the input sections defined earlier in Settings.

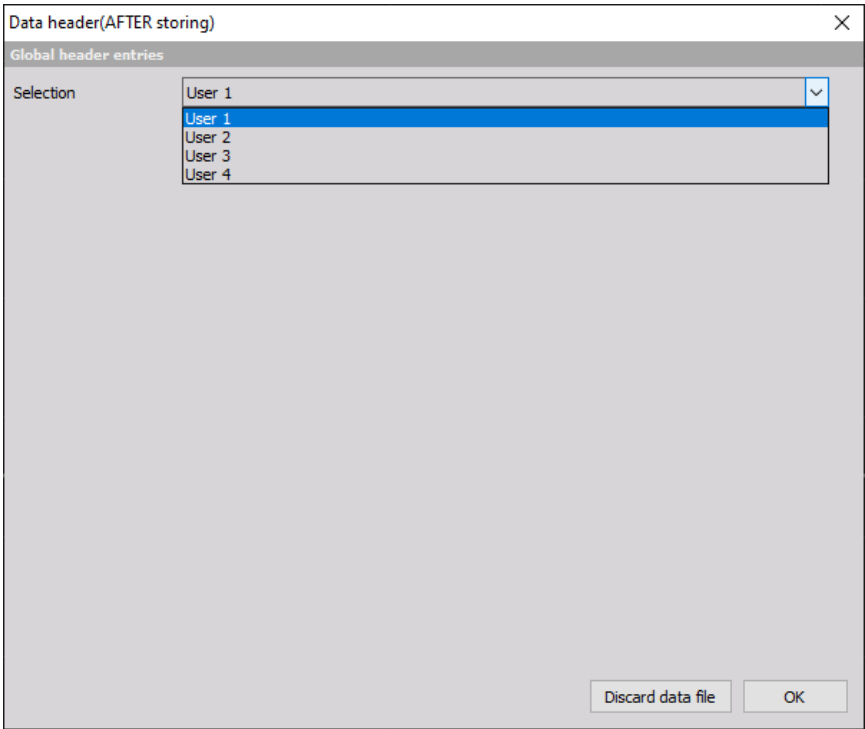


Image 93: Data header after storing

# How to Startup the Dewesoft X?

Startup option allows you to select what do you want [Dewesoft X](#) to do when you start it.

Multiple instances of [Dewesoft X](#) can be selected to allow that [Dewesoft X](#) is started multiple times on the same computer for special applications (running different devices, analysing old data while measurement process is running...).



Image 94: Enable multiple instances option

If you have a measurement device connected to the computer, you cannot have multiple instances of [Dewesoft X](#)!

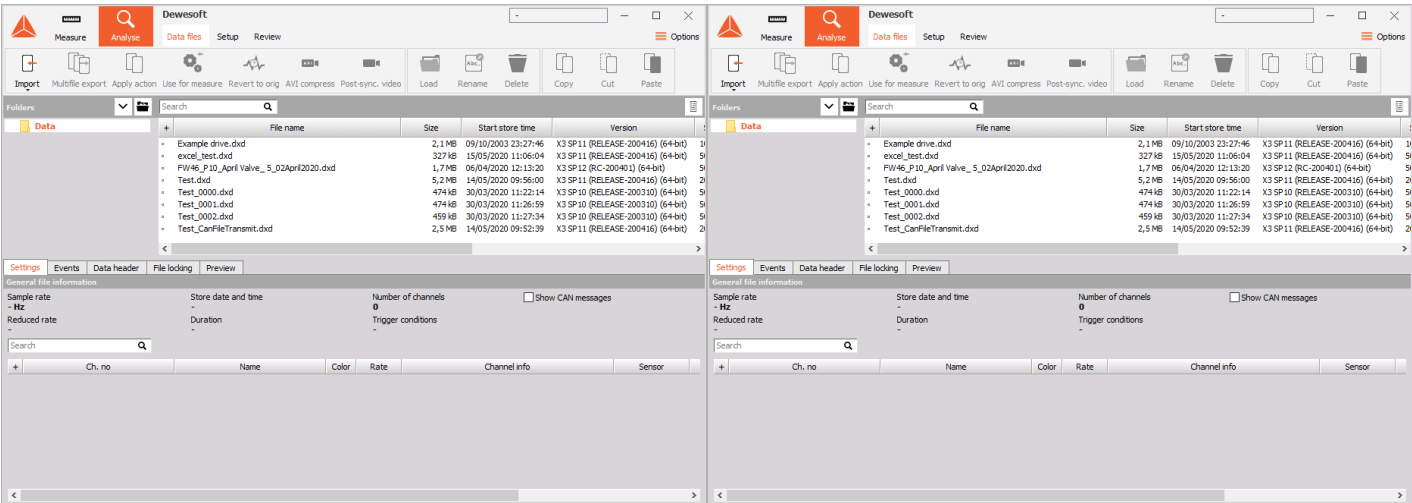


Image 95: Dewesoft running two instances

Under Starting setup options you select what to do when [Dewesoft X](#) starts.

- Nothing ([Dewesoft X](#) opens normally, no action is performed.)



Image 96: Default startup option

- Load setup ([Dewesoft X](#) automatically loads a defined setup. We can also tell the program to go straight to Acquisition mode or to start [Dewesoft X](#) in full-screen mode.)

⊙ **Starting setup**

When Dewesoft starts do	Load setup	▼
Setup filename	C:\DEWESoft\Setups	mesh_sideband_energy.dxs
Automatically start acquisition		<input type="radio"/>
Start in full screen mode		<input type="radio"/>

Image 97: Load setup when Dewesoft starts

- Load sequence (Load sequence at start will load the sequence defined in the file name and run when [Dewesoft X](#) starts.)

⊙ **Starting setup**

When Dewesoft starts do	Load sequence	▼
Sequence filename	C:\DEWESoft\Setups	%QFirstTry.dxt

Image 98: Load sequence when Dewesoft starts

# How to set Performance settings?

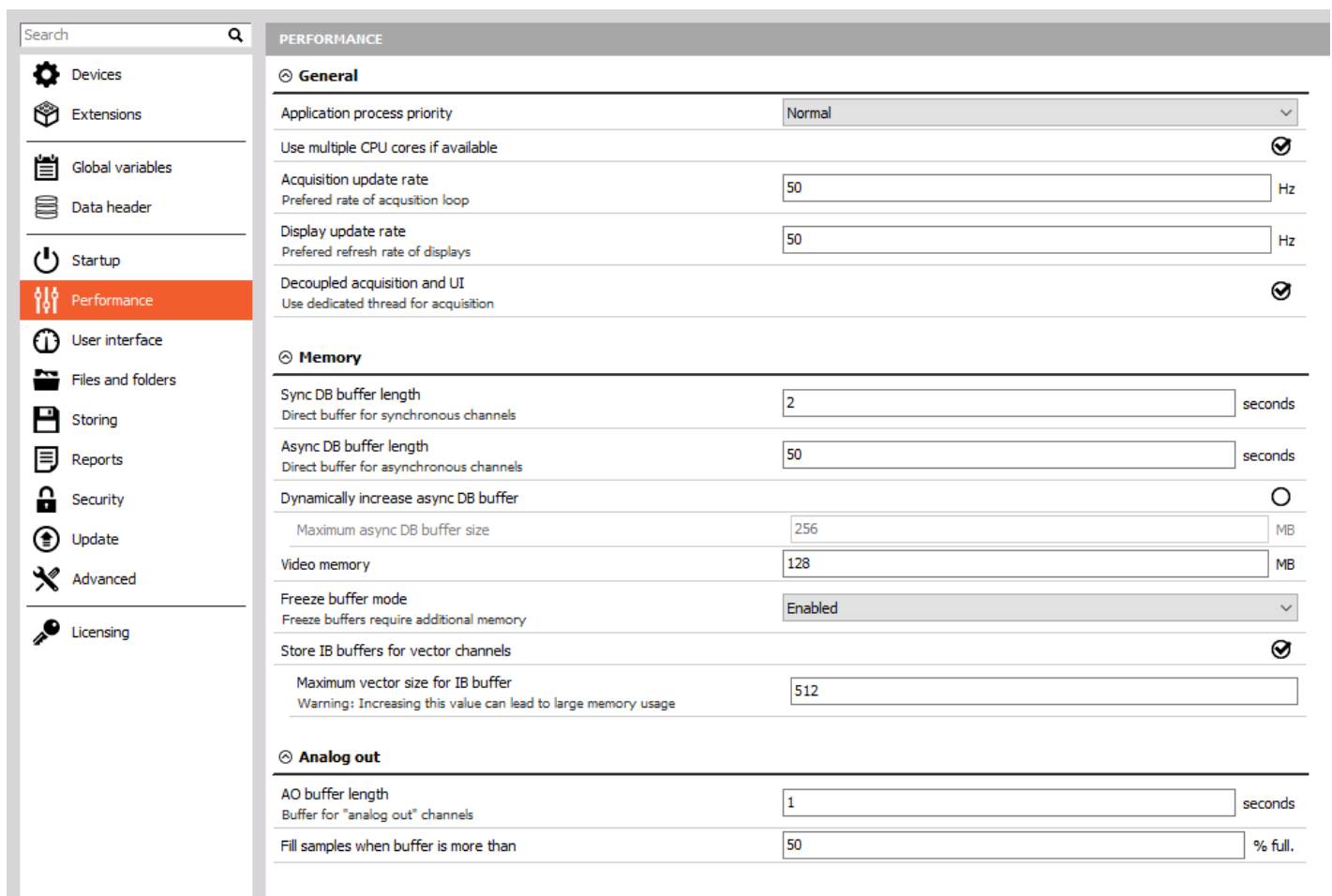


Image 99: Dewesoft X performance settings

## General

- Application process priority defines the process priority of [Dewesoft X](#).

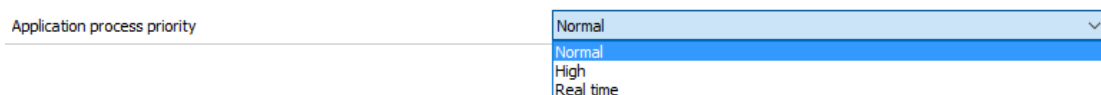


Image 100: Application process priority

- Usually, [Dewesoft X](#) should run on its own in the OS and, therefore Normal priority is enough.
  - High priority allows [Dewesoft X](#) to increase its performance if other processes are also running on the system.
  - Real-time is useful only in special applications. Even though thinking that real-time priority would be the best, but in reality, it might stall acquisition low-level drivers which must have enough CPU time. Setting [Dewesoft X](#) to real-time would mean that tasks like displaying data on the screen would have to high priority.
- Use multiple cores is a very important function to split the data acquisition and math processing between different CPU cores.
  - Acquisition update rate defines the preferred rate of acquisition loop. The graphic part was always a part of acquisition loop (data acquisition, calculation, storing, graphics). The graphics were drawn at the same time and that did not allow us to run a faster acquisition. Now, the graphics can be done in parallel. As a result, we could lower the priority of graphic part and have faster acquisition

times. Average acquisition loop was running with about 50 Hz and now it can run up to 1000 Hz. Set the acquisition update rate higher if you want to have the faster reaction times.

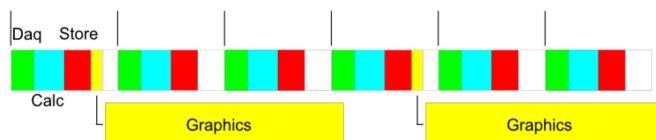


Image 101: Acquisition update rate

- Display update rate option defines the preferred refresh rate of displays. With defining lower display update rates, we can reduce CPU load of Displays. If we change the update rate from 50 Hz to 1 Hz, the CPU load of displays dropped from 30 % to 1 %. This is very useful when we are on the limit with our computer CPU.
- Decoupled acquisition and UI option are enabled by default. This option will use a dedicated thread for acquisition. One core will be used for acquisition and one core will be used for the user interface.

## Memory

Memory sizes are important to run the software correctly for a different application. There are sizes which need to be defined for:

- Sync DB - This is the memory size in seconds for all synchronous channels (analog, counters, ...). The value should be larger than maximum refresh time - 2 seconds is the default.
- Async DB - This is the memory size for all asynchronous channels (CAN, GPS, and many others...). The default value is 50 seconds.
- Video memory - Size of the video buffer; with lots of cameras the default 64 MB value should be reduced to half, for example not to run out of system memory.

Enable Freeze buffers should be enabled if we plan to use Freeze mode (to see data during the measurement).

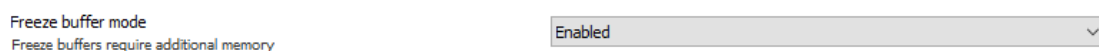


Image 102: Freeze buffer mode

When we enable it, the Freeze button is seen during the Measure mode.

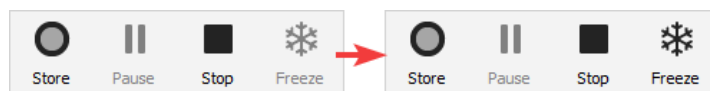


Image 103: Freeze button in measurement

When storing the data, you will see a special Freeze button. This is a sign for Grandview, enhanced freeze mode. Grandview allows the user to

review stored data from the start of measurement without interrupting data acquisition and storing process. User is able to zoom into any region of data already stored on disk during the measurement and review any type of signal including video, which makes (long term) measurements easier to manage.

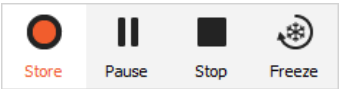


Image 104: Pressed store button

# Analog out

⊙ **Analog out**

AO buffer length

1

seconds

Buffer for "analog out" channels

Fill samples when buffer is more than

50

% full.

Image 105: Analog out settings

- AO buffer length - when you use the Function generator function in [Dewesoft X](#), the software sends the data to Sirius. Sirius waits for the amount of AO buffer length (in our case, this is 1 second) before it starts to output the signal. This has to be done, to prevent data loss. By default, the buffer length is set to 1 second.

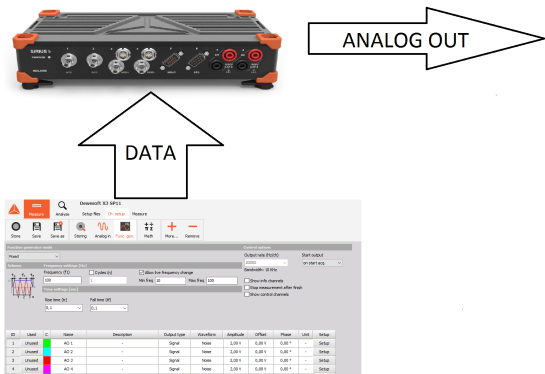


Image 106: Analog out buffer

- Fill samples when the buffer is more that \_\_ % full. Let's say that we have a buffer of 2 seconds. The samples will be sent when the buffer will be filled with the defined amount of percentage (at 2-second buffer, 50 % means, that it will wait for 1 second). By default, the value is set to 50 %.



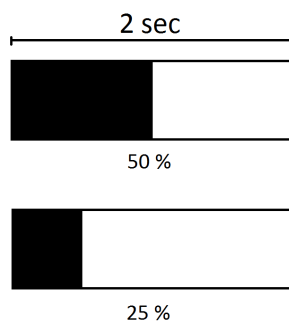


Image 107: Analog out buffer 2

# How to customize the User Interface?

Under the user interface section, we define the language of the program, display characteristics, sound card selection, and keyboard shortcuts.

The screenshot shows the 'User interface' settings window. The left sidebar has a search bar and a list of settings categories: Devices, Extensions, Global variables, Data header, Startup, Performance, User interface (highlighted), Files and folders, Storing, Reports, Security, Update, Advanced, and Licensing. The main panel is titled 'INTERFACE' and contains several sections:

- Language**: A dropdown menu set to 'English (default)'.
- Displays**:
  - Font size: A text input field with '8'.
  - Background color: A dropdown menu set to 'Dark'.
  - Show channel description: A checkbox with the text 'When checked, visual controls will show description next to channel name'.
  - Show displays toolbar in full screen mode: A checkbox.
  - Auto generate displays: A checked checkbox with the text 'If enabled, setup modules will automatically generate displays for the first time'.
  - Relative time format: A dropdown menu set to 'Day, HH:MM:SS'.
  - Absolute time format: A dropdown menu set to 'Local time'.
- Sounds**:
  - Enable recording of voice events: An unchecked checkbox.
  - Sound card driver: A dropdown menu.
  - Sound format: A dropdown menu with the text 'Select samplerate and bit depth'.
  - Beep at start trigger: An unchecked checkbox.
  - Beep at stop trigger: An unchecked checkbox.
- Shortcuts**:
  - Shortcut mapping: A dropdown menu set to 'Legacy'.
  - A list of shortcuts with their corresponding key combinations and edit icons (pencil):

Shortcut	Key Combination
Help	F1
Full screen	CTRL + F
Channel setup	F2
Measure mode	F3
Start storing	F5
Trigger	F6
Stop acquisition	F7
Keyboard event	SPACE
Notice event	N
Voice event	V
Cursor event	C
Switch freeze mode	CTRL + ALT + F
Show performance monitor	CTRL + SHIFT + P
Pause storing	F8
Show settings	F12
Design mode	CTRL + D
Undo	CTRL + Z
Redo	CTRL + Y
- User manual**:
  - Offline user manual resources only: An unchecked checkbox.

At the bottom right, there are 'OK' and 'Cancel' buttons.

Image 108: User interface settings

# Language

The language file can be selected from the drop-down list.

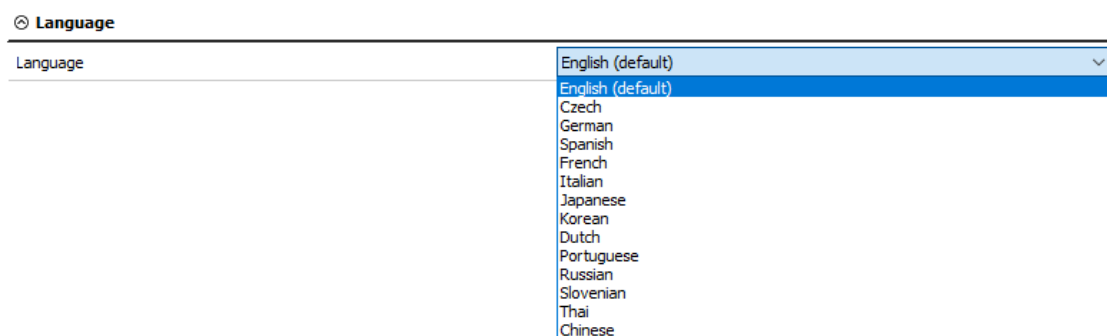


Image 109: Dewesoft language selection

The language files can be found in a folder locale located in [Dewesoft X](#) installation folder. Here, you can also add your own language files if they are written with the appropriate tool.

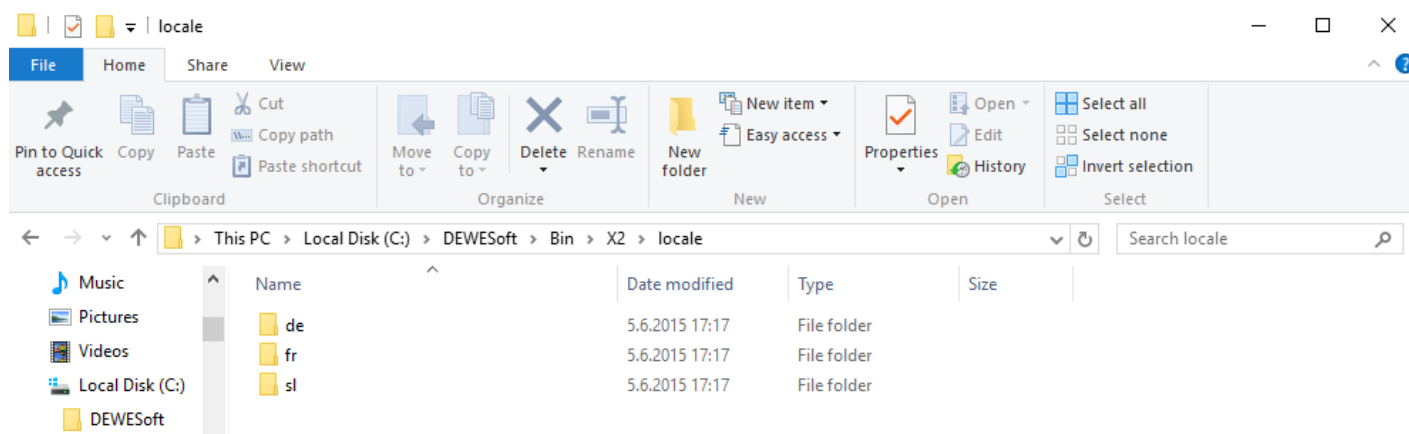


Image 110: Language files

# Displays

Font size defines the size of the font in measure mode (example: in the left picture, the font size is 8 and in the right picture the font size is 16).

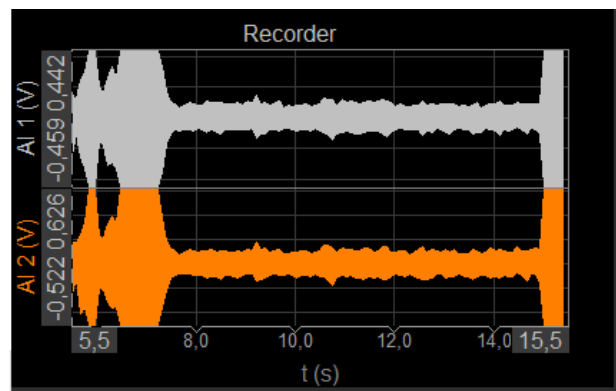
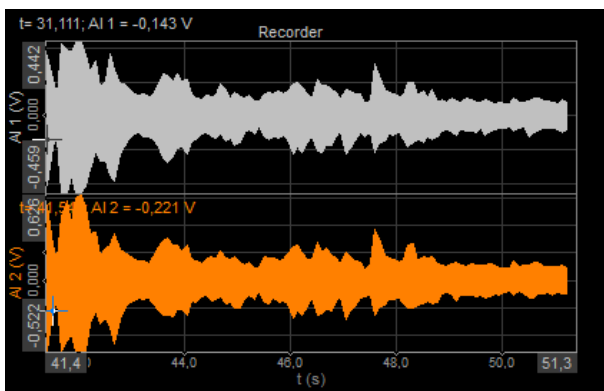


Image 111: Image font size

If we change the background color to white, the background of the measure mode will change.

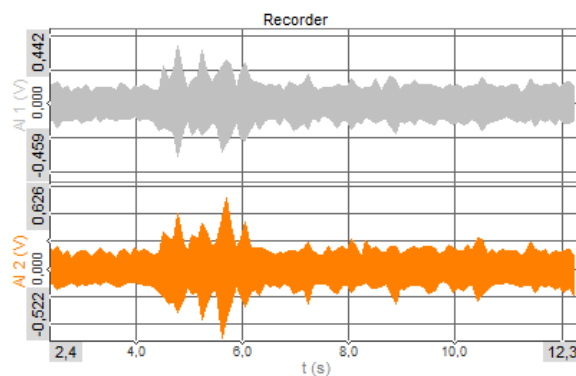


Image 112: Dewesoft light background

Show channel description sets that the channel description is shown in the name of the channels in visual controls (like recorder, for example). When switched off, only names are shown.

Dynamic acquisition rate

Channel actions

5000

Bandwidth: 1953 Hz

...

Balance amplifiers

Short on

Zero all

Reset zero all

[Hz]

Search

ID	Used	C	Name	Description	Ampl. name	Range	Measure...	Min	Values	Max	Physical ...	Units	Zero	Setup
1	Used		AI 1	First sensor	DEMO-SIRIUS-ACC	10 V	Voltage	-10,00	-6,424 / 6,634	10,00		V	Zero	Setup
2	Unused		AI 2	Second sensor	DEMO-SIRIUS-ACC+	10 V	Voltage	-10,00	-3,273 / 3,540	10,00		V	Zero	Setup
3	Unused		AI 3	Third sensor	DEMO-SIRIUS-ACC+	10 V	Voltage	-10,00	-10,000 / 10,000 OVERLOAD	10,00		V	Zero	Setup

Image 113: Channel description

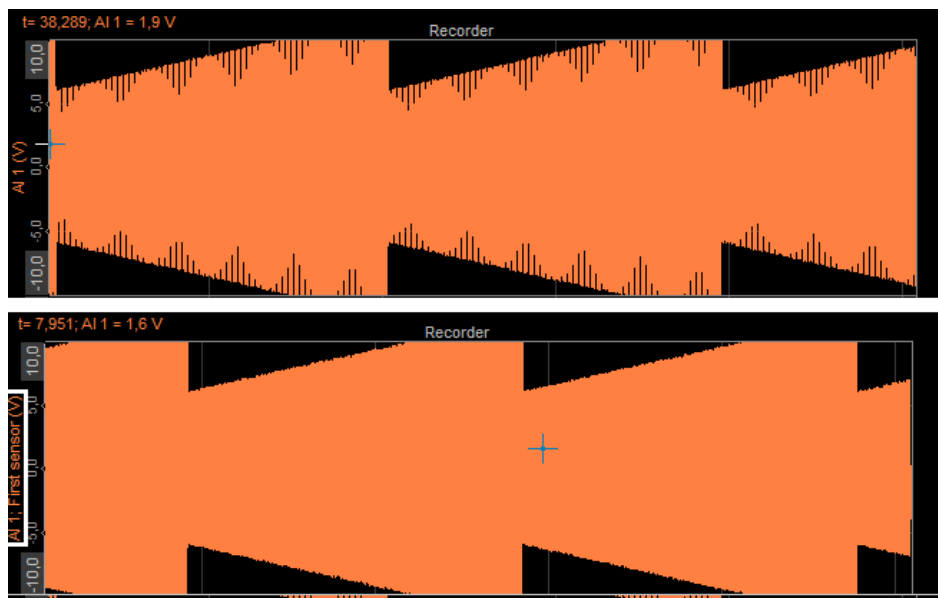


Image 114: Disabled/enabled channel description option

Show instrument toolbar in full-screen displays instruments button in full-screen mode; full screen (available with Ctrl-F) usually shows only instruments, but in this case, also a toolbar with standard displays are shown. In the left picture, this option is disabled, and in the right picture, this option is enabled. We can see the toolbar with different screens.



Image 115: Show the main toolbar

For the Time axis display Local time, UTC and Telemetry (UTC) can be selected from the drop-down list:

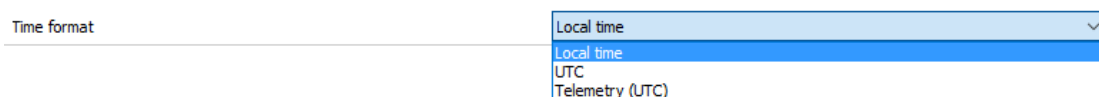


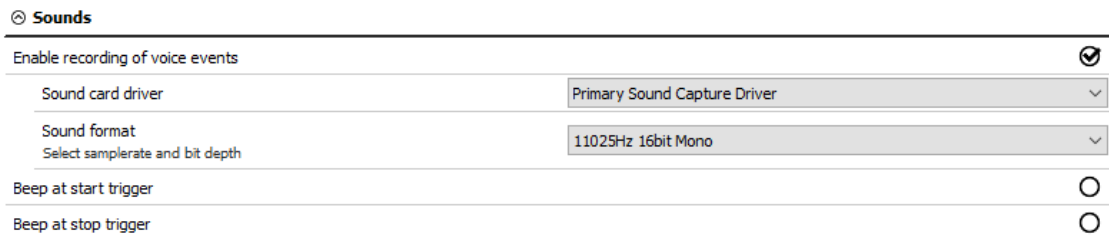
Image 116: Time format options

This selection will affect the absolute axis of the recorder, time display in the multimeter, and other displays showing absolute time. [Dewesoft](#) always stores the data in UTC format (without the local time bias).

- Local time display will show with data in local time based on OS settings, therefore the same data file will have different absolute times if viewed in the USA than if it is opened in China.
- UTC will show the universal coordinated time (without bias) and will be displayed the same around the globe.
- Telemetry UTC will not display the day, month and the year, but will display the day of the year instead.

## Sounds

Sound sections allow you to tell [Dewesoft X](#) which capable sound card in this computer you want to use for making voice annotations when storing data.

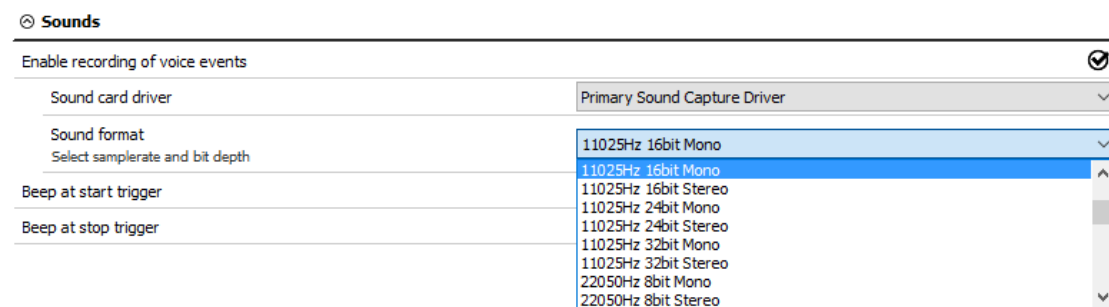


The 'Sounds' settings window is shown with the following options:

- Enable recording of voice events:** Checked (checkbox).
- Sound card driver:** Primary Sound Capture Driver (dropdown menu).
- Sound format:** 11025Hz 16bit Mono (dropdown menu).
- Beep at start trigger:** Unchecked (checkbox).
- Beep at stop trigger:** Unchecked (checkbox).

Image 117: Settings for voice events

Sound format can be chosen from the drop-down menu:



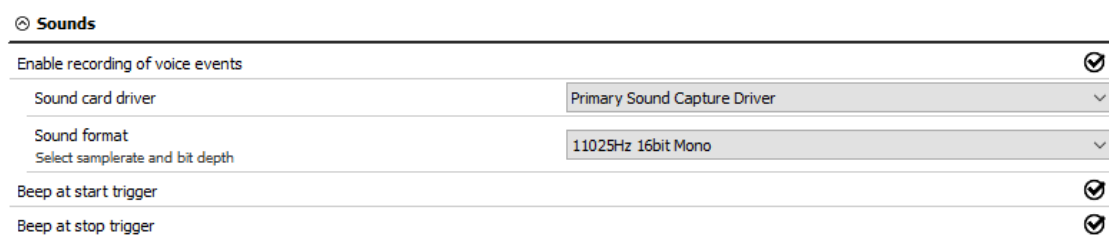
The 'Sounds' settings window is shown with the 'Sound format' dropdown menu open, displaying the following options:

- 11025Hz 16bit Mono (selected)
- 11025Hz 16bit Stereo
- 11025Hz 24bit Mono
- 11025Hz 24bit Stereo
- 11025Hz 32bit Mono
- 11025Hz 32bit Stereo
- 22050Hz 8bit Mono
- 22050Hz 8bit Stereo

Image 118: Sound format

The voice events can be entered by pressing V during recording, but only if the sound card is defined. The sound at the start and stop triggers allows us to have a sound indication for triggering.

Let's make an example of voice recording. I have chosen my Microphone as a sound card driver.



The 'Sounds' settings window is shown with the following options:

- Enable recording of voice events:** Checked (checkbox).
- Sound card driver:** Primary Sound Capture Driver (dropdown menu).
- Sound format:** 11025Hz 16bit Mono (dropdown menu).
- Beep at start trigger:** Checked (checkbox).
- Beep at stop trigger:** Checked (checkbox).

Image 119: Voice event settings example

When I go to Measure mode, click the Store button to start storing the data.

While measuring, press the V button on the keyboard and the program will record the voice with the selected sound card.

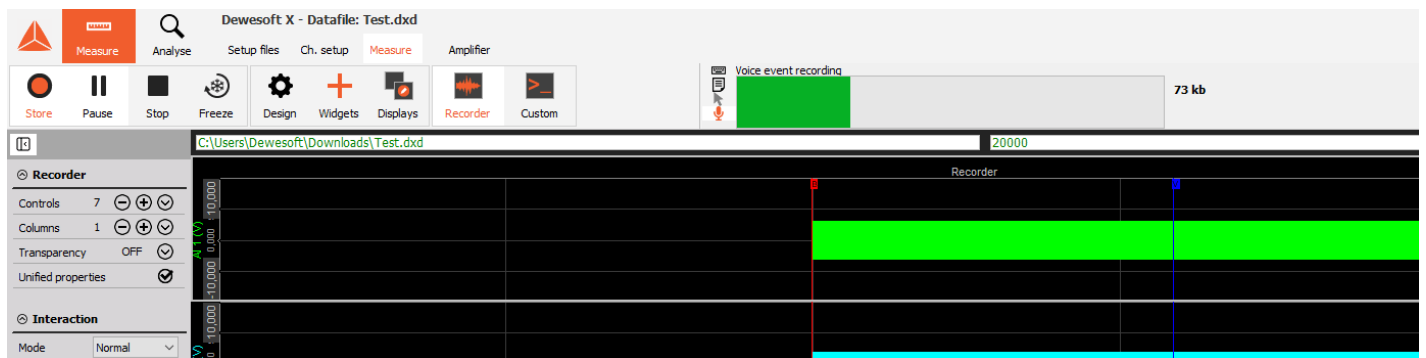


Image 120: Voice event recording

In **Analysis mode**, when we open the data file, we can see a *voice event* under the events section.

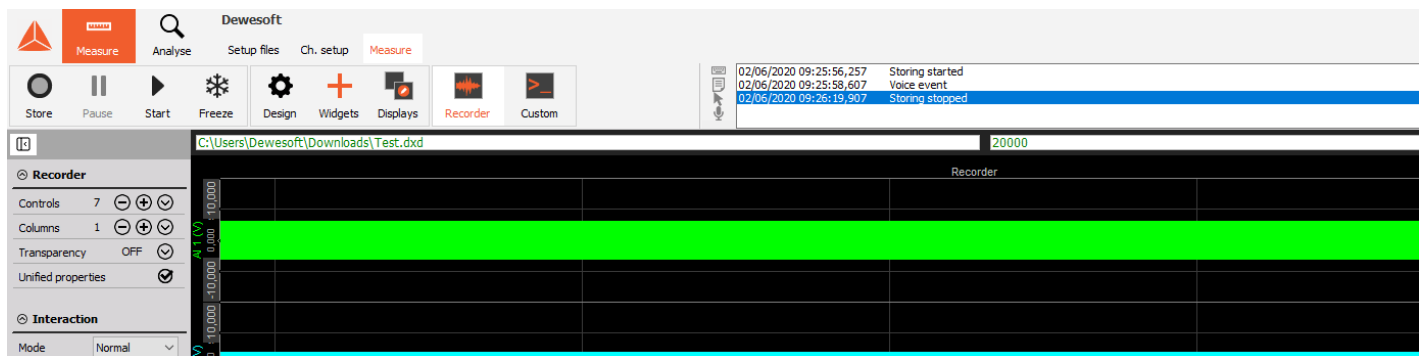


Image 121: Recorded voice event

In the *events window*, you can see when we started and stopped the storing and when we made a voice event. If you want to replay the voice event, double click on it.

The following window will appear and the voice will be replayed.



Image 122: Voice event progress

## Shortcuts

Under the shortcuts section, you can see all the available keyboard shortcuts in [Dewesoft X](#).

⊖ Shortcuts

Shortcut mapping	Legacy	▼
Help	F1	✎
Full screen	CTRL + F	✎
Channel setup	F2	✎
Measure mode	F3	✎
Start storing	F5	✎
Trigger	F6	✎
Stop acquisition	F7	✎
Keyboard event	SPACE	✎
Notice event	N	✎
Voice event	V	✎
Cursor event	C	✎
Switch freeze mode	CTRL + ALT + F	✎
Show performance monitor	CTRL + SHIFT + P	✎
Pause storing	F8	✎
Show settings	F12	✎
Design mode	CTRL + D	✎
Undo	CTRL + Z	✎
Redo	CTRL + Y	✎

Image 123: Shortcut list

You can change the buttons that will lead you to the wanted shortcut. Select the Custom Shortcut mapping.

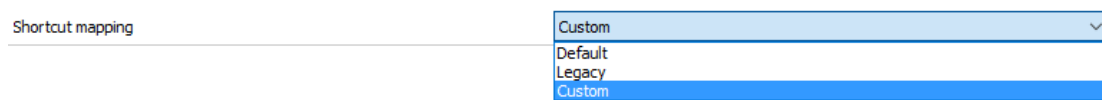


Image 124: Shortcut mapping

After that, a pen icon will show at every shortcut. To change the shortcut button, click on the pen icon.

⊖ Shortcuts

Shortcut mapping	Custom	▼
Help	F1	✎
Full screen	F11	✎
Channel setup	F2	✎

Image 125: Change of the shortcut key

The following window will appear. After assigning a new shortcut, click the OK button.



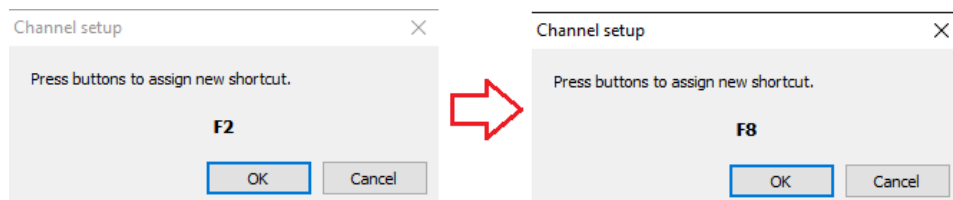


Image 126: Change keyboard shortcut

The new button for the shortcut is assigned.

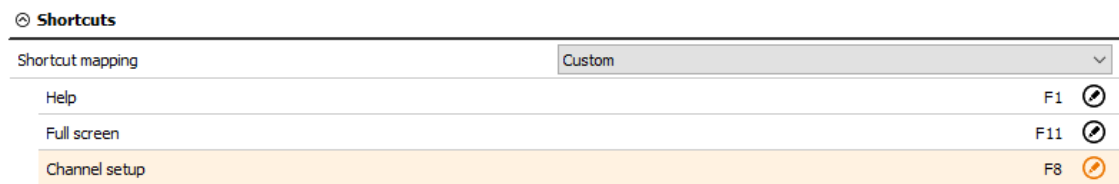


Image 127: New shortcut button

## User manual

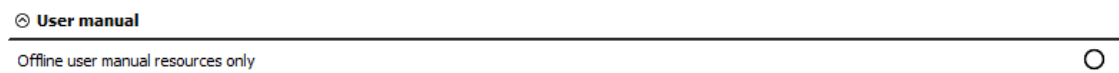


Image 128: User manual resources

If the checkbox is checked, Dewesoft will not attempt to get manual sources from the webserver. It will only use the sources installed with Dewesoft installation.

# How Files and Folders are structured?

Section Files and folder defines a starting point within the folder structure.

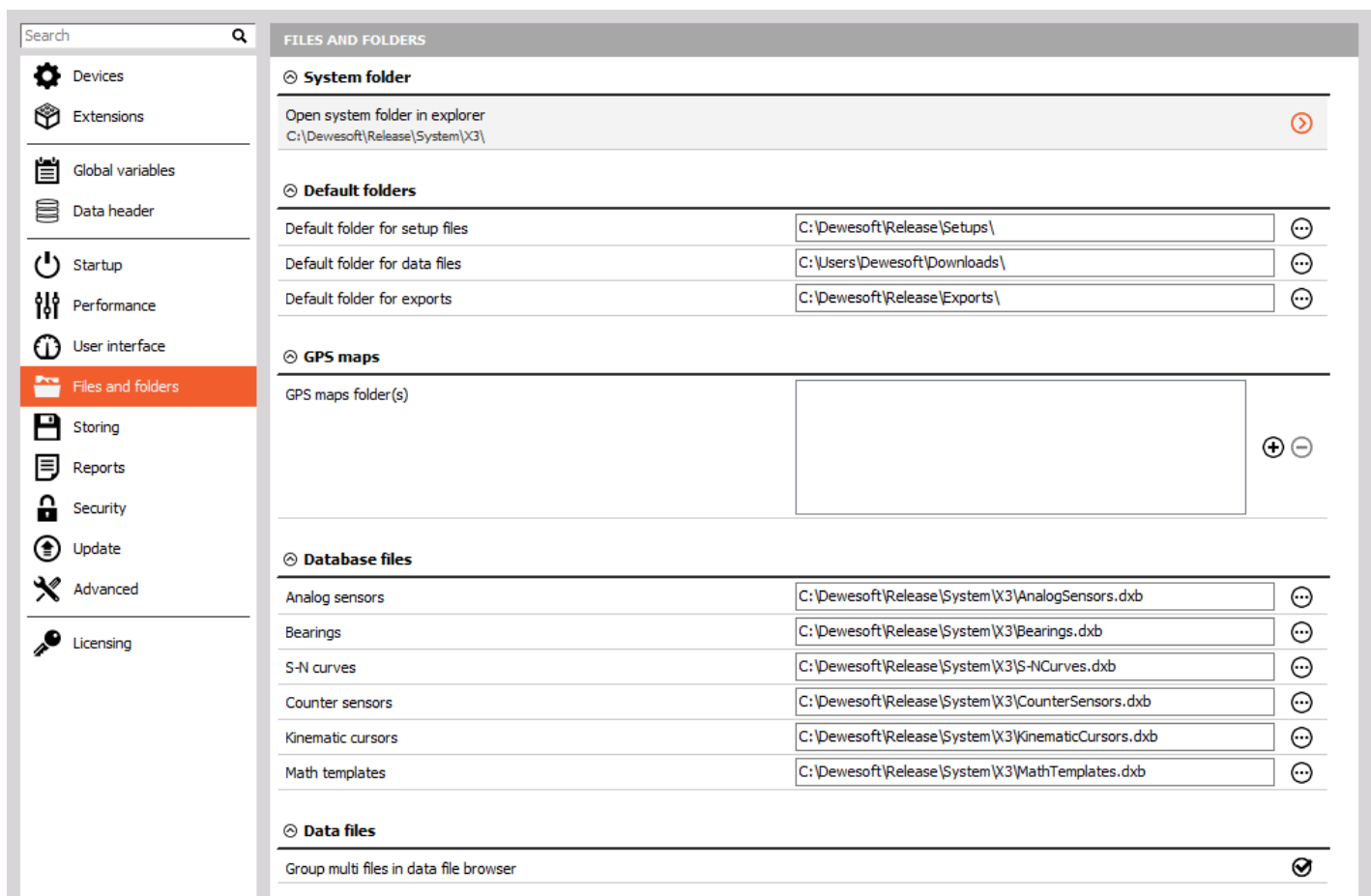


Image 129: Files and folders overview

## Default folders

- Default folder for setup files - Defines the starting folder where the setups will be loaded from. This default folder can be changed also from the Folders menu in Measure - Setup files with setting Set as the default project folder.
- Default folder for data files - Defines the folder where to store the data files by default. This can be also changed as above, but inside Measure - Ch. setup - Storing or Analysis - Data files.
- Default folder for exports - Defines the default place where the files are exported. If we select Remember the last selected folder, then the folder which was last selected when exporting data will be set as default and remembered for the next export.

## GPS maps

We have to define the path to GPS folder(s), which will be shown in the GPS plugin in [Dewesoft X](#).

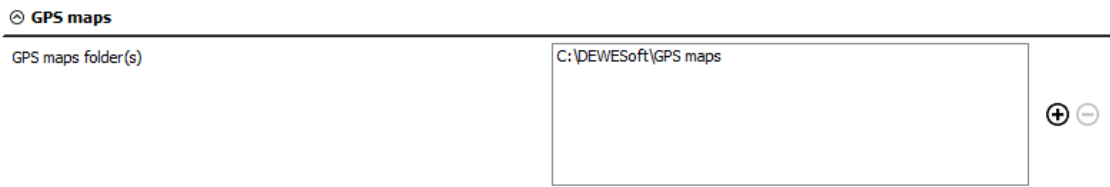


Image 130: GPS maps folder

---

## Database files

Under Database files, we define the path to different files:

- Analog sensors
- Bearings
- S-N curve
- Counter sensors
- Kinematic cursors
- Math templates

# How to set up Storing?

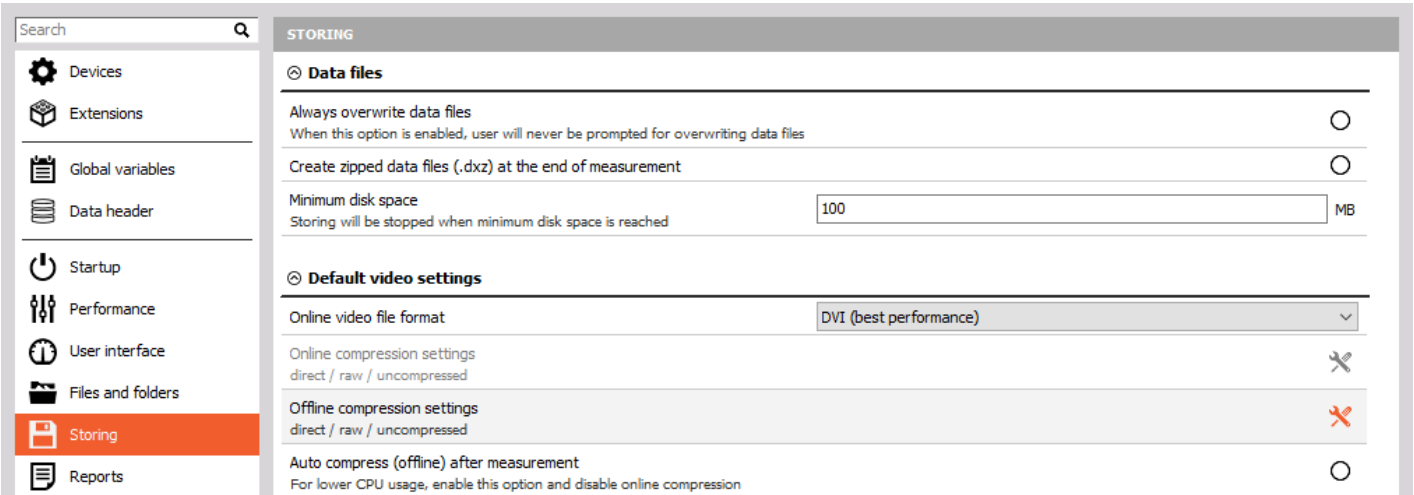


Image 131: Dewesoft storing overview

## Data files

Always overwrite data fields is an option that allows you to automatically overwrite the files without additional confirmation.

Dewesoft X can create a zipped data files (.dxz) at the end of the measurement. The advantage of this function is, that the data file is compressed and, therefore, takes less space.

Let's make a 30-second data file with 4 channels and a sample rate of 20000 samples/second. With a normal storing, the size of the data file is 5 MB. Then we select to have a zipped data file. The size of the datafile got reduced to 105kB.

	File name	Size	Start store time	Version	Sample rate	Channels	Store mode
•	Test_normal.dxd	5,0 MB	02/06/2020 13:03:26	X3 SP11 (RELEASE-200417) (64-bit)	20000 Hz	AI: 4	always fast
•	Test_zipped.dxz	105 kB	02/06/2020 12:59:34	X3 SP11 (RELEASE-200417) (64-bit)	20000 Hz	AI: 4	always fast

Image 132: Data file compression test

We can also define the Minimum disk space, that is required to make a data file. If we reach this limit during the measurement, storing will be stopped and the data file will be saved.

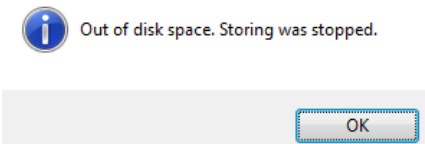
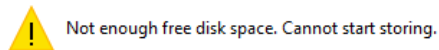


Image 133: Out of disk space

If there is not enough space from the beginning of the measurement, you will get a warning.



Not enough free disk space. Cannot start storing.

OK

Image 134: Not enough free space

## Default video settings

Online video file format can be selected between DVI or AVI format.

Online video file format

DVI (best performance)

DVI (best performance)

AVI (video standard)

Image 135: Video format options

Online video compressions settings (We can compress the video during the measurement and make the datafiles smaller. Our computer has to have good performance characteristics to perform online video compression):

### Default video settings

Online video file format

AVI (video standard)

Online compression settings

direct / raw / uncompressed

Offline compression settings

direct / raw / uncompressed

Auto compress (offline) after

For lower CPU usage, enable the

#### Video compression setup

Compression

direct / raw / uncompressed

direct / raw / uncompressed

H.264 / MPEG-4 AVC

MPEG4 / DivX / XviD

MJPEG

Image 136: Video compression options

Offline video compression settings (with offline video compression we can reduce the size of the data file):

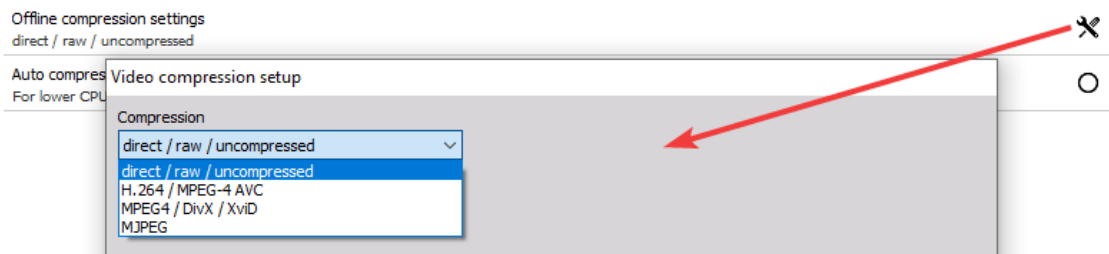


Image 137: Offline video compression options

For lower CPU usage, we can enable the option Auto compress (offline) after measurement. By enabling this option, we also disable online compression.



Image 138: Auto compress video

# How to create Reports and add a Logo?

Use your own company logo on printouts. After selecting the three dots button, the standard window explorer window appears to simply select an image file (\*.jpg type).

Under Print margins, we define printer border in millimeters.

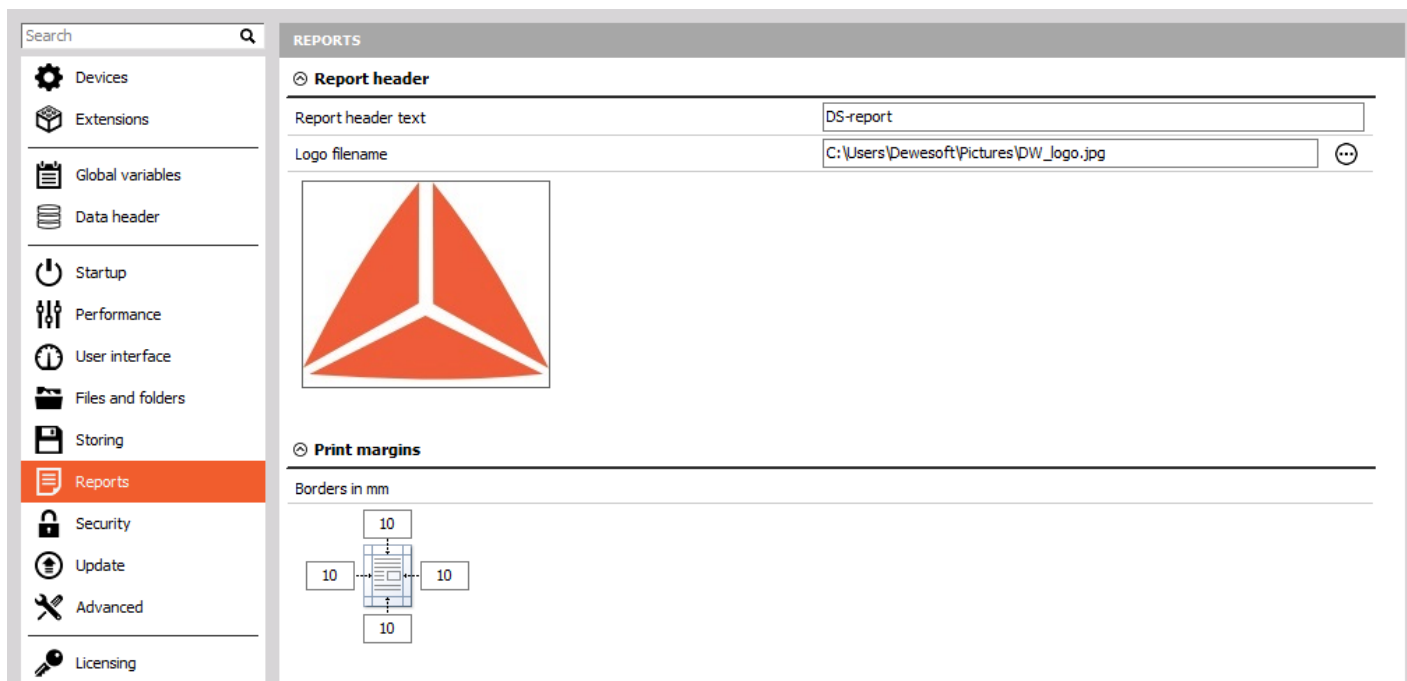


Image 139: Report header

Report header is seen when we want to print the document. Go to Analysis mode, select print and on the top of the document is our report header (with text and logo).

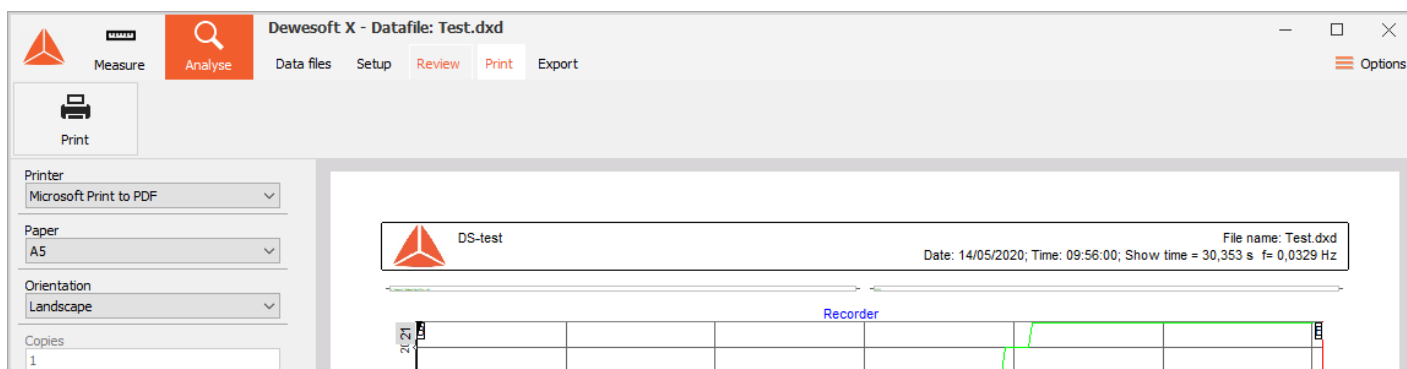


Image 140: Report header example

# How to set Security?

Under security options, you can lock the access to settings and preventing the access to [Dewesoft X](#) procedures.



Image 141: Password for entering settings

If we select this option, you will have to enter the password the next time you will enter the Settings.

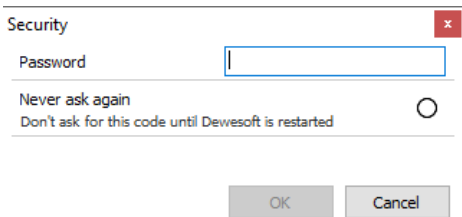


Image 142: Enter password for settings

You can also select the option **Never ask again**. It will not ask you for a password unit [Dewesoft X](#) is restarted.

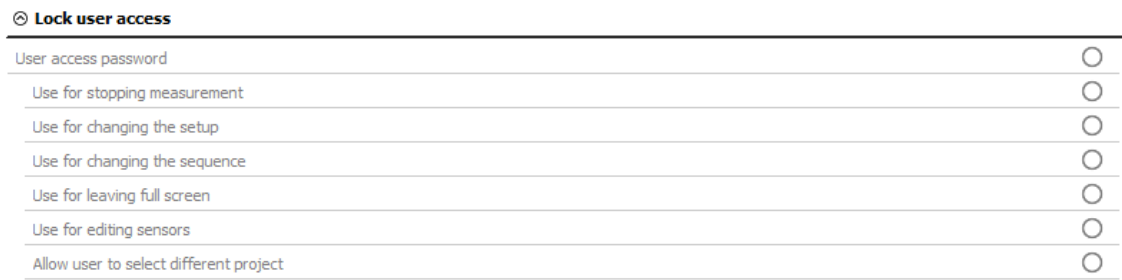


Image 143: Lock user access

If we select to use User access password, we can use it:

- for stoping measurement,
- for changing the setup,
- for changing the sequence,
- for leaving the full screen,
- for editing sensors and
- for allowing users to select different projects.



We can also define that the files being stored will be locked. We have three options:

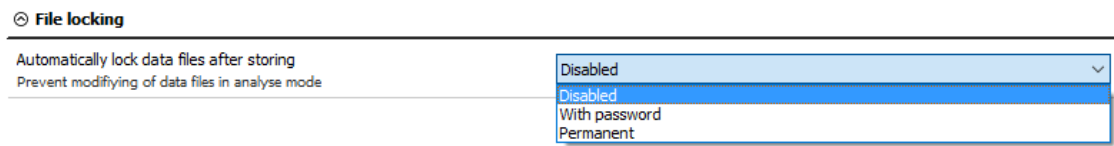


Image 144: File locking options

- **Disabled** - file locking will be disabled and the files can be post-processed.
- **With password** - file locking will be enabled and a password will be defined to unlock the file in analysing.
- **Permanent** - the file will be permanently locked and we can be sure it will not be modified in analyze.

# How to Update firmware?

The firmware for [Dewesoft X](#) hardware can now be upgraded directly in [Dewesoft X](#) software (firmware upgrade tool is no longer required).

## Required equipment

- Dewesoft instrument ([SIRIUS](#), [DEWE43](#), [KRYPTON](#), ...):
- [Dewesoft X](#) (version X2 SP7 or above)
- Dewesoft firmware upgrade package ([.dxu](#) file)

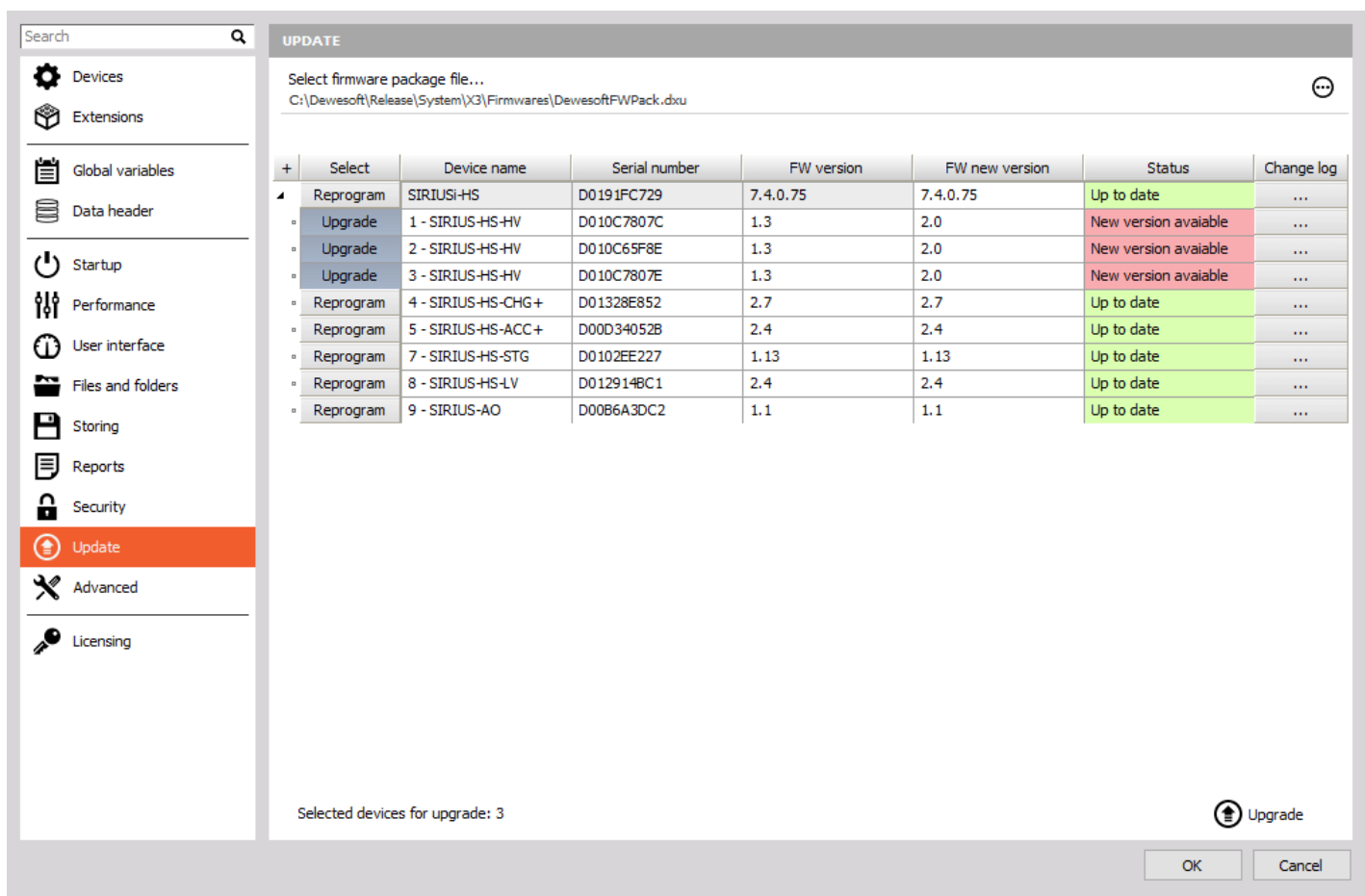


Image 145: Firmware upgrade

## Upgrade process

Download the Dewesoft upgrade package (.dxu file) from the Dewesoft downloads page under section [drivers](#).

Copy the file into the Firmware folder of your [Dewesoft X](#) installation (D:\DewesoftX\System\X\Firmwares).

Connect the Dewesoft instrument to PC and run [Dewesoft X](#) software.

Go to Settings and the Update menu. If the firmware package isn't selected, select it by pressing the "three-dot button" and find the folder with the firmware file in it.



Image 146: Firmware upgrade pack

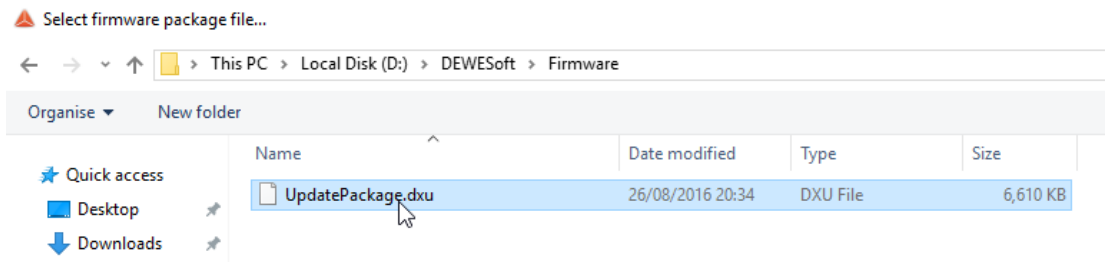


Image 147: Firmware pack selection

Select the device you want to upgrade and start the firmware upgrade by pressing the Upgrade button. The window should appear indicating that the upgrade has begun:

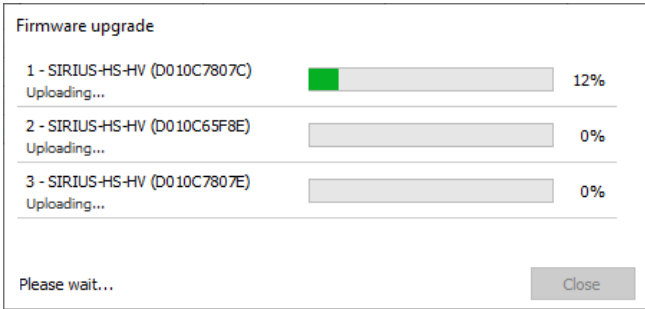


Image 148: Firmware upgrade progress

Wait until the software finishes the upgrade and close the window. After the upgrade, the device status should turn green and say 'Up to date'.

+	Select	Device name	Serial number	FW version	FW new version	Status	Change log
▲	Reprogram	SIRIUSi-HS	D0191FC729	7.4.0.75	7.4.0.75	Up to date	...
▫	Reprogram	1 - SIRIUS-HS-HV	D010C7807C	2.0	2.0	Up to date	...
▫	Reprogram	2 - SIRIUS-HS-HV	D010C65F8E	2.0	2.0	Up to date	...
▫	Reprogram	3 - SIRIUS-HS-HV	D010C7807E	2.0	2.0	Up to date	...
▫	Reprogram	4 - SIRIUS-HS-CHG+	D01328E852	2.7	2.7	Up to date	...
▫	Reprogram	5 - SIRIUS-HS-ACC+	D00D34052B	2.4	2.4	Up to date	...
▫	Reprogram	7 - SIRIUS-HS-STG	D0102EE227	1.13	1.13	Up to date	...
▫	Reprogram	8 - SIRIUS-HS-LV	D012914BC1	2.4	2.4	Up to date	...
▫	Reprogram	9 - SIRIUS-AO	D00B6A3DC2	1.1	1.1	Up to date	...

Image 149: Firmware up to date

Warning: Do not disconnect the device while upgrading firmware!

# What are the Advanced options in settings?

## Hardware

ADVANCED	
Hardware	⊙ Dewesoft devices
Visuals	USB speed limit warning (per slice) If speed is exceeded, warning will be shown in channel setup <input type="text" value="26"/> MB/s
Math	USB buffer size <input type="text" value="2"/> s
Diagnostics	CAN buffer size <input type="text" value="20000"/> messages
Analysis	CAN internal buffer size in number of messages per port
NET	SoftSync sample rate limit <input type="text" value="100"/> Hz
Experimental	Always enable USB system driver If Dewesoft USB system driver is disabled in Device Manager, it will be enabled automatically <input checked="" type="checkbox"/>
Performance	Disable EtherCAT interface Check this option if you do not want Dewesoft to scan for or use EtherCAT devices <input type="checkbox"/>
Sequencer	Use WinPCAP driver for EtherCAT device When checked, Dewesoft will use old driver <input type="checkbox"/>
Warnings	Set Sirius sample rate limit to 204.8 kHz <input type="checkbox"/>
Export	Set maximum sample rate to 204.8 kHz for DW-43, Sirius, Sirius-CD and Sirius-CD <input type="checkbox"/>
	Decode 2nd part of IRIG time frame <input type="checkbox"/>
	Create system channel to decode 2nd part of IRIG frame <input type="checkbox"/>
	Not resetting acquisition while timing is lost <input type="checkbox"/>
	Available sample rates Choose reduced set if combination of all channel sample rates causes low update rate <input type="text" value="Full set"/>
	Channel sample rate behaviour If global sample rate is changed, channel sample rate will be changed to selected option <input type="text" value="Set to global sample rate"/>
	Disable HW sample rate dividers Check this option if you want to disable hardware sample rate dividers (only for Dewesoft USB Devices) <input type="checkbox"/>
	⊙ Amplifiers
	Scan TEDS only once <input type="checkbox"/>
	If checked, TEDS scan will be performed only once instead of continuous scanning
	Write Dewesoft TEDS templates only <input type="checkbox"/>
	If checked, only Dewesoft TEDS templates will be written. Normally TEDS write tries to write standard templates for better compatibility.
	Shunt calibration error limit <input type="text" value="2"/> %
	Capacity check error limit <input type="text" value="10"/> %
	Disable additional software high pass filter if below calculation limit <input type="checkbox"/>
	Enable calibration by shunt <input type="checkbox"/>
	Disable reading of external TEDS on DSI adapters <input type="checkbox"/>
	Some DSI adapters (DSI-ACC) are able to read external TEDS
	Always keep TEDS header serial number <input type="checkbox"/>
	If checked, TEDS header serial number will always stay the same and only serial number inside Dewesoft sensor template will be updated
	Allow changing offset when scaling is disabled <input type="checkbox"/>
	If checked, and analog input channel scaling is set to "RAW", user will still be allowed to change offset
	⊙ CAN
	CAN default to acknowledge mode <input type="checkbox"/>
	When new device is found, acknowledge mode will be selected by default.
	⊙ Digital filters
	Default LP filter <input type="text" value="Anti-aliasing filter (IIR)"/>
	Default low pass filter setting. If wanted filter is not available on connected device, first filter will be selected
	AAF (zero-phase distortion) transition width <input type="text" value="Auto adjust"/>
	"Auto adjust" will set AAF to 16% transition width (up to 1:100 of sr. ratio). When "user defined" is selected transition width will be always achieved, but computational load can become heavy.
	Enable alias free filtering on Sirius-HS <input type="checkbox"/>
	Enable alias free filtering on Sirius-HS when selecting manual IIR filters (e.g. 30kHz, 10kHz)

Image 150: Advanced hardware settings

# Dewesoft devices

- **USB speed limit warning**(per slice) - here you can define the USB speed limit per slice. If the speed is exceeded, the warning will be shown in the channel setup.



Image 151: USB speed limit exceeded

- **Softsync sample rate limit** - we can define the maximum sample rate limit if two devices are synced with soft sync (e.g. [KRYPTON](#)). The software synchronization accuracy is around 2-10 ms, which is enough for simple temperature measurement. This synchronization solution requires no additional hardware.
- **Always enable USB system driver** - if Dewesoft USB system driver is disabled in device manager, it will be enabled automatically
- **Disable EtherCAT interface** - check this option if you do not want Dewesoft to scan or use EtherCAT devices
- Set [SIRIUS](#) **sample rate limit** to 204.8 kHz - set maximum sample rate to 204.8 kHz for DW-43, Sirius, Sirius-CD and Sirius-HD
- **Decode 2nd part of the IRIG time frame** - DS-Clock can now decode also 2nd part of the IRIG signal. Once this option is enabled, a new channel is shown in the system monitor.

--- DS-CLOCKv2 (D02FD233) ---					
Used	SyncTimeTracking	Sync Lost			
Used	AbsTime	-1,0000			
Used	SecPartOfIRIGFrame	1,000			

Image 152: Enable 2nd part of IRIG

- Not resetting acquisition while timing is lost - with this option enabled, Dewesoft will keep recording even if the timing is lost.
- **Available sample rates**

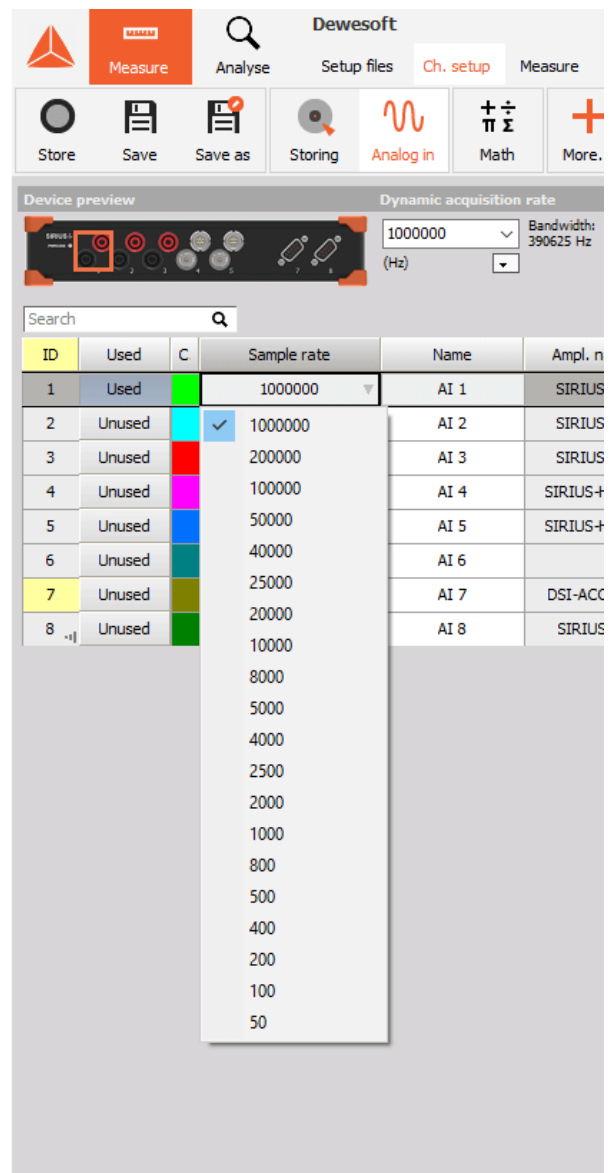
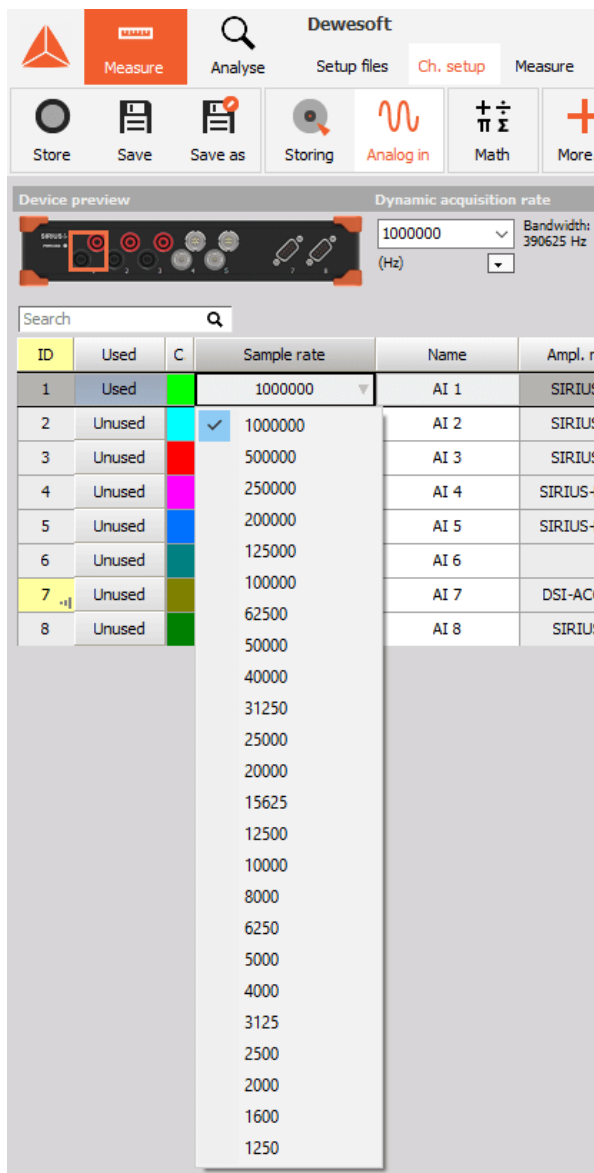


Image 153: Full and reduced sample rate divider set

- **Channel sample rate behavior** -allows you to choose the behavior of the channel sample rate in relation to the global sample rate.

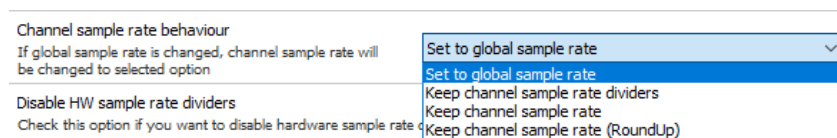


Image 154: Channel sample rate behavior

- **Disable HW sample rate dividers** - disables HW drivers and uses software sample rate dividers instead

## Amplifiers

- When we have sensors with TEDS chip, we have to scan it. If we enable this option, we scan for TEDS chip only once or we can continuously scan for TEDS sensors and leave this option disabled.

Used	AI 1	Accelerometer	SIRIUS-ACC	IEPE	10000 mV	Acceleration	m/s2	-981,74	0,01	981,74	Setup
------	------	---------------	------------	------	----------	--------------	------	---------	------	--------	-------

Image 155: Channel with TEDS

When the sensor is read, we can see the serial number, settings of the amplifier, and the sensitivity of the sensor.

- Write Dewesoft TEDS templates only
- Shunt calibration error limit (works on STG, STGM modules) - The shunt calibration can be used to measure and correct the resistance of strain gages. Shunt calibration takes a while since it has to set several configurations and measure back the results. With the Shunt calibration error limit, we define the maximum allowed deviation from the Shunt cal target value. If the value is more than 2%, the results are not ok and if the result is under 2%, the result is accepted.

Image 156: Shunt calibration error limit

- Capacity check error limit (works on CHG modules) - if we have connected charge sensors, we can perform the Capacity check. We have to enter the known value for the capacity target. After the value is input, we press check. Dewesoft will generate a sine wave and check what is the actual capacity. After this procedure is finished, Dewesoft will give us the actual capacity and the error. If the value is bigger than our defined value, it will be written in red color.

Image 157: Capacity check error limit

- Option Enable calibration by the shunt enables you to trust your shunt calculation result and use it for further measurement.

Image 158: Enable calibration by shunt

- Disable additional software high pass filter if below calculation limit - If this checkbox is checked and the limit of SW-HPFilter is reached, no additional SW-HPFilter is calculated. The SWHPFilter is needed for slow accelerometers to see also very low frequencies, and offset is ignored. If this checkbox is not checked and the limit of SW-HPFilter is reached, the SW-HPFilter is calculated based on the limit possible (offset can bother customers more than the very low frequencies missing). In the end, it depends on the sensor used and what the users want to see from it. This option is special for some customers who have MSI-ACC (or DSI-ACC). Also, some accelerometers in the IEPE mode might still have some offset even if the amplifier has an HW-HPFilter. To remove this offset, we calculate a HPFilter frequency based on this formula:  $\text{Frequency}(\text{SW-HPFilter}) = \text{Frequency}(\text{HW-HPFilter}) / 10$ . In most cases, this does not make any problems, but there are MSI-ACC which have an HW-HPFilter at 0.08 Hz. Depending on the sample rate, we can easily run into the limit of SW-HPFilter calculation where it is simply not possible to calculate it anymore.
- Always keep TEDS header serial number
- Allow changing offset when scaling is disabled



# CAN

CAN can be set to acknowledge mode by default when a new device is found.

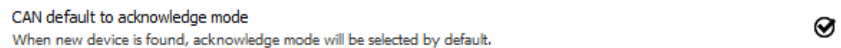


Image 159: CAN acknowledge mode

We can see the CAN operation mode when selecting the settings of a measurement device. In read-only mode, the DAQ device can only read messages from CAN data.

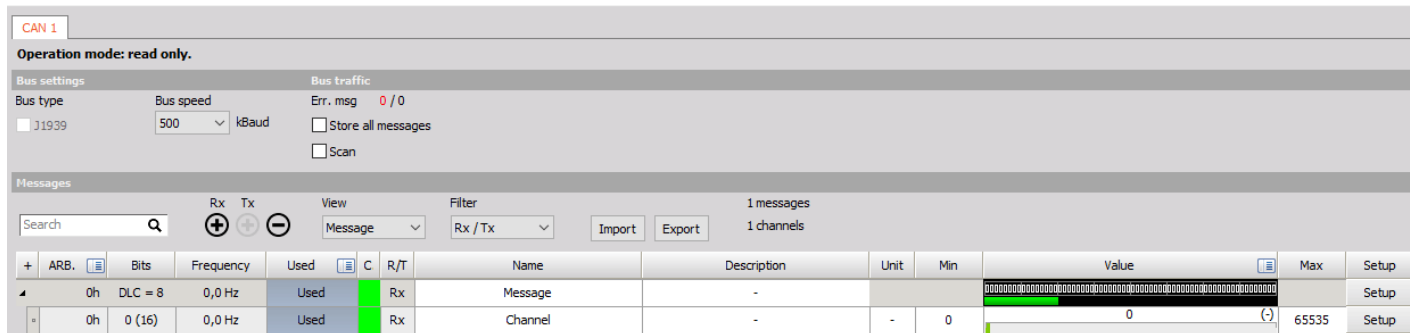


Image 160: CAN read-only operation mode

In Read/write/acknowledge mode, the DAQ device can read and send CAN data. To add a new transmit channel, click the icon in a red square.

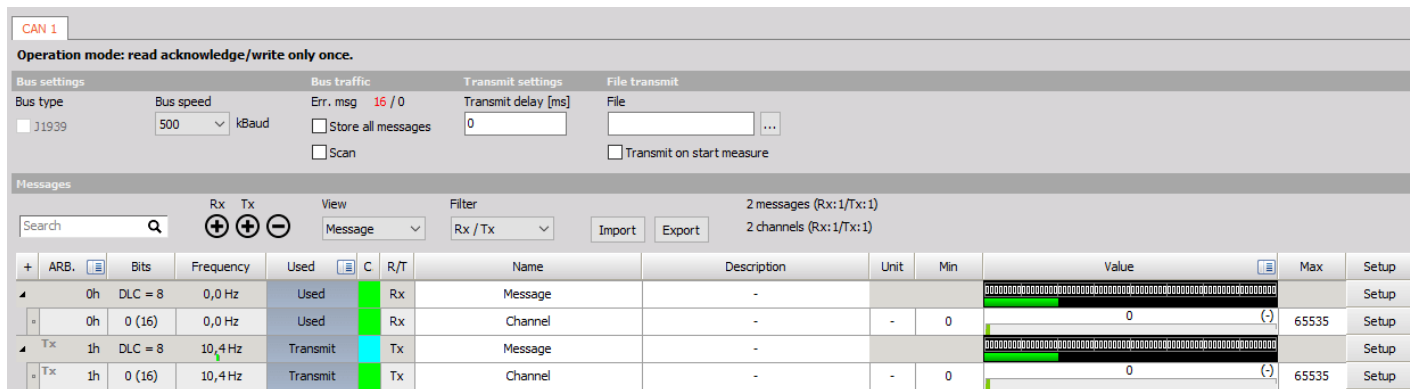


Image 161: CAN read-write acknowledge operation mode

## Digital filters

- **Default LP filter setting**- if the wanted filter is not available on a connected device, the first filter will be selected
  - OFF
  - Anti-aliasing (IIR)
  - AAF (zero-phase distortion)
  - Ring free
- **AAF (zero-phase distortion) transition width**
  - Auto adjust will set the AAF to 16% transition width (up to 1:100 of sample rate ratio)
  - User-defined - the transition band will always be achieved, but the computational load can become heavy

- **Enable alias-free filtering on Sirius-HS** - This option enables additional AAF has a cut-off frequency at 80 kHz, when the sample rate is equal or above 160kHz or a cut-off frequency of  $s/2$  when the sample rate is under 160 kHz.

# Visuals

ADVANCED

Hardware

Visuals

Math

Diagnostics

Analysis

NET

Experimental

Performance

Sequencer

Warnings

Export

Graphics

Use asynchronous buffer for GDI calls

Asynchronous buffer size4096kB

XY graph

Delta cursor angle offset0deg.

Delta cursor decimal places5

Show auto scale

Show auto scale option in measure mode

Auto scale period5s

3D graph

Show miss distance calculation

Max vertex count300000

GPS map

Max samples shown

Maximum number of GPS samples shown on GPS map.1000000

Scope

Memory size

Scope trigger memory size per channel100000samples

Maximum picture size

Maximum scope trigger picture size20000samples

Maximum number of pictures

Maximum number of scope trigger pictures per channel1000

Image 162: Advanced visuals

- **Graphics**

Use asynchronous buffer for GDI calls option allows you to use a dedicated thread for the graphics.

Graphics

Use asynchronous buffer for GDI calls

Asynchronous buffer size4096kB

Image 163: Graphics device interface

- In the **XY graph**, we define delta cursor angle offset and delta cursor decimal places.

In the image 145, the delta cursor offset is set to 0 and the delta cursor decimal places are set to 5. We can see that the dX and dY have 5 decimal places and the angle is 60°. In the image 146, we can see that the decimal places of the dX and dY have increased to 10 places, and the offset of the angle for 5° and is now 65°.

### ⊙ XY graph

Delta cursor angle offset	<input type="text" value="0"/>	deg.
Delta cursor decimal places	<input type="text" value="5"/>	
Show auto scale	<input type="radio"/>	
Show auto scale option in measure mode		
Auto scale period	<input type="text" value="5"/>	s
Auto scale on X and Y axis will be performed every x seconds.		

Image 164:XY graph settings

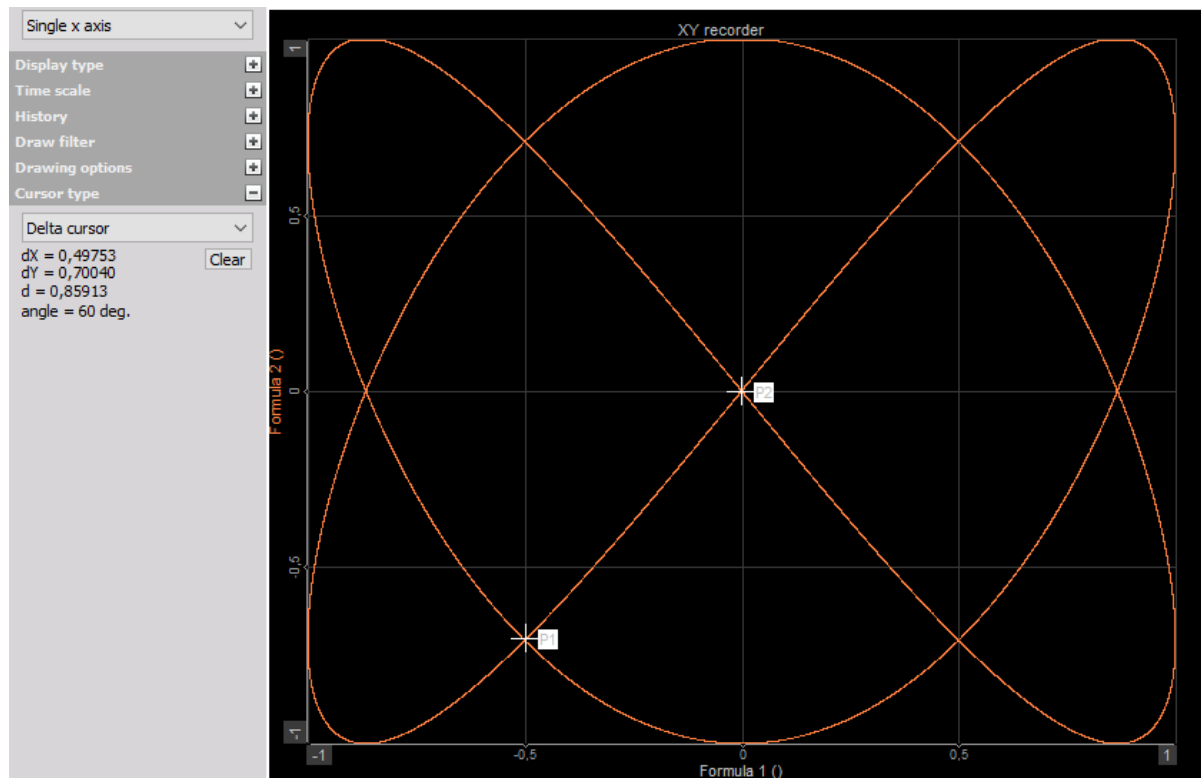


Image 165: Default cursor options

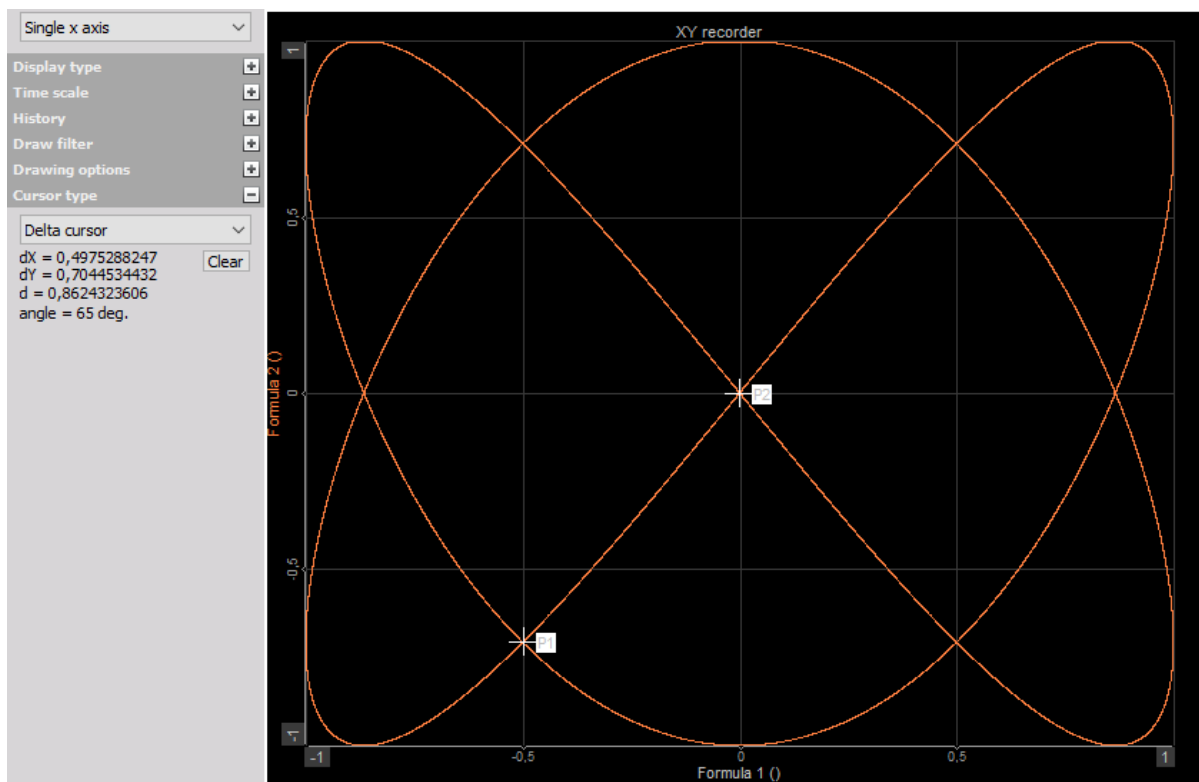


Image 166: Modified cursor options

- 3D graph
  - Show miss distance calculation
  - Max vertex count (Number of points generated for the 3D graph widget. The points can be limited if you are running out of memory.)
- GPS map
  - Max samples shown (This is the maximum number of samples which will be still shown in the GPS map)
- Scope
  - Memory size (Scope trigger memory size per channel.)
  - Maximum picture size
  - Maximum number of pictures

## Math

Under the math section, we can enable sharper anti-aliasing filter in the order tracking.

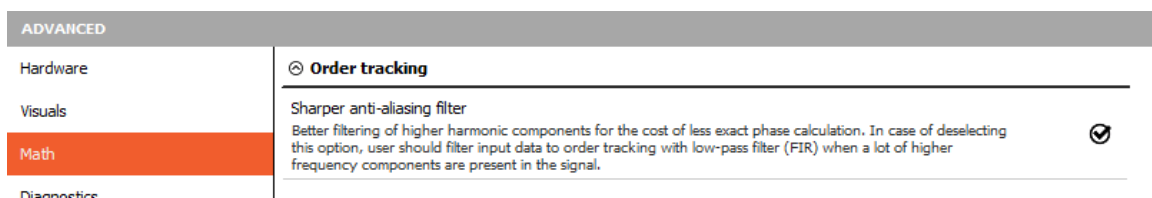


Image 167: Advanced math

# Diagnostics

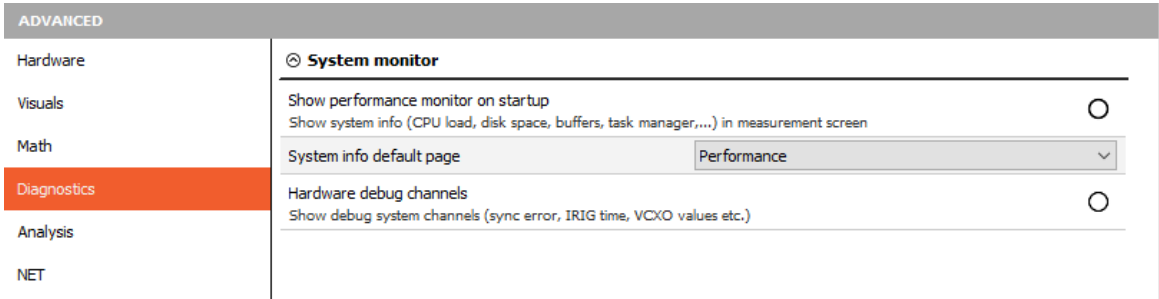


Image 168: Advanced diagnostics

When we are in the measure screen we can access the system performances by pressing a shortcut CTRL+SHITF+P. Here, we can set that as the default part of the screen.

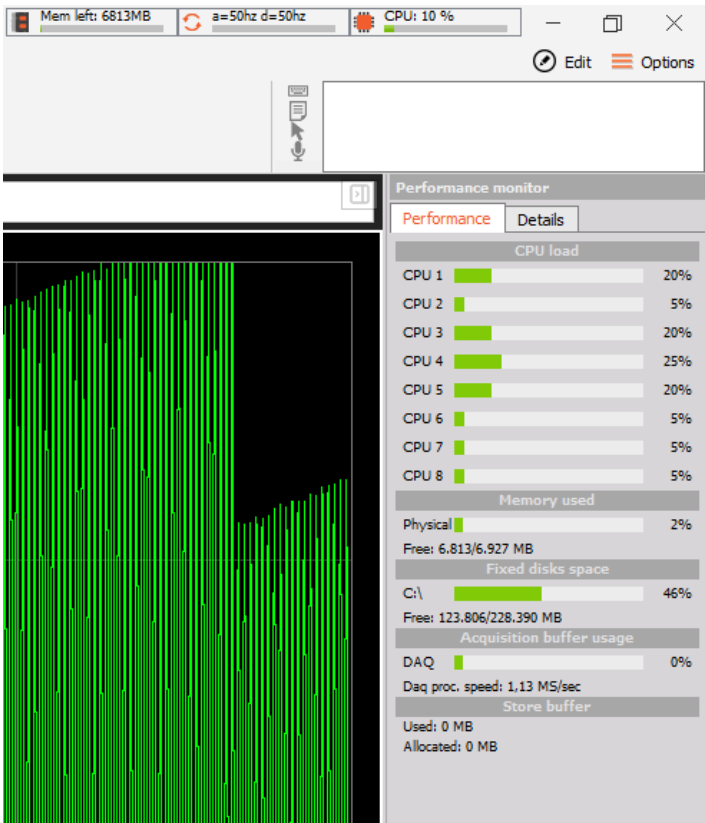


Image 169: Performance monitor

System info default page can be selected as Performance or Details.

If we have measurement hardware connected to our computer, we can also show debug system channels (sync error, IRIG time, VCXO values,

...). These settings can also be seen under the System monitor in Channel setup.

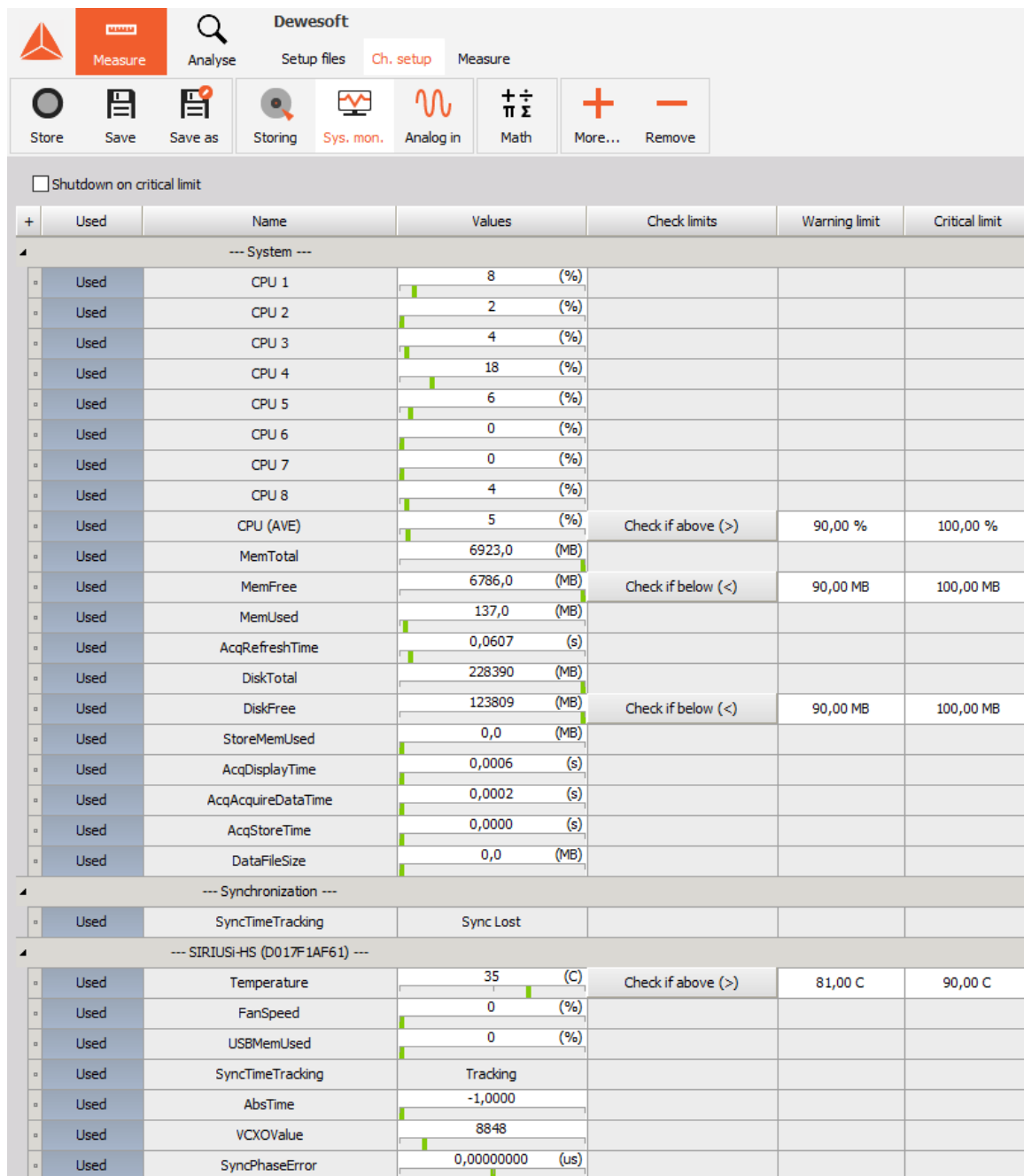


Image 170: Dewesoft system monitor

## Analysis

ADVANCED

Hardware

Visuals

Math

Diagnostics

Analysis

NET

Analysis

Automatically select output channel on sound card

Select synchronous channel as output for sound replaying in analysis mode (0...None, 1...first sync channel,...)

0

Use relative event time by default for new setups

☐

Image 171: Advanced analysis

Here, you can select the synchronous channel as output for sound replaying in analysis mode (0 - none, 1 - first sync channel, ...).

Let's say we measure the signal from 5 channels, and we want to use the third one (AI 3) as a default channel for sound replaying.

ID	Used	C	Name	Ampl. name	Range	Measurement	Min	Values	Max	Units	Zero	Setup
1	Used		AI 1	SIRIUS-HS-ACC	10 V	Voltage	-10,00	0,000	10,00	V	Zero	Setup
2	Used		AI 2	SIRIUS-HS-ACC+	10 V	Voltage	-10,00	0,000	10,00	V	Zero	Setup
3	Used		AI 3	SIRIUS-HS-CHG+	10 V	Voltage	-10,00	0,000	10,00	V	Zero	Setup
4	Used		AI 4	SIRIUS-HS-HVv2	20 V	Voltage	-20,00	0,000	20,00	V	Zero	Setup
5	Used		AI 5	SIRIUS-HS-STG	10 V	Voltage	-10,00	-0,001	10,00	V	Zero	Setup
6	Used		AI 6	SIRIUS-HS-STG	50 V	Voltage	-50,00	0,00	50,00	V	Zero	Setup
7	Used		AI 7	SIRIUS-HS-LVv2	50 V	Voltage	-50,00	0,00	50,00	V	Zero	Setup
8	Used		AI 8	SIRIUS-HS-LVv2	100 V	Voltage	-100,00	0,06	100,00	V	Zero	Setup

Image 172: Default channel for sound output

To set the third channel (AI 3) as the channel for sound replaying, just enter the number 3 in a checkbox.

Automatically select output channel on sound card

Select synchronous channel as output for sound replaying in analysis mode (0...None, 1...first sync channel,...)

3

Image 173: Automatically select the output channel on the sound card

After we store and replay the data file we can see the third channel (AI 3) as the default one for sound replay output channel.

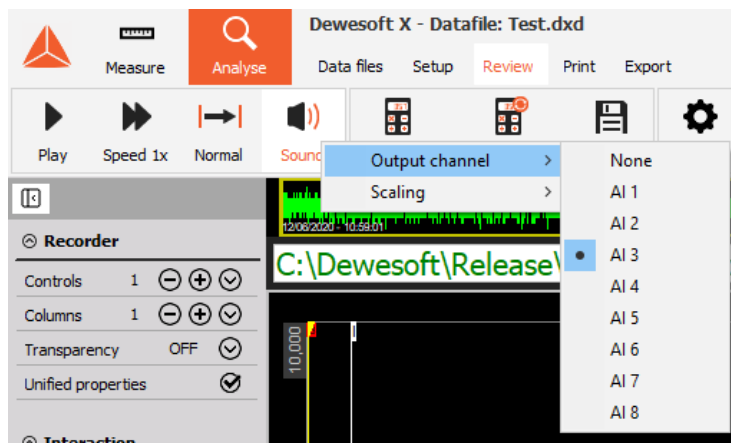


Image 174: Default output channel example

Use relative event time by default for new setups - with the new setup all the events will have the event time in relative time. If this option is disabled, the default time is absolute. The time type can be also changed during measurement by right-clicking on the event and change time display.

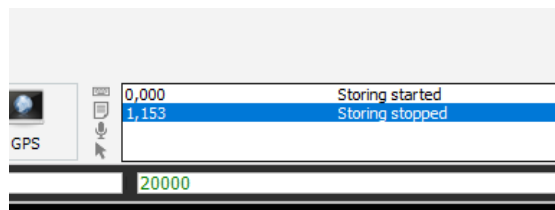


Image 175: Relative time events



ADVANCED	
Hardware	<div>⊖ Connection</div> <hr/> <p>Starting TCP/IP port for MU data connection First NET measurement unit connects to this port on client when data transfer is initiated. Subsequent MUs connect to the next port counting downwards. Port 8999 is reserved as command port on MUs and slave clients.</p> <p>8998</p> <hr/> <p>Allow NET connection in master mode Allow NET client connection to this unit if it is in master client or master measurement unit mode</p> <p>None</p> <hr/> <p>Send display from slave measurement units</p> <p><input type="radio"/></p> <hr/> <div>⊖ Cross trigger</div> <hr/> <p>Selected network interface for cross trigger</p> <p>Bluetooth Device (Personal Area Network)</p> <hr/> <p>Multicast group Measurement units inside same multicast group will share trigger conditions when cross trigger is enabled</p> <p>224.3.4.1</p> <hr/> <p>Cross trigger delay Maximum delay for received cross trigger event</p> <p>0,5</p> <hr/> <div>⊖ Setup screen connection</div> <hr/> <p>Keep client connection on view change (needs Dewesoft 64-bit version)</p> <p><input type="radio"/></p> <hr/> <p>Default protocol for connection</p> <p>VNC</p> <hr/> <p>Default password</p> <p></p> <hr/> <div>⊖ Events</div> <hr/> <p>Accept events from clients</p> <p>Disabled</p>
Visuals	
Math	
Diagnostics	
Analysis	
NET	
Experimental	
Performance	
Sequencer	
Warnings	
Export	

Image 176: Advanced NET settings

## • Connection

Starting TCP/IP port for MU data connection. (It is possible to define the starting port on the master measurement unit.)

For example, if the starting port is 8998, this port is used by the first measurement unit. The second measurement unit will use port 8997. The port 8999 is fixed and can't be changed. This port needs to be opened on master and slave units.

The port 1999 is used for Dewesoft launcher and also needs to be opened.

Allow NET connection in the master mode (If Dewesoft is Master client or Master measurement unit, it is possible to define which clients are allowed to connect.)

- None
- View client only
- Master or view client

## • Cross trigger

- Selected network interface for the cross trigger - Select the network card which is used for the NET system.
- Multicast group - Set-up the same IP multicast address on both master and slave units for the cross trigger to work correctly.
- Cross trigger delay - Maximum allowed network delay for the cross trigger.

## • Setup screen connection

Keep client connection on view change (needs Dewesoft 64-bit connection. The master PC stays connected to the slave units even when they aren't selected. This allows a smoother transition between the slave units.)

Default protocol for connection:

- VNC (ultra VNC) - Default password - by default, the password is set to a but for better security Dewesoft allows you to change

the password.

- RDP (windows remote desktop) - The remote desktop offers *two types of authentication*:
  - Use Windows credentials - If the master unit was already connected to a slave unit via remote desktop, and if the connection is saved, this option can be used.
  - User name and password - If the master unit is connecting to the slave unit for the first time.

- **Events**

It is possible to define which events will be shown on the master client or master measurement unit.

# How to import License?

The license for measuring with [Dewesoft X](#) is included in the device (usually PROF version). Once it is connected to the USB port, it acts as a dongle.

The license for *analyzing* is **free!** [Dewesoft X](#) can be installed on any computer and the stored data files can be opened, recalculated, and exported.

Additional licenses can be required for plugins, these can then also be written into the Dewesoft® device. To test plugins, you can request a 30-days-Evaluation license.

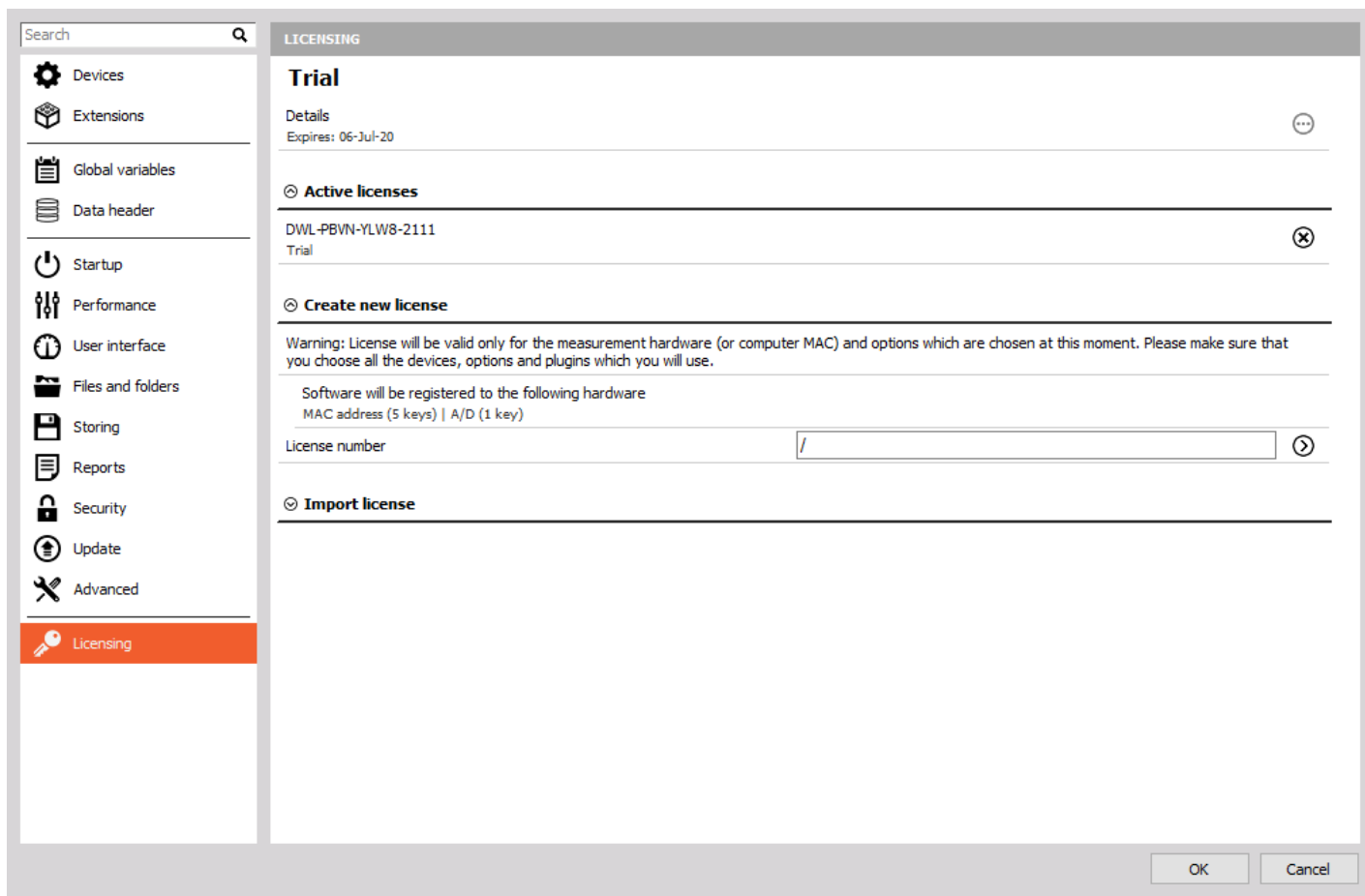


Image 177: Licensing

Under the *licensing section*, you see your **Active licenses**, **Create a new license**, or **Import offline license** (\*.lic file format).

Make sure that all the hardware which you intend to use is connected and switched on. Only in this case, the registration will be fully done for all measurement hardware being used. The license is then generated to hardware keys of the hardware OR to computer MAC address. So you can use the same hardware with the license file on any computer and you can also exchange the measurement hardware on the same computer with a need that MAC addresses are the same.

## Offline registration

If your measurement PC has access to an internet connection you can register directly from inside [Dewesoft X](#) software. If not [Dewesoft X](#) will automatically offer offline registration.

Enter your license key and press the arrow next to the license number button.

🔍 **Active licenses**

---

🔍 **Create new license**

---

Warning: License will be valid only for the measurement hardware (or computer MAC) and options which are chosen at this moment. Please make sure that you choose all the devices, options and plugins which you will use.

---

Software will be registered to the following hardware  
MAC address (4 keys) | A/D (1 key)

License number  ⓘ

---

🔍 **Import license**

---

Image 178: Enter your license key

If there are no DAQ devices connected to the computer, the license is generated only for MAC addresses of the PC.

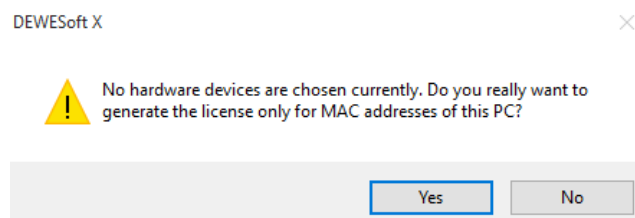


Image 179: If there are no DAQ devices connected to the computer, the license is generated only for MAC addresses of the PC

[Dewesoft X](#) will connect to the internet and will register automatically (online). If there is no internet connection, [Dewesoft X](#) will offer offline registration.

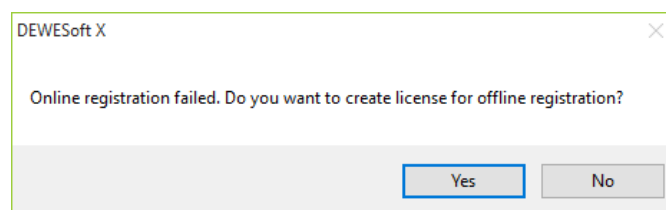


Image 180: If there is no internet connection, [Dewesoft X](#) will offer offline registration

[Dewesoft X](#) will create a \*.lic file and you have to save it to the computer.

Copy the created license ".lic" file from the measurement computer, and go to a computer with internet access. Visit Dewesoft home page, and select [registration](#).

Drop the \*.lic file to the window.

Offline registration

Evaluation license

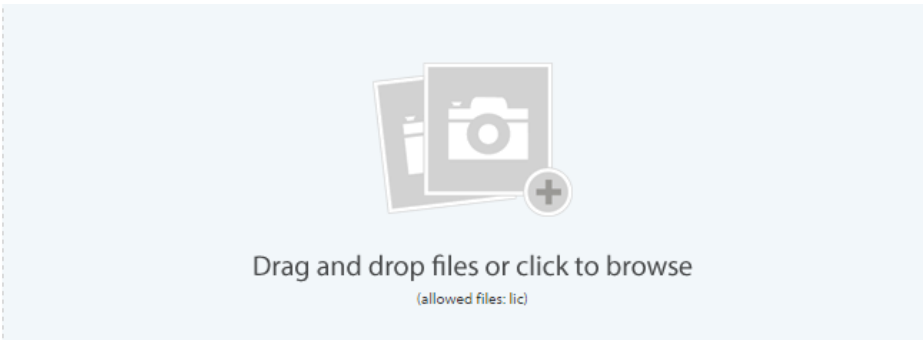


Image 181: Drop created license file on Dewesot's registration page

When you drop your license, the following window will appear. Please, download the generated file.

Save and overwrite the new ".lic" file over the ".lic" file on the measurement computer.

```
<?xml version="1.0" encoding="UTF-8"?>
<LicenseFile>
  <License ID="DW7-Y3CN-Y3CNY3CN">
    <Hardwarekeys>
      <MACs>F4-B7-E2-F3-FC-C9;20-89-84-F7-F3-CA;F6-B7-E2-F3-FC-C9;00-FF-A1-F8-4B-18</MACs>
      <PluginGUIDs></PluginGUIDs><PluginNames></PluginNames></Hardwarekeys>
      <LicenseCodes><PluginGUIDs></PluginGUIDs><MACs>2091557;2591077;2147673;2247081</MACs></LicenseCodes>
    </License>
  </LicenseFile>
```

Download

Image 182: Save and overwrite the new .lic file over the old .lic file

Restart [Dewesoft X](#) software and select the option Import license. Import the \*.lic file that was downloaded from the web page.

⌵ Import license

Import offline license... ⌵

Image 183: Restart Dewesoft X software and select Import license

# Evaluation license

To receive a fully functional 30-day evaluation license for [Dewesoft X](#) software, fill and submit the form below. Data marked with \* is required. Please provide a valid email address to which we can send the evaluation license.

The screenshot shows the Dewesoft website's 'Evaluation licence' registration page. The top navigation bar includes links for Products, Applications, Support, About us, Careers, and Training. Below this is a secondary navigation bar with icons for Contact us, Distributors, Downloads, Software registration (highlighted), RMA service, Forum discussions, Helpdesk, and Developers. The main content area has three tabs: Online registration, Offline registration, and Evaluation licence (which is selected and highlighted with a red box). Below the tabs, there is a text block explaining the 30-day evaluation license process. A registration form follows, with fields for LICENSE\* (a dropdown menu showing 'Dewesoft X (X3 SP6 and later)'), FIRST NAME\*, LAST NAME\*, and COMPANY\*. A red box highlights the 'Evaluation licence' tab. On the right side, there is a red chat bubble that says 'We're here to help!' with a 'DEWESOFT' logo.

Image 184: Request for a 30-day evaluation license for Dewesoft X

# Write license to Dewesoft devices

When we have a license for software on our PC, we can also write the license to Dewesoft measurement devices. This can be done, so the devices can be used also with another computer.

The screenshot shows the Dewesoft software interface. On the left, there are three sections: 'Active licenses' (showing 'DWX-H512-5Q6E-IJH1 TRIAL'), 'Create new license', and 'Import license'. In the center, there is a list of devices: 'SIRIUSi (D0060B515F)' and 'DEWE-43-A (D07C0FC5)'. A red box highlights these two devices. To the right of the devices, there is a blue button labeled 'Write license to...' with a right-pointing arrow.

Image 185: You can write licenses on measurement devices

If the license is already written on the measurement device, we get a warning. We can overwrite the existing license with a new one.

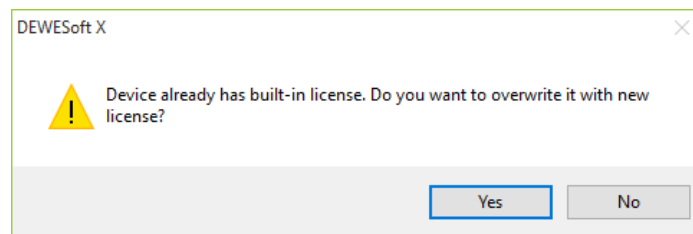


Image 186: If the license is already written on the measurement device, we get a warning