DEWETRON

DEWETRON OXYGEN XCP USER INSTRUCTIONS V3.5

Version: 3.5
Date: 17/03/2026

DEWETRON

The information contained in this document is subject to change without notice.

DEWETRON GmbH (DEWETRON) shall not be liable for any errors contained in this document. DEWETRON MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWETRON SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

DEWETRON shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

Technical Support

Please contact your local authorized DEWETRON representative first for any support and service questions.

For Asia and Europe, please contact:

DEWETRON GmbH
Parkring 4
8074 Grambach
AUSTRIA

Tel.: +43 316 3070
Fax: +43 316 307090
Email: support@dewetron.com
Web: http://www.dewetron.com

The telephone hotline is available Mon-day to Friday between 08:00 and 17:00 CET (GMT +1:00)

For America, please contact:

DEWETRON, Inc.
2850 South County Trail, Unit 1
East Greenwich, RI 02818
U.S.A.

Tel.: +1 401 284 3750
Toll-free: +1 877 431 5166
Fax: +1 401 284 3755
Email: support@dewamerica.com
Web: http://www.dewamerica.com

The telephone hotline is available Monday to Friday between 08:00 and 17:00 GST (GMT -5:00)

Restricted Rights Legend:

Use Austrian law for duplication or disclosure.

DEWETRON GmbH
Parkring 4
8074 Grambach
AUSTRIA

Printing History:

Please refer to the page bottom for printing version.

DEWETRON

Before updating your software please contact DEWETRON. Use only original software from DEWETRON.

Please find further information at www.dewetron.com.

DEWETRON

Table of Contents

1 PREFACE

This user instruction shows an exemplary procedure how to transfer data from OXYGEN to CANape and controlling the OXYGEN recording status by CANape via XCP over Ethernet.

This user instruction was written using the following software versions:

For ETAS INCA:

- DEWETRON OXYGEN version 8.0
- ETAS INCA V7.5

1.1 PERFORMANCE

With OXYGEN version 8.0, XCP data transmission has improved significantly. With OXYGEN version 8.0 and above data can be transferred up to 2MHz. The number of channels which can be transferred depends hardly on the hardware components used, see following tested examples.

Tested with INCA 7.5 as XCP Master and default OXYGEN Setup with hardware and formula channels with 2MHz sample rate:

1) Used hardware:
   Base board: KONTRON K3836-Q1
   CPU: Intel(R) Core(TM) i7-14700, 20 cores
   RAM: 32 GB
   OS: Windows 11 IoT Enterprise

   12 channels with 2MHz are possible for continuous data transmission or 24 channels with 1MHz.

2) Used hardware:
   Base board: FUJIZSU D3633-S1
   CPU: Intel(R) Core(TM) i7-8700 @3.2 GHz, 6 cores
   RAM: 16 GB
   OS: Windows 10 IoT Enterprise

   7 channels with 2MHz are possible for continuous data transmission or 14 channels with 1MHz.

Mathematical operations in OXYGEN also affect the overall computational load, which in turn also affects the number of channels which can be transferred with 2MHz.
With the hardware mentioned in 1) and without additional mathematical operations in OXYGEN like formulas, thus transmitting only hardware channels with 2MHz, it is even possible to transmit up to 16 channels as maximum, when using INCA 7.5. In general, processing XCP data is very computationally intensive, which means that the hardware and software used as receiver also plays a major role.

2 SETTINGS IN OXYGEN

2.1 INSTALLATION

The XCP plugin is automatically installed with every Oxygen R3.7 (Sept 2019) and above. Once installed, the plugin needs to be licensed (if not done by DEWETRON factory already) and activated.

2.2 PLUGIN LICENSING

The plugin license can be updated under the System Information tab (see Figure 2-1). This requires a *.lic-file provided by DEWETRON. A license update requires a restart of Oxygen.

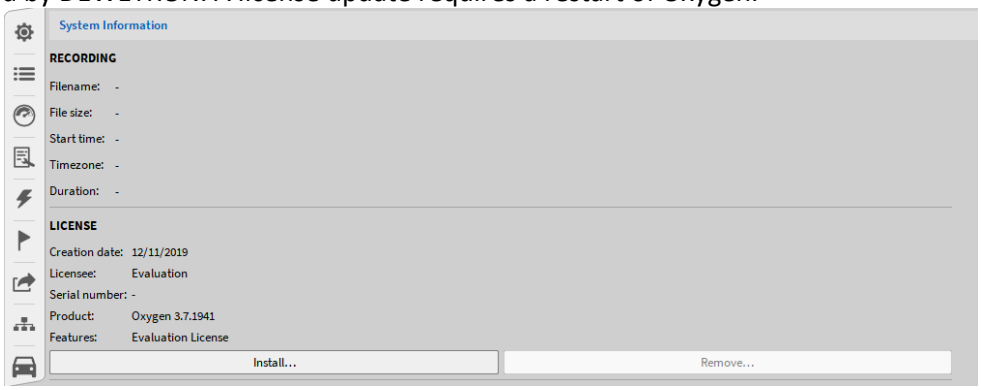


Figure 2-1: Updating the OXYGEN-license

Start OXYGEN and go to the *Remote Control* menu. You will find it in the *System Settings* menu. *Enable remote control* and select *XCP over Ethernet* protocol:

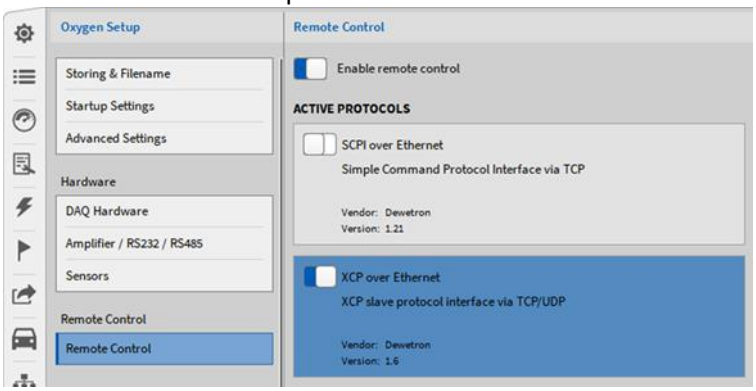


Figure 2-2: *XCP over Ethernet* Remote Control enabled

- On the right-hand side, you will find the *Configuration for XCP over Ethernet* settings:

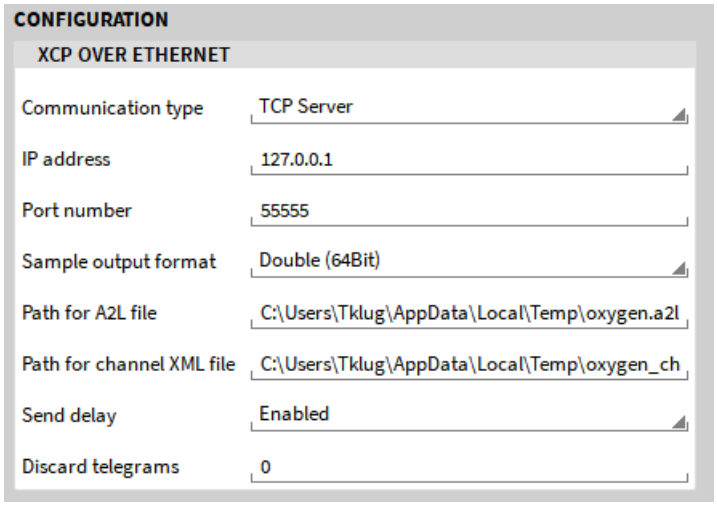


Figure 2-3: *Configuration for XCP over Ethernet* settings

Remark: Please be aware that the directory *C:/Temp* the a2l-file and the xml-file is stored to is not created automatically. Please create the directory *C:/Temp* manually or change the path to an existing directory!

The XCP configuration parameters "Send delay" can be set to enabled/disabled, when enabled the number set in "Discard telegrams" defines how many telegrams are discarded at the start.

- After enabling remote control, the *Screen Lock* button in the status bar will change to a *Remote Control* indicator which will become blue if a remote control is active:

Figure 2-4: *Remote Control* indicator

3 USER INSTRUCTIONS FOR VECTOR CANAPE

3.1 CREATE NEW PROJECT IN CANAPE

- Start CANape and accept the disclaimer:

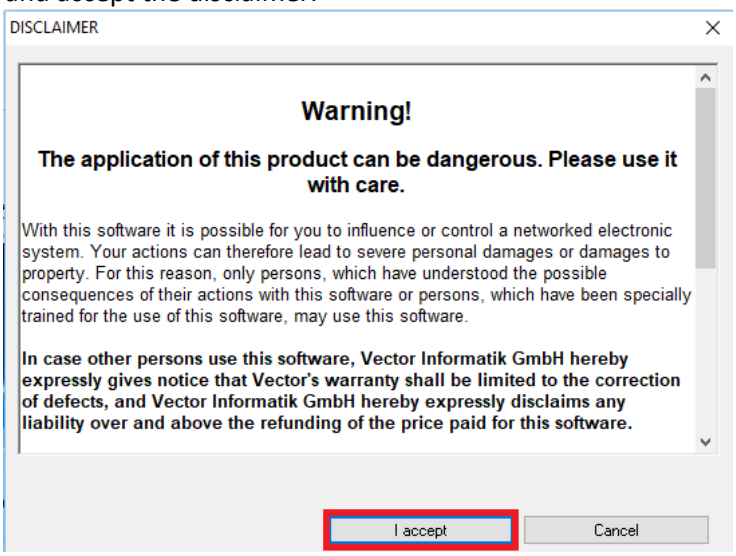


Figure 3-1: CANape disclaimer

- Select *Create new project…* and click on *OK*:

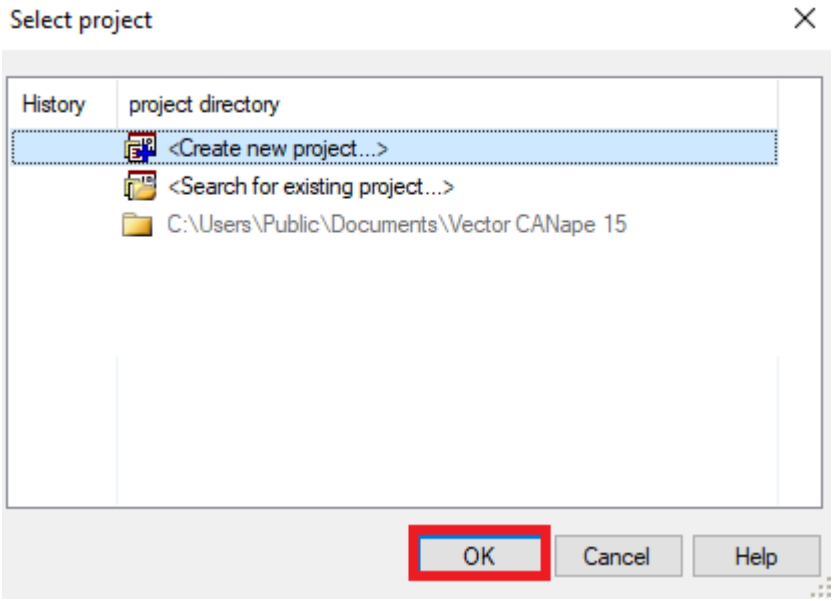


Figure 3-2: *Select project...* window

- Enter a *Project Name* and click on *Next*:

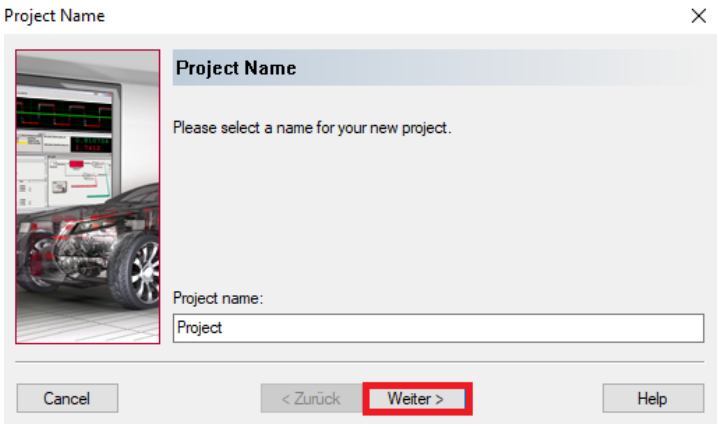


Figure 3-3: *Project Name* window

- Select the *Project Directory* and click on *Next*:

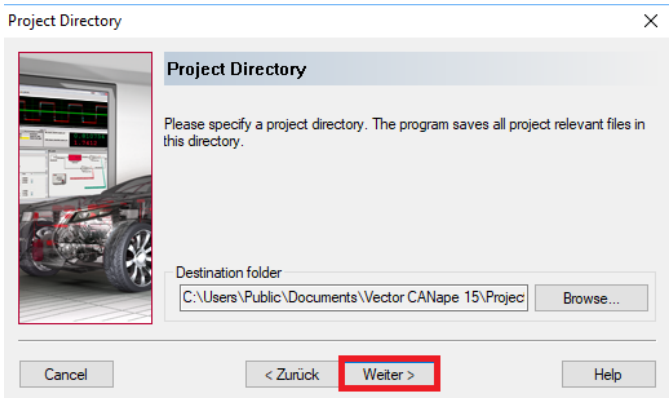


Figure 3-4: *Project Directory* window

- If desired, you can create a link to your new project on the desktop and click on *Finish*:

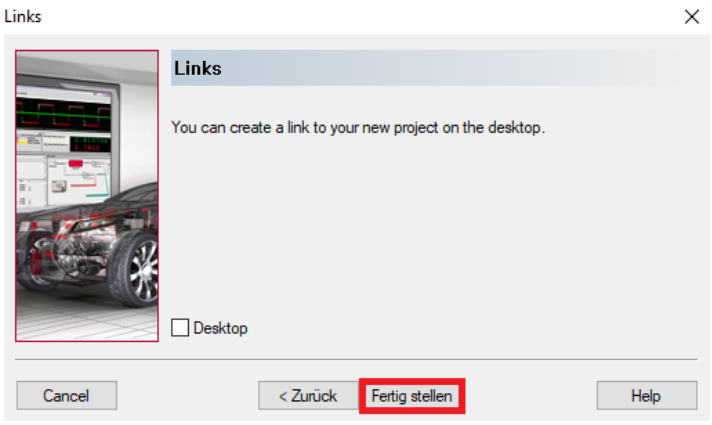


Figure 3-5: *Links* window

3.2 CREATE NEW XCP DEVICE IN CANAPE

- After creating or opening a project in CANape, go to the *Devices* ribbon and click on *New device*:

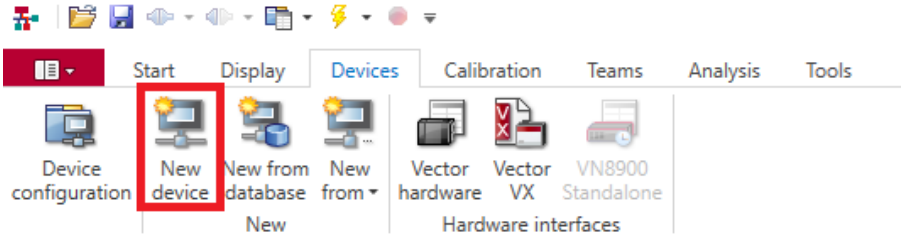


Figure 3-6: Create new device in CANape

- Enter a device *Name*, select *ECU* → *XCP* and click on *Next*:

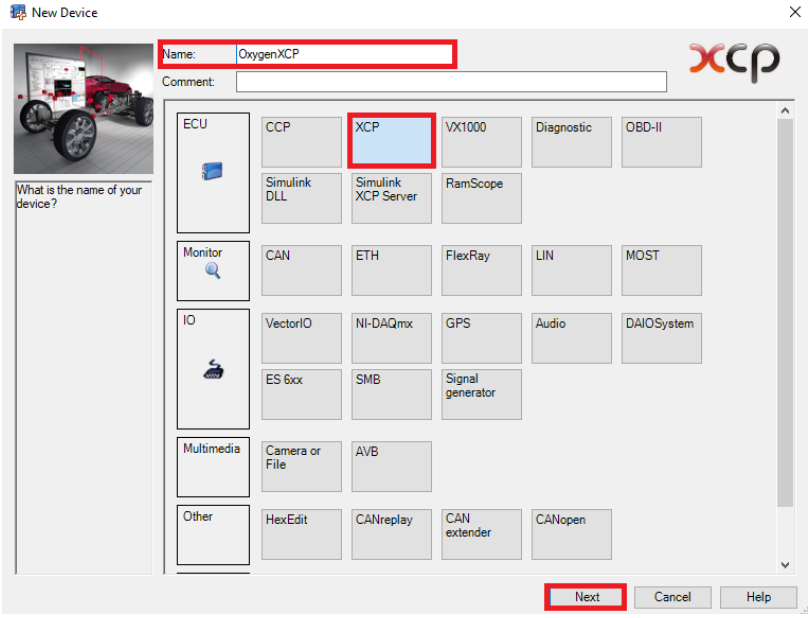


Figure 3-7: *New Device* window

- The *Dataset Management* settings can remain untouched:

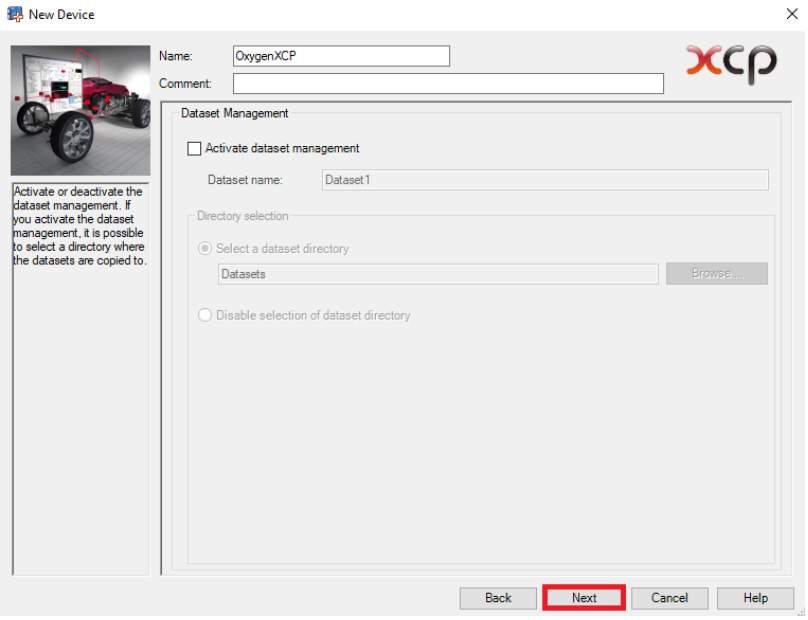


Figure 3-8: *New Device* window - *Dataset Management*

- The *Database settings* can remain untouched as well:

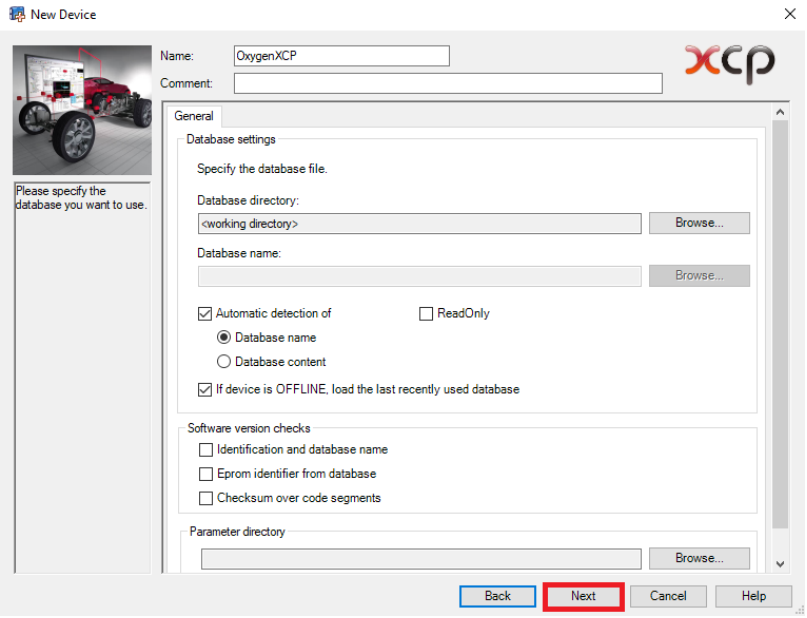


Figure 3-9: *New Device* window – *Database settings*

- Select Transport Layer Type: Ethernet, select the Channel: LocalPC: ETH 1-Ethernet Adapter – Ch 1 and click on Next:

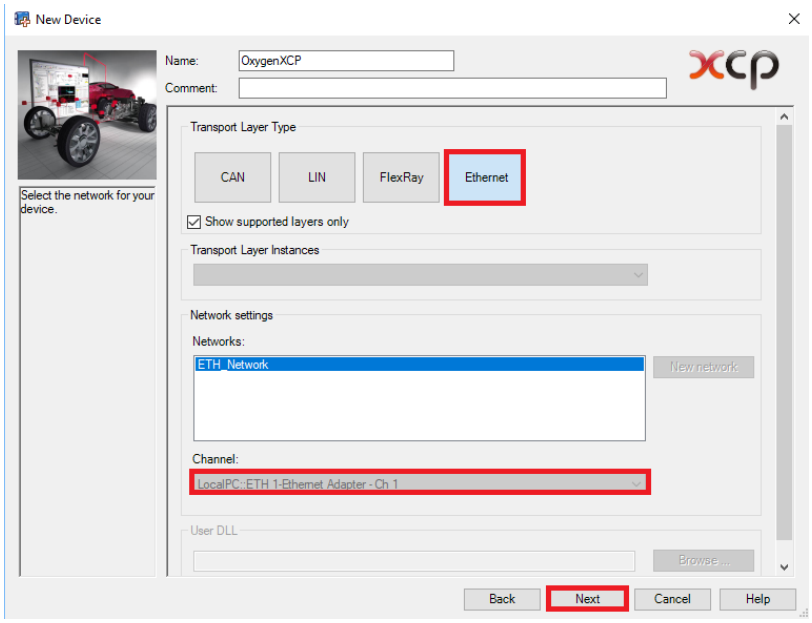


Figure 3-10: *New Device* window – *Transport Layer Type*

- The *Map File Settings* can remain untouched:

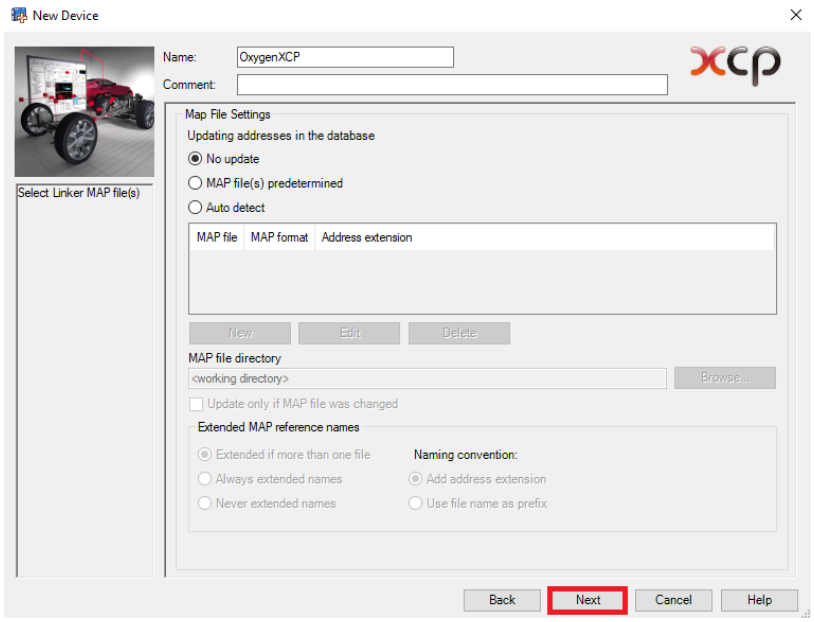


Figure 3-11: *New Device* window – *Map File Settings*

- The *Memory image file settings* can remain untouched as well:

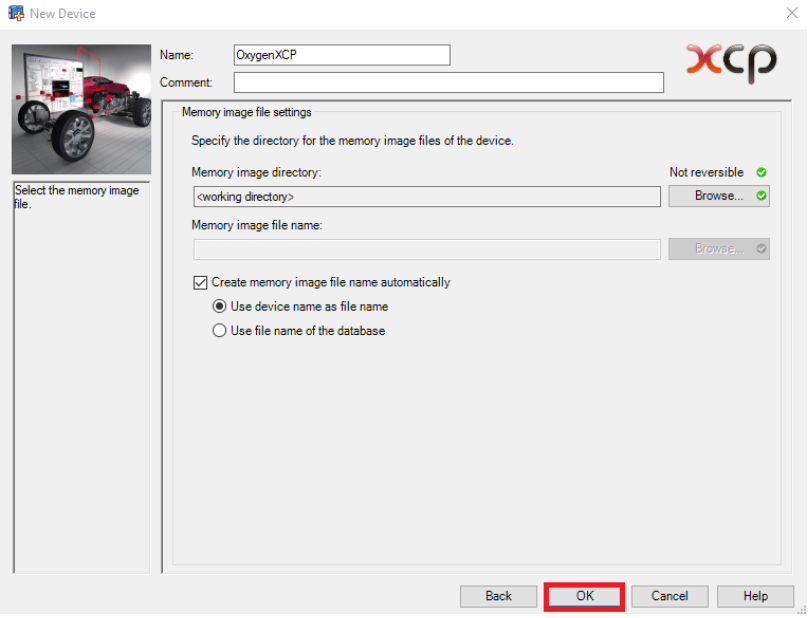


Figure 3-12: *New Device* window – *Memory image file settings*

- After clicking on *Ok*, the *Device Settings* will open.
- Go to the *Transport Layer* menu and enter the following *Ethernet* settings:

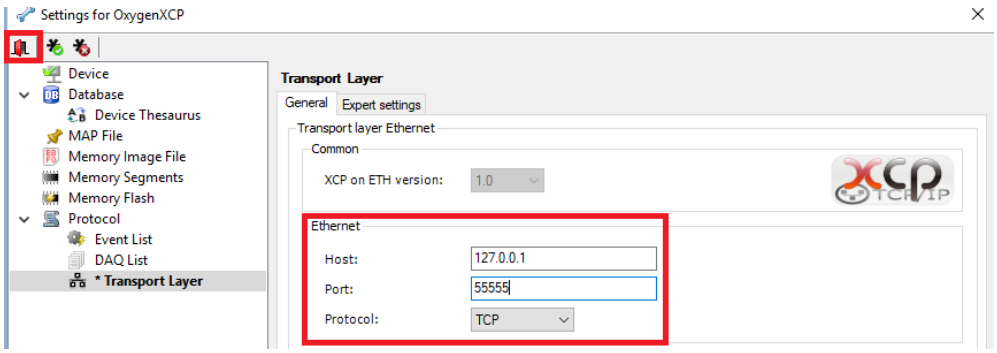


Figure 3-13: *Transport Layer* menu

  - *Host: 127.0.0.1*
  - *Port: 55555*
  - *Protocol: TCP*

- Swap to Oxygen and enter the same settings in the Configuration for XCP over Ethernet settings:

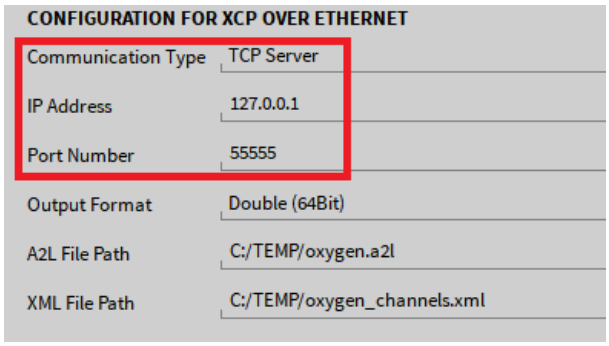


Figure 3-14: *Configuration for XCP over Ethernet* settings

These are the correct settings if OXYGEN and CANape are executed on the same PC. If OXYGEN and CANape run on different PCs, enter the IP address of the OXYGEN PC in the *Host* column (see Figure 3-13) and in the *IP address* column of the OXYGEN *XCP Configuration* menu (see Figure 3-14). For sure, the *Port* number and *Protocol* type must be same in both menus as well.

- Leave the menu by clicking on the *Door* button
- After leaving, the a2l-file must be selected. The path can be found and edited in the OXYGEN XCP configuration (see Figure 2-3):

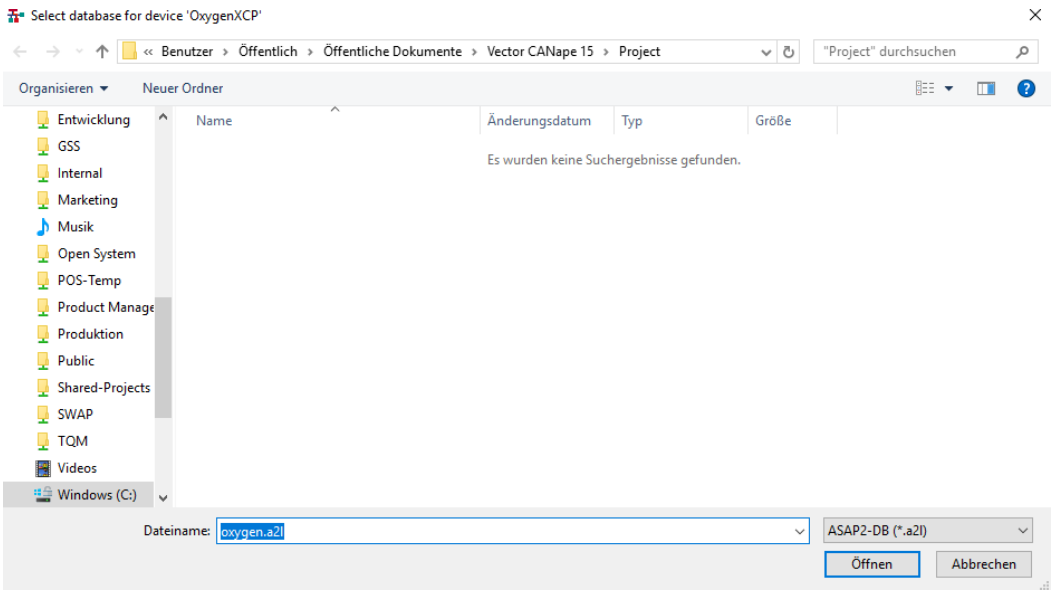


Figure 3-15: *Select database for device* menu

- A new a2l-file is created when XCP remote control is enabled in OXYGEN and during the start of OXYGEN if XCP remote control is enabled
- CANape will now automatically connect to OXYGEN if all settings are correct. The connection state can be checked in two ways:
- CANape: Go to the *Connection* tab in the *Start* ribbon. If the *Online* button is disabled, the connection is active. You may disconnect by clicking on the *Offline* button.

- OXYGEN: If the *Remote Control* indicator is blue, the connection is active and the screen is locked. You can unlock the screen by clicking on the *Remote-Control* indicator.

3.3 TRANSFER DATA FROM OXYGEN INTO CANAPE

3.3.1 REQUIRED SETTINGS TO RECEIVE DATA

- At first the signals that shall be transferred from OXYGEN to CANape must be selected
- Go to the *Start* ribbon and click on *Signals* in the M*easurement configuration*:

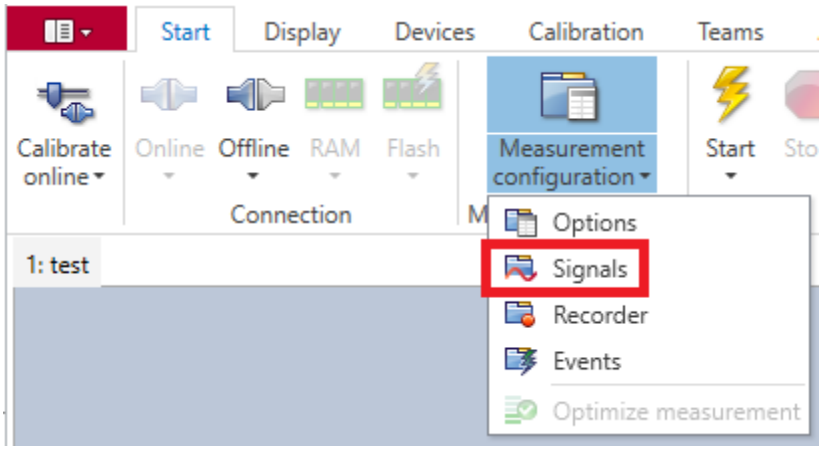


Figure 3-16: *Measurement configuration* selection

- Select your device, perform a right click and click on *Insert Signal*:

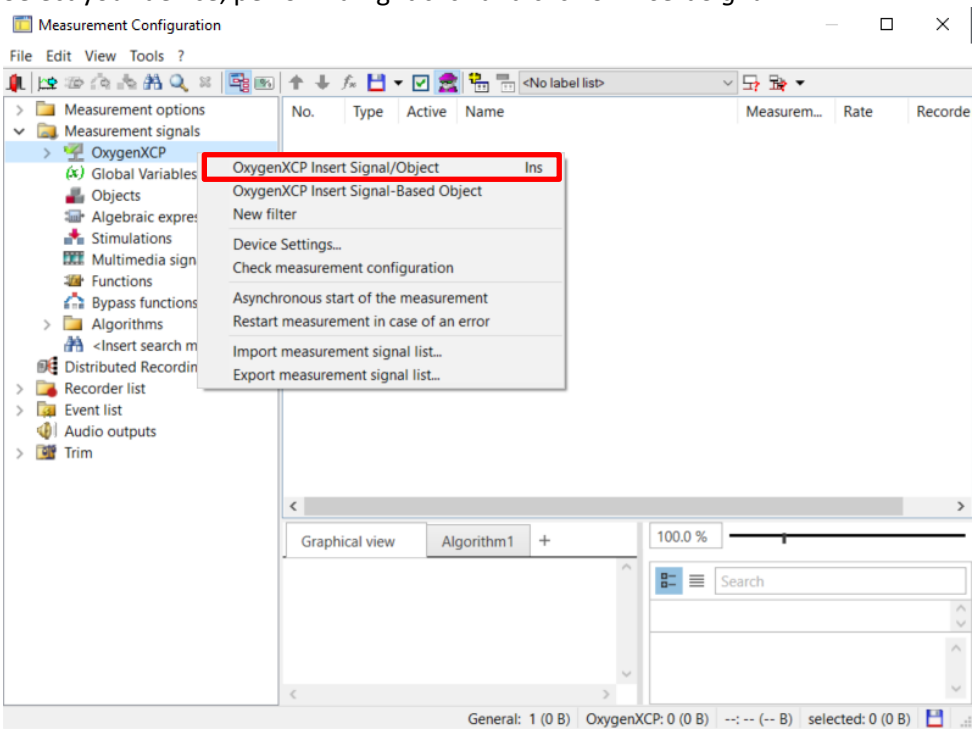


Figure 3-17: *Measurement Configuration* menu

- The *Database Selection* will open and list all available signals from the device. As this list is loaded from the a2l-file, the selection can also be done without active remote connection to OXYGEN. Select your desired analog signals (AI_1_1_Sim, AI_1_2_Sim, AI_1_3_Sim, AI_1_4_Sim in this example), the DEWETRON_RECORDER_CMD signal (Recording command) and the DEWETRON_RECORDER_STATUS signal (Recording status) from the list and click on *Apply*:

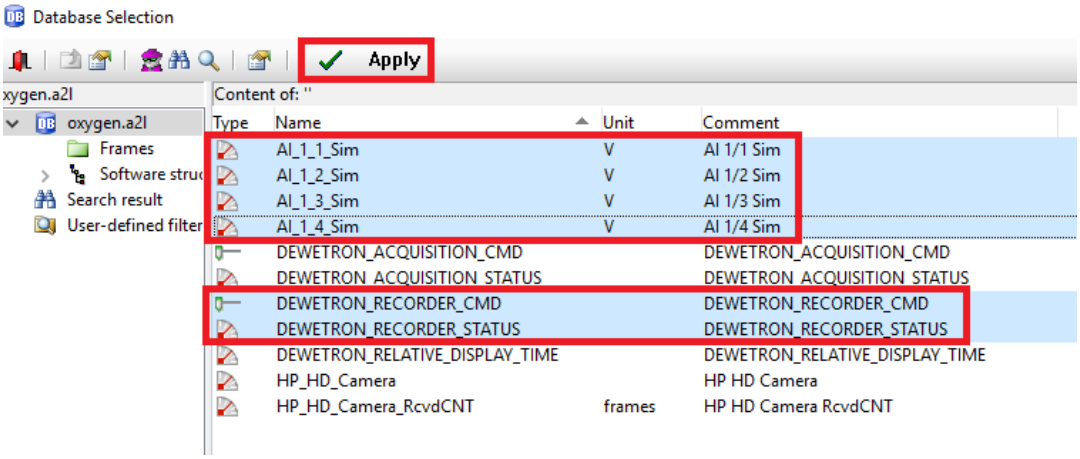


Figure 3-18: *Database Selection* menu

- The *Database Selection* menu can be left again by clicking on the *Door* button. The selected signals are now added to the measurement device and can be transferred from OXYGEN to CANape.
- Select a *Measurement mode*, i.e. *polling* (Program sends a cyclic request for the current value) in the *Measurement mode* menu and select a transfer *Rate*, i.e. 100ms. After that, close the *Measurement Configuration* with the *Door* button. For further information about the supported *Measurement modes*, please refer to section 3.3.2.

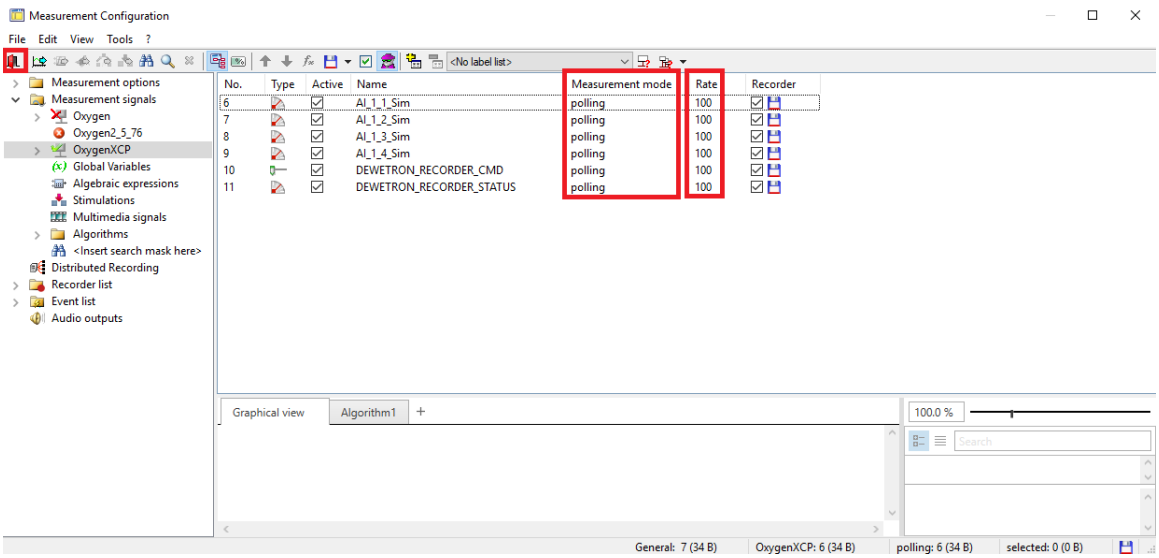


Figure 3-19: *Measurement Configuration* menu with applied signals

- Go to the *Display* ribbon and select *New window* and click on *Graphic*:

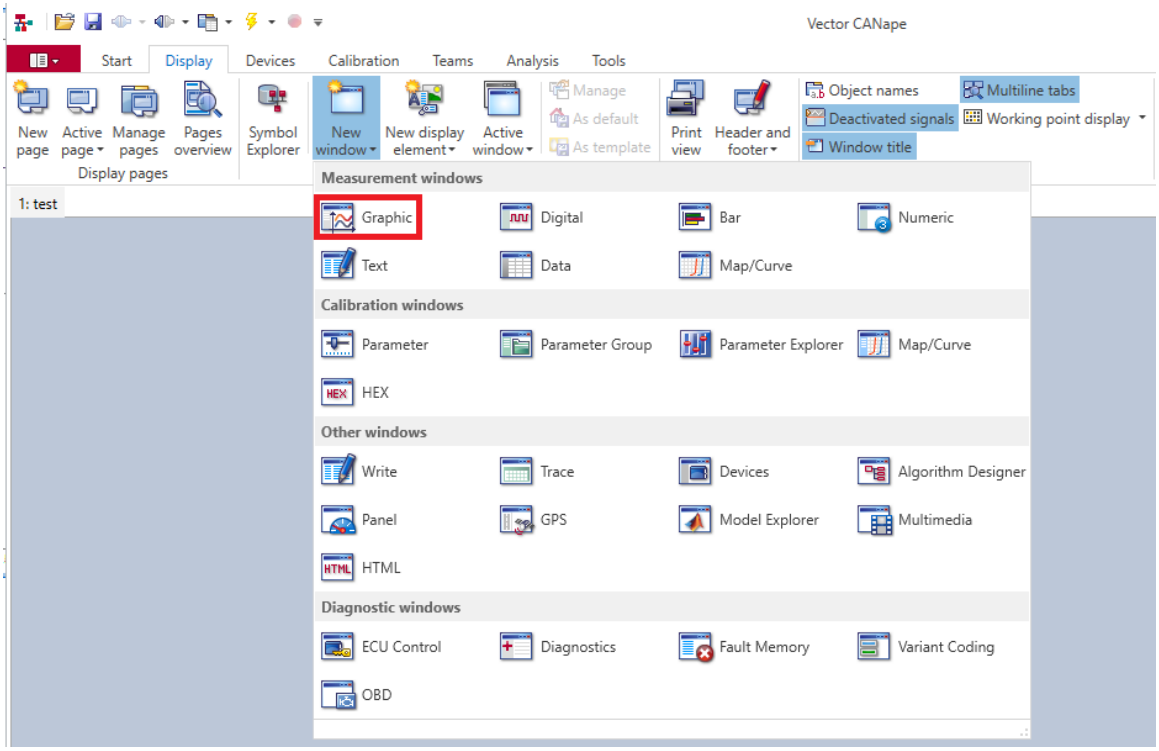


Figure 3-20: *Graphic window* selection

- The *Graphic* window is added to the display which will show the time dependent signal trend:

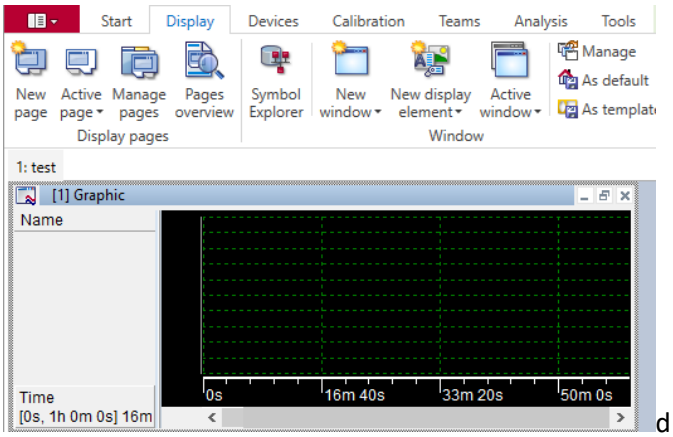


Figure 3-21: *Graphic* window

- To assign channel(s) to the window, right click into the grey space, select *Insert* and click on *Measurement signal…*:

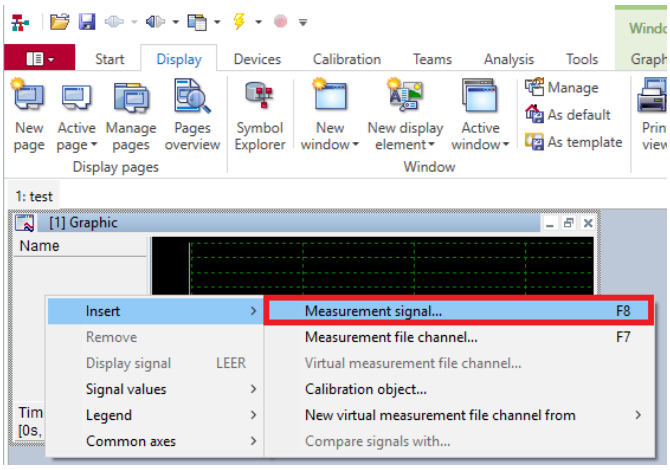


Figure 3-22: Insert measurement signals

- Select the desired signals from the list, click on *Apply* and leave the selection menu by clicking on the *Door* button:

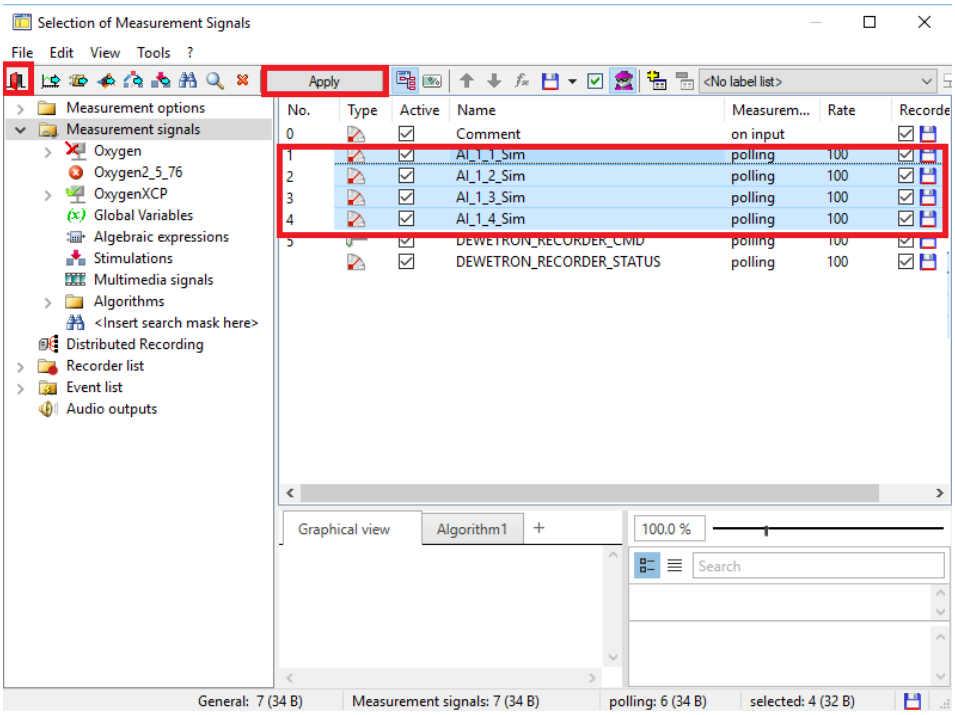


Figure 3-23: Measurement signal selection

- The signals are now assigned to the window

- The same procedure can be repeated for a *Numeric* window which equals a Digital Meter:

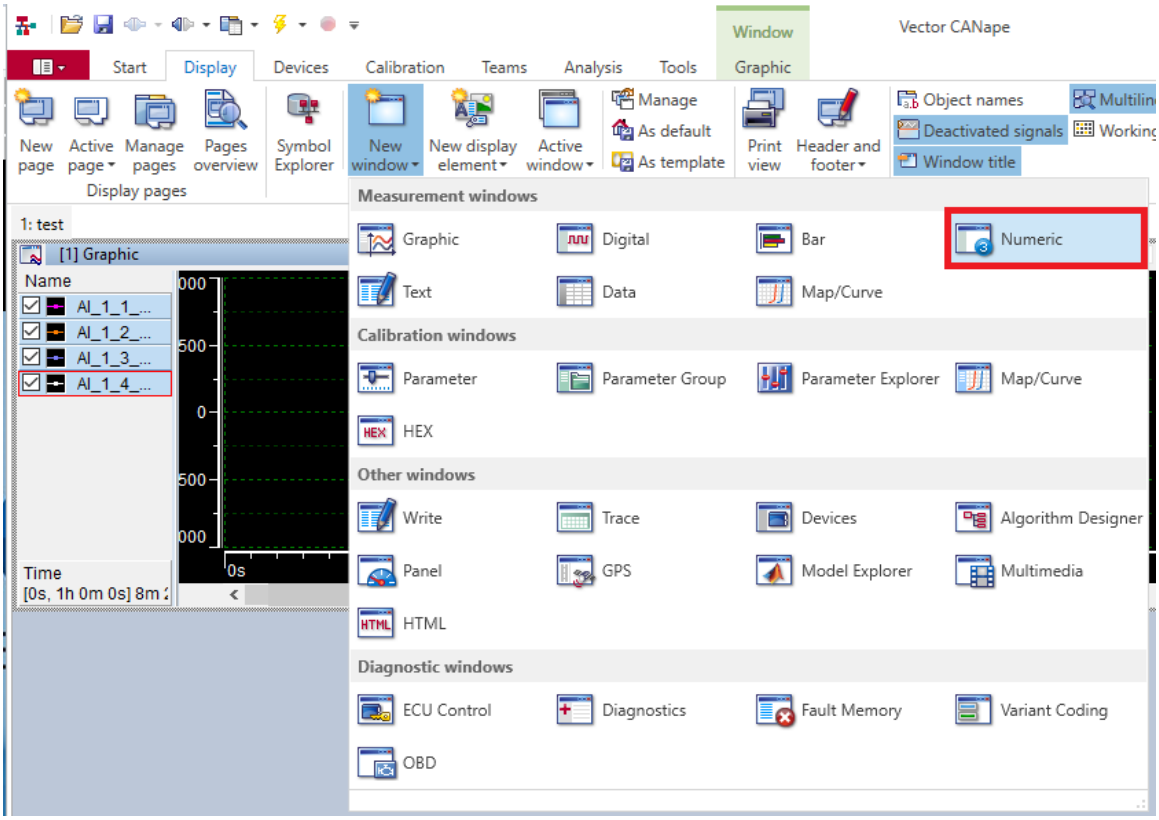


Figure 3-24: Adding a *Numeric* window

- Go to *Insert Measurement signal…* and select the desired signals:

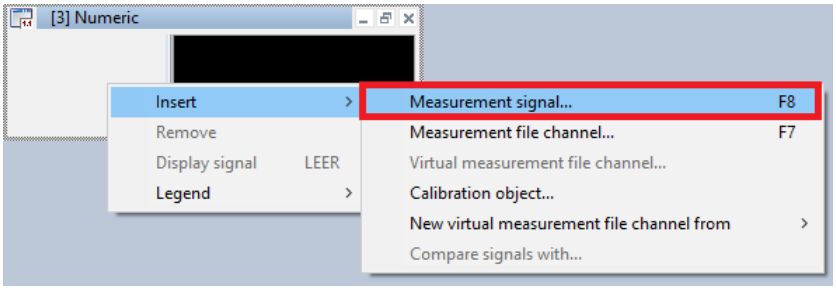


Figure 3-25: Insert measurement signal

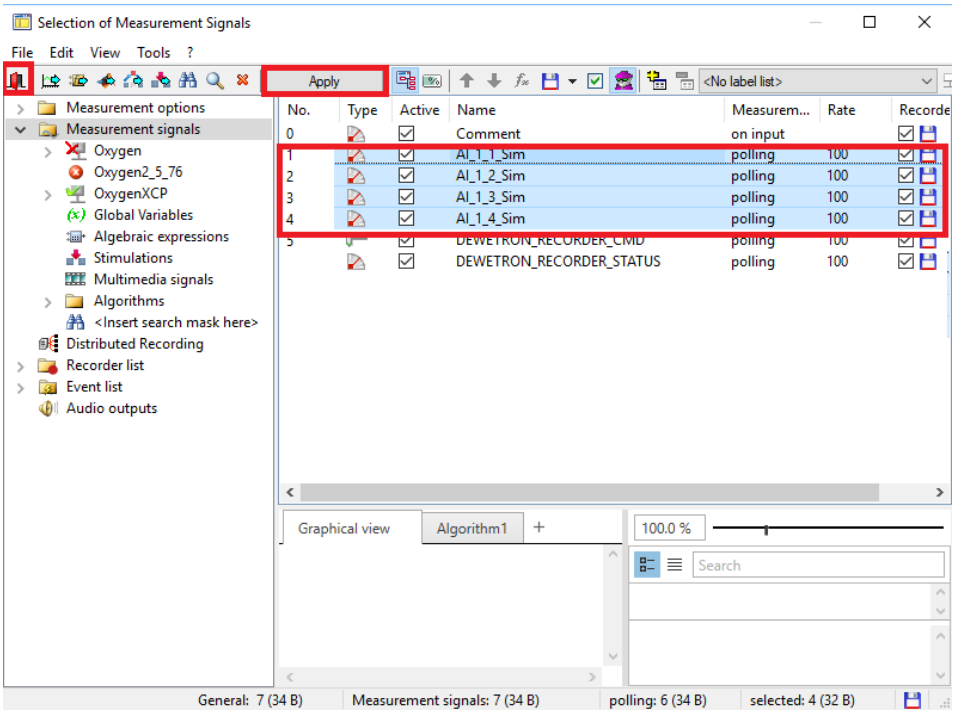


Figure 3-26: Measurement signal selection

- Go to the *Start* ribbon go to the select the *Data acquisition* section and click on *Start without recording*:

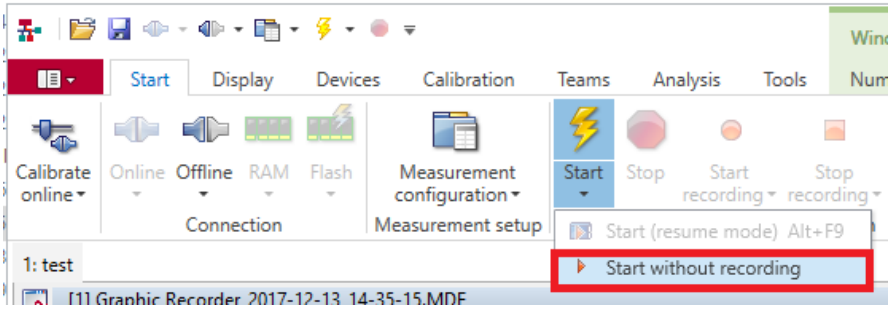


Figure 3-27: Start data transfer

- Data is now transferred from OXYGEN to CANape until the *Stop* button is pressed:

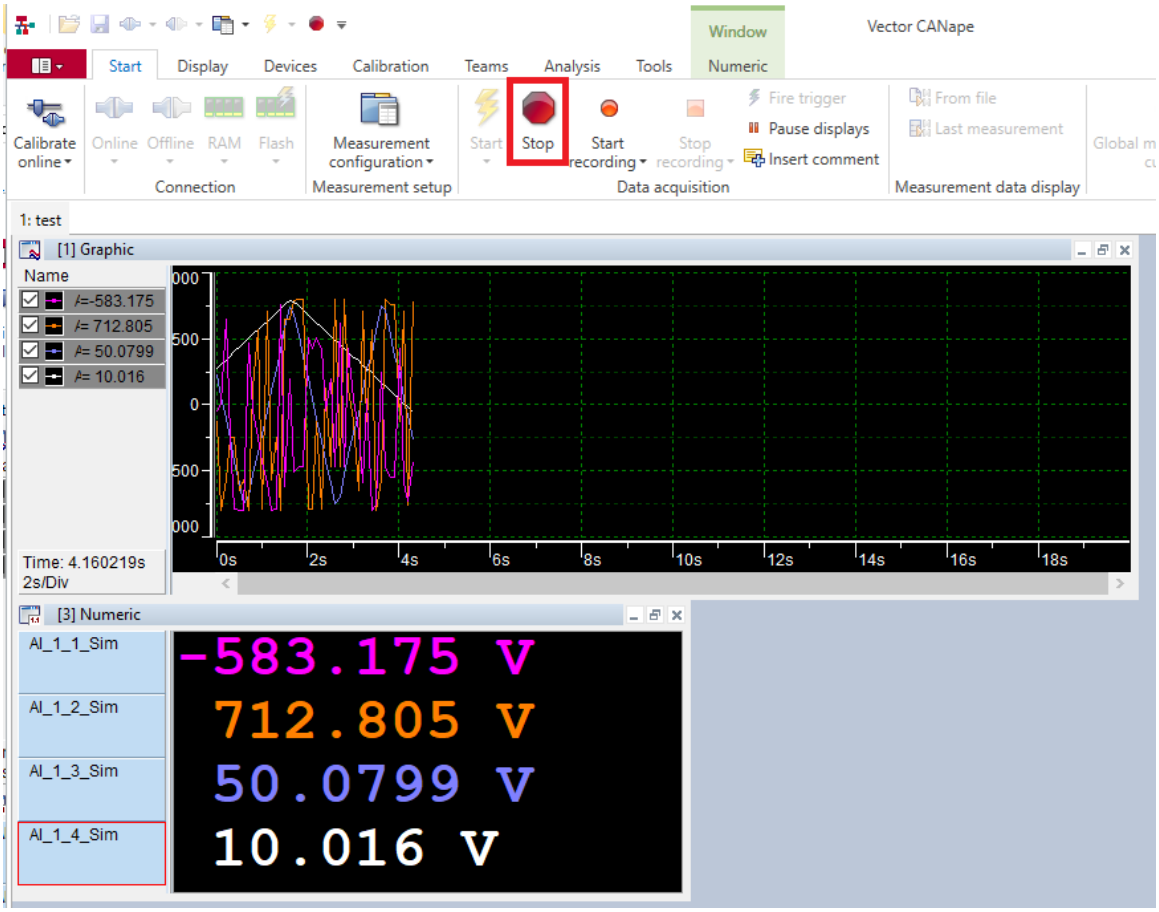


Figure 3-28: Data transfer from OXYGEN to CANape

3.3.2 SUPPORTED MEASUREMENT MODES

The following *Measurement Modes* are currently supported:

- *Polling*: Program sends a cyclic request for the current value
- 1s (average): Value will be measured by an ECU event
- 100ms (average): Value will be measured by an ECU event
- 10ms (average): Value will be measured by an ECU event
- 1ms (average): Value will be measured by an ECU event
- 100µs (average): Value will be measured by an ECU event

Other *Measurement Modes* are not supported and for their correct functionality cannot be guaranteed!

If *1s (average), 100ms (average), 10ms (average), 1ms (average)* or *100µs (average)* are selected as *Measurement Mode* (see Figure 3-29), corresponding statistics channels will be generated within OXYGEN during starting the measurement (see Figure 3-30) via CANape. The channels will be deleted again when the measurement is stopped.

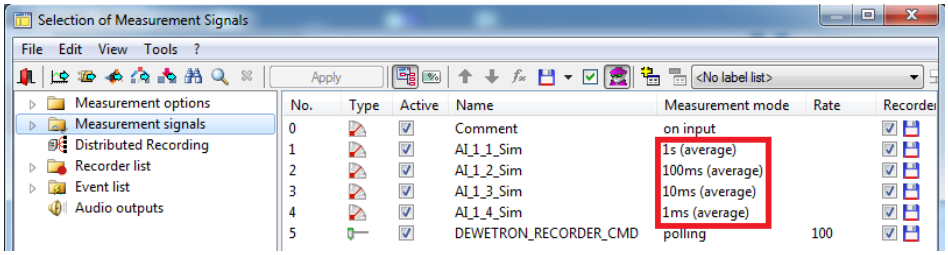


Figure 3-29: XCP DAQ statistics channels in CANape

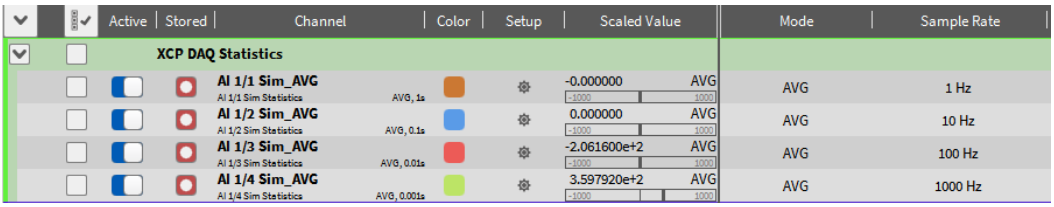


Figure 3-30: XCP DAQ statistics channels in OXYGEN

3.4 EDITING OXYGEN RECORDING STATE IN CANAPE

- Go to the *Display* ribbon, click on the *New window* section and select *Parameter*:

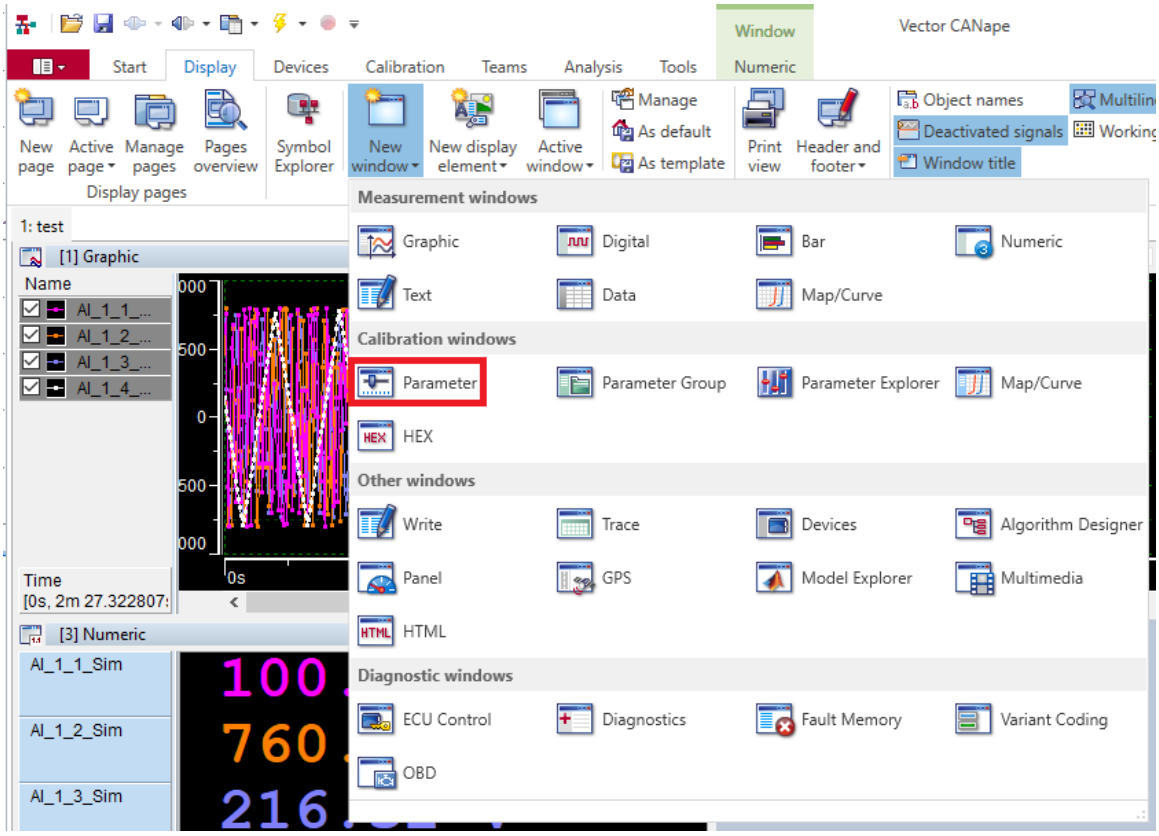


Figure 3-31: Adding a *Parameter* window

- Select the signal *DEWETRON_RECORDER_CMD* from the list, click on *Apply* and leave the setup with the *Door* button:

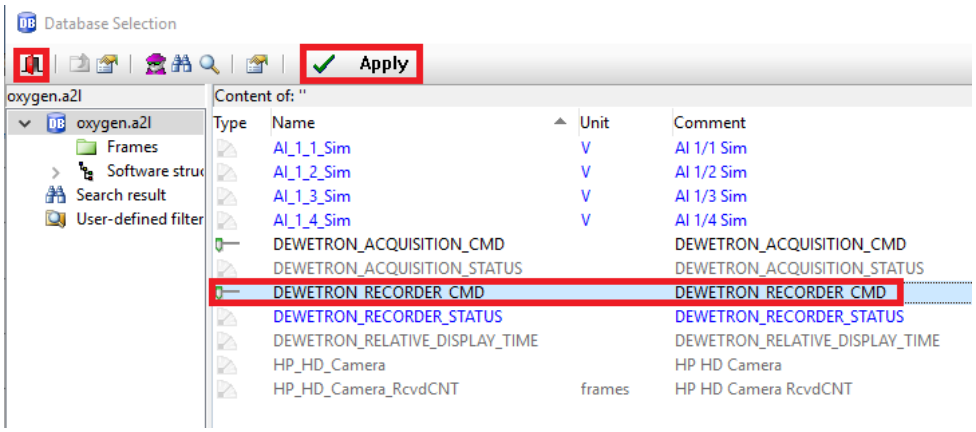


Figure 3-32: Parameter selection

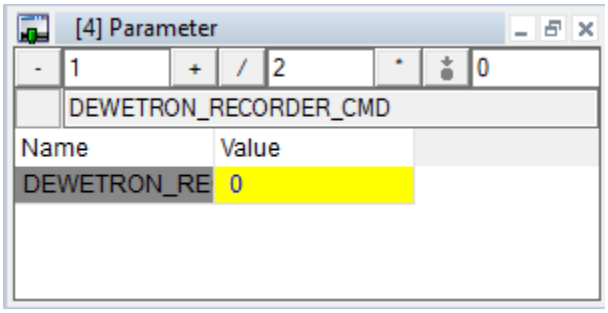


Figure 3-33: *Parameter* window

- OXYGEN's recording state can be controlled by the signal *DEWETRON_RECORDER_CMD* via the *Parameter* window.
- Add also a *Numeric* display and assign the signal *DEWETRON_RECORDING_STATUS* to receive feedback from OXYGEN about the actual recording state.
- Set the raster for *DEWETRON_RECORDING_STATUS to polling*, otherwise the state will not be recieved correctly.

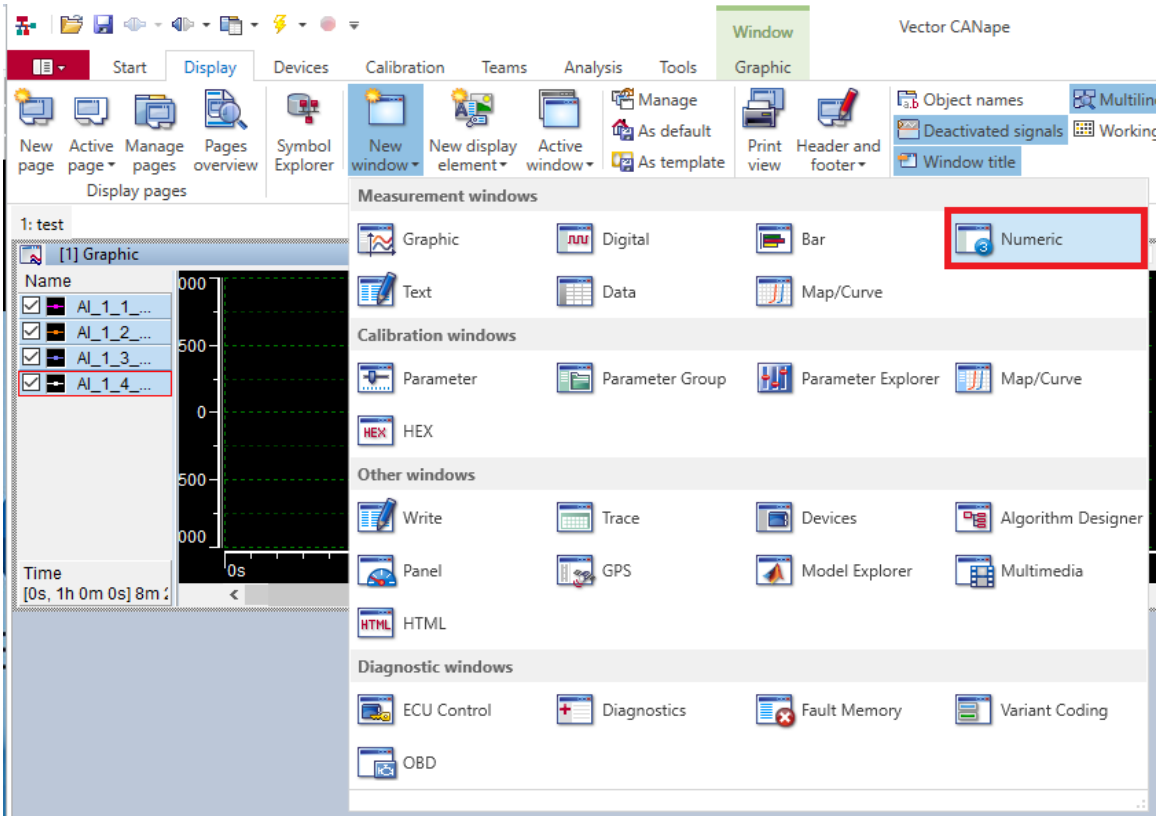


Figure 3-34: Adding a *Numeric* window

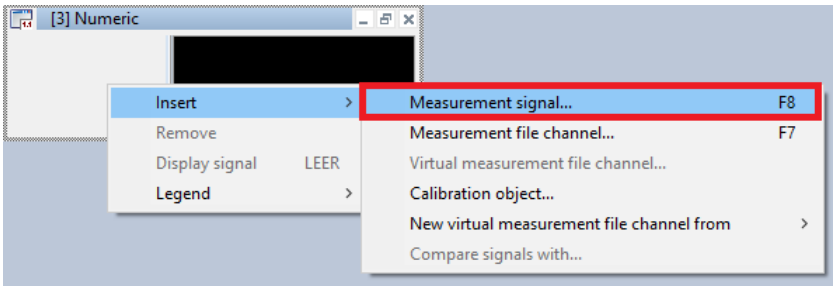


Figure 3-35: Insert measurement signal

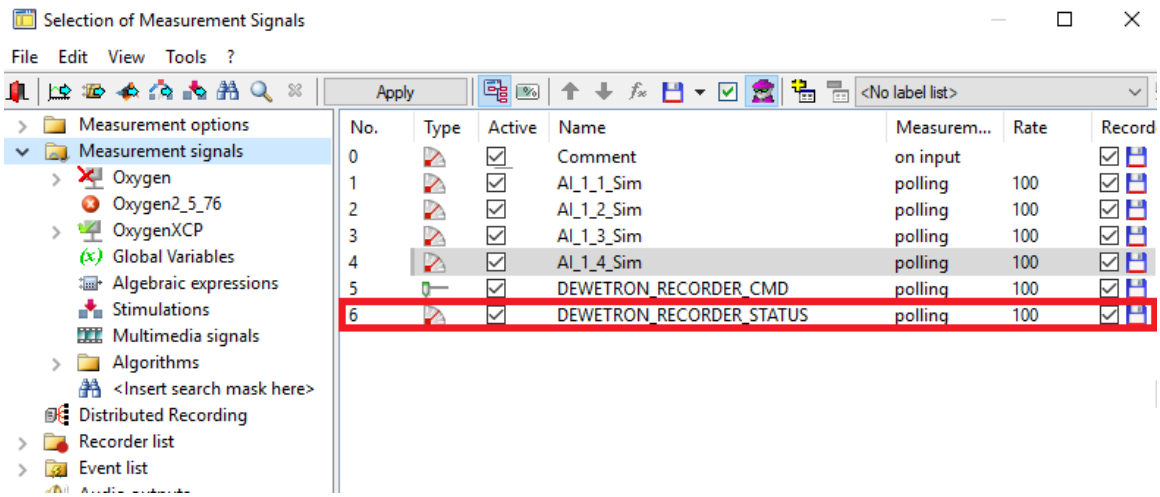


Figure 3-36: Measurement signal selection

- After pressing on *Start without recording* again (see Figure 3-27), data will be transferred from OXYGEN to CANape and the recording state of OXYGEN can be edited by CANAPE as well via the *Parameter* window.

The recording commands can be sent to OXYGEN by the *DEWETRON_RECORDER_CMD* signal. The following commands are available:

0 … Default value
1 … Start Recording
2 … Pause Recording
3 … Stop Recording
4 … Resume Recording

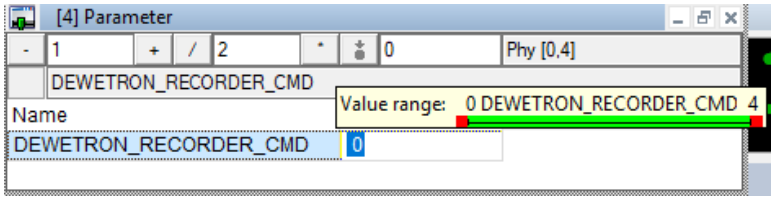


Figure 3-37: Changing OXYGEN recording status via CANape

It is also possible to arm a preset triggered recording, the parameter *DEWETRON_MEASUREMENT_CMD* is used for this purpose. Following commands are available:

0 … Default value
1 … Start measurement. If a trigger is configured, the trigger will be armed, otherwise a normal recording start happens.
2 … Stop measurement. Recording will be stopped and trigger will be disarmed.
3 … Trigger recording. This command can be used to start an additional recording for an armed triggered recording as if a trigger event were active.

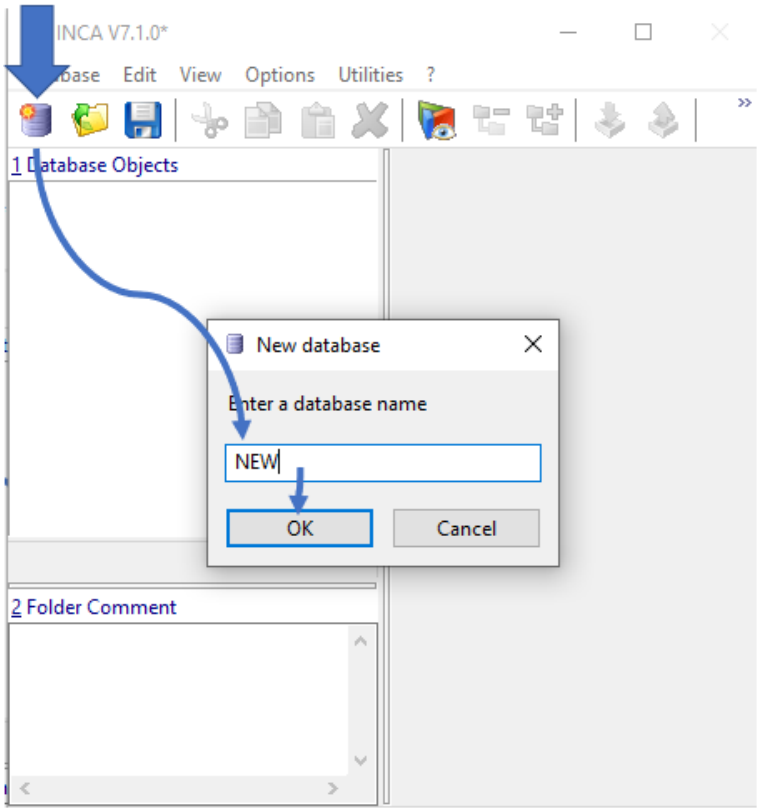
For retrieving the current measurement state *DEWETRON_MEASUREMENT_STATUS* has to be selected. Set the raster for *DEWETRON_MEASUREMENT_STATUS* of to polling, otherwise the state will not be recieved correctly. The following states are available:

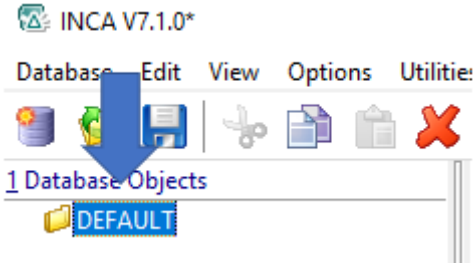
1 … READY: Recording is currently ready to be started
2 … RECORDING: OXYGEN is currently recording.
3 … PAUSED: Recording is currently paused and ready to resumed
4 … STOPPING: Recording is in the process of stopping. The change to ready happens automatically when the stopping process is finished.
5 … TRIGGERS_ARMED: Triggers are armed and waiting for a triggered recording event.
6 … TRIGGERED_RECORDING: Triggers are armed and recording is active.

4 USER INSTRUCTIONS FOR ETAS INCA

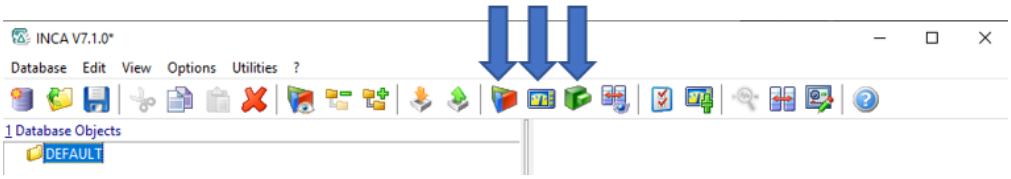
4.1 TRANSFER DATA FROM OXYGEN INTO INCA

- Start INCA and create a new database:

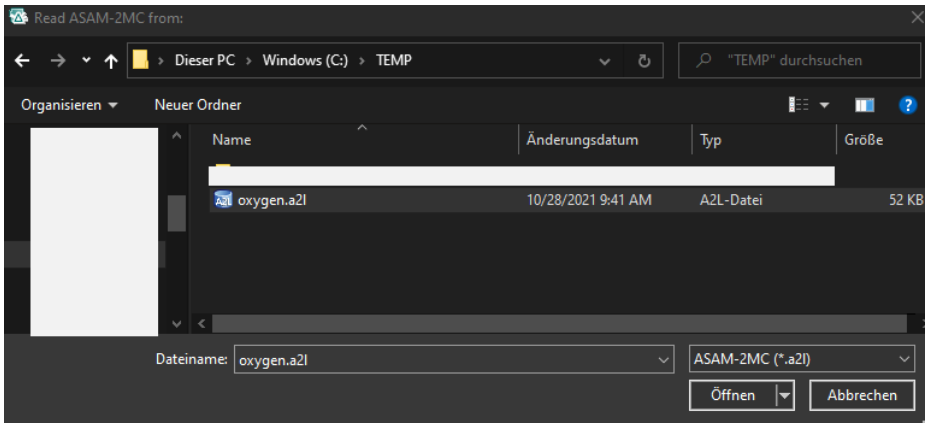




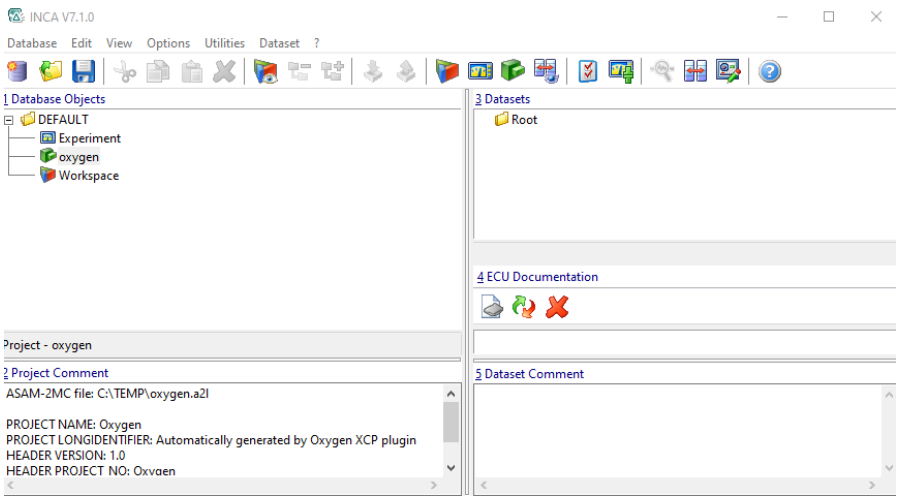
- Add a Workspace, Experiment and Project:



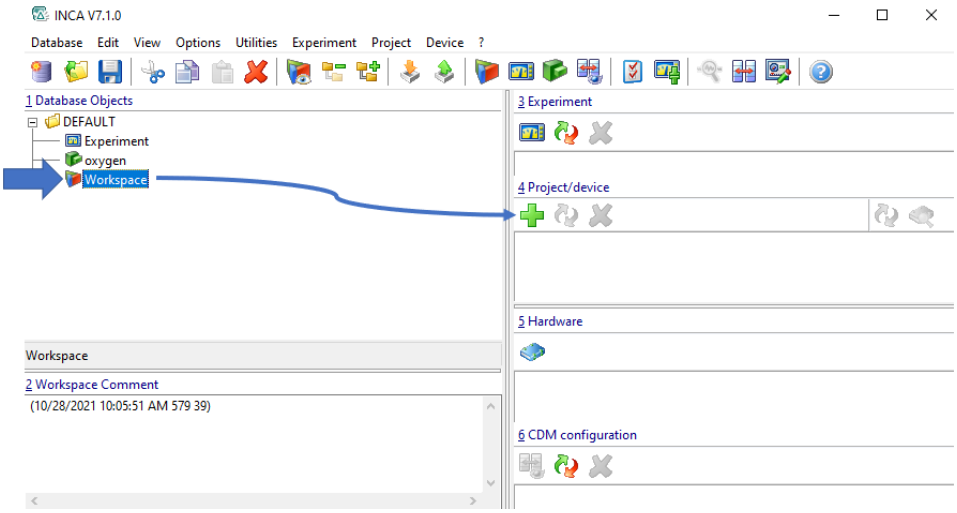
- When adding the Project, a popup file requesting OXGYEN's *.a2l-file will appear. Browse the *.a2l-file and click on *Open*:



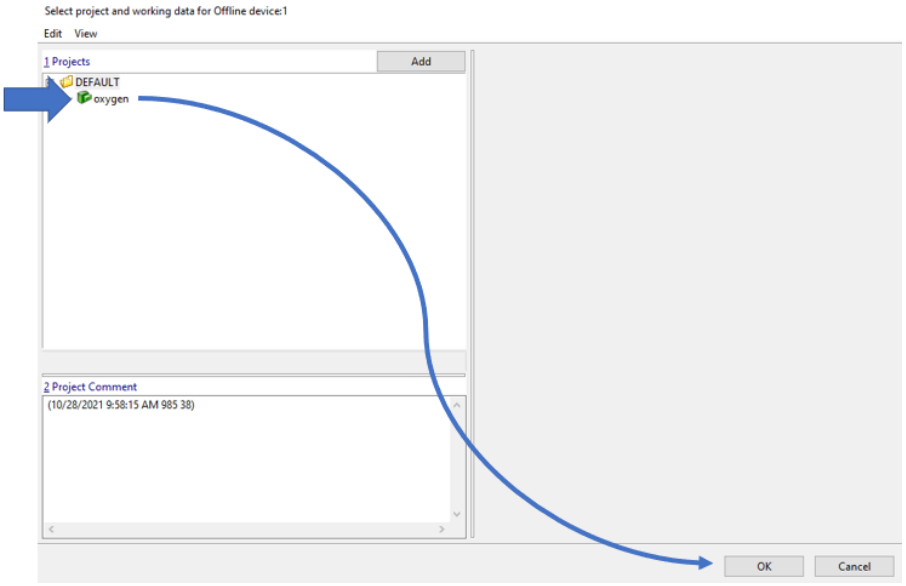
- After selecting the *.a2l-file another popup requesting a *.hex-file will popup. DO NOT select a *.hex-file but press Discard
- INCA will look like that afterwards:



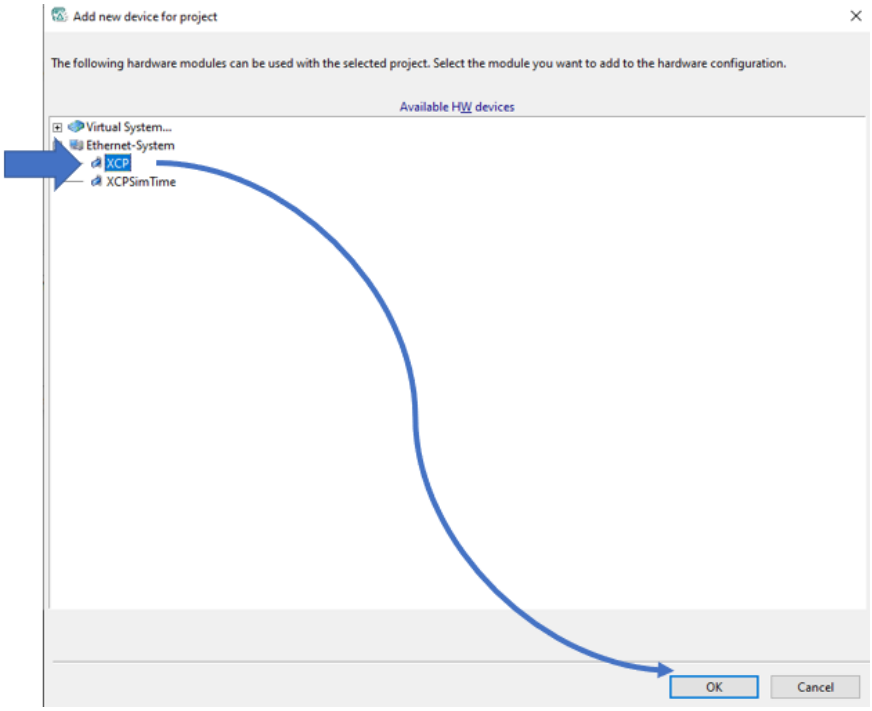
- Add the Workspace to the Project by selecting *Workspace* and pressing the green plus button below *Project / device*:



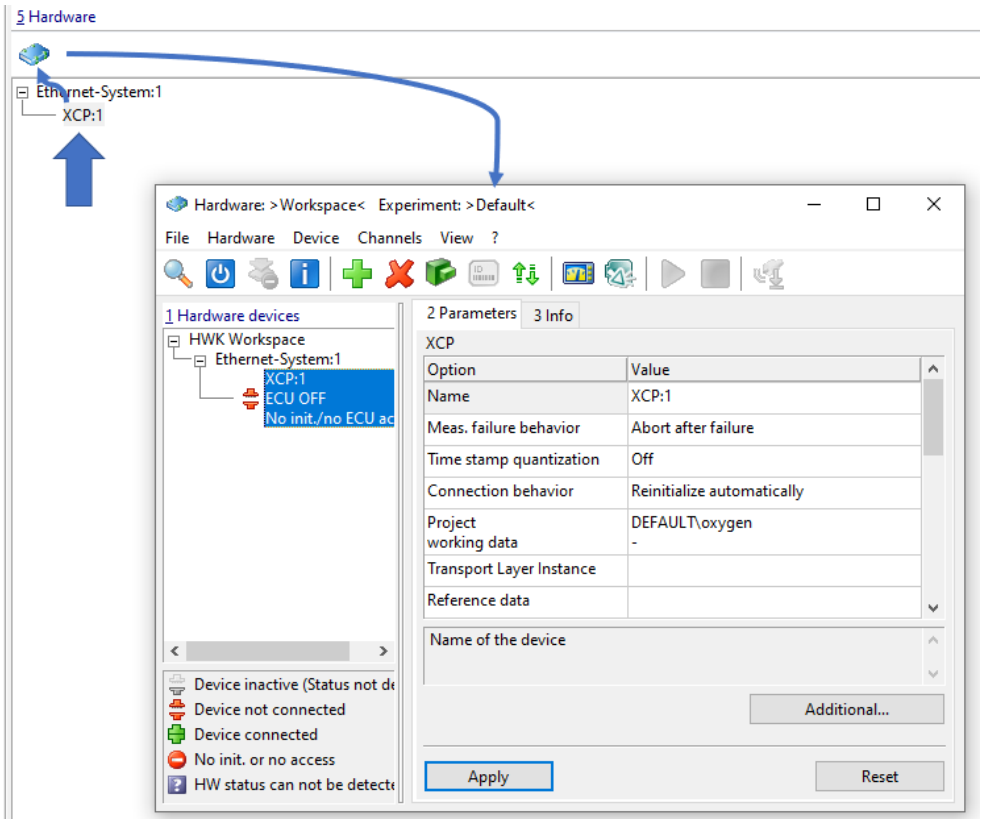
- Another Popup will open. Select *oxygen* and press *OK*:



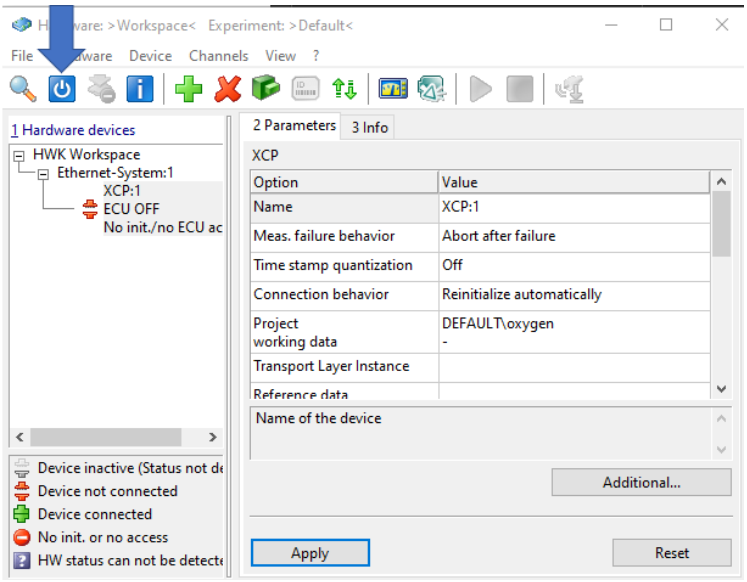
- This will open another popup. Select *Ethernet-System* and *XCP*. Press OK again.

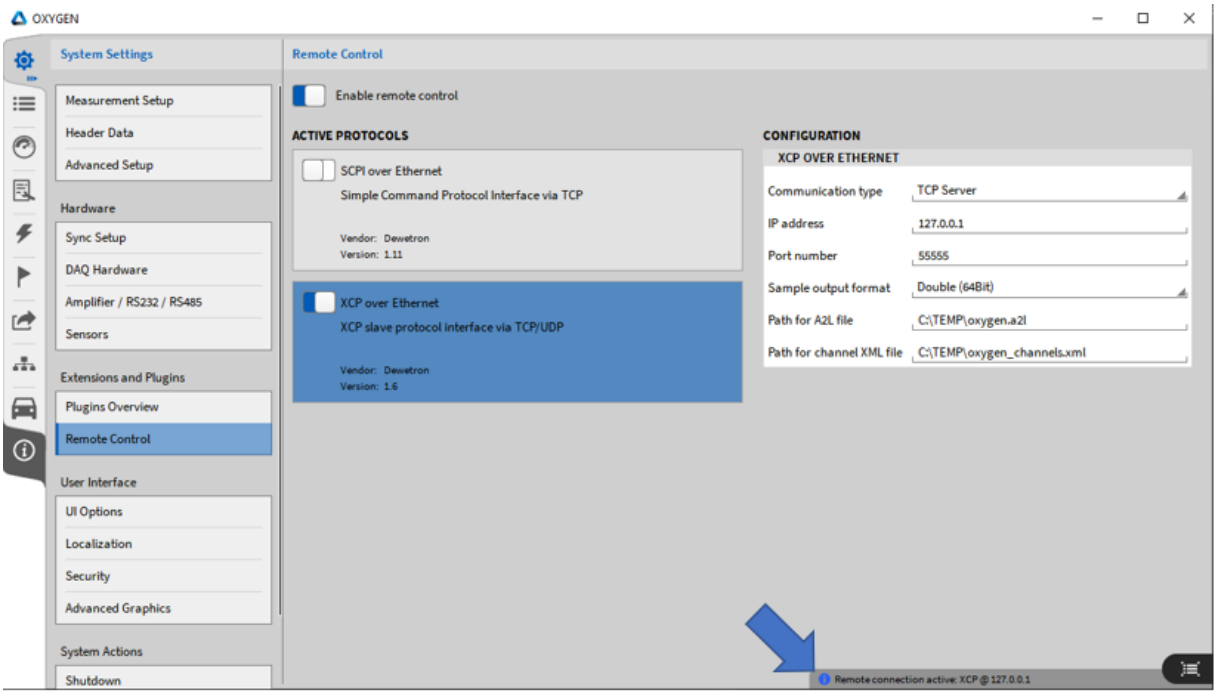


- Go to the Hardware section, select XCP:1 and open the Hardware Configuration:

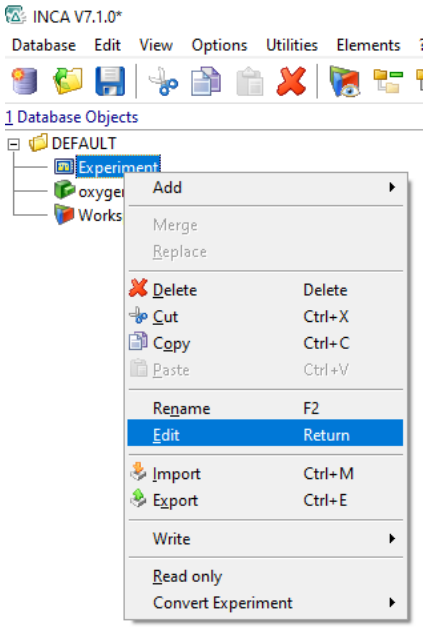


- Pressing the *Initialize Hardware* button will establish a remote connection to OXYGEN:
  An error message *No workspace assigned o device XCP:1* might occur that can be acknowledged

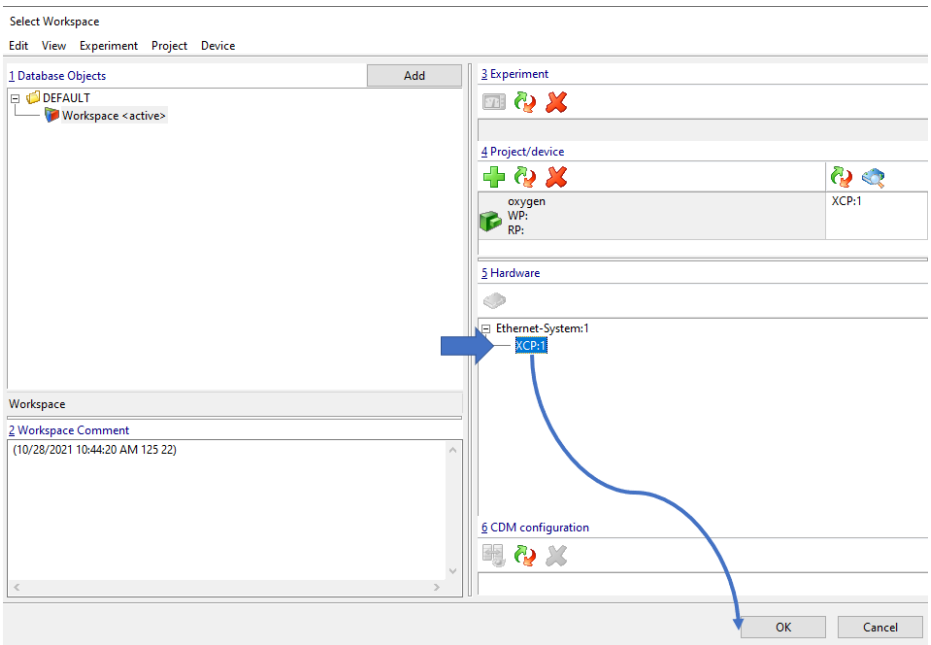




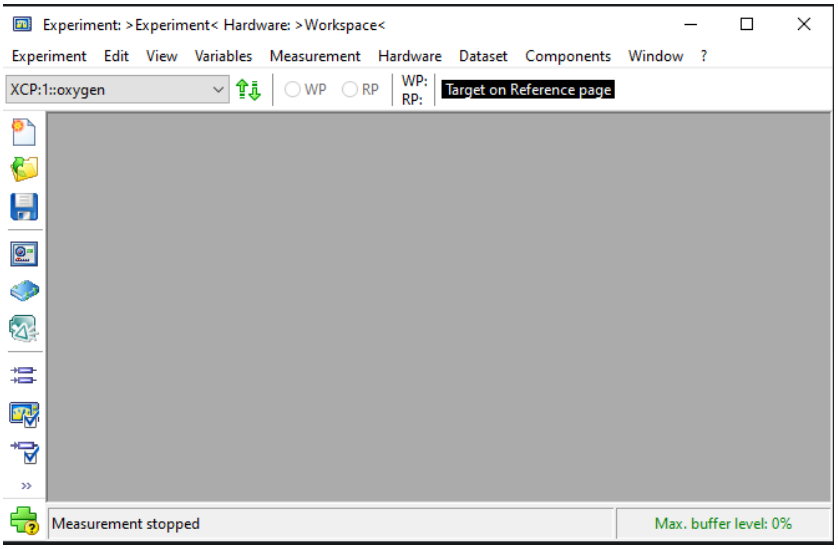
- Close the Hardware configuration
- Do a right click on the *Experiment* and select *Edit*:



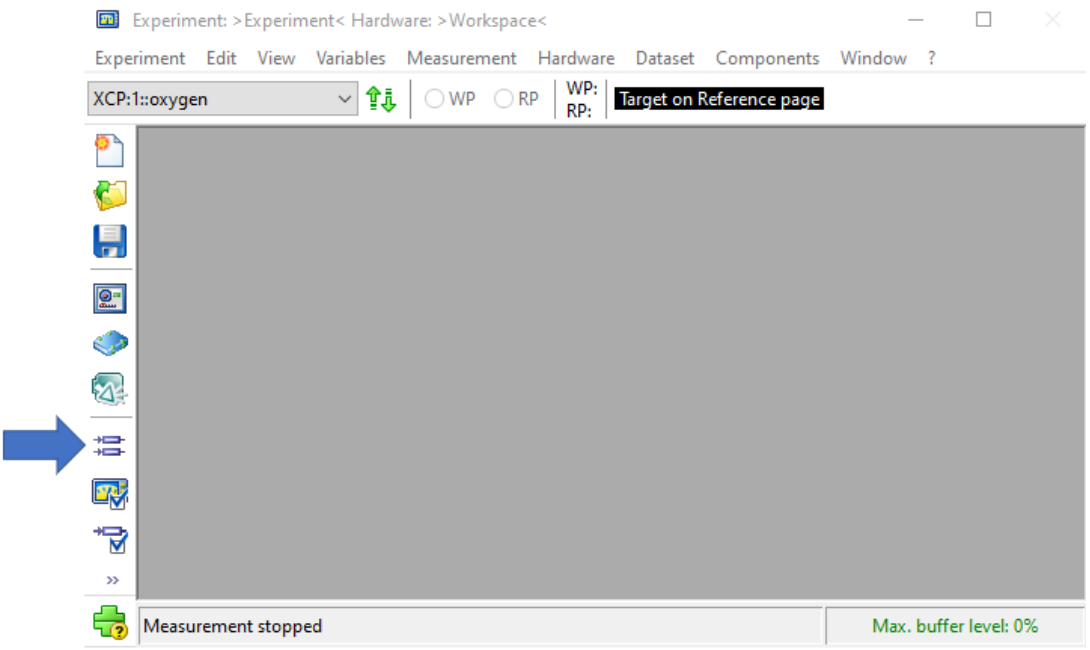
- Select *XCP:1* and press *OK* to assign this XCP connection to the Experiment:



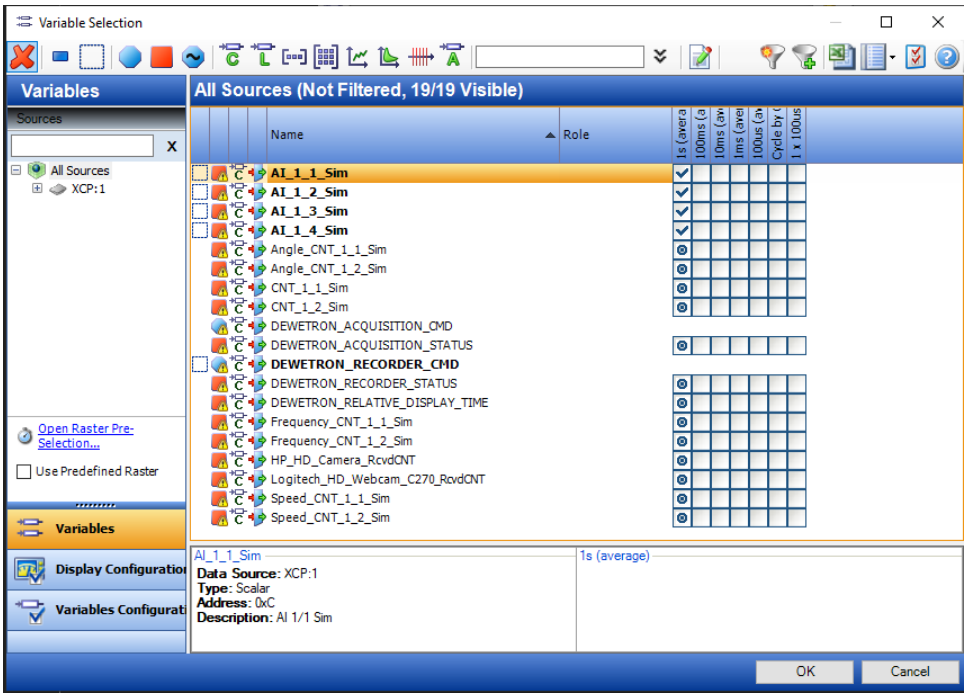
- After pressing OK, the Experiment's workspace will open:
  An error message Calibration is not possible for the following devices: XCP:1 might occur that can be acknowledged:



- Press the *Variable selection* button to select the desired channels from the *.a2l-file

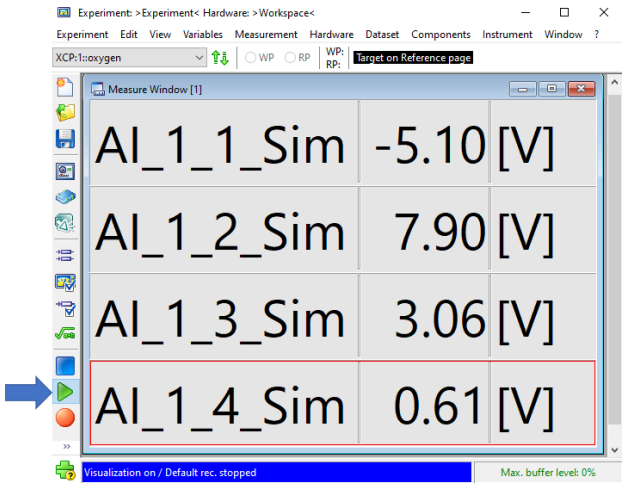


- Select the channels and variables for transmission:



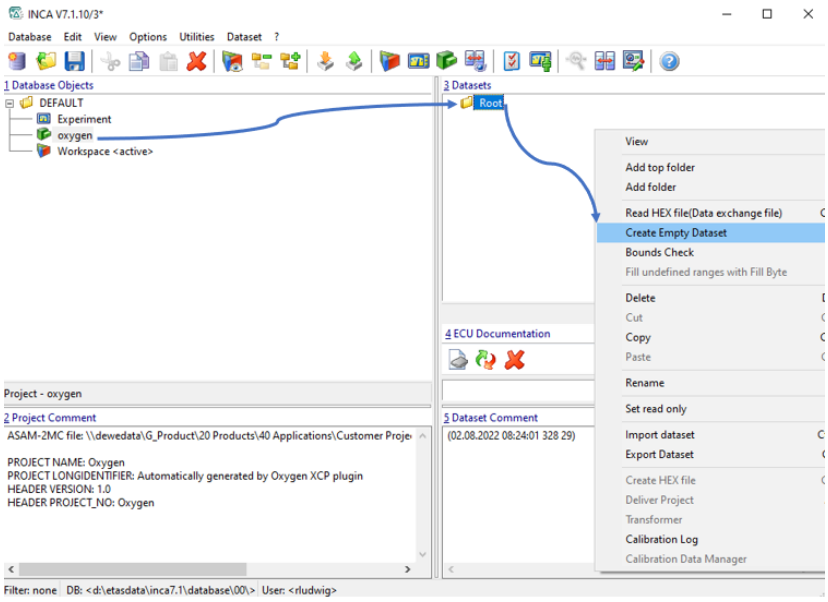
- The following rasters are supported:
  - 1s (average): Value will be measured by an ECU event
  - 100ms (average): Value will be measured by an ECU event
  - 10ms (average): Value will be measured by an ECU event
  - 1ms (average): Value will be measured by an ECU event
  - 100µs (average): Value will be measured by an ECU event

- Press Ok when finished
- A measure Window will now be available. Pressing the *Start visualization* button will start the data transfer.

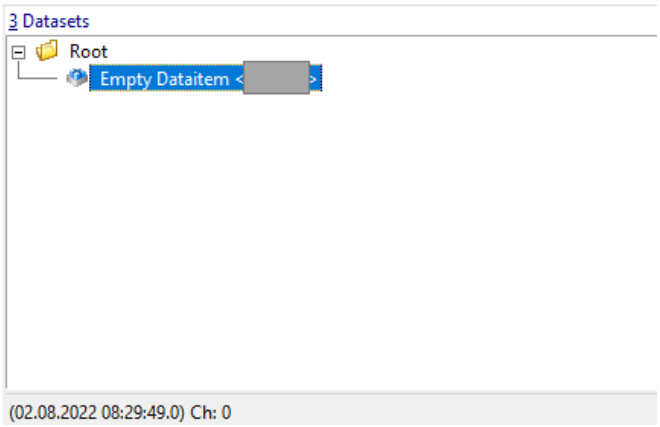


4.2 EDITING OXYGEN RECORDING STATE IN INCA

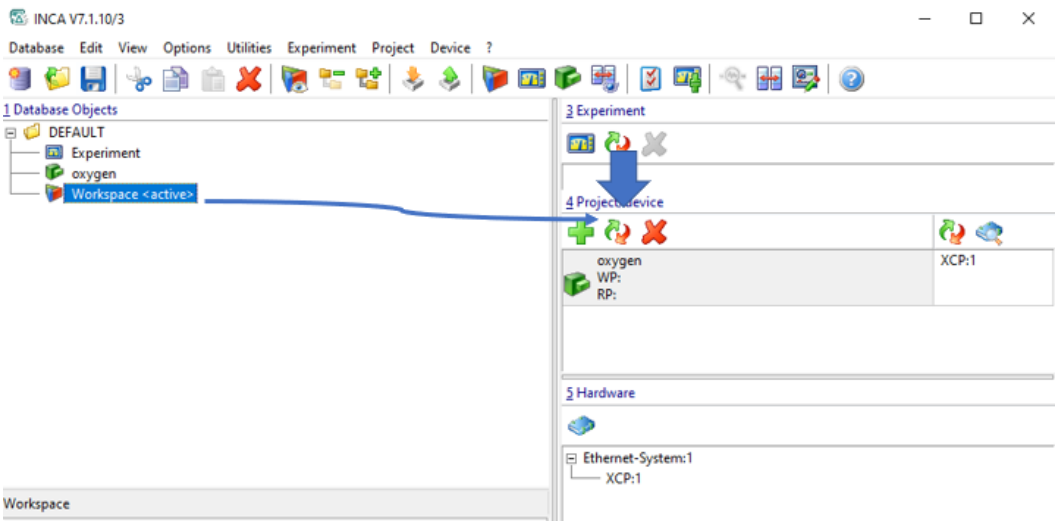
- Select the *oxygen* Experiment, go to *Datasets* and make a right click on *Roots* to *Create Empty Dataset*:



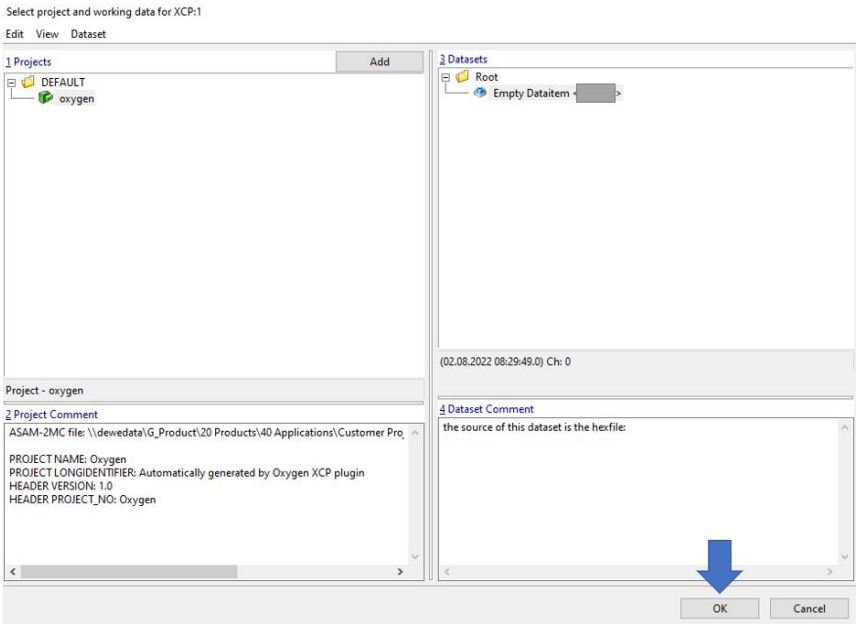
- An E*mpty Dataitem* will be created:



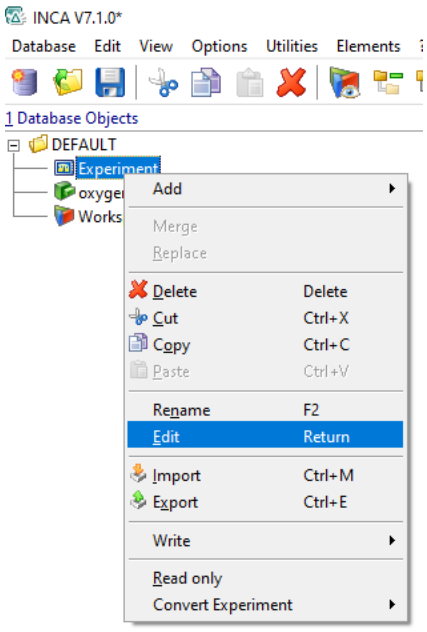
- Go To the *Workspace* and press *Change project /dataset* to connect the Empty *Dataitem* with the *Workspace:*



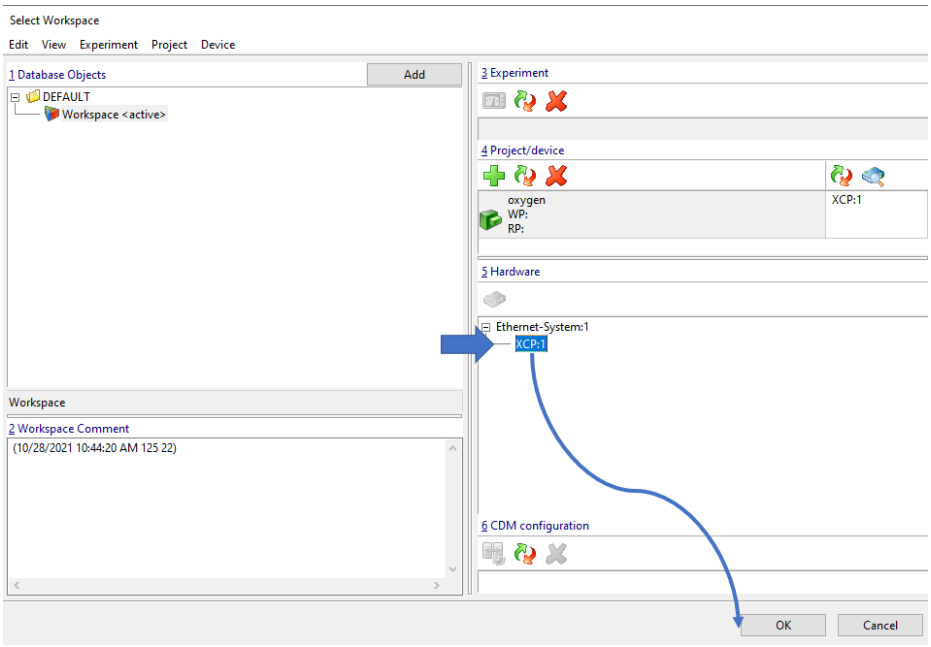
- Press *Ok*



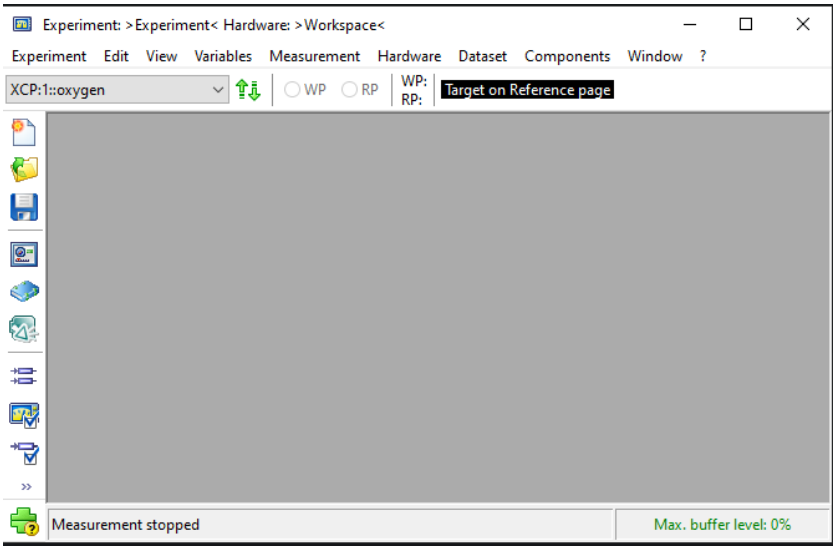
- Do a right click on the *Experiment* and select *Edit*:



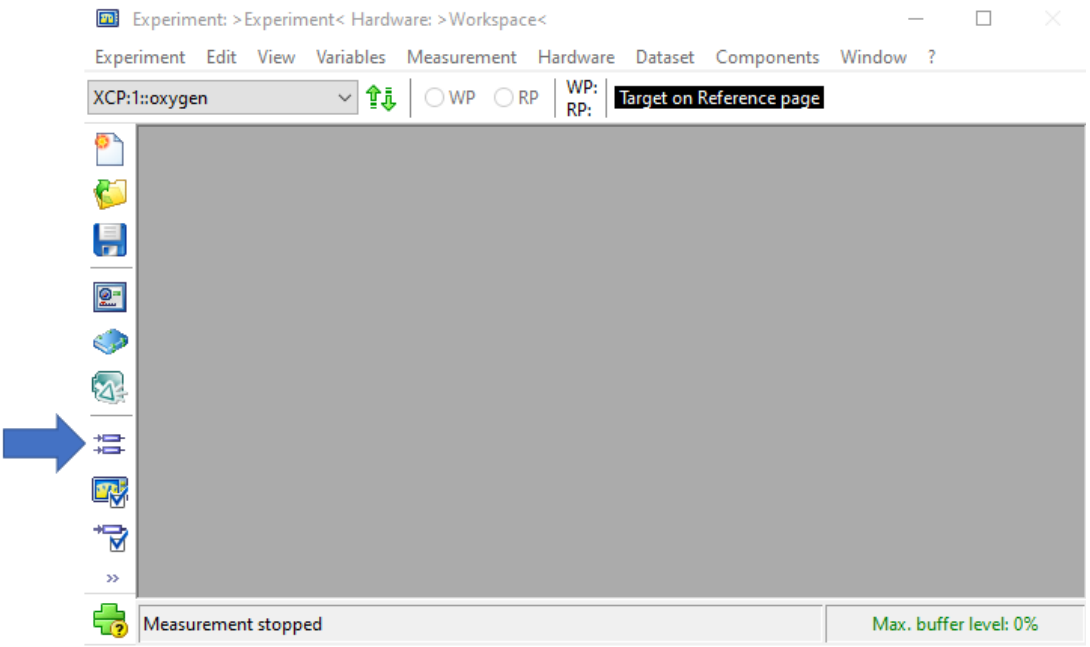
- Select *XCP:1* and press *OK* to assign this XCP connection to the Experiment:



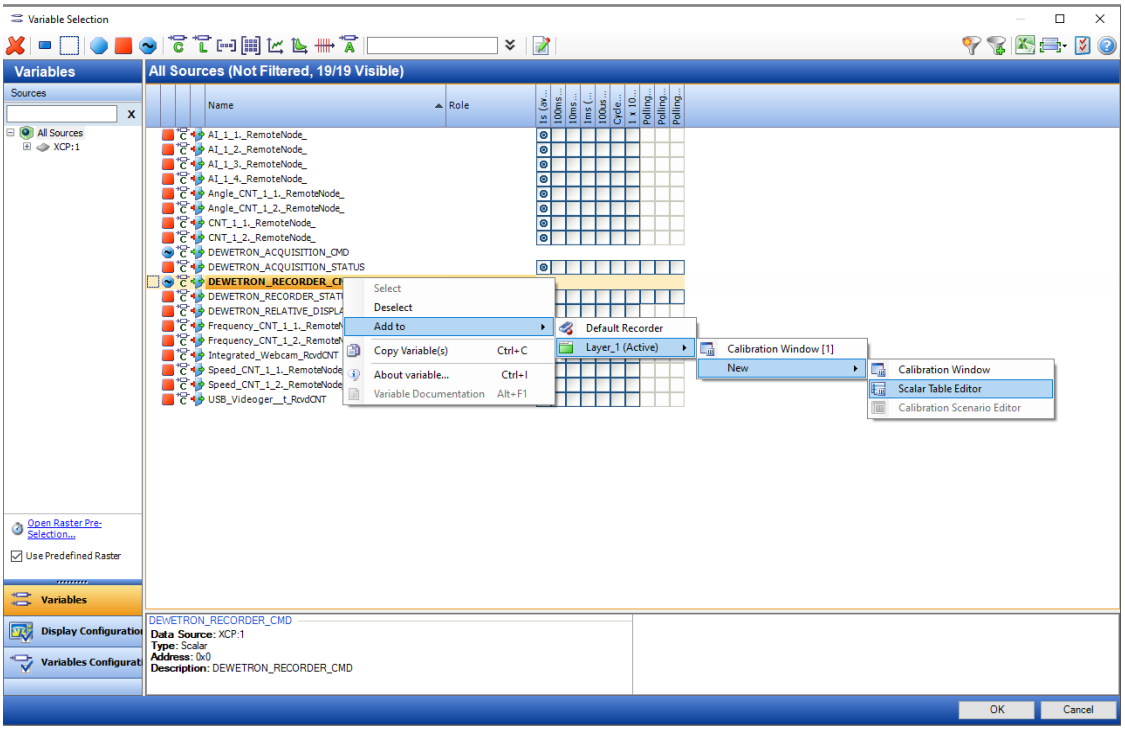
- The *Experiment* will open:



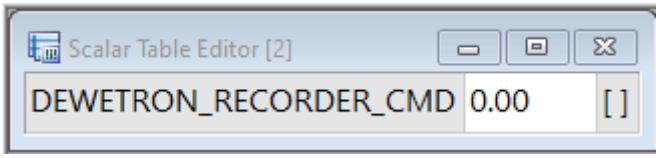
- Press the *Variable selection* button to select the desired channels from the *.a2l-file



- Select the DEWETRON_RECORDER_CMD variable, make a right click and select Add to → Layer_1 (Active) → New → Scalaar Table Editor:



- After pressing OK the Scalar Table Editor will be availabel with the *DEWETRON_RECORDER_CMD* variable added:



The recording commands can be sent to OXYGEN by the *DEWETRON_RECORDER_CMD* signal. The following commands are available:

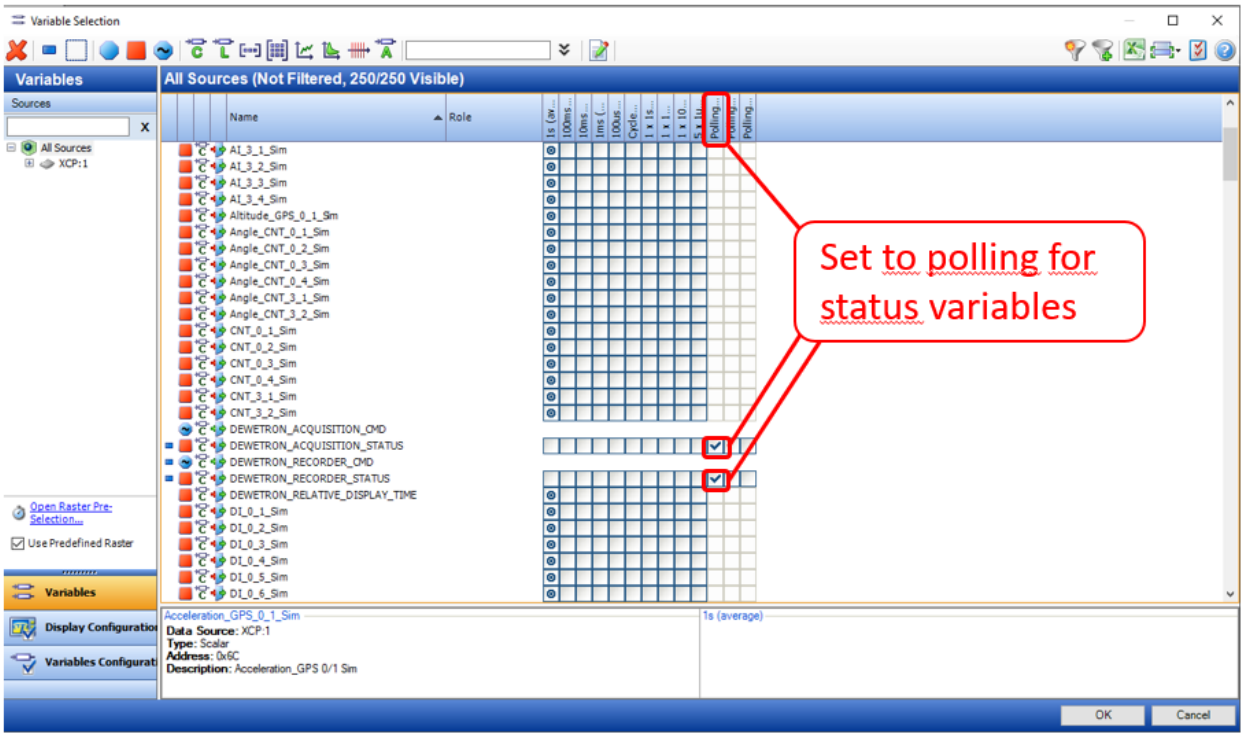
0 … Default value
1 … Start Recording.
2 … Pause Recording
3 … Stop Recording
4 … Resume Recording

It is also possible to arm a preset triggered recording, the parameter *DEWETRON_MEASUREMENT_CMD* is used for this purpose. Following commands are available:
0 … Default value
1 … Start measurement. If a trigger is configured, the trigger will be armed, otherwise a normal recording start happens.
2 … Stop measurement. Recording will be stopped and trigger will be disarmed.
3 … Trigger recording. This command can be used to start an additional recording for an armed triggered recording as if a trigger event were active.

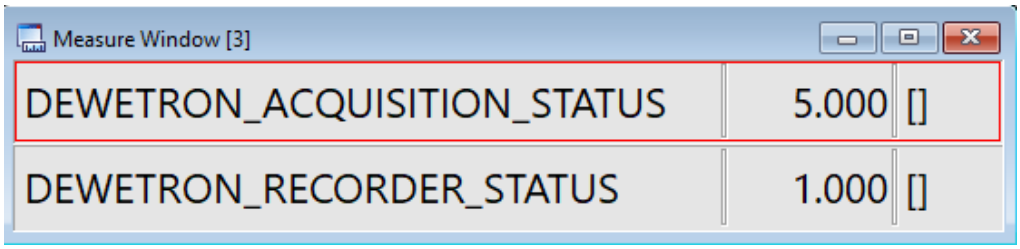
For retrieving the current measurement state *DEWETRON_MEASUREMENT_STATUS* has to be selected. Set the raster for *DEWETRON_MEASUREMENT_STATUS* of to polling, otherwise the state will not be recieved correctly. The following states are available:

1 … READY: Recording is currently ready to be started
2 … RECORDING: OXYGEN is currently recording.
3 … PAUSED: Recording is currently paused and ready to resumed
4 … STOPPING: Recording is in the process of stopping. The change to ready happens automatically when the stopping process is finished.
5 … TRIGGERS_ARMED: Triggers are armed and waiting for a triggered recording event.
6 … TRIGGERED_RECORDING: Triggers are armed and recording is active.

- Select the DEWETRON_RECORDER_STATUS variable for retrieving the current recording state. Select the DEWETRON_ACQUISITION_STATUS variable for retrieving the current acquisition state. Set the raster of both paramters to polling, otherwise the state will not be recieved correctly (See following screenshot).



- After pressing OK the Measure Window will be available with the *DEWETRON_RECORDER_STATUS and DEWETRON_ACQUISITION_STATUS* variable added:



The following states are available for *DEWETRON_RECORDER_STATUS*:

0 … INVALID: recording is not initialized (analysis mode,...)
1 … READY: recording is currently ready to be started
2 … RECORDING: oxygen is currently recording
3 … PAUSED : recording is currently paused and ready to be resume
4 … STOPPING: recording is in the process of stopping; changes to READY automaticall

The following states are available for *DEWETRON_ACQUISITION_STATUS*:

0 … INVALID: acquisition is not initialized (analysis mode,...)
1 … IDLE: no acquisition is currently active; acquisition may be restarted automatically if IDLE state was triggered because of an acquisition restart (config change etc.)
2 … CONFIGURE: oxygen is configuring the measurement system to start an acquisition; changes to CONFIGURE_DONE, RUNNING or ERROR automatically
3 … CONFIGURE_DONE: oxygen has completed configuring the measurement system to start an acquisition; changes to WAITING_FOR_SYNC, RUNNING or ERROR automatically
4 … WAITING_FOR_SYNC: system is armed and waiting to perform a synchronized start
5 … RUNNING: acquisition is active and processing samples
6 … TEARDOWN: acquisition is in the process of stopping; changes to IDLE or ERROR automatically
7 … ACQ_ERROR: acquisition was stopped because of unspecified problems; requires a manual restart (and possibly configuration changes to solve the issue)
8 … WAITING_FOR_RUNNING: system is armed and waiting to start processing samples