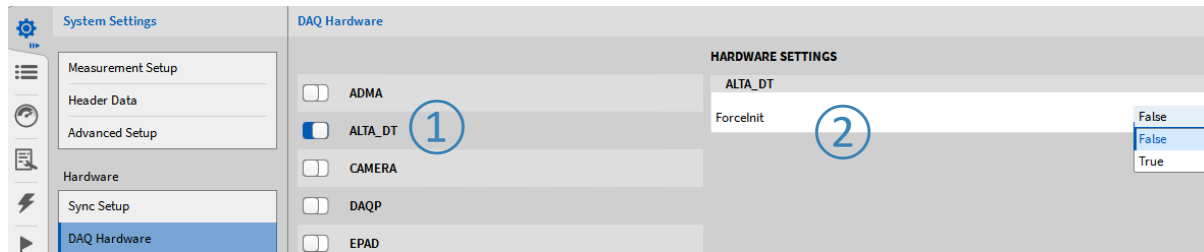DEWETRON

OXYGEN Training
> ARINC 429

Installation and System Settings

ARINC (Aeronautical Radio, Inc.) 429 is a technical standard for a widely used avionics bus in the air transport industry. This standard defines the transfer of digital data of avionics equipment.

With DEWETRON's ARINC 429 option it is possible to receive and decode such digital data and visualize it.

Other ARINC standards than 429 are currently not supported

> Software is automatically installed with OXYGEN; No extra license is needed
> ARINC module is a 3rd party hardware from Altadt
> All needed drivers are installed by the factory

> When using and ARINC module, the ALTA_DT button must be enabled in the DAQ Hardware settings (①)

> ForceInit (②)
>> *False*: Only the ARINC channels will be used which are available, all other channels which might be used by another software (i.e. AltaView) will not be used in OXYGEN
>> *True*: All ARINC channels will be used by OXYGEN

Software Configuration

① The ARINC module does not show up in the system overview as it is a 3rd party hardware

② The board channels will only appear in the Channel List

③ By expanding the ARINC section of one module, all available bus channels can be seen.

④ By clicking on the gear button, the ARINC Channel settings can be accessed

⑤ *Baud Rate:* 100k, 50k or 12.5k Baud can be selected

⑥ *Parity:* This selection does not have an impact when only decoding ARINC signals but can be set when sending ARINC signals. The parity bit can be set to none, *even* or *odd*.
**Sending is currently not supported by OXYGEN and the Parity setting is NONE by default.**
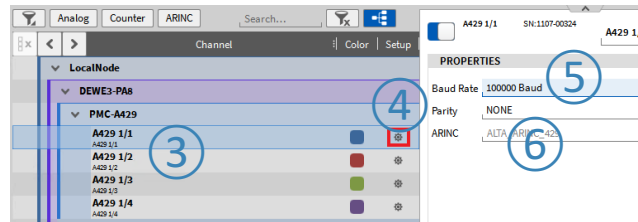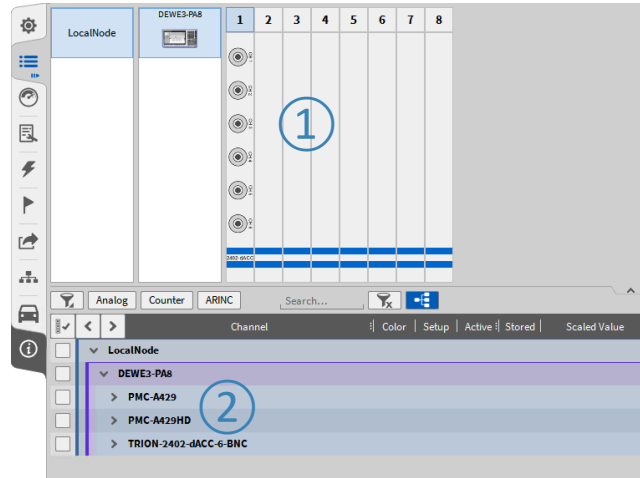
Remark: *It is possible within OXYGEN to receive the raw data stream and to decode the ARINC signals. A standard library is included and accessible in OXYGEN without further installations. This standard library includes equipment IDs and labels from the ARINC specification 429P1-19 (Digital Information Transfer System Set) with various Equipment IDs and corresponding labels*

Decoding Signals

① To decode an ARINC signal, select the respective ARINC bus channel of the module and click on the + button

② To decode signals from an equipment according to the ARINC specification 429P1-19, press *New equipment from database*

③ New equipment can also be added from a user defined file by clicking on *New equipment from file*

④ A popup menu will open to select the desired equipment ID and the desired labels

⑤ After selection, the Add Channel popup will appear again with information depending on the previous selection. Press add to finish the configuration.

⑥ A new channel section will be available in the channel list afterwards.
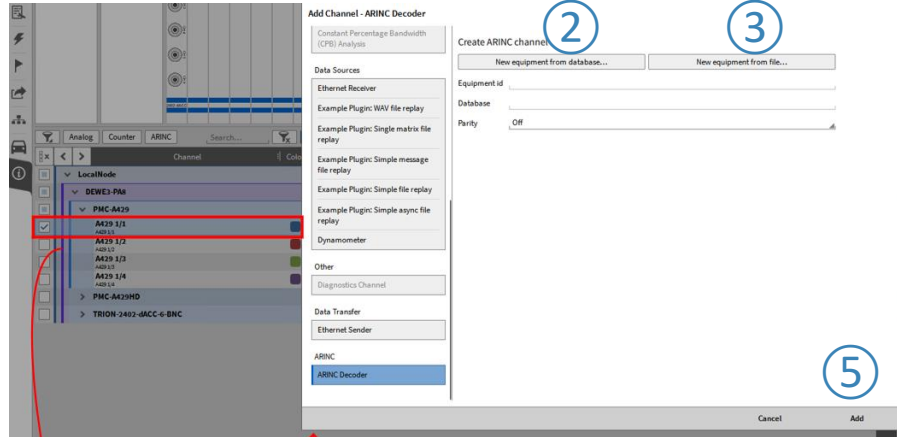
Remark: To select several equipments, repeat this step as it's not possible to select several equipment IDs at once
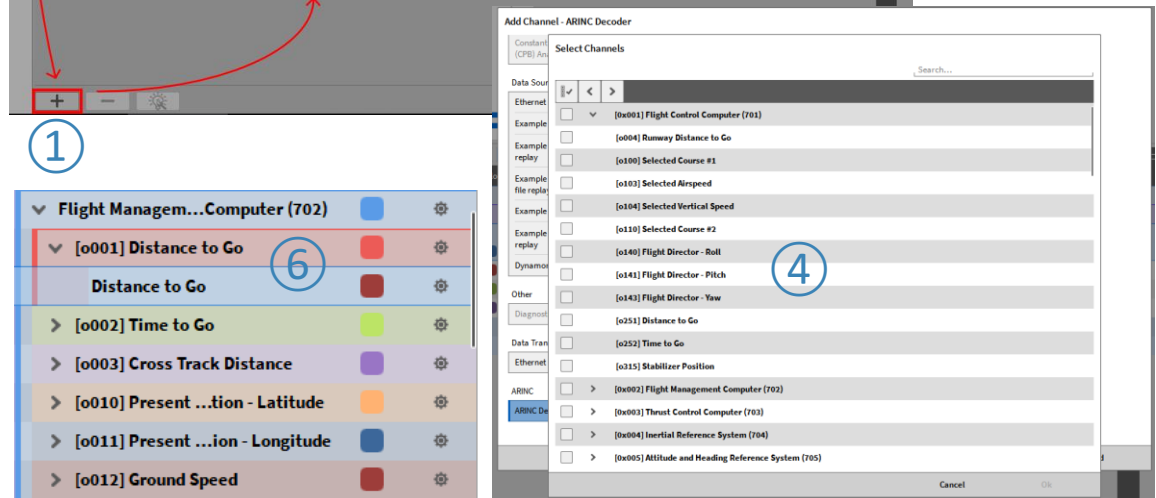
Channel Settings

① For equipment ID channels:
  - Equipment ID: the equipment ID can be edited.
  - Input Channel: the used ARINC bus channel can be changed here
  - Parity: the parity bit is off by default but can be set to even or odd in this field. The parity bit will be checked and the ARINC message discarded if it does not match. This setting is the same as when creating an ARINC decoder channel

② For the Labe channel:
  - Label ID: the label ID can be edited here and must be entered in octal.
  - SDI: the Source Destination Identifier (SDI) can be edited here.

Channel Settings

③ For the Signal channel:

- Bit Length and Bit Offset: the bit length and the bit offset can be set, whereas the offset can be adjusted in a range of 0…32. For a detailed explanation of the resolution and bit length, please refer to the ARINC standard mentioned in section 2.

- Data Encoding: bcd, signed and unsigned can be chosen as data encoding.

- Signal Encoding Unit: the signal unit can be set here. Note that the unit is not also automatically set in the Scaling but must be set individually.

- Scaling Gain and Scaling Offset: a gain and offset can be set here within a defined range.

- User defined signal scaling can be entered in the Sensor scaling section as well

Data Recording and Analysis

The decoded ARINC signals can be used in instruments like a recorder, digital meter or table. Just drag and drop the desired channel into the instrument to display the decoded values.

Additionally, the raw data stream in hexadecimal can be visualized in OXYGEN in the table instrument, by using the actual bus channels of the module, and not the decoded signal channels.

The raw data stream is also stored in the .dmd file and can be used to decode additional ARINC measurements in the data file during analysis.
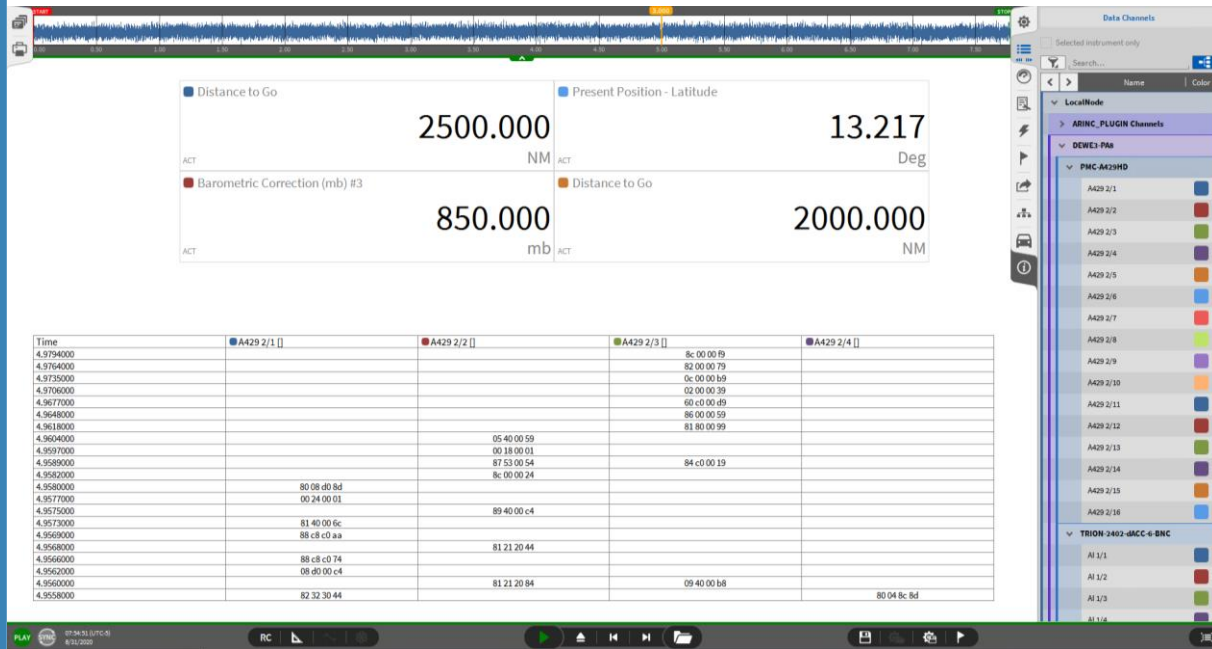
Data Export

ARINC signals can also be exported in different formats. Only decoded ARINC signals can be exported, it is not possible to export the raw data stream.

Hereby, go to the Export Settings, select the equipment IDs, labels etc. which should be exported and choose a corresponding export format and any additional settings if needed.

The export folder can also be set here.