



# BLUEPIRAT

BY MAGNA



## BLUEPIRAT Series CCP / XCP User Guide / 30.09.2020

Version 5.0.1

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# 1 LICENSE AGREEMENT

Please read the license agreement of this license contract carefully, before you install the software. By the installation of the software you agree to the conditions of this license contract.

This software-license agreement, in the following called "license", contains all rights and restrictions for final users that regulate the use of the accompanying software, operating instructions and other documents, in the following called as "software".

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15. The licensee is liable for all damages caused to the licensor by the violation of these license regulations.

## 2 PRODUCT LIABILITY

### 2.1 Terms and Conditions of Sale and Delivery

The General Terms and Conditions of Sale and Delivery of MAGNA Telemotive GmbH can be found on our website (<https://telemotive.magna.com>) under imprint.

### 2.2 Important operating instructions

**Please note these important instructions about the handling of devices of MAGNA Telemotive GmbH!**

There's a linux system running on the devices and sometimes when the device has a dirty shutdown due to a power break down or unplugging the power supply, the system is corrupt from this time. You know this situation from a PC, when you switch it off some times it maybe will not work any more or show you some mistakes.

In most cases this issue is catched up and repaired by the linux system we use, but sometimes it can happen that the system on the logger is damaged and there's no access to the device any more.

We are optimizing the handling of corrupted systems permanently and are integrating some new enhancements regarding this kind of issues with every new release to save the system. But we can't make the system for 100% save against these influences.

**So please use always the provided mechanism for shutting down the device or the implemented standby function in which the device shutting down when no traffic is detected any more in an adjustable time.**

### 3 Overview

This user guide describes the feature of the license **CAN Calibration Protocol (CCP)** and **Extended Calibration Protocol** {Universal Measurement and Calibration Protocol} (**XCP**) for the data loggers:

- BLUEPIRAT Rapid
- BLUEPIRAT Mini
- BLUEPIRAT2 5E
- BLUEPIRAT2
- BLUEPIRAT Remote

of MAGNA Telemotive GmbH.

This user guide describes the configuration and usage of this feature. The general configuration is described in the user guides of the used data logger as well as the System Client, which is valid together.

CCP / XCP via VLAN is still not supported!

This document refers to **firmware version 05.00.01** and the **System Client** from **version 5.0.1**. Some features depending on model and feature license or may not be available in older versions.

Software updates and user guides for other, optional, licensed enhancements are available in the Telemotive Service Center. (Please find the address under Contact at the last page.)

To ensure the most reliable operation of your system as possible, please make sure to use always current firmware and software versions.

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## 4 System requirements

### A2L file

This file defines parameters which are necessary to set up a CCP/XCP communication between the Telemotive data logger and an ECU. Each ECU has its own A2L file, so it cannot be provided by us. Please contact the respective ECU manufacturer to get a valid file.

The supported protocol versions are:

- XCP 1.0
- XCP 1.1
- XCP 1.2
- XCP 1.3
- XCP 1.4 (without packet mode!)
- CCP version 2.1.

### Control Unit

You need a Windows based Laptop or PC to configure the devices by the **System Client**. It also allows to save the recorded data and to use them offline later.

### System Client

Update, configure and read out your data loggers with System Client. Save time with central administration of your software products. System Client is your key to success for using all our products!

### BLUEPIRAT Rapid

High-performance multi-bus data logger for modern vehicle architectures based on Automotive Ethernet. With up to 3 TB internal memory and supreme recording performance. Robust and compact for in-vehicle use.

Due to the increasing complexity of driver assistance systems and the growing number of infotainment applications, the data traffic between ECUs in the most recent vehicle models has grown significantly. Consequently, besides the various classic bus systems, modern vehicle architectures are based on Automotive Ethernet according to BroadR-Reach / IEEE 802.3 100(0)Base-T1, which can keep up with the growing bandwidth demand.

### Power Backup

The **Power Backup** is a special component, which is designed to bridge short voltage interruptions. It is connected upstream of the data loggers on the voltage side, and must be connected to them via a dedicated LS CAN port for controlling.

### BLUEPIRAT Mini

The **BLUEPIRAT Mini** is smallest data logger in the world with an outstanding functional scope. It offers a wide range of interfaces, stable temperature behavior, very low energy consumption, four GBit Ethernet ports, and much more. Different blue PiraT Mini can be expanded flexibly to one cluster and therefore handled very easily by using [System Link](#).

### BLUEPIRAT2

The **BLUEPIRAT2** is our top-class all-in-one data logger. Seven models cover a wide range of interfaces. (Device is EOL)

### BLUEPIRAT2 5E

Additionally, the **BLUEPIRAT2 5E** offers improved power management and power backup, five

integrated Ethernet ports and super-fast start-up behavior. The BLUEPIRAT2 can be expanded flexibly via [System Link](#). (Device is EOL)

#### **Remote Control Touch (optional)**

Operate your BLUEPIRAT data loggers safely and comfortably from the driver's or passenger seat. Via System Link our new remote control becomes part of your logger network. One remote control can handle all connected loggers.

#### **BLUEPIRAT Remote (optional)**

While Remote Control Touch is just a control unit for handling unique devices or a TSL network, the blue PiraT Remote additional has logger functionality by offering internal storage and some interfaces. (Device is EOL)

#### **License**

For the additional feature **Logging CCP / XCP** an installed license is required. Settings for licensed features can be performed with a valid license only.

If you need a license for your logger, please contact our sales department (please find the address under contact at the last page).



## 4.1 Further manuals

Beside this user Manual, we offer the main manuals for our System Client as well as for the different data logger generations in our Service Center at

<https://sc.telemotive.de/bluepirat>.

Our licensed enhancements have own manuals which are stored in the Service Center too. You will find a list of these enhancements in the user manuals in the chapter **Additional features by optional licenses**.

Under the following links, you always will find the latest versions:

### User manual for the System Client

[https://sc.telemotive.de/4/uploads/media/SystemClient\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/SystemClient_UserManual.pdf)

### User manual for BLUEPIRAT Rapid

[https://sc.telemotive.de/4/uploads/media/BLUEPIRAT\\_Rapid\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/BLUEPIRAT_Rapid_UserManual.pdf)

### User manual for BLUEPIRAT Mini

[https://sc.telemotive.de/4/uploads/media/BLUEPIRAT\\_Mini\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/BLUEPIRAT_Mini_UserManual.pdf)

### User manual for Remote Control Touch

[https://sc.telemotive.de/4/uploads/media/RCTouch\\_UserGuide.pdf](https://sc.telemotive.de/4/uploads/media/RCTouch_UserGuide.pdf)

### User manual for BLUEPIRAT Power Backup

[https://sc.telemotive.de/4/uploads/media/BLUEPIRAT\\_Power\\_Backup\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/BLUEPIRAT_Power_Backup_UserManual.pdf)

### User manual for BLUEPIRAT2 / BLUEPIRAT2 5E

[https://sc.telemotive.de/4/uploads/media/BLUEPIRAT2\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/BLUEPIRAT2_UserManual.pdf)

### User manual for BLUEPIRAT Remote

[https://sc.telemotive.de/4/uploads/media/BLUEPIRAT\\_Remote\\_UserGuide.pdf](https://sc.telemotive.de/4/uploads/media/BLUEPIRAT_Remote_UserGuide.pdf)

For having an easy access if necessary, the most important manuals are linked in the client under the menu item [Help] and are reachable easily from there.

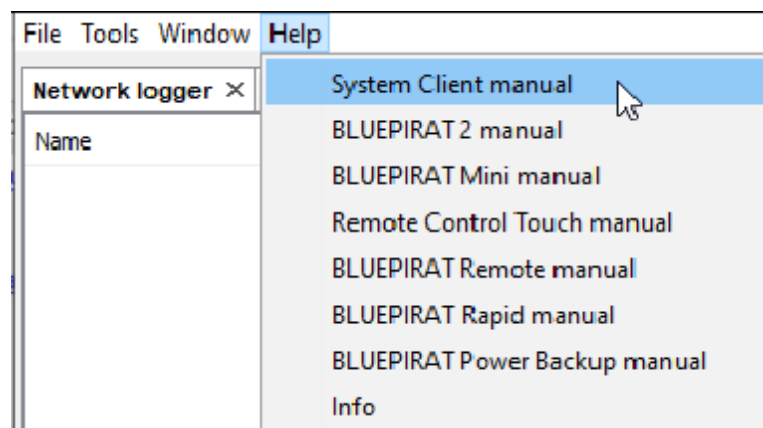


Figure 4.1: links to the manuals in the System Client

## 4.2 Additional features by optional licenses

Additional features can be activated by purchasing and installing licenses. Licenses can be ordered at our sales team. You find the user guides for these additional features in our Service Center. Currently the following licensed features are available.

Feature	Description
<b>Camera Link</b>	video recording via video server or network cameras Till now, only some cameras from AXIS were supported
<b>WLAN</b>	supporting wireless LAN / WiFi (802.11, 802.11a, 802.11n), (802.11ac from FW 02.04.01)
<b>GPS logging</b>	tracking of GPS data
<b>Measurements with CCP</b>	CAN Calibration Protocol
<b>Measurements with XCP</b>	Universal Measurement and Calibration Protocol Currently the functionality for Ethernet (XCP on Ethernet) and the CAN-bus (XCP on CAN) are available.
<b>MOST150 Streaming</b>	logging MOST150 synchronous/isochronous data
<b>MLBevo / QXDM</b>	The license Connected-Gateway MLBevo enables the recording of data of the ATOP control unit MLBevo via USB to the Magna Telemotive data logger and convert these data with the System Client. (from FW 02.03.01) Additional this license allows to log Qualcomm QXDM logs via USB (from FW 03.06.XX)
<b>Download Terminal</b>	The in the System Client integrated Download Terminal allows an automatization of configured tasks for a defined group of devices. (from FW 02.03.01)
<b>Test automation</b>	Interface for connecting to test automation tools. At the moment, the sending of CAN messages is supported. (from FW 02.04.01)
<b>Cellular network</b>	Allows the logger to send status messages over cellular network. (from FW 03.01.01)
<b>Firmware Care</b>	As part of the " Service Product Firmware Care ", new software and firmware versions are made available for download for a limited period of time. This service is available for 12 months from the date of purchasing the <b>BLUEPIRAT</b> .  This period can be extended by licenses.

**Table 4.1: Additional features by optional licenses**

## 4.3 Firmware Care

MAGNA Telemotive GmbH invests a great amount in the further development of its products.

For this we regularly provide new functions and enhancements via firmware and client releases.

### Basic conditions

As part of the "Service Product Firmware Care", new software and firmware versions are made available for download for a limited period of time. This service is available for 12 months from the date of purchasing the **BLUEPIRAT**. This period can be extended.

For details, please contact your sales partner (see contact at the end of the manual for addresses).

### Affected products

- **BLUEPIRAT Rapid**
- **BLUEPIRAT Mini**
- **Remote Control Touch**
- **BLUEPIRAT2 5E**
- **BLUEPIRAT2**
- **BLUEPIRAT Remote**

### Note:

Enhancements are only possible in current firmware releases.

### Attention:

Please note that updates to main firmware versions (05.00.01 / 06.00.01) need a special update license and can't be flashed to a device without this license.

To buy these licenses please contact our sales department under [TMO.Sales@magna.com](mailto:TMO.Sales@magna.com) (please find the complete address under Contact on the last page).

## 5 System overview / description

For an easy system overview, we can separate the system into three basic parts:

1. Setup and configuration
2. Operating and data recording
3. Download and conversion

In general, the system is used to get a Telemotive Trace File or MDF file v3.3 / v4.1 that includes the CCP/XCP communication.

### 5.1 Setup and configuration

The A2L file (delivered by the ECU supplier) is loaded into the System Client. If necessary, connection and communication settings can be modified. When the configuration is finished, the System Client can upload the configuration to the data logger.

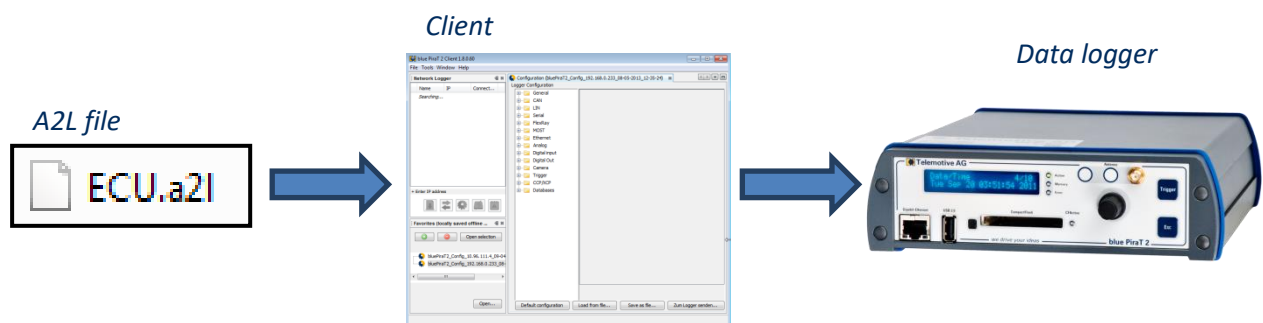


Figure 5.1: Setup and configuration

### 5.2 Operating and data recording

The data logger and the ECU work as configured. The CCP/XCP protocol is running. The data logger records the data.

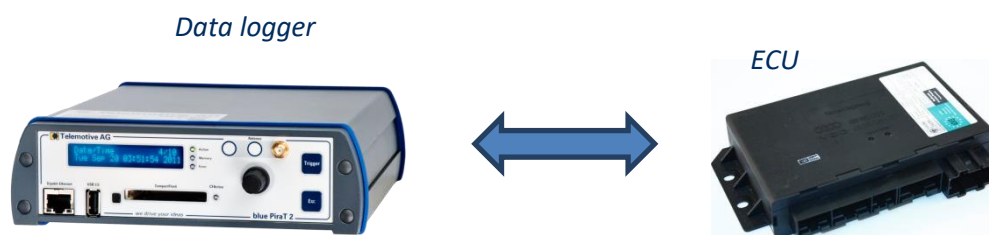


Figure 5.2: Operating and data recording

### 5.3 Download and conversion

After recording, the data can be downloaded from the data logger or converted directly into the target data format by the System Client.

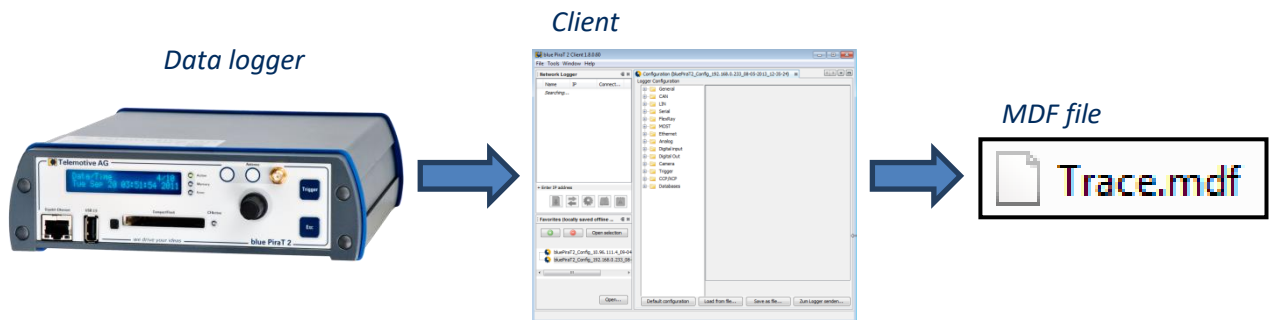


Figure 5.3: Download and conversion

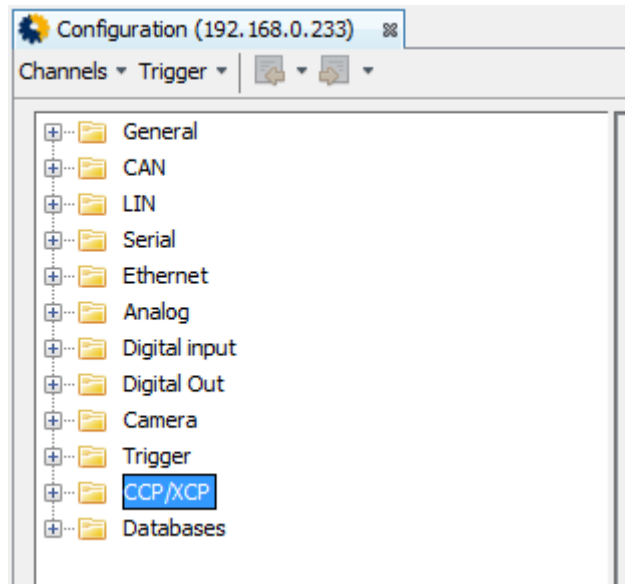
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## 6 Setup and configuration

### 6.1 Adding a new ECU

At first connect the data logger to your computer and start the System Client.

Click on the application **[Open configuration]** in the System Client.

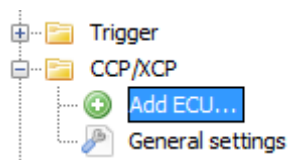


**Figure 6.1: Folder in configuration tree**

Expand the folder **[CCP/XCP]** in the configuration tree.

**Note:**

**If you only installed the CCP license, the folder is just named “CCP”.**



**Figure 6.2: Adding a new ECU**

By double-clicking the button **[Add ECU... (1/4)]** the **A2L Loading wizard** appears, where you can select the A2L file with the configuration data of the ECU and an INCA file with signal /DAQ selection. The number **(1/4)** shows how much of the 4 possible ECUs are still configured.

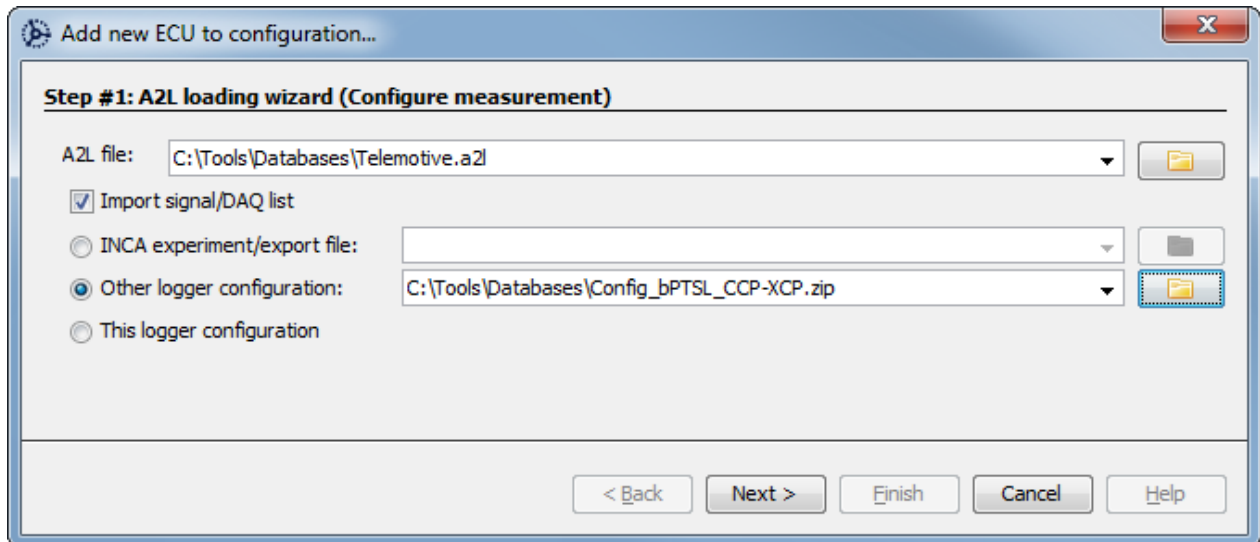


Figure 6.3: A2L loading wizard

**Attention:**

For A2L files please be aware that the file has to match the ECU and its hard- and software version. Otherwise the read or write addresses can be wrong and the CCP/XCP communication does not work correctly. Please contact the respective ECU manufacturer to get a valid file.

For configuring the ECU several files can be loaded at this point:

- A2L
- INCA – Experiment
- INCA – Export
- Configuration of an other Magna Telemotive data logger
- The configuration of the same logger

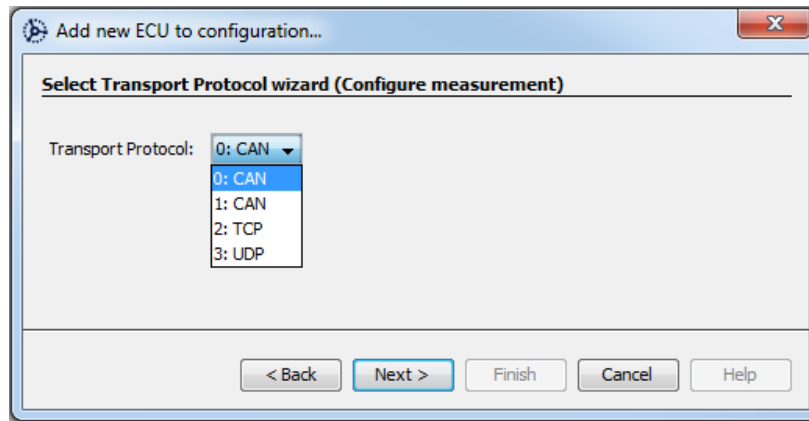
**When trying to import a configuration from another logger, the used A2L file must be loaded too!**

The option **This logger configuration** allows to duplicate a ECU e.g for assigning a newer A2L file to it.

By clicking on the button **[Next>]** the file will be imported and loaded on the logger.

If the file is not correct or has wrong settings, an error message is shown and the import is stopped.

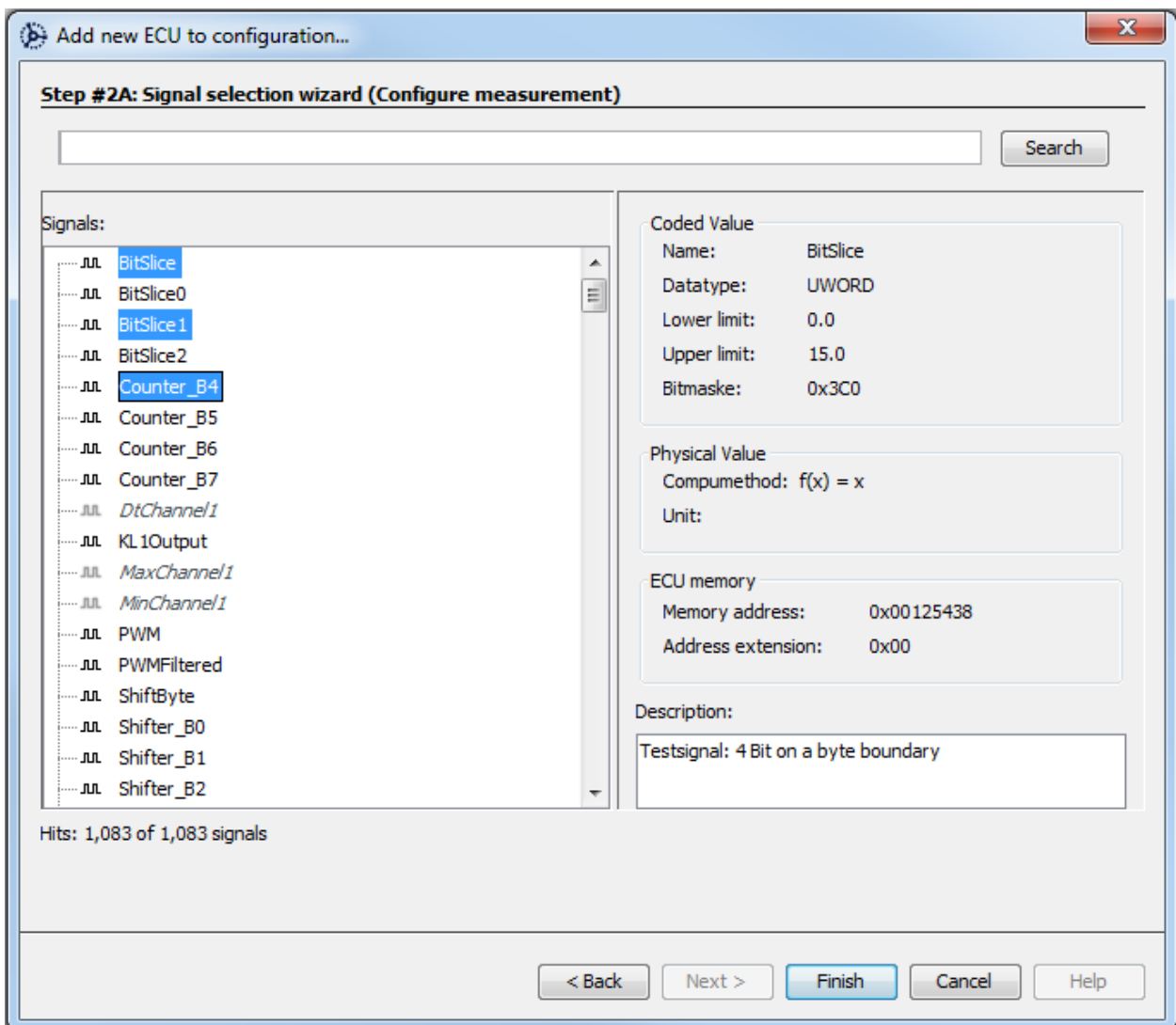
Next, you get to the **Select Transport Protocol Wizard**.



**Figure 6.4: Select Transport Protocol wizard**

With this wizard, you are able to select the ECU-specific connection.

If no INCA file was specified earlier in the **A2L Loading wizard**, the **Signal selection wizard** appears.

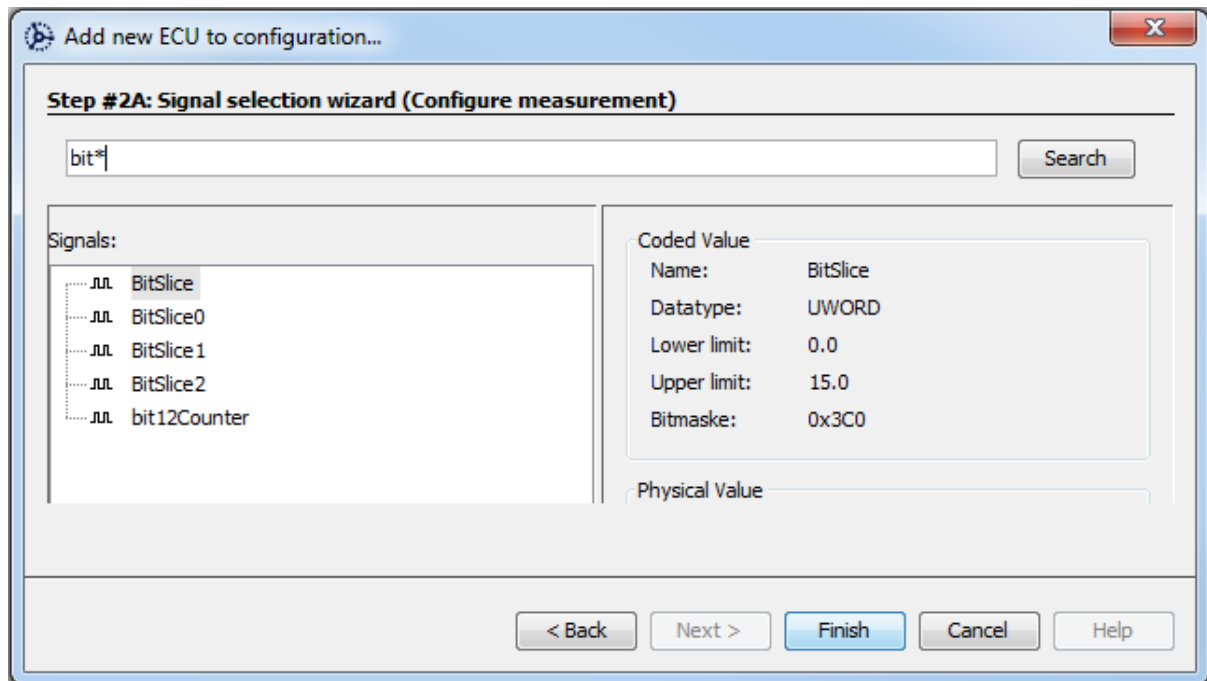


**Figure 6.5: Signal selection wizard**



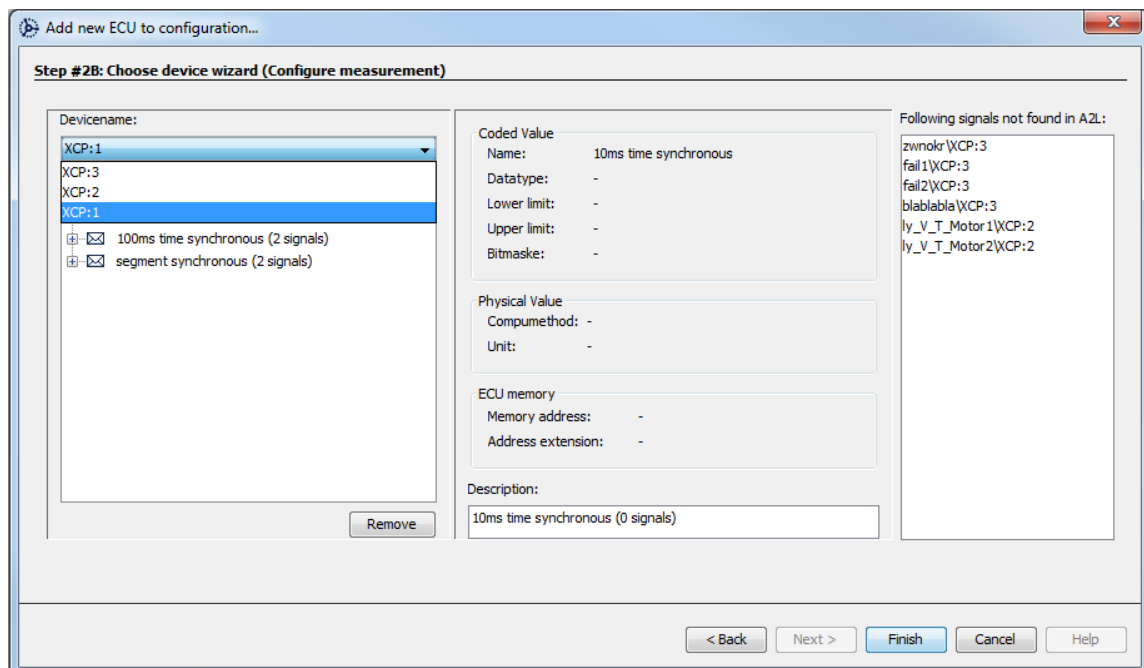
With this wizard, it is possible to select one or more signals for the measurement. The measurement can contain up to 1,000 signals.

With the button **[Search]**, the signals can be specifically selected from the A2I database:



**Figure 6.6: Select signals via the search function**

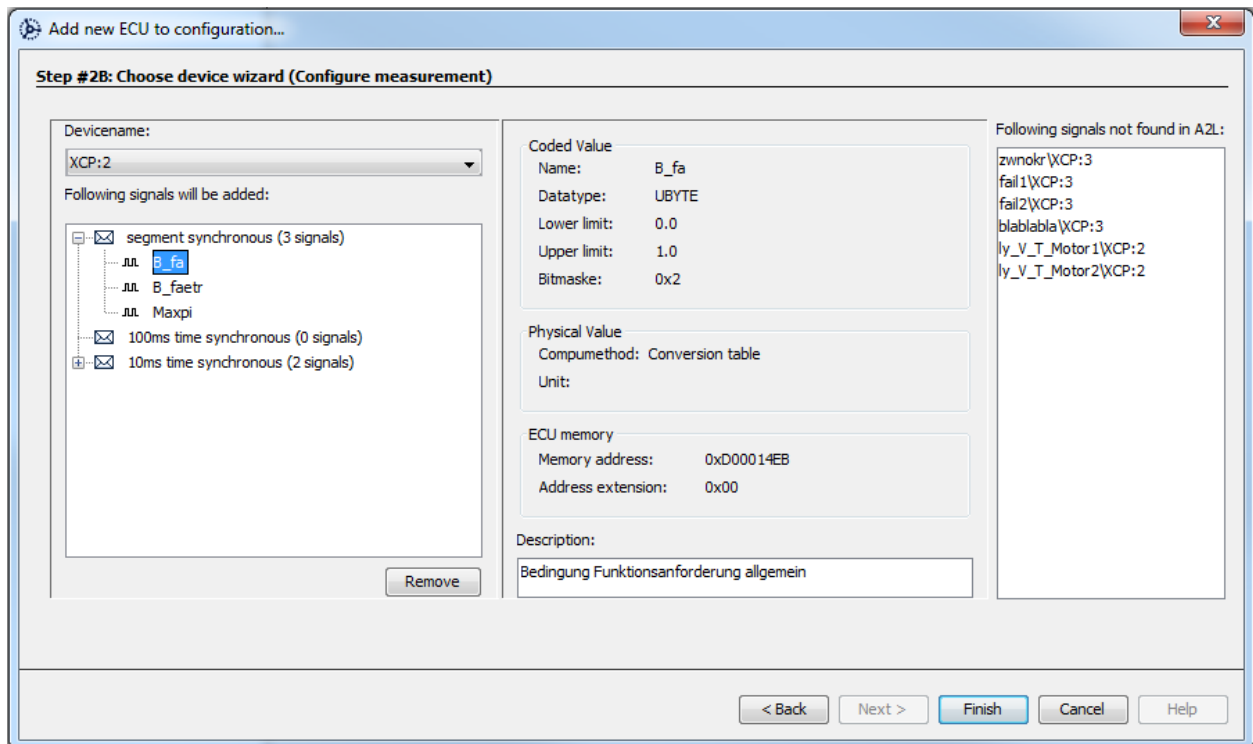
If an INCA-file or configuration was specified earlier in the **A2L Loading wizard**, the **Choose device wizard** appears.



**Figure 6.7: Choose device wizard**

With the **Choose device wizard** you can select your device over the selection window **Device-name**.

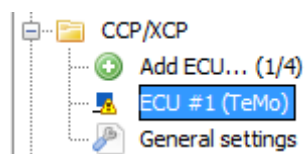
According to the selection of the device, specific signals are added for measurement.



**Figure 6.8: selected signals by INCA-file**

By clicking on a signal its details are displayed in the middle window. You can change the preselection using the button [Remove]. You can remove whole signal groups as well as single signals within the group.

After clicking [**Finish**], a new ECU is displayed in the configuration tree (e.g. ECU # 1). Up to four controllers can be created.



**Figure 6.9: Newly added ECU**

**Note:**

The parameters are predefined by the A2L file. Please change these parameters only if you exactly know their importance and the effects that follow it.

## 6.2 Tab [Configuration]

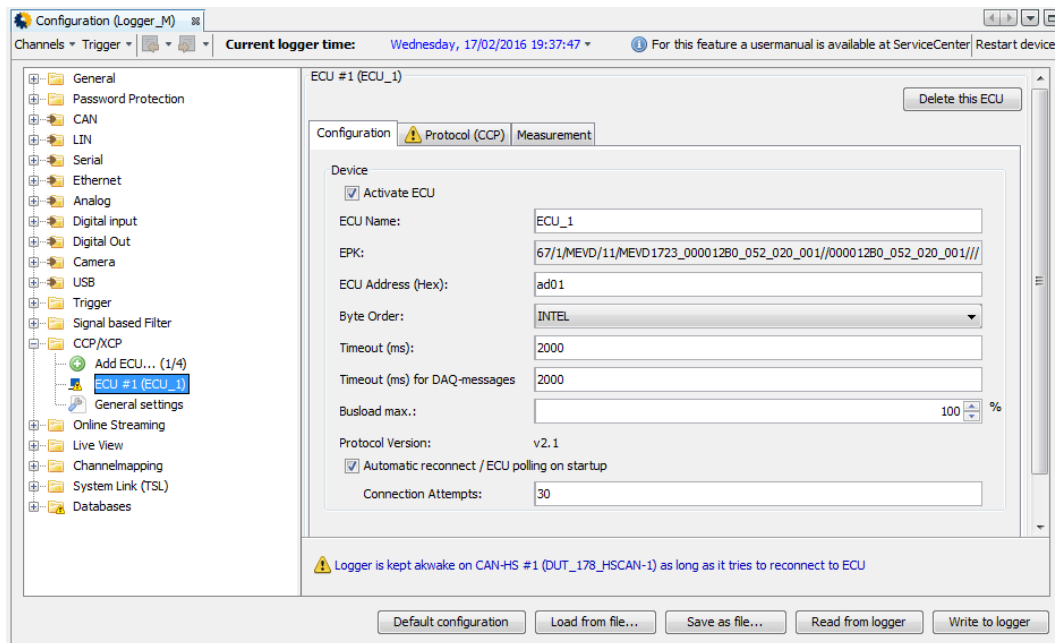


Figure 6.10: Example ECU configuration

### 6.2.1 Status

Delete and disable over the context menu (right mouse button) in the configuration tree:

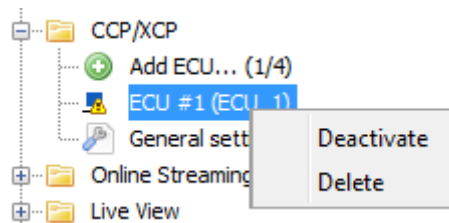


Figure 6.11: Deleting and deactivating the ECU

Each ECU can be enabled or disabled by the right mouse button in the configuration tree and via the checkbox **Activate ECU**.

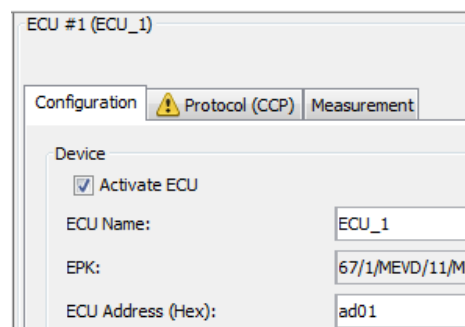


Figure 6.12: Checkbox "Activate ECU"

**Note:** If an ECU is inactive, its parameters are still kept in the configuration, but there is no CCP/XCP communication between data logger and ECU.

## 6.2.2 Delete this ECU

The button **[Delete this ECU]** deletes the marked ECU. It is also possible to delete via the right mouse button in the configuration tree.

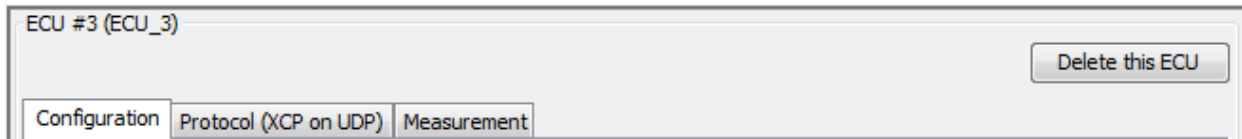


Figure 6.13: Delete this ECU

## 6.2.3 ECU Name

ECU Name:

Figure 6.14: Textbox "ECU Name"

In the text field **[ECU Name]** you can change the ECUs name. This option is only for an easy identification by the user and has no influence on the measurement or connection.

## 6.2.4 EPK

EPK:

Figure 6.15: Box "EPK"

The version identifier of the A2L-file is presented here if available.

## 6.2.5 ECU Address (Hex)

ECU Address (Hex):

Figure 6.16: Box "ECU Address (Hex)"

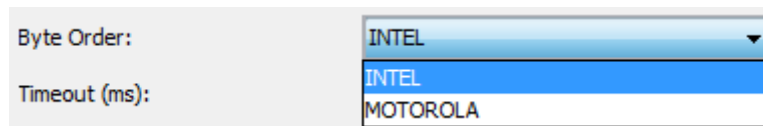
### Note:

The field **[ECU Address (Hex)]** is only needed for CCP ECUs. It is not displayed for XCP measurements.

In the text field <ECU Name> the ECU station address is indicated which is needed for establishing the communication to the ECU. It always has to be defined in Intel Byte Order although the following communication is in Motorola Byte Order.

When this address is wrong, the ECU does not establish the communication to the logger. The ECU station address is defined by the manufacturer of the ECU and is received only from him, if it's not noticed in the A2L file.

## 6.2.6 Byte Order



Byte Order: INTEL

Timeout (ms):

INTEL

MOTOROLA

**Figure 6.17: Box "Byte Order"**

In the dropdown menu next to **[Byte Order]** you can choose one of the following settings for the communication:

- Motorola (Big Endian)
- Intel (Little Endian)

## 6.2.7 Timeout (ms)



Timeout (ms): 2000

Timeout (ms) for DAQ-messages 2000

**Figure 6.18: Box "Timeout (ms)"**

In the text fields **[Timeout (ms)]** and **[Timeout (ms) for DAQ-messages]** you can define the time in milliseconds the logger waits for an answer from the ECU. When this time ends without an answer from the ECU the communication between the ECU and the logger will be stopped.

**Note:**

**If the connection fails increase the value of the timeout.**

## 6.2.8 Busload max.

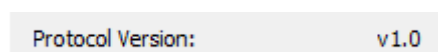


Busload max.: 100 %

**Figure 6.19: Box "Busload max."**

With the setting **[Busload max.]** you can limit the whole CCP/XCP communication on the selected CAN channel to a defined value. If the CCP/XCP busload reaches this value, additional messages get lost.

## 6.2.9 Protocol Version



Protocol Version: v1.0

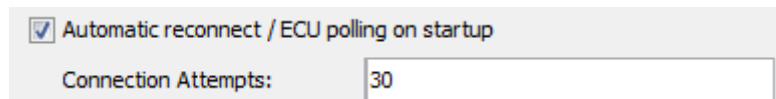
**Figure 6.20: Protocol Version**

The protocol version is taken from the A2L file.

The supported protocol versions are XCP 1.0, 1.1, 1.2, 1.3 and 1.4 (without packet mode!) and the CCP version 2.1.

### 6.2.10 ECU connection

If the connection gets lost or the ECU has not yet started up to link time, a continuous query **all 10 seconds** can be realized with the lower checkbox **Automatic reconnect / ECU polling on startup**.



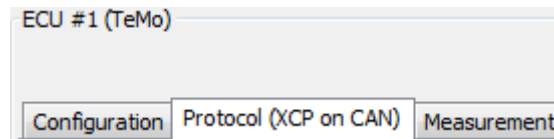
The image shows a software interface with a checkbox labeled "Automatic reconnect / ECU polling on startup" which is checked. Below it is a text input field labeled "Connection Attempts:" containing the number "30".

Figure 6.21: Connection Attempts

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## 6.3 Tab [Protocol]

On the **[Protocol]** tab sheet you can define some settings depending on your used bus and ECU protocol (CCP/XCP).

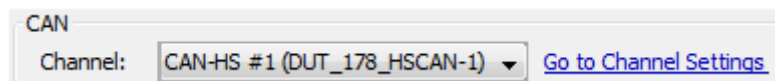


**Figure 6.22: Protocol tab**

The logger supports the transport layers CAN and Ethernet (TCP and UDP) for XCP. Please find the protocol and, if available, the bus system in brackets:

- CCP (Note: vehicle bus is always CAN)
- XCP over CAN
- XCP over TCP (Ethernet)
- XCP over UDP (Ethernet)

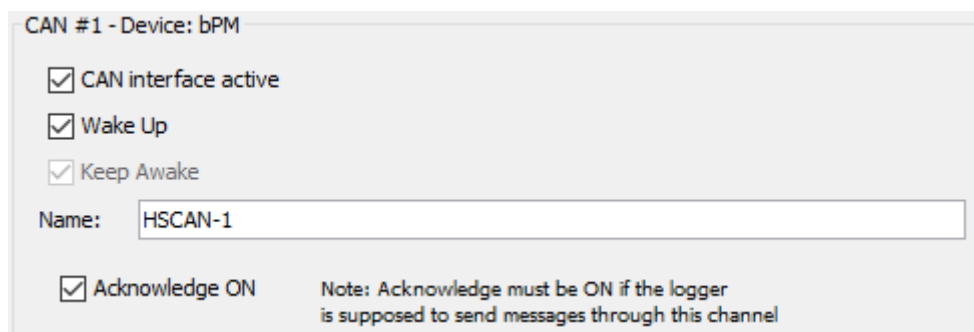
### 6.3.1 Protocol CCP/XCP on CAN



**Figure 6.23: CAN Channel selection field**

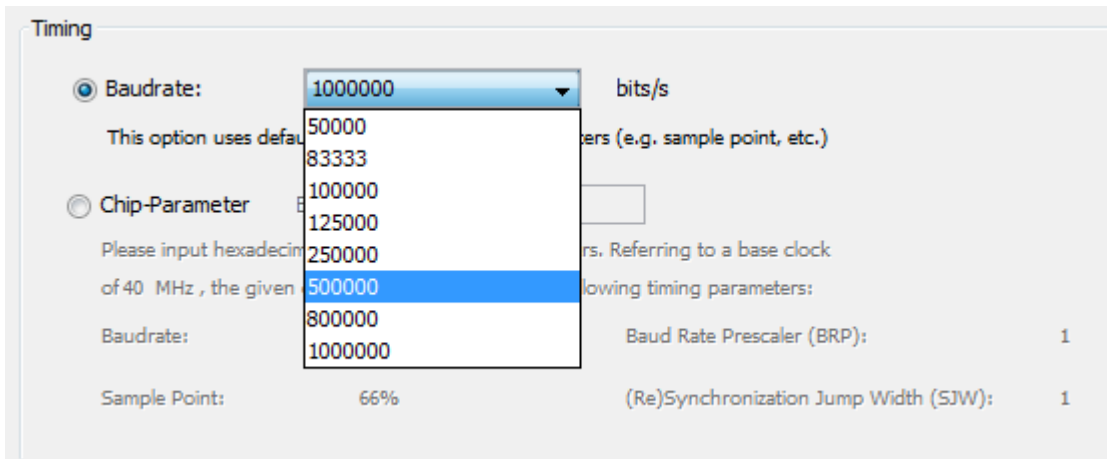
Please select the required CAN channel.

By clicking on the link **[Go to channel Settings]** you'll be forwarded to CAN channel setup.



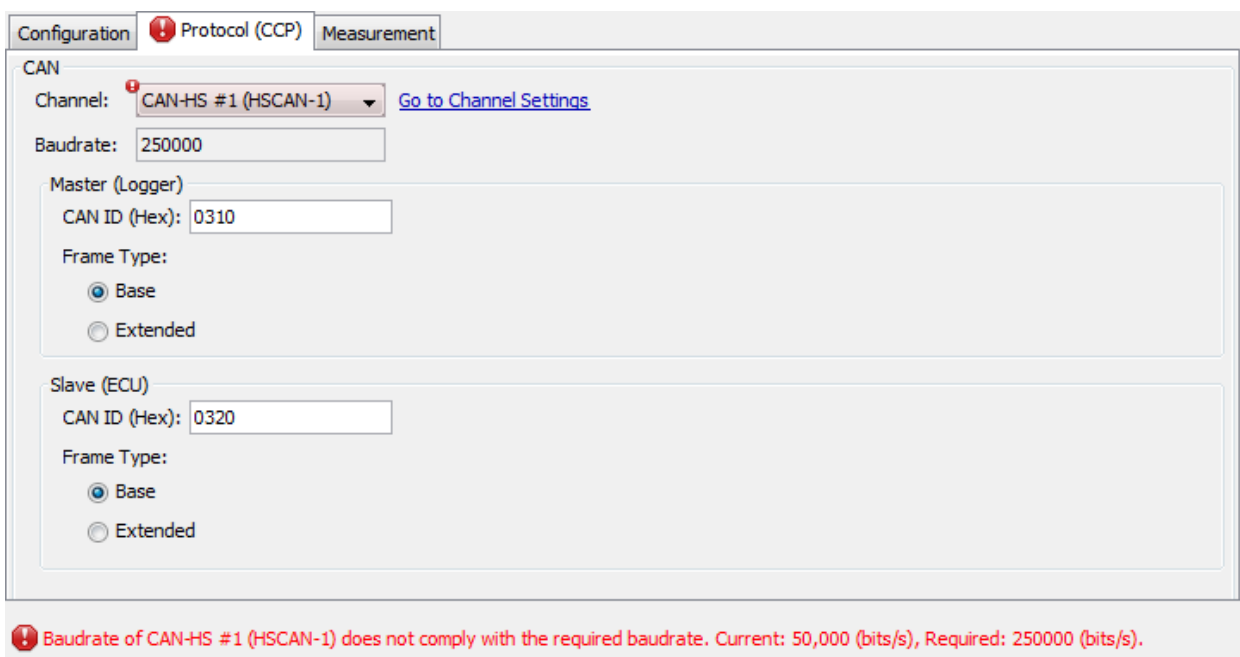
**Figure 6.24: CAN interface active and Acknowledge On**

The selected CAN channel has to be activated in the CAN settings as well as the checkbox **Acknowledge ON**.



**Figure 6.25: Set Baudrate**

The [Baudrate] of the ECU is read out from the A2L file. If the value does not match to the configured baud rate of the channel (in this case “CAN-HS #1”) the System Client shows an error message in red at the bottom of the window.



**Figure 6.26: Error message due to different baud rates**

To correct these settings you can directly use the link nearby to go to the according CAN channel settings (in this case “CAN-HS #1”) and there set the **[Baudrate]** to the value of the respective CCP/XCP ECU which is defined in the A2L file (see Figure 6.25: Set Baudrate).



Master (Logger)

CAN ID (Hex): 07fd

Frame Type:

Base

Extended

Slave (ECU)

CAN ID (Hex): 07fe

Frame Type:

Base

Extended

**Figure 6.27: Setting group "Master and Slave"**

In the settings for **[Master (Logger)]** and **[Slave (ECU)]** you can set the **[CAN ID (Hex)]** and the **[Frame Type]** of the communication.

For 11 bit CAN ID activate **Base**.

For 29 bit CAN ID activate **Extended**.

All CAN messages between ECU and logger have these CAN IDs. All other CAN messages on the bus will be ignored. When the CAN-IDs are wrong, the ECU doesn't answer.

Message Size:  Maximal size  Optimal size

**Figure 6.28: Message Size**

When using XCP on CAN the **[Message Size]** is another option in the **[Protocol]** tab sheet.

If the messages shall contain only the user data, activate **[Optimal size]**.

If fill-bytes shall be added too, activate **[Maximal size]**.

### 6.3.2 Protocol XCP on TCP/UDP

Select Transport Protocol wizard (Configure measurement)

Transport Protocol: 0: CAN ▼

- 0: CAN
- 1: CAN
- 2: TCP
- 3: UDP

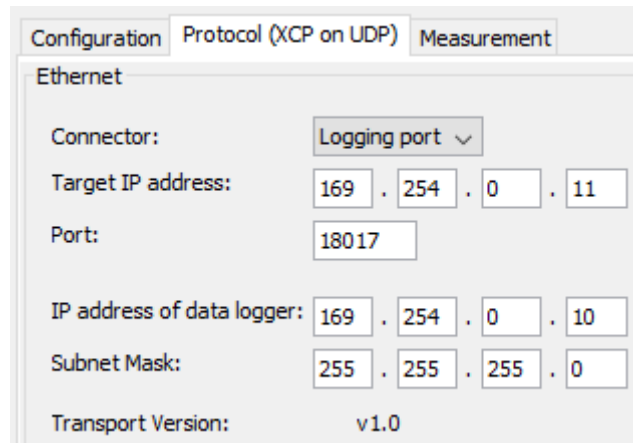
**Figure 6.29: Transport Protocol selection**

Whether TCP or UDP is used is predefined either by the A2L-File or can be chosen with **[Select Transport Protocol wizard (Configure measurement)]**.

See also chapter 6.1 Adding a new ECU

The configuration of XCP on TCP and XCP on UDP are not different. Communication with the ECU via TCP/UDP does not take place via an Ethernet channel. A new set of communication endpoint is responsible only for the ECU communication.

For this a new IP-alias of the logger is determined in the protocol. The IP address and port of the ECU have to be entered in the fields **[Target IP address]** and **[Port]**. The **[IP Address of data logger]** has to be at the same subnet as that of the ECU. With the dropdown menu of the **[Connector]** you can select the interface of the logger (“Logging port” or “TSL port”).



The screenshot shows a configuration window with three tabs: "Configuration", "Protocol (XCP on UDP)", and "Measurement". The "Configuration" tab is active. Under the "Ethernet" section, the following fields are visible:

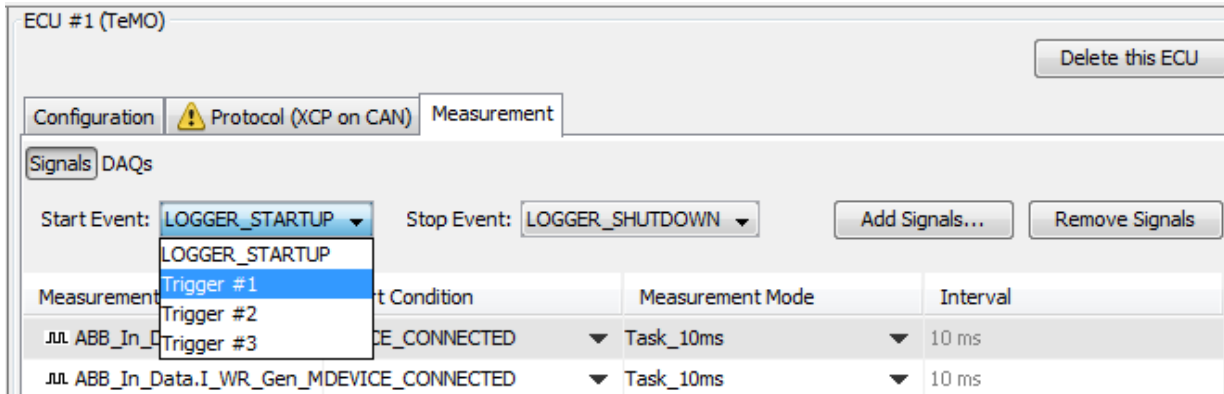
- Connector: Logging port (dropdown menu)
- Target IP address: 169 . 254 . 0 . 11
- Port: 18017
- IP address of data logger: 169 . 254 . 0 . 10
- Subnet Mask: 255 . 255 . 255 . 0
- Transport Version: v1.0

**Figure 6.30: XCP on UDP**

## 6.4 Tab [Measurement]

### 6.4.1 Start and Stopevent

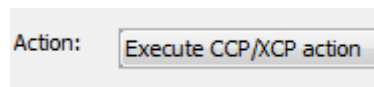
For each ECU a start and stop event can be defined on the tab sheet **[Measurement]**. As events startup/shutdown of the logger and trigger can be selected.



**Figure 6.31: Select event**

To use a trigger for CCP/XCP, the trigger has to be defined in the settings for trigger at first.

In the settings of this trigger **[Execute CCP/XCP action]** must be selected.



**Figure 6.32: Trigger selection: "Execute CCP/XCP action"**

For more information refer to the **"SystemClient\_UserManual"**

## 6.4.2 Signals and DAQs

In the tab sheet **[Measurement]** the view can be changed between **[Signals]** and **[DAQs]** (DAQ lists). The DAQ lists are already predefined by the A2L file. Some of these lists allow editing the parameters.

Some A2L files contain static DAQ lists which can be filled with signals. Otherwise dynamic DAQ lists are generated from the added signals (with the same **[Start Condition]** and **[Measurement Mode]**).

ECU #1 (TeMo) Delete this ECU

Configuration ⚠ Protocol (CCP) Measurement

Signals DAQs

Start Event: LOGGER\_STARTUP Stop Event: LOGGER\_SHUTDOWN Add Signals... Remove Signals

Measurements	Start Condition	Measurement Mode	Interval
⊕ <input checked="" type="checkbox"/> DAQ #0 (10ms)	DEVICE_CONNECTED	10ms	10 ms
⊕ <input checked="" type="checkbox"/> DAQ #2 (Segment)	OFF	Segment	Cylinder segment
⊕ <input checked="" type="checkbox"/> DAQ #1 (Display)	OFF	Display	100 ms

separate start events  
for individual meas-  
urement

mode for individual  
measurement

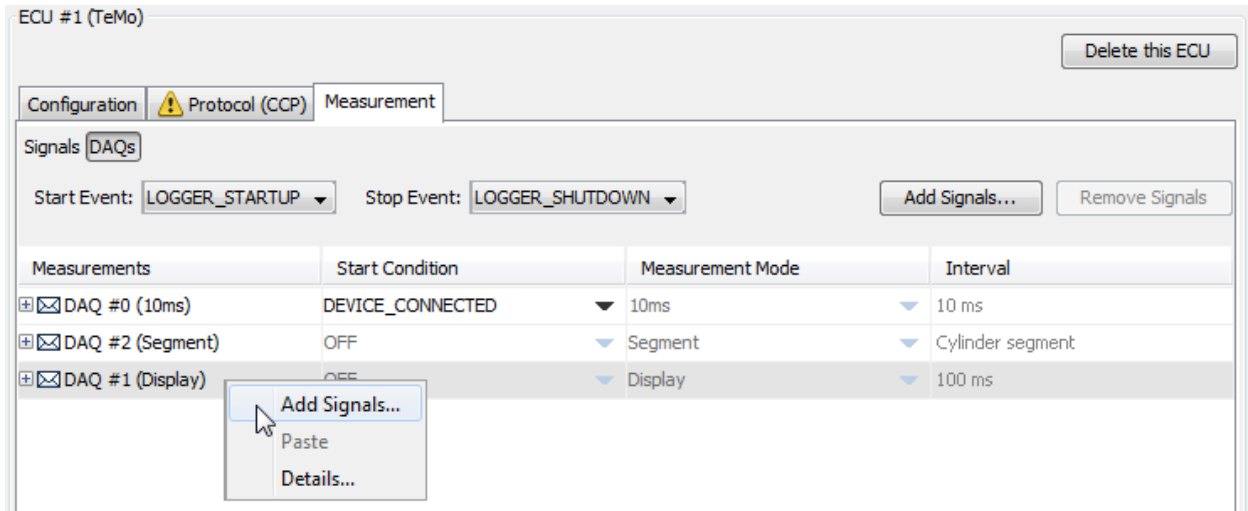
time- or event-trig-  
gered interval

**Figure 6.33: Static DAQ lists**

### 6.4.2.1 Adding Signals

To add individual signals to the current measurement you can:

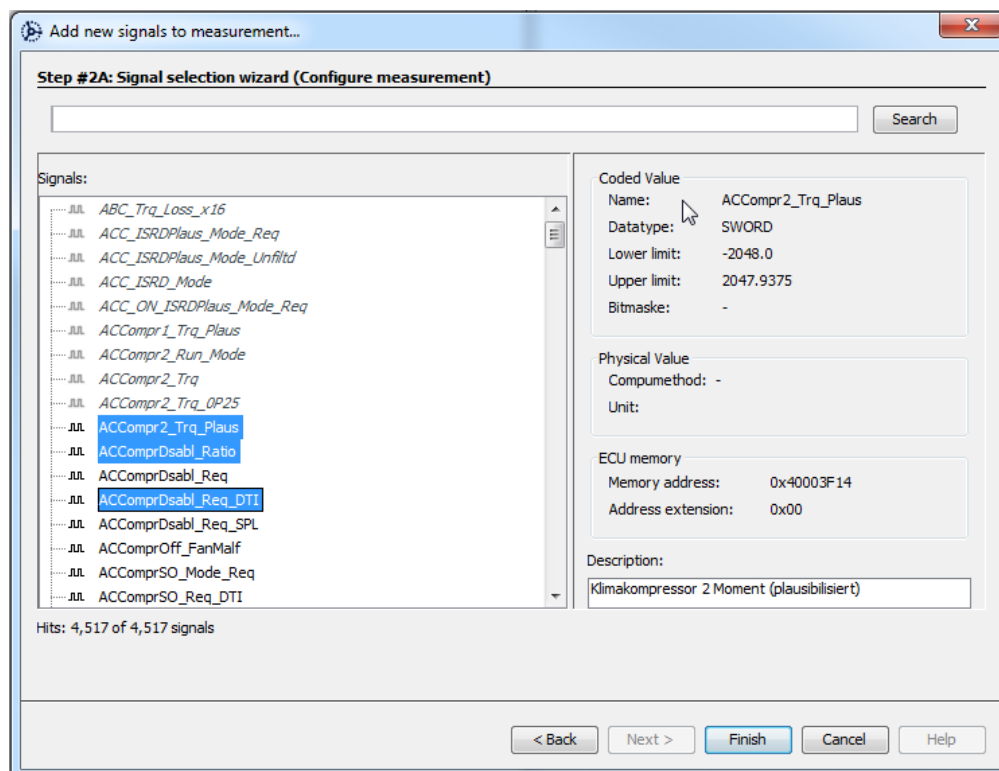
- click **[Add Signals...]** or
- Right-click in the DAQ list and click **[Add Signals...]** in its shortcut menu.



**Figure 6.34: Add Signals**

A new window will be opened for selecting the signal.

A double-click on the required signal will automatically add it to the measurement. It is also possible to select multiple signals by marking them and clicking **[Finish]**.



**Figure 6.35: Selecting Signals**

Signals can be moved per “drag and drop” between the DAQ lists or they can be placed outside the DAQ lists.

### 6.4.2.2 Defining start conditions

For each signal which is not in a DAQ list a separate start condition can be defined. Likewise a start condition can be defined for a whole "DAQ" list .

The screenshot shows the 'Signals' configuration window. At the top, there are tabs for 'Configuration', 'Protocol (XCP on CAN)', and 'Measurement'. Below these, there are 'Start Event' and 'Stop Event' dropdowns, both set to 'LOGGER\_STARTUP' and 'LOGGER\_SHUTDOWN' respectively. There are 'Add Signals...' and 'Remove Signals' buttons. The main area is a table with columns: 'Measurements', 'Start Condition', 'Measurement Mode', and 'Interval'. The table contains several rows, with the first row expanded to show a dropdown menu for the 'Start Condition' column. The dropdown menu is open, showing options: 'OFF', 'DEVICE\_CONNECTED', 'Trigger #1', 'Trigger #2', and 'Trigger #3'. The 'DEVICE\_CONNECTED' option is currently selected.

Measurements	Start Condition	Measurement Mode	Interval
☑ DAQ #0 (Dyn_DAQ 0)	Trigger #1	Task_10ms	10 ms
ABB_In_Data.IQ_Soll	Trigger #1	SINGLE	
ABB_In_Data.N_Ist_OBS	DEVICE_CONNECTED	SINGLE	

Figure 6.36: Defining different start conditions

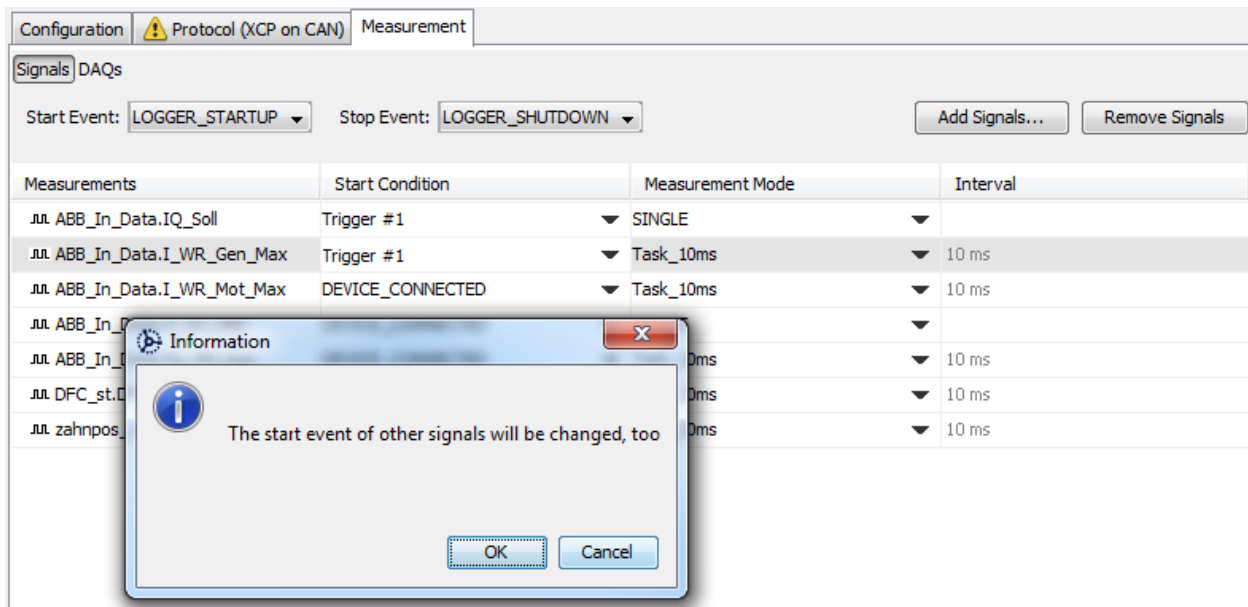
If the start condition of a signal from a DAQ list is changed in the **[Signals]** view, the start condition of the other signals from that DAQ list will be changed accordingly.

The screenshot shows the 'Signals' configuration window after a change. The 'Start Condition' dropdown for the selected DAQ is now set to 'DEVICE\_CONNECTED'. The table below shows that all signals under the DAQ list now have 'DEVICE\_CONNECTED' as their start condition. The table has columns: 'Measurements', 'Start Condition', 'Measurement Mode', and 'Interval'. The first row is highlighted in blue, and a red box highlights the first five rows of the table.

Measurements	Start Condition	Measurement Mode	Interval
☑ DAQ #0 (Dyn_DAQ 0)	DEVICE_CONNECTED	Task_10ms	10 ms
ABB_In_Data.I_WR_Gen_Max	DEVICE_CONNECTED	Task_10ms	10 ms
ABB_In_Data.I_WR_Mot_Max	DEVICE_CONNECTED	Task_10ms	10 ms
DFC_st.DFC_Com_CanA_StatHv	DEVICE_CONNECTED	Task_10ms	10 ms
ABB_In_Data.Psi_PM_Korr	DEVICE_CONNECTED	Task_10ms	10 ms
zahnpos_vorh_kd_i	DEVICE_CONNECTED	Task_10ms	10 ms
ABB_In_Data.IQ_Soll	Trigger #1	SINGLE	
ABB_In_Data.N_Ist_OBS	DEVICE_CONNECTED	SINGLE	

Figure 6.37: Information window after changing the start condition

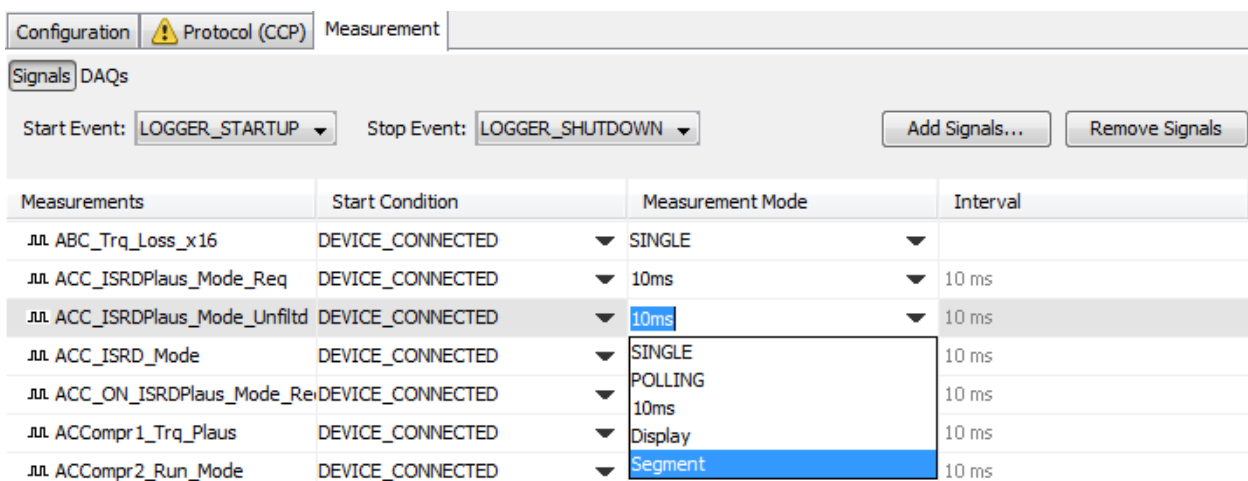
As this is not recognizable in the "**Signals**" overview, a correspondent notification message box will appear in case a change should occur.



**Figure 6.38: Message box after changing start condition**

### 6.4.2.3 Set measuring mode

For signals and DAQ lists a Measurement Mode can be defined.



**Figure 6.39: Select Measurement Mode**

The dropdown content is usually defined in the A2L file. If options cannot be selected or changed, this is also defined in the A2L file.

In general three different measurement modes are distinguished, whereas in the "single" and "polling" modes, the data logger individually requests measurement data from the ECU. This measurement mode is only adjustable, if the signal is outside the scope of the "DAQ list". In the

so-called DAQ-mode however, the ECU transmits the data to the logger in a specified cycle, that is predetermined in the A2L file. Both the measurement modes "single" and "polling" cannot be adjusted for signals being within the scope of the "DAQ" list.

DAQ-mode: this measurement mode is not adjustable, only signals specified in the DAQ list are referred to as that.

In principle, three different types of measurement can be distinguished:

Name	Bedeutung
SINGLE	The data will be requested once.
POLLING	The data will be requested in cycle. This happens after a defined time interval. The shortest polling interval is 10 ms.
DAQ	The data is configured once from the data logger within the ECU. The ECU will send the required data after an ECU internal defined event. (e.g., "10_ms" see figure above)

Table 6.1: Possible measuring modes

**Note:**

**In some cases the ECU software does not support all the Measurement Modes defined in the A2L file. If more than one Measurement Mode is configured for the same ECU and the CCP/XCP communication does not run, please try to configure only one Measurement Mode first. So you can isolate the problem and may have at least one or two working Measurement Modes.**

A signal or more can be deleted by marking it/them and clicking the button **[Remove Signals]**.

#### 6.4.2.4 Detailview

Over the context menu (right mouse button) you get to the detailed view of the signals and DAQ list.

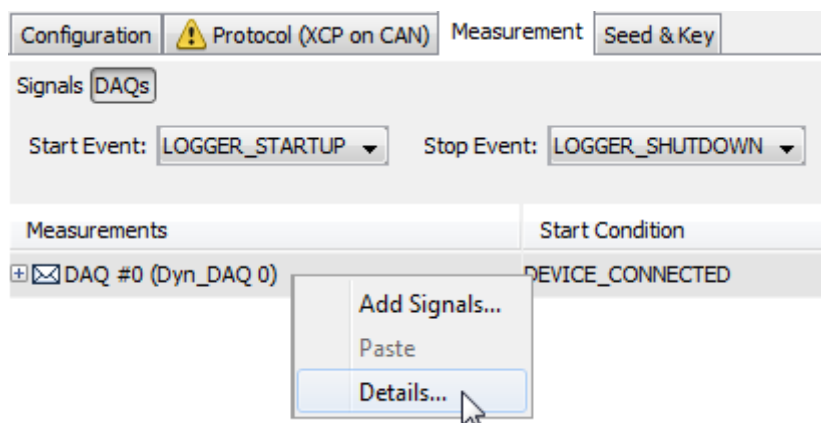
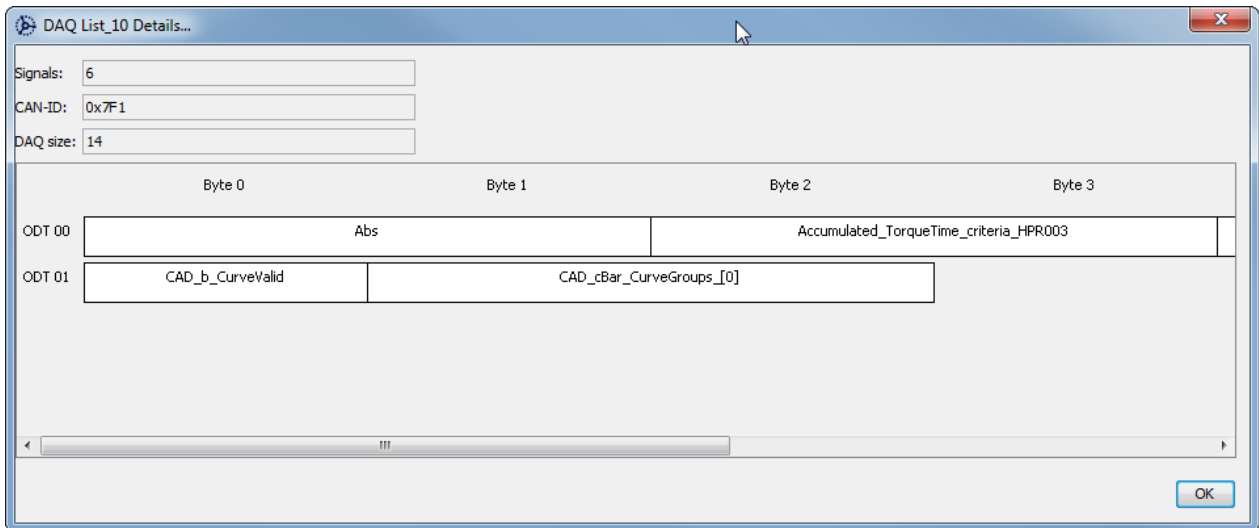


Figure 6.40: DAQ-Details





**Figure 6.41: Detail view of a DAQ list**

In this view, you can see the individual ODTs and their contents from which the DAQ list is composed.

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## 6.5 Tab [Seed & Key]

### Note:

In the moment, Seed & Key is supported only by BLUEPIRAT2 and only at CCP.

### 6.5.1 Functionality

With the feature "seed & key" the data logger supports an authorization check, which ensures that only legitimate persons can access the ECU through the CCP protocol. The data logger requests a so-called "seed" from the ECU. In combination with the preliminarily installed "seed & key" dll file, a so-called key is being generated. This key is sent by the data logger to the ECU for examination. In the event of a successful verification, the data logger can communicate with the ECU through the CCP protocol.

### 6.5.2 Settings

If the ECU supports **[Seed & Key]** at CCP, please check the settings in the corresponding tab.

These settings are taken from the A2L-file.

ECU #1 (TeMo) Delete this ECU

Configuration ! Protocol (CCP) Measurement Seed & Key

Seed & Key Configuration

Active

DLL File:

Function Name:

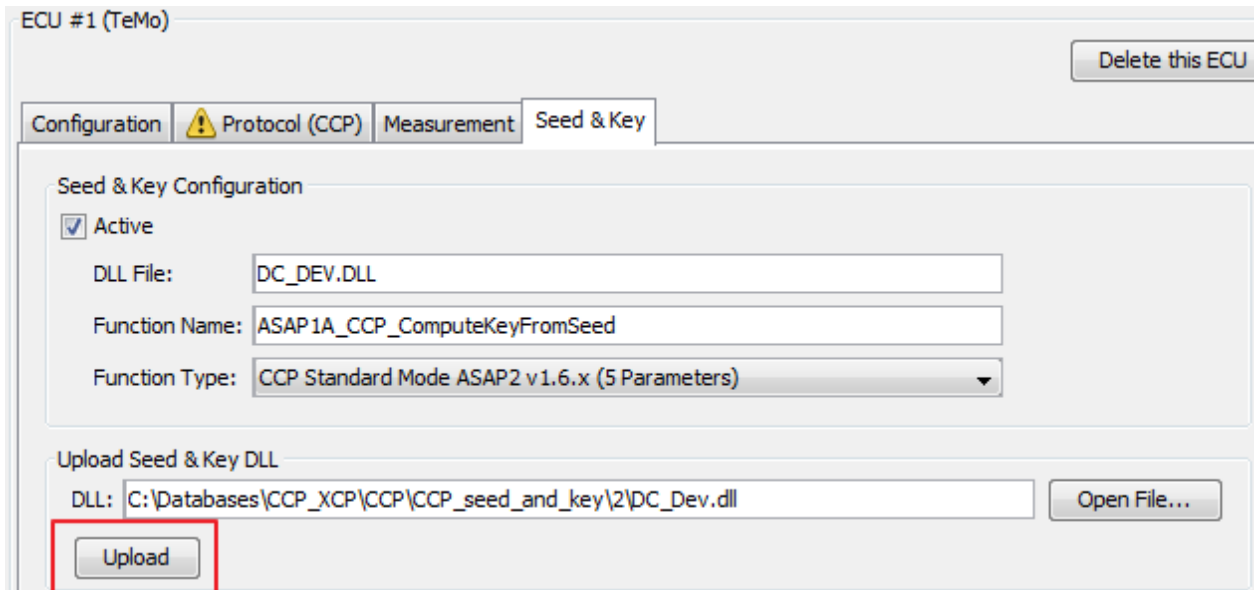
Function Type:

Upload Seed & Key DLL

DLL:  Open File...

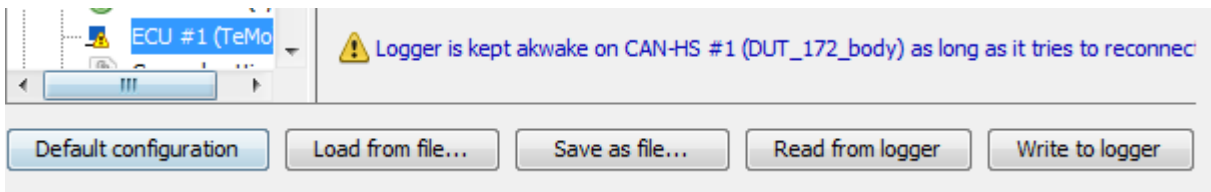
**Figure 6.42: Seed & Key Configuration**

Now the ECU specific Seed & Key DLL (32-bit) has to be upload to the logger.



**Figure 6.43: Seed & Key DLL**

If all configurations have been done, you may save the configuration via **[Save as file...]** or/and send it to the data logger via **[Write to logger]**.



**Figure 6.44: button bar below the ECU-settings**

A saved configuration can always be opened by the System Client via **[Load from file...]**.

After writing the configuration to the data logger, the CCP/XCP communication should be working.

## 6.6 General settings

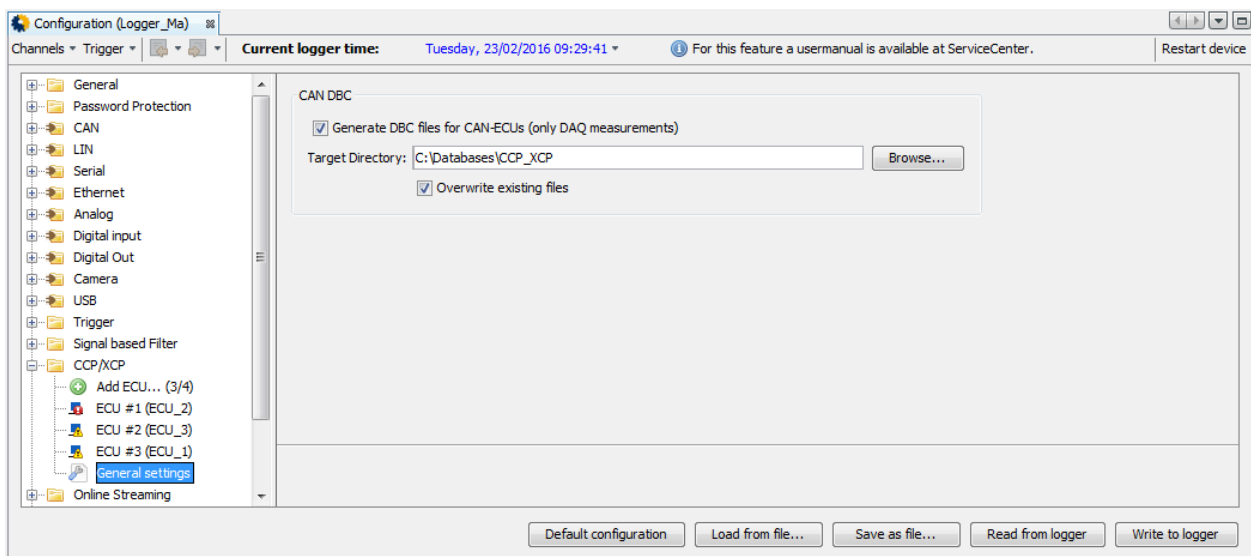
You can configure the settings for the optional DBC file generation under **[General settings]**.

The DBC-file generation is supported for CCP and XCP. The DBC file is needed for Live View, complex triggers and for signal based actions.

For more information and settings please refer to the **SystemClient\_UserManual**.

### Note:

There is the following restriction: Only DAQ measurements can be supported (as multiplexed CAN signals). Single/polling measurements cannot be mapped in the DBC. In the response messages of the ECU only data is delivered and therefore the data cannot be assigned clearly to a signal in the DBC, as the data in principle could belong to different signals.

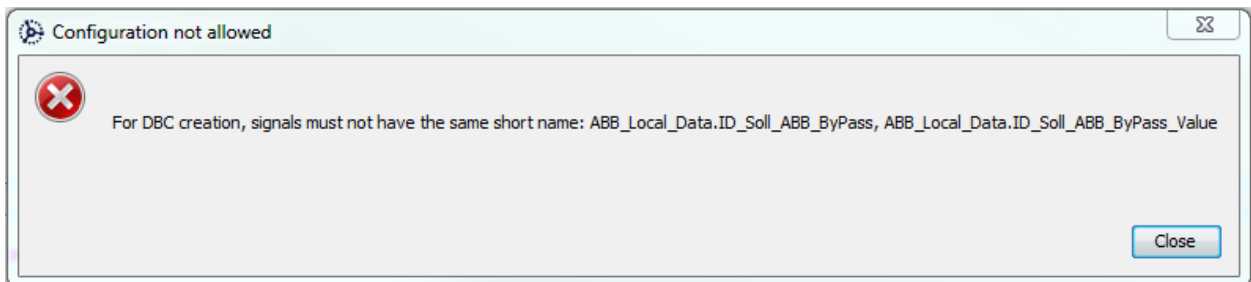


**Figure 6.45: General settings**

With the upper checkbox the data logger will create “.dbc” files. These files include details about the CCP/XCP data fields which are measured by using the DAQ lists.

With the lower checkbox you define, that new “.dbc” files overwrite the ones already existing in the target directory. The file name is generated by the System Client.

### Note:



**Figure 6.46 : Warning at the same signal-shortnames**

The "virtual" signal shortnames may only be 32 characters long and must distinguish. By right-clicking on the signal the shortname can be adjust accordingly.

The screenshot shows a software interface with a table of measurements and an 'Edit...' dialog box. The table has columns for 'Measurements', 'Start Condition', 'Measurement Mode', and 'Interval'. The 'Edit...' dialog box is open over the 'Counter\_B4' row, showing 'Signal: Counter\_B4' and 'Short Name: Counter\_B4'.

Measurements	Start Condition	Measurement Mode	Interval
Counter_B4	DEVICE_CONNECTED	100ms	100 ms
Counter_B5	DEVICE_CONNECTED	100ms	100 ms
Counter_B6	DEVICE_CONNECTED	100ms	100 ms
Counter_B7	DEVICE_CONNECTED	100ms	100 ms
KL1Output	DEVICE_CONNECTED	100ms	100 ms
PWM	DEVICE_CONNECTED	100ms	100 ms
PWMFiltered	DEVICE_CONNECTED	100ms	100 ms
ShiftByte	DEVICE_CONNECTED	100ms	100 ms
Shifter_B0	DEVICE_CONNECTED	100ms	100 ms
Shifter_B1	DEVICE_CONNECTED	100ms	100 ms

**Figure 6.47: Edit Signal Short Name**

To start the DBC Generation please click on the Button **[Write to Logger]**.

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## 7 Data recording

If the configuration has been written to the data logger and the device is working without errors, the CCP/XCP data are recorded continuously or event controlled, depending on the configuration.

### 7.1 Display of the RCTouch / BLUEPIRAT Remote



**Figure 7.1: Remote Control Touch / BLUEPIRAT Remote**

If an RCTouch / bP Remote is connected to the logger, you can display all available busses and their channels over the button **[Busload]** in the <Home>-View.

TSL: TSL_2_3 (2) Busload 22.02.2016 - 17:36:44		
Id	Name	Busload
#1	DUT_178_HSCAN-1	0 %
#2	DUT_178_HSCAN-2	0 %
#3	DUT_178_HSCAN-3	OFF
#4	DUT_178_HSCAN-4	OFF

CAN Serial LIN Ethernet Camera **CCP\_XCP**

**Figure 7.2: Busload view**

Press the button **[CCP XCP]** to display the CCP / XCP communication.

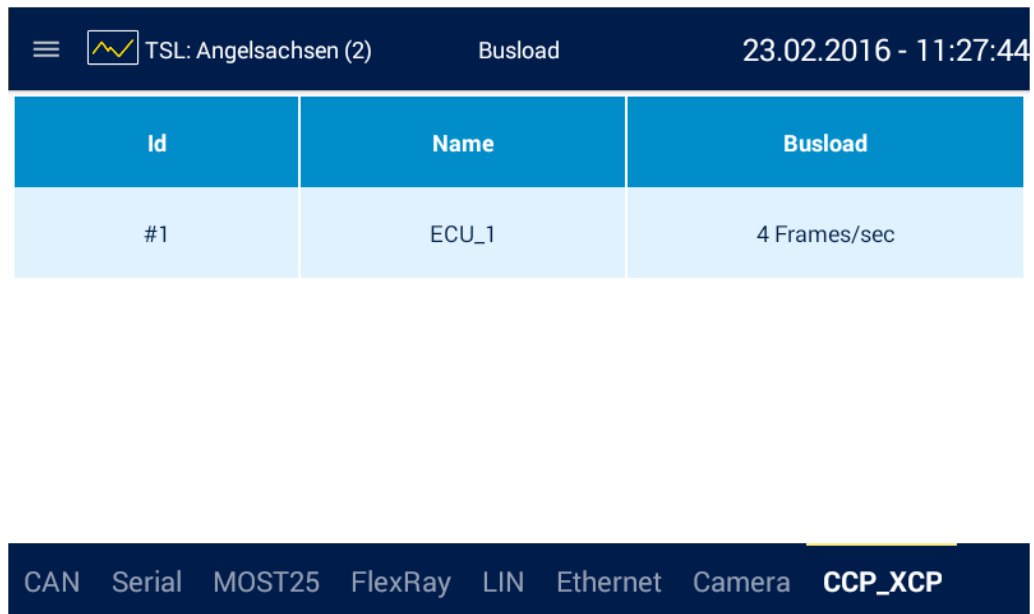


Figure 7.3: View "CCP\_XCP busload"

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## 7.2 Display of the BLUEPIRAT2 / 5E

The display of the **BLUEPIRAT2 / 5E** also shows information about the CCP/XCP communication. The display can only show two lines. Please use the rotating knob until the CCP/XCP menu is shown. There are 4 characters showing the state of the ECUs. Each of the four letters displayed represents an ECU and displays its status.

Status	Meaning
–	not configured
X	not connected
T	Traffic
N	no traffic, connected
E	Connection Error

Table 7.1: Status information at the display of the BLUEPIRAT2 / 5E



Figure 7.4: Display of the BLUEPIRAT2 / 5E

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## 7.3 Online Monitor

The online monitor enables the user to observe the measured data directly

### 7.3.1 Starting Online Monitor

To start the Online Monitor you have to activate the checkbox **Online Streaming active** in the sub-category **[Online Streaming]** and write it to the logger.

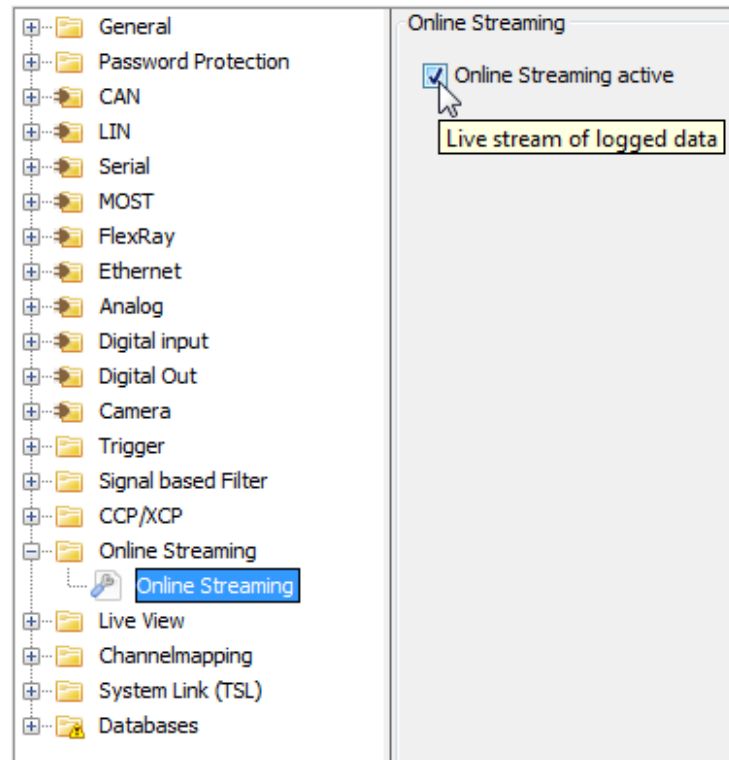


Figure 7.5: Activating Online Streaming

The tab <Online Monitor> can be opened by clicking the button **[Online Monitor] (2)**.

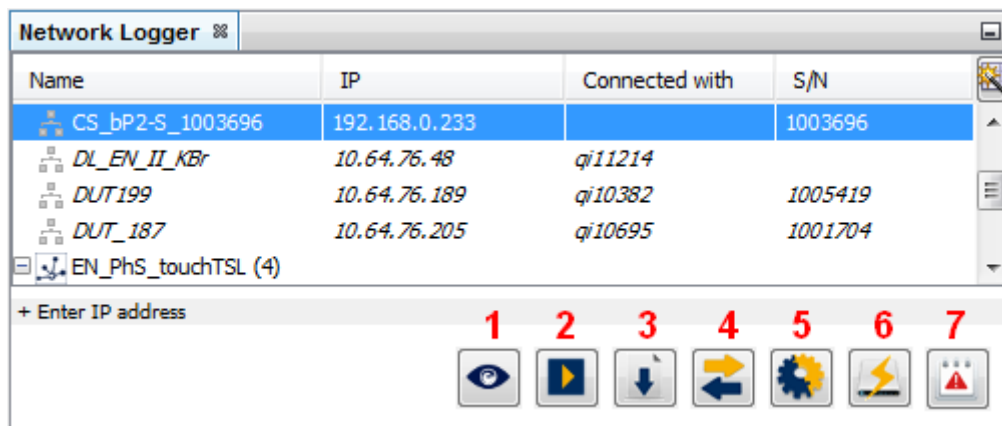

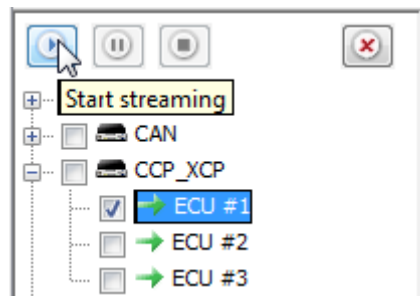


Figure 7.6: Tab "Network Logger"

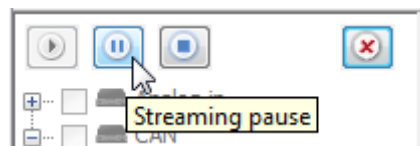


There you can define which interfaces and channels you want to see in the Online Monitor and start the streaming by clicking the button  **[Start streaming]**. You can choose interface groups e.g all ECU's or individual ECU's.



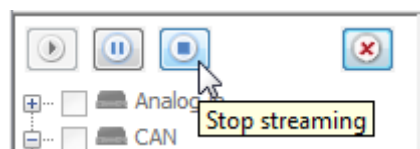
**Figure 7.7: Starting online streaming**

Online streaming can be paused by the button **[Streaming pause]**



**Figure 7.8: Pausing online streaming**

There's no possibility to change the streamed channels when streaming is active. If you want to change some interfaces or channels you have to stop streaming before. To stop the streaming, please push the button **[Stop streaming]**. After changing the required settings you can start streaming again.



**Figure 7.9: Stopping online streaming**

For more information and settings of the online monitor, see the **SystemClient\_UserManual**.

## 8 Download and conversion

The download application allows saving internal data (in Telemotive format) from the logger on the computers disk.

The conversion application allows saving internal data from the logger or an offline data set on the computers disk in a chosen format.

Connect the data logger to your computer and start the System Client.

Select the corresponding data logger in the window <Network Logger> and click either the button:

- **[Download data] (3)**, to generate an offline data set from the logger's data, or
- **[Convert data] (4)**, to convert an offline data set or directly the logger's data to another format.

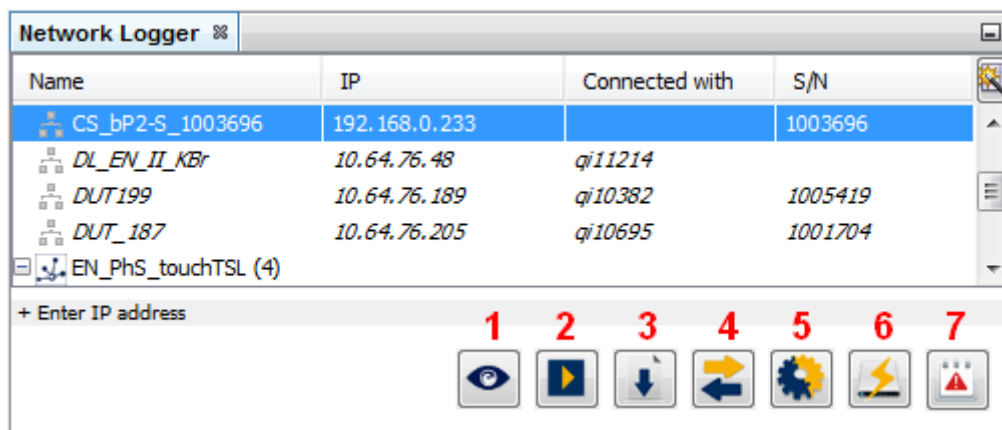


Figure 8.1: Selecting logger

Please find a detailed description for downloading and converting data in the manual of the System Client:

### User manual for the System Client

[https://sc.telemotive.de/4/uploads/media/TelemotiveSystemClient\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/TelemotiveSystemClient_UserManual.pdf)

## 8.1 Conversion

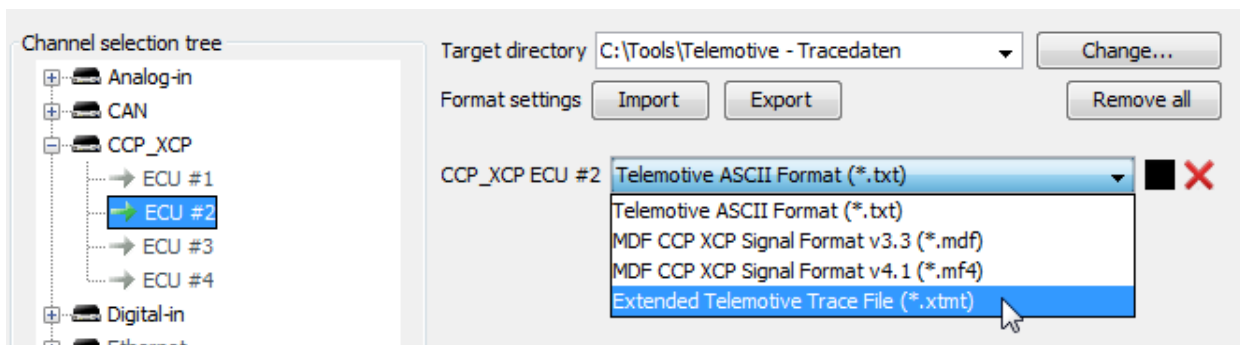
CCP/XCP data also can be converted directly without DBC file in MDF, Telemotive ASCII Format or Extended Telemotive Trace File.

Select in the channel list under **[CCP\_XCP]** the needed controller (using the unit number). Double clicking adds the channel directly to the output list (on the right side).

Select in the dropdown menu the output format:

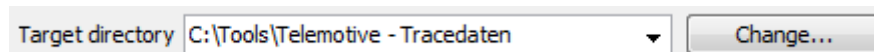
- **[Telemotive ASCII Format (\*.txt)],**
- **[MDF CCP XCP Signal Format v3.3 (\*.mdf)],**
- **[MDF CCP XCP Signal Format v4.1 (\*.mf4)]** or
- **[Extended Telemotive Trace File (\*.xtmt)].**

Please repeat this for all required channels.



**Figure 8.2: Set output format**

The target directory combo box allows entering the name of the directory in which the converted data will be saved. Either you choose an entry from the dropdown menu or you open the dialog <Choose target directory> by clicking **[Change...]**.



**Figure 8.3: Selecting target directory**

By pressing the **[Convert]** button at the lower button bar the conversion can be started. All channels in the area for format settings will be written into the target directory in the selected format.



**Figure 8.4: Convert button**

### Note:

From version 2.1.1 onwards ECU log messages (warnings, errors, notes) of MDF conversions are additionally written as TMASCII in a text file in the target directory.

## 9 Abbreviations

abbreviation	meaning
BLUEPIRAT	Processing Information Recording Analyzing Tool
bP	<b>BLUEPIRAT</b>
bP2	<b>BLUEPIRAT2</b>
bP2 5E	<b>BLUEPIRAT2 5E</b>
bPMini	<b>BLUEPIRAT Mini</b>
A2L	<b>ASAM MCD-2 MC Language</b>
AE	<b>Automotive Electronics</b>
ACK	<b>ACKnowledged</b>
CAN	<b>Controller Area Network</b>
CCP	<b>CAN Calibration Protocol</b>
CF	<b>Compact Flash</b>
CRO	<b>Command Receive Object</b>
DAQ	<b>Data Acquisition</b>
DTO	<b>Data Transmission Object</b>
ECL	<b>Electrical Control Line</b>
ECU	<b>Electronic Control Unit</b>
FIBEX	<b>Field Bus Exchange Format</b>
FW	<b>Firmware</b>
GMT	<b>Greenwich Mean Time</b>
INCA	<b>INtegrated Calibration and Application Tool</b>
LAN	<b>Local Area Network = Netzwerk</b>
LIN	<b>Local Interconnect Network</b>
MAC	<b>Media Access Control</b>
MCD	<b>Measure Calibrate Diagnose</b>
MDX	<b>Meta Data EXchange Format</b>
MEP	<b>MOST Ethernet Packet</b>
MOST	<b>Media Oriented Systems Transport</b> ( <a href="http://www.mostnet.de">www.mostnet.de</a> )
ODT	<b>Object Descriptor Table</b>
ODX	<b>Open Data EXchange</b>
OEM	<b>Original Equipment Manufacturer</b>
PHY	<b>PHYsical Bus Connect</b>
PW	<b>Password</b>
RX	<b>Receiver Data</b>
SD	<b>Secure Digital</b>
SFTP	<b>Secure File Transfer Protocol</b>
SHA	<b>Secure Hash</b>
SSL	<b>Secure Sockets Layer</b>
TCP/IP	<b>Transmission Control Protocol/Internet Protocol</b>
TLS	<b>Transport Layer Security</b>
TMP	<b>Telemotive Packetformat</b>

TSC	<b>T</b> elemotive <b>S</b> ystem <b>C</b> lient
TSL	<b>T</b> elemotive <b>S</b> ystem <b>L</b> ink
UDP	<b>U</b> ser <b>D</b> atagram <b>P</b> rotocol
USB	<b>U</b> niversal <b>S</b> erial <b>B</b> us
UTC	<b>U</b> niversal <b>T</b> ime, <b>C</b> oordinated
Wi-Fi	<b>W</b> ireless <b>F</b> idelity
WLAN	<b>W</b> ireless <b>L</b> ocal <b>A</b> rea <b>N</b> etwork
XCP	Universal Measurement and <b>C</b> alibration <b>P</b> rotocol

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