System Client
User Manual / 01.01.2020

Version 3.4.3

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2 PRODUCT LIABILITY

The General Terms and Conditions of Sale and Delivery of MAGNA Telemotive GmbH can be found on our website (www.telemotive.de) under imprint.

3 Overview

This user guide describes the administration of the System Clients which can be used for configuring and handling of the following MAGNA Telemotive GmbH products:

- blue PiraT2
- blue PiraT2 5E
- blue PiraT Mini
- Remote Control Touch
- blue PiraT Remote

For detailed descriptions of the hardware please refer to the correspondend hardware manuals.

This document refers to **firmware version 03.06.xx** and the **System Client** from **version 3.6.x**. 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 our 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.

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.

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4 System requirements

Control Unit
A Windows based Laptop or PC is needed to configure the devices by **System Client**. It also allows to save the recorded data and to use them offline later.

System Client
The software client is used for configuring the data logger as well as downloading the recorded data or convert these into your needed file format. An firmware update can be performed by the **System Client** too to ensure that your devices are always up to date.

Telemotive data logger
The communication between bus systems and control units is monitored and relevant data can be recorded very precisely with the data logger. The collected data are stored to the logger and can be downloaded via Ethernet to a PC.

The blue PiraT2 is our top-class all-in-one data logger. Seven models cover a wide range of interfaces.

Additionally, the blue PiraT2 5E offers improved power management and power backup, five integrated Ethernet ports and super-fast start-up behavior. The blue PiraT2 can be flexibly expanded via System Link.

The blue PiraT 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 flexibly expanded to one cluster and therefore handled very easily by using System Link.

Remote Control Touch
Operate your blue PiraT Mini or blue PiraT2 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.

blue PiraT Remote
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.

License
For some additional features 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 guide we offer the main manuals for our client as well as for the different data logger generations in our ServiceCenter at https://sc.telemotive.de/bluepirat.

User manual for the System Client
https://sc.telemotive.de/4/uploads/media/TelemotiveSystemClient_UserManual.pdf

User manual for blue PiraT2 / blue PiraT2 5E
https://www.telemotive.de/4/uploads/media/blue_PiraT2_UserManual.pdf

User manual for blue PiraT Mini
https://www.telemotive.de/4/uploads/media/blue_PiraT_Mini_UserManual.pdf

User manual for Remote Control Touch
https://sc.telemotive.de/4/uploads/media/RCTouch_UserGuide.pdf

User manual for blue PiraT Remote
https://sc.telemotive.de/4/uploads/media/blue_PiraT_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.

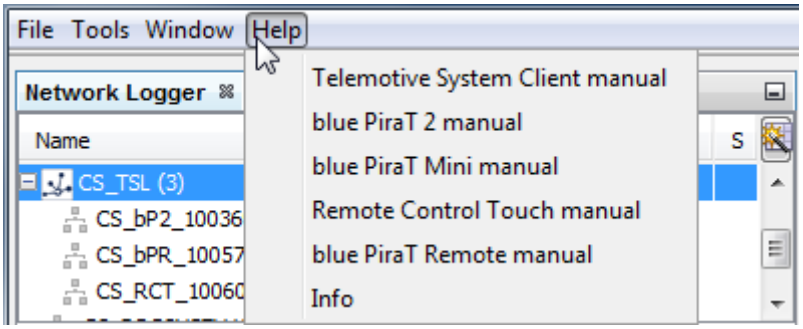

Figure 4.1: links to the manuals

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**.

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 the Service-Center. Currently the following licensed features are available.

Feature	Description
Camera Link	video recording via video server or network cameras
WLAN	supporting wireless LAN (802.11, 802.11a, 802.11n), *(802.11ac from FW 02.04.01)*
GPS logging	tracking of GPS data
Measurements with CCP	CAN Calibration Protocol
Measurements with XCP	Universal Measurement and Calibration Protocol Currently the functionality for Ethernet (XCP on Ethernet) and the CAN-bus (XCP on CAN) are available.
MOST150 Streaming	logging MOST150 synchronous/isochronous data
MLBevo	The license Connected-Gateway MLBevo enables the recording of data of the ATOP control unit MLBevo via USB to the Telemotive data logger and convert these data with the System Client. *(from FW 02.03.01)*
Download Terminal	Download Terminal allows an automatization of configured tasks for a defined group of devices. *(from FW 02.03.01)*
TPE	TPE = Telemotive Performance Extension Increasing the logging rate for Ethernet data up to 100Mbit/s *(from FW 02.04.01)*
Test automatisation	Interface for connecting to test automation tools. At the moment, the sending of CAN messages is supported. *(from FW 02.04.01)*
Cellular network	Allows the logger to send status messages over cellular network. *(from FW 03.01.01)*

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 **blue PiraT Rapid**. This period can be extended.

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

Affected products

- **blue PiraT Mini**
- **blue PiraT2 5E**
- **blue PiraT2**
- **blue PiraT Remote**
- **Remote Control Touch**
- **blue PiraT Rapid**

Note:
Enhancements are only possible in current firmware releases.

Attention:
Please note that updates to main firmware versions (04.00.01 / 05.00.01) 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 *(please find the complete address under Contact on the last page)*.

5 Downloading the System Client

The **System Client** can be downloaded in MAGNA Telemotives ServiceCenter (https://sc.telemotive.de/bluepirat).

A current version is always on the logger itself and can be downloaded from there. The following steps show you how to download the TSC directly from these devices:

- **blue PiraT2**
- **blue PiraT2 5E**
- **blue PiraT Mini**
- **blue PiraT Remote**
- **Remote Control Touch**.

5.1 Connecting the blue PiraT2 / blue PiraT2 5E

Connect the blue PiraT2 via the power harness (**red/+/clamp30** and **black/GND/-/clamp31**) with the vehicle battery or a power supply.

Figure 5.1: Power connection on the blue PiraT2

Figure 5.2: Power connection on the blue PiraT2 5E

Attention:
If you have ordered an external antenna, e.g., for Wi-Fi or GPS, the connector has to be bolt only by hand, not with any tools.

Switch on the blue PiraT2 by pressing the **[ON / Trigger]** button and wait until the logger is ready. Telemotive Logo changes into showing the available bus ports.

Figure 5.3: Switching on the blue PiraT2

For switching off the blue PiraT2 please press the **[OFF / Esc]** button for some seconds until the display shows “Shutdown”.

Pressing down the rotary knob will enter the operation menu. Now select “[1] Info” and press the rotary knob again. Then choose “9/11” by turning the knob. In the bottom line you can see the IP address of the logger. This IP address is required for the next step.

Figure 5.4: Info screen – IP address

5.2 Connecting the blue PiraT Mini

Connect the **blue PiraT Mini** to the vehicle battery or a power supply via the power harness (**red/+/clamp30** and **black/GND/-/clamp31**).

Connect the Gigabit Ethernet port ETH #1 with the Ethernet port of your computer by using an Ethernet cable.

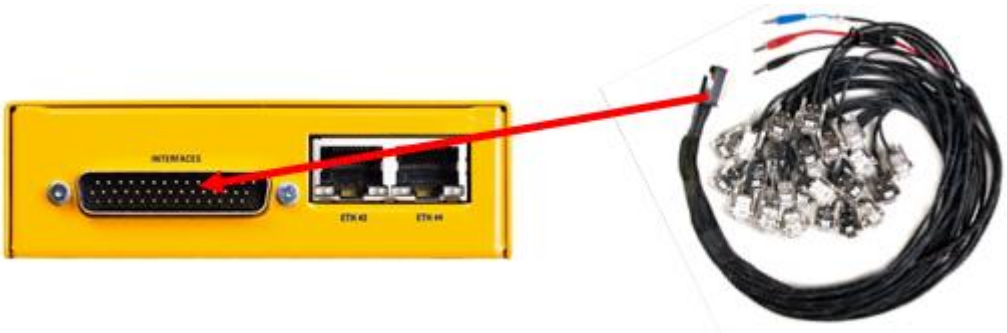

Figure 5.5: Power connection on the blue PiraT Mini

When the power supply is switched on the device will start automatically.

Is the **blue PiraT Mini** in standby mode please press the **[ON / Trigger]** button to start the device. The boot sequence takes about 15 seconds until the logger is reachable by the TSC. Data logging is starting much earlier.

Figure 5.6: Switching on the blue PiraT Mini

To switch off the blue PiraT Mini please press the **[ON / Trigger]** button for about five seconds till the green ACTIVE-LED starts pulsing.

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5.3 Connecting the blue PiraT Remote

Connect the **blue PiraT Remote** to the vehicle battery or a power supply via the power harness (**1.**) (**red/+/clamp30** and **black/GND/-/clamp31**).

Connect the Gigabit Ethernet port ETH #1 with the Ethernet port of your computer by using an Ethernet cable.

When the power supply is switched on the device will start automatically.

Is the **blue PiraT Remote** in standby mode please press the **[ON / Trigger]** button (**2.**) to start the device. The boot sequence takes about 45 seconds until the logger is reachable by the TSC. Data logging is starting much earlier.

Figure 5.7: Switching on the blue PiraT Remote

To switch off the **blue PiraT Remote** please press the **[ON / Trigger]** button (**2.**) for about five seconds till the green ACTIVE-LED starts pulsing.

5.4 Connecting the Remote Control Touch

Connect the **Remote Control Touch** to the vehicle battery or a power supply via the power harness (**1.**) (**red/+/clamp30** and **black/GND/-/clamp31**).

Connect the Gigabit Ethernet port ETH #1 with the Ethernet port of your computer by using an Ethernet cable.

When the power supply is switched on the device will start automatically.

Is the **Remote Control Touch** in standby mode please press the **[ON / Trigger]** button (**2.**) to start the device. The boot sequence takes about 45 seconds until the logger is reachable by the TSC. Data logging is starting much earlier.

Figure 5.8: Switching on the Remote Control Touch

To switch off the **Remote Control Touch** please press the **[ON / Trigger]** button (**2.**) for about five seconds till the green ACTIVE-LED starts pulsing.

5.5 Download and installation of the System Client

Open your internet browser and enter the IP address of the logger

(Default settings: **Automatic DHCP configuration for TSL with IP 192.168.0.233**) and press **[Enter]**.

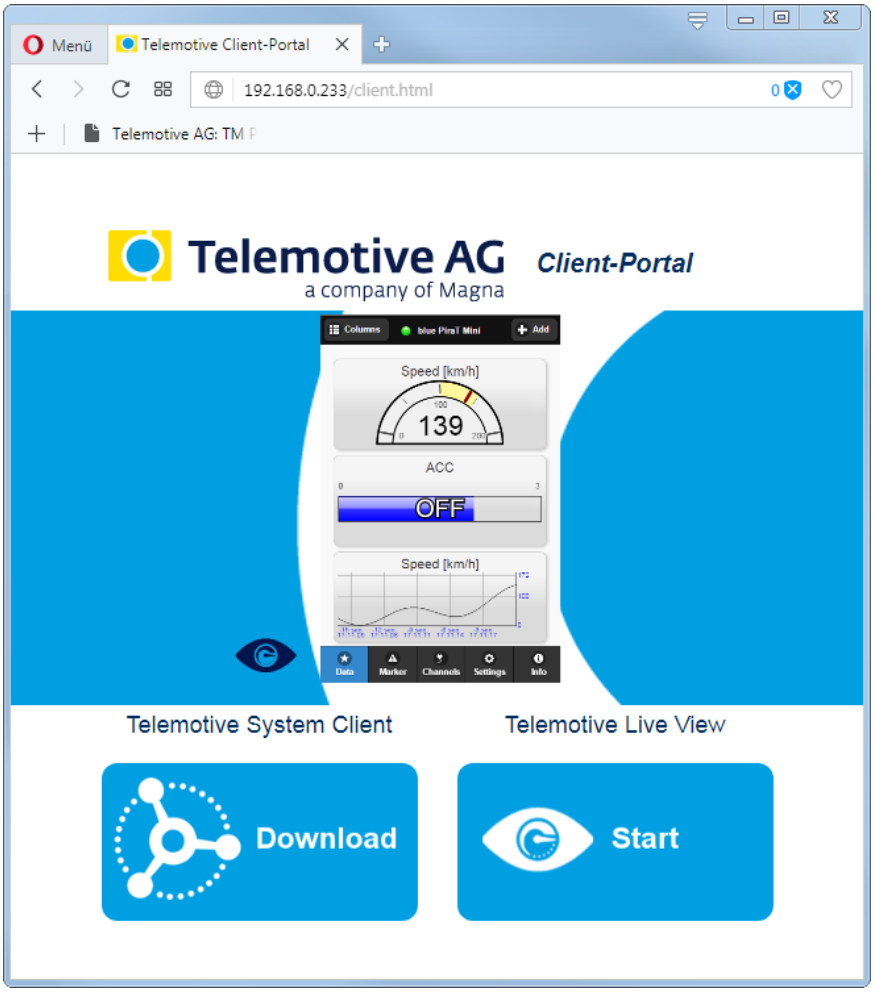


Figure 5.9: Client Portal

The connection between the logger and your computer system will be established. Please take care that the network settings of your network adapter are set to **Obtain IP address automatically**.

Click **[Download]**, to download the System Client (64 Bit version) directly from the logger. The 32 Bit version is available in our service center.

Follow these steps, depending on your browser:

Browser	Proceeding
Internet Explorer	Click **[Save]**, to locally save the file on your system. Click **[Accomplish]**.
Mozilla Firefox	Click **[Save file]**, to locally save the file on your system. Click the arrow on the right top of the browser menu and select the downloaded application in the appearing context menu.

In the dialog that opens select the desired software language from the dropdown menu.
Click **[OK]**.

Follow the instructions in the next dialog and select an installation directory.
Click **[Install]**.

After successful installation you will find the **System Client** icon on your desktop. Double-click the icon to start the application.

Figure 5.10: Desktop icon

5.6 System Client portable

The System Client is also available as a portable version which needs no installation but unpacking. This version is ready for downloading in our ServiceCenter.

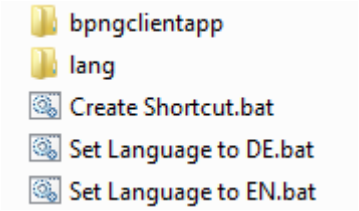


Figure 5.11: Content oft he portable client

The portable version includes some batch files for these functions:

Create Shortcut.bat	creates a shortcut for the start file oft he portable client
Set Language to DE.bat	changes the language into german
Set Language to EN.bat	changes the language into english (standard)

5.7 Console installer for the client

For installing the client software by a batch script or Windows prompt (console) you need an additional tool which can be downloaded from the ServiceCenter of the MAGNA Telemotive GmbH.

If there appear some errors during installation by the console installer these errors will be displayed in the console. When the installation runs successful, no messages will be shown in the console.

5.7.1 Starting the console installer

Please start the console installer in this way:

```
TSC_Console_Installer.exe <path to setup> [/L=...] [/D=...] [/DS=...]
```

Example:

```
TSC_Console_Installer.exe Telemotive_System_Client_Setup_2.3.1.exe
/L=g /D="C:\Tools\TSL" /DS=1
```

The first argument is the path to the clients setup file. The next arguments /L, /D and /DS are optional.

/L	to set the installation language. „e“ for English (default), „g“ for German
/D	to set the installation path. This must be an absolute path. If there are blanks in the path you have to surround them by apostrophes. Without this argument the Client will be installed into the default path. “<Program Files>\Telemotive AG\TSL”
/DS	to define if you want to install a Desktop symbol or not. "0" = no, "1" = yes (default)

Table 5.1: Arguments for console installer

You can call the help file by using /h.

5.7.2 Uninstaller

The TSC installation installs two different uninstaller into the installation folder. For uninstalling the client with a batch script you have to use the ***uninst_silent.exe*** which will not create any messages. Errors will be shown at the console.

5.8 Using the Client Library

For automation or implementing of some client functions into other programs we offer a **C++ Client-lib**.

The Client-lib can be downloaded from our Service Center at **[Software-Downloads]**.

The documentation is included into the download package.

6 General functions of the System Client

This section describes the usage of the System Client in general and shows how to use the different modules.

You can start the TSC by using the desktop icon. Double-click the icon to start the application.

Otherwise you can start the client over the menu **[Start]** → **[All programs]** → **[Telemotive AG]** → **[System Client]** → **[Telemotive System Client]**.

6.1 The menu bar of the client

There are four menu items in the menu bar of the client.

6.1.1 File

The item **[File]** allows closing the client.

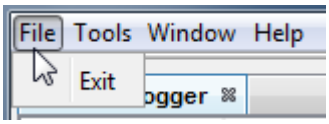


Figure 6.1: Menu item [File]

6.1.2 Tools

The item **[Tools]** allows creating a bug report of the client. For creating a bugreport of the logger, please see *chapter 17 The application* [Bug report.

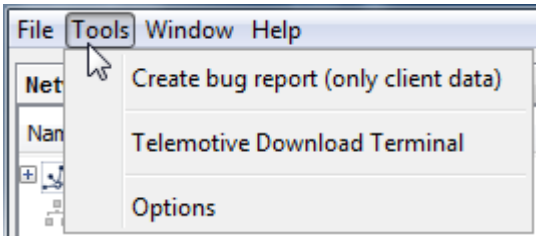


Figure 6.2: Menu item [Tools]

Additional you can switch over to **Download Terminal** which is a licensed feature and is described in an own manual:

bP2-Mini_Telemotive-Download-Terminal_UserGuide.pdf

With **[Tools]** => **[Options]** you'll open a new window where some of the basic settings of the client and it's modules can be configured. These options are described in the modules where they were needed.

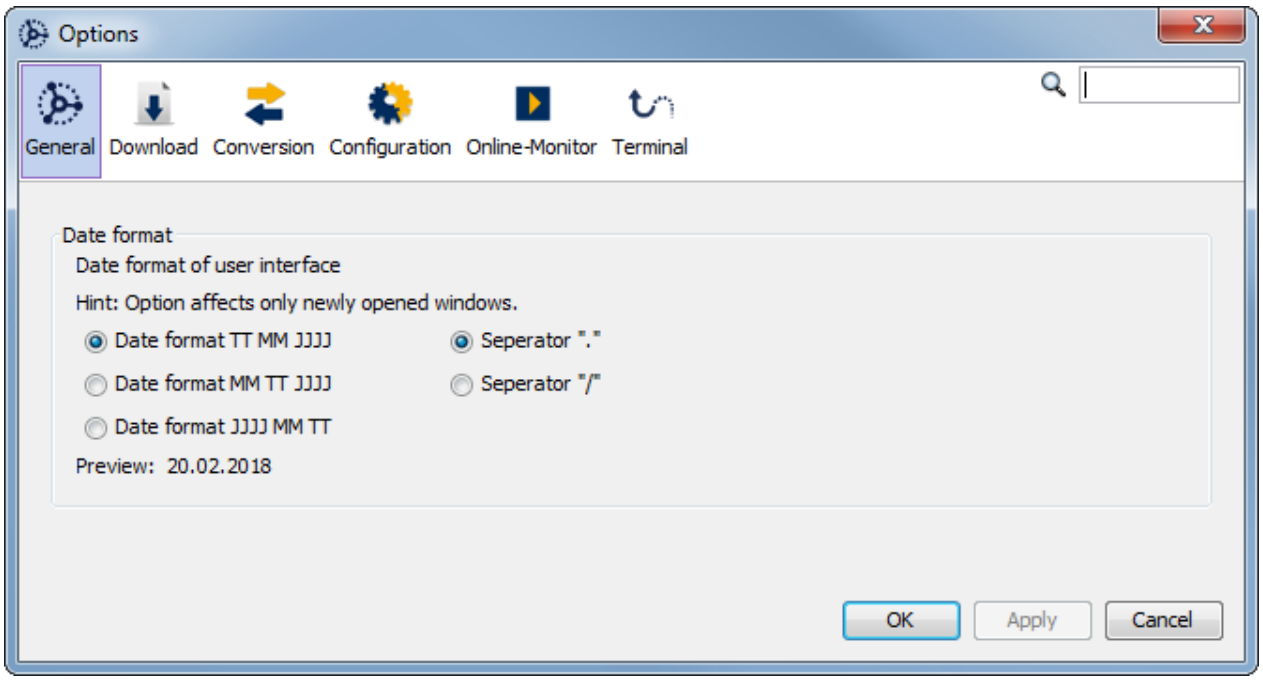
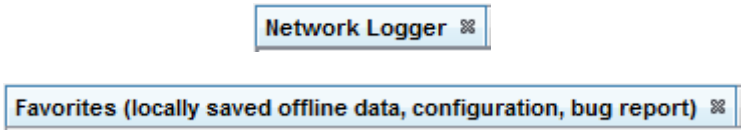


Figure 6.3: Menu item [Tools] – [Options]

6.1.3 Window

The item **[Window]** allows specifying which windows on the client screen is visible. It also allows to reset the window settings to default values.

Every tab can be closed by the **[X]** in the title bar and reactivated by the menu items.



By using **[Window] => [Output] / [Strg & 4]** it is possible to show a window with additional output information at the bottom of the client.

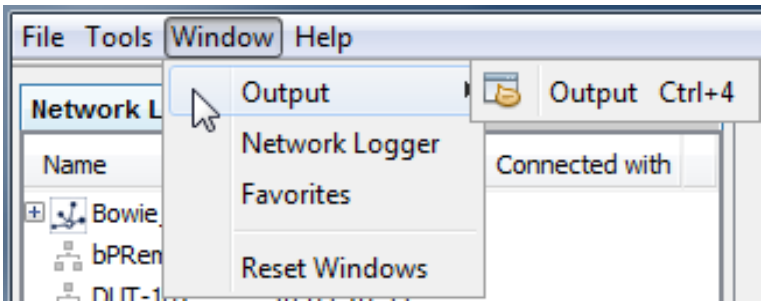


Figure 6.4: Menu item [Window]

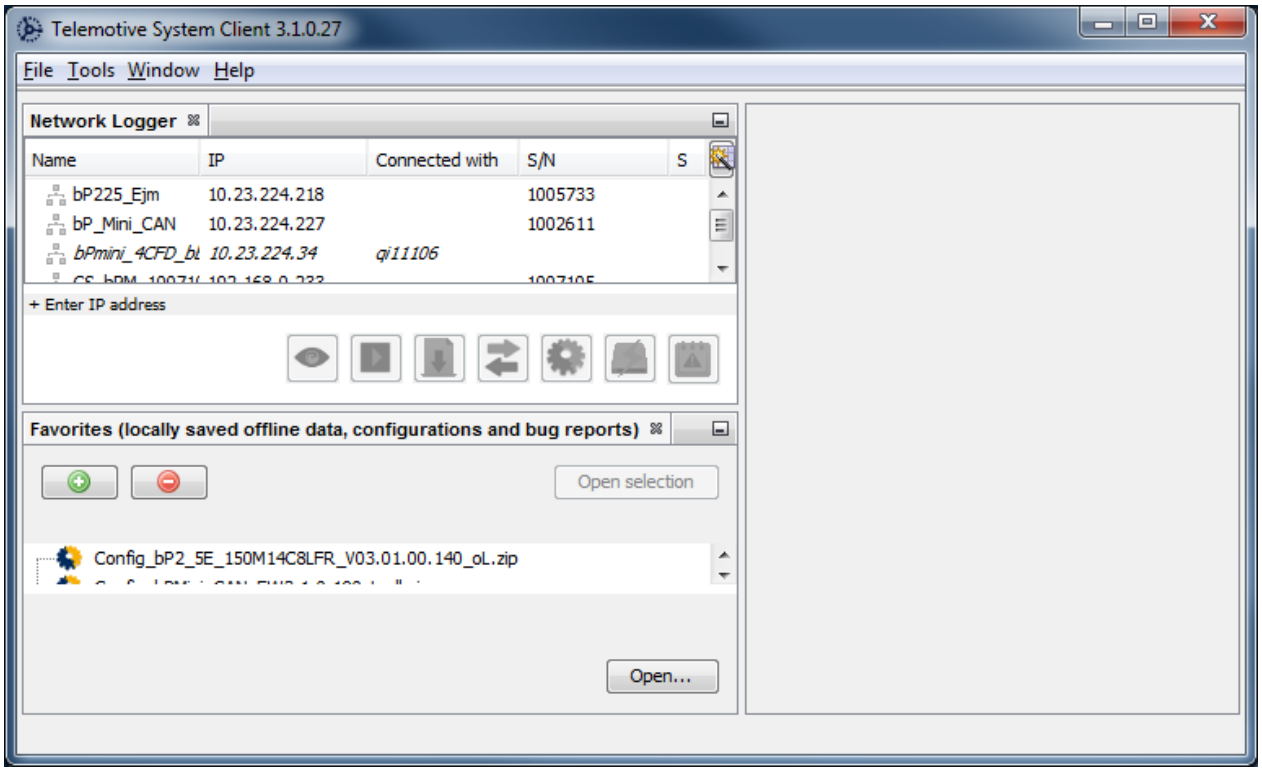


Figure 6.5: Standard view after [Reset Windows]

6.1.4 Help

The item **[Help]** offers access to general information about the client and a link to the main manuals.

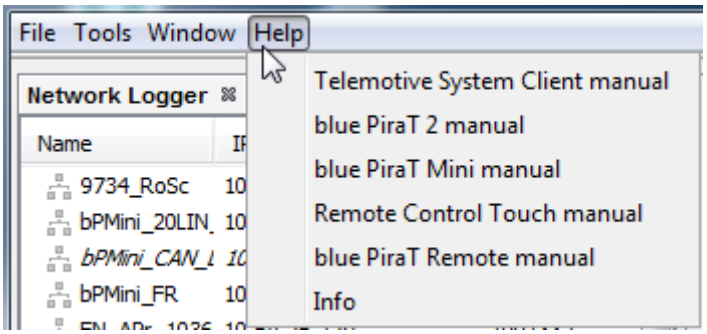


Figure 6.6: Menu item [Help]

6.2 The “Network Logger” tab

You can find a list of connected data loggers in your network in the <Network Logger> tab. You can configure which details from the connected data loggers will be shown by right clicking the header of the table. Possible details are the IP-address, the serial number, the user, which the data logger is connected to and the status of the device. The name will always be shown. After selecting one of the devices, you have access to the following applications.

You can choose and selecting the columns you need by right klicking the first row.

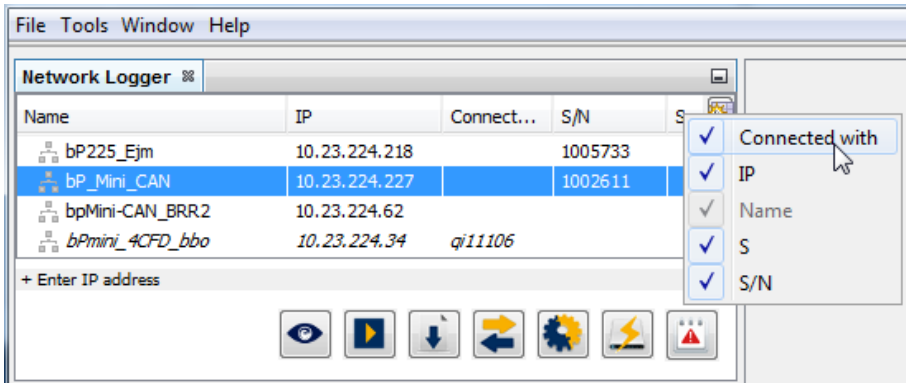


Figure 6.7: Start screen of the client

When a device is appearing new in the Network logger windo it is shon in bold letters for 5 secons:

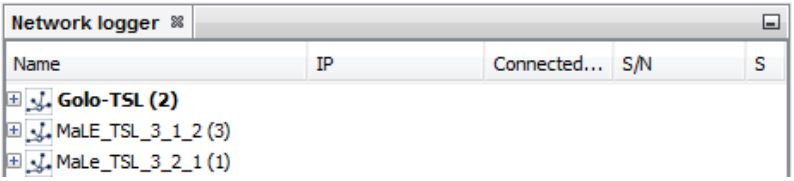


Figure 6.8: new device or TSL in the Network-logger window

Figure 6.9: Icons of the available application

Available applications:

1. Live View
2. Online Monitor
3. Download data
4. Convert data
5. Open configuration
6. Update firmware
7. Open bug report

6.3 Starting an application

Clicking on one of the applications establishes an exclusive connection to the logger (no other clients will be able to connect). But you can have access to the logger with different modules on the client at a time, e.g., **[Open Configuration]** and **[Download data]**.

If another client is already connected to a logger, the clients' user is shown in the <Connected with> column and the row is displayed as italics. Also the applications are grayed out and cannot be activated. Its only possible to get access to these devices by **[Live View].**

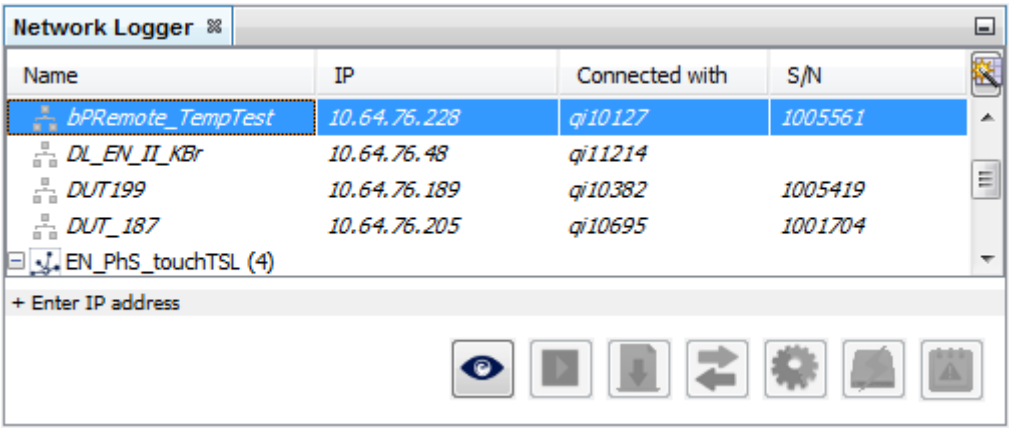


Figure 6.10: Devices which are used by other users

A device in error mode is shown in red with an error icon, all applications are still available.

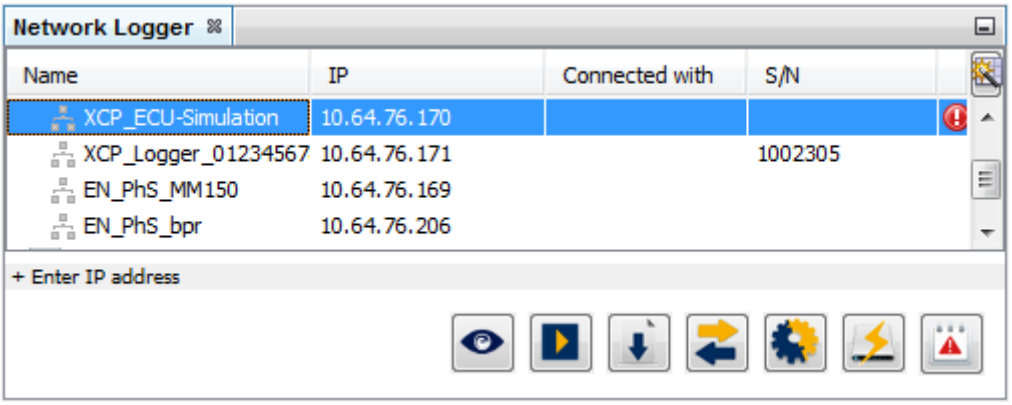


Figure 6.11: Device in error state

The context menu (accessible via right clicking on a logger) allows quick access to the applications as well as the following actions:

- Starting the Applications of the client
- Upload configuration (upload a stored configuration directly),
- reset the device to default configuration (only available for data loggers in error mode),
- activate device LED (to identify a physical device),
  blue PiraT Mini: red STATE-LED blue PiraT2: orange Memory-LED
- set date and time (synchronized to PC time) and
- restart device or
- shutdown device

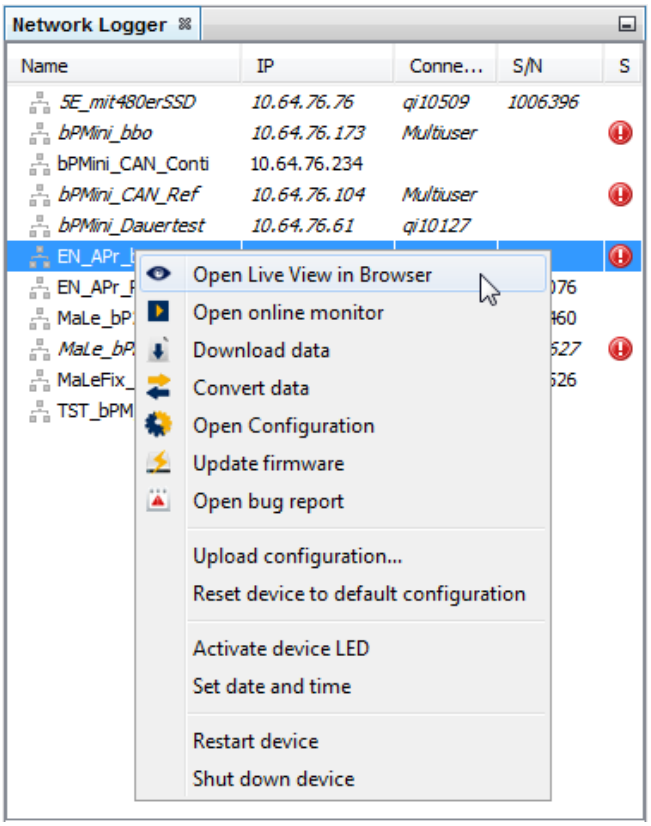


Figure 6.12: Context menu

6.4 The tab “Favorites”

The tab <Favorites> allows displaying saved offline data, configuration and bug reports.

At first the list is empty. To add an offline data set, click on the green **[+]** to select the needed data set. It is also possible to load the files per drag & drop. A double-click or the button **[Open selection]** allows to open entire tree files or .zip in the list.

The red **[-]** removes the selected entrees from the list.

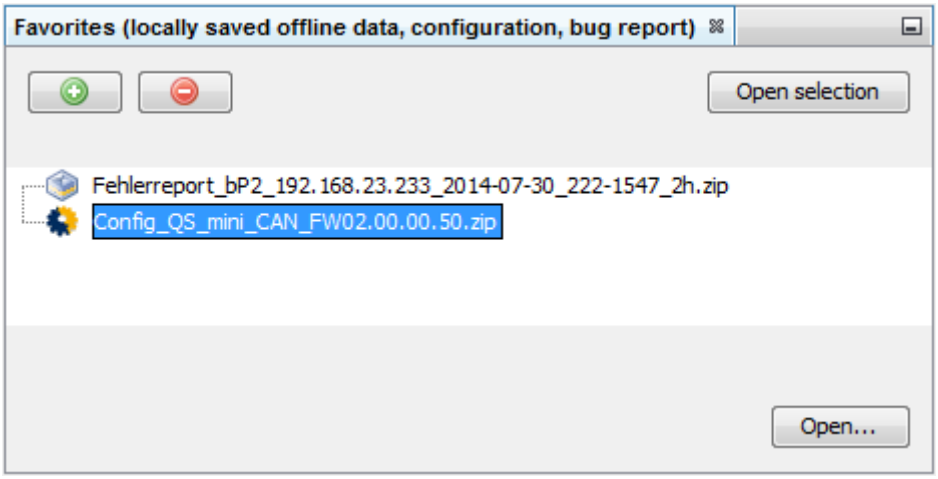


Figure 6.13: Tab “Favorites”

7 The application [Configuration]

This chapter describes the configuration of the logger by using the client.

7.1 Opening the application “Configuration”

In the tab <Network Logger> click a logger that is not already connected.

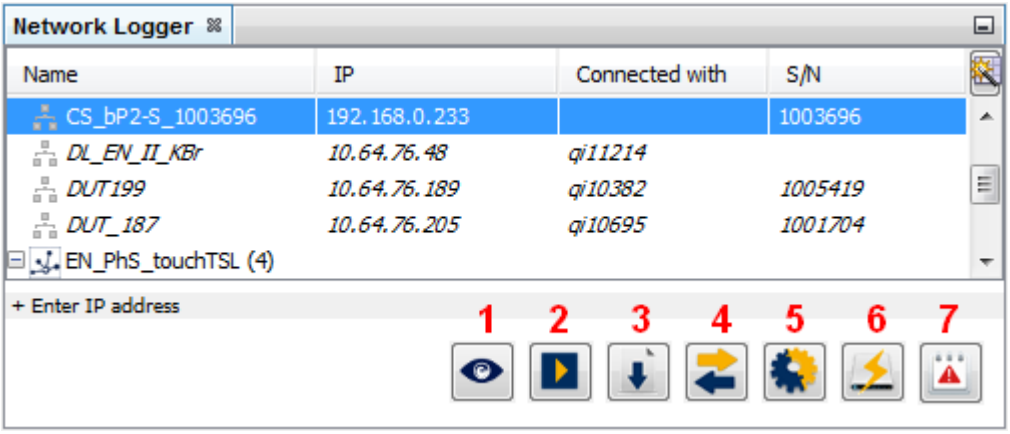


Figure 7.1: Selecting logger

Click on the application **[Open configuration]** **(5)**.

The tab <Configuration> is opening. The configuration tree is displayed in the main display area on the left.

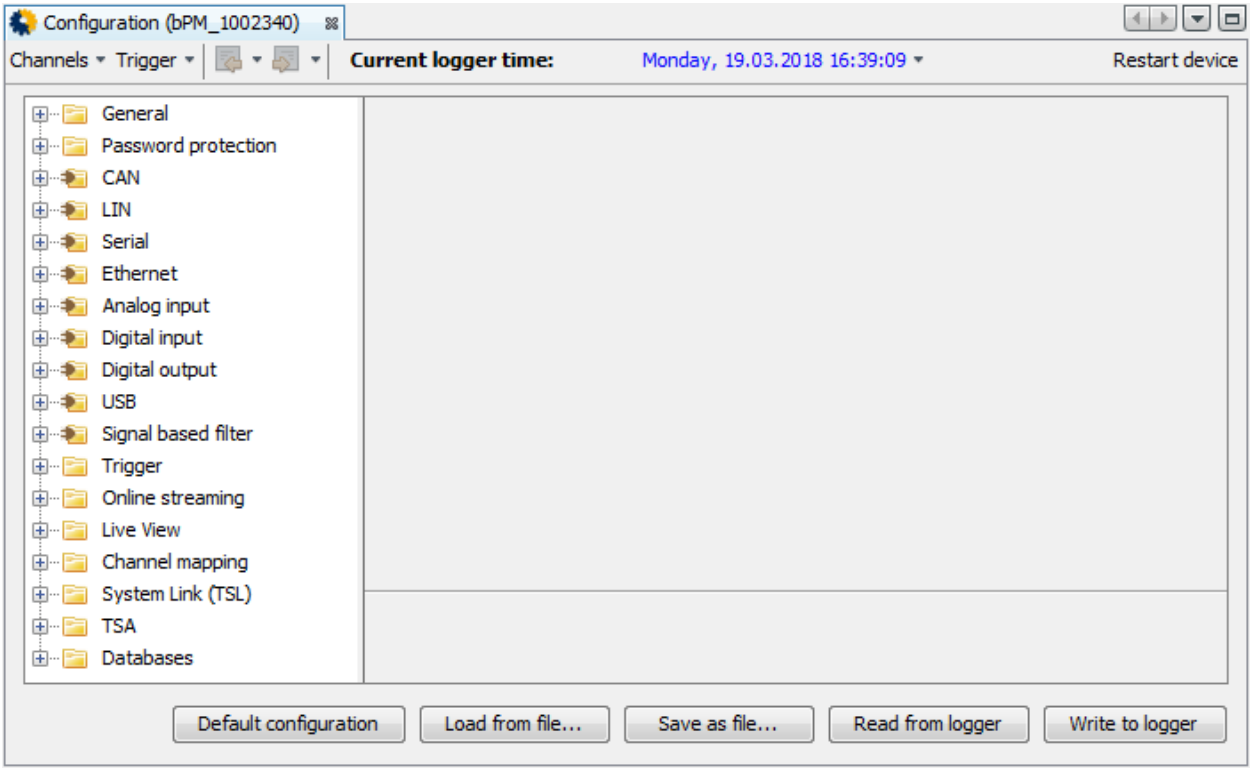


Figure 7.2: Tab “Configuration”

7.2 The tab “Configuration”

The toolbar at the top of the tab contains the following panels.

[Channels] activates or deactivates all logging channels. The channel settings are preserved.

[Trigger] enables or disables all triggers (exceptional the standard trigger by the **[Trigger]** button).

[Current logger time] shows the logger time. By clicking the arrow the logger time can be synchronized to PC time.

[Restart device] makes a restart of the data logger, for example to activate a configuration that needs a restart.

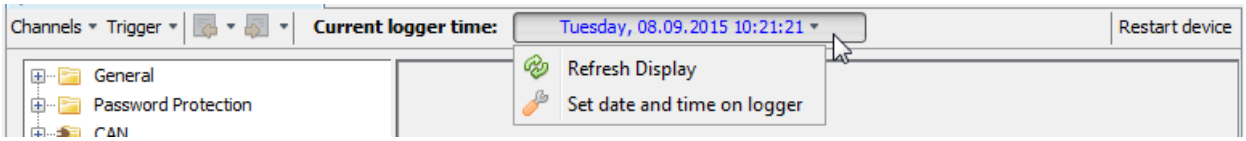


Figure 7.3: Toolbar in the tab “Configuration”

The button bar at the bottom of the tab contains the following buttons.

Button	Effect
Default configuration	resets all settings back to factory defaults Changes are only local! To apply changes on the device use the **[Write to logger]** button.
Load from file…	loads all settings from a file
Save as file…	saves all settings to a file
Read from logger	loads the most current settings from the device Any local changes will be lost!
Write to logger	writes all settings back to the data logger Changes are applied immediately. Exceptions are displayed by the client and the device can be restarted directly.

Table 7.1: Buttons in the tab “Configuration”

7.3 Loading and saving configuration

Loading and saving locally helps applying the same configuration to several data loggers. The following procedure explains how to do it.

8. Setup the desired configuration of one of the data loggers.
9. Save this configuration to a local file by clicking on the Button [Save as file…].
10. Choose the desired saving location.
11. Type in a file name.
12. Click the [Save] button.

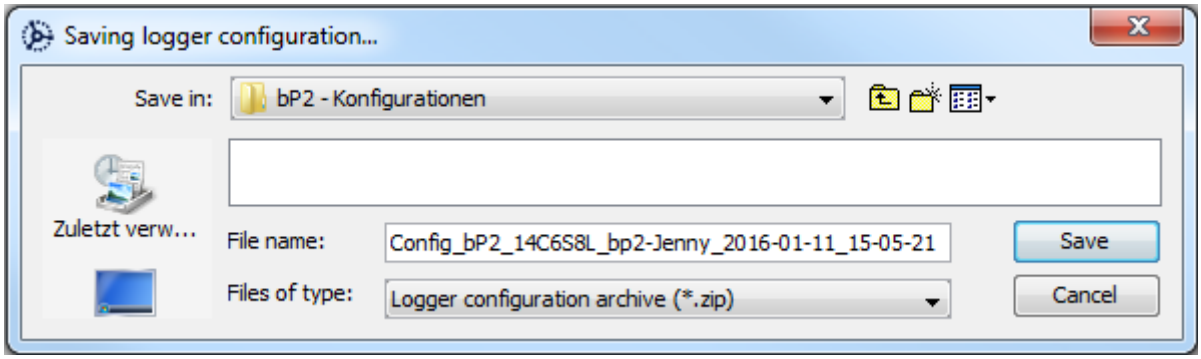


Figure 7.4: Saving configuration

13. For the remaining data loggers, load this file.

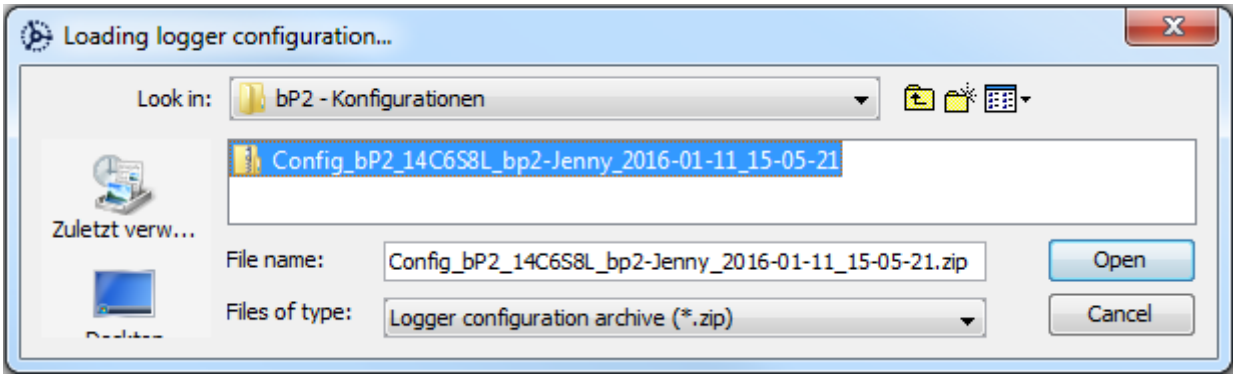


Figure 7.5: Loading configuration

14. Then apply the configuration to each selected device by clicking [Write to logger].

7.4 Changing date format

Under **[Tools]** → **[Options]** → **[General]** the format of the date could be changed. This is unique to the illustration at the user interface. After a reboot of the client, the modifications are assumed.

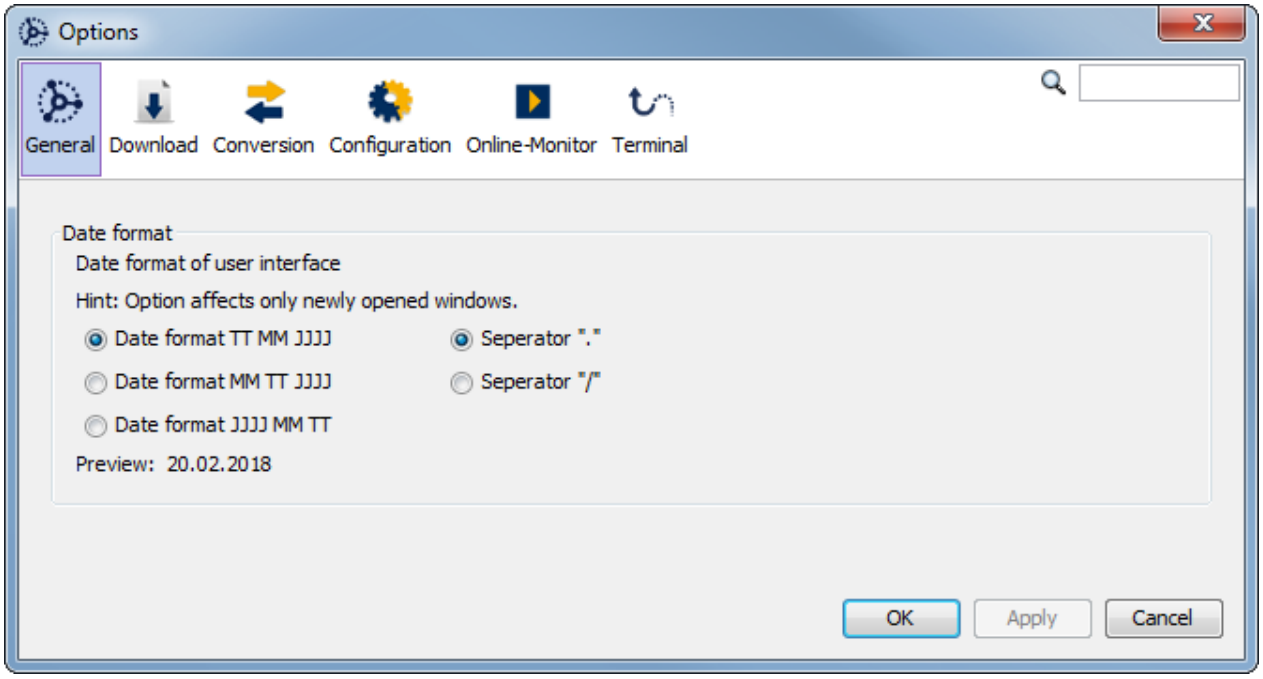


Figure 7.6: Changing date format

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8 The configuration tree

This chapter describes the configuration tree and all changeable parameters the user will be able to configure.

The configuration tree is split into **categories** with **sub categories**. Each category can be expanded by clicking on the **[+]** at the left.

Selecting one of the sub-categories will open the corresponding configuration form.

Note:
Any network changes have to be applied to the device by clicking on [Write to logger]. If changes are applied only after restart, the client will inform you and offers the direct restart.

8.1 General

The following sections describe the general settings of the data logger.

8.1.1 Name

Assign a name to the device. This name will be used in trace file names. The Name of configuration can be output on the display of logger (under Menu / Info).

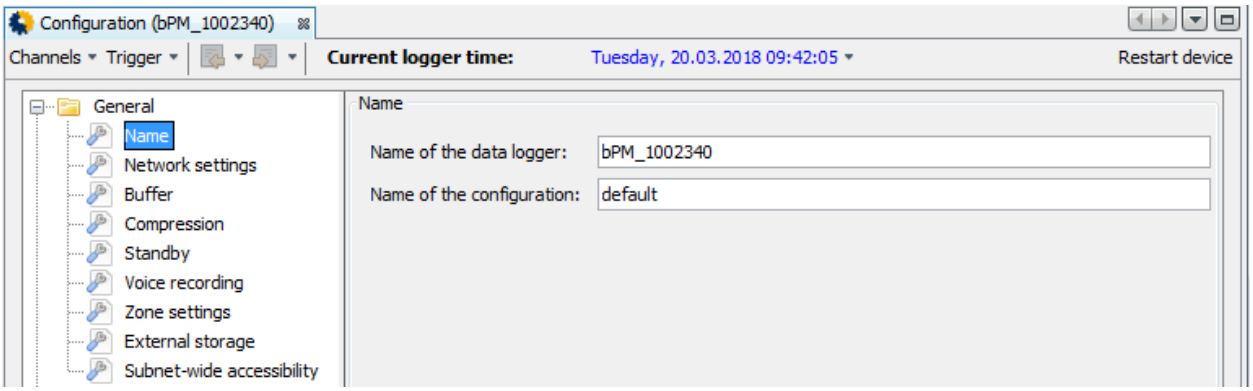

Figure 8.1: Configuration – General – Name

8.1.2 Network settings

Network settings can be modified at this point. Please read the descriptions carefully about the connection of the data logger to a network before modifying these settings.

Notice:
If “DHCP server” is selected as the <DHCP mode>, you can also modify the IP address and subnet mask of the logger. This is necessary, when the control unit is in the same subnet as the logger client interface.

There’s a explanations for each options in the configuration window.

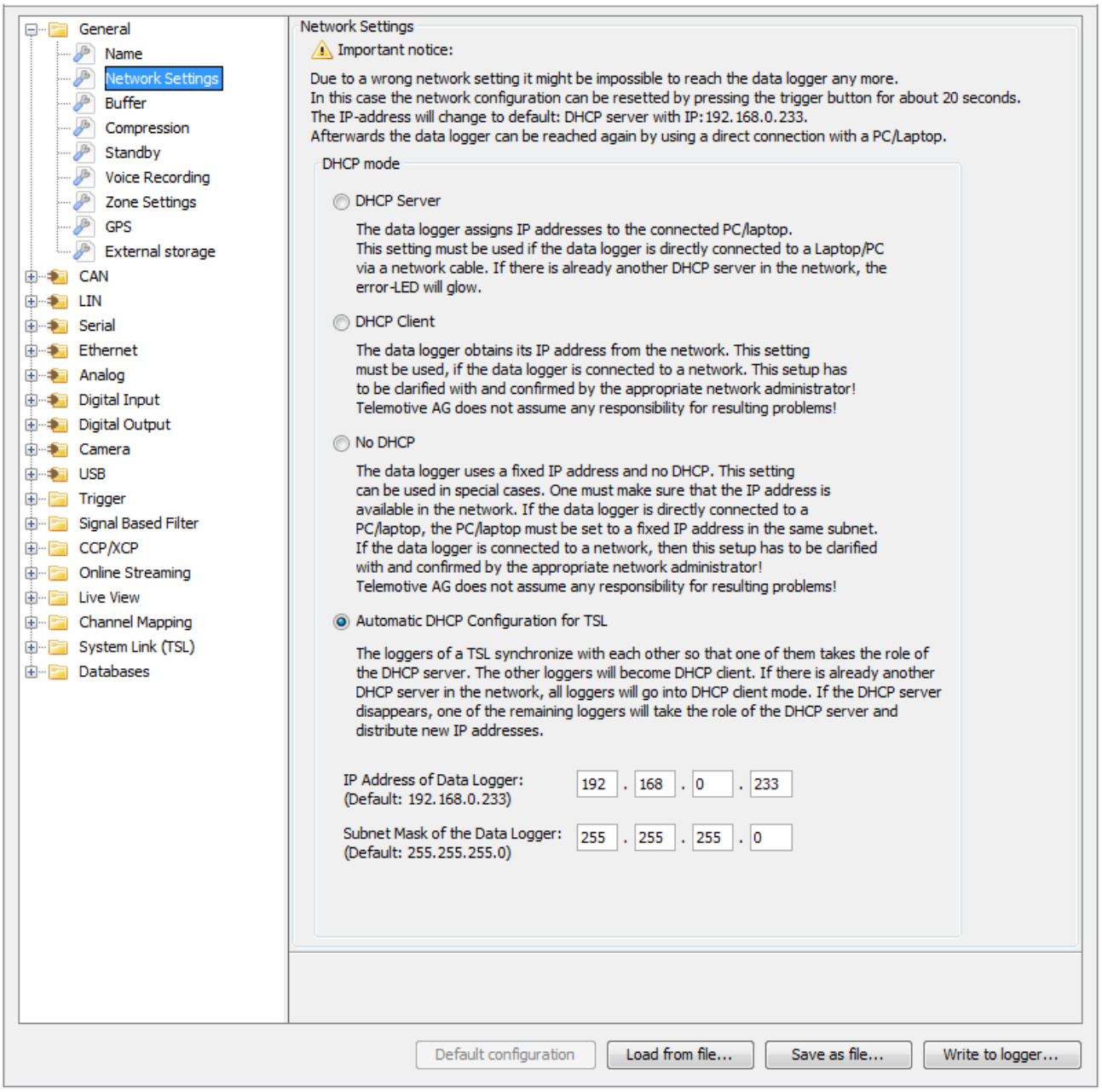

Figure 8.2: General – Network settings

8.1.2.1 Resetting network settings

Important note:
Due to a wrong network setting it might be impossible to reach the data logger any more. In this case the network configuration can be resetted by a long press on the [ON / Trigger] button (bP2 ca. 5 – 10 sec. during operation / bP Mini ca. 20 sec. during startup) to default settings: Automatic DHCP configuration (with IP 192.168.0.233).

After a reboot the data logger can be reached again by using a direct connection with a PC/Laptop.

8.1.3 Buffer

The Buffer option affects logger behavior when running out of disk space.

If the checkbox **Circular buffer mode for Internal Storage active** is enabled, the logger will stop logging additional data until the issue is resolved manually.

If the checkbox **Circular buffer mode for Internal Storage active** is enabled, the logger will automatically delete the oldest data as required and remain operational.

For removable media the circular buffer can be set separately.

If necessary, the startup data can be protected against overwriting.

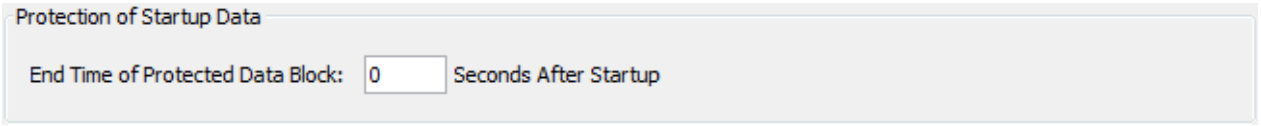

Figure 8.3: Protection of startup data

In **<Protection of marker data>** it is possible to delete the video data first. Data around a marker can be protected against being overwritten too.

The length of this data block around a marker can be specified below.
If a time is given as the data block end, and the data logger shuts down before this time, then the marker data protection ends with the shutdown of the data logger.

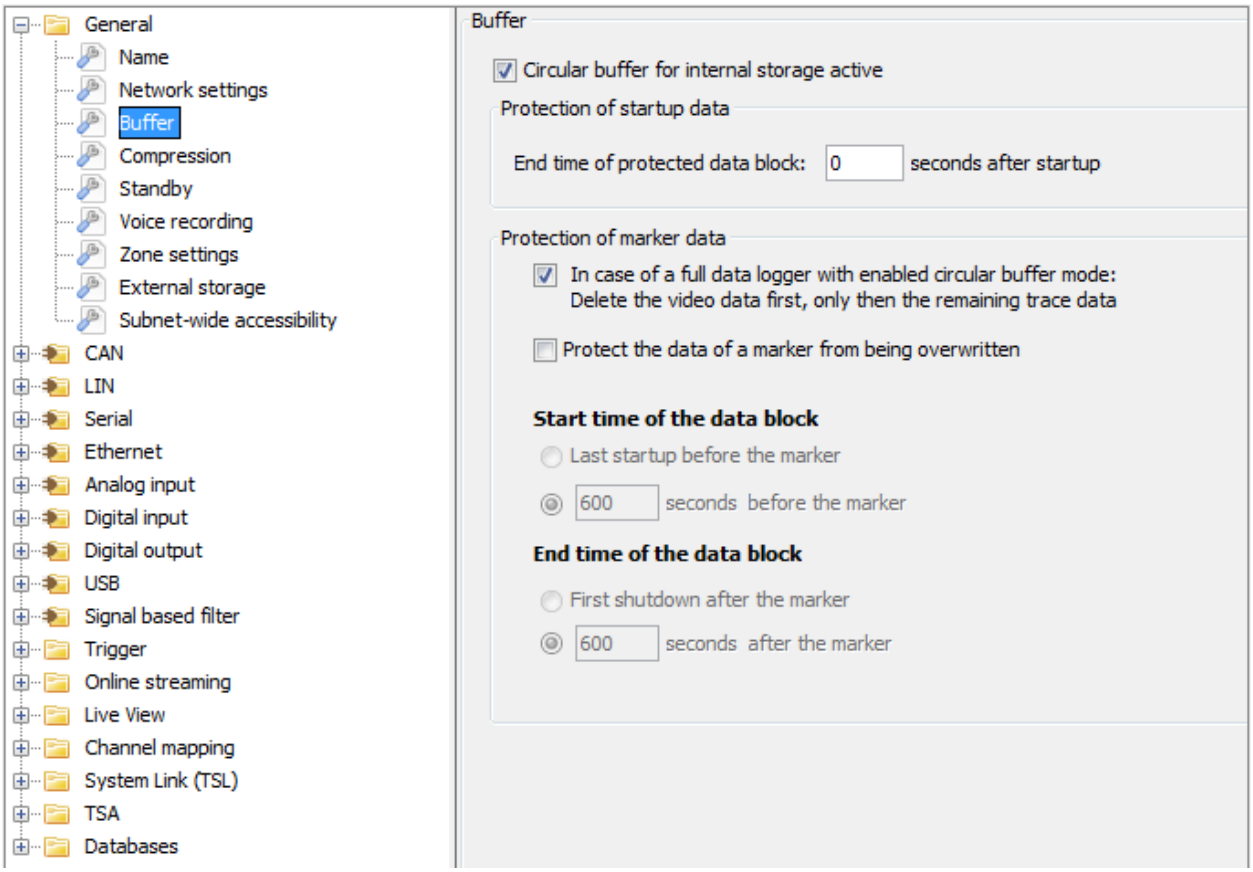

Figure 8.4: General – Buffer

Note:
Circular buffer for external storage is always enabled, if logging on removable media is on. In this case only the buffer for removable media can be switches on or off.

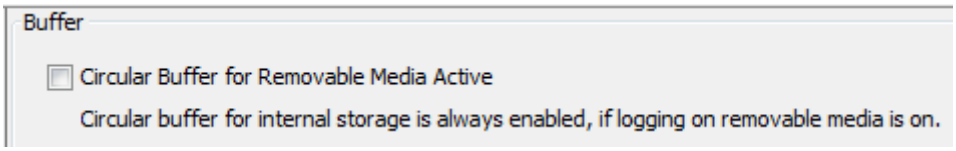

Figure 8.5: General – Buffer with enabled removable media

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8.1.4 Compression

Trace files can be compressed during recording on by activating the checkbox **Compress trace files during recording**. Additional the blue PiraT Mini has an internal compression algorytm which compresses all data which will be stored to the logger automatically.

If this compress mode is activated, the data logger switches automatically to the normal mode, if the traffic at the recorded busses is too high.

In this case, the trace data on the data logger are mixed in zipped and normal data. If you convert the data by the client, it has no effect.

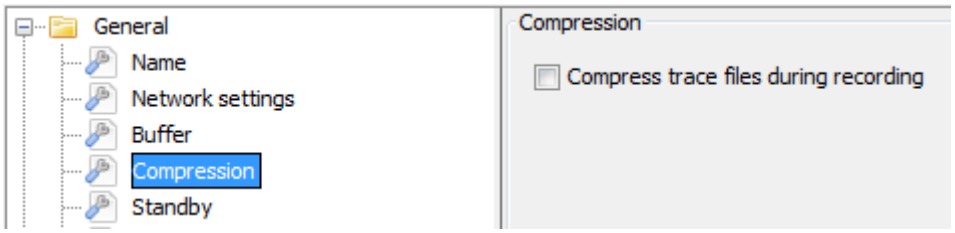


Figure 8.6: General – Compression

8.1.5 Standby

The Standby setting provides the setup of the shutdown condition of the data logger. It is possible to deactivate the automatic standby with **Deactivate automatic standby** but this must be done only if the logger is connected to a sufficient power supply.

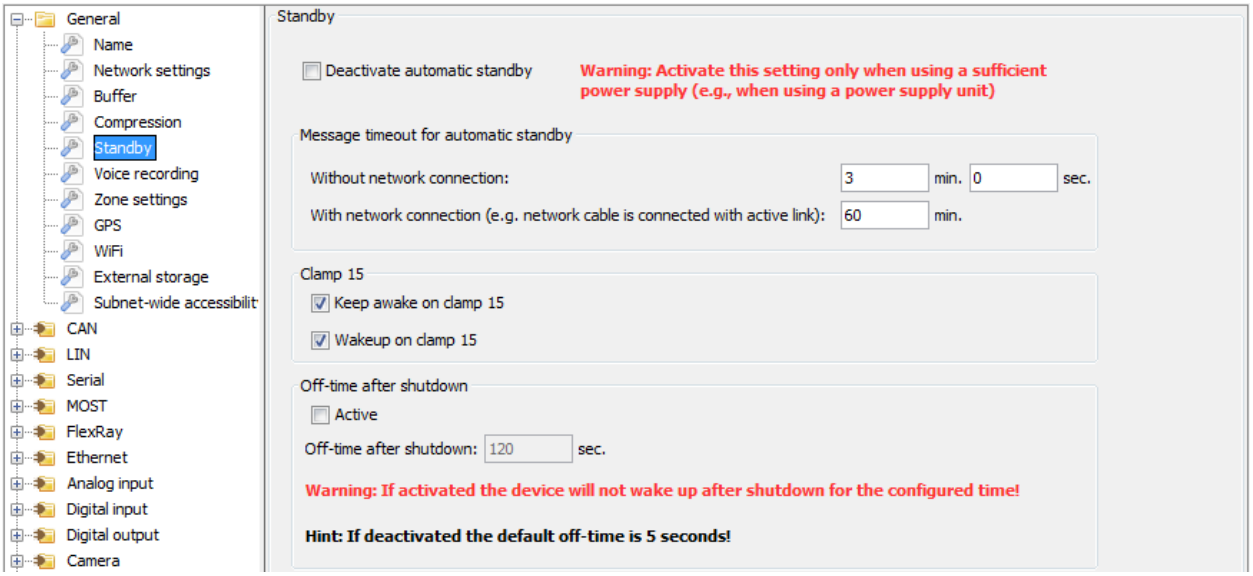
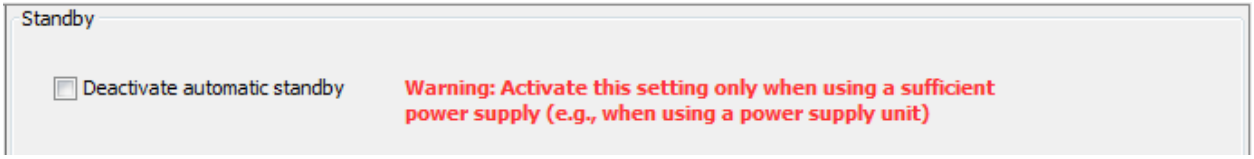


Figure 8.7: General – Standby



8.1.5.1 Message timeout for automatic standby

Without network connection

If the data logger is not connected to a network at the front Ethernet port and does not receive any data it shuts down and enters standby mode after the inserted time.

With network connection (e.g. connected network cable with active link)

If the data logger is connected to a network at the front Ethernet port with active link and does not receive any data during the timeout entered in the lower text field, then it shuts down and enters standby mode.

Hints:

1. **In both cases Ethernet interfaces which are used for the connection of a TSL cluster are not included!**
2. **If the Client is connected to the logger (e.g., during the configuration), the logger never enters the standby mode.**
3. **A TSL compound is handled as one device, so there are the same rules for the standby conditions.**

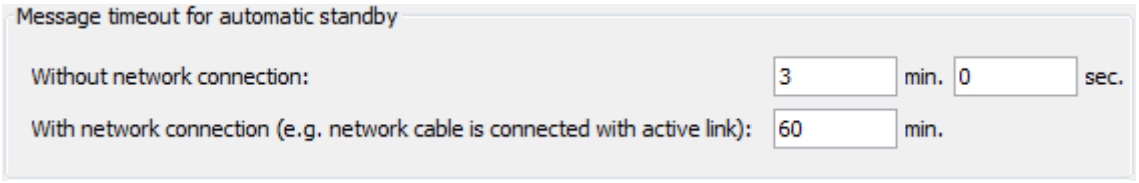


Figure 8.8: Automatic standby

8.1.5.2 Keep awake and wake on clamp 15

The options for keeping alive or wakeup the device on clamp 15 can be configured in the next step.

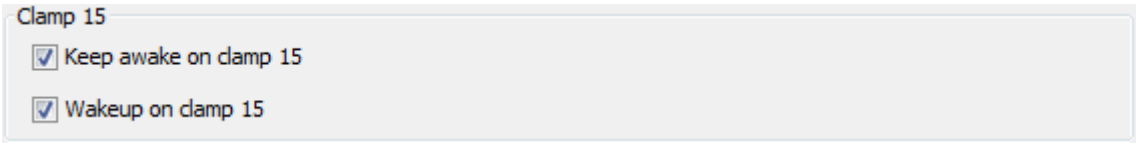


Figure 8.9: Keep awake an wake on clamp 15

8.1.5.3 Off-time after shutdown

When this option is active, the device or TSL cluster ist waiting for the given time bevore rebooting at every shutdown process.

This offers to shut down the devices ordinary before the current is switched off.

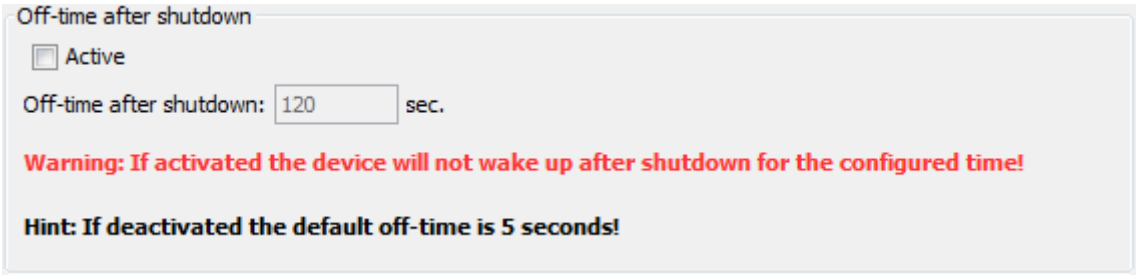


Figure 8.10: Off-time after shutdown

8.1.6 Voice recording

Voice recording settings allow adjusting the maximum length for each entry recorded by the **blue PiraT Remote** (bPR) as well as with the optional devices **Remote Control Voice** (RCV) and **Remote Control Touch** (RTC).

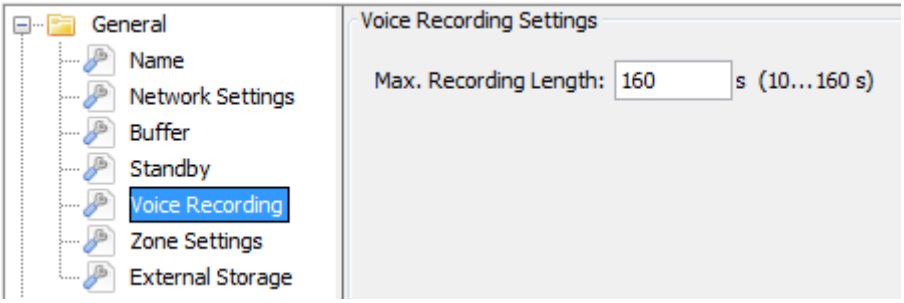


Figure 8.11: General – Voice recording Settings

8.1.7 Zone settings

After choosing **[Zone settings]** in the configuration tree, the settings regarding the internal clock of the data logger appear. These settings regard the time zone of the data logger and enabling the automatic daylight savings adjustment.

If the checkbox **Adjustment for daylight savings** is selected, the data logger automatically switches between summer and winter time, without the need to adjusting the clock manually.

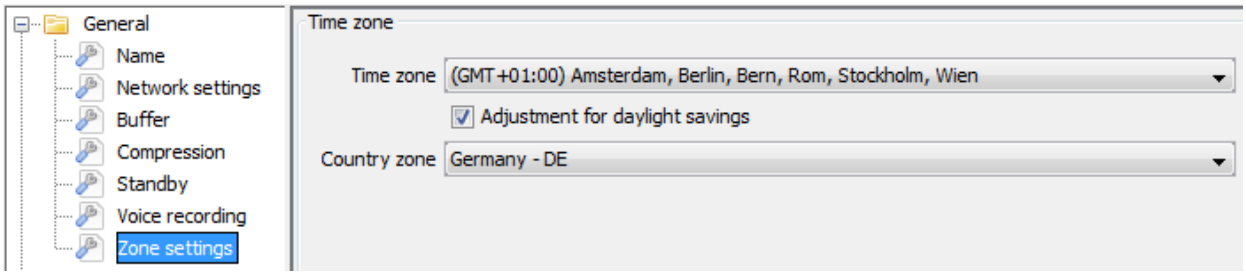


Figure 8.12: General – Zone settings

The time can be set in the client toolbar in every module.

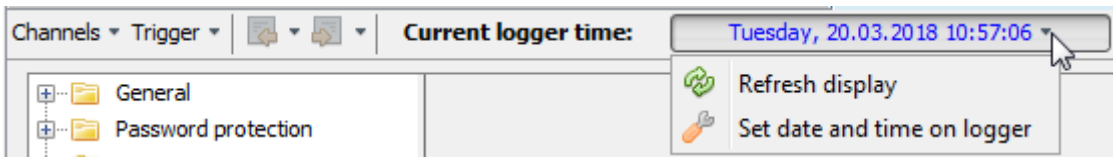


Figure 8.13: Current logger time on toolbar

Important note:
If you need to change the time zone of your computer system you MUST restart the TSC to take effect to these changing, e.g., for setting the time on the data logger.

The <Country zone> is ONLY needed if your logger has a Wi-Fi module.

By changing the <Country zone> you can set the frequency and transmission power which should be used in the country where you want to use the logger.

8.1.8 Parallel logging on External Storage

Parallel logging on External storage, offers the possibility of gathering and handing over the logged data after a test drive in an easy way without connecting the logger to a system and download the data by the client.

In this mode the tacedata will be saved internal on the logger first and when a block was saved completely it will be copied addidional to the external storage.

Supported Media
blue PiraT2 / 5E: CF card or USB Memory - (FAT32, NTFS or ext4)
blue PiraT Mini: SD card or USB Memory - (FAT32, NTFS or ext4)
blue PiraT Remote: SD card or USB Memory - (FAT32, NTFS or ext4)

Detailed information can be found in the User Guide of the used data logger.

Note:
MAGNA Telemotive GmbH recommends the testing of every removable media before using it in a measurement. We suggest that especially USB devices with USB 3.0 are sometimes not recognized by the system.

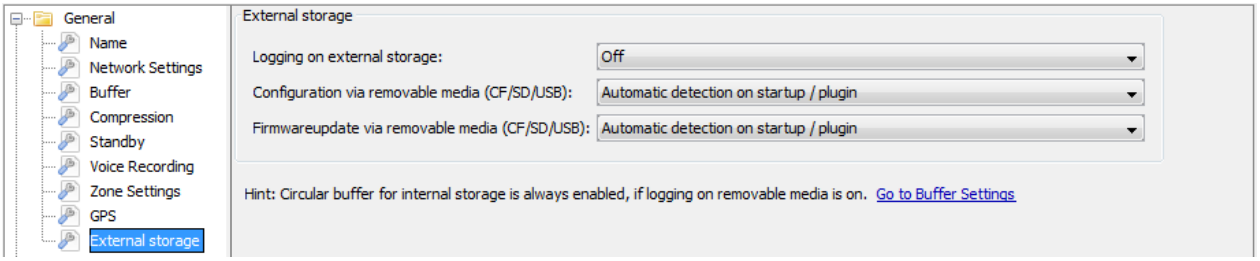
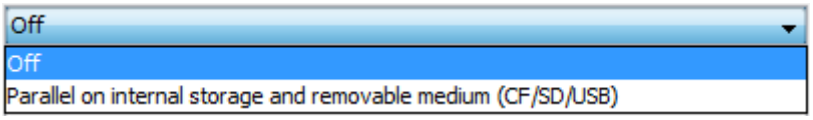


Figure 8.14: Configuration of External Storage

Additional to recording trace data on the internal hard disk only (default), you can select to record **[Parallel on internal storage and removable medium …]** at the first dropdown menu.



The removable medium can be plugged in during the start of the logger or while it's working.

If [Parallel on internal storage and removal medium …] is selected and the medium is identified, all data will be stored additional to the external storage.

Selecting the active mode is only possible via the client. If the recording mode is selected, recording starts immediately after identification of the first storage medium. If two media are plugged in at power on, the CF/SD card is preferred prior to USB media.

A selection of the medium by using the configuration is not possible – the first plugged storage medium it is always active. For activating the other medium, you have to remove both media and plug in the second medium again.

Attention:
To prevent data loss the External Storage should only be removed in the idle state of the logger.

Note:
While using Parallel logging to External storage the trace files will be stored to the internal storage first and when a trace block is closed and saved internal it additional will be copied to the removable media.

8.1.8.1 Configuration via Removable Media

To configure the logger via a configuration file on an external storage, a folder named *__configuration__* must be created on the external storagein the root directory. In this folder the zipped configuration file has to be saved. It's only allowed to have one configuration in this folder.

The menu item **[Configuration via Removable Media]** offers four or three options, depending on the used device:

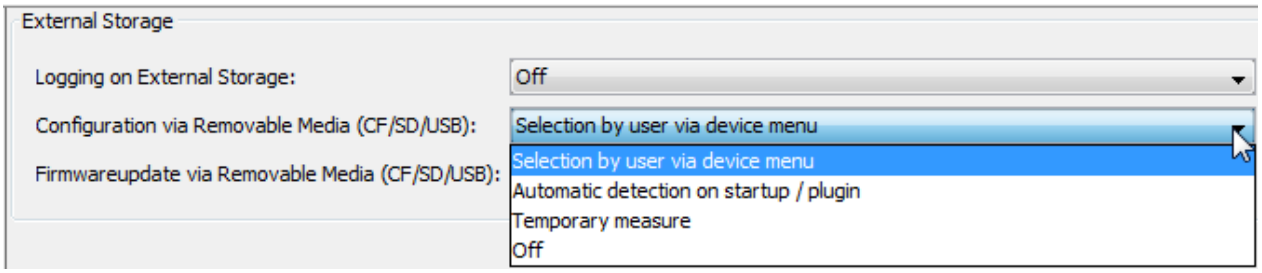


Figure 8.15: Configuration via Removable Media

Selection by user via device menu
This selection (only available for blue PiraT2 /5E) allows to use the configuration by using the display menu of the logger. You'll find a detailed description in the manual of blue PiraT2

Automatic detection on startup / plugin
After the startup or while the device is running, the configuration will be updated when the medium is plugged in and prepared correctly.

Temporaty measure
The configuration from the removable medium will be copied to the logger and used until the logger restarts or was shut down.

- ⇨ Setting a new configuration and flashing a firmware to the logger are disabled when [Temporary measure] is active!

Off
This setting deactivates the option **[Comfiguration via Removable Media…]**

8.1.8.2 Firmwareupdate via Removable Media

To use the option **[Firmwareupdate via Removable Media]** there must be a folder called ***update*** in the root directory of the external storage. Then you have to copy the firmware file into this folder. It must be only one firmware package in this folder. This firmware must have a higher or lower version number as the installed one. A firmware package with the same version will be ignored.

The menu item **[Firmwareupdate via Removable Media]** offers three or two options, depending on the used device:

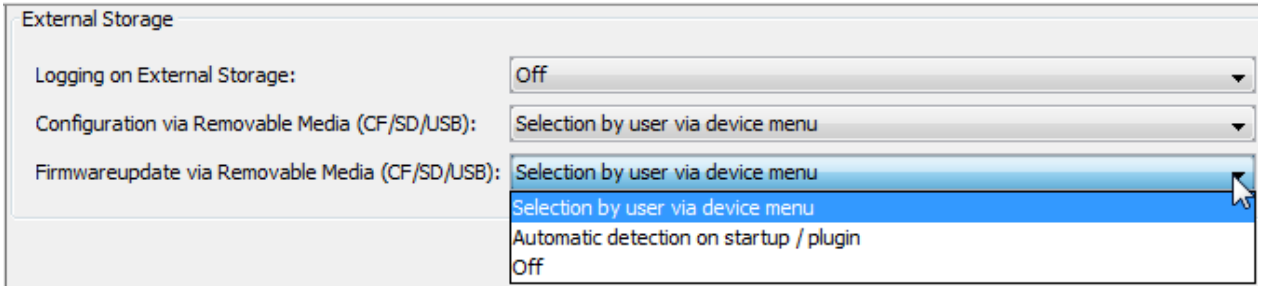


Figure 8.16: Configuration via Removable Media

Selection by user via device menu
This selection (only available for blue PiraT2 /5E) allows to perform the firmwareupdate by using the display menu of the logger. You'll find a detailed description in the manual of blue PiraT2.

Automatic detection on startup / plugin
After the startup or while the device is running, the firmware will be updated when the medium is plugged in and prepared correctly.

Off
This setting deactivates the option **[Firmwareupdate via Removable Media]**.

Note:
When a valid folder for configuration as well as one for firmware update exists, the firmware will be flashed at first and afterwards the configuration will be transferred.

8.1.8.3 Stopping Parallel logging

There are several possibilities for stopping parallel logging:

Shutting down the device
Shutting down the devive will close all active trace files which will be saved to the device as well as to the removable media.

After that the media can be pulled out.

Pulling out the media
At blue PiraT2 / 5E it must happen by using the option [5] Memory Device => [5] Safely remove ext. Mem on the display.

If the External Storage is removed while the logger is just working, data loss may happen probably!

When a valid External Storage with data is connected with a computer system it can be used like an offline data set.

8.1.9 Subnet-wide accessibility

This option allows the client to communicate with a device which is in another subnet.

Note: Because of the logger has to contact the cliet at first, please enter the IP address of the client into the field.

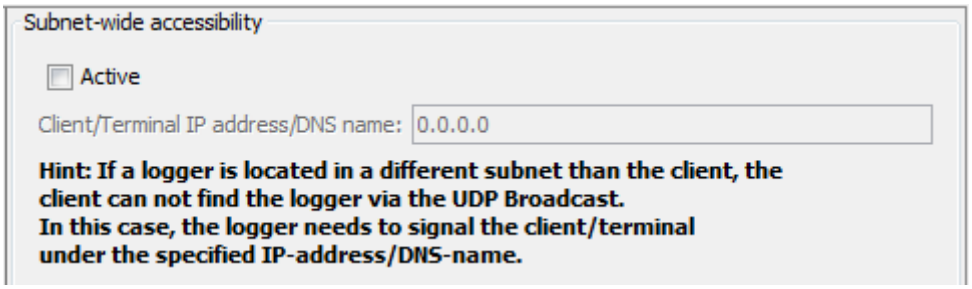


Figure 8.17: Subnet-wide accessibility

Attention: Please be sure that the communication between different subnets is allowed in your network switch and not blocked by a firewall on your system.

8.2 Password Protection

The **[Password Protection]** gives the customer the possibility to protect selected functions of the logger to be sure that these settings can't be modified by unauthorized persons.

Note:
The password protection can be configured for a single logger only. It is not possible to configure it for a complete TSL-network.

You can create user who are only able to change defined settings.

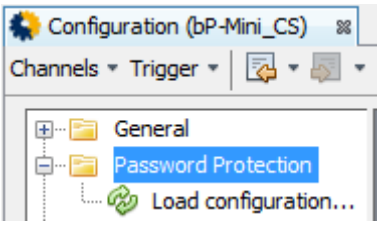


Figure 8.18: Password Protection

These functions can be protected:

- Set date and time
- Delete data
- Reset marker counter
- Change password protection
- Change configuration (without password)
- Change configuration (Signal based filters only)
- Uploading Wine DLLs (seed & Key only)
- Resetting to default configuration
- Update firmware
- Deleting or installing licenses

Functions that just read from the logger like data download and Live View can't be restricted.

At blue PiraT2 these functions are protected to be modified by the rotary knob on the front side too.

The existing administrator with the user name "admin" can't be deleted and basically possesses all permissions.

Note:
The default password for the administrator is "admin" and should be changed at the first usage.

The Administrator can create user / accounts and give them different rights for configuring the data logger.

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8.2.1 Activating password protection

To activate the password protection please open the folder **[Password Protection]** and click on **[Load configuration…]**.

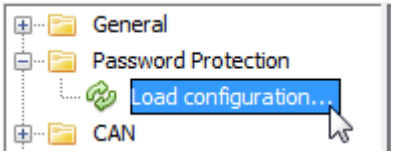

Figure 8.19: Password Protection – Load configuration…

By activating the checkbox **[x] Password Protection Active** at the sub-category **[General]** the feature will be enabled.

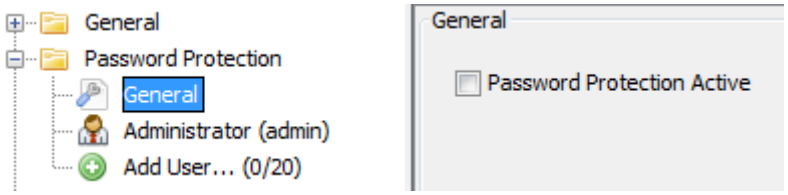

Figure 8.20: Password Protection – General

At first you should change the password for the administrator at the sub-category **[Administrator (admin)]**. By clicking the button **[Change Password…]** a new window is opening where you can set the new password. Enter the new password in both text fields to confirm it and click **[OK].**

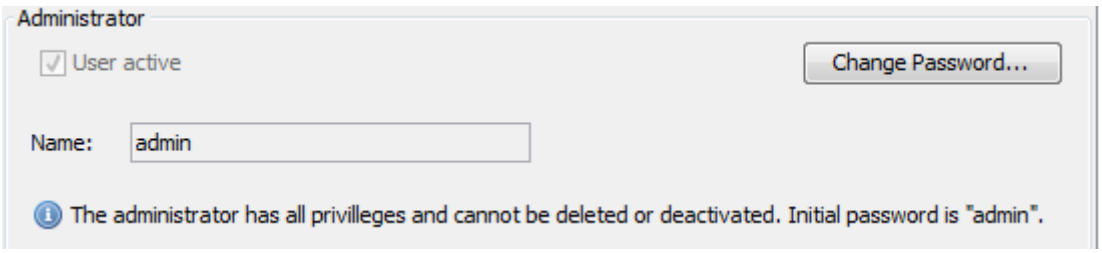

Figure 8.21: Configuration – Password Protection – Administrator (admin)

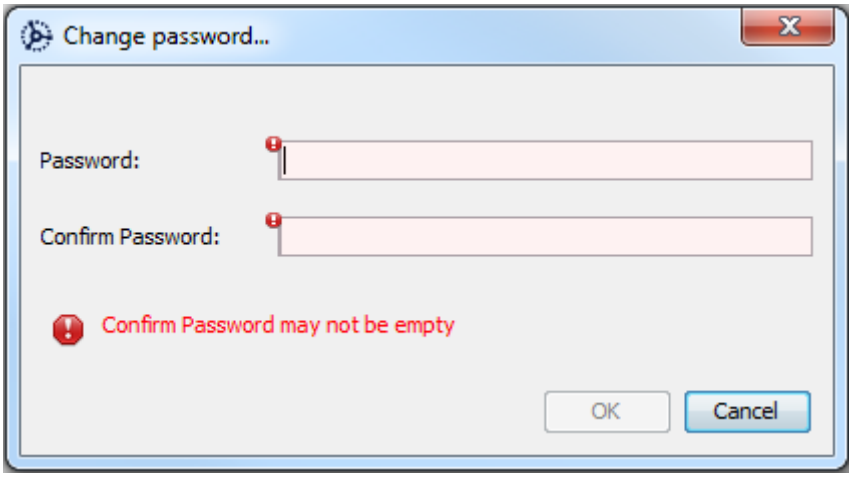

Figure 8.22: Changing password

8.2.2 Adding new user

The administrator can create up to 20 additional users and give them the needed rights. The number at the end shows how many users are created yet.

Click on **[Add User… (…/20)]**. A new dialog will be opened.

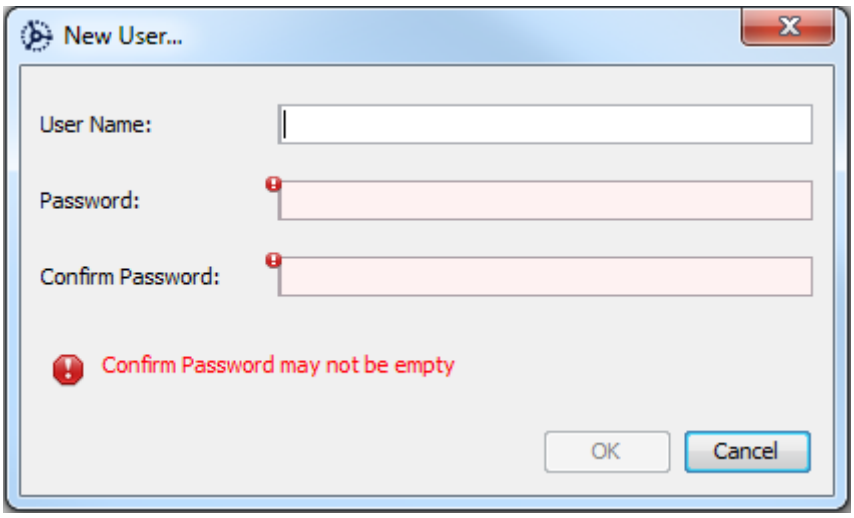

Figure 8.23: Password Protection – Add User…

The username must be unique and can't be used more than once. The password confirmation will be checked and by clicking **[OK]** the new user is applied.

On the user settings side the user can be configured. In this window the user as well can be activated, deactivated, renamed or his password can be changed.

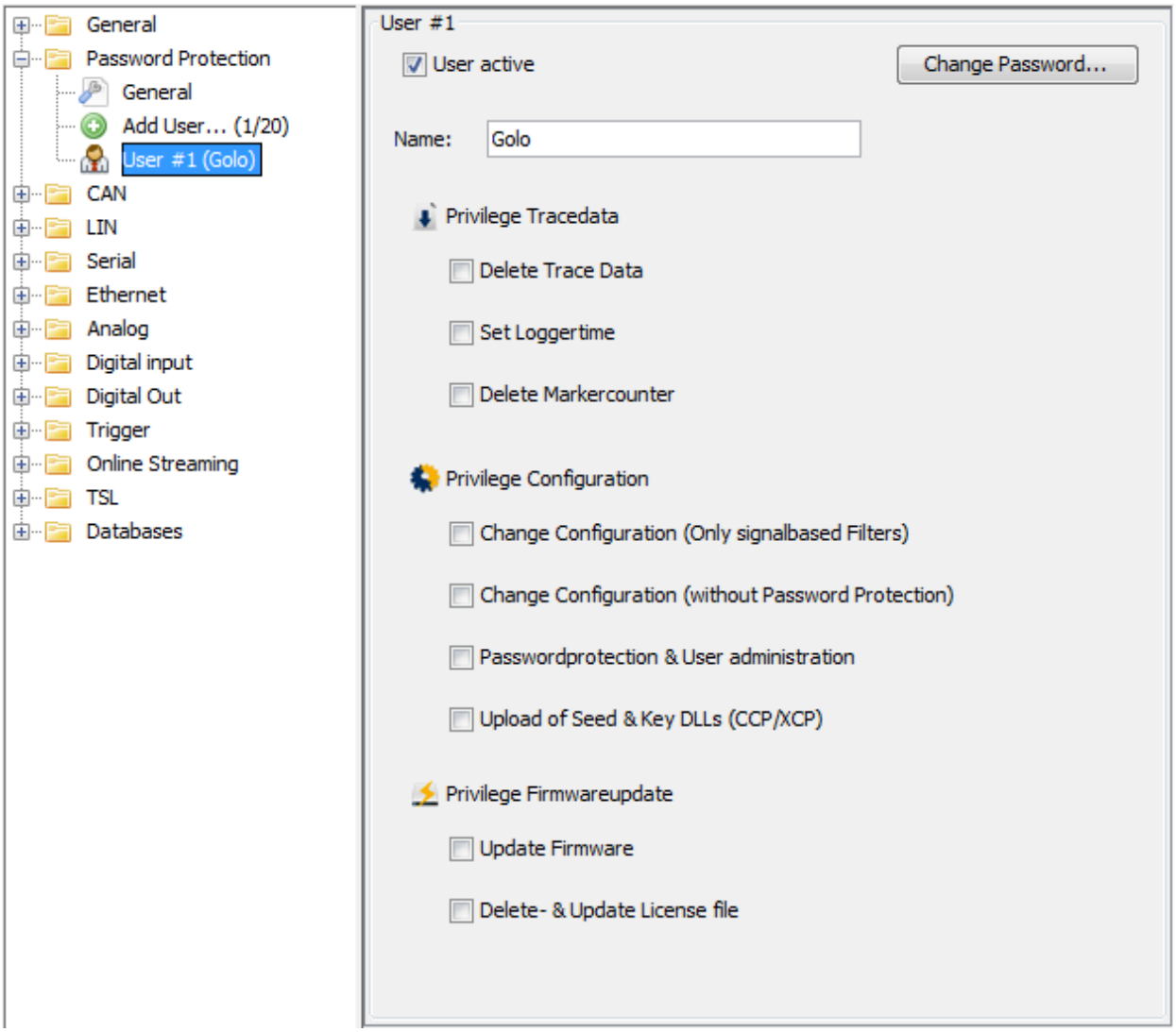

Figure 8.24: Password Protection – User

The password protection takes effect when data should be sent or loaded from the logger. The request will be stopped and a confirmation window for login will be shown.

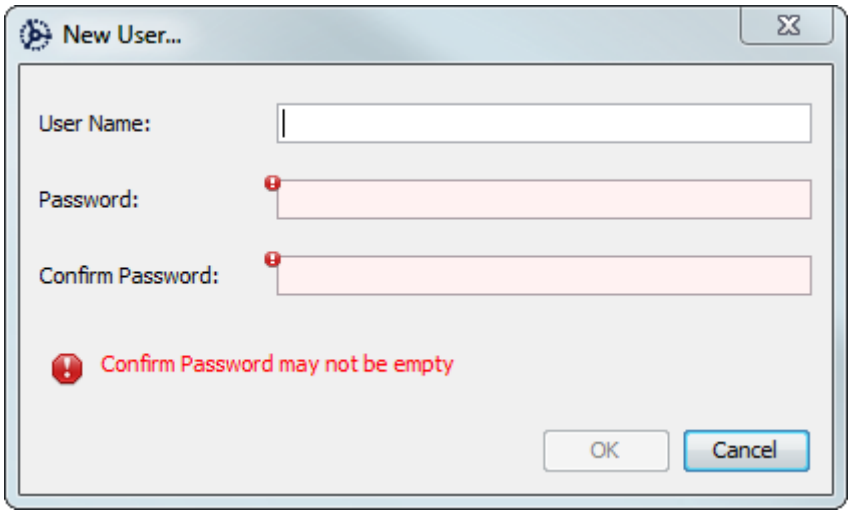

Figure 8.25: Device login

When the user has not the right to do this operation he gets an error message.

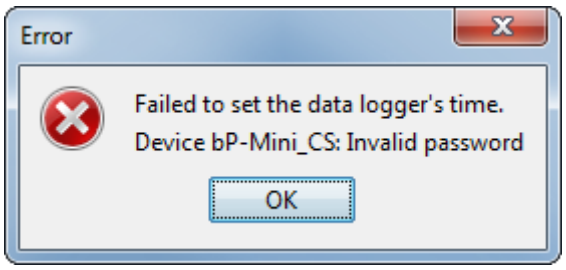

Figure 8.26: Error message due to lack of authorization

When the user has the right for this operation the operation will continue without error.

8.2.3 Visibility of the sub-categories of Password Protection

When the configuration of the logger is called the next time, only the folder **[Password Protection]** and the sub-category **[Load configuration…]** is shown.

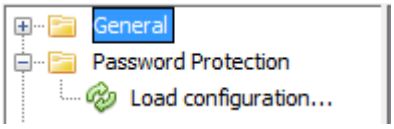

Figure 8.27: Password Protection not visible

After loading the password configuration the whole **[Password Protection]** is visible, if the current use has the right to see this point.

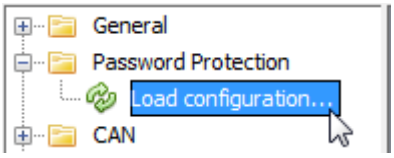

Figure 8.28: Load configuration

Figure 8.29: Password Protection visible

8.2.4 The userlist

When new users are created you'll see an overview of the existing users and their rights by clicking on **[Password Protection]**.

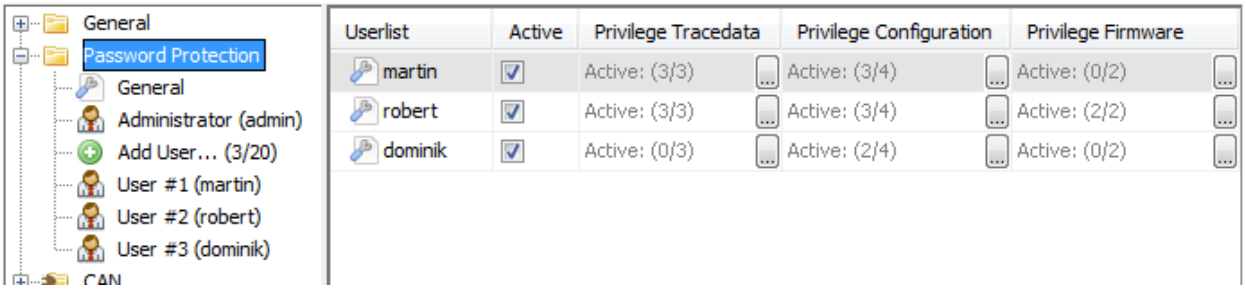

Figure 8.30: Password Protection: Userlist

In this overview all the privileges can be easy modified with the … buttons at the "Privilege …" columns, when the current user has the right to do that.

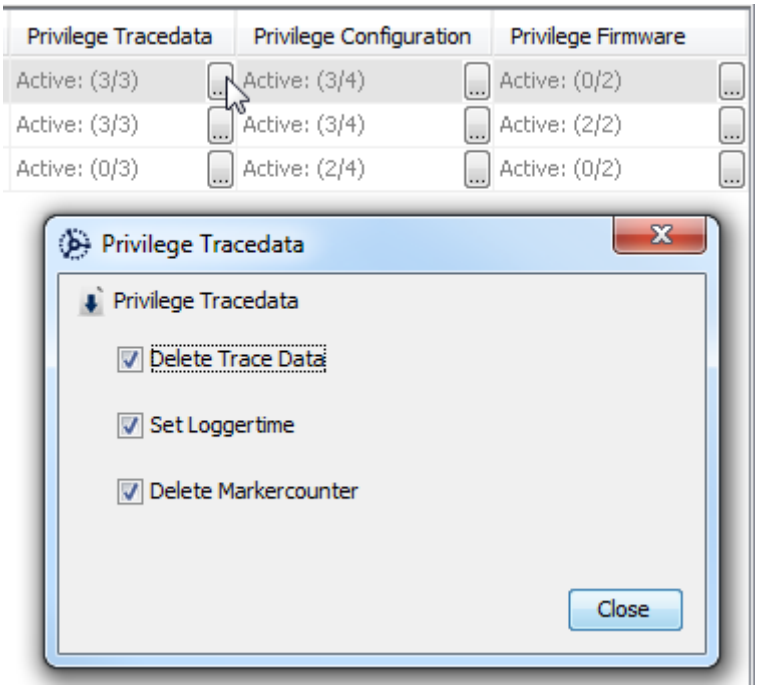

Figure 8.31: Changing users privileges

8.3 General settings of the further ports

Some settings are common to more than one bus or feature. This section will provide an overview for these settings.

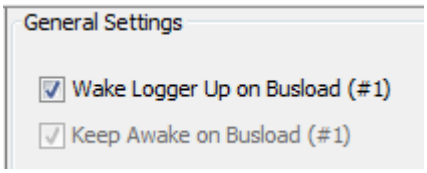

Figure 8.32: General settings – Wakeup system

This setting affects one or several (the affected channels are listed in brackets) channels and, if checked, allows the channel(s) to wake the system from standby mode.

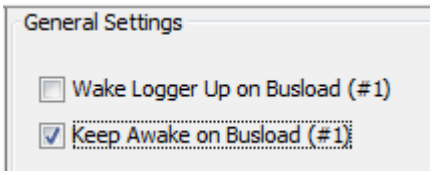

Figure 8.33: General settings – Keep awake on busload

This setting has an effect on one or more channels. The respective channels are listed in brackets. If "Keep awake at bus load" is activated, the logger remains awake as long as data is received on the relevant bus and is not set to standby mode.

Keep awake on busload (…) is only available if **Wakeup system (…)** is enabled.

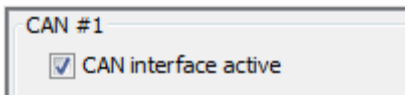

Figure 8.34: *port* – *port* interface active

Unchecking this setting disables the channel completely. It will not be logged or considered for standby checks (wakeup, keep awake).

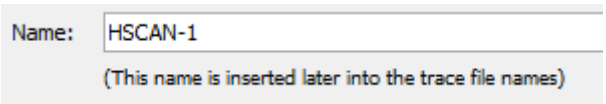

Figure 8.35: *port* – Name

This setting assigns a name to the channel. This name will be used in log files to easily identify the channel.

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8.4 CAN

CAN settings are accessible by opening the **[CAN]** folder. In the right window you see an overview of all channels and can modify some general settings of the CAN bus.

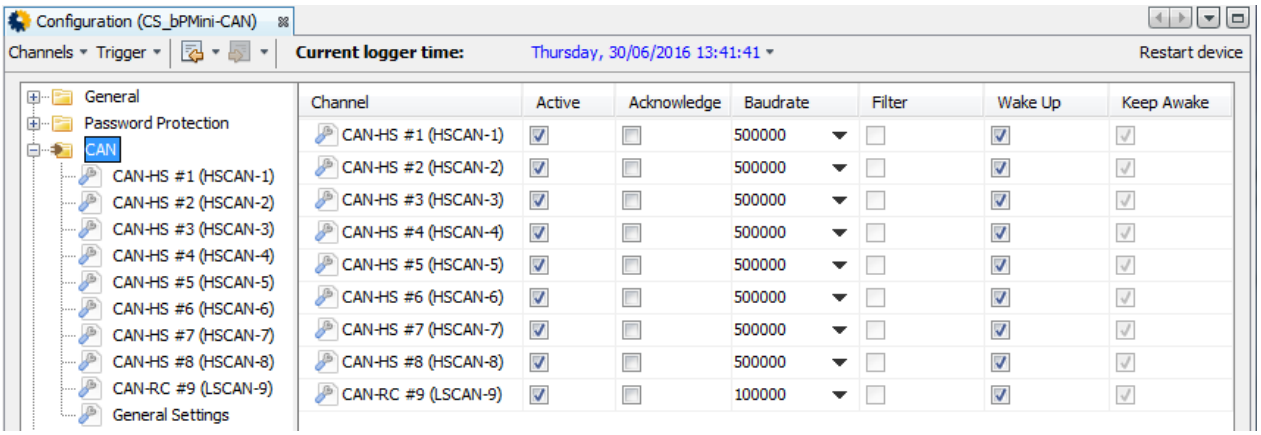


Figure 8.36: CAN: channel overview

8.4.1 CAN-HS/-LS

All CAN interfaces are listed in the configuration tree. Selecting an interface will open its configuration form.

Each CAN interface, High Speed CAN (CAN-HS) or Low Speed CAN (CAN-LS), can be activated or deactivated separately.

The checkbox **Acknowledge ON** must be activated for CAN channels which are used to send CAN messages, e.g. when you need this function for complex triggers.

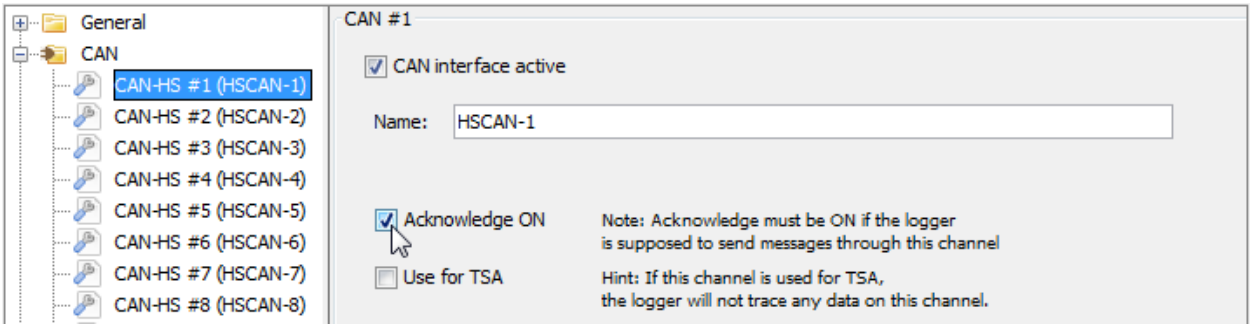


Figure 8.37: CAN-HS #...

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

8.4.2 CAN - Timing

The **[Timing]** can be configured by specifying the baud rate or by configuring directly the chip parameters.

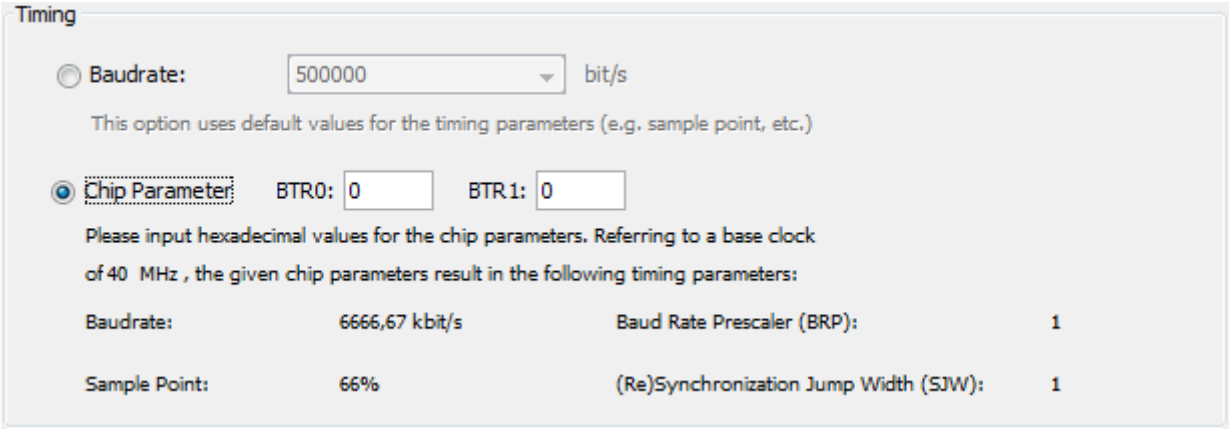
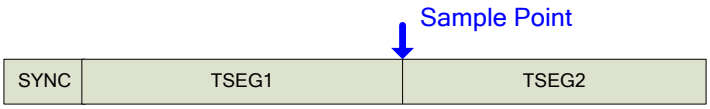


Figure 8.38: CAN-HS #... <Timing>

The chip parameters are given by two Bytes.



BTR1							
7	6	5	4	3	2	1	0
0	TSEG2			TSEG1			

BTR0							
7	6	5	4	3	2	1	0
SJW		BRP					

Parameter	Range	Bedeutung
BRP	0…63	Baud rate prescaler The base clock is divided by 2 * (BRP + 1), resulting in the base unit for the timing, the so-called “time quantum” TQ
TSEG1	2…15	(TSEG1 + 1) is the number of TQs before the sample point
TSEG2	1…7	(TSEG2 + 1) is the number of TQs after the sample point
SJW	0…3	(Re-)Synchronization Jump Width Adjust the bit time by maximum (SJW + 1)

Table 8.1: CAN-Bit-Timing-Parameter

8.4.3 CAN - Filter

The <CAN Filter> allows to reduce the amount of recorded data. It can be activated or deactivated with the checkbox.

Figure 8.39: CAN-HS #... <CAN Filter>

In the database settings databases for CAN signals can be configured or CAN signals added by their ID.
The list contains all CAN message identifiers (in hexadecimal format) that can be recorded (message IDs which are not listed will be ignored).
If a CAN database is provided the associated message name is shown for each ID.

Clicking on **[Add message…]** opens the following dialog.

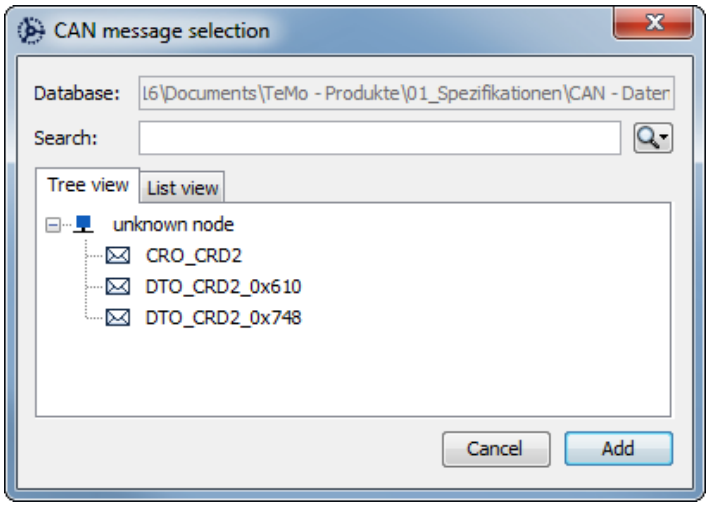


Figure 8.40: Adding a CAN message

The database is the one selected in the database settings (see section 8.13). A click on the branches of the tree and then **[Add]** closes the dialog and the message appears in the list.

To remove a message from the list, select the message and click **[Remove message(s)]**.

8.4.4 CAN-FD

For CAN FD the baud rate for the payload can be set separately. When the client detects a CAN FD logger, this option is shown automatically. In this option CAN FD can be activated and deactivated too.

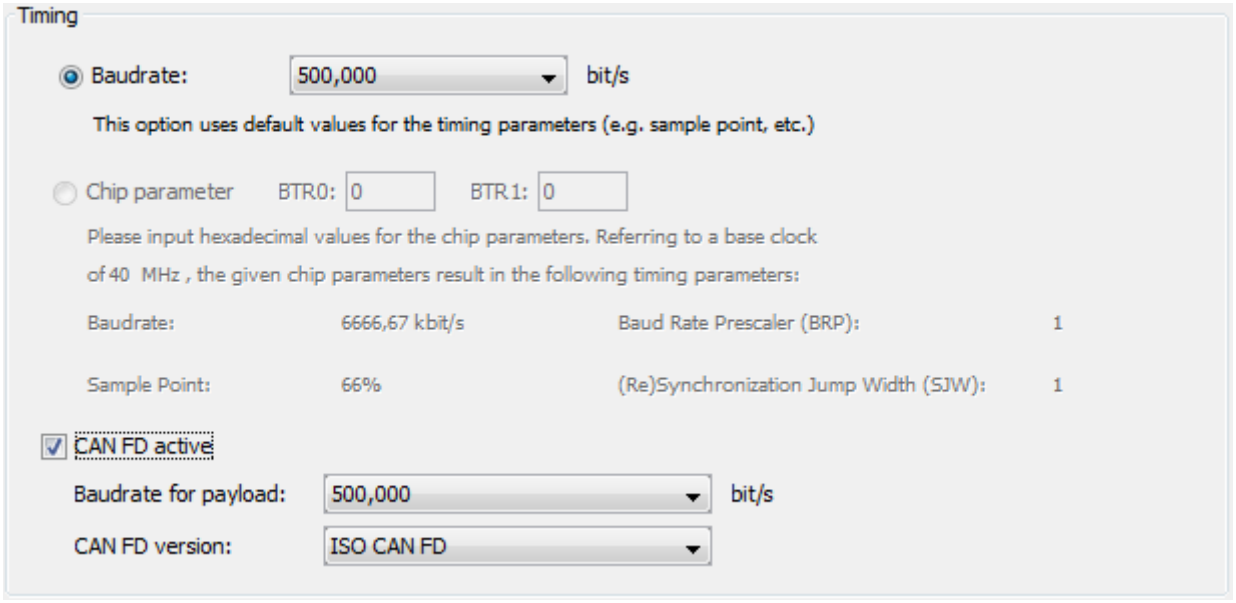


Figure 8.41: CAN FD – baud rate for payload

In opposite to CAN-HS, in the overview of CAN-FD two additional columns are implemented, in which FD can be activated or deactivated as well as the data baud rate of the payload can be configured.

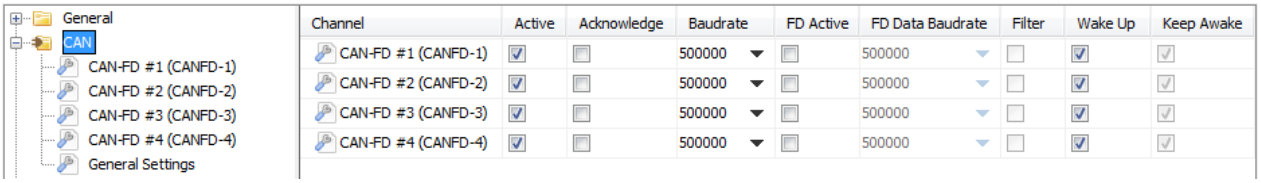


Figure 8.42: CAN-FD: channel overview

On the configuration page for every channel this settings as well as the settings for the CAN FD version are available too:

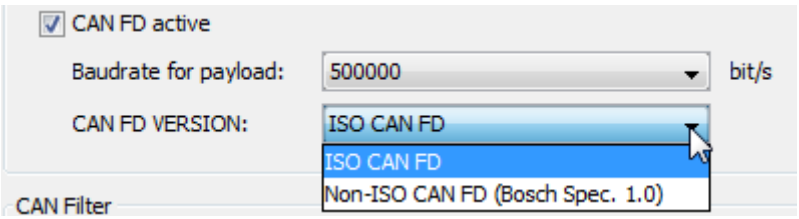


Figure 8.43: CAN-FD: Special settings

Attention: CAN FD must be activated to use it, otherwise the interface works as HS-CAN only!

8.4.5 CAN - General settings

The general settings for CAN are separated into High Speed (HS) and Low Speed (LS) interfaces. Both general configuration pages allow setup of standby behavior. At blue PiraT2 some channels are combined and can't be set separately as at blue PiraT2 5E and blue PiraT Mini wher you can set every single channel.

More about general settings see section 8.3.

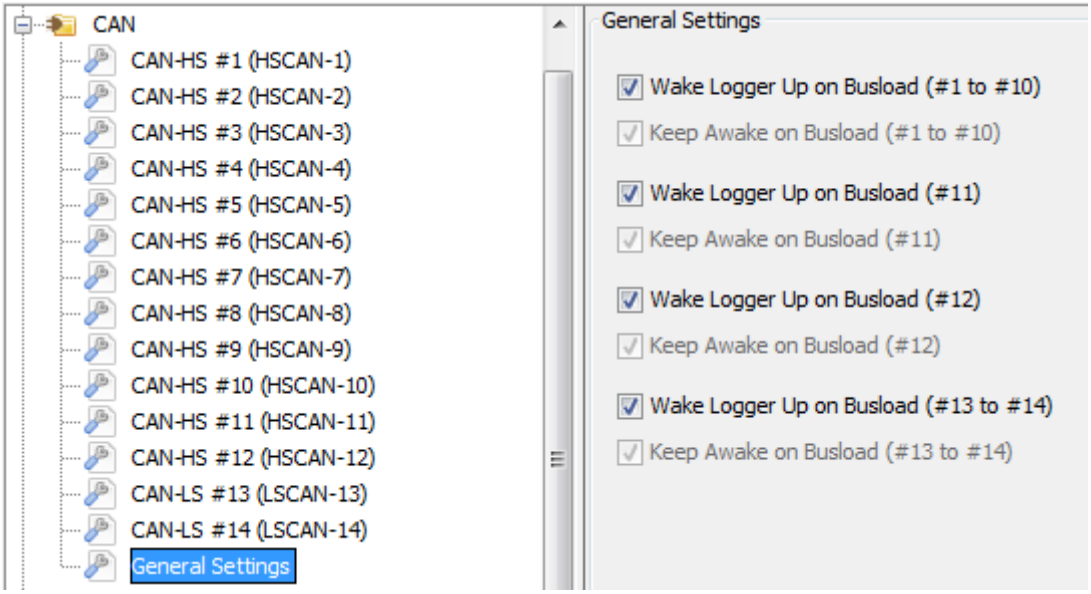


Figure 8.44:CAN – General settings

8.5 LIN

LIN settings are accessible by opening the **[LIN]** folder. In the right window you see an overview of all channels and can modify some general settings of the LIN bus.

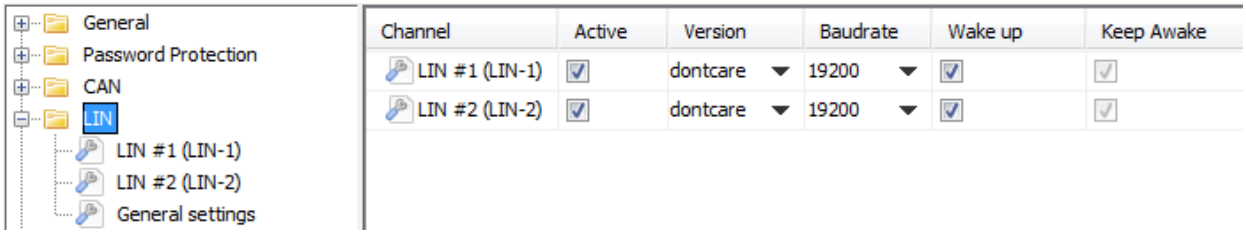


Figure 8.45: LIN: Channel (overview)

8.5.1 LIN

All LIN interfaces are listed in the configuration tree. Selecting an interface will open its configuration form.

Each LIN interface can be activated or deactivated separately.

The following parameters must be set:

<Baudrate>	Set the baud rate of your LIN interface.
<Version>	Version 1.3, 2.0 and 2.1 are available.
<Sample-Position>	Select the sample position.

(The LIN bus is sampled with a rate which is 16 x higher than the baud rate. The sample position defines which bit will be used for interpretation, see LIN buss spec.)

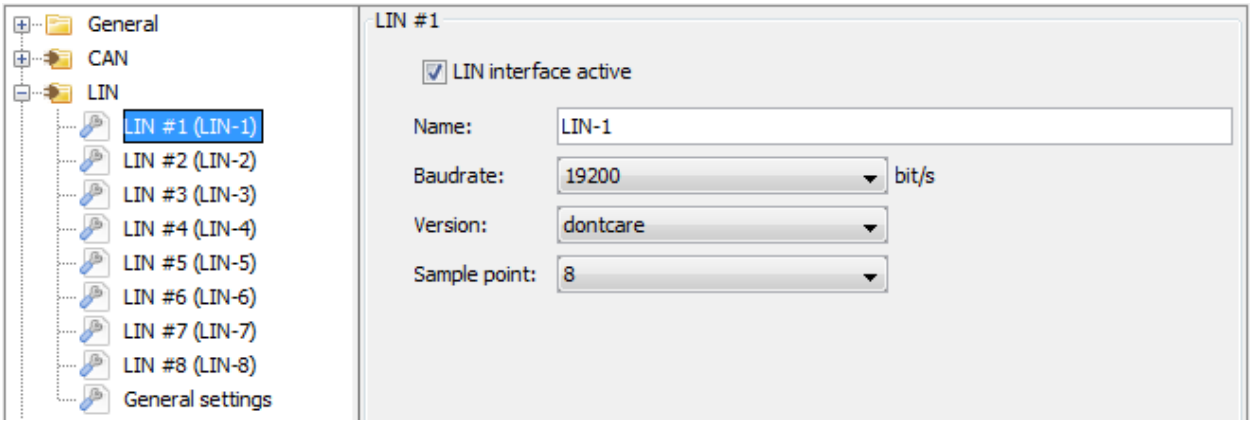


Figure 8.46: LIN #...

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

The blue PiraT Mini 20 LIN has ne special LIN interface (LIN #20 ISO), which needs a separate power supply. This power connectors are part of the cable set.

To be sure that this point will not be ignored, a hint is implemented into the System Client.

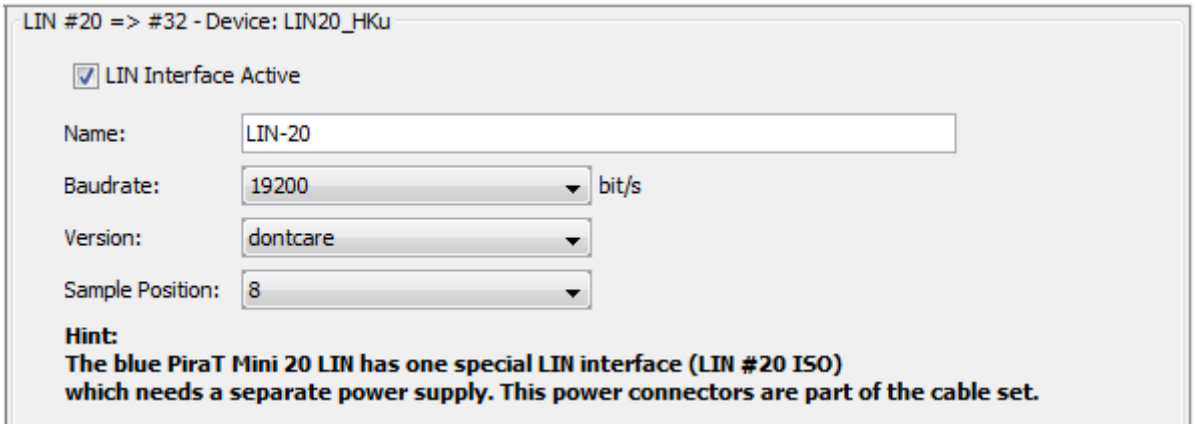


Figure 8.47: LIN #20 at blue PiraT 20 LIN

8.5.2 LIN - General settings

More about general settings see section 8.3.

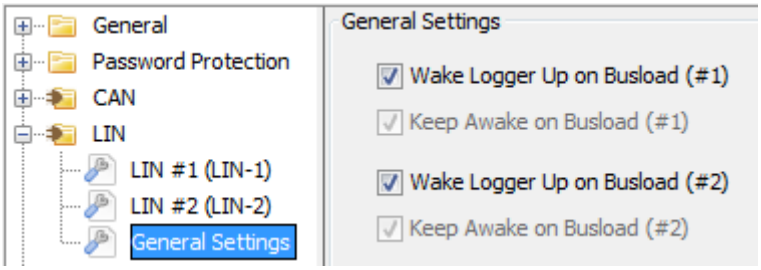


Figure 8.48: LIN – General settings

8.6 Serial

Serial settings are accessible by opening the **[Serial]** folder. In the right window you see an overview of all channels and can modify some general settings of the serial bus.

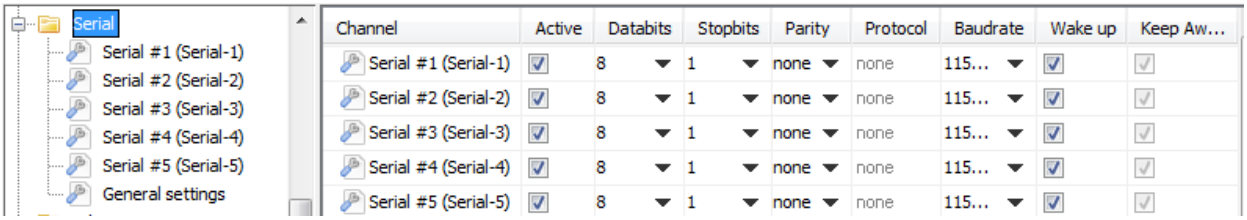


Figure 8.49: Serial: Channel (overview)

8.6.1 Serial

All serial interfaces are listed in the configuration tree. Selecting an interface will open its configuration form.

Each serial interface can be activated or deactivated separately.

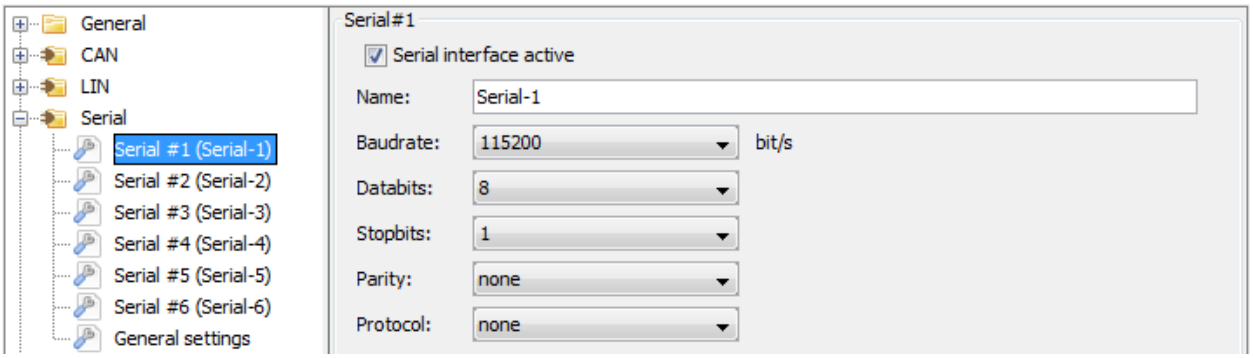


Figure 8.50: Serial #...

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

Baudrate, Databits, Stopbits and Parity are configuring the interface.

8.6.1.1 Serial protocols

Protocols as DLT, GNLog and TraceClient can be configured for serial interfaces too.

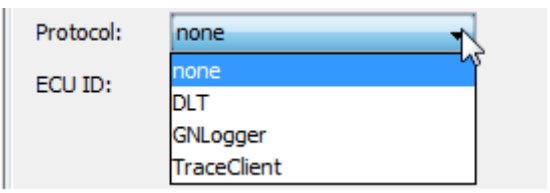


Figure 8.51: Configuring protocols for serial interfaces

8.6.2 Serial - General settings

More about general settings see section 8.3.

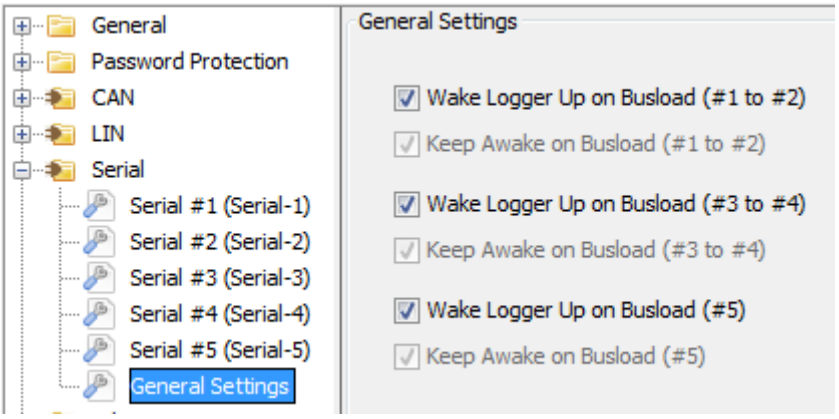


Figure 8.52: Serial – General settings

8.7 MOST

8.7.1 MOST

MOST settings allow setup of standby behavior, basic channel configuration (see section 8.3), and MOST specific settings.

These MOST specific settings may vary based on the version of MOST (25/150) used.

These options can place limits on message length or filter specific messages based on addresses.

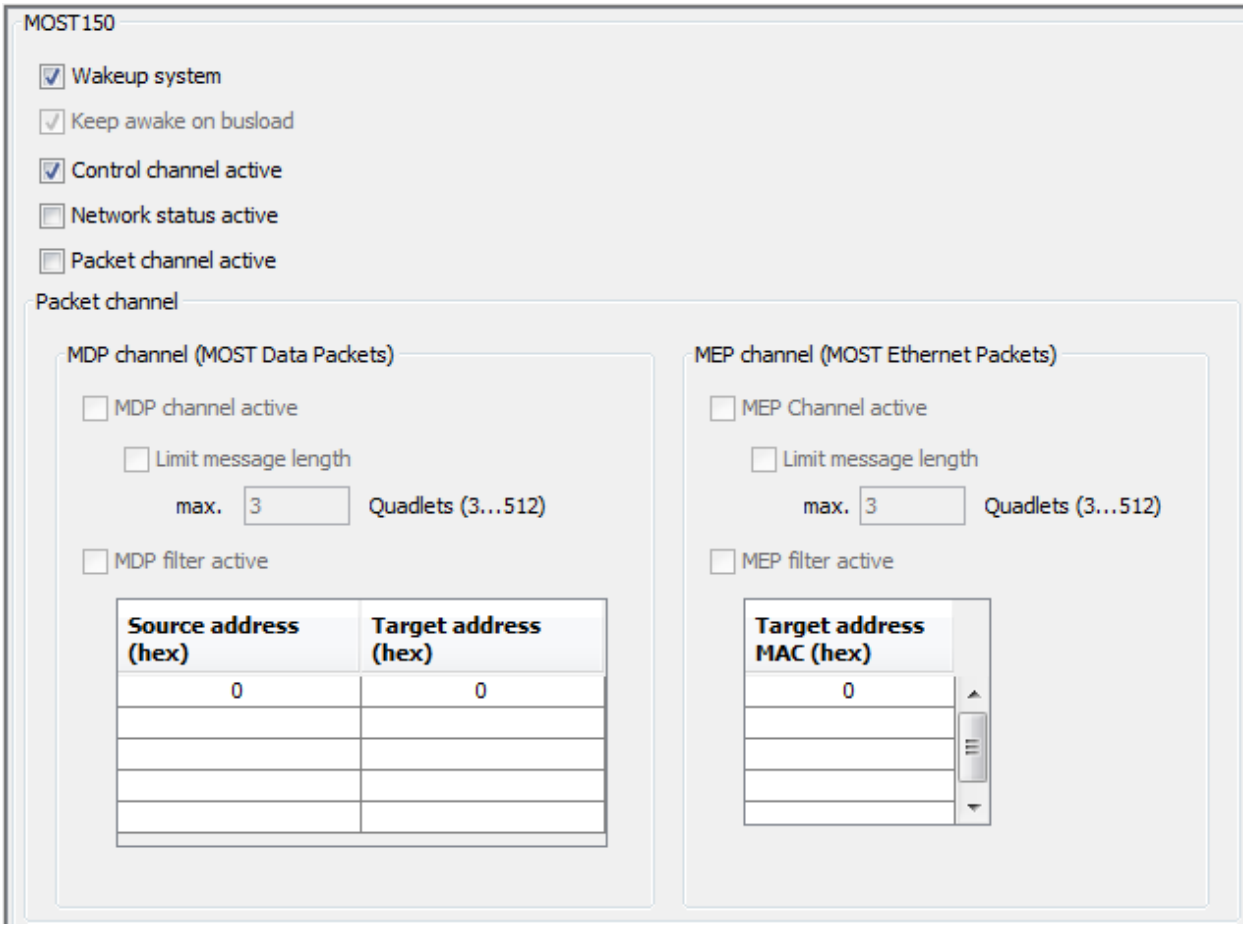


Figure 8.53: MOST…

[MEP/ECL] is only available for MOST150.

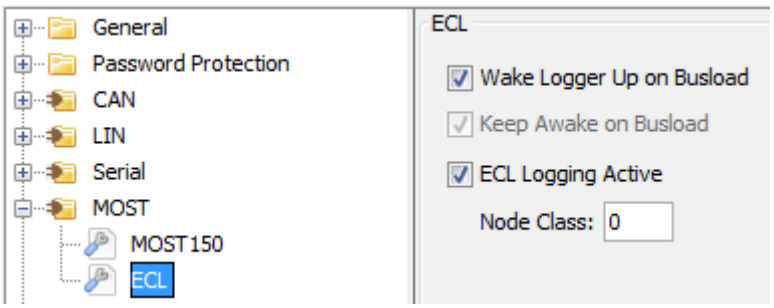


Figure 8.54: Configuration – MOST – ECL

8.8 FlexRay

FlexRay settings are accessible by opening the **[FlexRay]** folder. In the right window you see an overview of all channels and can modify some general settings of the FlexRay bus.

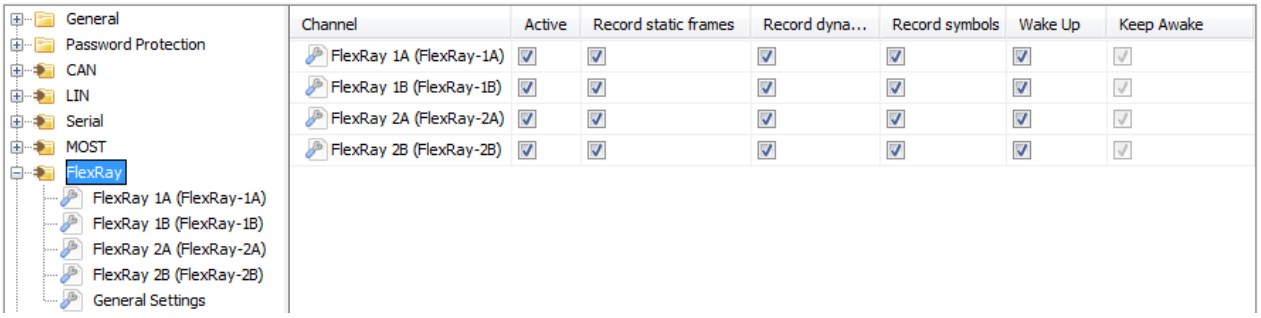


Figure 8.55: FlexRay: Channel (overview)

8.8.1 FlexRay

All FlexRay interfaces are listed in the configuration tree. Selecting an interface will open its configuration form.

Each FlexRay interface can be activated or deactivated separately.

FlexRay channel settings provide basic channel configuration (see section 8.3) as well as additional options to reduce recorded data.

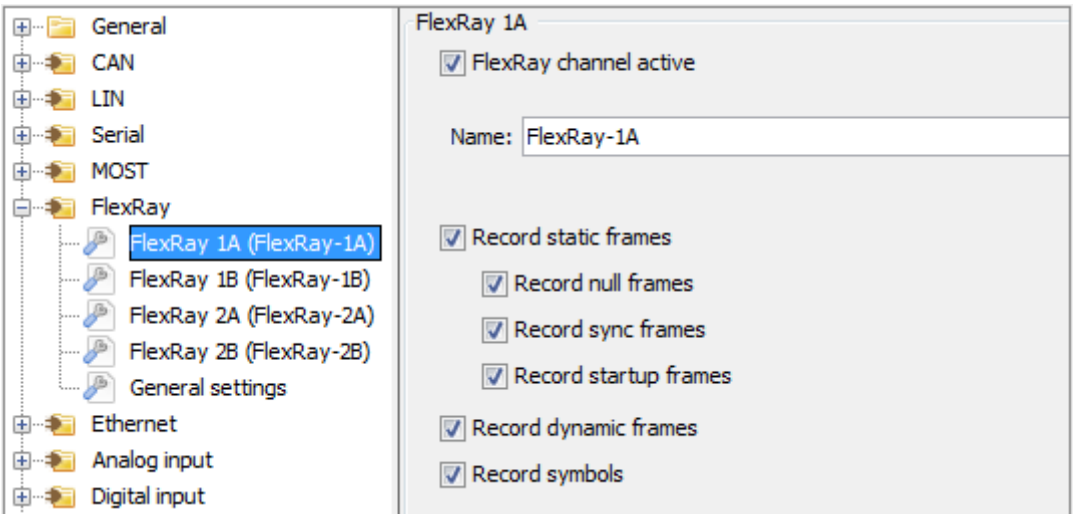


Figure 8.56: FlexRay …

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

8.8.2 FlexRay - General settings

FlexRay general settings allow setup of standby behavior (see section 8.3) and <Baudrate>. Baud rates are set for a pair (e.g., 1A and 1B) of FlexRay channels.

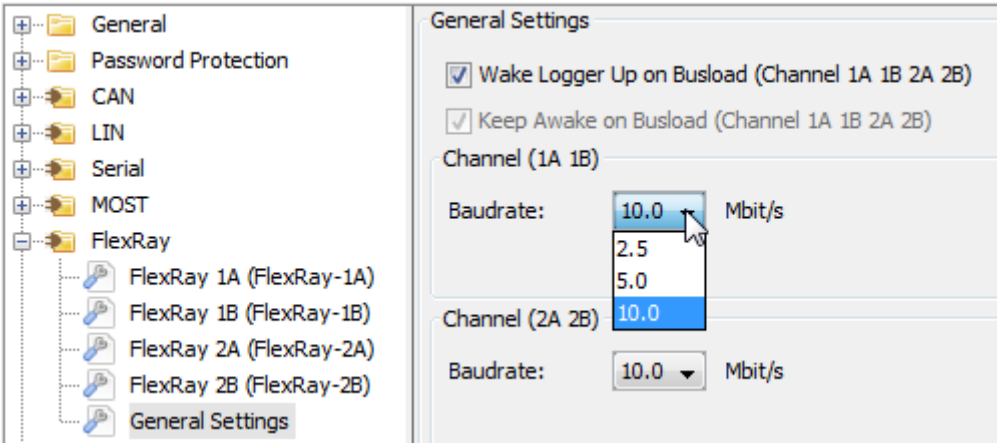


Figure 8.57: FlexRay – General settings

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8.9 Ethernet

Ethernet settings are accessible by opening the **[Ethernet]** folder. In the right window you see an overview of all channels and can modify some general settings of the Ethernet ports.

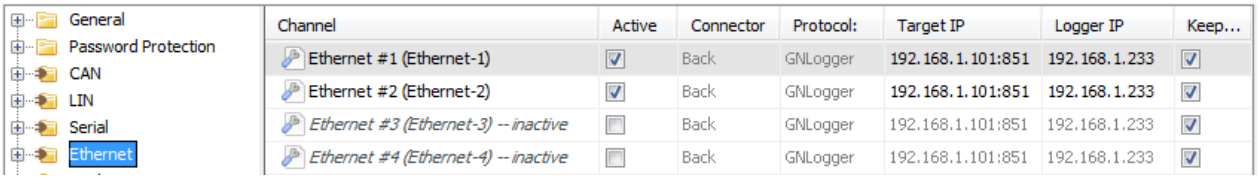

Figure 8.58: Ethernet: Channel (overview)

8.9.1 Ethernet – ETH / USB

All Ethernet interfaces are listed in the configuration tree. Selecting an interface will open its configuration form.

Each of the 16 logical Ethernet interfaces can be activated or deactivated separately.

Note:
Ethernet #1 to #16 do not relate to the physical Ethernet ports on the blue PiraT2 or the blue PiraT Mini but are logical recording channels.

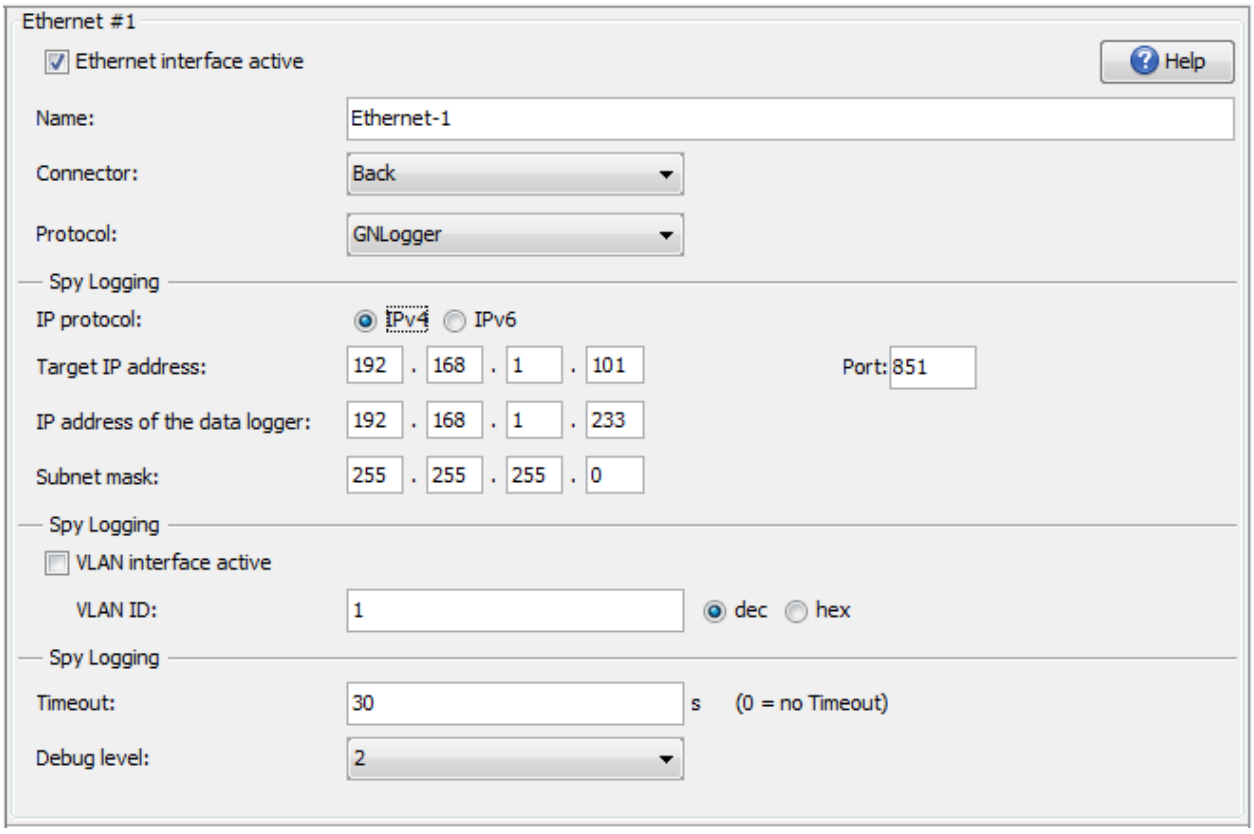

Figure 8.59: Ethernet #...

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

At blue PiraT2 / blue PiraT2 5E / blue PiraT Mini as <Connector> for the recording can be selected *Front*, *Back* or *USB* (*from fw 03.04.01*).

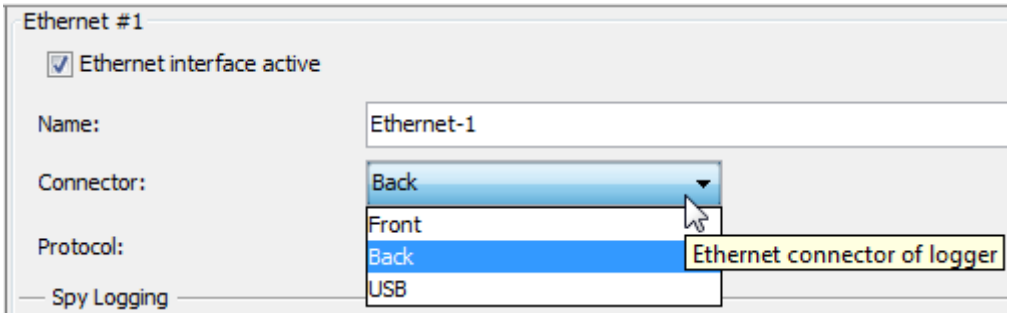

Figure 8.60: Ethernet #... <Connector>

The following adapters have been successfully tested for logging Ethernet over USB:

- DELOCK 62121 (USB 3.0 -> Gigabit LAN)
- DELOCK 62583 (USB 3.0 -> 2 x Gigabit LAN)
- DELOCK 61969 (USB 2.0 -> Gigabit LAN)
- Edimax EU 4306 (USB 3.0 -> Gigabit LAN)

For each of the logical channels, the desired Ethernet <Protocol> can be selected.

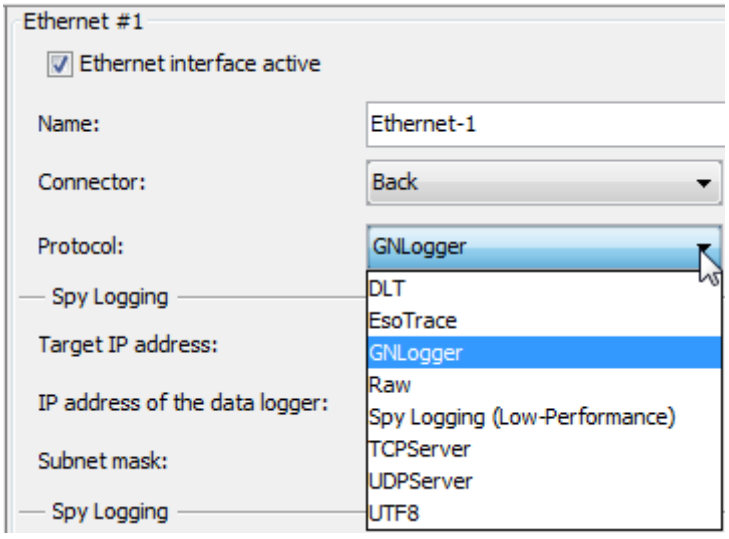

Figure 8.61: Ethernet #... <Protocol>

IPv4 and **IPv6** can be used as IP protocol. (*up from FW 03.04.01*)

Under **<Target IP address>** the IP address of the controller is specified. The default value here is **IPv4:** 192.168.1.101 / **IPv6**: 0:0:0:0:0:FFFF:C0A8:0165

There are the following restrictions on the IP configuration.

- Logical Ethernet channels #1 to #16: Under <IP-address of data logger> and <Subnet mask> the IP-addressing of the recording interface from the logger (Default: 192.168.1.101 is entered. These must be in the same subnet as the target address.
- If a client connection via the front Ethernet interface exists and data is recorded at the same time via the rear Ethernet port, the subnet of the front PC interface of the data logger and the subnet of the logical Ethernet channels #1 to #16 must be different.
- The combination of IP address and port number must not be used by another device.

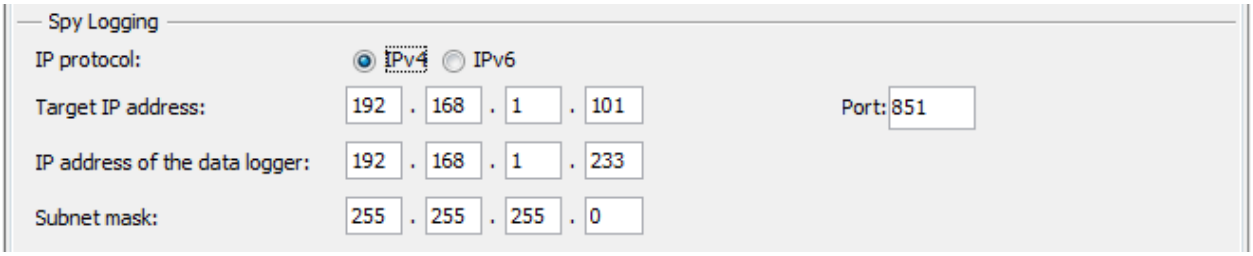

Figure 8.62: Ethernet #... <Target IP address> and <Port> | IPv4

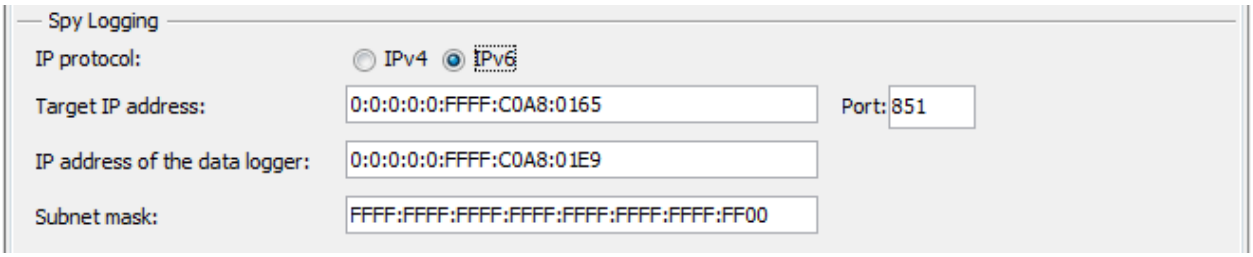

Figure 8.63: Ethernet #... <Target IP address> and <Port> | IPv6

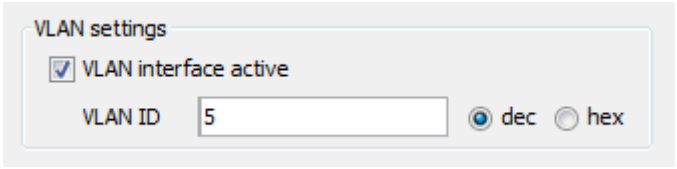

Figure 8.64: Ethernet #... <VLAN settings>

Note:
If you activate the checkbox VLAN interface active and enter a <VLAN ID>, you need an appropriate remote site with the same <VLAN ID>.
By activating multiple Ethernet channels with different VLAN IDs, each channel must be located on a different subnet.

With the <Timeout> settings you can define the time after which the logger will close the connection and reconnect to the target when there's no communication on the bus.

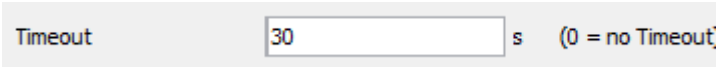

Figure 8.65: Ethernet #... <Timeout>

Note:
If <Timeout> is "0" seconds, the connection remains.

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8.9.2 Differing settings at blue PiraT Mini / blue PiraT2 5E

At **blue PiraT Mini** and **blue PiraT2 5E** there are some more possibilities available for configuring the settings of the Ethernet ports at the rear side.

8.9.3 Settings oft he rear ports – blue PiraT Mini

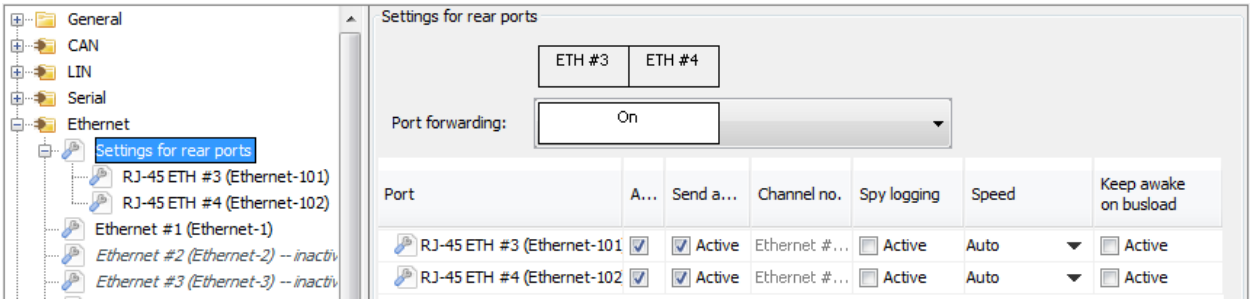


Figure 8.66: Ethernet – Port Settings

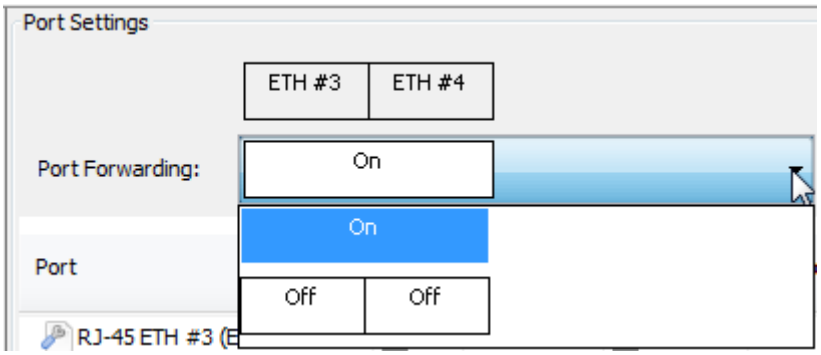


Figure 8.67: Port modes of blue PiraT Mini

In blue PiraT Mini there's a feature implemented called Port forwarding which works like a Tap mode but additionally allows to log high level protocols like GNLog, DLT, TCP usw., which have to send requests to the ECU.

Port forwarding can only be activated together for both rear ports.

8.9.3.1 Send active

The logger must send a acknowledge message when protocol based traces as e.g. DLT or GNlog have to be recorded. The option [ ] Send active allows to deactivate this confirmation when it is not needed for this port.

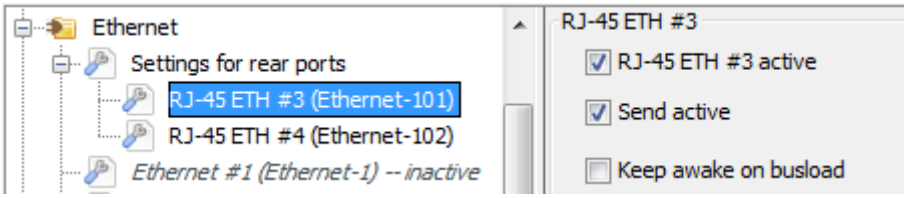


Figure 8.68: Send active

8.9.3.2 BroadR-Reach on blue PiraT Mini CAN

This option is available at blue PiraT Mini CAN ONLY! The changing to **BroadR-Reach logging** (license free up from fw 03.02.01) is done in the following two steps.

8.9.3.2.1 Switching to BroadR-Reach in the configuration

In the System Client the needed interfaces are switched from RJ-45 to BroadR-Reach.

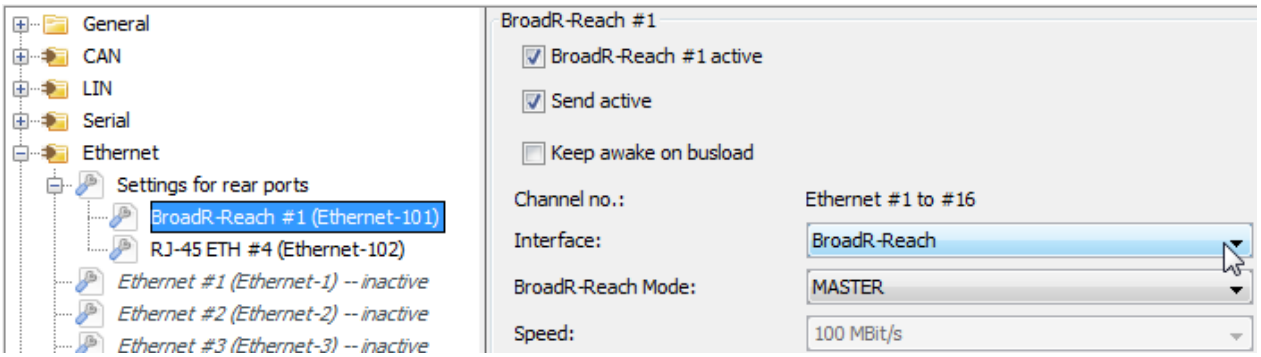


Figure 8.69: Activating BroadR-Reach

For a better clarity the name of the interface changes immediately in the overview. In this case ETH #3 to **BroadR-Reach #1** and ETH #4 is still configured to **RJ-45**.

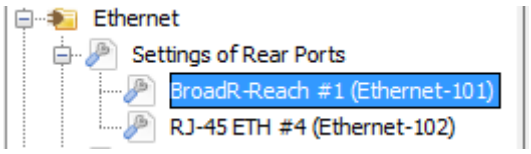


Figure 8.70: Changing of description

The **BroadR-Reach** interface can also operate in MASTER or SLAVE mode. For a correct communication a master interface has to be connected to a slave interface.

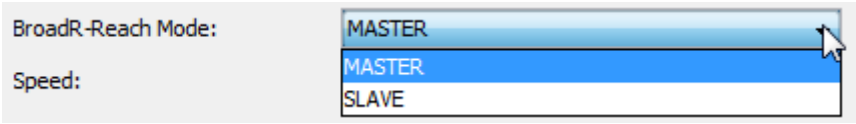
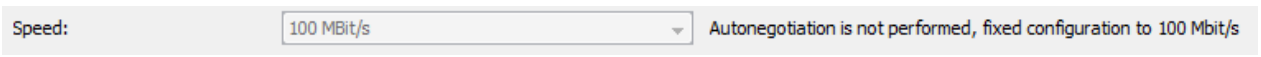


Figure 8.71: Selecting BroadR-Reach Mode



Except for the transfer rate, which is fixed to 100 Mbit/s for BroadR-Reach, all settings inclusive the available filter options match to the settings for Ethernet logging.

8.9.3.2.2 Switching to BroadR-Reach

If one or both Ethernet interfaces are changed to **BroadR-Reach**, the Ethernet port on the device is disabled. But the **BroadR-Reach** connector on the wiring harness is enabled instead and must be used for the connection.

The BroadR-Reach interfaces are implemented to the wiring harness as black connectors and labeled with **KFZ BRR 1** / **KFZ BRR 2**.

8.9.3.2.3 BroadR-Reach connection samples

These two samples show possibilities, in which way the BroadR-Reach interfaces can be used.

The connection between two units can be separated and passed through the logger for logging one channel.

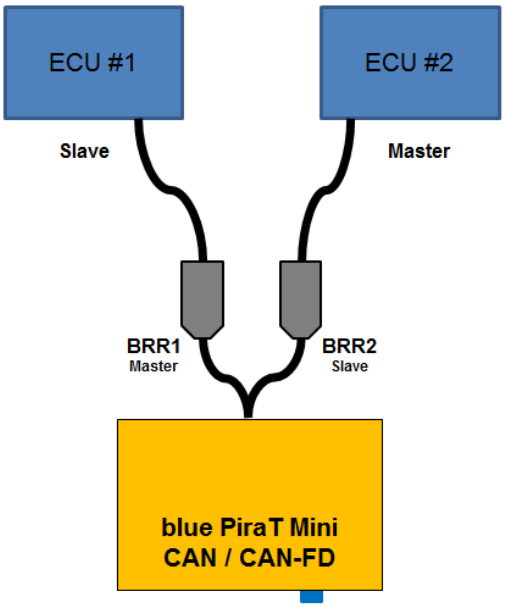


Figure 8.72: BroadR-Reach – logging one channel

In this case, port forwarding at the rear ports must be enabled so that the data is passed in both directions and the logger is not visible to both ECUs.

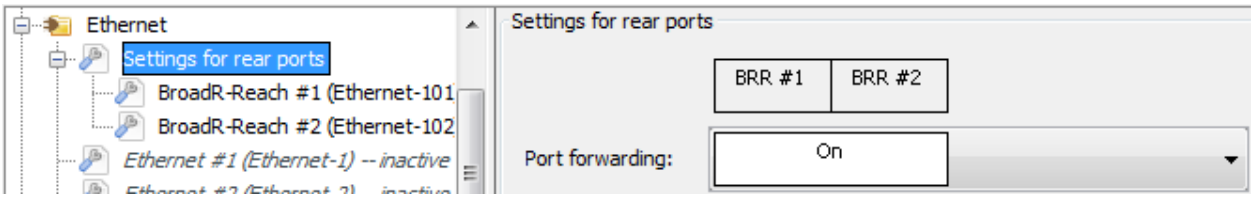


Figure 8.73: BroadR-Reach – logging one channel, Port forwarding: ON

When a connection between two units is separated and passed by port forwarding over a HUB or switch to the logger, only one interface is needed to log this channel whith spy logging. The other interface can be used e.g. for logging from a debug interface of another unit. This is shown in the following picture.

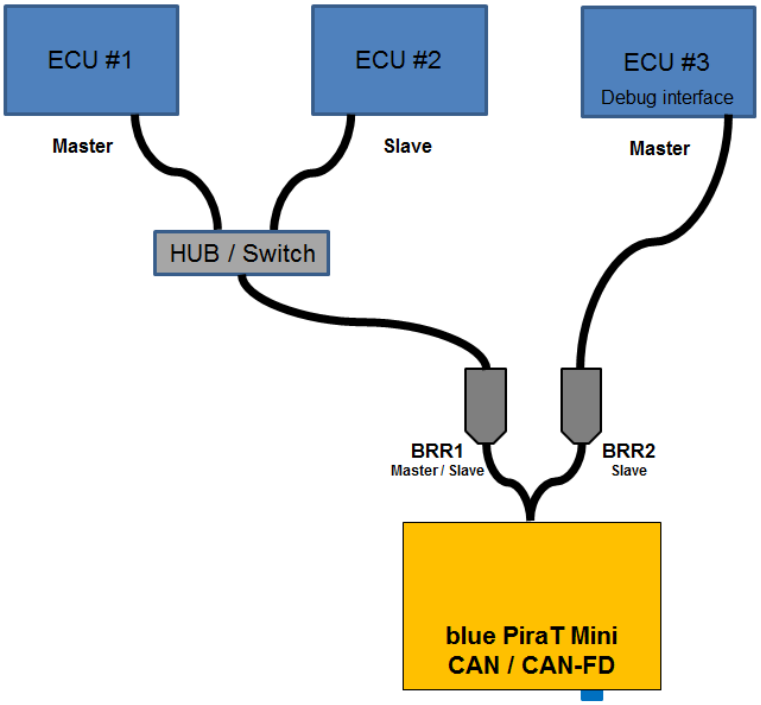


Figure 8.74: BroadR-Reach – logging of two channels

In this case, port forwarding must be switched off, because the ports are handled separately

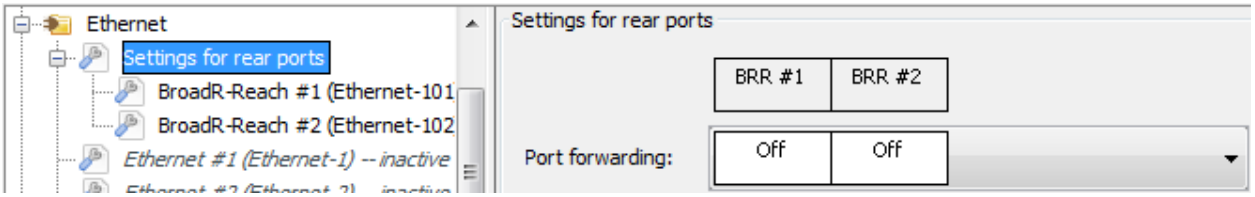


Figure 8.75: BroadR-Reach – logging of two channels, Port forwarding: OFF

8.9.3.3 Bridging front / back ethernet ports

Normally the front and rear ethernet ports of blue PiraT Mini must use different subnet masks.

At blue PiraT Mini this limitation can be set aside under [Ethernet] => [General Settings] by activating the option [Bridge front / back ethernet ports]

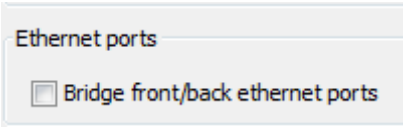


Figure 8.76: Bridging front / back ethernet ports

If it is necessary that 4 ECU's have to be logged in the same subnet, it can be realized by activating the option [Bridge front / back ethernet ports]. Here all 4 ethernet ports are bridged and can be configured as one switch without this limitation.

8.9.4 Filtering options of rear ports at blue PiraT Mini / blue PiraT2 5E

The rear Ethernet ports of **blue PiraT Mini / blue PiraT2 5E** are serving more settings and filters for the logging.

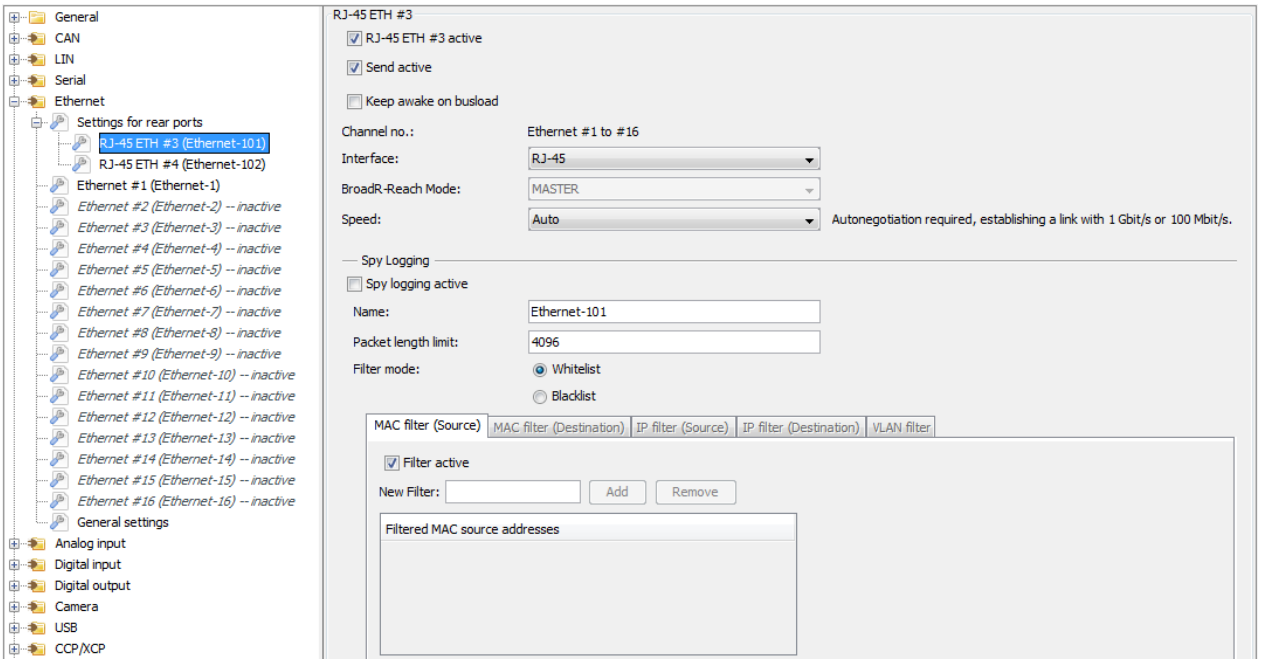


Figure 8.77: Filtering options of rear ports

In order to enter a filter first you have to activate the checkbox **Filter active**.

One of these special features of ETH #3 & ETH #4 is the possibility to work in "Spy" mode and log only filtered messages.

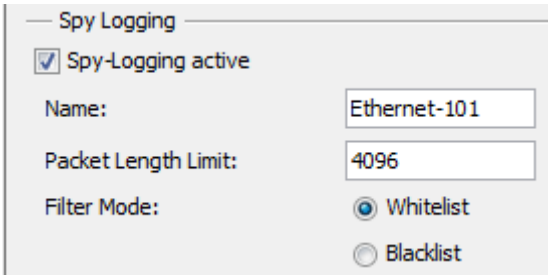


Figure 8.78: Choosing Filter Mode

You can select between Whitelist and Blacklist for configuring these filters. When you define a **Whitelist** only the filtered messages will be logged. When you choose the **Blacklist** all these messages will be dropped.

These filters are available:

- MAC Filter (Source)
- MAC Filter (Destination)
- IP Filter (Source)
- IP Filter (Destination)
- VLAN-Filter

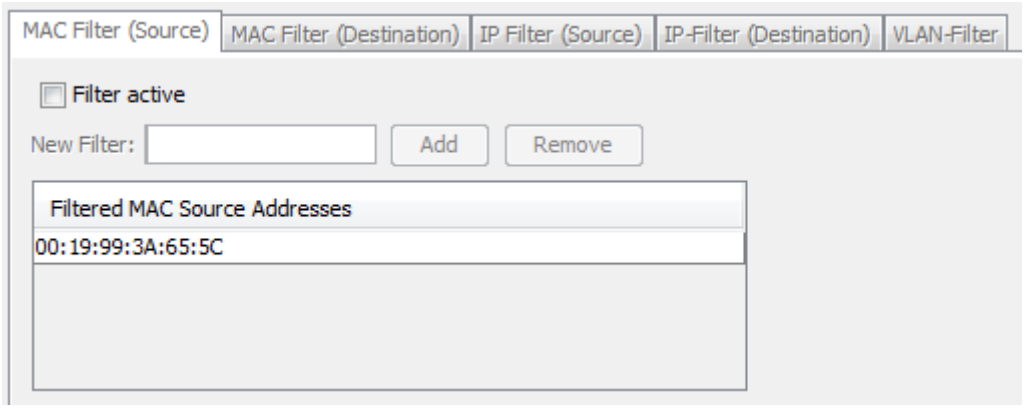


Figure 8.79: MAC address filter

Note:
When entering the MAC address, please enter the individual bytes separated by colons.

8.9.5 Port settings of the rear ports – blue PiraT2

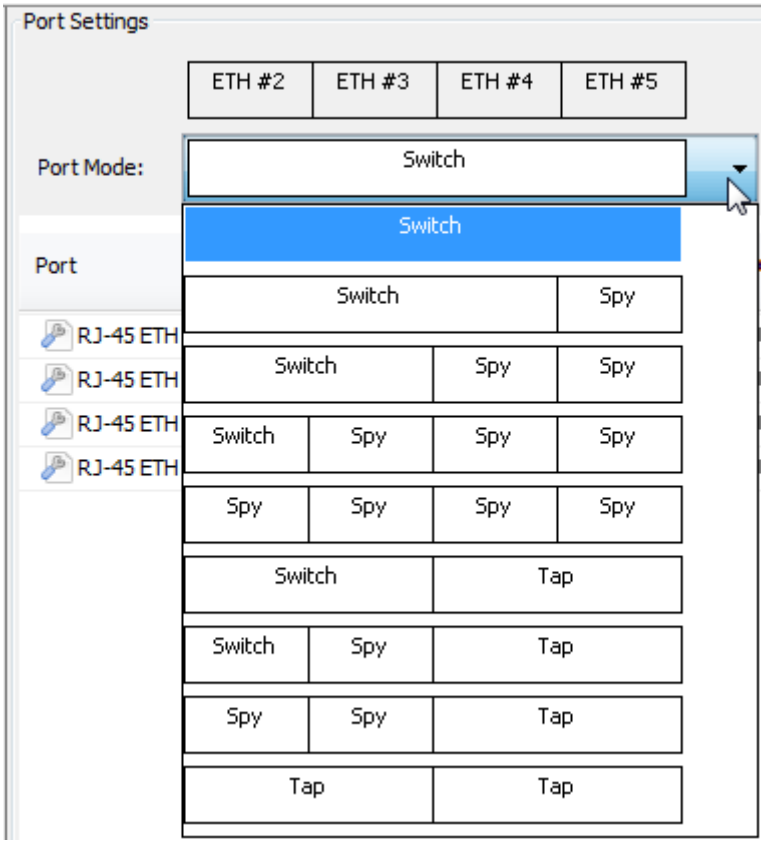


Figure 8.80: Port modes of blue PiraT2

8.9.5.1 Port mode *Switch*

For Logging of high-level protocols (GNLog, DLT, TCP etc.) over Ethernet, as well as Camera and XCP over Ethernet, use the <Port Mode> *Switch*.

The ports, which are configured as *Switch* are ready for operation, after the logger has started up. In default mode, all ports are configured as *Switch*. In this mode it is not possible to change the speed like at “Spy” mode. It is set to 100 Mbit/s.

The ports can communicate with each other. Incomming messages will be forwarded by a routing table to the correspondend port. This routing table is created by using the SRC MAC of the incoming messages with relevant port numbers.

In *Switch* mode, the Spy Logging can be activated separate for every port to log all incomming messages.

8.9.5.2 Port mode *Spy*

In *Spy* mode the Ethernet data are recorded on the Data Link Layer (→ OSI layer 2). This recording mode is independent of the protocol used (TCP, IP, UDP etc. → OSI layer 3/4).

Ports which are configured as *Spy* just listen on the line and log all transferred messages.

8.9.5.3 Port mode *Tap*

In *Tap* mode the Ethernet data are recorded on the Data Link Layer (→ OSI layer 2). This recording mode is independent of the protocol used (TCP, IP, UDP etc. → OSI layer 3/4).

The *Tap* mode has the same functionality as two *Spy* ports and additional routes all incoming data from one port to another (in both directions). This routing is also optimized for low latency.

The data logger is in this way integrated into the line and receives all incoming and outgoing data. But only the incoming data will be recorded.

This routing is also optimized for low latency.

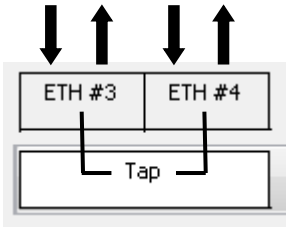


Figure 8.81: Data recording in “Tap” mode

Note:
In *Tap* mode the feature *Spy logging* is automatically activated.

8.9.6 Spy logging

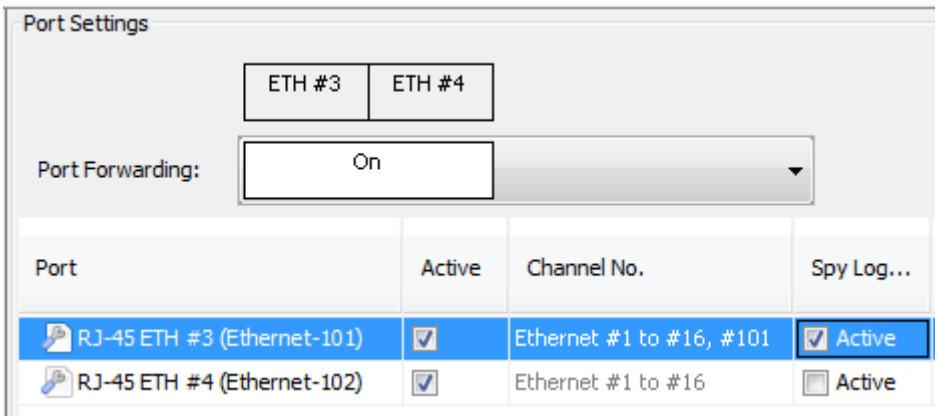


Figure 8.82: Spy Logging

blue PiraT Mini:
A port where *Spy Logging* is activated, is ready for operation after very short latency and can log incoming data even when the logger has not started up yet.

The trace files for **Spy Logging** are recorded with a separate range of channel numbers (101 and 102 in blue PiraT Mini).

blue PiraT2 5E:
A port where *Spy Logging* is activated, is ready for operation after very short latency and can log incoming data even when the logger has not started up yet.

At ports where “Spy” or *Tap* is configured, no protocol logging is possible. It acts only on ports which are configured on *Switch*.

The trace files for **Spy Logging** are recorded with a separate range of channel numbers (101 - 104 in blue PiraT2 5E).

Note:
As the behavior of the ports can be configured flexibly, the port configuration must be considered while plugging the cables. Look out which cable is connected to which port.

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8.9.7 Available port speeds

The following speed-configurations are possible and can be set separately for every port.

Logger	Remote site
Auto	Auto, 100 MBit/s (Full duplex), 100 MBit/s (Half duplex), 10 MBit/s (Full duplex), 10 MBit/s (Half duplex)
100 MBit/s	Auto, 100 Mbit/s (Full duplex), 100 MBit/s (Half duplex)
1 GBit/s (Auto)	Auto, 1 GBit/s

Table 8.2: Available port speeds and allowed remote sites configuration

Note:
1 GBit (Auto) setting at the logger is needed to ensure that 1 GBit/s is used. If the other party does not offer 1 GBit in this mode, there is no connection.

8.9.8 Protocol “DLT”

For logging DLT over Ethernet (license free up from fw 03.02.01) the DLT protocol has to be configured for the used Ethernet channel.

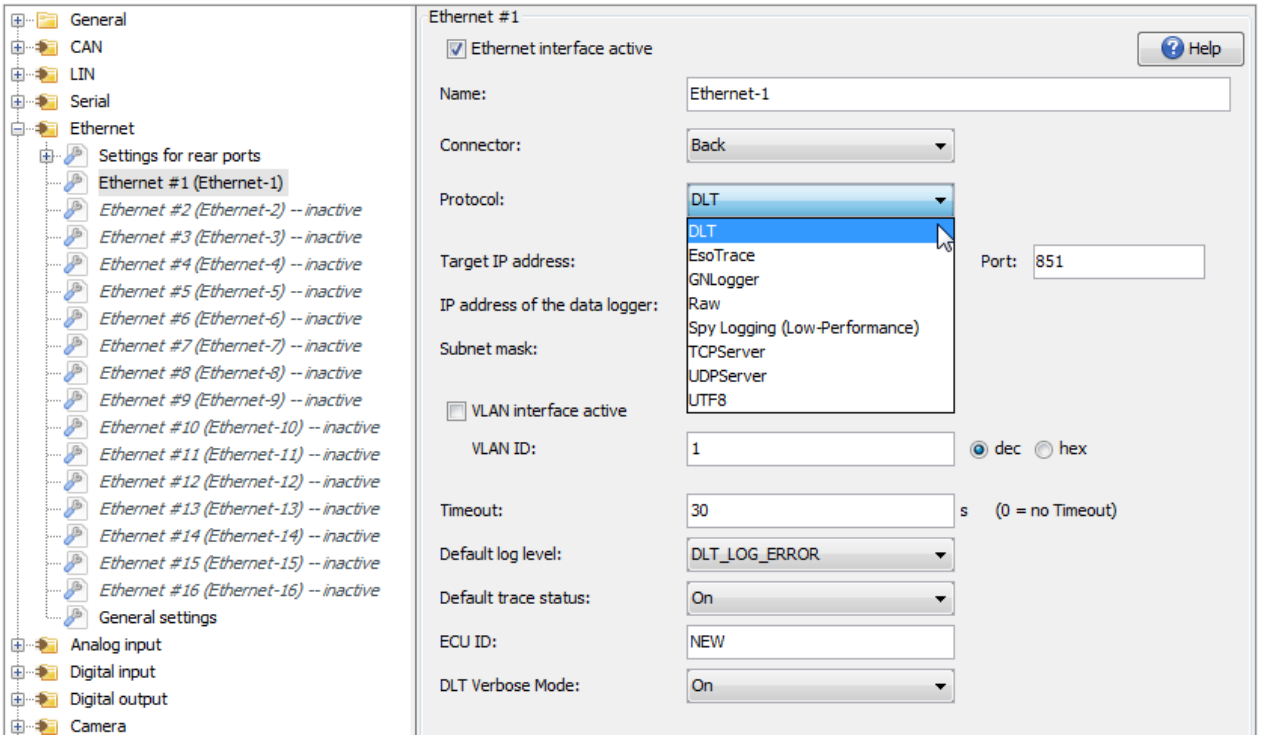

Figure 8.83: Choosing protocol “DLT”

Protocol

In the dropdown menu it is possible to choose different protocols. Choose “DLT” for logging DLT messages.

Timeout

Here you can specify the “Timeout”. Timeout means that the connection is terminated, if during the defined time in seconds no data was sent. After the termination the logger tries to reconnect.

Default Log-Level

Here you can set one of the DLT default Log-Levels specified within the DLT specification.

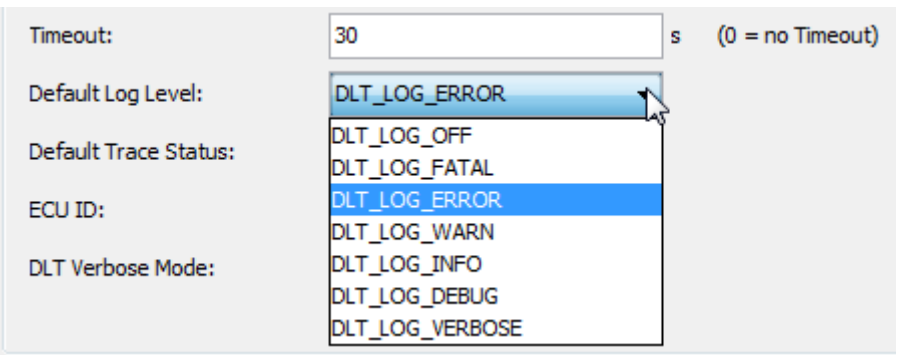

Figure 8.84: Log-Level Dropdown Menu

Default Trace-Status

This setting configures the Default Trace-Status, in which the DLT standard is defined.

ECU-ID

Here you can define an ECU-ID name, so if no ECU-ID is sent by the ECU it will be taken.

DLT Verbose Modus

Depending on the quantity of needs internal logs of the control unit are needed, the DLT verbose mode can be activated or deactivated.

8.9.9 Protocol “EsoTrace”

In the client the configuration of the logger must be opened to configure the **[EsoTrace]** function. The configuration tree shows the entries Ethernet #1 to #16. In the dropdown menu at <Protocol> you can select the entry **[EsoTrace]**.

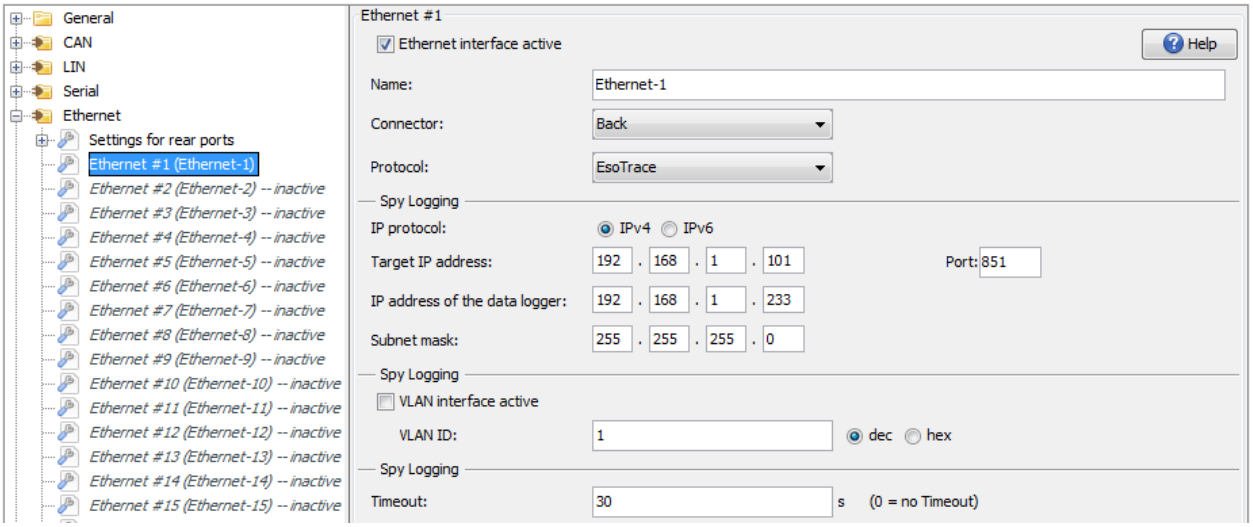

Figure 8.85: Choosing protocol “EsoTrace”

Each Ethernet channel can be configured for logging EsoTrace data.

8.9.10 Protocol “GNLogger”

To record traces in GNLogger format you just have to configure the <Protocol> of the needed Ethernet port of the blue PiraT2 / blue PiraT Mini to **[GNLogger]** and set the general settings to fit to your source device.

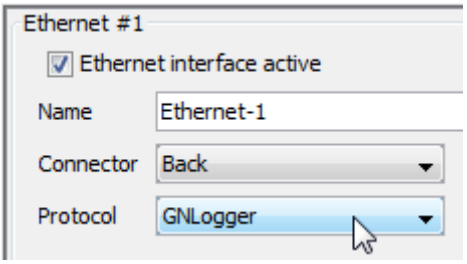

Figure 8.86: Choosing protocol “GNLogger”

During conversion these data can be converted into GNLogger format but only when they are really recorded as GNLogger data.

When the <Protocol> “GNLogger” is selected, you can choose between four different <Debug level>s.

Debug level	Output
0	no debug output
1	maximum debug output
2	normal debug output
3	minimal debug output

Table 8.3: Debug level

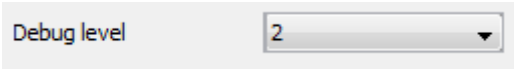

Figure 8.87: Ethernet #... <Debug level>

8.9.11 Protocol “Raw”

When using the raw data transmission over TCP the blue PiraT Mini / blue PiraT2 will be a TCP-slave device. Therefore the data logger will initiate a TCP connection to a TCP server by using an open socket connection (you can configure IP/Port of server via client software).

When using raw data transmission, every data package up to 40 kBytes is getting a time stamp and will be written on the logger. If the connection is getting lost, it will take about 5 seconds to build up a new connection for logging data again.

8.9.12 Protocol “Spy Logging (Low-Performance)”

On Spy Logging (Low-Performance) the received network traffic on front port will be passed to the operating system. Caused by latency and internal processing of the operating system data loss may occur on high data rates.

Since release of the blue PiraT2 5E and blue PiraT Mini, there is a possibility for high performance spy logging on the back ports. All traffic will be logged.

On high data rates Spy Logging on the back ports is recommended.

Note: This function is only available for the front ports.

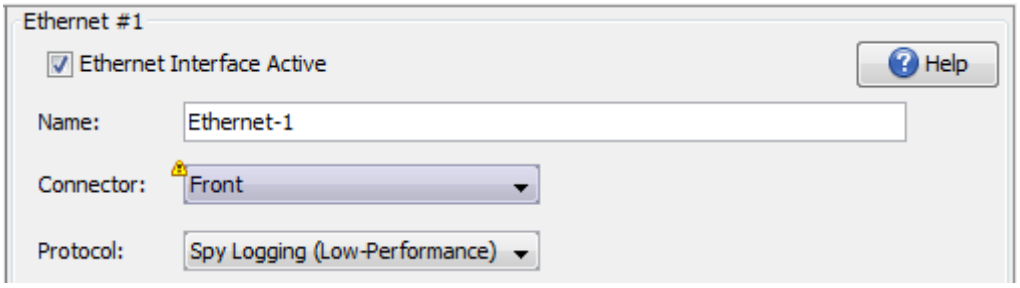

Figure 8.88: Choosing protocol “Spy Logging”

Every Ethernet channel can be configured for logging in Spy Loging but only one per connector.

8.9.12.1 Filter configuration in Spy Logging

For each Ethernet channel three types of filters can be configured. All filters are independent and can be used coincident. Nested or associated filters cannot be used.

IP Filter

You can define a set of IP addresses that should be recorded. There are only Ethernet data packets recorded that are sent from / to the defined IP addresses.

To add IP addresses to the filter activate the checkbox **IP Filter active** and click the **[Add]** button. To conclude the entry press the **[Enter]** key on your keyboard.

For deleting an IP address mark the IP address in the list and press the **[Remove]** button.

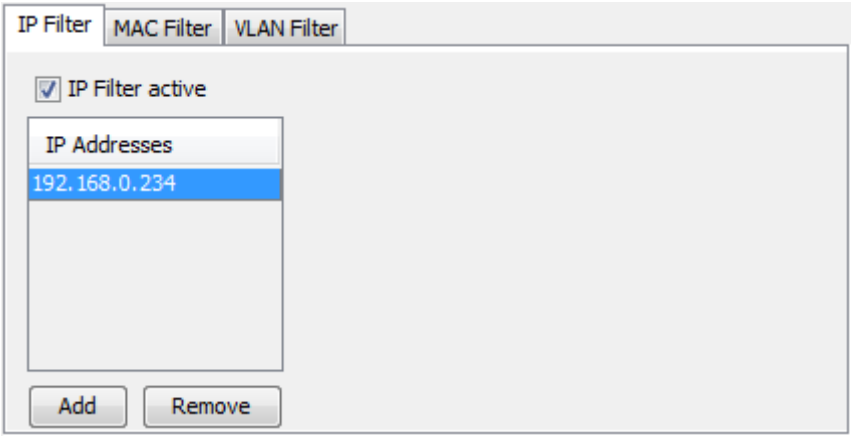

Figure 8.89: Setting an IP Filter

MAC Filter

You can define a set of MAC addresses that should be recorded. There are only Ethernet data packets recorded that are sent from / to the defined MAC addresses.

To add MAC addresses to the filter activate the checkbox **MAC Filter active** and click the **[Add]** button. To conclude the entry press the **[Enter]** key on your keyboard.

For deleting an MAC address mark the MAC address in the list and press the **[Remove]** button.

MAC addresses have the following scheme: “xx:xx:xx:xx:xx:xx” where xx got a hexadecimal value from 00 to FF.

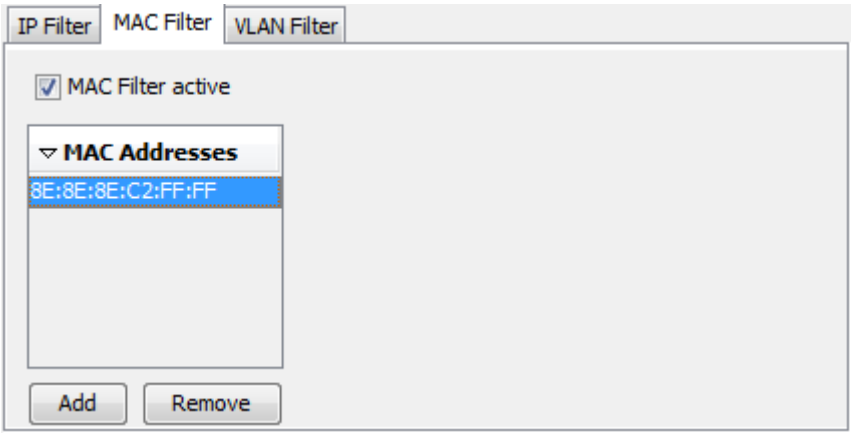

Figure 8.90: Setting a MAC Filter

VLAN Filter

You can define a set of VLAN IDs that should be recorded. There are only Ethernet data packets recorded that are sent from / to the defined VLAN IDs.

To add VLAN IDs to the filter activate the checkbox **VLAN Filter active** and click the **[Add]** button. To conclude the entry press the **[Enter]** key on your keyboard.

For deleting a VLAN ID mark the VLAN ID in the list and press the **[Remove]** button.

A VLAN ID got to be a number between 1 and 4094.

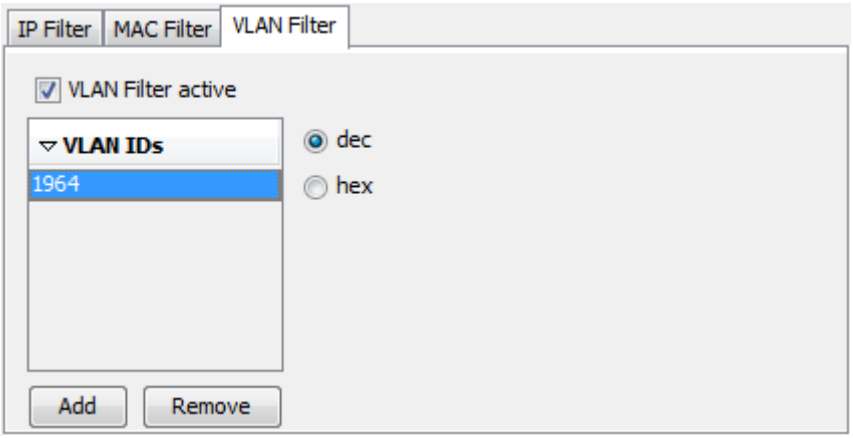

Figure 8.91: Setting a VLAN Filter

8.9.13 Protocol “TCPServer”

When using the TCPServer data transmission the blue PiraT Mini / blue PiraT2 will be a TCP-server. Therefore the target device will initiate a TCP connection to the data logger by using an open socket connection.

Every data package up to 40 kBytes is getting a time stamp and will be written on the logger.

8.9.14 Protocol “UDPServer”

The blue PiraT Mini / blue PiraT2 can be configured as an UDP server by setting up an IP address and port number.

A slave device can build up a connection to the data logger. The data logger logs raw data packages up to 40kBytes and write them with a time stamp down. There is no configurable debug level.

If the connection is getting lost, it will take about 5 seconds to build up a new connection for logging data again.

8.9.15 Protocol “UTF8”

When using the UTF8 data transmission over TCP, the blue PiraT Mini / blue PiraT2 will be a TCP-Slave device. Therefore the data logger will initiate a TCP connection to a TCP server by using an open socket connection (you can configure IP/Port of server via client software).

By using UTF8 data transmission the logger will write a timestamp after every detected Linefeed (LF) from the incoming data.

If the connection is getting lost, it will take about 5 seconds to build up a new connection for logging data again.

8.10 Analog

Analog settings are accessible by opening the **[Analog]** folder. In the right window you see an overview of all channels and can modify some general settings of the analog bus.

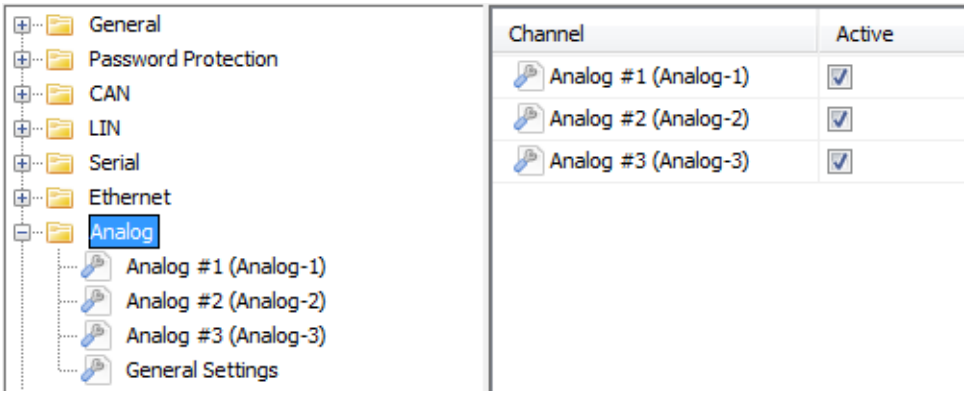

Figure 8.92: Analog: Channel (overview)

8.10.1 Analog

All analog interfaces are listed in the configuration tree. Selecting an interface will open its configuration form. Each analog interface can be activated or deactivated separately.

Note:
“Analog #1” got no external input. It only can measure the input voltage of the logger.

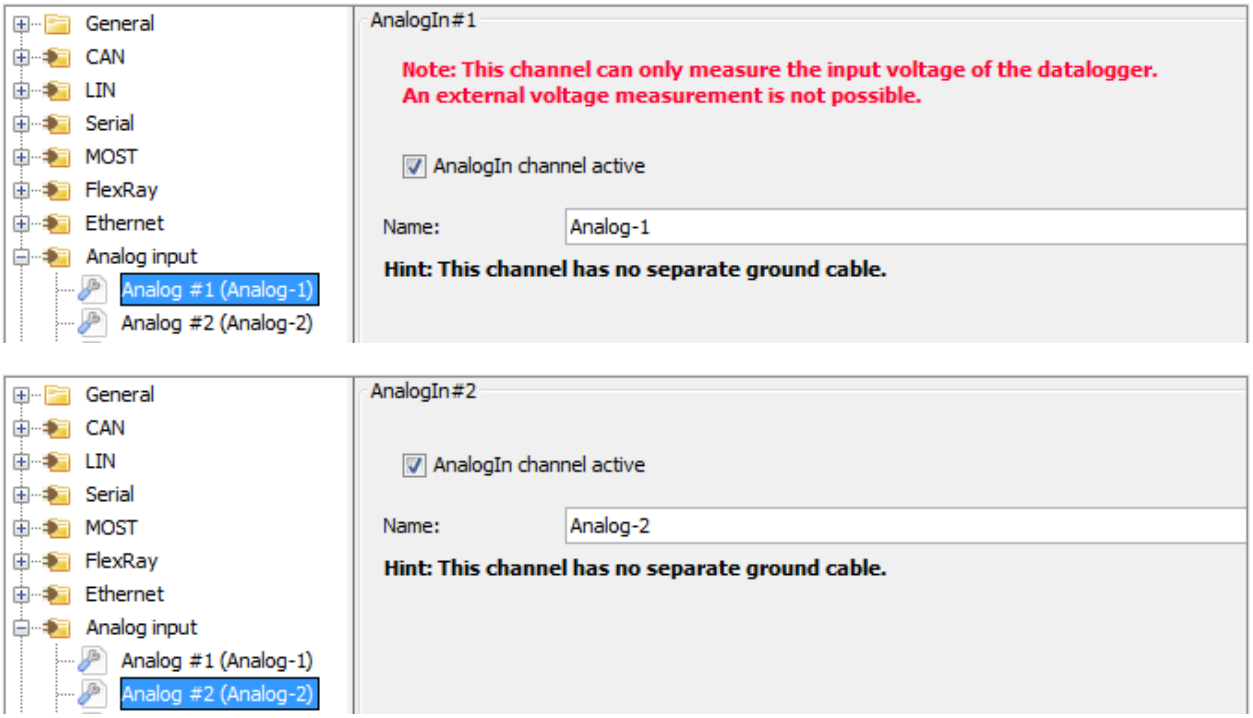

Figure 8.93: Notification message due to lack of external input for Analog #1 & #2

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

Note:
If you use the channel “Analog #2” or hogher, please connect the ground of the corresponding analog ports to the ground clamp of the logger.

8.10.2 General settings

[General Settings] allow defining a sampling interval for all of the analog interfaces. These settings can be different depending on your logger type. In some cases these settings are combined for some channels.

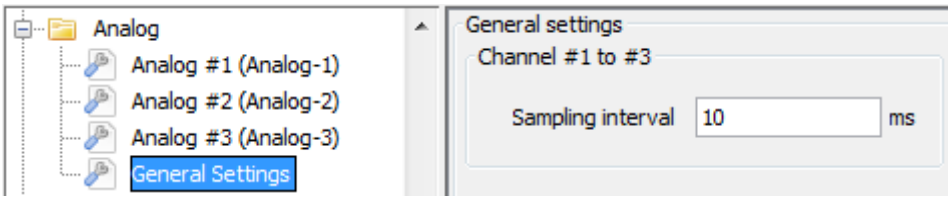

Figure 8.94: Analog – General settings

8.11 Digital input

Digital settings are accessible by opening the **[Digital input]** folder. In the right window you see an overview of all channels and can modify some general settings of the digital bus.

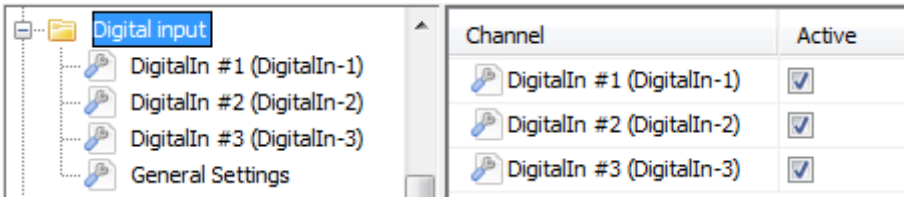

Figure 8.95: Digital input: Channel (overview)

8.11.1 Digital In

All digital interfaces are listed in the configuration tree. Selecting an interface will open its configuration form. Each digital interface can be activated or deactivated separately.

Note:
At blue PiraT Mini the analog and digital interface are combined so even Digital In #1 can only be used for internal measurements.

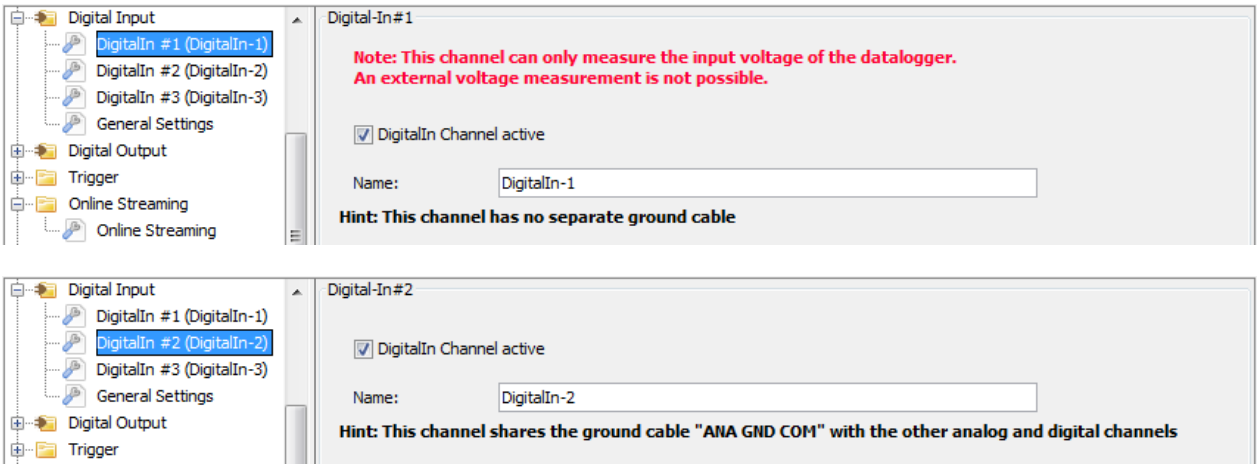

Figure 8.96: Digital input – DigitalIn #1 & #2

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

8.11.2 General settings

The blue PiraT2 and blue PiraT2 5E has the possibility to configure channel #1 and #2 for wakeup. The blue PiraT Mini as well as blue PiraT Remote hasn't this option.

General settings allow setup of <Mode> and <Sampling interval>.

Two logging modes are currently available:

- Edge Detection: It will be recorded a sample on a detected signal change, either rising, falling or both.

- Timing Mode: It will be recorded a sample after each interval. Intervals are specified in milliseconds (between 1 ms and 100000 ms).

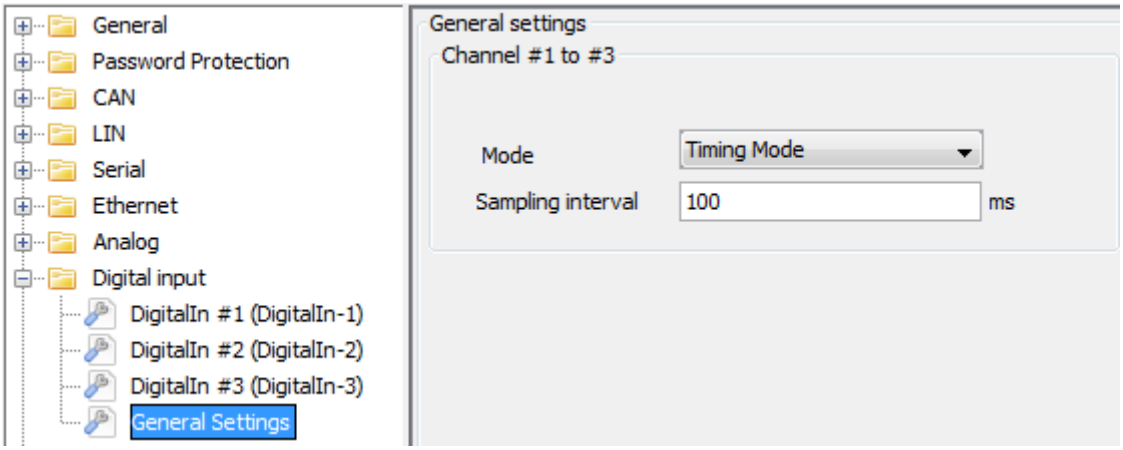

Figure 8.97: Digital input – General settings (of blue PiraT Mini)

8.11.3 Threshold

The Threshold voltage of the digital inputs is written at the blue PiraT2 / blue PiraT Mini User Guide.
https://sc.telemotive.de/4/uploads/media/blue_PiraT2_UserManual.pdf
https://sc.telemotive.de/4/uploads/media/blue_PiraT_Mini_UserManual.pdf

Here the threshold voltage and hysteresis can be specified.

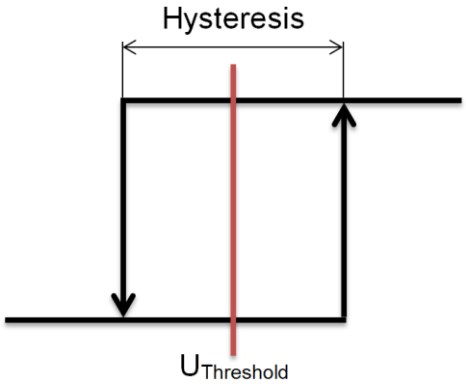

Figure 8.98: Hysteresis curve

At the blue PiraT2 the threshold voltage could be configured at DigitalIn #2 to #5.

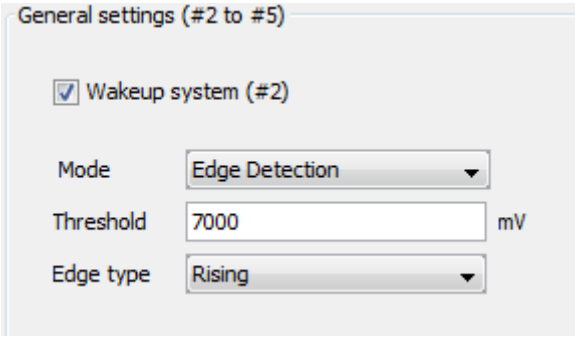

Figure 8.99: Digital input – General settings (of blue PiraT2)

8.12 Digital Out

The initial default value of the digital output channels could be set here to "0" or "1" and the current value can be modified by complex triggers later.

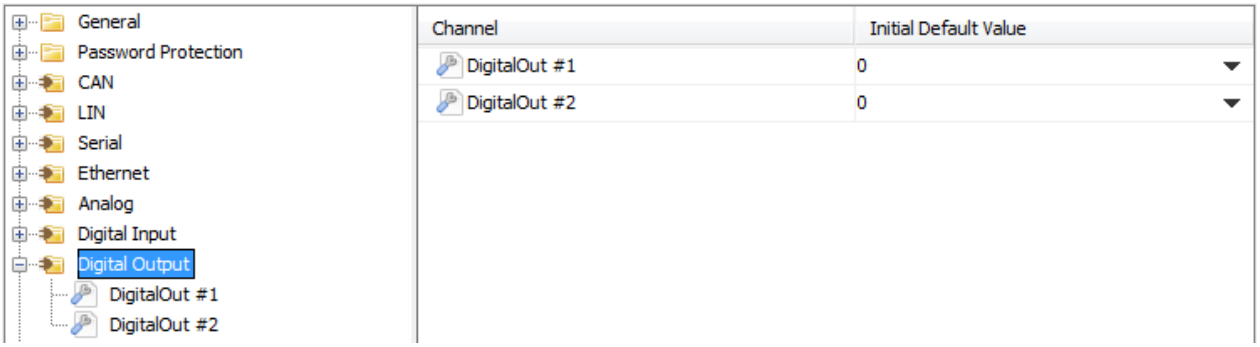

Figure 8.100: Digital output settings (overview)

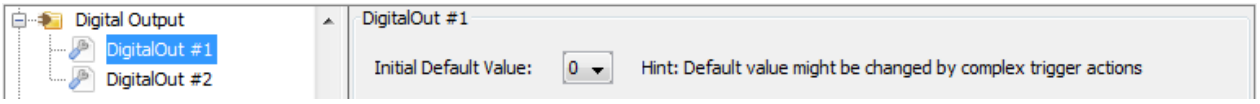

Figure 8.101: Digital output settings (detail)

8.13 USB

From firmware version 03.04.01, MAGNA Telemotive data loggers also support logging data from units which communicate over **Android LogCat interface** via USB.

The activation take place by the point [USB] => [USB].

Figure 8.102: Activating USB logging

The assigned **Name** for the channel is inserted in the file names of the trace data later and is used in the Online Monitor, LiveView, on the Remote Control Touch and in the channel selection list for the conversion too.

For getting access to the unit a valid key must be inserted. This key must be copied into the field [Encryption key] and send to the logger with the configuration.

The System Client can convert the collected trace data later as usual.

8.14 Signal Based Filtering (license free from Rev. 3.1.1)

The feature **Signal Based Filtering** provides the possibility to automatically extract preconfigured signals with an adjustable sampling frequency directly on the logger from the recorded messages and then to store them in a MDF file resp. CSV file.

This allows an automatic filtering of a part of the recorded data, to reduce the amount of data. For this, the user can create freely configurable filter rules trough the System Client. Each filter can be assigned to arbitrary signals. These signals are then filtered from the recorded data.

An event must be assigned to each created filter (see section 8.14.1.7). If this event occurs, the values of the associated signals are filtered and stored in a separate file.

Note:
Signal based filtering does not permanently filter data! The data will be filtered only when a trace file was written to the internal memory and the CPU has enough free capacity for the filtering.

A trace file will be closed and written to the internal memory:

- when it's size is more than 10 MB
- the Event overview all trace files closes by pressing the button [Review]

8.14.1 Filter configuration

Note:
By sending a configuration to the data logger every active filtering is stopped. If a filtering was activated before, for example by pressing a button, it has to be started again.

Start the System Client. In the Network Logger list click a logger that is not already connected. Click on the application **[Open configuration]** and expand the folder **[Signal based Filter]** in the window to the right.

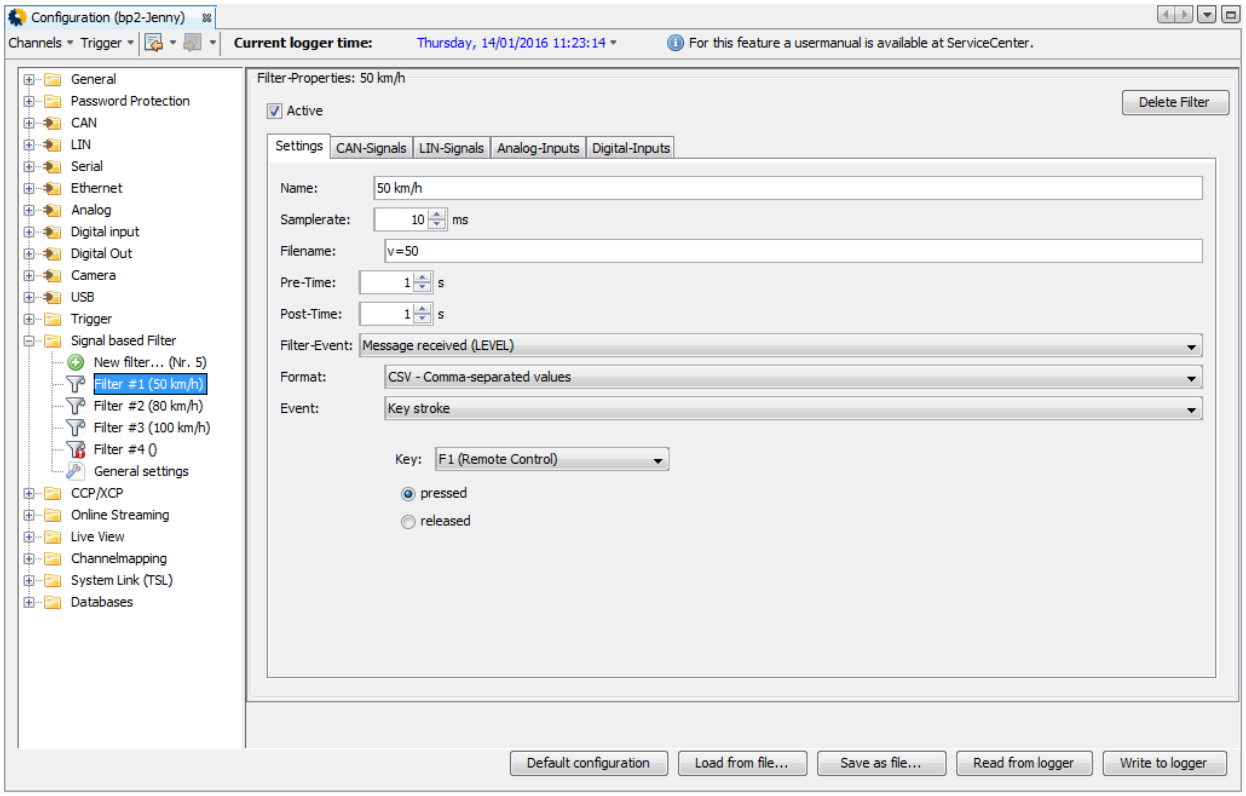

Figure 8.103: Example Trigger configuration

By double-clicking the button **[New filter…]** a new filter will be shown in the list (e.g., Filter #1). The red symbol with exclamation mark reminds that the filter is not configured yet or is not fully configured.

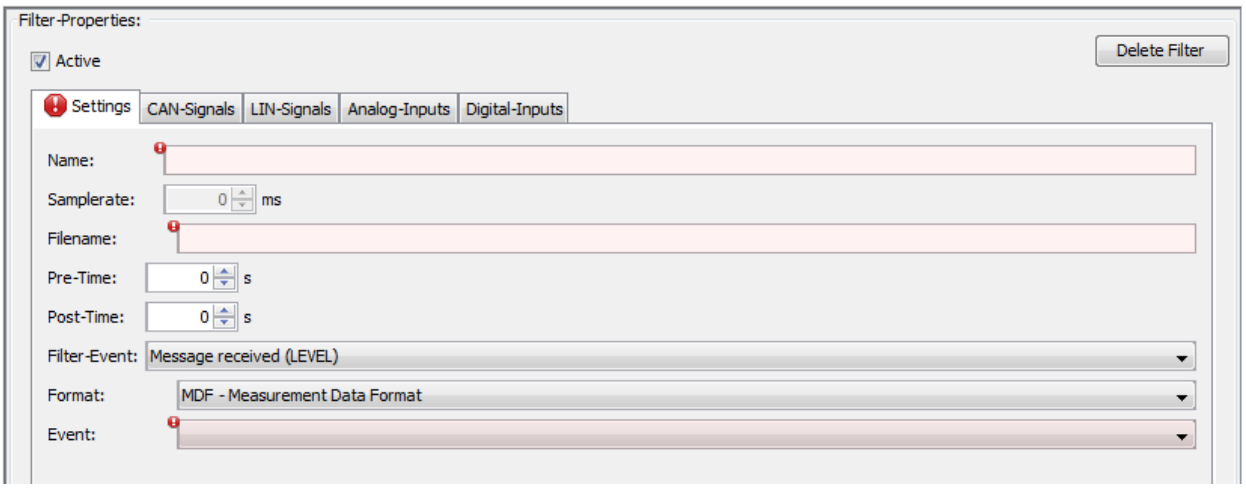

Figure 8.104: Configuration parameters

8.14.1.1 Status

Each filter can be enabled or disabled by the right mouse button in the configuration tree, in the filter overview and via the checkbox **Active**.
If a filter is inactive, its parameters are still kept in the configuration, but the data logger does not execute the filter.

8.14.1.2 Delete Filter

The button **[Delete Filter]** deletes the marked filter. It is also possible to delete via the right mouse button in the configuration tree or in the filter overview.

8.14.1.3 Samplerate

By the Samplerate a new sampling rate of all filtered signals for the output file is set. The adjustment of the Samplerate is depending on format and can be applied only in the following Formats:

- CSV – Comma-separated values
- MDF – Measurement Data Format – sorted (Samplerate must be greater than 0)
  With a Samplerate of 0 the original sampling rate is used.

8.14.1.4 Pre-Time and Post-Time

Applies a filter to the recorded data, the on- and off-delay can be configured for this event to record additionally a certain area after the event and before.

Time period BEFORE the event => **Pre-Time**	value between 0 and 3600 seconds
Time period AFTER the event => **Post-Time**	value between 0 and 3600 seconds

8.14.1.5 Filter-Event

The following two Filter-Events are supported.

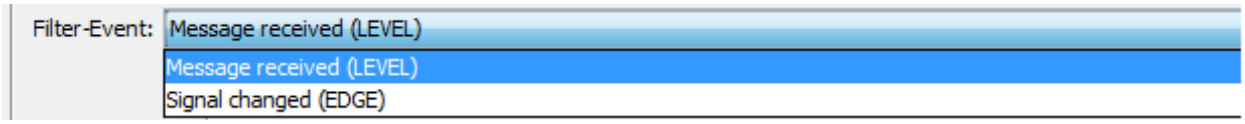

Figure 8.105: Filter-Event

8.14.1.5.1 Message received (LEVEL)

The filter is triggered, when a message is received and its signal condition coincides with the configured.
That means, e.g., when ten times consecutively the same signal is received, the filter is triggered ten times. With analog and digital signals, for which a sampling interval is specified in the general channel settings, the filter is triggered, e.g., every 100 ms, when the signal does not change.

8.14.1.5.2 Signal changed (EDGE)

The filter is triggered, when the value of the signal changes.
That means, e.g., when ten times consecutively the same signal is received, the filter is triggered only once. With analog and digital signals, for which a sampling interval is specified in the general channel settings, it is only triggered, when the value of the signal is changing within the sampling.

8.14.1.6 Format and conversion

The formats of the generated files are depending on the type and the configuration of the respective filter. The following output formats are supported:

- Unsorted MDF 3.3 (Restriction to a maximum of 256 messages) (*.mdf)
- CSV (*.csv)
- Sorted MDF 3.3 (*.mdf)
- Vector Rawdata (*.log)
- Telemotive Trace file (*.tmt)

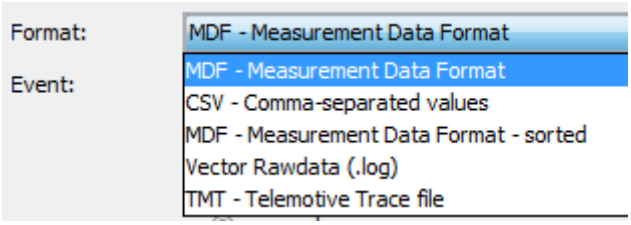

Figure 8.106: Select Format

If the following formats are selected,

- Vector Rawdata (.log)
- TMT – Telemotive Trace file

no signal filtering will be carried out.

Only the raw data are recorded unfiltered, but triggered with start and stop condition.

In this case the signal tabs will be greyed out, because this tabs are not evaluated.

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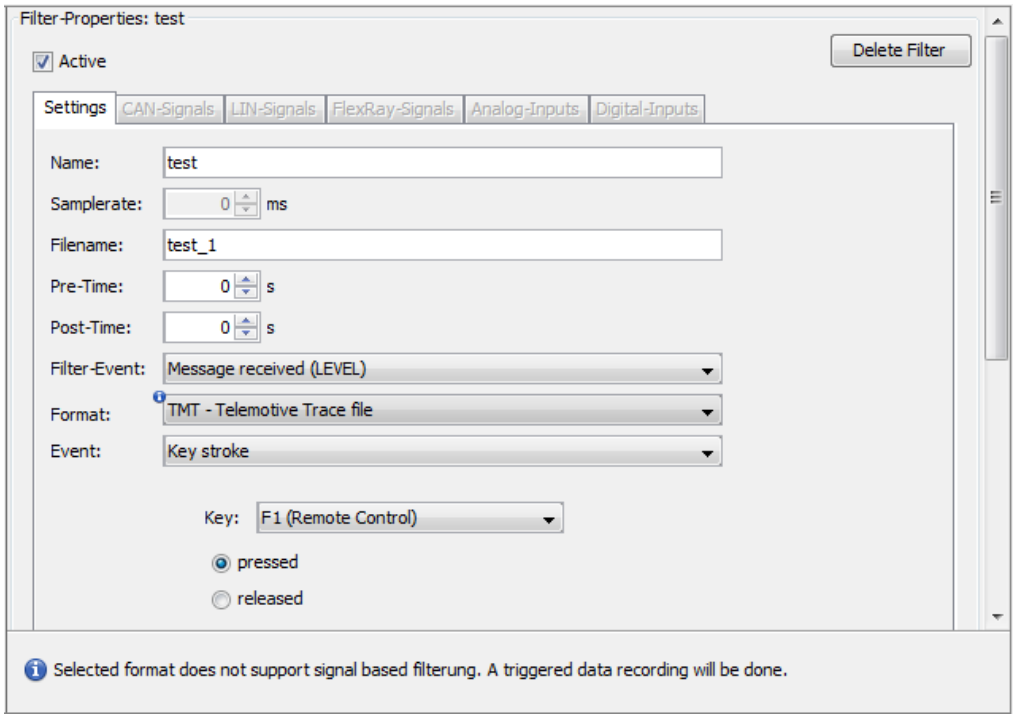

Figure 8.107: Inactive tabs at format selection Vector Rawdata and Telemotive Trace file

During conversion, the filtered data is displayed in a separate node:

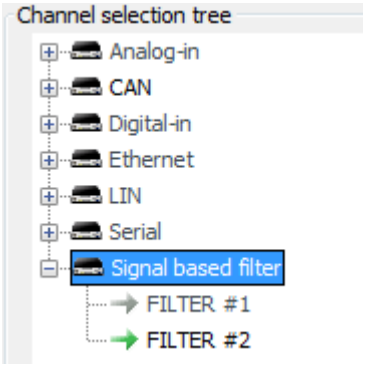

Figure 8.108: Filtered data in channel selection tree

The target format defined in the configuration for the filter can not be changed any more.

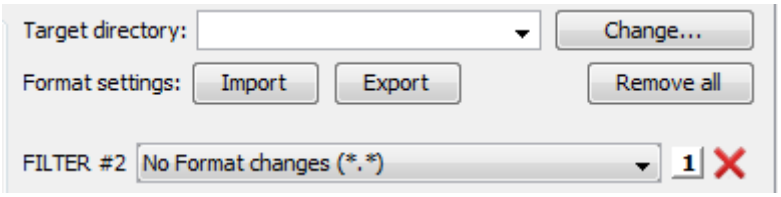

Figure 8.109: Target format of filtered date

8.14.1.7 Event

To start a filtering process, each created filter must be assigned to an event. If this event occurs, the corresponding signal values are filtered and stored in a new file. The filtered data is automatically downloaded trough the System Client.

Currently, the following events are possible:

- Complex event
- Received CAN signal
- Received LIN signal
- Received FlexRay signal
- Key stroke
- Digital Input
- Analog Input

8.14.1.7.1 Complex event

The event **[Complex event]** offers the possibility to combine different single events with logical expressions to one event.

The user has to select the **[Complex event]** in the first configuration step. Afterwards, the empty input field <Expression> appears. The user can now insert different event conditions by the button **[Insert element…]**. A new expression is inserted at the current location of the cursor. Inserted items are displayed in blue text color. Error messages and warnings about items are displayed in **red text color**. If an element has been inserted, it can be deleted from the expression but not changed.

It is also possible to generate only one event condition for a complex event.

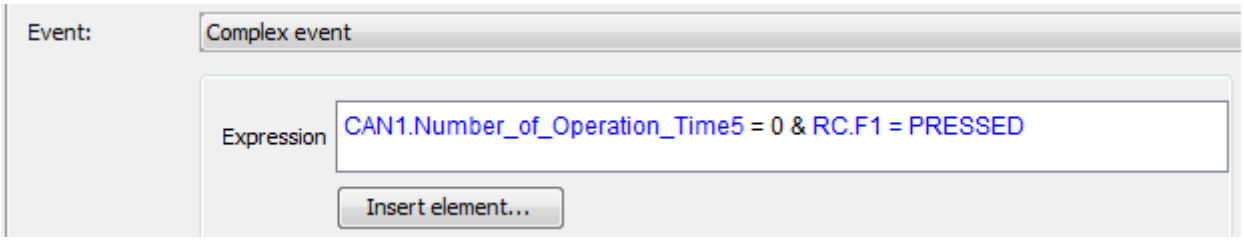

Figure 8.110: Event “Complex event”

8.14.1.7.2 Received … signal

For the following events [Received CAN signal], [Received LIN signal] and [Received FlexRay signal] serves as an example the event [Received CAN signal], because they are similar to configure.

With the following settings you define the CAN signal which starts the filter.

You can define the signal itself or load it from a previously assigned database (see section 8.20) by clicking the button **[Load from Database…]**.

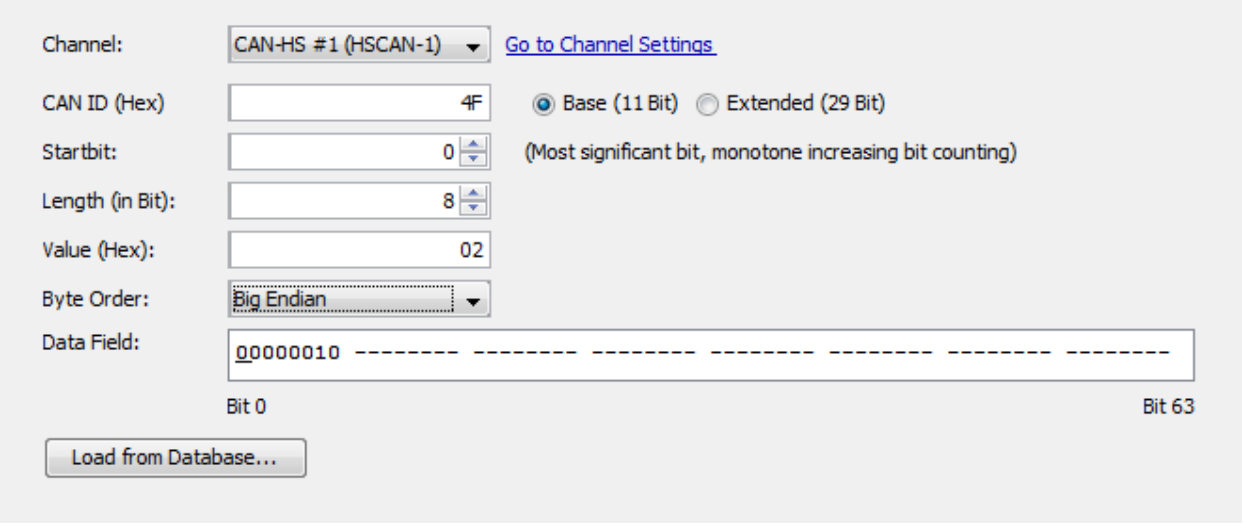

Figure 8.111: Event "Received CAN signal"

8.14.1.7.3 Key stroke

The event **[Key stroke]** is defined by clicking the **[Trigger]** button of the logger / the Remote Control or function keys **[F1]** to **[F10]**.

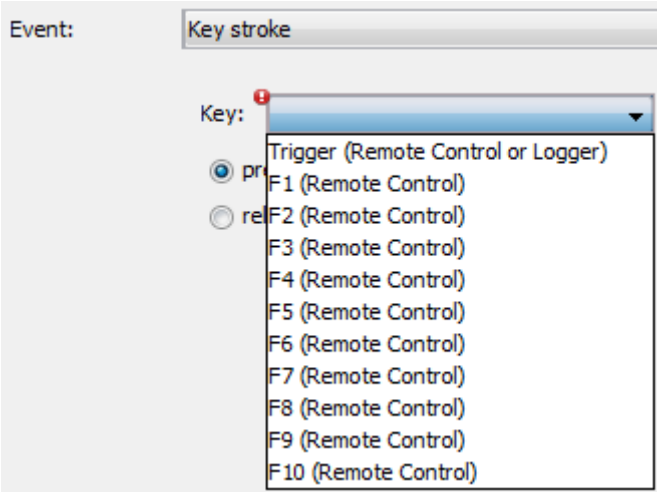

Figure 8.112: Selecting triggering key

Each function key can only be assigned to a single filter. Linking a plurality of function keys with each other or a function key and a complex event is not possible.
The key status can be **pressed** or **released**. These parameters have to be selected by the user.
The associated action is executed, e.g., when you have selected **pressed**, by pressing the key.

A connected blue PiraT Remote Control (Voice) is required for using the function keys **[F1]** to **[F10]**.

8.14.1.7.4 Digital Input

The event **[Digital Input]** is defined by selecting the channel and the signal status **[1 (High)]** or **[0 (Low)]**. This parameter has to be selected by the user.

Figure 8.113: Event "Digital Input"

Note:
Signal evaluation corresponding to the used digital input. Depending on the application the trigger must be configured compatible to the digital input.

The number of available digital input channels depends on the used device type. To define the exact number, please look at the hardware manual.

8.14.1.7.5 Analog Input

The event **[Analog Input]** is defined by the comparison of the analog input and the selected voltage value. The value must be set in mV.

Hint:
The voltage must exactly correspond to the set value. If this is not the case, no action is triggered. To define an interval, the complex events can be used.

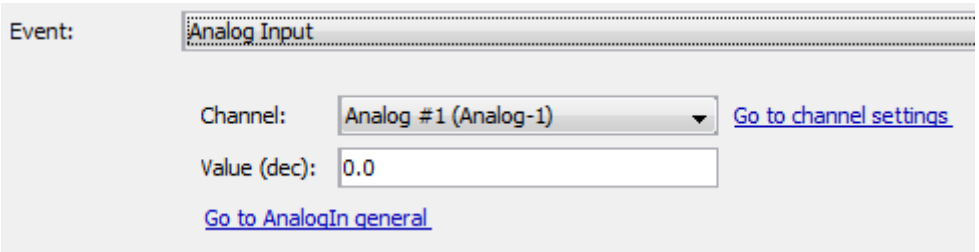

Figure 8.114: Event "Analog Input"

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8.14.2 Filter assignment

If the filter is fully configured, you can set the signals/inputs that he should filter after his triggering.

The following signals can be filtered:

- CAN-Signals
- LIN-Signals
- FlexRay-Signals
- Analog-Inputs
- Digital-Inputs

To remove a filter on a signal, open the respective tab and mark the signal. Delete the signal by either clicking **[Remove signal(s)]** or opening the signals shortcut menu with a right-click on it and there clicking **[Delete signal(s)]**.

To define a filter for a signal, open the respective tab and click **[Add signal…]**. A dialog opens whose content depends on if you assign a signal or input.

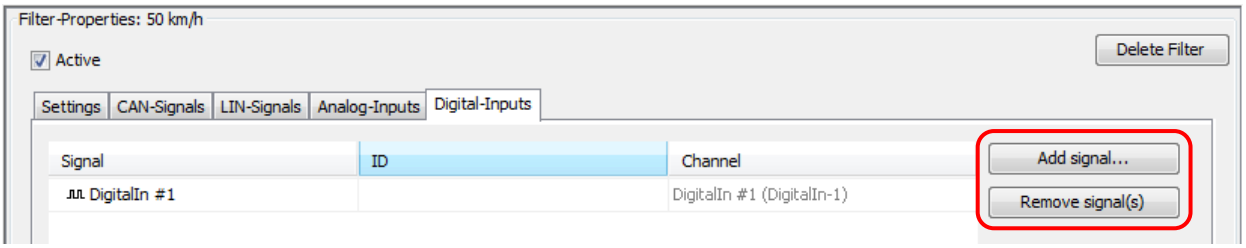


Figure 8.115: Filter assignment

8.14.2.1 Filtering signal

As an example here serves the adding of CAN signals.

Via the setting “Channel” you can select the signals to be filtered from a single channel or from all channels.

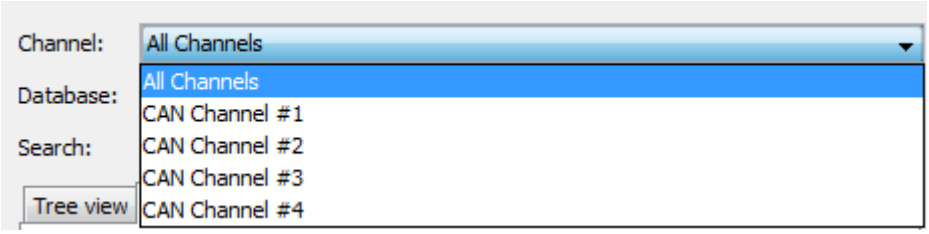


Figure 8.116: Selecting CAN channel

Mark the required signals of the configured database in the tree view or list view and click **[Add]**.

Note: For further information about database please have a look at section 8.20.

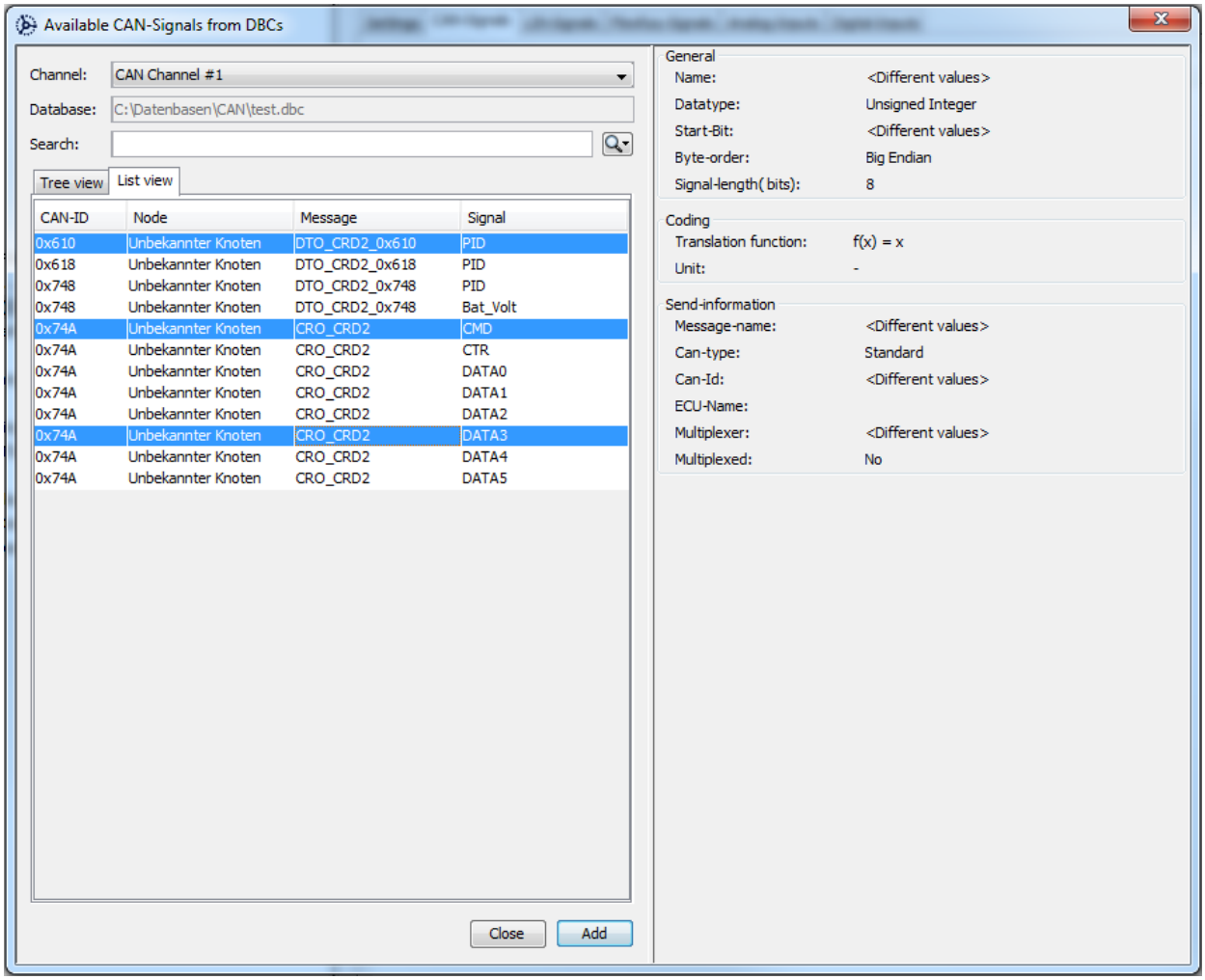


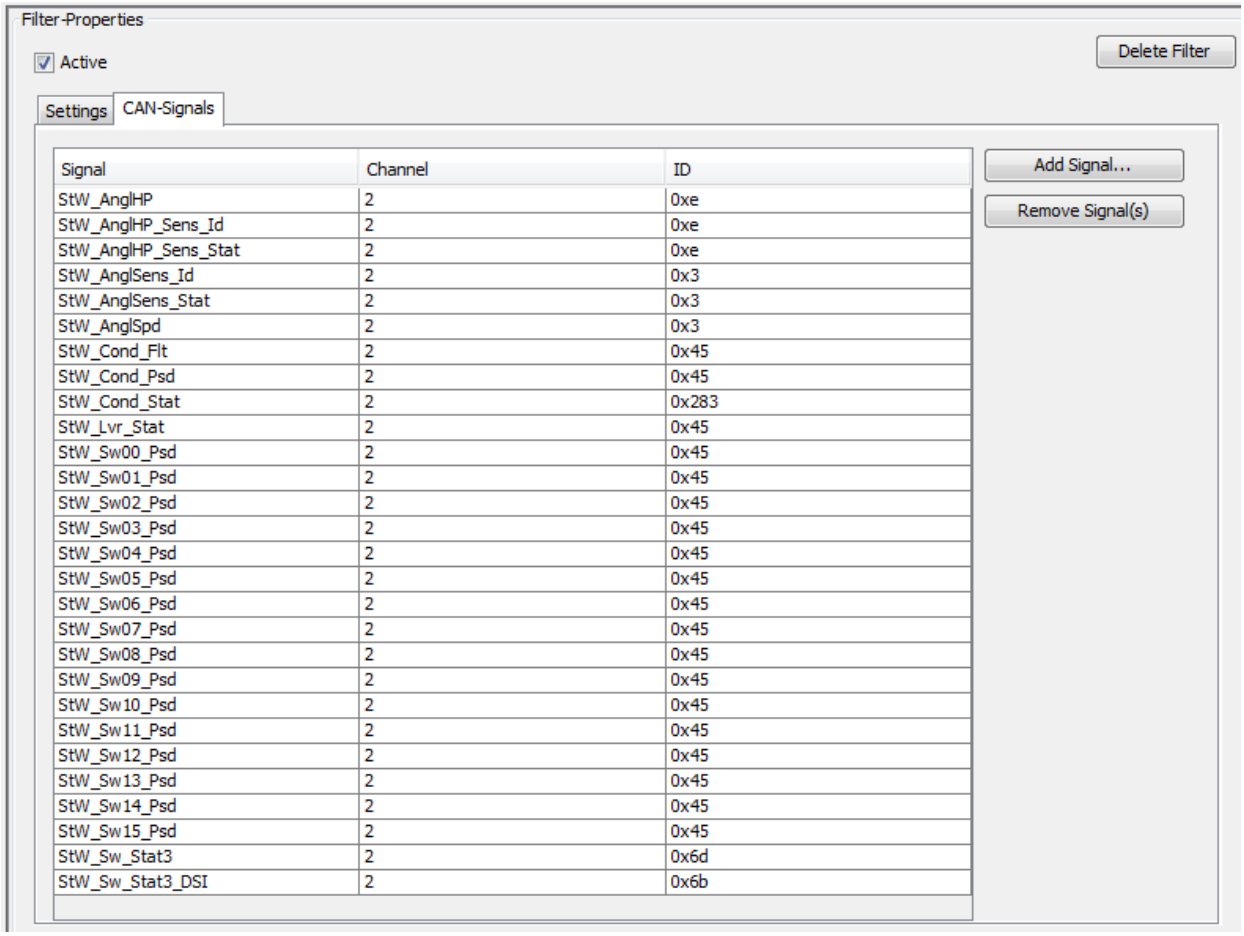
Figure 8.117: Selecting signals of CAN channel

To avoid conflicts with signals of the same name, all inserted signals are automatically renamed trough the System Client into a fixed format and thereby provided with a unique name.

Format for signal names:
<Original signal name>___#<Logical channel (Hex)><Message ID (Hex)>

Example:

Original signal name:	StW_AnglHP
Logical channel (Hex):	2
Message ID (Hex):	0xe
New signal name:	StW_AnglHP___#20xe



Signal	Channel	ID
StW_AnglHP	2	0xe
StW_AnglHP_Sens_Id	2	0xe
StW_AnglHP_Sens_Stat	2	0xe
StW_AnglSens_Id	2	0x3
StW_AnglSens_Stat	2	0x3
StW_AnglSpd	2	0x3
StW_Cond_Flt	2	0x45
StW_Cond_Psd	2	0x45
StW_Cond_Stat	2	0x283
StW_Lvr_Stat	2	0x45
StW_Sw00_Psd	2	0x45
StW_Sw01_Psd	2	0x45
StW_Sw02_Psd	2	0x45
StW_Sw03_Psd	2	0x45
StW_Sw04_Psd	2	0x45
StW_Sw05_Psd	2	0x45
StW_Sw06_Psd	2	0x45
StW_Sw07_Psd	2	0x45
StW_Sw08_Psd	2	0x45
StW_Sw09_Psd	2	0x45
StW_Sw10_Psd	2	0x45
StW_Sw11_Psd	2	0x45
StW_Sw12_Psd	2	0x45
StW_Sw13_Psd	2	0x45
StW_Sw14_Psd	2	0x45
StW_Sw15_Psd	2	0x45
StW_Sw_Stat3	2	0x6d
StW_Sw_Stat3_DSI	2	0x6b

Figure 8.118: CAN signals to be filtered

8.14.2.2 Filtering input

The inputs (analog and digital) can be set manually. These relates to the channel total value and not to one signal.

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8.14.3 General Settings

For the filtered data, a separate ring buffer can be configured. Through the size specification is set, what percentage of the available total memory of the hard drive is used for the filtered data.

The value can be set from a minimum of 30 to a maximum of 70 %.

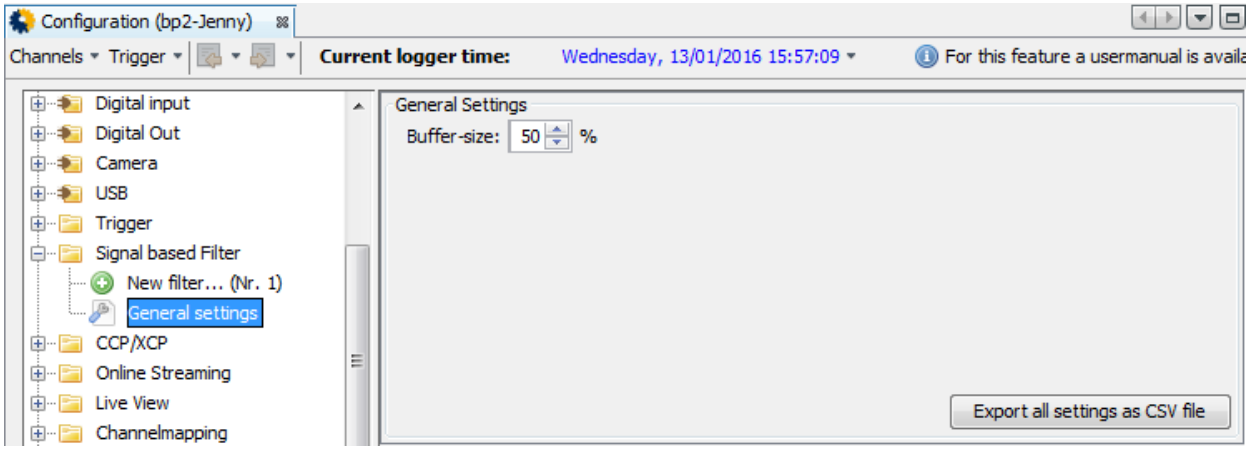

Figure 8.119: Buffer-size

8.14.3.1 Filter overview

To manage your signal based filters as fast as possible we included the filter overview. You can reach the filter overview by clicking the category **[Signal based Filter]**.

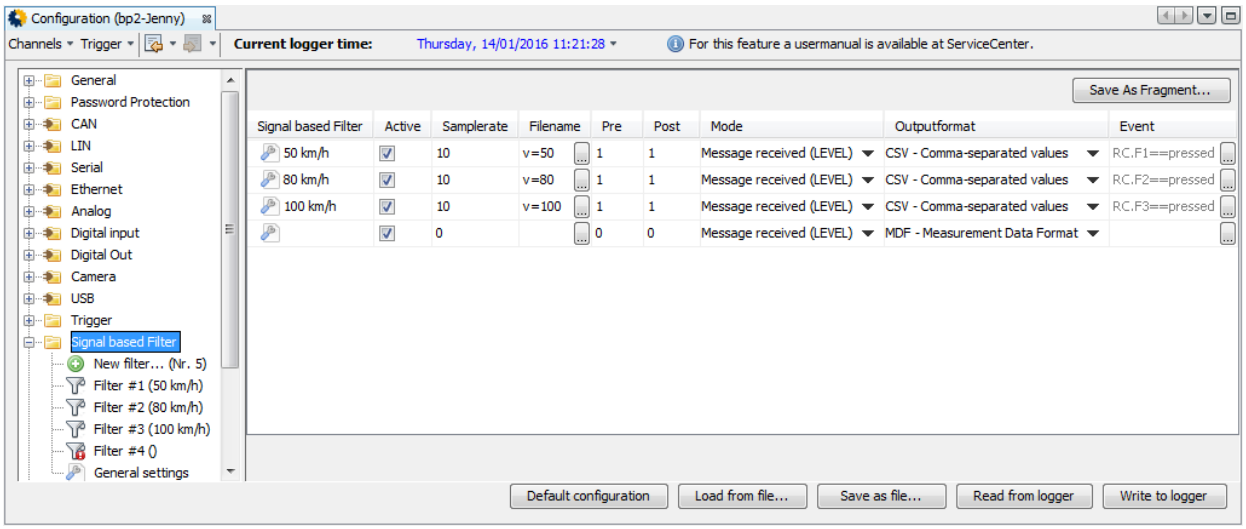

Figure 8.120: Configuration – Signal based Filter: Signal based Filter (overview)

The filter overview contains the important information about the filter settings.

The following options are available in the shortcut menu of every filter:

- Copy Filter
- Delete Filter
- Activate / deactivate Filter

8.14.3.2 Save as fragment

With the button **[Save As Fragment…]** you can store your signal based filters separately, regardless of other settings in the System Client. It is therefore possible to transfer your self-defined filters quickly to other data loggers and to combine them with different configurations.

To import the saved filter configuration, open the loggers shortcut menu with the right mouse key in the Network Logger list and click **[Upload configuration…]**.

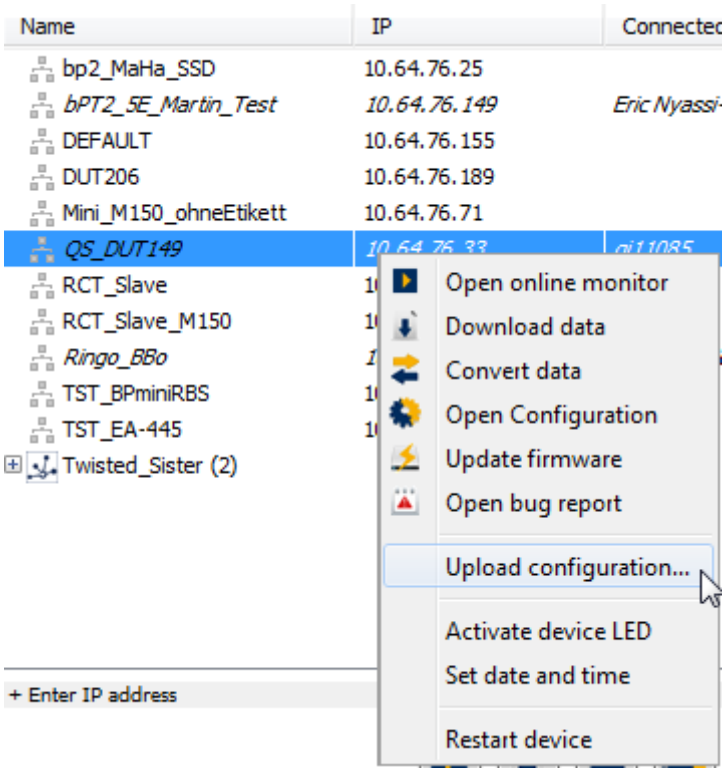

Figure 8.121: Upload filter configuration

Attention:
This works only with a single data logger, not with a TSL cluster!

Then the configuration is transmitted to the logger.

A progress bar appears at the bottom on the right of the System Client, please wait until the bar disappears.

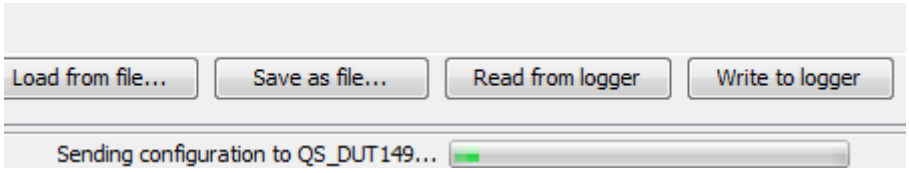

Figure 8.122: Progress bar

Now you have to click on the button **[Read from logger]** in order to update the screen.

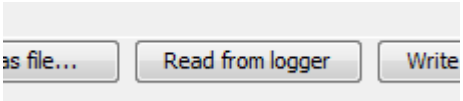

Figure 8.123: Read from logger

Then you can see the imported filter in the folder **[Signal based Filter]**.

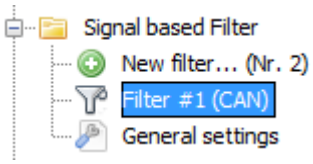

Figure 8.124: Imported signal based filter

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8.14.3.3 Copy Filter

By the function **[Copy Filter]** in the shortcut menu of each filter you can make an exact duplicate of a filter with the same properties like the source filter.

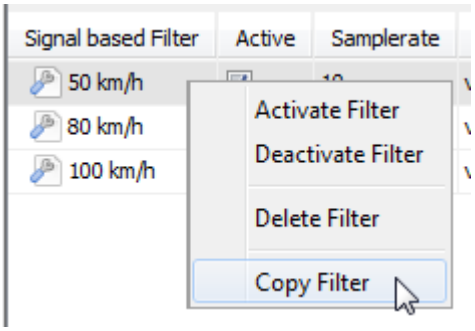


Figure 8.125: Copy filter

To identify a duplicated filter the name of the duplicated filter will look like this:

Sample: *name of source filter*_Copy

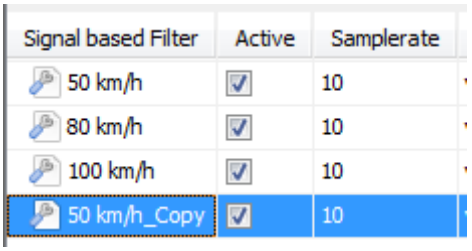


Figure 8.126: Copied filter

8.15 Trigger

With the function **Complex Triggers** of the blue PiraT2 / 5E / Mini / Remote the following functions are available:

- Supporting CCP/XCP events (requires CCP or XCP license)
- Configuring an event that will cause an action

Event	Action
Complex event	Send CAN message
Receive CAN signal	Set marker
Receive LIN signal	Set digital output
Receive FlexRay signal	Append info entry to event overview
Key stroke	Display notification on Remote Control
Digital Input	Send SMS (with additional license)
Received Logger Signal	Send E-Mail (with additional license)
Analog Input	Execute CCP/XCP action (with additional license)
Received GPS signal	Display Remote Control Monitor (with additional license)

You can set up to 50 complex triggers.

Open the category **[Trigger]**.

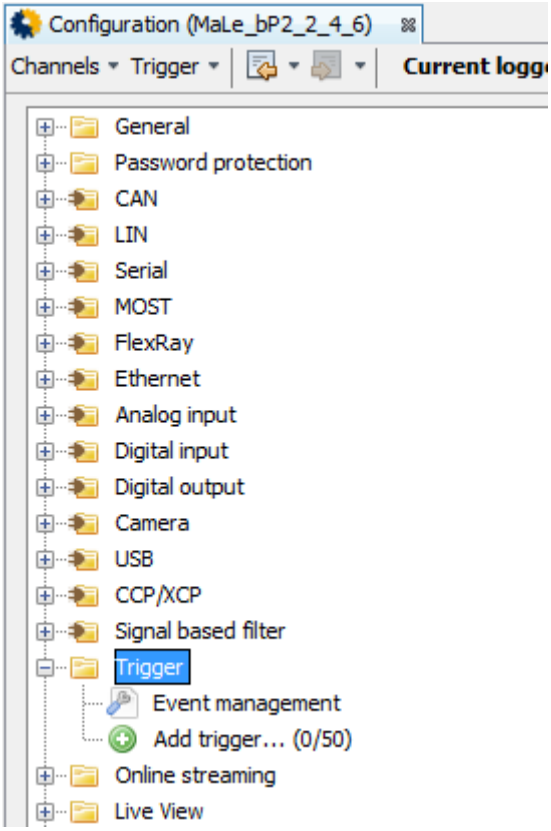


Figure 8.127: Adding new Trigger

By double-clicking the button **[Add Trigger… (…/50)]** a new trigger will be shown in the list (e.g., Trigger #1). The red symbol with exclamation mark reminds that the trigger is not configured yet or is not fully configured.

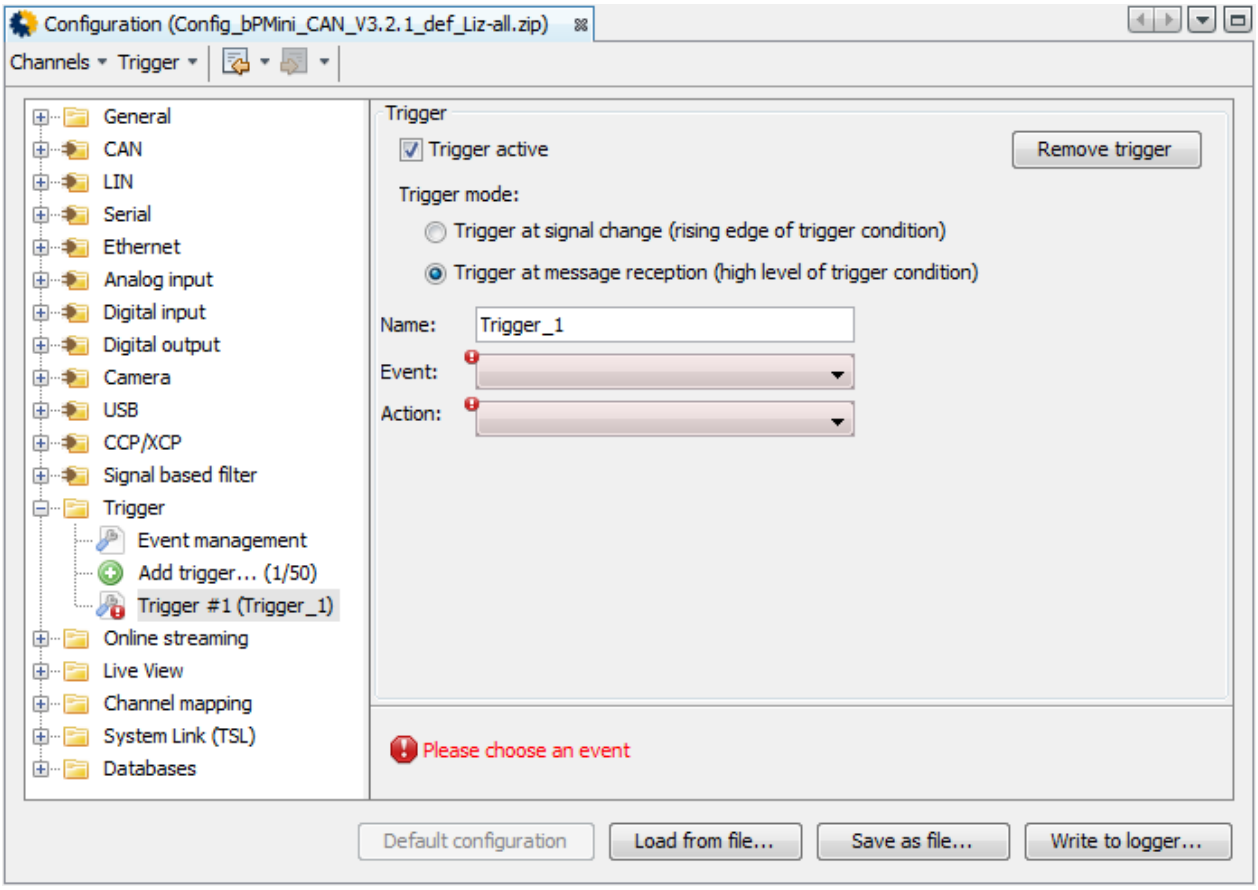


Figure 8.128: Trigger #...

When at least one trigger was added clicking the folder **[Trigger]** will open an overview of all triggers and their configurations in the right window, see section 8.15.10 Trigger overview.

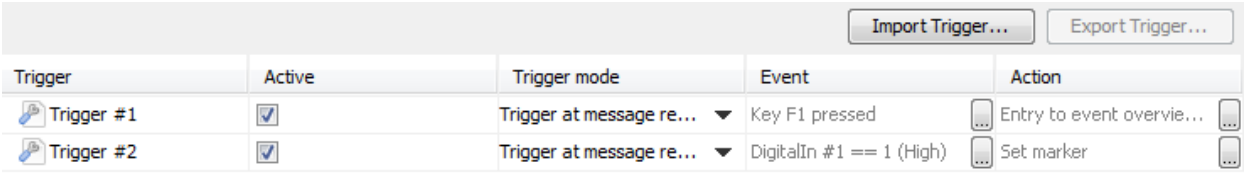


Figure 8.129: Trigger (overview)

8.15.1 Status

Each trigger can be enabled or disabled by the right mouse button in the configuration tree, in the trigger overview and via the checkbox **Trigger active**.
If a trigger is inactive, its parameters are still kept in the configuration, but the data logger does not execute the trigger.

8.15.2 Remove trigger

The button **[Remove trigger]** deletes the marked trigger. It is also possible to remove via the right mouse button in the configuration tree or in the trigger overview.

8.15.3 Mode

Each trigger has two different modes of evaluating the trigger condition:

- Trigger at signal change (EDGE): The trigger occurs only if signal value changes and the event condition are “true”. This trigger condition mode is applicable for periodic signals (e.g., CAN signals), where only one trigger is required for the first time the event condition is true.
- Trigger at message reception (LEVEL): The trigger occurs every time a signal message was received and the event conditions are corresponding. This trigger mode is applicable if every reception of a message should cause a new trigger (Default trigger mode).

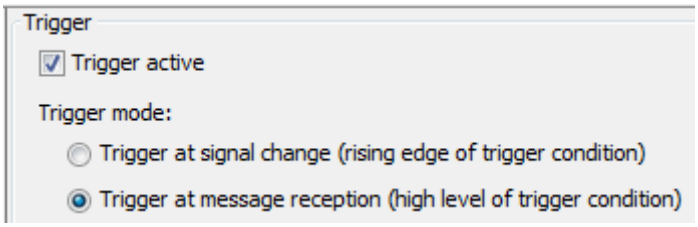


Figure 8.130: Selecting the trigger mode

8.15.4 Name

The name of the trigger can be changed by the user. The new trigger name is displayed in the configuration tree on the left hand side. The number of characters for the trigger name is limited to 50.

8.15.5 Event and action

The trigger function is defined by an event and a following action. Events and actions can be defined and changed by the user in any sequence.

8.15.6 Selecting an event

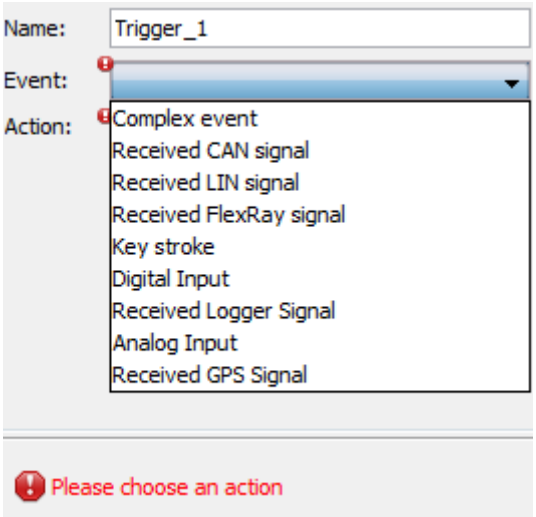


Figure 8.131: Selecting an event

8.15.6.1 Event: Complex event

The event **[Complex event]** offers the possibility to combine different single events with logical expressions to one event. One complex trigger can start only one <Action>. Different complex events can be configured to realize different actions.

The user has to select the **[Complex event]** in the first configuration step. Afterwards, the empty input field <Expression> appears. The user can now insert different event conditions by the button **[Insert element…]**. It is also possible to generate only one event condition for a complex event.

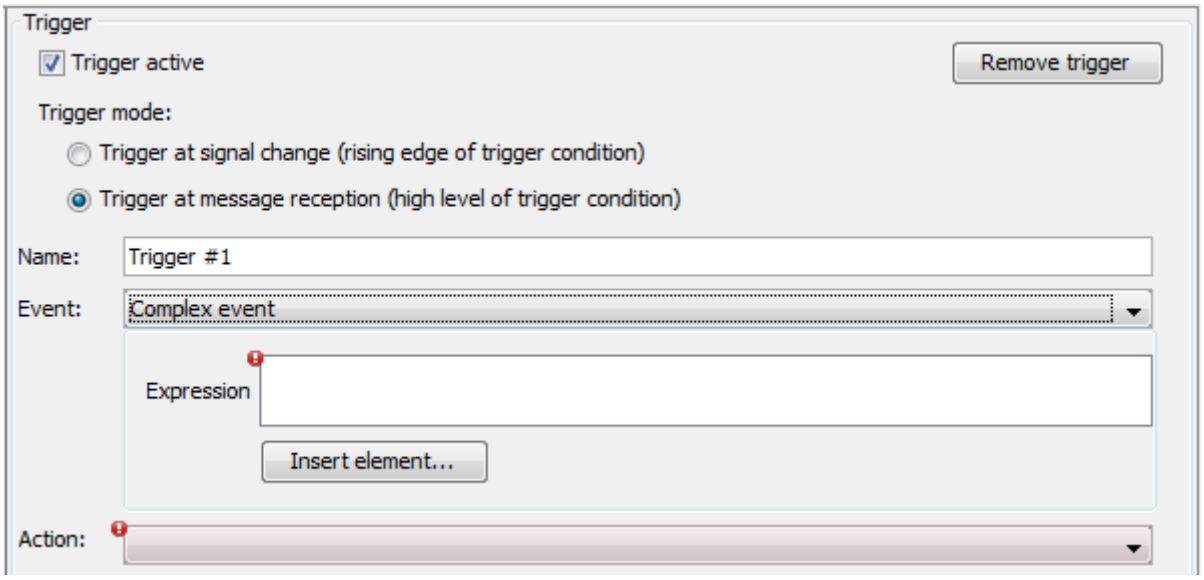


Figure 8.132: Selecting the event *Complex event*

8.15.6.1.1 Inserting an Expression

A new expression is inserted at the current location of the cursor. Inserted items are displayed in blue text color. Error messages and warnings about items are displayed in **red text color**. If an element has been inserted, it can be deleted from the expression but not changed.

The different events are selected with the **[Insert element…]** button.

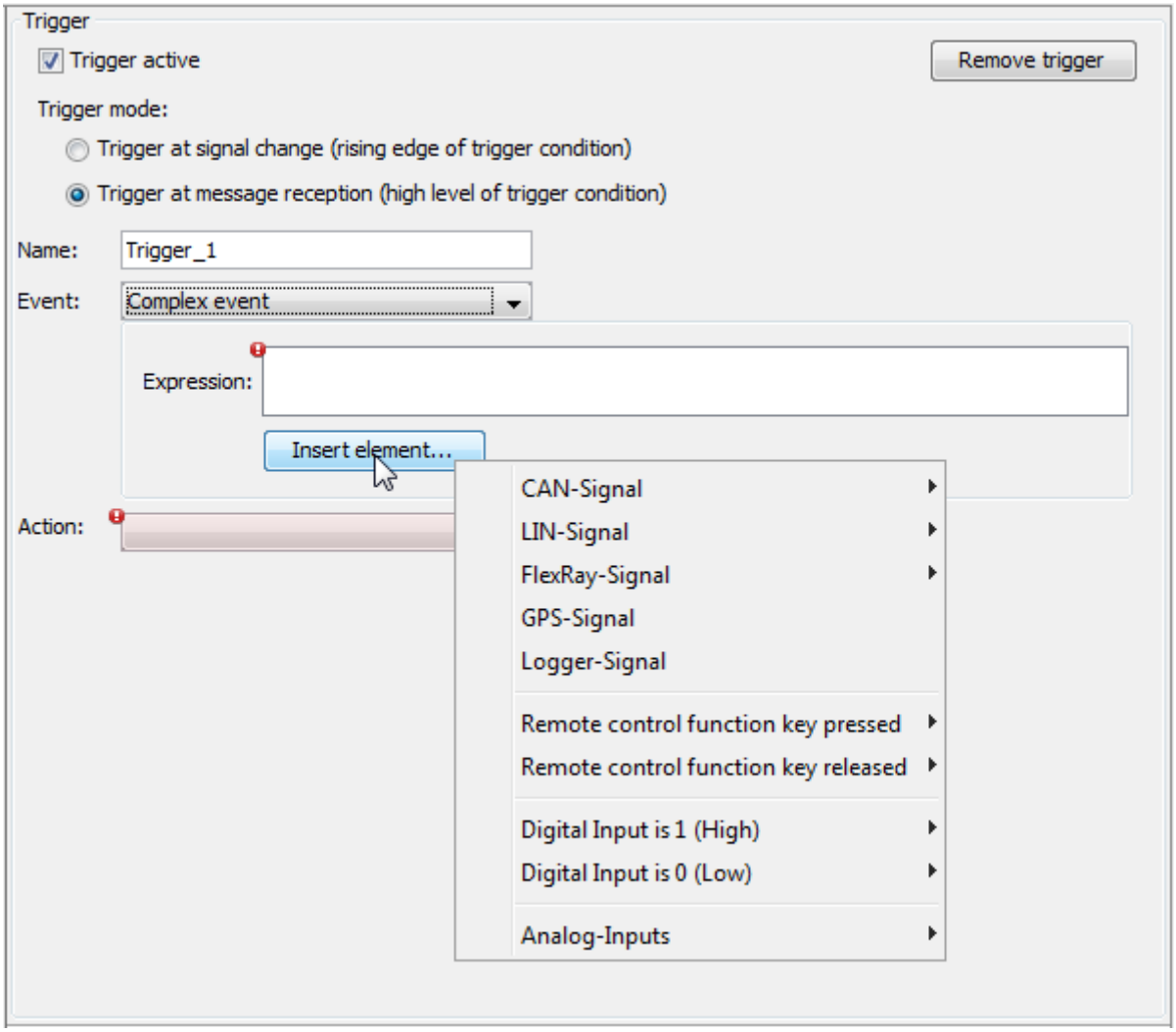


Figure 8.133: Inserting an expression

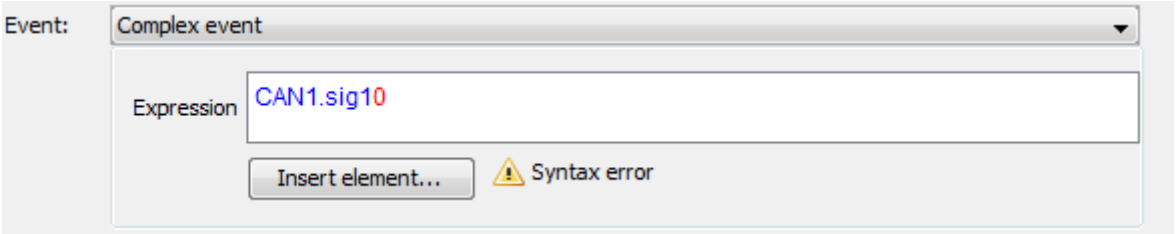


Figure 8.134: Part of a complex event

8.15.6.1.2 Expression: CAN-/LIN-/FlexRay-Signal

The corresponding CAN/LIN/FlexRay signal can be selected after clicking **[Insert element…]** in the shortcut menu.

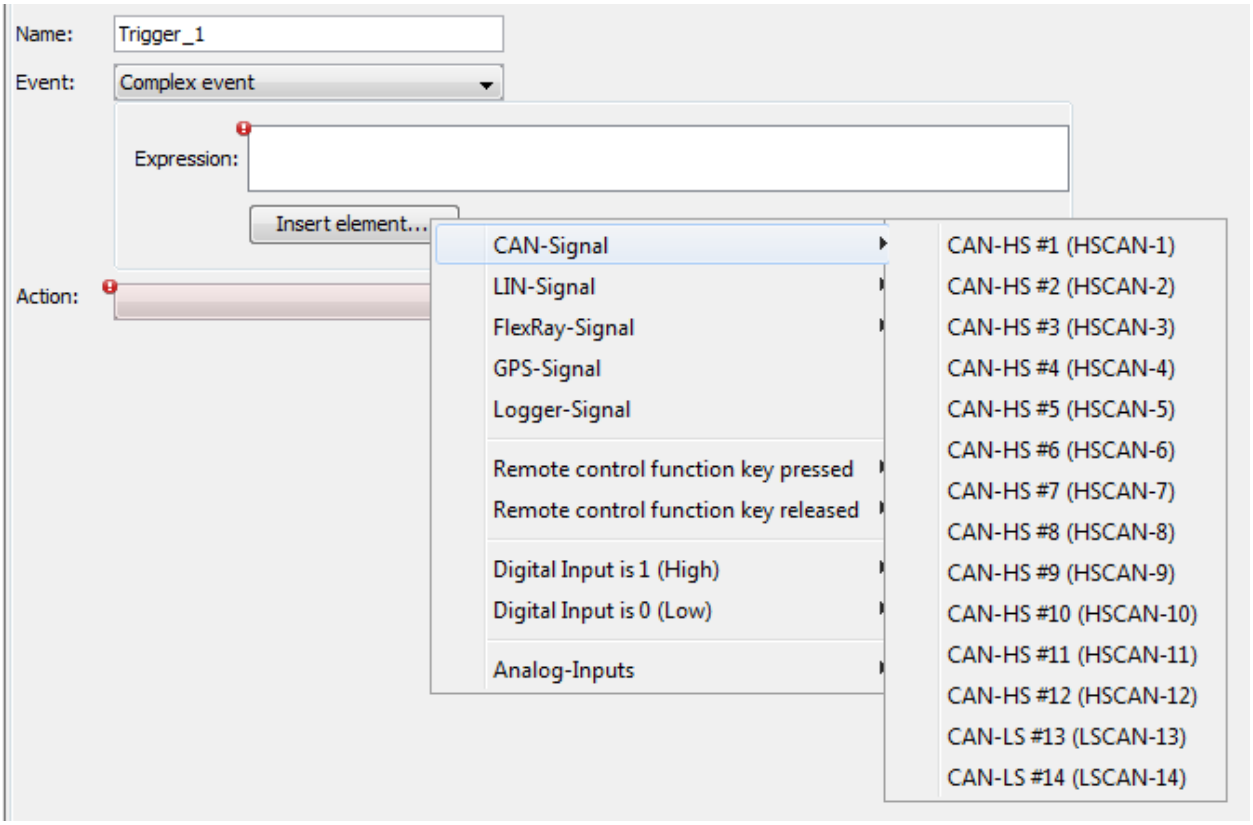


Figure 8.135: Selecting expression “CAN-Signal”

A dialog is opening. Here you can select the signal from a database.

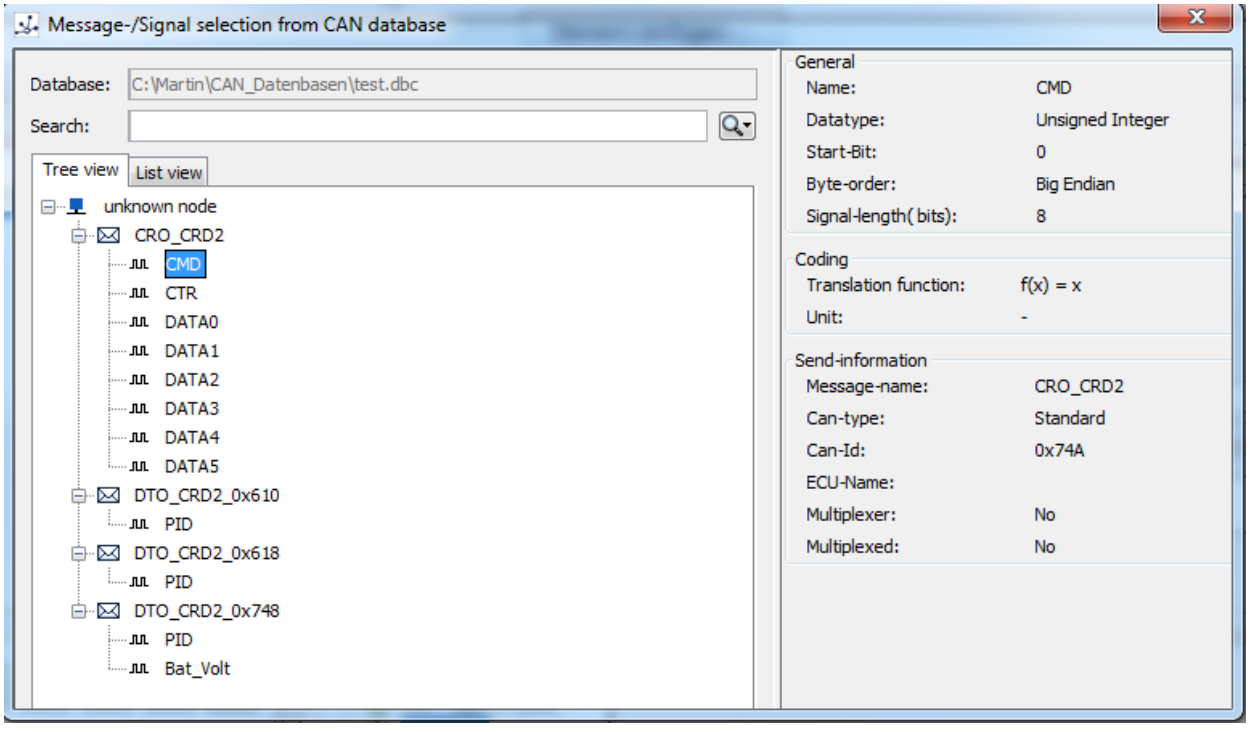


Figure 8.136: Selecting signal from CAN database

After selecting the signal the expression is displayed in the following format in the expression field:
*bus**channel number*.*signal name*

It is not possible to edit the signal name or channel number.

To complete the condition, the user has to insert 1. an operator and 2. a reference value (i.e., a scaled decimal value) by the PC keyboard. It is not possible to change this order.

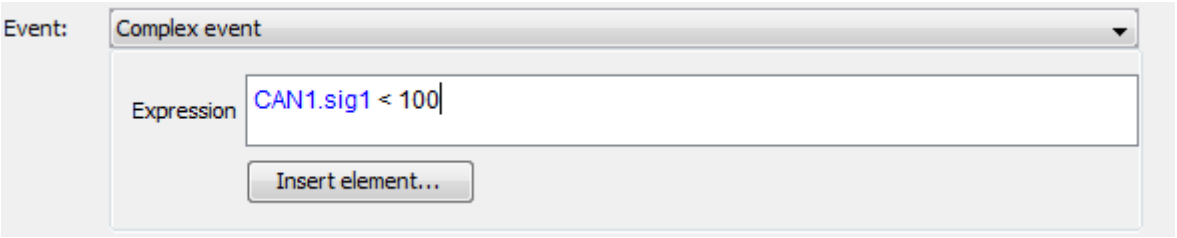


Figure 8.137: CAN expression

8.15.6.1.3 Expression: GPS-Signal

You can select a GPS signal by clicking **[Insert element…]** in the shortcut menu.

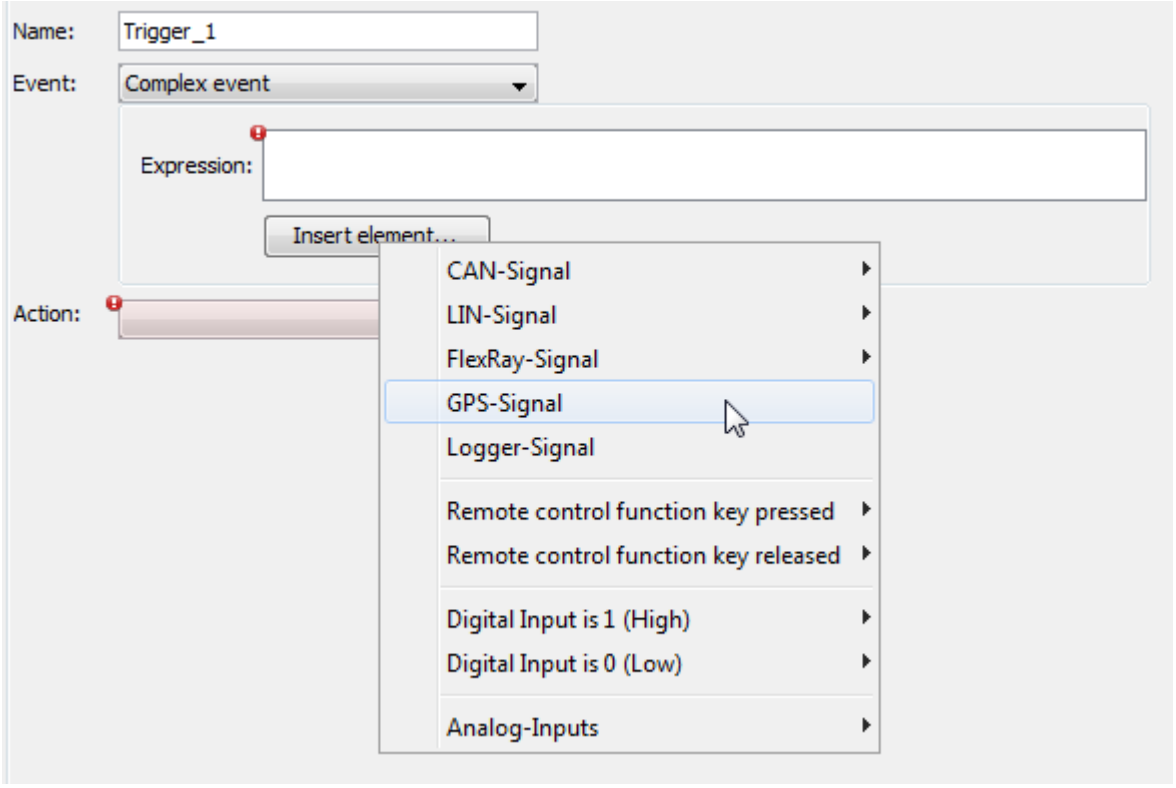


Figure 8.138: Selecting expression “GPS-Signal”

A dialog is opening. Here you can select the following signals:

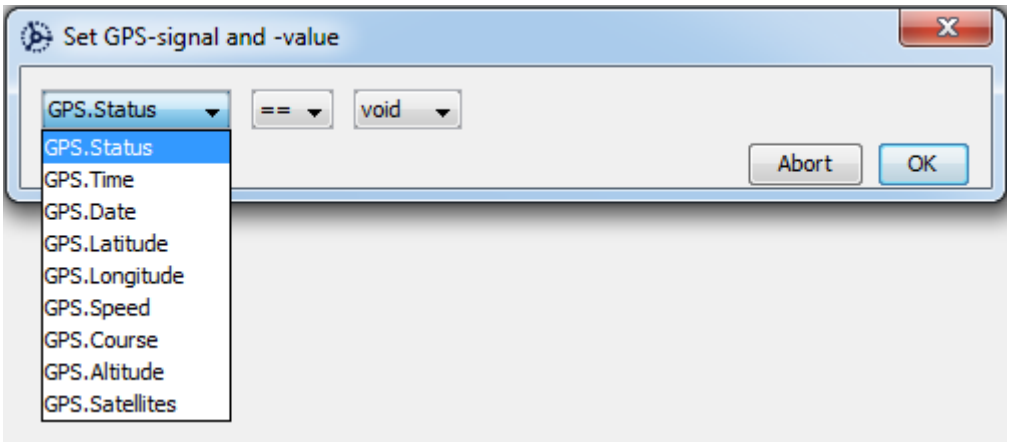


Figure 8.139: Available GPS-signals

Depending on the selected signals different operators can be choosen

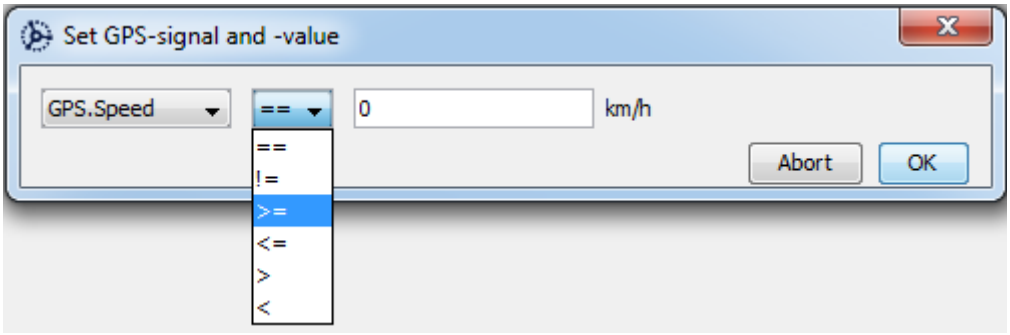


Figure 8.140: GPS-Speed operators

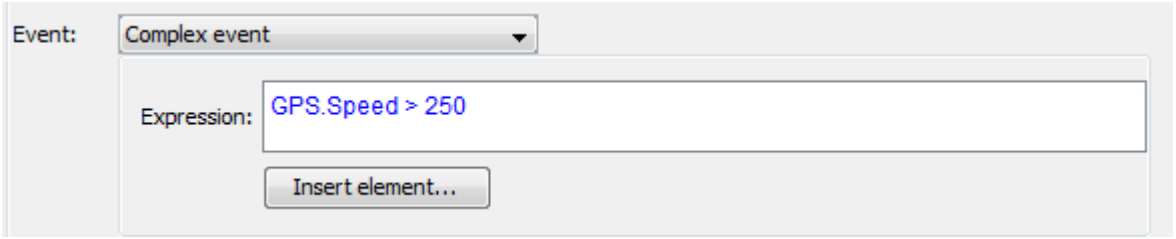


Figure 8.141: GPS expression

8.15.6.1.4 Expression Logger-Signal

As expression you can also insert the logger status.

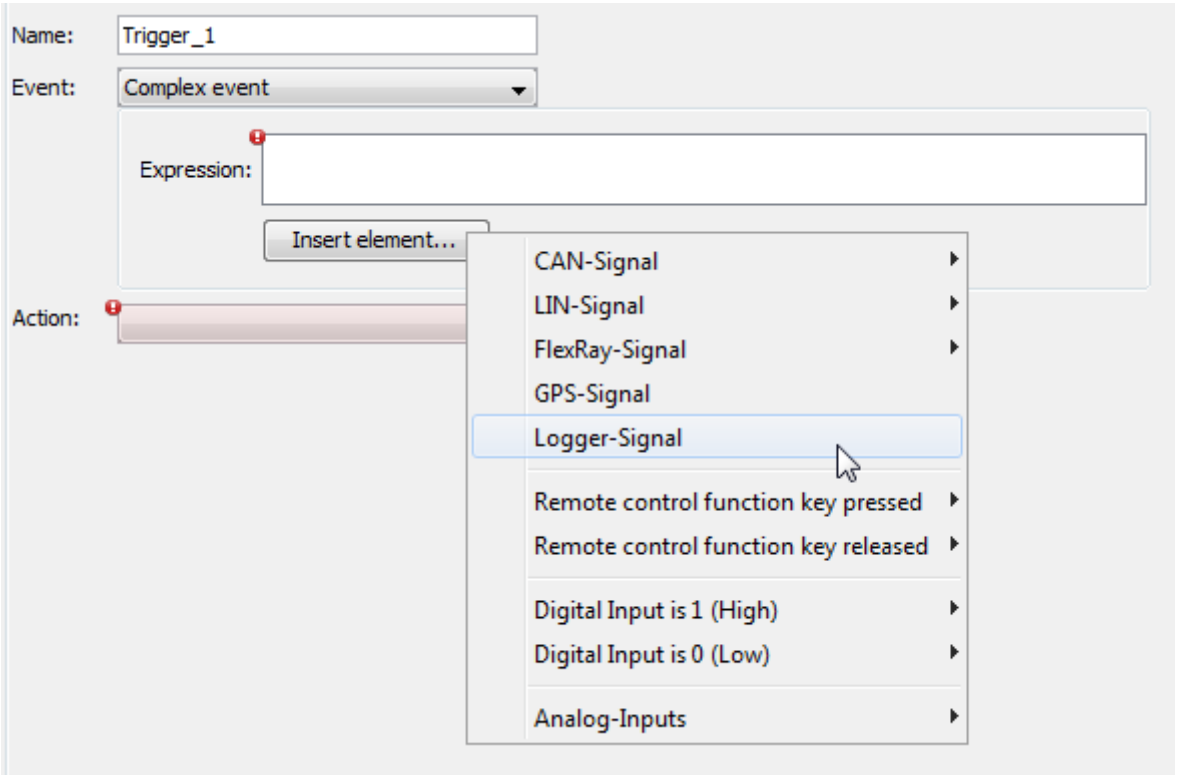


Figure 8.142: Selecting expression “Logger-Signal'

You can select the following logger states

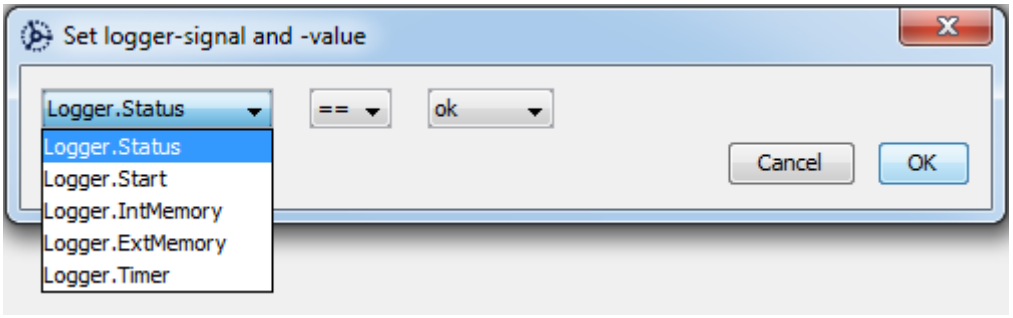


Figure 8.143: Avaiable logger states

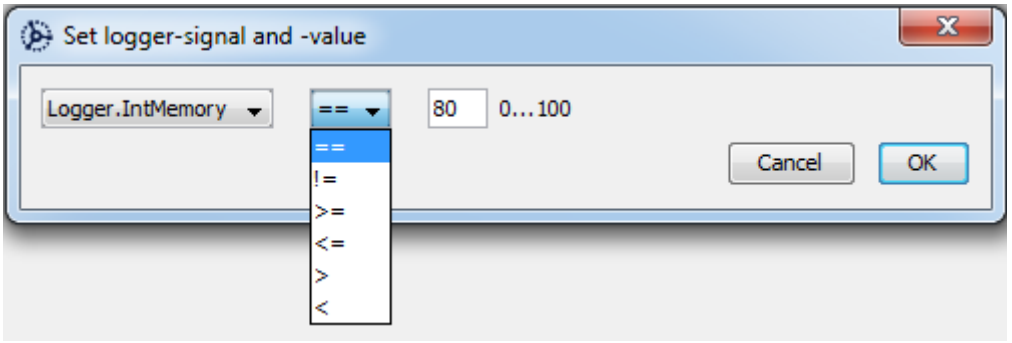


Figure 8.144: Avaialble logger status operands

Signalname	Type	Description
Logger.Status	„ok“ „warning“ „mem“ „ring“ „error“	No incidents There are warnings Internal memory is full, logging is stopped Ring buffer is full, old traces are deleted Logger in fault condition
Logger.IntMemory	Double (0..100)	Fill level of the internal memory HDD, SSD, Flash in percent
Logger.ExtMemory	Double (0..100)	Fill level oft he external Speicher CF-Flash, SD-Card in percent
Logger.Start	Bool	Logger is started The value 1.00 indicates that the logger is started
Logger.Timer	64Bit Integer	Past time in seconds since logger start or configuration change. The counter is reset to 0 after each restart or configuration change.

Table 8.4: Explanation of Logger signals

8.15.6.1.5 Expression: Remote control function key

Two options are available for the Remote Control (Voice) function keys **[F1]** to **[F10]**:
Remote control function key pressed → F*key number*
Remote control function key released → F*key number*

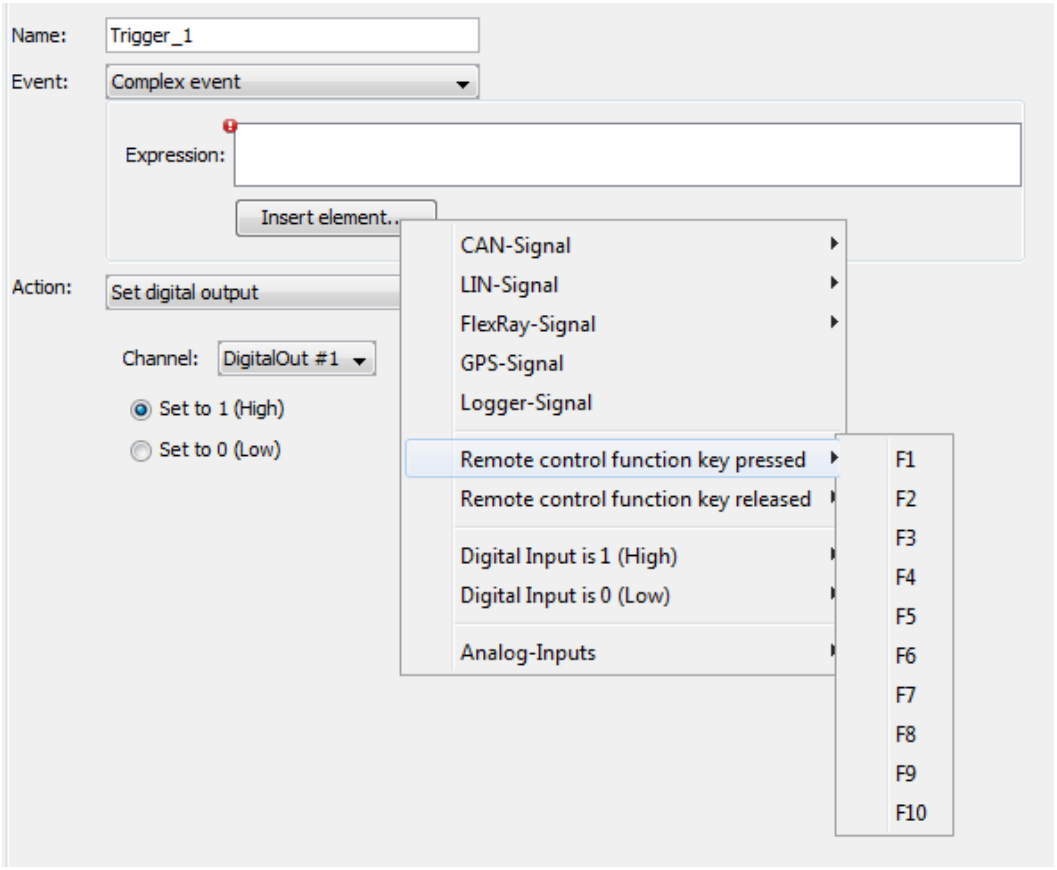


Figure 8.145: Selecting expression "Remote control function key pressed/released"

The event conditions are automatically generated and displayed in the expression field. There is no additional user input required.

pressed Function will be done by pressing the key.
released Function will be done by releasing the key.

The event conditions are displayed in the expression field as followed:
RC.F*key number* = PRESSED
RC.F*key number* = RELEASED

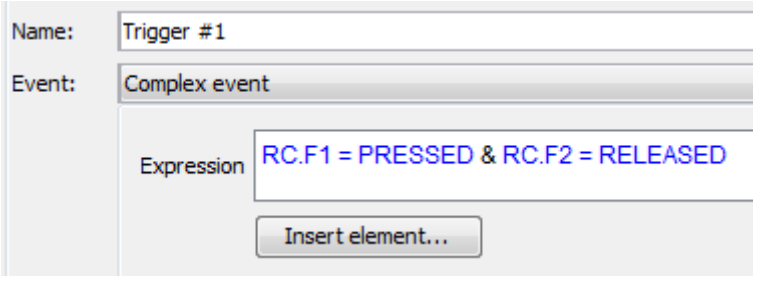


Figure 8.146: Remote Control function key expression

It is not possible to edit the digital input event in the expression field after it has been added.

8.15.6.1.6 Expression: Digital input

Two options are available for the digital input signals:
Digital input is 1 (High)
Digital input is 0 (Low)

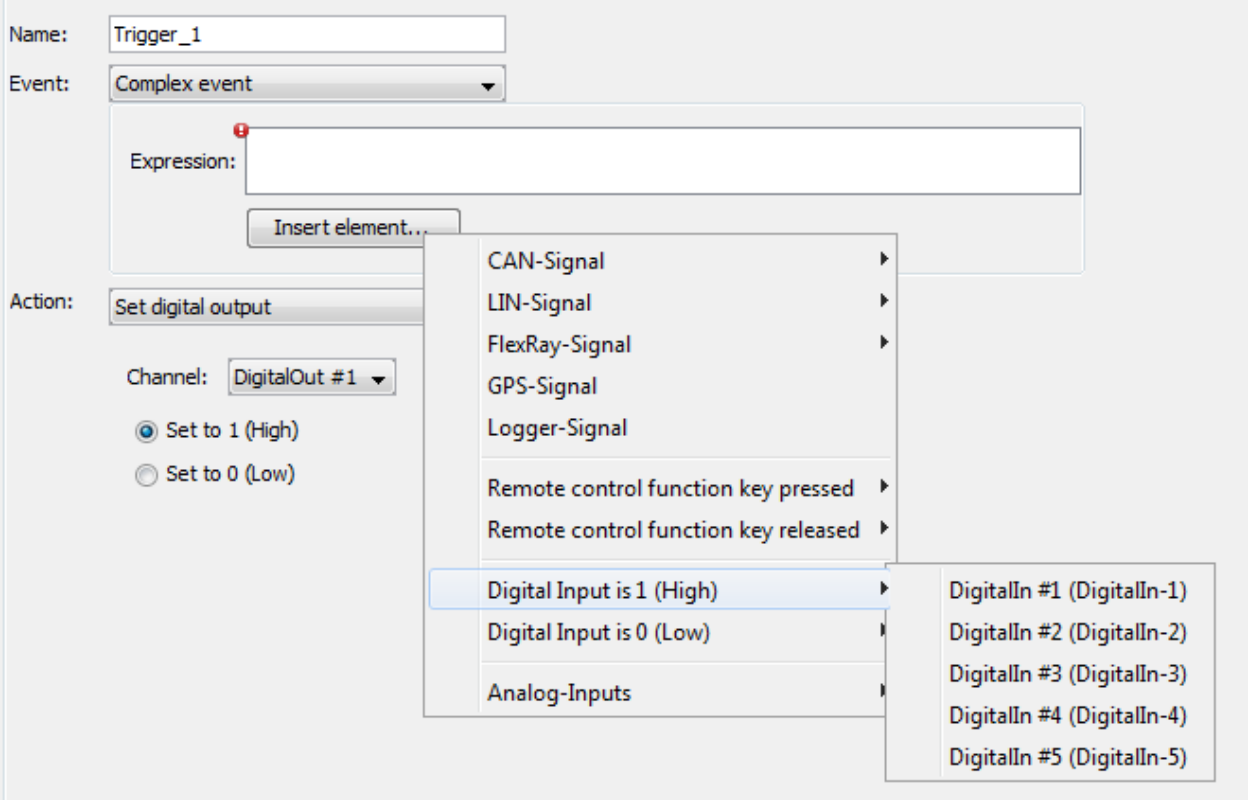


Figure 8.147: Selecting expression “Digital input is 1 (High)/0 (Low)”

The event conditions are automatically generated and displayed in the expression field. There is no additional user input required. The event conditions are displayed in the expression field as followed:
DIGIN#*channel number* = 1
DIGIN#*channel number* = 0

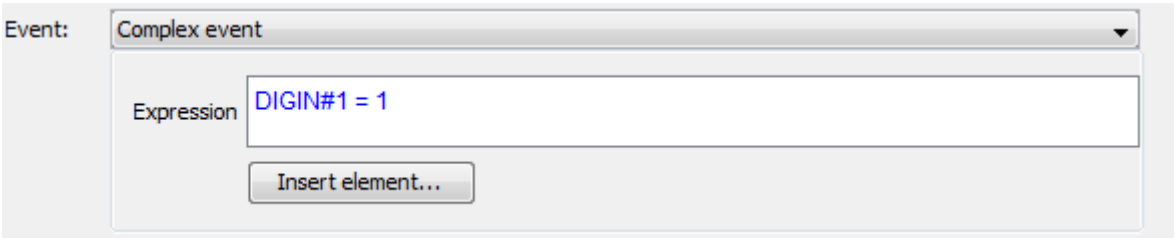


Figure 8.148: Digital input expression

It is not possible to edit the digital input event in the expression field after it has been added.

8.15.6.1.7 Expression: Analog Input

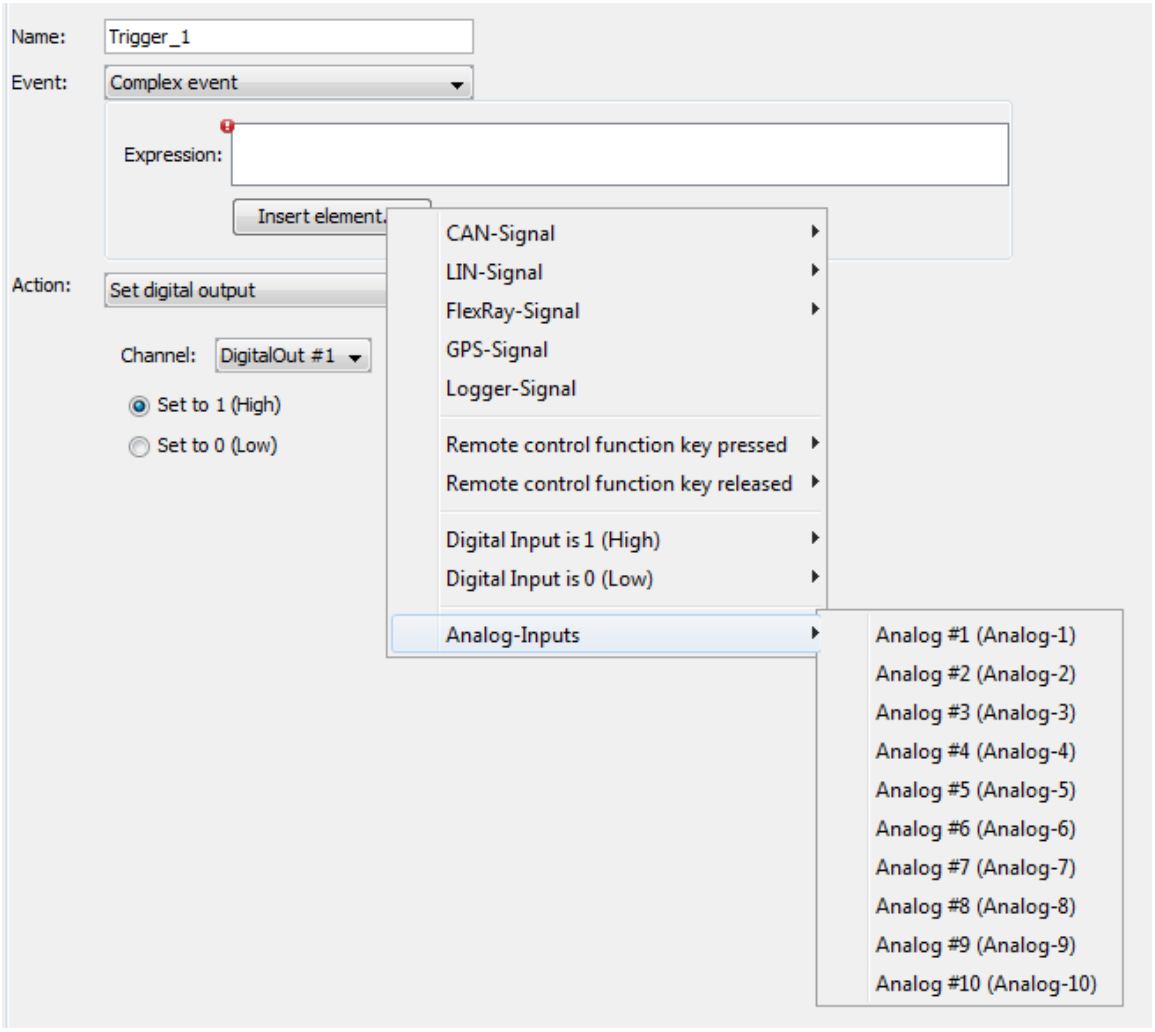


Figure 8.149: Selecting expression “Analog input”

After selecting the analog signal the signal is displayed in the following format in the expression field:
AI*channel number*

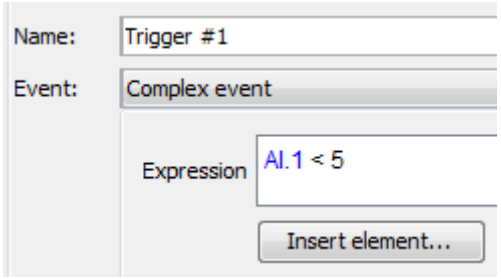


Figure 8.150: Analog input expression

It is not possible to edit the signal name or channel number.

To complete the condition, the user has to insert 1. an operator and 2. a reference value (i.e., a scaled decimal value) by the PC keyboard. It is not possible to change this order.

8.15.6.1.8 Overview of operators

The following compare operations, logical operations and numerical characters are available to combine different single events to a valid complex event expression.

Logical Operators	& logical AND combination | logical OR combination ! negation of events expressions
Compare operations / inequalities	< less than <= less than or equal > greater than >= greater than or equal = equal != not equal
Alphanumerical characters	0 to 9 compare values
Characters	“ (“ resp. “) “ Brackets for event expressions “ . “ resp. “ , “ Dot and comma for floating point expressions will be processed equivalent. The presentation depends on the language settings chosen during the client installation.

Table 8.5: Operators (overview)

The user has to enter the compare operators, logical operators and characters by the keyboard into the expression field. The configuration can be changed any time by the user.

Note:
It is not possible for the user to insert a space character. Space characters are inserted automatically to improve the readability.

The single event conditions of a complex event expression are processed by a defined priority list:

Operator	Description	Priority
( )	Brackets	1 (high)
!	NOT	2
< , <= , > , >= , = , !=	Comparisons	3
& , |	Logical AND, OR	4 (low)

Table 8.6: Priority order of the operators

Example: A B C event

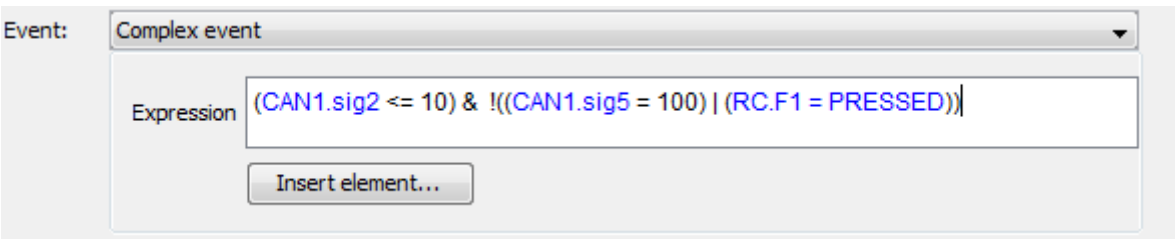


Figure 8.151: Valid expression of complex event

Process order:

15. Determination of results from the bracket terms of the event expressions A, B and C
16. Determination of result from event expression B and C combined with logical OR; Negation of the result
17. Logical AND is applied to the result of step 2 and the result of event condition A

The NOT operator always applies to the subsequent bracket expression.

8.15.6.1.9 Verification of input parameter

The complex event expression is validated immediately after each user input. Error and warning messages, if applicable, are displayed in the expression field in **red** and described below.

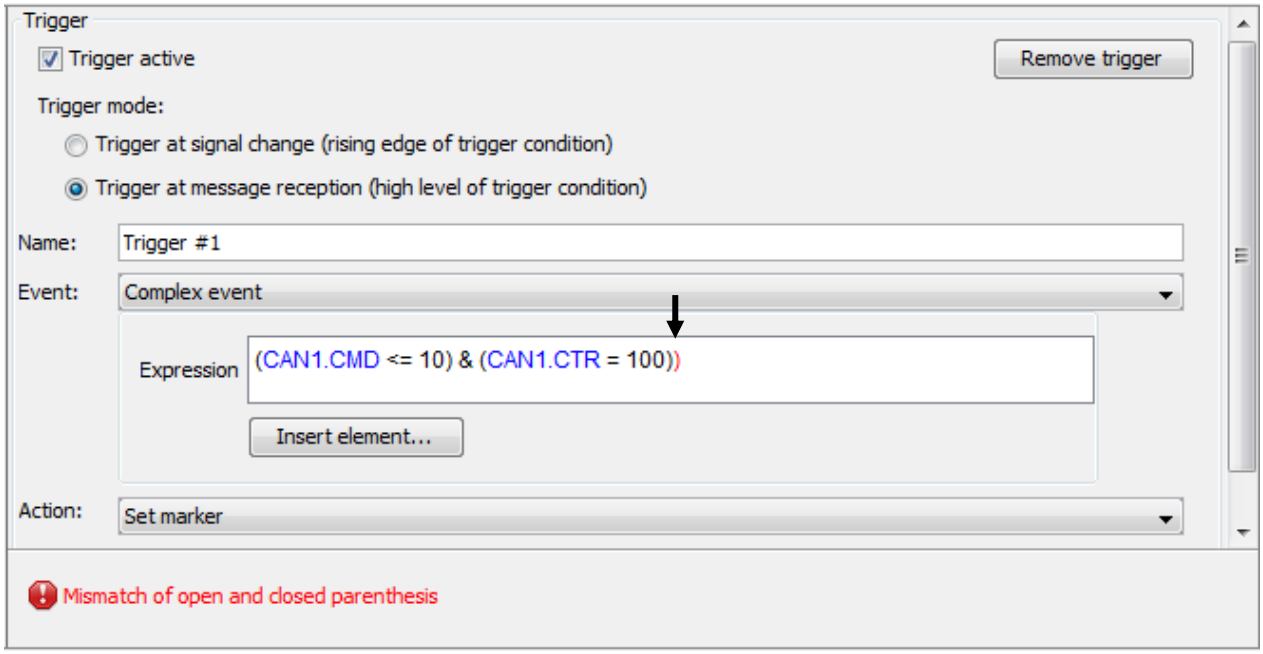


Figure 8.152: Verification of input parameter

The following error and warning messages are displayed:

Mismatch of open and closed parenthesis
The number of opened brackets is not equal to the number of closed brackets.

CAN signal parameter doesn't match the selected CAN data base
After the CAN database has been changed, the selected CAN signals are not available in the new database.

Syntax error
Compare operators or logical operators are missing or event conditions are used not correctly.

Moving Cursor
The cursor can be moved by the user either with the arrow keys of the PC keyboard or with the PC mouse. Inserted elements are skipped by the cursor because they can't be edited.

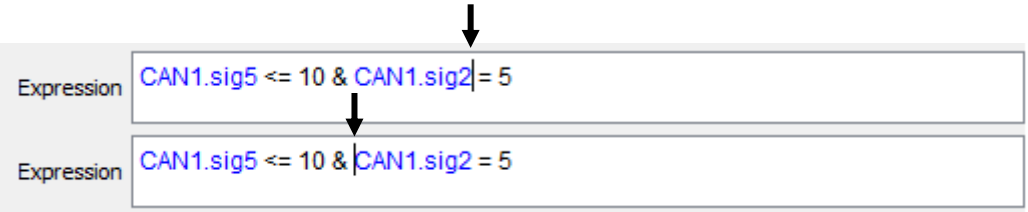


Figure 8.153: Moving cursor

8.15.6.1.10 Deleting events, characters and operators

Events, characters and operators can be marked and/or deleted as followed:

backspace button	Marked event, character or operator on the left hand side of the cursor is deleted.
delete button	Marked event, character or operator on the right hand side of the cursor is deleted.
PC mouse	Event, character or operator is marked with the pressed left mouse button.

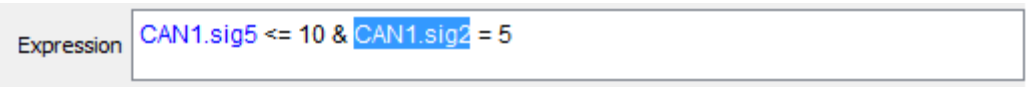


Figure 8.154: Deleting event/character/operator

All elements of a complex event expression can be marked and deleted individually or altogether. A single event (CAN signal, function key and digital input) can be deleted only at once.

8.15.6.1.11 Changing CAN databases

If the CAN database is changed before loading the configuration or during configuration of the trigger parameter, the display in the expression field is updated automatically. The signal name of the new CAN database is displayed. The old signal name is kept in case the CAN signal is not listed in the new CAN database or the CAN database was deactivated. In this case, the CAN signal is displayed in **red**.

Example:

- The expression field contains “CAN1.clampstatus = 3”. It is a CAN signal from the database with the CAN ID 0x480 and the data bit 0-7, which was used during CAN signal configuration.
- The user switches to a new CAN database.
- In the new database the CAN signal with the CAN ID 0x480 and the data bit 0-7 is named “clampstatus_new”.
- In the expression field the new signal name is automatically updated to “CAN1.clampstatus_new = 3”.
- Now the user deactivates the CAN database in the configurator.
- In the expression field the signal name changes to “CAN1.clampstatus_new = 3”.
- The signal name changes to “CAN1.clampstatus_new = 3”.

8.15.6.2 Event: Receive CAN/LIN/FlexRay signal

With the event **[Receive CAN/LIN/FlexRay signal]** it is possible to define a signal as a trigger.

It is possible to check the whole message or a single signal.

Here you can enter the signal manually or load it from a database. To **[Load from Database…]** you must select a database for the corresponding channel in the category **[Databases]**.

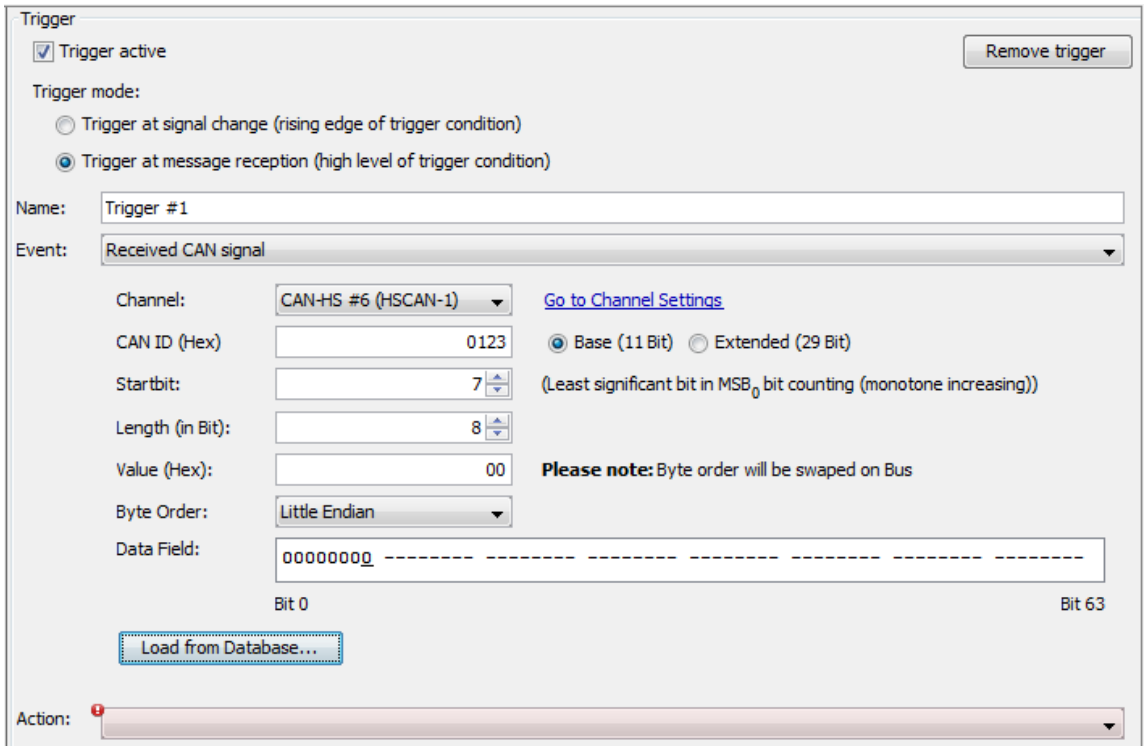


Figure 8.155: Selecting event *Receive CAN signal*

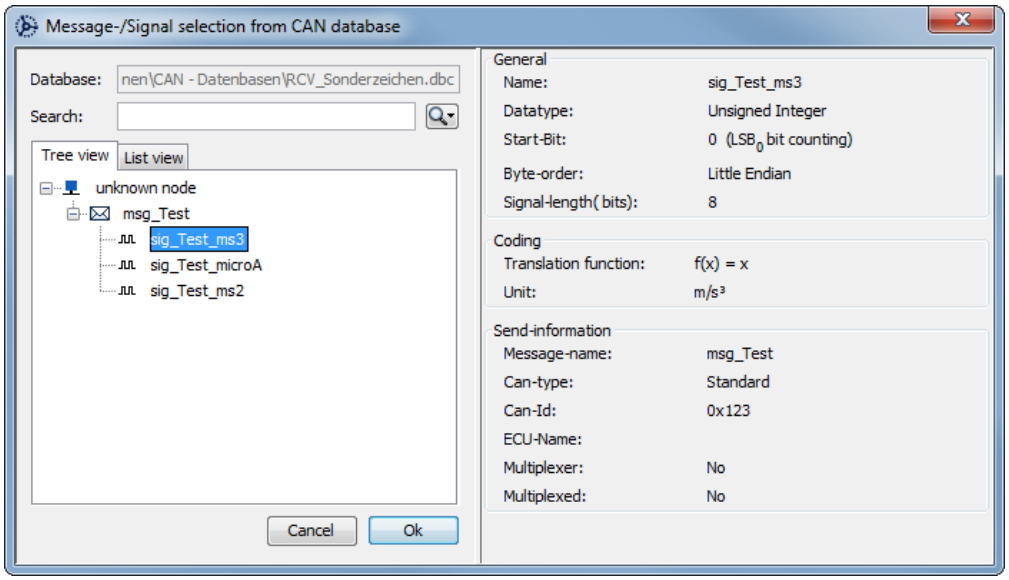


Figure 8.156: Selecting a CAN signal from a database

For a correct function please take care to use the right bit counting!

8.15.6.3 Event: Key stroke

The event **[Key stroke]** is defined by clicking the **[Trigger]** button of the logger / the Remote Control or function keys **[F1]** to **[F10]**.

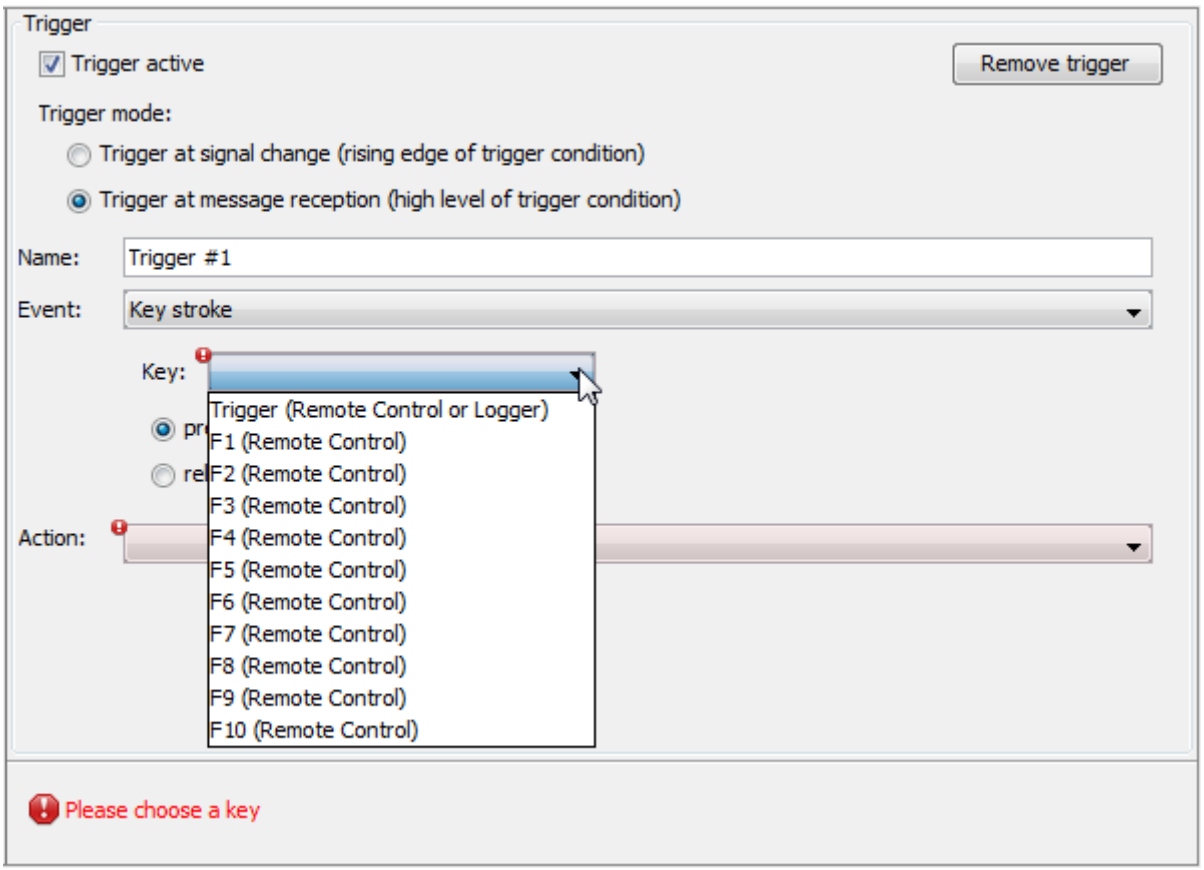


Figure 8.157: Selecting triggering key

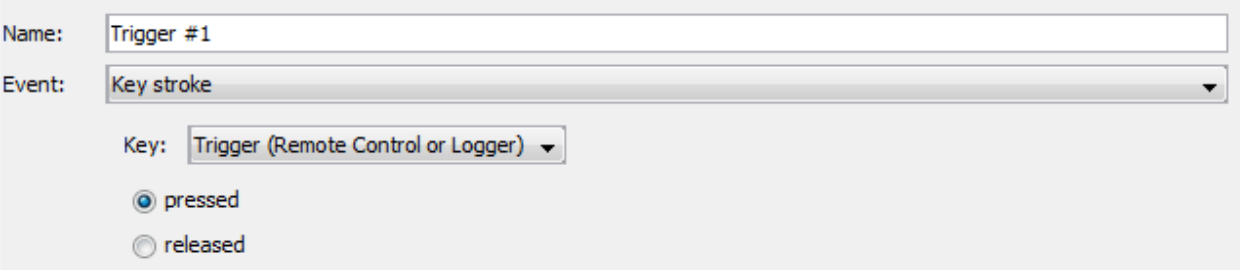


Figure 8.158: Selecting key status

The key status can be **pressed** or **released**. These parameters have to be selected by the user.

The associated action is executed, e.g., when you have selected **pressed**, by pressing the key.

A connected Remote Control (RC) / Remote Control Voice (RCV) / Remote Control Touch (RCT) / blue PiraT Remote (bPR) is required for using the function keys **[F1]** to **[F10]**.

8.15.6.4 Event: Digital Input

The event **[Digital Input]** is defined by selecting the channel and the signal status **[1 (High)]** or **[0 (Low)]**. This parameter has to be selected by the user.

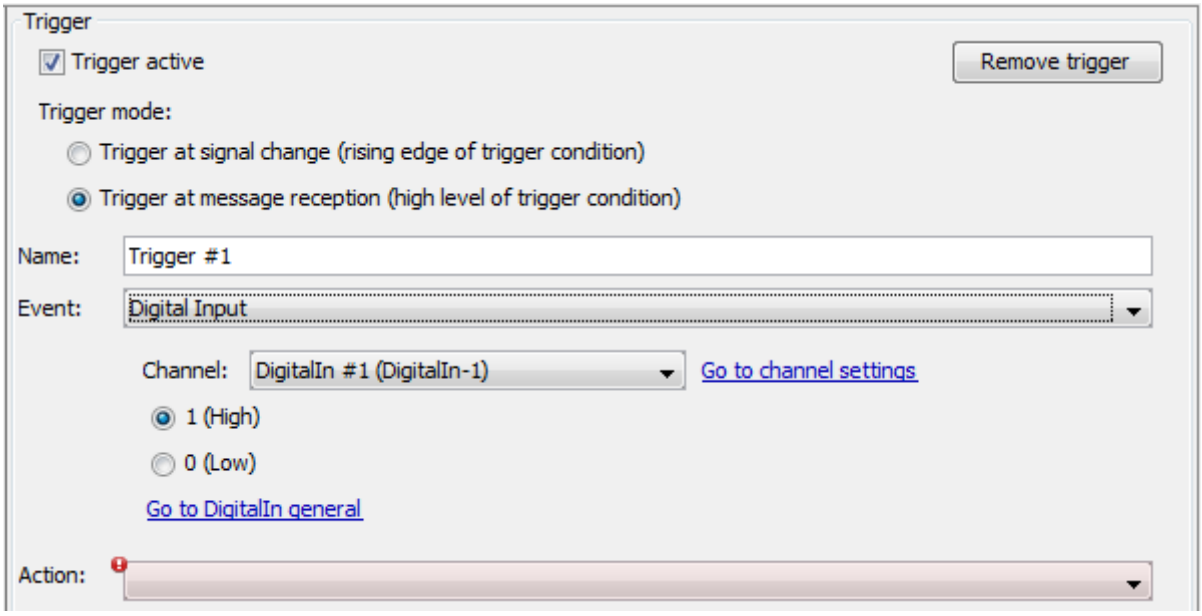


Figure 8.159: Selecting event *Digital Input*

The switching threshold depends on the used digital input (see also section 8.11).

Note:
Signal evaluation corresponding to the used digital input. Depending on the application the trigger must be configured compatible to the digital input.

The number of available digital input channels depends on the used device type. To define the exact number, please look at the hardware manual.

8.15.6.5 Event: Received Logger Signal

By using the event [Received Logger Signal] some direct status messages of the data logger can be used as trigger event.

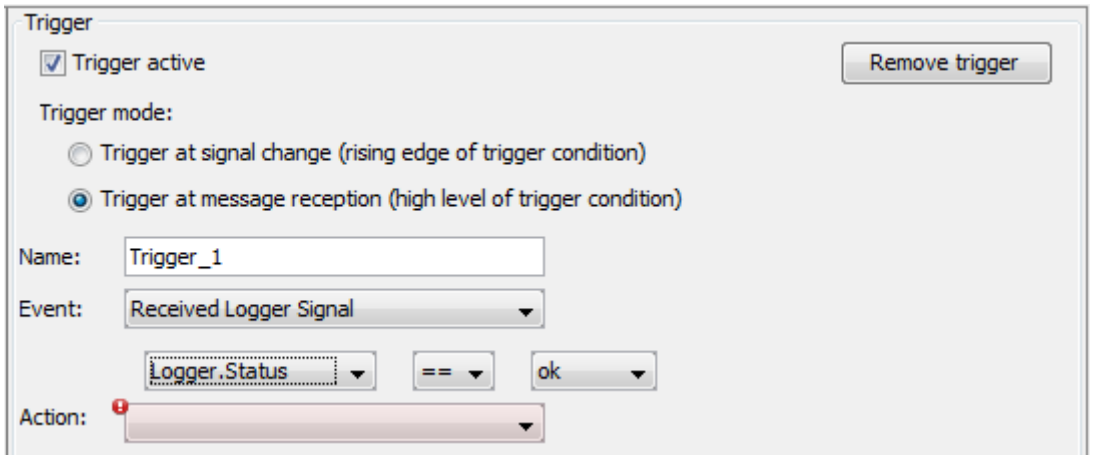
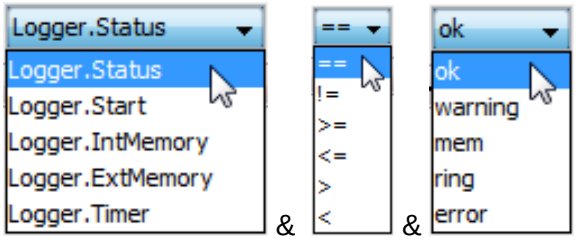


Figure 8.160: Selecting event *Analog Input*

The following stati are selectable:

Logger.Status
Logger.Start
Logger.IntMemory
Logger.ExtMemory
Logger.Timer

The status Logger.Status offers the possibility to define the signal by an operand and a variable more precisely.

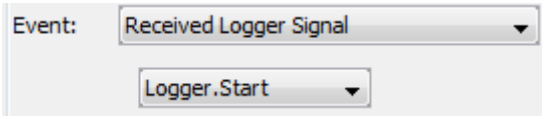


The operands:

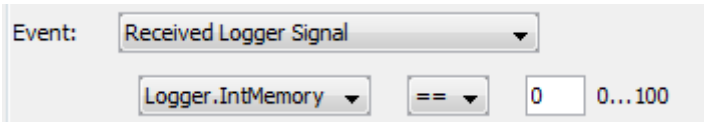
==	equal
!=	not equal
>=	Bigger as
<=	smaller as
>	bigger
<	smaller

Can be combined with the stati of the logger and used as event for a choosable action.

The status Logger.Start is evaluated directly:

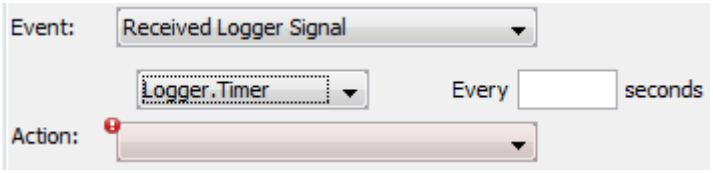


The Stati Logger.IntMemory and Logger.ExtMemory can be defined with an operand and a variable again.



The operands described above can here be linked with the used level of the internal or external memory in % and interpreted as event.

In addition, a timer can be implemented via the logger status, which executes a definable action every *n* seconds.



8.15.6.6 Event: Analog Input

The event **[Analog Input]** is defined by the comparison of the analog input and the selected voltage range. The value must be set in mV, e.g. 10000 for 10 V.

Hint:
The voltage must pass to the set range. If this is not the case, no action is triggered. To define an interval, the complex events can be used, see section Expression: Analog Input.

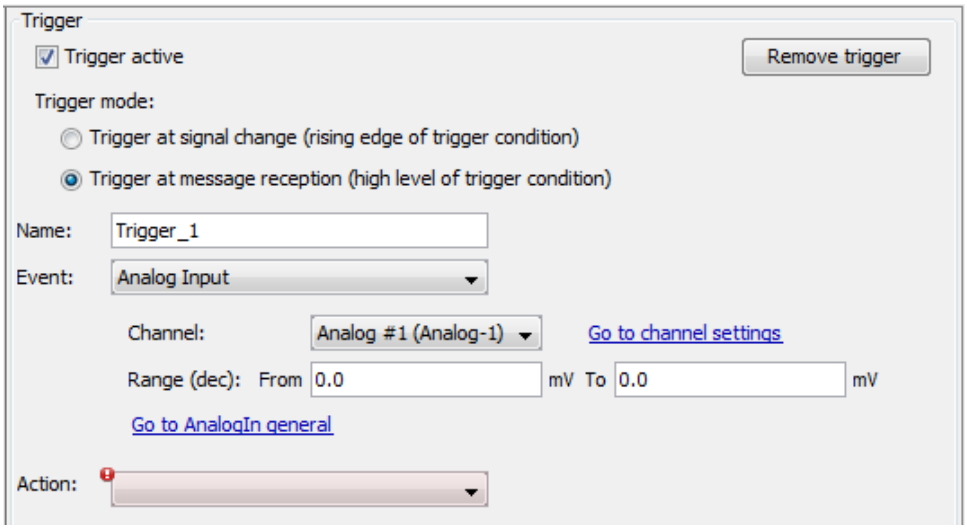


Figure 8.161: Selecting event *Analog Input*

8.15.6.7 Event: Received GPS Signal

By using the event [Received GPS Signal] the following GPS-Signals can be used as trigger event.

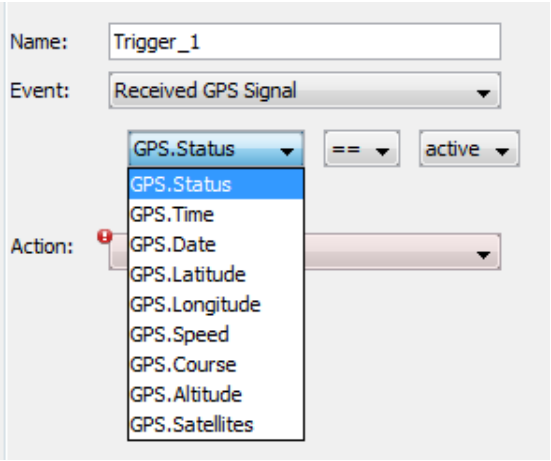


Figure 8.162: Available GPS-Signals

Signalname	Typ	Beschreibung
GPS.Status	„void“ „active”	Empty data records, since no view on satellites Valid data records
GPS.Time	Integer	UTC time in 24h format „hhmmss“
GPS.Date	Integer	UTC date in Format „ddmmyy“
GPS.Latitude	Double	Latitude in dezimal „°“
GPS.Longitude	Double	Längengrad in decimal degrees
GPS.Speed	Double	Speed in „km/h“
GPS.Course	Double	Course in decimal degrees
GPS.Altitude	Double	Height in „m“
GPS.Satellites	Integer	Number of visible satellites

Tabelle 8.1: Explanation of the GPS-Signals

8.15.7 Selecting an action

After the configuration of the trigger event, the selection of the trigger action is required. Some of the shown points are only available with additional licenses!

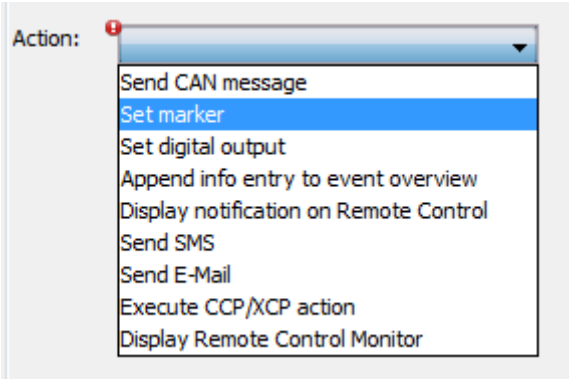


Figure 8.163: Selecting an action

The required trigger action can be selected in the dropdown menu <Action>.

8.15.7.1 Action: Send CAN message

After selecting the trigger action **[Send CAN message]** additional parameters have to be set by the user.

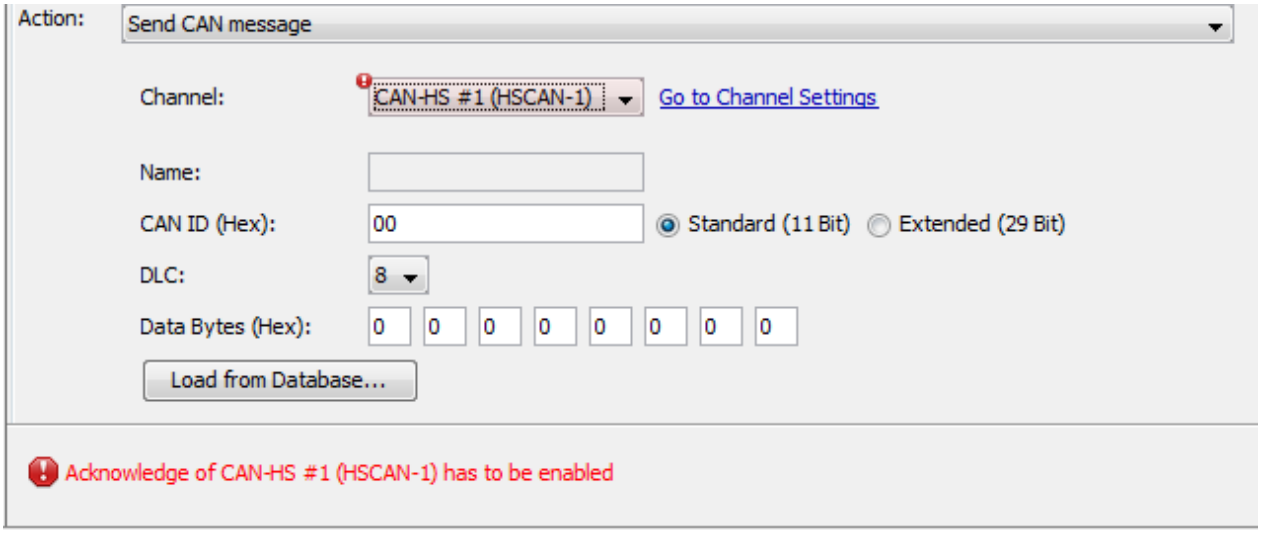


Figure 8.164: Selecting action *Send CAN message*

The CAN message parameters can be selected manually or automatically by using the CAN database. You can also choose between 11 bit and extended 29 bit CAN identifier length.

Warning:
Using this function can influence the vehicle network significantly. When using this function a person must be aware of the consequences sending the specified CAN messages.

8.15.7.2 Action: Set marker

The behavior of the action **[Set marker]** is identical to the behavior when the user pushes the **[Trigger]** button on front panel of the device or on the remote control.

Figure 8.165: Selecting action *Set marker*

There is no additional user input required for this action. The following steps are done by setting a marker:

- Recording the time stamp and the marker counter to the trace data
- Increase the marker counter by one
- Optical and acoustic feedback from the remote control
- Write marker info to the <Event overview>
- Flashing of the LED on the front panel of the device

Hint:
If you select the event [Trigger] button and the action „Set marker“, at each key press two marker will be set.

8.15.7.3 Action: Set digital output

It is possible to switch a digital output on with the action **[Set digital output]**. The level of the output signal then corresponds to the power supply level (KL30). The digital output has a maximal load of 100 mA.

This action also allows switching off a digital output by setting his status to 0 (Low). The off level of the output signal is 0 V (KL31).

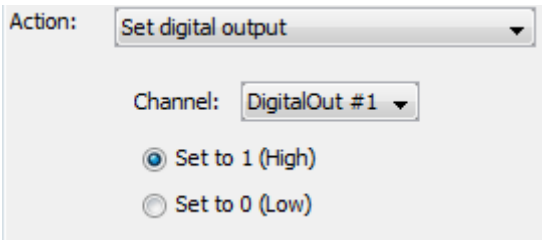


Figure 8.166: Selecting action *Set digital output*

There is no additional user configuration required for this trigger action.

8.15.7.4 Action: Append info entry to event overview

For the action **[Append info entry to event overview]** it is possible to configure a user defined message with included signals from the available interfaces. The message is limited to a maximum of 75 characters.

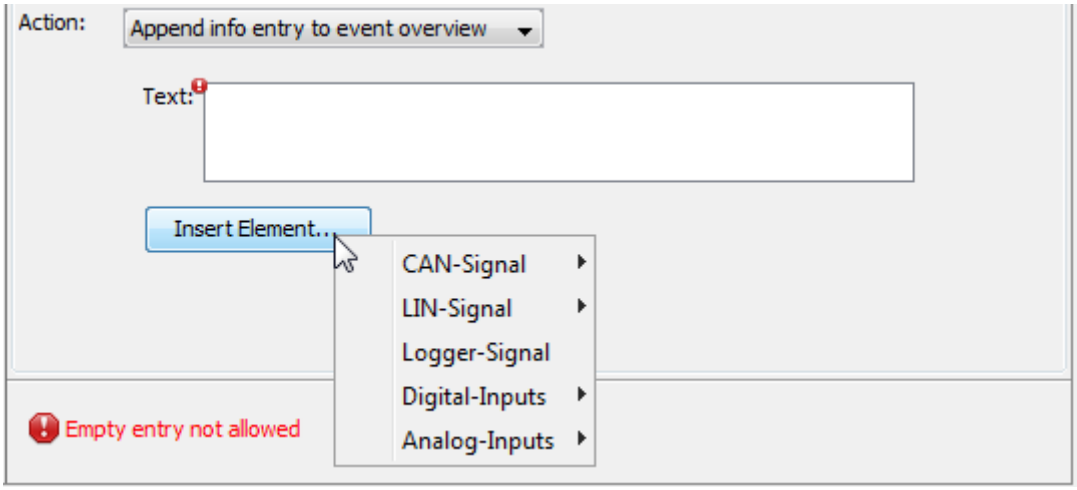


Figure 8.167: Selecting action *Append info entry to event overview*

The message is displayed in the <Event overview> during the download or format conversion process of the trace data.

8.15.7.5 Action: Display notification on Remote Control

For the action **[Display notification on Remote Control]** it is possible to configure a user defined message with included CAN signals. For the info display there are 20 characters per line and total four lines available.

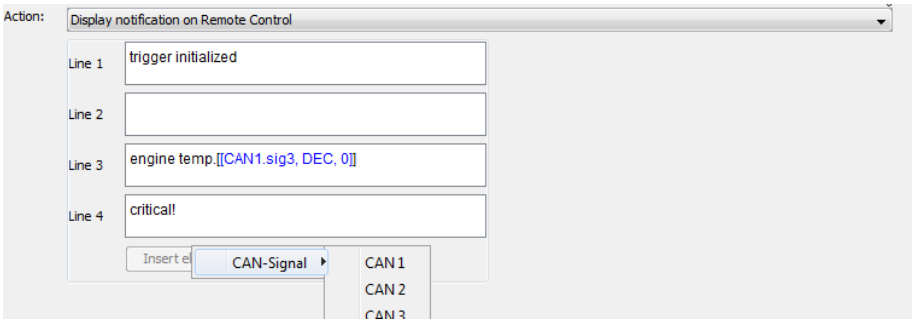


Figure 8.168: Selecting action *Display notification on Remote Control*

The message is displayed for four seconds. The previous remote control screen is displayed after this time has passed. If an additional complex trigger or a marker is executed during this, the current message is overwritten by the new one.

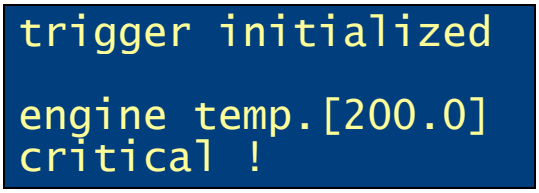


Figure 8.169: Notification on Remote Control

8.15.7.6 Action: Send SMS (with additional license only)

The action [Send SMS] allows sending an SMS with defined text and signals of the device to up to 3 recipients. Please find more information in the manual of Cellular Network.

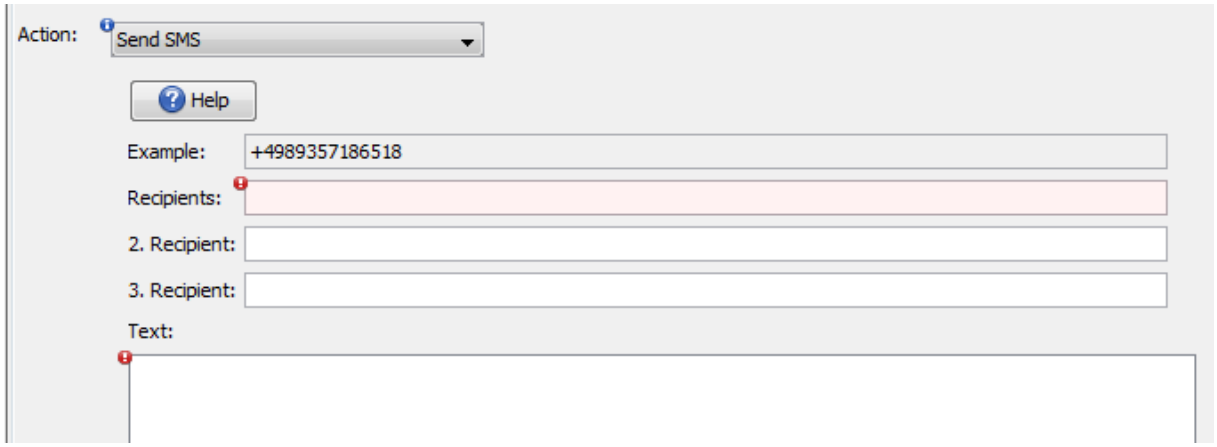


Figure 8.170: Action: Send SMS

8.15.7.7 Action: Send E-Mail (with additional license only)

The action [Send E-Mail] allows sending an E-Mail with defined text and signals of the device to up to 3 recipients. Please find more information in the manual of Cellular Network.

Figure 8.171: Action: Send E-Mail

8.15.7.8 Action: Execute CCP/XCP action (with add. license only)

It is possible to define a CCP/XCP action. If you define an action with the Name, e.g., “CCP Trigger” you can use this action in the CCP/XCP menu as “Start or Stop Event”. For further information please have a look at the CCP/XCP user guide.

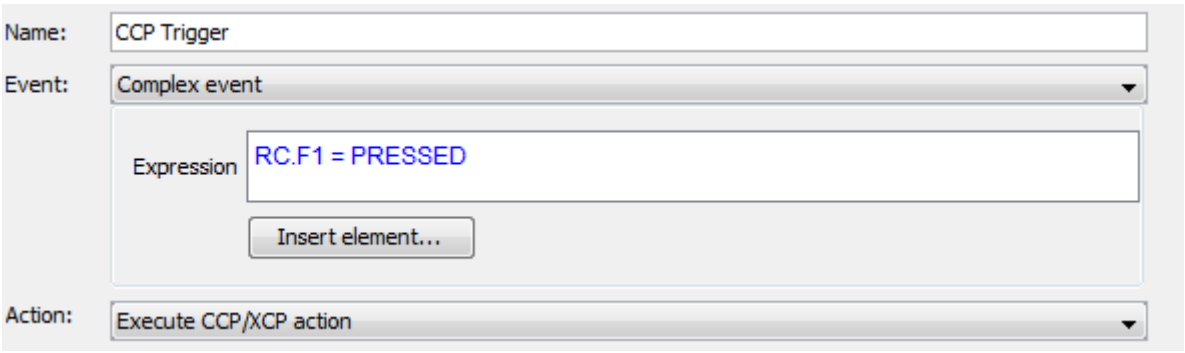


Figure 8.172: Selecting action *Execute CCP/XCP action*

8.15.7.9 Action: Display Remote Control Monitor (up to FW3.1.1 with add. license only)

Selected signals can be displayed by the Remote Control with the trigger action **[Display Remote Control Monitor]**. This trigger action is only available if the license **Remote Control Monitor** is installed. The user guide Remote Control Monitor describes the configuration and the functionality of this license.

There's a maximum of 10 trigger with Remote Control Monitor which can be active at the same time! For defining more trigger please export the existing trigger and delete them afterwards so that you can define more trigger with RCM.

Attention:

This option will NOT be displayed when the action [Display Remote Control Monitor] **is configured 10 times. For defining more trigger please export the existing trigger and delete them afterwards so that you can define more trigger with RCM.**

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8.15.8 Setting a marker via an external button

It is possible to set a Marker via a button and a digital input of the logger. Important is to activate the digital input with the **Timing Mode** (100 ms), see 8.11.2 General settings .

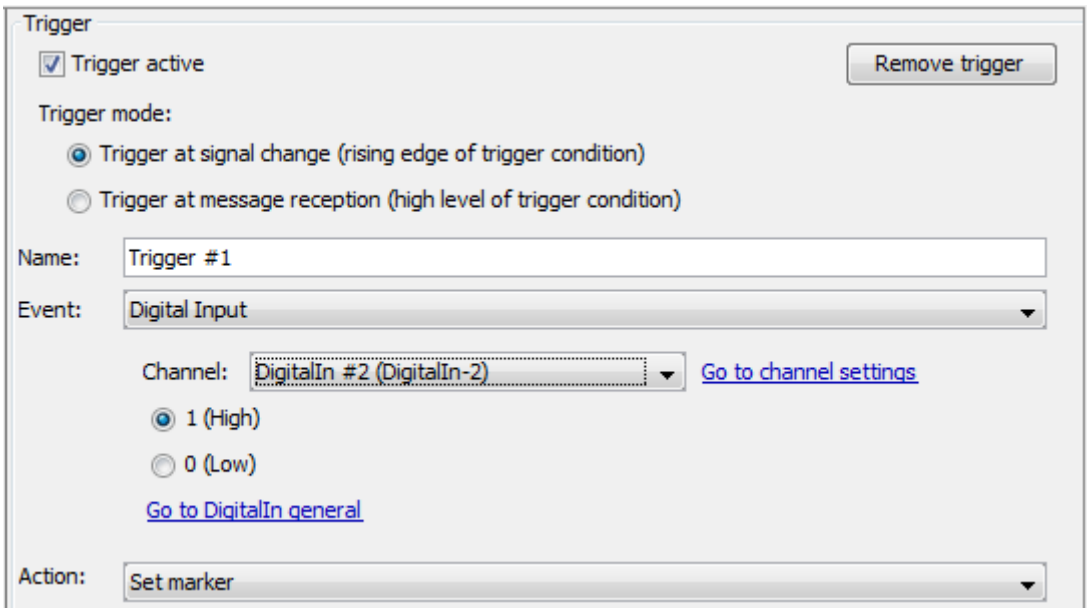

Figure 8.173: Setting a marker via an external button

By these settings the bouncing of the switch is repressed. The button is connected to the board voltage of the car and to the digital input of the data logger.

Note:

The analog and digital inputs of the blue PiraT Mini are summarized to one wire. Here it is also necessary to connect the ground for the analog inputs.

8.15.9 Event management

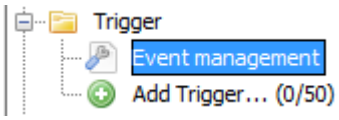

Figure 8.174: Configuration – Trigger – Event management

Use **[Event Management]** to manage the list of configurable events that can be used as initiators for a trigger. You can define new events by clicking **[New event]** and delete existing events by clicking **[Delete event]**.

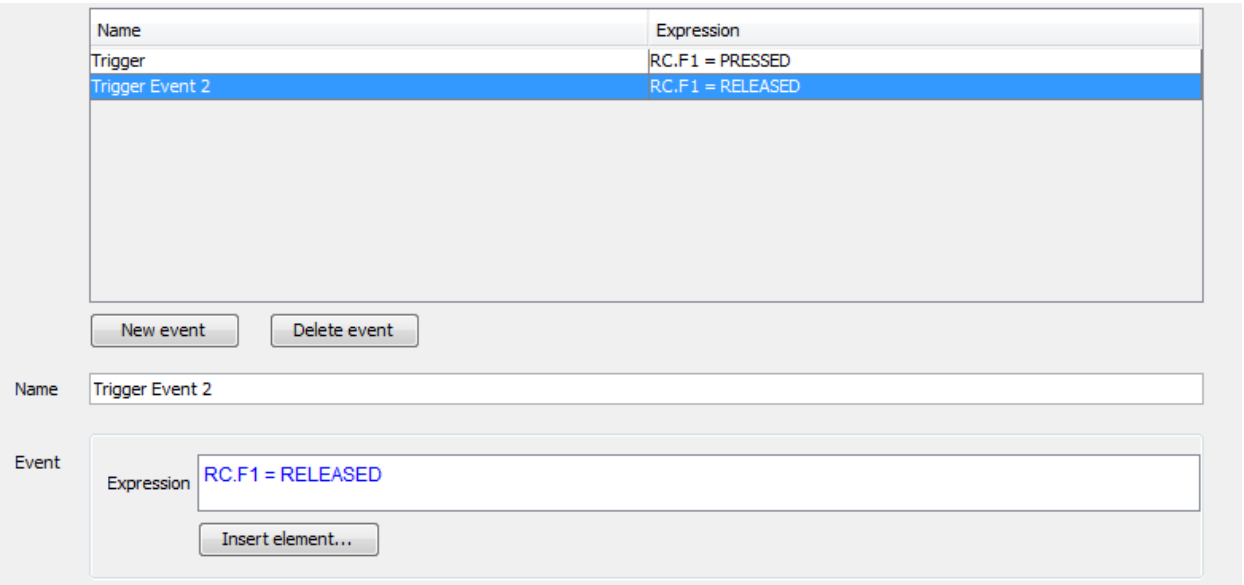

Figure 8.175: Event management

Workflow:

18. Click **[New event].**
19. Give this event a name, e.g., “Trigger Event 2”.
20. Define an <Expression> using the **[Insert element…]** button.
21. Add a new trigger to the configuration tree by clicking **[Add Trigger… (…/50)].**
22. For the <Event> choose [Complex event]. Now you can insert the newly defined event.

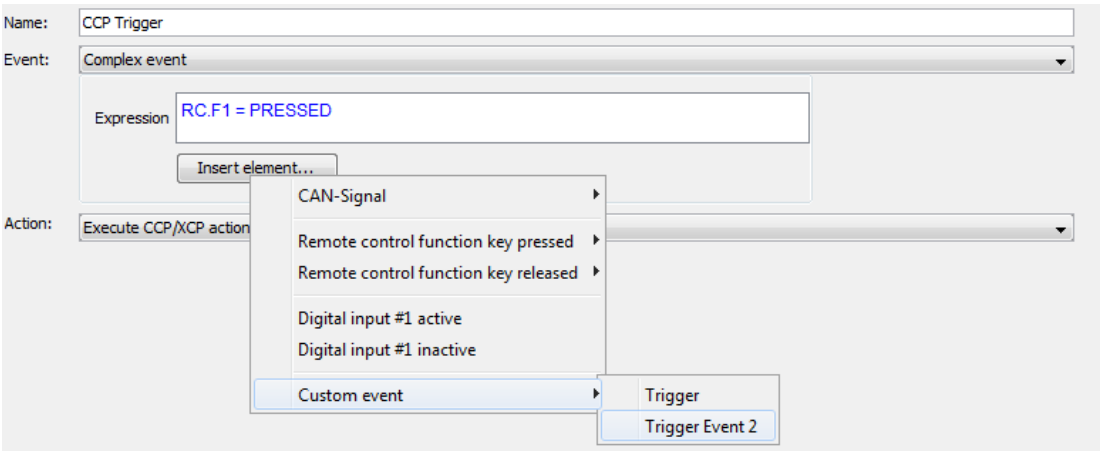

Figure 8.176: Selecting "Custom event"

8.15.10 Trigger overview

To manage your trigger as fast as possible we included the trigger overview. You can reach the trigger overview by clicking the category **[Trigger]**.

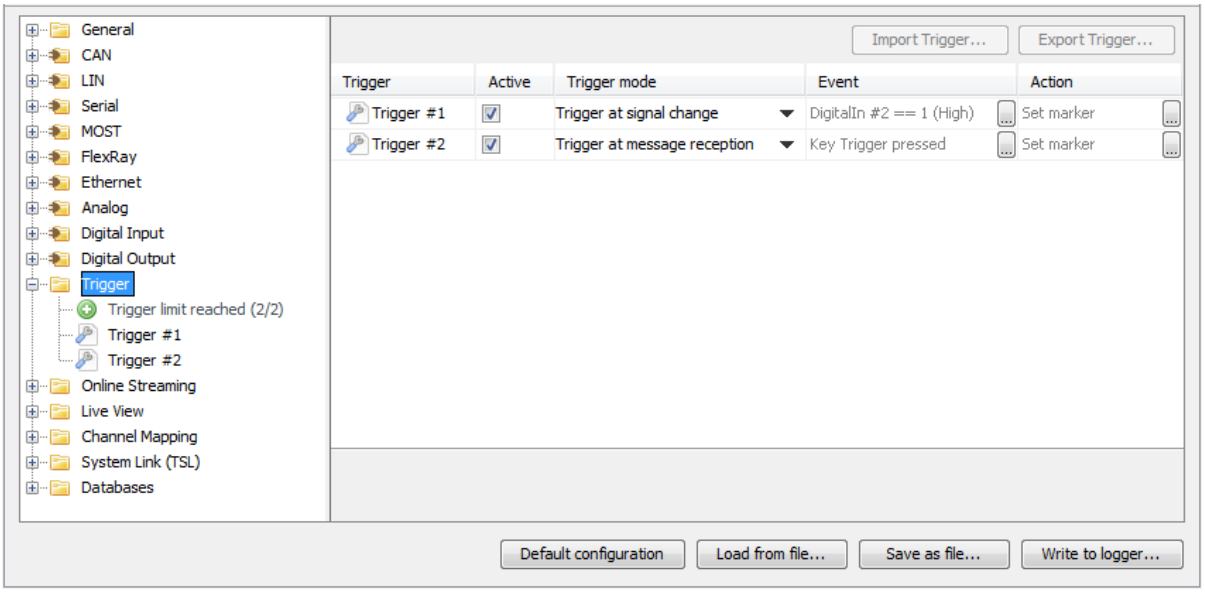

Figure 8.177: Trigger (overview)

The trigger overview contains the important information about the trigger settings.
To select every trigger press **[Strg]** und **[A]** simultaneously.
To select only multiple trigger you have two possibilities.

- Press [Strg] and hold it while marking single triggers. or
- Select a group of triggers one below the other by selecting the trigger on top resp. bottom of the group, pressing and holding Shift [↑] and finally selecting the trigger on bottom resp. top of the group.

For the selected triggers the following options are available:

- Import / export Trigger
- Duplicate Trigger
- Delete Trigger
- Activate / deactivate Trigger

8.15.10.1 Ex- or importing trigger

The export and import function perform any tasks needed to process load and store external trigger to transfer created triggers to another configuration or data logger.

The button bar on the right above the overview contains the following buttons.

Button	Effect
Export Trigger…	exports selected trigger into a *.zip archive
Import Trigger…	imports trigger from a *.zip archive

Table 8.7: Buttons in the trigger overview

When **exporting** triggers, individual or selected triggers can be exported. Using the **[Ctrl]** key, individual triggers can be marked, with the **[Shift]** key a range between two triggers can be selected and exported to a *.zip file via **[Export Trigger].**

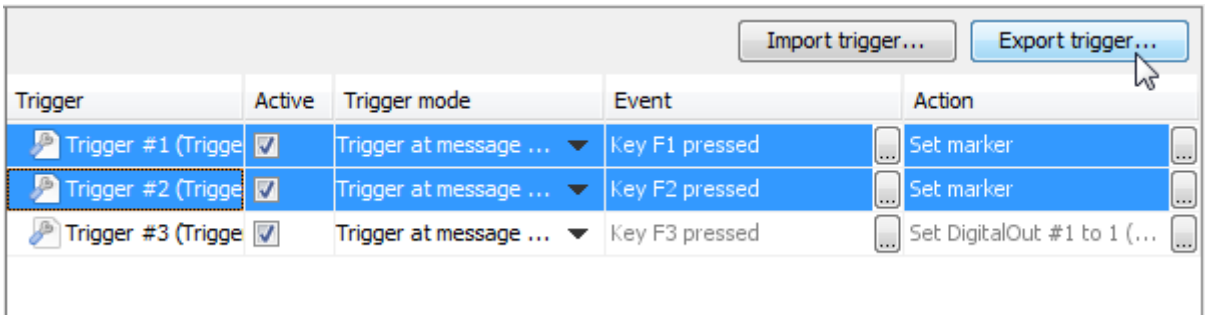

Figure 8.178: Trigger selection for exporting

When **importing** the triggers, only the required ones can be selected:

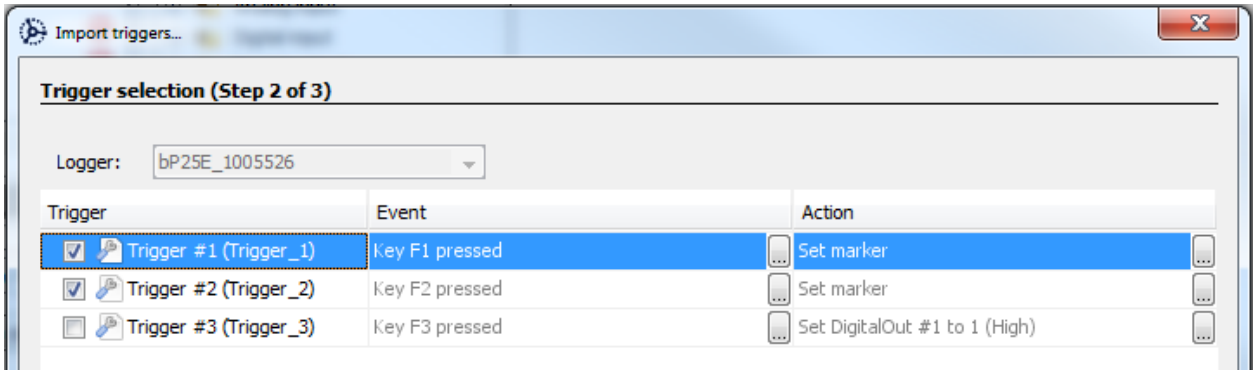

Figure 8.179: Trigger selection for importing

The rest of the logger configuration will stay untouched. Importing trigger from offline configurations is working as well.

Note:
If you import a trigger with a trigger name (e.g., Trigger-001) that is already used from another trigger in the overview, you should delete or rename one of them. Otherwise you have no chance to filter the trigger in the traces.

8.15.10.2 Duplicate trigger

By the function **[Duplicate Trigger]** in the shortcut menu of each trigger you can make an exact duplicate of a trigger with the same properties like the source trigger.

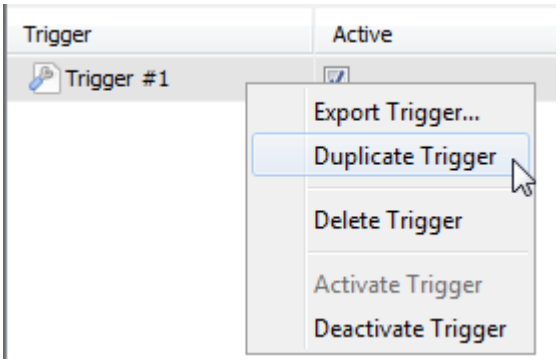

Figure 8.180: Duplicate trigger

To identify a duplicated trigger the name of the duplicated trigger will looks like this:

Sample: *name of source trigger*_Copy*ID*

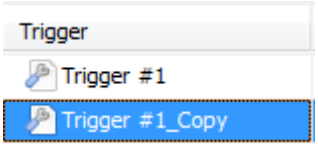

Figure 8.181: Duplicated trigger

8.15.11 Automatically eliminated trigger

The following points should be considered with regard to the trigger function execution.

- The trigger function is only available after the data logger startup is complete.
- In certain disadvantageous cases, it is possible that there is a maximum time delay of 200 milliseconds between event and action, caused by a high bus- and system-load.
- The user can configure up to 50 independent trigger events and trigger actions. Such a configuration can cause a high system load in the trigger system of the data logger. This could result in a data processing problem and possibly in partially loss of the data recording.
  To avoid this situation, a trigger debouncing mechanism is implemented. The trigger debouncing is able to handle temporary high trigger load inside a limited time period with the condition “maximum number of triggers within the defined time”. The trigger debouncing condition is different for each trigger action and is not changeable.

Action	Debouncing condition (max. values)
Send CAN message	10 CAN messages per 1 millisecond
Set marker	10 marker per 2 seconds
Set digital output	10 switching operations per 1 millisecond
Append info entry to event overview	100 entries per 10 minutes
Display notification on Remote Control	1 display messages per 400 milliseconds
Display Remote Control Monitor	update of the CAN signal values in 1 second

Triggers are eliminated if the number of triggers exceeds the debouncing level inside the measurement time. In this case a warning message is appended to the <Event overview>. The warning messages are created in an interval of 60 seconds. The warning message contains the name of the causing trigger action and the number of the missing triggers.

Example of warning message in the tab sheet “Event overview”:
Warning: ´*trigger action name*` trigger action skipped *n* times

n: number of skipped trigger actions of this name
The counter for missing triggers is reset to zero after each startup of the data logger.

Trigger action name:

- Send CAN message
- Set marker
- Set digital output
- Append info entry to event overview
- Display notification on Remote Control
- Display Remote Control Monitor

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8.16 Online Streaming

With the checkbox **Online Streaming active** you can send the recorded data directly over the Ethernet port at the front. These data can be displayed by the internal Online Monitor too (see chapter

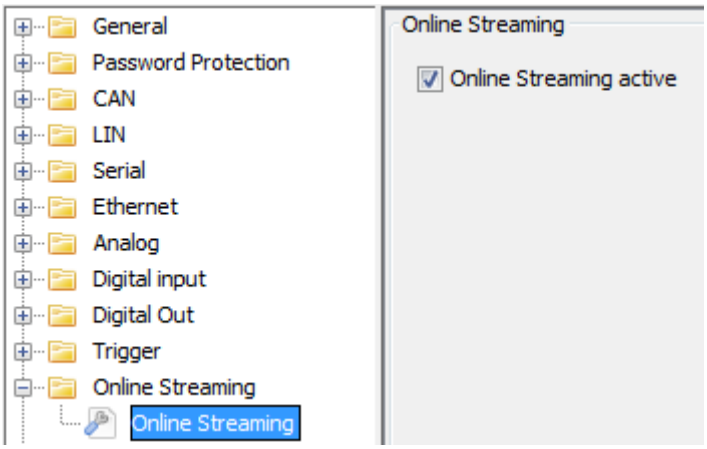

Figure 8.182: Online Streaming

For implementing these data into an own monitoring tool we're offering an online streaming library. You can find a detailed manual in our ServiceCenter at:
blue PiraT2 → Software Downloads → blue PiraT2 - Online Streaming Library
This Library can be used for the blue PiraT Mini too.

8.17 Live View

Live View provides the ability to preview pre-configured logger data live on a mobile device such as a a laptop, tablet or smartphone.

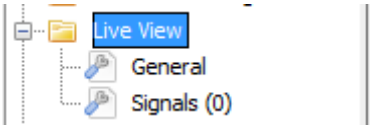

Figure 8.183: Live View

A HTML-5 ready browser is required for displaying these data. Wi-Fi (via additional license) or Ethernet establishes the connection to the logger.

The detailed description can be found below in the chapter * Live View*.

8.18 Channelmapping

By using the channelmapping, the channel order of the logging buses can be changed, if you need other channel numbers.

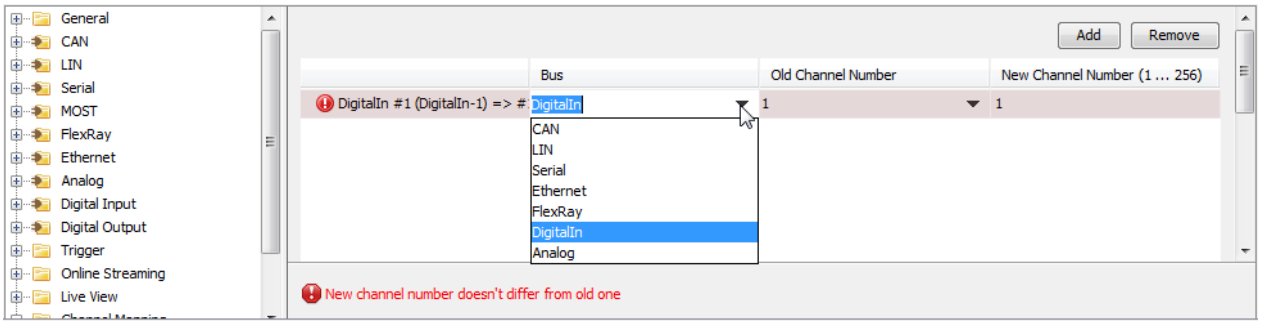

Figure 8.184: Channelmapping

The configured channel numbers are shown at the configuration and at the conversion. The channel numbers must be unique. There are channels from 1 to 256 possible.

Attention:
The channelmapping is stored on the logger and will be included by conversion and creation of a sortet offline data set. While creating an unsorted offline data set this information will be stored to the data set but not in the data itself!
While converting these data with another tool as the System Client, these information about channel mapping will not be included!

8.19 System Link (TSL)

The System Link allows combining several data logger to a TSL network and using them as one huge device with all combined interfaces.

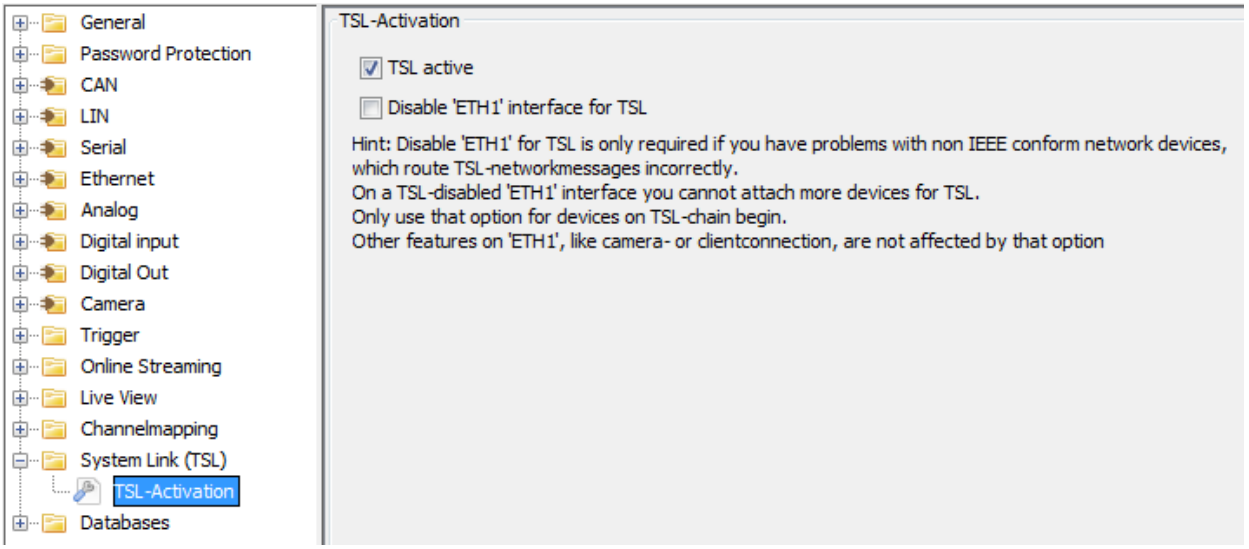

Figure 8.185: TSL-Activation

Note: Up from firmware release 3.1.1 TSL is active as default setting!

You'll find the complete manual for TSL in the chapter ***Establishing and configuring a TSL network***

8.20 System Access (TSA)

System Access (TSA) offers a programmable interface within the Telemotive data logger. This interface can be programmed to execute user-defined functions on a logger. TSL networks are currently not supported.

Currently the programming can only be done by MAGNA Telemotive, therefore only the transfer to the logger is described here.

Projects like these can be realized :

- Delayed execution of a complex trigger
- Implementation of a gateway e.g. from Ethernet to CAN
- Special filtering of data
- Rest bus simulation
- Time-based loops for complex triggers, e.g. send 10 sec signal y over CAN-x
- Generating user defined notifications e.g. on the RCTouch

Note: The modules must match the respective hardware architecture of the device. Modules compiled for the blue PiraT2 can not be transferred to a blue PiraT Mini!

You'll find the feature in the configuration in the categorie [TSA].

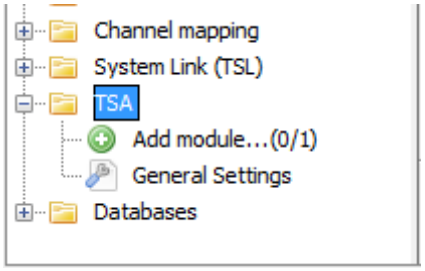

Figure 8.186: System Access (TSA)

At first, a finalised TSA module must be transferred to the logger and set to active in the second step. To load a module into the client, use the dot [Add module…(0/1)] in the [TSA] category

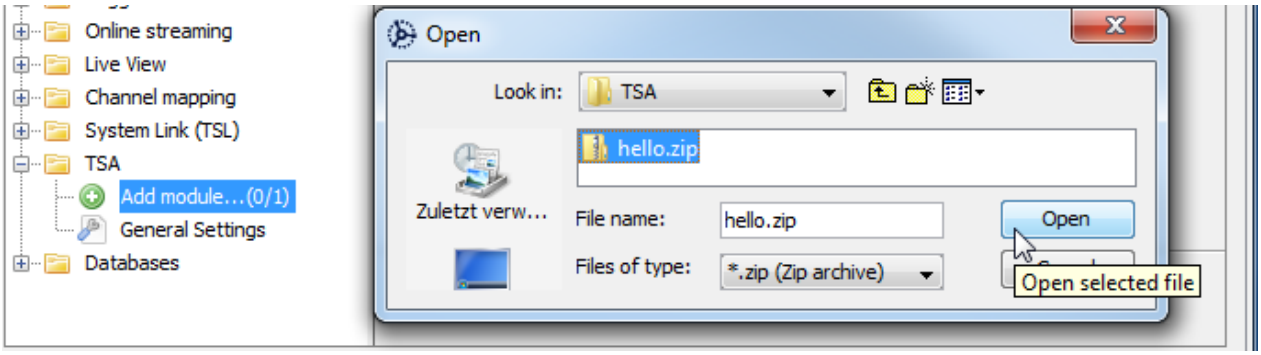

Figure 8.187: Adding a TSA module

The module is checked by the System Client, and if this is successful, the module is entered as a new node. If the check fails, an error message is displayed, e.g. Signature check failed, wrong FW version or wrong architecture

An added module is listed in the [TSA] category and the properties of the module will be displayed there.

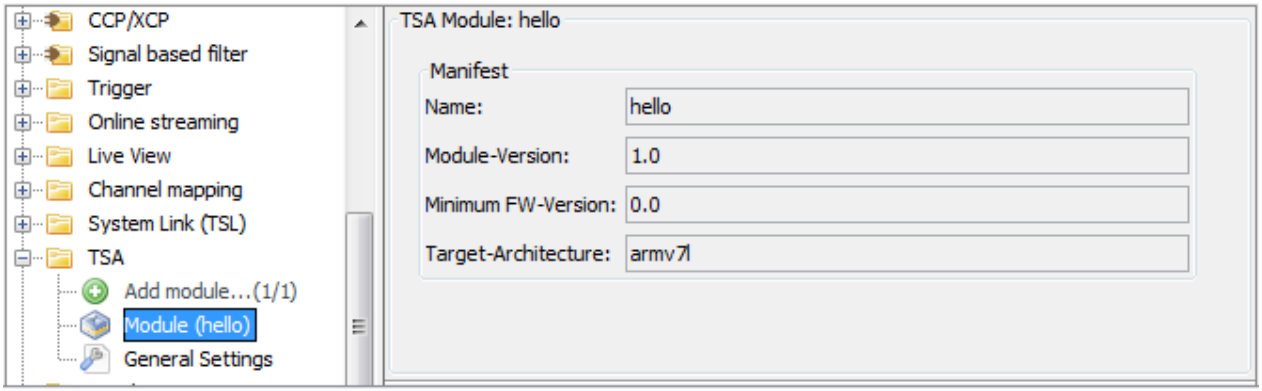

Figure 8.188: Properties of the added module

Under [General Settings], the module can be activated or deactivated as required.

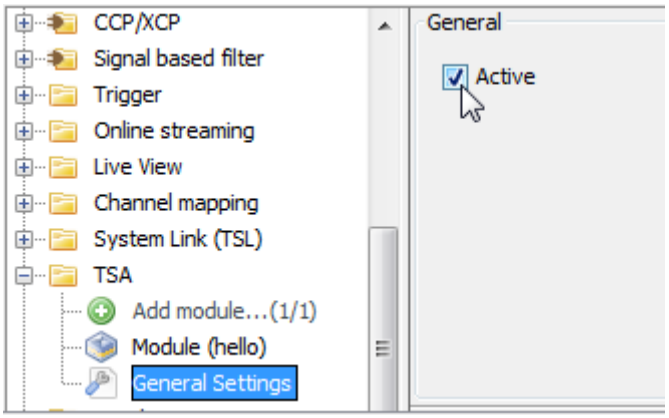

Figure 8.189: Activating the module

The module can be removed from the configuration by a right-click.

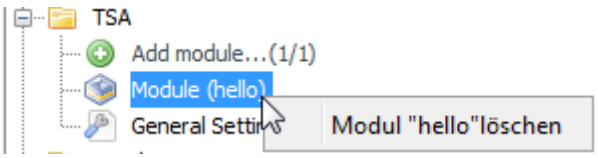

Figure 8.190: Deleting the module

8.21 Databases

Databases settings are accessible by opening the category **[Databases]**. The sub-categories allow configuring a database for each CAN, LIN and FlexRay channel.

Databases contain readable names and organization for bus signals which allows easier configuration of filters or triggers.

Via the combo box of a channel it is possible to quickly select previously used databases or to disable the use of databases for this channel. The file icon  on the right side of the combo box opens a file selector to choose a database from the file system.

Bus	Database
CAN	Fibex versions 3.1.1 / 4.0.0 / 4.1.0 / 4.1.1, AUTOSAR System Template 3.2.x Vektor DBC-File,
FlexRay	Fibex versions 3.1.1 / 4.0.0 / 4.1.0 / 4.1.1, AUTOSAR System Template 3.2.x
LIN	Fibex versions 3.1.1 / 4.0.0 / 4.1.0 / 4.1.1, LDF version 2.1 and 2.2

Table 8.8: Busses and compatible databases

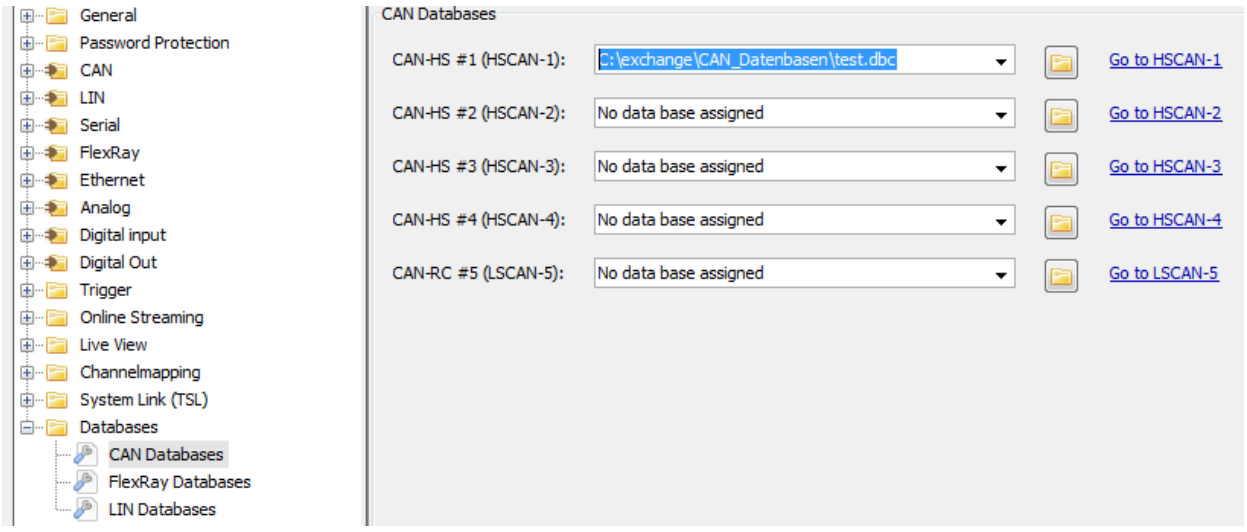

Figure 8.191: Databases – CAN Databases

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9 Remote Control Monitor

This chapter describes the feature of **Remote Control Monitor** for the data loggers

- blue PiraT2
- blue PiraT2 5E
- blue PiraT Mini
- blue PiraT Remote

of MAGNA Telemotive GmbH.

With the **Remote Control Monitor** feature it is possible to display current values of selected signals immediately on the remote control unit.
There's a maximum of 10 trigger with Remote Control Monitor which can be active at the same time! For defining more trigger please export the existing trigger and delete them afterwards so that you can define more trigger with RCM.

The Remote Control Monitor is a part of the trigger function. The function is called as a trigger, when a defined event will cause a certain, singular action.

Event ⇨ Action

This user guide describes the configuration and usage of this feature.

9.1.1 Functionality

The devices Remote Control Voice and Remote Control have a four-line display, each with 20 characters.

The Remote Control Monitor function is able to handle up to 10 different Remote Control Monitor windows. A Remote Control Monitor window is activated by a trigger event. It displays the configured signals.

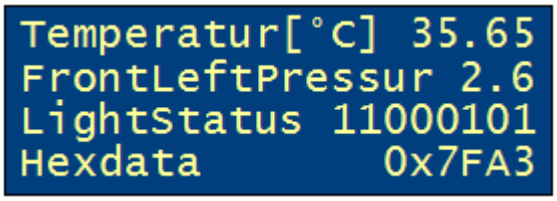

Figure 9.1: Example Remote Control Monitor window at RC/RCV

The window is closed by pushing the Cancel button **[✖]** or Status button. Thereby the Remote Control (Voice) display is switching to the previous screen.

The user can configure up to 20 different signals for each Remote Control Monitor window. One signal will be displayed in each line.

Since the Remote Control (Voice) display only contains four lines, it is possible to scroll the signal entries with the Arrow buttons of the device.

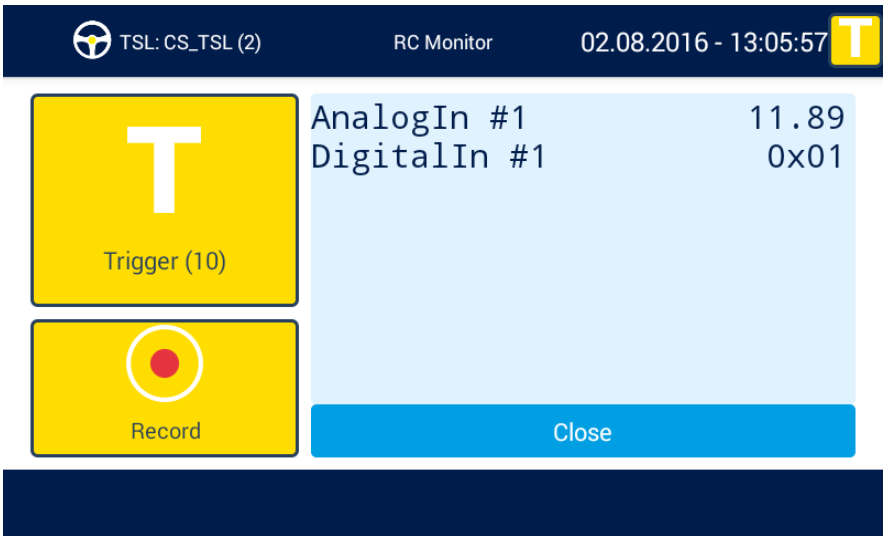

Figure 9.2: Example Remote Control Monitor window at RC Touch

The following interfaces are available for presentation:

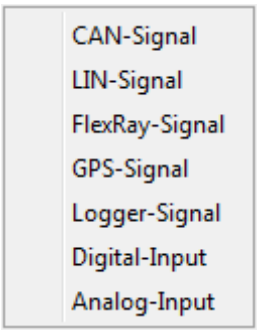

Figure 9.3: Displayable signals

For each signal, the following information is shown:

- Name of the signal
- Physical unit of the signal, if given (e.g., mph)
- Value of the signal

The name and the physical unit of the signal are displayed left-aligned, while the value of the signal is displayed right-aligned. If the 20 columns of the display are not sufficient to display all parameters, the value of the signal overwrites the physical unit and/or the name of the signal. The display automatically changes to floating point display if a signal value exceeds the maximum number of displayable characters.

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9.1.2 Wiring the Remote Control (Voice)

To use the Remote Control Monitor function, it is required to connect a Remote Control unit.

To connect the RC or RCV to the blue PiraT, blue PiraT2 (5E) or blue PiraT Mini a special universal cable set and a connection cable is necessary. The following figure shows the connection of the cables. The connection cable is plugged into the right side of the Remote Control (Voice).

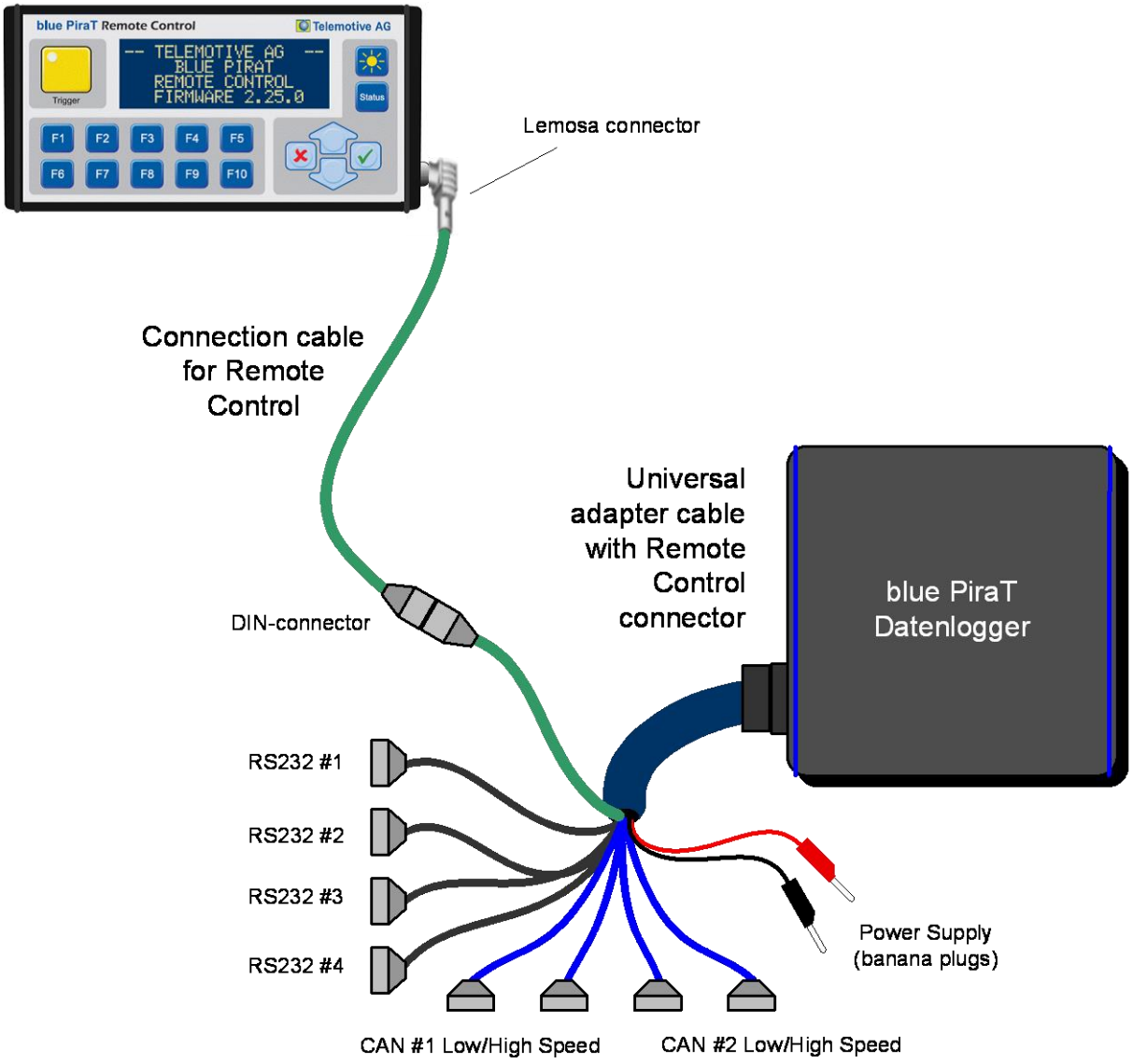

Figure 9.4: Wiring the Remote Control (Voice) with the data logger

Note:
By using a RC or RCV the power supply voltage must be limited to16 V

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9.1.3 Trigger configuration

The Remote Control Monitor is defined via a trigger, i.e., a specified event (e.g., pressing a function key) causes a unique action (the display of the Remote Control Monitor).

Setting up two complex triggers is license free. With the additional license **Complex Triggers** you can set up to 50 complex triggers.

Is there just a license **Remote Control Monitor** installed on the data logger (without license **Complex Triggers**), you could use twelve triggers. It is possible to configure ten triggers with the action “Remote Control Monitor” und two with an arbitrary action.

Start the System Client. In the Network Logger list click a logger that is not already connected. Click on the application **[Open configuration]** and expand the folder **[Trigger]** in the window to the right.

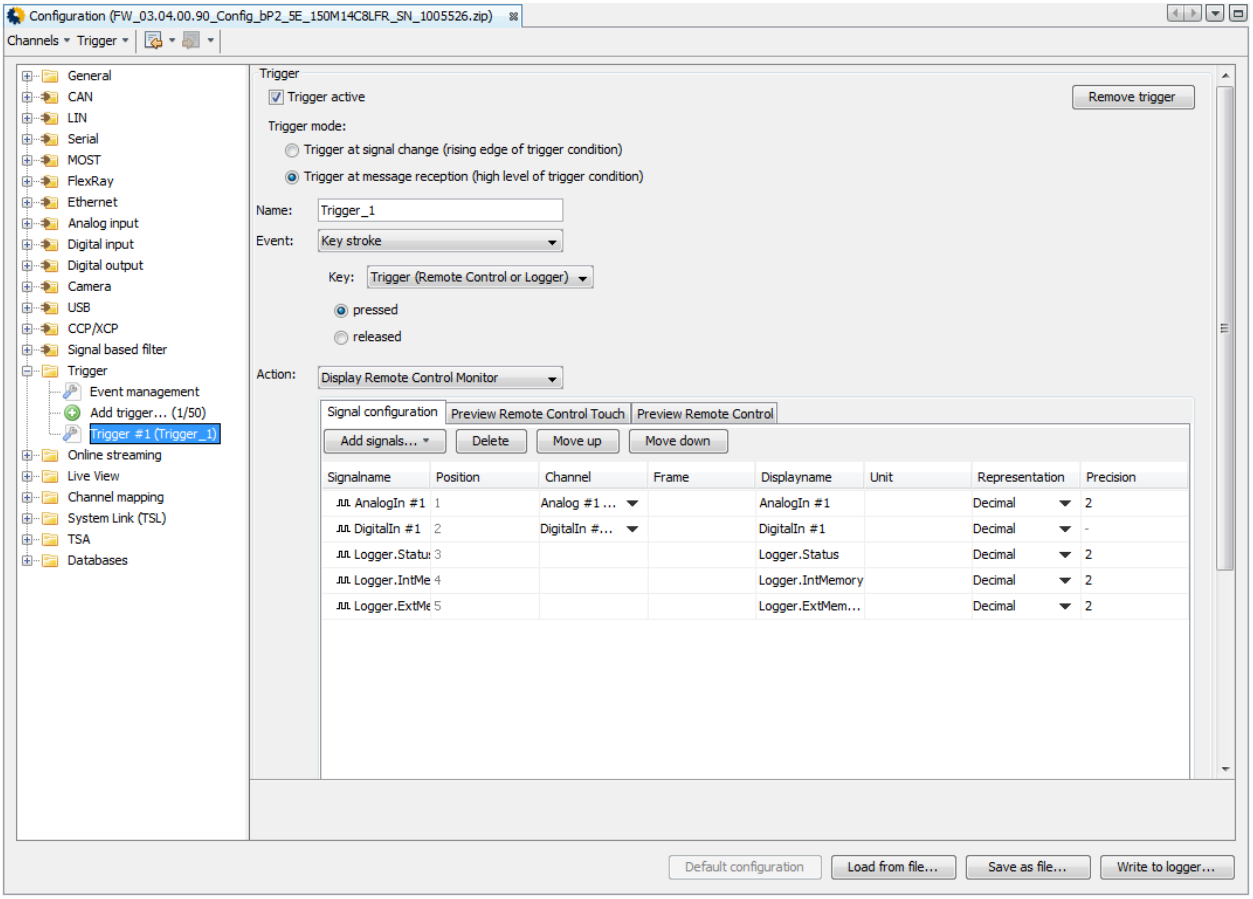

Figure 9.5: Example Trigger configuration

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By double-clicking the button **[Add Trigger… (…/50)]** a new trigger will be shown in the list (e.g., Trigger #1). The red symbol with exclamation mark reminds that the trigger is not configured yet or is not fully configured.

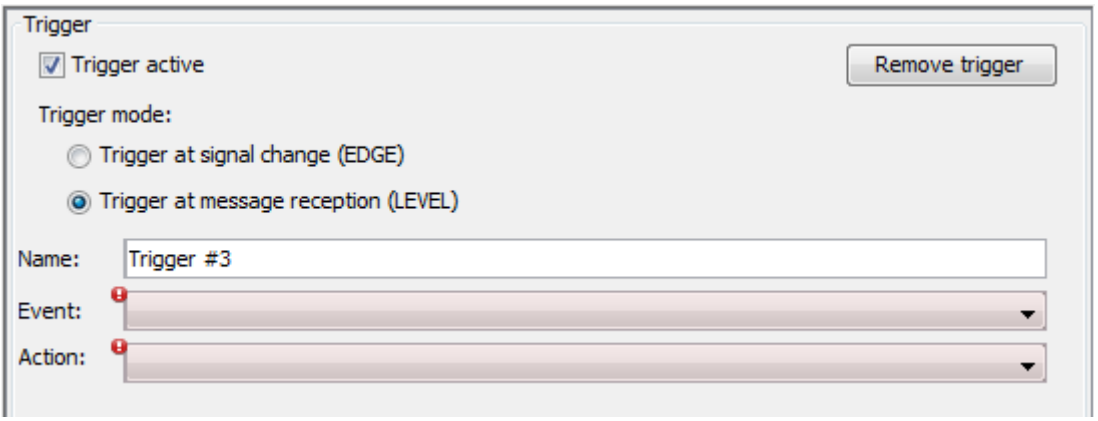

Figure 9.6: Configuration parameters

9.1.3.1 Status

Each trigger can be enabled or disabled by the right mouse button in the configuration tree, in the trigger overview and via the checkbox **Trigger active**.
If a trigger is inactive, its parameters are still kept in the configuration, but the data logger does not execute the trigger.

9.1.3.2 Remove trigger

The button **[Remove trigger]** deletes the marked trigger. It is also possible to remove via the right mouse button in the configuration tree or in the trigger overview.

9.1.3.3 Mode

Each trigger has two different modes of evaluating the trigger condition:

- Trigger at signal change (EDGE): The trigger occurs only if signal value changes and the event condition are “true”. This trigger condition mode is applicable for periodic signals (e.g., CAN signals), where only one trigger is required for the first time the event condition is true.
- Trigger at message reception (LEVEL): The trigger occurs every time a signal message was received and the event conditions are corresponding. This trigger mode is applicable if every reception of a message should cause a new trigger (Default trigger mode).

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9.1.3.4 Name

The name of the trigger can be changed by the user. The new trigger name is displayed in the configuration tree on the left hand side. The number of characters for the trigger name is limited to 100.

9.1.3.5 Event and action

The trigger function is defined by an event and a following action. Events and actions can be defined and changed by the user in any sequence.

9.1.3.5.1 Event “Key stroke”

Note:

Below the configuration of the Remote Control Monitor, which is triggered by pressing a function key, is described as an example.

Additional trigger events can be found in the **User manual for the System Client in the section “Trigger (category)”**.

The event **[Key stroke]** is defined by clicking the **[Trigger]** button of the logger / the Remote Control or function keys **[F1]** to **[F10]**.

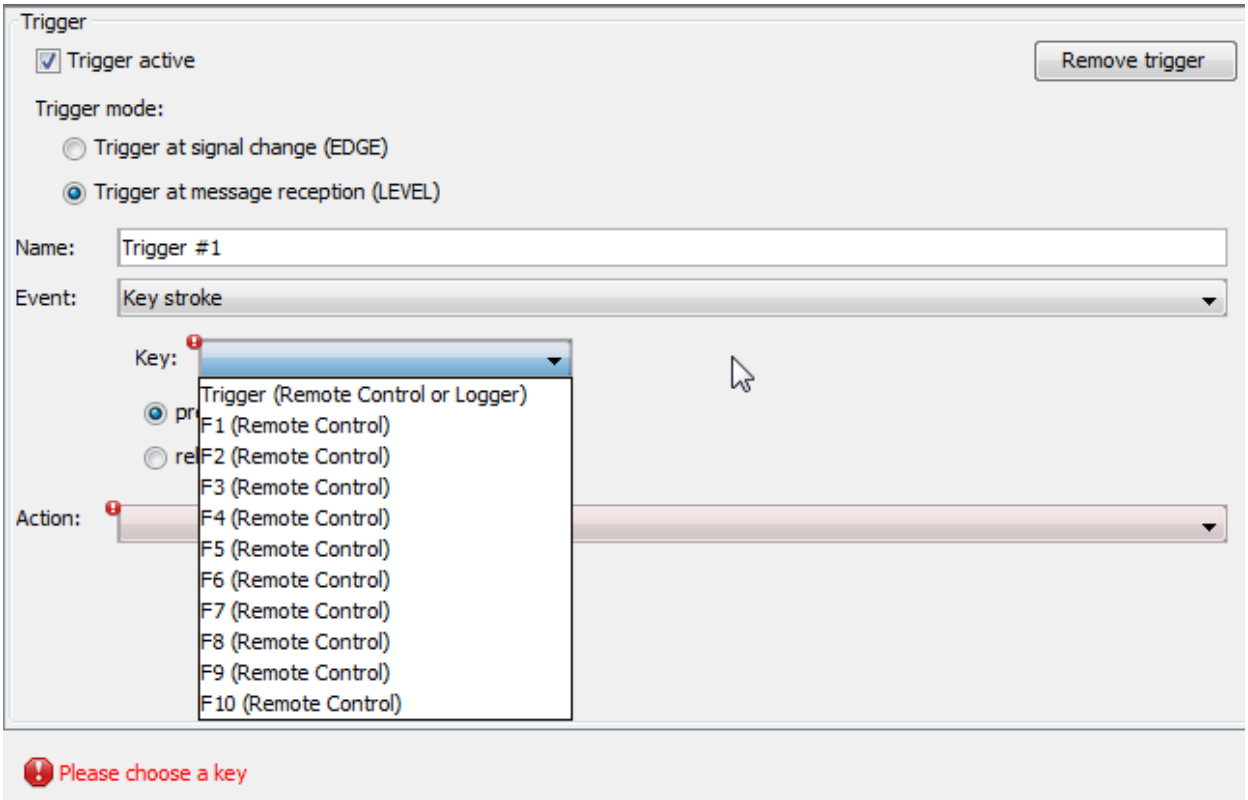

Figure 9.7: Selecting triggering key

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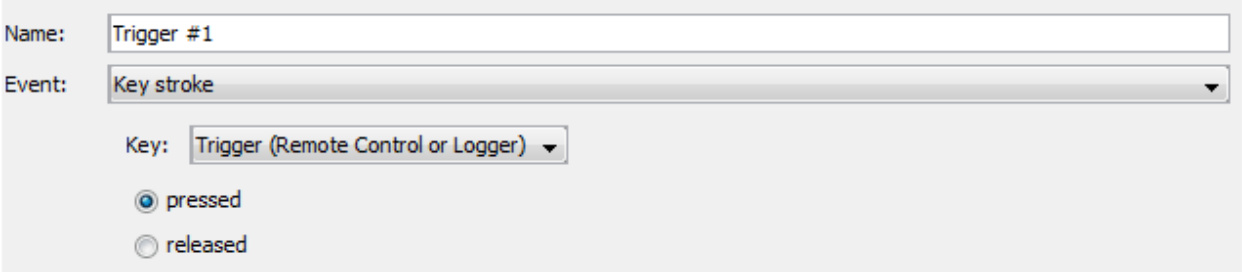

Figure 9.8: Selecting key status

The key status can be **pressed** or **released**. These parameters have to be selected by the user.

The associated action is executed, e.g., when you have selected **pressed**, by pressing the key.

A connected blue PiraT Remote Control (Voice) is required for using the function keys **[F1]** to **[F10]**.

9.1.3.5.2 Action "Display Remote Control Monitor"

After the configuration of the trigger event, the selection of the trigger action is required.

Selected signals can be displayed by the Remote Control with the trigger action **[Display Remote Control Monitor]**.

Attention:
This option will NOT be displayed when the action [Display Remote Control Monitor] **is configured 10 times. For defining more trigger please export the existing trigger and delete them afterwards so that you can define more trigger with RCM.**

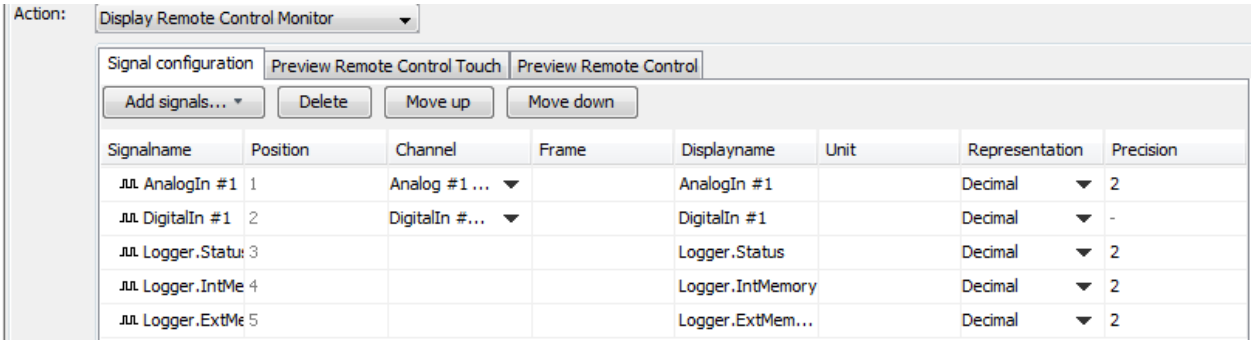

Figure 9.9: Action – Remote Control Monitor

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9.1.4 Signal list

9.1.4.1 Adding signal

Click the button **[Add from database…]**, to select the required signal to be displayed in the Remote Control Monitor from the shortcut menu. The signal appears with a new line in the signal list.

It is possible to configure up to 20 lines for per Remote Control Monitor window. Each new line is added to the end of the signal list.

If a signal is missing the assignment to the database, a respective notification message appears. Via a button you can directly switch to the configuration of the database.

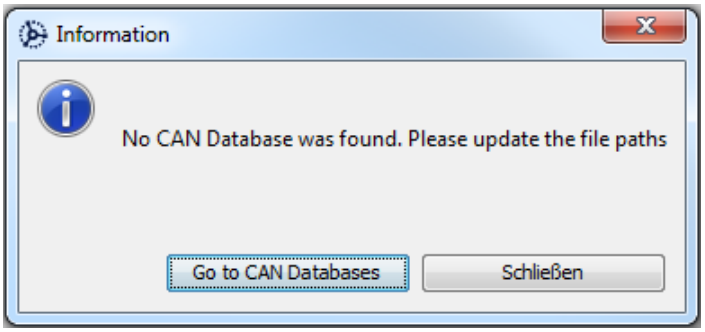

Figure 9.10: Notification message due to lack of database

The user can define the associated database for each channel and select the required signal.

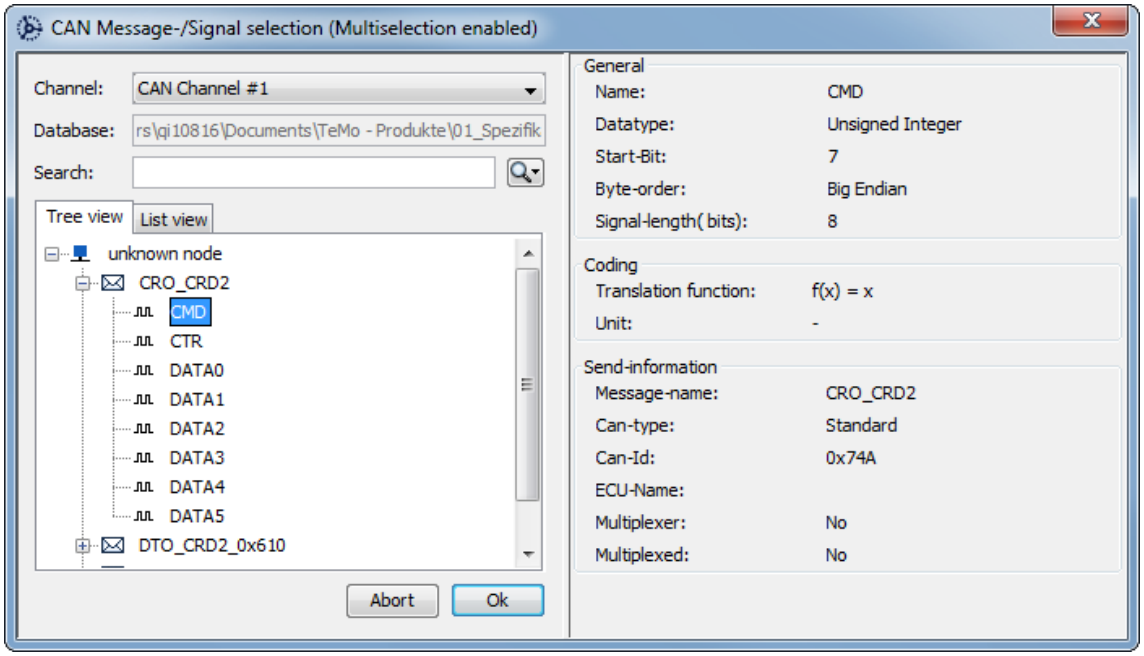

Figure 9.11: Selecting signal from database

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9.1.4.2 Arranging signals

The order of the signals in the display can be changed by the user with the buttons **[Move down]** and **[Move up]**. For that, the line to be moved has to be selected in the signal list. The corresponding button will be operated until the desired list position has been reached.

9.1.4.3 Deleting signal

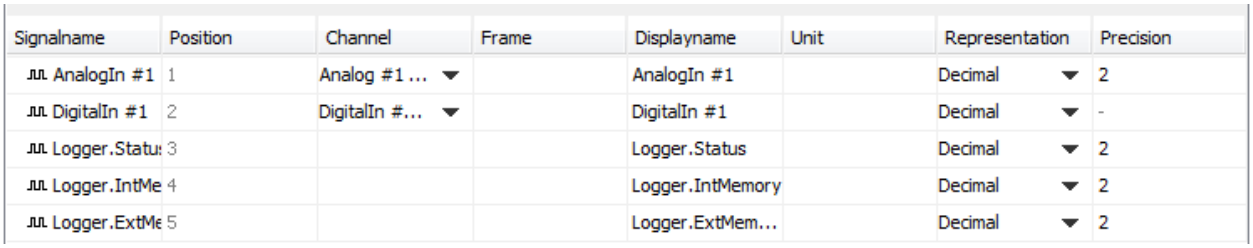
The user can delete single signals from the signal list via the button **[Delete]** after selecting the signal to be deleted.

9.1.4.4 Setting signal parameters

All parameters of a selected signal are initially loaded from the database. They are partly displayed in the signal list. If included in the configuration, the following signal parameters are displayed in the Remote Control Monitor window:

- Name
- Unit
- Value

The display of some signal parameters can be modified within the signal list.



Signalname	Position	Channel	Frame	Displayname	Unit	Representation	Precision
AnalogIn #1	1	Analog #1 ...		AnalogIn #1		Decimal	2
DigitalIn #1	2	DigitalIn #...		DigitalIn #1		Decimal	-
Logger.Statu:	3			Logger.Status		Decimal	2
Logger.IntMe	4			Logger.IntMemory		Decimal	2
Logger.ExtMe	5			Logger.ExtMem...		Decimal	2

Figure 9.12: Signal list

9.1.4.4.1 Signalname

The user can edit the signal name in the column “Displayname”. The Remote Control Monitor uses the signal name loaded from the database as the default value.

9.1.4.4.2 Position

Here the current position of the signal is listed.

9.1.4.4.3 Bus (fixed)

Shown from which bus this signal comes from.

9.1.4.4.4 Channel

Under this point the needed channel can be set for a signal which is configured on several channels.

9.1.4.4.5 Frame (fixed)

Shows from which frame of the channel the signal comes.

9.1.4.4.6 Displayname

The shown name of the signal can be modified here.

9.1.4.4.7 Unit

The user can edit the signal unit in the column [Unit]. The Remote Control Monitor uses the signal unit loaded from the database as default value.

9.1.4.4.8 Value

In the column “Representation” the user can select one of the following three number formats in which the signal is interpreted.

Decimal:
The signal value is displayed as an integer value or as floating point value with up to 7 (max.) decimal places. If a signal value exceeds the maximum number of displayable characters (16), the display automatically changes to floating point display.

Hexadecimal:
The signal value is displayed as a hexadecimal raw value up to a signal bit length of 32 bit. For signal values that are longer than 32 bit, only the decimal format is available.

Binary:
The signal value is displayed as a binary raw value up to a signal bit length of 8 bit. For signal values that are longer than 8 bit, only the decimal or the hexadecimal format is available.

The Remote Control Monitor function automatically calculates the number of the required decimal places from the parameters bit length, value range, factor and offset and records this value into the column “Precision“ as the default.

9.1.4.4.9 Precision

In the column [Precision] the user can change the number of the decimal places in the range from 0 up to 7.

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9.1.5 Remote Control Touch / Remote Control preview

The Remote Control preview allows checking how the current configuration will look like in the Remote Control display. This feature simplifies adjusting the parameters for a proper display within the 20 columns.

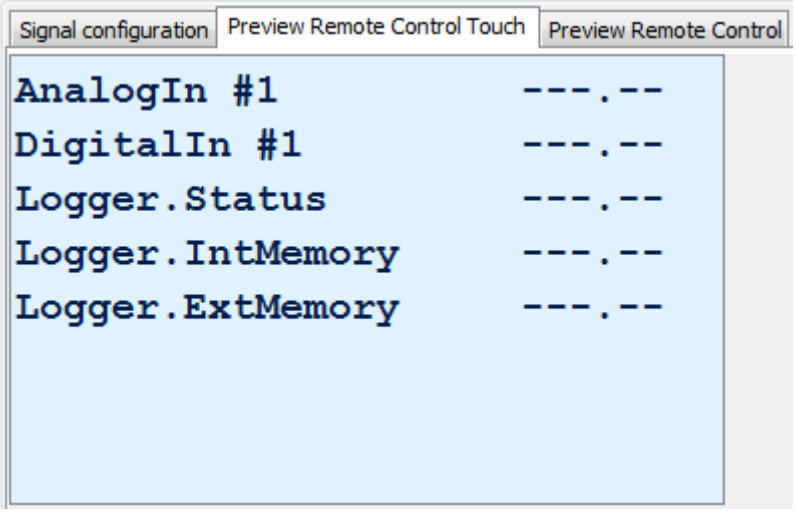


Figure 9.13: preview Remote Control Touch

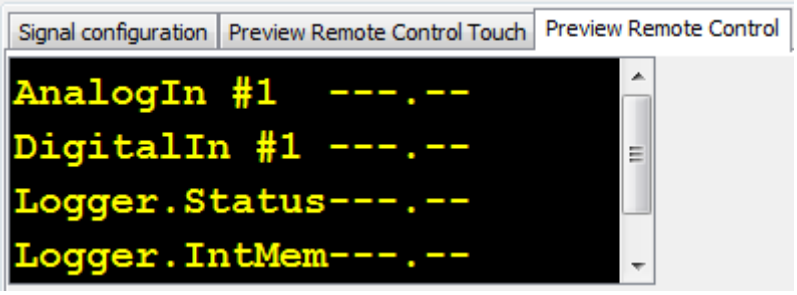


Figure 9.14: preview Remote Control

Since the actual values of the signals are not known at this point, default value lengths are used for the preview.

The display of the signal value has always a higher priority as the display of the signal name and the signal unit. The signal value will overwrite the signal name and the signal unit, if 20 characters for a line are not enough to display all parameters.

Exceeds a signal value the maximum displayable number of characters, it is automatically changed to the default display.

9.1.6 Changing the database

Is there a change of the database during the configuration or before loading a configuration, the display of the signal parameters will be updated. So the signal parameters of the new database are being used.

The signals will be displayed as follows, if there is no matching between new database and selected signal or the database is completely deactivated. An additional hint is displayed in the footer line.

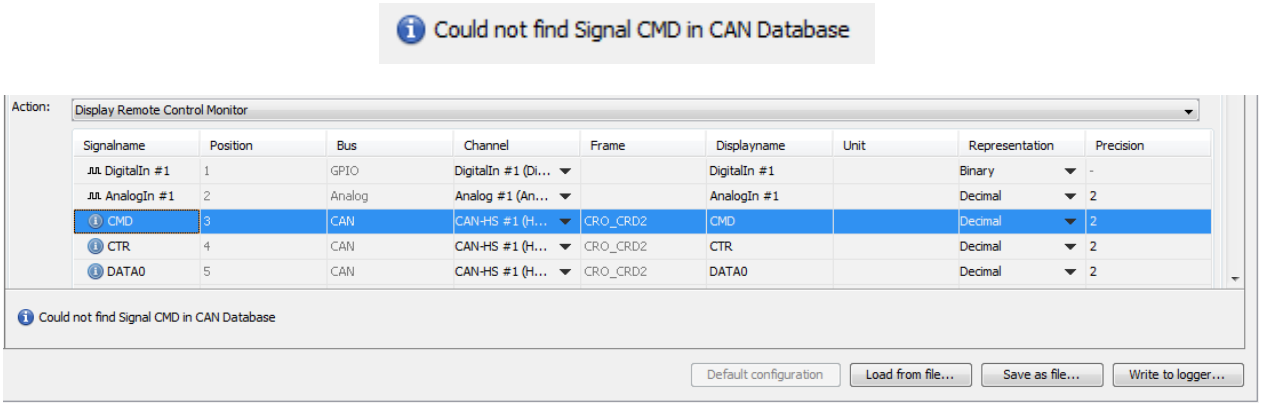


Figure 9.15: Change of CAN-database

9.1.7 Remote Control character set

The following characters from the windows-1254 character set table are displayed by the Remote Control Monitor:

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0-																
1-																
2-	SP	!		#	$	%	&	'	(	)	*	+	,	-	.	/
3-	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4-	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5-	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6-	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7-	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
8-																
9-																
A-		¡	¢	£		¥		§	¨		ª	«				¯
B-	°	±	²	³		µ	¶	·				»	¼	½		¿
C-				Ã	Ä	Å	Æ	Ç		É						Ï
D-		Ñ				Õ	Ö	×	Ø				Ü			ß
E-	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	Í	î	ï
F-		ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü			ÿ

10 Establishing and configuring a TSL network

This chapter describes the special setting for using a TSL network (System Link) of a bunch of Telemotive data loggers. Due to the fact that there are a lot of settings for the TSL, only the differences to the standard application are shown in this chapter.

Please read this chapter carefully if you want to use a TSL network.

10.1 Requirements

Only one blue PiraT2 can take place in a TSL network.

Note: Up from firmware release 3.1.1 the network setting is set to [Automatic DHCP Configuration for TSL] and the activation for TSL is active as default. The following settings just have to be modified if they are changed before.

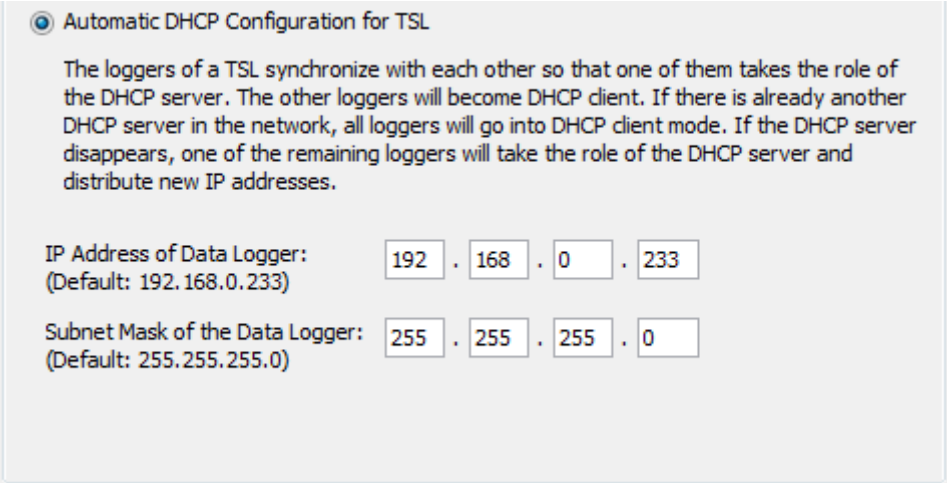


Figure 10.1: Automatic DHCP Configuration for TSL

To combine several loggers to one TSL network you have to set all devices to **TSL active**. This option can be activated in category **[System Link (TSL)]** in sub-category **[TSL-Activation]**.

In the network settings please be aware that only one DHCP server can be configured for each TSL network. If the TSL network should be connected to a network with external DHCP server all devices have to be configured as DHCP client.
If there is more than one DHCP server you will get following error message while opening the TSL configuration:

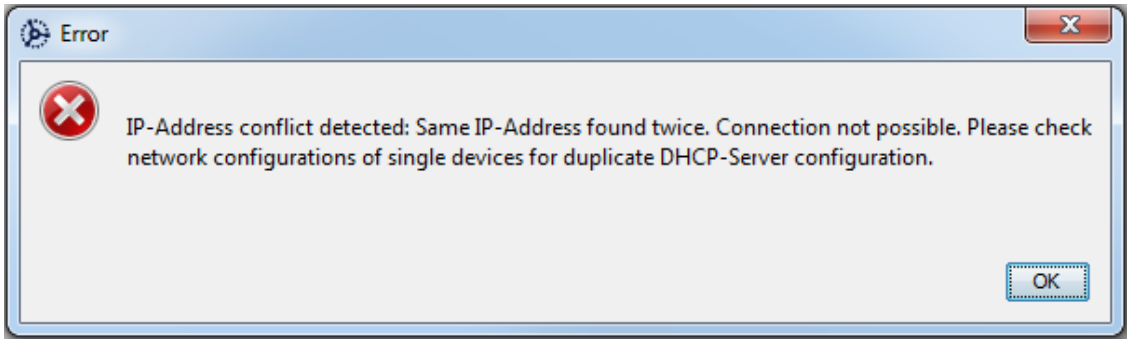


Figure 10.2: Error message with two DHCP-Server

If the connection of the TSL network does not work instantly please reboot all loggers to set the new network configurations as active.

Attention:
While configuring a new TSL network, we recommend to setting the time and deleting all existing data and marker on all logger of the TSL network.

This ensures a clean separation and synchronisation of the logged data in the TSL network.

10.2 Connections in TSL

The blue PiraT Mini will be connected only by the RJ45 ports at the front (**ETH #1 / TSL or ETH #2 / TSL**).

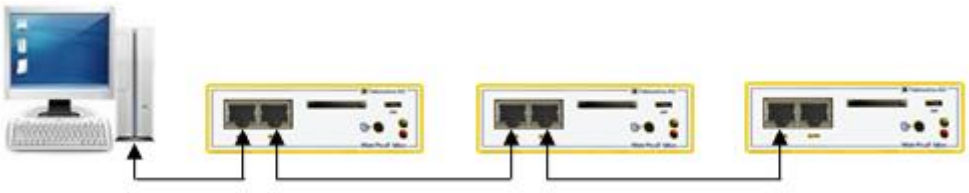


Figure 10.3: TSL example with three blue PiraT Mini

All data logger in a TSL network are connected as a line topology: Every device is connected to the previous and to the next device to the **ETH #1 / TSL** or **ETH #2 / TSL** port. The free ports of the first or the last device can be used to connect the TSL network to your network or directly to the client to manage the TSL network.

When you use a **blue PiraT2** or **blue PiraT2 5E** in a TSL network this device has to be the last one in the line because these devices can be connected ONLY by the front Ethernet port to a TSL network.

As soon as two or more TSL devices have been connected they will synchronize their time settings and when they are shown in the client they are ready to be configured.

Note:
Logging with front connectors in a TSL network could lead to problems of TSL connection.
We suggest to use the rear ports (ETH #3 & ETH #4) for logging in a TSL network.

10.3 Access to a TSL

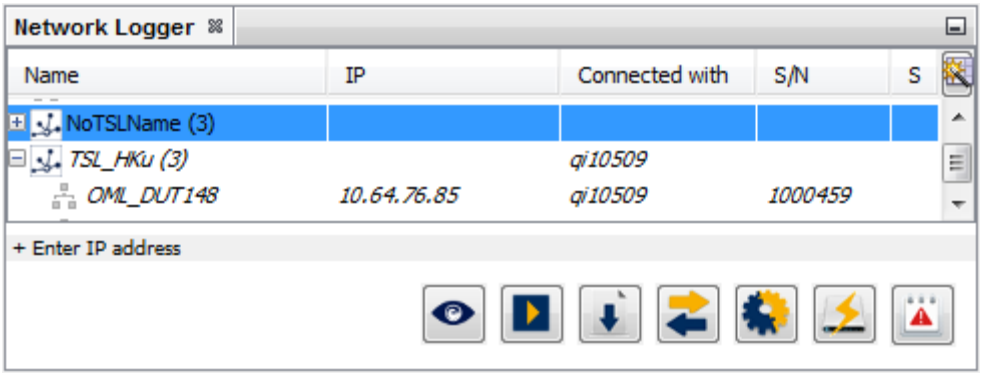


Figure 10.4: TSL in tab “Network Logger”

The client shows all connected TSL networks in the <Network Logger> as a knot. This knots symbol is the TSL icon and shows no IP address. In the status column the most serious status of all devices belonging to the network is shown (Error > Warning).

When you expand the knot you see the members of the TSL, slightly indented.

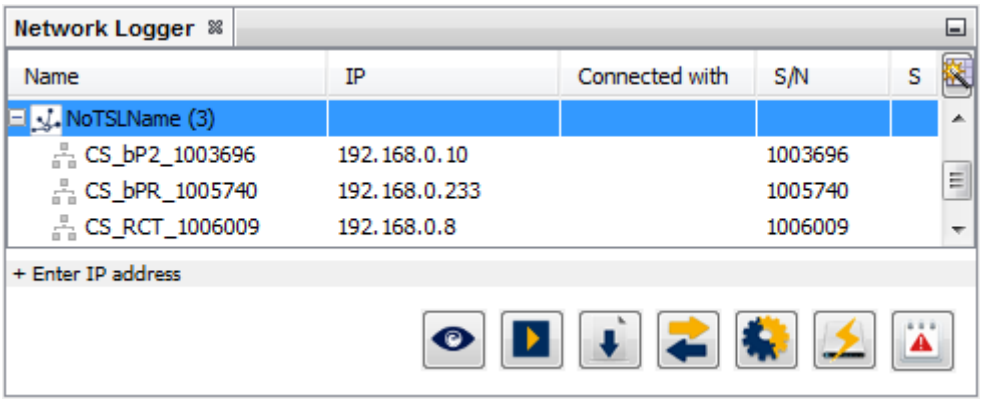


Figure 10.5: Loggers within TSL in tab “Network Logger”

Available applications for TSL networks:

23. Live View
24. Online Monitor
25. Download data
26. Convert data
27. Open configuration
28. Update firmware
29. Open bug report

You can choose the TSL by selecting the TSL knot or one of the members. The System Client establishes the connection to the whole TSL as well as if you use the direct IP search. Is this IP address in a TSL network the client will establish the connection to the whole TSL too.

The shortcut menu is also valid for the whole TSL network, no matter if you choose the network or the device. The only exception is the option **[Activate device LED]**. Selecting it in the shortcut menu of the TSL knot all LEDs are blinking, in the device menu only its LED blinks.

If different firmware versions are detected in a TSL cluster, this will be shown in the network logger window of the client:

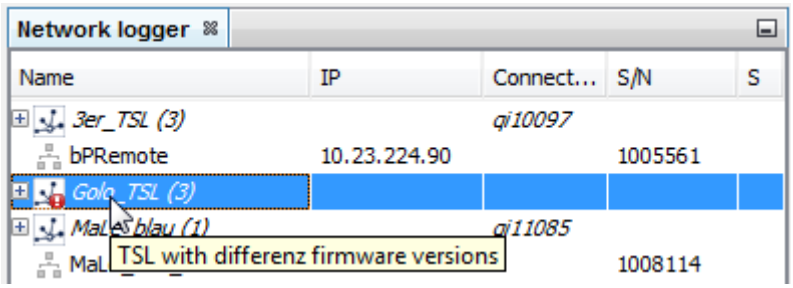


Figure 10.6: TSL with different firmware versions

10.4 Marker in a TSL network

Whena TSL network is established, the highes marker counter is the base for new TSL markers. If the highest marker counter is at 5, the next TSL marker has number 6 and will be synchronized to all TSL members.

10.5 Configuration of TSL

The TSLs configuration is the summary of the settings of all devices belonging to the network. There are consistent settings for the whole TSL.

10.5.1 Activating TSL

The TSL can be activated in category **[System Link (TSL)]** in sub-category **[TSL-Activation]**. On blue PiraT Mini the ETH1 port could be enabled for TSL. This is only necessary if non IEEE conform network devices are connected.

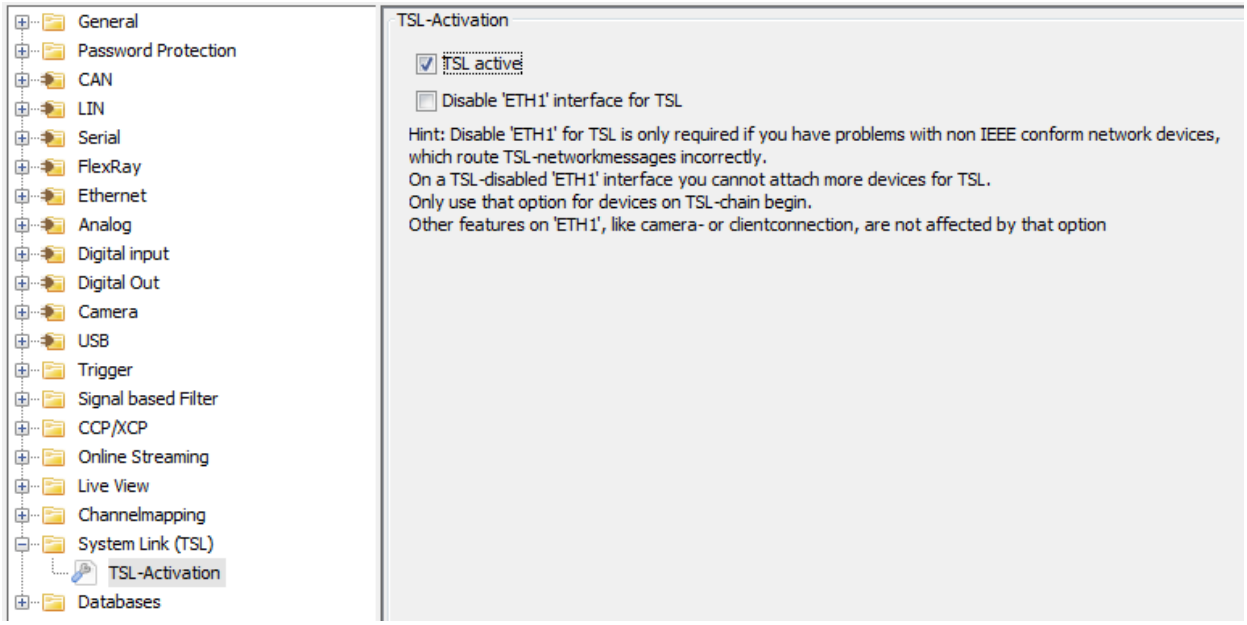


Figure 10.7: TSL-Activation

10.5.2 General settings – TSL

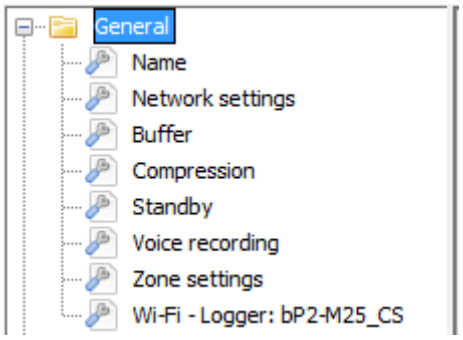


Figure 10.8: General

These settings are shown separately in a sub-category:

- Name
- Network settings
- Voice recording

And these settings are valid for all TSL members:

- Buffer
- Compression
- Standby
- Zone settings

If the client detects inconsistent settings, the settings of the device with the lowest mainboard number will be used. Just the Wi-Fi settings will get separate settings because of the multiple options they offer.

When there are different configurations regarding external storage in a TSL cluster, the settings for circular buffer can be set separately for devices with or without external storage. *(from FW 03.00.03)*

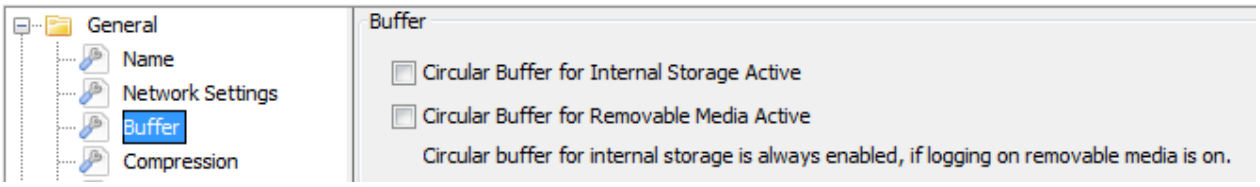
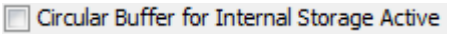
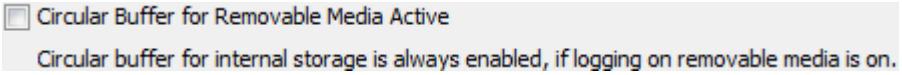


Figure 10.9: different settings for circular buffer

The first option:



is for devices without, the second option:



for devices where Logging on external storage is activated.

Settings dedicated to only one device are grouped accordingly (group title and device name).

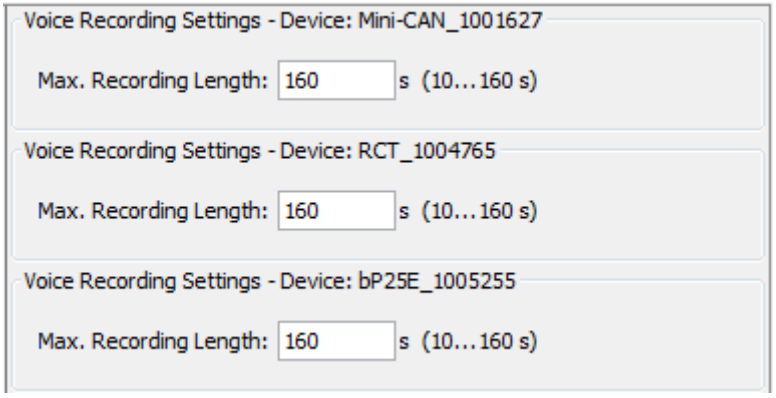


Figure 10.10: Voice recording settings with TSL grouping

10.5.3 Bus configuration – TSL

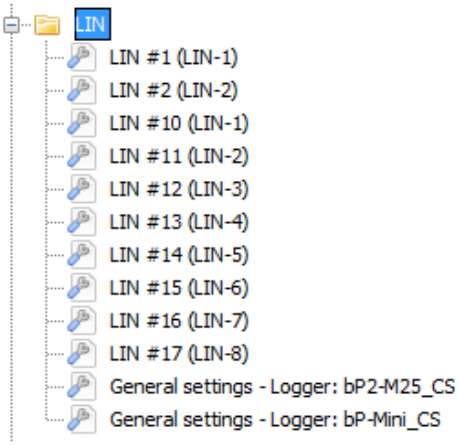


Figure 10.11: LIN

All available interfaces of every bus system are listed together in the folder of the configuration tree. General settings are listed for every device separately. The number of the interface is read from the configuration and the given presets under **[System Link (TSL)] → [TSL-Cascading – Logger: …]**. If the channel number changes during the configuration the order is not updated.

The name of the data logger is shown at the top of the sub-categorys tab sheet, here: LIN #1 - Device: bP-Mini_CS.

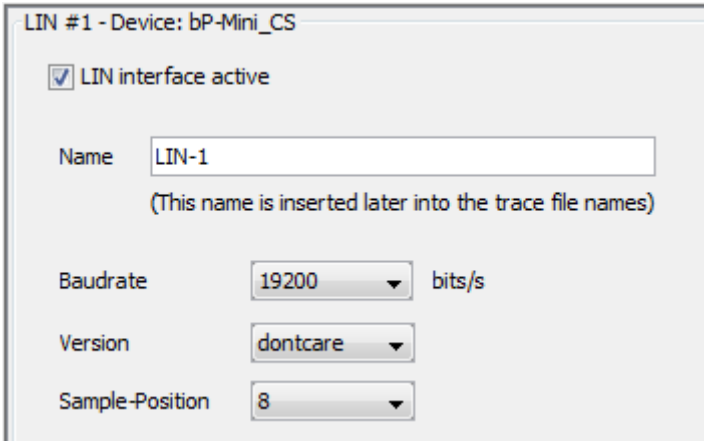


Figure 10.12: LIN #...

The interface overview of a TSL network shows an additional column with the logger name and internal channel number.

Channel	Devicename (internal busid)	Active	Version	Baudrate	Wake up	Keep Awake
LIN #1 (LIN-1)	bP-Mini_CS(#1)	☑	dontcare	19200	☑	☑
LIN #2 (LIN-2)	bP-Mini_CS(#2)	☑	dontcare	19200	☑	☑
LIN #10 (LIN-1)	bP2-M25_CS(#1)	☑	dontcare	19200	☑	☑
LIN #11 (LIN-2)	bP2-M25_CS(#2)	☑	dontcare	19200	☑	☑
LIN #12 (LIN-3)	bP2-M25_CS(#3)	☑	dontcare	19200	☑	☑
LIN #13 (LIN-4)	bP2-M25_CS(#4)	☑	dontcare	19200	☑	☑
LIN #14 (LIN-5)	bP2-M25_CS(#5)	☑	dontcare	19200	☑	☑
LIN #15 (LIN-6)	bP2-M25_CS(#6)	☑	dontcare	19200	☑	☑
LIN #16 (LIN-7)	bP2-M25_CS(#7)	☑	dontcare	19200	☑	☑
LIN #17 (LIN-8)	bP2-M25_CS(#8)	☑	dontcare	19200	☑	☑

Figure 10.13: LIN: Channel (overview)

10.5.4 MOST settings – TSL

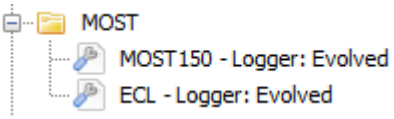


Figure 10.14: MOST

The settings for all available MOST interfaces are merged into the **[MOST]** category of the configuration tree.

10.5.5 Ethernet port settings – TSL

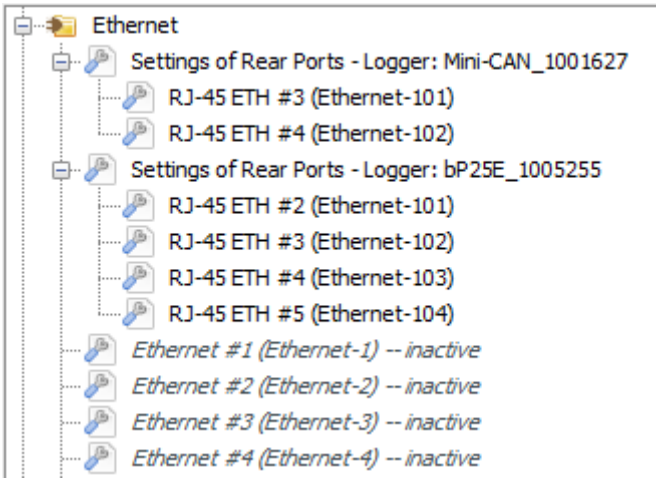


Figure 10.15: Ethernet #...

The settings for all available Ethernet ports can be modified in the category **[Ethernet]**. Every blue PiraT Mini and blue PiraT2 HW 2.x which is member of the TSL will get an own sub-category for port settings.

The ETH port numbers are not cascadable but the numbers of the spy channels which will be written into the trace files.

10.5.5.1 Ethernet / camera settings – TSL

Due to the reason that the front ETH ports are needed for TSL, they are not available for camera logging when TSL is activated.

10.5.6 Databases – TSL

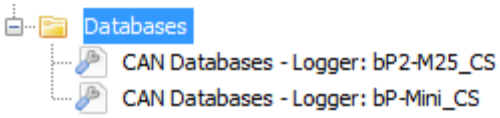


Figure 10.16: Databases

The CAN databases are listed for each device separately in the category **[Databases]**. Their channel numbers are shown cascaded.

10.5.7 Feature configuration – TSL

Features which are available on multiple data loggers are merged to one category within each device gets a separate sub-folder.

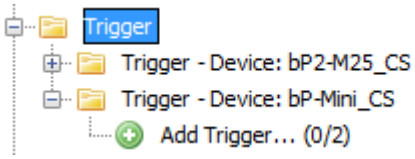


Figure 10.17: Feature on multiple devices

Features which are available on only one device get the logger name in the category description and no sub-folder is created.

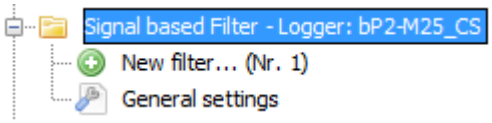


Figure 10.18: Feature just on one device

10.5.8 Password protection – TSL

Password protection can be configured for the whole TSL network or for every member. The password request will appear for every logger.

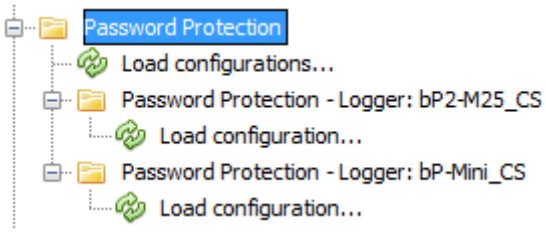


Figure 10.19: Password configuration

10.5.9 Trigger, Signal based filter, CCP/XCP – TSL

Trigger, Signal based filter and CCP/XCP can be configured for each device and will work only on this device too. The available interfaces are limited to the limit of this device. Actions for events can happen on the specific device only. There are no events which can work over the whole TSL or on another member of the TSL.

Triggers are set at all active loggers in TSL.

10.5.10 System Link – TSL

In the sub-category **[General]** the TSL name could be assigned. This name is shown in the Network Logger list, in offline data sets etc. (likely the logger name of single devices).

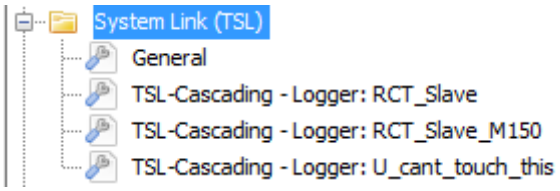


Figure 10.20: System Link (TSL)

In overview tab **[System Link (TSL)]** an **[Automatic cascade]** (channel offset) is possible, i.e., the logger with the smallest mainboard number starts with channel #1. At the other loggers a channel offset will be adjusted.

The offset has to be configured so that every channel has a unique number. The display in the overview is changed immediately.

Additionally it is possible to change the start number of a channel by clicking on the interval. Please insert an integer value as start point.

Logger	CAN-C...	LIN-...	Serial...	Flexr...	Ether...	Ethernet...	Analo...	DigitalIn...	Camera-Ch...	CCPXCP-ECUs
TSL-Cascading - Logger: RCT_Slave	#1 .. #14	#1 .. #8	#1 .. #6	#0 .. #0	#0 .. #0	#1 .. #16	#1 .. #2	#1 .. #1	#1 .. #4	#1 .. #4
TSL-Cascading - Logger: RCT_Slave_M150	#15 .. #16	#0 .. #0	#7 .. #10	#0 .. #0	#0 .. #0	#17 .. #32	#3 .. #5	#2 .. #4	#5 .. #8	#5 .. #8
TSL-Cascading - Logger: U_cant_touch_this	#0 .. #0	#0 .. #0	#0 .. #0	#0 .. #0	#0 .. #0	#34 .. #49	#0 .. #0	#0 .. #0	#0 .. #0	#0 .. #0

Figure 10.21: System Link (TSL): Logger (overview)

A more precise description about possible channel numbers you will find in sub-category **[System Link (TSL)] → [TSL-Cascading - Logger: <name>]**.

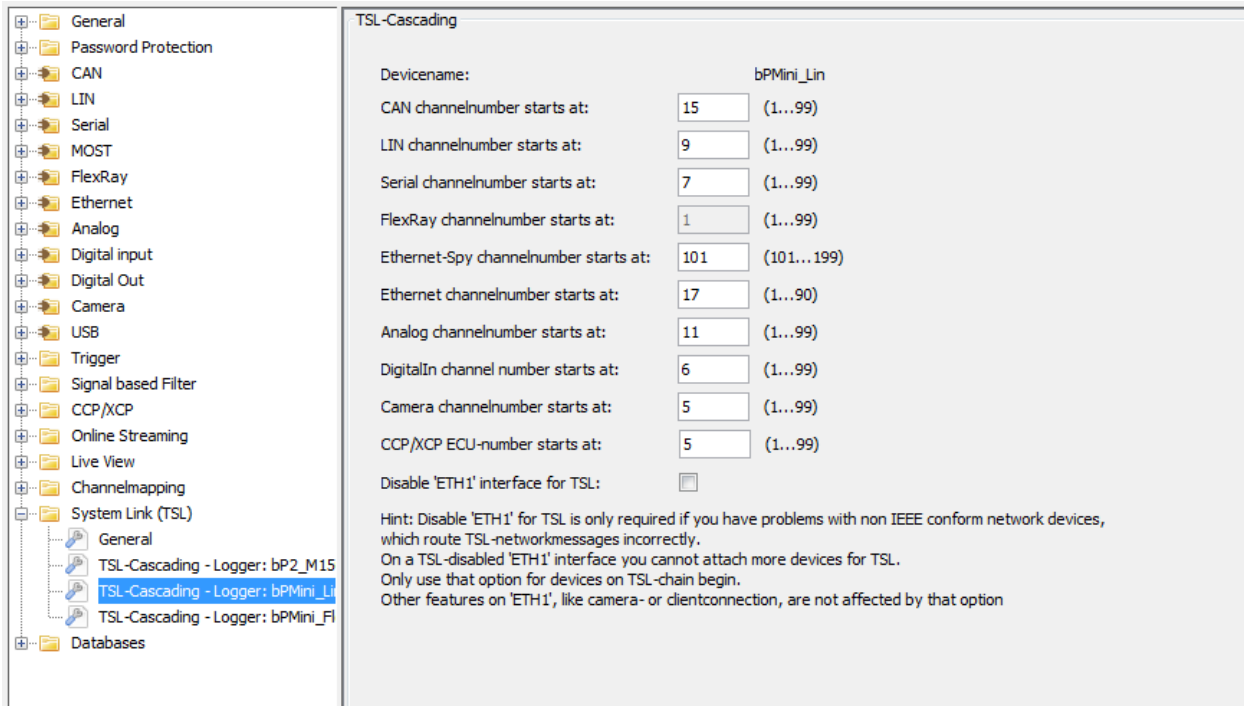


Figure 10.22: System Link (TSL) – TSL-Cascading - Logger: …

10.5.11 Offline configuration – TSL

If you open an Offline configuration of a TSL network the number of integrated configurations (corresponds to the number of loggers) will be shown in the tab title.

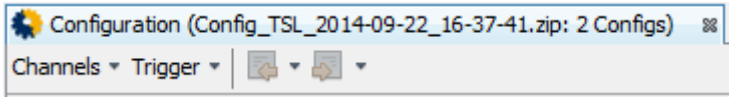


Figure 10.23: Tab title of offline configuration

Attention:
A TSL offline configuration only can be send to a TSL network with the same number of members. Only TSL networks can be selected as target for this configuration.

If the number of members does not match to the number of integrated configurations you will get this error message:

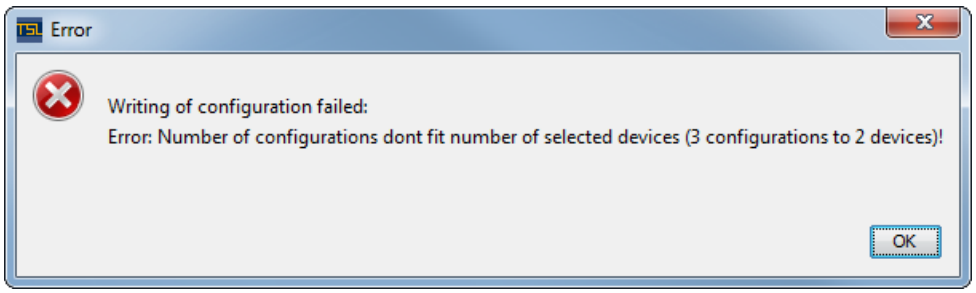


Figure 10.24: Error message due to wrong number of devices in offline config

When the number of members is equal, but the TSL is a different one, you have to make a “Configuration matching”. This assigns every single configuration to one of the members in the current TSL. General settings will be equalized.

Fort the configuration matching a dialogue for TSL-selection appears which is set automatically to the best matching possible. This matching can be accepted or changed by the user. Every configuration can be assigned to one device only. If a configuration does not match ecactly to a device the missing values are filled with default settings.

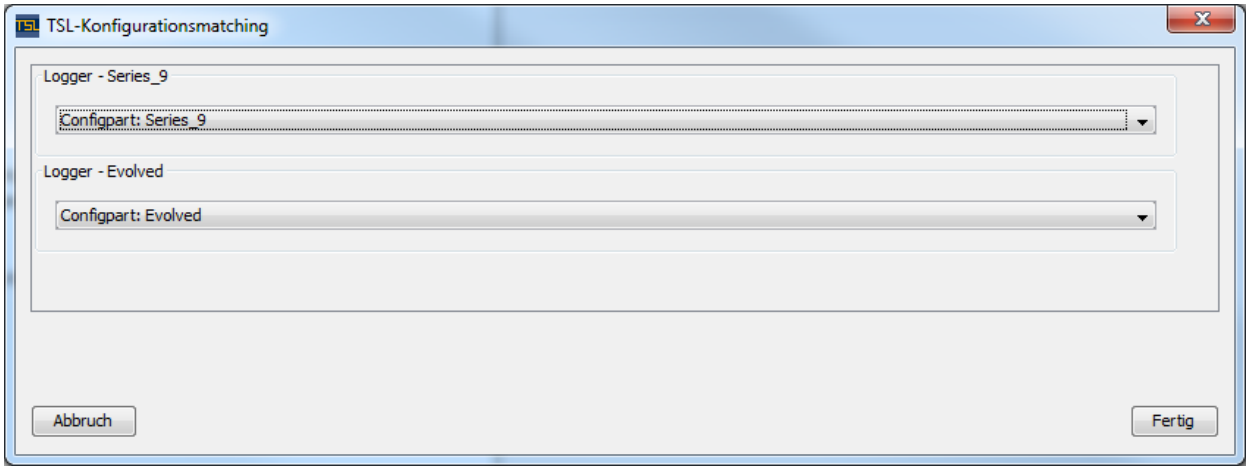


Figure 10.25: TSL Configuration matching

A validation is checking the configurations when you choose the matching by yourself and gives you a hint when some parts of the configuration are missing or inapplicable.

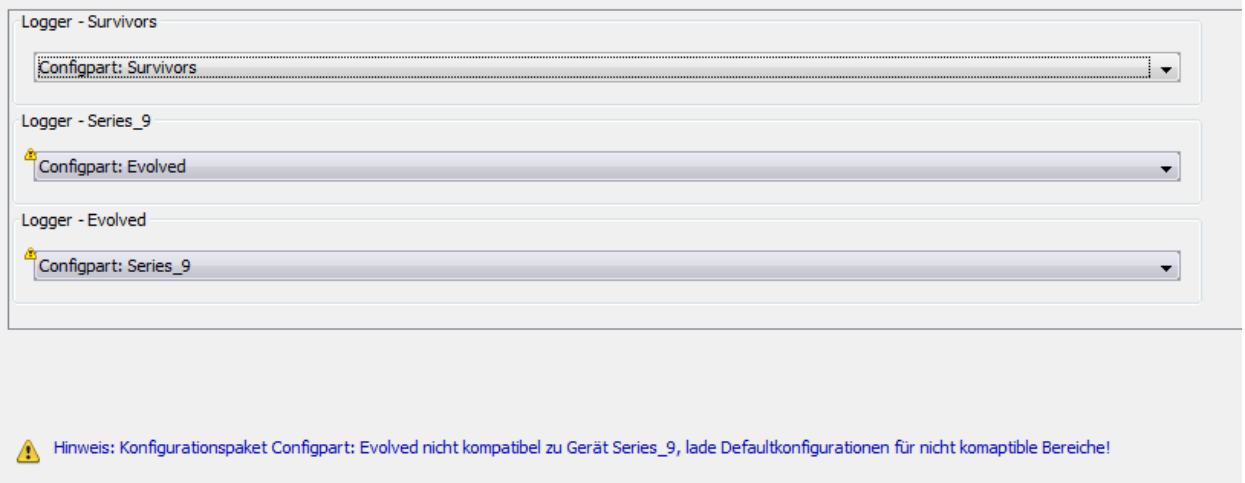


Figure 10.26: Notification message due to incompatibility of device and configpart

Some settings have to be equal in a TSL and will be adjusted by the client if necessary. There's a pop up window which is listing the modified settings.

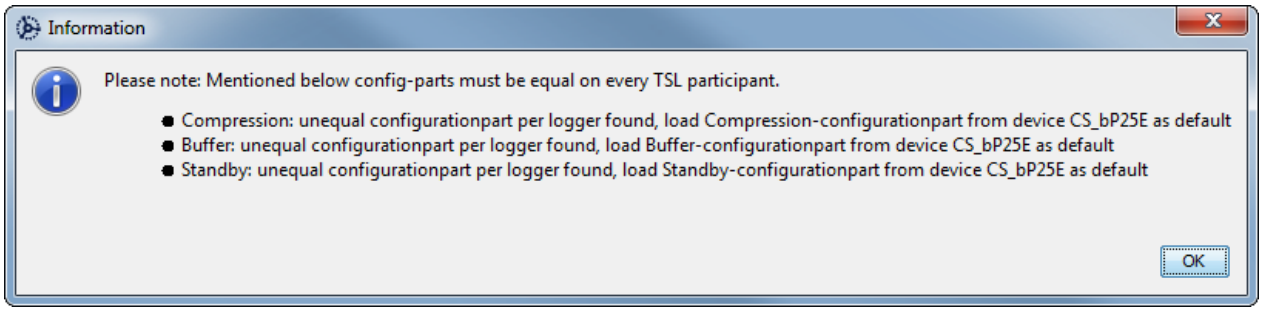


Figure 10.27: Notification message fort he adaption of configurations

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10.6 Downloading / converting – TSL

When you try to download or convert data without a valid cascading of the channels you will get an error message. All settings which are invalid will be enumerated.

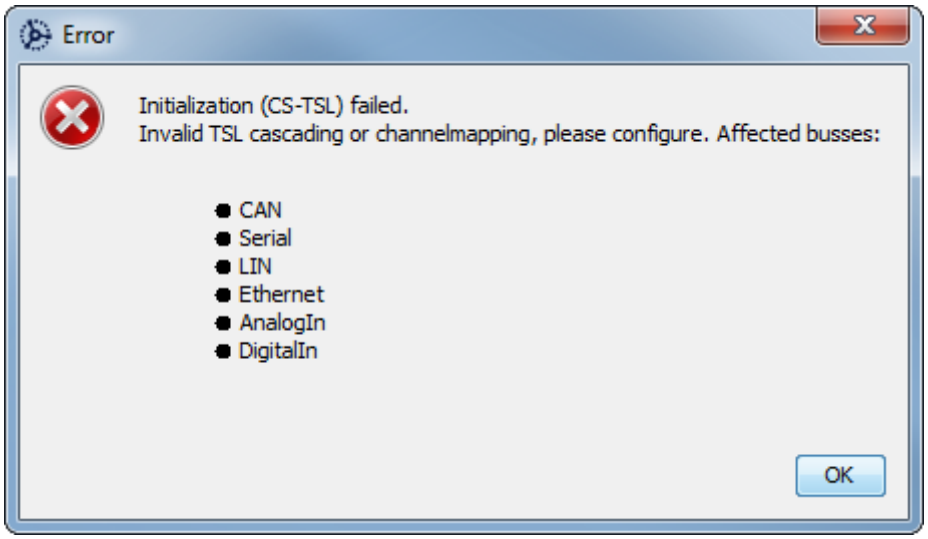

Figure 10.28: Error message due to invalid cascading settings

Due to the fact that all raw data will just be cascaded during the sorted download or conversion process you can change the cascading settings after recording the data without any loss of data.

10.7 Downloading from a TSL network

When the cascading is valid the overview for available data is shown.

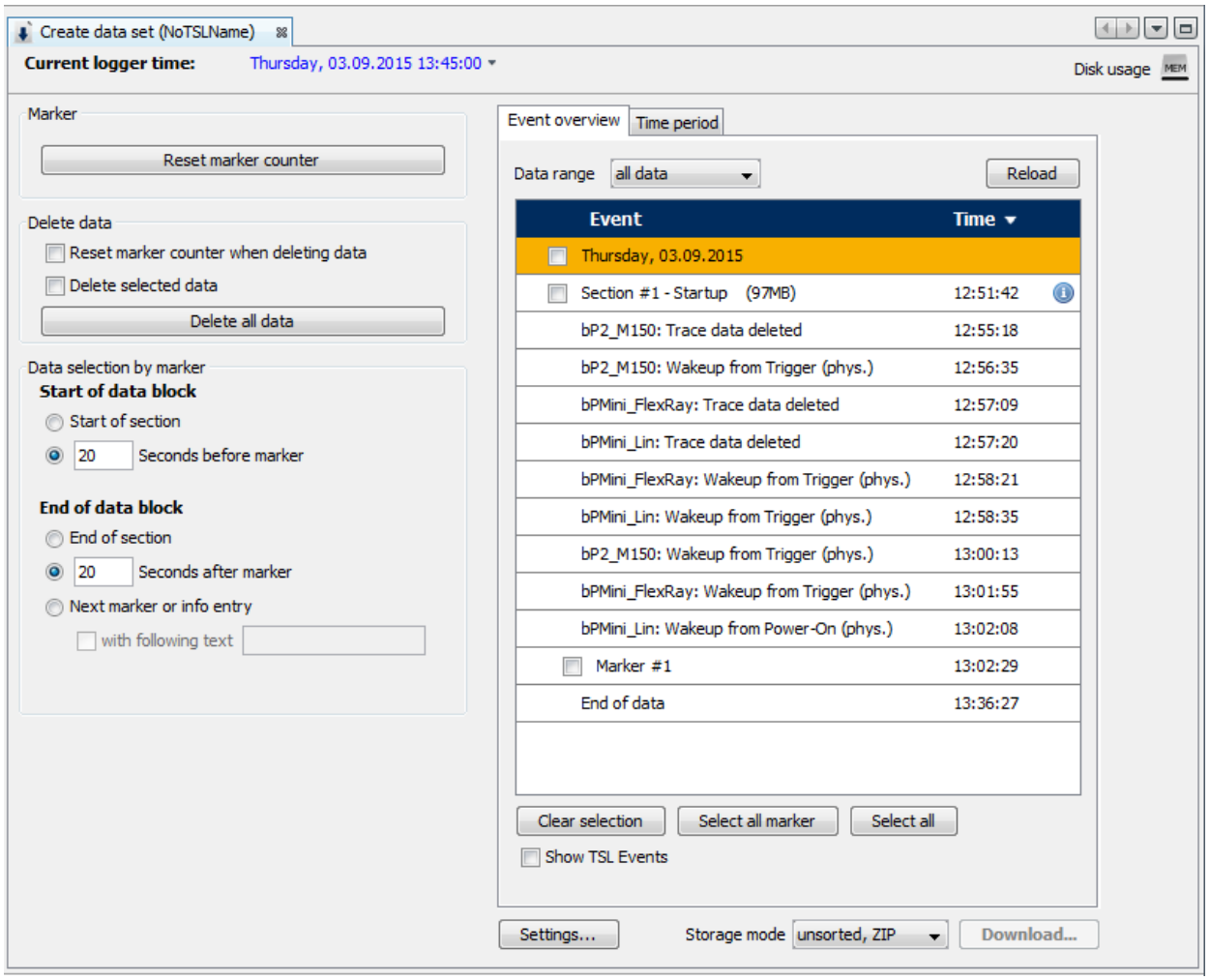

Figure 10.29: Download overview without TSL Events

At <Current logger time> you find the current time of the reference data logger. By pressing the button you can see the time of all members of the TSL.

Additional to the standard events you can mark the checkbox **[ ] Show TSL Events** to see the startup and shutdown times of all members of the TSL.

The timeframes are defined by the first startup and last shutdown of all members of the TSL. The single startups/shutdowns of the devices are listed too. Found marker from all members are shown and get new numbers in ascending order.

By pressing the button at the right of a section you get a list of all recorded interfaces with cascaded channel numbers.

10.7.1 Unsorted download

While downloading the data unsorted, all data of the selected sections are downloaded without cascading or sorting by time. But these information are stored into the offline data set and can be used for later conversion. It is possible to cascade and synchronize the downloaded offline data set in a subsequent conversion process.

10.7.2 Sorted download

During a sorted download all data will be synchronized and cascaded into one file. The main-board number in the filename is the summary of all mainboard numbers in the TSL. All trace files with channel number will be cascaded according to the actual settings.
Configurations and synchronization messages are listened in the head of the data files.

We recommend a sorted offline data set for further processing with other tools.

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10.8 Converting data from logger or offline data set – TSL

There's no difference in converting a normal offline date set or a TSL offline data set. All cascaded channels are listed in the <Channel selection tree>.

The checkbox **Show TSL Events** is available too. When you convert an unsorted offline data set all data will be sorted, synchronized and cascaded before. During an online conversion the current logger time is also shown.

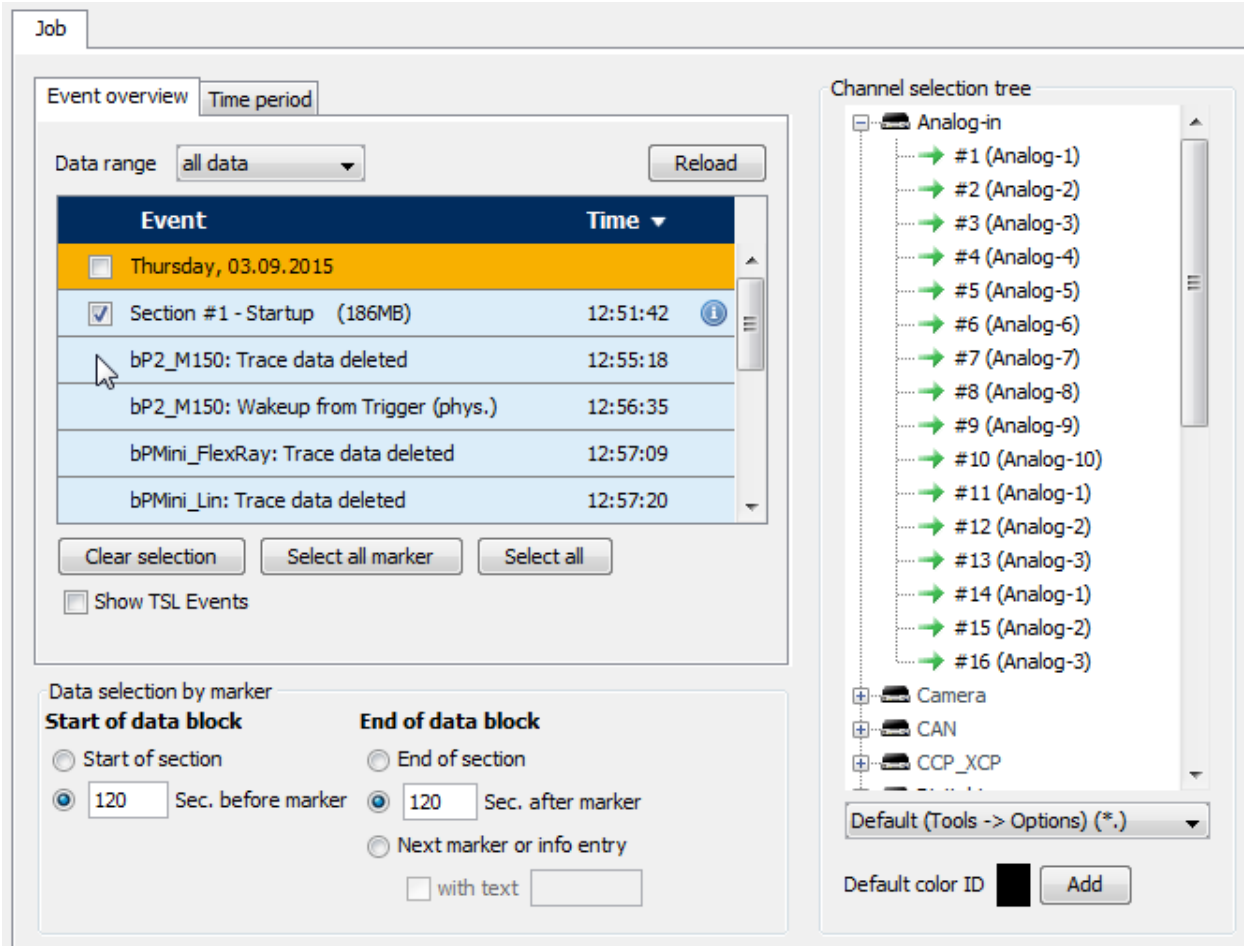

Figure 10.30: Conversion overview TSL offline data set

10.9 Creating a bug report – TSL

When starting the application **[Open bug report]** of a TSL you'll see the errors of all TSL members with a short description.

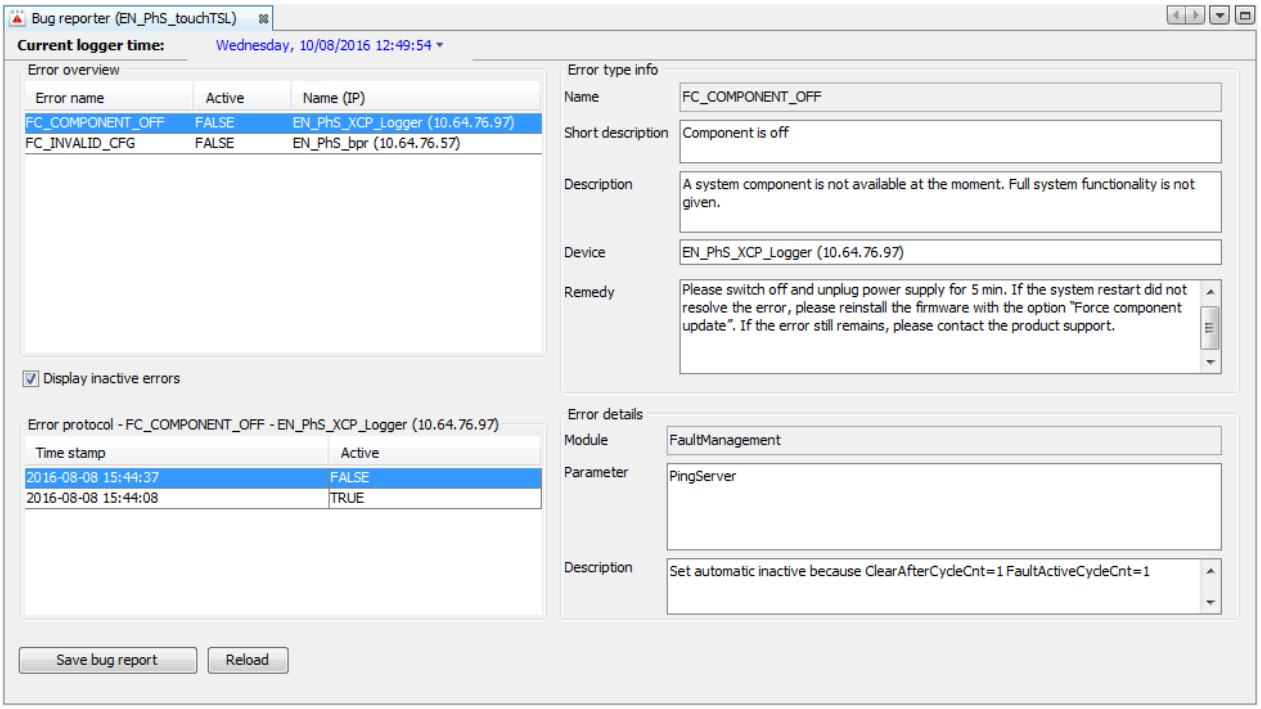

Figure 10.31: TSL bug reporter

When you save the bug report, the name contains the short "bPTSL" for the TSL network, the firmware version "FW-02.01.04" and the serial numbers of the members.

10.10Firmware or license update – TSL

When starting the application **[Update firmware]** of a TSL you'll see the information divided into two columns – one for **blue PiraT Mini / blue PiraT Remote / Remote Control Touch** and one for **blue PiraT2 / 5E** if both devices are available. For every group of devices one firmware packet is selectable and will be updated to all members of this TSL in one update process.

The firmware packets are named as follows:

blue PiraT Mini **blue PiraT Remote** **Remote Control Touch**	bPMini_SWxx-yy-zz-oo … .dat (o = optional)
blue PiraT2 **blue PiraT2 5E**	bluePiraT2_SWxx-yy-zz-oo … .dat (o = optional)

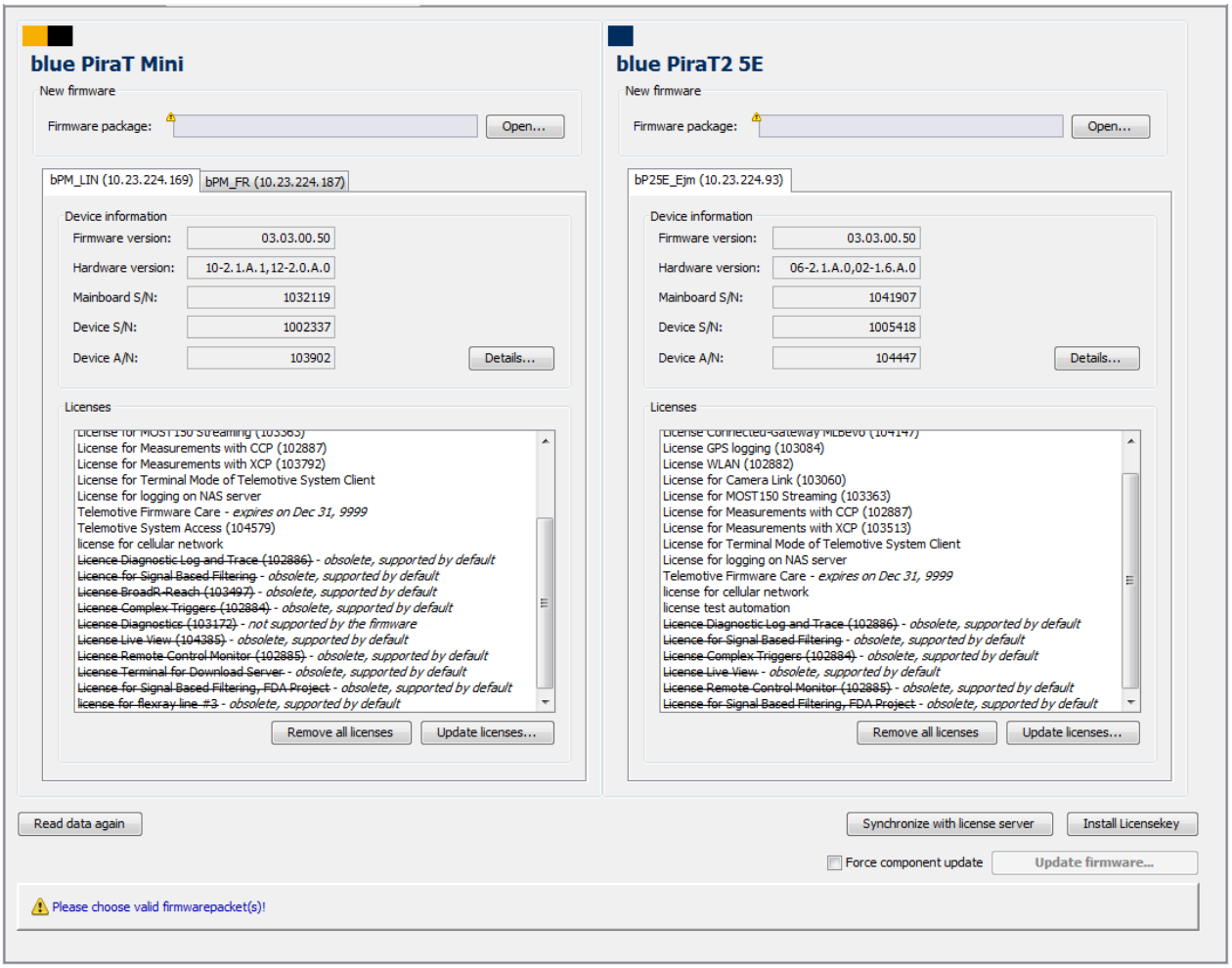

Figure 10.32: Firmware / License update TSL

The version of the firmware packets for the different devices have to be exactly the same to work as a TSL network. When there are more than one device in the TSL, e.g., 2 blue PiraT Mini, every device has an own tab where you can read or update the licenses as well as buttons for the whol TSL cluster are available.

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10.11Configuration – options

The options for the configuration can be reached by the menu items [Tools] => [Options].

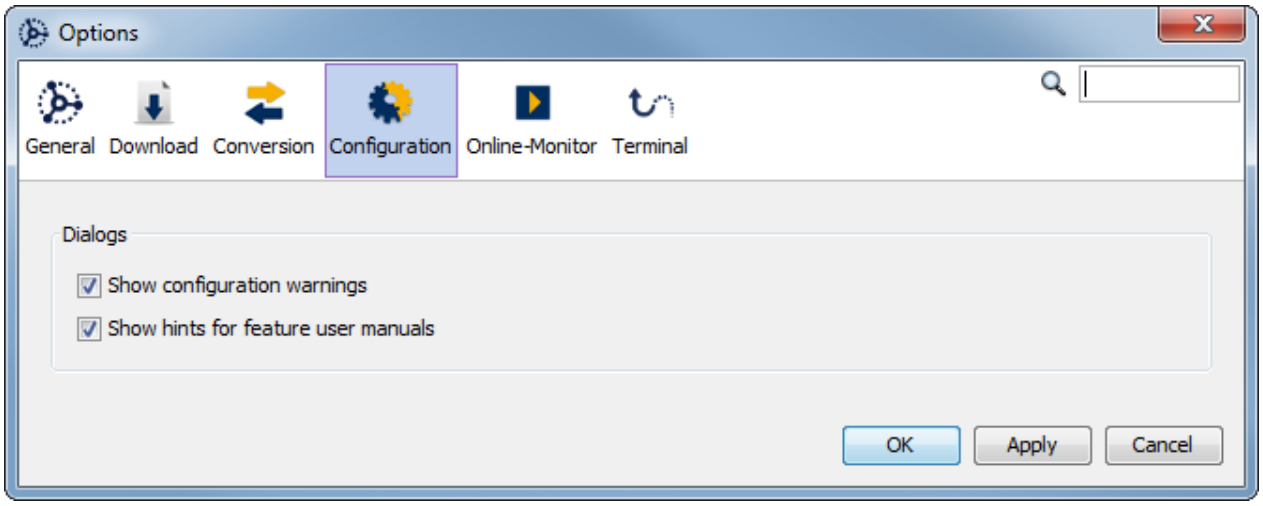


Figure 10.31: Configuration - options

Here you can set the option if the configuration warnings and hints for special user manuals should be shown or not.

11 Terminal light

The Telemotive data logger **blue PiraT2** and **blue PiraT Mini** have a feature called “Terminal light” which allows to connect several logger to one computer system for configuration, downloading or other features without the need to modify the network settings of each data logger.

For this feature every data logger has a second, fixed IP address in the subnet 10.1.X.Y which can be contacted by the System Client.

Attention:
To use this option your computers network port has to be set to the fixed IP address 10.1.255.254 and subnet mask 255.255.0.0.

To set this IP address, please go to the specific network connection at **[Properties]** change the IP settings and close the window with **[OK]**.

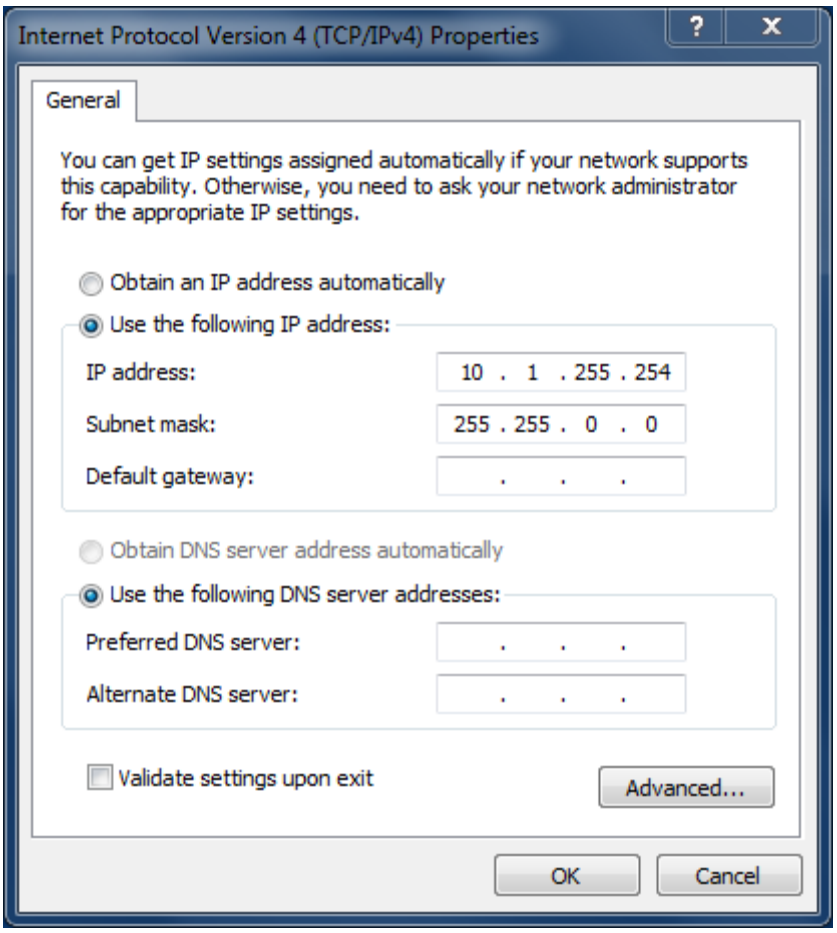


Figure 11.1: Change IP settings

When this is done the System Client establishes the connection to the data loggers and the devices can be used.

Index

12 The application [Live View]

Live View provides the opportunity to preconfigure data on a logger or TSL cluster (up from release 3.4.1) and show them live on a mobile device such as mobile phone, tablet or laptop.

A HTML5 compatible browser is required for displaying this. The connection to the logger is made by Wi-Fi (with additional license) or Ethernet.

12.1 Open Live View

There are several ways to open Live View in the browser.

12.1.1 Application icon [Live View]

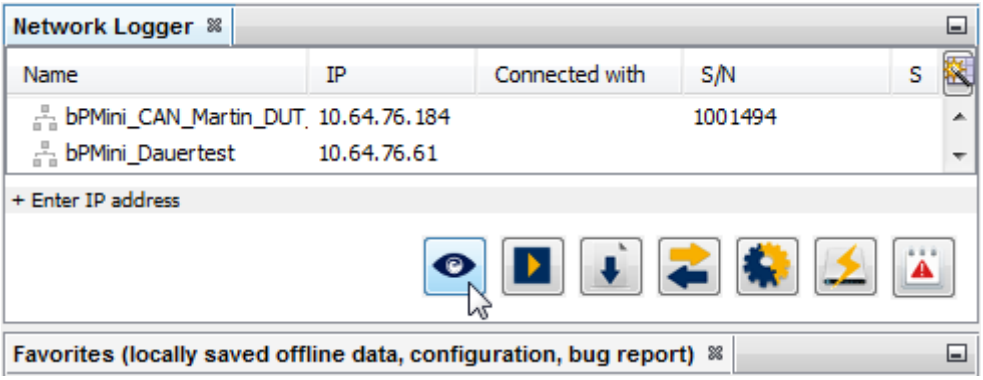


Figure 12.1: Open the Live View over the Icon

12.1.2 Right click on the logger

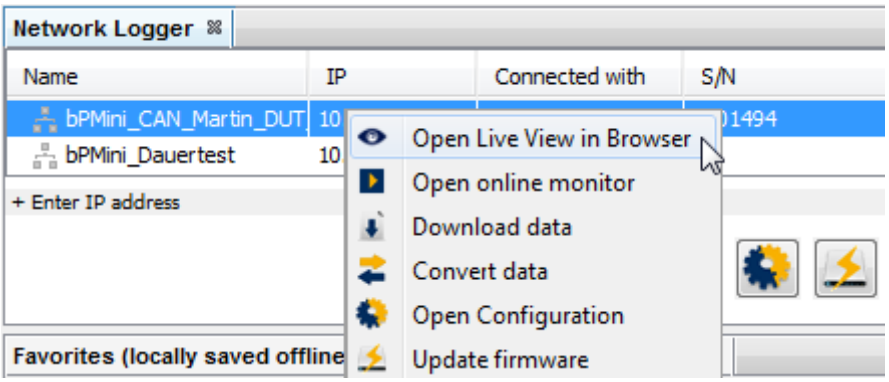


Figure 12.2: Open the Live View over right click

12.1.3 Access via the configuration

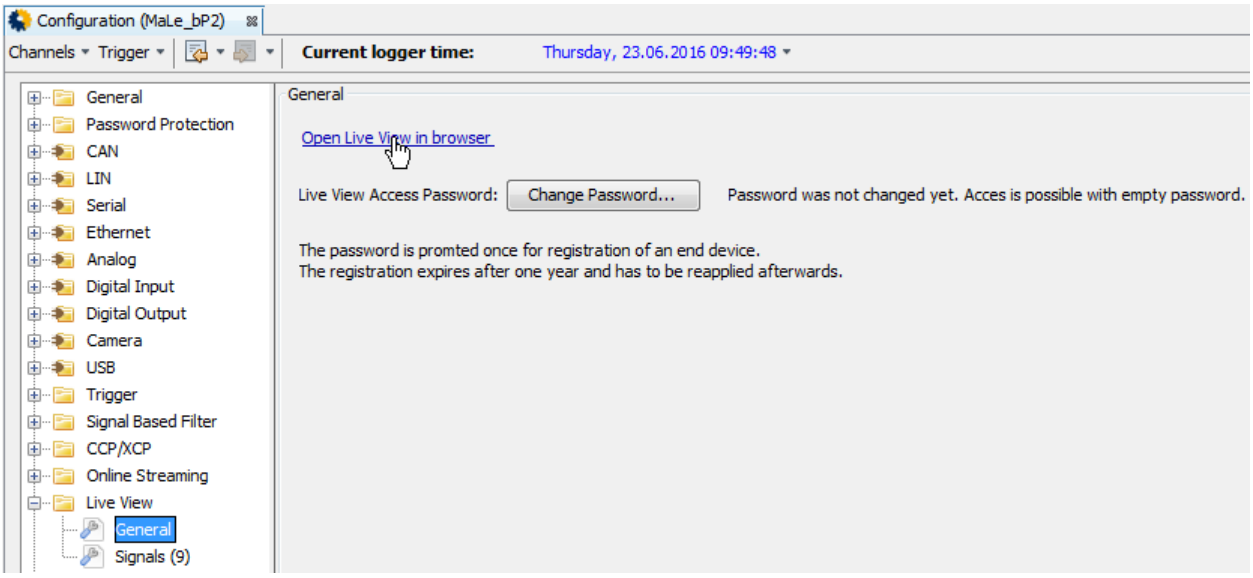


Figure 12.3: Opening Live View via the configuration

12.1.4 Access via the Client-Portal

By entering the IP address of the logger in the browser you get to the Client Portal.

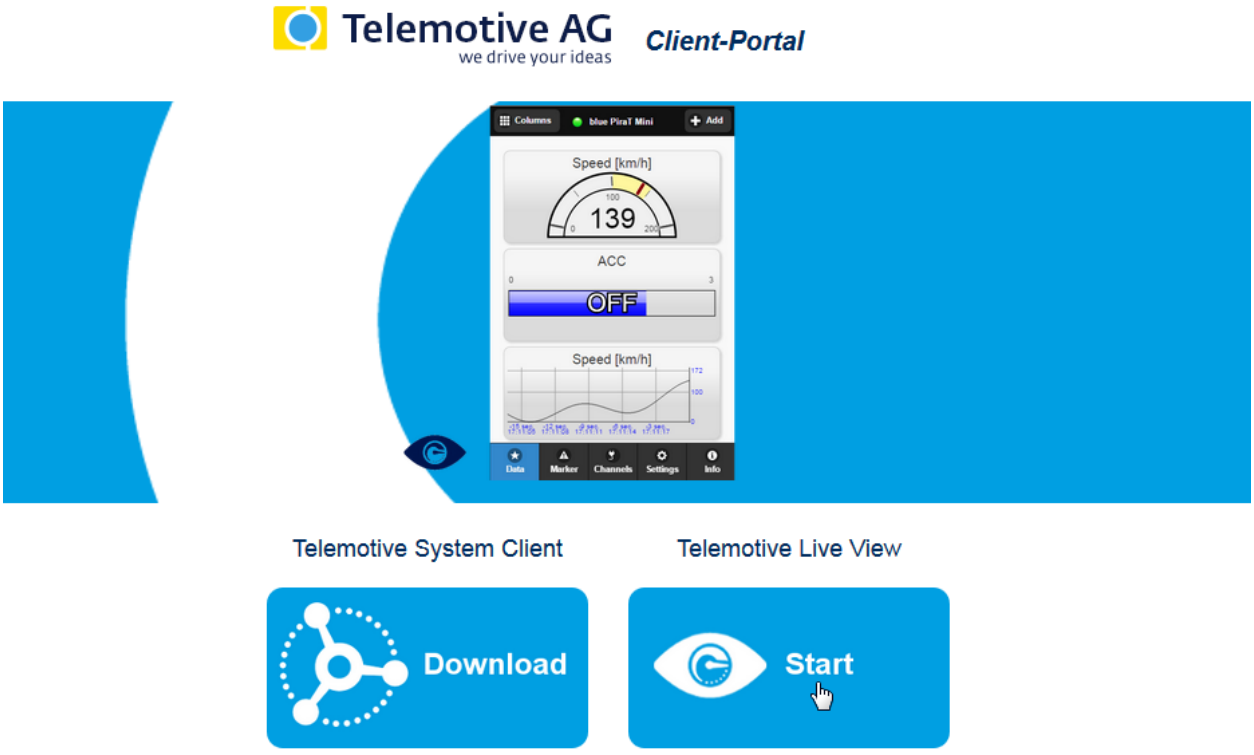


Figure 12.4: Open the Live View via the Client-Portal

12.2 Password configuration

In the default settings, there's no assigned password. Access can therefore be carried out without a password. Due to security reasons, and to prevent unauthorized access, a password should be established by the client for Live View at first.

The dialog for entering or change a password can be reached via the configuration tree **[Live View]** → **[General]**.

Here you have the possibility to open Live View via the direct link with the default browser too.

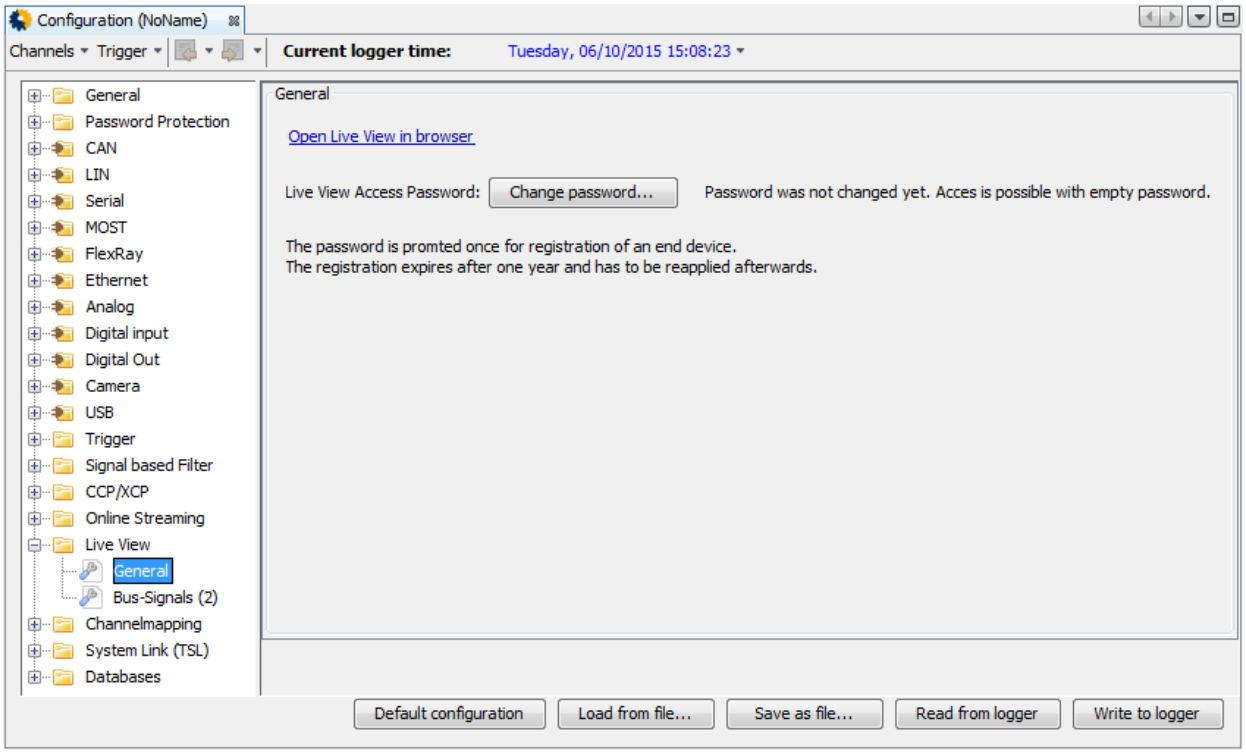
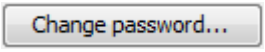


Figure 12.5: Live View – General

By clicking 

the window for entering the password will open.

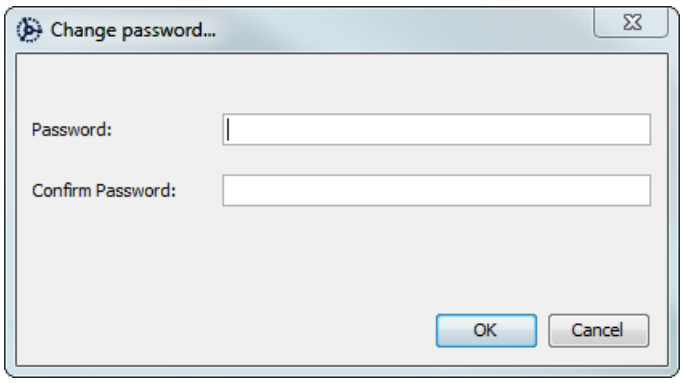
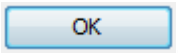


Figure 12.6: Changing password

Note:
The password may only contain characters that are encodable with US-ASCII eg. § is not allowed. The rules are self-explanatory by an implemented verification.

In the password configuration there is no minimum number of characters. So it is also possible to define a single-digit password.

To save the password, click on 

.

The logger must be restarted by pressing the buttons **[Restart Logger]** to complete the process.

12.3 Connection between mobile device and logger via Wi-Fi

To exchange information between the mobile device and the logger via Wi-Fi, the mobile device must login into the Wi-Fi of the logger.

For this, Wi-Fi has to be activated in the mobile device and the connection to the network with the given SSID and the password assigned in the client must be established.

12.4 Requirements

If the connection and authentication have been successfully completed with the logger, TLV shows the data view (Top).

In order to guarantee the fully functionality of the **TLV**, 3 functions of the (mobile) browser will be checked. The browser must support the following points:

- WebSocket
- Local- & SessionStorage
- Canvas

WebSocket: To guarantee communication between the logger and TLV, the (mobile) browser must support WebSocket's. There are a lot of browsers that tell the user that the browser supports this feature, which is not necessarily true (see Android Stack Browser)

Local- & SessionStorage: In order that the widgets do not have to be reconfigured repeatedly, the entire configuration is stored by the storage function on the (mobile) device.

Note:
If the cache of the browser will be deleted, the saved configuration is lost.

Canvas: The browser requires HTML5 - Canvas technology to draw the widgets.

All 3 functions have been reviewed by MAGNA Telemotive by the following browsers. Here it is important that AppleWebKit version of at least 535.0 exists in the browser.

Note: It is possible to display integers that are encoded with up to 52 Bits. Higher numbers have a rounding error which is only related to the representation in the Live View and does not occur in the recorded data!

12.5 Requirements for mobile devices

Mobile browser	Requirement
	up from Android FW 4.4.2 (Kit-Kat)
	up from Windows Phone 8.0
	up from iOS 6.0
	up from version 16.0
	up from version 24.0
	up from version 34.0

Computer browser	Requirement
	up from Internet Explorer 11.0
	up from Safari 6.0
	up from Opera 18.0
	up from Firefox 11.0
	up from Chrome 21.0

12.6 Database configuration

To display the favored signals via Live View, they had to be configured in the client first.

A database has to be included to set a signal available for the Live View, The database can be configured in the configuration tree under the point **[Databases]** and the desired channel.

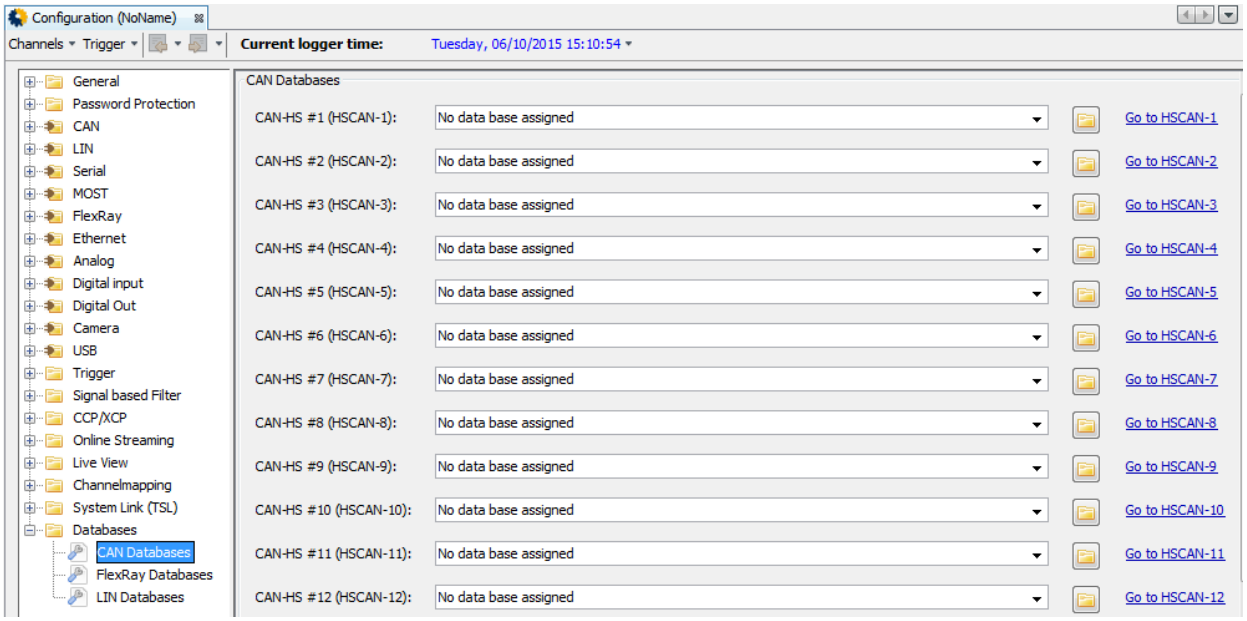


Figure 12.7: Assigning databases

Pressing the field  opens the dialog in which the DBC can be selected and load into the data base configuration.

12.7 Adding signals

To display the favored signals in the Live View, these signals have to be set in the configuration tree at **[Live View]** → **[Signals]**.

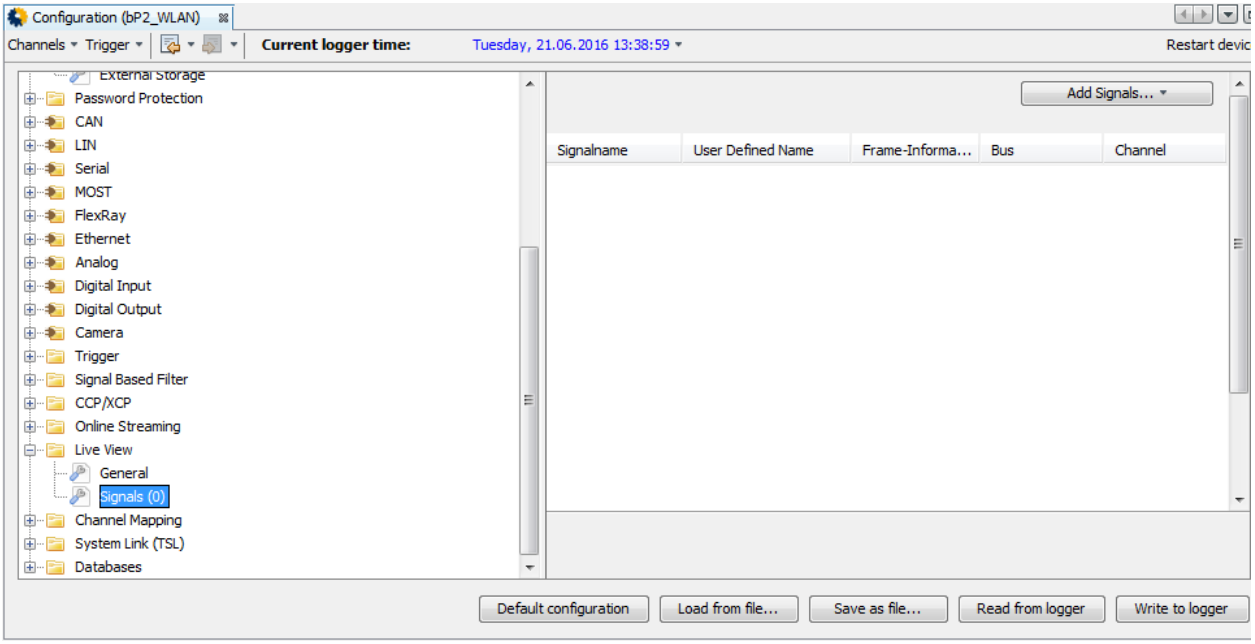


Figure 12.8: Adding signals

By clicking on  a context menu opens.

Where you can select the corresponing bus for which a database is stored.

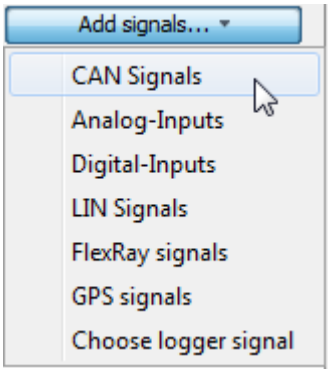


Figure 12.9: Bus selection

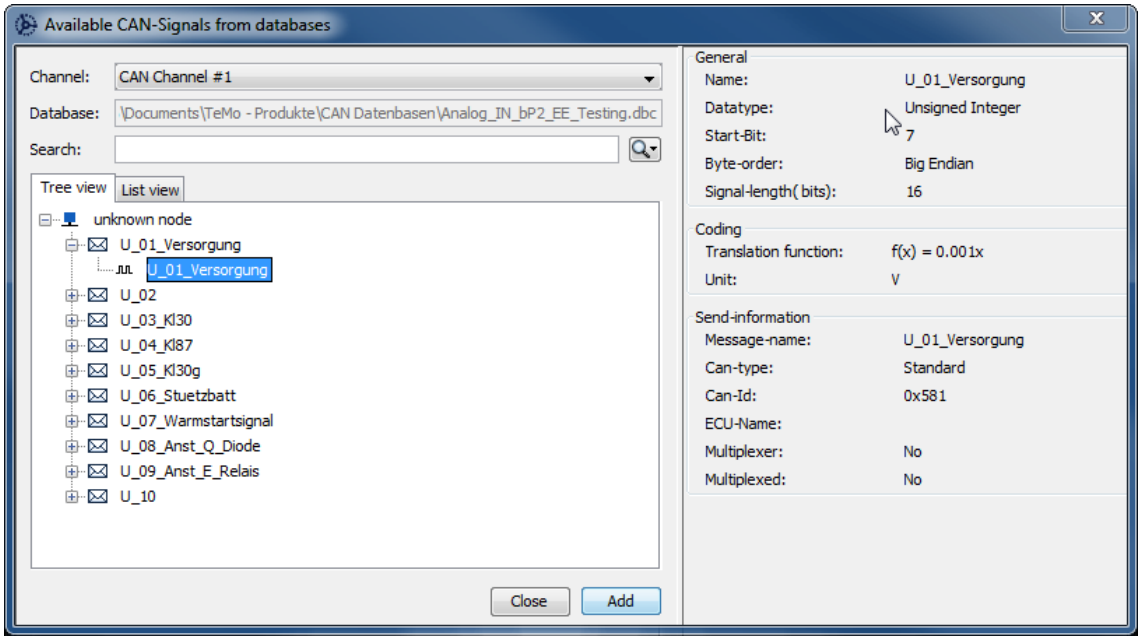


Figure 12.10: Selecting signals

The tree or list view provides the ability to display and select the signals that are stored in the respective DBC. By pressing Add these will be listed in the list of **[Signals].**

To enable the logger offering the signals in the TLV, which are listed under **[Signals]**, the process must be finished with Write to logger.

12.8 The display of Live View

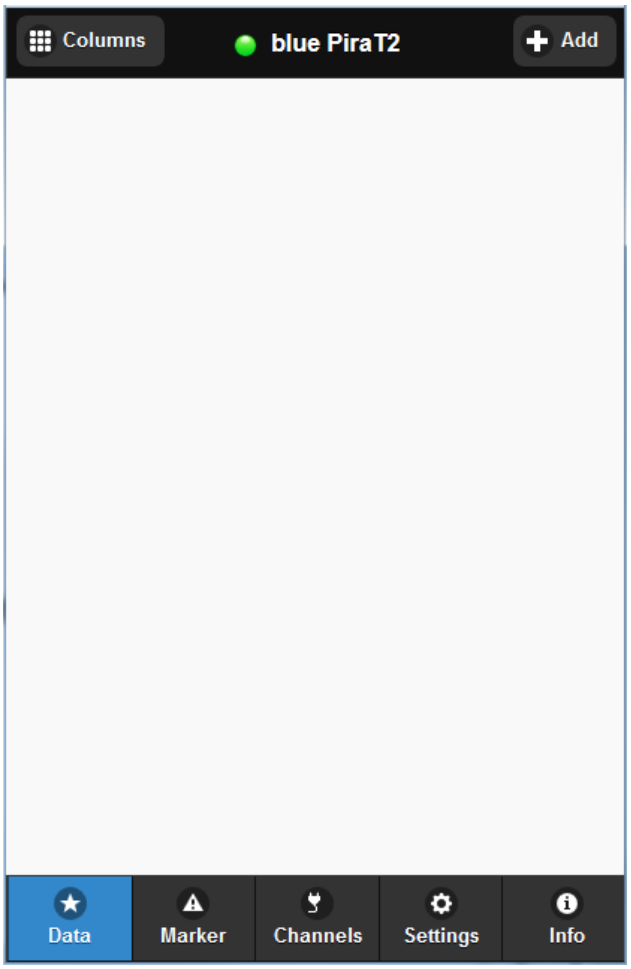


Figure 12.11: Live View startscreen

The window of the Live View can be displayed in 5 views that show information about the logger, change settings or set trigger.

At the top of the title bar, the logger type and the current connection status to the logger is displayed. If the communication is successful, the status indicator is **green**. If there's no connection available, (e.g., due to Wi-Fi failure), the display is gray.

If no connection exists, the Live View always tries to contact the logger again and again (reconnect).

State	Definition
	**green** – connection to logger successful, TLV is ready for use
	gray – connection not established, TLV tries to reconnect to the logger intermittently

12.8.1 Language Setting

The language of the Live view is taken from the Browser settings.

Changing the language settings of the browser also causes a change of the Live View -surface.

12.9 Data

In the data view the Live View works with the created widgets. These widgets are supplied with the data on the WebSocket, which are provided by the Telemotive loggers. Various display options for the widgets are available to be set here.

Compared to the other 4 categories, the data view has 2 additional buttons for configuring the display.

By pressing the button **[Columns]** (), the widgets are displayed in multiple columns and sizes.

The widgets are always bound to a fixed grid. The grid of the WebApp provides 5 options with different sizes: 1, 2, 3, 4 and 5 columns.The widgets can be moved around within the grid.

Figure 12.12: Presentation with one column

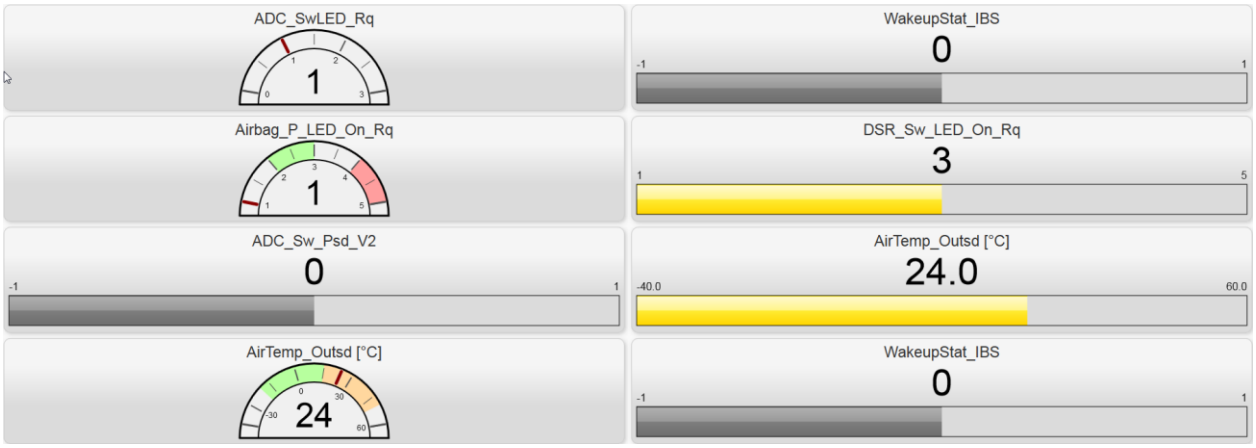


Figure 12.13: Presentation with two columns

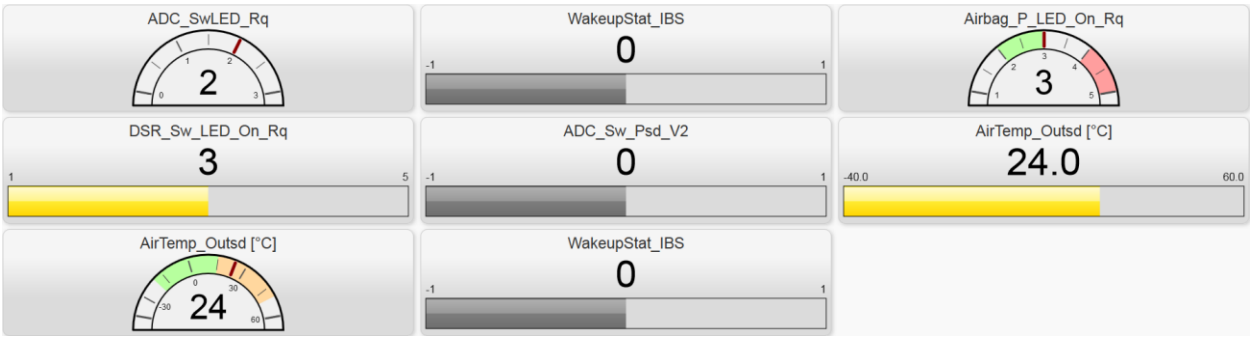


Figure 12.14: Presentation with three columns

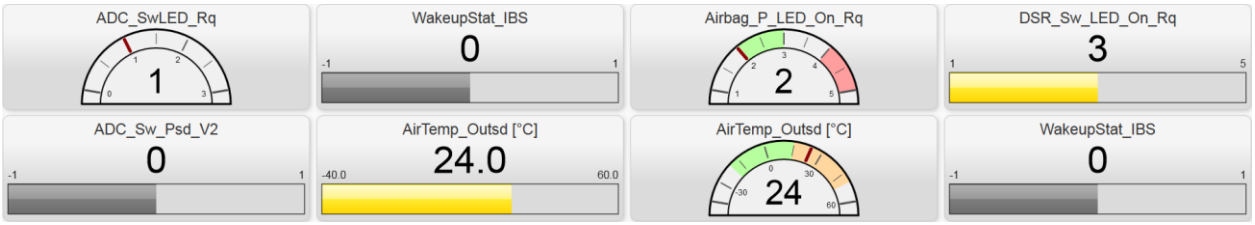


Figure 12.15: Presentation with four columns

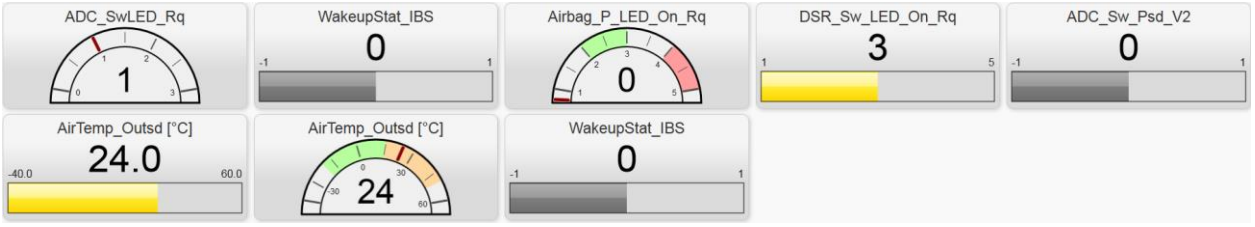


Figure 12.16: Presentation with five columns

12.10Adding and Configuration of widgets

By pressing **[(✚) Add]** at the top right of the window a new widget on the grid will be created and a dialog box appears.

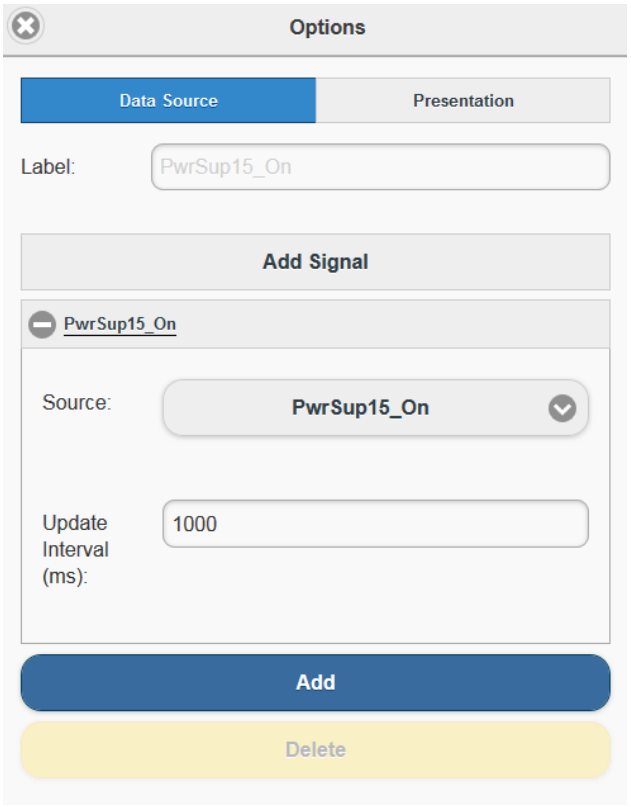


Figure 12.17: Adding a widget

12.10.1 Data Source

Under the tab **[Data Source]** the respective signal can be configured, which was previously added in the client menu item Live view / Signals.

12.10.2 Label

An individual name for the selected signal can be given in the field **[Label]** because some signals have quite a long name.

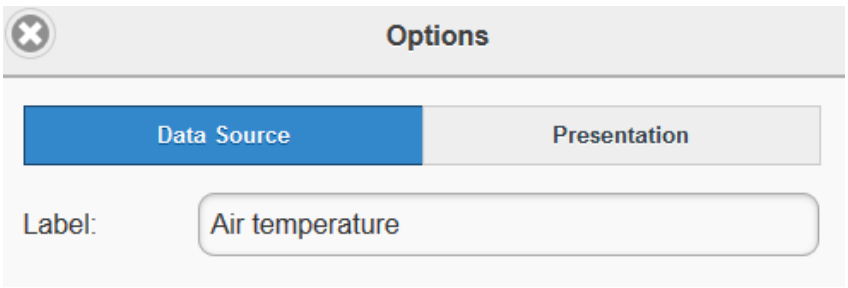


Figure 12.18: Field Label

12.10.3 Adding signals

Via the Data Source button you can select the signals, that you have previously added in the client under the menu item Live View / Signals

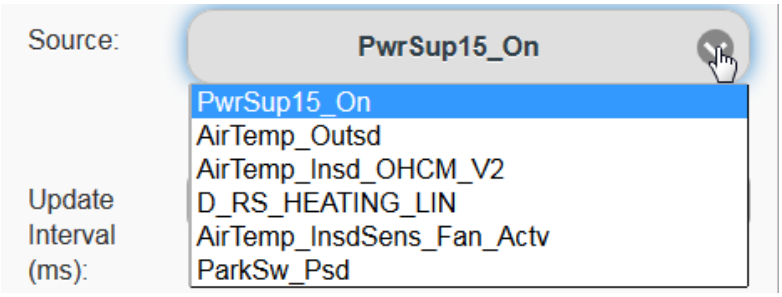


Figure 12.19: Adding signals

12.10.4 Update Interval

In this field you can specify how often the view of the widget should be updated (in milliseconds ms).

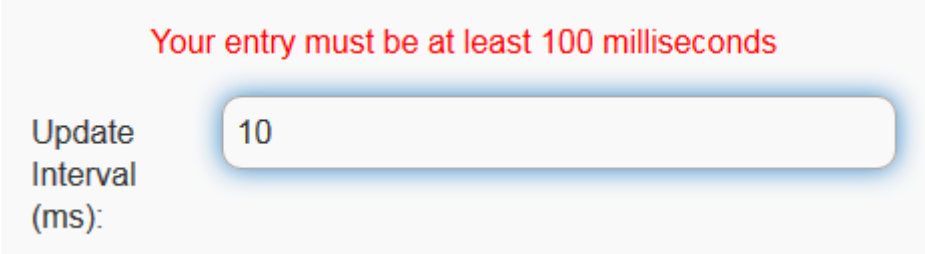


Figure 12.20: Field Update Interval

12.10.5 Presentation

After configuring the data source, the appearance of the widget for the configured signal can be set on the tab **[Presentation]**.

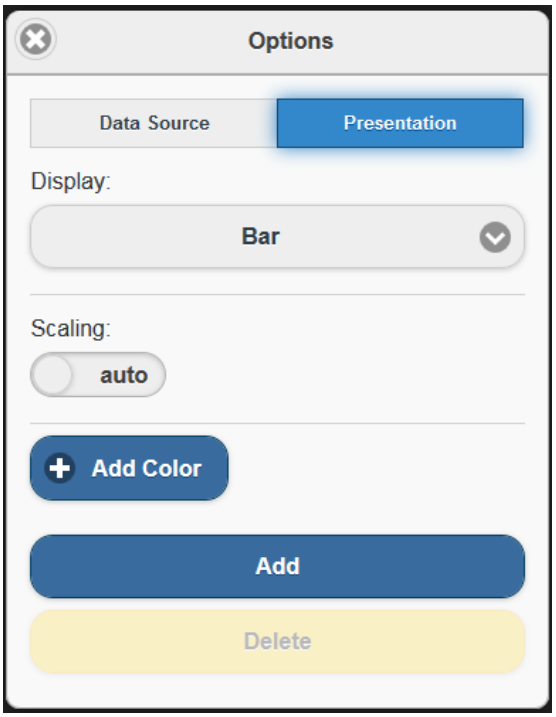
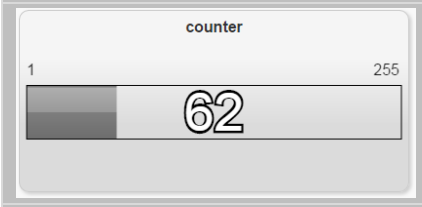
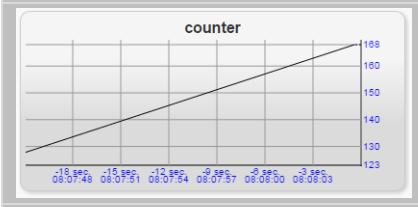
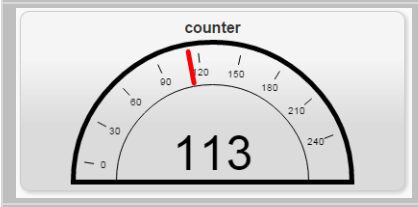


Figure 12.21: Configuring presentation

For the **[Presentation]** of the configured values different widgets are available.

Widget presentation (in FW 02.01.01)	Widget name	Widget settings
	Bar	Scaling: auto and man. Color Selection: Yes Dec. places: Yes
	Lines	Scaling: auto and man. Color Selection: Yes Dec. places: Yes
	Speedo	Scaling: auto and man. Color Selection: Yes Dec. places: Yes
	Text	Scaling: None Color Selection: Yes Dec. places: Yes Timeunit: Yes

12.10.6 Scaling

For the scaling, the 2 states **[auto]** and **[manually]** are selectable. If the controls are set to **[auto],** the maximum value is continuously adapted to the signal. Different to the state **[auto],** the widget is static in the mode **[manually]**, where the user needs to specify a minimum and a maximum value. With this setting, the widget shows those areas only. If the signal value is outside this range, it is no longer detected by the widget.

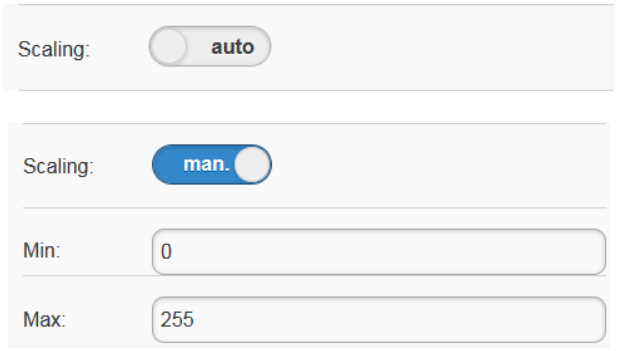


Figure 12.22: Setting the scaling

12.10.7 Timeunit

In the display option [line chart] you can enter the range of data retrieval for displaying from 100 to 86.400.000 ms (24h). Either as a numeric entry or using the arrow buttons on the right side of the field.

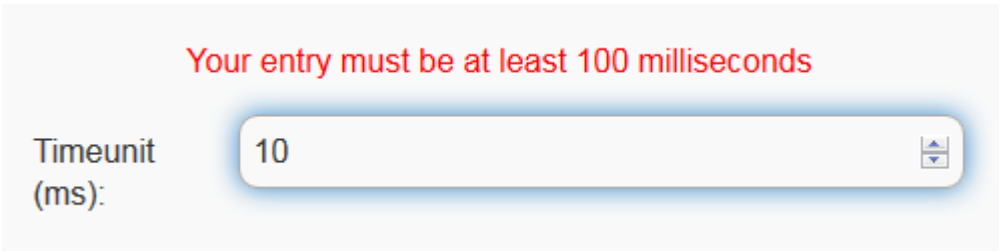


Figure 12.23: Setting the timeunit in the line chart

12.10.8 Decimal places

For a better overwiev the decimal places can be fixed.

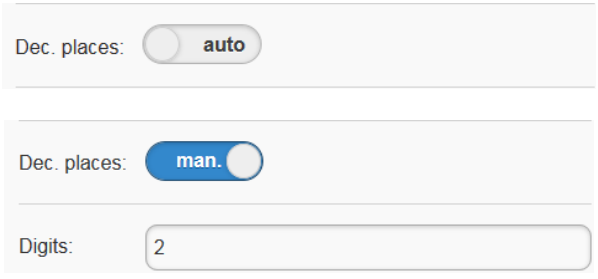


Figure 12.24: Setting dec. places

12.10.9 Adding Color

By pressing this field, it is possible to set several value ranges to be shown in colors as gray, blue, green, orange, yellow and / or red.

The value ranges may also overlap. Here, the rule is that the color interval defined below overwrites the previous color setting.

Example color configuration outside temperature display

First, the type of display, the scale and the range of values are set.

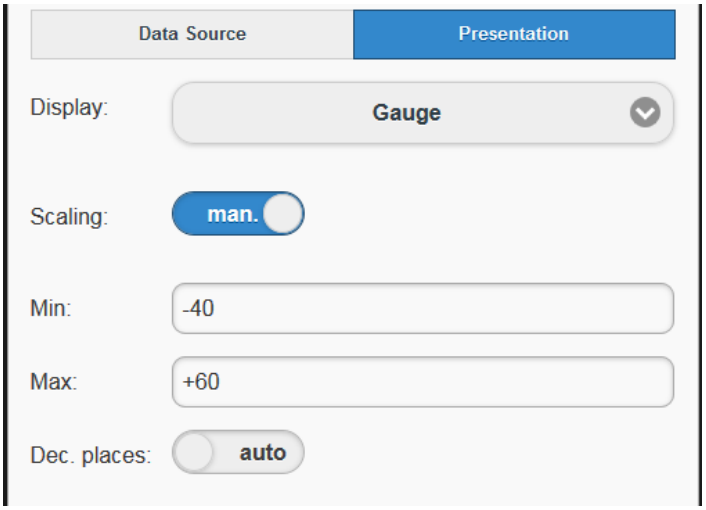


Figure 12.25: Example Presentation Configuration

To add a color activate the button 

Then the following field appears:

A click or finger print in [Range 1] opens a settings window:

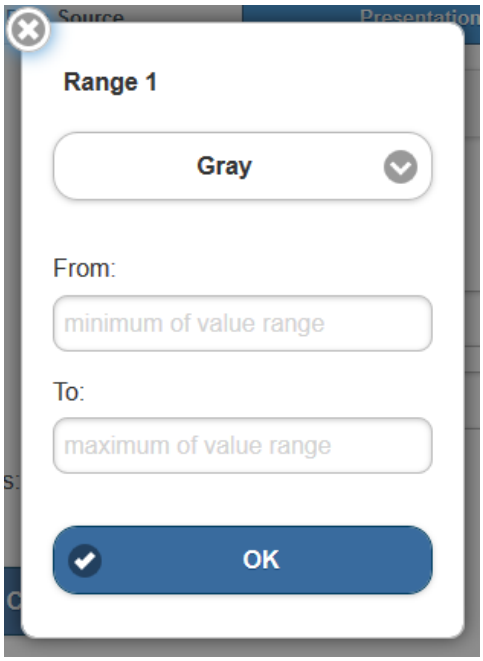


Figure 12.26: Setting window range

The activation of the color buttons [Gray] opens the color selection.

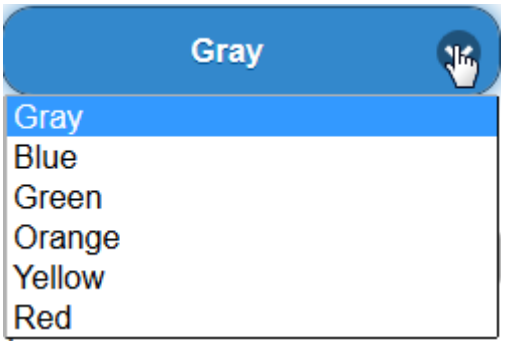


Figure 12.27: Color selection

Here you can enter the range of the color:

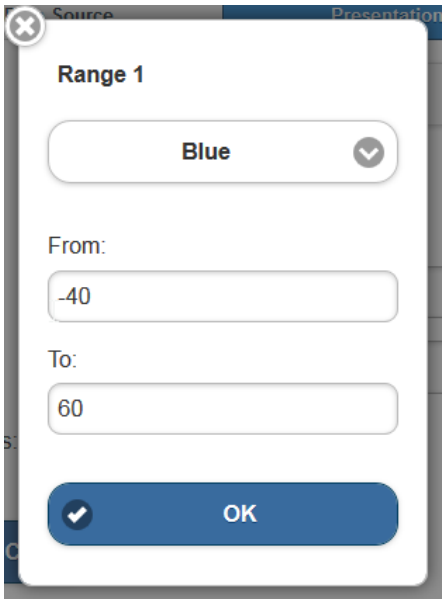


Figure 12.28: Range input

By clicking or finger pressure on [ok] the newly created blue ranges are represented.

Figure 12.29: Colored Range

Individual ranges may be removed via the "Delete" button.

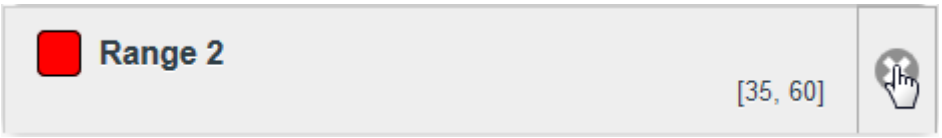


Figure 12.30: Remove a range

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The settings will be taken over by activation of the [Modify] Button

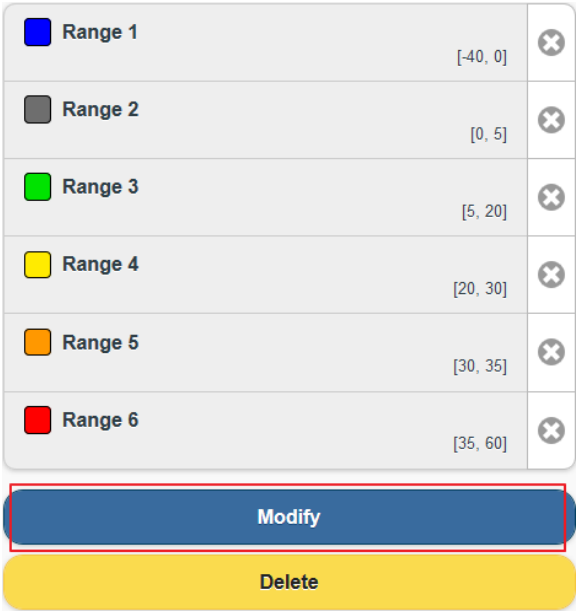


Figure 12.31: Taking over of the color presentation

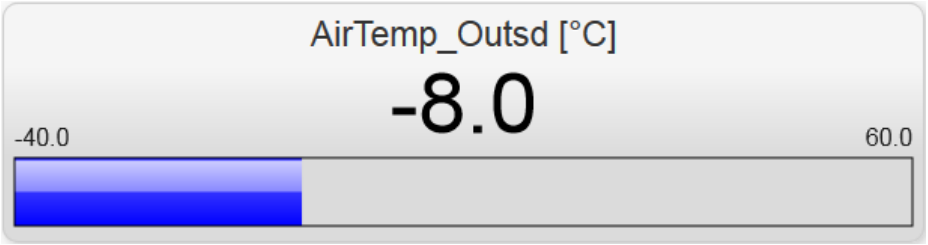


Figure 12.32: Colored Presentation of the signal as bar

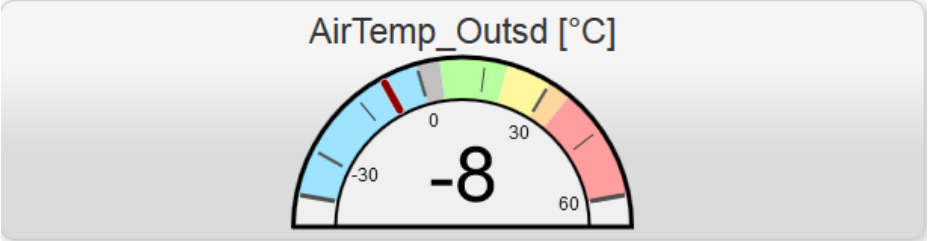


Figure 12.33: Colored Presentation of the signal as gauge

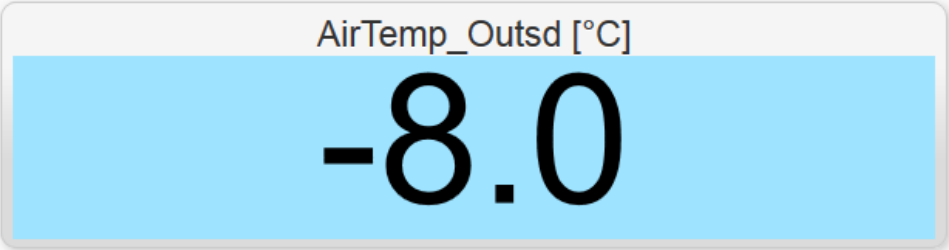


Figure 12.34: Colored Presentation of the signal as text

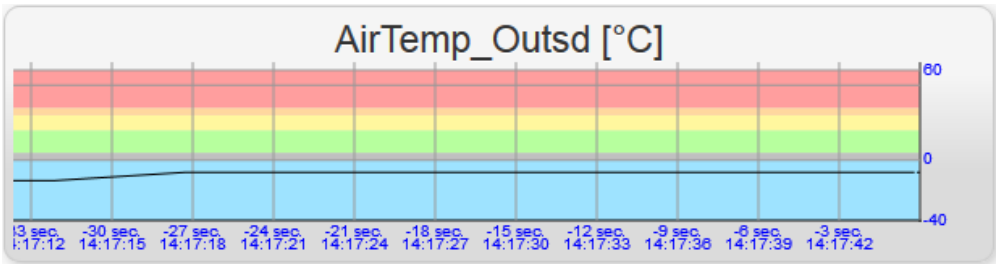


Figure 12.35: Colored Presentation of the signal as line chart

12.10.10 Display of the widgets in case of missing data update

If a configured widget does not receive data for an extended period of time, the graph is grayed out and a counter is displayed that increments how many seconds a new value has not not arrived.

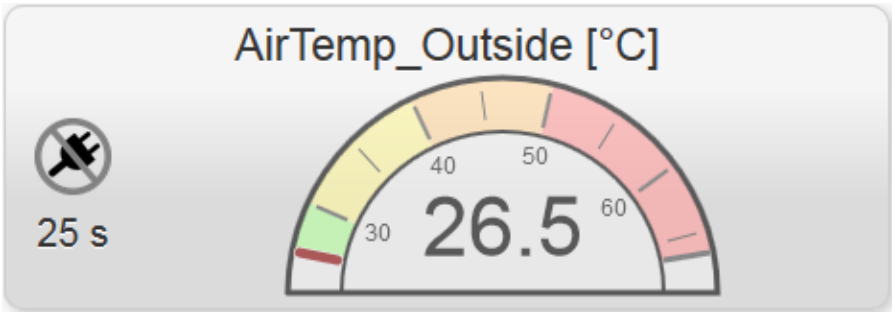
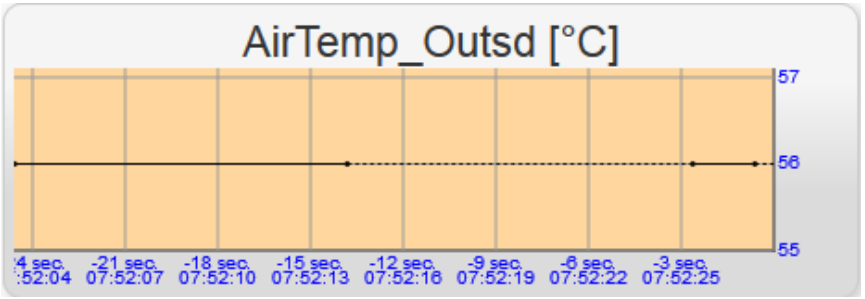


Figure 12.36: Grayed out tachograph

In the line diagram, interruption are represented by a dotted line.



An interruption is displayed when:

1. the update interval was exceeded twice without a value having arrived
2. the interruption duration is at least three seconds

If there are several signals in a diagram, the signal with the highest update interval counts.

Examples:

a) A signal with an update interval of 100 ms. Here rule 2 takes care that at least three secons must elapse before an interruption is displayed.

b) A signal with an update interval of 3000 ms. Here rule 1 takes that twice the update interval must be exceeded. Therefore an interruption is only displayed from six seconds on.

c) Multiple signals in a diagram: a signal with 100 ms update interval and a signal with 1000 ms update interval. Here, the first update interval counts, therefore 1000 ms x2 = 2000 ms. However as this is still less than three seconds, an interruption is displayed from three seconds on.

12.10.11 Represent multiple signals in a widget

You can also display several signals within a widget. This requires the presentation option [Line chart].

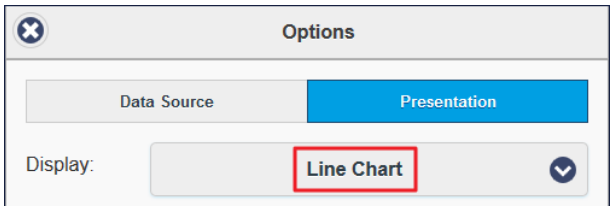
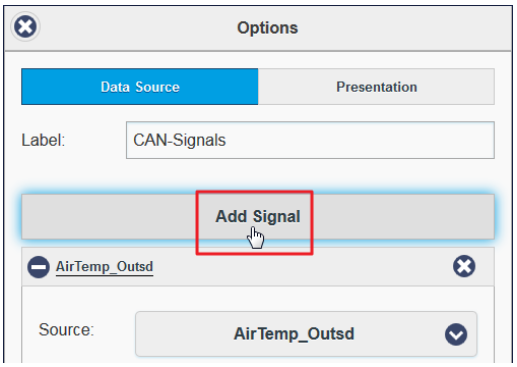


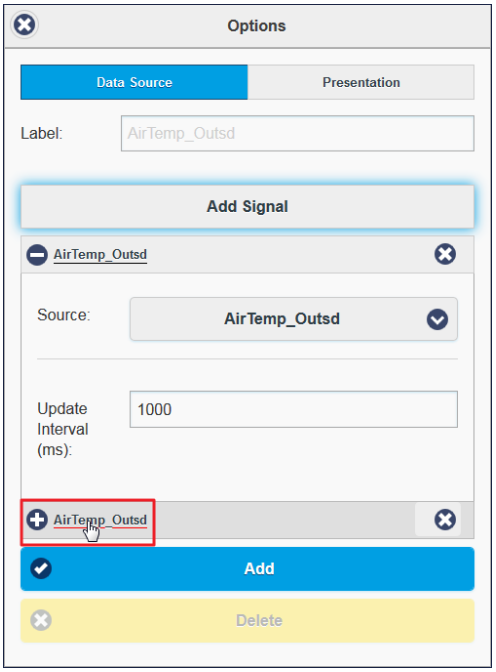
Figure 12.37: Widget Presentation option Line Chart

The other signals are added as follows:

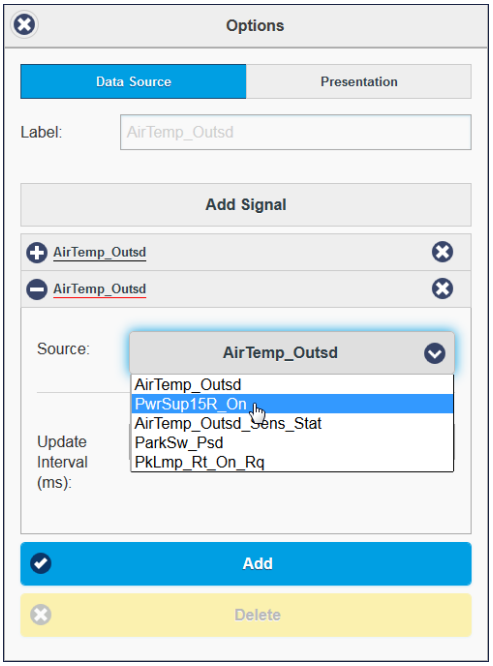
1.) Select the tab [Data Source] and activate the [Add Signal] button:



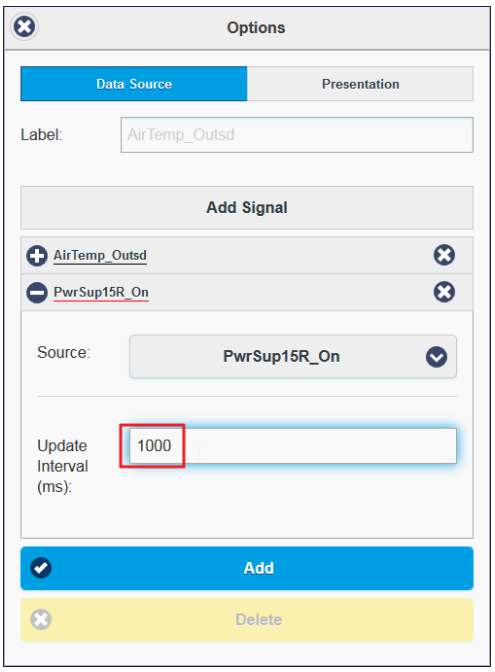
2.) Tip on the link or the plus icon in the appearing additional signal button (it appears always the first signal in alphabetical order of the added signals in the client).



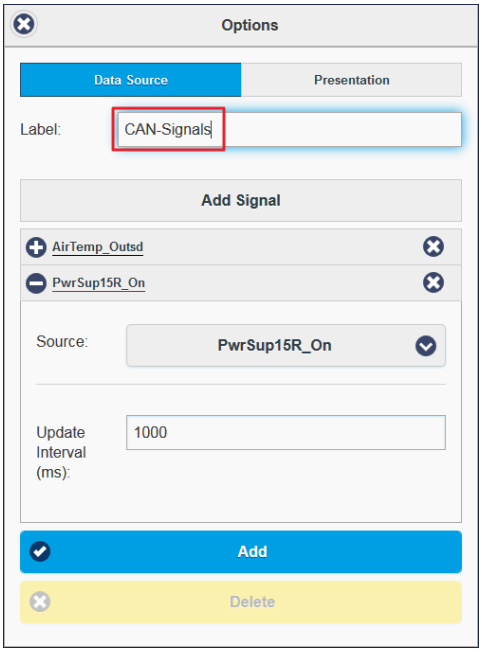
3.) Select the data source in the window that opens



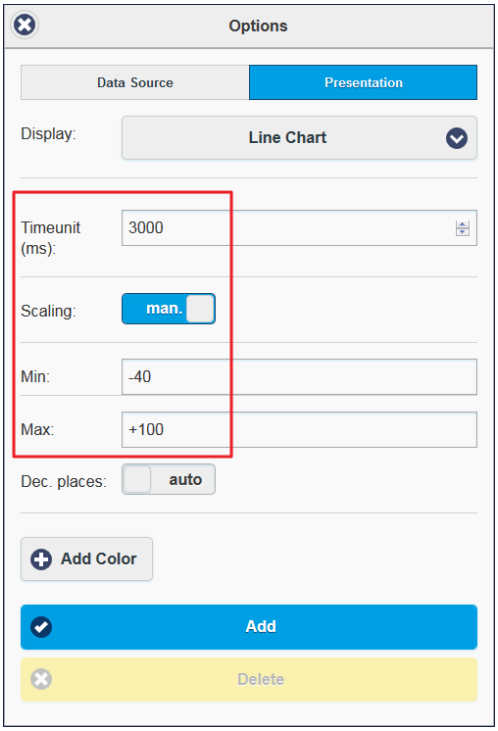
4.) Enter the proper Update Interval



5.) Enter the chart name about the [Label] field



6.) Please adjust the Scaling and the Timeunit under the tab Presentation:



7.) With the button [Modify] the further signal is added to the Widget.
Please update your browser after that.

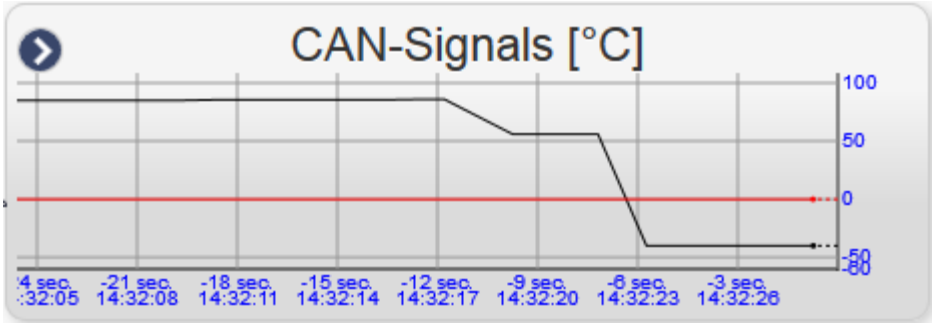


Figure 12.38: Widget with multiple signals

8.) If you tap the arrow button in the upper left corner oft he widget, a legend will display the signal assignment to the colors.

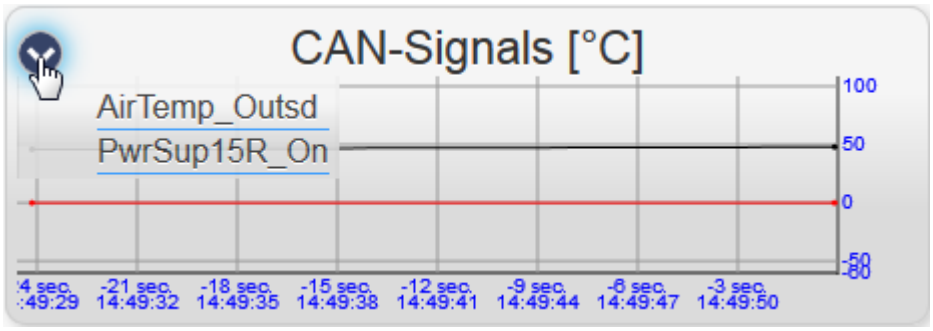


Figure 12.39: Widget with signal legend

12.10.12 Customizing widgets

If the widget is already on the grid, it can be adjusted individually, or the arrangement can be changed. By pressing on a widget with your finger, the known dialog in which the widget can be adjusted, saved or deleted will be shown again. With pressed mouse button (finger), the widget can be repositioned on the grid.

Operation on the widget (FW 2.01.01)	Effect
1x keystroke	opens the settings dialog
1x keystroke + hold	moving at the grid

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12.11 Marker

By touching the trigger button on the tab **[Marker],** a marker can be set and this creates an information entry. All markers that are created are listed below the button. This list is updated as soon as a marker is set. If a trigger is set on network device A, device B will be updated at the same time and gets the trigger displayed in his list too.

Figure 12.40: Tab “Marker”

12.12 Channels

Information about active, inactive or even faulty buses are displayed on the tab **[Channels]**. In addition to the bus state, information about the bus load or the bus name here are visible too.

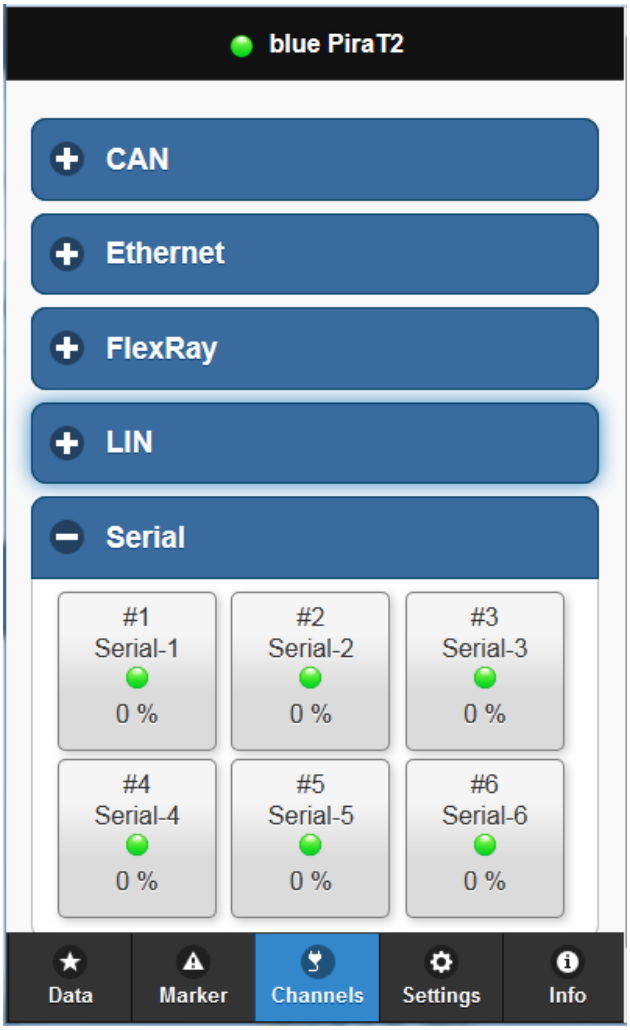

Figure 12.41: Tab “Channels”

BUS state	Meaning
	BUS is active (without errors, messages are send)
	BUS is deactivated or not connected
	BUS state unknown (BUS message could not been delivered)
	BUS has an (ERROR)

12.12.1 Adjusting the channel view

The [Edit] button in the channel view allows you to customize the view oft he displayed buses and their channels.

Figure 12.42: Button [Edit] in the channel view

In the Edit window it is possible to adjust the view to your own needs by selecting and unchecking the checkboxes and blank unused channels.

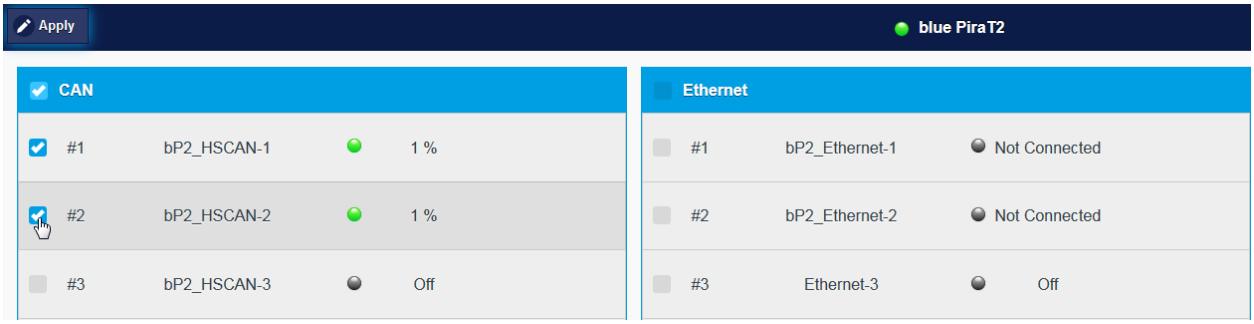

Figure 12.43: Edit the channel view

Over the [Apply] you can save the customized display.

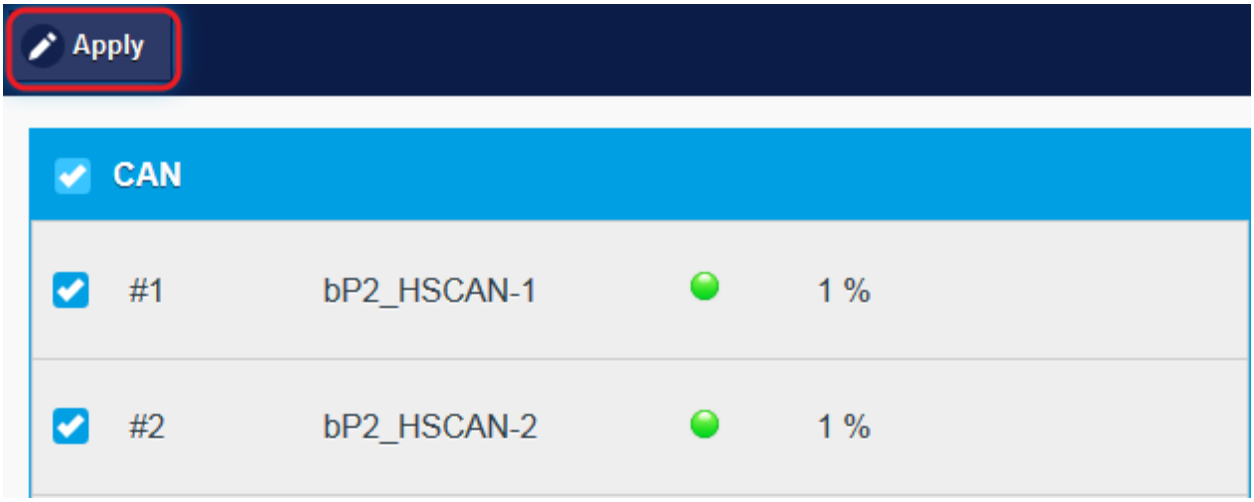

Figure 12.44: Button [Apply] in the channel view

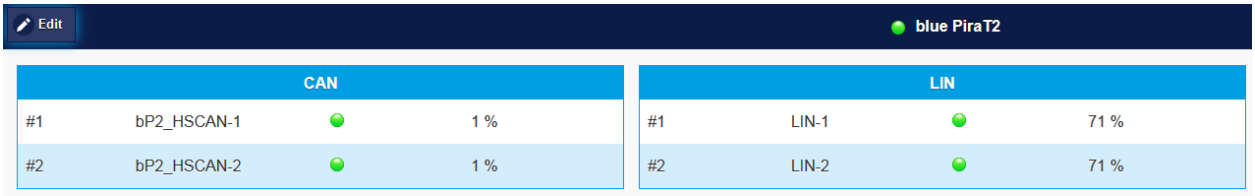

Figure 12.45: Customized presentation in the channels overview

12.13 Settings

Under the category **[Settings]** various settings for the TLV can be done. In order not to have to configure the widgets every time, there is the option of saving the configuration on both, the logger as well as locally on the mobile device.

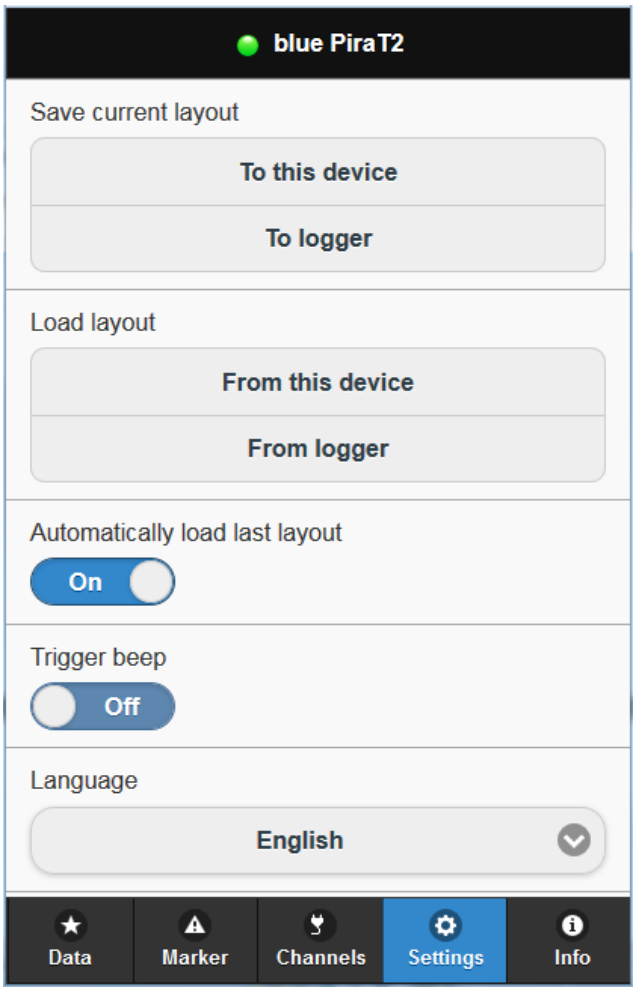

Figure 12.46: Tab "Settings"

The settings (widget configuration) and the trigger beep (whether on or off) can be stored on the logger **[To logger]** or locally on the mobile device **[To this device].**

In both cases, a dialog opens in which the settings can be saved with a custom name.

Note:
A layout can ONLY be loaded on a logger with the same IP address, restoring to a logger with different IP address is not possible!

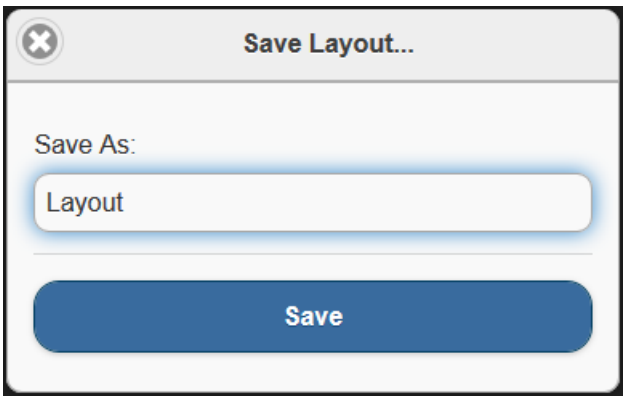

Figure 12.47: Saving a layout

If the layout and the settings have been saved, this is available in the loading dialogue.

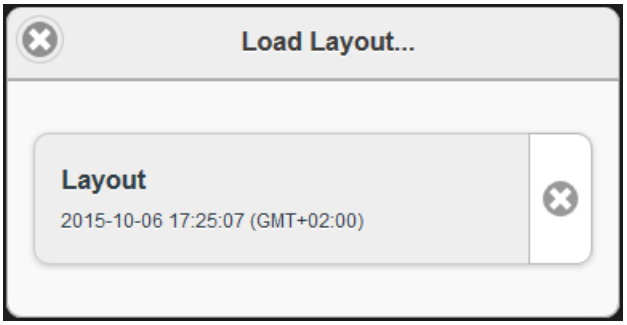

Figure 12.48: Loading a layout

If a layout is no longer required, you can delete it by pressing the icon .

Automatically load last layout: When this feature is enabled, the browser is always loading the last configuration which was set. When a saved configuration is loaded, the current configuration which was not saved will be overwritten.

Note:
If the browser cache is cleared, the last settings which were configured on the browser and not saved to the device, are deleted.

Trigger beep: Plays an acoustic signal on the terminal when the trigger button is pressed.

Language: Changes the language of the TLV.

12.14Info

On the tab **[Info]** you will find information about the logger such as device name, firmware version and the current state of the spent and existing licenses.

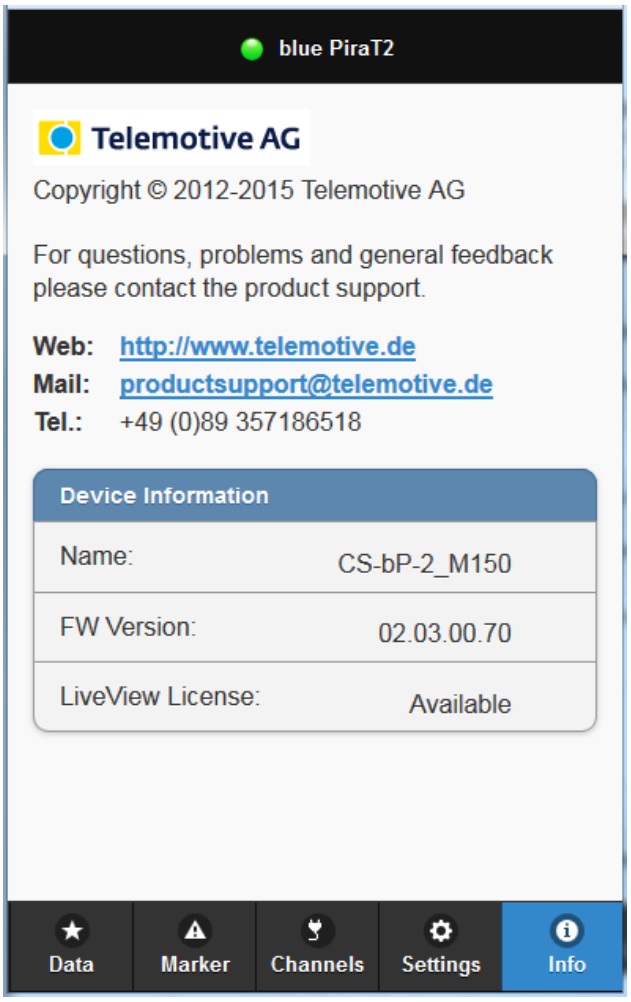

Figure 12.49: Tab “Info”

Device Information

- Name: Name of the logger
- FW Version: Firmware version of the logger
- License: Available or not

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13 The application [Online Monitor]

The client offers an Online Monitor which allows having a live view to the recorded data.

13.1 Starting the 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.

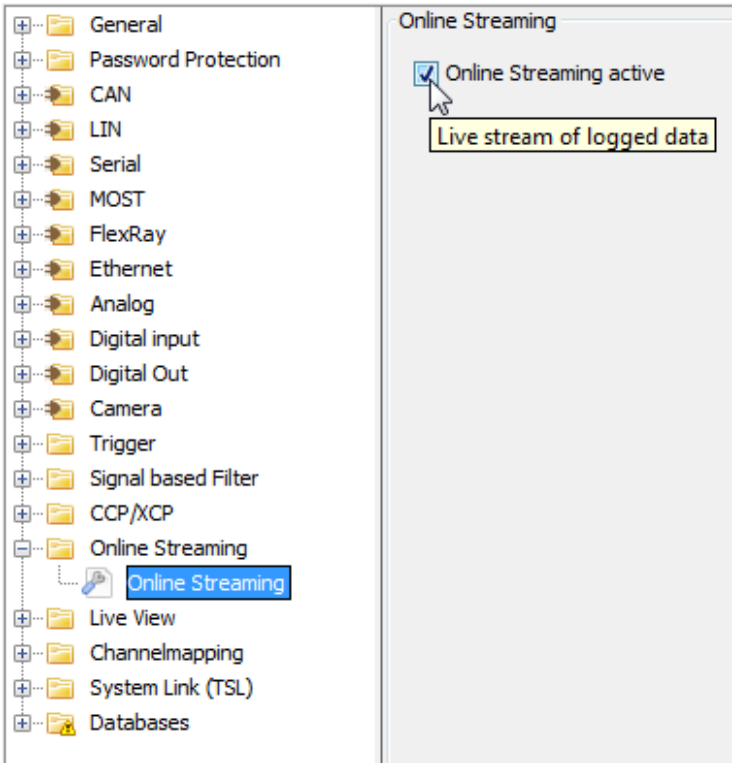

Figure 13.1: Activating Online Streaming

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

Figure 13.2: Starting online monitor

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 a complete interface or seperate channels.

Note: Ethernet spy data which are logged in TPE mode can not be streamed to the online monitor!

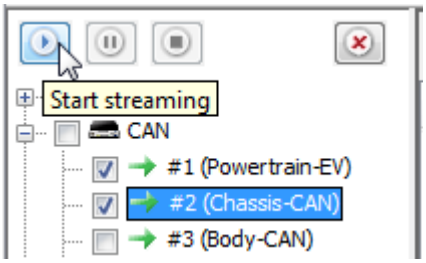

Figure 13.3: Starting online streaming

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

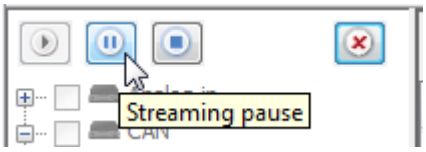

Figure 13.4: Pausing online streaming

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.

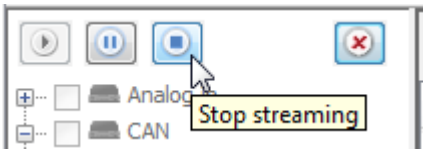

Figure 13.5: Stopping online streaming

13.1.1 Context menu of the channes

While Online monitor is still not active, a single channel can be opened in a new window:

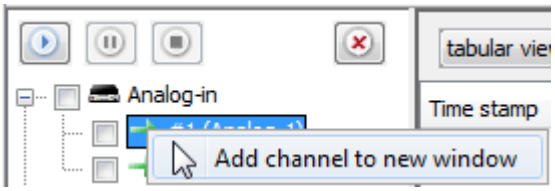

Figure 13.6: Add channel to new window

The new window can get an own name:

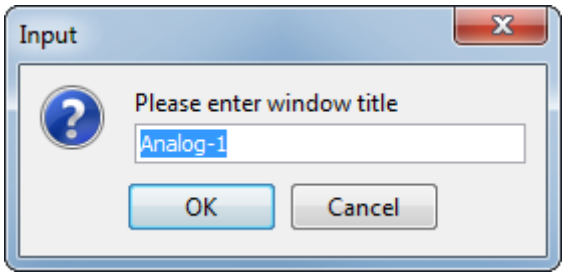

Figure 13.7: Setting a window title

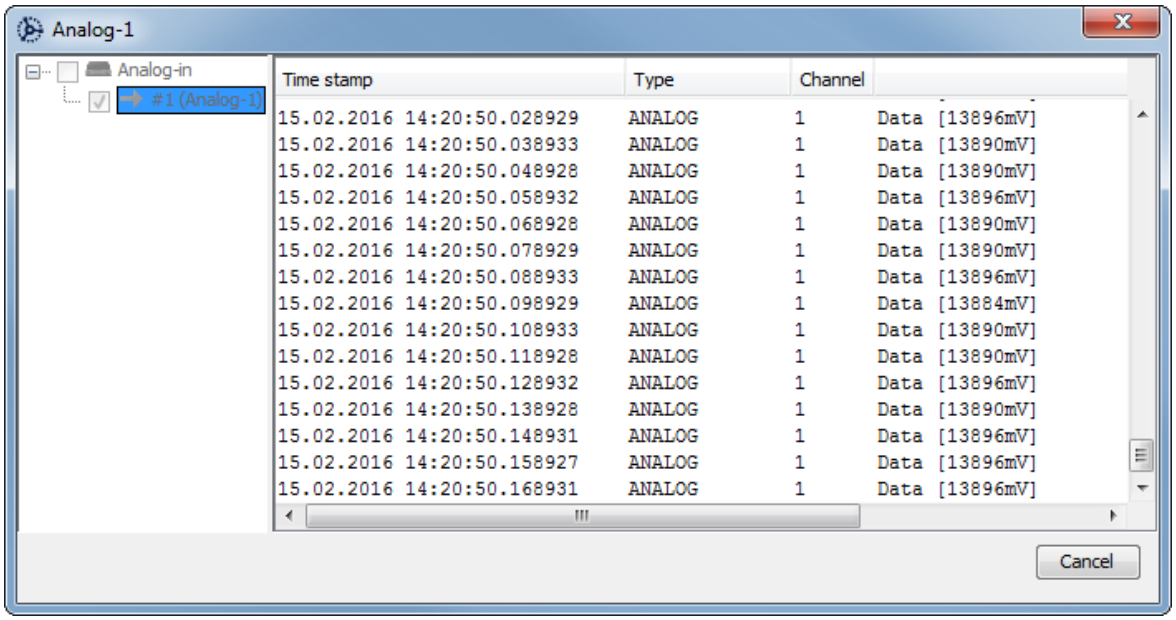

Figure 13.8: A channel in a new window

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13.2 Assigning databases

You can assign databases to all your available CAN, LIN and FlexRay channels by the button Assigning databases... or by using the context menu:

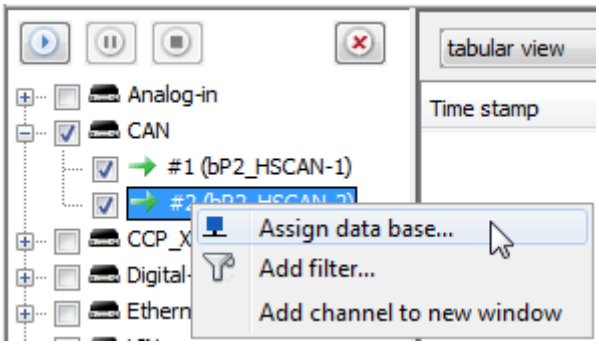

Figure 13.9: Assigning databases by context menu

In the next window all available channels the database can be assigned.

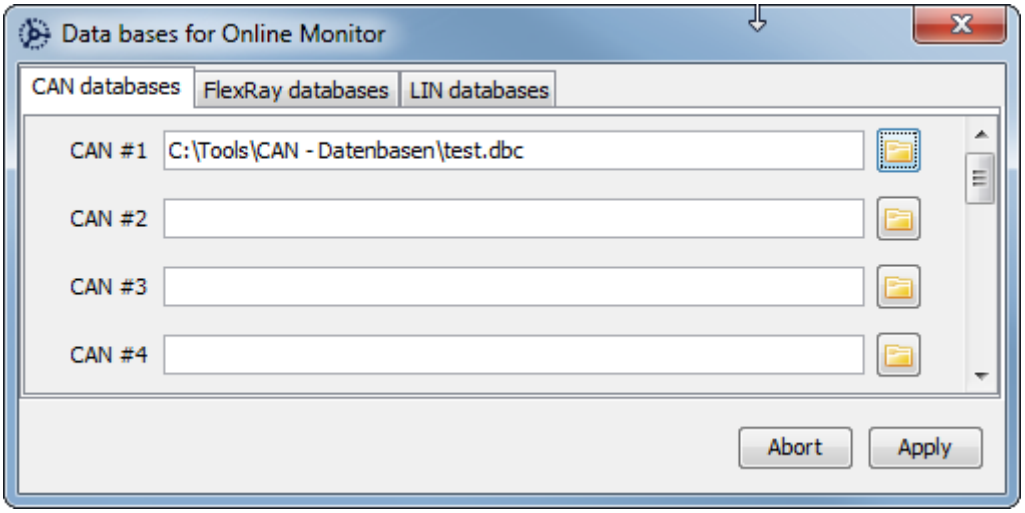

Figure 13.10: Database configuration

The following data bases can be assigned:

CAN:	CAN dbc, FIBEX 3.x, FIBEX 4,1, AUTOSAR System Template 3.2.x.
FleyRay:	FIBEX 3.x, FIBEX 4,1, AUTOSAR System Template 3.2.x.
LIN:	FIBEX 3.x, FIBEX 4,1., LDF

13.3 Adding filter

For several interfaces you can create filters to define exactly which messages are shown in the Online Monitor. This option can be reached by the context menu. The context menu also allows to delete filters.

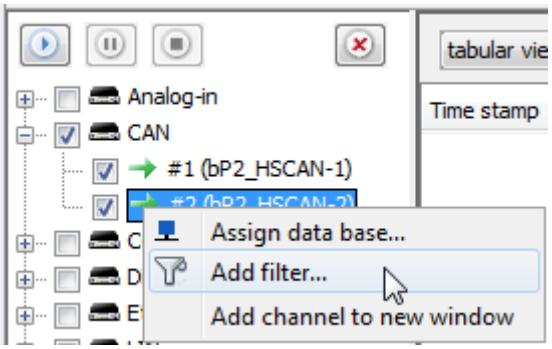

Figure 13.11: Add filter

13.3.1 CAN filter

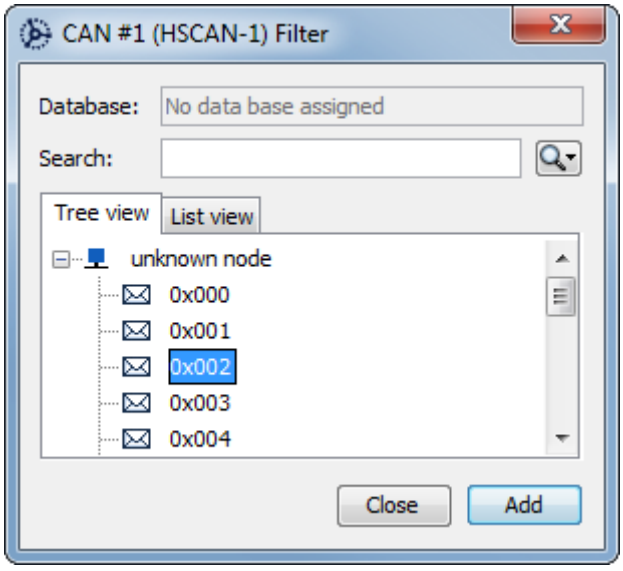

Figure 13.12: Choosing filter

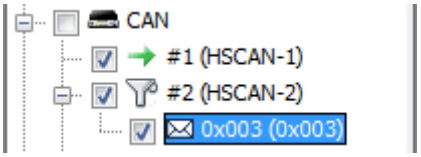

Figure 13.13: Newly added filter

Databases can be assigned to CAN channels **[No data base assigned…]**. This can be also used to configure Filters.

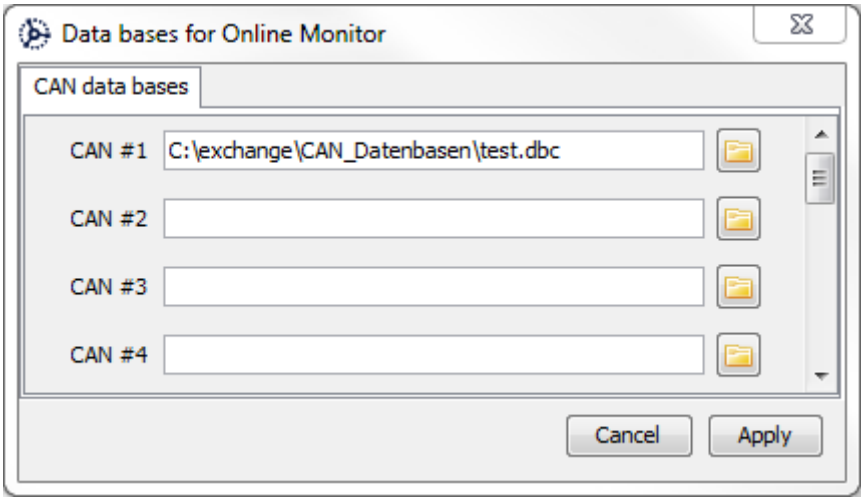

Figure 13.14: Data bases for Online Monitor

13.3.2 Text filter for Ethernet and serial channels

Ethernet and serial messages could be filtered by a string. Messages including the filter string are shown or written to a file.

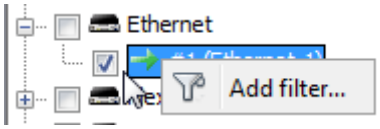

Figure 13.15: Add filter

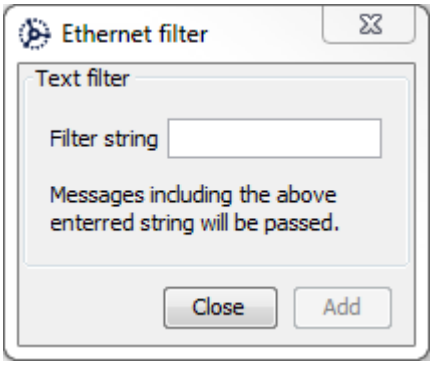

Figure 13.16: Creating text filter for Ethernet and serial channels

13.4 Redirecting logging into a file

The selected messages which are shown in the Online Monitor can be logged directly into a data file on your computer system. For doing this you only have to mark the checkbox and choose the directory to store the file to. The available target format is **Telemotive ASCII Format (*.txt)**

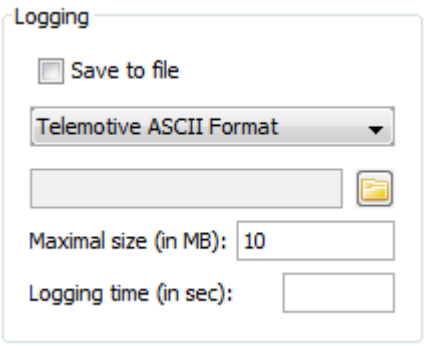

Figure 13.17: Write Logging to file

Every time you start the streaming the client creates a new file in the chosen store directory and adds a number to the filename “_#...”.

Te file can be limited due to a size or time period. When the defined option is reached, the file will be closed and a new file starts to log.

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13.5 Views of Online Monitor

While Online Monitor is running you see the current data which are recorded by the data logger.

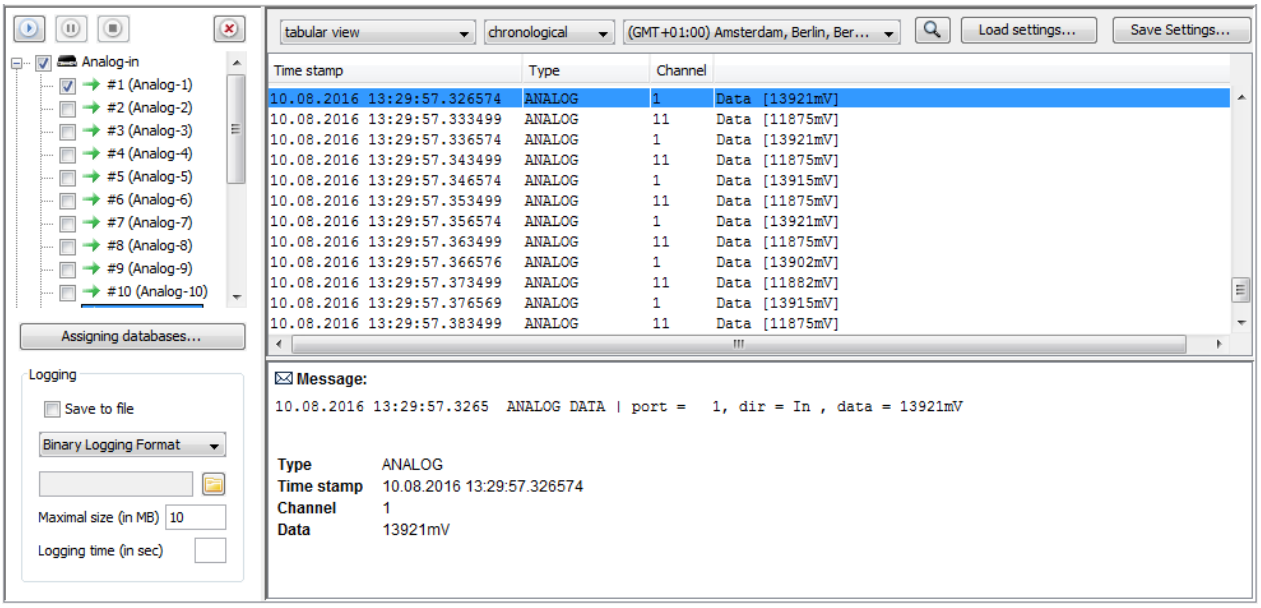

Figure 13.18: Tab [Online Monitor]

When the Online monitor is stopped you can display details of a message in the bottim part of the window.

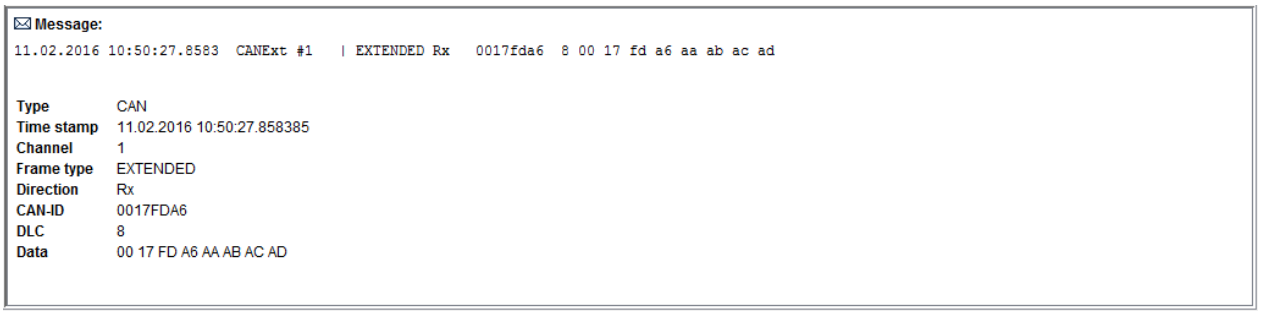

Figure 13.19: Message details of a CAN message

The shown traces can be deleted by the **[Clear trace window]** button when you want to proceed with another measurement or just want to clear the screen

The Online Monitor fills a maximum of 10000 rows and then the oldest messages fall out of the Online Monitor.

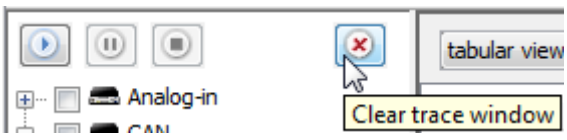

Figure 13.20: Clear trace window with button

13.5.1 Context menu for messages

You can delete the shown data by using the context menu (right mouse key) too.

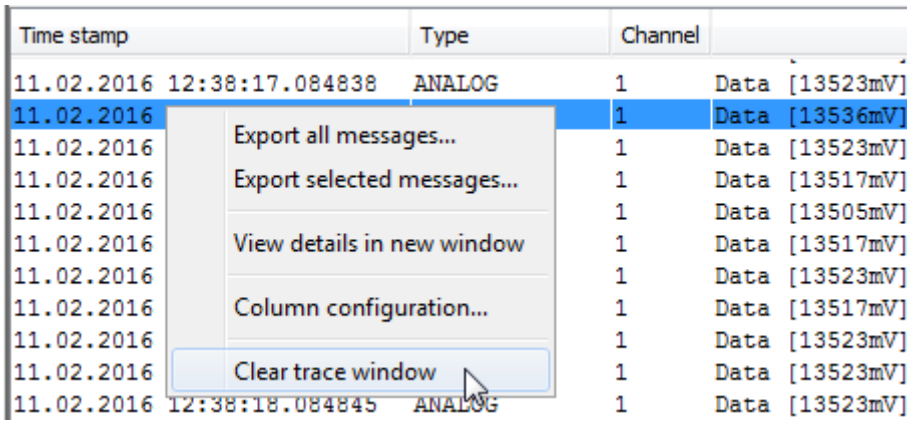

Figure 13.21: Clear trace window in Online Monitor data overview

Both options only clear the Online Monitor and have no influence to the recorded data.

When you have stopped monitoring you have some more options in the context menu:

[Export all messages…] allows exporting all messages which are currently in the Online Monitor into Telemotive ASCII Format (*.txt)

[Export selected messages…] can be used to export selected messages only.

In TMASCII viev you can copy selected messages with **[Strg]** and **[c]** into the clipboard for further use, e.g., mailing or word processing.

[View details in new window] opens a new window with the details of the marked message.

[Column configuration…] allows to configure which columns are displayed and which are not.

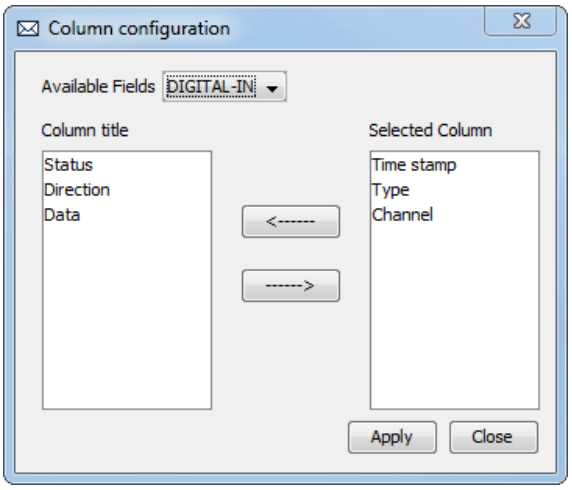

Figure 13.22: Column configuration

The available columns depend on the selected interface.

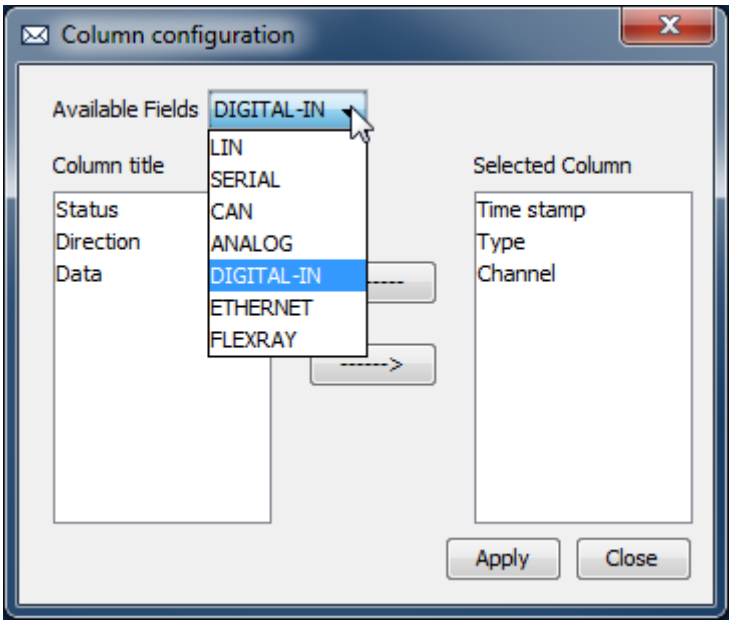

Figure 13.23: Available fields depending on the selected interface

[Column configuration…] is available in the context menu of the table header too.

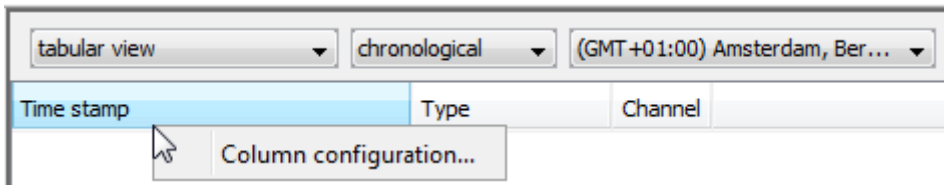

Figure 13.24: Column configuration in table header

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13.6 Changing the view

The view of the data in Online monitor can be configured as you need it. The following settings can be set in the menu bar of the data window.

Figure 13.25: the menu bar of the data window

13.6.1 Tabular or Telemotive ASCII

In the first row the view can be changed between **[tabular view]** and **[Telemotive ASCII view]**

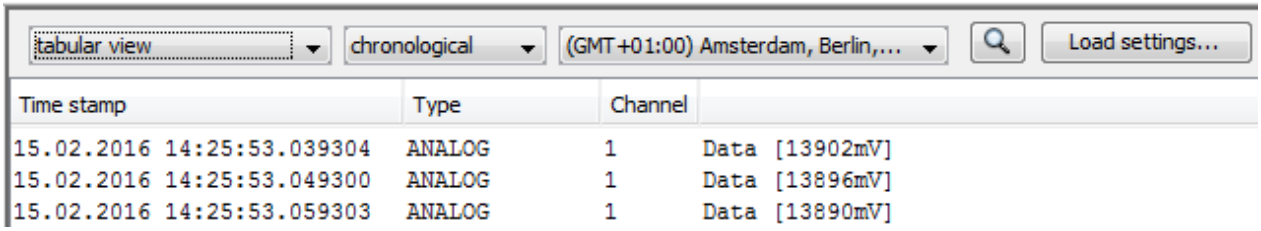


Figure 13.26: tabular view

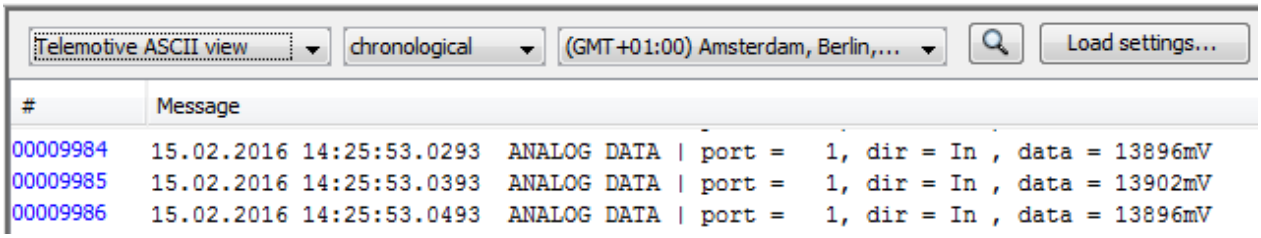


Figure 13.27: Telemotive ASCII view]

13.6.2 Chronological or fixed

The next step which can be set is a **[chronological]** or **[fixed position]** view. With standard settings all messages are shown in the moment when they are logged.

With setting the window to **[fixed position]** all messages are fixed on the screen and only the changing characters will be refreshed.

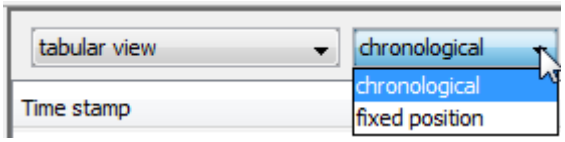


Figure 13.28: Changing view

Which part of a message is continuous and which is variable depends on the message type can be seen in the next table. Anything which is not continuous is variable.

Message type	Continuous part
SERIAL	<message type>, <channel index>, <protocol>
CAN	<message type>, <channel index>, <CAN type> (Standard, Error, TX, TXRequest), <CAN ID>
MARKER	<message type>
ANALOG	<message type>, <port>, <direction> (Rx, Tx)
SYSTEM	<message type>
TEMPERATUR	<message type>
ETHERNET	<message type>, <channel index>, <direction>(Rx, Tx), <protocol>, <ECU ID>
FLEXRAY	<message type>, <channel index>, <Slot ID>
LIN	<message type>, <channel index>, <LIN ID>
DIGITAL	<message type>, <port>, <direction> (Rx, Tx)
MOST25 – CTRL and MDP	<message type>, <host address>, <target address>
MOST25 – State	<message type>
MOST150 – CTRL and MDP	<message type>, <host address>, <target address>
MOST150 – MEP	<message type>, <target address>
MOST150 – State	<message type>
CCP	<message type>, <ECU ID>
XCP	<message type>, <ECU ID>
GPS	<message type>
ECL	<message type>
BUSLOAD	<message type>, <BUS>, <channel index>

Table 13.1: Continuous and changing parts of the messages

13.6.3 Sorting by columns

In [tabular view] and [fixed position] it is possible to sort the data in the available columns for a better overview. By clicking on the head of a column the client sorts the data. This is shown by a small arrow in the head after sorting.

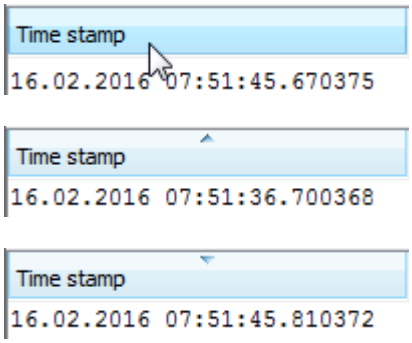


Figure 13.29: A sorted column

13.6.4 Time zone

The shown time zone can be changed between **GMT**, which is stored at the data logger, or the **Logger time zone**, which is set to the data logger.

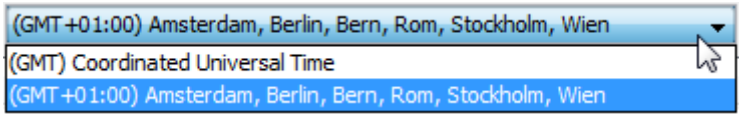


Figure 13.30: Selecting time zone

13.6.5 Searching in online monitor

By using the integrated search function  it can be searched in the shown data. Here it can be defined if the search should look at upper and lower case or not.

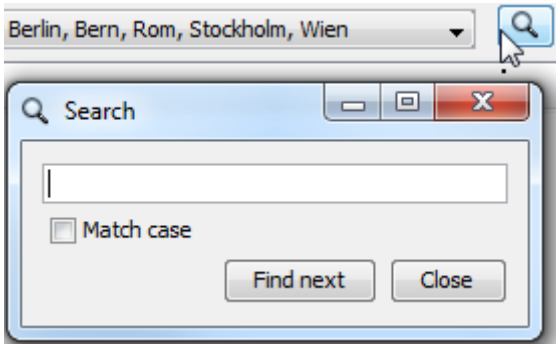
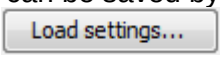


Figure 13.31: Searching in online monitor

All done settings for online monitor can be saved by the button 

into a XML file or loaded later again by the button 

.

13.7 Online monitor – options

The options for online monitor can be reached by the menu items [Tools] => [Options].

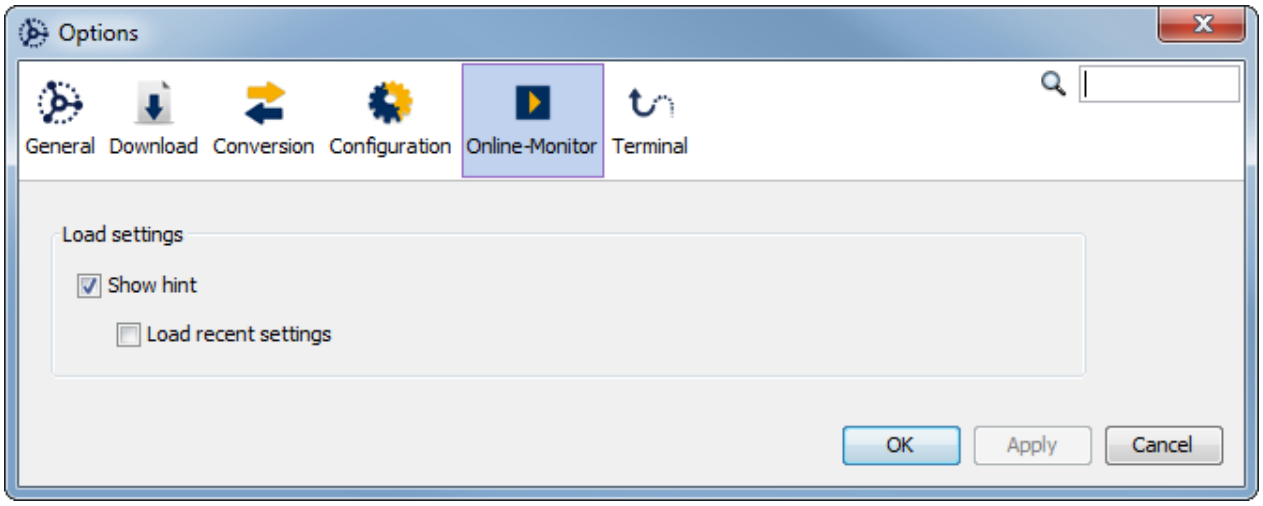


Figure 10.31: Online monitor - options

Here you can set the option if the last used settings should be used or if a question should be shown if the last settings should be loaded.

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14 The application [Data download]

This chapter describes how to use the data download application.

14.1 Opening the application “Create data set”

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

In the tab <Network Logger> click a logger that is not already connected.

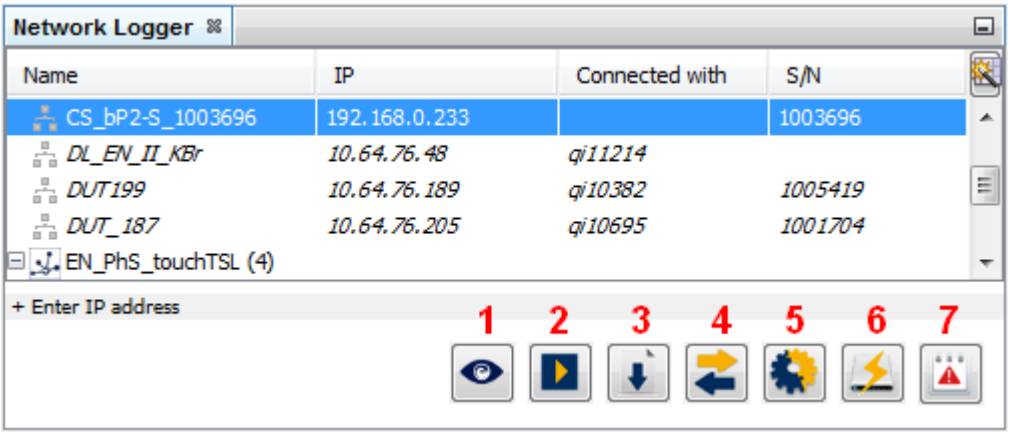


Figure 14.1: Selecting logger

Click on the application **[Download data]** **(3)**.

The tab <Create data set> is opening. The <Event overview> with the loggers data is displayed on the right.

Attention:
If corrupted data are found on the logger the client tries to repair this data first before he shows the overview. Depending on the quantity of defective files this can take up to some minutes.

This process can be stopped by the button [Cancel] and will be continued when the client gets access tot he logger next time.

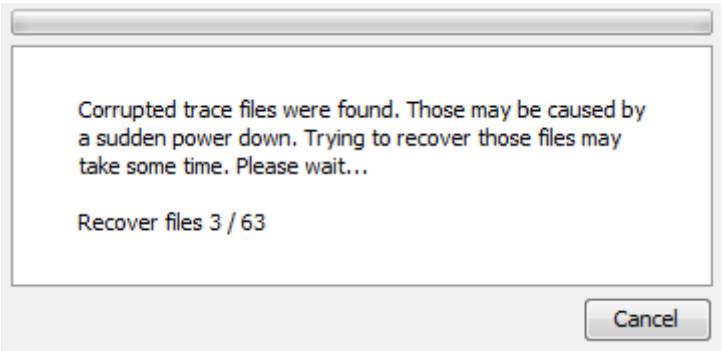


Figure 14.2: Cancelling the recovery process

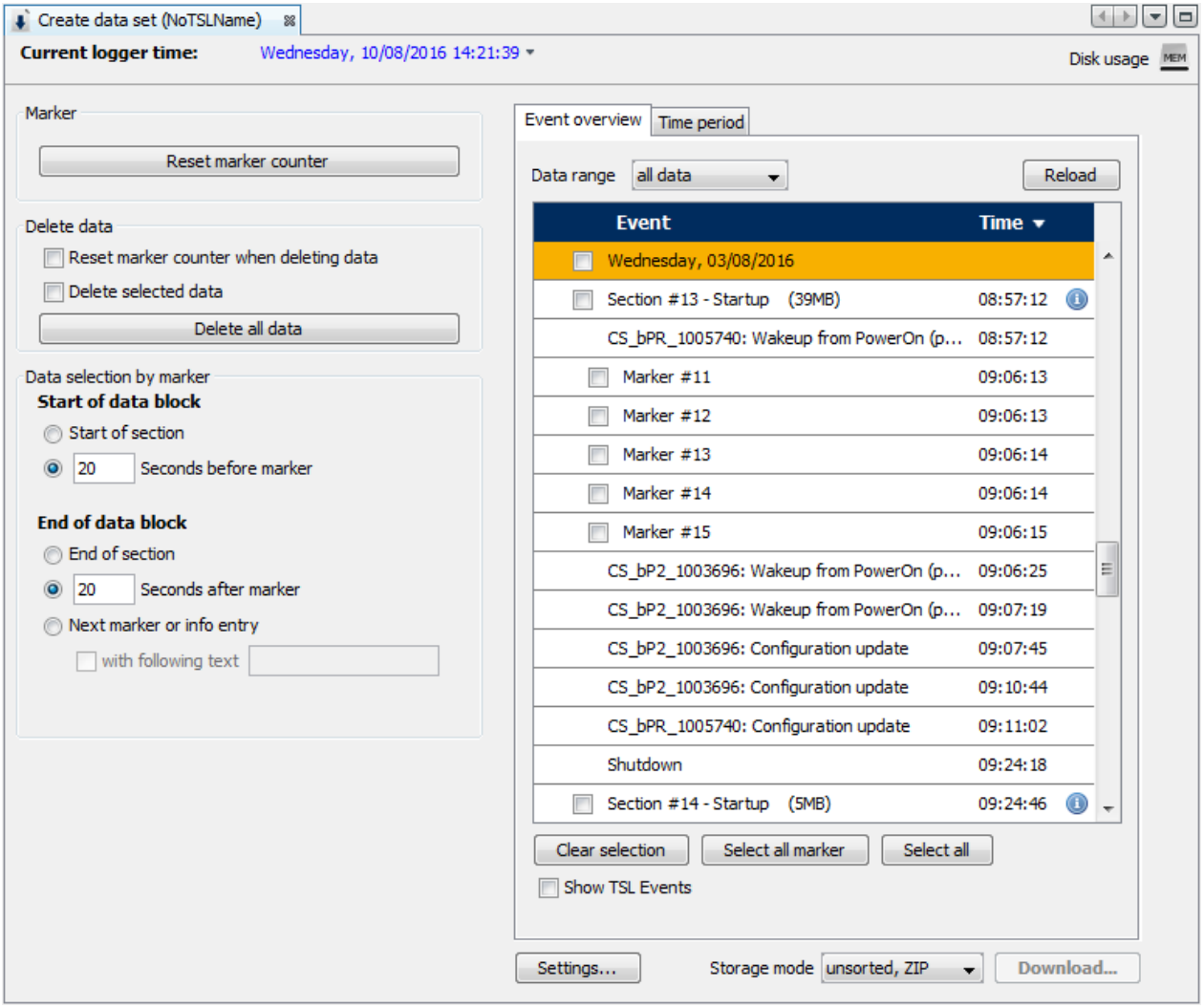


Figure 14.3: Tab “Create data set”

14.2 The tab “Create data set”

14.2.1 Toolbar

Figure 14.4: Toolbar in the tab “Create data set”

The toolbar at the top of the tab contains the following panels.

14.2.1.1 Current logger time

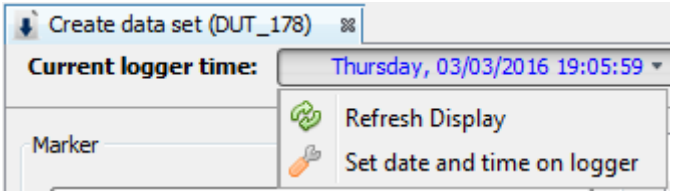


Figure 14.5: Setting time and date

[Current logger time] shows the logger time. By clicking the arrow the logger time can be synchronized to PC time.

14.2.1.2 Disk usage

Klicking on [Disk usage] opens a window that displays the current available internal and external space for trace data storage.

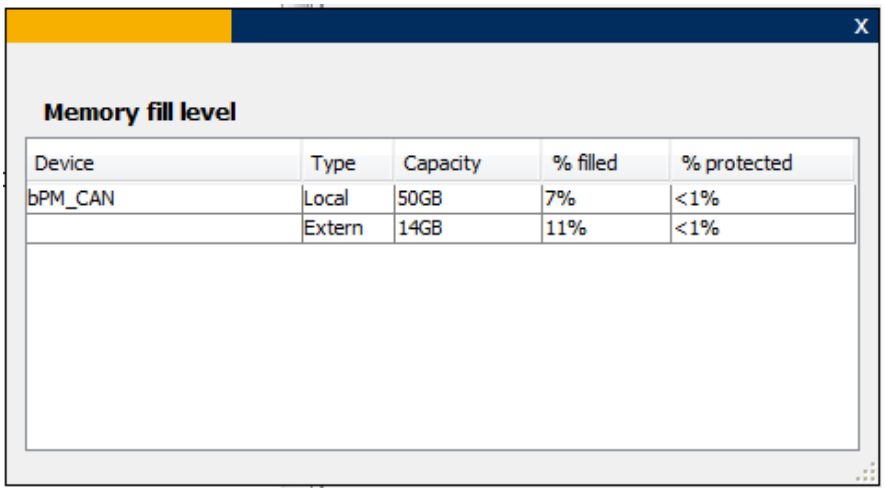


Figure 14.6: Window with disk usage

The window can be closed by clicking the **[x]** button in the upper right corner.

From 95% usage, the button [Disk usage] is colored in red and in the window [Memory fill level] the lines with the storages are highlightet in red.

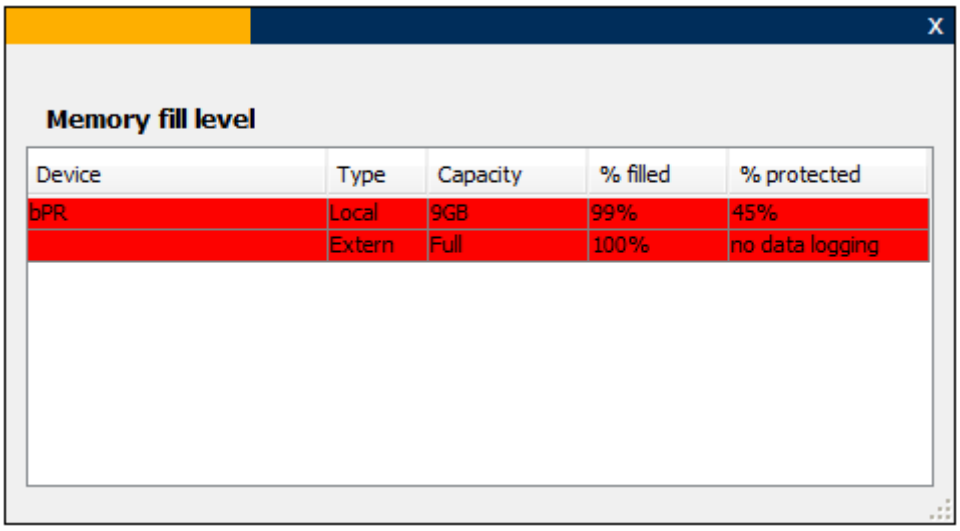


Figure 14.7: Window Memory fill level

14.2.2 Reset marker counter

Each marker in the <Event overview> is assigned a consecutive number. By clicking the button **[Reset marker counter]** this counter is reset to “0”.

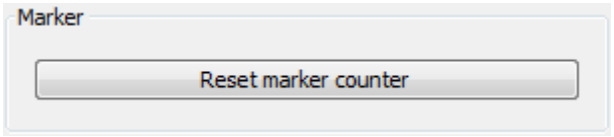


Figure 14.8: Reset marker counter

14.2.3 Delete data

To delete data from the logger, you have two options.

Delete all data all data from the logger will be erased
In this case, you have the option to reset the marker counter.

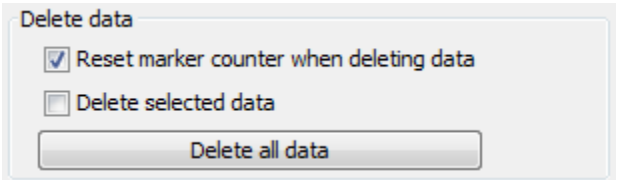


Figure 14.9: Delete all data incl. Reset marker counter

Delete selected data only selected data will be erased
The data have to be marked in the <Event overview> beforehand.

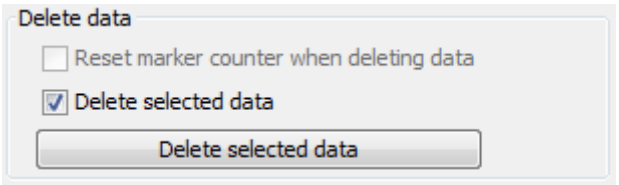


Figure 14.10: Delete selected data

Note: The [Delete selected data] option deletes complete sectors only, single marker or data around marker can not be selected for deleting! For that the check boxes before markers are removed when activating this option.

14.2.4 Defining data block

In the segment <Data selection by marker> the periphery of the data block is defined for the marker that was chosen in the <Event overview>.

Data selection begins either at the last startup or at a fixed time before marker time.

For the end of data block there are four possibilities. It ends at:

- the end of section,
- a fixed time after the marker,
- the next marker or info entry within the same section that is been set or
- the next marker or info entry within the same section with the text entered in the text field that is been set.

Note: If the nex marker or info entry comes after the end of the section the conversion stops at the end of the section!

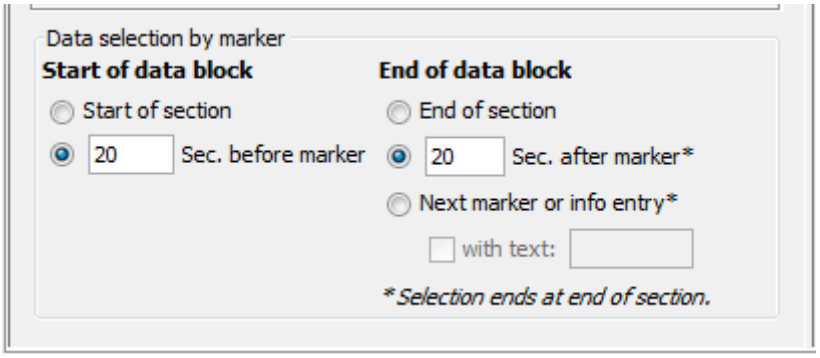


Figure 14.11: Defining data block start and end

14.2.5 Selection by Event overview

The tab sheet <Event overview> displays the recorded data as sections defined by a startup and shutdown of the data logger, including all markers set and info events (wakeup source (CAN, LIN, Power-ON, …), configuration update, delete data, set time, TSL events etc.).

The following functions and information are available.

- The dropdown menu at <Data range> limits the display to the data from the selected interval (since today, since yesterday, since 2 days etc.)
- **[Reload]** will request any new data from the logger and updates the <Event overview>.
- Time ▾ reverses the time order.
- **[Clear selection]** clears the choice, not the data.
- **[Select all marker]** selects all marker in the event overview.
- **[Select all]** sets all events as active.

Attention:
If you select an orange marked day, all sections, that begin on this day will be marked. Starts no section at the selected day, then there are no data downloaded or converted.
If you want to select data of a special day (from 00:00 to 23:59) please use the <Time period> window for selecting the hours of this day.

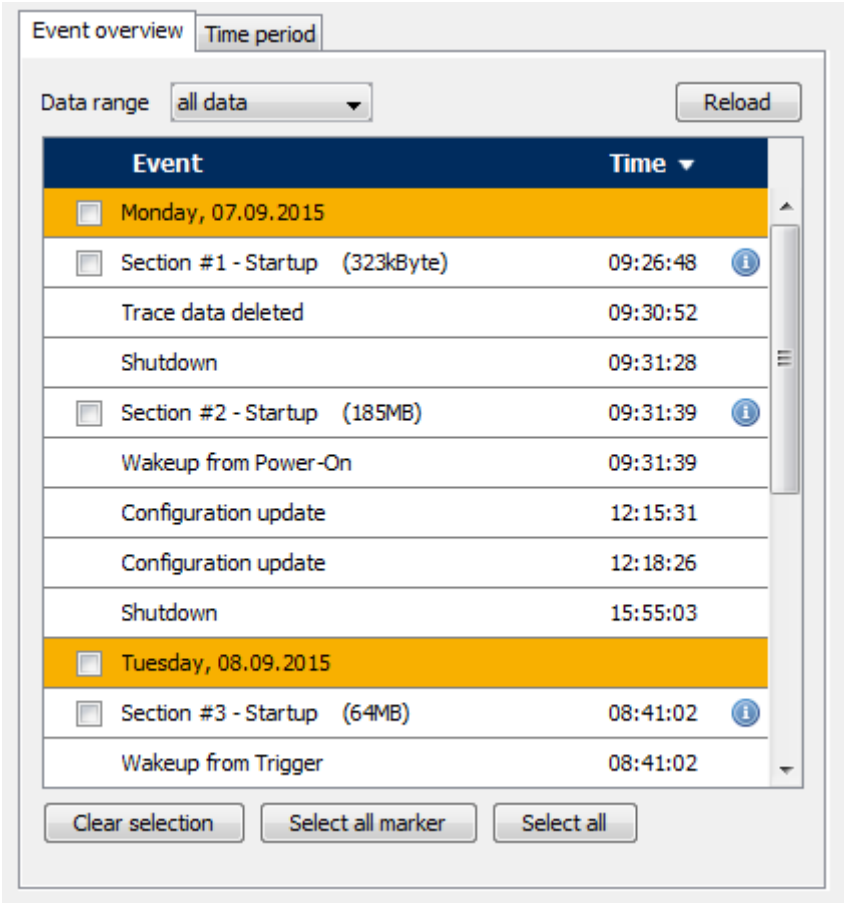


Figure 14.12: Create data set – Event overview

A click on the button opens a window with an overview of the recorded channels in this section. The window can be closed by clicking the **[x]** button in the upper right corner.

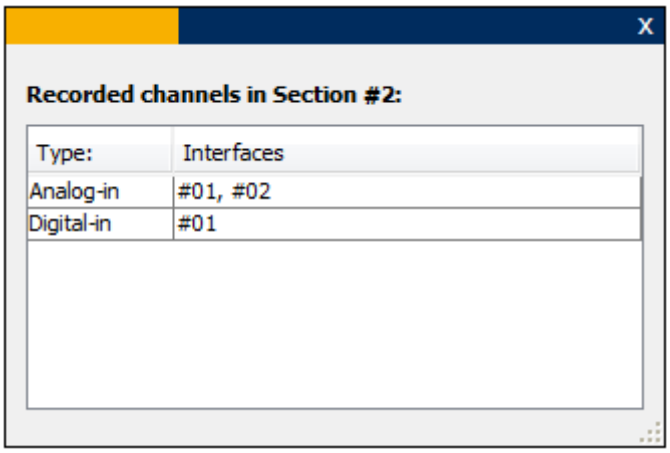


Figure 14.13: Window for overview of recorded channels each section

14.2.5.1 Displaying wakeup reasons

For failure analysis is explicitly specified in the event window (from start-up to shutdown) as additional information in addition to the recorded interfaces also the interface which has aroused the logger.

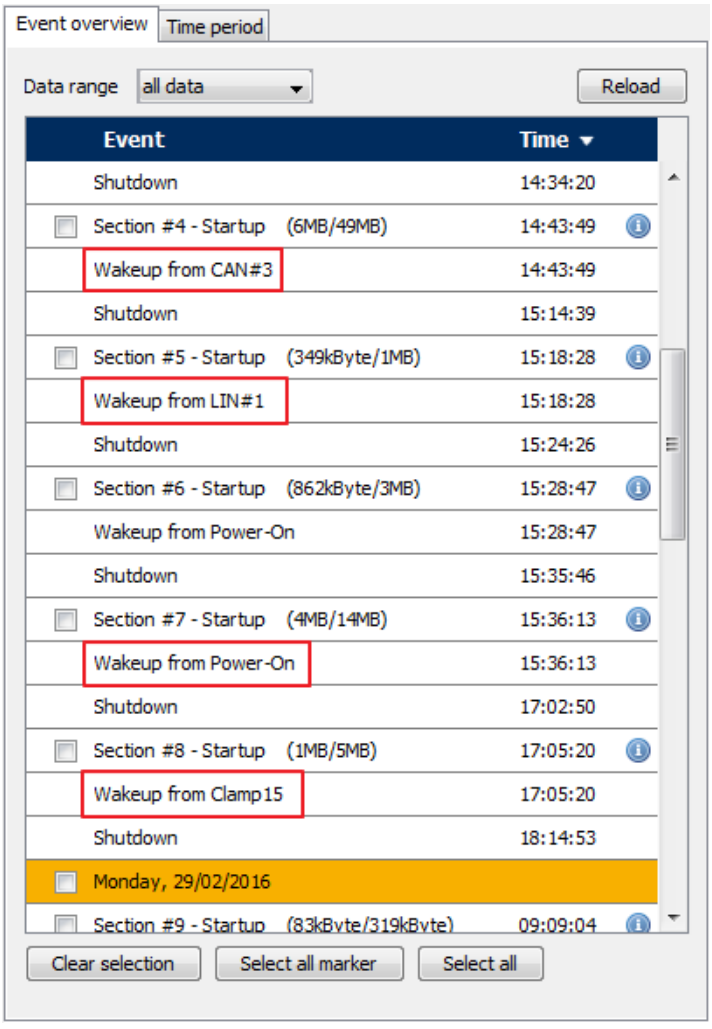
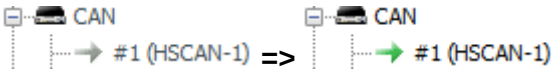


Figure 14.14: Wakup sources in the event window (highlighted in red)

14.2.6 Selection by Time period

The tab sheet <Time period> selects all data for download that is selected “From” a defined start time “To” a defined end time.

Note: Not till a period is added by clicking on [Add] to the download list, the channels in the channel selection tree will be analysed and marked as containing trace data with the green arrow.



It is possible to choose several time periods for one download.

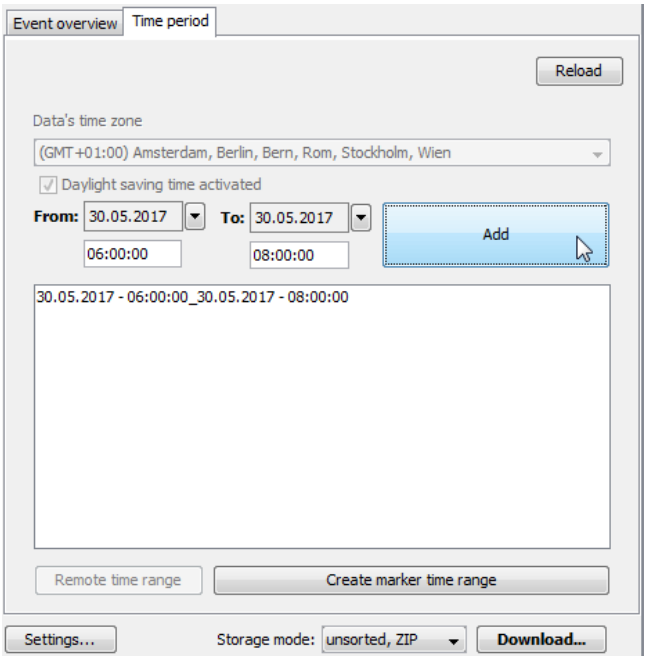


Figure 14.15: Create data set – Time period

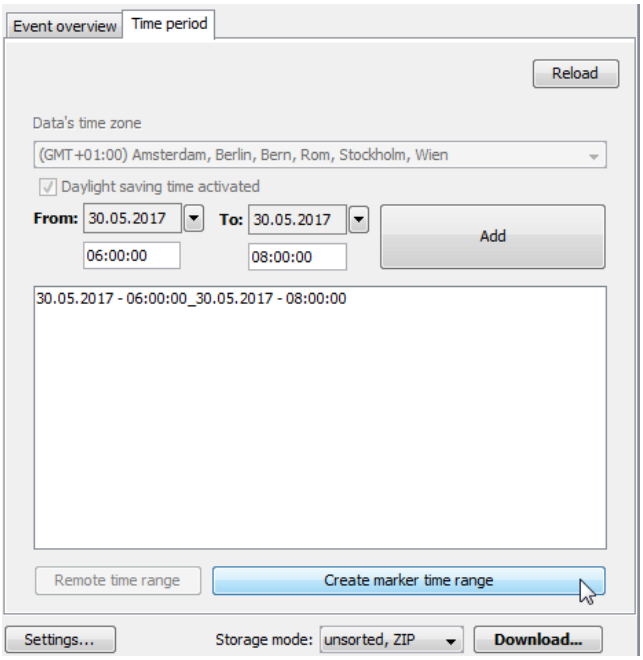


Figure 14.16: Create data set – Marker time range

By clicking on [Create marker time range] a new window opens where all available markers are listed and can be selected. The time period which shoud be included around a marker can be defined for each one individually.

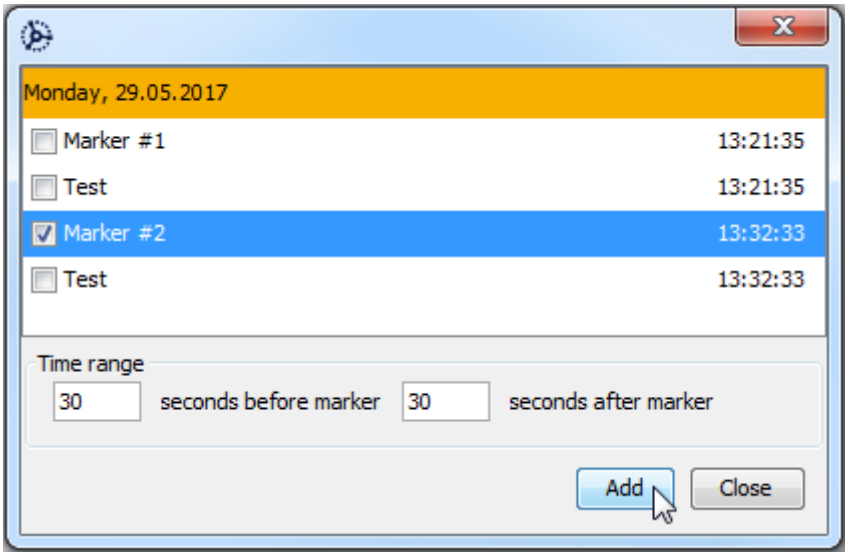


Figure 14.17: Create data set – adding a marker time range

Marked time periods can be deleted by clicking the button [Remove time range].

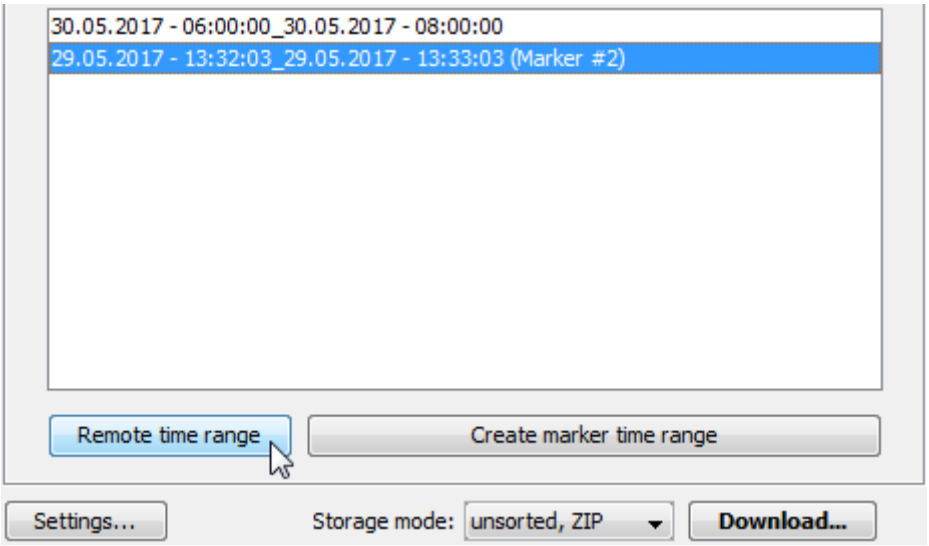


Figure 14.18: Create data set – Remove time range

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14.2.7 Download - Optins

By clicking on **[Options …]** a dialog opens with multiple views. You can find this button underneath the <Event overview> resp. the <Time period> or in the menu bar of the client in the item **[Tools]**. Here you have the choice between short and long trace file names and the download modes sorted and unsorted, as folder- or ZIP-file.

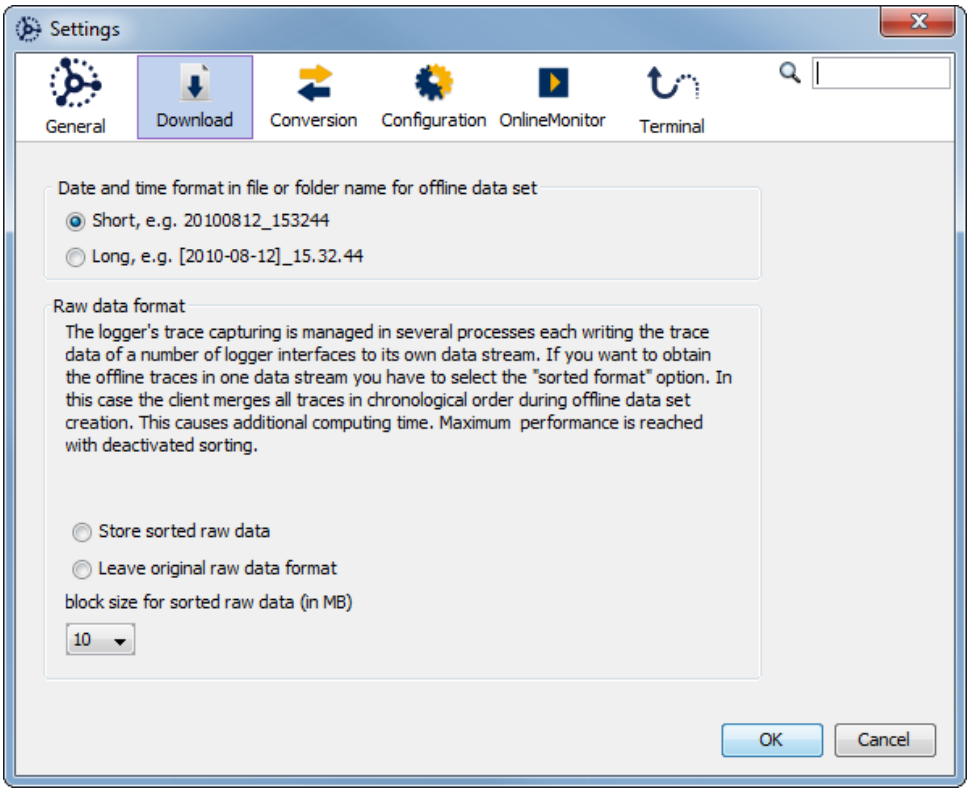

Figure 14.19: Change download-options

14.3 Downloading data set

The download of data can be initialized by a click on the button **[Download…]** underneath the <Event overview> resp. the <Time period>.

After a click on the **[Download…]** button, you have to set a <Name> for your offline data set and a place to store. Confirm the download with **[Save]**.

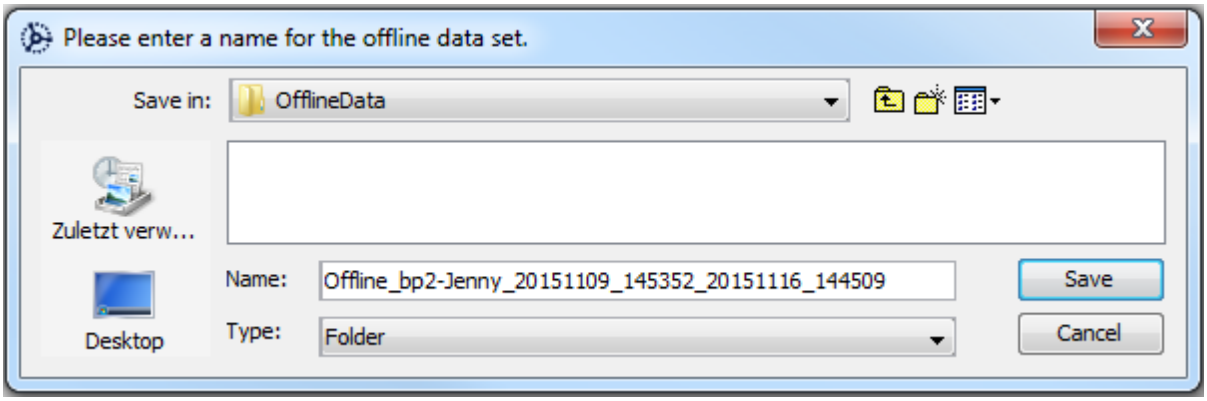

Figure 14.20: Download data set

14.4 Partitioning a data set

When you have downloaded a huge offline data set but you only need a small part of this for your analysis you can divide the huge offline data set into pieces.

When you have put the offline data set to the tab “Favorites“ (see section 6.4 The tab “Favorites”) you can select it and reach the option **[Create offline data subset from this…]** in the context menu by a right click.

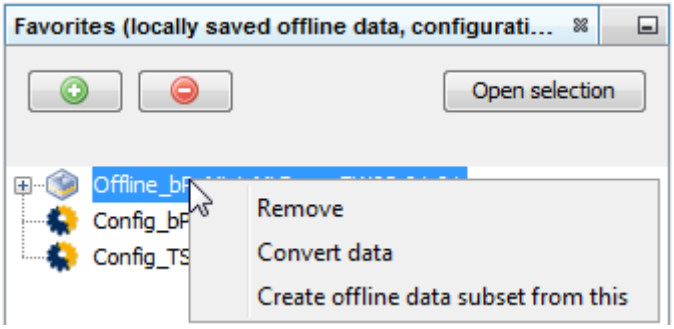

Figure 14.21: Create offline data subset from this

The full offline data set is displayed in the right window in an own tab <Create data set>. After selecting the desired events or time period you are able to create the offline date subset by clicking the button **[Create…]**.

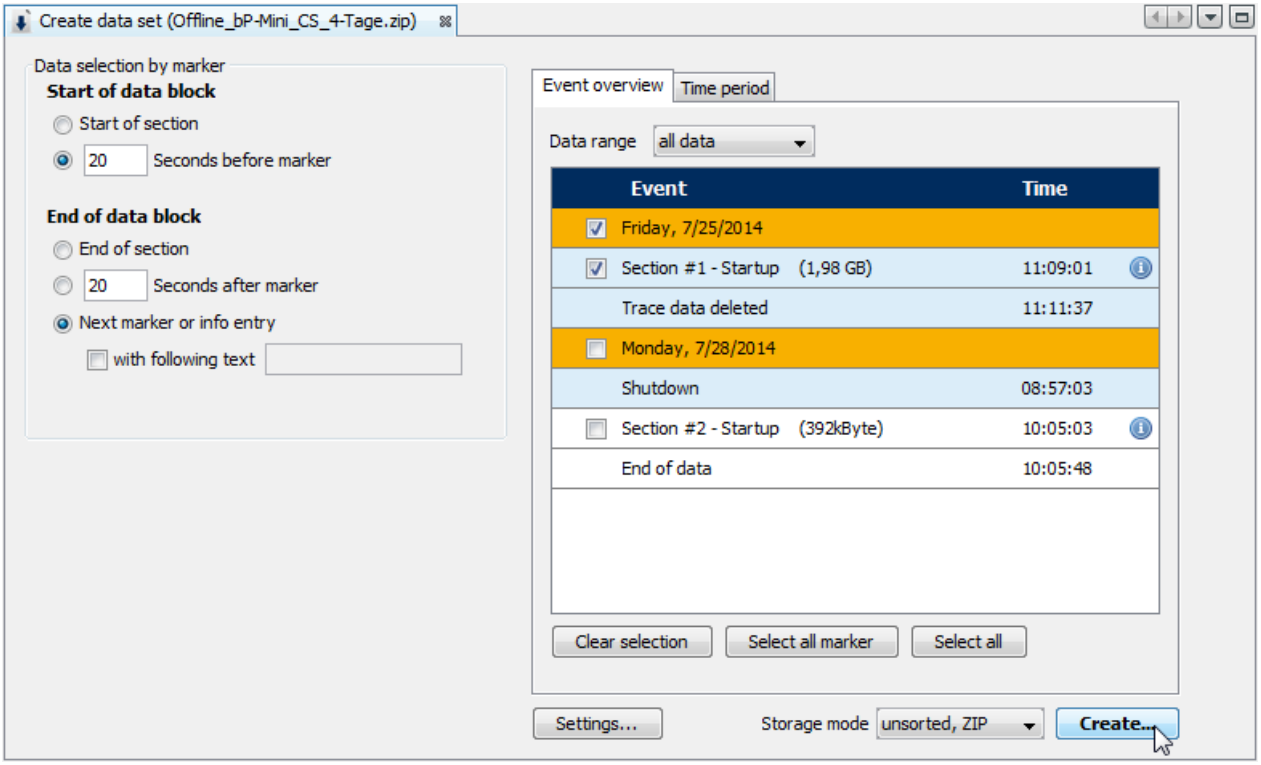

Figure 14.22: Creating an offline data subset

14.5 Trace file viewer

To get an overview about the offline data, a trace file viewer is available in the System Client.

Add the unzipped offline data to the tab “Favorites“ (see section 6.4 The tab “Favorites”). In the directory tree, you can find the trace data. A double-click opens the trace file viewer in the right window. By the filter function, you could select the recorded channels.

You can select which interface or channel should be displayed and change the displayed data into HEX format.

For interfaces you can select either complete groups of interfaces or single interfaces.

Note:
The timestamps of unsorted data are always in GMT.

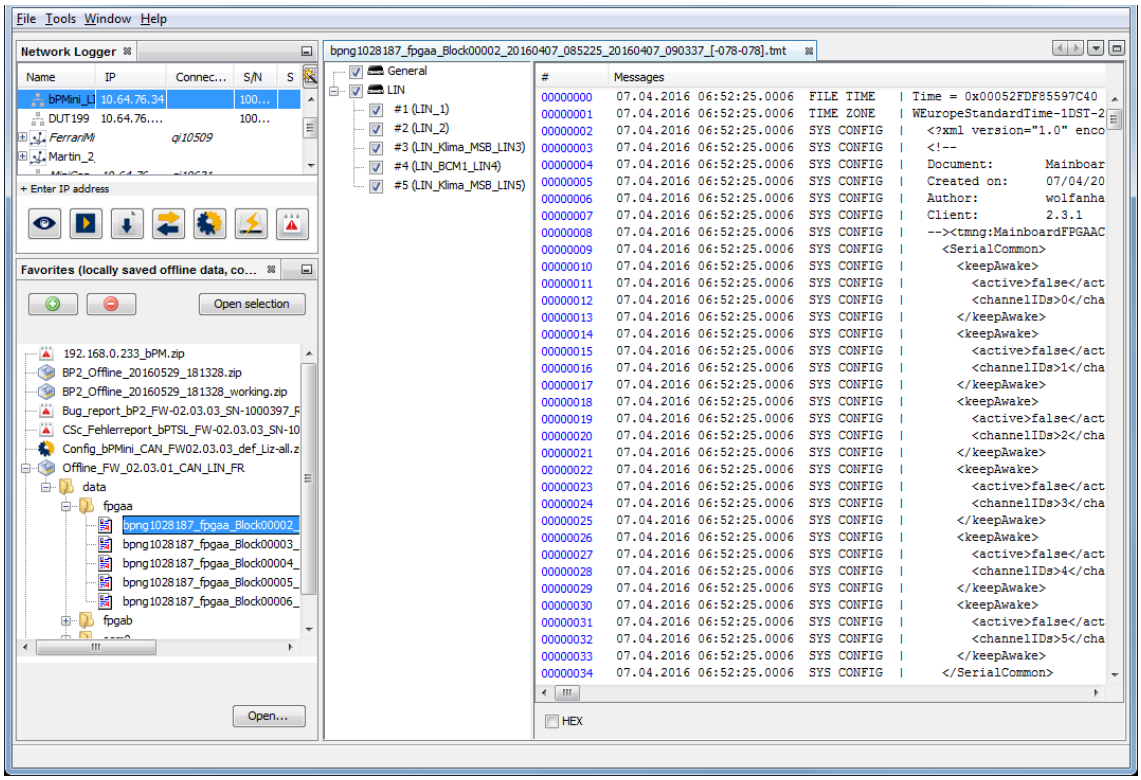

Figure 14.23: Trace file viewer

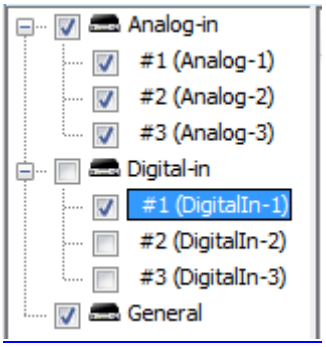

Figure 14.24: Selecting groups or interfaces

14.5.1 Folder structure of an offline data set

blue PiraT2 / blue PiraT2 5E						
/ethernet	/fpgaa	/fpgab	/fpgac	/mii0	/oem0	/oem2
Schnittstelle / Interface						
Ethernet	6x Seriell 1 - 6	12x HS-CAN 1 - 12	10x HS-CAN 15 - 24	mii (ETH-Spy)	MOST 150	MOST 25
	2x Analog-IN 1 - 2	2x LS-CAN 13 - 14			8x Analog-IN 3 - 10	8x Analog-IN 3 - 10
	1x Digital IN+OUT IN 1				4x Digital-IN 2 - 5	4x Digital-IN 2 - 5
	1x Digital IN+OUT OUT 1				2x Digital-OUT 2 - 3	2x Digital-OUT 2 - 3
	8x LIN 1 - 8				2x FlexRay 1 - 2	2x FlexRay 1 - 2

Figure 14.25: Folder structure of an offline data set from blue PiraT2 / 5E

blue PiraT Mini				
/ethernet	/fpgam	/fpgame	/fpgamfr	/fpgamm150
Schnittstelle / Interface				
Ethernet	CAN	mii (ETH-Spy)	FR	M150
	LIN			
	SER			
	Analog / Digital			

Figure 14.26: Folder structure of an offline data set from blue PiraT Mini

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15 The application [Data conversion]

All trace data will be recorded internally in the proprietary Telemotive TMT format (*.tmt). If the recorded trace data will be downloaded and sorted, the data will be converted to an Extended TMT format (*.xtmt).

This chapter describes how to convert the internal format in other formats, to make the data readable or to prepare them to import them into available analyzing tools.

15.1 Conversion format overview

The table below shows which data of the interfaces can be converted to other formats.

Format / format																											Ver.18-01
Tracedaten / Trace data	*.txt APN ASCII	*.txt ASCII Hexadecimal	*.dlt Autosar DLT	*.blf Binary Logging	*_CANCORDER.asc CANCorder	*.asc CANoe ASCII	*.esotrace Eso Trace file	*.raw Ethernet Raw	*.xtmt Extended Telemotive	*.[x]aa GN-Log	*.gpx GPS Exchange	*.kml KML Google Maps	*.kmz KMZ comp.Google Maps	*.log MDF Logging	*.mdf MDF Signal v3.3	*.mf4 MDF Bus Logging Format v4.1	*.mf4 MDF Signal v4.1	*.img MOST Data Analyser	*.mpeg4 MPEG-4	*.ts MPEG Isochron raw file	*.nmea NMEA - ASCII GPS	*.op2 Optolyzer	*_RAW.txt RAW Serial	*.txt Serial Debug	*.txt Serial Trace Analyser	*.pcap TCPdump	*.txt Telemotive ASCII	*.trc Trace Client
Analog IN				x		x			x							x											x	
CAN / CAN-FD				x	x	x			x					x	x	x	x										x	
CCP_XCP									x						x		x										x	
Digital IN									x							x											x	
ECL									x									x									x	
Ethernet			x	x			x	x	x	x																x	x	
- Ethernet - DLT			x					x	x																		x	
- Ethernet - EsoTrace							x	x	x																		x	
- Ethernet - GN Log								x	x	x																	x	
- Ethernet - RAW								x	x																		x	
- Ethernet - Spy Mode/MII				x		x		x	x							x										x	x	
- Ethernet - TCP Server								x	x																		x	
- Ethernet - UDP Server								x	x																		x	
- Ethernet - UTF8								x	x																		x	
FlexRay				x		x			x							x											x	
GPS									x		x	x	x								x						x	
Kamera/Video																			x									
LIN				x		x			x							x											x	
MOST150 CTRL				x					x									x									x	
MOST150 MDP				x					x									x									x	
MOST150 MEP				x					x									x								x	x	
MOST150 Streaming				x					x									x		x								
MOST25 CTRL				x		x			x									x				x					x	
MOST25 MDP				x		x			x									x									x	
Serial RS232	x	x	x				x		x	x													x	x	x		x	x
Signal based filter (Format wird beibehalten / keeps the used format)																												
USB / Conn.-Gateway MLBevo									x														x	x			x	
Marker				P	M	P	M		M	M		M	M					P				P		M	M		M	
Konvertierung / converting	1	1	m	m	m	m	1	1	m	1	1	1	1	m	m		1	m	1	m	1	m	1	m	1	m	m	1

Marker	M	marker can be written into the file
	P	marker can be written into the file as CAN / MOST pseudo message only
Konvertierung / converting	m	file with multiple channels
	1	one file per channel

Table 15.1: Conversion options (overview)

15.2 Description of file formats

All traces date are stored on the logger in Telemotive Trace File format:

Telemotive Trace File (binary) (*.tmt) (*.xtmt)
This file format is a proprietary binary format of MAGNA Telemotive GmbH. It is used for storing the trace data internally on the data logger and into offline data sets. The file names have the extension “*.tmt“ or “*.xtmt”, if the data are already sorted. The Telemotive Trace File format is able to store all bus types and all of the information that the data logger is logging. Each data entry is stored with a start and an end time stamp.

Note:
This file format contains time stamps in the time standard UTC (Universal Time, Coordinated).

And can be converted later in these formats:

15.2.1 APN ASCII (*._APN.txt)

This format contains the serial data in binary format. Each line starts with a time stamp. A line is finished if the pattern 0x0D 0x0A 0xAA or 0x0D 0x0A 0xBB occurs in the data. In this case, the characters 0x0D 0x0A is written to the current line and 0xAA resp. 0xBB is written to the following line.

15.2.2 ASCII Hexadecimal (*.txt)

This format contains the serial data in hexadecimal format. Each line starts with a time stamp. A line is finished if the number of bytes in this line or the difference in the time stamps exceeds certain values.

15.2.3 Autosar DLT (*.dlt)

This format bases on AUTOSAR Diagnostic Log and Trace 4.0. The format can be used for Ethernet and serial data. Due to a special costumer requirement, the serial DLT messages are extended with a DLT serial header. The header is put in front of each message and consists of the four bytes “0x44 0x4C 0x53 0x01” (ASCII representation: „DLS“+0x01).

15.2.4 Binary Logging (*.blf)

The BLF format is a data format of the company Vector. It is possible to import files of this format into the software CANoe. Currently, the System Client includes CAN, MOST25/150 control channel and MOST25 asynchronous channel, MOST150 MDP/MEP channel, FlexRay channel, LIN channel and even Ethernet-SPY/MII data in this format. Additionally it is possible to convert analog data, marker (also as MOST pseudo messages) and timestamps as CAN pseudo messages.

15.2.5 CANCorder (*._CANCORDER.txt)

The CANCorder format is an ASCII format of the data logger CANCorder of the company IXX-AT. It is possible to use this format for the CAN data recorded by the blue PiraT2 / blue PiraT Mini.

15.2.6 CANoe ASCII (*.asc)

The CANoe ASCII format is a data format of the company Vector Informatik. It is possible to read files of this format into the software CANoe. Currently the client includes CAN, MOST25 control channel and MOST asynchronous channel, FlexRay channel and LIN channel data in this format. Additionally it is possible to convert analog data, marker (also MOST pseudo messages) and timestamps as CAN pseudo messages.

15.2.7 EsoTrace (*.esotrace)

This format was defined by the company eSolution and can be used for Ethernet data.

15.2.8 Ethernet Raw (*.raw)

It is possible to log Ethernet data in the following two formats.

- **RAW** = Data packages with packet-length of up to 40 kilobyte are getting a time stamp and will be stored on the data logger.
- **UTF8** = Data packages which are ending with LF or CR are getting a time stamp and will be stored on the data logger. This is a proprietary format for serial data.

Extended Telemotive Trace File (binary) (*.tmt) (*.xtmt)
This file format is a proprietary binary format of MAGNA Telemotive GmbH. It is used for storing the trace data internally on the data logger and into offline data sets. The file names have the extension “*.xtmt”, if the data are already sorted. The Telemotive Trace File format is able to store all bus types and all of the information that the data logger is logging. Each data entry is stored with a start and an end time stamp.

Note:
This file format contains time stamps in the time standard UTC (Universal Time, Coordinated).

15.2.9 GN-Log (*._GNLog.<yy>aa)

This is a proprietary format for serial data. <yy> contains the last two digits of the year.

15.2.10 GPS Exchange (*.gpx)

The GPS exchange format GPX is the format for geo data. It is an open license free format, which should be used for the exchange of geo data. The format bases on the XML standard.

15.2.11 KML (*.kml)

Keyhole Markup Language (KML) is the format for geo data for the applications Google Earth and Google Maps. The format bases on the XML standard.

15.2.12 KMZ (*.kmz)

Keyhole Markup Language (KML) is the format for geo data for the applications Google Earth and Google Maps. KMZ is the compressed version of KML in zip format. The format bases on the XML standard.

15.2.13 MDF Logging (*.log)

MDF (Measurement Data Format) is a binary data format for measurement data, which was developed by the company Vector. Currently this format is only used for CAN messages. It defines one channel group related to MDF specification v3.3.

The channel group includes:

- #1 Event-Type
- #2 CAN-Channel
- #3 CAN-ID
- #4 Direction Rx/Tx
- #5 RTR
- #6 DLC
- #7-14 Byte 0 – 7
- #15 Time Stamp

15.2.14 MDF Signal v3.3 (*.mdf)

MDF (Measurement Data Format) is a binary data format for measurement data, which was developed by the company Vector. This format includes all signals of the CAN trace, that are specified within the assigned DBC file or which were logged by CCP/XCP.

15.2.15 MDF Signal v4.1 (*.mf4)

MDF (Measurement Data Format) is a binary data format for measurement data by ASAM standards. This format includes all signals of the CAN trace, that are specified within the assigned DBC file or which were logged by CCP/XCP.

15.2.16 MOST Data Analyser (*.img)

The MOST Data Analyser format contains data of the MOST control and asynchronous channel as well as MDP, MEP and streaming messages. It has the extension “*.img“. It is possible to read files of this format with the “OptoLyzer Suite“ of SMSC. Marker could be written as MOST pseudo message.

15.2.17 MPEG4 – Video (*.mpeg4)

MPEG4 is a well-known format for video streams. For more information please have a look on http://mpeg.chiariglione.org/standards/mpeg-4/mpeg-4.htm.

15.2.18 MPEG Isochronous raw (.ts)

MPEG transport stream is a standardized communication protocol for continuous, digital video and audio streams. This format is used for DVB, ATSC and MOST150 streaming data. The format is generated by extracting the raw data from the data stream.

15.2.19 NMEA – ASCII GPS (*.nmea)

NMEA 0183 is a well-known format for geo data, which was defined by the National Marine Electronics Association. It bases on ASCII.

15.2.20 OptoLyzer (*.op2)

The OptoLyzer format contains data of the MOST25 control channel. It has the extension ".op2". It is possible to import files of this format with the "OptoLyzer Suite" from the company SMSC. For newer versions of the "OptoLyzer Suite" it is recommended to use the *.img format. Marker could be written as MOST pseudo message.

15.2.21 Raw Serial (*._RAW.txt)

This format only contains the unmodified serial raw data (and also Connected-Gateway MLBevo) without any formatting. It is only possible to store one single channel in this format.

15.2.22 Serial Debug (*.txt)

The Serial Debug format is also a format for unmodified raw data (and also Connected-Gateway MLBevo). In contrast to the Raw Serial format one message contains all characters up to the next end-of-line. This format equals the Raw Serial format of the blue PiraT.

15.2.23 Serial Trace Analyser (*.txt)

The Serial Trace Analyser format is a simple text format for serial data.

```
0006394 22.06.2006 07:12:01.5  | Startup sequence initiated
0006395 22.06.2006 07:12:02.3  | performing mem test
0006396 22.06.2006 07:12:02.5  ========= Marker 5 =========
0006397 22.06.2006 07:12:03.1  | time: 0455334
```

Figure 15.1: Trace in Serial Trace Analyser format

Mostly a single channel can be stored in this format. Each line starts with a line number followed by a time stamp and the serial data. This format also supports markers.

15.2.24 TCP dump (*.pcap)

TCP dump is a well-known program for controlling and evaluating network traffic. For Windows operating system "WinDump" is available.

For more information please have a look on www.tcpdump.org.

15.2.25 Telemotive ASCII (*.txt)

This file format is a proprietary text format of MAGNA Telemotive GmbH. It is mainly used for testing purposes. The Telemotive Trace File ASCII format is able to store all bus types of the data logger. The other file formats are not able to store all information created by the data logger (e.g., error states), therefore it can be useful to select this format for data conversion.

The format could be different in a newer client version. Each line starts with a time stamp followed by the bus type and the channel number (if applicable). Here you can see an example of a trace in the Telemotive ASCII format.

```
22.06.2006 06:51:52.3422  MOST CTRL   | [0101 -> 0401] . 01.01 . 003.1 . 0 0 ()
22.06.2006 06:51:52.3430  SERIAL #1   | PI:d313 ATN:1 MESSAGES:6 selected:false HEX_ AA BB 01
22.06.2006 06:51:52.3430  SERIAL #1   | Program [1] ixRadio
22.06.2006 06:51:52.3436  MOST CTRL   | [0101 -> 0100] . 01.01 . 003.C . 0 2 (01 01)
22.06.2006 06:51:52.3464  CAN #1      | Rx   0fa  8 1e 5d f6 00 1c 15 84 69
22.06.2006 06:51:52.3476  SERIAL #1   | Starting shutdown
22.06.2006 06:51:52.3545  CAN #1      | Rx   7c9  8 f0 50 01 5a 00 27 9a 00
```

Figure 15.2: Trace in the Telemotive ASCII format

15.2.26 Trace Client Format (*.tcr)

A special data format for the trace client from Harman Becker.

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15.3 Opening the application “Conversion”

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

In the tab <Network Logger> click a logger that is not already connected with another client.

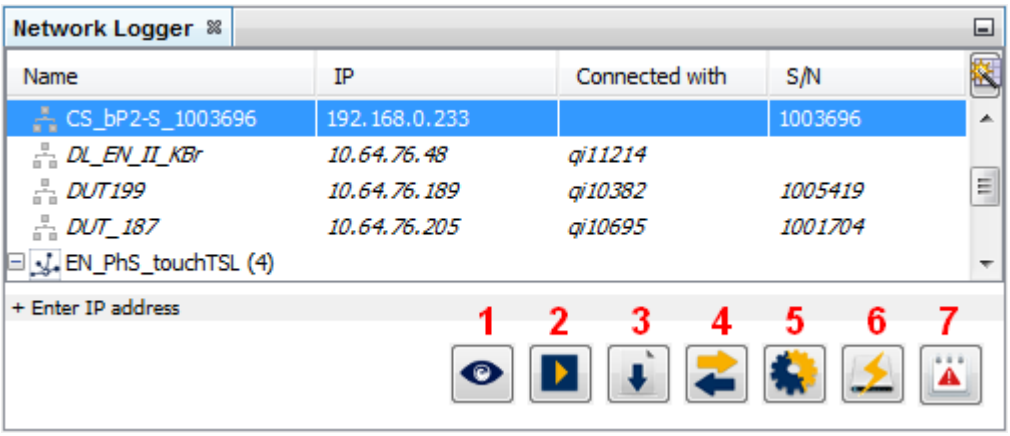

Figure 15.3: Selecting logger

Click on the application **[Convert data]** (4).

The tab <Conversion> is opening with the <Event overview> with the loggers data on the left side, the <Channel selection tree> in the middle and the area for format settings on the right side.

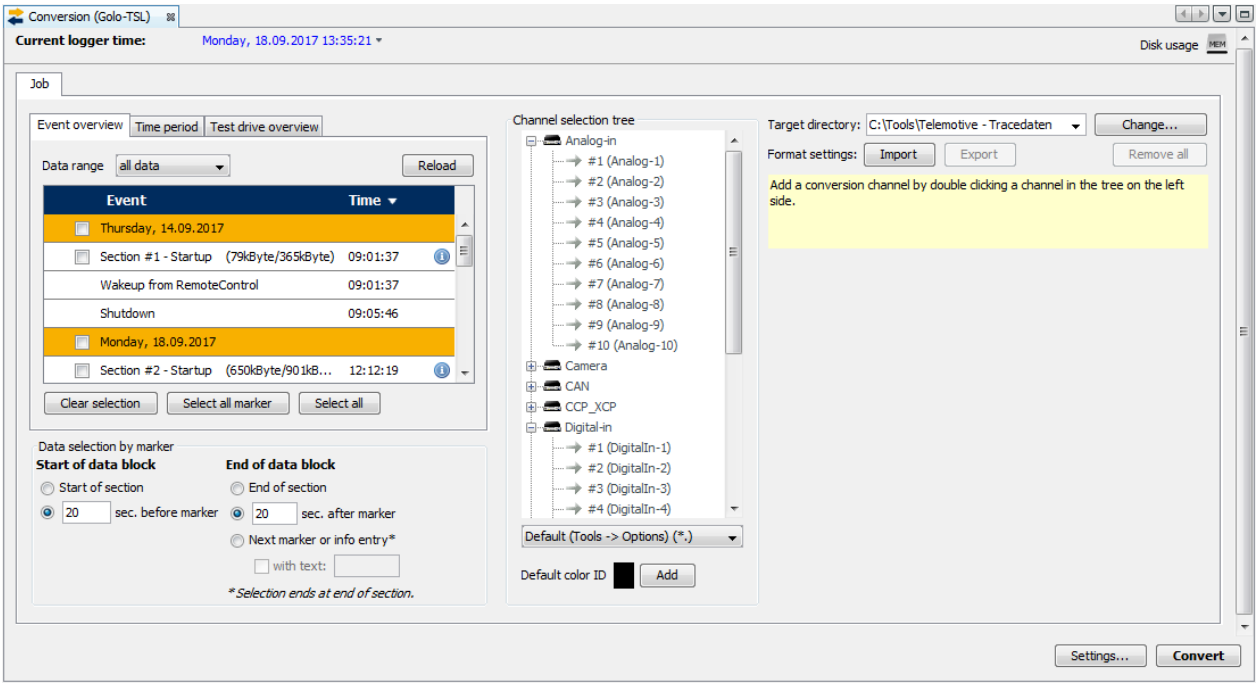

Figure 15.4: Tab “Conversion”

If you want to convert an offline data set or pieces of it, add the offline data to the tab “Favorites“ (see section 6.4 The tab “Favorites”).

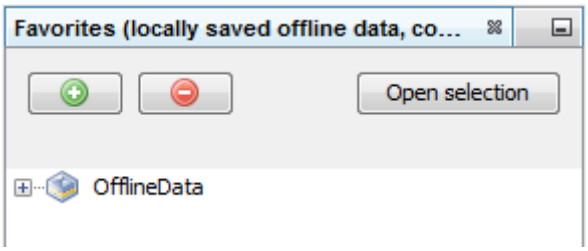

Figure 15.5: Tab “Favorites”

A double-click on the offline data set opens the window with the available data sections. In the tab name the file name is displayed in parentheses.

15.4 The tab “Conversion”

In an online conversion, the toolbar at the top of the tab is equal to that of the tab <Create data set>, see 14.2 The Tab Concersion.
In the tab <Conversion> of an offline data set there is no toolbar available.

The button bar at the bottom of the tab contains the following buttons.

Button	Effect
Settings...	opens the dialog <Settings>, see **Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.**
Convert	starts the conversion

Table 15.2: Buttons in the tab “Conversion”

15.4.1 Event overview / Time period / Test drive overview

Data which should be converted can be selected in the <Event overview>, the <Time period> or the <Test drive overview>.

These 3 possibilities for selecting the data are described in the download section. Please look at: 14.2.5 and 14.2.6.

Attention:
While converting data, selected in the event overview, the data are stored divided into sections. When the data were selected in the time period the data are stored into one file as long as the file hasn’t reached the maximum file size.

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15.4.2 Selection by Test drive overview (from 3.2.1)

Additional to the selection by event overview and time period it is possible to select directly a test drive over the Test drive overview for concersion when a test drive was defined by using the Remote Control Touch or blue PiraT Remote before.

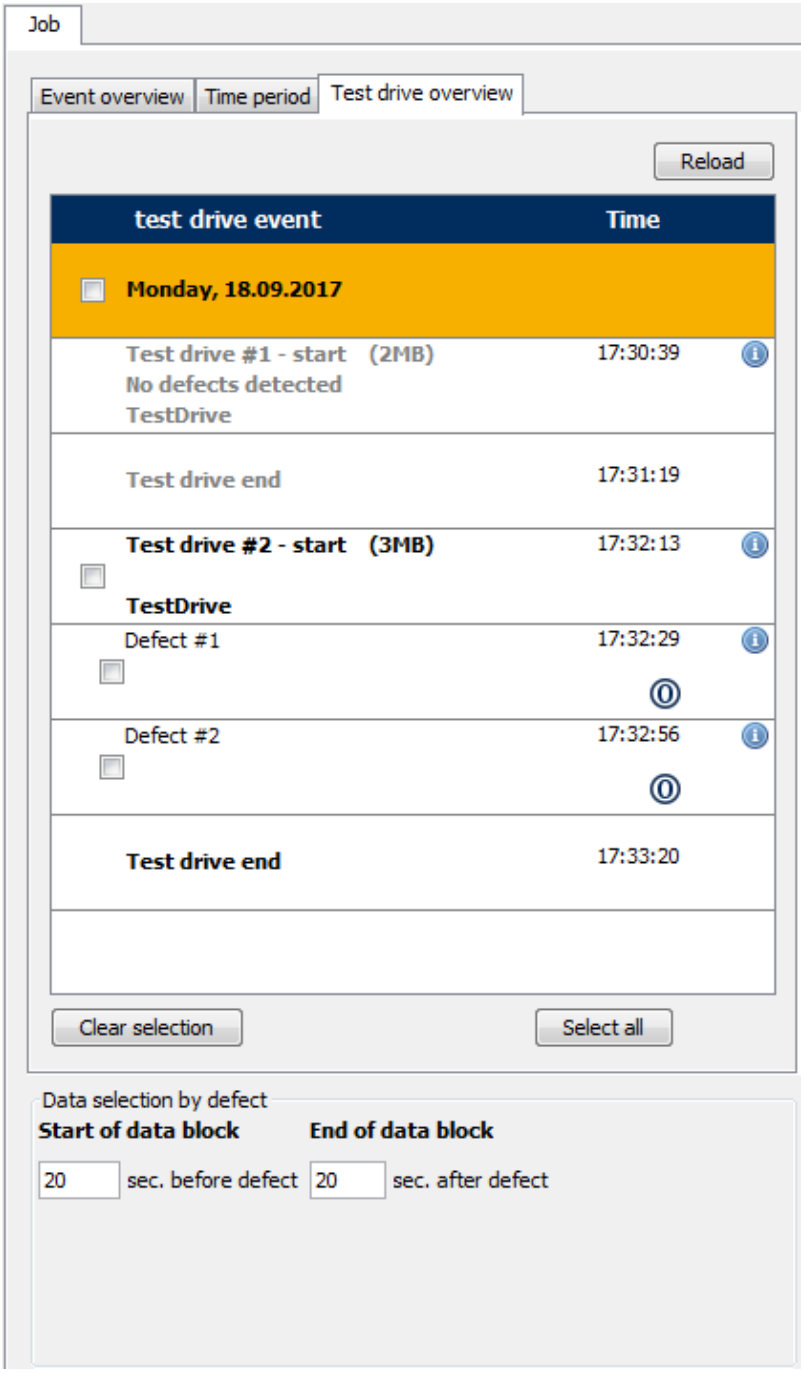


Figure 15.6: Selection by Test drive overview

Attention: It has to be mentioned that you only can choose data around a defect for conversion. If no defects were marked by marker during the test drive there are no data for conversion available in the test drive overview as shown above in Test drive #1!

By using the Event overview or Time period these data are for sure available for conversion.

15.4.3 Defining a data block

You can select days, sections or marker for conversion. For the conversion with markers the time period which should be converted before and after the marker can be configured.

For more information see 14.2.4 Defining data block.

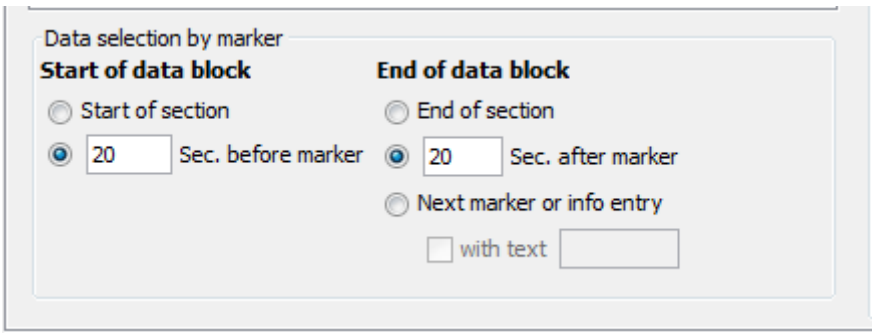


Figure 15.7: Defining data block start and end

Attention:
The availability of channels is determined at section level. At very low data rates, it is therefore possible that the conversion of data around a marker may fail because of there are no data at this time.
In this case only the existing data will be converted.

15.4.4 Choosing channel

Each channel in the <Channel selection tree> is sorted to its interface. To see the channels of an interface click on the **[+]**.

If you have chosen the data which shall be converted, the color of the arrows of available channels in the <Channel selection tree> changes from gray to green.

Open the dropdown menu underneath the <Channel selection tree> and choose the desired conversion format.

If **[Default (Tools ->Options)]** is set, the default settings of the dialog <Settings> will be taken, See chapter Formats

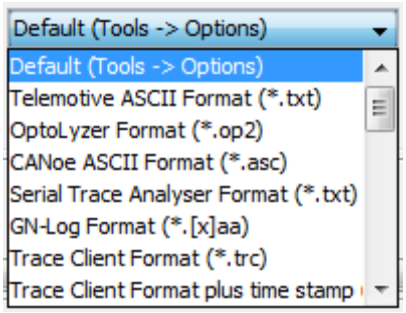


Figure 15.8: Choosing conversion format

To add a channel to the area for format settings, double-click on it at the <Channel selection tree> or select it there and click **[Add]** underneath the <Channel selection tree>. Multiple channels can be selected by holding down the **[Strg]** button.

Available channels appear in the <Default color ID>.
Unavailable channels are grayed out.

Once an unavailable channel has been added, it is pointed out in red font, that not for all added channels data were selected or are available.

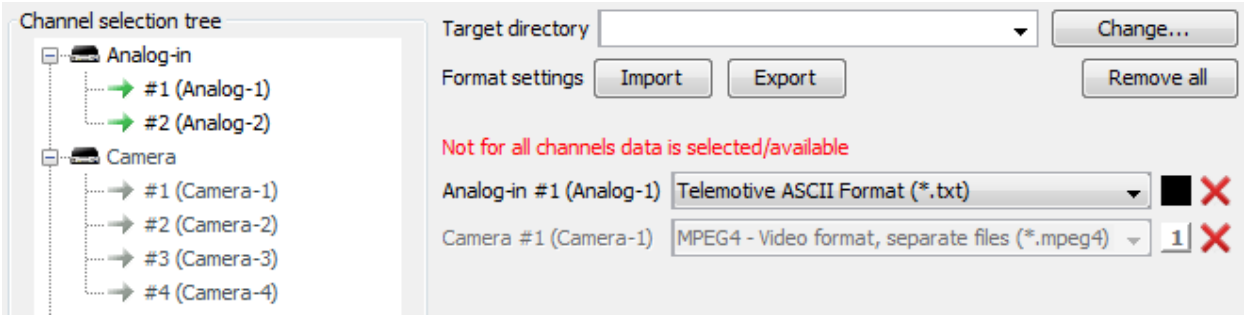


Figure 15.9: "Channel selection tree" and area for format settings

By a click on the **[X]** the respective conversion channel is removed.

15.4.5 Selecting target directory

The path of the target directory, where the converted data shall be stored, can be selected here. 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…]**.

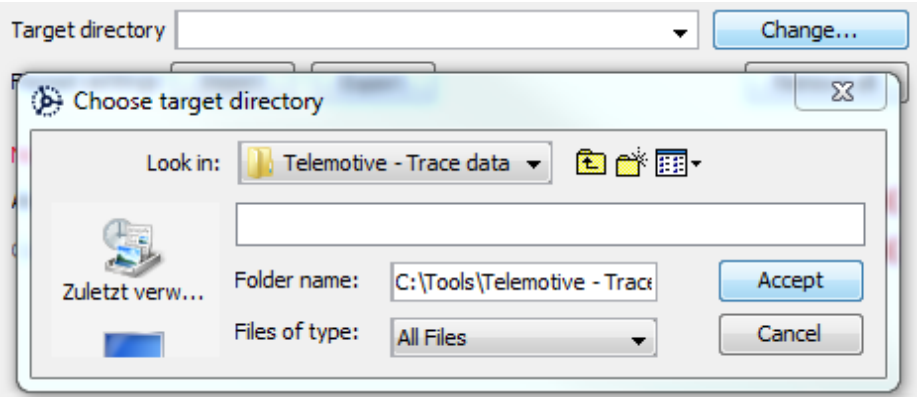


Figure 15.10: Selecting target directory

15.4.6 Import/export format settings

The <Format settings> with the selected channels can be imported or exported to quickly use frequently used settings.

Figure 15.11: Import/export format settings

When the imported settings do not fit to the actual data, a note is displayed where the assignment by Channel-Index or Channel-Name can be set.

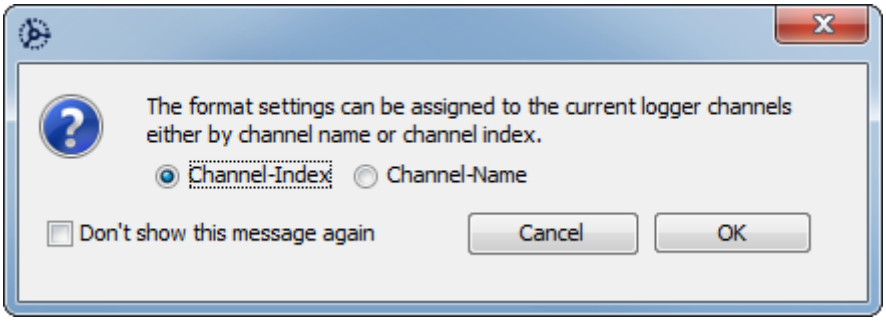


Figure 15.12: Assigning by Channel-Index or Channel-Name

15.4.7 Changing conversion format

The dropdown menu of the active, added channels only offers the conversion formats which are possible for the data of the interface.

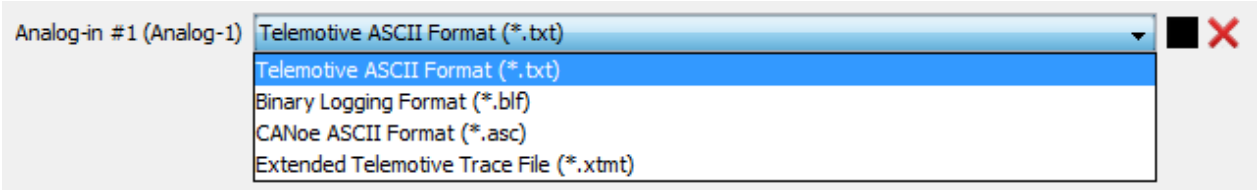


Figure 15.13: Changing conversion format

Data having the same channel can be converted in the same format but in different output files by selecting different Color-IDs.

For changing the Color-ID click on the colored field besides the dropdown menu. A dialog opens in which the Color-ID can be changed arbitrarily. By clicking **[Apply]** the colored field takes over the selected color value.

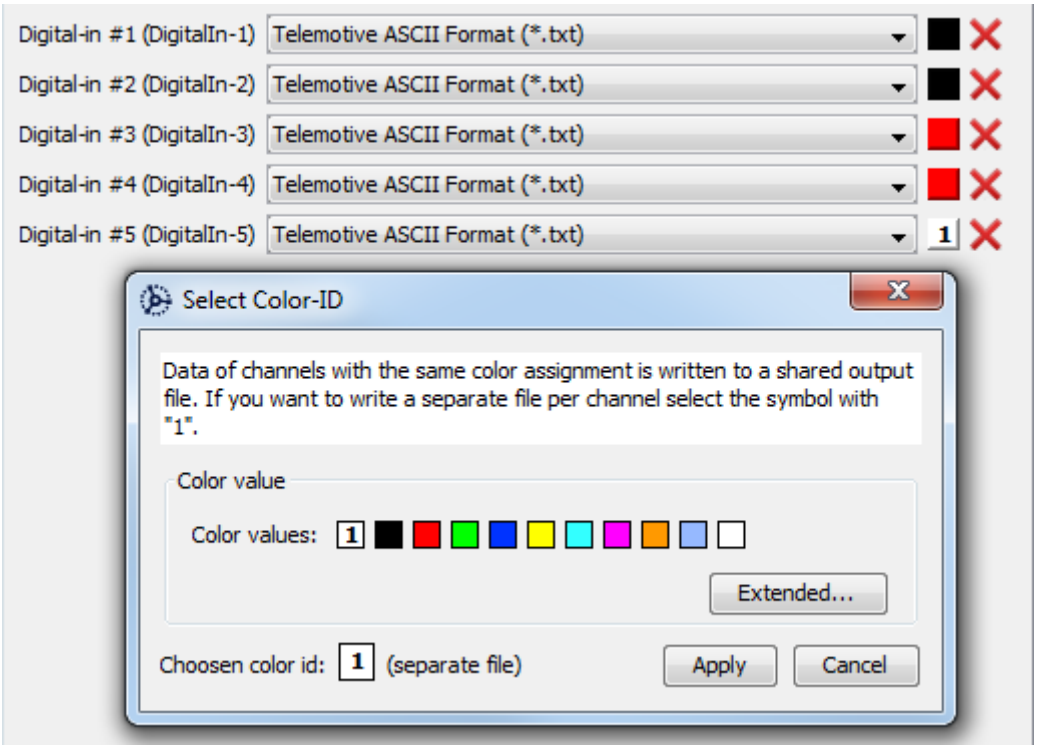


Figure 15.14: Changing Color-IDs

15.5 Converting data

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.

In some cases, not all data could be converted at the target format. This is the case if the target format can't absorb all of the recorded information (e.g., signal based conversion) or the protocol is not supported (e.g., TCP-Raw-data to GN-Log).

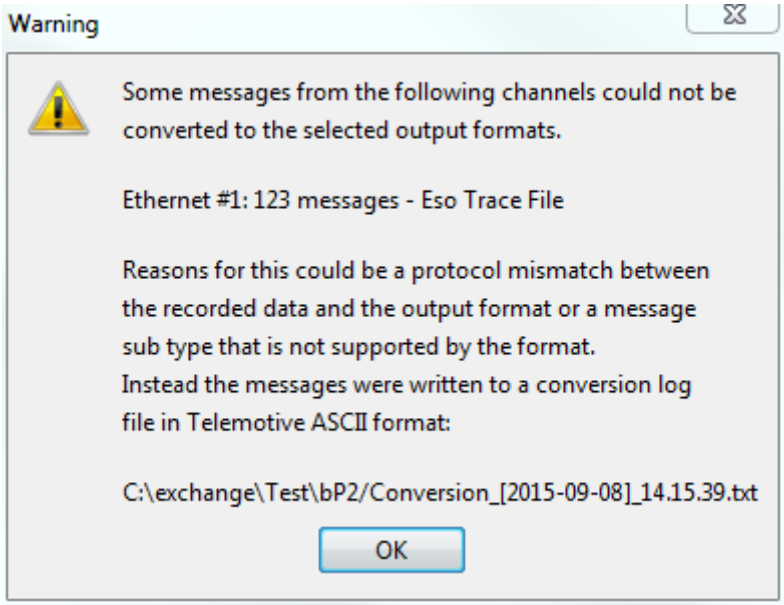


Figure 15.15: Notification message due to improper conversion

15.6 Automatically generated Events.txt

During the conversion process all events in the selected time range are saved into a file called event.txt which allows to get fast access to the times where marker are set or to see the startups and shutdowns of the data logger.

This file is analogue to the file which was created with blue PiraT of first generation.

The structure of the file is as follows:

```
----- Thursday, 25.09.2014
Section 1
    09:16:54.000    Startup
    10:29:27.000    Marker #1
    11:17:13.349    Shutdown
Section 2
    11:17:29.000    Startup
    11:19:59.991    Shutdown
Section 3
```

Figure 15.16: Example Events.txt

15.7 Conversion - Options

By clicking on **[Options…]** a dialog opens with multiple views. You can find this button underneath the <Event overview> resp. the <Time period> or in the menu bar of the client in the item **[Tools]**.

15.7.1 General

On the tab sheet <General> you can define the name of the tester which will be inserted into the converted file names.

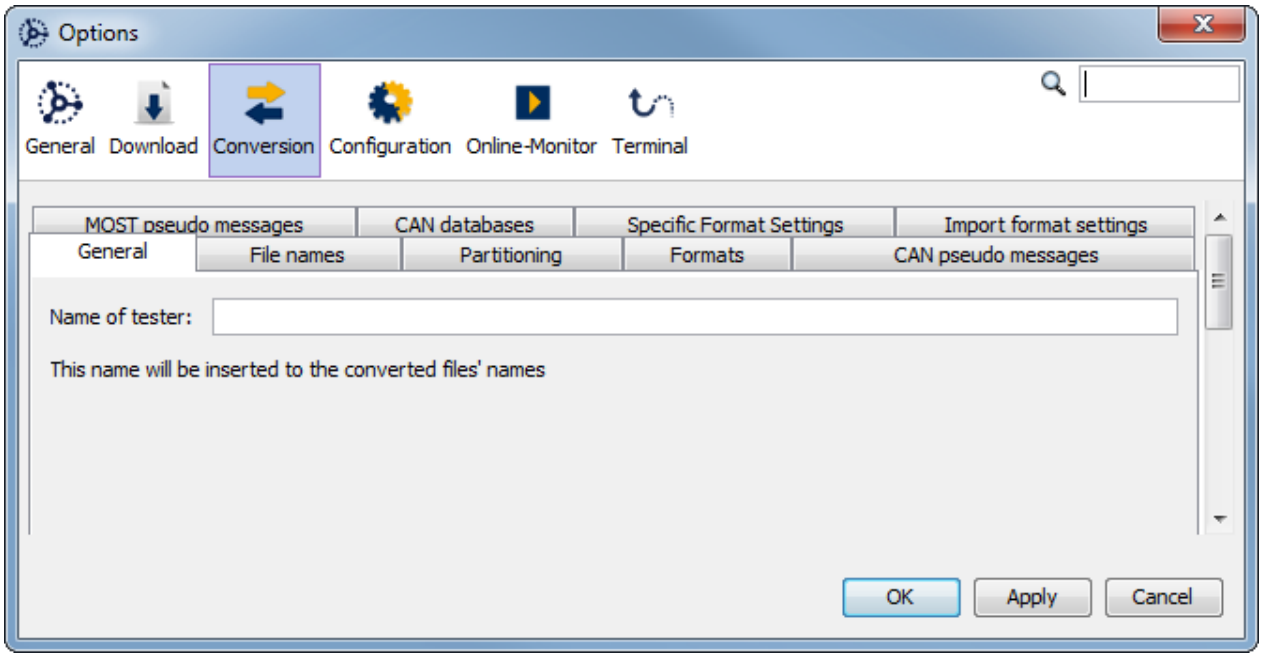


Figure 15.17: Tab sheet “General”

15.7.2 File names

Here you can choose whether the file name of the converted data contains:

- the date and time display in the short or long format
- the time stamp according to the effectively included data or to the time stamps in the data selection dialog and
- occurring marker numbers.

Note:
If you set many markers, the file name will be very long.

The timestamp inserted in the file name can be configured as follows:

according to the effectively included data
The time stamp of the first and last recorded data in the selected interval is written in the file name.

according to the time stamps in the data selection dialog
The time of the selected interval is written in the file name.

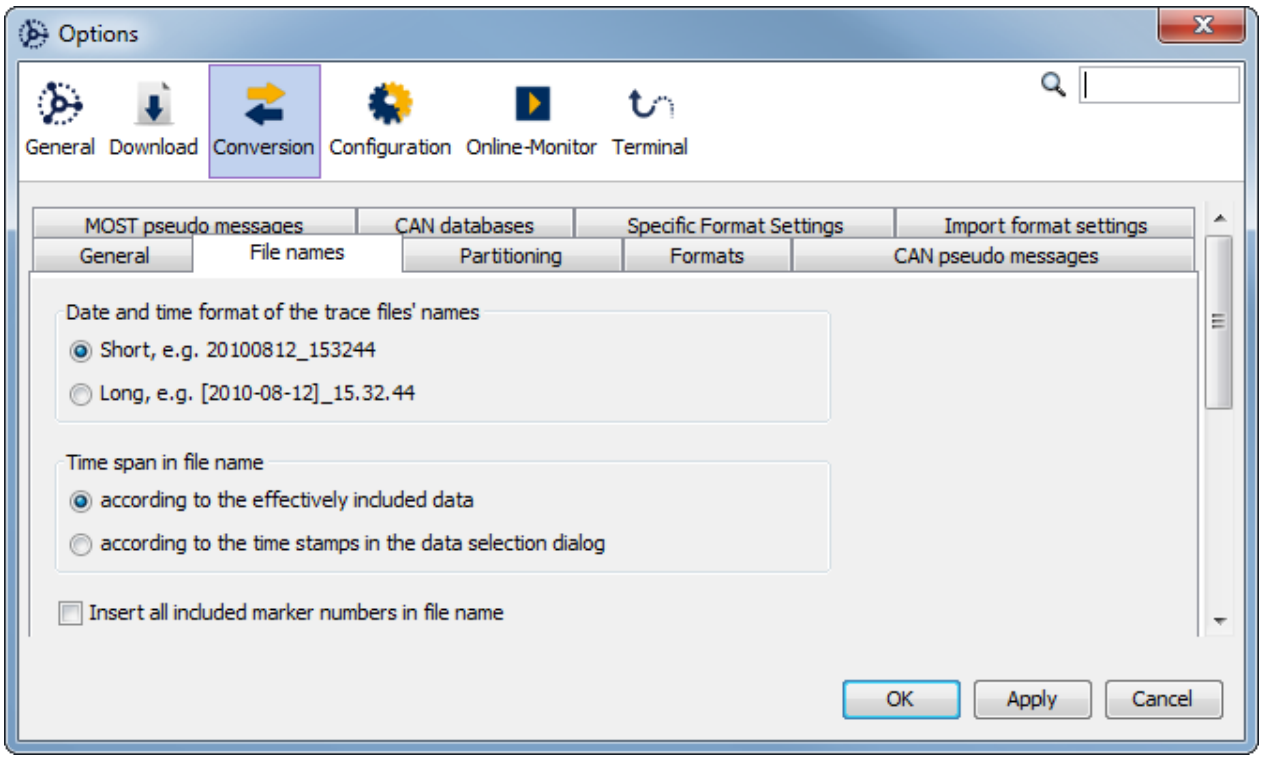


Figure 15.18: Tab sheet “File names”

15.7.3 Partitioning

The partitioning concerns the storing ans splitting of the target trace files in multiple files or folders.

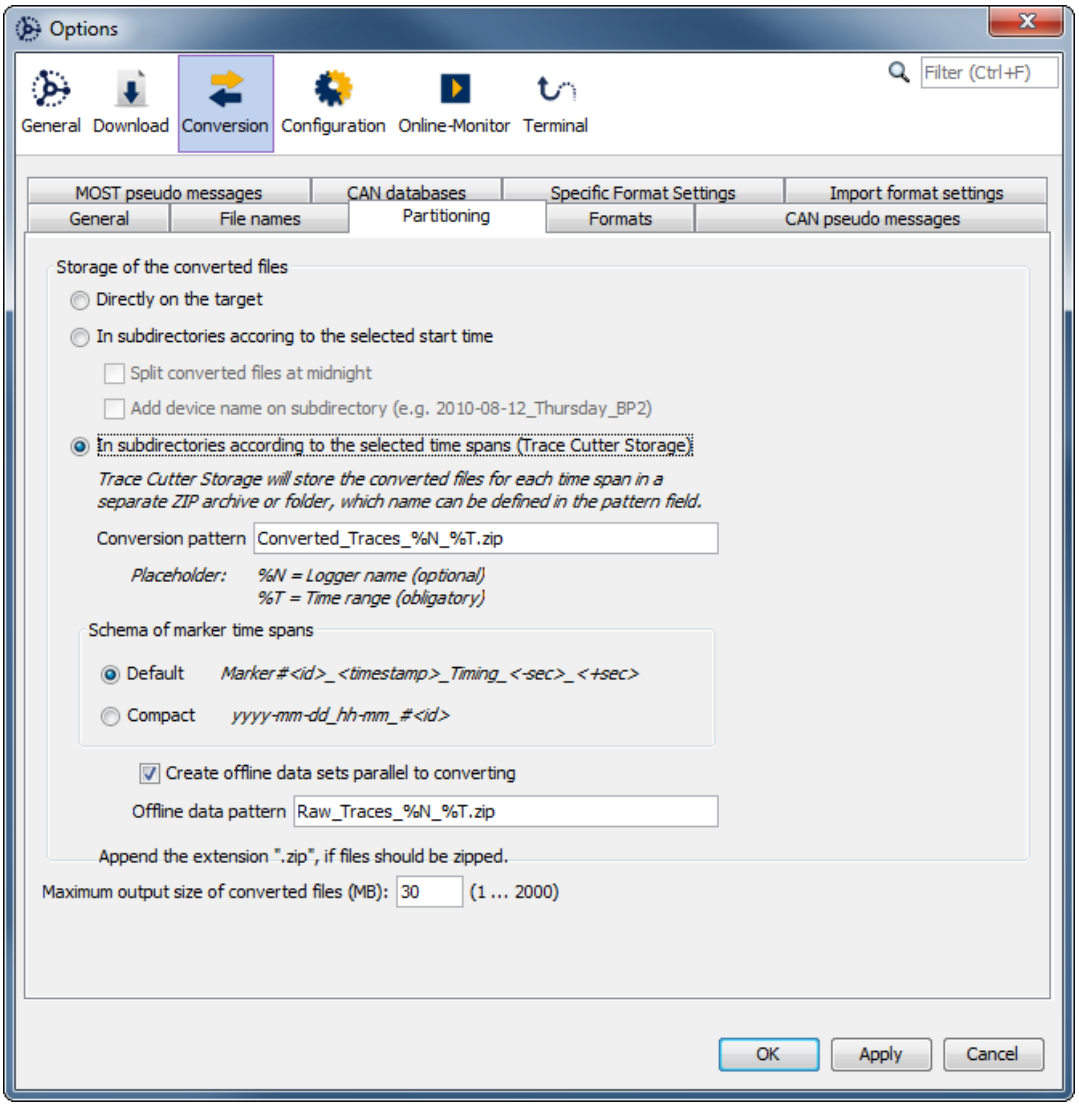
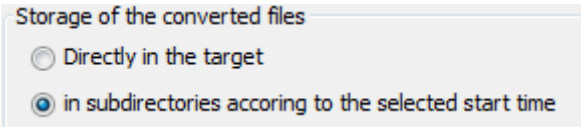


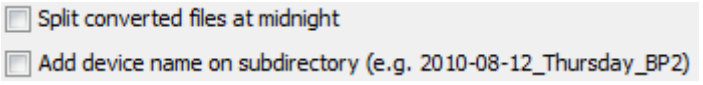
Figure 15.19: Tab sheet “Partitioning”

The converted data can be saved directly to the target directory or stored into a subfolder. If **in subdirectories according to selected start time** is enabled, the client makes subdirectories for the converted data.



If **Split converted files at midnight** is not enabled, the last file at the day is written full to the maximum output size, after that a new file begins (all files have the same max. size).

By activating the option Add device name on subdirectory ou can choose if the names of these folders only contain the date or the name of the data logger too.



15.7.3.1 Trace Cutter Storage (from release 3.1.1)

By marking the option in subdirectories according to the selected time spans (Trace Cutter Storage) the converted data will be stored for each time span in a separate ZIP archieve or Folder, which name can be defined in the pattern field.

The available placeholders are:

- %N = logger name (optional)
- %T = time range (obligatory)
- .zip = storage as zipped archieve (optional)

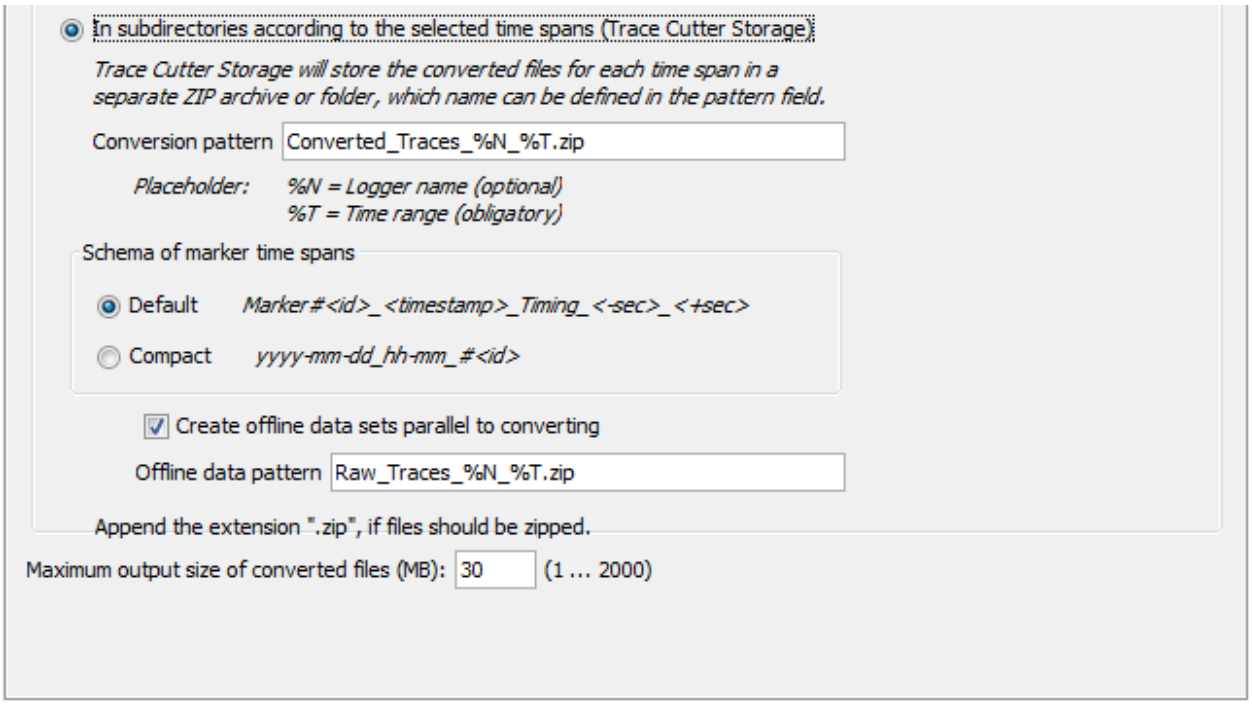


Figure 15.20: Trace Cutter Storage

The Schema of the marker time spans can be set,

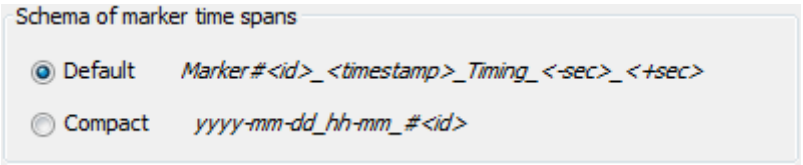


Figure 15.21: Trace Cutter Storage

And the maximum file size of the converted data can be adjusted. When this size is reached, the trace file is closed at this point and a new one is created.

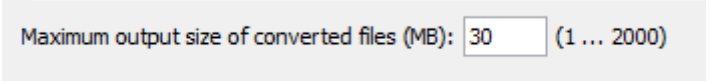


Figure 15.22: Trace Cutter Storage

15.7.4 Formats

The default settings for format selection can be chosen here. The available file formats are shown in Table 15.1: Conversion options (overview).

To convert analog data into “*.asc” or “*.blf”, the data must be transformed first into CAN pseudo messages.

The corresponding DBC file can be found on the associated CAN channels that are allocated among databases.

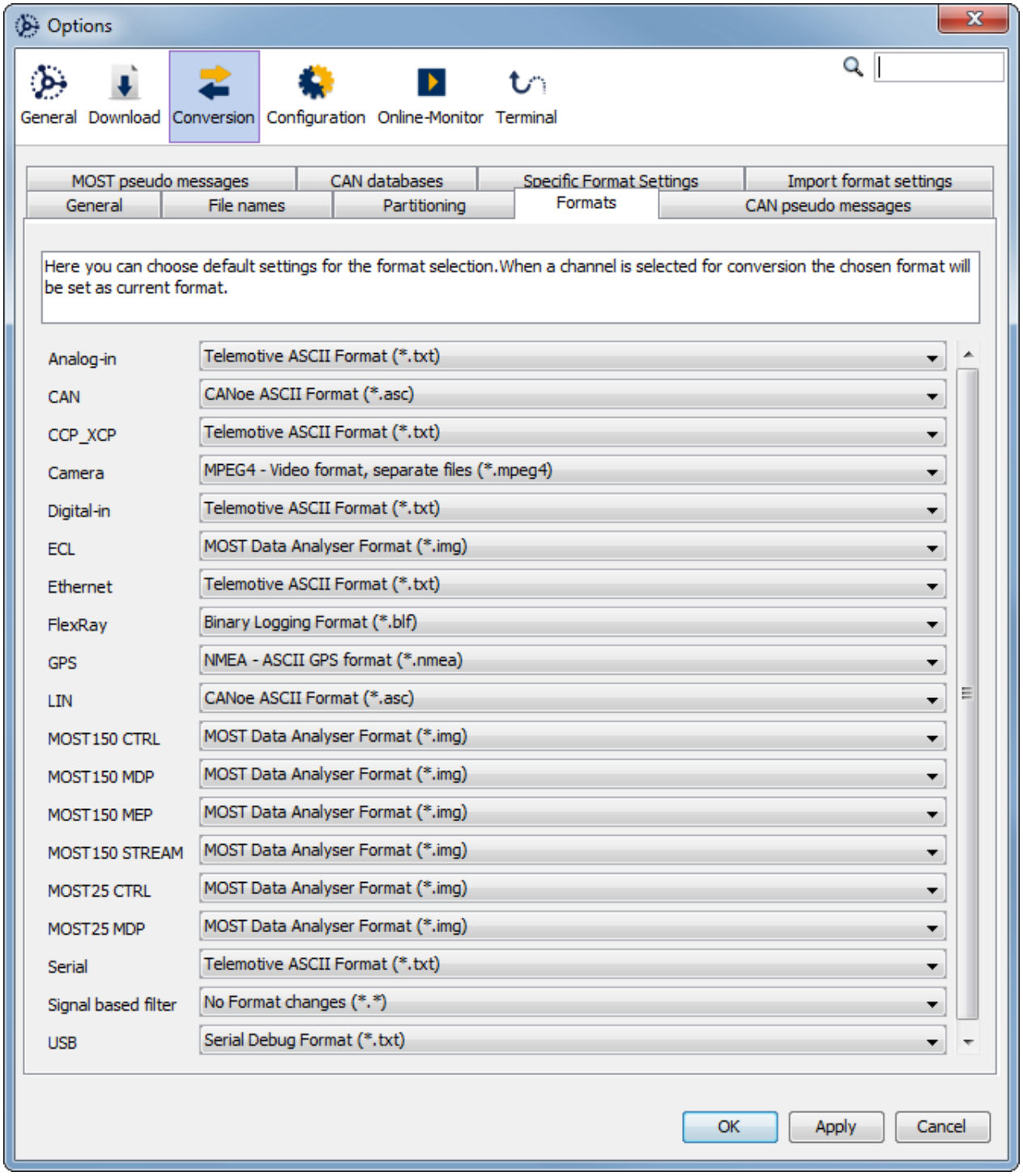


Figure 15.23: Tab sheet “Formats”

15.7.5 CAN pseudo messages

Some CAN file formats (e.g., CANoe ASCII) don't support the inclusion of the markers and the absolute time stamps. For this reason, the client can be configured to insert CAN pseudo messages with this information. A pseudo message is defined by the channel number, the CAN ID and the number of data bytes.

The pseudo message for the absolute time stamps is inserted every second. It contains the hour, minute, second, day, month and year of the time stamp.
The pseudo message for markers is inserted at the time of the marker. It contains the marker number.

It is also possible to write analog measurements as a CAN pseudo message. So the analog data could be written in the CANoe format as "*.asc" or "*.blf" files.

Therefore you have to assign a CAN ID and a CAN channel to each analog port that you want to convert. The selected CAN channel must be configured with a CAN database (see section 8.20). This DBC file must contain a description of the CAN message of the selected CAN ID including a CAN signal with at least 16 bit of data length. Internally the logger stores the voltage values in volts. The output of the measuring values is an integer format, so the decimal places are cut off. To solve these, please write a factor in your CAN database. For example a factor of 0.001 gives output values in mV.

The analog data will be written to this signal when converting.

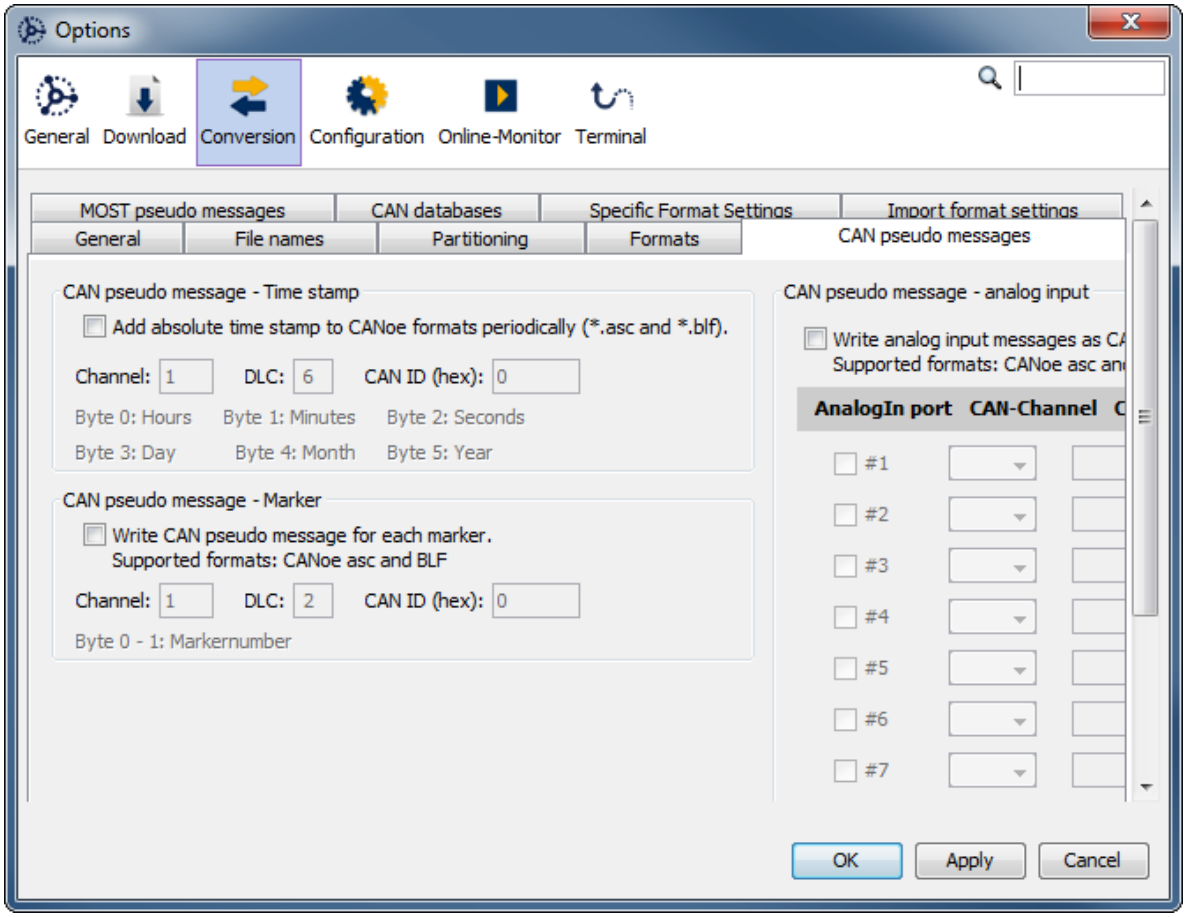


Figure 15.24: Tab sheet "CAN pseudo messages"

15.7.5.1 Explanation of the generated trace data

(CAN-ID 200 was used)

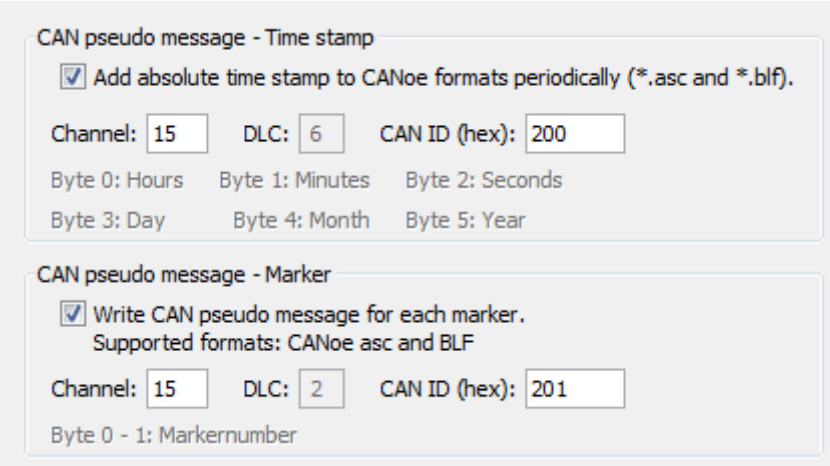


Figure 15.25: Example of a CAN pseudo message

Trace data from February 9th 2018 07:51:23

```
Line 10119:   442.000000 15       200             Rx   d 6 07 33 17 09 02 E2
```

Byte 5	Byte 4	Byte 3	Byte 2	Byte 1	Byte 0
Year	Month	Day	Second	Minute	Hour
E2	02	09	17	33	07
2018	02	09	23	51	07

Date:
0x7E2 = 2018, 7E2 is greater than 1Byte, therefore 7 is omitted and only E2 is used.

E1= 2017
E2= 2018
E3= 2019
E4= 2020

15.7.6 MOST pseudo messages

Some file formats (e.g., OptoLyzer “*.op2”) do not support the inclusion of the markers. For this reason, the client can be configured to insert MOST pseudo messages with this information.

A pseudo message is defined by its source address, the target address, the function block ID and the function ID. The marker number is stored in the first two data bytes (the lower 8 bit are stored in the first data byte).

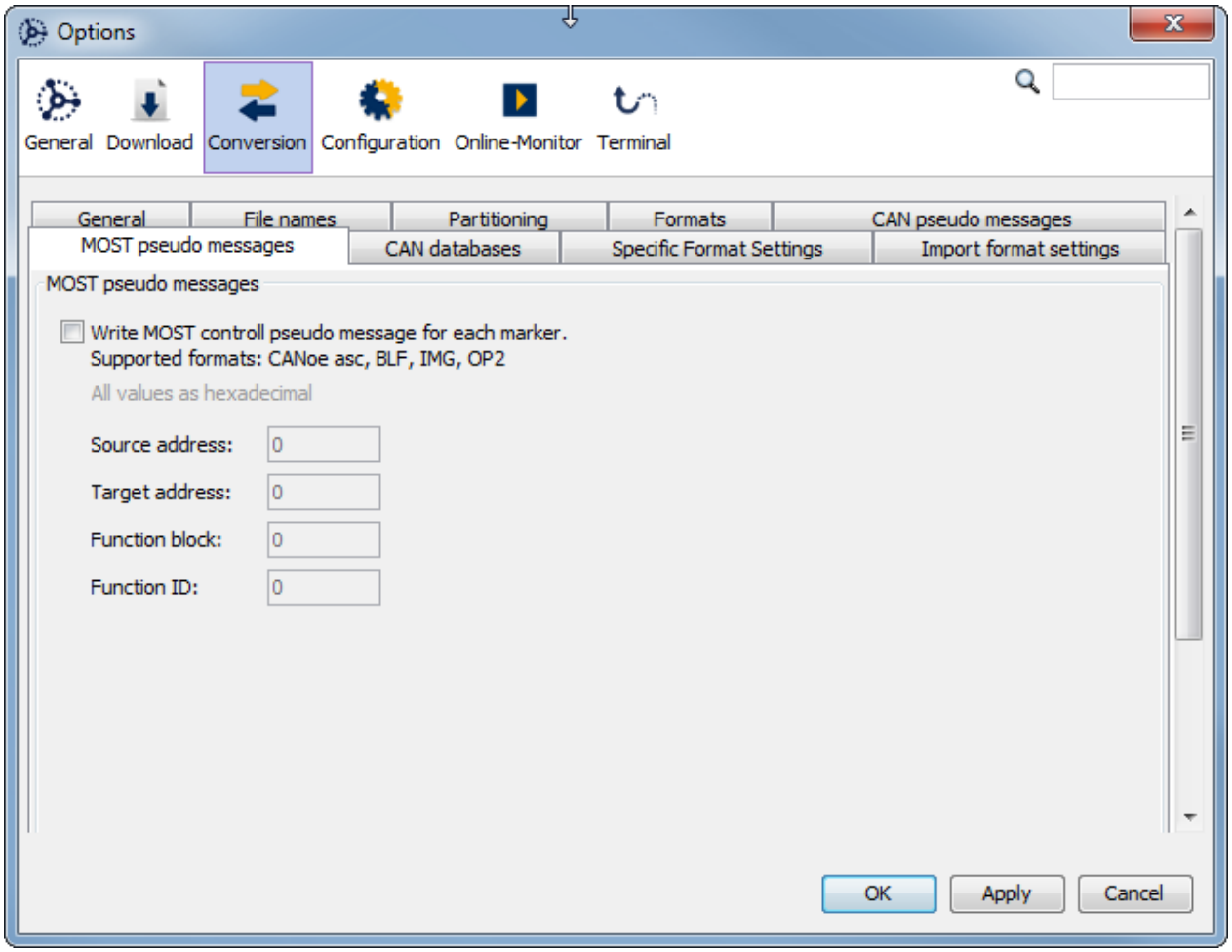


Figure 15.26: Tab sheet “MOST pseudo messages”

15.7.7 CAN databases

Databases settings are accessible by opening the tab sheet <CAN databases> in the settings menu. This menu allows configuring a database for each CAN channel. Databases contain readable names for CAN message IDs which allows easier configuration of CAN filters.

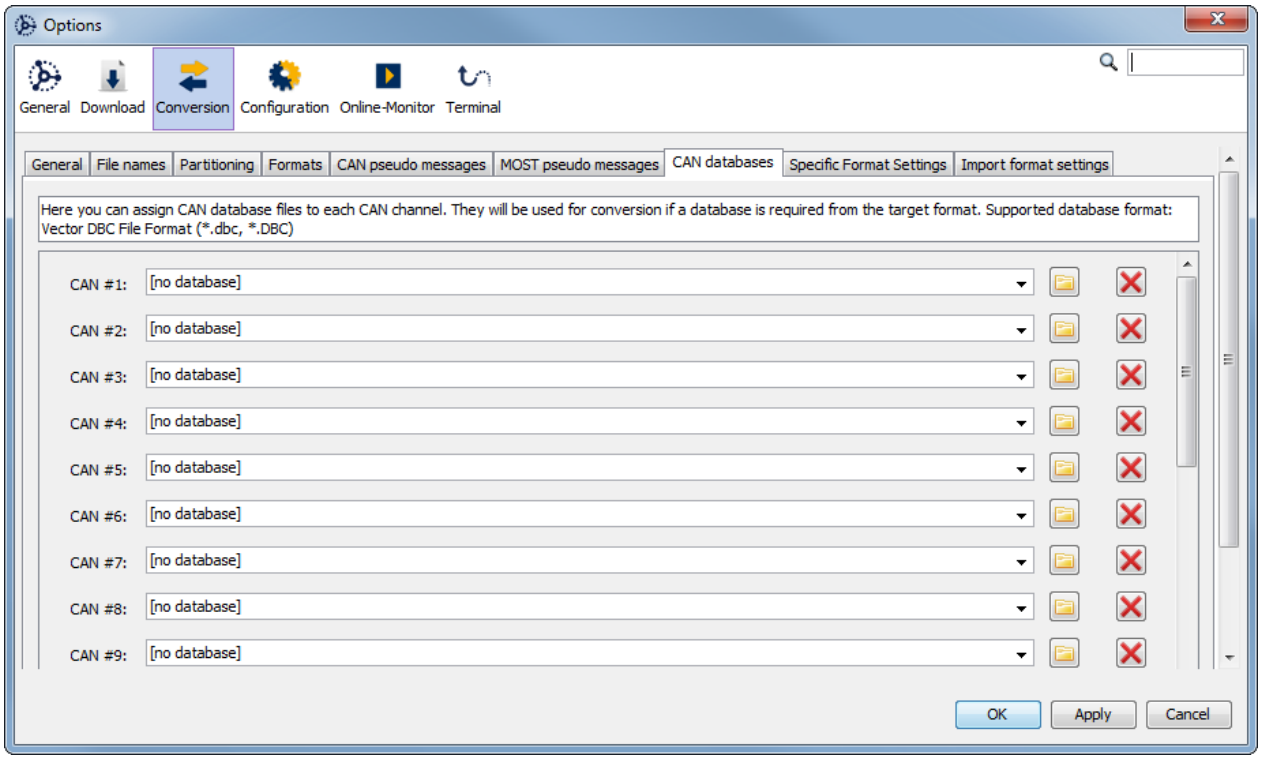


Figure 15.27: Tab sheet “CAN databases”

15.7.8 Specific Format Settings

Here you can set up specific format settings for both optional feature GPS Logging and MOST150 streaming.

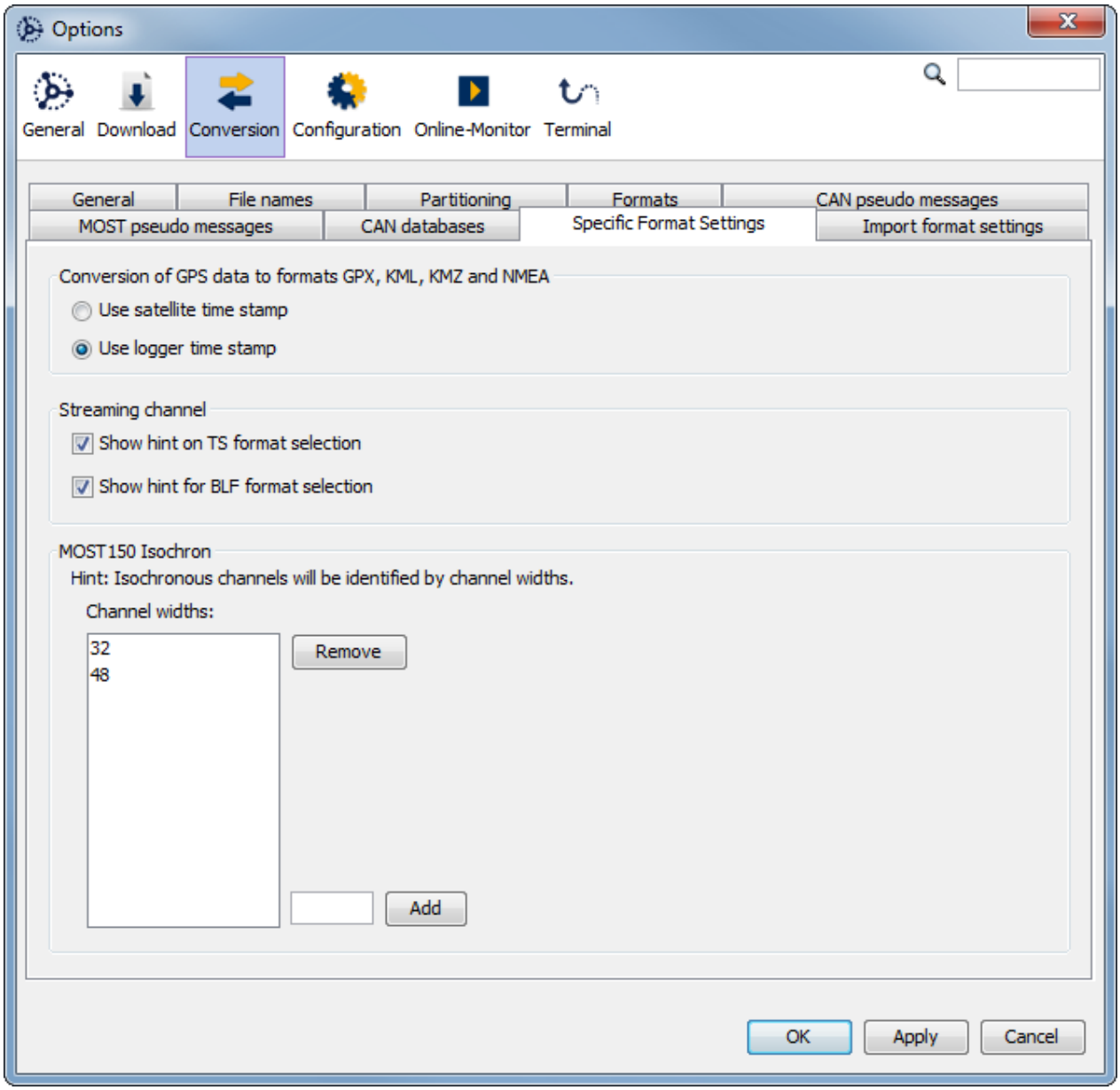


Figure 15.28: Tab sheet “Specific Format Settings”

15.7.8.1 Converting of GPS data

For converting GPS data in GPS Exchange format (*.gpx), KML Google Maps (*.kml), KMZ comp. Google Maps (*.kmz) or NMEA – ASCII GPS (*.nmea) you could select the time stamp source. It is possible to use the logger time or the satellite time.

15.7.8.2 Converting of MOST150 streaming data

The enabled checkbox **Show hint on TS format selection** activates the hint when MOST150 streaming data shall be converted into the Isochronous raw format (*.ts) and notes the limitations for the conversion.

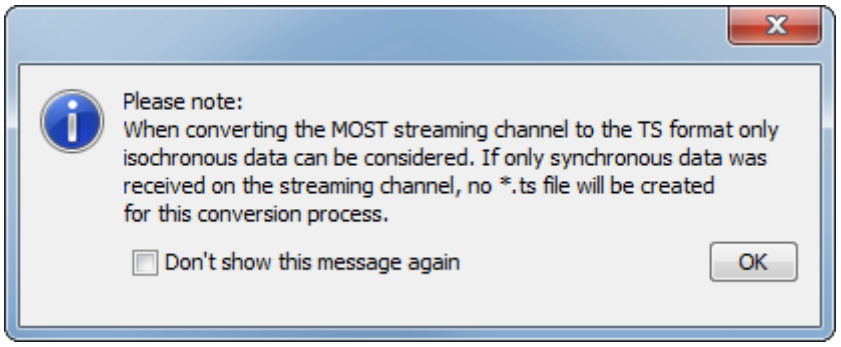


Figure 15.29: Notification message due to conversion of a streaming channel to *.ts

The enabled checkbox **Show hint on blf format selection** activates the hint when MOST150 streaming data shall be converted into the binary loggin format (*.blf) and notes the limitations for the conversion.

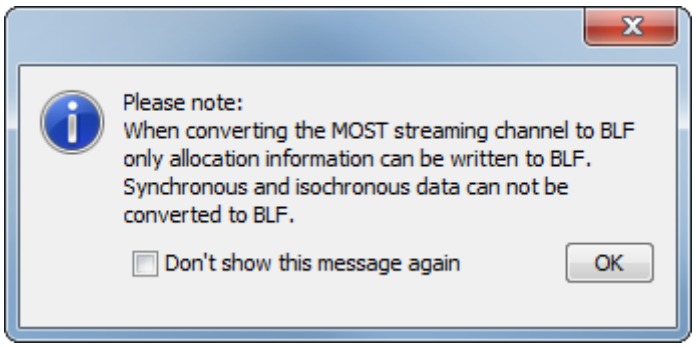


Figure 15.30: Notification message due to conversion of a streaming channel to *.blf

15.7.8.3 Channel width of MOST150 isochronous data

Here the width of the isochronous MOST150 channels vcan be specified according to the used control units.

15.7.9 Import format settings

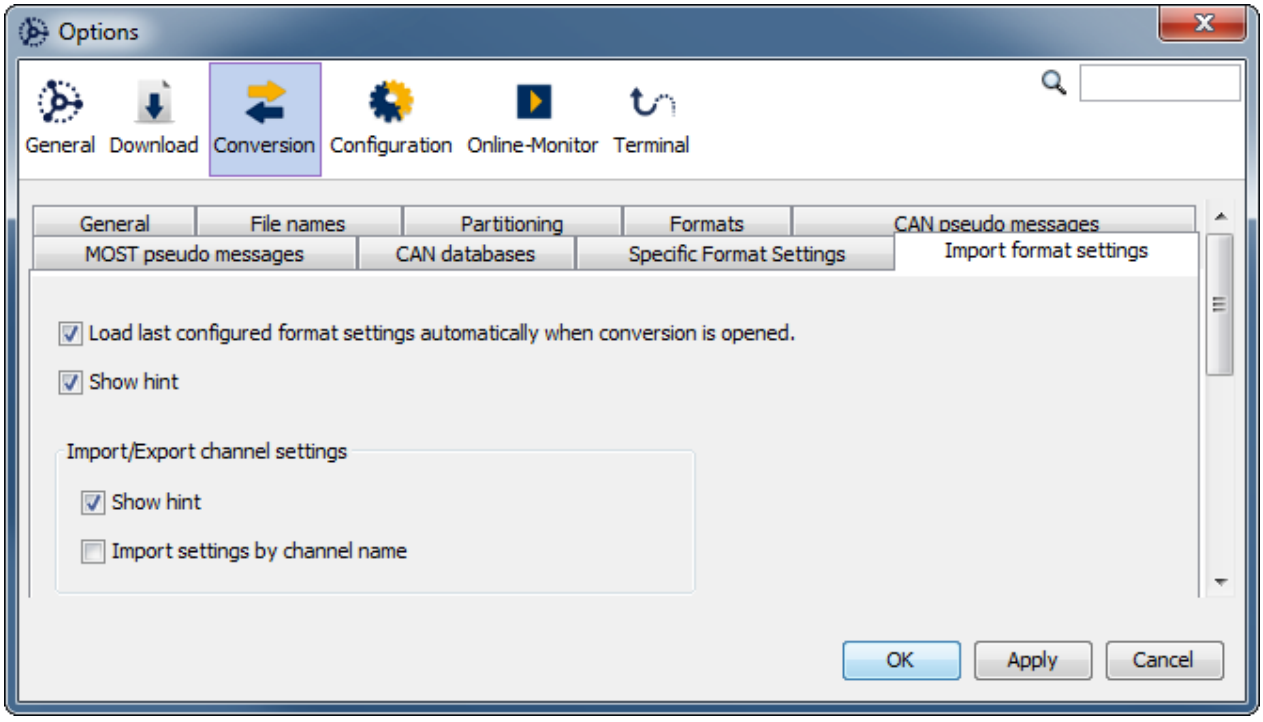


Figure 15.31: Tab sheet “Import format settings”

On this tab shet you can define if the last used format settings should be used when opening the conversion.

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16 The application [Firmware & Licenses update]

The tab <Firmware- / Licenses update> can be opened by clicking the button **[Update firmware]** **(6)**.

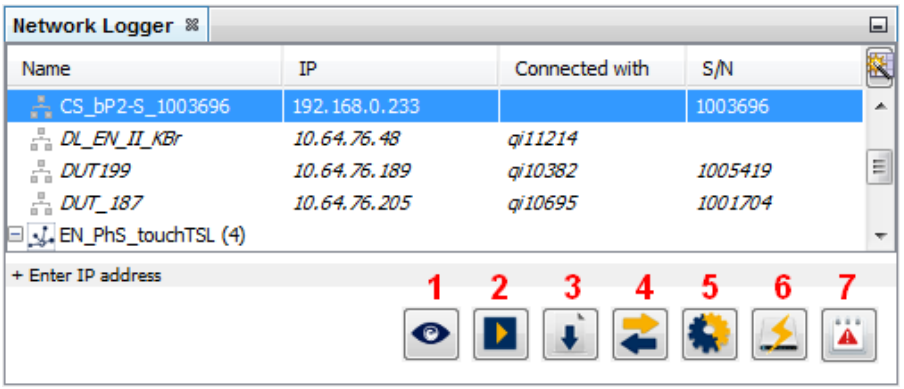

Figure 16.1: Tab “Network Logger”

[Current logger time] shows the logger time. By clicking the arrow the logger time can be synchronized to PC time. By clicking the button **[Read data again]** at the bottom of the tab the tab content will be updated.

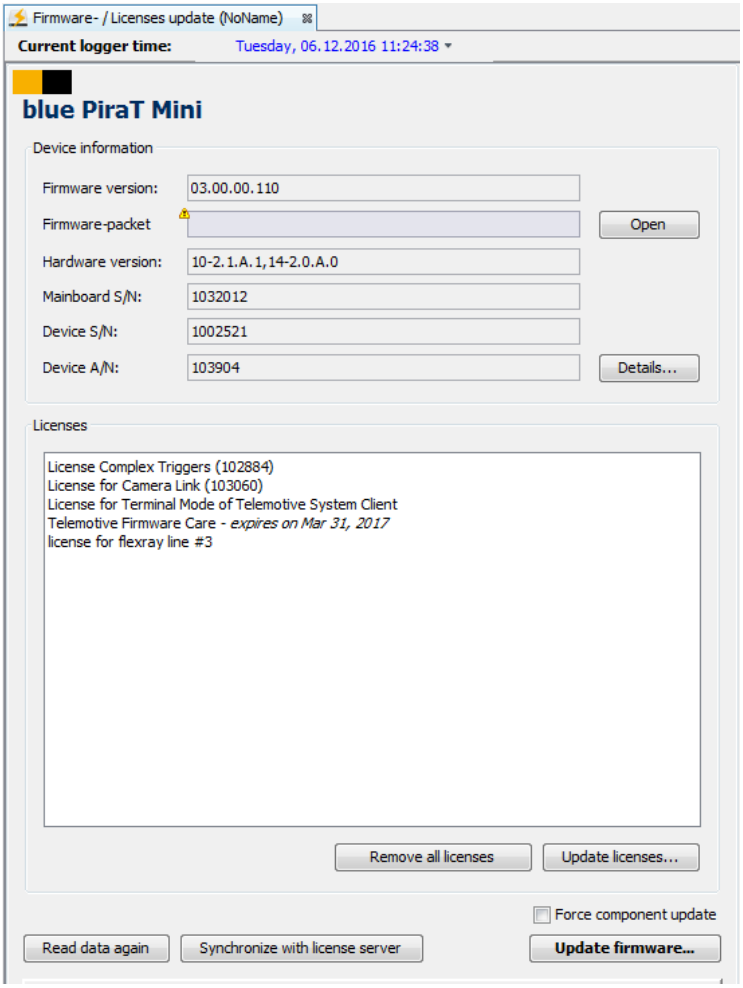

Figure 16.2: Tab “Firmware- / Licenses update” (of blue PiraT2)

16.1 Device information

The following information is read from the logger and displayed in the upper section of the tab:

- current version of the firmware on the data logger,
- hardware version,
- mainboard serial number,
- device serial number and
- device article number.

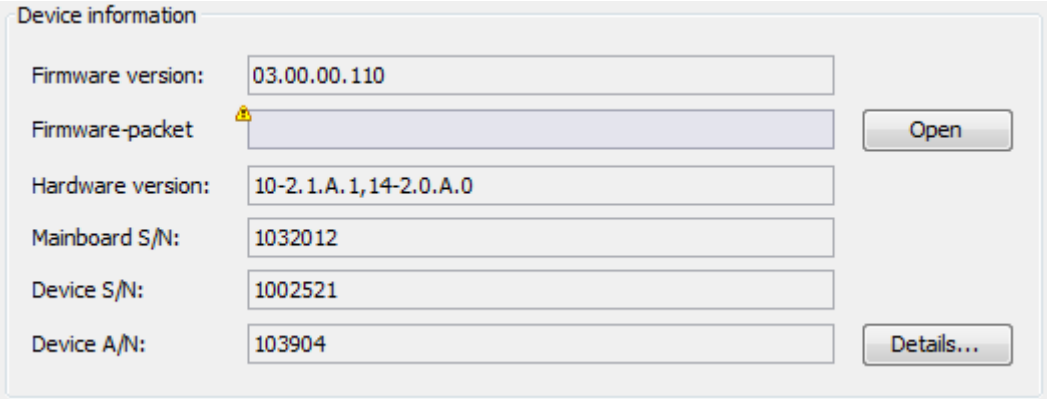

Figure 16.3: Firmware- / Licenses update: device information

Over **[Details…]** a window opens containing the version numbers of the logger components. The window can be closed by clicking **[OK]** or the **[x]** button in the upper right corner.

16.2 Update firmware

Click **[Open]** next to <Firmware-packet>. Choose the desired firmware file (file extension “*.dat”) in the appearing dialog. Click **[Open]**.

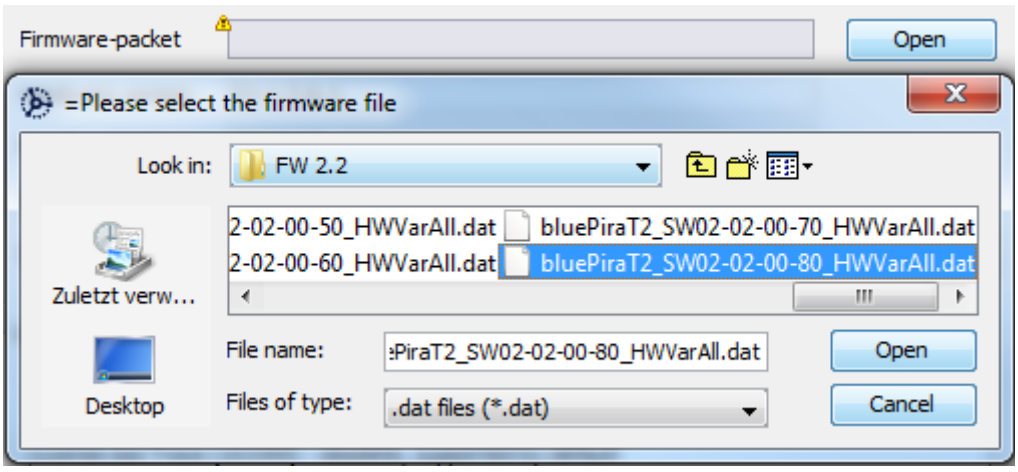

Figure 16.4: Selecting firmware file

Note:
If you choose an invalid firmwarepacket, an notification message appears and the button [Update firmware…] stays inactive.

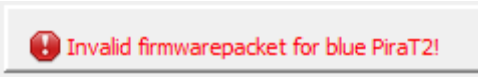

Figure 16.5: Notification message by invalid firmwarepacket

Note:
The firmware files shouldn‘t be renamed. If you rename this file, the firmware update fails.

Click **[Update firmware…]**. Follow the instructions in the appearing dialog and click **[Start firmware update]**.

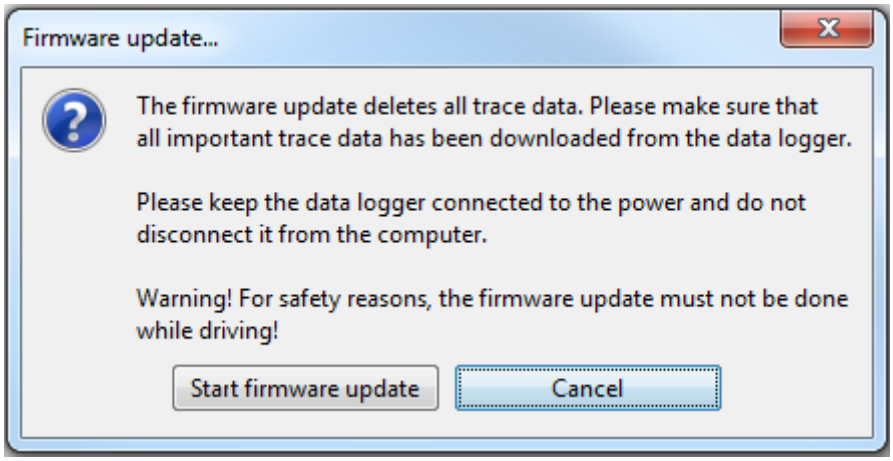

Figure 16.6: Notification message before firmware update

16.3 Force component update

The update of all components can be forced by ticking the corresponding checkbox. This can be useful to reinstall the same version or to downgrade to an older version on the logger.

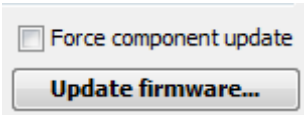

Figure 16.7: Force component update

16.4 Licenses

The actual installed licenses are shown in the section <Licenses>.

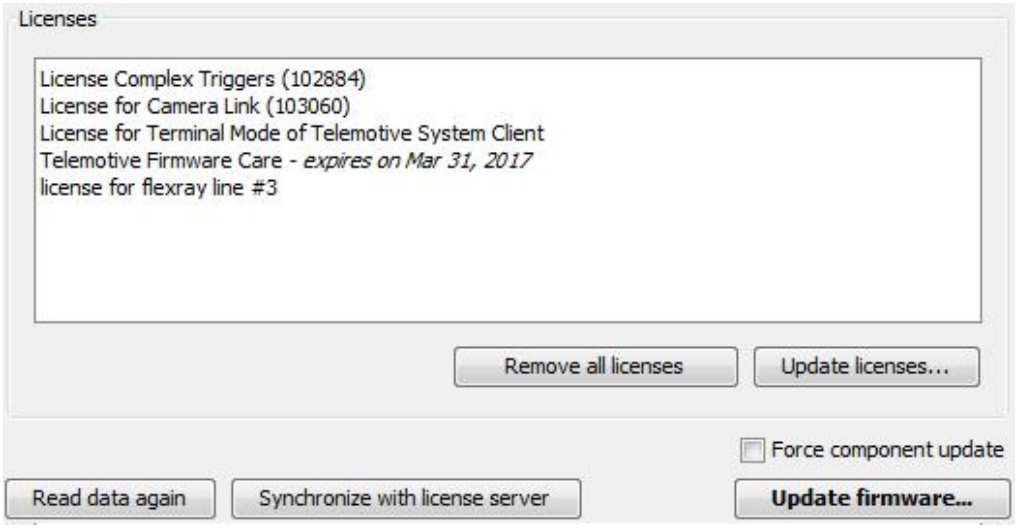

Figure 16.8: Firmware- / Licenses update <Licenses>

It is possible to remove all licenses by a click on **[Remove all licenses]**.

In order to update licenses, click on the **[Update licenses…]** button, choose the desired file containing the license in the appearing dialog and click **[Open]**.

Attention: The new license files are zipped and do NOT have to be unzipped!

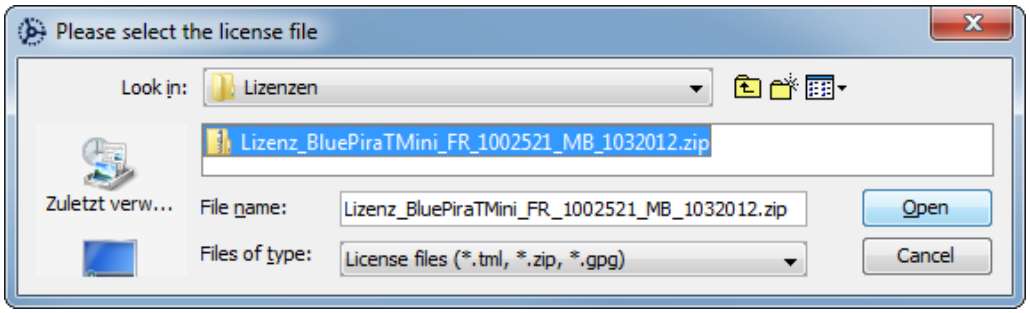

Figure 16.9: Selecting license file

16.5 Downloading a license directly from the license server

For simplifying the handling of the licenses, from version 3.0.1 the System Client offers the alternative to download the license file from the license server directly. This step needs a internet connection! By activating the button [Synchronize with license server] the assigned licenses will be transferred to the device.

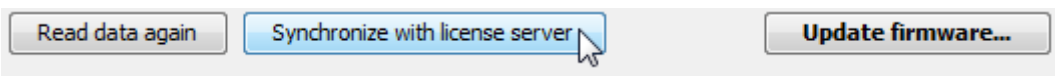

Figure 16.10: Downloading a license file from the license server

17 The application [Bug reporter]

The bug reporter is meant to help in the understanding of logger's errors. Some errors are very simple to fix by the user himself.

Attention: The creation of an error report is independent of currently active errors! Internal logs of the devices are stored in the error report, so it is very important to provide the error time as exact as possible!

17.1 Opening the application "Bug reporter"

In the tab <Network Logger> click a logger that is not already connected.

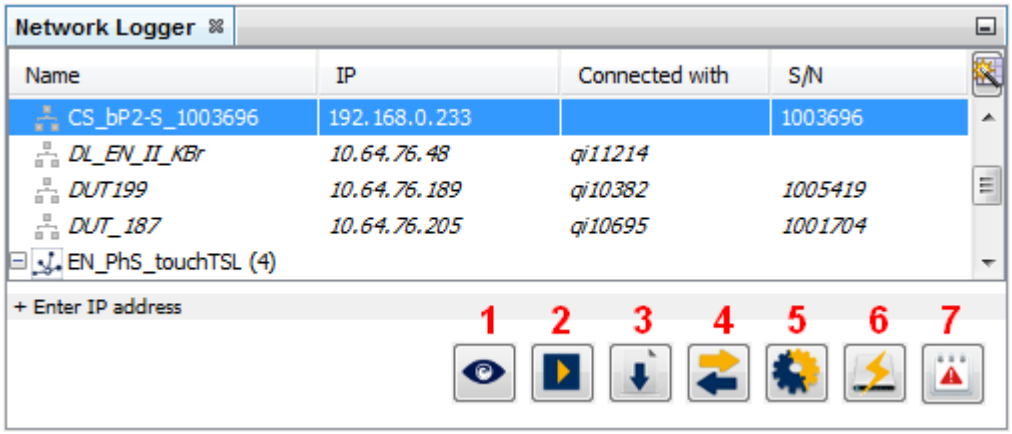

Figure 17.1: Selecting logger

Click on the application **[Open bug report]** (7).

The tab <Bug reporter> is opening with the sections <Error overview> and <Error protocol> on the left and <Error type info>and <Error details> on the right side.

[Current logger time] shows the logger time. By clicking the arrow the logger time can be synchronized to PC time.

If the checkbox **Display inactive errors** between <Error overview> and <Error protocol> is enabled, all errors (active and non-active) are displayed.
Otherwise only currently present errors are shown.

If no errors are active at this time, a message is shown in the **Error overview**

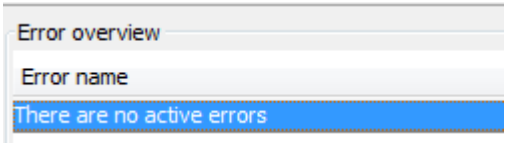

Figure 17.2: There are no active errors

The button bar at the bottom of the tab contains the following buttons.

Button	Effect
Save bug report	saves the actual bug report
Reload	reads the bugs from the logger again and updates the tab content

Table 17.1: Buttons in the tab “Bug reporter”

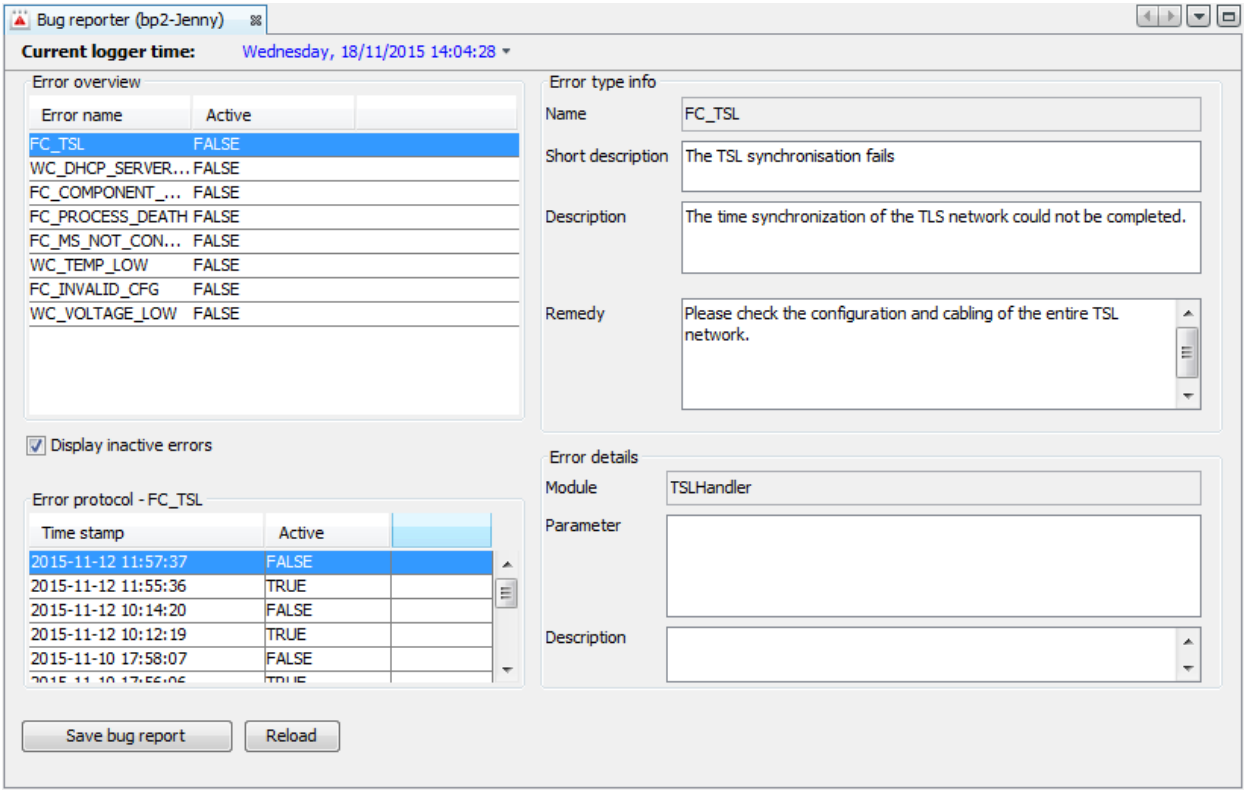

Figure 17.3: Tab “Bug reporter”

17.2 Error overview

All errors kept on the logger are listed with their currently active status.

If an error in the column <Active> is “TRUE”, i.e., the error is still active.

Note:
That list includes errors that were active at an earlier date. From firmware 02.04.01 older errors will be deleted by the firmware update. In this context the time stamp is important. The time stamp is described in the section below.

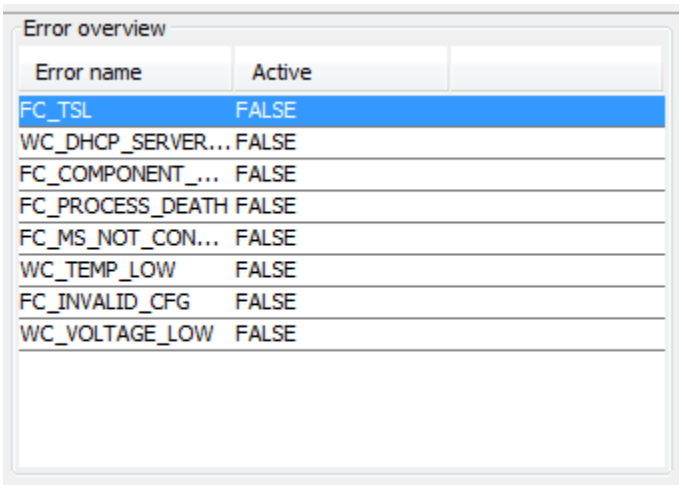

Figure 17.4: Bug reporter <Error overview>

17.3 Error protocol

Each error has its history stored on the logger, even errors that are not currently active. The section <Error protocol> displays the stored errors and their respective time stamps of the, in the section <Error overview> selected, Error name.

In the column <Active> two states are possible.

“TRUE” The error is/was active at the relevant time stamp.

“FALSE” The error is/was inactive at the relevant time stamp.

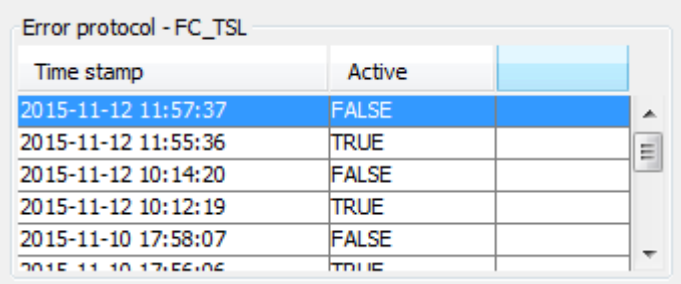

Figure 17.5: Bug reporter <Error protocol>

17.4 Error type info

The, in the section <Error overview> selected, Error name is displayed together with a description and suggested solutions.

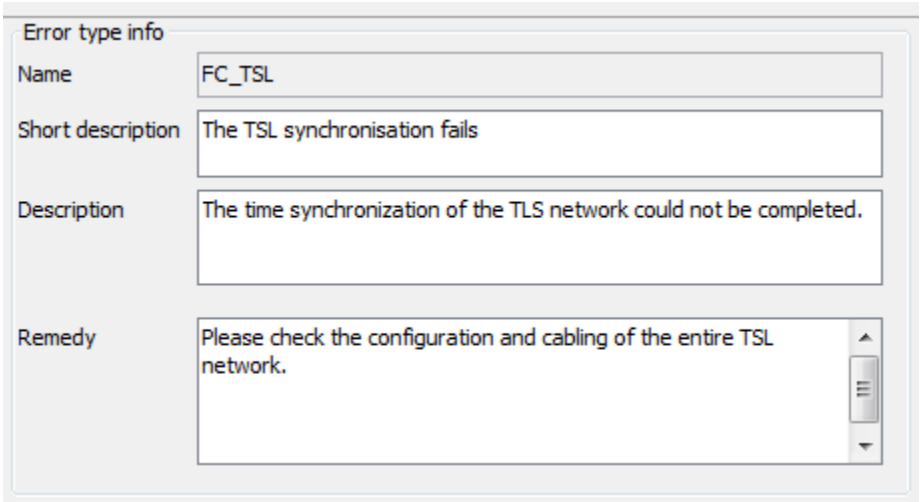

Figure 17.6: Bug reporter <Error type info>

17.5 Error details

The details of the error are explained in the last box.

Figure 17.7: Bug reporter <Error details>

17.6 Save bug report

To save the bug report, click the button **[Save bug report]**. Choose one of the three in the following described options in the appearing dialog. Fill the "*" marked fields under <Error details>.

Especially important for analysis is to specify the "*Date/time of error*", i.e., the time the error occurred, as accurately as possible.

Option	Effect
1: Client and logger without trace data	This is the standard option. It includes client and data logger logs and configuration files, but does not include trace data.
2: Client and logger with all trace data	Includes all raw trace data in the bug report. In most cases, this leads to a huge zip archive, which cannot be sent by Email. Additionally, the creation of the bug report can take much longer. For these reasons, this option should only be used when requested by the support team.
3: Client and logger with trace data of a specific time range	To avoid a possible huge zip archive when including all trace data, one can store only the raw trace data of a specific time period in the bug report.

Table 17.2: Memory amount of bug report

Confirm the settings by clicking **[OK]**. Choose saving directory and file name of the bug report in the appearing dialog and confirm them by clicking **[Save]**.

Please send an Email with the bug report to TMO.Produktsupport@magna.com or log into our OTRS ticket system to upload the bug report into a new or existing ticket.

If you do not have access to the ticket system, please contact the product support to get login data.

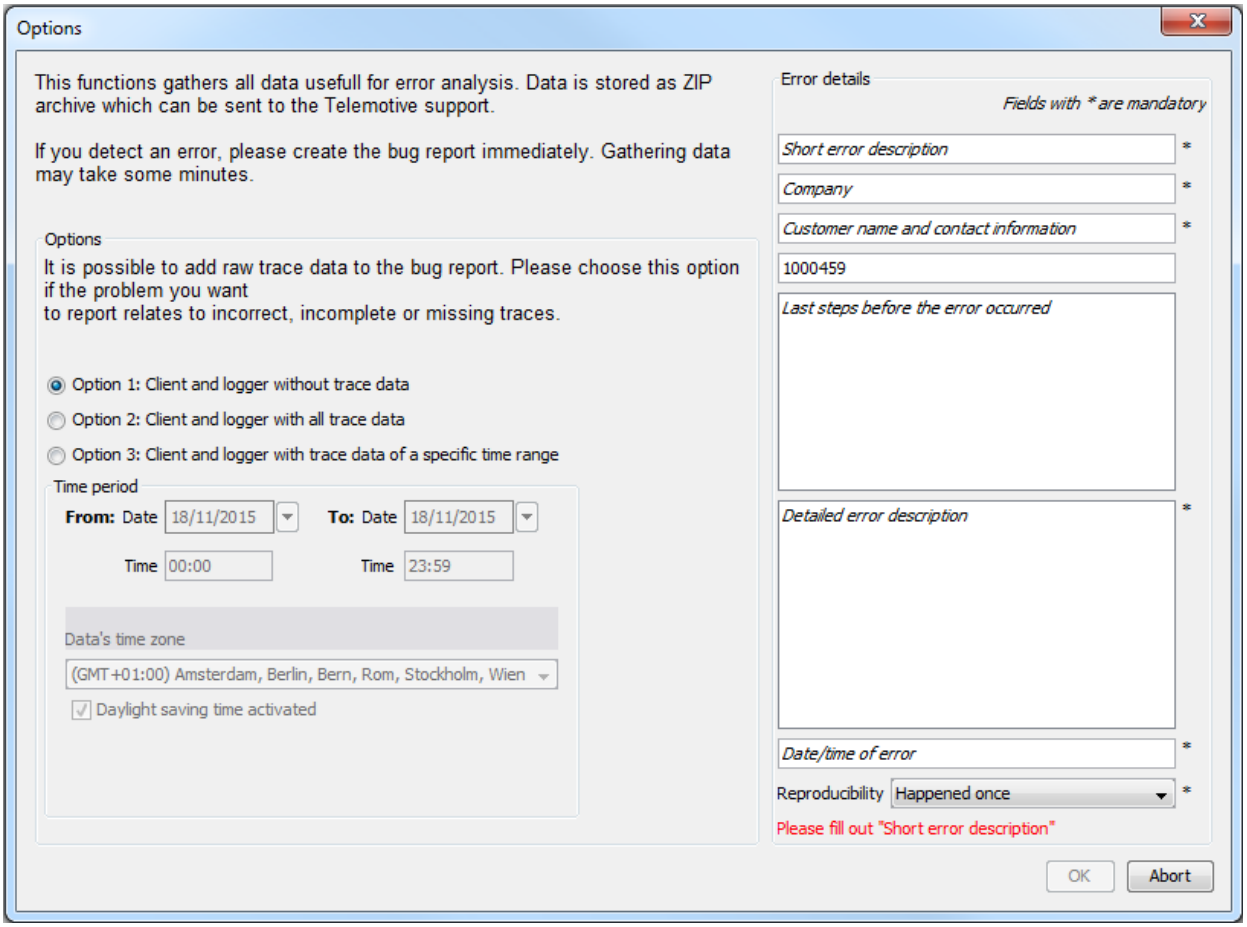

Figure 17.8: Establishing saving options

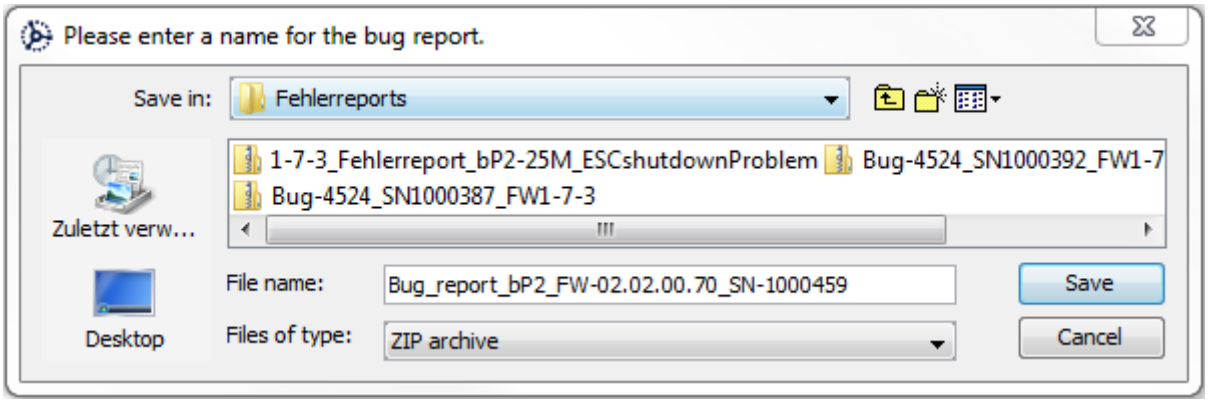

Figure 17.9: Establishing saving directory and file name

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18 Abbreviations

Kürzel / abbreviation	Bedeutung / meaning
blue PiraT	**P**rocessing **I**nformation **R**ecording **A**nalyzing **T**ool
bP	**b**lue **P**iraT
bP2	**b**lue **P**iraT**2**
bP2 5E	**b**lue **P**iraT**2** 5E
bPMini	**b**lue **P**iraT Mini
RC Touch	**R**emote **C**ontrol **T**ouch
bP Remote	**b**lue **P**iraT **R**emote
A2L	**A**SAM MCD-**2** MC **L**anguage
AE	**A**utomotive **E**lectronics
ACK	**ACK**nowledged
CAN	**C**ontroller **A**rea **N**etwork
CCP	**C**AN **C**alibration **P**rotocol
CF	**C**ompact **F**lash
CRO	**C**ommand **R**eceive **O**bject
DAQ	**D**ata **A**cquisition
DTO	**D**ata **T**ransmission **O**bject
ECL	**E**lectrical **C**ontrol **L**ine
ECU	**E**lectronic **C**ontrol **U**nit
FIBEX	**FI**eld **B**us **Ex**change Format
FW	**F**irm**w**are
GMT	**G**reenwich **M**ean **T**ime
INCA	**IN**tegrated **C**alibration and **A**pplication Tool
LAN	**L**ocal **A**rea **N**etwork = Netzwerk
LIN	**L**ocal **I**nterconnect **N**etwork
MAC	**M**edia **A**ccess **C**ontrol
MCD	**M**easure **C**alibrate **D**iagnose
MDX	**M**eta **D**ata E**X**change Format
MEP	**M**OST **E**thernet **P**acket
MOST	**M**edia **O**riented **S**ystems **T**ransport (www.mostnet.de)
ODT	**O**bject **D**escriptor **T**able
ODX	**O**pen **D**ata E**X**change
OEM	**O**riginal **E**quipment **M**anufacturer
PHY	**PHY**sical Bus Connect

PW	**P**ass**w**ort
RX	**R**eceiver Data
SD	**S**ecure **D**igital
SFTP	**S**ecure **F**ile **T**ransfer **P**rotocol
SHA	**S**ecure **Ha**sh
SSL	**S**ecure **S**ockets **L**ayer
TCP/IP	**T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol
TLS	**T**ransport **L**ayer **S**ecurity
TMP	**T**ele**m**otive **P**acketformat
TSL	**T**elemotive **S**ystem **L**ink
UDP	**U**ser **D**atagram **P**rotocol
USB	**U**niversal **S**erial **B**us
UTC	**U**niversal **T**ime, **C**oordinated
Wi-Fi	**Wi**reless **Fi**delity
WLAN	**W**ireless **L**ocal **A**rea **N**etwork
XCP	Universal Measurement and **C**alibration **P**rotocol

Table 18.1: Abbreviations

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21 Version history

Version	Änderung	Datum

Table 21.1: Version history

22 Contact

DRIVING **EXCELLENCE.**
INSPIRING **INNOVATION.**

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