FL3X by STAR®

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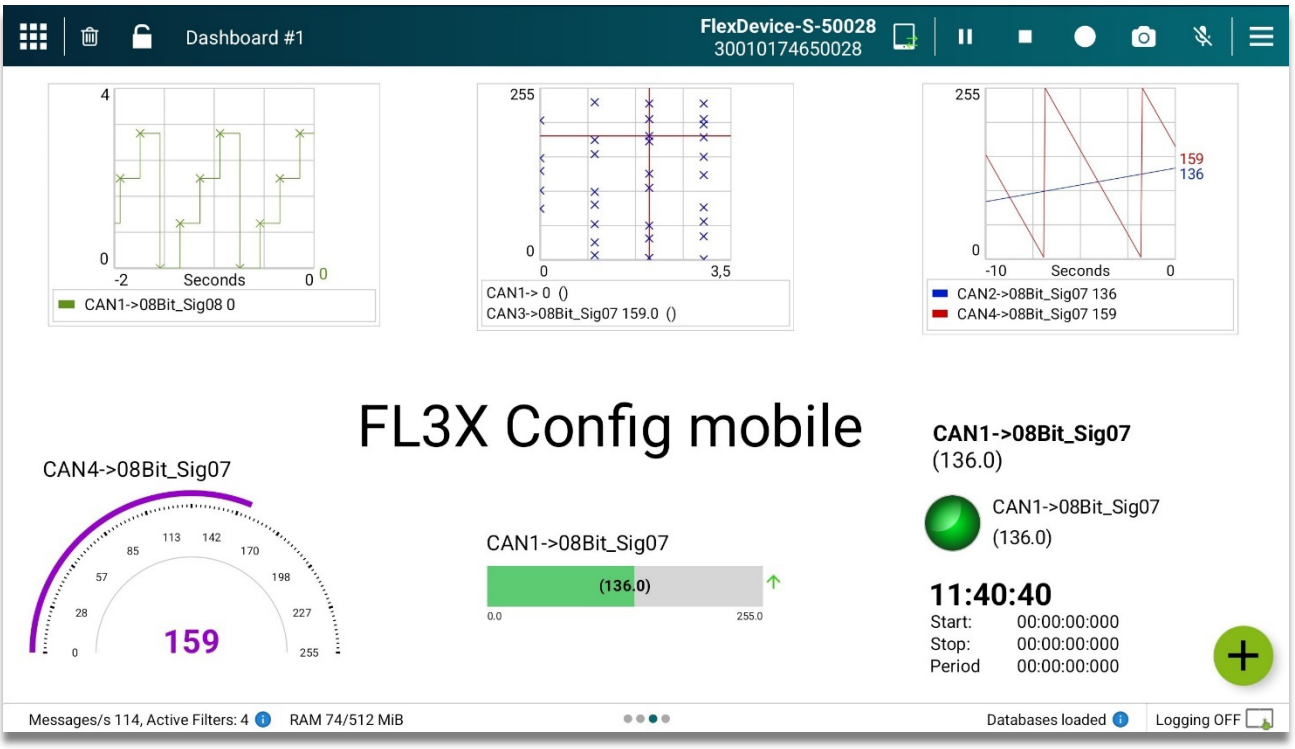
FL3X Config mobile

User Manual



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Any semiconductor devices have an inherent chance of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of over-current levels and other abnormal operating conditions.
The safety and handling instructions in this document must be followed strictly.

Revision History

Version	Date	Description
D1V0-F	2023-02-16	1st Release for FL3X Config mobile
D1V1-F	2023-07-18	Trace, Theme
D1V2-F	2024-06-07	Add Trace Import / Export
D1V3-F	2024-09-03	Update for FL3X Config mobile 1.3

Related Hardware / Software Versions

Product	Reference No.	Version	Remarks
PC-HW-Interface	3-9999-0C01	3.7	Interface to Communicate with the *STAR ELECTRONICS* Hardware
FL3X Device-S	3-00860A01-30		Old product name: FlexDevice-S
FL3X Device-L	3-00870A02-01	Rev 2	Old product name: FlexDevice-L
FL3X Device-L	3-00870A03-01	Rev 3	Old product name: FlexDevice-L
FL3X Device-L²	3-00870S02-01	Rev 2	Old product name: FlexDevice-L²
FL3X Device-L²	3-00870S03-01	Rev 3	Old product name: FlexDevice-L²
FL3X Interface-S	3-V0862A01-01		
FL3X Interface-L	3-V0872A01-01		
FL3X Interface-L²	3-V0872B01-01		
FL3X Config	3-01140A01	1.3	Older Projects since FL3X Config 1.0 and FlexConfig RBS 5.0 can be loaded.

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Table of contents

1 General

1.1 Intended User Group

This product may only be used by expert technicians and/or engineers who are qualified and familiar with electronic components and systems.

Each person involved with setup or operation of the product must

- be a qualified technician or engineer.
- strictly adhere to this manual.
- receive a briefing by an authorized person.

	**NOTICE**
	If you are unsure of how to use the product as intended or have any questions about the use of the product, please discontinue use of the product immediately and contact the STAR ELECTRONICS GmbH & Co. KG Support.

	**⚠ WARNING**
	The product may only be used by expert technicians and/or engineers who are qualified and familiar with electronic components and systems! The use of the product by non-professionals is not permitted and strictly forbidden!

1.2 Intended use

FL3X Config mobile is a software specially designed for testing purposes in connection with STAR ELECTRONICS GmbH & Co. KG's hardware devices. It was developed to configure and control STAR ELECTRONICS GmbH & Co. KG hardware devices (e.g. the FL3X Device product family) exclusively. It is **NOT** permitted to use the software with or in connection with **any other hardware devices**.
For this intended use, FL3X Config mobile offers the following options:

- Configuration of STAR ELECTRONICS GmbH & Co. KG hardware
- Control the runtime behavior of STAR ELECTRONICS GmbH & Co. KG hardware
- Visualization of data traffic (e.g. Use Case "Analyzing")
- Logging of data traffic

Any deviation from the intended use is only permitted with specific **prior written approval** of STAR ELECTRONICS GmbH & Co. KG.

	**⚠ WARNING**
	Any use of the software on or in connection with a STAR ELECTRONICS GmbH & Co. KG hardware device product outside a fully controlled testing and/or laboratory environment may result in death or serious injury due to unpredictable behavior of a vehicle and/or potentially missing, deactivated or malfunctioning safety devices on a vehicle!

	**⚠ WARNING** The FL3X Config mobile may be used to communicate with networked electronic systems. E.g. FlexRay, CAN or Ethernet. Any use of the product outside a fully controlled testing and/or laboratory environment may result in death or serious injury due to unpredictable behavior of a vehicle and/or potentially missing, deactivated, or malfunctioning safety devices on a vehicle! The user is responsible to ensure the safety of the entire system. This includes amongst other things a safety shutdown.

	**NOTICE** The device is not a calibrated measurement device. STAR ELECTRONICS GmbH & Co. KG accepts no liability whatsoever for the correctness of any measurement results.

	**⚠ WARNING** The FL3X Config mobile is **NOT** designed, intended, or authorized and may **NOT** be used for or in connection with the following purposes and/or devices: - use as part of medical systems - life support applications - aviation, space, nuclear, or military applications - any other purposes / devices deviating from the intended use of the product specified by STAR ELECTRONICS GmbH & Co. KG.

	**⚠ WARNING** The product may only be used by expert technicians and/or engineers who are qualified and familiar with electronic components and systems! The use of the product by non-professionals is not permitted and strictly forbidden!

1.3 Meaning of Text Styles

In this document *filenames*, "*buttons", "controls*" and '*menu entries*' are marked with a different text format.

Any placeholder or variable is marked with '%...%'. E.g. %version%.

1.4 Used Pictographs

The meaning of the pictographs used is shortly described below.

Follow the specific instructions in the document, where these pictographs are placed.

	**NOTICE** Used to indicate a situation which may result in an operating failure. Damage of the product may occur, but there is no hazard of injury if not avoided.

	**Information** Used to indicate information provided only for purposes of clarification, illustration, and general information.

	**Reference** References to other documents.

1.5 Safety and Handling Instructions

Please read the instructions for use carefully. To protect the device or the application against damage, or to avoid personal injury the FL3X Config mobile must be handled as described herein.

Changes or modifications of the FL3X Config mobile are not allowed for safety and warranty reasons!

STAR ELECTRONICS GmbH & Co. KG is not liable for any damages arising from non-observance of the product information.

Follow the
a) specific safety and handling instructions placed at dedicated document positions
b) general safety and handling instructions below:

	**⚠ WARNING** FL3X Config mobile can be used to interfere with networked electronic systems. By connected measurement hardware like the FL3X Device-L, FL3X Config can be used to transmit messages via FlexRay, CAN, LIN or Ethernet busses. If transmitted messages are received by real electronic control units, e.g. within a test car, these messages could result in an unpredictable behavior or a failure of the electronic control unit. This may result in serious injury of persons or material damage! Only qualified and briefed persons may use FL3X Config mobile! Only Transmit messages, where the expected behavior of the receiver is known.

2 Product Description

2.1 FL3X Config mobile - Overview

The FL3X Config mobile app is a tool designed for automotive development for wireless visualization of Automotive Ethernet, CAN, LIN and FlexRay data. The application supports the connection mode via WiFi or Ethernet with a FL3X Device.

Main Features:

- Wireless visualization of Automotive Ethernet, FlexRay, CAN-HS, CAN-FD and LIN data
- Numerous display modes for signal values, e.g. linechart, gauge, text, etc.
- Manipulations to affect signal values, frames, etc.
- Data logging for later analysis in suitable tools
- Labeling by voice recording

FL3X Config mobile is a product of STAR ELECTRONICS GmbH & Co. KG and was developed entirely in Germany.

Fields of Application

- Test drives for driver assistance functions
- In the laboratory for monitoring specific signal values
- In the test field, wireless connection to the selected test bench

3 Licensing

3.1 Software Licenses (FL3X Config mobile)

There are three different FL3X Config mobile versions. Two of them require a license. Currently all features of FL3X Config mobile are available in the Basic version.

- FL3X Config mobile Basic version: This version requires no license and is free of charge.
- FL3X Config mobile Professional version: This version requires a FL3X Config mobile Professional license.
- FL3X Config mobile Enterprise version: This version requires a FL3X Config mobile Enterprise license.

3.2 Runtime Licenses (FL3X Device, FL3X System)

Some features require a runtime license. Runtime licenses are set with an expiration date. This date will be compared with the release date of the FL3X Config mobile version the project was compiled with.
This release date must be smaller or equal than the license expiration date to use the licensed features.

There are also 'lifetime' licenses available with no expiration date.

3.2.1 No License

The following features can be used without an active runtime license:

- Ethernet Configurations for PC-Ethernet Connector (e.g. Time Synchronization)
- Bus Analyzing
- Bus Logging

3.2.2 FL3X Config Standard Runtime license

No features of FL3X Config mobile require an active FL3X Config Standard Runtime license.

3.2.3 FL3X Config Extended Runtime license

No features of FL3X Config mobile require an active FL3X Config Extended Runtime license.

4 Preparation

4.1 Overview

For installation, you must transfer the supplied installation file *FL3XConfig_mobile-*.apk* to the Android device and launch it from any file browser. Follow the installation instructions (see chapter 3.3).

The application requires the following rights:

- Read, modify, or delete memory contents: Required for logging and saving projects.
- Full network access: Needed to connect to FL3X Devices and to check for updates
- Control vibration alarm: Required for signal monitoring alarm function
- Audio recording
- Query location data: This is required for reading WiFi SSIDs

4.2 System requirements

The system requirements for installing and running the FL3X Config mobile app are:

Recommended:

- Android 13 or 14
- 2000 MHz Quad Core processor
- 4 GB RAM
- 10-inch screen or larger
- Screen resolution of 2560x1800 or higher
- Internect connection to get additional content

Minimal:

- Android 7.0 (API 24)
- 1500 MHz Dual Core processor
- 2 GB RAM
- 7-inch screen
- Screen resolution of 1280x800

In general, the more powerful the Android device used, the more bus data can be received, processed and displayed in parallel with high performance.

4.3 Installation

FL3X Config mobile can only be installed manually with the provided APK file.

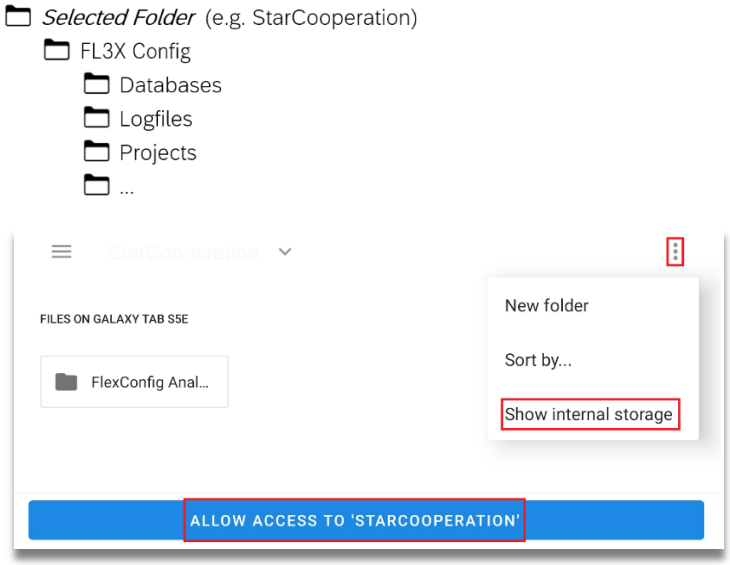
4.3.1 With APK installation file

1. Get the APK installation file:

   https://flex-product.com/de/produkte/flexconfig-analyzer
2. Copy the installation file to the tablet, e.g. via USB.
3. Run the installation file (install unknown apps must be allowed).
4. Go through the installation wizard.
5. Once the software is installed it will be displayed on the screen.

4.3.2 Setup App

1. Launch the application
2. Due to Android storage restriction the app needs explicit storage access to a specific folder selected by the user. Storage access will be requested on first app start:
   a. Click *Select Folder*
   b. Select a folder on the tablet which will be used by the app for projects, logging, database, ...



3. Confirm the necessary access rights.

4.4 Bus databases

In the following, the term database is generally used for bus databases.

4.4.1 Prepare databases

To be able to graphically prepare the vehicle data, databases are required on the tablet. The application supports the FIBEX 4.1.1 format natively. Files in the formats:

- Fibex: 2.0.0d, 2.0.1, 3.0.0, 3.1.0, 4.0.0, 4.1.0, 4.1.2, FIBEX+ 1.4,
- AUTOSAR: 3.0.2, 3.1.0, 3.1.4.DAI.2, 3.1.4.DAI.4, 3.2.2, 4.0.3, 4.1.1, 4.2.1, 4.2.2, 4.3.0, 4.3.1, 4.4.0, 4.6.0, 4.7.0
- CANdbc
- LDF

are converted by the app when used for the first time. This conversion can take several hours for large databases and/or low performance tablets. The conversion only needs to be performed the first time the

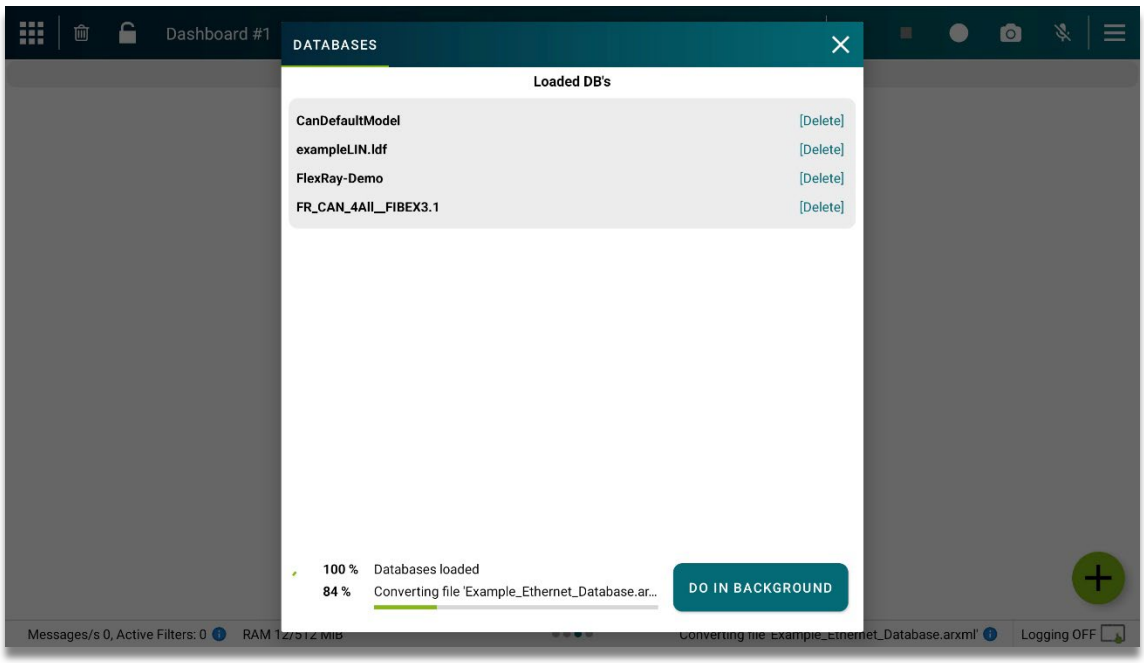
database is loaded. It is recommended to convert large databases with FL3X Config on a powerful PC and transfer the converted files afterwards to the tablet. This eliminates the need for conversion on the tablet.

To use a ldf/dbc/arxml/xml file in the app it must first be copied to the appropriate folder on the tablet:

.../StarCooperation/FL3X Config/Databases

The app loads and converts all databases in the “Databases” folder automatically on startup. A loading dialog opens, in which the loading state of the databases is displayed. In addition, the status is displayed at the bottom in the status bar of the app. By tapping the status bar, the loading dialog can be opened again.

Note: The name of the database must be unique.



4.4.2 Update database

To replace a database with a new version, the new version must first be copied to the *“Databases”* directory as described in section 3.4.1. Afterwards, a new version can be loaded in the device manager by clicking the replace button. A wizard opens that replaces the database. If desired, an automatic assignment of the signals configured in the widgets is attempted. The more the databases differ the less signals can be assigned automatically. Graphic display elements that lose their link during the process are marked with a red exclamation mark and must be manually assigned to the correct signal.

If the automatic assignment is rejected or the loaded database is removed from the channel via the remove button, the widgets created for this channel and this database are retained. From this point on, the widgets have an invalid configuration and therefore do not display any signal values. A valid signal can be selected via the widget settings.

4.4.3 Delete database completely

- If a database is used in a saved project, this project must be deleted from the folder *.../StarCooperation/FL3X Config/Projects* and all copies created by the user must also be deleted.
- The app stores loaded database in the private app memory. To delete these, open the database loading dialog and click ‘delete’ next to the corresponding database or click ‘delete all.
  Now you can choose between ‘delete completely’ and ‘delete only from app memory’.
  - completely: database file is also removed from databases diretory. Check the directory to be sure.
  - app memory: database is only removed from app memory. If it’s still in databases diretory, it will be loadded again with the next app start.

  To delete all databases from the app memory, you can alternatively reset the entire app: Either uninstall the app or delete all app data in the Android app settings.
  ATTENTION: This will completely reset the app! All app settings and unsaved projects will be lost.

- Delete the corresponding database in the directory *.../StarCooperation/FL3X Config/Databases*.

5 Application

5.1 Launch and exit application

FL3X Config mobile can be started via the app drawer, as is usual in Android.

To close the application, press the back button repeatedly until the dialog for closing the app appears. After confirmation, running analyzing sessions are disconnected and the application is closed.

If the application is put into the background via the home button, the operating system may terminate the application or individual services to keep memory free. It cannot be guaranteed that the connection to the hardware is maintained or that it is still recorded when logging is active.

5.2 Connection setup

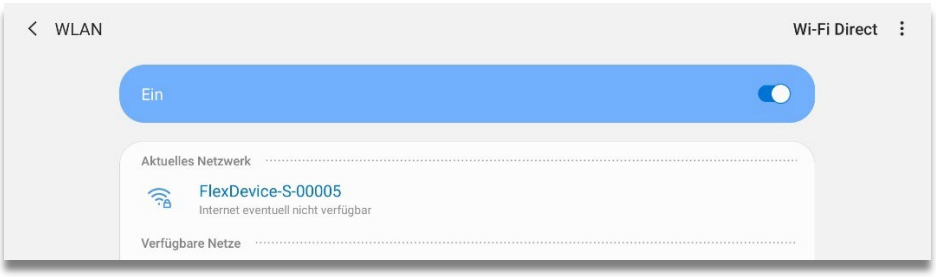
The connection to the hardware is established via WiFi. The WiFi is managed by Android. If several WiFi networks are stored on the tablet, Android automatically switches between the networks. Networks with an Internet connection and better range are preferred. If the tablet disconnects the WiFi connection to the FL3X Device or connects to another FL3X Device, all known networks except the desired FL3X Device must be disabled or removed in the WiFi settings of Android.

5.2.1 Connect with a FL3X Device

5.2.1.1 WiFi Connection

To establish a connection to a FL3X Device, go to the Android WiFi settings and establish a connection with the desired FL3X Device. The device icon opens the device manager. Here you can directly access the WiFi settings via select device button in the devie manager tab:

Note: Only one tablet can connect to the FL3X Device-S and FL3X Device-L/L² via WiFi. If another tablet is already connected, the connection setup via the Android settings can fail.

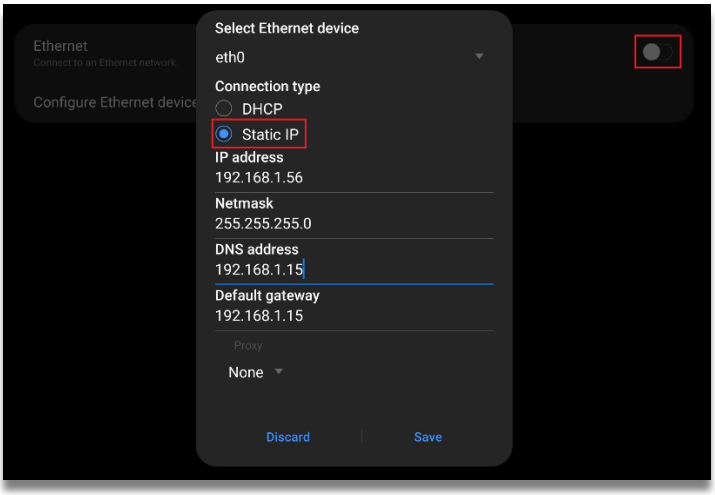


5.2.1.2 Ethernet Connection

To connect a FL3X Device via Ethernet your Android device must support USB ethernet adapter or needs a build in Ethernet connector. Then you can connect the Ethernet adapter / connector with a cable to the FL3X Device. To establish a connection you need to set a static IP address on the Android device in the connection settings. Those can be found in Settings > Connections > More connection settings > Configure Ethernet device. These settings may differ on different Android device and will only show when an Ethernet adpater is connected to the Android device.

Set the following configuration:

- Static IP
- IP address: Set a unique IP address. If you connect only one FL3X Device the IP address must differ from the FL3X Device IP and gateway addres. Those can be checked on the device diagnosis page.
- Networkmask
- DNS address: IP address of the connected FL3X Device
- Default gateway: IP address of the connected FL3X Device

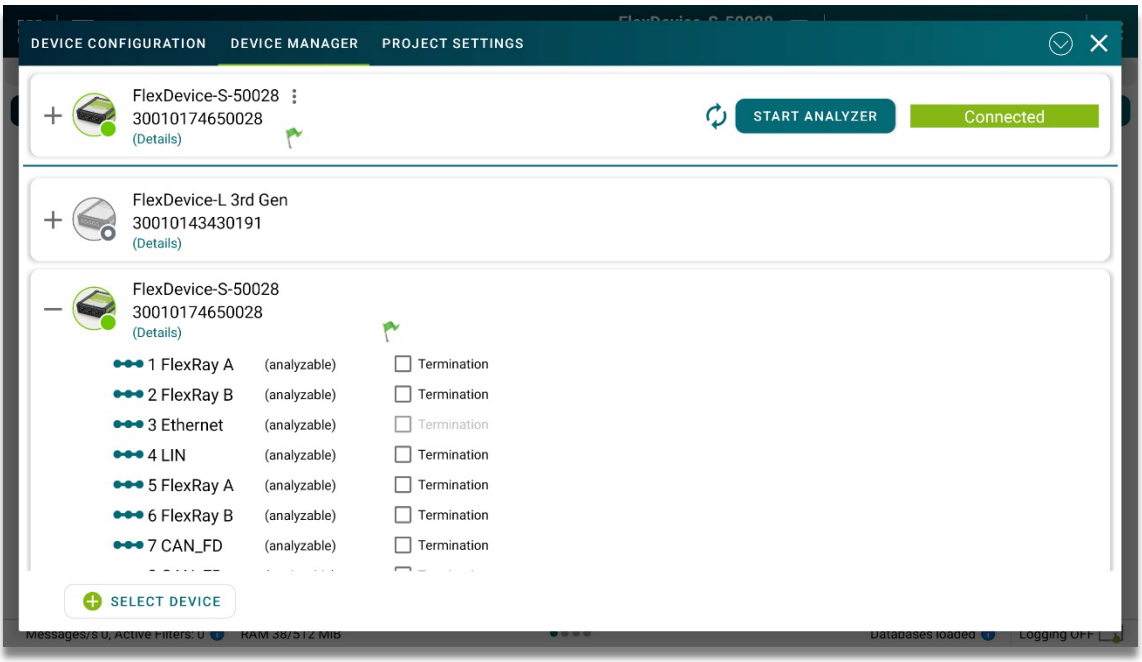


After setting the configuration try to establish the connection with the checkbox. If the connection attempt fails, unplug the Ethernet cable and/or adapter and plug it in again.

5.2.1.3 Connect App and Device

The device view opens via the device icon . By opening the device view, the app automatically establishes a connection to the device connected via WiFi. The connection status is displayed via the device icon and in the device view. The following states are possible:

	Disconnected:	There is no connection to a FL3X Device.
	Connected:	App is connected to the FL3X Device.
	Analyzing started:	Analyzing is active and data is streamed from FL3X Device to app.



If the connection fails, please try again. If a connection cannot be established even after several attempts, please check whether the correct hardware is connected and whether the hardware is supplied with power. If the connection still cannot be established, restart the FL3X Device via the web interface or briefly disconnect the power supply to the FL3X Device.

You can reach the web interface of a FL3X Device connected via Ethernet via the IP address (default:192.168.1.15) to restart the FL3X Device, proceed as follows:

- Select "Debug" page on the web interface.
- Press the "Show" button in the "Commands" section.
- Select the "Restart" command.

5.2.2 Device compatibility

In order to use the FL3X Config mobile application with a FL3X Device, the latest firmware must be actived on the FL3X Device. If you are using projects created with FL3X Config, you must use the latest version of FL3X Config to create and flash your projects. If no self-created projects are used on the FL3X Device, the app automatically updates the firmware on the FL3X Device.

For more information on updating the firmware, see section 5.11.

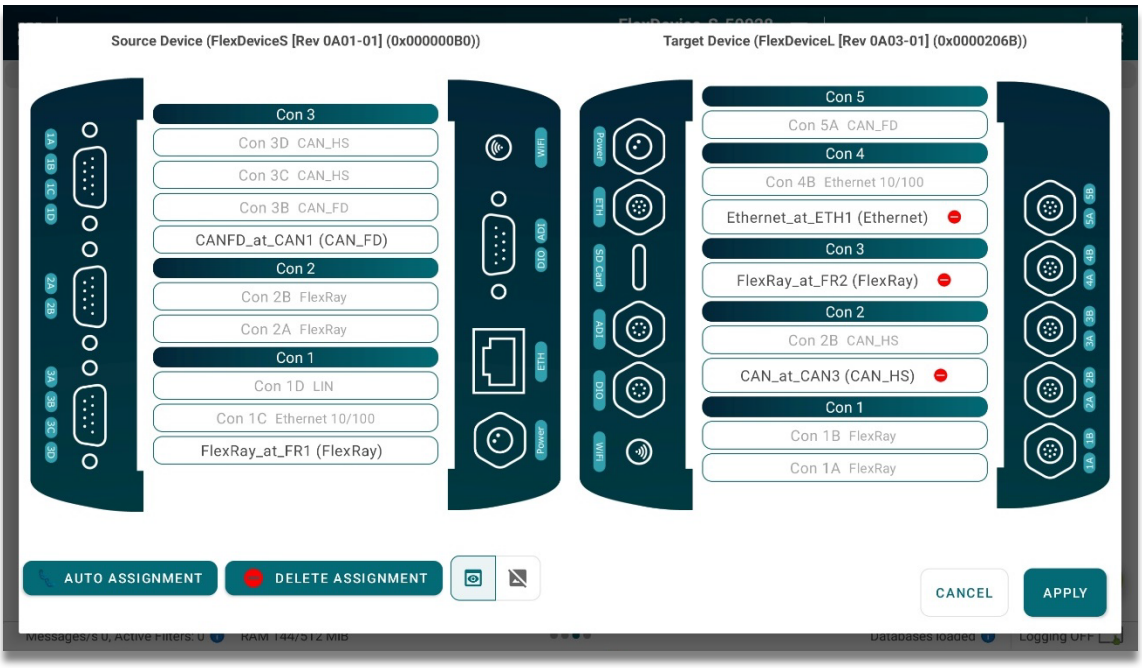
5.2.3 Change device

To change the device type of a project open the change device view by selecting “Change Device Type” in the overflow menu.

Change device type is only possible if the project is a pure analyzing project. Use FL3X Config to change the device type of projects containing a RBS configuration.

After selecting the change device entry, a dialog opens in which the target device type must be selected. In the next dialog that configured buses of the current project / source device can be assigned to the target device. This can be done by drag & drop or the “Auto Assignment” function, which will assign the buses to a fitting channel on the target device. To delete an assignment press the red deletet icon of the assigned bus or reset all with the “Ddelete Assignment” Button. Not assigned buses will be deleted.

By clicking the “OK” button the changes will be applied to the current project. If you want to keep the old project you have to save it before performing the change device and save the changed project after the change device with a different name.



If you want to hide or show the device panels, you can switch between “Full View” and “Compact View” by pressing the toggle button.

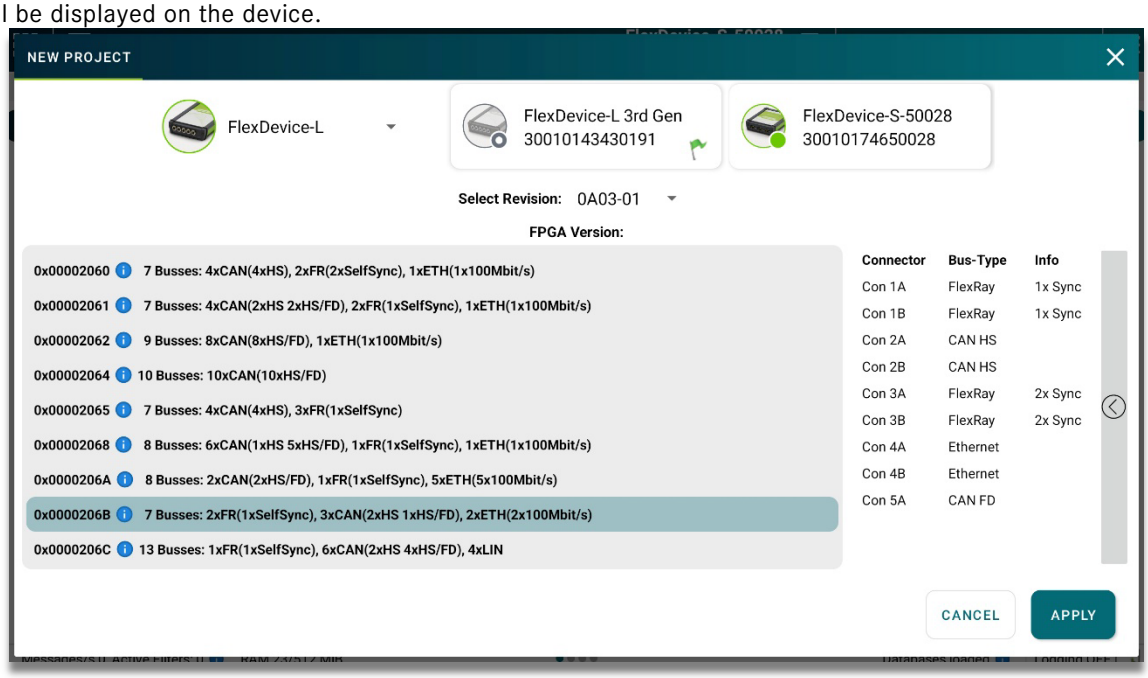
5.2.4 Disconnect

All analyzing sessions are automatically disconnected when the application is closed. The WiFi connection must be disconnected via the Android settings.

Running Analyzer session can be stopped with the stop button in the top bar or in the device manager.

5.2.5 Configure project

When creating a new project, a device variant must be selected. The variant can be selected manually or by selecting a connected device. If the selected variant is compatible to a connected device a green flag icon will be displayed on the device.

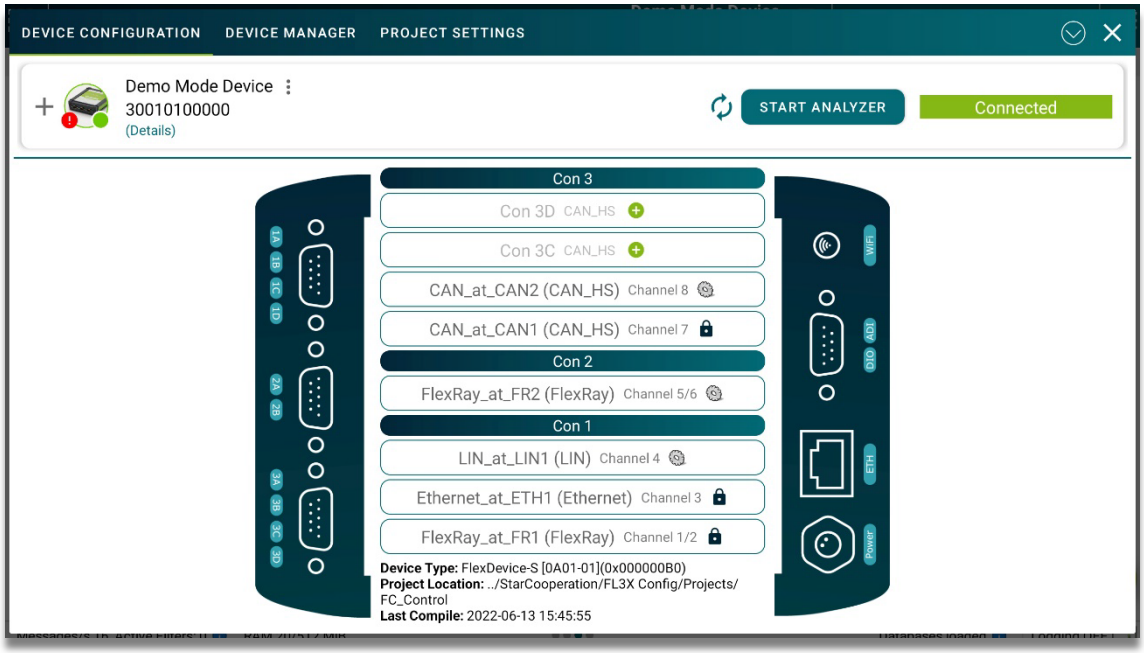


The device configraution view opens via the device icon .

To configure connectors, analyzing must be stopped. The changed settings will be applied when the connection is re-established.

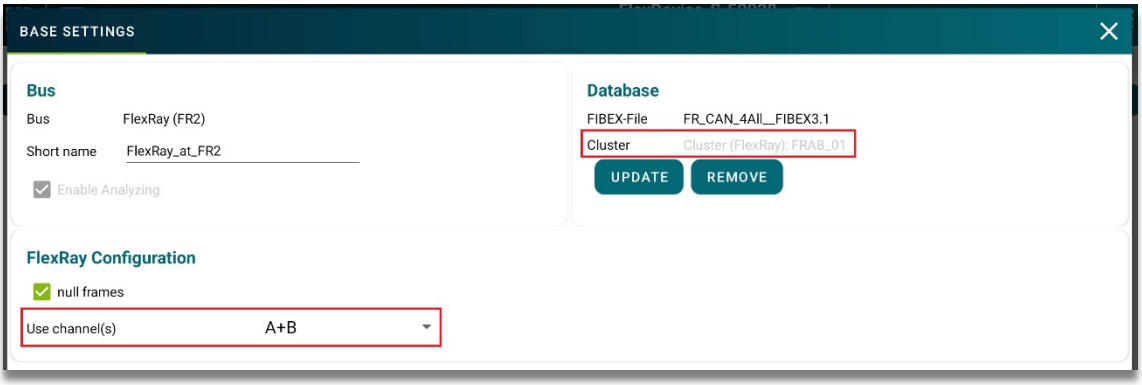
A new connector configuration is added by clicking on an empty connector. To edit a configuration open the bus configuration view by clicking on a configured connector and selected edit. Configuration can be swapped between compatible configurations by drag and drop.

The lock icon indiacte a configuration which was created by FL3X Config PC and can not be edited with FL3X Config mobile.



FlexRay

For FlexRay buses, the parameters "null frames" (enables reception of null frames) and "Use channel A/B/A+B" (enables reception only from FlexRay channel A, only from FlexRay channel B or from A+B). Care must be taken to select the appropriate cluster when adding a database. The selection of a database is done only for FlexRay bus configuration and the selected database is used for both channels. I.e. if channel A and B are used, the cluster A+B must be loaded. If only channel A is used, it is sufficient to load cluster A from the database.



CAN

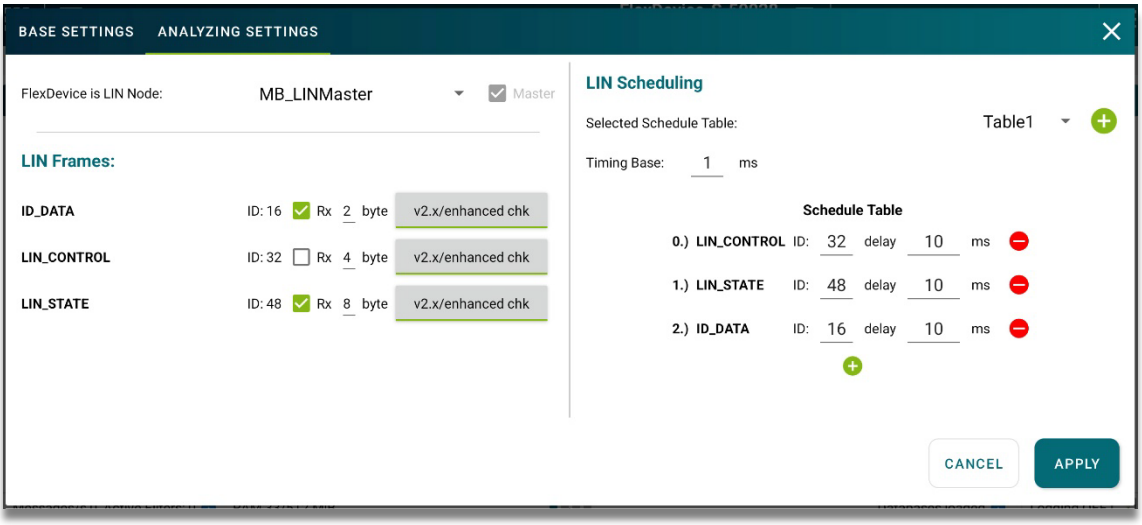
Deactivating the listen-only mode of a CAN channel is only possible for security reasons after you allow this in the app settings.

For CAN-FD channels, in addition to the baud rate and the listen-only mode, the following parameters can be configured via the config button next to the channel (and are usually not automatically taken over from the DB):

- Use CAN-FD: enable use of CAN-FD on this channel
- Protocol variant: allows selection of one of the two supported CAN-FD specifications
- Bitrate switching: activates bitrate switching in the controller
- Baud rate (data phase): defines which baud rate is to be used for the data phase of message transmissions when bitrate switching is activated

LIN

A LIN channel can only be used with a loaded database. In addition, the LIN channel must be configured via the device configuration view.



All frames from the database are listed in the configuration dialog. For each frame the ID, Rx/Tx flag, payload length and protocol version/ checksum calculation are displayed. The values are initially set with the loaded database. This information is needed for the app to receive LIN messages from a FL3X Device.

If one of the entries is incorrect, the message will not be received by the app, even if the message is transmitted by the hardware! This information can be adjusted in the configuration dialog, if the hardware differs from the database.
In addition, it must be selected which LIN node is the connected FL3X Device in the LIN cluster. This determines the Tx/Rx flag automatically. A deactivated Rx flag corresponds to a Tx flag. If the master node is selected, the FL3X Device processes the configured schedule table. In RBS mode, the schedule table cannot be changed by the app, otherwise it can be configured in the app. If the database contains multiple schedule tables, the desired schedule table can be selected in the LIN configuration.
Event-based frames without cycle time are not supported.

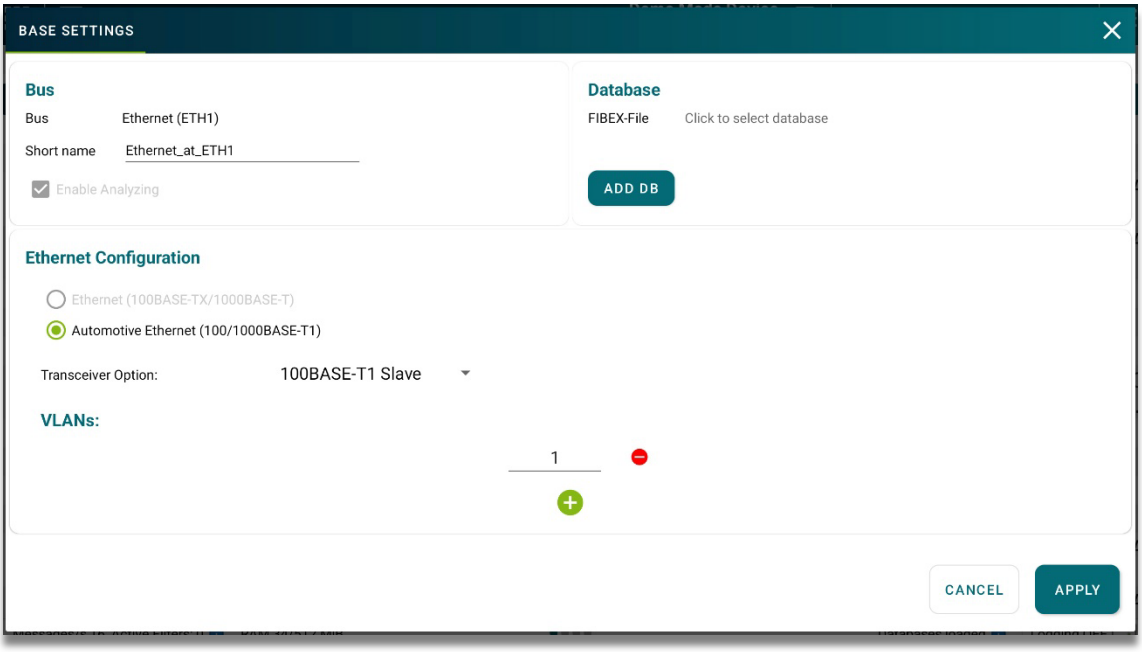
LIN analyzing restrcitions:

- Analyzing channel (no RBS): For each header on the channel, a frame is received with payload regardless of whether a slave has created the appropriate payload on the channel or not. The app cannot detect if the recevied payload is valid!
- RBS channel: Only LIN Frames with a configured RBS Rx user funtion can be received by the app.

Ethernet

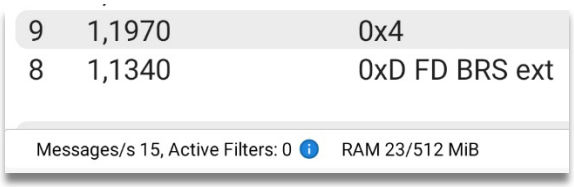
For Ethernet the following settings must be configured in the Ethernet configuration dialog:

- BASE-T1 or BASE-Tx communication
- Transceiver Option:
  - BASE-Tx: 10/100/1000BASE
  - BASE-T1: 100/1000BASE Master/Slave
- VLANs:
  - no database loaded: Configure alle VLANs with ID, which should be configured on the FL3X Device
  - database loaded: VLANs are taken from the database



5.2.6 Streaming Connection

As soon as the tablet receives data, the number of messages per second is displayed in the status bar at the bottom left.



If the tablet is no longer able to process all messages, the number is displayed in red. This can cause data to be transmitted with a delay or to be lost during longer operation above the performance limit.

To prevent this behavior, reduce the number of graphical displays on an interface and too many or too extensive offsets of signals.

If errors occur during transmission between FL3X Device and app, the number of transmission errors appears in red:

Those errors can occurr when packages are lost. To ensure that no packages are lost change the connection to TCP.

5.2.6.1 Streaming Settings

The streaming from FL3X Device to the app can be configured in the app settings. In the category ‘FL3X Measure’ the streaming transport protocol can be selected to adjust the streaming to your requirements:

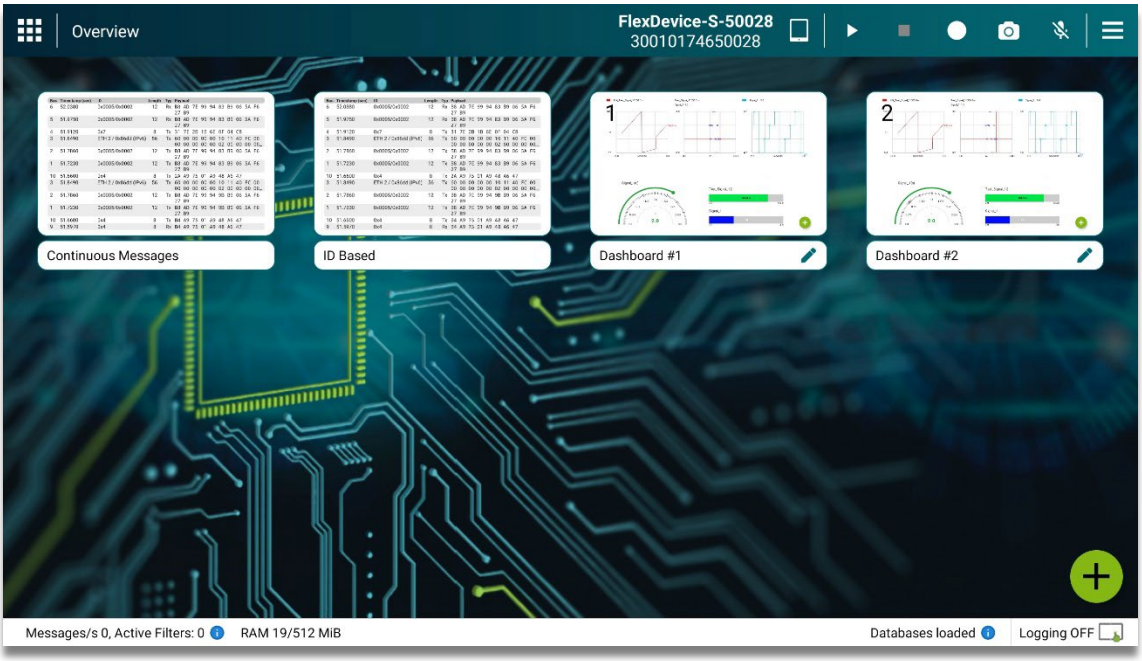
- Auto: The app chooses the transport protocol.
- UDP: Faster streaming, but packages can be lost.
- TCP: Slower but all packages are transmitted.

5.3 User interface

5.3.1 Overview

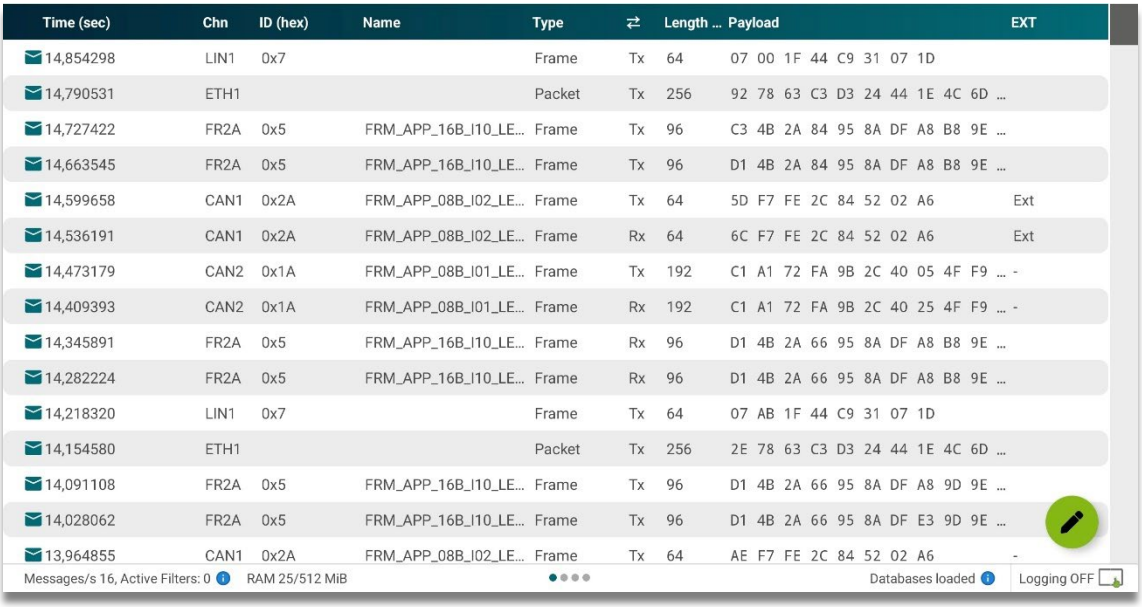
The application has three different display methods: continuous messages, ID-based messages and a graphical view. These views are called dashboard in the app. Each of these views can be switched through by swiping across the screen. Alternatively, a dashboard overview can be opened via the overview icon at the top left edge.

The screenshot button at the top of the screen can be used to take a screenshot of the current screen at any time to capture current events.

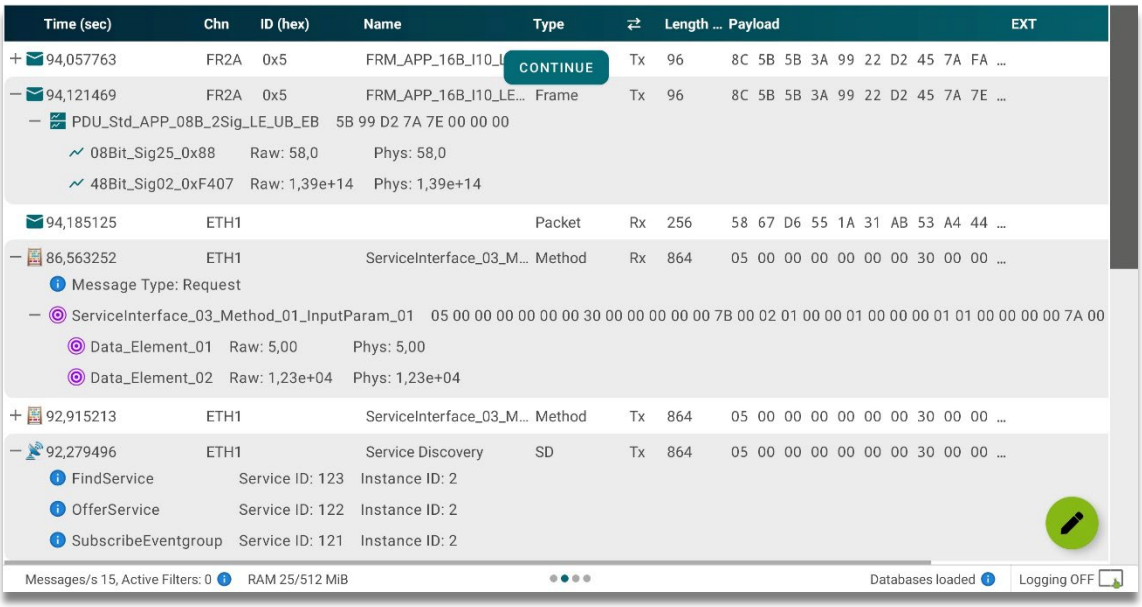


5.3.2 Trace: Continuous messages

In the continuous message trace are all incoming and outgoing messages displayed. The latest message is shown at the top. The payload shown for each element is the raw uninterpreted data. If the trace is paused by scrolling down or pausing analyzing, the messages can be expanded to show additional information. With a two-finger swipe gesture you can scroll vertically through the columns.



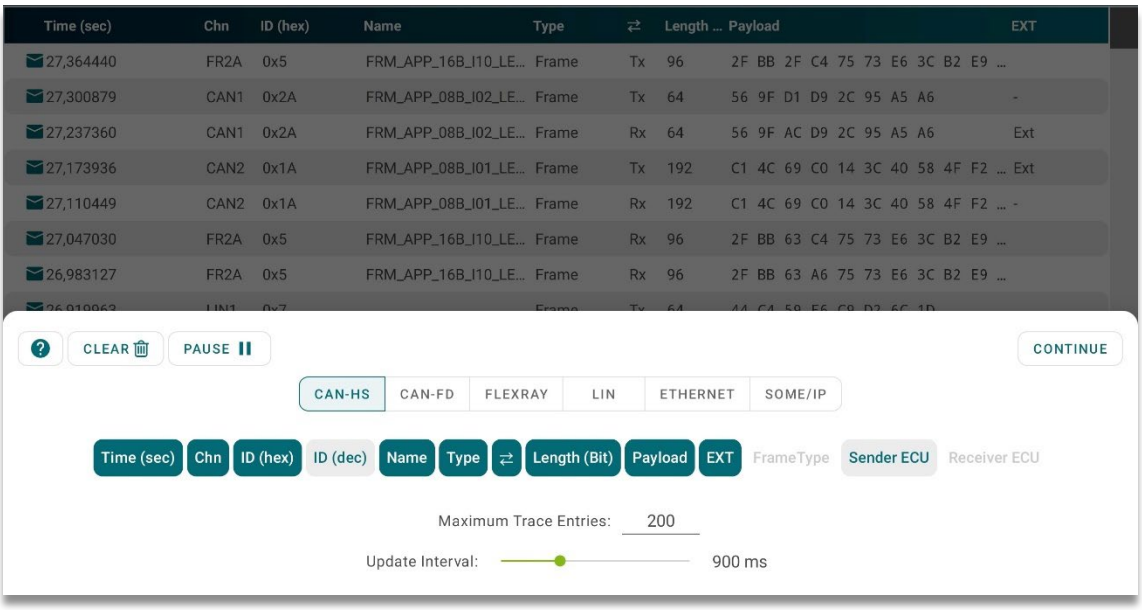
Time (sec)	Chn	ID (hex)	Name	Type	⇄	Length ...	Payload	EXT
14,854298	LIN1	0x7		Frame	Tx	64	07 00 1F 44 C9 31 07 1D	
14,790531	ETH1			Packet	Tx	256	92 78 63 C3 D3 24 44 1E 4C 6D ...	
14,727422	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Tx	96	C3 4B 2A 84 95 8A DF A8 B8 9E ...	
14,663545	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Tx	96	D1 4B 2A 84 95 8A DF A8 B8 9E ...	
14,599658	CAN1	0x2A	FRM_APP_08B_I02_LE...	Frame	Tx	64	5D F7 FE 2C 84 52 02 A6	Ext
14,536191	CAN1	0x2A	FRM_APP_08B_I02_LE...	Frame	Rx	64	6C F7 FE 2C 84 52 02 A6	Ext
14,473179	CAN2	0x1A	FRM_APP_08B_I01_LE...	Frame	Tx	192	C1 A1 72 FA 9B 2C 40 05 4F F9 ...	-
14,409393	CAN2	0x1A	FRM_APP_08B_I01_LE...	Frame	Rx	192	C1 A1 72 FA 9B 2C 40 25 4F F9 ...	-
14,345891	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Rx	96	D1 4B 2A 66 95 8A DF A8 B8 9E ...	
14,282224	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Rx	96	D1 4B 2A 66 95 8A DF A8 B8 9E ...	
14,218320	LIN1	0x7		Frame	Tx	64	07 AB 1F 44 C9 31 07 1D	
14,154580	ETH1			Packet	Tx	256	2E 78 63 C3 D3 24 44 1E 4C 6D ...	
14,091108	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Tx	96	D1 4B 2A 66 95 8A DF A8 9D 9E ...	
14,028062	FR2A	0x5	FRM_APP_16B_I10_LE...	Frame	Tx	96	D1 4B 2A 66 95 8A DF E3 9D 9E ...	
13,964855	CAN1	0x2A	FRM_APP_08B_I02_LE...	Frame	Tx	64	AE F7 FE 2C 84 52 02 A6	-



To show all information for a trace entry a database is required. If there is no database assigned to the corresponding channel or the message is not found in the database some trace column will be empty or some messages can't be expanded. A database is also required to show SOME/IP Elements instead of the raw ethernet frames.

By long clicking an entry it will be marked visually in the trace view and the scroll bar at the right.

The trace view can be configured by clicking the floating edit button in the bottom right corner of the view. Different view sets can be selected to show bus system and protocol specific information. All columns of a view set can be rearranged by drag & drop and enabled/disabled by clicking. Those configurations will be saved and loaded with the project.

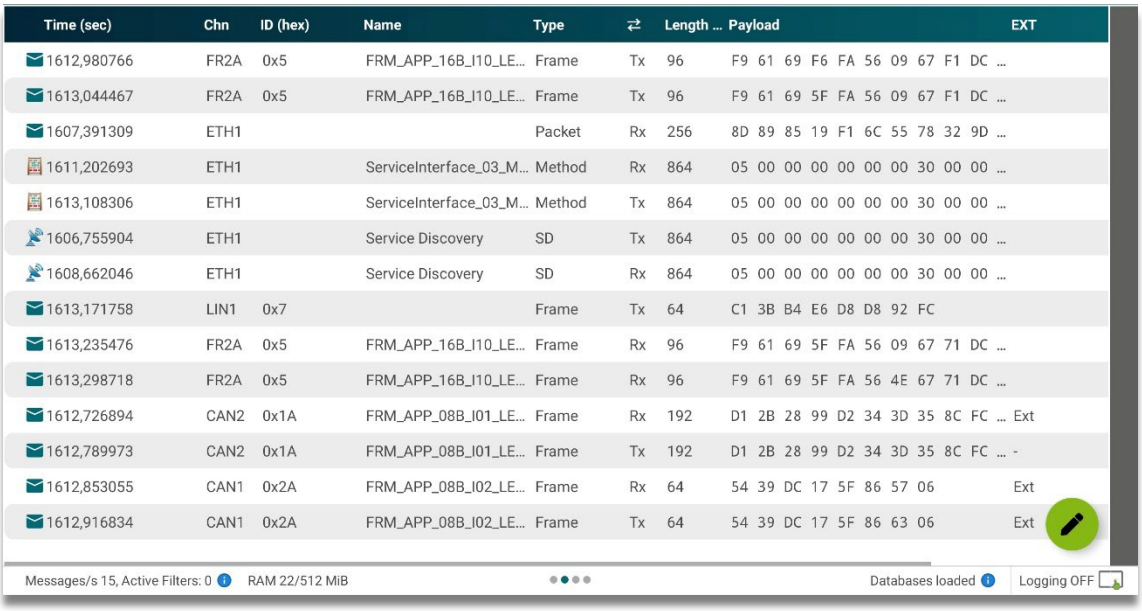


Furthermore there are app specific settings to adjust the trace behaviour. A maximum amount of trace entries can be set which is limited to 100.000 entries. Also the update interval of the trace can be changed between 400 ms and 2 seconds.

For LIN frames it is mandatory that they are configured correctly in the LIN configuration. Otherwise they cannot be displayed by the app! Header only frames will not be displayed.

5.3.3 Trace: ID-based messages

From the continuous message view, the ID-based message view can be accessed by swiping from right to left. The content is the same as in the continuous view but messages are stacked by their ID for each channel separately. So that each message is shown only in one line with the latest data.



5.3.4 Trace Filter

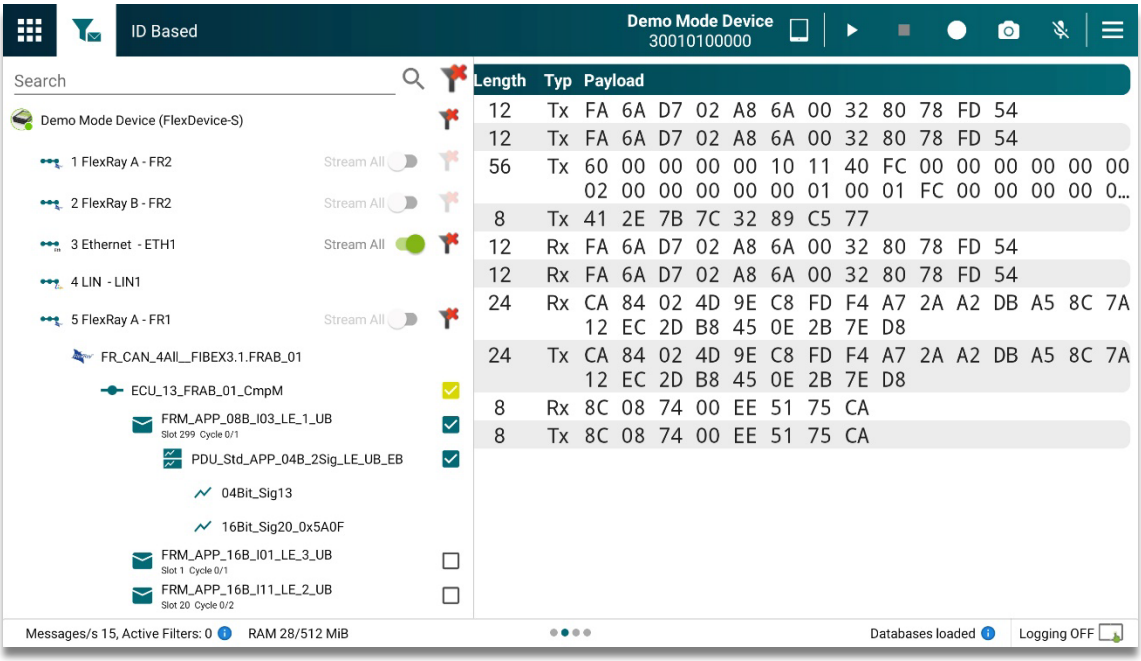
There are two types of filters supported:

- Streaming Filter: Positive filters to select messages which are streamed from the connected device to the app.
- Trace UI Filter: This filters will be applied to all received messages in the buffer.

5.3.4.1 Streaming Filter

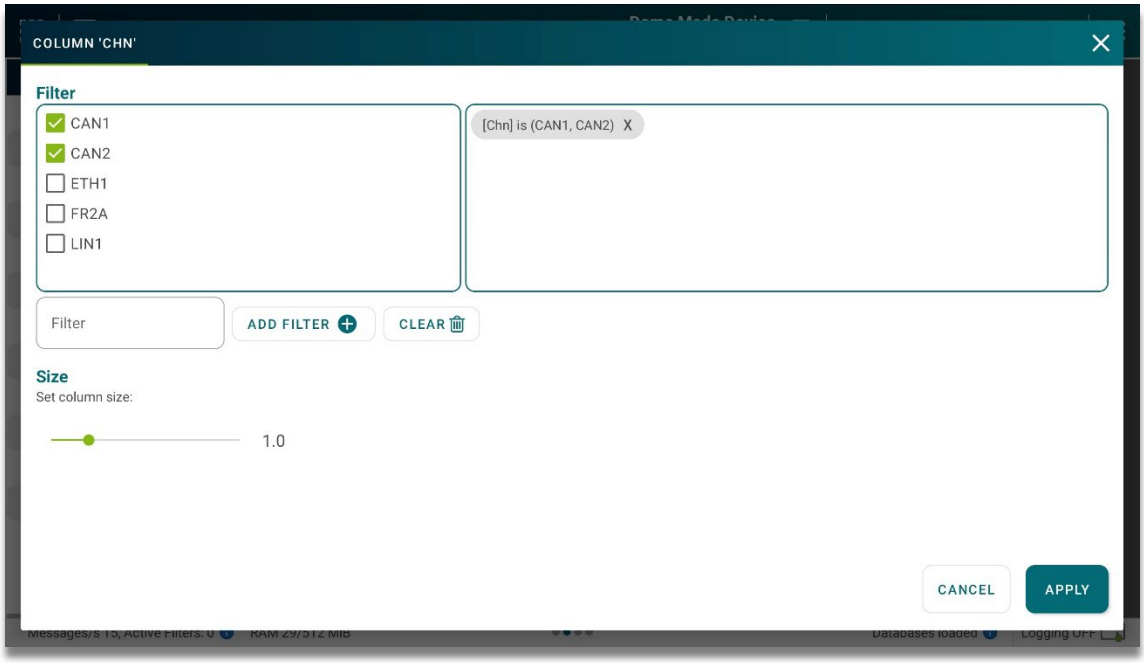
In the message views, a filter list can be displayed via the filter button . This lists the configured channels of the currently connected device. If a database is loaded for a channel, message IDs can be enabled via this list so that they can pass the hardware filter. This will stream messages from the FL3X Device to the app and display them in the message views. Frames required by widgets on the dashboards are displayed even if the associated filter is disabled in the filter list. If no filter has been enabled and no widget has been configured, no message will be displayed in the trace. Activating the filters is done by the checkbox. If a switch button is displayed at channel level, the stream-all filter can be activated with this button. If the stream-all filter is active, all frames transmitted on this channel are streamed to the app independent of the active frame filters.

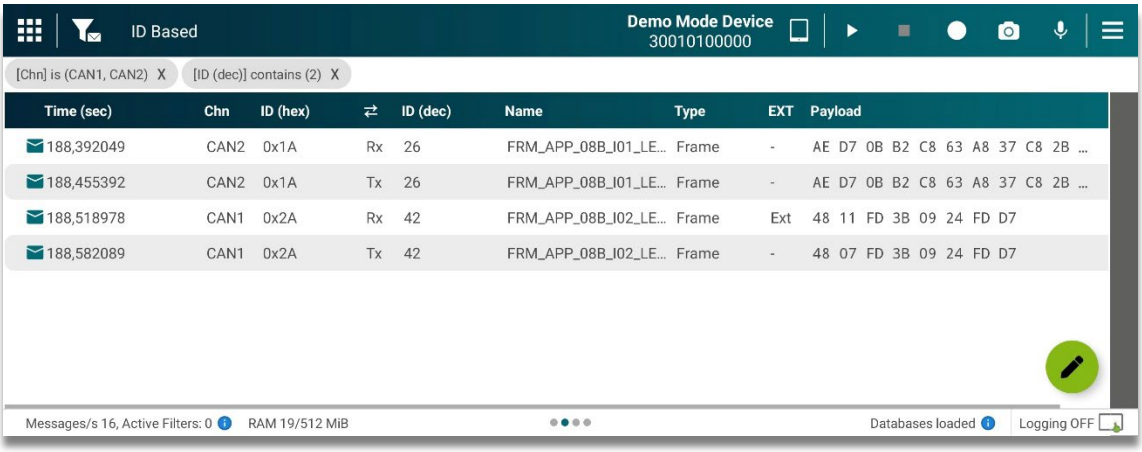
The filters for FlexRay channel A and B are displayed separately.



5.3.4.2 Trace UI Filter

Trace filters can be set for each column. By clicking on the column, a dialog opens in which the filters can be configured. Filters can be created from a list of known values or from custom text. When creating a filter from text, different values can be separated with a comma. Different values in a filter are applied as OR-condition and different filter entries are applied as AND-condition. All filters are case insensitive. Active filters are shown above the trace.



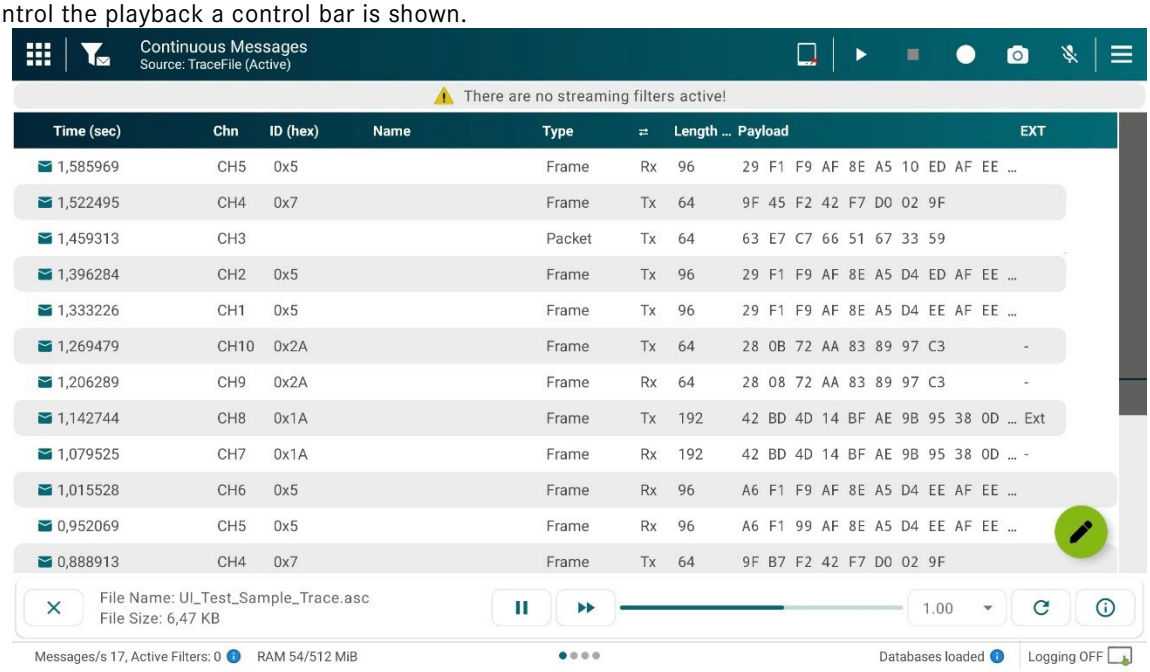


5.3.5 Trace Import / Export

By pressing the edit button the trace settings dialog is opened. There is a button to import or export a trace file. The supported trace file format is the same as for logging, which is described in chapter 5.8.4.

Import

When selecting the import button, a file selection dialog is opened. Only ASC files can be imported. After the file is opened, the contained messages are replayed. The messages are delayed by their timestamp, to control the playback a control bar is shown.



The playback control contains the following actions:

- Close: By clicking the X button, the trace file is closed.
- Play/Pause: The playback can be paused.
- Fast Forward: Show all messages as fast as possible.
- Progress: Shows how much of the trace file has been replayed.
- Speed: Speed factor to slow down or speed up the playback.
- Reload: Reset trace file to play from start again.
- Info: Show playback statistics of loaded messages and invalid trace file entries.

When playing the trace file, the restriction of the maximum number of trace entries also applies. This means that if the trace is configured for 200 entries, a maximum of 200 entries from the trace file are displayed at the same time. If the file contains more, the old entries are discarded, as with analyzing. To display these again, the file must be reloaded via "Reload", scrolling back is only possible up to the maximum trace size.

To interpret the messages with a database the database must be assigned to the corresponding channel in the current project. There is no restriction regarding the device type of the current project.

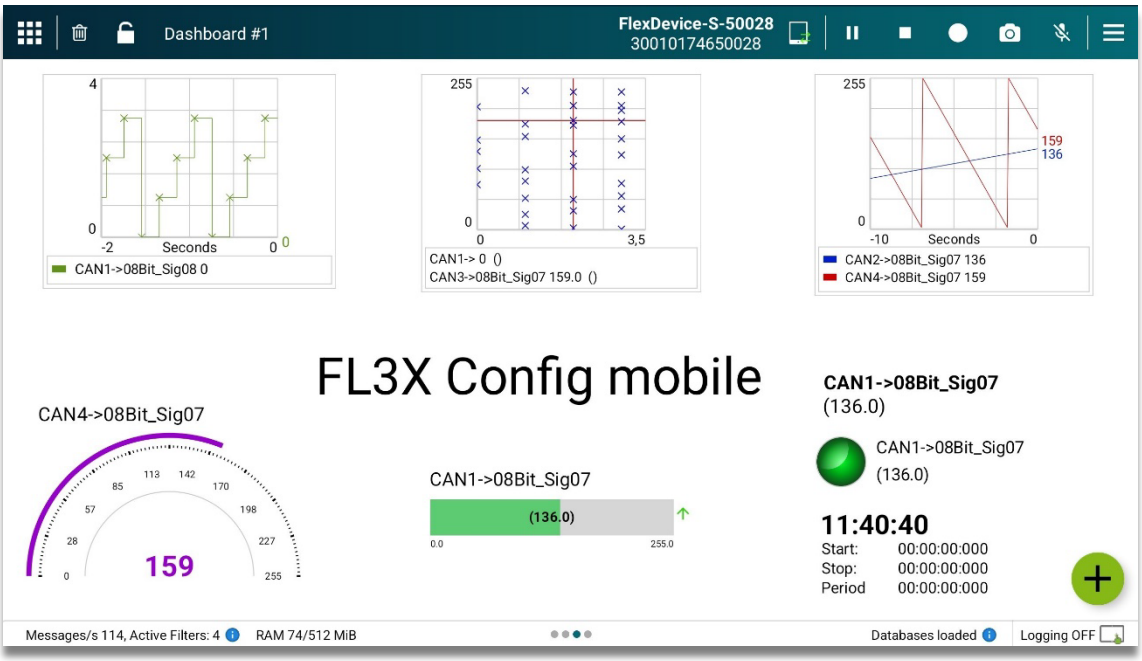
Export

After pressing the export button, a file name and the export format must be selected, available are ASC and MDF. Exported are all entries which are currently contained in the trace. The exported file is stored at *.../StarCooperation/FL3X Config/Traces*. If a message was highlighted a marker is exported for this entry.

5.3.6 Graphic view

In addition to the two message views, there is also the graphical view. This is displayed as an empty page when a new configuration is made. The graphical view can be completely customized using widgets. Additional dashboards can be added via the dashboard overview by clicking on the plus icon at the bottom right.

To create a widget, press the plus button at the bottom right of the screen and select the desired widget type by pressing the corresponding icon. The configuration menu will then open. Select the data to be displayed and confirm with "*Apply*".



On the dashboards in the graphical view it is possible to zoom or move the view with two fingers. The dashboard can be changed by swiping with one finger.

By long press on a widget, a context menu is opened. The widgets can be moved, edited, scaled and deleted via this menu. If the widget is in move or zoom mode, it is highlighted in yellow. It can be moved by holding down and dragging with the finger. Zooming is done with two fingers in the yellow area.

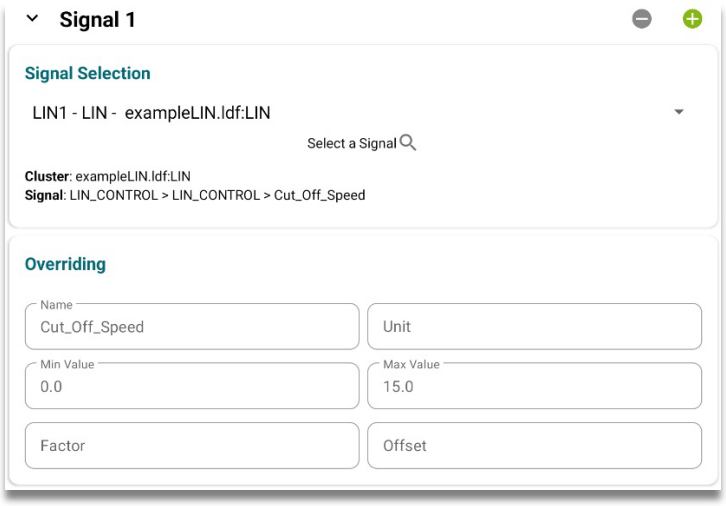
All widgets of a dashboard can be removed by pressing the delete button .

The widgets always display the last value received. If a message is no longer sent on the channel or no longer arrives at the tablet due to a signal interruption, "No Data" is displayed. In the widget settings, you can set how long to wait before "No Data" is displayed. The default setting is 10 seconds. The line chart additionally holds the last received value. If signal values are received late due to a signal interruption, the data in the widget will be corrected.

5.4 Graphic display elements

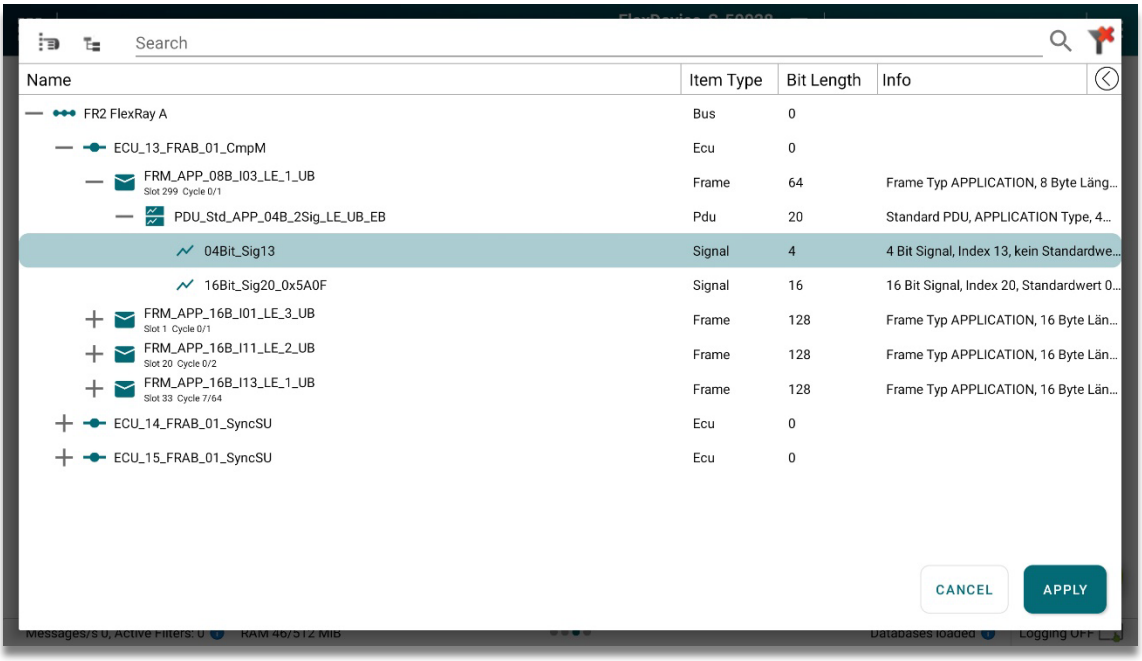
Almost all widgets have various configuration options. For these widgets, a configuration screen is opened during creation.

To display a specific signal or global variable in a widget, first select the corresponding channel with the associated database in the configuration screen. The selection is made via the dropdown field under signal selection. The FlexRay channels A, B and Ethernet VLANs are listed separately. If the project contains any global variables created with FL3X Config mobile, there is an additional entry ‘Globale Variables’ in the dropdown field.



You can then open the signal search by clicking on the magnifying glass. Select a signal here and confirm with OK. If a FlexRay Channel A or B has been selected, only the signals from this channel are displayed in the signal selection dialog.

Selection of global variables are restricted to simple data types, arrays are not available for visualization.



If a signal has been selected, the fields for the signal name, unit, min and max are automatically filled based on the database. These values are only valid for the current widget and can be edited. The offset and factor values allow you to subsequently adjust the received signal for each widget individually. If the fields for offset and factor are empty, the signal will not be changed.

Text table entries are displayed in the following widgets:

- Signal
- BarChart
- Lamp
- LineChart
- MatrixChart

SOME/IP

- Supported
  - Events, methods and fields
  - Common datatypes
  - Complex datatypes - structures
- Not supported / in development
  - Complex datatypes – unions
  - Complex datatypes - typedef
  - static and dynamic arrays
  - SOME/IP - TP

5.4.1 LineChart

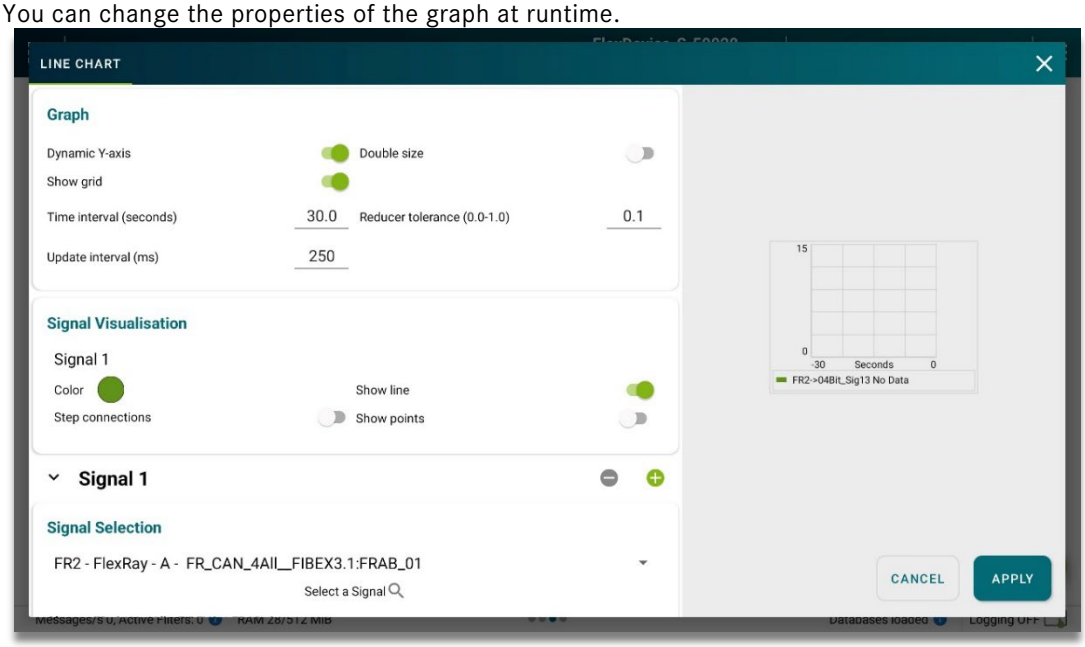
The line chart allows you to display the value progression of a signal in time. After selecting the element, you can configure the view:

- Dynamic Y-axis:
  Specify whether the Y-axis should display the range between the min-value and max-value of the signal in a fixed manner, or whether it should adapt dynamically to the received values.
- Show line:
  Specify whether you want to display lines between individual measuring points
- Stepped connection:
  Here you can specify whether the lines should be displayed interpolated or stepped
- Show point markers:
  Specify whether value changes should be marked
- Time interval:
  Here you can define over which time period already drawn signal values should remain visible.

The signal properties factor and offset in use with the line chart can lead to a significantly increased power demand on the tablet.

Then select "*Apply*" to make the graph visible with your settings.

You can change the properties of the graph at runtime.



5.4.2 Image display

The image display allows you to display images and graphics. An image can be added via the green plus button. By default, an image is displayed independently of a signal.

If the image is to be switched, exchanged or hidden depending on a signal, a signal must first be added via the "Add Signal" button. Afterwards, a signal can be selected in the signal selection, depending on which the graphic is to be switched.

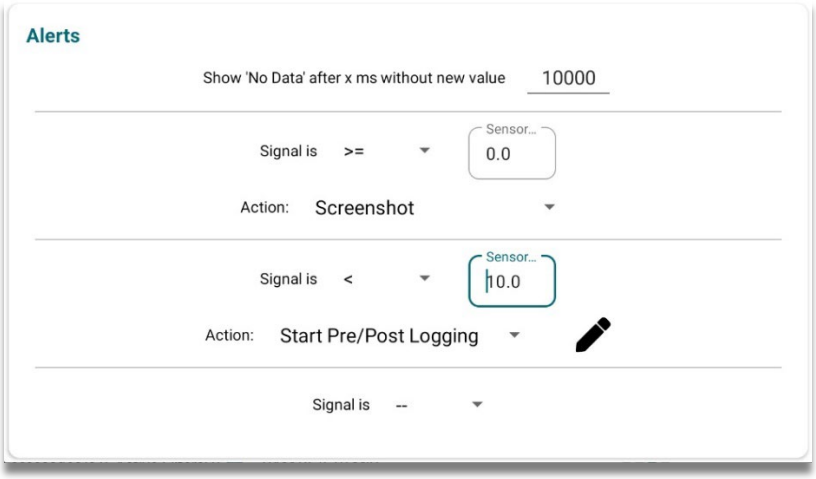
If a signal has been selected, then the limits in which the graphic is to be displayed can be defined for the selected image. These can be switched by clicking on the larger/smaller signs. Additional images can be added via the green plus.

Common image formats like png and jpeg are supported. Animated graphics are currently not supported.

5.4.3 Alarms

Alarms can be defined for each signal when a limit value is exceeded. In addition to the output of an acoustic warning signal, a vibration alarm if supported by tablet or the flashing of the corresponding display is also possible. Furthermore, a screenshot can be triggered or logging can be started automatically. If logging is already running, the alarm has no effect. An alarm is triggered a maximum of every 5 seconds, even if the limit value remains permanently exceeded.

To activate an alarm, configure it in the configuration screen in the "Alarm" section.



Not all Android devices supporting vibrations. Make sure your device supports vibration before using vibration alarms.

For a sound alert the app uses the configured system notification sound. If no notification sound is set, the system alarm sound or system ringtone will be used. When no sound is set at all, the alarm does not work because no sound can be played.

5.4.4 Color and special settings

The configuration screen under "Color" contains color settings for the various display components.

Depending on the widget, there are other special sections with setting options.

For example, in the line chart widget, you can choose whether the y-axis should run fixed from minimum to maximum value of the signal or dynamically adjust to the received values.

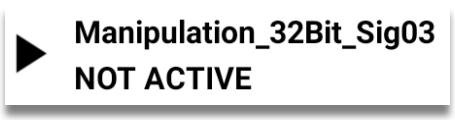
5.4.5 Button

For a button, the text as well as the color of the button can be set. The button can trigger an action. The following actions are available: Send Frame, Pause Send and Pre/Post Logging.

5.4.6 Manipulation

The Manipulation widget can start and stop manipulations on the FL3X Device. To use manipulations in the app, valid ID-Defines are required. Those can only be created by FL3X Config. Make sure the generation of ID-Defines is activated in the FL3X Config settings. The ID-Defines are created during the build process,

saved in the project and are only valid for this build. Flash the project on your FL3X Device, save the project and load the same project in the app. Now you're ready to use manipulations.

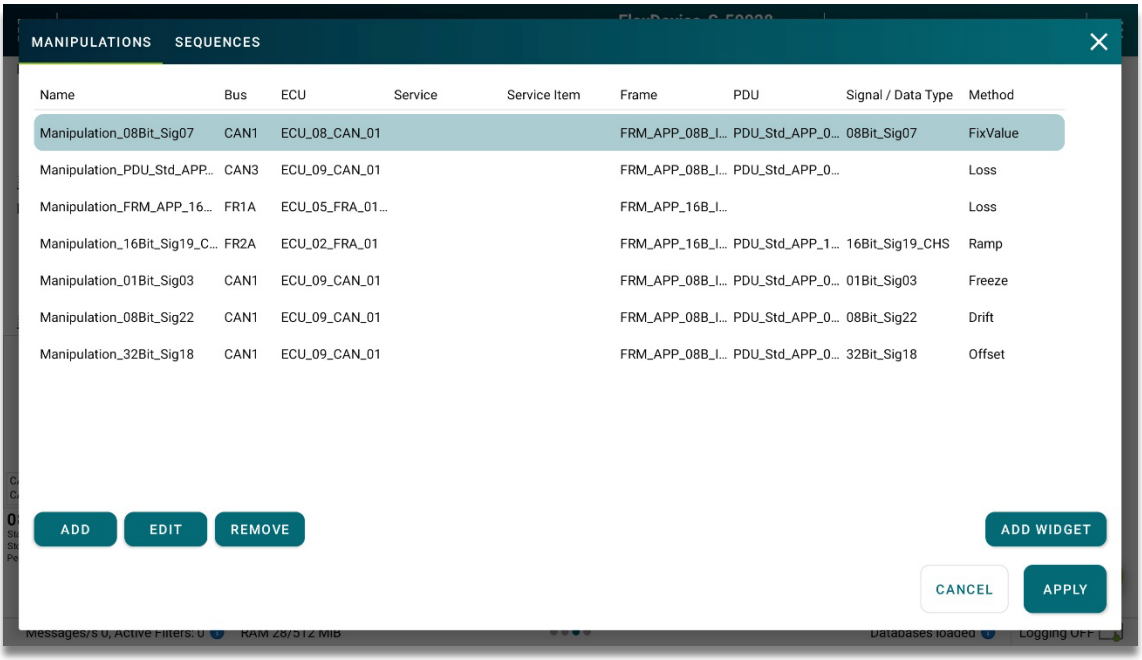


5.5 FL3X Config Control

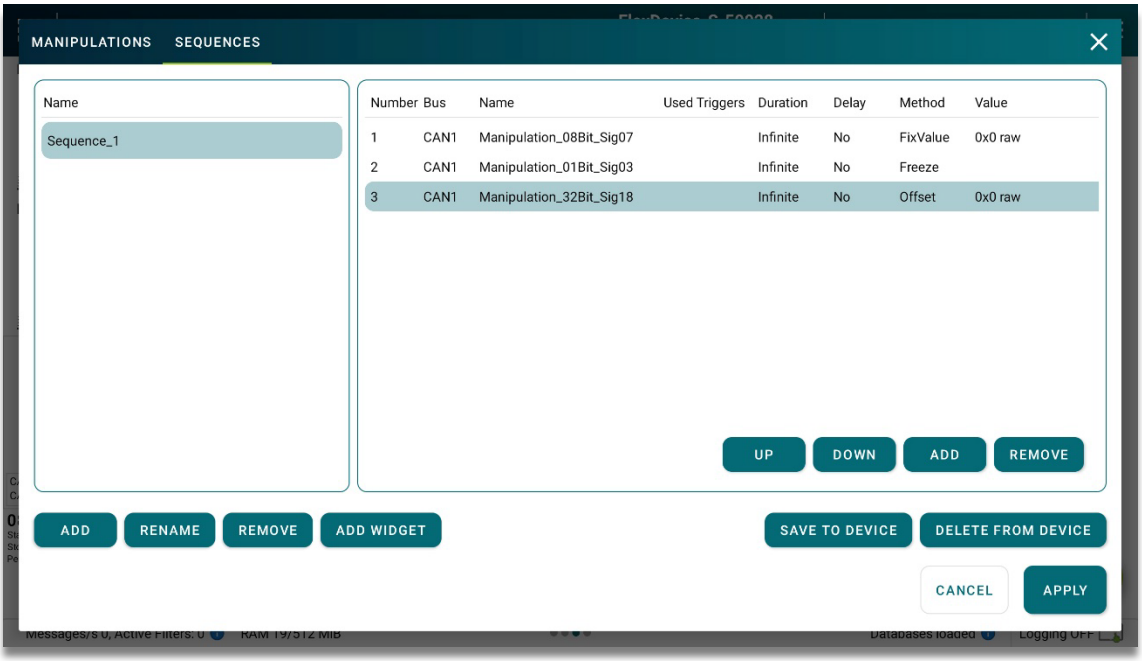
With FL3X Config Control you can manipulate...

- ...Signal Values.
- ...PDUs.
- ...Frames.
- ...ECUS.
- ...Fields, Events, Methods.
- ...Datatype Values.
- ...Global Variables which were created with FL3X Config.

In the FL3X Config Control dialog you can create, edit and delete manipulations and sequences . FL3X Config Control can be opend with the "FL3X Config Control" entry in the overflow menu ☰. Manipulations can be activated with the manipulation widget.

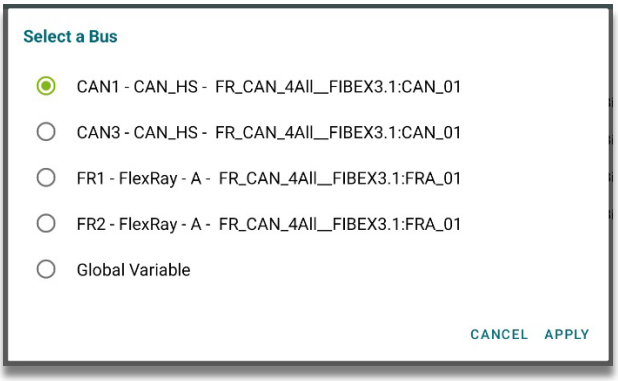


In the "Sequences" tab, manipulations can be combined to a manipulation sequence. Those sequences can be saved to the device or activated with the manipualtin widget.



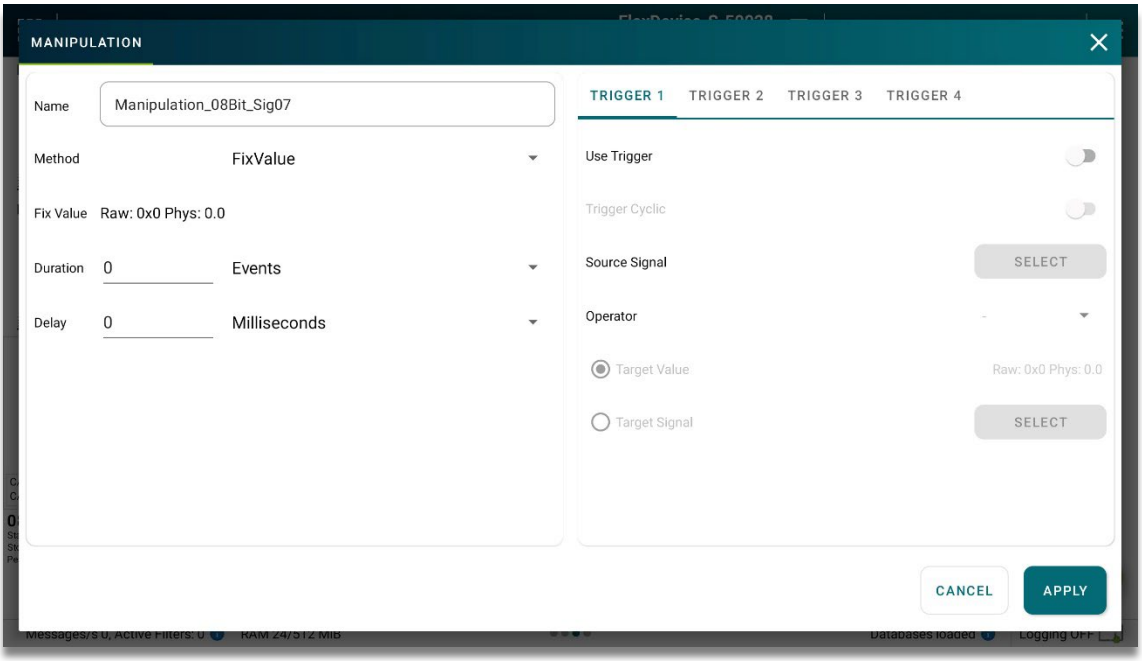
Manipulations can only be generated for a RBS bus, which was created by FL3X Config. If you create a manipulation which affects a Signal/Frame/... which isn't send by the configured RBS, the manipulation won't have any effect. Further restrictions are described in 5.4.6.

When a new manipulation is added, a bus or the "Global Variable" entry must first be selected. Then you can specify the target which should be manipulated.



There are multipe configuration options for manipulations:

- Method: FixValue, Offset, Ramp and more. The available methods depends on the selected target.
- Duration
- Delay
- Up to four trigger: Compare the source sigal to another signal or a fix value to trigger the manipulation.



Further information about manipulations and there configuration options can be found in the FL3X Config User Manual or help.

Differences to FL3X Config Control in FL3X Config PC

- Switch signals are not selectable in FL3X Config mobile, therefore switch manipulations can't be created with FL3X Config mobile. But manipulations using swtich signals, which were created with FL3X Config, can be editet and used.
- In FL3X Config mobile manipulations can only be activatet / stopped by a manipualtion widget.
- No Hot Keys support in FL3X Config mobile.
- When selecting a targert for a manipultion FL3X Config shows only items used by the configured RBS. FL3X Config mobile shows always alle items of the database. If you create a manipulation which affects a item which isn't send by the configured RBS, the manipulation won't have any effect.

5.6 Frame / PDU Mode

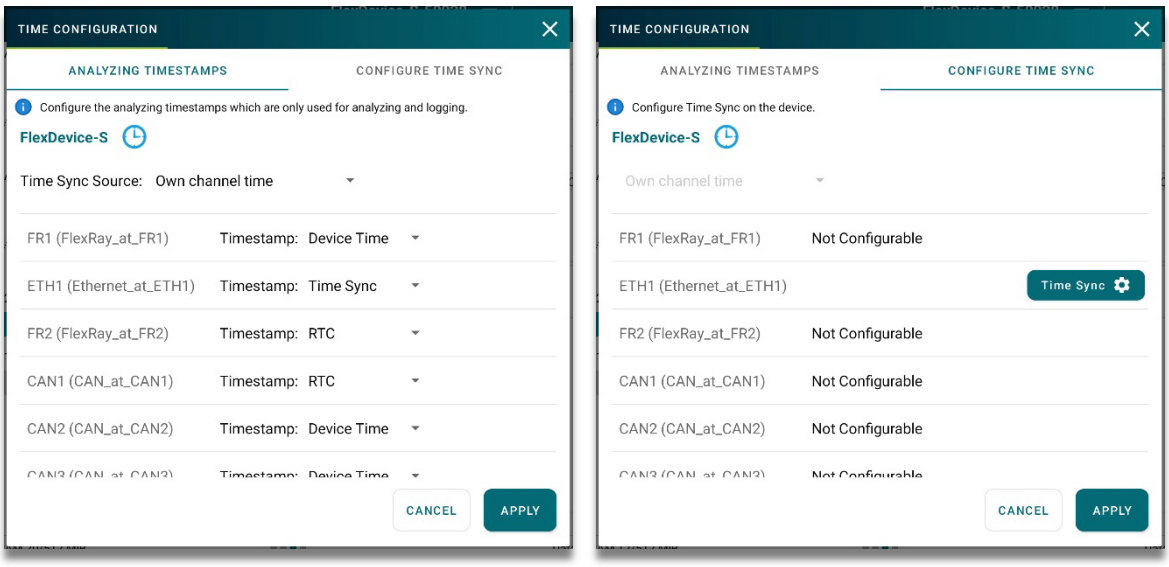
In the settings it is possible to switch between Frame Mode and PDU Mode. If a signal or a filter is configured the configuration contains the current mode. If the mode is changed, it has no effect on existing signal and filter configurations. In the widget settings it is displayed when a signal was selected via PDU mode.

	Frame Mode	**PDU Mode**
signal selection/ filter selection	ECU > Frame > PDU > Signal	ECU > PDU > Signal
Signal	A signal is updated exclusively by the selected frame instance.	A signal is updated by all instances of the selected PDU send by the selected ECU.
Filter/raw data	The selected frame instance is displayed.	All frames containing the selected PDU are displayed.

The Frame/PDU mode setting is saved and loaded with the project.

5.7 Time Configuration

Time configuration settings allow to choose from different timestamp formats which are used for analyzing and logging. Also, it is possible to configure Time Sync on the connected device at runtime. The settings can be opened with the 'Time Configuration' entry in the overflow menu.



5.7.1 Analyzing and Logging Timestamp

The selected timestamp format does not influence the RBS behavior on the device, it only configures the timestamps used for analyzing and logging. Timestamps are shown in the raw message view and used for logging. When logging on the device, the selected timestamp format will also be used.

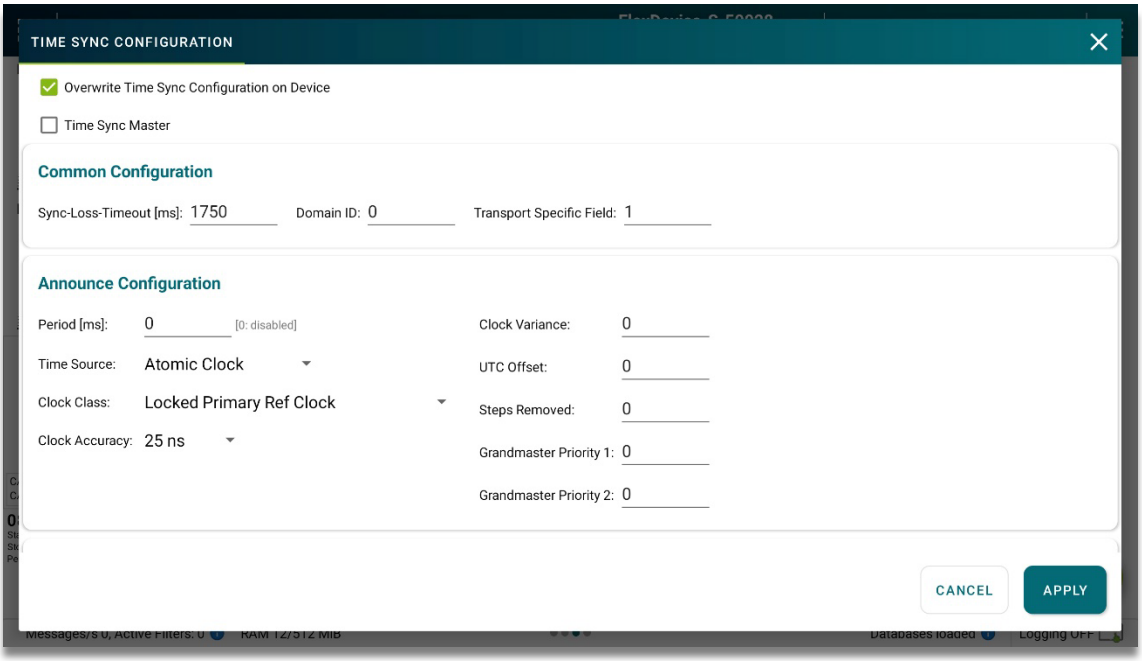
For each channel there are three timestamp formats available:

- **Device Time:** Time counter which is reset to zero with each device restart.
- **RTC:** Local time of the device which can be changed on the diagnosis page.
- **Time Sync:** The configured Time Sync source forwards its own time to all channels with timestamp format ‘Time Sync’. If there is no Time Sync time at the source channel, due to incorrect or missing Time Sync setup, the device time will be used automatically as fallback. In chapter 5.7.2 is described how to configure Time Sync. Following sources are available for selection:
    - **PC-Ethernet Connector:** PC-Ethernet Connector must be configured as valid Time Sync slave (PTP) to receive time from the connected PTP-Master.
    - **Own Channel Connector:** Each channel with timestamp format ‘Time Sync’ uses its own Time Sync channel time.
    - **Any Channel:** Each configured channel can be set as source to forward its own Time Sync channel time internally.

5.7.2 Time Synchronization

PTP can be configured at runtime for the PC-Ethernet Connector and each ethernet channel. For other Time Sync channel types or more configuration settings use FL3X Config.

Check ‘Overwrite Time Sync Configuration on Device’ to configure Time Sync for this channel. If Time Sync is already configured on the device for this channel, the configuration will be overwritten. On the diagnosis page are all Time Sync configurations shown in the ‘Time Sync’ tab.



5.8 Logging

The application has a logging function. The data is saved as an '.asc' or '.mf4' file and can thus be further processed by common applications. The default storage format can be selected in the app settings.

Logging is started and stopped via the logging button in the top bar. At the right corner of the bottom status bar is the current logging state displayed.

The logging process is symbolized by a red recording icon in the upper bar. Logging can also be stopped via this icon.

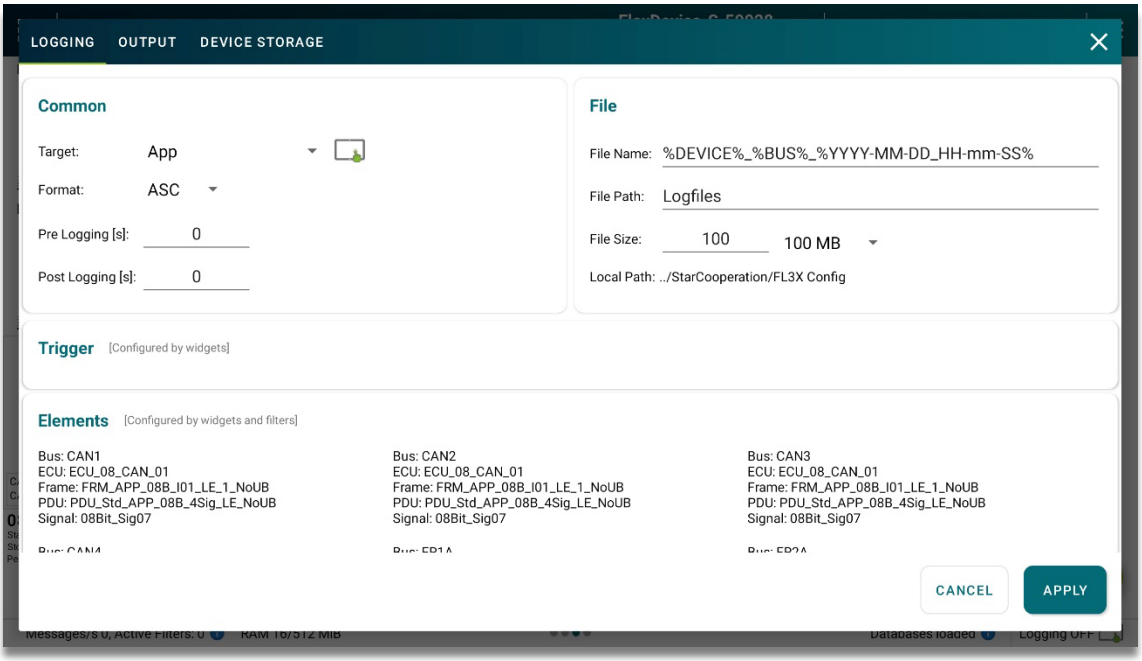
5.8.1 Logging Configuration

Logging settings can be opened with the 'Logging' entry in the overflow menu. Here you can switch the logging target between 'App' and 'Connected Device'. This will influence the available configuration options and logging behavior. Logfiles will be saved on the selected target. Common options for both targets are:

- Format: ASC or MDF
- File Size: The size of the created logging files is limited to the configured size. When the file size is exceeded a new logging file is created.

All frames that are transferred from the FL3X Device to the tablet are logged. Please note that the performance option influences which frames are transferred. If it is enabled, only the frames displayed on the currently visible dashboard will be transferred. Therefore, when changing the dashboard during the logging process, the recorded frames may change. The change of the graphical page is noted in the log file, except when logging on the device. The 'Elements' section lists, independent of the performance option, shows all elements which will be logged. These elements are added by the message filters in the raw message view and by the signals which are selected in the widgets.

In the Section 'Triggers' are all triggers listed which will start or stop logging. Triggers can only be used when logging with the app.



5.8.2 App Logging

If the application is terminated, logging is also stopped. If the app is placed in the background, the system may terminate the logging process if the system load is high. Therefore, keep the app in the foreground during logging.

The log files are stored on the internal memory of the tablet in the folder *.../StarCooperation/FL3X Config/Logfiles*. From there, they can be easily opened or sent with programs on the tablet. Alternatively, the tablet can be connected to a computer via USB to access the device's memory.

The time stamps stored in the trace are generated by the FL3X Device, so they meet real-time requirements. Even if the application itself, due to high data load, only reproduces information with a delay.

The logging process leads to a greatly increased system load. As a result, the application may discard frames if the number of frames to be transmitted is high. In this case, the generated log file does not contain all received frames. A data loss is noted in the log file.

When using app logging there are additional logging features available. A default pre and post logging time can be set in the logging settings. To deactivate pre and post logging, set the time to zero. Possible pre and post logging durations are 0 up to 120 seconds. Pre logging logs all messages which were received in the pre time before logging was started. Post logging will stop logging after post time has passed.

Logging triggers can only be used with app logging. A trigger can be configured in the alert section of a selected signal in the widget. If ‘PrePostLogging Trigger’ is selected, the default pre / post logging times can be overwritten when logging is started by this trigger.
When logging start and stop trigger conditions are simultaneously active, the start condition will outweigh the stop condition. Logging trigger condition will also outweigh the logging start / stop button.

Please note that, for technical reasons, a tablet cannot completely replace a system specifically designed for data logging; we recommend using the logging feature on the FL3X Device or FL3X Config.

5.8.3 Device Logging

The log files are stored in a sub folder ‘Logfiles’ on the connected device SD-Card. In the logging settings can be selected if the files should be saved on the internal or the external SD-Card.

When logging on the device, there is an additional option ‘Autostart’ which will start the configured logging immediately after a device restart. The logging configuration will be applied to the device when analyzing is started. For technical reasons, device logging is linked with analyzing. Therefor logging will stop if you stop analyzing. If the connection is lost to the device or WiFi deactivated while analyzing and logging is active the logging will continue on the device. To keep logging active without analyzing, activate the logging autostart feature, start analyzing to apply the configuration and restart the device.

5.8.4 Logging Content

	Format	Logging Content
CAN	ASC	Time, Channel ID, ID / Extended ID, Dir, Data Length, Data
	MDF	Time, Channel ID, Flags (FD, BRS, Dir), DLC, Data Length, Data
CAN FD	ASC	Time, Channel ID, Dir, ID / Extended ID, BRS, ESI, DLC, Data Length, Data, Flags
	MDF	Time, Channel ID, Flags (FD, BRS, Dir), DLC, Data Length, Data
FlexRay	ASC	Time, Channel Mask (A|B), Channel ID, Slot ID, Cycle, Dir, Flags, CRC header, Data Length, Data
	MDF	Time, Channel ID, Slot ID, Startup Frame, Sync Frame, Null Frame, Payload Length (in words), Cycle, Flags (A|B Channel, Dir), Data Length, Data
LIN	ASC	Time, Channel ID, Frame ID, Dir, Data Length, Data, Checksum Model
	MDF	Time, Channel ID, Frame ID, Flags (Dir), Data Length, Data
Ethernet	ASC	Time, Channel ID, Data Length, Data (Raw Ethernet Frame)
	MDF	Time, Channel ID, DST MAC, SRC MAC, EtherType, Flags (Dir), Data Length, Data (Raw Ethernet Payload)

5.9 Send messages

Send messages is supported for FL3X Device-L/L² Rev3 and FL3X Device-S.

To send a message select the ‘Send’ entry in the overflow menu or create a button with the send message function. Then select the channel on which the message is to be sent. Messages can be sent on CAN channels and LIN channels. Sending is not possible if an RBS created with FL3X Config is active on the channel. If sending is not possible, the channel will not be available for selection.

You can either select DLC and message ID freely or have them preselected by selecting a frame. In addition, specify the data bytes in the hexadecimal system.

In addition, a message can be repeated as often as desired. To do this, enter the desired number of repetitions in the text field or leave it blank for unlimited repetitions. Also, specify how long the pause between messages should be. Note that the send interval is determined by the tablet and therefore does not meet real-time requirements.

Stopping a send process set to infinity is possible via a button widget with the Pause Frames function.

CAN

For CAN-FD the parameters "CAN-FD-Frame" can be activated (allows the use of more than 8 data bytes) and "Bit-Rate-Switching" (switches for the data phase of the transmission to the baud rate set on controller level; only possible if Bit-Rate-Switching was also activated on controller level).

Sending CAN messages with extended identifier is not supported.

LIN

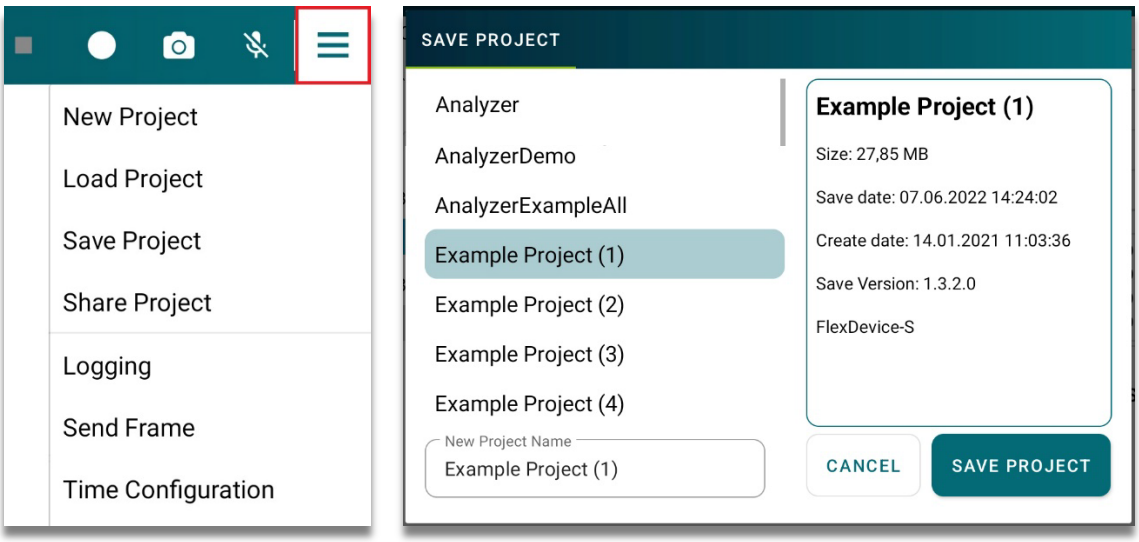
LIN messages are sent automatically whenever the corresponding ID is requested by the master. If the entered ID is not requested by the master, then the message is never sent on the channel. Sending LIN messages is only possible if a database is loaded, and no RBS is configured on the LIN channel.
The setting for using checksum calculation is automatically loaded from the database. Changing it may result in the message not being received.

5.10 Save, load and share project

5.10.1 Save and load project

Every change to the project is immediately saved internally in the app. If the app is closed, the last status is loaded at the next start.

To save a project to storage, select the item 'Save project' in the overflow menu. Now assign a name for your project.



The corresponding project folder is stored on the tablet memory under *.../StarCooperation/FL3X Config/Projects*. The project can be copied and used on other devices.

Please note that a project file also contains your database. Therefore, it may fall under confidentiality rules of your company.

Loading a project is done via the menu items 'Load project'.

Projects created with FL3X Config can be loaded. If an RBS has been configured for a channel in FL3X Config, it can no longer be edited on the app. This means that it is not possible to exchange the assigned database. If this is necessary, the exchange must be carried out with FL3X Config and the adapted project must be loaded on the tablet. Alternatively, a new project can be created on the tablet.

5.10.2 Share project

Projects can be shared via E-Mail, Bluetooth, Cloud etc. Before the project is shared it will be zipped. The zip file can be protected with a password. To share your project, select ‘Share Project’ in the overflow menu. If your project contains unsaved changes, you’re asked to save them. Afterwards you can set a password to protect the shared project zip. Skipping the password dialog will create a zip without password. Now the zipped project is saved in the projects folder and an Android share dialog opens. If you close the share dialog the project zip will remain in the projects folder.

To open a shared project, select ‘Load Project’ in the overflow menu. If you copied the project zip into the project folder it will be listed, otherwise click ‘Import Project zip’ and select the zip file. When a project is imported the project will be extracted and saved in your project folder.

5.11 Updating the firmware on the FL3X Device

5.11.1 Automated flashing

In order for a FL3X Device to be used with the FL3X Config mobile app, the current firmware must be active on the FL3X Device. If an old Analyzer firmware is active on the FL3X Device, the app tries to updated it automatically. In case that a project created with FL3X Config is active on the FL3X Device, it must be recompiled and flashed with the latest FL3X Config version. Alternatively, the RBS Project can replaced by standalone analyzer. Section 5.11.2 describes to process to flash the device manually.

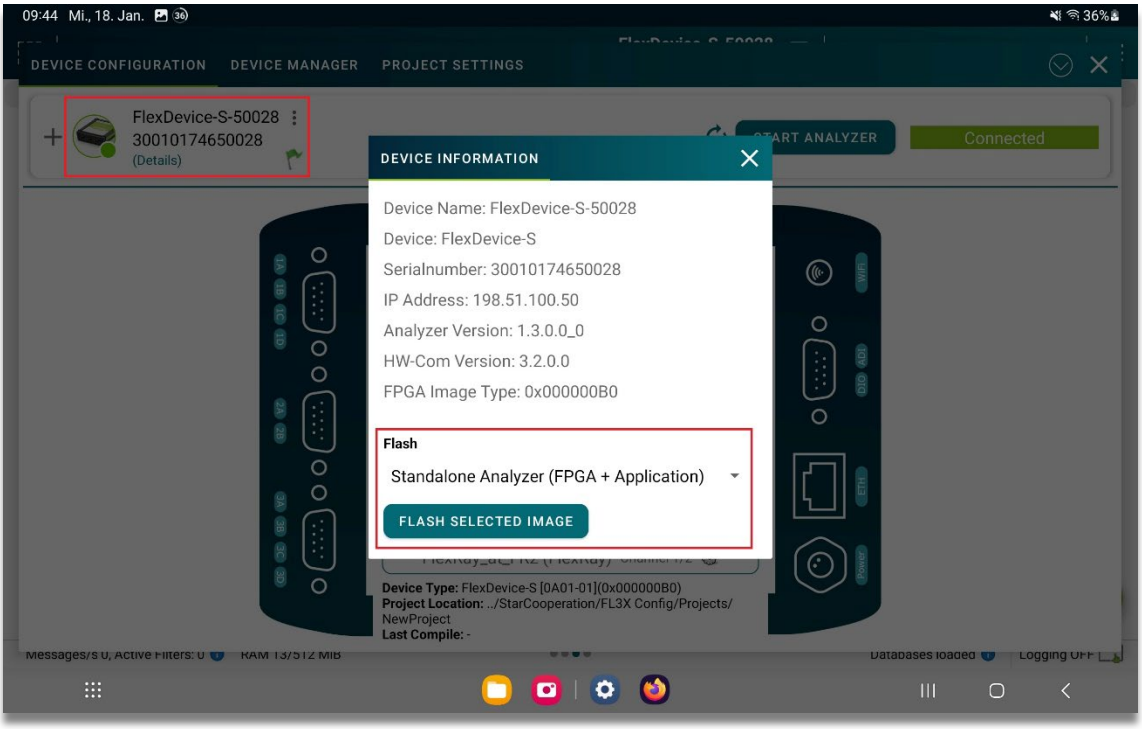
5.11.2 Manual flashing

It is possible to transfer the current standalone analyzer firmware or project to the device at any time using the FL3X Config mobile app. In the device manager , an information dialog can be opened by pressing on the device name. The flash section contains an option for selecting images for flashing and the button to start flashing.:

- Flash Standanlone Analyzer: Flash FPGA and analyzing application image / distribution image which is used for analyzing only use cases. All channels can be configured and used with FL3X Config mobile.

- Flash Analyzer Application: This won't replace the currently running FPAG image on the FL3X Device, but flash the analyzing application image / distribution image which is used for analyzing only use cases. All channels can be configured and used with FL3X Config mobile.
- Flash Project: To flash FPGA image and project application image from project folder. The application image / s19 file must have been compiled by FL3X Config. It must also be compatible to the connected device.
- Flash Project Application: Flashing project application image without FPGA image. The application image / s19 file must have been compiled by FL3X Config. It must also be compatible to the connected device.
- Flash Project FPGA Image: Flashing FPGA image file wich is compatibel to the project.

Note: Updating the firmware is not supported for the *FL3X Device-L Rev2* and *FL3X Device-L² Rev2*. These models must be updated using the web interface or FL3X Config.



5.11.3 Add FPGA images

Not all FPGA images are deposited in the app. To add further FPGA images, copy the image files to *../StarCooperation/FL3X Config/Resources/Variants/*. The images must be zipped to be used with the app.

Downloading FPGA images files can be done in two ways:

- App
  - Establish a connection to the internet.
  - Open the app settings via the overflow menu ☰.
  - Click 'Update FPGA Images' in the 'Downloads' section.
  - The app will download and save the images automatically.
- Homepage
  - Open the webpage https://flex-product.com
  - Download the FL3X Device-S/L/L² driver.
  - Choose FPGA images from the downloaded folder.
  - Zip each image if they're not already zipped. The name of the zip file must contain the image variant 0xXXXXXXXX.
  - Copy the zipped images on the tablet to *../StarCooperation/FL3X Config/Resources/Variants/*

5.12 Settings

Use the 'Settings' menu item in the overflow menu to access the application's settings.

5.12.1 App

Here you can set that the screen of your device always remains activated while the app is running. This function should only be used when the power source is connected. For user-defined shutdown times, please use the setting options of the operating system.

It is also possible to set the application to attempt to restart analyzing after a connection loss. Analyzing is automatically restarted as soon as a WiFi connection to the FL3X Device is active again after a connection loss.

Furthermore you can disable the ‘Show PDUs’ setting, so that the PDU’s are removed in the filter settings and the signal selection.

5.12.2 Project

Change between frame mode and PDU mode for the currently loaded project. This setting is saved and loaded with your projects.

5.12.3 Performance

Activate the “Per page filter” to reduce the amount of data transferred. Only data needed by the current dashboard will be transferred.

5.12.4 Bus

In the right area of the settings the baud rates can be set, which should be used as default after connecting a hardware. In addition, the listen-only mode can be deactivated by default. Please note that a deactivated listen-only mode together with an incorrect baud rate can interfere with the vehicle bus.

5.12.5 Theme

The Dark Mode can be enabled in the theme settings. To automatically adapt the colors of the widgets to the current theme, you can activate the ‘Auto adjust widget color’ setting. Colors which are affected by this setting are shown in the widget settings with three bubbles. The first one shows the selected color which is used when the setting is disabled. The second bubble shows the color for the light mode and the third the color for the dark mode.

6 Troubleshooting

This chapter contains frequently asked questions and their answers about the FL3X Config product.

1	Topic	No WiFi connection to the FL3X Device can be established.
	Solution	• Was the correct hardware selected to connect? • Is the hardware supplied with power? Is the WiFi LED lit? • It can take up to two minutes until the WiFi module is ready to receive. • Is the tablet or FL3X Device already connected to another device? • Disconnect the hardware from power for 5 seconds. Try again after two minutes.
2	Topic	The app does not show incoming data in the raw data lists.
	Solution	• Is at least one additional station connected to the bus that sets the ACK bit? If not, deactivate the listen-only mode for this bus in the connection overview. • Has a database already been loaded? Does this description file match the bus used? Were frames activated in the filter list that are also present on the bus?
3	Topic	Projects, logging or audio files are not visible in the PC's file eplorer when the tablet is connected via USB.
	Solution	• This is an Android bug when the tablet is connected to the PC via MTP. Older Android versions / tablets only support file transfer via MTP. In this case, the tablet must be restarted so that the files are visible on the PC via USB.
4	Topic	The tablet gets very hot and slow.
	Solution	• Disconnect the tablet from the power supply. Charging generates a lot of heat, which causes the tablet to clock down and operate slower.
5	Topic	An existing WiFi connection breaks off.
	Solution	• The range depends strongly on environmental influences. Walls, especially those made of metal, greatly reduce the range. Interfering signals from microwaves, DECT phones or other radio transmitting devices can greatly reduce the bandwidth or cause the connection to be interrupted. • During the attempt to establish another connection, the system may disconnect the existing connection.
6	Topic	The channels displayed in the connection view do not correspond to the real equipment of the FL3X Device.
	Solution	• Create a new project with the fitting device type.
7	Topic	The application crashes.
	Solution	• Despite extensive testing, we cannot completely rule out errors and crashes in our software. We apologize for this and ask you to report these errors to us with as detailed a description as possible to support-ee@star-cooperation.com.
8	Topic	The WiFi connection to the FL3X Device is automatically disconnected and another WiFi network is connected.
	Solution	• Go to the WiFi settings of Android. • Delete or disable the automatic reconnection of all known WiFi networks except the desired FL3X Device.
9	Topic	Analyzing cannot be started because a lock is active on the FL3X Device.
	Solution	There are several solutions for this: • Another device/tablet is already using the FL3X Device. • If no other analyzing is active, the lock is automatically removed after 60 seconds and you can connect. • Restart the FL3X Device to disconnect all connections and reset the lock.
10	Topic	The WiFi connection setup via the Android settings fails.
	Solution	A maximum of one device can connect to the FL3X Device via WiFi. Disconnect the already connected device or restart the FL3X Device.

11	Topic	If a projects compiled with FlexConfig RBS 4.6 or older running on the FL3X Device it can not be updated over WiFi.
	Solution	Flash an actual version of the project to the FL3X Device. If you are using the distribtuion image on your device please contact our supportteam.

7 Ordering information

7.1 FL3X Config mobile

Product	Description	Order number
FL3X Config mobile	Software package FL3X Config mobile for Android	3-V1140B01-01

7.2 Accessories

Product	Description	Order number
FL3X Device-L/L²	WiFi bus interface with FlexRay, LIN and CAN-HS/CAN-FD	see data sheet FL3X Device-L: 3-V087-0A03 FL3X Device-L²: 3-V087-0S03
FL3X Device-S	WiFi bus interface with FlexRay, LIN and CAN-HS/CAN-FD	3-V0860A01
Android tablet	We offer you a suitable Android tablet for the use of FL3X Config (mobile.	Upon request
Tablet car charger		Upon request
Tablet car mount		Upon request
Custom extensions		Upon request

7.3 Related documents

Document	Description	Order number
[1] Instructions for Use FlexDevice-L/L²	Operating instructions for the FL3X Device-L/L² (in English)	3-0087-0A01-D19
[2] Instructions for Use FlexDevice-S	Operating instructions for the FL3X Device-S (in English)	3-0086-0A01-D09
[3] Open Issues	Know issues for FL3X Config mobile	3-0114-0B01-D12

8 Glossary

App drawer	Overview of all apps on the device. Depending on the device, the app drawer can be opened differently.
audio recording 	Starts or stops an audio recording. If a red dot is visible in the icon, the audio recording is active. The audio recording is saved under *.../StarCooperation/FL3X Config/Screenshots.*
Recording icon 	If the recording icon is visible, logging is active. Clicking on the icon stops logging.
Dashboard overview 	This icon is located at the upper left edge and opens an overview of all dashboards.
database	Bus database, bus description file
device icon 	This icon takes you to the device overview where the connected FL3X Device is displayed and can be configured.
filter button 	This button displays the filter view where frame filters can be activated and deactivated.
logging button 	Logging can be started via this button.
delete button 	This button will delete all the widgets on the current Dashboard.
overflow menu 	This icon opens the menu.
pause button 	This button freezes the widgets. When the play button is pressed, the widgets are updated again.
play button 	This button can be used to start analyzing or continue it after pausing.
screenshot button 	By clicking this button, a screenshot of the currently visible area can be created. The screenshot is saved under *.../StarCooperation/FL3X Config/Screenshots.*
lock button 	This button locks the dashboards. As a result, widgets cannot be scaled or moved. Also, the dashboard zoom is locked. Dashboards can still be swiped through.
stop button 	This button stops the active analyzing.
NF, SY and SU flag	Flags that are used in a FlexRay frame header: NF: null frame SY: Sync frame indicator SU: Startup frame indicator
Widget	A widget is a display element on a dashboard that is used for signal visualization, for example.

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