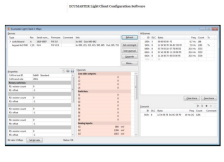


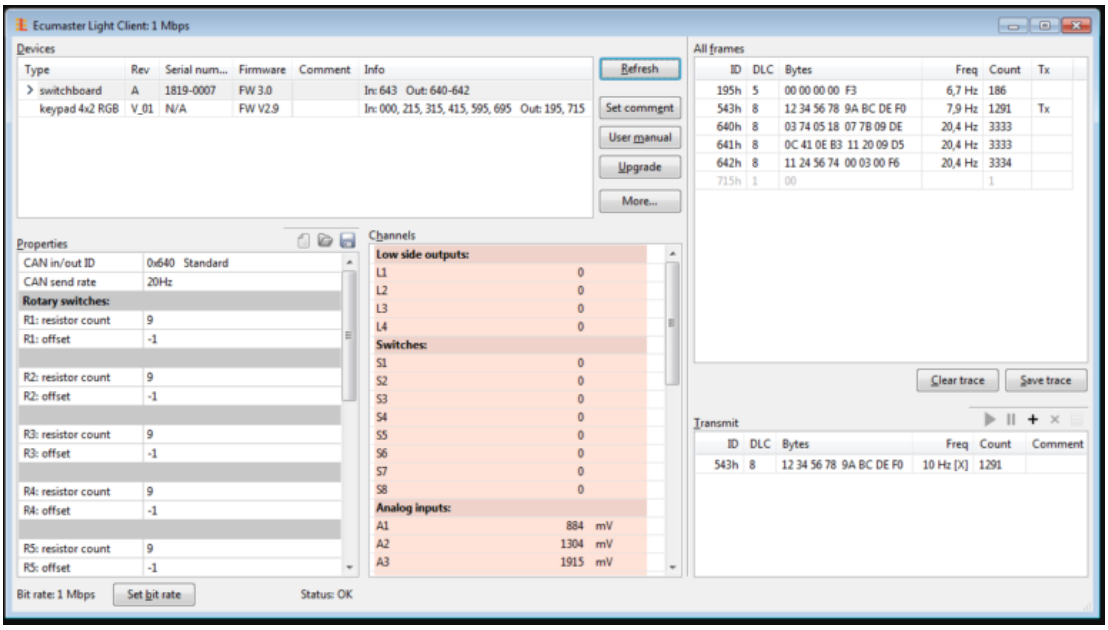
ECUMASTER Light Client Configuration Software User Manual

Contents

1 ECUMASTER Light Client Configuration Software
2 Overview
3 Compatible devices
4 Compatible USBtoCAN adapters
5 Starting the Light Client software
6 Main window user interface
7 Devices panel
8 Properties panel
9 Channels panel
10 Status field
11 Transmit panel
12 Light Client case studies
13 Document revision history
14 Documents / Resources
14.1 References
15 Related Posts

ECUMASTER

ECUMASTER Light Client Configuration Software



Product Information
Specifications

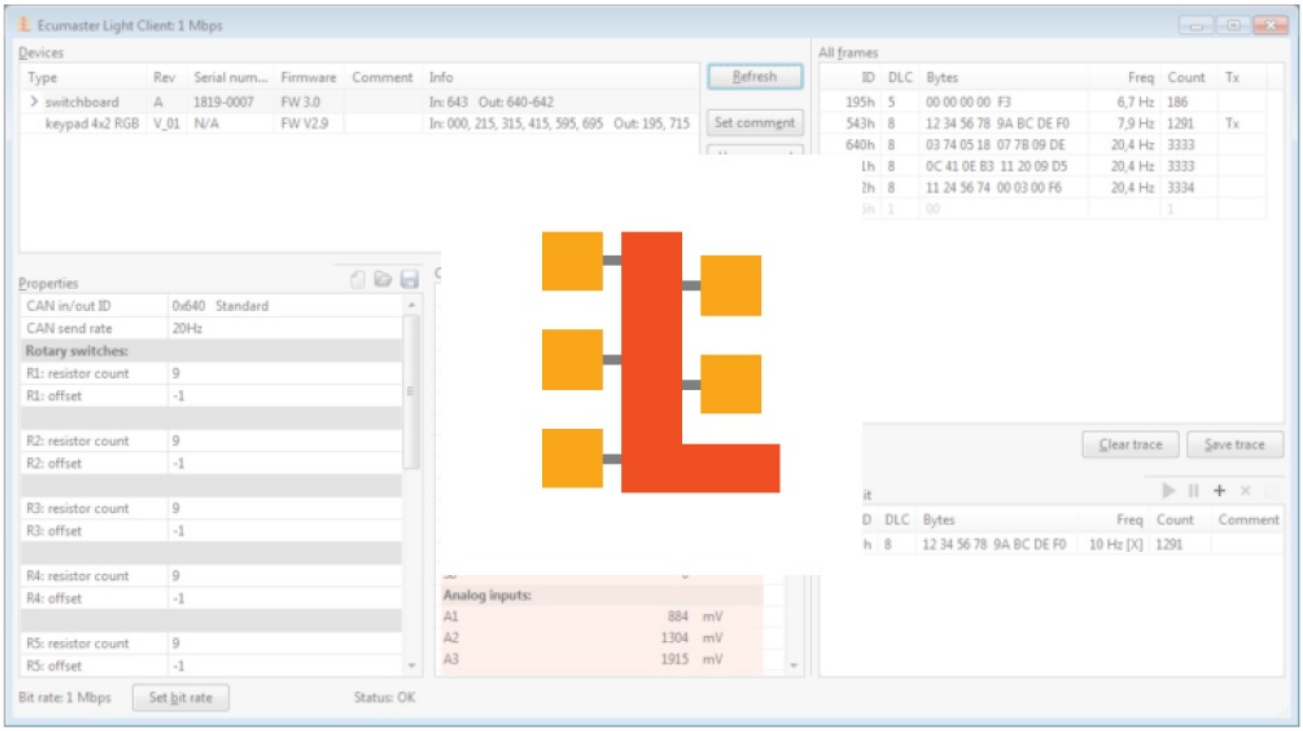
- Product Name: Light Client
- Document Version: 2.2
- Software Version: 2.2
- Published on: 11 April 2024

Product Usage Instructions
Overview
Light Client is a lightweight client program that provides access to device configurations directly from the device itself. Updates for firmware, user manuals, and firmware upgrade files are fetched from the Internet when needed. This eliminates the need for frequent updates to the Light Client software.

FAQ (Frequently Asked Questions)
Q: Can I use the Light Client without an internet connection?
A: Yes, Light Client can work in offline mode allowing you to edit projects without an active connection to the CAN bus.

Light Client

Document version:
Software version:
Published on: 11 April 2024



Overview

Ecumaster Light Client is the configuration software for many Ecumaster devices. It is also a tool for monitoring and logging the CAN bus traffic. The Light Client can discover compatible devices on the bus, decode channels/signals values, modify device-specific properties. There are links to user manuals and firmware upgrade options for each device. Also, a bit rate of all compatible devices connected to a CAN bus can be changed at once by one click. CAN bus monitoring is possible thanks to the list of frames grouped by ID and the possibility to send custom frames to the CAN bus. Also, all the traffic can be saved into a textual trace file.

Light Client is a lightweight client program. The description of every device configuration is provided by the device itself and is not a part of the program. Thanks to this approach, it is not necessary to update the Light Client each time you want to work with a new firmware. The same applies for access to user manuals and firmware upgrades files. All these files are accessed from the Internet if needed.

Compatible devices

The following devices are compatible with Light Client:

Compatible device	Product page	Project file
Battery Isolator	www.ecumaster.com/products/battery-isolator/	.ltc-batteryIsol
CAN Keyboards	www.ecumaster.com/products/can-keyboards/	Not available
CAN Switchboard V3	www.ecumaster.com/products/can-switch-board/	.ltc-switchboard
CAN Thermal Camera	www.ecumaster.com/products/can-thermal-camera/	.ltc-tireTempCam .ltc-brkTempCam
Digital Gear Indicator	www.ecumaster.com/products/digital-gear-indicator/	.ltc-gearDisplay
Dual H-bridge	www.ecumaster.com/products/dual-h-bridge/	.ltc-h-bridge
GPS to CAN	www.ecumaster.com/products/gps-to-can/	.ltc-gps
GPS to CAN V2	www.ecumaster.com/products/gps-to-can-v2/	.ltc-gps2
Lambda to CAN	www.ecumaster.com/products/lambda-to-can/	.ltc-lambda
Wheel Speed to CAN	www.ecumaster.com/products/wheel-speed-to-can/	.ltc-wheelSpeed
RF Steering Wheel Panel	www.ecumaster.com/products/wheel-panel/	.ltc-rf-receiver
ADU (*)	www.ecumaster.com/products/adu/	.ltc-ADU

The support for Ecumaster Advanced Display Unit (ADU) is limited to firmware and layout upgrade from the Internet. This workflow is used when the ADU is operated by a racing series. In such a situation, full access to the ADU requires a secret encryption key.
If you are using a regular ADU please use the separate ADU Client available on www.ecumaster.com/products/adu/ to have all the configuration options.

Compatible USBtoCAN adapters

Light Client can use a USBtoCAN adapter to get access to the CAN bus network.

The following adapters are supported:

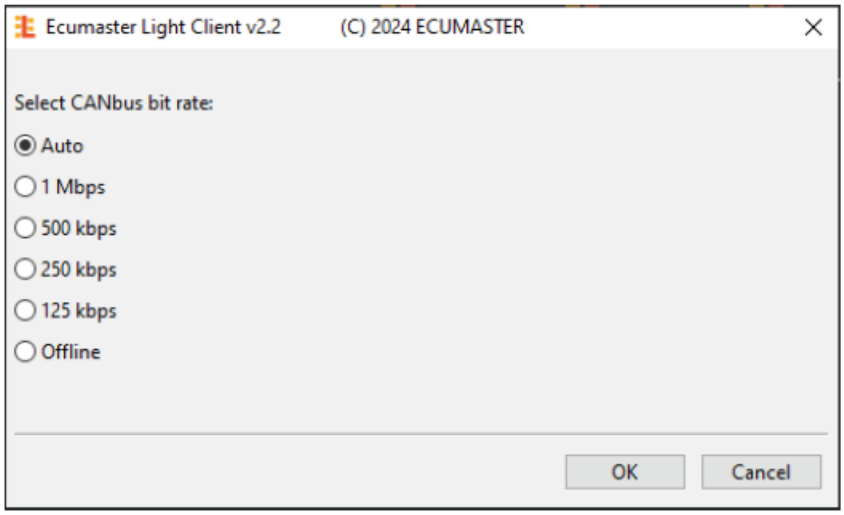
1. Ecumaster USBtoCAN (*)
2. Peak System PCAN-USB and PCAN-LAN adapter
3. Kvaser CAN adapter

Light Client is also able to work in the offline mode to allow the user to edit Light Client projects without a connection to the CAN bus.
If you are using Ecumaster USBtoCAN and Microsoft Windows XP/7/8/8.1 the device driver must be installed from www.ecumaster.com/products/usb-to-can

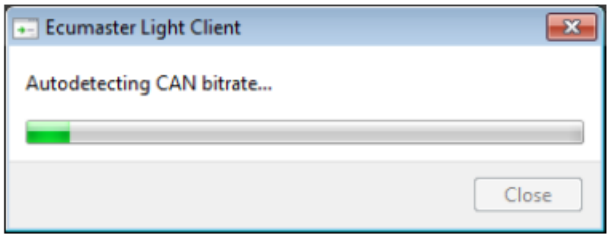
Starting the Light Client software

After starting the program, you must define the bit rate of the CAN bus. The following options can be selected:

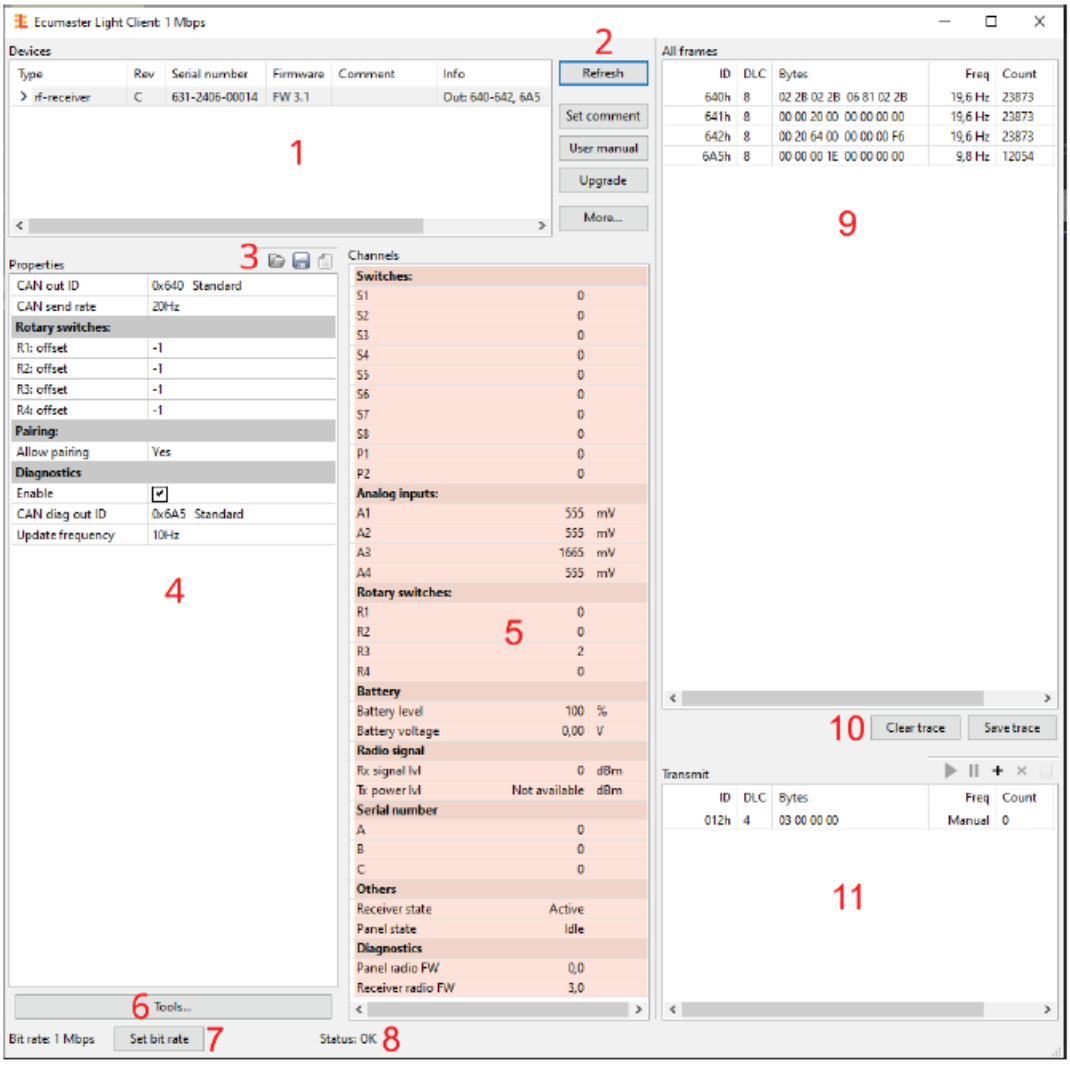
1. Auto detection
2. Specific bit rate (1 Mbps, 500 kbps, 250 kbps, 125 kbps)
3. Offline – to edit the Light Client projects without connection to the CAN bus



If you use the Auto (auto-detection mode) all supported bit rates will be monitored in listen-mode to find the actual bit rate. In the case no frame is received, test frames will be sent to check if any device is able to acknowledge it.



Main window user interface



User interface description:

1. The Devices section in the Light Client application provides a list of all compatible devices connected to your CAN bus. Upon connection, Light Client detects and displays these devices. Each device entry includes general information such as name, hardware revision, serial number, firmware version, and additional details about used CAN IDs. To configure a device and display its channels, double-click its entry in the Devices section.
2. Devices control buttons:
    - Refresh – refresh devices list
    - Set comment – set a comment for the device
    - User manual – view the online user manual in a web browser
    - Upgrade – the device firmware upgrade, online or local file
    - More:
    - Load project – open previously saved project file
    - ▪ Save project – save project file of the currently selected device
    - Restore project to default – restore default properties of the currently selected device
    - Mount device from file… – open a virtual device from local file and append it to list of devices
    - Mount device from ECUMASTER.com… – open a virtual device from Internet and append it to list of devices
    - Export CAN definition .CANX… – export to .CANX file for importing in other Ecumaster products

    - Export CAN definition .DBC… – export to .DBC file for importing in other products
    - About – application information
3. Device properties management toolbar:
    - Restore project to default – restore default properties of the currently selected device
    - Load project – open previously saved project file
4. Save project – save project file of the currently selected device
   List of properties for the selected device
5. List of channels sent over the CAN bus
6. The Tools button shows device-specific menu. Check the user manual for your device to see what tools are available
7. Button for changing bit rate of all the devices compatible with Light Client
8. CAN bus status information
9. List of received frames on the CAN bus, grouped by ID
10. Clear trace button removes all received frames from history and Save trace button saves that history to a text file
11. Transmit window allows you to set custom frames which will be sent over the CAN bus

Devices panel

The devices panel shows a list of devices compatible with the Light Client that are available on the CAN bus. Each device is described by the following columns:

- Type
- Revision
- Serial number
- Firmware version
- User comment
- Additional information about the used input and output CAN IDs.

Double click a row or press Enter to make the device active and display its channels and properties.
Devices control buttons [2] are contextual to the active device:

- To open its user manual in the web browser, press the User manual button (or Alt+M).
- To upgrade its firmware, press the Upgrade button (or Alt+U).
- To set its comment press the Set comment button (or Alt+E).
- To export its channels definition to CANX or DBC file press More | Export CAN definition .CANX… or More | Export CAN definition .DBC…

Properties panel

- The properties panel allows you to edit the properties of the active device. Every change that is made in the “Properties” is immediately stored in the device’s permanent memory. In other words, there is NO Make Permanent functionality similar to ADU, PMU, EMU PRO, EMU BLACK, EMU CLASSIC Client software.
- Each device type has its own list of properties. Refer to the user manual of a specific device to find available properties.

- Properties for the active device can be loaded from the Light Client project file. To do this use the Properties management toolbar (marked as 3 in chapter Main window user interface (on page 5)). You can save the Light Client project file and then use it on a different device of the same type (even with different firmware version).
- Every device type has its own file extension, e.g. ".ltc-gearDisplay" for Digital Gear Display, or ".ltc-switchboard" for CAN Switchboard.

Channels panel

- The channels panel allows you to see the content of CAN bus frames sent by the active device.
- Each device type has its own list of channels. Refer to the user manual of a specific device to find available channels.
- It's possible to export description of all the channels to CANX or DBC file for use in other software. To do this press "More | Export CAN definition .CANX…" or "More | Export CAN definition .DBC…".

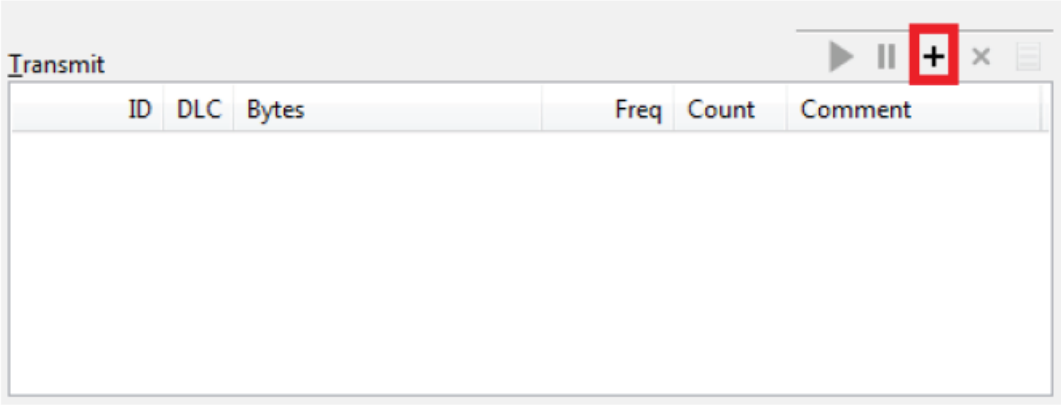
Status field

Explanation of CAN statuses for Ecumaster USBtoCAN adapter

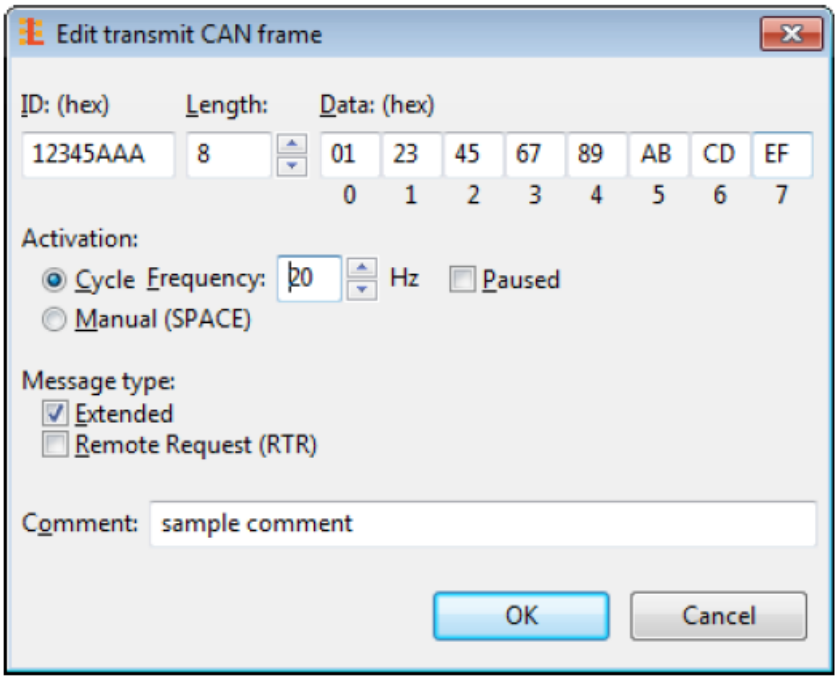
Status	**Typical cause of the problem**
OK	CAN bus fully functional, no error
stuff	Other device sends frame(s) on the different bit rate
form	Other device sends frame(s) on the different bit rate
bitrec	There is NO terminator on the CAN bus
bitdom	CANL and CANH are shorted
bit	Two devices send frames with the same ID, but with different DLC/DATA fields
ack	The adapter is the only one device on the CAN bus, no other devices. Or, CANL or CANH is disconn ected from other devices. Or, CANL and CANH are swapped together
Offline	Program is working in Offline mode – there is no access to a CAN bus

Transmit panel

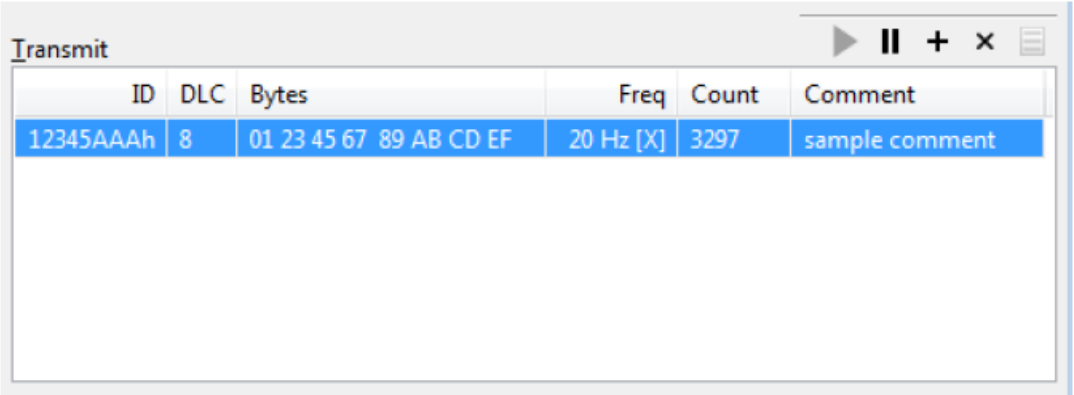
- Light Client gives you the possibility to transmit custom frames to a CAN bus.
- The toolbar above the Transmit panel can be used to Start, Pause, Add and Delete transmit frames.
- To add a frame, press the Add icon (+) or press the Insert key when focused on the Transmit panel list (press the Alt+T to focus the Transmit panel list).



The add transmit frame dialog window will appear. You can define if the frame is CAN 2.0A (Standard) or CAN 2.0B (Extended), its ID, Length and Data bytes or RTR frame type. In addition to prior, the Cycle frequency can be selected or frame can be one-shot activated by Space key later on. Textual Comment can be assigned to help identify the frame the list.



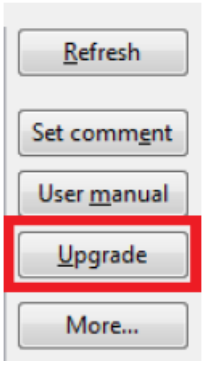
To edit the transmit frame double click on it or press the Enter key while the frame is highlighted.



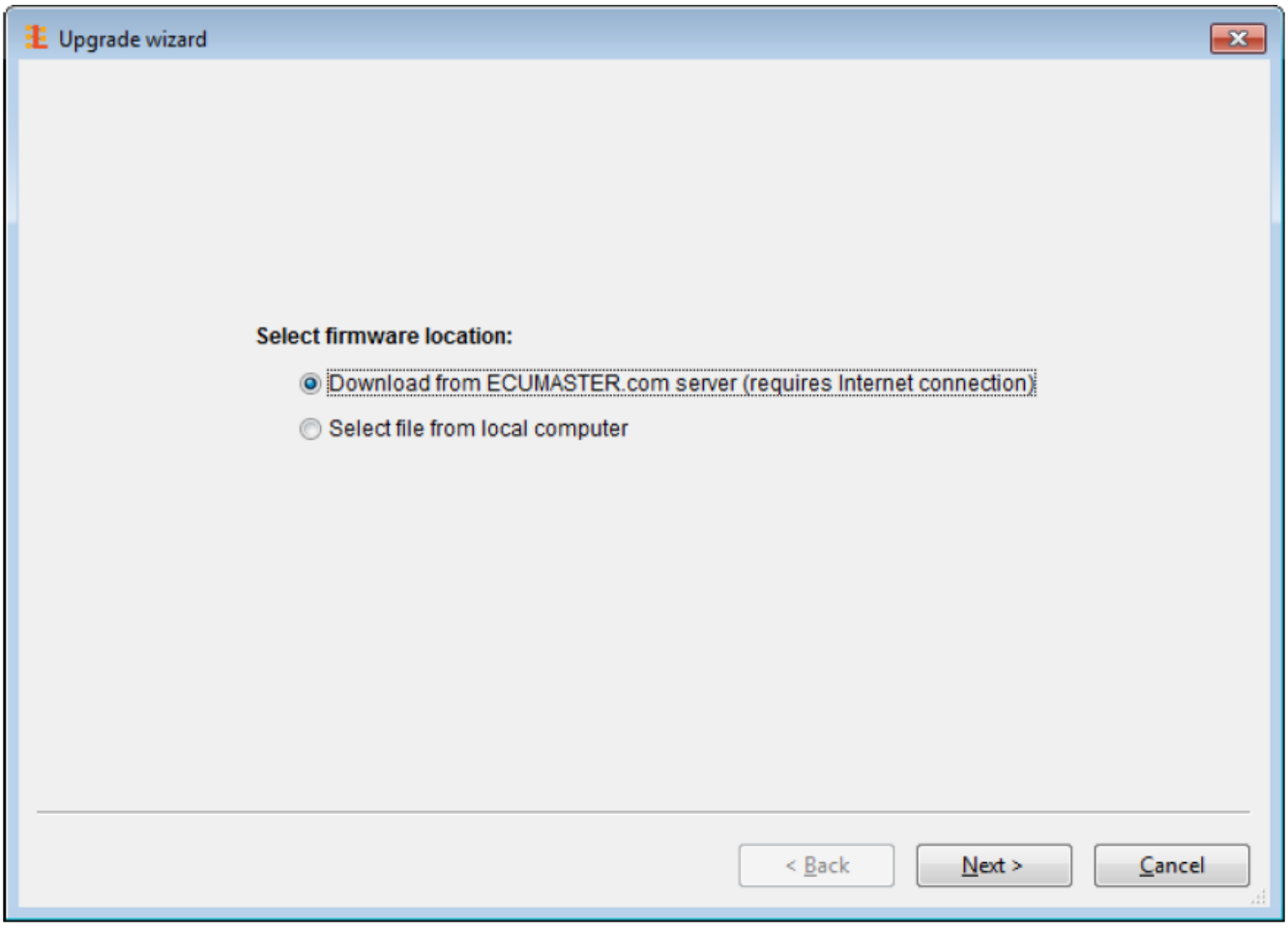
Light Client case studies

Upgrading a device firmware.

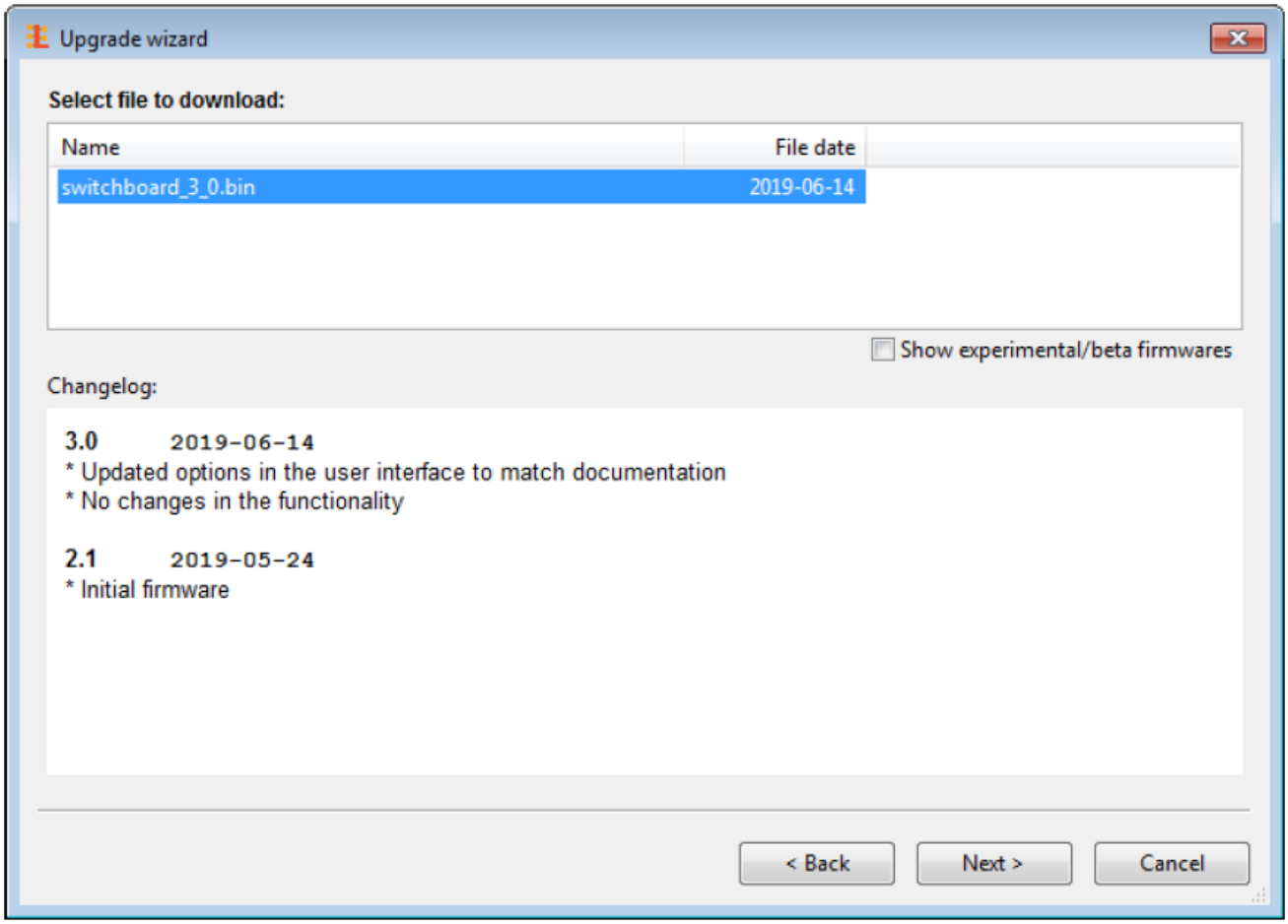
The Light Client application allows you to upgrade the connected device's firmware to the latest version. To do this, press the Upgrade button.



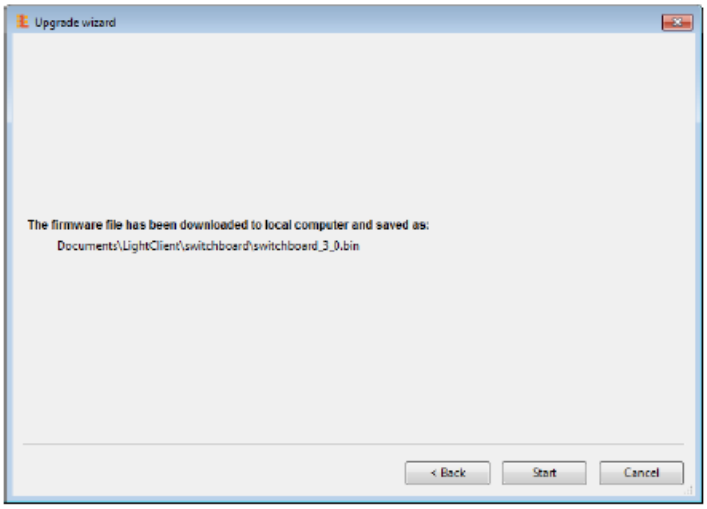
The following screen will appear:



Firmware files are not part of the Light Client installation so the easiest solution is to download the latest firmware from the server (requires Internet connection). When you press the Next button, the following dialog should appear, allowing you to download the selected firmware:



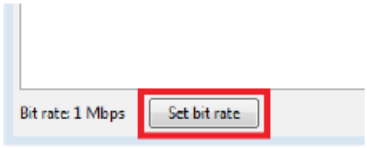
You can decide whatever or not display the experimental/beta firmwares. Please note, that experimental/beta firmware may not work as expected.
When you press the Next button again, the application should display a download confirmation.



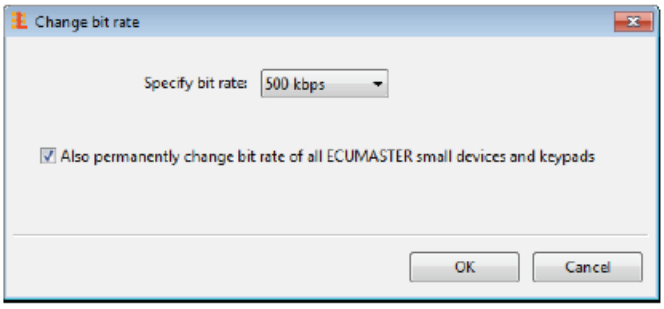
Next, press the Start button to upgrade the firmware. During the upgrade process do not turn off your PC or interrupt power to the device!

Changing CAN bit rate of devices.
The Light Client application allows you to change the bitrate of all Light Client compatible devices in a CANbus network. To do this, press the “Set bit rate” button.

The following screen will appear:



The following screen will appear



You need to choose the new speed after the change and press the OK button. Changes will be applied immediately.

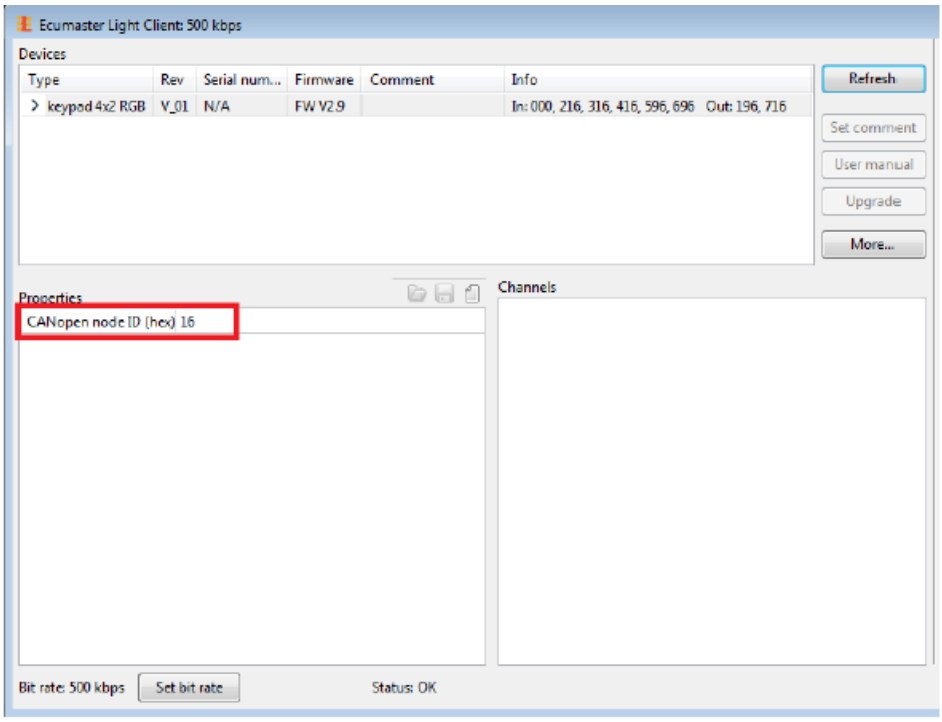
- By unchecking the “Also permanently change…” tick you have an option to only change the adapter bitrate. This can be useful when diagnosing CAN bus problems.
- It’s important to know, that Light Client can only change the bit rate of compatible devices. If you have any third-party devices please disconnect these devices from CAN bus before changing the bit rate by the program. Refer to these third-party devices user manuals on how to change their bit rate.
- Some devices support only a fixed CAN bit rate (e.g. ECUMASTER ADU or CAN Switchboard V3 with SPEED jumper closed). In such a situation it’s not recommended to change the CANbus bitrate, because you will lose the connection with these devices. Users will be prompted in such a situation.

Changing CAN Keyboard CANopen node ID.

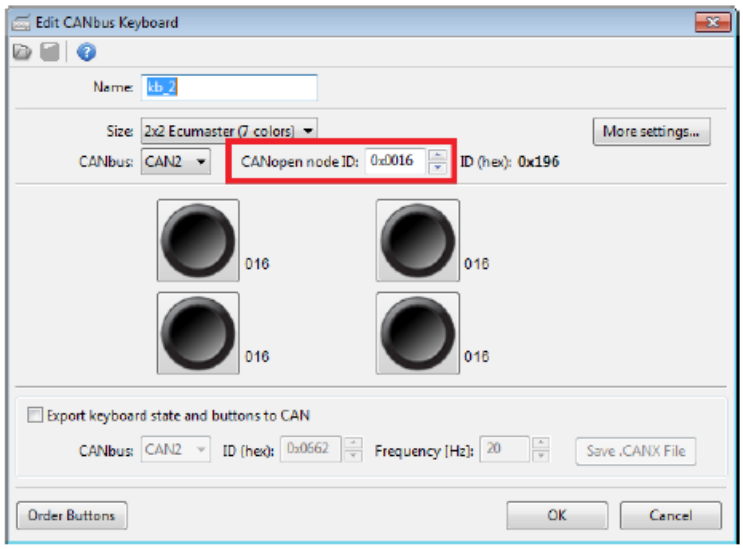
- Each CAN keyboard with factory default settings has the same CANopen node ID = 0x15.
- If you want to connect two CAN Keyboards of any size to the same CAN bus you need to assign a unique CANopen node ID to the second keypad.
- You can assign for example the CANopen node ID = 0x16 to the second keyboard.

To do this use the following steps:

1. Connect ONLY THE SECOND KEYBOARD to the CAN bus.
2. Start the Light Client app.
3. Press OK with the Auto bit rate option selected.
4. Change the CANopen node ID in the Properties panel to 0x16. The change will be immediately applied to the keyboard.



5. [OPTIONAL] If you need to connect these two keyboards to Ecumaster PMU, you need to define CANopen node ID=0x16 for the second keypad in the PMU Client software.

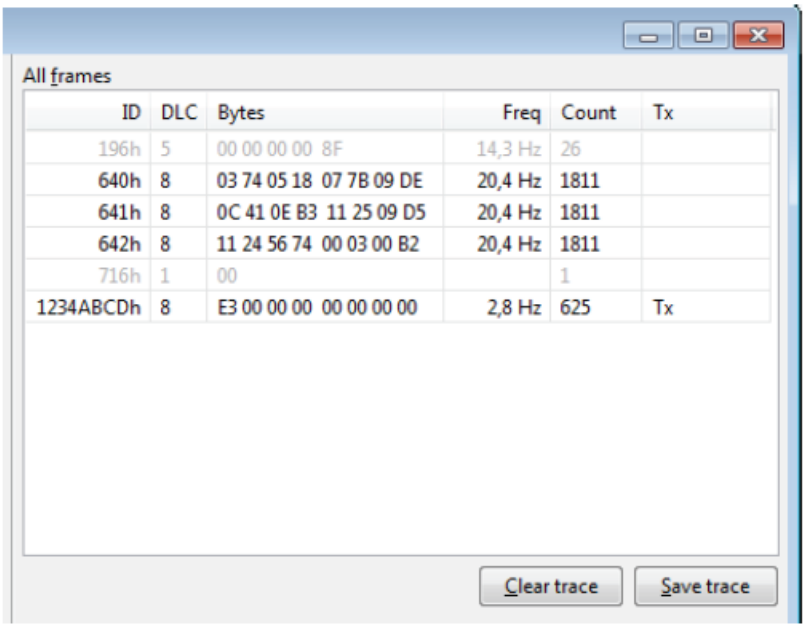


Please do not confuse CANopen node ID with CAN ID. CAN ID describes the address of one frame, while CANopen node ID is a set of frames according to the CANopen standard. And so, for example CANopen node ID = 0x15 the following CAN IDs are used (hex): 0x000, 0x195, 0x215, 0x315, 0x415, 0x595, 0x695, 0x715.

Monitoring CAN bus and saving the trace of the bus traffic to a file.
Light Client is able to monitor CAN bus traffic. There is also an option to save the trace of all CAN frames into a text file.

Use the following steps to use the program in this way:

1. Connect the USBtoCAN to the appropriate CAN bus that you want to monitor.
2. Start the Light Client app.
3. Press OK with the Auto bit rate option selected.
4. The following area of the Light Client Window will show the CAN bus traffic



- The rows in grey show frames that ware recorded a few seconds ago, but now are not present on the CAN bus
- The ID field is in hexadecimal format (“h” suffix denotes hexadecimal). The 3-character wide ID fields are the CAN Standard frames (CAN 2.0A), while 8-character wide IDs are the CAN Extended frames (CAN 2.0B).
- The DLC field denotes the length of each frame and can be in range 0-8
- The Bytes field denotes DATA of each frame and all bytes are shown in hexadecimal format.
- If the Tx field is displayed in the Tx column, it means that the frame sent from the Light Client Transmit panel.
- The Freq field shows the update frequency of the last frames.
- The Count field shows how many frames have been recorded

5. Make sure the Status field (7) at the bottom of the Light Client main window shows the OK status
6. You can now save the traffic to the text file with the .TRACE extension using the Save trace
7. You can now open this text file in any text editor such as Windows Notepad:

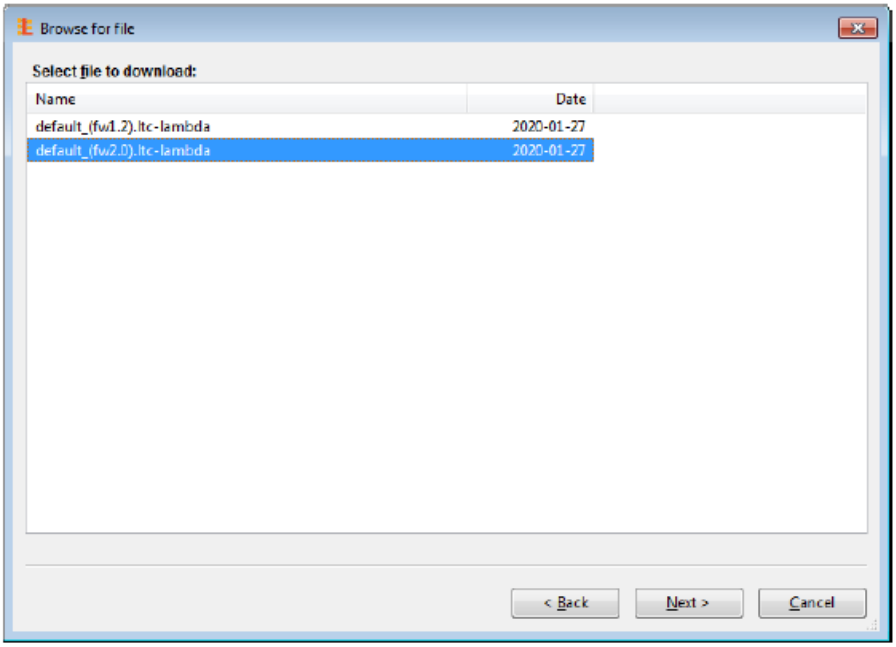
```
;---+----1----+----2----+----3----+----4----+----5----+----6----+----7
;
;Start time: 2020-02-19 16:18:41
;Program:    ECUMASTER Light Client v1.6.1
;
;Number  Offset[ms]  Type   ID (hex) DLC    Data bytes (hex)
;------  ----------  -----  --------  -  -----------------------
     1:         0.0  Rx          640  8  03 74 05 18 07 7B 09 DE
     2:         1.2  Rx          641  8  0C 41 0E B3 11 25 09 D5
     3:         1.4  Rx          642  8  11 24 56 74 00 03 00 03
     4:        49.1  Rx          640  8  03 74 05 18 07 7B 09 DE
     5:        50.2  Rx          641  8  0C 41 0E B3 11 25 09 D5
     6:        50.5  Rx          642  8  11 24 56 74 00 03 00 04
     7:        98.0  Rx          640  8  03 74 05 18 07 7B 09 DE
     8:        99.2  Rx          641  8  0C 41 0E B3 11 25 09 D5
     9:        99.5  Rx          642  8  11 24 56 74 00 03 00 05
    10:       100.6  Tx     1234ABCD  8  E3 00 00 00 00 00 00 00
    11:       147.0  Rx          640  8  03 74 05 18 07 7B 09 DE
    12:       148.2  Rx          641  8  0C 41 0E B3 11 20 09 D5
    13:       148.3  Rx          716  1  00
    14:       148.5  Rx          642  8  11 24 56 74 00 03 00 06
```

Mounting (opening) a virtual device from ECUMASTER.com server

Every device compatible with the Light Client has its default project saved on the Ecumaster.com server. This allows users that do not own the physical device to check out what properties/channels this device offers.

Use the following steps to use the program in this way:

1. Start the Light Client app.
2. On the start window select Offline and press OK.
3. From the devices controls buttons [2] press the More… | Mount device from **ECUMASTER.com** server
4. Press the Next button to confirm connection to the webserver
5. Select a device that you want to load and press the Next button
6. Select a file you want to load and press the Next button

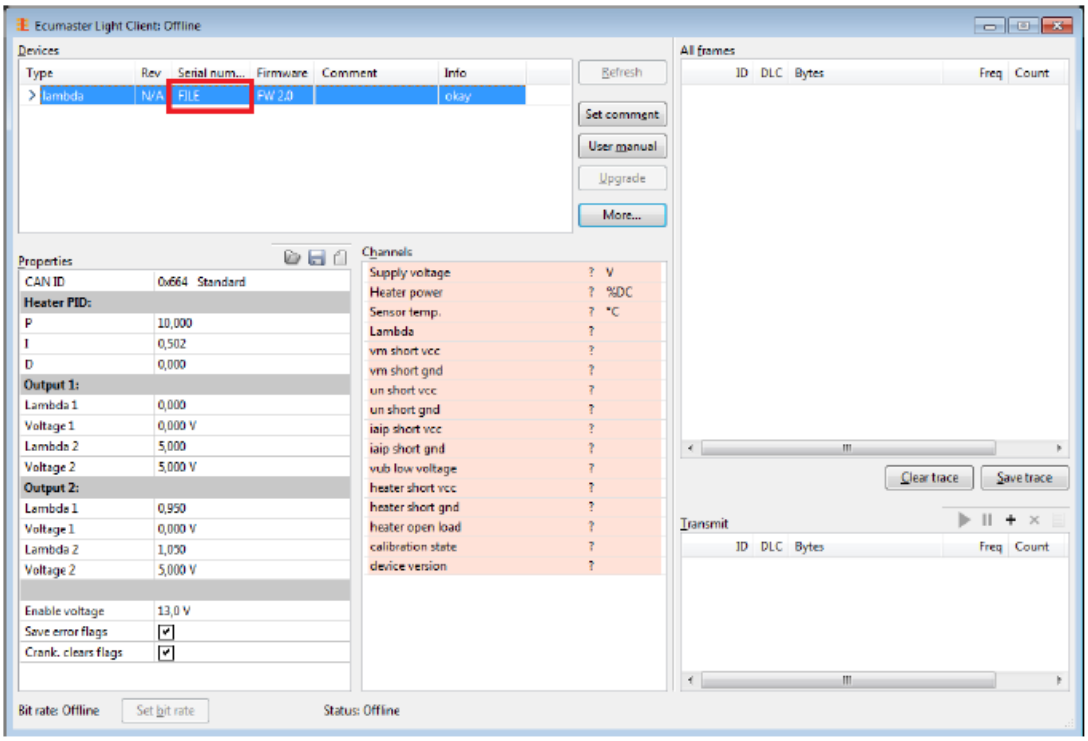


7. On confirmation page press Finish

Now your virtual device is mounted and you are able to inspect the device:

- View and modify the properties
- View channels names and units
- View the user manual
- Export CAN definition .CANX
- Export CAN definition .DBC

Save a modified project into Light Client project file



In a similar way to mount a device from **ECUMASTER.com** server, you are able to mount a device from a local file. It gives you the ability to edit properties and then save it for future use.

Document revision history

Revision	Date	Changes
1.0	2020.03.12	Initial release
2.2	2024.04.11	Document layout changed to the Ecumaster standard format Tools button description added

©Ecumaster | USER MANUAL | Published on: 11 April 2024 | Document version: 2.2 | Software version: 2.2

Documents / Resources

	ECUMASTER Light Client Configuration Software [pdf] User Manual Light Client Configuration Software, Client Configuration Software, Configuration Software, Soft ware

References

- Ecumaster
- User Manual

Manuals+, Privacy Policy

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