SLSS CANAnalyser Tester Instruction Guide

CAN-Bus Software for use with Serosys Technologies hardware dongles

Document: V1.2.4.1L - January 2026

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Tester Instruction Guide

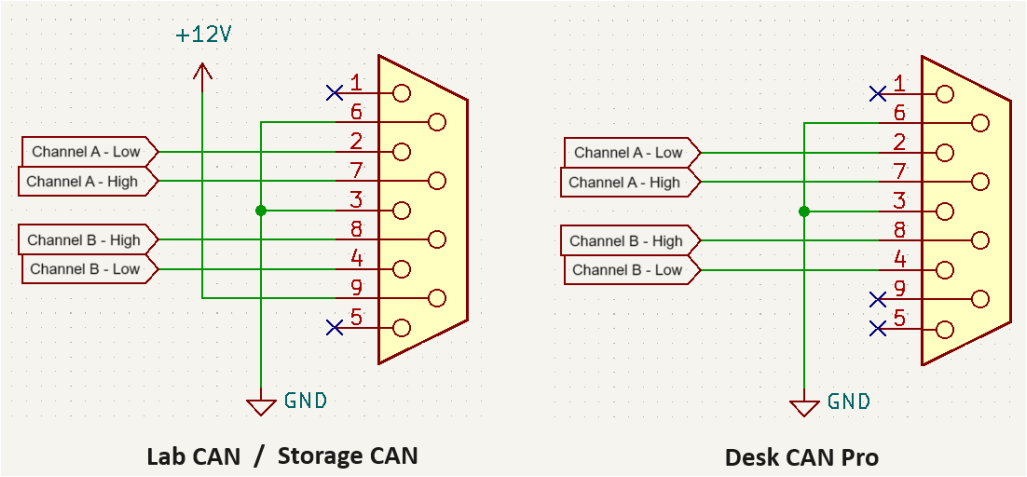
Based on software version V1.2.4.1L

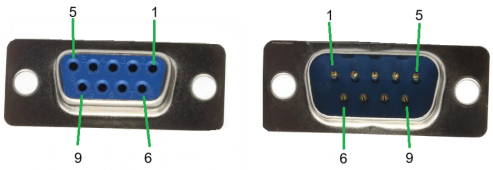
1. Connect the Dongle

You must use a USB2.0 compatible cable with the CANAnalyser dongles, not a charge-only USB cable.

1.1. DB9 (D-sub9) Connector Pinout

The pinout is the same for both Male and Female connectors. They are internally connected pin to pin and will pass through bus traffic even if unpowered.





Power

- Only available on Lab CAN and Storage CAN
- Input power voltage supply range: +7 V to +28 VDC (nominal ~= 12 VDC)
- Reverse voltage and transient voltage protection

Ground

- Ground pins are all connected internally

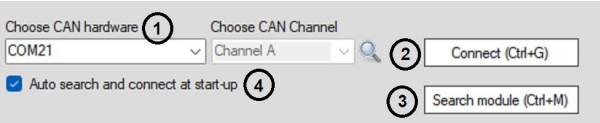
CAN Bus High / Low

- Even though the differential CAN Bus high and low pins do not require a ground reference, it is recommended that ground is carried with these pins for common-mode voltage rejection to avoid potential damage to the transceivers

2. SLSS CANAnalyser Software

2.1. Connecting to the Dongle Hardware

Please make sure you are using a USB 2.0 data cable and that the **Solid Red** color LED is lit up before trying to connect.



Manually selecting a COM port and then connecting

1. Select the COM port for your hardware dongle in the drop-down box
2. Select the Connect button

This will tell the software to look for the hardware dongle on that port. If if finds the hardware and connects to it, the hardware connection LED will begin blinking purple. If it does not find it, please select a different port and ensure the proper USB driver has been installed.

Automatically searching for your hardware dongle after the program has already been loaded

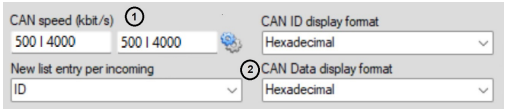
3. Select the Search Module button and let the software automatically search through the available COM ports to find your hardware dongle. If if finds the hardware and connects to it, the hardware connection LED will begin blinking purple. If it does not find it, ensure the proper USB driver has been installed.

Automatically searching for your hardware dongle upon loading the software

4. If desired, the check-box next to "Auto search and connect at start-up" may be selected. Once selected, the next time the software is loaded, it will automatically search for the hardware dongle upon start-up. If if finds the hardware and connects to it, the hardware connection LED will begin blinking purple. If it does not find it, ensure the proper USB driver has been installed.

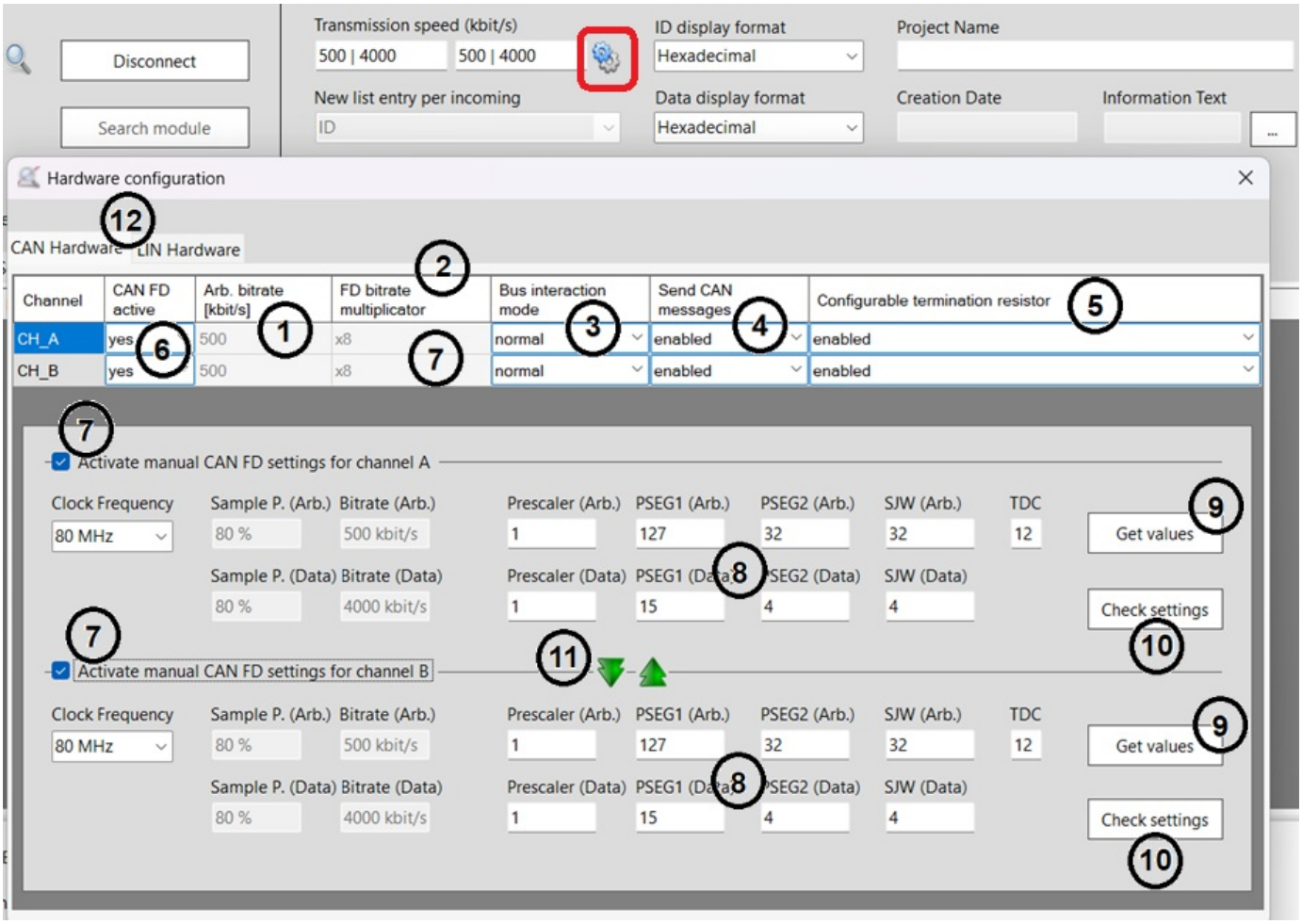
Automatically searching for the dongle may take up to 10 seconds. Direct connect is always faster by selecting the COM port from the drop-down.

2.2. Connection Speed, Connection Mode and List Entry Style



1. Shows the Connection Speed for each channel. The speed and mode can be changed from here
2. Select the option from drop-down menu to view Incoming Messages either by unique ID's or by pure scrolling messages
    - ID - Only 1 unique ID row is shown in all the data available in the Incoming CAN data tab and just the data changes
    - Data - Every message with changing data will be shown sequentially in a unique row, even if it is the same ID

2.3. Set the Connection Speed and Connection Mode for each Independent Channel



Press the image of the gears to open the Hardware Configuration window. The Connection Speed and Connection Mode for each channel can be adjusted here.

1. Select the desired Arbitration bitrate from the drop-down menu. They are able to be independently set for each channel.

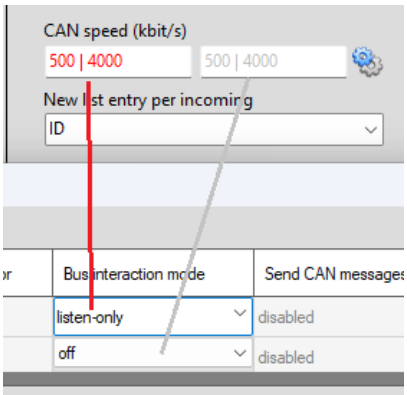
2. For standard ISO CAN FD setup, select the FD bitrate multiplicator. They are able to be independently set for each channel.

> If the manual CAN FD settings are activated below, this box will be greyed out and not used in the speed calculations.

3. Select the desired bus interaction mode from the drop-down menu. It lets you choose between normal mode (*Allows full send and receive interaction on the bus*), Listen Only mode (*Only able to receive bus messages but not able to send*), or Off (*Channel is completely shut off, no receiving or sending possible*).

> In Listen Only mode, if the dongle is connected to a bus that has a single node only, the Incoming data will show a very fast message count. This is because it is not an active multi-node bus. Once there are at least 2 nodes on the bus plus the dongle, it will operate normally. Also, the software will allow the Sending tab to appear as if it is sending messages, however they will not be sent to the actual bus

> When selecting "Listen-only", the CAN speed will be indicated in red color. When selecting "off", the CAN speed will be indicated in grey color.

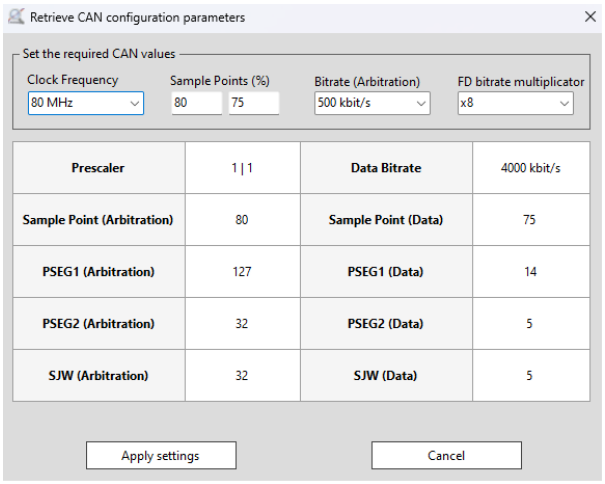


4. Choose to enable or disable message sending from the drop-down menu. This allows the user to lock out or enable each CAN channel from being able to send messages or not. If these are disabled, the Send CAN Messages Tab will not be functional
5. The drop-down menu allows a SW configurable option for enabling or disabling the 120 ohm bus terminating resistor (independently per channel)
6. CAN FD can be enabled or disabled from the drop-down

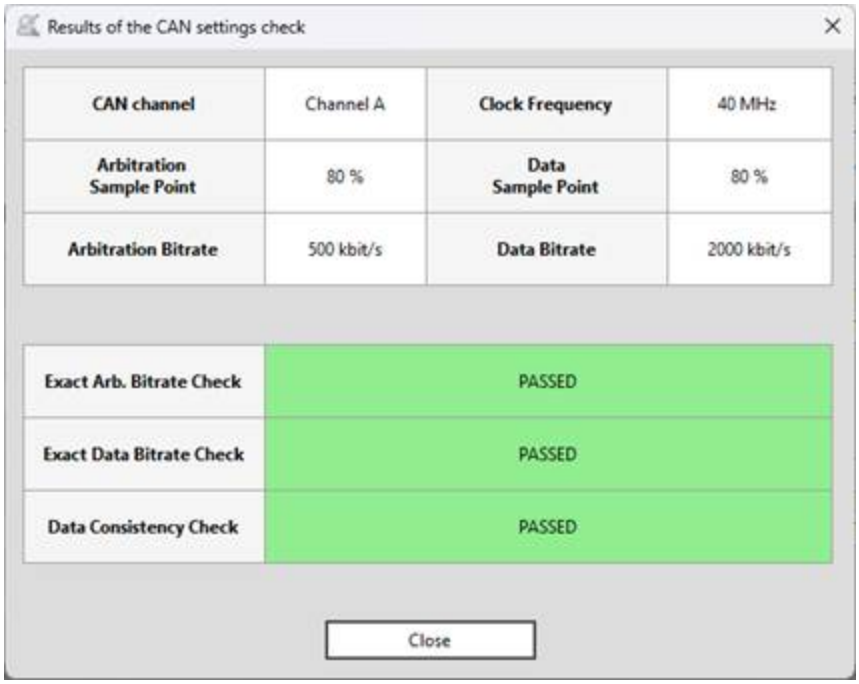
7. When selecting the checkbox to activate the manual CAN FD settings, the FD bitrate multiplicator box greys out as this overrides it

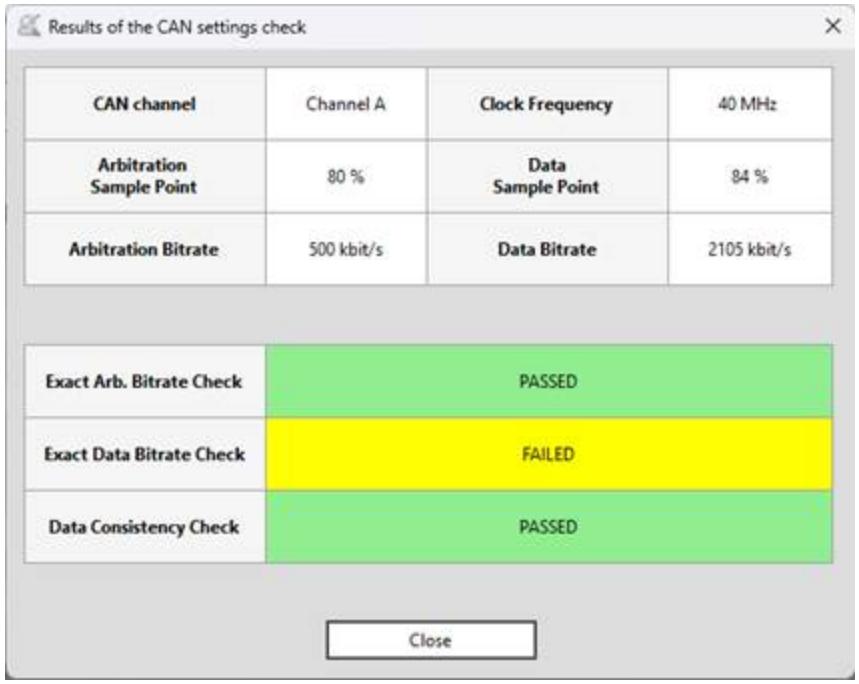
For CAN FD, settings can be very critical and sensitive. This will help to provide many options from generic settings to very custom settings to customize the connection flexibility.

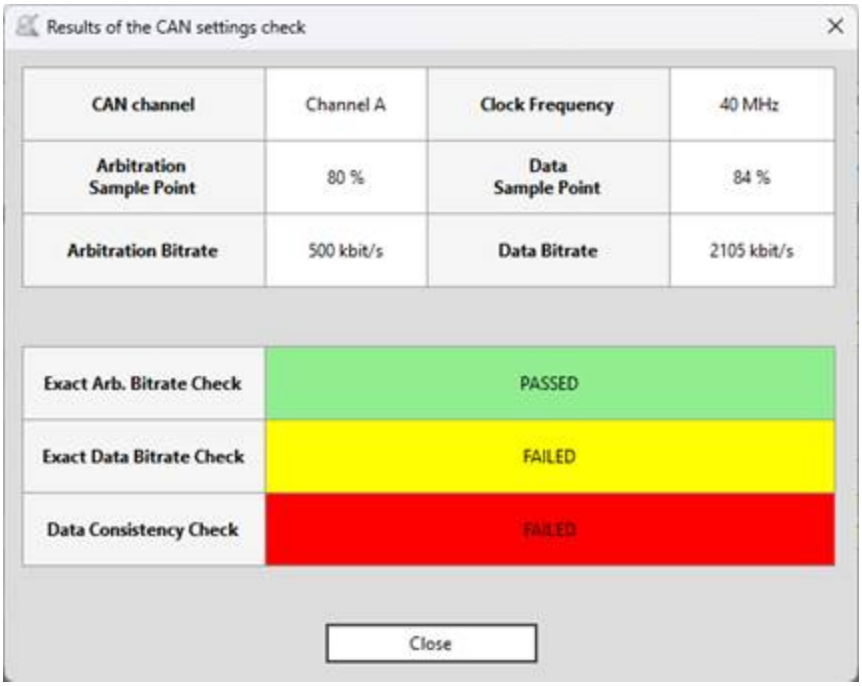
8. The values of all the critical CAN FD connection parameters may be manually set here. It is recommended to consult with a CAN FD bitrate calculator for best results
9. Selecting the **Get Values** button will open up a window to do the value calculations automatically based on a few user selectable inputs. The user will select the desired clock frequency, sample points (Arb / Data), the desires Arbitration bitrate speed and the FD bitrate multiplicator and the values will all be generated. Select **Apply settings** to set them



10. Selecting the **Check settings** button will conduct a check of the values that are entered to ensure a valid matching set of calculations will work. This way you can easily check if the chosen settings are valid or not (as shown in these 3 following examples).


Results of the CAN settings check
CAN channel
Channel A
Clock Frequency
40 MHz
Arbitration Sample Point
80 %
Data Sample Point
80 %
Arbitration Bitrate
500 kbit/s
Data Bitrate
2000 kbit/s
Exact Arb. Bitrate Check
PASSED
Exact Data Bitrate Check
PASSED
Data Consistency Check
PASSED
Close

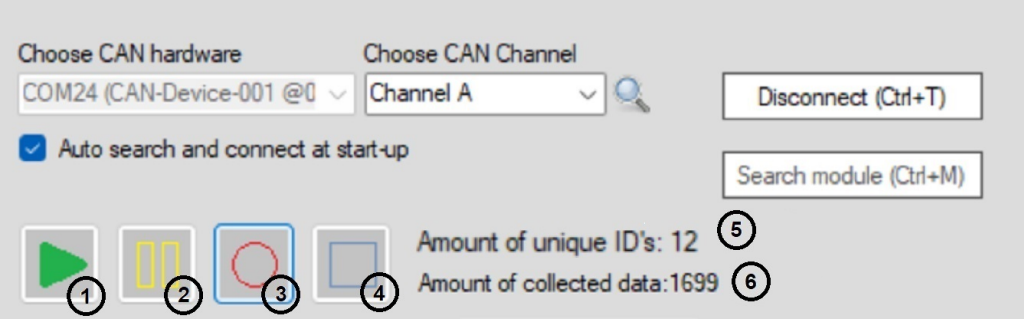

Results of the CAN settings check
CAN channel
Channel A
Clock Frequency
40 MHz
Arbitration Sample Point
80 %
Data Sample Point
84 %
Arbitration Bitrate
500 kbit/s
Data Bitrate
2105 kbit/s
Exact Arb. Bitrate Check
PASSED
Exact Data Bitrate Check
FAILED
Data Consistency Check
PASSED
Close



11. Select the arrow direction to copy the settings from either Channel A to Channel B, or from Channel B to Channel A.
12. Hardware variant tabs (CAN, LIN, qwiic/I2C)

2.4. Controlling Recording / Displaying of CAN Traffic

The buttons allow control over the data recording and display as well as the showing the summary of ID's and amount of data collected

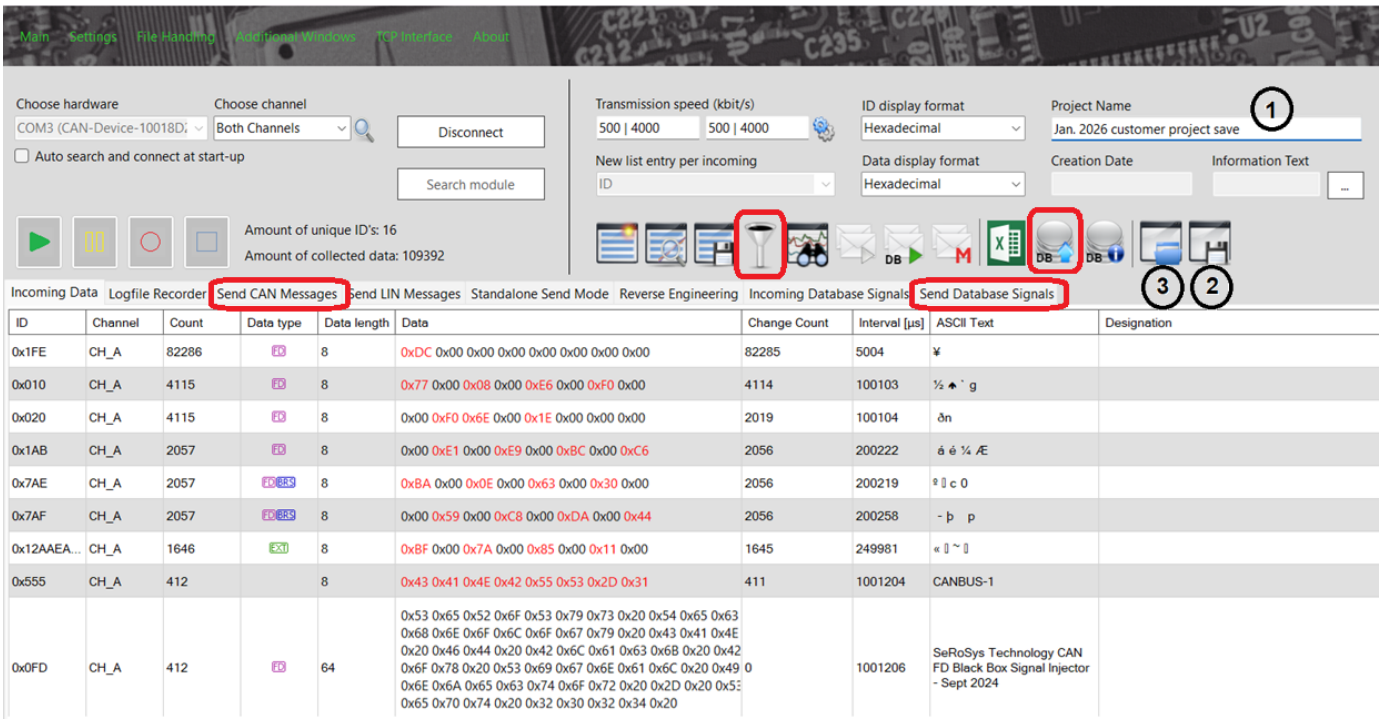


1. The **Play** button is activated by default to show all incoming CAN message data
2. The **Pause** button is used to pause the display and recording of CAN message data
3. The **Record** button is used to record the CAN message data in the buffer
4. The **Stop** button is used to stop the display and recording of CAN message data
5. This displays the number of unique CAN arbitration ID's seen on the incoming data bus (regardless of which channel it is on)
6. This displays the total quantity of messages received (for all channels)

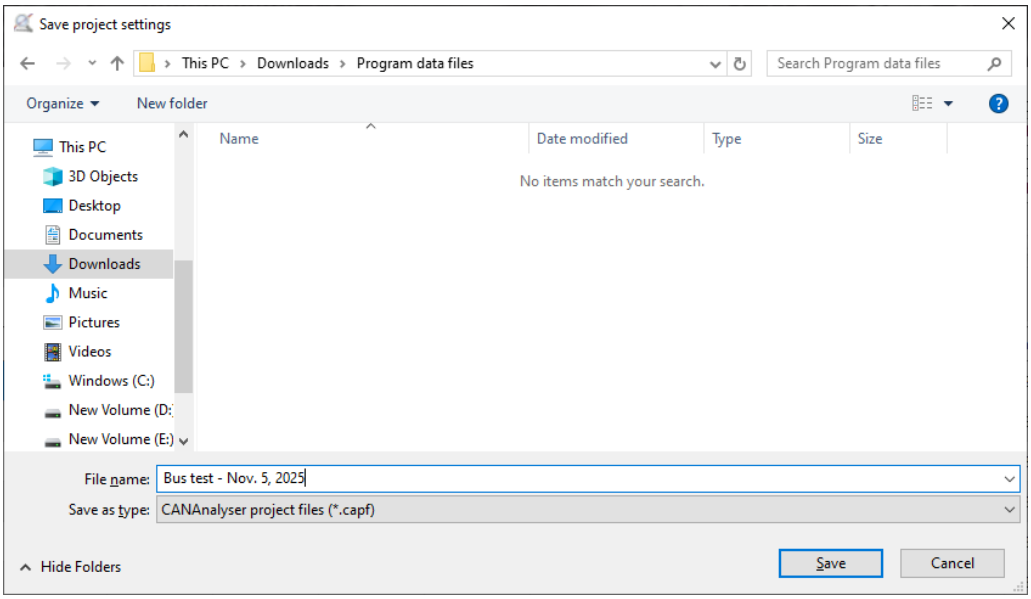
2.5. Storing / Recalling Full Sessions Containing all Settings

This is key for efficiency for testers work setup and sharing the setup with other testers / users

Once a session has been fully set up including loading database files, message send lists and filters, a User may save the full session setup and may even share that with others. The red box highlights in the screenshot here show all the locations of the saved settings.

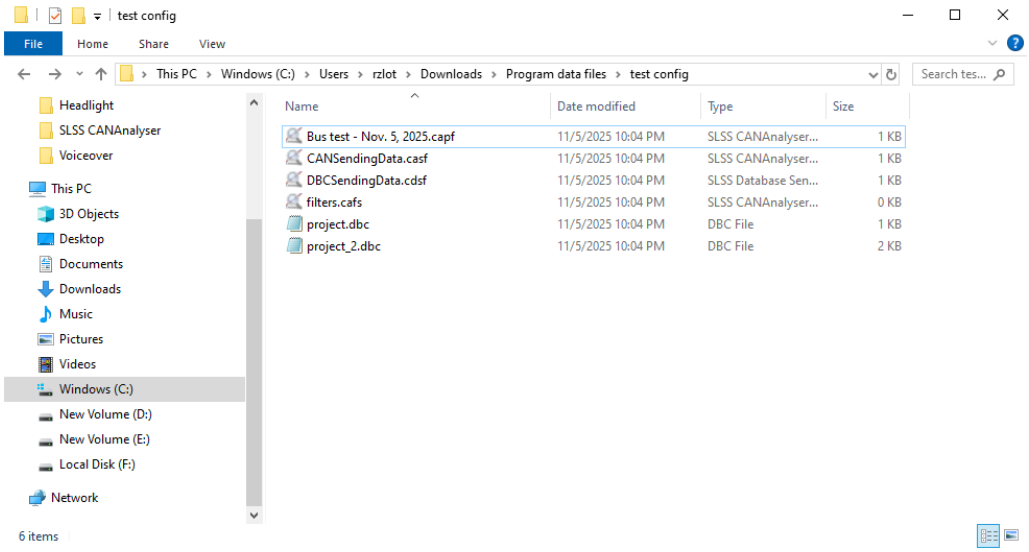


1. Enter a Project Name that is desired to be saved. Suggestions may include related dates, test cases, project names, tester name, etc.
2. Press this to save the session. Choose the folder to save to and provide a meaningful save name.



Note the folder location. Saving the file creates an entire folder with all setup information. A user may provide this intact folder to someone else to share a saved setup

3. To load a previously saved project setup, navigate to the folder location with the desired .CAPL file name and select it.

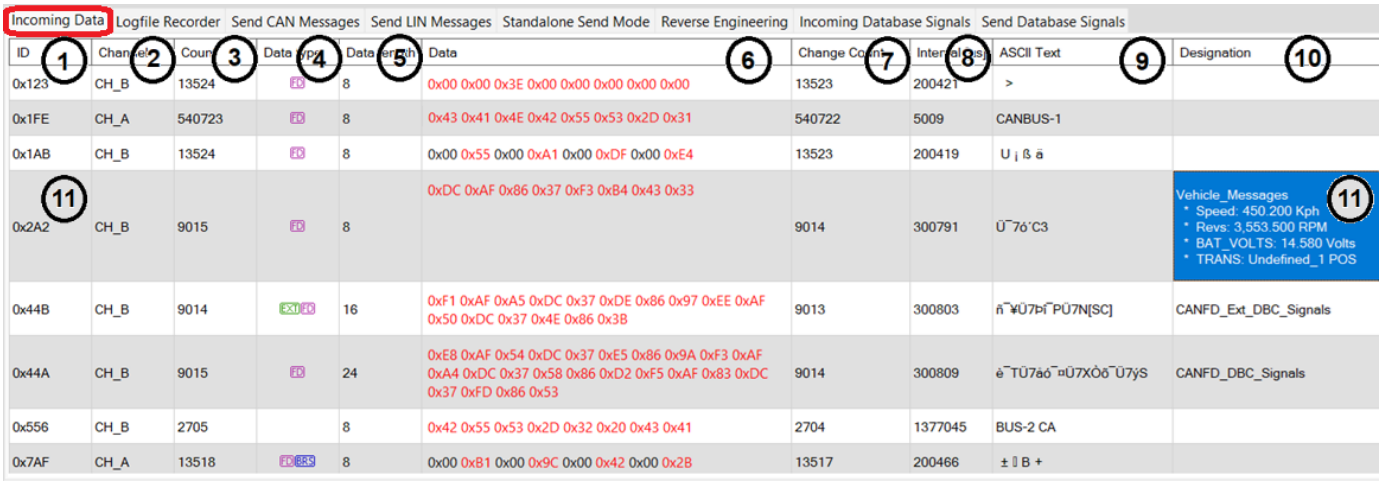


2.6. Viewing Live Incoming CAN Data

This is the default tab and the most important tab that gives an overview of all current incoming CAN data.

Each column may be shrunk or widened to suit individual preferences.

Clicking on the header of each column will also sort the table order based on the column (low to high or high to low)



1. **ID** - Displays the Arbitration ID of each unique CAN message received or sent
2. **Channel** - Displays the source of the CAN data for each row:

Channel	Data Source
CH_A	Data received from the bus into the hardware module on CAN bus CH-A
CH_B	Data received from the bus into the hardware module on CAN bus CH-B
SEND_A	Data sent from the hardware module on to CAN bus CH-A
SEND_B	Data sent from the hardware module on to CAN bus CH-B

3. **Count** - The count of how many times the CAN ID was sent or received, regardless if there was any change in Byte data

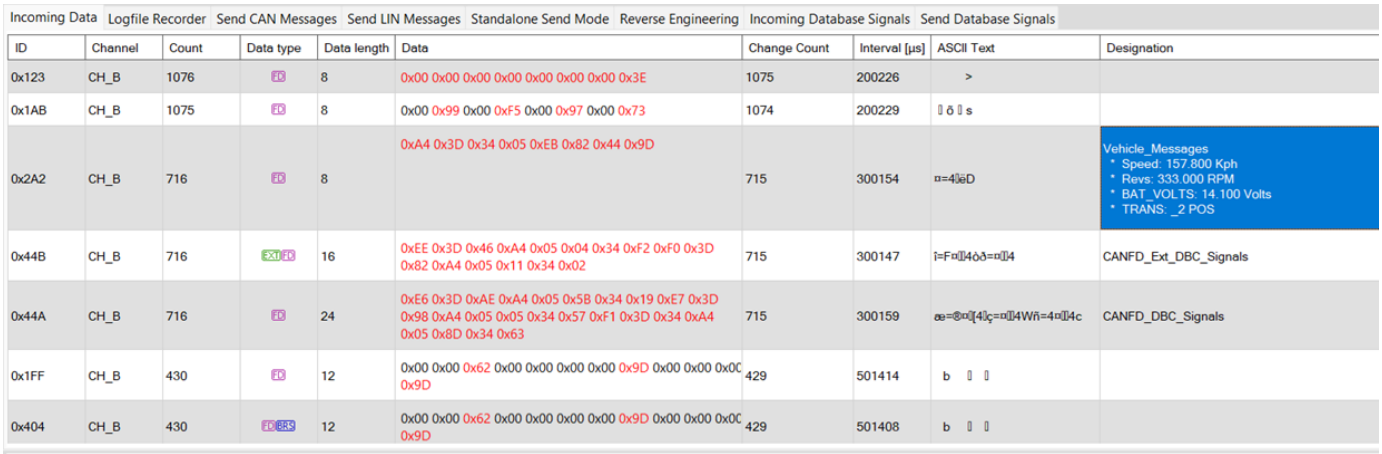
4. **Data type** - This is the type of data for this row. **If this field is blank then the message is a CAN 2.0 format**

[EXT] = CAN 2.0 Extended ID
[EXT] [FD] = CAN FD Extended ID
[FD] = CAN FD
[FD] [BRS] = CAN FD Bit Rate Switch

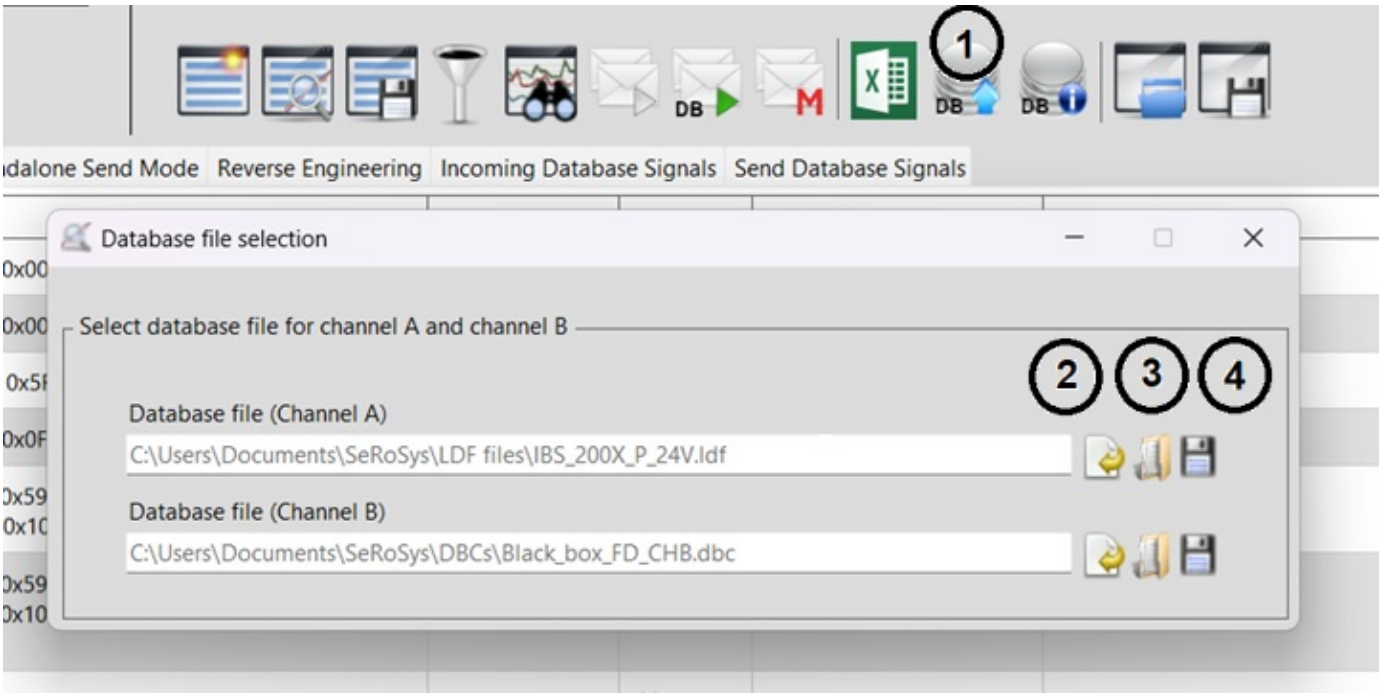
5. **Data Length** - The number of bytes for the CAN ID
6. **Data** - Displays the data bytes (up to 64 for CAN FD) for the CAN ID. (*Note the red colored entries. This is the changing byte highlighting. This will be described in more detail in the next sub-section*)
7. **Change Count** - The count of how many times the data changed for the CAN ID
8. **Interval (µs)** - The time delta in microseconds between each time this message is received
9. **ASCII Text** - Displays the concatenated ASCII converted data of the data bytes for the CAN ID. Note that to display certain ASCII special items, this is the nomenclature to represent these special characters:

[CR] = carriage return
[LF] = line feed
[SC] = semicolon

10. **Designation** - Human readable message name of the CAN ID. *This only populates if a valid database file has been loaded*
11. If a valid database file is loaded and the Designation is shown, clicking on the CAN ID will expand that Designation box to show the human readable CAN signals for that row. If there multiple IDs with data in the Designation column, only the Designation name will be shown unless selecting the row to expand to view the signals for that Designation. Note only one row shows at a time. (see image here)



2.6.1. Loading a Database File (DBC, LDF)



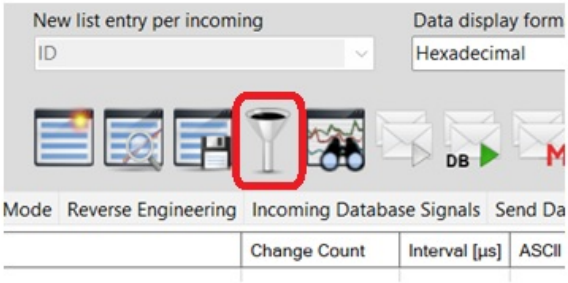
1. Press this button to open a dialog box to select a unique database file to load into each channel independently. Current supported database formats are DBC (CAN) and LDF (LIN)

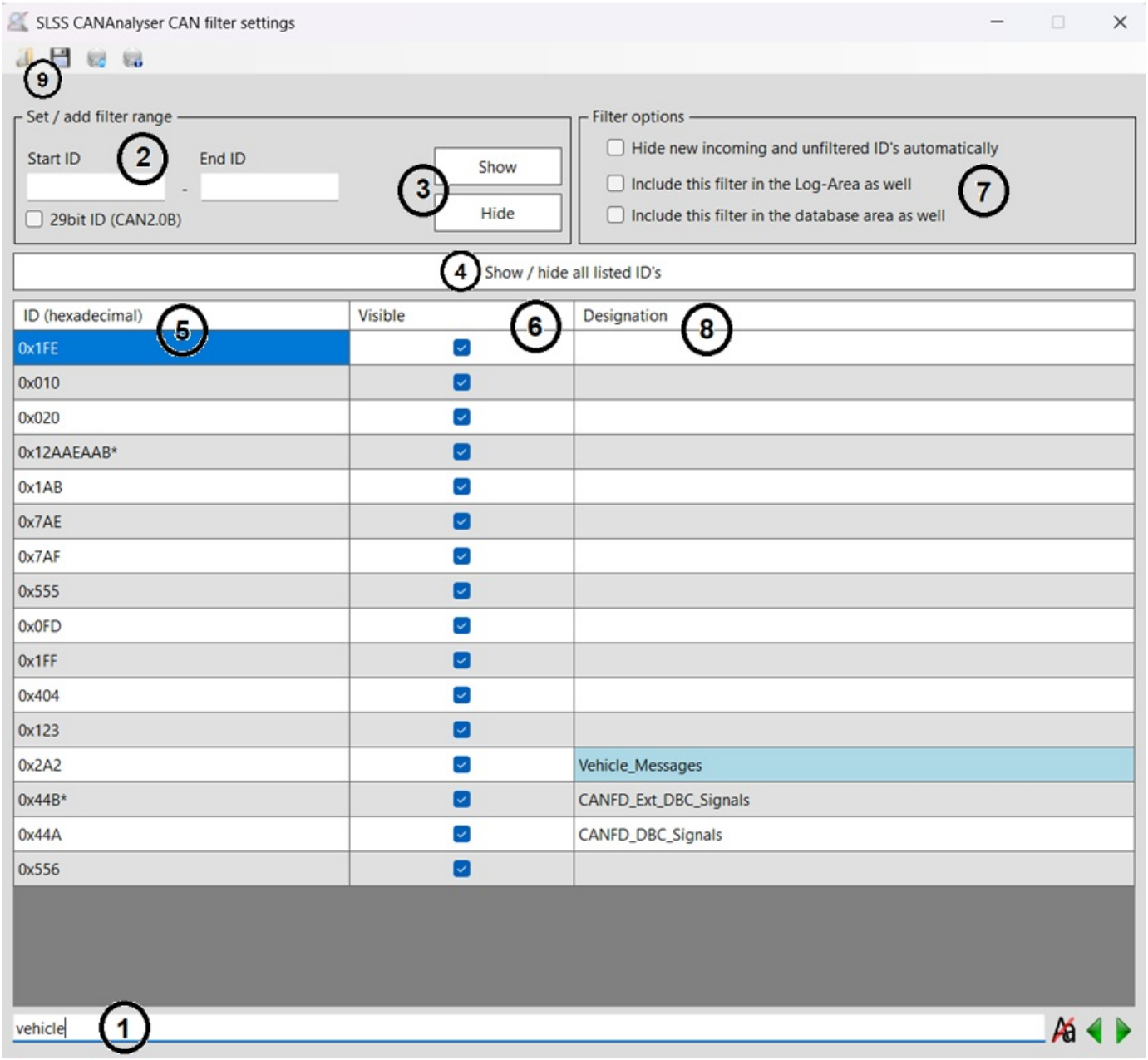
This dialog box opens and allows the following functions for each channel.

2. This opens the DBC editor
3. This is to open a valid DBC file
4. This will save your current active DBC file

2.6.2. Message Filtering

This is a separate window that opens to be able to move to a separate screen or show as a separate window to be able to view the impact of adjusting filter settings on the fly in different feature tabs.

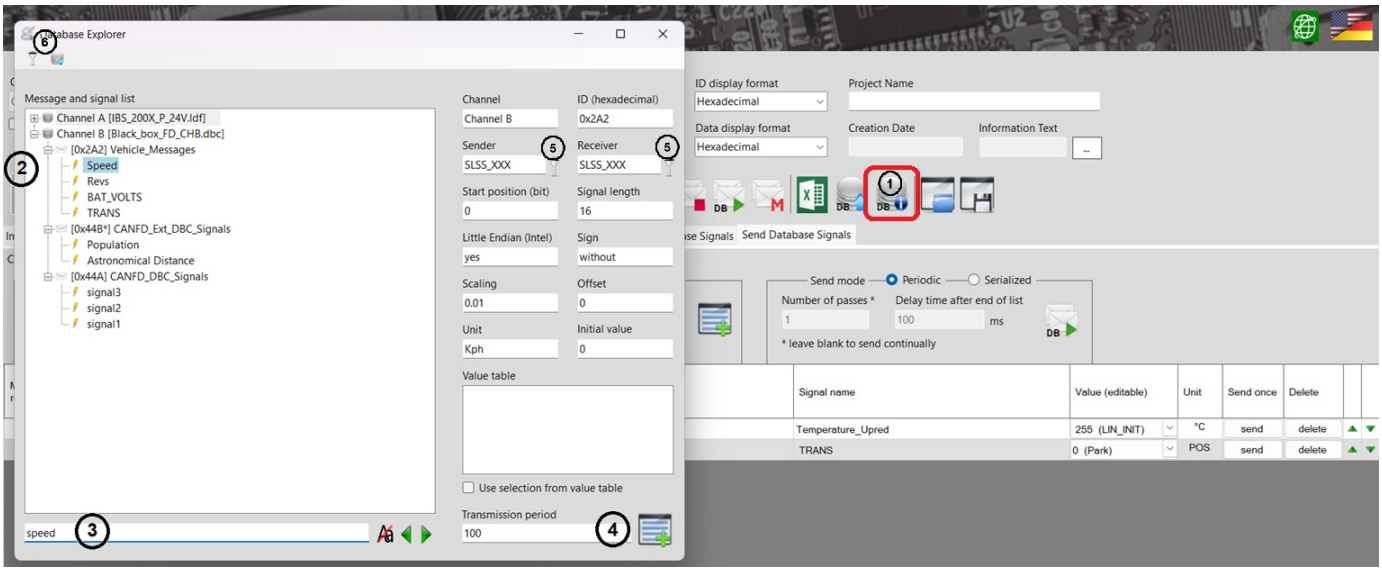




1. This is the textual search filter. All text entered here will be highlighted in the filter chart
2. Enter in a single CAN ID or a range (Start ID to End ID) to use as your filter criteria. Check the box for 29bit ID for filtering Extended IDs
3. After selecting your CAN ID or CAN ID range, select either **Show** or **Hide** to affect the checkboxes in the table below for visibility of the selected IDs
4. This button can be toggled to **Show** or **Hide** ALL visible ID's (checkboxes) in the table below
5. Lists all current received message ID's on the active bus
6. List of checkboxes to show which ID's will be shown or hidden
7. Checkbox options of where to apply the impact of the filter settings
8. If a database file is currently loaded, the human readable designations of the ID's will be shown here for reference
9. The filter settings may be saved and loaded for easier future access

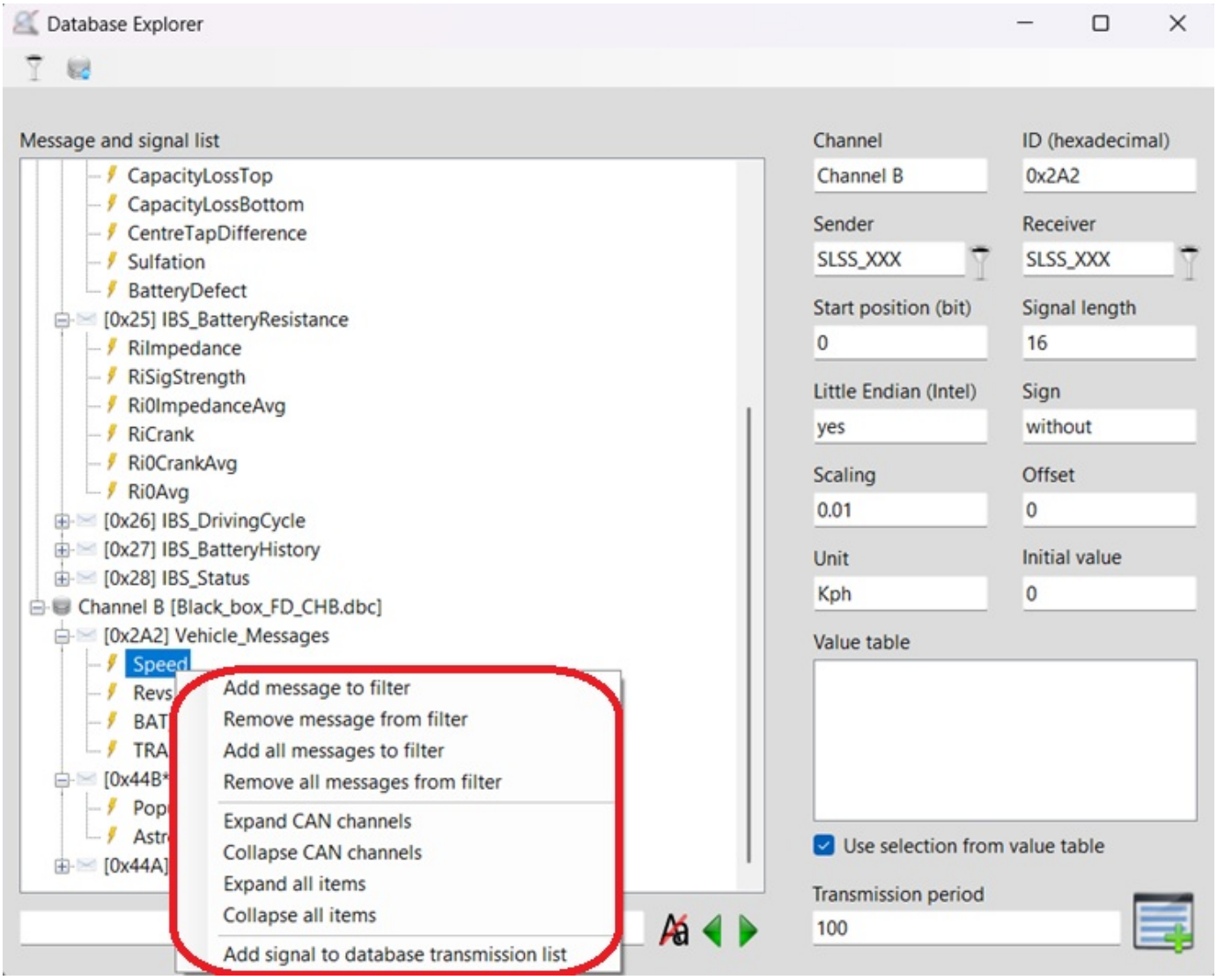
It is possible to show both the Standard and Extended ID's in the same filter area. The * indicates an Extended ID

2.7. Database Explorer button (DBC, LDF)



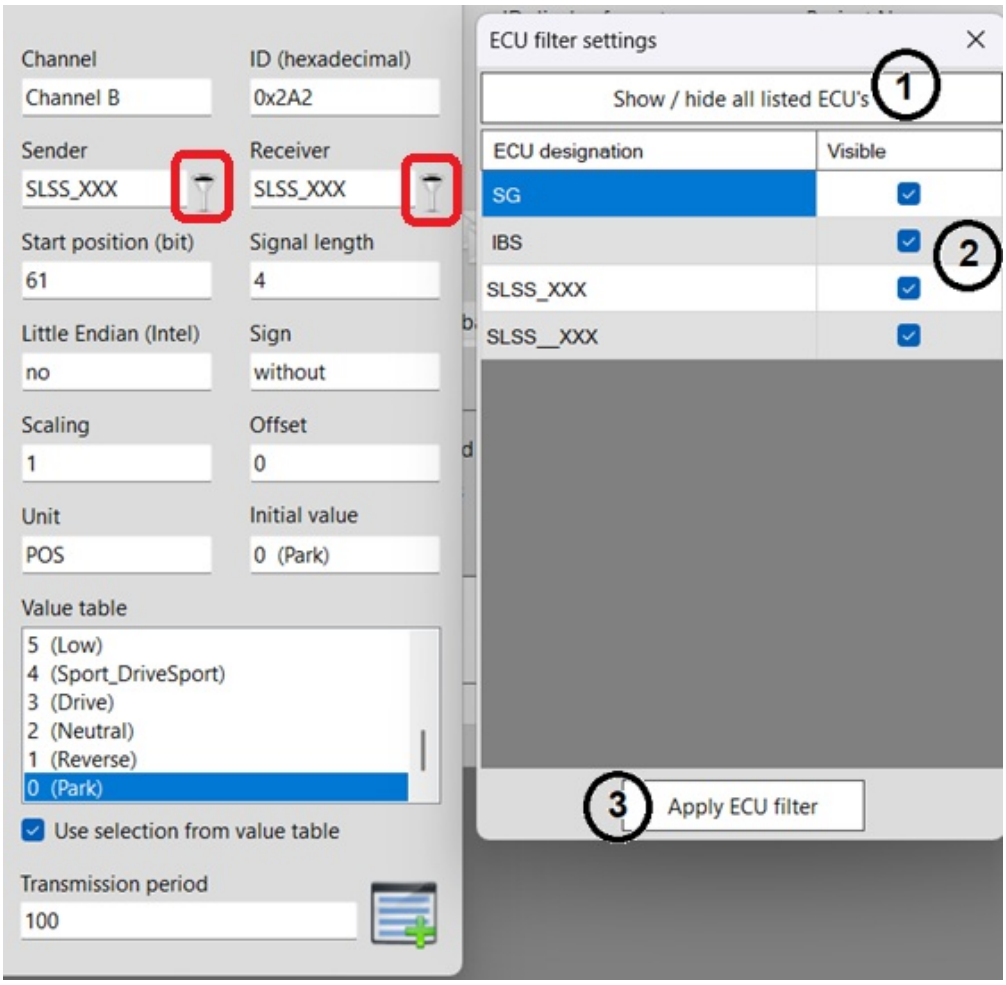
1. Press this button to open the Database Explorer window
2. All loaded databases on Channel A / Channel B will show (initially nested). Click the + / - buttons to expand or contract the tree of Message Signals
3. To quickly find the desired Signal, enter the Signal name in the textual search bar
4. The selected Signal may be directly add to the Send Database Signal tab of message to send. Specify the Transmission period and press the button to add it to the list
5. Selecting the filter icon next to the Sender or Receiver box opens a list of all the ECU's for filtering. See next sub-section for details
6. These 2 icons are shortcuts to the relevant Filter Settings and Database selection windows

2.7.1. Right-Click context menu



1. Right-Click on a Signal name to bring up powerful shortcut actions such as Filter impacts and adding the desired Signal to the Send Database Signals tab

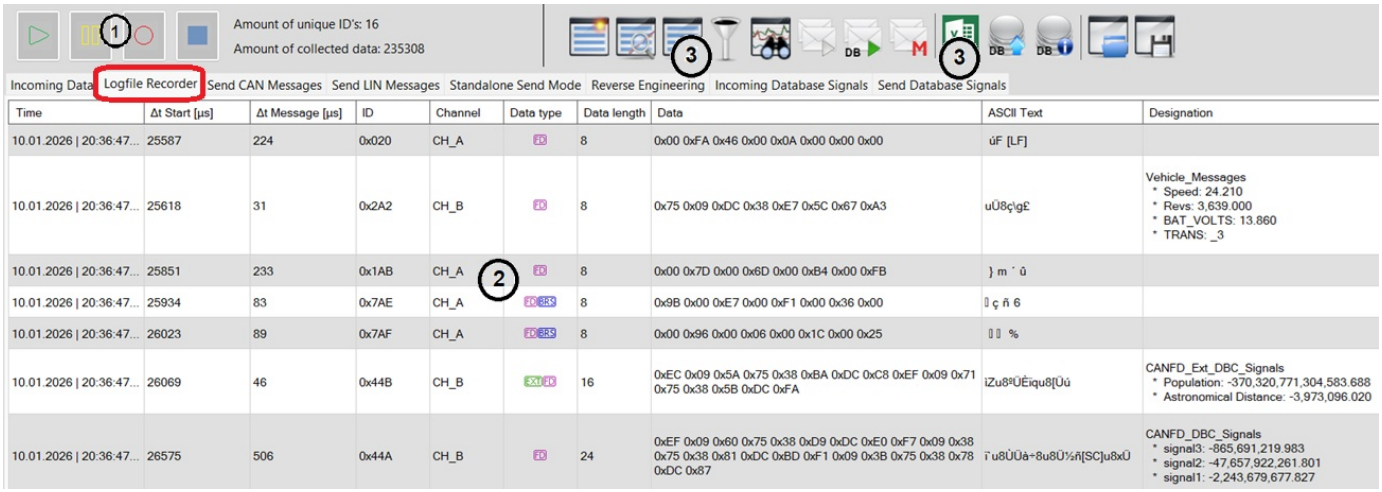
2.7.2. ECU Filtering



1. Press this to quickly show or hide all the checkboxes in the list below
2. Manually check or uncheck boxes to specify the target ECU's to filter in or out
3. Press this to apply the ECU filtering. This impacts the overall Filters from the Message Filtering button on the main screen. Impacted message ID's that share the ECU type will all be checked or unchecked on that filter window

2.8. CAN Logging

This feature tab is used to display and store a running log of all data received sequentially. This data bay be saved or exported for further analysis.

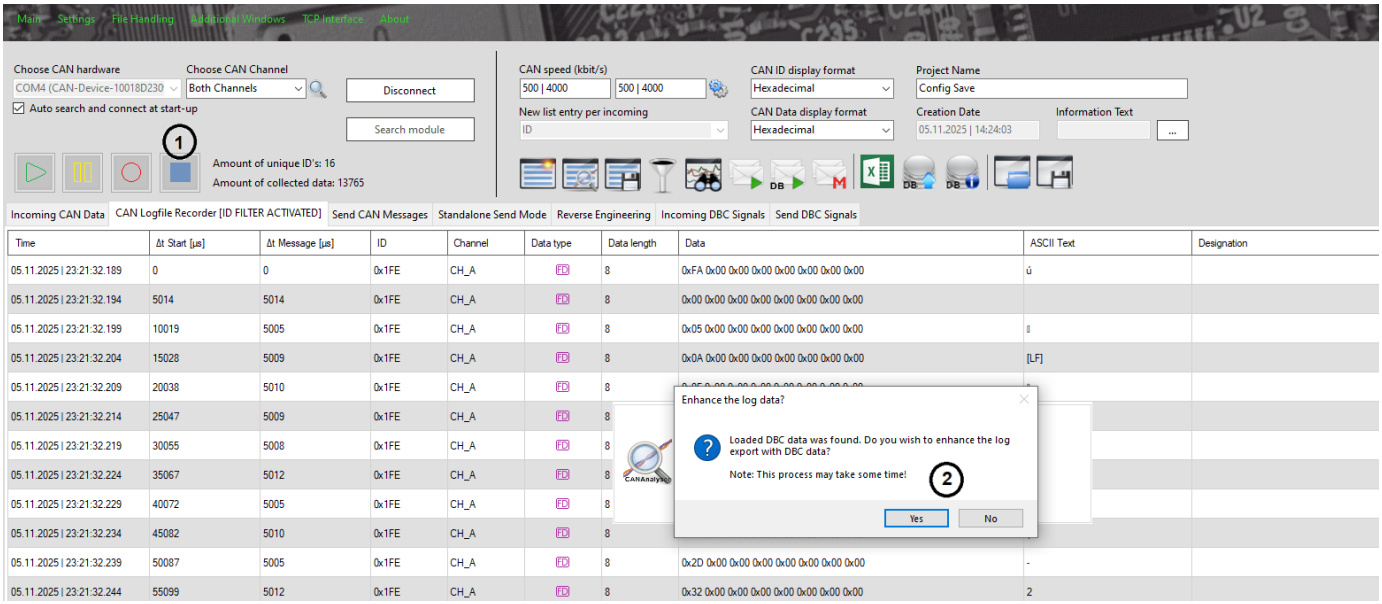


Time	Δt Start [µs]	Δt Message [µs]	ID	Channel	Data type	Data length	Data	ASCII Text	Designation
10.01.2026 | 20:36:47...	25587	224	0x020	CH_A	FD	8	0x00 0xFA 0x46 0x00 0x0A 0x00 0x00 0x00	úF [LF]	
10.01.2026 | 20:36:47...	25618	31	0x2A2	CH_B	FD	8	0x75 0x09 0xDC 0x38 0xE7 0x5C 0x67 0xA3	uÜ8ç\g£	Vehicle_Messages * Speed: 24.210 * Revs: 3,639.000 * BAT_VOLTS: 13.860 * TRANS: _3
10.01.2026 | 20:36:47...	25851	233	0x1AB	CH_A	FD	8	0x00 0x7D 0x00 0x6D 0x00 0xB4 0x00 0xFB	} m ´ û	
10.01.2026 | 20:36:47...	25934	83	0x7AE	CH_A	FD BRS	8	0x9B 0x00 0xE7 0x00 0xF1 0x00 0x36 0x00	▯ ç ñ 6	
10.01.2026 | 20:36:47...	26023	89	0x7AF	CH_A	FD BRS	8	0x00 0x96 0x00 0x06 0x00 0x1C 0x00 0x25	▯▯ %	
10.01.2026 | 20:36:47...	26069	46	0x44B	CH_B	EXT FD	16	0xEC 0x09 0x5A 0x75 0x38 0xBA 0xDC 0xC8 0xEF 0x09 0x71 0x75 0x38 0x5B 0xDC 0xFA	ìZu8ºÜÈïqu8[Üú	CANFD_Ext_DBC_Signals * Population: -370,320,771,304,583.688 * Astronomical Distance: -3,973,096.020
10.01.2026 | 20:36:47...	26575	506	0x44A	CH_B	FD	24	0xEF 0x09 0x60 0x75 0x38 0xD9 0xDC 0xE0 0xF7 0x09 0x38 0x75 0x38 0x81 0xDC 0xBD 0xF1 0x09 0x3B 0x75 0x38 0x78 0xDC 0x87	ï`u8ÙÜà÷8u8Ù½ñ[SC]u8xÜ	CANFD_DBC_Signals * signal3: -865,691,219.983 * signal2: -47,657,922,261.801 * signal1: -2,243,679,677.827

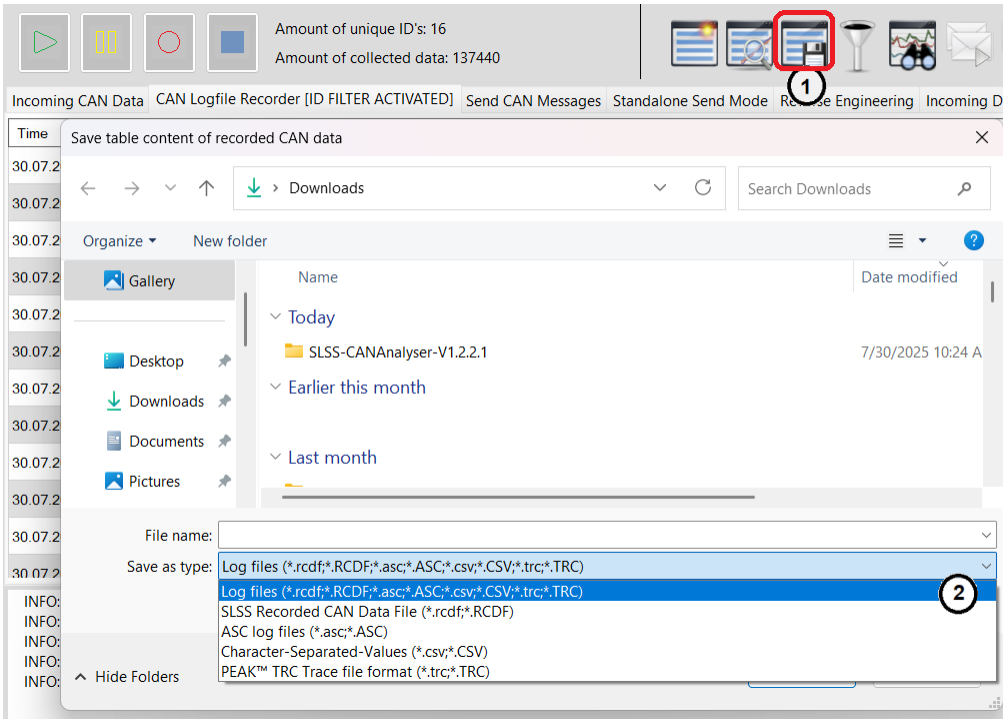
1. As described in earlier sections, the play / pause / record / stop buttons have a direct impact on the data logger and the summary of the unique ID's and total collected data are still displayed
2. The data will scroll down vertically with new data appearing in the top row and pushing older data down and off the screen.
3. All recorded data may be exported either in the export format of the CANAnalyser SW (to be able to be loaded again) or as an export for external data analysis in multiple formats

2.8.1. Reviewing Logged Data with Database Signals (DBC, LDF)

1. To review logged data, press the Stop button
2. Select "Yes" to enhance the data with database signal information and then scroll through the results



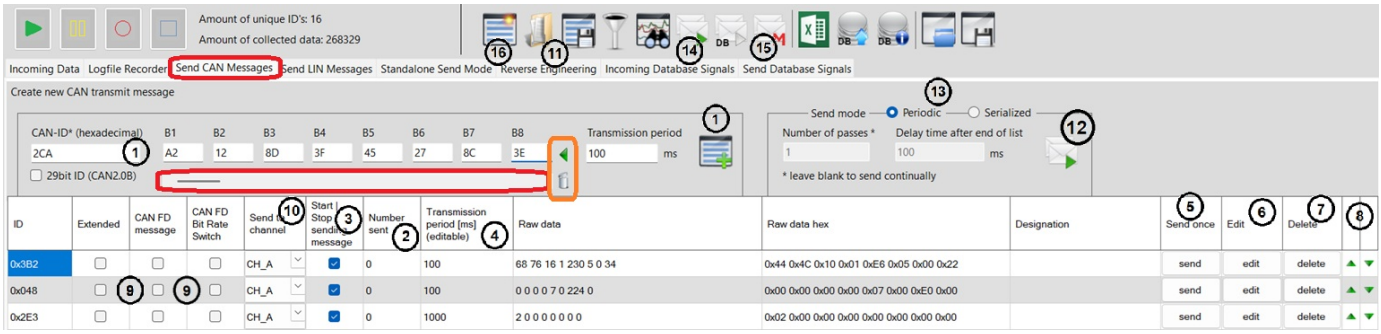
2.8.2. Exporting ASC Logged Data



1. From the CAN Logfile Recorder Tab, press the Save button
2. From the drop-arrow, choose the desired CSV, TRC, ASC format and then provide the File Name and location to save

2.9. Sending CAN ID Messages

This feature tab is used to allow the user to create and send single or multiple CAN messages onto the bus. By default, data will be sent in the Periodic mode. More details will be listed below.

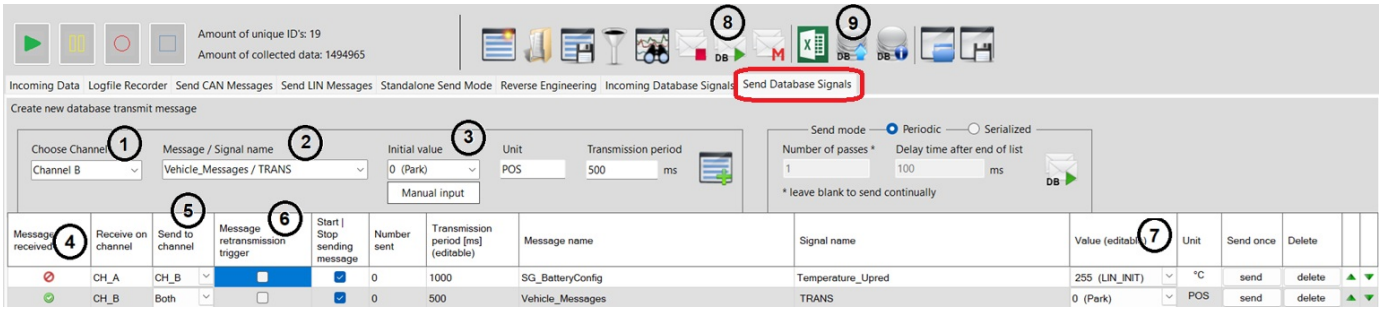


1. Enter the ID and the byte data that is desired to be added to the send list. Only 8 bytes are displayed at a time. For a CAN FD message, use the scroll (red highlight above) to move through all 64 bytes. To jump back to B1, press the green arrow (orange highlight above). To delete all byte entries, press the trash can icon (orange highlight above). Once the message is fully entered, press the button with the green plus sign to add it to the end of the list below
2. When viewing this feature tab while messages are being sent, this column shows a count of how many times each message was sent.
3. When viewing this feature tab while messages are being sent, the checkboxes may be checked or unchecked dynamically to turn on and off sending of individual messages on the list if desired.
4. The transmission / delay period may be changed dynamically by double-clicking in the cells on this column if desired as a fast way to edit the transmission speed.
5. At any time, the user may press the **Send** button to manually send any message once (regardless of whether the messages are automatically sending or not).
6. To edit an existing message entry in the table, select **Edit** to open a window of parameters to change and then **Save changes**.
7. Select **Delete** to delete a message entry from the table.
8. The up and down arrows may be used to move a message up or down the list order. Note that this is not useful in Periodic mode but it is useful on the Serialized mode.
9. The data type of the message ID may be set by setting these checkboxes
    - Extended
    - CAN FD message
    - CAN FD bit rate switch (selecting this checkbox forces the CAN FD message checkbox to be selected)
    - Not selecting any of these checkboxes means that the message will be send as CAN 2.0
10. The drop-down box allows the message to be selected to send to either Channel A, Channel B or both channels

11. The load and save icons are used to load a previously saved list of messages to send or to save the current list. Note that a saved file can be also opened as a macro
12. Pressing this button toggles between sending / stopping the list of messages to be sent to the bus.
13. Select the box to move between Periodic or Serialized messages to be sent. When Periodic is selected, the 2 boxes under it are grayed out and not required, however, when Serialized is selected, the user may specify a set number of passes that the list should be sent and if a delay time is desired at the end of the list before starting the next pass.
14. The global Start and Stop sending button works in all tabs. Note that the green arrow in the icon means that there are messages that can be sent and pressing it turns the arrow red to show that it is sending. If that arrow is red, pressing it will stop sending and then turn the arrow green. If the arrow is grey, that means there are no messages ready to be sent yet and messages will need to be added first
15. This will enter the Macro sending options mode
16. This button will erase the entire send list

2.10. Sending Database Signals (DBC, LDF)

To offer the convenience of simplicity for users to be able to directly send the real world values from a database file without requiring to manual set your ID and byte data, we offer this feature.



This tab only provides functionality to add new Signals with a database file loaded!

Functionality of this tab is based on the **Send CAN Messages** tab so all common functionality operates the same and will not be the focus of this sub-section.

If the database file gets updated after a send Signal list was stored, the Database Send list may need to be changed to match the Signal changes.

1. If 2 database files are loaded, the list may be extremely large so it is possible to use this dropdown to allow a choice of which database channel to select the signal from, or both channels may be selected.
2. Select the desired Signal name from the dropdown that is intended to be used to send to the bus.

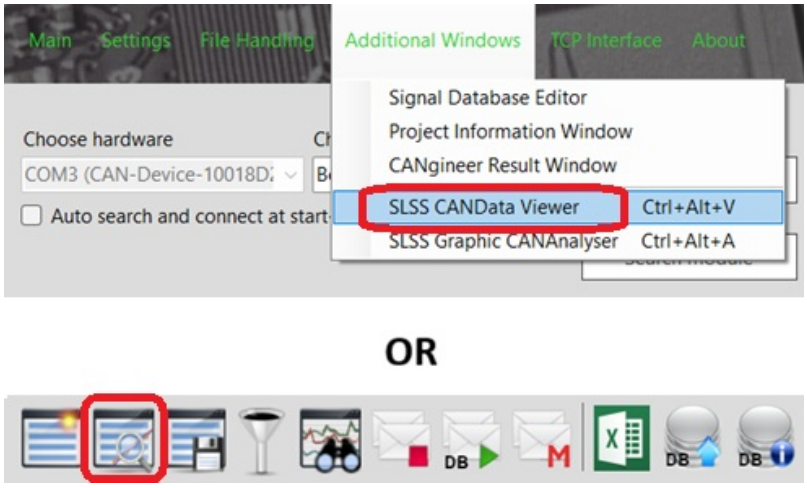
Currently a direct entry / search function is under development to improve the ability to find the signal faster. This will be released soon!

3. Enter the desired Signal value within the allowed range. If data is entered outside the database file determined range, a pop-up will inform the user of the minimum and maximum value range to select from. Values that are entered that do not match the scaler from the selected database file data will be rounded up to the next valid value (including decimal values). The units are automatically populated from the database data.
4. This column will show either a green check box or a red cross-out. The green check box means that this Signal is currently being received on the active bus. The red cross-out means that the Signal is not currently being seen on the active bus.
5. This drop down allows the user to send the desired Signal information to either bus. This is useful if one channel is actively receiving an ID and the value is intended to be modified and sent to the other bus (like a filtered Gateway in essence).

6. Selecting this box means that if the first column has a green check box and the remaining bytes of a CAN ID that are not being impacted by this Signal then this Signal will transit on this row with the remaining live data byte values retransmitted from the live incoming data.
7. The values of the Signal may be edited and updated directly here.
8. Global Start and Stop Database Signal send button.

2.11. Importing and Reviewing Saved Log Data

This menu option feature is used to be able to load in a previously saved data session and view the data inside the software



Alternatively, the 3 file extensions (.scdf, .scdv & .rcdf) may be double-clicked and opened directly from a Windows Explorer folder. Doing this will directly open an instance of the Data Viewer program.

File extensions

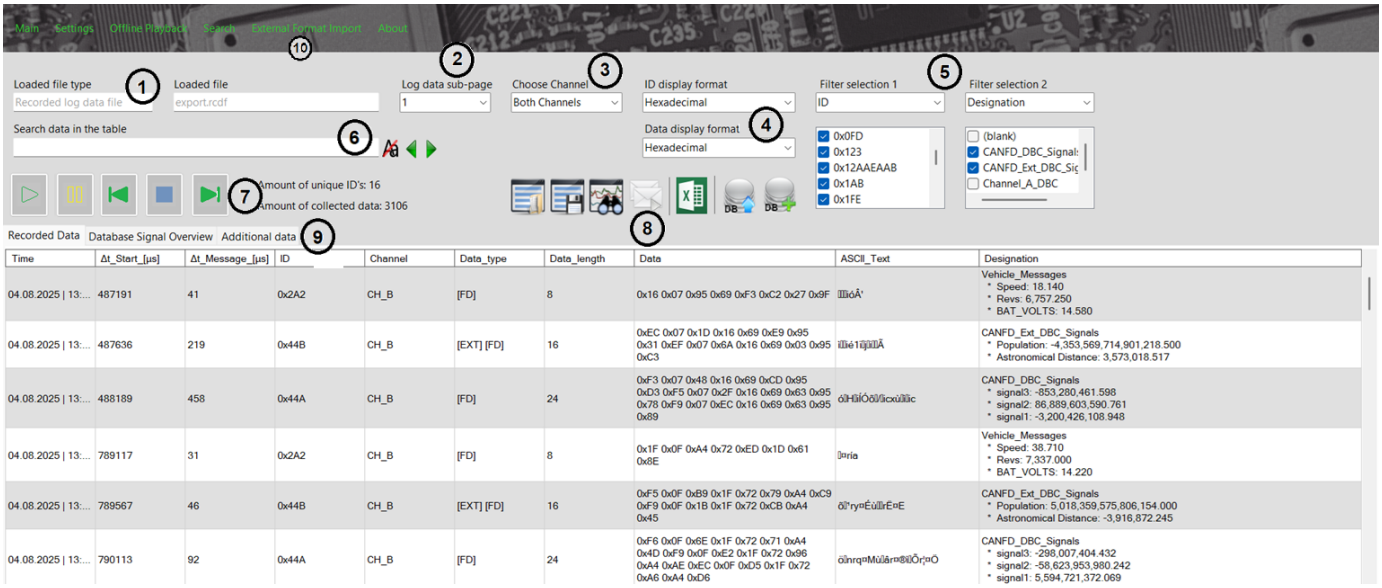
scdf - SLSS CAN Data file - Saved current data from the Incoming CAN Data tab (snapshot of the current messages - 1 per ID)

scdv - SLSS CANData Viewer file - Saved table content of the SLSS CANData Viewer (can be saved as a sub-set to remove filtered items)

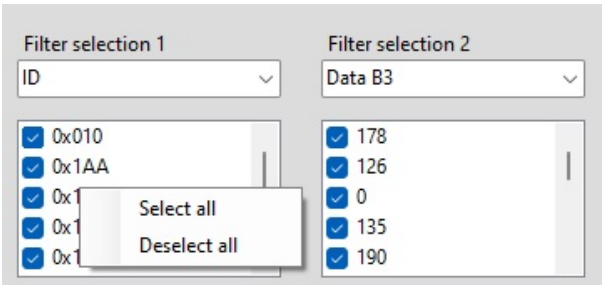
rcdf - SLSS recorded CAN Data file - Saved current data from the CAN Logfile Recorder tab (full log export data)

3. Data Viewer Main Program

All of SLSS CANAnalyser saved file formats are supported as well as importing ASC log files



1. Information displayed based on the file loaded. It states the type of file and the file name that was loaded
2. In the case of loading a file that has more than 200,000 rows, to conserve PC memory resources, the data will be broken into sub-pages of up to 200,000 lines per sub-page. This drop-down allows the user to select a different sub-page of data to access
3. This allows the view of only CH_A or CH_B or both channels from the loaded data
4. These drop-downs are used to change the format of either the ID or Byte data (HEX, DEC, BINARY)
5. Filter 1 and Filter 2 may be set to provide 2 layers of filtering of ID or bytes or designation to find the data that is desired. To select or deselect all messages in a filter list, right click on the list and select "Select all" or "Deselect all"



6. This is a data search field. Any text entered here will highlight a cell in blue color for matching criteria. Beside it is an icon to enable or disable case matching. The green arrows beside that will move to the next or previous matched cell
7. These are the data control buttons. From left to right is Play, Pause, Step backwards, Stop, Step forwards. Note, to play back the data, press the play button. The play button must be enabled for

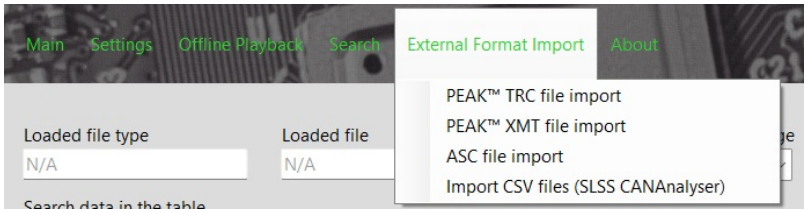
the graphical viewer to show the graph

8. These are the feature control buttons. From left to right is the Load data button (loads scdf, scdv, rcdf files), the save button to save a copy of your current filtered data, the graphical analyser button (operates identical to this button in the main software), the playback CAN button (future application to play back recorded data back onto the live bus), Export data button (choose from Excel or CSV), load database file button and then the last button will go through the loaded data rows and enhance it with the loaded database file data
9. There are 4 tabs in the main viewing window. The first 3 operate identically to the way these 3 tabs operate in the main SLSS CANAnalyser software. The Recorded CAN Data tab shows the logged data rows (that can be played back). The Database Signal Overview tab shows all the decoded human readable database signal data that can also be played back to see dynamic data as it changes. The Database Data tab allows the direct viewing of the database file itself. The 4th tab "Additional data" is for imported data such as imported send message data that can be viewed and then converted / saved into the SLSS CANAnalyser format to load into the main software
10. The software currently supports 4 data import formats. **PEAK ™** .TRC V2.0 and V2.1 format log files, **PEAK ™** .XMT send message list files and **ASC** files may be imported. Additionally CSV files that were previously exported from SLSS CANAnalyser format may also be imported

For CSV imports, ensure to select the correct delimiter character under the **Settings** menu.

3.1. Import ASC log files

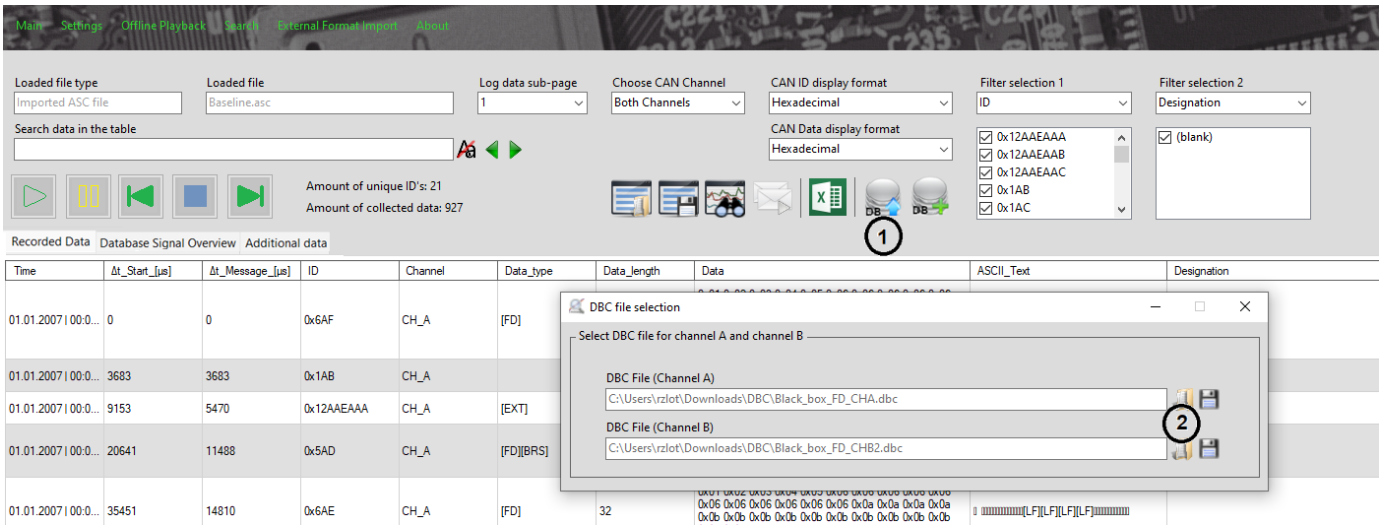
Select "ASC file import" from this menu to import ASC log files for analysis.



3.2. Loading the Database file and enhancing the logged data (DBC, LDF)

After importing a log file or loading a previously saved log file, the database file may be loaded in order to add the Message / Signal human readable information.

1. Open the window to load the database file
2. Select the file location of the database file for each channel



1. Select "Yes" to enhance the loaded data with the database translations