

ECU Logger Documentation

Summary

The ECU logger is a PC tool to extract logged data from EFI Technology ECUs. This includes the EURO4, EURO5, EURO8, EURO8PLUS and EURO12 but also the older legacy EURO6 and EURO12 with their appropriate XML database file.

The extracted data will be stored in a dump file (*.bin) together with the logger configuration and the lap time info. The user can also choose to convert it to MDF (v3.30). dump files can always be converted later by loading them with the ECU Logger and converting them to MDF, 2D or CSV file format.

The ECU logger allows a user to create a logger configuration for the target ECU using the device database. This includes channels to log, logging speed of the channels, stop delay, trigger mode (disabled, continuous, external or channel triggered). When channel triggering is chosen, the tool enables the user to select the thresholds between which the logger will be active. The configuration can be stored on the PC in a *.spt file. The tool can also read an existing configuration from an ECU.

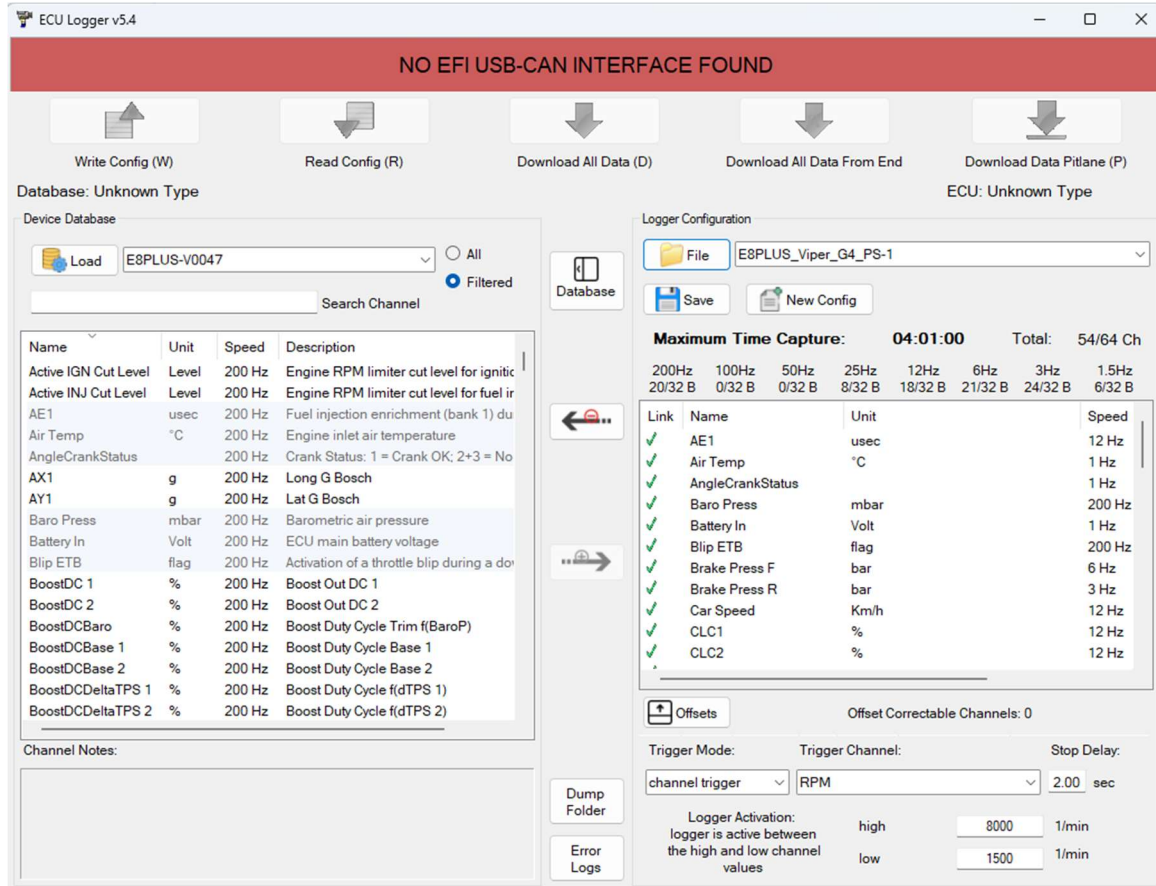
This document will clarify how to use the tool and explain the functionality.

Short key list:

Arrow Key Left	Increases frequency of the selected channels in the configuration (circles around when max frequency is reached)
Arrow Key Right	Decreases frequency of the selected channels in the configuration (circles around when min frequency is reached)
Delete Key	Deletes the selected channels in the configuration
Ctrl + A	Selects All channels in the configuration box which has the focus (top or bottom one)
Space bar	Adds selected database channels to the configuration
Ctrl + R	Read configuration from ECU
Ctrl + W	Write configuration from ECU
Ctrl + D	Download Data from ECU
Ctrl + P	Download Data Pitlane Mode

Appearance

Below is a screenshot of the ECU Logger Tool, depending on the connection status and the current activity, the top bar will change color and display the status. In the case below it indicates that there is no EFI USB-CAN interface connected.



Other states can be:

EFI COMMUNICATION SERVER OFFLINE	No ECU Communication Server Found, this means the communication server is not installed on the pc
NO DATABASE LOADED	There is no device database loaded (the tool needs the XML database to know how to talk to the ECU). The EFI USB-CAN interface is connected though.
CONNECTING TO ECU...	The tool is attempting to get a connection to the target ECU.
NO ECU CONNECTED	The tool is not connected to an ECU
LOGGER STANDBY (remaining time to capture: 15:05:43)	The tool is connected to the ECU and the logger is not running, it is in an halted state. Showing the remaining time that can be captured.
LOGGER RUNNING (remaining time to capture: 15:05:55)	The tool is connected to the ECU and the logger is running / recording. Showing the remaining time that can be captured.
ERASING LOGGER DATA... (could take a few minutes)	The tool is connected to the ECU and the ECU is busy with erasing the datalogging memory.
PITLANE MODE, Waiting for ECU...	The tool is in pit lane mode, ready to download all logger data from the ECU the moment it connects.

Device Database

A device database can be loaded by pressing the load button in the device database section (left). This will open the database folder of ECT (if installed) and allow the user to select an XML database.

The 6 most recent databases selected are put in the dropdown box next to the load button for quick access.

On the right of the combo box there are 2 radio buttons (All and Filtered), per default Filtered is selected and this only shows the channels in the database marked for the logger.

When All is selected it will display all channels of the database.

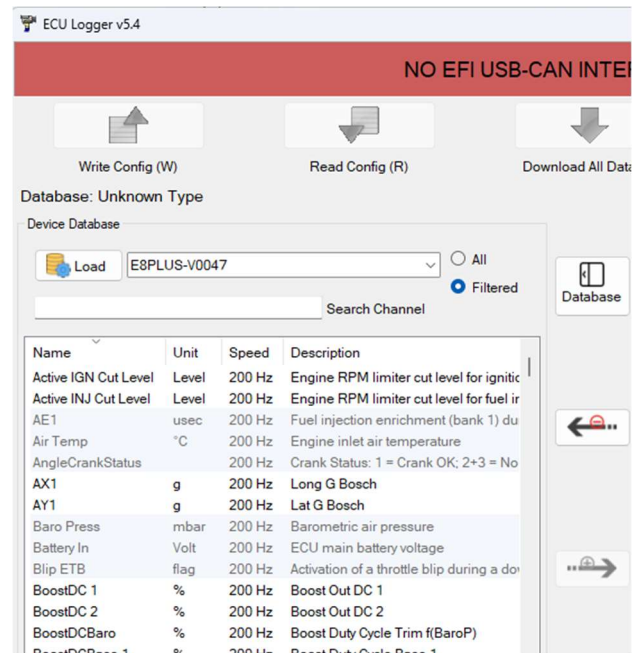
Channels can be added to the configuration by pressing the arrow button that points to the right.

Multiple channels can be selected. Pressing the space bar after having selected some channels, will also add them to the configuration. After they are added, the cursor will move to the next channel in the database that was not added yet.

The search bar below the load button will filter the channels using the search string entered the bar. Multiple search strings can be entered by using the asterisk (*).

Below the channels is a Channel Notes Box which contains the Notes for the channel that was last selected.

The top button in the middle column called "Database" will hide or expand the database section to give more screen space to the logger configuration screen. When the database section is needed again, click the Database button to show the section again.



Logger Configuration

Just like in the device database section, the load button will open the last used folder in which configurations were stored and allow the user to select a configuration (.spt) or a dump file (.bin) to read the configuration from.

When a configuration is loaded correctly, it will display all signals with a link column, this will indicate if the channel was found in the opened database file (if found and was equal, if found but was not equal, if was not found). The lightning bolt is added if that channel is configured to be a trigger channel.

The maximum capture time (with the format days hours:minutes:seconds) is displayed above the channels together with the total number of channels configured.

Depending on the ECU the total channels supported can be different, the amount is displayed after connecting to the right of maximum time capture.

The maximum number of bytes per frequency group is also limited, depending on the channel sizes, and this can result in more or less channels per frequency. The amount supported is displayed after connecting to the ECU below each frequency group.

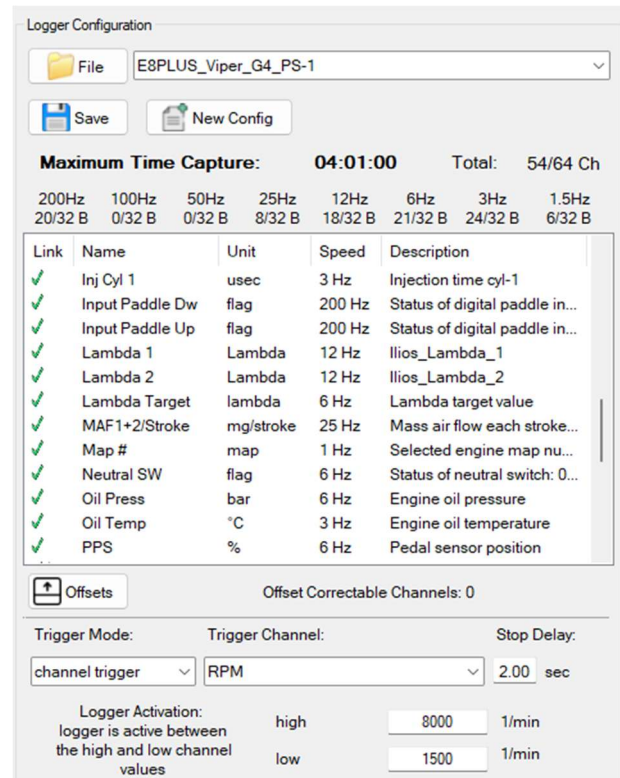
The logging speed of these channels can be changed by either double clicking a channel and selecting a new frequency or by selecting multiple channels and pressing the arrow keys (left for higher frequency, right for lower frequency).

Pressing the arrow button that points to the left will remove the channels from the configuration. Pressing New config will remove all channels and start a default empty config.

Pressing the offset button will open the offset correction channel box, channels can be put here or removed by pressing arrow up button or arrow down button respectively.

When a channel is configured as an offset correctable channel, the current value will be read continuously and displayed in the offset column. This value will be used to correct the channel to value zero when generating an MDF after the data is extracted from the ECU. This offset value will be automatically fixed when writing the configuration to the ECU.

Below the channel boxes are the trigger options and the stop delay (number of seconds to keep logging after the logger is stopped and how long to wait to start logging).



Logger Configuration

File: E8PLUS_Viper_G4_PS-1

Save New Config

Maximum Time Capture: 04:01:00 Total: 54/64 Ch

Link	Name	Unit	Speed	Description
✓	Inj Cyl 1	usec	3 Hz	Injection time cyl-1
✓	Input Paddle Dw	flag	200 Hz	Status of digital paddle in...
✓	Input Paddle Up	flag	200 Hz	Status of digital paddle in...
✓	Lambda 1	Lambda	12 Hz	Ilios_Lambda_1
✓	Lambda 2	Lambda	12 Hz	Ilios_Lambda_2
✓	Lambda Target	lambda	6 Hz	Lambda target value
✓	MAF1+2/Stroke	mg/stroke	25 Hz	Mass air flow each stroke...
✓	Map #	map	1 Hz	Selected engine map nu...
✓	Neutral SW	flag	6 Hz	Status of neutral switch: 0...
✓	Oil Press	bar	6 Hz	Engine oil pressure
✓	Oil Temp	°C	3 Hz	Engine oil temperature
✓	PPS	%	6 Hz	Pedal sensor position

Offsets Offset Correctable Channels: 0

Trigger Mode: channel trigger Trigger Channel: RPM Stop Delay: 2.00 sec

Logger Activation: high 8000 1/min
logger is active between the high and low channel values low 1500 1/min

Communicating with ECU

After configuring all channels to log, the user can connect to an ECU and click Write Config to upload the configuration into the ECU. Uploading the config will zero all offset correctable channels automatically and will command the ECU to erase the datalogger memory after uploading the configuration. After the datalogger memory is erased, the logger will automatically start (or wait for a trigger depending on the configuration).

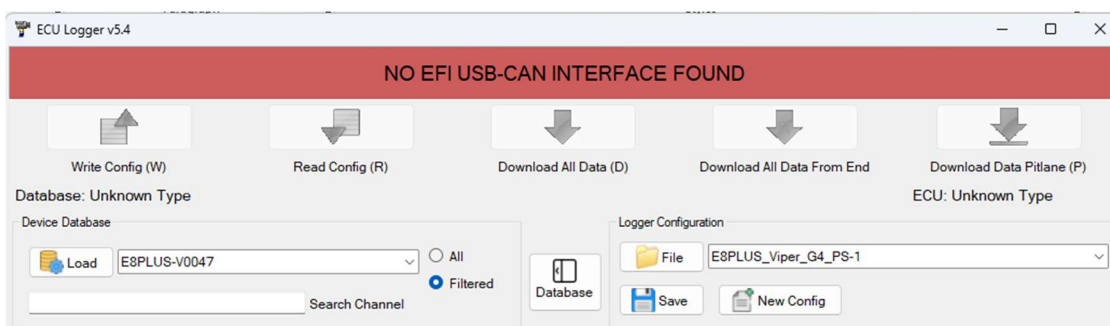
The Read Config button will read only the configuration from the ECU, but not the lap info or the logged data.

The “Read All Data” button will initiate the process of extracting the logged data from the ECU. First, it will read the configuration, then the lap time info and afterwards it will start reading the data logged data.

While it is reading the data, the operation can be cancelled at any time creating an MDF from the data read up until it got cancelled. The logger will continue running after it gets cancelled.

Normally the data is extracted by reading the datalogger memory from start to finish, but alternatively the data can also be extracted from finish to start by clicking the Download All Data From End button. This will allow users to extract the last 10min quickly for example. After the data is extracted, the user can decide to clear the memory and restart the logger or to continue from the current point.

To Download All data immediately when the ECU connects, press the Download Data Pitlane button. This will prepare the logger to start downloading as soon as the ECU connects to the interface. Typically used in the pitlane at the racetrack for fast data extraction.



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To access the location where the logger puts the dump files (bin), the user can click on the Dump Folder button. This will open Windows Explorer on the location where the dump files are stored.

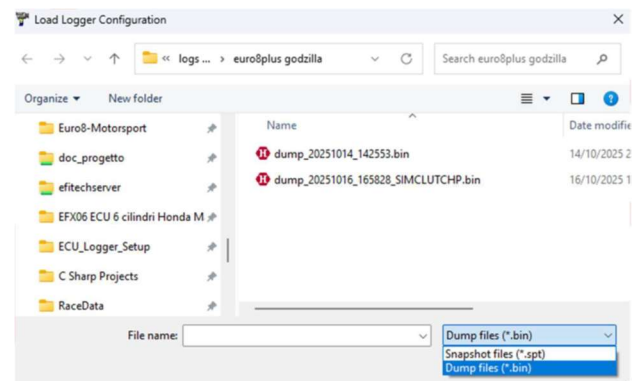
The ECU Logger will write all activity to an error log, which can be investigated in case of maloperation or to trace back which steps were executed. Also, more information about device database warnings (channels with problems which are not shown in the channel box) and about connection difficulties can all be traced back to the error log. An error log is always created and stored in temp folder and thus automatically deleted by windows. To go to the folder where error logs are stored, the user can press the Error Log button.

Dump Files

The generated dump files contain the raw data extracted from the ECU + the read logger configuration.

Dump files are a space effective way as data backup and very useful as a debug tool in case something went wrong during data extraction or Logs button. Logger configuration can be loaded from the dump file simply by filtering dump files in the file open window:

Normally configurations are loaded from .spt files but also dump files can be used.



After selecting a dump file, also a pop-up will ask to save the logged data, so the user can generate a readable log file from the raw data, such as MDF (select for use with ECT Datalog Viewer) , 2D or CSV.

After clicking one of the options, the user will be prompted for a save location for the log file.

Log Files

Working with MDF files, events are added to the log file where lap times are visualized:

An event can be a key off/key on event or a channel trigger event (logger halted/resumed).

