BUDS2

USER MANUAL

Summary

Legal Notices

We have made all efforts to offer current, correct and clearly-expressed information within the BUDS2 End User Documentation.

However, we cannot guarantee that the contents are completely free of errors. Neither KPIT Technologies GmbH (LTD) nor the authors of this document accept any legal responsibility for its contents or any consequences, including direct or indirect liability, arising from its use.

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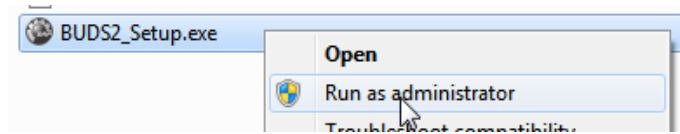
Installation

The hardware, software and internet connection of your computer are all critical to ensure an optimal BUDS2 performance. BRP may not be able to assist you if your configuration doesn't match the following minimum requirements:

- Processor type:
  - Intel: 3rd generation or later Core i5 or Core i7 processor, or
  - AMD: FX or Ryzen processor
- Processor frequency:
  - 2 GHz or higher for dual-core processors, or
  - 1.5 GHz or higher for processors with four cores or more
- RAM:
  - 8GB or more
- Storage
  - at least 5 GB available on the C drive:
  - a solid-state disk (SSD) is recommended
- Screen
  - resolution of at least 1366 by 768
- USB
  - two USB ports available
- Operating system
  - Microsoft Windows 7 with service pack 1, 64-bit, or
  - Microsoft Windows 10, 64-bit
- Internet
  - a high-speed internet connection is required
  - a connection with a download speed of 30 Mbps or higher is recommended

BRP recommends using the PC for BUDS2, BossWeb and other BRP usages only. Diagnostic tools from other powersport vendors, some computer security suites and some remote administration software have occasionally interfered with the correct operation of BUDS2.

Computer administrator privileges are required for BUDS2 installation, as well as for module update operations using a USB-to-USB cable connection.

To install BUDS2, execute the installation program called *'BUDS2_Setup.exe'*. If you are not logged-in as Windows administrator, please run the installation program as Windows administrator. To do this, right-click on the installer and click on *Run as administrator*. If Windows opens a security warning, accept it by clicking on *'Run'*. If you want to cancel the installation process, press the *'Cancel'* button or the *'X'* on the top right of the window at any point of the installation.

Figure 1: Running as Administrator

When the installer opens, select the installation language from the drop-down menu.
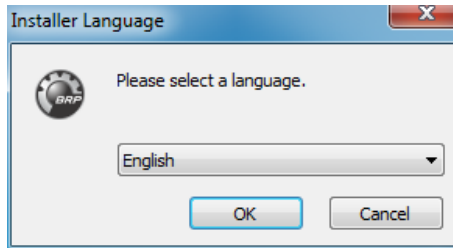
Figure 2: Language selection for installation process

Next, the install location and disk space requirements are shown. The install location cannot be changed. If the required disk space exceeds the available disk space, prepare additional disk space and re-start the installation program.
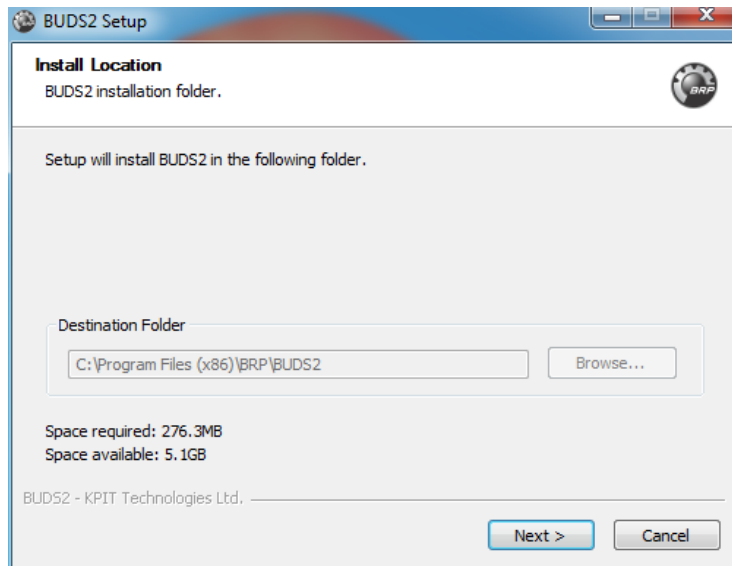

Figure 3: Information of the installation folder

Then, you can choose the folder of the Windows start menu to which you want to add a startup shortcut. By default, it is set to *'BRP/BUDS2'*. If you do not want to create a shortcut in the start menu, select the checkbox *'Do not create shortcuts'*. Acknowledge the configuration by selecting *'Install'*.

In case the error message *'BUDS2 already running, you have to shutdown all program instances'* is shown, you need to stop the currently running BUDS2 application and restart the installation program.

It is not possible to install two versions of BUDS2. Thus, in case of the warning message *'BUDS2 already installed …'*, you need to confirm to uninstall the currently installed version of BUDS2. If you want to keep captured BUDS2 files, backup them first.
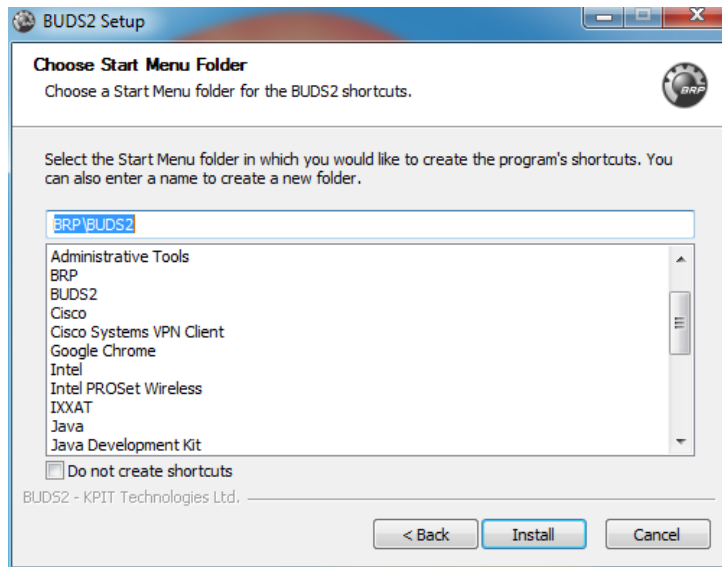
Figure 4: Shortcut in Windows start menu

If you have never installed BUDS2 before, you need to install drivers for the VCI. If you had a BUDS2 version installed before, you do not need to install the VCI drivers again. The VCI installation is part of the BUDS2 installation. Thus, the VCI driver can be installed by selecting *'Yes'* in the next confirmation dialog:
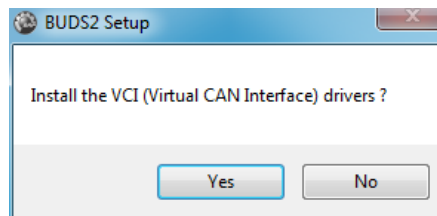
Figure 5: VCI driver installation

Finally, BUDS2 will be installed on your computer.
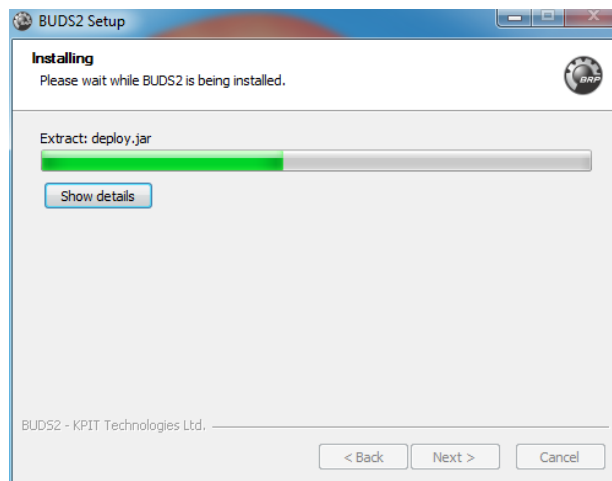
Figure 6: Installation of BUDS2

After installation, an information dialog will show the outcome of the installation process. If VCI drivers were installed, a reboot of the computer is required. Otherwise you can select to run BUDS2 immediately from the installer. Otherwise the installer quits after selecting *'Finish'*.
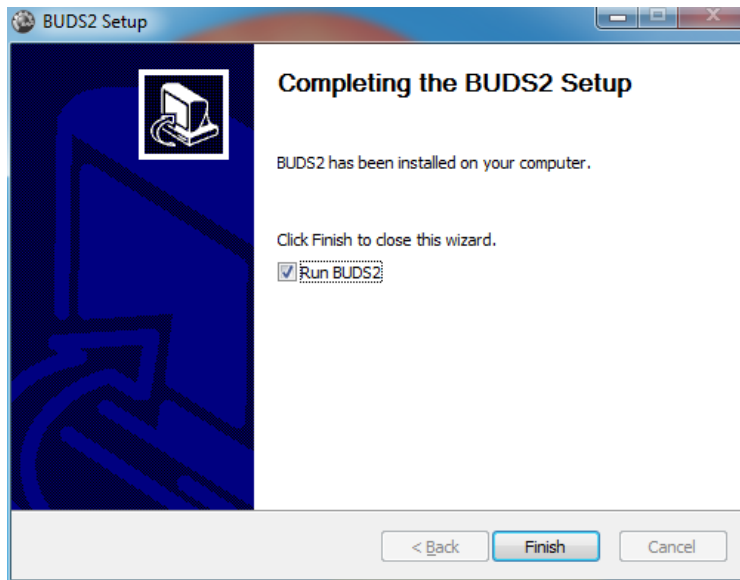
Figure 7: Installation completed

Start-up

To start BUDS2, you can select *BRP->BUDS2* from the Windows start menu if you selected to add a shortcut in the installation process. Otherwise navigate to *'C:\Program Files (x86)\BRP\BUDS2\'* and double-click on the BUDS2 executable called '*BUDS2.exe*'.

BUDS2 will prompt you a login dialog, first. Enter your BOSSWeb information to log in.
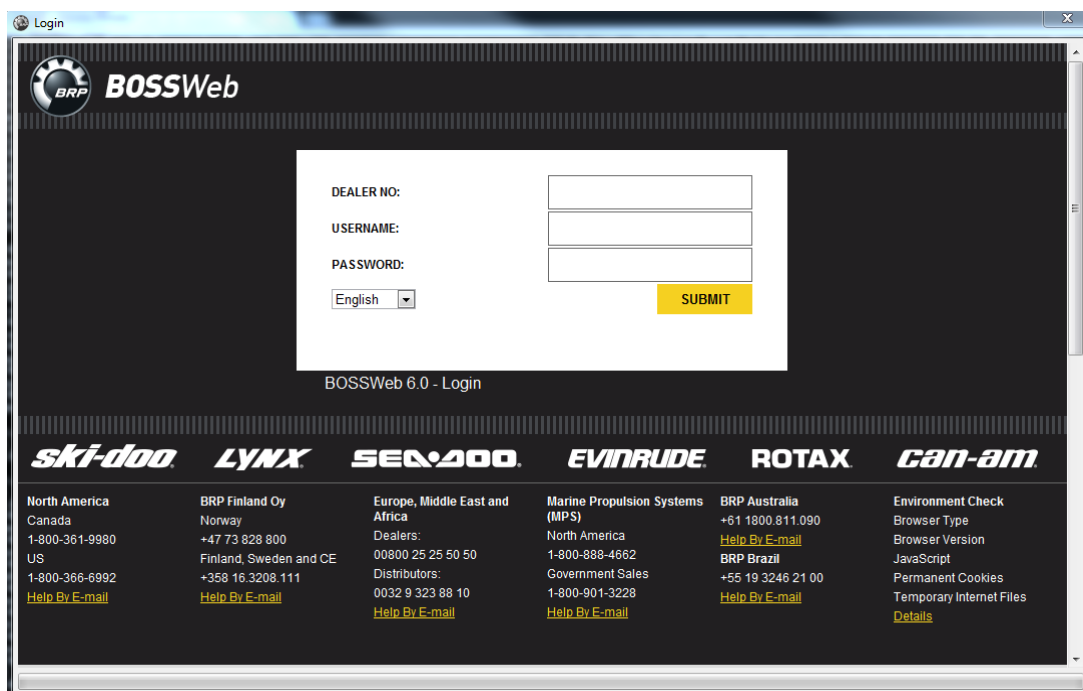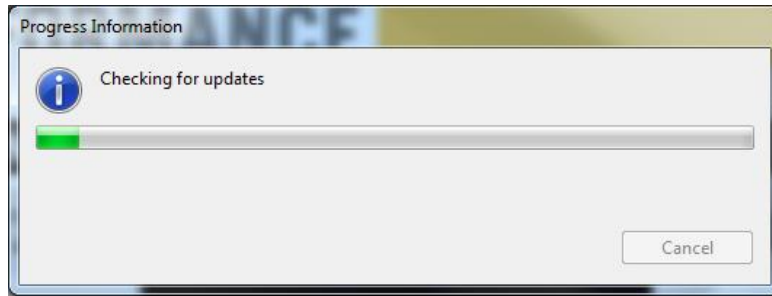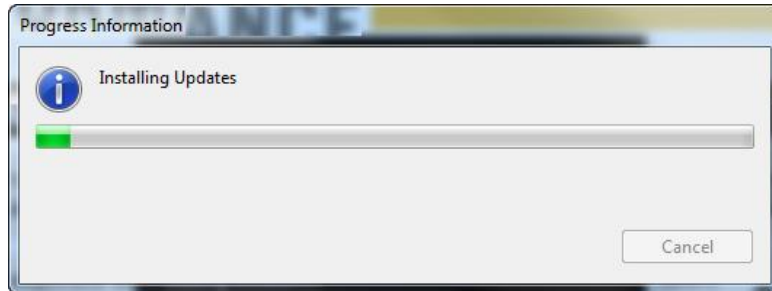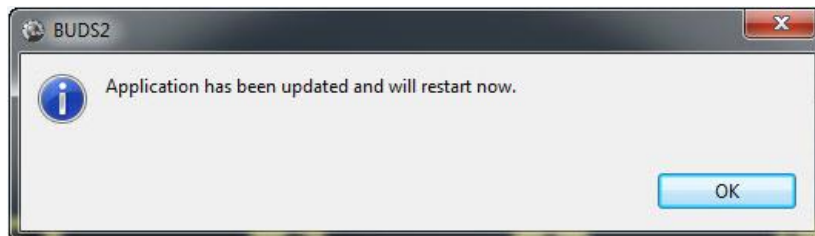

Figure 8: BOSSWeb internet login

During the opening, BUDS2 will check for updates and install them if this is the case. At the end, you will be asked to restart the program. You will have to re-enter your BOSSWeb data.

Figure 9: Checking for updates

Figure 10: Install updates

Figure 11: restart of the application

A disclaimer may show you important legal information during the startup process. Read it carefully and accept the disclaimer to start BUDS2. Declining it will close BUDS2.
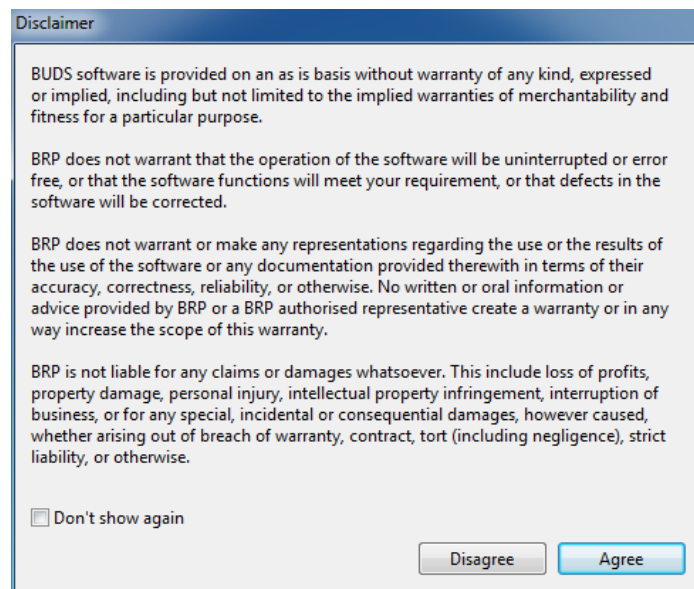
Figure 12: Disclaimer

BUDS2 can work in two different modes:

- **VCI mode**: All data is read from the VCI. *VCI mode* is only available if a VCI is connected and the VCI drivers have been installed successfully.
- **File mode**: Data is read from a BUDS2 file which is a stored snapshot of a previous vehicle scan. BUDS2 is in *file mode* if a BUDS2 file has been opened.

If a VCI is connected at startup, BUDS2 will start up in *VCI mode* and start scanning the vehicle.
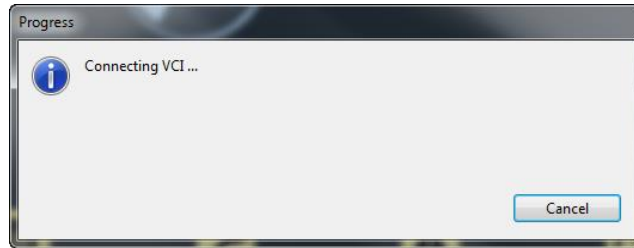
Figure 13: Connecting VCI
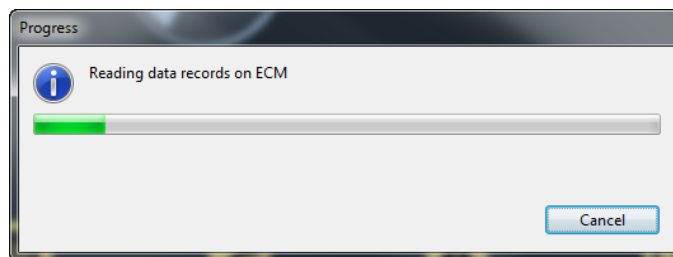
Figure 14: Reading ECUs

If no VCI is connected at startup, BUDS2 will prompt you to open a BUDS2 file. A file dialog will open and you can select the BUDS2 file to open. In this case BUDS2 will start up in *file mode*.
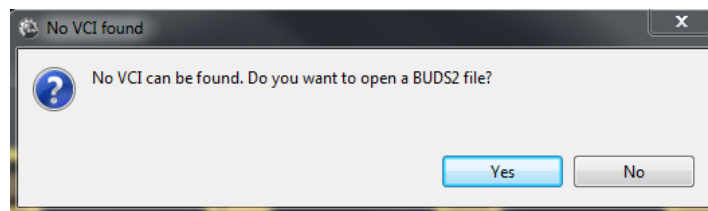
Figure 15: No VCI found
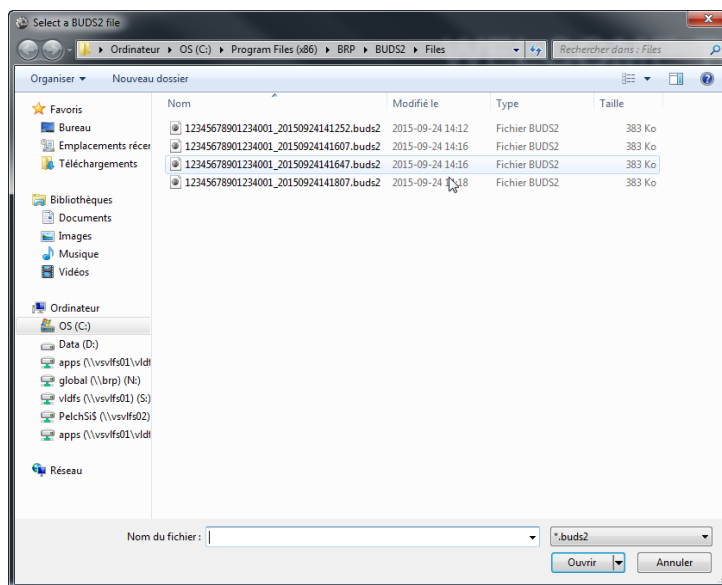
Figure 16: Opening a BUDS2 file

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In both file and VCI mode, BUDS2 brings us to the main screen below:
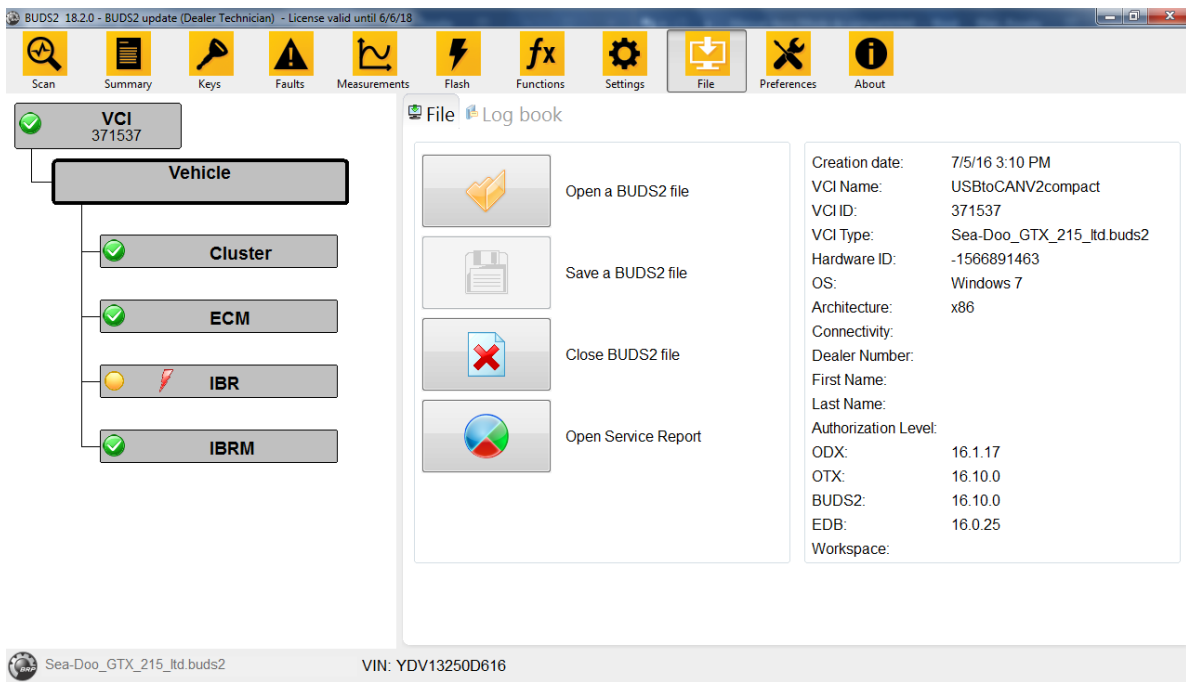
**Figure 17: BUDS2 main page**

Status bar

The status bar at the bottom of the page includes the name of the BUDS2 file and the VIN. It can also indicate the key status (ON or OFF) and the battery voltage.

Figure 18: Status bar

Vehicle diagnostic dashboard

The dashboard, always shown in the left part of the window, visualizes an overview of the connected VCI, the vehicle and its modules. An element like VCI, vehicle or module can be selected by clicking on it. As a result, BUDS2 will show information about the selected element. If a module is selected, information of this module is shown (if available). If a VCI or a vehicle is selected, information about the vehicle or all contained modules is shown.
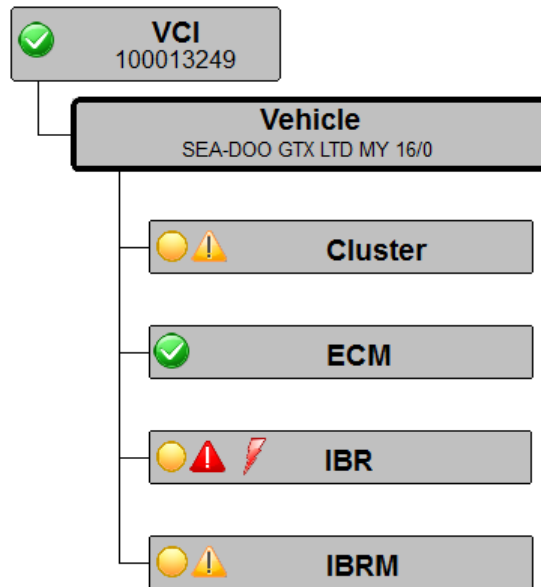
Figure 19: Vehicle diagnostic dashboard

Each module shows different status icons:

	Module is in boot mode
	Module is in boot mode and application is valid; or fault codes or firmware updates have been found
	Module is not in boot mode and application is valid. No fault codes or valid firmware updates available
	Optional or recommended flash file
	Mandatory flash files
	Occurred fault codes found
	Active fault codes found

Toolbar

In the toolbar, shown on the top of the window, you can select the task you want to perform next.
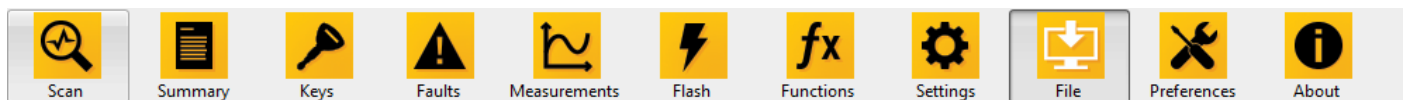
Figure 20: Toolbar

Scan

To scan a vehicle connected via the VCI, select *'Scan'* in the toolbar. A progress dialog shows you the progress of the scanning process. Pressing *'Cancel'* in the progress dialog will stop the scanning process and clear all data which has already been read. The scanning is not interruptible at any time and, thus, cancellation may not respond immediately.
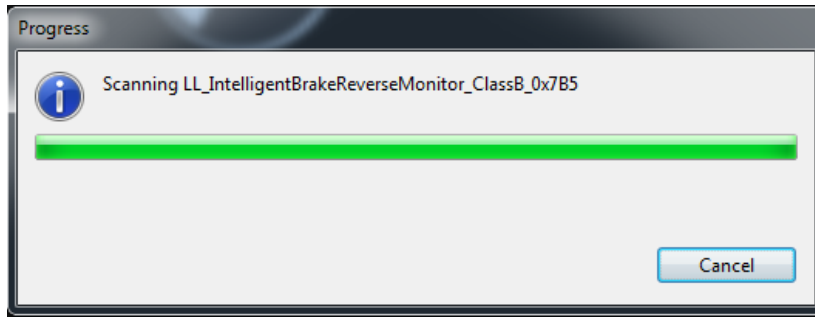
Figure 21: Progress of a vehicle scan

Preferences

- o Disclaimer: the disclaimer can be (de)activated
- o Language: allows to select BUDS2 user interface language
- o License: displays your license information
- o Measurements: The measurement rate can be adjusted
- o Units: Metric or Imperial unit system can be selected
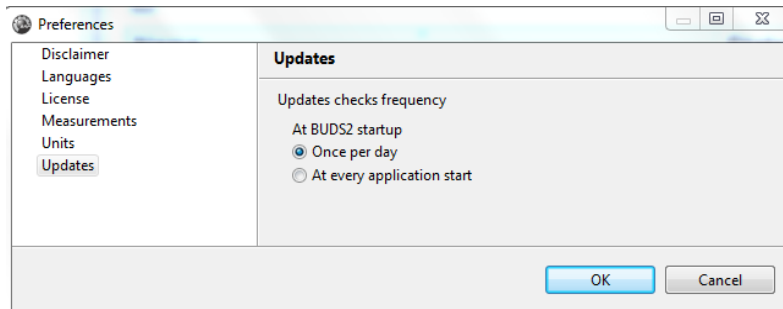- o Updates: allow to change the frequency of the updates

Figure 22: Preferences

About BUDS2

Information on BUDS2, such as version number, can be seen. Clicking on Open Manual will open this manual.
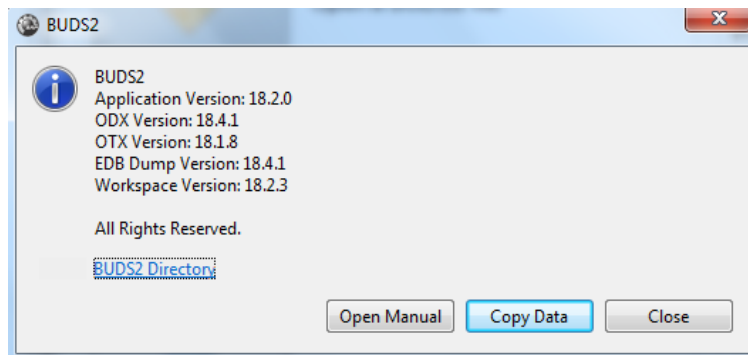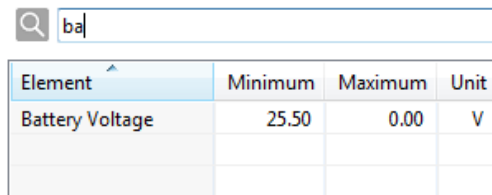

Figure 23: About BUDS2

General functions

Search function

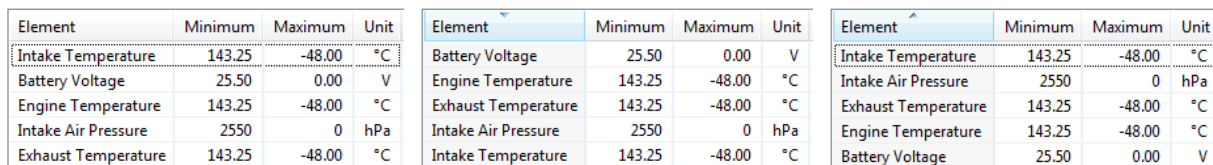Above every table, there is a text field which can be used to search through the table entries.

Figure 24: Search function

Table sorting

By clicking on the column name, the sorting of the table columns can be changed from default sorting to alphanumerical sorting either descending or ascending. The default sorting is based on the order of occurrence.

Figure 25: Table sorting (default, descendant, and ascendant)

Column and window sizes

The size of columns and windows can be changed by clicking on the column separator, or window border respectively, and dragging it to the preferred size.

Scroll bars

If needed, scroll bars are shown either in the window or inside tables. Select and drag the knob of the scroll bar to change the view port.

Summary Page

All information on the vehicle connected can be seen in the *Summary Page*. The vehicle information is divided into three categories on the right, *Summary*, *Health* and *Statistics.*

Summary

By selecting the VCI or the vehicle in the dashboard on the left, general information on the vehicle is shown on the right side. *'Vehicle model'* as well as the *'Customer'* settings can be changed, by changing the value in the text field. The value is written whenever the focus is moved away from the text field.

Figure 26: Summary Page

By clicking on *'Reset Service'*, the maintenance can be reset if a reset is supported by the vehicle.

Figure 27: Reset of last service

The view on the right changes if a specific module, for example ECM (Engine Control Module), is selected. Information on the selected module can then be seen in the *Summary* tab.

Health

On the top, the *Health* tab shows a legend for the icons in the dashboard. Below, general problems on the vehicle are reported. The view is set up dynamically and shows which faults appear in which module. A description can be seen for every problem.

|	Type	Component	Description
⚡	Warning	ECM	Optional or recommended flash file
⚡	Warning	IS	Optional or recommended flash file
⚡	Warning	IBR	Optional or recommended flash file
⚡	Warning	CCK	Optional or recommended flash file
⚡	Warning	IBRM	Optional or recommended flash file
🟡	Warning	ECM	Module is in boot mode and application is valid / Faults codes or firmware updates have been found
🟡	Warning	IS	Module is in boot mode and application is valid / Faults codes or firmware updates have been found
🟡	Warning	IBR	Module is in boot mode and application is valid / Faults codes or firmware updates have been found
🟡	Warning	CCK	Module is in boot mode and application is valid / Faults codes or firmware updates have been found
🟡	Warning	IBRM	Module is in boot mode and application is valid / Faults codes or firmware updates have been found
⚠️	Warning	IS	At least one occurred fault code
🔺	Error	ECM	At least one active fault code
🔺	Error	IBR	At least one active fault code

Figure 28: Health Page

Statistics

Statistics is divided into *Last instants*, *Min/Max*, *Run Time*, *RPM Profile*, and *Speed Profile* tabs.

Last instants

Measurements of last 120 seconds are saved. The table at the bottom of the page shows a table with all these measurements. By selecting any of the options such as Engine Speed (rpm), Engine Temperature (°C), Intake Manifold Pressure (mbar), Present Torque ("Miist") (%), Throttle Accelerator Sensor (%), Throttle Position (%) in the top of the page, the corresponding information is shown and displayed graphically.
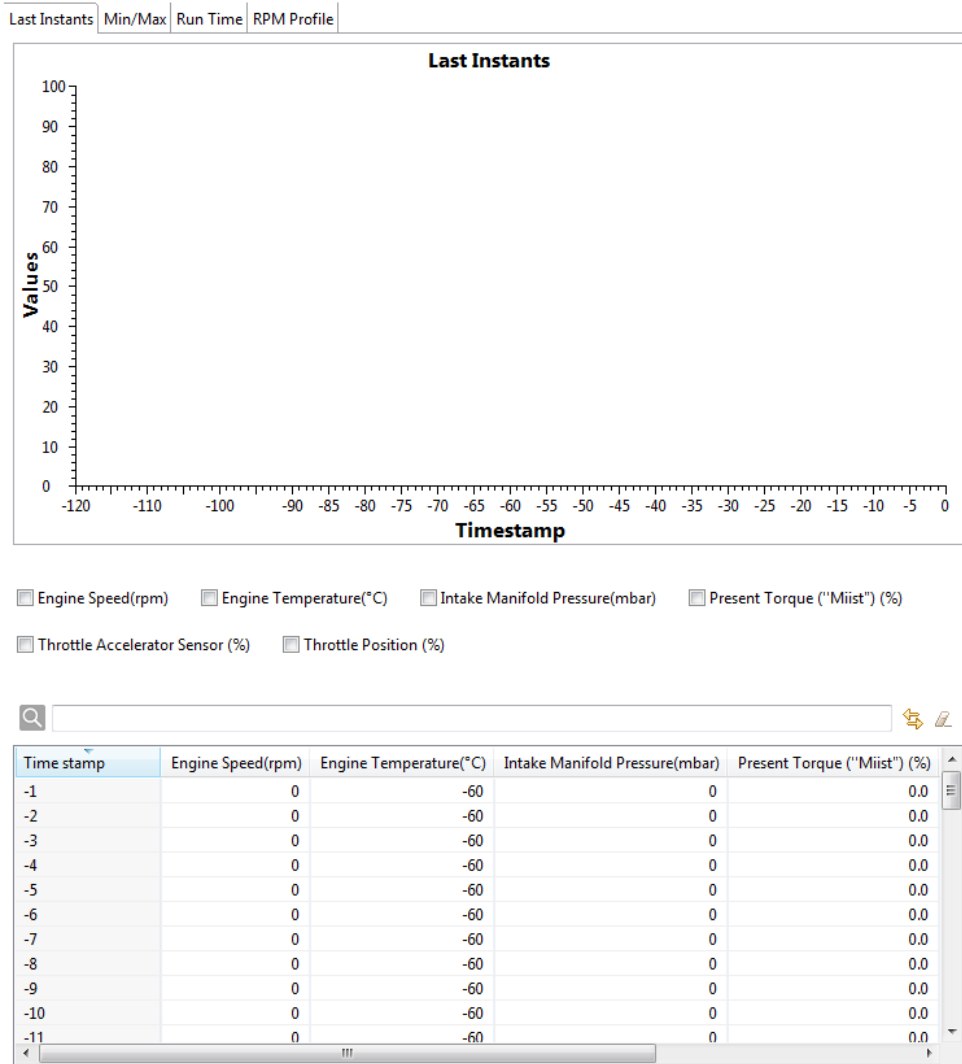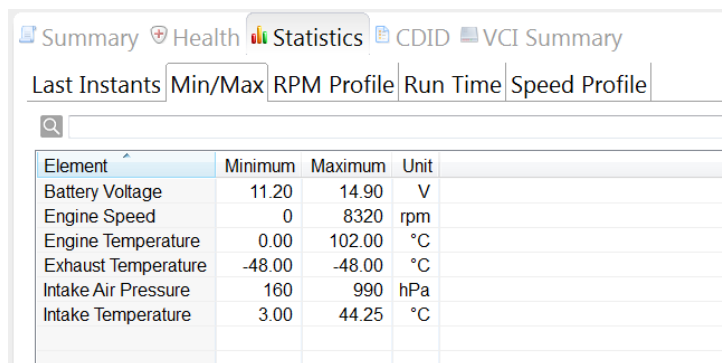
Figure 29: Last Instants Page

By selecting the refresh or clear button on the top right of the *Last Instants* tab, values are reloaded from the vehicle, or cleared, respectively.

Min/Max

The module saves the minimum and maximum value of the following elements: Battery Voltage, Engine Temperature, Exhaust Temperature, Intake Air Pressure, Intake Temperature).

Figure 30: Min/Max Page

By selecting the refresh or clear button on the top right of the *Min/Max* tab, values are reloaded from the vehicle, or cleared, respectively.

Run Time

The different keys of the vehicle are listed, learning key, limp home, normal key and rental key. Information on how long the vehicle was run with the respective key is shown.
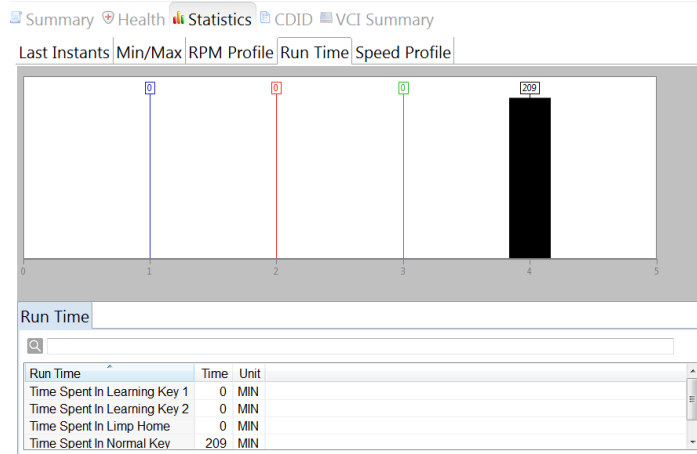
Figure 31: Run Time Page

By selecting the clear button on the top right of the *Run Time* tab, the values are cleared in the vehicle.

RPM Profile

Indication how long the vehicle was run in which RPM range (revolutions per minute).
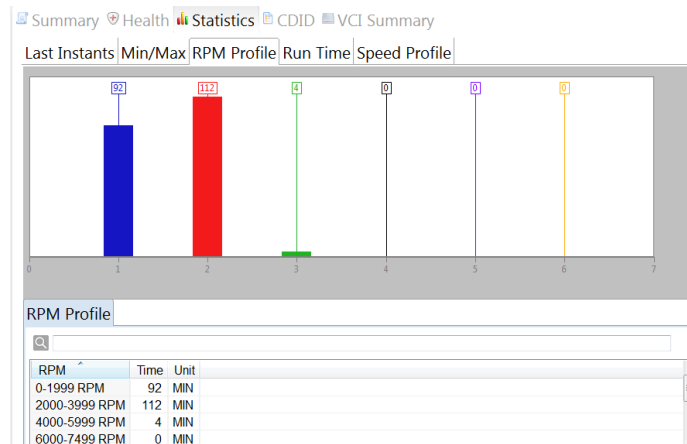
Figure 32: RPM Profile Page

By selecting the clear button on the top right of the *RPM Profile* tab, the values are cleared in the vehicle.

Speed Profile

This tab shows how long the vehicle has been operating in various speed ranges.
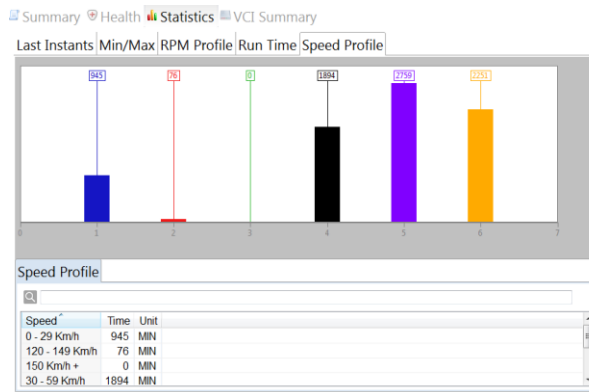
Figure 33: Speed profile page

Keys Page

To program keys into the vehicle or read the currently programmed keys, open the *Keys Page*.
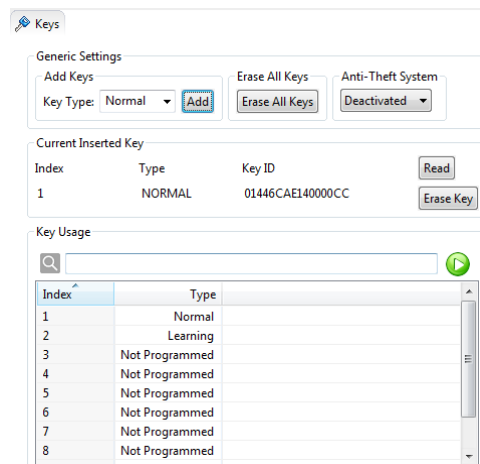
Figure 34: Keys Page

Programming a new key:
1. Press on *'Read'* to read the currently connected key
2. Select the key type, e.g. normal or rental
3. By clicking on *'Add'*, the currently connected key will be registered with the selected key type
4. The new key will be shown in the table *'Key Usage'* which shows all programmed keys

To change the key type of an already programmed key, double-click on a key in the table or press the green *'Play'* button after selecting a key in the table.

Selecting *'Erase Key'* will remove the currently connected key.

By clicking on *'Erase All Keys'*, all key settings are reset.

The keys are only programmed when the Anti-Theft System is enabled.

Faults Page

All faults are listed and described (Module, State, Code, Description) on the top right.

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Active/Occurred

Active: Active faults

Occurred: Faults occurred but are no longer active

By selecting the refresh or clear button on the top right of the *Active/Occurred* tab, the faults are reloaded from the vehicle, or cleared, respectively.

Figure 35: Active/Occurred Faults Page

Inactive

The *Inactive Faults* tab shows all inactive faults, i.e. faults that did not occur.

In the bottom section of the page more details on the faults are given.

Environmental Data

The status of the vehicle when the fault occurred is shown (i. e. speed, ignition angle, ...).

Figure 36: Environmental Data

Possible Causes

The reasons which may have causes the fault are mentioned in the *Possible Causes* tab.

Service Actions

Information on how to solve the issues is given in the *Service Actions* tab.

Measurements Page

The *Measurements Page* contains the *Presets* and *Custom* tabs.

Presets

In the *Presets* tab, there are graphs of the basic elements and a list of predefined measures.
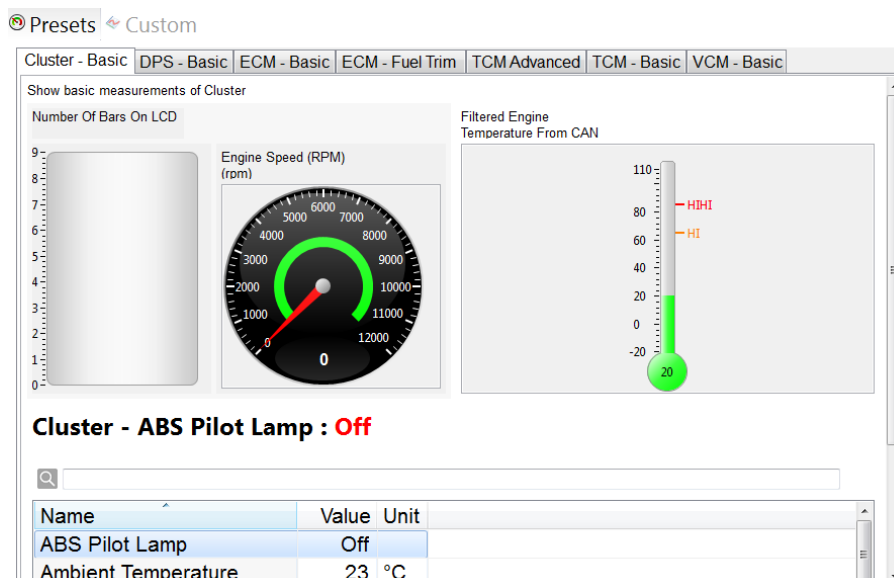

Figure 37: Presets

Custom

For a custom visualization of measurements, select the *Custom* tab. It offers 3 different graph types:

- **Line graph** visualizes one or more numeric measurement values
- **Gauge graph** visualizes one numeric measurement value
- **Switch graph** visualizes one Boolean value (On/Off or Enabled/Disabled)

In the left view, the measurement values are listed. If they are selected in the table, the according value is updated. To show a graph in the line graph, gauge graph or switch graph, select the respective graph type in the graph column. Once the graph type is selected, the graph is displayed in the right view.
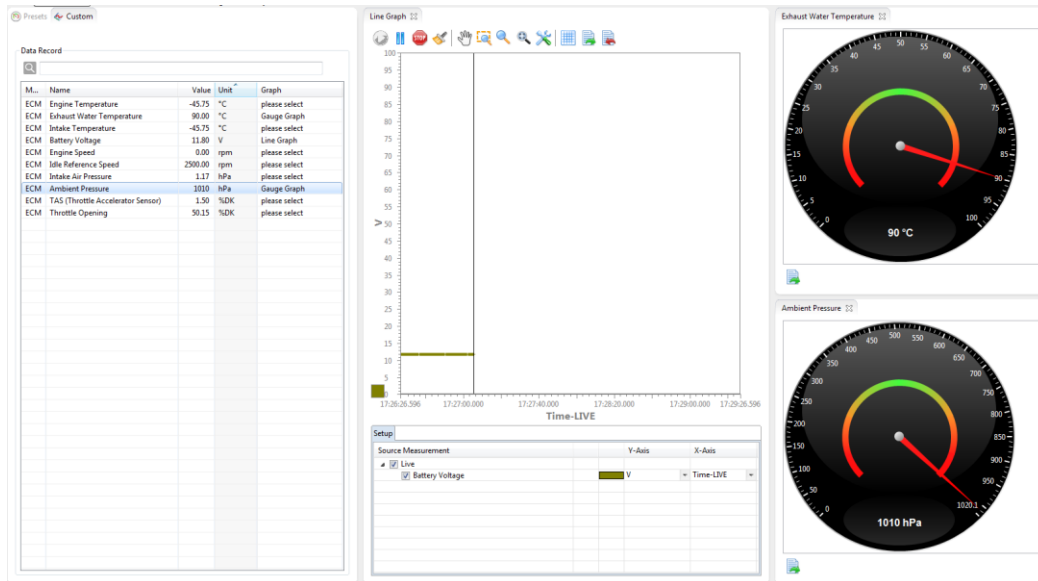
Figure 38: Custom Measurements

The line graph can be controlled by the following buttons in the toolbar.

start the graph drawing (visualizes and keeps samples)

pause the graph drawing (pauses sampling). After pausing the visualization and sampling can be restarted by pressing the start button

stop the graph drawing (clears all samples)

clear the samples on the graph

move the graphic to the preferred view port

define an area with the pointer which will be the new view port

zoom in at the current position of the cursor

reset the zoom to the original settings

open the settings dialog which lets the user change the graph style like color, line width, etc. (see below)

reset the cursor

export all samples

import previously stored samples

Flash Page

Flash

If you want to flash a module with a new firmware, open the *Flash* tab. The *Flash Page* shows a table including all valid firmware files for the module currently selected in the dashboard. To flash a firmware file on a module, select one of the flash files in the table and double-click it or press the *'Play'* button on the right next to the search line.
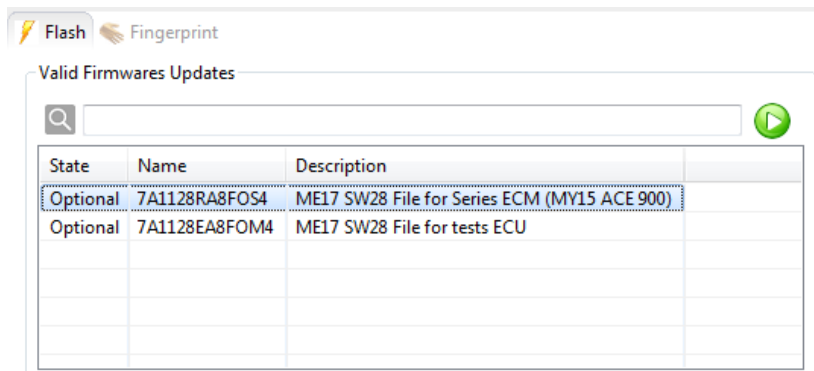

Figure 39: Flash Page

Fingerprint

The fingerprint for the selected module is shown in the *Fingerprint* tab, i. e. time when and by whom the software was last flashed.
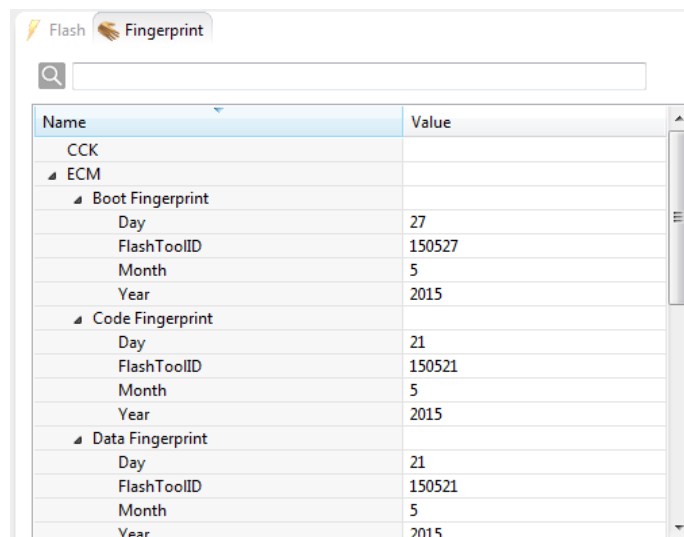

Figure 40: Fingerprint Page

Functions Page

The Functions page contains the Functions and activators tab.

Functions

The *Functions* tab contains the information on input and output commands with routines. To activate a command or a routine, double-click on it in the list or click on the green 'Reading' button.
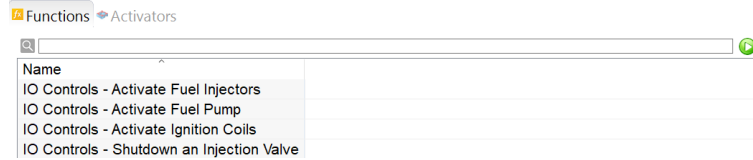

Figure 41: command input/output routines

Activators

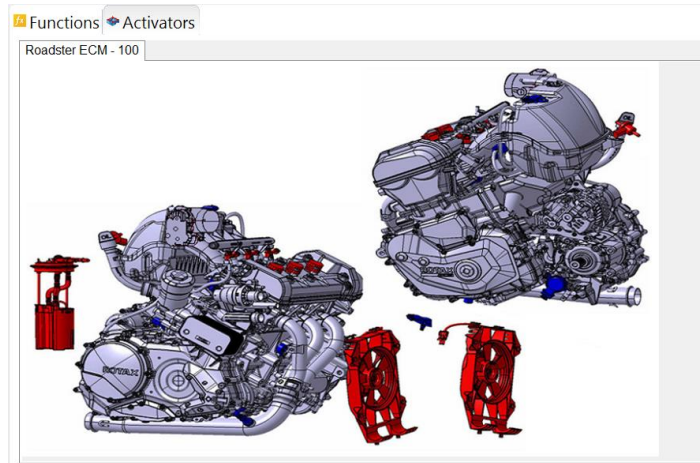This tab allows to test (activate and stop) several electric components

Figure 42: Activators tab

Settings Page

The *Settings* tab contains sensor or actuator initializations, configurations, and options available for the currently selected module. The current status of the initialization is in the second column. To perform an initialization, double-click on it in the list or click on the green 'Play' button

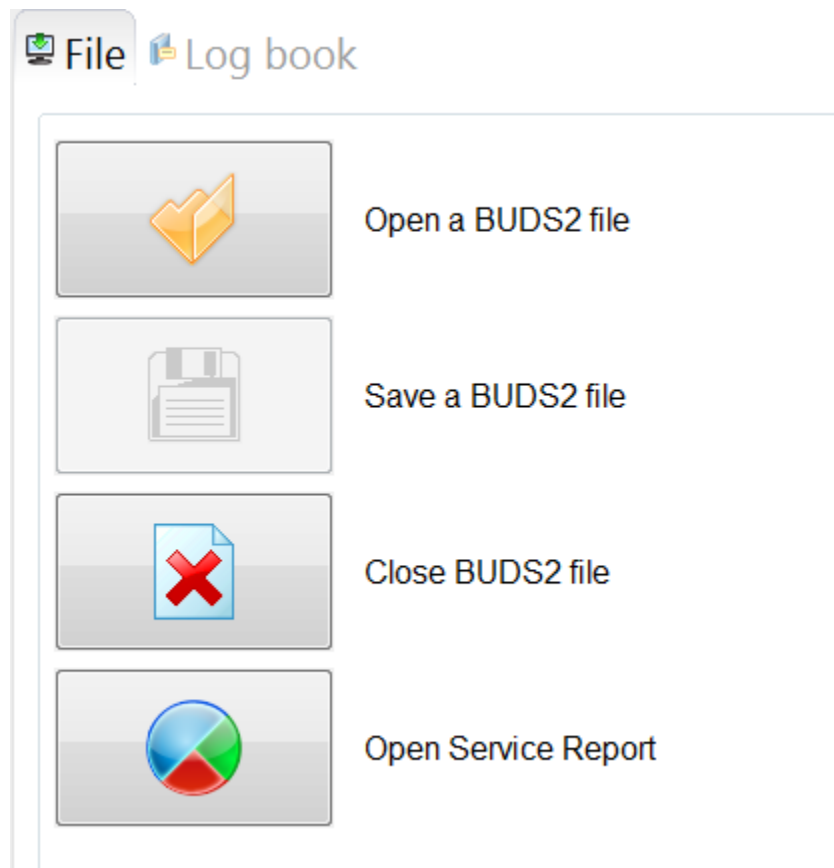**Figure 43: Settings Page**

File Management Page

File

Figure 44: File Management Page / File tab

Open a BUDS2 file
Used to open a BUDS2 file that has been saved previously.

Save a BUDS2 file
All values read from the currently connected vehicle are saved to a file.

Open Service Report

A service report, i.e. a summary of all data, is opened. The report can either be printed or exported as PDF file.
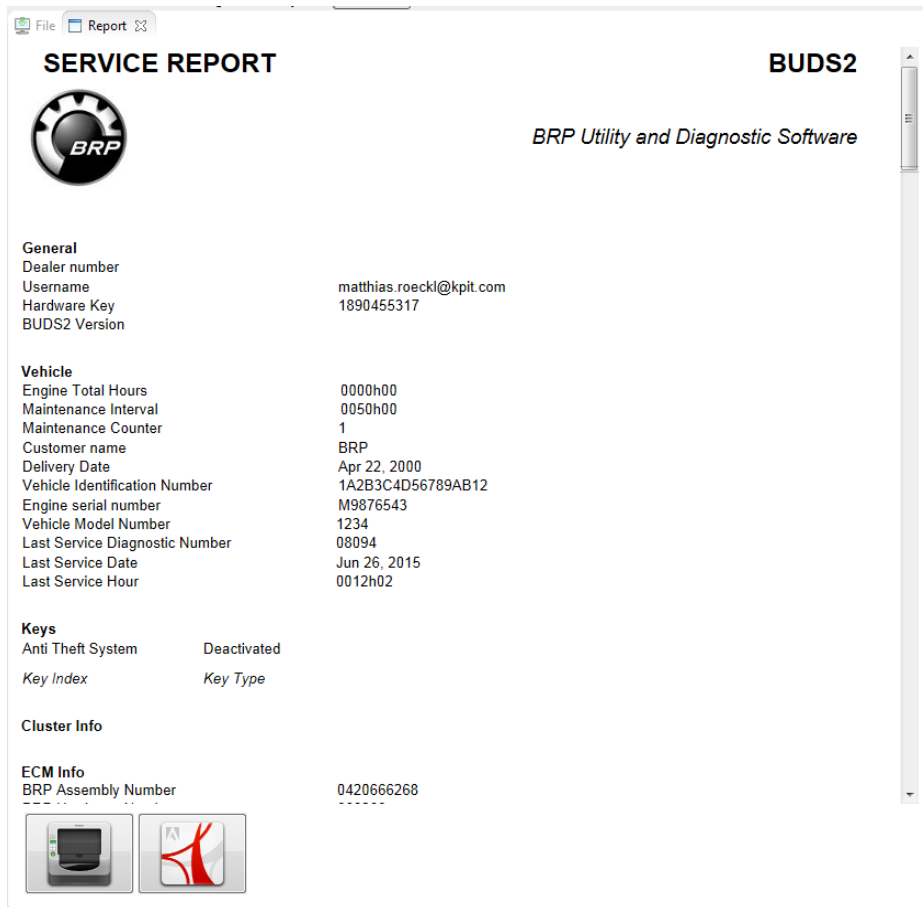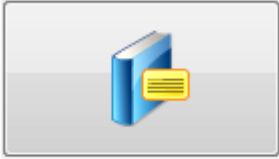

Figure 45: Service Reports

Log Book

This functionality gives the opportunity to generate a logbook. This may be requested by BRP when contacting technical support.

Figure 46: Logbook tab