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 the 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 following prerequisites have to be met for a proper installation of BUDS2:

- Administrator rights: the installation has to be run as Windows administrator. BUDS2 can be executed as normal Windows user.

- 1.5 GHz Processor
- 2 GB RAM
- Windows 7/8/10
- 1 GB of disc space to store the application, data and updates
- USB port to connect the IXXAT VCI
- All running instances of BUDS2 need to be closed

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.
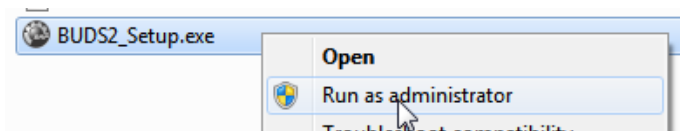

Figure 1: Running as Administrator

When the installer opens, first, the preferred language has to be selected from the drop down menu.
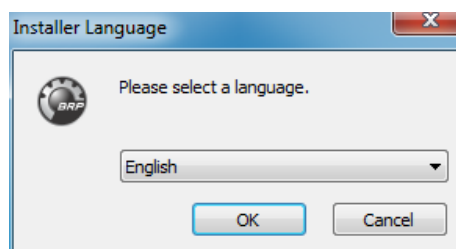

Figure 2: Language selection for installation process

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.
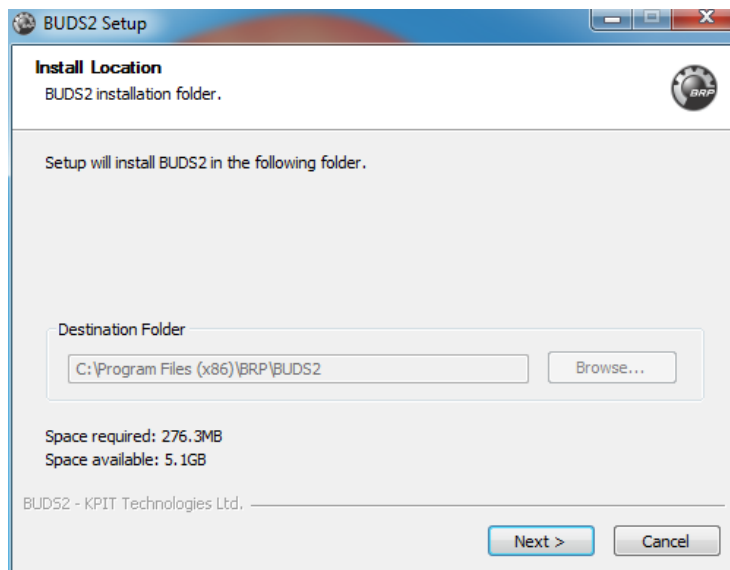

Figure 3: Information of the installation folder

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.
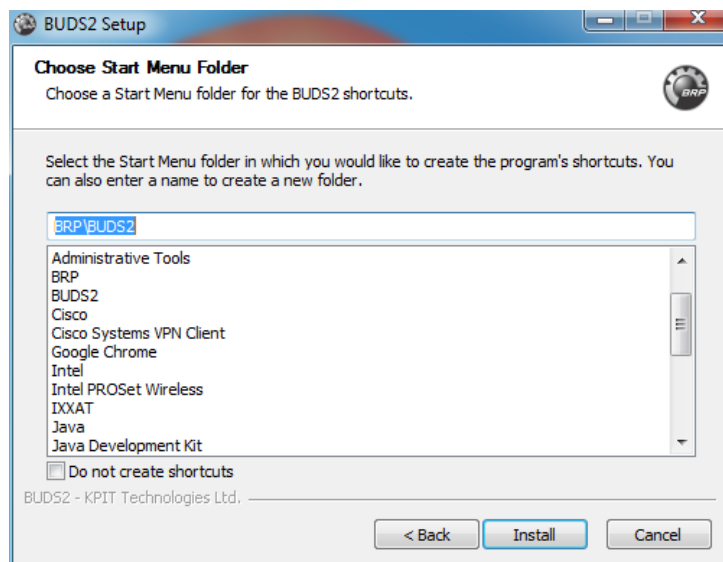

Figure 4: Shortcut in Windows start menu

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:
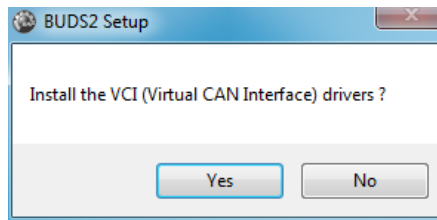

Figure 5: VCI driver installation

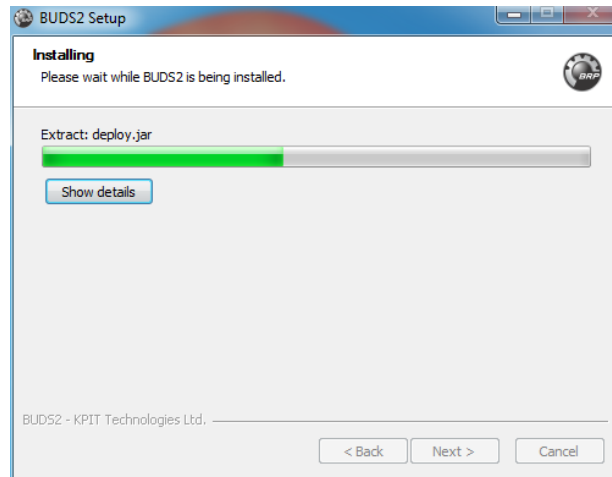Finally, BUDS2 will be installed on your computer.

Figure 6: Installation of BUDS2

After the 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'*.
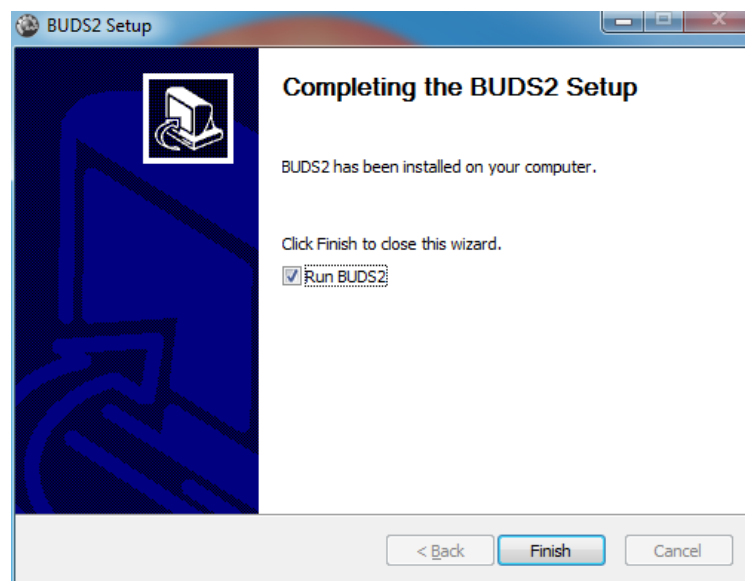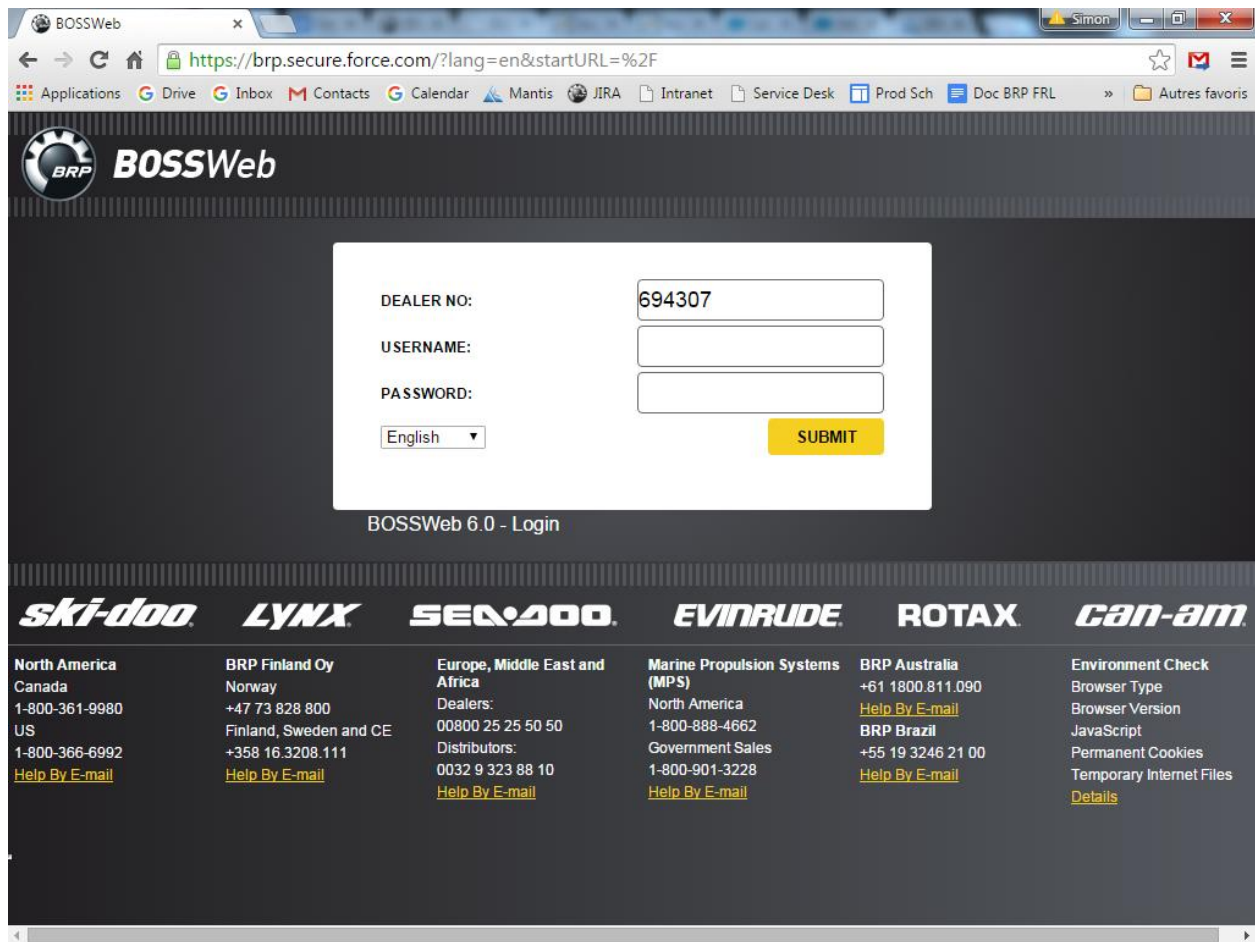

Figure 7: Installation completed

Language selection

The language in BUDS2 is synchronized with your BOSSWeb account. To select the language in BUDS2, you first have to login to the BOSSWeb web page.

Figure 8: BOSSWeb internet login

When you are successfully logged in, click on *Profile* at the top right of the screen. Then, click on *Edit* to get to the profile edition mode.

Figure 9: Getting to the profile edition mode

Now select the desired language from the drop down menu. To validate your choice, click on *Save*.
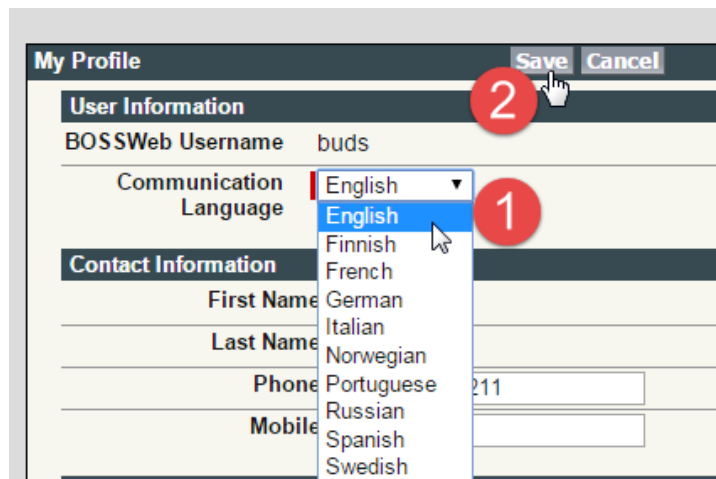
Figure 10: Language selection

You are now ready to start BUDS2 in your preferred language.

Startup

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.
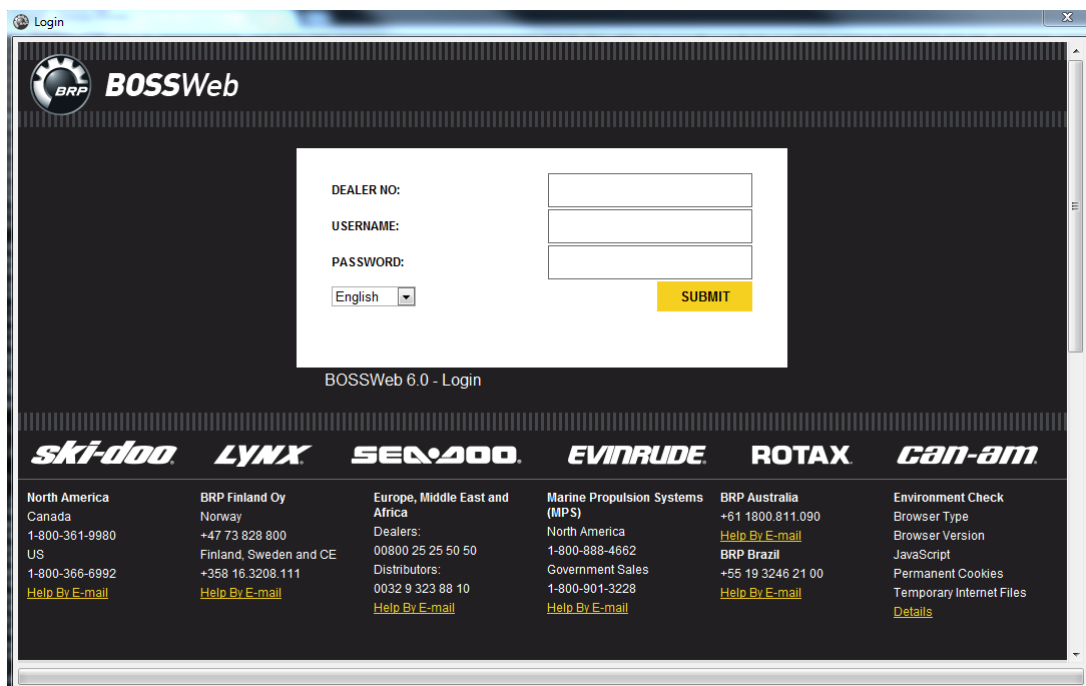

Figure 11: Login dialog

During the opening, BUDS2 will look for updates and install them if it finds some. At the end it will ask you to restart the program. You will have to re-enter your BOSSWeb credentials.
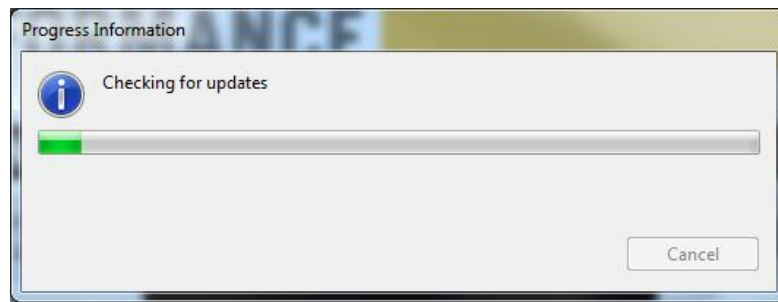
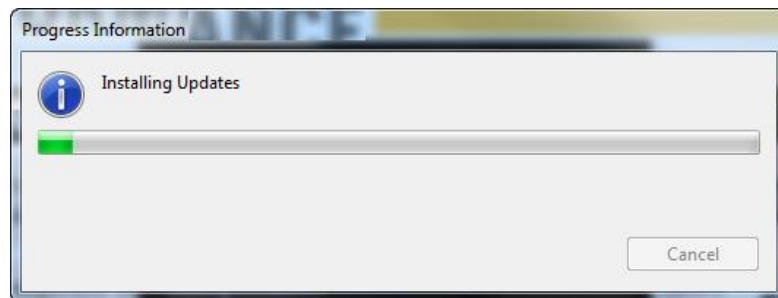**Figure 12: Check for updates**
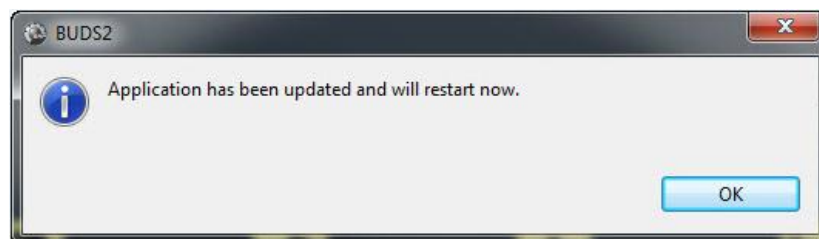

Figure 13: Installing updates

Figure 14: Application restart

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.
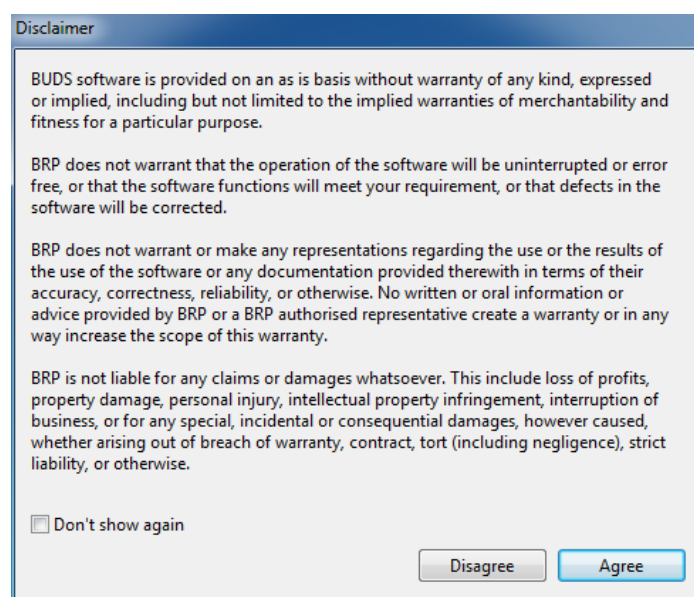

Figure 15: Disclaimer

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.
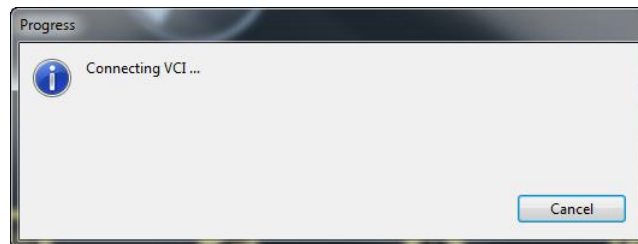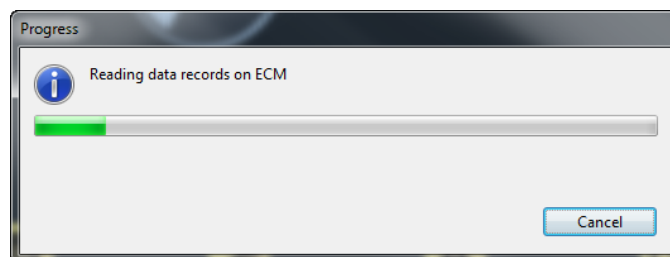

Figure 16: Connecting VCI

Figure 17: 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*.
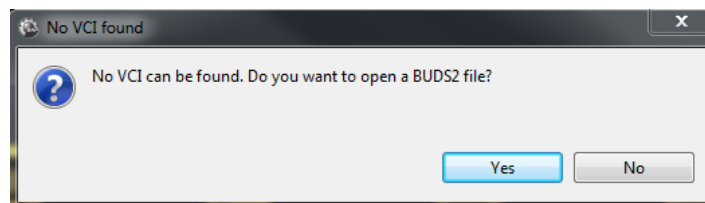

Figure 18: No VCI found
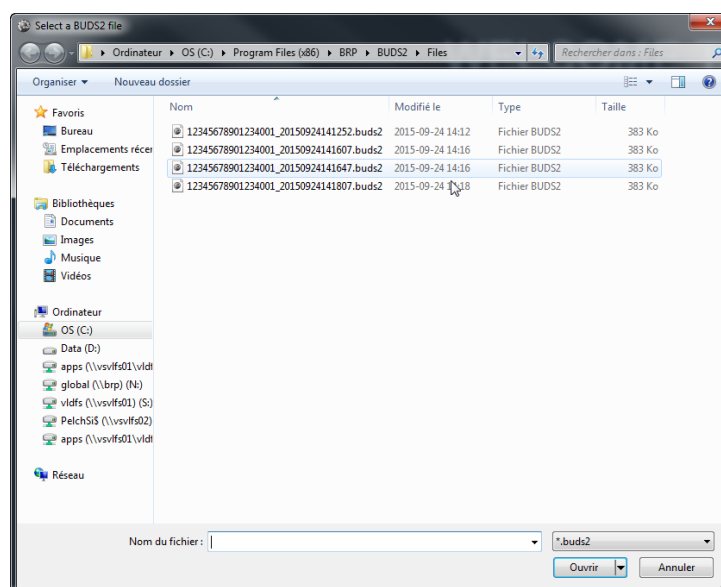
Figure 19: Opening a BUDS2 file

You can switch between available modes in the combo box on the bottom left of the BUDS2 window.

Figure 20: Operation mode

After a successful startup of BUDS2, the *Welcome Page* is automatically opened.

Figure 21: Welcome Page

In the center of the *Welcome Page* BUDS2 these eight pages are offered:

- Summary Page

- Faults Page

- Measurements Page

- Flash Page

- Functions Page

- Settings Page

- Keys Page

- File Management Page

Figure 22: BUDS2 pages

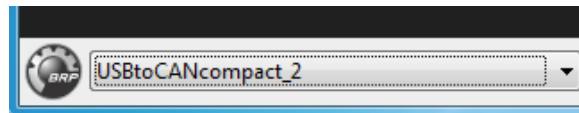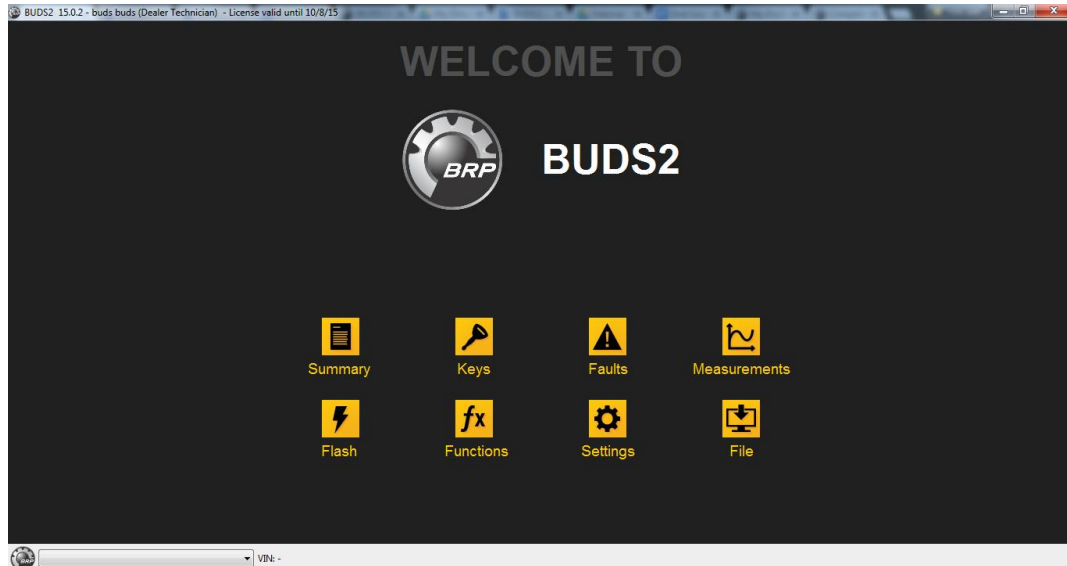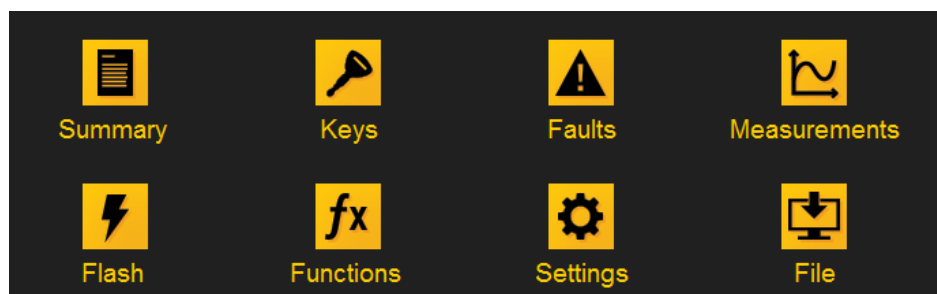Clicking on one of these tasks opens their respective perspective. All task perspectives are structured identically and offer the following interfaces:

Status bar: The status bar on the bottom of the page displays a combo box to select *VCI mode* or a previously loaded BUDS2 file. Furthermore, the status bar includes the VIN, key status (i.e. ON or OFF) and the battery voltage.
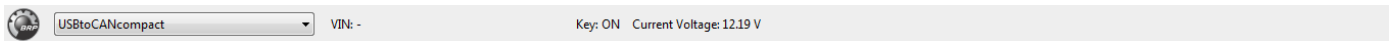

Figure 23: Status bar

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.
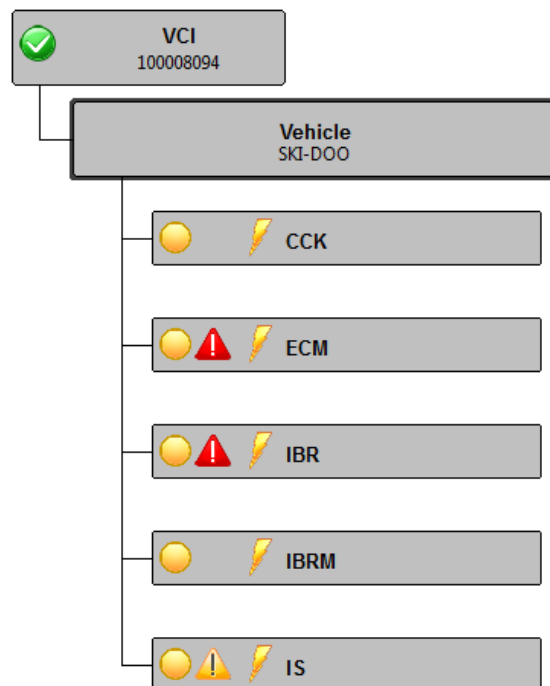
Figure 24: Vehicle diagnostic dashboard

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

⚠️ (yellow)	Occurred fault codes found
⚠️ (red)	Active fault codes found

Tool bar: In the toolbar shown on the top of the window you can select the task you want to perform next.
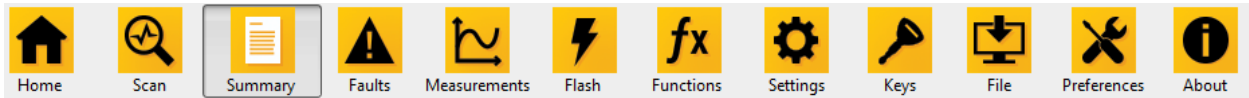

Figure 25: Toolbar

Home

Clicking on *'Home'* opens the *Welcome Page*. From the *Welcome Page* you can select the next task you want to perform.

Figure 26: Welcome Page

Scan

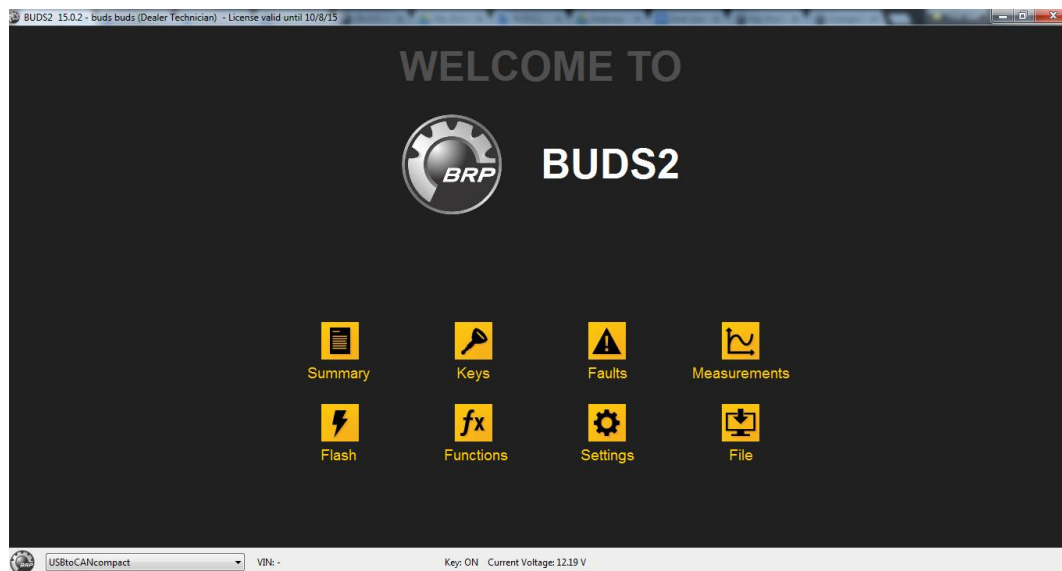To scan a vehicle connected via the VCI, select *'Scan'* in the toolbar. A progress dialog shows you the progress of the scanning process. Pressing *'Cancel'* in the progress dialog will stop the scanning process and clear all data which has already been read. The scanning is not interruptible at any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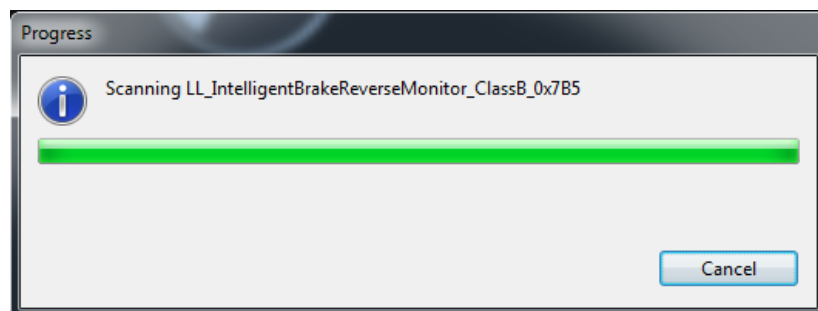

Figure 27: Progress of a vehicle scan

Preferences

- o Disclaimer: The disclaimer can be (de)actived

- o License: See your license information

- o Measurements: The measurement rate can be adjusted

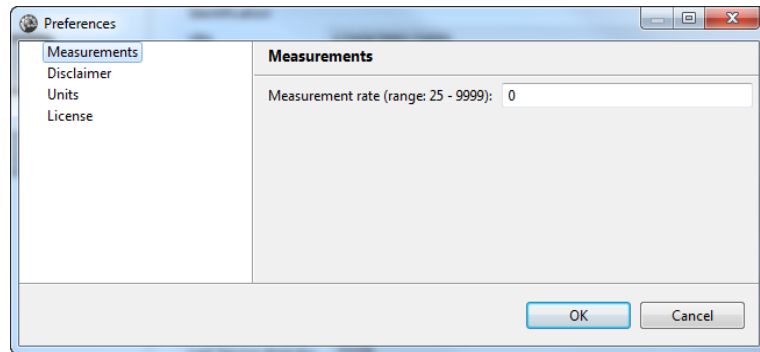- o Units: Metric or Imperial unit system can be selected

Figure 28: Preferences

About BUDS2

Information on BUDS2, such as version number, can be seen. Clicking on Open Manual will open this exact BUDS2 manual.
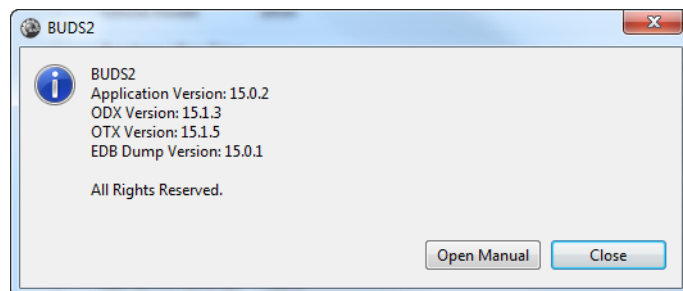
Figure 29: About BUDS2

General functions
Search function

Above every table, there is a text field which can be used to search through the table entries.
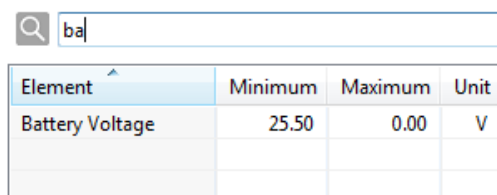
Figure 30: Search function

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.

Element	Minimum	Maximum	Unit
Intake Temperature	143.25	-48.00	°C
Battery Voltage	25.50	0.00	V
Engine Temperature	143.25	-48.00	°C
Intake Air Pressure	2550	0	hPa
Exhaust Temperature	143.25	-48.00	°C

Element	Minimum	Maximum	Unit
Battery Voltage	25.50	0.00	V
Engine Temperature	143.25	-48.00	°C
Exhaust Temperature	143.25	-48.00	°C
Intake Air Pressure	2550	0	hPa
Intake Temperature	143.25	-48.00	°C

Element	Minimum	Maximum	Unit
Intake Temperature	143.25	-48.00	°C
Intake Air Pressure	2550	0	hPa
Exhaust Temperature	143.25	-48.00	°C
Engine Temperature	143.25	-48.00	°C
Battery Voltage	25.50	0.00	V

Figure 31: 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 32: Summary Page

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

Figure 33: 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 34: Health Page

Statistics

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

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.
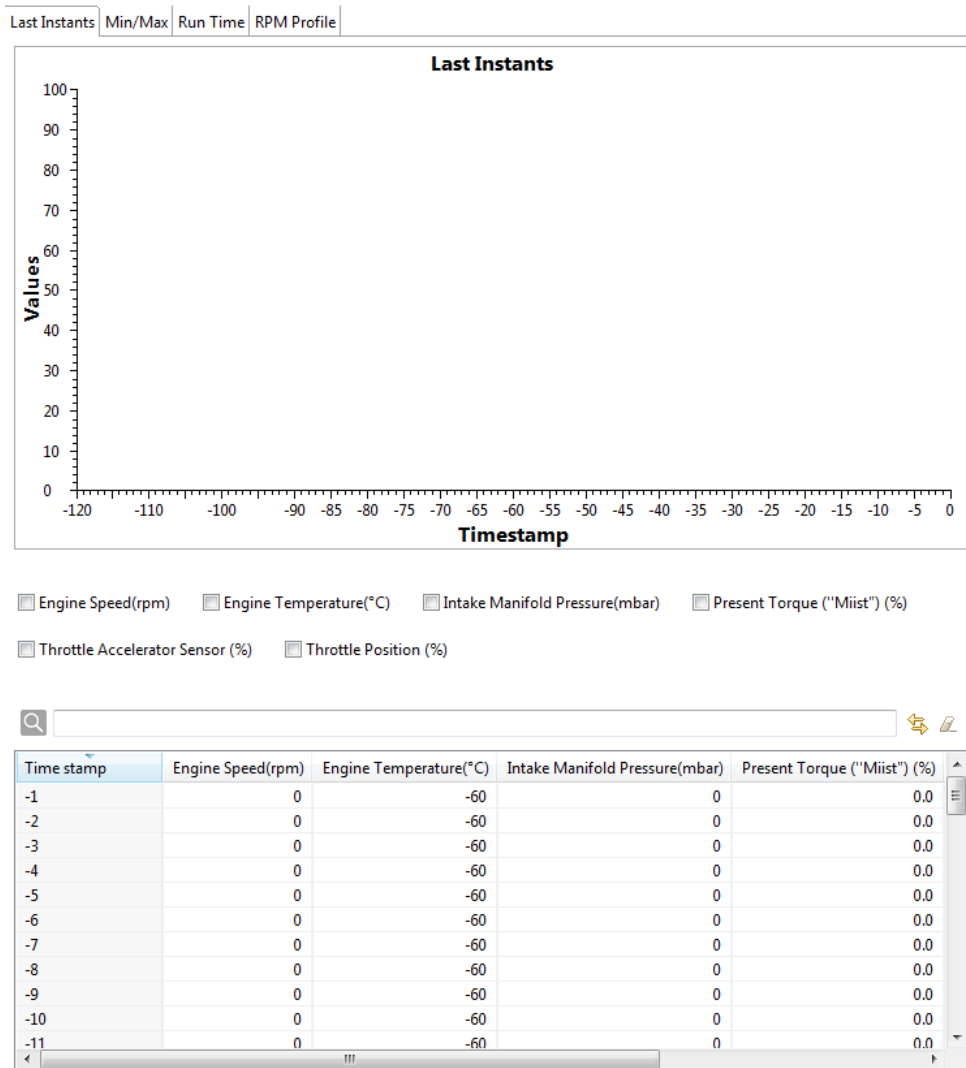
Figure 35: Last Instants Page

By selecting the refresh or clear button on the top right of the *Last Instants Tab*, the 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 36: Min/Max Page

By selecting the refresh or clear button on the top right of the *Min/Max Tab*, the 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 37: 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 38: RPM Profile Page

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

Keys Page

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

Figure 39: 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.

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 40: Active/Occurred Faults Page

Inactive

The tab *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 41: 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 tabs *Presets* and *Custom*.

Presets

In the *Presets Tab* a list of pre-defined measurements is shown. The availability of presets depends on the selection in the Dashboard. By double-clicking on a preset in the table, a window is opened which shows the presets, e.g. the engine speed can be seen graphically (see figure below).
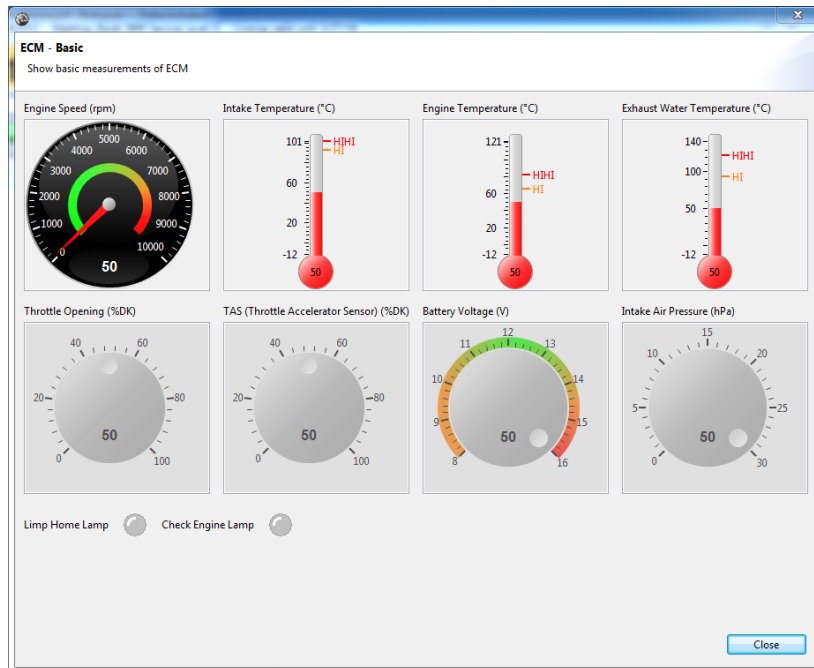

Figure 42: Available Presets

Figure 43: ECM - Basic Preset

Custom

For a custom visualization of measurements, select the *Custom Tab*. The *Custom Tab* lets the user select between 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.
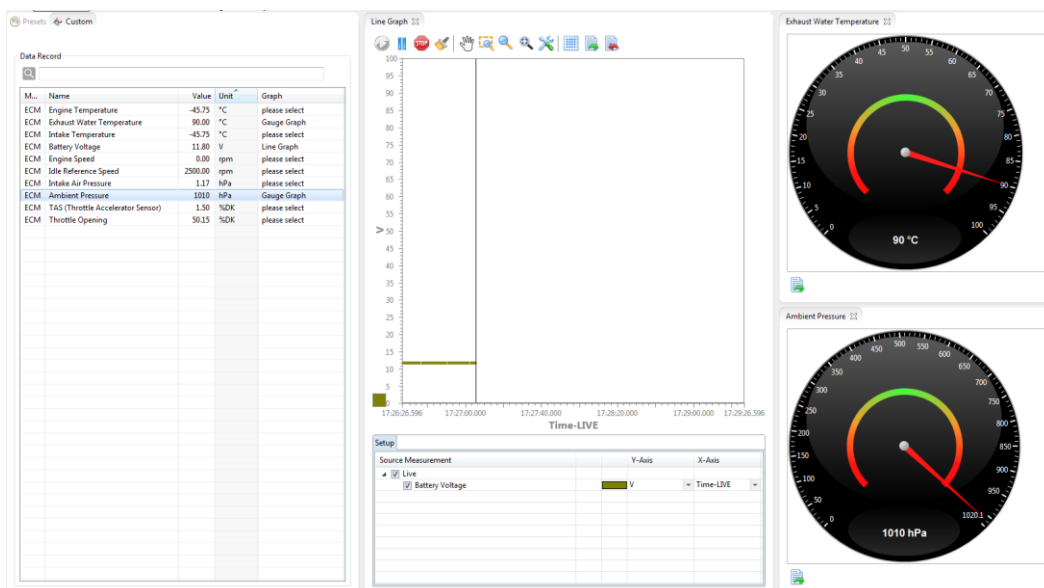

Figure 44: Custom Measurements

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

starts the graph drawing (visualizes and keeps samples)

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

stops the graph drawing (clears all samples)

clears the samples on the graph

lets the user move the graphic to the preferred view port

lets the user defined an area with the pointer which will be the new view port

lets the user zoom in at the current position of the cursor

resets the zoom to the original settings

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

resets the cursor

exports all samples

imports previously stored samples

Flash Page

Flash

If you want to flash a module with a new firmware, open the *Flash Page*. 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.
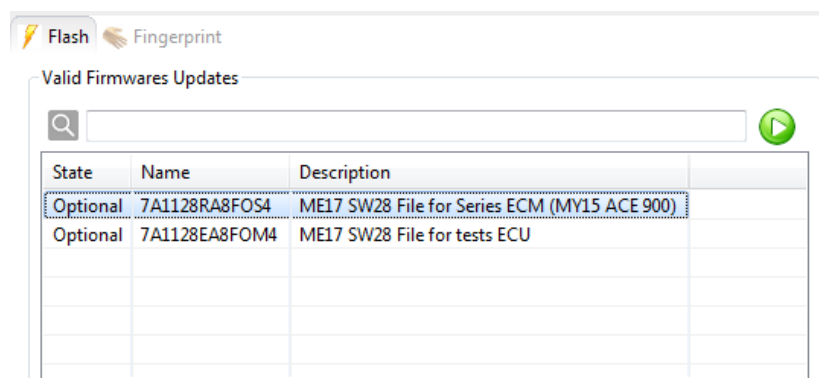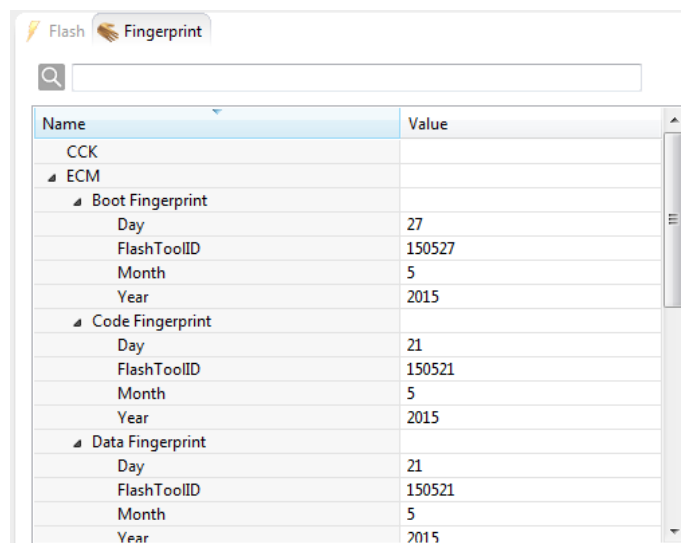

Figure 45: Flash Page

Fingerprint

The fingerprint for the selected module is shown, i. e. time when and by whom the software was flashed.
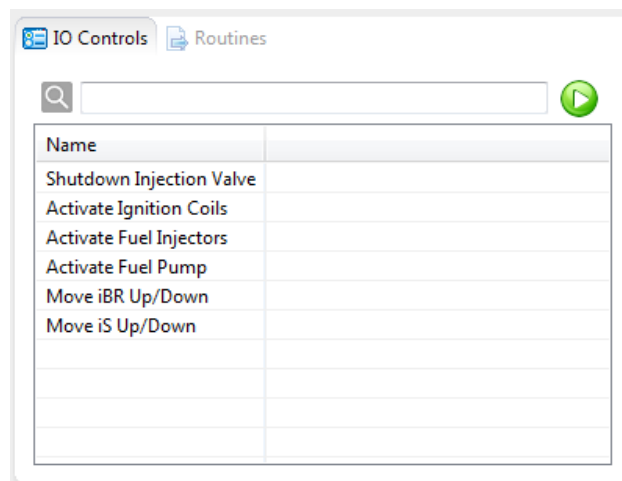
Figure 46: Fingerprint Page

Functions Page

IO Controls

All available IO controls for the module, which is currently selected in the dashboard, are listed in the *IO Controls Tab*. By double-clicking on one of the shown elements or by clicking on the green *'Play'* button, the selected IO control is activated.

Figure 47: IO Controls Page

Routines

All available routines for the module, which is currently selected in the dashboard, are listed in the *Routines Tab*. By double-clicking on one of the shown elements or by clicking on the green *'Play'* button, the selected routine can be executed.
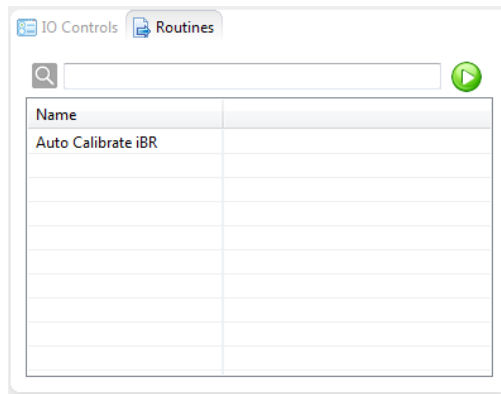
Figure 48: Routines Page

Settings Page

Initializations

All available initializations of sensors or actuators of the module, which is currently selected in the dashboard, are listed in the *Initializations Tab*. The current state of the initialization can be seen in the second column. By double-clicking on one of the shown elements or by clicking on the green *'Play'* button, the selected initialization can be executed.
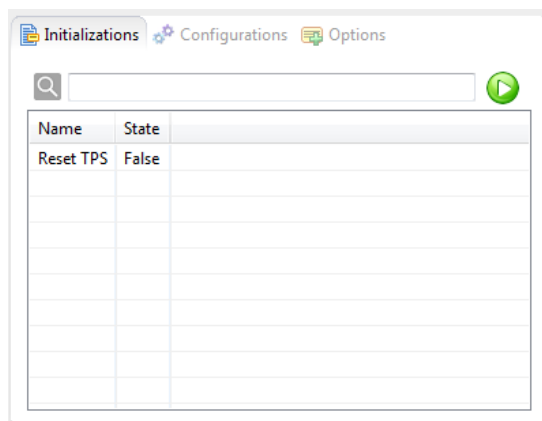

Figure 49: Initialization Page

Configurations

All available configurations of the module, which is currently selected in the dashboard, are listed in the *Configurations Tab*. The current state of each configuration is shown in the second column. By double-clicking on one of the shown elements or by clicking on the green *'Play'* button, the selected configuration can be adjusted.
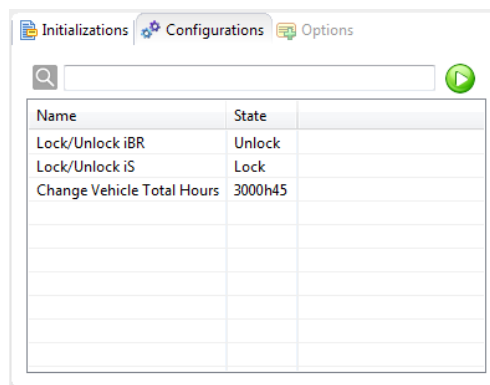

Figure 50: Configurations Page

Options

All available options for the module, which is currently selected in the dashboard, are listed in the *Options Tab*. The current state of the each option is shown in the second column. By double-clicking on one of the shown elements or by clicking on the green *'Play'* button, the selected option can be executed.
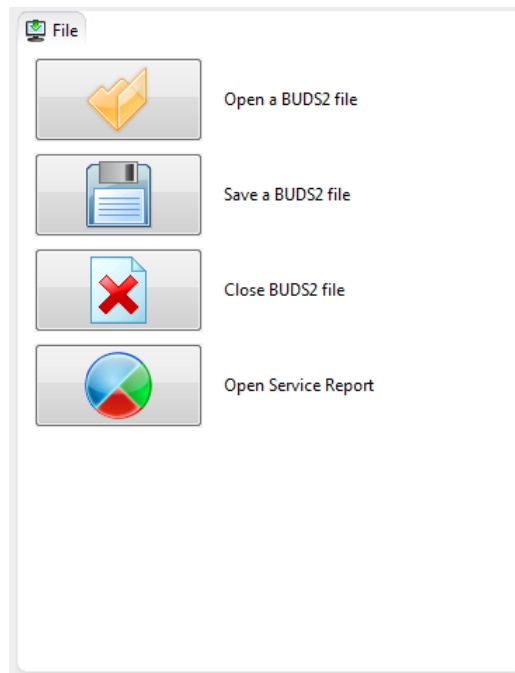
File Management Page

Figure 51: File Management Page

Open a BUDS2 file

A BUDS2 file can be opened. The file opened is automatically selected and visible in the combo box on the left bottom.

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 52: Service Reports