Diagnostic Software for BMW – Instruction Manual

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About Bavarian Technic

Bavarian Technic is comprised of software engineers and automotive enthusiasts alike. As automotive enthusiasts, we understand the value of solid, effective tools in the workshop. With the goal of providing professional mechanics and home enthusiasts with tools they can rely on, we work hard to develop easy-to-use software and quality hardware for the automotive repair market.

Included in the Package

Depending on the product version you purchased, some or all of these cables will be included with your package. Your package does not include a software installation CD. You must download and install the Bavarian Technic software directly from the Bavarian Technic web site, www.bavariantechnic.com.

Standard interface cable

Early-model adapter cable

50’ extension cable

Product Versions

Bavarian Technic offers two diagnostic kits for BMW: Enthusiast and Professional. Both kits provide the same diagnostic capabilities across the same range of cars.

- **Enthusiast version:** The Enthusiast kit comes complete with one USB-to-ODBII standard interface cable. Its use is limited to three cars managed by VIN. Bavarian Technic enforces this limit by storing the car’s VIN in the memory of the cable. After you use the cable on three cars, it will only continue to function on those three cars.
- **Professional version**: The Professional kit comes complete with one USB-to-ODBII standard interface cable, one 50’ extension cable, and one early-model adapter cable with the round, 20-pin connector. You can use the Professional version on an unlimited number of cars.

How the Software Works

With the release of the diagnostic software for BMW, Bavarian Technic launches a completely new software platform. The platform has three main components: 1) the “Framework” 2) the “Car files,” and 3) the “ECU files.”

The Framework is the core of the new software. It maintains control over all other components of the tool including the car files, ECU files, user interface, and communication with the standard interface cable and car. The Framework gets information from the Car files to reference control units associated

with chassis types and models. It also gets information from the ECU files so it can communicate effectively with the many control units supported by BMW automobiles.

Each BMW chassis type – and each model built upon each chassis type – comes equipped with a number of electronic control units that support many of the car's systems. The Car files are simple XML files that list supported electronic control units for each chassis type and/or model. The Framework uses the Car files to reference the Bavarian Technic ECU files.

The ECU files are XML files that contain control unit address information, unit ID and descriptions, possible fault codes and descriptions, activation options, and other ECU-specific details. The Framework uses the information in the ECU files to connect to the control unit. The Bavarian Technic user interface displays some of the information contained in the ECU file, such as fault code descriptions.

With the release of this software platform, Bavarian Technic hopes to be able to support a greater number of units in a wider range of cars.

System Requirements

The following is a list of the minimum system requirements for the effective use of the software:

- Windows operating system version 2000, XP (32- or 64-bit), or Vista (32- or 64-bit)
- 1.2 GHz Pentium-class processor or faster. (2.0 GHz or faster recommended for late-model cars – MY 2005+.)
- 512 MB RAM
- Internet Explorer 6.0 or higher
- Microsoft .NET Framework 2.0 (free download from Microsoft)
- Available USB port

Installing the Software

The software installs directly to your computer from Bavarian Technic's download page; you will not receive an installation CD with the cables. Install the software before plugging in the cable.

To install the software:

1. Go to http://www.bavariantechnic.com.
2. Select *Downloads* from the left column.
3. Click *Bavarian Technic USB cable drivers* to install the required hardware driver software.
4. Click *Microsoft® .NET framework version 2.0* to install the required .NET Framework.
5. Click *Download Bavarian Technic software now…* to start the Bavarian Technic installation.
6. When prompted with the security warning, click *Install*.

Getting Started

Upon successful installation of the software, you are ready to connect the cables and start the program. The following sections provide detailed instructions for this procedure.

Connecting the Cables

Depending upon the kit you ordered, you will have one, two, or three cables. With the car's ignition off and before launching the software, connect the cables between your computer and car as follows.

- Connect the standard interface cable's USB connector to the USB port on your computer.
- Connect the OBDII-end of the standard interface cable to the diagnostic port on your car.
- If you purchased the 50' extension cable, you can connect it between the male ODBII-end of the standard interface cable and the car.
- If you are working on early-model cars and have the early-model adapter cable, connect it between the standard interface cable and car or between the 50' extension cable and the car.

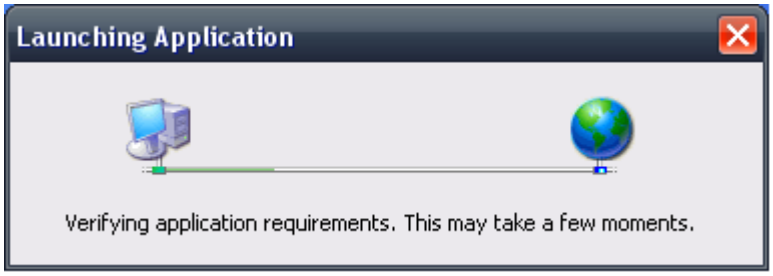
After you connect the cables, turn the ignition to the 'on' position and start the Bavarian Technic program.

Launching the Software

After you connect the cables, you can start the software. There are two ways to do this:

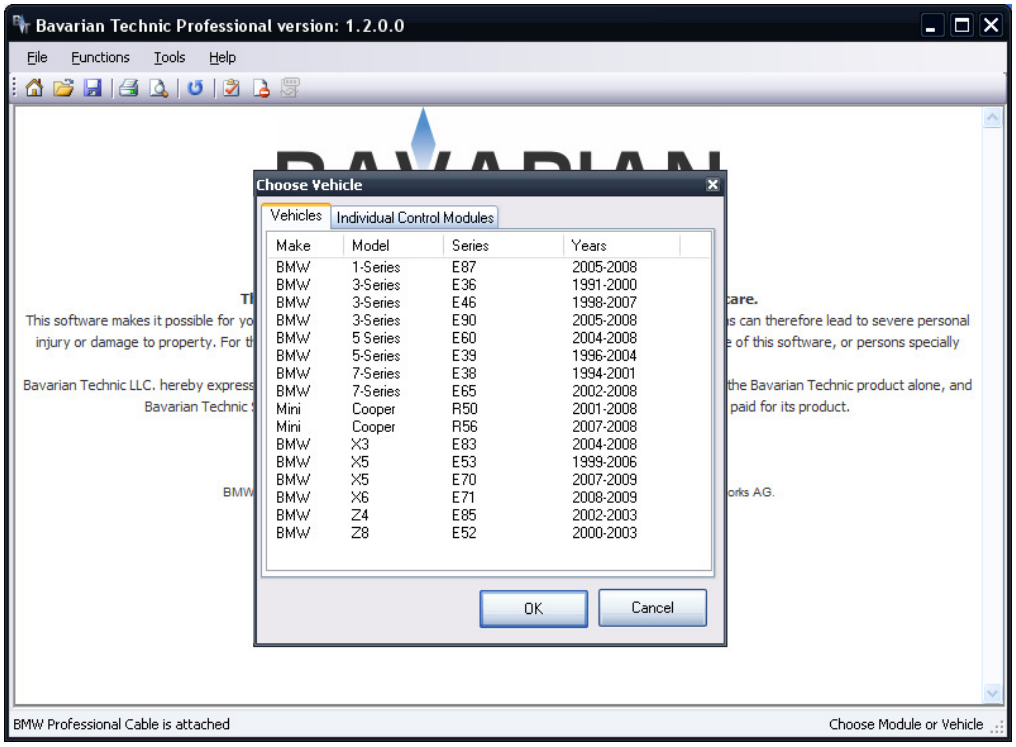
- Click *Start* | *All Programs* |*Bavarian Technic*|*Bavarian Technic (BMW)*.
- Go to http://www.bavariantechnic.com/download.aspx and re-download the software.

Upon starting the software, you will see the Launching Application screen followed by the main user interface.



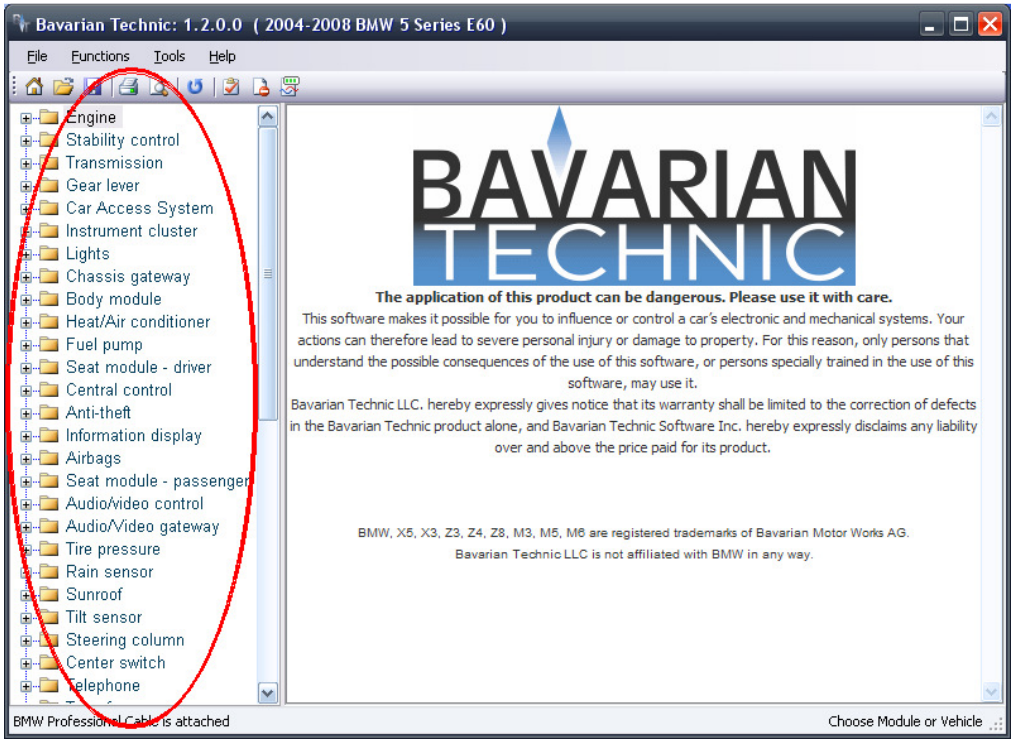
Launching Application screen

When the software starts, you can choose a car by year and model, or choose specific control units from the list of all supported control units in the *Choose Vehicle* dialog.



Bavarian Technic Choose Vehicle dialog and main user interface

After you select a car, you can select from a list of supported control units specific to that car found in the left-hand navigation pane, as seen below.



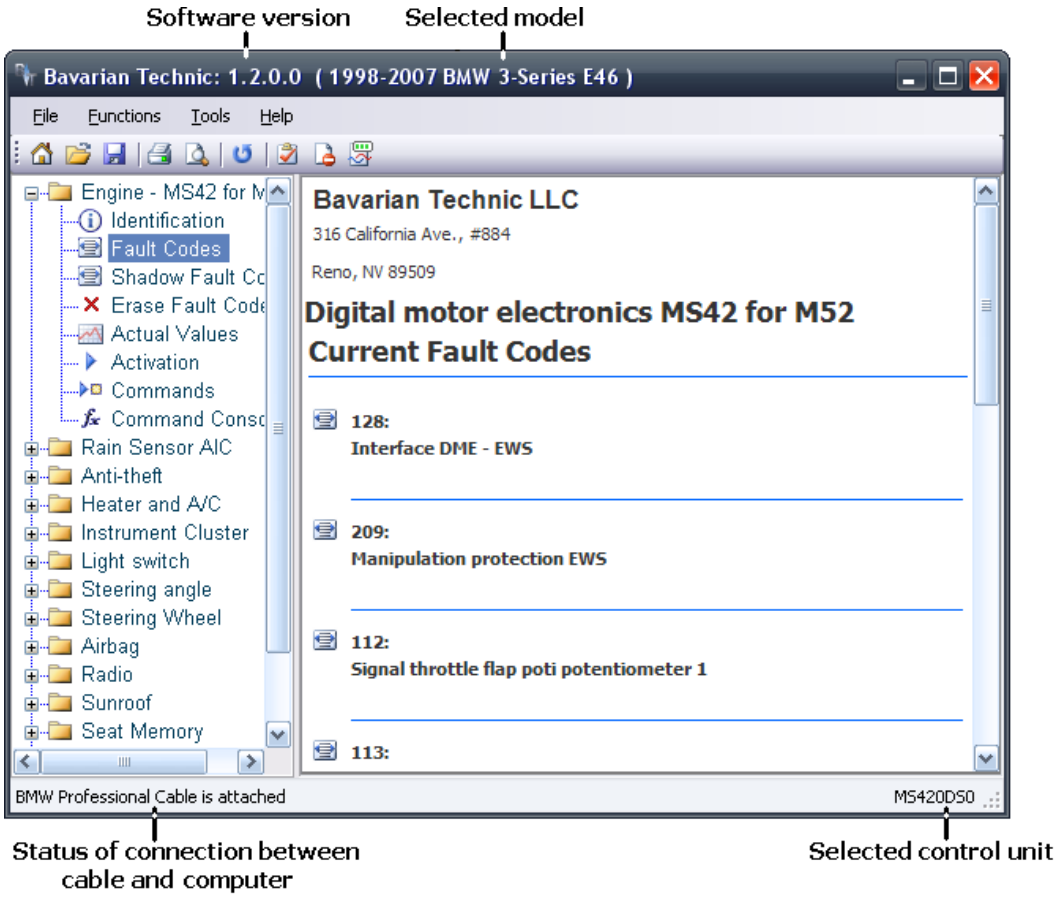
Select supported control units from the left-hand pane.

Using Bavarian Technic

Bavarian Technic is equipped with many of the same capabilities the BMW factory tool includes. The following sections will guide you through the many available options so you can get the most from your kit.

Screen Layout

The Bavarian Technic screen displays several key points of information as the following picture indicates:



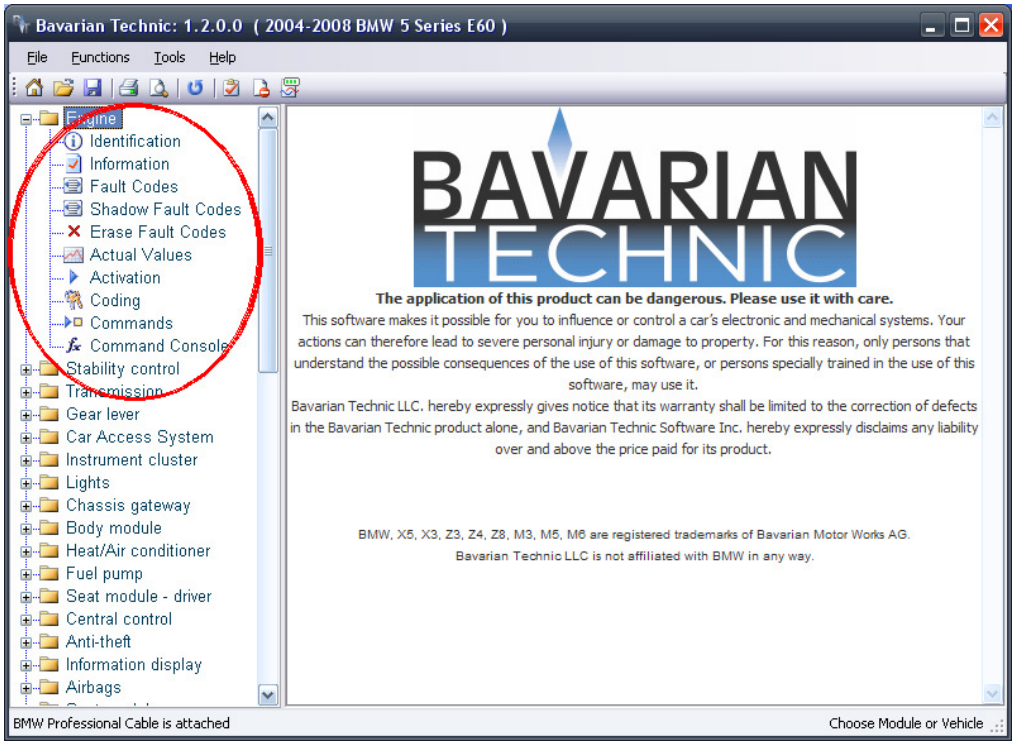
Icons at the top of the Bavarian Technic user interface provide access to common functions. These include:

- New – open the Choose Vehicle dialog to select a new vehicle
- Print – print the current page
- Print Preview – preview the current page prior to printing
- Refresh – refresh the current view
- Short test all units
- Clear faults in all units

-  Condition based service

Control Unit Functions

Each control unit supports one or more of several different functions. You can access these functions by expanding the list under each control unit.



View of control unit options

In order of appearance, these features include:

Identification

The Identification option is available for each unit and displays information about the control unit such as part number and supplier name.

Information

You can find the Information option under control units that support it. This options displays information such as the vehicle's VIN and assembly number.

Fault Codes/Shadow Fault Codes

Fault codes, shadow fault codes, their descriptions, and fault status information are included in the display when supported by the control unit. The fault codes displayed are the same fault codes that you would see using the factory tool. Bavarian Technic is different from generic OBD2 tools that only show emissions-related engine problems. When displaying fault codes, Bavarian Technic displays all faults and displays any additional fault information if it is available in the control unit.

To find additional information on faults, troubleshooting steps, and repair information, refer to the factory service manuals.

Erase Fault Codes/ Erase Shadow Fault Codes

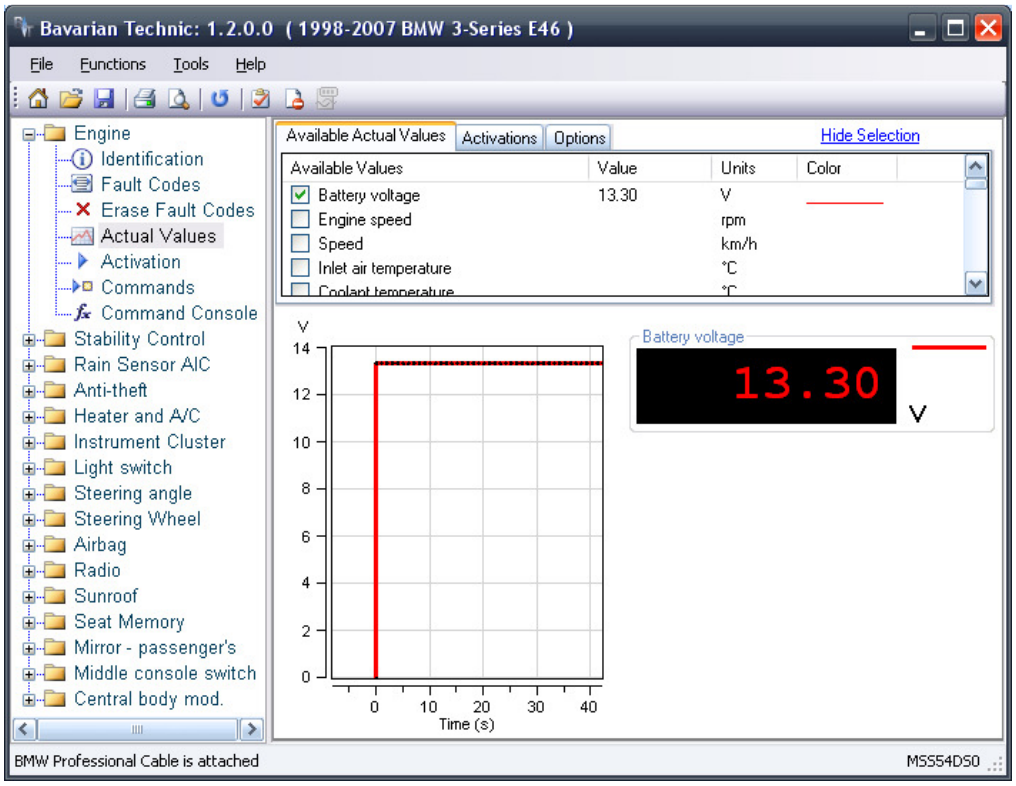
To clear fault codes or shadow fault codes from the control unit's memory, click on the *Erase Fault Codes* or *Erase Shadow Fault Codes* option, respectively, for the control unit selected.

Alternatively, you can select to erase fault codes in all units at once by selecting the *Functions* menu option and clicking *Clear faults in all units*. It is not possible to erase only one fault code.

If fault codes remain after attempting to clear them, then the problem the fault code displays still exists. For example, if the fault code you see is "Seat belt buckle receptacle," and you have not repaired the problem, you will not be able to clear the fault.

Actual Values

With Actual Values, you can monitor individual values calculated by the control unit in near real time. The actual values that are available are the same values available in the latest BMW factory tool. Upon selection of a value or multiple values, the output data automatically appears on a graph and/or in digital format on the Bavarian Technic screen as seen below.



To use actual values:

1. Select a model.
2. Select a control unit that supports actual values.

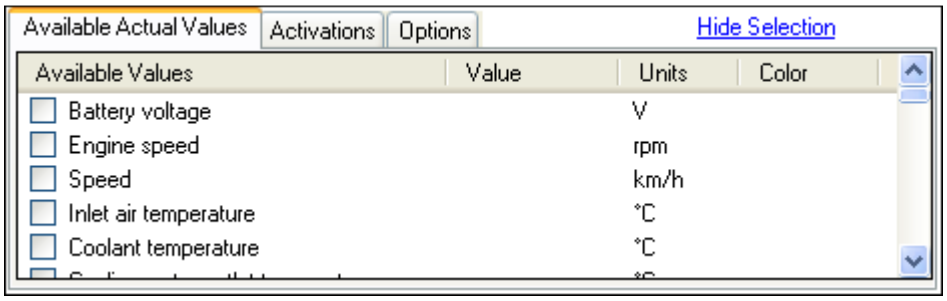
3. Select available value(s) listed in the right-hand pane under the Available Actual Values tab.

Note: Avoid selecting more values than you need. The Actual Values process is very resource intensive for the both the control unit sampled and the computer running the software. Selecting more options than necessary can degrade performance. Furthermore, the sampling rate will vary by control unit with the newest control units sampling much faster than earlier versions. Faster sampling rates require more computer resources.

The Bavarian Technic tool also supports digital diagnostic requests. Diagnostic requests are much like actual values, but usually represented in text. This is because they are typically Boolean values such as "On/Off," "Open/Closed," or "Yes/No." Digital diagnostic options are included with the list of available actual values under the Available Actual Values tab.

There are three tabs found on the Actual Values screen:

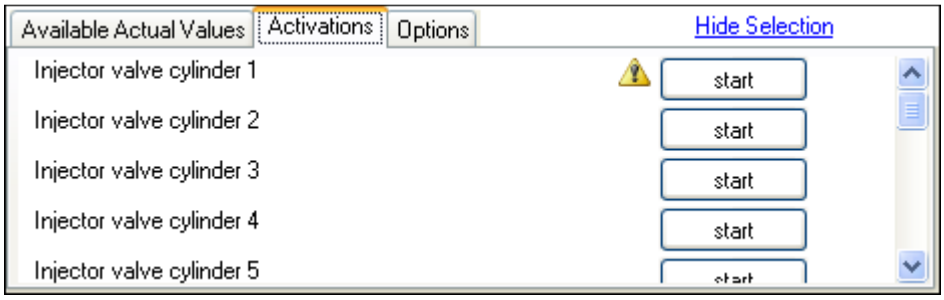
- Available Actual Values
- Activations
- Options



Select the desired actual value(s) under the Available Actual Values tab

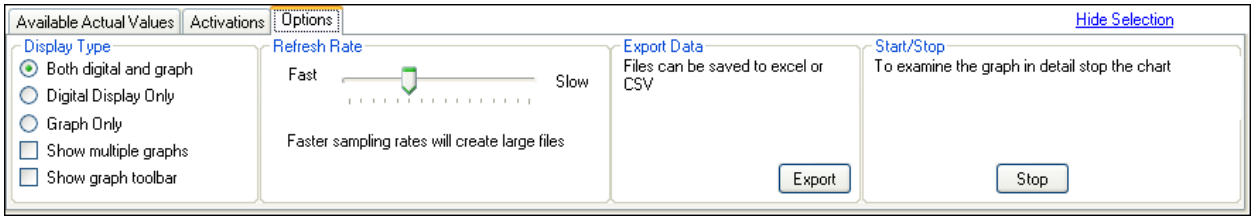
The Available Actual Values tab gives you a list of values supported by the control unit. Select a value or values to request data from the control unit.

The Activations tab, provides an easy way to activate supported components within the selected control unit. You use this to affect the Actual Values data. The result is a comprehensive troubleshooting capability and greater ease of use when working with actual values. Read more about activations under the *Activations* section of this document.



Using the Activations tab, you can activate supported components

The Options tab provides access to editable settings of the Actual Values feature. Editable settings include the display and sample refresh rate. You can also export sampled values to Microsoft® Excel* or to a comma separated file, and start / stop sampling for closer examination of values.



The Options tab provides access to editable settings

Activations

The Activations option allows you to start and stop supported available components within the car for troubleshooting purposes. The tool supports components ranging from the engine fan to injection valves. For example, to confirm all indicators of the instrument cluster are working properly, use this feature to turn them on, or "activate" them.

To activate supported components:

1. Select your model.
2. Select a control unit that supports activations.
3. Select *Activation*
4. Click the *Start* button found to the right of the components listed in the right-hand pane.

Warning! Use Activation options with caution and only with complete knowledge of their function. For example, it is not a good idea to activate the coolant shutoff valve of a hot car.

Coding

Available in the Professional kit only, the Coding option provides a way to back-up, restore, and change settings within supported control units. For example, you can save the settings of an old control unit you must replace and restore the settings to a new control unit. Bavarian Technic relies on internal part numbers and metrics to ensure you do not restore settings to unintended, incompatible control units.

Commands

Many control units support the ability to receive requests to alter their settings. Separate from coding changes, the Commands feature includes such control unit requests as adaptation resets. On many models, you will use the Commands feature of the Instrument Cluster to reset the service interval and indicator.

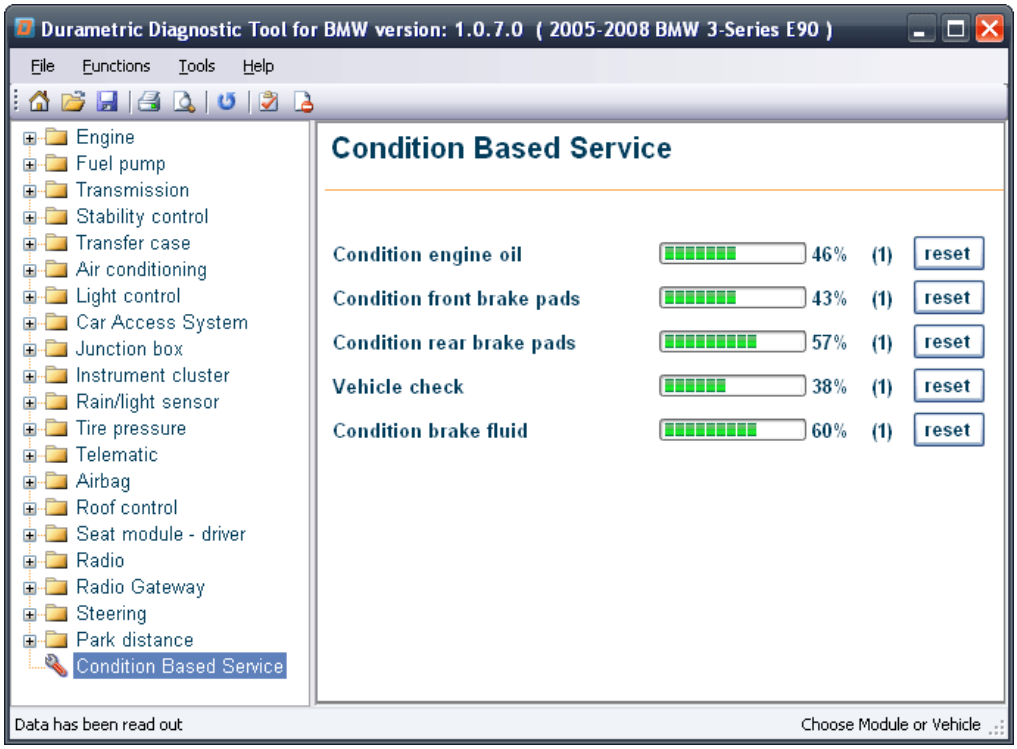
Command Console

Available in the Professional kit only, the Command Console is a means to send low-level, manually configured requests to a control unit and see the response. Intended only for those who understand the

low-level communication language of BMW control units, you can use this feature for a deeper level of troubleshooting.

Condition Based Service

Condition Based Service is a sophisticated system used in newer BMW cars for tracking maintenance status information. It is included on all E60, E65, E90, and E70 models. Bavarian Technic software supports Condition Based Service on all of these models. You can use the Condition Based Service option to check and reset the status of service items on cars that support this feature.



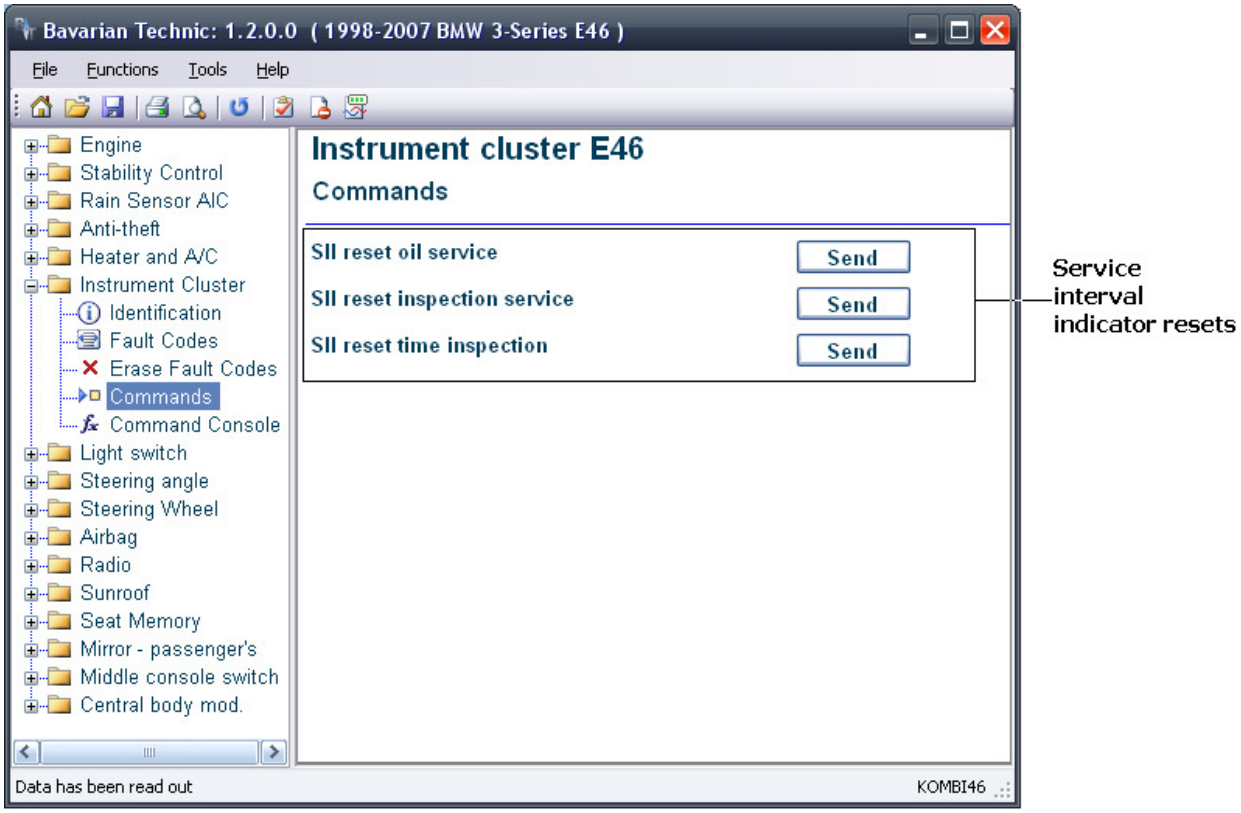
The Condition Based Service read-out of newer cars

Reset Service Reminders

Later-model cars have service interval indicators (SII) for oil service and inspections on the instrument cluster. These cars will display the reminder when service is due. Depending on the model, you can reset the service interval indicators in one of two ways: 1) via the Commands option under the instrument cluster, or 2) via the Condition Based Service option if supported by your car.

To reset the service reminder via the Commands option:

1. Select your model.
2. Select the instrument cluster.
3. Select *Commands*.
4. Click *Start* next to the Service Interval Indicator option you want to reset.



Find Service Interval Indicator resets under the instrument cluster *Commands* option

To reset the service reminder via Condition Based Service:

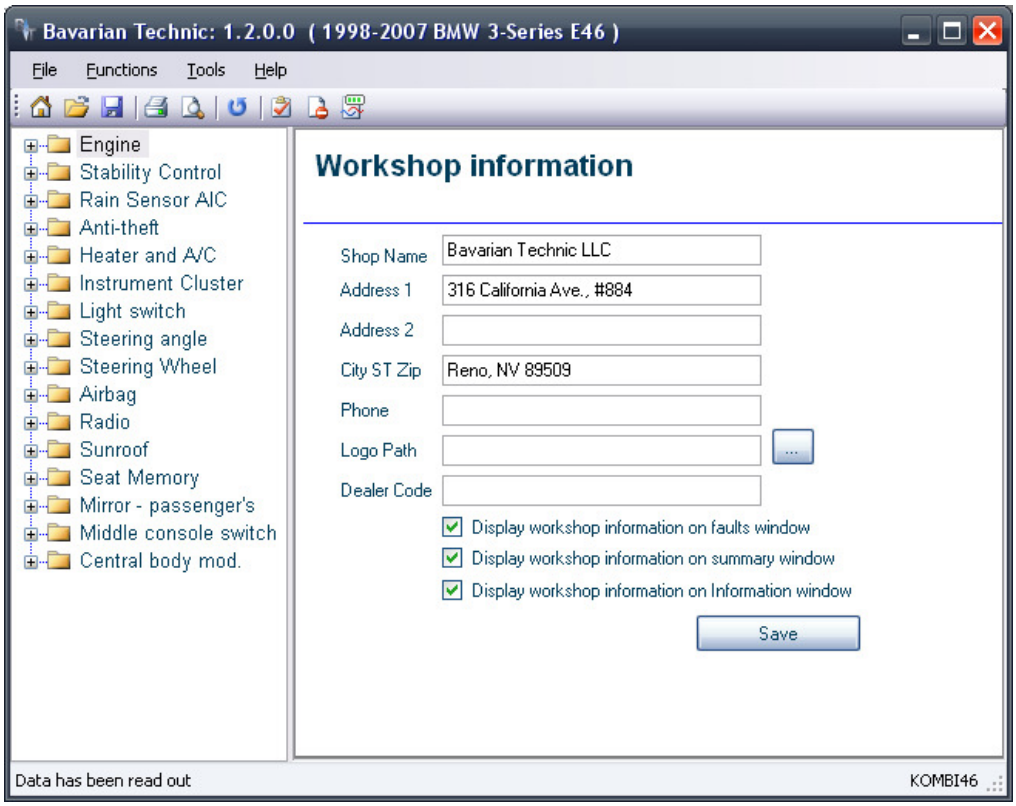
1. Select your model.
2. Click the Condition Based Service button. 
3. Click *Reset* next to the service option you want to reset.

Set Workshop Information

Included with the Bavarian Technic Professional Kit only, you can customize the software for your business through the *Set Workshop Information* feature. With this feature, you can enter details such as your business name, address, phone number, and company logo. The information will appear on screens within the software and also when you print data to your local printer.

To set workshop information:

1. Select *Functions*.
2. Click *Set Workshop Information*.
3. Enter name, address, phone number, path to your logo, and dealer code (if applicable).
4. Click *Save*.



Workshop Information edit screen

Control Unit Search

To help improve the overall coverage and functionality of the Bavarian Technic tool for BMW, we included a control-unit search feature. The search uses a process whereby the Bavarian Technic software attempts to locate all ECUs of the car and, once complete, sends the gathered information to Bavarian Technic for use in development. Bavarian Technic uses any of several protocols, including DS2, DS3, KWP-2000, KWP-Fast, and DCAN, and attempts to connect to the vehicle on each possible address using the protocol(s) selected. Information sent to Bavarian Technic includes unit IDs, addresses, protocols supported, model year, and model designation, and helps fill gaps in breadth and depth of model coverage. The software sends no personally identifiable information during this process.

Updating the Software

Every 48 hours, after you start the Bavarian Technic software, it automatically checks for updates using an available internet connection. If no internet connection is available, the software will wait another 48 hours before checking again. If an internet connection is available, and an update exists, the software prompts you to install the update. The update process lasts only a few moments depending on the speed of your internet connection. Bavarian Technic transmits no personally identifiable information during this process.

Updating the Cable Firmware

The standard interface cable manages communication between the Bavarian Technic software and your car's control units. Periodically, Bavarian Technic releases firmware updates to ensure every cable continues to perform as expected across various models and software versions.

To update the firmware:

1. Click the *Tools* menu item.
2. Click *Tool Information* from the menu.
3. Click the *Update Firmware* button.

Updating the firmware takes approximately 45 seconds. The standard interface cable must remain connected to the computer for the update to occur. Do not disconnect the cable during the firmware update.

BMW Diagnostic Connector Locations

Through the present time, BMW has used three different connectors for diagnosis of internal electronic systems, roughly separated by model years. Bavarian Technic supports only the 20-pin and 16-pin connectors.

- 1982 – 1988: 15-pin round connector located under the car's hood – not supported
- 1987 – 2003: 20-pin round connector located under the car's hood - supported
- 1996 – Present: 16-pin OBDII connector located under the driver's side dashboard – supported

Models produced between 1987 and 1988 can have either the 15-pin or the 20-pin connector. Bavarian Technic supports only the 20-pin connector, so you should confirm the type of connector you have.

Models produced between 1996 and 2000 likely have both the 20-pin round connector and the 16-pin OBDII connector. If your car has both 20- and 16-pin connectors, you will want to use the 20-pin connector to access the most information your car has to offer.

Common Problems and Solutions

Here is a list of some common problems and their likely solutions.

Software will not install	• Confirm you have an internet connection • Confirm your computer meets the minimum system requirements • Install (re-install) Microsoft .NET Framework 2.0
Software will not start	• Restart your computer • Confirm your computer meets the minimum system requirements • Reinstall the software
Cable not recognized by the software	• Confirm Windows Device Manager "sees" the cable when it is connected. • Confirm Bavarian Technic USB cable drivers are

	installed properly • Confirm the cable is a genuine Bavarian Technic cable
Initialization failure when trying to connect to a control unit	• Cable is disconnected • Control unit is faulty • Control unit is different than the one selected in the Bavarian Technic software • Control unit not properly supported
Cable LED turns red	• Indicates an electrical short o Between K1 or K2 and B+ o Between K1 or K2 and Ground • Check for appropriate continuity between pins of the diagnostic connector at the car.
Cable LED won't turn green	• Confirm there is a secure connection between the Bavarian Technic standard interface cable and car • Confirm the ignition is in the 'on' position • Confirm the car's battery is fully charged • For CAN bus based cars, awaken the CAN network by turning switching the key to 'off' and then to 'on'. Keep the CAN bus alive during diagnostics by turning on the emergency flashers.
"Cable not plugged in" message	• Confirm the cable is securely plugged into the USB port on your computer • Confirm there is power from the car to the cable and the LED on the cable is green • Confirm Bavarian Technic USB cable drivers are installed properly • Confirm Windows Device Manager "sees" the cable when it is connected. • Confirm the cable is a genuine Bavarian Technic cable
Cannot update the software	• Confirm there is an update available • Confirm you have an internet connection on the computer that runs the Bavarian Technic software

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