

SIEMENS

Hardware Operating Manual

BlueVCI



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Safety instructions


Explanation of symbols

The safety instructions in the operating manuals, the scope of delivery or any other documentation provided and on the products themselves use symbols that have the following meanings:



Caution!


Texts with this symbol contain information relating to your safety and how you can reduce the risk of fatal or serious injury.

The **CAUTION**  symbol indicates that particular attention is required to ensure your safety.



Warning!


Texts with this symbol contain information about how you can prevent damage to the vehicle and to the equipment.

The **Warning**  symbol informs you that failure to observe the instructions provided can result in damage to the vehicle and/or the equipment.



Note

Texts with this symbol contain additional useful information.

A **Note**  symbol also contains special additional instructions for using the equipment and other associated information.



Reference to other safety instructions

The general safety instructions are specified below. The operating manuals also contain additional safety instructions. You must read these operating manuals before use.

IMPORTANT SAFETY INSTRUCTIONS



1. Caution!

Read all instructions thoroughly.



2. Caution!

If the device is damaged, it may not be used until it has been inspected by a qualified specialist.



3. Caution!

To prevent electric shock, you may not use the device on wet surfaces or expose it to rainfall.



4. Caution!

Do not allow any cables or leads to hang over the edges of desks, benches or consoles. Avoid contact between the cables or leads and hot parts or rotating fans.



5. Caution!

Use of extension cables is not permitted. Only the specified cables and leads may be used for testing purposes.



6. Caution!

The device may not be operated close to open fuel tanks as this could cause a risk of explosion or fire.



7. Caution!

When working on combustion engines, you must ensure adequate ventilation.



8. Caution!

Only use the device as described in the manual. Only use the accessories specified by the manufacturer.



9. Caution!

Risk of explosions

The device has internal sparking components and may not therefore be exposed to any flammable vapours. The device should be operated at least 460 mm (18") above the ground as gasoline and other vapours settle on the ground.



10. Caution!

Opening the device or accessories without authorisation and improper interference with the device can result in significant hazards for you and for the device itself.



Note

To assure an undisturbed radio communication it is necessary to cover the USB connector by the cap

RETAIN THESE INSTRUCTIONS!

Status: 2007

1 General information

1.1 Overview

This operating manual contains the necessary information for proper use of the “Bluetooth Vehicle Communication Interface BT” and “Bluetooth Vehicle Communication Interface WLAN”, referred to in the text as “BlueVCI” for short.

Knowledge of and technically correct application of the safety instructions and warnings in this operating manual are essential for hazard-free startup and to ensure safety during operation and maintenance of the BlueVCI.

For reasons of clarity, the operating manual does not include all details of the hardware and cannot cover every conceivable startup, operation, maintenance and support.

1.2 Safety instructions

Follow the safety instructions for the BlueVCI. These can be found on the rear of the device and in this operating manual after the contents and at all relevant items in the text.

1.3 Declaration of Conformity



Herewith Siemens AG declares that the device BlueVCI BT is in compliance with the requirements and provisions of the EU Directive 1999/5/EC.

A copy of the complete Declaration of Conformity can be retrieved from:

Siemens AG

A&D AS AP TE SF

Siemensallee 84

D-76187 Karlsruhe

1.4 FCC approval

Warnungen in Bezug auf eingebauten Bluetooth-Sender/-Empfänger:



1. Warning!

FCC 15.19: This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
 2. This device must be able to accept any interference received, including interference that may cause undesired operation.
-



2. Warning!

FCC 15.21: Changes or modifications made to this equipment not expressly approved by the manufacturer may void the FCC authorization to operate this equipment.



3. Warning!

This equipment complies with FCC radiation exposure limits for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This transmitter must not be moved or operate in conjunction with any other antenna or transmitter.

Siemens AG BlueVCI



FCC ID: LYHBLUEVCIBT

IC: 267AA-BLVCIBT

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject of the following two conditions. (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.5 Designated use

- The BlueVCI is suitable for use on vehicles, test benches etc.
- The product described has been developed, manufactured and tested in compliance with the applicable safety standards. Observance of the safety instructions, specified start-up procedure, designated use and the recommended maintenance and care information results in no hazards likely to cause material damage or personal injury under normal circumstances.

1.6 Areas of applications

The BlueVCI is connected to a diagnostic interface and, in conjunction with an application, enables wireless communication with a host computer.

The device is designed to be configurable for specific applications. This applies to the mechanical and electrical diagnostic interface and to the protocols and software control as well.

The device is designed to be application neutral. It allows the user to realise an individual solution tailored to his specific requirements.

2 Design and function

This section provides a basic description of all BlueVCI components.

Versions

1. BlueVCI BT with Bluetooth communication
2. BlueVCI WLAN with WLAN communication

2.1 BlueVCI Vehicle Diagnostic Interface

The BlueVCI is dedicated for mobile operation in a workshop. It is connected to a vehicle via a diagnostic plug and provides electronic support for troubleshooting and fault finding.

The BlueVCI is powered by the vehicle battery via the diagnostic plug or from a computer system (PC, laptop or vehicle tester) via USB cable. Communication is either wireless or via the USB connection.

2.1.1 Scope of delivery

The BlueVCI consists of the following major components:

1. BlueVCI device
2. USB cable, type A-B (0.5 m)
3. Documentation CD-ROM



Bild 2-1 BlueVCI device

2.1.2 Order options

1. OCA-specific test adapter cable



Figure 2-2 OCA-specific test adapter cable

2. Flash memory

Depending on the model, no flash memory or memory up to 1GB can be included

3. OBD Connector Assembly (OCA)

The OCA connector is customized. Changing of the OCA in the field is possible, see also section 4.



Figure 2-3 Customized OBD-contractor OCA 01

3 Interfaces and display

The BlueVCI has the following interfaces and displays (see figure 3-1):

1. Diagnostic connector (OBD)
2. USB interface, Type B
3. Three-colored LED (yellow/green/red)

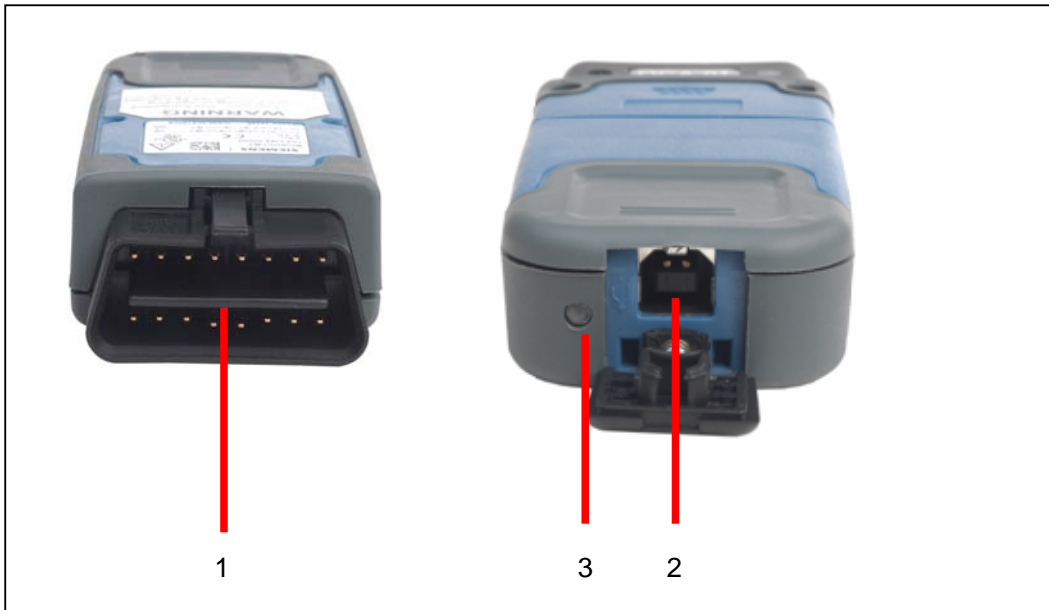


Figure 3-1 Interfaces and display

3.1 LED display

- **Green:** The BlueVCI is connected to the diagnostic interface and is not registered on a computer system.
- **Green (slow flashing):** The BlueVCI is registered on a computer system.
- **Green (fast flashing):** The BlueVCI and the computer system are transferring data.
- **Green/red (alternate flashing):** Firmware update in progress.
- **Red:** Firmware update error.
- **Red (slow flashing):** The BlueVCI is overheating. If the LED is flashing, the BlueVCI must be disconnected from the power supply. The LED then is nonluminous.
- **Yellow:** Unable to start firmware.

3.2 OBD Connector Assembly (OCA)

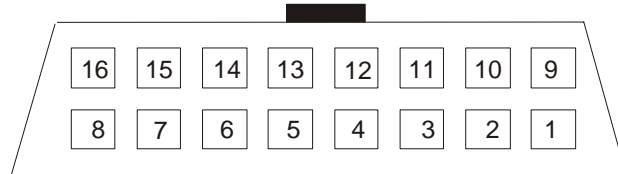
A standard OCA or a manufacturer-specific OCA can be used for the vehicle connection. The OCA is secured with the two hexagon socket screws located on the top of the BlueVCI.

The BlueVCI can be used to measure the voltage of the following signals:

- Terminal 30, B+
- Terminal 15, ignition
- HS CAN+
- HS CAN-
- K1
- K2
- L
- J1850 PWM+ / VPW / LS CAN+
- J1850 PWM- / LS CAN-

The OBD plug interface **OCA01** has the following pin assignment:

1. Terminal 15, ignition
2. SAE J1850-H, VPW or PWM or CAN LS / FT
3. ---
4. Terminal 31, B-
5. Terminal 31, B-
6. CAN_H, CAN HS
7. K line



View of the pins

8. ---
9. ---
10. SAE J1850_L, PWM or CAN LS / FT
11. ---
12. CAN screen
13. ---
14. CAN_L, CAN HS
15. L line, can also be used as a second K line
16. Terminal 30, B+

3.3 Communication interfaces

In addition to the USB connection, a Bluetooth or WLAN interface is available for communication with the computer system, depending on the model of the device.

The Bluetooth interface is based on the Bluetooth standard V2.0 and has the following properties:

- High data rate (max. 2Mbit/s)
- Pico net and scatter net
- WLAN coexistence (802.11) support (adaptive frequency hopping)

The alternative WLAN interface supports the IEEE 802.11g standard and is backwards compatible with existing 802.11b installations.

When using several BlueVCIs at the same location, the devices can be differentiated from one another by one's own identification. An area is available on the top of the housing in which an own label can be attached for identification purposes.



Figure 3-2 Identification BlueVCI

1. Place for one's own identification-code of BlueVCI
2. Identification OCA

4 Mechanical design

The BlueVCI housing is made of two plastic shells that are held together by four TORX screws. The parts of the housing made of soft plastic (soft components) protect the device against shocks, prevent damages to surfaces and make it easier to handle.

The housing cover is held in place by two hexagon socket screws (width 2 mm) and can be removed to replace the OCA (see figure 4.1).

The rating plate, specifying order and serial number and rated voltage, and a safety notice label are attached to the base of the housing.



Figure 4-1 Mechanical design and assembly

To open the BlueVCI, unscrew the two hexagon socket screws, carefully lift off the cover and remove the OCA by lifting it slightly and pulling it forward out of the housing.



Note

Further dismantling of the BlueVCI voids the warranty.

5 Function

5.1 Startup

Before using the BlueVCI several software settings must be configured. That is done by the diagnostic software. Please contact your supplier of the diagnostic software for further information.

5.2 Operation

1. Connect the BlueVCI to the diagnostic interface on a vehicle. The LED must be continuously lit in green.
2. If necessary, connect the USB cable. The LED blinks green. Establishing a USB connection disconnects any existing Bluetooth or WLAN connection.
3. Perform vehicle diagnosis by using the diagnostic software installed on the computer system.

Please find further information about operation in the documentation of your diagnostic software supplier.

6 Troubleshooting and Self-Test

The BlueVCI was tested before leaving the factory. Carefully selected components and performance of comprehensive quality inspections guarantee that the BlueVCI is extremely reliable. However, if a fault should occur, refer to the information provided in this section.

You should attempt to identify and localize the fault as accurately as possible. Follow the solutions presented and perform all of the actions described.

6.1 Self-Test

Handling and sequence of the BlueVCI self-test are performed with the diagnostic software application. The test adapter cable is required to do this. The power supply is ensured by the USB connection.

6.2 Symptoms, causes and solutions

| Symptom | Possible cause | Solution |
|--|--|--|
| LED continuously lit in green. | Communication link lost. | Attempt to establish a different type of communication link. See also for specific instructions of the diagnostic application supplier. |
| LED 3 flashing red. Communication link interrupted. | Excess temperature in BlueVCI during operation | Disconnect the BlueVCI from the diagnostic interface and, if applicable the USB connection and allow it to cool. |
| LED constantly lit in yellow. | Unable to start firmware. | Disconnect the BlueVCI from all connections and re-connect. |
| LED constantly lit in red. | Firmware update failed. | Repeat firmware update. See also for specific instructions of the diagnostic application supplier. |

Table 6-1 Possible faults

7 Maintenance and support

7.1 Visual inspection

Perform a regular visual inspection of the BlueVCI. Inspect all parts for damages e.g. breakages and dirt.

Regularly check the device, all cables and the accessories for damage.

If the housing is dirty, clean it with a lint-free moist (not wet) cloth.

7.2 Firmware update

To update the firmware, a corresponding update file must be stored on the computer system. The update is done under the control of the diagnostic application software.

7.3 Replacing the diagnostic plug

The diagnostic plug is attached to the BlueVCI with two hexagon socket screws and can easily be replaced in case of damage (see section 4).



Note

Further dismantling of the BlueVCI voids the warranty.

8 Technical data

8.1 BlueVCI

| | |
|---|---|
| Dimensions (W x H x D) | Approx. 47 x 24 x 104 mm |
| Weight | Approx. 95 g |
| Ambient requirements | |
| Operation | <p>Ambient temperature 0 to +45°C</p> <p>Relative humidity At max. +25°C 10 to 80%, no condensation</p> <p>Operating height -400 to +2000 m NN</p> |
| Transportation and storage | <p>Ambient temperature -20 to +60°C</p> <p>Relative humidity At max. +20°C 10 to 80%, no condensation</p> |
| Mechanical protection | Free fall 2 m onto hardwood surface |
| Electrical protection and safety | <p>Safety requirements:</p> <ul style="list-style-type: none"> - Workshop equipment: UL 201 - Information processing equipment: DIN EN 60950 (VDE 0805), EN 60950, IEC 950, UL 60950, CSA-C22.2 No. 950 - Measuring instruments: DIN EN 61010-1 (VDE 0411 Section 1), EN 61010-1, IEC 1010-1 - Degree of protection (solid body, water, humidity) DIN EN 60529, IEC 529 - Degree of protection: IP 40 <p>Pollution Degree II</p> <p>For internal use only</p> <p>Overvoltage protection category I</p> |
| Power supply | Vehicle electrical system or USB |

| | |
|--|--|
| Supply from vehicle electrical system | |
| Rated voltages | 8 to 18 V DC, typically 12 V DC |
| Current consumption in load range | Max. 0.2 A at 12 V battery voltage |
| Maximum power consumption | 2.4 W |
| Protection | Input protected against disturbances in line with DIN 40839 Section 1, test pulses 1 to 3, intensity IV and test pulse 4, intensity III. |
| Supply via USB | |
| Rated voltages | 5 V DC |
| Maximum power consumption | < 2 W |
| Operation on diagnostic plug | Not possible |
| External interfaces, wireless | |
| Radio interface | - Bluetooth or - WLAN (depending on version) |
| External interfaces, wired | |
| USB interface | 1 x USB standard 1.1, type B |
| Vehicle interface | OBD in line with ISO 15031 |
| Radio approvals | EN 301489-1, EN 301489-17, EN 300328-2, SAR IEEE 1528, SAR EN 50371, FCC Part 15 Class A, Bluetooth, WLAN |
| Displays | |
| Status indicator | - LED (yellow / green / red) |
| Flash Memory | None or up to 1 GB (depending on version) |

8.2 USB cable

| | |
|---------------------|----------------|
| USB cable, type A-B | 0.5 m standard |
| Contact durability | > 1000 |

9 Glossary

9.1 Abbreviations

| | |
|---------|---|
| BlueVCI | Bluetooth Vehicle Communication Interface |
| DHCP | Dynamic Host Configuration Protocol: Protocol for central management and assignment of IP addresses |
| IP | Internet Protocol |
| OBD | On-board diagnosis |
| OCA | OBD connector assembly |
| TCP | Transmission Control Protocol |
| USB | Universal Serial Bus |
| OCA | OBD Connector Assembly |

We checked the content of this documentation for consistency with the state of the device described. However, variations cannot be ruled out and we accept no liability for complete consistency. The information in this documentation is reviewed at regular intervals and any necessary corrections are made in subsequent editions. We are grateful for any suggestions for improvements.

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