HEX INNOVATE

Hex GS-911

Diagnostic tool for BMW motorcycles

User manual

Edition 1.1
March 2022
Software version 2203.3

1 TABLE OF CONTENTS

1 Table of contents 2
2 GS-911 Basics 3
2.1 What is GS-911? 3
2.2 Terminology 3
2.3 How does GS-911 work? 3
2.4 Choosing the right GS-911 device 4
3 Registering your GS-911 5
4 Operating GS-911 with a computer 6
4.1 Installing the GS-911 software 6
4.2 Updating the GS-911 software 6
4.3 Using GS-911 software on Windows and Apple computers 7
4.3.1 Using the GS-911 software for Windows 7
4.3.2 Setting Wi-Fi access permissions 8
4.4 Forwarding GS-911 logs to Hex Innovate 8
5 Connecting GS-911 to a computer 9
5.1 Connecting to a GS-911 using Wi-Fi 9
5.1.1 Creating a D2D connection between GS-911 and a control device 10
5.1.2 Creating an infrastructure connection between GS-911 and a control device 11
5.1.3 Troubleshooting Wi-Fi connectivity problems 12
6 Operating GS-911 with a mobile phone or tablet 14
6.1 Prerequisites for mobile control devices 14
6.2 Using GS-911 software for mobile control devices 14
6.3 Service functionality and mobile control devices 16
7 Connecting GS-911 to a motorcycle 17
8 Troubleshooting communication issues 20
9 Maintenance and diagnostic functions 21
9.1 Checking the motorcycle's battery power and ignition power 21
9.2 GS-911 Remote diagnostics 21
9.3 AutoScanning 22
9.4 Selecting a motorcycle series and model 24
9.5 Listing the motorcycle's electronic modules 25
9.6 Upgrading to a Professional software licence 25
9.7 Emergency functionality 26
9.7.1 Reading all current fault codes for a chosen module 26
9.7.2 Clearing current fault codes 27
9.7.3 Reading software values from a chosen module in real time 27
9.8 Service functionality 30
9.9 Service reminder/vehicle functions 31
9.10 Administrative functionality 32
10 GS-911 extension cables 34
11 Resources 35
11.1 Becoming a GS-911 Beta tester 35
11.2 Help for Apple OS X users running GS-911 software 35
11.3 Using obsolete control devices 35
11.4 Glossary of terms 35
11.5 Finding a repair manual for your BMW or Husqvarna motorcycle 35
11.6 Getting help 35
12 Finding the diagnostic connector 37
13 Notices and copyright 38

2 GS-911 BASICS

2.1 What is GS-911?

The Hex GS-911 is a compact, portable diagnostic tool for BMW motorcycles. GS-911 makes technical problem-solving easier by giving you greater insight into the electronics of your motorcycle.

Depending on which GS-911 device you use, the device can communicate wirelessly or by USB, and with control devices such as computers, tablets and smart phones.

GS-911 can serve as a workshop-based tool, and can also be carried with you while you are riding your motorcycle.

2.2 Terminology

In this manual, you will see the terms *GS-911 device* and *Control device*.

- A *GS-911* or *GS-911 device* is the 3-pin, 10-pin round, or 16-pin OBD-II GS-911 device that physically connects to the motorcycle.
- A *Control device* is any digital device that can communicate with a GS-911 device, read the motorcycle's electronic data and fault codes, and control the motorcycle's components. Depending on your needs, a Control device might be a desktop or laptop computer, or a Wi-Fi-equipped mobile phone or tablet computer.

2.3 How does GS-911 work?

By connecting a GS-911 to your BMW motorcycle, you can diagnose almost any electronic problem you encounter.

A modern motorcycle actually starts the diagnostic process itself. Often, it does this by logging a fault code to its on-board memory. A fault code is simply data that describes the problem, keeps a count of how many times the problem has happened, and says whether the problem still exists. It may also include information on what the motorcycle thinks might be causing the problem.

In some cases, you might see a Master Caution light (below, left) or a Master Warning light (below, right) on your motorcycle's instrument cluster.

On newer BMWs, you may see information regarding a problem on the motorcycle's instrument display. In some cases, the engine warning icon or ABS warning icon may come on.

Most steady-state or intermittent electronic problems and faults may go unnoticed because no warning lights or icons appear. Sometimes, they are not recognised by the motorcycle's software as a problem (and therefore do not generate fault codes). GS-911 can be used to diagnose such problems by reading software values in real time.

When GS-911 is connected to the motorcycle, it shows you all fault codes that have been logged. Depending on the motorcycle model, the GS-911 will likely also include Service functions that allow you to test suspect components yourself.

GS-911 will not damage your motorcycle. It works in exactly the same way as the diagnostic equipment that automotive dealers use to find and repair problems.

- GS-911 powers itself on whenever it is connected to a motorcycle or to a computer's USB port.
- Depending on the commands it receives, GS-911 can passively read information (like fault codes) from control units, and actively control hardware components (for example, by changing On/Off status).
- GS-911 is easy to use and fail-safe. The GS-911 and its software cannot damage a motorcycle in any way.
- GS-911 can be 'hot plugged', and does not need to be 'ejected' or 'safely removed'.

2.4 Choosing the right GS-911 device

A number of different GS-911s have been produced in response to changing hardware and software technologies.

If you need help with choosing the correct GS-911 for your needs, go to https://www.hexgs911.com/how-do-i-choose-a-model/.

3 REGISTERING YOUR GS-911

Before a new GS-911 can communicate with a BMW motorcycle, it must be registered.

Registration activates the GS-911 device and enables support and warranty cover. The registration process is also used to enter the new owner's details if you ever decide to sell your GS-911.

IMPORTANT

To register, you must do any one of the following:

- Connect the GS-911 to the internet in Infrastructure mode.
- Use the supplied USB cable to connect the GS-911 to a computer with internet access.

If you do not do the registration procedure as shown in the video below, the GS-911 will be blocked from communicating with control devices.

When you take ownership of a GS-911, register it as shown in the *Register your GS-911wifi* video at https://www.hexgs911.com/videos/.

4 OPERATING GS-911 WITH A COMPUTER

Before a GS-911 can communicate with the motorcycle or the chosen control device, software that allows the control device to communicate with the GS-911 must be installed on the control device.

Note these important points regarding functionality on different control devices:

- **Windows-based computers:**
  - **Emergency functionality** is available offline from the GS-911 Diagnostics Application, and online from the GS-911 Web Application.
  - **Service functionality** is available through the GS-911 Web Application, if you are connected to the internet through Wi-Fi.
  - **Service functionality** is available in the GS-911 Diagnostics Application if you are offline.
- **iOS/MacOS and Android devices:**
  - **Emergency functionality** is available offline from the GS-911 Web Application.
  - **Service functionality** is available through the GS-911 Web Application, if you are connected to the internet through Wi-Fi.
  - If you are offline, Service functionality is not available.

IMPORTANT

To control GS-911 Service functions using a mobile phone or tablet, see Service functionality and mobile control devices.

4.1 Installing the GS-911 software

Install the correct software for your control device as shown at https://www.hexgs911.com/software-downloads/.

4.2 Updating the GS-911 software

If the GS-911 Cloud detects that a newer version of the GS-911 software is available, you will be prompted to update the software.

The GS-911 software is regularly updated with new features and bug fixes. To check for and install GS-911 software updates, connect to the internet, then click **Setup → Update**.

4.3 Using GS-911 software on Windows and Apple computers

The stand-alone (offline) version of the GS-911 software is designed to run exclusively on Microsoft Windows-based platforms.

Android and Apple mobile control devices can access Service functionality by using the GS-911 Cloud. To use the GS-911 Cloud functionality, see Service functionality and mobile control devices.

For instructions on how to run PC-based GS-911 software on an Apple platform (for example, by dual-booting Windows or running a virtual machine), go to https://www.hexgs911.com/faq/why-doesnt-the-pc-app-run-on-my-os/.

4.3.1 Using the GS-911 software for Windows

Use the GS-911 software by doing the steps that follow:

1. Launch the GS-911 software from the desktop icon, or from the Windows *Start* menu.
    - If you want to connect a GS-911 to the computer using USB:
        i. Connect the GS-911 to any unused USB port.
        ii. Click the USB connection option (a typical example is shown below).

            - The GS-911 user interface will launch.
    - If you want to connect a GS-911 USB+Wi-Fi to the computer using Wi-Fi:
        i. Power the GS-911 by connecting it to a USB port or to the motorcycle's diagnostic connector.
        ii. Make sure the GS-911 is in *Infrastructure mode* as shown in Creating an infrastructure connection between GS-911 and a control device.
        iii. Make sure the GS-911 is connected to the same Wi-Fi network as the control device.
        iv. Click the Wi-Fi connection option (a typical example is shown below).

            - The GS-911 user interface will open in a separate window in your web browser.
        v. See Connecting to a GS-911 using Wi-Fi.

Whenever the GS-911 software is successfully connected to a GS-911 device, the lower right side of the main screen shows the serial number of the connected GS-911 (a typical view is shown below).

If the GS-911 is connected to a motorcycle, the vehicle's battery voltage and ignition switch status are shown in the upper right corner of the user interface (below).

- The motorcycle's battery can reliably supply power to the GS-911 if the vehicle battery voltage is 12.3V or more with the ignition switch ON, and the engine not running.
- If the engine is not running and battery voltage is 12.2V or less, connect an intelligent battery charger or test or replace the motorcycle's battery before doing diagnostics.
- If battery voltage is shown as 0.00V, check that the GS-911 is properly connected to the diagnostic connector.
- If the ignition icon looks like this: the ignition switch is ON.
- If the ignition icon looks like this: the ignition switch is OFF. Switch the ignition ON to do diagnostics.

4.3.2 Setting Wi-Fi access permissions

Depending on the security settings of your Windows computer, Windows Defender Firewall may have blocked Wi-Fi communication between your computer and GS-911 USB+Wi-Fi device.

Before using a GS-911 USB+Wi-Fi, make sure that the GS-911 software has been granted device access permission to your computer.

4.4 Forwarding GS-911 logs to Hex Innovate

In the unlikely event that the GS-911 device or software malfunctions, a *log* is generated. The GS-911 software stores log files automatically, allowing Hex Innovate to gather information on potential GS-911 problems so that the software and hardware can be improved.

If Hex Innovate asks you to forward your GS-911 log files, instructions on how to do so are available at https://www.hexgs911.com/faq/how-do-i-send-my-debug-log-files/.

5 CONNECTING GS-911 TO A COMPUTER

IMPORTANT

It is recommended that you keep your control device connected to the internet while using the GS-911 and its software.

Depending on what type of GS-911 device you have, you may have a choice between two different connection methods.

- *GS-911 USB+Wi-Fi* devices have a USB B port and Wi-Fi connection controls (below, left). These devices can connect to control devices using USB and Wi-Fi.

- *GS-911 USB* devices only have a USB B port (above, right). These devices can only connect:
    - To Windows-based laptop or desktop computers
    - To laptop or desktop computers running a virtual machine-based Windows installation.
    - Using USB.

5.1 Connecting to a GS-911 using Wi-Fi

GS-911 USB+Wi-Fi devices can communicate wirelessly with Wi-Fi-equipped control devices. *Wi-Fi* is an information-exchange protocol that works using radio. You can read the full Wi-Fi specification that GS-911 requires and complies with at https://www.hexgs911.com/specifications/.

A GS-911 USB+Wi-Fi device can communicate with a Wi-Fi-equipped control device in two different ways:

- The control device can communicate directly with the GS-911 USB+Wi-Fi device using *Device-to-device (D2D) mode* (below).

- If the control device and GS-911 USB+Wi-Fi device are far apart, or you need Service functionality while using a mobile control device, the control device can communicate with the GS-911 and the remote Hex server through a local Wi-Fi network using *Infrastructure mode* (below).

5.1.1 Creating a D2D connection between GS-911 and a control device

Create a device-to-device (D2D) connection between a GS-911 USB+Wi-Fi and a computer or mobile device by doing the steps that follow:

1. Power the GS-911 by connecting it to a USB port, or to the motorcycle's diagnostic connector.
    - When the boot sequence is complete, the *Power/status* LED (below) will flash green once per second.

- If the Power/status LED shows steady red, the GS-911's boot sequence has failed. For a full explanation of GS-911's light codes, refer to https://www.hexgs911.com/connectors-buttons-and-lights/. If the Power/status LED still shows steady red after the GS-911 is disconnected and reconnected, there may be a firmware fault: reinstall the device firmware as shown at https://www.hexgs911.com/faq/how-do-i-recover-corrupt-firmware/.

2. If the *Infrastructure mode* LED (lower arrow, below) shows steady green, press and release the Wi-Fi mode button on the GS-911 (upper arrow, below).

- The *D2D mode* LED should briefly show red, then show steady green (below).

3. Activate Wi-Fi connectivity on your control device.
4. Search for and connect to the GS-911 using the control device's Wi-Fi functionality. The GS-911 should appear in the control device's network/internet settings dialogue as *GS911_XXXX* (where *XXXX* is the GS-911's serial number).

5.1.2 Creating an infrastructure connection between GS-911 and a control device

If you have access to a local Wi-Fi network with internet connectivity, you can create an *infrastructure connection* in order to use the *GS-911 Cloud* functionality.

You need an infrastructure connection if:

- You need full Service functionality when using a non-Windows control device (such as a mobile phone).
- Your control device and GS-911 USB+Wi-Fi device are too far apart to communicate in *D2D mode*.
- More than one GS-911 USB+Wi-Fi device is being used in the same general area at the same time (for example, in a motorcycle repair workshop).

To create an infrastructure connection between your control device, a GS-911 USB+Wi-Fi and a local Wi-Fi network, do the steps that follow:

1. Activate Wi-Fi reception on the control device.
2. Launch the GS-911 software.
3. Click **Setup → Wifi Setup**.
    - The Wi-Fi setup buttons will be shown. Note that the GS-911 device is also listed as a Wi-Fi network.
4. If a suitable Wi-Fi network is not listed, click **Scan for networks**.
    - The control device will scan for available Wi-Fi networks.
    - All local Wi-Fi networks that are active will be listed under *Infrastructure Mode*.
    - If your network is still not listed, make sure your Wi-Fi network complies with the specification listed at https://www.hexgs911.com/specifications/.
5. Select a new Wi-Fi network by clicking the listing for the chosen network.
    - The *Network Detail* section will be shown.
6. Enter the network password in the *Passphrase* field.
7. Click **Connect**.
    - GS-911 will attempt to connect to the chosen Wi-Fi network.
    - If connection to the chosen network is successful, GS-911 will beep twice.
    - If the GS-911 is in *D2D mode* when the connection to the chosen network is made, it will automatically switch to *Infrastructure mode.*
    - If the Infrastructure mode LED alternates between no activity and flashing red, the Wi-Fi network password may have been entered incorrectly. Make sure the correct Wi-Fi password is entered by clicking the **Show Password** button, forgetting the network, and re-entering the network credentials and password.
8. If the GS-911 cannot find the chosen Wi-Fi network, and the *Infrastructure mode* LED remains red, test the Wi-Fi network connectivity as shown in Troubleshooting Wi-Fi connectivity problems below.

5.1.3 Troubleshooting Wi-Fi connectivity problems

If you are having trouble using an *Infrastructure mode* connection between your GS-911 and a control device, diagnose the connection issue by doing the steps that follow:

1. Make sure your Wi-Fi router is powered on.

2. Make sure you can access the internet from the chosen network, using your control device. If you cannot, try accessing the internet from the chosen network using a different control device.
3. Click **Wifi Setup → Network Test → Test network packet loss**.
    - The results of the ping test will be shown. Packet loss values are shown as percentages.
    - A packet loss value of 5% or greater means the Wi-Fi connection has failed the ping test. If this happens, do the steps that follow:
        i. If possible, bring the control device and GS-911 device closer to the Wi-Fi router.
        ii. Make sure there is clear line-of-sight between the control device and Wi-Fi router, and between the GS-911 and Wi-Fi router.
    - If the steps above do not improve the high packet loss value, do the steps that follow:
        i. Connect the GS-911 to your computer by USB.
        ii. Go to https://www.hexgs911.com/gs-911-downloads/.
        iii. Download and install the *GS-911 Diagnostics Installer* as shown at https://www.hexgs911.com/software-downloads/.
        iv. Operate GS-911 using the installed *GS-911 Diagnostics* application.

6 OPERATING GS-911 WITH A MOBILE PHONE OR TABLET

Different mobile versions of the GS-911 software are available. This allows you to operate your GS-911 with a wide variety of mobile phones. Some tablet computers can also use mobile versions of the GS-911 software.

GS-911 software and support are available for Android-equipped phones and tablets, and Apple iPhones and iPads running iOS.

Please note that official support and software updates are no longer available for non-Wi-Fi mobile control devices.

TIP

If a Wi-Fi network with internet connectivity is available, you can access full Service functionality on mobile control devices by using the GS-911 Cloud feature. For details, refer to Service functionality and mobile control devices.

6.1 Prerequisites for mobile control devices

If you are using a mobile control device to control GS-911, the device must have Wi-Fi capability and a current web browser that is compatible with HTML5, such as Chrome, Firefox or Safari.

GS-911 software is available for mobile control devices using the following operating systems:

- **Android devices:** Android OS version 2.3 or later.
- **Apple iPhones and iPads:** Any version of the iOS operating system.

6.2 Using GS-911 software for mobile control devices

IMPORTANT

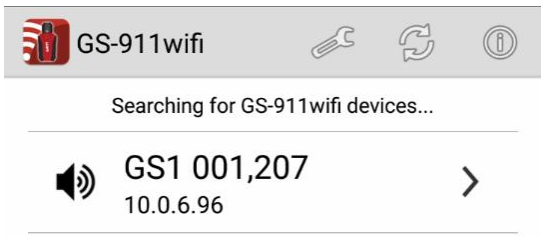
If a Wi-Fi network with internet connectivity is available, you can access full Service functionality on mobile control devices by using the GS-911 Cloud feature. For details, refer to Service functionality and mobile control devices.

To install the correct GS-911 software for your mobile control device, refer to https://www.hexgs911.com/software-downloads/. After following the online instructions, launch the software from the mobile control device by doing the steps that follow:

1. Connect the GS-911 to the motorcycle's diagnostic connector as shown in Connecting GS-911 to a motorcycle.

2. Connect the phone to the GS-911 (using D2D mode) or to the Wi-Fi network configured on the GS-911 (using Infrastructure mode) as shown in Connecting to a GS-911 using Wi-Fi.
3. Click the **GS-911 wifi** application icon on the control device's screen (below).

- The *GS-911 Wi-Fi* application will launch, and will search for GS-911 USB+Wi-Fi devices to connect to.
- If a connected GS-911 is found, the GS-911's IP address will be shown on the search screen (a typical view is shown below).



TIP

If a different control device is connected to the GS-911 you want to connect to, you must either leave the existing connection as is, or take over the connection using the new control device (below).

To take over the session using the new control device, click **Go ahead, I understand that I am hijacking the session!**

4. If the mobile control device cannot communicate with the GS-911, see Troubleshooting communication issues.

6.3 Service functionality and mobile control devices

IMPORTANT

To use GS-911 Cloud functionality, you need:

- A GS-911 Wi-Fi+USB device.
- A Wi-Fi-based internet connection.

If you have Wi-Fi internet connectivity, full Service & Maintenance functionality is available from the GS-911 Cloud server. If Wi-Fi connectivity is not available, only emergency functionality can be used.

The image below shows the basic data flows when the GS-911 Cloud is accessed in *Infrastructure mode*:

The GS-911 Cloud function allows full Service functionality from any control device that has Wi-Fi connectivity and an HTML5-compatible web browser.

Access Service functionality from your mobile phone by doing the steps that follow:

1. Connect the GS-911 to the motorcycle's diagnostic connector as shown in Connecting GS-911 to a motorcycle.
2. Make sure your mobile control device, the GS-911, and the local Wi-Fi router are as close to each other as practically possible.
3. Create a Wi-Fi link between the mobile control device, the local Wi-Fi network and the GS-911, as shown in Creating an infrastructure connection between GS-911 and a control device.
4. If the mobile device cannot communicate with the GS-911, see Troubleshooting communication issues.

7 CONNECTING GS-911 TO A MOTORCYCLE

After launching the GS-911 software from a computer or mobile control device, connect the GS-911 to the motorcycle by doing the steps that follow:

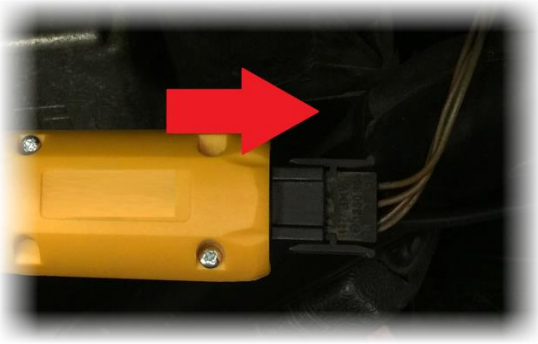
1. Find your motorcycle's diagnostic connector. If you do not know where to find the connector, see Finding the diagnostic connector.

CAUTION

If the motorcycle's diagnostic connector does not have a dust cap, clean the connector contacts with electrical contact cleaner and dry with a clean, lint-free cloth before connecting the GS-911.

After disconnecting the GS-911, install an original BMW dust cap.

- For three-pin diagnostic connectors, do the steps that follow:
  - i. Remove the dust cap from the diagnostic connector.
  - ii. Connect the GS-911 device's Hella plug to a 12-volt electrical supply.
  - iii. Press the interface end of the GS-911 into the diagnostic connector (below). The GS-911 should 'click' into the connector.



- For 10-pin (round) diagnostic connectors, connect the GS-911 to the motorcycle's diagnostic connector by doing the steps that follow:
  - i. Remove the dust cap from the diagnostic connector by twisting the cap counter-clockwise.
  - ii. Turn the black locking ring on the GS-911's connection interface counter-clockwise until the ring comes to a stop. You will see the first white arrow (below).

iii. View the contact face of the motorcycle's diagnostic connector. The red plastic lug must face *down* (below).

iv. Hold the GS-911 device so the white *Wi-Fi* logo faces up.

v. Push the GS-911 device's interface plug into the BMW diagnostic connector (below).

vi. Turn the GS-911's black locking ring clockwise until the ring cannot turn any further (above).

- For 16-pin OBD-II diagnostic connectors, connect the GS-911 to the motorcycle's diagnostic connector by doing the steps that follow:

  i. Remove the dust cap from the diagnostic connector.

  ii. Press the GS-911 device's interface plug into the diagnostic connector in such a way that the interface plug and connector slide together easily (below).

2. Place the GS-911 where it cannot be damaged.

> **CAUTION**
>
> Do not place the GS-911 on hot surfaces, engine components, near moving parts, or where it could be exposed to hot exhaust, oil or petrol (gasoline).
>
> Do not strain the wires leading from the BMW diagnostic connector. This could lead to circuit breaks and cause the motorcycle's electronic systems to malfunction.
>
> Extension cables are available, and can be used to place the GS-911 in a safe location while it is being used. See GS-911 extension cables for details.

3. Prepare the motorcycle for diagnostics by doing the steps that follow:
   i. Turn on the ignition switch and the kill switch.
   ii. Make sure the gearbox is in the *Neutral* (N) position.
   iii. Make sure the sidestand is in the *down* position.
   iv. If you are going to do service functions, connect an intelligent battery charger to the motorcycle's battery.

8 TROUBLESHOOTING COMMUNICATION ISSUES

If your GS-911 does not respond to commands from your control device, refer to Troubleshooting Wi-Fi connectivity problems.

If the mobile control device cannot connect to the GS-911, diagnose the problem by going to https://www.hexgs911.com/faq/gs-911-cannot-see-or-connect-to-my-wifi-router/.

If you suspect that a problem with the GS-911 device or with the motorcycle's diagnostic data lines is interfering with communication between the GS-911 and motorcycle, refer to the GS-911 device diagnostic check procedure at https://www.hexgs911.com/faq/how-do-i-test-the-diagnostic-interface/.

9 MAINTENANCE AND DIAGNOSTIC FUNCTIONS

This section shows you how to use the GS-911 to do basic vehicle diagnostics on your BMW motorcycle under emergency conditions and workshop conditions.

IMPORTANT

All examples seen in this section are typical. Not all functionality shown is available for all motorcycles.

Before you do any of the procedures shown in this section:

1. Make sure the motorcycle's ignition switch and kill switch are both in the ON position.
2. Make sure the motorcycle's gearbox is in the *Neutral* (N) position.
3. Make sure the motorcycle's side stand is in the *down* position.

9.1 Checking the motorcycle's battery power and ignition power

If the motorcycle fails to start, or its electronic systems behave strangely, there may be a problem with the motorcycle's battery or electrical systems.

For instructions on how to quickly check the condition of the motorcycle's battery, see https://www.hexgs911.com/faq/is-my-batter-ok/.

9.2 GS-911 Remote diagnostics

You can grant other users remote control of your GS-911. This allows any other person, anywhere in the world, to diagnose problems with your motorcycle over the internet, even if that person does not have a GS-911.

To allow another person to control your GS-911 remotely, do the steps that follow:

1. Click **Setup → Remote GS-911 Control → Continue**.
2. Do not close the *Remote GS-911 Control* page.
    - The GS-911 software will copy a URL to your control device's clipboard.
3. Send the URL to the person doing remote diagnosis.
4. Instruct the person doing remote diagnostics to paste the forwarded URL into their web browser's address bar.
    - The person doing remote diagnostics can now control your GS-911 remotely.
5. To end the remote session, click **Disconnect** on the GS-911 user interface.

9.3 AutoScanning

AutoScanning is the quickest, easiest way to view all fault codes that are currently saved in the motorcycle's on-board memory.

We recommend that you run and save a complete AutoScan on every motorcycle you work on. This allows you to build up a historical record that can be invaluable for future diagnostics.

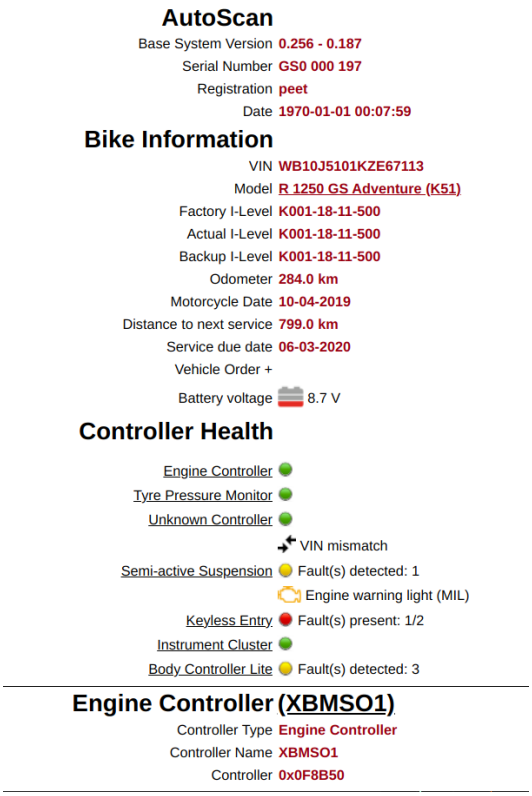
IMPORTANT

The GS-911 3-pin model does not support AutoScanning.

If you are using a GS-911 3-pin, refer to Reading all current fault codes for a chosen module for instructions on how to view fault codes.

To read all current fault codes using AutoScanning, do the steps that follow:

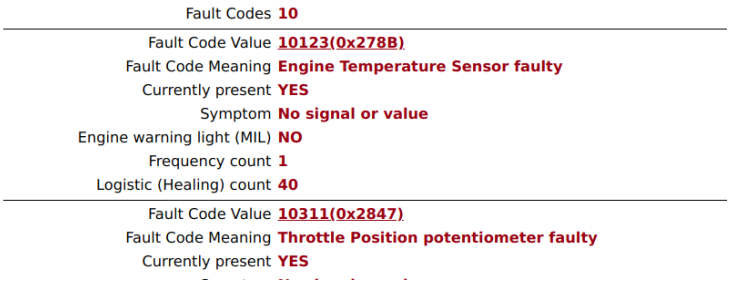
1. Click **AutoScan**.
    - An AutoScan report will be generated (part of a typical AutoScan report is shown below).



IMPORTANT

Not all motorcycles have all possible electronic modules. Equipment levels depend on the motorcycle model, the world market the motorcycle was first sold in, and factory-fitted equipment requested by the motorcycle's first owner.

2. Scroll through the AutoScan report.
    - If fault codes are present, they will be listed by module category.
    - As an example, a typical engine-related fault code is shown below:



3. When you have read all stored fault codes, you can gather information to fix the cause of the problem using the methods that follow:
    - To read the motorcycle's real-time software values, see Reading software values from a chosen module in real time.
    - To view the motorcycle's operational parameters as a 2-D graph, see Reading software values from a chosen module in real time.
    - For instructions on how to log software values to a plottable value/time graph for basic fault-finding, refer to https://www.hexgs911.com/faq/how-do-i-import-and-view-the-csv-realtime-data/.
    - To permanently cure the problem that caused the fault code, you must diagnose and eliminate the root cause of the problem.
    - If you see a notification that a fault code cannot be cleared, the problem that caused the fault code is still present.

IMPORTANT

A problem that generates a fault code may not always be eliminated by deleting the fault code.

A fault code is only a message that tells you a problem exists. It is not the problem itself.

4. To delete all current fault codes from all electronic modules at the same time, click **Clear All faults**.
5. To E-mail the AutoScan report, click the ✉ icon at the bottom of the AutoScan report. Follow the prompts to completion.

6. To save a copy of the AutoScan report as a plain-text file, click the icon at the bottom of the AutoScan report. Follow the prompts to completion.
7. To print a copy of the AutoScan report, click the icon at the bottom of the AutoScan report. Follow the prompts to completion.

9.4 Selecting a motorcycle series and model

TIP

GS-911 also supports 652 cm^3 and 898 cm^3 Husqvarna motorcycles manufactured between 2011 and 2014.

Before doing any diagnostic or maintenance function, you must specify the series and model of motorcycle that GS-911 is connected to.

IMPORTANT

Make sure the correct motorcycle series is selected. If the wrong series is selected, incorrect or misleading data may be shown.

GS-911 will attempt to determine the series and model automatically when Battery voltage is detected. We recommend you use the **Detected Vehicle** option.

TIP

If the motorcycle type can be determined, a motorcycle icon will be shown next to the correct link.

In the unlikely event that GS-911 cannot select the correct series or model, use the **Select Vehicle** option to choose the motorcycle series and model manually by doing the steps that follow:

1. Click **Select Vehicle**.
    - The motorcycle series selector will be shown.
2. For BMW motorcycles, click the link for the correct BMW series. For Husqvarna motorcycles, click **Husqvarna**.
    - The chassis selection dialogue will be shown.
3. Click the link for the correct chassis type.
    - The motorcycle model listing will be shown.
4. Click the link for the correct motorcycle model.
    - The software controller selection screen will be shown.

To read software values for the chosen controller, read current software values as a real-time graph, and read and clear stored fault codes, see Emergency functionality.

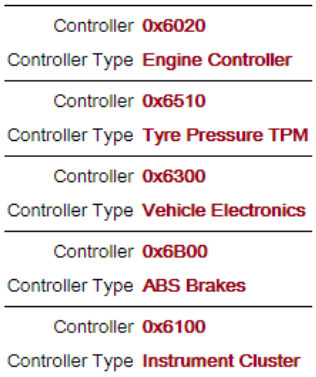
To diagnose and repair problems using the GS-911 Service functions, see Service functionality.

9.5 Listing the motorcycle's electronic modules

Modern motorcycles rely on a collection of electronic control systems to operate. The newer the motorcycle, the more electronic control systems it is likely to have.

To view a list of the electronic control modules installed on the motorcycle, do the steps that follow:

1. Click **Detected Vehicle** or **Select Vehicle**.
2. Click **Scan Controllers**.
    - A list of all electronic control modules installed on the motorcycle will be shown. As an example, the view below lists the modules fitted to a typical R1200GS Adventure (K25).



3. To re-scan the list of installed modules, click **Rescan**.
4. The controls for printing, downloading and E-mailing the list of installed modules are the same as those used for AutoScan reports. To print, download or E-mail a list of the installed modules, refer to AutoScanning.

9.6 Upgrading to a Professional software licence

If you have an *Enthusiast* software licence, the GS-911's Service functionality can be used on a maximum of *ten* motorcycles.

To allow GS-911 to be used with more than 10 different motorcycles, you need a *Professional* software licence. This lets you use the GS-911 Service functionality on an unlimited number of motorcycles.

To upgrade to a Professional software licence, click **Setup → VIN Usage → Upgrade to Pro**.

9.7 Emergency functionality

Emergency functionality is functionality whose main purpose is to help you diagnose and repair a faulty motorcycle when:

- The fault could potentially make the motorcycle unrideable, but:
- It may be possible to correct the fault using basic knowledge and tools, or when advanced knowledge and tools may not be immediately available.

Use Emergency functionality by doing the steps that follow:

1. Specify the motorcycle series and model as shown in Selecting a motorcycle series and model.
2. Click the link for the electronic module you want to work on.
    - The relevant Function menu will be shown.
3. Continue with fault-finding by choosing one of the following actions:
    - To read the module's hardware and software metadata, click **ECU Information**.
    - To read the module's stored fault codes, see Reading all current fault codes for a chosen module.
    - To clear the module's stored fault codes, see Clearing current fault codes.
    - To read the motorcycle's real-time operating parameters as a list, see Reading software values from a chosen module in real time.
    - To read the motorcycle's real-time operating parameters as a dynamic 2-D graph, see Reading software values from a chosen module in real time.

To manipulate the components that are controlled by the chosen module, see Service functionality.

IMPORTANT

For up-to-date information on supported diagnostic functions for each motorcycle model, go to http://www.hexcode.co.za/products/gs-911/function-chart.

9.7.1 Reading all current fault codes for a chosen module

This section shows how to read fault codes for individual modules only. To read all fault codes from all modules at once, see AutoScanning.

To read all current fault codes for a single module, do the steps that follow:

1. Specify the motorcycle model as shown in Selecting a motorcycle series and model.
2. Select the electronic module you want to work on by clicking the correct link in the Controller list.
    - The Functions view will be shown.
3. Click the **Read Fault Codes** link.
    - The *Fault codes* pane for the selected electronic module will be shown.

To delete all current fault codes for the chosen module, see Clearing current fault codes.

9.7.2 Clearing current fault codes

IMPORTANT

A problem that has generated a fault code may not always be eliminated by deleting the fault code.

A fault code is only a message that tells you a problem exists. It is not the problem itself.

To delete all current fault codes for a single module, do the steps that follow:

1. Go to the *Navigation* section for the selected module as shown in Reading all current fault codes for a chosen module.
2. Click **Clear Fault Codes → Continue**.
    - All stored fault codes for the chosen module will be deleted.
    - If a notification is given that one or more fault codes cannot be cleared, the problem that triggered the fault code is still present.
3. Alternatively, you can delete all current fault codes from all electronic modules at the same time. To do this, see AutoScanning.

9.7.3 Reading software values from a chosen module in real time

Modern motorcycles use a series of interconnected, computerised systems. Instead of constant voltages, a number of control inputs and corresponding actuation outputs take the form of data streams.

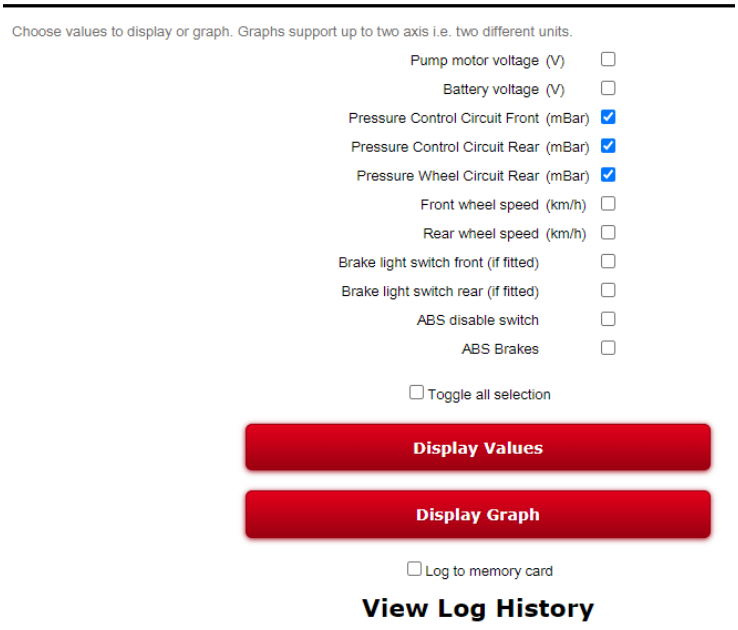
The *Real-time Values* function allows you to see these data streams in real time as numeric parameters, or as a 2-D graph showing values over time. As a basis for diagnostic troubleshooting, you can compare these values with known baselines.

NOTE

To view the parameters of the chosen module as a real-time 2-D graph, see Reading software values from a chosen module in real time.

To view an instantaneous readout of real-time parameters for any chosen electronic module, do the steps that follow:

1. Specify the motorcycle model as shown in Selecting a motorcycle series and model.
2. Choose the electronic module you want to work on by clicking the correct link in the Controller list.
    - The Functions view will be shown.
3. Click **Real-time Values**.
    - A list of parameters will be shown for the chosen module (a typical example for ABS brakes is shown below).



4. Show (and if needed, store) data by doing the steps that follow:
    i. Check the check-boxes for each parameter value you want to see.
    ii. If you want to view all parameter values, check the **Toggle all selection** check-box.

NOTE

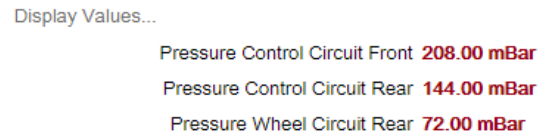
The graph view can show an unlimited number of *parameters*, as long as no more than two different *measurement units* (speed, pressure, volume, and so on) are selected.

iii. If you want to log the data stream as a telemetry file that can be viewed as a static 2-D graph, check the **Log to memory card** check-box.

TIP

The **Log to memory card** function is particularly useful if you want to collect diagnostic data while the motorcycle is moving.

5. To view the data stream as a set of numeric values, click **Display Values**.
    - The *Display Values…* pane will show all chosen parameter values for the module in real time (a typical example is shown below).



6. Alternatively, you can view the data stream as a dynamic 2-D graph. This is a good way to diagnose a problem if you know that a value must progress in an orderly fashion across a set scale[1].

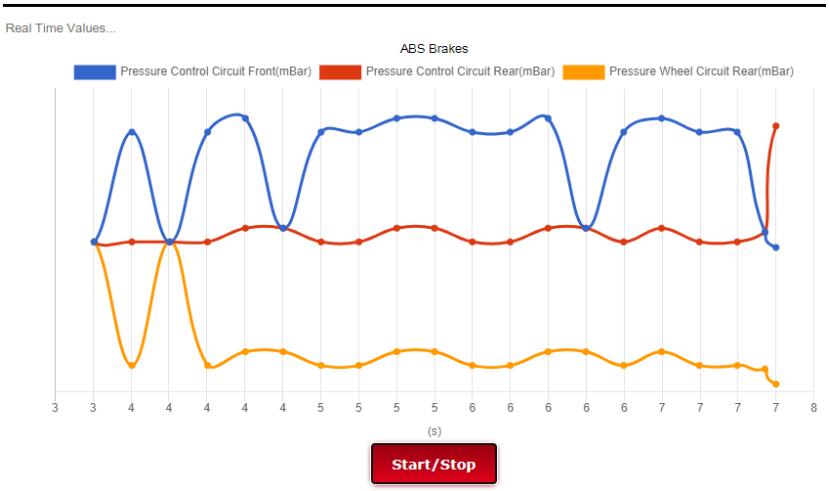
IMPORTANT

To be able to view data streams as a dynamic 2-D graph, you must:

- Un-check the **Log to memory card** check-box.
- Check a maximum of two parameter value check-boxes.

7. To view the data stream as a dynamic 2-D graph, click **Display Graph → Start/Stop**.
    - The *Real Time Values…* pane will chart all chosen parameter values for the module in real time (a typical example is shown below).

[1] As a typical example: if an engine uses a potentiometer-type throttle-position sensor, the sensor resistance must progress in a linear fashion from 0% (idle) to 100% (full throttle). If, on a progressive time scale, the throttle is opened from idle to full and the sensor position suddenly reads 0% at some point during throttle opening, there may be a break in the sensor's slide track. Or, if the sensor reading makes erratic 'jumps' up or down the scale instead of progressing evenly from 0% to 100%, the sensor may be contaminated with dirt or water.
Results like this narrow down the list of possible problems, giving clear starting points for troubleshooting.



8. If needed, pause or stop the real-time view by clicking **Start/Stop** a second time.
9. To resume the real-time view, click **Start/Stop** again.

The real-time values shown in the Display Values… and *Real-time Values…* panes can be used for diagnostic troubleshooting as follows:

- You can compare the shown values with baseline values that are known to be normal (in other words, with conditions that must be satisfied for the relevant system to work properly).
- If you checked the *Log to memory card* check-box, the telemetry stream is saved as a *.CSV file. For instructions on how to read the saved data as a static 2-D graph, refer to https://www.hexgs911.com/faq/how-do-i-import-and-view-the-csv-realtime-data/.

To check whether a component is faulty by doing actuation tests on the motorcycle's electronic components, see Service functionality.

9.8 Service functionality

Service functionality is functionality that can help you diagnose and repair a faulty motorcycle when:

- The fault has potential to make the motorcycle unrideable, and:
- It is likely that the fault can only be corrected using advanced, in-depth knowledge and/or specialised tools.

Service functionality includes all adaptation, configuration and calibration procedures, output tests, and hardware control that can be done using the GS-911 Service Functions.

A range of videos is available that show how to use the GS-911 Service Functions. To view the list of GS-911 Service Function videos, go to https://www.hexgs911.com/videos/.

9.9 Service reminder/vehicle functions

This includes setting the motorcycle's date, time, and service reminder functions.

NOTE

Availability of service reminder functionality depends on the motorcycle series, model and control unit type.

You can reset the visual service reminder on your motorcycle's instrument display (a typical example is shown below).

This function uses the date and time values on your control device to set the next date and mileage at which the motorcycle's visual service reminder will be shown.

To reset the visual service reminder after a routine service interval, do the steps that follow:

1. Make sure the date and time shown on your control device are correct.
2. Select the correct motorcycle series and model as shown in Selecting a motorcycle series and model.
3. Click **Service reminder / Vehicle Functions**.
4. Click **Service reminder**.
    - If your GS-911 has an *Enthusiast* software licence, and has not been connected to the present motorcycle before, setting the service reminder will add the motorcycle's VIN number to the GS-911 device's VIN list.
    - If your GS-911 has a *Professional* software licence, or you are willing to add the motorcycle's VIN number to the GS-911's VIN list, the *Service reminder* pane will be shown.
    - The *Next service due on* mileage and date values will be shown. The default values are 10 000 kilometres (6 000

miles) or 365 calendar days from the present time, whichever comes first.

5. If you want to set the next service-reminder interval to the default value, click **Reset service reminder to defaults (365 days / 10 000 km)**.
6. If you want to set the service reminder to appear at a custom interval, do the steps that follow:
    i. Click **Choose custom date / mileage**.
        - The *Custom service reminder* dialogue will be shown.
    ii. Click the date drop-down and choose the correct service date from the calendar.
    iii. Set the date at which the next service reminder will appear to any value between 31 and 1 000 calendar days. You cannot set a custom date interval outside these limits.
    iv. Enter the mileage at which the next service must be done in the *Next service due at odometer:* field.
    v. You can set the mileage at which the next service reminder will appear to any value between 500 and 60 000 Km (300 to 40 000 miles). You cannot set a custom mileage interval outside these limits.
    vi. Click **Apply** to apply the date and mileage settings.
7. Program the new intervals into the motorcycle's memory by turning the motorcycle's ignition switch off, then on.

9.10 Administrative functionality

Administrative functionality includes all functions that make the GS-911 user experience easier.

- To view the GS-911's basic information, go to **About**.
- To view the GS-911 End-User License Agreement go to **About → License**.
- To print an AutoScan report, click the button at the bottom of the *Autoscan* page.
- To choose whether GS-911 parameters are shown in Metric or Imperial units, navigate to **Setup → Options** and select the correct measurement units.
- To choose the language you want the GS-911 user interface to be shown in, navigate to **Setup → Options** and select the correct language.

- To enable or disable GS-911 device sounds, navigate to **Setup → Options** and choose a sounds option.
- For instructions on how to set GS-911 to automatically switch off to conserve motorcycle battery power, see https://www.hexgs911.com/faq/can-i-leave-my-gs-911-device-connected-to-the-bike-when-it-is-switched-off/.

10 GS-911 EXTENSION CABLES

To help avoid damage to your GS-911, extension cables are available. The cables can be used to place the GS-911 in a safe location while doing diagnostics. They also allow safe usage of the GS-911 while the motorcycle is being ridden.

For more information on extension cable specifications, go to https://www.hexgs911.com/connecting-to-your-bike/.

To purchase a GS-911 extension cable, go to the Hex Innovate Shop at https://www.hexinnovate.com/shop/.

11 RESOURCES

This section has information on resources that will help make vehicle diagnostics an easier, faster and more enjoyable experience.

11.1 Becoming a GS-911 Beta tester

If you would like to contribute your software testing skills to the GS-911 community, you can join the GS-911 Beta testing group. If you would like to become a GS-911 Beta tester, send an E-mail to support@hex.co.za.

11.2 Help for Apple OS X users running GS-911 software

Future versions of the GS-911 software will feature native support for Apple personal computer systems.

If you have trouble running GS-911 software on an Apple computer-based virtual machine, help is available at https://www.hexgs911.com/faq/why-doesnt-the-pc-app-run-on-my-os/.

11.3 Using obsolete control devices

Hex does not offer official support or GS-911 software updates for phones or tablets that do not feature Wi-Fi connectivity.

For instructions on how to use GS-911 software on an obsolete control device, refer to https://www.hexcode.co.za/products/gs-911/support/faq/which-gs-911-software-to-use.

11.4 Glossary of terms

For detailed explanations of the abbreviations and terms found in this manual, go to https://www.hexgs911.com/faq/what-do-all-those-acronyms-mean/.

11.5 Finding a repair manual for your BMW or Husqvarna motorcycle

If you plan to do service or repair work on your motorcycle, you may need a comprehensive service and repair manual. For instructions on how to find detailed service and repair information, go to https://www.hexgs911.com/faq/where-can-i-find-a-repair-manual-for-my-bike/.

11.6 Getting help

If you have trouble operating the GS-911 device or software, please read the GS-911 FAQ before contacting Hex Innovate.

To access the GS-911 FAQ, or the contact details for Hex Innovate, go to https://www.hexgs911.com/contact-us/.

12 FINDING THE DIAGNOSTIC CONNECTOR

If you do not know where the diagnostic connector is located on your BMW or Husqvarna motorcycle, view the diagnostic connector location guide at https://www.hexcode.co.za/products/gs-911/support/how-tos/how-to-loacate-the-diagnostic-connector-on-your-bmw-motorcycle.

13 NOTICES AND COPYRIGHT