User Manual

Daimler LFSPG-MH

History of changes

Version	Date	Editor	Changes / Comments
1.0	18.09.2018	DK	Initial release
1.1	27.09.2018	DK	Completion of technical data
1.2	31.01.2019	JB	Correction, for internal use only
1.3	22.05.2019	JB	Correction, FCC ID
1.4	31.05.2019	PW	Correction, FCC 15B
1.5	25.06.2019	PW	Correction, Notice FCC 15.105
1.6	25.06.2019	PW	Correction, Notice reinsert deleted section
1.7	26.06.2019	PW	Correction, Notice additional information

Regulatory Information for USA and Canada

NOTICE:

This equipment has been tested and found to comply with the limits for Class B digital devices pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. During the operation of device a distance of 15 cm surrounding the device and 20cm above the top surface of the device must be respected.

This device complies with Part 15 class B of the FCC Rules and with Industry Canada licence-exempt RSS standard.

Operation is subject to 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.

Changes or modifications made to this equipment not expressly approved by Huf Tools may void the FCC authorization to operate this equipment.

FCC ID: PD6LFSPGMH

IC ID: 4008A-LFSP-MH

List of abbreviations / Glossary

API.DLL	Software interface to enable interaction between the application and a device.
Download	Firmware Installation of the Key Reader
Driver	Software Interface between hardware device and operating system
Firmware	Program which is installed on the Key Reader
Flash Tool	Windows Software to install the Key Reader Firmware
IR	Infrared
LED	Light Emitting Diode
LF	Low Frequency
LFSPG-MH	Key Reader for Daimler Car and Truck keys
SPG.DLL	Software interface to enable interaction between the application and the LFSPG-MH Key Reader
USB	Universal Serial Bus

Contents

1. Introduction

1.1. Trade marks

Windows, Windows NT and other names of Microsoft products which are mentioned in this manual are registered trade marks of the Microsoft Corporation. Other trade marks and product names mentioned in this manual are trade marks belonging to their legal owners and are hereby acknowledged as such.

1.2. System requirements for operating the Key Reading Station

To install and start the Key Reading Station software, your system must meet the following minimum requirements:

- Pentium (at least 500MHz) or higher processor
- Windows XP or Windows 7 (32bit or 64bit)
- Installed Java Runtime Environment
- 30 MB free storage space
- A free serial or USB interface

1.3. Unpacking the LFSPG-MH Key Reader

Please check the packaging for possible damage during transport. If the packaging is badly damaged, you should not install the device.

1.4. Scope of supply

- Key Reader Daimler LFSPG-MH with fixed USB connection cable
- Plug-in power supply (12VDC, 2A)-

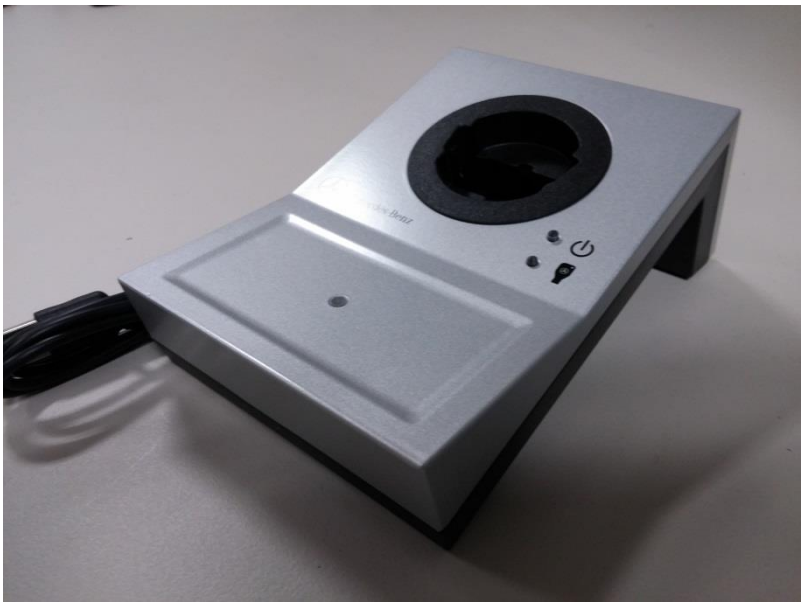

Fig. 1: Daimler LFSPG-MH

2. Warnings and Safety Instructions

This device must not be disposed of in domestic waste.
Always dispose of electronics at the designated collection facilities.

Warning! Place the device on a horizontal and stable surface and secure the connecting cables. Otherwise there is a risk of injury due to the device falling down.

Warning! Do not look directly into the LEDs of the device for a long time, otherwise there is a risk of eye irritation.

Warning! Only use the included power supply unit of protection class II. Otherwise the device will lose its radio approval.

Warning! This equipment has not been designed for connection to an IT power distribution system.

Warning! The socket outlet shall be installed near the equipment and shall be easily accessible.

Warning! Do not use extension cords. Neither for the USB nor for the power cord. Otherwise the device will lose its radio approval.

Warning! If the device, power supply unit or connecting cable is damaged, immediately unplug the plug-in power supply unit and disconnect the device from the PC.

2.1. Disconnect Device

The low voltage socket on the back of the unit is the disconnecting device for the LFSPG-MH. To disconnect the supply voltage, pull the extra-low voltage plug out of the device.
When not in use for a long time, unplug the AC-DC-Adapter from the wall outlet and disconnect the USB plug from the Personal Computer.

3. Operation

The Daimler LFSPG-MH is able to read and write data from different Daimler car and truck keys.

After successful installation, as described in chapter 4, the device is ready for operation. The device status is indicated by the upper LED, illuminate in green light when ready for operation. If the LED's show any other indication please refer to the Table of states on page 15.

Carry an ignition key into the key receptacle of the LFSPG-MH. The detection of the key will start automatically. When the key is recognized the lower LED shows this by a green light.

Recent keys are detected by placing them on the lower tray. A successful detection is indicated by green light of the lower LED.

4. Installation

To install the driver under all specified Windows operating systems you must have administrator rights. This is a default setting from Microsoft.

4.1. Choice of location

Please do not install the Key Reading Station at locations in which the device is exposed to the following environmental conditions:

- Strong vibrations
- Temperatures beyond 5°C - 35°C
- Moist environment (IP30 Device)

For optimal use of the Key Reader Daimler LFSPG-MH, you should put up the device on a level, stable surface near the computer on which the software has been installed,

4.2. Installing the Hardware

1. Plug in the USB connector coming from the Key Programmer Station into a free USB connection on your computer

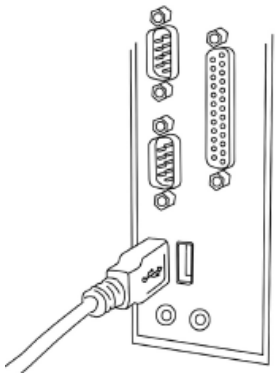

Fig.2: USB Device Connection to the computer

2. Connect the power adapter into the socket provided on the back of the key programmer

4.3. Installing the driver

To install the driver you need operating system independent administrator rights. This is a Windows default.

The installation of the drivers is analogous with the 32Bit and 64Bit versions of each operating system.

4.3.1. Installing the USB driver on Windows XP

After connecting the LFSPG-MH to the computer, it will be recognized automatically by Windows. A message is displayed on the screen indicating „Welcome to the Found New Hardware Wizard“.

In the following dialog, select the option: **No, not this time** and press **Next**

Fig. 3: Start dialog for driver installation

Please insert CD delivered with the package and select the option: **Install the software automatically (recommended)** and press **Next.**

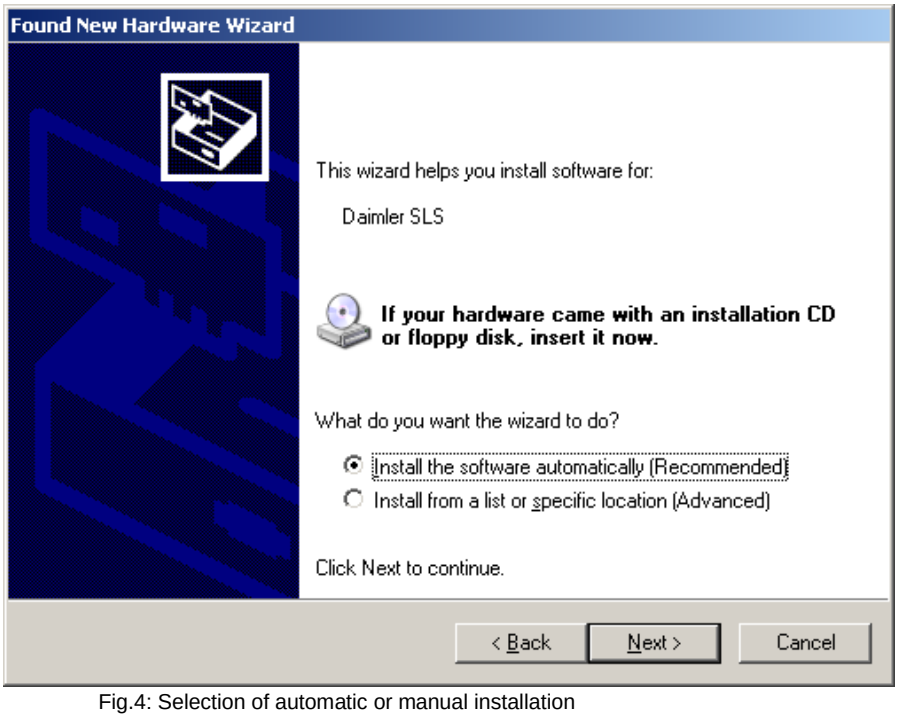

Fig.4: Selection of automatic or manual installation

When the following dialog appears, click on: **Continue Anyway**

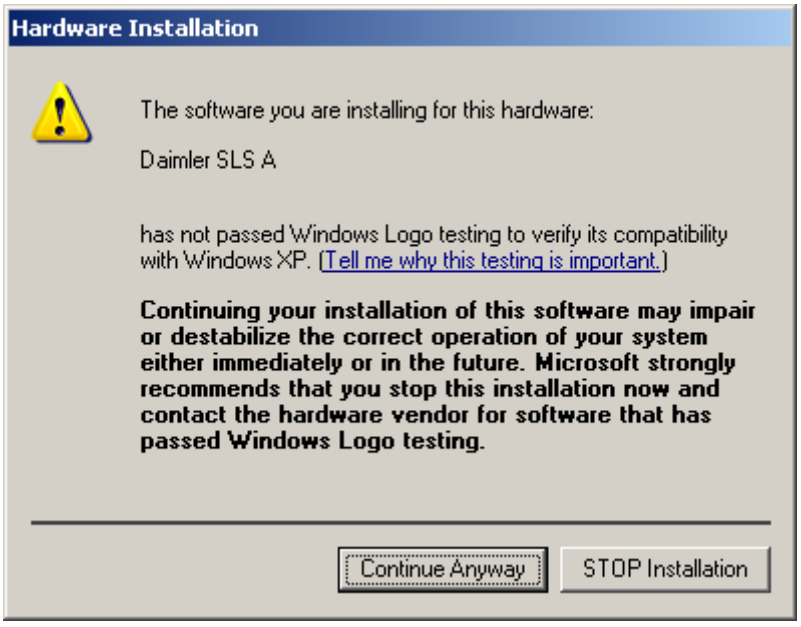

Fig.5: Installation warning

Wait for the files to be installed.

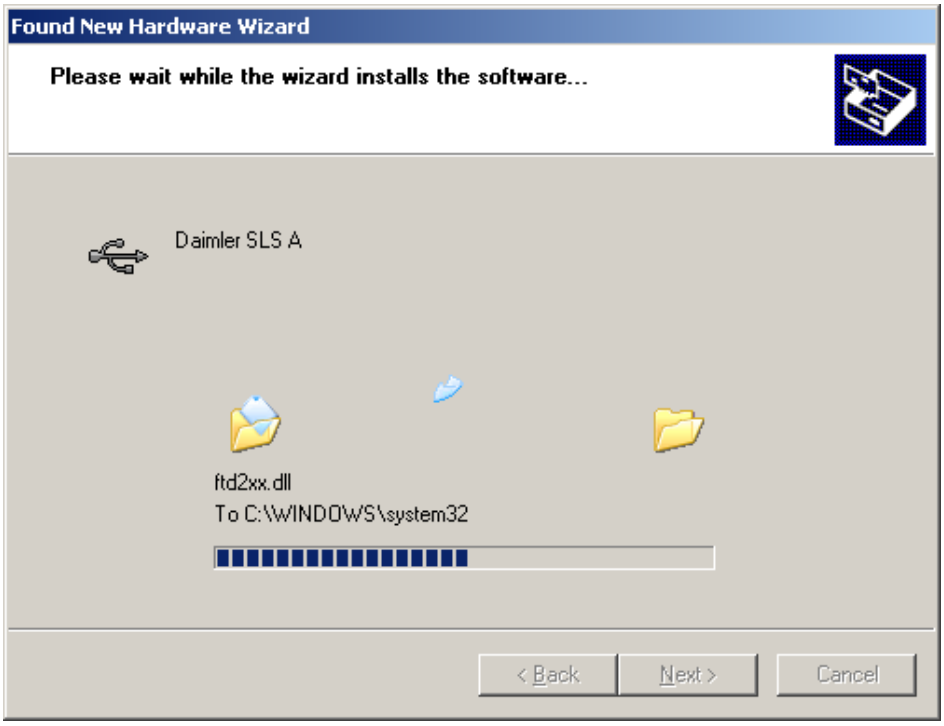

Fig. 6: Installation screen

After completion click on: **Finish**

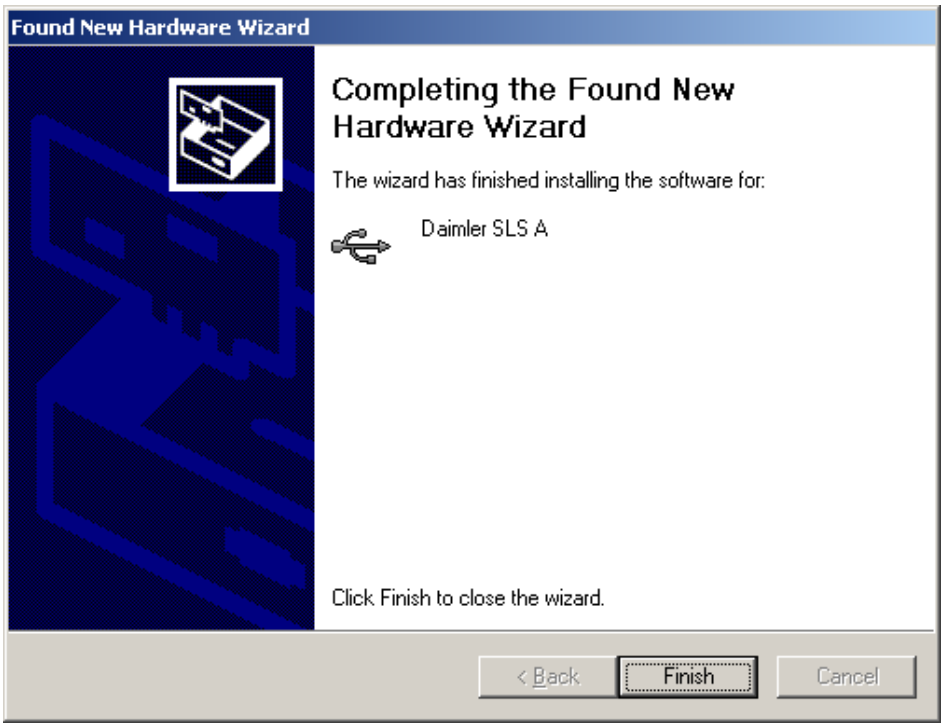

Fig. 7: Completing the installation

Installation is complete now.

4.3.2. Installing the USB driver on Windows 7

After connecting the LFSPG-MH to the computer for the first time it will be recognized automatically by Windows. A message is shown on the screen, that the driver will be installed.

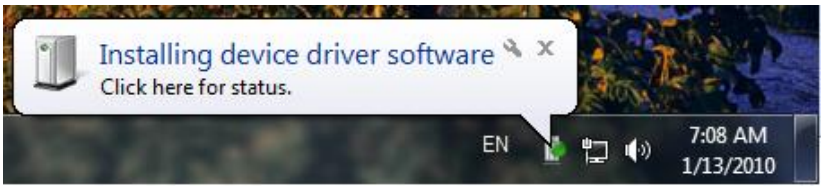

Fig. 8: Windows install message

After a short time an error message appears, indicating the driver was not installed.

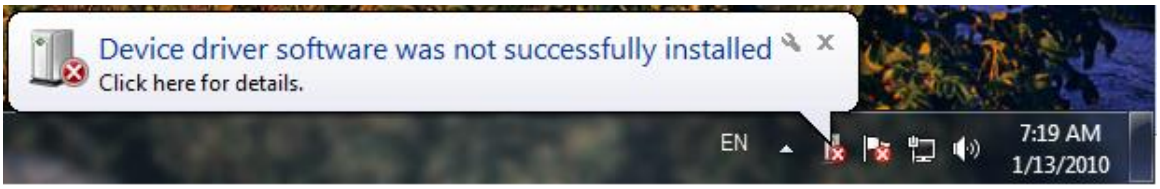

Fig.9: Error Message

The driver has to be installed manually. Please open the device Manager. The device Manager is a component of the operating system. To obtain more information about the device manager, please refer to the Help of the operating system. Now there is displayed the unknown device with a *Daimler LF SPG* description. Right click on the device and choose **Update Driver Software**.

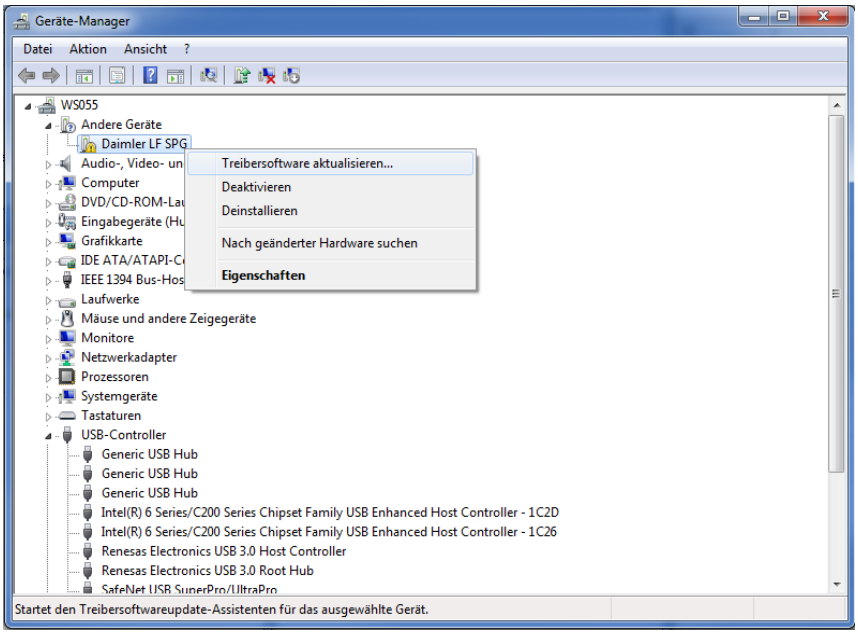

Fig. 10: Device Manager

In the next dialog click on: **Browse my computer for driver software.**

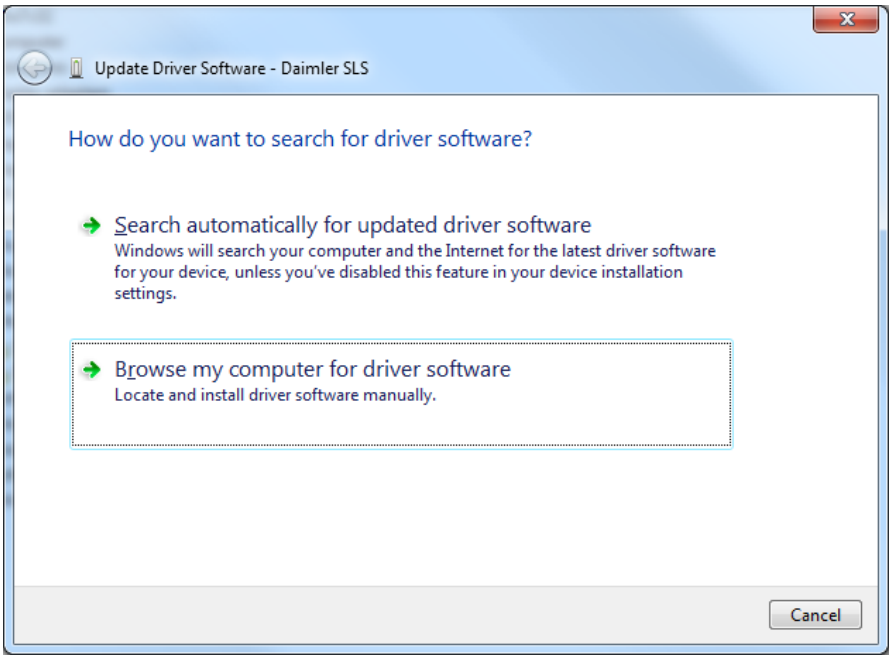

Fig.11: Selection of automatic or manual installation

The driver files are in the *USB Driver* folder on the CD ROM. Choose the folder and press **Next**.

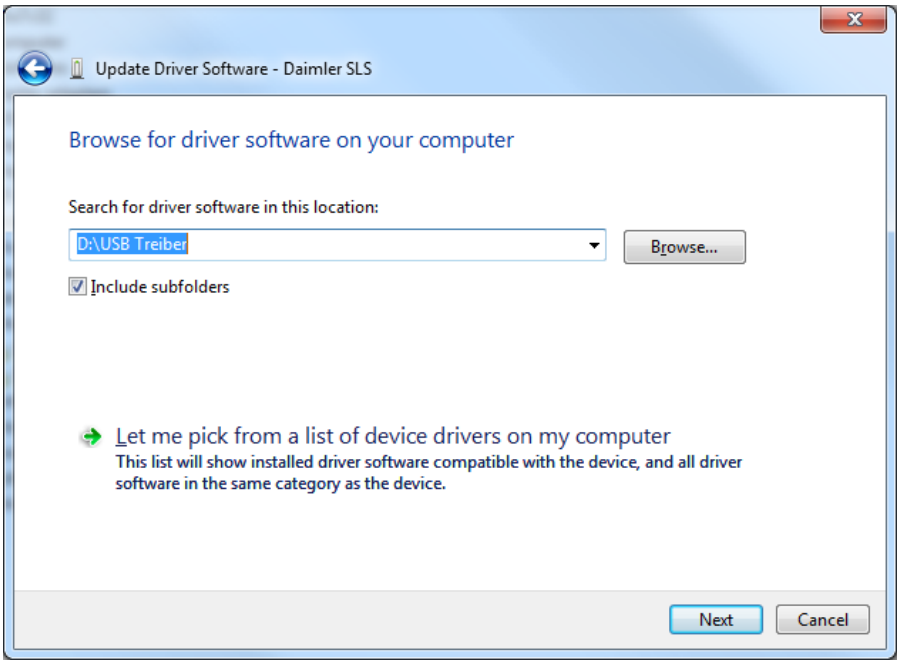

Fig.12: Search for the driver

When the following dialog appears, click on: **Install this driver software anyway.**

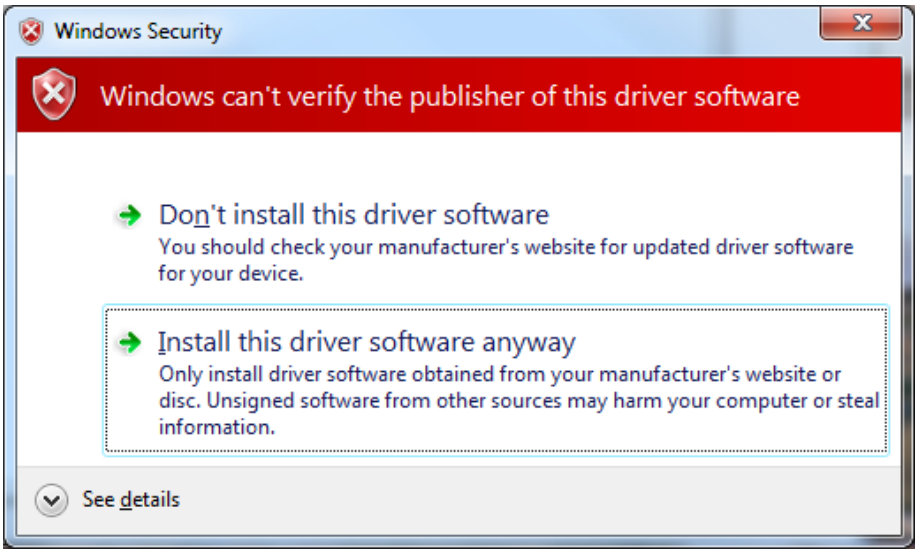

Fig.13: Installation warning

Wait for the files to be installed.

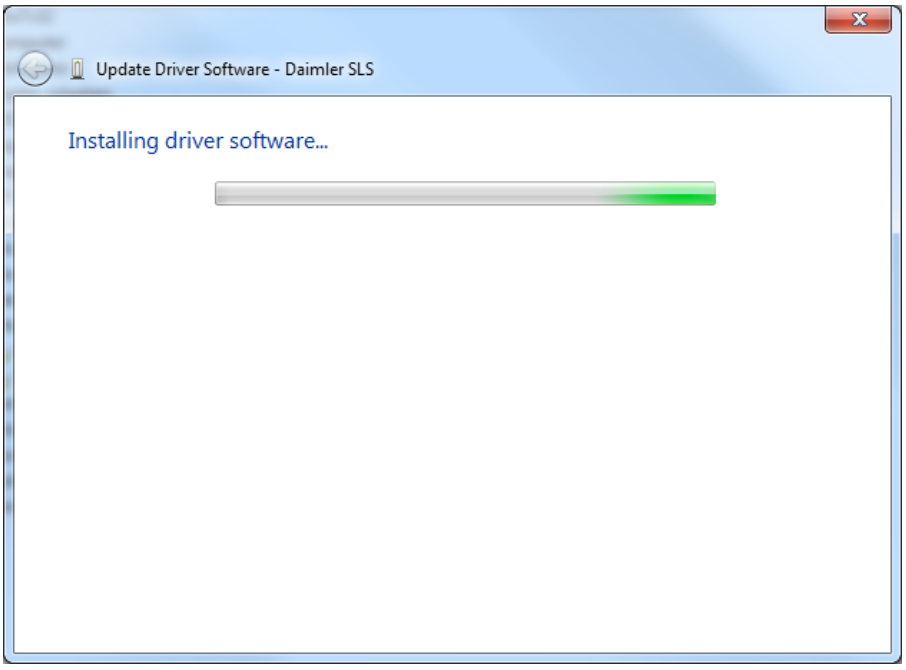

Fig. 14: Installation screen

After completion click on **“Close”**

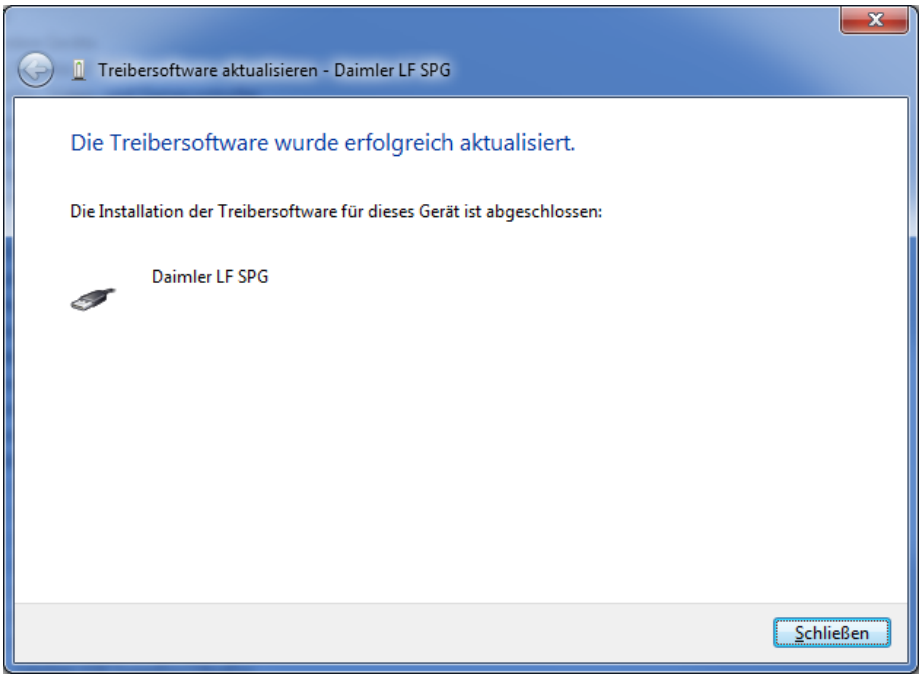

Fig. 15: Completing the installation

Now installation is complete.

4.4. Installation of SPG.DLL

The SPG.DLL represents the software interface between an application program and the SPG. This file must be present on the target system. The path where the SPG.DLL must reside is different for 32-bit and 64-bit operating system versions.

4.4.1. 32bit operating system

When using the 32-bit DLL which SPG.DLL must be copied into the Windows System32 subdirectory.

4.4.2. 64bit operating system

- The 32-bit DLL must be copied to the Windows subdirectory SysWOW64.
- The 64-bit DLL must be copied into the Windows System32 subdirectory.

5. Status Indication by LED

Two status indicating LED's are integrated in the LFSPG-MH. The upper LED indicates the status of the device hardware, the second LED indicates the status of communication between the LFSPG-MH and car key.

Both LED's can be illuminated in different colours and show the states described hereafter:

	Description	Upper LED	Lower LED
LFSPG-MH-Status 	LFSPG-MH not working	off	off
	LFSPG-MH in working condition	green	X
	Firmware Download in progress	blue	off
Mercedes Car Key Communication Status 	Communication with the key	X	blue
	Car key recognized	X	green
	Error while communicating with car key	X	red

Table 1: LED's color indication

6. Flashing Firmware

To change the firmware of the device a separate Windows program (Flash Tool) is used. Before starting the Flash Tool, any programs that access the key programmer, must be terminated.

Any firmware version can be copied to the key programmer, thus also downgrade the firmware is possible at any time. The current firmware version of the LFSPG-MH can not be saved.

To Flash the firmware, the Flash Tool needs to be launched. The execution location is irrelevant. No additional files are required.

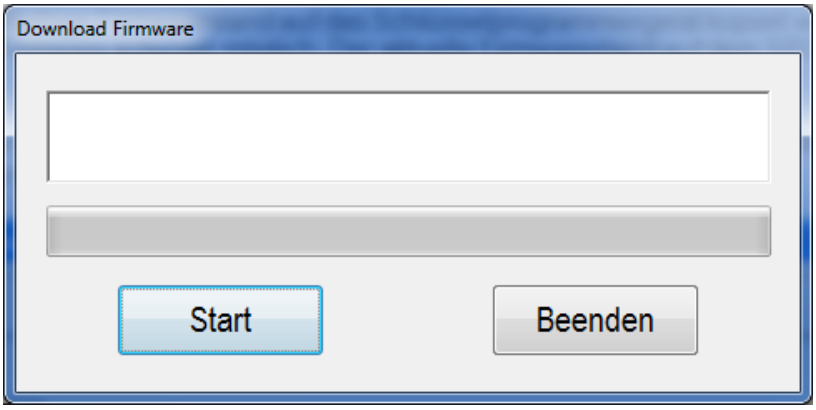

Fig. 16: User Interface of Flash Tool

With "Start", a file dialog is opened, so you can select the firmware file to Flash into the LFSPG-MH. The Flash-process is started by pressing the Open button.
The top LED of the SPS lights blue for the duration of the operation.

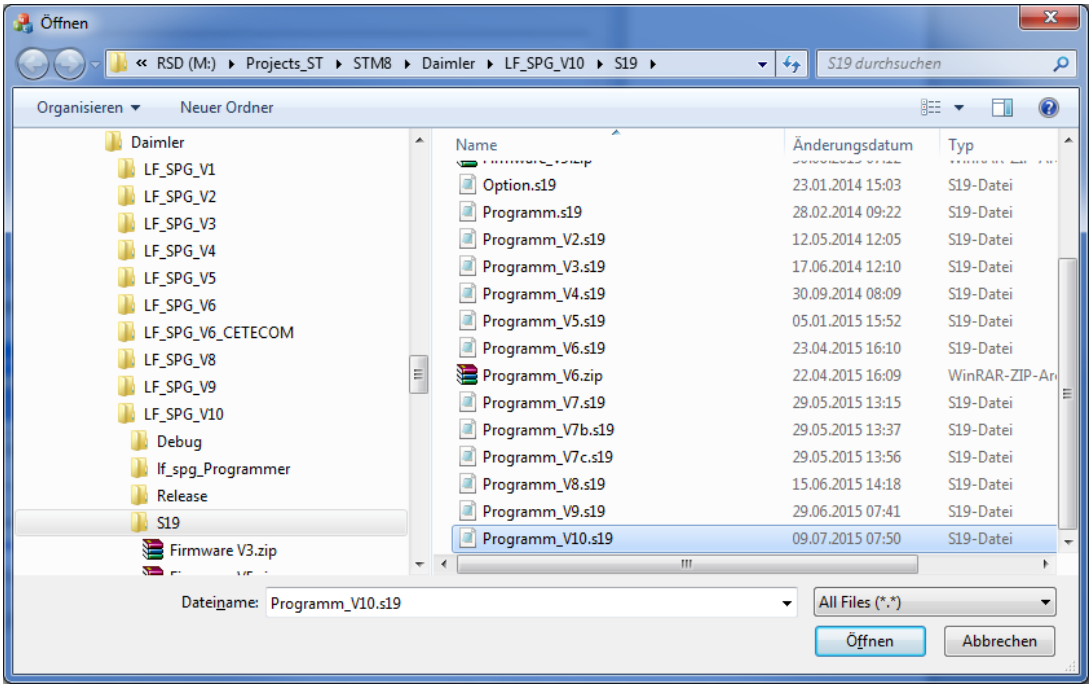

Fig. 17: File Dialog to choose the Firmware

The LFSPG-MH is restarted after successful Flash process and the new firmware is active.
After closing the program, the LFSPG-MH can be used again by another application program.
If the Flash process was not completed correctly or the LFSPG-MH is not working anymore, restart the Flash process.

7. Error list

Possible errors are listed in the table below :

Description	Actions
Upper LED doesn't light	SLS might be not correctly connected. Check the USB connection and the Power supply connection
	Hardware Error, return the device
No connection to the LFSPG-MH	Download interrupted. Start Download again
	LFSPG-MH might be not correctly connected. Check the USB connection and if your PC is working
	Driver not installed, please install the driver
	Application not installed, please install the application
	Check power supply, properly connected?
	Hardware Error, please return the device
Communication with the car key not successful	IR connection disturbed, insert key all the way into the receptacle
	IR connection disturbed, Key defect? Please try another car key.
	LF connection disturbed, please hang up key again
	LF connection disturbed, defect key? Please try a different key.
	Hardware Error, please return the device

Table 2: Error list

8. Technical Data

General Data

Trade name:	Daimler LFSPG-MH
Housing:	non-conductive, glass-fibre reinforced plastic housing,
Size:	118mm * 63mm * 175mm (w * h * d)
Ambient temperature:	5°C to 35°C, not condensing
Power supply:	12VDC+-10%, max. 1A, extra-low voltage socket
Maximum power consumption:	max. 10W
Data Connection:	USB, fixed cable (1,8m)
Visualization:	two RGB LEDs to visualize device status and key communication status

Antenna Specification

Antenna1:	intern PCB Antenna (printed air coil) (120kHz CW)
Antenna2:	integrated ferrite core inductivity (21,8kHz RFID and 125kHz RFID)

125kHz RFID

Frequency: 125kHz
Bandwidth: 0.92kHz
Wavelength: 2,398km
Output Power: 9,8dBµA/m (@10m)

21,8kHz RFID

Frequency: 21,8kHz
Bandwidth: 1,77kHz
Wavelength: 13,752km
Output Power: 24,5dBµA/m (@10m)

IR Communication, 120kHz Energy Transfer

Frequency (Energy): 120kHz
Bandwidth (Energy): CW (0Hz)
Wavelength (Energy): 2,498km
Output Power (Energy): 18,3dBµA/m (@10m)

Frequency (IR): 336,8THz
Bandwidth (IR): 56kHz
Wavelength (IR): 890nm
Output Power (IR): 17mW

9. Declaration of Conformity

The Declaration of Conformity (DoC) is available as a separate document.