

dLAN®

500 WiFi



devolo

The Network Innovation

devolo dLAN[®] 500 WiFi



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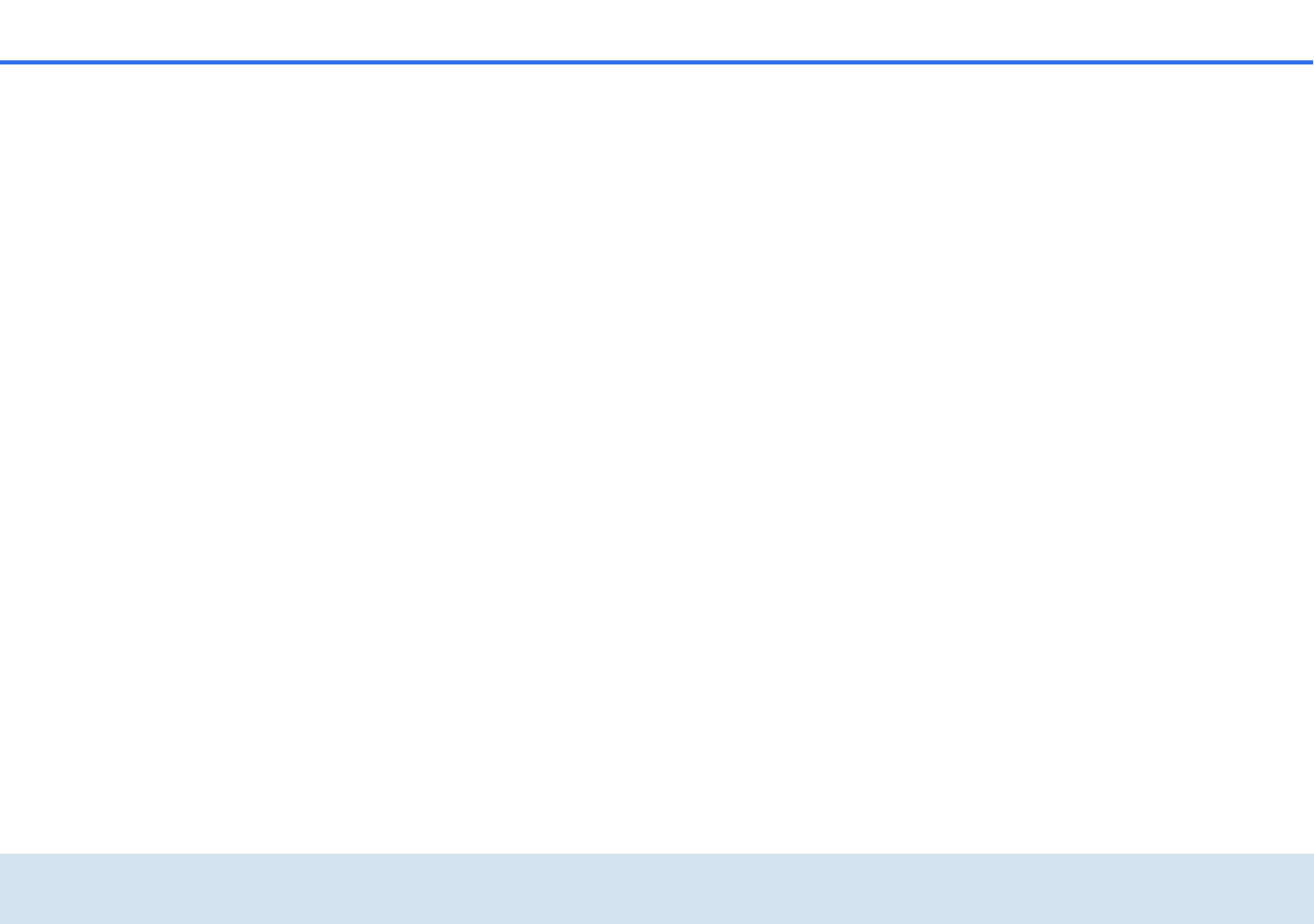
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1 Preface

1.1 Thank you!

The dLAN 500 WiFi combines the latest technology and unobtrusive design with the best Internet connection. As a dLAN adapter, the dLAN 500 WiFi uses the internal power line and, in doing so, brings the Internet to any room. The integrated Wireless LAN ensures additional Internet coverage.

The WiFi Move Technology provides for even more freedom: All terminal devices are automatically connected to the network; in other words, there is automatically the best Wi-Fi reception in all rooms and on all floors!

With the help of the dLAN Cockpit App for smartphones and tablets, you have all dLAN and Wi-Fi devices of your home network in view at any time and from anywhere.

Moreover, the adapter's compact and unobtrusive design fits unobtrusively into any type of residential interior.

1.1.1 About this manual

In addition to a brief introduction to the basics of "dLAN" and "Wi-Fi" and a presentation of

dLAN 500 WiFi devolo products with the WiFi Move Technology and dLAN Cockpit App in **Chapter 2**, **Chapter 3** describes how to quickly set up the dLAN 500 WiFi.

In **Chapter 4**, you will learn about how to successfully start up the dLAN 500 WiFi and how you can download dLAN Cockpit App from the respective store.

What you need to do to integrate your dLAN 500 WiFi into the dLAN network and how you can manage it using the dLAN Cockpit App or the dLAN Cockpit software is covered in **Chapter 5**.

Chapter 6 describes configuration options in detail for the built-in configuration interface, including access to the Wi-Fi.

Bandwidth optimisation, information about product safety and the environmental compatibility of the device and our warranty terms in **Chapter 7** concludes the manual.

Description of the symbols

Here we briefly describe the meaning of the symbols used in this manual.



Very important note. Failure to observe this note may result in damage.



Important note that should be observed.



Additional information, background material and configuration tips for your device.

If you have any further ideas or suggestions related to our products, we would be delighted to hear from you at support@devolo.com!

devolo on the Internet

For detailed information on our products or "dLAN", visit www.devolo.com. The **Service Centre** area contains downloadable product descriptions and documentation, as well as updates to devolo software and device firmware.

1.2 CE conformity

CE 0680

This product complies with the technical requirements of the directive 1999/5/EC (R&TTE), the EMC directive 2004/108/EC and the other relevant provisions of the FTEG, and it is designed for use in the EU and Switzerland. The product is class A equipment. Class A devices may cause interference when used in residential environments.



"99/05/CE" (R&TTE directive) is a directive similar to the EMC directive. It applies to radio equipment and telecommunication terminal equipment. Observance of these directives is verified by the use of harmonized European norms.

For the CE declaration for this product, refer to the accompanying product CD under CE.



For the permitted voltage range for operating the device and the power consumption, refer to the label on the rear side of the device. Additional technical information is available at www.devolo.com.

2 Introduction

dLAN is an intelligent, secure technology that lets you set up a home network easily, quickly and economically via your household electrical wiring, without the need for complex and expensive dedicated cabling.

2.1 What exactly is dLAN?

dLAN (direct Local Area Network) uses the household power grid to transfer data between computers equipped with suitable adapters and other network components. As a result, any power outlet can be used as a network access point. The data is modulated prior to transfer and sent as a signal via household power lines. State-of-the-art technology ensures that the power and data networks do not interfere with one another. Networking via dLAN is fast and secure. The data is encrypted using a key to prevent interception by third parties.

2.2 What is WLAN?

WLAN (Wireless Local Area Network) refers to the use of radio technology to network computers and other devices. While it is possible to wirelessly connect computers in pairs (peer-to-peer, p2p), a central access point is required to set up a network of multiple devices.

Such access points are frequently combined in a single device with modems for Internet access and routers to manage network traffic.

The wireless network established by an access point using a specific channel (from 1 to 13) and name (SSID) has a limited range. The range of the access point, which is also known as a "radio cell", is impeded by building walls. In some cases, stable connections are often only possible between WLAN devices within a single room.

As it is not possible to rely on hardware such as network cables (in a LAN) or household wiring (in a dLAN) to control access to a WLAN, wireless networking naturally presents special security challenges. WLANs therefore use a number of security measures, such as a concealed network name, data encryption and access control via the MAC addresses of the network adapters.

2.2.1 Wi-Fi or WLAN?

Wi-Fi is an invented brand name of the Wi-Fi Alliance, a consortium that certifies devices with wireless interfaces. In many countries, Wi-Fi is also used synonymously with WLAN, which if taken strictly, is incorrect, because **Wi-Fi** designates the **wireless standard** and **WLAN** the **wireless network**.

2.3 dLAN 500 WiFi

The **dLAN 500 WiFi** unites the technologies of **LAN**, **Wi-Fi** (wireless) and **dLAN** in one case:

- Your home network from the power outlet. Unpack. Plug it in. Get started! The easy way to connect using your home's power lines. Turn any power outlet you want into Internet access.
- High-speed data transmission at speeds of up to 500 Mbps and a fast Ethernet connection for connecting an additional terminal device (such as a computer, Smart TV, game console, etc.)
- The power outlet is also the new Wi-Fi access point – with **WiFi Move Technology**, you have optimal Wi-Fi reception for smartphones, laptops and tablets in the entire home – completely automatically (at least two **dLAN 500 WiFi** adapters required; see **Network kit**).
- Automatic encryption! Protection from unauthorised access at the touch of a button for Wi-Fi (WPS)
- Automatic phase shift: This is how the Internet gets to each room and becomes your home network.
- Share the use of your printer and hard drives. Access your music, photos and data or stream HD videos in the highest quality.

- Easy management of the dLAN home network via **dLAN Cockpit App** or **dLAN Cockpit** software for the home network configuration on the computer (Windows, Mac OS X and Linux)
- Automatic encryption! Protection from unauthorised access at the touch of a button for dLAN (AES).
- Minimum energy consumption, intelligently and automatically.
- Compatible with all dLAN adapters (200 Mbps or 500 Mbps)
- Handy design for convenient placement throughout the home, at any power outlet.

2.3.1 dLAN Cockpit App

dLAN Cockpit App is devolo's **free app**, for checking and configuring Wi-Fi, dLAN and LAN connections for the dLAN 500 WiFi via smartphone or tablet computer. The smartphone or tablet connects to the dLAN 500 WiFi at home via **Wi-Fi**.

2.3.2 WiFi Move Technology

WiFi Move Technology is a function of the dLAN 500 WiFi for automatic synchronisation of the entire Wi-Fi settings of all **dLAN 500 WiFi** adapters connected to your home network. **WiFi Move Technology** is activated easily at the touch

of a button on the adapter. For more information, refer to Chapter 3 **Quick start**.

2.4 Sample applications

dLAN 500 WiFi completes your home network

On the one hand, you connect fixed network devices, (as shown in illustration 1), such as computers and Internet access devices, by dLAN. On the other hand, you include devices such as smartphones, laptops and tablets in your home network via Wi-Fi. Each additional dLAN 500 WiFi adapter (e.g. one on every storey) makes it easy for you to enable full Internet access everywhere in the home via Wi-Fi and/or dLAN.

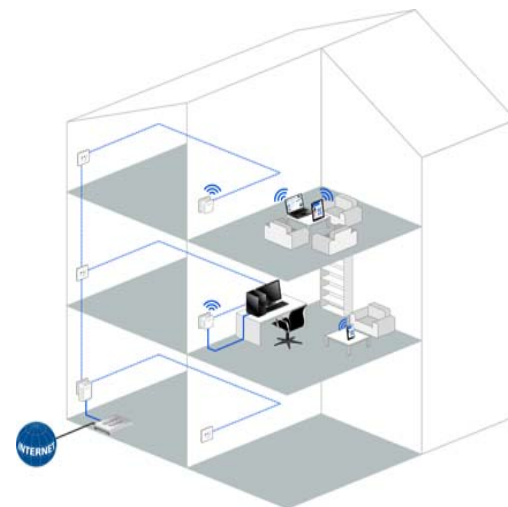


Fig. 1

WiFi Move Technology

Thanks to WiFi Move Technology, an automatic synchronisation of the Wi-Fi settings takes place between all dLAN 500 WiFi adapters, freeing you of the hassle of configuring of each individual dLAN 500 WiFi adapter (see illustration 2).

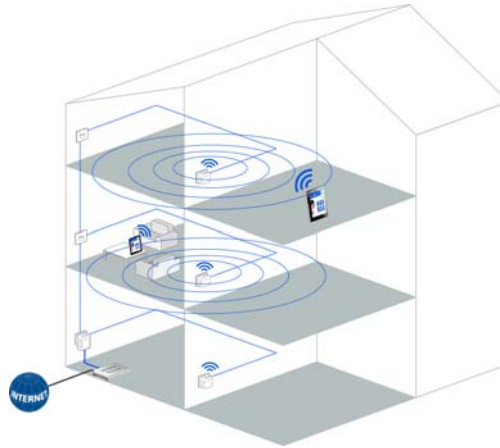


Fig. 2

3 Quick start

This chapter covers everything you need to know to quickly set up your dLAN 500 WiFi in the dLAN and Wi-Fi network. In addition, we will lead you through the installation of the devolo software.

3.1 Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN 500 WiFi.

- **Single Kit:**
 - dLAN 500 WiFi
 - Hard copy of installation guide
 - CD containing software and online documentation

or

- **Starter Kit:**
 - dLAN 500 WiFi
 - dLAN 500 duo
 - Network cable
 - Hard copy of installation guide
 - CD containing software and online documentation

or

- **Network Kit:**
 - Two dLAN 500 WiFi
 - dLAN 500 duo
 - Network cable
 - Hard copy of installation guide
 - CD containing software and online documentation

devolo AG reserves the right to change the package contents without prior notice.

3.2 System requirements

- **Operating systems:** Windows XP (32-bit), Windows Vista Home Premium (32-bit/64-bit), Windows 7 Home Premium (32-bit/64-bit), Windows 8, Linux (Ubuntu), Mac OS X, Mac iOS, Android
- **Network connection**



Please note that your computer or other device must feature a network adapter with a network port.



To set up a dLAN (AV) network, you need at least two dLAN (AV) devices (200 Mbps or 500 Mbps).

3.3 Connecting the dLAN 500 WiFi

Expanding an existing dLAN network by adding a new dLAN 500 WiFi (single kit)



Take note of the dLAN 500 WiFi Wi-Fi key before the networking procedure. You will find the unique adapter key on the label on the back of the housing.

- ① Plug the dLAN 500 WiFi into a wall socket. As soon as the indicator light of the dLAN button lights green (after approx. 45 seconds), the adapter is ready to operate.



If you only want to use the Wi-Fi function on the dLAN 500 WiFi, plug the adapter into a power outlet, without any cables whatsoever. You can also connect the dLAN 500 WiFi to the network jack of a network device, such as a computer, with a commercially available network cable. (see 2.4 Sample applications)



The power outlet should be in range of the connected network device.

The dLAN 500 WiFi with the cable-based network device should be easy to access.

To switch off the dLAN 500 WiFi or disconnect it from the mains supply, pull the power plug out of the power outlet.

- ② If you have already secured your existing dLAN network using the encryption button, use the same method to integrate further adapters. Once you have successfully connected the new dLAN 500 WiFi, **first** press the encryption button (approx. **1 second**) of one of your network's existing adapters, **then** press the encryption button (approx. **1 second**) of your new dLAN 500 WiFi **within two minutes**.
- ③ That's it! The new dLAN 500 WiFi is now integrated into your existing dLAN network.
- ④ In order to connect the dLAN 500 WiFi with your laptop, tablet or smartphone by Wi-Fi, enter the previously noted Wi-Fi key as the network security key.



Begin carrying out the configuration of your network in order to secure your Wi-Fi network in a customised manner. For more information, refer to Chapter 6 Network configuration.

Encrypting a new dLAN network with one or more dLAN 500 WiFis and a dLAN 500 duo (starter kit or network kit)



Note the Wi-Fi key of the dLAN 500 WiFi before the networking procedure. You will find the unique adapter key on the label on the back of the housing.

- ① Connect the dLAN 500 duo to your Internet access device's network jack.
- ② Plug the dLAN 500 WiFi into a wall socket. As soon as the indicator light of the dLAN button lights green (after approx. 45 seconds), the adapter is ready to operate.



If you only want to use the Wi-Fi function on the dLAN 500 WiFi, plug the adapter into a power outlet, without any cables whatsoever. You can also connect the dLAN 500 WiFi to the network jack of a network device, such as a computer, with a commercially available network cable (see 2.4 Sample applications).



The power outlet should be in range of the connected network device. The dLAN 500 WiFi with the cable-based network device should be easily accessible. To switch off the dLAN 500 WiFi or disconnect it from the mains supply, pull the power plug out of the power outlet.

- ③ After you have successfully connected both adapters, press **first** the encryption button of the **dLAN 500 duo** (approx. **1 second**) and **then** the dLAN button of the **dLAN 500 WiFi** (approx. **1 second**) **within two minutes**.
- ④ That's it! Your dLAN network is now protected against unauthorised access.

- ⑤ In order to connect the dLAN 500 WiFi via Wi-Fi with your laptop, tablet or smartphone, enter the previously noted Wi-Fi key as the network security key.



Begin carrying out the configuration of your network in order to secure your Wi-Fi network in a customised manner. For more information, refer to Chapter 6 Network configuration.

WiFi Move Technology

- ⑥ To integrate additional dLAN 500 WiFis into your home network, repeat step ②.
- ⑦ **Within 2 minutes, first** press the dLAN button of the existing **dLAN 500 WiFi** (approx. **1 second**) and **finish by pressing** the dLAN button of the new **dLAN 500 WiFi** (approx. **1 second**).
- ⑧ The existing dLAN 500 WiFi transmits its **entire Wi-Fi configuration** to the new dLAN 500 WiFi adapter. The existing and the new dLAN 500 WiFi adapters are now **continuously connected** with each other, and from now on exchange changes to the **Wi-Fi configuration automatically** with each other.



For more information on the WiFi Move Technology, refer to Chapter 2 Introduction and 6.5.7 WiFi Move Technology.

3.4 Installation of devolo software

Downloading dLAN Cockpit App

- ① Download the **dLAN Cockpit App** to your smartphone or tablet computer from the corresponding store.



You can find the dLAN Cockpit App quickest by clicking on the magnifying glass in the store and searching directly for dLAN Cockpit.

- ② **dLAN Cockpit** is placed in your smartphone's or tablet app list as usual. Tapping on the **dLAN Cockpit** icon brings you to the start menu.



You can find more information in Chapter 5.2 dLAN Cockpit App.

Software for Windows

The installation wizard installs the adapter's configuration software as well as the **devolo dLAN Cockpit** on the Windows operating system.

- The **dLAN Cockpit** software finds all accessible dLAN adapters in your dLAN network, displays information about these devices and encrypts your dLAN network individually.
- You can configure your Wi-Fi network, along with other actions, using the **configuration interface** for your dLAN 500 WiFi.

To install the software, insert the included CD-ROM in the CD drive of your computer.



*If AutoPlay is active on your computer, the installation will start automatically. Otherwise, open the directory with the Windows Explorer by right-clicking on **Start** (or the **Windows logo**) and selecting **Explorer** from the context menu. Then start the installation wizard manually.*

You will be asked for permission to transfer anonymous performance data related to your dLAN adapter to devolo. The data sent to devolo pertains only to the performance values of your dLAN devices. The data is anonymised and will be used exclusively for statistical purposes. By providing it, you can help us improve our products. You can find the installed software applications in the **Start** ➤ **All Programs** ➤ **devolo** program group.

Software for Mac (OS X)

The **software** ➤ **mac** folder contains the dLAN configuration software.

Software for Linux (Ubuntu)

The **Software** ➤ **Linux** folder contains the dLAN configuration software.

4 Initial use

This chapter covers everything you need to know to set up your dLAN 500 WiFi. It will explain connecting the device and its functions. We will also briefly introduce

the included devolo software and then guide you through its installation.



Fig. 3 is country-specific

4.1 Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN 500 WiFi.

- **Single Kit:**

- dLAN 500 WiFi
- Hard copy of installation guide
- CD containing software and online documentation

or

- **Starter Kit:**

- dLAN 500 WiFi
- dLAN 500 duo
- Network cable
- Hard copy of installation guide
- CD containing software and online documentation

or

- **Network Kit:**

- Two dLAN 500 WiFi
- dLAN 500 duo
- Network cable
- Hard copy of installation guide

- CD containing software and online documentation

devolo AG reserves the right to change the package contents without prior notice.

4.2 System requirements

- **Operating systems:** Windows XP (32-bit), Windows Vista Home Premium (32-bit/64-bit), Windows 7 Home Premium (32-bit/64-bit), Windows 8, Linux (Ubuntu), Mac OS X, Mac iOS and Android

- **Network connection**



Please note that your computer or other device must feature a network adapter with a network port.



To set up a dLAN (AV) network, you need at least two dLAN (AV) devices (200 Mbps or 500 Mbps).

4.3 Functions

The dLAN 500 WiFi has one Wi-Fi and one dLAN button with LED status display, a network jack and a reset button.



Fig. 4



The LED status display can be deactivated on the configuration interface of the dLAN 500 WiFi (see 6.4.5 LED settings).

4.3.1 Wi-Fi button



The Wi-Fi button controls the following Wi-Fi functions:

● Wi-Fi On/Off:

- In the **factory default settings**, Wi-Fi is already **enabled** and Wi-Fi **WPA2** encryption is configured. The default Wi-Fi key for the initial installation of the dLAN 500 WiFi is the adapter's Wi-Fi key.

dLAN 500 WiFi

MT:2503

230V~, 0.1A, 50Hz

CE 0680



Sec. ID: ITSA-NICE-DAYT-ODAY

WiFi key: ITSANICEDAYTODAY


S/N: 121221112222221

XX



Before the networking procedure, take note of the Wi-Fi key of the dLAN 500 WiFi from which all Wi-Fi configurations are to be transferred to all other dLAN 500 WiFi adapters. You will find the unique key on the label on the back of the housing.

- In order to **switch Wi-Fi off**, press and hold the Wi-Fi button **longer than 3 seconds**.

- In order to switch **Wi-Fi** back on, tap the **Wi-Fi button**.
 - **Wi-Fi network with WPS encryption**
 - If the device is still on **factory defaults**, tap the **Wi-Fi button** in order to activate **WPS**.
 - If the **Wi-Fi** connection was **switched off** and **you would like to activate WPS**, press the **Wi-Fi button twice**; once to switch Wi-Fi on, and once to activate WPS.
-  *WPS is one of the encryption standards developed by the Wi-Fi Alliance for increasing security in a Wi-Fi home network. The objective of WPS is to make it easier to add devices to an existing network. For more detailed information, refer to Chapter 6.5.6 Wi-Fi Protected Setup.*
- **Indicator lights:**
The integrated indicator lights (**LEDs**) show all of the Wi-Fi statuses for the dLAN 500 WiFi by illuminating and/or flashing:
 - When the **Wi-Fi** connection is **switched off**, the **LED is also off**.
 - When **the Wi-Fi** connection is **switched on**, the LED lights **green**.
 - **WPS** pairing is represented by **quick flashing**.

4.3.2 dLAN button



The dLAN button controls the following dLAN functions:

● Encrypting the dLAN network

- To encrypt your dLAN network individually, press **each dLAN button or encryption button** on the connected devices for approx. **1 second** within 2 minutes (see **5.1 dLAN network encryption at the touch of a button**).
- To remove a dLAN device from your network, press the **dLAN or encryption button** on the corresponding device **for at least 10 seconds** (see **5.1 dLAN network encryption at the touch of a button**).

● Indicator lights:

The integrated indicator lights (**LEDs**) show all of the dLAN statuses for the dLAN 500 WiFi by illuminating and/or flashing:

- The LED flashes **slowly**. There is **no** connection to the **dLAN** network.



Check whether the adapter is connected to the mains supply correctly and whether the encryption process has been carried out suc-

cessfully. For more information, refer to **4.4 Connecting the dLAN 500 WiFi and 5 dLAN network**.

- The LED lights **green**. The network connection is suitable for **HD** video streaming.
- The LED lights **orange**. The network connection is suitable for **SD** video streaming and online gaming.
- The LED lights **red**. The network connection is suitable for simple data transfer and **Internet access**.

● **WiFi Move Technology**

WiFi Move Technology is a function for synchronising the Wi-Fi settings of all **dLAN 500 WiFi** adapters connected to your home network.

- **Within 2 minutes first** press the dLAN button of the existing **dLAN 500 WiFi** (approx. **1 second**) and **finish by pressing** the dLAN button of the new **dLAN 500 WiFi** (approx. **1 second**).
- The existing dLAN 500 WiFi transmits its **entire Wi-Fi configuration** to the new dLAN 500 WiFi adapter. The existing and the new dLAN 500 WiFi adapters are now **continuously connected** with each other, and from now on exchange changes to the **Wi-Fi**

configuration automatically with each other.



*For more information on the WiFi Move Technology, refer to Chapter **6.5.7 WiFi Move Technology**.*

4.3.3 Reset

The **reset** button (next to the network jack) has two different functions:

- **The device restarts** if you press the Reset button **for less than 10 seconds**.
- To change the configuration of the dLAN 500 WiFi back to the **factory defaults**, press the Reset button **for more than 10 seconds**. Keep in mind that all settings that have already been configured will be lost!



You can use the tip of a drawing pin to press the reset button.

4.3.4 Network connection

Via the LAN port, a computer or another network device can be connected to the dLAN 500 WiFi via a commercially available network cable.

4.3.5 Wi-Fi antennas

The internal Wi-Fi antennas are for connecting to other network devices wirelessly.

4.4 Connecting the dLAN 500 WiFi

This section describes how to connect your dLAN 500 WiFi to a computer or other network device.



Note the Wi-Fi key of the dLAN 500 WiFi before the networking procedure. You will find the unique adapter key on the label on the back of the housing.

- ① Use a network cable to connect the dLAN 500 WiFi to network port of your computer or other network device.



If you only want to use the Wi-Fi function on the dLAN 500 WiFi, plug the adapter into a power outlet, without any cables whatsoever. (see 2.4 Sample applications)

- ② Plug the dLAN 500 WiFi into a wall socket. As soon as the indicator light of the dLAN button lights green (after approx. 45 seconds), the adapter is ready to operate.



The power outlet should be in range of the connected network device.

The dLAN 500 WiFi with the cable-based network device should be easily accessible.

To switch off the dLAN 500 WiFi or disconnect it from the mains supply, pull the power plug out of the power outlet.

- ③ A dLAN network is set up as soon as at least one other dLAN adapter has been connected and plugged into the mains supply. To secure your dLAN network individually, continue with your dLAN network configuration. For more information, refer to the chapter **5 dLAN network**.
- ④ In order to connect the dLAN 500 WiFi via Wi-Fi with your laptop, tablet or smartphone, enter the previously noted Wi-Fi key as the network security key.
- ⑤ If you would like to connect additional adapters, proceed as just described. For more information, also read Chapter **3 Quick start**.
- ⑥ In order to secure your Wi-Fi network individually, carry out your network configuration. For more information, refer to Chapters **5 dLAN network** and **6 Network configuration**.

Downloading dLAN Cockpit App

- ⑦ Download the **dLAN Cockpit App** to your smartphone or tablet computer from the corresponding store.



*You can find dLAN Cockpit App quickest by clicking on the magnifying glass in the store and searching directly for **dLAN Cockpit**.*

- ⑧ **dLAN Cockpit** is placed in your smartphone's or tablet's app list as usual. Tapping on the **dLAN Cockpit** icon brings you to the start menu.



*You can find more information in Chapter 5.2 **dLAN Cockpit App**.*

Installation of devolo software

- ⑨ Finally, install the software for dLAN 500 WiFi as described in the following chapter.

4.4.1 Software installation

Software for Windows

The installation wizard installs the adapter's configuration software as well as the **devolo dLAN Cockpit** on the Windows operating system.

- The **dLAN Cockpit** software finds all accessible dLAN adapters in your dLAN network, displays

information about these devices and encrypts your dLAN network individually.

- You can configure your Wi-Fi network, along with other actions, using the **configuration interface** for your dLAN 500 WiFi.

To install the software, insert the included CD-ROM in the CD drive of your computer.



*If AutoPlay is active on your computer, the installation will start automatically. Otherwise, open the directory with the Windows Explorer by right-clicking on **Start** (or the **Windows logo**) and selecting **Explorer** from the context menu. Then start the installation wizard manually.*

You will be asked for permission to transfer anonymous performance data related to your dLAN adapter to devolo. The data sent to devolo pertains only to the performance values of your dLAN devices. The data is anonymised and will be used exclusively for statistical purposes. By providing it, you can help us improve our products. You can find the installed software applications in the **Start** ▾ **All Programs** ▾ **devolo** program group.

Software for Mac (OS X)

The **software** ▾ **mac** folder contains the dLAN configuration software.

Software for Linux (Ubuntu)

The **Software** ➤ **Linux** folder contains the dLAN configuration software.

5 dLAN network

Before you can use the dLAN 500 WiFi in your dLAN network, first you have to connect it to other dLAN AV devices as a home network. Two specific pieces of information are especially important for this:

- Shared use of a dLAN password results in a delimited dLAN network.
- Shared use of the dLAN password serves as access control to the dLAN network as well as the encryption, and thereby the interception protection, of the transmitted data.

The dLAN password can be set in different ways:

- Automatically using the **encryption button** (see **5.1 dLAN network encryption at the touch of a button**)
- Manually using the **dLAN Cockpit** program (see **5.3 dLAN Cockpit**) or **dLAN Cockpit App** program (see **5.2 dLAN Cockpit App**).
- By entering the **dLAN password** in the **configuration interface** of the adapter (see **5 Network configuration**).

5.1 dLAN network encryption at the touch of a button

To encrypt a dLAN network, in which all associated devices are equipped with an encryption button, simply press the encryption button located on the device. Pressing this button will encrypt your dLAN network with a randomly generated password.



Fig. 5

The following section contains exact instructions on the basis of possible network scenarios:

Encrypting a new dLAN network with a dLAN 500 WiFi and a dLAN 500 duo

After you have successfully connected both adapters, press **first** the encryption button of the **dLAN 500 duo** (approx. **1 second**) and **then** the dLAN button of the **dLAN 500 WiFi** (approx. **1 second**) **within two minutes**.

That's it! Your dLAN network is now protected against unauthorised access.

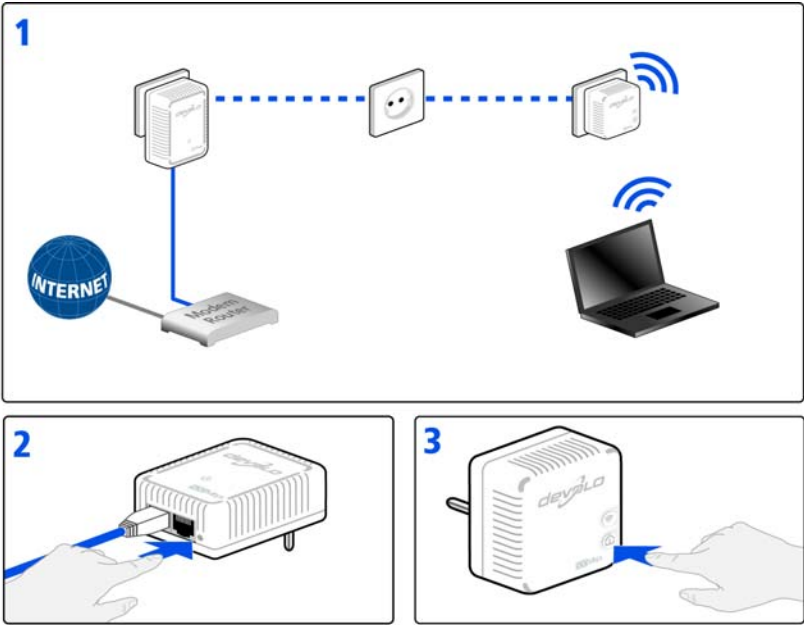


Fig. 6

Expanding an existing dLAN network by adding a new dLAN 500 WiFi

If you have already secured your existing dLAN network using the encryption button, use the same method to integrate further adapters. Once you have successfully connected the new dLAN 500 WiFi, first press the encryption button (approx. **1 second**) of one

of your network's existing adapters, then press the encryption button (approx. **1 second**) of your new dLAN 500 WiFi **within two minutes**.

That's it! The new dLAN 500 WiFi is now integrated in your network. To integrate additional adapters in your network, repeat the above steps.

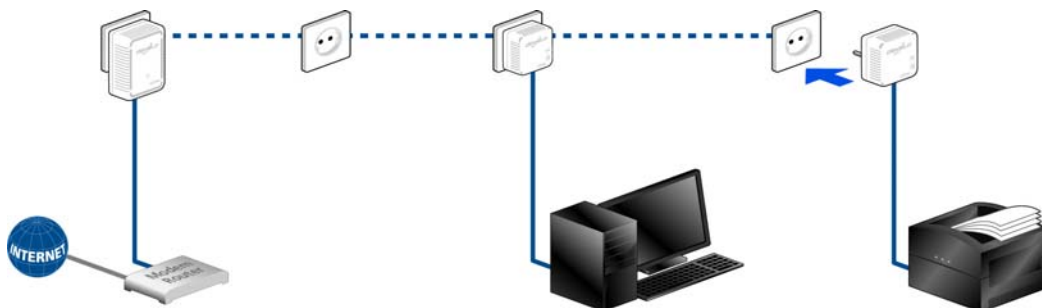


Fig. 7

Removing a dLAN 500 WiFi from a network

To remove a dLAN 500 WiFi adapter from an existing network, press its encryption button for **at least ten seconds**. The device will be assigned a new randomly generated password and will thus no longer be able to

access the network. To integrate the device into a different dLAN network, follow the steps described above, depending on whether you are setting up a new network or adding the adapter to an existing one.

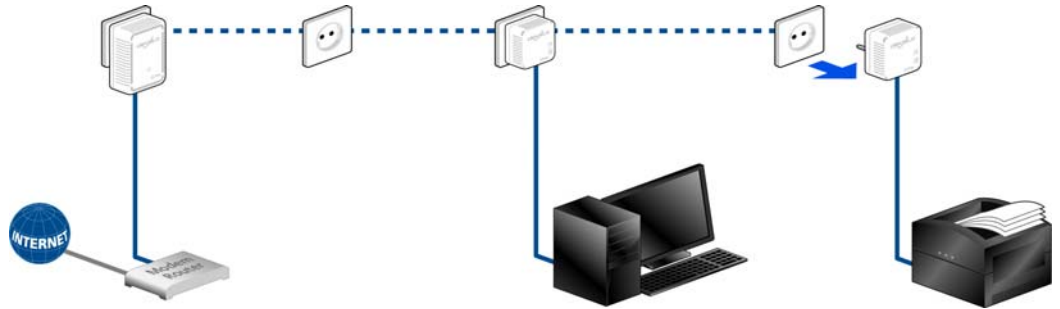


Fig. 8

5.2 dLAN Cockpit App

dLAN Cockpit App is an app for monitoring and encryption, which you can use to search out all other accessible dLAN devices in your home network and connect them together into a secure network **using the dLAN 500 WiFi** – this could be considered the counterpart to the **local** devolo dLAN Cockpit **software** (see **5.3 dLAN Cockpit**).

In addition, you can also use **dLAN Cockpit App** to access the **configuration interface** for the dLAN 500 WiFi and to change settings in the WLAN and dLAN network (see **5 Network configuration**).

- ① After you have integrated the dLAN 500 WiFi into your home network as described in Chapter **3.4 Connecting the dLAN 500 AV Wireless+** and have downloaded dLAN Cockpit App, you can get to start menu just by tapping on **dLAN Cockpit**.
- ② In order to connect the dLAN 500 WiFi to your smartphone or tablet PC, select **My dLAN**.



- ③ As soon as your smartphone or tablet is connected to the dLAN 500 WiFi, all of the adapters found in

the network appear with a picture and corresponding name.



The menu in dLAN Cockpit App automatically adjusts to the orientation (horizontal/vertical) of the smartphone or tablet P.

If your smartphone or tablet switches to power saving mode, the previously displayed view is shown again when you activate the screen again.

5.2.1 Overview page

You can page through the list of adapters by **swiping** across the screen (left/right or up/down).



The **house** icon displays the connection over dLAN.



The **WLAN** icon displays the connection over WLAN.



The **bar graph** reflects the connection quality. The data rate is displayed in **Mbps**. Tapping on a respective adapter allows you to read the transfer rate for another device from the selected adapter's point of view.



Tapping on the **gear/arrow** brings you to the configuration interface for the dLAN 500 WiFi. For more detailed information on the interface refer to Chapter 5 **Network configuration**.



Tapping on the **recycle bin** removes the connected adapters.

5.2.2 Settings menu

Tapping on the two **gears**  brings you to the settings menu for the respective adapter.

Here you have the option of assigning a unique **new name** for yourself and to reset the respective device to the **factory default settings**. In addition, you can learn about device information such as the firmware version in use and the individual MAC address.

5.2.3 Menu on the bottom edge of the screen

The functions of the menu on the bottom edge of the screen are self-explanatory and can be operated intuitively. Depending on which submenu you are in, the following functions appear:





- **Start: dLAN Cockpit** start menu

- You can always use the **Refresh** option to display the current status of devices that have been found (if this hasn't happened automatically).
- During the initial installation of the adapter, select the **Add adapter** option.
- The **Troubleshooting guide** contains additional installation aids.
- **Security**: Tapping on the **key** icon allows you to change the dLAN password for either the entire dLAN network or just for the respective adapter or to reset it to the factory defaults.



The factory default password is HomePlugAV. For security reasons, we recommend setting an individualised dLAN password.

5.3 dLAN Cockpit

devolo **dLAN Cockpit** is a monitoring and encryption program that detects all reachable dLAN devices in your home network and combines them in a secure network. Due to its logical graphic design, the dLAN Cockpit is easy and intuitive to operate. After installing the devolo software, it can be found in the **Start**  **Programs**  **devolo** program group.



After starting the dLAN Cockpit, all reachable dLAN devices in your home network will appear. This may take a moment.



All adapters found in the network appear with as adapter icon with a corresponding product name. The adapter in the middle of the dLAN network identified

with the symbol shown here symbolises your locally connected device. If you have multiple dLAN devices connected locally, you can jump back and forth between them. Clicking an adapter icon with the mouse enables the corresponding dLAN device and highlights it.

The coloured connecting lines of the adapters illustrate the current transmission quality:

- **Green:** the network connection is suitable for HD video streaming.
- **Orange:** the network connection is suitable for SD video streaming and online gaming.
- **Red:** the network connection is suitable for simple data transfer and Internet access.

If data transmission from one device to another is actually taking place, the data rate is displayed on the respectively highlighted adapter.

Settings and functions

You can configure settings for the respectively highlighted device or for the network

- via the buttons at the bottom edge of the screen
- or via tabs arranged at the side of each adapter.

You can always use the **Refresh** button to display the current status of devices that have been found (if this hasn't happened automatically).

By means of the **Options** button or the corresponding tabs of the respective adapter, you can learn device information such as the firmware version used and the individual MAC address.

Options are given like assigning an **additional name**, resetting the respective device to the **factory default settings** or **removing a device** from the existing dLAN network.



The above-mentioned setting options vary depending on the function and features of your device.

You can also specify whether information on the performance of your dLAN adapters will be transferred to devolo.



The data sent to devolo pertains only to the performance values of your dLAN devices. The data is anonymised and will be used exclusively for statistical purposes. By providing it, you can help us improve our products.

The **Troubleshooting Guide** includes installation instructions and information about how to connect your devices optimally with one another.

5.3.1 Encrypting a network with dLAN Cockpit

If you use dLAN devices **without an encryption button**, data can be encrypted only via **dLAN Cockpit**.



Before the networking procedure, note the security IDs of all dLAN adapters. This unique identifier of each dLAN device is located on the label on the housing. It consists of 4 x 4 letters separated by dashes (e.g. ANJR-KMOR-KSHT-QRUV). Ensure that all dLAN adapters are connected to the power grid and computers or other network components as appropriate.

Scan for local adapter

After dLAN Cockpit is started, it searches for the dLAN adapter connected directly to your computer first.

Adding an adapter

Add all the dLAN devices you want to your dLAN network by selecting the **Add adapter** button. You will need the **16-character** security IDs of the adapters from the label on the housing. Enter it now in the **Security ID** field and confirm with **OK**. If a security ID is correct and the device can be reached in the dLAN network, it will be added to your network of configured adapters and also displayed in the program.

Entering a network password

After you have added all the dLAN devices you want to your dLAN network, select the **Change password**

button to assign a shared network password that will apply for all registered adapters in your personal home network.

You can choose between your own password, a random password and the default password. To define your own password with a length of at least eight characters, enter this into the **Network password** text field. Alternatively, you can have a randomly selected, highly secure password assigned using the **Generate secure password** button. Use the **Factory default password** button to reset the dLAN adapter to the default password. Normally, the display of the password is hidden for security reasons. If you enable the option **Show characters**, the current password is displayed in legible form in the text field.



The factory default password is HomePlugAV. Assigning a specific password to a single adapter will exclude it from the remaining dLAN network.

If **dLAN Cockpit** is called up again later after a successful initial installation, for example to **integrate a new adapter** into a network, the application remembers the devices that were entered earlier. Enter the new device as described in the **Adding an adapter**

section. The **current network password** is assigned **automatically** to the newly added device.

6 Network configuration

The dLAN 500 WiFi has a built-in configuration interface that can be called up using a standard web browser. All settings for operating the device can be modified here.

6.1 Calling up the built-in configuration interface

You can access the built-in configuration interface for the dLAN 500 WiFi in different ways:

- Using the **dLAN Cockpit App** on your smartphone or tablet, you can access the device's configuration interface by going to the dLAN Cockpit App **overview page** and tapping on the **gear/arrow**.



You can find more information on dLAN Cockpit App in Chapter 5.2 dLAN Cockpit App.

- Using the **dLAN Cockpit** software under **Start** ➤ **All Programs** ➤ **devolo** ➤ **dLAN Cockpit**, you

can get to the device's configuration interface by clicking on the corresponding tab.



Then the program determines the current IP address and starts the configuration in the web browser.

By default, you will come directly to the configuration interface. However, if a login password was set via the option **Device configuration** ➤ **Security**, you have to enter this first (refer to **6.4.1 Device security**).

6.2 Menu description

All menu functions are described in the corresponding interface as well as in the associated chapter in the manual. The sequence of the description in the manual follows the structure of the menu.

Click **Save** to save the settings of the respective area of the configuration interface.

Click **Back** to leave the respective area of the configuration interface.

Select the desired language in the language selection list.



The four central areas of the configuration interface are displayed on the left edge. Click the button of an area to move directly into it.



- In the **Status overview** area, you get general information about all connected dLAN, Wi-Fi and LAN devices.

- You can change or modify the various device settings for security, network, dLAN and time under **Device configuration**.
- You can change or modify Wi-Fi settings in the **WLAN configuration** area.
- The **Management** section is for resetting, securing and restoring your individual configurations. In addition, you can update the firmware of your dLAN 500 WiFi here.


6.3 Status overview


In the **Status overview** area you can track the status of your connected dLAN, Wi-Fi and LAN devices.


Status overview

Firmware version: 1 (2013-01-26)


dLAN® status


 not connected


 unsecured


 **dLAN® devices**
Information about connected dLAN® devices

WLAN status

 WLAN status: on


 secured

 WiFi Move Technology status: Enabled

 **WLAN monitor**
Here you can find an overview of known stations.

Ethernet status

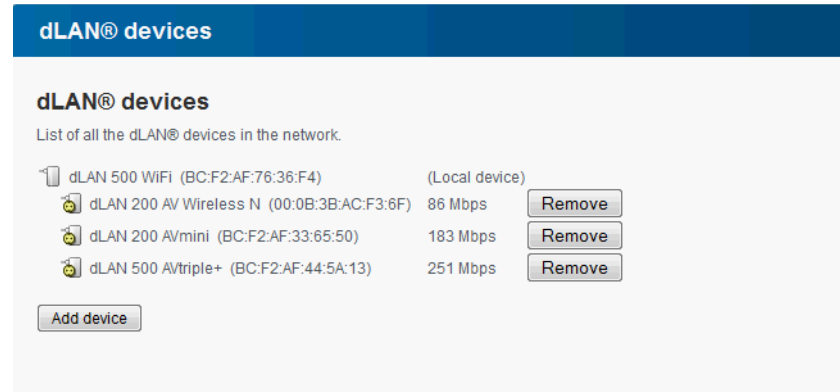
Port 1



6.3.1 dLAN status

Here, you can see whether your devices are connected to a dLAN network. To display all connected dLAN devices, click either the **house** icon or the **dLAN devices** arrow. Each connected dLAN device, regardless of whether it is connected locally or remotely in the net-

work, is displayed with its MAC address, name and type. Clicking or tapping the **lock** icon brings you directly to the **dLAN settings** (see **6.4.3 dLAN settings**).



You can add additional dLAN devices to your dLAN network by tapping or clicking on **Add device**. To do this, enter the security ID for the respective dLAN adapter in the **Security ID** field and confirm with **Save**.

Add dLAN® device

Add dLAN® device

Here you can add a new dLAN® device to your network. First, enter the security ID printed on the rear side, plug the device into a power outlet, and then confirm by clicking Save.

The security ID consists of four groups, each with four capital letters, separated by hyphens.

Security ID: - - -



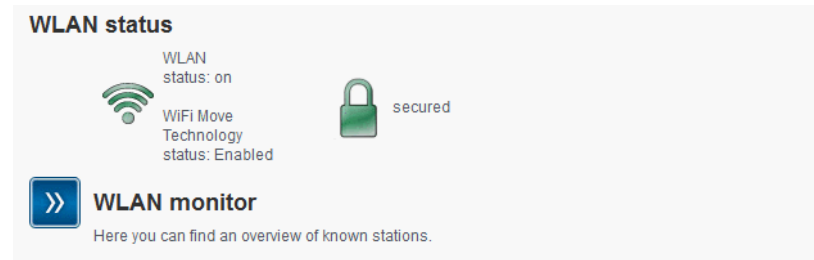
Before the networking procedure, note the security IDs of all dLAN adapters. This unique identifier of each dLAN device is located on the label on the housing. It consists of 4 x 4 letters separated by dashes (e.g. ANJR-KMOR-KSHT-QRUV). Ensure that all dLAN adapters are connected to the power grid and computers or other network components as appropriate.

6.3.2 WLAN status

Here, you can see whether the Wi-Fi connection is switched on or switched off and whether **Wi-Fi Move Technology** is activated (see **6.5.7 Wi-Fi Move Technology**). Clicking or tapping the **Wi-Fi** icon brings you directly to the **WLAN configuration** (see **6.5 WLAN configuration**). Click on the **WLAN monitor** arrow to have all of the known Wi-Fi devices displayed. Each Wi-Fi station known since the last

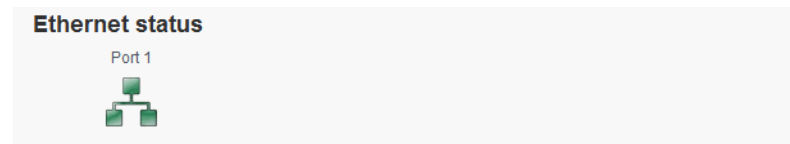
system start is displayed together with its name, MAC and IP address and the last login date, along with the speed if possible if there is an Internet connection and a time server was found.

Clicking or tapping the **lock** icon of the Access Point brings you directly to the **Wi-Fi configuration area** (see **6.5.1 Access point**), where you can configure settings for Wi-Fi network security.



6.3.3 Ethernet status


The status of the network connection is displayed in this area.





6.4 Device configuration


In the device configuration area, you can modify settings for device security, network, dLAN, date and time and LED.

Device configuration

 **Security**
You can protect the configuration of the device using a password.

 **Network settings**
You can set the IP address for the device and alter the settings for the automatic address assignment (DHCP).

 **dLAN® settings**
You can protect your dLAN® network using a password.

 **Date and time**
The device can retrieve the date and time automatically from a time server.

6.4.1 Device security

In this area you can control the access to the configuration interface as well as enable and disable the functions of the interfaces and buttons on the dLAN 500 WiFi.

Password

You can set a login password for access to the configuration interface.



By default, the built-in configuration interface of the dLAN 500 WiFi is not protected with a password. However, we recommend assigning a password when the installation of the dLAN 500 WiFi is complete to protect it against tampering by third parties.

- ① To do so, first enter (if present) the current password and then enter the desired new password twice. Now the configuration interface is protected against unauthorised access with your individual password!

Security

Password

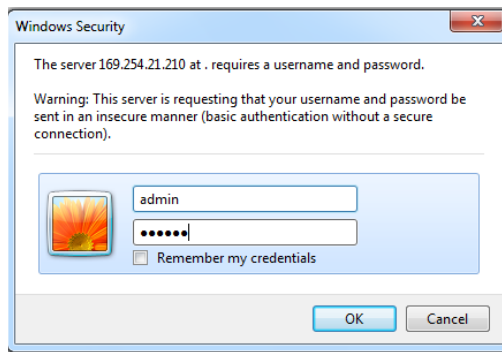
Enter a password to restrict access to your device configuration. The password may not be longer than 24 characters. The username for configuration access is "admin".

Present password:

New password: 0 Characters

Repeat password: 0 Characters

- ② Call up the configuration interface again later; the following window appears first:



- ③ Enter **admin** in the **User name** field and your individual password in the **Password** field.



The admin user name cannot be changed.

6.4.2 Network settings

The dLAN 500 WiFi also communicates via the TCP/IP protocol as a component of your home network. The IP address required for this can either be entered manually or obtained **automatically** from a **DHCP server**.

The option **Use this to accept network settings automatically from a DHCP server** is enabled in the factory defaults.

If a DHCP server is already present in the network for giving out IP addresses, have the option **Use this to accept network settings automatically from a DHCP server** enabled so that the dLAN 500 WiFi automatically receives an address from it.

You can also assign a static IP address by making entries under **IP address** (e.g. '192.168.0.249') and **Netmask** (e.g. 255.255.255.0).



*If you happen to forget the IP address of your dLAN 500 WiFi, proceed as described under **6.1 Calling up the built-in configuration interface**.*

Network settings

IP address

Here you can configure the local IP address for the device.

IP address:

Netmask:

Default gateway:

DHCP client

☒ Use network settings provided by a DHCP server

6.4.3 dLAN settings

In a dLAN network, all connected components must use the same password. The dLAN password can be defined in the **dLAN Cockpit App** or **dLAN Cockpit** with the **dLAN encryption button** (see **5 dLAN network**) or at this location in the configuration interface. You can choose to configure the password **locally** or for the **entire** ("Total") network.

If you only change the password for a **local device**, you exclude it from your **complete dLAN network**.



The dLAN default password is HomePlugAV.

dLAN® settings

dLAN® password

Enter the dLAN® network password needed for your device to access your dLAN® network. All devices that are part of a dLAN® network must use the same dLAN® network password.

Define password for: ☐ Local device ☒ Total network

Password: 0 Characters

Repeat password: 0 Characters

6.4.4 Time server

A time server is a server on the Internet whose task consists of providing the exact time. Most time servers are coupled with a radio clock.

The option **Retrieve date and time automatically** is activated by default so that the dLAN 500 WiFi can automatically synchronise the date and time.

Select your **Time zone** and the **Time server**. If you have enabled the option **Adjust to daylight saving time automatically**, the dLAN 500 WiFi automatically adjusts to daylight saving time.



Synchronisation with an Internet time server has to be ensured in order to use the Wi-Fi time control, for example (see 6.5.5 WLAN time control). In addition, the time server has to be activated, and an active Internet connection is also required.

Date and time

Current time

You can view the current date and the current time here.

Not possible to retrieve time information from the time server. Please check the device configuration and your Internet connection.

Time server

The device can retrieve the date and time automatically from a time server. An active Internet connection is required for this purpose.

☒ Retrieve date and time automatically

Time zone: GMT+01:00 (Western Europe, Central Europe) ▼

Time server: ptbtime1.ptb.de

☒ Adjust to daylight saving time automatically

6.4.5 LED settings

The LED status display can be deactivated by activating the function **Disable all LEDs permanently** in order to

prevent unwanted lighting, for example, in the master bedroom.



The LED status display is activated in the factory default state.

LED settings

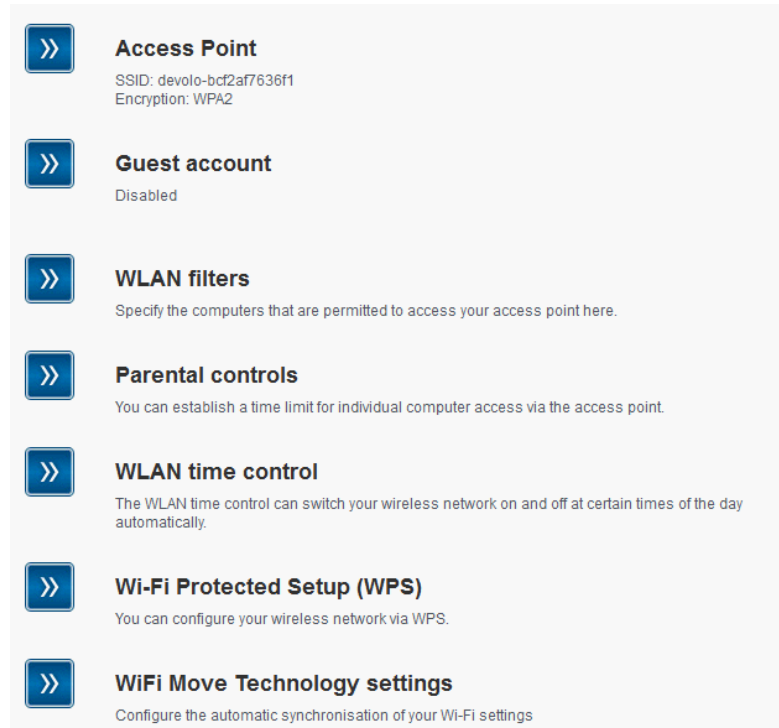
LED settings

Set whether all your device's LEDs are to be disabled at all times.

Disable all LEDs permanently.: ☐

6.5 WLAN configuration

In the **WLAN configuration** area, you can configure settings for the Wi-Fi network and its security.



The screenshot displays a vertical list of configuration options, each preceded by a blue square icon containing two white right-pointing chevrons (»). The options are:

- Access Point**
SSID: devolo-bcf2af7636f1
Encryption: WPA2
- Guest account**
Disabled
- WLAN filters**
Specify the computers that are permitted to access your access point here.
- Parental controls**
You can establish a time limit for individual computer access via the access point.
- WLAN time control**
The WLAN time control can switch your wireless network on and off at certain times of the day automatically.
- Wi-Fi Protected Setup (WPS)**
You can configure your wireless network via WPS.
- WiFi Move Technology settings**
Configure the automatic synchronisation of your Wi-Fi settings

If you would like, you can completely shut off the Wi-Fi part of your dLAN 500 WiFi, e.g. if you want to operate it exclusively as a simple dLAN device via the built-in Ethernet connections. There are three different methods for switching the **Wi-Fi function** on and off:

- Press the **ON/OFF button** on the front panel of the device. Detailed information on switching the device on and off can be found in Chapter **4.3.1 Wi-Fi button**.

- Use the **Enable WLAN** or **Disable WLAN** button on the configuration interface under **WLAN configuration**.
- Enable the Wi-Fi time control. For more information, refer to Chapter **6.5.5 WLAN time control**.



*The operating state of the device is displayed under **6.3 Status overview**.*

WLAN configuration

The wireless network is currently enabled. You can disable the wireless network by clicking the button below.

This action does not influence the function of the WLAN time control. If the time control is enabled, it will switch the wireless network on or off again at the next time you set. If you want to disable the wireless network permanently, please also disable the time control.

Disable WLAN

6.5.1 Access point

Since the dLAN 500 WiFi functions as an access point, you will have to configure various parameters for your wireless network.



Keep in mind that after saving this setting, you will be disconnected from any existing Wi-Fi connection to the

dLAN 500 WiFi. In this case, configure the device via Ethernet or dLAN.

Settings

When activating the encryption, make sure that the Wi-Fi settings (SSID, encryption mode and encryption key) of the access point always correspond to the settings of the clients, as otherwise you will be (unintentionally) excluding devices from your network.

Access Point

Settings

Please select the settings to be used by your access point.

SSID *:

☐ Hide SSID

Channel:



In the factory default setting of the dLAN 500 WiFi, the Wi-Fi function is enabled and Wi-Fi WPA2 encryption is configured. The default Wi-Fi key is the Wi-Fi key of the dLAN 500 WiFi. You will find the key on the label on the back of the housing.

The SSID specifies the name of your wireless network. You can see this name when logging onto the Wi-Fi and thereby identify the correct subnet. If you enable the **Hide SSID** option, your wireless network remains hidden. In this case, potential network users must know the exact SSID and enter it manually to be able to set up a connection.



Some Wi-Fi adapters have difficulty connecting to such hidden wireless networks. If the connection to a hidden SSID poses problems, first try to set up the connection with a visible SSID and only then try to hide it.

For operation as an access point, a (transmission) channel must be specified. There are 13 channels available. We recommend keeping the default setting **Auto**, since in this setting the dLAN 500 WiFi selects the channel regularly and independently. In other words, if the last connected station logs out, a search for a suitable channel is carried out immediately. If no stations are connected, the device automatically selects a channel every 15 minutes.

Security

Without encryption, not only are all data transmitted from client computers to the dLAN 500 WiFi in your wireless network without protection, but there is also no password prompt to establish the connection. If no other security measures were set up, such as a Wi-Fi filter (see Chapter **6.5.3 WLAN filters**), third parties can gain access to your network at any time and, for example, share your Internet connection. Each instance of access is visible to you in the Wi-Fi monitor (see Chapter **6.3.2 WLAN status**).

To secure the data transmission in your wireless network there are two security standards available.

- The older and weaker **WEP** standard can protect communication with the help of a key having either **10 or 26 characters**. To do so, enter a series of hexadecimal characters with the corresponding number of characters into the **Key** field.



A WEP key consists of a hexadecimal number which in turn consists of max. 26 characters (from 0 to 9 and A to F, e.g. "8AF34597FF5KK6LM4DF3OP2JK1"). No other special characters (e.g. colons) may be used.

- The state-of-the-art **WPA and WPA2 (Wi-Fi Protected Access)** methods allow individualised keys

consisting of **letters and numbers with a length of up to 63 characters**. You can simply enter this using the keyboard, without having to convert it into hexadecimal format first (as with WEP). Under **Mode**, you can limit access of clients to the dLAN 500 WiFi to the method you have selected.

Save all modified settings before leaving this configuration area again.



You should always encrypt the connections in your Wi-Fi. Otherwise anyone within range could penetrate into your home network and, for example, share your Internet connection. If possible, always select the better WPA2 encryption method. Only use WEP if one of your wireless terminal devices does not operate with a better standard.

Security

You can encrypt data traffic in your wireless network so that unauthorised persons do not have access to your data. For this purpose, we recommend using WPA2 encryption. WEP or WPA encryption no longer provides adequate security and also limits the maximum possible data rate to 54 Mbps (802.11g standard). Do not use the WEP or WPA standard unless your wireless devices do not support WPA2.

When activating the encryption, make sure that the WLAN settings (SSID, encryption mode and key) of the access point always correspond to the settings of the clients, as otherwise you will be (unintentionally) excluding devices from your network.

☐ No encryption (not recommended)

☐ WEP (not recommended)

Enter the WEP key as a 10-digit (for 64-bit encryption) or a 26-digit (for 128-bit encryption) hexadecimal number. Hexadecimal numbers can contain the numbers 0-9 and the letters A-F.

Key:

☒ WPA / WPA2

Please enter the WPA key as a string of characters.

Key *:

Mode: ▼

*Permitted characters are upper and lower-case letters a-z, the digits 0-9, the space character and the following special characters

! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { | } ~

6.5.2 Guest account

If you have friends or acquaintances visiting and you want to provide them with Internet access but without giving away the password for your Wi-Fi, you can set up a separate guest account in addition to the main Internet connection. The guest account can have its own SSID, time limit and Wi-Fi password. This way your visitors can surf the Internet without having access to your local network.

To set up a guest account, enable the **Activate guest account** option. You can also enable or disable the guest account in **dLAN Cockpit App** using the **Activate guest account** button.

Define the name of the guest network in the **SSID** field (**S**ervice **S**et **I**dentifier).

Automatic shutoff

If you would like to set a time limit for the guest account, enable the option **Automatically shut off guest account after ...** and enter the desired time limit.



Note that guest access is subordinated to the actual Wi-Fi configuration, and with it, is subject to the settings of the Wi-Fi time control. This means that guest access can only be used within

the times that are defined for the dLAN 500 WiFi under 6.5.5 WLAN time control.

Security

You should also encrypt the guest account to prevent anyone in signal range from intruding into your home network and sharing your Internet connection. **WPA and WPA2 (Wi-Fi Protected Access)** security standards are available for this.

WPA and WPA2 (Wi-Fi Protected Access) methods allow individualised keys consisting of **letters and numbers with a length of up to 63 characters**. You can simply enter this using the keyboard, without having to convert it into hexadecimal format first. Under **Mode**, you can limit access to the dLAN 500 WiFi to the method you have selected.

Guest account

Settings

Please select the settings to be used by the guest account.

☐ Activate guest account

SSID *: devolo-guest-bc:f2:af:69:11:f8

Automatic shutoff

You can define whether the guest account is to be shut off after a certain period of time. However, at most, guest account is active only for as long as the general access point is.

☐ Automatically shut off guest account after

Security

You can encrypt data traffic in your wireless network so that unauthorised persons do not have access to your data. For this purpose, we recommend using WPA2 encryption. WPA encryption no longer provides adequate security and also limits the maximum possible data rate to 54 Mbps (802.11a/g standard). Do not use the WPA standard unless your wireless devices do not support WPA2.

☐ No encryption (not recommended)

☒ WPA / WPA2

Please enter the WPA key as a string of characters.

Key *: JFRINMQHHNUJGFXO

Mode: WPA2

*Permitted characters are upper and lower-case letters a-z, the digits 0-9, the space character and the following special characters

! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { | } ~

6.5.3 WLAN filters

In addition to encryption (see **6.5.1 Access point**), you can secure your wireless network even more by us-

ing a Wi-Fi filter to limit access to Wi-Fi devices. Even if the encryption is switched off, the device will not establish a connection.

WLAN filters

The MAC address filter is currently disabled. Stations can connect to your access point regardless of their MAC address.

Enter the MAC addresses of the stations that can log into your access point. You can either enter the MAC addresses manually or select them from the list of currently known stations.


No stations have connected to the access point yet.

Approved WLAN stations

The station list currently has no entries.



The Wi-Fi filter should be used only as an additional option. By using it you could limit access to your wireless network, but without encryption it would be relatively easy for third parties to eavesdrop on all of your data transmissions.

To use the Wi-Fi filter, enable the option **Enable filters**. Now you can manually enter different network devices to provide access to your dLAN 500 WiFi using what is known as their MAC address or you can select take them from a list of known devices (see **6.3.2 WLAN status**  **WLAN monitor**). Confirm each entry with **Add**.

Approved Wi-Fi stations




Network devices or stations connected to your dLAN 500 WiFi are automatically listed, that is, to enable an already connected station for the dLAN 500 WiFi, simply select the MAC address of the respective device and confirm it with **Add**. This then appears under **Approved WLAN stations**. To remove an enabled station, select its MAC address and confirm it with **Delete selected**.



The Wi-Fi filter can only be set for stations connected directly to the access point (not the guest account).



The MAC address designates the hardware interface of each individual network device uniquely (e.g. the Wi-Fi adapter of a computer or the Ethernet port of a printer). It consists of six double-digit hexadecimal numbers, each separated by a colon (e.g. 00:0B:3B:37:9D:C4).

You can easily determine the MAC address of a Windows computer by opening the window with the command prompt under **Start**  **All Programs**  **Accessories**  **Command Prompt**. Enter the command **IPCONFIG /ALL** here. The MAC address is displayed under the designation **Physical address**.



After entering the MAC addresses, do not forget to click the **Save** button. If the entered values are incorrect (e.g. because the colons are missing), a corresponding error message is displayed.




Keep in mind that you also have to enter the MAC address of your own computer if you are connected to the dLAN 500 WiFi not via the Ethernet port, but via Wi-Fi. Otherwise you will block your own access to the device via Wi-Fi by activating the Wi-Fi filter!

6.5.4 Parental controls

You can regulate Internet access for specific stations based on time using this function. For instance, to protect your children from excessive Internet use, you can define how long they may use the Internet per day.

Synchronisation with an Internet time server is necessary to be able to use the parental controls. In this case, the **time server** (**Device configuration**  **Date and time**  **Obtain date and time automatically**) for the dLAN 500 WiFi has to be enabled and an active Internet connection is also required (see **6.4.4 Time server**). **The time server is enabled by default.**

If you would like to set up a daily time quota, enable the option **Turn on parental controls**. Now enter the MAC addresses for the stations for which you would like to set up a time quota. You can enter the MAC addresses manually or select them from the list of currently known stations (see **6.3.2 WLAN status**  **WLAN monitor**). Confirm each entry with **Add**.

Parental controls

Not possible to retrieve time information from the time server. In order to use the parental controls, you need to indicate in the device configuration that the device should automatically obtain date and time information from a time server. This requires an Internet connection.

Parental controls are currently disabled. The configured time limit is not being monitored for the stations.

Turn on parental controls

Please enter the MAC addresses of the stations for which you would like to set a time limit. You can either enter the MAC addresses manually or select them from the list of currently known stations.

No stations have connected to the access point yet.

WLAN stations with time limit

The list is currently empty.

WLAN stations with time limit

Here you can find a list all of the Wi-Fi stations for which the Internet access time is limited.

Each station is displayed with its MAC address, name, time remaining and the specified time quota.

If you would like to delete a station from this list, highlight the station and confirm with **Delete selected**.

Clicking or tapping on **Edit** brings you to the settings menu for the time quota. If you would like the time quota to be monitored, enable the option **The time limit will be monitored**.

The **daily** time quota can be specified in hours and minutes.

Station setting

WLAN station time limit

Define and activate a time limit.

WLAN station

MAC address: 00:0b:3b:3fc7:97

Name:

You can define whether the time limit is to be monitored for this station.

☐ The configured time limit will be monitored

Set the daily time quota for this station:

Hours Minutes

A **time quota** can only be used if it matches the **time periods** defined in the **WLAN time control** and if the **dLAN 500 WiFi is enabled** and there is an Internet connection. (see **6.5.5 WLAN time control**).

The time quotas for the **parental controls** are **defined per day** and the time periods for **WLAN time control** are defined **per weekday**.



If you expand an ongoing time quota, the change takes effect immediately; if you reduce an ongoing time quota, the change takes effect on the following day.

6.5.5 WLAN time control



Synchronisation with an Internet time server has to be ensured in order to use Wi-Fi time control. In this case, the time server (Device configuration ▢ Date and time ▢ Obtain date and time automatically) for the dLAN 500 WiFi has to be enabled and an active Internet connection is also required 6.4.4 Time server). The time server is enabled by default.

To be able to use the Wi-Fi time control, enable the option **Enable time control**. The time control automatically switches your wireless network on and off at certain times of the day.

You can define two time periods during which your wireless network is to be enabled for each weekday. Then the time control automatically switches the wireless network on or off.



Keep in mind that, as long as the dLAN 500 WiFi registers connected stations, the wireless network remains enabled. The wireless network is not switched off until the last station has logged off.

Manually switching the access point on or off (i.e. using a button) always has priority over automatic time control. The configured time control would take effect automatically during the next defined time period.

WLAN time control

WLAN time control

You can define two time periods during which your wireless network is to be enabled for each weekday. The time control is used to switch the wireless network on and off automatically at the times specified. Please note that the wireless network is never disabled while there are still stations connected to it. The system will wait until the last station has logged off before the wireless network is disabled.

Not possible to retrieve time information from the time server. To use the time control, you have to specify in the device configuration that the device is to retrieve the date and time automatically from a time server. This requires an Internet connection.

☐ Enable time control

Please enter the times in the 24-hour format (hh:mm) (example: 23:59). If you want to set a time period that goes beyond midnight, you must split it into two time periods (example: *Monday 18:00 to 00:00 and Tuesday 00:00 to 01:00*).

Monday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Tuesday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Wednesday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Thursday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Friday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Saturday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>
Sunday:	<input type="text"/>	-	<input type="text"/>	and	<input type="text"/>	-	<input type="text"/>

6.5.6 Wi-Fi Protected Setup

Wi-Fi Protected Setup (WPS) is one of the international encryption standards developed by the Wi-Fi Alliance for easily and quickly setting up a secure wireless network. The encryption keys of the respective Wi-Fi client

are transmitted automatically and continuously to the other Wi-Fi client(s) of the wireless network. The dLAN 500 WiFi offers two different variants for transmitting these encryption keys:

WiFi Protected Setup (WPS)

Using WPS you can integrate WLAN stations into your wireless network by entering a PIN or by pressing the WPS button on the device.

Note: If WPS is enabled, any configured WLAN filter will be temporarily disabled!

☒ WPS active

WPS via PBC (Push Button)

The WPS configuration can be started either by using the WPS button on the device or via the web interface. Please start the configuration process and then press the WPS button on the device that is to join the wireless network.

WPS via PIN

The device also supports WPS via a PIN. In order to join a station to your wireless network via PIN please enter the PIN and then start the configuration process. Next, you must tell your station that it should join the wireless network. The PIN of the station is usually either printed on the housing or specified on the configuration interface.

PIN:

Note: WPS cannot be used to integrate WLAN stations into your wireless network via guest account!

WPS via PBC (Push Button Configuration):

- ① Start the encryption process on the dLAN 500 WiFi
 - either by tapping the **WPS button** on the **front panel of the device** or
 - by pressing the **Start setup** button on the user interface under **WLAN configuration** ➤ **Wi-Fi Protected Setup (WPS)**.
- ② Then press either the WPS key of the Wi-Fi client you are adding or the WPS button on the configuration interface. Now the devices exchange their encryption keys and establish a secure Wi-Fi connection. The Wi-Fi LED on the front panel indicates the synchronisation process by flashing.

WPS via PIN:

- ① To interconnect Wi-Fi stations securely in your wireless network via PIN variants, enter an individualised key in the configuration interface under **WLAN configuration** ➤ **Wi-Fi Protected Setup (WPS)** ➤ **PIN** and start the encryption process by pressing the **Start setup** button.
- ② Open the configuration interface of the Wi-Fi client to be added and transmit the PIN selected on the dLAN 500 WiFi. Confirm the encryption process as described there. Now the devices

exchange their encryption keys and establish a secure Wi-Fi connection. The Wi-Fi LED on the front panel indicates the synchronisation process by flashing.

Use of the **WPS** process implies either **WPA** or **WPA2**. For that reason, keep in mind the following automatic settings depending on the encryption standard (also refer to **6.4.1 Device security**), i.e.

- if under **WLAN configuration** ➤ **Access Point No encryption** or **WEP** is selected in advance, **WPA2** is set automatically. The newly generated password is displayed under **Wi-Fi configuration** ➤ **Access Point** in the **Key** field.
- if under **WLAN configuration** ➤ **Access Point WEP** is selected in advance, **WPA2** is set automatically. The newly generated password is displayed under **WLAN configuration** ➤ **Access Point** in the **Key** field.
- if under **WLAN configuration** ➤ **Access Point WPA** is selected in advance, this setting remains with the previously assigned password.
- if under **WLAN configuration** ➤ **Access Point WPA2** is selected in advance, this setting remains with the previously assigned password.

6.5.7 WiFi Move Technology

Wi-Fi Move Technology is a function for synchronising the Wi-Fi settings of all **dLAN 500 WiFi** adapters connected to your home network.

WiFi Move Technology support enabled

- ① Also press the dLAN button of the dLAN 500 WiFi adapter for which **the entire Wi-Fi configuration** is to be transferred to all other dLAN 500 WiFi adapters.
- ② Then tap each dLAN button of the other dLAN 500 WiFi adapters.

- ③ All dLAN 500 WiFi adapters are now **continuously connected** to each other and, from now on, share changes to the **Wi-Fi configuration** with each other **automatically**.



Wi-Fi configuration in factory defaults:
In the factory default settings of the dLAN 500 WiFi, the Wi-Fi function is enabled and the Wi-Fi encryption WPA2 is configured. The default Wi-Fi key is the Wi-Fi key of the corresponding device. You will find the key on the label on the back of the housing.

WiFi Move Technology settings

WiFi Move Technology settings

All dLAN® 500 Wi-Fi devices that have WiFi Move Technology mode enabled automatically synchronise all Wi-Fi settings with each other. At least two dLAN® 500 Wi-Fi devices are required in your dLAN® network in order to be able to use the WiFi Move Technology function.

WiFi Move Technology support enabled: ☒

6.6 Management

In the **Management** area you can reset the current configuration to the factory defaults, save it to your

computer as a file or restore it from there and update the firmware of the dLAN 500 WiFi.

Management



Reset configuration

All settings in the device will be deleted and reset to their factory default values. All of your settings will be lost.



Save configuration file

You can store the configuration of the device in a file on your computer and restore it later when required.



Restore device configuration

Select a saved configuration file to restore a previous configuration on the device.



Update Firmware

Update the firmware in your device by uploading the new firmware file from your computer to the device.

6.6.1 Resetting the configuration

With the **Management ▸ Reset configuration** command, the dLAN 500 WiFi is reset to the original factory defaults. In doing so, you lose your personal settings.

The last-assigned dLAN password for the dLAN 500 WiFi is also reset. To re-secure your dLAN network individually, read further at **6.4.3 dLAN settings**.

Reset configuration

If you continue, all device settings will be deleted and the factory default settings will be loaded. This will clear all settings that you have changed.

Please be aware that resetting the device to its factory settings also resets the dLAN® password. This may make devices on your dLAN® network inaccessible. If this occurs, please use the dLAN® Configuration Wizard to reconfigure your dLAN® network.

Reset configuration

For backup purposes, all active configuration settings can be transmitted to your computer, stored there as a file and reloaded into the dLAN 500 WiFi. In this way, you can for example generate configurations for different network environments, with which you can set up the device quickly and easily.

6.6.2 Saving a configuration file

To save the active configuration to your computer as a file, select the corresponding button in the area **Man-**

agement  **Save configuration file**. Then enter a storage location and name for the settings file.

Save configuration file

You can store the configuration of the device in a file on your computer and restore it later when required.

Save configuration file

6.6.3 Restoring a configuration

An existing configuration file can be sent to the dLAN 500 WiFi in the **Management** ▸ **Restore device configuration** area and enabled there. Select a suitable file via the **Browse...** button and start the op-

eration by clicking the **Restore device configuration** button.

Restore device configuration

Please select the configuration file to be loaded onto the device.

File name:

6.6.4 Update firmware

The firmware of the dLAN 500 WiFi includes the software for operating the device. If necessary, devolo offers new versions on the Internet as a file download,

for example, to modify existing functions or to extend the scope of function.

Update Firmware

Current firmware version: 1 (2013-01-14)

Please select the firmware file to be loaded onto the device.

File name:

- ① To bring the firmware up to the latest version, first go to the devolo website, www.devolo.com, and download the appropriate file for the dLAN 500 WiFi to your computer.
- ② Then in the configuration dialogue, go to the area **Management** ➤ **Update Firmware**. Click **Browse...** and select the downloaded file.
- ③ Then start the update procedure with the **Update Firmware** button. After a successful update, the dLAN 500 WiFi restarts automatically.



Ensure that the update procedure is not interrupted. To do so, it is best to connect your computer to the dLAN 500 WiFi via dLAN or LAN rather than Wi-Fi.

7 Appendix

7.1 Bandwith optimisation

To significantly improve the transmission capacity of the network, we recommend that you comply with the following "connection rules":

- Plug the device directly into a wall socket. Avoid multiple sockets. This may impair the transmission of the dLAN signals.
- Plug the devices into different outlets and avoid using the same extension strip.

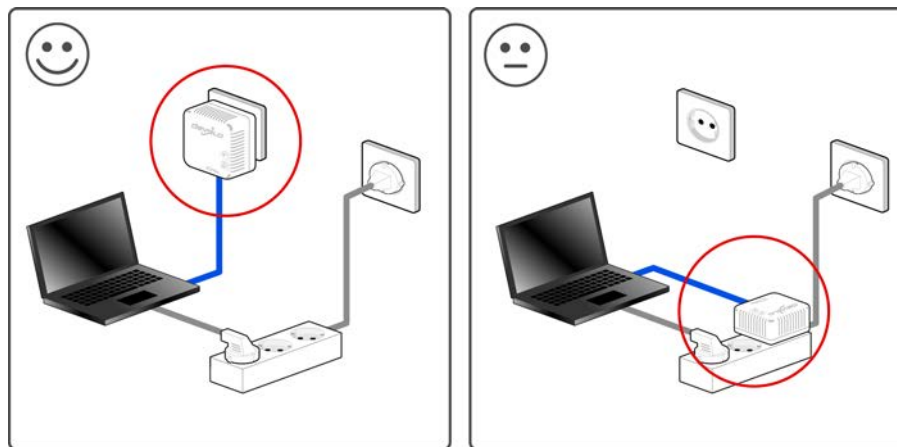


Fig. 9

7.2 Important safety instructions

All safety and operating instructions should be read and understood before using the device, and should be kept for future reference.

- Never open the device. There are no user-serviceable parts inside the device.



Do not try to service this product yourself! Contact qualified technicians each and every time your device needs maintenance. There is a risk of electric shock!

- Use the device in a dry location only.
- Always use the included network cable to connect the device.



The outlet must be within reach of the connected network devices. The adapter and the network devices must be easily accessible.

- To switch the device off, pull the power plug.
- To disconnect the device from the power supply grid, pull the power plug.
- Do not insert any objects into the openings of the device.
- Do not keep the device in direct sunlight.

- Slots and openings on the case serve as ventilation. Never block or cover them.
- Never set up the device near a heater or radiator.
- The device should be located only where sufficient ventilation can be ensured.
- Disconnect the device from the power supply grid before cleaning. Use a moist towel to clean the device. Never use water, paint thinner, benzene, alcohol or other strong cleaning agents when cleaning the device, as these could damage the case.
- Never use the device with a power supply that does not meet the specifications provided on the rating plate. If you do not know what type of power supply you have at home, contact your dealer or energy supplier.
- In the event of damage, disconnect the device from the power supply grid and contact customer service. This applies, for example, if
 - the power cable or plug is damaged.
 - liquid has been spilled on the device or objects have fallen into the device.
 - the device has been exposed to rain or water.
 - the device does not work, even though the operating instructions have been followed properly.

- the device's case is damaged.

7.3 Disposal of old devices



To be used in the countries of the European Union and other European countries with a separate collecting system:

The icon with crossed-out wastebasket on the device means that this adapter is an electrical or electronic device that falls within the scope of application of the German Electrical and Electronic Equipment Act ("Elektrogesetz"). Since 24 March 2006, these types of devices may no longer be disposed of with household waste. Rather, in Germany, they can be given to a municipal collection point free of charge. Contact your municipal government to find out the address and hours of the nearest collection point.

7.4 Warranty conditions

The devolo AG warranty is given to purchasers of devolo products in addition to the warranty conditions provided by law and in accordance with the following conditions:

1 Warranty coverage

- a) The warranty covers the equipment delivered and all its parts. Parts will, at devolo's sole discretion, be replaced or repaired free of charge if, despite proven proper handling and adherence to the operating instructions, these parts became defective due to fabrication and/or material defects. Alterna-

tively, devolo reserves the right to replace the defective product with a comparable product with the same specifications and features. Operating manuals and possibly supplied software are excluded from the warranty.

- b) Material and service charges shall be covered by devolo, but not shipping and handling costs involved in transport from the buyer to the service station and/or to devolo.
- c) Replaced parts become property of devolo.
- d) devolo is authorized to carry out technical changes (e.g. firmware updates) beyond repair and replacement of defective parts in order to bring the equipment up to the current technical state. This does not result in any additional charge for the customer. A legal claim to this service does not exist.

2 Warranty period

The warranty period for this devolo product is three years. This period begins at the day of delivery from the devolo dealer. Warranty services carried out by devolo do not result in an extension of the warranty period nor do they initiate a new warranty period. The warranty period for installed replacement parts ends with the warranty period of the device as a whole.

3 Warranty procedure

- a) If defects appear during the warranty period, the warranty claims must be made immediately, at the latest within a period of 7 days.
- b) In the case of any externally visible damage arising from transport (e.g. damage to the housing), the person carrying out the transportation and the sender should be informed immediately. On discovery of damage which is not externally visible, the transport company and the sender are to be immediately informed in writing, at the latest within 3 days of delivery.
- c) Transport to and from the location where the warranty claim is accepted and/or the repaired device is exchanged, is at the purchaser's own risk and cost.
- d) Warranty claims are only valid if a copy of the original purchase receipt is returned with the device. devolo reserves the right to require the submission of the original purchase receipt.

4 Suspension of the warranty

All warranty claims will be deemed invalid

- a) if the label with the serial number has been removed from the device,
- b) if the device is damaged or destroyed as a result of acts of nature or by environmental influences (moisture, electric shock, dust, etc.),
- c) if the device was stored or operated under conditions not in compliance with the technical specifications,
- d) if the damage occurred due to incorrect handling, especially to non-observance of the system description and the operating instructions,
- e) if the device was opened, repaired or modified by persons not contracted by devolo,
- f) if the device shows any kind of mechanical damage, or
- g) if the warranty claim has not been reported in accordance with 3a) or 3b).

5 Operating mistakes

If it becomes apparent that the reported malfunction of the device has been caused by unsuitable hardware, software, installation or operation, devolo reserves the right to charge the purchaser for the resulting testing costs.

6 Additional regulations

The above conditions define the complete scope of devolo's legal liability.

- a) The warranty gives no entitlement to additional claims, such as any refund in full or in part. Compensation claims, regardless of the legal basis, are excluded. This does not apply if e.g. injury to persons or damage to private property are specifically covered by the product liability law, or in cases of intentional act or culpable negligence.
- b) Claims for compensation of lost profits, indirect or consequential detriments, are excluded.
- c) devolo is not liable for lost data or retrieval of lost data in cases of slight and ordinary negligence.
- d) In the case that the intentional or culpable negligence of devolo employees has caused a loss of data, devolo will be liable for those costs typical to the recovery of data where periodic security data back-ups have been made.
- e) The warranty is valid only for the first purchaser and is not transferable.
- f) The court of jurisdiction is located in Aachen, Germany in the case that the purchaser is a merchant. If the purchaser does not have a court of jurisdiction in the Federal Republic of Germany or if he moves his domicile out of Germany after conclusion of the contract, devolo's court of jurisdiction applies. This is also applicable if the purchaser's domicile is not known at the time of institution of proceedings.
- g) The law of the Federal Republic of Germany is applicable. The UN commercial law does not apply to dealings between devolo and the purchaser.

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