

dLAN® 1200+ WiFi ac



Manual

devolo

devolo dLAN[®] 1200+ WiFi ac

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Version 1.2_11/19

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1 Preface

Thank you for placing your trust in this dLAN 1200+ WiFi ac.

The dLAN 1200+ WiFi ac allows you to set up your own home network with almost no effort. Because the clever dLAN technology transmits the data over the household electrical wiring, you do not have to lay any new cables.

1.1 About this manual

Carefully read all instructions before setting up the device and store the manual and/or installation guide for later reference.

After a brief introduction to dLAN and WiFi basics and an introduction to the dLAN 1200+ WiFi ac in **Chapter 2**, **Chapter 3** tells you how to successfully start using the adapter in your network. **Chapter 4** describes in detail the setting options of the built-in configuration interface and thus also access to the WiFi. Technical specifications of the frequency ranges, tips for bandwidth optimisation, information about product safety and environmental compatibility of the device, as well as our warranty terms, can be found in **Chapter 5** at the end of the manual.

Description of the icons

This section contains a brief description of the icons used in this manual and/or on the rating plate, the device connector, as well as the icons used on the package:

Icon	Description
	Very important safety symbol that warns you of imminent electrical voltage which if not observed can result in serious injury or death.
	An important safety symbol that warns you of a potentially dangerous situation involving a burn hazard which can result in minor injuries or damage to property.
	An important note that should be observed which can potentially lead to material damages.
	The device may only be used indoors in dry conditions.

Icon	Description
	The manufacturer/distributing company uses the CE marking to declare that the product meets all applicable European regulations and has been subjected to the prescribed conformity assessment procedures.
	It is used to prevent the occurrence of waste electrical and electronic equipment and to reduce this type of waste through reuse, recycling and other forms of utilisation. The European Community WEEE Directive establishes minimum standards for handling waste electrical and electronic equipment in the EU.
	Additional information, background material and configuration tips for your device.
	Indicates a completed course of action

Intended use

Use devolo products, devolo software and the provided accessories as described to prevent damage and injury.

Products

devolo products are communication devices designed for indoors.* Depending on the product, they are equipped with a **PLC-** (**P**ower**L**ine **C**ommunication) and/or a Wi-Fi module. Computers, laptops, smartphones, tablets, smart TVs and other devices connected this way are integrated into a home network over the existing electrical wiring and/or Wi-Fi without any complicated wiring. devolo devices must never be used outdoors because the high temperature fluctuations and moisture can damage both the product and the power line. devolo products may not be installed at a height above **two metres** unless an additional fastening mechanism is available. The products are intended for operation in the EU, Switzerland and Norway.

* The only exceptions are devolo outdoor products, which are suited for the outdoor use thanks to their IP certification.

Software

devolo devices can be used only with the free, downloadable programs approved and available on devolo AG's website (www.devolo.com) and in app stores (iOS and Google Play). Any modifications to the product-specific firmware or software could damage the products and, in the worst-case scenario, render them unusable and negatively affect conformity.

Always use the most up-to-date software version to make sure you have the latest security functions and device updates. The installed devolo software notifies you automatically if a new software version is available.

Accessories

Use only the provided accessories.

1.2 CE Conformity

CE This product complies with the technical requirements of the directives **2014/53/EU**, **2011/65/EU** und **2009/125/EC**.

This product is designed for use in the EU, Switzerland and Norway.

A printout of the simplified CE declaration of this product is separately included and can also be found under www.devolo.com/support/ce.

1.3 Safety notes

It is essential to have read and understood all safety and operating instructions before the devolo device is used for the first time; keep them safe for future reference.



DANGER! Electrical shock caused by electricity

Do not reach into the electrical socket, do not open the device and do not insert any objects into the electrical socket or into the ventilation openings

Users do not need to carry out any maintenance on devolo devices. In the event of damage, disconnect the devolo device from the mains supply by pulling it or its plug out of the electrical socket. Then contact qualified specialist personnel (after-sales service) exclusively. **Damage** is deemed to have occurred, for example,

- if the power plug is damaged.
- if the devolo device has been showered with liquid (such as rain or other water).

- if the devolo device is inoperable.
- if the housing of the devolo device is damaged.
- *Do not plug devolo devices directly into each other. Devices that are plugged into each other can experience a decrease in transmission rate.*



DANGER! Electric shock caused by electricity

Device must be plugged into a power socket with a connected earth wire

devolo devices may be operated only on a **mains power supply** as described on the **rating plate**.

To disconnect devolo devices from the mains supply, unplug the device from the electrical socket.

The power socket and all connected network devices should be easily accessible so that you can pull the power plug quickly if needed.



CAUTION! Heat development during operation

Certain housing components can become very hot in certain situations. Attach device so that it is touch-proof, observing optimal positioning

devolo devices should only be installed at locations that guarantee adequate ventilation. Slots and openings on the housing are used for ventilation:

- **Do not cover** devolo devices during operation.
- Do not place **any objects on** devolo devices.
- Do not insert **any objects** into the **openings** of devolo devices.
- devolo devices must **not** be placed directly **next to** a naked **flame** (such as fire or candles).
- devolo devices must **not be exposed to direct heat radiation** (e.g. radiator, direct sunlight).



CAUTION! Damage to housing from cleaning agents containing solvents
Clean only electroless and with dry cloth

1.4 devolo on the Internet

For detailed information on our products, visit www.devolo.com.

There you will find product descriptions and documentation, and also updates of devolo software and your device's firmware.

If you have any further ideas or suggestions related to our products, please don't hesitate to contact us at support@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.



Fig. 1 devolo dLAN and WiFi throughout the home

2.1 What exactly is dLAN?

dLAN (**d**irect **L**ocal **A**rea **N**etwork) 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 (**W**ireless **L**ocal **A**rea **N**etwork) 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 What exactly is range+?

Range+ is a technology for devolo dLAN products. Unlike conventional Powerline technology, range+ Technology uses all three lines (neutral, earth wire, phase) of the electrical circuit, making use of the

full physical potential. Thanks to patented signal coupling, data transmission over the mains supply is optimised. This results not only in a more stable Internet connection that is less sensitive to interference, but also increased range.

2.4 The dLAN 1200+ WiFi ac

The dLAN 1200+ WiFi ac is equipped with

- A PLC button (home icon) with LED status display,
- A WiFi button with LED status display,



The LED status display can be deactivated on the configuration interface of the adapter (see 4.7 System).

- Two network jacks
- One reset button
- Four internal WiFi antennas
- One integrated electrical socket



Fig. 2: devolo dLAN 1200+ WiFi ac with country-specific plug/socket

mation, refer to Chapter **3.3 Connecting the dLAN 1200+ WiFi ac**.

Reading the PLC indicator light

The integrated indicator light (LEDs) shows the dLAN status for the dLAN 1200+ WiFi ac by illuminating and/or flashing:

- *Check whether the adapter is connected to the mains supply correctly and whether the encryption process has been carried out successfully. For more information about this, refer to **3.3 Connecting the dLAN 1200+ WiFi ac**.*

2.4.1 PLC button



This button controls the following functions:

Encrypting the dLAN network

- To encrypt your dLAN network individually, press **each PLC button** on the connected devices for approx. **1 second** – within 2 minutes.
- To remove a dLAN device from your network, press the **PLC button** on the corresponding device **for at least 10 seconds**. For more infor-

	PLC LED	Flashing behaviour	Meaning	LED status display (web interface*)
1	Red LED	Lights up steady	Adapter is in the start-up process	Cannot be disabled
2	Red LED	Flashes at intervals of 0.5 sec. (on/off)	No dLAN connection exists	Cannot be disabled
3	Red LED	Flashes at intervals of 2 sec. (on/off)	Data transmission rate not in optimum range *	Can be disabled
4	White LED	Lights up steady	An encrypted dLAN connection exists and the adapter is ready to operate	Can be disabled
5	White LED	Flashes at intervals of 0.5 sec. (on/off)	dLAN encryption being established	Can be disabled
6	White LED	Flashing at intervals of 0.5/50-60 sec. (On/off)	Adapter is in Standby mode	Can be disabled

* Information about the web interface can be found in Chapter 4 **Network configuration**.

** Information on improving the transmission rate can be found in Chapter 5.3 **Bandwidth optimization**.

***A dLAN adapter switches to standby mode after approximately 10 minutes if no active network device (e.g. computer) is connected to the network interface and the WiFi is switched off. In this mode, the dLAN adapter cannot be accessed over the electrical wiring. As soon as the network device (e.g. computer) connected to the network interface is switched on again, your dLAN adapter can also be accessed over the electrical wiring again.

i Check whether the adapter is connected to the mains supply correctly and whether the pairing operation has been carried out successfully. For more information about this, refer to 3.3 **Connecting the dLAN 1200+ WiFi ac**

2.4.2 WiFi button



The WiFi button controls the following WiFi functions:

WiFi On/Off:

- In the **factory default settings**, the **WiFi** setting is already **enabled** and the WiFi encryption is set to **WPA2**. The WiFi key is the unique key of the dLAN 1200+ WiFi ac. You can find this key on the label on the rear side of the housing.

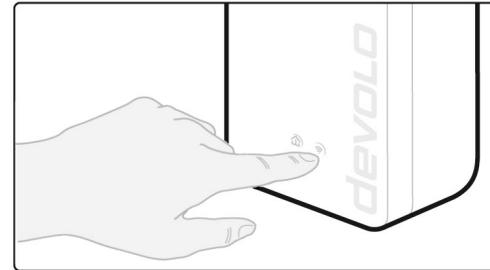


Fig. 3 WiFi button

- In order to **switch WiFi off**, press and hold the WiFi button **longer than 3 seconds**.
- In order to switch **WiFi back on**, tap the **WiFi button**.

Connecting WiFi devices via WPS

- If the device is still on **factory defaults**, tap the **WiFi button** in order to activate **WPS**.
- If the **WiFi** connection was **switched off** and you would like to **activate WPS**, press the

WiFi button twice; once to switch WiFi on, and again to activate WPS.

- *WPS, developed by the WiFi Alliance, is one of the encryption standards in a WiFi network. The objective of WPS is to make it easier to add devices to an existing network. For more detailed*

information, refer to Chapter 4.4.7 WiFi Protected Setup (WPS).

Reading the WiFi indicator light

The integrated indicator light (LED) shows the WiFi status for the dLAN 1200+ WiFi ac by illuminating and/or flashing:

	WiFi LED	Flashing behaviour	Meaning	LED status display (web interface*)
1	White LED	Flashes at intervals of 0,1 sec. on/5 sec. off	The dLAN adapter is in WPS mode to integrate WiFi-enabled devices via WPS.	Cannot be disabled
2	White LED	Lights up steady	WiFi is switched on and active.	Can be disabled
3	White LED	Off	<p>Status 1: The WiFi LED is switched off and the devolo adapter is still ready for use.</p> <p>Status 2: The WiFi function ist disabled.</p>	Can be disabled

	WiFi LED	Flashing behaviour	Meaning	LED status display (web interface*)
4	White LED	Flashes at intervals of 0.2 sec. (on/off)	Firmware update	Cannot be disabled

* Information about the web interface can be found in Chapter 4 **Network configuration**.

2.4.3 Network jacks

You can use the network jacks on the dLAN adapter to connect it to stationary devices such as computers, game consoles, etc. using a standard network cable.

2.4.4 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 1200+ WiFi ac 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 a pointed object (such as a paper clip) to press the Reset button.

2.4.5 WiFi antennas

The internal WiFi antennas are for connecting to other network devices wirelessly.

2.4.6 Integrated electrical socket

To connect other network devices to your mains supply, use the electrical socket of the dLAN 1200+ WiFi ac. The mains filter integrated into the dLAN 1200+ WiFi ac eliminates any noise of connected devices and significantly improves data transmission in the network.

3 Initial use

This chapter covers everything you need to know to set up your dLAN 1200+ WiFi ac. We provide a description of how the device is connected and briefly introduce the included devolo software. For more information, please visit our website www.devolo.com.

3.1 Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN 1200+ WiFi ac.

- **Single Kit:**

- dLAN 1200+ WiFi ac
- Hard copy of installation guide
- simplified CE declaration

or

- **Starter Kit:**

- dLAN 1200+ WiFi ac
- dLAN 1200+
- Network cable
- Hard copy of installation guide
- simplified CE declaration

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

3.2 System requirements

- Operating systems supported by devolo Cockpit:

- from Windows 7 (32-bit/64-bit),
- from Ubuntu 13.10 (32-bit/64-bit),
- from Mac (OS X 10.9)

- Network connection

■ *Please note that your computer or other device must have a network card or network adapter with a network interface.*

To set up a dLAN network, you need at least two dLAN adapters.

3.3 Connecting the dLAN 1200+ WiFi ac



CAUTION! Damage to the device caused by ambient conditions
Only use device indoors in dry conditions

In the following sections we describe how to connect the dLAN 1200+ WiFi ac and integrate it

into the network. We clarify the exact procedures based on potential network scenarios.

- *For the permitted voltage range for operating the device and the power consumption, refer to the label on the rear of the device. For additional technical information on our products, refer to the Service Centre area at www.devolo.com.*

3.3.1 Starter Kit – Setting up a new dLAN network

- 1 Connect the dLAN 1200+ to your Internet access device's network jack (e.g. WiFi router).



CAUTION! Tripping hazard

Lay the network cable in a barrier-free manner and ensure that the electrical socket and the connected network devices are easily accessible

- 2 Plug the dLAN 1200+ WiFi ac into a wall socket. As soon as the LED indicator light flashes red at regular intervals of 0.5 sec., the adapter is ready to operate but not yet integrated into the dLAN network.

Connecting the two dLAN 1200+ WiFi ac to a dLAN network

Before you can use the adapter in a dLAN network, first you have to connect it as a network. This is accomplished by using a shared dLAN password. This forms a delimited dLAN network. Shared use of the dLAN password serves both 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:

dLAN network encryption:

- Using **devolo Cockpit** or the **devolo Home Network App** (see Chapter 3.4 **Installation of devolo software**),
 - Only using the **PLC button** and **3.3 Connecting the dLAN 1200+ WiFi ac**
 - Using the web interface, in the **PLC menu 4.5 Powerline**
- ✓ As soon as the white LED lights up steady on both devices, your dLAN network is set up and protected from unauthorised access.

3.3.2 Addition – Expanding an additional network

- ① Plug the dLAN 1200+ WiFi ac into a wall socket. As soon as the LED indicator light flashes red at regular intervals of 0.5 sec., the adapter is ready to operate but not yet integrated into the dLAN network.

Integrating the dLAN 1200+ WiFi ac into an existing dLAN network

Before you can use the dLAN 1200+ WiFi ac in your dLAN network, first you have to connect it to your existing dLAN devices as a network. This is accomplished by using a shared dLAN password. The dLAN password can be set in different ways:

dLAN network encryption:

- Using **devolo Cockpit** or the **devolo Home Network App** (see Chapter 3.4 **Installation of devolo software**),
- Only using the **PLC button** (see Chapter 2.4.1 **PLC button** and 3.3 **Connecting the dLAN 1200+ WiFi ac**)
- Using the web interface, in the **PLC menu** 4.5 **Powerline**:



As soon as the white LED lights up steady, the new dLAN 1200+ WiFi ac is integrated into your existing, encrypted dLAN network.

Integrating the dLAN 1200+ WiFi ac into an existing WiFi network

To ensure that the dLAN 1200+ WiFi ac has the same WiFi configuration as your WiFi router, you can apply the WiFi access data at the touch of a button using the **WiFi Clone** function. This can be enabled in different ways:

Enabling WiFi Clone:

- Enabling WiFi Clone at the touch of a button: First press the **PLC button** with the **home icon** on the front side of dLAN 1200+ WiFi ac and then press the WPS button of the WiFi router with the access data you want to apply.
- or
- **Enabling WiFi Clone via the configuration interface.** More information about this function can be found in Chapter **WiFi Clone**.

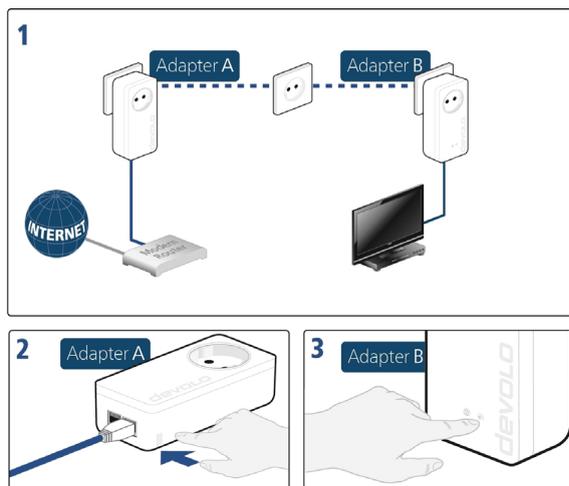


Fig. 4: Setting up the dLAN network

Connecting devices to the WiFi network

- Establish the WiFi connection with your laptop, tablet or smartphone by entering the previously noted WiFi key as the network security key.

3.4 Installation of devolo software

Installing devolo Cockpit software

devolo Cockpit finds all accessible dLAN adapters in your dLAN network, displays information about these devices and encrypts your dLAN network individually. You can use the software to navigate to the integrated web interface.

Operating systems supported by devolo Cockpit (Version 5.0 or later):

- from Windows 7 (32-bit/64-bit) or later,
 - from Ubuntu 13.10 (32-bit/64-bit),
 - from Mac (OS X 10.9)
- You can find the product manual, software and additional information on devolo Cockpit online at www.devolo.com/cockpit.

Downloading the devolo Home Network App

The devolo Home Network App is devolo's **free app** also for checking and configuring WiFi, Magic and LAN connections for the dLAN adapter (using a smartphone or tablet). The smartphone or tablet connects to the dLAN adapter at home over Wi-Fi.

- 1 Download the devolo Home Network App to your smartphone or tablet computer from the corresponding store.
 - 2 The devolo Home Network App is placed in your smartphone's or tablet's app list as usual. Tapping on the devolo Home Network App icon brings you to the start menu.
- *You can find more information about the devolo Home Network App online at www.devolo.com/devolo-app.*

3.5 Removing the adapter from the network

To remove the dLAN 1200+ WiFi ac device from an existing network, press the PLC button with the home icon on the corresponding adapter for **at least 10 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 network, follow the steps described above, depending on whether you are setting up a new network or adding the device to an existing one.

4 Network configuration

The dLAN 1200+ WiFi ac has a built-in web interface that can be called up using a standard web browser. All settings for operating the device can be modified here.

4.1 Calling up the built-in web interface

You can access the built-in online web interface for the dLAN 1200+ WiFi ac in different ways:

- Using the **devolo Home Network App** on your smartphone or tablet, you can access the device's web interface by tapping on the corresponding adapter symbol for the dLAN 1200+ WiFi ac.

or

- Using the **Cockpit software** you can get to the device's web interface by clicking on the corresponding tab for the dLAN 1200+ WiFi ac. Then the program determines the current IP address and starts the configuration in the web browser.

i By default, the web interface will open directly. However, if an access password has been set via the option **System → Management**, you have to enter that password first. Read more about this under **4.7 System**.

i You can find more information on devolo Home Network App and Cockpit software in Chapter **3.4 Installation of devolo software**.

4.2 General information about the menu

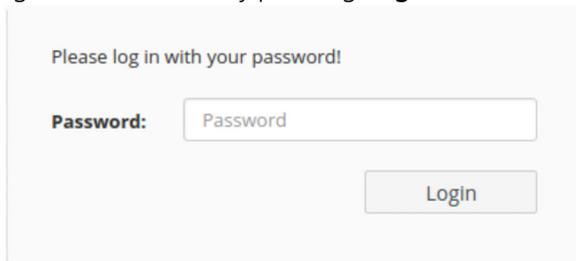
All menu functions are described in the corresponding interface as well as in the associated chapter in the manual. The sequence of the description in the manual follows the structure of the menu. The figures for the device interface serve as examples.

Logging in

The web interface is not password protected. Assigning a login password is mandatory when logging in for the first time to prevent unauthorised access by third parties.

i You can find more information on the login process in Chapter **4.7 System**.

Enter your existing password each time you login again and confirm by pressing **Log in**.



A screenshot of a login form. At the top, it says "Please log in with your password!". Below that, there is a label "Password:" followed by a text input field containing the word "Password". To the right of the input field is a "Login" button.

Logging out



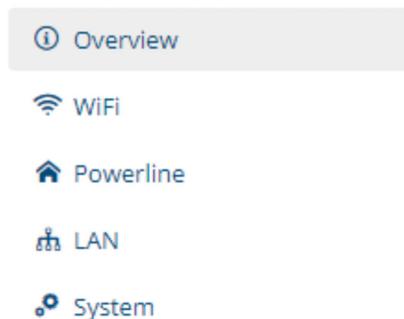
Log out of the web interface by clicking **Log out**.

Language selection



Select the desired language in the language selection list.

The central areas of the web interface and their sub-categories are listed on the left edge. Click the entry for an area to move directly into it.



Making changes

Once you make a change, two icons are shown on the corresponding menu page:

- **Disk** icon: Your settings are being saved.
- **X** icon: The operation is being cancelled. Your settings are not being saved.

Required fields

Fields with a red border are required fields. This means entries must be made in these fields to continue with the configuration.

Help text blank fields

Fields that have not been filled in yet contain greyed out help text, which indicates the required content for the field. This help text disappears immediately once content has been entered.

Default settings

Some fields contain default settings which ensure the greatest amount of compatibility and ease of use. Default settings are identified with an * in drop-down menus.

Default settings can of course be replaced with customised information.

Recommended settings

Some fields include recommended settings.

Recommended settings can of course be replaced with customised information.

Tables

You can make changes within a table by clicking the corresponding table row in **Time Control** and **Parental Control**. In edit mode, the corresponding table rows have a blue background. In edit mode, the corresponding table rows have a blue background.

Invalid entries

Entry errors are either highlighted by a red border or error messages are shown.

Buttons

Click the **Disk** icon to save the settings for the respective web interface area.

Click the **X** icon or use the **Menu path** above the buttons to exit the respective web interface area.

Click the **Recycle bin** icon to delete an entry.

Click the **Arrow** icon to refresh a list.

4.3 Overview

The **Overview** area shows the status of the dLAN 1200+ WiFi ac and the connected LAN, PLC and WiFi devices.

System		WiFi	
Information		2.4 GHz	
Name:	SaChri	Current channel:	1 (auto)
Location:	Wohnzimmer	Enabled SSIDs:	HOME
Serial number:	1608319950017762	Connected WiFi clients:	1
Firmware version:	5.3.1 (2019-08-15)	5 GHz	
		Current channel:	112 (auto)
		Enabled SSIDs:	HOME
		Connected WiFi clients:	0
Powerline		LAN	
Local Device		Ethernet	
Encryption:	Secured	Port 1:	Not connected
		Port 2:	Not connected
Network		IPv4	
Connected clients:	4	Protocol:	DHCP
		Address:	192.168.1.241
		Subnet mask:	255.255.255.0
		Default gateway:	192.168.1.254
		DNS server:	192.168.1.254
		IPv6	
		Protocol:	DHCPv6
		Address/Subnet:	2a00:6020:15ee:7400:3243:20ff:fe79:c01e/64

4.3.1 System

Name: Device name

Serial number: Device serial number

Firmware version: Firmware version of the device

4.3.2 WiFi

2.4 GHz

Current channel: used frequency channel in the 2.4-GHz frequency range

Enabled SSIDs: Name of the enabled WiFi networks

Connected WiFi clients: number of devices connected to the network.

5 GHz

Current channel: used frequency channel in the 5-GHz frequency range

Enabled SSIDs: Name of the enabled WiFi networks

Connected WiFi clients: number of devices connected to the network.

4.3.3 Powerline

Local device

Encryption: status of encryption "secured"

Network

Connected clients: number of devices connected to the Powerline network

4.3.4 LAN

Ethernet

Port 1 or. 2: if a connection has been detected, the speed (10/100/1000 Mbps) is specified; otherwise, the status "unconnected" is specified.

IPv4

Protocol: Display indicating whether DHCP is switched on or switched off

Address: IPv4 address in use

Subnet mask: IPv4 network mask in use

Default gateway: IPv4 gateway in use

Name server: DNSv4 server in use

IPv6

Protocol: Display indicating whether DHCPv6 is switched on or switched off

Subnet mask: SLAAC mask in use

4.4 WiFi

Make all changes to your wireless network in the **WiFi** area.

WiFi Clients

Status	MAC Address	Manufacturer	Frequency band	Network name	Tx rate (Mbps)	Rx rate (Mbps)	Since -
✓	D0:D2:80:2C:3E:C3	Apple, Inc.	2.4 GHz	devolo-050	n/a	n/a	0 Tage, 02:30:15
✓	A4:D8:30:FF:9A:82	Liteon Technology...	2.4 GHz	devolo-050	n/a	n/a	0 Tage, 01:02:26
✓	E4:F0:42:18:CD:BD	Google, Inc.	5 GHz	devolo-050	263	390	0 Tage, 02:09:37

WiFi Network

Active -	Network name	Encryption	Frequency band	Current channel	Connected clients
✓	devolo-050	WPA2 Personal	2.4 GHz	1 (auto)	0
✓	devolo-050	WPA2 Personal	2.4 GHz	1 (auto)	0
✓	devolo-050	WPA2 Personal	5 GHz	100 (auto)	1
✓	devolo-guest-050	WPA2 Personal	5 GHz	100 (auto)	0
✓	devolo-guest-050	WPA2 Personal	2.4 GHz	1 (auto)	0
✓	devolo-guest-050	WPA2 Personal	5 GHz	100 (auto)	0

4.4.1 Status

You can see the current status of your WiFi network configuration here, e.g. the connected WiFi stations, the MAC address, the selected frequency band, the SSID, the transfer rates and the connection duration.

4.4.2 WiFi networks

You can make all necessary changes to your WiFi network here.

WiFi Network Mode

2.4 GHz + 5 GHz 2.4 GHz 5 GHz off

Use common settings

2.4 GHz + 5 GHz

Network name 2.4 + 5 GHz

Channel 2.4 GHz:

Channel 5 GHz:

Hide SSID:

Encryption:

none WPA/WPA2 WPA2 WPA3/WPA2 WPA3

One of the following key is required: a passphrase with a length of 8 to 63 characters or a pre-shared key with a length of 64 characters.

WiFi network mode

The dLAN 1200+ WiFi ac supports both the parallel operation of the WiFi frequency bands and their separate use.

The **WiFi network mode** field lets you define your preferred setting by clicking the respective field:

- **2.4 GHz + 5 GHz** – Both frequency bands are used
- **2.4 GHz** – Only the 2.4 GHz frequency band is used
- **5 GHz** – Only the 5 GHz frequency band is used
- **Off** – If desired, you can completely switch off the WiFi section of your dLAN 1200+ WiFi ac here.



Keep in mind that after saving this setting, you will be disconnected from any existing wireless connection to the dLAN 1200+ WiFi ac. In this case, configure the device over Ethernet.

Network name

The **network name (SSID)** determines the name of your wireless network. You can see this name when logging onto the WiFi, allowing you to identify the correct WiFi network.

Channels

There are 13 channels available in the **2.4 GHz** frequency band. The channels recommended for Europe are channels 1, 6 and 11. This ensures the frequency bands of the channels do not overlap and any connection problems are avoided.

There are 19 channels available in the **5 GHz** frequency band.

The channel selection default setting is **Automatic**. The dLAN 1200+ WiFi ac regularly and automatically executes the channel selection in this setting. 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.

It is worth noting that connected devices also have to support the increased frequency band of 5 GHz. From channel 52 onward you go into the radar range. When accessing the device for the first time, a radar detection phase (DFS) starts automatically, during which time the dLAN 1200+ WiFi ac cannot be accessed via WiFi. This can take up to 10 minutes.

In the **Channel** field, you can manually select a 2.4 GHz and a 5 GHz channel. If you are not sure which

wireless channels are used by nearby devices, select the **Automatic** option.

Hide SSID:

The **SSID** specifies the name of your wireless network. You can see this name when logging onto the WiFi, allowing you to identify the correct subnet.

If the **Hide SSID** option is disabled, your network name is visible. If this option is disabled, potential network users must know the exact SSID and enter it manually to be able to set up a connection.

I *Some WiFi stations have difficulty connecting to 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.*

Security

The **WPA/WPA2/WPA3 (Wi-Fi Protected Access)** security standard is available for securing data transmission in your wireless network. This method allows for individualised keys consisting of **letters and numbers and the depicted special characters with a length of up to 63 characters**. You can simply enter them into the **Key** field via the keyboard.

4.4.3 Guest network

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

Configuration

Enable

The guest network does only allow access to the internet.

Frequency band: 2.4 GHz + 5 GHz

Network name: Guest

Encryption: none WPA/WPA2 WPA2 WPA3/WPA2 WPA3

One of the following key is required: a passphrase with a length of 8 to 63 characters or a pre-shared key with a length of 64 characters.

The QR-Code gives you easy access to the guest network using mobile devices such as smartphones or tablets. While scanning the QR-code the credentials for the guest network will be transferred to your mobile device.



Automatic Shutoff

Enable

Select a time period. The guest WiFi network is automatically switched off after this period has elapsed.

Selected time period: 2 h

To set up a guest account, activate the **Enable** option.

The guest account has an **Automatic shutoff** feature. This feature automatically disables the guest network once the selected time period ends.

You can use the **Enable** option to activate the shut-off feature.

- You can also enable or disable the guest account in the **devolo Home Network App** using the **Guest account** button.

Frequency band

In the **Frequency band** field, you select the frequency band mode you are using (see Chapter **WiFi network mode**).

Network name

Define the name of the guest network in the **Network name** field.

Key

You should also encrypt the guest account to prevent anyone in signal range from intruding into your network and, for example, sharing your Internet connection. The **WPA/WPA2/WPA3 (Wi-Fi Protected Access)** security standard is available for this.

This method allows for individualised keys consisting of **letters and numbers with a length of up**

to 63 characters. You can simply enter them via the keyboard.

To do so, enter a corresponding number of characters into the **Key** field.

QR code

Using the QR code, you can conveniently set up the connection to the guest network for mobile devices. Scanning the QR code automatically transfers the credentials for the guest network to the respective mobile device. The QR code is visible only if the guest network has been enabled.

4.4.4 Mesh

Mesh

All devolo WiFi adapters offer mesh WiFi, which entails completely new and improved WiFi functions:

- **Fast roaming** (IEEE 802.11r) streamlines the registration process for WiFi end devices, such as smartphones or tablets, when switching to another WiFi hotspot.
 - *The feature **Fast roaming** is not compatible with all WiFi clients. If there will be connection problems with one of your devices, please deactivate these option.*

In factory default condition of the dLAN 1200+ WiFi ac **Fast roaming** is turned off by default.

- In addition, the new **air-time fairness** feature processes the requests of high-speed WiFi clients at higher priority. This prevents older devices, which may require more time for a download, from creating WiFi bottlenecks.
- Integrated **band steering** ensures that all WiFi stations automatically switch to the optimum frequency band (2.4 and 5 GHz frequency band) in order to use the best WiFi connection at all times.

In order to turn the mesh functions on, activate the **Enable** option.

The mesh function of the dLAN 1200+ WiFi ac is switched on by default.

Mesh WiFi

Enabling the Mesh functionality features will optimize your inhome WiFi network experience while using your mobile devices. Inhome roaming solves your sticky client problem. Band Steering and Dynamic Frequency Selection provides WiFi access even with many clients and Airtime Fairness optimizes your bandwidth.

Enable

Features

IEEE 802.11r (also called "Fast Roaming") accelerates the login of a WiFi device to this WiFi access point. Requirement: The device was already connected to another WiFi access point with 802.11r enabled, identical network name (SSID), and identical encryption. Unfortunately, 802.11r is not compatible with every WiFi device. If you experience problems with any of your devices, please disable this option.

IEEE 802.11r

WiFi Clone

WiFi Clone allows you to apply the WiFi access data (network name and WiFi password) of another WiFi access point to this device automatically. This requires that you start the configuration process and then press the WPS button on the device containing the WiFi access data (SSID and WiFi password) to be applied.

Fig. 30 Mesh WiFi

WiFi Clone

WiFi Clone makes it possible to simply copy the WiFi configuration data of an existing WiFi access point (e.g. your WiFi router) to all WiFi access points (Single SSID). Start the procedure with the **Start setup** option and then press the WPS button of the device with the WiFi access data (SSID and WiFi password) to be applied.

4.4.5 Schedule control

The **Schedule control** area lets you define when and if your WiFi is switched on and off.

WiFi schedule settings

WiFi schedule control
 Enable

WiFi convenience function
 Enable

When the WiFi convenience function is activated, the wireless network is not switched off until the last WiFi device has logged off from your access point.

Please note that many tablets/smartphones maintain their WiFi connection indefinitely!

Overview of the wifi schedule settings



Configuration

Here you can define the time intervals for when you want your WiFi to be activated.

Interval	From	to
Mon-Fri	18:30	24:00

Enabling WiFi schedule control

In order to be able to use time control, activate the **Enable** option.

Configuration

You can define multiple 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.

Automatic disconnection

If you enable the **Automatic disconnection** option, the wireless network is not switched off until the last station has logged off.

- *Manually switching the device on and off (using a button) always has priority over automatic time control. The configured time control then takes effect automatically during the next defined time period.*

4.4.6 Parental control

You can regulate WiFi access for specific devices based on time using this function. For instance, to prevent your children from using the Internet excessively, you can define how long they may use the WiFi per day. Synchronisation with an (Internet) time server is necessary to be able to use the parental control. In this case, the time server (**System** → **Management** → **Time Server (NTP)**) for the dLAN 1200+ WiFi ac ac has to be enabled and an active Internet connection is also required.

- *The time server pool.ntp.org is enabled by default. You can find more information in Chapter 4.7.2 Management.*

If you would like to set up a **time quota** (usage time in hours) or a **time period** (active from/to), activate the **Enable** option. Now enter the MAC addresses of the devices you want to set up parental control for.

Under **Type**, define either a **time quota** (time limit) or a **time period** for when you want the MAC addresses entered to receive Internet access. Under **Select interval**, select the desired time frame.

Parental control

Enable

A1:55:EE:5E:14:8E

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

WiFi enabled WiFi disabled

Configuration

Please note that WiFi schedule Settings have precedence over these settings!

You can limit access to certain Wi-Fi devices by the MAC address. Please define the time periods during which Wi-Fi access is allowed.

+

MAC address	Type			
A1:55:EE:5E:14:8E	Interval	Sat+Sun	10:00	20:00
A1:55:EE:5E:14:8E	Interval	Mon-Fri	18:15	20:00

Setting the time quota

Under **Time Quota**, the time limit can be selected. Confirm your settings by clicking the **Disk** icon.

Setting the time period

Under **Time Period**, the desired time period can be selected. After entering the interval, enter the desired start and end times in hour and minute format.

Confirm your settings by clicking the **Disk** icon.

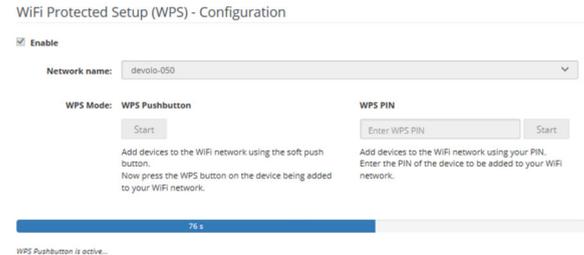
If you want to delete a time quota (time limit) or a time period from the list, click/touch the **dustbin** icon.

4.4.7 WiFi Protected Setup (WPS)

WiFi Protected Setup (WPS) is one of the international encryption standards developed by the WiFi Alliance for easily and quickly setting up a secure wireless network. The encryption keys of the respective WiFi devices are transmitted automatically and continuously to the other WiFi device(s) in the wireless network.

Enabling WPS encryption

In order to be able to use WPS encryption, activate the **Enable** option.



The dLAN 1200+ WiFi ac offers two different variants for transmitting these encryption keys:

WPS using WPS pushbutton

- 1 Start the encryption process on the dLAN 1200+ WiFi ac
 - By pressing the **WiFi button** on the **front side of the device** or
 - By pressing the corresponding **Start** button on the user interface under **WiFi → WPS Pushbutton**.
- 2 Then either press the WPS key of the WiFi device you are adding or enable the WPS mechanism in the WiFi settings of the WiFi device. Now the devices exchange their encryption keys and establish a secure WiFi connection.

tion. The WiFi LED on the front panel indicates the synchronisation process by flashing.

WPS via PIN

To interconnect WiFi devices in your wireless network securely using a PIN variant, go to the web interface and, under **WiFi** → **WPS** → **WPS PIN**, enter the WPS PIN generated by your Android smartphone or tablet and start the encryption process by pressing the corresponding **Start** button.

Use of the **WPS** method implies the use of the **WPA/WPA2** encryption standard. Therefore take note of the following automatic settings:

- If under **WiFi** → **WiFi networks**, the **No encryption** option is selected in advance, **WPA2** is set automatically. The newly generated password is displayed under **WiFi** → **WiFi networks** in the **Key** field.
- If under **WiFi** → **WiFi networks**, the **WPA/WPA2/WPA3** option is selected in advance, this setting **remains** with the previously assigned password.

4.4.8 Neighbour networks

The **Neighbour networks** area displays visible wireless networks in your surroundings.

Network name	Channel	Signal quality (%)
devolo-183	100	94
DVT-3490-5	124	94
devolo-183	11	94
NETGEAR70_jonas_r	6	94
Loft TV.b	6	94
DVT-3490-2	1	94
devilo24	1	94
devolo-159	1	94
ASUS_7437b8fde68	9	94
NETGEAR-2	2	94

4.5 Powerline

Make all changes to your PLC network in the **Powerline** area.

The connected dLAN devices are displayed with detailed basic information such as the MAC address, local or network connectivity, functionality as a centralised coordinator and the transmission rates.

Encryption

Encryption: Secured

Connected Powerline devices

AVLN	Device Name	MAC address	Connection	Central Coordinator	Tx rate (Mbps)	Rx rate (Mbps)
1	devolo-618	F4:06:8D:4F:68:27	remote	⊙	219	247
1	Geraet CP	30:D3:2D:26:E8:A3	local		-	-

In a dLAN network, all connected components must use the same password. This can be assigned in different ways:

- Using **devolo Cockpit** or the **devolo Home Network App** (see Chapter 3.4 Installation of devolo software),

- Only using the **PLC button** (see Chapter 2.4.1 **PLC button** and 3.3 **Connecting the dLAN 1200+ WiFi ac**)
- Using the web interface, in the **PLC menu Powerline → Settings:**

Powerline Password

You can also assign your network a custom PLC password you pick yourself. Enter this password for each dLAN adapter in the **Network password** field and confirm your settings by clicking the **Disk** icon.

Note that the custom password is not assigned to the whole PLC network automatically. Instead, you must assign it separately to each of your dLAN adapters.

Powerline Password

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

Password:

Compatibility Mode

Select the compatibility mode. This mode is a special mode, which resolves rare connection issues which can result from interaction with other technologies such as VDSL.

MIMO SISO VDSL 17a (Default)

All changes will have effect after a system reboot.

Compatibility Mode

Using as VDSL connection may negatively impact the performance of the bandwidth connection. Select from among the following settings in order to mitigate any potential negative effects.

Operating mode:

- MIMO
- SISO

Signal transmission profiles:

- VDSL 17a
- VDSL 35b

■ *Get in touch with your internet provider to find out which signal transmission profile is the best option for your internet connection.*

The MIMO operating mode and the VDSL 17a signal transmission profile are configured by default.

4.5.1 Add device

Using the encryption (PLC) button

If you would like to manually add a new dLAN device, press the encryption button within 2 minutes

on the device which you want to join your Powerline network and confirm with **Start configuration**.

Via security ID

If you would like to manually add a new dLAN device, provide its security ID and confirm with **Start configuration**.

Using the encryption button

Use the encryption button to allow the device to join the Powerline network. Press the encryption button within 2 minutes on the device which you want to join your Powerline network! Afterwards, click the "Start configuration" button.

Via security ID

Here you can add a new Powerline 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 "Start configuration".

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

Security ID:

4.6 LAN

You make changes to the network settings in the **LAN** area.

Ethernet	
Port 1:	Not connected
Port 2:	Not connected
Ethernet	30:D3:2D:AF:8B:B9
IPv4	
Protocol:	DHCP
Address:	172.25.201.89
Subnet mask:	255.255.0.0
DNS server:	172.25.1.12
IPv6	
Protocol:	DHCPV6
Address:	2a00:fe0:313:25:32d3:2dff:feaf:8bb9
Subnet mask:	64

4.6.1 Status

You can see the current LAN status of the dLAN adapters here. The **Ethernet** area shows the network devices connected to the two network connectors **Port 1** and **Port 2** (e.g. PC, NAS, etc.).

IPv4/IPv6

Depending on how the dLAN 1200+ WiFi ac is connected to the Internet (IPv4 or IPv6), current network information is displayed, such as **Address**, **Subnet mask**, **Standard gateway** and **DNS server**.

4.6.2 IPv4/IPv6 configuration

In the factory default settings, only the **Retrieve network settings from a DHCP server** option for **IPv4** is enabled. This means that the IP address is retrieved automatically from a DHCP server. The currently assigned network data are visible (greyed out).

If a DHCP server is already present on the network for assigning IP addresses (e.g. your Internet router), you should leave the **Retrieve network settings from a DHCP server** option enabled so that the dLAN 1200+ WiFi ac automatically receives an address from it.

If you want to assign a static IP address, make entries accordingly for the **Address**, **Subnet mask**, **Default gateway** and **DNS server** fields.

Confirm your settings by clicking the **Disk** icon. Then, restart the dLAN adapter (see Chapter **4.7.3 Configuration**) to ensure that your changes take effect.

4.7 System

In the **System** area, you can configure the settings for security and other dLAN adapter device functions.

4.7.1 Status

Here you can view the most important information on the dLAN adapter, including the current date and time, time zone, MAC address of the adapter,

status of the WiFi and Powerline LEDs and the two operating buttons (PLC button and WiFi button).

Date and Time

Local time:	10.09.2018 14:51
Time zone:	Europe/Aachen
Time server 1:	europe.pool.ntp.org

MAC Addresses

Ethernet	30:D3:2D:AF:8B:B9
----------	-------------------

LEDs

WiFi LED:	Enabled
Powerline LED:	Enabled

Buttons

PLC button:	Enabled
WiFi button:	Enabled

4.7.2 Management

System information lets you enter user-defined names in the **Device name (hostname)** and **Device location** fields. Both pieces of information are particularly helpful if multiple dLAN adapters are to be used and identified in the network.

Under **Change access password**, a login password can be set for accessing the web interface.

By default, the built-in web interface of the dLAN 1200+ WiFi ac is not protected by a password. We recommend assigning a password when the installation of the dLAN 1200+ WiFi ac is complete to protect it against tampering by third parties.

- *To do so, enter the desired new password twice. Now the web interface is protected against unauthorised access with your custom password!*

In **Power Management**, you can enable Standby mode on the dLAN 1200+ WiFi ac.

If **Standby** mode is enabled, the dLAN 1200+ WiFi ac automatically switches to Standby mode if no ethernet connection has been enabled, i.e. if no network device (e.g. computer) is switched on and connected to the network interface and if WiFi is disabled.

In this mode, the dLAN 1200+ WiFi ac is not accessible over the Powerline network. As soon as the network device (e.g. computer) connected to the network interface is switched on again, your adapter can also be accessed over the electrical wiring again.

Powersave mode is disabled in the dLAN 1200+ WiFi ac factory default settings.

Standby mode is enabled in the dLAN 1200+ WiFi ac factory default condition.

The **LED settings** let you disable the LED status display of the **WiFi** and **Powerline** LEDs.

An error status is indicated by corresponding flashing behaviour regardless of this setting.

- *For information on the LED behaviour of the dLAN adapter in standby mode, refer to Chapter **Reading the PLC indicator light**.*

You can completely disable the **operating buttons** on the dLAN adapter in order to protect yourself against possible changes. Simply disable the **Enable PLC button** or **Enable WiFi button** option.

The operating buttons are enabled in the dLAN 1200+ WiFi ac factory default settings.

Under **Time zone**, you can select the current time zone, e.g. Europe/Berlin. The **Time server (NTP)** option lets you specify a 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. Select your time zone and time server; the dLAN 1200+ WiFi ac automatically switches between standard time and summer time.

4.7.3 Configuration

Saving the device configuration

To save the enabled configuration to your computer as a file, select the corresponding button in the **System** → **Configuration** → **Save Configuration to File** area. The system starts downloading the current device configuration.

Restoring the device configuration

An existing configuration file can be sent to the dLAN 1200+ WiFi ac in the **System** → **Configuration** area and enabled there. Select a suitable file via the **Select file ...** button and start the operation by clicking the **Restore** button.

Factory Settings

The dLAN 1200+ WiFi ac is reset to the original factory defaults in the **System** → **Configuration** area with the **Factory Reset** option.

■ *Doing so causes you to lose your personal WiFi and PLC settings. The last-assigned passwords for the dLAN 1200+ WiFi ac are also reset.*

For backup purposes, all active configuration settings can be transmitted to your computer, stored there as a file and reloaded into the dLAN 1200+ WiFi ac. This function can be useful

for creating a variety of configurations that will let you quickly and easily set up the device for use in different network environments.

Reboot device

In order to reboot the dLAN 1200+ WiFi ac, select the **Reboot** button in the **System** → **Configuration** area.

4.7.4 Firmware

The firmware of the dLAN 1200+ WiFi ac 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.

Current firmware

The currently installed firmware of the dLAN 1200+ WiFi ac is displayed here.

Searching for and updating firmware automatically

The adapter can also look for up-to-date firmware automatically. To do this, enable the **Regulatory check for firmware updates** option.

■ *The dLAN 1200+ WiFi ac lets you know when a new firmware version becomes available. The option is enabled by default.*

The **Automatically install firmware updates** option allows the adapter to automatically install the firmware it has found.

- *The dLAN 1200+ WiFi ac automatically updates its firmware. The option is enabled by default.*

Download updated firmware

- 1 If you have downloaded an updated firmware file for the dLAN 1200+ WiFi ac to your computer, navigate to the **System** → **Firmware** → **Update firmware** area. Click **Browse ...** and select the downloaded file.
- 2 Confirm the update procedure with **Update firmware**. After a successful update, the dLAN 1200+ WiFi ac restarts automatically.



Ensure that the update procedure is not interrupted.

4.7.5 Config Sync

Config Sync allows settings to be configured uniformly for all devolo dLAN devices in the network. This includes the following settings e.g.:

- WiFi network
- Guest network
- Mesh WiFi
- Time control and time server settings.

In order to switch Config Sync on, activate the **Enable** option.

- *Please note that the WiFi is always switched on or off for the entire network. Therefore, stop Config Sync first on a device that you want to configure or switch separately.*

5 Appendix

5.1 Frequency range and transmitting power

Technical specifications in the 5 GHz frequency range

Frequency range	5 GHz
IEEE standard	802.11 a/h 802.11 n 802.11 ac
Indoor frequency range	5150 – 5350 MHz
Indoor & outdoor frequency range	5150 – 5725 MHz (802.11 a/h, n) 5150 – 5350 MHz / 5470 – 5725 MHz (802.11 ac)
Channel bandwidth	20 MHz (802.11 a/h) 20, 40 MHz (802.11 n) 20 MHz, 40 MHz, 80 MHz, 160 MHz (802.11 ac)
Max. indoor transmission power (EIRP)	200 mW (channel 36 – 64) / 23 dBm

Frequency range	5 GHz
Max. transmitting power	1,000 mW (channel 100 – 140) / 30 dBm

Technical specifications in the 2.4-GHz frequency range

Frequency range	2.4 GHz
IEEE standard	802.11 b 802.11 g 802.11 n
Indoor frequency range	–
Indoor & outdoor frequency range	2399.5 – 2484.5 MHz
Channel bandwidth	20 MHz (802.11 b/g) 20, 40 MHz (802.11 n)
Max. indoor transmission power (EIRP)	100 mW / 20 dBm
Max. transmitting power	100 mW / 20 dBm

5.2 Channels and carrier frequencies

Channels and frequencies in the 5-GHz band

Channel	Carrier frequency
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz
52	5260 MHz
56	5280 MHz
60	5300 MHz
64	5320 MHz
100	5500 MHz
104	5520 MHz
108	5540 MHz
112	5560 MHz
116	5580 MHz
120	5600 MHz
124	5620 MHz
128	5600 MHz

Channel	Carrier frequency
132	5660 MHz
136	5680 MHz
140	5700 MHz

Channels and frequencies in the 2.4 GHz band

Channel	Carrier frequency
1	2412 MHz
2	2417 MHz
3	2422 MHz
4	2427 MHz
5	2432 MHz
6	2437 MHz
7	2442 MHz
8	2447 MHz
9	2452 MHz
10	2457 MHz
11	2462 MHz
12	2467 MHz
13	2472 MHz

5.3 Bandwidth optimization

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

- Plug the dLAN 1200+ WiFi ac directly into a wall socket. Avoid using power strips. This may impair the transmission of the PLC signals.
- If there are several sockets in the wall directly next to each other, they behave like a power strip. Individual sockets are optimal.

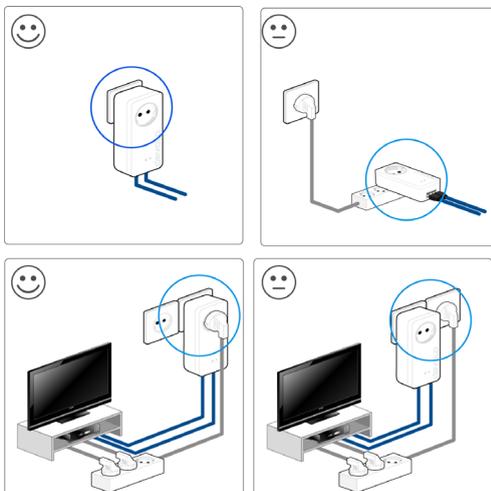


Fig. 5: Bandwidth optimization

5.4 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 product is an electrical or electronic device that falls within the scope of application of the European Community WEEE Directive. These types of devices may no longer be disposed of with household waste. Rather 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.

5.5 Warranty conditions

If your devolo device is found to be defective during initial installation or within the warranty period, please contact the vendor who sold you the product. The vendor will take care of the repair or warranty claim for you. The complete warranty conditions can be found at www.devolo.com/warranty.

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