MicroLink™ dLAN Ethernet
MicroLink™ dLAN USB

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devolo AG
Sonnenweg 11
52070 Aachen
Germany

www.devolo.de

Aachen, July 2003

40169/0703

Preface

Thank you for placing your trust in this devolo product.

The dLAN adapters are compatible to the HomePlug standard and enable you to establish or expand a home network easily and economically. PC work such as data exchange, accessing a network printer over the home network or Internet access is all done over the existing electrical wiring in the building. A dLAN adapter turns every power outlet into a network connection. You are completely independent—use a power outlet anywhere from the basement to the attic.

About this manual

This manual contains all the information you need about your dLAN adapter from devolo. It tells you how to set up and install your dLAN adapter. The 'All about the home network' chapter also contains examples of applications for the dLAN adapter and general information on networks.

Exacting manufacturing standards and stringent quality control are the basis for high product standards and consistent quality to ensure your fullest satisfaction with this dLAN adapter.

This documentation was compiled by several members of our staff from a variety of departments in order to ensure you the best possible support when using your product.

Additional information in the Internet at 'www.devolo.de'

Our online services (www.devolo.de) is available to you around the clock should you have any queries or require any further support. See the 'Support' section for answers to frequently asked questions about your product.

Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN adapter:

- dLAN adapter(s) (MicroLink dLAN Ethernet and/or MicroLink dLAN USB)
- Ethernet cable and/or USB cable
- Printed manual
- CD with drivers, online documentation and application software

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

CE conformity

These products comply with the technical requirements of the 1999/5/EC Directive (R&TTE) and the other relevant provisions of the FTEG, and they are designed for use in the EU and Switzerland.

The products are class A equipment. This equipment may cause interference with radio waves in home use; if this occurs the operator may be required to take corrective action.

See the appendix to this manual for the declaration of conformity to the applicable standards.

Contents

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1 Introduction

This chapter gives you an overview of the new dLAN technology and a brief introduction to the two devolo dLAN adapters.

1.1 What exactly is dLAN?

There is now a new alternative to the well-known wired LAN and Wireless LAN network technologies currently used in home networking: dLAN (direct LAN, i.e. directly networked). dLAN is home networking using the electric wiring already installed in the building.

Cost factor and transmission quality

dLAN is an economical and easy-to-use networking technology. You don't need to lay cables and you can connect to the home network at every power point.

The dLAN technology modulates and demodulates additional frequencies on the power lines. Modulation and demodulation is a well-known and proven method of data transmission, which has been in use in other applications for a number of years. Now it is used to set up Internet and network accesses in the home or office. Depending on the damping factor, distances of up to 200 meters can be covered.

With a maximum data transmission rate of 14 Mbps and symmetrical upload and download, the dLAN technology is equivalent to classical Ethernet networking solutions and is faster than the current wireless standard WIFI™ for home applications. Depending on the line quality, bandwidths of 6 to 8 Mbps are possible in practice—quite sufficient for extending the DSL connection to all rooms.

Data security and radiation

The power meter in the building acts as a physical barrier against unwanted access from outside. However, for the sake of security, software-activated 56-bit encryption should be used to guarantee secure data transfer within the network.

dLAN devices from devolo meet the stringent EU industrial standards and comply with the current standards for electromagnetic radiation. In fact, the radiation is distinctly lower compared to wireless LAN technologies.

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1.2 What does the dLAN adapters from devolo offer you?

The dLAN adapters from devolo enable you to set up or expand a home network easily and economically. PC work such as data exchange, accessing a network printer over the home network or Internet access is all done over the existing electrical wiring in the building. A dLAN adapter converts every power point into a connection to your home network. You are completely independent—use a power outlet anywhere from the basement to the attic. And the advantages of computer networking at home or in the office are obvious:

- Common usage of one Internet access (e.g. Internet-DSL connection)
- Common usage of one printer
- Common access to centrally stored data
- Multi-user games over the network.

You can find examples of possible networks and general information in the chapter 'All about home networking'.

1.2.1 MicroLink dLAN Ethernet

Simple installation

- Connect the MicroLink dLAN Ethernet to the computer or the device with the Ethernet cable
- Connect the MicroLink dLAN Ethernet to the power outlet
- Install the devolo tools MicroLink dLAN Configuration Wizard and MicroLink Informer
- Done!

Ethernet connection

The MicroLink dLAN Ethernet adapter has an Ethernet port for connecting to a device in the home network (e.g. PC, notebook, modem, router, switch etc.) and it has a standard power plug for connection to a power outlet. The adapter is powered by an integrated 230V AC power supply.

Status display

The indicator lights (LEDs) of your MicroLink dLAN Ethernet adapter show the connection status, allow the data transmission to be checked and make it easy to diagnose any system malfunctions. The MicroLink dLAN Ethernet adapter has 4 indicator lights and an Ethernet port.

1.2.2 MicroLink dLAN USB

Simple installation

- Connect the MicroLink dLAN USB to the computer with the USB cable
- Connect MicroLink dLAN USB to the power outlet
- Install the devolo drivers
- Install the devolo tools MicroLink dLAN Configuration Wizard and MicroLink Informer
- Done!

USB port

The MicroLink dLAN USB adapter has a USB output for connection to a computer in the home network with a USB port. The USB port makes the MicroLink dLAN USB adapter independent of power from an external power adapter.

Status display

The indicator lights (LEDs) of your MicroLink dLAN USB adapter show the connection status, allow the data transmission to be checked and make it easy to diagnose any system malfunctions. The MicroLink dLAN USB adapter has 3 indicator lights and a USB port.

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2 Connection and installation

This chapter shows you how to connect the devolo dLAN adapters. It also contains a brief description of the installation procedure under Windows 98SE, Windows Me, Windows 2000 and Windows XP.

2.1 System requirements

2.1.1 MicroLink dLAN Ethernet

Your computer must meet the following requirements to operate with your MicroLink dLAN Ethernet:

- **Operating systems**: Windows 98SE, Windows Me, Windows 2000 or Windows XP
- **Ethernet connection**

Note that your computer or the device to which you want to connect the MicroLink dLAN Ethernet must have an Ethernet port, i.e. a network card or a network adapter.

2.1.2 MicroLink dLAN USB

Your computer must meet the following requirements to operate with your MicroLink dLAN USB:

- **Operating systems**: Windows 98SE, Windows Me, Windows 2000 or Windows XP
- **USB port**

Note that the computer to which the MicroLink dLAN USB adapter is to be connected must have a USB port.

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2.2 Connection and display elements

2.2.1 MicroLink dLAN Ethernet

The MicroLink dLAN Ethernet adapter has four indicator lights (LEDs) and an Ethernet port:

PL-COL: Flashes faster as the network load increases.

PL-ACT: Flashes when data is being sent or received over the electrical lines.

PL-LNK: Steady when connected to power.

ETH-LNK/ACT: Steady when the MicroLink dLAN Ethernet adapter is connected to the computer or the device; flashes during data transfer.

Ethernet connection: This is the connection point on the MicroLink dLAN Ethernet adapter for connecting it to a computer or another device with the network cable (included).

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2.2.2 MicroLink dLAN USB

The MicroLink dLAN USB adapter has three indicator lights (LEDs) and a USB port:

COL: Flashes faster as the network load increases.

ACT: Flashes when data is being sent or received over the electrical lines.

LNK: Steady when connected to power.

USB port: This is the connection point on the MicroLink dLAN USB adapter for connecting it to a computer with the USB cable (included).

2.3 Installation

2.3.1 Connecting the MicroLink dLAN Ethernet adapter

Before connecting the dLAN adapter please note its security ID and keep it available for configuration of the network. The security ID can be found on the bottom of the dLAN adapter.

① With the computer running connect the MicroLink dLAN Ethernet adapter to an Ethernet port of the computer with the network cable (included).

② Plug the MicroLink dLAN Ethernet adapter into a convenient power socket.

③ Then install the devolo tools MicroLink dLAN Configuration Wizard and MicroLink Informer. For more information see the 'devolo tools' chapter.

No drivers are required for installation of the MicroLink dLAN Ethernet adapter.

2.3.2 Connecting the MicroLink dLAN USB adapter

Before connecting the dLAN adapter please note its security ID and keep it available for configuration of the network. The security ID can be found on the bottom of the dLAN adapter.

① With the computer running connect the MicroLink dLAN USB adapter to a USB port of the computer with the network cable (included).

② Plug the MicroLink dLAN USB adapter into a convenient power socket.

③ Now install the drivers in the desired operating system.

④ Then install the devolo tools MicroLink dLAN Configuration Wizard and MicroLink Informer. For more information see the 'devolo tools' chapter.

2.3.3 Driver installation—MicroLink dLAN USB

Plug&play installation

The MicroLink dLAN USB supports plug&play. This makes installation much easier. Windows wizards guide you through the installation process and request the required data.

The driver installation process is different in different operating systems. The procedure is described separately below for the various operating systems.

Installation under Windows 98SE

① Put the devolo product CD in your CD-ROM drive.

② Windows starts the hardware wizard and reports that new hardware has been detected. Confirm by clicking **Next**.

③ Windows provides you with two options for searching for drivers. Select the 'Search for the best driver for your device (Recommended)' option and click **Next**.

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④ The correct driver can be found on the devolo product CD. Activate the 'CD-ROM drive' option and deactivate all other boxes. Then click **Next**. The driver installation is started.

⑤ Click **Next** to continue the installation.

*You may be prompted to insert the Windows 98 CD. Insert it into your CD-ROM drive and click **OK**.*

⑥ By clicking **Finish** you'll exit the installation.

⑦ Click **Yes** to any prompts to restart the computer.

Installation under Windows Me

① Put the devolo product CD in your CD-ROM drive.

② Windows starts the hardware wizard and reports that new hardware has been detected. Confirm by clicking **Next**.

③ Windows provides you with two options for searching for drivers. Select the 'Automatic search for a better driver (Recommended)' option and click **Next**. The driver installation is started.

④ By clicking **Finish** you'll exit the installation.

⑤ Confirm any prompts to restart the computer with **Yes**.

Installation under Windows 2000

① Put the devolo product CD in your CD-ROM drive.

② Windows 2000 starts the hardware wizard and reports that new hardware has been detected. Click **Next**.

③ The wizard offers two options to search for the driver. Select the 'Search for a suitable driver for my device (recommended)' option and click **Next**.

④ The correct driver can be found on the devolo product CD. Activate the 'CD-ROM drives' option and deactivate all other boxes. Then click **Next**. The driver installation is started.

⑤ Click **Next** to continue the installation.

⑥ By clicking **Finish** you'll exit the installation.

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Installation under Windows XP

During the installation Windows will inform you that the software that you are installing has not passed the Windows logo test. Depending on the configuration of your computer this message may appear more than once. Always continue with the installation by selecting ***Continue Installation*** *' in the Windows Logo Certification' dialog box.*

① Put the devolo product CD in your CD-ROM drive.

② Windows XP starts the hardware wizard and reports that new hardware has been detected.

③ In the following dialog window activate the option 'Install the software automatically (Recommended)'. Click **Next**. The driver installation is started.

④ By clicking **Finish** you'll exit the installation.

For more information on the installation of the devolo tools MicroLink dLAN Configuration Wizard and MicroLink Informer please see the 'devolo tools' chapter.

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3 All about the home network

This chapter contains important and useful information on networks—from the configuration of your computer to examples of applications to general tips.

3.1 Configuring the computer

Now that you have successfully connected and installed your devolo dLAN adapter, we show you how to configure your computer correctly and how to check existing settings.

3.1.1 Windows 98 and Windows Me

① Open the properties of the LAN connection on the connected computers by selecting **Start** ▶ **Settings** ▶ **Control Panel** ▶ **Network**.

② Click the entry for the TCP/IP protocol of the network adapter and on **Properties**. Enable the option 'Obtain an IP address automatically'. You can ignore all other options: they either remain empty or retain their default settings. Close the dialogs with **OK**.

*If you cannot find an entry similar to 'TCP/IP' or 'TCP/IP -> Network Adapter Name' or 'Internet Protocol (TCP/IP)', you must install the TCP/IP protocol. Under **Add** select 'Protocol' and click **Add** again. In the next dialog box under 'Manufacturer' select 'Microsoft' and under 'Network Protocol' select 'TCP/IP'.*

③ If you use a router for Internet access, you will still need to configure it, because the router dials into the Internet, not the computer. Under **Start** ▶ **Settings** ▶ **Control Panel** ▶ **Internet Options** select the 'Connections' tab and enable the 'Never dial a connection' option. Close the dialogs with **OK**.

3.1.2 Windows 2000

① Open the properties of the LAN connection on the connected computers by selecting **Start** ▶ **Settings** ▶ **Control Panel** ▶ **Network and Dial-up Connections**. Click with the right mouse button on the corresponding LAN connection and select 'Properties'.

② Click the entry for the TCP/IP protocol of the network adapter and on **Properties**. Enable the option 'Obtain an IP address automatically'. You can ignore all other options: they either remain empty or retain their default settings. Close the dialogs with **OK**.

*If you cannot find an entry similar to 'TCP/IP' or 'TCP/IP -> Network Adapter Name' or 'Internet Protocol (TCP/IP)', you must install the TCP/IP protocol. Under **Install** select 'Protocol' and click **Add**. In the next dialog box select 'Internet Protocol (TCP/IP)' and confirm with **OK**.*

③ If you use a router for Internet access, you will still need to configure it, because the router dials into the Internet, not the computer. Under **Start ▶ Settings ▶ Control Panel ▶ Internet Options** select the 'Connections' tab and enable the 'Never dial a connection' option. Close the dialogs with **OK**.

3.1.3 Windows XP

The Windows XP start menu can be configured in different ways. See the Windows XP documentation for more information.

① Open the properties of the LAN connection on the connected computers. Select **Start ▶ Control Panel ▶ Network and Internet Connections ▶ Network Connections**. Click with the right mouse button on the corresponding LAN connection and select 'Properties'.

② Click the entry for the TCP/IP protocol of the network adapter and on **Properties**. Enable the option 'Obtain an IP address automatically'. You can ignore all other options: they either remain empty or retain their default settings. Close the dialogs with **OK**.

*If you cannot find an entry similar to 'TCP/IP' or 'TCP/IP -> Network Adapter Name' or 'Internet Protocol (TCP/IP)', you must install the TCP/IP protocol. Under **Install** select 'Protocol' and click **Add**. In the next dialog box select 'Internet Protocol (TCP/IP)' and confirm with **OK**.*

③ If you use a router for Internet access, you will still need to configure it, because the router dials into the Internet, not the computer. Under **Start ▶ Control Panel ▶ Network and Internet Connections ▶ Internet Options** select the 'Connections' tab and enable the 'Never dial a connection' option. Close the dialogs with **OK**.

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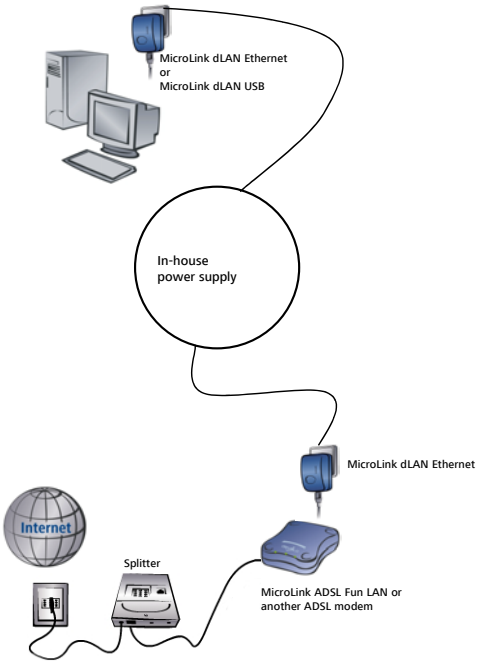
Other Internet applications such as e-mail clients may also need this information. This generally involves changing a setting with a name like 'Connect to' or similar to 'LAN'.

3.2 Examples of applications

This section demonstrates some current application scenarios.

3.2.1 Internet ADSL workstation solution—option 1

Workstation with Internet connection over an ADSL modem



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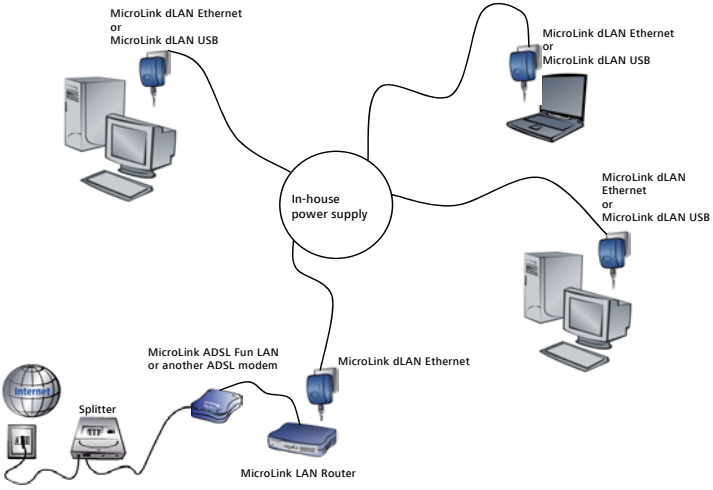
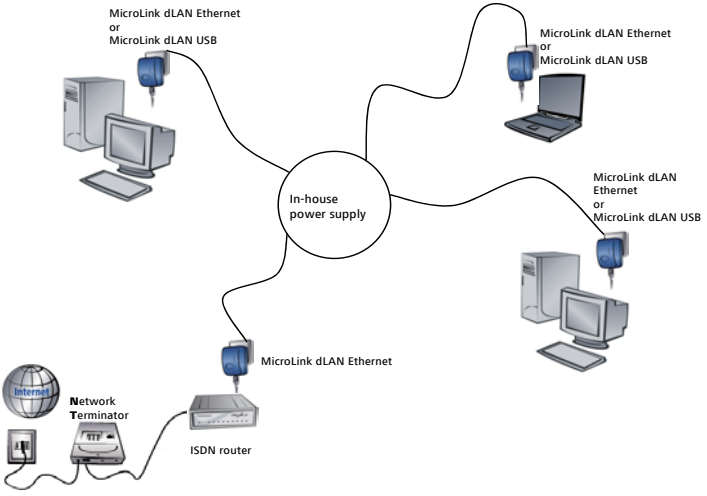
3.2.2 Home networking—option 2

Networking several workstations with one Internet connection over a LAN router and an ADSL modem



3.2.3 Home networking—option 3

Networking several workstations with one Internet connection over an ADSL router



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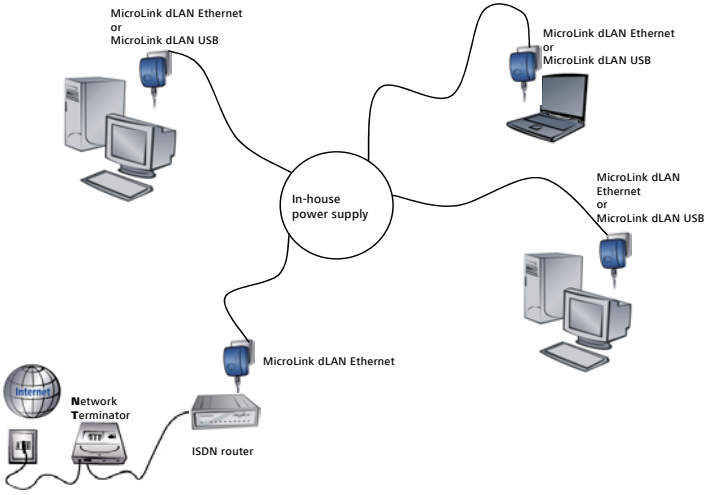
3.2.4 Home networking—option 4

Networking several workstations with one Internet connection over an ISDN router



3.3 Worth knowing

Network volume

The maximum number of dLAN adapters in a single-family house is theoretically 253 connections, but in practice no more than 10 devices should be transferring data simultaneously.

Compatibility

The devolo dLAN adapters are compatible to all other devolo LAN products, to all devices that comply with the IEEE 802.3 standard and to other HomePlug devices.

Network security

Normally the electric meter forms a physical barrier, i.e. only devices connected to this meter can be part of the network and benefit from the phase coupling. We strongly recommend that you use the dLAN adapter's internal device encryption. It is configured with the MicroLink dLAN Configuration Wizard. For more information see the 'devolo tools' chapter.

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How to use passwords correctly

You can improve your security substantially by following some important rules regarding the use of passwords.

- Keep your passwords as secret as possible.
  - Never write a password down. Popular, but completely unsuitable storage options include notebooks, wallets and text files in computers. Do not pass on your password unnecessarily.
- Select a random password.
  - Use random strings of letters and numbers. Passwords from common language usage are not secure.
- Change the password regularly or immediately if you feel it has been compromised.
  - Passwords should be changed as frequently as possible. This requires a little effort, but increases your security considerably.
  - Even if only the slightest indication of a leak exists, the password should be changed.

Always use the internal device encryption for security. It is configured with the MicroLink dLAN Configuration Wizard. For more information see the 'devolo tools' chapter.

You can find more answers to frequently asked questions (FAQs) on the devolo product CD (included) and at our home page www.devolo.de under 'Support'.

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4 devolo tools

Now that you know something about networks, this chapter introduces the MicroLink Informer and MicroLink dLAN Configuration Wizard software tools.

4.1 MicroLink Informer

The MicroLink Informer shows information on all dLAN devices in your network, such as their MAC addresses and current connection rates. See the section 'Installation of devolo tools' for the installation of the MicroLink Informer.

*The MAC address (**M**edia **A**ccess **C**ontrol) is a serial number and is unique in the world. It is permanently programmed in the hardware and cannot be changed. The MAC address of the dLAN adapters is on the bottom of the device.*

4.2 MicroLink dLAN Configuration Wizard

The MicroLink dLAN Configuration Wizard supports you during configuration of an encrypted dLAN network. It helps you to add the desired dLAN adapters to your network. All dLAN adapters in the network can be configured from one central point, i.e. from one workstation. You need the dLAN adapters security IDs (see devices undersides) for encryption and to assign a network password that you have selected.

The next sections describe the installation of the devolo tools and the configuration of the dLAN network.

4.2.1 Installation of devolo tools

① Put the devolo product CD in your CD-ROM drive.

② In the CD setup select 'Install MicroLink dLAN Software'.

③ Windows starts the wizard. Activate the options 'MicroLink dLAN Configuration Wizard' and 'MicroLink Informer', and click on **Next**.

④ The following dialog box shows the default devolo target folder in which the devolo tools will be installed. Select a new folder or accept the default folder, and then click **Next**.

⑤ Click **Next** again, and continue the installation with **Finish**.

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⑥ After a successful installation, start the devolo tools with **Start** ▶ **Programs** ▶ **devolo** ▶ **MicroLink dLAN Configuration Wizard** or **MicroLink Informer**.

4.2.2 Configuration of the dLAN network

Please have the previously noted dLAN adapters security IDs ready. The MicroLink dLAN Configuration Wizard requires them for configuration of the network. You will find the security ID on the bottom of the device.

① Start the MicroLink dLAN Configuration Wizard under **Start** ▶ **Programs** ▶ **devolo** ▶ **MicroLink dLAN Configuration Wizard**.

② Confirm with **Next**.

③ The MicroLink dLAN Configuration Wizard starts the network analysis and searches for dLAN adapters on your network.

The dLAN adapter connected directly to your computer is configured automatically.

④ Now enter in sequence the security IDs of the dLAN adapters that are to be included into a network and click **Add**. Click **Next** when you have entered all desired dLAN adapters.

⑤ In the following dialog box enter your network password and confirm your input with **Next**.

Note that all the dLAN adapters that you want to add to your network must also be physically connected.

⑥ Your network password is now assigned to the dLAN adapters selected for the network.

⑦ Exit securing your network by clicking **Finish**. Your dLAN network is now secure against unauthorized access from outside.

The configuration of the dLAN network can be changed or updated at any time. To do this repeat the configuration process as described above.

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5 Appendix

5.1 MicroLink dLAN Ethernet

5.1.1 Technical data

This table has detailed information for those interested.

	MicroLink dLAN Ethernet
Standards	Ethernet specification IEEE 802.3 Auto MDI / X compatible to HomePlug standard
Protocols	CSMA/CD
Trabsfer rate	14 Mbps
Transfer procedure	Asynchronous
Modulation	OFDM—84 carrier
Range	Up to 200 m
Security	56 bit DES
LEDs	1x3 status Ethernet-Link/ACT
dLAN connection	Standard power plug
Computer interface	RJ45
Power consumption	3 VA (max.)
Power supply	Integrated 230V AC supply via power socket
Temperature	Storage: -25°C – 70°C Operation: 0°C – 40°C
Environment	0-40°C, 10-90% humidity (non-condensing)
System requirements	Ethernet interface Windows 98, Windows Me, Windows 2000, Windows XP
CE conformity	CE-compliant in accordance with the technical requirements of R&TTE for all EU countries and Switzerland
Design	Plastic housing 93 x 66 x 42 (height x width x depth)
Warranty	3 years

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5.1.2 Declaration of conformity

CE

KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

Die Firma: **devolo AG**
The Company: **Sonnenweg 11**
52070 Aachen

erklärt, dass das Produkt: **MicroLink™ dLAN**
declares that the product:

Verwendungszweck: **PLC-Ethernet-Adapter**
Intended purpose: PLC Ethernet adapter

den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the appropriate essential requirements of the FTEG (Article 3 of R&TTE) and the other relevant provisions.

Harmonisierte Normen: Gesundheit und Sicherheit gemäß §3 (1) 1. (Artikel 3 (1) a))
Harmonised standards: Health and safety requirements contained in §3 (1) 1. (Article 3 (1) a))

EN 60 950: 1992 +A1: 1993 +A2: 1993 +A3: 1995 +A4: 1997 +A11: 1997

Harmonisierte Normen: Schutzanforderungen in Bezug auf die EMV §3 (1) 2, (Artikel 3 (1) b)
Harmonised standards: Protection requirements with respect to EMC §3 (1) 2, (Article 3 (1) b)

EN 55 024: 1998
EN 55 022: 1998 Recommendation for a measurement by Dortmund University

Diese Erklärung wird verantwortlich abgegeben durch:
This declaration is submitted by:

Aachen, 3. März 2003
Aachen, 3rd March 2003

Heiko Harbers
Vorstandsvorsitzender
CEO

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5.2 MicroLink dLAN USB

5.2.1 Technical data

This table has detailed information for those interested.

	MicroLink dLAN USB
Standard	Compatible to USB specification, Rev. 1.1 Compatible to HomePlug standard
Protocols	CSMA/CD
Modulation	OFDM—84 carrier
Range	Up to 200 m
Security	56 bit DES
Transfer rate	14 Mbps
Transfer procedure	Asynchronous, synchronous (USB)
Installation	Plug&play
LEDs	1x3 Status
dLAN connection	Standard power plug
Computer interface	USB
Power consumption	1.25 w (max)
Power supply	Via USB
Temperature	Storage: -25°C – 70°C Operation: 0°C – 40°C
Environment	0-40°C, 10-90% humidity (non-condensing)
System requirements	USB port Windows 98SE, Windows Me, Windows 2000, Windows XP
CE conformity	CE-compliant in accordance with the technical requirements of R&TTE for all EU countries and Switzerland
Design	Plastic housing 72 x 50 x 25 (height x width x depth)
Warranty	3 years

EN

5.2.2 Declaration of conformity

CE

KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

Die Firma: **devolo AG**
The Company: **Sonnenweg 11**
52070 Aachen

erklärt, dass das Produkt: **MicroLink™ dLAN USB**
declares that the product:

Verwendungszweck: **PLC-USB-Adapter**
Intended purpose: PLC USB adapter

den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the appropriate essential requirements of the FTEG (Article 3 of R&TTE) and the other relevant provisions.

Harmonisierte Normen: Gesundheit und Sicherheit gemäß §3 (1) 1. (Artikel 3 (1) a))
Harmonised standards: Health and safety requirements contained in §3 (1) 1. (Article 3 (1) a))

EN 60 950: 1992 +A1: 1993 +A2: 1993 +A3: 1995 +A4: 1997 +A11: 1997

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Harmonised standards: Protection requirements with respect to EMC §3 (1) 2, (Article 3 (1) b)

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Aachen, 3rd March 2003

Heiko Harbers
Vorstandsvorsitzender
CEO

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5.3 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. Alternatively, 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

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

b) 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.

c) Claims for compensation of lost profits, indirect or consequential detriments, are excluded.

d) devolo is not liable for lost data or retrieval of lost data in cases of slight and ordinary negligence.

e) 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.

f) The warranty is valid only for the first purchaser and is not transferable.

g) 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.

h) The law of the Federal Republic of Germany is applicable. The UN commercial law does not apply to dealings between devolo and the purchaser.