MicroLink® ISDN Router
MicroLink® dLAN® ISDN Router

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Preface

Thank you for placing your trust in this devolo product.

By purchasing the MicroLink ISDN Router or MicroLink dLAN ISDN Router, you have chosen an ISDN router that innovatively combines the functions and advantages of an ISDN modem, a switch, a router and a firewall all in a single device. This combination makes it the optimal, user-friendly network and Internet access solution for home network solutions and small-office and home-office (SOHO) environments.

- The ISDN modem provides satisfyingly fast Internet access:
  - With transmission speeds of up to 128 kbps, long waits when downloading files, loading Web pages or playing online games are a thing of the past.
  - An installation wizard helps you get connected to the Internet quickly. Access settings for common ISPs are already preconfigured.
- It serves as an optimal combination of Internet-access device and network switch:
  - The router simplifies the installation of Internet access significantly, as no special drivers are required for the connected individual computers. The access protocol has been implemented in the router itself.
  - The router functionality lets multiple users access the Internet at the same time. The firewall function provides protection from hacker attacks. DHCP automates the TCP/IP configuration of the connected computers. The router can be configured conveniently using a Web browser.
  - The integrated switch is the foundation for small networks. Up to four computers can be connected simultaneously. Each of the four ports can also be used as an uplink port to connect additional routers, switches or hubs.
- A HomePlug adapter allows access to the router throughout the building without having to lay new lines. Instead of network cables, household power lines are used to transfer data.
  - Combine your MicroLink ISDN Router together with a devolo HomePlug adapter to connect to other network devices via the household power cables.

MicroLink dLAN ISDN Router only

- The HomePlug adapter is already built into your MicroLink dLAN ISDN Router. The router is automatically networked to all other HomePlug adapters simply by connecting it to the power supply grid of the building.
- DES_{pro} encryption provides the highest degree of interception protection during data transmission over the power supply grid.

Model versions

This documentation is intended for users of the following devices:

- MicroLink ISDN Router
- MicroLink dLAN ISDN Router

Model restrictions

If a part of the documentation applies to a certain model only, this is indicated by a note in the margin.

In the other parts of the documentation, the models are referred to collectively as the **MicroLink (dLAN) ISDN Router**.

About this manual

Exacting manufacturing standards and stringent quality control are the basis for high product standards and consistent quality to ensure your fullest satisfaction with this MicroLink (dLAN) ISDN Router.

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.

For further information, please visit 'www.devolo.com'

Our online services (www.devolo.com) are available to you around the clock should you have any questions or require any further support.

Package contents:

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

- MicroLink ISDN Router or MicroLink dLAN ISDN Router
- ISDN cable (RJ11 – RJ45) 5m
- Power supply pack: 230V / 9V AC; 800 mA (MicroLink ISDN Router) or Power supply pack: 230V / 12V DC; 700 mA (MicroLink dLAN ISDN Router)
- CD-ROM with manual (PDF) and installation support
- printed manual

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

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1 Introduction

1.1 What does the MicroLink (dLAN) ISDN Router have to offer?

The following is an outline of the principal features of the device giving you a quick overview of its capabilities.

Simple installation

- Connect the computers in the LAN (Ethernet) to the MicroLink (dLAN) ISDN Router.
- Connect the MicroLink (dLAN) ISDN Router to the ISDN connection.
- Connect the MicroLink (dLAN) ISDN Router to the power supply grid.
- Configure Internet access
- That's it!

Versatile networking

Because of the built-in 4-port switch, the PCs connected to the MicroLink (dLAN) ISDN Router form an internal network with transfer rates of up to 100 Mbps.

MicroLink dLAN ISDN Router only

The MicroLink dLAN ISDN Router lets you choose how you would like to connect your PCs to the Internet— you can connect them using either the power supply grid or network cables.

Thanks to the built-in HomePlug technology, the network can be expanded through household power cables without the need to lay new lines. Each PC simply needs a MicroLink dLAN connected to an electrical outlet. With dLAN, you can connect to the Internet, exchange data, share printers or play exciting multiplayer games from any room of your house. Simply connect the router to the rest of the dLAN network via the power cable. The four Ethernet ports remain available for connecting other network devices.

1.2 What exactly is dLAN?

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

Cost factor and transmission quality

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

The dLAN standard 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. Depending on the attenuation factor, dLAN is capable of covering distances of at least 200 meters.

With a maximum data transmission rate of 14 Mbps and symmetrical upload and download, the dLAN standard is equivalent to classical Ethernet networking solutions and is faster than the wireless standard 802.11b. Depending on the line quality, bandwidths of 6 to 8 Mbps are possible in practice—quite sufficient for extending the Internet connection.

Data security and radiation

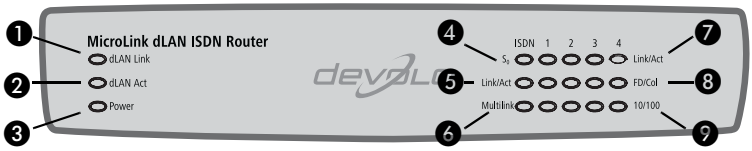
For security reasons, DES_{pro} encryption is used, which guarantees secure data transfer within the network. In addition, the power meter in the building can act as a physical barrier against unwanted access from outside.

dLAN devices from devolo meet the stringent EU industrial standards and comply with the current standards for electromagnetic radiation. Its radiation level is actually well below that of Wireless LAN technologies.

2 Connection and installation

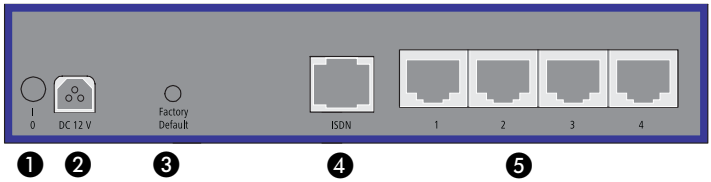
In this chapter, we will explain the displays and connections of the MicroLink (dLAN) ISDN Router and show you how to set up the device and connect computers as well as other network devices. A couple of network examples are illustrated at the end of the chapter.

2.1 Display and connections



Only for MicroLink dLAN ISDN Router

dLAN	❶	**dLAN Link**	Lit when connected to another dLAN adapter.
	❷	**dLAN Act**	Flashes during data transfers via dLAN.
	❸	**Power**	Lit when the device is switched on.
ISDN	❹	**S0**	Lit when the ISDN bus is active.
	❺	**Link/Act**	Lit when ISDN connection is active, flashes during data transmission (Link = connection, Act = activity).
	❻	**Multilink**	Lit when channel bundling is active.
LAN connections 1 to 4	❼	**Link/Act**	Lit when a computer (or hub/switch) is connected to the device. Flashes during data transfers in the LAN.
	❽	**FD/Col**	Lit in full duplex mode, flashes during data collisions (FD = Full Duplex, Col = Collision).
	❾	**10/100**	10 or 100 Mbps. Lit when data transfer rate is 100 Mbps.



1	Power switch.
2	Connection for AC adapter.
3	Button for manual reset; if this button is pressed for longer than five seconds, all of the stored configuration data will be deleted and the router will be restored to its factory defaults.
4	RJ45 jack for ISDN cable for the ISDN connection.
5	RJ45 sockets for network cables (patch cables, at least UTP CAT5) to connect computers in the LAN or additional network devices.

2.2 Connecting the MicroLink (dLAN) ISDN Router

Preconditions

Your MicroLink (dLAN) ISDN Router requires a computer running an operating system with TCP/IP support (e.g. Windows 98, Windows Me, Windows 2000, Windows XP, MAC OS X, Linux) connected to the MicroLink (dLAN) ISDN Router via LAN (Ethernet).

To connect a computer to the integrated switch via LAN, use a network cable with RJ45 plugs, also known as a patch cable. The computer must have a free LAN port (RJ45).

Connection

① Connect the MicroLink (dLAN) ISDN Router to an AC outlet using the AC adapter. Turn on the power with the switch on the back. The green 'Power' LED on the front panel will light up.

② Connect the ISDN cable first to the 'ISDN' socket on your router and then to the ISDN connection.

③ Next, use network cables to connect up to four computers to a router's RJ45 socket (LAN port) respectively and start the connected computers. The associated 'Link/Act' control lamps light up.

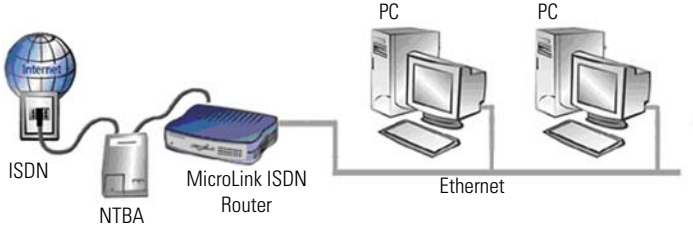
It is important to always start the router before the computers so that the computers can receive their TCP/IP configuration from the router's DHCP server while booting.

As each of the RJ45 sockets also functions as an uplink port, you may connect either a computer or an additional switch (hub) to any of the four ports to link more than four computers. Thanks to Auto MDI/X, you can use either cross-over or normal cables. An LED labeled 'Link/Act' will be lit on the front panel for every computer or every network device which is connected and powered up.

For information on configuring the MicroLink (dLAN) ISDN Router, please see the following Chapter "Router configuration" on page 15.

2.3 Networking examples

① Networking of multiple workstations; Internet access via the MicroLink ISDN Router



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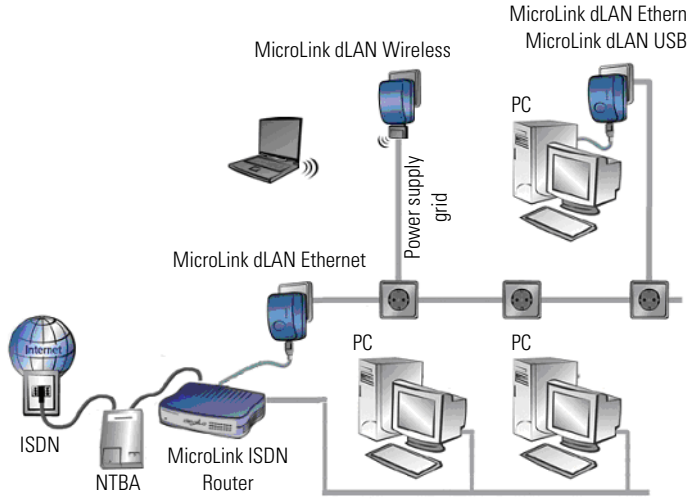
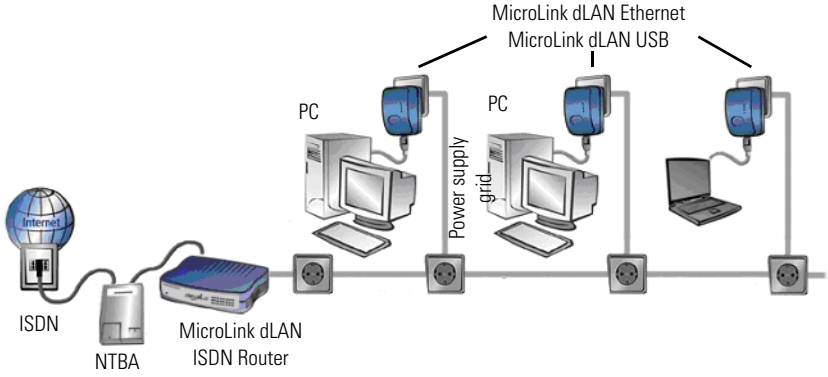
② Networking multiple workstations via the power supply grid and/or Ethernet; Internet access via the MicroLink ISDN Router



③ Networking via MicroLink dLAN USB or Ethernet; data exchange between all computers in the network and Internet access via the MicroLink dLAN ISDN Router



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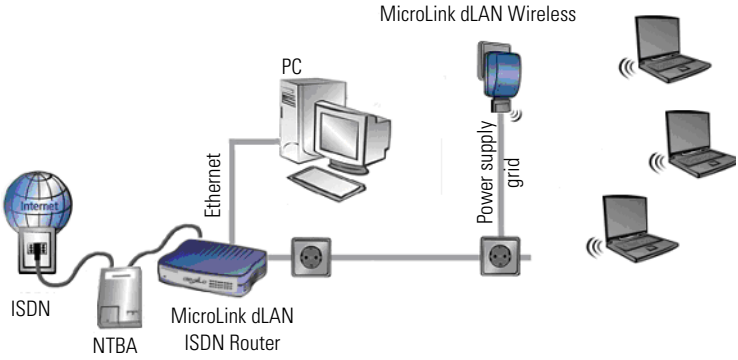
④ Linking an additional WLAN network using MicroLink dLAN Wireless; data exchange between all computers in the subnets and Internet access via the MicroLink dLAN ISDN Router



3 Router configuration

This chapter will explain how to set up Internet access and how to take advantage of additional functions and settings of your router with advanced configuration.

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If you intend to use a computer connected via dLAN to configure the router, you must set up the dLAN network first. For more information, please see "Configuring the dLAN network with the MicroLink dLAN Configuration Wizard" on page 29.

The configuration of the MicroLink (dLAN) ISDN Router takes place in the following stages:

- Check the network settings of the computer on the local network and modify them as necessary
- Set up Internet access
- Configure additional router functions

For configuring the network and setting up Internet access, we recommend using the setup wizard, which will help you configure the necessary settings ("Setting up Internet access using the setup wizard " on page 15). Alternatively, you may also set up Internet access using browser-based configuration ("Setting up Internet access manually" on page 16). The MicroLink (dLAN) ISDN Router is already optimally pre-configured for simple Internet access.

The additional functions of the router must be set up manually using the browser-based configuration ("Advanced configuration" on page 18).

If you have switched the router's power off and back on, or reset the router using the 'Factory Default' button, you must then also restart all of the connected computers to update the network settings.

3.1 Set up Internet access

3.1.1 Setting up Internet access using the setup wizard

If you are using a computer with a Windows operating system to configure the router, you have the option of using the setup wizard.

① Put the enclosed devolo product CD in your CD-ROM drive. The 'devolo MicroLink (dLAN) ISDN Router' setup application will start automatically.

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If the Setup software does not start automatically, run the file 'autorun.exe' in the root folder of the product CD.

② Select 'Install MicroLink (dLAN) ISDN Router software'.

③ The wizard will now install the selected devolo software on your computer. When the installation is complete, the router configuration wizard will automatically start. During this process, the wizard first checks the computer's network settings and modifies them as necessary. Then the wizard helps you set up Internet access for the router.

④ Finally, the wizard will contact the devolo website to ensure that the Internet access is working. If the Internet connection is working correctly, configure all other connected computers. Insert the devolo product CD in the computers to be configured and install 'MicroLink (dLAN) ISDN Router installation' as a minimum. The wizard will then check the settings of the network and correct them as necessary, and will skip setting up Internet access again if so requested.

Note that modern operating system features (like the Windows Update feature) and various programs such as e-mail and file-sharing clients can be configured to connect to the Internet automatically, which can cause charges from your service provider.

For this reason, once you are done setting up the router, pay attention to the router to see how and when it connects to and disconnects from the Internet. The cost control setting is pre-configured to a maximum of seven online hours per week (see "Cost control" on page 21).

3.1.2 Setting up Internet access manually

To configure Internet access for your MicroLink (dLAN) ISDN Router, you will need a computer that is connected to the router with a network cable and is installed with an Internet browser.

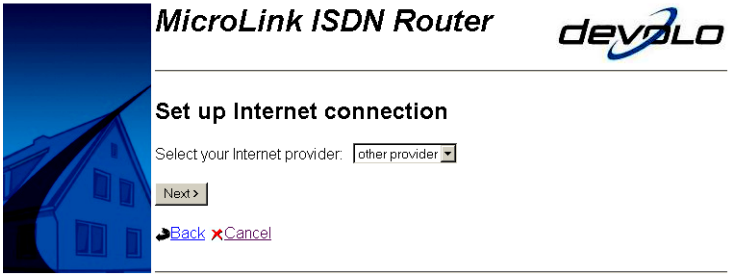
The computer you are using to configure the MicroLink (dLAN) ISDN Router must be set up to receive network settings automatically. For further information, please see the documentation of your operating system.

① Open your browser and enter the URL 'http://192.168.0.251'.

② Click 'Set up Internet connection', to start the corresponding wizard.

③ A list of countries appears. For each country, selected Internet service providers have been pre-configured. Select your location from the list and click 'Next'.

④ Choose your Internet provider from the list and confirm your choice by clicking 'Next'.



*If you are using an **unlisted** provider, select the entry 'other provider' and set up the connection manually.*

⑤ Enter the call number for your Internet provider. If your router is connected to a branch exchange, enter the number you have to dial to access an outside line in the 'Number to access an outside line' field (such as "9"). Then click 'Next'.

⑥ Some Internet service providers require you to enter additional access data (such as a user name and password). This is data that you receive from your Internet service provider. Enter the data accordingly and then click 'Next'.

⑦ To confirm and save the new data to your router, click 'Finish'.

⑧ Finally, check whether the Internet connection works by entering a URL such as www.devolo.com in your Web browser. Once your Internet access is working correctly, set the remaining connected computers to automatically receive network settings. For further information, please see the documentation of your operating system.

3.1.3 Checking your Internet connection

After you have configured your Internet connection correctly, the router can establish a connection to the Internet automatically for all computers on the

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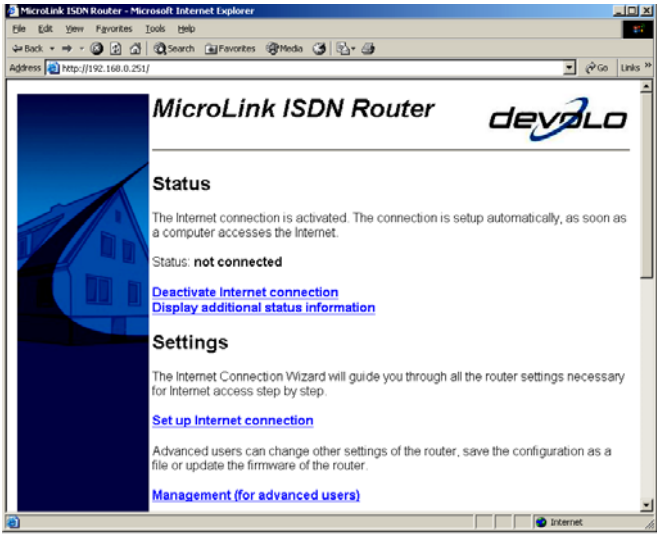
network. Data for checking the Internet connection is provided on the entry page of the router configuration utility (http://192.168.0.251).



From this site, you can view whether you are currently connected to the Internet in the section called 'Status'. The advanced status includes, in addition to ISDN connection data, the current IP and DNS addresses assigned to the router from your Internet service provider and the duration of the current Internet connection. The 'Cost control' section indicates the valid time limits and the amount of minutes used so far (see “Cost control” on page 21).

To update and view the latest data, simply click the refresh button in your browser.

If you want to disable access to the Internet from the computers on your network completely, you can disable the Internet connection on the entry page of the router configuration utility. This does not affect the router settings. All access data for the Internet connection remain intact for later use. To enable the Internet connection again, simply click the 'Activate Internet connection' button on the entry page of the router configuration utility.

3.2 Advanced configuration

In this chapter, we will be guiding you through the advanced configuration of the MicroLink (dLAN) ISDN Router, explaining its functions and settings.

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3.2.1 Start Advanced configuration

① Open your browser and enter the URL 'http://192.168.0.251'.

② Select 'Management (for advanced users)'.

③ Click the 'Display expert configuration' link.

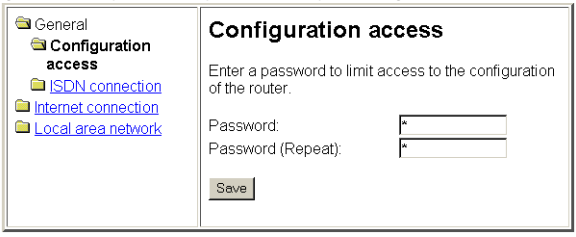
Keep in mind that the settings you have configured only take effect if you confirm them by clicking 'Save'.

3.2.2 General

Configuration access

Specify the configuration password here.

Select a password to prevent unauthorized access to the configuration of your router. Enter it into both fields. Should you ever forget your password, you will need to press the 'Factory Default' button. However, this will also delete all of your configuration data. You will then need to set up the router again. Save your new password by clicking 'Save'.



Please note that changing the configuration password will block the setup wizard. Use of the setup wizard is disabled if a configuration password is set up.

ISDN connection

For 'Own phone number (MSN)', specify the call number of your ISDN connection (without area code). If your router is connected to a branch exchange, specify the number you have to dial to access an outside line in the 'Number to access an outside line' field (such as "9").

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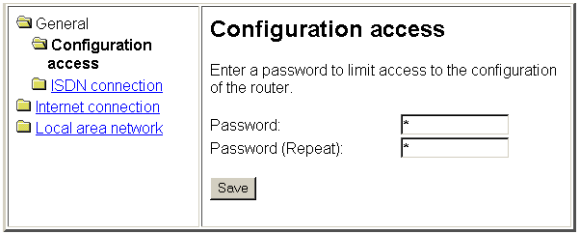
3.2.3 Internet connection

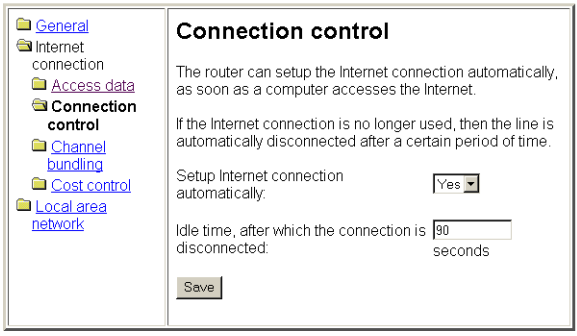
Access data

Here you can view and modify the access data for your Internet service provider.



Connection control

Your router can connect automatically to the Internet when an application on a computer on your network (such as an Internet browser or e-mail program) requests access to the Internet. If you want to disable this feature, select 'No' for the 'Set up Internet connection automatically' option.



The 'Idle time, after which the connection is disconnected' option indicates how many seconds the connection should be kept even though none of the computers on the network has sent any data to the Internet. To keep the connection from being interrupted too frequently, which requires the router to reestablish the connection when needed, do not enter this value too low. We recommend setting this value between 60 and 180 seconds initially, and adjusting later as necessary.

Note that modern operating system features (like the Windows Update feature) and various programs such as e-mail and file-sharing clients can be con-

figured to connect to the Internet automatically, which can cause charges to add up from your service provider.

For this reason, once you are done setting up the router, pay attention to the router to see how and when it connects to and disconnects from the Internet. The cost control setting is pre-configured to a maximum of seven online hours per week (see "Cost control" on page 21).

Channel bundling

If the connection to the Internet becomes too slow for your needs, you can combine the bandwidths of two ISDN lines (called channel bundling).

The difference between channel bundling and a "normal" connection is that bundling uses two ISDN lines simultaneously to transfer data to and from the Internet.

You can use the 'Activate automatic channel bundling' option to enable or disable this feature. The 'Idle time, after which the second line is disconnected' indicates how long the router should keep the second ISDN line open if it is not being used.

Be aware that the use of a second ISDN line incurs additional charges. Furthermore, using the second ISDN line for the Internet connection may make it impossible for you to use the telephone at the same time.

Cost control

Your MicroLink (dLAN) ISDN Router can help you keep online costs under control. To do so, specify for 'Cost control' how much online time is to be allowed during a specific period. Once this time has elapsed within this period, the router will no longer establish any connections to the Internet. If you want to disable cost control, simply specify "0" for the 'Maximum connection time'.

If the maximum online time limit has elapsed within the specified period, the router automatically closes the current connection. Reconnecting to the Internet is possible if:

- You click the 'Remove connection block' option on the entry page of the router configuration utility.
- You shut off and then switch on the router.
- You modify the value for the period or for the maximum online time.
- Or the specified period ends.

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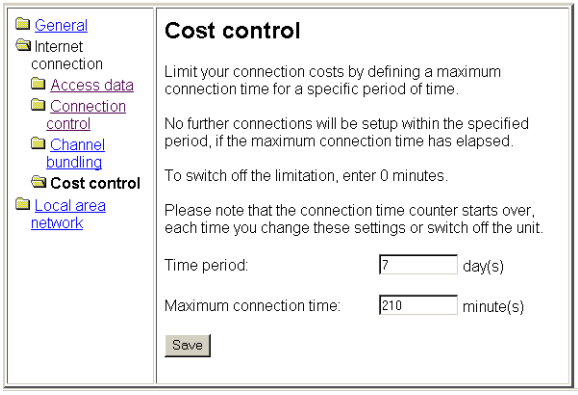
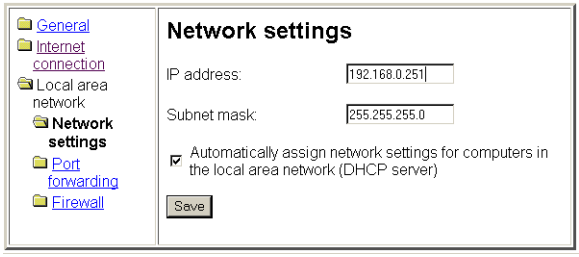


If cost control is enabled, be sure you have enough time when connected to complete large downloads. Once the maximum online time limit has elapsed, the router disconnects from the Internet without any warning. Another option is to use a download manager that allows you to resume downloads that have been interrupted.

3.2.4 Local network

Network settings

On this screen you can specify the 'IP address' to be used to access your router from the network. The default setting is '192.168.0.251'. This screen is also used to specify the subnet mask (default: '255.255.255.0'). If you want to use your MicroLink (dLAN) ISDN Router as a DHCP server, check the box next to 'Automatically assign network settings for computers in the local area network (DHCP server)'.



Please note that changing the IP address will block the setup wizard. The setup wizard can only be used if the MicroLink (dLAN) ISDN Router can be reached at its default IP address of '192.168.0.251' with the subnet mask of '255.255.255.0'.

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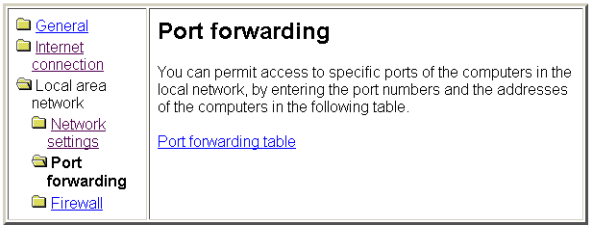
Port forwarding

The computers on your network are not directly accessible from other computers on the Internet. To make web servers, FTP servers and other applications available, you can enable port forwarding.



Follow these steps to configure a port for port forwarding:

① Click 'Port forwarding table'. The window that appears contains a table that lists port ranges and the IP address corresponding to the target computer.

② Click 'Add'.

③ Use the 'From port' and 'To port' fields to define the range of ports from which incoming requests will be forwarded to the target computer (for example, "80" for HTTP requests).

④ For 'Forward to IP address', enter the IP address of the target computer to which requests are to be forwarded.

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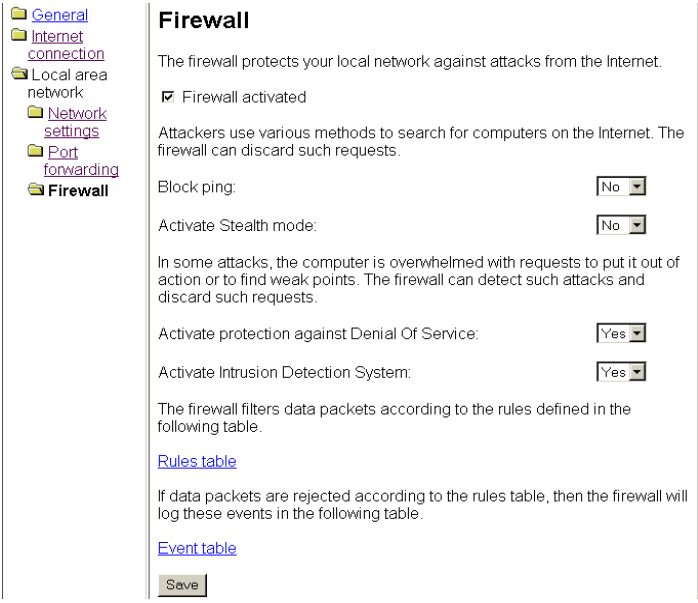
Confirm your settings and return to the port forwarding table by clicking 'Save'. The table now displays the new port forwarding settings. You can change the forwarding settings by clicking the start port. The two icons to the left of each entry allow you to copy or delete the port forwarding settings.

Firewall

The 'Firewall' screen allows you to enable or disable the firewall of the MicroLink (dLAN) ISDN Router.



The other settings here allow you to define how your router and your network are protected.

Many attacks on a computer network begin with a simple ping to an IP address. If a ping is responded to, the attacker knows that he has found a potential target. Blocking the ping prevents the router from answering it. This also makes it impossible to find the router via a "traceroute" request.

In addition to the actions mentioned above, reactions to certain port requests may also reveal whether there is a computer at the queried address. To prevent this, use the 'Stealth mode' feature. If enabled, it hides all non-open ports.

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You can also protect the router from Denial-of-Service attacks. Denial of Service (DoS) attacks are attacks to a computer or network with the objective of creating as much data traffic as possible and thereby overloading the system. If DoS protection is enabled using the 'Activate protection against Denial Of Service' setting, the router, after detecting a DoS attack, discards all corresponding packets.

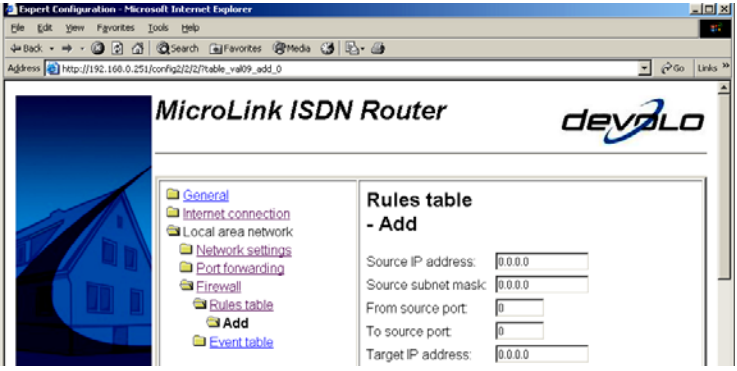
The Intrusion Detection System (IDS) is used to detect intruders in a computer or network.

The 'Activate Intrusion Detection System' option lets you configure how the firewall is to react to a detected intrusion attempt and how it is to deal with the corresponding packets. The following are your options:

- 'Yes': The packets are discarded without notification.
- 'No': The packets are forwarded.

Additionally, you can instruct the firewall to filter out certain data packets.

① Click 'Rules table'. This opens a window with a list of rules. Click 'Add'.



② You can define the rules in the window that follows. The following options are available:

- 'Source IP address': Source IP address, or 0.0.0.0 if the filter is to apply to all IP addresses.
- 'Source subnet mask': Source subnet mask which, together with the source IP address, determines the source network, or 0.0.0.0 if the filter is to apply to all IP addresses.
- 'From source port' and 'To source port' define the port range for the packets being filtered. If both values are specified as 0, the filter applies to all source ports.

- 'Target IP address': Target IP address, or 0.0.0.0 if the filter is to apply to all IP addresses.
- 'Target subnet mask': Target subnet mask which, together with the target IP address, determines the target network, or 0.0.0.0 if the filter is to apply to all IP addresses.
- 'From target port' and 'To target port' define the port range for the packets being filtered. If both values are specified as 0, the filter applies to all target ports.
- 'Action': This is used to define how the firewall is to treat a specific packet. The following are your options:
  - 'Transmit packet': The packet is allowed through.
  - 'Reject packet': The packet is discarded without notification.
  - 'Discard packet': The packet is rejected and the sender is notified accordingly.

Confirm your settings and return to the list of rules by clicking 'Save'. You can modify the entry by clicking the source IP address. The two icons to the left of the entry allow you to copy or delete it.

Clicking the 'Event table' opens a list containing all the logged events that have been triggered by the rule. To make sure you can accurately trace events in the log, check that the system time is set correctly in the router. To do so, go to the router utility start page, then select 'Management (for advanced users)' and then 'See date and time'.

3.3 Saving and restoring your configuration

You can save all of the settings for your MicroLink (dLAN) ISDN Router to a file on disc simply by selecting 'Management (for advanced users)' and then 'Save configuration as file' on the entry page of the router configuration utility. If at a later time your settings are inadvertently changed, you can load the settings of the saved file into the router by clicking 'Restore configuration from file'.

3.4 Uploading new firmware

The firmware is the router's internal program. It may be updated from time to time. If you experience problems with your MicroLink (dLAN) ISDN Router, download the latest firmware version from the devolo homepage at www.devolo.com. Then carry out these steps:

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① On the start screen of the configuration utility, click 'Management (for advanced users)' and then click 'Upload new firmware'.

② Click 'Browse'.

③ Specify the location of the firmware file and then click 'Open'.

④ Now click 'Start upload' to load the new firmware into the router.

4 devolo MicroLink dLAN software

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In this chapter, we will introduce you to the devolo MicroLink dLAN Configuration Wizard, the MicroLink Informer MicroLink EasyShare software and the HTML configuration interface. We will also describe the installation and configuration of your dLAN network using the MicroLink dLAN Configuration Wizard.

4.1 Overview of the devolo software

4.1.1 MicroLink dLAN Configuration Wizard

The MicroLink dLAN Configuration Wizard helps you to build and change your encrypted dLAN network. With its help, you can add the MicroLink (dLAN) ISDN Router to your network. It allows you to configure all dLAN adapters on the network from a central location, such as from a single workstation. For the encryption process, you need the security IDs of all MicroLink dLAN adapters and the MicroLink (dLAN) ISDN Router (provided on the underside of unit) and a network password of your choosing, which you will assign.

4.1.2 MicroLink Informer

The MicroLink Informer displays information regarding all dLAN devices on your network, such as their MAC addresses and current transfer speeds.

*The MAC address (**M**edia **A**ccess **C**ontrol) is a serial number which is unique throughout the entire world. It is permanently programmed in the hardware and cannot be altered. You can find the MAC address of the MicroLink (dLAN) ISDN Router on the bottom of the unit.*

4.1.3 MicroLink EasyShare

MicroLink EasyShare is a file-sharing and chat tool for your local network. It allows you to exchange files easily between local Windows computers. The chat function allows instant communication between all network users. MicroLink EasyShare is very user-friendly and easy to use.

4.2 Installation of the devolo MicroLink dLAN software

The devolo MicroLink dLAN software is normally installed together with the setup wizard. To install the devolo software separately on a computer with a Windows operating system, follow the steps below.

① Put the enclosed devolo product CD in your CD-ROM drive. The 'devolo MicroLink dLAN ISDN Router' setup software will start automatically.

If it does not start automatically, run the file 'autorun.exe' in the root folder of the product CD.

② In the CD setup select 'Install MicroLink dLAN ISDN Router software'.

③ Select the software components ('devolo MicroLink dLAN Configuration Wizard', 'devolo MicroLink Informer' and/or 'devolo MicroLink EasyShare') that you want to install and click **Next**.

④ The next dialog window shows the default target directory (preset by devolo), to which the devolo software will be installed. You can accept the suggested directory or select a new one. Confirm your selection by clicking **Next**.

⑤ Confirm once again by clicking **Next**, then end the installation by clicking **Finish**.

⑥ Once the installation has completed successfully, launch the devolo application via **Start** ▶ **Programs** ▶ **devolo** ▶ **MicroLink dLAN Configuration Wizard**, **MicroLink EasyShare, MicroLink Informer** or **MicroLink dLAN ISDN Router installation**.

4.3 Configuring the dLAN network with the MicroLink dLAN Configuration Wizard

Please have at hand the security IDs of the dLAN adapter, which you have written down earlier. The MicroLink dLAN Configuration Wizard requires this for configuring the network. You can find the security ID on the bottom of the unit.

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

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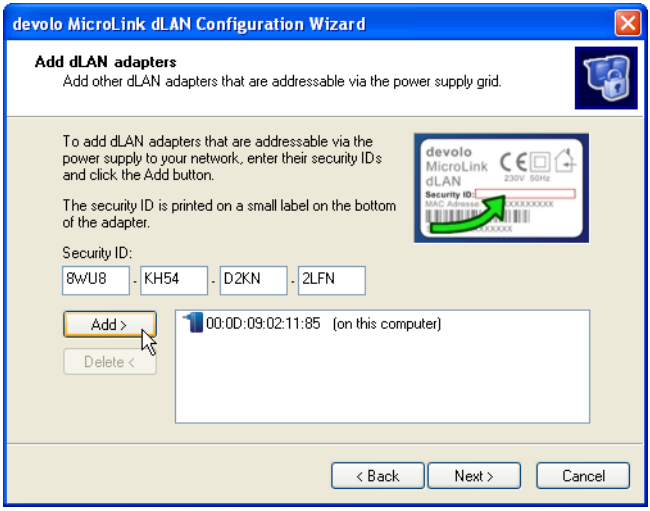
② Confirm with **Next**. The MicroLink dLAN Configuration Wizard starts the network analysis and searches your network for the dLAN adapters.

Make sure that all of the dLAN adapters that you want to add to your network are also connected to the power supply grid.

③ The dLAN adapter that is directly connected to your computer is detected automatically. All other dLAN adapters must be registered manually. To do so, enter in sequence the security IDs of the dLAN adapters which, together, you want to make form a network.

④ Then, click **Add** and confirm with **Next** after you have entered all the dLAN adapters you want to add.



⑤ In the next dialog window, enter the network password you have chosen twice and confirm with **Next**.

*The password set up initially by devolo is **HomePlug**.*

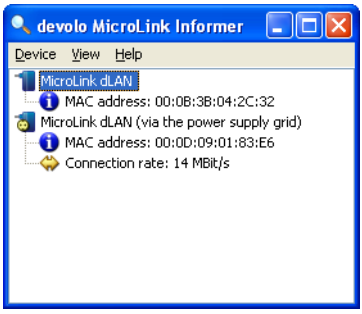
⑥ Your network password is now assigned to the dLAN adapters you have selected for the network.

⑦ Finish the process of protecting your network by clicking **Finish**. Your dLAN network is now protected from unauthorized access from outside.

You can change and/or update the configuration of the dLAN network at any time. To do so, repeat the configuration process described above.

4.4 Overview of the dLAN with the MicroLink Informer

With MicroLink Informer, you always have an overview of the dLAN adapters on your dLAN network. MicroLink Informer displays the dLAN adapter connected directly to the computer, as well as all dLAN adapters which are available on the network and which belong to the same dLAN network.



In addition to other information, MicroLink Informer displays the MAC address of each dLAN adapter and the current connection data rate.

You can use the **Device** ▶ **Rename** command to change the name of the highlighted device.

Right-clicking on one of the dLAN adapters opens a context menu in which the following commands are available:

- 'Rename' opens a dialog in which you can assign a new name to the device.
- 'Start dLAN configuration wizard' opens a dialog in which you can add new dLAN adapters to the dLAN network and assign the network password.

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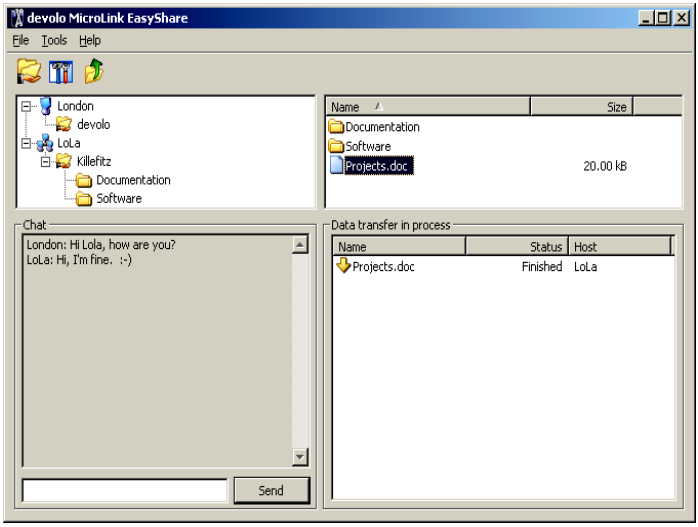
4.5 Communication in the dLAN with the MicroLink EasyShare

All users on the local network who have started MicroLink EasyShare are automatically recognized by the program and listed:



4.5.1 Configuration

The MicroLink EasyShare software provides two easy wizards, which will guide you quickly and easily through the configuration process: the first setup wizard, which starts automatically the first time the program is started, and the sharing wizard, which allows you to add shared items at any time. The individual functions of the MicroLink EasyShare software are described here:

Folder sharing

To share data with others, a MicroLink EasyShare network user has to make the data available in a shared folder. When a folder is shared, all of its files as well as the files of all its subdirectories become available to all users on the MicroLink EasyShare network. Folders can be shared either by using the initial setup wizard, which opens automatically the first time the MicroLink EasyShare is started, or by using the sharing wizard. You can open the sharing wizard by clicking the **Add share** button, or by selecting **File** ▶ **Add share** from the menu.

Refreshing shared folders

To view (newly) shared folders of other MicroLink EasyShare network users, select **File ▶ Refresh** from the menu, or **Refresh** from the context menu (right mouse button). The contents of all shared folders will appear in the top right-hand window.

Downloading files

To download shared files from other MicroLink EasyShare network users, select the computer belonging to the user and then mark the shared folder for that user. The upper-right window then lists all the contents of the folder. From the list, mark the files and/or folders that you want to download and then select **File ▶ Download** from the menu, or **Download** from the context menu (right mouse button). Choose a target folder on your computer and confirm by clicking **OK**. The files are now downloaded to your computer. The status of the download is displayed in the lower-right window entitled 'Data transfer in process'.

Data transfer in process

All 'Data transfer in process' are displayed in the lower right window and disappear from the screen once they are finished.

- The 'Name' column indicates the name of the file being downloaded.
- The 'Status' column shows the current transfer progress and the transfer speed.
- The 'Host' column shows the computer from which the file is being downloaded, or to which it is being uploaded from your computer.

You can cancel the current download by clicking the file and selecting **Cancel** from the context menu (right mouse button).

Chatting

The lower left window functions as a chat room, which is visible and accessible to all MicroLink EasyShare users on the local network. Users can "chat" by writing messages and clicking **Send**.

5 Appendix

5.1 Performance data and specifications

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	MicroLink ISDN Router	MicroLink dLAN ISDN Router
LAN standards	Ethernet specification IEEE 802.3; Fast Ethernet specification IEEE 802.3u; Full duplex specification IEEE 802.3x	
ISDN standard	DSS1 (Euro-ISDN), 1TR6 (German national ISDN standard), basic connection (multi-device connection)	
dLAN		HomePlug-compatible
Transfer throughput ISDN	up to 64,000 – 128,000 bps with channel bundling	
Firewall	Protection against the following attacks: IP spoofing, ping of death, land attack, reassembly attack, SYN flooding, DoS attack	
dLAN security		DES_{pro} encryption over the power supply grid
Ports	4 LAN with Auto MDI-X (LAN ports can also be used as uplink ports)	
WAN connection	Connection type: RJ 11	
LEDs	Power, 4x3 status LEDs for Ethernet connections and uplink port, 3 for ISDN status	Power, 4x3 status LEDs for Ethernet connections and uplink port, 3 for ISDN status, 2 for HomePlug connection
Computer interface	RJ45	
Protocols	CSMA/CD, TCP/IP	
System requirements	CD-ROM drive, for Internet access: ISDN connection	
Power supply	9 V AC/800 mA adapter	Power supply pack: 230V / 12V DC; 700 mA
Ambient conditions	5–40°C, 10–80% humidity (non-condensing)	
CE conformity	CE conformity in accordance with the technical requirements for all EU countries and Switzerland: EN 60950-1: 2001 EN 55024: 1998+A1: 2001 EN 55022: 1998 +A1 :2000 (Class A)	
Warranty	3 years	

5.2 Declarations of conformity

CE

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KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

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

erklärt, dass das Produkt: **MicroLink® ISDN Router**
declares that the product:

Verwendungszweck: **ISDN-zu-Ethernet-Router**
Intended purpose: ISDN-to-Ethernet router

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 60950-1: 2001

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 55024: 1998 +A1: 2001
EN 55022: 1998 +A1: 2000 +A2: 2003

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

Aachen, 21. September 2004
Aachen, 21st September 2004

Heiko Harbers
Vorstandsvorsitzender
CEO

EN

CE

KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

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

erklärt, dass das Produkt: **MicroLink® dLAN® ISDN Router**
declares that the product:

Verwendungszweck: **ISDN-zu-Ethernet-Router mit PLC-Adapter**
Intended purpose: ISDN-to-Ethernet router with PLC 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 60950-1: 2001

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 55024: 1998 +A1: 2001
EN 55022: 1998 +A1: 2000 +A2: 2003
and Expert Opinion by Competent Body EMC (CE 0682)

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

Aachen, 21. September 2004
Aachen, 21st September 2004

Heiko Harbers
Vorstandsvorsitzender
CEO

5.3 CE conformity

The product conforms to the basic requirements of Directive 1999/5/EC (R&TTE) and the other relevant provisions of the FTEG (Radio and Telecommunications Terminal Equipment Act), and is designed for use in the EU and Switzerland.

MicroLink dLAN ISDN Router only

This product is 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.

5.4 Care and maintenance of the device

There are no user-serviceable parts inside the case. Do not open the case. Clean the unit by wiping dirt from the case using an eyeglasses cleaning cloth or other soft cloth. Never use water, paint thinner, benzene, alcohol or other strong cleaning agents when cleaning the MicroLink (dLAN) ISDN Router, as these could damage the case.

5.5 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:

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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 any 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 rendered 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 seven days.

b) In the case of any externally visible damage arising from transport (e.g. damage to the case), the person responsible for the transportation and the sender should be informed immediately. On discovery of damage which is not externally visible, the transport company and devolo are to be immediately informed in writing, at the latest within three 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 if

a) the label with the serial number has been removed from the device,

b) the device is damaged or destroyed as a result of acts of nature or by environmental influences (moisture, electric shock, dust, etc.),

c) the device was stored or operated under conditions not in compliance with the technical specifications,

d) the damage occurred due to incorrect handling, especially due to non-observance of the system description and the operating instructions,

e) the device was opened, repaired or modified by persons not authorized by devolo,

f) the device shows any kind of mechanical damage,

g) 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 software, hardware, 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.