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Packet contents:

- 1x** Hama Wireless LAN Router 54 Mbps
- 1x** 12V power supply
- 1x** printed operating instructions
- 1x** configuration cable

Remark concerning the positioning:

The connection quality depends strongly on the place or surroundings where you put up the WLAN device. Please ensure that the device or its antennae are neither covered nor built in. We advise you against putting it up near metallic objects or other electric or radiant devices. In case of reception fluctuations or connection interruptions we recommend you to move interference sources such as DECT telephones, mobile phones, Bluetooth devices or other WLAN networks out of the way. If this is not possible, it may also be helpful to change the cable.

System requirements:

- Operating system with TCP/IP protocol installed
- Java-capable web browser such as Mozilla Firefox or Microsoft Internet Explorer

Safety instructions:

Do not use the device in moist or extremely dusty areas, on radiators or in the vicinity of heat sources. This device is not designed for use outdoors. Protect the device from pressure and impact. The device may not be opened or moved during operation. Do not operate the device without a screwed-on antenna.

Caution! Use the router with the enclosed power supply unit only. Using other power supply units can cause irreparable damage to the product.

Note: The router establishes a permanent connection to the Internet. You should, therefore, use a flat-rate tariff. Connection costs can be very high, especially with pay-as-you-go tariffs. Even if you pay your bill based on data volume, you might face higher costs than expected. Please note that closing the browser and turning off your PC does not automatically disconnect you from the Internet. Furthermore, a number of programs send queries to or receive data from the Internet without clearly indicating this activity. **If you want to ensure that there is no active connection to the Internet, you should switch off the device or disconnect it from the modem.**

1. Connecting the Wireless LAN Router

1. Connect the computers and other network devices such as hubs/switches to sockets 1-4. Use a crossover or CAT5 patch cable (max. 100m). The integrated switch automatically identifies the connection speed of 10 or 100Mbps, half/full duplex transfer mode and the type of cable used.
2. Connect the Ethernet port of your modem to the WAN connection on the router. A 1:1 or crossover cable is required depending on the modem. In most cases, the existing connection cable can be used.
3. Plug the power unit supplied into an empty socket and connect it to the router. Caution: Unsuitable power supply units can cause damage!

Checking Installation

There are various status indicating LEDs on the top of the device:

| LED | Condition | Status |
|--------|-------------|---|
| Power | Illuminated | Power unit is connected and supplying electricity |
| | Off | No power unit connected, device not being supplied with electricity |
| WLAN | Flashing | Wireless LAN is activated / data is being sent |
| | Off | Wireless LAN is deactivated |
| WAN | Illuminated | The WAN port has generated a correct network connection |
| | Flashing | Data transfer via WAN port |
| | Off | No connection |
| LAN1-4 | Illuminated | The corresponding LAN port has generated a correct network connection |
| | Flashing | Data transfer via respective LAN port |
| | Off | No connection |

2. Configuring the operating system and computer

The TCP/IP protocol must be installed on all PCs that will be using the Internet. By default, the IP address 192.168.2.1 and an activated DHCP server are configured for the router. This means that the connected PCs are automatically given appropriate addresses and other settings. We recommend using these settings.

Proceed as follows to check the settings on your PC:
Start -> Settings -> Control panel -> Network connections
Select the connection (network adapter) via which your PC is connected to the router, e.g. "LAN connection". When you right-click the corresponding connection, a menu is displayed in which you select Properties.

Select the **Internet Protocol (TCP/IP)** entry in the list and click **Properties**.



Select **Obtain an IP address automatically** and **Obtain DNS server address automatically!** Confirm by clicking **OK**, and again in the subsequent window.

Your PC is now configured such that the router assigns the IP address automatically. You can then configure the router using the web browser.

The browser must be Java-capable and the Java function must be activated (e.g. Internet Explorer 6.0 or better, or Mozilla Firefox).



3. Configuring the Wireless LAN Router

To start the configuration process, open your browser and enter "http://192.168.2.1" as the address.

The login window is then displayed. By default, the user name is set to **admin** and the password is **1234**. After entering these, click **OK** to log on to the router.

You can configure the router via the integrated Setup Wizard or manually. After configuration using the Setup Wizard, the device is set so that the connected computers can access the internet.

Note! For security reasons, you must change your user name and password. The standard settings are identical for many devices and can allow others to access the router configuration. See Page 09 for information.

The configuration surface gives you the possibility to change between the German and the English language. Choose the desired language in the browser window at the top on the right. The language is altered immediately and can always be changed again.

3.1 Configuring using the Wizard

Please start the Setup Wizard after logging in by clicking **Quick Setup Wizard**. Then click **Next**.

3.1.1 Time zone

The router can synchronize the time with a time server in the Internet. To do so, activate **Enable NTP client update**. Then select the correct time zone under **Time Zone Select**, for example „(GMT) London, Dublin, Lisbon“. Select an NTP server in Europe. Click **Next** to continue.



3.1.2 LAN settings

The IP address and subnet mask can, in most cases, be left at their default settings. Click **Next** to confirm.

3.1.3 Broadband connection (WAN Interface Setup)

In the next step, you will be asked to specify the WAN connection type (**WAN access type**). Usually, this is PPPoE. Due to the widespread use of DSL via PPPoE, the remainder of the description will refer to this type of connection. After you select PPPoE, you must enter a **user name** and **password** for your Internet provider. Click **Next** to confirm.



3.1.4 Wireless LAN basic settings

Wireless LAN is deactivated by default for security reasons. If you want to activate the function, uncheck **Disable Wireless LAN Interface**.

Access point mode is the most common. This mode allows you to connect the WLAN device to the router. Select the AP option as the mode. The following description will refer to this operating mode.

Using the selection under **band**, you can specify whether the device runs in the 2.4 GHz band in accordance with the 802.11b (11 Mbps), 802.11g (54 Mbps) standard or works in combination with 802.11b and 802.11g. Then specify the **SSID**. The SSID can be up to 32 characters long and must be identical for all devices in the network. The **Channel Number** allows you to select the channel in which the data is to be transferred. 13 channels are available. Click **Next** to confirm your entries.



3.1.5 Wireless LAN security settings (wireless security)

You can set the encryption for your wireless network here. Note that activating Wireless LAN without also setting encryption results in a security risk. For this reason, use one of the encryptions options described in the following.

a) Encryption type WPA (Wi-Fi Protected Access)

We recommend using encryption option **WPA(TKIP)**, **WPA2(AES)**, or **WPA2 Mixed**. WPA stands for Wi-Fi Protected Access and offers high protection for wireless networks. WPA contains the WEP architecture, but offers additional protection through dynamic keys based on the Temporal Key Integrity Protocol (TKIP). WPA2 is a development of WPA and uses a different encryption algorithm, advanced encryption standard (AES). WPA2 Mixed Mode allows clients using WPA or WPA2 to access the access point. The mixture is very practical if not all clients are WPA2 compatible.

Then select the **key format** (pre-shared key format). Select either **Pass phrase** for a key with a length of at least 8 and a maximum of 63 characters, for which letters (A-Z), numbers, and punctuation marks can be used, or **Hex** for a 64-character key, in which only numbers from 0-9 and letters from a-f can be used. The next step is to enter a key (pre-shared key). Any client wanting to access the access point must know this character string. Then end the Wizard by clicking **OK**.

b) Encryption type WEP (Wired Equivalent Privacy)

WEP is a standard encryption algorithm for WLAN. It controls access to the network and guarantees the integrity of the data. This method is considered vulnerable due to a range of weaknesses. Therefore, if possible, you should use WPA instead.

To use WEP, first select **WEP** as the encryption option. Then select whether you want to use 64 bit or 128 bit encryption (for key length), whereas the latter offers greater security. Next, select either **Hex** (characters from 0-9 and a-f) or **ASCII** (any character) for the **Key format**. This also determines the length of the key.

You can preset up to four keys in **Default Tx Key**.

Select **Key 1**, for example, and enter your key of choice with the required length in the fields underneath the selection.

Examples:

64 bit Hex (10 characters) = 231074a6ef

64 bit ASCII (5 characters) = j31n!

128 bit Hex (26 characters) = 231074a6b9773ce43f91a5bef3

128 bit ASCII (13 characters) = urlaub2006.+0

Then end the Wizard by clicking **OK**.

3.2 Configuration as repeater (WDS mode)

What is **WDS**? Wireless Distribution System is the name for wireless connections between multiple access points, and also allows clients to log-in, which is not permitted by other bridge modes. The bandwidth of the network is halved for each additional access point as the packets have to be sent twice.

This makes it a combination of the previous modes.

From the start view, which you can access by clicking **Home**, select **Setup** and then **WLAN/Basic Settings** in the menu on the left.

Wireless LAN is deactivated by default for security reasons. If you want to activate the function, uncheck **Disable Wireless LAN Interface**.



The selection under **Band** allows you to specify whether the device runs in the 2.4 GHz band in accordance with the 802.11b (11Mbps), 802.11g (54Mbps) standard or works in combination with 802.11b and 802.11g.

Select AP+WDS under **mode**. This sets the network type to infrastructure.

The client network requires **SSID**, which is used for identification purposes in the network and must, therefore, be identical for all users of the client network. The SSID can be up to 32 characters long. Letters and numbers are allowed.

The **Channel Number** allows you to select the channel in which the data is to be transferred. 13 channels are available.

Click **Apply** to save the settings. Then switch to the menu item WDS and select the check box **Activate WDS**. Enter the MAC address of another access point into the appropriate field. This is exactly how you must enter the MAC address of this access point for any other access point. You can find the MAC address of this access point under **Status**. Then click **Security Settings**. You



can enter the encryption for the connection in the window that opens. Make sure that this encryption exactly matches the set encryption at other access points. You can find more information on the various encryptions in section **Wireless LAN Security Settings**. Click **Apply** to save the settings and close the window for security settings.

Click **Apply changes** to save your entries.

Repeat the above steps to for additional access points.

Please note that when operating two or more access points in a network, the DHCP server may be activated at one access point only. Assign a relevant IP address for all access points.

For example:

1. Access Point IP address 192.168.2.1; Subnet mask 255.255.255.0; DHCP on
2. Access point IP address 192.168.2.2; Subnet mask 255.255.255.0; DHCP off
3. Access point IP address 192.168.2.3; Subnet mask 255.255.255.0; DHCP off
etc.

3.3 Changing log-in data

From the start view, which you can access by clicking **Home**, select **General Setup** and then **System => Password Setup** in the menu on the left.

This page allows you to enter a new password for the router. Click **Apply** to confirm your entries.

4. Tools

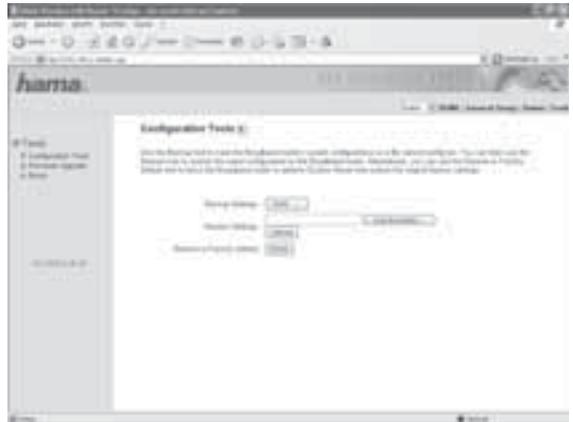
The Hama Wireless LAN router provides you with various tools to help you configure and use the device.

4.1 Configuration Tools

From the start view which can be accessed by clicking **Home**, select **Tools** in the menu at the top right, and then **Configuration Tools** in the menu on the left.

This page allows you to save all configuration options of the router. Click **Save** to do so. Then select the target folder. You should also set a file name which allows you to identify the file clearly. Click **Save** after your selection. The settings are now saved. If you want to restore the saved settings at a later time, click **rowse** and then select the configuration file required. Click **Upload** to load the file. The router takes a few seconds to load the file and then to restart. The selected LAN configuration is valid after restarting.

To reset the router to the default settings, click **Reset (Restore to Factory Default)**. Click **OK** at the next prompt. All settings are reset to the default settings.



4.2 Firmware Update

From the start view which can be accessed by clicking **Home**, select **Tools** in the menu at the top right, and then **Firmware Upgrade** in the menu on the left. To do so, click **Next** in the next window.

Click **Browse** to select the new firmware file in the next window. Click **Apply** after you select the file. The new firmware is loaded and the router is restarted.

Warning! Earlier settings are lost when new firmware is loaded.

5. Status information

From the start view, which you can access by clicking **Home**, select **Status** in the menu at the top right. Here you can find detailed information on the device status.

6. Support and Contact Information

If products are defective:

Please contact your dealer or Hama Product Consulting if you have any product claims.

Internet / World Wide Web:

Product support, new drivers or product information can be found at www.hama.com

Support Hotline – Hama Product Consulting:

Tel. +49 (0) 9091 / 502-115

Fax +49 (0) 9091 / 502-272

E-mail: produktberatung@hama.de

Note:

This product may only be used in Germany, Austria, Switzerland, France, England, Belgium, Spain, Holland, Denmark, Hungary, Poland, Sweden, Luxemburg, Ireland, Greece, Romania, the Czech Republic, Slovakia and Finland.

See www.hama.com for the declaration of conformity with R&TTE Directive 99/5/EC.



