D-Link®

DSL-224

Wireless N300 VDSL2 Router with ASDL2+/Ethernet WAN Support

BEFORE YOU BEGIN

Delivery Package

- Router DSL-224

- Power adapter DC 12V/1A

- RJ-11 telephone cable

- Ethernet cable

- Splitter

- "*Quick Installation Guide*" (brochure).

If any of the items are missing, please contact your reseller.

The "*User Manual*" and "*Quick Installation Guide*" documents are available on D-Link website (see www.dlink.ru).

> **!** **Using a power supply with a different voltage rating than the one included will cause damage and void the warranty for this product.**

Default Settings

Domain name of device	`dlinkrouter.local.`
IP address of device	`192.168.1.1`
Username (login)	`admin`
Password	`admin`
Name of wireless network (SSID)	`DSL-224`

System Requirements and Equipment

- A computer with any operating system that supports a web browser.
- A web browser to access the web-based interface of the router:
  - Apple Safari 8 and later
  - Google Chrome 48 and later
  - Microsoft Internet Explorer 10 and later
  - Microsoft Edge 20.10240 and later
  - Mozilla Firefox 44 and later
  - Opera 35 and later.
- A NIC (Ethernet or Wi-Fi adapter) to connect to the router.
- An 802.11b, g, or n Wi-Fi adapter to create a wireless network.

CONNECTING TO PC

PC with Ethernet Adapter

1. Connect an Ethernet cable between any of LAN ports located on the back panel of the router and the Ethernet port of your PC.

2. ***To connect the device to a DSL line:*** connect a phone cable between the DSL port of the router and the **MODEM** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **LINE** port of the splitter.

3. ***To connect the device to an Ethernet line***: please connect the router to the ISP's Ethernet line only after setting the WAN port and creating the Internet connection (see the ***Initial Configuration Wizard*** section, page 17).

4. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.

5. Turn on the router by pressing the **ON/OFF** button on its back panel.

Then make sure that your PC is configured to obtain an IP address automatically (as DHCP client).

Obtaining IP Address Automatically (OS Windows 7)

1. Click the **Start** button and proceed to the **Control Panel** window.

2. Select the **Network and Sharing Center** section. (If the Control Panel has the category view (the **Category** value is selected from the **View by** drop-down list in the top right corner of the window), choose the **View network status and tasks** line under the **Network and Internet** section.)

3. In the menu located on the left part of the window, select the **Change adapter settings** line.

4. In the opened window, right-click the relevant **Local Area Connection** icon and select the **Properties** line in the menu displayed.
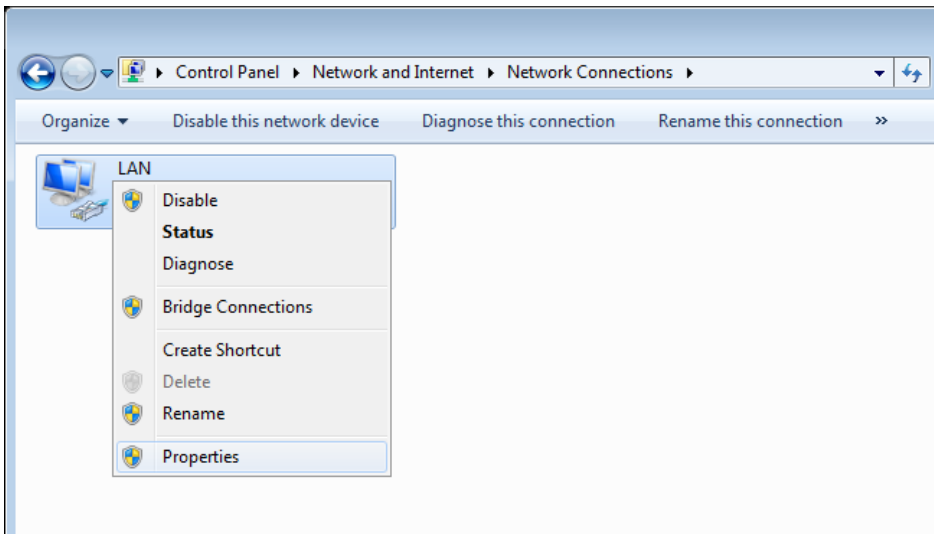
5. In the **Local Area Connection Properties** window, on the **Networking** tab, select the **Internet Protocol Version 4 (TCP/IPv4)** line. Click the **Properties** button.

6. Make sure that the **Obtain an IP address automatically** and **Obtain DNS server address automatically** choices of the radio buttons are selected. Click the **OK** button.
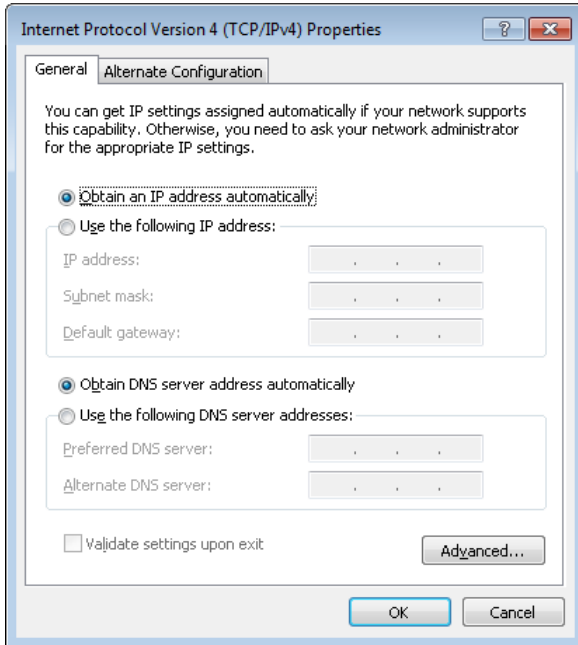
7. Click the **OK** button in the connection properties window.

PC with Wi-Fi Adapter

1. ***To connect the device to a DSL line:*** connect a phone cable between the DSL port of the router and the **MODEM** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **LINE** port of the splitter.

2. ***To connect the device to an Ethernet line***: please connect the router to the ISP's Ethernet line only after setting the WAN port and creating the Internet connection (see the ***Initial Configuration Wizard*** section, page 17).

3. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.

4. Turn on the router by pressing the **ON/OFF** button on its back panel.

5. Make sure that the Wi-Fi adapter of your PC is on. As a rule, modern notebooks with built-in wireless NICs are equipped with a button or switch that turns on/off the wireless adapter (refer to your PC documents). If your PC is equipped with a pluggable wireless NIC, install the software provided with your Wi-Fi adapter.

Then make sure that your Wi-Fi adapter is configured to obtain an IP address automatically (as DHCP client).

Obtaining IP Address Automatically and Connecting to Wireless Network (OS Windows 7)

1. Click the **Start** button and proceed to the **Control Panel** window.

2. Select the **Network and Sharing Center** section. (If the Control Panel has the category view (the **Category** value is selected from the **View by** drop-down list in the top right corner of the window), choose the **View network status and tasks** line under the **Network and Internet** section.)

3. In the menu located on the left part of the window, select the **Change adapter settings** line.

4. In the opened window, right-click the relevant **Wireless Network Connection** icon. Make sure that your Wi-Fi adapter is on, then select the **Properties** line in the menu displayed.

5. In the **Wireless Network Connection Properties** window, on the **Networking** tab, select the **Internet Protocol Version 4 (TCP/IPv4)** line. Click the **Properties** button.

6. Make sure that the **Obtain an IP address automatically** and **Obtain DNS server address automatically** choices of the radio buttons are selected. Click the **OK** button.
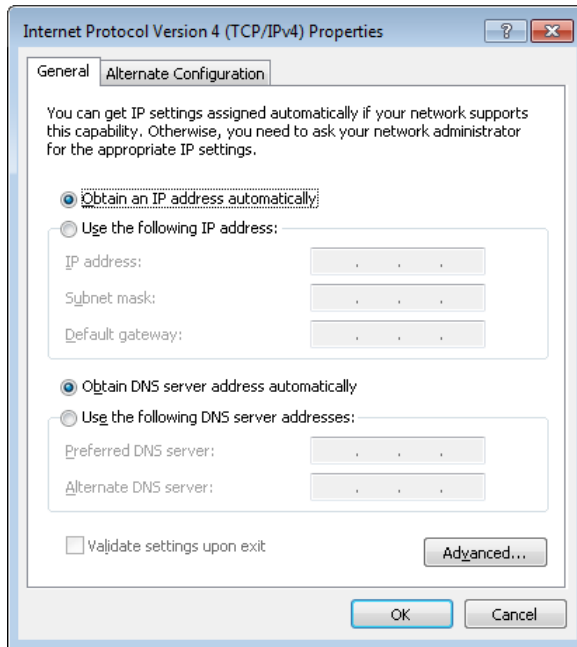
7. Click the **OK** button in the connection properties window.

8. To activate the WPS function, press the **WPS** button of the router and release. The **WPS** LED will start blinking.

9. To open the list of available wireless networks, select the icon of the wireless network connection and click the **Connect To** button or left-click the network icon in the notification area located on the right side of the taskbar.
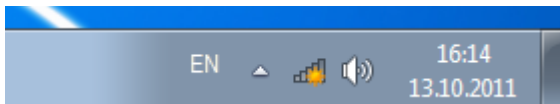
10. In the opened window, in the list of available wireless networks, select the wireless network **DSL-224** and click the **Connect** button.
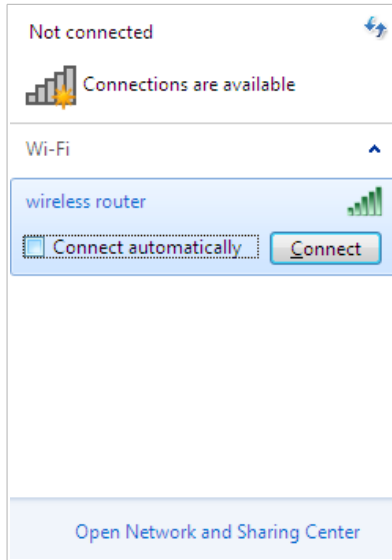
11. Then the window for entering the network key will open. Press the **WPS** button of the router again and release.

12. Wait for about 20-30 seconds. After the connection is established, the network icon will be displayed as the signal level scale.

> If you perform initial configuration of the router via Wi-Fi connection, note that immediately after changing the wireless default settings of the router you will need to reconfigure the wireless connection using the newly specified settings.

CONFIGURING ROUTER

Connecting to Web-based Interface

Start a web browser. In the address bar of the web browser, enter the domain name of the router (by default, `dlinkrouter.local`) with a dot at the end and press the **Enter** key. Also you can enter the IP address of the device (by default, `192.168.1.1`).
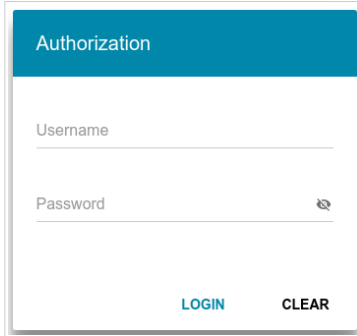

!
> If the error "*The page cannot be displayed*" (or "*Unable to display the page*"/"*Could not connect to remote server*") occurs upon connecting to the web-based interface of the router, make sure that you have properly connected the router to your computer.

If the device has not been configured previously or the default settings have been restored, after access to the web-based interface the Initial Configuration Wizard opens (see the ***Initial Configuration Wizard*** section, page 17).

Dear Customer! It's the first time the device is turned on. Please configure the device in order to use the Internet access services.
To run the Wizard, click the "Start" button.

START
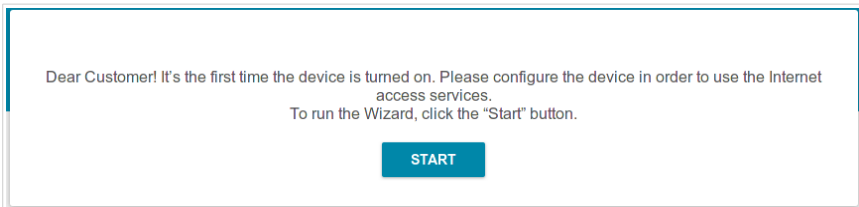
If you configured the device previously, after access to the web-based interface the login page opens. Enter the username (`admin`) in the **Username** field and the password you specified in the **Password** field, then click the **LOGIN** button.
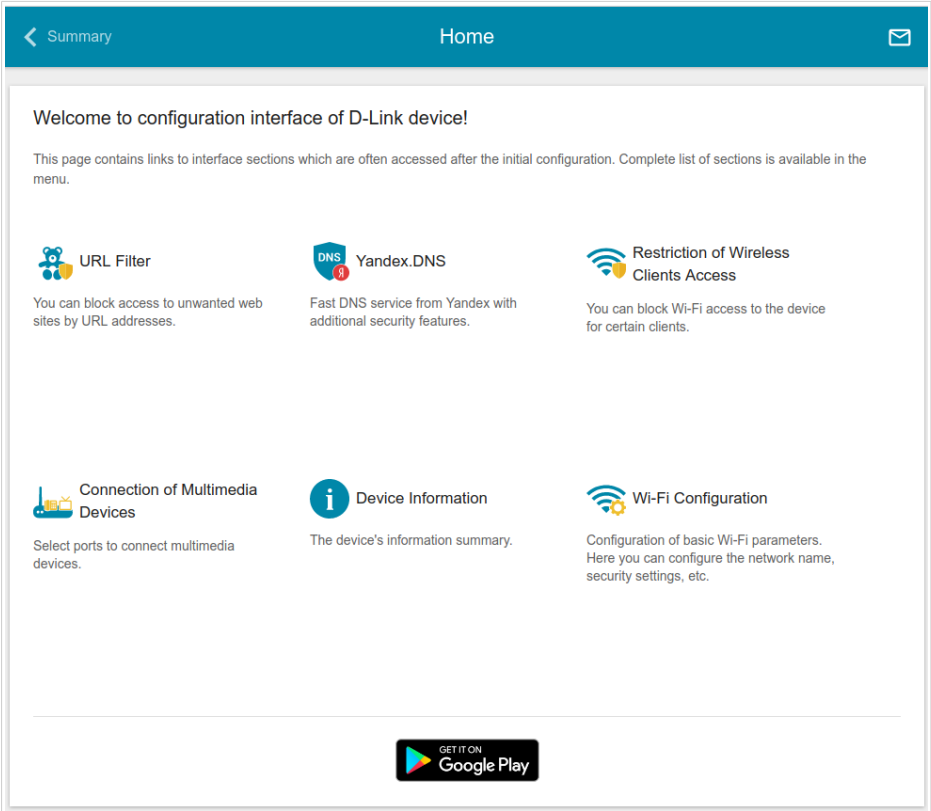
The **Summary** page displays general information on the router and its software.

The **Home** page displays links to the most frequently used pages with device's settings.

The web-based interface of the router is multilingual. You can select the needed language upon the initial configuration of the web-based interface of the router or in the **System / Configuration** section of the menu.
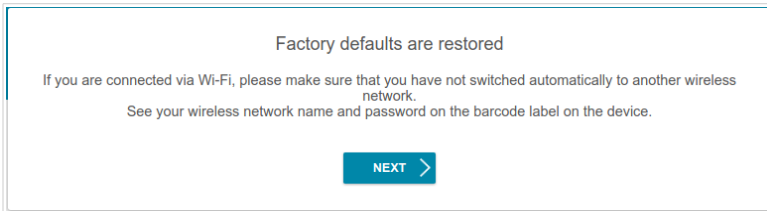
Other settings of the router are available in the menu in the left part of the page. Go to the relevant section and select the needed page or run the wizard in the **Initial Configuration** section.

Initial Configuration Wizard

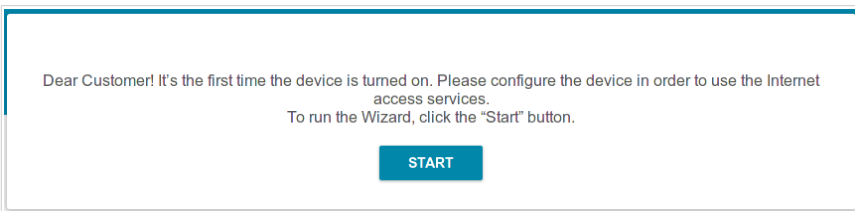In order to start the Initial Configuration Wizard manually, go to the **Initial Configuration** section.

> In order to run the initial setup wizard, the device should be reset to factory defaults.
>
> CANCEL   OK
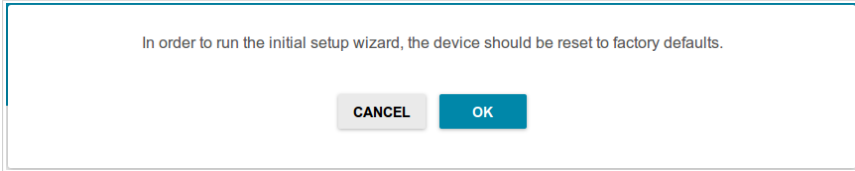
Click the **OK** button and wait until the factory default settings are restored.

> Factory defaults are restored
>
> If you are connected via Wi-Fi, please make sure that you have not switched automatically to another wireless network.
> See your wireless network name and password on the barcode label on the device.
>
> NEXT >

If you perform initial configuration of the router via Wi-Fi connection, please make sure that you are connected to the wireless network of DSL-224 and click the **NEXT** button. Then click the **START** button.

If the device has not been configured previously or the default settings have been restored, the Initial Configuration Wizard starts automatically upon access to the web-based interface or upon opening a web site on the Internet.

> Dear Customer! It's the first time the device is turned on. Please configure the device in order to use the Internet access services.
> To run the Wizard, click the "Start" button.
>
> START

1. Click **YES** in order to leave the current language of the web-based interface or click **NO** to select another language.
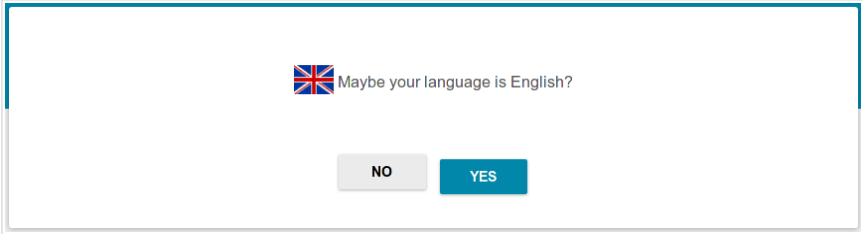
2. On the next page, click the **CONTINUE** button.
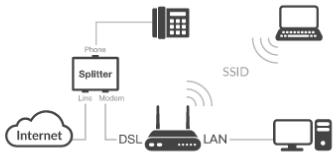
Selecting Operation Mode

In order to connect your device to a VDSL or ADSL line, on the **Device mode** page, from the **Connection method** list, select the **VDSL** or **ADSL** value correspondingly. In this mode you can configure a WAN connection, set your own settings for the wireless network, configure LAN ports to connect an STB or VoIP phone, and set your own password for access to the web-based interface of the device.

In order to connect your device to a private Ethernet line, on the **Device mode** page, from the **Connection method** list, select the **Ethernet (LAN)** value. In this mode you can configure one of the router's LAN port as the WAN port, configure a WAN connection, set your own settings for the wireless network, configure LAN ports to connect an STB or VoIP phone, and set your own password for access to the web-based interface of the device.

When the operation mode is selected, click the **NEXT** button.

Configuring LAN Port as WAN Port

This configuration step is available for the **Ethernet (LAN)** mode.

1. On the **Device connection** page, select a free LAN port which will be used as the WAN port.
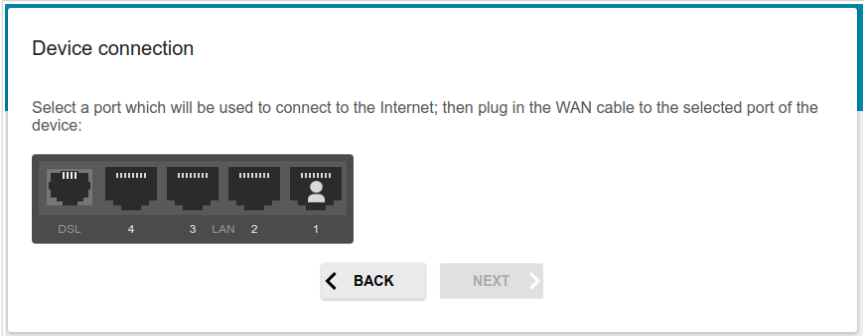
2. Click the **NEXT** button.

Configuring Ethernet WAN Connection

This configuration step is available for the **Ethernet (LAN)** mode.

! You should configure your WAN connection in accordance with data provided by your Internet service provider (ISP). Make sure that you have obtained all necessary information prior to configuring your connection. Otherwise contact your ISP.

1. On the **Internet connection type** page, from the **Connection type** list, select the connection type used by your ISP and fill in the fields displayed on the page.

Static IPv4: Fill in the following fields: **IP address**, **Subnet mask**, **Gateway IP address**, and **DNS IP address**.

IP address*
Subnet mask*
Gateway IP address*
DNS IP address*

Static IPv6: Fill in the following fields: **IP address**, **Prefix**, **Gateway IP address**, and **DNS IP address**.

IP address*
Prefix*
Gateway IP address*
DNS IP address*

PPPoE, IPv6 PPPoE, PPPoE Dual Stack: Enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** field). Click the **Show** icon (👁) to display the entered password. If authorization is not required, select the **Without authorization** checkbox.

2. If your ISP uses MAC address binding, select the **Clone MAC address of your device** checkbox.

3. If the Internet access is provided via a VLAN channel, select the **Use VLAN** checkbox and fill in the **VLAN ID** field.

4. Click the **NEXT** button.

Configuring VDSL WAN Connection

This configuration step is available for the **VDSL** mode.

> **!** You should configure your WAN connection in accordance with data provided by your Internet service provider (ISP). Make sure that you have obtained all necessary information prior to configuring your connection. Otherwise contact your ISP.

1. On the **Internet connection type** page, from the **Connection type** list, select the connection type used by your ISP and fill in the fields displayed on the page.

Static IPv4: Fill in the following fields: **IP address**, **Subnet mask**, **Gateway IP address**, and **DNS IP address**.

IP address*

Subnet mask*

Gateway IP address*

DNS IP address*

Static IPv6: Fill in the following fields: **IP address**, **Prefix**, **Gateway IP address**, and **DNS IP address**.

IP address*

Prefix*

Gateway IP address*

DNS IP address*

PPPoE, IPv6 PPPoE, PPPoE Dual Stack: Enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** field). Click the **Show** icon (👁) to display the entered password. If authorization is not required, select the **Without authorization** checkbox.

Without authorization
Username*
Password*   👁

2. If your ISP uses MAC address binding, select the **Clone MAC address of your device** checkbox.

3. If the Internet access is provided via a VLAN channel, select the **Use VLAN** checkbox and fill in the **VLAN ID** field.

☐ Clone MAC address of your device
ⓘ *In some ISP's networks, it is required to register a certain MAC address in order to get access to the Internet.*
☑ Use VLAN
ⓘ *Select the checkbox if the Internet access is provided via a VLAN channel.*
VLAN ID*

4. Click the **NEXT** button.

Configuring ADSL WAN Connection

This configuration step is available for the **ADSL** mode.

! You should configure your WAN connection in accordance with data provided by your Internet service provider (ISP). Make sure that you have obtained all necessary information prior to configuring your connection. Otherwise contact your ISP.

1. On the **Internet connection type** page, from the **Connection type** list, select the connection type used by your ISP and fill in the fields displayed on the page.

Static IPv4, IPoA: Fill in the following fields: **IP address**, **Subnet mask**, **Gateway IP address**, and **DNS IP address**.

IP address*

Subnet mask*

Gateway IP address*

DNS IP address*

Static IPv6: Fill in the following fields: **IP address**, **Prefix**, **Gateway IP address**, and **DNS IP address**.

IP address*

Prefix*

Gateway IP address*

DNS IP address*

PPPoE, IPv6 PPPoE, PPPoE Dual Stack, PPPoA: Enter authorization data provided by your ISP (the username (login) in the **Username** field and the password in the **Password** field). Click the **Show** icon ( ) to display the entered password. If authorization is not required, select the **Without authorization** checkbox.

☐ Without authorization
Username*
Password*   👁

2. Specify the VPI and VCI values in the relevant fields.

VPI (0-255)*
VCI (32 - 65535)*

3. Click the **NEXT** button.

Configuring Wireless Network

1. On the **Wireless Network 2.4 GHz** page, in the **Network name** field, specify your own name for the wireless network or leave the value suggested by the router.

2. In the **Password** field, specify your own password for access to the wireless network.

3. You can restore the parameters of the wireless network specified before resetting to factory defaults. To do this, click the **RESTORE** button.
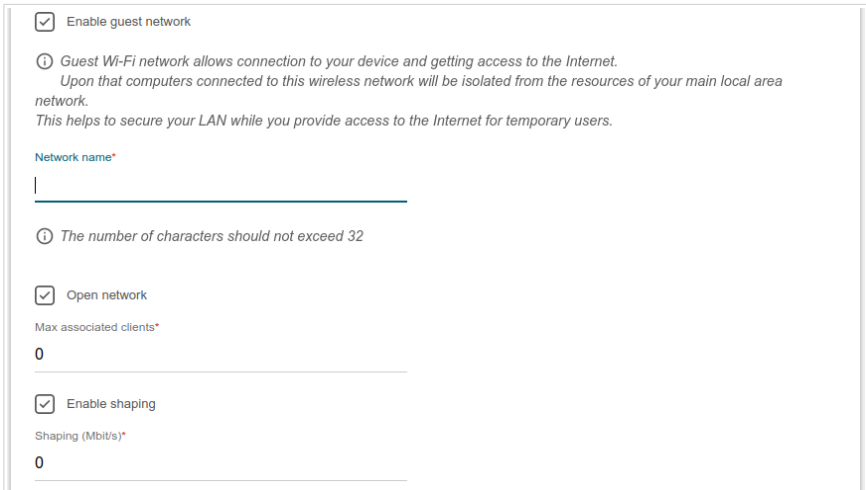
4. If you want to create an additional wireless network isolated from your LAN, select the **Enable guest network** checkbox.

5. In the **Network name** field, specify your own name for the guest wireless network or leave the value suggested by the router.

6. If you want to create a password for access to the guest wireless network, deselect the **Open network** checkbox and fill in the **Password** field.

7. If you want to limit the bandwidth of the guest wireless network, select the **Enable shaping** checkbox and fill in the **Shaping** field.

8. Click the **NEXT** button.

Configuring LAN Ports for IPTV/VoIP

1. On the **IPTV** page, select the **Is an STB connected to the device** checkbox.

2. Select a free LAN port for connecting your set-top box.

3. *For the **VDSL**, **Ethernet (LAN)** modes*: If the IPTV service is provided via a VLAN channel, select the **Use VLAN ID** checkbox and fill in the **VLAN ID** field.

4. *For the **ADSL** mode*: Specify the VPI and VCI values in the relevant fields.

5. Click the **NEXT** button.

6. On the **VoIP** page, select the **Is an IP phone connected to the device** checkbox.

7. Select a free LAN port for connecting your IP phone.

8. *For the **VDSL**, **Ethernet (LAN)** modes*: If the VoIP service is provided via a VLAN channel, select the **Use VLAN ID** checkbox and fill in the **VLAN ID** field.

9. *For the **ADSL** mode*: Specify the VPI and VCI values in the relevant fields.

10. Click the **NEXT** button.

Changing Web-based Interface Password

On this page you should change the default administrator password. To do this, enter a new password in the **Admin password** and **Password confirmation** fields. You may set any password except `admin`. Use digits, Latin letters (uppercase and/or lowercase), and other characters available in the US keyboard layout.[1]

!   Remember or write down the new password for the administrator account. In case of losing the new password, you can access the settings of the router only after restoring the factory default settings via the hardware **RESET** button. This procedure wipes out all settings that you have configured for your router.

Click the **NEXT** button.

On the next page, check all the settings you have just specified.

Also you can save a text file with parameters set by the Wizard to your PC. To do this, click the **SAVE CONFIGURATION FILE** button and follow the dialog box appeared.

To finish the Wizard, click the **APPLY** button. The router will apply settings, reboot, if needed, and check the Internet connection if the Wizard has configured a WAN connection.

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1   0-9, A-Z, a-z, space, !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~.

Configuring Local Area Network

1. Go to the **Connections Setup / LAN** page.

2. If needed, change the IPv4 address of the router's LAN interface and the mask of the local subnet. To do this, click the **IPv4** tab and specify needed values in the **IP address** and **Mask** fields in the **Local IP Address** section.

Local IP Address

IP address*
192.168.1.1

Mask*
255.255.255.0

Hostname
dlinkrouter.local

3. If needed, specify your own IPv6 address of the router's LAN interface. To do this, click the **IPv6** tab and select the **Static** value from the **Mode of local IPv6 address assignment** drop-down list in the **Local IPv6 Address** section. Then specify the needed value in the **IPv6 address** field.

Local IPv6 Address

Mode of local IPv6 address assignment
Static

IPv6 address*
fd01::1

Prefix*
64

4. **IPv4 address assignment**. By default, the built-in DHCP server of the router assigns IPv4 addresses to the devices of the LAN. If you want to manually assign IPv4 addresses, disable the DHCP server (click the **IPv4** tab and select the **Disable** value from the **Mode of dynamic IP address assignment** drop-down list in the **Dynamic IP Addresses** section).

Dynamic IP Addresses

Mode of dynamic IP address assignment
DHCP server   ▾

Start IP*
192.168.1.100

End IP*
192.168.1.200

Lease time (in minutes)*
1440

⬤ DNS relay

5. **IPv6 address assignment**. By default, the devices of the LAN automatically assign IPv6 addresses to themselves (the **Stateless** value is selected from the **Mode of dynamic IPv6 address assignment** drop-down list in the **Dynamic IPv6 Addresses** section on the **IPv6** tab). If the devices of the LAN do not support IPv6 address autoconfiguration, use the built-in DHCPv6 server of the router (select the **Stateful** value from the **Mode of dynamic IPv6 address assignment** drop-down list). If you want to manually assign IPv6 addresses to devices of the LAN, select the **Disable** value from the **Mode of dynamic IPv6 address assignment** drop-down list.

6. After specifying the needed parameters on the **Connections Setup / LAN** page, click the **APPLY** button.

SPECIFICATIONS*

Hardware		
Processor	·	RTL8685S
RAM	·	32MB, SDRAM
Flash	·	8MB, SPI
Interfaces	· ·	RJ-11 DSL port 4 10/100BASE-TX LAN ports
LEDs	· · · · · ·	POWER DSL INTERNET WLAN 4 LAN LEDs WPS
Buttons	· · · ·	ON/OFF button to power on/power off RESET button to restore factory default settings WPS button to set up wireless connection WLAN button to enable/disable wireless network
Antenna	·	Two internal omnidirectional antennas (2dBi gain)
MIMO	·	2 x 2
Power connector	·	Power input connector (DC)

DSL Parameters		
VDSL/ADSL Standards	· · · ·	VDSL2: ITU G.993.2, support of 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a profiles ADSL: Multi-mode, ANSI T1.413 Issue 2, ITU-T G.992.1 (G.dmt) Annex A, ITU-T G.992.2 (G.lite) Annex A, ITU-T G.994.1 (G.hs) ADSL2: ITU-T G.992.3 (G.dmt.bis) Annex A/L/M, ITU-T G.992.4 (G.lite.bis) Annex A ADSL2+: ITU-T G.992.5 Annex A/L/M

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*   The device features are subject to change without notice. For the latest versions of the firmware and relevant documentation, visit www.dlink.ru.

DSL Parameters	
ATM/PPP Protocols	· Bridged and routed Ethernet encapsulation · VC-based or LLC-based multiplexing · ATM Forum UNI3.1/4.0 PVC (up to 8 PVCs) · ATM Adaptation Layer Type 5 (AAL5) · ITU-T I.610 OAM F4/F5 loopback · ATM QoS · PPP over ATM (RFC 2364) · PPP over Ethernet (PPPoE) · Keep-alive for PPP connections

Software	
WAN connection types	· PPPoA · PPPoE · IPv6 PPPoE · PPPoE Dual Stack · IPoA · Static IP / Dynamic IP · Static IPv6 / Dynamic IPv6 · Bridge
Network functions	· DHCP server/relay · Advanced configuration of built-in DHCP server · Stateful/Stateless mode for IPv6 address assignment, IPv6 prefix delegation · DNS relay · Dynamic DNS · Static IP routing · Static IPv6 routing · IGMP Proxy · IGMP snooping · RIP · Support of UPnP IGD · Support of VLAN · WAN ping respond · Support of SIP ALG · Support of RTSP · LAN/WAN conversion
Firewall functions	· Network Address Translation (NAT) · Stateful Packet Inspection (SPI) · IP filter · IPv6 filter · MAC filter · URL filter · DMZ · Prevention of ARP and DDoS attacks · Virtual servers · Built-in Yandex.DNS web content filtering service

Software	
VPN	· IPSec/PPTP/L2TP/PPPoE pass-through
QoS	· Interface grouping · VLAN priority (802.1p)
Management and monitoring	· Local and remote access to settings through TELNET/WEB (HTTP/HTTPS) · Multilingual web-based interface for configuration and management · Support of D-Link Assistant application for Android and iPhone smartphones · Firmware update via web-based interface · Automatic notification on new firmware version · Saving/restoring configuration to/from file · Support of logging to remote host · Automatic synchronization of system time with NTP server and manual time/date setup · Ping utility · Traceroute utility · TR-069 client

Wireless Module Parameters	
Standards	· IEEE 802.11b/g/n
Frequency range	· 2400 ~ 2483.5MHz
Wireless connection security	· WEP · WPA/WPA2 (Personal/Enterprise) · MAC filter · WPS (PBC/PIN)
Advanced functions	· WMM (Wi-Fi QoS) · Information on connected Wi-Fi clients · Advanced settings · Guest Wi-Fi / support of MBSSID · Limitation of wireless network rate · Periodic scan of channels, automatic switch to least loaded channel · Autonegotiation of channel bandwidth in accordance with environment conditions (20/40 Coexistence)
Wireless connection rate	· IEEE 802.11b: 1, 2, 5.5, and 11Mbps · IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54Mbps · IEEE 802.11n: from 6.5 to 300Mbps (from MCS0 to MCS15)

Wireless Module Parameters	
Transmitter output power *The maximum value of the transmitter output power depends upon the radio frequency regulations applied in your country*	· 802.11b 16dBm (+/-1dB) · 802.11g 14dBm (+/-1dB) · 802.11n 14dBm (+/-1dB)
Receiver sensitivity	· 802.11b -86dBm · 802.11g -72dBm · 802.11n HT20 -67dBm HT40 -65dBm

Physical Parameters	
Dimensions (L x W x H)	· 160 x 59 x 121 mm (6.3 x 2.32 x 4.76 in)
Weight	· 215 g (0.47 lb)

Operating Environment	
Power	· Output: 12V DC, 1A
Temperature	· Operating: from 0 to 40 °C · Storage: from -20 to 70 °C
Humidity	· From 5% to 95% (non-condensing)

SAFETY RULES AND CONDITIONS

Please carefully read this section before installation and connection of the device. Make sure that the power adapter and cables are not damaged. The device should be used only as intended in accordance with the documents.

The device is intended for use in dry, clean, dust-free, and well ventilated areas with normal humidity away from strong heat sources. Do not use the device outdoors or in the areas with high humidity. Do not place foreign objects on the device. Do not obstruct the ventilation openings of the device. The environmental temperature near the device and the temperature inside the device's cover should be within the range from 0 °C to +40 °C.

Only use the power adapter supplied with the device. Do not plug in the adapter, if its case or cable are damaged. Plug the adapter only into working electrical outlets with parameters indicated on the adapter.

Do not open the cover of the device! Unplug the device before dusting and cleaning. Use a damp cloth to clean the device. Do not use liquid/aerosol cleaners or magnetic/static cleaning devices. Prevent moisture getting into the device or the power adapter.

The service life of the device is 2 years.

TECHNICAL SUPPORT

You can find software updates and user documentation on our website.

D-Link provides its customers with free support within the product's warranty period.

Customers can contact the technical support group by phone or by e-mail/Internet.

FOR TELEPHONE NUMBERS AND ADDRESSES OF D-LINK OFFICES WORLDWIDE VISIT

http://www.dlink.com/corporate/worldwideoffices/