COMTREND CORPORATION

PowerGrid-9141(s)
Powerline Ethernet Adapter
User Manual

Version A1.0, October 24, 2012

Preface

This manual provides information related to the installation and operation of this device. The individual reading this manual is presumed to have a basic understanding of telecommunications terminology and concepts.

If you find the product to be inoperable or malfunctioning, please contact technical support for immediate service by email at INT-support@comtrend.com

For product update, new product release, manual revision, or software upgrades, please visit our website at http://www.comtrend.com

Important Safety Instructions

With reference to unpacking, installation, use, and maintenance of your electronic device, the following basic guidelines are recommended:

· Do not use or install this product near water, to avoid fire or shock hazard. For example, near a bathtub, kitchen sink or laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g. a wet basement).
· To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are not blocked.

Power supply specifications are clearly stated in Appendix A Specifications.

Product disposal instructions

The symbol shown here and on the product means that the product is classed as Electrical or Electronic Equipment and should not be disposed with other household or commercial waste at the end of its working life.

The Waste of Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been put in place to recycle products using best available recovery and recycling techniques to minimize the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

Product disposal instructions for residential users

When you have no further use for it, please remove any batteries and dispose of them and the product as per your local authority's recycling processes. For more information please contact your local authority or the retailer where the product was purchased.

Product disposal instructions for business users

Business users should contact their suppliers and check the terms and conditions of the purchase contract and ensure that this product is not mixed with other commercial waste for disposal.

Copyright

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Introduction

The PG9141(s) Powerline Ethernet adapter you have just acquired is part of Comtrend's Powerline family:

• PG9141(s) – The Current Model

• PG9041(s) – HomePlug AV 200M Powerline with pass through product

• PG9042(s) – HomePlug AV 200M small size with changeable plug and socket

This user manual will provide you with the basic knowledge to start using your new PG9141(s) in just minutes.

Features

· ClearPath Technology

Supports ClearPath and can be used with neutral-ground pair for higher PHY rates/throughputs and better coverage over the other HPAV products. (HPAV technology utilizes the phase-neutral pair only)

· High Speed Data Transmission

High speed (up to 200Mbps) dramatically increases the performance of next-generation home entertainment applications such as multiple high definition (HD), 3DTV and standard definition (SD) video distribution, TV over IP (IPTV), digital video recorder (DVR) networking and media center PCs.

· No Extra Wires Needed

Local area network can be extended without the hassle of having to install extra wiring because the power line network is already a commonplace fixture in most households.

· Simple Pairing, Plug & Play

Quick and easy connections with embedded plug-and-play, no extra configuration required!
PowerGrid 9141(s) can be paired easily by simply connecting Ethernet cables to routers and devices.

· Extends Connecting Range & Eliminates Dead Spots

Unlike wireless, Power line technology is capable of actually covering more than 95% of a typical household area.

### · More Outlets than Other Wired Solutions

On average, there are 45 power outlets and only 3-5 cable or phone outlets in a household, therefore making power lines a more convenient solution for extending networks.

· Security

With advanced data encryption capability, the power line networks are safer and more secure.

Powerline adapters are the ideal way of creating a home network or complementing an existing Wi-Fi connection. By providing a secure high speed connection and great service quality, Powerlines allow you to watch Standard and High Definition (HD) movies as well as play online games without interruption or pixilation; share photos, music and other media stored on a PC or compatible storage device anywhere in your home. Powerline Adapters will help you reach those areas of your home where the Wi-Fi signal is either too weak or cannot reach.
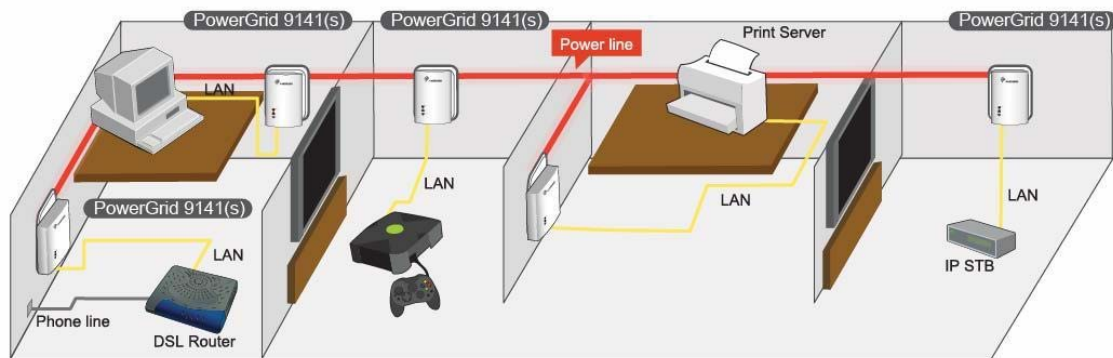
Package contents

The following items are included in your PG9141(s) package:
• A single or pair of PG9141(s) adapters
• One Ethernet cable with each adapter
• Quick Start Guide

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LEDs and Buttons

The PG9141(s) has been designed to be as user friendly as possible. There are just three LED lights and two buttons on the unit. They are described below.


| LED	Color
STATUS	Red: Normal network traffic (ex. the connection speed is between 1 and 40 Megabits per second)
	Orange: Good network traffic (ex. the connection speed is between 40 and 90 Megabits per second)
	Green: Excellent network traffic (ex. the connection speed is more than 90 Megabits per second)
ETHERNET	ON: Local area network (LAN) connection is established
	OFF: LAN connection is not established
Power	OFF: No power (perhaps the socket to which the adapter is connected does not work or is disabled)
	ON: Powerline is plugged in with voltage present
	Flashing: the connection is established

How to install the PowerGrid 9141(s)

If your PG9141(s) starter kit was supplied as a pair, please note that they are pre-configured and come ready to use; the Powerline adapters are paired in our factory so they will recognize each other, which makes setup this easy:

1. Plug both PG9141(s) adapters into an electrical socket:

   a. One next your router (or modem) "Device A"
   b. One next to the device you will connect to your network "Device B"

2. The Status LEDs on both PG9141(s) adapters will light up RED.

3. When the Status LEDs are both GREEN the adapters are ready to use.
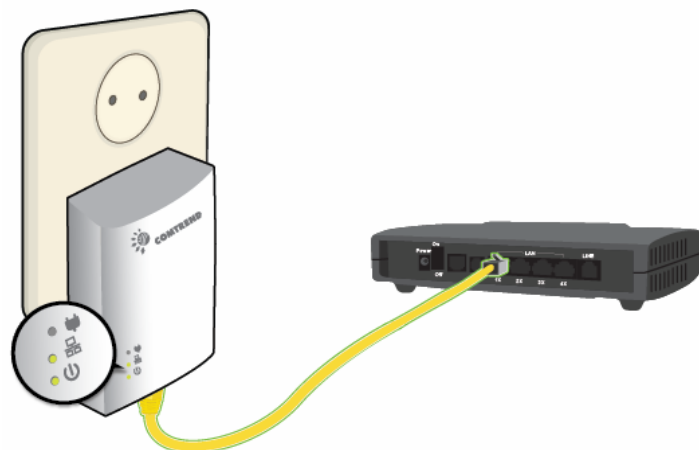
Connect the other PG9141(s) to your computer, V-box or other network device using an Ethernet cable "Device "B"
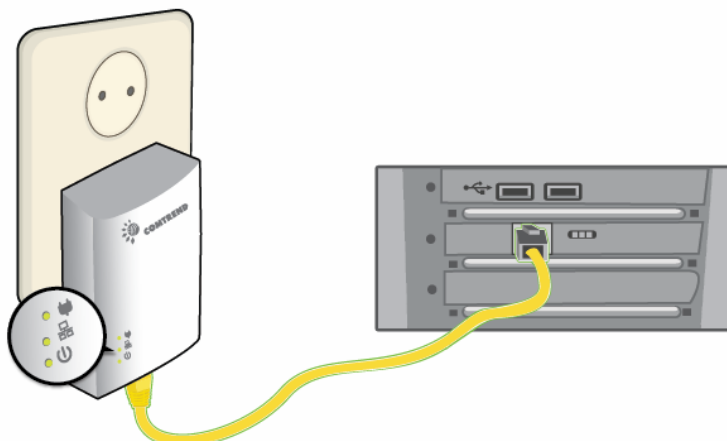
If the PG9141(s) starter kit is supplied in single units, you need to pair

up 2 units manually with the same above connections to modem/router (like "Device A") and end device (like "Device B"):

1. The **STATUS LED** on the additional PowerGrid 9141(s) should now be **RED** or **GREEN** or **ORANGE**.

2. If the Status LED is not **GREEN** , Press the both Config buttons of the two PowerGrid 9141(s) for 2-5 seconds (within 2 minutes of eachother), upon successful connection of the additional PowerGrid 9141(s), the STATUS LED will light up **Green**.
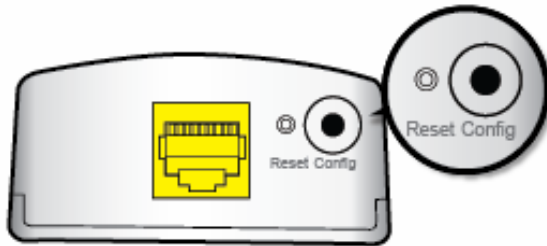
   If the connection process is not successful (i.e. the STATUS LED does not light up or Power LED is blinking) please refer to Frequently Asked Questions: STATUS LED OFF and Power LED blinking.

3. If the status LED is not Green , please consult the information in the Section "Frequently Asked Questions".

Soon after, you should see the Ethernet LED blinking; this indicates that there is data traffic going through the PG9141(s). You are now ready to start using your network.
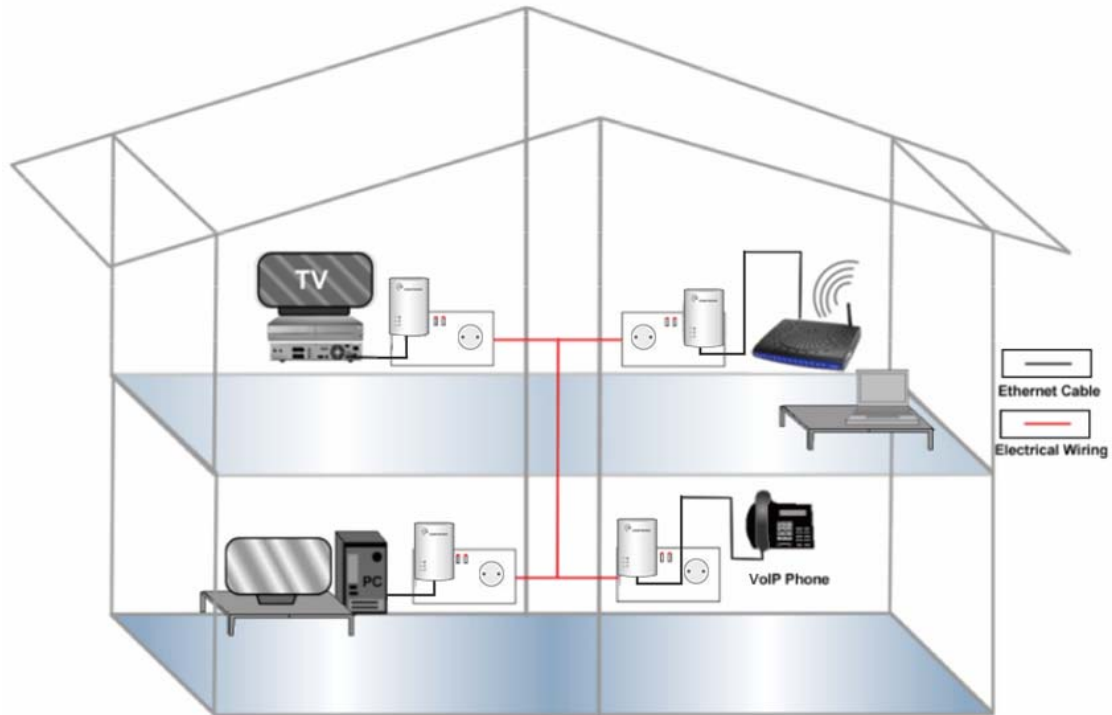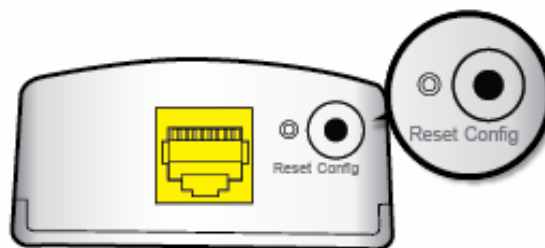

Adding a New Device

Plug the additional PowerGrid 9141(s) into a socket, and then connect it to the network device (e.g. computer, set-top-box etc…) via the Ethernet (RJ-45) cable, using the steps described for "Device B" connection to join the new PowerGrid 9141(s) to the network, the **STATUS LED** should light up **RED**, **GREEN** or **ORANGE**. This is "Device C".

Press the both Config button of "Device A" for 2-5 seconds, within two minutes press the "Device C" for 2-5 seconds. Upon successful connection of the additional PowerGrid 9141(s), the **STATUS LED** will light up.

If you must plug your adapter into a power strip, we suggest you use a basic power strip as the more advanced ones have a filter that can interfere with the Powerline signal.
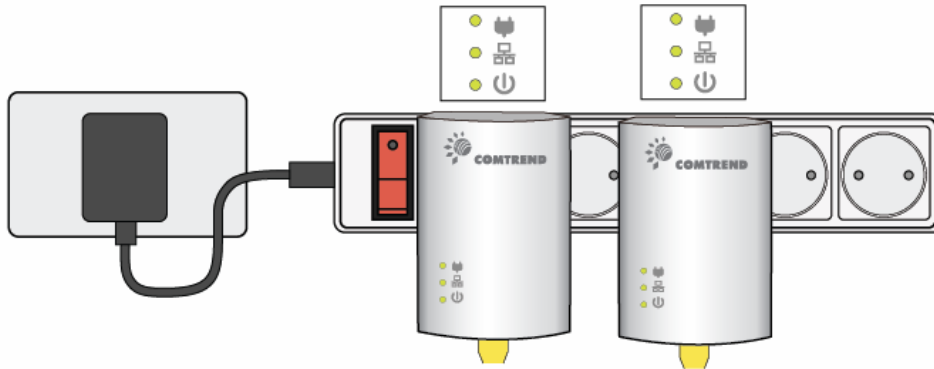
SURGE PROTECTED POWER STRIPS: Avoid plugging PowerGrid units into power strips with surge protection as this will reduce network speed and may even prevent their use.

How to understand the STATUS LED colors

The STATUS LED displays quality of the network and provides important information that will provide solutions to common questions, such as why a High Definition (HD) movie is not showing or shows with pixels. The STATUS LED indicator will vary its color depending on the estimated speed of the Powerline connection. The speed is measured in Megabits Per Second (Mbps).

Color	Information
RED	The current connection has standard quality, normal internet activities ex. 40Mbps are possible but the Powerline is unable to transmit either a Standard Movie or High Definition (HD) Movie.
ORANGE	The current connection has good quality and Internet activities ex. greater than 40Mbps and less than 90Mbps to transmit Standard Movie and HD Movie.
GREEN	The current connection has excellent quality and internet activities ex. greater than 90Mbps to transmit multiple Standard Movies and HD Movies.

NOTE: All these measurements are configurable based on ISP definitions or factory default settings.

Frequently Asked Questions

This Powerline adapter has been designed to be reliable and easy to use in creating or extending your existing home network. However, should you experience any problems, please refer to the list below to aid in troubleshooting.

1. What to do if the LEDs do not display as expected?
- Power indictor is flashing, the other indicators are off: PowerGrid 9141(s) went into power saving mode. It occurs 30 seconds after the Ethernet signal connection stops.

- Ethernet LED is off: If the Ethernet LED does not light up, check or connect your devices (PC, STB...etc.) to the port Ethernet PowerGrid 9141(s) to check whether your Ethernet cable works. Alternatively, you can use another similar cable.

- Status LED is off: After performing step 2. (for 2 single units to pair up), if still not working, please do the following 2 steps:

  ➢ Simple Connect: Press the CONFIG push button for more than 11 seconds on each of PowerGrid 9141(s) adapters then press the CONFIG push button for 2-5 seconds on one adapter (the Power LED should blink). Within 2 minutes, press the CONFIG push button for 2-5 seconds on the second adapter. After 10 seconds the two adapters should communicate and the Status LED should be solid on both adapters at the end of the pairing process.

  ➢ Simple Pairing: Plug 2 PowerGrid 9141(s) adapters to the power then connect these 2 devices directly to one another using an Ethernet cable. Wait for the Ethernet LED to turn ON, and then disconnect the Ethernet cable. The Status LED should be solid ON both PowerGrid 9141(s) adapters at the end of the pairing process.

2. How do I RESET to factory default settings?

If you have tried the FAQ above action 1., you are still experiencing problems, you can return both PowerGrid 9141(s) adapters to factory settings using the pin by pressing (RESET) for 11 seconds (until all the LEDs of the adapter blink).

If the power LED on any of the PowerGrid 9141(s) units (in the network) does not light up Green, press the Config button on the problem PowerGrid 9141(s) unit for more than 10 seconds to disconnect it from the network. Then, follow the steps in the Section "How to install the PowerGrid 9141(s)" above. If the problem persists, please contact your local agent for further assistance.

3. Why is SDTV video not streaming?

- Check the STATUS indicator LED in the adapter connected to the STB.
- If the indicator is RED this means that the PLC link is not able to play an SDTV streaming.
- Try to reposition the adapter into another outlet in order to obtain an ORANGE or GREEN indication.
- If the indicator is ORANGE or GREEN, it should now be able to play SDTV video.
- If the SDTV video still does not play, check the Ethernet cables and the settings of devices connected to the PLC adapters (STB, router, PC, video server, etc.).

4. How many PowerGrid 9141(s) could be installed at home?

For each additional device (computer, modem, router...and so on) that you want to connect to your home network, you will need add additional adapters PowerGrid 9141(s) and Ethernet cables, one for each device.

The maximum number of installed devices, is up to 10 in the same home network.

Maximum data transfer between devices, 95 MB /sec.
Poor quality of the wiring and the presence of interference will significantly reduce the possible number of installed devices and data transfer rate.

5. Why is HDTV video not streaming?

- Check the status indicator LED in the adapter connected to the set top box (STB).
- If the indicator is RED or ORANGE this means that the Powerline link is not able to stream HDTV.
- Try to reposition the adapter in another outlet in order to obtain a GREEN indication.
- If the indicator is GREEN, it should now be able to play a HDTV video.
- If the LED is not GREEN check the Ethernet cables and the settings of devices connected to Powerline adapters (STB, DSL router, PC, video server, etc.).

> **NOTE:** If the HDTV video bandwidth is lower than 10Mbps, it may be possible to stream the video with an ORANGE STATUS LED in some cases.

6. What if my Powerline Adapters don't fit into the plug socket?

- Your Powerline Adapters might not fit because the sockets are too close to the floor or are in the skirting board.
- The easiest way around this is to use a trailing power strip, and

plug the Adapter into the strip. Please make sure that the strip is not an anti-surge adapter strip.

7. What if the house next door has Powerline Adapters as well?

- Each pair of Powerline Adapters has its own unique security key. This means that your connection is secure and cannot be confused with anyone else's.

8. Is it safe to leave the Powerline Adapters on all the time - is there any danger of overheating?

- Powerline Adapters are CE and FCC certified and completely safe to leave plugged in all the time. They may become slightly warm in use - this is perfectly normal. However, you may wish to put them into standby when not in use.

9. How much power do Powerline Adapters use and how much do they cost each month in electricity?

- The Adapters use 3.5 Watts when in use and 0.45 Watts in standby. Prices vary between electricity suppliers.

10. How can I check that my Powerline Adapters are working properly?
- Your Powerline Adapters are set to work together as a pair, and should work perfectly out of the box. The best way to test them is to find a double plug socket, and plug them in next to each other. Often the best place to find a double plug socket is in your kitchen. Alternatively plug them into a trailing extension strip (but not an anti-surge strip).
- When plugged in, after 10 seconds, the Powerline Adapters will configure themselves so that each has a green status light.
- If the Powerline Adapters don't configure themselves as above, you need to follow the reset procedure (described above).
- When your Powerline Adapters are connected to a device the Ethernet light should light up. When you're using the service the Ethernet light will flash. You may notice that the Status Light on one or both Powerline Adapters changes to red or orange. This isn't something to worry about if you are not having any problems with your connection.

PowerGrid Series PG-9141(s)

200M HPAV

Appendix A Specifications

Interface

- RJ-45 X 1 for Ethernet connection
- AC power plug X 1

Ethernet
- Standard IEEE 802.3
- 10/100 BaseT auto-sense
- Auto rate and duplex negotiation
- MDI/MDX support

Modulations
- OFDM, FEC; Flexible frequency configuration

Data Rate
- Up to 200Mbps

Management
- Remote Firmware upgrade
- TR-069 Supported (Optional)

Security
- AES 128 bits encryption ensures total data security

Networking Protocols

- 802.1D Ethernet Bridge
- 802.1Q VLAN
- Quality of Service (QoS)
- IGMP(IPv4) Snooping & MLD(IPv6) Snooping

Power
- 100-240 VAC 0.2A 50Hz/60Hz
- Auto power saving mode max 0.5W (in standby mode)

Environment Condition
- Operating temperature: 0 ~ 40 degrees Celsius
- Relative humidity: 8 ~ 95% (non-condensing)

Dimensions
- EU (UK/French/NA) version 93mm (H) x 29.6mm (W) x 59mm (D) (with plug)

Certifications
- FCC, CE class B, WEEE, RoHS, REACH

*** PG-9141s with ClearPath technology "(s)"