COMTREND CORPORATION

PowerGrid 9141s-PoE Powerline Ethernet Adapter With PoE
User Manual

Version A1.0, October 1, 2014

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

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NOTE:	This document is subject to change without notice.

Protect Our Environment

	This symbol indicates that when the equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separate from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this router can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local government.

Chapter 1: Product Information

1.1 Powerline Features

- High speed PHY rate - Up to 200Mbps
- Supports 128-bit AES link encryption with key management
- Supports Quality of Service (QoS)
- Support for IPv4/IPv6, IGMP and MLD snooping
- Easy installation - just plug and play
- Wall-mount design

1.2 Safety Information

1. This Powerline Ethernet adapter is designed for indoor use only; DO NOT place this Powerline product outdoors.

2. DO NOT put this Powerline product at or near hot or humid places, like kitchens or bathrooms.

3. DO NOT pull any connected cable with force; disconnect it from the Powerline Ethernet adapter first.

4. There's no user-serviceable part inside the Powerline Ethernet adapter. If you found that the product is not working properly, please contact your dealer of purchase and ask for help. DO NOT disassemble the product; this will void your warranty.

1.3 System Requirements

- Computer or network devices with wired network interface card.
- Any connected devices must feature a network port.
- An available AC power socket (100 – 240 V, 50/60Hz).

1.4 Package contents

The following items are included in your PG-9141s-PoE package:

• A single PG-9141s-PoE adapter

• One Ethernet cable
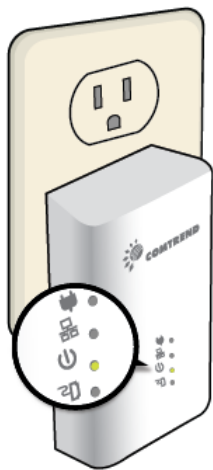
• Quick Installation Guide

Chapter 2: Network Setup

2.1 Hardware Setup

Front Panel and LED indicators

The PG-9141s-PoE has been designed to be as user friendly as possible. There are just four 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 品	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: Establishing connection
PoE	Green: PoE Mode – Port "ON"
	OFF: PoE Mode – Port "OFF"
	Blink: PoE Mode – Over-load or short

Bottom Panel
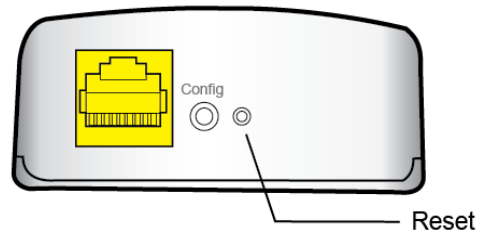
Reset

Item Name	Description
LAN	Local Area Network (LAN) port
Reset	Press 11 seconds to reset the system with factory defaults
Config	Press for between 2 – 11 seconds to join/establish a powerline network Press for over 11 seconds to leave a powerline network

2.2 Initial Setup

NOTE: This guide assumes that a PowerGrid 9141s will be the primary connection to the modem / router and a PowerGrid 9141s-PoE will be used within the network to connect to a PoE-capable device (E.g. Camera, Access Point, IP Phone).

1. Ensure that your modem or router is powered on.

2. Plug a PowerGrid 9141s unit into the power socket closest to the modem/ router. The **POWER LED** will blink **GREEN.**

3. Connect the PowerGrid 9141s unit to the LAN port of the modem/router with an Ethernet (RJ-45) cable. Wait 10 seconds for the PowerGrid's **Ethernet LED** and **Power LED** to light up **GREEN** indicating a stable connection.
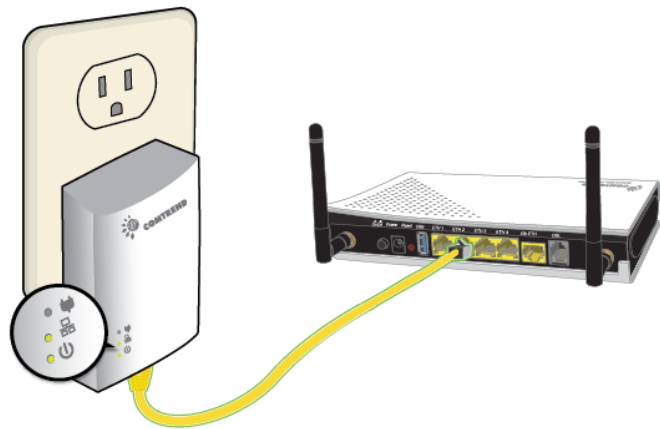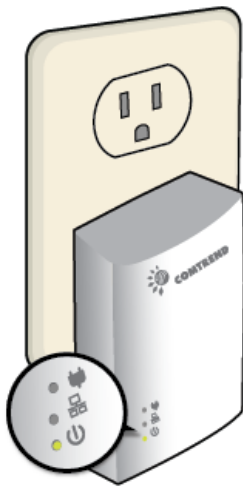
2.3 Device Connection

These steps show how to connect a PowerGrid 9141s-PoE to a network device. Below we use a PoE camera as a network device.

1. Plug a PowerGrid 9141s-PoE unit into the power socket closest to the PoE (IEEE 802.3af compliant) camera or other device. The **Power LED** on the PowerGrid 9141s-PoE should light up **GREEN**.

2. Connect the PowerGrid 9141s-PoE to the camera with an Ethernet cable. The **Ethernet and PoE LEDs** on the PowerGrid 9141s-PoE should light up **GREEN**.
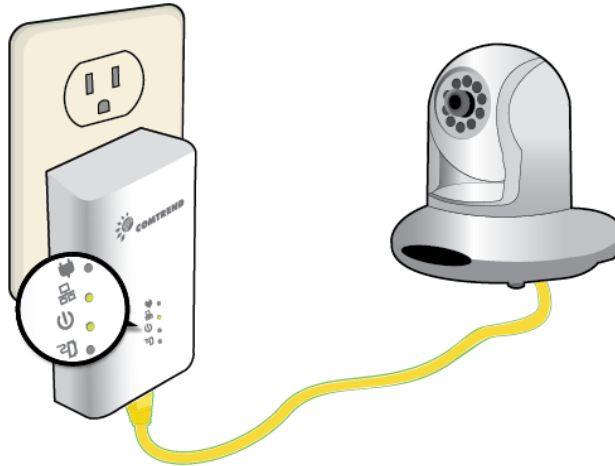
3. The **STATUS** LED on the PowerGrid 9141s-PoE should now be **RED**, **GREEN** or **ORANGE**.

4. If the **STATUS** LED is off, Press the "Config" button on each of the two PowerGrid 9141s and 9141s-PoE devices for 2-5 seconds. Upon successful connection of the PowerGrid 9141s-PoE, the **STATUS** LED will light up **GREEN**.

5. If the connection process is not successful, please refer to the troubleshooting steps in Chapter 3.

2.4 Adding a New Device

Follow steps 1-4 above to add additional PowerGrid 9141s-PoE devices to the network. Press the "**Config**" button on the new device and one other PowerGrid device in the network so they can pair and transmit data successfully.
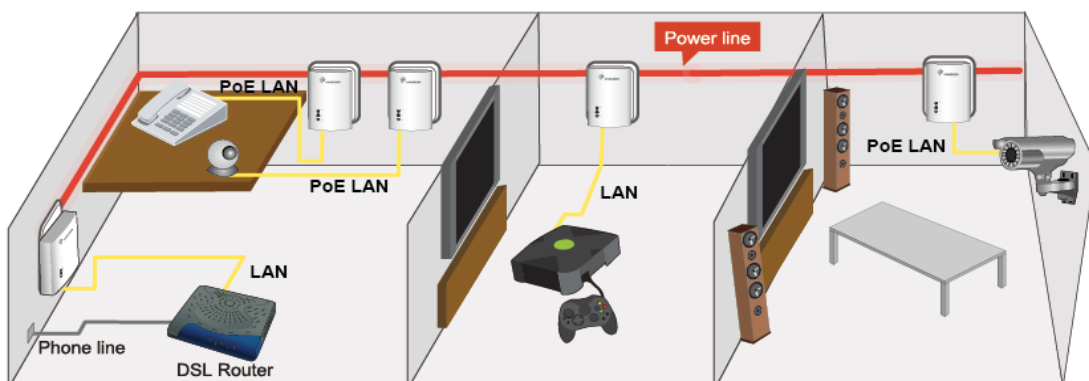
2.5 How to use a power strip with the PG-9141s-PoE

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.

2.6 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	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).

Chapter 3: Troubleshooting

The following information should help you diagnose basic setup or installation problems.

	STATUS
	ETHERNET
	POWER
	PoE

1) POWER LED BLINKS AND OTHER LEDs are OFF: The **POWER LED** blinks and other LED lights switch off when PowerGrid 9141s-PoE(s) unit enters power saving mode. This occurs 30 seconds after the Ethernet connection is lost (see below).

2) ETHERNET LED is OFF: If the **Ethernet LED** fails to light up, check that the LAN port of the PowerGrid unit is connected firmly to the LAN port of the other device. To check the condition of the Ethernet cable, use another cable to test the same connection.

3) STATUS LED is OFF: Plug both PowerGrid units that you're attempting to pair into power outlets that are within the same room; both PowerGrid devices should have an Ethernet cable connected to their respective devices (e.g. PC, Router, Set Top Box, camera, etc...). After 10 seconds (approx, until all the LEDs of the device blink), the **STATUS LED** should light up **GREEN**. If not, press the "**Config"** button on each for 2-5 seconds and let go.

4) PoE LED is OFF: If the **PoE LED** fails to light up, check that the LAN port of the PowerGrid unit is connected firmly to the LAN port of the PoE device. Also, the PoE capable device needs to support the 802.3af standard and not other proprietary standards.

* If you have tried all of the above and are still experiencing problems, you can reset both devices (PG-9141s & PG-9141s-PoE) to factory default by using a pin to push in the "**Reset"** button for 11 seconds (until all the LEDs of the device blink).
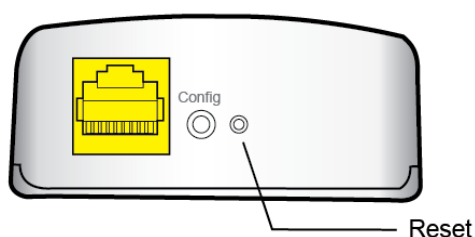
PG-9141s-PoE   **PG-9141s**
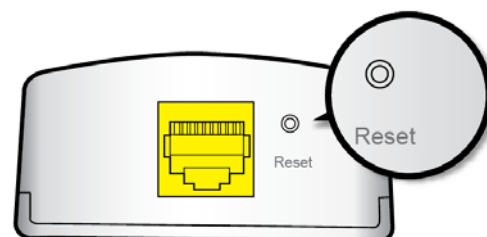
Chapter 4: Frequently Asked Questions

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 9141s-PoE went into power saving mode. It occurs 60 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 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 9141s-PoE 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 9141s-PoE adapters in to power outlets, 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 9141s-PoE 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., and you are still experiencing problems, you can return both PowerGrid 9141s-PoE 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 9141s-PoE units (in the network) does not light up Green, press the Config button on the problem PowerGrid 9141s-PoE unit for more than 10 seconds to disconnect it from the network. Then, see Chapter 2 for Network Setup. 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 9141s-PoE could be installed in the 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 9141s-PoE 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.

NOTE: RJ45 PIN assignments for the PG-9141s-PoE.

RJ45 PINS	10/100 Mixed DC & Data (mode A)	RJ45 PINS	10/100 Mixed DC & Data (mode A)
Pin 1	Rx + / DC +	Pin 5	unused
Pin 2	Rx - / DC +	Pin 6	Tx - / DC -
Pin 3	Tx + / DC -	Pin 7	unused
Pin 4	unused	Pin 8	unused

Appendix A: Specifications

Interface

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

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

Modulations
- OFDM, FEC; Flexible frequency configuration

Data Rate
- Up to 200Mbps (operating @ HPAV baseband plans 2-28MHz)

Management
- Remote Firmware upgrade
- TR-069 Supported

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 50Hz/60Hz
- Auto power saving mode max 0.5W (in standby mode)
- Per port feeding power up to 15 watts (use with IEEE 802.3af standard PoE enabled PD devices ex. VoIP phone, IP Cam…etc.)

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

Dimensions
- 108mm (H) x 68mm (W) x 46mm (D)
  (with plug)

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