

Product External Specification For Powerline AV Wireless N Extender

Model Name: DHP-W306AV Rev. A1

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Revision History

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| Rev. | Date | Author | Reason for Changes |
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| 1.1 | 2010/4/16 | Webber Hsu | <ul style="list-style-type: none">• Typo correct |
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1.0 Scope

1.1 Document

Ideal networking solution for home and small business environment requires high degree of convenience and flexibility in functionality, configuration and maintenance. Home users and network administrators have been struggling to maintain multiple devices in order to support functionalities required while at the same time ensuring that a secure environment is provided.

The DHP-W306AV is the product combined to latest 802.11n technology while staying compatible with 802.11b & 802.11g networks and the latest technology to deliver up to 200Mbps wired speed over a home's existing electrical wires.

This rapid transmission speed makes it ideal for bandwidth-intensive applications, guaranteeing smooth HD video streaming, VoIP calls, and lag-free online gaming experiences. In addition, it prioritizes Internet traffic, ensuring that multimedia applications do not experience glitches while web surfing and downloads are in progress.

The DHP-W306AV upgrades your wireless network to the next generation of wireless technology and makes your wireless connectivity faster and wider to meet the blooming demand to multimedia application. User can enjoy the higher performance of wireless networking while streaming for more and more digital multimedia devices even at bigger home.

This device provides ample network bandwidth, enabling digital home consumers to tap into existing electrical wiring and wireless environment for high-quality multimedia streaming.

1.2 Product Feature

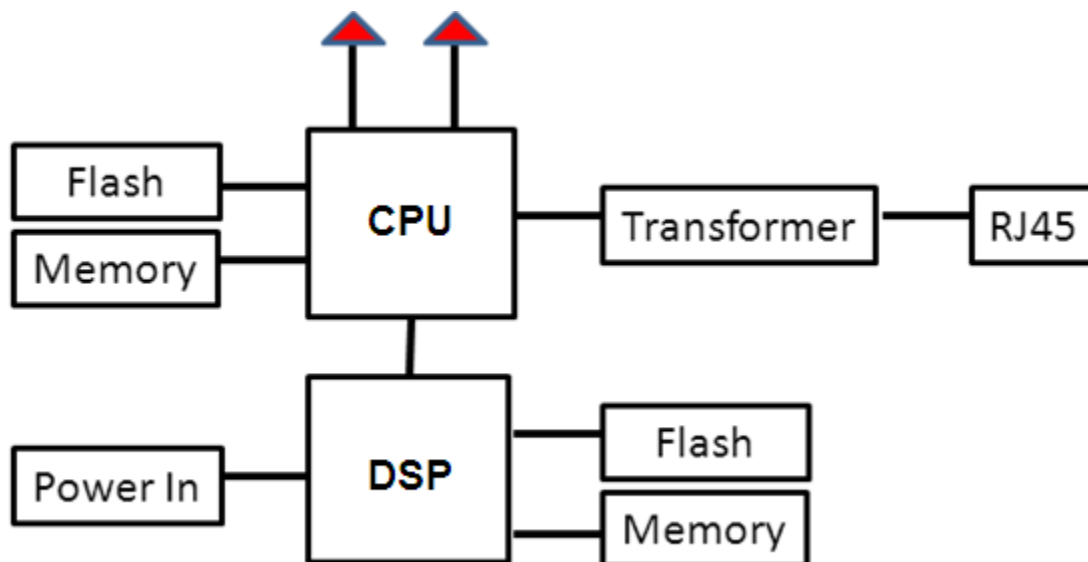
- **Power Line Interface**
One Powerline interface Compatible with HomePlug AV specification
- **LAN Interface:**
One port 10/100 Mbps Fast Ethernet
- **Wireless Interface:**
Compatible with IEEE 802.11n specification
Compatible with IEEE 802.11g specification
Compatible with IEEE 802.11b specification
- **Security**
128-bit AES Link Encryption with key management for secure power line communications
NMK (Network Membership Key) used to authenticate/access
Rotating NEK (Network Encryption Key)
- **Functions support:**
WPS (Wi-Fi Protected Setup) (WCN 2.0)
 - Push Button
 - PINWireless Security:
 - 64/128 bits WEP
 - WPA
 - WPA2WLAN Partition
Web-based configuration and management
UPnP support
D-Link Enhanced PLC Qos

2.0 Requirements

The following sections identify the detailed requirements of the DHP-W306AV Powerline AV Wireless N Extender.

2.1 Hardware Specification

2.1.1 Block Diagram



2.1.2 Hardware Interface

| | Feature | Detailed Description |
|---------|----------------------|---|
| 2.1.2.1 | Power Line Interface | <ul style="list-style-type: none"> One PLC interface Compatible with HomePlug AV specification up to 200 Mbps |
| 2.1.2.2 | LAN Interface | <ul style="list-style-type: none"> One 10/100 Mbps Fast Ethernet port Complies IEEE 802.3u specification Support IEEE 802.3x Flow Control Support Auto Negotiation Support Auto MDI/MDIX |
| 2.1.2.3 | WLAN Interface | <ul style="list-style-type: none"> Compatible with IEEE 802.11n specification Compatible with IEEE 802.11g specification Compatible with IEEE 802.11b specification Two fixed external 2dBi Omni-direction Antennas |
| 2.1.2.4 | Reset Button | <ul style="list-style-type: none"> 1 Push button for reset the device to default setting. |
| 2.1.2.5 | Power Button | <ul style="list-style-type: none"> 1 Push button for power on/off the device. |
| 2.1.2.6 | WPS Button | <ul style="list-style-type: none"> 1 Push button for WPS connection |
| 2.1.2.7 | Eny Button | <ul style="list-style-type: none"> 1 Push button for Power Line sync connection |



2.1.3 LED Indicators

| | LED Indicator | Color | Status | Description |
|---------|---------------|------------------|----------------|--|
| 2.1.3.1 | Power | Green/ Orange | Solid Orange | • During power on process |
| | | | Solid Green | • The device is power on |
| | | | Light off | • The device is power off |
| | Power Line | Green | Solid Green | • The link is established |
| | | | Blinking Green | • Data transmission |
| | | | Light off | • The link is not established |
| | WLAN | Green | Solid Green | • The link is up |
| | | | Blinking Green | • Data transmission |
| | | | Light off | • The link is not established |
| | LAN | Green | Solid Green | • The link is established |
| | | | Blinking Green | • Data transmission |
| | | | Light off | • The link is down |
| | WPS/Eny | Blue | Solid Blue | • The connection is established |
| | | | Blinking Blue | • WPS or Eny is waiting for connection |
| | | | Light off | • No function is working |



2.1.4 IEEE 802.3 Section

| | Feature | Detailed Description |
|---------|---------------------------------|--|
| 2.1.4.1 | 10/100 BASE-TX Fast Ethernet | <ul style="list-style-type: none"> • IEEE 802.3u compliance • IEEE 802.3x Flow Control support • Support Full/Half Duplex operations • Support Auto Negotiation • Support Auto MDI/MDIX |

2.1.5 IEEE 802.11b Section

| | Feature | Detailed Description |
|---------|------------------------------|--|
| 2.1.5.1 | Standard | <ul style="list-style-type: none"> • IEEE 802.11b |
| 2.1.5.2 | Radio and Modulation Schemes | <ul style="list-style-type: none"> • DQPSK, DBPSK, DSSS, and CCK |
| 2.1.5.3 | Operating Frequency | <ul style="list-style-type: none"> • 2400 ~ 2497MHz ISM band |
| 2.1.5.4 | Channel Numbers | <ul style="list-style-type: none"> • 11 channels for United States • 13 channels for Europe Countries • 14 channels for Japan |
| 2.1.5.5 | Data Rate | <ul style="list-style-type: none"> • 11, 5.5, 2, and 1 Mbps |

| | Feature | Detailed Description |
|---------|------------------------------------|---|
| 2.5.5.6 | Media Access Protocol | <ul style="list-style-type: none"> CSMA/CA with ACK |
| 2.1.5.7 | Transmitter Output Power | <ul style="list-style-type: none"> Typical 19 dBm (+/-2dB) at 11, 5.5, 2, and 1Mbps at room temperature 25 degree C |
| 2.1.5.8 | Effective Isotropic Radiated Power | <ul style="list-style-type: none"> 18.0 dBm (typical) |
| 2.1.5.9 | Receiver Sensitivity | <ul style="list-style-type: none"> Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 8% at room temperature. -90 dBm at 1Mbps -89 dBm at 2Mbps -88 dBm at 5.5Mbps -86 dBm at 11Mbps |

2.1.6 IEEE 802.11g Section

| | Feature | Detailed Description |
|---------|------------------------------------|--|
| 2.1.6.1 | Standard | <ul style="list-style-type: none"> IEEE 802.11g |
| 2.1.6.2 | Radio and Modulation Schemes | <ul style="list-style-type: none"> BPSK, QPSK, 16QAM, 64QAM, and OFDM |
| 2.1.6.3 | Operating Frequency | <ul style="list-style-type: none"> 2400 ~ 2497MHz ISM band |
| 2.1.6.4 | Channel Numbers | <ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries 14 channels for Japan |
| 2.1.6.5 | Data Rate | <ul style="list-style-type: none"> 54, 48, 36, 24, 18, 12, 9, and 6 Mbps |
| 2.1.6.6 | Media Access Protocol | <ul style="list-style-type: none"> CSMA/CA with ACK |
| 2.1.6.7 | Transmitter Output Power | <ul style="list-style-type: none"> Typical 17 dBm (+/-2dB) at 6 to 18 Mbps at room temperature 25 degree C Typical 16 dBm (+/-2dB) at 24 to 36 Mbps at room temperature 25 degree C Typical 15 dBm (+/-2dB) at 48 to 54 Mbps at room temperature 25 degree C |
| 2.1.6.8 | Effective Isotropic Radiated Power | <ul style="list-style-type: none"> 16.0 (typical) |
| 2.1.6.9 | Receiver Sensitivity | <ul style="list-style-type: none"> Error Rate = 10% at room temperature. -86 dBm at 6Mbps -85dBm at 9Mbps -84 dBm at 12Mbps -82 dBm at 18Mbps -78 dBm at 24Mbps -75 dBm at 36Mbps -71 dBm at 48Mbps -70 dBm at 54Mbps |

2.1.7 IEEE 802.11n Section

| | Feature | Detailed Description |
|---------|------------------------------|--|
| 2.1.7.1 | Standard | <ul style="list-style-type: none"> IEEE 802.11n draft 2.0 |
| 2.1.7.2 | Radio and Modulation Schemes | <ul style="list-style-type: none"> BPSK, QPSK, 16QAM, 64QAM with OFDM |
| 2.1.7.3 | Operating Frequency | <ul style="list-style-type: none"> 2400 ~ 2483.5MHz ISM band |
| 2.1.7.4 | Channel Numbers | <ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries 14 channels for Japan |
| 2.1.7.5 | Data Rate | <ul style="list-style-type: none"> 6.5~300 Mbps |
| 2.1.7.6 | Media Access Protocol | <ul style="list-style-type: none"> CSMA/CA with ACK |
| 2.1.7.7 | Transmitter Output Power | <ul style="list-style-type: none"> Typical 15dBm (+/-2dB) at MCS0 to MCS4 and MCS8 to MCS12 at room temperature 25 degree C |

| | Feature | Detailed Description |
|---------|------------------------------------|--|
| | | <ul style="list-style-type: none"> Typical 13dBm (+/-2dB) at MCS5 and MCS13 at room temperature 25 degree C Typical 12dBm (+/-2dB) at MCS6 and MCS14 at room temperature 25 degree C Typical 8dBm (+/-2dB) at MCS7 and MCS15 at room temperature 25 degree C |
| 2.1.7.8 | Effective Isotropic Radiated Power | <ul style="list-style-type: none"> 8 (MCS7) (typical) 8 (MCS15) (typical) |
| 2.1.7.9 | Receiver Sensitivity | <ul style="list-style-type: none"> N mode HT20(MHz) <ul style="list-style-type: none"> -82 dBm at MCS0/8 -79 dBm at MCS1/9 -77 dBm at MCS2/10 -74 dBm at MCS3/11 -70 dBm at MCS4/12 -66 dBm at MCS5/13 -65 dBm at MCS6/14 -64 dBm at MCS7/15 N mode HT40(MHz) <ul style="list-style-type: none"> -79 dBm at MCS0/8 -76 dBm at MCS1/9 -74 dBm at MCS2/10 -70 dBm at MCS3/11 -67 dBm at MCS4/12 -63 dBm at MCS5/13 -62 dBm at MCS6/14 -61 dBm at MCS7/15 |

2.2 Firmware Specification

2.2.1 Function Table

| SETUP | ADVANCED | TOOLS | STATUS | SUPPORT |
|-------------------|--------------------|-------|-------------|---------|
| Wireless Settings | MAC Address Filter | Admin | Device Info | Menu |
| PLC Settings | Advanced Wireless | Time | Logs | Setup |

| | | | | |
|--|------------|----------|------------|---------|
| | User Limit | Firmware | Statistics | Advance |
| | | System | Wireless | Tools |
| | | Schedule | | Status |

The Web-based Configuration Interface supports browsers that certify the W3C standard.

This web-based configuration interface includes the following functions:

- **Setup**
Setup allows you to configure parameters for Internet connection, wire networking and wireless networking by Setup Wizard or manually configuration.
- **Advanced (Advanced Function Configuration)**
Advanced Function Configuration allows you to configure advanced features such as MAC Address Filter, Advanced Wireless and User Limit.
- **Tools**
Tools provides administrators to manage the router.
- **Status**
Status allows you to display the router information and status.
- **Support**
To provide an online user manual that facilitates the setup.

2.2.2 Setup

| | Feature | Detailed Description |
|---------|-------------------|--|
| 2.2.2.1 | Wireless Settings | <ul style="list-style-type: none"> • The wireless section is used to configure the wireless settings for the router. |
| | | <ul style="list-style-type: none"> • Wireless Network Settings This sections allows admins to setup the wireless network settings such as SSID, Wireless Channel, 802.11 Mode, Transmission Rate, Channel Width, and Visibility Status. • Wireless Security Mode To protect your privacy you can configure wireless security features. This device supports three wireless security modes, including WEP, WPA-Personal, and WPA-Enterprise. WEP is the original wireless encryption standard. WPA provides a higher level of security. WPA-Personal does not require an authentication server. The WPA-Enterprise option requires an external RADIUS server. |
| 2.2.2.2 | PLC Settings | <ul style="list-style-type: none"> • To configure the PLC settings of the device and also to configure the Qos on your HomePlug network. |
| | | <ul style="list-style-type: none"> • Network Name The Network Name allows the HomePlug devices that have the same network name in the HomePlug network to communicate with each other. • Add Member Use this section to configure the HomePlug device on your network easily. • Manual Add Member This section allows users to configure the HomePlug device manually. • Member List HomePlug device connected to the unit will have their information displayed in the table. The table will show the Name, MAC Address, speed and Status for each device. |

| | Feature | Detailed Description |
|--|---------|---|
| | | <ul style="list-style-type: none"> • QoS Settings This section prioritize HomePlug traffic passing through your device based on the device it is intended for by setting MAC address and the level of priority. |

2.2.3 Advanced Function Configuration

| | Feature | Detailed Description |
|---------|--------------------|--|
| 2.2.3.1 | MAC Address Filter | <ul style="list-style-type: none"> • The MAC address filter section can be used to filter network access by machines based on the unique MAC addresses of their network adapter(s). It is most useful to prevent unauthorized wireless devices from connecting to your network. |
| 2.2.3.2 | Advanced Wireless | <ul style="list-style-type: none"> • Advanced Wireless Setup provides administrators to configure detail wireless perimeters. • |
| 2.2.3.3 | User limit | <ul style="list-style-type: none"> • Limit the connected client number. (1-32) |

2.2.4 Tools

| | Feature | Detailed Description |
|---------|---------|--|
| 2.2.4.1 | Admin | <ul style="list-style-type: none"> • The Admin option is used to set a password for access to the Web-based management and enable Remote Management that allows admins to manage the router from anywhere on the Internet. • Admin Password Enter a password for the user “admin”, who will have full access to the Web-based management interface. • User Password Enter a password for the user “user”, who will have read-only access to the Web-based management interface. • System Name The name of the router can be changed here. • Administration Enabling Remote Management allows you to manage the router from anywhere on the Internet. Disabling Remote Management allows you to manage the router only from computers on your LAN. |
| 2.2.4.2 | Time | <ul style="list-style-type: none"> • The Time Configuration option allows admins to configure, update, and maintain the correct time on the router’s internal system clock. • Time Configuration From this section admins can set the time zone that users are in and daylight saving can also be configured to automatically adjust the time when needed. • Automatic Time Configuration This section allows admins to setup the time configuration through NTP. • Set The Date and Time Manually This section allows admins to setup the time configuration manually or copy the setting from PC. |
| 2.2.4.3 | System | <ul style="list-style-type: none"> • This section allows admins to manage the router’s configuration settings, reboot the router, and restore the router to the factory default settings. Restoring the unit to the factory default settings will erase all settings, including any rules that have created. |

| | Feature | Detailed Description |
|---------|-----------|--|
| 2.2.4.4 | Firmware | <ul style="list-style-type: none"> The Firmware Upgrade section can be used to update to the latest firmware code to improve functionality and performance. Firmware Information Here are displayed the version numbers of the firmware currently installed in your router and the most recent upgrade that is available. Firmware Upgrade This section allows admins to upgrade the firmware by uploading it from their local hard drive. Firmware Upgrade Notification Options This section enables the router to automatically check whether a new firmware is released and send the information by email to admins. Language Pack Information This section allows admins to change language pack by uploading it from their local hard drive. |
| 2.2.4.5 | Schedules | <ul style="list-style-type: none"> Schedules can be created for use with enforcing rules and applied to all access control rules. |

2.2.5 Status

| | Feature | Detailed Description |
|---------|-------------|--|
| 2.2.5.1 | Device Info | <ul style="list-style-type: none"> All of your Internet and network connection details are displayed on the Device Info page. The firmware version is also displayed here. |
| 2.2.5.2 | Logs | <ul style="list-style-type: none"> The router automatically logs (records) events of possible interest in its internal memory. If there is not enough internal memory for all events, logs of older events are deleted, but logs of the latest events are retained. The Logs option allows you to view the router logs. You can define what types of events you want to view and the level of events to view. This router also has external Syslog Server support so you can send the log files to a computer on your network that is running a Syslog utility. |
| 2.2.5.3 | Statistics | <ul style="list-style-type: none"> The Statistics page displays all of the LAN, WAN, and Wireless packet transmit and receive statistics. |
| 2.2.5.4 | Wireless | <ul style="list-style-type: none"> The wireless section allows you to view the wireless clients that are connected to your wireless router. |

2.2.6 Support

| | Feature | Detailed Description |
|---------|---------|---|
| 2.2.6.1 | Menu | <ul style="list-style-type: none"> Support menu tree |
| 2.2.6.2 | Setup | <ul style="list-style-type: none"> Setup help |
| 2.2.6.3 | Advance | <ul style="list-style-type: none"> Advance help |
| 2.2.6.4 | Tools | <ul style="list-style-type: none"> Tools help |
| 2.2.6.5 | Status | <ul style="list-style-type: none"> Status help |

2.3 Setup Utility Specification

| | Feature | Detailed Description |
|-------|---------|---|
| 2.3.1 | DCC | <ul style="list-style-type: none"> D-Link Click'n Connect (DCC) utility for DEU 16 Languages Support |
| 2.3.2 | QRS | <ul style="list-style-type: none"> Quick Router Setup (QRS) utility for DUS and DI 24 Languages Support |

2.4 Electrical Characteristic

| | Feature | Detailed Description |
|-------|-------------------|---|
| 2.4.1 | Power Input | <ul style="list-style-type: none"> 100V ~ 240V |
| 2.4.2 | Power Consumption | <ul style="list-style-type: none"> 6W |

2.5 Mechanical Requirements

| | Feature | Detailed Description |
|-------|---------|--|
| 2.5.1 | Length | <ul style="list-style-type: none"> 105mm |
| 2.5.2 | Width | <ul style="list-style-type: none"> 71mm |
| 2.5.3 | Height | <ul style="list-style-type: none"> 51.5mm |
| 2.5.4 | Weight | <ul style="list-style-type: none"> 208g |

2.6 Compatibility Requirements

This device passes the following compatibility requirements.

| | Feature | Detailed Description |
|-------|---------|---|
| 2.6.1 | Wi-Fi | <ul style="list-style-type: none"> Meet applicable Wi-Fi 802.11b, g, n certification requirements. |

2.7 Environmental Requirements

| | Feature | Detailed Description |
|-------|--------------------------------------|---|
| 2.7.1 | Operating Temperature Conditions | <ul style="list-style-type: none"> The product is capable of continuous reliable operation when operating in ambient temperature of 0 °C to +40 °C. |
| 2.7.2 | Non-Operating Temperature Conditions | <ul style="list-style-type: none"> Neither subassemblies is damaged nor the operational performance be degraded when restored to the operating temperature after exposing to storage temperature in the range of -20 °C to +65 °C. |
| 2.7.3 | Operating Humidity conditions | <ul style="list-style-type: none"> The product is capable of continuous reliable operation when subjected to relative humidity in the range of 10% and 90% non-condensing. |
| 2.7.4 | Non-Operating Humidity Conditions | <ul style="list-style-type: none"> The product is not be damaged nor the performance be degraded after exposure to relative humidity ranging from 5% to 95% non-condensing |