



LINK TECHNOLOGIES PowerLink AT2 Battery PoE User Guide

[Home](#) » [LINK TECHNOLOGIES](#) » LINK TECHNOLOGIES PowerLink AT2 Battery PoE User Guide 

Contents

- [1 LINK TECHNOLOGIES PowerLink AT2 Battery PoE](#)
- [2 Hardware Overview](#)
- [3 Quick Start](#)
- [4 Features:](#)
 - [5 Hardware](#)
 - [6 Functions](#)
 - [7 Web Interface](#)
 - [8 DHCP and DNS](#)
- [9 Appendix:](#)
 - [10 Documents / Resources](#)
 - [11 Related Posts](#)



LINK TECHNOLOGIES PowerLink AT2 Battery PoE



Hardware Overview

- Power Button on Top
- 48v and 24v buttons on the front of the unit
- LCD screen to tell you the current status
- Light on top
- Power Over Ethernet LAN Port
- USB-C Charging system 2A
- USB Power Out
- Optional 5 GHz Access Point



Quick Start

- Power-On Powerlink AT2 Device
- Press the voltage you need to power your CPE
- Use a short CAT5 cable to go between the LAN port on the PowerLink AT2 and the CPE.
- Connect to www.linktechs.net SSID

- The IP address should come from CPE (if you are configured for DHCP on your wireless device), or you will need to statically configure it.
- Connect to your CPE using web/inbox or installation application.

Normally there is no need to login to the PowerLink unless you wish to do some kind of special configuration, things like change VLANs, SSIDs, security etc. Most of the time the unit will be completely pass-through, and transparent bridging. Most manufacturing applications prefer this.

Features:

- 1.5-inch TFT RGB display
- Passive Power Over Ethernet Device, Ubiquiti, Mikrotik, Cambium, etc.
- Switchable 24V and 48V – 30W PoE.
- Will power up 802.3at devices using 8 wires
- WiFi 2.4 GHz – Optional 5GHz AC Module
- 14000mA/h for charging external devices.
- Short-circuit, Overload, Temperature, Low Output Voltage protection.
- Automated preparation of CPE antenna. Via Linux script
- OpenWrt / Ledu, HTML menu, working opkg repository
- VLAN support
- Iperf3 -s always active
- Samba 3, for files and memory sharing, USB flash memory.
- Works Perfectly with Several Manufacture Apps — EasyUBNT, Tik-App, Ubuntu, Cambium
- IEEE 802.3 (Pin 4 e 5 +24V, Pin 7 e 8 GND)
- For old Cambium CPE, you have to create a LAN cable with a reversed power pin.
- One-year warranty.
- USB Out (Charge/LED)
- Wi-Fi
- PoE On
- Accessory:
 - o Hard Case
 - o USB Cable
 - o LAN Cable
 - o 5Ghz AC module (Optional)
- 280 grams
- 86x103x30mm
- MT7620 chipset 2.4GHz
- Two PCB antennas.

WiFi Speed (theoretical):

2.4 GHz Width 40Mhz = 86 Mbps 2.4 GHz Width 20Mhz = 43 Mbps

Optional USB AC Stick

AC 5Ghz Width 80Mhz = 292Mbps AC 5Ghz Width 40Mhz = 150Mbps AC 5Ghz Width 20Mhz = 72 Mbps



Hardware

Top Features

- LAN Port
- Reset Button
- USB-C Power Input
- Power Button
- LED Light
- USB with Power Out



Front Buttons/LEDs

The Pwr led tells you if the router is powered on. The Battery light will blink if the unit is low on charge or charging, it will be solid if the unit is finished charging. WiFi blink, when client are associated Eth blink, when Ethernet is connected



Functions

Top Button

This is the button on the top of the unit, next to the LAN and Power In port.

- One-click – Turn on Router and WiFi Turn on AT2
- One-click – Turn off Router and WiFi
- Fast Double click – Turn off AT2
- Long click button – Turn on/off LED Light

24V / 48V Button

The 24v button is Yellow in color and the 48v button is Red. Be sure your device supports 48v and/or 24v before plugging them in. The PowerLink does not have a method to detect what voltage should be applied, therefore, it will apply the voltage you select. Look on the screen for the current-voltage output.

- One-Click – Enable POE out with selected voltage and Enable WIFI
- One-Click – Disable POE out and disable WIFI
- One-Click at boot button – Show Test

Reset Button

The reset button is to either perform a firmware update or to factory reset the unit. This is typically one of the major troubleshooting steps that

- Pressed during startup – firmware update
- Pressed for 30 seconds – factory reset.

Yellow Battery LED Indicator

This indicator tells you when the unit is charging, and when it is completed charging. It also will tell you when a low battery condition is enabled.

- While charging = Blinking LED
- End of Charge = LED ON
- In discharging = LED ON
- Low Battery = Blinking LED

Timeout

If the PoE out is on and the power is lower than 2W, the unit turns off after 2 minutes. If only WiFi is on, it turns off after 15 minutes. You can remove this timeout from the configuration.

Display

The LCD displays a number of items, the battery level, the Current PoE Voltage going out the POE Ethernet port, and the milli-amp draw, as well as an ethernet status Icon. It also can tell you if your configuration script was successfully completed or if it failed.

- Battery level
- PoE voltage
- Ethernet Status ICON
- switched off – router off
 - ethernet at 100 Full Duplex
 - Problems with an ethernet cable
- unplug – Cable Not Plugged In
- Power delivered
- config did – When the script is successful
- config failed – When the script fails



Default Configuration

To connect to the device and change options, you can connect via web browser via <http://192.168.1.69> or SSH to the same IP address. The default

IP Address: 192.168.1.69

Username: root password: Geva

To Automate the Preparation of CPEs

On the Powerlink AT, through ssh connection:

- | | |
|-----------------------|---|
| • /root/CpConf.sh | daemon for CPE configuration |
| • /root/OnCpScript.sh | executed on the CPE for its configuration |
| • /root/system.cfg | copied on the CPE for its configuration |
| • /root/icons.sh | daemon that controls icon on TFT |

On HTML page of router -> System -> Startup -> Local Startup iperf -s&

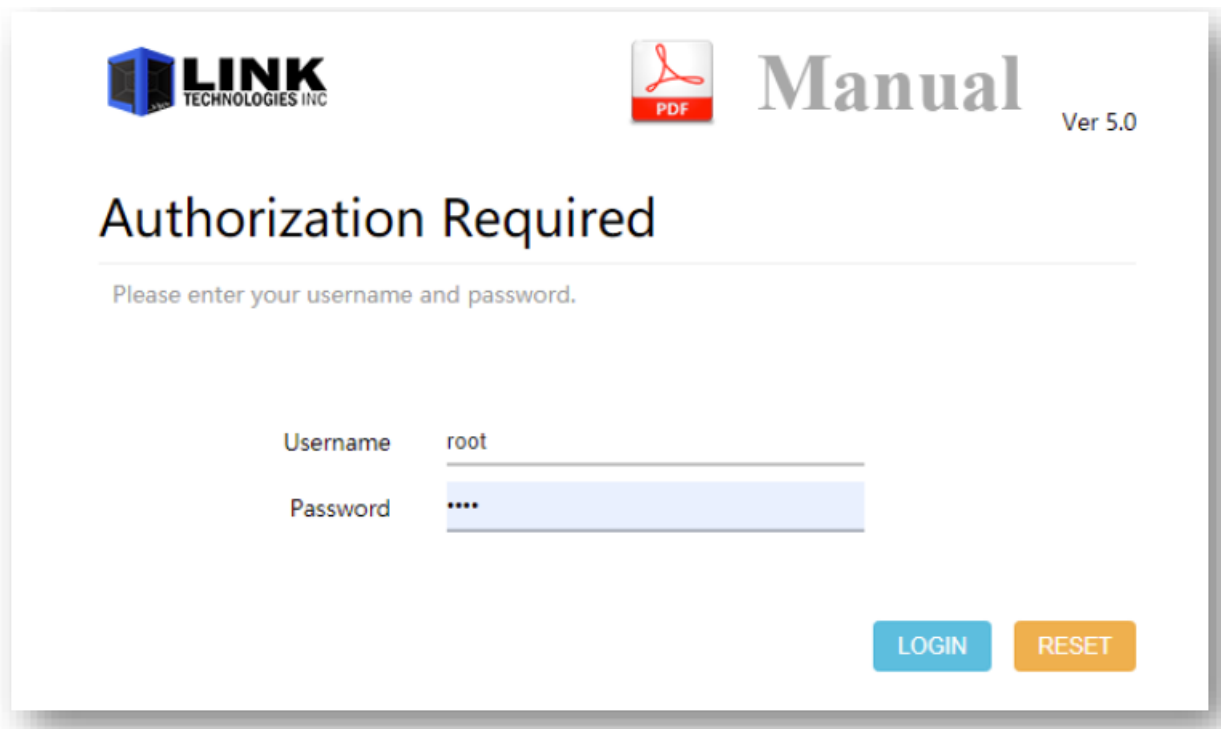
/root/icons.sh &

#!/root/CpConf.sh &

- Remove comment (#) on the last line, to enable auto CPE conf.
- Customize OnCpScript.sh for your requirement.
- Copy your CPE configuration file, system.cf g
- Examples work on the Ubiquiti AirOs CPE

Web Interface

You can access the web interface by browsing 192.168.1.69. The username is root and the password is either link techs or gets VA.



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PDF Manual Ver 5.0

Authorization Required

Please enter your username and password.

Username

Password

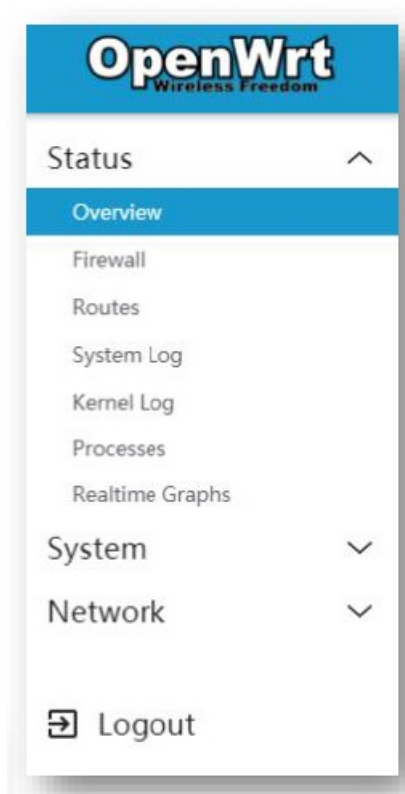
[LOGIN](#) [RESET](#)

Status

The left menu gives you the status page. This includes an overview, Firewall, routes, logs, processes, and graphing.

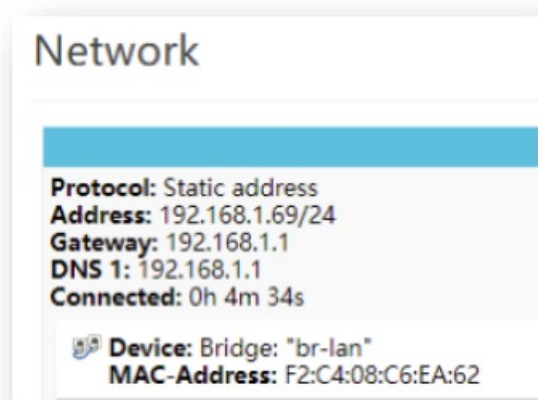
The Status page gives you Hardware, Firmware versions, and uptime.

| Status | |
|------------------|---|
| System | |
| Hostname | BatteryPoE |
| Model | BatteryPoE |
| Architecture | MediaTek MT7620A ver2 ecos6 |
| Firmware Version | OpenWrt 19.07.5 r11257-5090152ae3 / LuCI openwrt-19.07 branch git-21.07%58580-41ab871 |
| Kernel Version | 4.14.209 |
| Local Time | 2021-03-25 17:35:40 |
| Uptime | 0h 4m 3s |
| Load Average | 0.14, 0.17, 0.09 |



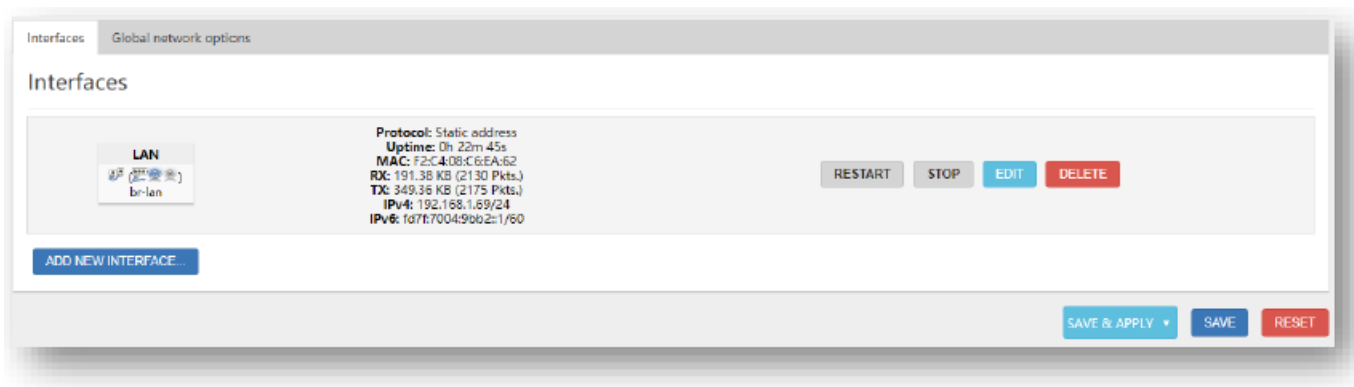
The network section tells you what is in use and connected to the device.

The network section tells you what is in-use and connected to the device.

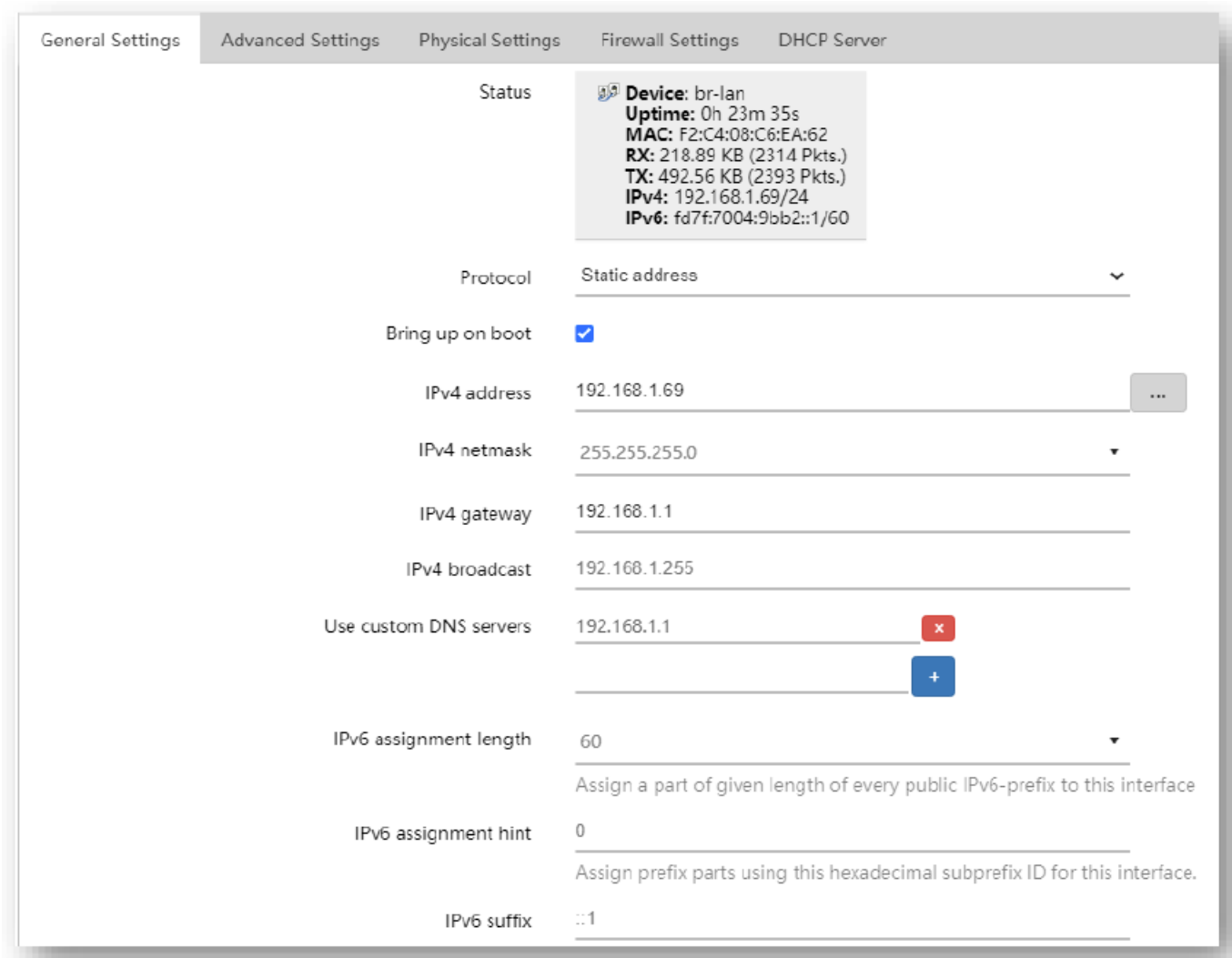


Interface / Bridge

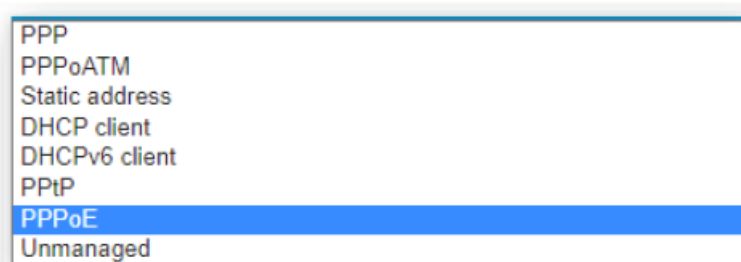
Under Network → Interfaces, you have the option to configure new interfaces and/or edit the existing ones. The default should be LAN, this is a brand bridge group.



By clicking edit, you can edit the LAN interface, this will bring up the following menu options:

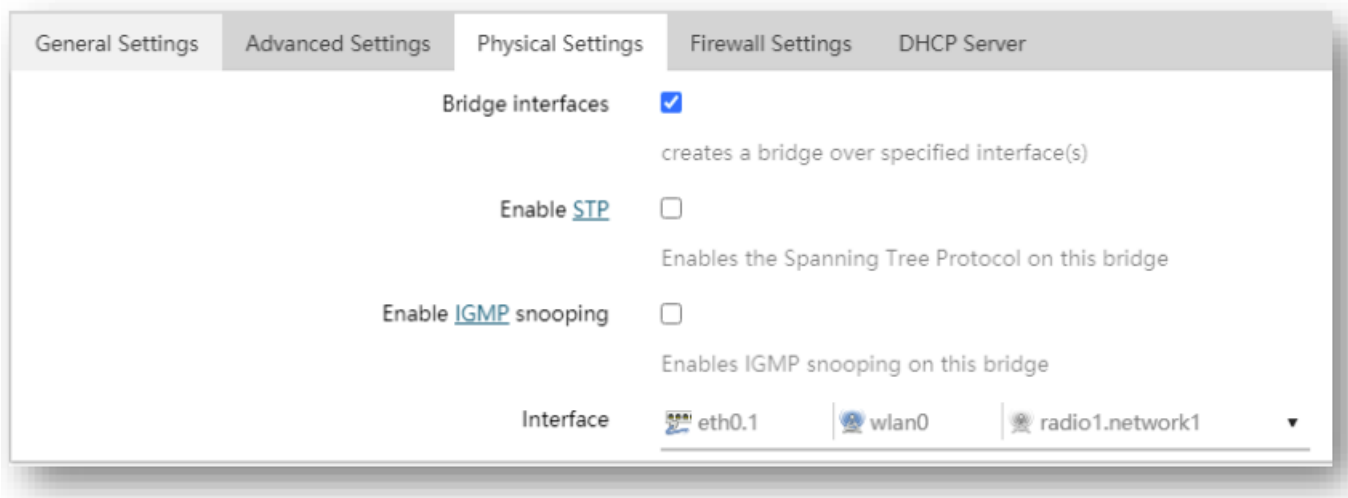


Here, you have options to select what protocol you wish, this could be used on the ethernet or any other interface. The default option is static address, where the br-lan is statically configured.



Other options include; PPP, DHCP Client, or PPPoE. I would always recommend that you bring up the default interface statically as well as upon boot. NOTE, there is options here that can render the device not reachable, and then a factory reset would be the only option.

Under Physical Settings, you can tell that this interface is a bridge, enable STP and/or IGMP snooping, as well as select what interfaces you wish to bridge together. The image below is the default configuration.



DHCP-Server





Under Network → Interfaces, hit edit your interface and then you can go to DHCP Server. Here are your configurable options for DHCP Server.

Wireless

This section under status gives you the wireless access point, SSID, and encryption as well as the channel of radios0, this is the 2.4 GHz radio built into the PowerLink AT2. The radio1 would be if you have added the 5 GHz module into the unit.



Wireless Overview


| | | | | |
|---|---|---------|------|--------|
|  | Generic 802.11bgn Channel: 1 (2.412 GHz) Bitrate: ? Mbit/s | RESTART | SCAN | ADD |
|  | SSID: www.linktechs.net Mode: Master BSSID: 00:0C:43:76:20:58 Encryption: None | DISABLE | EDIT | REMOVE |
|  | Generic 802.11bg Device is not active | RESTART | SCAN | ADD |
|  | SSID: PowerLink_5Ghz Mode: Master Wireless is not associated | DISABLE | EDIT | REMOVE |

Here you have options to disable the radio interface, as well as set your network mode, channel, and width. You also have the option to select auto channel if you prefer.

General Setup

Advanced Settings

Status

 Mode: Master | SSID: www.linktechs.net
BSSID: 00:0C:43:76:20:58
Encryption: None
Channel: 1 (2.412 GHz)
Tx-Power: 20 dBm
Signal: 0 dBm | Noise: 0 dBm
Bitrate: 0.0 Mbit/s | Country: 00

Wireless network is enabled

DISABLE

Operating frequency

ModeChannelWidth
N1 (2.412 Mhz)40 MHz

Maximum transmit power

driver default - Current power: 20 dBm
Specifies the maximum transmit power the wireless radio may use. Depending on regulator reduced by the driver.

General Setup

Wireless Security

MAC-Filter

Advanced Settings


Mode

Access Point

ESSID

www.linktechs.net

Network

lan: 

Choose the network(s) you want to attach to this wireless interface or fill out the custom field

Hide ESSID

☐

WMM Mode

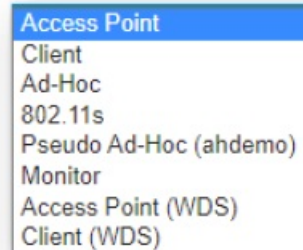
☒

In advanced settings at the top, you can select the country you are operating in, therefore it will keep the power levels to the max your country supports. NOTE, if you have legacy 802.11b devices, you will need to check the box to allow 802.11b devices, else you can uncheck this. Please test to verify you are not using a legacy device.

Under General Setup, you have options for what mode you wish to operate in, Access Point being the most common. Other options include client, ad-hoc, Monitor, and various WDS modes.

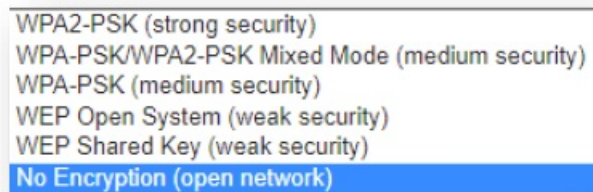
Changing SSID

You will change your SSID by going to Network → Wireless → selecting edit on the radio you wish to modify, then it will be under General Setup. Here you have ESSID, this is your SSID that will appear, if you wish to hide it or change the network that this interface operates off of you can do it here.



Securing Wireless

Under Network → Wireless → Wireless Security, you have options to select what security mode you wish to operate in. WPA2-PSK is recommended. You will enter your network key under KEY



Isolating Clients

If you wish, you can click advanced settings under your wireless interface and select the check box to isolate clients.

VLANs



Under the Network → Switch, you have the ability to add VLANs to your configuration. What VLAN ID and what tag or untagged port it should come from.

Switch

The network ports on this device can be combined to several [VLANs](#) in which computers can communicate directly with each other. [VLANs](#) are often used to separate different network segments. Often there is by default one Uplink port for a connection to the next greater network like the Internet and other ports for a local network.

Enable VLAN functionality ☒

VLANs on "switch0" (mt7620)

| VLAN ID | CPU (eth0) | LAN |
|--------------|---|---|
| Port status: |  1000baseT full-duplex |  1000baseT full-duplex |
| 1 | tagged | untagged |

ADD VLAN

SAVE & APPLY

SAVE

RESET

Firewall

Firewall Status

IPv4 Firewall IPv6 Firewall

HIDE EMPTY CHAINS

RESET COUNTERS

RESTART FIREWALL

Table: Filter

Chain *INPUT* (Policy: *ACCEPT*, 93 Packets, 6.01 KB Traffic)

| Pkts. | Traffic | Target | Prot. | In | Out | Source | Destination | Options | Comment |
|--------|-----------|----------------------------|-------|----|-----|-----------|-------------|-----------------------------|-------------------------|
| 342 | 29.98 KB | ACCEPT | all | lo | * | 0.0.0.0/0 | 0.0.0.0/0 | - | - |
| 1.33 K | 230.05 KB | input_rule | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | - | Custom input rule chain |
| 1.24 K | 224.04 KB | ACCEPT | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | ctstate RELATED,ESTABLISHED | - |

Chain *FORWARD* (Policy: *ACCEPT*, 0 Packets, 0 B Traffic)

| Pkts. | Traffic | Target | Prot. | In | Out | Source | Destination | Options | Comment |
|-------|---------|---------------------------------|-------|----|-----|-----------|-------------|-----------------------------|------------------------------|
| 0 | 0 B | forwarding_rule | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | - | Custom forwarding rule chain |
| 0 | 0 B | ACCEPT | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | ctstate RELATED,ESTABLISHED | - |

Chain *OUTPUT* (Policy: *ACCEPT*, 76 Packets, 5.17 KB Traffic)

| Pkts. | Traffic | Target | Prot. | In | Out | Source | Destination | Options | Comment |
|--------|----------|-----------------------------|-------|----|-----|-----------|-------------|-----------------------------|--------------------------|
| 342 | 29.98 KB | ACCEPT | all | * | lo | 0.0.0.0/0 | 0.0.0.0/0 | - | - |
| 1.70 K | 1.11 MB | output_rule | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | - | Custom output rule chain |
| 1.62 K | 1.10 MB | ACCEPT | all | * | * | 0.0.0.0/0 | 0.0.0.0/0 | ctstate RELATED,ESTABLISHED | - |

Firewall - Zone Settings

The firewall creates zones over your network interfaces to control network traffic flow.

Enable SYN-flood protection ☐

Drop invalid packets ☐

Input accept ▼

Output accept ▼

Forward accept ▼

Change Password

To Change the PowerLink ATs default password, go to System → Administration. Here you can change the default password.

Router Password

Changes the administrator password for accessing the device

Password ⌵

Confirmation ⌵

DHCP and DNS

Iperf3

Iperf3 is always running. You can run the following command:

```
iperf3 -c 192.168.1.69
```

On any Linux device, CPE, PC, etc.

This Ethernet Test:

```
root@PowerLinkAT:/# iperf3 -s
```

```
-----  
Server listening on 5201  
-----
```

```
Accepted connection from 192.168.1.30, port 50542
```

```
[ 5] local 192.168.1.69 port 5201 connected to 192.168.1.30 port 50544
```

```
[ ID] Interval           Transfer     Bitrate  
[ 5]  0.00-1.02   sec   11.4 MBytes  93.5 Mbits/sec  
[ 5]  1.02-2.01   sec   11.1 MBytes  94.2 Mbits/sec  
[ 5]  2.01-3.01   sec   11.2 MBytes  94.1 Mbits/sec  
-----
```

```
[ ID] Interval           Transfer     Bitrate  
[ 5]  0.00-9.02   sec   106 MBytes  99.1 Mbits/sec  
receiver
```

```
geva@PC: iperf3 -c 192.168.1.69
```

```
Connecting to host 192.168.1.69, port 5201
```

```
[ 5] local 172.20.207.228 port 37390 connected to 192.168.1.69 port 5201
```

```
[ ID] Interval           Transfer     Bitrate      Retr  Cwnd  
[ 5]  0.00-1.00   sec   12.1 MBytes  101 Mbits/sec    0   225 KBytes  
[ 5]  1.00-2.00   sec   11.4 MBytes  95.6 Mbits/sec    0   236 KBytes  
[ 5]  2.00-3.00   sec   11.5 MBytes  96.1 Mbits/sec    0   236 KBytes  
[ 5]  3.00-4.00   sec   10.9 MBytes  91.7 Mbits/sec    0   236 KBytes  
-----
```

```
[ ID] Interval           Transfer     Bitrate      Retr  
[ 5]  0.00-9.48   sec   107 MBytes  95.1 Mbits/sec    0  
[ 5]  0.00-9.48   sec    0.00 Bytes  0.00 bits/sec  
sender  
receiver
```

Samba3 and USB flash key

USB flash memory FAT32 mounted in /mnt/usbkey Android and Linux shared as:

192.168.1.69/usbkey

Samba3 does not work with windows 10, but you can enable it. (Search in google)

Repository:

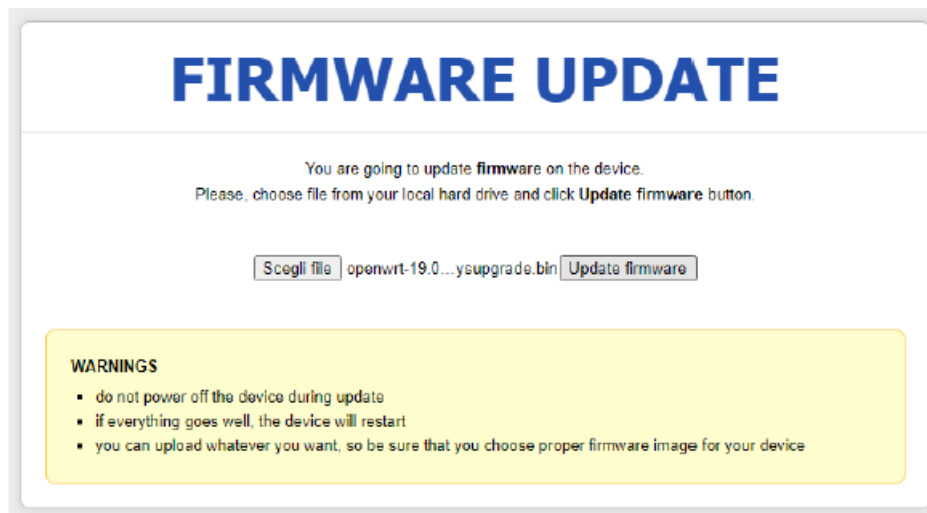
If you set the working gateway, repository work, and you can add the modules you need, for example, to enable SAMA, GSM dongle, or other drives, the flash-free is about 1Mb.

Upgrading Firmware

3 available solutions

- USB → Under 4gig capacity, formatted FAT32, firmware “BatteryPoE_at2.bin”
 - a. Plug in USB
 - b. Power-On PowerLink AT2
 - c. During Startup the Firmware will be updated.

- Use the Reset Button
 - a. Press Reset Button
 - b. Power-On PowerLink AT2
 - c. When the Power LED blinks, you should be able to access the Firmware Page of uBoot via the web at the address <http://192.168.1.69/index.html>



- Release reset once you access this page
- On the HTML page of the router
 - a. system, backup, update.

Connecting to the console, in ssh, and send command for:

- echo AutoOff=NO > /dev/ttyS0
- echo AutoOff=YES > /dev/ttyS0
- echo AutoOn=NO > /dev/ttyS0
- echo AutoOn=YES > /dev/ttyS0
- echo TmrWiFi=NO > /dev/ttyS0
- echo TmrWiFi=YES > /dev/ttyS0
- echo TmrPoE=NO > /dev/ttyS0
- echo TmrPoE=YES > /dev/ttyS0
- Disable Auto WiFi Off, Turning the PoE Off
- Enable Auto WiFi Off, Turning the PoE Off (Default) Disable Auto WiFi On, Turning the PoE On
- Enable Auto WiFi On, Turning the PoE Off (Default) Disable Auto-off after 15 minutes, in only WiFi
- Enable Auto-off after 15 minutes, in only WiFi (Default) Disable Auto-off after 2 minutes, in PoE under 2W
- Disable Auto-off after 2 minutes, in PoE under 2W (Default)

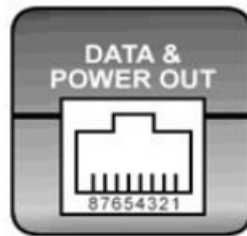
You can also add interesting line on the HTML menu: System / Startup / Local Startup

Appendix:

Cat5 Pinout



Cat5 Pinout



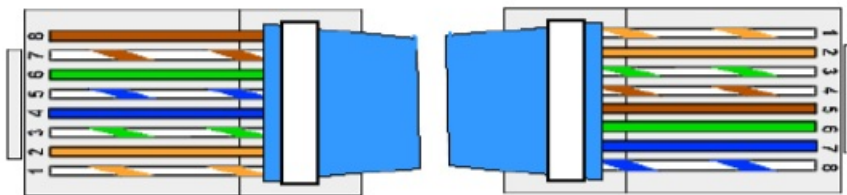
- 1 Data Pair 1
- 2 Data Pair 1
- 3 Data Pair 2
- 4 + VDC
- 5 + VDC
- 6 Data Pair 2
- 7 - VDC
- 8 - VDC

Cambium Cable

This cable is for those cambium CPEs that require reversed power pins. It is available on www.linktechs.net



Below is a chart of the Cambium CPE Reversed Power Pin Out



V cable, for LAN speed test

This cable allows you to Power your CPE and plug a LAN cable into your device for Ethernet Speed testing, eliminating the need for the Wireless Access Point. This cable is available at www.linktechs.net




AC 5 Ghz adapter

AC 5 Ghz adapter



Documents / Resources

| | |
|--|---|
|  | <p>LINK TECHNOLOGIES PowerLink AT2 Battery PoE [pdf] User Guide PowerLink, AT2 Battery PoE, PowerLink AT2 Battery PoE, Battery PoE, PoE</p> |
|--|---|