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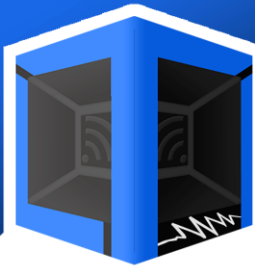
PowerLink V5 Manual v1.0

PowerLink V5 Manual

Hardware Overview

- 1 Power Slider 3 position
- 2 Function pushbutton
- 3 Build in Light
- 4 Power Over Ethernet LAN Port
- 5 USB-C Charging system 2A
- 6 USB Power Out & AC 5Ghz
- 7 Power Orange Led
- 8 WiFi Red Led
- 9 Eth Blue Led
- 10 Reset Button
- 11 Test Battery 4 Red Led





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Quick Start

- Move the Slider Switch to WiFi or W+P (WiFi + PoE)
- Use a short CAT5 cable to go between the LAN port on the PowerLink V5 and the CPE.
- Connect to www.linktechs.net SSID
- 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/winbox or installation application.
- Blue Eth Led It is fixed if Ethernet Cable is 100 Full Duplex, flashing if Half Duplex (Defective)

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 manufacture applications prefer this.

WiFi Speed (theoretical):

2.4 GHz Width 40Mhz = 86 Mbps

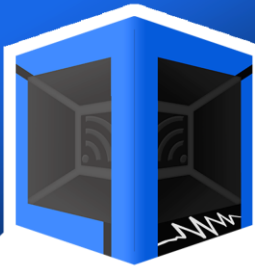
2.4 GHz Width 20Mhz = 43 Mbps

Optional USB AC Stick

AC 5Ghz Width 80Mhz = 292(100)Mbps

AC 5Ghz Width 40Mhz = 150(100)Mbps

AC 5Ghz Width 20Mhz = 72 Mbps



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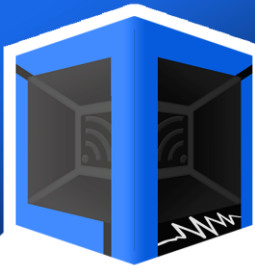
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Contents

Hardware Overview	1
Quick Start.....	1
Features:	4
WiFi Speed	4
Optional USB AC Stick	2
Functions.....	5
Top Button	5
Reset Button	5
Yellow Battery LED Indicator	5
Display.....	5
Default Configuration	6
To Automate the Preperation of CPEs.....	6
Iperf3.....	9
Samba3 and USB flash key.....	20
Repository:.....	19
Upgrading Firmware	19
NOTICE: Optional 5GHZ AC USB Stick	22
Cat5 Pinout.....	20
Cambium Cable	20
V cable, for LAN speed test.....	20



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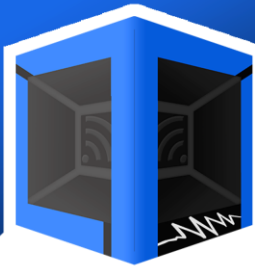
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Features:

- Passive Power Over Ethernet Device, Ubiquiti, Mikrotik, Cambium, etc.
- WiFi 2.4 GHz - Optional 5GHz AC Module
- 7000mA/h for charging external devices.
- Short-circuit, Overload, Temperature protection.
- Ethernet Cable Test
- 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 reversed power pin.
- One-year warranty.
- USB Out (Charge / Optional AC 5Ghz)
- Wi-Fi
- PoE On
- Accessory:
 - Hard Case
 - USB Cable
 - LAN Cable
 - 5Ghz AC module (Optional)
- 140 grams
- 96 x 44 x 97 mm
- MT7620 chipset 2.4GHz
- Two PCB antennas.





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Functions

Power Slider 3 position -> 1

- Off (PowerBank is working)
- WiFi
- WiFi + PoE

You can turn off wifi with double click on pushbutton

You pay much attention, no LED is lit in this condition.

Don't forget the poe on.

Function pushbutton -> 2

- One click – Turn on PowerBank / Test battery
- Fast Double click – Turn off PowerBank and/or WiFi
- Long click button – Turn on/off LED Light

Reset Button -> 10

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.

Leds

The Power Orange Led 7, blink if the router is powered on.

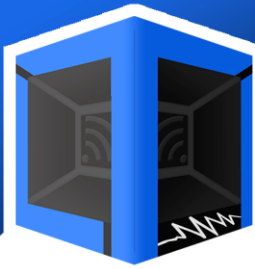
WiFi Red Led 8, blink when client are associated

Eth Blue Led 9, It is fixed if Ethernet Cable is 100 Full Duplex, flashing if Half Duplex (Defective)

4 Red Led, Battery Indicator 11

This indicator tells you when the unit is charging, and when it is completed charging. It also will tell you battery level.





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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 Preperation 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

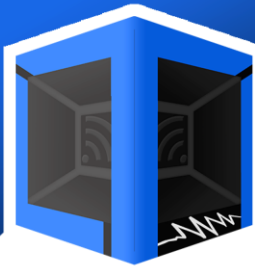
On HTML page of router -> System -> Startup -> Local Startup

iperf -s&

/root/icons.sh &

#/root/CpConf.sh &

1. Remove comment (#) on the last line, for enable auto CPE conf.
2. Customize OnCpScript.sh for your requirement.
3. Copy your CPE configuration file, system.cfg
4. Examples work on the Ubiquiti AirOs CPE



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Web Interface

You can access the web interface by browsing to 192.168.1.69. The username is root and password is geva.



Manual

Ver 5.0

Authorization Required

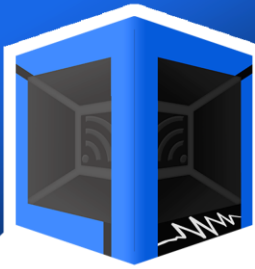
Please enter your username and password.

Username

Password

LOGIN

RESET



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Status

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

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

Status

System

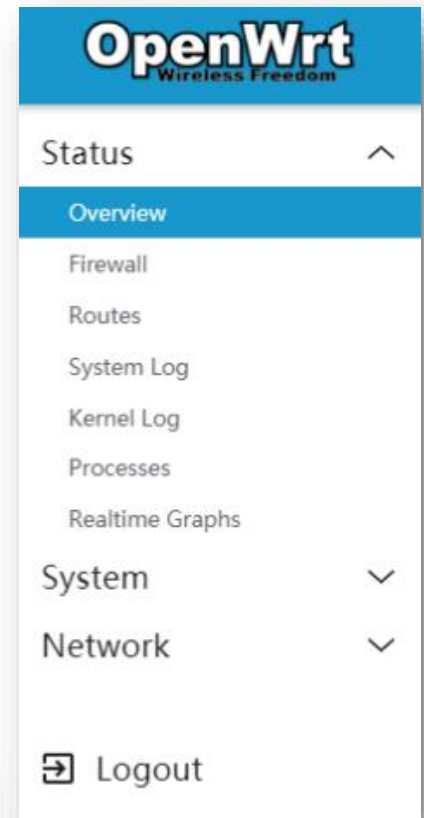
Hostname	BatteryPoE
Model	BatteryPoE
Architecture	MediaTek MT7620A ver2 eco6
Firmware Version	OpenWrt 19.07.5 r11257-5090152ae3 / LuCI openwrt-19.07 branch git-21.079.58580-41ab871
Kernel Version	4.14.209
Local Time	2021-03-25 17:35:40
Uptime	0h 4m 3s
Load Average	0.14, 0.17, 0.09

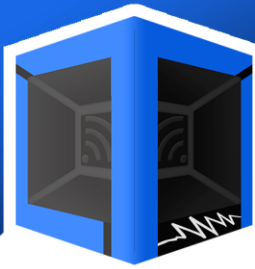
The network section tells you what is in-use and connected to the device.

Network

Protocol: Static address
Address: 192.168.1.69/24
Gateway: 192.168.1.1
DNS 1: 192.168.1.1
Connected: 0h 4m 34s

 **Device:** Bridge: "br-lan"
MAC-Address: F2:C4:08:C6:EA:62





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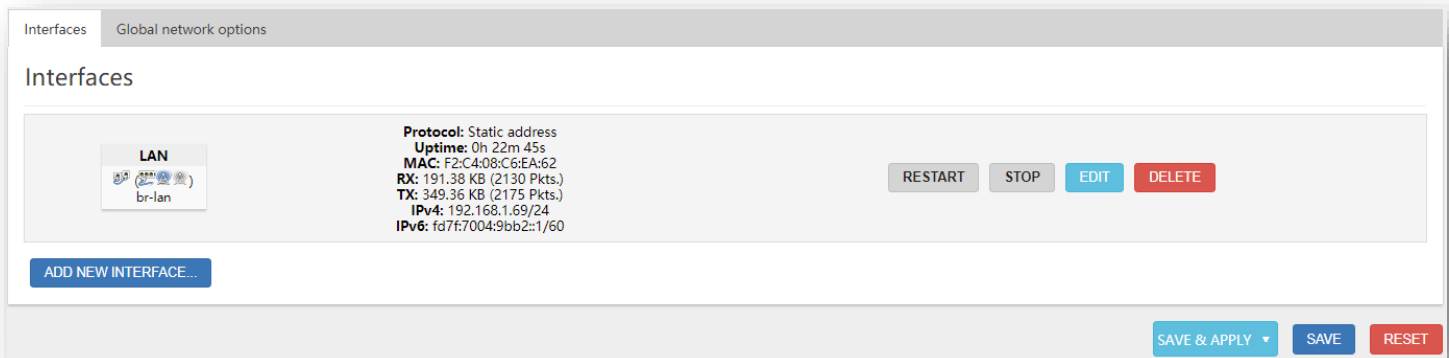
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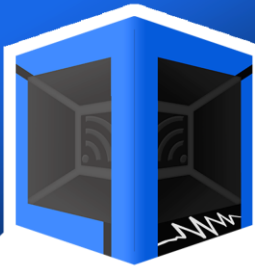
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Interface / Bridge

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





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

General Settings

Advanced Settings

Physical Settings

Firewall Settings

DHCP Server

Status

 **Device:** br-lan
Uptime: 0h 23m 35s
MAC: F2:C4:08:C6:EA:62
RX: 218.89 KB (2314 Pkts.)
TX: 492.56 KB (2393 Pkts.)
IPv4: 192.168.1.69/24
IPv6: fd7f:7004:9bb2::1/60

Protocol

Static address

Bring up on boot

☒

IPv4 address

192.168.1.69

IPv4 netmask

255.255.255.0

IPv4 gateway

192.168.1.1

IPv4 broadcast

192.168.1.255

Use custom DNS servers

192.168.1.1

IPv6 assignment length

60

Assign a part of given length of every public IPv6-prefix to this interface

IPv6 assignment hint

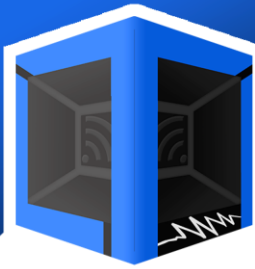
0

Assign prefix parts using this hexadecimal subprefix ID for this interface.

IPv6 suffix

::1

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.



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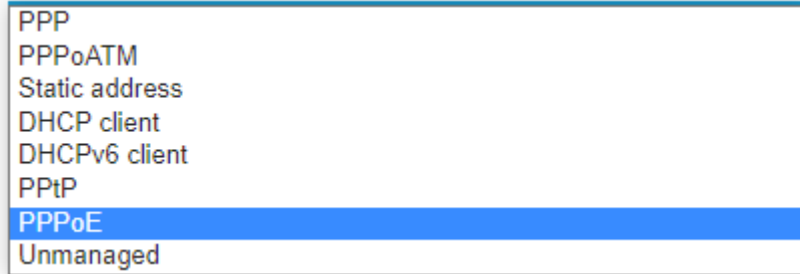
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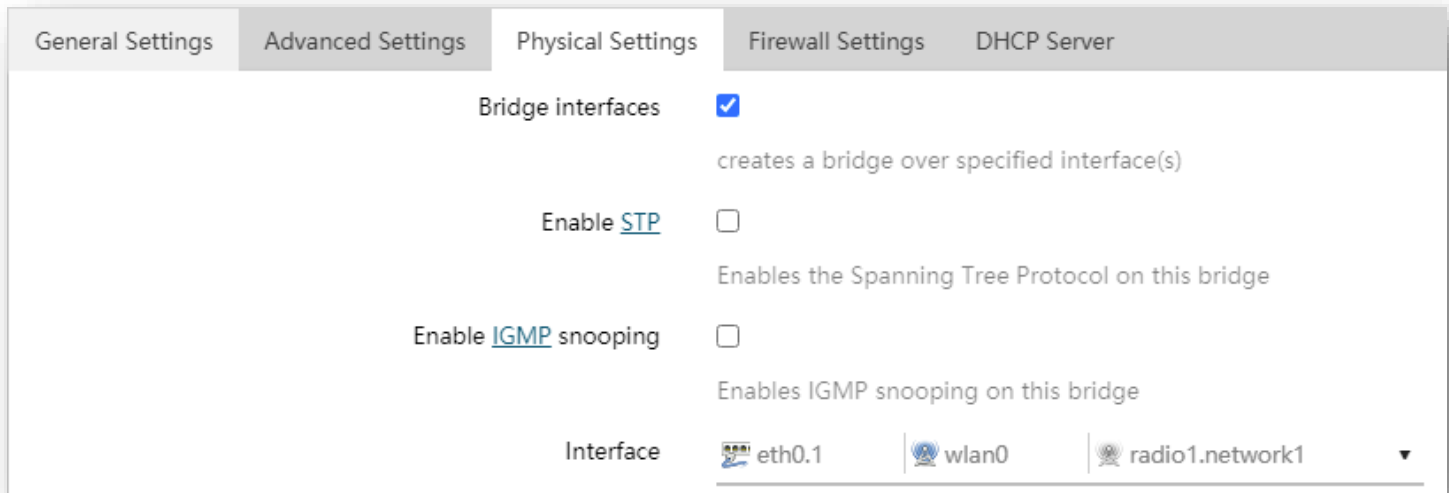
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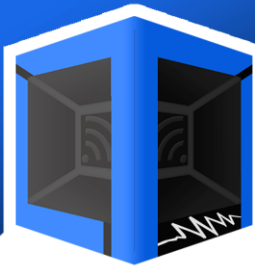
Other options include; PPP, DHCP Client, or PPPoE. I would always recommend that you bring up the default interface statically as well as upon boot. NOTE, there is options here that can render the device not reachable, and then a factory reset would be the only option.

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 you configure options for DHCP Server.



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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

radio0	radio1
Type: 802.11bgn Channel: 1 (2.412 GHz) Bitrate: - SSID: www.linktechs.net Mode: Master BSSID: 00:0C:43:76:20:58 Encryption: None Associations: -	Type: 802.11bg Channel: 36 (0.000 GHz) Bitrate: - SSID: PowerLink_5Ghz Mode: Master BSSID: - Encryption: - Associations: -

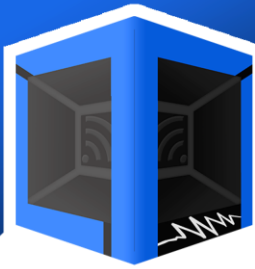
Under Network → Wireless, you can configure the wireless interfaces:

Wireless Overview

radio0	Generic 802.11bgn Channel: 1 (2.412 GHz) Bitrate: ? Mbit/s SSID: www.linktechs.net Mode: Master BSSID: 00:0C:43:76:20:58 Encryption: None	RESTART SCAN ADD
radio1	Generic 802.11bg Device is not active SSID: PowerLink_5Ghz Mode: Master Wireless is not associated	RESTART SCAN ADD
disabled		DISABLE EDIT REMOVE

Once here you can click Edit to edit the WLAN you wish.

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.



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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

Mode

Channel

Width

N

1 (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

Ian: 

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

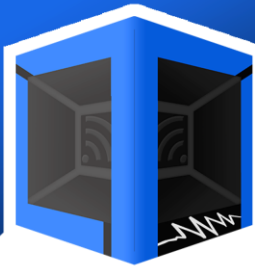
Hide ESSID

☐

WMM Mode

☒

In advanced settings at the top, you can select your country you are operating in, therefor 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.



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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 → select 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.

Access Point
Client
Ad-Hoc
802.11s
Pseudo Ad-Hoc (ahdemo)
Monitor
Access Point (WDS)
Client (WDS)

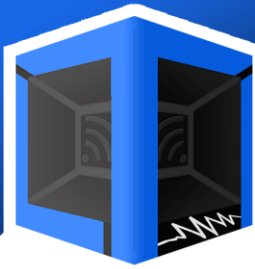
WPA2-PSK (strong security)
WPA-PSK/WPA2-PSK Mixed Mode (medium security)
WPA-PSK (medium security)
WEP Open System (weak security)
WEP Shared Key (weak security)
No Encryption (open network)

Securing Wireless

Under Network → Wireless → Wireless Security, you have options to select what security mode you wish to operate in. WPA2-PSK is the 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.



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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:		
1	tagged	untagged

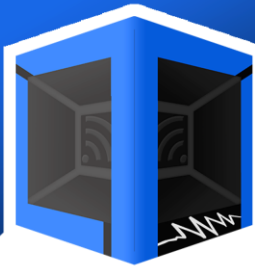
DELETE

ADD VLAN

SAVE & APPLY

SAVE

RESET



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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	-



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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

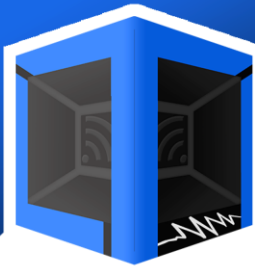
To Change the PowerLink ATs default password, go to System → Administration. Here you can change the default password.

Router Password

Changes the administrator password for accessing the device

Password 

Confirmation 



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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

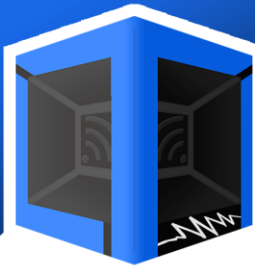
mounted in /mnt/usbkey

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)





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Repository:

If you set 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

1. USB → Under 4gig capacity, formatted FAT32, firmware "BatteryPoE_at2.bin"
 - a. Plug in USB, , PowerOff, press Reset.
 - b. Power-On PowerLink AT2
 - c. During Startup the Firmware will be updated.
2. 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 web at address <http://192.168.1.69/index.html>
 - d. Release reset once you access this page

FIRMWARE UPDATE

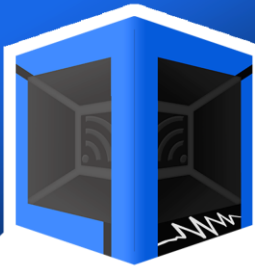
You are going to update **firmware** on the device.
Please, choose file from your local hard drive and click **Update firmware** button.

Nessun file selezionato

WARNINGS

- do not power off the device during update
- if everything goes well, the device will restart
- you can upload whatever you want, so be sure that you choose proper firmware image for your device

3. On HTML page of the router
 - a. system, backup, update.



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Appendix:

Cat5 Pinout



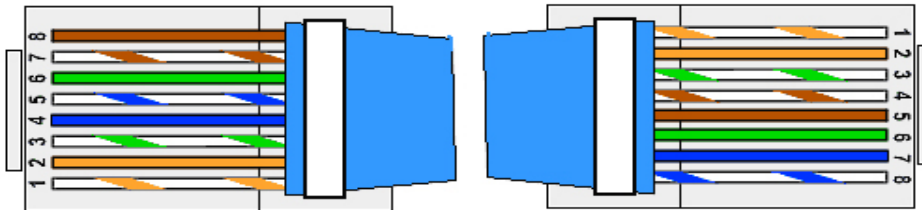
- 1 Data Pair 1
- 2 Data Pair 1
- 3 Data Pair 2
- 4 + VDC
- 5 + VDC
- 6 Data Pair 2
- 7 - VDC
- 8 - VDC

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

