

LINK
TECHNOLOGIES INC
www.LinkTechs.net

🇺🇸 314.735.0270
🇨🇦 647.725.7011
📄 636.660.1534

sales@LinkTechs.net
support@LinkTechs.net
invoices@LinkTechs.net

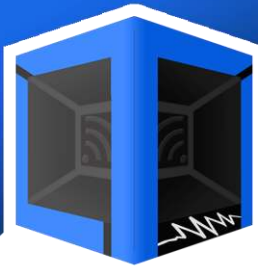
PowerLink V5 Manual v1.0

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





LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

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

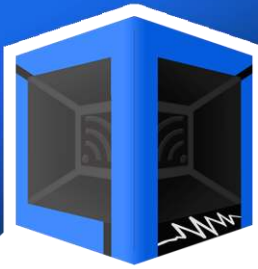
2.4 GHz Width 20Mhz = 43 Mbps

Optional USB AC Stick


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

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

AC 5Ghz Width 20Mhz = 72 Mbps



LINK
TECHNOLOGIES INC
www.LinkTechs.net

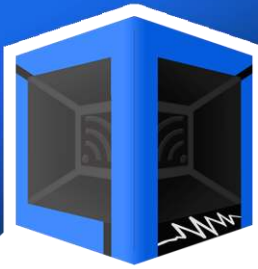
 314.735.0270
 647.725.7011
 636.660.1534

sales@LinkTechs.net
support@LinkTechs.net
invoices@LinkTechs.net

PowerLink V5 Manual v1.0


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



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net


PowerLink V5 Manual v1.0


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.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

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.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

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

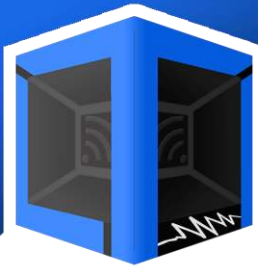
On HTML page of router -> System -> Startup -> Local Startup

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



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

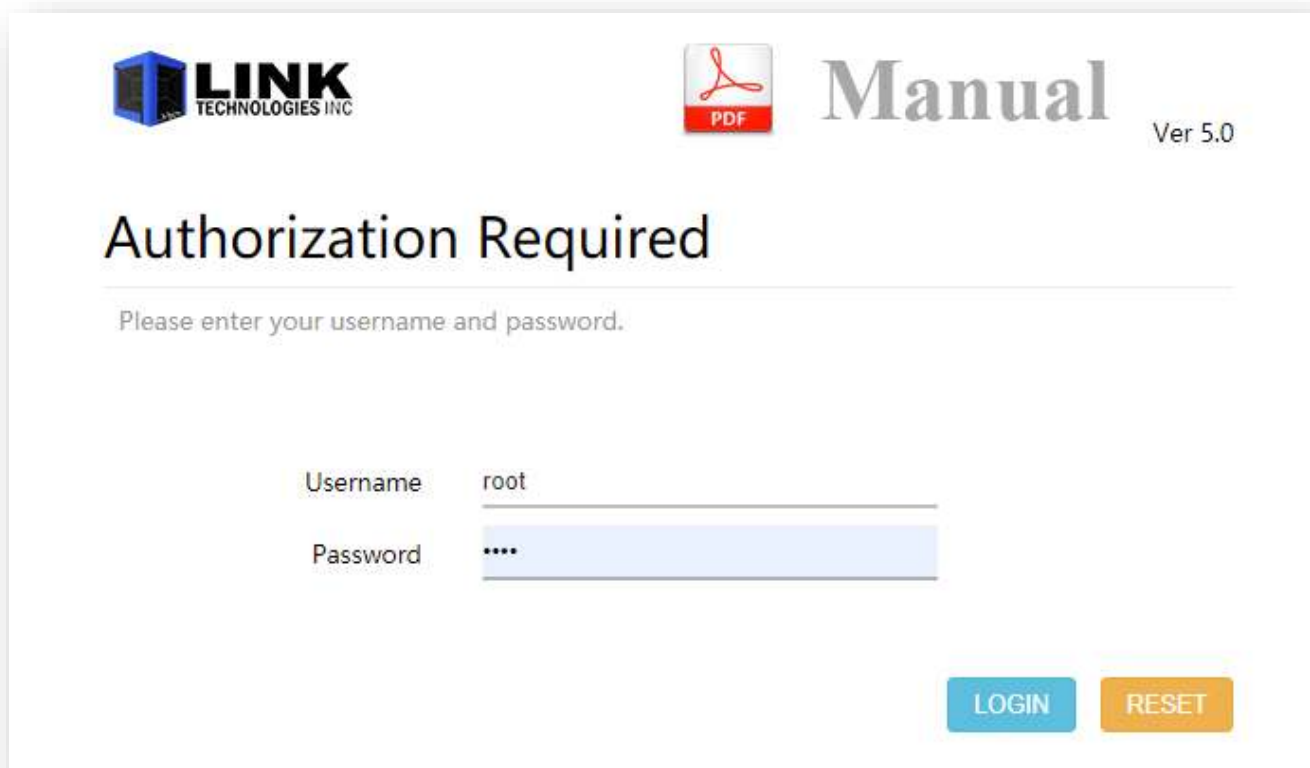
support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

Web Interface




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



The screenshot shows the web interface for the LINK TECHNOLOGIES INC Manual. At the top left is the LINK TECHNOLOGIES INC logo. To its right is a PDF icon with the word "PDF" below it. Further right is the word "Manual" in a large, grey, serif font, with "Ver 5.0" in a smaller font to its right. Below the logo and PDF icon is the heading "Authorization Required" in a large, black, sans-serif font. Underneath this heading is a horizontal line, followed by the text "Please enter your username and password." in a smaller, grey font. Below this text are two input fields: "Username" with the value "root" and "Password" with the value "****". At the bottom right of the form are two buttons: "LOGIN" in a blue button and "RESET" in an orange button.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270
 647.725.7011
 636.660.1534

sales@LinkTechs.net
support@LinkTechs.net
invoices@LinkTechs.net

PowerLink V5 Manual v1.0

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

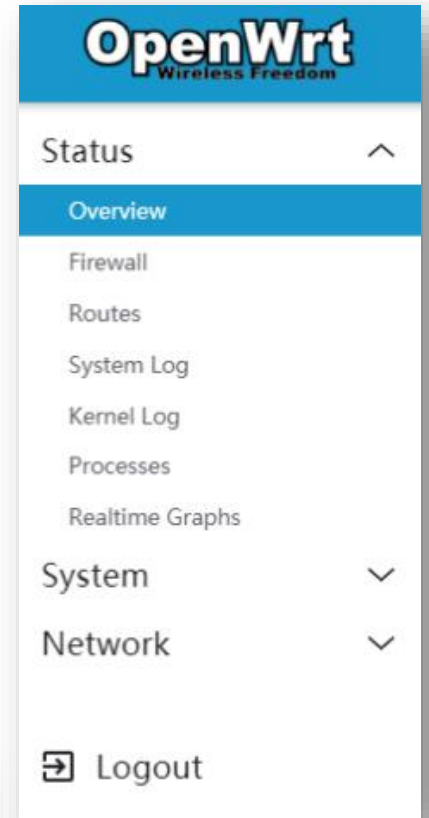
System	
Hostname	BatteryPoE
Model	BatteryPoE
Architecture	MediaTek MT7620A ver2 eco5
Firmware Version	OpenWrt 19.07.5 r11257-5090152ae3 / LuCI openwrt-19.07 branch git-21.079.58580-41ab871
Kernel Version	4.14.209
Local Time	2021-03-25 17:35:40
Uptime	0h 4m 3s
Load Average	0.14, 0.17, 0.09

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





LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

Interface / Bridge

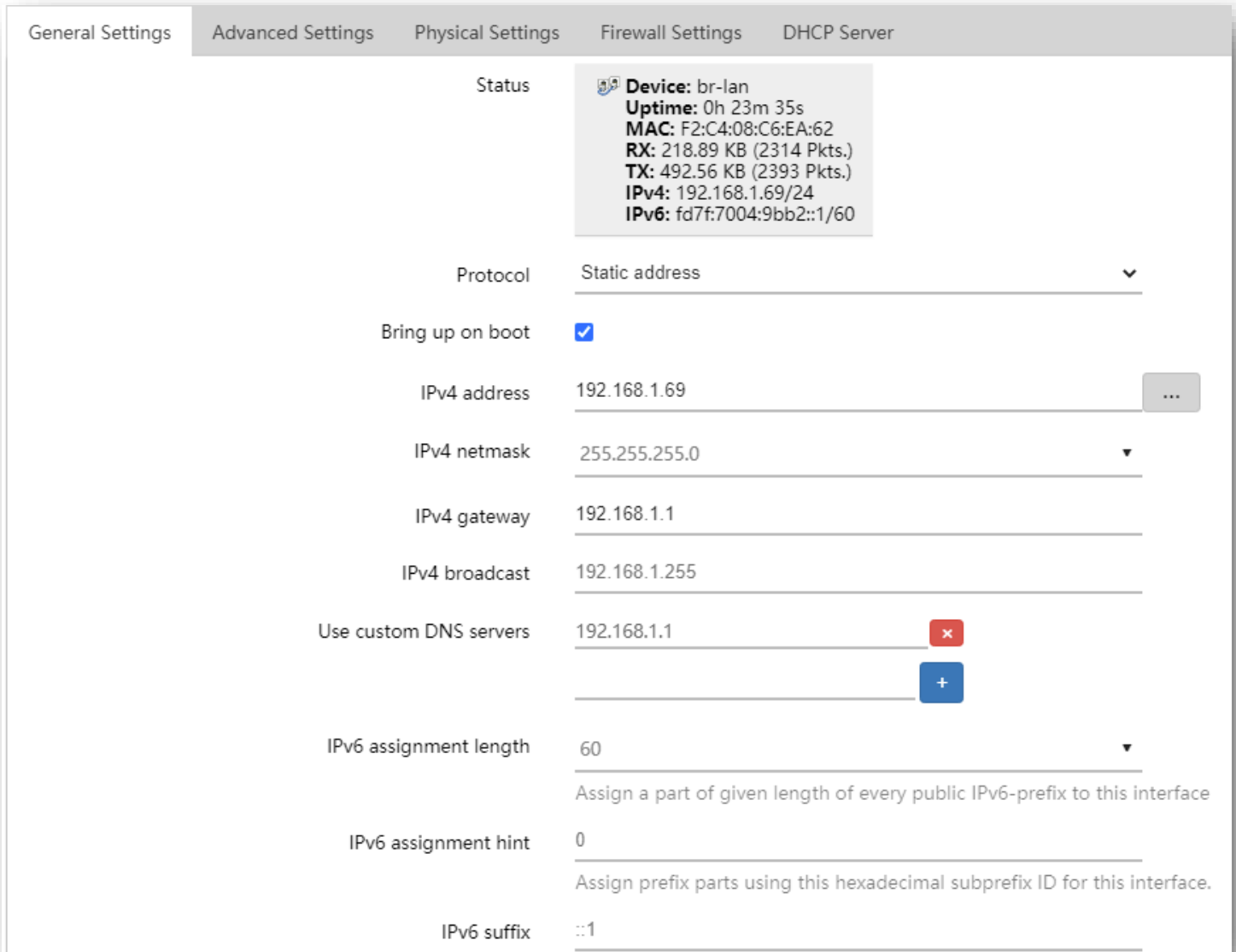
Under Network → Interfaces, you have the option to configure new interfaces and/or edit the existing. The default should be LAN, this is a br-lan bridge group.



The screenshot shows a web-based network configuration interface. At the top, there are tabs for "Interfaces" and "Global network options". Below the tabs, the "Interfaces" section is active. It displays a single interface named "LAN" with a "br-lan" icon. To the right of the interface name, the following details are listed: Protocol: Static address, Uptime: 0h 22m 45s, MAC: F2:C4:08:C6:EA:62, RX: 191.38 KB (2130 Pkts.), TX: 349.36 KB (2175 Pkts.), IPv4: 192.168.1.69/24, and IPv6: fd7f:7004:9bb2::1/60. To the right of these details are four buttons: "RESTART", "STOP", "EDIT", and "DELETE". Below the interface details is a blue button labeled "ADD NEW INTERFACE...". At the bottom right of the interface, there are three buttons: "SAVE & APPLY" (with a dropdown arrow), "SAVE", and "RESET".



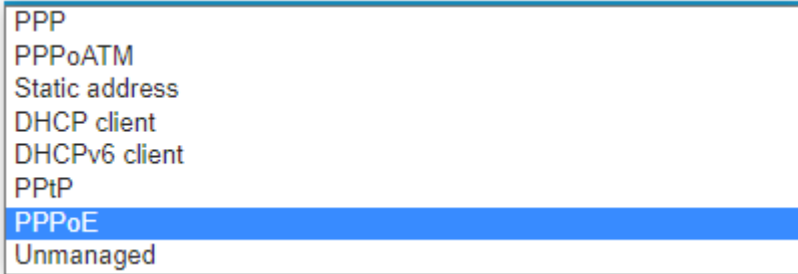
By clicking edit, you can edit the LAN interface, this will bring up the following menu options:



The screenshot shows a network configuration window with the following settings:

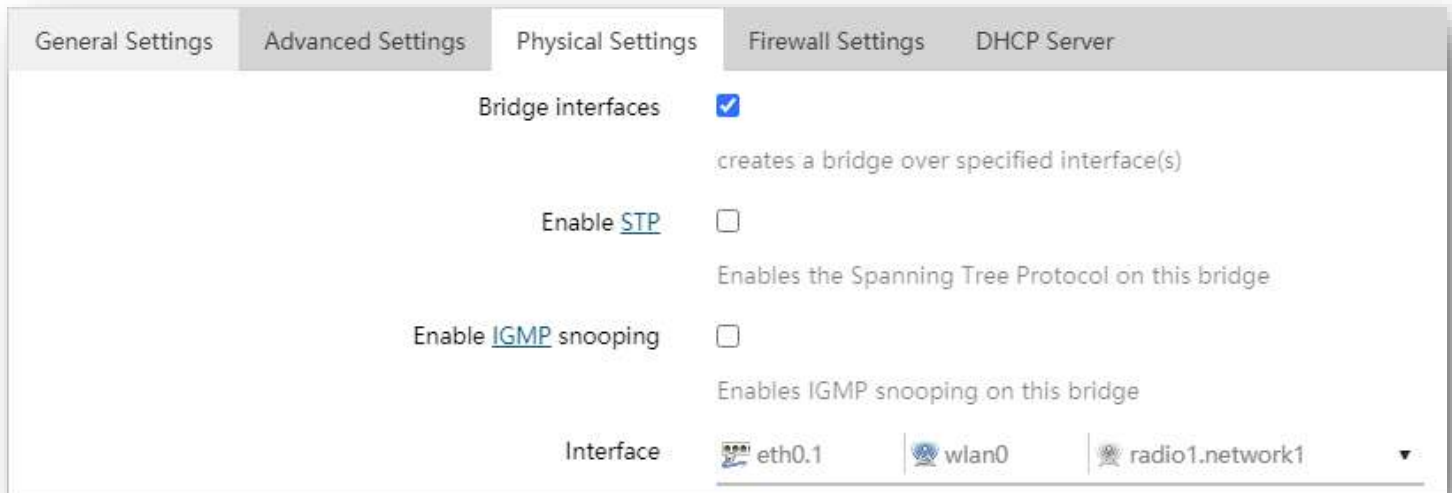
Setting	Value
Status	Device: br-lan Uptime: 0h 23m 35s MAC: F2:C4:08:C6:EA:62 RX: 218.89 KB (2314 Pkts.) TX: 492.56 KB (2393 Pkts.) IPv4: 192.168.1.69/24 IPv6: fd7f:7004:9bb2::1/60
Protocol	Static address
Bring up on boot	<input checked="" type="checkbox"/>
IPv4 address	192.168.1.69
IPv4 netmask	255.255.255.0
IPv4 gateway	192.168.1.1
IPv4 broadcast	192.168.1.255
Use custom DNS servers	192.168.1.1
IPv6 assignment length	60
IPv6 assignment hint	0
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.



Other options include; PPP, DHCP Client, or PPPoE. I would always recommend that you bring up the default interface manually 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 can configure 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

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


	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


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.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

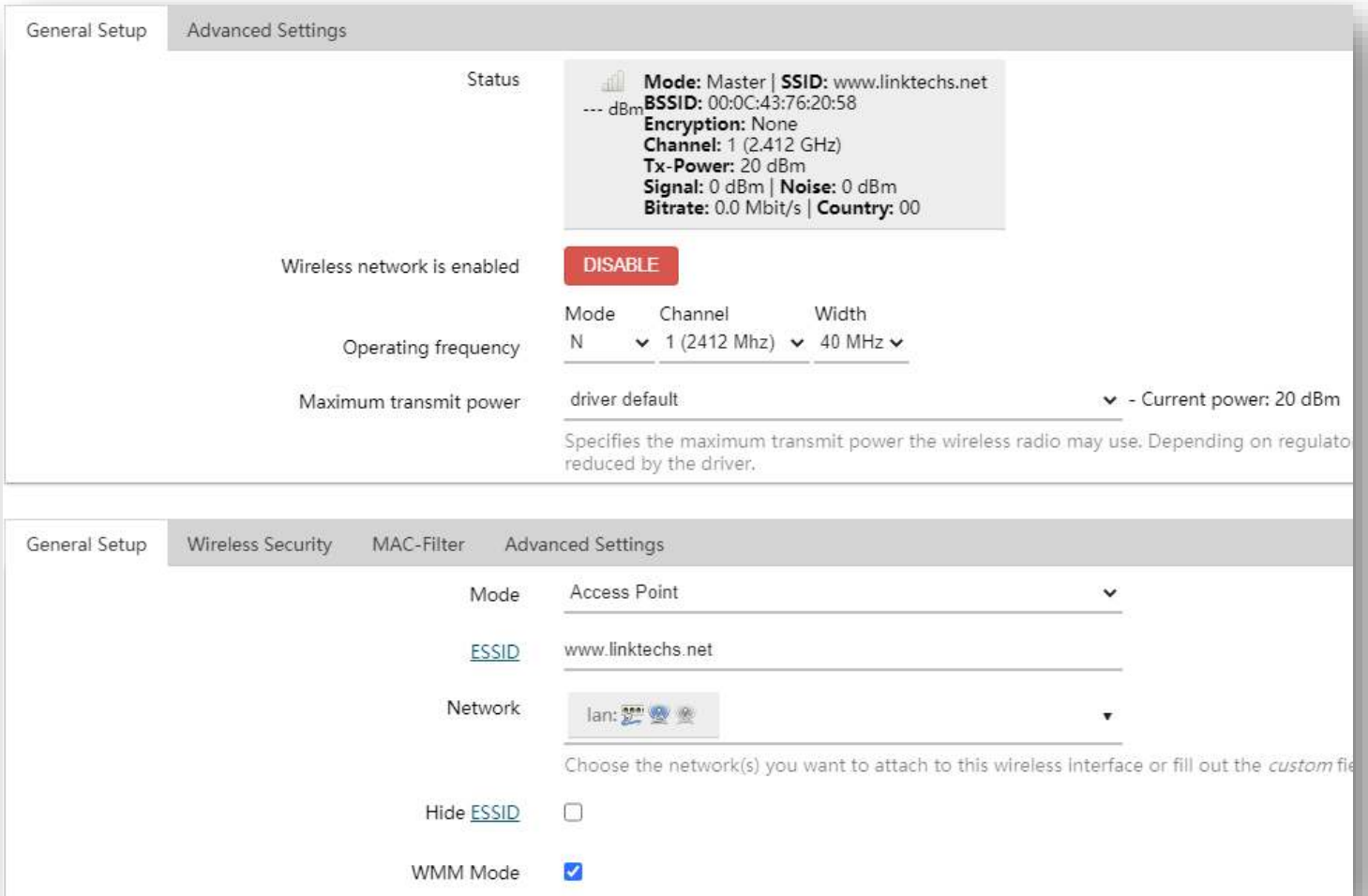
 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0




The screenshot displays the 'Advanced Settings' tab for a wireless network configuration. The 'Status' section shows the network is enabled with a 'DISABLE' button. The 'Operating frequency' section includes dropdowns for Mode (N), Channel (1 (2.412 Mhz)), and Width (40 MHz). The 'Maximum transmit power' is set to 'driver default' with a current power of 20 dBm. A detailed status box provides the following information: 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. Below the main settings, the 'Wireless Security' tab is active, showing Mode: Access Point, ESSID: www.linktechs.net, Network: lan, Hide ESSID: unchecked, and WMM Mode: checked.

In advanced settings at the top, you can select your 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.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270
 647.725.7011
 636.660.1534

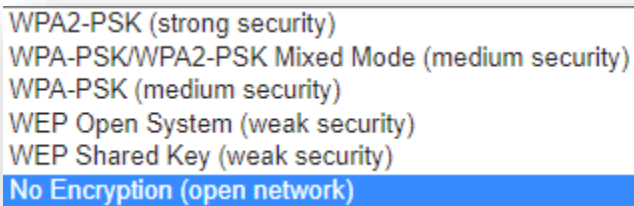
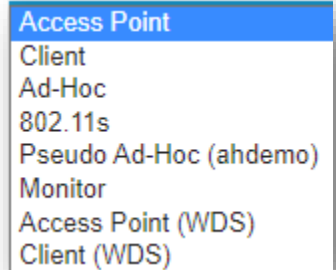
sales@LinkTechs.net
support@LinkTechs.net
invoices@LinkTechs.net

PowerLink V5 Manual v1.0

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.



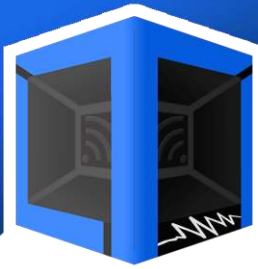
WPA2-PSK (strong security)
WPA-PSK/WPA2-PSK Mixed Mode (medium security)
WPA-PSK (medium security)
WEP Open System (weak security)
WEP Shared Key (weak security)
No Encryption (open network)

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.



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

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 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.



LINK
TECHNOLOGIES INC
www.LinkTechs.net

 314.735.0270

 647.725.7011

 636.660.1534

sales@LinkTechs.net

support@LinkTechs.net

invoices@LinkTechs.net

PowerLink V5 Manual v1.0

Appendix:

Cat5 Pinout



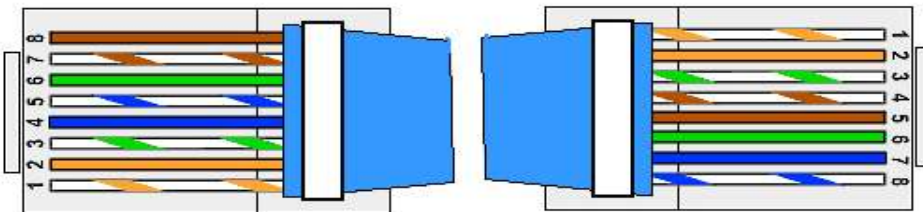
- 1 Data Pair 1
- 2 Data Pair 1
- 3 Data Pair 2
- 4 + VDC
- 5 + VDC
- 6 Data Pair 2
- 7 - VDC
- 8 - VDC

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

