



# Ethernet Power Controller 5

## USER'S GUIDE

## Product Features

Congratulations on selecting the DLI Ethernet Power Controller, a smart rack-mount AC power switch. Features include:

### ***Simple Web Interface***

The internal web server is accessible from any browser. Simply enter an IP. Configuration and control are web-based.

### ***AutoPing™ Reboot***

AutoPing continuously monitors an IP address. If a server, router, or other peripheral goes down, AutoPing can automatically reboot it without user intervention. Several devices can be monitored simultaneously.

### ***8 Switched Duplex Outlets + 2 Unswitched Outlets***

Eight individually switched controlled circuits are provided with duplex outlets. Outlets are spaced for large adapters and plugs. Un-switched outlets are provided for “always on” devices.

### ***Programmable LCD Display***

A 2x16 LCD displays status for each outlet. Custom messages can be displayed via a scripting language.

### ***Multi-User Password Security***

Multi-user authentication limits access to the power controller. The administrator selects which outlets each user can control.

### ***Sequenced “On Timer”***

A programmable delay timer allows outlets to be switched on in sequence, rather than simultaneously. Most devices draw a surge of power when initially switched on. Using this timer, more equipment can share a single circuit without overloads. Programmable scripts can be used to create customized power-up and shut-down sequences with variable timing.

### ***MOV Surge Suppression***

Dual 3600W metal oxide varistors clamp power surges and spikes, protecting attached devices.

### ***Scripting Language, Syslog, and Utilities***

A scripting language can be used to create custom control and reboot sequences, schedule periodic reboots, etc. Internal and external event logs are provided.

### ***New Features***

New features include improved power metering, a light sensor, temperature sensor, longer battery life, HTTPS, WiFi support and improved scripting.

### ***Field Upgradeable Firmware***

Firmware is field upgradeable via Ethernet.

## **Package Contents**

- Ethernet Power Controller 5 with NEMA 5-15 plugs and reversible rack ears attached.
- RP-SMA WiFi Antenna
- Internal web server backup battery (shipped disconnected)

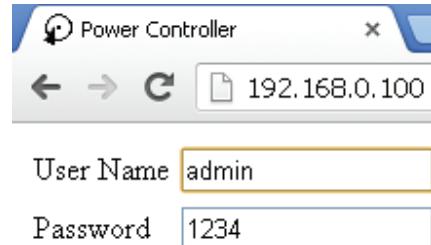
Please contact the freight carrier immediately if your package appears opened or damaged in transit. Call DLI at (408) 330-5599 for tech support, service, and hardware upgrades.



## Important Factory Defaults

**IP:** **192.168.0.100**  
**User name:** **admin**  
(lower case)  
**Password:** **1234**

To reset to factory defaults, gently press the reset-to-defaults button below the LCD to enter the reset menu, then select a reset option.



## Quick Setup

Use these shortcuts if you are an experienced installer. We recommend reading the entire manual for first-time installation.

- Unpack. Save the carton. Attach line cords to 15A circuits.
- Attach an Ethernet cable from the controller to your LAN. Switch power on. If you are attached through a switch, you may need to cycle switch power to establish a connection.
- Ping the default address 192.168.0.100 to confirm that a network connection is established. If you don't receive a response, proceed to the **IP Setup** section below.
- Log in to the power controller using the default user name **admin** and the password **1234**. Note: "**admin**" must be entered in lower case.
- Click the **Settings** link to reach the configuration page. **Select the safest power-loss configuration** for your installation: (all OFF, all ON, or sequential ON)
- Configure the power switch as described below. After each change, click Submit and wait for the page to refresh before continuing.

**Tip:**

- A three-bulb electrical safety-tester is handy for configuring the controller before attaching your equipment.

## IP Setup

If your network settings won't access the default IP, use a direct cable connection (temporarily bypass any switch or router) and follow these steps to add a compatible static IP, such as 192.168.0.50. Before adding an IP, close all programs and browsers. After the link is established, you can enable WiFi or revert to DHCP.

### Windows Step 1

In Windows, the first step is locating the network adapter TCP/IP properties. The procedure differs for each Windows version:

**Windows XP, 2000, 2003:** Open **Start / Control Panel / Network Connections**. In “classic view”, select **Start / Settings / Control Panel /Network Connections**. Right-click on **Local Area Network Connection** and select **Properties**. Proceed to step 2.

**Windows Vista:** Open **Start**, right click on **Network**, then on **Properties**. Double click **Network and Sharing Center**, click **Manage Newtork Connections**. A Network Connections window appears. Right click on the network connection to the switch, ie. **Local Area Network**. Proceed to step 2.

**Windows 7:** Open the **Start orb**, click on **Control Panel**. Click **View Network Status and Tasks**, then **Change Adapter Settings**. Proceed to step 2

**Windows 8:** Mouse or swipe to the bottom right corner and select **Settings**. Select **Control Panel**. Select **Network and Sharing Center**. Change **Adapter Settings**. Right click on your connected network and select **Properties**. Proceed to step 2



## Windows Step 2

The second step is adding an IP such as 192.168.0.50  
Temporarily disable DHCP while configuring the switch.

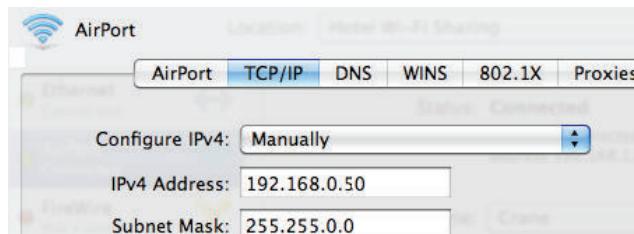
Select **Internet Protocol (TCP/IPv4)** Properties and click **Properties**. Enter a compatible static IP such as:

<input type="radio"/> Obtain an IP address automatically	
<input checked="" type="radio"/> Use the following IP address:	
IP address:	192 . 168 . 0 . 50
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	192 . 168 . 0 . 1

Click **Apply** and close windows. Ping the power switch to confirm the connection. Point your browser to 192.168.0.100 Log in.  
Detailed instructions are at [digital-loggers.com/ip\\_setup](http://digital-loggers.com/ip_setup)

## Max OS X

Turn **AirPort** off temporarily. Click the Apple logo, then **System Preferences**, then **Network**. Select **Built-In Ethernet** and then **Configure**. Under the **TCP/IP** tab, select **Manually** and enter an IP address such as 192.168.0.0 as shown:



Make changes shown. Point a browser to 192.168.0.100 Log in.  
Find Mac setup details at [digital-loggers.com/mac\\_ip\\_setup](http://digital-loggers.com/mac_ip_setup)

## Network Configuration

WiFi and HTTPS are disabled by default. Establish a satisfactory hard-wired network connection to 192.168.0.100 first, then enable other desired features. The **Settings** page controls network configuration:

General Network Settings	
HTTP Port	80
Enable SSH Server	<input type="checkbox"/>
SSH Port	22
Syslog Server	<input type="text"/>
Same subnet access only	<input checked="" type="checkbox"/>
<input type="button" value="Submit"/>	
LAN Configuration	
MAC Address	7C:E1:FF:00:00:00
Protocol	Static IP
IP address	192.168.0.100
Subnet mask	255.255.255.0

The IP address of the controller needs to match the “class C” of your system. In other words, the first three bytes (192.168.0) must match the IP on your computer to access the controller. Using a **Ping** utility is a good way to confirm a valid network configuration. An “unreachable” report from Ping indicates a misconfigured network.

Once you have a connection, the controller may be operated via a web browser. To access the controller, enter the IP address in the URL field of your web browser. The default is <http://192.168.0.100>

After setup, the HTTP and SSH ports may be moved to improve security. For example, changing the HTTP port to 199 requires a browser URL of 192.168.0.100:199 to reach the power controller.

## Home (Outlet Control) Page



DIGITAL  
LOGGERS, INC.

Ethernet  
Power  
Controller

Controller: WISP Tower #1			
Mon Jan 31 10:53:21 2000			
Individual Control			
#	Name	State	Action
	Bus A:	124V 0.00683A [ 000000.1 kWh ]	
1	Set device names here	ON	<a href="#">Switch OFF</a> <a href="#">Cycle</a>
2	via the setup page	OFF	<a href="#">Switch ON</a>
3	Cisco Router 3825	OFF	<a href="#">Switch ON</a>
4	Main DSL Router	OFF	<a href="#">Switch ON</a>
	Bus B:	128V 0A [ 000000.0 kWh ]	
5	WiFi AP South	OFF	<a href="#">Switch ON</a>
6	Cooling Fans	OFF	<a href="#">Switch ON</a>
7	Backup DSL Router	OFF	<a href="#">Switch ON</a>
8	Solar Charge Control	ON	<a href="#">Switch OFF</a> <a href="#">Cycle</a>

To access the home page, first enter the controller's IP address in the browser URL field, then log in. User **admin** has access to all features. Other users have limited access to outlets as assigned by the administrator.

### Outlet Control

Clicking "Outlet Control" links to the home page used for manually switching outlets on and off. Access to specific outlets is determined by username. Admin controls all circuits.

### Setup

The setup page lets you set outlet names, create web links, adjust startup delays, and set a power loss recovery mode. You can also add user accounts and change login credentials on this page.

### Scripting

An updated scripting language based on Lua lets you customize the power controller. Scripts may be started manually, automatically on power-up, by external http commands, or by AutoPing events. Find a list of commands and examples at: [digital-loggers.com/scripts.html](http://digital-loggers.com/scripts.html)

### AutoPing

The AutoPing page lets you set parameters to automatically reboot attached equipment. First, specify an IP address to ping. Next, adjust the timing settings and use the checkboxes to link the IP to power circuits. For example, if a router is unreachable, you may choose to automatically reboot both a router and a switch attached to two different circuits. Learn more: [digital-logger.com/AutoPing](http://digital-logger.com/AutoPing)

### System Log

The power controller keeps an internal event log including logins, outlet switching, power interruptions, and AutoPing events. Recent events are stored in the log and accessible from the System Log page. SYSLOG export is supported. For more information: [digital-logger.com/syslog.html](http://digital-logger.com/syslog.html)

### Logout

Browser logout is automatic when a session is closed. Use this link to log-out in advance.

### Programmable Web Links

User-defined web links are provided. Set names and destination URLs for these links on the **Settings** page. These are convenient for connecting to other power controllers or to remote sites.

## Switching Outlets On and Off

The outlet control page lets you control any duplex outlet (except the always-on pair). A master control allows those users with access to switch all outlets on or off.

To switch an outlet, simply click to the right of the outlet name or number. On/Off switching is immediate.

Individual Control			
#	Name	State	Action
1	DSL Router	ON	<a href="#">Switch OFF</a> <a href="#">Cycle</a>



Use the keypad for local control: Select an outlet using the arrow keys, then press on, off, or cycle. Press ON or OFF for 5 seconds to lock or unlock an outlet. Locking prevents web access. To change the display move, press the up and down arrows simultaneously. The keypad may be disabled on the Setup page.

You may want to Cycle a device which is connected to the controller. This feature is useful for rebooting Ethernet devices which may interrupt the web link to the controller. Clicking Cycle switches power off, waits for the **ON Delay time**, and then switches power back on. This reboots the attached device.

You can also cycle all outlets using the Master Control on the bottom of the page. An adjustable ON sequence delay takes effect when cycling, when using All Outlets ON and on power-up.

Master Control  
[All Outlets OFF](#)  
[All Outlets ON](#)  
[Cycle all Outlets](#)  
Sequence delay: 3 s

Depending on your web browser settings, you may need to click the Refresh button or F5 key to update the on-screen status display after changing settings. Screen refresh rate is adjusted in two places: on the Setup page and in your browser settings.

## Setup Page

The **Setup** page allows the admin to configure:

### Controller and Outlet Names

Use the controller name field to assign a Controller Name to the power controller itself. An example is **Server Rack 4 PDU..** The Controller Name will appear on top of all pages. Assign a separate name to each outlet, such as **DSL Router 1** or **Email Server** to aid identification. Check the **Confirm** button to the right of the outlet name if you would like a pop-up window to appear before switching critical outlets.

### Power-On Sequence Delay

When a time value is entered in the **All ON Sequence Delay** field, the power controller will pause for a period of time before switching each outlet on in sequence. This delay helps prevent power surges and blown circuit breakers which can occur when multiple devices are switched on simultaneously. A delay of 60 seconds is suggested for server applications. This delay time is also used in the Cycle function.

You may also enter a screen refresh delay in this section. If **Enable screen refresh** is checked, and a delay value is entered, your browser should periodically update the status screen.

### Wrong Password Lockout

After three failed login attempts, the switch can disable access for a selected period of time (0-60 Minutes).

### Power Loss Recovery Modes

The power loss recovery mode setting has a very important setting that determines operation after a power failure:

When recovering after power loss	<input type="radio"/> Turn all Outlets off
	<input type="radio"/> Turn all Outlets on (in delayed sequence)
	<input checked="" type="radio"/> Return to pre-powerloss state

1. Turn all outlets off (all systems will be switched off until manually turned on later, possibly by a script).
2. You can automatically turn all outlets on using the sequence delay timer described above.
3. You can return to the same outlet settings that were used prior to the power loss. ie. 1 On, 2 Off, etc. The ON Sequence delay timer is used here as well.

*Note: If you have written a power-on script, the recovery mode takes effect before script execution begins. Scripts start after self-test, approximately 30 seconds after power-up.*

### User Defined Links

Add hyperlinks to other power controllers, your own web pages, or remote web sites by entering URLs in the **Setup** page. For example, enter “Site Two Power Controller” in the description field and a URL of “192.168.0.250” These links appear on the left side of the web pages.

### Access Control

The administrator can grant users access to only certain outlets. To set permissions, login as admin first, then create a permissions matrix by entering user names on the left and checking allowed outlets on the right.

### Network Settings

A valid fixed IP address, network mask, and gateway must be entered in this section.

When changing IPs, you may need to restart your network switch to validate the new IP on an “auto-configuring” switch port. *Be sure to record the new IP address.*

Use the **Protect** button to lock the network settings. *Once protected, the network settings cannot be changed except by pressing the physical reset button below the LCD.*

## AutoPing™

### AutoPing Operation and Settings

AutoPing is an automatic system for rebooting IP equipment without human intervention. AutoPing will monitor a device. If it stops responding, AutoPing can cycle power to reboot it. For example, you might use AutoPing to monitor an external multi-cast IP to automatically reboot a DSL router or WiFi AP.

To use AutoPing, first add an IP address. Next, link that IP address to one or more outlets. Timing settings must be considered.

## Add IP Address to AutoPing

Use this option to specify the address of an IP device you wish to monitor. After entering the IP address, the settings page will refresh and you can select the outlets associated with this address. Use the checkboxes in the AutoPing section to correlate the IP address to one or more outlets. If communications to the target IP is lost, these outlets will be rebooted. Four main parameters control AutoPing:

### Time between pings

This is the time between each “ping” check of the IP address. 60 seconds should be useful for most applications.

### Ping failures before reboot

This sets the number of failed communications attempts that must be sequentially detected before a power cycle. For example, when set to 5, the target system must fail to respond 5 times in a row before it is rebooted. Since occasional network timeouts and packet loss can occur during normal Ethernet operation, between 5 and 10 pings is suggested.

### Times to Attempt Reboot

If you have an unreliable target device, limit the number of times it will be rebooted by entering that value here. For example, entering 5 will reboot your server up to 5 times before giving up.

### Device Reboot Delay

After power cycling to reboot a device, a waiting period will occur before the IP address is re-checked by AutoPing. This delay allows the device time to reboot. Most devices take some time to reboot. Windows and Linux servers can force automatic file system checks which may take several minutes to complete. To allow for startup delays, enter a time delay in the **Device Reboot Delay** period. For example, a reasonable value for a typical server might be 10 minutes (600 seconds). Entering 600 would cause the power controller to start checking the server for normal IP operation 10 minutes after reboot.

Find more details at: [digital-loggers.com/AutoPing2.html](http://digital-loggers.com/AutoPing2.html)



## AutoPing Example

In this example, we use AutoPing to automatically reboot a DSL router. Since the switch is connected inside the router, we select a target IP of 8.8.8.8. This is a multi-cast address which connects to a multitude of Google name servers. We can safely assume that if none of them respond, we have lost network connectivity.

We connect the router to outlet 1, enter the external IP on the left, and leave all timing values at defaults.

AutoPing													
IP(s)	Reboot Outlets								Script	Action	Stats		
	1	2	3	4	5	6	7	8			TX	RX	HIT
<input type="text"/> 8.8.8.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	[Cycle]	<input type="button" value="+"/>	0	0	0						
AutoPing Properties													
Enable AutoPing:	<input type="checkbox"/>												
Time between pings:	<input type="text"/> 30		seconds. (2-3600)										
Ping timeout to reboot:	<input type="text"/> 150		seconds. (2-3600)										
Ping responses to enable autoping:	<input type="text"/> 5		pings. (0-100)										
Times to attempt reboot:	<input type="text"/> 5		tries. (1-255)										
Device reboot delay:	<input type="text"/> 120		seconds. (1-43200)										

## Internet Access

Like to access your power controller over the Internet? Learn how to configure your router at [port-forward.com](http://port-forward.com). A firewall is recommended.

## Mobile Device Access

Non-admin accounts have simplified UI well suited for mobile devices with small screens. Third-party applications are available to control various DLI products from Android and IOS. These apps are sold and supported by independent developers, not by DLI. Learn more: [digital-loggers.com/mobile.html](http://digital-loggers.com/mobile.html)

## Real-Time Clock

An internal Real-Time-Clock (RTC) is provided. This clock can be set manually using the **Date/Time** link. The time zone can be selected based on GMT. Internal batteries have an estimated 15-year lifetime.

## Web Server Backup Power

A rechargeable battery pack maintains web server operation for a few minutes during power failures. Open the battery compartment door by depressing the latch to the left of the door to access the battery and connect the cable. Allow 48 hours for full recharge.

## Lua Scripting

The controller can be customized using the Lua language. A full description is beyond the scope of this manual, so please visit [lua.org](http://lua.org) and review the examples at: [digital-logger.com/scripts.html](http://digital-logger.com/scripts.html)

## Power Metering

Four web meters provide voltage and current readings on the A&B bus. Cumulative kilowatt hours are displayed. For non-PFC corrected loads, a power factor correction value may be manually entered on the setup page. Current metering includes only the switched outlets. Co-location users may elect to use the unswitched outlets for “house power”. To avoid tripped breakers, take the current drain of the unmetered outlets into account when operating near the 15A maximum rating.



## Source Code

In compliance with the spirit of the GNU public license, source code is provided for reference. A TLA and NDA from Atheros are highly recommended before attempting any custom development. DLI cannot provide confidential documents, warranty or tech support for modified units.

## Technical Support

Please register. Painless on-line registration gets you free tech support, access to firmware updates, and information when updates and new features become available. To save yourself time, please review the product FAQ page:

[digital-loggers/EPCR5FAQs.html](http://digital-loggers/EPCR5FAQs.html)

## Your Suggestions Are Appreciated

At DLI, we listen to customers. Please send suggestions to [engineering@digital-loggers.com](mailto:engineering@digital-loggers.com).



## Specifications

Alert Beeper	73dBA at 12". Programmable.
Applications	Commercial, industrial, and residential remote power control and reboot. Indoor use only.
Circuit Breakers	Manual reset, 15A Thermal, UL Supplemental
Clock / RTC	15 year Li battery
Controls / Display	Reset -to-factory-default switch, 2x16 Backlit LCD w/ PowerSave, 5 button keypad, E-Stop
Enclosure	Steel, double grounded. Vented 4 sides. Fanless.
Ethernet Interface	10/100 autosensing, Static IP, TCP port selectable, 8 pin RJ-45 w/ internal FCC filtering
FCC Testing	Part 15
Humidity	8-80% RH Operating
Input Power Cord	Fixed 14AWG with 5-15 plug standard
Inlet and Outlet Rating	UL, CSA 15A, 120VAC only
Input Frequency	Power supply - DC-400Hz
Operating Temperature	-30° to 170°F, -34° to 77°C
Options - User	Right-Angle 19" rack-mount bracket.
Power Supply Rating	90-240V, AC/DC Autosensing
Password Transmission	Encrypted, base 64 or HTTPS
Power Dissipation	4.9W Typ Max (all on) <3 W idle
Power Fail Hold-Over	350ms minimum (all relays on)
Power-Up Modes	Last used settings, all power on or off, sequential on or run BASIC program script
Relay Contact Spec	15-25A AC/DC, 1/2HP
Surge Protection	Dual 3600WMetal Oxide Varistors
Size	3.5x5.5x19" 8.9x14x48cm 2-U
Weight (packed)	Single unit 10.3lbs 4.7kg
WiFi	Atheros 9331 2.4G 802.11n +19dBm RP-SMA



## Limited Five Year Warranty

The terms of this warranty may be legally binding. If you do not agree to the terms listed below, return the product immediately in original unopened condition for a full refund. The purchaser assumes the entire risk as to the results and performance of the unit. DLI warrants this power controller to be free from major defects. No agency, country, or local certifications are included with this unit. It is the responsibility of the user to obtain such certifications if necessary for the customer's application. Buyer acknowledges and agrees that he is solely responsible for proper use, certification and safety testing of components supplied by DLI. DLI's entire liability and exclusive remedy as to defective hardware shall be, at DLI's option, either (a) return of the purchase price or (b) replacement or repair of the hardware that does not meet DLI's quality control standards and has been returned through proper RMA procedures. DLI's liability for repair or replacement is to DLI's customer ONLY. NO SUPPORT IS PROVIDED FOR MODIFIED FIRMWARE. MODIFICATION OF FIRMWARE VOIDS ALL WARRANTY. Warranty service requires an original invoice from DLI and an RMA number provided by technical support. RMA material must be shipped prepaid to DLI. RMA numbers are valid for 15 days from date of issue. This warranty does not cover products which are modified (including firmware modifications), subjected to rough handling, or used in applications for which they were not originally intended. Batteries are not covered under warranty. Physical damage caused by customer or in transit to DLI is not covered under warranty. Please insure your shipments. No oral advice or verbal warranties made by DLI's employees, dealers, or distributors shall in any way increase the scope of this warranty. DLI makes no warranty as to merchantability or fitness for any particular purpose. DLI assumes no liability for incidental or consequential damages arising from the use or inability to use this product. This warranty gives you specific legal rights. You may also have other rights that vary from state to state. Since some states do not allow the exclusion of liability for consequential damages, some of the above limitations may not apply to you. Auto-Ping™ is a registered trademark of Computer Performance, Inc. Since this is a FLASH based product, firmware should not be updated over the Internet or a busy LAN. Packet loss could result in FLASH corruption, requiring mail-in service. This product is designed for indoor use only. It is not intended for and should not be used in outdoor, mobile, airborne, or FDA Class III applications.



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Release 0.3.0 6/13/2014

## Related Products:



[90-240VAC Smart PDU](#)



[Web Enabled DIN Relay](#)



[2x50A, 8x15A DC Smart Switch \(+12,+24, or -48\)](#)



[Smart PoE Injector](#)

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