

# Ethernet Power Controller II

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## User's Guide

## Product Features

Congratulations on selecting the Ethernet Power Controller II, a surge-suppressed rack-mount power switch used for remote control, automatic reboot and power monitoring. Features include:

### **Simple Web Interface**

The internal web server is accessible from any standard web browser. Simply enter an IP address, and the controller may be configured and controlled via the web.

### **Auto-Ping Reboot**

This powerful feature automatically monitors a remote IP address. If a server, router, or other peripheral goes down, the controller will automatically reboot it, without user intervention.

### **16 Switched Outlets + 2 Un-switched Outlets**

Eight switched circuits are provided, each with a pair of outlets. Each pair of outlets can be controlled independently. The outlets are spaced for large adapters and plugs. Two un-switched and un-metered circuits are provided for "always on" devices.

### **Local Control, Manual Lockout and E-Stop**

Front panel controls are provided to manually override software control. Each outlet can be switched on or off manually, or locked to prevent remote control. A 2x16 LCD displays status for each relay. Display operation is customizable using a simple scripting language.

### **Password Security**

Multi-user password security is provided to limit access to the power controller. The administrator selects which outlets each user controls.

### **Sequenced "On Timer"**

A programmable delay timer allows outlets to be switched on in sequence, rather than simultaneously. Most devices draw more

power when they are initially switched on. Using this timer, more equipment can be attached to a single circuit without overloading. Programmable scripts can also be used to create customized power-up and power-down sequences with variable timing.

#### ***Redundant Power Supply***

Dual, redundant switching power supplies are included. The loss of either main power circuit will not affect the controller itself. Separate A/B power circuits are provided for redundancy.

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

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

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

A scripting language can be used to create custom control and reboot sequences, schedule periodic reboots, customize the LCD, and control serial devices. Both internal and external system logs are provided. Windows utilities send status notifications, warnings, and power bills via email.

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

Firmware is field upgradeable via Ethernet using the web UI or a command line utility.

### **Standard Package Contents**

1. Ethernet Power Controller II
2. Dual Power Cords – Permanently attached per UL
3. Quick Start Card & Manual

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

## Important Factory Defaults

### DEFAULT IP ADDRESS

The factory default is **192.168.0.100**

### DEFAULT ADMINISTRATOR LOGIN

User name: **admin** (lower case)

Password: **1234**

To reset the IP address and admin login to factory defaults, press the reset-to-defaults button – Gently!

*Note:* Reset-to-defaults sets the admin login and IP address, but it doesn't affect outlet names, links, and stored scripts. Auto-Ping and auto-start of custom scripts is disabled.

## Quick Setup

Use these shortcuts if you are an experienced installer. If this is your first time, please skim the entire manual first.

1. Remove the power controller from its shipping carton. Save the carton and packing for future hardware upgrade.
2. Attach the power cords to two protected power sources with a capacity of at least 15 amperes each.
3. Attach the cable from the controller to a port on your LAN. If the default IP address of <http://192.168.0.100> isn't compatible with your network, a crossover cable may help during initial configuration. Switch power on. If you are connected to a switch, you may need to cycle power to the switch to establish a connection.
4. Ping the default address: <http://192.168.0.100> to confirm that a reliable network connection is established. If you don't

receive a response, use a crossover cable and see the "Windows IP setup." Section below.

5. Log in to the power controller using the default user name **admin** and the password **1234** "*admin*" must be entered in lower case.
6. Click on the **Settings** link to reach the configuration page.
7. Configure the switch as described below. After each change, click **Submit** and wait for the page to refresh before continuing.
8. The front panel controls can be used to manually switch circuits on or off, or to allow remote access.

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

## Windows IP Setup

If your default Windows settings won't access the default IP, use a crossover cable and follow these steps to add a compatible IP such as 192.168.0.1 Before adding an IP, close other programs and browsers.

### Windows 2000, 2003, XP

Go to Network Settings → Local Area Network. Use the keyboard shortcut <Windows-R> - type **ncpa.cpl** and click OK. Right click on **LAN Connection** and choose **Properties**. Highlight **Internet Protocol** and click **Properties**. Click **Advanced**. Under the IP Address settings, click **Add**. Enter a new compatible IP, such as 192.168.0.1, and a subnet mask of 255.255.255.0. Press **Add**.

### Windows 7

Click **Start** → **Control Panel**. In the search box, type **adapter**. Under "Network and Sharing Center", click **View Network Connections**. Right click on the adapter you're using and click **Properties**. Click the **Networking** tab. Select **Internet**

**Protocol Version 4 (TCP/IPv4).** Click **Properties, Advanced**, then under IP addresses click **Add**. Enter a new compatible IP, such as 192.168.0.1, and a subnet mask of 255.255.255.0. Press **Add**.

Close all windows for the configuration to take effect. Start your Browser and type 192.168.0.100 in the URL field. Log in.

## Basic Operation

After power-up, the controller performs a sequence of self-tests to ensure reliability. The static IP on the **Settings** page is used.

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

## Home (Outlet Control) Page

To access the home page, first enter the IP address in web 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. When configuring the power controller for the first time, use the default **admin** username and **1234** password.

The home page contains twelve links to other pages. The first eight are fixed internal links:

### 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 your login.

### Setup

The setup page lets you select outlet names, program web lings, startup delays, and the power loss recovery mode. You can also change login credentials on this page.

### **Scripting**

A scripting language using BASIC commands lets you customize the power controller. Scripts may be started manually, automatically on power-up, by external http commands, or by Auto-Ping events. Find a full list of commands and example scripts at: [www.digital-loggers.com/scripting.html](http://www.digital-loggers.com/scripting.html)

### **RTC**

The controller features an internal battery-backed up real-time clock. Use the RTC link to view clock settings or synchronize to your local PC time.

### **AutoPing**

The AutoPing link lets you set parameters for 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 specific 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.

### **System Log**

The power controller keeps a log of system events including logins (successful and attempted), outlet switching, power interruptions, and Auto-Ping events. Recent events are stored in the log and accessible from the System Log page. Multiple controllers can export logs to a single external SYSLOG server. Find information on setting up a SYSLOG server here: [www.digital-loggers.com/syslog.html](http://www.digital-loggers.com/syslog.html)

### **Logout**

The controller will automatically log-out when your browser session is closed. Click this link to log-out in advance.

## Help

The Help link displays the latest online manual. Since features are subject to change without notice, this manual may not be an exact match for your controller.

## Logout

Logout ends the web session. A login is required to reconnect.

## Programmable Web Links

Four additional user-defined web links are provided on the outlet control page. Factory defaults are **Manual**, **FAQ**, etc. You may change the name and destination URL for these links on the **Settings** page. These links 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 pair of outlets (except the always-on pair). A master setting also allows users (with security access) to switch all outlets on or off.

To switch an outlet on or off, simply click to the right of the outlet name or number. Switching is immediate.

You may also **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 a few seconds (as specified on the setup page), and then switches power back on. This resets the attached device. You may also cycle all outlets using the **Cycle All Outlets** button on the bottom of the page.

Depending on your web browser settings, you may need to click the **Refresh** button to update the on-screen status display after changing settings. The screen refresh rate is configured on the **Setup** page.

## Setup Page

The **Setup** page allows the administrator to configure the power controller. These settings are supported:

### **Controller and Outlet Names**

Use the controller name fields to assign a Controller Name to the power controller itself. Examples are “Server Rack 4 PDU” or “Reactor Coolant Pumps”. The Controller Name field appears on the top of the home page. Assign a separate name to each outlet, such as “Customer 4” or “Email Server” to make identification of each circuit simple.

### **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 the 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.

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 can disable access for a selected period of time (0-60 Minutes).

### **Power Loss Recovery Modes**

The power loss recovery mode setting has three settings which take effect after a power failure:

1. You can turn all outlets off (all systems will be switched off until manually turned on later) by checking the first box.

2. You can automatically turn all outlets on using the “All ON sequence delay” described above. Check the second option to do this.
3. You can return to the same outlet settings that were used prior to the power loss. The “All ON sequence delay” will also be used in this instance. Check the third option for ALL ON.

*Note: If you have written a script and enabled scripting, the script will start automatically on power up at LINE 1.*

### **User Defined Links**

You may link to other power controllers, your own web pages, or remote web sites by entering up to four URLs and descriptions in the Setup page. For example, enter “Site Two Power Controller” in the description field with a URL of “192.168.0.250” These links appear on the home page.

### **Access Control**

The administrator can restrict user permissions to certain outlets. To set permissions, login as admin, then create a permissions matrix by entering user names on the left and checking permitted outlets to the right of each user name.

### **Network Settings**

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

When changing IPs, you may need to restart the unit and 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 on the front of the unit.*

### **Power Factor**

The administrator can use this section to adjust the power factor (PF) used to calculate energy usage. This allows the controller to more accurately total power consumption for reactive loads, such as motors or power supplies which are not power factor corrected. A separate PF may be entered for each bus. The default power factor is 1 (100%).

## **Auto Ping Page**

### **AutoPing Operation and Settings**

AutoPing is an automatic system for rebooting IP equipment without human intervention. To use AutoPing, first add an IP address. Next, link that IP address to one or more outlets. Timing settings must also be considered.

### **Add IP Address to Auto-Ping**

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 IP address is lost, these outlets will be rebooted. Four parameters are used for AutoPing operation:

#### **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, a number 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 operation 10 minutes after reboot.

### **Serial Port Support**

Two serial ports are provided. In the Ethernet Power Controller II, both ports are available on the front panel. The DB-9 connectors use the IBM standard pinout: Pin 2=RXD, Pin 3=TXD, Pin 5=Ground.

### **Voltage / Current Monitoring**

The Outlet control page displays separate voltage and current readings for the A and B busses. Each of the four web meters acts independently. The design accuracy of the meters is +/- 5%. The current drawn by the two un-switched always-on outlets is not metered and not included in the total. Always-on outlets may be used

for “house power” in datacenter applications. The other outlets may be monitored via the web meters and using the logging utility below.

## **Power Logging Utility**

A Windows based logging utility provides email notifications, graphs and power bills. Learn more and download it free at: [www.digital-loggers.com/pcl.html](http://www.digital-loggers.com/pcl.html)

## **Technical Support**

Please register your product. A quick on-line registration gets you free technical support and allows us to inform you when updates and new features become available. To save time, please have a look at the product FAQ page solutions. You may FAX questions to (408) 541-8459 or email: [support@digital-loggers.com](mailto:support@digital-loggers.com) For phone support, call (408) 330-5599 with the following so we can better serve you:

- The firmware version level installed in the power switch. This information can be found on the lower left corner of the outlet control page.
- A description of the Ethernet devices connected to your unit, for example, a 10/100 PC and crossover cable.
- A copy of your invoice and/or the product serial number.

## **We Appreciate Your Feedback**

At DLI, we listen to customers. Send your suggestions to engineering (at) digital-loggers.com. Since we're constantly adding and changing features, specifications are subject to change without notice.

## Specifications

Operating input voltage and power consumption	90-130VAC. 5-15 outlets are UL rated only for 120V use. Idle power 6.2W typical (all outlets off).
Input frequency	50/60Hz
Surge suppressors	Dual MOV, 3600J rating
Ethernet interface	10/100 autosensing, Static IP, TCP port selectable, 8 pin RJ-45 with internal FCC filtering
Serial I/O hardware	RS-232, 2 ports, 1 external, supported by scripting utility and web terminal
Outlets & plugs	18 x outlets NEMA 5-15R, 2 15A plugs, others available custom order
Password transmission	Encrypted, base 64
Circuit breakers	2x15A thermal, slow blow, pushbutton
Control relays	25A Contact, 10 <sup>6</sup> mechanical ops
Power cords	14AWG low loss stranded, UL SJT FX3C VW-1 150°C rating
Power fail hold-over time	600ms minimum (all on)
Current metering	+/-5% or accuracy, 0-20A
Voltage metering	90-277VAC, 5% accuracy
Switches & controls	Slide switches select On, Off, Remote (hold to lock/unlock) Processor has reset-to-default button
Size	19" RETMA rack. 2-U 3.5" height
Indicators	Power on (8x LEDs), Outlet Status (8x LEDs), Link, Act Audio alert 81dBA at case
Weight	Bare unit 10.2 lbs, Ship wt. 12.1lbs
Operating temperature	-30° to 17°F, -34° to 77°C
Enclosure material	Cold rolled steel, non flammable, powder coated, no plastics

## 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 they necessary for the customer's application. 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. WARRANTY SERVICE DOES NOT INCLUDE SOFTWARE OR HARDWARE UPGRADES. No warranty service will be provided without 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 modified, 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. 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.



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