Midspan PoE Injector

User's Guide

Product Features

Congratulations on selecting the DLI PoE Injector, a surge-suppressed, AC/DC powered midspan injector with auto-reboot and programmable power control. Features include:

Simple Web Interface
The internal web server is accessible from any browser. Simply enter an IP address. The injector can be configured and controlled via the web.

Auto-Ping Reboot
This automatic feature monitors a remote IP address. If a radio, server, router, or other IP peripheral goes down, the switch will automatically reboot it, without user intervention. Up to 8 devices can be monitored individually. A remote target, such as a reliable Internet server can be monitored to automatically reboot devices upon loss of downstream connectivity.

8 Switched, Protected PoE Ports
Eight individual switch-controlled PoE circuits are provided with single ports. A total output of 150W is supported.

Automatic AC/DC Failover
PoE ports always connect to the best quality power source (AC or battery power). Transfer is instantaneous.

Battery Trickle Charger – Float Battery Maintainer
A battery float charging circuit is provided to trickle charge attached batteries. The 15V version will float charge up to 14V, the 24V version charges to 28V, and the -48V version charges to -52.0V. Maximum charge voltage is regulated to prevent overcharging.

LCD Display
A 2x16 LCD displays status for each PoE device. Custom messages can be displayed with an easy-to-use BASIC scripting language.

Designed for Use with External Switches, Separate Control Port
The injector does not contain a hub, switch, or router, so any 10/100 data may be routed through the injector ports. A separate control port is provided for flexibility.

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

Sequenced "On Timer"

A programmable delay timer allows ports 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.

Three-Way PoE Surge Suppression

Triple protection (diodes, SIDAC, and gas discharge tube) protects all PoE lines from transients. For low-capacitance pass-through compatibility with 10/100 networks, data lines are unprotected. Battery input is reverse polarity protected. Each PoE port has individual overcurrent protection and audio alert for overcurrent. The AC power supply incorporates noise filtering, surge suppression, overcurrent and overvoltage protection. The DC supply includes thermal overload protection. Multiple redundant cooling fans are provided.

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. A Windows utility can send status notifications, warnings, and power bills via email.

Field Upgradeable Firmware

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

What this Product Won't Do

The injector won't control solar or wind devices or fast-charge large batteries. Input voltage on the battery terminals must be limited. If AC power fails, the -48 injector will switch to battery power and provide a PoE output voltage approximately 0.5V lower than the DC battery input voltage. Any excess charge voltage will be passed through the 48V injector. For example, if the DC battery input voltage is 48V, the PoE output voltage will be 47.5v.

Newer versions of the 24V injector (manufactured after 5/1/2012) include an internal DC-DC voltage regulator which prevents PoE over-voltage by regulating the PoE output voltage at exactly 24.0V. External fast-chargers (>28V) are compatible, but battery input voltage to these units should not exceed 30VDC at 150W full load to minimize heating.

The injector does not contain a hub, switch or router. RJ-45 PoE jacks are simply loop-through. Each port is completely independent from the others. In addition, no surge suppression is provided on the data pairs. The design is compatible with 10/100 Ethernet.

The injector is for indoor use only. It's not rated for use outdoors or in humid environments.

Standard Package Contents

1. PoE Injector
2. Rack mount ears and screws
3. Registration card & printed manual
4. 5-15P to C-13 Power Cord (120V models).
   Other cords available at digital-loggers/com/cords.html

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

Compatible Attached Equipment

1. External batteries (optional). Gel or flooded batteries are compatible. An external fast-charger may be useful when connecting batteries rated over 50AH.

2. Compatible 10/100 PoE devices -
   RJ-45 pins 4 & 5 are positive + output
   RJ-45 pins 7 & 8 are negative – output

   Note: For older Cisco and Motorola Canopy equipment that uses reverse (non-standard) PoE polarity or for 220/240VAC, injectors may be special ordered.

Important Factory Defaults

DEFAULT IP ADDRESS
The factory default is **192.168.0.100**

DEFAULT ADMINISTRATOR LOGIN
User name: **admin**   (lower case)
Password: **1234**

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To reset the IP address and admin login to factory defaults, gently press the reset-to-defaults button near the Ethernet jack.

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 this shortcut list if you're an experienced installer. If this is your first time, please skim the entire manual first.

1. Remove the injector from its shipping carton. Save the carton and packing for future hardware upgrade.
2. Attach the power cord to a protected power source with a capacity of at least 2 amperes. Attach rack ears if needed. Ears may be rotated for wall mounting.
3. If using the battery feature, attach a battery and 20A external fuse to the **+POS** and **-NEG** battery terminals on the rear of the injector. One 12-14V battery is required for the 15V injector, two for the 24V injector, and four for the -48 injector. Supplemental external chargers may be wired directly across the battery(ies).
4. To use the charge feature, leave the shorting bridge clip between the CHG terminal and the adjacent battery terminal.
5. Attach the cable from the controller to a port on your LAN. If the default IP address of http://192.168.0.100. A crossover cable may help if the attached (older) device doesn't support Auto MDI-X.
6. Switch power on. If you are connected to a switch, you may need to cycle power to the switch to establish connection.
7. Ping the default address: http://192.168.0.100 to confirm that a reliable IP connection is exists. If you don't receive a response, try a crossover cable and *see* the **Windows IP Setup** section below.
8. Log-in to the power controller using the default user name **admin** and the password **1234.**
   ("admin" must be entered in lower case)
9. Click on the **Settings** link to reach the configuration page.
10. IMPORTANT: Select the safest power-on configuration for your installation: (all OFF, all ON, or sequential ON)
11. Configure the switch as described below. After each change, click **Submit** and wait for the page to refresh before continuing.

Windows IP Setup

If your default Windows settings won't access the default IP, try 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.

Early 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, Vista

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 default static IP on the controller's **Settings** page is used, ie. 192.168.0.100.

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 the web browser URL field, then log-in. User **admin** has access to all features. Other users have limited access to ports as assigned by the

administrator. When configuring the power controller for the first time, use the default username, **admin** , and password **1234**

The home page contains 11 links to other pages. The first nine are fixed internal links:

Outlet Control
Clicking **Outlet Control** hyperlinks to the home page where you can manually switch ports on and off. Each user's access to specific PoE ports is controlled by the administrator.

Setup
The setup page lets you select outlet names, create web links, adjust startup delays, and select 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 command, or by Auto-Ping events. Find a command list and examples: digital-loggers.com/Scripting.html

AutoPing
The AutoPing link lets you set parameters for automatically rebooting 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. Learn more at digital-loggers.com/AutoPing.html

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: digital-loggers.com/syslog.html

Logout
The controller will automatically log-out when your browser session is closed or after several minutes of inactivity. Click the log-out button to close the session 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 earlier controllers and earlier firmware versions. Find the firmware revision history at digital-loggers.com/Revhistory.html

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 Ports on and Off
The outlet control page lets you control any pair of ports (except the always-on pair). A master setting also allows users (with security access) to switch all ports on or off.

To switch a port on or off, simply click to the right of the outlet name or number. Switching is immediate. You may also **Cycle** a device 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 a single attached device. You may also cycle all ports using the **Cycle All** button on the bottom of the page.

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 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 field to assign a Controller Name to the power controller itself. Examples are "WISP Radio #1" or "IP Cam – Front Office". The Controller Name field appears on the top of the home page. Assign a separate name to each PoE port, such as "Customer 4" or "Email Server" to aid identification.

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 the next PoE device on in sequence. This delay helps prevent power surges and blown circuit breakers which can occur when multiple devices are switched on simultaneously. The delay can also be used to allow radios or routers time for reboot. A delay of 60 seconds is suggested for server applications.

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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.

Wrong Password Lockout
After three failed login attempts, the controller 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 complete power failure including loss of AC power and complete battery discharge:

1. You can turn all PoE ports off (all systems will be switched off until manually turned on later) by checking the first box.
2. You can automatically turn all ports on using the "All ON sequence delay" described above. Check the second option to do this.
3. You can return to the same PoE 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 PoE 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 ports. To set permissions, login as admin, then create a permissions matrix by entering user names on the left and checking permitted ports to the right of each user name.

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 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 and firmware updates are disabled until the reset button near the control port is pressed.*

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 ports. Timing settings must 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 ports associated with this address. Use the checkboxes in the AutoPing section to correlate the IP address to one or more ports. If communications to the target IP is lost, these ports will be rebooted. Four parameters control 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 a limit here. For example, entering 5 will reboot your server a maximum of 5 times before giving up. A script can also be used to control Auto Ping operation.

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 a device such as a server, router or radio time to reboot before the next Ping check. 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.

Windows Logging and Email Notification

A Windows utility can be used to record activity and send notifications via email when specified trigger events occur. This utility also logs power consumption and generates reports when used in conjunction with our larger AC power controllers.   Download the utility at 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. Registering gives you access to free firmware updates. To save time, please have a look at the product FAQ page solutions. You may FAX questions to (408) 970-3491 or email: support@digital-loggers.com Call (408) 330-5599 with the firmware version from the lower-left corner of the outlet page and a description of the PoE devices connected to your unit.

We Appreciate Your Feedback

At DLI, we listen to our customers. Please send suggestions to engineering@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 only. Internally switch selected. Specify 200-240VAC if needed when ordering.
Input frequency	50/60Hz, or 140-160VDC
Surge suppressors	SIDAC, Diode, Gas Tube
Battery String	Two 12V batteries wired in series for 24V model, four 12V cells in series for -48. Either gel, AGM, or flooded batteries may be used. Batteries over 50AH may need external charging.
Ethernet interface	10/100 autosensing, Static IP, TCP port selectable, 8 pin RJ-45 with internal FCC filtering
PoE Ports	8x PoE ports, 8x loop-through, 1x control port. Maximum current 2A at 15V, 1.8A at 24V, 1A @-48V Maximum total PoE power ~150W
Password transmission	Encrypted, base 64
Overcurrent protection	Auto-resetting thermal fuses on all PoE ports
PoE Control relays	25A Contact, 10^6 mechanical ops, arc supression
Power cord	18AWG low loss stranded, UL SJT FX3C VW-1 150ºC rating
Size	19" RETMA rack. 1-U 1.75" height
Indicators	2x16 backlit LCD Audio alert script programmable
Weight	Bare unit 10.2 lbs, Ship wt. 12.1lbs
Operating temperature	-20º to 120ºF, -28º to 49ºC
Battery Connection	3x 2mm screw terminals (positive, negative, charge)
Enclosure material	6061 Aluminum powder coated

Limited One 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. DAMAGE CAUSED BY LIGHTNING OR HEAVY E.S.D. IS NOT COVERED UNDER WARRANTY. DAMAGE CAUSED BY OVER-VOLTAGE ON THE BATTERY INPUT IS NOT COVERED UNDER WARRANRTY. WARRANTY DOES NOT COVER DAMAGE CAUSED BY IMPROPER AC INPUT VOLTAGE, i.e. 240V APPLIED TO A 120V INJECTOR. THIS PRODUCT IS DESIGNED FOR INDOOR USE ONLY. EXPOSURE TO WATER, MOISTURE, OR CONDENSATION WILL VOID THE WARRANTY. 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 are 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 hardware that does not meet DLI's quality control standards, only when said hardware 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 and attached PoE devices 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-of 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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