24V PoE Injector

USER'S GUIDE

DIGITAL LOGGERS, INC.

Product Features

Congratulations on selecting the DLI 24V midspan PoE injector, a web-controlled, surge-suppressed injector with auto-reboot and remote power switching. Features include:

Universal Device Compatibility
Robust design powers passive 24V PoE devices such as UBNT and Mikrotik APs and routers. An automatic over-current shutdown and restart feature protects devices and eliminates negotiation problems.

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

Auto-Ping™ Reboot
This automatic feature monitors a remote IP address. If an AP, IP-cam, VoIP phone or other PoE device goes down, the injector will automatically reboot it, without user intervention. Up to 8 devices can be monitored individually.

8 Switched and Protected PoE Ports
Eight individually switched PoE circuits are provided. Extensive surge supression and filtering help protect PoE devices.

Automatic AC/DC Failover with External Batteries
A 24V battery string may be connected. PoE ports always select the best quality power (AC or DC). Transfer is instantaneous. An internal charger provides 27.6V to charge and maintain batteries.

LCD Display, Keypad
A 2x16 LCD displays outlet status and custom messages. A keypad provides local control and a per-port locking function.

Password Security

Multi-user password security limits access to the injector. The administrator selects which port(s) each user controls.

Surge Suppression and Protection

Gas tube, SIDAC, MOV, PTC and inrush current limiters are provided for safety. A custom AC power supply employs over-voltage and over-current protection as well as under-voltage lockout. Extensive filtering is provided for clean DC power. All PoE ports are over-current protected for safety with automatic reset.

Scripting Language, Syslog, and Utilities

A programmable sequence delay allows ports to be switched on in timed order. Programmable scripts can also be used to create customized power-up and power-down sequences with variable timing. A scripting language can be used to create custom control and reboot sequences or to schedule periodic reboots. Both internal and external system logs are provided. Windows utilities can send status notifications and warnings.

New Features

New features include remote voltage monitoring, an improved keypad, extended real-time clock battery life, scheduling function, Wake on Lan (WOL) support, NTP sync, SYSLOG and mobile device support. Learn more about new features here. Firmware is field upgradeable via Ethernet using a local connection.

Product Limitations

The injector is not a DC-DC regulator. It won't control solar panels or fast-charge large batteries. The injector does not contain a switch, hub, router, or AP. Midspan injection ports are loop-through. Each port is independent. The injector does not use 4-pair gigabit injection and is not designed for 1000BT. The injector is designed for indoor use only and should not be exposed to moisture.
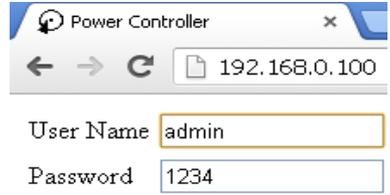
Important Factory Defaults

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, gently press the reset-to-defaults button to the left of the LCD.

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

Quick Setup

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

1. Remove the injector from its shipping carton. Save the carton and packing for future hardware upgrades.
2. Check the input voltage. Default is 90-130VAC unless specified when ordering. The injector is not auto-sensing. Connect the ground stud. Power up. Check wiring and voltage before connecting optional external batteries.
3. Attach the cable from the injector to a port on your LAN. 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: 192.168.0.100 to confirm a network connection is established. If you don't receive a response, see the **IP Setup** section below.
5. Log in to the injector 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. Select the safest power-loss port configuration for your installation: (all OFF, all ON, or sequential ON)
8. Configure the PoE injector as described below. After each change, click Submit and check the refreshed page before continuing.

Tips:

• Connect the ground stud to a good solid earth ground for ESD protection.
• See digital-loggers.com/batteries.html for detailed information on using external batteries.
• Please register your product for better support and free firmware updates

IP Setup

If your network settings won't access the default IP, use a direct cable connection to the control port (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 programs and browsers. After the link is established, you can revert to DHCP if desired, or use a combination of DHCP and static IPs.

Windows IP Configuration - 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**. If you're using "classic view", it's **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 Network Connections**. A Network Connections window appears. Right click on the network connection to the switch, ie. **Local Area Network**. Proceed to step 2.
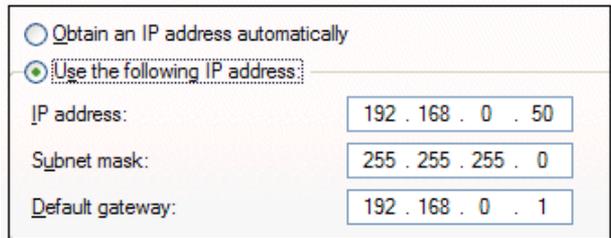
Windows 7: Use the default **Category View**. Open the **Start** orb, click on **Control Panel**. Click **View Network Status and Tasks**, then **Change Adapter Settings**. Proceed to step 2.

Windows 8: Mouse or swipe to the 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 IP Configuration - Step 2

The second step is adding an IP (such as 192.168.0.50). If you are using DHCP, it is easiest to temporarily disable it while configuring the switch.

Select **Internet Protocall TCP/IP V4 Properties** and click **Properties**. Enter a compatible static IP such as shown:


Click **Apply** and close windows. Ping the power switch to confirm the connection. Point your browser at 192.168.0.100 and log in. Find detailed instructions at digital-loggers.com/ip_setup.html

Max OS X IP Configuration

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 a compatible IP address sucha s 192.168.0.50 as shown:
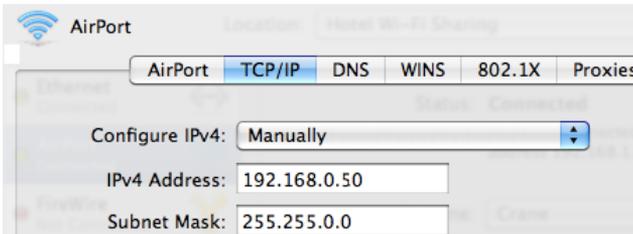
Make the changes shown. Point your browser at 192.168.0.100 and log in. Find detailed instructions at digital-loggers.com/mac_ip_setup.pdf

Basic Operation

After power-up, the injector performs a sequence of self-tests to ensure reliability. Network settings are on the **Settings** page:

Network	
MAC Address	00:0b:78:66:77:89
HTTP port	80
IP address	192.168.0.100
Subnet mask	255.255.255.0

The IP address of the injector needs to match the "class C" of your system. In other words, the first three bytes (192.168.0) must be the same as the IP address on your computer in order to access the injector. Using an ICMP **Ping** utility is a good way to confirm you have a valid network configuration. For security, we recommend chaning the HTTP port.

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

Home (Port Control) Page

Ethernet Power Controller

DIGITAL LOGGERS, INC.

Controller: SJC Airport West Ramp

Sat Jul 13 11:24:27 2013

Port Control
Setup
Scripting
Date/Time
AutoPing
System Log
Logout
Support
Help

Manual
FAQ
Product Information
Digital Loggers, Inc.

Individual Control

#	Name	State	Action
1	Axis IP Cam Zone 4	OFF	Switch ON
2	Axis IP Cam Zone 5B	OFF	Switch ON
3	Axis IP Cam Zone 5C	OFF	Switch ON
4	Axis IP Cam Zone 6	OFF	Switch ON
5	Public WiFi AP 14	OFF	Switch ON
6	Public WiFi AP 15	OFF	Switch ON
7	Public WiFi AP 16	OFF	Switch ON
8	Public WiFi AP 17	OFF	Switch ON

Master Control

All Ports OFF
All Ports ON
Cycle all Ports

To access the home page, first enter the IP address in a web browser URL field, then log in. User **admin** has access to all features. Other users have limited access to ports as assigned by admin. When configuring the injector for the first time, use the default **admin** username and **1234** password.

The home page contains 13 external hyperlinks. The first nine are fixed internal links. The four links in the lower left corner of the screen are user-programmable.

Port Control

Clicking "Port Control" links to the home page used for switching PoE power on and off. Access to specific ports is determined by your login. Admin has access to everything.

Setup

The setup page lets you select port (or device) names, program web links, startup delays, and the power loss recovery mode. You can also change login credentials here.

Scripting

A scripting language using BASIC commands lets you customize the injector. Scripts may be started manually, automatically on power-up, by external http commands, using programmable hyperlinks, or by Auto-Ping events. Find commands and example scripts at: digital-loggers.com/scripting.html

Auto-Ping

The Auto-Ping 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 ports. You may want to assign multiple ports. For example, if a router appears unreachable, you may choose to automatically reboot both the router and a switch attached to two different ports. Learn more: digital-loggers.com/auto-ping.html

System Log

The injector keeps a log of system events, including logins (successful and attempted), port switching, power interruptions, and Auto-Ping events. Recent events are stored in the log and are accessible from the System Log page. One or multiple injectors can export logs to a single external SYSLOG server. For more information on syslog: digital-loggers.com/syslog.html

Logout

The injector will automatically log-out when your browser session is closed and after a timeout. Use **Logout** 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 earlier injectors or firmware versions. Find the firmware revision history here.

Programmable Web Links
Four additional user-defined web links are provided on the port 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 injectors or to remote sites. You can also use them to trigger scripts.

Switching Ports On and Off

The port control page lets you control any port. A master setting also allows users with permissions to switch all ports on or off.

To switch an port on or off over the web, log in and click to the right of the port name or number. Switching is immediate.

Individual Control			
# Name		**State**	**Action**
1 DSL Router		ON	Switch OFF Cycle

Use the front-panel keypad for local control: Select a port using the arrows, then press on, off, or cycle. **Hold ON or OFF for 5 seconds to lock or unlock an port**. Locking prevents web access.

You may also cycle a device which is connected to the injector. This feature is useful for rebooting Ethernet devices wired in series which may interrupt the TCP/IP link to the injector. Clicking Cycle switches power off, waits for the **ON sequence delay**, and then switches power back on. This reboots the attached device.

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

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 administrator to configure the injector. These settings are supported:

Injector and Port Names
Use the **Controller name** field to tag the injector itself. Examples are **West Side PoE Injector** or **IP Cam Power Switch**. This name appears on top of all pages. Assign a separate name to each port, such as **AP Router 1** or **West IP Camera** to tag devices. Check the **Confirm** button to the right of the port name if you would like a pop-up window to appear before switching critical ports.

Power-On Sequence Delay
When a time value is entered in the **All ON sequence delay** field, the injector will pause for a period of time before switching each port on in sequence. This delay value is also used as an **OFF** time in the **Cycle** function.

You may enter a screen refresh delay time. If **Enable Screen Refresh** is checked, and a delay value is entered, your browser should periodically update the status screen. Note that your browser also has a similar setting which can override this.

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 three settings which take effect after power is restored. Select the safest mode:

1. You can turn all ports off. All ports will be switched off until manually turned on later or enabled by a script.
2. You can automatically turn all ports on using the **All ON sequence delay** timer described above.
3. You can return to the same port settings that were used prior to the power loss. ie. 1 On, 2 Off, etc. The **ON Sequence delay** timer is used.

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

User Defined Links
You may link to other injectors, 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 Injector" in the description field with a URL of "192.168.0.250" These links appear on the home page. Links can also trigger scripts.

Access Control - User Permissions
The administrator can restrict user access to certain ports. To do so, 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 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 settings. *Once protected, the injector settings (including network settings) cannot be changed except by pressing the physical reset button near the LCD.*

Auto-Ping™

Auto-Ping Operation and Settings
Auto-Ping is an automatic system for rebooting IP equipment without manual intervention. Auto-Ping will monitor a device. If it stops responding, Auto-Ping will cycle power to reboot it. For example, you might use Auto-ping to monitor an external multi-cast IP to automatically reboot a DSL router or WiFi AP.

To use Auto-Ping, first add an IP address. Next, link that IP address to one or more ports. Timing settings should 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 may link PoE ports to this IP. Use the checkboxes in the Auto-Ping section to assign ports to an IP. If communications to the target IP is lost, these ports will be rebooted. Four parameters control Auto-ping 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, 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 occurs before the IP address is re-checked by Auto-ping. This delay allows the device time to reboot and become responsive. Many PoE devices run embedded LINUX and can take some time to reboot. IP Cameras with large flash drives may take up to several minutes. To allow for startup delays, enter a time delay in the **Device Reboot Delay** period. For example, a reasonable value for an IP cam might be 10 minutes (600 seconds). Entering 600 will give the IP cam 10 minutes to boot, after which the injector will begin monitoring the IP cam for TCP/IP connectivity.

Find a detailed explanation at: digital-loggers.com/AutoPing.html

Auto-Ping Example

In this example, we use Auto-Ping 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 PoE router to port 1, and add the external IP here, leaving all timing values at defaults. We first add the IP. After clicking the green checkbox, Auto-Ping will check for several

IP	1	2	3	4	5	6	7	8	Script	Action
☐ 8.8.8.8	☑	☐	☐	☐	☐	☐	☐	☐		☑ ☒
Add IP Address to AutoPing										
IP Address			8.8.8.8							

responses before enabling itself. After that, the router will be monitored and automatically rebooted.

Had we entered a number in the **Script** box, a program would be excuted (starting at that line number) when the target router required reboot. Find more examples at: digital-loggers.com/AutoPing.html

Mobile Devices

The injector will automatically zoom webpages to fit smaller mobile device screens. To use this feature, first log-in as admin. Then create a user such as "mobile". The webserver will auto-detect smaller screen sizes. This feature is not available when logged in as admin. A number of third-party applications are available to control the switch from Android and IoS. Find some here: digital-loggers.com/mobile.html

Real-Time Clock

An internal Real-Time-Clock (RTC) is provided. It can be set manually using the **Date/Time** link. The time zone can be selected based on GMT. To syncronize the clock, an NTP command is provided in the scripting language.

Scripting Example

The injector can be used as-is in most applications, or customized using a BASIC scripting language. A full scripting description is beyond the scope of this manual, so please visit our website for other examples and a full command list. Here's a simple scripting example: a daily reboot of a PoE Access Point.

To prevent lockups, it's often useful to "refresh" an Access Point

with a periodic power-cycle. This very simple program cycles power on port 3, then beeps at midnight daily. The GOTO 1 instruction starts it over to run perpetually.

User strings		
1	00 00 * * *	
2		
Script listing		
1	WAIT 1	("00 00 * * *")
2	CYCLE 3	
3	BEEP 1	
4	GOTO 1	

Find more scripting examples, and a full list of commands at digital-loggers.com/Scripting.html

Windows Logging and Email Notification

A Windows utility can log activity and notify you when specified trigger events occur. This utility also logs power consumption and generates reports when used in conjunction with our power controllers. Learn more and download the utility free at digital-loggers.com/pcl.html

Battery Connection

Identical batteries should be wired in series to create a 24V string. See digital-loggers.com/batteries.html for more information.

Specifications

Alert Beeper	73dBa at 12". Programmable.
Applications	Power and re-boot of PoE devices such as routers, APs, IP-Cams, and VoIP Phones
Circuit Breaker - PoE	Auto-resetting thermal, 1A trigger point
Clock / RTC	15 year Li battery, NTP support
Control / Display	Reset -to-factory-default switch, 2x16 Backlit LCD w/ PowerSave, 5 button keypad
Charging Current	Curved, 1000mA peak, cutoff at 27.6V, 15W max
Dimensions	RETMA compliant 1-U, 7.5x19x1.75"
Enclosure	Aluminum chassis, double grounded. Vented 4 sides. Four redundant fans.
Ethernet Interface	10/100 autosensing, Static IP, TCP port selectable, 8 pin RJ-45 w/ internal FCC filtering
FCC Testing	Part 15 S/D
Humidity	8-80% RH Operating Noncondensing
Input Voltage (AC)	90-130VAC only, 180-240 via special order only
Input Frequency	AC power supply DC-400Hz
Operating Temperature	-30º to 170ºF, -34º to 77ºC
Password Transmission	Encrypted, base 64 Movable HTTP port for security
PoE Pinout	Pairs 4,5 + positive ; 7,8 - negative = return
Power Ratings	24W max per port, 150W total, 210W max AC in
Power Fail Hold-Over	150ms minimum (all circuits on, 50W load)
Power-Up Modes	Last used settings, all power on or off, sequential on or run BASIC program script
Control Relay Contact	25A DC, 10^6 operations
Software Controls	Individual outlets on/off, all on/off/cycle. Net settings, Web UI
Surge Protection	Metal Oxide Varistor, SIDAC, Gas Tube, PTC
Weight (shipping)	Approx 6.1lbs incl. cord & packaging.

Technical Support

Please register and review the FAQs www.digital-loggers.com/poefaqs.html Feel free to call (408) 330-5599 or email support@digital-loggers.com

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. 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 it 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. ESD AND LIGHTNING DAMAGE IS NOT COVERED. No warranty service will be provided without 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. 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.

DIGITAL LOGGERS, INC.

2695 Walsh Avenue
Santa Clara, CA 95051
digital-loggers.com
SUPPORT@DIGITAL-LOGGERS.COM
Manual date 8/3/2022

Related Products:

Datacenter PDU

Web Enabled DIN Relay

24V Smart Switch

-48V Smart PoE Injector

(408) 330-5599

Auto-ping Function

Online Manual

Scheduling Function

Product Suggestions

BASIC Scripting

DIGITAL LOGGERS, INC.

2695 Walsh Avenue, Santa Clara, CA 95051
Tel: (408) 330-5599, Fax: (408) 541-8459
digital-loggers.com