

Power Controller Logger

User's Guide

V 1.0

Power Controller Logger Features

The logger is a Windows application for monitoring DLI power controllers and generating automated reports. The logger offers these features:

- Periodic scanning of event logs from multiple power controllers.
- Email notifications to multiple email addresses
- Notification of over-current or under-current alarms
- Power usage graphs

Hardware Compatibility

The logger is tested compatible with these DLI Products:

- Ethernet Power Controller II, [Ethernet Power Controller II LCD](#), Ethernet Power Controller III, P/N EPCR2, EPCR2L and EPCR3
- Web Power Switch, [Web Power Switch II](#), Web Power Switch III, P/N LPC, LPC2, LPC3
- [-48 Volt Power Controller](#), P/N 48
- [Ethernet DIN Relay](#), P/N DIN
- [Vertical PDU](#), P/N VPDU

Only products with power metering hardware can generate power reports and histograms.

Program Installation

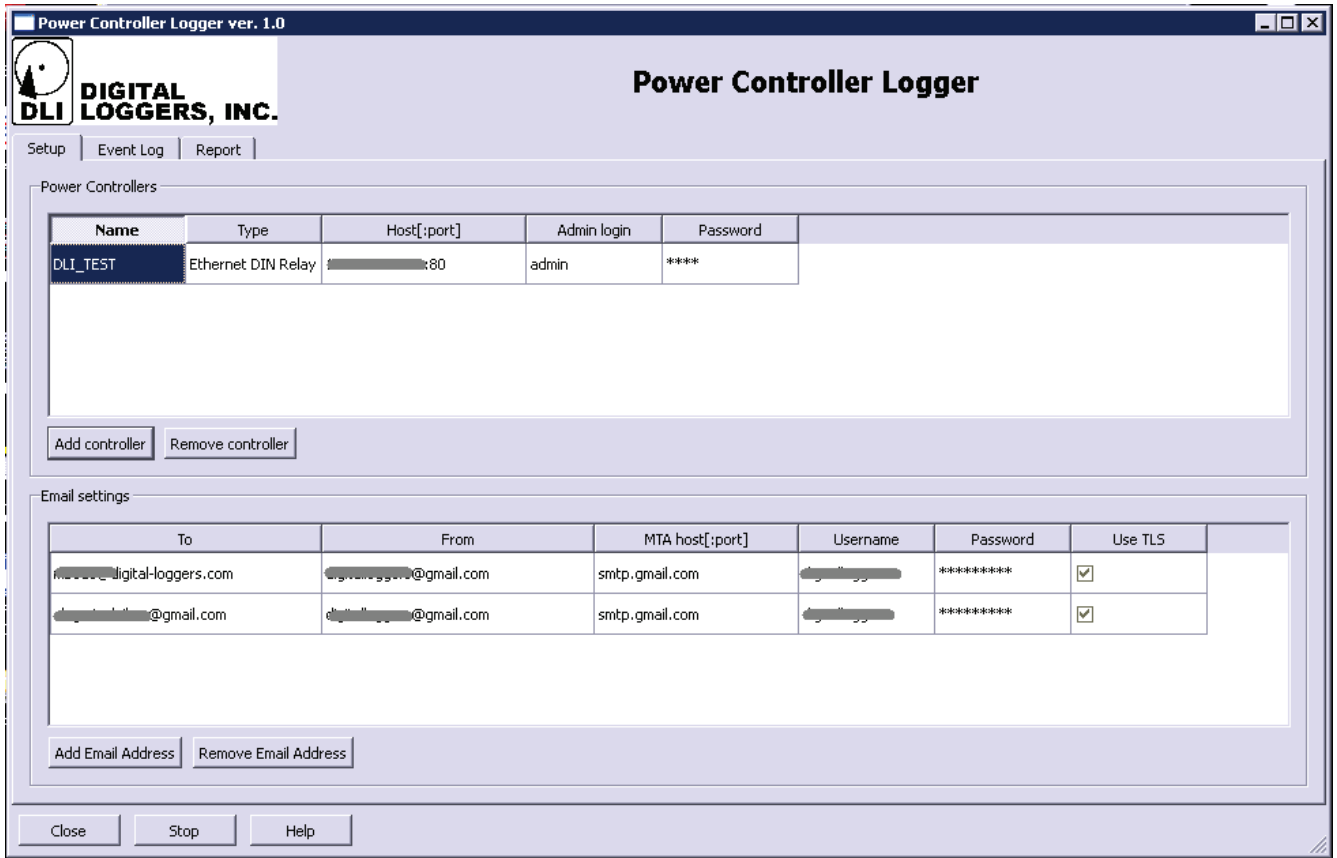
Download the latest version from:

www.digital-loggers.com/pcl.html

To install the PowerControllerLogger unzip the file PCL.zip into a program folder on your hard drive, ie. C:\Programs.

Program Usage

To start the logger, run PowerControllerLogger.exe from the unzipped program folder. On startup, the main window appears:

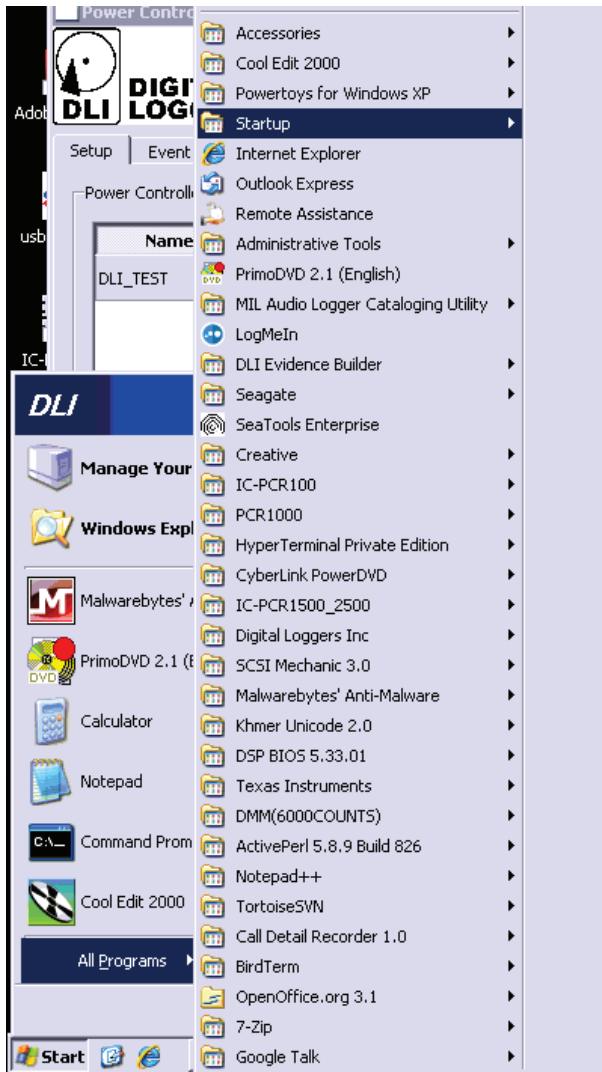


The logger will continue operating in the background even when the main window is closed. To run in background mode, press the Close button or click **Close window** in the upper left corner. In background mode, the logger will continue checking controllers and sending email alerts.

To stop logging and unload the logger, click **Stop**.

Auto-Start

To auto-start the logger, use the standard Windows approach and place a link to the logger to the Startup folder. The Startup folder is found in the Windows Start Menu:



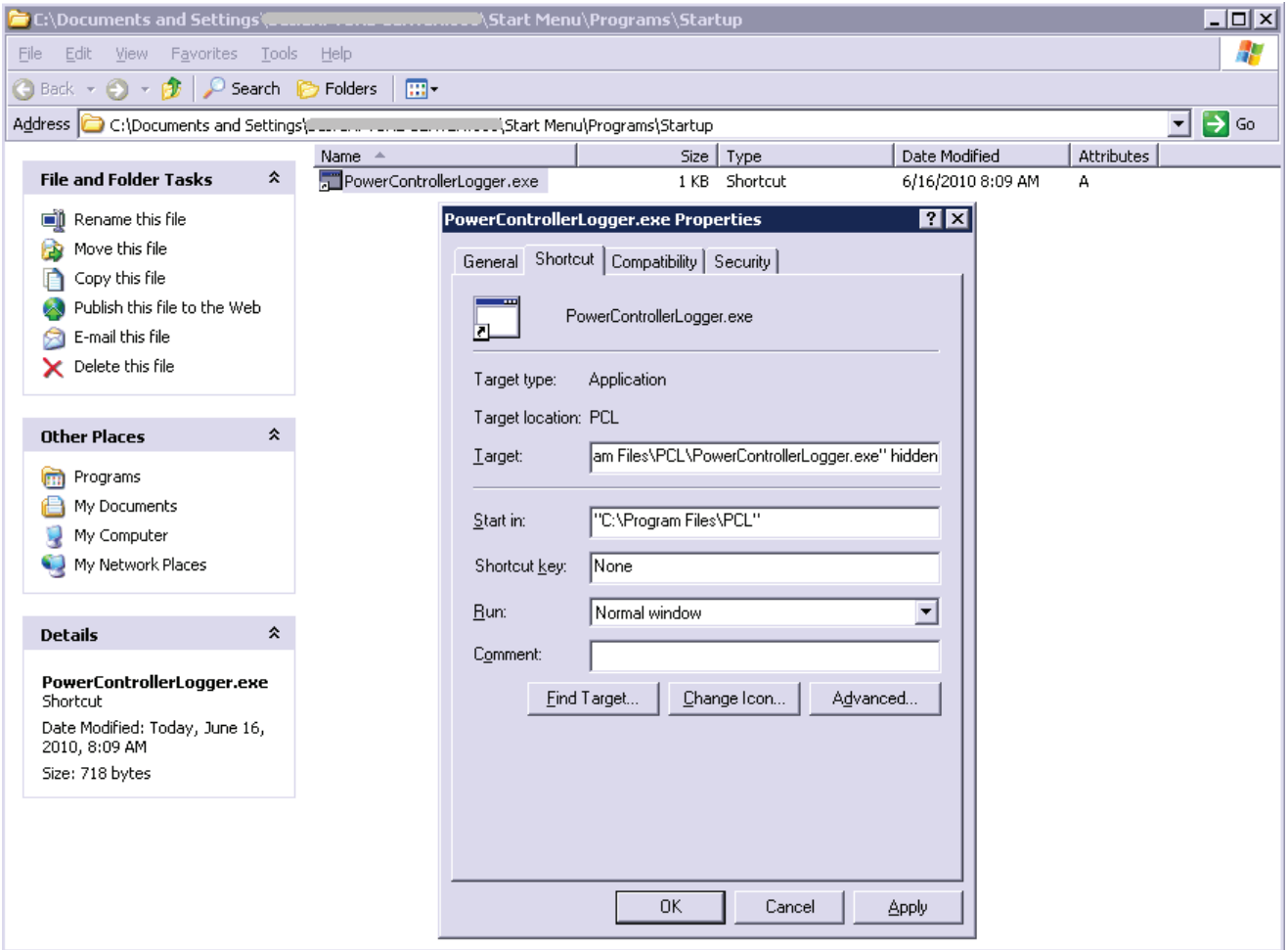
Start->All Programs->Startup.

Right-click in the Startup folder and choose **New** then **Shortcut**.

Browse to PowerControllerLogger.exe.

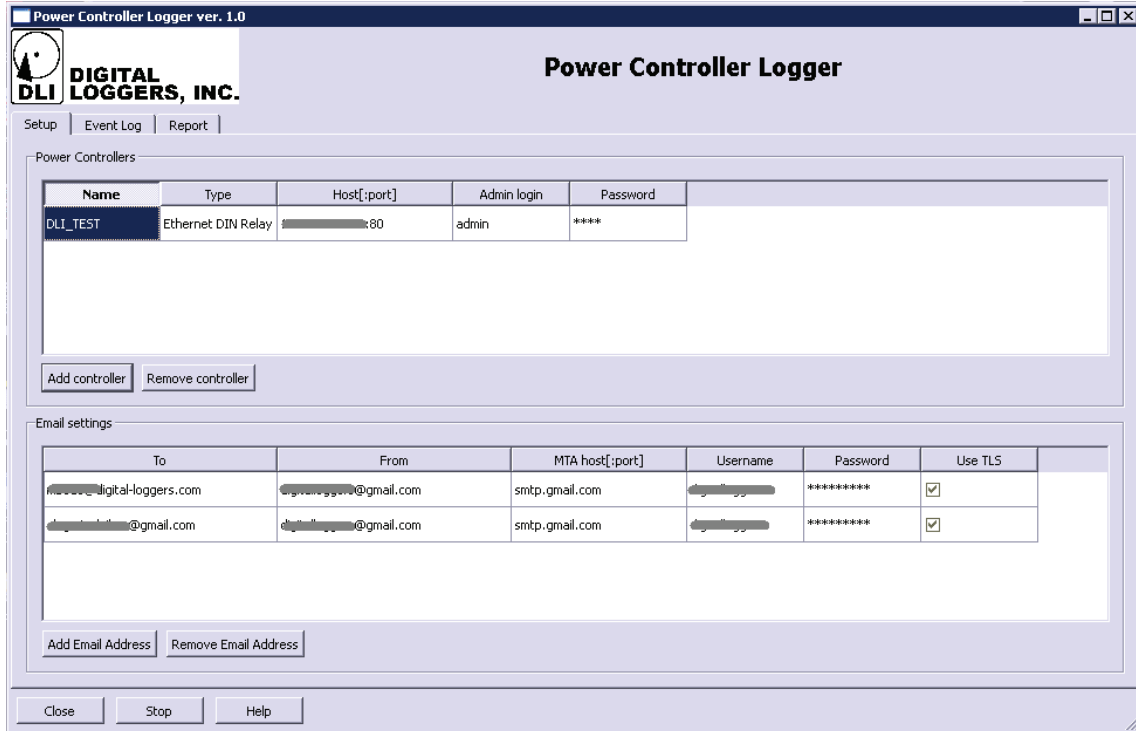
Hidden Mode

Use the **Hidden** startup parameter to hide the main window when the logger auto-starts after operating system reboot



Main Window

The main window contains the control page and three buttons at the bottom:



Click **Close** to close window without stopping the logger, **Stop** to unload the logger or **Help** to show this brief help page.

Three main tabs are provided: **Setup**, **Event log** and **Report**.

The setup page allows you to add controllers to monitor and email addresses to which notifications will be sent.

The current messages obtained from the controllers but not sent are shown on the Event log page. After messages are sent, they are removed from the Event log.

The notification report format is defined on the Report page.

Adding a Power Controller

The **Power Controllers** section on the **Setup** page lets you add controllers to be queried by the logger and to set alert trigger parameters.

The list of controllers is shown in grid format. The grid is empty when the logger is first started. To monitor a new controller, click **Add controller**. This dialog appears:

Controller Settings

DIGITAL LOGGERS, INC.

Power Controller Logger

Name Type

Host Port

Admin Password

Channels

Overcurrent, Amps	Undercurrent, Amps	Power factor

Enter these parameters to define a controller:

Name Use a unique name to identify the controller via email

Type The type of DLI power controller

Host and port The IP address and port of the power controller

Admin and password .. The admin username and password.

The **Channels** table lets you set trigger values to define undercurrent and overcurrent events and calculate the energy consumption. To monitor energy consumption, you'll need an [Ethernet Power Controller II](#) or III with internal power meter. Since these power controllers use two independent A/B power input busses, energy monitoring parameters are defined separately for each bus. Energy monitoring parameters include:

Overcurrent (Amps)

When the total bus load exceeds this value, an **Overcurrent** notification is sent. For example, an appropriate setting might be 13A, since the input circuit breaker is rated at 15A.

Undercurrent (Amps)

When the total bus load is below this setting, an **Undercurrent** notification is sent. An appropriate setting example may be 1A for a file server. If the server draws less than this 1A, a fault has likely occurred and a notification will be sent.

Power Factor

Power consumption is calculated as volts times amps times power factor. The power factor value is between zero and 1. 1 is equivalent to a pure resistive load means pure resistive load (ie. a heater or power-factor corrected server power supply.) Zero is a purely reactive load such as inductance or capacitor. You may refer to the power supply or device manufacturer's manual to determine a power factor other than 1. [Learn more about Power Factor here.](#)

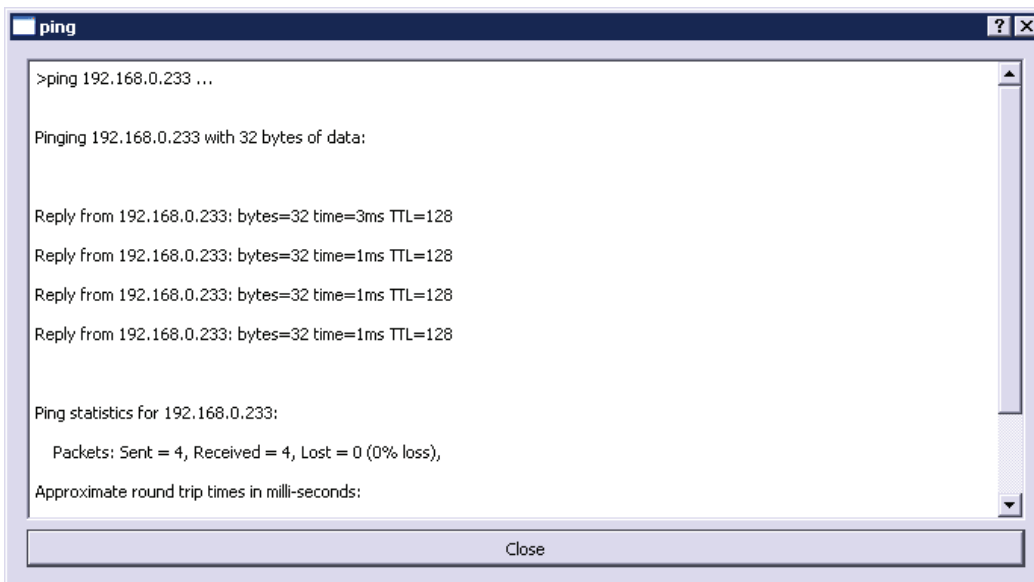
If you are monitoring a DLI power controller which does not contain an internal power meter, the settings will be stored, but no notifications will be provided.

Checking Power Controller Settings

After adding a power controller, use these two tools to verify settings before proceeding:

Ping Controller

Click this button to send [ICMP](#) echo requests. The logger waits for echo replies from the power controller. When echos are received successfully, the round-trip time is displayed in milliseconds.



```
>ping 192.168.0.233 ...

Pinging 192.168.0.233 with 32 bytes of data:

Reply from 192.168.0.233: bytes=32 time=3ms TTL=128
Reply from 192.168.0.233: bytes=32 time=1ms TTL=128
Reply from 192.168.0.233: bytes=32 time=1ms TTL=128
Reply from 192.168.0.233: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.0.233:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
```


If the PING test doesn't work, you'll receive an error message like "timeout" or "host unreachable". Solutions: Check the target IP address of the power controller. Make sure the IP is reachable from your machine. Check the subnet restriction option. Add a compatible IP to your Windows machine.

Test HTTP Connection

After a successful PING test, use Test HTTP to authenticate the power controller using the admin username and password you have provided. This checks all four network parameters. Any errors detected are displayed.

After entering and testing all parameters, click **OK**. The new controller is added immediately to the table. Periodic checking starts immediately according to the schedule defined on **Report** page.

Monitoring starts automatically, so no **Start Check** button is provided. This allows the logger to auto-start after an operating system reboot.

To alter controller parameters, double-click on any cell in the grid. Previous settings are cached. Click **OK** to commit changes.

To stop monitoring a specific controller, select cell within the controller's parameter grid and click **Remove Controller**.

Note: You can't connect to a controller while editing the controller list or altering controller parameters. While you add, change, or delete controllers, the logger will not check or send notifications. When you've completed your changes, operation will resume.

Entering Email Settings

The **Email settings** dialog lets you add email recipients to receive automatic notifications. The FROM account information for your email server is also stored here.

Click **Add Email Address** to enter a new target address for automatic notifications. This dialog appears:

The **To** and **From** fields are email addresses of the sender and recipient respectively. If you experience difficulty sending email, you may enter the same value for both sender and recipient.

The **MTA** section contains five parameters required by the [Mail Transport Agent \(MTA\)](#):

Since the logger is an email client, these parameters should match the settings on your other email clients.

If you are using an email client program called a [Mail User Agent \(MUA\)](#) such as Microsoft Outlook, Mozilla Thunderbird, or Windows Mail, just copy the MTA parameters to the logger.

If you are using web based email from one a public MTA such as Google Mail (GMail), Hotmail or Yahoo Mail, check the providers tech support page for these parameters. [GMail settings are located here.](#)

Note: You'll need [SMTP](#) settings, not POP3 or IMAP (those protocols are using for receiving mail, not sending).

MTA's usually use standard port numbers. The logger is generally smart enough to determine the port number from other parameters, so you may use this field blank in most cases. If you have a corporate email server, you may need to obtain this information from your administrator.

Gmail Account Example

One easy solution is to [create a dedicated GMail account](#) (it's free). For example:

From:NotificationSender@gmail.com (replace this with your valid account)

To: YourTargetEmail@YourServer.com (target address for notifications)
Host: smtp.gmail.com
Port: (leave blank)
User: NotificationSender
Password: your gmail password
Use TLS: yes

Checking Email Settings

To verify that all email parameters are correct, click **Send test email**. A test email will be sent to the specified recipient address. If the test email is sent successfully you will see the appropriate message, otherwise you will see an error message and SMTP session log that should help explain the issue (ie. authentication.) Check the recipient mailbox to read the test email.

Note: Note, that successful email transmission doesn't guarantee successful delivery. You may successfully send email to outgoing MTA, but the incoming MTA may reject this email, or the recipient email address may be absent in the MTA's account database.

When all email parameters are completed and verified, click **OK** to add the recipient to the grid. Notifications will start immediately per the schedule set on the Report page.

To change parameters, double-click a cell on the grid to open a dialog. Click OK to commit changes.

To stop sending notifications to the recipient, select a cell for that recipient and click **Remove Email Address**.

Event Log Page

The screenshot shows the 'Power Controller Logger ver. 1.0' application window. The title bar includes standard window controls. The interface features the 'DIGITAL DLI LOGGERS, INC.' logo and the application name 'Power Controller Logger'. Below the logo are three tabs: 'Setup', 'Event Log' (which is selected), and 'Report'. The main area contains a table with the following columns: 'Message ID', 'When', 'From (Controller)', 'Type', 'Reason Phrase', 'Raw Data', and 'Ti'. The table lists several 'login_success' events from 'DLI_TEST ; Ethernet DIN Rel...' controllers, with timestamps ranging from 13:59:04 to 14:02:04 on Wednesday, June 30, 2010. The 'Raw Data' column shows details like '3702:22:50-UP din[130814]: Suc...' and 'http'. At the bottom of the table area, there are fields for 'Total Events: 20 / 20' and 'Last Check: Wed Jun 30 14:02:04 2010'. A footer bar contains 'Close', 'Stop', and 'Help' buttons.

Message ID	When	From (Controller)	Type	Reason Phrase	Raw Data	Ti
	Wed Jun 30 14:02:04 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:22:50-UP din[130814]: Suc...	http
	Wed Jun 30 14:02:03 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:22:49-UP din[130814]: Suc...	http
	Wed Jun 30 14:01:05 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:21:51-UP din[130814]: Suc...	http
	Wed Jun 30 14:01:04 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:21:51-UP din[130814]: Suc...	http
	Wed Jun 30 14:01:03 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:21:50-UP din[130814]: Suc...	http
	Wed Jun 30 14:00:04 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:20:51-UP din[130814]: Suc...	http
	Wed Jun 30 14:00:02 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:20:49-UP din[130814]: Suc...	http
	Wed Jun 30 13:59:04 2010	DLI_TEST ; Ethernet DIN Rel...	login_success		3702:19:50-UP din[130814]: Suc...	http
	Wed Jun 30	DLI_TEST ;	login_success		3702:19:50-UP	http

The most recent events are listed on the **Event Log** page. Events include content from the syslog pages on the power controllers. Short event lists may include some events that have already been sent via email.

How it Works

The logger operates as intermediary between power controllers and user emails. It collects events from controllers in its internal memory buffer on a scheduled basis, sending events to the email recipients according to the report schedule.

Synchronization of the power controller clocks and the host PC clocks is highly recommended. Use the Settings page on the power controller to do this. Unsynchronized clocks could create unusual behavior, ie. "messages from the future".

Report Parameters Page

The **Report** page contains these parameters and options:

Power Controller Logger ver. 1.0

DLI DIGITAL LOGGERS, INC. Power Controller Logger

Setup | Event Log | **Report**

Check Controllers Every Minute

Send Login Messages

Send Overcurrent and Undercurrent Messages

Send Power Histograms

Send Bill

Send Entire Event Log

Send Email Notifications Every Hour

Energy Price: 0.27 USD per kWh

Apply Cancel

Close Stop Help

Check Controllers Every

Defines the frequency at which each power controller is checked via HTTP.

Send Login Messages

Controls whether emails should contain login messages

Send Overcurrent and Undercurrent messages

Controls whether emails contain overcurrent and undercurrent messages

Send Power Histograms

Controls whether emails contain graphic power histograms

Send Bill

Controls whether emails contain the power bills based on usage, KWH price, and power factor settings. This option is used by co-location firms to bill customers for power.

Send Entire Event log

Controls whether emails contain all event log messages from the power controllers

Send Email Notifications Every

Defines the notification schedule, i.e. how often PowerControllerLogger sends emails. It should be the same or less often than the Check Controllers Every setting.

Energy price

Sets the billing price of one kilowatt-hour including the value and the currency.

[The average US commercial cost of 1 KWH](#) in the US is between \$.08 and \$.27 in 2010. This option is used by co-location firms to bill customers for power.

Note: The logger acts as intermediate memory buffer between controllers and email recipients. The **Check Controllers Every** parameter defines how frequently events are copied from power controllers to the memory buffer. The **Send Email Notifications Every** parameter defines how frequently events will be written from memory buffer to email notification reports.

Clicking **Apply** commits all changes. Clicking **Cancel** aborts changes.

Feedback

We appreciate feedback and constructive criticism. Please email us at engineering@digital-loggers.com

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