Industrial Power Switch

User's Guide

Product Features

Congratulations on your purchase. The IPC-8000 power controller is a wall-mount power switch used for remote control and automatic reboot. Current features include:

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.

Serial Interface
A DB-9 serial DTE control port is provided. The controller may be switched via a modem or other serial device. This is useful for remote control in the event of a network outage, or for primary control if a web browser interface is not necessary.

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

8 Switched Relays - SPDT
Eight switched circuits are provided, each with a SPDT set of dry relay contacts rated at 15-20A. Each relay can be controlled independently. The relays connect to screw terminals for easy installation.

Password Security
Multiple levels of password security are provided to limit access to the power controller.

Sequenced "On Timer"

A programmable delay timer allows relays to be switched on in sequence, rather than simultaneously. Most electrical devices draw more power when they are initially switched on. Using this timer, more equipment can be attached to a single circuit without overloading.

At DLI, we listen to customers. Send your suggestions to support@digital-loggers.com. Since we're constantly adding features, product specifications are subject to change without notice.

Standard Package Contents

1. IPC-8000 Industrial Power Controller
2. Ethernet Cable – Crossover
3. Power Cord – For initial test only
4. Manual

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

Important Factory Defaults

DEFAULT IP ADDRESS
The factory default IP address is 192.168.1.250

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

To reset the IP address and admin login to factory defaults:
- Switch the unit off
- Short the SW1 reset jumper for 10 seconds while switching power on

Note: This procedure resets the admin login and IP address, but it doesn't affect relay names and links.

Quick Setup

Use these shortcuts if you are an experienced installer. If you are unfamiliar with the installation of power controllers, please contact DLI for technical support and installation services.

1. Remove the power controller from its shipping carton. Save the carton and packing, in case of future upgrade.
2. Attach the test cord to either a 110V or 220V circuit – the unit is auto-switching. Less than 200mA is required.
3. Attach the cable from the controller to a 10Mb port (or switched 10/100Mb port) on your LAN. If the default IP address of http://192.168.1.250 isn't compatible with your network, a crossover cable may help during initial configuration. Switch power on. After 10 seconds, a link light should appear. If you are connected to a switch, you may need to cycle power to establish the port speed on the switch. Note that the controller is a 10MBps device, so you'll need either a 10Mbps port, or a 10/100Mbps switch port.
4. Ping the default address http://192.168.1.250 to confirm that a good network connection has been established. If you don't receive a response, use a crossover cable and *see the "Windows IP setup." Section below.*
5. You may also set an IP address via a serial port. See page 12 for serial port configuration information.
6. Log in to the power controller using the default user name "admin" and the password "admin" *Both must be entered in lower case.*
7. Click on the "Settings" link to reach the main configuration page.
8. Complete the configuration information as described below. After each section is completed, click the "Submit" button and wait for the page to refresh before continuing to the next section.

Tip: A DVM is handy for setup. Ensure that the controller is properly wired before attaching your equipment.

Windows IP Setup (2000, 2003, XP)

If your default Windows settings won't access the controller, use a crossover cable and follow these steps to reach the controller's IP. Before adding an IP, close network programs and browsers. Use the keyboard shortcut <Windows-R> - type "ncpa.cpl" and click OK. Right click on your LAN connection and choose "Properties". Highlight "Internet Protocol" and click the "Properties" button. Click the "Advanced" button. Under the IP Address settings, click the "Add" button. Enter a new IP, such as 192.168.1.10, and a subnet mask of 255.255.255.0. Press the "Add" button. This new IP is added the list. Click "OK" and close all windows for the configuration to take effect.

Start your Browser and type 192.168.1.250 in the URL field. The EPC asks for a login. Enter the default user name "admin" and password "admin" in lower case.

Basic Operation

After power-up, the controller performs a sequence of self-tests to ensure reliability. After self-test, the controller requests an IP address if DHCP has been selected. If DHCP is not used or no server is located, the fixed IP address on the network settings page is selected.

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. For setup, or in the event of a network outage, the controller may also be operated from a serial port.

The administrator may choose to assign separate passwords to limit user access to only certain relays. This is useful in ISP environments where the administrator may want a customer to access only his machines.

Home (Relay Control) Page

To access the home page, first enter the IP address in web browser URL field, then log in. The admin has access to all features. User access is limited to relays assigned by the administrator. When configuring the power controller for the first time, use the default "admin" username and "admin" password.

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

Outlet Control
Clicking "Outlet Control" links to the home page used for manually switching relays on and off. Access to specific relays is determined by your login.

View Log
Clicking "View Log" links to a time stamped event log. This log is stored in non-volatile memory and is retained by internal battery backup in the event of a power failure. The event log records logins and major events.

Settings
Clicking "Settings" links the administrator to a configuration page. This page is used to set outlet names, power on features, network settings, user information and passwords.

Help

DIGITAL LOGGERS, INC.   **ETHERNET POWER CONTROLLER**

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 "Link 1", "Link 2", 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 relay. A master setting also allows users with security access to switch all relays on or off. The delay in which relays will be switched on is determined by settings on the Admin page.

To switch a relay 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, and then switches power back on. This resets the attached device. You may also "cycle" all relays 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. Most browsers update automatically after a few seconds.

Event Log

The view log page records logins and major system events. If "Auto Ping" is enabled, a statistical display of the number of pings issued and received from each device will be displayed. If a device has been rebooted, the last reboot time is listed to the right of the AutoPing IP address.

Web Settings Page

The settings 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 Power Strip" or "Plutonium Refinery Control". The Controller Name field appears on the top of the home page. Assign a separate name to each outlet, such as "Missile Launcher" 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.

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 relays off (all systems will be switched off until manually turned on later) by checking the first box.
> 2. You can automatically turn all relays on using the "All ON sequence delay" described above. Check the second option to do this.
> 3. You can return to the same relay 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.

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 "192.168.1.250" These links appear on the home page and are accessible to all users.

Network Settings

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

For most applications, a fixed IP address is preferable. You may also check a box to use DHCP to automatically assign an IP address if you have a DHCP server on site. If DHCP is selected and no DHCP server is detected, the power controller will revert to the fixed IP address setting.

When changing IP addresses, 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.*

Date and Time

The date and time may be changed on the settings page. Changing the time does not affect the previous log entries.

Adding Users and Changing Passwords - Admin

The administrator may add users and change passwords. If a password is forgotten, the admin may view it on the admin page. If the admin password is lost, the entire unit must be reset to factory defaults and then reconfigured using the procedure described on page 4.

AutoPing Operation and Settings

AutoPing is an automatic system for rebooting IP equipment without human intervention. To use AutoPing, first associate a specific IP address with one or more relays. Some timing settings should also be considered.

Auto-Ping Settings

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 relays associated with this address. Use the checkboxes in the AutoPing section to correlate the IP address to one or more relays. If communications to the IP address is lost, these relays 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 system is rebooted. 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 overloads and missed packets can occur during normal network operation, a number between 5 and 10 pings is recommended.

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 rebooting a device with a cold-boot power-off, a waiting period should occur before the IP address is re-checked by AutoPing. This delay allows the device to reboot. Windows and Linux servers can force automatic file system checks which may take several minutes to complete. Enter a safe value To allow for this, enter a time delay in the Device Reboot Delay period. For example, a reasonable value for a typical Windows 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 Settings

In the event of a network failure, the controller may be accessed via a serial port. The serial port may also be used for initial setup. Factory default settings are 9600,N,8,1, with no handshake. Port 3 is the default control port. Many of the basic features, including relay control and network setup are available via the serial port. Three serial configuration settings are provided:

Baud Rate

Standard rates are provided with a pull-down menu. Use the web setup page an to select the rate which matches your equipment. The serial format is N,8,1 (No parity, 8 data bits, 1 stop bit). All three ports operate at the same baud rate.

Modem (Control) Port
This sets the port used to access the power controller text menu system. This is useful in the event of a network failure that could otherwise make the controller unreachable. The modem port can also "cross-connect" to the other serial ports for maintenance of other devices. The default is Port 3.

Modem Initialization String
If power is completely lost (on both circuits), a string is sent to re-initialize the modem approximately 20 seconds after power-up.

Additional TTL Serial Ports Available for OEM applications
Two additional TTL level serial I/O ports are provided for OEM applications. Download the control PCB schematics from www.digital-loggers.com/rcm.pdf if you wish to use these ports.

RS-232/TTL Serial Port Access

Three serial ports are provided. One can be used for external control from a modem or other serial device. The other ports can connect to managed serial devices (such as routers, PCs, servers, or other RS-232 devices). Port 3 is the default control port. Ports 1 & 2 are optional TTL level serial ports. Port 3 has TXD on pin 2, and RXD on pin 3 of the female DB-9. Port 3 offers hardware handshaking; ports 1 & 2 do not.

When connected via RS-232 or TTL, these features are available:
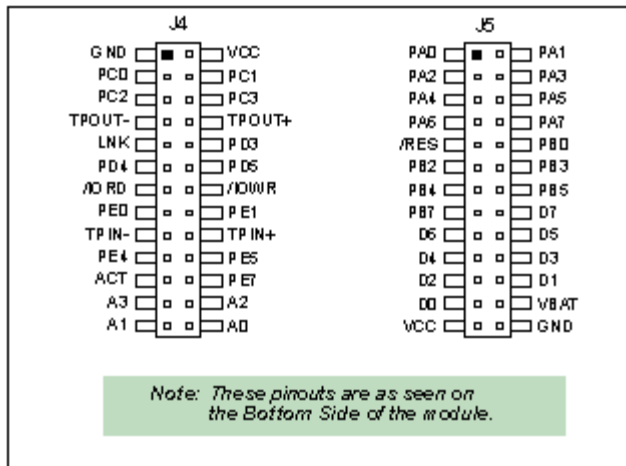
- Login/Logout

- Outlet Control
- View Log
- Change Network Settings
- Cross Connect (to other ports)

Press "?" or **HELP** after login for a command list. After connecting via a modem, the administrator can "cross connect" to these two ports to communicate with the managed devices. To disconnect from a cross-connection, type the letters **DISC** –slowly- with at least 100ms between each keystroke. All ports operate at the same baud rate, which is specified on the web Settings page. The modem port can be set to any of the three ports. Approximately 30 seconds after power-up, a modem initialization string is automatically sent. A string such as ATDT 1,555-1212 or AT S0=5 can be used to initialize or dial your modem. This feature can also be used in conjunction with a voicemodem or pager as an alert in the event of a power interruption.

When accessing via a serial port, make sure you have the correct baud rate. Select no handshaking, N,8,1 format. Log in using the admin or user password. You may log in only to the port selected as "modem port" in the setup menu. The other two ports operate as loop-through ports when selecting the cross connect option.

RCM 2200 Pinouts / TTL Serial Ports

TTL serial ports and other ports are available by direct solder connection to P4 and P5. For information on these ports, download the RCM2200 module manual from www.digital-loggers.com/rcm.pdf

```
        J4                           J5
GND  ■ □  VCC          PA0  ■ □  PA1
PC0  □ □  PC1          PA2  □ □  PA3
PC2  □ □  PC3          PA4  □ □  PA5
TPOUT- □ □  TPOUT+     PA6  □ □  PA7
LNK  □ □  PD3          /RES □ □  PB0
PD4  □ □  PD5          PB2  □ □  PB3
/IORD □ □  /IOWR       PB4  □ □  PB5
PE0  □ □  PE1          PB7  □ □  D7
TPIN- □ □  TPIN+       D6   □ □  D5
PE4  □ □  PE5          D4   □ □  D3
ACT  □ □  PE7          D2   □ □  D1
A3   □ □  A2           D0   □ □  VBAT
A1   □ □  A0           VCC  □ □  GND
```

Note: These pinouts are as seen on
the Bottom Side of the module.

Technical Support

To save time and effort, please read this manual completely before calling for tech support. You may FAX questions to (408) 541-8459 or email: support@digital-loggers.com   For phone support, dial (408) 330-5599 and please have the following ready so we can better serve you:

- A copy of your invoice and customer number.
- The firmware version level installed in the system. This information can be found on the home page.
- A description of the Ethernet device connected to your unit, for example, a 10/100 switching hub with a port set to 10Mbps.

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. This device is intended to be used with an external circuit breaker and cutoff switch to provide additional protection. 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. 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. Replacement of the consumable lithium battery inside this unit is not covered under warranty. This battery will be replaced with a new extended life battery at a flat rate of $49 plus shipping. 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. 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.

DIGITAL LOGGERS, INC.
2695 Walsh Ave.
Santa Clara, CA 95051
FAX (408) 541-8459
www.digital-loggers.com
SUPPORT@DIGITAL-LOGGERS.COM