Ethernet Controlled
Reboot Relay

RELAY, ETHERNET CONTROLLED

MFR	DLI CAGE 1GT4T5
P/N	RR-3
PWR	11-30VDC 4W
CONTACTS	5A @ 28VDC

USER'S GUIDE

DIGITAL LOGGERS, INC.

Standard Features

The RR-3 reboot relay offers these features:

Web Interface, Scripting and LCD
The internal web server is accessible from any standard web browser. Just enter an IP to configure and control via the web,   The relay can also be cotrolled via scripts, and an LCD provides status.

8 SPDT Relay Outputs
Eight sets of single-pole double-throw contacts are provided via a D25 connector are rated at 5A.

DC Power Input
The input is designed for 12,24, or 28VDC operation with negative ground. Input is protected against reverse polarity and over-voltage.

Security: Password, HTTP Port and Subnet Restriction

Password security and a changeable HTTP port help control access. Subnet restriction limits control to your LAN. Multiple users are supported with individual relay masking.

Sequenced "On Timer"
A programmable delay timer allows relays to be switched on in sequence, rather than simultaneously. Many loads draw more power when they are initially switched on. Sequencing prevents circuit overloads when loads devices are attached to a single circuit.

Scripting, AutoPing, and FLASH Firmware Upgrades
A BASIC style scripting language provides simple PLC function-ality. AutoPing monitors and reboots routers, servers and IP gear automatically. FLASH firmware is locked to prevent undervoltage corruption, The PLCC FLASH IC may be replaced as new features become available.

Important Factory Defaults

DEFAULT IP ADDRESS AND LOGIN
The factory default IP address is 192.168.0.100
User name: admin (lower case)
Password: 1234

RESET PROCEDURE

To reset the IP address and login to defaults:

• Remove the cover. Apply power.

• Gently depress the reset switch on the side of the control PCB.

• The LCD displays "Reset to Defaults". Wait 30 seconds. You may need to restart your router or when the IP changes.

Note: A hardware reset affects the admin login credentials and IP address, but it won't change relay names, links, or scripts.

Quick Setup

Use these shortcuts for a quick installation:

1. Connect Ethernet and power inputs using a DB-9.

2. Apply power to the relay. The LCD will illuminate.

3. Enter 192.168.0.100 in your web browser address bar. If the login page doesn't appear, follow the IP Setup instructions.

4. Login using the default user name, **admin** (lower case). Enter the default password, **1234**

Important➤ Set the recovery mode for safety after apower failure. The recovery mode controls default relay settings after power is restored.

7. Change the password to improve security.

Tip: An ohmmeter is handy for testing the relay before attaching equipment.

IP Setup

If your network settings won't access the default IP, use a direct cable connection (temporarily bypass any switch or router) and follow these steps to add a compatible 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 or use a combination of DHCP and static IPs.

Windows Step 1

In Windows, the first step to changing IPs is locating the network adapter TCP/IP properties. The procedure differs for each version of Windows:

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 Newtork 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 bottom right 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 Step 2

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

Select **Internet Protocall TCP/IP V4 Properties** and click **Properties**. Enter a compatible static IP. Click **Apply** and close windows. Ping the relay to confirm. Point your browser to 192.168.0.100 Log in.

Max OS X IP Setup

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 an IP address such as 192.168.0.50
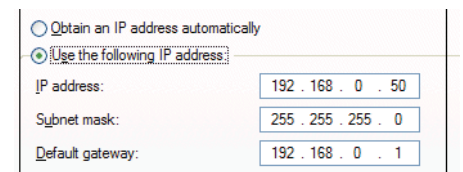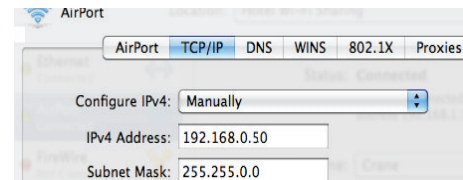
Basic Operation

After initial power-up, the relay performs a sequence of self-tests to ensure reliability. After self-test, an internal web browser starts at the fixed (static) IP address set on the setup page. If enabled, script execution starts on line 1.

The relay may then be operated via the web. To access the relay, simply enter the IP address (ie. 192.168.0.100) in the URL field of your web browser.

Home Relay (Relay) Control Page

To access the home page, first enter the IP address in web browser URL field, then log in. The home page contains links to other pages. The first four are static internal links:

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

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

Help
The Help link displays the latest online manual. Since features are subject to change without notice, online manuals are usually more current than printed manuals.

Logout
Logout ends the authenticated web session. Login to reconnect.

Programmable Web Links
Four additional user-defined web links are provided on the relay control page. Factory defaults are "Manual", "FAQs", etc. You may change the name and destination URL for these links on the "Setup" page. These links are convenient for connecting to other power switches or to remote sites.

Switching Relays on and Off
The relay control page lets you control any relay. The sequence delay in which relays will be switched on is determined by settings on the setup page.

To switch a relay on or off, simply click to the right of the relay name or number. Switching is immediate. You may also "Cycle" an attached device.. This is useful for rebooting devices which may interrupt the network link to the relay. Clicking "Cycle" switches power off, waits a few seconds (as specified by the sequence delay), and then switches power back on. You may also "cycle" all relays via the "Cycle all relays" button.

Most browsers have an internal setting for maximum refresh rate. Depending on your web browser settings, you may need to click the "refresh" button to update the on-screen status display after changes.

Setup Page

These settings configure the relay. Only admin has access.

Switch and Relay Names
Use the switch name field to assign a Switch Name to the power relay itself. Examples are "Machine Tool Controls" or "Lighting Relay". The Switch Name field appears on the top of the home page. Assign an identifying name to each load, such as "Sump Pump" or "Email Server".

Power-On Sequence Delay
When a time value is entered in the "All ON sequence delay" field, the power relay will pause for a period of time before energizing each relay on in sequence. This delay can prevent the power surges and blown circuit breakers which can occur when multiple loads are switched on simultaneously. A delay of 60-120 seconds is typical.

You may also enter a screen refresh delay. If "Enable screen refresh" is checked, and a delay value is entered, your browser should periodically update the status screen. The maximum update rate is limited by browser settings.

Power Loss Recovery Modes

The power loss recovery mode setting has three setting options which take effect after every power failure:

1. You can turn all relays off (all relays stay 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 this option for ALL ON.

A script starting at line 1 will override these settings.

User Defined Links

You may link to other power relays, 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 Switch" in the description field with a URL of "192.168.0.102" These links appear in a left column.

Confirm Option Checkbox

Checking "Confirm" causes the web server to issue a confirmation dialog box before accepting any on/off change.

Adding Users

Only the admin may add users and passwords. Each user may control certain relays using the masking matrix. It is possible (but not recommended) to add a user without a password. This will allow unauthenticated access to selected relays. Only non-admin user web pages are scaled for mobile devices.

Network Settings

A fixed IP address, network mask, gateway, and subnet mask must be entered in this field. To lock these settings, click the "protect" button. This prevents change until the hardware reset button is pressed.

When changing IP addresses, 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.

Internal Scripting Language

The scripting language can be used to customize operation. It uses BASIC-like commands. Learn more and find sample scripts at: Digital-Loggers.com/Scripting.html

Auto Ping Automatic Reboot

The internal AutoPing™ feature is a handy system for rebooting IP equipment without human intervention. AutoPing works by cycling power when a device becomes unresponsive to IP pings. To learn more about AutoPing and how to use it, visit: Digital-Loggers.com/AutoPing.html

Security

Your relay employs secure challenge-response authentication, with a new encryption token for each transaction. This gives it fairly good out-of-the box security. Making it more secure takes just a moment:

Changing the Password

It's a good idea to change your password. You will be prompted to change it from the default. Use the Setup page to change it. Write it down in a safe place.

Restricting Subnet Access
To restrict access to only the 255 IP addresses on your LAN, or "Class C", enable the subnet restriction on the setup page.

Changing the HTTP Port
Changing the HTTP port to a non-standard value makes it very difficult for a hacker, even one with your password, to find the relay. The default port is 80. For example, if you change the port to 5372, use http://192.168.0.100:5372 to access the relay.

Installing Inside a Firewall
Install your relay inside a firewall (using port forwarding), rather than directly on the internet for an additional layer of security

Power Input and Consumption

Your relay can be powered from an external DC supply as low as 11.5VDC and as high as 28V. An internal fuse will trip if voltages above 32VDC are applied. Connect the positive side of the supply to pins 4 & 5 and the negative to pins 8 and 3.The relay contacts are fully isolated (1KV hipot tested) from the power supply. A maximum power consumption of about 3.5W occurs when all relays are energized.

Contact Ratings and Protection

The internal PB Relays are rated at 277VAC, but derated to 50VDC due to the DB-25 limitations. Relays are rated at 1 million mechanical, 250,000 electrical operations at 50% load and 800,000 operations at 10% load. The relays are sealed.

For maximum flexibility, relay contacts are unprotected. For high current inductive switching, consider adding an external snubber circuit to extend contact life. Download contact protection information from: DINRelay.com/RelayCare.pdf

Connector Pinouts

D9 Pin	Function	Note
5	DC input	11-30V
9	Ground	
4	DC input	11-30V
8	Ground	
3	Ground	
7	RX-	RJ45 pin 6
2	RX+	RJ45 pin 3
6	TX-	RJ45 pin 2
1	TX+	RJ45 pin 1

D25 Pin	Function
13	NO1
25	Com1
12	NC1
24	NO2
11	Com2
23	NC2
10	NO3
22	Com3
9	NC3
21	NO4
8	Com4
20	NC4
7	NO5
19	Com5
6	NC5
18	NO6
5	Com6
17	NC6
4	NO7
16	Com7
3	NC7
15	NO8
2	Com8
14	NC8
1	not used

Digital-Loggers.com

DIGITAL LOGGERS, INC.