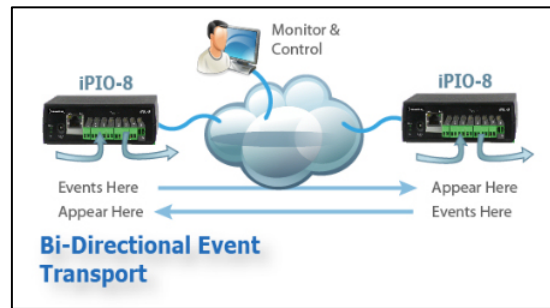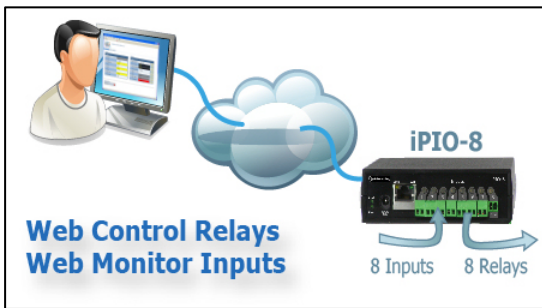# LOLM366912

The iPIO-8 is a network attached, IP addressed digital input and output device. The iPIO-8 can be controlled and monitored with a standard web browser. Multiple iPIO-8 devices can communicate amongst themselves to transport I/O information across the network. Each iPIO-8 has eight controllable form C relays, and eight digital inputs.

Web Control Relays
Web Monitor Inputs

iPIO-8

8 Inputs   8 Relays

Monitor & Control

iPIO-8   iPIO-8

Events Here   Appear Here
Appear Here   Events Here

Bi-Directional Event Transport

Monitor & Control

iPIO-8

8 Relays

Multi-Site Event Consolidation

Monitor & Control

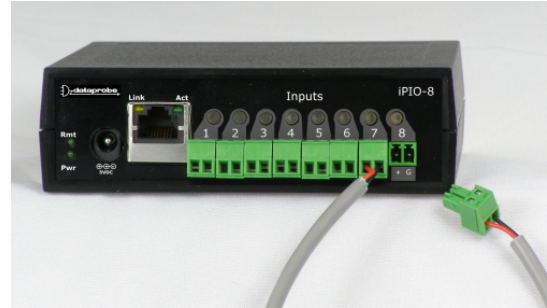iPIO-8

8 Inputs

Multi-Site Event Distribution

Each channel of the iPIO-8 is independently configurable, allowing selection of what IP addresses to deliver to and on what channel. Highly flexible telemetry systems can be developed with these simple devices.

Hardware Installation

Inputs

Connect the inputs to the iPIO-8 using the screw terminals. Inputs can be either dry relay or switch contacts, or a +VDC voltage (3 to 30 V), referenced to a common ground.

Screw terminals are removable for easy installation. Terminals for each circuit are marked + and G. When connecting dry relay contacts, the polarity is not significant.

> ⚠ **The iPIO-8 is Factory set for Dry Contact Input Only.**
> Prior to Connecting +VDC, Resistor Pack PU2 must be removed.
> Contact Technical Support for Details

When connecting +VDC, connect the positive voltage to the terminal marked + and the negative or ground to the terminal marked G.
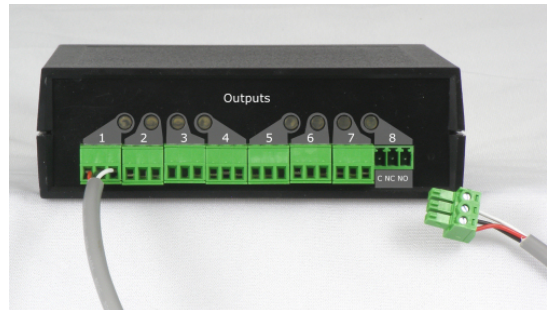
Status	Dry Relay	DC Voltage
Open	Open	>3VDC
Closed	Closed	<=0VDC

Input Specification   Dry Contact (common ground) or Wet ±30VDC Max

Relays

Connect to the iPIO-8 relays using the screw terminals, as illustrated. Relays are Form C. Connect to the Common (C), Normally Closed (NC) and Normally Open (NO) as marked. When the iPIO-8 relay is in the Open Condition, the Common is connected to the Normally Open. In the Closed state, the Common and Normally Closed are connected.

Relay Specifications

Rating (resistive)	0.5 A 120 VAC or 1 A 24 VDC
Maximum Carrying Current	2 A
Maximum Switching Power	60 AV, 24 W
Maximum Switching Voltage	120 VAC/60 VDC
Maximum Switching Current	1A
Life Expectancy	5 Million Operations Mechanical. 100K Operations at rated load

Power supply

The iPIO is provided with a wall mounted power supply, item 1930075. This power supply is provided with four plug styles to accommodate most locations. The plug for North America is pre installed. To remove the plug, slide the tab located under the plug and lift the plug out. For another location, attach the appropriate plug to the power supply body. Insert the top of the plug in first, then slide the tab and insert the bottom of the plug. If a suitable plug style is not provided, use an adaptor power cord (not provided) appropriate for your location.

Power Supply 1930075 Supplied

Connect the power supply to the +5VDC connection on the iPIO.
An LED next to the connector indicates power on. The iPIO-8 requires a 1 minute boot-up process.

Power Supply 1930075
Input   100-240 VAC 50-60Hz
Output 5 VDC 2.6A

Network

Connect the network to the iPIO-8 with the Cat 5 cable, provided, or suitable replacement. The Network connector on the iPIO-8 has two LED indicators. The orange LINK LED indicates a successful connection to the network. The Green ACT LED blinks to display network activity.

LED Indicators

Pwr   Power On indication

Rmt   Remote Communication Status indication

      LED OFF   No Remote Units Programmed
      LED ON   All Remotes Communicating Normally
      LED Flash   One or More Remotes with Communication Error

Input   The iPIO-8 has eight LED indicators, displaying the status of the Inputs.

      LED OFF   Input Open
      LED ON   Input Closed

      During power up sequence, LEDs will be off until boot complete, then flash once, then set to their current status.

Output The iPIO-8 has eight LED indictors, displaying the status of the Relay Outputs.

      LED OFF   Relay Open
      LED ON   Relay Closed

      During power up sequence, LEDs will be off until boot complete, then flash once, then set to their current status.

Link   Network Connected

Act   Network Activity. During power up sequence, Act LED will be solid on until boot process is complete. After boot, LED blinking indicates network activity

WEB Page Access

The web pages provide status information on the inputs and outputs of the iPIO-8, as well as provide configuration for the unit. Open a browser to the default or current IP address of the unit. Enter the default username and password:

Factory Defaults:

IP Address   192.168.0.254
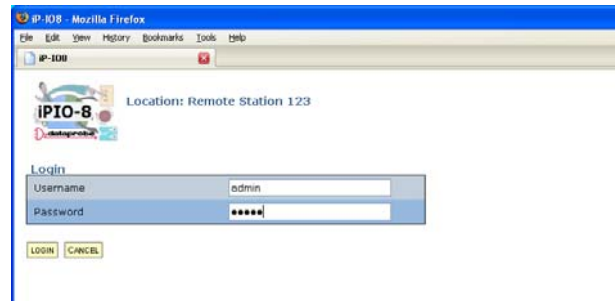
User Credentials

iPIO-8 Login Page

User Type	Default Username / Password	Access
Administrator	admin / admin	View, Control and setup
General User	user / user	View and Control

Status and Control

The Status and Control web page provides real time status of the inputs, outputs and remote iPIO-8 unit connections.

The top of the page indicates the location reference, which is user settable.

Each input, output and remote device is defined by a user selectable name. Inputs and outputs can also be assigned names for Open and Closed statuses, as well as background and text colors for each. All configurations are accomplished via the setup tab at the top of the screen.
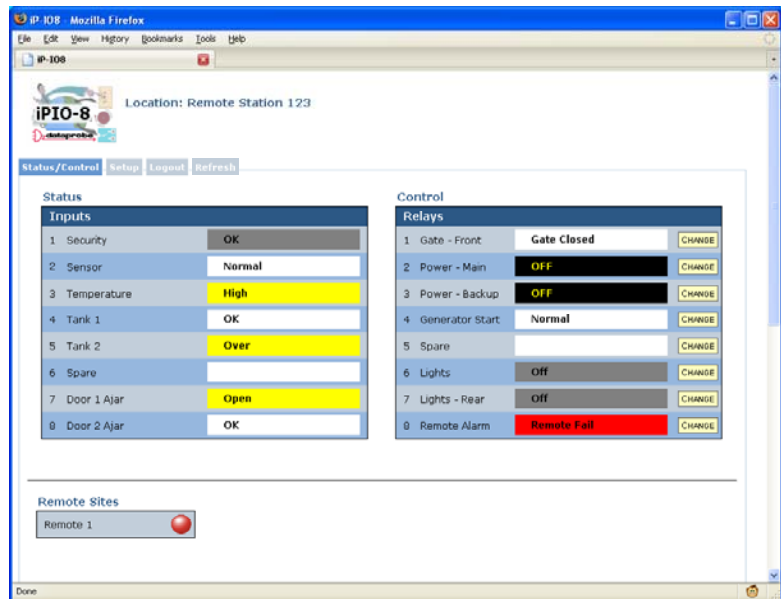
If the iPIO-8 is programmed to communicate with additional units, each remote unit will be displayed at the bottom of the page. Each remote site displays red or green, indicating connection status.

iPIO-8 Status and Control

Operation

To operate any of the relays, click on the **Change** button associated with that relay.
To view the latest status, click on the **Refresh** tab.
To access the configuration click the **Setup** tab (Administrator Only).
To logout, click the **Logout** tab.

Configuration

Access to the setup tab requires administrator rights.

The setup section is divided into five tabs, Device, Input, Output, Network and Remote. Click on any tab to access that section.

Note: Click on Save at the bottom of each screen before moving to another section. Wait for the page to reload prior to moving to another section.

Device Setup

Device setup allows definition of the Location ID, displayed on the top header of each page, plus the Login Names and Passwords for the User and Administrator roles.

There are two roles that can be defined. The user has access only to the status and control page. The Administrator also has access to the setup pages.
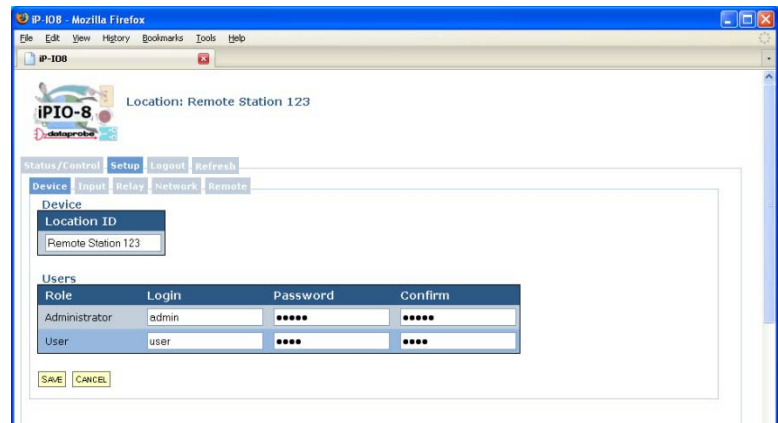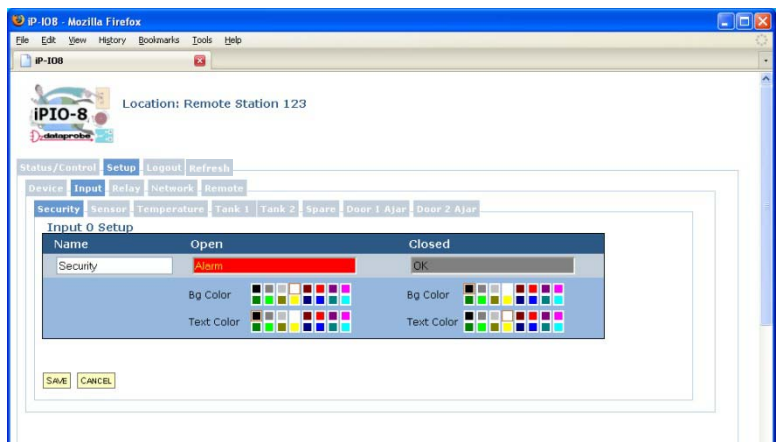
Input Setup

Each of the eight inputs is represented by a tab with its name. Click on the tab to access the setup parameters for each input.

Each input has a user definable name (20 characters max.).

Both the Open and Closed conditions have a user definable Name (20 characters max.) as well as user definable colors for the background and text. To select the colors, click on the color boxes below the Open and Closed names. Click Save when done, before moving to the next tab.

Relay Setup

Each of the eight relays is represented by a tab with its name. Click on the tab to access the setup parameters for each relay

Each relay has a user definable name (20 characters max.)

Both the Open and Closed conditions have a user definable Name as well as user definable colors for the background and text. To select the colors, click on the color boxes below the Open and Closed names.   Click Save when done, before moving to the next tab.
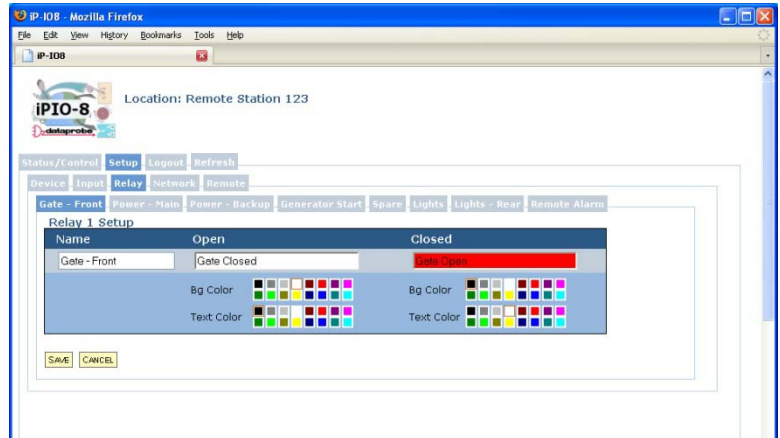
Network Setup

The iPIO-8 provides two methods for setting the IP Address
1) Static
2) DHCP

Select Static Mode from the drop down list and fill in the IP Address, Subnet Mask and Gateway as provided by your network administrator. Click save to save the changes. You will then be prompted to reboot the iPIO-8. Click on the Reboot button. The iPIO-8 will reboot and the new IP address will be ready to be accessed.

Selecting DHCP from the IP Setup page allows a DHCP server to provide IP address, Subnet Mask and Gateway information to the iPIO-8.   Click Save and then Reboot when prompted. The iPIO-8 will reboot.   After reboot, access the iPIO-8 with the IP address assigned by the DHCP server. Check your DHCP server to identify the IP address assigned to the iPIO-8. If no IP address is assigned by a DHCP server, the original IP address will be retained.
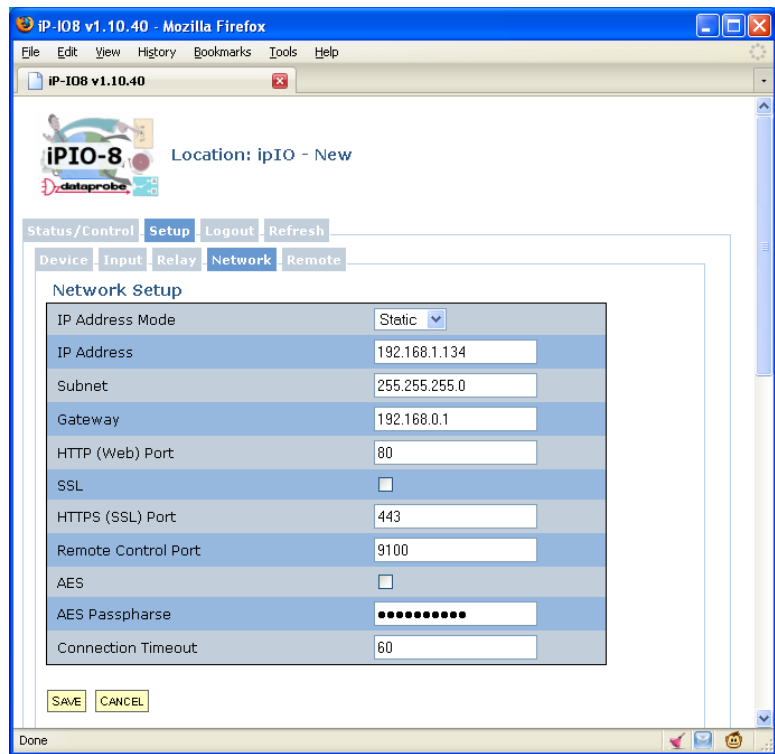
Secure Sockets Layer (SSL) To restrict web access to secure, encrypted pages, select SSL. Click Save and then Reboot when prompted. With SSL enabled, access the iPIO-8 using https://

> ⚠ To remove SSL, a hardware reset is required. After deselecting SSL, press the recessed Reset pushbutton on the front panel, to the right of Input 8.

Port Settings   The IP Setup page also allows for changing of the port assignment for both HTTP, HTTPS and inter-iPIO protocols.   Dataprobe recommends changing the Web port for units that will be connected to the Internet. This will minimize the number of hacker attacks that the iPIO-8 will be subject to. If a port other than the default Port 80 (or port 443 for SSL) is used for web browser access, that port must specifically be used in the URL when accessing the iPIO-8. For example, if the Web Port is changed to 9090 then the URL for the unit would be http://192.168.0.254:9090 or https://192.168.0.254:9090 for SSL.

> Default Port Assignments
> > Web: 80
> > SSL: 443
> > iPIO: 9100

AES Encryption Pairs of iPIOs can use 128 bit AES encryption to secure status and control messages. To use AES, enter a AES Passphrase (up to 16 characters) and enable AES with the checkbox. Any additional iPIO-8 that connects to this device will need to use the same Passphrase as set here. See Remote Setup for entering the Passphrase of a remote iPIO-8.

Remote Setup

Add remote iPIO-8 units to allow communication between iPIO-8 units and remote transport of contact inputs across the network. Up to 32 remote units can be programmed.

Adding a remote unit allows the local inputs of the iPIO-8 to control the relays of the remote iPIO-8. To achieve bi-directional control between two iPIO-8 units, each must be programmed with the other as a remote.

To add a remote, click on the Add Remote tab.

Remote Name Enter the name (20 characters max.) to identify the remote unit.

Remote Network Enter the IP Address and Port (if changed from default 9100 when setting up the remote).

AES Encryption can be used to secure communications with the remote. Enter the Passphrase that matches the remote devices, and check the AES checkbox
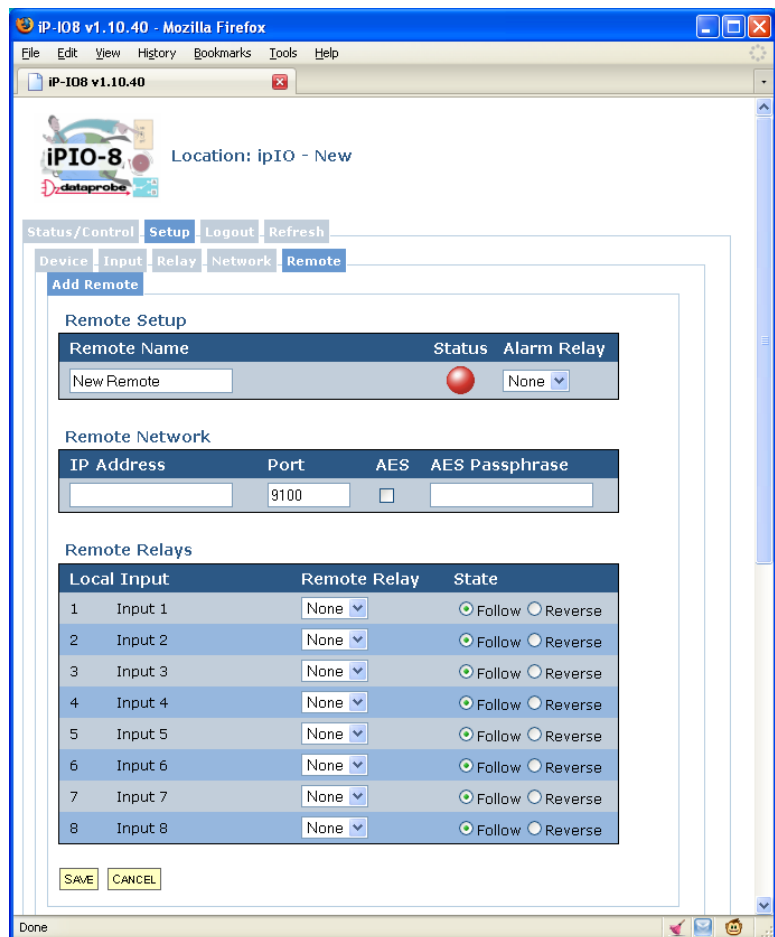
Remote Relays One relay on the local iPIO-8 can be used as an alarm for link failure. When used, the Alarm relay will be energized (Common to Normally Closed connected) when the link is OK and de-energized (Common to Normally Open) when an alarm occurs.   Each remote can use a different alarm relay, or multiple remote units can share the same relay and the alarm will occur if any remote link fails.

Each local input on the iPIO-8 can be used to activate one relay on remote iPIO-8 units. Program the Remote Relay section by selecting which remote relay will be controlled by each input. Select the relay number on the remote unit that will be controlled and Follow or Reverse to select relay position relative to the input.

State Setting	Local Input Open	Local Input Closed
Follow	Remote Relay Open	Remote Relay Closed
Reverse	Remote Relay Closed	Remote Relay Open

Multiple inputs on the local iPIO-8 can control the same relay on the remote unit. In this case, the remote relay will switch based on the most recent input state change. It is also possible to have the inputs of the local iPIO-8 control its own relays, by setting up a remote iPIO-8 with the local IP address.

Click Save and the color Link Status will change from red to green to indicate successful communications between iPIO-8 devices.

The Sync button allows information on all local inputs to be transmitted to the remote iPIO-8. When the remote iPIO-8 is set up, use this button to coordinate the local inputs with the remote relays.

iPIO-8 units continually communicate to coordinate inputs and outputs. If one or more remotes are programmed, the RMT LED on the front of the iPIO-8 will be solid on. If any remotes fail to communicate, the LED will flash, and the alarm relay (if programmed) will Open. Click refresh, or refresh your browser window to view the latest remote status.

Using remote setup for your application

Application 1. Bidirectional Relay Transport
In this application, two iPIO-8 units share input status over the network. The relays of each unit reflect the input status of the other.

- Set each iPIO-8 as a remote of the other.
- Set each remote relay to match the input of the local.
- Set an alarm relay to provide link supervision (alarm relay notification if communications fails).
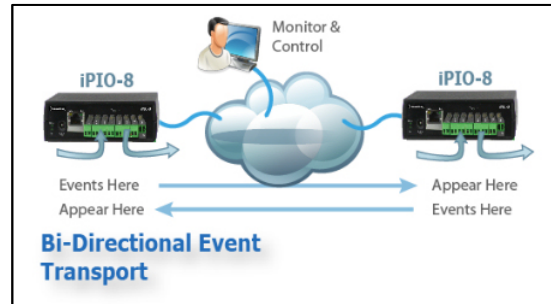
Application 2. Multi-Site Event Consolidation
In this application, many reporting sites communicate to one central site. Any input change from any of the remote sites is reflected in the output at the central site.

- Set each reporting unit with the IP address of the central site as a remote.
- Set each input of the reporting unit to the same relay on the central unit.
- To get consolidated link supervision, add all the reporting sites as remotes in the central unit, and set an alarm relay.

Application 3 Multi-Site Event Distribution
In this application, one central sites broadcasts status information to multiple remote sites.

- Set all remote sites as remotes in the central unit.
- To get link supervision at the remote sites, add the central unit as a remote, and set an alarm relay in each location.
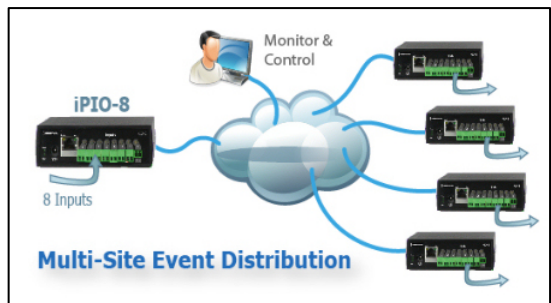
The flexibility of the iPIO-8 allows many other combinations of control and reporting.   Contact Dataprobe Technical Support for assistance in getting the most out of your iPIO-8.

Specifications

Physical	5.25"W x 5.5"D x 1.75"H (13.3 x 14.0 x 4.5 cm)	
Environmental	Temperature	0 - 70 Deg C Operating
	Humidity	90 Pct Non Condensing
Power	Wall Mounted Power Supply, included 105 - 240 VAC 50/60Hz or +5VDC direct.	
Connections	2 Terminals per Input. (common ground) Three Terminal per Relay Output (Form C)	
LED Indictors	8 x Input. 8 x Output. Network Link (Link) and Activity (Act). Remote Unit Link Status (Rmt). Power (Pwr)	
Switch	Reset. Hardware Reset	
Inputs	8 Digital Inputs Dry relay/switch closures or +/-3VDC to +/-30 VDC Grounds common	
Control Relay	Current Maximums	0.5A @ 120VAC or 1A @ 24VDC
	Switching Power	60VA Max 50uW Min
	Switching Voltage	120VAC or 60VDC Max 1VDC Min
	Switching Current	2A Max 1mA Min
	Resistance	100 milliohms (initial value)
	Operations	5 Million, mechanical. 100K at maximum load
Network	HTTP Web Server SSL Secure Sockets Layer DHCP Assigned or Static IP Address Inter Device Communications via TCP/IP Protocol supplied. 128 bit AES Encryption optional Selectable Port assignments for Web, SSL and Inter Device Communication.	