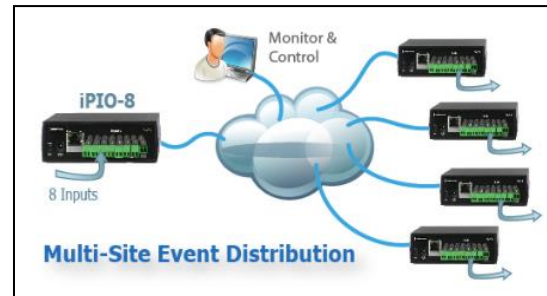
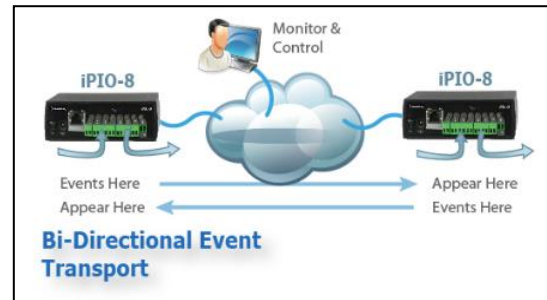
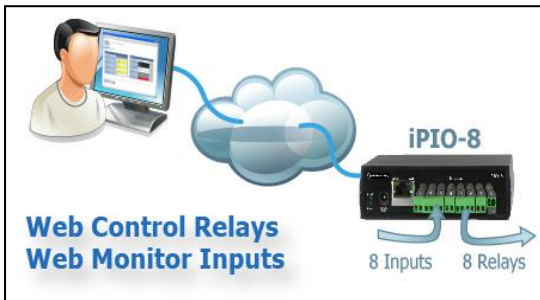


1. General Description

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

Each channel of the iPIO 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.



iPIO-816_v3_v240904w

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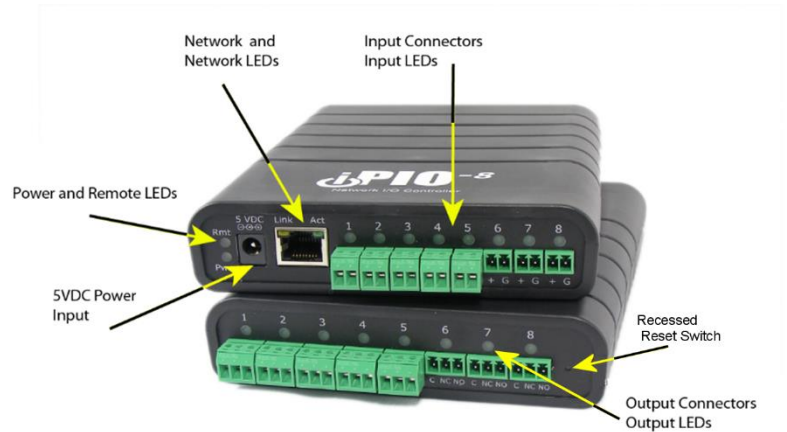
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3. Model Identification and Features

This manual covers both versions of the iPIO v3 product family. Each model has similar features and is functionally differentiated by the number of Inputs and Outputs each supports.

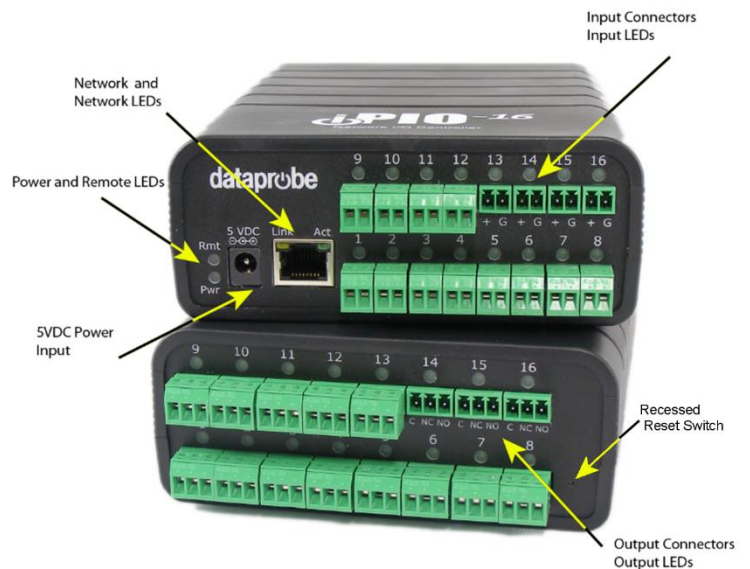
3.1. iPIO-8

Inputs	8
Outputs	8
Power:	A/C Power Supply
Height	1.25"
Width	5.00"
Depth	7.32"



3.2. iPIO-16

Inputs	16
Outputs	16
Power:	A/C Power Supply
Height	2.02"
Width	5.00"
Depth	7.32"



3.3. Optional Accessories

Mounting Kit
1920034. See Section 4.8

High Current Relay Module
1340076. See Section 4.4

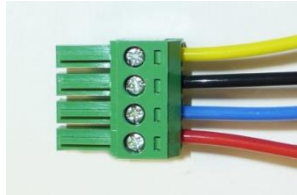
Replacement Power Supply
1930085

4. Hardware Installation

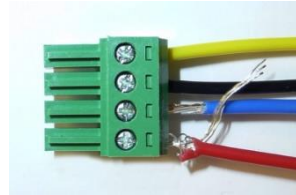
4.1. Inputs and Outputs

Connections to the iPIO Inputs and Outputs are made using screw terminal blocks. The screw terminal blocks are on removable connectors for easy cable fabrication.

Make sure screw terminals are tightened securely and that there are no loose strands of cable or excessive stripped wires.



Proper Screw Terminal Connections



Poor Screw Terminal Connections.

Note Loose Wires and Excessive Stripping

4.2. Inputs

Connect the inputs to the iPIO 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.

Connecting to +VDC Inputs

The iPIO is factory configured for dry contact closure inputs only. To configure for +VDC inputs, jumpers must be removed.



Disconnect power and all cables prior to input configuration.

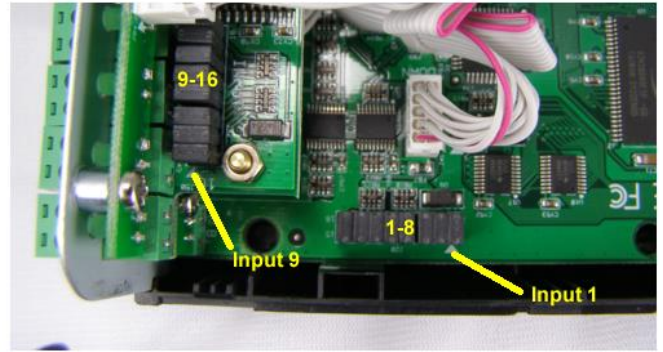
When connecting +VDC, connect the positive voltage to the terminal marked + and the negative or ground to the terminal marked G.

Status	DC Voltage
Open	>3VDC
Closed	<=0VDC

iPIO-8 and iPIO-16

Open the iPIO by removing the screws on the underside of the iPIO-8 and 16.

There are eight jumpers representing inputs 1-8 on the iPIO-8 and iPIO-16. Jumpers 9-16 on the iPIO-16 are located on the daughter board for the inputs. An arrow indicates jumper 1 and 9. See photo:



iPIO-16 Shown. 1-8 same for iPIO-8

4.3. Relays

Connect to the iPIO Form C relays using the screw terminals as illustrated. Connect to the Common (C), Normally Closed (NC) and Normally Open (NO) as marked. When the iPIO 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.

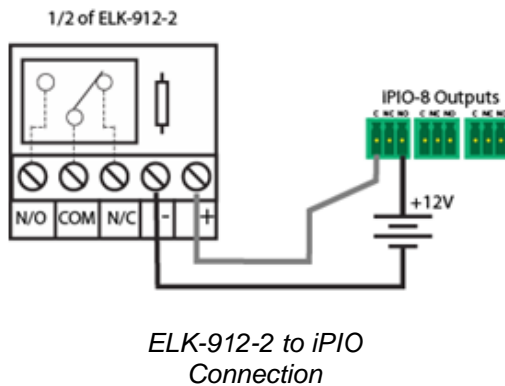
Relay Specifications

Relay Type	Form C
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

4.4. Switching Higher Current

The ELK-912-2 (Item # 1340076) is a two relay board to provide higher current switching for several of Dataprobe's remote control products. Each ELK-912-2 is two independent relays, each with screw terminal connections. The relay boards can be separated in to individual relays as required for mounting.

To use the ELK-912-2 with the iPIO, connect the relay board to the Output connections of the iPIO as shown below.



Specifications – ELK-912-2

Operating Voltage : 12 VDC Nominal
 Current Draw: 30 mA
 Minimum Pull-in Voltage: 9VDC
 Diode Protection Across Relay

Contact Rating:
 7 Amps @ 30 VDC
 10 Amps @ 125 VAC

Physical: 2.2" x 1.55" (56mm x 39mm)

4.5. Power

The iPIO-8 and iPIO-16 are provided with a power supply, item 1930085. The supply is rated for 100-240VAC 50/60 Hz. and is supplied with a line cord for North America. For locations outside of North America, use an appropriate power adaptor or replace the cord with a suitable cord for your location. Power Supply connection for the linecord is standard IEC C7.

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

Power Supply 1930085

Input	100-240 VAC 50-60Hz
Output	5 VDC 4A
Linecord	NEMA 1-15P to IEC C7 2 meters

iPIO-8

There is a custom version of the iPIO-8 v3 that can be powered with Power over Ethernet (PoE) instead of the power supply. Please contact support for details.

4.6. Network

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

4.7. LED Indicators

See [Section 3](#) for LED locations for each model.

Pwr Power On indication

Rmt Remote Communication Status indication

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

Input The iPIO has eight LED indicators, displaying the status of the Inputs. User settings define the On or Off State of the LED relative to the inputs. The Factory Default is:

OFF Input Open
ON Input Closed

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

Output The iPIO has eight LED indicators, displaying the status of the Relay Outputs. User settings define the On or Off State of the LED relative to the inputs. The Factory Default is:

OFF Relay Open (C connected to NC)
ON Relay Closed (C connected to NO)

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

Link Network Connected (Amber)

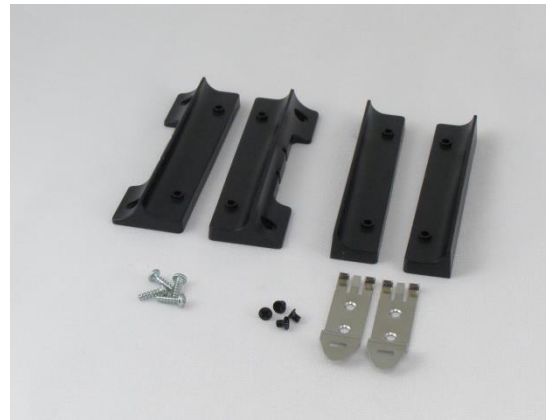
Act Network Activity. (Green) occasional blinking to indicate traffic.

During the power up sequence, Link LED will be on, and Act LED will blink until boot process is complete. After boot is complete, Both LEDs will go off, then restart normal activity.

4.8. Wall and DIN Mounting

A mounting kit for wall and DIN rail mounting is available.

Part # 1920034 Wall and DIN Mounting Kit



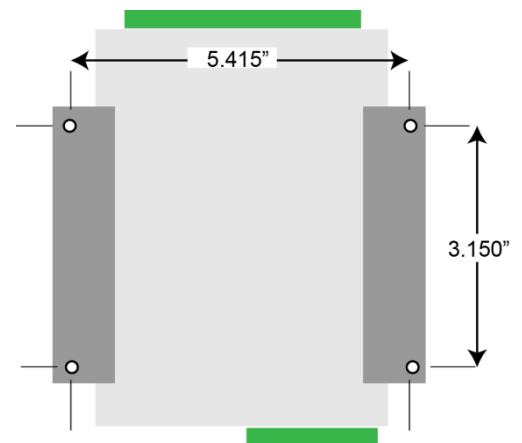
Remove all cables from the unit prior to installing or removing any mounting hardware.

Wall Mounting iPIO-8 and iPIO-16

Install the wall mounting ears to the unit using the four silver screws.



Mount to wall using appropriate hardware



DIN Rail Mounting iPIO-8 and iPIO-16

Install the Intermediate bracket onto the bottom of the unit using the 4 silver screws.



Install the DIN rail clips using the black screws as shown



Mount to DIN Rail



5. Communications Options

The iPIO units have a number of means of communication.

Factory Defaults:

IP Address 192.168.1.254

User Credentials

Two user types are supported Administrator and User. The chart below details the available functions of each type.

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

5.1. Web Browser

Point your browser to the IP address of the iPIO unit and enter the credentials as set. The web pages provide status information on the inputs and outputs of the iPIO, 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.

See [Sections 6-8](#) for complete web browser details

5.2. Telnet

The system supports the Telnet communications protocol for basic setup and limited control options.

Connect via Telnet client to the IP address of the iPIO. Enter the credentials as set.

```
Hello... connected to iPIO-X!  
Connected to Telnet Session 1
```

```
User> admin  
Password> *****
```

Telnet Factory Default

Port 23

See [Section 9](#) for Telnet and CLI details

5.3. SNMP

The iPIO is SNMP manageable. Up to four SNMP managers can be defined for the purpose of delivering status Inform messages.

SNMP Factory Defaults

Read Community: public
Read/Write Community: private

Download the MIB from the iPIO support pages at <https://dataprobe.com/support-ipio>

The iPIO is configurable for what events trigger SNMP Traps. See section [7.4 SNMP Setup](#)

- **Input.** SNMP Traps on any input change
- **Relay.** SNMP Traps on any relay change
- **Communication.** SNMP Traps on any change in communication status to the remotes.
- **Configuration.** SNMP Traps on any configuration change.

5.4. Email Notifications

The iPIO will send email for a number of events. Up to two email addresses can be specified to receive emails. The types of events that generate emails are also configurable. See section [7.3 Email Setup](#). The events that can generate emails are:

- **Input.** Email on any input change
- **Relay.** Email on any relay change
- **Communication.** Email on any change in communication status to the remotes.
- **Configuration.** Email on any configuration change.

Email Syntax for input change

```
From: <your from account>  
Date: Thu, Nov 16, 2023 at 5:14 PM  
Subject: Input Change  
To: <your to address>
```

```
<Location Name of iPIO>  
Input <input number> <input name> is <state name>
```

Example:

```
From: <mydataprobe@comcast.net>  
Date: Thu, Nov 16, 2023 at 5:14 PM  
Subject: Input Change  
To: testlab@dataprobe.com
```

```
Shop Floor - Houston  
Input 16 Back Door is Open
```

Other emails use similar syntax.

5.5. Dataprobe Exchange Protocol (DxP)

Dataprobe devices use the Dataprobe Exchange Protocol (DxP) to communicate.

The protocol for communication between iPIO units can be used by software developers to create custom applications for a wide variety of applications. Dataprobe makes the protocol freely available on its website, as well as sample code in a variety of formats.

Visit <https://dataprobe.com/support-ipio> for more information. Contact Dataprobe Application Engineering for additional assistance.

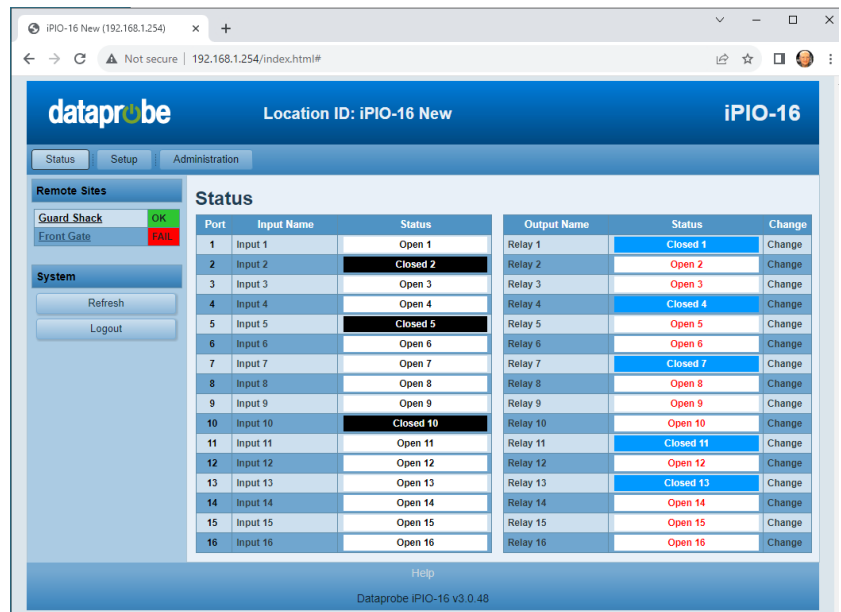
6. Web Browser Operation

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

The top of the page indicates the iPIO device the user is connected to. This location ID is 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.

When logging in with Administrator rights, the menu bar below the header will be displayed. This allows access to the Setup and Administration pages of the unit.



The screenshot shows the Dataprobe iPIO-16 web interface. The header displays "dataprobe" and "Location ID: iPIO-16 New". Below the header is a navigation bar with "Status", "Setup", and "Administration" tabs. The "Status" tab is active, showing a "Remote Sites" section with "Guard Shack" (OK) and "Front Gate" (Fail). The main "Status" section contains two tables: "Input" and "Output".

Port	Input Name	Status
1	Input 1	Open 1
2	Input 2	Closed 2
3	Input 3	Open 3
4	Input 4	Open 4
5	Input 5	Closed 5
6	Input 6	Open 6
7	Input 7	Open 7
8	Input 8	Open 8
9	Input 9	Open 9
10	Input 10	Closed 10
11	Input 11	Open 11
12	Input 12	Open 12
13	Input 13	Open 13
14	Input 14	Open 14
15	Input 15	Open 15
16	Input 16	Open 16

Output Name	Status	Change
Relay 1	Closed 1	Change
Relay 2	Open 2	Change
Relay 3	Open 3	Change
Relay 4	Closed 4	Change
Relay 5	Open 5	Change
Relay 6	Open 6	Change
Relay 7	Closed 7	Change
Relay 8	Open 8	Change
Relay 9	Open 9	Change
Relay 10	Open 10	Change
Relay 11	Closed 11	Change
Relay 12	Open 12	Change
Relay 13	Closed 13	Change
Relay 14	Open 14	Change
Relay 15	Open 15	Change
Relay 16	Open 16	Change

If the iPIO is programmed to communicate with remote units, each remote unit will be displayed in the left column. Each remote site displays its name and status OK or Fail in green or red. The name is a hotlink to the IP address of that remote device.

The status will automatically refresh approximately every 2 seconds.

6.1. 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** button.

To logout, click the **Logout** button.

6.2. Setup and Administration Menu Bar

The top menu bar is only visible and accessible to users with administrative rights. It allows access to the Setup and Administration pages of the unit. Read the following sections for details on setup and administration.

7. Web Browser Setup

Access to the Setup requires administrator rights.

iPIO setup is divided into seven sections, Device, Network, Email, SNMP, Inputs, Relays, and Remotes. Click on the buttons on the left 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.

7.1. Device Setup

Device setup allows definition of the Location ID, displayed on the top header of each page. The Auto Update feature defines if the status of this device will be automatically transmitted to the remote sites, and if so, how often.

Also set on this page are 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.

The screenshot shows the 'Device Setup' page for 'iPIO-16 New'. The page has a blue header with the 'dataprobe' logo and 'Location ID: iPIO-16 New'. Below the header is a navigation bar with 'Status', 'Setup', and 'Administration' tabs. The 'Setup' section is active, with a sidebar on the left containing buttons for 'Device', 'Network', 'E-mail', 'SNMP', 'Inputs', 'Relays', 'Remotes', 'System', 'Refresh', and 'Logout'. The main content area is titled 'Device' and contains the following fields:

- Location ID: iPIO-16 New
- Auto Update: 0 Minutes On Reconnect
- Users table:

Role	Login	Password	Confirm
Administrator	admin	****	****
User	user	****	****

At the bottom of the form are 'Save Settings' and 'Cancel' buttons. The footer of the page reads 'Dataprobe iPIO-16 v3.0.48'.

7.2. Network Setup

The iPIO provides two methods for setting the IP Address

- Static
- 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. Click on the Reboot Required button. The iPIO 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. Click

The screenshot shows the 'Network Setup' page for 'iPIO-16 New'. The page has a blue header with the 'dataprobe' logo and 'Location ID: iPIO-16 New'. Below the header is a navigation bar with 'Status', 'Setup', and 'Administration' tabs. The 'Setup' section is active, with a sidebar on the left containing buttons for 'Device', 'Network', 'E-mail', 'SNMP', 'Inputs', 'Relays', 'Remotes', 'System', 'Refresh', and 'Logout'. The main content area is titled 'Network Setup' and contains the following fields:

- MAC Address: 00:0D:AD:04:6E:80
- IP Address Mode: Static
- IP Address: 192.168.1.254
- Subnet: 255.255.255.0
- Gateway: 192.168.1.1
- HTTP (Web) Port: 80 (Default 80)
- SSL:
- HTTPS (SSL) Port: 443 (Default 443)
- Telnet:
- Telnet Port: 23 (Default 23)
- DxP Port: 9100 (Default 9100)
- AES:
- AES Passphrase: Passphrase
- DxP Uses Credentials:
- Connection Timeout: 2

At the bottom of the form are 'Save Settings' and 'Cancel' buttons. The footer of the page reads 'Dataprobe iPIO-16 v3.0.48'. A callout box on the right side of the page contains the text: 'The iPIO v3 series supports SSL. SSL use will cause web pages to render slowly. Use with caution when necessary.'

Save and then Reboot when prompted by the button in the left column. The iPIO will reboot. After reboot, access the iPIO with the IP address assigned by the DHCP server. Check your DHCP server to identify the IP address assigned to the iPIO. If no IP address is assigned by a DHCP server, the original IP address will be retained.

Port Settings

The Network Setup page also allows for changing of the port assignment for 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 will be subject to. If a port other than the default Port 80 is used for web browser access, the port must specifically be used in the URL when accessing the iPIO. For example, if the Web Port is changed to 9090 then the URL for the unit would be `http://192.168.1.254:9090`.

Default Port Assignments

- Web: 80
- Telnet: 23
- DxP: 9100

Telnet

The Telnet setup capabilities can be enabled or disabled with this checkbox

AES Encryption

Pairs of iPIOs can use 128 bit AES encryption to secure status and control messages. To use AES, enter an AES Passphrase (up to 20 characters) and enable AES with the checkbox. Any additional iPIO 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.

Use DxP Credentials

Older DxP supported devices do not use username and password pairs in the protocol. Uncheck this to provide backward compatibility if the remote site units do not support U/P pairs.

Connection Timeout

The Telnet and web login will automatically log off the user if no activity is detected for the period of time (in minutes) specified here. Set to 0 to allow unlimited timeouts, but be sure to log out manually as unlimited timeout will prevent new users from logging in if the session is not closed manually.

7.3. Email Setup - v3.0.48

The iPIO sends an email notification on a variety of events. Set the unsecure email server information on this page. **SSL is not supported at this time.**

SMTP Server.

Set the IP address of the email (SMTP) server that will send the email notifications.

Account Name

Set the user login name for the SMTP server.

Account Password

Set the password for the SMTP server account.

Return Address

Set the return address to be used in the email notifications.

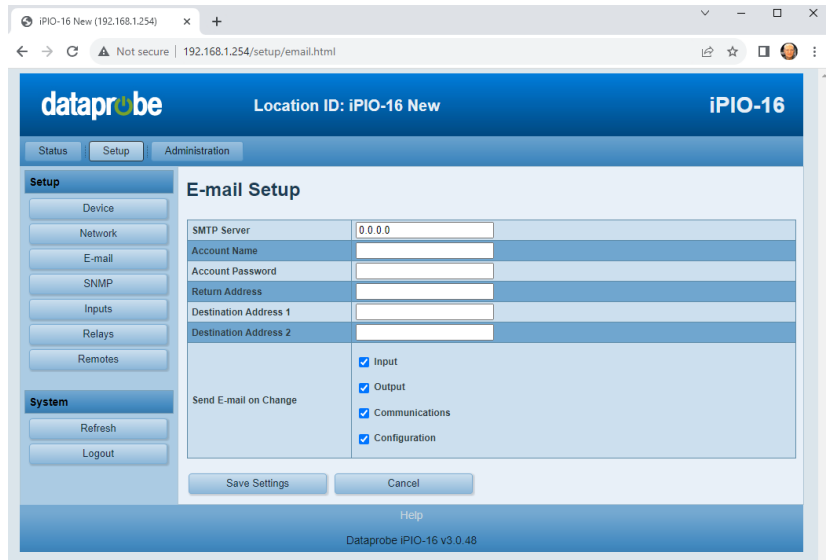
Destination 1 & 2

Set up to two email addresses to receive notifications.

Send Email on Change

Select which type of events will generate email notifications.

- Input. Email on any input change
- Relay. Email on any relay change
- Communication. Email on any change in communication status to the remotes.
- Configuration. Email on any configuration change.



7.4. Email Setup - v3.5.00

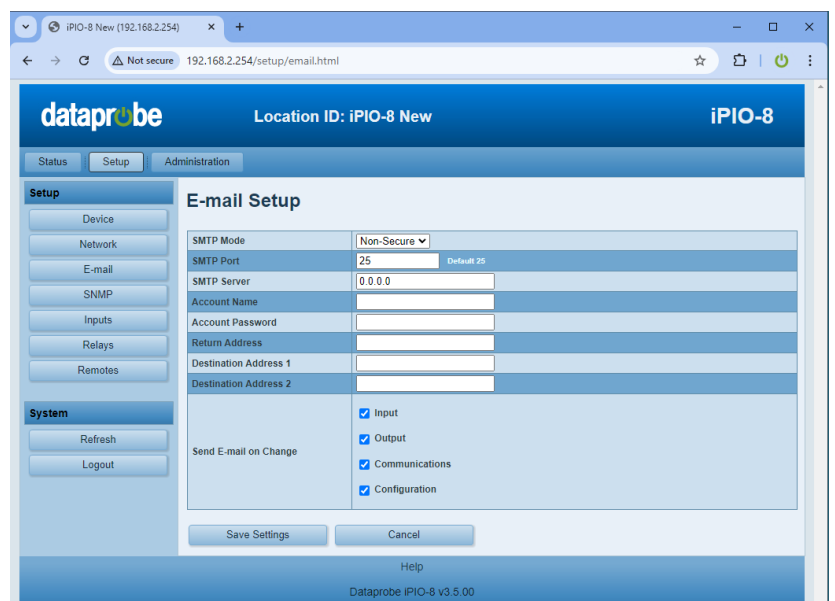
The iPIO sends an email notification on a variety of events. Set the email server information on this page.

SMTP Mode.

Set the SMTP Mode to one of the 3 available options: Non-Secure, TLS or STARTTLS. TLS and STARTTLS are both going to use encryption.

SMTP Port.

Set the SMTP port. Non-Secure is usually 25. TLS and STARTTLS are usually 587 or 465.



SMTP Server (non-secure).

Set the IP address of the email (SMTP) server that will send the email notifications.

SMTP Server Address (TLS or STARTTLS).

Set the SMTP server address that will send the email notifications.(IP or FQDN)

Account Name

Set the user login name for the SMTP server.

Account Password

Set the password for the SMTP server account.

Return Address

Set the return address to be used in the email notifications.

Destination 1 & 2

Set up to two email addresses to receive notifications.

Send Email on Change

Select which type of events will generate email notifications.

- Input. Email on any input change
- Relay. Email on any relay change
- Communication. Email on any change in communication status to the remotes.
- Configuration. Email on any configuration change.

7.5. SNMP Setup

iPIO is SNMPv2 manageable. Set the SNMP manager and trap information on this screen.

SNMP Managers 1-4

Set up to four SNMP managers IP addresses. Each manager defined here will receive traps.

Read & Write Community.

Set the SNMP Read Community and Write Community strings here.

Send Trap on Change

Set which events will generate SNMP Traps.

- Input. SNMP Traps on any input change
- Relay. SNMP Traps on any relay change
- Communication. SNMP Traps on any change in communication status to the remotes.
- Configuration. SNMP Traps on any configuration change.

To use the SNMP, download the iPIO MIB at <https://dataprobe.com/support-ipio>

The screenshot shows the 'SNMP Setup' configuration page in the iPIO-16 web interface. The page is titled 'SNMP Setup' and is part of the 'Setup' section. It features a table for configuring four SNMP managers, with fields for IP addresses and community strings. Below the table, there are checkboxes for 'Send Trap on Change' for Input, Output, Communications, and Configuration. The interface includes a 'Save Settings' button and a 'Cancel' button. The browser address bar shows the URL '192.168.1.254/setup/snmp.html'.

SNMP Manager	IP Address
SNMP Manager 1	0.0.0.0
SNMP Manager 2	0.0.0.0
SNMP Manager 3	0.0.0.0
SNMP Manager 4	0.0.0.0

Read Community: public
Write Community: private

Send Trap on Change:

- Input
- Output
- Communications
- Configuration

7.6. Input Setup

Select the input to be configured from the dropdown box.

Input Name

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

Qualifying Time

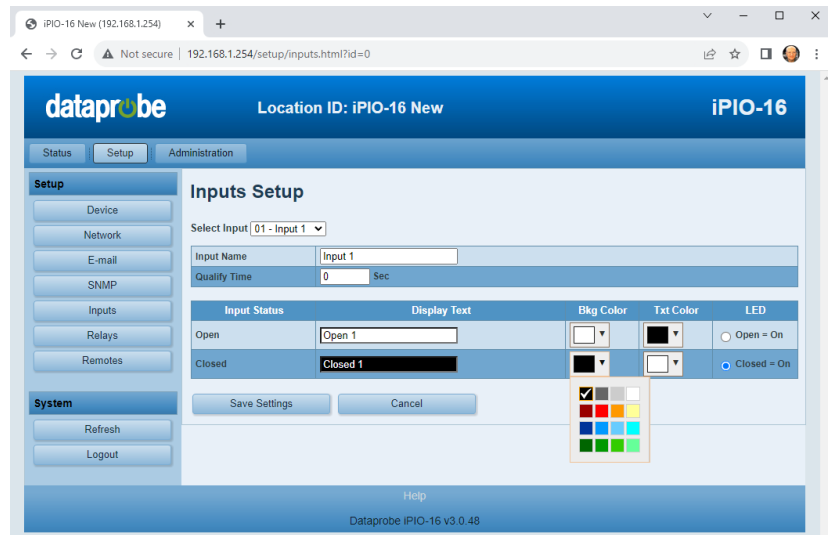
Set the time, in seconds (0-99) that the input must be continuously in any new state to have the iPIO recognize the change in state.

Open and Closed Names

Both the Open and Closed conditions have a user definable Name (20 characters max.)

Open and Closed Colors

The user may also select 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 input or setup section

LED Status

The user may select upon what state of the input the LED for that channel will be ON or Off. Select with the radio button.

7.7. Relay Setup

Select the relay to be configured from the dropdown box.

Relay Name

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

Open and Closed Names

Both the Open and Closed conditions have a user definable Name (20 characters max.)

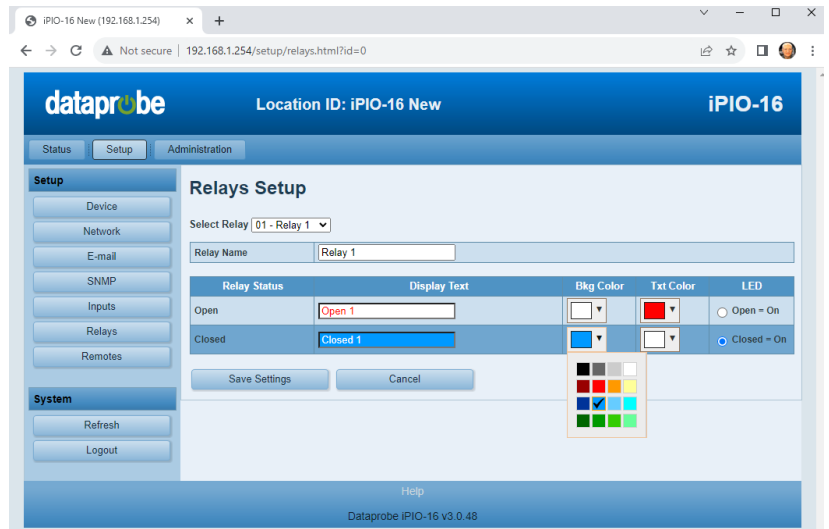
Open and Closed Colors

The user may also select 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 relay or setup section

LED Status

The user may select upon what state of the relay the LED for that channel will be ON or Off. Select with the radio button.

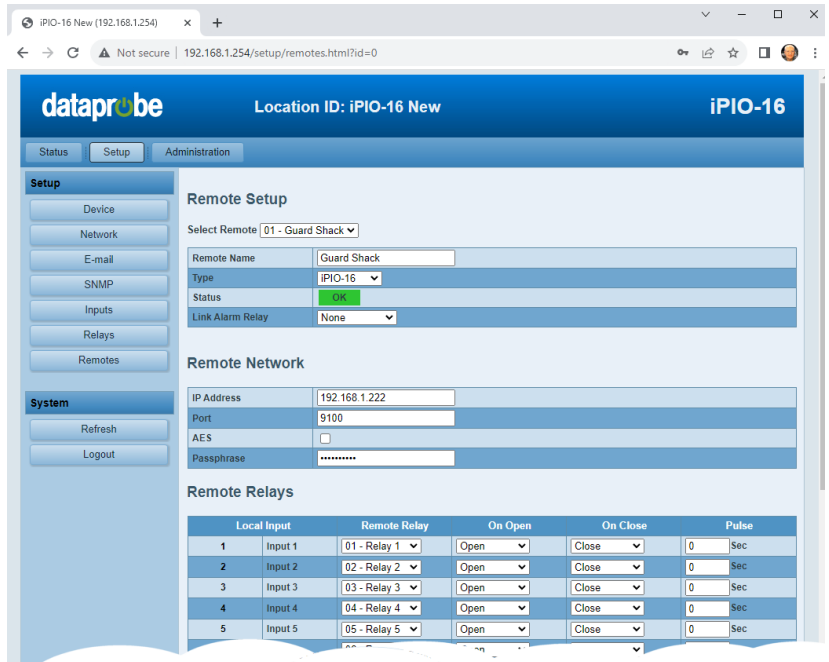


7.8. Remote Setup

To allow multiple Dataprobe products to communicate and control one another, each device must be setup to communicate with the devices that are remote to it.

Adding a remote will allow the inputs of this iPIO unit to control the outputs of another iPIO unit, or multiple units. Additional Dataprobe products, like iBoot-G2 series power controller can also be remotes that are controlled by this iPIO. To achieve bi-directional control between two iPIO units, each must be programmed with the other as a remote.

To add the first device, click on Add Device. This will generate the setup screen for the first remote. To add additional remotes, click on Add Device for each one. Up to 32 remote units can be programmed.



Remote Name

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

Remote Type

Select the model of the remote device. This setting will allow for the proper entry of variables depending on remote model.

Link Alarm Relay

One local relay can be designated to provide status of the link between this device and the remote. Different relays can be assigned to each remote, or one relay can serve as a general purpose alarm for all remotes. 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.

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 device, and check the AES checkbox

Remote Relays

Each local input on the iPIO can be used to activate one relay on each remote iPIO unit. Program the Remote Relays by selecting which remote relay will be controlled by each input. Select the relay channel number on the remote unit that will be controlled. Select None if the input does not affect any remote output.

The On Open and On Close setting allow the user to define the action that the remote relay will take when the input is open or closed. The choices are Open, Close or Pulse – Open and Pulse - Close. If Pulse – Open or Close is selected, the relay will momentarily take the state chosen (open or closed) for the duration specified in the Pulse column.

Multiple inputs on the local iPIO 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 control its own relays, by setting up a remote iPIO with the local IP address.

Click Save and the color Status box will change from red FAIL to green OK to indicate successful communications between iPIO devices.

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

iPIO units continually communicate to coordinate inputs and outputs. If one or more remotes are programmed, the RMT LED on the front of the iPIO 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.

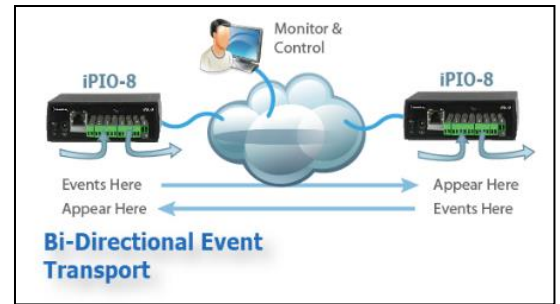
If the Auto Update feature is enabled on the Device Setup page, the iPIO will periodically transmit its status to the remote unit. If the On Reconnect feature is enabled, the iPIO will transmit its status whenever the connection to the remote is established or re-established.

7.9. Remote Setup Applications

Bidirectional Relay Transport

In this application, two iPIO units share input status over the network. The relays of each unit reflect the input status of the other.

- Set each iPIO 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).



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 site 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 allows many other combinations of control and reporting. Contact Dataprobe Technical Support for assistance in getting the most out of your iPIO.

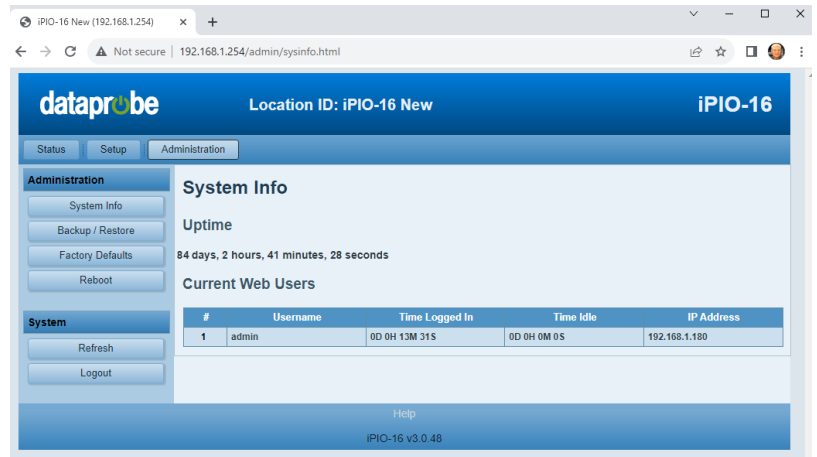
8. Web Browser Administration

The Administration section is available to users with Administrator Credentials only.

8.1. System Info

The System Information page provides the following information

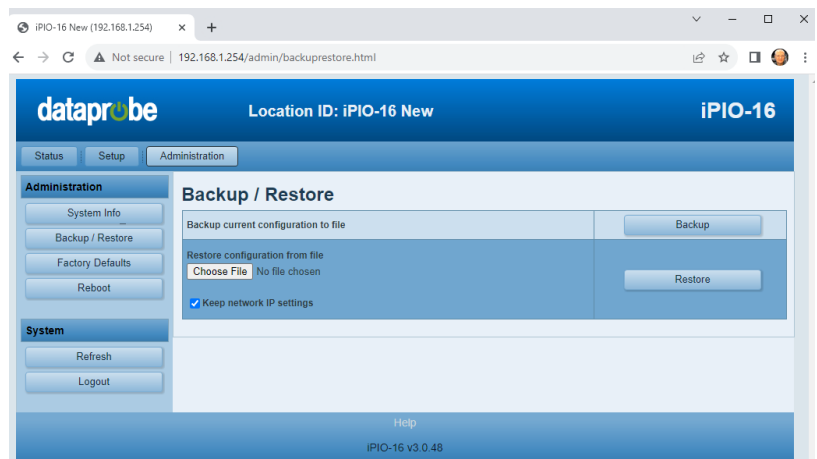
- Uptime: The amount of time since the last power up or reboot of the unit.
- Current Users: The username of any currently connected web users, the length of time the user has been logged on; the time the user has had no activity with the device, and the IP Address of the user.



8.2. Backup and Restore

The Backup and Restore feature allow the current configuration of the iPIO to be downloaded and saved for future use.

This will allow re-install in the same unit if it should be reset to Factory Defaults, or if the user wishes to return to a known set of settings. It can also be used to install in an additional unit to allow multiple units with similar configurations to be set-up quickly.



Configuration files can only be restored to the same model and version of unit as was exported from. (for example: a v2 export file **can not** restore to a v3 unit)

Backup

Click on the Backup button to begin the process. The unit will create a file and the browser will download it to the default download location for the PC. (usually Downloads). The default file name is `ipiov3-device.conf`. After it is downloaded you can rename it as long as the extension remains `.conf`. (ex. rename file as `'My Backup iPIO-16 unit.conf'`)

Restore

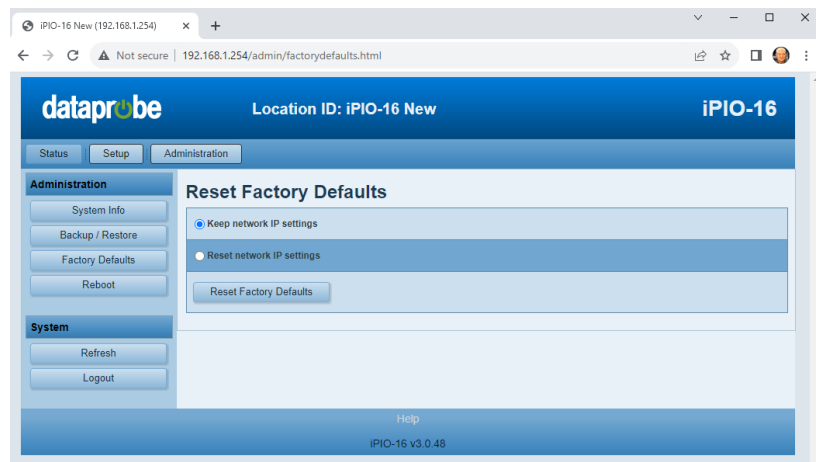
Click on 'Choose File' to select a `.conf` file to upload. Select the file and click Open. The file name will be listed next to the Choose File button. Use the Keep Network IP Settings to restore all settings EXCEPT the Network settings. Checking this box allows the basic setup of a new unit with your network, then loading a standard configuration file into that new unit.

Once the Restore button is pushed the file is uploaded and the device will reset. After the reboot is complete, the device will automatically reconnect.

8.3. Factory Defaults

This button allows the reset of all settings to Factory Defaults. Like the Restore feature, the Network Settings can be excluded from the reset. Click on the Reset Factory Defaults button, then confirm

Once the 'Reset Factory Defaults' button is pushed the device will reboot. After the reboot is completed, the device will automatically reconnect.



8.4. Reboot

A Reboot button provides a restart of the iPIO system. Once the Reboot button is pushed the device will reboot. Once the reboot is completed, the device will automatically reconnect.

8.5. Recessed Reset Switch

The recessed reset switch is located on the output side of the unit to the right of the relay 8 output.

The recessed reset switch will require a paper clip or pointy object to press.

Tap once briefly to reset the CPU of the device.

Press and hold for 10 seconds then release to reset factory defaults. When the RMT LED begins to blink, you have held the button long enough to release the button to reset defaults.

9. Telnet and CLI

The system supports the Telnet communications protocol for basic setup and limited relay control.

Connect via Telnet client to the IP address of the iPIO. Enter the credentials as set.

```
Hello... connected to ipIO-X!  
Connected to Telnet Session 1
```

```
User> admin  
Password> *****
```

Telnet Factory Default

Port 23

9.1. Get Commands - Programming

Command	Description	Factory Default
get device	Display device information Location ID: ipIO-16 New Upgrade Enable: Yes Product ID: ipIO-16 Firmware Version: v3.0.48 System Uptime: 84 days, 2 hours, 1 minutes, 19 seconds	
get location	Display location name	iPIO-16 New
get console	Display console information Connection Timeout: 2 minute(s) Telnet Enabled: Yes Telnet Port: 23	
get network	Get network IP settings MAC Address: 00:0D:AD:04:00:02 IP Mode: Static IP Address: 192.168.1.254 Subnet: 255.255.255.0 Gateway: 192.168.1.1 DNS1: 192.168.1.1 DNS2: 8.8.8.8 DNS used for upgrade only	
get mac	Displays the MAC address	
get user	Display Admin and User information Admin Name: admin Admin Password: admin User Name: user User Password: user	

9.2. Set Commands - Programming

Command	Description	Factory
set location <location name>	Location name 20 characters max	iPIO-16 New
set ipmode <static dhcp>	Sets the IP Mode Static: The IP address is set manually DHCP: The IP Address is set by DHCP Server	static
set ipaddress <xxx.xxx.xxx.xxx>	Sets the IP Address in dotted decimal	192.168.1.254
set subnet <xxx.xxx.xxx.xxx>	Sets the subnet mask in dotted decimal	255.255.255.0
set gateway <xxx.xxx.xxx.xxx>	Sets the gateway in dotted decimal	0.0.0.0
set dns1 <xxx.xxx.xxx.xxx>	Sets the DNS1 used for upgrade only	192.168.1.1
set dns2 <xxx.xxx.xxx.xxx>	Sets the DNS2 used for upgrade only	8.8.8.8
set console telnet port <xxxxxx>	Sets the telnet port (0-65535)	23
set console telnet enable <yes no>	Enable or Disable telnet	Enabled (yes)
set console timeout <1-99>	Sets number of minutes for telnet to logout automatically	2
set user <admin user> name <name>	User name 20 characters max	admin or user
set user <admin user> password <passwd>	User Password 20 characters max	admin or user
set upgrade enable <yes no>	Enable or Disable upgrade ability	Enabled (yes)
set upgrade start	Begin Upgrade process Unit will download latest code and then reboot to apply	
set factory defaults	Set factory defaults after verification with Y/N response. 'N' will display Factory Defaults were not set 'Y' will display Setting Factory Defaults and Rebooting... Connection to host lost.	

9.3. Set Commands - Relay Control

set relay <1-16> <open closed>	Use to control specified relay open or closed
----------------------------------	---

10. Firmware Upgrades

The iPIO v3 can be field upgraded. Find the latest version to determine if upgrade is necessary from the ipio support pages found here: <https://dataprobe.com/support-ipio>

If you determine you need a firmware upgrade, the procedure requires internet access and a telnet connection to the unit.

- 1) Telnet to the unit at its current ipaddress.
 - a. Current ipaddress should be set and have appropriate gateway and DNS entries
- 2) Confirm the upgrade ability is enabled with 'get device'
 - a. If not enabled, then enable with 'set upgrade enable yes'
- 3) Begin upgrade with the upgrade command
 - a. 'set upgrade start'
 - b. Response will be OK
 - c. When the upgrade is complete the unit will reboot and be available at the same ip.
- 4) (optional) Check upgrade status with 'get device'
 - a. Unit will report 'Upgrade in Progress' while in progress
 - b. Unit will report 'Upgrade Failed' if upgrade fails.
 - c. Unit will report 'Upgrade Complete' when complete

Usually, the unit will reboot before you can see this message

Approximately 3 minutes for upgrade and reboot completion

When the upgrade is complete the 'get device' will not show any Upgrade Status.

11. Specifications

Physical	iPIO-8	Height 1.25" Width 5.00" Depth 7.32"
	iPIO-16	Height 2.02" Width 5.00" Depth 7.32"
Environmental		Temperature 0 - 50 Deg C Operating Humidity 90 Pct Non Condensing
Power	iPIO-8 iPIO-16	Wall Mounted Power Supply, included 105 - 240 VAC 50/60Hz or +5VDC direct.
Inputs		Two screw terminals per input. 8 or 16 Digital Inputs Grounds common Dry relay/switch closures or +/-3VDC to +/-30 VDC
	iPIO-8 iPIO-16	8 Inputs 16 Inputs
Relay Outputs		Current Maximums 0.5A @ 120VAC or 1A @ 24VDC Switching Power 60VA Max 50uW Min Switching Voltage 120VAC or 60VDC Max 1VDC Min Switching Current 1A Max 1mA Min Resistance 100 milliohms (initial value) Operations 5 Million, mechanical. 100K at maximum load
	iPIO-8 iPIO-16	8 Form C Relays 16 Form C Relays
LED Indicators		One LED Indicator for Each Input, Configurable for On or Off state [red] One LED Indicator for each Relay Output. Configurable for ON or Off state [red] Network Link (Link) [amber] and Activity (Act).[green] Remote Unit Link Status (Rmt). [green] Power (Pwr) [green]
Switch		Reset. Hardware Reset and Factory Default with long press
Network		HTTP Web Server - DHCP Assigned or Static IP Address Email to SMTP Server - SNMP V2 Manageable. MIB Supplied Inter Device Communications via DxP Protocol supplied. 128 bit AES Encryption optional Selectable Port assignments for Web and DxP Protocol.

12. Technical Support and Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship for a period of **Three Years** from the date of initial purchase. If the product should prove defective within that period, Seller will repair or replace the product, at its sole discretion. Repairs may be made with new or refurbished components and replacements may be new or refurbished at the Sellers sole discretion. Repaired or replaced units shall be warranted for the balance of the original warranty, or 90 days, whichever is greater.

If Purchased from Dataprobe Inc.; Service under this Warranty is obtained by shipping the product (with all charges prepaid) to the address below. Seller will pay return shipping charges within the United States. Call Dataprobe Technical Service to receive a Return Materials Authorization (RMA) Number prior to sending any equipment back for repair. Include all cables, power supplies, accessories and proof of purchase with shipment.

If purchased from an Authorized Dataprobe Reseller; Service under this Warranty is obtained by contacting your Authorized Dataprobe Reseller.

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Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from jurisdictions to jurisdiction.

WARNING: The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability of fitness for any specific application.

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