IntellusUltraConnect Web Server Manual

Introduction

The IntellusUltraConnect Web Server (IWS) was designed to provide a convenient and simple user interface for programming and monitoring the IntellusUltraConnect controller provided with your chamber. The web server is accessible from any computer running a compatible web browser via an Ethernet network. No additional software is necessary. The web server is built into the IntellusUltraConnect controller.

Please feel free to contact Percival Scientific with any questions you may have about this manual or using the IntellusUltraConnect Web Server at:

- 1-800-695-2743
- 515-465-9363
- parts@percival-scientific.com
- https://www.percival-scientific.com/contact-us/parts-services

Securing the IntellusUltraConnect Web Server

Security is a critical issue for any network. Be sure to consult with your institution's network administrator(s) to ensure that best security practices are followed in an effort to maintain a secure network environment. Here are some items to consider when installing IntellusUltraConnect Web Servers on any network.

- Whenever possible, use private IP addresses and separate the IntellusUltraConnect Web Server network from the business network.
- Access to the IntellusUltraConnect Web Server from the Internet should be indirect, going through an access point to the business network on the way.
- If external access is required, assign a single point of access to the IntellusUltraConnect Web Server network. Allow access to the IntellusUltraConnect Web Server network using a device capable of creating a virtual private network (VPN). **Data will not be encrypted between the computer and IntellusUltraConnect Web Server unless a VPN is used.**
- External access points should be protected by a firewall.
- External access points should be protected by a layer 3 switch or router.

IntellusUltraConnect Web Server Setup

1. Connect the chamber into the network.
2. On the tablet, click on the router link, or navigate to a Chrome browser and type in either https://192.168.1.1 (the https may be necessary)
3. You might get a warning screen, click "Show advanced", and then click the "proceed" link.
4. You should see the following login screen:
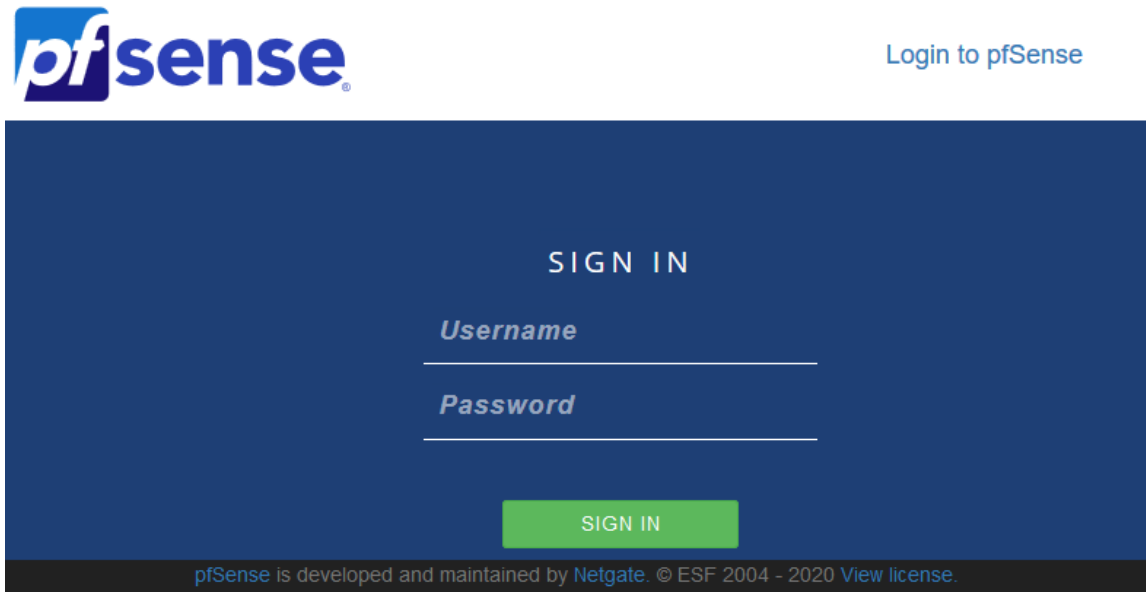
5. For the username type in "admin" and for the password, type in the code printed on the Netgate.
6. Once you are logged in, note the IP address assigned beside where it says "WAN" on the front page. If there is none, then there is a connectivity issue to the network, please ask your IT department.
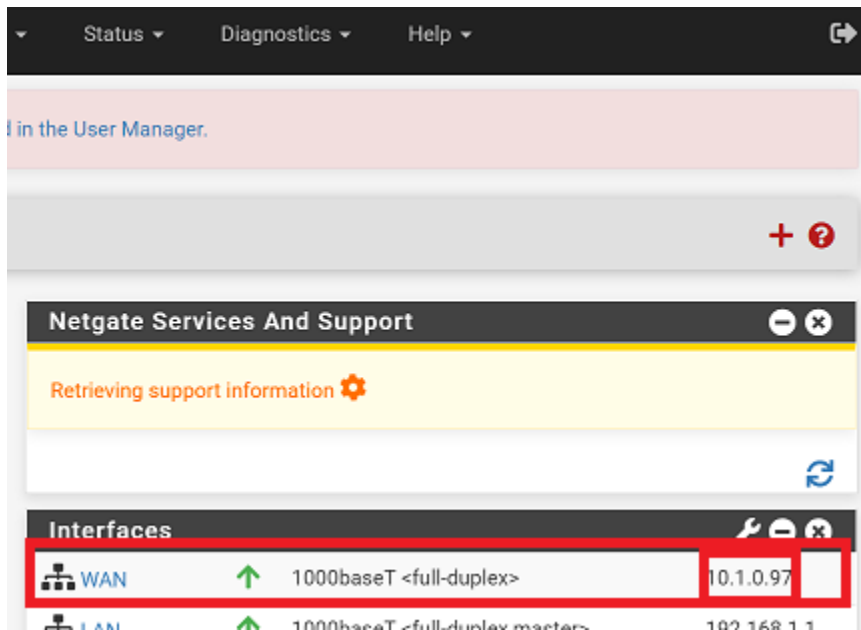
7. Note this IP address and close the browser.
8. From a PC elsewhere on your network, you can bring up a browser, and input the IP address from step 6 (with an https in front). You should see an error screen but click 'advanced' and then pass through this screen.
9. You should see the usual controller webpages.
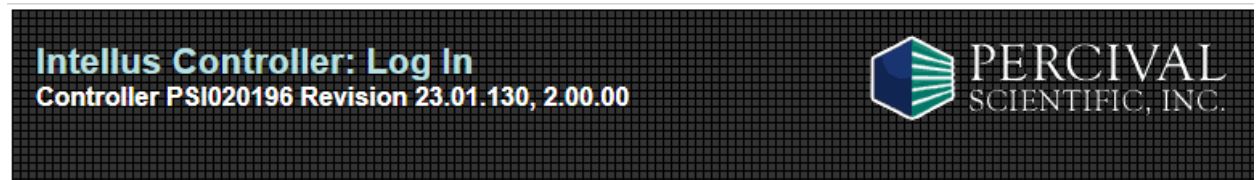
Connecting to the IntellusUltraConnect Web Server

In order to communicate with the IntellusUltraConnect Web Server, connect it to a network. A self-contained network can be created by connecting a computer directly to the IWS, or by connecting a computer and the IWS to a network switch or hub. Alternatively, the IWS can be connected to an existing building network.

IMPORTANT!

The e-mail functionality of the IWS requires the connection of the IWS to the Internet and an existing Gmail or Yahoo e-mail account.

An Ethernet port is provided on the exterior of the chamber for the purpose of connecting the IWS to a network. Contact the individual responsible for network administration in your institution to assist with connecting the IWS to a network.
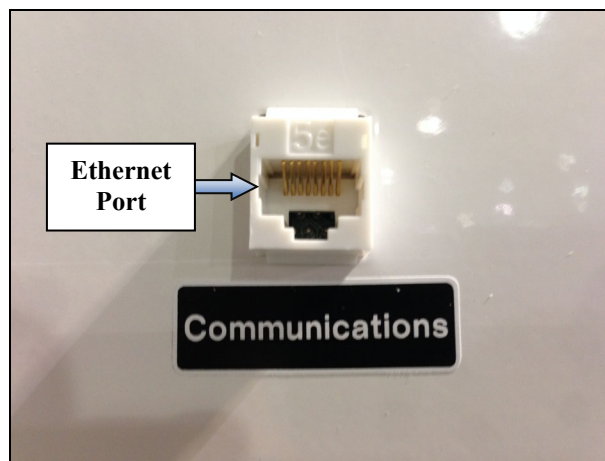
> **Note:** Before connecting the IWS to a building network, contact your network administrator to ensure the IWS will not interfere with any other devices that are present on the network. Depending on the IP mode selected, the IWS may be assigned a unique IP address by a DHCP server if one is present. Otherwise, it will use default IP settings. A DHCP server is designed to automatically assign IP addresses to network equipment.

The IntellusUltraConnect Web Server is designed to communicate on networks using the TCP/IP suite of protocols. Therefore, each IntellusUltraConnect Web Server must be assigned a unique IP address. On single piece orders the IWS is configured by default with the following IP information:

        IP Address: 192.168.1.1
        Subnet Mask: 255.255.255.0
        Default Gateway: 192.168.1.254

On multiple piece orders, each IWS is assigned an IP address in succession. For example, if three chambers were ordered, the IP addresses will be configured as 192.168.1.1, 192.168.1.2 and 192.168.1.3. Each controller's IP configuration can be found inside the Diagnostics menu.

To access IP configuration information in the IntellusUltraConnect controller's Diagostics menu, use the following procedure:

1) Press the **DIAGNOSTICS** key to enter the Diagnostics menu
2) Repeatedly press the ▼ and ▲ keys as necessary to view the IP Address Mode, Active IP Address, Active IP Subnet, Active IP Gateway, and Network Status of the IntellusUltraConnect controller.
3) Press the **DIAGNOSTICS** key to return to the main status screen

Default controller IP addresses (described above) do not need to be changed for self-contained network configurations (i.e. a direct connection between one or more IWS systems and a computer). The computer's IP address, however, needs to be configured in the 192.168.1.0 (255.255.255.0) network range. Keep in mind that each device connected to the network requires its own discrete IP address. An additional IWS system should not be connected to a pre-existing, self-contained network if its IP address is already being used by another device. First, connect the new IWS to the computer individually so that the IP address can be changed. Please refer to the section entitled 'Changing the Fixed IP Address' for information on changing the IP address once successfully connected to the computer.

If DHCP/Fixed IP mode is selected, and the IWS is connected to a building network with a DHCP server, the IWS will be assigned a unique IP address. A DHCP server is designed to assign IP addresses to network equipment. If a DHCP server is not available, the controller will use the default IP information listed above or will use the fixed IP information entered via the Intellus controller as described in the **IntellusUltraConnect Web Server Setup** section. If any other device exists on the network with the same IP information the IWS may interfere with this device. Please contact your network administrator(s) for advice on connecting the IWS to your building network.

Once properly connected to any of the above-described network types, an IWS is accessible via a compatible web browser. To connect to the IWS use the following steps:

1) Open Internet Explorer or similar browser (e.g. Chrome, Firefox).
2) Enter the IP address or controller Device Name to access the IWS.

Note: Initially, only the IWS IP address is available for connecting to the IWS. Once connected, the IWS device name can be accessed in the Setup Menu (and changed at the user's discretion). The Device Name can be used for subsequent connections to the system instead of the IP address.

3) To access the IWS via the IP address, proceed to step 4). To access the IWS via the Device Name, proceed to step 5).
4) If not known, refer to the Diagnostics menu on the IntellusUltraConnect controller to obtain the active IP address. Some browsers will accept just the IP number, however some may require the full IP address. An example of the full IP address is http://192.168.1.1. Refer to the example below, then proceed to step 6).
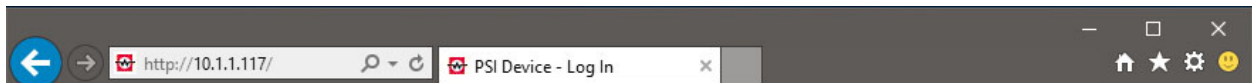
5) Enter the Device Name into the web browser's address field. An example of the Device Name is http://PSI018351 Refer to the example below, then proceed to step 6).

6) Once the IP address or Device Name has been entered, press the browser's **Go** button or **Enter** key on your keyboard.
7) If a successful connection to the web server is established, the user will be prompted to enter a user name and password. The default user name is **ADMIN** and the default password is **PSIADMIN**.

> **Important!** The user name and password must be entered with all capital letters.
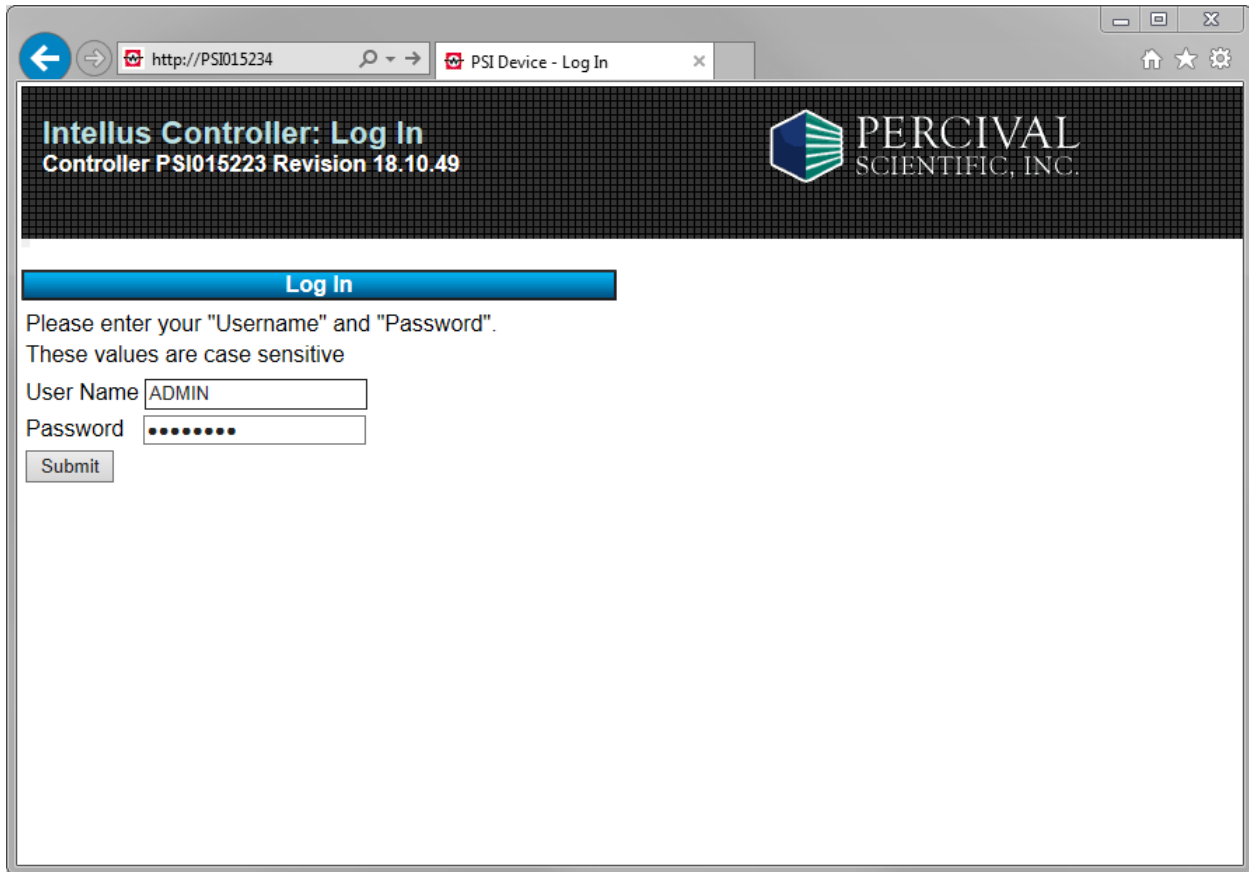
If the login screen pictured above does not appear, there is either a problem with the network connection between the computer and the IWS, or the IWS web server itself. If a "Page cannot be displayed" or "The requested URL could not be retrieved" message appears, the computer may not be communicating properly with the IWS. If this is the case, check to ensure that the computer's IP information is set to be on the same network as the IWS. For basic troubleshooting:

- Inside the Diagnostics menu, the Network Status screen can be used to help troubleshoot network connection problems. A Network Status of 'Down' typically indicates a physical connection problem between the IntellusUltraConnect controller and the desired network. A good connection to the network will show a Network Status of the connection speed (i.e. 100Mbps)
- Use the PING command to test connectivity to the controller. For example, if the active IP address is "192.168.1.1" the proper syntax to test connectivity via the command prompt is "ping 192.168.1.1". If the controller does not respond, make sure the IP address is unique on the desired network.

If the computer and IWS are configured properly to communicate on the same network and the login screen still does not appear, contact your facility's network administrator for further assistance.

If an "HTTP 404 – File not found" error message is displayed, there is likely a proper network connection between the computer and IWS, but an issue with the IWS itself. Please contact customer support at Percival Scientific for additional assistance.

8) After the user name and password are correctly entered, the Monitor page is displayed (shown below).

Setup Page

It is recommended that each new IWS is initially configured by first navigating to the Setup page. To open the Setup page, click the **Setup** hyperlink.

The user will likely be presented with a page stating that there is a problem with the website's security certificate - similar to the page below. It is safe to continue to this web page.
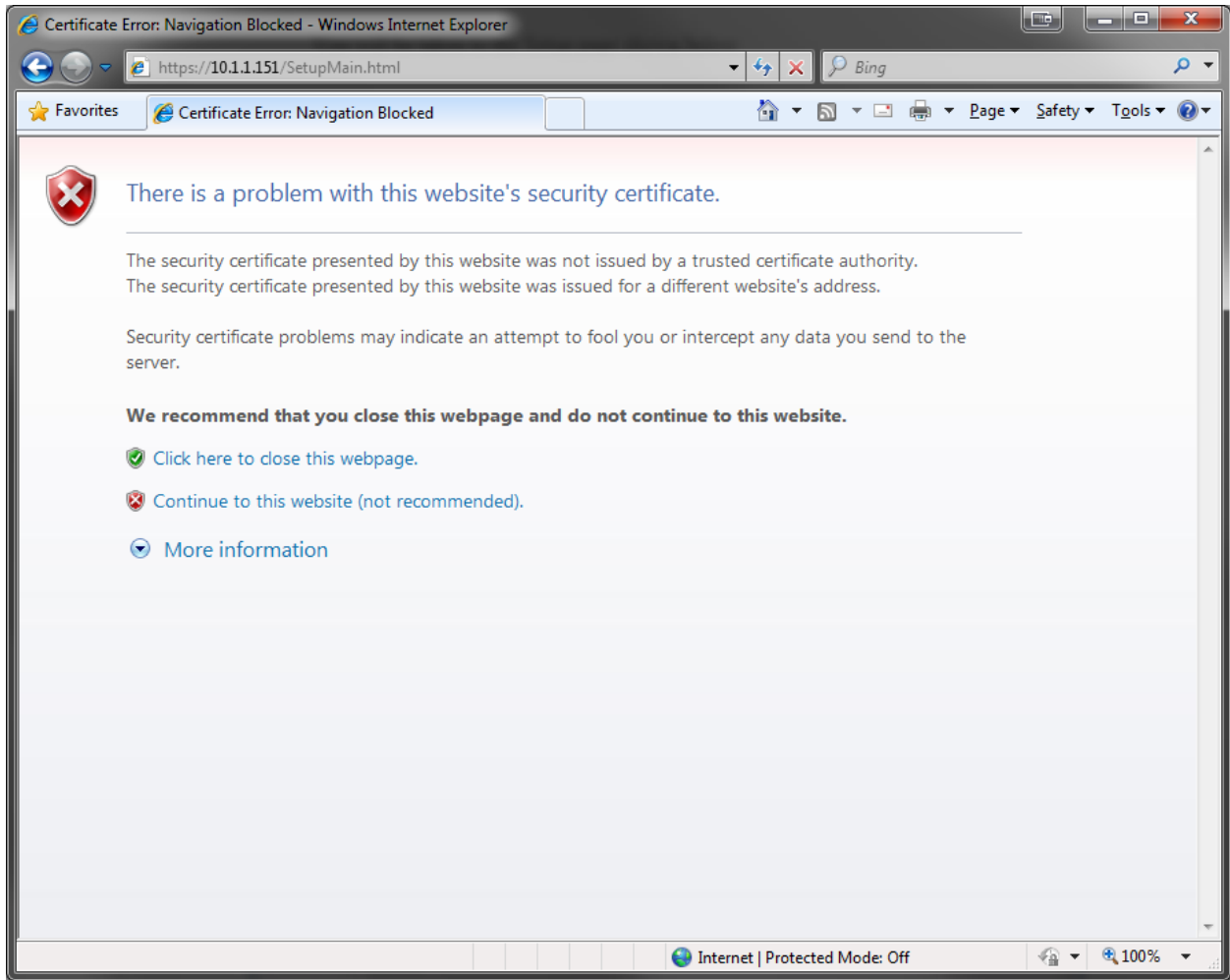
Click on 'Continue to this website' to access the Setup page, shown below.

Percival recommends the following items should be configured on the Setup page:

1) The administrator password should be changed.
2) To control user access to the web server, configure a general user and check the read only option as necessary.
3) If you will be connecting more than one IWS to a network the fixed IP address can be changed.
4) The Monitor Page Refresh Rate and Auto Log Out values should be reviewed and changed as necessary.
5) The IntellusUltraConnect controller time should be set.

IntellusUltraConnect Web Server Manual Rev3

Changing the Administrator Password

To change the administrator password, use the following procedure:

1) Enter a new password in the password field for the Administrator. The password can be between 1-24 alphanumeric characters in length.
2) Re-enter the password in the re-enter password field for the Administrator.
3) Click the **Save** button next to the Administrator's re-enter password field.

Note: The administrator's user name can be changed by entering the user name prior to changing the password. The user name may be between 1-24 alphanumeric characters in length.

Security Level	User Name	Password	Re-Enter Password	
Administrator:	ADMIN	••••••••••••••••••••	••••••••••••••••••••	Save

> **Important!** Do not forget the administrator password. If the password is forgotten the IntellusUltraConnect controller will need to be returned to our factory at the user's expense to reset the password.

Configuring a General User

When logging in as an administrator, all functions are available to the administrator. This includes viewing and making changes to chamber parameters and access to the Setup page. To restrict users from having full access, configure a general user account. The general user can be assigned the ability to view and make changes, or to only view the current chamber parameters. Checking the "Make General User Read-Only" box will restrict this user level to only viewing of the current chamber parameters. If this box is left unchecked, the general user can make changes. The general user does not have access to the Setup page.

To assign a general user:

1) Type a user name in the User Name field for the General User. The user name can be between 1-24 alphanumeric characters in length.
2) Enter a password in the password field for the general user. The password can be between 1-24 alphanumeric characters in length.
3) Re-enter the password in the re-enter password field for the general user.

4) If the general user is to have read-only access, check the "Make General User Read-Only" box.
5) Click the **Save** button next to the general user's re-enter password field.

Changing the Fixed IP Address

If more than one IWS is to be connected to a network, each IWS should have a unique IP address on the network. Typically, on multiple piece orders, Percival Scientific pre-configures standard, unique IP addresses into each IntellusUltraConnect controller. In certain instances, the same IP address may have been used on multiple chambers. If this is the case and the controllers are to be connected to a self-contained network, the IP addresses of each IWS can be changed via the Setup page. In order to add multiple controllers to a closed network, one of the following scenarios is necessary:
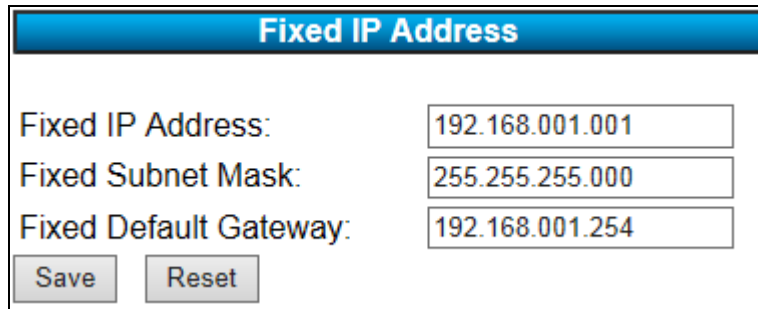
1) The existing IWS on the closed network with address 192.168.1.1 needs to be re-addressed so that a new IWS with the default 192.168.1.1 address can be added. For example, if three IWS units are to be connected, change the IP address of the first unit to 192.168.1.2 and the next unit to 192.168.1.3. The third unit can be added as-is at the default of 192.168.1.1.
2) A new IWS with the default address 192.168.1.1 needs to be changed to a unique address before it is added to the closed network. In this scenario, each IWS to be added requires a 1:1 connection with a computer first.

In both scenarios, the IP address can be changed from (default) 192.168.1.1 to a new address, such as 192.168.1.X, where X is a unique address number on the closed network.

If the IWS units are to be connected to an existing network, a unique fixed IP address should be assigned even if each IWS will be automatically assigned an IP address from a DHCP server. If connecting to an existing DHCP-enabled network, it is recommended that a reserved DHCP address be used. This can be requested from the network's administrator for each IWS. The network administrator will require the MAC address for each IWS. The MAC address can be found on in the diagnostic menu on the IntellusUltraConnect controller.

To change the fixed IP address, use the following procedure:

1) Locate the **Fixed IP Address** section on the Setup page.
2) Enter the Fixed IP Address, Fixed Subnet Mask and Fixed Default Gateway values into their respective fields. **Note:** If you have created a self-contained network you do not need to change the Fixed Default Gateway value.
3) Click the **Save** button below the Fixed Default Gateway field to save the fixed IP settings.
4) Cycle power to the chamber (turn chamber power off and then on again). The new fixed IP settings will not take effect until the chamber power is turned off and then on again. If the "Try DHCP server, then use Fixed IP" IP resolution method is selected and a DHCP server is not available it may take a few minutes before the fixed IP address is available.

Fixed IP Address	
Fixed IP Address:	192.168.001.001
Fixed Subnet Mask:	255.255.255.000
Fixed Default Gateway:	192.168.001.254
Save Reset	
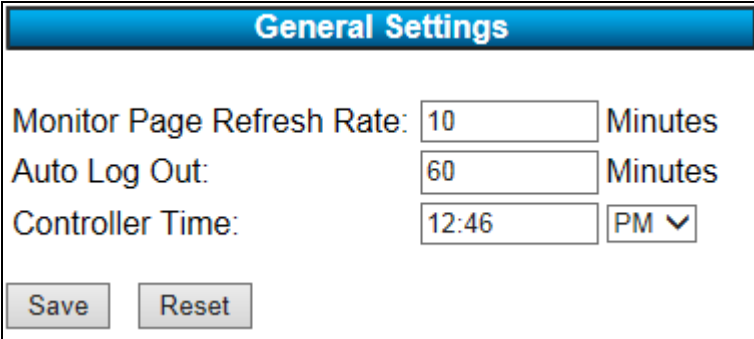
Changing the Monitor Page Refresh Rate, Auto Log Out values and Setting the IntellusUltraConnect Controller Time

To modify the Monitor Page Refresh Rate, Auto Log Out values and set the IntellusUltra controller time, use the following procedure:

1) Locate the **General Settings** section at the bottom of the Setup page.
2) If connecting to the IWS from a secure computer, set the Monitor Page Refresh Rate to the desired value. This value is the interval at which the IWS will refresh the Monitor page if the browser window is left open. If this value is less than the Auto Log Out value, the IWS will <u>not</u> automatically log out. If security is important, set the Monitor Page Refresh Rate to a value greater than the Auto Log Out value.
3) If connecting to the IWS from a secure computer, set the Auto Log Out value to the desired value. Otherwise, this value can be up to the maximum of 999 minutes. If security is important, set the Auto Log Out value less than the Monitor Page Refresh Rate.

> **Important!** In order for the auto log out feature to be activated, the auto log out value must be less than the monitor page refresh rate value. If it is not, the IWS will <u>not</u> automatically log out. **In order to fully log off the IWS, the web browser must be closed.** If not closed, it is possible to continue working with the IWS by clicking the **Back** button.

4) To set the IntellusUltraConnect controller time, enter the current time in the Controller Time field.
5) Click the **Save** button below the Controller Time field to save the Monitor Page Refresh Rate, save the Auto Log Out value and set the IntellusUltra controller time.

General Settings

Monitor Page Refresh Rate:	10	Minutes
Auto Log Out:	60	Minutes
Controller Time:	12:46	PM ∨

Save   Reset

The Setup page can also be used to accomplish the following:

- Configure e-mail addresses of individuals to alert when the chamber enters an alarm state.
- Configure e-mail addresses of individuals to send current chamber condition e-mails.
- Modify the Device Name and TCP/IP setup information.

E-mail Setup

The IWS can be configured to send e-mails to up to five different recipients for the purposes of notification of chamber alarms or general, periodic updates of in-process chamber conditions. The IWS can send email using either Gmail or Yahoo as the email service. Therefore, the IWS must have access to the Internet in order to send emails. Users will therefore, need to have a Gmail or Yahoo account to use the e-mail feature on the IWS. The Gmail or Yahoo mail server IP address must be provided in order for the IWS to send e-mails. Please note that if an attempt to use Gmail is made, and two-step verification is enabled on the Gmail account, that the emails will not be sent. Gmail only works when two-step verification is disabled.

IMPORTANT!

The IWS uses a secure certificate to identify itself to Gmail and Yahoo. This certificate is valid until certain dates. For Gmail, the certificate is valid until 5/20/2022 and for Yahoo the certificate is valid until 11/9/2031. Once this date is reached, the services will no longer allow email to be forwarded through its email system using the expired certificate. Therefore, the controller will need to be updated in order to continue sending emails. Before the certificate expiration dates are reached, please contact Percival Scientific for information on updating affected controllers with new certificates.

To configure e-mail, use the following procedure:

1) Locate the **E-mail Setup** section on the Setup page.
2) If using Gmail as the e-mail forwarding service, enter Gmail's SMTP server's IP address in the SMTP Server Fixed IP field. The address is 74.125.193.109. If using Yahoo as the e-mail forwarding service, enter Yahoo's SMTP server's IP address in the SMTP Server Fixed IP field. This address is 98.139.221.253. These server addresses may be subject to change. If you are unable to send emails using this address please contact Percival Scientific.
3) Enter the source e-mail address for your Gmail or Yahoo account. This is the address from which the e-mail will be sent. If using Gmail as the forwarding service, the e-mail address must be in the gmailaddress@gmail.com format and must be a valid Gmail address.   If using Yahoo as the forwarding service, the e-mail address must be in the yahooaddress@yahoo.com format and must be a valid Yahoo address.
4) Enter the source e-mail password. This is the password for the Gmail or Yahoo account that was used for the source e-mail address.
5) Configure each e-mail address to which the IWS is to send e-mails. If an e-mail recipient is to receive alarm e-mails, check the E-mail Alarms box. If a recipient is to

receive current condition e-mails, check the E-mail status every box and select an interval at which the IWS will send update e-mails. Current condition e-mails can be sent at 1, 6, 12, and 24 hour frequencies.

6) Click the **Save** button at the bottom of the **E-mail Setup** section to save e-mail settings.

Optionally, the Device Name in the **TCP/IP Settings** section may be changed. The Device Name is indicated in the subject line of e-mails sent from the IWS. It is recommended that the Device Name is changed to something meaningful to the user group, and can be used to distinguish from which chamber an email has been sent. The device name can be up to 15 alphanumeric characters in length. Refer to the **TCP/IP Settings** section for instructions on changing the device name.

The following example shows the e-mail setup, using Gmail as the e-mail service:

E-mail Setup				
SMTP Server Fixed IP:	74.125.193.109			
Source E-mail Address:	sample@gmail.com	Test		
Source E-mail Password:	••••••••			
E-mail Recipient 1:	joe@yourinstitute.com	☑ E-mail Alarms	☑ E-mail status every	Hour ∨
E-mail Recipient 2:	fred@yourinstitute.com	☐ E-mail Alarms	☑ E-mail status every	24 hours ∨
E-mail Recipient 3:		☐ E-mail Alarms	☐ E-mail status every	∨
E-mail Recipient 4:		☐ E-mail Alarms	☐ E-mail status every	∨
E-mail Recipient 5:		☐ E-mail Alarms	☐ E-mail status every	∨
Save Reset				

In the above example, the user joe@yourinstitute.com will receive alarm e-mails and current condition e-mails once per hour. The user fred@yourinstitute.com will receive only current condition e-mails once every 24 hours.

The following is a sample of the information sent in alarm or current condition e-mail:

IMPORTANT! - Please investigate any errors / alarms at the chamber.

Alarm: Deviation High

Controller Time: 01:17PM

Operation: Sequence
Step: 1 MONDAY
Iteration: 1

Actual Temperature: 31.8ºC
Temperature Set Point: 24.0ºC
High Temperature Safety Set Point: 55.0ºC
Low Temperature Safety Set Point: -5.0ºC
High Deviation Alarm Set Point: 5.0ºC
Low Deviation Alarm Set Point: -5.0ºC

Actual RH: 75%RH
RH Set Point: 75%RH

Actual Aux: 500 PPM
Aux Set Point: 500 PPM

Light 1: Off
Light 2: Off

When an alarm occurs, the IWS will send an e-mail to each user configured to receive alarm e-mails. A user can acknowledge that there is an alarm in the chamber by clicking the **Acknowledge Alarms** button on the Monitor page. This will remotely stop the alarm buzzer on the IntellusUltraConnect controller. The user should investigate and correct any alarms at the chamber.

Modifying TCP/IP Setup Information
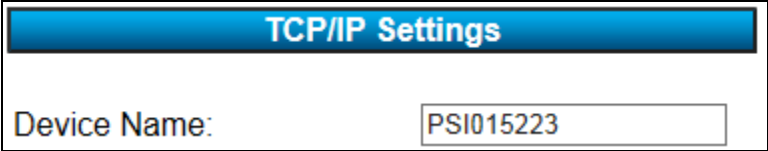
The default TCP/IP setup information can be changed in the TCP/IP Settings section of the Setup page. The settings that can be configured are the device name, IP address resolution method and fixed IP address information.

Device Name

The device name is the name the IWS registers on the network as the DNS name when a DHCP server is used. This name can be up to fifteen characters in length. Acceptable characters for the device name are 0 to 9, a to z, A to Z, and – (hyphen). The device name is indicated at the top of each web page. This name may be changed to something more meaningful, if desired. Please note that if the Device Name is changed, it will become the new name used to connect to the IWS. For example, if the previous name was PSI015234 and it's changed to PGC10, then the new browse at address would be http://PGC10. The device name is displayed in the subject line of alarm and current condition e-mails, and can be used to identify which chamber sent the email.

To change the device name:

1) Locate the **TCP/IP Settings** section on the Setup page.
2) Enter the desired Device Name in the Device Name field.
3) Click the **Save** button below the Fixed Default Gateway field to save the device name.

IP Resolution Method

The IWS supports the DHCP client and fixed (static) IP methods of assigning an IP address.

The IP resolution method used to obtain an IP address can be set to one of the following:

- DHCP/Fixed
- Fixed *

* This is the default method used to obtain an IP address.

When the IP method is set to DHCP/Fixed the IWS will follow the standard rules to seek out and receive an IP address from a DHCP server. If the IWS does not locate a DHCP server after a few minutes it will use the fixed method to receive an IP address. If a
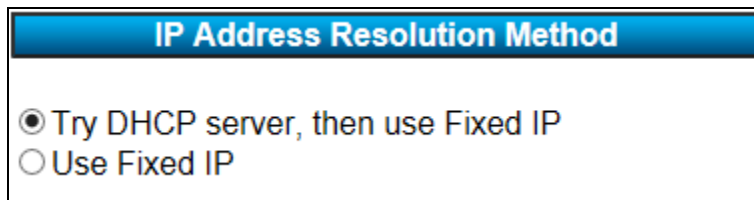
router is located between the IWS and the DHCP server, make sure the router is capable of forwarding DHCP/BOOTP messages or that a DHCP relay agent is in place.

When the IP method is set to Fixed, manually assign an IP address, subnet mask and default gateway address in the IWS, or use the default values. Refer to the section titled "**Changing the Fixed IP Address**" for information on setting the fixed IP address and related fields.

To change the IP Resolution Method, use the following procedure:

1) Locate the **IP Address Resolution Method** section on the Setup page.
2) Select the desired IP resolution method.
3) Click the **Save** button below the Fixed Default Gateway field to save the IP resolution method.
4) Cycle power to the chamber (turn chamber power off and then on again). The IP resolution method will not take effect until the chamber power is turned off and then on again.

Note: If the "Try DHCP server, then use Fixed IP" method has been selected, and a DHCP server cannot be located after cycling power, the IWS will default to using the fixed IP address after a few minutes.

Monitor Page

To open the Monitor page, click the **Monitor** hyperlink. The Monitor page provides users with an overview of the connected chamber's current status. If the browser is left on this page, it will refresh automatically at the monitor page refresh rate interval.

Please refer to the **IntellusUltra & Connect Manual** provided inside the chamber operation manual for more information regarding the items on this page.

The following status information is displayed on the Monitor page:

Input Status

This table displays the current set points and process values for temperature, humidity (if provided) auxiliary (if provided), and expansion channels (if provided). Any channels not provided will display values as NA (not available). This table also displays the current limit 2 process value.

Alarm Status

This table displays any current alarms in the chamber. The **Acknowledge Alarms** button below the table is used to remotely silence the alarm buzzer at the controller when an alarm is active. The user should investigate and correct any alarms at the chamber.

Alarm Settings

This table displays the current alarm settings in the IntellusUltraConnect controller. The Limit 1 High and Limit 1 Low values represent the high and low limit settings in the controller. The Limit 2 High and Limit 2 Low values represent the redundant high and low limit settings in the controller. The High Deviation and Low Deviation values represent the high and low deviation alarm settings in the controller. The RH, AUX and RMC (expansion) High and Low values represent their respective high and low alarm settings in the controller*. Any alarm that is not enabled in the controller will display as NA (not available).

* Humidity, Auxiliary and Expansion channel alarms are generally not enabled on controllers.

Lighting Status

This table displays the current lighting set points for the chamber. Light set points will display as 'On' or 'Off' for on/off lighting or as a value between 0-100 for dimmable lighting. Any lighting output not enabled will display as NA (not available) in this table.

Operation Mode

This table displays the current mode of operation of the IntellusUltraConnect controller.

- If the controller is running manual settings, the Mode column will display "Manual".
- If the controller is running a diurnal program, the Mode column will display "Diurnal".
- If the controller is running a daily light integral program, the Mode column will display "DLI".
- If the controller is running a program, the Mode column will display "Program", the Name column will display the current running program name and the Step column will display the current step number running in the program.
- If the controller is running a sequence, the Mode column will display "Sequence", the Name column will display the current running program name in the sequence, the Step column will display the current step number running in the sequence and the Iteration column will display the current iteration of the program running in the sequence.

Controller Time

This table displays the current time configured for the IntellusUltraConnect controller.

Program Steps

This table displays the current running program's step information.

- When manual settings are running this table is empty.
- When a diurnal or daily light integral program is running, the two steps of the diurnal or daily light integral program are displayed. The current running step of the diurnal or daily light integral program is highlighted in yellow.
- When running a program or sequence, the table displays the current running step highlighted in yellow along with three other steps of the program.

Manual Settings Page

Click the Manual Settings hyperlink to open the Manual Settings page

Intellus Controller: Manual Settings
Controller PSI015 23 Revision 18.10.49

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Monitor	Manual Settings	Diurnal Program	DLI Program	Programming	Calibration	Setup	Log Off

Temperature

Set Point	20.0	C
Limit 1 High Alarm	35.0	C
Limit 1 Low Alarm	-5.0	C
Limit 2 High Alarm	39	C
Limit 2 Low Alarm	-9	C
Deviation Alarms	No	
High Deviation Alarm	NA	C
Low Deviation Alarm	NA	C
Deviation Latching	No	
Deviation Buzzer	Yes	

Edit Defrost Settings

Lighting

1	2	3	4	5	6	7	8	9	10	11	12
OFF	OFF	0	OFF	NA	NA	NA	NA	NA	NA	NA	NA

13	14	15	16	17	18	19	20	21	22	23	
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

View Light Lifetime

Humidity

Set Point	70	%RH
Enable Humidification	No	
Enable Dehumidification	No	
High Alarm	NA	%RH
Low Alarm	NA	%RH

Auxiliary

Set Point	500	PPM
Enable Auxiliary Output 1	Yes	
Enable Auxiliary Output 2	Yes	
High Alarm	NA	PPM
Low Alarm	NA	PPM

Save   Reset   Run Manual

To open the Manual Settings page, click the **Manual Settings** hyperlink. The Manual Settings page enables users to set the temperature, lighting (if provided), relative humidity (if provided) auxiliary (if provided), and expansion channel (if provided) set points that the chamber will maintain when running in Manual Mode. It also allows users to enable or disable the humidification, auxiliary, and expansion systems and to set alarm set points for temperature and any other configured process loops*.

* Humidity, Auxiliary, and expansion channel alarms are generally not enabled on controllers.

> **Important!** The **Save** button must be clicked at the bottom of the page in order to save any modified settings. Click the **Reset** button to reset the page data fields to what they were when the page was loaded. Click the **Run Manual** button to run manual settings.

Please refer to the **IntellusUltra & Connect Manual** provided inside the chamber operation manual for more information regarding the items on this page and the concept of running manual settings.

The following settings can be configured on the Manual Settings page:

Temperature

The following settings can be configured under the temperature section:

- Set Point – This is the temperature at which the chamber will run in Manual Mode.
- High Alarm – This is the threshold above which a Temperature High alarm will occur.
- Low Alarm – This is the threshold below which a Temperature Low alarm will occur.
- Limit 1 High Alarm – This is the temperature above which a high limit 1 alarm will occur.
- Limit 1 Low Alarm – This is the temperature below which a low limit 1 alarm will occur.
- Limit 2 High Alarm – This is the temperature above which a high limit 2 alarm will occur.
- Limit 2 Low Alarm – This is the temperature below which a low limit 2 alarm will occur.
- Deviation Alarms – This setting allows users to enable or disable deviation alarms.
- High Deviation Alarm – This is the temperature the chamber must deviate above set point in order to trigger a high deviation alarm.
- Low Deviation Alarm – This is the temperature the chamber must deviate below set point in order to trigger a low deviation alarm.

- Deviation Latching - This setting allows users to enable or disable latching deviation alarms.
- Deviation Buzzer - This setting allows users to enable or disable the deviation alarm buzzer.
- Edit Defrost Settings button – Click this button to edit defrost settings. This button is disabled unless a defrost system is provided on your chamber. Please refer to the Defrost Settings Page section for more information.

Any setting not enabled on a connected IntellusUltraConnect controller will display as NA (not available).

Lighting

When running manual settings, each individual light output can be configured as on or off for on/off lighting or a percentage between 0 and 100 for dimmable lighting. For each output configured, enter either 'On' or 'Off' for on/off lighting or a value between 0 and 100 for dimmable lighting.

Click the View Light Lifetime button to access the Light Lifetime page. This button is disabled if no light outputs are provided on your chamber. The Light Lifetime page is used to view and reset the number of hours each light output has been on, and to configure the light lifetime alarm value. Please refer to the Light Lifetime Page section for more information.

Any light output not enabled on the controller will display as NA (not available).

Humidity, Auxiliary and Expansion Channels (if provided)

The following settings can be configured under their respective sub-headings on the Manual Settings page:

- Set Point - This is the level the chamber will maintain while running in Manual Mode.
- Enable [Input Name] Output 1 – Select 'Yes' to enable the sub-system as necessary. Select 'No' to disable the sub-system.
- Enable [Input Name] Output 2 – Select 'Yes' to enable the sub-system as necessary. Select 'No' to disable the sub-system.
- High Alarm - This is the threshold above which a high alarm will occur for the input.*
- Low Alarm - This is the threshold below which a low alarm will occur for the input.*

Any setting not enabled on your controller will display as NA (not available).

* Input alarms are generally not enabled on controllers.

Saving Manual Settings

To save any changes you make to the manual settings, click the **Save** button located at the bottom of the page. The **Save** button will not be available if the current user is logged in as the general user and the general user has been assigned read-only access.

Running Manual Settings

Click the **Save** button accept and save any Manual Settings changes before running manual settings. Click the **Run Manual** button at the bottom of the page to put the IntellusUltraConnect controller into Manual Mode, and run manual settings. The **Run Manual** button is not available for general users with read-only access.

Defrost Settings Page

To open the Defrost Settings page, click the **Edit Defrost Settings** button in the Temperature section of the Manual Settings page. The Defrost Settings page enables users set defrost periods for chambers ordered with a low temperature option. If a low temperature option was not ordered, this button will be disabled.

Please refer to the **IntellusUltra & Connect Manual** for more information regarding the items on this page and the concept of programming defrost periods.

> **Important!** The **Save** button must be clicked at the bottom of the page in order to save any changes made to the defrost duration. The **Add, Delete** and **Save** buttons are not available for general users with read-only access. Click the **Reset** button to reset data fields on this page to the values used when the page was loaded.

The following settings can be configured on the Defrost Settings page:

- Defrost Duration – This is the length of time in minutes each programmed defrost period will last.
- Defrost Periods – A total of six defrost periods can be programmed. To add a defrost period, use the following procedure:

    1) Enter the desired start time for the period in the Defrost Period Start Time field.
    2) Select AM or PM from the dropdown.
    3) Click the **Add** button. The period will be added to the Defrost Periods table.

    To delete a defrost period, use the following procedure:

    1) Enter the defrost period number you wish to delete in the Delete Defrost Period # field.
    2) Click the **Delete** button. The period will be removed from the Defrost Periods table.

    The **Add** and **Delete** buttons will are not available for general users with read -only access.

Light Lifetime Page

To open the Light Lifetime page, click the **View Light Lifetime** button in the Lighting section of the Manual Settings page. The Light Lifetime page enables users to view and reset the number of hours each light output has been on, and to configure the light lifetime alarm value.

Please refer to the **IntellusUltra & Connect Manual** for more information regarding the items on this page.

The following actions can be performed on the Light Lifetime page:

- View light lifetimes – Each output displays the accumulated hours it has been programmed on in the Light Lifetime table.
- Reset light lifetimes – To reset an individual light output's lifetime to 0 hours, enter the number of the light output to be reset in the Reset Light Lifetime # field, and then click the **Reset** button.
- Reset all light lifetimes – To reset all light lifetime values to 0 hours, click the **Reset All** button.
- Set light lifetime alarm value – To set the light lifetime alarm value, enter the desired hours in the Light Lifetime Hours field and click the **Save** button. The value can be between 1 to 99999 hours.
- The **Reset, Reset All** and **Save** buttons are not available for general users with read-only access.

Any light output not enabled on the controller will display as NA (not available).

Diurnal Program Page

To open the Diurnal Program page, click the **Diurnal Program** hyperlink. The Diurnal Program page enables users to configure and run a diurnal program.

> **Important!** The **Save** button must be clicked at the bottom of the page in order to save any modified settings. Click the **Reset** button to reset data fields on this page to the values used when the page was loaded. Click the **Run Diurnal** button to run the diurnal program.

Please refer to the **IntellusUltra & Connect Manual** provided inside the chamber operation manual for more information regarding the items on this page, and the concept of running a diurnal program.

The following settings can be configured on the Diurnal Program page:

Day Settings

The following settings can be configured under the day settings section:

- Day Temperature – This is the temperature that will be maintained during the day period.
- Day Humidity (if provided) – This is the humidity level that will be maintained during the day period.
- Day Auxiliary (if provided) – This is the auxiliary set point that will be maintained during the day period.
- Day [Input 4 Name] (if provided) – This is the input 4 set point that will be maintained during the day period.
- Day [Input 5 Name] (if provided) – This is the input 5 set point that will be maintained during the day period.
- Day [Input 6 Name] (if provided) – This is the input 6 set point that will be maintained during the day period.
- Day [Input 7 Name] (if provided) – This is the input 7 set point that will be maintained during the day period.
- Day Period Start Time – This is the time at which the day period will start.
- Day Period End Time – This is the time at which the day period will end and the night period will start.
- Day Events Powered – This setting determines if any outputs configured as event outputs should be on or off during the day period of the running program.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).

Night Settings

The following settings can be configured under the night settings section:

- Night Temperature – This is the temperature that will run during the night period.
- Night Humidity (if provided) – This is the humidity level that will run during the night period.
- Night Auxiliary (if provided) – This is the auxiliary level that will run during the night period.
- Night [Input 4 Name] (if provided) – This is the input 4 set point that will be maintained during the night period.
- Night [Input 5 Name] (if provided) – This is the input 4 set point that will be maintained during the night period.

- Night [Input 6 Name] (if provided) – This is the input 4 set point that will be maintained during the night period.
- Night [Input 7 Name] (if provided) – This is the input 7 set point that will be maintained during the night period.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).

Saving the Diurnal Program

To save any changes made to the diurnal program, click the **Save** button located at the bottom of the page. The **Save** button is not available for general users with read-only access.

Running the Diurnal Program

The **Save** button must be clicked in order to save any modified diurnal program settings. Click the **Run Diurnal** button at the bottom of the page to run the saved Diurnal Program. The **Run Diurnal** button is not available for general users with read-only access.

Daily Light Integral (DLI) Program Page

To open the Daily Light Integral Program page, click the DLI Program hyperlink. The Daily Light Integral Program page enables users to configure and run the daily light integral program.

> **Important!** The **Save** button at the bottom of the page must be clicked in order for any modified settings to be retained. Click the **Reset** button to reset data fields on this page to the values used when the page was loaded. Click the **Run DLI** button to run the daily light integral program.

Please refer to the **IntellusUltra & Connect Manual** provided inside the chamber operation manual for more information regarding the items on this page and the concept of running a daily light integral program.

The following settings can be configured on the Daily Light Integral Program page:

DLI Input Source

The DLI Input Source value indicates which control loop has been associated with the DLI feature. Only one control loop can be associated with the DLI Input Source. This value is factory set and is not configurable by the user. The DLI Input Source can be associated with the Auxiliary input, or any expansion input (4-7).

On the DLI Program page, the DLI Input Source is displayed at the top of the Day Settings sub-menu. The Day Lights and Night Lights values contained within the Day and Night Settings sub-menus are the same inputs as the DLI Input Source value, however, they have been renamed to denote their specific purpose within the DLI program.

Day Settings

The following settings can be configured under the day settings section:

- Day Temperature – This is the temperature that will be maintained during the day period.
- Day Humidity (if provided) – This is the humidity set point that will be maintained during the day period.
- Day Auxiliary (if provided) – This is the auxiliary set point that will be maintained during the day period. If the auxiliary input is the DLI input source, this setting is renamed to Day Lights*.
- Day [Input X Name] (if provided) where X is the expansion input number (4-7) – This is the input set point that will be maintained during the day period. If any expansion input is the DLI input source, this input's setting is renamed to Day Lights*.
- Daily Light Integral – This is the daily light integral value to which the program will accumulate each day.
- Day Period Start Time – This is the time at which the day period will start.
- Day Period End Time – This is the time at which the day period will end and the night period will start.
- Day Events Powered – This setting determines if any outputs configured as event outputs should be on or off during the day period of the running program.

* Day Lights – This is the lighting level at which the chamber will be set during the day portion of the program.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).

Night Settings

The following settings can be configured under the night settings section:

- Night Temperature – This is the temperature that will run during the night period.
- Night Humidity (if provided) – This is the humidity set point that will be maintained during the night period.
- Night Auxiliary (if provided) – This is the auxiliary set point that will be maintained during the night period. If the auxiliary input is the DLI input source, this setting is renamed to Night Lights*.
- Night [Input X Name] (if provided) where X is the expansion input number (4-7) – This is the input set point that will be maintained during the night period. If any expansion input is the DLI input source, this input's setting is renamed to Night Lights*.

- * Since the lights are off during the night portion of the DLI program, the Night Lights value cannot be set.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).
To save any changes made to the diurnal program, click the **Save** button located at the bottom of the page. The **Save** button is not available for general users with read-only access.

Saving the Daily Light Integral Program

To save any changes made to the daily light integral program, click the **Save** button located at the bottom of the page. The **Save** button is not available for general users with read-only access.

Running the Daily Light Integral Program

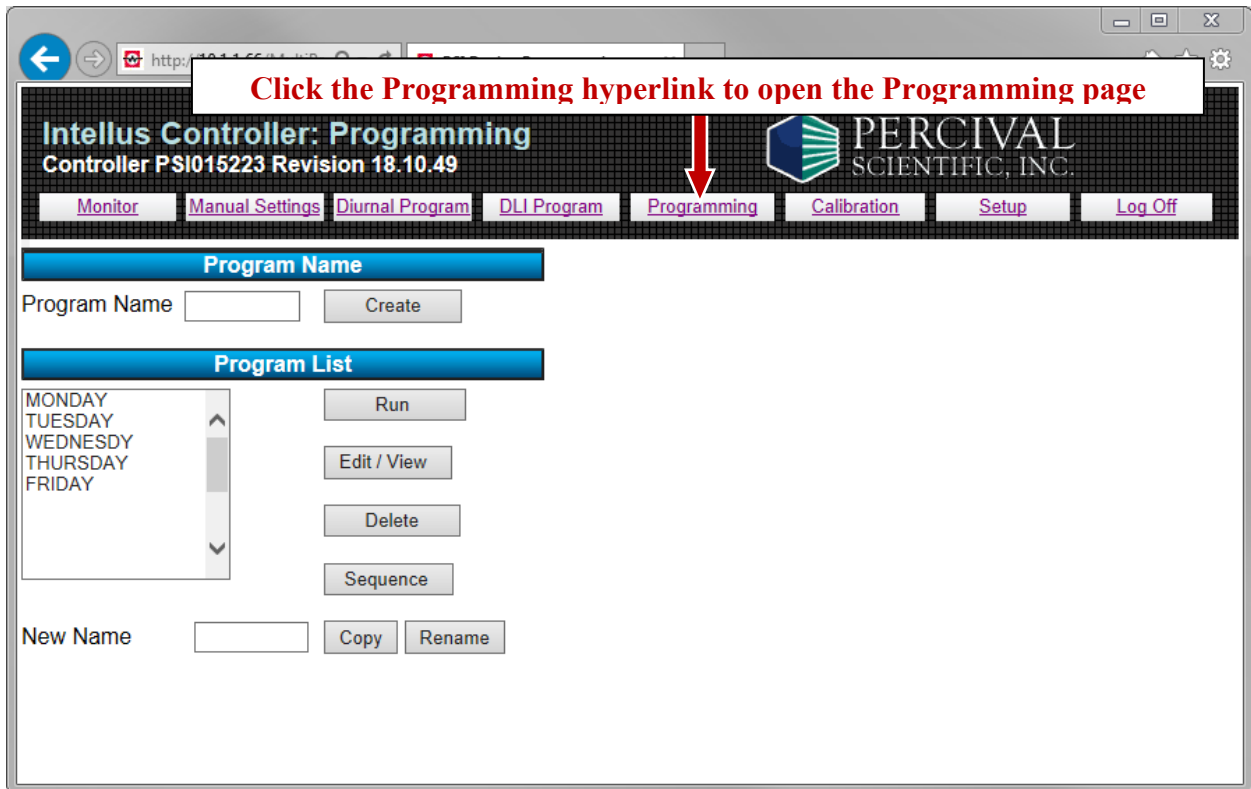The **Save** button must be clicked in order to save any modified diurnal program settings. Click the **Run DLI** button at the bottom of the page to run the saved DLI Program. The **Run DLI** button is not available for general users with read-only access.

Programming Page

To open the Programming page, click the **Programming** hyperlink. The Programming page enables users to create, edit, delete, copy, rename and run programs and sequences. When the Programming page is opened, the Program List will display the programs currently in the controller. If the program step type is set to '24 Hour', the list will reflect the 24 hour programs currently in the controller. If the program step type is set to 'Elapsed', the list will reflect the elapsed non 24 hour programs currently in the controller.

Please refer to the **IntellusUltra & Connect Manual** for more information regarding programming.

Creating a New Program

To create a new program, use the following procedure:

1) Enter a name for the new program in the Program Name field.
2) Click the **Create** button. The Edit Program page is then automatically opened, where the new program can be modified. Please refer to the Edit Program Page section for more information on editing a program.

Note: The **Create** button is not available for general users with read-only access.

Running a Program

To run a program, use the following procedure:

1) Select the program to be run from the Program List.
2) Click the **Run** button.

Note: The **Run** button will not be available for general users with read-only access.

Editing/Viewing a Program

To edit or view a program, use the following procedure:

1) Select the program to be edited/viewed from the Program List.
2) Click the **Edit/View** button.
3) The Edit Program page will then be opened, where the user can edit or view the program. Please refer to the Edit Program Page section for more information on editing/viewing a program.

Deleting a Program

To delete a program, use the following procedure:

1) Select the program to be deleted from the Program List.
2) Click the **Delete** button.

Note: The **Delete** button will not be available if the current user is logged in as the general user and the general user has been assigned read-only access.

Sequencing Programs

To create or edit a program sequence, use the following procedure:

1) Click the **Sequence** button. The Sequence page will we opened. Please refer to the Sequence Program Page section for more information on sequencing programs.

Copying Programs

To copy a program, use the following procedure:

1) Select the program to be copied from the Program List.
2) Enter a name for the copied program in the New Name field.
3) Click the **Copy** button.

> **Note:** Copying a large program may cause the program list on the Programming page to incorrectly display the list of programs. Some programs may cease to appear in the Program List. Please refresh the Programming page until the programs reappear in the list.
>
> The **Copy** button is not available for general users with read-only access.

Renaming Programs

To rename a program, use the following procedure:

1) Select the program to be renamed from the Program List.
2) Enter a new name for the program in the New Name field.
3) Click the **Rename** button.

Note: The **Rename** button is not available for general users with read-only access.

Edit Program Page

http://10.1.1.66/MultiProg   PSI Device Programming

Intellus Controller: Edit Program
Controller PSI015223 Revision 18.10.49

PERCIVAL SCIENTIFIC, INC.

Monitor | Manual Settings | Diurnal Program | DLI Program | Programming | Calibration | Setup | Log Off

Program Name : MONDAY

Step Time

AM

Temperature   %RH   Auxiliary

C   %RH   PPM

Lighting

1	2	3	4	5	6	7	8	9	10	11	12
				NA	NA	NA	NA	NA	NA	NA	NA

13	14	15	16	17	18	19	20	21	22	23	
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Add Step

Modify / Delete Step #   Modify Step   Delete Step

Program Steps

Step	Time	Temp	%RH	Aux	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	12:00 AM	24.0	70	100	OFF	OFF	0	OFF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	03:00 AM	24.0	70	300	OFF	OFF	0	OFF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	06:00 AM	26.0	75	500	OFF	OFF	0	OFF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	09:00 AM	27.0	80	500	ON	ON	100	ON	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Navigation   1

Run Program

To open the Edit Program page, either choose to create or edit a program on the Programming page. The Edit Program page enables users to edit or view programs. When the Edit Program page is opened, the steps in the Program Steps table will reflect the steps in the program. Please note that when creating a new program a single step is automatically added to the program at 12:00AM.

Please refer to the **IntellusUltra & Connect Manual** for more information regarding programming.

Note: The **Add Step, Modify Step, Delete Step** and **Run Program** buttons are not available for general users with read-only access.

Adding Steps to a Program

To add steps to a program, use the following procedure:

1) Enter the relevant step information into the step fields. The information that is required for each step includes the step time, temperature, humidity level (if provided), auxiliary setting (if provided), expansion channel settings (if provided) and lighting settings. If the program step type is set to '24 Hour', enter the Step Time in the HH:MM AM/PM format (e.g. 12:00 AM). Only the time needs to be entered (e.g. 12:00). AM/PM is selected from a dropdown next to the time field. If the program step type is set to 'Elapsed', enter the Step Time in the HHH:MM format (e.g. 006:00 representing a step time of six hours). An elapsed step time can range from 000:01 to 999:59.
2) Click the **Add Step** button.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).

The following example shows the typical step information required for adding a step to a 24 Hour program:

Modifying Steps in a Program

To modify a program step, use the following procedure:

1) Enter the step number for the step you want to modify in the Modify / Delete Step # field and click the **Modify Step** button. The current step information will be transferred into the step fields.
2) Change the fields as required.
3) Click the **Modify Step** button to save changes.

Deleting Steps in a Program

To delete a program step, enter the step number for the step you want to delete in the Modify / Delete Step # field and click the **Delete Step** button.

Reviewing the Steps in a Program

Once editing a program, use the navigation page links below the Program Steps table to navigate through the steps. Up to ten steps are displayed on the Edit Program page at any one time. If a given program contains more than ten steps, use the First, Prev, Next or Last links to navigate through additional steps.

- The First link will load the first ten steps of the program.
- The Prev link will load the previous ten steps of the program.
- The Next link will load the next ten steps of your program.
- The Last link will load the last 10 steps of your program.
- The page number can be selected to go directly to a set of ten steps. For example, if a program contains 55 steps, click on page 6 to view steps 46-55. Click on page 5 to display steps 41-50.

Running the Program

To run the program, click the Run Program button at the bottom of the page.

Sequence Program Page

To open the Sequence Program page, click the **Sequence** button on the Programming page. The Sequence Program page enables users to link programs together that are to be run in series. When the Sequence Program page is opened, the program list will reflect the current programs in the controller and the sequence information table will reflect the steps in the sequence.

Please refer to the **IntellusUltra & Connect Manual** for additional information regarding sequencing programs.

Adding Steps to the Sequence

To add steps to the sequence, use the following procedure:

1) Select the program to be added to the sequence from the program list.
2) Enter the number of iterations the program is to be run in the Number of Iterations field. The number of iterations can range between 1 and 500.
3) Click the **Add** button. Up to 50 programs can be added to the sequence.

Note: The **Add** button is not available for general users with read-only access.

Inserting Steps into the Sequence

To insert steps into the sequence, use the following procedure:

1) Select the program to be inserted into the sequence from the program list.
2) Enter the number of iterations the program is to be run in the Number of Iterations field. The number of iterations can range between 1 and 500.
3) Enter the sequence step number after which the new program should be inserted in the Insert After Sequence Step # field.
4) Click the **Insert** button.

Note: The **Insert** button is not available for general users with read-only access.

Deleting Steps from the Sequence

To delete steps from the sequence, use the following sequence:

1) Enter the number of the step to be deleted in the Delete Sequence Step # field.
2) Click the **Delete** button.

Note: The **Delete** button is not available for general users with read-only access.

Running the Sequence

To run the sequence, use the following procedure:

1) Enter the step at which the sequence is to be started in the Run sequence from step # field. Typically this is step 1.
2) Enter the starting iteration at which the sequence is to be run in the Iteration # field. Typically this is iteration 1.

3) Click the **Run Sequence** button.

   Note: The **Run Sequence** button is not available for general users with read-only access.

Deleting the Entire Sequence

To delete the entire sequence, Click the **Delete Sequence** button.

Note: The **Delete Sequence** button will is not available for general users with read-only access.

Calibration Page

To open the Calibration page, click the **Calibration** hyperlink. The Calibration page enables users to adjust the calibration offsets the IntellusUltraConnect uses to control temperature, humidity, auxiliary and expansion channel set points.

Please refer to the **IntellusUltra & Connect Manual** for more information regarding calibration offsets.

Any setting not enabled on the IntellusUltraConnect controller will display as NA (not available).

> **Important!** Calibration offsets are <u>not</u> normally altered. Calibration offsets should only be changed when the temperature, humidity, auxiliary, or expansion channel values displayed on the controller do not agree with your measurement device.

> **Important!** The **Save** button must be clicked at the bottom of the page in order to save any modified settings. Click the **Reset** button to reset data fields on this page to the values used when the page was loaded.

The following offsets can be configured on the Calibration page:

Temperature

Selecting the temperature offset method from the drop-down list. Select **Day/Night** to use day/night offsets. Select **Multiple** to use multiple offsets. Under normal circumstances use day/night offsets to calibrate the chamber.

When 'Day/Night' is selected as the offset method, the following offsets can be configured for temperature:

- Day Temperature Offset – This is the offset that will be applied when any light output is configured to be on.
- Night Temperature Offset – This is the offset that will be applied when all light outputs are configured to be off.
- Day Limit 2 Offset - This is the offset that will be applied to the backup temperature sensor when any light output is configured to be on.
- Night Limit 2 Offset – This is the offset that will be applied to the backup temperature sensor when all light outputs are configured to be off.

When 'Multiple' is selected as the offset method the following offsets can be configured for temperature:

- Day Temperature Offset 1-3 – These are the temperature offsets that will be applied at day temperature points 1-3 when any light output is configured to be on.
- Night Temperature Offset 1-3 – These are the temperature offsets that will be applied at night temperature points 1-3 when all light outputs are configured to be off.
- Day Temperature Point 1-3 – These are the temperatures at which the day temperature offsets 1-3 will be applied when any light output is configured to be on.
- Night Temperature Point 1-3 – These are the temperatures at which the night temperature offsets 1-3 will be applied when all light outputs are configured to be off.

Humidity (if provided)

The following offsets can be configured for humidity:

- Day Humidity Offset – This is the offset that will be applied when any light output is configured to be on.
- Night Humidity Offset – This is the offset that will be applied when all light outputs are configured to be off.

Auxiliary (if provided)

The following offsets can be configured for auxiliary:

- Day Auxiliary Offset – This is the offset that will be applied when any light output is configured to be on.
- Night Auxiliary Offset – This is the offset that will be applied when all light outputs are configured to be off.

Expansion Channels – Inputs 4-7 (if provided)

The following offsets can be configured for inputs 4-7:

- Day Offset – This is the offset that will be applied to the input's control loop when any light output is configured to be on.
- Night Offset – This is the offset that will be applied to the input's control loop when all light outputs are configured to be off.

Saving Calibration Offsets

To save any changes made to the calibration offsets, click the **Save** button located at the bottom of the page. Once the offsets are saved, they will be applied immediately. The **Save** button is not available for general users with read-only access.

Logging Out

To log out of the controller, click the **Log Out** hyperlink. The user will be directed to the Log Off page. **In order to fully log off the IWS, close the web browser.** If the browser is not closed it is possible to continue working with the IWS by clicking the **Back** button.