PercivalConnect Remote Software
User Manual

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Introduction

The PercivalConnect remote software was designed to provide convenient, remote access of IntellusUltraConnect control systems. The software offers capabilities which supplement and enhance the IntellusUltraConnect web server interface. These features include support of the connection of multiple controllers, a multi-user environment, remote data logging, email alarm and status notifications, a program import utility, and convenient graphing tools.

Software Versions

As of 2020, the PercivalConnect software is available in a 'local' version only.

> The local version of the PercivalConnect software is provided with every IntellusUltraConnect control system. The user must install it on a 64-bit Windows computer. One installation of the application supports multiple users by acting as a host for all configured user accounts. The application and database for the system reside on a central computer, and access to the system is accomplished via a web server. All external connections to this system only require a web browser with access to the network (and IP address) of the central PC. There is no additional software installation required for remote access.

This user manual is designed to provide the reader with guidelines for the proper installation and operation of the PercivalConnect remote software. Please contact Percival Scientific with any questions regarding this manual or the use of the PercivalConnect Remote Software at:

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

System Requirements

Remote Terminal

- Web Browser: a current version of Google Chrome, Microsoft Edge, Mozilla Firefox, or Safari (Internet Explorer is not supported)

Central Server

- OS: 64-bit Windows 10 or Windows 11, or Windows Server 2019 or later (32-bit Windows is not supported)
- Processor: 2 GHz, minimum (2 GHz+ recommended)
- RAM: 4 GB, minimum (8 GB+ recommended)
- Disk Space: 15GB free space, minimum (80 GB+ recommended)

Network and Firewall

The installer does not change Windows Firewall settings. Make sure the following inbound TCP ports are allowed on the central server, and on any firewall between the server, the controllers, and remote users:

- Port 8443 (HTTPS): web browser access to the PercivalConnect software
- Port 61614 (SSL/TLS): chamber data from IntellusUltraConnect controllers (Cloud Security = SSL)
- Port 61613: chamber data from controllers configured for non-SSL communication

The central server should have a fixed (static) IP address, because each controller is configured with this address. Internet access is only required for email notifications that use the default mail service and for the 'Forgot password?' feature.

IntellusUltraConnect IP Address and Web Server Setup

Any IntellusUltraConnect controller to be connected to the remote software must first be configured for network communications. Please refer to the **"IP Address Setup"** section of the **IntellusUltra & Connect Manual**. Configure each controller to communicate with the computer on which the PercivalConnect software is installed. If the PercivalConnect software is to be accessed remotely, configure each controller to communicate on a network with access to the internet.

Communication between an IntellusUltraConnect control system and the PercivalConnect software is secure from the perspective that it is uni-directional. Once connected, each controller pushes data to the PercivalConnect database at a frequency of once per minute. The software's database only **receives** data from each controller and never requests it.

Each IntellusUltraConnect controller's web server can be linked to the PercivalConnect software at the user's discretion. This link allows for a seamless transition between the PercivalConnect software and a controller's built-in web server interface. If this link is established, please refer to the **"Securing the IntellusUltraConnect Web Server"** and **"IntellusUltraConnect Web Server Setup"** sections of the **IntellusUltraConnect Web Server Manual**.

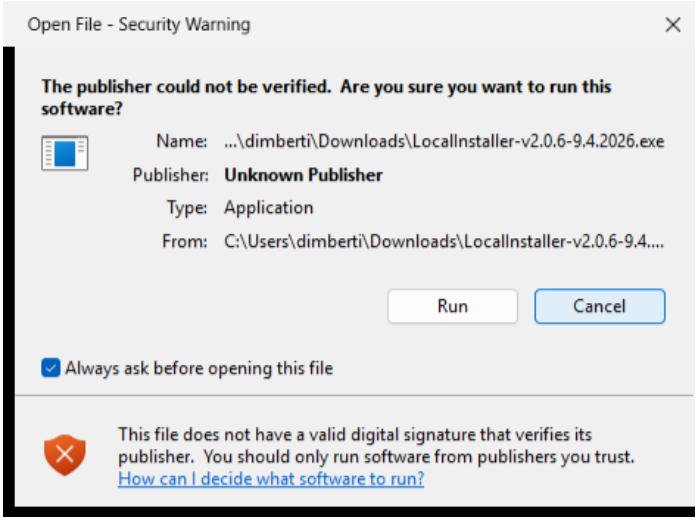
Note: Some of the recommendations for securing a web server may not allow direct access from the PercivalConnect software.

Software Installation

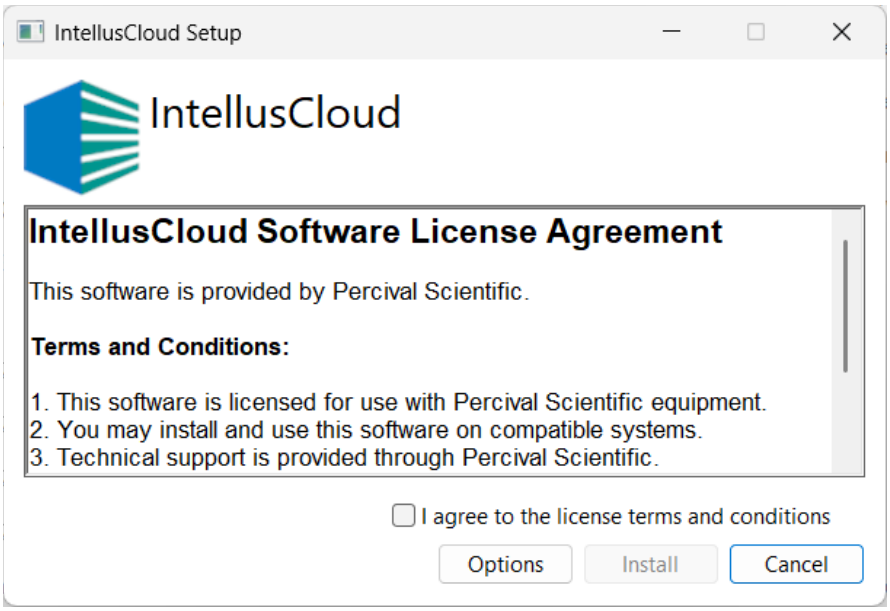
Please use the following procedure for installation of the software on a local computer:

1) Double-click on the 'LocalInstaller-vX.X.X' Windows installation file.

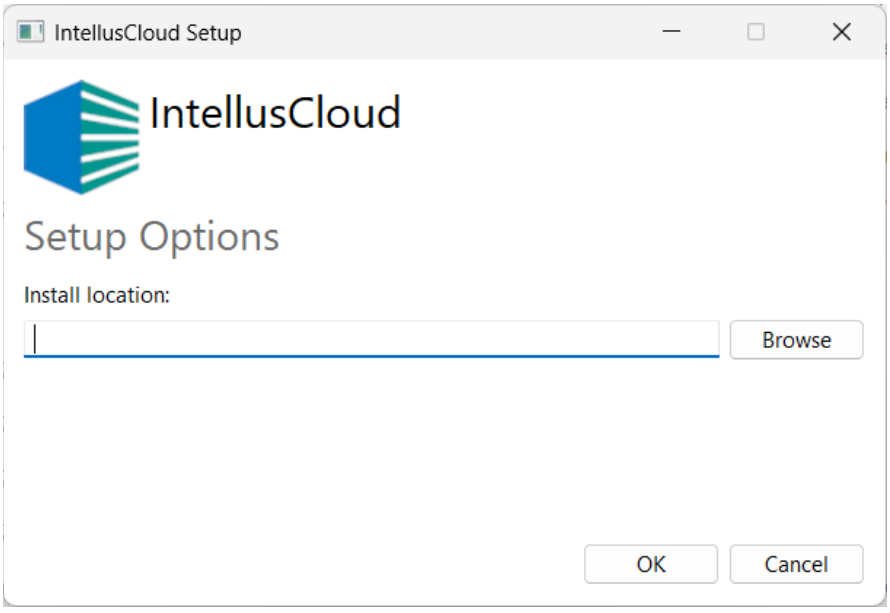
2) Depending upon the local PC's security settings, a pop-up message may appear. Because the installation file is not digitally signed, the publisher is shown as 'Unknown Publisher'.



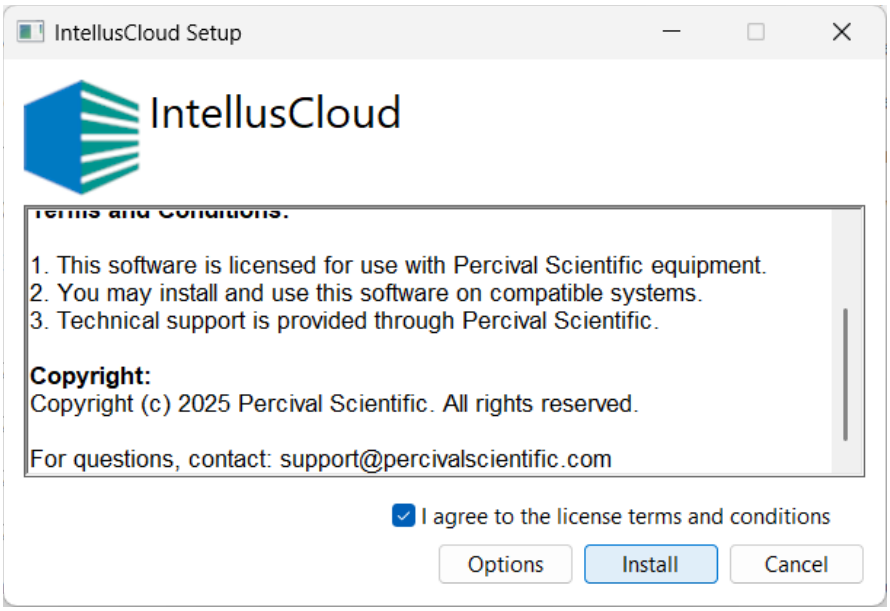
3) In order to proceed with the installation, click 'Run'. To abort the installation process, click 'Cancel'. **Note:** Do not install software from any sources you do not trust.
4) After 'Run' is selected, the IntellusCloud Setup window opens and displays the IntellusCloud Software License Agreement.



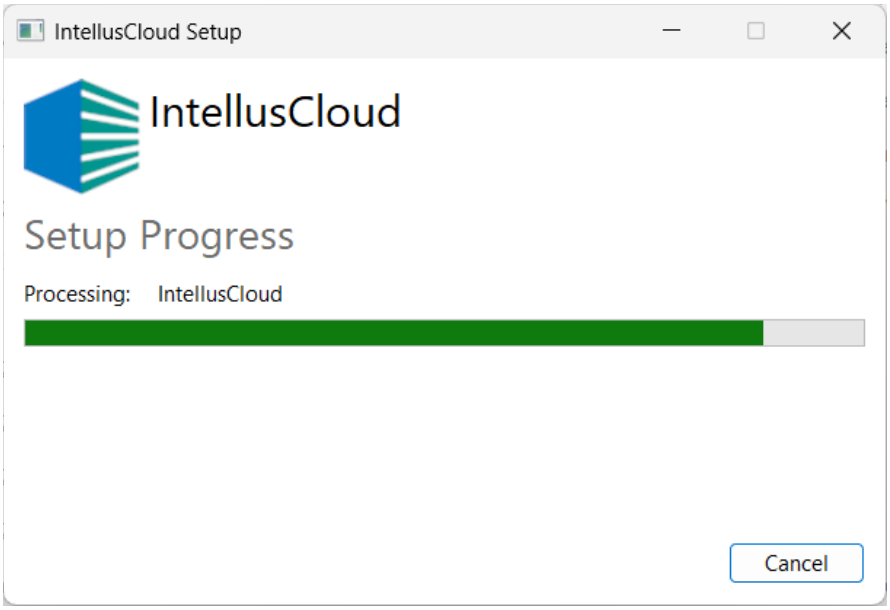
5) Read the license agreement, then select the 'I agree to the license terms and conditions' check box. The 'Install' button is not available until this check box is selected. Click the 'Cancel' button to abort the installation.
6) The 'Options' button opens the Setup Options screen, which shows an Install location. Click 'Cancel' to return to the license agreement.



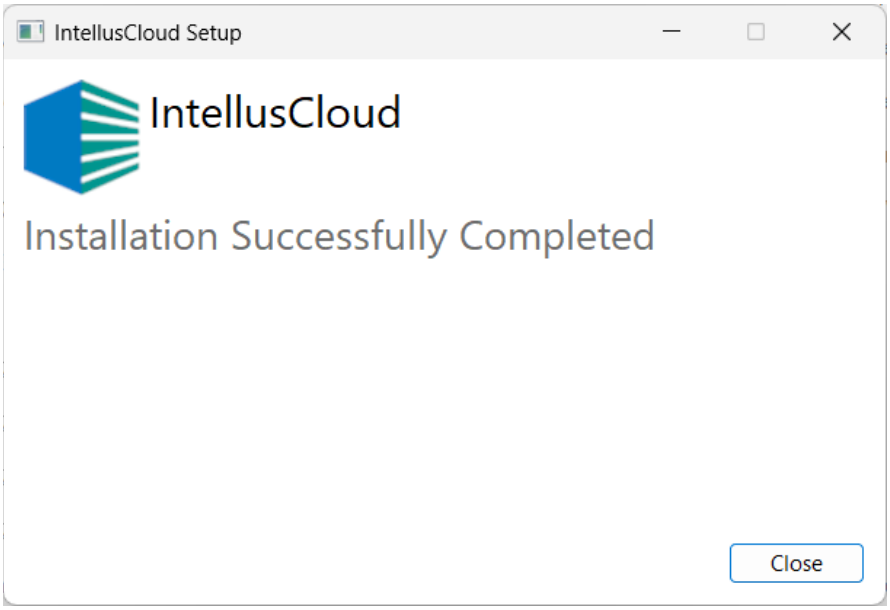
7) Click the 'Install' button to proceed with the installation.



8) Depending upon the local PC's security settings a pop-up message requesting permission for the application to make changes to the device may appear. To proceed with the installation, click 'Yes'. To abort the installation, click 'No'. **Note:** Do not install software from any sources you do not trust.
9) The Setup Progress screen shows each component as it is processed: the Microsoft .NET 10 Windows Hosting Bundle, MongoDB 8.0 Community Server (the database), the database migration step (MigrationRunner), and the IntellusCloud application. Components that are already installed are skipped. This can take several minutes.



10) When the setup process is complete, the ‘Installation Successfully Completed’ screen will appear.



11) Click the ‘Close’ button to close the installer.
12) The installation process is complete.

The installer creates three Windows services that start automatically with Windows: IntellusCloud Web Service, IntellusCloud Local Service, and IntellusCloud Core Service. The MongoDB Server service is also installed. An ‘IntellusCloud’ shortcut, which opens the software in the default web browser, is added to the desktop and to the Start menu.

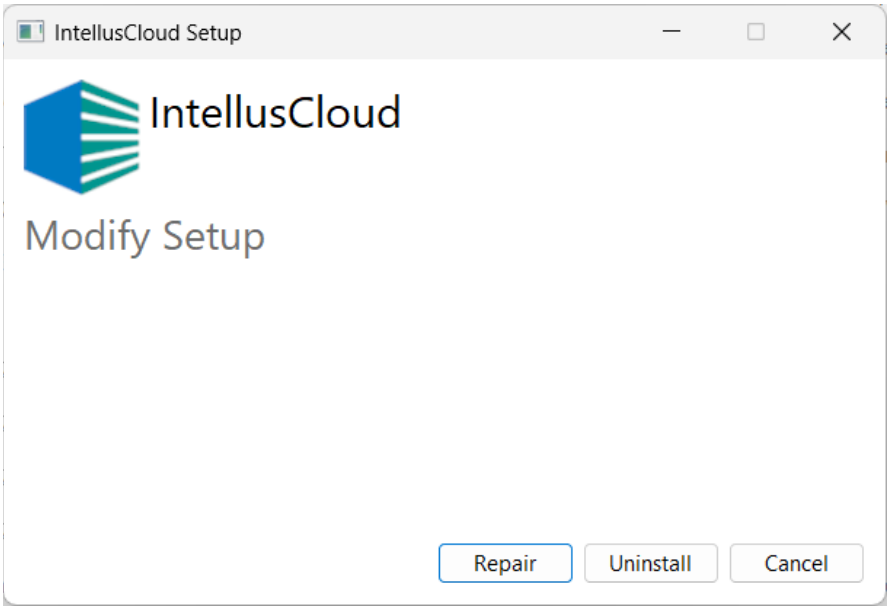
Upgrading from Version 1.x

To upgrade an existing PercivalConnect 1.x installation, run the version 2.0.6 installer on the same computer. The installer removes version 1.x and transfers the existing customers, users, chambers, and logged data into the new database. It is recommended that the existing data be exported, and the computer backed up, before upgrading. Note: The web address of the software changes in version 2.0 (see Launch the Application). Update any saved bookmarks.

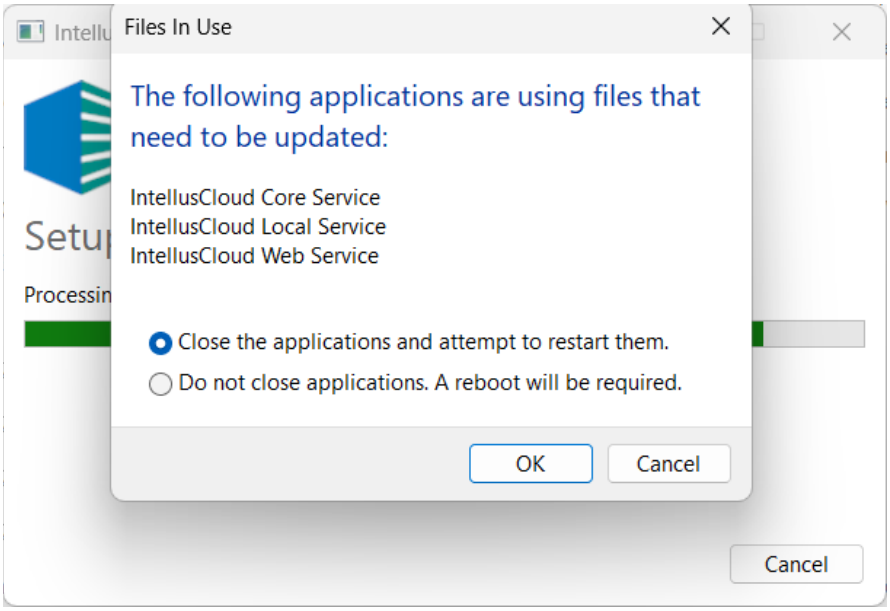
Repairing or Uninstalling the Software

If the same version of the software is already installed, the installation file opens the Modify Setup screen instead. Click ‘Repair’ to reinstall the program files, ‘Uninstall’ to

remove the software, or ‘Cancel’ to exit. The software can also be uninstalled from Apps in Windows Settings.



During a repair, upgrade, or uninstall, a ‘Files In Use’ message may list the IntellusCloud services. Select ‘Close the applications and attempt to restart them’ and click ‘OK’.



Uninstalling the software does not remove MongoDB Server or the database files in C:\IntellusCloudLocal\mongodb. If the software is installed again, the existing customers, users, chambers, and logged data are kept.

Launch the Application

To launch the PercivalConnect application on the local PC, double-click the 'IntellusCloud' desktop shortcut, or open a web browser and type '**https://localhost:8443**' into the address bar. The Login Page will be displayed.

To connect to the PercivalConnect software from a remote device, open a web browser and type '**https://###.###.###.###:8443**', where ###.###.###.### is the IP address of the local host computer. If the IP address is not known, proceed to the section entitled '**Configure IntellusUltraConnect for PercivalConnect'**. Once connected, the Login Page will be displayed.

Security Certificate Warning

The connection to the PercivalConnect software is encrypted with a security certificate that is created on the central server during installation. Because this certificate is not issued by a public certificate authority, the web browser displays a warning, such as 'Your connection isn't private', the first time it connects. This is expected. To continue, click 'Advanced', then click 'Continue to … (unsafe)' or 'Proceed'. The Login Page will then be displayed.
To stop the warning from appearing, an IT administrator can install the server's certificate in the 'Trusted Root Certification Authorities' certificate store of each computer that accesses the software.

User Account Hierarchy

The PercivalConnect remote software has 3 different user levels, with each allowing for a different level of access to the software and connected chamber control systems. In the software's Role lists, the General User level is shown as 'User'.

General User

The general user level in the PercivalConnect software is intended for regular users that do not require any type of administrative access to the system. This user level is able to view the status, graphs, and profile of any chambers assigned to the user account. Multiple chambers can be assigned to each general user account. General users can also upload programs via the program import utility, as well as access a chamber's IntellusUltraConnect Web Server directly through the application.

Customer Administrator

The Customer Administrator user level has access to all the features available to General User accounts. Additionally, this level of access can create and administer General User accounts,

edit the profiles of the customer's chambers, and create and download data exports. Chambers must be assigned to a Customer Administrator account before they appear on that account's Home and Chambers pages.

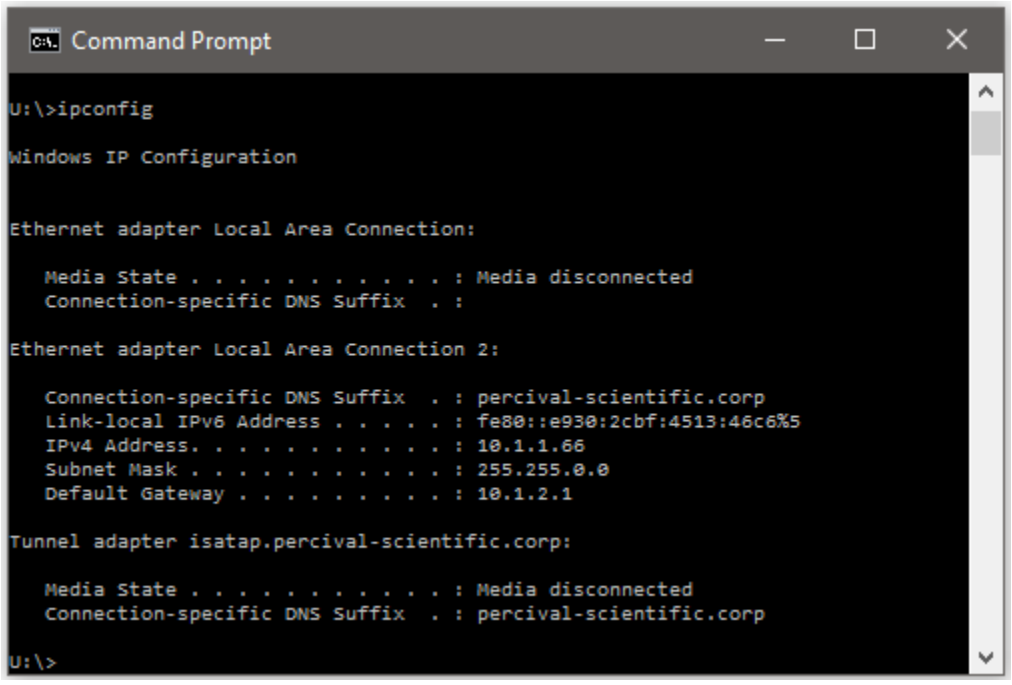
Site Administrator

The Site Administrator user level has full access of the PercivalConnect software. This user level is typically used to create and administer Customer Administrator user accounts, but can also create and administer all other types of user accounts. Each instance of the locally installed software will require its own user groups, including a Site Administrator user level.

Configure IntellusUltraConnect for PercivalConnect

In order to proceed with registering an IntellusUltraConnect controller with the PercivalConnect software, the following items must be completed:

1) PercivalConnect software must be installed on a local computer.
2) IntellusUltraConnect must be configured for network communications with the central computer on which the PercivalConnect software has been installed.
3) Determine the IP address of the local computer. The IP address is required for remote access. To determine the IP address of the local computer:
   a. Open the command prompt.
   b. Type 'ipconfig' into the field and press Enter



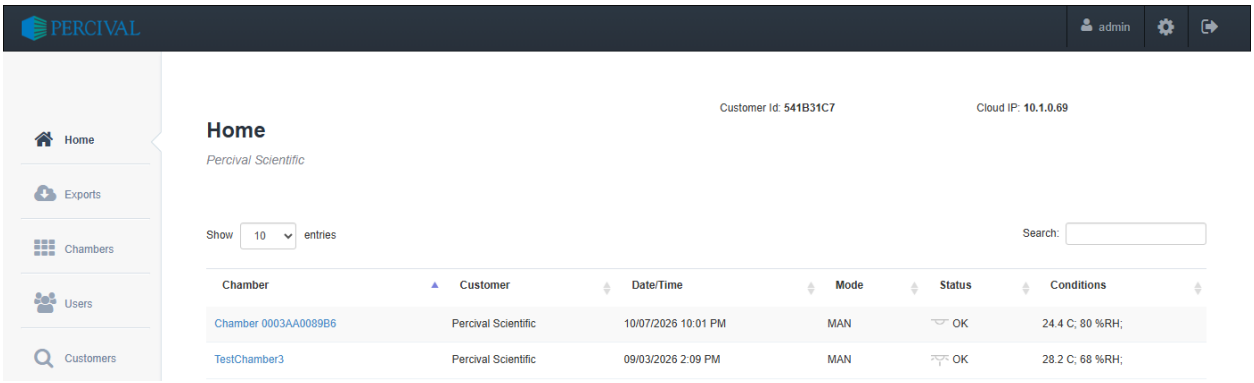
   c. The computer's IP address will be displayed in the resulting text. In the example shown above, the local computer's IP address is 10.1.1.66
   d. Type 'exit' and press Enter to exit the command window.

Once the above preliminary steps have been accomplished, use the following procedure to obtain a Customer ID number from the locally installed PercivalConnect remote monitoring software.

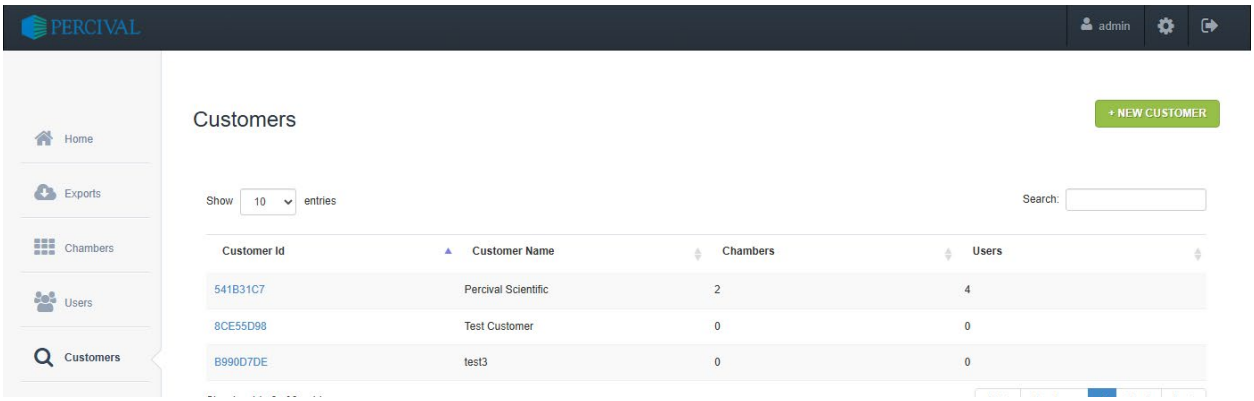
1) Run the PercivalConnect remote software. If accessing the software from a remote location, skip to step 3), otherwise continue to the next steps if the software is to be accessed from the local computer on which it's installed.

a. Open a web browser on the local computer on which the PercivalConnect software was installed
b. Type '**https://localhost:8443**' into the address field of the web browser

2) Access the PercivalConnect remote software from a remote computer.
   a. Open a web browser on the remote device or computer
   b. Type 'https://' followed by the host computer's IP address and the port number (:8443), and press Enter. For example, to remotely connect with the host computer shown above, the user should type '**https://10.1.1.66:8443**' into the address field of the web browser.
3) Login as the Site Administrator. The login credentials are:
   a. Username = admin
   b. Password = admin
4) If successfully logged in, the Home page of the PercivalConnect Software will be displayed. Click on the 'Customers' tab on the side bar.



5) On the Customers page the, default Customer is Percival Scientific. This is the customer account associated with the default Site Administrator user account.
6) The Customer ID for the default Percival Scientific customer account is **541B31C7** (see screen shot below). If a chamber is to be connected with the software under this customer account, proceed to the section entitled **IntellusUltraConnect Setup**. If a chamber is to be registered with a new customer account, proceed to the next section.



Note: Customer accounts must be created before any user accounts are created, and before any chambers can be linked to the database and subsequently assigned to users. Customer Names must be unique.

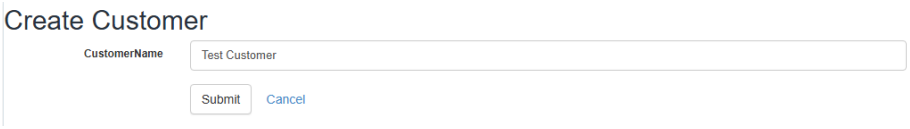
Depending upon the requirements for the PercivalConnect software implementation, either the default Percival customer group may be used to register chambers with the software, or the Site Administrator can create one or more new customers – each with their own user groups. For smaller, simpler chamber installations, the default Percival customer group may suffice whereas larger, more complex installations may benefit from multiple customer group accounts. For example, a large company or institution with multiple departments and multiple controlled environments with IntellusUltraConnect control systems may choose to create a customer group for each department. Each department's customer group would be assigned a Customer Administrator account and subsequent General User accounts. This scenario allows for a single software system and provides segregation between user groups.

Creating a New Customer

1) Click the '**+ NEW CUSTOMER**' button at the top, right hand corner of the Customers page in the PercivalConnect remote software ware.

Note: Only the Site Administrator user level has the ability to create and administer new Customers in the software.

2) When prompted, enter the new customer name into the text field and click 'Submit'. **Note:** Customer names must be unique. For the purpose of these instructions a new customer call Test Customer will be added to the system.



3) Each customer account is assigned a random, unique Customer ID by the software. This ID must be input into any IntellusUltraConnect controller that is to be connected to the software. For the above example, the new Customer ID generated is 8CE55D98.
4) After the new customer is created, its Customer Profile page opens. The Customer Id is also listed under Connection Details on this page.

IntellusUltraConnect Setup

The following information is required to configure an IntellusUltraConnect control system for communications with a PercivalConnect software installation.

- IP address of the host computer
- Customer ID number

The IntellusUltraConnect control system can be configured to connect with the PercivalConnect software through the controller's overlay, or (if provided) touch screen interface. Skip the next set of instructions and proceed to the following set of steps for instructions on how to the control system via the touch screen interface. Use this procedure to configure an IntellusUltraConnect control system for the PercivalConnect software via the controller overlay:

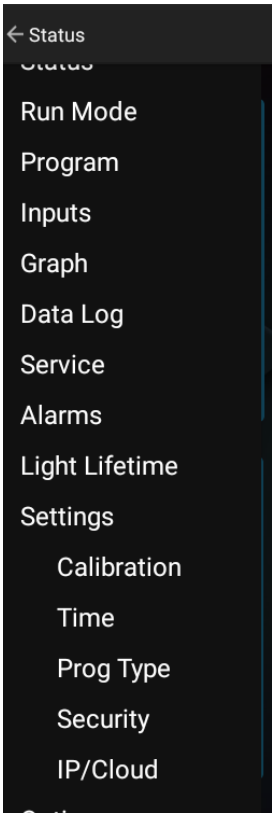
1) Hold both the **ENTER** and ▲ keys simultaneously for approximately four seconds. The controller will prompt the user to enter the security level password. The default password is '1111'. If the first character of the password is not flashing, press the **ENTER** key.
2) Use the ▲ and ▼ keys as necessary to change characters. Press the **PROGRAM** key to advance to the next character. Repeatedly press the **PROGRAM** key to scroll through and review the password. Pressing the **PROGRAM** key at the last character will cause the character selection to wrap around.
3) Press the **ENTER** key when the password '1111' has been successfully entered.
4) Press the ▼ key repeatedly until 'Cloud Server IP' appears in the display.
5) Press the **ENTER** key to edit the IP address value.
6) Enter the IP address obtained from the steps above for the host computer running the PercivalConnect software. Use the ▲ and ▼ keys as necessary to change the flashing character to the desired value. Press the **PROGRAM** key to advance to the next character. Repeatedly press the **PROGRAM** key to scroll through and review

the password. Pressing the **PROGRAM** key at the last character will cause the character selection to wrap around. **Note:** The host computer's IP address can be located at the top of most screens on the PercivalConnect software as 'Cloud IP:'.

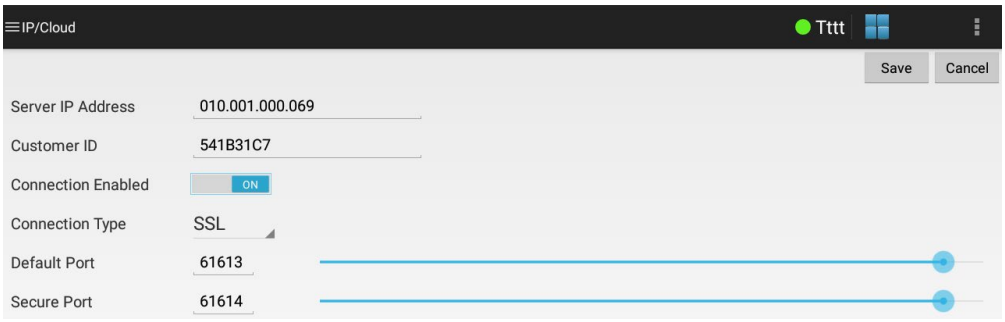
7) Press the **ENTER** key to accept the changes.
8) Press the ▼ key to display 'Cloud Security'
9) The Cloud Security should be set to 'SSL'. If not, proceed to the next step. If correct, proceed to step 13).
10) To change this setting, press the **ENTER** key
11) Press the ▼ or ▲ key to change the displayed menu value to the desired setting
12) Press the **ENTER** key to accept the change.
13) Press the ▼ key to display 'Cloud Default Port'.
14) The Cloud Default Port should be set to **61613**. If not, proceed to the next step. If correct, proceed to step 18).
15) To change this setting, press the **ENTER** key.
16) Use the ▲ and ▼ keys as necessary to change the flashing character to the desired value. Press the **PROGRAM** key to advance to the next character. Repeatedly press the **PROGRAM** key to scroll through and review the password. Pressing the **PROGRAM** key at the last character will cause the character selection to wrap around.
17) Press the **ENTER** key to accept the changes.
18) Press the ▼ key to display 'Cloud Secure Port'
19) The Cloud Secure Port should be set to **61614**. If correct, proceed to the next step. If not use steps 15) through 17) for reference on how to change this value, then proceed to the next step.
20) Press the ▼ key to display 'Cloud Customer ID'
21) Enter the Customer ID. This was generated by the local instance of the PercivalConnect software, per previous instructions.
22) Press the **ENTER** key to edit the Cloud Customer ID value.
23) Use the ▲ and ▼ keys as necessary to change the flashing character to the desired value. Press the **PROGRAM** key to advance to the next character. Repeatedly press the **PROGRAM** key to scroll through and review the password. Pressing the **PROGRAM** key at the last character will cause the character selection to wrap around.
24) Press the **ENTER** key to accept the changes.
25) Press the ▼ key to display 'Cloud Connection'
26) Press the **ENTER** key to edit this value.
27) Press the ▲ or ▼ keys to change the value to Yes.
28) Press the **ENTER** key to accept the change.
29) Press and hold <u>both</u> the **ENTER** and ▲ keys simultaneously for approximately four seconds to exit the User Setup Menu and return to the main display screen.

To configure an IntellusUltraConnect control system for use with the PercivalConnect software through the (optional) touch screen tablet, use the following procedure in the IntellusControl app:

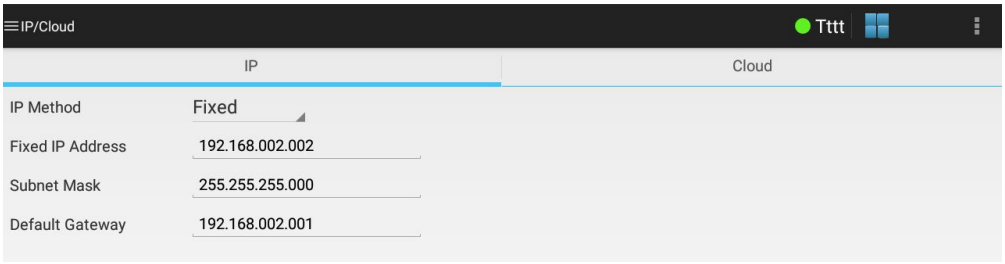
1) Log in to the IntellusControl app, then tap the menu icon at the top left of the screen to open the side bar menu.
2) Tap Settings, then IP/Cloud, per the screen shot below.



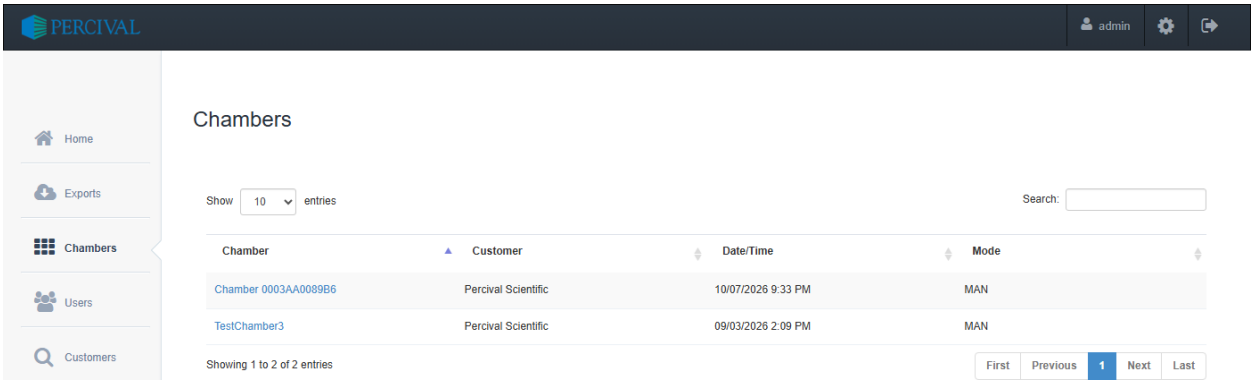
3) Tap the Cloud tab and set the values to the following:
    a. Server IP Address = IP address of the local host computer, entered with three digits in each part (for example, 010.001.000.069)
    b. Customer ID = ID number obtained from previous steps
    c. Connection Enabled = ON
    d. Connection Type = SSL
    e. Default Port = 61613
    f. Secure Port = 61614



4) To change a value, tap it, edit it, and then tap the check mark (Enter) key on the keyboard. The Save and Cancel buttons at the top right become available once a value has been changed. The above screen shot shows example values.
5) Press the Save button to accept changes and save them to the IntellusUltraConnect controller.
6) The IP tab of this page shows the controller's own network settings. On chambers with a Netgate network gateway, the controller uses a fixed address of 192.168.002.002 (subnet 255.255.255.000, gateway 192.168.002.001). Do not change these settings.



Once the software and controller have been configured, the newly-added controller will show up in the list of chambers on the Chambers page, and will automatically start sending data every minute to the software, where it can be remotely viewed and exported from different user accounts.
Note: If the Date/Time of a newly connected chamber shows 01/01/0001, the controller has reached the software, but its data is being blocked. Refer to the Troubleshooting section.



Chambers with a Netgate Network Gateway

Chambers manufactured after 2022 may contain a Netgate network gateway between the IntellusUltraConnect controller and the facility network. The controller and the tablet connect to the Netgate inside the chamber, and the Netgate connects the chamber to the facility network through the chamber's Ethernet port. On these chambers, the cloud connection is still set up on the controller or the tablet, as described above.

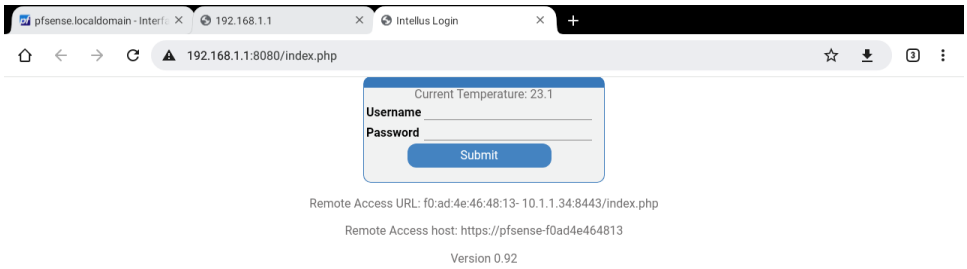
The chamber's address and host name on the facility network are shown as the Remote Access URL and Remote Access host on the Netgate login page (see below). The host name is also printed next to the chamber's Ethernet port. Use the two procedures below only if the controller and tablet procedures above cannot be used or do not connect.

Netgate Web Page (Last Resort)

The Netgate can send the chamber's data to the PercivalConnect software itself. Use this method only when the chamber cannot be connected through the controller or the tablet.

Important: This starts a separate connection from the Netgate. If the controller's own cloud connection is also enabled, the PercivalConnect software receives the chamber's data twice. Set the controller's Cloud Connection (Connection Enabled) to No before using this method.

- Open the Netgate web page. On the chamber's tablet, open Chrome and go to http://192.168.1.1:8080/index.php. From a computer on the facility network, go to https://###.###.###.###:8443/index.php, using the chamber's Remote Access address or host name, and accept the certificate warning.



- Log in. The default username is admin, and the default password is percival-scientific.
- Click INFORMATION in the left-hand menu.
- In the Connect section, enter the IP address or host name of the computer running the PercivalConnect software into Connect IP String, and check the Port (61614), SSL Enabled (True), and Customer ID.

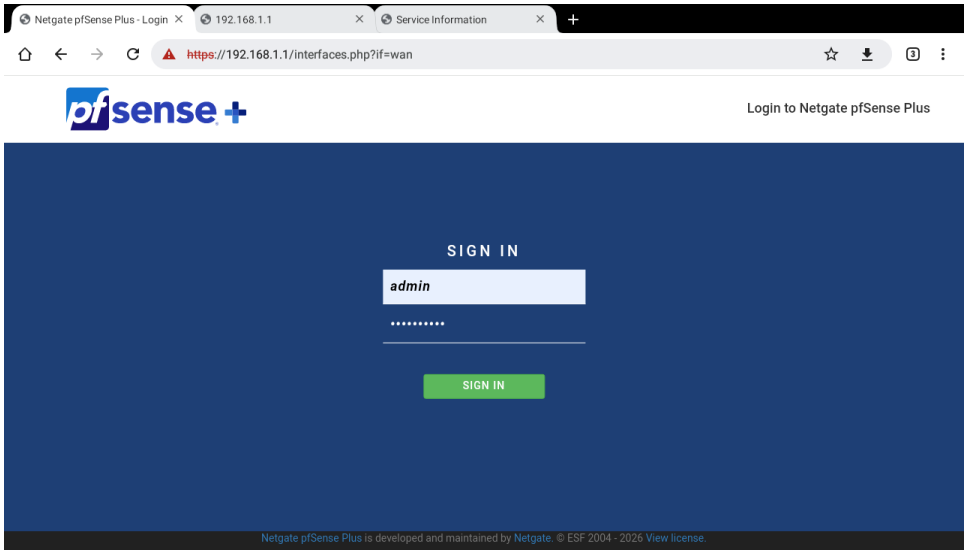
- Click ‘Save&Run Connect’.

Netgate Firewall Settings

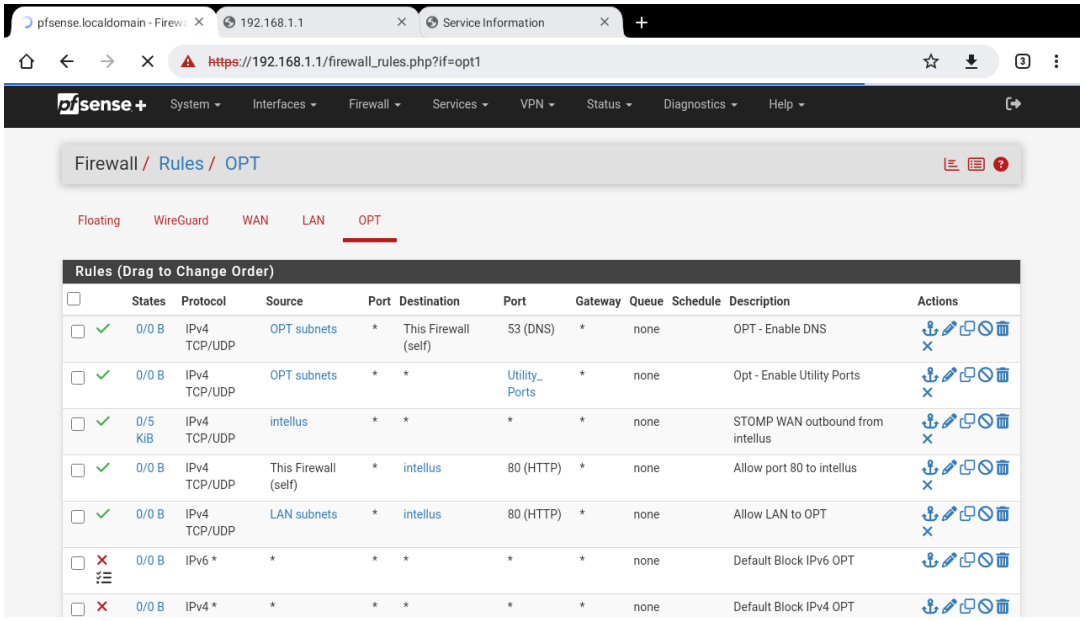
If a chamber with a Netgate still does not connect, the Netgate’s firewall may be blocking the connection to the PercivalConnect software on port 61614 (or 61613). To check the firewall:

- On the chamber’s tablet, open Chrome and go to https://192.168.1.1 (accept the certificate warning).

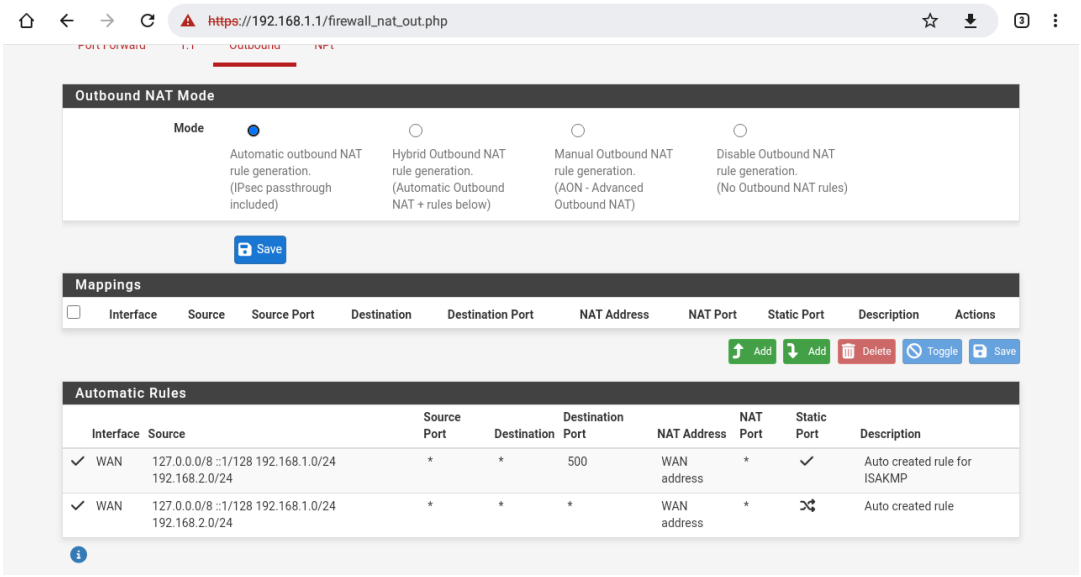
- Log in. The default username is admin, and the default password is Percival1! (also printed on a label on the Netgate). A Netgate that has been reset to its factory settings uses admin and pfsense.



- On the top bar, click Firewall, then Rules, then the OPT tab (the connection to the controller).
- Check that the rule 'STOMP WAN outbound from intellus' is present and enabled, with Source 'intellus' and Destination and Port set to '*' (any). A disabled rule is shown faded. If the rule is missing, click Add, and create a Pass rule on the OPT interface for protocol TCP/UDP, with Source 'intellus' and Destination any. Click Save, then Apply Changes.



- On the top bar, click Firewall, then NAT, then the Outbound tab. Check that the Mode is 'Automatic outbound NAT rule generation', and that the automatic rules include 192.168.2.0/24.



- If both settings are correct, the connection is being blocked outside the chamber. Ask the facility's IT department to allow TCP port 61614 (or 61613) between the chamber and the computer running the PercivalConnect software.

Note: For other Netgate network settings, such as a fixed IP address or a direct connection to a PC, refer to the Intellus Networking Field Guide.

Creating New User Accounts

A user account is required to view and download chamber data from the PercivalConnect remote software. It is recommended that each user is provided with a discrete account, and that usernames and passwords are not shared between multiple users.

The following section describes the procedure for creating new user accounts. Once a user account is created, any IntellusUltraConnect controller actively connected to the system under the same customer group may be assigned to it. The Site Administrator user level can create any kind of user account. The Customer Administrator can only create a General User account. The General User account does not have rights to create any user accounts.

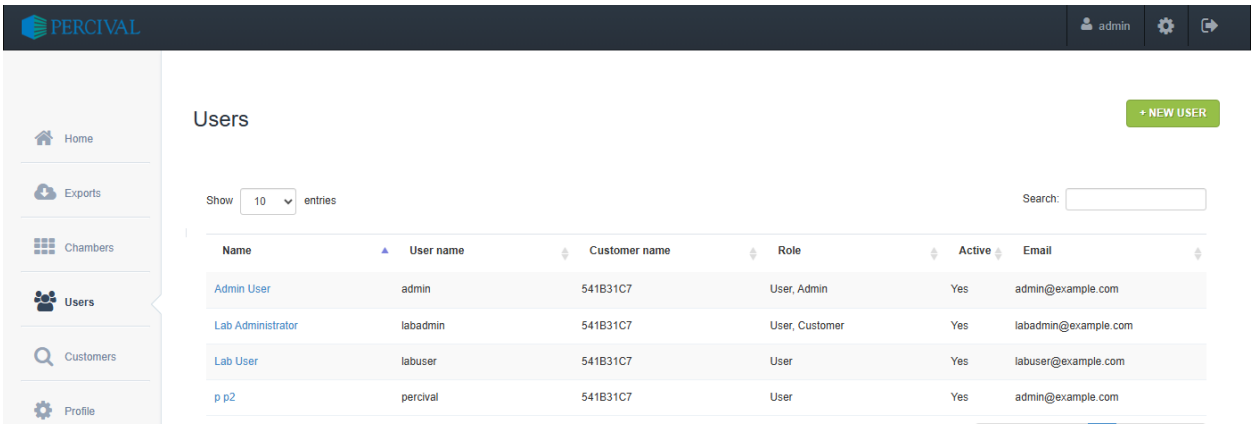
IMPORTANT!

It is highly recommended that users change default or initial administrator-assigned passwords immediately after their first login.

Create a Customer Administrator Account

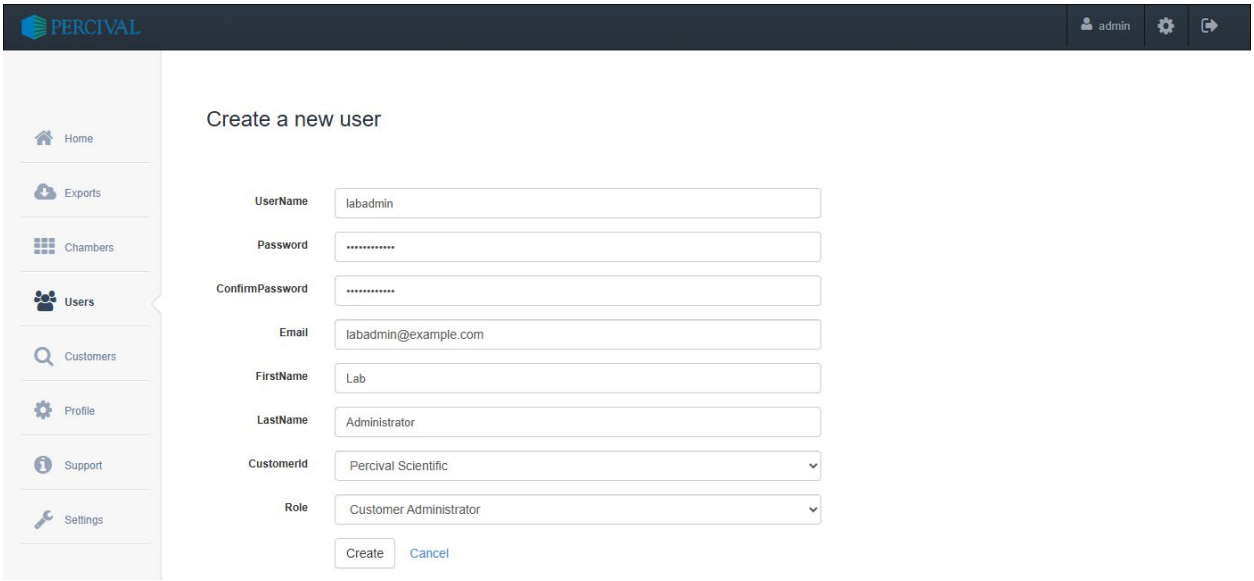
Please use the following procedure as a guide to create Customer Administrator user account(s):

1) Login to the PercivalConnect software as the Site Administrator. Unless already changed, the default login credentials are:
    a. Username = admin
    b. Password = admin
2) Once logged in, click on the Users tab on the side bar menu.



3) Click on the '**+ NEW USER**' button at the upper, right hand side of the Users page

4) On the 'Create a new user' screen, enter the new user information into all fields, select the customer account from the CustomerId dropdown list, select 'Customer Administrator' from the Role dropdown list, and press 'Create' to save. Passwords must be at least 6 characters long. The screenshot below shows the example of a new customer administrator with the username of labadmin. This example account will be referred to later on in this user manual.



5) After a new user account is created, its User Account page opens, and the account is added to the list of users on the Users page. Once a user has been created, one or

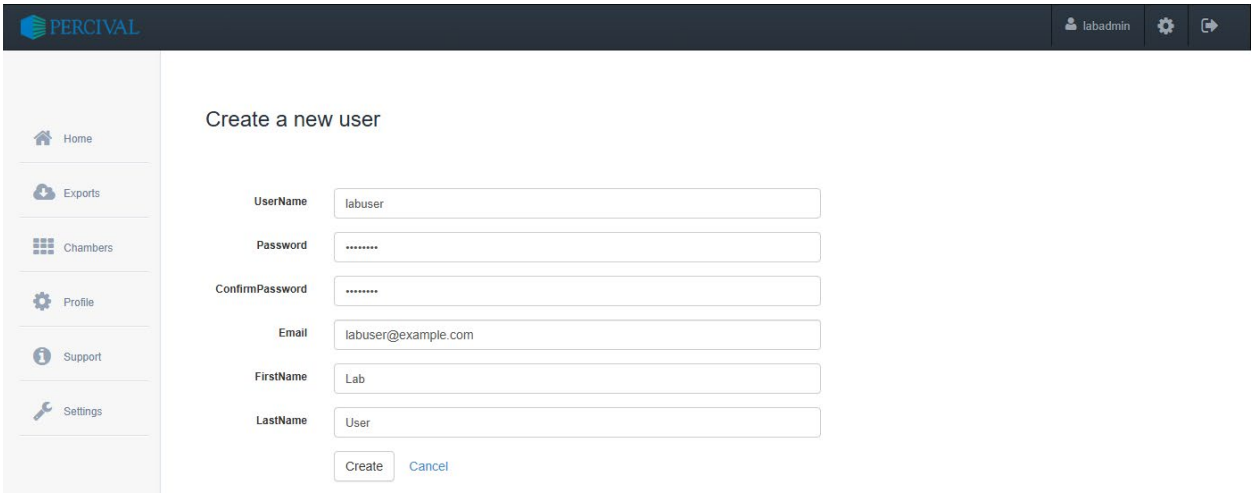
more chambers can be assigned to the account. To assign a chamber to an account, proceed to the section entitled 'Add Chambers to a User Account'.

Create a General User Account

General User accounts may be created from both the Site and Customer Administrator levels. In most cases of the local software, the Customer Administrator account will be used to create General User accounts. Use the following procedure to create a General User account:

1) Login to the PercivalConnect software as the Customer Administrator.
2)
3) Click on the '**+ NEW USER**' button at the upper, right hand side of the Users page

4) On the 'Create a new user' screen, enter the new user information into all required fields, and press 'Create' to save. The screenshot below shows the example of a new general user account under the Percival Scientific customer. The username in this example is labuser. This example account will be referred to later on in this user manual.



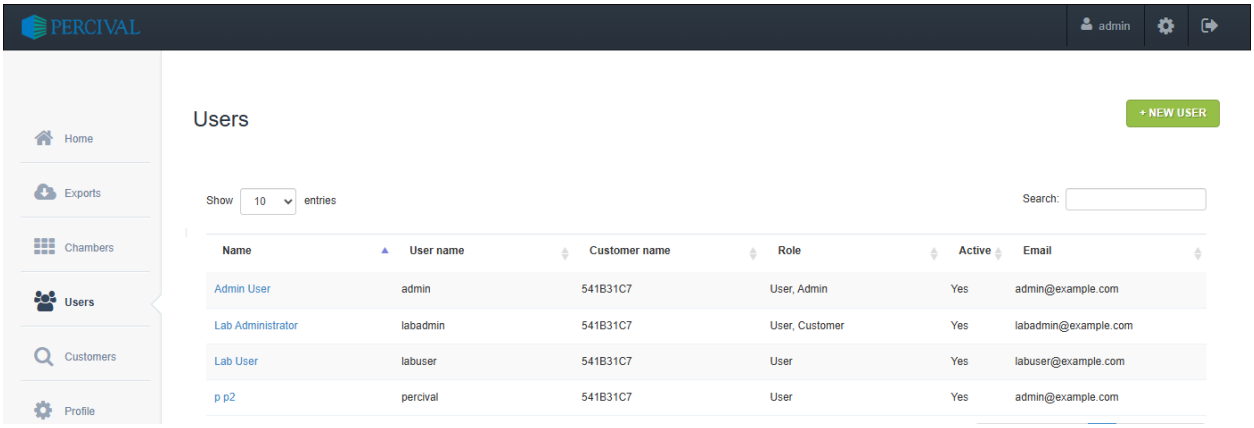
Note: There is no dropdown menu to select the user type (Role Name) when logged in as the customer administrator. Only General User accounts can be created and administered from this user level.

5) After the new user account is created, its User Account page opens, and the account is added to the list of users on the Users page. Once a user has been created, one or more chambers can be assigned to the account. To assign a chamber to an account, proceed to the section entitled 'Add Chambers to a User Account'.

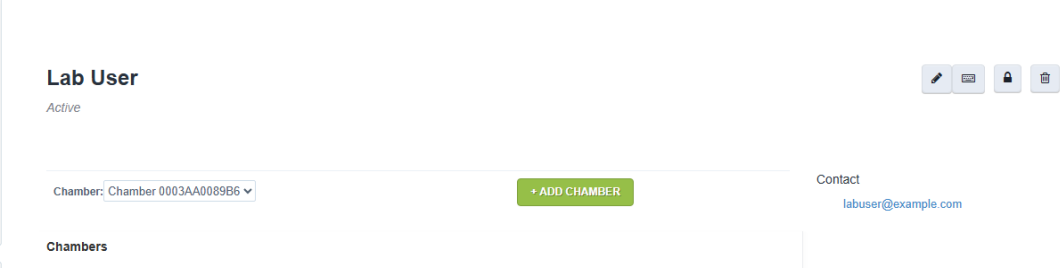
Add Chambers to a User Account

Once chambers have been connected to the PercivalConnect software, and user accounts have been created, administrators can assign chambers to users. To associate a connected IntellusUltraConnect control system with a user account (the example below uses the General User account) on the PercivalConnect software, use the following procedure:

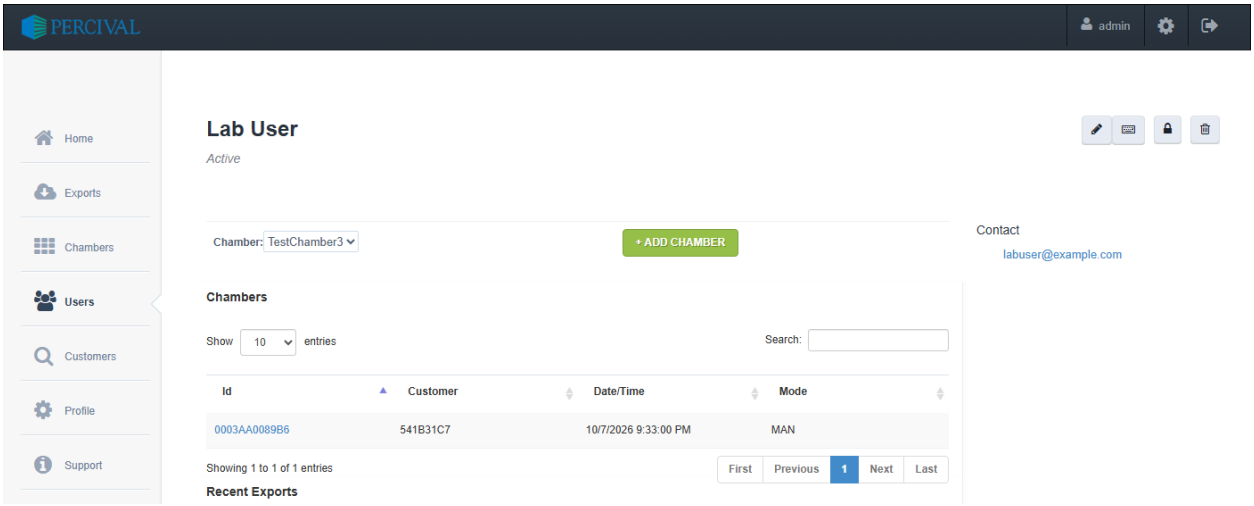
1) Click on the name hyperlink of the user account that is to be edited from the list of names on the Users page.



2) Clicking on the name hyperlink opens the user's User Account page. This particular subset of instructions is focused on adding a new chamber to the user account, so only those necessary features are covered. For a complete overview of this page, please refer to the section of this manual entitled 'User Account Page'. To add a chamber to the selected user account, select the chamber from the dropdown list, then click the '+ ADD CHAMBER' button.



3) The newly added chamber will be added to the Chambers table on the user account's profile page. The Date/Time column in the Chambers table will not show the correct chamber time until the first logged data point has been successfully uploaded to the software database. If this value does not update, there may be a problem with the controller's SD card or with the network connection (refer to the Troubleshooting section).



Note: The Chamber dropdown list only contains the IntellusUltraConnect controllers that are available to be associated with the user account. If no chambers are available, no chambers will populate this list.

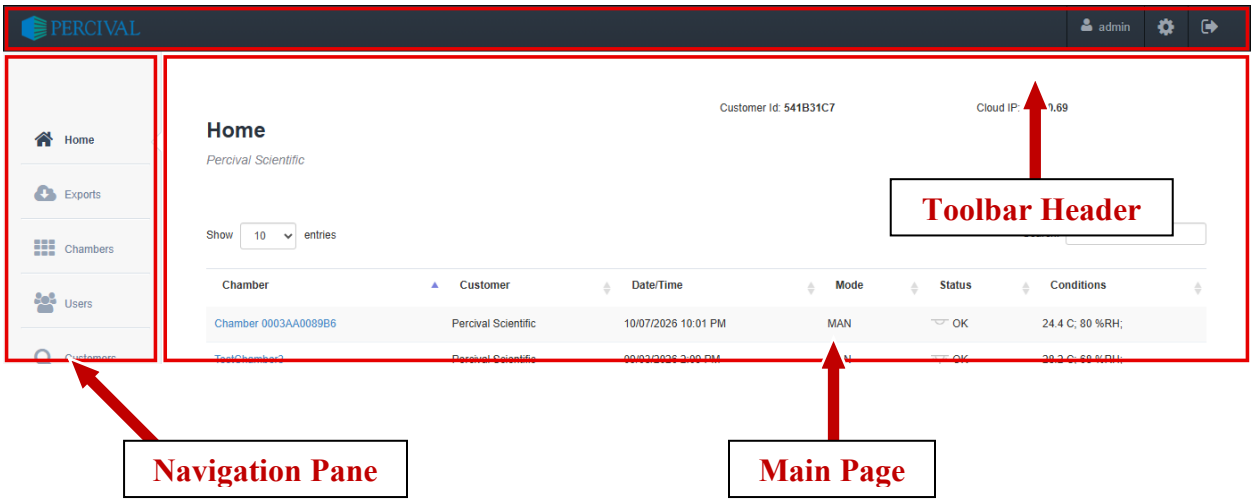
Software Screens and Navigation

The following sections describe the features and utility of each screen in the software.

General Page Layout

With the exception of the Login Screen, the PercivalConnect software utilizes a common page layout to streamline navigation between pages, and provide the user with an intuitive interface. The pages consist of three main sections – a static header at the top

of each page, a static navigation pane located at the left side of each page, and page-specific information located in the center of each page.



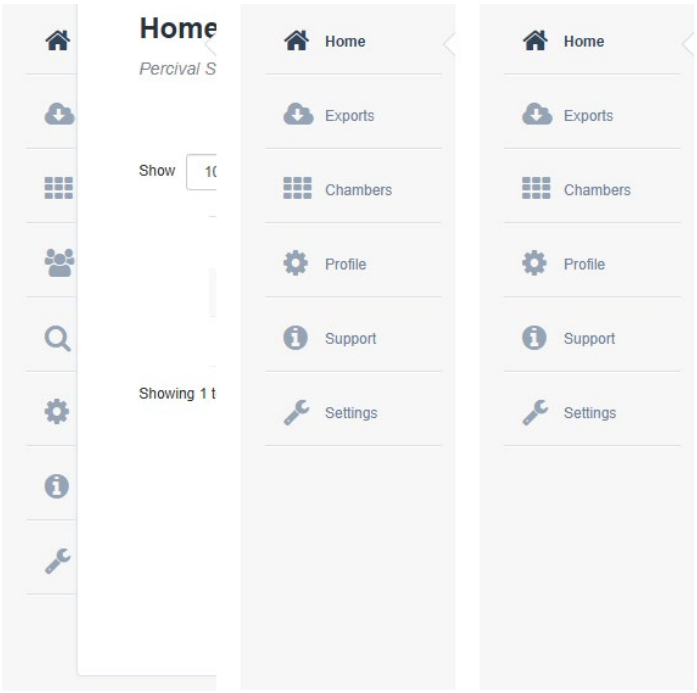
Navigation Pane

A navigation pane is provided at the left side of each software screen to allow the user to quickly transition between pages. From the perspective or each user, this pane is static, however the content of the navigation pane dynamically changes based upon the logged in user's credentials.

The Site Administrator user level has access to all software features and pages. The Customer Administrator and General User levels have restricted access, and therefore less available page destinations in their respective navigation panes. Please refer to the diagram below for reference on each user level's navigation pane.

To navigate between pages, simply click on the icon or text in the navigation pane associated with the desired software page.

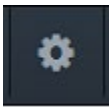
Site Admin Customer Admin General User



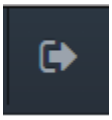
Toolbar Header

A toolbar header is provided at the top of every PercivalConnect software screen, with the exception of the Login screen. This static toolbar contains the same icons, regardless of the logged in user account's permissions.

Click on the Percival Scientific icon to return to the Home page. While on the Home page, click on this icon to refresh the page's information.

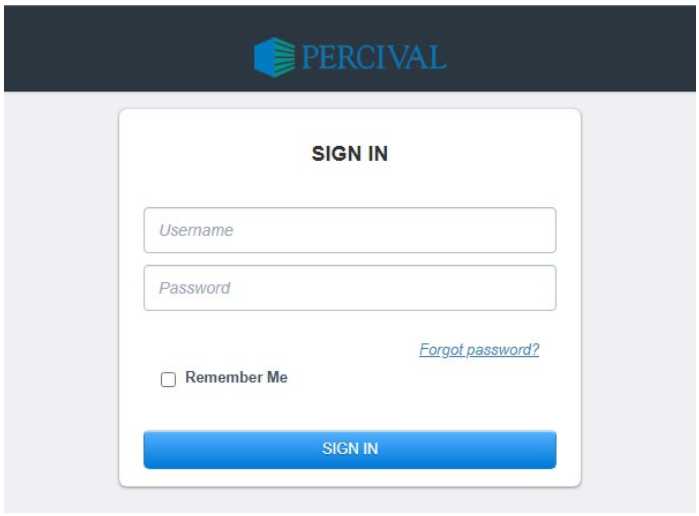


Click on the Gear icon to make changes to the logged in user's account. For more information regarding this feature, please refer to the section entitled '**Manage Account Page**'.



Click on this icon to log out from the PercivalConnect software. After the user is successfully logged out, the software returns to the Login Screen.

Login Screen



This login screen is the first page a user encounters when accessing the PercivalConnect software. Any access to the software requires an active username and password. Usernames and passwords are case-sensitive.

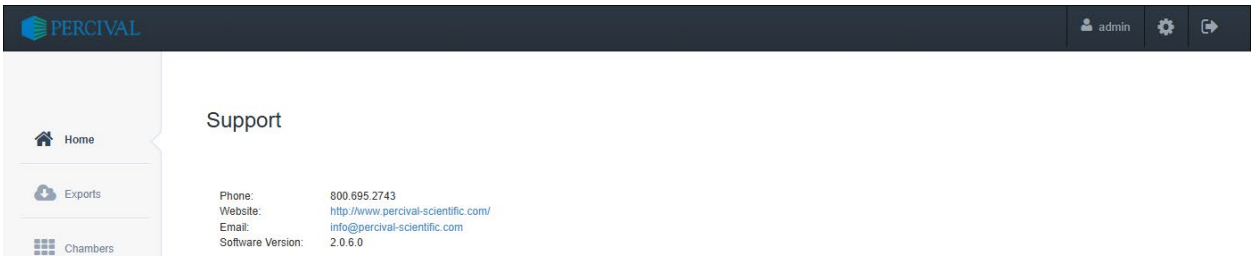
Users may select at their own discretion whether to allow the system to remember their login credentials whenever the software login screen is accessed. Once the username and password have been entered into the appropriate fields, click the '**SIGN IN**' button to log into the PercivalConnect software.

WARNING!

Enabling the 'Remember Me' check box poses a security risk as any user logging into the PercivalConnect software from the same computer will not need to enter in user credentials!

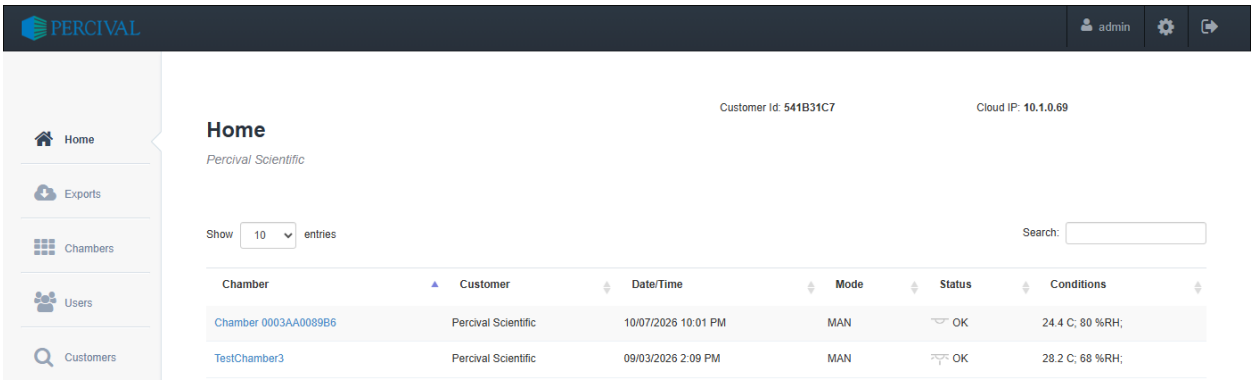
Support Page

If support is required at any time throughout the use the PercivalConnect software, click on ‘Support’ in the navigation pane. This opens the Support page, which contains contact information for Percival Scientific, and the software version.



Home Page

The Home screen is the first page a user encounters after successfully logging on to the PercivalConnect software. The intent of this screen is to provide the user with summary information of all chambers connected with their PercivalConnect user account. This summary information is presented in a tabular format. Only connected chambers that are assigned to the logged in user account are visible on the Home page.



The chamber status table on the Home screen contains the following column headers and information. To sort the table, click on the column header name by which the list is to be sorted. For large chamber lists, the search field may be used to find specific data. To use this feature, type the search word into the provided field. The chamber status table is filtered as the search word or number is entered into the search field.
The Home page refreshes automatically every 60 seconds. The customer name, Customer Id, and Cloud IP are shown above the table.

Chamber Column

The chamber column contains the chamber name. The default chamber name is 'Chamber 0003AA00####', where the numerical value following 'Chamber' is the connected controller's MAC address and the # characters are unique to every IntellusUltraConnect controller.

Each chamber name is presented as a shortcut hyperlink to that chamber's Status page. To access a chamber's status page from the Home page, click on the hyperlink. Please see the section entitled **Chamber Status Page** for instructions on the features and function of this page.

Customer Column

The customer column in the chamber status table contains the customer account associated with a connected chamber. The Home and Chambers pages list only chambers that belong to the logged in user's own customer account.

Date/Time Column

The Date/Time column in the chamber status table shows the timestamp from the last logged data point from the chamber's control system.

Note: The Date/Time value stops updating when a chamber stops sending data. A chamber that has connected but has never delivered a data point shows 01/01/0001 12:00 AM. Refer to the Troubleshooting section.

Mode Column

The Mode column in the chamber status table shows the operation mode of the connected chamber. Chamber operating modes and their table values are as follows:

MAN: Denotes the chamber is running in Manual Mode and maintaining manual set points
DIUR: Denotes the chamber is running a Diurnal program
DLI: Denotes the chamber is running a DLI program
PROG: Denotes the chamber is running a Multi-step program
SEQ: Denotes the chamber is running a Sequence of multi-step programs

Note: Please refer to the **IntellusUltra and Connect User Manual** for a detailed description of each controller operation mode.

Status Column

The Status column in the chamber status table shows an icon-based status for lighting and alarm conditions in each chamber. The light status icon is displayed as either 'Off', 'Partial', or 'Full'. If any control system alarm is active, an alarm icon is displayed in this column. If no alarm icon is present in the Status column, there are no active alarm conditions.

Denotes the chamber lights are off.

Denotes the chamber lights are partially energized.

Denotes the chamber lights are fully energized.

Denotes the chamber has an active alarm condition.

Conditions Column

The Conditions Column in the chamber status table shows the most recently logged process values in each chamber. The process values are listed in order of their input number. If an input is not active on a chamber, it is not included in the conditions information.

Chamber process values are listed in the following order:

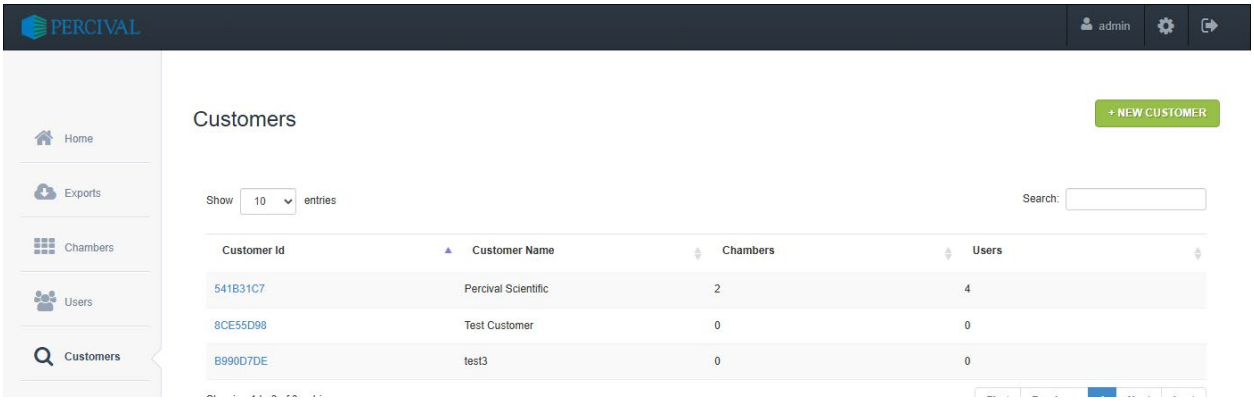
1) Temperature
2) Relative Humidity
3) Auxiliary
4) Expansion Slot 1
5) Expansion Slot 2
6) Expansion Slot 3
7) Expansion Slot 4

Process values (with units) are delimited with semicolons in this column. For additional information regarding Intellus process loops, refer to the **IntellusUltra & Connect User Manual**. For a summary of which inputs are utilized on a particular chamber, please refer to the chamber specific **Installation and Operation Manual**.

Customers Page

The Customers page is only accessible via the Site Administrator user account.

The Customers page provides the Site Administrator with a summary table of the customer accounts in the PercivalConnect software system. It also provides the Site Administrator with the ability to add new customer accounts as well as edit and delete existing customer accounts. Below is a screen shot of the Customers page, populated with the (default) Percival and (example) Test Customer account, created previously in this instruction manual.



Customers Summary Table

Provided below is a brief description of the information contained within each column of the summary table on the Customers page:

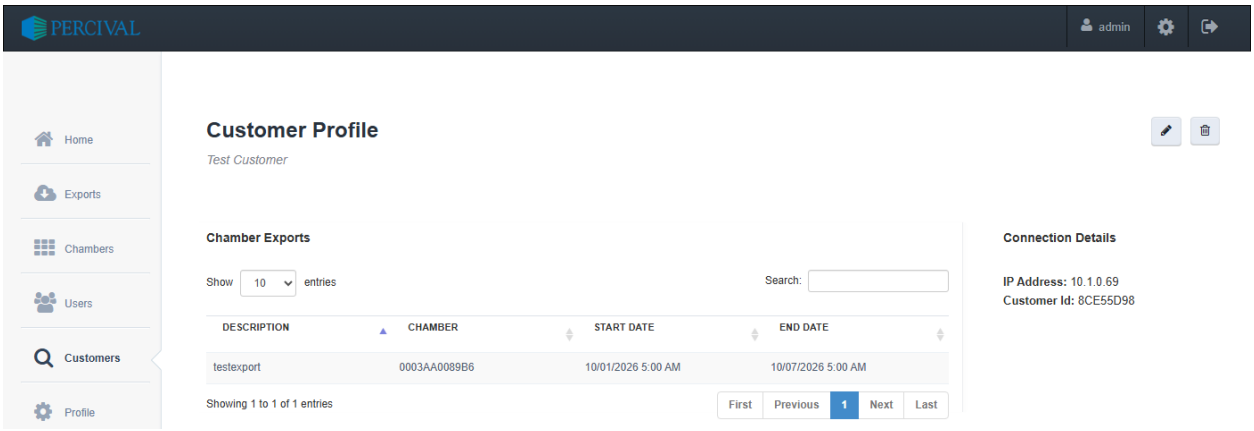
Customer ID: This column contains the unique customer ID generated by the software when a new customer account has been created. The ID numbers in this column are provided as hyperlinks. Clicking on an ID hyperlink opens a page containing detailed account information for the customer account. Please refer to the section entitled **Customer Profile Page** for additional information regarding the features and function of this page.
Customer Name: This column contains the customer names added to the system.
Chambers: This column lists the number of chambers currently assigned to a customer account.
Users: This column contains the number of users assigned to a customer account.

Creating a New Customer

New customer accounts are created by clicking the '+ NEW CUSTOMER' button on the Customers page. Please refer to the section identically entitled Creating a New Customer above this one for instructions.

Customer Profile Page

This page contains information regarding the selected customer account including a table of chamber exports created by the users assigned to the customer account, and specific connection details regarding the customer account. The customer account can also be administered via a set of buttons at the top, right hand side of the screen by a Site Administrator. The screenshot below shows the Customer Profile page for the Test Customer account example, created previously in this user manual.



Icons located at the top, right side of the Customer Profile page allow the Site Administrator to make changes to account information.

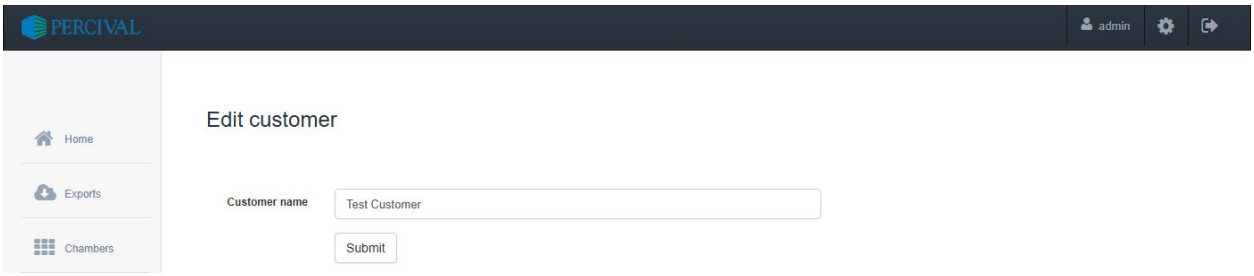
This button opens the Edit Customer page, where the customer name can be edited

This button deletes the customer account.

Edit a Customer Name

To edit values on the Edit Customer page, use the following procedure:

1) Click on the (edit) button. The following screen appears:

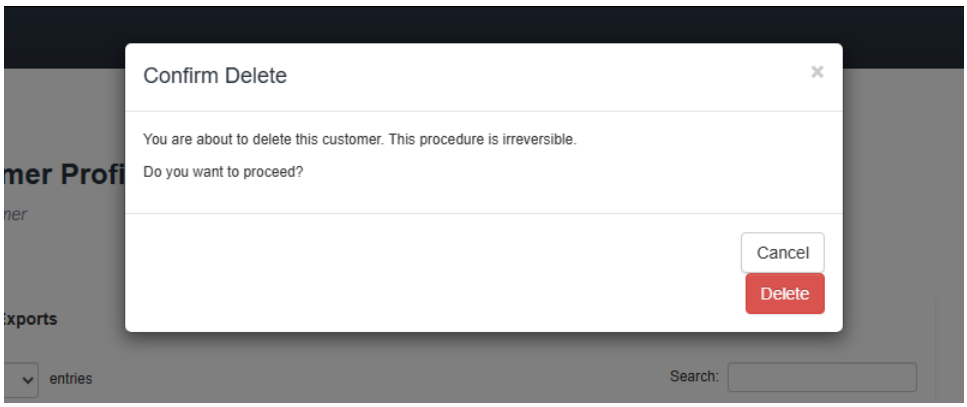


2) Edit the customer name in the text entry field
3) Click on the ‘Submit’ button.

Delete a Customer Profile

To delete the customer profile, please use the following procedure:

1) Click on the (delete this customer) button. The administrator is presented with the following pop-up message:

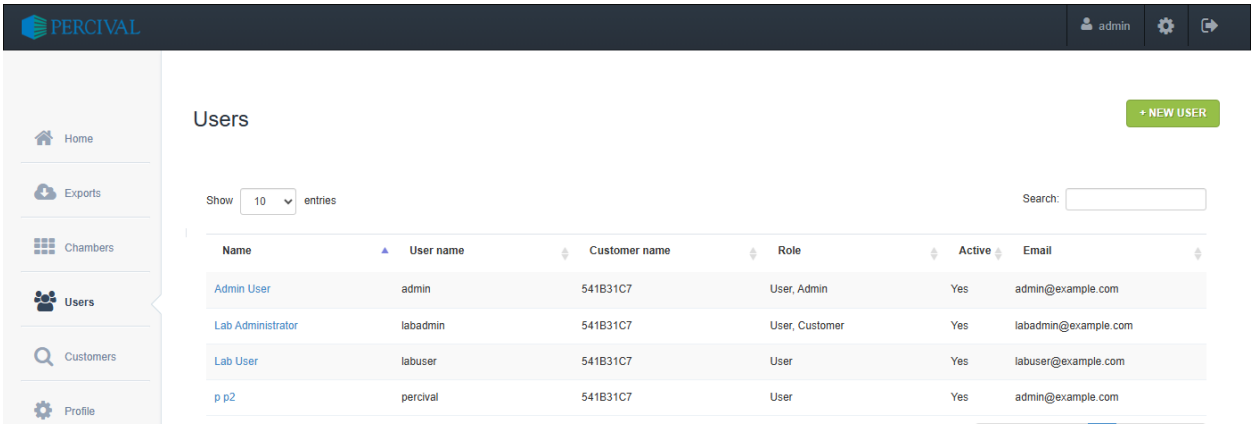


2) Click the 'Cancel' button to terminate this process, otherwise proceed to the next step.
3) Click the 'Delete' button in this window to permanently delete the customer and associated account information from the PercivalConnect software.

Users Page

The Users page is available to Site and Customer Administrator user accounts. This page provides administrators with a summary table of the user accounts in the PercivalConnect software system for which they have administrative rights. It also provides them with the ability to add new user accounts as well as edit and delete existing user accounts. Below is a screen shot of the Users page populated with the example users created previously in this instruction manual.

Note: In version 2.0.6, the Users tab might only show in the Site Administrator's navigation pane. Customer Administrators can open the Users page by adding '/User' to the end of the address in the browser's address bar.



Users Summary Table

Provided below is a brief description of the information contained within each column of the summary table on the Users page:

Name: This column contains the full name of the person to which the user account has been assigned. The names in this column are provided as hyperlinks. Clicking on a name hyperlink opens a page containing detailed account information for the specific user. Please refer to the section entitled **User Account Page** for additional information regarding the features and function of this page.

User name: This column contains the user name for the PercivalConnect user account. This is the username required for the login process.

Customer name: This column contains the Customer ID of the customer account to which each user account has been assigned. This field is most applicable to Site Administrators who may be required to manage multiple customer accounts.

Role: This column contains the user account level for each user. 'User' is a General User, 'User, Customer' is a Customer Administrator, and 'User, Admin' is a Site Administrator.

Active: This column contains the state of each user account. An active (enabled) user account is shown as 'Yes', and a locked (disabled) user account is shown as 'No'.

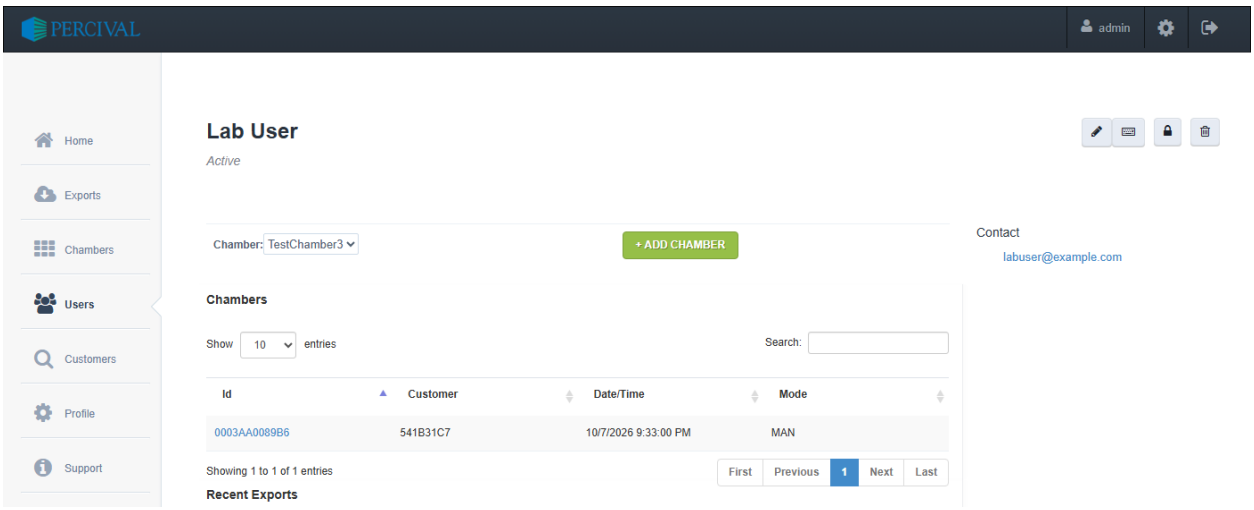
Email: This column contains the email address associated with each user account. The addresses are displayed as hyperlinks, providing administrators with a convenient way to contact users via email. Clicking on an email hyperlink opens the default email program on the user's computer and populates the 'To:' field with the selected user's email address.

Creating a New User

New user accounts are created from the Users page. Please refer to the section entitled **Creating New User Accounts** for instructions on how to create new accounts.

User Account Page

This user-specific page contains detailed information regarding the user account. The main User Account page contains a list of chamber available for assignment to the user account, a list of the chambers currently assigned to the user account, a list of the export links created by the user account, and user contact information. The user account can also be administered via a set of buttons at the top, right hand side of the screen. The screenshot below shows the User Account page for the Lab User account example, created previously in this user manual.



In this example, the user account has been assigned one chamber (0003AA0089B6) and has not created any export links. The 'Chamber:' dropdown list contains the chambers that can still be added to the account. When every chamber has been assigned, the message 'All chambers have been assigned.' is shown instead.

The chamber names contained in the list are provided as hyperlinks. Click on the chamber name hyperlink to open the chamber's Chamber Status page. For more

information regarding the Chamber Status page, please refer to the section of this manual entitled **Chamber Status Page**.

To contact a user via email, click on the email address hyperlink associated with the user account located at the right side of the User Account page.

Icons located at the top, right side of the User Account page allow users to make changes to account information. The available icons are dependent upon the user's level of access.

This button opens the Edit User page, where user information can be edited

This button opens the Password Reset page, where the user's password can be changed or reset.

This button locks the user account.

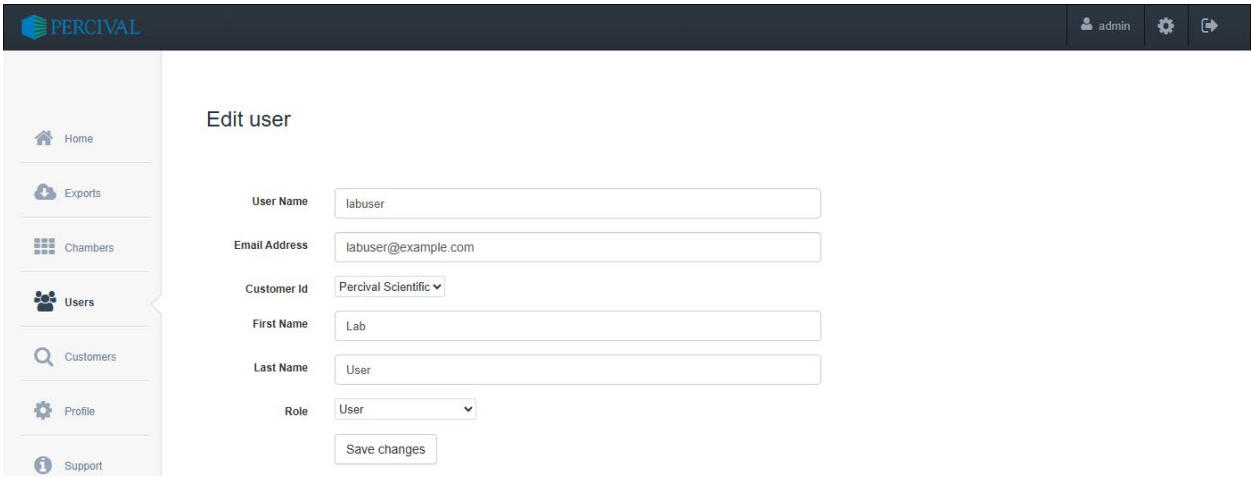
This button unlocks the user account.

This button deletes the user account.

Edit a User Account

To edit values on the User Account page, use the following procedure:

4) Click on the (edit) button. The following screen appears:

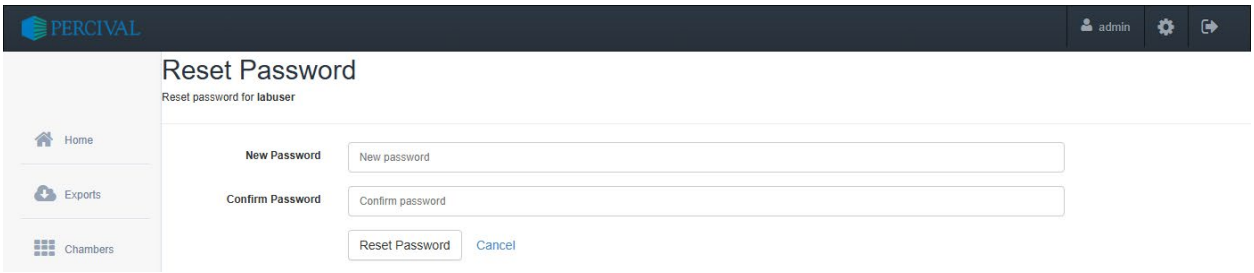


5) Edit any necessary fields
6) Click on the ‘Save changes’ button.

Change or Reset a Password

To change or reset a user’s password, use the following procedure:

1) Click on the (reset password) button. The following screen appears:

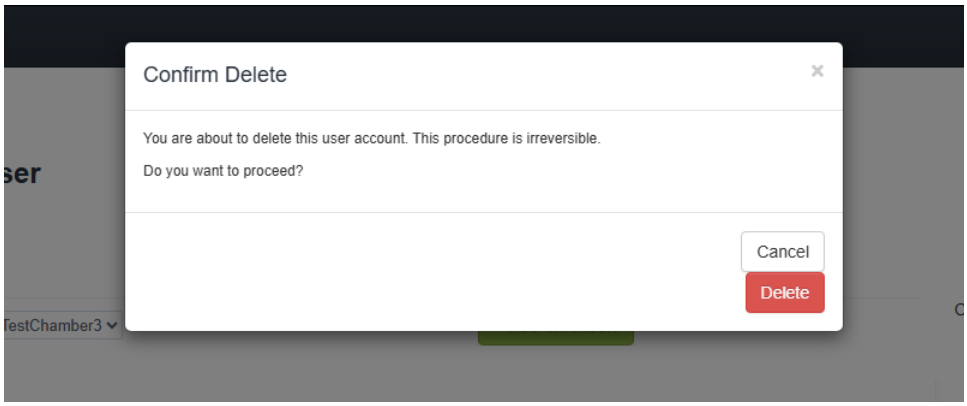


2) Enter the new password into the New Password and Confirm Password fields. Passwords must be at least 6 characters long.
3) Click on the ‘Reset Password’ button.

Delete a User Profile

To delete the user profile, please use the following procedure:

1) Click on the (delete this user) button. The administrator is presented with the following pop-up message:



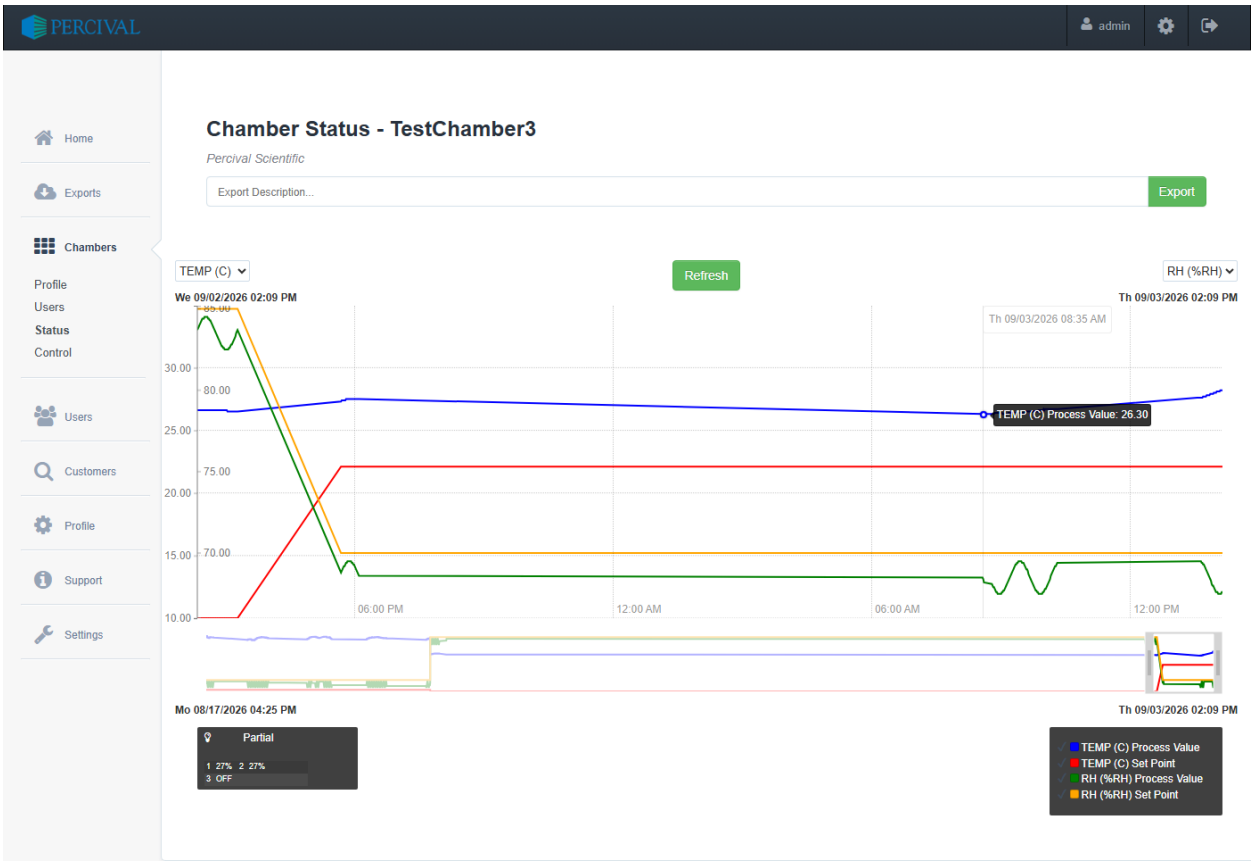
2) Click the ‘Cancel’ button to terminate this process, otherwise proceed to the next step.
3) Click the ‘Delete’ button in this window to permanently delete the user and associated user data from the PercivalConnect software.

Chambers Page

The Chambers page is very similar to the Home page in terms of its use and content. This page’s table, however, does not include the Status and Conditions columns. Please refer to the previous section entitled Home Page for additional information regarding the specific elements and features of this page. Only connected chambers that are assigned to the logged in user account are visible on the Chambers page. To access detailed chamber performance data, click on the chamber name hyperlink in the ‘Chamber’ column. Please refer to the section entitled Chamber Status Page for instructions on the features and functions of this page.

Chamber Status Page

The Chamber Status page provides the user with both graphical and tabular chamber performance data. Additionally, data exports can be created for any displayed graphical data. Upon accessing the Chamber Status page, sub-menus are displayed under the Chambers menu on the navigation pane: Profile, Users (administrators only), Status, and Control (only when a Chamber Link has been entered on the Chamber Profile page).



The graph on the Chamber Status page contains all of the chamber performance data that has been uploaded to the PercivalConnect database. When the page is opened, the main graph shows the most recent 24 hours of data. Two process values can be selected at one time. For each selected process value, the graph shows both the process value and its set point, for up to four lines.

A color coded graph key is located below the graph screen at the right side of the screen. This key updates whenever new process values are selected from the dropdown lists. Click the check mark next to a line in the key to hide or show that line.

At each side of the graph window, dropdown lists are provided for the user to select which chamber process values are to be displayed in the graph. Select 'None' to leave an axis empty. The selections are remembered for each chamber. Above the graph window in the center of the screen is a 'Refresh' button. Press this button to refresh the graph screen.

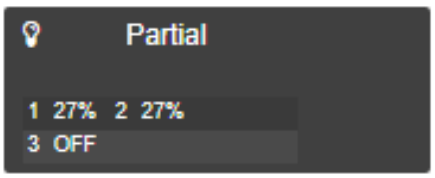
The graph tool also includes a zoom-in feature. A graph zoom-in window is located below the main graph. To zoom in on a particular period of time within the complete graph, click on the grab bars at each end of the zoom-in window and drag them to the

desired graph times. As the zoom-in window is adjusted, the main graph updates to display the desired section of the graph. The resized zoom-in area can also be slid along the graph timeline. For example, the zoom-in window can be resized to display 24hrs of data on the main graph window. This one day window can then be slid back and forth along the timeline to display different 24hr periods on the main graph screen.

Below the graph window on the left hand side of the screen is a lighting conditions table. When the cursor is hovered over a graph line, a pop-up box is displayed which shows the process value information at that point. Also, the lighting table displays the lighting conditions for this highlighted point. An example of the lighting conditions table is provided below for reference. At the top of the table, an overview of the lights is provided for quick reference. The symbols used to denote the chamber lighting state are the same as those used in the chamber summary table on the **Home Page**.

This table also shows the state of individual light and event outputs. On/Off events and outputs are denotes as OFF or ON. Dimmable light outputs are displayed in terms of their actual output percentage set point. If a digital output on the controller is either not enabled, or is used for a function other than light or event outputs, the output is not included in the table.

Light events are segregated from output events on the graph. Light events are listed first, and event outputs are listed below the light outputs.

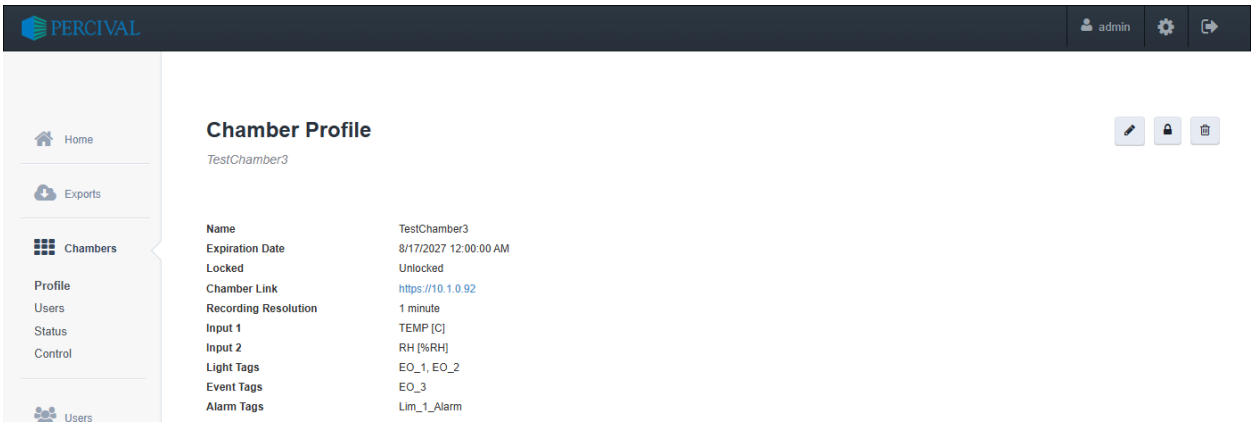


A data export field is located at the top of the Chamber Status page. To create a data export, enter a description and click the Export button at the right hand side of this field. The time range of the export reflects the data shown in the main graph window. If the zoom-in feature is used, the export file will only contain data from the zoomed-in period shown on the main graph window. A message confirms that the export was created.

Note: An export link cannot be created until a description is entered into the text entry field. This description becomes the download link name and filename of the data export file. Please proceed to the **Exports Page** section of this manual for additional information on data exports.

Chamber Profile Page

The Chamber Profile page contains a chamber's PercivalConnect software account information. This page is accessible by all user levels, but administrator level access is required to edit any fields.



Icons located at the top, right side of the Chamber Profile page allow users to make changes to the editable fields. The available icons are dependent upon the user's level of access.

This button opens the Chamber Edit page, where the editable chamber profile values can be changed

This button locks the chamber account.

This button unlocks the chamber account.

This button deletes the chamber account.

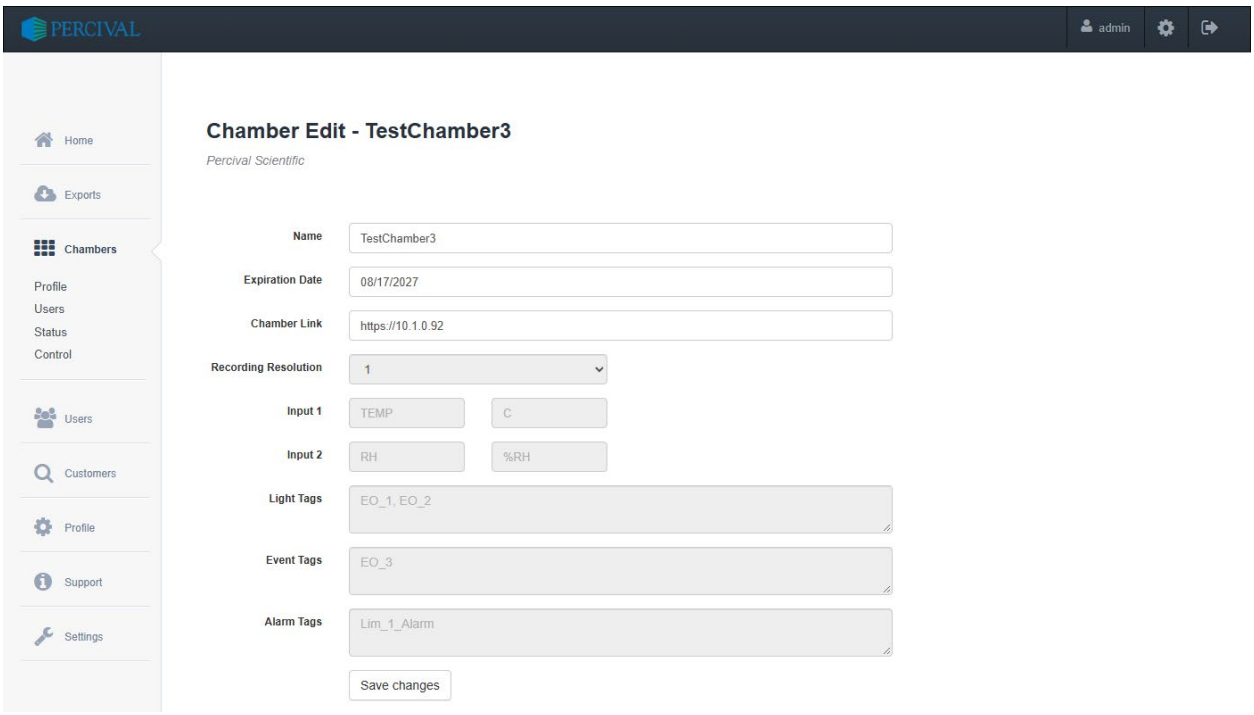
The Chamber Profile page contains the following information:

Name: This is the Chamber Name value that is populated throughout the software. The default chamber name is 'Chamber 0003AA00####', where the numerical value following 'Chamber' is the connected controller's MAC address and the # characters are unique to every IntellusUltraConnect controller. The chamber name value can be edited by the Site and Customer Administrators.
Expiration Date: The expiration date of the chamber account. This value can be edited by administrators.
Locked: This value denotes the status of the chamber account (Locked or Unlocked). The Site Administrator can lock and unlock chamber accounts. Locking retains all database information, but disallows user access to the chamber account.
Chamber Link: This field is editable by Site and Customer Administrators, and should be filled in at the administrator's discretion. The chamber link is the address of the chamber's IntellusUltraConnect controller web server, for example 192.168.2.1 or https://10.1.1.25:8443. An address entered without http:// or https:// is saved as http://. Adding this address enables the controller's IntellusUltraConnect Web Server to be accessed through the PercivalConnect software, and enables the Program Import Utility. This is accomplished through the Control sub-menu, which is added under the Chambers menu in the navigation pane once the Chamber Link address has been entered.
Recording Resolution: The PercivalConnect software has a default recording resolution at 1 point per minute. Changing this may require special modifications on the chamber.
Input 1: This field provides the user with the connected chamber's input name and process value units.
Input 2: Similar to Input 1.
Input 3: Similar to Input 1.
Input 4: Similar to Input 1.
Input 5: Similar to Input 1.
Input 6: Similar to Input 1.
Input 7: Similar to Input 1.
Only the inputs that are enabled on the controller are listed.
Light Tags: This field provides the user with the controller tag names for all enabled light outputs. These tags are used as column headers on exported data files.
Event Tags: This field provides the user with the controller tag names for all enabled event outputs. These tags are used as column headers on exported data files.
Alarm Tags: This field provides the user with the controller tag names for all controller alarms.

Edit a Chamber Profile

To edit values on the Chamber Profile page, use the following procedure:

1) Click on the (edit) button. The following screen appears:



2) Edit the Name, Expiration Date, or Chamber Link fields. The remaining fields are reported by the controller and cannot be edited.
3) Click on the 'Save changes' button.

Delete a Chamber Profile

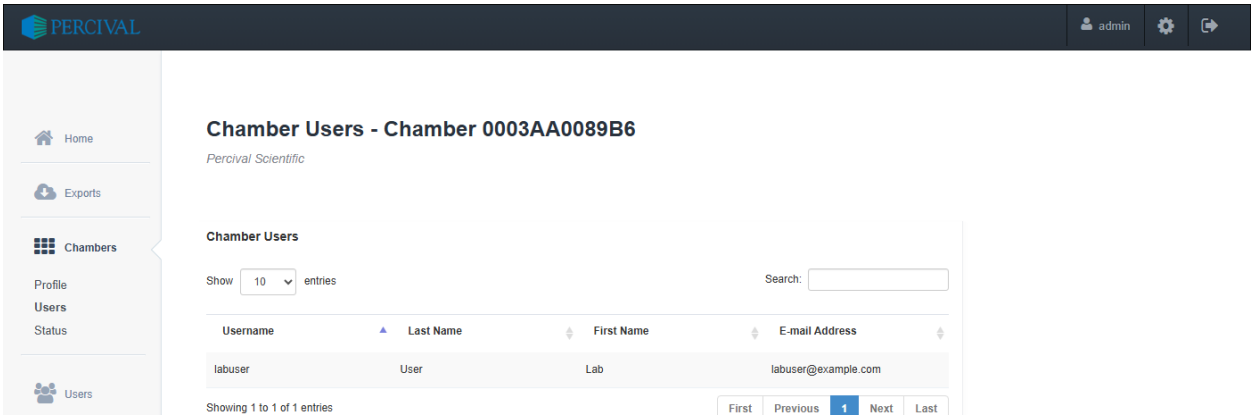
To delete the chamber profile, please use the following procedure:

1) Click on the (delete) button. The user is presented with the following confirmation page:

2) Click the 'Cancel' button to terminate this process, otherwise proceed to the next step.
3) Click the 'Yes, delete' button to permanently delete the chamber and its database values from the PercivalConnect software.

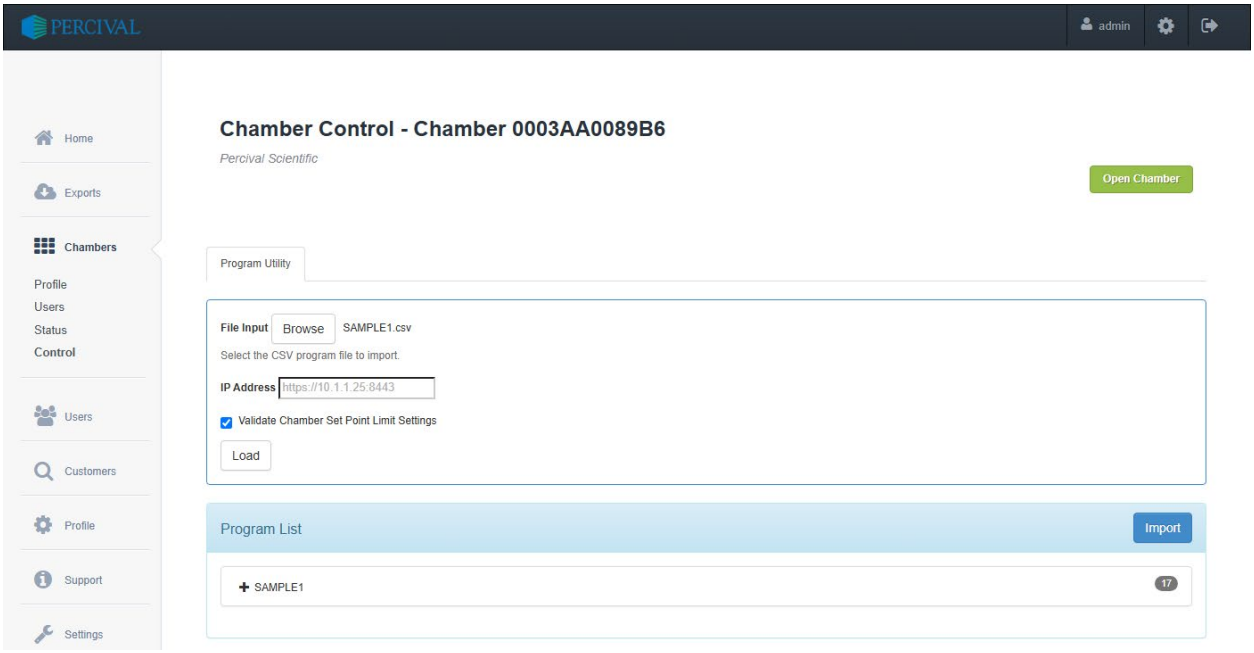
Chamber Users Page

This page provides Site and Customer Administrators with a list of all user accounts with access to the chamber. This page is not viewable by General Users.



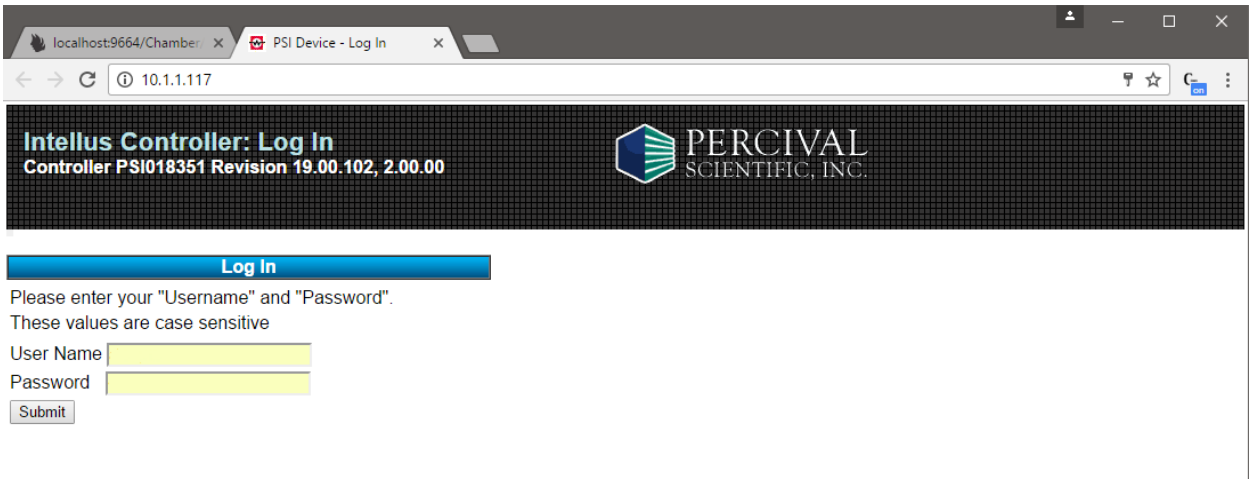
Chamber Control Page

If enabled (see previous section entitled 'Chamber Profile Page – Chamber Link') the Chamber Control page provides users with the ability to send data to an IntellusUltraConnect controller **from** the PercivalConnect software. This page enables a connection pathway to the chamber control system's web server, and provides a means for users to upload multi-step program .csv files. By default, the PercivalConnect software only receives chamber data. For additional information regarding chamber communications, please refer to the section of this manual entitled **IntellusUltraConnect IP Address and Web Server Setup**.



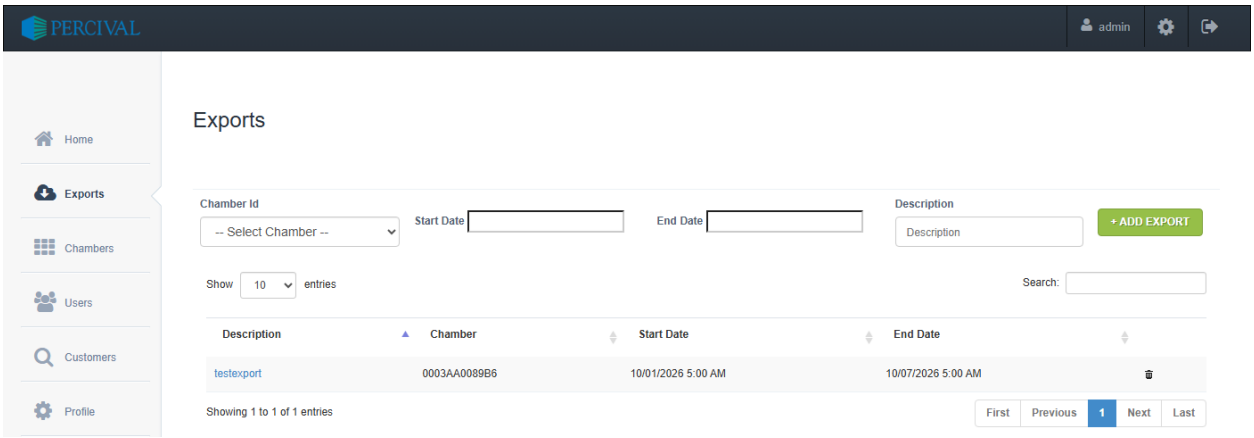
For instructions on the use of the multi-step program upload feature, proceed to the section of this manual entitled **Program Import Utility**.

To access the chamber's IntellusUltraConnect Web Server interface, click on the 'Open Chamber' button at the top, right hand side of the screen. A new web browser tab will be created and opened, where the web server's login screen is presented to the user. Please refer to the **IntellusUltraConnect Web Server Manual** for instructions on the operation of this user interface.



Exports Page

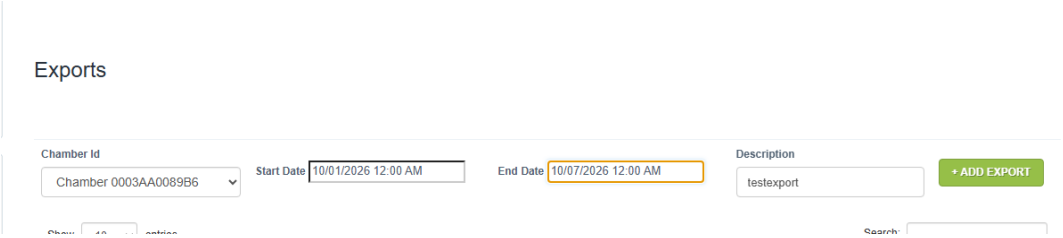
The Exports page is used in the creation and downloading of export links. Any data export links created throughout the software are listed on and downloaded from this page. This page contains a section for the creation of export links at the top of the page, and a list of created export links in a table at the bottom of the page. The screenshot below shows the Exports page without any created export links.



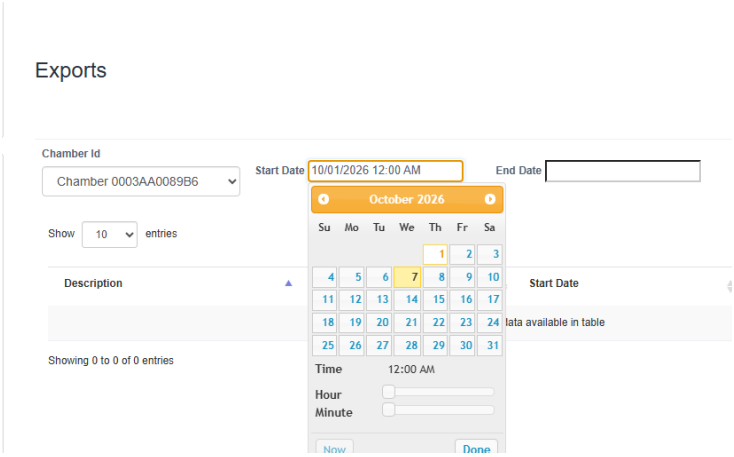
Create an Export

Export links can be created from the Chamber Status page or from the Exports page. For instructions on how to create an export link from the Chamber Status page, please refer to the section of this manual entitled Chamber Status Page. The example below describes the creation of a new data export. The desired data to be exported is between October 1st and October 7th, 2026. For instructions on the creation of this data export link from the Exports page, please use the following procedure:

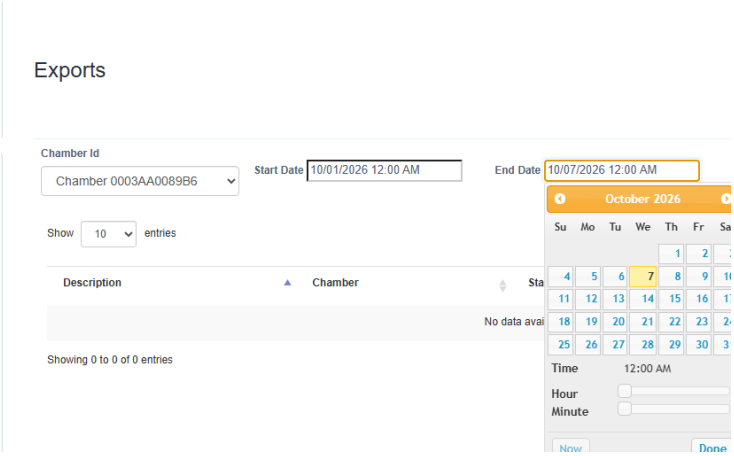
1) Click on the Exports tab on the navigation pane to open the Exports page. Use the export creation fields at the top section of the Exports page to configure a new data export. Below is a screenshot of the required export creation fields:



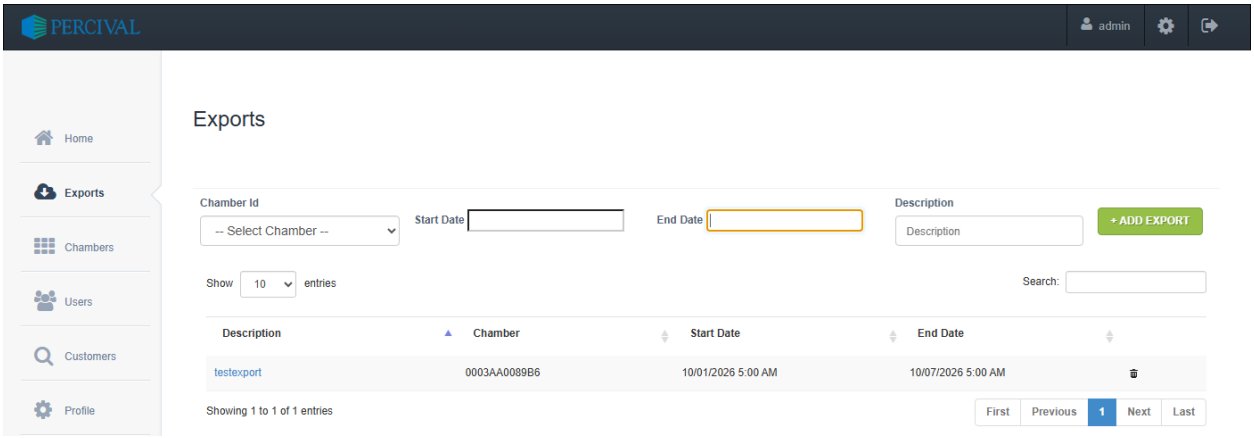
2) Select the desired chamber from which data is to be downloaded from the 'Chamber ID' dropdown list. For these instructions the example chamber (Chamber 0003AA0089B6) from previous sections will be selected.
3) Click on the Start Date field. A calendar tool will be displayed per the screenshot below. Enter the desired start date and time (12:00 AM, October 1st, 2026) and click on the 'Done' button.



4) Click on the End Date field. A calendar tool will be displayed per the screenshot below. Enter the desired end date and time (12:00 AM, October 7th, 2026) and click on the 'Done' button.



5) Enter a description into the 'Description' field. This description is used to identify the export link in the table on the Exports page, and becomes the export's filename. For this example, the export description is 'testexport'.
6) Once all export fields are properly filled, click on the green '+ ADD EXPORT' button.
7) The new export link is then saved in the system, and is added to the export table on the Exports page.



8) To download the export file, click on the export description hyperlink in the Description column of the exports table. The exported data is extracted from the PercivalConnect database, compressed into a .zip file and saved onto the Downloads folder on the user's computer. The export description is used as the filename:

9) The export file contained within the .zip file is a .csv file named export.csv, which can easily be opened with a spreadsheet program such as Microsoft Excel. The first row

contains the column headers (date and time, Mode, process values PV_1, PV_2…, set points SP_1, SP_2…, and light, event, and alarm values). Each following row is one logged data point.

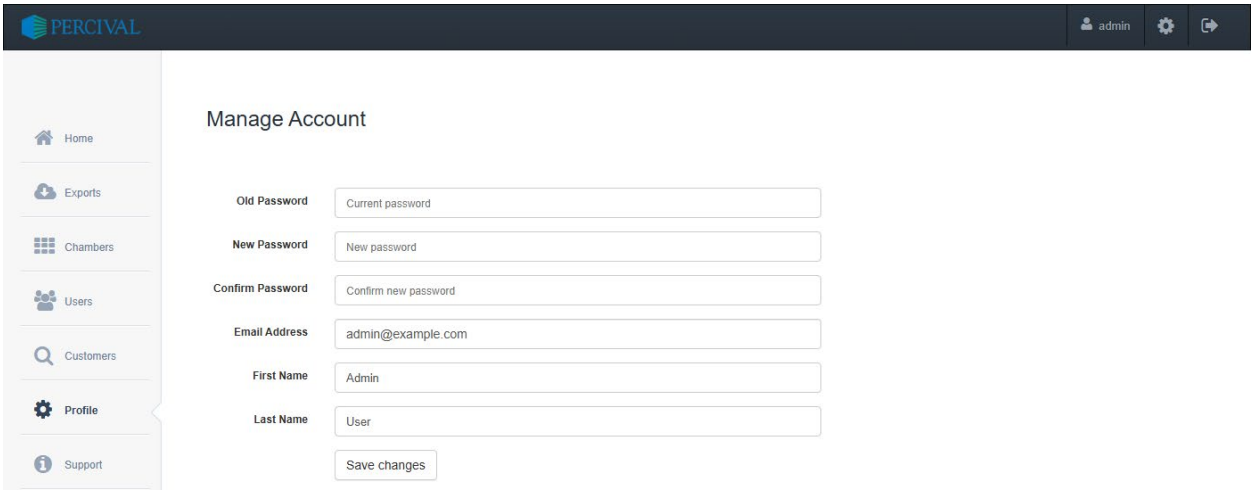
10) The created export link is retained in the list for future access and is only viewable by the General User who created the file and the Site and Customer Administrators.

Delete an Export

Export links can be deleted from the Exports page as well. To delete an export link, click the trash can icon at the right end of its row in the exports table, then click 'OK' when asked 'Delete this export request?'.

Manage Account Page

The Manage Account page is accessible by clicking on 'Profile' in the navigation pane, or clicking on the Gear icon located in the toolbar header at the top of each page. The Manage Account page (see screenshot below) allows the logged in user to make changes to their account information.

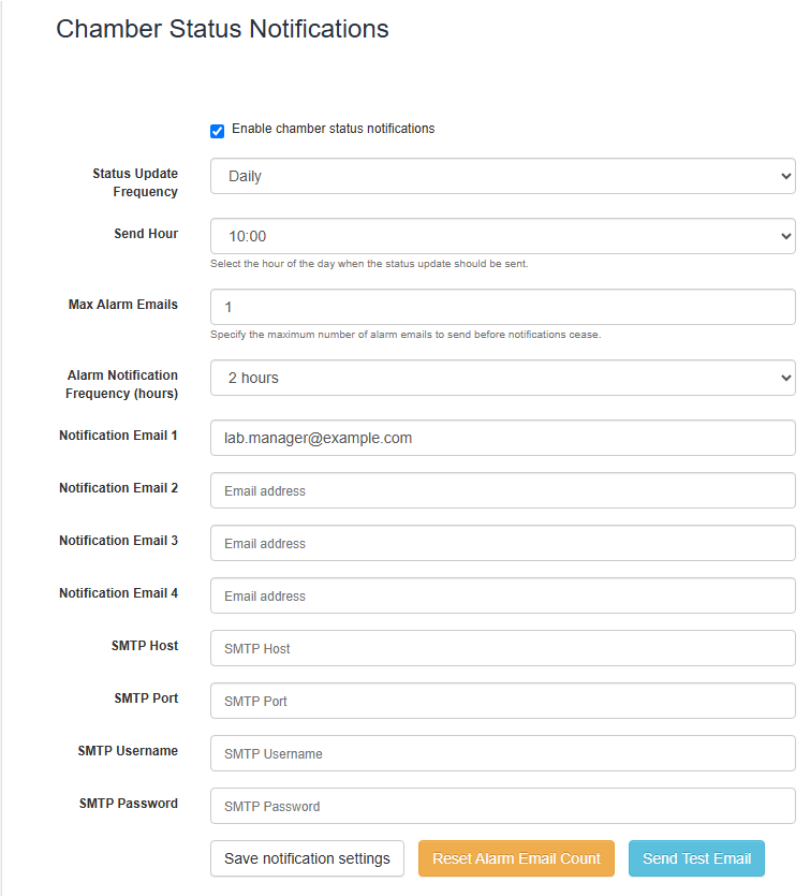


To make changes to the account information on this page, edit the desired text entry fields. Once all changes have been made, click on the 'Save changes' button.

Chamber Status Notifications

The Chamber Status Notifications section of the Manage Account page sets up email notifications for the logged in user. Notifications cover the chambers the user can access. Two kinds of email are sent:

- Alarm notifications (subject 'INTELLUS ALARM'), sent while a chamber has an active alarm
- Status updates (subject 'INTELLUS STATUS UPDATE'), a summary of chamber status sent on a regular schedule



The notification settings are:

Enable chamber status notifications: Turns email notifications on or off for this user account.

Status Update Frequency: How often status updates are sent: Hourly, Daily, Weekly, or every 14 Days.

Send Hour: The hour of the day at which status updates are sent (Daily, Weekly, and 14 Days only).

Send Day: The day of the week on which status updates are sent (Weekly and 14 Days only).

Max Alarm Emails: The maximum number of alarm emails sent for a chamber before alarm notifications for that chamber stop. Click 'Reset Alarm Email Count' to start sending alarm emails again. This resets the count for all chambers. (this must not be '0' to send alarm emails)

Alarm Notification Frequency (hours): How often alarm emails are repeated while an alarm remains active.

Notification Email 1–4: Up to four email addresses that receive the notifications. At least one address is required when notifications are enabled.

SMTP Host, SMTP Port, SMTP Username, SMTP Password: The facility's own outgoing mail server, if one is to be used. If these fields are left blank, email is sent through Percival Scientific's mail service from chambermail@percival-scientific.com, which requires internet access from the PercivalConnect computer.

To set up notifications:

- Select the 'Enable chamber status notifications' check box.
- Select the Status Update Frequency, and the Send Hour and Send Day if shown.
- Enter the Max Alarm Emails and select the Alarm Notification Frequency.
- Enter at least one Notification Email address.
- If a facility mail server is to be used, enter the SMTP settings.
- Click the 'Save notification settings' button.
- Click the 'Send Test Email' button and confirm that the test email is received. If it is not, check the email addresses, the SMTP settings, and the recipients' spam or junk folders.

Each status update lists every chamber with its local time, process values and set points, light status, and alarm state. An example status update email is shown below:

Chamber status update.

TestChamber3 Status
Local Time: October 07, 2026 10:00 AM
Temp PV/SP: 28.2C/22.1C
RH PV/SP: 68%/70%
Light Status: Partial
NO ALARMS ARE ACTIVE ON THIS CHAMBER.

Chamber 0003AA0089B6 Status
Local Time: October 07, 2026 10:00 AM
Temp PV/SP: 23.7C/14.0C
RH PV/SP: 80%/82%
Light Status: Off
NO ALARMS ARE ACTIVE ON THIS CHAMBER.

An alarm email lists each chamber that has an active alarm. An example alarm email is shown below:

Chamber alarm status update.

Chamber 0003AA0089B6 Status
Local Time: October 02, 2026 02:08 PM
Temp PV/SP: 23.6C/14.0C
RH PV/SP: 80%/82%
Light Status: Off
AN ALARM IS ACTIVE ON THIS CHAMBER.

The test email sent by the 'Send Test Email' button is a status update for all of the user's chambers, marked '(TEST EMAIL)', as shown below:

Chamber status update (TEST EMAIL).

TestChamber3 Status
Local Time: October 02, 2026 02:17 PM
Temp PV/SP: 28.2C/22.1C
RH PV/SP: 68%/70%
Light Status: Partial
NO ALARMS ARE ACTIVE ON THIS CHAMBER.

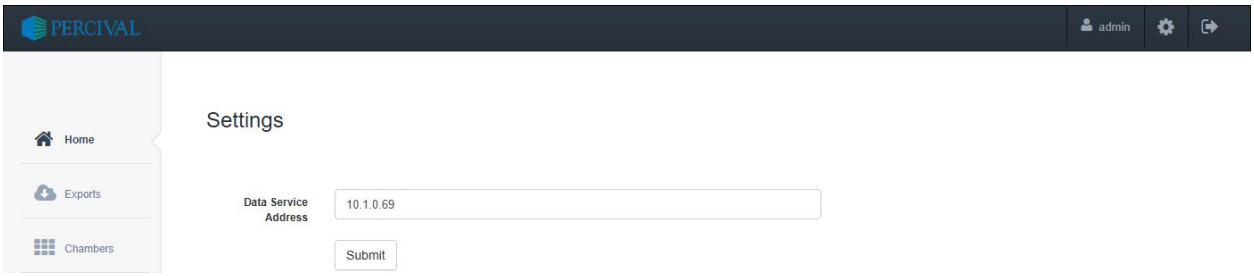
Chamber 0003AA0089B6 Status
Local Time: October 02, 2026 02:17 PM
Temp PV/SP: 24.1C/14.0C
RH PV/SP: 80%/82%
Light Status: Off
AN ALARM IS ACTIVE ON THIS CHAMBER.

This is a test email from IntellusCloud to verify your notification email and SMTP settings.

Settings Page

The Settings page is intended for the Site Administrator. On this page, the Site Administrator can specify the Data Service Address, which is the IP address of the local computer on which the PercivalConnect software has been installed and from which the database is hosted.

Below is a screenshot of the Settings page:



Setting the Data Service Address

Use the following procedure to set the Data Service Address on the Settings page of the PercivalConnect software:

1) Click on Settings in the navigation pane.
2) Enter the host computer's IP address into the Data Service Address field. **Note:** Refer to the section of this manual entitled **Configure IntellusUltraConnect for PercivalConnect** for instructions on how to determine the IP address of the host computer.
3) Click on the 'Submit' button.
4) The IP address value entered into the Data Service Address field is displayed at the top of the Home page as 'Cloud IP:', and on the Customer Profile page as 'IP Address:'. This provides a simple way for users to determine the IP address of the host computer when setting up new accounts, and connecting new chambers. Below is an example of the Cloud IP: field on the software's Home page:

Program Import Utility

The Program Import Utility in the PercivalConnect remote software allows users to upload multi-step program profiles from a .csv file. This is a particularly useful tool for programs with large numbers of steps. Rather than creating and saving program steps to the control system individually via the IntellusUltraConnect controller overlay, touchscreen interface, or web server, the Program Import Utility allows users to create programs with a spreadsheet, then save them to the control system with the click of one button.

Cross-origin Resource Sharing (CORS)

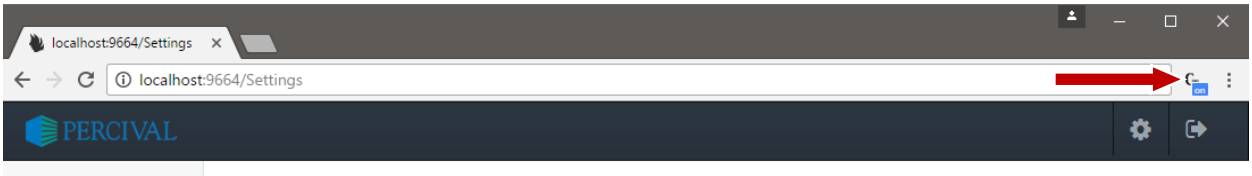
Cross-origin resource sharing (CORS) is the standard way web browsers handle web page requests to and from servers with different domain origins, and ensures that the interaction is safe.

In PercivalConnect version 1.x, the web browser communicated directly with the controller during a program upload, and a CORS-disabling browser plug-in was required. Starting with version 2.0, the PercivalConnect server relays these requests to the controller, so a CORS plug-in is no longer required, and CORS should remain enabled.

If a program upload fails with an error that mentions CORS or a blocked cross-origin request, first clear the web browser's cache and reload the Chamber Control page, because the browser may be using a page saved from an older version. As a last troubleshooting step, a CORS-toggle plug-in can be installed and turned on temporarily. For example, the following plug-in can be used for Google Chrome web browsers:

https://chromewebstore.google.com/detail/allow-cors-access-control/lhobafahddgcelffkeicbaginigeejlf?hl=en

Upon installing this plug-in, an icon is populated onto the browser window next to the address field.



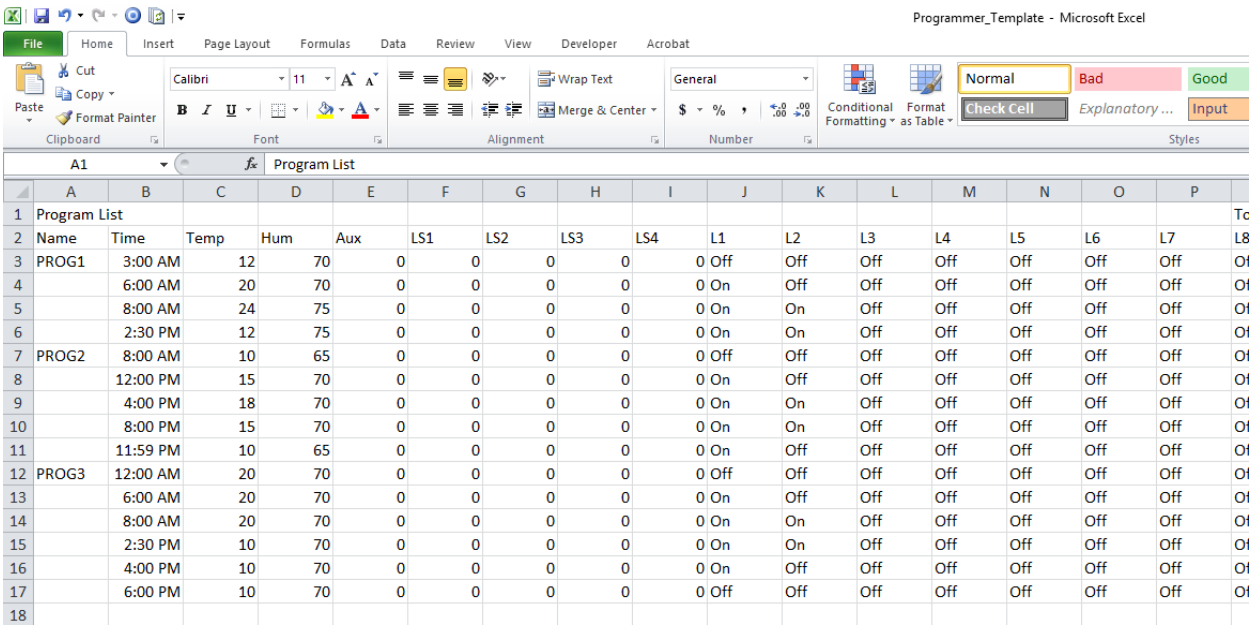
Clicking on this icon toggles CORS on/off. When the icon is set to 'On', CORS is disabled.

⚠ WARNING

Disabling CORS on a web browser makes it less secure. It is highly recommended that CORS be kept enabled at all times. At the user's discretion, CORS should only be disabled during use of the Program Import Utility, then re-enabled.

Excel Template

An excel comma separated values file (.csv) template, called 'Programmer_Template' is available from Percival Scientific. This template should be used for the creation of multi-step program files to be imported into the Program Import Utility. It is recommended that this file be copied and saved to a location on the user's local hard drive. The screenshot below shows the template with sample programs:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	Program List																Tc
2	Name	Time	Temp	Hum	Aux	LS1	LS2	LS3	LS4	L1	L2	L3	L4	L5	L6	L7	L8
3	PROG1	3:00 AM	12	70	0	0	0	0	0	Off	Off	Off	Off	Off	Off	Off	Of
4		6:00 AM	20	70	0	0	0	0	0	On	Off	Off	Off	Off	Off	Off	Of
5		8:00 AM	24	75	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
6		2:30 PM	12	75	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
7	PROG2	8:00 AM	10	65	0	0	0	0	0	Off	Off	Off	Off	Off	Off	Off	Of
8		12:00 PM	15	70	0	0	0	0	0	On	Off	Off	Off	Off	Off	Off	Of
9		4:00 PM	18	70	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
10		8:00 PM	15	70	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
11		11:59 PM	10	65	0	0	0	0	0	On	Off	Off	Off	Off	Off	Off	Of
12	PROG3	12:00 AM	20	70	0	0	0	0	0	Off	Off	Off	Off	Off	Off	Off	Of
13		6:00 AM	20	70	0	0	0	0	0	On	Off	Off	Off	Off	Off	Off	Of
14		8:00 AM	20	70	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
15		2:30 PM	10	70	0	0	0	0	0	On	On	Off	Off	Off	Off	Off	Of
16		4:00 PM	10	70	0	0	0	0	0	On	Off	Off	Off	Off	Off	Off	Of
17		6:00 PM	10	70	0	0	0	0	0	Off	Off	Off	Off	Off	Off	Off	Of
18																	

The programmer template contains the following information:

Name: This is the program name that is saved to the IntellusUltraConnect controller. Program names must be 8 characters or less and can only contain the following characters:

- Uppercase letters 'A' through 'Z'
- Lowercase letters 'a' through 'z'
- Numbers '0' through '9'
- Blank space ' '
- Percent symbol '%'

- Hyphen symbol '-'
- Period '.'

Time: This column is the step time. For 24 hour time-based programs, the time value is the time at which the step begins. This time value must be entered in the format of 'HH:MM:SS AM/PM' per the screenshot above. For elapsed type programs, the time value represents the duration of each program step. For this format, the time must be entered in the format of 'HHH:MM'

Temp: This value denotes the program step's primary temperature set point. It is also referred to as SP1 throughout the PercivalConnect software.

Hum: This value denotes the program step's relative humidity set point (if enabled). It is also referred to as SP2 throughout the PercivalConnect software.

Aux: This value denotes the program step's auxiliary channel set point (if enabled). It is also referred to as SP3 throughout the PercivalConnect software.

LS1: This value denotes the program steps' expansion slot (channel 4) set point (if enabled). It is also referred to as SP4 throughout the PercivalConnect software.

LS2: This value denotes the program steps' expansion slot (channel 5) set point (if enabled). It is also referred to as SP5 throughout the PercivalConnect software.

LS3: This value denotes the program steps' expansion slot (channel 6) set point (if enabled). It is also referred to as SP6 throughout the PercivalConnect software.

LS4: This value denotes the program steps' expansion slot (channel 7) set point (if enabled). It is also referred to as SP7 throughout the PercivalConnect software.

L1-L47: These values denote the Light and Event output set points for each step. Events must be programmed as 'On' or 'Off' (or 1 or 0), and Lights must be programmed as 'On' or 'Off' or 0-100, depending upon the light output type. 0-100 values are used for open-loop dimmable lighting options.

When creating an Excel programming file, please note that all columns must have the appropriate values entered for them, even if a particular controller does not have all control loops and digital outputs enabled. For example, a chamber ordered with temperature and two lighting events still requires values for the Hum, Aux, LS1-LS4 and L3-L47 columns. For these unused parameters, enter a value of '0' for the Hum, Aux and LS1-4 columns, and 'Off' for the lighting columns.

The maximum number of 24 hour, time-based program steps that can be entered into a controller is 500. The maximum number of elapsed, timer-type steps that can be entered into a controller is 60. Please keep track of the total number of program steps intended to be uploaded to a controller. If this total number of steps for either program type is exceeded, that program will not upload properly.

The Program Import Utility reads no more than the first 496 lines of a program file. Larger sets of programs must be split into several files.

Multiple programs can be uploaded at once, if entered into the template per the example, shown above. In the screenshot above, rows 3-6 define the first program, which is named PROG1. Rows 7-11 define the second program, named PROG2. Rows 12-17 define the last program, named PROG3. The following are characteristics of the first program:

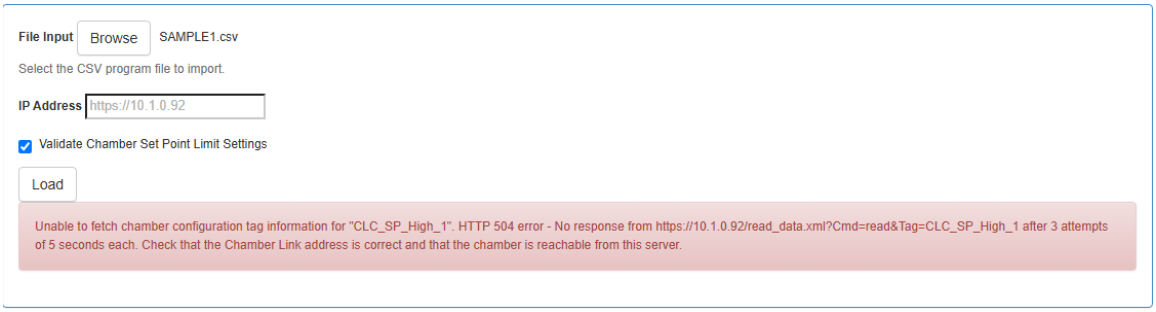
When creating a new program file from the template, do not modify the top two rows. These rows are required for the program steps to upload properly to the IntellusUltraConnect control system.

Note: If a new program is uploaded with the same name as an existing program in the control system, the new program will overwrite the existing program.

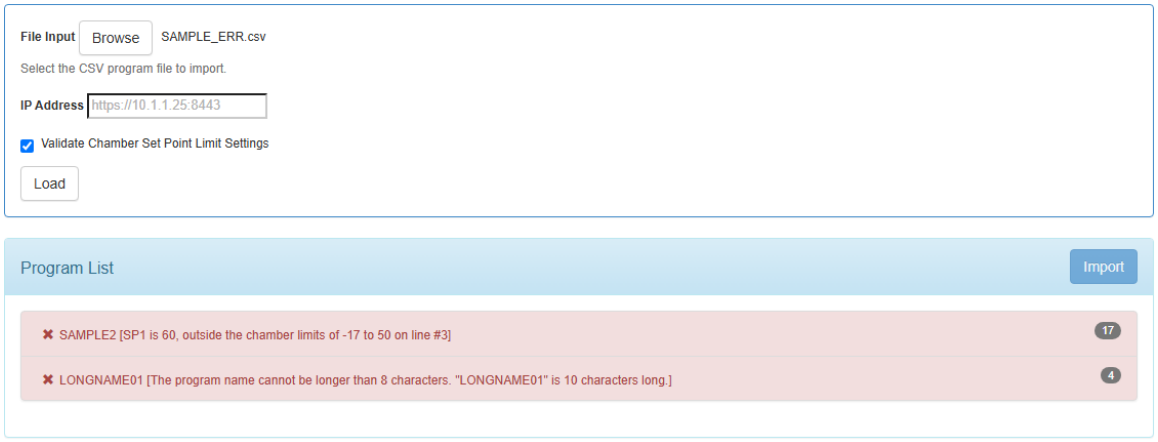
Uploading a Program

Before using these instructions, the Chamber Link address must be entered on the Chamber Profile page, and the program file to be uploaded must be completed and saved. For instructions on setting the Chamber Link, refer to the section of this manual entitled Chamber Profile Page. For instruction on the creation of a program file, please refer to the previous section of this manual entitled Excel Template. Use the following procedure to upload a program to an IntellusUltraConnect controller via the Program Import Utility on the PercivalConnect remote software:

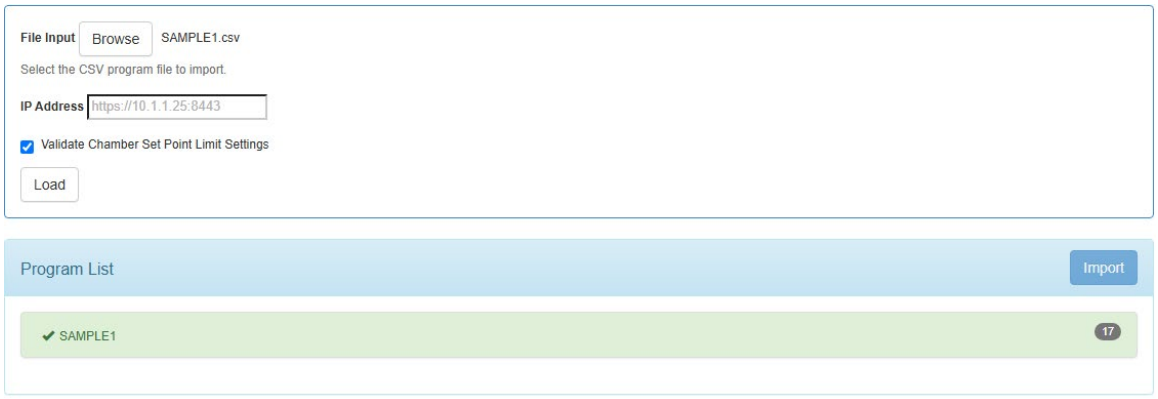
1) Login to the PercivalConnect software
2) Click on 'Chambers' in the navigation pane
3) Click on the 'Control' sub-menu under 'Chambers' in the navigation pane
4) Click on the 'Browse' button
5) Select the program .csv file to be uploaded to the controller
6) Click on the 'Load' button. The software reads the set point limits and output types from the controller, which can take up to a minute.
7) If any error messages occur, proceed to the next step. If the program loads without any errors, proceed to step 13).
8) If the PercivalConnect software cannot reach the controller, a message such as the following will appear. Check that the Chamber Link address is correct (including https:// and the port number, if any), that the chamber is powered on and connected to the network, and that the controller's web server can be reached from the PercivalConnect computer (refer to the Troubleshooting section).



9) The Program Import Utility will check the values in the program file before uploading them to the control system. Programs with missing or incorrect values, or values outside the operating limits of the control system, are shown in red with a description of the first error found. In the example below, program SAMPLE2 has a temperature set point (SP1) of 60 on line 3, which is outside the chamber's limits of -17 to 50, and program LONGNAME01 has a name longer than 8 characters. A formatting error in the file is reported as 'Unable to parse the selected CSV file.' To skip the set point limit check, clear the 'Validate Chamber Set Point Limit Settings' check box before clicking 'Load'.



10) Resolve any errors in the program file per the error messages.
11) Save the changes to the .csv file
12) Repeat steps 4) through 6) to reload the corrected program file.
13) Click the 'Import' button to save the programs to the IntellusUltraConnect controller. Only programs without errors are imported.
14) When the upload is complete, each imported program turns green, as shown below. A program that fails to upload turns red.



15) The program upload is complete.

Troubleshooting

The Web Browser Shows a Security Warning

- This is expected the first time a browser connects. Refer to the section entitled Security Certificate Warning under Launch the Application.

The Software Cannot Be Opened from Another Computer

- Check that the address starts with https:// and ends with :8443 (for example, https://10.1.1.66:8443).
- Check that inbound TCP port 8443 is allowed by Windows Firewall on the central server and by any network firewall.
- On the central server, open Windows Services and check that the IntellusCloud Web Service and MongoDB Server services are running.

A Chamber Does Not Appear in the Software

- On the controller, check the Cloud Server IP, Cloud Customer ID, Cloud Security, and port settings, and that Cloud Connection is set to Yes (refer to IntellusUltraConnect Setup).
- Check that inbound TCP port 61614 (or 61613 for non-SSL) is allowed on the central server and on any firewall between the controller and the server.
- On the central server, check that the IntellusCloud Local Service and IntellusCloud Core Service services are running.
- Check that the chamber has been assigned to the user account (refer to Add Chambers to a User Account).
- On chambers with a Netgate network gateway, refer to the section entitled Chambers with a Netgate Network Gateway.

The Date/Time Shows 01/01/0001

- A chamber whose Date/Time shows 01/01/0001 12:00 AM has completed its initial connection to the software, but its data is not getting through. This is almost always caused by something on the network blocking the traffic between the controller and the central server, for example a firewall blocking port 61614, or a firewall or proxy that inspects or blocks SSL/TLS traffic.
- Ask the facility's IT department to allow TCP port 61614 (or 61613 for non-SSL) between the controller and the central server in both directions, and to exclude this traffic from SSL/TLS inspection.
- Check that the controller's Cloud Security setting matches the port in use: SSL with the Cloud Secure Port (61614), or non-SSL with the Cloud Default Port (61613).
- After the network has been corrected, set Cloud Connection on the controller to No and then back to Yes. The Date/Time should update within a few minutes.
- On chambers with a Netgate network gateway, also check the Netgate firewall (refer to the section entitled Netgate Firewall Settings).

The Date/Time Stops Updating

- The chamber has stopped sending data. Check that the chamber is powered on and connected to the network, and check the items listed under A Chamber Does Not

Appear in the Software. If the problem continues, there may be a problem with the controller's SD card.

A Program Upload Fails

- If the message 'Unable to fetch chamber configuration tag information' appears, the PercivalConnect computer cannot reach the controller's web server. Click 'Open Chamber' on the Chamber Control page. If the controller's web page does not open, correct the Chamber Link on the Chamber Profile page, or check the network connection to the chamber.
- Correct any errors listed in red in the Program List, save the file, and click 'Load' again (refer to Uploading a Program).
- If the error mentions CORS, refer to the section entitled Cross-origin Resource Sharing (CORS).

Email Notifications Are Not Received

- On the Manage Account page, click 'Send Test Email'. If the test email is not received, check the notification email addresses, the SMTP settings, and the recipients' spam or junk folders. If the SMTP fields are blank, the PercivalConnect computer needs internet access.
- If alarm emails have stopped, the Max Alarm Emails limit may have been reached. Click 'Reset Alarm Email Count'.