PercivalConnect Remote Software
User Manual

Introduction 1
Software Versions 1
System Requirements 1
Remote Terminal 1
Central Server 2
IntellusUltraConnect IP Address and Web Server Setup 3
Software Installation 4
Launch the Application 9
User Account Hierarchy 9
General User 9
Customer Administrator 9
Site Administrator 9
Configure IntellusUltraConnect for PercivalConnect 10
Creating a New Customer 13
IntellusUltraConnect Setup 14
Creating New User Accounts 19
Create a Customer Administrator Account 19
Create a General User Account 21
Add Chambers to a User Account 23
Software Screens and Navigation 25
General Page Layout 25
Navigation Pane 26
Toolbar Header 27
Login Screen 28
Support Page 29
Home Page 29
Chamber Column 29
Customer Column 30
Date/Time Column 30
Mode Column 30
Status Column 30
Conditions Column 31
Customers Page 32
Customers Summary Table 32
Creating a New Customer 33
Customer Profile Page 33
Edit a Customer Name 34
Delete a Customer Profile 35
Users Page 36
Users Summary Table 36
Creating a New User 37
User Account Page 37
Edit a User Account 39

Change or Reset a Password 40
Delete a User Profile 40
Chambers Page 41
Chamber Status Page 41
Chamber Profile Page 45
Edit a Chamber Profile 47
Delete a Chamber Profile 48
Chamber Users Page 49
Chamber Control Page 50
Exports Page 51
Create an Export 52
Delete an Export 54
Manage Account Page 55
Settings Page 56
Setting the Data Service Address 57
Program Import Utility 58
Cross-origin Resource Sharing (CORS) 58
Excel Template 59
Uploading a Program 62

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, 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 windows-based 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 (Chrome 56, IE 11, Firefox 51, Opera 42, MS Edge 38)

Central Server

- OS: Windows 7, or higher (32 and 64 bit Windows is supported)
- Processor: 2 GHz, minimum (2 GHz+ recommended)
- RAM: 4 GB, minimum (4GB+ recommended)
- Disk Space: 15GB free space, minimum (80 GB+ recommended)

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.

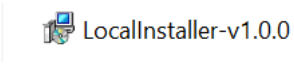
Each IntellusUltraConnect controller's web server can be linked to the PercivalConnect software at the user's discretion. This link allows for a seamless transition between the PercivalConnect software and a controller's built-in web server interface. If this link is established, please refer to the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

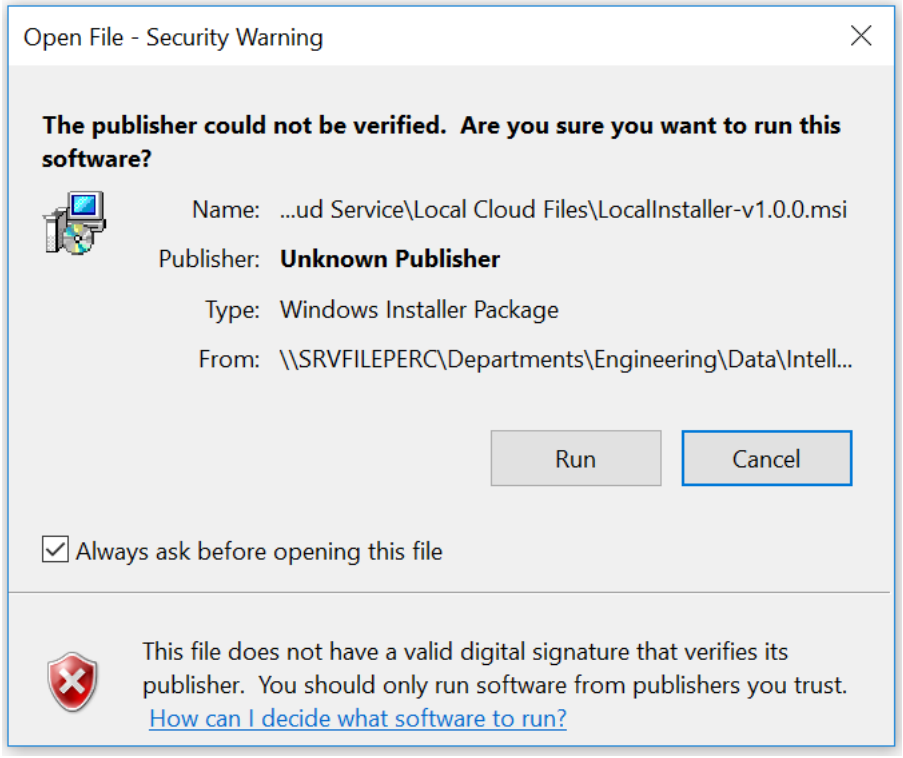
Software Installation

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.

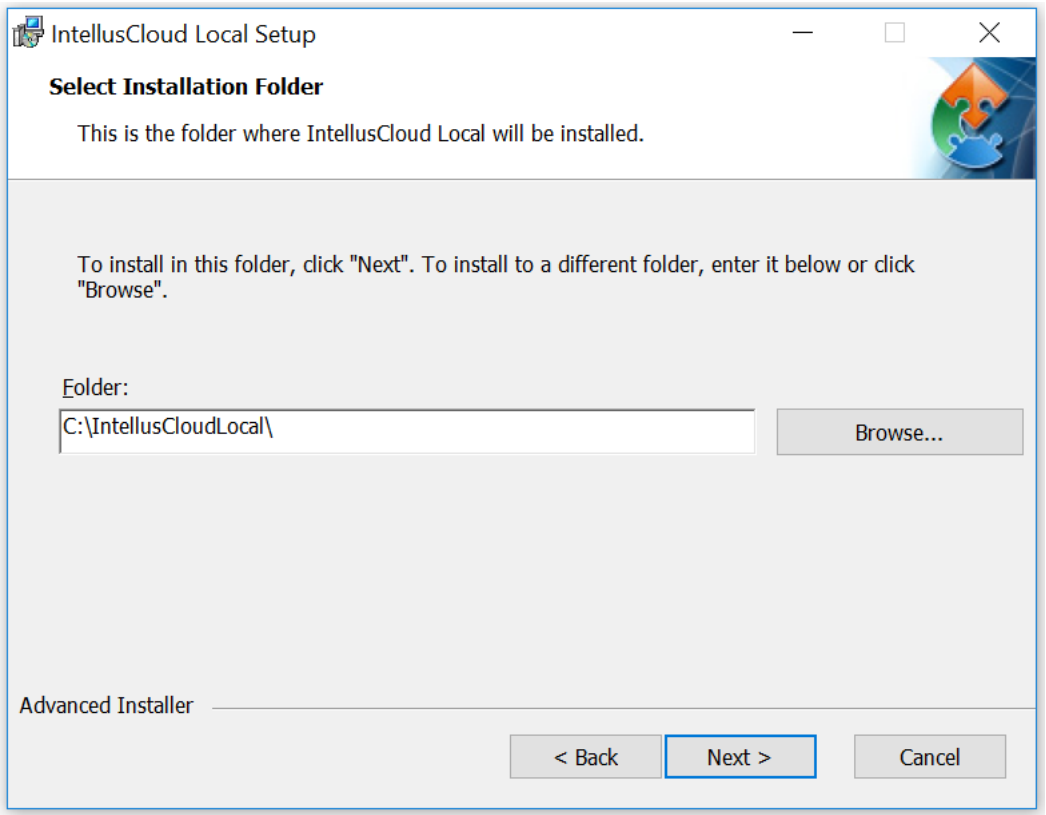


2) Depending upon the local PC's security settings, a pop-up message may appear.

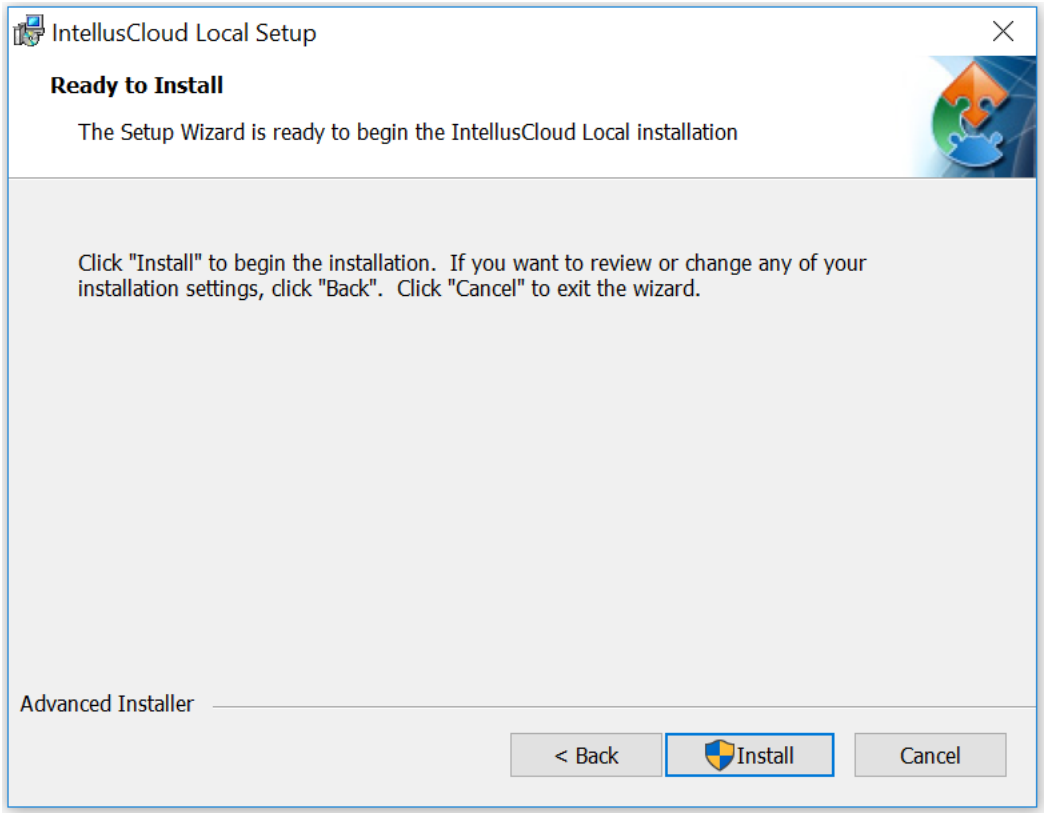


3) In order to proceed with the installation, click 'Run'. To abort the installation process, click 'Cancel'. **Note:** Do not install software from any sources you do not trust.
4) After 'Run' is selected, the setup wizard will then be opened.

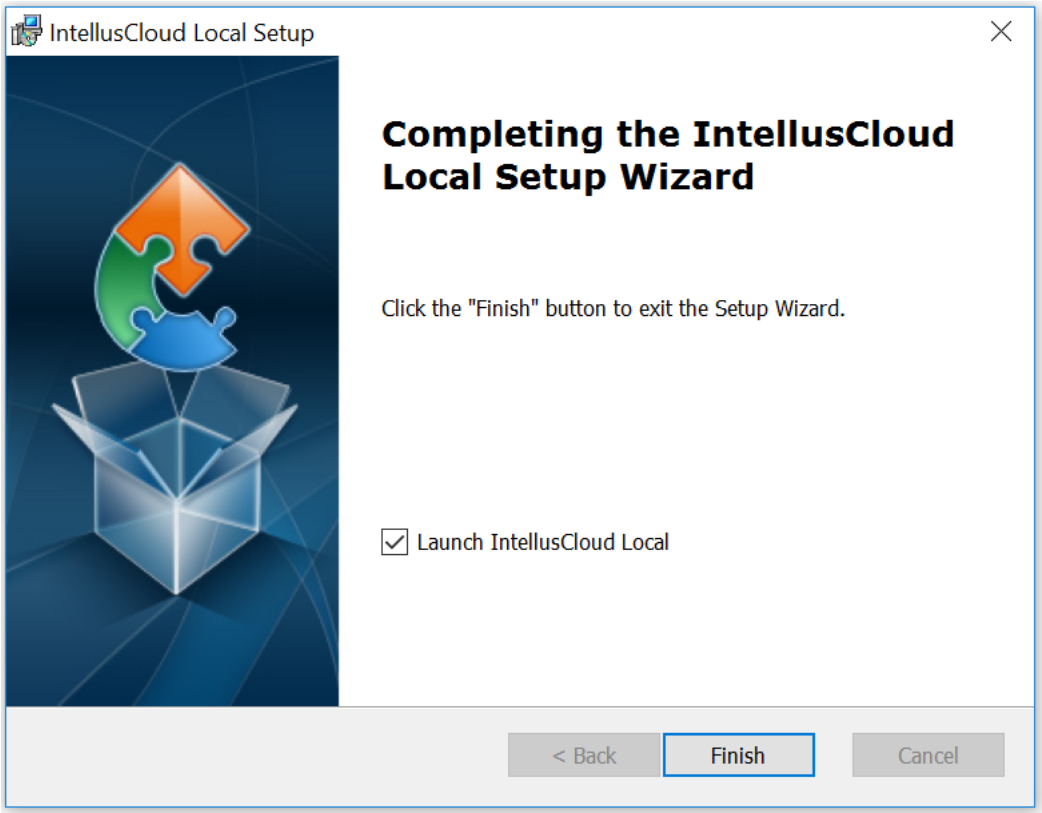
5) Click the 'Next' button to proceed, or click the 'Cancel' button to abort the installation.
6) The user will be prompted to select the installation folder location. The user may choose to:
    a. Click on the 'Back' button to return to the initial Setup Wizard screen.
    b. Select the desired location for the application's files by keying in a file pathway/location. Once the file location is defined, click on the 'Next' button. **Note:** It is recommended that a record of the non-default folder location be kept in case troubleshooting is required. Proceed to step 7).
    c. Select the desired file location from the Windows Explorer window by clicking on the 'Browse' button. Once the file location is selected, click the 'Next' button. **Note:** It is recommended that a record of the non-default folder location be kept in case troubleshooting is required. Proceed to step 7).
    d. Use the default file location. Click on the 'Next' button to accept the default file location.



7) Once the file pathway is selected, the Installer is ready to begin installing the program. Click the 'Install' button to proceed with the installation. Click on the 'Back' button to revisit previous installation settings. Click the 'Cancel' button to abort the installation process.



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 installation manager will proceed with installing program files. When the setup process is complete, the following screen will appear.



10) Select the 'Launch IntellusCloud Local' check box to run the application right away. De-select the check box if you do not wish to launch the software immediately.
11) Click the 'Finish' button to close the installer.
12) The installation process is complete.

The PercivalConnect application's interface runs through a web browser. If the application is selected to launch immediately after the installation is complete, the user may be prompted to select a program with which to open the application. If so, select the preferred web browser from the available list of programs. Once selected, the application will open in the selected web browser, and the Login Page will appear.

Launch the Application

To launch the PercivalConnect application on the local PC, open a web browser and type '**localhost:9664**' 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 '**http://###.###.###.###:9664**', 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.

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.

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 graphs and create export links for any chambers assigned to a specific 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. This user level can also view all control systems assigned to the customer account and all data export links created by each General User.

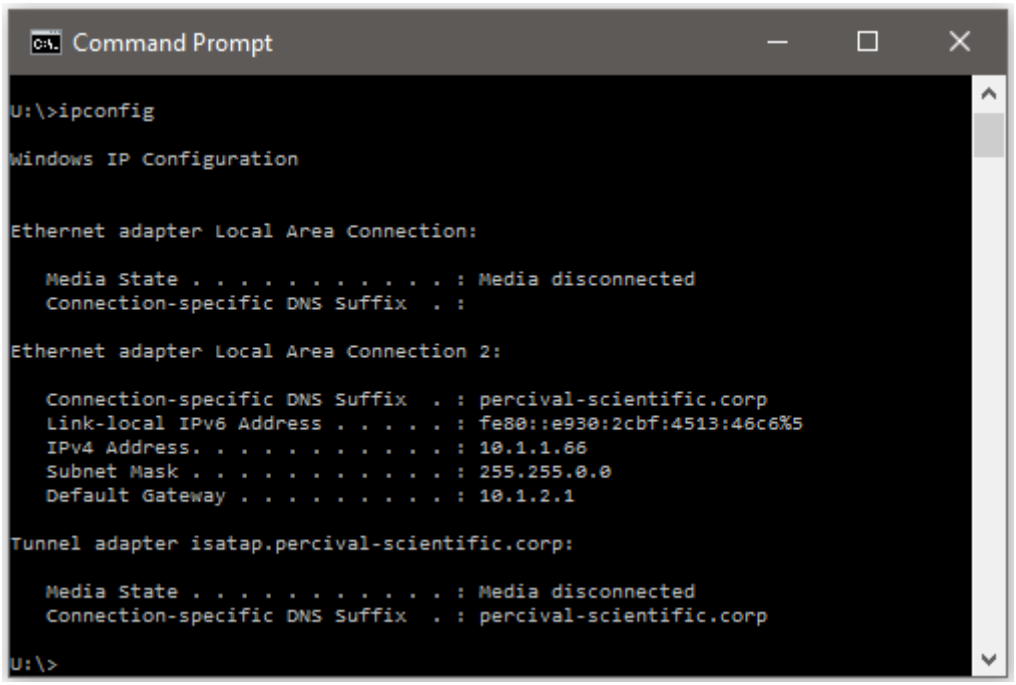
Site Administrator

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



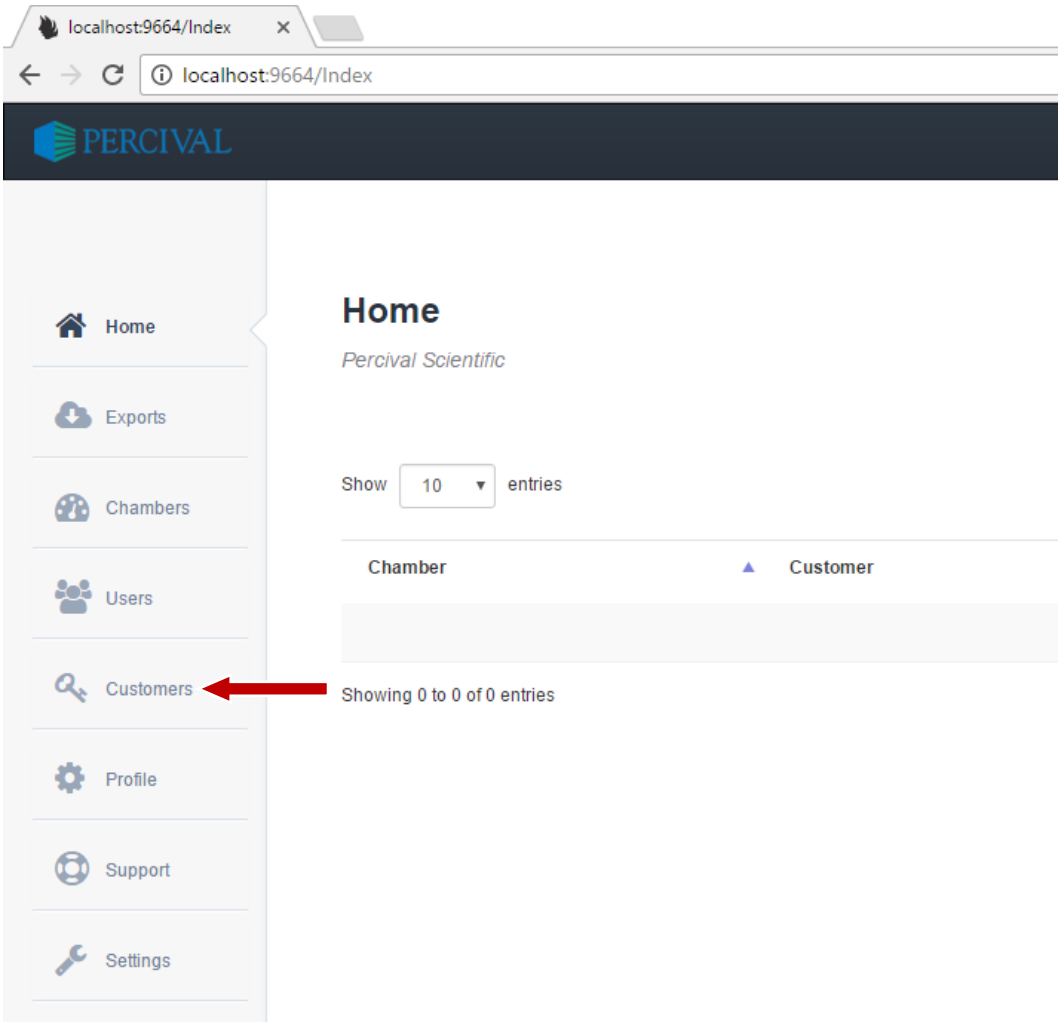
   c. The computer's IP address will be displayed in the resulting text. In the example shown above, the local computer's IP address is 10.1.1.66
   d. Type 'exit' and press Enter to exit the command window.

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.

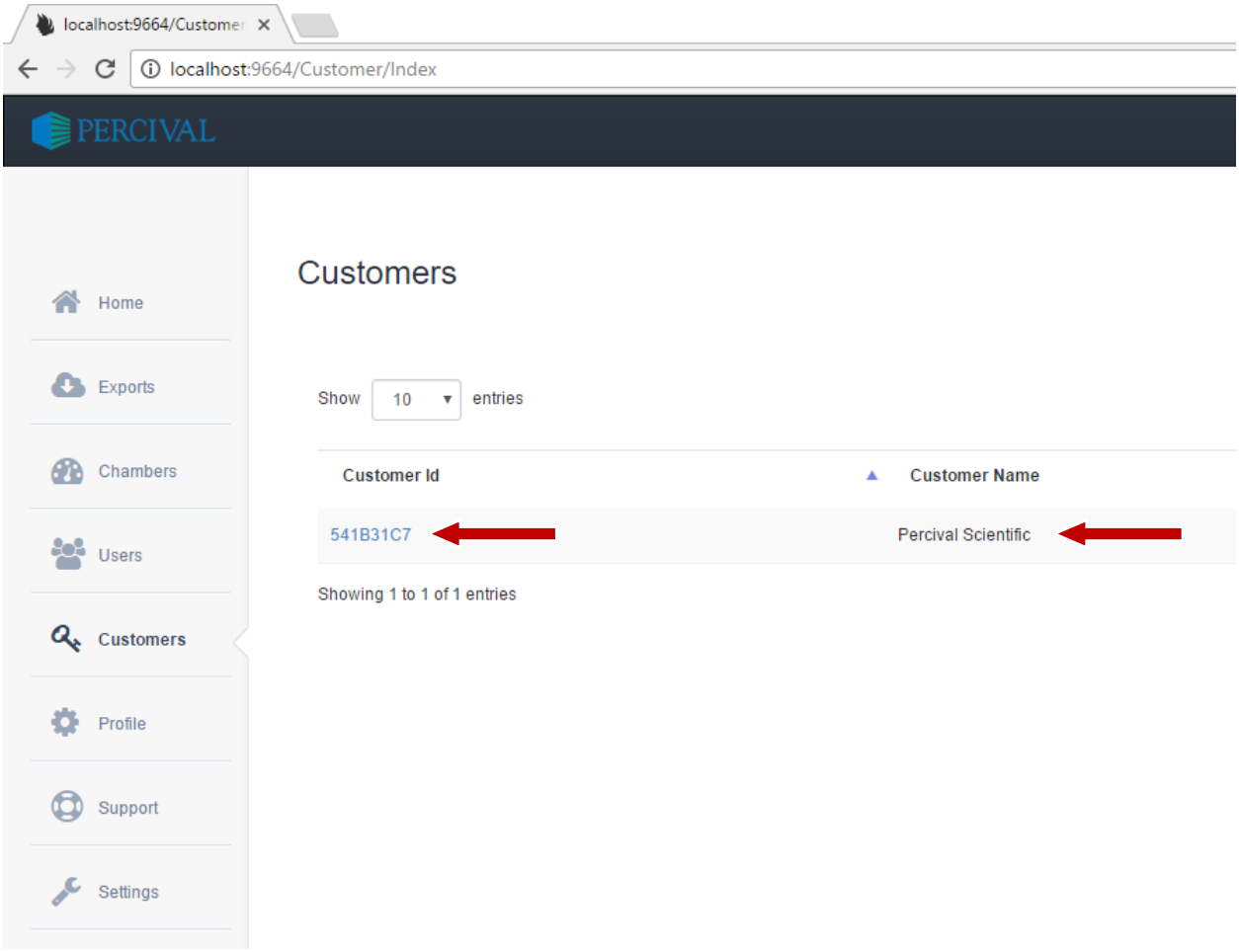
1) Run the PercivalConnect remote software. If accessing the software from a remote location, skip to step 3), otherwise continue to the next steps if the software is to be accessed from the local computer on which it's installed.

a. Open a web browser on the local computer on which the PercivalConnect software was installed
b. Type '**localhost:9664'** 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 in the host computer's IP address followed by the port number (:9664) and press Enter. For example, to remotely connect with the host computer shown above, the user should type '**http://10.1.1.66:9664**' 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.



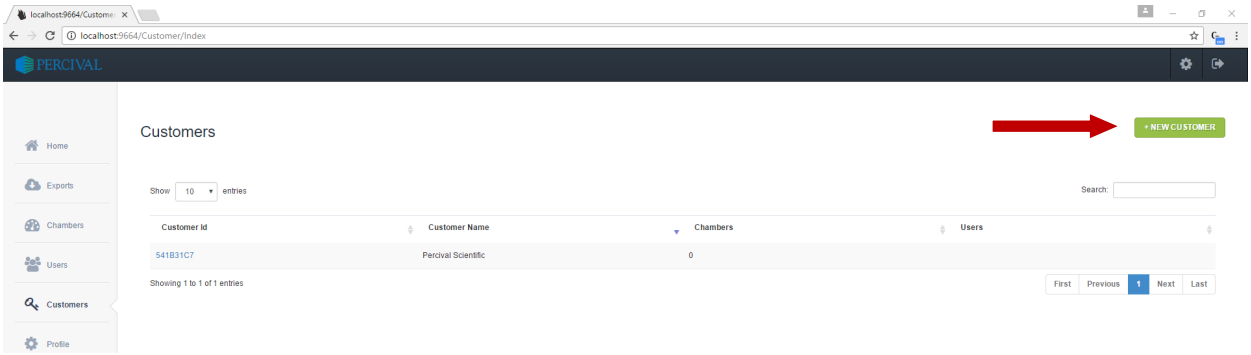
Note: Customer accounts must be created before any user accounts are created, and before any chambers can be linked to the database and subsequently assigned to users. Customer Names must be unique.

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.

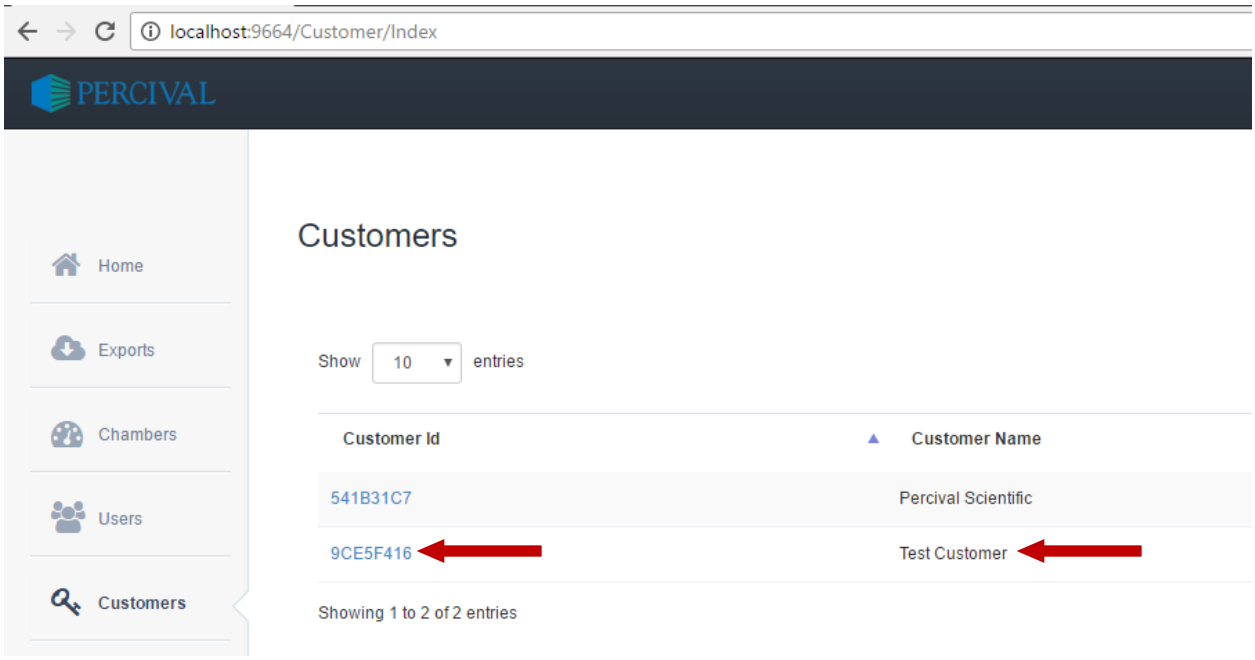
Creating a New Customer

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 9CE5F416.

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 <u>both</u> 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:** For both software implementations, 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.

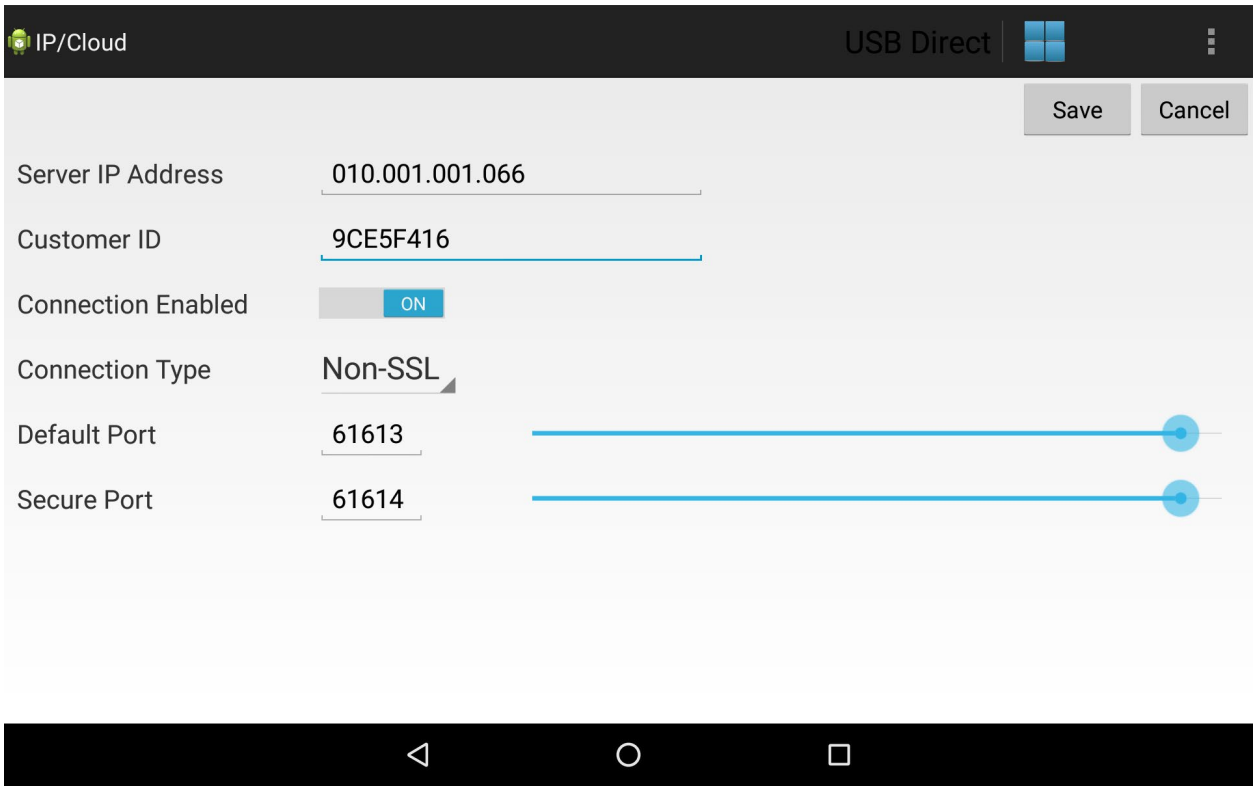
24) Press the **ENTER** key to accept the changes.
25) Press the ▼ key to display 'Cloud Connection'
26) Press the **ENTER** key to edit this value.
27) Press the ▲ or ▼ keys to change the value to Yes.
28) Press the **ENTER** key to accept the change.
29) Press and hold <u>both</u> the **ENTER** and ▲ 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 interface, use the following procedure:

1) With the IntellusControl application running, touch anywhere on the main display screen (except the graph tile) to open the side bar menu.
2) Press Settings, then IP/Cloud per the screen shot below.

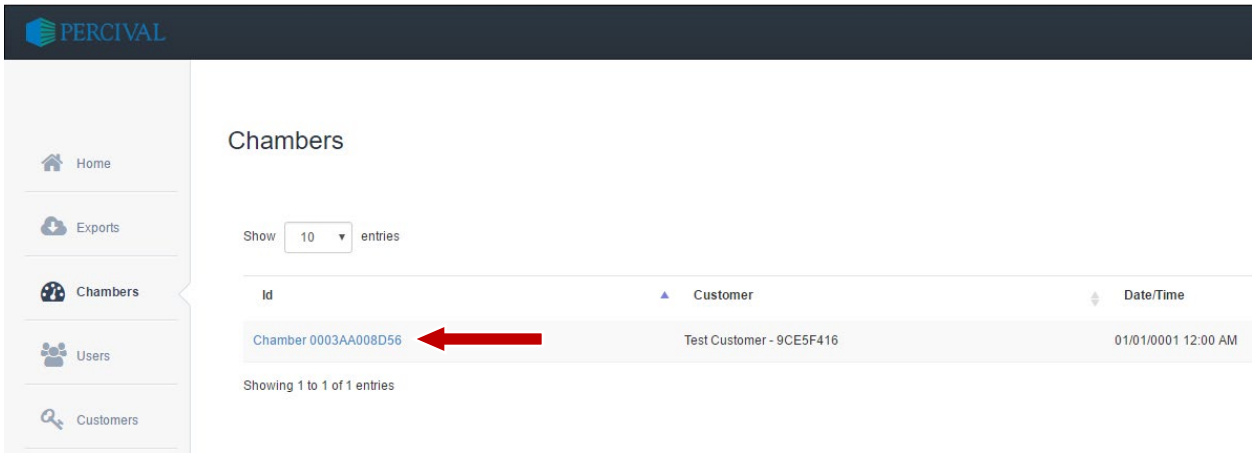
3) Set the values on the Cloud settings page to the following:
    a. Server IP Address = IP address of local host computer
    b. Customer ID = ID number obtained from previous steps

c. Connection Enabled = Yes
d. Connection Type = SSL
e. Default Port = 61613
f. Secure Port = 61614



4) The above screen shot is provided showing the values from previous examples populated into the IP/Cloud setup page.
5) Press the Save button to accept changes and save them to the IntellusUltraConnect controller.

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.


PERCIVAL
Home
Exports
Chambers
Users
Customers
Chambers
Show 10 entries
Id
Customer
Date/Time
Chamber 0003AA008D56
Test Customer - 9CE5F416
01/01/0001 12:00 AM
Showing 1 to 1 of 1 entries

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 PercivalConnect software allows only one instance of a user account to connect to the system at a time. If multiple instances of the same user account attempt to log into the software at the same time, the most recent login assumes control of the session, and the previous session is disconnected.

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.

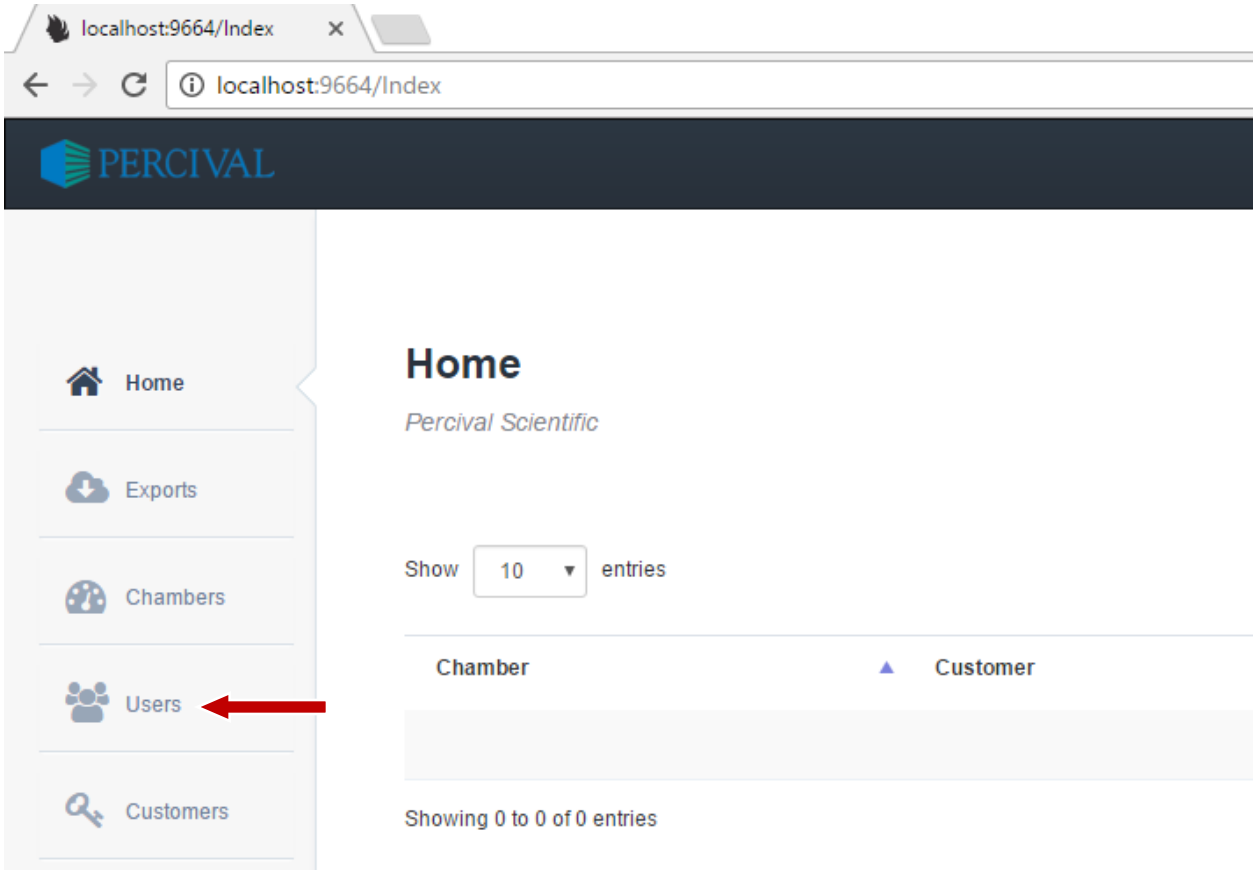
IMPORTANT!

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

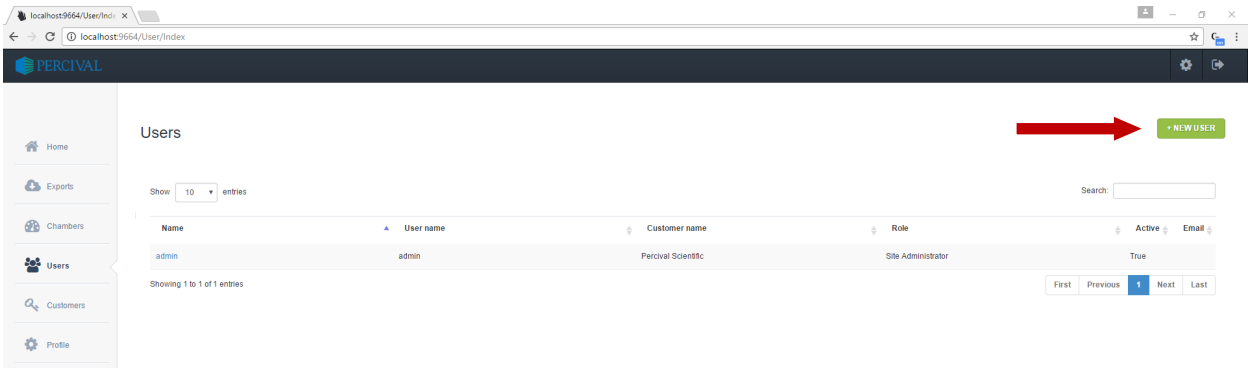
Create a Customer Administrator Account

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

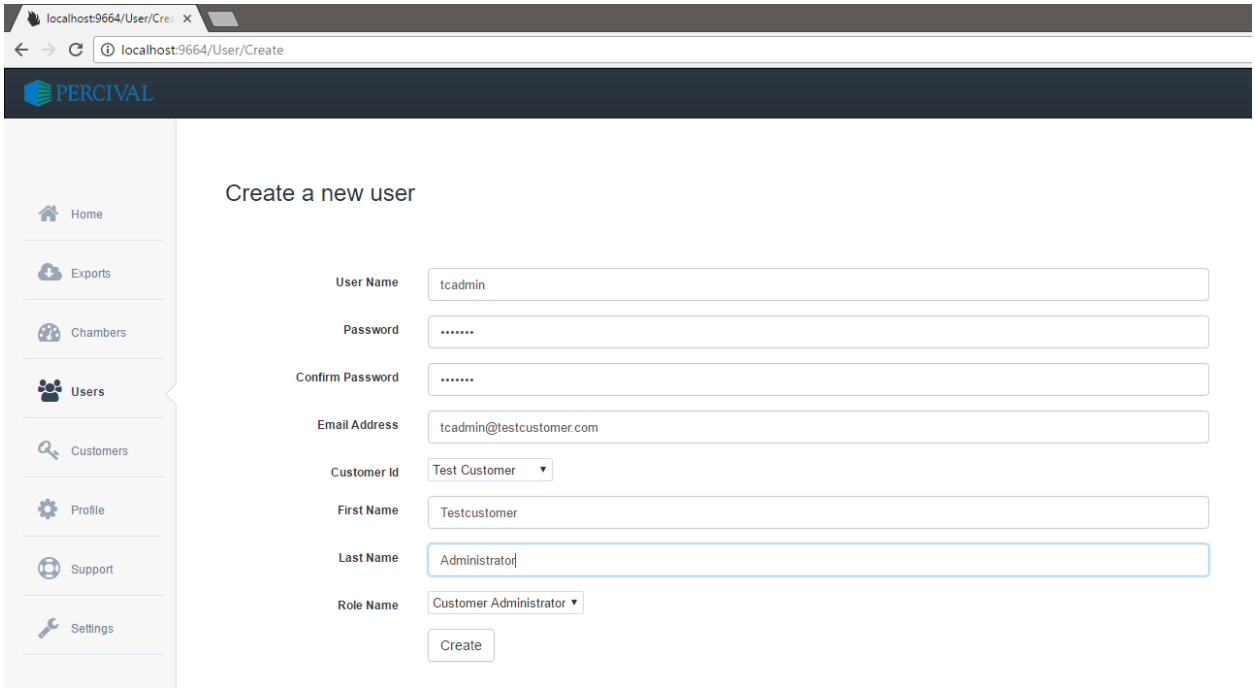
1) Login to the PercivalConnect software as the Site Administrator. Unless already changed, the default login credentials are:
    a. Username = admin
    b. Password = admin
2) Once logged in, click on the Users tab on the side bar menu.



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 required fields, and press 'Create' to save. The screenshot below shows the example of a new customer administrator with the username of tcadmin. This example account will be referred to later on in this user manual.

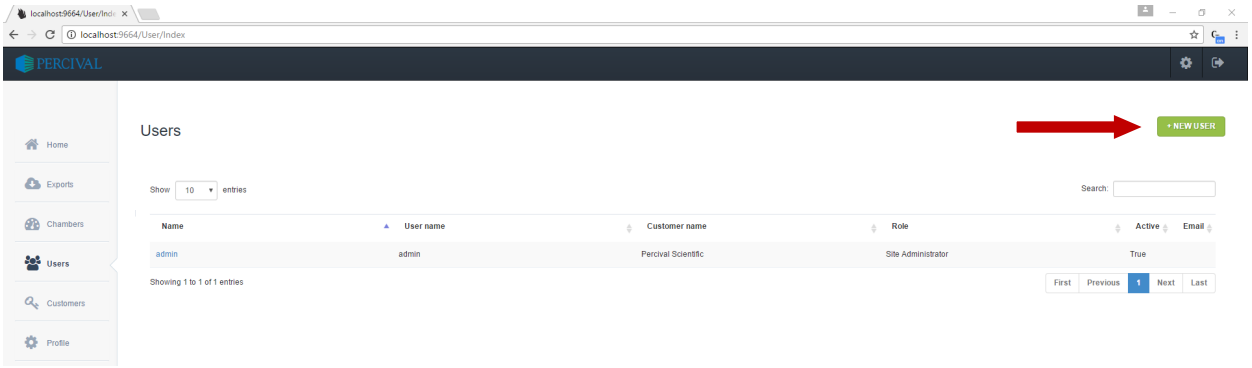


5) After a new user account is created, it is added to the list of users on the software's Users page. Once a user has been created, one or more chambers can be assigned to the account. To assign a chamber to an account, proceed to the section entitled 'Add Chambers to a User Account'.

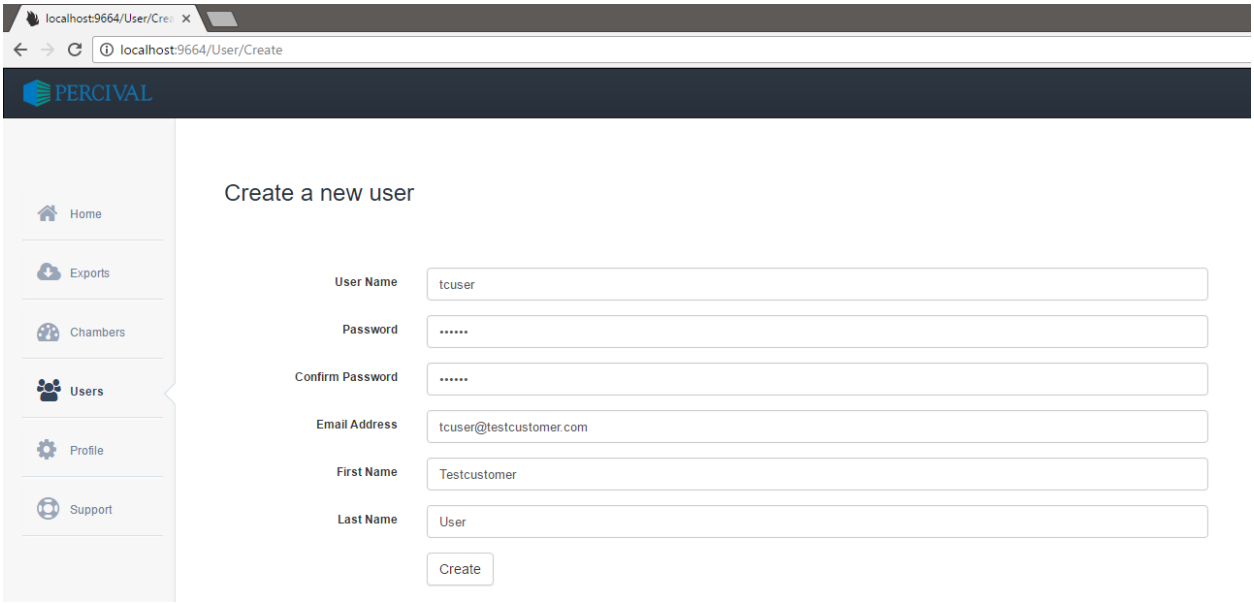
Create a General User Account

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) 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 required fields, and press 'Create' to save. The screenshot below shows the example of a new general user account under the Test Customer company. The username in this example is tcuser. This example account will be referred to later on in this user manual.



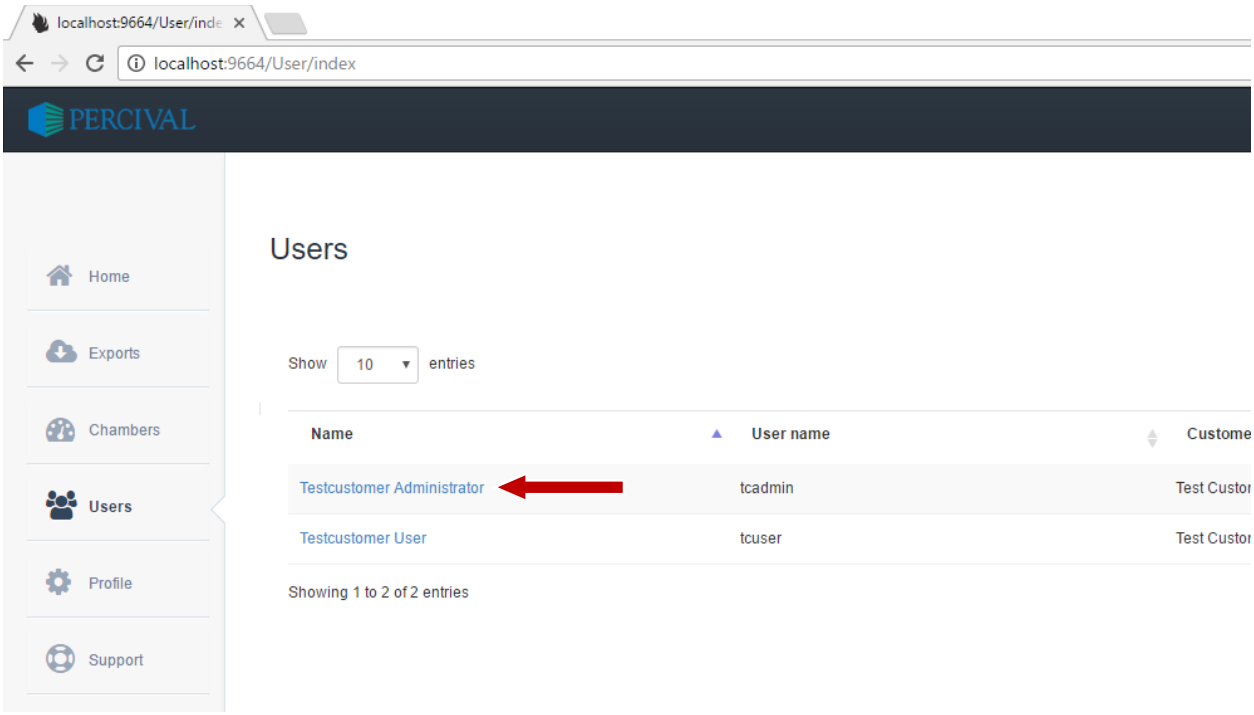
Note: There is no dropdown menu to select the user type (Role Name) when logged in as the customer administrator. Only General User accounts can be created and administered from this user level.

5) After the new user account is created, it is added to the list of users on the software's 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'.

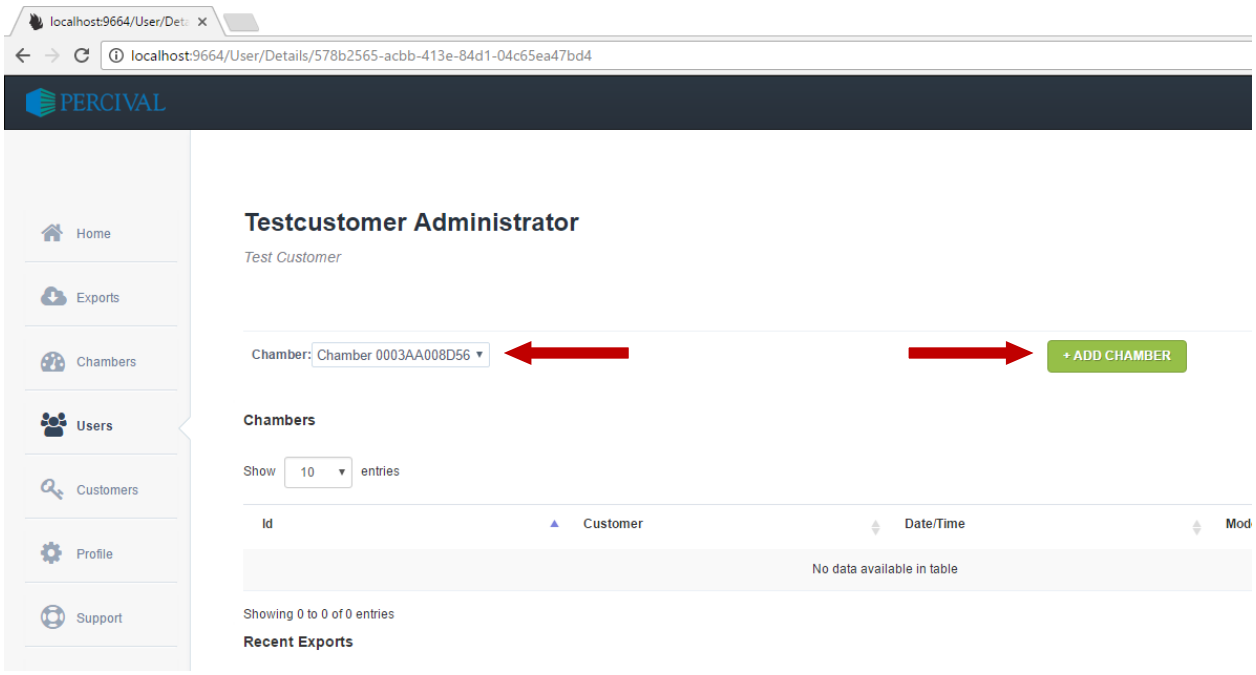
Add Chambers to a User Account

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 Customer Administrator account) on the PercivalConnect software, use the following procedure:

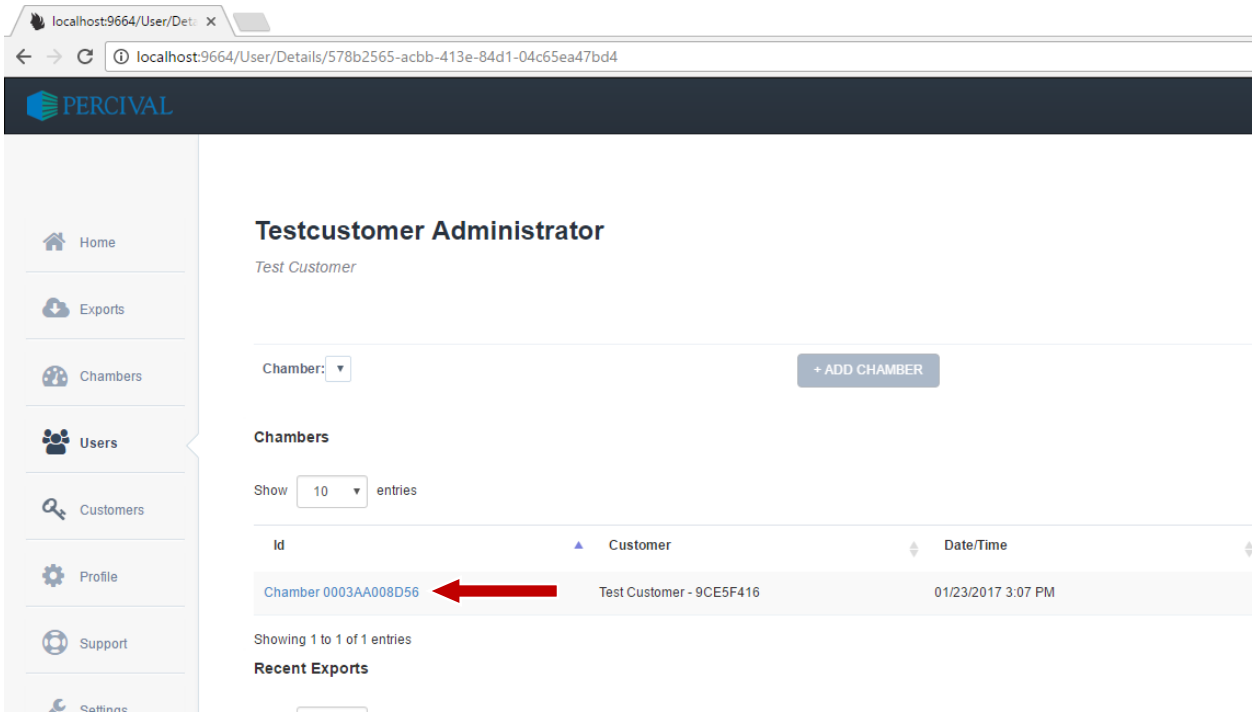
1) Click on the customer name hyperlink that is to be edited from the list of names on the Users page.



2) Clicking on the user name hyperlink opens the user account's profile 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 the users profile page, please refer to the section of this manual entitled 'User Profile Page'. To add a chamber to the selected customer 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.



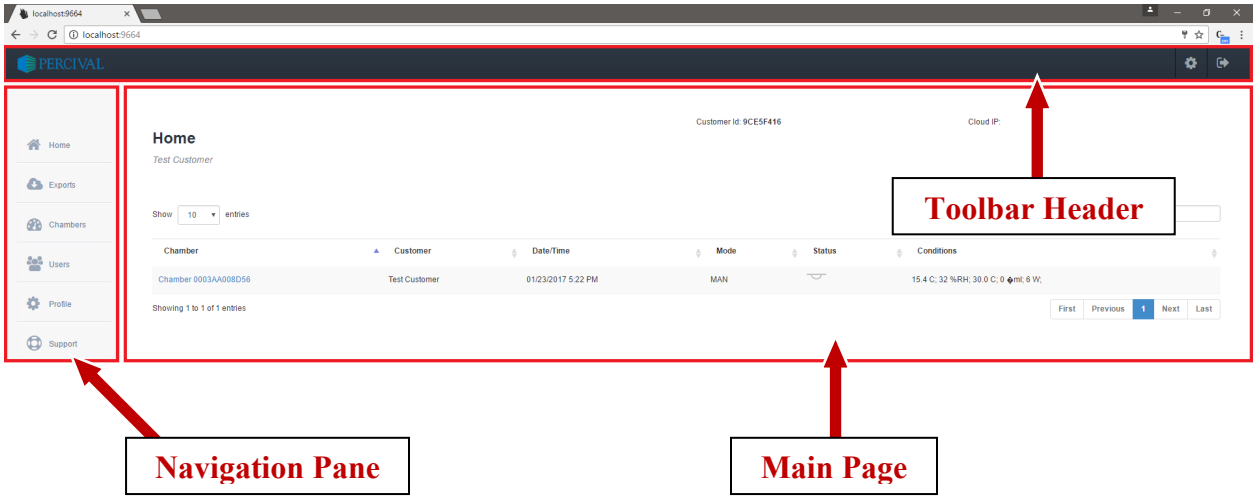
Note: The Chamber dropdown list only contains the IntellusUltraConnect controllers that are available to be associated with the user account. If no chambers are available, no chambers will populate this list.

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.

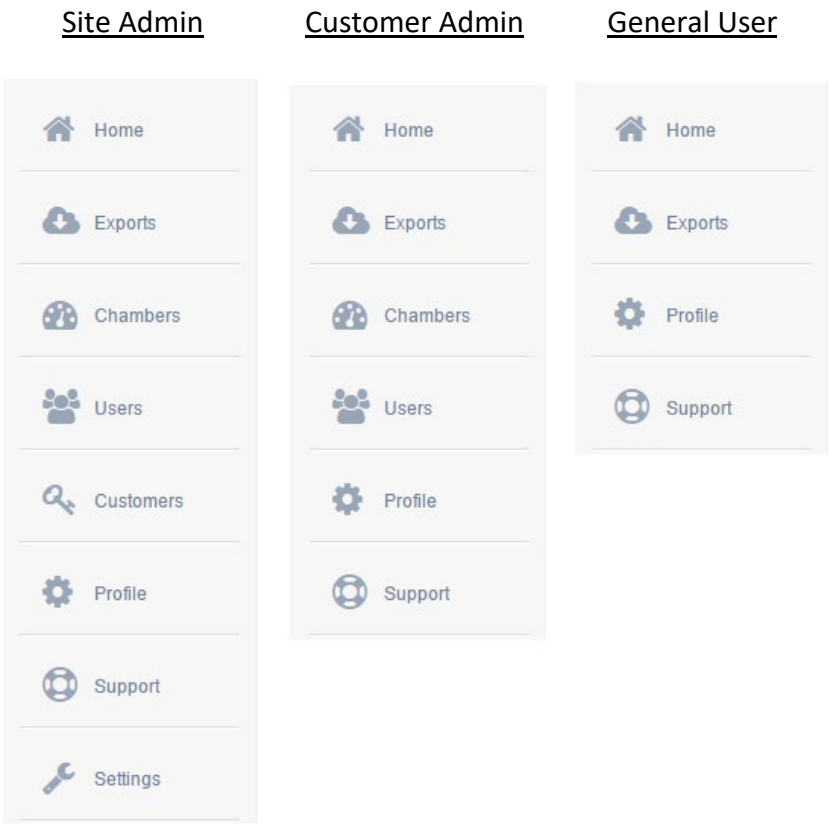


Navigation Pane

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.

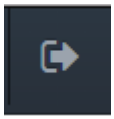


Toolbar Header

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.

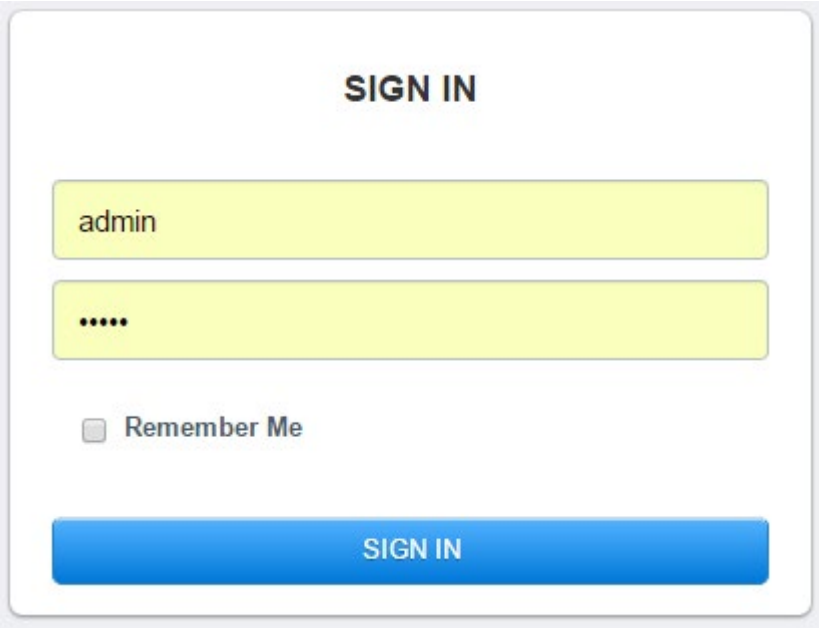
Click on the Percival Scientific icon to return to the Home page. While on the Home page, click on this icon to refresh the page's information.

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. The software allows only one instance of a user account to be logged in at a time. If a user is logged into the system and another user logs in with the same credentials, it will

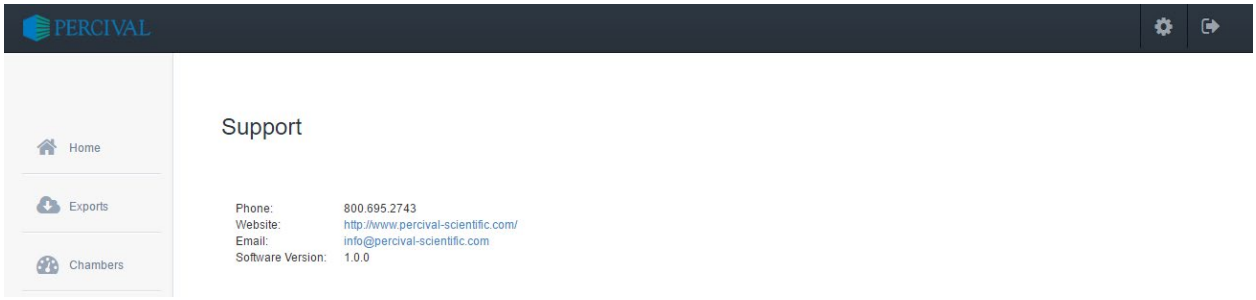
Users may select at their own discretion whether to allow the system to remember their login credentials whenever the software login screen is accessed. Once the username and password have been entered into the appropriate fields, click the '**SIGN IN**' button to log into the PercivalConnect software.

WARNING!

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

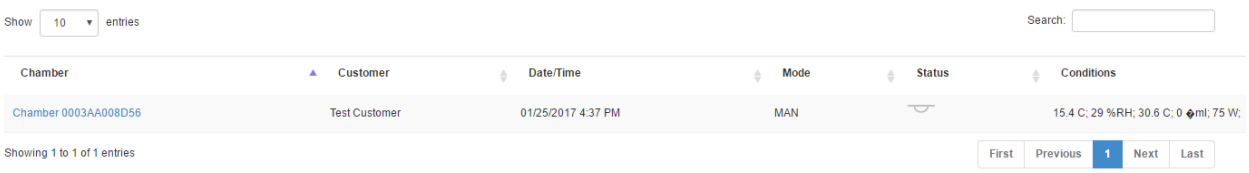
Support Page

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.

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. This column is most useful for Site Administrators, as this the user level is the only one able to view data from multiple customer accounts. Customer Administrators and General Users do not have rights to view chambers from other customer accounts so the customer column will contain only the customer name of their associated 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: If a control system connection to the PercivalConnect software is broken, the value in this column will display a placeholder timestamp.

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:

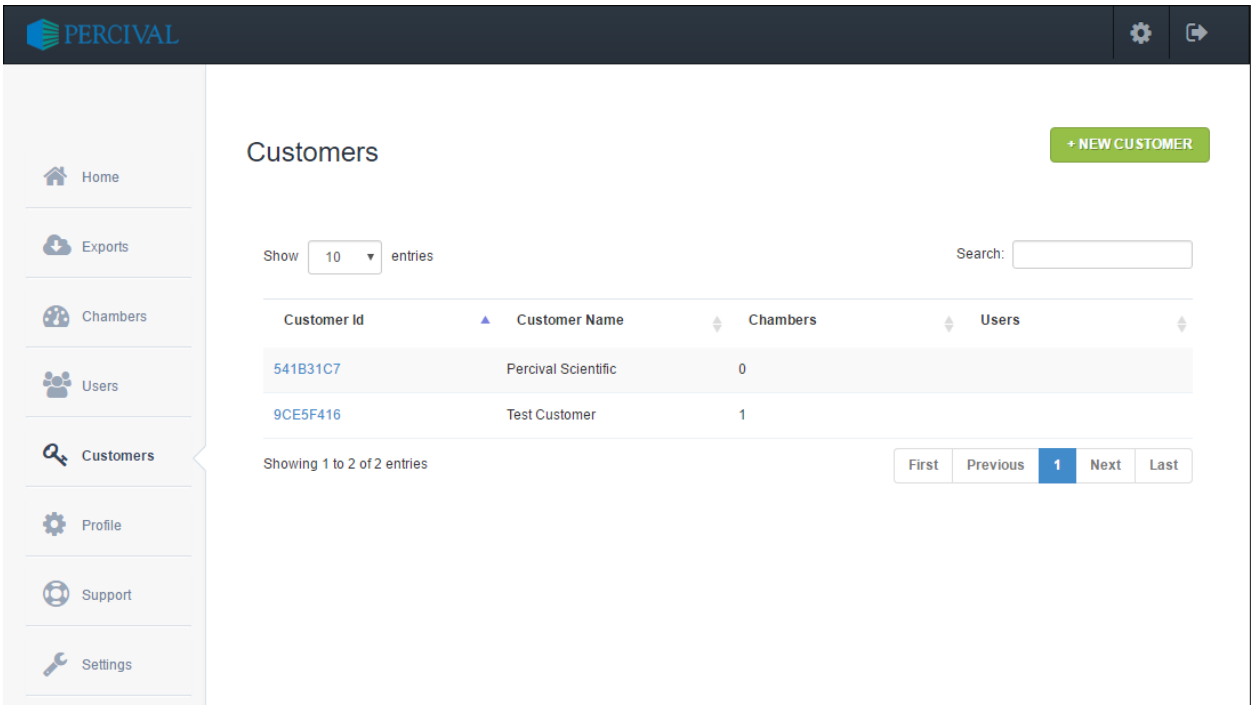
1) Temperature
2) Relative Humidity
3) Auxiliary
4) Expansion Slot 1
5) Expansion Slot 2
6) Expansion Slot 3
7) Expansion Slot 4

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.

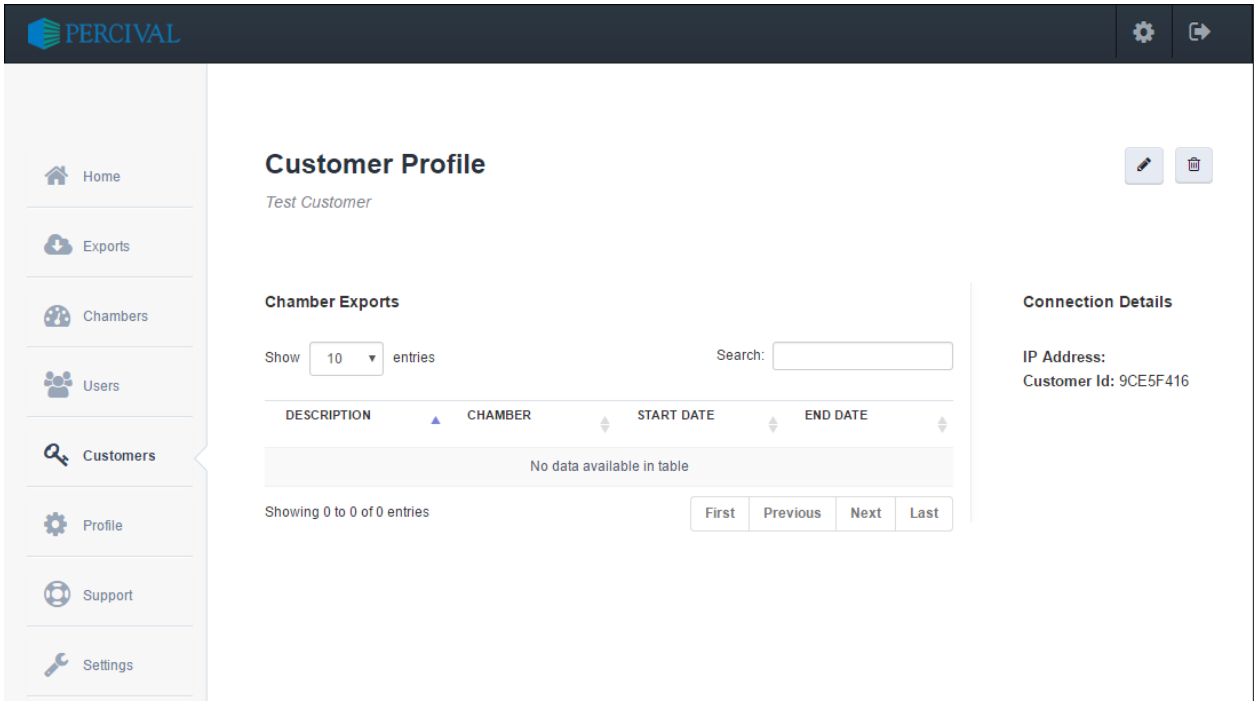
Customer Name: This column contains the customer names added to the system.
Chambers: This column lists the number of chambers currently assigned to a customer account.
Users: This column contains the number of users assigned to a customer account.

Creating a New Customer

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

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.

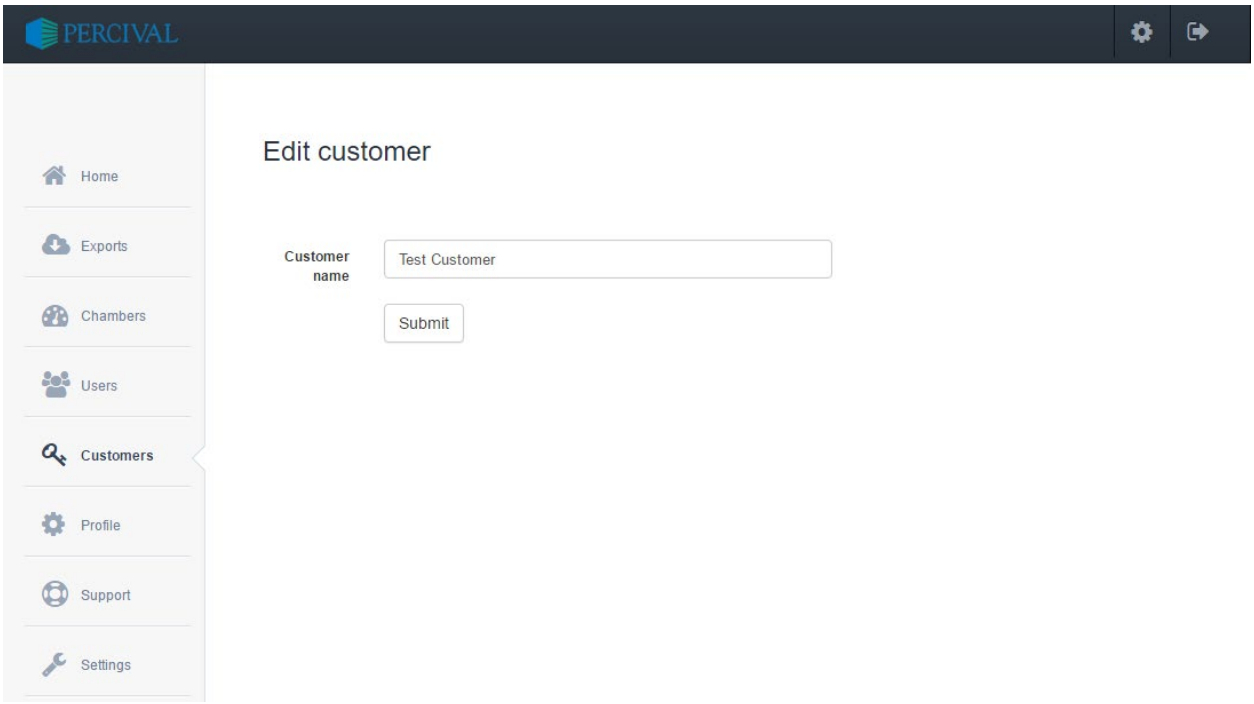
This button opens the Edit Customer page, where the customer name can be edited

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:

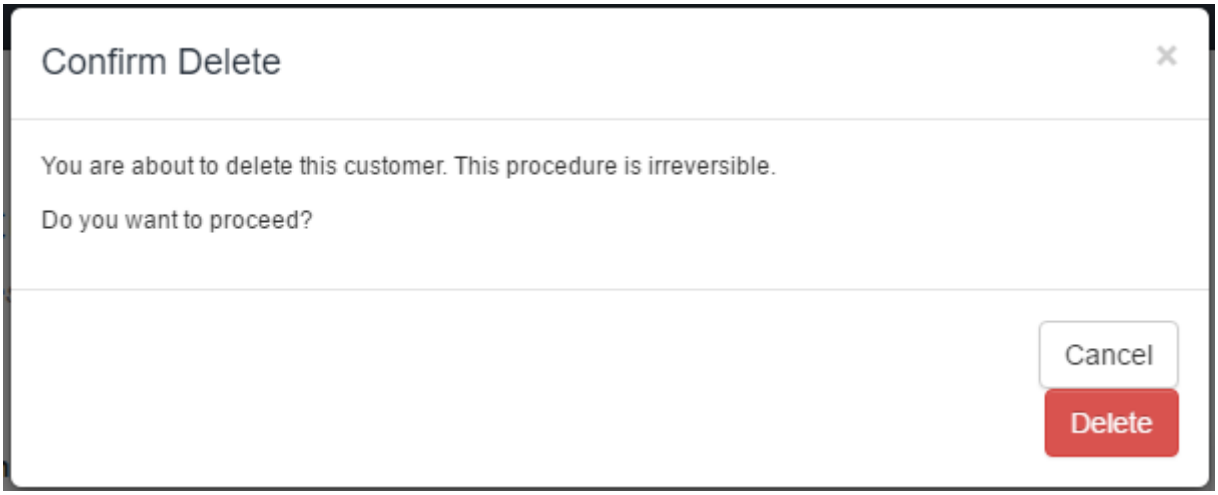


2) Edit the customer name in the text entry field
3) Click on the 'Submit' button.

Delete a Customer Profile

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

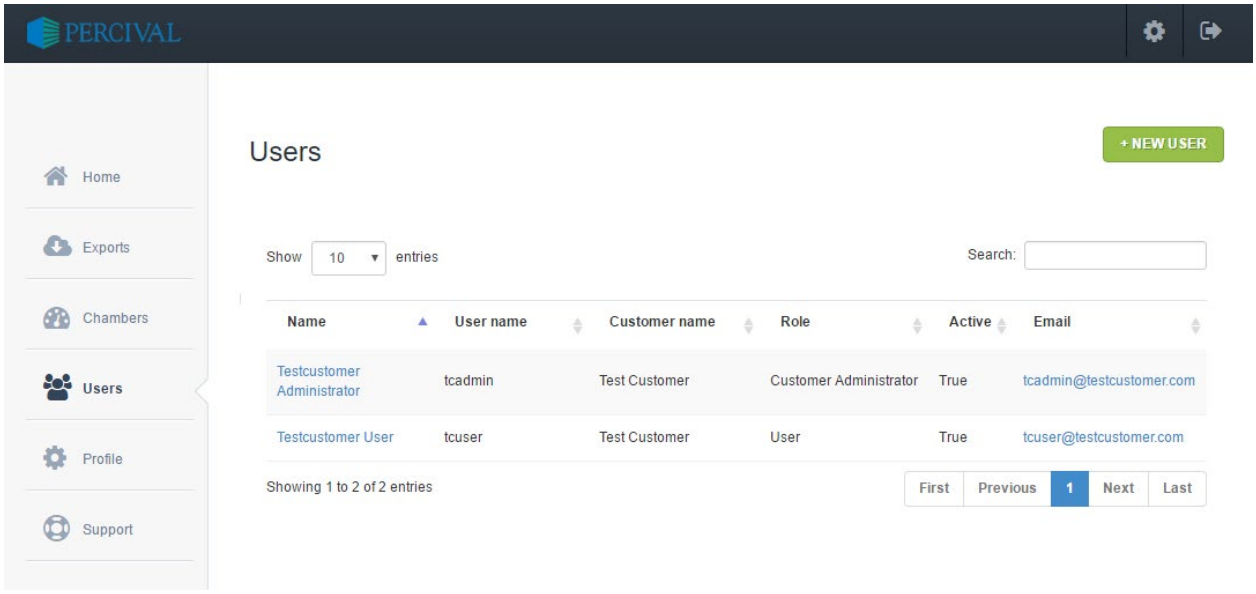
1) Click on the (delete this customer) button. The administrator is presented with the following pop-up message:



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.



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 name 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. Customer Administrators only have rights to administer users under their customer account, so all users in the table will have the same customer name.

Role: This column contains the user account level for each user.

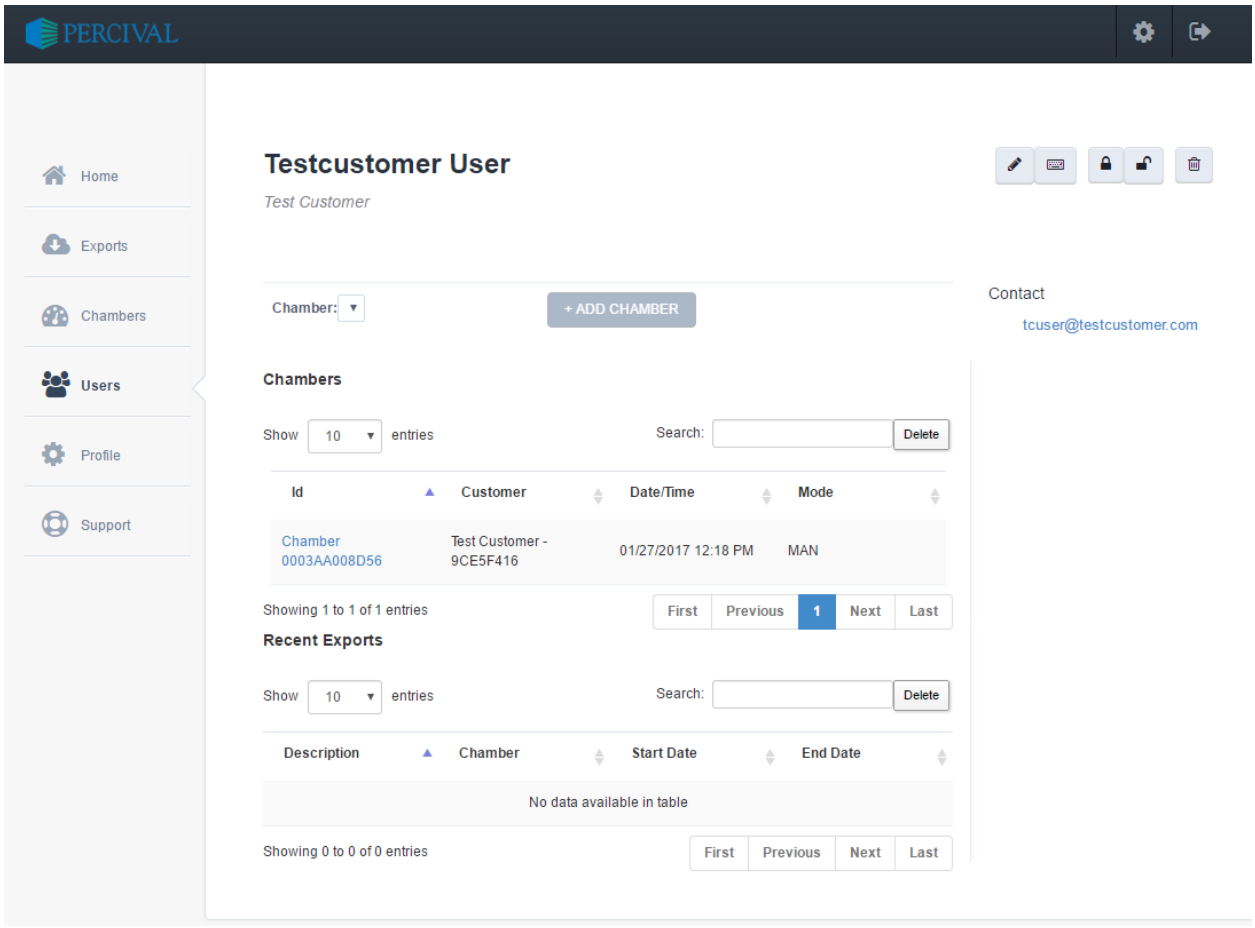
Active: This column contains the state of each user account. An active (enabled) user account is shown as 'True', and a locked (disabled) user account is shown as 'False'.
Email: This column contains the email address associated with each user account. The addresses are displayed as hyperlinks, providing 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 Testcustomer User account example, created previously in this user manual.



In this example, the user account has been assigned only one chamber (Chamber 0003AA008D56), has not created any export links, and there are no other chambers connected to the software available that could be added to the account. If a new chamber were available to be added to the account, the 'Chamber:' dropdown list would contain a list of chamber names, and the '+ ADD CHAMBER' button would be green (not inactive and greyed out).

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.

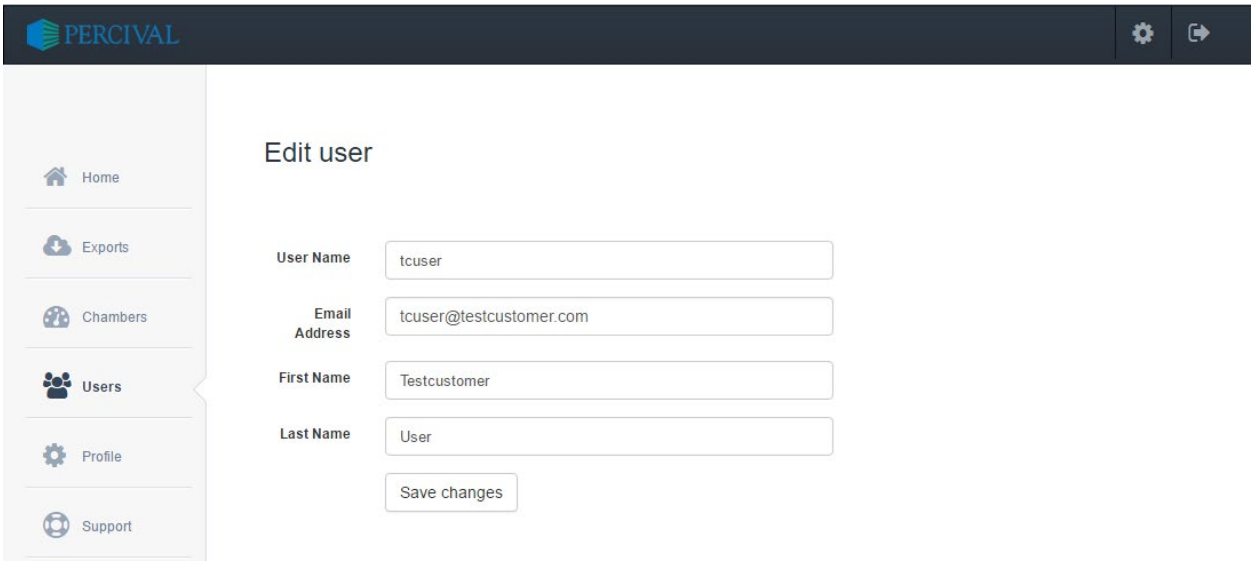
This button unlocks the user account.

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:

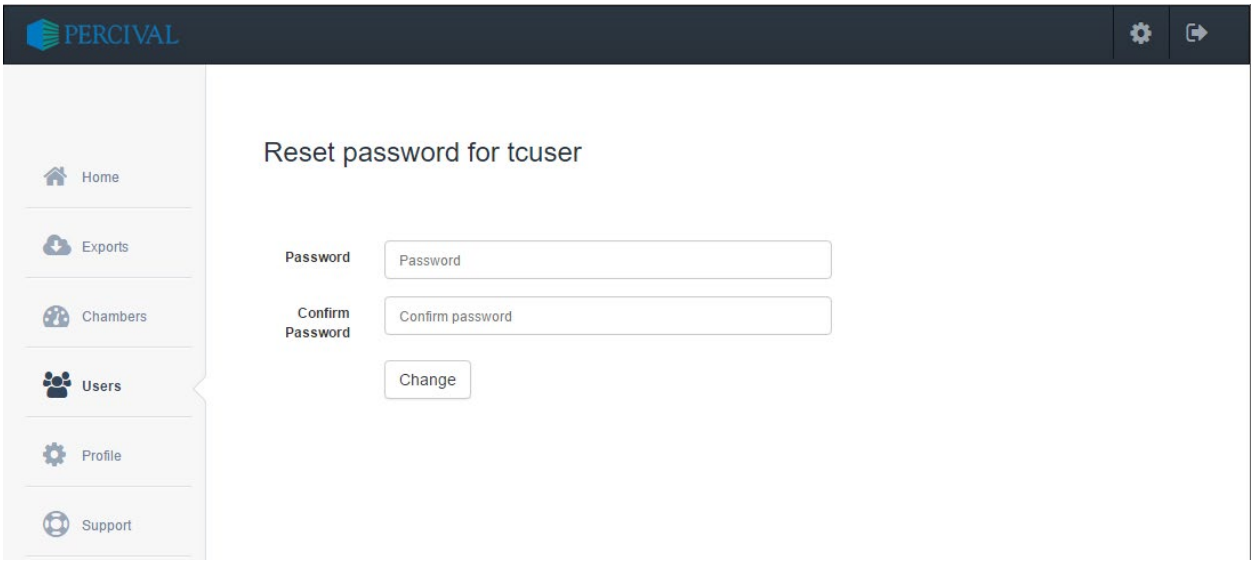


5) Edit any necessary fields
6) Click on the 'Save changes' button.

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:

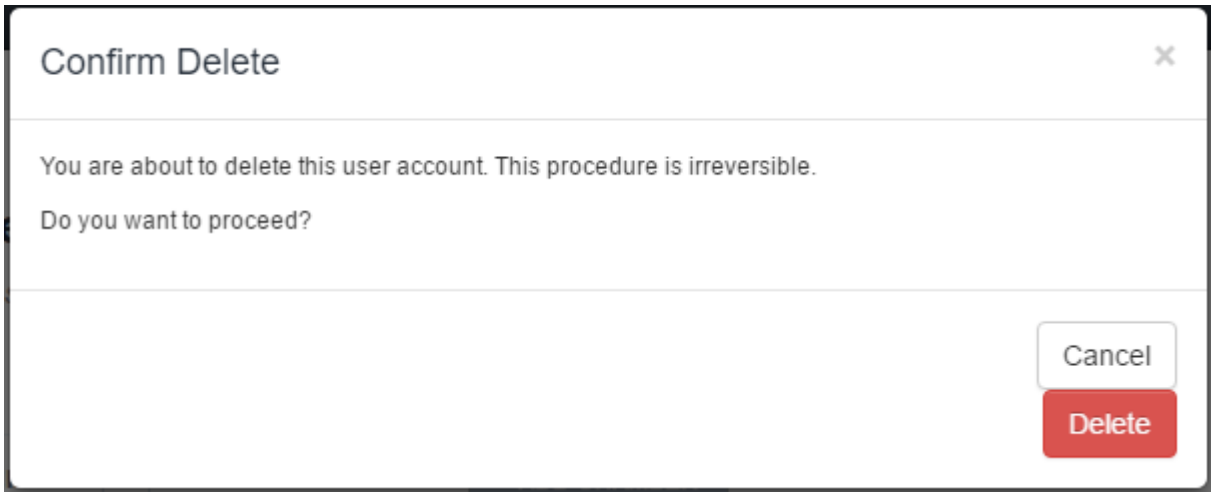


2) Edit any necessary fields
3) Click on the 'Change' button.

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:



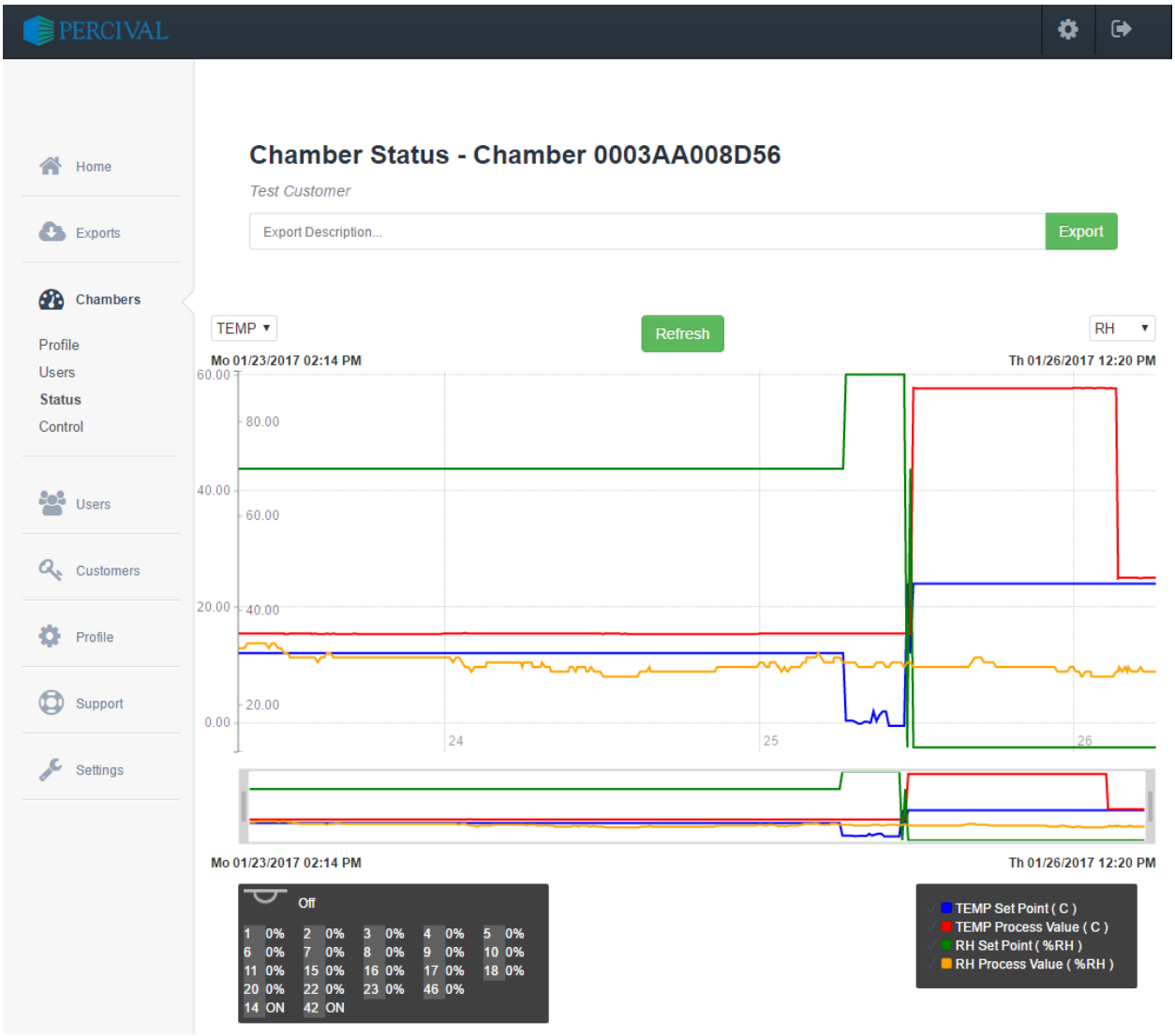
2) Click the 'Cancel' button to terminate this process, otherwise proceed to the next step.
3) Click the 'Delete' button in this window to permanently delete the user and associated user data from the PercivalConnect software.

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 Status and Current Conditions. 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 'Id' 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, export links can be created for any displayed graphical data. Upon accessing the Chamber Status page, additional sub-menus under the Chambers menu on the navigation pane are displayed. These sub-menus are displayed and made available only to certain administrator user accounts. Upon initial login, the available sub-menus are Profile, Users and Status.

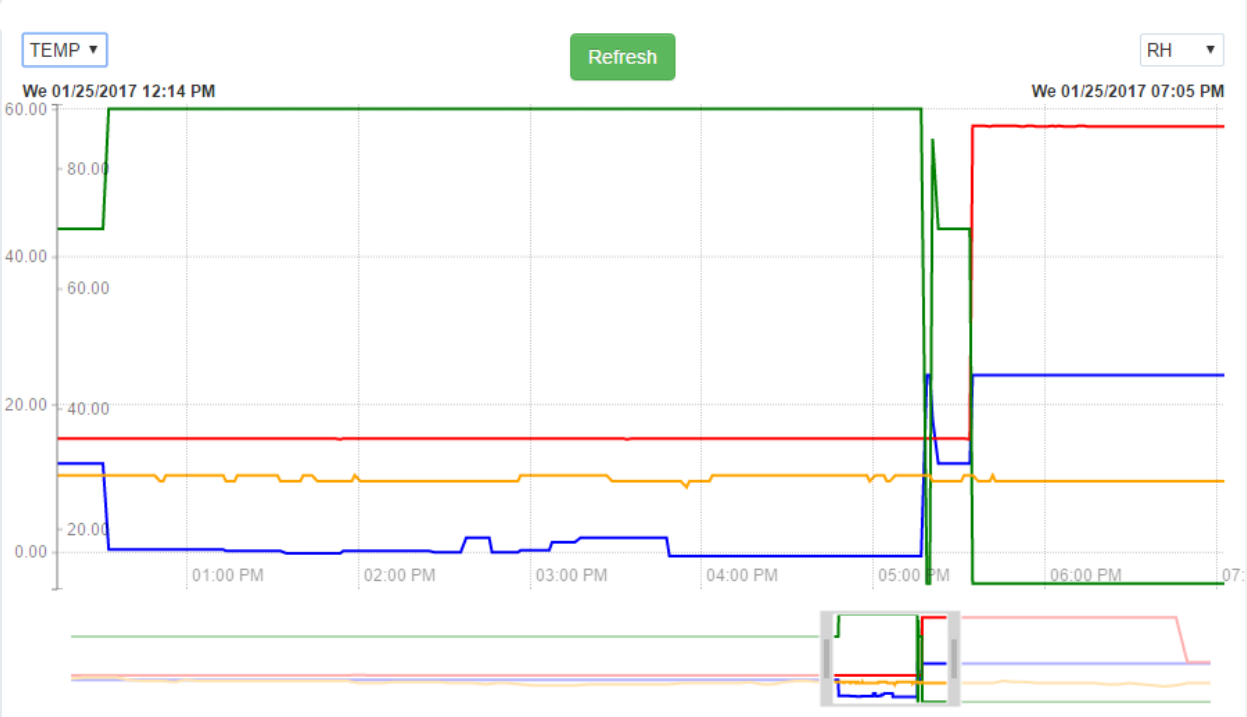


The displayed graph on the Chamber Status page contains all of the chamber performance data that's been uploaded to the PercivalConnect database. Up to 1 year of data can be kept in the database. Up to two process values can be displayed on the graph at one time.

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.

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. Above the graph window in the center of the screen is a '**Refresh**' button. Press this button to refresh the graph screen.

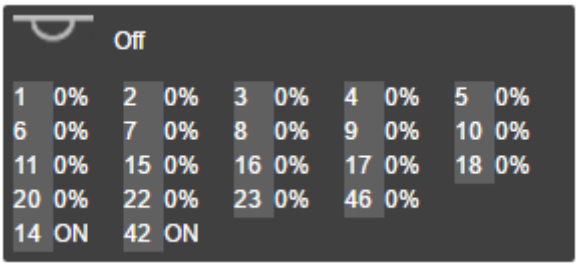
The graph tool also includes a zoom-in feature. A graph zoom-in window is located below the main graph. To zoom in on a particular period of time within the complete graph, click on the grab bars at each end of the zoom-in window and drag them to the desired graph times. As the zoom-in window is adjusted, 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. The example table shown below shows that outputs 1-11, 15-18, 20, 22, 23 and 46 are configured as lights and outputs 14 and 42 are configured as events.

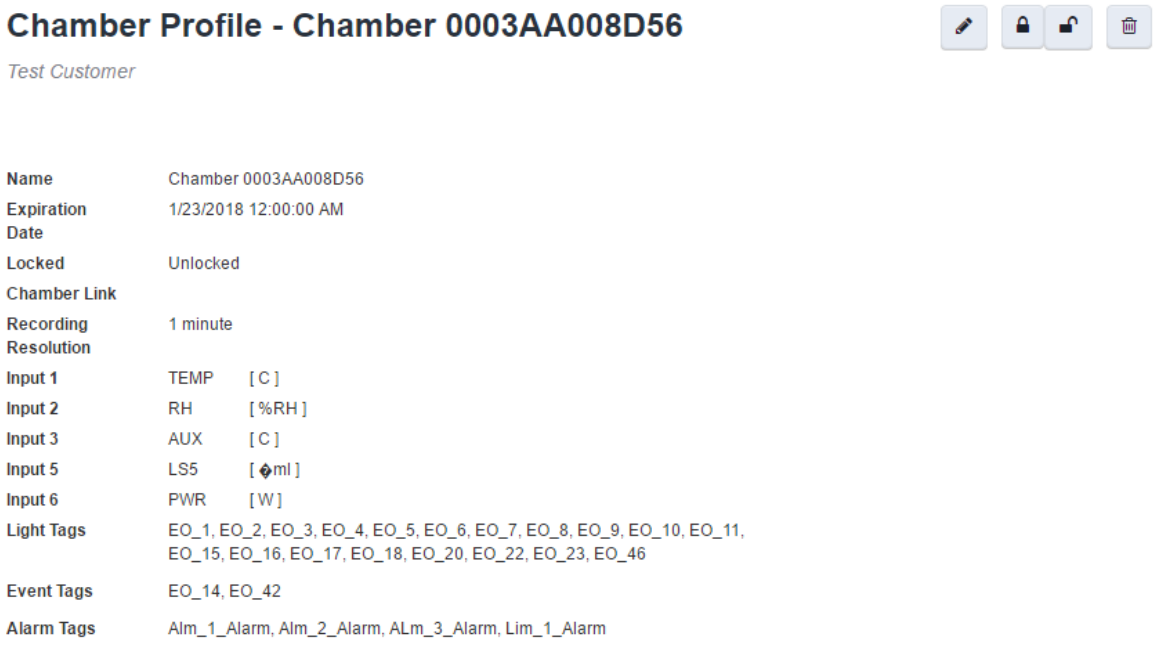


A data export field is located at the top of the Chamber Status page. Export links can be created by clicking the Export button at the right hand side of this field. The time range of the export reflects the data shown in the main graph window. If the zoom-in feature is used, the export file will only contain data from the zoomed-in period shown on the main graph window.

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 enables text entry fields for all editable chamber profile values

This button locks the chamber account.

This button unlocks the chamber account.

This button deletes the chamber account.

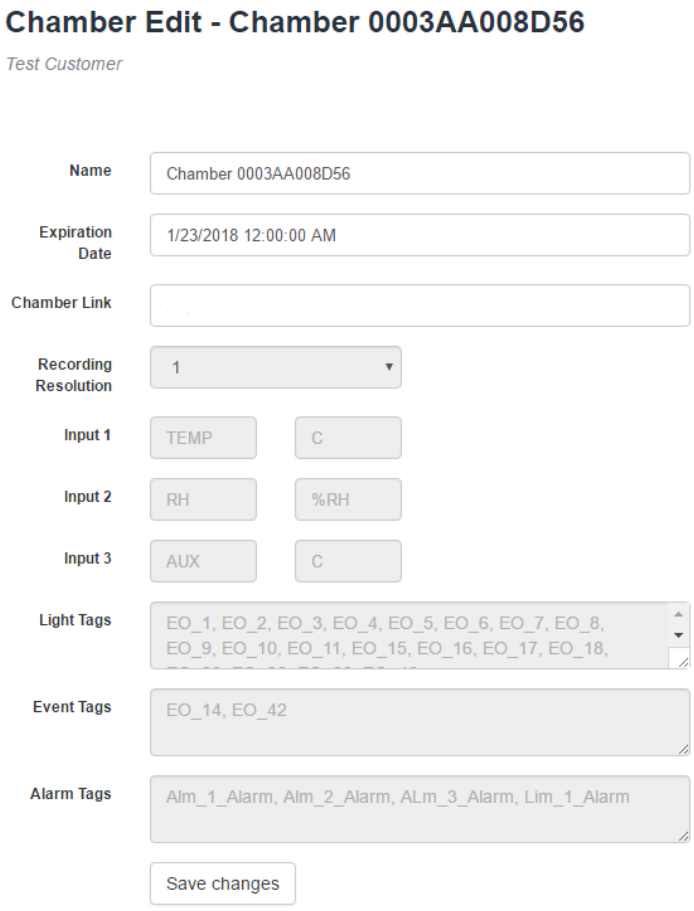
The Chamber Profile page contains the following information:

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.
Locked: This value denotes the status of the chamber account. The Site Administrator can lock and unlock chamber accounts. For example, a chamber cloud account profile that's allowed to expire will initially be locked. This retains all database information, but disallows user access to the chamber account.
Chamber Link: This field is editable by all user levels, and should be enabled at the user's discretion. The chamber link value is the IP address of the chamber's IntellusUltraConnect Controller. Adding this address enables the controller's IntellusUltraConnect Web Server to be accessed through the PercivalConnect software. 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 PercivlConnect software has a fixed recording resolution at 1 point per minute. This field is not configurable, and is a placeholder for future functionality.
Input 1: This field provides the user with the connected chamber's input name and process value units.
Input 2: This field provides the user with the connected chamber's input name and process value units.
Input 3: This field provides the user with the connected chamber's input name and process value units.
Input 4: This field provides the user with the connected chamber's input name and process value units.
Input 5: This field provides the user with the connected chamber's input name and process value units.
Input 6: This field provides the user with the connected chamber's input name and process value units.
Input 7: This field provides the user with the connected chamber's input name and process value units.
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:

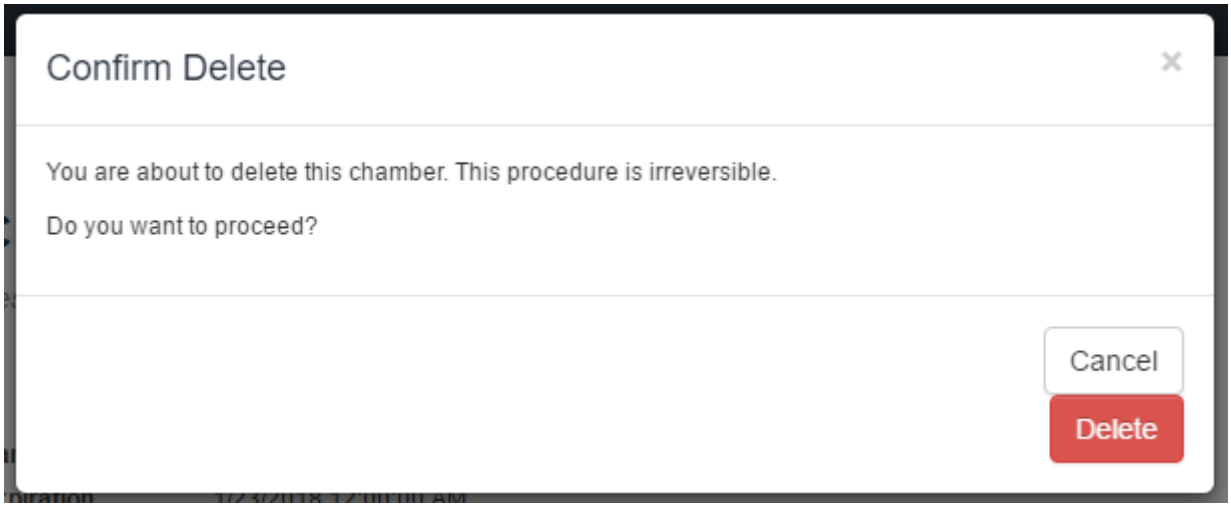


2) Edit any necessary fields
3) Click on the 'Save changes' button.

Delete a Chamber Profile

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

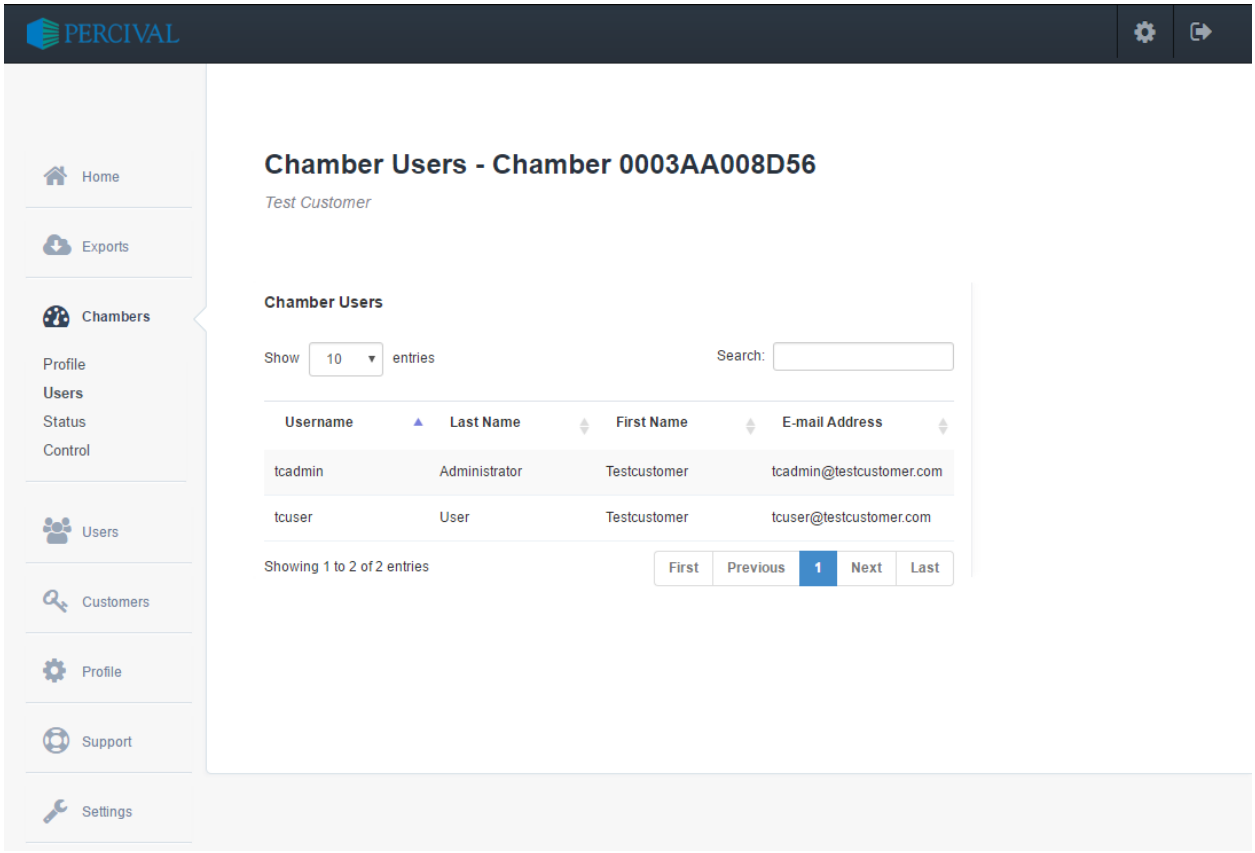
1) Click on the (delete) button. The user is presented with the following pop-up message:



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 chamber and its database values from the PercivalConnect software.

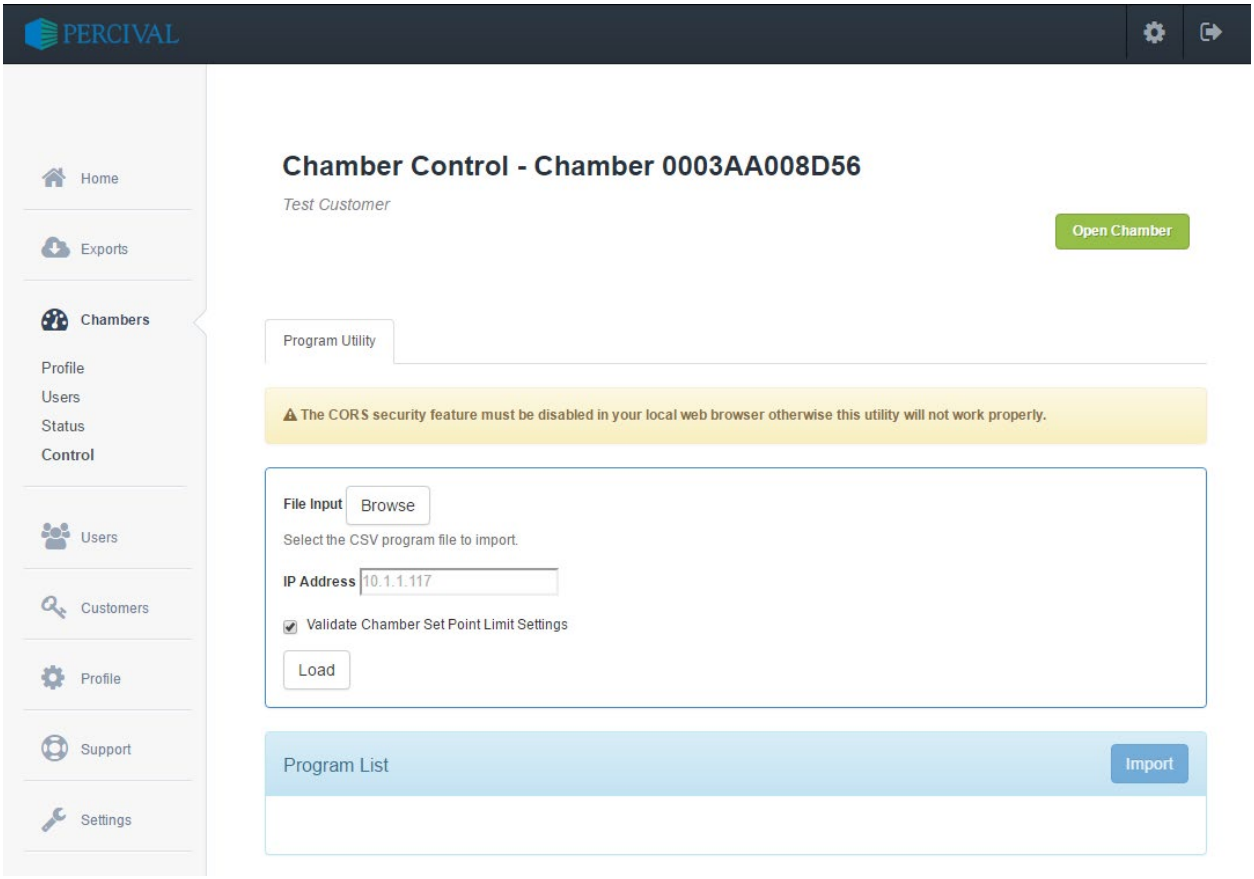
Chamber Users Page

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.



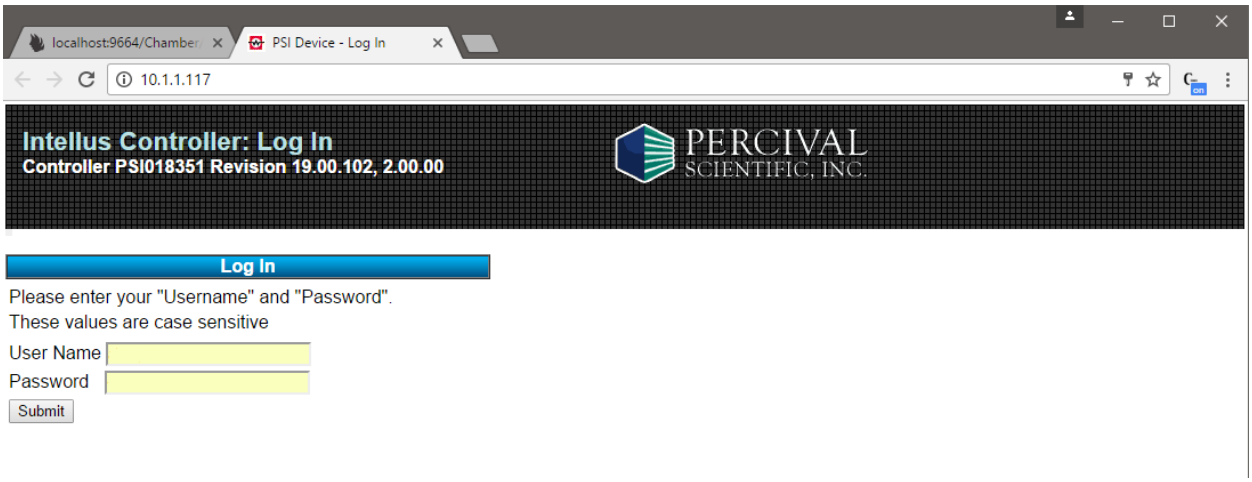
Chamber Control Page

If enabled (see previous section entitled 'Chamber Profile Page – Chamber Link') the Chamber Profile 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**.



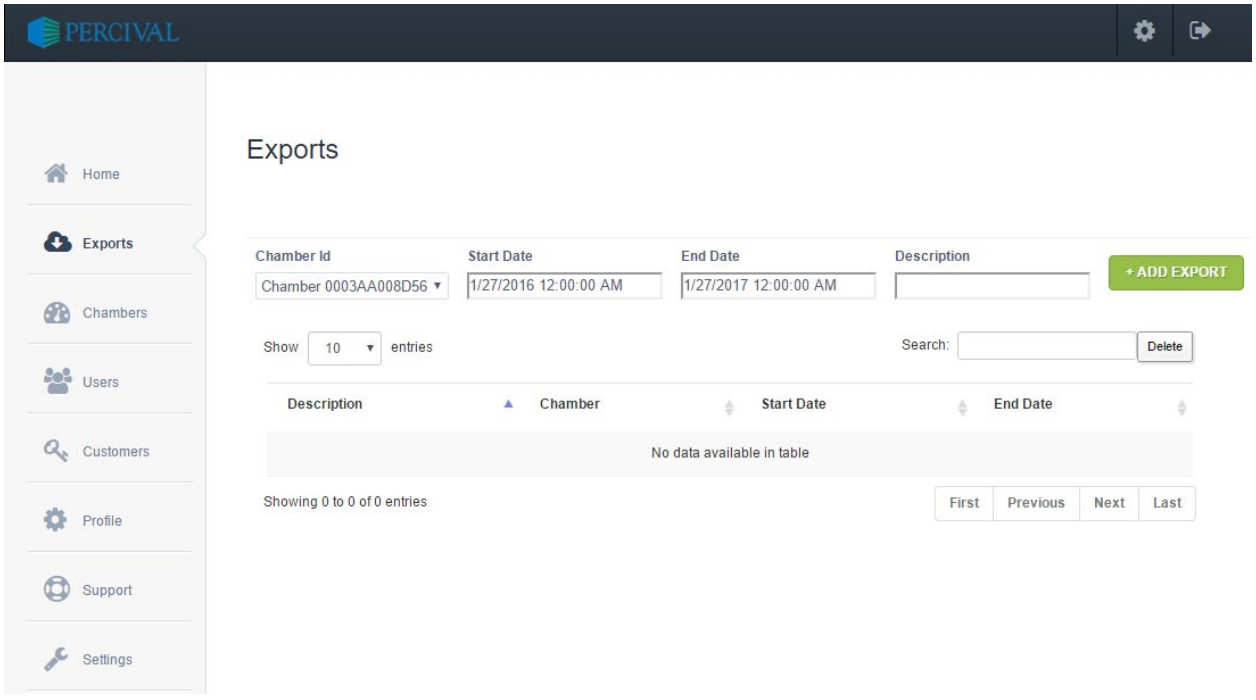
For instructions on the use of the multi-step program upload feature, proceed to the section of this manual entitled **Program Import Utility**.

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.

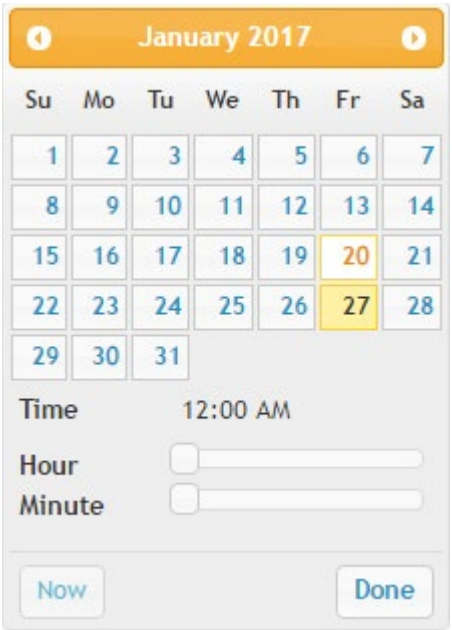


Create an Export

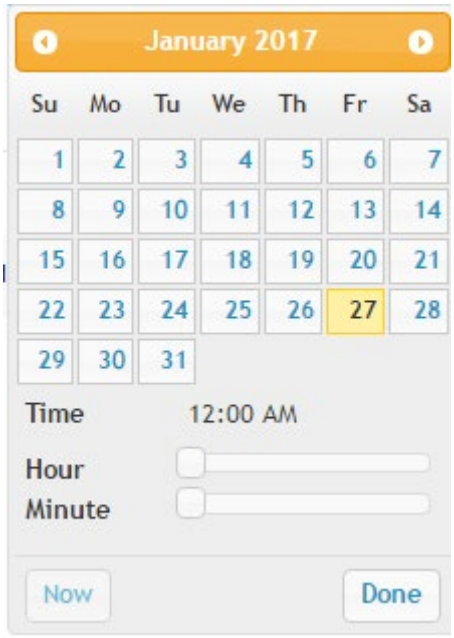
Export links can be created from the Chamber Status page or from the Exports page. For instructions on how to create an export link from the Chamber Status page, please refer to the section of this manual entitled **Chamber Status Page**. The example below describes the creation of a new data export. The desired data to be exported is between January 20th and January 27th, 2017. 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:

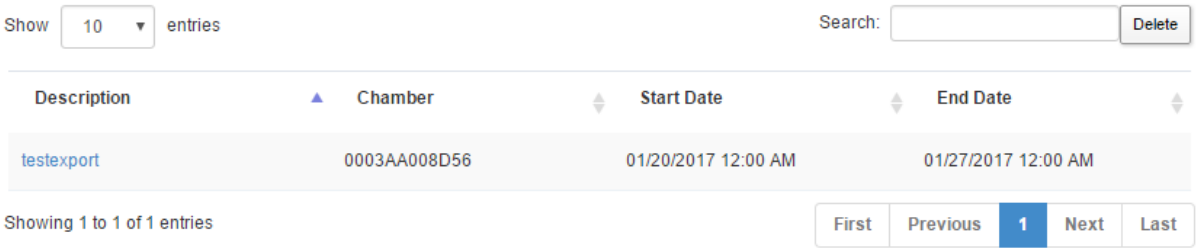
2) Select the desired chamber from which data is to be downloaded from the 'Chamber ID' dropdown list. For these instructions the example chamber (Chamber 0003AA008D56) from previous sections will be selected.
3) Click on the Start Date field. A calendar tool will be displayed per the screenshot below. Enter the desired start date and time (12:00am, January 20th, 2017) and click on the 'Done' button.



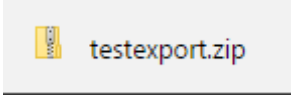
4) Click on the End Date field. A calendar tool will be displayed per the screenshot below. Enter the desired end date and time (12:00 am, January 27th, 2017) and click on the 'Done' button.



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:



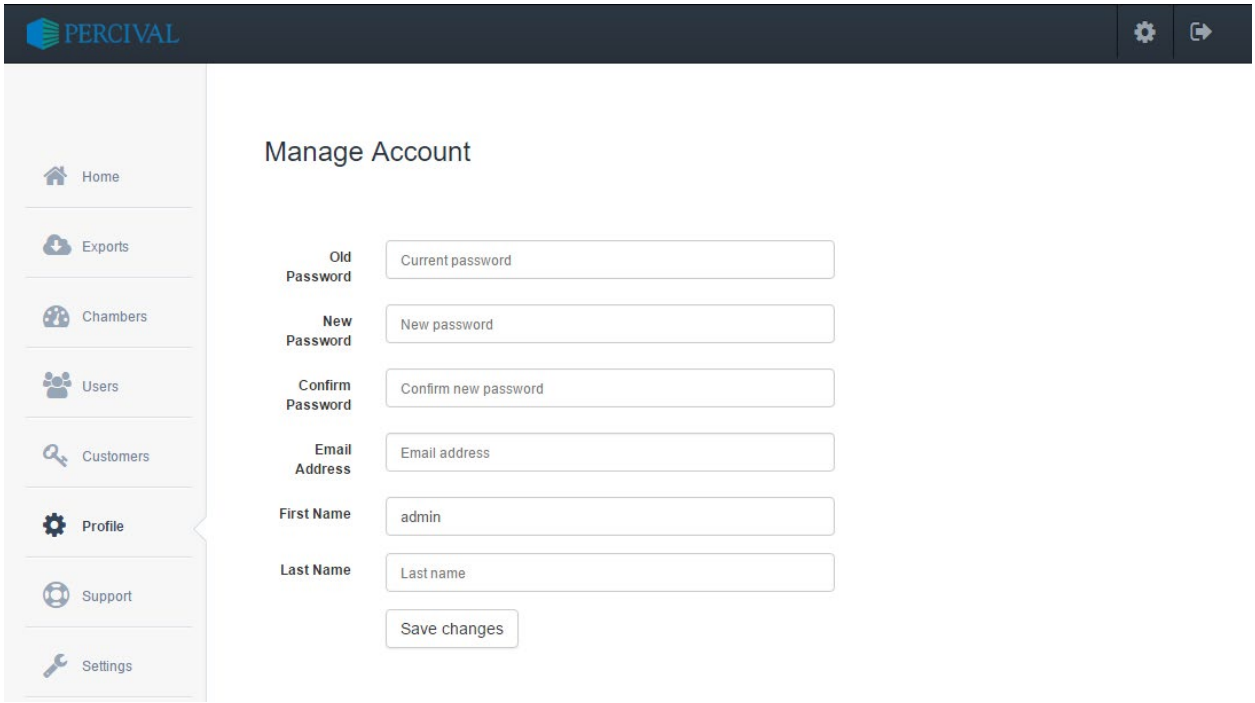
9) The export file contained within the .zip file is a .csv file which can easily be opened with a spreadsheet program such as Microsoft Excel.
10) The created export link is retained in the list for future access and is only viewable by the General User who created the file and the Site and Customer Administrators.

Delete an Export

Export links can be deleted from the Exports page as well. To delete an export link, type in the export link's description into the search field and click on the adjacent 'Delete' button. This will delete the export link from the system. **Note:** The software does not prompt the user with a 'confirm delete' pop-up notification as with other types of delete functions.

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.

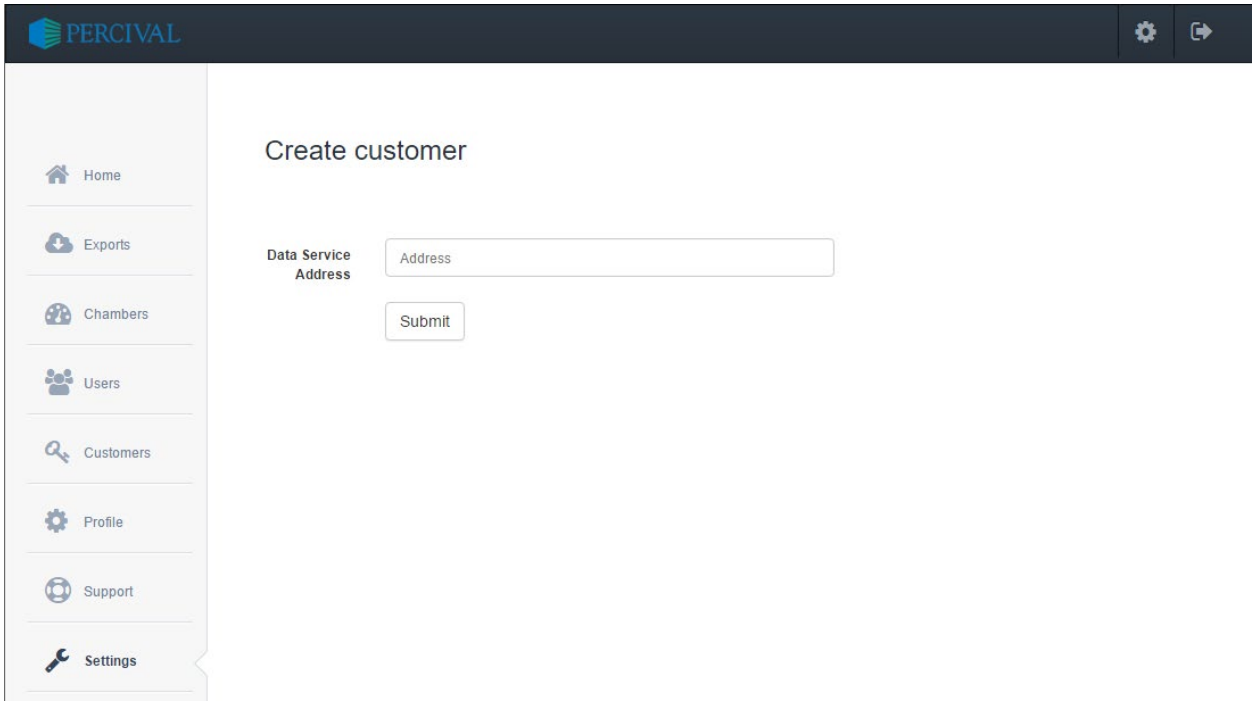


To make changes to the account information on this page, edit the desired text entry fields. Once all changes have been made, click on the ‘Save changes’ button.

Settings Page

The Settings page is accessible only by the Site Administrator user level. 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.

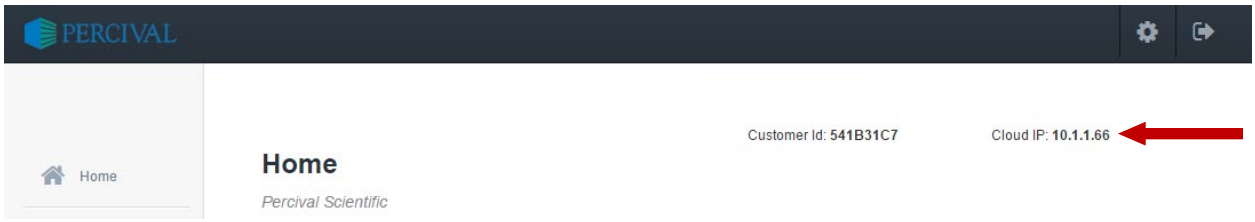
Below is a screenshot of the Settings page:



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 the Settings field in the navigation pane. **Note:** This page is only accessible to the Site Administrator user level.
2) Enter the host computer's IP address into the Data Service Address field. **Note:** Refer to the section of this manual entitled **Configure PercivalConnect for IntellusUltraConnect** 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 other pages throughout the software as the 'Cloud IP:' This Cloud IP field is visible by all users and provides a simple way for them 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)

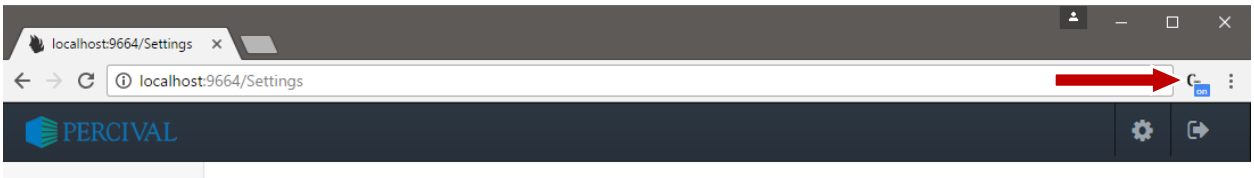
Cross-origin resource sharing (CORS) is the standard way web browsers handle web page requests to and from servers with different domain origins, and ensures that the interaction is safe.

The PercivalConnect host computer and each IntellusUltraConnect controller utilize their own servers. The Program Import Utility uses both servers in order to work properly, thus creating a situation where CORS becomes relevant.

Currently the IntellusUltraConnect controller does not support CORS. Therefore, in order for the Program Import Utility to function properly, a CORS-disabling plug-in must be installed on any web browser from which the utility is to be run. For example, the following plug-in can be used for Google Chrome web browsers:

https://chrome.google.com/webstore/detail/cors-toggle/omcncfnpmcabckcddookmnajignpffnh?hl=en

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



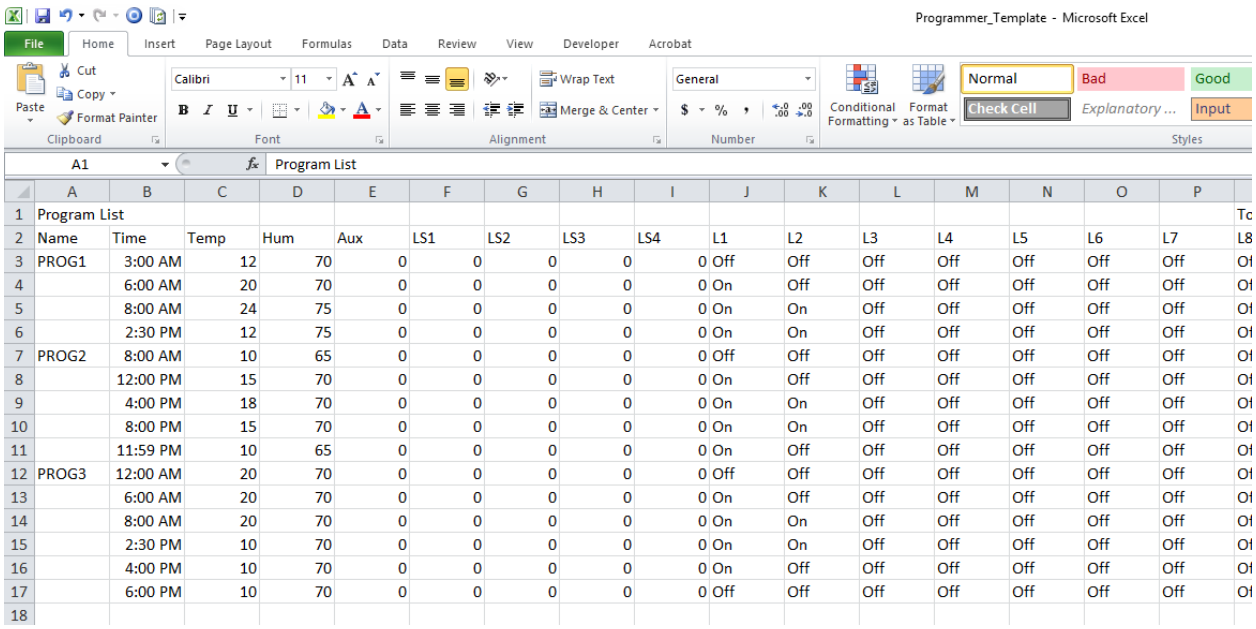
Clicking on this icon toggles CORS on/off. In this case, the Program Import Utility will not work properly unless this icon is set to 'On' – meaning CORS is disabled.

⚠ 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 included with the PercivalConnect software files. 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																To
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', 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.

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.

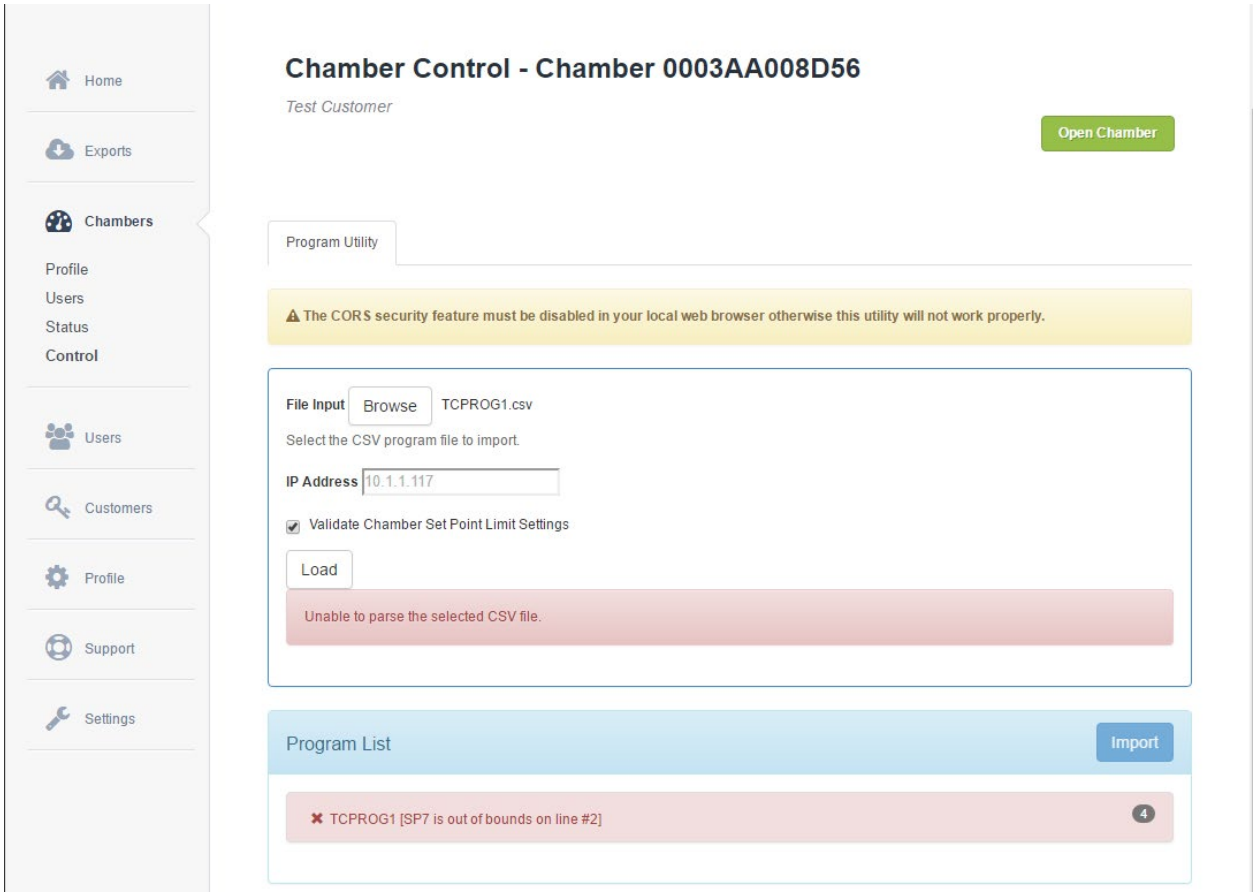
Note: If a new program is uploaded with the same name as an existing program in the control system, the new program will overwrite the existing program.

Uploading a Program

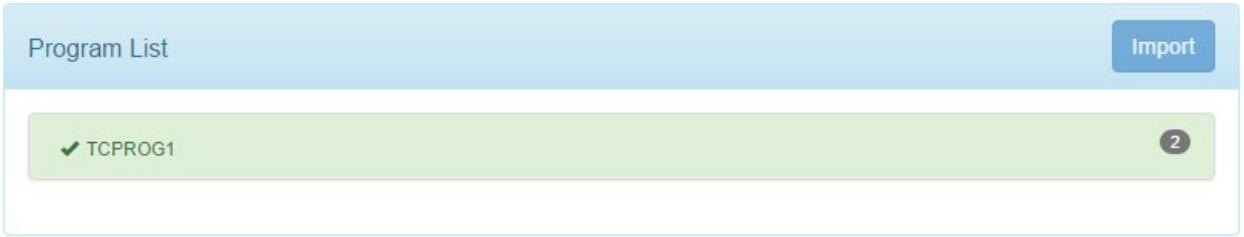
Before using these instructions, the chamber IP address must be entered into the Chamber Profile page, and the program file to be uploaded must be completed and saved. For instructions on setting the chamber IP address, refer to the section of this manual entitled **Chamber Profile Page.** For instruction 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
7) If any error messages occur, proceed to the next step. If the program loads without any errors, proceed to step 13).
8) If CORS (see section entitled Cross-origin Resource Sharing (CORS)) is not disabled on the web browser, the following message will appear. Ensure CORS is turned off via a CORS toggle plug-in for the web browser used for the program upload.

9) The Program Import Utility will check values in the program file before uploading them to the control system. If there are any missing or incorrect values that fall outside of the operating boundaries of the control system, a warning message will be displayed containing a description of the error. In the example below program TCPROG1 is shown to have multiple errors. The first error message of 'Unable to parse the selected CSV file' indicates a formatting error, and the second error message of 'TCPROG1 [SP7 is out of bounds on line #2]' indicates an error in the value entered regarding the program set point for SP7 (LS1 column) on line 2.



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 program to the IntellusUltraConnect controller.
14) When the upload is complete, the following screen will be shown.



15) The program upload is complete.