

# CMP6010

USER MANUAL

Software Version 1.12



CMP6010

**CONVIRON®**



# CMP6010

## USER MANUAL

PLEASE READ THESE INSTRUCTIONS  
CAREFULLY AND COMPLETELY  
BEFORE OPERATING.

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# CONVIRON SERVICE AND TECHNICAL SUPPORT

Convicon welcomes the opportunity to provide assistance and to answer any technical questions related to the start-up, use and troubleshooting of the CMP6010 control system. If you are having a problem using your CMP6010, please ensure you have read this CMP6010 User Manual in its entirety for information about the feature(s) with which you are experiencing trouble.

If the problem persists and/or you require additional assistance, please collect the following information prior to contacting Convicon:

- The serial number of the chamber which is located on the rating plate on the side of the chamber
- The software version number of the CMP6010 controller, which is located in the Help screens. To access the Help screens, press the <↑> and <↓> hard keys at the same time from the any of the three Status screens (temperature, humidity, or light)
- A description of the problem
- A description of what you were doing before the problem occurred.

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## PREFACE

This manual is intended for users of the CMP6010 control system. Although it is not intended as a service manual, the Service menu of the controller and its functions are detailed as a reference for service personnel.

The manual is presented in a visual format, using representative screen images to guide the user through each set of instructions. The instructions proceed left-to-right and top-to-bottom, and are augmented by arrows indicating movement from one step to the next. Text below each graphic instructs the user in completing tasks, with required button presses indicated by angled brackets containing the button's graphic <⬅>.

For users viewing the manual electronically, navigation is simplified by the use of hyperlinks. Section headings in the table of contents and figure/section cross-references within will take the user to the relevant page in the manual when clicked or tapped. The user can return to the table of contents by clicking or tapping the Conviron logo found at the bottom of each page.





# PRECAUTIONS

The following symbols are used throughout this manual to draw your attention to important warnings, guidelines and product information. Please take note of their respective meanings.



Hazard Warning



Important Information



Dangerous Electrical Current



Slippery Surface

Please note the following precautions before operating this equipment:



- This equipment is only to be operated and maintained by authorized personnel - that is, personnel who have been trained on the proper operation and/or maintenance of the equipment and who have read this manual.
- If in doubt about safe operation and/or maintenance of the equipment, contact the responsible party in your organization immediately.
- Prior to operating, users should conduct a visual inspection of the equipment and surrounding area by walking around the unit and checking both inside and outside to ensure no debris or obstacles are present that could pose a safety hazard. If operators see a potential hazard (e.g. water accumulating on the floor which could be slippery or an obstruction that would prevent the door from opening/closing properly) they should take appropriate steps such as alerting service personnel.
- Ensure that no one is using or could activate the room remotely during operation or maintenance activities.
- When a Schedule is **not** running, Alarms are disabled! No one other than a single, designated on-site service technician should be operating the chamber. Altering output parameters to troubleshoot a chamber while others are handling mechanical or electrical systems within the chamber, **COULD BE HAZARDOUS AND MAY RESULT IN PERSONAL INJURY**. As such, manipulation of output parameters must be performed with either a qualified service technician present or via phone support with Conviron's Technical Services group.



- Qualified trades-people such as electricians, plumbers, refrigeration mechanics, etc. should perform all work as required by local codes and regulations.
- Central Management™ (CM) is an optional feature. If CM is being used it becomes inextricably linked to the use of the Controller and therefore, both the Central Management manual and the Controller Operators Manual must be read and understood in their entirety prior to operation.



- Working in a high voltage environment will be required when servicing this equipment. Do NOT attempt this work unless you have the appropriate knowledge and experience. Always take appropriate safety precautions.
- The main terminal in the control panel has live voltage unless the external breaker is OFF. Use extreme caution when working in the control panel to prevent injury.
- The Controller may come equipped with an optional Uninterrupted Power Supply (UPS) such that power will remain live for a period of time even if the power supply is turned OFF. Use extreme caution when working on the control panel to prevent injury. If you have any doubts as to whether your unit comes equipped with a UPS, contact Conviron.

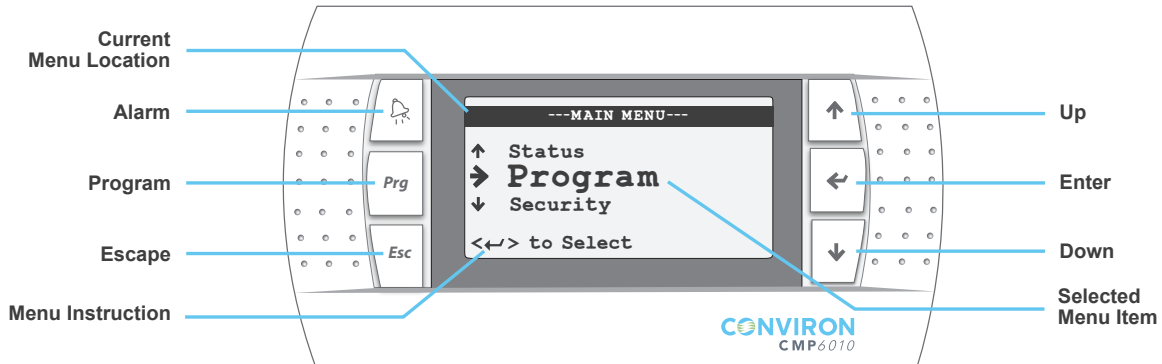


- Users should note that water may accumulate on the floor which could be slippery and pose a safety hazard. Always ensure floors remain dry and wear non-slip footwear.

# 1.0 CONTROLLER NAVIGATION

Using the current menu location (indicated at the top of every controller screen) and menu map (located on the following page), it is easy for the user to navigate the controller interface.

## 1.1 User Interface



## 1.2 Button Functions

### Up/Down ( ↑ / ↓ ):

- Navigate between menu items
- Change the value of a configurable parameter
- Move to next screen (with cursor selecting menu location)

### Enter ( ← )

- Open selected menu item
- Move cursor to the next configurable parameter on the page

### Escape (Esc)

- Return to previous menu/screen
- Save schedule/program

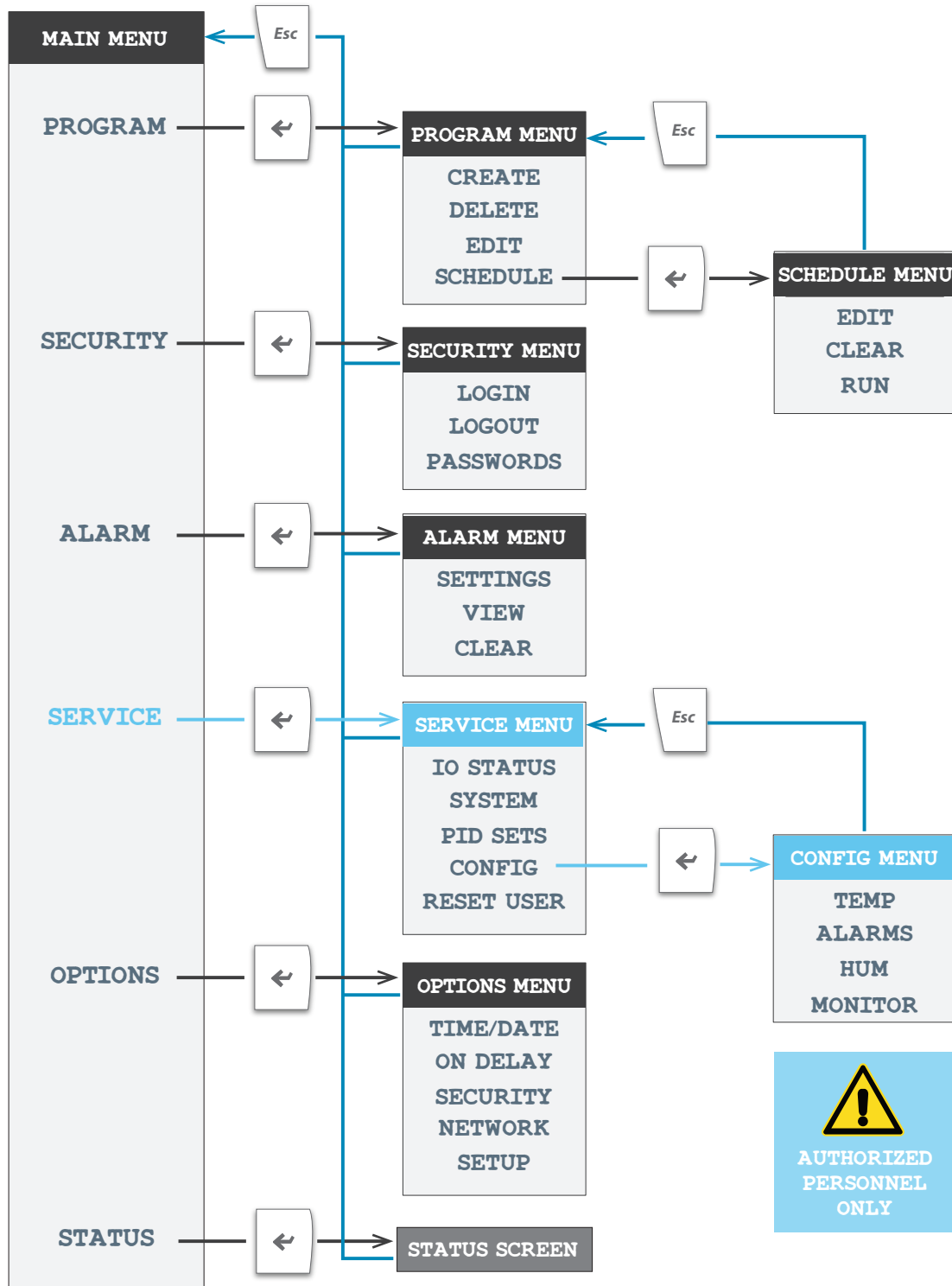
### Program (Prg)

- Flashes yellow to indicate when the schedule is running. When flashing, press to view running schedule (from the Status screens only).
- Toggles between Edit-Add-Delete-Sort functions in Edit Program and Edit Schedule screens

### Alarm (🔔)

- Flashes red to indicate an active unacknowledged alarm. Solid red indicates inactive unacknowledged alarm. When illuminated (solid or flashing), press to view alarm.

### 1.3 Menu Map

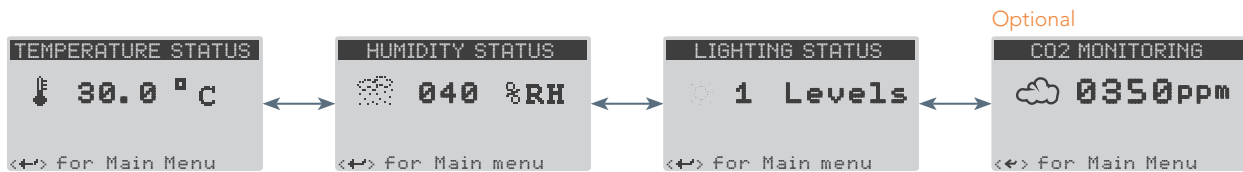


## 2.0 STATUS SCREENS

The Status screens display actual and set point conditions for the three controlled parameters: temperature, relative humidity, and light level. Large type indicates actual measured values (temperature, humidity) and current level (light), while smaller icons indicate set point values. A padlock icon in the lower right of the screen indicates security has been enabled via the options menu (if security is disabled no icon is present).

When the controller is powered on, it will display the temperature status screen by default.

### Status Screens: Security Disabled, No Schedule Running

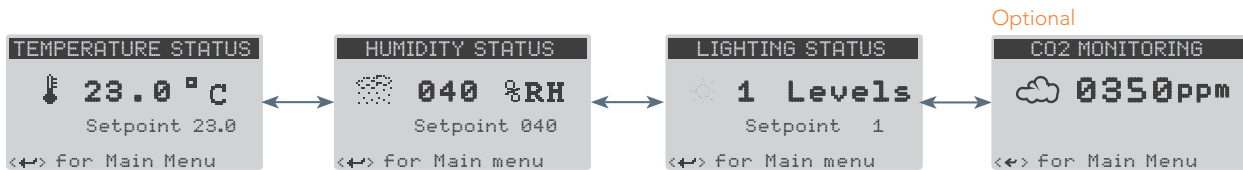


Status screens displaying actual chamber conditions (large type). The absence of set point conditions indicates that the Schedule is NOT running

<↑/↓> to toggle between temperature, relative humidity, and light level

<<=> to access the Main menu

### Status Screens: Security Disabled, Schedule Running

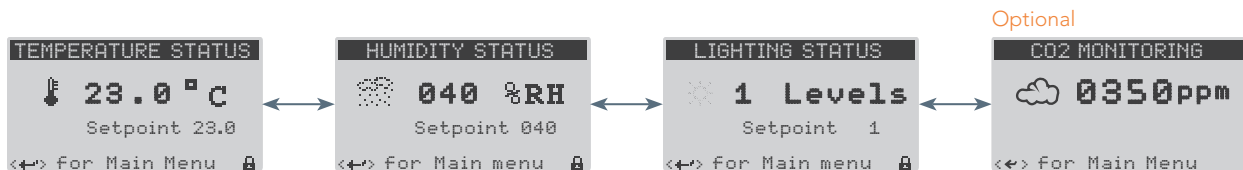


Status screens displaying actual chamber conditions (large type) and set point conditions (smaller type). The presence of set point conditions (small type) indicates that the Schedule is running

<↑/↓> to toggle between temperature, relative humidity, and light level

<<=> to access the Main menu

### Status Screens: Security Enabled, Schedule Running



Status screens displaying actual chamber conditions (large type) and set point conditions (smaller type). The presence of set point conditions (small type) indicates that the Schedule is running. The padlock icon indicates that security has been enabled.

<↑/↓> to toggle between temperature, relative humidity, and light level

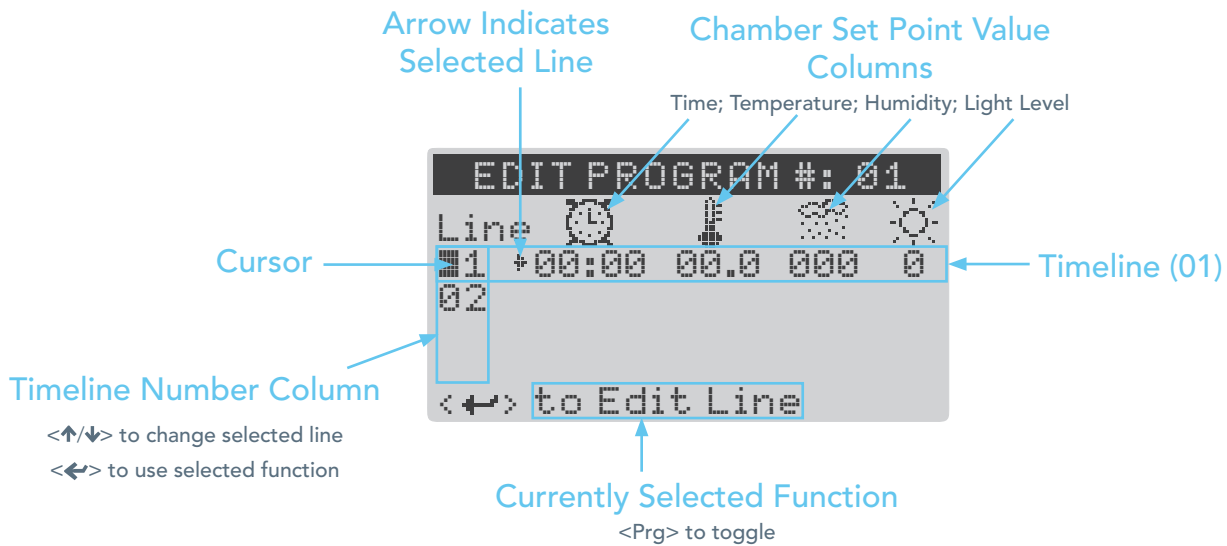
<<=> to access the Main menu



## 3.0 PROGRAM MENU

### 3.1 Introduction to Programs

A program is a list of timelines, each of which specifies chamber environmental conditions—temperature, humidity, and light—for a specific point in time. Each program represents a single 24 hour period and can contain up to 24 timelines. The controller memory can store up to 16 programs. Programs are created and edited via the Edit Program screen, which can be accessed via the Create and Edit menu items from the Program menu (dependent on whether you are creating a new program or editing an existing program). Programs are then listed in the Schedule to define an experimental protocol (see section [4.0 SCHEDULE MENU](#)).

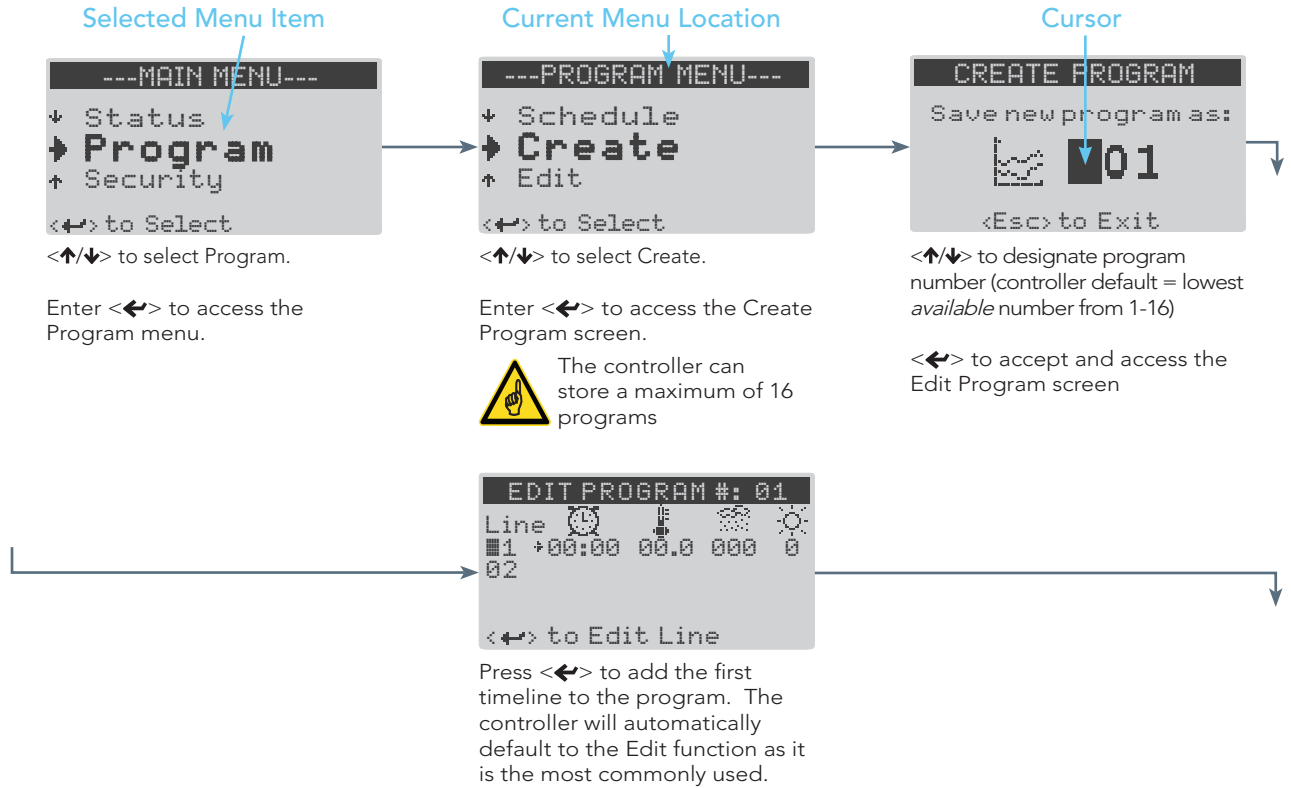


#### Program Parameters:

Maximum Number of Programs per Controller: 16  
 Maximum Number of Timelines per Program: 24  
 Timeline Resolution: 1 minute

### 3.2 Creating a Program

Creating new programs using the CMP6010 interface is a simple procedure. The user must designate a number under which to save the program, input desired set point values at their respective time lines, and save the program once complete.



**There are four functions that can be used when creating and editing programs:**

- Edit, Add, Delete, and Sort.

With the cursor in the Line column, Press <↑/↓> to select line, <Prg> to toggle between functions, and <←> to use the selected function.

**Edit**

```

EDIT PROGRAM #: 01
Line 01 +00:00 00.0 000 0
02 05:00 15.0 055 1
03 09:30 25.0 060 3
04 14:00 22.0 055 2
<←> to Edit Line
    
```

<←> to move cursor left-to-right through set point parameters for the selected timeline

<↑/↓> to adjust value of selected parameter.

**Add**

```

EDIT PROGRAM #: 01
Line 01 +00:00 00.0 000 0
02
<←> to Add Line
    
```

<←> to add a new timeline at the current cursor position.

Programs can contain up to a maximum of 24 lines.

**Delete**

```

EDIT PROGRAM #: 01
Line 01 +00:00 00.0 000 0
02
<←> to Delete Line
    
```

<←> to delete a timeline at the current cursor position.

**Sort**

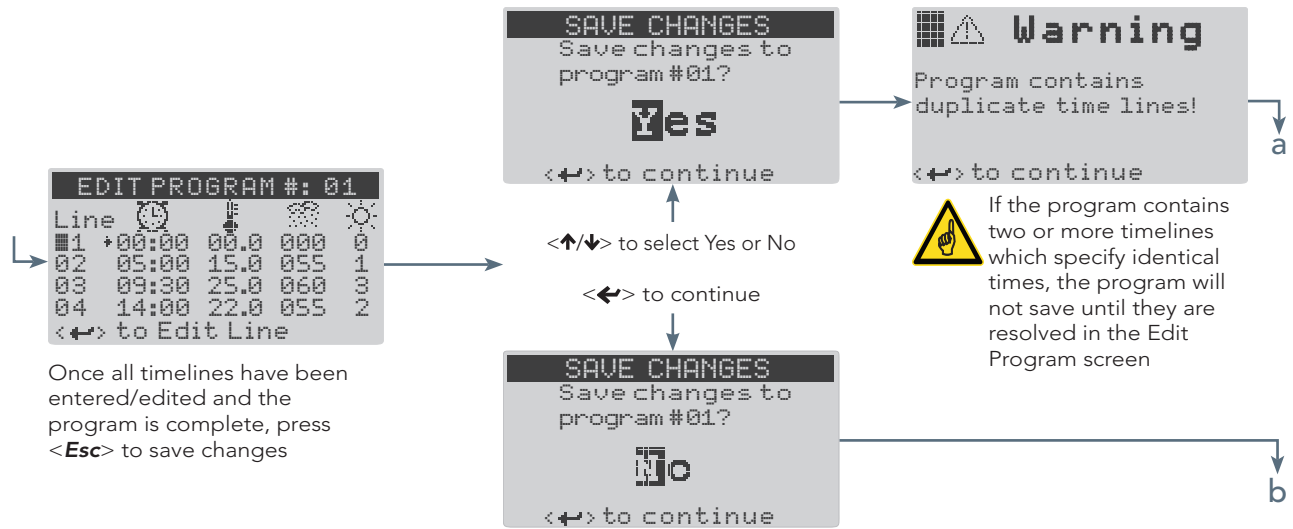
```

EDIT PROGRAM #: 01
Line 01 +00:00 00.0 000 0
02
<←> to Sort Program
    
```

<←> to arrange the timelines of the program in chronological order.

Programs are automatically sorted when saved.





a

```

PROGRAM SAVED
Program 01 saved.
<←> to continue
  
```

Program has been saved

<←> to continue and return to Program menu

b

```

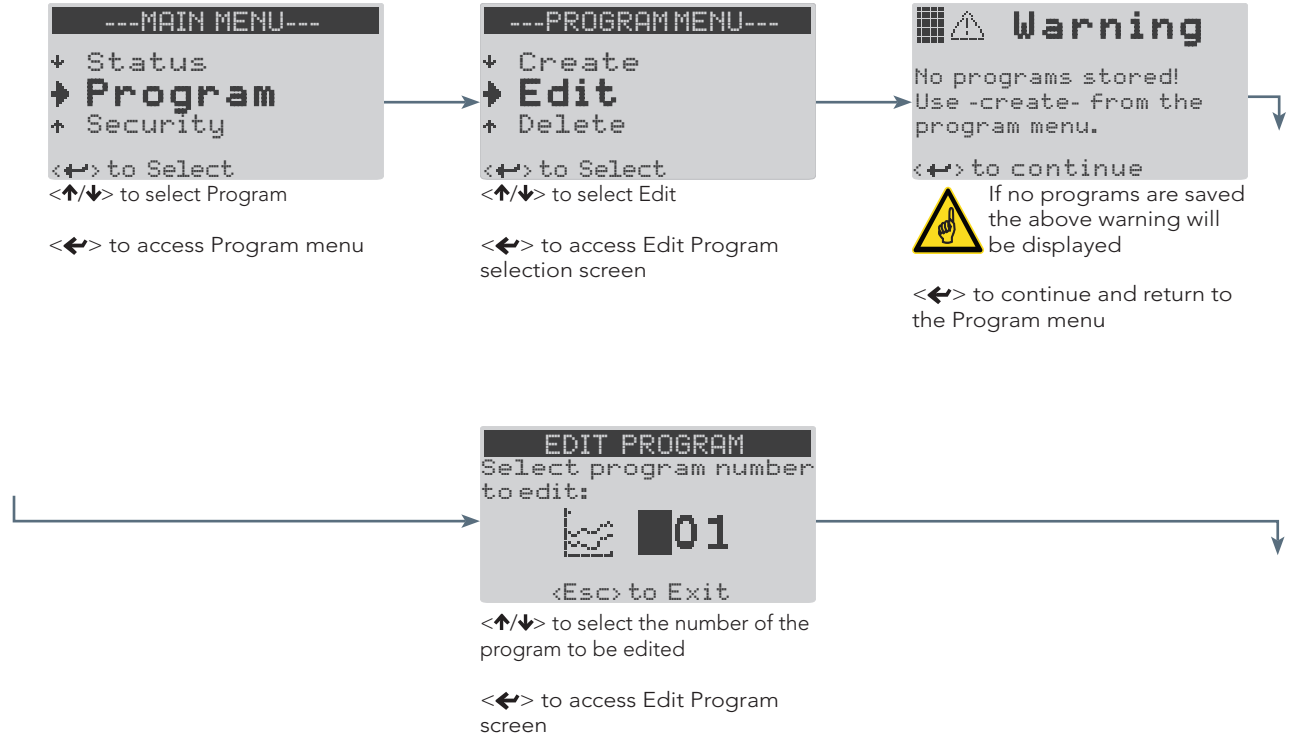
PROGRAM NOT SAVED
Changes to program #: 01 have been discarded.
<←> to continue
  
```

Program has *not* been saved

<←> to continue and return to Program menu

### 3.3 Editing a Program

The Edit menu item in the Program menu allows the user to make changes to an existing program. The Edit Program screen is accessed from either the Create program or Edit program menu items (see section 3.2 Creating a Program). The only difference is the Create menu item uses the Edit Program screen to create a new program, while the Edit menu item allows the user to make changes to an existing program only.

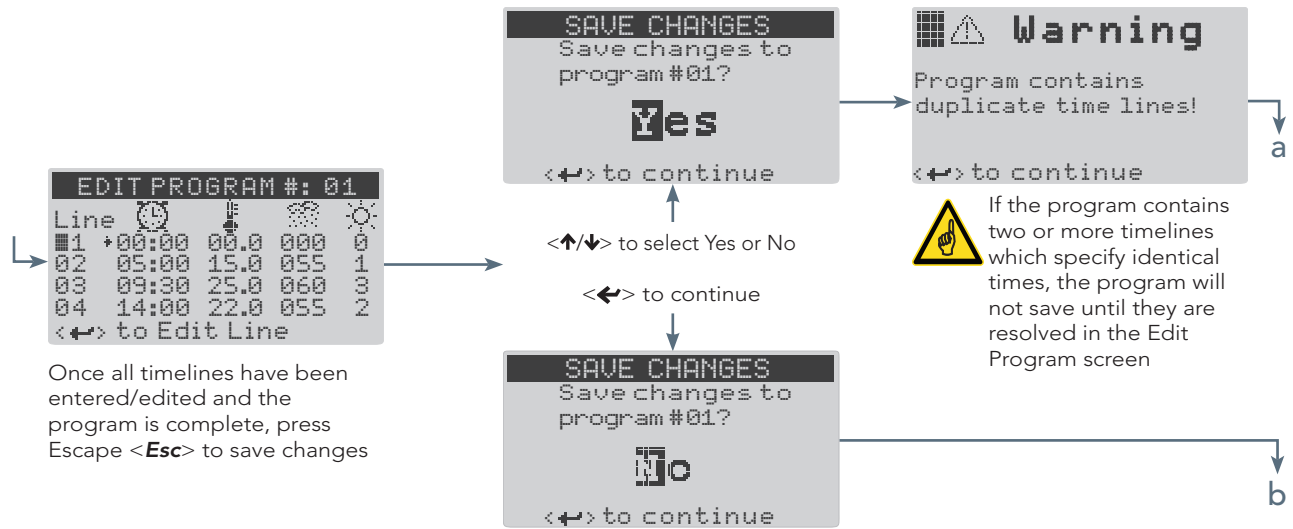


**There are four functions that can be used when creating and editing programs:**

- Edit, Add, Delete, and Sort.

With the cursor in the Line column, Press <Up>/<Down> to select line, <Prg> to toggle between functions, and <Left> to use the selected function.

Edit	Add	Delete	Sort
<p>&lt;Left&gt; to Edit Line</p> <p>&lt;Left&gt; to move cursor left-to-right through set point parameters for the selected timeline</p> <p>&lt;Up&gt;/&lt;Down&gt; to adjust value of selected parameter</p>	<p>&lt;Left&gt; to Add Line</p> <p>&lt;Left&gt; to add a new timeline at the current cursor position.</p> <p> Programs can contain up to a maximum of 24 lines</p>	<p>&lt;Left&gt; to Delete Line</p> <p>&lt;Left&gt; to delete a timeline at the current cursor position.</p>	<p>&lt;Left&gt; to Sort Program</p> <p>&lt;Left&gt; to arrange the timelines of the program in chronological order.</p> <p> Programs are automatically sorted upon saving.</p>



**PROGRAM SAVED**  
Program 01 saved.  
<←> to continue

Program has been saved

<←> to continue and return to Program menu

**PROGRAM NOT SAVED**  
Changes to program #: 01 have been discarded.  
<←> to continue

Program has *not* been saved

<←> to continue and return to Program menu

### 3.4 Deleting a Program

To delete a program, select Delete from the Program menu and identify the number of the program to be deleted.

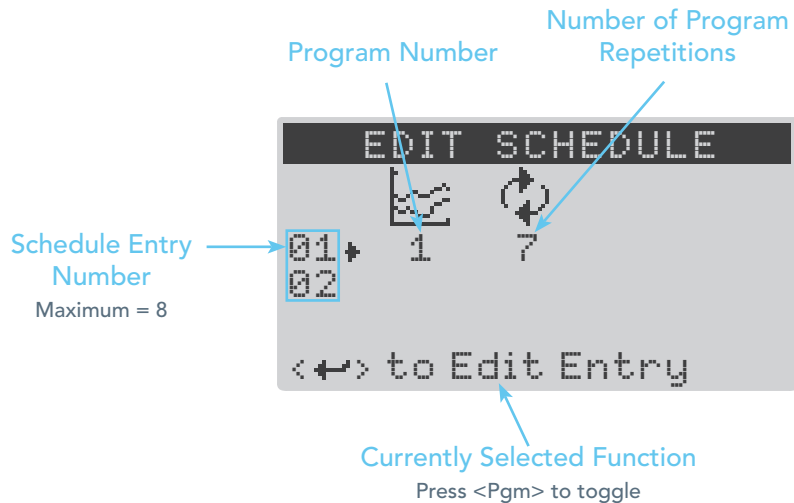


## 4.0 SCHEDULE MENU

### 4.1 Introduction to the Schedule

The schedule is a list of entries, with each entry designating a saved program and the number of times for that program to run before moving to the next entry listed in the schedule. The CMP6010 controller can store one schedule. The schedule can contain up to eight entries, each of which can be set for up to 99 repetitions, or set to run continuously (indicated by  $\infty$  on the screen). In addition, the entire schedule itself can be set for up to 99 repetitions, or set to run continuously.

The Edit Schedule screen uses the same functions as the Edit Program screen with the exception of the Sort function, which is not necessary for editing the schedule as it is the order of the list that determines the next program to be run rather than a specific time.



#### Schedule Parameters:

- Maximum number of schedules per controller: 1
- Maximum number of schedule entries: 8
- Number of repetitions per entry: 1-99, or continuous ( $\infty$ )
- Number of schedule repetitions: 1-99, or continuous ( $\infty$ )

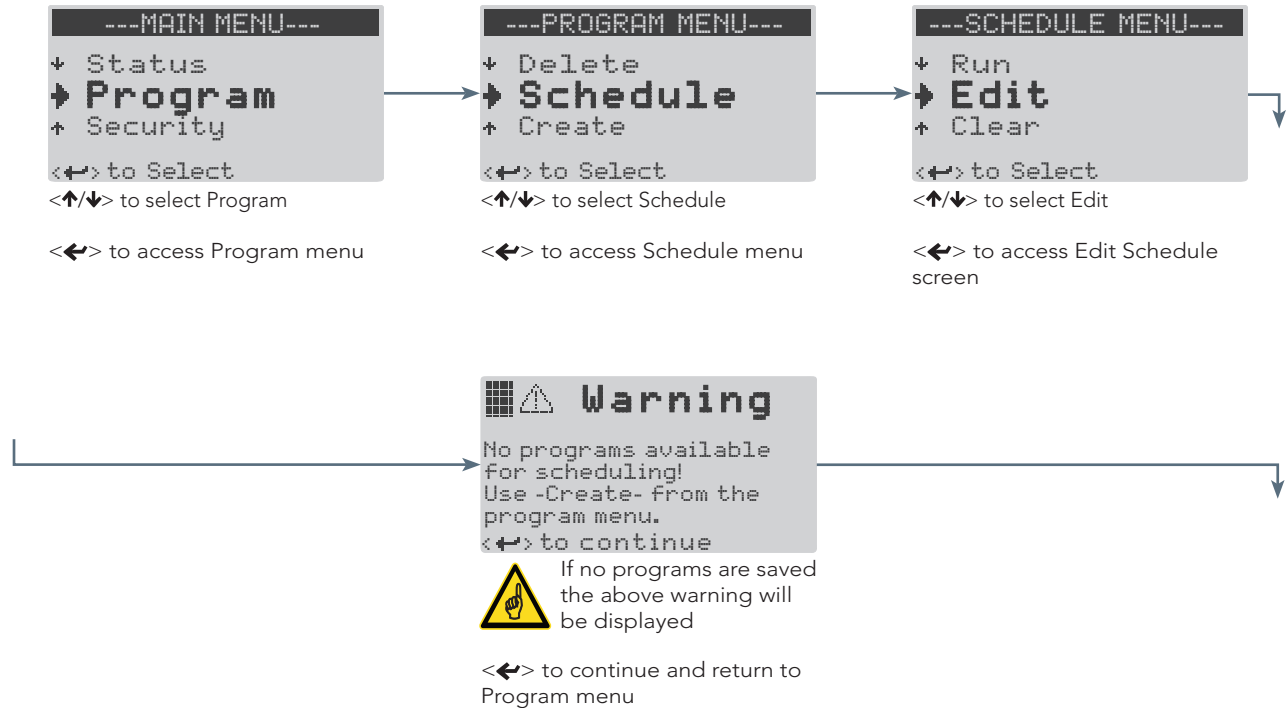
## 4.2 Schedule Hierarchy

The table below illustrates the relationship between the Schedule and the Programs which comprise the Schedule.

Schedule (0-99 Repetitions)							
Entry 1 0-99 Repetitions	Entry 2 0-99 Repetitions	Entry 3 0-99 Repetitions	Entry 4 0-99 Repetitions	Entry 5 0-99 Repetitions	Entry 6 0-99 Repetitions	Entry 7 0-99 Repetitions	Entry 8 0-99 Repetitions
Program 1	Program 6	Program 4	Program 2	Program 3	Program 14	Program 11	Program 16
Timeline 1	Timeline 1	Timeline 1	Timeline 1	Timeline 1	Timeline 1	Timeline 1	Timeline 1
Timeline 2	Timeline 2	Timeline 2		Timeline 2	Timeline 2	Timeline 2	Timeline 2
	Timeline 3	Timeline 3				Timeline 3	
	Timeline 4	...					
		Timeline 24					

### 4.3 Creating or Editing the Schedule

The process of creating and editing the schedule is very similar to the process of creating and editing programs. The user must access the Edit Schedule screen from the Schedule menu, create or edit the desired schedule entries, and save the schedule upon completion.



#### There are three functions that can be used when editing the schedule:

- Edit, Add, and Delete.

With the cursor in the entry column, Press <↑/↓> to select an schedule entry, <Prg> to toggle between functions, and <←> to use the selected function.

#### Edit



<←> to Edit Entry  
<←> to move cursor left-to-right through program and repetition parameters for the selected entry

<↑/↓> to adjust value of selected parameter

#### Add



<←> to Add Entry  
<←> to add a new entry at the current cursor position.

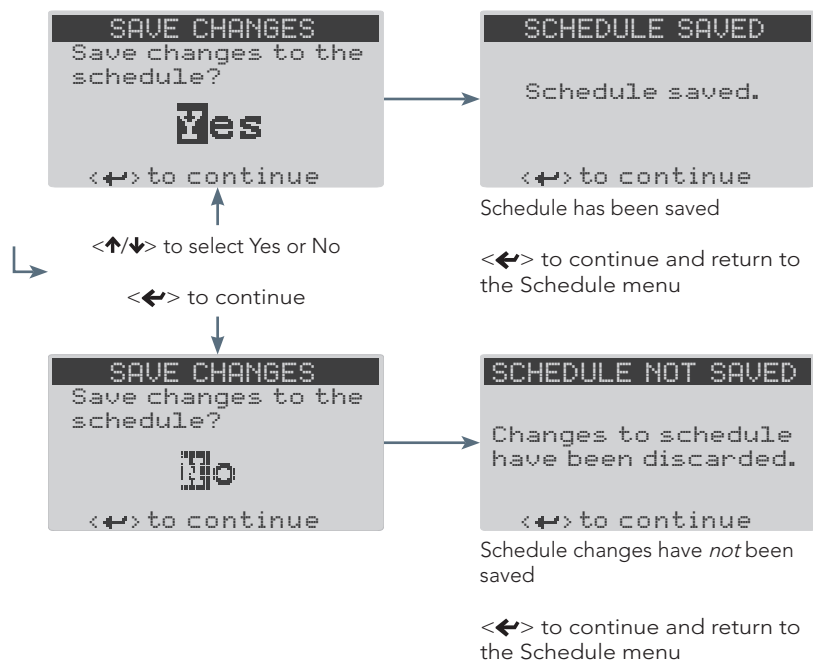
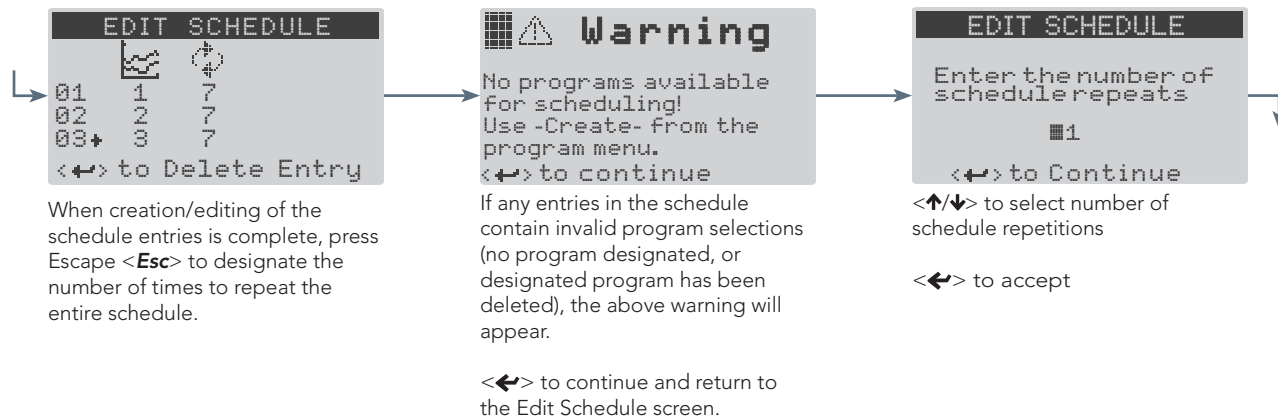


The Schedule can contain a maximum of eight entries

#### Delete



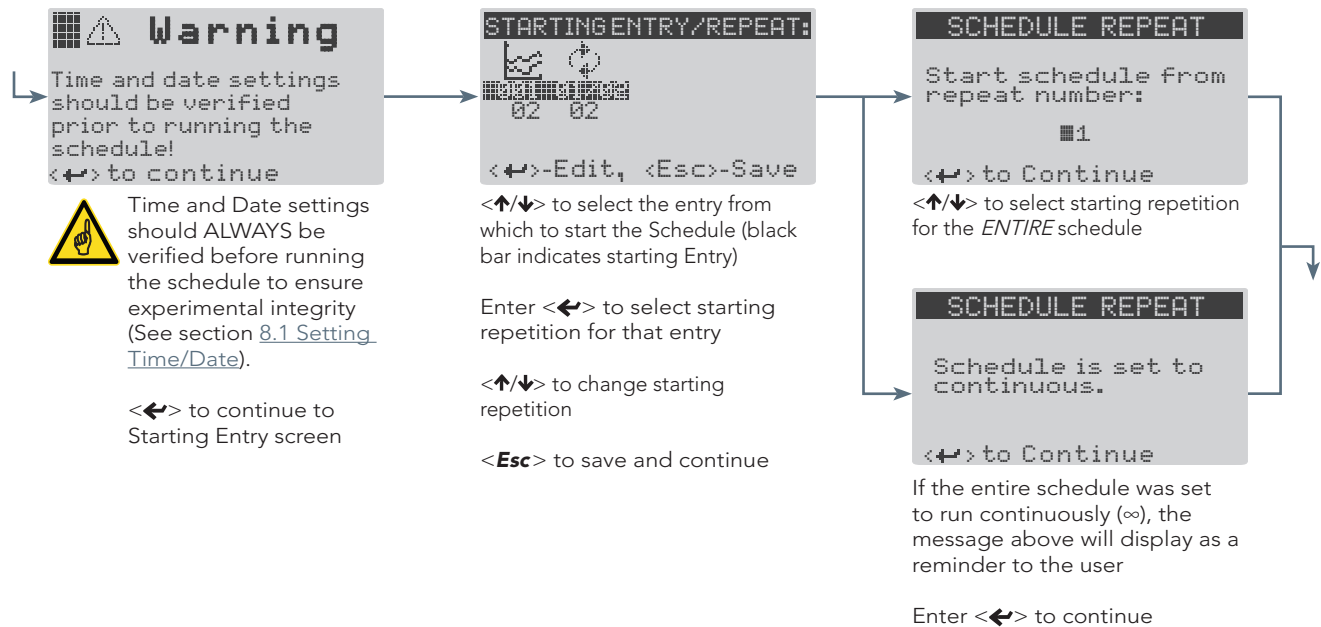
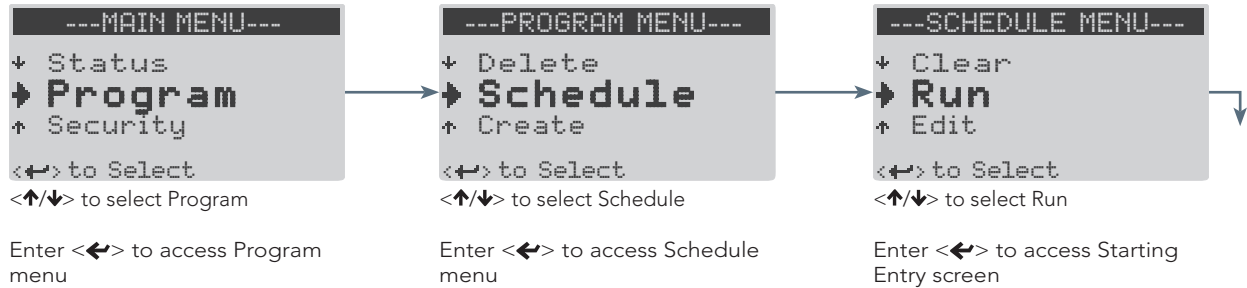
<←> to Delete Entry  
<←> to delete an entry at the current cursor position.

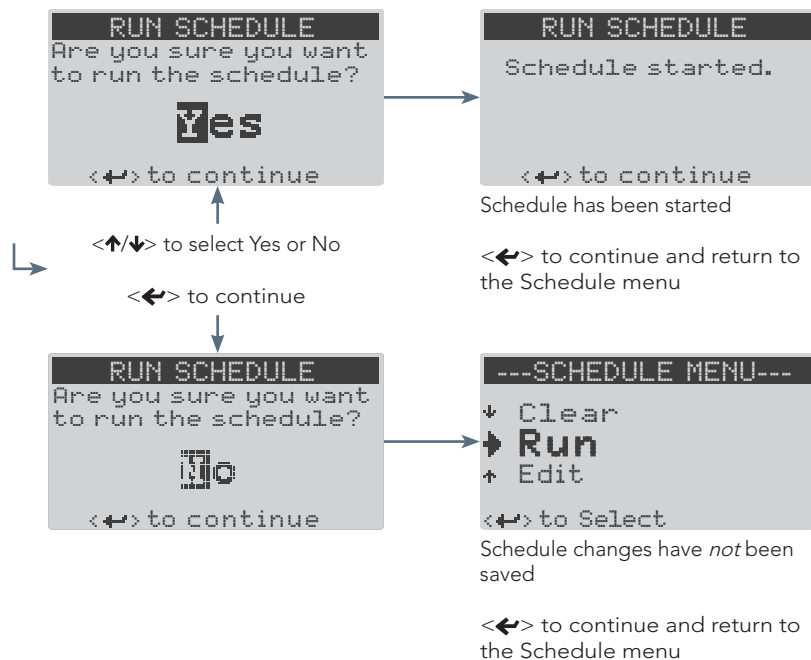




## 4.4 Running the Schedule

To run the schedule, a user has only to choose a starting point for the schedule and confirm that it is ready to be run. The starting point can be any entry and repetition within the schedule.





## 5.0 SECURITY MENU

The Security menu allows the user to login, logout and modify user level passwords for the controller.

There are three security access levels possible: Factory, User and Public.

- **Factory:** Allows authorized/qualified personnel to access the Service menu. Factory level security is *a/ways* enabled, and cannot be disabled by the user. Call Convicon if the Factory password is required
- **User:** Intended for users who require the ability to create/edit programs and modify chamber settings. A logged in user can access all menus and menu items *except* the Service menu. The controller provides three User level accounts. The default user password is 00000
- **Public:** Only the Status screens are available to any user when Security is enabled and a User is not logged in. This is intended to allow anyone to check the current status of the chamber.

By default, Security is disabled until activated via the Security menu item from the Options menu (see section [8.3 Enabling and Disabling Security](#)).

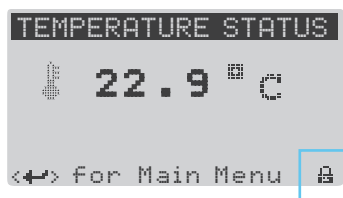


After a period of five minutes of inactivity, any users or service personnel will be automatically logged out to help prevent unauthorized access to the controller.

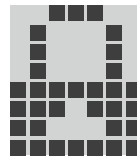
### 5.1 Logging In

Security is enabled/disabled via the Security item in the Options menu (see section [8.3 Enabling and Disabling Security](#)).

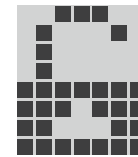
Security status is indicated by the padlock icon in the lower right of the screen. If no icon is present, security is disabled.



Security Stats Icon  
(absent when DISABLED)



SECURITY ENABLED  
User Logged OUT



SECURITY ENABLED  
User Logged IN

Icon Indicates Security ENABLED




<←> to Select  
<↑/↓> to select Security  
<←> to access Security menu



<←> to Select  
<↑/↓> to select Login  
<←> to access Login screen



<←> to continue  
 If security is DISABLED in the Option menu, only the Service menu requires a user to login using the Factory password (which can be obtained by calling Conviron)



<←> to Continue  
<←> to move cursor to Select User parameter  
<↑/↓> to select user  
<←> to accept and move cursor to Password parameter

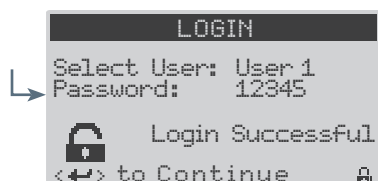


<←> to Continue  
<←> to move cursor to first digit of Password  
<↑/↓> to change digit value  
<←> to move to next digit

Repeat until all digits are entered.



<←> to Continue  
If Password is incorrect 'Login Failed' will display  
<←> to continue and return to the Security menu.

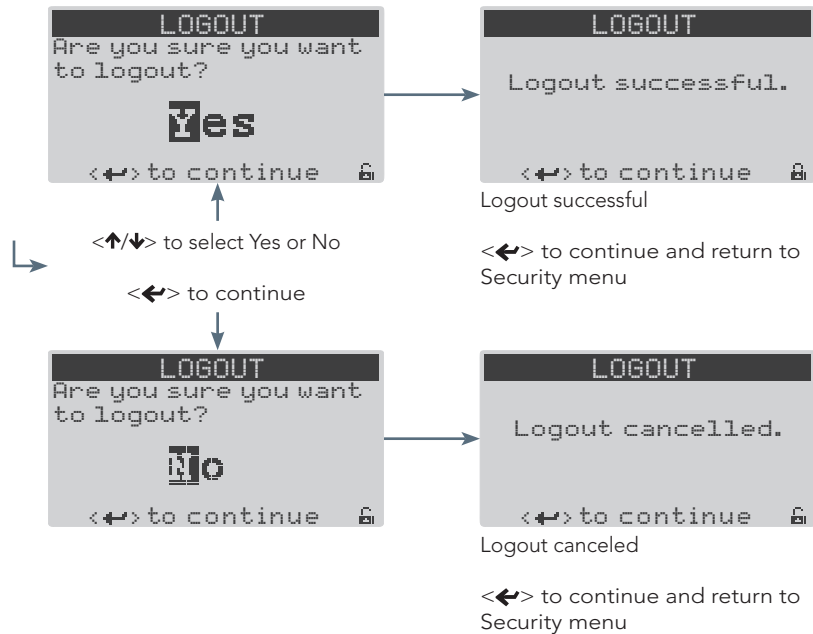
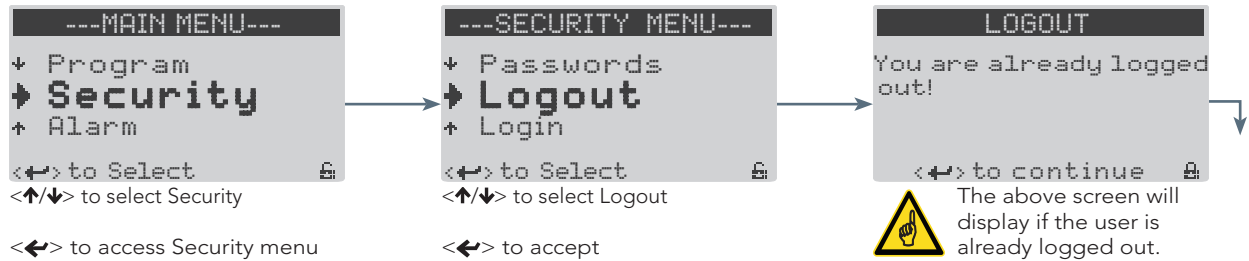


If Password is correct 'Login Successful' will display, and the security icon will change to an open padlock.

<←> to continue and return to the Security menu

## 5.2 Logging Out

Users should log out immediately after completing necessary tasks at the controller to ensure that no changes are made unintentionally to programs or chamber parameters by anyone other than the intended user. As a safeguard, all users are automatically logged out after a period of five minutes of inactivity.



### 5.3 Changing a Password

To change the password for a specific User, follow the procedure below. If a password has been forgotten, the corresponding User account must be reset using the Reset User item from the Service menu, which requires the Factory login password (see section [9.5 Reset User](#)).



## 6.0 ALARM MENU

From the Alarm menu the user can view and clear the alarm history and change alarm settings for temperature and humidity processes. For information on specific alarms and alarm troubleshooting, see section [7.0 ALARM TROUBLESHOOTING](#)



- If the temperature alarm limit is reached, the controller will trigger a visual and audible alarm, and will shut the chamber OFF
- If the humidity alarm limit is reached, the controller will trigger a visual and audible alarm however the chamber will remain ON

### 6.1 Changing Alarm Settings

```

---MAIN MENU---
↓ Security
→ Alarm
↑ Servoce
<←> to Select
<↑/↓> to select Alarm

```

<←> to access Alarm menu

```

---ALARM MENU---
↓ Clear
→ Settings
↑ View
<←> to Select
<↑/↓> to select Settings

```

<←> to access Settings screens

#### Flashing Cursor Indicating Screen/Menu Title Selected

```

TEMPERATURE ALARM
Set Low Limit:  -05.0c
Set High Limit:  55.0c
<Esc> to Exit

```

<↑/↓> to toggle between Temperature Alarm and Humidity Alarm screens (with cursor selecting screen title)

<←> to move cursor through configurable parameters on screen

<↑/↓> to change value of selected parameter

<Esc> to exit (parameter values are automatically saved)

### 6.2 Viewing Alarm History

The View option allows the user to review the most recent 15 alarm events. Each event includes date, time, and status (alarm limit set point—'Lim', and actual value—'Act') information. Each time the controller is powered on, a 'Bootup' alarm is saved to the alarm history.

```

---MAIN MENU---
↓ Security
→ Alarm
↑ Servoce
<←> to Select
<↑/↓> to select Alarm

```

<←> to access Alarm menu

```

---ALARM MENU---
↓ Settings
→ View
↑ Clear
<←> to Select
<↑/↓> to select View

```

<←> to access View screen(s)

```

Alarm Type  Time/Date
VIEWALARM HISTORY
01 Bootup   00:00 01/01/04
Act: 000   Lim: 000
02 Bootup   00:00 01/01/04
Act: 000   Lim: 000
↓ to Scroll

```

Actual Conditions Alarm Limit

<↑/↓> to scroll through Alarm events

<Esc> to return to Alarm menu

### 6.3 Clearing Alarm History

The Clear menu item allows the user to clear all entries from the alarm history.



Users should clear the alarm history after it has been viewed to avoid confusion between old and new alarms.





## 7.0 ALARM TROUBLESHOOTING

The CMP6010 controller is equipped with several different alarms designed to protect equipment from damage and help ensure experimental integrity.

Controller alarms include:

- Temperature limit
- Humidity limit
- Low water level or door open
- Refrigeration low pressure: 3 different alarm conditions
- Refrigeration high pressure: 3 different alarm conditions

When temperature and refrigeration alarms are triggered, the chamber will automatically shut OFF to protect core components from damage.

Humidity and low water alarms will trigger the appropriate alarm indicators, but the chamber will remain ON.

### 7.1 Alarm State Indication

The CMP6010 Controller uses two warning devices to indicate alarm state. The Alarm button on the keypad will illuminate red (either flashing or solid depending on alarm state), and the alarm buzzer will sound. The table below indicates the meaning of each alarm state based on the behavior of the warning devices.

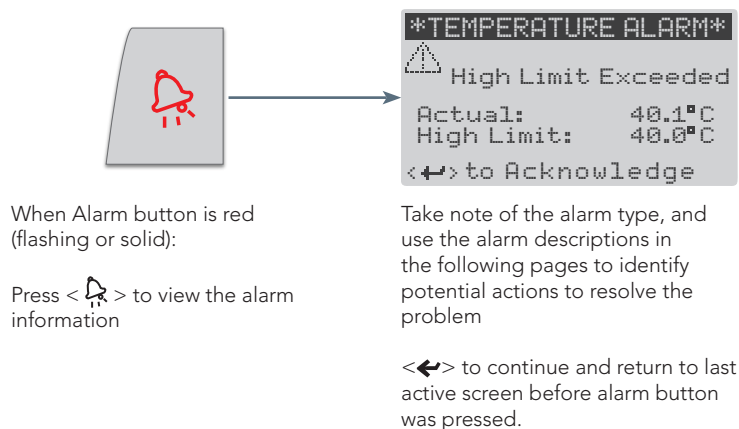
Alarm Button	Alarm Buzzer	Alarm State	Description
Flashing Red	ON	Active, Unacknowledged	An alarm condition has triggered an alarm, no corrective action has been taken, and the user has not acknowledged it.
Flashing Red	OFF	Active, Acknowledged	An alarm condition has triggered an alarm, no corrective action has been taken, and the user has acknowledged it.
Solid Red	OFF	Inactive, Unacknowledged	An alarm condition has triggered an alarm and corrective action has been taken (or the problem has resolved itself), and the user has not acknowledged it.
OFF	OFF	Inactive, Acknowledged	An alarm condition has triggered an alarm, corrective action has been taken, and the user has acknowledged it.

## 7.2 Alarm Types

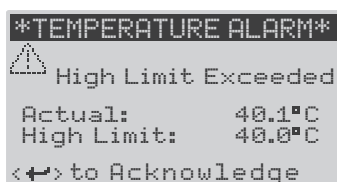
The CMP6010 Controller uses five different primary alarm types with a total of 12 possible alarms to monitor and alert the user to problems affecting chamber operations. All alarms are listed in the following section, along with user troubleshooting suggestions that address the most common cause(s) of each.

### 7.2.1 Viewing and Acknowledging an Alarm

When an alarm is triggered the user must determine the alarm type in order to take action to resolve the problem.



### 7.2.2 Temperature Alarm: High Limit Exceeded (**chamber: off**)



Indicates the actual temperature within the chamber is higher than the temperature alarm High Limit set point.

- $\langle \leftrightarrow \rangle$  to acknowledge alarm

User corrective action(s):

1. Check the High Temperature Alarm set point (see section [6.1 Changing Alarm Settings](#))
2. Remove any sources of heat that may have been placed inside the chamber
3. Call your local representative or contact Conviron for more information (see [page i](#)).

### 7.2.3 Temperature Alarm: Low Limit Exceeded (chamber: off)

```
*TEMPERATURE ALARM*
▲ Low Limit Exceeded
Actual:      3.9°C
Low Limit:   4.0°C
<↔> to Acknowledge
```

Indicates the actual temperature within the chamber is lower than the temperature alarm Low Limit set point.

- <↔> to acknowledge alarm

User corrective action(s):

1. Check the Low Temperature Alarm set point (see section [6.1 Changing Alarm Settings](#))
2. Ensure the door is closed properly
3. Call your local representative or contact Conviron for more information (see [page i](#)).

### 7.2.4 Humidity Alarm: High Limit Exceeded (chamber: on)

```
***HUMIDITY ALARM***
▲ High Limit Exceeded
Actual:      091 %RH
High Limit:  090 %RH
<↔> to Acknowledge
```

Indicates the actual relative humidity within the chamber is higher than the humidity alarm High Limit set point.

- <↔> to acknowledge alarm

User corrective action(s):

1. Inspect the inside of the chamber for signs of water. If there is water present, stop the chamber immediately and shut the water supply off
2. If the relative humidity set point is high (more than 90%), water droplets may occasionally form on the humidity sensor resulting in an inaccurate reading of 100%. Open the door until the display reading drops below the Humidity Alarm High Limit set point value
3. If relative humidity is not critical for the experiment, keep the door open for less than 1 minute or until the actual relative humidity reading is lower than the relative humidity set point
4. Verify the relative humidity set point is lower than 90% AT ALL TIMES
5. The Humidity Alarm High Limit must be higher than the relative humidity set point at anytime throughout the programs that comprise the Schedule or it will unintentionally trigger an alarm
6. Remove any sources of humidity that may have been placed inside the chamber
7. Call your local representative or contact Conviron for more information (see [page i](#)).

## 7.2.5 Humidity Alarm: Low Limit Exceeded (chamber: on)

```

***HUMIDITY ALARM***
▲ Low Limit Exceeded
Actual:    029 %RH
Low Limit: 030 %RH
<↔> to Acknowledge

```

Indicates the actual relative humidity within the chamber is lower than the humidity alarm Low Limit set point.

- <↔> to acknowledge alarm

User corrective action(s):

1. Verify the water supply and strainer (if equipped) are functioning properly
2. Verify the chamber door is closed properly
3. Verify that the exhaust/fresh air regulator is functioning properly
4. The Humidity Alarm 'Low Limit' must be lower than any relative humidity set point at any time throughout the programs that comprise the Schedule
5. If the Humidity Alarm 'Low Limit' is set to 0 and the alarm persists, the sensor must be replaced. Contact Conviron for more information (see [page i](#))
6. Call your local representative or contact Conviron for more information (see [page i](#)).

## 7.2.6 Low Water Level (chamber: on, humidification system: off)

```

***WATER ALARM***
▲ Low Level
Water level low for
60 seconds with
additive RH setpoint!
<↔> to Acknowledge

```

Indicates the liquid level switch in the ultrasonic humidifier has detected a low water level for 60 seconds, during a time when an additive humidity set point has been programmed.

- <↔> to acknowledge alarm



The Low Water Level warning will stop the Humidifier to protect the ultrasonic transducers from damage. To restart humidification, stop and restart the Schedule once the problem is resolved.

User corrective action(s):

1. Verify the water supply and strainer (if equipped) are functioning properly
2. Call your local representative or contact Conviron for more information (see [page i](#)).

## 7.2.7 Door Open (chamber: on, humidification system: off)

```

***DOOR ALARM***
▲ Door open for
60 seconds with
chamber running!
<↔> to Acknowledge

```

Indicates the chamber door has been open for 60 seconds.

- <↔> to acknowledge alarm

User corrective action(s):

1. Ensure no obstructions prevent the chamber door from closing completely
2. Call your local representative or contact Conviron for more information (see [page i](#)).

### 7.2.8 High Pressure Alarm: Warning (**chamber: on**)

```

**PRESSURE ALARM**
  ▲ High Pressure
  High pressure cut-out
  warning!
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set high pressure cut-out limit.

- <↔> to acknowledge alarm



If this Alarm occurs only once, or very infrequently, it is an indication that the refrigeration system experienced a temporary condition which triggered the high pressure cut-off set point, but recovered automatically and does not require service.

If this Alarm occurs frequently, it may be an indication that the refrigeration system requires service.

User corrective action(s):

1. Call your local representative or contact Convicon for more information (see [page i](#)).

### 7.2.9 High Pressure Alarm: Repeat (**chamber: off**)

```

**PRESSURE ALARM**
  ▲ High Pressure
  High pressure cut-out
  3 times in 30 minutes!
  Chamber shut down.
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set high pressure cut-out limit and recovered 3 times in a 30 minute timespan.

- <↔> to acknowledge alarm



This Alarm is an indication of a potential failure in the refrigeration system. To protect components of the refrigeration system, the chamber automatically shuts off

User corrective action(s):

1. Call your local representative or contact Convicon for more information (see [page i](#)).

### 7.2.10 High Pressure Alarm: Time (**chamber: off**)

```

**PRESSURE ALARM**
  ▲ High Pressure
  High pressure cut-out
  for 45 seconds!
  Chamber shut down.
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set high pressure cut-out limit for a duration of 45 seconds.

- <↔> to acknowledge alarm



This Alarm is an indication of a potential failure in the refrigeration system. To protect components of the refrigeration system, the chamber automatically shuts off

User corrective action(s):

1. Call your local representative or contact Convicon for more information (see [page i](#)).

### 7.2.11 Low Pressure Alarm: Warning (chamber: on)

```

**PRESSURE ALARM**
  ▲ Low Pressure
  Low pressure cut-out
  warning!
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set low pressure cut-out limit.

- <↔> to acknowledge alarm



If this Alarm occurs only once, or very infrequently, it is an indication that the refrigeration system experienced a temporary condition which triggered the high pressure cut-off set point, but recovered automatically and does not require service.

This may also occur after the doors have been open for a long period. **NEVER KEEP THE DOOR OPEN FOR LONGER THAN three MINUTES WHILE THE CHAMBER IS RUNNING.** If more than three minutes are required, stop the Schedule

If this Alarm occurs frequently, it may be an indication that the refrigeration system may require service.

User corrective action(s):

Call your local representative or contact Conviron for more information (see [page i](#)).

### 7.2.12 Low Pressure Alarm: Repeat (chamber: off)

```

**PRESSURE ALARM**
  ▲ Low Pressure
  Low pressure cut-out
  3 times in 30 minutes!
  Chamber shut down.
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set low pressure cut-out limit and recovered 3 times in a 30 minute timespan.

- <↔> to acknowledge alarm



This Alarm is an indication of a potential failure in the refrigeration system. To protect components of the refrigeration system, the chamber automatically shuts off

User corrective action(s):

1. Call your local representative or contact Conviron for more information (see [page i](#)).

### 7.2.13 Low Pressure Alarm: Time (chamber: off)

```

**PRESSURE ALARM**
  ▲ Low Pressure
  Low pressure cut-out
  for 45 seconds!
  Chamber shut down.
  <↔> to Acknowledge
  
```

Indicates the refrigerant pressure has exceeded the factory set low pressure cut-out limit for a duration of 45 seconds.

- <↔> to acknowledge alarm



This Alarm is an indication of a potential failure in the refrigeration system. To protect components of the refrigeration system, the chamber automatically shuts off

User corrective action(s):

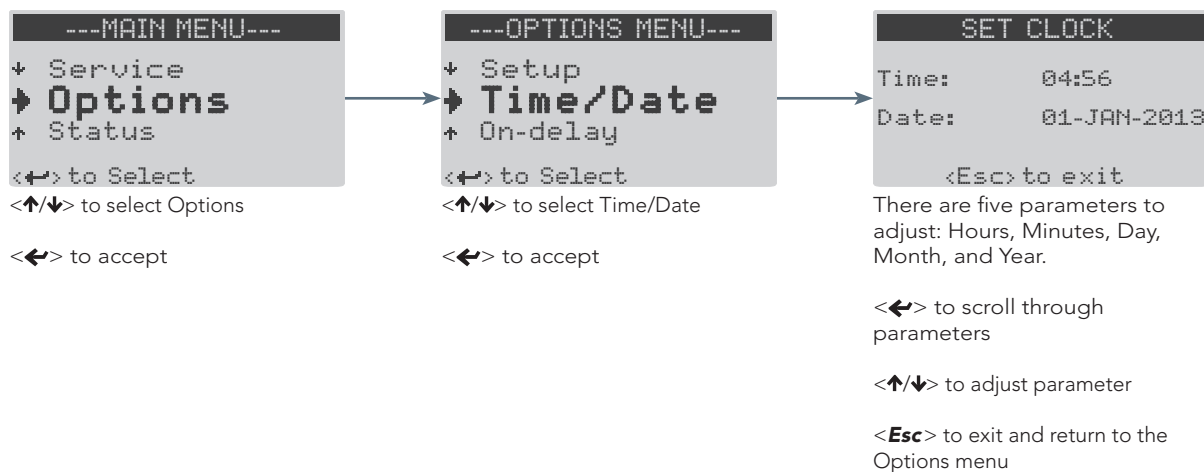
1. Call your local representative or contact Conviron for more information (see [page i](#)).

## 8.0 OPTIONS MENU

The Options menu contains items that allow the user to configure time and date, on-delay, enable/disable security, set up network communications, and designate light range and temperature/humidity offsets (if required).

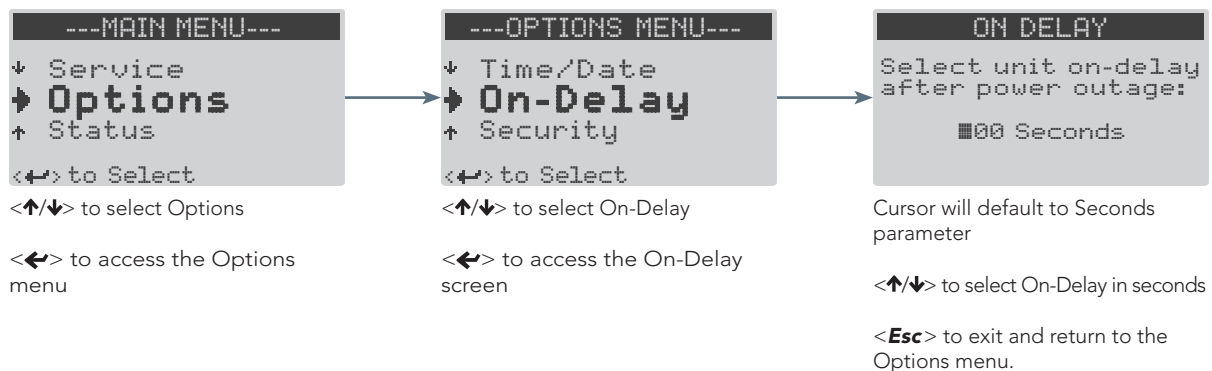
### 8.1 Setting Time/Date

To ensure experimental integrity it is important for the time and date to be set before running the schedule. Time and date can be adjusted after the schedule has begun, but it will affect the duration of the currently running program timeline, and is not recommended.



### 8.2 Setting On-Delay

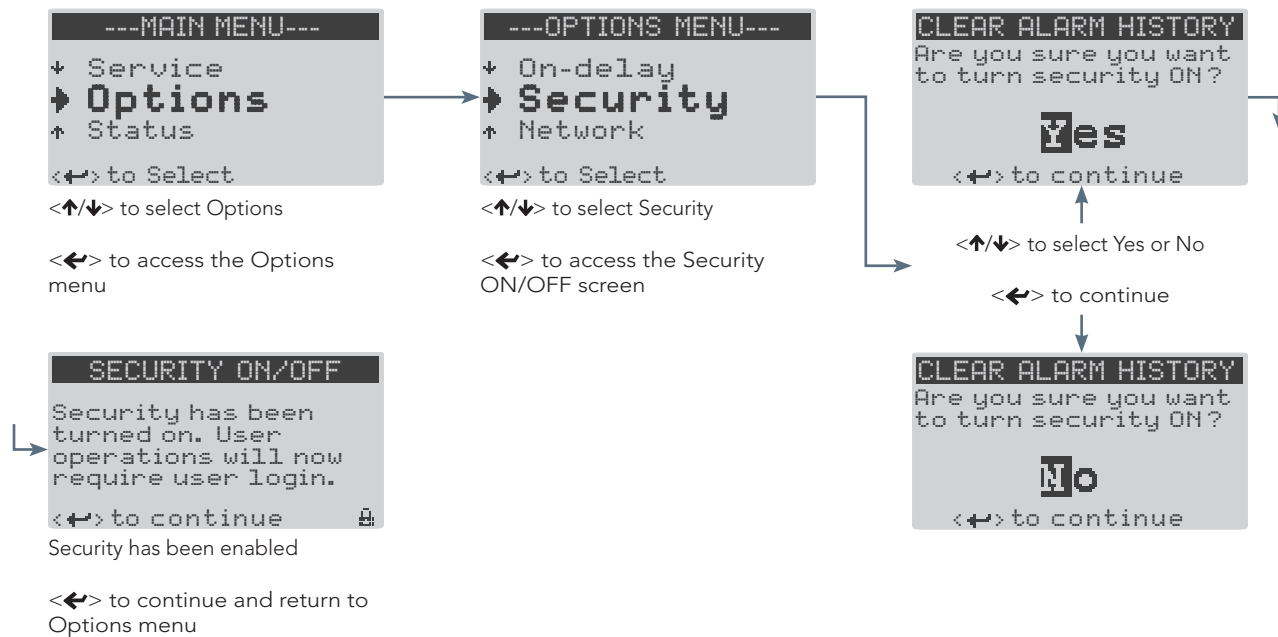
The controller has the ability to delay start-up of the chamber after a power failure to reduce electrical demand when multiple chambers are utilizing the same power supply. The delay can be set from 0-900 seconds, accommodating installations where large numbers of growth chambers are used.



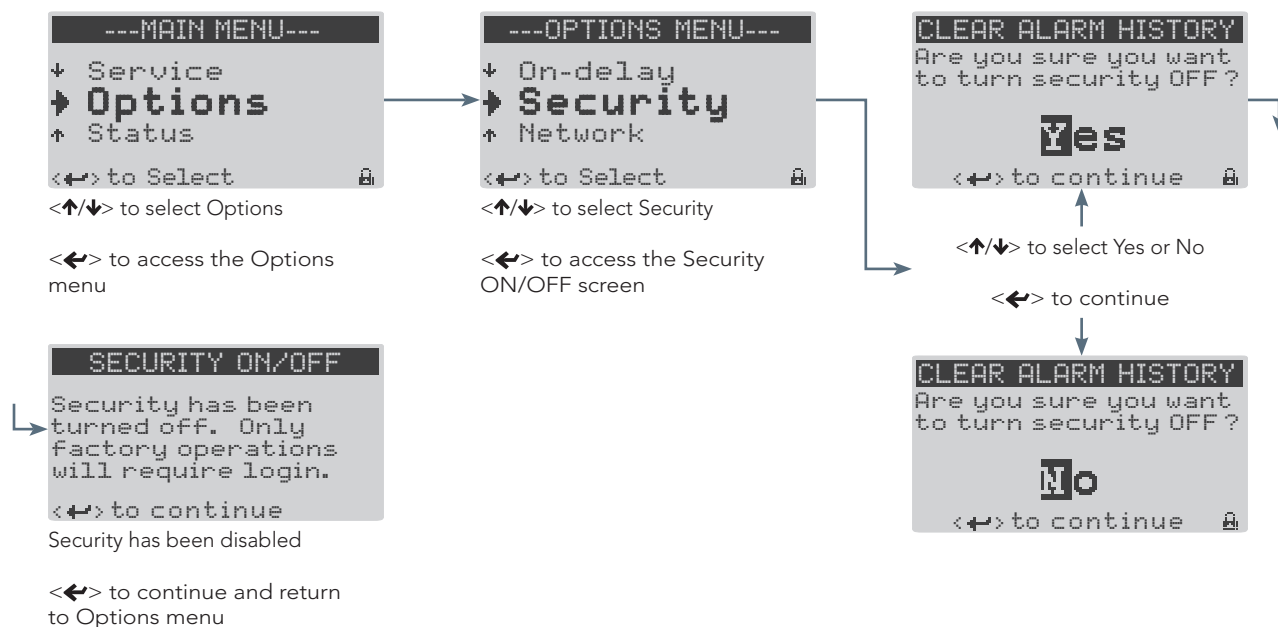
### 8.3 Enabling and Disabling Security

The Security item from the Options menu allows the user to enable or disable User level security (for more information on using Security features, see section [5.0 SECURITY MENU](#)).

#### 8.3.1 Enabling Security



#### 8.3.2 Disabling Security



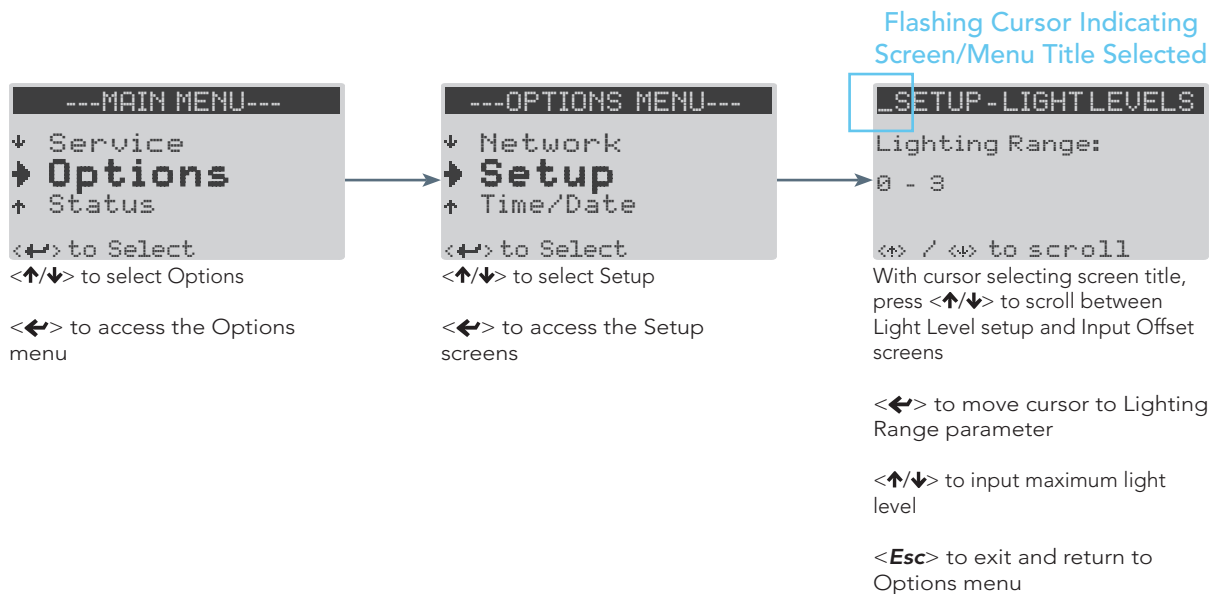


## 8.4 Setting Light Level and Input Offset

### 8.4.1 Setting Number of Discrete Light Levels

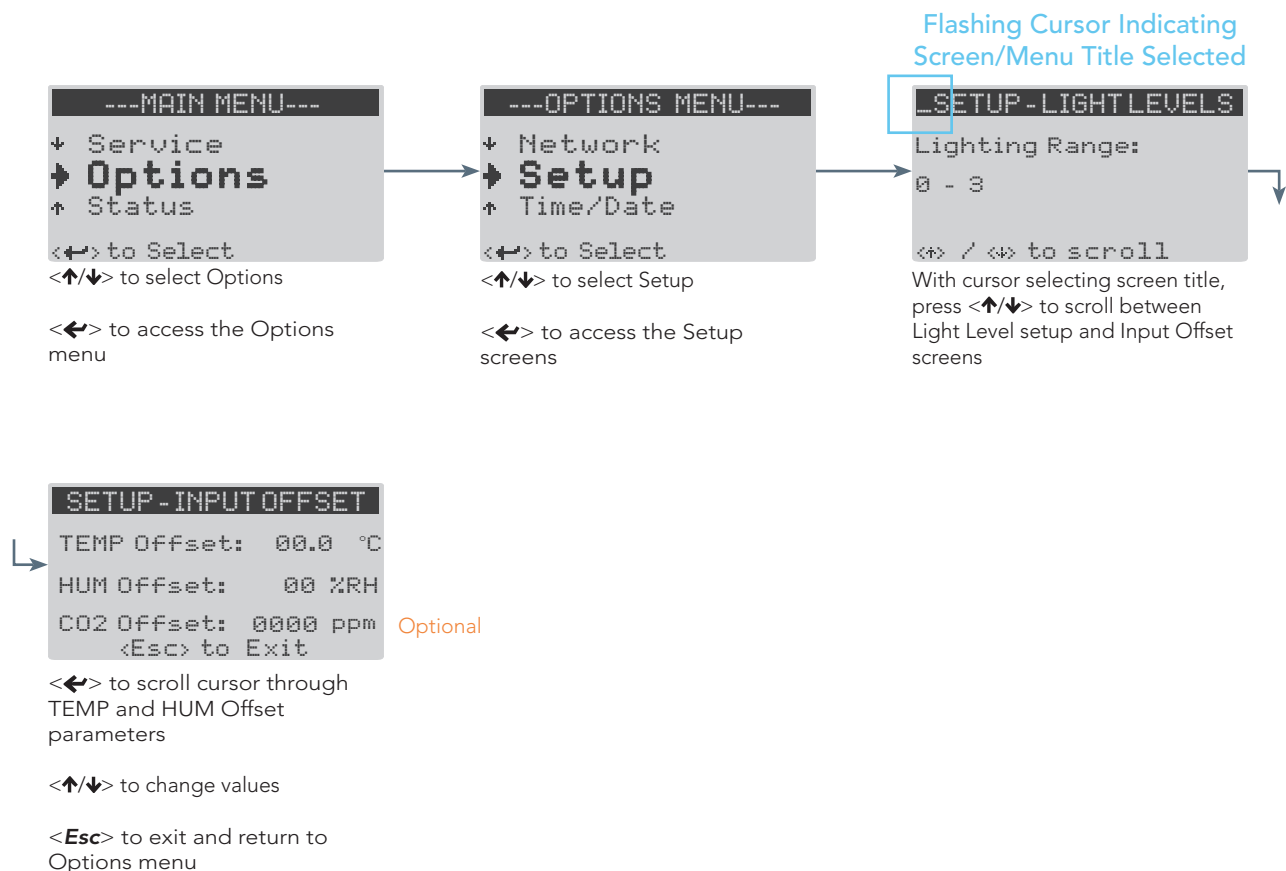
The number of discrete light levels available differs depending on chamber model and kit configuration. Use the table below to input the correct values for the chamber kit/model.

Model	Maximum Light Level
A1000PG	3
A1000AR	3
A1000TC	1
A1000IN	1
G1000	1



### 8.4.2 Setting Input Offset

The temperature and humidity sensor input to the controller can be offset if necessary to allow calibration of the chamber sensor and display with a third party measuring device.



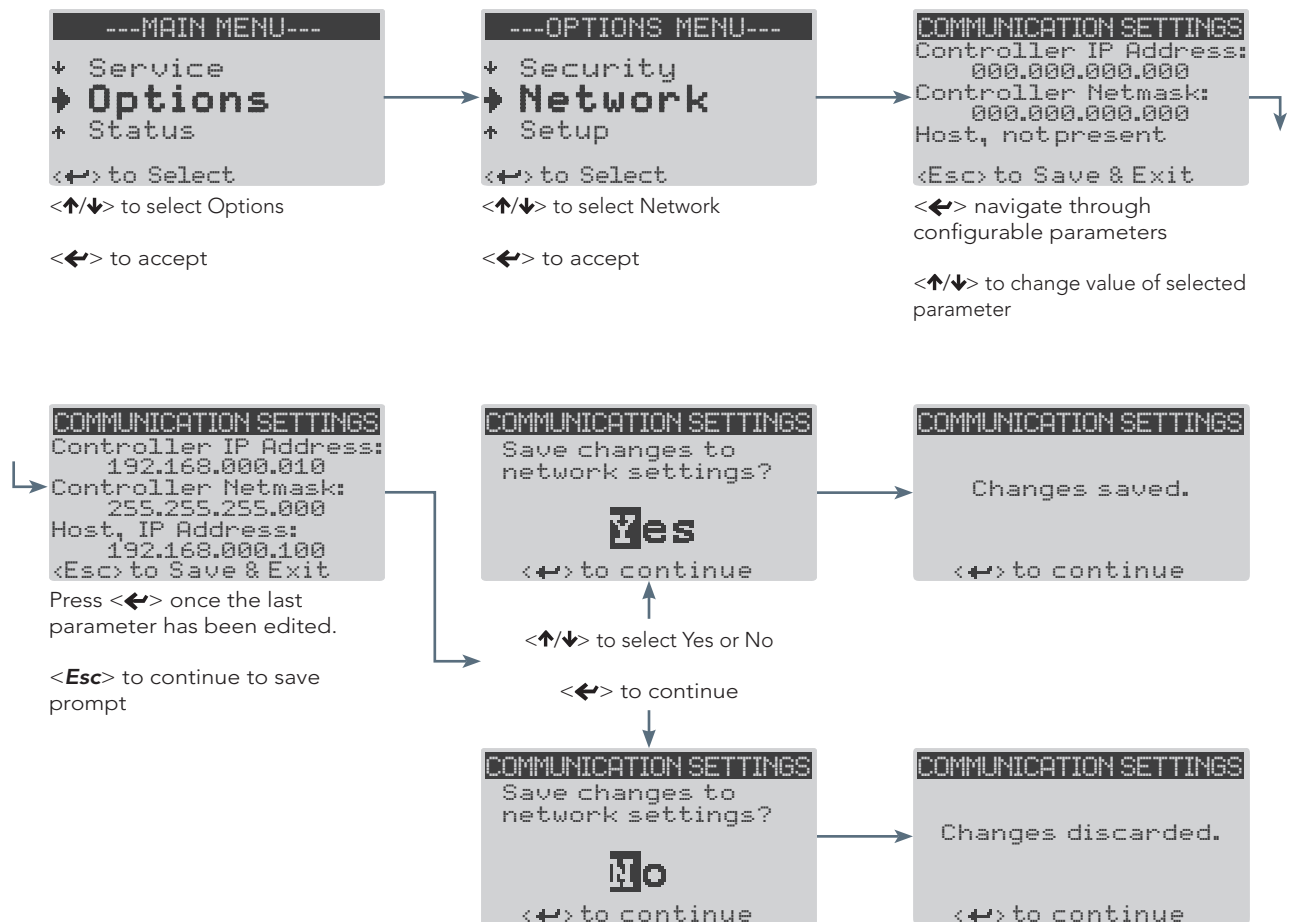
## 8.5 Configuring Network Communication

Network settings are input and edited at the Communication Settings screen. Network communications allow the controller to be connected to a local area network or single computer for downloading of logged experimental data via file transfer protocol (FTP). The controller can also be connected to an optional Conviron Central Management™ network, which provides additional functionality such as downloading experimental data, trend graphs, and alarm notifications. For more information on Central Management, contact Conviron.

The controller can be connected in one of two ways:

- A single computer directly to the controller. This requires a **cross-over** Ethernet cable connected to the chamber (or controller) Ethernet port (located at the rear of Adaptis and G1000 chambers).
- Controller connected to network on which computer resides. This requires a **straight-through** Ethernet cable connected to the chamber (or controller) Ethernet port.

### 8.5.1 Inputting Network Communication Settings



## 8.5.2 Connecting the Controller to a Network (LAN)

1. Ensure that the controller is physically connected to the network on which the computer to be used for downloading data resides. This requires a **straight-through Ethernet cable**.
2. Navigate to the controller Communication Settings screen via the Options > Network menu. See section [8.5.1 Inputting Network Communication Settings](#) for instructions on inputting network settings.
3. Input the network subnet mask under the 'Controller Netmask' heading
4. Choose an unused IP address from the same network on which the computer resides, and input under the 'Controller IP Address' heading. Determining a suitable IP address may require assistance from a network administrator or Information Services professional
5. Using an FTP client or internet browser enter the following address:

**ftp://httpadmin:fhttpadmin@aaa.bbb.ccc.ddd**

Where:

**httpadmin** = User name

**fhttpadmin** = Password

**aaa.bbb.ccc.ddd** = IP address chosen for the controller in Step 7

6. Once connected, the browser or FTP client will display a list of files. Files containing experimental log data will appear in the format:

**aaa.bbb.ccc.ddd YYYY-MM-DD.log**

Where aaa.bbb.ccc.ddd is the IP address of the controller, and YYYY-MM-DD is the date of the log file. Download or copy any required log files.

7. Values in the log file are comma-separated. Log files can be opened with Microsoft Excel or any other application capable of managing comma separated values.

### 8.5.3 Connecting the Controller to a Single Computer

1. Ensure that the controller is physically connected to the computer to be used for downloading data. This requires a **cross-over Ethernet cable**.
2. Navigate to the controller Communication Settings screen via the Options > Network menu. See section [8.5.1 Inputting Network Communication Settings](#) for instructions on inputting network settings.
3. Input the network subnet mask under the 'Controller Netmask' heading
4. Choose an unused IP address from the same network on which the computer resides, and input under the 'Controller IP Address' heading. Determining a suitable IP address may require assistance from a network administrator or Information Services professional
5. Using an FTP client or internet browser enter the following address:

**ftp://httpadmin:fhttpadmin@aaa.bbb.ccc.ddd**

Where:

**httpadmin** = User name

**fhttpadmin** = Password

**aaa.bbb.ccc.ddd** = IP address chosen for the controller in Step 7

6. Once connected, the browser or FTP client will display a list of files. Files containing experimental log data will appear in the format:

**aaa.bbb.ccc.ddd YYYY-MM-DD.log**

Where aaa.bbb.ccc.ddd is the IP address of the controller, and YYYY-MM-DD is the date of the log file. Download or copy any required log files.

7. Values in the log file are comma separated. Log files can be opened with Microsoft Excel or any other application capable of managing data organized into comma separated values.



## 9.0 SERVICE MENU



This section refers to features of the controller that are available only to personnel who possess skills and knowledge required to service the chamber. Access to this menu and all sub-menus requires Factory level login. Call Convion if the Factory password is required.

The Service menu provides technicians and other authorized personnel access to fundamental chamber settings and diagnostic tools required for troubleshooting and service. To access this menu, enter the Factory login password at the Security > Login screen.

### 9.1 I/O Status

The I/O (input/output) Status screens provide real time feedback on the state of both analog and digital inputs and outputs at the controller. Digital and analog outputs can be manually triggered and adjusted for servicing purposes. The Schedule must be stopped before the I/O Status screens can be accessed. For further information on alarms types mentioned in this section, see Section [7.0 ALARM TROUBLESHOOTING](#).

#### 9.1.1 Accessing and Manipulating I/O Status Screens

```

---MAIN MENU---
+ Alarm
+ Service
+ Options
<←> to Select
<↑/↓> to select Service
<←> to access the Service
menu
  
```

```

---SERVICE MENU---
+ Reset User
+ IO Status
+ System
<←> to Select
<↑/↓> to select IO Status
<←> to access the IO Status
screens
  
```

Flashing Cursor Indicating  
Screen/Menu Title Selected

```

I/O STATUS
Analog Inputs:
Temperature: 23.0 °C
Humidity: 045 %RH
<Esc> to Exit
  
```

With the cursor selecting screen title, press <↑/↓> to move between screens

<←> to move between configurable parameters

<↑/↓> to change value of selected parameter.

## 9.1.2 Controller Analog Inputs

### Temperature

Controller Terminal: **B4**

- 24.0 °C Displays the current chamber temperature in °C.

### Humidity

Controller Terminal: **B3**

- 045 %RH Displays the current chamber humidity in percentage relative humidity (%RH)

### CO2

Controller Terminal: **B2**

- 750 PPM Displays the current chamber carbon dioxide in parts per million (PPM)

## 9.1.3 Controller Analog Outputs

### SUDLY

Controller Terminal: (if valve type = STEPPER): **Y3**  
(if valve type = SOLENOID): **Y2**

- 00.0 VDC = NOT energized
  - 05.0 VDC = energized
- Main power contacter. Indicates the main contacter is either energized/not energized.

### ALARM

Controller Terminal: **Y1**

- 00.0 VDC = buzzer OFF
  - 10.0 VDC = buzzer ON
- Analog output for alarm buzzer. Functions as on/off device.

### HMVLV

Controller Terminal: (if valve type = STEPPER): **Y2**


- 00.0 VDC = fully CLOSED
  - 10.0 VDC = fully OPEN
- An analog output controlling the position of the stepper valve when 'stepper' is selected as heat control type from the Service > Config > Temp screen. Functions across a 0-10 VDC range.




## 9.1.4 Controller Digital Inputs

### DI\_COASW

Controller Terminal: **ID1**


 = CLOSED. Normal Operation

Chamber Off Alarm. Generated when the Schedule is running and the chamber should be running but is not for a period of 60 seconds.


 = OPEN. Indicating alarm condition

### DI\_LEVELSW

Controller Terminal: (if Float Switch Alarm = ENABLED): **ID2**


 = CLOSED. Water level nominal

Low Water Level switch. Active when Float Switch Alarm is set to enabled in the Service > Config > Alarms screen. Input is monitored while the Schedule is running and humidity set point is greater than zero. Generates an alarm when float switch in ultrasonic humidifier indicates low water level for 60 seconds.


 = OPEN. Indicating low water level

### DI\_DOORSW

Controller Terminal: (if Door Open Alarm = ENABLED): **ID2**


 = CLOSED. Indicates chamber door closed.

Door Open switch. Active when Door Open Alarm is enabled in Service > Config > Alarms screen. Alarm is generated when the chamber door is open for 60 seconds.


 = OPEN. Indicates chamber door open.

### DI\_HI\_PRES

Controller Terminal: **ID4**


 = CLOSED. Head pressure at or above high pressure limit. Alarm triggered

Refrigeration High (head) Pressure monitoring input. Actively monitors head pressure while the Schedule is running. Generates High Pressure Warning alarm each time contact closes. Generates High Pressure Shutdown alarm if contact remains closed for 45 seconds and/or contact closes 3 times in a span of 30 minutes.


 = OPEN. Head pressure within acceptable range.

### DI\_LO\_PRES

Controller Terminal: **ID3**

 = CLOSED. Suction pressure at or above high pressure limit. Alarm triggered


Refrigeration Low (suction) Pressure monitoring input. Actively monitors suction pressure while the Schedule is running. Generates Low Pressure Warning alarm each time contact closes. Generates Low Pressure Shutdown alarm if contact remains closed for 45 seconds and/or contact closes 3 times in a span of 30 minutes.


 = OPEN. Suction pressure within acceptable range.

### 9.1.5 Controller Digital Outputs

#### RSULV

Controller Terminal: (if Float Switch Alarm = ENABLED): **NO2**


 = CLOSED. Solenoid valve open and filling.


 = OPEN. Solenoid valve closed.

Ultrasonic humidifier reservoir fill solenoid digital output. Active when Float Switch Alarm is enabled in the Service > Config > Alarms screen. Input is CLOSED when the humidity set point > 0 and DI\_LEVELSW remains open for longer than 5 seconds.

#### CFMTR

Controller Terminal: (if Door Open Alarm = ENABLED): **NO2**


 = CLOSED. Circulating fan ON.


 = OPEN. Circulating fan OFF.

Circulating fan digital output. Active when Door Open Alarm is enabled in the Service > Config > Alarms screen. Input is closed when DI\_DOORSW = CLOSED

#### USHUM

Controller Terminal: **NO4**


 = CLOSED. Ultrasonic transducers active.


 = OPEN. Ultrasonic transducers inactive.

Ultrasonic Humidifier transducer digital output. Longburst type output with 10 second period. PID controlled based on B3 humidity sensor input and humidity set point. When Float Switch alarm is enabled via Service > Config > Alarms, USHUM = closed when DI\_LEVELSW = closed.

#### HMVLV1

Controller Terminal: (if Valve Type = STEPPER): **NO5**


 = CLOSED. Stepper board energized.


 = OPEN. Stepper board de-energized to reset valve position.

Stepper valve reset digital output. Enabled when 'valve type = stepper' and 'boost heat = no', in the Service > Config > Temp screen. On/Off style. Output turns off once a week at midnight for 5 seconds to reset the position of the stepper valve.

#### HSVLV


Controller Terminal: (if Valve Type = SOLENOID): **NO5**


 = CLOSED. Heating solenoid energized.

 = OPEN. Cooling solenoid energized.

Heating solenoid valve digital output. Enabled when 'Valve Type = Solenoid' in the Service > Config > Temp screen. Longburst style. PID controlled based on B4 Temperature sensor and set point temperature (SP\_TEMP). When HSVLV = OPEN, cooling solenoid valve (CSVLV) = CLOSED.


**HTR\_DUTY**Controller Terminal: (if Valve Type = STEPPER and Enable Boost Heat = YES) : **NO5**


 = CLOSED. Electric heaters energized.

 = OPEN. Electric heaters de-energized.

Electric boost heater control digital output. Enabled when 'Valve Type = Stepper' and 'Boost Heat = Yes' in the Service > Config > Temp screen. Activation is determined by values entered for 'Activation Temp' and 'Boost Heat Offset' in the configuration screens.


**FLUOR1**Controller Terminal: **NO1**


 = CLOSED. Fluorescent ballasts energized (lights ON).

 = OPEN. Fluorescent ballasts de-energized (lights OFF).

Lighting control digital output. On/off style. Control is based on light level set point (SP\_LIGHT). FLUOR\_1 is delayed by 1 second upon startup (SUDLY > 0).

**FLUOR2**Controller Terminal: **NO3**

 = CLOSED. Fluorescent ballasts energized (lights ON).

 = OPEN. Fluorescent ballasts de-energized (lights OFF).

Lighting control digital output. On/off style. Control is based on light level set point (SP\_LIGHT). FLUOR\_2 is delayed by 2 seconds upon startup (SUDLY > 0).

## 9.2 System

The System screens provide general information about controller memory and communications status.

### Clock Card

```

SYSTEM
Clock Card:
Not Working
Permanent Memory:
Working
+ / + to scroll

```

The clock card contains a battery that allows the controller to maintain time/date settings through power outages and chamber down time. No modifiable settings.

### Memory

```

SYSTEM
Clock Card:
Not Working
Permanent Memory:
Working
+ / + to scroll

```

Permanent Memory, Ext (extended) Permanent Memory, and Permanent Memory Writes all report on the status of the controller's memory. No modifiable settings.

```

SYSTEM
Ext Permanent Memory:
Present + Working
Permanent Mem Writes:
00000
+ / + to scroll

```

### Communications

```

SYSTEM
Communications:
Disabled
+ / + to scroll

```

The communications item will show enabled when a network card has been installed in the controller. There is no requirement for modification of this parameter.

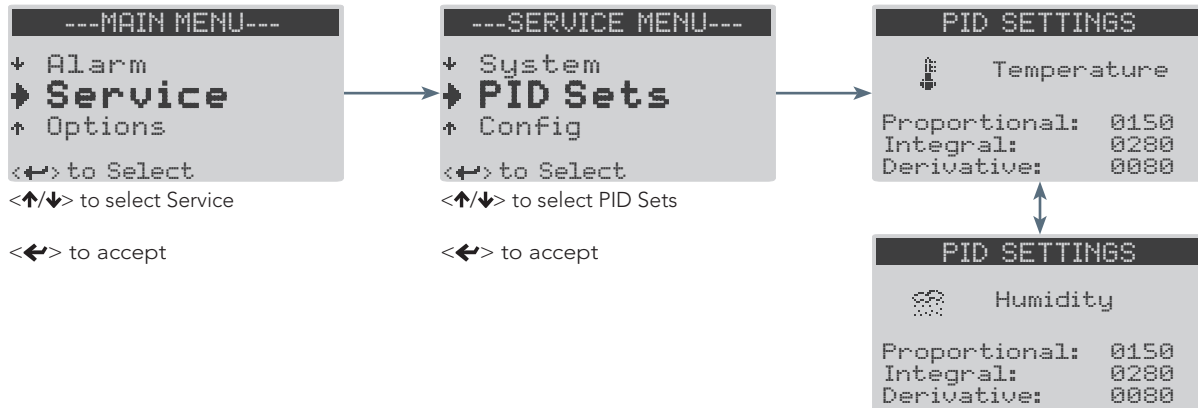
```

SYSTEM
Communications:
Enabled
(For network settings
press <Prg>+<Esc>
from -Status- screen).
+ / + to scroll

```

## 9.3 PID Sets

The PID Settings screens contain the proportional, integral, and derivative values for controlled processes (temperature and humidity). These values are factory set by Convion, and should not require modification, except under strict guidance from Convion Technical Service.



With cursor selecting screen title, press <↑/↓> to scroll between Temperature and Humidity PID settings screens

<←> to cycle cursor through configurable parameters

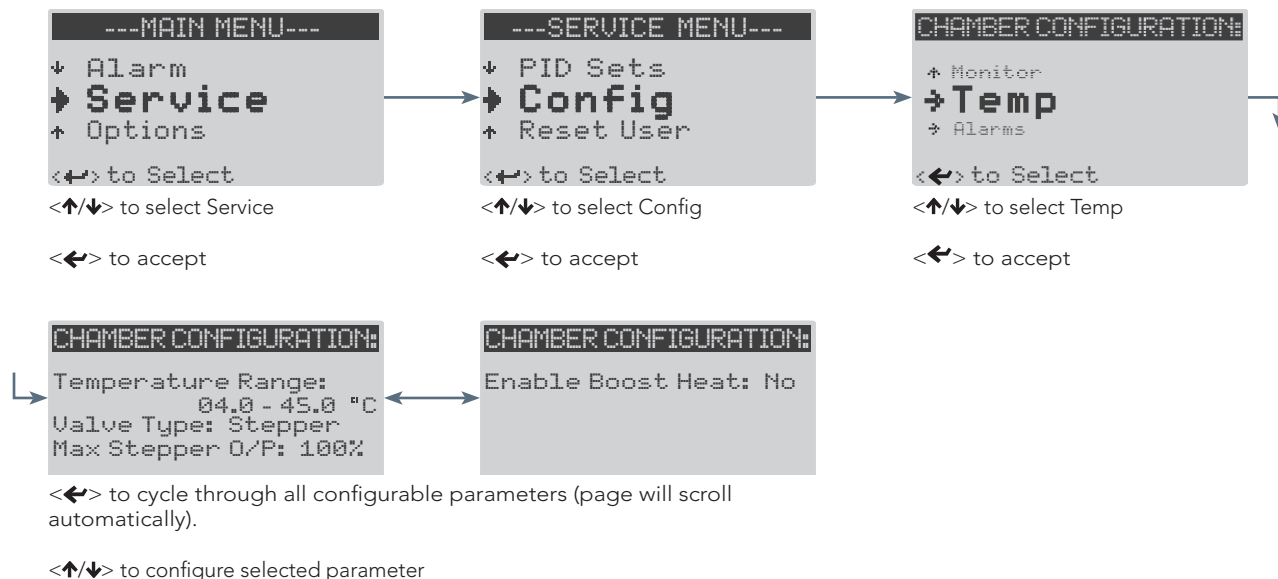
<↑/↓> to configure selected parameter

<Esc> to exit and return to Options menu

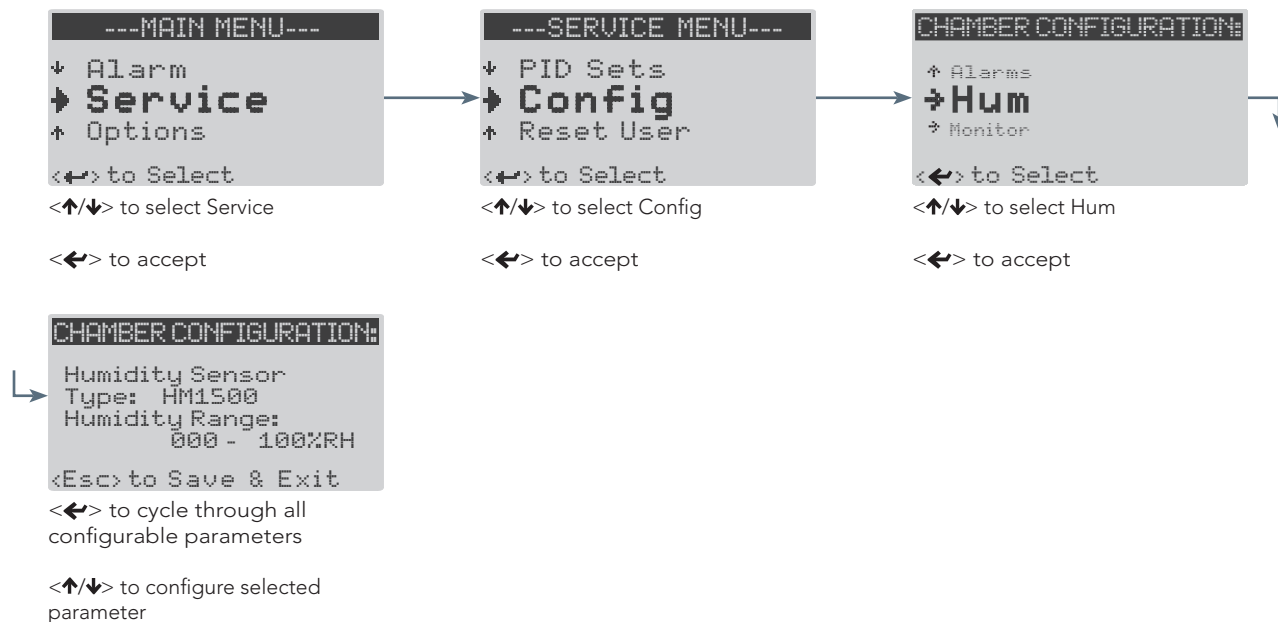
## 9.4 Config

The Config screen contains fundamental settings related to process control and the ability to select which alarm type (Low Water or Door Open) will be monitored by the controller. These settings are configured at the factory based on chamber type and additional options.

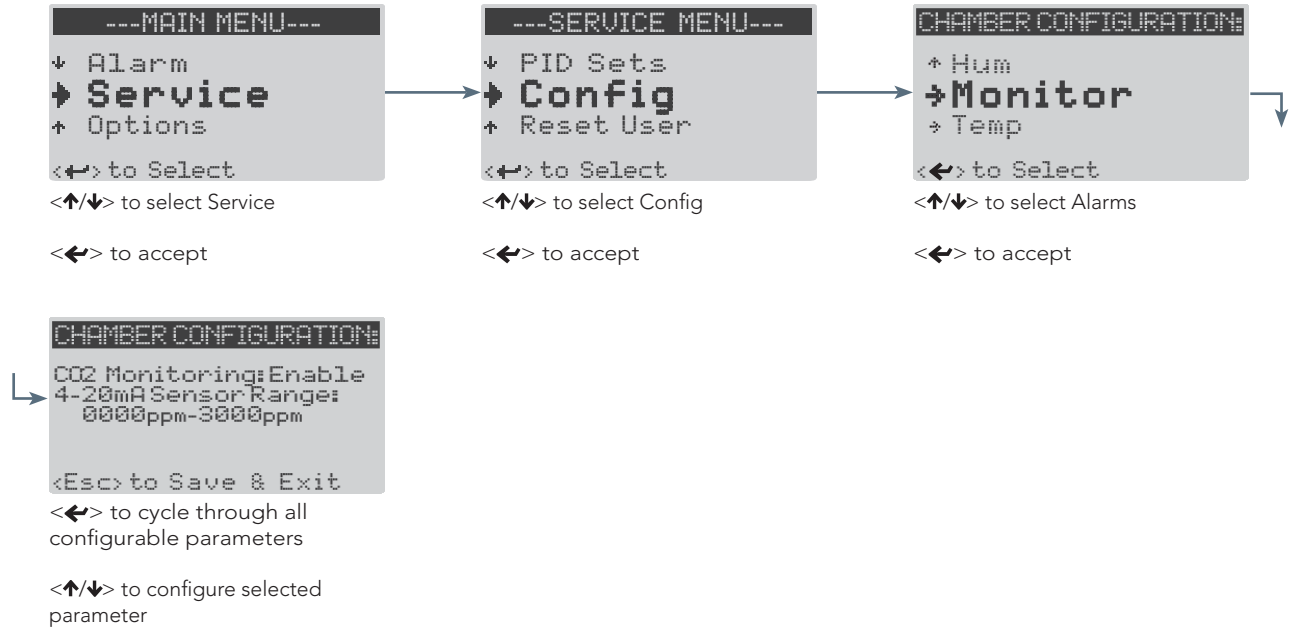
### 9.4.1 Temperature Process Configuration



### 9.4.2 Humidity Process Configuration

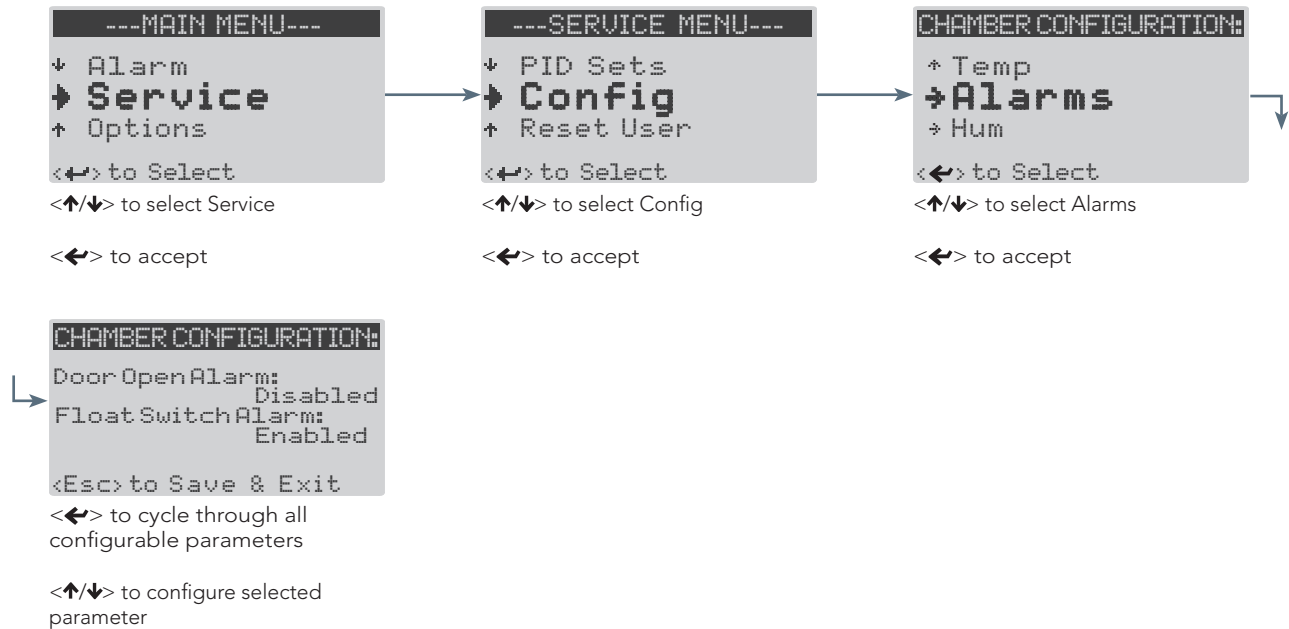


### 9.4.3 Carbon Dioxide Monitoring Configuration



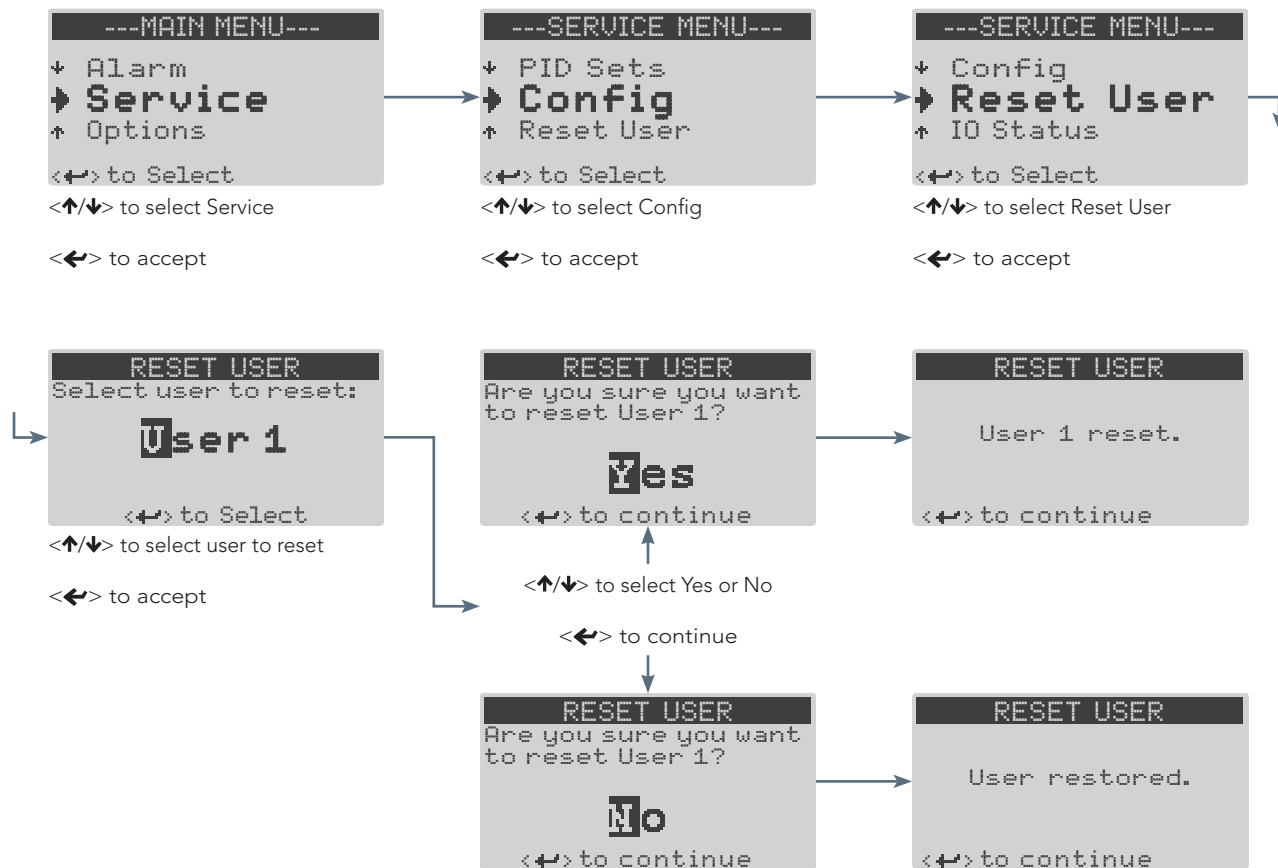
### 9.4.4 Alarm Type Configuration

The standard alarm type configured CMP6010 equipped chambers is the Float Switch alarm. The controller can only enable one of the two alarm types at any given time. The Door Open alarm is an optional feature.



## 9.5 Reset User

The Reset User menu allows a User level account to be reset to default settings.





## 10.0 GLOSSARY

<b>Central Management System™ (CM)</b>	A optional remote control and monitoring system. Contact Convion for more information.
<b>Chamber</b>	The entire unit is called the chamber. Parts of the chamber include the control screen, the electrical panel, the refrigeration system and the plant growth area (chamber interior).
<b>Controller</b>	The device which controls chamber operations according to user inputs.
<b>Current Menu Location</b>	A black bar at the top of every screen which indicates current location on the menu map.
<b>Cursor</b>	The cursor identifies the currently selected parameter when modifying controller settings. It can be either a flashing solid block (when within the current screen) or a flashing underscore (when selecting the current menu location), and is toggled by the Enter <↵> key.
<b>Entry</b>	An entry designates a program by number, and the number of times for that program to be run before the controller executes the next entry. Entries are identified by number on the left side of the Edit Schedule screen (see section <a href="#">4.1 Introduction to the Schedule</a> )
<b>Host</b>	Another term for the Central Management system. It is more commonly used in alarm messages and technical documentation.
<b>Inputs</b>	User defined parameters that enable controllers' activity.
<b>Outputs</b>	Switches that control specific devices or conditions within the chamber.
<b>Program</b>	A program is a series of timelines, each of which specifies chamber environmental conditions --temperature, humidity, and light-- at a given point in real time. Each program represents a single 24 hour period, and can contain between 1-24 timelines. The controller memory can store up to 16 programs.
<b>Set point</b>	A set point designates the target value for a controlled parameter. For example, 25°C is a temperature set point.

## GLOSSARY

**Schedule**

The numbered list of entries which the controller executes sequentially in ascending order.

**Timeline**

A timeline designates a set point value for each controlled parameter at a specified point in real time. Each program in the CMP6010 can store up to 24 timelines.





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