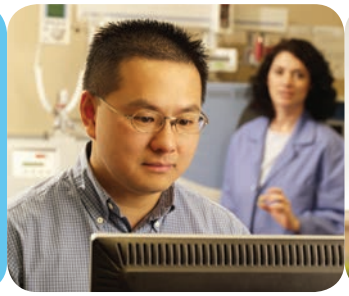
CENTRAL MANAGEMENT™



OPERATOR'S MANUAL

Software Version 8.2

At Conviron we develop and implement innovative and reliable controlled environment solutions.

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CONVIRON®

Building Partnerships | Creating Solutions

CENTRAL MANAGEMENT™

OPERATOR'S MANUAL

PLEASE READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE OPERATING.

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PREFACE

Welcome to the Operator's Manual for Conviron's Central Management™ (CM) System. This Manual has been developed to assist those responsible for remotely monitoring and operating Conviron growth chambers. The Manual is provided to all clients who have purchased a chamber(s) with Central Management™.

The manual is structured to provide step-by-step instructions. Clients will find sufficient detail including figures, diagrams, and graphics to remotely monitor and operate the chamber without issue. However, given that installations are specific to each facility and that facilities may have unique circumstances, additional information or assistance from Conviron may be required. In such cases, contact information is provided on the following page.

This equipment is only to be used by authorized personnel – that is, personnel who have been trained on the proper use of the equipment and who have read this manual.

SERVICE AND TECHNICAL SUPPORT

Conviron welcomes the opportunity to provide assistance and to answer any technical questions related to the start-up, use and general technical support and troubleshooting of the Central Management™ system. Before contacting Conviron, please check the following:

- Read this Operator's 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 Conviron:
    - Serial Number - The serial number of Central Management™ is located on the serial card on the side of the computer or on the Installation Media.
    - Software version number of Central Management™ – Open Central Management™ and Select "Help" then "About". A dialog window will open, showing the software version number.
    - A description of the problem.
    - A description of what you were doing before the problem occurred.

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General

This agreement shall be governed by the laws of the Province of Manitoba, in Canada, with the courts of the Province of Manitoba having exclusive jurisdiction.

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

Please Note

Please note the following Hazard warnings before operating this equipment:

- Users of Central Management™ must be aware that changes they make will impact electrical and/or mechanical operations of a chamber(s) at a location that they are not visually monitoring and/or physically present at.
- Operating the chamber remotely, while others are occupying or servicing the chamber, COULD BE HAZARDOUS AND MAY RESULT IN PERSONAL INJURY to service or other on-site personnel. As such, manipulation of parameters via CM must only be performed when Users have taken appropriate safety precautions including having established that NO ONE ELSE is occupying or servicing the chamber while using CM software.
- Conviron Central Management™ is normally the connection point to several external alarm monitoring systems. Consequently, it is important to understand the following;
  1. Users of CM must have permission to connect to CM and if the work requires rebooting or shutting down the equipment, the onsite authority must be informed such that this procedure can be accomplished safely.
  2. Be certain of the correct procedures for remote connection, login and disconnect. It is possible to select the incorrect "quit" methodology and "shutdown" the CM system rather than simply disconnecting the remote connection. If the system is shutdown, all subsequent chamber alarms occurring would not be recognized by CM, thereby failing to send out alarm notifications. Once shutdown, the CM system would require a manual startup.
  3. While the CM system shows many of the chambers' parameters, alarm settings and physical conditions are not available to the remote user. Any type of change or diagnostics are best performed when onsite personnel are available to work with the remote user.
- Central Management™ is an optional feature. If Central Management™ is being used it becomes inextricably linked to the use of the Controller and therefore, both the Central Management™ Manual and the Operator's Manual for the Controller must be read and understood in their entirety prior to operation.

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1.0 INTRODUCTION

This Manual explains how to use the Conviron Central Management™ (CM) system to remotely monitor and operate Conviron growth chambers based on CMP series Controllers. It is intended for people who are responsible for managing and / or operating the growth chambers within their facility, but who are not expert users of Microsoft Windows.

This Manual contains seven chapters.

Chapter 1.0 Introduction

Describes the organization of the Manual, its document conventions, the major features of the Central Management™ system, and how to contact Conviron Client Services.

Chapter 2.0 Quick Start

Explains how to get started. Instructions are provided including setting up the computer and chamber network and using the Central Management™ application, along with a brief outline of the user interface. A step by step approach has you working right away. It also describes how to get online help and further assistance.

Chapter 3.0 Using Central Management™

Explains how to use all Menu functions including adding chambers and subscribers to the Central Management™ Network, organizing chambers in folders, planning experiments, viewing Activity Logs and Extracting data or alarms.

Chapter 4.0 Chamber Activities

Outlines the necessary day to day activities in a work flow format to aid the Administrator in using the software effectively. Included are; Monitoring chambers using the Thumbnail Status, Email Alerts, Chamber Panel and Viewing alarms and configuring responses.

Chapter 5.0 Remote Chamber Programming

Describes how Users access and work with the Central Management™ system and Chambers from Network, Internet locations and alternate devices.

Chapter 6.0 System Maintenance and Troubleshooting

Describes the necessary details for the configuration of backups, Central Management™ system settings, Alarm responses and network addressing, and restoration of Central Management™ software.

Chapter 7.0 Central Management™ Software Installation

Provides instructions on learning how to install the Central Management™ v8.1 software-only component of Conviron's Central Management™ system.

Glossary of Terms used in this Manual.

1.2 Document conventions

To help you find and understand information, the following document conventions are used in this Manual.

Table 1.1: Conventions

Convention	Meaning
Tip:	Information that isn't procedural, but will help with the use of Central Management™.
Important:	Information that is essential to performing a procedure.
Bold text	The name of a section in this Manual or another Manual.
Italic text	The name of the file or directory.
Typewriter font	Text that you enter.
"In Quotes"	Menu names and menu selection options
key1+key2	Press and hold the first key while you press the second key.
key1, key2	Press and release the keys sequentially.

1.3 Central Management™ system features

The Central Management™ system is a Microsoft Windows based remote control and monitoring application for Conviron growth chambers equipped with CMP series Controllers.

Using Central Management™, you can operate and monitor growth chambers from a central location. The Central Management™ system makes it possible for Conviron Client Services to perform maintenance and troubleshooting tasks remotely.

Central Management™ system features

Using Central Management™, you will be able to perform the following tasks remotely:

- Tell, at a glance, the status of any chamber on the network
- Operate all chambers on the network from a central location

- Receive Email Alerts for Urgent alarms
- Download alarm and log data in text or "csv" format
- Gain online access to Central Management™ system using Windows Terminal Services
- Take advantage of Central Management™'s built-in Web Reporting service

The Central Management™ System includes the following software and optional hardware.

- Central Management™ software v8.2

Optional Central Management™ hardware

- Pentium processor
- 8 GB RAM
- 2TB hard drive
- 19 inch monitor
- Conviron Restore Drive
- Dual 10/1000Base-T Ethernet cards
- Sanity Card ensures fail-safe operation
- DCS - Dry Contact Alarm Reporting System
- Microsoft Windows Operating System

The hardware for the Central Management™ system reflects current PC technology, including Conviron's additions of Conviron Flash Drive imaging and Restore, Sanity / Alarm card, Dry Contact System (DCS), dual Network cards with three display monitor capability, and Daily Automated Backup. A single 19" LCD display is standard.

Central Management™ hardware options

- Autodialer
- Modem
- Networking components
- Switches
- Wiring
- Cabling transport

Central Management™ software features

- The Central Management™ system has all the features of the previous Central Control system (CCS) with many additions to meet the changing needs of our clients.
- Central Management™ is a .NET 2.0 application. The application runs on Windows 2000™, Windows XP Professional™, Windows 7.
- The Central Management™ "core", (CMService.exe) runs as a system service (it is not tied to a user account) allowing multi-user security access. Central Management™ is the User Interface and may be closed, without effect to logging, alarms, or email.
- Central Management™ is network independent. Addressing can conform to Users' needs to permit integration and coexistence in existing Networking Structures (some restrictions apply to legacy equipment).
- Direct online Central Management™ system access via network or optional modem using generic Windows Terminal Services on PCs or Macs and Microsoft Windows Mobile 2003SE on PDAs.
- Windows 7 operating system shares PC resources more efficiently, allowing the Central Management™ PC to be a fully functional workstation.
- Central Management™ software can run on Client hardware without the Conviron's hardware option, however, the Local Audible alarm, Sanity reset, Autodialer and Building dry contacts options for Alarm alerting would not be available. Email Alerts in this situation would be the only alerting method.
- Central Management™ has a built-in Web Reporting service. This provides Status Thumbnails, Data and Alarm logs, Trend-Graphing, Service History and Data downloading to a remote user via a Web Browser. It is perfect for the view-only people who need to see what the chambers are doing. Web Reports are available anywhere via Internet or Intranet Web browsers.
- A full featured calendar based Experiment Scheduler documents the start-stop date, chamber ID, User Name, Experiment Name and notes. Information is presented on a Gantt style or grid chart display.
- The Scheduler tool has Chamber Usage tracking and reporting by Chamber or User, for charge out purposes. Reports are printable or may be saved in text and html formats.
- Central Management™'s chamber properties record contains editable fields of ID, Model, Serial, Notes, Service History, Service Notes, Experiments, Subscribers and a 12 character description field. The chamber database keeps all the related items to a chamber and experiment together in one place.
- The email alarm reports are "configurable", allowing you to determine which alarm will generate an email alert. The email system is organized for a single "Network subscriber"

who gets every chamber alarm message and individual "chamber subscribers" who see only alarms from their particular chamber(s). An Email Alert message links to the Web Report Alarms page for that chamber.

- Trend graph allows for instant multi-day, (up to 1 year) multi-point graphs and printouts, (optionally) including alarm condition indicators.
- Files are stored on the Central Management™ system in standard Comma Separated Values (CSV) format. Files are organized by chamber ID, in DataLog, Alarmlog and Programs directories. The data file is stored as a daily archive and filename-branded with "year - day of the year – Chamber # " (i.e. - 07124001.log) format.
- Dry Contact System has a programmable reset interval to prevent masking of second and tertiary alarm actions.
- Configurable settings for Email, Web Reports, Dry Contact System, and Alarm Actions are flexible to work the particular environment.
- Easy test verification features for Email, Dry Contact System and Sanity.

Protection

The Conviron hardware includes Microsoft Security Essentials. As Virus protection is vital for any internet connected PC, it is strongly advised that an Anti-Virus program is installed. The Conviron Central Management™ system includes Microsoft Security Essentials, by default. As most clients have an existing preference for an Anti-Virus program, please be sure to read Chapter 6 regarding Central Management™'s requirements and Third Party Security protection. Restore and Backup operations are explained in detail in Chapter 6, pages 22-26.

Networking

The Chambers and Central Management™ system do not have special requirements for networking hardware. Connecting the chambers with a local private network is the default installation type. Expanding or connecting to the building services can be added at any time, as the Central Management™ system is ready for the additional connection. The second Building Network card is set to auto-configure (DHCP). Details on configuring TCP/IP networking with the Central Management™ system are found in Chapter 6.0

Online Assistance

Conviron Client Services offers online assistance with all our products, and this is facilitated by our ability to connect to your Central Management™ system network. This can be via the Internet (analog modem optional) or LAN connections, whichever is appropriate for your IT Building Services to supply. For your security, take note that we use several static TCP/IP addresses for Internet connections to your facility. These addresses can be added to your firewall rules, allowing secured access to Central Management™: 207.54.102.226 primary and 207.54.102.229 secondary.

Customization

The decision that must be made, is how the Central Management™ system is to be used in your specific environment. This can wait until all the features and possibilities are understood, within the framework of the users' workflow. The Email, Remote Communication and Web services can be activated at any time by adding the necessary settings to Central Management™'s "settings panel". See Section 1.3: Central Management™ system features to select the options that best fit your needs.

References

This Central Management™ Operator's Manual explains how to use Central Management™. If you need assistance using Microsoft Windows, a Conviron Controller, or any of the other software applications included with the Central Management™ System, refer to one of the following user guides:

- Microsoft Windows User's Guide
- Conviron CMP4030 User's Guide
- Conviron CMP5090 User's Guide
- Conviron CMP6050 Operators Manual
- Conviron CMP37660 User's Guide (3000 Host)

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2.0 QUICK START

The Central Management™ program runs in the Windows Operating System so you need a basic understanding of how to work with Windows applications. Central Management™ can be run on Windows 2000, Windows XP Pro and Windows Vista Ultimate. Microsoft .NET v2.0 is required.

This chapter is intended for readers who have little experience with a Central Management™ system or Windows. In this chapter, you will learn:

- How to setup the Central Management™ hardware
- To understand the features and startup mode
- To Login as Administrator or Guest
- How to start and quit Central Management™
- About the Central Management™ system
- To setup your Chamber Network
- How to get online help

2.1 PC Hardware setup

Connect items in the following sequence; refer to Figure 2.1: Rear Panel View.

Table: 2.1: Connection checklist

Item	
1	Connect monitor and PC power cables to power bar.
2	Connect monitor, mouse and keyboard to PC.
3	Connect ethernet cables to chamber network, PC and switch.
4	Connect building network cable to PC and building services. (Optional)
5	Connect Dry Contact System cable to PC and DCS box.
6	Connect DCS to autodialer and/or building alarm system. (Optional)
7	Connect modem cable to modem and the other end to phone outlet. (Optional)
8	Connect autodialer to modem "phone jack" (Optional)

Figure 2.1: Rear Panel View

To merge into a building network the addressing scheme must be disclosed and Conviron equipment preconfigured with static network addresses.

The CMP4000 to CMP5000 Controllers have several possible Ethernet LAN configurations, but there are certain restrictions. These options are available only with the Controller software version 6.22

2.2 Network Description

- Inter-connections between the Chamber Controllers (CMP4000, CMP5000 and CMP6000) and the Central Management™ system PC utilize industry standards to ensure that a proven network technology is provided for the Conviron Chamber Network.
- Conviron, by default, provides a private network for the chambers and Central Management™ system. The hardware and equipment is non-proprietary and can coexist in most TCP/IP based Ethernet networks.

Conviron Controller Ethernet LAN Configurations

The Chamber may be:

1. Integrated into Client's network as fixed (static, not DHCP) IP address in the existing User's LAN address scheme.

2. Integrated into user's network as separate subnet, using a private addressing scheme, but connected to the user's LAN hardware.

3. Connected to Client's network via a router, allowing the physically separate hardware and addressing schemes to communicate to each other.

4. Connected to Client's network via a Central Management™ system, allowing the physically separate hardware and addressing schemes to communicate to each other (Conviron Default).

Central Management™ Networking

Connect the Chamber and Central Management™ PC to the Ethernet switch using the same ethernet cabling as the Chamber.

Click on Start" > "Control Panel" > "Network and Internet" > "View network Status and tasks" > "Change Adapter Settings".

Right click on the Chamber Network and Select "Properties". The "Network Properties" screen will be displayed.

Scroll down and select Internet Protocol Version 4 (TCP/IP), then click on the "Properties button", Figure 2.1a: Internet Version 4 Protocol Properties will be displayed.

The Building Network connection is optional and must be configured by on site I.T. staff.

The Central Management™ system is installed with 192.168.0.100 as the default Network address. Chambers also default to 192.168.x.xx for Central Management™ Network, but their address must be set, so each Chamber has a unique ID (address).

Assuming the first Chamber is set to 192.168.0.1 (Unit ID 001) set each Chamber to have sequential IDs. (1,2,3 ...and so on). We reserve the first (100) addresses for legacy chambers, CMP4000 and CMP5000. The remaining addresses of 192.168.0.101 to 254 are suitable for selection for CMP6050 Chamber Controllers.

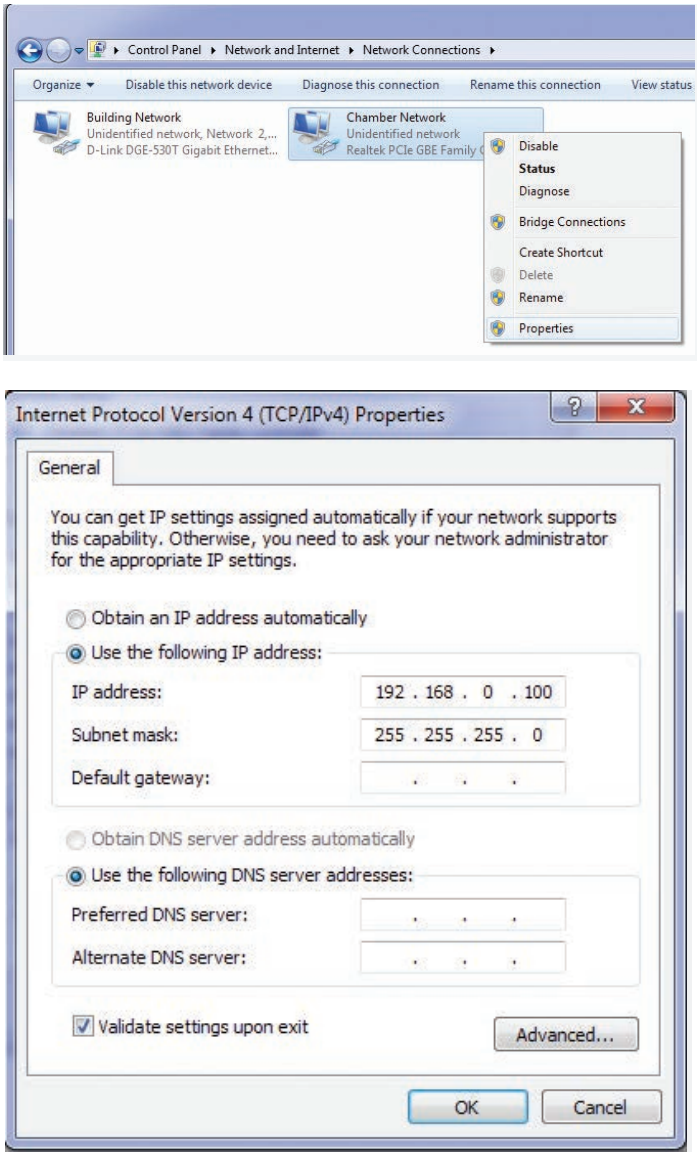


Figure 2.1a: Internet Version 4 Protocol Properties

CMP4000-5000 networking

To set the Chamber Addressing:

1. Power up the Chamber's Controller. Once you see the chamber status screen, touch the Options icon and locate the Group and Unit numbers.

2. Touch the group and unit buttons, Figure 2.3: Group and Unit Address, to set the Controller's Group to "0" and Unit ID to "1-99" or the desired TCP/IP address.

3. Once the Group and Unit are set, 'Touch' the "EXIT" button, to save the change and exit.

4. A pop-up window will appear warning "Net Address changed you must cycle power". "Select" OK to proceed. After the restart the new Unit ID will be shown on the Controller status display, Figure: 2.2 CMP5090 Status Display.

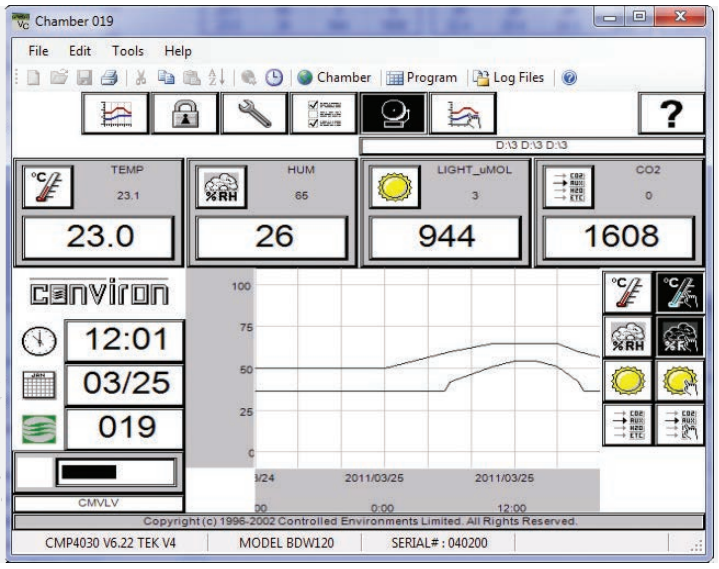


Figure 2.2: CMP5090 Status display

Figure 2.3: Group and Unit address

Addressing format requirements:

IP address is 192.168.**x.yy**
x is the first digit of the address (Group). Range is **0 to 9**
yy are the last two digits of the address (Unit). Range is **1 to 99**
Subnet mask is fixed at 255.255.255.0

Setting the Unit ID to 001 will set the TCP/IP address of the chamber to 192.168.0.1.

Remember, the chamber must be set to an address in the same network **(x)** as the Central Management™ PC (default - 192.168.0.100).

CMP6050 networking

The CMP6050 can be connected to a Central Management™ system on an Ethernet Local Area Network. To enable communications the Controller must be connected to the network and configured with a suitable network address. There are two places where the Controller IP addresses must be set-up: At the Controller and at the Central Management™ PC.

There are two network addresses to set in the CMP6050:

- CMP Address: Address or ID of the Controller within the network.
- Netmask: Divides an IP address into subnets and specifies the network's available host.
- Central Management™ Enables or Disables CM communication
- CM Address Central Management™ IP Address

A valid IP address is needed for the "CM Address" value when there is a Central Management™ system present. If there is no Central Management™ system present the CM Address should be set to 'Disabled'.

To set the Chamber Addressing:

1. From the status screen, touch the 'ID' button

to access the network configuration, Figure 2.4: CMP6050 Network Configuration.

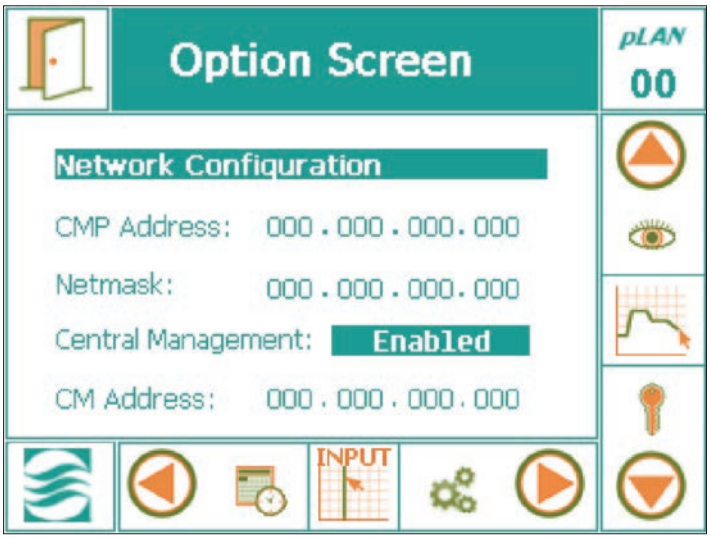


Figure 2.4: Network Configuration

Figure 2.4a: Controller Keys

If "Disabled" is displayed, Select the "Disabled" text and use the "Scroll Up" arrow key to change "Disabled" to "Enabled", then press "Enter" to save. (Figure 2.4a: Controller Keys)

2. To change the address numbers touch each individual numerical field. A pop-up keypad, Figure 2.5: Keypad will appear each time a field is accessed.

3. Once all the addresses have been entered, touch the 'EXIT' button, Figure 2.5a: Exit and a pop-up warning window, Figure 2.6: Save Changes will appear to confirm the numerical entries:

Figure 2.5a: Exit

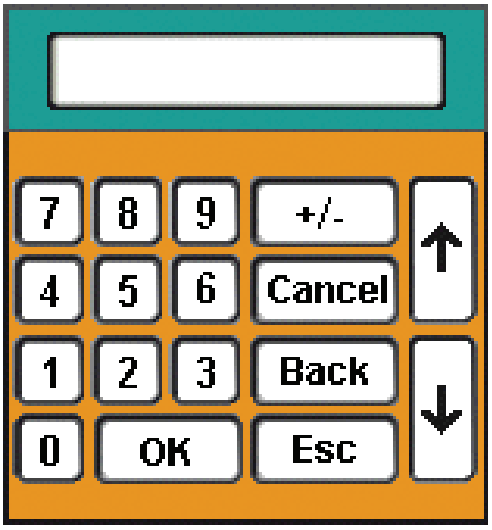


Figure 2.5: Keypad

4. Touch the 'Yes' or 'No' button to return to the Status Screen. Touch the 'Cancel' button to return and re-enter any numerical address errors.

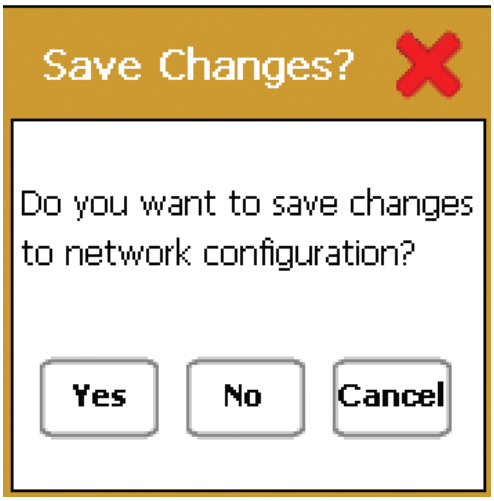


Figure 2.6: Save Changes

2.3 Startup and Logon

Start-up

When the PC is powered on, it will automatically start the Central Management™ service. No user interaction is required. Data logging and alarming sequences are handled by the Central Management™ service, which is always operating when the PC on.

Logon as Administrator

After a power outage, the PC will power up automatically starting the Operating System and the Central Management™ service. The user must logon with "conviron" ID.

Administrator Logon

The administrator logon is "conviron" with the password "CWxxxx" where xxxx is the work order of the Central Management™ system as printed on page (i) of the Central Management™ system Installation Manual. If this information is lost, please contact Conviron Client Services, with your Central Management™ system serial number (located on the Central Management™ system side panel). The "conviron" logo allows the user to run Central Management™ system which permits full access to the chambers and management of all chamber related information.

Configuration

Conviron provided hardware will be pre-configured to a site's existing chamber list (if known). Software installations will need to add chambers to the Central Management™ system list to enable communications with the Central Management™ system.

2.4 Starting and Quitting Central Management™

Your system has been preconfigured to automatically run Windows and the Central Management™ software whenever you start the computer.

Normally the Central Management™ Service is ALWAYS active, however the Central Management™ Operator Application can be started when required and closed when not needed.

For software updates and specific service tasks the Central Management™ Service may need to be stopped and restarted. Refer to Chapter 6 for details.

Starting the Central Management™ application

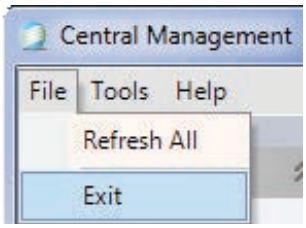
To start the Central Management™ application program:

- Double-click the Central Management™ icon Central Management™ will start.

Quitting Central Management™

There are two ways to quit Central Management™. Either

- From the "File" menu, choose "Exit". or



- Double-click the button in the top left corner of the Central Management™ program's window. Central Management™ will stop running.

2.5 Understanding the Central Management™ program window

Menu bar

The menu bar runs along the top of the window and provides access to all of the application's commands, Figure 2.7: Central Management™ Status Display.

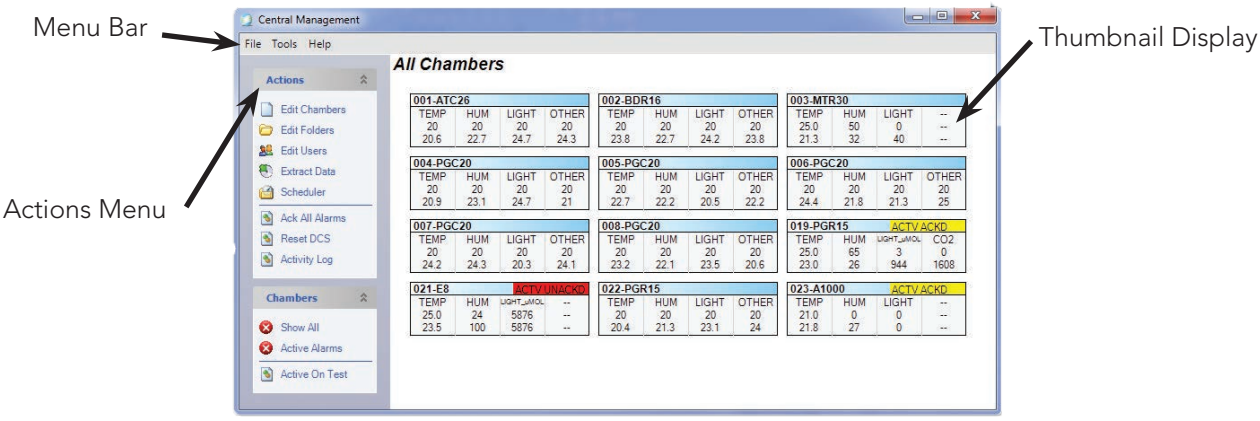


Figure 2.7: Central Management™ Status Display

Chamber status

The Chamber Status Thumbnails window displays the current status of each growth chamber currently connected to the network, Figure 2.7: Central Management™ Status Display. You organize chambers in "folders" and access them by clicking the Chambers List displayed on the right portion of the window. (See Chapter 3.0 Using Central Management™, Organizing chambers in folders, for directions on using folders.)

Thumbnail

Individual Thumbnails display the current status of all chambers connected to the network.

From a chamber's thumbnail you can read the chamber's zone selectors and alarm status. (See **Chapter 3.0 Using Central Management™, Understanding chamber status thumbnails** for more information about reading thumbnails.), Figure 2.8: Thumbnail Display.

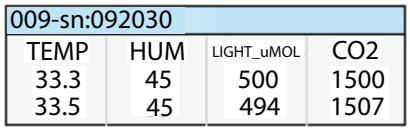
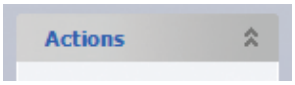


Figure 2.8:Thumbnail Display

Actions List

Actions comprises a list of the most used commands for working with Central Management™. If hidden, click on the roll-up button to reveal the entire menu.

Action List rolled up



Virtual Login window

Right-click on a chamber thumbnail display to activate the chamber menu, Figure 2.8a: Chamber menu.

Select "Virtual Chamber" to login and work with the chamber Controller. The display seen will be different depending on the Chamber Controller type (see **Sections 4.5, 4.12** for details).

2.6 Adding a Chamber to the Status Display

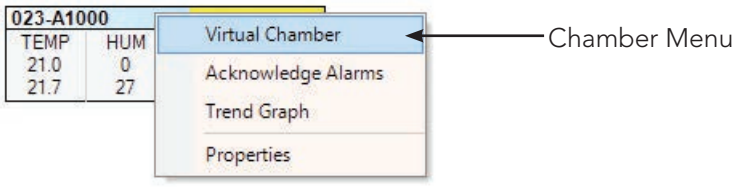
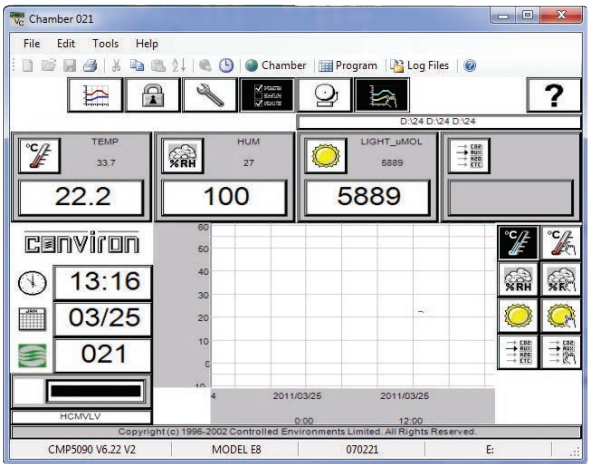


Figure 2.8:a Chamber Menu

CMP5000 Interface



CMP6000 Interface

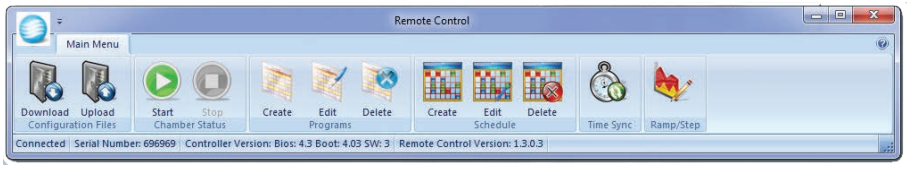


Figure 2.9: Virtual chamber displays

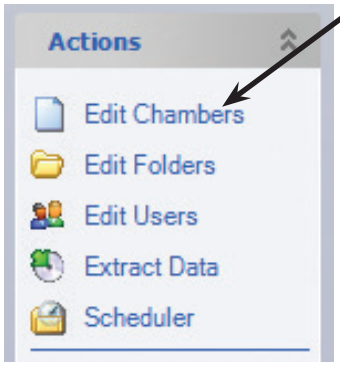
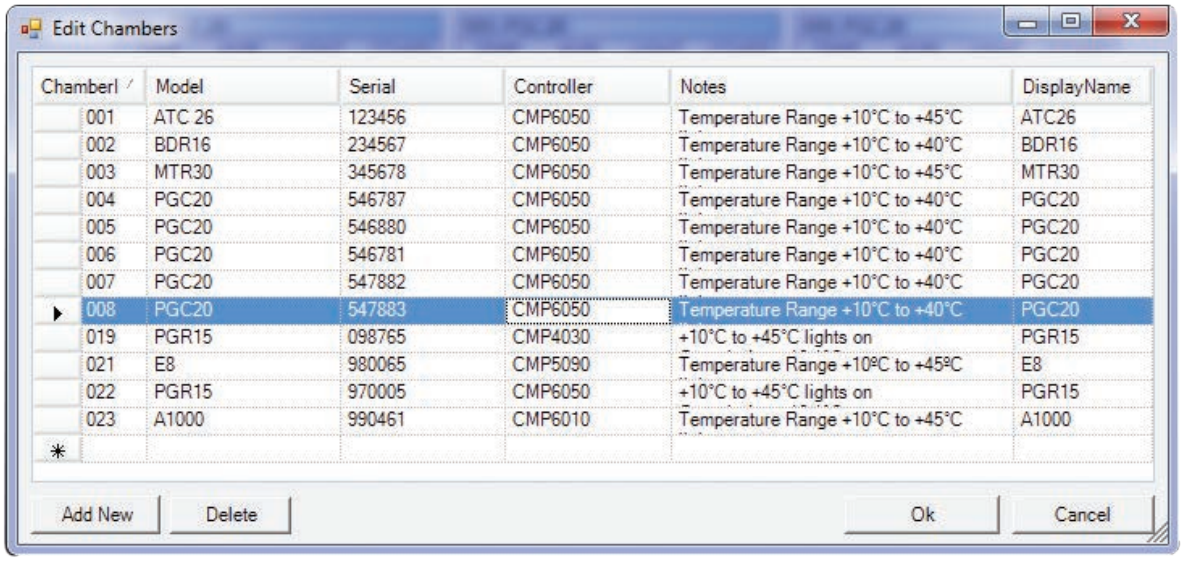


Figure 2.10: Edit chambers

1. From the Central Management™'s "Action Menu", choose "Edit Chambers". The "Edit Chambers" window will open.
2. To add a new chamber select "Add New".
3. Type the Chamber ID number as shown on the Chamber Controller, then tab to set Model Serial, Controller, Notes and Display Name.
4. Both the Chamber ID and the Controller entry is essential for Central Management™ to function properly with differing Conviron Controllers.
5. Enter the Controller type as: CMPxxxx where the x= the four digit numeric model of your Chamber.
6. To edit any record in the Edit Chambers window, select the entry and type in the new information Figure 2.11: Edit Chambers Dialog.

The Chamber specifications are especially useful in the notes area. Chamber ID and Controller are the only REQUIRED entries.



ChamberI	Model	Serial	Controller	Notes	DisplayName
001	ATC 26	123456	CMP6050	Temperature Range +10°C to +45°C	ATC26
002	BDR16	234567	CMP6050	Temperature Range +10°C to +40°C	BDR16
003	MTR30	345678	CMP6050	Temperature Range +10°C to +45°C	MTR30
004	PGC20	546787	CMP6050	Temperature Range +10°C to +40°C	PGC20
005	PGC20	546880	CMP6050	Temperature Range +10°C to +40°C	PGC20
006	PGC20	546781	CMP6050	Temperature Range +10°C to +40°C	PGC20
007	PGC20	547882	CMP6050	Temperature Range +10°C to +40°C	PGC20
008	PGC20	547883	CMP6050	Temperature Range +10°C to +40°C	PGC20
019	PGR15	098765	CMP4030	+10°C to +45°C lights on	PGR15
021	E8	980065	CMP5090	Temperature Range +10ºC to +45ºC	E8
022	PGR15	970005	CMP6050	+10°C to +45°C lights on	PGR15
023	A1000	990461	CMP6010	Temperature Range +10°C to +45°C	A1000

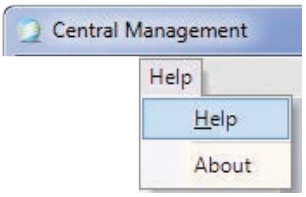
Figure 2.11: Edit Chambers Dialog

The Display Name Entry will be shown on the Thumbnail Display of both Web reports and Central Management™'s "dashboard". The Display Name can be 12 characters or less.

To remove a Chamber entry, click on the column in front of the Chamber ID. Once the row is selected, press the delete key on the keyboard.

2.7 Getting Online Help

Central Management™ includes a PDF (Adobe portable document format) copy of the Operators Manual that can be opened at anytime.



From the menu bar

To access online help from the menu bar

- From the Help menu, choose Help.

The online help table of contents appears.

From within a remote control session

To access online help from a Remote Control or Virtual Login.

- Click the button, or from the Help menu, choose Help.

The Help file will open to the table of contents.

2.8 Known Issues

- When installing Central Management™ software, ensure the default installation location is used, *C:\Program Files for 32 bit installations and C:\Program Files (x86) for 64 bit installations.* This will avoid a potential Central Management™ Service startup failure.
- Ensure the Windows Regional and Language settings are set to English Canada. This prevents serious Program Editor Spreadsheet errors with time and units.
- The "Edit User" window has "Username" and "Email" entries. Both must not be empty. If no Email address is provided, insert a blank space.

2.9 Arranging Windows

While working with Central Management™, you can arrange windows on the Central Management™ system desktop any way you want. Refer to Microsoft's Windows User's Guide for detailed instructions on moving, sizing, and arranging windows.

Minimizing windows

You can also save space on the desktop by shrinking open windows into icons or minimizing the window.

- Click to minimize the window to a taskbar button. To restore the minimized window to its previous size, click its taskbar button.

Maximizing windows

To maximize an icon into a window

- Click to maximize the window so it covers the full screen.

Arranging windows

You can re-arrange windows.

- After maximizing a window, click to restore the window to its previous size.

To learn more about using Windows, refer to the **Microsoft Windows Help and Support Center.** Microsoft includes a self-paced tutorial with Windows. To start the tutorial

From the Windows Start menu,

choose Help and Support

2.10 Typical Central Management™ screens

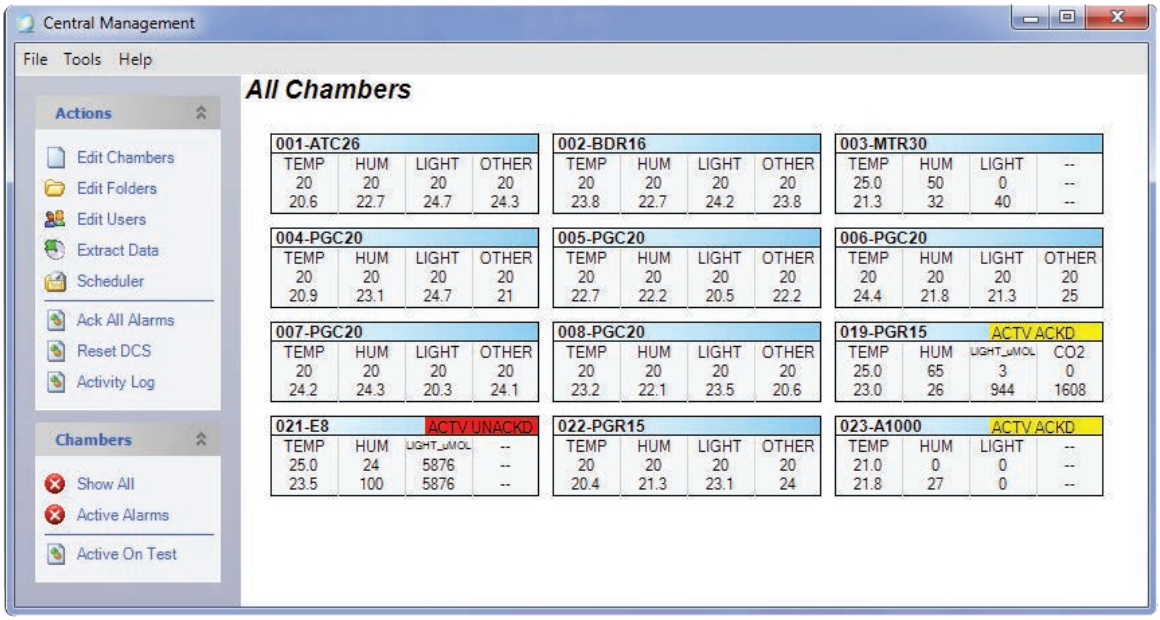


Figure 2.12: Central Management™

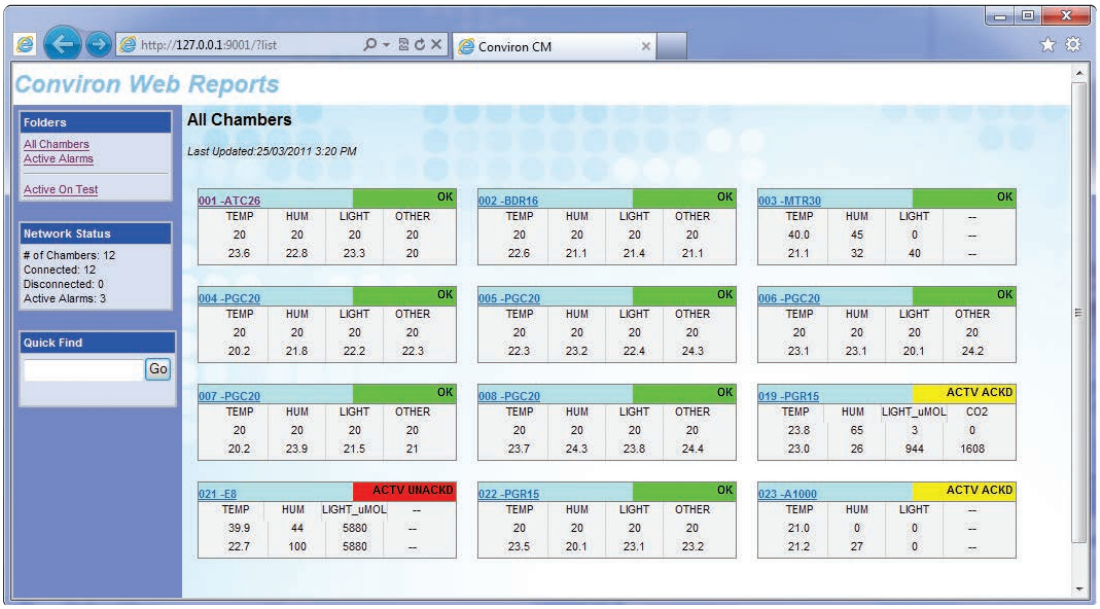


Figure 2.13: Web reports

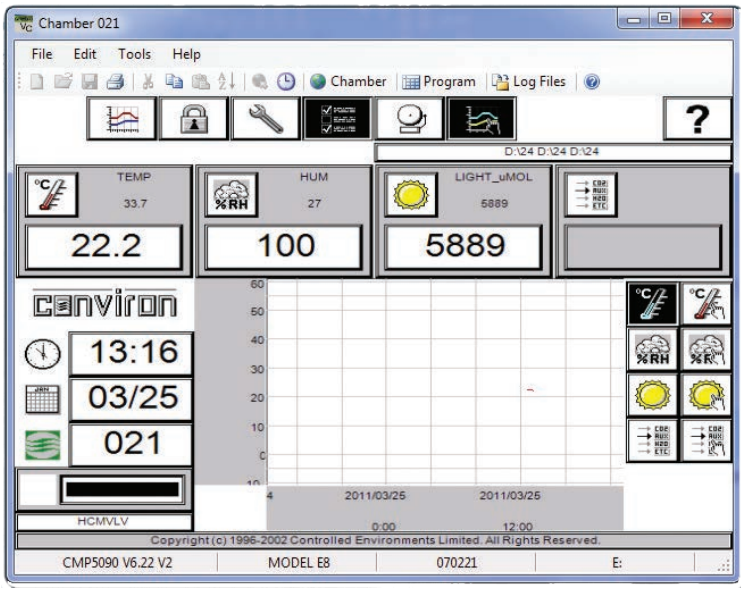
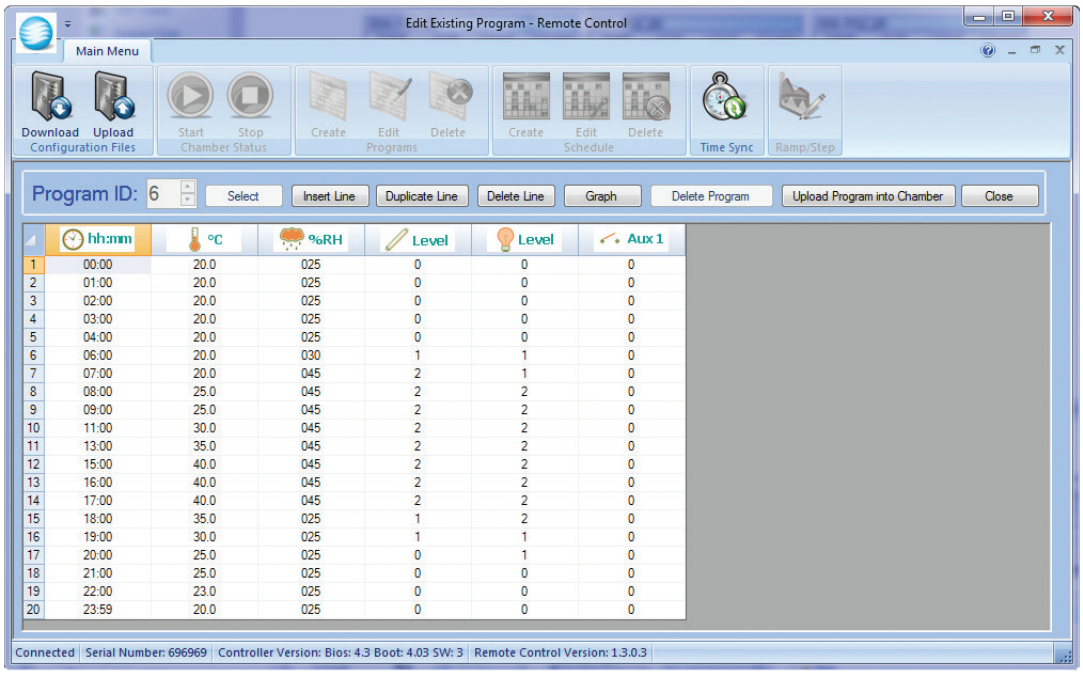


Figure 2.14: Virtual chamber (Remote Interface for CMP4000/5000 series Controllers)



	hh:mm	°C	%RH	Level	Level	Aux 1
1	00:00	20.0	025	0	0	0
2	01:00	20.0	025	0	0	0
3	02:00	20.0	025	0	0	0
4	03:00	20.0	025	0	0	0
5	04:00	20.0	025	0	0	0
6	06:00	20.0	030	1	1	0
7	07:00	20.0	045	2	1	0
8	08:00	25.0	045	2	2	0
9	09:00	25.0	045	2	2	0
10	11:00	30.0	045	2	2	0
11	13:00	35.0	045	2	2	0
12	15:00	40.0	045	2	2	0
13	16:00	40.0	045	2	2	0
14	17:00	40.0	045	2	2	0
15	18:00	35.0	025	1	2	0
16	19:00	30.0	025	1	1	0
17	20:00	25.0	025	0	1	0
18	21:00	25.0	025	0	0	0
19	22:00	23.0	025	0	0	0
20	23:59	20.0	025	0	0	0

Figure 2.15: Remote control (Remote Interface for CMP6000 series Controllers)

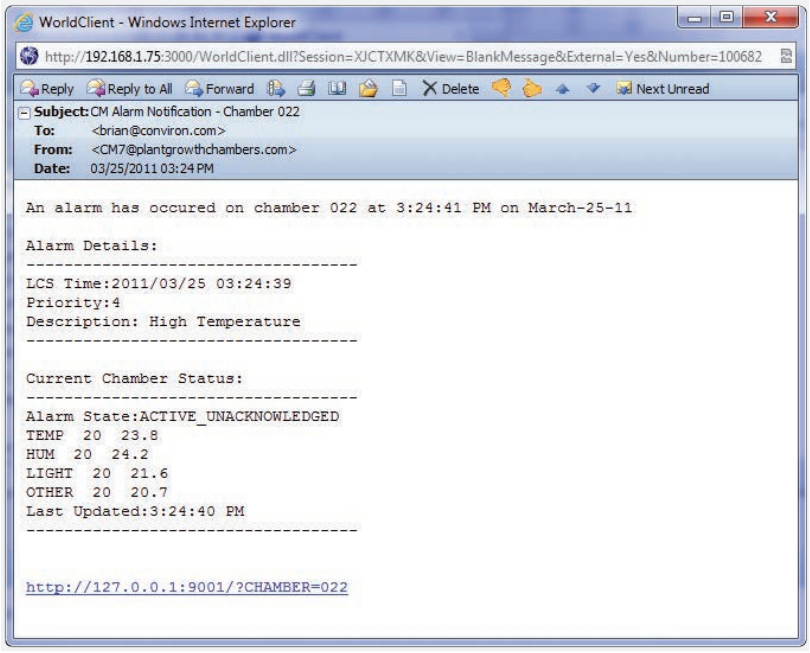


Figure 2.16: Email alert

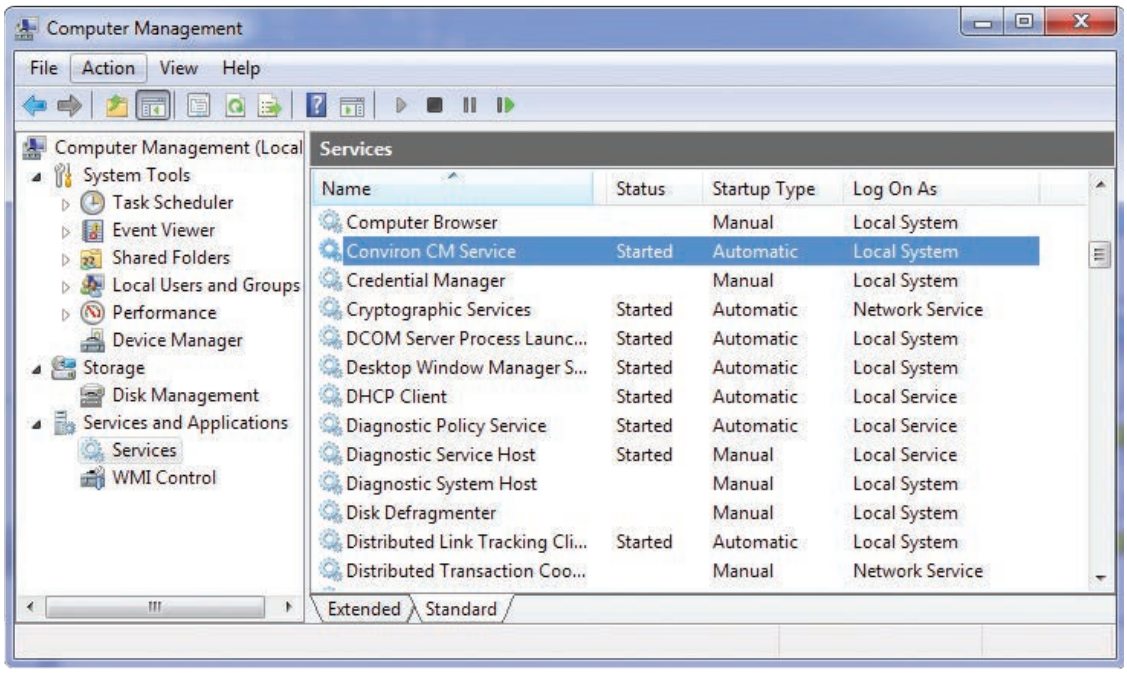


Figure 2.17: Central Management™ service

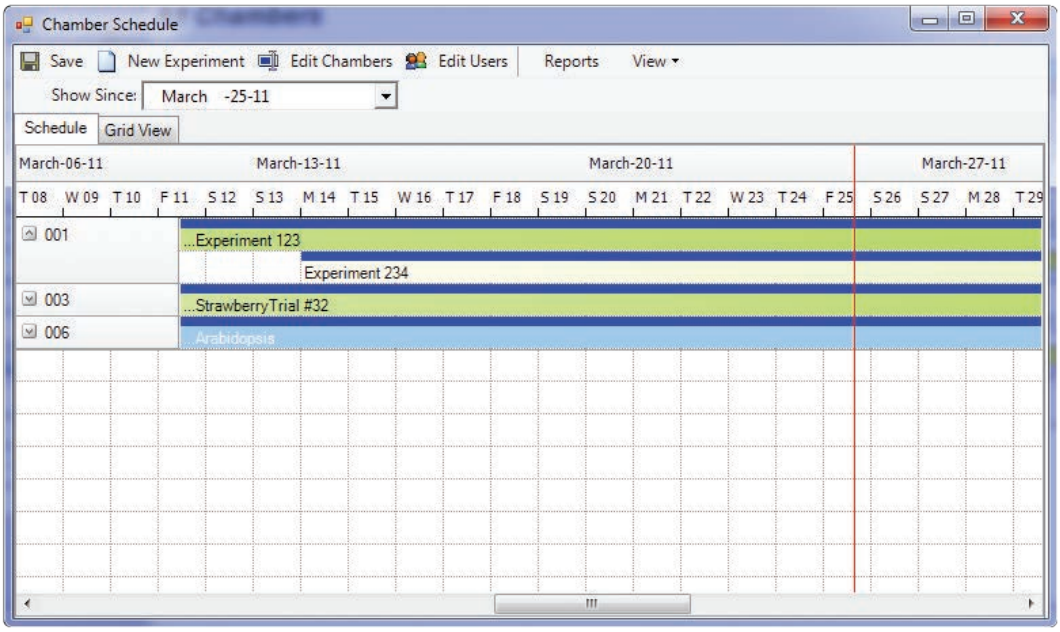


Figure 2.18: Experiment scheduler

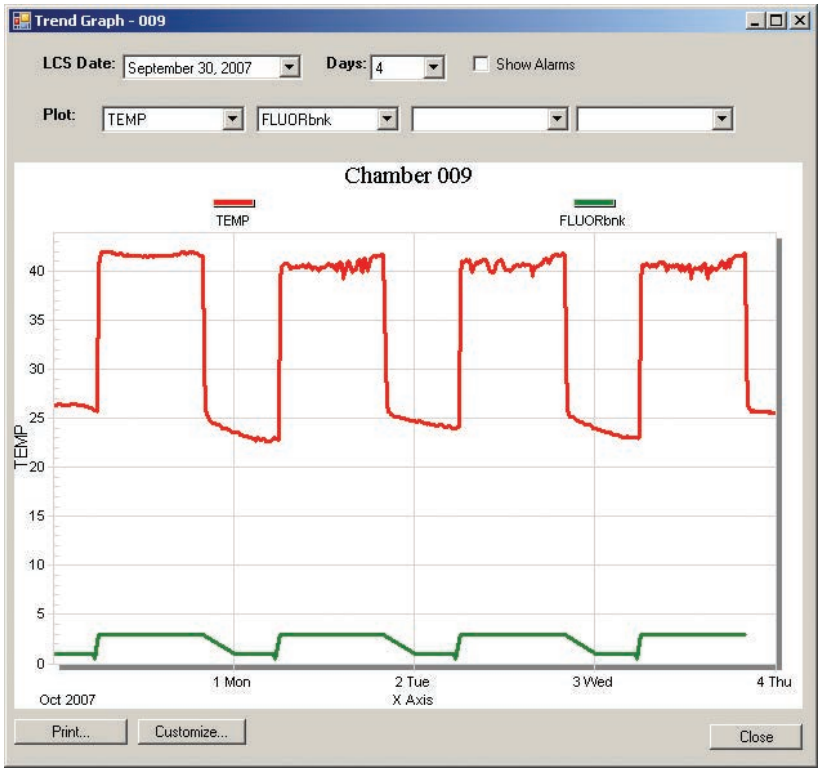


Figure 2.19: Trendgraph

3.0 USING CENTRAL MANAGEMENT™

Central Management™ provides the ability to work with alarm actions to ensure alerts are noticed effectively. Logged data can be opened in other applications such as spreadsheets and text editors.

In this chapter, you will learn how to:

- Understand all Menu Functions
- Add Chambers to the network
- Add Subscribers
- View Activity Logs
- Use Diagnostics
- Acknowledge / Respond to Alarms
- Schedule Experiments
- Extract Data or Alarms
- Export Alarm and Data to another application or file

All menu item functions are explained in this section. For detailed use and workflow suggestions, read chapter 4.0 Chamber Activities

3.1 Actions Panel

Edit chambers

Select Edit Chambers to Add/Remove a chamber or alter the key information about an existing chamber record, Figure 3.1.

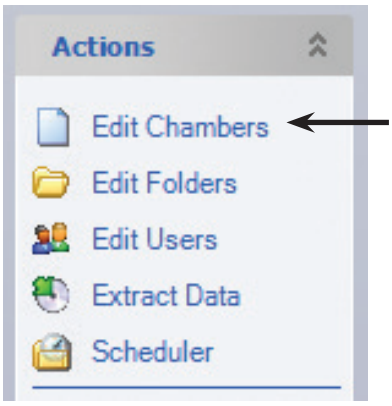


Figure 3.1: Actions menu

Add/edit

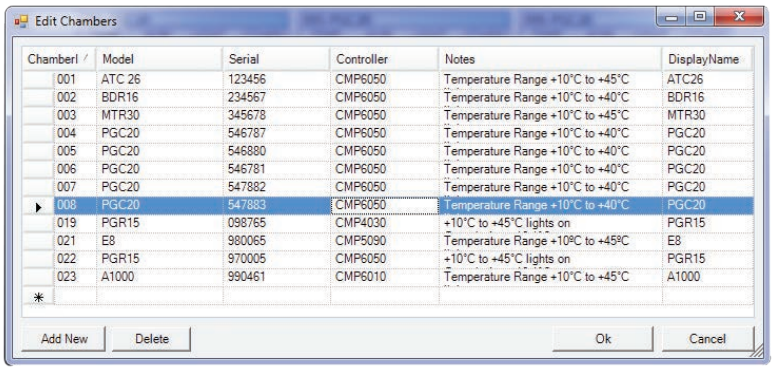


Figure 3.2: Edit Chambers

Select "Add New" and type in the Chamber ID number as set in the Chamber Controller, then tab to Model, Serial, Controller and Notes. The Controller entry is essential for Central Management™ to function properly with differing Conviron Controllers. Enter The Controller type as: CMPxxxx where the x= the four digit numeric model of your Chamber Controller, Figure 3.2: Edit Chambers.

Tip: The Chamber specifications are especially useful in the notes area. Chamber ID and Controller are the only REQUIRED entries.

Edit folders

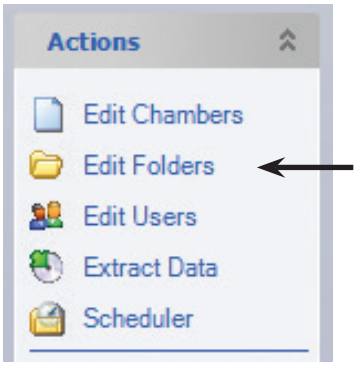


Figure 3.3: Edit Folders

Select "Edit Folders" from the actions menu to create and maintain custom chamber groups, Figure 3.3" Edit Folders.

Select "New Folder" then type your custom folder name. Custom folder names will be displayed in the lower section of the "Chambers" panel, Figure 3.5: Chambers Folders.

Next select a folder name, highlight chamber(s) and then click "Add" or "Remove" to update that folder's list, Figure 3.4 Folder Editing.

OK to exit and save changes.

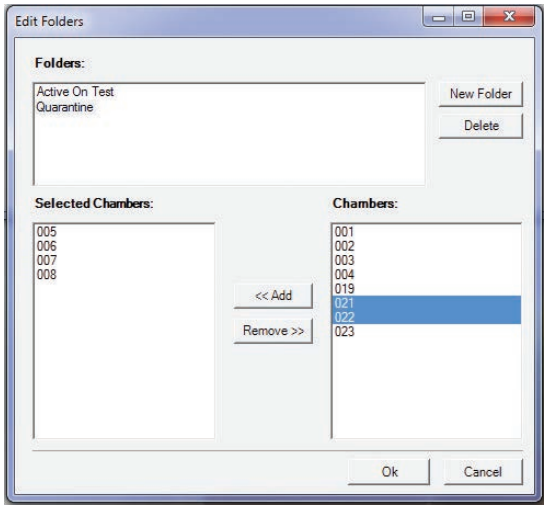


Figure 3.4: Folder Editing

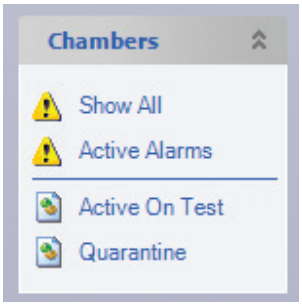


Figure 3.5: Chambers Folders

The first two categories are system defaults and may not be altered. Selecting "Show All" will display all configured chamber Thumbnail displays on the Status Display. Selecting "Active Alarms" will display on the Status Display, only the chambers that currently have active alarms.

User folders

The remaining categories are user defined and some examples of organization are shown here. A newly installed system will not have user defined entries, until they are defined, Figure 3.5 Chambers Folders.

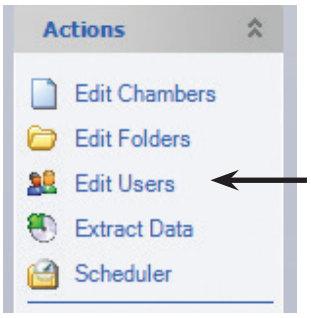


Figure 3.6: Actions
Edit Users

Edit users

Select "Edit Users" from the actions menu, Figure 3.6: Actions - Edit Users. Adding users to the Central Management™ allows the Central Management™ Administrator be able to alert the correct persons responsible for chamber activity, alarms and performance.

Usage reports and Email functions require the chambers to have users associated to them. The Email address is optional, but Email configuration must be completed for the Email Alerts to become functional, Figure 3.7: Edit Users. See sections 5.1 and 6.4 for additional email setup.

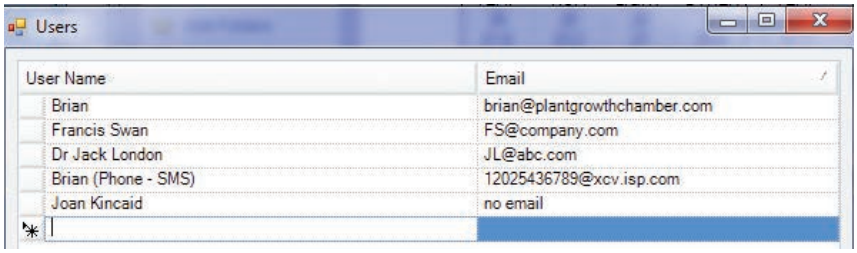
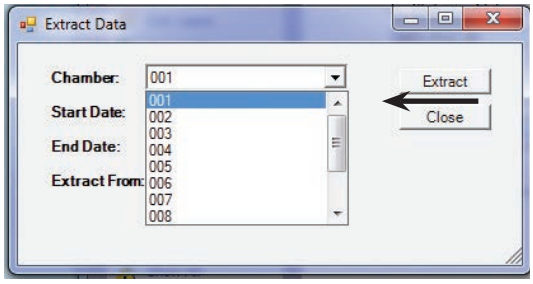


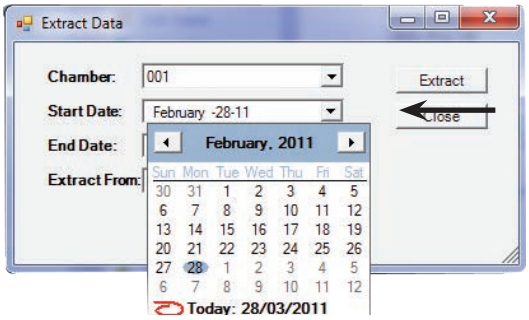
Figure 3.7: Edit Users

Extract data

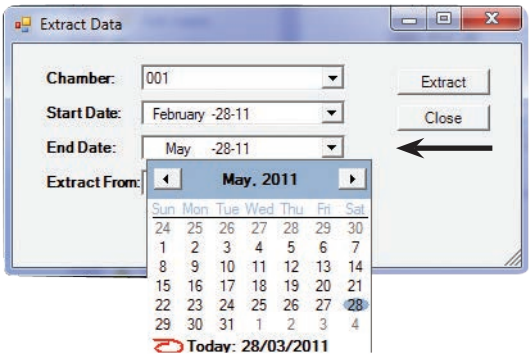
Extract data selection will allow you to choose where to copy the file and specify the Chamber ID, Start and End Dates and the data type, Alarms or Logs.

1. 

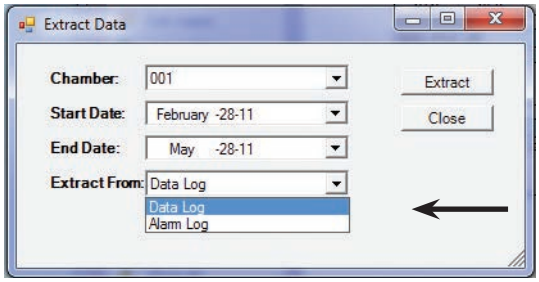
First,
Select the chamber

2. 

Second,
Select the start date.

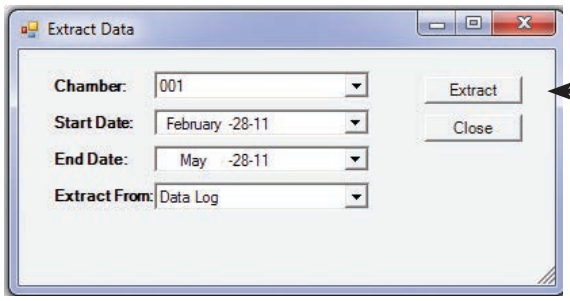
3. 

Third,
Select the end date.

4. 

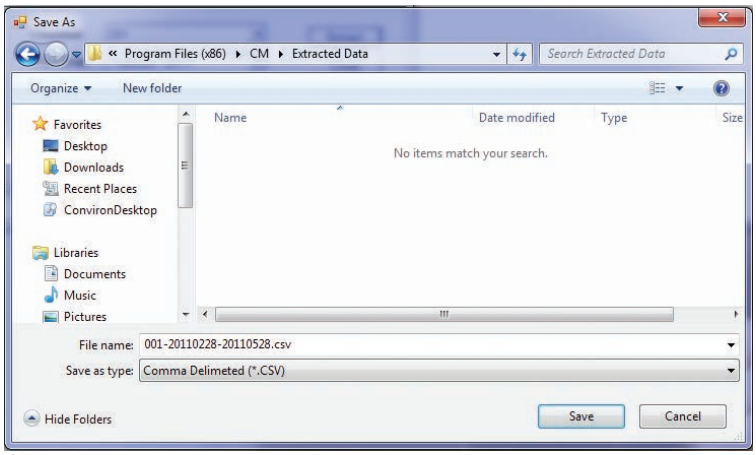
Fourth,
Select the data type,
alarm or log files.

5.



Fifth,
Select extract.

6.



The "Save As" dialog box permits you to save the extracted Data to any device or location connected to the Central Management™ computer, Figure 3.8: Data Extract Dialog.

Figure 3.8: Data Extract Dialog

Once you have chosen the location, type the filename and select one of the available formats, Excel Ready (CSV) or Tab delimited (Print Ready).

Scheduler

The Chamber Scheduler is a powerful Management interface to all Chamber information. Select "Scheduler" from the Action menu, Figure 3.9: Actions Menu.

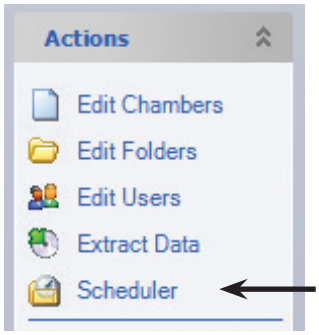


Figure 3.9: Actions Menu

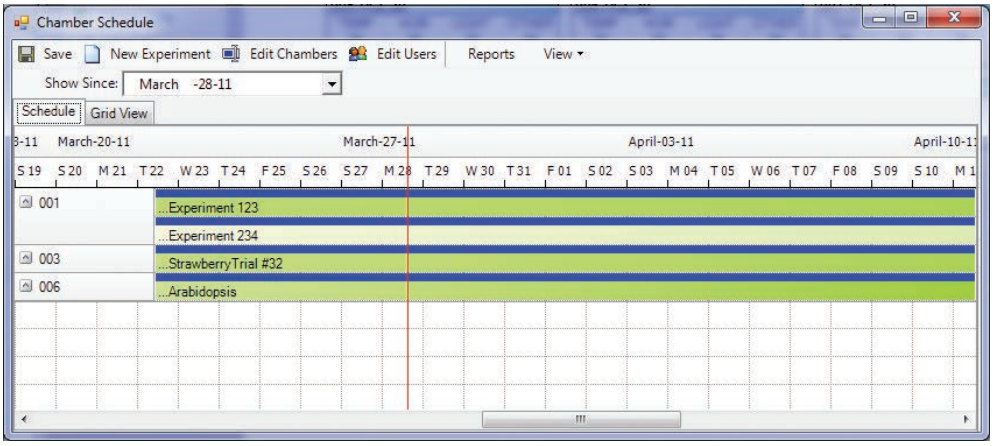


Figure 3.10: Scheduler Gantt View

Two views are available for the schedules. The Gantt (above) and the grid (below). Both views can be configured to suit your needs. The Tool bar has two items from the Actions menu for convenience. (Edit Chambers and Users), Figure 3.10: Scheduler Gantt View.

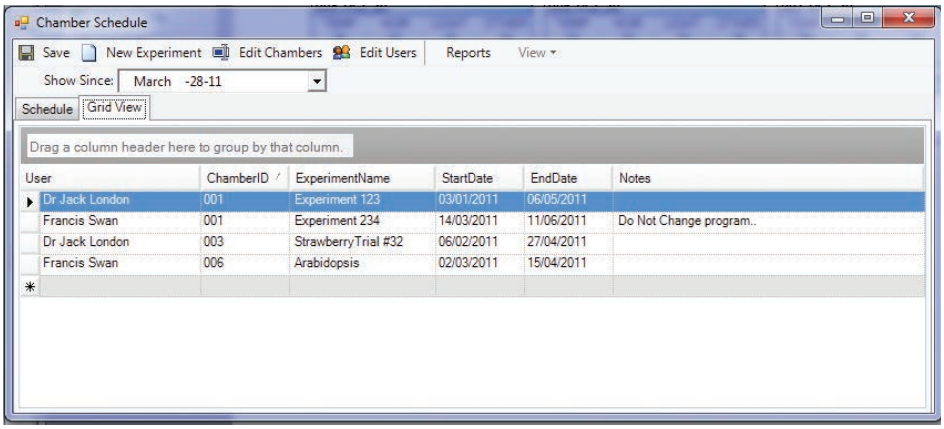


Figure 3.11: Scheduler Grid View

Experiments are more than records of Chamber usage. They document the User, Chamber and any informative notes that are pertinent to the scheduled experiment. The start and stop dates assist the Administrator in determining the duration of all experiments (reports are by Chamber or by User). Detailed instructions are found in chapter 4.0 Chamber Activities, Figure 3.11: Scheduler Grid View.

Ack all alarms

This Global command will acknowledge all alarms for all Chambers on the network. Acknowledging alarms indicates that you have "seen" the alarm condition and subsequent corrective action, if any, is your responsibility.

Acknowledging active alarms stops the local audible alarm and email notification as well as changing the state of the chamber display icons of the System tray, Thumbnail display and Chambers panel, Figure 3.12: Ack All Alarms.

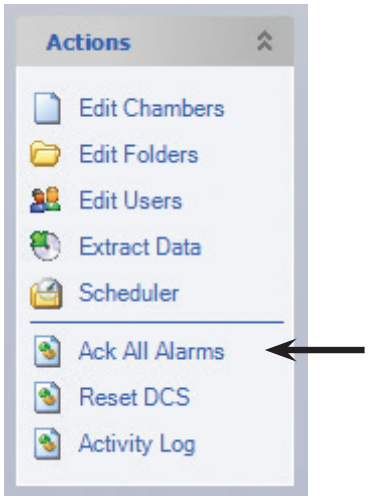


Figure 3.12: Ack All Alarms

Reset DCS

Selecting "Reset DCS" will deactivate the relay of the Conviron Alarm Contacts box, during an Alarm condition. It will set the N.C. (normally closed) contacts, back to a closed position and the Green LED (normal) will be illuminated. This feature is provided for backward compatibility with autodialer settings used in CCS versions 4, 5 and 6. This function would only be needed, when the "DCS reset interval" is set to 0 (disabled) or during the Dry Contact System reset interval, Figure 3.13: DCS Reset.

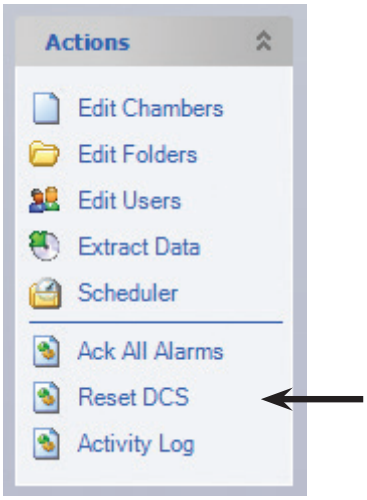


Figure 3.13: DCS reset

Activity log

Select Activity Log, from the Action Menu, to review all Central Management™ related network events, Figure 3.14: Activity Log.

Remote Chamber Connections, Email Alarms and tests, Central Management™ Service status, Dry Contact System Relay Status, Sanity Status and Chamber Communications are all examples of the message types stored in the Activity Log. The files are located in the *C:\Program Files\CM\ActivityLogs for 32 bit installations and C:\Program Files (x86)\CM\ActivityLogs for 64 bit installations* directory. The files are date coded for mm/dd/yy.log

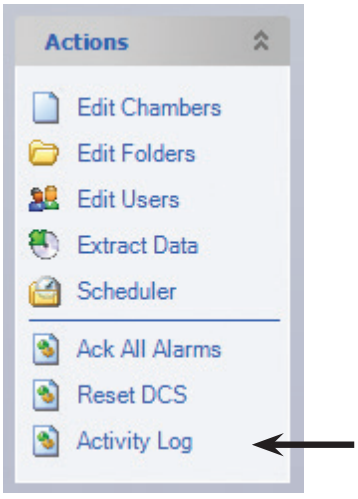


Figure 3.14: Activity log

Alarm Icons

Three types of Icons precede the log message to inform you of the urgency of the log entry. These icons also appear in the Chambers panel, folders list, indicating the alarm status of the individual folder groups.

Information - Confirmation messages i.e.-login to chamber. Inactive Acknowledged (or no alarm) -**IA**

Alert - Unexpected conditions, not critical i.e.-chamber in database trying to login. Inactive Unacknowledged - **IU**

Error - More serious conditions, response needed i.e.-Error sending email alerts. Active Unacknowledged - **AU**

3.2 Chambers Panel

The "Chambers Panel" controls display of the chamber thumbnails in the Central Management™ Network. Select the grouping you want to display on the Chamber Status thumbnail Window, Figure 3.15: Chambers panel.

All the remaining categories are user defined. Icons indicate the current alarm status of each group. The meaning of each icon is shown in **Alarm Icons** above.

The letter abbreviations correspond to the Chamber Controllers designations.

Show all

"Show all" displays all chambers active or not

Active alarms

"Active alarms" shows only chambers with active alarms

User folders

The entries of the "Chambers Panel" below the black line are User added "Folders", used to organize the Chambers in a logical manner that is appropriate to the User's needs.

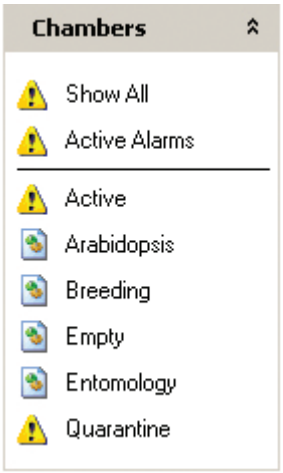


Figure 3.15: Chambers Panel

3.3 Tools Menu

Diagnostics

DCS Test

This diagnostic tool can be used to verify the DCS (Dry Contact System) operation and to ensure the alarm contacts correctly signal the Autodialer or Central Monitoring Station, Figure 3.16: Diagnostics.

Send Test Email

Verify the email configuration is configured correctly by sending a test Email to any valid Email address. Setting for SMTP server and Email configuration must be completed in the "Setting" window prior to testing, Figure 3.16: Diagnostics.

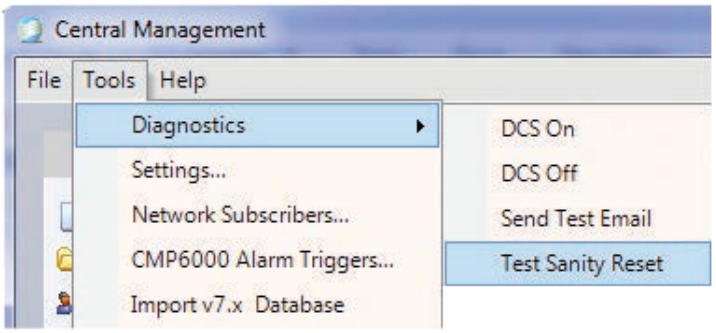


Figure 3.16: Diagnostics

Test Sanity Reset

Select Test Sanity Reset to be certain that the Watchdog Card is working properly. Sanity reset cannot be stopped once YES is selected, Figure 3.17: Sanity Warning. After a time delay of about 40 seconds the system is rebooted. The Central Management™ system will automatically restart and run the necessary services to monitor the Chambers.

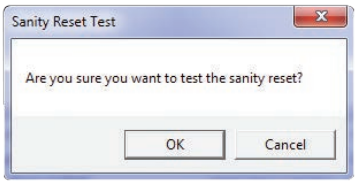


Figure 3.17: Sanity Warning

If Sanity reset fails, refer to **Chapter 6.0 System Maintenance and Troubleshooting** for Sanity Card settings and troubleshooting hints

Settings

Select "Tools" then "Settings" to configure the Central Management™ options. See Chapter 6.0 System Maintenance and Troubleshooting for details on each setting, Figure 3.18: Application Settings.

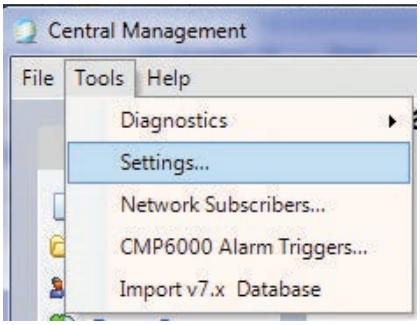


Figure 3.18: Application Settings

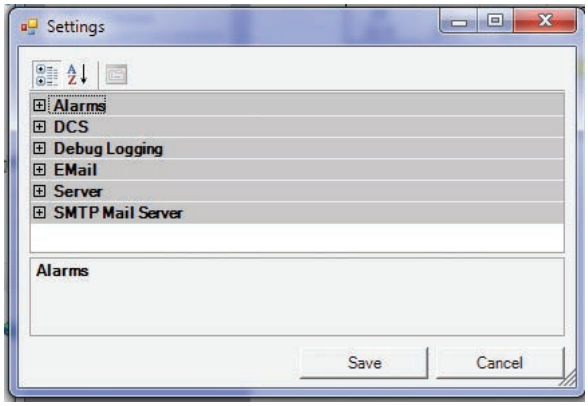


Figure 3.19: Settings Categories

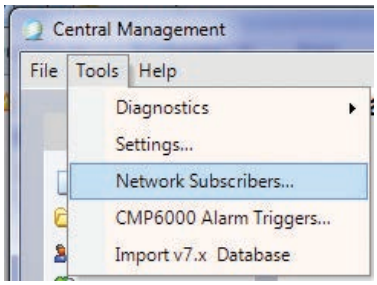


Figure 3.20: Network Subscribers

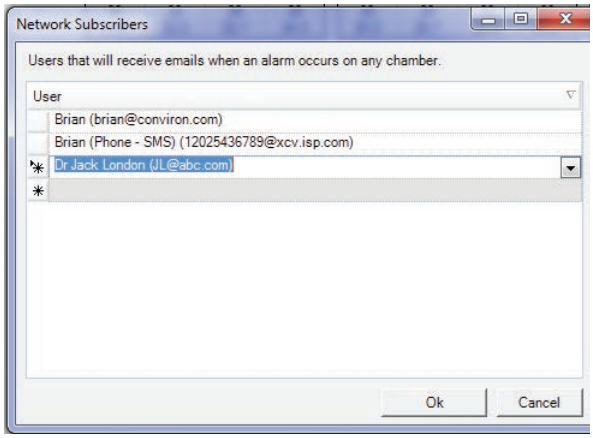


Figure 3.21: Network email subscribers

The default settings for the Central Management™ system are documented in chapter 6.0 System Maintenance and Troubleshooting, however most settings never need to be altered. Email, Mail Server and Web Server setting have user site specific addresses that need to be provided by the on site IT administrator. Please refer them to **Chapter 6.0 System Maintenance and Troubleshooting,** Figure 3.19: Settings Categories.

Network Subscribers

Network Subscribers are typically system administrators. All Chamber alarm conditions are sent to the Network Subscribers. Regular Subscribers are added to the individual "chamber property" Subscriber lists. Users appearing in both lists will receive only one email alarm notification, Figure 3.20: Network Subscribers.

Users can be added to the Network Subscribers list by clicking on the drop-down list box and selecting one or more of the displayed names. If this list is empty, you must first add users with the "Edit Users" selection of the Actions menu, Figure 3.21: Network Email Subscribers.

Add as many users as needed.

Deleting an existing Network Subscriber is easily done by selecting the column preceding the name entry and pressing the delete key. This list can be empty.

CMP6000 Alarm Triggers

Select Tools, then "CMP6000 Alarm Triggers" to set the default actions for all CMP6000 series Chamber Controllers, Figure 3.22: CMP6000 Alarm Triggers.

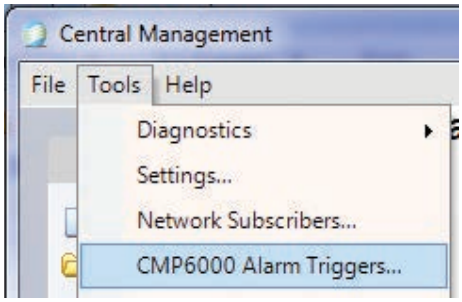


Figure 3.22: CMP6000 Alarm Triggers

Global settings

The default Alarm Triggers settings are the Global Alarm action rules applied to every CMP6000 Chamber Controller, Figure 3.24: Default Alarm Triggers.

Individual settings on a Chamber-by-Chamber basis can be set by a similar page in the Chambers properties menu of each Chamber Thumbnail display. See the following section for details.

Chamber settings

To change a specific Chamber's Alarm actions; Find the Chamber to edit in the Central Management™ 's Main Status display window and right-click on the Thumbnail display to bring up the Chamber menu. Select "Properties", Figure 3.23: Chamber Properties.

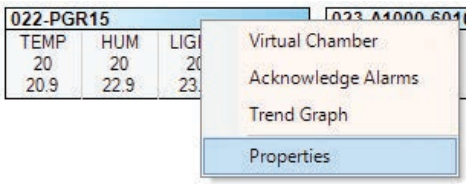


Figure 3.23: Chamber Properties

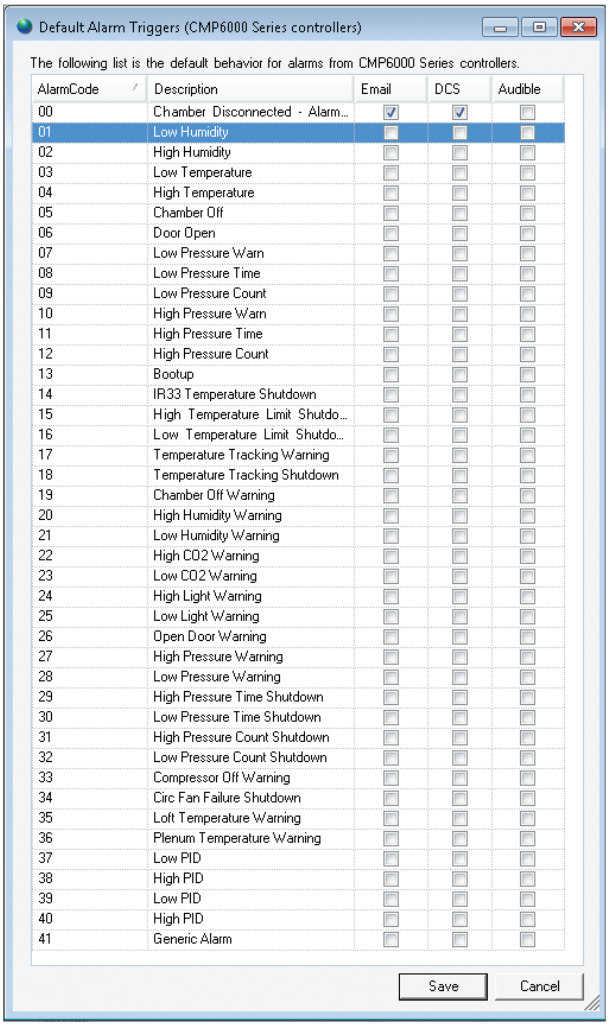


Figure 3.24: Default Alarm Triggers

Then select the Alarm Tab. On an individual alarm, add or remove the check mark (P) to change the default actions for this chamber.

The settings shown in Figure 3.25: Chamber Alarm Settings, are the alarm action rules applied to Chamber 001 a CMP6000 Chamber Controller.

The settings that are grayed out are the Global defaults that are currently applied. Overriding a Default Alarm action will add a check mark the "Custom" box for the row associated with the setting you have altered.

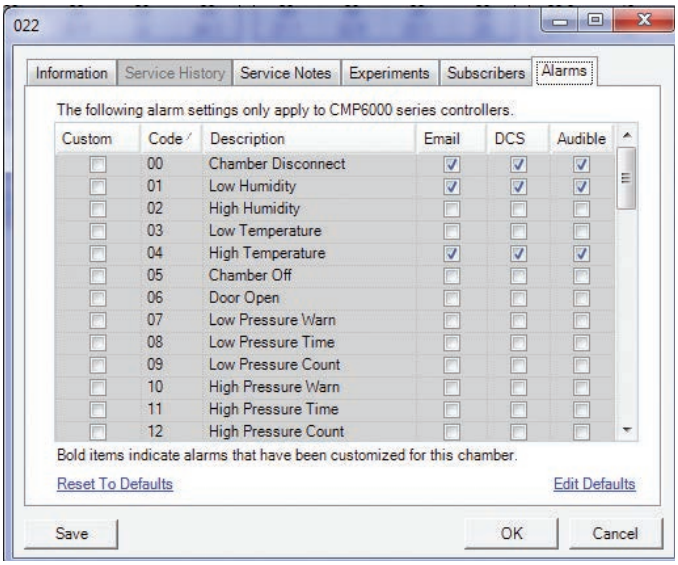


Figure 3.25: Chamber Alarm Settings

Each setting can be enabled (✓) or disabled (blank). "Reset to Defaults" will set this chamber to the "Default Alarm Triggers" settings. "Edit Defaults" will open the "Default Alarm Triggers" Global settings for you to make changes that will effect all chambers.

Clicking "OK", will accept and activate the settings, "Cancel" will exit without saving changes.

3.4 File Menu

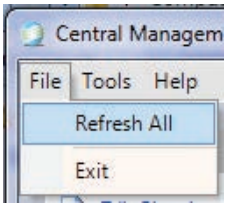


Figure 3.26: File Refresh

Refresh all

Clicking on, File "Refresh All" menu choice will force a Thumbnail display refresh, Figure 3.26: File Refresh.

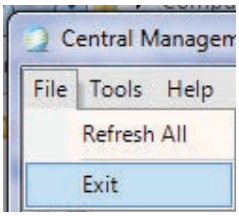


Figure 3.27: Exit

Exit

Exit will close Central Management™ without further dialog, Figure 3.27: Exit.

3.5 Help Menu

Help

Selecting "Help" will open a PDF copy of the Central Management™ Operators Manual, Figure 3.28: Help. The PDF file *C:\Program Files\CM\Manuals\CMOperatorsManual.pdf for 32 bit installations and C:\Program Files (x86)\CM\Manuals\CMOperatorsManual.pdf for 64 bit installations file* can be copied to another PC and used for reference. It is not printable.

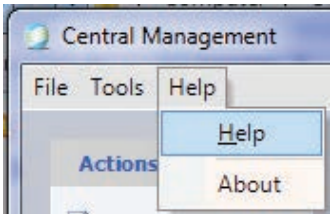


Figure 3.28: Help

About

Selecting "About" will show the technical and legal details of Central Management™ software, Figure 3.29a: About and 3.29b: Technical and License Details

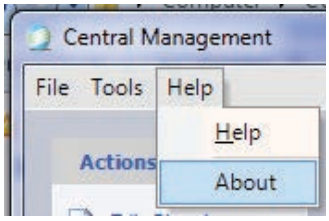


Figure 3.29a: About

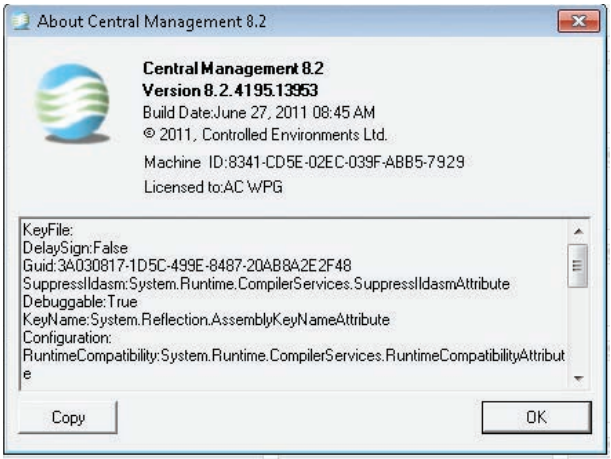


Figure 3.29b: Technical and License Details

3.6 Chamber menu Properties

Right-Click on a Chamber's Thumbnail display, to open the Thumbnail menu.

Select "Properties" to view the chamber's information, Figure 3.30: Chamber Menu.

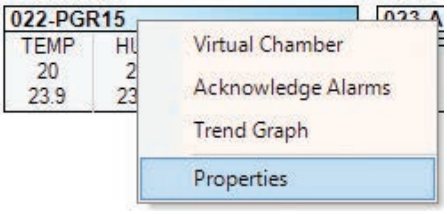


Figure 3.30: Chamber Menu

Information

Select the TAB for the category to view or modify. The Information tab is displayed by default. All chamber information entered by the "Edit Chambers" window is displayed for the selected chamber, Figure 3.31: Chamber Information. Legacy chamber Controllers (CMP4000 and CMP5000) will show the Alarms tab greyed-out, as this feature is exclusive to the CMP6000 Controllers.

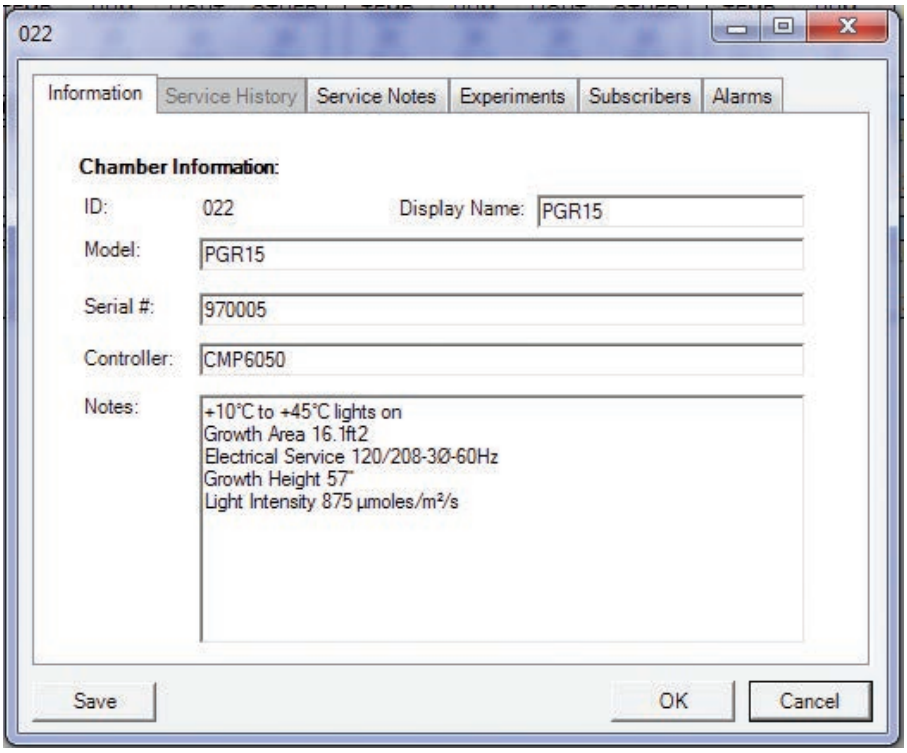


Figure 3.31: Chamber Information

Service history

The Service History shows the current operating history of control devices in the selected chamber. Each chamber's list will be different, Figure 3.32: Service History. This tab will be greyed-out for the CMP6000 Controllers.

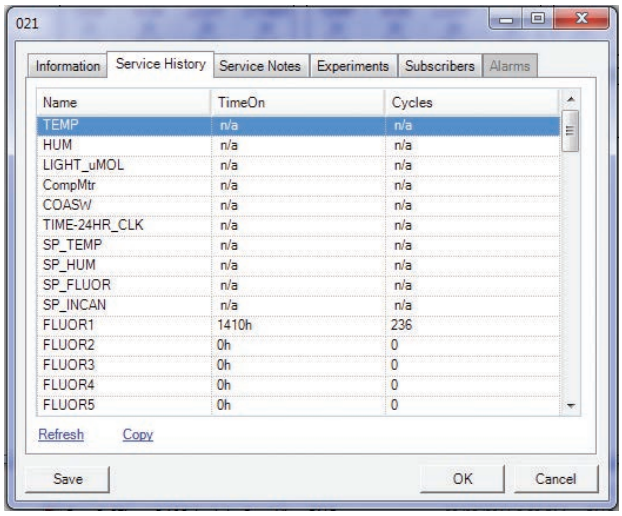


Figure 3.32: Service History

Items prefixed with "SP" are set-points and do not have a recorded history. Selecting "Refresh" will get the current values from the chamber. "Copy" will add the Service History onto the Windows clipboard for easy pasting into reports. Service History is also available in the Web Reports.

Service notes

Service Notes can contain any useful information, such as; Maintenance, Operations journal, problem log or part replacement schedules, Figure 3.33: Service Notes.

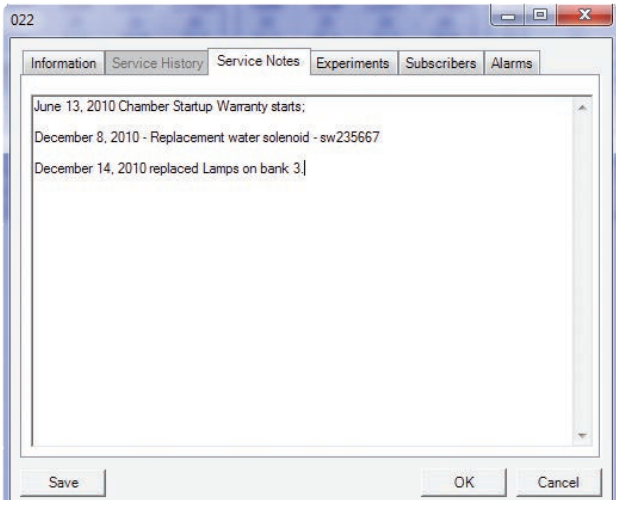


Figure 3.33: Service Notes

Experiments

Experiments are more than records of chamber usage. They can document the User or any informative notes that are pertinent to the scheduled experiment. The start and stop dates assist the Manager to determine the duration of all experiments. The Scheduler can print reports by Chamber or by User, Figure 3.34: Experiment Schedule.

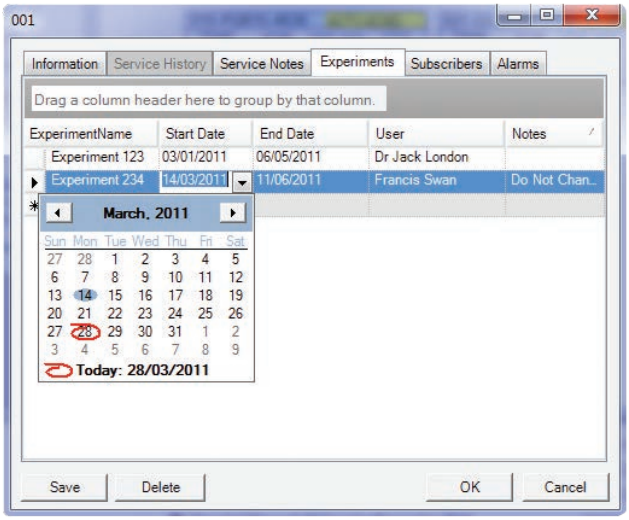


Figure 3.34: Experiment Schedule

Subscribers

Click on the small black triangle to display the current user list. You can only add current Users to the subscriber list. To add new or edit users, see the "Edit User" topic, Figure 3.35: Subscribers.

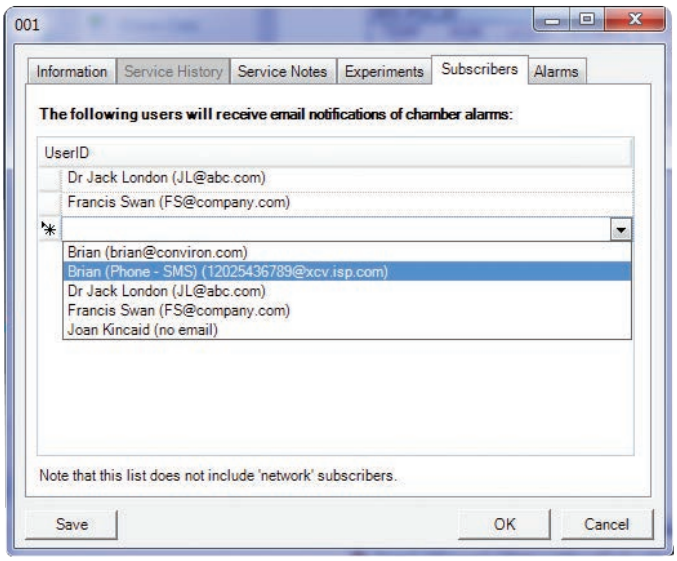


Figure 3.35: Subscribers

Trend Graph

Right-Click on a Chamber's Thumbnail display to open the Thumbnail menu. Select "Trend Graph" to plot the Chamber's information, Figure 3.36: Chamber Menu.

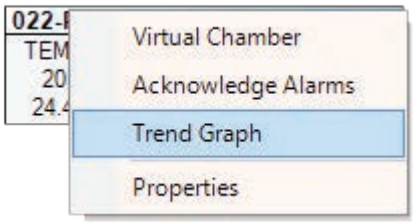


Figure 3.36: Chamber Menu

Trend Graph will display up to 4 plots of logged data from a Chamber. Up to 365 days in sequence may be shown on one plot. Additionally Chamber Alarm impulses may be plotted on the graph, Figure 3.37: Trendgraph.

Legacy chambers may have a varied selection of logged data and logging frequency. That option is set at the Chamber "Options Screen". Note that CMP6000 Controllers have a fixed logging frequency (18 seconds).

Full graph customizing and printing menus are available by selecting "Print" or "Customize"

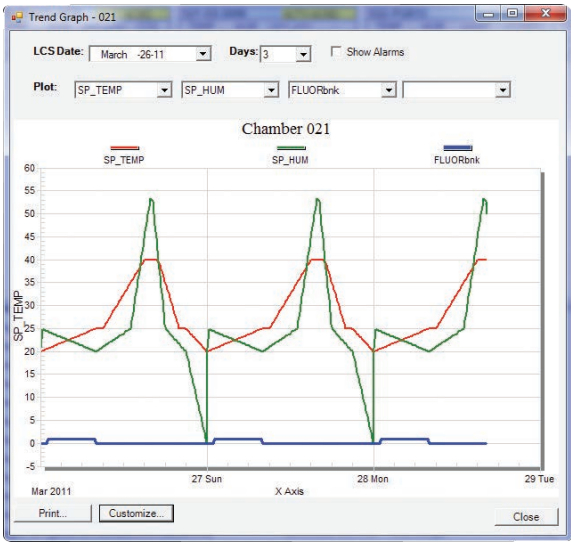


Figure 3.37: Trendgraph

Acknowledge alarms

Right-Click on the Thumbnail display of the alarming chamber, then select Acknowledge Alarms, Figure 3.38: Acknowledge Alarms.

Acknowledging alarms indicates to the system that you have "seen" the alarm condition and subsequent action is now your responsibility. Acknowledging stops the local audible alarm and email notification as well as changing the state of the chamber display icons of the System tray, Thumbnail display and Chambers panel. This is a chamber specific command that will only acknowledge alarms at the selected chamber.

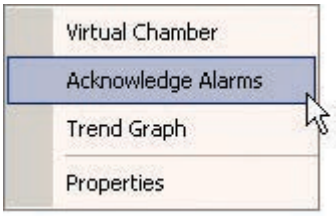


Figure 3.38: Acknowledge Alarms

See **Chapter 4.0 Chamber Activities** for details on responding to Alarms.

3.7 File locations

Files are stored on the local hard drive in different locations since version 7.5 of the Central Management™ systems. Both file locations are similar in structure and differ only in their "root" location, Figure 3.39: File Locations. With a Central Management™ system the files are located as follows: (xxx is Chamber ID).

System files for application
- *C:\Program Files (x86)\CM*

Application activity log files
- *C:\Program Files (x86)\CM\ActivityLogs*

Application debugging* log files (* not active by default)
- *C:\Program Files (x86)\CM\Applogs*

Log and Alarm files via Central Management™
- *C:\Program Files (x86)\CM\Chambers\xxx*

Log, Alarm and Program Files via Virtual Chamber
- *C:\Program Files (x86)\CM\Sites\Local network\xxx\Alarmlog*
- *C:\Program Files (x86)\CM\Sites\Local network\xxx\Datalog*
- *C:\Program Files (x86)\CM\Sites\Local network\xxx Programs*

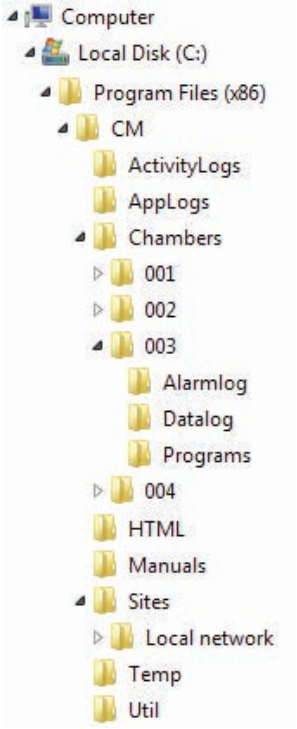


Figure 3.39: File Locations

The current 64 bit Windows installation is shown. A 32 bit system uses a similar path , but without "(x86)

Do not edit "CP4" or "CCF" files!

Under the Sites directory is the default site name "Local Network". Central Management™ automatically creates (as needed) directories for Chamber Numbers, AlarmLog, DataLog and Programs. All files are text based and readable, with the exception of .CCF configuration + .CP4 program files. These are raw Controller Files.

This page applies to the legacy CMP4000 and 5000 Controller based chambers. The CMP6000 based chambers save configuration files (xxxx. CCF) by default to the "My Documents folder". You can save files to that location or add them to the existing logical CM folder structure.

PGM files are readable and editable versions of the CP4 files. Log and Alarm files are not intentionally duplicated. If Virtual Chamber is used to download Log and Alarm files from the Flash drive of a Chamber (optional storage) these files are stored in:

CM\Sites\Local network\xxx

The file data is the same, but the latter files are branded by Central Management™, with received time and date, automatically storing logs in the default location:

CM\Chambers\xxx

Virtual Chamber

Virtual Chamber is used to communicate with the Chamber's Controller. Many user level functions can be performed from this interface remotely.

Right-Click on the Chamber Thumbnail Display and Choose "Virtual Chamber", Figure 3.40: Virtual Chamber.

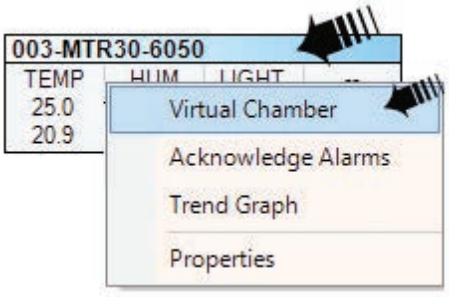


Figure 3.40: Chamber Menu

Two distinctly different User interfaces are provided depending on the Controller type. CMP5000 and CMP4000 series Controllers use a "Virtual Chamber" interface, Figure 3.41: Virtual Chamber. The CMP6050 Controller uses the "Remote Control" interface, Figure 3.42: Remote Control.

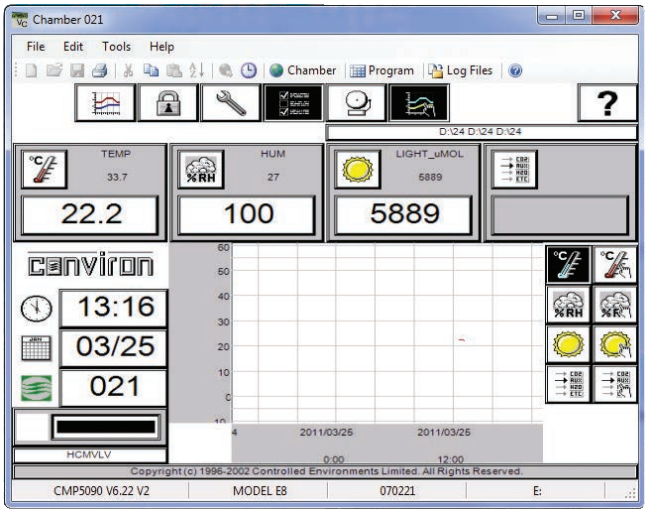


Figure 3.41: Virtual Chamber

Both programs use the mouse and keyboard to make icon selections and input information. The program editors have "cut and paste" editing, file import and export. Refer to **Chapter 4.0 Chamber Activities** for detailed instructions.

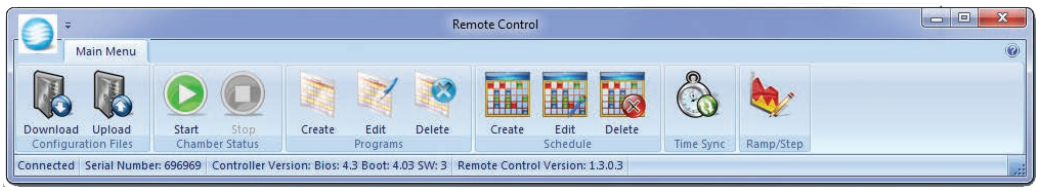


Figure 3.42:Remote Control

4.0 CHAMBER ACTIVITIES

The Chamber Activities outlines the necessary day to day activities in a work flow format to aid the Administrator in using the software effectively.

In this chapter, you will learn how to

- Work with User Types and Security
- Setup Alarm Priorities, Procedures and Actions
- Plan with Experiment Scheduler
- Operate Remote Chamber software (Virtual Chamber and Remote Control)

4.1 User Types and Security Roles

Administrator

The Administrator has full access to the Central Management™ PC and can Edit Chamber Lists, Users, Experiments, responds to alarm conditions, update service logs and print chamber usage reports. They can work at the Central Management™ console or via Remote Desktop access. The Administrator typically receives global email alerts. Other users can be selected to receive global email alerts - there is no restriction on the number or type of user to be alerted. Two additional Security "levels" are provided - "Local" and "Remote". The Windows and Chamber logon securities protect against unauthorized changes.

Local Network User

These Users may or may not have access to the Central Management™ PC as determined by the Administrator. From any network connected PC, they can use a Web Browser to connect to Central Management™. From a Web Browser, Web Reports are presented showing a thumbnail display for all chambers. Users can download alarm and data files, view service history, receive email alarm alerts on a chamber-by-chamber basis. This requires low security, as no changes can be made - that is, it is a view-only mode.

Remote Users

Via the Internet, all or part of any of the above User Types can be enabled, as determined by the local IT security and firewall configuration rules.

Acknowledging, responding to and correcting alarm conditions can prevent more serious problems. Alarm priorities are set first in the chambers' Alarms screen for CMP4000 and CMP5000 Controllers. Individual parameters can be given priorities in the range of 1-99. See the CMP5090 User Guide for details. Central Management™ software has an Alarm actions setting for each CMP6000 chamber to enable or disable the alarm actions for each alarm condition Reference: (Section 4.2 Alarm Actions)

4.2 Alarm Actions

Central Management™ responds very specifically to three ranges of alarms for the CMP4000 and CMP5000 chambers and three client selectable actions for the CMP6000 chambers.

Above Priority 40

No Central Management™ response, alarm message is displayed and logged.

Priority 31-40

Audible alarm from Central Management™ PC

Priority 21-30

Email alert + Audible alarm

Priority 1-20

DCS alarm + Email alert + Audible alarm

Respond by using one of the Acknowledge Alarm buttons at the Central Management™ or on the Alarms Screen at the chamber. This will silence the alarm. Assess and correct the cause.

A thumbnail for a given chamber on the Central Management™ dashboard must be configured and active before the alarm can be received from that chamber.

Tip: About Chamber Alarm Communication. Chamber alarm messages are sent to Central Management™ when they are initially added to the Chamber alarm list. Existing alarm state changes are not sent to Central Management™. Deleting the alarm from the Chamber will ensure it is reported to Central Management™ if it becomes re-activated. Central Management™ has an "Alarm Delay" function implemented. The delay is the time (5 seconds) that an alarm must be present in the active state before the Dry Contacts System will be triggered. Version 7 of CCS added a "DCS Reset Interval", which automatically resets the DCS after 10 seconds (default), permitting retriggering of the DCS for subsequent alarms.

4.3 Dry Contact System (DCS)

The DCS has two isolated sets of Form "C" dry contacts for alarm triggering to external systems. Typically these may be an Autodialer and/or a Building Monitoring System, Figure 4.2: DCS and Autodialer Operation.

DCS automatically resets after 10 seconds (default), permitting retriggering of the DCS and Autodialer for subsequent alarms.

The Autodialer will respond to an alarm by dialing up to four separate telephone numbers. When the call is answered, an "Alert Condition" message is delivered and a user-recordable voice message. The Dial out sequence can be "acknowledged" by sending "555" from the phone keypad during a received call. This ceases dial out.

Figure 4.2: DCS and Autodialer Operation

Alarm States

Normal Operation	Initialization code during startup of the Central Management™ program, causes relay on the DCS box to be energized. The green LED will be illuminated. This is the normal operating condition.
Alarm Condition	A red LED illuminated and a de-energized relay signals an alarm condition.
Power Failure Alarm	Should a power failure occur at the Central Management™ PC, the relay will de-energize and remain de-energized until the return of power and Central Management™ operating system startup.
Chamber Alarm	Upon receipt of a chamber alarm of high priority (1-20) the Central Management™ will de-energize the relay.

Acknowledging the voice warning is not the same as acknowledging the alarm. Both Central Management™ and the autodialer must be acknowledged. Most important is the alarm at the chamber that caused the dial-out event. If you are on site, you can look at Central Management™ or chamber and diagnose what action needs to be taken to correct the problem. If you are remote, you have the option to connect to Central Management™ to view the alarm condition or use email alerting/web reports to view the actual chamber number and alarm condition. If the chamber must have the program settings altered, this can be done online using Central Management™. In the absence of Central Management™ a hands-on visit to the chamber would be required.

4.4 Acknowledging Alarms with DCS

Alarm sequence

Sequence of operation	1	During normal operation, when there are no active, unacknowledged alarms with a priority in the range of 1 to 20, on the network, the NORMAL (green) LED will be illuminated.
Alarm and delays	2	When an alarm occurs on any network chamber, the alarm delay is started. (5 second default.)
	3	The audible alarm is triggered and the email alert is sent.
	4	The alarm delay lapses and the triggering of the DCS box occurs. The alarm LED (red) on the dry contact box lights. It will remain on until either acknowledged or auto reset (10 seconds).
Autodialer	5	The autodialer input recognition delay starts (5 seconds default) and after the delay lapses, the autodialer will initiate calling the designated phone numbers (how many times it calls and how many numbers it calls depends on the programmed settings of the autodialer).
Acknowledge	6	When the call is answered, you can acknowledge the alarm warning by pressing the appropriate touch tone buttons) on the telephone (555 is default).
Reset	7	The "Reset DCS" button returns the dry contact box to its normal state. The alarm LED will turn off and the normal LED will turn on. If another high priority alarm occurs while you are diagnosing and fixing the present problem, the system will be ready to phone out again. If this crucial step is skipped, the autodialer cannot be triggered to call out for the subsequent alarms.
Diagnose	8	The next step is to diagnose the chamber that had the alarm and take the necessary steps to correct the fault.

"DCS Reset interval" which automatically resets the DCS after 10 seconds (default), permits retriggering of the DCS and auto dialing systems for subsequent alarms. If set to 0, (default is 10 seconds) the DCS will not reset after an alarm, forcing a manual "reset DCS" to be made on Central Management™'s Actions menu.

Sensaphone autodialer connected to older Central Management™ systems used a default "input recognition time" of 3 minutes. This is not compatible with Central Management™ default settings. The result will be an autodialer that is never activated by alarms. The recommendation is to reduce the "input recognition time" to 5 seconds. The reason for the 3 minute "input recognition time" in earlier systems was to mask a Central Management™ sanity reset from alarming. While instability was an issue in Windows® operating systems prior to Windows XP®, this situation is very unlikely to occur with the current Central Management™ version.

4.5 Scheduling Activities

Chamber scheduler

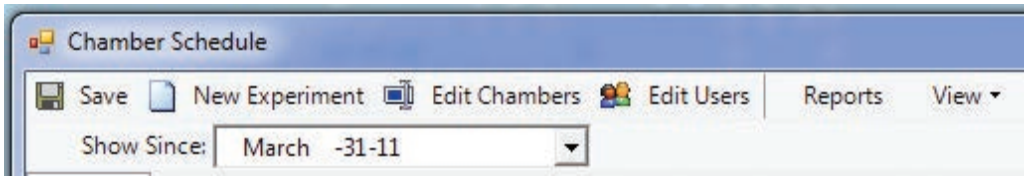


Figure 4.3: Chamber Scheduler Toolbar

Save

Save is required when changes are made. If you do not save, when you exit, changes will be lost.

Show Since

"Show Since" places the center of your scheduler view at the date you selected from the drop down calendar.

Time Scale

"Select View" then "Time Scale". The default time scale settings are shown. Both the bottom and middle tiers may be altered to show a time scale that suits your needs.

Group By

The Default View shows Chamber ID, Figure 4.4: Default View. To change the grouping, select "View" then "Group By" then select a new item category from the "group items by" list. Click OK to update your scheduler display.

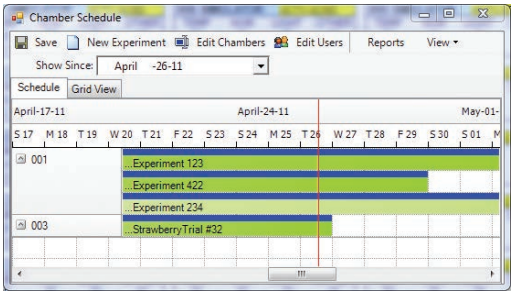


Figure 4.4: Default View

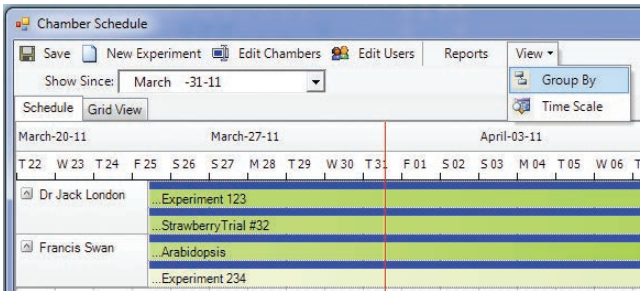


Figure 4.4a: User View

Tip: Editing Chamber and Users are explained in Chapter 3.0 Using Central Management™.

Views

Two different views of the chamber information are available to the administrator to use.

Time Line View

More than one experiment may be "attached" to a Chamber as shown above by Chamber 001. The list of Experiments may be "rolled up" to show only a single line per Chamber, Figure 4.5: Time Line View.

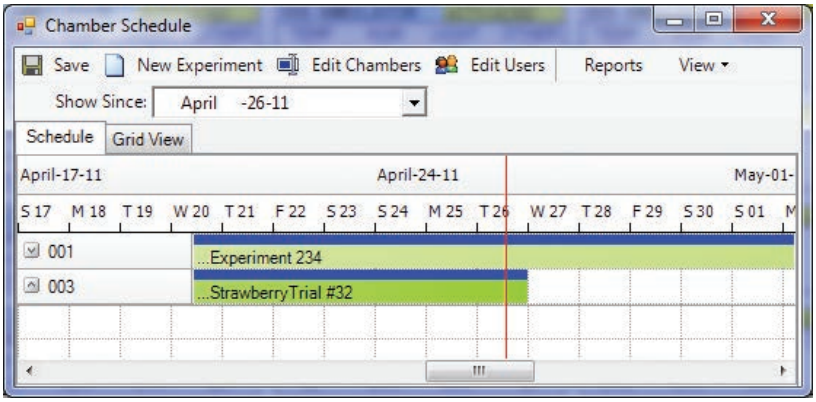


Figure 4.5: Timeline view

Tip: The Schedule "Time Line" changes color to a darker shade as time progresses. The red line indicates the current date.

Grid view

The Grid View permits easy experiment schedule view reordering by selecting any of the column headers, such as User or Start Date, Figure 4.6: Grid Line View.

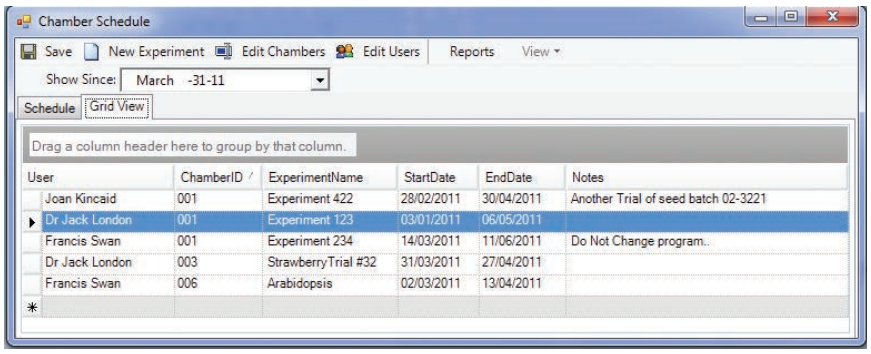
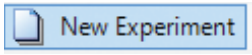


Figure 4.6: Grid Line View

New experiment 

A "New Experiment" allows the administrator to plan every aspect of the chamber's usage.

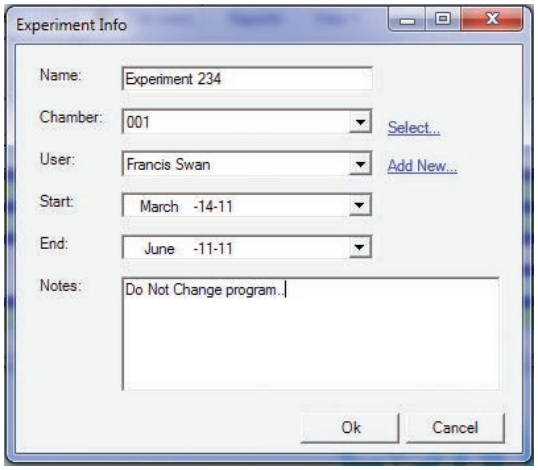


Figure: 4.7: Experiment Info

Chamber, User, Start and End dates are mandatory. However, additional information such as Name and Notes will assist with administration tasks, Figure 4.7: Experiment Info. Experiment information appears on each Chambers' properties menu as a "Tab", Figure 4.8: Chamber Information.

The experiment name is displayed on the Chamber Scheduler main window and helps differentiate one experiment from another. By default, lists are sorted by Chamber ID, but may be resorted by any of the displayed fields.

Three Notes areas are provided for each Chamber. The Experiment Notes are expected to be used for experiment related information (guidelines and warnings), Chamber notes (equipment specifications) and service notes for chamber maintenance.

Right-Click on any Chamber's Thumbnail display to open the Thumbnail menu. Select "Properties" to view the Chamber and Experiment information, Figure 4.8: Chamber Information.

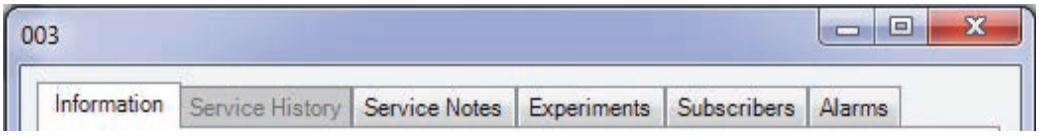
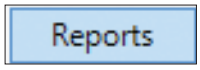


Figure 4.8: Chamber Information

Reports



Select "Reports" from chamber scheduler menu, Figure 4.3: Chamber Scheduler Toolbar

Select the date period for the usage report, Figure 4.9: Usage Reports

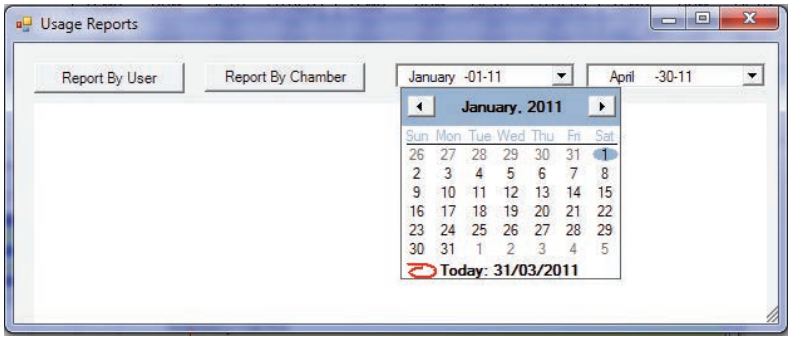


Figure 4.9: Usage Reports

Select the button for either "Report by user" or" Report by Chamber", Figure 4.10: By User and Figure 4.11: By Chamber. Print or Copy to Clipboard as needed.

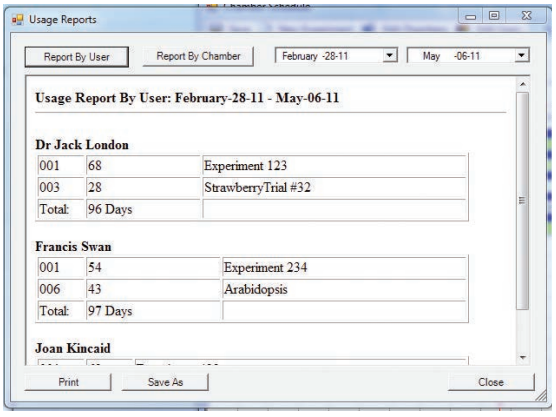


Figure 4.10 By user

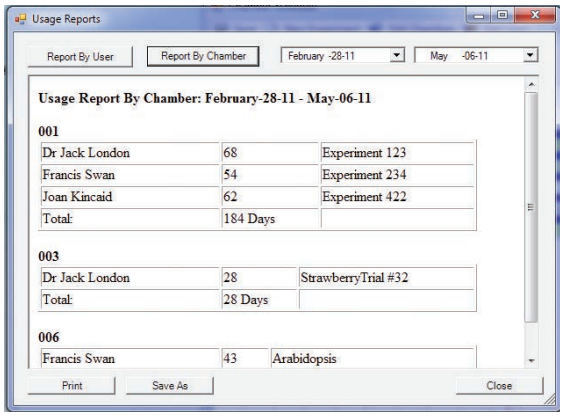


Figure 4.11: By chamber

4.6 Using Virtual Chamber - CMP4000-5000 Legacy

Start a Virtual Session

Different interfaces are displayed, depending on the type of Chamber control System you have selected to program. The following information, Sections 4.6 to 4.11 refer to the CMP4000 and CMP5000 series Controllers. For details regarding the CMP6000, refer to **4.12 Using Remote Control CMP6000.** (Central Management™ uses the appropriate interface, according to chamber configuration – Section 2.6 Adding a chamber to the status display).

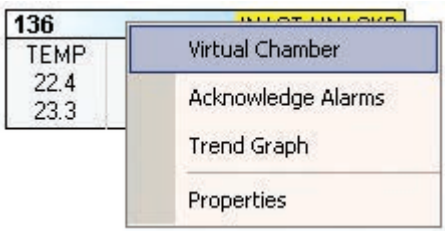


Figure 4.12: Chamber Menu - Virtual Chamber

From the Central Management™ dashboard, choose the chamber number to connect to and "right click" on the chamber thumbnail, selecting "Virtual Chamber", Figure 4.12: Chamber Menu - Virtual Chamber.

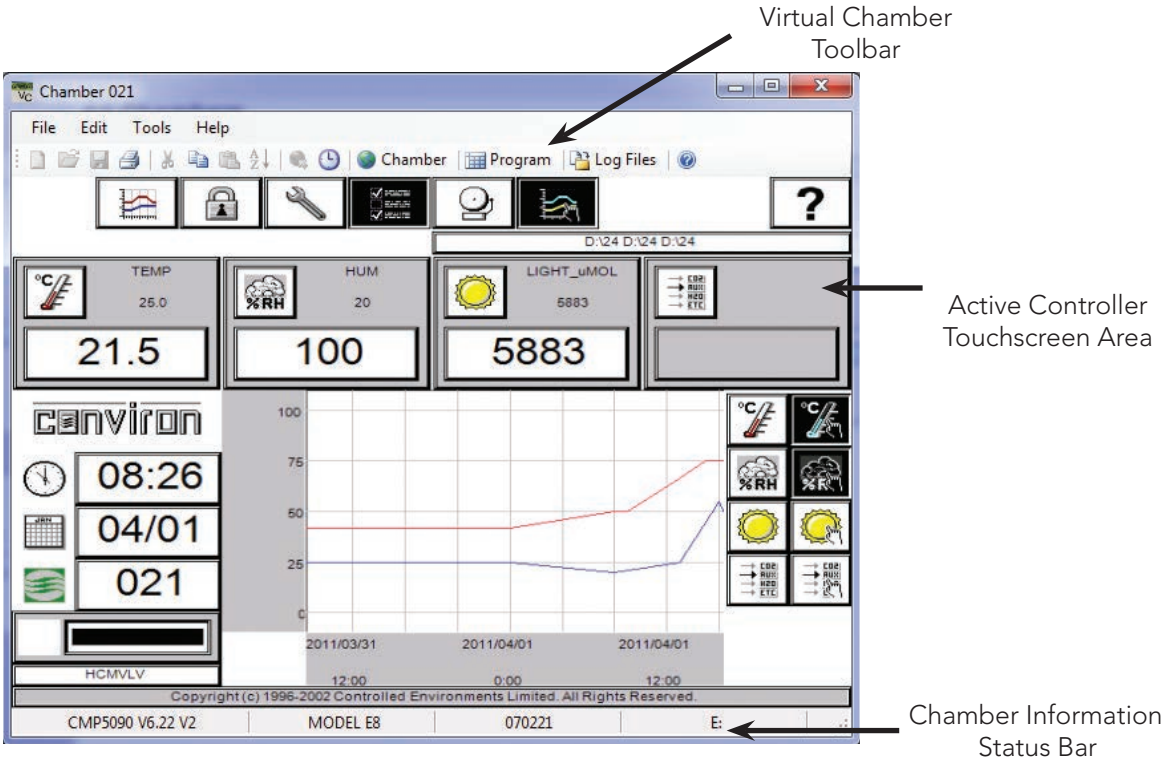


Figure 4.13: Virtual Chamber Display

Could Not Connect

This error message indicates a complete communications failure. Check all settings and connections and retry. If the problem persists, refer to **Chapter 6 System Maintenance and Troubleshooting** or seek Conviron Technical assistance.

Figure 4.14: Could Not Connect

Time-out

The inactivity time-out period (15 minutes) has expired and Virtual Chamber has automatically disconnected from the Chamber. This ensures that the Chamber will be available for local Touch-Screen login.

Figure 4.15: Disconnected

4.7 Virtual Chamber Functions

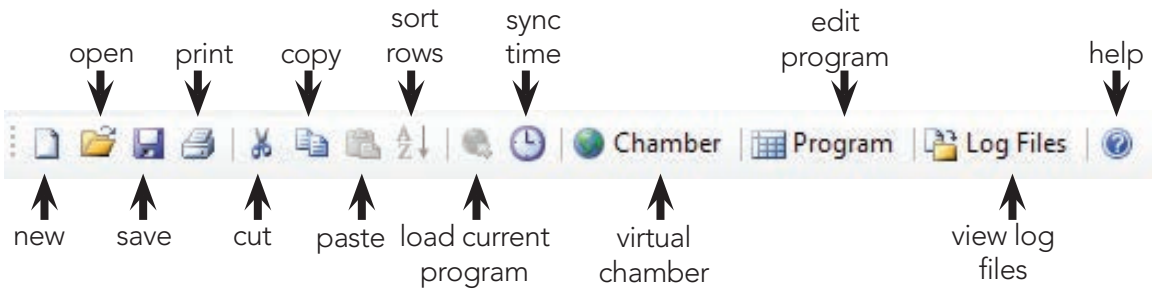


Figure 4.16: Virtual Chamber Toolbar

Toolbar

New	Ctrl+N Clears the spreadsheet.
Open	Imports program (pgm) from disk.
Save	Ctrl + S Saves current program to chamber.
Print	Prints current program or chamber screens.
Cut	Ctrl+X Cuts contents of selected cells (s).
Copy	Ctrl+C Copies contents of selected cells(s).
Paste	Ctrl+V Pastes clipboard contents to selected cells(s).
Sort	Arranges rows (time lines) in chronological order.
Load	Loads the current program into the chamber editor (ready to run)
Sync	Synchronizes chamber date and time to Central Management™
VC Panel	View virtual chamber screens of logged in chamber
Program editor	Edit chamber programs on Virtual Chamber program editor
Log files	Download and view alarm and data of files from chamber storage drive
Help	Opens the Help Document VC3.pdf

Menus

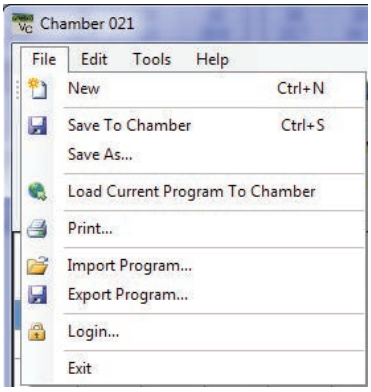


Figure 4.17: File Menu

File

Same functions as the Toolbar icon, plus;

Save as	Permits saving the loaded program to a different number
Export	Exports program (pgm) to Program disk
Logon	Allows entering the required security information when Chamber Security is enabled.

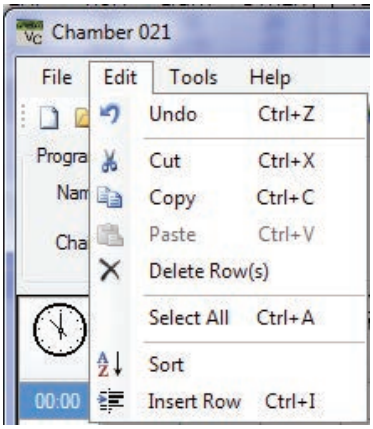


Figure 4.18: Edit Menu

Edit

Same functions as the Toolbar icon, plus;

Undo	Ctrl+Z Undoes the last operation
Delete Rows	Deletes the selected row
Select All	Ctrl+A Selects all the cells of the spreadsheet
Insert Row	Ctrl+I Inserts a blank row at selected location

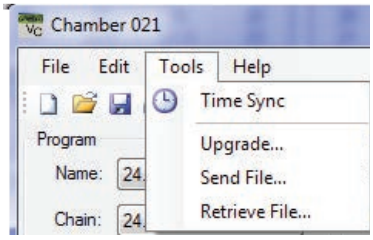


Figure 4.19: Tools Menu

Tools

Same functions as the Toolbar icon, plus;

Upgrade	For upgrading the software of the Controller. Conviron is the sole provider of software and can add new functions to existing Controllers.
Send File	Factory-only software feature.
Retrieve File	**Factory-only software feature.**

Help

This icon will open the Virtual Chamber Manual in PDF format. All User Manuals are located in the default installation directory;

C:\Program Files (x86)\CM\Manuals

4.8 Chamber Panel

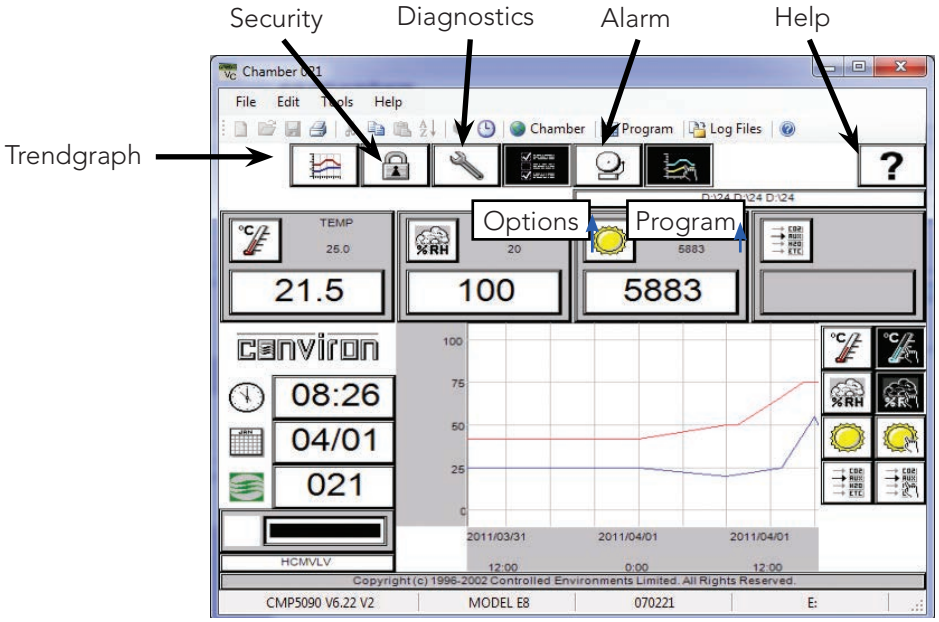
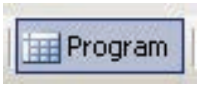


Figure 4.20: Virtual Chamber

See the CMP4030 or CMP5090 User Guide for full details about Controller software functioning and use. All the expected chamber Controller features are available at Central Management™, using a mouse click rather than a screen touch.

4.9 Program Editor



Selecting the "Program Button" starts the program editor, Figure 4.22: Program Editor.

With Central Management™, you can write a program, store it on the Central Management™ system, and download it to any chamber Controller on the network.

In this section you will learn to:

- Understand the name and function of each section of the Program Editor
- Write programs using the Program Editor
- Print a program from the Program Editor
- Load programs onto a chamber Controller from the Program Editor
- Save programs onto chamber Controller from the Program Editor
- Import and Export a program into the Program Editor from Central Management™

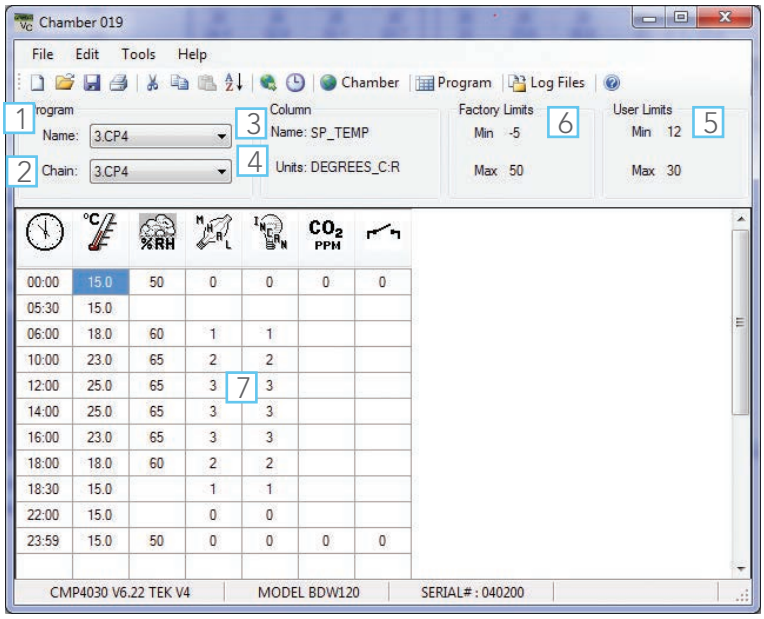


Figure 4.21: Program Editor

Parts of the Program Editor

1. **Name list**
   The name list lists the programs stored on the chamber Controller. The name of the program currently loaded into the Program Editor is displayed.

2. **Chain list**
   The chain list lists the programs stored on the chamber Controller. The program name displayed is the program to which the program currently loaded into the Program Editor is chained.

3. **Column**
   The column field tells you the zone currently selected in the table.

4. **Units**
   The Units field tells you the units of measurement used by the current zone. i.e.: °C for temperature

5. **User Limits**
   The User Limits (Active Zone Operating Range) field tells you the Chamber operating range for the active zone.

6. **Factory Limits**
   The Factory Limits (Active Zone Alarm Limit Range) field tells you the range of setting for the Alarm Limits that apply to the active zone. You cannot change factory settings.

7. **Program table**
   The program table or spreadsheet is a series of columns and rows in which you enter your program.

Using the Program Editor

Clearing the program table

To clear the program table to start writing a new program, from the "File Menu", choose New.

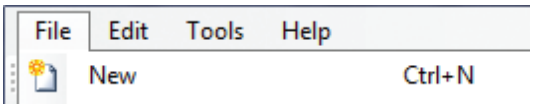


Figure 4.22: New Program

Or Click the

icon on the Virtual Chamber Toolbar, or Press CTRL+N. If there are values in the table that have not been saved, you are asked if you want to save changes. Click "Yes" to save changes or "No" to lose changes. The program table is cleared.

Entering Values

To enter a value into the program table select a cell and type a value.

Deleting Values from Cells

To clear a value from a cell or series of cells, select the cell or range of cells that you want to clear. From the Edit menu, choose Cut.

Figure 4.23: Delete

Or select the icon or Press CTRL+X. The selected cells are cleared and the values are copied to the Windows clipboard.

Copying values in cells

To copy a cell or range of cells. Select the cell or range of cells that you want to copy. From the Edit menu, choose Copy

Figure 4.24: Copy

Or Click the icon, or, Press CTRL+C. The values of the cells you selected are copied to the Windows clipboard.

Pasting values into cells

To paste values that you have cut or copied new cells select the cell to which you want to paste values. If you are pasting a range of cells, select the first (top, left) cell the range.

Figure 4.25: Paste in

From the Edit menu, choose "Paste", or click the icon, or, Press CTRL+V.

The last value that was cut or copied is pasted to the selected cell or cells.

Selecting the whole table

You can select the entire program table, copy it, and append it to another program.

To select the whole program table, from the Edit menu, choose "Select All", or

press CTRL+A, the whole program table is selected.

Figure 4.26: Select All

Inserting a row

To insert a row into the program table, select a cell in the row above where you want to insert a row.

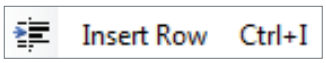


Figure 4.27: Insert Row

From the Edit menu, choose "Insert Row", or

press CTRL+I, a blank row is inserted after the row you selected.

Deleting a row

To delete an entire row select a cell in the row that you want to delete.

Figure 4.28: Delete Rows

From the Edit menu, choose Delete Row(s).

The entire row is deleted and the following rows are moved up in the table.

Sorting rows

To sort rows by time:

Figure 4.29: Sort Rows

From the Edit menu, choose "Sort", or

click the icon. The program rows are sorted chronologically.

Undo edit

To Undo an Edit operation and restore the cell(s) to prior values:

Figure 4.30: Undo

From the Edit menu, choose "Undo", or

press CTRL+Z. The value(s) are restored to the affected cell(s)

Saving a program to a chamber Controller

After writing or editing a program in the Program Editor, it must be named before saving. Also, you must save it on the chamber Controller before you can load and run it.

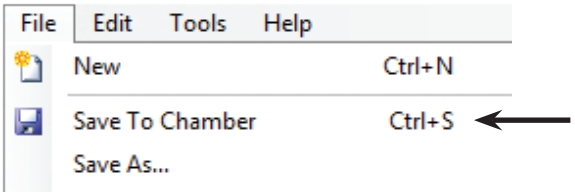


Figure 4.31: Save To Chamber

To save an already named program (just edited):

From the File menu, choose "Save", or

click the icon, or press CTRL+S. The Program is saved immediately.

To save an unnamed program (newly created):

From the "File" menu, choose "Save As", Figure 4.32: Save to Chamber, or

click the icon.

The "Save As" dialog box appears.

Type a program number in the text box that is numeric only and is a maximum of eight characters. Select the "OK" button. The program is saved on the chamber Controller with the numeric name just assigned.

Saving a Program on Central Management™

To save a program written in the Program Editor on Central Management™:

From the "File" menu, choose "Export Program", Figure 4.32: Export Program.

Next the "Export Program" dialog box appears. In the File Name text box, type a name, up to eight characters, Figure 4.33: Export Program Dialog.

Or,

If you want to save the program with an existing file name, select the name you want from the File Name list.

If you want to save your file in a different directory or drive, select a new path from the Directories and Drives lists.

Select OK,

The program is saved in Central Management™. Programs stored in Central Management™ have a file extension of 'pgm' and are text based. They can be opened and edited with Excel or text editors.

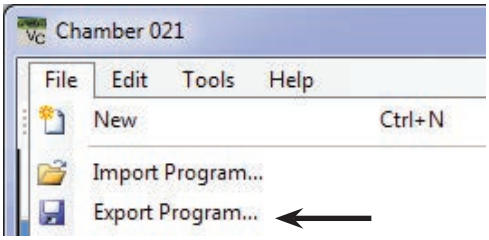


Figure 4.32: Export Program

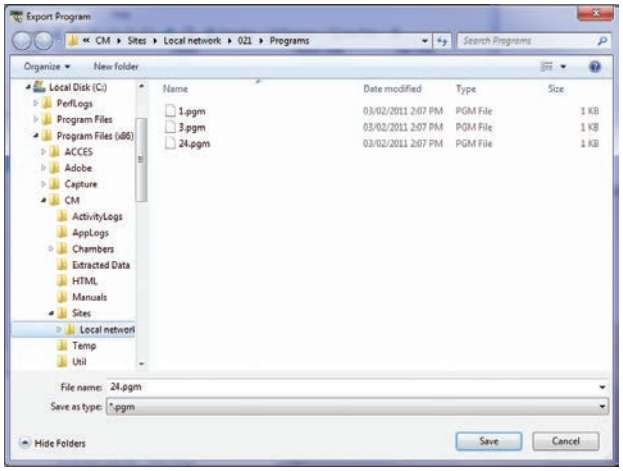


Figure 4.33: Export Program Dialog

Loading a Program to the Chamber Controller's Program screen

Before you can run a chamber program, you must load the program into the chamber Controller's Program screen. You cannot run a chamber program from the Program Editor. To load a program, make sure that you have saved the program on the Controller as described in the previous section.

From the File menu, choose Load Current Program to Chamber, or

click the icon.

The program is loaded to the Controller's Program screen. Go to the Chamber panel, then Program Spreadsheet to Run the program.

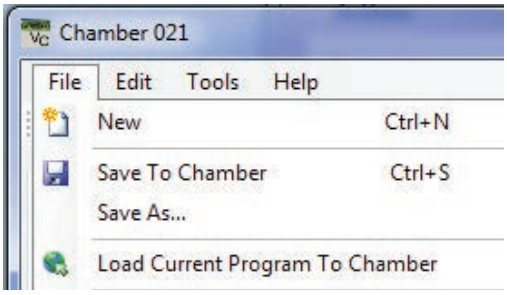


Figure 4.34: Load To Chamber

Opening a program saved on the Central Management™ system

To open a program saved on the Central Management™ system:

From the "File Menu", select "Import Program", Figure 4.35: Import Program.

Next the "Import Program" dialog box appears, Figure 4.37: Import Program Dialog. From the file name list, select the file that you want to open. If you do not see the file you want, select a new directory or drive from the directories and drives lists.

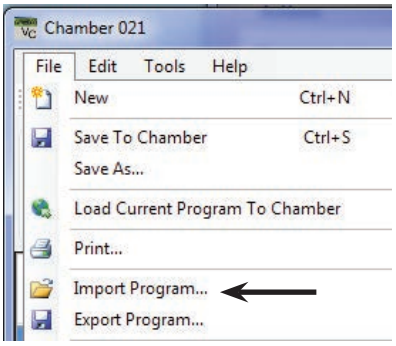


Figure 4.35: Import Program

Programs stored on the Central Management™ system have a file extension program.

Find your file, select it and click "Open".

The program you selected appears in the Program Editor

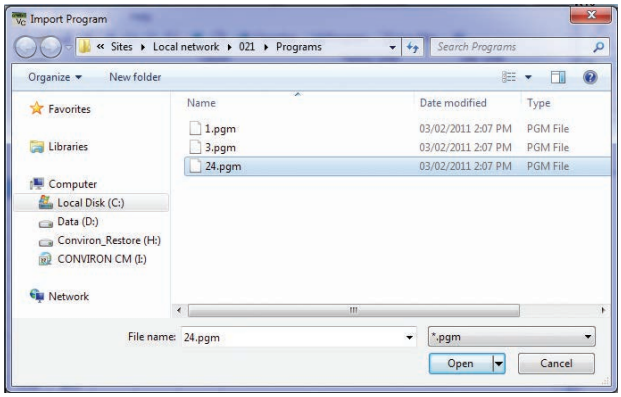


Figure 4.36: Import Program Dialog

4.10 Printing a program

To print a copy of the program currently loaded into the Program Editor:

From the File menu, choose Print, or

click the icon.

The Central Management™ system prints the Program Editor table.

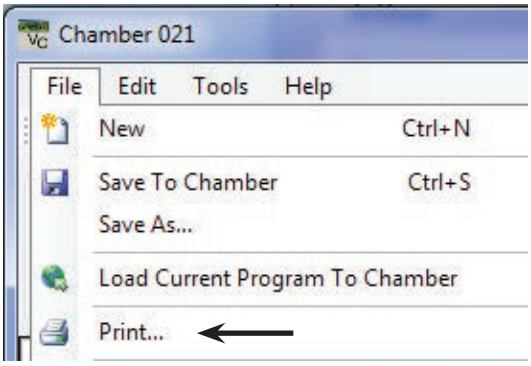


Figure 4.37: Print Program

4.11 Log Files

If the chamber is equipped with additional log storage, Virtual Chamber can access, download and view both Alarm and Data logs. The Virtual Chamber status bar shows if a storage drive is installed on a Chamber, Figure 4.38: Chamber Status Bar.

Figure 4.38: Chamber Status Bar

To access the Log Files on the Controller, select the

Button on the Virtual Chamber Toolbar.

Sync

Files must be downloaded from the chamber Controller to work with them. This is called sync.

Select the number of days to SYNC data from the chamber to Central Management™ from the Synch Files List Box, Figure 4.39: Select Sync Duration.

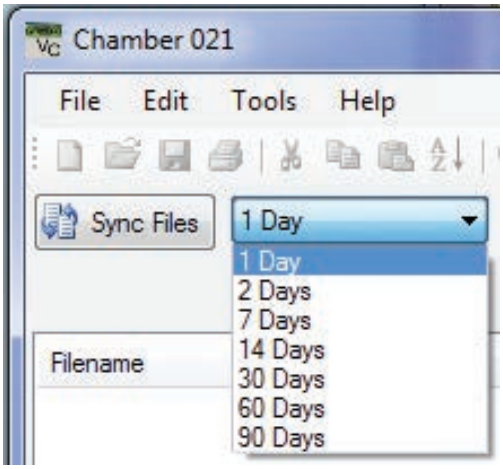


Figure 4.39: Select Sync Duration

Click on the

Button and Virtual Chamber will retrieve the files from the chamber Controller. If a file doesn't exist, nothing will be downloaded.

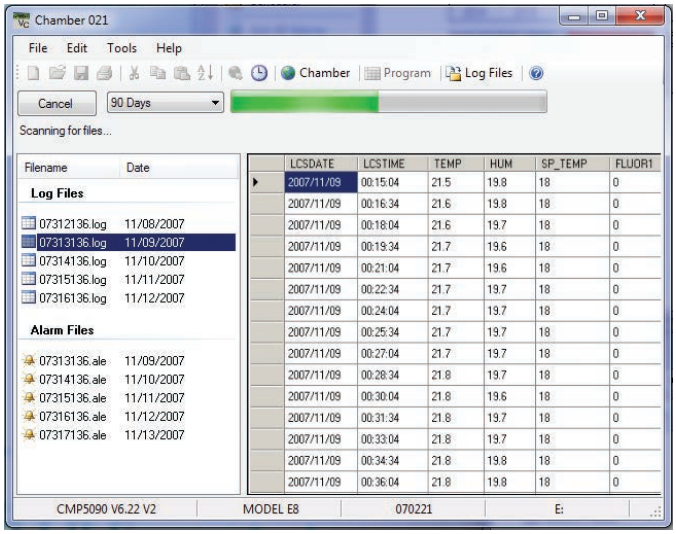


Figure 4.40: Sync File Progress

A progress indicator and file listing shows the file downloading progress, Figure 4.40: Sync File Progress.

File Locations

Central Management™ stores the files retrieved by Virtual Chamber on the local hard drive under

C:\Program Files (x86)\CM/Sites

Under the Sites directories is the default site name "Local Network"

Under the "Local Network" Virtual Chamber automatically creates (as needed) directories for Chamber Numbers, AlarmLog, DataLog and Programs. All files are text-based and readable, with the exception of .CP4 program files. These are raw Controller files and PGM files are the readable versions.

Do Not Edit CP4 Files!

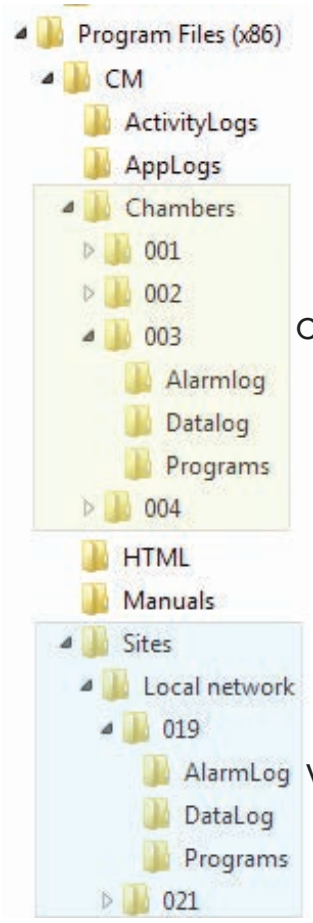


Figure: 4.41: File Locations

View

Once the log files are retrieved, selecting a file name in the left pane will display its contents in the right pane, Figure 4.43: Log File View. The data view can be scrolled, sorted and copied. If a selected file shows no data on the right pane, it is likely that the storage media is full and should be cleared.

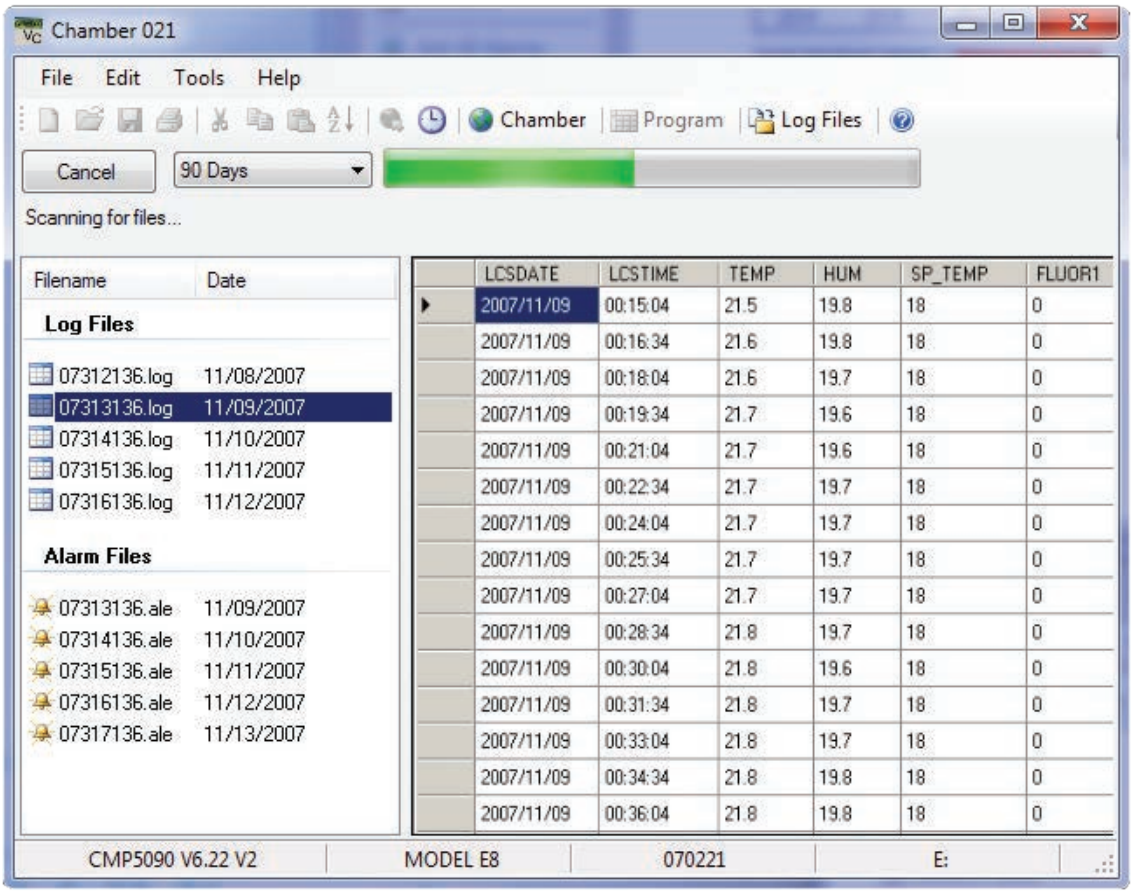


Figure 4.42: Log File View

4.12 Software Upgrades for CMP4000 and CMP5000

Conviron can offer software upgrades to Chamber Controller software to enhance the operation of the Chamber, add new features and change the mode of the alarming functions. Contact Client Services for details.

Floppy vs. Flash vs. Hard Drive

Depending on the physical characteristics, age and versions of the hardware and software, the features of the CMP Controllers vary. Conviron maintains detailed information that is easily accessed by the chamber serial number. The current features as well as the upgrade abilities can be determined by providing this information in any upgrade request.

Prepare Package

Conviron will provide the upgrade software package either on Floppy disk, Flash Card or via electronically transferred zip file (email or the Conviron FTP site). For installation by Central Management™ or Virtual Chamber, the best practice would be to unzip and copy the update package to the local hard drive. Logically if you are to upgrade Chamber 3, place the update package in a directory within Chamber 3's file structure, Figure 4.43: Chamber Directory.

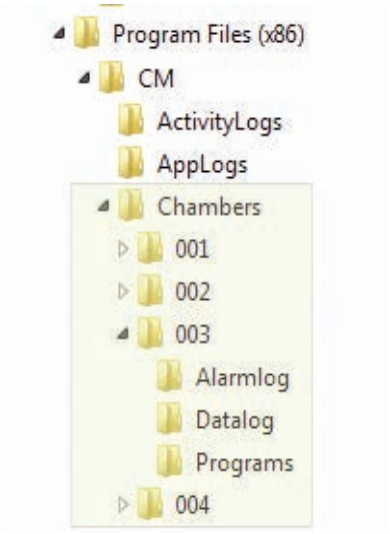


Figure: 4.43: Chamber Directory

Logon

With a Central Management™ system, select the chamber number to connect to and right-click on the chamber thumbnail, selecting "Virtual Chamber", from the "Chamber Menu" Figure 4.44: Virtual Chamber Login.

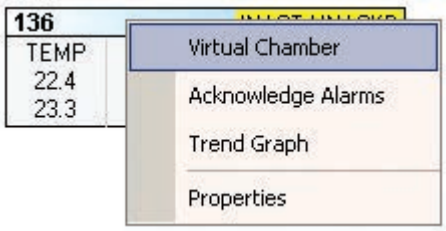


Figure 4.44: Virtual Chamber Login

Security

A minimum Security Level 40 is required for the "Software Upgrade" feature. This protects the chamber Controller from accidental corruption by unauthorized personnel. After logging on to the chamber, from the "Chamber Menu", select "Login" from the "File Menu".

Type a user name and password that have security level 40.

Contact your administrator or Conviron for access information, Figure 4.45: Security Dialog.

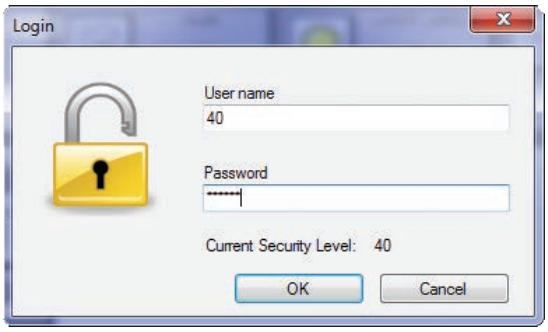


Figure 4.45: Security Dialog

Locate Upgrade

The next step is to select Upgrade from the Tools Menu, Figure 4.46: Tools-Upgrade. The upgrade dialog box will open, Figure 4.47: Upgrade Dialog. Select "Browse", and navigate the directories to:
C:\Program Files (x86)\CM\Chambers\003\Update

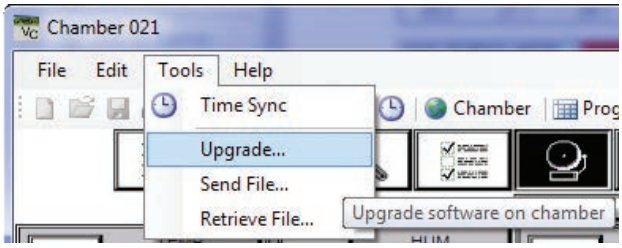


Figure: 4.46:Tools-Upgrade

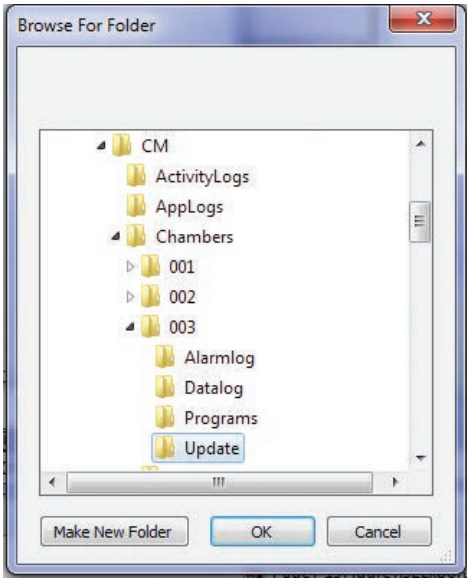


Figure 4.47: Upgrade Dialog

Serial Number

All Conviron products are identified by serial number and upgrades must be for the matching serial number!

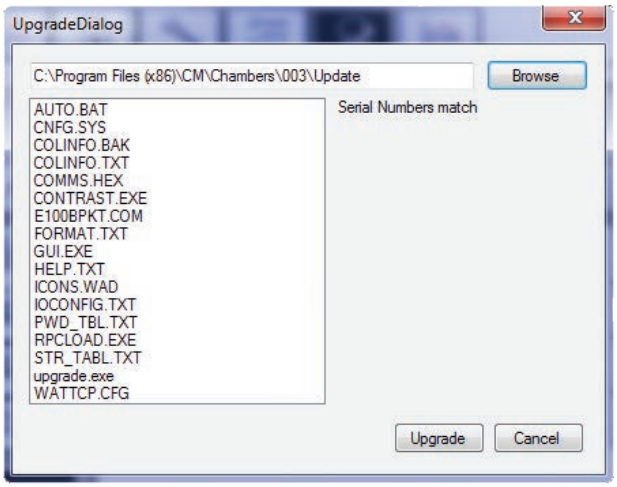


Figure 4.48: Upgrade Dialog Serial Match

If you see the "DO NOT MATCH" message, do not continue. CANCEL the operation and contact Conviron Client Services for assistance.

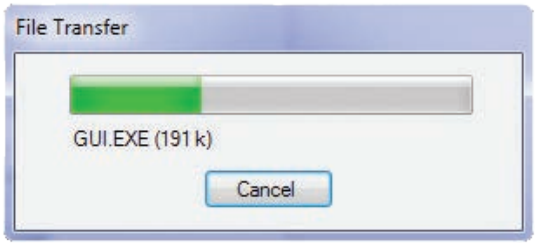


Figure 4.49: Upgrade progress

Once the Serial Numbers are confirmed to match, select "Upgrade". The upgrade file transfer dialog will show the progress of the update procedure.

Reboot

After all files have been transferred to the chamber Controller, a "Reboot?" dialog will display. The chamber Controller must be restarted for changes to take effect. Select "Yes".

Additionally, power to the chamber Controller needs to be cycled off, then on again after 10 seconds.

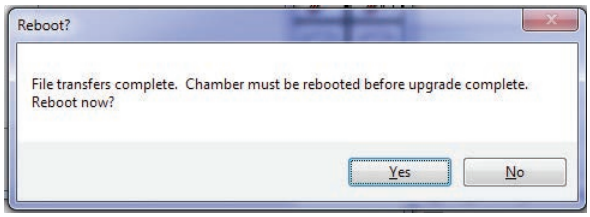


Figure 4.50: Upgrade Complete

The Controller should restart and in a minute or two, show the status screen. If this does not occur as expected, repeat the power cycling and follow the recommended startup procedure for CMP Controllers as outlined in the CMP4030 – CMP5090 User Guide or Conviron CMP4030 Version 6.00 - 6.20 Software Update Guide.

4.13 Using Remote Control - CMP6050

Introduction

The CMP6050 is the most advanced control system developed by Conviron. Configured to your chamber specifications from the factory, the CMP6050 offers a wide array of set-up, control and alarm features to tune the configuration to your specific requirements. As well, the scalability of the CMP6050 accommodates additional Input/Output ports should your research require additional sensors.

Users of Central Management™ must be aware that changes they make will impact electrical and/or mechanical operations of a chamber(s) at a location that they are not visually monitoring and/or physically present at.

Operating the chamber remotely, while others are occupying or servicing the chamber, COULD BE HAZARDOUS AND MAY RESULT IN PERSONAL INJURY to service or other on-site personnel. As such, manipulation of parameters via CM must only be performed when Users have taken appropriate safety precautions including having established that NO ONE ELSE is occupying or servicing the chamber while using CM software.

Remote Control Operations

The Remote Control Main Menu shows all of the software features, Figure 4.51: Remote Control Main Menu.

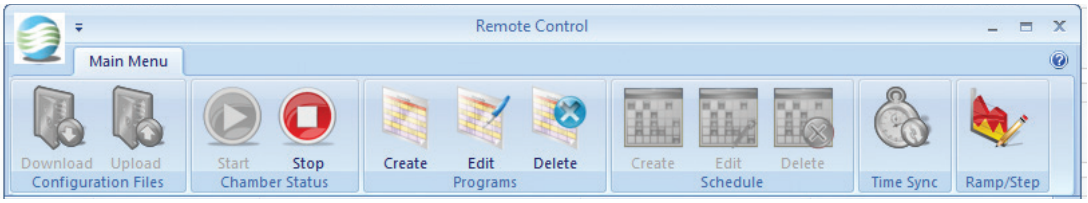


Figure 4.51: Remote Control Main Menu

Remote Control allows the User to:

- Connect to your chamber
- Download (save) or Upload (retrieve) chamber configuration
- Start and Stop a chamber schedule
- Create / Edit / Delete Programs and Schedules
- Perform Time Synchronization
- Modify Chamber Ramp and Step Operation

Chamber Communication

Addressing

TCP/IP

All Chamber settings are done in the CMP6050 Options screen.

SNMP

Port 161 is the standard SNMP port. This port is not alterable.

Remote Access

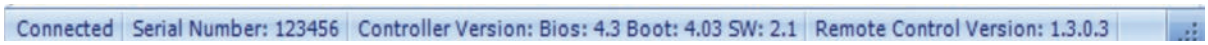
Firewall

Windows™ or third party firewall software must allow the SNMP port (161) to pass through from the Chamber to the Central Management™ and / or Remote Control software.

Chamber Information

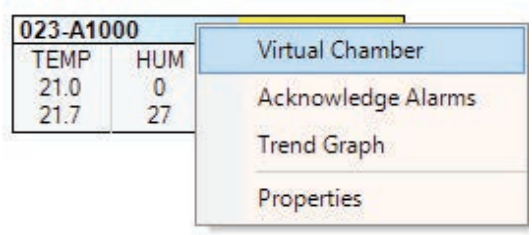
When connected to a Chamber, the Chamber information is displayed in the Remote Control's status bar.

Connection status, Chamber serial number, Controller version and remote Control software version are displayed. Access to the CMP6050 Controller is via Central Management™.



Connecting to Chambers

Connection to a chamber is normally done by right-clicking on the chamber Thumbnail of the Central Management™ status window and choosing Virtual Chamber from the menu.



Once you are connected to a chamber the Remote Control main menu will appear onscreen, Figure 4.52: Remote Control Main Menu.

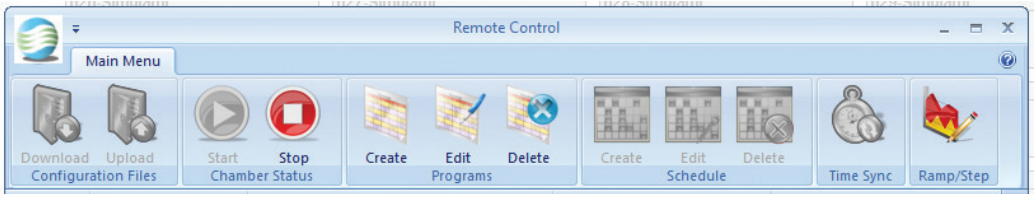


Figure 4.52: Remote Control Main Menu

During a Remote Control session, the Chamber Touch screen is locked from local use. This ensures that only one user at a time has access to a Chamber.

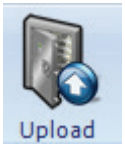
Disconnect

Click on the "exit" Icon to terminate an active connection. Should you forget that you are connected to a Chamber, the Remote Control software will detect inactivity and self-terminate after 15 minutes. The Chamber Controller will be released from Touchscreen lockout a few seconds after Remote Control is stopped.

Configuration Files

Configuration files are the complete set of Chamber Programs and schedule information that the Chamber requires to operate.

Upload



Click on the "Upload" Icon. Upload prompts you to chose previously saved configuration files from the local PC to send to the connected Chamber.

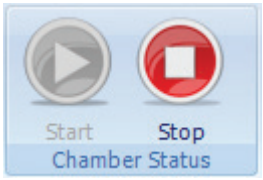
Download

Click on the "Download" Icon. Download retrieves configuration files from the connected Chamber and saves them to the local PC. The default save directory is "My Documents", which can be altered.

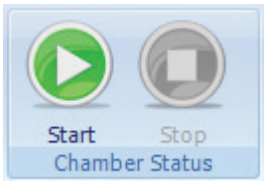
Chamber Status

Starting and Stopping

Once you have connected to a chamber the "Status" of the schedule (and Chamber) can be observed by noting the state of the "Start" and "Stop" icons.



When the Chamber is running the "Stop" icon is illuminated.

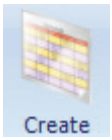


When the Chamber is stopped the "Start" icon is illuminated.

When the "Start" icon is selected, you are prompted to pick a program to run from the Schedule.

Programming

Creating a program



Select the CREATE icon to start the program creation procedure. The next unused program number will become available.

Click SELECT to accept or use the spinner to choose another number. Only unused program IDs will be displayed, Figure 4.53: Program Selector.

Figure 4.53: Program Selector

The Program Spreadsheet will be activated. Use the Program Spreadsheet Tools to Insert timelines specific to your needs. A step by step procedure to edit a program follows in section "Editing a Program".

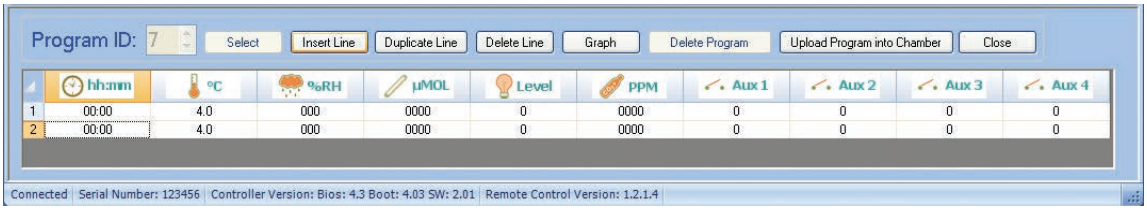


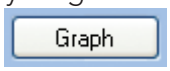
Figure 4.54: Program Spreadsheet

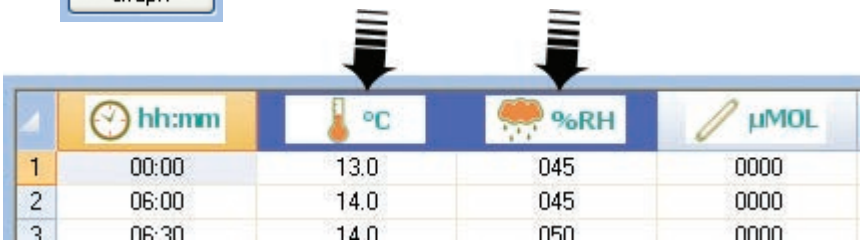
Program Spreadsheet Tools

Insert Line	Inserts a time line with default settings.
Duplicate Line	Inserts a copy of an existing line to speed program creation.
Delete Line	Removes selected line or lines from the program.
Sort Lines	Selecting column header arranges lines in ascending or descending order within the selected column.
Graph	Highlight one or more columns, by selecting the column header with a right-mouse click. Select Graph to view data graphically.
Delete Program	Not active unless the Delete Program icon was selected to open the Program Editor.
Upload Program	Saves the new or edited program to the chamber Controller.
Close	Quits Program and unsaved changes are lost.

Editing a program

1. Select the Edit icon to start the program editing procedure.
2. Click Select to accept or use the spinner to choose another number. Only used program IDs will be displayed.

3. The Program Spreadsheet toolbar will be activated.
4. Insert Line – Inserts a time line with default settings.
5. Sort Lines – Selecting column header arranges lines in ascending or descending order according to the selected column.
6. Graph – Programmed parameters can be easily verified by highlighting one or more columns by a right-mouse click. The column header will change color to indicate selection.  Select to view data graphically.



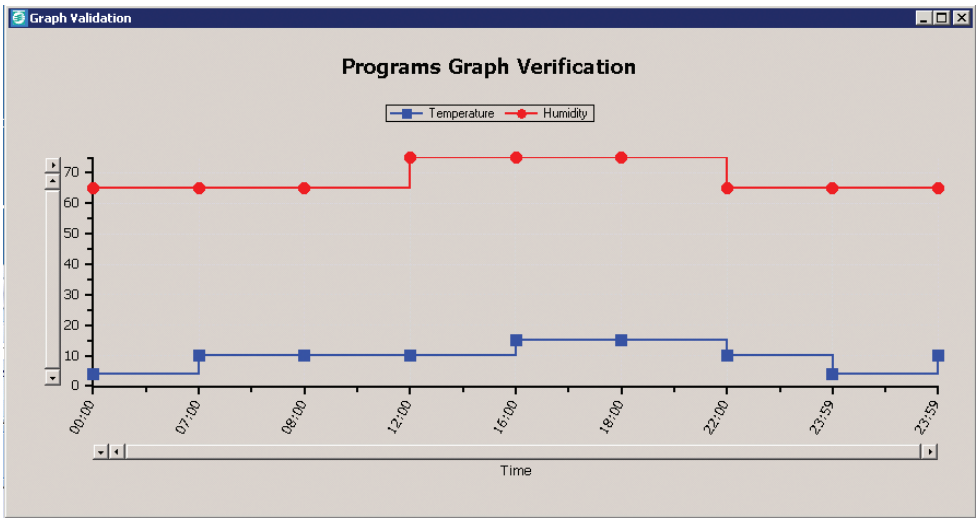


Figure 4.55: Program Verification

7. Upload Program - Select this button to save the current Spreadsheet program to the chamber. Select "Close" to quit and lose program or unsaved changes.

8. The final step to Run the program requires adding it to a Schedule. Refer to section **Creating / Editing a Schedule** for complete details.

Deleting a Program

The Program Spreadsheet toolbar will be activated, Figure 4.54: Program Spreadsheet.

Delete Program	Deletes the currently selected program.
Close	Quits Program and unsaved changes are lost.

Scheduling

Creating/Editing/Deleting a Schedule

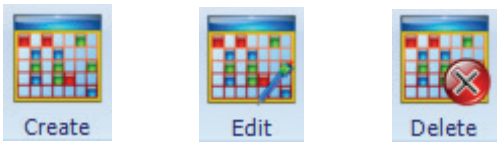
- Creating a schedule is only allowed if there is no existing schedule. The Delete button is disabled. Once the schedule is created the Delete icon is enabled.
- Editing a schedule requires an existing schedule.
- Deleting a schedule is only allowed if there is an existing schedule. The Create button is disabled. Once the schedule is Deleted the Create icon is enabled.

Schedule Table Tools

Insert Entry	Add a line to the schedule table. Entries of program number and program repeats are defaulted to "1". Edit as needed.
Delete Entry	Removes a program from the schedule table.
Program repeat	May be set between 1 and 99 repetitions of the program.
Global repeat	May be set between 1 and 99 or infinite / continuous repetitions of the schedule.
∞	Select the infinity symbol to set the Global Repeat to continuous.
Upload Schedule	Sends the schedule to the chamber.
Close	Quits Schedule and unsaved changes are lost.

Working with the Schedule Editor

Select Create Edit or Delete Schedule.



Selecting one of the Schedule icons opens the Schedule Editor, Figure 4.56: Schedule Editor.

Both Create and Editing a schedule follow the same procedure;

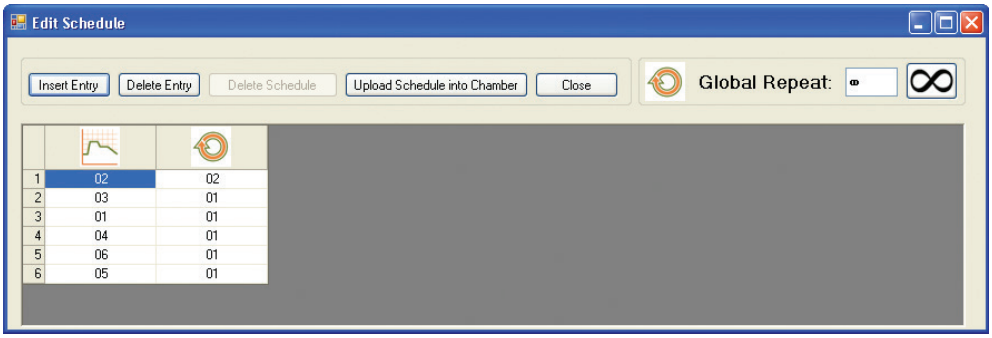


Figure 4.56: Schedule Editor

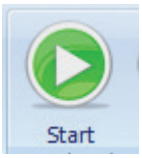


Figure 4.56a: Start Chamber

1. Open the schedule editor.
2. Add or modify schedule entries for programs and repetitions.
3. Set global repeat.
4. Upload schedule, it must be uploaded to the chamber to be saved.
5. Closing will exit without saving changes.
6. To run the schedule, select the start icon and then select the program (row) to be the first program to run.

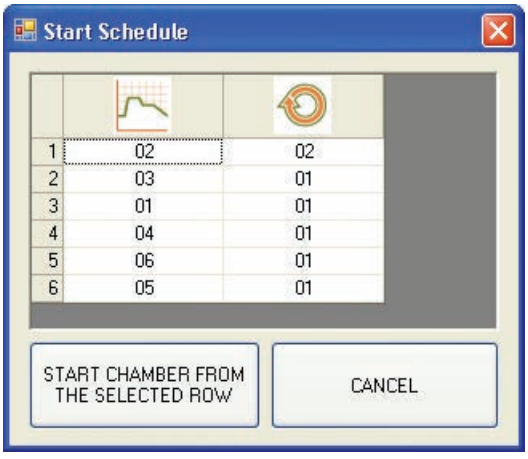


Figure 4.56b: Start Schedule

Time Synchronization

Select the Time Synchronization icon to set the Controller to the same time and date as Central Management™.

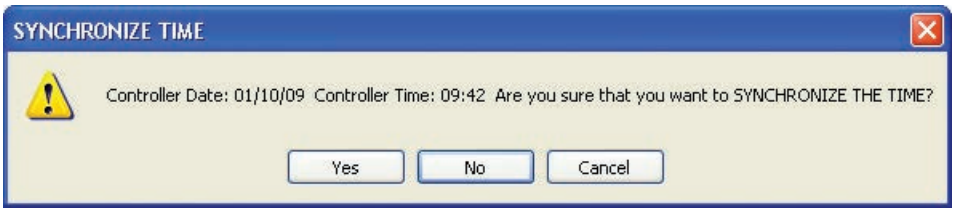


Figure 4.56c: Time Synchronization

Altering the Controller time and date will cause changes to the logged data.

Ramp-Step Mode Setting (Prior to version 3.10)

Previous versions of the CMP6050 software allowed Step or Ramp Mode control for temperature, and Step Mode only for all other processes.

- Select the Ramp/Step icon to open the Ramp/Step Setting dialog, Figure 4.57a: Ramp/Step Settings. The Ramp/Step Disable Dialog will open.

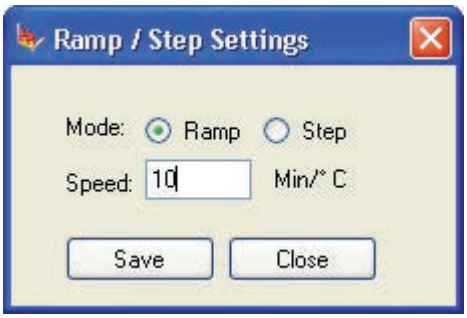


Figure 4.57a: Ramp/Step Settings
Software versions prior to v3.10

- Selecting "Step" grays out the speed setting.
- The permissible setting range is from 4 to 900 minutes per degree Celsius. Attempting to set beyond this range will cause a warning dialog to be displayed.
- Select 'Save' to save the settings and immediately update the chamber controller or close to quit without changes.
- When the mode is changed, the chamber will confirm the setting with the dialog of Figure 4.58 Change Mode.

Revised Process Ramping (for version 3.10)

The CMP6050 controller with controller software version 3.10, will allow selection between Step Mode, Ramp Mode, or Disable Mode for all process controls. The various modes can be changed while a program is running. Note that all processes can be disabled, except temperature.

- Select Ramp/Step or Disabled for any of the processes of the dialog.
- Select OK to save the settings and immediately update the chamber controller or close to quit without changes.
- When the mode is changed, the chamber will confirm the setting with the dialog of Figure 4.58 Change Mode.

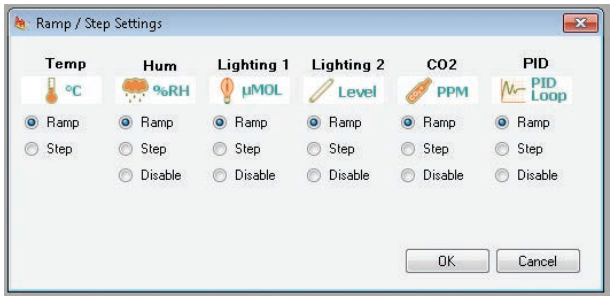


Figure 4.57b: Ramp/Step Setting Software v3.10 and later

Figure 4.58: Change Mode

Security and Login

The security settings are entirely based in the Chamber Controller. This permits individual Chamber by Chamber settings.

Security and Log-In Screen

A single prompt for password will appear if the security features are enabled at the Chamber Controller. The password entered is validated by the chamber and access is granted if the password matches the Chamber settings.

Log-Out Security Screen

Logout is automatic. When the Remote Control program is terminated, you will be logged out of the Chamber in a few seconds.

5.0 REMOTE CHAMBER PROGRAMMING

The Remote Chamber Programming allows the user to work with the Chamber from offsite locations using remote communication technologies.

In this chapter, you will learn how to:

- Add Subscribers
- Receive and use Email Alerts
- Use WebReports to view Chamber history
- Connect to Central Management™ via Remote Desktop

5.1 Email Alerts

This section covers the Email Alert message and its features. The configuration details of the Central Management™ Email settings are covered in Chapter 6.0 System Maintenance and Troubleshooting.

All of the features in this Chapter require configuration by on site IT personnel.

Alert Subscriber

There are two types of Subscribers for Email Alerts.

- Network Subscriber; receives Global Email Alerts from all chambers on the Network
- Chamber Subscriber; receives Email Alerts only for the chambers for which he has subscribed, Figure 5.1: User Creation.

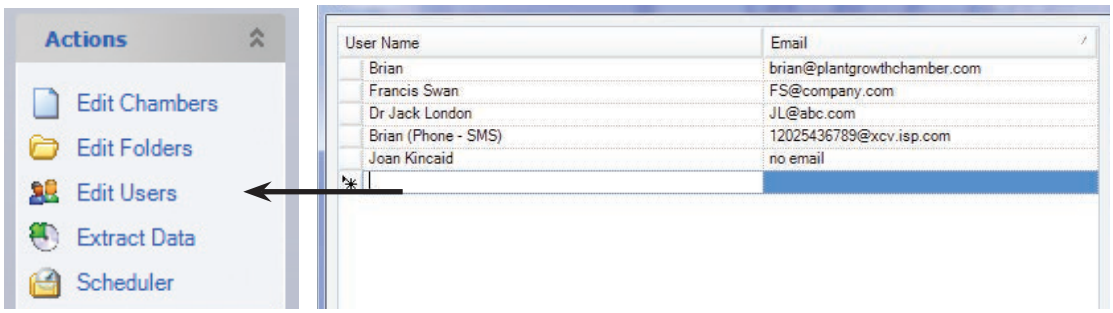


Figure 5.1: User Creation

All Subscribers must first be added as Users via Central Management™ "Edit Users" menu item. Name and valid email address are required. Once in the User List, Names can be "attached" to a particular chamber subscriber list or added to the network subscribers list.

Add subscribers

To Add a Chamber Subscriber to a particular chamber, start by right-clicking on the particular chamber thumbnail of Central Management™. This opens the Chamber Menu, Figure 5.2: Chamber Menu - Properties.

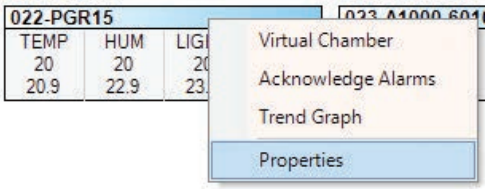


Figure 5.2: Chamber Menu – Properties

Next, select "Properties".

Select the "Subscriber" tab of the Properties window.

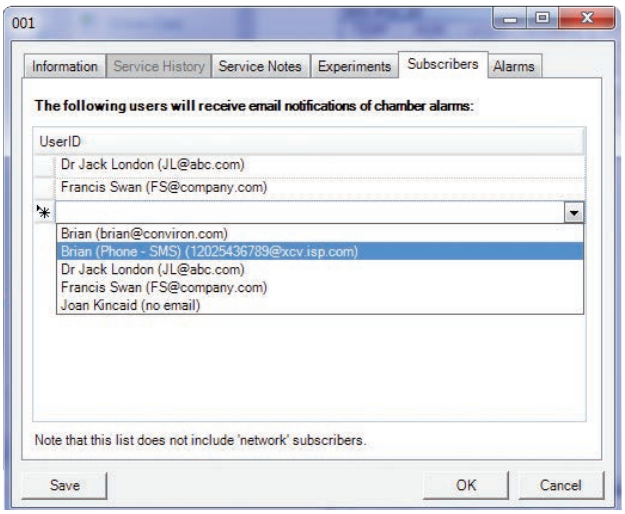


Figure 5.3: Chamber Subscriber

Click on the drop-down menu ▼ to display the current user list, Figure 5.3: Chamber Subscriber.

You may add one or more users to the subscriber list. All users will receive an Email Alert when an alarm condition at this chamber is triggered that meets the Email Alert configuration.

To Add a Network Subscriber to Global Email Alerts, from Central Management™ select "Tools" menu and then "Network Subscribers", Figure 5.4: Network Subscriber.

Again, you may add one or more Network Subscribers to the subscriber list. All subscribers on the list will receive an Email Alert in the event of an alarm condition at ANY Network Chamber that meets the configured Email Alert settings. Subscribers who are listed on both Network and Chamber lists will receive only a single Email Alert.

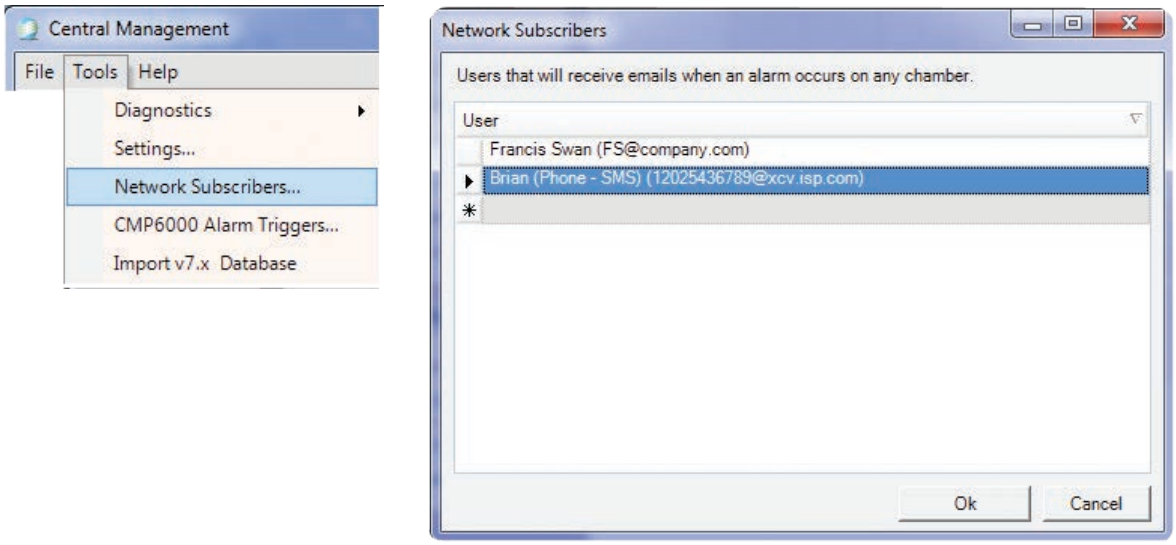


Figure 5.4:Network Subscriber

Alert Message

The Alarm email message contains;

- when the alarm occurred
- what the priority was and
- a text description of the alarm condition

The Chamber uses abbreviations in the description, that are easily understood. Looking at the description line of the sample Alert Message in Figure 5.5: Alert Email Message: "Description: High Humidity", selecting the Web Report link opens a Web page, Figure 5.7: Email Alert Link Page, with in depth information on alarming chamber.

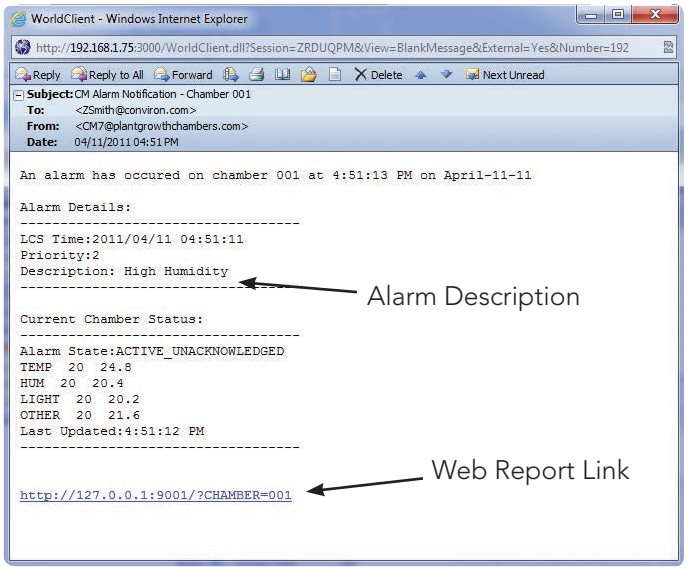


Figure 5.5: Alert Email Message

5.2 Web Reports

Status

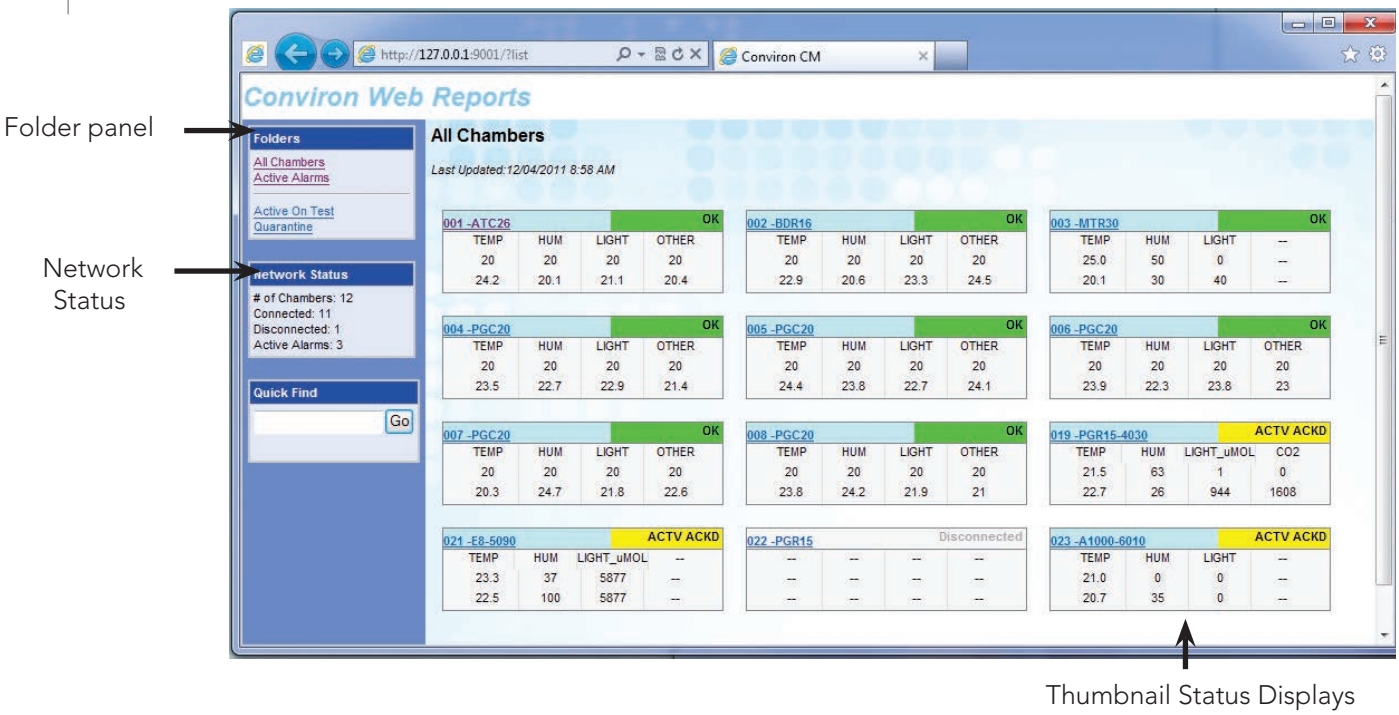
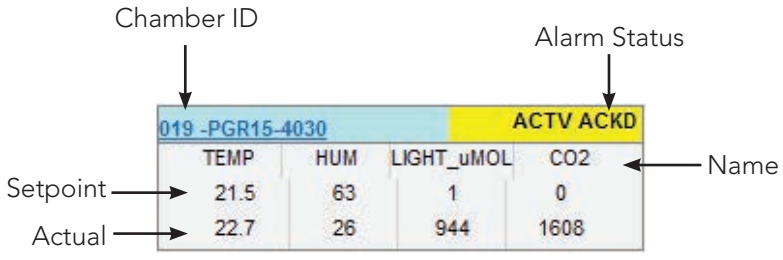


Figure 5.6: Web Report



Chamber Page

Selecting a chamber ID number will link to the Chamber page. The current alarm status messages are displayed. Five menu choices allow navigation to additional information pages. Each page allows for the selection of particular time periods for the displayed data, Figure 5.7: Email Alert Link Page.

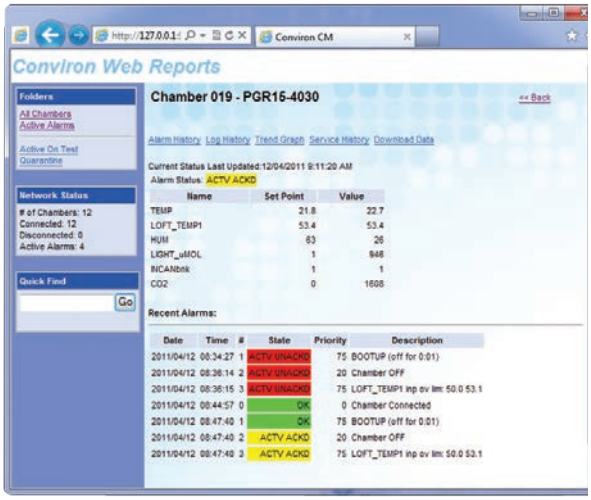


Figure 5.7:Email Alert Link Page

Alarm History

After clicking on Alarm History, specify the date to display and click "Show", Figure 5.8: Alarm History.

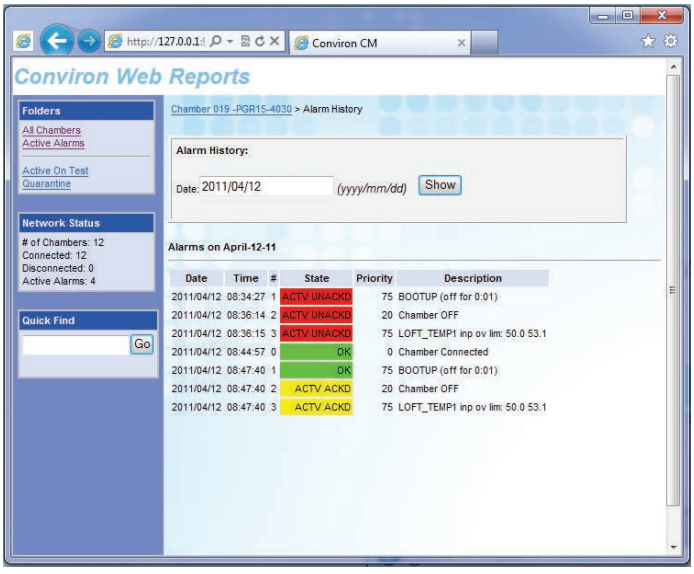


Figure 5.8: Alarm History

Log History

After clicking on Data Log History, specify the date to display, check "Show Alarms" if desired, and click "Show", Figure 5.9: Log History.

Trend Graph

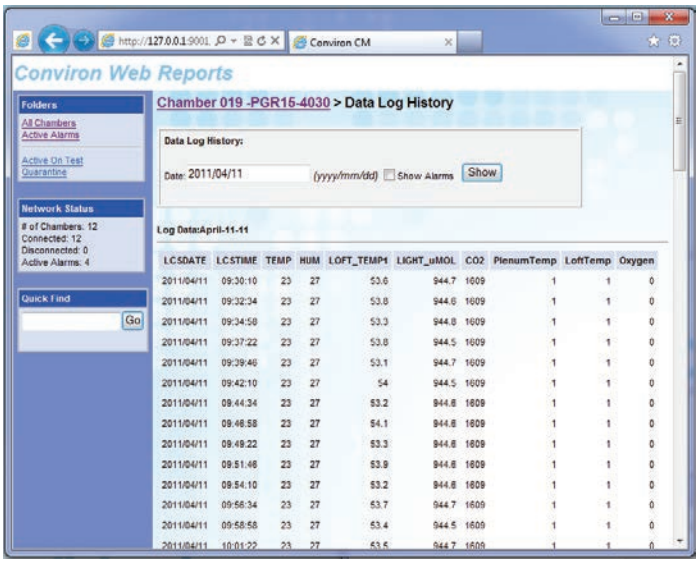


Figure 5.9: Log History

After clicking on Trend Graph, specify the date and number of days to display. Select the data fields to graph from the list boxes and click "Show", Figure 5.10: Trendgraph. Optionally check "Show Alarms" to display alarm time indicators.

Figure 5.10: Trendgraph

Service History

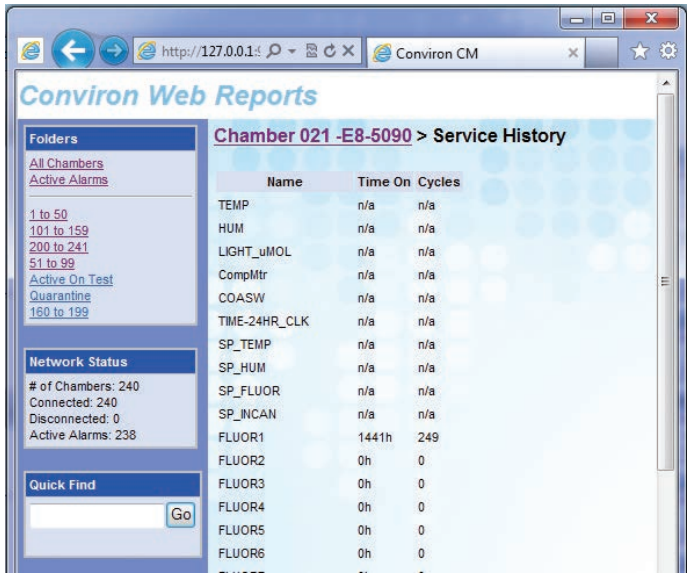


Figure 5.11: Service History

After clicking on Service History, the current time-on or cycles of each output will be shown. These values can only be changed at the Chamber's local display screen and only for CMP4000-5000, Figure 5.11: Service History.

Download Data

To download Chamber logged information (alarm or data logs), Select the Chamber, Start and End dates, then the type of data, Alarm or Log data. Finally click on extract, Figure 5.12: Download Data.

The "Download Data" form automatically suggests a suitable name for the data downloaded, Figure 5.13: Open / Save Download.

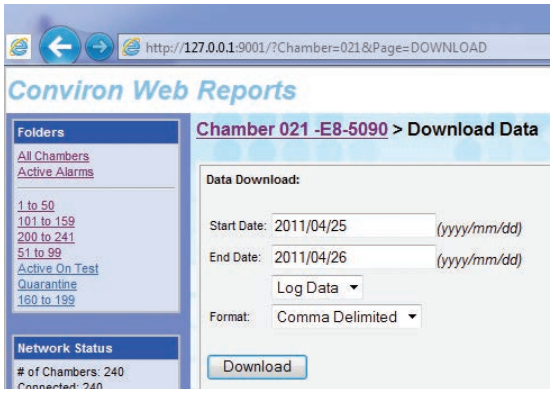


Figure 5.12: Download Data

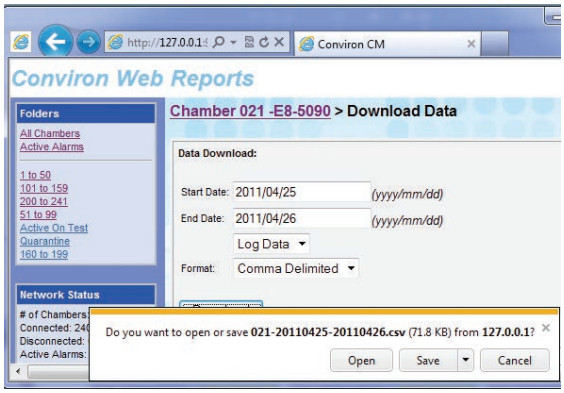


Figure 5.13: Open/Save Download

5.3 Remote Desktop

This instruction is based on Microsoft Windows XP Professional. Other Windows interfaces differ slightly.

Conviron Central Management™ is normally the connection point to several external alarm monitoring systems. Consequently, it is important to understand the following;

1. Users of CM must have permission to connect to CM and if the work requires rebooting or shutting down the equipment, the onsite authority must be informed such that this procedure can be accomplished safely.
2. Be certain of the correct procedures for remote connection, login and disconnect. It is possible to select the incorrect "quit" methodology and "shutdown" the CM system rather than simply disconnecting the remote connection. If the system is shutdown, all subsequent chamber alarms occurring would not be recognized by CM, thereby failing to send out alarm notifications. Once shutdown, the CM system would require a manual startup.
3. While the CM system shows many of the chambers' parameters, alarm settings and physical conditions are not available to the remote user. Any type of change or diagnostics are best performed when onsite personnel are available to work with the remote user.

Central Management™ access is via generic Windows Terminal Services or Microsoft Windows Mobile 2003SE for PDAs.

Logon Security

By default, Conviron supplied Central Management™ systems have the Remote Desktop connection enabled. Typically only the administration account "conviron" is permitted to "take-over" control of the Central Management™ computer.

Install Defaults

The login and password is unique for each Central Management™ system and is documented in the Central Management™ Installation Manual delivered with the product shipment. If this information is lost, please contact Conviron Client Services, with your Central Management™ serial number, which is located on the Central Management™ PC side panel, Figure 5.14: Serial Card.

Figure 5.14: Serial Card

Single User

Microsoft Remote Desktop protocol (3389) can be used to do a Central Management™ takeover. Microsoft XP Professional software allows a single logon session at any given moment. When the remote desktop session is active, the Central Management™ console cannot be used without disconnecting the remote user. Conversely, locally logging on to the Central Management™ system during a remote session will disconnect the remote user.

When a user is disconnected, their programs are closed and unsaved data may be lost.

Start

Figure 5.15: Remote Desktop - Connection

To connect to the Conviron Central Management™ Server, open your Remote Desktop program:

Start > All Programs > Accessories > Communications > Remote Desktop Connection

Type in the TCPIP address of the Conviron Central Management™ Server, using the address that your on site IT staff provide, Figure 5.15: Remote Desktop - Connection.

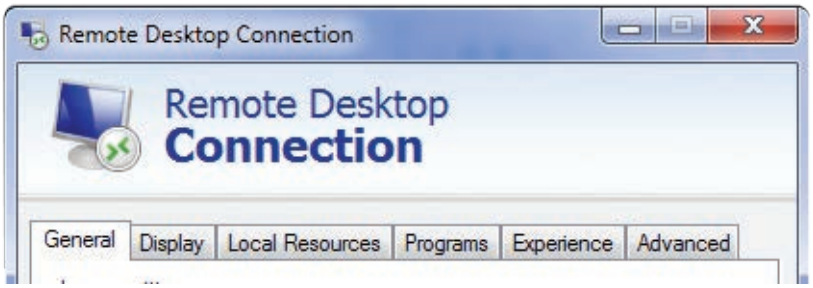


Figure 5.16: Remote Desktop - Options

This will likely be the TCPIP address of a firewall or the Central Management™ system Building Network Connection address.

Click on the OPTIONS button to set the defaults for your sessions.

Options

Before connecting, review the Settings under each Tab to set the desired parameters for your connection and graphics needs. To share drives and clipboard with the remote Central Management™ system, the related options must be enabled, Figure 5.16: Remote Desktop Options.

Display

The display setting shown is the default. This is suitable for most situations, Figure 5.17: Remote Desktop - Display Settings.

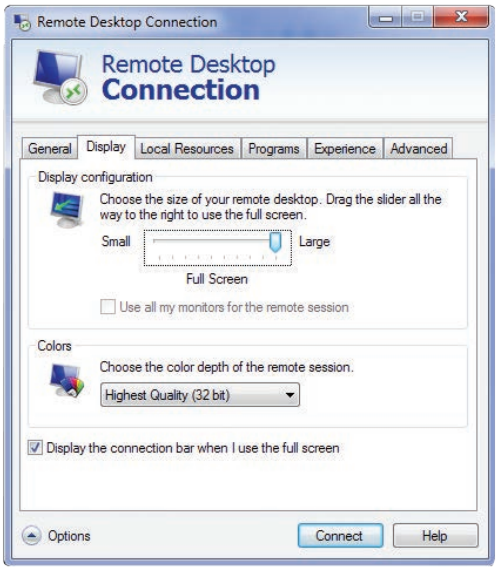


Figure 5.17: Remote Desktop - Display Settings

Local Resources

Clicking on the "more button" shows the drive list, Figure 5.18: Remote Desktop - Sound and Drive Mapping.

Checking a drive letter enables disk drives to be available to transfer local files to and from programs on Central Management™ Server. Improved performance will be achieved if these options are disabled. Checking printers allows your local attached printer to be available on Central Management™ server programs. Printer driver installation may be required, depending on printer requirements. Ensure Clipboard is checked to allow cut and paste operations between the Central Management system and remote computer.

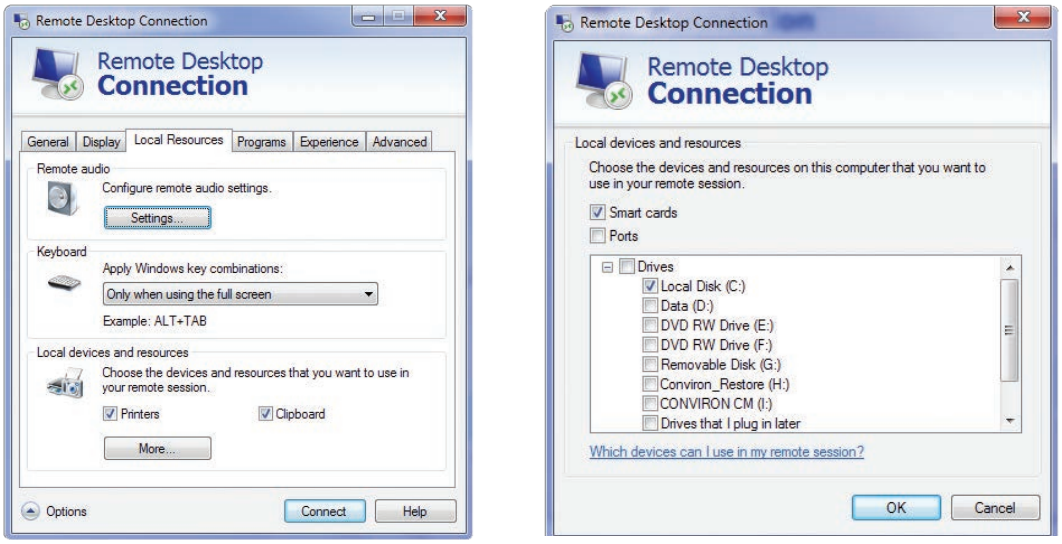


Figure 5.18: Remote Desktop - Sound and Drive Mapping

Experience

Set the performance option of the experience tab to your connection speed. Un-checking the features boxes will speed the display performance but lower the quality of the Central Management™ screens, Figure 5.19: Remote Desktop - Experience.

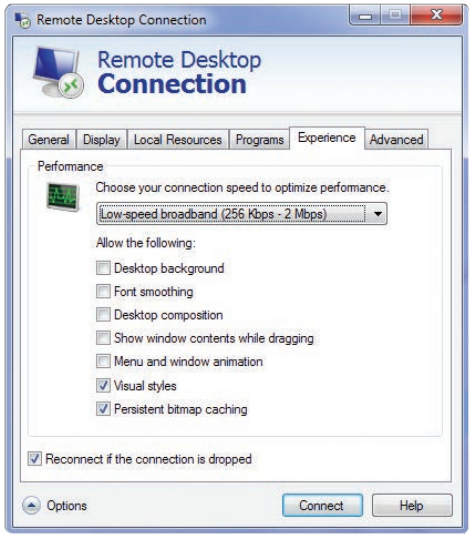


Figure 5.19: Remote Desktop - Experience

Save defaults

Once these are set as needed, return to the General Tab and save your settings for future connections, Figure 5.20: Remote Desktop -Save Setting - Connect.

Select "Connect" to start the logon process. This required you to have an active Internet connection.

Logging On

As soon as the connection is established, a dialog box will prompt you for **User name:** and **Password:**

As noted earlier, contact Conviron Client Services if you have lost this information. Be prepared to provide the Central Management™ system serial number.

Once you are connected, the Central Management™ Desktop will be displayed in Full-screen.

When your session is complete, Select "Log Off" to close programs and close the remote session. The Central Management™ programs run as Windows Services and will run as long as the Central Management™ Computer is powered on.

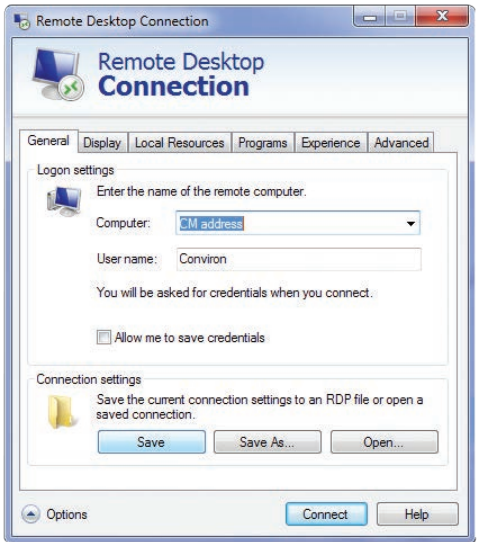


Figure 5.20: Remote Desktop - Save Settings - Connect

6.0 SYSTEM MAINTENANCE AND TROUBLESHOOTING

The Central Management™ system settings, Chamber configuration, Operating System and the Client PC settings are all important to ensure systems communicate properly.

In this chapter, you will learn how to:

- Connect Hardware Components
- Check all system settings - Central Management™, Firewall, Chamber
- Test functionality of devices
- Perform Basic Troubleshooting
- Configure Software features
- Setup Central Management™ Backup
- Run DVD Restore System
- Update DVD Restore
- Install Central Management™ Software-only

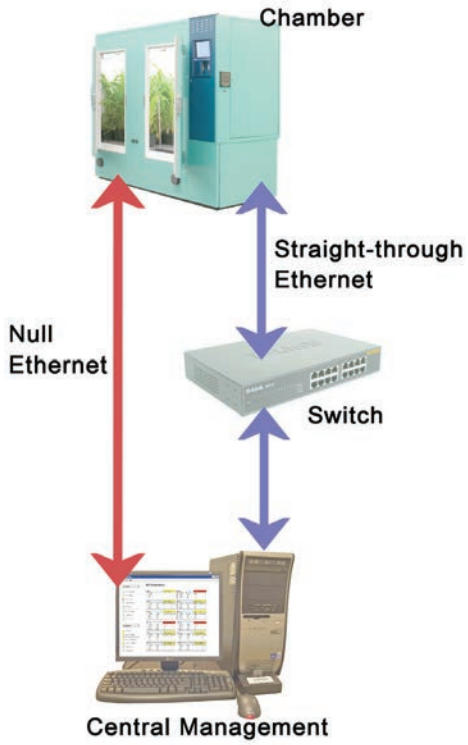


Figure 6.1: Ethernet Connections

6.1 Connection Procedure

1. Connect the Cabling to the Chamber
2. Connect Devices to the Network Switch
3. Connect Central Management™
4. Set the TCP/IP Addressing of Central Management™
5. Set the Chamber ID (TCPIP) Addressing
6. Verify and Test Communications

Follow the connection procedure, ensuring all devices are connected before applying power.

Cable

Ethernet Straight-through cables are normally connected to the network Switch (or Hub) and to each device.

If no switch is involved, an Ethernet Crossover cable is connected directly from the Chamber to the PC.

See Figure 6.2: Ethernet Crossover Cable diagram for details.

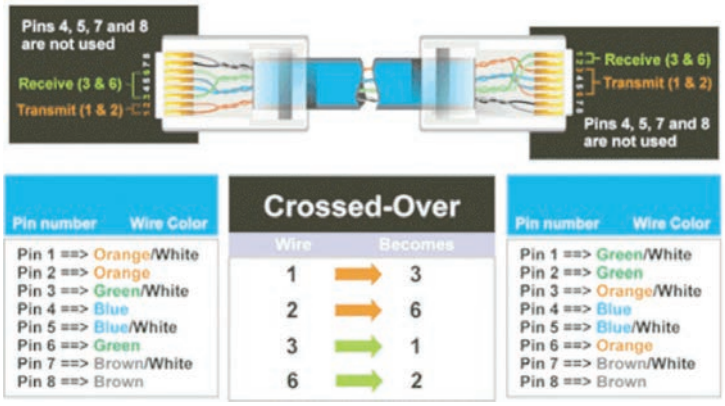


Figure 6.2: Ethernet Crossover cable

Chamber

1. Connecting the Cabling to the Chamber
   The Central Management™ network uses UTP (Unshielded Twisted Pair) 100Base-T Category 5E, Ethernet cabling. From the Chamber the cable exits the control panel and is laid in a series of "J" hooks crossing the ceiling/wall. The "J" hooks are spaced on a maximum of 5-foot centers and bring each cable run in an organized fashion from the devices (Chamber and PC) to the Switch(es) location, Figure 6.3: J Hook Cable Supports.

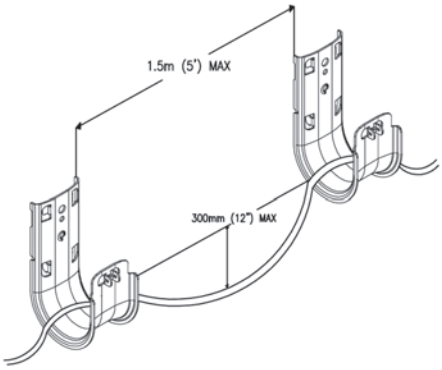


Figure 6.3: J-Hook Cable Supports

   Connections to the Chamber Controller should be made with the Controller powered off.

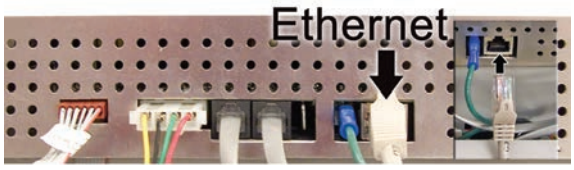


Figure 6.4: CMP4000-5000 Bottom Ethernet Connection

   Connect an Ethernet cable to the Chamber. The cable is connected to an RJ-45 receptacle on the bottom plate of the chamber Controller or at the top of the Control Panel. See Figure 6.4: CMP4000-5000 Ethernet Connection point or Figure 6.5: CMP6000 Ethernet Socket.

Figure 6.5: CMP6000 Ethernet Socket

Switch

2. Connecting to the Network Switch
   The switches or hubs provide multiple ports that are wired with Ethernet UTP cables connecting each chamber to Central Management™. Each port has the same function. One cable for each device, Figure 6.6: Network Switch.

Figure 6.6: Network Switch

PC

3. Connecting the PC (Central Management™)
   Connect the Chamber and Central Management™ PC to the Ethernet switch using the same ethernet cabling as the Chamber. The correct network adapter to connect to the chambers is labeled "Chamber network", Figure 6.7: Central Management™ PC Connections.

   The Building Network connection is optional and must be configured by on site IT staff.

4. Checking the Addressing of the Central Management™. The Central Management™ system is installed with 192.168.0.100 (netmask 255.255.255.0) as the default network address. Chambers also default to 192.168.x.xx for Central Management™ Network, but their address must be set, so each chamber has a unique ID (address).

   Assuming the first chamber is set to 192.168.0.1 (Unit ID 001) set each chamber to have sequential IDs. (1,2,3 ...and so on). Conviron has reserved the first (100) addresses for legacy chambers, CMP4000 and CMP5000. The remaining addresses of 192.168.0.101 to 254 are suitable for selection for CMP6050 chamber Controllers.

Figure 6.7: Central Management™ PC Connections

The standard configuration of the chamber Controllers prior to CCS v7 used different TCP/IP addresses. New chambers use 192.168.x.xx by default. Legacy chamber configurations MUST be updated to enable communication to the new Central Management™ address.

Updates must be done with the assistance of Conviron Client Services

Chamber address

5a. Setting Addresses CMP4000 and CMP5000

- Power up the Chamber's Controller. Once you see the chamber status screen, touch the Options icon and locate the Group and Unit numbers.
- Touch the group and unit buttons, Figure 6.9: Address - Group + Unit to set the Controller's Group to "0" and Unit ID to "1-99" or the desired TCP/IP address.:
- Once the Group and Unit are set, 'Touch' the "EXIT" icon, to save the change and exit.

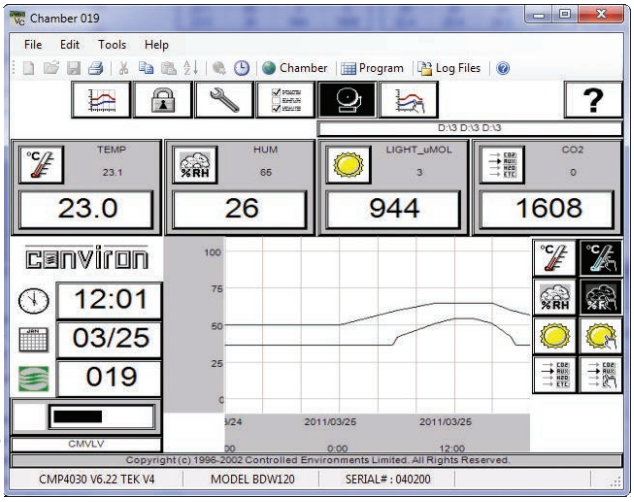


Figure 6.8: CMP5090 Status Display

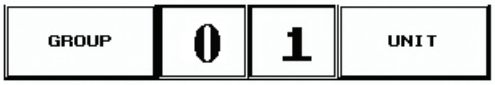


Figure 6.9: Address - Group + Unit

- A pop-up window will appear warning "Net Address changed you must cycle power". Proceed to 'Select' OK. After the restart the new Unit ID will be shown on the Controller status display, Figure: 6.8: CMP5090 Status Display.
- When the Status screen is viewed, communication between the Chamber and Central Management™ should be completely functional.

Addressing format requirements:

IP address is 192.168.**x.yy**
x is the first digit of the LCS. Range is **0 to 9**
yy are the last two digits of the ID. Range is **1 to 99**
Subnet mask is fixed at 255.255.255.0

Setting the Unit ID to 001 will set the TCP/IP address of the chamber to 192.168.0.**1**.
Remember, the chamber must be set to an address in the same network (x) as the Central Management™ PC (default - 192.168.0.100).

Chamber address

5b. Setting Addresses CMP6000

The CMP6050 series can be connected to a Central Management™ system on an Ethernet Local Area Network. To enable communications the Controller must be connected to the network and configured with a suitable network address. There are two network addresses to set up in the CMP6050 series as follows:

- CMP Address: Address or ID of the Controller within the network.
- Netmask: Divides an IP address into subnets and specifies the network's available host.
- Central Management™ Enables or Disables CM communication
- CM Address Central Management™ IP Address

A valid IP address is needed for the CM Address value even if there is no Central Management™ system present.

To set the Chamber Addressing:

a. From the status screen, touch the 'ID' button ID 000 to access the network configuration, Figure 6.10: Network Configuration)

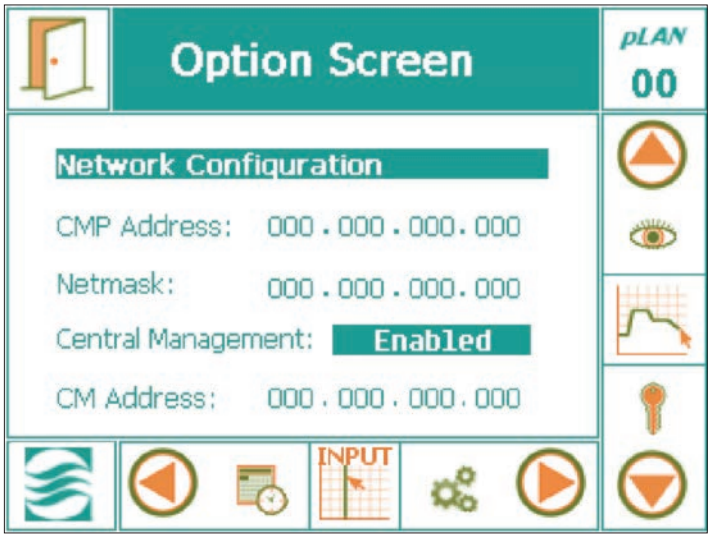


Figure 6.10: Network Configuration

Figure 6.10a: Controller Keys

If "Disabled" is displayed, Select the "Disabled" text and use the "Scroll Up" arrow key to change "Disabled" to "Enabled", then press "Enter" to save. (Figure 6.10a: Controller Keys)

b. To change the address numbers touch each individual numerical field. A pop-up keypad, Figure 6.11: Keypad will appear each time a field is accessed.

Figure 6.11: Keypad

c. Once all the addresses have been entered, touch the 'EXIT' button, Figure 6.12: Exit and a pop-up warning window, Figure 6.13: Save Changes, will appear to confirm the numerical entries:

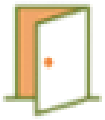


Figure 6.12: Exit

d. Touch the 'Yes' or 'No' button to return to the Status Screen. Touch the 'Cancel' button to return and re-enter any numerical address errors.

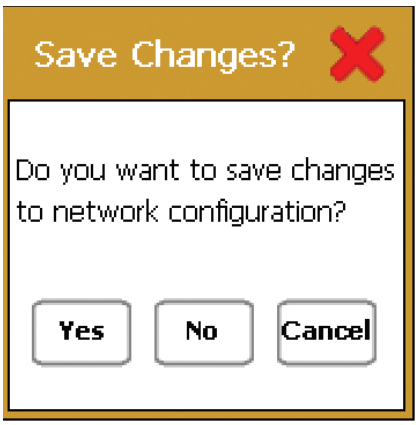


Figure 6.13: Save Changes

Test

6. Test Communications with Central Management™

When the chamber Controller boots up it senses the cable connection to the switch and to Central Management™ system. If the connections are in place and configured correctly, the Controller signals Central Management™ and a socket connection (software communication) is established. Through this socket, the chamber information is sent to Central Management™. The most obvious indicator of the communication is the Chamber Status Thumbnail on Central Management. To start Central Management™, double-click on the Central Management™ icon.

If the unit ID for your chamber is not shown on the "All Chambers" display, you must select "Edit Chambers" to add a new display. "Grayed-out" displays are not communicating between Central Management™ and the Chamber., Figure 6.14: Central Management™ Status Thumbnails.
Chamber thumbnail displays will appear, typically, when a chamber is powered on.

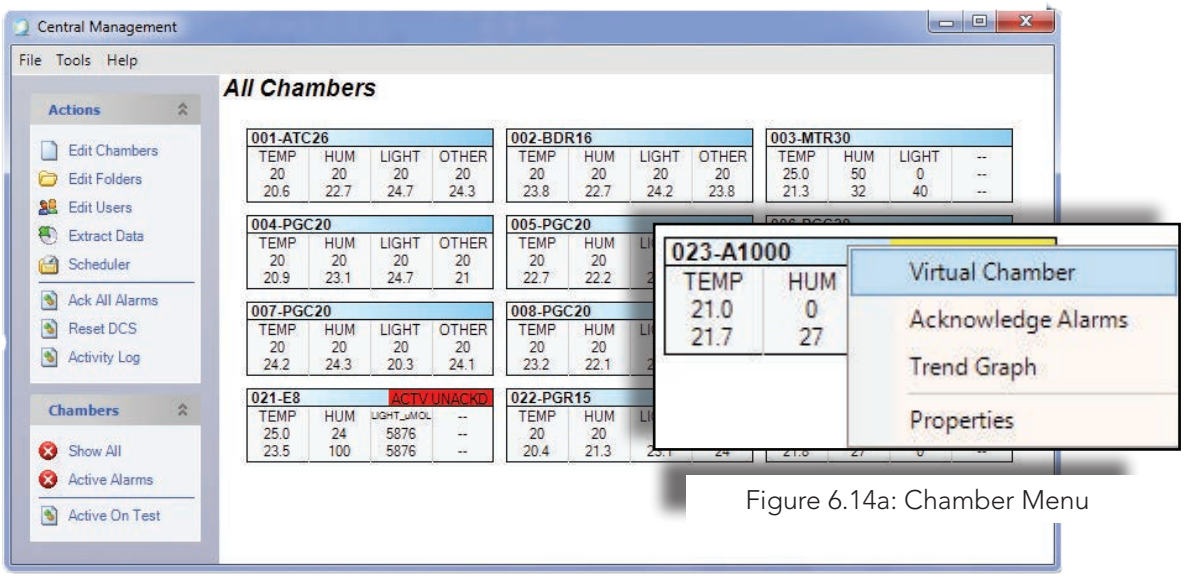


Figure 6.14a: Chamber Menu

Figure 6.14: Central Management Status Thumbnails

After a PC power on, thumbnail displays may take up to 15 minutes to appear. To verify communications to the chamber, a virtual login can be attempted at any time. Just right-click on a thumbnail display and select "Virtual Chamber" from the "Chamber Menu", Figure 6.14a: Chamber Menu.

This window, Figure 6.15: Connecting, may appear as communications initiate with the chamber. Normally this proceeds rapidly. Within seconds the Virtual Login will open to the chamber status screen,

One of the following Virtual Chamber Status screens will appear indicating the connection is successful, Figure 6.16: Virtual Chamber for CMP5090 or Figure 6.17: Remote Control for CMP6050. If neither appear, an error message will be displayed.

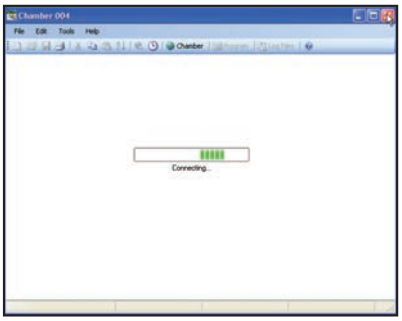


Figure 6.15: Connecting

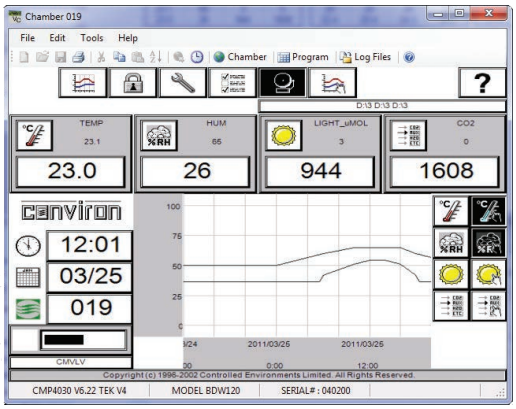


Figure 6.16: Virtual Chamber for CMP5090

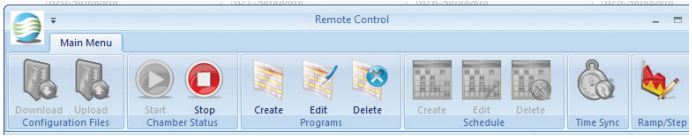


Figure 6.17: Virtual Chamber for CMP6050

The error messages indicate a communications failure, Figure 6.18: Login Failure - CMP5090 and, Figure 6.19: Login Failure - CMP6050. Use the **Chapter 6.2 Diagnostics** section that follows to check all settings and connections and then retest. If the problem persists, seek Conviron Technical assistance.

Figure 6.18: Login Failure - CMP5090

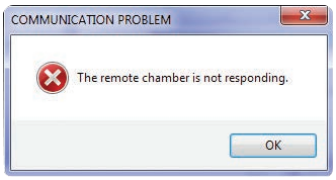


Figure 6.19: Login Failure - CMP6050

6.2 DiagnosticsSwitch

The Switch has indicators that will assist in determining if connections and communications are operational, Figure 6.20, Network Switch.

Figure 6.20: Network Switch

Link/Act -This indicator lights up when the port is connected to an Ethernet device; if the light is blinking, it indicates that data is being transmitted or received.

Power - The Power indicator lights green when the switch is receiving power; otherwise, it is off.

FDX / Col (Full-duplex/Collision) - This LED indicator lights green when a respective port is in full duplex (FDX) operation mode. Otherwise, it is blinking when collisions are occurring on the respective port in half duplex operation mode.

100Mbps - This LED indicator lights green when the port is connected to a 100Mbps Fast Ethernet station. Otherwise, the LED is off when the port is connected to a 10Mbps Ethernet device.

The Link light must be illuminated for any device connected to the switch, when the devices (Controller or PC) are powered on.

If not, check the device connected to that port. Reasons may include:

- The cable may be disconnected
- The cable may be defective
- The device address may be unset or
- It may need a reboot

If, when the Chamber Controller is powered on and the green Ethernet Network Indicator is OFF, check the following;

- Cable is connected
- Address is set
- Reboot Controller
- Software problem reload
- Hardware problem replace Controller

Chamber

On the rear panel of the Chamber Controller are several indicators for diagnostics. The green Ethernet Network Link Indicator must be constantly illuminated for Network communications to be functional. The red Ethernet Activity Indicator will flash intermittently when information is being transferred. (Such as during the PING test), Figure 6.21.

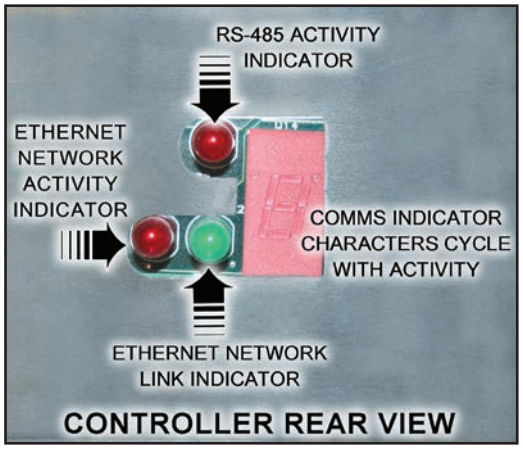


Figure 6.21: CMP5090 Indicator LEDs

Central Management™

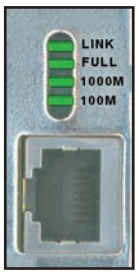


Figure 6.22: PC Ethernet Connector

Link/Activity – Figure 6.22: PC Ethernet Connector shows a steady green indicating good link between the Network Card and the switch. Flashing green indicates activity (transmitting or receiving) within the adapter.

Full– Steady green indicates the adapter is operating in full-duplex mode.

1000M – The LED indicator lights green when a 1000 Mbps device is connected to the adapter.

100M –The LED indicator lights green when a 100 Mbps device is connected to the adapter.

If all the above checks were accomplished and still no Thumbnail Display activity is seen.

- Try a Virtual Login to the Chamber
- In a Command window run a Ping Test. See the Ping section that follows for complete details.

If, when the CM is powered on, and the green Ethernet Network Indicator is OFF, check the following

- Cable is connected
- Address is set
- NIC is Enabled
- Software problem Run "ping 127.0.0.1" you must get a reply, not a time-out or error.
- Hardware problem replace NIC

For hardware problems with PCs that are under Conviron warranty, contact Conviron Client Services. For software issues, re-installation of a device, driver or program will correct most problems. The Central Management™ system can be restored to factory conditions using the Restore feature as a final solution.

Network Ping

The Ping utility is essentially a system administrator's tool that is used to see if a computer is operating and also to see if network connections are intact.

A small packet is sent through the network to a particular IP address.

The computer that sent the packet then waits (or 'listens') for a return packet.

If the connections are good and the target computer is up, a good return packet will be received.

PING can also tell the user the amount of time it takes for a packet to make the complete trip.

One address that cannot be used by any computer in the world, is the address 127.0.0.1. This address has been reserved for what is known as the loopback address. A loopback address is an address that tells the computer to test its own basic network setup.

All Conviron units by default use the prefix "192.168" (custom or versions prior to V7, may have a different default prefix).

How to test Network Connection using Ping

1. Open a "Command Prompt" window and at the prompt (C:\ ), type the command line as shown, using the Unit ID number of the Controller as the internet address. Note, that all Conviron chambers use the prefix "192.168"

2. Use Ctrl-C to stop, record minimum, maximum and average ping times.

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS] [-r count] [-s count] [[-j host-list] | [-k host-list]] [-w timeout] destination-list

Example: To test chamber 001 use: ping 192.168.0.1

To test chamber 101 use: ping 192.168.0.101

Table 6.1 Ping Command Options

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS] [-r count] [-s count] [[-j host-list] | [-k host-list]] [-w timeout] destination-list

Options:	Description:
-t	Ping the specified host until stopped.
	To see statistics and continue - type Control-Break;
	To stop - type Control-C.
-a	Resolve addresses to hostnames.
-n count	Number of echo requests to send.
-l size	Send buffer size.
-f	Set do not Fragment flag in packet.
-i TTL	Time To Live.
-v TOS	Type Of Service.
-r count	Record route for count hops.
-s count	Timestamp for count hops.
-j host-list	Loose source route along host-list.
-k host-list	Strict source route along host-list.
-w timeout	Timeout in milliseconds to wait for each reply.

If the basic communication problem persists, consult local IT staff or call Conviron Client Services for technical assistance.

6.3 Central Management™ and Chamber Networking

In all Windows based Computer Operating Systems a network adapter will require a TCP/IP address to operate on the LAN. Conviron Software expects at least one adapter in the PC and it must be dedicated to the Central Management™ Network. The address of the adapter must be known by the Conviron Central Management™ software and the chamber.

Both programs have settings that must agree with the Operating Systems TCP/IP setting. The Central Management™ Setting "LCSNetwork" and the chamber setting of "Unit ID" must have the compatible TCP/IP settings as the Network Card allocated to the Central Management™ Chamber Network.

See the following section for details of the software setting for Conviron applications.

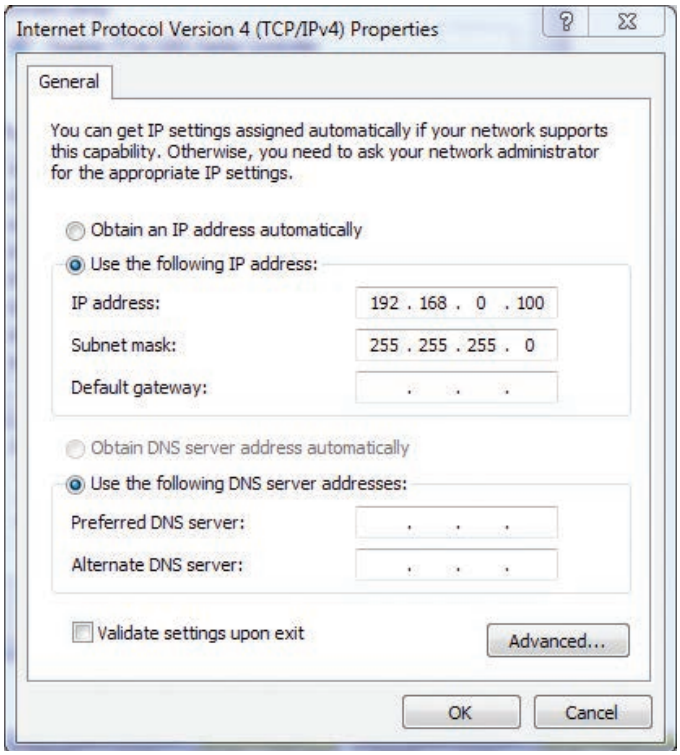


Figure 6.23: Internet Protocol TCPIP Settings

6.4 Central Management™ Software Settings

Central Management™ Settings Panel

Select "Tools" then "Settings" to configure Central Management™ options, Figure 6.24: Tools - Settings.

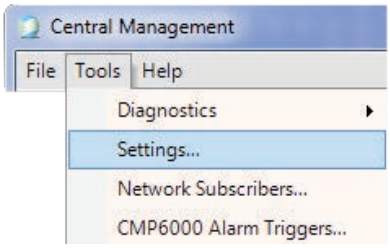


Figure 6.24: Tools - Settings

Alarms

The Central Management™ settings Panel has six sections for configuration information;

- Alarms
- DCS
- Debug Logging
- Email
- Server

- SMTP Mail Sever
- AlarmDelay setting will delay the alarm activation of email, audible and Dry Contact System alarms. It is specified in seconds, with a settable range of 1-999
- AudibleAlarmPriority setting will enable a short tone every 10 seconds for an Unacknowledged alarm that is less than or equal to the Audible Alarm Priority setting. The alarm priority setting for each chambers' specific alarm condition is set in the Local Control System or Chamber's Controller.

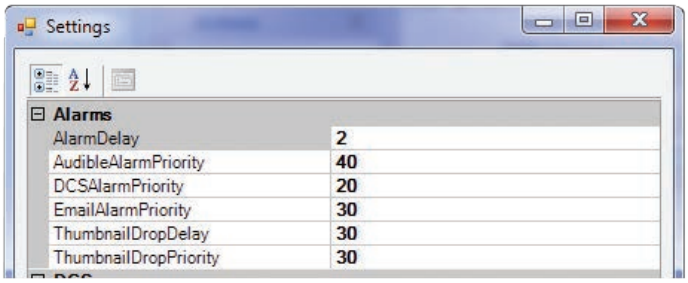


Figure 6.25: Alarms Settings

- DCSAlarmPriority (Dry Contact System) enables the Dry Contact System box to trigger contacts at the set priority value or less. Any Local Control System alarm of the priority 1 to 20 inclusive will trigger the contacts.
- EmailAlarmPriority setting enables the alarm priority number which is compared to every chamber alarm. If the Alarms priority numbers is less than or equal to this setting, Central Management™ will send an Email Alert notification action to all designated users.
- ThumbnailDropDelay time (in seconds) will delay the triggering of a "communication lost" alarm, when a Local Control System disconnects from Central Management™. This setting exists to provide compatibility with previous versions of Local Control System software that dropped connections intermittently, causing nuisance alarms. If set to zero this function is disabled.
- ThumbnailDropPriority setting is the alarm priority number applied to the "loss of communication alarm", between the Local Control System and Central Management™. The priority setting will determine Central Management™'s notification action.

Dry Contact System

- AudibleAlarm setting is true to be enabled and false to be disabled. The Audible alarm will emit a short tone every 10 seconds for an Unacknowledged alarm that is less than or equal to the Audible Alarm Priority setting. The alarm priority setting for each chamber specific alarm condition is set in the Local Control System or Chamber's Controller.
- DCSAddress (Dry Contacts System) address is set by the factory to the value needed by the alarm-sanity card. To obtain the address, with your mouse, right-click on the Computer icon (MyComputer in XP) and Select "Mangage" from the menu. The Computer Management program will be displayed. Select "Device Manager" from the left column, double-click on "Data Acquisition" and then double-click on "ACCES PCI-WDG-CSM". Select the "Resources" tab and note the first four characters of the second I/O range setting Figure 6.26a: Alarm Card Address. (i.e.- E480) This address will be entered into the Central Management™ "Settings" dialog after the software installation. This address is inserted into the Central Management™ Settings "DCSAddress". Figure 6.26: Alarm - DSC Settings.

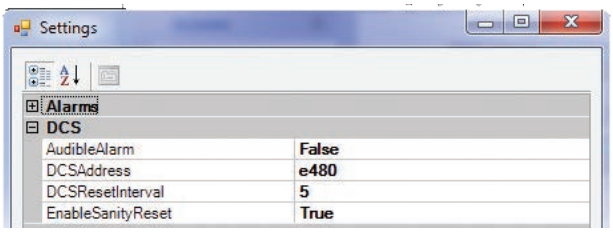


Figure 6.26: Alarm - DCS Settings

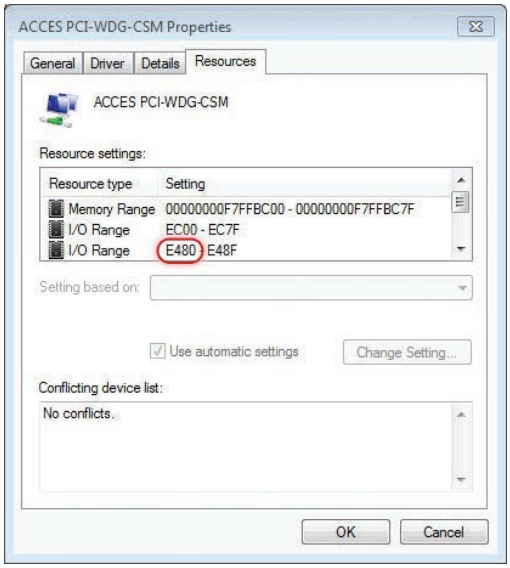


Figure 6.26a: Alarm Card Address

- DCSResetInterval a delay in seconds that the Central Management™ System will wait before resetting the Dry Contact System contacts after an Alarm has occurred. Set to zero (0) to specify no interval.
- EnableSanityReset is set to "TRUE" (default) to ensure continuous operation of Central Management™. In the event of PC lockup, due to a transient malfunction, the PC will be forced to restart.

Debug Logging

- DebugLogging should be set to "FALSE" (off) unless Conviron Client Services request this to be set on. When activated, detailed debugging log files are generated.

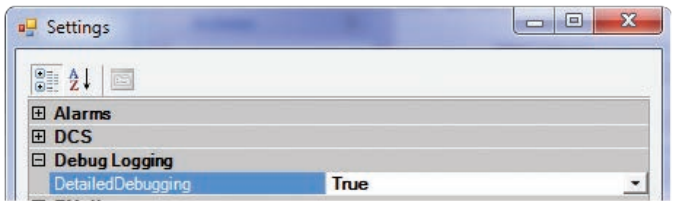


Figure 6.27: Debug Logging

Email

- EmailFromAddress This is the email address that Central Management™ will use on the Email Alert Message, it can be different from the SmtpUserID.
- EmailMaxAttempts is the maximum number of attempts the Central Management™ System will try to send an email alert.
- EmailRetryDelay is the time in seconds that the Central Management™ system will wait before trying to re-send an email if the SMTP server was not available. Range is 0 to 99999

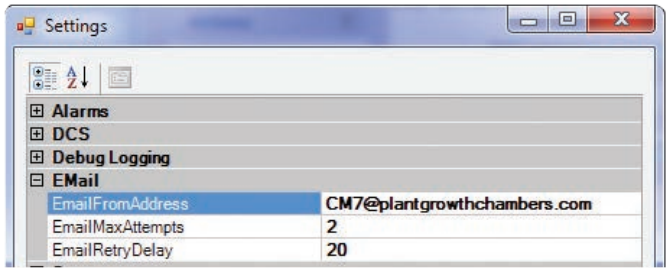


Figure 6.28: Email Local Settings

Server

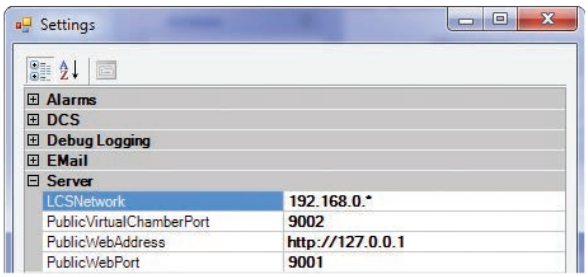


Figure 6.29: Server Settings

- LCSNetwork Class B TCPIP address. This must be the first two octets of the Central Management™ Network. Ex. '192.168' For CMP5090 Controllers or earlier or the first three octets for CMP6XXX Controllers. Ex. '10.242.56.'
- PublicVirtualChamberPort defines the port that Virtual Chamber software uses to communicate to the Chamber.
- PublicWebAddress will appear in the email Alerts that Central Management™ sends to the Email Subscribers. Users may browse to this address to view the chamber status. The address is specific to each installation, as it typically reflects the Building Network Address. The Central Management™ system is shipped with the Central Management™ address with the above default setting, and the on site IT staff are responsible for providing the correct "Building Network" address.
- PublicWebPort is appended to the Public Web address to permit access via a Web browser to the Web Reports page. ex. http://192.168.0.100:9001/?list

SMTP Mail Server

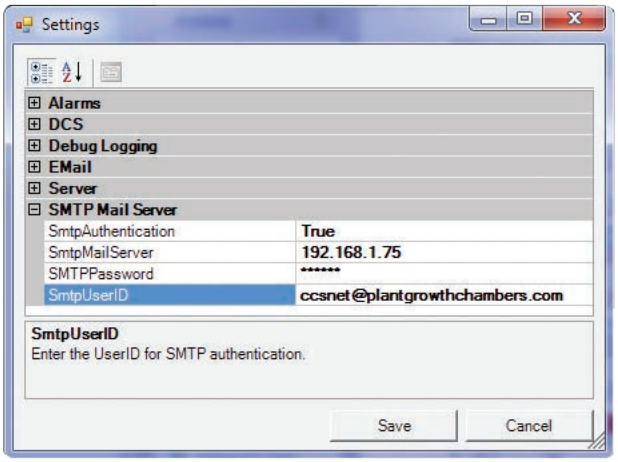


Figure 6.30: Mail Server Settings

- SmtpAuthentication set this option to "TRUE" if your SMTP server requires authentication.
- SmtpMailServer is the address of your email server for Central Management™ to send Email Alert messages.
- SmtpPassword is required if authentication is set "TRUE"
- SmtpUserID and password is assumed by your IT department will assign a SMTP User ID and password in conjunction with the Mail Server information. Once the server settings are complete and the "EmailFromAddress" is set, email alerts will be enabled. The final task would be to assign "Users" with email addresses to the "Network Subscriber List" or on individual Chambers' properties forms.

Restart the Conviron CM Service to accept all Email and SMTP Server settings.

6.5 Web Reports

Enable Web Reports

Follow this procedure to connect the Central Management™ Building adapter to the Network, Intranet or Internet to provide Web Reports to the target audience.

- Open Network Connections and select the Building Network Adapter.
- Right-Click on the icon and select "properties" from the menu.
- Select Internet Protocol version 4 and Click on "properties".
- Note the IP address
- Insert this address in the Server Settings "PublicWebAddress", see Figure 6.29

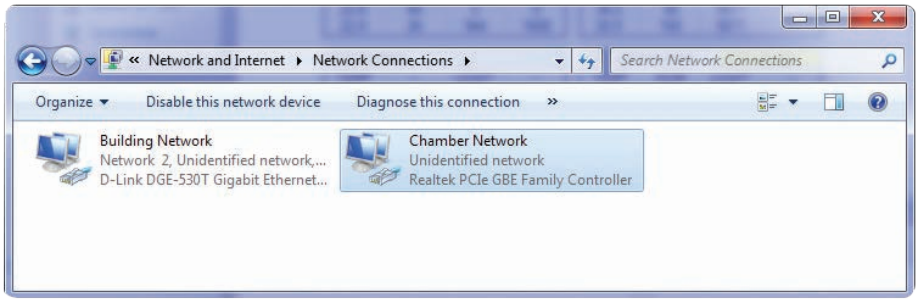


Figure 6.31: Network Connections

Contact your IT department and have them assign a static TCPIP address for the Building Network adapter.

If external (Internet) access is to be provided, a default gateway and DNS server addresses may be required, Figure 6.32: Building Network.

All settings are site specific and the responsibility of the on site IT administration to provide.

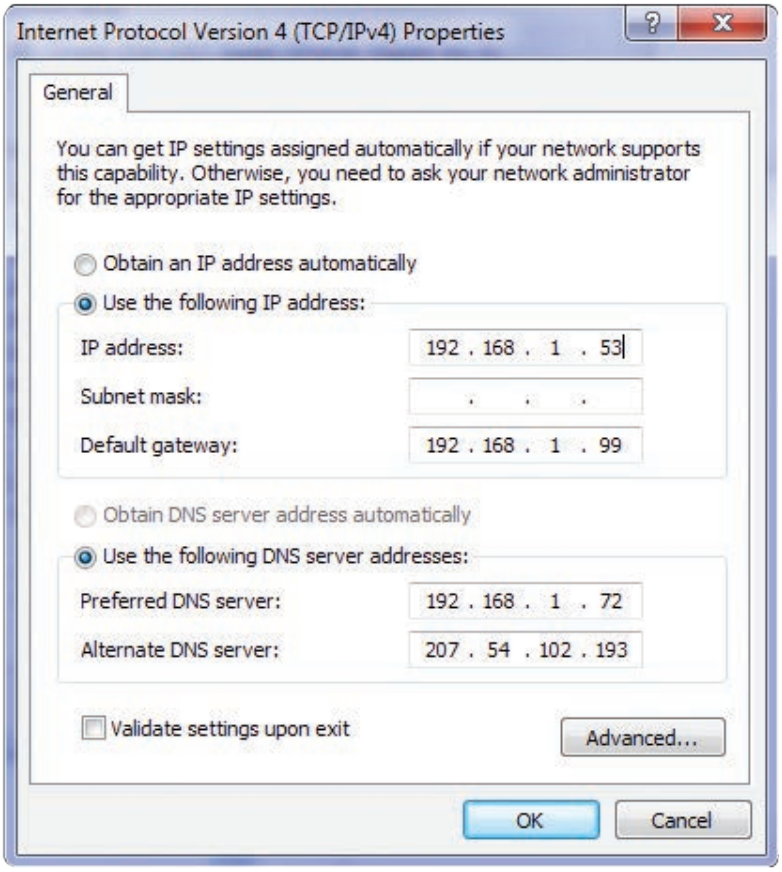


Figure 6.32: Building Network

6.6 Virtual Chamber Settings

Central Management™ Client

Virtual Chamber, as part of the Central Management™ software package, uses the settings of the Central Management™ for locating the chambers by address. When you right-click on a thumbnail display and select Virtual Chamber, the Central Management™ passes the network address and chamber number to Virtual Chamber. No additional configuration is possible.

6.7 Firewall Settings

Default Central Management™ Settings

Table 6.1: Microsoft Firewall Settings

Name	Profile	Enabled	Action	Programs \ProgramFiles (x86)\CM\	Local & Remote Address	Protocol	Local Port	Remote Port
Central Management™	All	Yes	Allow	CentralManagement.exe	Any	TCP	Any	Any
CM Service	All	Yes	Allow	CMService.exe	Any	TCP	Any	Any
CM Web Reports	All	Yes	Allow	Any Browser	Any	TCP	9001	Any
Remote Control	All	Yes	Allow	RemoteControl.exe	Any	TCP	161	Any
Virtual Chamber	All	Yes	Allow	VC.exe	Any	TCP	Any	Any
Remote Desktop	All	Yes	Allow	System	Any	TCP	3389	Any

Firewall settings are shown as a reference, Table 6.1: Windows Firewall Settings. Windows Firewall is enabled (by default) on the Conviron Central Management™ system.

Other security related programs will control the applications and external ports that are allowed to communicate with the outside world. This is normal behavior, however, these programs must have either permit rules or exceptions so you can authorize your communications program to use these ports to communicate.

Settings similar to those set for the firewall will enable Central Management™ programs to communicate via the Intranet and also the Internet. At the Enterprise Firewall the port 9001 must be forwarded to the Central Management™ system, to allow remote Internet users to be able to view the Web Reports (port 9001).

Microsoft Remote Desktop protocol (3389) can be used to do a Central Management™ takeover and is recommended to be restricted to users with Administration level access. Microsoft software allows a single logon session at any given moment. When the remote desktop session is active, the Central Management™ console cannot be used, without disconnecting the remote user. Conversely, locally logging on to the Central Management™ system during a remote session will disconnect the remote user.

Third party Client Security Software

The following programs were identified to require attention to ensure Central Management™ and the alerting mechanisms are operating correctly
and completely.

- McAfee Antivirus and Intrusion Prevention
- Trend Micro Antivirus and AntiSpyware

This is not an exclusive list, certainly other Security programs will require similar rules or exceptions to be added for Central Management™'s operation.

Add rules to "ALLOW" the programs in Table 6.2: Central Management™ Applications, to have unrestricted access the Central Control System Network. If Internet communications is utilized, then allow full Internet access, incoming and outgoing.

Table 6.2: Central Management™ Applications,

CentralManagement.exe	Remote Control.exe
CMService.exe	VC.exe

For Email, Virtual Chamber and WebReports access via the internet to be enabled, the following ports will need to be opened through any Firewall software;

Table 6.3: Central Management™ Port Requirements

SMTP (port 25) - Email	SNMP (port 161)
HTTP (port 9001) - Web Reports	port 9002 - VC Routing

Please call your on site I.T. support before altering any security software settings.

6.8 Central Management™ Backup

Central Management™ Software-only

The "software only" installation provides the optional backup scripts that are provided with Conviron's Central Management™'s full hardware system.

The required files for the automated backup system are provided in the C:\Program Files (x86)\CM\Util directory. These files need to be imported into the Windows 7 task scheduler:

CM2SSD_AutomaticBackup.xml and Backup CM Data to D partition.xml

It is up to the User to ensure the appropriate hardware is in place and to then activate the Tasks and test the backup system.

Central Management™ Hardware

The Central Management™ application uses Windows Task Scheduler and Windows Backup to automatically enable backup tasks for hardware based installations only.

Task Scheduler

The task "Backup CM Data to D partition.xml" is used to run a command script (CMv81bak2D.bat) twice per hour to "backup" the application log files from C:\Program Files (x86)\CM directory and all the CHAMBERS and SITES subdirectories contents, to the D drive partition.

Once per hour the D drive directory CMbak is backed-up by the task "CM2SSD_AutomaticBackup.xml " to the Conviron Restore Drive (Solid State Drive H:).

The Conviron command scripts can be modified to suit any special requirements. These files ASSUME a hardware setup of a C and D partition of the hard drive and a Conviron Restore Drive installed. Windows Backup™ software copies only the updated files from the D:\CMbak directory.

Backup Scripts

```
@echo off
rem Copyright 2011 Controlled Environments Limited, All Rights Reserved.bmc
rem CMv81bak2D.bat
rem V1.6  1/31/2011
echo %date%_%time%_Backup V81 to D drive started >> "C:\Program Files (x86)\CM\
ActivityLogs\backup.log"
xcopy "C:\Program Files (x86)\CM\Chambers\*.*" D:\CMbak\Chambers\ /E /D /C /K /Y
xcopy "C:\Program Files (x86)\CM\Sites\*.*" D:\CMbak\Sites\ /E /D /C /K /Y
xcopy "C:\Program Files (x86)\CM\ActivityLogs\*.log" D:\CMbak\ActivityLogs\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\AppLogs\*.log" D:\CMbak\AppLogs\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\*.license" D:\CMbak\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\*.mdb" D:\CMbak\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\*.config" D:\CMbak\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\*.xml" D:\CMbak\ /C /K /Y
xcopy "C:\Program Files (x86)\CM\Chambers.txt" D:\CMbak\ /C /K /Y
echo %date%_%time%_Backup V81 to D drive completed >> "C:\Program Files (x86)\
CM\ActivityLogs\backup.log"
```

Xcopy Command Syntax

Copies files and directory trees and is used in the backup scripts to quickly update the backups. This command tool may be modified to the clients needs.

XCOPY source [destination] [/A | /M] [/D[:date]] [/P] [/S [/E]] [/W] [/C] [/I] [/Q] [/F] [/L] [/H] [/R] [/T] [/U] [/K] [/N]

Options	Description
source	Specifies the file(s) to copy.
destination	Specifies the location and/or name of new files.
/A	Copies files with the archive attribute set, doesn't change the attribute.
/M	Copies files with the archive attribute set, turns off the archive attribute.
/D:date	Copies files changed on or after the specified date. If no date is given, copies only those files whose source time is newer than the destination time.
/P	Prompts you before creating each destination file.
/S	Copies directories and subdirectories except empty ones.
/E	Copies directories and subdirectories, including empty ones. Same as /S /E. May be used to modify /T.
/W	Prompts you to press a key before copying.
/C	Continues copying even if errors occur.
/I	If destination does not exist and copying more than one file, assumes that destination must be a directory.
/Q	Does not display file names while copying.
/F	Displays full source and destination file names while copying.
/L	Displays files that would be copied.
/H	Copies hidden and system files also.
/R	Overwrites read-only files.
/T	Creates directory structure, but does not copy files. Does not include empty directories or subdirectories. /T /E include empty directories and subdirectories.
/U	Updates the files that already exist in destination.
/K	Copies attributes. Normal Xcopy will reset read-only attributes.
/Y	Overwrites existing files without prompting.
/-Y	Prompts you before overwriting existing files.
/N	Copy using the generated short names.

6.9 Conviron Restore Process

Overview

All software is preloaded into the PC. The information below is required for emergency re-installation only!

Software Restore Overview

The First step in the process to restore the Central Management™ system is to restart the CM system and boot into the Restore Drive.

The Second step is select the System Image restore and choose the image from the Conviron Restore drive.

The Final step is to reload your personal applications added to Central Management™ after original delivery. Example Anti-Virus program.

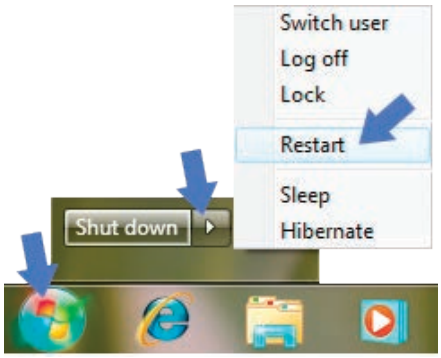
Backup all critical data BEFORE using the Restore Process, as C:\ drive will be erased. All changes to the Central Management™ PC since initial startup will be lost. Chamber data is stored in the C:\Program Files (x86)\CM\Chambers directory. It is recommended to save all files in the "CM" directory with the file extensions of LOG, XML, MDB, PGM, ALE, CP4, LICENSE and TXT. By default, the Autobackup application has saved all the chamber data to the D: drive (partition) and H: Conviron Restore drive (Solid State Drive).

Only drive C:\ is affected by the restore process!

Software Restore Procedure

1. Select the start menu->shutdown->restart. As soon as the system's beep is heard, tap the F8 key a couple times slowly.This will start the Boot Menu. If you miss the timing to start the boot menu, wait until the system has fully started, then"Restart" the again and repeat the process.

2. Select the KINGSTON SV100S264G drive. This is the Conviron Restore Drive. Wait until the system starts.



3. At the System Recovery Options dialog "Select Keyboard ..." leave "US" hightlighted and Select "Next".
4. At the System Recovery Options dialog "Windows found problems..." Select "No". Do Not Select "Repair and Restart".
5. At the next System Recovery Options dialog Select "Restore your computer using a system image . . ." and Select "Next".
6. At the System Recovery Options dialog "Select a System Image Backup", Select "Use the latest available system image", Location must be "Conviron Restore" drive then Select "Next".
7. When the software re-installation is complete the computer will be restarted. The chambers will automatically logon within a period of about ten minutes or less.
8. Once the system has been restored, copy backup data from either "D:\CMbak" or "Conviron Restore Drive\CMbak" (Auto backup) backups to the Central Management™ installation location on C drive. This procedure will bring your system's data from the factory settings up to the date of your last backup.
9. Lastly reload your personal applications added to Central Management™ after original delivery. Example Anti-Virus program.

Call 1-800-363-6451 or +1-204-786-6451 for Conviron Technical Services, if assistance is required

6.10 Creating a New System Restore Image

It is recommended to replace the restore image after major changes, such as application installation.

Step 1 Follow the Microsoft Backup instructions to make a "System Image" of C drive (including the system partition which is the default setting).

Step 2 Save this "system image" to a DVD or external drive and store it away safely for future use.

You may replace the "factory system image" on the Conviron Restore Drive, but do this at your own risk. Once it has been replaced you have only your current image for recovery options.

6.11 About Information

To find the Central Management™ version number;

- From the "Help" menu, choose "About".

The About Central Management™ dialog box appears. The version numbers are in the top half of the box, Figure 6.33: About Central Management™.

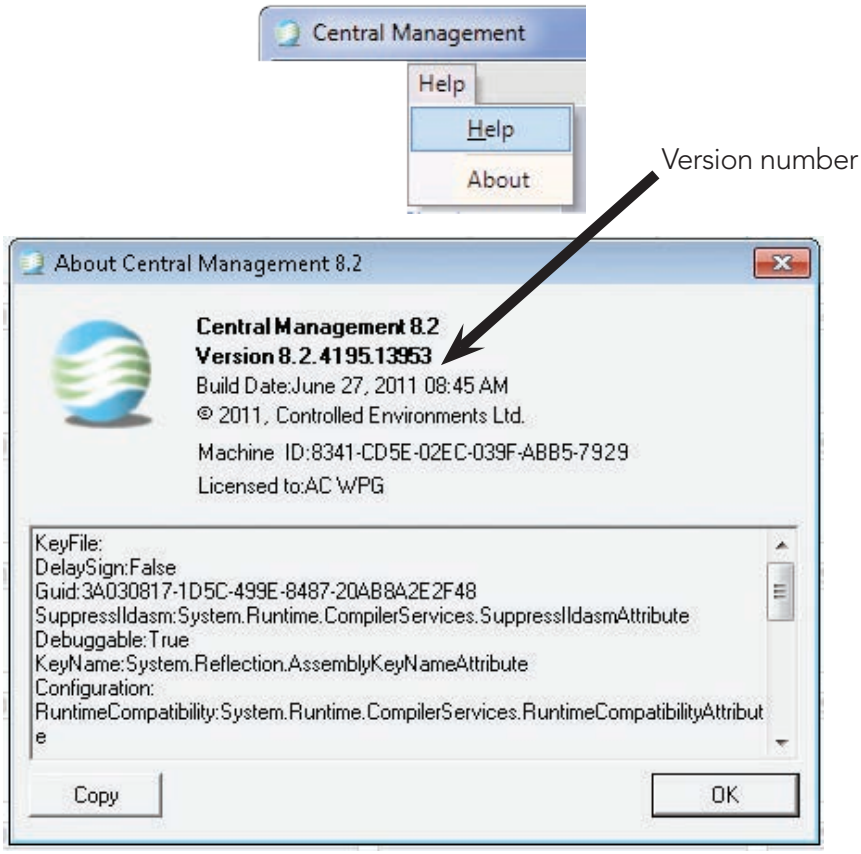


Figure 6.33: About Central Management™

To find the Central Management™ serial number

- Look on the side of the PC for a Card similar to Figure 6.34: Serial Number.

Figure 6.34: Serial Number

7.0 INSTALLING CENTRAL MANAGEMENT™

7.1 Central Management™ V8.1 Install Procedure

Requirements

Microsoft Windows™, versions; 2000, 2003, XP Pro, Vista or Windows 7 operating systems, with Microsoft.NETv2.0 installed. Windows 7 Pro-64 bit recommended.

PC Specification

The following outlines the typical Hardware requirements;

- Processor – 3 GHz + dual core;
- 8GB RAM
- PCI-e "dual display" graphics Controller;
- Tower case c/w 750W ATX power supply;
- DVD/CD-RW Internal, 22x dual layer SATA drive;
- Card Reader USB 2.0 cf/sm/sd;
- 2 TB SATA Hard Disk;
- Optional Serial Port (Com1: for CMP3000 CCS);
- USB Ports;
- 104 Key US keyboard ;
- Battery backed-up real time clock;
- Optical Bus mouse PS2/USB;
- Onboard Ethernet, 1000 BaseT, for Chamber Network;
- PCI-e Ethernet Card, 1000 BaseT, for Building Network;
- CSA /UL CE Certified system;
- 19" LCD Color Monitor;
- Y2K hardware + BIOS compliance

BIOS Selection: Password protection for CMOS parameters

Setting Options

- Ensure hardware meets or exceeds to Conviron Specification, above.
- Hard drive is partitioned to C=75% and D=25%.
- NIC boot roms should be disabled.
- PC must be configured to automatically restart, in the event of a power loss (power on resume). BIOS settings similar to "LAST STATE" are required.

DVD Installation

The software has two requirements. The login ID of the first user is to be "conviron" and this user must have local machine administration privileges.

Figure 7.1: Software Installation DVD

Insert the Central Management™ v8.1 DVD supplied by Conviron, into your CDROM drive. If auto-run is active a read me file will be displayed. If the CD does not auto-run, open the CD with Windows Explorer and open the file ReadMe1st.txt.

Always install the Central Management™ application in the default "C:\Program Files (x86)" or "C:\Program Files"location. Not following this recommendation will cause issues, particularly with computers using alternate languages.

A. Set TCP/IP address for ON-Board Ethernet (Chamber Network) as indicated by the installation program. (Typically address 192.168.0.100 and netmask 255.255.255.0)

B. A second Network card (Building Network) can be enabled and must be configured by on site I.T. staff to be used on the local building network.

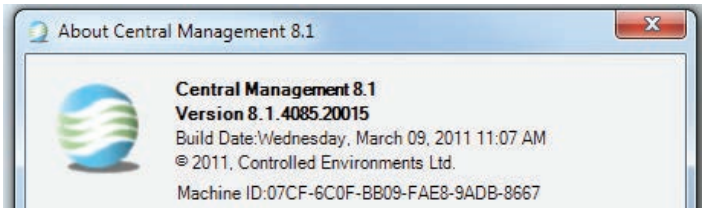
C. Install the current version of Adobe Reader to be able to view the Conviron Operator's Manuals.

D. Refer to Chapter 6.0 of the Central Management™ Operator's Manual to set appropriate firewall rules for your installation.

E. Go to "Starting Central Management" in Chapter 2.0 of the Central Management™ Operator's Manual for Installation verification.

Activation

Central Management™ Software will operate as TrialWare and will expire in 30 days, after which a license file is needed to continue using it. You can activate Central Management™ at any time, by running "Help-About-License".



Copy and send the machine ID via email or phone by contacting Conviron at:

centralmanagement@conviron.com or phone 204-786-6451

Conviron will supply a license file, copy it into the Central Management™ installation directory *C:\Program Files (x86)\CM*.

Starting

Run Central Management™ Program by double-clicking on the desktop icon titled

Central Management™ or click on Central Management™ in Start menu – Conviron group.

GLOSSARY

Building Network	The existing premise computer network
Cascade	To arrange open windows on the desktop so that they overlap each other
CCS	Central Control system – legacy chamber monitoring program
Central Management™	Application software designed by Conviron for total Phytotron management
Central Management™ network	The physical connection of growth chambers to the central control computer
Cell	The smallest unit of information on a program table
Chamber	The growth chamber unit, including the Controller, growth area, and control systems
Chamber program	A series of time lines which are entered into the program table telling the Controller how to set conditions in the growth chamber over a 24-hour period
CMP	Conviron Microprocessor Programmer
Controller	The computer that sets, directs, and records the conditions in the growth chamber
Conviron Restore Drive (Solid State Drive)	Solid State Hard Drive permitting a Bootable Windows 7 Repair system including the Operating System Image and the lastest CM application data backup.
DCS	Dry Contact System; relay contacts for alarm indications to auxiliary systems
Download	Sending data to the Central Management™ system from a chamber Controller
Ethernet	The type of local area network used by the Central Management™ system to connect to the chambers

Export	To copy and convert a file to a different format so that it can be opened by another application
Extract	To copy or display selected records
Host	The Central Control System - legacy chamber monitoring program.
Icon	A small graphic that represents a Windows element such as a program, directory, file, window, etc.
Import	To open and convert a file that has a format different from an application's standard format.
Label	The name used by the Controller for an output or alarm.
Load	To install software.
LCS	Local control system or Conviron chamber Controller
Menu bar	The horizontal bar located near the top of the program window containing the program's menus. You can access all of the programs commands from the menu bar.
Output	Switches that control specific equipment or conditions within the chamber.
Phytotron	A controlled environment facility with plant growth chambers and / or controlled greenhouses for scientific research.
Program spreadsheet	See program table.
Program table	A series of columns and rows for entering program time lines on the chamber's Program Spreadsheet or the VC's Program Editor.
Reinstall	To run an application software installation after it has been completely removed.
Remote control	Chamber operations remotely via the Remote Control software, for Programming and Schedule operations.

Restore	Complete operating system and application replacement to an image created at an earlier date. A fast complete recovery method.
Software repair	Conviron applications use Windows Installer (MSI) technology which permits dynamic application repair.
Thumbnail	An icon located in the Central Management™ system or Web Reporting's Chamber Status window that display the current conditions of a growth chamber connected to the network.
Toolbar	The horizontal bar located near the top of the program window containing icons for commonly used commands.
Upgrade	Loading a new software version.
Upload	Sending data from a chamber Controller to the Central Management™ system.
Virtual chamber	Chamber operations using the chamber touch screen remotely via the VC software, "viewing" the actual chamber screens in real time.
Zone	An area of the growth chamber that is controlled and/or monitored by the Controller.

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