

# Millipore®

Preparation, Separation,  
Filtration & Testing Products

## User Guide

CoPrime™ Biochromatography System

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# System Overview

## Introduction

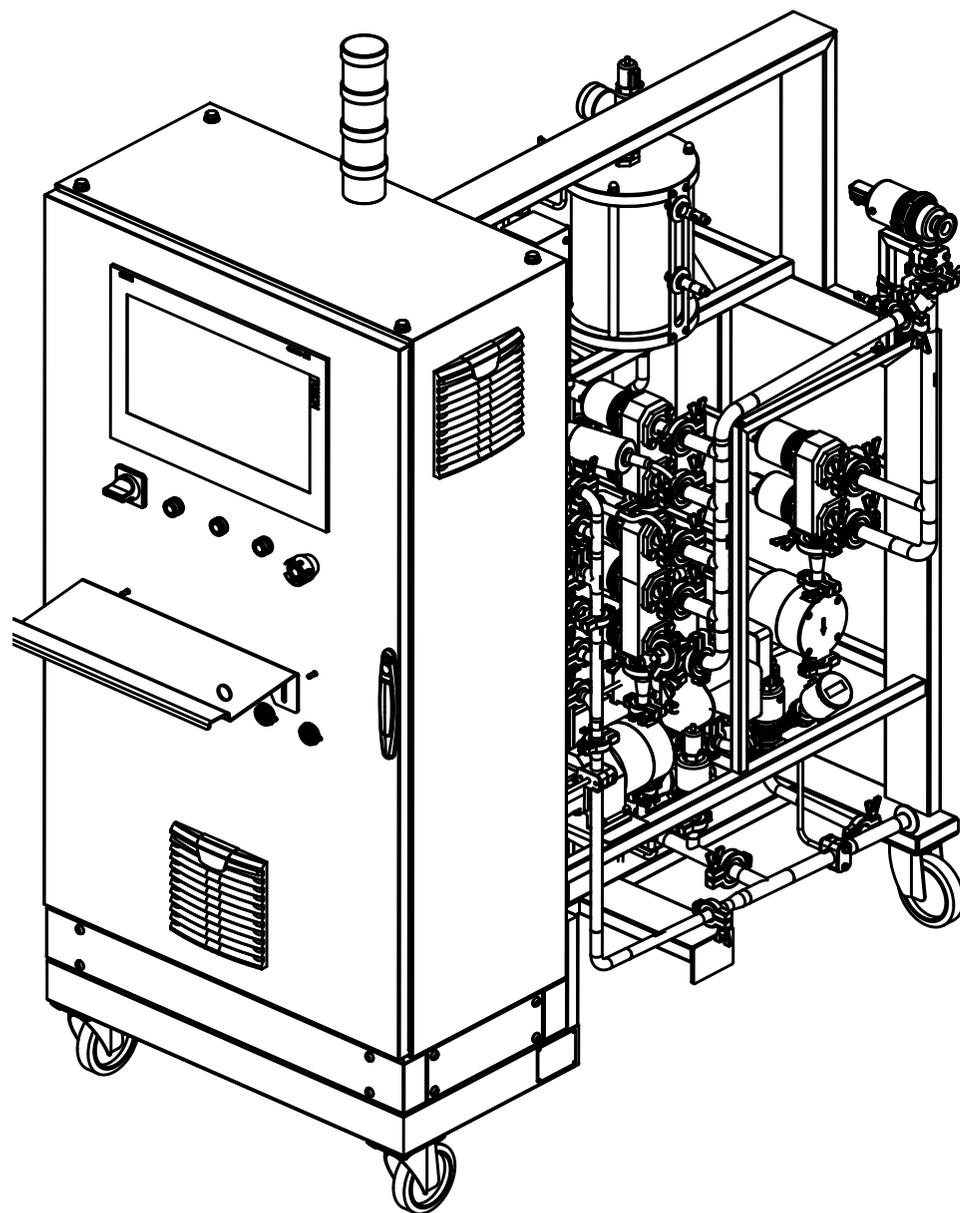
The CoPrime™ Biochromatography System is a fully automated chromatography system designed to achieve optimum separation and purification of monoclonal antibodies, vaccines, plasma, and therapeutic proteins while offering a high degree of operational flexibility.

The system is available for use with chromatography columns of many sizes.

The system is controlled by the Common Control Platform® (CCP®) software.

This guide describes all options for CoPrime™ Biochromatography Systems and provides instructions for using the system including the CCP® software options.

**NOTE** The illustrations are examples. Actual configuration may vary according to selected options and custom features.



# Operator and Equipment Safety

Anyone operating or near the CoPrime™ Biochromatography System must comply with the following:

	Read and understand this user guide and all component user guides before using the system. Failure to follow instructions could result in user injury or system damage.	
	Read and understand all maintenance instructions in this user guide before performing maintenance on the system. Failure to follow instructions could result in user injury or system damage.	
	Read and understand the meaning and handling of all alarms on the system.	
	Use appropriate personal protective equipment, including eye protection, when operating the system (normal sound level is below 70dB). UV eye protection is required when servicing the UV lamp.	
	Follow the unpacking instructions on the outside of the crate when removing the system from packaging. Failure to follow these instructions could result in operator injury or equipment damage.	
	Use appropriate auditory protection during prolonged use.	
	The system is heavy. Follow local regulations regarding lifting limits.	
	Prior to operation, ensure the system is fully assembled as described in "Assembling and Setting Up the Hardware" Ensure that options are properly installed and the pumps and sensors are properly connected.	
	Never operate the system in a hazardous environment or use with flammable, combustible, or solvent liquids.	
	Any alteration of the system from factory specification may cause unsafe conditions and void the product warranty.	
	Once the system is assembled, do not move it.	
	Do not leave the system unattended during operation.	
	Engage the locks when the system is stationary.	
	Before dismantling the system or performing any maintenance operation, ensure that all sources of energy are shut down (fluid, gas, and electricity).	
	In case of any leak, stop the pump. When the pressure sensor reads zero, identify the location and cause of the leak.	
	The system is for indoor use only.	
	During a power failure or if the emergency stop button is pressed, the system may remain pressurized.	
	Do not walk on the system frame or lean on any system elements.	
	This system is for industrial use only and cannot be used in a residential environment.	
		Risk of electric shock.
		To completely shut down the power to the control box, unplug the power cord from the power source.
		Visibly inspect the power cord and cables for damage. Replace any worn or damaged power cord and cables.
		Ensure that the power cord and cables do not present a tripping hazard and are located in a dry area.
		Use appropriate power supply cable and circuit breakers.
		Ensure that the ventilation opening of the control box is not blocked.
		All electrical operations must be done by qualified personnel having the required accreditation.
 Do not disconnect any grounding cables indicated by this symbol.		
Vibrations during transport may cause loosening of the screws in the electrical box. Check and tighten as required before first use.		

## Safety Symbols

The following symbols are used in this system:

Symbol	Meaning	Symbol	Meaning
	UV radiation		Wear protective clothing
	Use caution		Wear gloves
	Electrical hazard		Wear eye protection
	Biological hazard		

## System Specifications

### Mechanical Specifications

Specification		
System dimensions (W x D x H)	851 x 1680 x 2035 mm	
Minimum weight	275 kg	
Maximum weight	390 kg	
Dead volume (full option system)	Bubble trap	6 L
	Housing	4.5 L
	Piping	1.3 L
Hold up volume (HETP option)	0.3 L	

### Instrument Specifications

Specification	Tag	Range/ Setting/ Type/ Accuracy	Process Connection
Pressure sensors	PIT001 PIT002 PT003 PT004 PT005	-1–5 bar ±0.1 bar	TC ¾ in.
High-pressure switches	PSH001 PSH002	4.2 bar	TC ¾ in.
Mass flowmeters	FT001 FT002	0–25 L/ min ±1% MV	TC ¾ in.
Temperature sensor	TE006	0–100 °C ±1 °C	Combined with conductivity sensor

Specification	Tag	Range/ Setting/ Type/ Accuracy	Process Connection
Conductivity sensors	AE001	0 to 200mS/cm ±4mS/cm	TC ¾ in.
	AE004A	0 to 200mS/cm ±4mS/cm	
	AE004B	0–50 µS/cm ±1µS/cm	
pH Sensors	AE002 AE005	0 - 14 pH ±0.1 pH on range 4 - 9 pH	TC ¾ in.
Air sensors	YS002	N/A	TC ¾ in.
UV sensors	AE007 AE008	UV: 0 - 2 AU ±0.04AU	TC ¾ in.

## Operating Specifications

Specification	
Electrical power supply	100V-240V ~ 50-60Hz one phase + neutral
Air inlet quality	filtered to ≤ 5 µm, -20 °C dew point, oil free
Air supply pressure range	6 to 10 Bar
Fluid pressure range	0 Bar - 4 Bar
Fluid flowrate	180L/h - 1200L/h
Fluid temperature range	4 to 30 °C
Fluid maximal viscosity	2 cP
Inlet maximal pressure	0.15 Bar
Ambient temperature range	4 to 30 °C
Altitude	0m - 2000m
Overvoltage category	II

Specification	
IP Rating (IEC 60529)	IPX5
Environmental conditions	Normal conditions
For use in wet location	Yes
Means of protection	Class I PE connected
System mobility	Floor standing

## Automation Specifications

Control Platform	PLC	Allen Bradley Compact Logic
	Control software system	Windows® 7 Operating System
	Operator interface panel type	iFix® Software
User interface		19 inch touch screen

## Nameplate

CoPrime™ BIOCHROMATOGRAPHY SYSTEM 20L		
CAT. NO	 Date of Manuf.	Operating conditions:  pressure 0 to +4 barg  temperature +4 to +30°C
<b>M</b>	SN	
   	Air supply pressure:  +6 to +10 barg	
 Millipore SAS 67120 Molsheim/France	Engineered in France Assembled in France	

## Storage Requirements

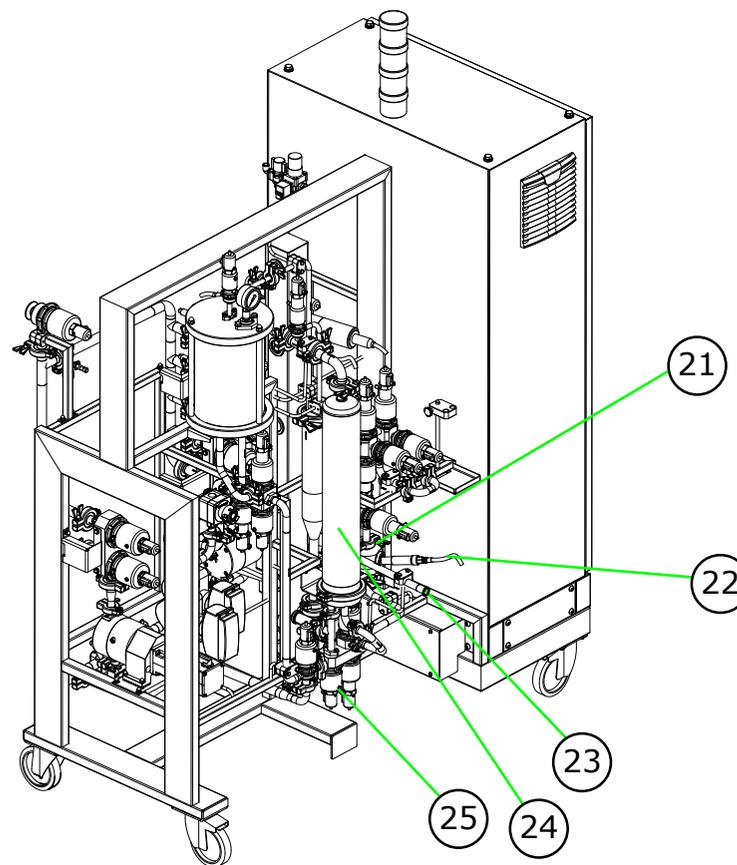
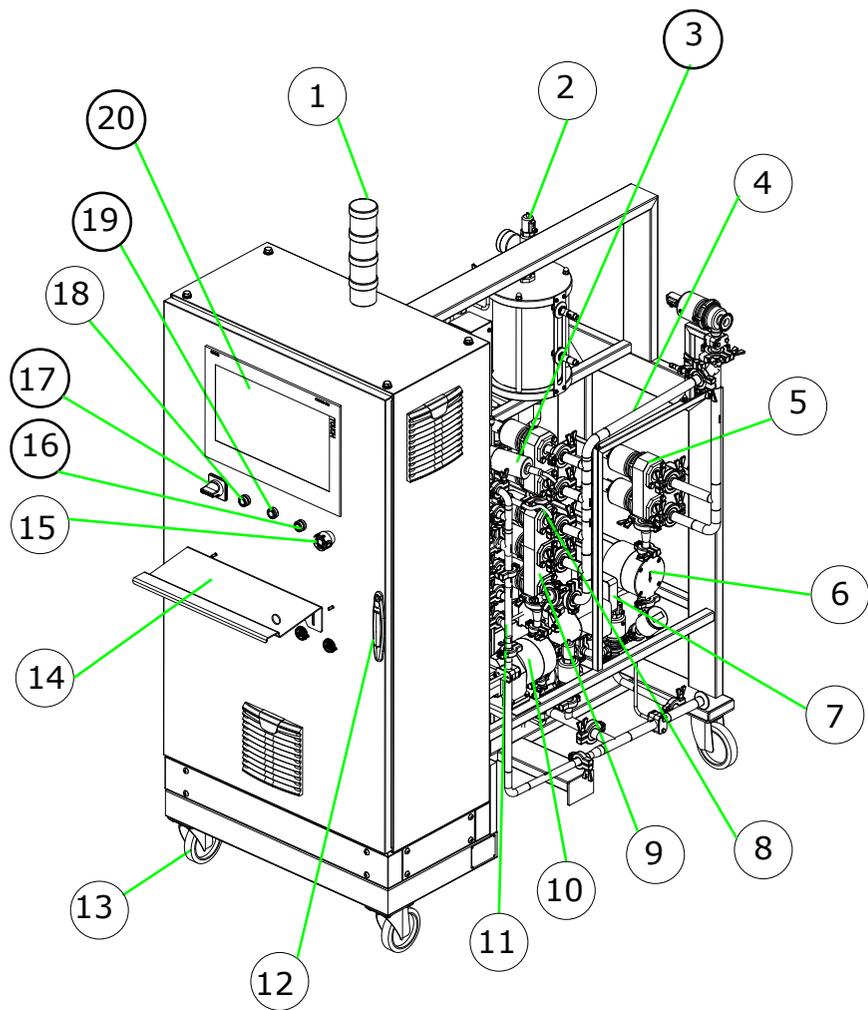
Parameter	Requirement
Temperature range	4 to 30 °C
Humidity range	10 to 90%
Cleaning	Unit must be thoroughly cleaned prior to storage.

## System Components

The key numbers in this table refer to the drawings on the following pages. Options listed in the table are defined on the pages following the drawings.

Key No.	Description	Option Number
1	Indicator light	--
2	NovAseptic® valve feedback switches	12
3	Post-column UV dual wavelength	9
4	CIP manifold	11
5	Pump 2 inlet manifold	2
6	Pump 2	2
7	Mass flowmeter	3
	Electromagnetic flowmeter	13
8	Post-column pH & conductivity	8
9	Pump 1 inlet manifold	1
10	Pump 1	--
11	Outlets	10
12	Cabinet door handle	--
13	Castor	--
14	Keyboard tray	--
15	Emergency stop	--
16	24 V DC light	--
17	Power supply shutdown switch	--

Key No.	Description	Option Number
18	Reset buzzer	--
19	Emergency reset	--
20	User interface display	--
21	Pre-column pH sensor	6
22	Pre-column conductivity sensor	6
23	HETP inlet port	7
24	Pre-column filter holder and valve block	5
25	Pre-column filter holder	4, 5

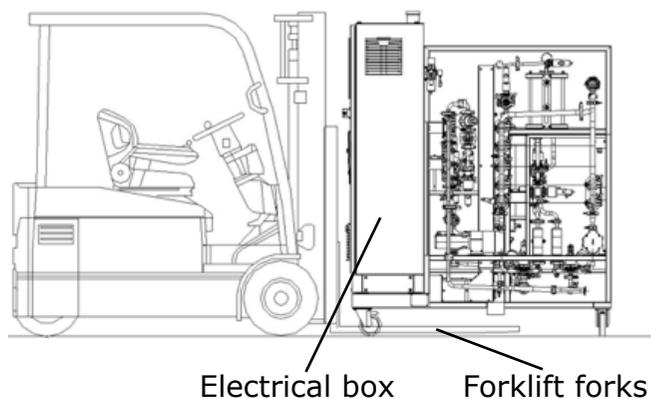


# System Setup

# Unpacking the CoPrime™ Biochromatography System

Unpacking the system requires use of a forklift with a capacity of at least 1500 kg.

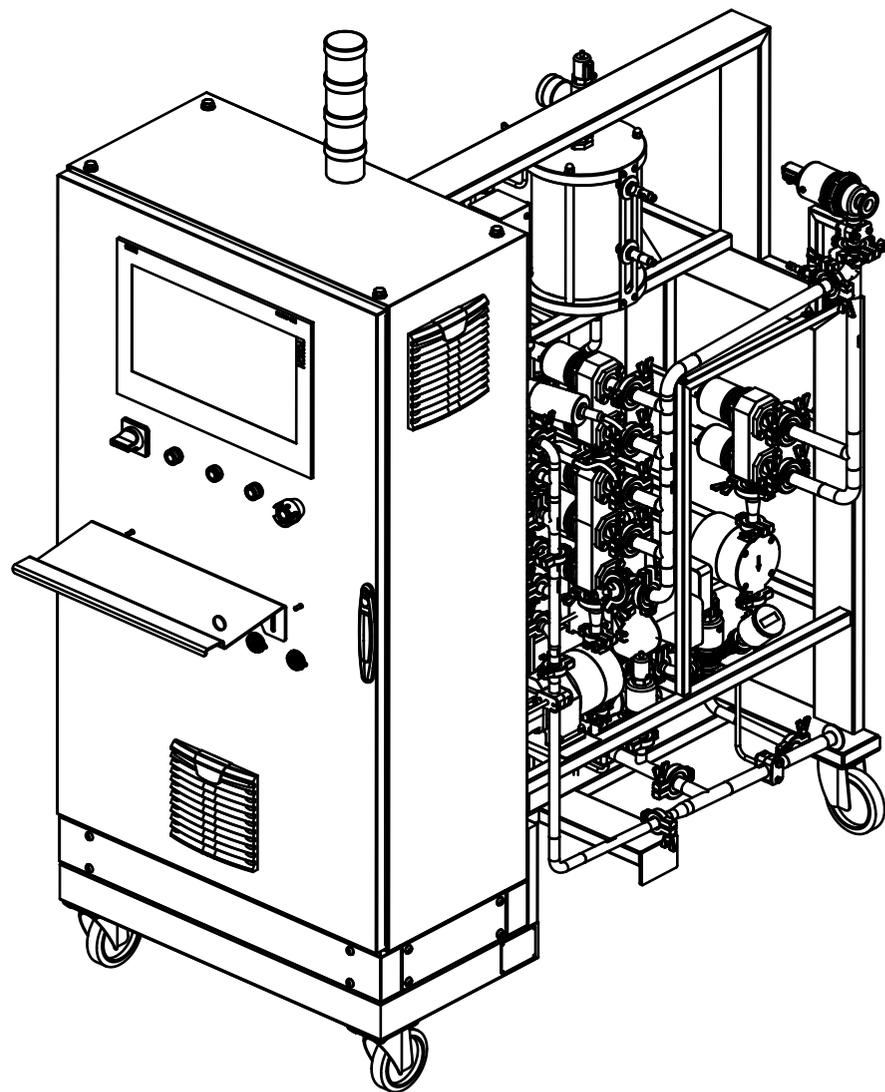
Place the forks beneath the electrical box and the frame, between the wheels.



**NOTE** The equipment may be damaged if the forklift is not used correctly. Do not lift the system from the side.

Protect the frame surface finish from damage.

When moving the system on a fork lift, keep the system as low as possible at all times.



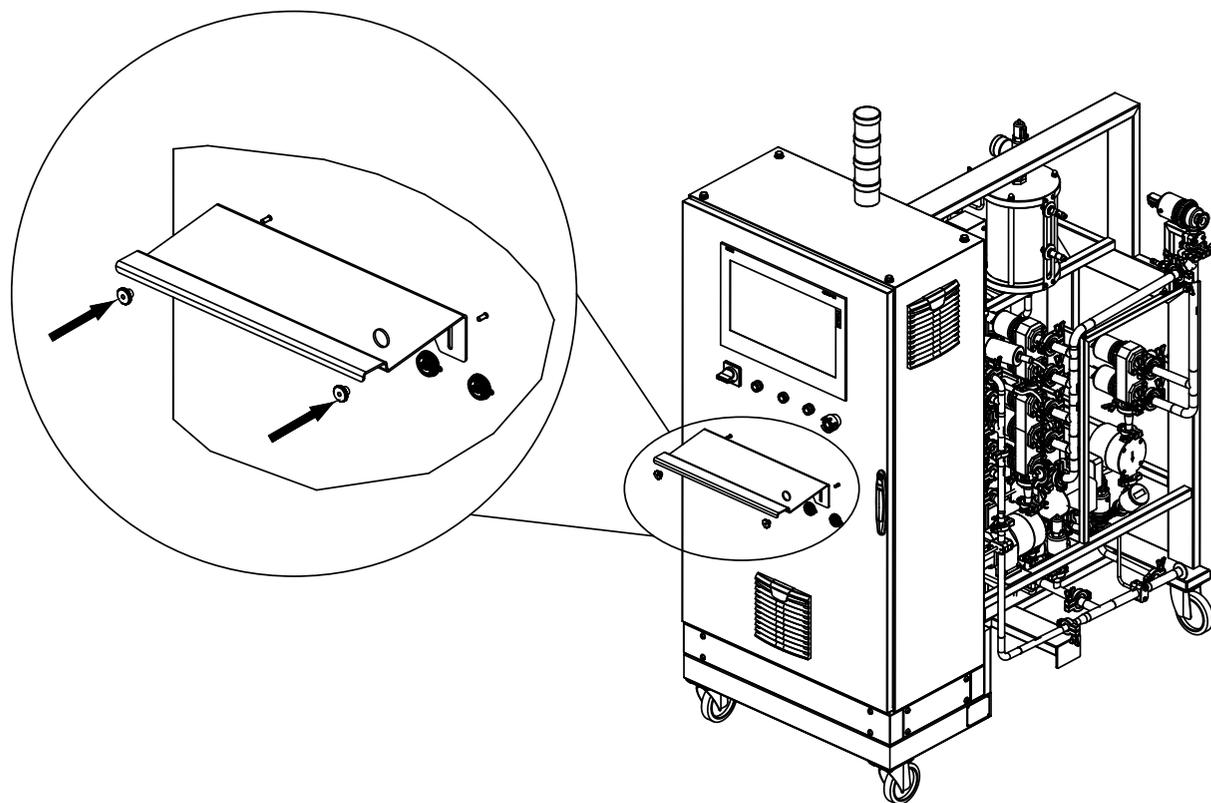
# Setting up the CoPrime™ Biochromatography System

## Installation Notes

- A one meter clearance on all sides of the system is required for maintenance access.
- Place the system on a level and stable floor.
- Lock the wheel brakes to immobilize the system.
- Access to fluid and electrical connections must be unobstructed.
- The default parameters have been set in the factory. Changes to parameters must be performed only by trained personnel. After modification, sensor calibration and system operation must be verified and validated.
- Do not change the pressure switch settings.

## Install the Indicator Light and Keyboard Shelf

Once the system has been located, install the indicator light on the top of the unit and the keyboard shelf on the front of the unit.



1. Remove the two knurled nuts from the system door.
2. Install the keyboard shelf onto the two studs on the door.
3. Tighten the nuts to secure the keyboard shelf.

## Connecting to Utilities

### Fluid Line Connections

Refer to the piping and instrumentation diagram (P & ID) to determine the appropriate flow path.

#### Connection Notes

- When the HETP inlet connection is not used, plug and secure it with a gasket and TC clamp.
- Before turning on the feed pump, verify that the appropriate valves are open to create a valid flow path.
- Tubing or piping connected to the system must be clean and free of any foreign material that can contaminate the system or block the valves.
- Ensure there are no kinks or bends in any tubing.
- Connect the system drain line to waste.
- Ensure there are no leaks in the sanitary connections.
- Ensure that all gaskets are sealed properly and all connections are tight.

### Electrical Connections

Refer to the electrical schematic included with the system.

#### Terminal block X02 markings

Wire	Label Block	Label Wire
Neutral	1	N
Phase	2	L
Earth		

#### Connection Notes

- The equipment is protected by a 13A circuit breaker and must be connected to a power supply with its own protection (circuit-breaker or fuses on both poles).
- The user-supplied main power supply cable must be connected to the terminal block X02 and to the earth terminal.
- An external emergency stop button may be installed while the equipment is shut down and the power is off.
- The earth wire in the electrical cabinet must be longer than the neutral and phase wires.
- Use a ground jumper with an M4 screw. All the earth screws must be tightened with at least 3 turns.
- The power supply cable gland must be tightened with a tool.

## Priming the System

Activate the auto vent function of the bubble trap to prevent fluid overflow from the top of the bubble trap.

Minimal distance between capacitive sensors LSH001 and LSL002 should be 40 mm to ensure optimal detection.

Before connecting the column, fill the piping with liquid.

To ensure flowmeter reliability, remove air bubbles from the lines.

1. Start the pump and set it to at least 30%.
2. Flush and purge the air through bubble trap vent.
3. Flush and purge the air through the filter holder vent.
4. Flush the rest of the system lines.
5. Before connecting the column, and after priming the system, flush any air bubbles out of the chromatography valve by opening the following flowpaths in this order:
  1. Column bypass
  2. Column forward
  3. Column reverse
  4. Column bypass
6. Remove the column spool and connect the column.

## Cleaning the System

The system must be cleaned in place (CIP) prior to initial use. The chromatography column must not be connected to the system when performing the CIP.

**NOTE** The chemical agents used during CIP must be compatible with the wetted materials of the system.

Establish and validate a cleaning procedure and schedule.

Ensure that the cleaning and process solutions are compatible with the materials in the following table.

Component Material	CIP Contact	External Surface Cleaning Contact
Acrylic	X	X
EPDM	X	X
High alkalinity glass	X	
PEEK	X	
PET		X
PTFE	X	
Polyamide		X
Sapphire glass	X	
Santoprene® resin	X	
SS 303		X
SS 304 - SS 304L		X
SS 316L - SS 316Ti	X	X

The following solutions are compatible with the system materials of construction:

Area	Solution	Notes
External Surfaces	Isopropanol at 70% (aerosol)	
	Ethanol at 95%	
	Sodium hypochlorite (bleach)	Rinse immediately after cleaning
CIP Surfaces	Hydrochloric acid (HCl) <1M	
	Sodium chloride (NaCl) <2M	2 hours max contact time. Flush immediately after cleaning.
	Guanidine HCl <6M	
	Sodium hydroxide <2M	
POM parts (valves position indicator switches)	Sodium hypochlorite (bleach)	Rinse immediately after cleaning.
PA parts (plastic clamps)		
Bubble trap tube	Ethyl alcohol or isopropyl alcohol	2 hour max contact time. Wipe with a moistened soft cloth after cleaning.

## Connect the System to Cleaning Utilities

1. Install the CIP-Manifold, CIP-Fraction (which links all the inlets and outlets together) and CIP-column (which bypasses the chromatography column) on the system. Refer to the P&ID to identify the connections.
2. Place a gasket on each TC connector and tighten.

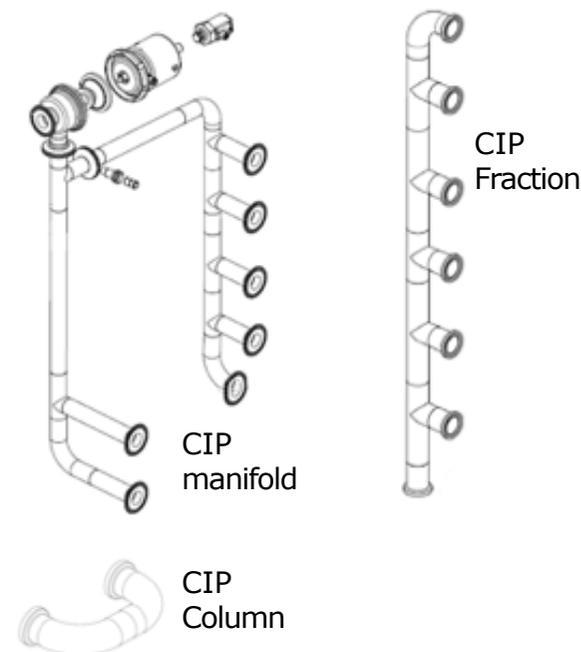
A sensor detects the presence and proper installation of the CIP-Manifold to enable the CIP cycle in automatic mode.

## Example of CIP Procedure

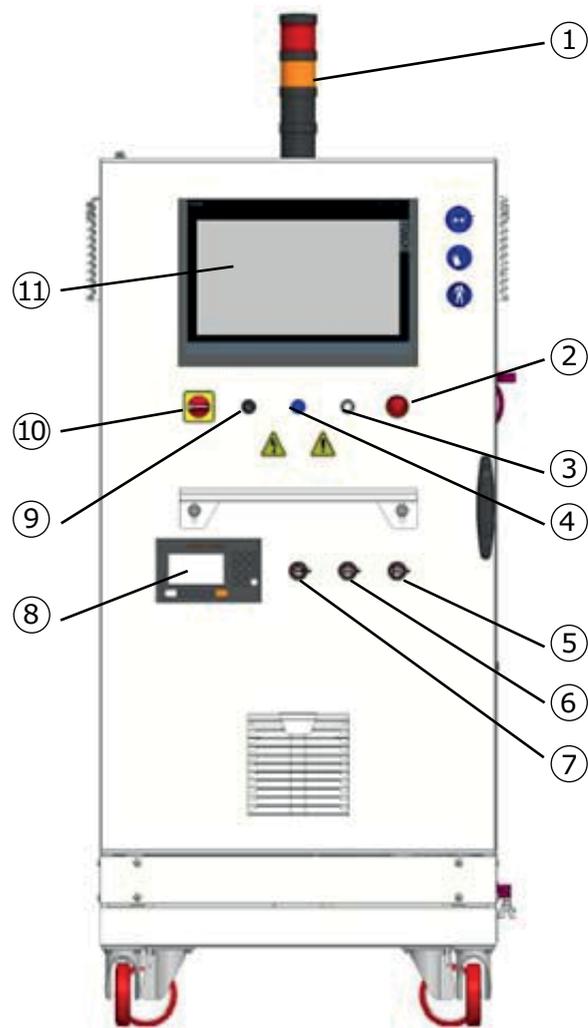
**NOTE** This is an example. CIP procedures should be validated at installation.

1. Flush process water (12–25 °C) through the system and all associated piping. Flush piping with at least five times its volume at a flowrate of approximately 15 LPM. Direct flush to drain.
2. Clean the system by pumping 0.5M NaOH solution (20–25 °C) through the system and all associated piping at a flowrate of approximately 5 LPM for a contact time of approximately one hour. The solution can be looped back in to reduce environment impact.

3. Rinse the system with process water (12–25 °C) through the system and all associated piping. Piping should be flushed with at least five times its own volume at a flowrate of approximately 15 LPM. Direct flush to drain.
4. Rinse with process water (12–25 °C) through the system and all associated piping. Piping should be flushed with at least five times its volume at a flowrate of approximately 15 LPM. Direct flush to drain. Rinsing efficiency can be monitored through conductivity (0 to 50  $\mu\text{S}/\text{cm}$ ) (if system includes option 8).



## Control Panel



Key No.	Item	Description
1	Warning/Alarm Light	Orange light indicates a warning. Red light indicates an alarm. A buzzer sounds as soon as an alarm appears.
2	Emergency Stop	Pushing this button stops the system. To restart the system, turn the button clockwise. Pushing the emergency stop will: Stop the pumps and return the valves to their default positions (open for Normally Open valves or closed for Normally Closed valves).
3	24VDC	Illuminates as soon as the system has power.
4	Blue Emergency Reset/HP	Illuminates when pushed. Pushing the button will reset the alarm and restart the system. Push this button to restart the system when the high pressure (HP) alarm occurs. If the Emergency Stop has been pushed, unlock the Emergency Stop and push this reset button to restart the system.
5	USB PORT	Allows user to connect a USB device.
6		
7	RJ45 PORT	Allows user to connect an RJ45 device.
8	Instrument Display	Displays the data transmitted by conductivity, temperature, UV absorbance and pH instruments.
9	Buzzer Reset	Silences the buzzer. This button has same function as the Buzzer button on the Alarm page of the screen.
10	Power Supply Disconnect Switch	Turn clockwise to on position to start the system.
11	User Interface	PC with CCP®6 software, allows to manage the whole system.

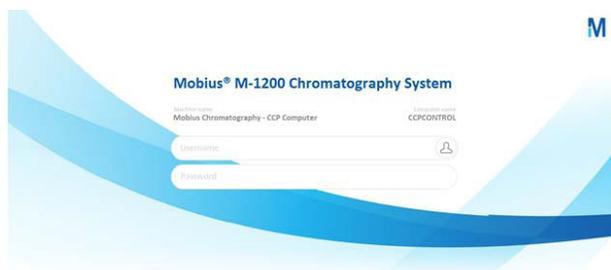
# System Operation

# Operating Instructions

Do not leave the system unattended while operating.

## Starting the System

1. Turn the power supply disconnect switch to the |/On position. The power indicator illuminates.
2. Verify that the emergency stop button is unlocked.
3. The user interface screen, PC, and PLC power on, and the PC starts loading programs.
4. The CCP® application launches automatically.
5. From main screen touch the user icon  and then touch **Login** and enter the name and password of the user.



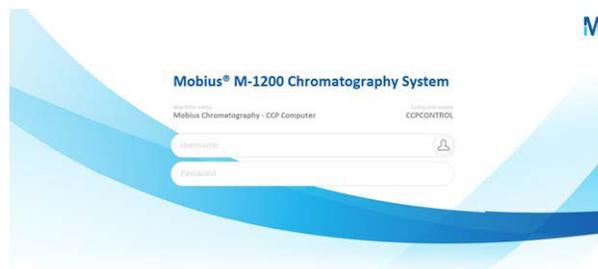
6. Push **Reset Emergency/HP** to start the process.
7. Acknowledge all alarms (push alarm banner, acknowledge all and close).
8. System is on stand-by.

## Using the Common Control Platform® (CCP®) Software

With the CCP® application launched, touch the user icon



and then touch **Login** and enter the name and password of the user.



Each user should have a unique login name and password assigned by the system administrator.

If the login fails, the Unknown User Name or Bad Password message appears.



If an attempt is made to gain access to the User Interface with unauthorized login information, an unauthorized access message appears.



After log in, the Login Prompt closes and the Process display opens.

**NOTE** If login at startup has been disabled from the system settings screen, this login prompt does not appear and Process display opens.

## User Interface

The User Interface includes a tool bar, P & ID, and various user selectable status displays. The user must have the appropriate security privileges to open certain displays.

There are five main sections of the User Interface:

- The Navigation Bar
- The Process Display (P&ID)
- The Detailed Panels
- The Process Controls Bar
- The Recipe Status and Totalizers display

The screenshot displays the Mobius® M-1200 Chromatography System interface. At the top, the navigation bar includes 'Home', 'Unit Procedure Editor', and 'Reports'. The main display area is divided into several functional sections:

- Procedure:** Shows 'Operation' with 'TestLinear' and a duration of 0:00:45.
- P&ID Diagram:** A detailed process flow diagram showing pumps (P001, P002), valves (XV001-XV027), and columns (PRE COLUMN, COLUMN, POST COLUMN).
- DETAILED PANELS:** A table of system parameters:
 

Conductivity mS	10.0 mS/cm
Conductivity µS	12.00 µS/cm
pH	7.00 pH
Temperature	25.0 °C
UV1	0.100 AU
UV2	0.100 AU
Pressure	0.80 bar
Delta P Column	0.20 bar
- Control Settings:** 'FLC001 - Control settings' section with 'Pump Speed' set to 0.0% and 'Setpoint' at 0.0%. It includes 'AUTO', 'MANUAL', 'STOP', and 'START' buttons.
- Status Bar:** Shows 'User Total' at 0:00:00, 'Totalizers display: Hidden', and 'No Error'.

The User Interface reflects the options installed on the system.

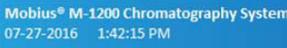
**NOTE** Recipe Editor and Unit Procedure Editor refer to the same function. Both names are used in the system software.

## Navigation Bar

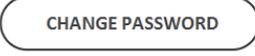
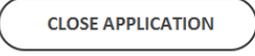
Navigation bars organize the controls as shown in the following table.



Click the desired tool bar button to perform the action.

Button	Description
	No action.
	Opens the Recipe Editor to edit operations and procedures.
	Opens the Reports Editor to edit reports.
	Opens the System Information popup.
	Displays the user ID and group account.
	Opens the User settings window.

Touch  to access the following options:

Button	Description
	Opens login screen. When no user is connected, the text of this button is « login »
	Opens the on-line user manual.
	Logs current user out of system.
	Opens change password window.
	Select the language for the User Interface, Recipe Editor and Report Client.
	Opens System Settings Window.
	Closes the current application.
	Closes Windows operating system application.

## Changing the Language

Languages other than English may be specified when a system is ordered.

The Change Language icon in the User Menu opens the Change Language Screen. There are eight different language options. When the language is changed, User Interface, Recipe Editor, and Report Client are all changed to the selected language.



Only one non-English language is set up as a primary language. When the primary language is chosen, both the interface texts and the Batch Report content can be in the primary language. This allows a Batch Report to be printed in both the primary language and English. The primary language is specified when the software is installed.

**NOTE** Batch Reports are translated only into English and the primary language.

## Changing the Report Language

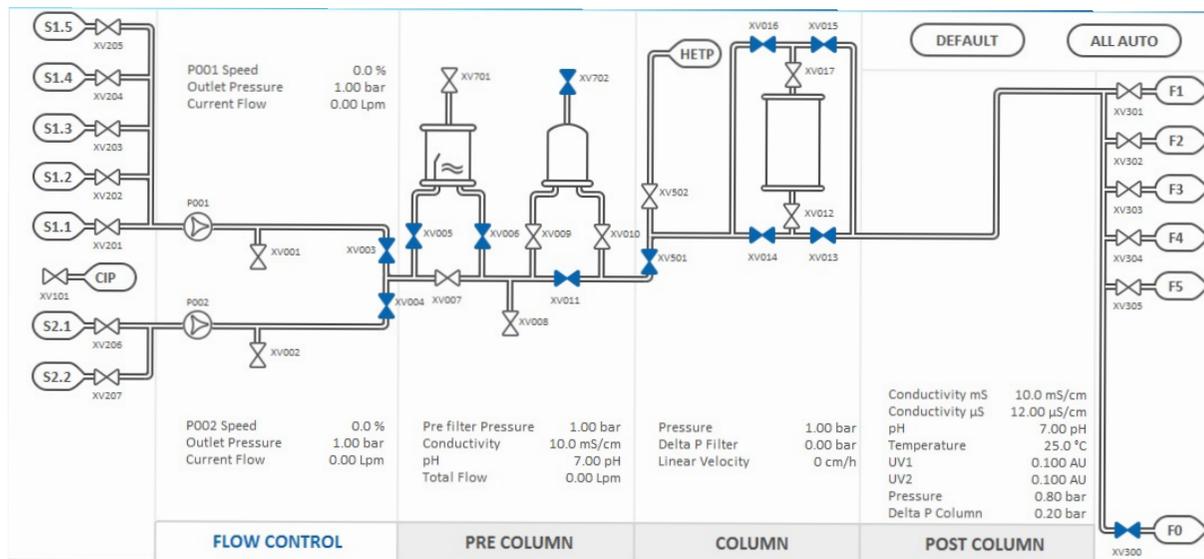
User reports can be generated in English or a different primary language. The primary language must be set in the registry. The language index is shown in the following table:

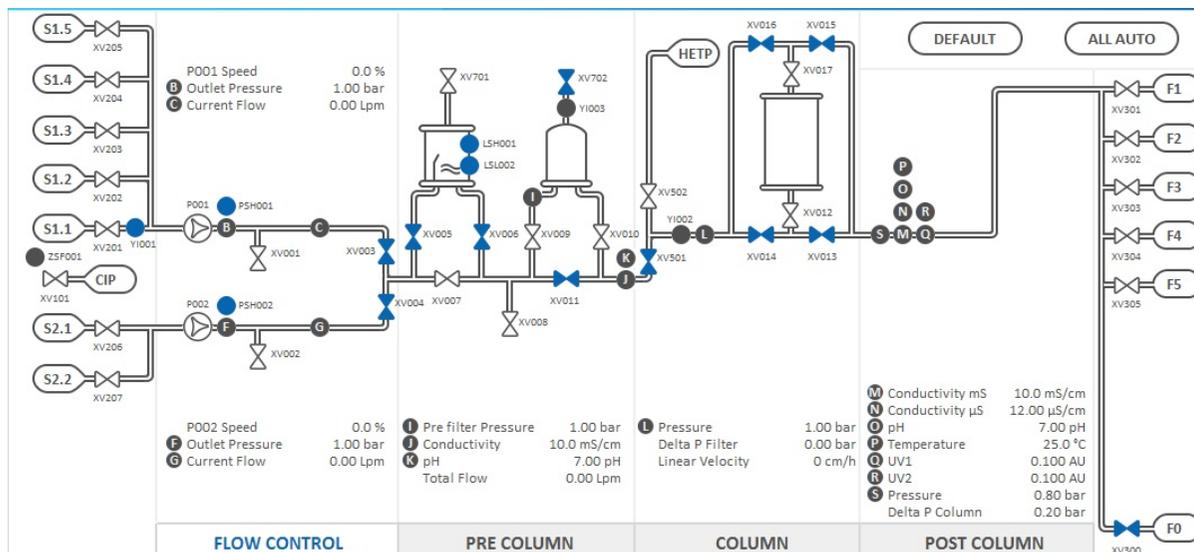
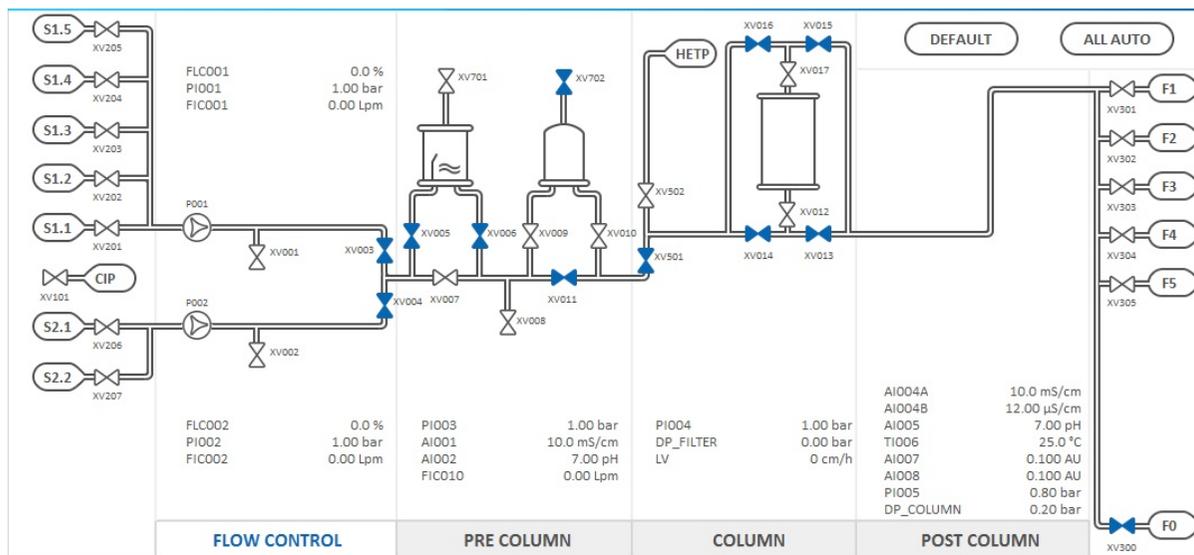
Language	Setting	Language	Setting
English	1 (default)	Spanish	5
French	2	Chinese	6
German	3	Japanese	7 (Default for Japanese system)
Italian	4	Korean	8 (Default for Korean system)

## Process Display (P & ID)

The P & ID screen dynamically displays all process conditions, analog, and digital values and pump status.

Display of sensor tags or labels and sensor locations can be selected on the display setup screen.





## General Commands

Button	Description
	Set the system to its default state.
	Set all system equipment (valves and pumps) to auto mode.

## Piping

Symbol	Description
	Closed pipe
	Open pipe
	Open pipe with flow

## Digital valves

Click a digital valve symbol to open the control popup.

Symbol		Description
Auto Mode	Manual Mode	
		Closed valve
		Open valve
		Valve travelling
		Non Critical Fault
		Critical Fault

## Inlets

Symbol	Description
	Closed inlet. Click the icon to open the related inlet and close all the other inlets of the inlet line.
	Open inlet

## Outlets

Symbol	Description
	Closed outlet. Click the icon to open the related outlet and close all the other outlets.
	Open outlet

## Pumps

Click a pump symbol to open the detailed control panel.

Symbol		Description
Auto Mode	Manual Mode	
		Pump OFF
		Pump ON
		Non Critical Fault
		Critical Fault
		Interlock

## Pump Control

When pump speed is controlled by Flowrate, Column Linear Flowrate, or by Mixing settings, a circle is added to the pump symbol and shows the current control mode.

Symbol	Control mode
	Pump speed controlled by Flowrate
	Pump speed controlled by Linear Flowrate
	Pump speed controlled by Mixing. When Mixing control is interlocked the added circle is blinking.
	Pump running according to its speed setpoint (no circle is added).

## Bubble Trap – Liquid Level

Click the Bubble Trap symbol to open the detailed control panel.

Closed Flowpath	Open Flowpath	Sensors	Description
			Liquid level is above the high level sensor. If there is a signal loss, no product is sent to the drain through vent valve (when autovent is ON).
			Liquid level is between the low level high level sensors. Both sensors ON indicates level is acceptable.
			Liquid level is below the low level sensor. If there is an LSL signal loss no air is sent into the column (when autovent is ON).

## Bubble Trap - Alarms

Non Critical	Critical	Description
		High level alarm
		Low level alarm

### Bubble trap – Auto Vent

Symbol	Description
	<p>Auto vent is enabled.</p> <p>The vent valve is automatically controlled to maintain liquid in the bubble trap at its operating level.</p> <p>The valve opens when liquid is below the low level sensor.</p> <p>The valve closes when liquid is above the high level sensor.</p>
	<p>Auto vent is disabled.</p> <p>For bubble trap performance, it is not recommended to disable the auto vent function.</p>

### Filter

Click the Filter symbol to open the detailed control panel.

### Filter – Liquid Level

Closed Flowpath	Open Flowpath	Description
		Filter is not full of liquid
		Filter is full of liquid

### Filter – Alarms

Non Critical	Critical	Description
		Filter filling alarm

### Filter – Auto vent

Symbol	Description
	<p>Auto vent is enabled.</p> <p>The vent valve is automatically controlled to maintain liquid in the filter at its operating level.</p> <p>The valve opens when liquid is below the liquid sensor for a while (configurable timer).</p> <p>The valve closes when liquid is above the liquid sensor for a while (configurable timer).</p>
	<p>Auto vent is disabled.</p>

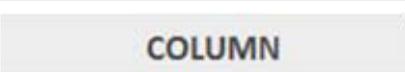
## Column

Click the Column symbol to open the detailed control panel.

### Column – Flowpath

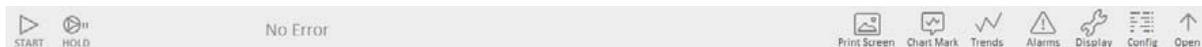
Symbol	Description
	No valid flowpath is selected
	Column Forward flowpath is selected.
	Column Reverse flowpath is selected

### Detailed Panels Buttons

Symbol	Description
	Opens the Flow Control Panel
	Opens the Pre Column Panel
	Opens the Column Panel
	Opens the Post Column Panel

## Process Control Bar

Process Control Bar content varies based on the current system status (alarm presence, recipe running, etc.).



Symbol	Description
	Starts the current recipe.
	Aborts the current recipe.
	Sets the system to hold state.
	Resumes from hold state.
	Pauses the currently running recipe.
	Resumes the running recipe from pause.
	Opens the recipe step jump popup.
	Opens the Alarm history popup.

Symbol	Description
	Acknowledges current alarms.
	If at least one unacknowledged critical alarm is present, then the button appears in red.
	Stops the alarm buzzer.
	Creates a screen shot and saves it as a jpg file. The default file location is D:\Millipore\PrintScreens. Filename is automatically created based on the current date & time.
	Creates a new chart mark, i.e. a new vertical line in trend charts.
	Opens the Trend chart panel.
	Switches from the trend chart panel to the full screen chart.

Symbol	Description
	Switches from the full chart window to the panel chart.
	Opens alarm status display.
	Opens display setup popup.
	Opens parameters save and restore popup.
	Opens the recipe pool popup.

## Recipe Status and Totalizers

The Recipe Status and Totalizers display shows process information including recipe name, path, duration, current phase, step, and liquid totalizers (Volume or CVs).

When no recipe is running, the previous recipe name and duration are shown. Users may access the recipe pool.

Procedure	
<b>Operation</b>	0:01:05
PromptYES	



No Recipe is running  
Open a recipe to start a new process

<b>User Total</b>	0:00:00
Totalizers display : Hidden	

*Recipe Status – No recipe running, totalizers hidden*

Procedure	
<b>Operation</b>	0:00:06
MyRecipe_00.03 0.00 L	
<b>0</b>	Phase 0 0:00:06
STEP 5	0.00 L
<b>RUN</b>	Step 5 of 11 0:00:01
0:00:06	0.00 L
<b>1</b>	Criteria
STEP 0	Tl006 Post column temperature>=20 *
IDLE	
0:00:00	
<b>2</b>	Pending Step
STEP 0	Inlet S1.2 Flowpath
IDLE	Value
0:00:00	1
	Next Step
	P001 Process Flowpath
	Value
	1
	Pause Time 0:00:00
	0.00 L
	Hold Time 0:00:00
<b>User Total</b>	0:00:00
▶ ↺ 0.00 L	
Totalizers display : Volume	

*Recipe Status – Recipe running, Volume totalizers*

When a recipe is running, the left part of the display shows the phase number, the step number, the phase status (IDLE, RUN, PAUSE, HOLD) and the phase timer for each phase tab.

When a phase is running, the phase number and the step number are highlighted in blue.

The right part of the display shows the running step information of the phase:

- The actual step
- The step timer
- The name of the action
- The setpoint value of the action

If criteria are defined for the step, these are displayed below:

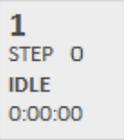
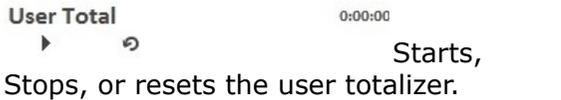
- The first criteria of the action
- The mathematical operator
- The second criteria of the action

For phase zero only, the next step action, with its setpoint value, is displayed on the bottom right of the screen.

For all other phases, two buttons are displayed on the two bottom corners:

- A round pause button on the bottom left corner enables the user to pause the running phase.
- A round abort button on the bottom right corner enables the user to stop the running phase.

When a launched operation or procedure is finished, an Enter Run Header Data window appears to enable the addition of comments.

Symbol	Description
	Opens the Recipe Pool to download and start a recipe.
	Opens the Recipe Phase tab informations.
	
	
	Pauses a running recipe phase.
	Restarts a running recipe phase.
	Aborts a running recipe phase.

## Using the Recipe Editor

Use the Recipe Editor to create and manage operations (sequences of actions) and procedures (sequences of operations). The building blocks of operations are individual actions. A series of actions are listed sequentially to form an operation. Operations can be linked in series to form a procedure. The operation or the procedure file is downloaded to the PLC for subsequent execution through the User Interface.

There are actions for virtually all controls on the system, as well as time-based, volume-based and event-based criteria, which can be used to control transitions from step to step.

Actions are organized into the following functional groups:

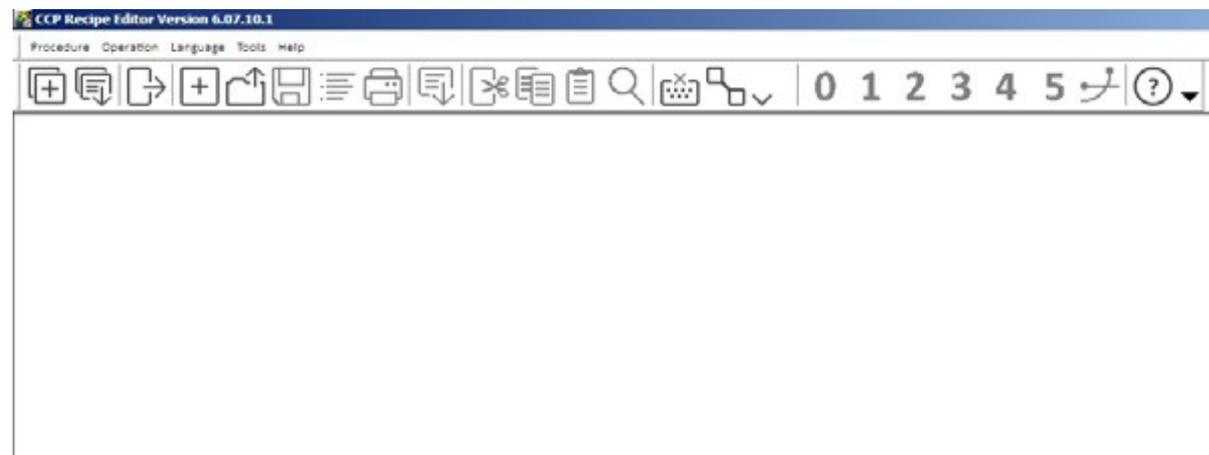
- Flowpath-Inlets
- Flowpath-System
- Valve Control
- FlowControl-Pump1
- FlowControl-Pump2
- FlowControl-Mixing
- PreColumn
- Column
- PostColumn-Peak Detection

- Analog Alarms
- Discrete Alarms
- Miscellaneous
- Operations and Phase Control
- Messaging

Several samples of operations and procedures are supplied with the system.

## Launching the Recipe Editor

Launch the Recipe Editor by clicking the Recipe Editor icon in the User Interface. The main window of the editor opens.



## Tool Bar

The functionality of the icons in the Recipe Editor Toolbar is described below.

Icon	Description
	Create a new procedure or edit an existing one.
	Download current procedure into the PLC.
	Exit the recipe editor.
	Create a new operation.

Icon	Description
	Open and edit an existing operation.
	Save current operation.
	Edit header of current operation.
	Print current operation.

Icon	Description
	Download current operation into PLC.
	Cut Selection and place in clipboard.
	Copy selection.
	Paste contents of clipboard. Applies cut and copied text as a whole line.
	Search tool.
	Toggle popup keyboard. Clicking on this icon toggles between two pictures; a monitor and a keyboard. The monitor indicates that the touch screen's popup keyboard will be employed for data entry. The keyboard indicates that an external keyboard will be employed for data entry.
	This is a selection of the configuration file for the system. These settings are preconfigured at the factory and should not be changed.
	Switches to Work space.

Icon	Description
<b>0</b>	Edit Phase 0
<b>1</b>	Edit Phase 1
<b>2</b>	Edit Phase 2
<b>3</b>	Edit Phase 3
<b>4</b>	Edit Phase 4
<b>5</b>	Edit Phase 5
	Edit Linear Gradient
	Open On-line Manual

## Steps

The numbered rows in the Operation Area are the steps of the operation. During the execution of an operation, steps are implemented in the order they are listed, unless the jump has been programmed in or manually selected to jump to a particular step.

A single step includes the following columns:

- A number to define the position of the step in the operation. The recipe editor allows up to 250 lines in a phase.
- A user-defined label for the step. The CCP® software allows up to twenty steps to be labeled in a phase. The labels allow the user to branch to different steps in an operation.
- Criteria 1 and Criteria 2, which could be based on either time, volume or specific events.
- Boolean operators AND and OR to link the two criteria.
- The action to be executed at the step.
- Value: Most actions involve setting appropriate values to variables.
- EGU (engineering units) for the value field, where applicable.
- A field for entering comments or prompts. Comments enhance the readability of a programmed operation. Prompts allow messaging on the screen.

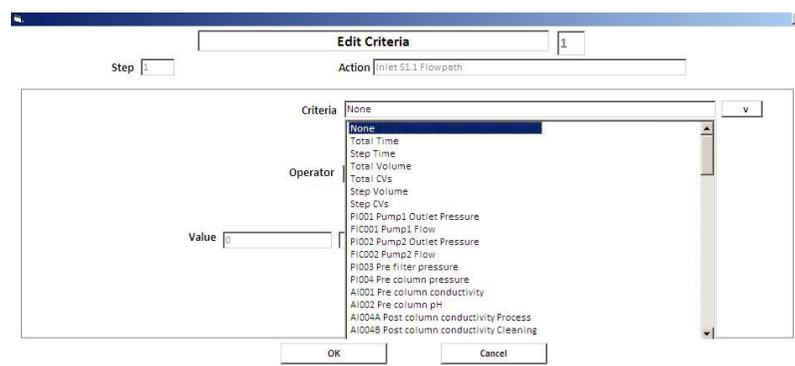
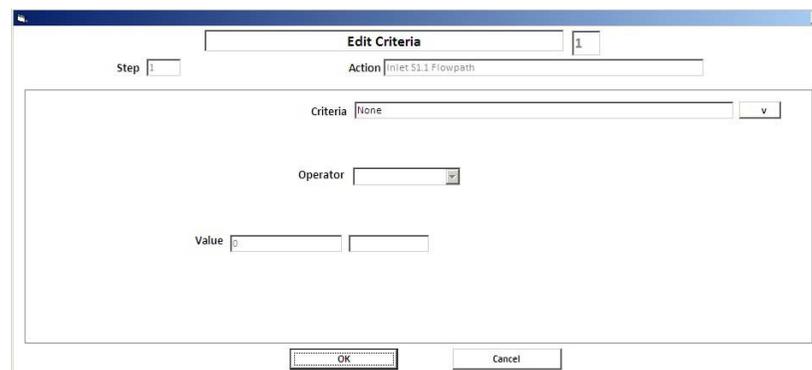
## Creating a Step

1. Click anywhere on the line in the tabular environment where the action is to be inserted. The line should now be highlighted in yellow.

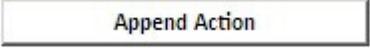
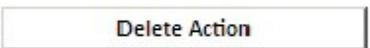
2. Click the appropriate action group in the Select Action Group list on the top left side of the Recipe Editor. The actions in the highlighted action group will be listed in the Select Action list on the right side of the recipe editor.
3. Scroll through the actions in the Select Action list and click the desired action.
4. Click the insert action button to transfer the selected action to the highlighted line. The line will now be referred to as a step.
5. If the step needs to be labeled, click the label column. A drop-down list appears with the numerals 1–20. Choose an appropriate number to label the Step.

**NOTE** No two steps can have the same label.

6. If the action in the step is to be executed based on some criterion, click the Criteria 1 column. An edit box appears. Click the Criteria field in the edit box and a drop-down menu containing a list of all the criteria appears. Scroll through the list to select the desired criterion. Then choose the appropriate operator in the operator field, and finally enter the appropriate value in the value field. The units in the value field will depend on the selected criterion. For instance, if the criterion is based on time, then the value will be in seconds.
  7. If a second criterion is necessary, repeat the step above. Then click on the column labeled Bool and choose the appropriate Boolean operator (AND or OR) to link the two criteria.
  8. If the action in the step involves setting values to variables (e.g. set points for flow rates, gradients etc.), click the column labeled Value. A data entry box pops up. The form of the box depends on the state of the popup keyboard toggle button (monitor or keyboard). Use the box to enter the appropriate values.
- NOTE** When a recipe step, containing a pressure criteria at zero, is opened for modification, it may change from 0 Bar to 1 Bar. Verify the value before pressing the Save button or the Cancel button.
9. If the action in the step involves a messaging criterion, click on the Comments/Prompt column. This launches a data entry box. Enter the appropriate string to appear in the messaging window.
  10. Click the Comments/Prompt column to add comments.



The buttons on the top right side of the application environment perform the functions described in the following table.

Icon	Description
	Transfers the selected action onto the highlighted step. Any action previously displayed as the highlighted step is transferred to the next step.
	Transfers the selected action to the step immediately below the highlighted step.
	Overwrites the current action in the highlighted step with the selected action.
	Deletes the current action in the highlighted step.

**NOTE** To select the contents of a step for cutting and pasting, click on the line number of the step.

## Phases

Phases are sets of steps that allow the user to break the recipe into multiple phases. This allows the set of steps to be used multiple times within an operation.

There can be a maximum of six phases in an operation.

Phase 0 is the main phase. When an operation is run, it starts executing actions listed in Phase 0. When creating a new operation or opening an existing one, the application environment opens with Phase 0.

From Phase 0, Phases 1–5 can be started, stopped, paused or resumed.

Phases can be run in parallel or in series.

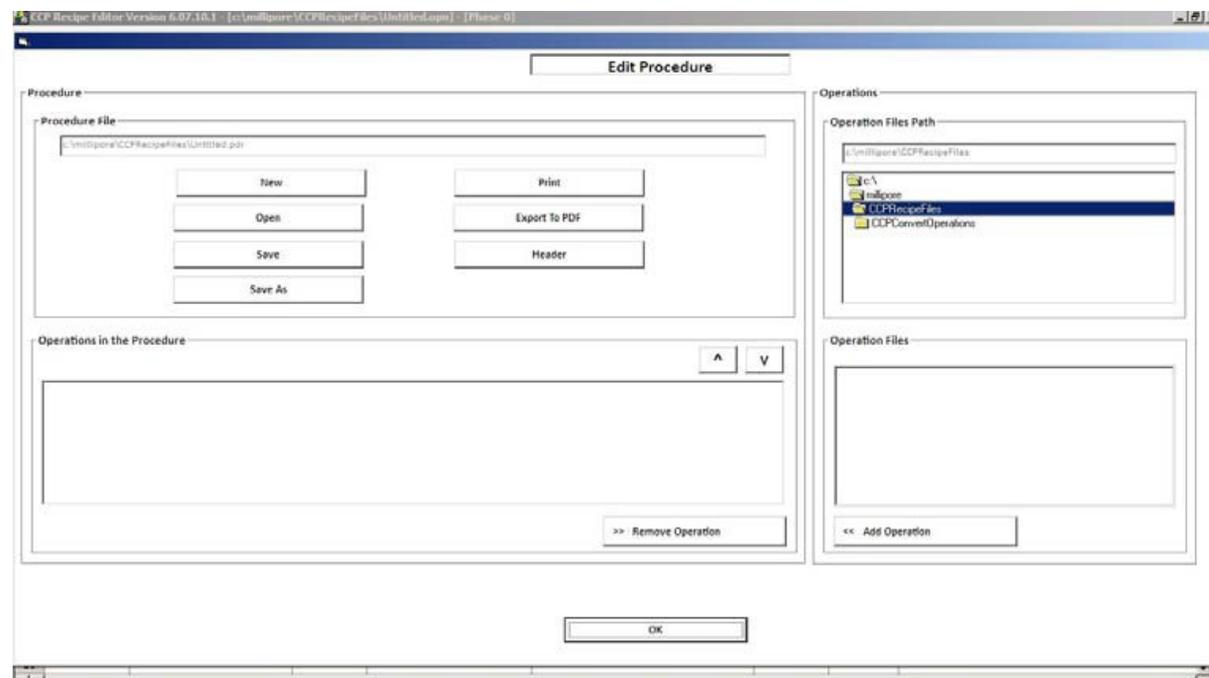
The current status of a phase is viewed with the Operation Status window.

## Managing Procedures

### Creating a Procedure

To create a procedure, click **Procedure** and then **Edit Procedure** in the Recipe Editor Menu bar or click the icon in the tool bar.

The Edit Procedure window opens.



In the lower right corner of the form, the Operation Files list box presents all the operations currently stored within the path indicated in the Operation Files Path list box.

### Downloading the Procedure

Click **Procedure** and then click **Download Procedure** in the Recipe Editor menu bar or click the icon in the tool bar.

**NOTE** A recipe must be saved on the system, in the default folder, before it can be exported to an external device such as a USB key. Contact your administrator if an export is needed.

### Executing the Procedure

Click the Run icon in the process window and the Run Header data dialog box will launch. Close the dialog box and the procedure currently downloaded to the PLC will be executed. The Operation Status window displays information about the current operation of the procedure being executed.

## Recipe Editor Actions Summary

The following table describes the available actions for each action group.

Display	Action
<b>Flowpath-Inlets</b>	
Inlet S1.1 Flow Path	Sets inlet flow path
Inlet S1.2 Flow Path	
Inlet S1.3 Flow Path	
Inlet S1.4 Flow Path	
Inlet S1.5 Flow Path	
Inlet S2.1 Flow Path	
Inlet S2.2 Flow Path	
Inlet CIP Flow Path	
Inlet HETP Flow Path	
<b>Flowpath-System</b>	
Default Flow Path	Sets system flow path
Critical Flow Path	
P001 Process Flow Path	
P001 Clean Flow Path	
P001 Drain Flow Path	
P002 Process Flow Path	
P002 Clean Flow Path	
P002 Drain Flow Path	
BBT Online Flow Path	
BBT Clean Flow Path	
BBT Bypass Flow Path	
BBT Drain Flow Path	
Filter Online Flow Path	

Display	Action
Filter Drain/Clean Flow Path	Sets system flow path
Filter Bypass Flow Path	
Column Forward Flow Path	
Column Reverse Flow Path	
Column Bypass Flow Path	
Outlet F1 Flow Path	
Outlet F2 Flow Path	
Outlet F3 Flow Path	
Outlet F4 Flow Path	
Outlet F5 Flow Path	
Outlet F0 Flow Path	
User 1 Flow Path	
User 2 Flow Path	
User 3 Flow Path	
User 4 Flow Path	
User 5 Flow Path	
<b>Valve Control</b>	
XV101 CIP Open	Opens or closes valve
XV101 CIP Close	
XV201 Inlet S1.1 Open	
XV201 Inlet S1.1 Close	
XV202 Inlet S1.2 Open	
XV202 Inlet S1.2 Close	

Display	Action
XV203 Inlet S1.3 Open	Opens or closes valve
XV203 Inlet S1.3 Close	
XV204 Inlet S1.4 Open	
XV204 Inlet S1.4 Close	
XV205 Inlet S1.5 Open	
XV205 Inlet S1.5 Close	
XV206 Inlet S2.1 Open	
XV206 Inlet S2.1 Close	
XV207 Inlet S2.2 Open	
XV207 Inlet S2.2 Close	
XV001 Drain After Pump1 Open	
XV001 Drain After Pump1 Close	
XV002 Drain After Pump2 Open	
XV002 Drain After Pump2 Close	
XV003 Junction Line 1&2 Open	
XV003 Junction Line 1&2 Close	
XV004 Junction Line 1&2 Open	

Display	Action
XV004 Junction Line 1&2 Close	Opens or closes valve
XV005 BBT Close	
XV006 BBT Open	
XV006 BBT Close	
XV007 BBT Open	
XV007 BBT Close	
XV701 BBT Vent Open	
XV701 BBT Vent Close	
XV008 Drain After BBT Open	
XV008 Drain After BBT Close	
XV009 Filter Open	
XV009 Filter Close	
XV010 Filter Open	
XV010 Filter Close	
XV011 Filter Open	
XV011 Filter Close	
XV702 Filter Vent Open	
XV702 Filter Vent Close	
XV501 HETP Isolement Open	
XV501 HETP Isolement Close	
XV502 HETP In Open	
XV502 HETP In Close	
XV012 Pre-Col Open	
XV012 Pre-Col Close	
XV013 Pre-Col Open	

Display	Action
XV013 Pre-Col Close	Opens or closes valve
XV014 Pre-Col Open	
XV014 Pre-Col Close	
XV015 Pre-Col Open	
XV015 Pre-Col Close	
XV016 Pre-Col Open	
XV016 Pre-Col Close	
XV017 Pre-Col Open	
XV017 Pre-Col Close	
XV301 Outlet F1 Open	
XV301 Outlet F1 Close	
XV302 Outlet F2 Open	
XV302 Outlet F2 Close	
XV303 Outlet F3 Open	
XV303 Outlet F3 Close	
<b>Flow Control-Pump 1</b>	
Pump P001 Stop	Start/Stop commands Control loop modes and related setpoints Control loop parameters Deviation alarms
P001 Control	
Pump P001 Run	
Pump P001 Control by Speed	
Pump P001 Control by Volumetric	
Flow Rate	
Pump P001 Control by Linear Velocity	
Pump P001 Speed Set Point	
Pump P001 Volumetric Flow Set Point	
Pump P001 Linear Velocity Set Point	

Display	Action
Pump P001 Ramp Rate	Start/Stop commands Control loop modes and related setpoints Control loop parameters Deviation alarms
Pump P001 Deadband	
Pump P001 Loop Gain	
Pump P001 Loop Reset	
Pump P001 Loop Rate	
Pump P001 Loop Deadband	
Pump P001 Loop Stable Time	
Pump P001 Deviation HI Alarm	
Pump P001 Deviation HIIH Alarm	
Pump P001 Deviation Alarm Enable	
Pump P001 Deviation Alarm Disable	
<b>Flow Control-Pump 2</b>	
Pump P002 Run	Start/Stop commands Control loop modes and related setpoints Control loop parameters Deviation alarms
Pump P002 Control by Speed	
Pump P002 Control by Volumetric	
Flow Rate	
Pump P002 Control by Linear Velocity	
Pump P002 Speed Set Point	
Pump P002 Volumetric Flow Set Point	

Display	Action
Pump P002 Linear Velocity Set Point	Start/Stop commands Control loop modes and related setpoints Control loop parameters Deviation alarms
Pump P002 Ramp Rate	
Pump P002 Deadband	
Pump P002 Loop Gain	
Pump P002 Loop Reset	
Pump P002 Loop Rate	
Pump P002 Loop Deadband	
Pump P002 Loop Stable Time	
Pump P002 Deviation HI Alarm	
Pump P002 Deviation HIHI Alarm	
Pump P002 Deviation Alarm Enable	
Pump P002 Deviation Alarm Disable	

Display	Action
<b>FlowControl-Mixing</b>	
Mixing Enable	Dual Pump Mixing Control Enable/disable the mixing Start/stop both pumps together Sets Mixing mode and related setpoints Mixing control loop parameters Deviation alarms Linear Gradient Control (control the gradient profile defined in the gradient phase)
Mixing Disable	
Mixing Start Pumps	
Mixing Stop Pumps	
Mixing Control Pumps by Speed	
Mixing Control Pumps by Volumetric Flow	
Mixing Control Pumps by Linear Velocity	
Mixing Control Pumps Speed Set Point	
Mixing Control Pumps Volumetric Flow Set Point	
Mixing Control Pumps Linear Velocity Set Point	
Mixing Percentage Mode	
Mixing Conductivity Mode	
Mixing Percentage Set Point	
Mixing Conductivity Set Point	
Mixing Primary Conductivity Snapshot	
Mixing Primary Conductivity Set Point	
Mixing Secondary Conductivity Snapshot	

Display	Action
Mixing Secondary Conductivity Set Point	Dual Pump Mixing Control Enable/disable the mixing Start/stop both pumps together Sets Mixing mode and related setpoints Mixing control loop parameters Deviation alarms Linear Gradient Control (control the gradient profile defined in the gradient phase)
Mixing Conductivity Deadband Set Point	
Mixing Conductivity Stable Time Set Point	
Mixing Total Flow Deadband Set Point	
Mixing Total Flow Stable Time Set Point	
Mixing Closed Loop Proportional Factor	
Mixing Lookup Table ON	
Mixing Lookup Table OFF	
Mixing Lookup Table Create Segment	
Mixing Lookup Table Number of Segment	
Mixing TotalFlow Deviation Alarm Enable	
Mixing TotalFlow Deviation Alarm Disable	
Mixing TotalFlow Deviation HI Alarm	
Mixing TotalFlow Deviation HIHI Alarm	
Mixing Conductivity Deviation Alarm Enable	

Display	Action
Mixing Conductivity Deviation Alarm Disable	Dual Pump Mixing Control Enable/disable the mixing Start/stop both pumps together Sets Mixing mode and related setpoints Mixing control loop parameters Deviation alarms Linear Gradient Control (control the gradient profile defined in the gradient phase)
Mixing Conductivity Deviation HI Alarm	
Mixing Conductivity Deviation HIHI Alarm	
Linear Gradient Start	
Linear Gradient Abort	
Linear Gradient Pause	
Linear Gradient Resume	
<b>PreColumn</b>	
Bubble Trap Auto Vent ON	Bubble trap and filter auto vent control
Bubble Trap Auto Vent OFF	
Filter Auto Vent ON	
Filter Auto Vent OFF	
<b>Column</b>	
Bed Height	Column Parameters
Column Volume	

Display	Action
<b>PostColumn-Peak Detection</b>	
Peak Detection Enable	Peak detection control: Enable/disable peak detection Sets end of peak detection mode either based on an absolute value or based on a percentage of the height Sets start and end setpoints Sets the UV sensor to be used for detection Sets the inflection detection setpoints
Peak Detection Disable	
End Peak Based on Setpoint	
End Peak Based on Height	
Start Peak Set Point	
End Peak Set Point	
End Peak % Height Set Point	
Peak Rising Time	
Peak Falling Time	
Stability Timer Enable	
Stability Timer Disable	
Stability Deadband	
SetUV1(AI007) SignalforPeak Detection	
SetUV2(AI008) SignalforPeak Detection	
UV Baseline Zero On	
Peak Inflection Detection Enable	
Peak Inflection Detection Disable	
Peak Inflection Percentage	
Peak Inflection DeadTime	

Display	Action
<b>Analog Alarms</b>	
Enable PI001 Pump1 Outlet Pressure Alarm	Enable/Disable analog alarms Sets analog alarms setpoints
Disable PI001 Pump1 Outlet Pressure Alarm	
PI001 Pump1 Outlet Pressure LOLO	
PI001 Pump1 Outlet Pressure LO	
PI001 Pump1 Outlet Pressure HI	
PI001 Pump1 Outlet Pressure HIHI	
Enable FIC001 Pump1 Flow Alarm	
Disable FIC001 Pump1 Flow Alarm	
FIC001 Pump1 Flow LOLO	
FIC001 Pump1 Flow LO	
FIC001 Pump1 Flow HI	
FIC001 Pump1 Flow HIHI	
Enable PI002 Pump1 Outlet Pressure Alarm	
Disable PI002 Pump1 Outlet Pressure Alarm	
PI002 Pump1 Outlet Pressure LOLO	
PI002 Pump1 Outlet Pressure LO	

Display	Action
PI002 Pump1 Outlet Pressure HI	Enable/Disable analog alarms Sets analog alarms setpoints
PI002 Pump1 Outlet Pressure HIHI	
Enable FIC002 Pump1 Flow Alarm	
Disable FIC002 Pump1 Flow Alarm	
FIC002 Pump2 Flow LOLO	
FIC002 Pump2 Flow LO	
FIC002 Pump2 Flow HI	
FIC002 Pump2 Flow HIHI	
Enable PI003 Pre Filter Pressure Alarm	
Disable PI003 Pre Filter Pressure Alarm	
PI003 Pre Filter Pressure LOLO	
PI003 Pre Filter Pressure LO	
PI003 Pre Filter Pressure HI	
PI003 Pre Filter Pressure HIHI	
Enable PI004 Pre Column Pressure Alarm	
Disable PI004 Pre Column Pressure Alarm	

Display	Action
PI004 Pre Column Pressure LOLO	Enable/Disable analog alarms Sets analog alarms setpoints
PI004 Pre Column Pressure LO	
PI004 Pre Column Pressure HI	
PI004 Pre Column Pressure HIHI	
Enable AI001 Pre Column Conductivity Alarm	
Disable AI001 Pre Column Conductivity Alarm	
AI001 Pre Column Conductivity LOLO	
AI001 Pre Column Conductivity LO	
AI001 Pre Column Conductivity HI	
AI001 Pre Column Conductivity HIHI	
Enable AI002 Pre Column pH Alarm	
Disable AI002 Pre Column pH Alarm	
AI002 Pre Column pH LOLO	
AI002 Pre Column pH LO	
AI002 Pre Column pH HI	
AI002 Pre Column pH HIHI	

Display	Action
Enable AI004A Post Column Conductivity	Enable/Disable analog alarms Sets analog alarms setpoints
Process Alarm	
Disable AI004A Post Column Conductivity	
Process Alarm	
AI004A Post Column Conductivity Process LOLO	
AI004A Post Column Conductivity Process LO	
AI004A Post Column Conductivity Process HI	
AI004A Post Column Conductivity Process HIHI	
Enable AI004B Post Column Conductivity	
Cleaning Alarm	
Disable AI004B Post Column Conductivity	
Cleaning Alarm	
AI004B Post Column Conductivity Cleaning LOLO	
AI004B Post Column Conductivity Cleaning LO	
AI004B Post Column Conductivity Cleaning HI	

Display	Action
AI004B Post Column Conductivity Cleaning	Enable/Disable analog alarms Sets analog alarms setpoints
HIHI	
Enable TI006 Post Column temperature Alarm	
Disable TI006 Post Column temperature Alarm	
TI006 Post Column temperature LOLO	
TI006 Post Column temperature LO	
TI006 Post Column temperature HI	
TI006 Post Column temperature HIHI	
Enable AI005 Post Column pH Alarm	
Disable AI005 Post Column pH Alarm	
AI005 Post Column pH LOLO	
AI005 Post Column pH LO	
AI005 Post Column pH HI	
AI005 Post Column pH HIHI	
Enable AI007 Post Column UV1 Alarm	
Disable AI007 Post Column UV1 Alarm	

Display	Action
AI007 Post Column UV1 LOLO	Enable/Disable analog alarms Sets analog alarms setpoints
AI007 Post Column UV1 LO	
AI007 Post Column UV1 HI	
AI007 Post Column UV1 HIHI	
Enable AI008 Post Column UV2 Alarm	
Disable AI008 Post Column UV2 Alarm	
AI008 Post Column UV2 LOLO	
AI008 Post Column UV2 LO	
AI008 Post Column UV2 HI	
AI008 Post Column UV2 HIHI	
Enable PI005 Post Column Pressure Alarm	
Disable PI005 Post Column Pressure Alarm	
PI005 Post Column Pressure LOLO	
PI005 Post Column Pressure LO	
PI005 Post Column Pressure HI	
PI005 Post Column Pressure HIHI	

Display	Action
Enable FIC010_TOT Total Flow Alarm	Enable/Disable analog alarms Sets analog alarms setpoints
Disable FIC010_TOT Total Flow Alarm	
FIC010_TOT Total Flow LOLO	
FIC010_TOT Total Flow LO	
FIC010_TOT Total Flow HI	
FIC010_TOT Total Flow HIHI	
Enable LV Linear Velocity Alarm	
Disable LV Linear Velocity Alarm	
LV Linear Velocity LOLO	
LV Linear Velocity LO	
LV Linear Velocity HI	
LV Linear Velocity HIHI	
Enable DP_Filter Delta P Filter Alarm	
Disable DP_Filter Delta P Filter Alarm	
DP_Filter Delta P Filter LOLO	
DP_Filter Delta P Filter LO	
DP_Filter Delta P Filter HI	
DP_Filter Delta P Filter HIHI	

Display	Action
Enable DP_Column Delta P Column Alarm	
Disable DP_Column Delta P Column Alarm	
DP_Column Delta P Column LOLO	
DP_Column Delta P Column LO	Enable/Disable analog alarms Sets analog alarms setpoints
DP_Column Delta P Column HI	
DP_Column Delta P Column HIHI	

Display	Action
<b>Discrete Alarms</b>	
PSL601 Valves Air Defect Alarm PSL601 Valves Air Defect Alarm Disable	Enable/Disable digital alarms
CIP Manifold Alarm Enable	
CIP Manifold Alarm Disable	
YI003 Fluid detection (Filter) Alarm Enable	
YI003 Fluid detection (Filter) Alarm Disable	
YI001 End Product Detection Alarm Enable	
YI001 End Product Detection Alarm Disable	
LSH001 BBT Level High Alarm Enable	
LSH001 BBT Level High Alarm Disable	
LSL002 BBT Level Low Alarm Enable	
LSL002 BBT Level Low Alarm Disable	
SIC001D Pump1 Fault Alarm Enable	
SIC001D Pump1 Fault Alarm Disable	

Display	Action
SIC002D Pump2 Fault Alarm Enable	Enable/Disable digital alarms
SIC002D Pump2 Fault Alarm Disable	
AA008 UV Lamp Fail Alarm Enable	
AA008 UV Lamp Fail Alarm Disable	
ESCUST Emergency Stop CustomerAlarm	
Enable	
ESCUST Emergency Stop CustomerAlarm	
Disable	
DF48VP001 Pump 1 48 VDC Defect Alarm	
Enable	
DF48VP001 Pump 1 48 VDC Defect Alarm	
Disable	
DF48VP002 Pump 2 48 VDC Defect Alarm	
Enable	
DF48VP002 Pump 2 48 VDC Defect Alarm	
Disable	
YI002 Pre Col. Air Presence Alarm	
Enable	
YI002 Pre Col. Air Presence Alarm	
Disable	

Display	Action
LV01_Err Pump1 Linear Vel. SP Alarm Enable	Enable/Disable digital alarms
LV01_Err Pump1 Linear Vel. SP Alarm Disable	
LV02_Err Pump2 Linear Vel. SP Alarm Enable	
LV02_Err Pump2 Linear Vel. SP Alarm Disable	
YA01 PC to PLC Comm Failure Alarm Enable	
YA01 PC to PLC Comm Failure Alarm Disable	
YA02 CCP Runtime Comm Failure Alarm Enable	
Discrete Alarms	
YA02 CCP Runtime Comm Failure Alarm Disable	
Enable/Disable digital alarms	
YA03 Historical Collection Alarm Enable	
YA03 Historical Collection Alarm Disable	
YA04 Hard Drive Overload Alarm Enable	

Display	Action
YA04 Hard Drive Overload Alarm Disable	Enable/Disable digital alarms
YA05 Database Overload Alarm Enable	
YA05 Database Overload Alarm Disable	
YA06 Raid Error Alarm Enable	
YA06 Raid Error Alarm Disable	
YA07 Node 0 Communication Failure Alarm Enable	
YA07 Node 0 Communication Failure Alarm Disable	
YA08 Node 0 Internal Defect Alarm Enable	
YA08 Node 0 Internal Defect Alarm Disable	
YA09 Node 1 Communication Failure Alarm Enable	
YA09 Node 1 Communication Failure Alarm Disable	
YA10 Node 1 Internal Defect Alarm Enable	
YA10 Node 1 Internal Defect Alarm Disable	
PI001 Signal Failure Alarm Enable	

Display	Action
PI001 Signal Failure Alarm Disable	Enable/Disable digital alarms
FIC001 Signal Failure Alarm Enable	
FIC001 Signal Failure Alarm Disable	
PI002 Signal Failure Alarm Enable	
PI002 Signal Failure Alarm Disable	
FIC002 Signal Failure Alarm Enable	
FIC002 Signal Failure Alarm Disable	
FIC010 Signal Failure Alarm Enable	
FIC010 Signal Failure Alarm Disable	
PI003 Signal Failure Alarm Enable	
PI003 Signal Failure Alarm Disable	
PI004 Signal Failure Alarm Enable	
PI004 Signal Failure Alarm Disable	
AI001 Signal Failure Alarm Enable	
AI001 Signal Failure Alarm Disable	
AI002 Signal Failure Alarm Enable	
AI002 Signal Failure Alarm Disable	

Display	Action
YI002 Signal Failure Alarm Enable	Enable/Disable digital alarms
YI002 Signal Failure Alarm Disable	
AI004A Signal Failure Alarm Enable	
AI004A Signal Failure Alarm Disable	
AI004B Signal Failure Alarm Enable	
AI004B Signal Failure Alarm Disable	
TI006 Signal Failure Alarm Enable	
TI006 Signal Failure Alarm Disable	
AI005 Signal Failure Alarm Enable	
AI005 Signal Failure Alarm Disable	
AI007 Signal Failure Alarm Enable	
AI007 Signal Failure Alarm Disable	
AI008 Signal Failure Alarm Enable	
AI008 Signal Failure Alarm Disable	
PI005 Signal Failure Alarm Enable	
PI005 Signal Failure Alarm Disable	

Display	Action
<b>Miscellaneous</b>	
None	When executed, this action produces no changes in the status of the unit. This action is primarily used to assign a label to a step for logic branching, or between consecutive prompts.
Enable All Alarms	When executed, enables all alarms.
Disable All Alarms	When executed, disables all alarms.
Enable All Valve Limit Switch Alarms	When executed, enables all Limit switches alarms.
Disable All Valve Limit Switch Alarms	When executed, disables all Limit switches alarms
Enable All Analog Input Signal Failure Alarms	When executed, enables all Signal Failure alarms.
Disable All Analog Input Signal Failure Alarms	When executed, disables all Signal Failure alarms.
Global Auto Mode	Sets all equipments to their auto mode.

Display	Action
Go to Default	Sets the system to its default state.
Chart Mark	When executed, adds a chart mark to the Real Time display, and the Historical and Alarm/Event logs.
Log Comment	Add a comment to the event log. The message contents can be defined in the comment/prompt column of the phase's spreadsheet.
Holdup Volume	The volume of fluid held in the system flowpath
HETP Start	Flags the start of HETP data to be used by the HETP report.
HETP End	Flags the end of HETP data to be used by the HETP report.
Start User Totalizers	Starts the user totalizer
Stop User Totalizers	Stops the user totalizer

Display	Action
Reset User Totalizers	Resets the user totalizer
Log User Totalizers	Logs the user totalizer
User Non Critical Alarm 1	Triggers the User non critical alarm #1
User Critical Alarm 1	Triggers the User critical alarm #1
User Non Critical Alarm 2	Triggers the User non critical alarm #2
User Critical Alarm 2	Triggers the User critical alarm #2

Display	Action
<b>Operations and Phase Control</b>	
If Criteria Met then Jump to Label:	If the criteria are met, the operation jumps to another labeled action
System Hold	Sets the system to hold state
Operation Abort	Aborts the running operation
Operation Pause	Pauses the running operation
Phase 1 Start	Start Starts phase X Stop stops phase X Pause pauses phase X Resume resumes phase X
Phase 1 Stop	
Phase 1 Pause	
Phase 1 Resume	
Phase 2 Start	
Phase 2 Stop	
Phase 2 Pause	
Phase 2 Resume	
Phase 3 Start	
Phase 3 Stop	

Display	Action
Phase 3 Pause	Start starts phase X
Phase 3 Resume	
Phase 4 Start	
Phase 4 Stop	Stop stops phase X
Phase 4 Pause	Pause pauses phase X
Phase 4 Resume	
Phase 5 Start	Resume resumes phase X
Phase 5 Stop	
Phase 5 Pause	
Phase 5 Resume	

Display	Action
No Default on Complete	Does not set the system to the default state on the completion of an operation
Default on Complete	Sets the system to the default state on the completion of an operation
Criteria Flag 1 ON	Criteria flags can be used to create user-defined criteria.  On Sets the criteria flag. Off Resets the criteria flag.
Criteria Flag 1 OFF	
Criteria Flag 2 ON	
Criteria Flag 2 OFF	
Criteria Flag 3 ON	
Criteria Flag 3 OFF	
Criteria Flag 4 ON	
Criteria Flag 4 OFF	
Criteria Flag 5 ON	
Criteria Flag 5 OFF	

Display	Action
<b>Messaging</b>	
Phase 0 Prompt with OK Button	When executed, those actions display a dialog box containing a message and answer buttons (either OK only or Yes/No).  The message contents is defined via the comment/prompt column of the selected phase's spreadsheet.  Available only for the currently active phase.
Phase 0 Prompt with Yes/No Buttons	
Phase 1 Prompt with OK Button	
Phase 1 Prompt with Yes/No Buttons	
Phase 2 Prompt with OK Button	
Phase 2 Prompt with Yes/No Buttons	
Phase 3 Prompt with OK Button	
Phase 3 Prompt with Yes/No Buttons	
Phase 4 Prompt with OK Button	
Phase 4 Prompt with Yes/No Buttons	
Phase 5 Prompt with OK Button	
Phase 5 Prompt with Yes/No Buttons	

## Criteria Summary

The criteria in the Recipe Editor environment are intended to be self-explanatory.

Criterion	Description
None	This empty field makes the transition true, the action associated with the step where this criterion stands will always be executed.
Total Time	Checks the value of the time elapsed from the start of the operation.
Step Time	Checks the value of the time elapsed from the start of the current step.
Criteria 1 True Time	Checks how long the criterion 1 is true.  Available for criteria 2 column only.
Total Volume	Checks the value of the volume of fluid that has passed through the system from the start of the operation.

Criterion	Description
Total CVs	Checks the value of the column volumes of fluid that have passed through the system from the start of the operation.
Step Volume	Checks the value of the volume of fluid that has passed through the system from the start of the current step.
Step CVs	Checks the value of the column volumes of fluid that have passed through the system from the start of the current step.

Criterion	Description
PI001 Pump1 Outlet Pressure	Analog and digital values can be compared to a user defined value through mathematical operators (=, >=, <=) in order to produce the desired criterion.
FIC001 Pump1 Flow	
PI002 Pump2 Outlet Pressure	
FIC002 Pump2 Flow	
PI003 Pre filter pressure	
DP_Column Delta P Column	
ZSF001 CIP Manifold connected	Checks CIP Manifold
YI001 End Product Detected	Checks End of Product
YI002 Pre Column Air Presence	Checks Air Presence before the column
YI003 Fluid Detected (Filter Housing)	Checks liquid presence in the filter
Start of Peak Detected	True when Start of Peak has been detected
End of Peak Detected	True when End of Peak has been detected
Peak Inflection Detected	True when Peak Inflection has been detected
Peak Stable Time	Checks for how long the UV value is stable

Criterion	Description
Mixing Retention Volume Reached	True when the retention volume has been reached: The holdup volume has been pumped through the system.
Mixing Conductivity within deadband	Within deadband: Checks if the control loop process value has reached its setpoint setpoint+/- the deadband
Mixing Conductivity Stable	
Mixing Total Flow within deadband	
Mixing Total Flow Stable	
FLC001 Pump1 Ramp Complete	
FLC001 Pump1 within deadband	
FLC001 Pump1 Control Stable	
FLC002 Pump2 Ramp Complete	
FLC002 Pump2 within deadband	
FLC002 Pump2 Control Stable	
Goto Default on End Enabled	Checks if Goto Default on complete is enabled
Goto Default on End Disabled	Checks if Goto Default on complete is disabled

Criterion	Description
Criteria Flag 1 On	Checks the flags set by the criteria flags actions
Criteria Flag 1 Off	
Criteria Flag 2 On	
Criteria Flag 2 Off	
Criteria Flag 3 On	
Criteria Flag 3 Off	
Criteria Flag 4 On	
Criteria Flag 4 Off	
Criteria Flag 5 On	
Criteria Flag 5 Off	
Phase 1 Complete	Checks if Phase X is complete
Phase 2 Complete	
Phase 3 Complete	
Phase 4 Complete	
Phase 5 Complete	
Phase 1 Total Time	Checks Phase X duration, volume totalizer or CVs totalizer
Phase 1 Total Volume	
Phase 1 Total CVs	
Phase 2 Total Time	
Phase 2 Total Volume	
Phase 2 Total CVs	
Phase 3 Total Time	

Criterion	Description
Phase 3 Total Volume	Checks Phase X duration, volume totalizer or CVs totalizer
Phase 3 Total CVs	
Phase 4 Total Time	
Phase 4 Total Volume	
Phase 4 Total CVs	
Phase 5 Total Time	
Phase 5 Total Volume	
Phase 5 Total CVs	Checks the answer buttons associated with a message-based dialog box. Phase prompt criteria may be used only in the next step after a step with a prompt that is being examined. Only one of the criteria Phase Prompt Yes and Phase Prompt No can be used following a phase prompt.
Phase 0 Prompt OK	
Phase 0 Prompt Yes	
Phase 0 Prompt No	
Phase 1 Prompt OK	
Phase 1 Prompt Yes	
Phase 1 Prompt No	
Phase 2 Prompt OK	
Phase 2 Prompt Yes	
Phase 2 Prompt No	
Phase 3 Prompt OK	
Phase 3 Prompt Yes	
Phase 3 Prompt No	
Phase 4 Prompt OK	
Phase 4 Prompt Yes	
Phase 4 Prompt No	
Phase 5 Prompt OK	
Phase 5 Prompt Yes	
Phase 5 Prompt No	
End of Linear Gradient	Check if Linear Gradient is finished

## Remote Desktop Connection

Remote Desktop Connection enables connection to a remote computer.

For administrator details, refer to the Computer Administration document in the digital set of documents supplied with the system.

## Batch Reporting

The CCP® system provides the collection, storage, processing and reporting of batch production data, in accordance with international standards on batch control and current good manufacturing practices.

All recorded information pertaining to a batch is referred to as the batch history. CCP® software stores the batch history so that it is associated with the actual execution of the applied protocol.

Information contained in the batch history includes:

- A copy of the protocol used to perform the process and any changes made during the execution. This is event data which includes:
  - Predictable events where certain event data are logged during the execution of the operation including start/stop times of procedural elements.

- Unpredictable events where any non-programmed operator intervention is logged, such as comments based on observations during system operation, entry of any results, sampling, etc. The log includes intervention type and user ID. Other unpredictable events logged are alarms, equipment failures or other abnormal conditions.
- Trends of measured process parameters such as temperature, pressure, etc.
- The event log for setpoint changes for the mass flow controllers and peristaltic pumps when controlled by pH or DO with PID controller is disabled.

## Launching the Report Client

Click the Reports icon in the tool bar to launch the CCP® Report Client application.



## Generating a Report



Batch reports are created using the Report Generator. Click the Report Generator or, on the Report Client menu bar, click on Reports then Report Generator.

The Report Generator form appears.

Run ID	Start Date Time	End Date Time	Product ID	Batch ID	Step ID	User Name	State
1	28/08/2017 10:10:08	28/08/2017 10:10:11				CCP Administrator	Complete
2	28/08/2017 10:09:23	28/08/2017 10:09:25				CCP Administrator	Complete
3							
4							
5							
6							
7							
8							
9							
10							

## Run Selection

The table in the lower part of the screen contains the data corresponding to runs archived by the system. Data can be sorted by Run ID, Start and End Date and Time of the run, Product ID, Batch ID, Step ID, User Name and State of the run.

## Sorting Batch Data

To sort the data within the same column, click the column header. Every subsequent click sorts the data in the reverse order, either ascending or descending.

## Advanced Query

Check the box located on the top left corner of the table to activate the advanced query boxes placed on top of the column headers. When activated, the gray color of these boxes changes to white. To perform an advanced query within a particular column, click the white box located on top of the corresponding column header. A data entry form appears. Type any desired string of characters in the text box provided with this form and click OK.

Example: The following figure shows the results of a query when the string 12 has been defined in the white query box corresponding to the Run ID column.

The screenshot shows the 'Report Generator' window. On the left, there are buttons for 'Close', 'Preview Report', 'Print Report', 'Save Report', 'E2Chrom Export', and 'Configuration Report'. The main area is divided into sections: 'Run Selection Criteria' with 'Run ID' selected and a value of '28/08/2017 10:10:08', and 'Date Time' with start and end dates. Below this is 'Report Configuration' with a 'Choose Configuration' dropdown and 'Save', 'Delete', and 'ACTIVE' buttons. On the right, there are 'Report Selections' and 'Automatic Report Generation' checkboxes. At the bottom, an 'Advanced Query' section has a checked box and a table with a query box containing '12' above the 'Run ID' column header.

Run ID	Start Date Time	End Date Time	Product ID	Batch ID	Step ID	User Name	State
12/08/2017 09:49:06	12/08/2017 09:49:06	12/08/2017 09:49:06	CCP Administrator				
12/08/2017 09:48:56	12/08/2017 09:48:59	12/08/2017 09:48:59				CCP Administrator	In Progress
12/08/2017 09:46:10	12/08/2017 09:46:10	12/08/2017 09:46:10	CCP Administrator				
12/08/2017 09:45:03	12/08/2017 09:45:06	12/08/2017 09:45:06				CCP Administrator	In Progress
12/08/2017 09:44:45	12/08/2017 09:44:45	12/08/2017 09:44:45	CCP Administrator				
12/08/2017 09:44:36	12/08/2017 09:44:39	12/08/2017 09:44:39				CCP Administrator	In Progress
12/08/2017 09:44:32	12/08/2017 09:44:32	12/08/2017 09:44:32	CCP Administrator				
12/08/2017 09:43:42	12/08/2017 09:43:44	12/08/2017 09:43:44				CCP Administrator	In Progress

Note that the string 12 is present in all Run ID descriptors in this column.

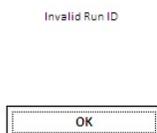
The advanced query function also provides for "AND-type" Boolean logic. Putting search parameters in the advanced query boxes of more than one column will only return values that match all criteria.

## Select a Run

To select a run for report generation, click the appropriate row (in any column) that contains the run information needed. The selected row is highlighted in yellow. The Run ID and the Start and End Dates and Times are updated in the Run Selection Criteria box located in the upper central part of the Report Generator form.

Select one of the buttons provided within the Run Selection Criteria box (Run ID and Date Time) to generate a particular report. The Run ID button generates a report for the particular run whose Run ID matches the description defined in the adjacent text box.

If the Run ID entered in the text box is not archived, an error message appears when the user attempts to view the report.



### Date Time Button

The Date Time button generates a report containing all the data bound by the lower and upper limits of the defined time window. If the time window spans over several days, the generated report will contain a large amount of both sensor and event data.

## Report Configuration

### Report Configuration Menu

The report configuration menu allows the user to save, recall, and activate report configurations.

**NOTE** Only users with appropriate security privileges can save configurations.



### Saving a Configuration

Click **Save** and enter a unique name. The current configuration will be saved for future recall.

### Deleting a Configuration

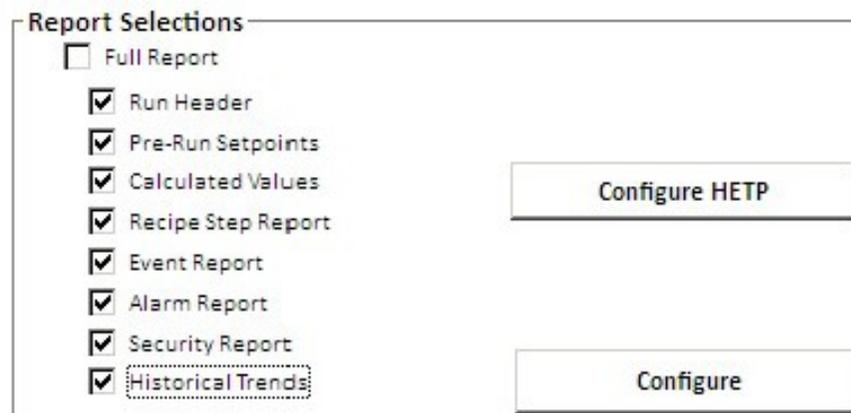
Click **Delete** to delete the currently selected configuration.

### Activating a Configuration

Click **Make Active** to activate the configuration currently being displayed.

### Report Selections Box

The Report Selections box, located in the upper right corner of the form, provides several check boxes that allow the user to select one or more sections for a particular report from the list provided. If all sections are required within a report, check the Full Report box in the upper right corner of the form.





## Analog Data Configuration Columns

Column	Description
Description	A description of the data that will be included in the report.
Graph	A checkbox to select if the data is to be presented in a graph.
Tabular	A checkbox to select if the data is to be presented in tabular form.
Interval	The frequency of the data included within the report. In this case, one data point per 10 seconds is going to be included for all the tags in the chart groups.
Chart Mark	A checkbox to select if chart marks created during the process are to be included in the chart.
X-Axis	A drop-down box to select the X-Axis variable. The choices are Time, CV and Volume.
Alternate Start Time	The time for which values will be returned for an individual tag that is different than the Start Time of the selected run.
Tag	The tag whose value will be returned.
Y-Axis	A checkbox to select if the tag's data is to be presented along the Y-Axis.
Low/High	The low and high range of the engineering units of the tag. Defaults to the tag range in the system but can be manually changed.
EGU	Engineering Units of the tag. Defaults to the tag EGU stored in the system but can be manually changed.
Color	Color of the trend for that tag. Can be manually changed.

## Configuring the HETP Report

When either the Full Report or the Calculated Values boxes is checked within the Report Selections box, the Configure HETP button is enabled. The Configure HETP button opens the HETP Report Configuration Screen. The user may then define the parameters for HETP calculations, including the Start and End Points, Analysis Mode and HETP Variable.

### Start and End Points

To select Start and End Points for the HETP data, click the appropriate button to choose either Flagged Date Time (the start and end points of the selected run) or Manual Date Time (to input start and end dates and times manually, in the Start and End Date Time boxes).

### Analysis Mode

Select Pulse Analysis or Frontal Analysis by clicking the appropriate button. In Pulse Analysis, the HETP peak data points are read directly from the historical data file. In Frontal Analysis, the HETP peak data points are read from the absolute value of the derivative of the historical data.

When Frontal Analysis mode is selected, a smoothing algorithm is applied to the raw historical data before the derivative of the data is calculated. The smoothing value is a moving average, which appears in the Smoothing Index box. This may be adjusted using the scroll bar below the box.

When Frontal Analysis mode is selected, the start point for calculating the derivative of the data is defined as an offset from the start time. The length of this offset may be defined in the Cart Line Offset Time box, if Manual Date Time is selected.

### HETP Variables

Three choices are available for the variable to be used for HETP calculations:

- Post Column Conductivity
- Post Column pH
- Post Column UV

The chosen variable is selected by clicking on the appropriate button.

### Automatic Report Generation

For automatic report generation at the end of a run, check the Automatic Report File Generation box within the Automatic Report Generation box. To send the report to the default printer at the end of the run, check the Automatic Report Printout box.

Automatic Report Generation

Automatic Report File Generation

Automatic Report Printout

### Report Preview

To preview the final report, click Preview Report on the top left corner of the Report Generator form. Samples of final reports are shown below.

Close Report Preview

Print... Page Wi... Beginning End 1/1 Back Forward

**Run Report**

Run ID: 07/04/2017 3:03:32 PM  
Start Date: 07/04/2017 3:03:37 PM  
End Date: 07/04/2017 3:06:17 PM

**Recipe Step Report**

Date Time	Phase	Step	Step Action	Action Value	User Name
07/04/2017 3:03:38 PM	0	1	Global Auto Mode	1.00	NONE
07/04/2017 3:03:38 PM	0	2	Disable All Valve Limit Switch Alarms	1.00	NONE
07/04/2017 3:03:39 PM	0	3	P001 Process Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	4	Filter Bypass Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	5	BBT Online Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	6	Column Bypass Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	7	Outlet F5 Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	8	Inlet S1.2 Flowpath	1.00	NONE
07/04/2017 3:03:39 PM	0	9	Pump P001 Control by Speed	1.00	NONE
07/04/2017 3:03:39 PM	0	10	Pump P001 Speed Set Point	10.00	NONE
07/04/2017 3:03:39 PM	0	11	Pump P001 Run	1.00	NONE
07/04/2017 3:04:39 PM	0	12	Phase 0 Prompt with OK Button	1.00	NONE
07/04/2017 3:04:54 PM	0	13	Chart Mark	1.00	NONE

### Event Report

Close Report Preview

Print... Page Wi... Beginning End 1/19 Back Forward

**Run Report**

Run ID:  
Start Date: 12/08/2018 09:49:04  
End Date: 12/08/2017 10:09:32

**Event Report**

Date Time	Event Type	Event Description	Old Value	New Value	Event Label	EGU	User Name
25/07/2017 10:47:10	Event	XV501 Opened					NONE
25/07/2017 10:47:10	Event	XV013 Opened					NONE
25/07/2017 10:47:10	Event	XV014 Opened					NONE
25/07/2017 10:47:10	Event	XV015 Opened					NONE
25/07/2017 10:47:10	Event	XV016 Opened					NONE
25/07/2017 10:47:10	Event	XV300 Opened					NONE
25/07/2017 10:47:10	Event	Start of Peak Detected					NONE
25/07/2017 10:47:10	Event	End of Peak Detected					NONE
25/07/2017 10:47:10	Event	Peak Inflection Detected					NONE
25/07/2017 10:47:10	Event	FLC001 Pump1 Ramp Complete					NONE
25/07/2017 10:47:10	Event	FLC001 Pump1 within deadband					NONE
25/07/2017 10:47:10	Event	Pump P001 Speed Set Point	4.00	0.00			NONE
25/07/2017 10:47:10	Event	Pump P001 Linear Velocity Set Point	4.00	0.00			NONE
25/07/2017 10:47:10	Event	Pump P002 Volumetric Flow Set Point	4.00	0.00			NONE
25/07/2017 10:47:10	Event	Mixing Percentage Set Point	2.00	0.00			NONE
25/07/2017 10:47:10	Event	Chart Mark	2.00	1.00			NONE



## Pre Run Setpoints Report

Close Report Preview

Print... Page W... Beginning End 1/88 Back Forward

Pre Run Setpoints				
Date Time	Event Description	Setpoint	EGU	User Name
12/06/2017 09:43:48	Default Flowpath	1		NONE
12/06/2017 09:43:48	Critical Flowpath	1		NONE
12/06/2017 09:43:48	P001 Process Flowpath	1		NONE
12/06/2017 09:43:48	P002 Process Flowpath	1		NONE
12/06/2017 09:43:48	BBT Online Flowpath	1		NONE
12/06/2017 09:43:48	Column Bypass Flowpath	1		NONE
12/06/2017 09:43:48	Outlet F0 Flowpath	1		NONE
12/06/2017 09:43:48	User 1 Flowpath	1		NONE
12/06/2017 09:43:48	XV101 CIP Close	0		NONE
12/06/2017 09:43:48	XV201 Inlet S1.1 Close	0		NONE
12/06/2017 09:43:48	XV202 Inlet S1.2 Close	0		NONE
12/06/2017 09:43:48	XV203 Inlet S1.3 Close	0		NONE
12/06/2017 09:43:48	XV204 Inlet S1.4 Close	0		NONE
12/06/2017 09:43:48	XV205 Inlet S1.5 Close	0		NONE
12/06/2017 09:43:48	XV206 Inlet S2.1 Close	0		NONE
12/06/2017 09:43:48	XV207 Inlet S2.2 Close	0		NONE
12/06/2017 09:43:48	XV001 Drain After Pump1 Close	0		NONE
12/06/2017 09:43:48	XV002 Drain After Pump2 Close	0		NONE
12/06/2017 09:43:48	XV003 Junction Line 1&2 Close	0		NONE
12/06/2017 09:43:48	XV004 Junction Line 1&2 Close	0		NONE
12/06/2017 09:43:48	XV005 BBT Close	0		NONE
12/06/2017 09:43:48	XV006 BBT Close	0		NONE
12/06/2017 09:43:48	XV007 BBT Close	0		NONE

## Recipe Step Report

Close		Report Preview	
Print...	Page W...	Beginning	End 1/8
<b>Run Report</b>			
Run ID:		End Date: 12/08/2017 10:11:17	
Start Date: 12/08/2016 09:49:04			
<b>Alarm Report</b>			
Date Time	Alarm Description	Event Label	User Name
25/07/2017 10:47:40	FIC002 Signal Failure	Alarm	NONE
25/07/2017 10:47:41	PSH002 Pump2 High Pressure	Alarm	NONE
25/07/2017 10:47:41	SIC002D Pump2 Fault	Alarm	NONE
25/07/2017 10:47:41	DF48VP002 Pump 2 48 VDC Defect	Alarm	NONE
25/07/2017 10:47:42	PI002 Signal Failure	Alarm	NONE
25/07/2017 10:47:44	AI001 Signal Failure	Alarm	NONE
25/07/2017 10:47:44	AI002 Signal Failure	Alarm	NONE
25/07/2017 10:47:44	PI003 Signal Failure	Alarm	NONE
25/07/2017 10:47:51	AI004A Signal Failure	Alarm	NONE
25/07/2017 10:47:51	AI004B Signal Failure	Alarm	NONE
25/07/2017 10:47:51	TI006 Signal Failure	Alarm	NONE
25/07/2017 10:47:51	AI005 Signal Failure	Alarm	NONE
25/07/2017 10:47:52	AI008 Signal Failure	Alarm	NONE
25/07/2017 10:48:04	YA13 Database Corrupted Alarm	Alarm	NONE
25/07/2017 10:48:05	Alarm Acknowledge	Alarm Ack	NONE
25/07/2017 10:48:20	PSL601 Valves Air Defect Alarm	OK	NONE

## Security Report

close Report Preview

Print... Page W... Beginning End 1/1 Back Forward

**Run Report**

Run ID:  
Start Date: 12/08/2016 09:49:04 End Date: 12/08/2017 10:12:16

Security Report	
Date Time	Event Type
25/07/2017 10:59:15	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 120-ALARM ACK
25/07/2017 10:59:16	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 200-SYS NAVIGATION
25/07/2017 10:59:18	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 107-CLOSEAPPLICATION
25/07/2017 10:59:18	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 108-SHUTDOWN
25/07/2017 10:59:16	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 102-LANGUAGE NAVIG
25/07/2017 10:59:32	ADMIN logged in as Application User
25/07/2017 11:11:35	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 209-SYS MAINT SIMUL
25/07/2017 11:11:39	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 200-SYS NAVIGATION
25/07/2017 11:11:39	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 107-CLOSEAPPLICATION
25/07/2017 11:11:39	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 108-SHUTDOWN
25/07/2017 11:11:39	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 102-LANGUAGE NAVIG
25/07/2017 11:11:53	ADMIN logged in as Application User
28/07/2017 11:42:49	ADMIN logged in as Application User
28/07/2017 13:04:47	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 200-SYS NAVIGATION
28/07/2017 13:04:47	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 107-CLOSEAPPLICATION
28/07/2017 13:04:47	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 108-SHUTDOWN
28/07/2017 13:04:47	NODE SECURITY VIOLATION: SYSTEM DEFAULT access to SECURITY AREA 102-LANGUAGE NAVIG

## Tabular Data Report

Close      Report Preview

Print... Page Width Beginning End 1/317 Back Forward

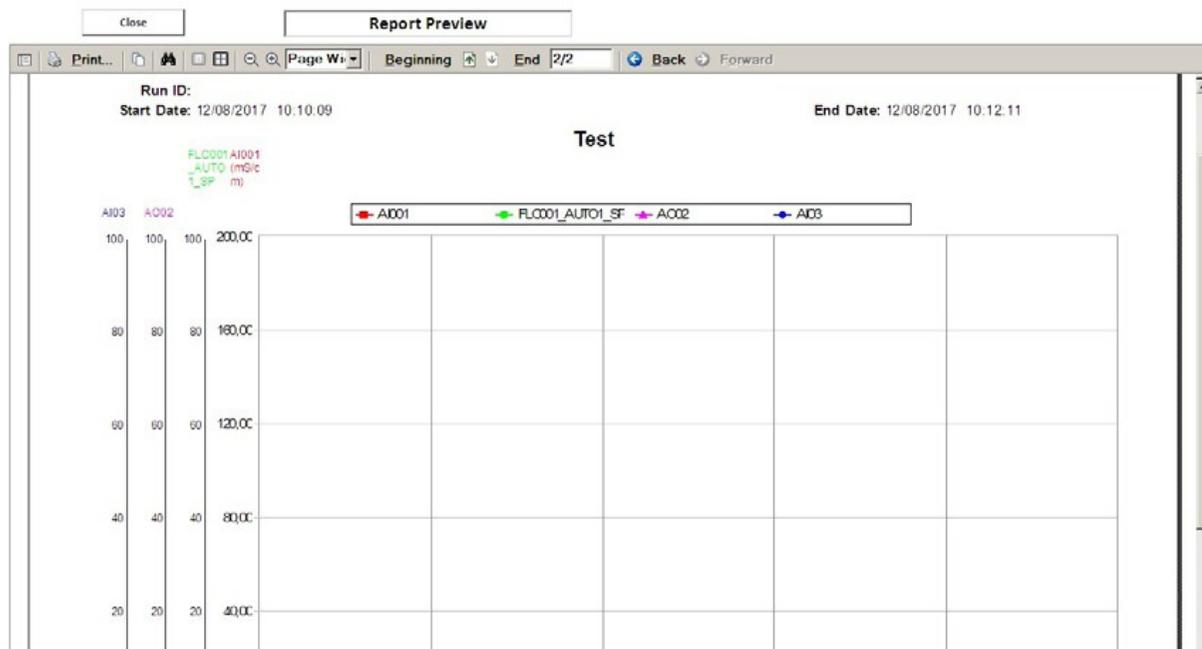
**Run Report**

Run ID: 28/08/2017 10:10:08      End Date: 12/08/2017 09:49:11  
Start Date: 28/08/2017 10:10:09

**Test  
Tabular Log**

Date Time	AI001	FLC001_AUTO1 SP	AO02	AI03			
28/08/2017 10:10:09	-49.99	0.00	0.00	-24.81			
28/08/2017 10:10:19	-49.99	0.00	0.00	-24.81			
28/08/2017 10:10:29	-49.99	0.00	0.00	-24.81			
28/08/2017 10:10:39	-49.99	0.00	0.00	-24.81			
28/08/2017 10:10:49	-49.99	0.00	0.00	-24.81			
28/08/2017 10:10:59	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:09	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:19	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:29	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:39	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:49	-49.99	0.00	0.00	-24.81			
28/08/2017 10:11:59	-49.99	0.00	0.00	-24.81			
28/08/2017 10:12:09	-49.99	0.00	0.00	-24.81			
28/08/2017 10:12:19	-49.99	0.00	0.00	-24.81			
28/08/2017 10:12:29	-49.99	0.00	0.00	-24.81			
28/08/2017 10:12:39	-49.99	0.00	0.00	-24.81			

## Analog Data Report



### Printing Reports

To print the report to the default printer, click **Print Report** on the top left corner of the Report Generator form.

### Saving Reports

A report can be saved in rtf, pdf and tab separated txt formats.

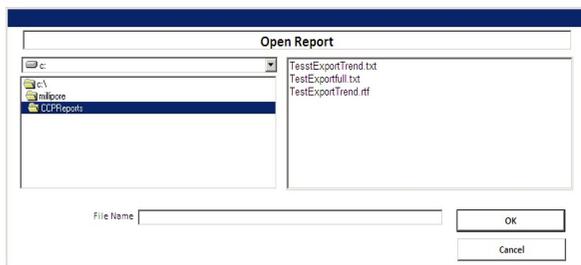
Select the desired format using the drop-down box in the upper left corner of the form and click **Save Report**.

### Exiting the Report Generator

To exit the report generator, click **Close** on the upper left corner of the form.

## Opening an Existing Report

Existing reports can be opened within the CCP® Report Client by clicking the Open Report Icon  or by clicking Reports menu and the Open Report menu item.



To open a report, select the file from the list on the right side of the form and click **OK**. The File Name can be typed in the text box provided on the bottom of the form. The selected report is opened within the corresponding application.

## Additional Features of Report Client

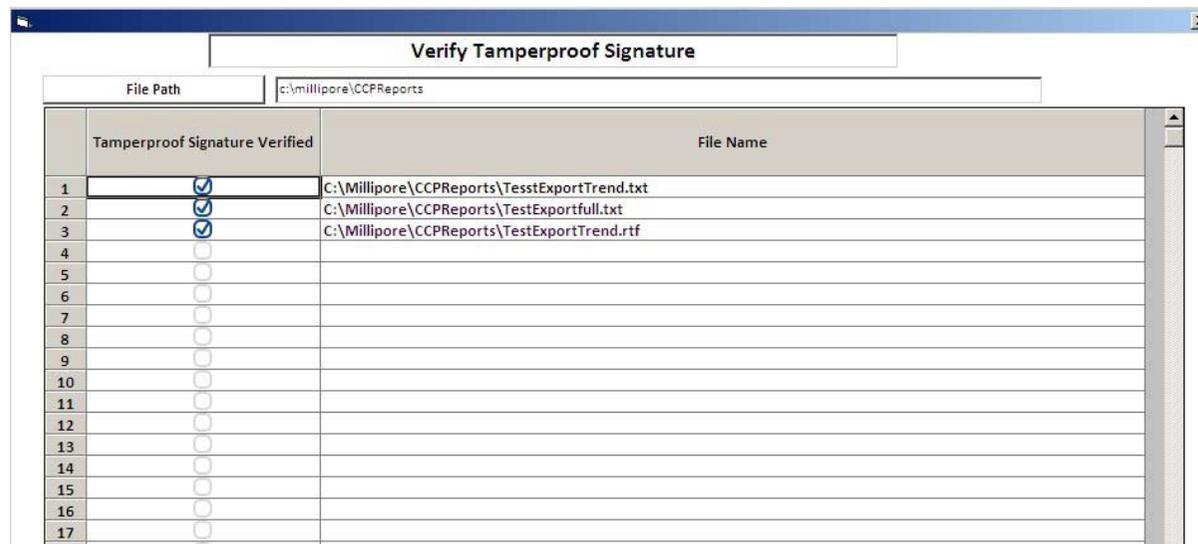
### Enabling Keyboard or Touchscreen

The CCP® Report Client supports both a keyboard and a touch screen user interface. To switch between the two modes, click the keyboard/monitor icon or click the Tools menu and then the Toggle Popup Keyboard menu item. The monitor icon indicates that the touchscreen mode is active while the keyboard icon indicates that the keyboard mode is active.

## Verifying Tamperproof Signatures

CCP® software keeps track of unauthorized modifications to archived report files. When report files are created within CCP® software, the system codes the file in a way that prevents unauthorized changes from going unnoticed.

To check which archived reports have been modified, click the Verify Signature icon or click the Tools menu and then the Verify Tamperproof Signature menu item. Either action will launch the Verify Tamperproof Signature form.

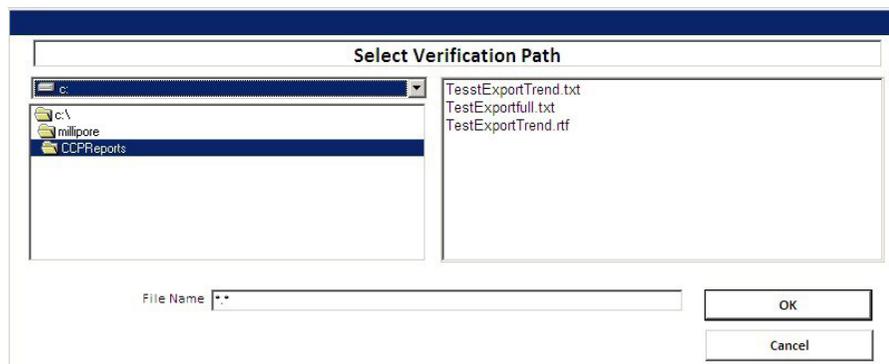


The files with the check marks are the original files created by CCP® software using the unalterable raw data archived during the run. The unchecked report files were altered in some way by software outside the CCP® system.

**NOTE** CCP® software considers ALL alterations to be tampering. If Adobe® Acrobat® software is used for electronic signatures for reporting, CCP® software considers these reports altered, and they will NOT be checked as verified tamperproof. If Adobe® Acrobat® software is used, only Acrobat® software can check the tamperproof status of the document.

To check the integrity of the files residing in different locations within the available drives and folders, click File Path on the top left corner of the Verify Tamperproof Signature form.

The Select Verification Path dialog box appears. Use the drive and folder list controls on the left side of the form to browse over the available drives and folders.

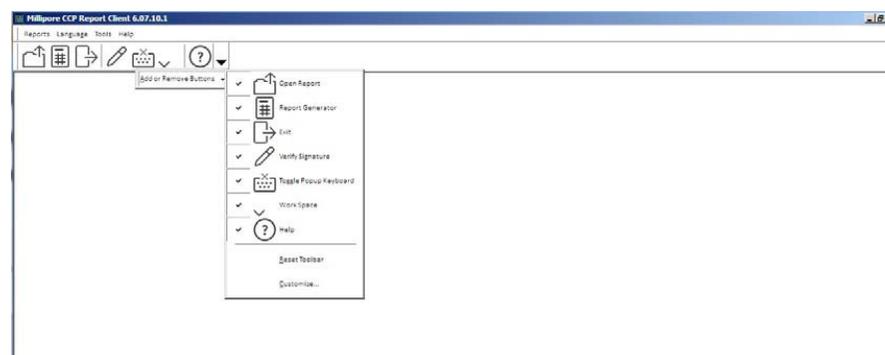


Once a path has been selected, click OK and the verification results are displayed in the Verify Tamperproof Signature form. The selected file path is also updated on the gray text box located on the top part of the Verify Tamperproof Signature form.

To close the Verify Tamperproof Signature form, click Close.

## Customizing the Report Client Menu

The user interface may be customized by clicking on the black arrow located on the tool bar. The user can add or remove icons, menus or menu items, as shown below.



## Electronic Signatures with Adobe® Acrobat® Software

The Acrobat® software signature functionality is tied to the Windows® operating system users configured on the system (see [Security](#)). Each user can create his/her digital signature to use for signing documents. Click the Acrobat® software Digital Signature button to open the login screen. The user can then open any Acrobat® file and sign the document, using an already created digital signature or can create a new digital signature.

For details of the Acrobat® software electronic signature function, please see the online help that is included with the Adobe® Acrobat® software.

## Historical Trend Display

The Historical Trend Display helps the user monitor the performance of the process. The basis of the Historical Trend Display is the Chart Group File, which contains a list of tag names for which data is being collected. When a given Chart Group File is selected for display, the data specified by the tag names in that file will be displayed in the Historical Trend Display. The data for each tag name is represented by a distinctive individual trace, which is referred to as a Pen.

Chart Group Files which define the Historical Trend charts may be created.

At any time, a Chart Group File can be modified or a new one created to examine data in a different format or at a different time.

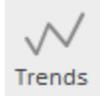
Through the Historical Trend program, create and modify display charts by assigning:

- Colors and optional markers for each tag name for enhanced readability
- High and low limits for display of each tag
- A time span for the display chart that can be shifted on demand
- Different line styles for the tags
- A display legend

The Historical Trend chart groups are stored as \*.csv files. The following is an example of the format using the default system path C:\MILLIPORE\HTR\ChartGroup1.csv.

### Opening the Historical Trend Display

To open the Historical Trend display, click the related symbol of the Process Control Bar.

Icon	Description
 Trends	When the Historical Trend Display is not visible, click the Trends symbol to open it.
 Maximize	When the Historical Trend Display is open, click the Maximize symbol to maximize it.
 Minimize	When the Historical Trend Display is maximized, click the Minimize symbol to minimize it.



The maximized display can either show one single trend chart or three stacked charts.



Charts

Apply time to All

1 3 <<< << < NOW > >> >>> CLOSE

Symbol	Description
1 3	Select either 1 single chart or three stacked charts
Apply time to All	<p>Gives access to the following choices:</p> <ul style="list-style-type: none"> <li>• Apply time to All</li> <li>• Apply time to chart 1</li> <li>• Apply time to chart 2</li> <li>• Apply time to chart 3</li> </ul> <p>The above arrow buttons allow time navigation within the selected charts.</p>

The Historical Trend display displays, creates and modifies the Historical Trend charts. The Historical Trend display includes:

- A data description list with the specific color code.
- The X-axis has the date and time stamp.
- The Y-axis tick marks are configurable. Clicking a particular data group in the data description list causes the range and color of that data to be displayed on the Y-axis.
- Drag the marker bar across the chart to display the value of the various data at a given point in time.

### Chart Group File

The basis of the Historical Trend is the Chart Group. The Chart Group File is a .csv file containing a list of database tag names for which data is being collected. Chart Group files are located in the folder: C:\MILLIPORE\HTR. When a chart group file is selected, the data in the selected chart group will be displayed in the Historical Trend display.

The system has a default chart group file: Default.csv. The table below lists the data included in this file.

Data Description	Pen	Color
AI004A	EdgeStyleSolid	
FIC001	EdgeStyleSolid	
PI001	EdgeStyleSolid	
CHART MARK	EdgeStyleDot	

### Custom Group Files

A variety of custom Chart Group Files, defining a variety of Historical Trend charts, which can be examined to determine how the process was performing at any point in time can be created.

At any time, a Chart Group File can be modified or a new one created to examine data in a different format or at a different time.

**Chart Group Configuration** [X]

Chart Group File  
C:\Millipore\HTR\Default.csv

Data Sources  
Pen List:

- Hist.THISNODE.A1007.F\_CV
- Hist.THISNODE.FIC001.F\_CV
- Hist.THISNODE.PI001.F\_CV
- Hist.THISNODE.CHART\_MARK.F\_CV

Time

Apply Time to All Historical Pens

Time Before Now  
000:00:10:00

Fixed Start Time  
01/02/2016 16:11

Duration:  
00:00:10:00

Interval:  
00:00:01

Display milliseconds

Time Zone:  
Client Time Zone

Adjust for Daylight Saving Time

Pen Style

Line Style:  
EdgeStyleSolid

Line Color:  
[Red]

Line Width:  
1

Historical Mode:  
Sample

Marker Style:  
NoMarker

Marker Character:  
[ ]

Data

Fetch Limits

Low Limit:  
0,00

High Limit:  
200,00

New

Save

Save As

Apply Pens

Cancel/Close

Help

To create a new chart group file, click **New** in the Chart Group File window. This launches the Chart Group Configuration window.

### Chart Group Configuration Window Structure

Section	Functionality
Chart Group File	Lists the name of the chart group file that is being configured
Data Sources	Displays the pen list of the current chart group file. Allows the user to select additional data (pens) from the Historical Datacart
Time	Sets the time limits (X-axis range) for the data display
Pen Style	Defines the style of the Trend line for a particular pen
Data	Sets up high and low limits (Y-axis range) for the data value
Action Button	Controls for saving, canceling and managing the configured chart file

### Chart Group File

When an existing Chart Group File is chosen, the name of the file and directory path will appear in the Chart Group File area.

If a new chart group file is being created, the string “no file” appears in the Chart Group File area.

### Data Sources: Pen Selection and Editing

The Data Sources section is for adding, removing, and editing pens. There are four buttons to carry out these tasks.



Click **Add Pen** to open three additional buttons and a pen selection field.

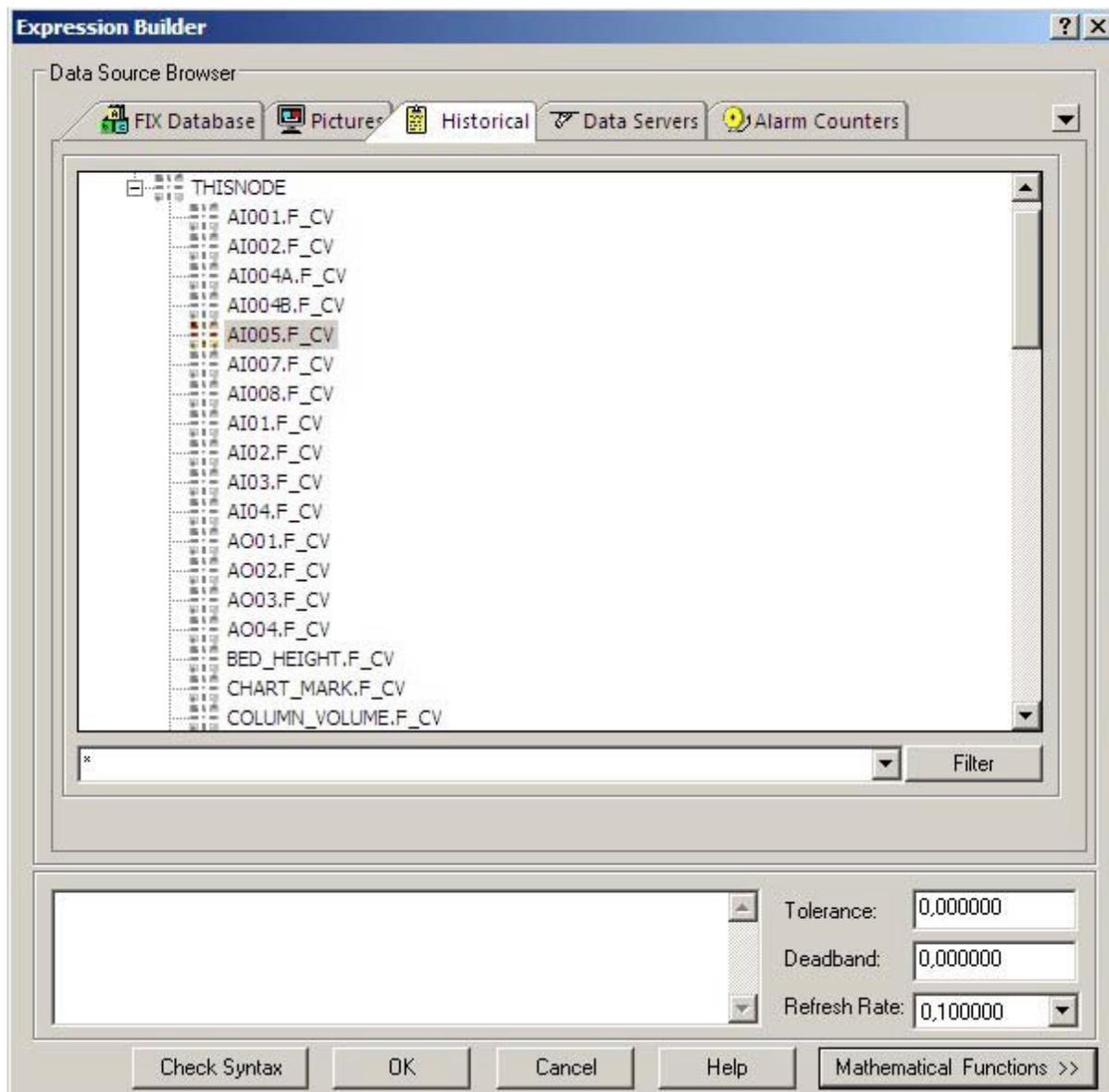


Pens can be added either from the existing pen list or from the historical database. The historical data pens have the format: Hist. Node.Tag.Field

**NOTE** iFix® software pens default as Fix32.Node.Tag.Field. Look at the Historical datacart with pens that have the format as follows: Hist. Node. Tag.Field. See the next section for details.

1. Click the drop-down sign to list the existing pens.
2. Click the gray button to launch the Expression Builder window. Using the existing pen list, click the pen on the list, highlighting it. Then click on the white space in the Pen List and the software will add the selected pen to the list.

## Using the Expression Builder Window



The Expression Builder window has five tabs. Only the Historical tab is needed. Click Historical Tab to open the historical datacart with the list of historical assigned and collected pens.

To add a pen using the Expression Builder Window:

1. Click the folder Hist and then click the folder NODE. This displays a long list of the pens that can be chosen to display in the Historical Trend display in the process User Interface.
2. Click a pen to select it. The selected pen is highlighted and is listed at the bottom of the window.
3. Click **OK** to return to the Chart Group Configuration window.

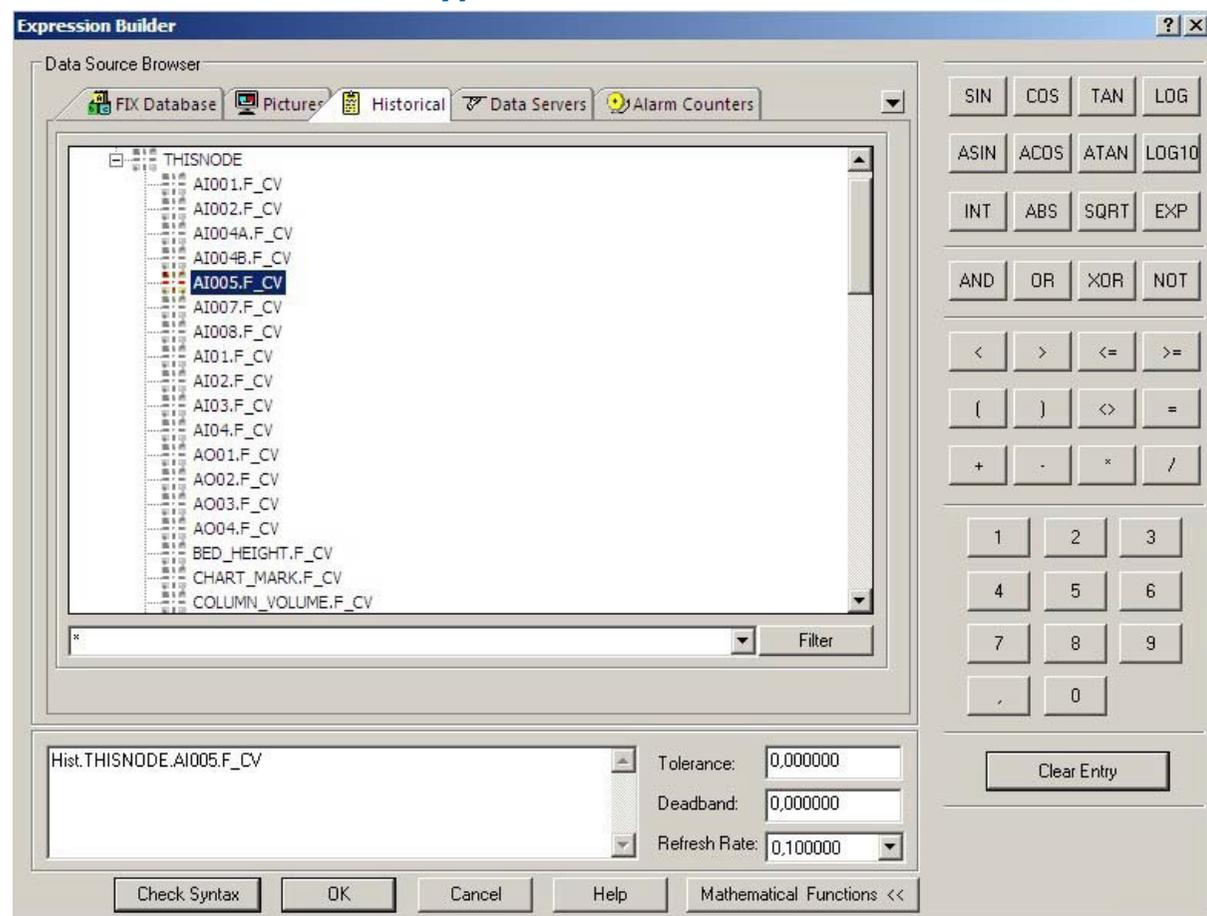
Click in the white space of the Pen List to add the selected pen to the Pen List.



## Expression Builder Terms

Term	Definition
Filter	The Filter button is used to filter the data source by Node, Tag, etc.
Mathematical functions	Provides a keypad with basic and Boolean math functions.
Tolerance	Specifies the current connection's rounding factor.
Deadband	Specifies the maximum fluctuation you want for the current value before iFix® software updates it. This creates a +/- zone around the current value. As long as the value is within this range, iFix® software does not update the value.
Refresh	Specifies the rate at which iFix® software updates the current value.

## Mathematical Function Keypad



### Editing the Pen List

Click **Remove** to remove an existing pen from the pen list. Use **Move Pen Up** or **Move Pen Down** to change the position of a pen in the pen list.

## Setting the Time Range for Pens

The Time section of the Chart Configuration window enables the user to set the time range for pens. If the Apply Time to All Historical Pens box is checked, the time setting is applied to all the pens in the Group Chart File pen list. If this check box is left empty, the time setting apply only to the pen that is configured.

Time Before Now drop-down menu enables the user to choose the time period from current time. There are five choices: One hour, Two hours, Four hours, Eight hours and Twenty Four hours.

Fixed Start Time uses the fixed start time or sets a start time. Click the Time field to open the keyboard.

The Duration box chooses the duration time for the data display. Click the Duration data field to open the keyboard. The maximum duration time is 99:99:99:99.

## Setting Data Limits

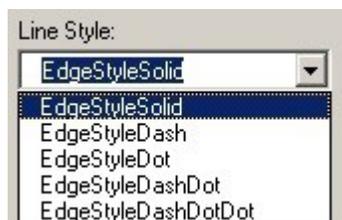
The Data section in the chart group configuration window is used to set the value (Y-axis) range for the selected pen. If the Fetch Limits box is checked, the data range is automatically set as the default analog data range. If the Fetch Limits box is unchecked, the limits can be configured.

## Selecting Pen Style Appearance

The Pen Style section is used to choose the appearance of a pen in the Historical Trend display.

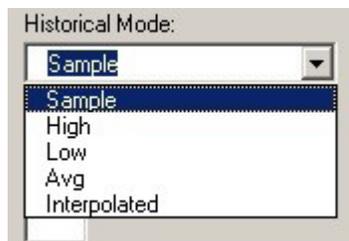
## Line Style Menu

When the Line Style drop-down menu is highlighted, the selected style is used to display the data profile line.



## Historical Mode Menu

The Historical Mode drop-down menu is used to choose the way the data is displayed. Typically the Sample option is used. Sample displays the historical data according to user's data settings. High displays a straight line that has the highest value of the historical data over the selected time span. Low displays a straight line that has the lowest value of the data over the selected time span. Avg displays a straight line that has the average value of all the historical data points during that time period.

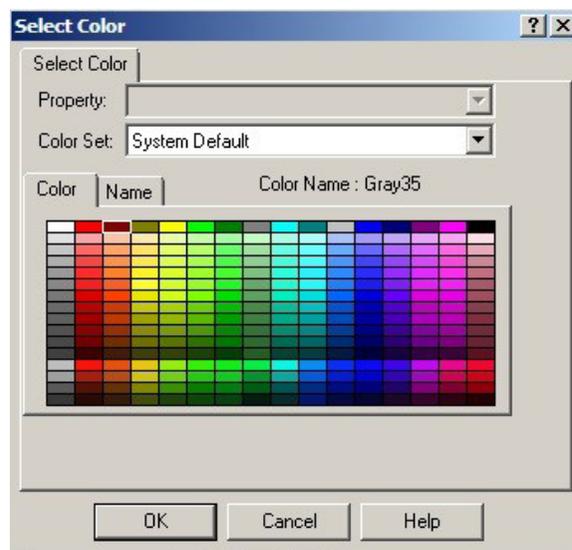


## Marker Style Menu

The Marker Style drop-down menu is used to configure the marker shape of the individual data points.



The Line Color button defines the color of the data profile lines. Click **Line Color** to open a color palate that is used to select the desired pen color. Click **OK** to apply the color to the pen.



The Line Width box defines the thickness of the line. The user can change the number in the Line Width box. A higher number denotes a thicker line.

## Completing the Configuration

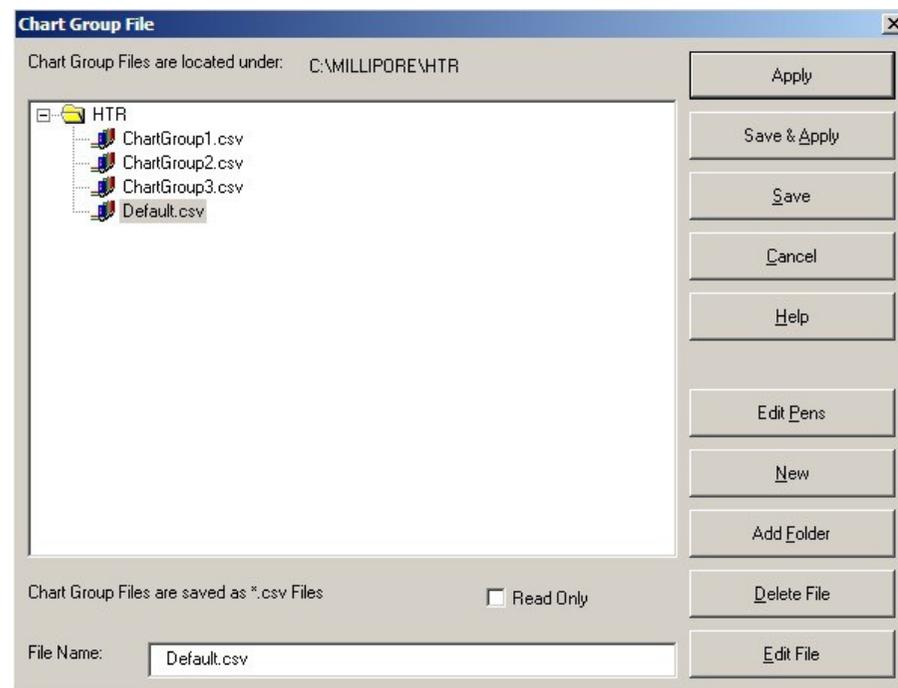
When finished with the configuration of the Chart Group File, use the action buttons to save the file or to directly apply the pen selected and configured.

Chart Group Configuration Action Buttons

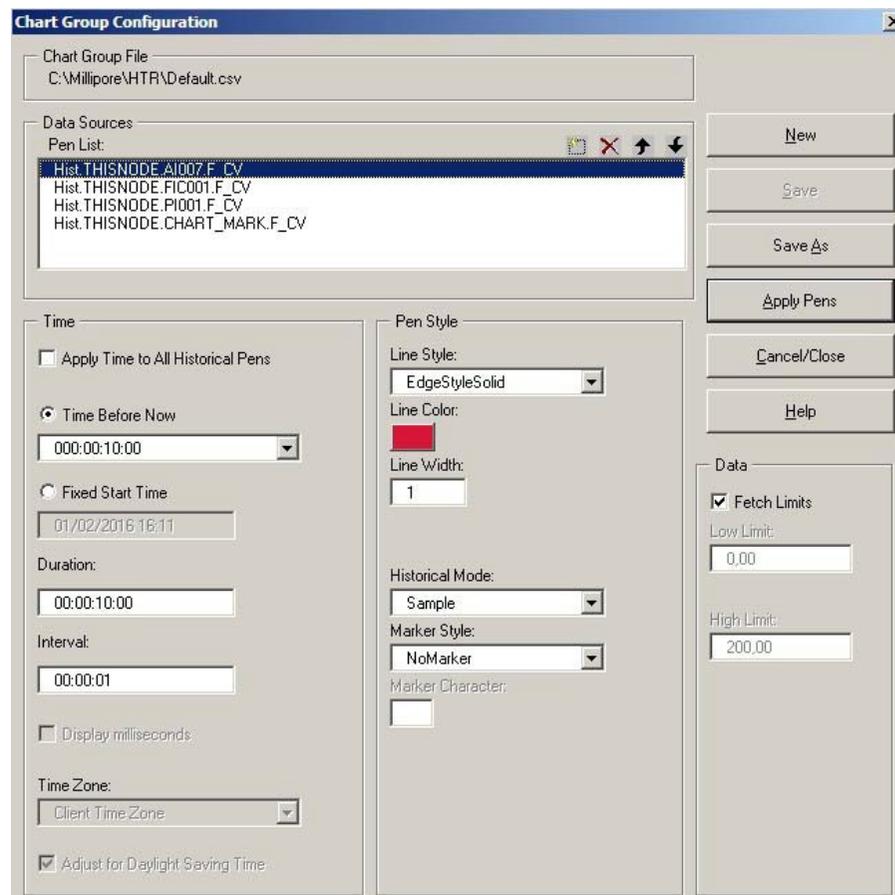
Button	Action
New	Click New to open a confirmation Chart Group Wizard window.
Apply Pens	The configuration of the pen is applied to the Historical Trend display. The file will NOT be saved.
Cancel/Close	Cancels the pen configuration and closes the Chart Group Configuration window, without saving any selections.
Help	Provided by the iFIX® software package and is of limited utility for the user.
Save and Save As	Launch the Chart Group File window to save the file. Type the name of the file at the bottom of the window and click Save to cause the file to appear in the file list.

## Editing a Chart Group File

To edit a chart group file, double-click the Historical Trend display. This opens the Chart Group File window.



From the Chart Group File window, select the file to edit and then click **Edit File**. This launches the Chart Group Configuration window.



In the Chart Group Configuration window the name of the file that will be edited appears in the Chart Group File section, e.g., C:\Millipore\HTR\ChartGroup3.csv.

All the pens included in the file are listed in the Data Sources section.

Use the Pen Edit buttons to add or remove a pen or adjust its position up or down.

Use the Time section to set up pen's time duration.

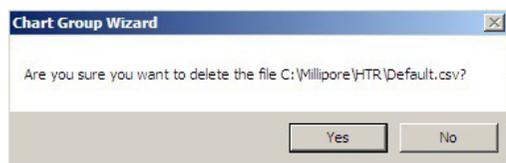
Use the Data section to set limits for the data represented by the pen.

Use the Pen Style section to adjust the pen's appearance.

Use the Action buttons (Save or Save As) to save the modified files.

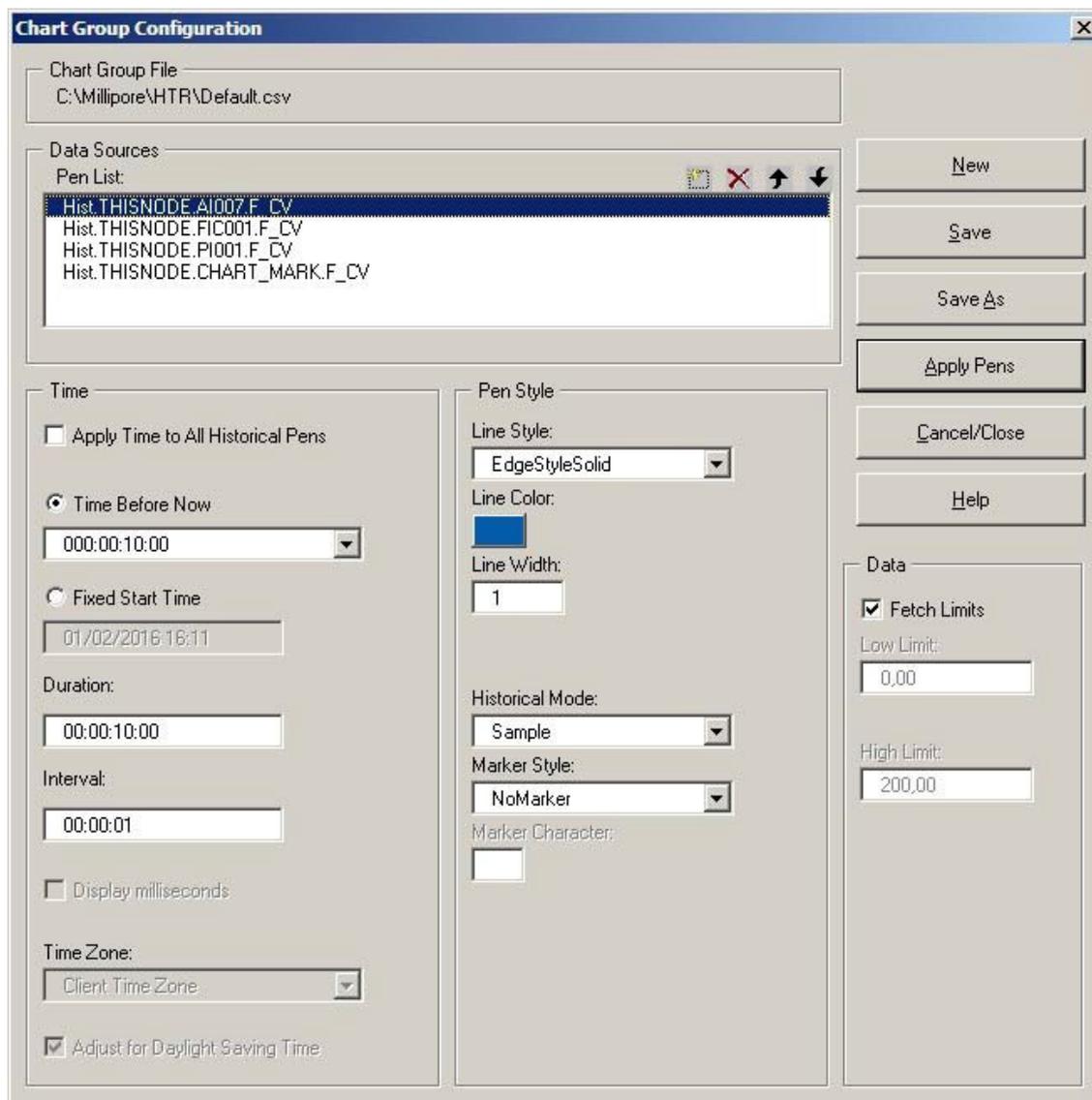
### Deleting a Chart Group File

1. Select the file to be deleted from the file list at the Chart Group File window.
2. Click Delete File. A confirmation prompt appears.
3. Clicking Yes to delete the selected file.



### Editing Pens

1. Click **Edit Pens** in the Chart Group File window. This launches the Chart Group Configuration window. If the required pen is not on the list, the user must open the list of all the pens.



2. Click the **Add Pen** icon to open the drop-down menu sign and display the list of the existing pens.

3. Select the pen to edit from the list. Use the features of different sections of the Chart Group Configuration window to edit the pen's time duration, data limits, appearance, etc.
4. After editing the pen, save the new configuration to a new file or directly apply the pen without saving the file by clicking **Apply Pens**.

**NOTE** The Help button in the Chart Group Configuration window is part of the iFIX® software package. Its menu includes topics that relate to configuring the design of the chart group using the iFIX® software package and is of limited utility to the user.

## Stopping the System

**NOTE** Use the emergency stop button only in an emergency. Follow the procedure below to stop the system in a non emergency.

1. Touch the user icon  and select **Shut Down Windows**. (See also [Shutting Down the Control System](#).)
2. After the screen is off, turn the power supply disconnect switch to O/Off position. The blue light and the white lights should be off.

## Storing the System

Before storing, clean the system. See [Cleaning the System](#).

Store the system with an appropriate sterile buffer solution when it is not in use. Repeat the cleaning procedure before use if the system has not been used for five days.

# User Interface

# Preparing the System for Operation

Use the system settings display to access general system settings. Users with administrator rights can access this display from the User menu.

SYSTEM SETTINGS		
<p><b>Global Version</b> 1.00.00.00</p> <p><b>Application Module</b> 1.00.00.00</p> <p>HMI Program 1.00.00.00</p> <p>PLC Program 1.00.00.00</p> <p>CCP Core Update 6.07.10.01</p> <p><b>Base Platform</b> 1.00.00.00</p>	<p><b>Confirmation and signature Window Configuration</b></p> <p><input type="radio"/> No confirmation window</p> <p><input checked="" type="radio"/> Confirmation window only</p> <p><input type="radio"/> Confirmation with Signature</p> <p><input type="radio"/> Confirmation with Signature and Verification</p> <p>PRECONFIGURED COMMENTS</p>	<p><b>Database Capacity</b> A pop-up will warn the user when the database size reaches it's limit.</p> <p>Database capacity limit 75 % &gt;</p> <p><b>Computer Storage Capacity</b> An alarm will notify the user when warning threshold is overpassed (Default is 80%)</p> <p>Computer storage capacity limit 75 % &gt;</p>
<p><b>Login request at start</b> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> ON</p>	<p><b>Save Recipe Signature</b> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> ON</p> <p><b>Electronic Signature</b> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> ON</p>	<p>USERS &amp; GROUPS</p> <p>MAINTENANCE</p> <p>IFIX</p> <p>LOG RATE</p> <p>WINDOWS ACCESS</p> <p>FLOWPATH CONFIG.</p>
<p><b>Inactivity timer before Autologout</b></p> <p><input checked="" type="radio"/> 5 minutes</p> <p><input type="radio"/> 15 minutes</p> <p><input type="radio"/> 30 minutes</p>	<p>CLOSE</p>	

## Login Request at Start

Use this setting to set login requirements at system startup:

- OFF: After the startup sequence is complete, the Process display opens.
- ON: After the startup sequence is complete, the Startup login request prompt opens. Process display opens after a valid user has logged in.

## Inactivity Timer Before Auto Logout

Use this setting to select the inactivity time after which the current user is automatically logged off.

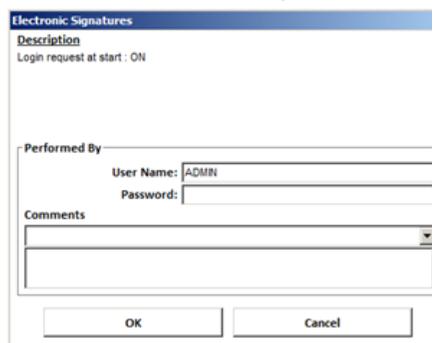
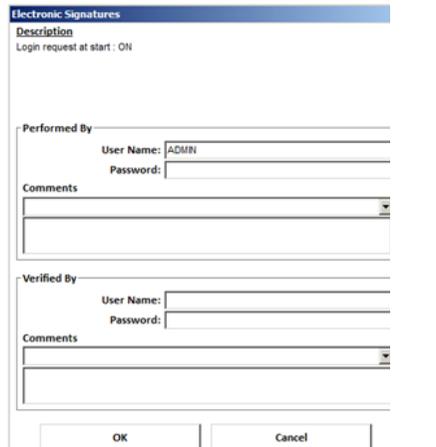
If the screensaver is active, the auto logout occurs while the screensaver is displayed

If the screensaver is not active, a popup alerts the user 10 seconds before the auto logout. Move the cursor to cancel auto logout.

## Confirmation and Signature Window Confirmation

Use this setting to control the confirmation box that appears before applying any user request (starting equipment, changing a setpoint).

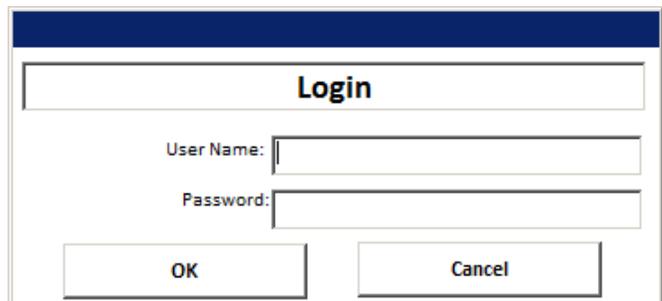
Setting	Description
No confirmation window	User request is directly applied. No confirmation box appears.
Confirmation window only	Confirmation window appears 

Confirmation with signature	Confirmation with signature window appears 
Confirmation with signature and verification	Confirmation with signature and verification window appears 

**NOTE** Even if the **No Confirmation Window** is selected, a confirmation appears for critical actions like switching from auto to manual mode or changing alarm priorities.

## Save Recipe Signature

Use this setting to set login requirements for saving recipe files. When set to ON, a user login prompt appears when Save is clicked on the Recipe Editor.



## Electronic Signature

Use this setting to make the Adobe® Digital Signature tool available from the Report Client. When ON, the following symbol appears in the Report Client toolbar and gives access to the Adobe Digital Signature tool:



## Database Capacity

The control system periodically monitors the SQL database capacity and triggers a non critical alarm when the current size exceeds the set value. The current value is logged in the application log file.

## Computer Storage Capacity

The control system periodically monitors the computer hard drive capacity and triggers a non critical alarm when the current size exceeds the set value. The current value is logged in the application log file.

## Flowpath Configuration

Use the Flowpath Config. Button to open the flowpath configuration screen and allow the user to configure:

- The default flowpath
  - The 5 user flowpaths
1. Select the Flowpath to be configured from the **Select a Flowpath** dropdown menu.
  2. Click **View** to apply the Flowpath mask of the selected flowpath to the system valves. To modify, use the Process display to open and close valves. Click **Save** to store the current valves positions as the new flowpath mask.
  3. Click **Apply** to apply the selected flowpath to the system valves. To modify, use the Process display to open and close valves. Click **Save** to store the current valve positions as the new flowpath.

## Log Rate

Use the **Log Rate** button to access to the Historical Trend Assign utility. See [Using the Historical Assign Program](#).

## Manually Controlling the System

The process can be manually controlled using the User Interface. The process is automatically controlled when it is being run by a recipe.

**NOTE** Before writing operations using the Recipe Editor, users should understand all aspects of manually operating the system (see [Using the Recipe Editor](#)).

For example, to manually control a pump, click on the pump in the User Interface and change the settings.

### Critical Alarms

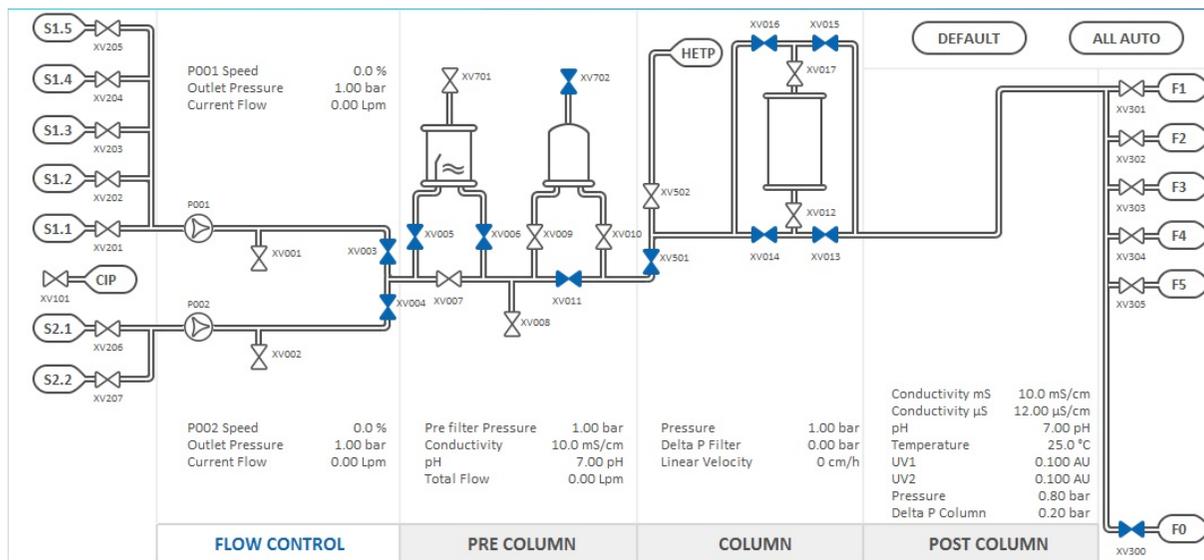
Before the system can be used, all of Critical Alarms must have disappeared.

See [Alarm Control](#) for more details on the behavior of alarms in this system.

## Controlling the Process

Control the process through the six panels of the Process display:

- Inlets
- Flow Control
- Pre Column
- Column
- Post Column
- Outlets



To access a detailed panel for each area, click the button at the bottom of the Process display.

**NOTE** There are no detailed panels for Inlets or Outlets.

# Flow Control

## Pump Control

Use the detailed panel for each pump to do the following:

- Select the pump control mode and its related setpoint
- Select auto or manual mode
- Start and stop the pump
- Access the loop tuning controls

FLC001 - Control settings

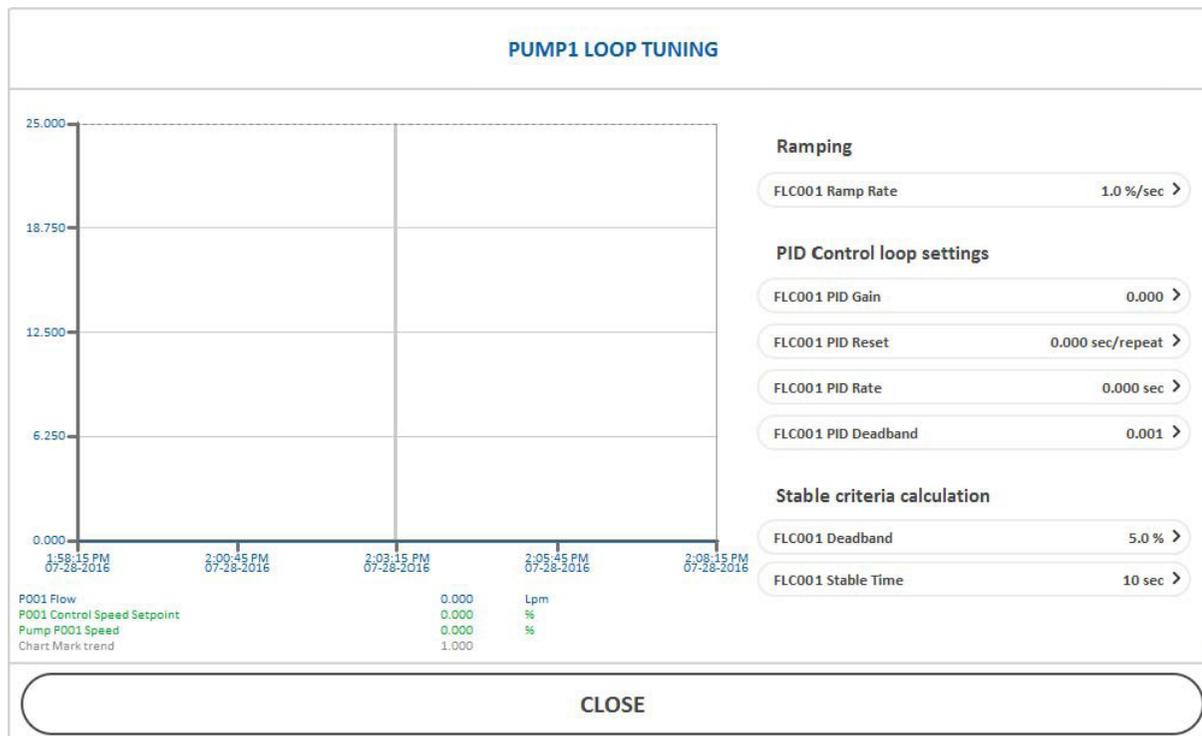
Pump Speed  Setpoint 0.0 % > Pump Speed 0.0 %

**AUTO** MANUAL STOP START

Manual state will ignore any recipe start/stop command and will interlock Mixing control

<b>PUMP 1</b>	PUMP 2	DUAL PUMP MIXING	PUMP OUTLETS	PCV010	PCV011	ALARM SETTINGS 
---------------	--------	------------------	--------------	--------	--------	--

The Loop Tuning popup shows the control loop values on a chart. Tune the control parameters to reach the desired dynamic properties.



**NOTE** Optimized parameters are set at factory. Changing those parameters may affect flowrate accuracy.

## Dual Pump Mixing

Use Dual Pump Mixing to control both of the pumps simultaneously. Both of the pumps must be in auto mode.

Use the detailed panel to do the following:

- Enable and disable mixing control
- Start and stop both pumps together
- Set control mode and related setpoints
- Enable and disable the lookup table

Mixing Controls  OFF  ON   Lookup Table  OFF  ON

Total Flow : Pump Speed  0.0 %

Mixing : Percentage  0.0 %Pri

PUMP 1 PUMP 2 **DUAL PUMP MIXING** PUMP OUTLETS PCV010 PCV011 ALARM SETTINGS

## Mixing Lookup table

Use the Mixing Lookup Table to minimize the conductivity control error when performing Mixing conductivity gradient (step or linear). The table compensates for the nonlinear relationship between mixing percentage and measured conductivity.

Fill in the lookup table based on experimental trials. When the system is stabilized, in the Calibrate segment, snap the current conductivity reading and current primary pump speed percentage. These readings are used as reference points on the table.

Choose the number of points to include in the lookup table.

**MIXING LOOKUP TABLE**

Lookup Table  OFF  ON      Conductivity **-49.99 mS/cm**      %Primary **0.0 %Pri**

Segment	Conductivity	%Primary
0	0.00 mS/cm	0.0 %Pri
1	0.00 mS/cm	0.0 %Pri
2	0.00 mS/cm	0.0 %Pri
3	0.00 mS/cm	0.0 %Pri
4	0.00 mS/cm	0.0 %Pri

Number of Segments  >     

**1**  
1-5 / 5

## Mixing Loop Tuning

The Mixing Loop Tuning popup shows the control loop values. Tune the control parameters to reach the desired dynamic properties.

Use the Primary and Secondary conductivity snap buttons to store the current conductivity reading as primary or secondary conductivity value.

This popup also contains the Holdup volume used as reference to determine if the retention volume has passed through the system.

### MIXING LOOP TUNING

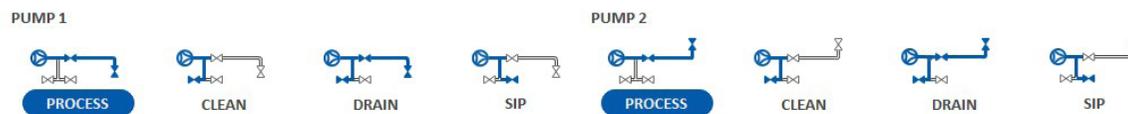
Chart Mark trend	1.000	
Mixing Percentage Setpoint	0.000	%Pri
Mixing Speed Setpoint	0.000	%
Pump P001 Speed	0.000	%
Pump P002 Speed	0.000	%

- Mixing Total Flow dead band: 5.0 % >
- Mixing Total Flow StableTime: 10 sec >
- Mixing Conductivity dead band: 5.0 % >
- Mixing Conductivity StableTime: 10 sec >
- Mixing Closed Loop Proportionnal Factor: 1 >
- Mixing Primary Conductivity: 0.00 mS/cm >
- PRIMARY CONDUCTIVITY SNAP
- Mixing Secondary Conductivity: 0.00 mS/cm >
- SECONDARY CONDUCTIVITY SNAP
- Holdup Volume: 0.000 L >

CLOSE

## Pump Outlets

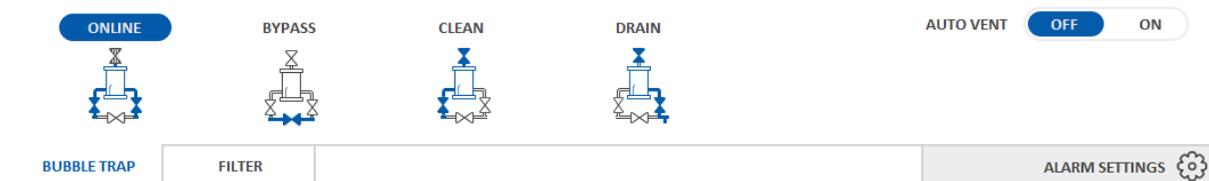
Select the Pump outlet flowpath through this display:



## Pre Column

### Bubble trap

In the Bubble trap panel, set the related flowpaths and enable and disable the auto venting function.



### Filter

In the Filter panel, set the related flowpaths, enable and disable the auto venting function, and set the auto vent timers.



## Column

### Flowpath

In the Column flowpath panel, set the related flowpaths.



### Parameters

In the Column Parameters panel, set the column mechanical characteristics used for CVs totalizers and HETP calculations.

Column Volume	10.000 L >
Column Bed Height	20.000 cm >
Column Diameter	25.231 cm

## Post Column

### UV Sensors

Use the UV Sensors to do the following:

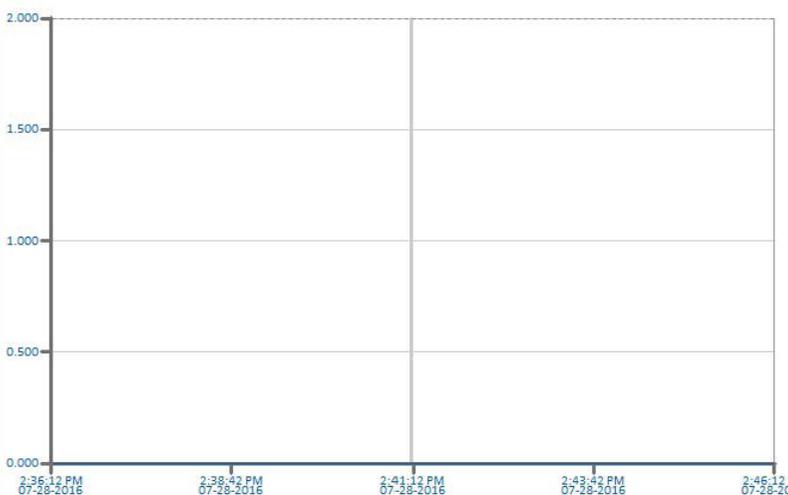
- Enable and disable the Primary Peak and set its start and end setpoints
- Enable and disable the Inflection point and set its deadband and percent setpoint
- Set a new UV Zero baseline
- Access UV Tuning controls

### UV Tuning Controls

The UV Tuning popup shows the UV Value on a chart. The user can tune the UV detection algorithm:

- Choose the UV Probe to be used for detection
- Set end peak calculation mode to absolute or percentage of the peak height
- Adjust the Rising and Falling timers
- Adjust the UV Stable criteria parameters

### UV TUNING CONTROLS



The chart displays a UV signal trace for 'Post column UV1' on '07-28-2016'. The y-axis represents absorbance units (AU) from 0.000 to 2.000. The x-axis shows time from 2:36:12 PM to 2:46:12 PM. A single sharp peak is visible at approximately 2:41:12 PM, reaching a maximum absorbance of 1.000 AU. The baseline is stable at 0.000 AU.

Post column UV1  
Chart Mark trend

0.000 AU  
1.000

**Main Probe**  
Select detection probe  
 AI007  AI008

**End Peak Calculation**  
Select End peak calculation mode  
 ABSOLUTE  %MAXPEAK

**Rising / Falling status timers**

Rising Time  >

Falling Time  >

**Stable Criteria**  
UV stable criteria calculation  
 OFF  ON

Peak Stable Deadband  >

Peak Stability Time

**CLOSE**

## Setting Up the Display

Access Display Setup from the Process Controls Bar. Use Access Display to do the following:

- Choose display preferences for the Process display (Instrument labels or tags, View or hide sensors locations)
- Configure and launch the screensaver
- Lock the touchscreen for cleaning purpose

**Instruments Labels**  
Select labelling option for instruments

TAGS LABELS

**View Sensors Locations**  
Show where sensors are located on P&ID

HIDE SHOW

**Screensaver**  
Display readings of your choice

START SCREENSAVER

SCREENSAVER SETTINGS

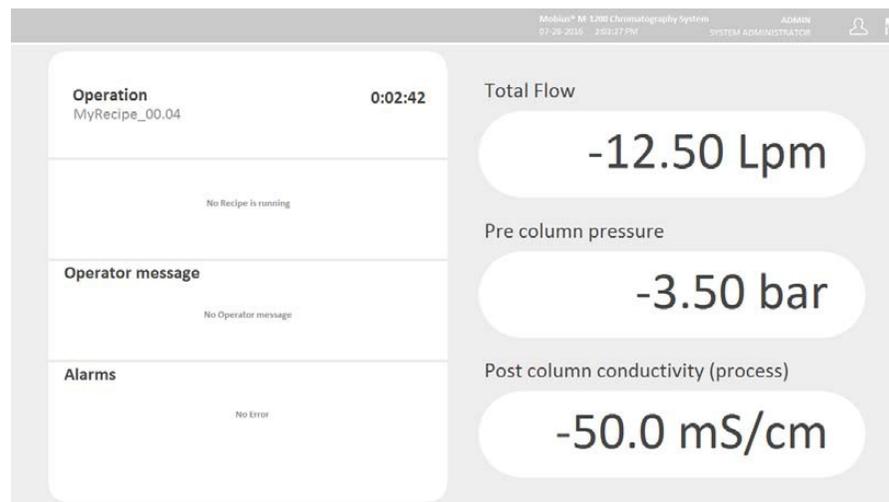
**Lock Screen**  
Disable touchscreen for 30 seconds

LOCK SCREEN

### Screensaver Settings

The screensaver shows the most relevant system information:

- Recipe status
- Operator message
- Alarms
- Three process values selected by the user



The Screensaver background color and blinking status indicates the system's state:

Color	Meaning
Steady grey	OK
Blinking grey	Waiting for operator answer
Steady orange	Non critical acknowledged alarm is present
Blinking orange	Non critical unacknowledged alarm is present
Steady red	Critical acknowledged alarm is present
Blinking red	Critical unacknowledged alarm is present

## Screensaver Settings

Use the Screensaver settings to do the following:

- Activate or deactivate the screensaver
- Set the inactivity time used to trigger the screensaver
- Choose each of the three user configurable analog fields

SCREENSAVER OPTIONS				
Screensaver active		PUMPS	PRE COLUMN	POST COLUMN
<input checked="" type="radio"/> OFF <input type="radio"/> ON When enabled the screen saver is automatically displayed after inactivity timer				
<b>Inactivity timer</b> <input type="radio"/> 1 minute <input type="radio"/> 3 minutes <input checked="" type="radio"/> 5 minutes		<b>Pump 1</b>		<b>Pump 2</b>
		<input type="radio"/> P001 Speed		<input type="radio"/> P002 Speed
		<input type="radio"/> Pre-pump Pressure		<input type="radio"/> Pre-pump Pressure
		<input type="radio"/> Outlet Pressure		<input type="radio"/> Outlet Pressure
		<input type="radio"/> Current Flow		<input type="radio"/> Current Flow
		<input type="radio"/> SIP Temperature		<input type="radio"/> SIP Temperature
		<input type="radio"/> PCV Position		<input type="radio"/> PCV Position
<b>Select the field to be personalized</b> <input type="text" value="Total Flow"/> <input type="text" value="Pre column pressure"/> <input type="text" value="Post column conductivity (process)"/>				
<input type="button" value="CLOSE"/>				

## Lock the Screen for Cleaning

Click the Lock Screen button to activate Screen Cleaning Mode. The screen remains locked for cleaning for 30 seconds. Clean the screen with antistatic spray and a soft wipe.



## Alarm Control

Alarm control ensures safety of personnel and equipment, and ensures that proper operating parameters are maintained.

### General Alarm Behavior

There are two alarm classifications:

- Non-critical alarms (medium priority) provide warnings. Information is displayed in orange in the alarm banner and the alarm panel. The actuators continue to run.
- Critical alarms (high priority) activate a lock that puts the system into a safe state. Information is displayed in red in the alarm banner and the alarm panel. All actuators are stopped, and critical flowpath is activated.

Non-Critical Alarms Actions	Critical Alarms Actions
Alarm horn sounds	Alarm horn sounds
Alarm condition and value are recorded in alarm / event log	Alarm condition and value are recorded in alarm / event log
Alarm is listed in the Alarm Summary display with an orange background	Alarm is listed in the Alarm Summary display with an orange background
The specific sensor is orange on the user interface display	The specific sensor is red on the user interface display
	The system is put into a Hold state

The Alarm panel displays all alarm information and settings. It has two main tabs: Status and History.

The Status tab groups all alarms settings into categories:

- Pumps
- Pre-Column
- Column
- Post-Column
- Digital
- Network
- Valve
- Signal

## Alarm Status

### Alarm Status – Pumps and Pre-Column

The screenshot displays the 'STATUS' tab of the alarm status interface. It is divided into two main sections: 'Pumps' and 'Pre-Column'. Each section contains a list of parameters with their current values and ranges.

Pumps	
PI010 - Pre-pump P001 pressure	-1.00 / -1.00 / 9.00 / 9.00 bar
PI001 - P001 outlet pressure	-1.00 / -1.00 / 9.00 / 9.00 bar
FIC001 - P001 Flow	0.00 / 0.00 / 25.00 / 25.00 Lpm
TI801 - P001 SIP temperature	0 / 0 / 150 / 150 °C
FLC001 - P001 Control Variable	100.0 / 100.0 %
PI011 - Pre-pump P002 pressure	-1.00 / -1.00 / 9.00 / 9.00 bar
PI002 - P002 outlet pressure	-1.00 / -1.00 / 9.00 / 9.00 bar
FIC002 - P002 Flow	0.00 / 0.00 / 25.00 / 25.00 Lpm
TI802 - P002 SIP temperature	0 / 0 / 150 / 150 °C
FLC002 - P002 Control Variable	100.0 / 100.0 %
MIXING - Mixing Total Flow Deviation	100.0 / 100.0 %
MIXING - Mixing Conductivity Deviation	100.0 / 100.0 %

Pre-Column	
PI003 - Pre filter pressure	-1.00 / -1.00 / 9.00 / 9.00 bar
AI001 - Pre column conductivity	0.00 / 0.00 / 200.00 / 200.00 mS/cm
AI002 - Pre column pH	0.00 / 0.00 / 14.00 / 14.00 pH
FT - Total Flow	0.00 / 0.00 / 50.00 / 50.00 Lpm

At the bottom of the interface, there are three numbered tabs (1, 2, 3) and a right-pointing arrow. A 'CLOSE' button is located at the very bottom of the window.

## Alarm Status – Column and Post-Column

HISTORY		STATUS	
<b>Column</b>		<b>Post-Column</b>	
PI004 - Pre column pressure	-1.00 / -1.00 / 9.00 / 9.00 bar	AI004A - Post column conductivity (process)	0.0 / 0.0 / 200.0 / 200.0 mS/cm
DP - Delta P Filter	-1.00 / -1.00 / 1.00 / 1.00 bar	AI004B - Post column conductivity (cleaning)	0.00 / 0.00 / 50.00 / 50.00 µS/cm
LV - Linear Velocity	0 / 0 / 999 / 999 cm/h	AI005 - Post column pH	0.00 / 0.00 / 14.00 / 14.00 pH
		TI006 - Post column temperature	0.0 / 0.0 / 100.0 / 100.0 °C
		AI007 - Post column UV1	0.000 / 0.000 / 2.000 / 2.000 AU
		AI008 - Post column UV2	0.000 / 0.000 / 2.000 / 2.000 AU

← 1 2 3 →

CLOSE

## Alarm Status – Digital and Network

HISTORY				STATUS	
<b>Digital</b>				<b>Network</b>	
E5001 - Emergency Stop	Critical	DF24V - 24 VDC Defect	Critical	YA01 - PC to PLC Com. Failure	Non-Critical
PISL601 - Valves Air Presence	Critical	DF48VP001 - P001 48VDC Defect	Critical	YA02 - CCP Runtime Com. Failure	Non-Critical
YI001 - End Product Detection	Non-Critical	DF48VP002 - P002 48VDC Defect	Critical	YA03 - Historical Collect. Failure	Non-Critical
YI002 - Pre Column Air Presence	Critical	PCV010D - PCV010 Position Defect	Non-Critical	YA04 - Hard Drive Overload	Non-Critical
YI003 - Fluid Detection Filter	Critical	PCV011D - PCV011 Position Defect	Non-Critical	YA05 - Database Overload	Non-Critical
LSH001 - Bubble Trap High Level	Non-Critical	CIP - CIP Alarm	Critical	YA07 - Node 0 Com. Failure	Critical
LSL002 - Bubble Trap Low Level	Critical	LV01 - P001 Linear Flow. SP error	Non-Critical	YA08 - Node 0 Internal Defect	Non-Critical
PSH001 - P001 High Pressure	Critical	LV02 - P002 Linear Flow. SP error	Non-Critical	YA11 - PLC Program Major Fault	Critical
PSH002 - P002 High Pressure	Critical				
SIC001D - P001 Fault	Critical				
SIC002D - P002 Fault	Critical				
AA008 - C8000 Defect	Critical				

← 2 **3** 4 →

CLOSE

## Alarm Status – Valves

HISTORY				STATUS			
<b>Valves</b>				<b>Valves</b>			
XV201 - (Inlet S1.1)	Non-Critical	XV004 - (Junction Line 1&2)	Non-Critical	XV009 - (Filter)	Non-Critical	XV301 - (Outlet F1)	Critical
XV202 - (Inlet S1.2)	Non-Critical	XV801 - (Steam Trap1)	Non-Critical	XV010 - (Filter)	Non-Critical	XV302 - (Outlet F2)	Critical
XV203 - (Inlet S1.3)	Non-Critical	XV802 - (Drain Steam Trap1)	Critical	XV011 - (Filter)	Non-Critical	XV303 - (Outlet F3)	Critical
XV204 - (Inlet S1.4)	Non-Critical	XV803 - (Steam Trap2)	Non-Critical	XV702 - (Filter Vent)	Critical	XV304 - (Outlet F4)	Critical
XV205 - (Inlet S1.5)	Non-Critical	XV804 - (Drain Steam Trap2)	Critical	XV501 - (HETP Isolement)	Non-Critical	XV305 - (Outlet F5)	Critical
XV206 - (Inlet S2.1)	Non-Critical	XV805 - (Isolement SiP1)	Critical	XV502 - (HETP In)	Non-Critical	XV306 - (Outlet F6)	Critical
XV207 - (Inlet S2.2)	Non-Critical	XV806 - (Isolement SiP2)	Critical	XV012 - (Pre Column)	Non-Critical	XV307 - (Outlet F7)	Critical
XV208 - (Inlet S2.3)	Non-Critical	XV005 - (BBT)	Non-Critical	XV013 - (Pre Column)	Non-Critical	XV308 - (Outlet F8)	Critical
XV209 - (Inlet S2.4)	Non-Critical	XV006 - (BBT)	Non-Critical	XV014 - (Pre Column)	Non-Critical	XV309 - (Outlet F9)	Critical
XV210 - (Inlet S2.5)	Non-Critical	XV007 - (BBT)	Non-Critical	XV015 - (Pre Column)	Non-Critical	XV310 - (Outlet F0)	Critical
XV101 - (CIP)	Non-Critical	XV701 - (BBT Vent)	Non-Critical	XV016 - (Pre Column)	Non-Critical		
XV003 - (Junction Line 1&2)	Non-Critical	XV008 - (Drain After BBT)	Non-Critical	XV017 - (Pre Column)	Non-Critical		

← 3 4 5 →

CLOSE

## Alarm Status – Signal

HISTORY				STATUS			
<b>Signal</b>							
PI001 - PI001 Signal Failure	Critical	AI004B - AI004B Signal Failure	Critical				
FIC001 - FIC001 Signal Failure	Critical	TI006 - TI006 Signal Failure	Non-Critical				
PI002 - PI002 Signal Failure	Critical	AI005 - AI005 Signal Failure	Critical				
FIC002 - FIC002 Signal Failure	Critical	AI007 - AI007 Signal Failure	Critical				
TI801 - TI801 Signal Failure	Non-Critical	AI008 - AI008 Signal Failure	Critical				
TI802 - TI802 Signal Failure	Non-Critical	PI010 - PI010 Signal Failure	Non-Critical				
PI003 - PI003 Signal Failure	Non-Critical	PI011 - PI011 Signal Failure	Non-Critical				
PI004 - PI004 Signal Failure	Non-Critical	PCV010 - PCV010 Signal Failure	Non-Critical				
AI001 - AI001 Signal Failure	Critical	PCV011 - PCV011 Signal Failure	Non-Critical				
AI002 - AI002 Signal Failure	Critical						
YI002 - YI002 Signal Failure	Critical						
AI004A - AI004A Signal Failure	Critical						

← 3 4 5 →

CLOSE

Click any of these categories to open the Alarm settings panel. The History tab groups all current alarms on one list. Current alarms are also displayed on the Alarm banner.

To acknowledge alarms, select the Alarm Acknowledge icon on the bottom of the screen. Alarms remain current until cleared or disabled. System operation cannot be continued until a critical alarm is cleared.

## Alarm History

HISTORY				STATUS
Ack	Date/Time	Tagname	Description	
✓	07-28-2016 3:50:56 PM	PISLE01_ALARM	Valves Air Alarm	
✓	07-28-2016 3:50:56 PM	LEAK01_ALARM	Bubble Trap High Level Alarm	
✓	07-28-2016 3:50:56 PM	SIC001D_ALARM	P001 Fault	
✓	07-28-2016 3:50:56 PM	SIC002D_ALARM	P002 Fault	
✓	07-28-2016 3:50:56 PM	AA00B_ALARM	C8000 Defect	
✓	07-28-2016 3:50:56 PM	DI 24V_ALARM	24 VDC Defect	
✓	07-28-2016 3:50:56 PM	DF48VPO01_ALARM	P001 48VDC Defect	
✓	07-28-2016 3:50:56 PM	DF48VPO02_ALARM	P002 48VDC Defect	
✓	07-28-2016 3:50:56 PM	PCV010D_ALARM	PCV010 Defect	
✓	07-28-2016 3:50:56 PM	YAO7_ALARM	Node O Com. Failure	
✓	07-28-2016 3:50:56 PM	YAO8_ALARM	Node O Internal Defect	
✓	07-28-2016 3:50:56 PM	PI001_SIG_ALARM	PI001 Signal Failure	
✓	07-28-2016 3:50:56 PM	FIC001_SIG_ALARM	FIC001 Signal Failure	
✓	07-28-2016 3:50:56 PM	PI002_SIG_ALARM	PI002 Signal Failure	
✓	07-28-2016 3:50:56 PM	FIC002_SIG_ALARM	FIC002 Signal Failure	
✓	07-28-2016 3:50:56 PM	TI801_SIG_ALARM	TI801 Signal Failure	
✓	07-28-2016 3:50:56 PM	TI802_SIG_ALARM	TI802 Signal Failure	
✓	07-28-2016 3:50:56 PM	PI003_SIG_ALARM	PI003 Signal Failure	
✓	07-28-2016 3:50:56 PM	PI004_SIG_ALARM	PI004 Signal Failure	
✓	07-28-2016 3:50:56 PM	AI001_SIG_ALARM	AI001 Signal Failure	
✓	07-28-2016 3:50:56 PM	AI002_SIG_ALARM	AI002 Signal Failure	
✓	07-28-2016 3:50:56 PM	YI002_SIG_ALARM	YI002 Signal Failure	
✓	07-28-2016 3:50:56 PM	AI004_SIG_ALARM	AI004 Signal Failure	

ACKNOWLEDGE    ENABLE ALL ALARMS    DISABLE ALL ALARMS

CLOSE

## Alarm Banner

START	<ul style="list-style-type: none"> <li>✓ 07-28-2016 3:50:56 PM Valves Air Alarm</li> <li>✓ 07-28-2016 3:50:56 PM Bubble Trap High Level Alarm</li> </ul>	
-------	--	--

## Process (Analog Instrument) Alarms

The analog process alarm setpoints are LOLO, LO, HI and HIHI. If the HI or LO setpoint is violated, a non-critical alarm is triggered; if the HIHI or LOLO setpoint is violated, a critical alarm is triggered.

All the process (analog instrument) alarm settings are made on the Alarm settings panel, which lists the analog measurement name and their alarm limit settings. This panel sets up the critical alarm (LOLO and HIHI) and non-critical alarm (LO and HI). When the process data reaches the alarm set point, the alarm will be turned on after a configurable period of time called delay.

Pumps	Pre-Column	Column	Post-Column	Digital	Network	Valve	Signal
<b>PI010 -3.50 bar</b> OFF ON Pre-pump P001 pressure							
9.00 bar 2 s HIHI Alarm Delay							
9.00 bar 2 s HI Alarm Delay							
-1.00 bar 2 s LO Alarm Delay							
-1.00 bar 2 s LOLO Alarm Delay							
Scaling >							
<b>PI001 -3.50 bar</b> OFF ON P001 outlet pressure							
9.00 bar 2 s HIHI Alarm Delay							
9.00 bar 2 s HI Alarm Delay							
-1.00 bar 2 s LO Alarm Delay							
-1.00 bar 2 s LOLO Alarm Delay							
Scaling >							
<b>FIC001 -6.25 Lpm</b> OFF ON P001 Flow							
25.00 Lpm 2 s HIHI Alarm Delay							
25.00 Lpm 2 s HI Alarm Delay							
0.00 Lpm 2 s LO Alarm Delay							
0.00 Lpm 2 s LOLO Alarm Delay							
Scaling >							
1 → 1-3/12							
CLOSE							

The following categories contain analog alarms:

- Pumps
- Pre-Column
- Column
- Post-Column

To set up an alarm value, click on the appropriate cell (LOLO, LO, HI, or HIHI). A data entry box appears. There is a range for each process alarm. Minimum Range Value  $\leq$  LOLO  $\leq$  LO  $\leq$  HI  $\leq$  HIHI  $\leq$  Maximum Range Value.

The ranges are different for different process data. If the input data is not in the range, the error message "Value Out of Range" appears.

To enable or disable the alarms, click the ON/OFF button near the Analog Tag.

### Discrete Device (Digital) Alarms

The digital alarm display shows alarm status for each discrete device.

Pumps	Pre-Column	Column	Post-Column	Digital	Network	Valve	Signal
ES001 Emergency Stop		Critical				1 s Delay	
PISL601 Valves Air Presence		Critical		Non-Critical	OFF	ON	2 s Delay
YI001 End Product Detection		Critical		Non-Critical	OFF	ON	0 s Delay   0 s Priming
YI002 Pre Column Air Presence		Critical		Non-Critical	OFF	ON	0 s Delay   0 s Priming
YI003 Fluid Detection Filter		Critical		Non-Critical	OFF	ON	0 s Delay   0 s Priming
LSH001 Bubble Trap High Level		Critical		Non-Critical	OFF	ON	1 s Delay

1 →  
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CLOSE

To enable or disable an alarm, click the ON/OFF button.

To set the Alarm priority, click the Critical or Non-Critical button. This always requires user confirmation regardless of System Settings.

Safety alarm priorities can be set. Safety alarms are always Critical and cannot be disabled.

There are three safety alarms:

- Emergency Stop (ES001)
- High Pressure Switch for Pump 1 (PSH001)
- High Pressure Switch for Pump 2 (PSH002)

## Network Alarms

The network alarms tab displays all network alarms and their status.

Pumps	Pre-Column	Column	Post-Column	Digital	Network	Valve	Signal
					Non-Critical	OFF ON	60 s Delay
					Non-Critical	OFF ON	60 s Delay
					Non-Critical	OFF ON	60 s Delay
					Non-Critical	OFF ON	60 s Delay
					Non-Critical	OFF ON	60 s Delay
					Critical	OFF ON	5 s Delay

1 →  
1 - 6 / 8

CLOSE

## Valve Alarms

The valve alarms tab displays all valve alarms and their status.

Pumps	Pre-Column	Column	Post-Column	Digital	Network	Valve	Signal
	XV201 (Inlet S1.1)		Critical	Non-Critical	OFF ON	2 s Delay	
	XV202 (Inlet S1.2)		Critical	Non-Critical	OFF ON	2 s Delay	
	XV203 (Inlet S1.3)		Critical	Non-Critical	OFF ON	2 s Delay	
	XV204 (Inlet S1.4)		Critical	Non-Critical	OFF ON	2 s Delay	
	XV205 (Inlet S1.5)		Critical	Non-Critical	OFF ON	2 s Delay	
	XV206 (Inlet S2.1)		Critical	Non-Critical	OFF ON	2 s Delay	

1 →  
1 - 6 / 46

ENABLE ALL VALVE ALARMS  
DISABLE ALL VALVE ALARMS

CLOSE

Use the buttons in the bottom right corner to enable or disable Valve Alarms all together.

## Signal Alarms

The signal alarms tab displays all signal alarms and their status.

Pumps	Pre-Column	Column	Post-Column	Digital	Network	Valve	Signal
	PI001_SIG	PI001 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay
	FIC001_SIG	FIC001 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay
	PI002_SIG	PI002 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay
	FIC002_SIG	FIC002 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay
	TI801_SIG	TI801 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay
	TI802_SIG	TI802 Signal Failure	Critical	Non-Critical	OFF	ON	2 s Delay

1 →  
1 - 6 / 21

ENABLE ALL SIGNAL ALARMS  
DISABLE ALL SIGNAL ALARMS

CLOSE

## Resuming from Hold

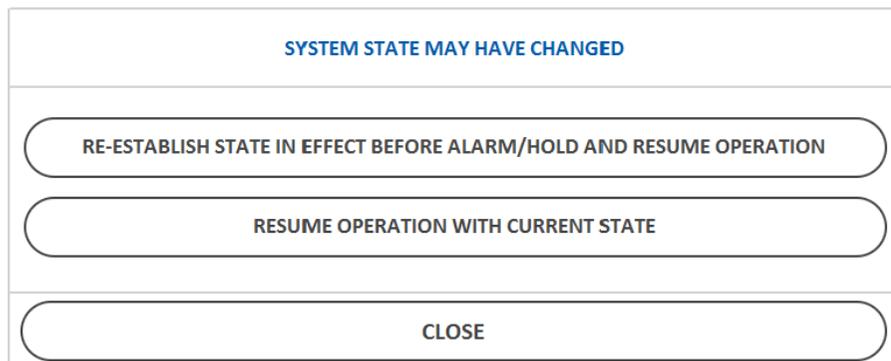
Once all critical alarm conditions have been cleared, remove the system from hold state by clicking **Resume** in the Process Controls bar:



If a critical alarm is still present, resuming from hold is not possible and the following message appears:



If no critical alarm is present, a popup appears:



The image shows a rectangular dialog box with a white background and a thin grey border. At the top, centered, is the text "SYSTEM STATE MAY HAVE CHANGED" in blue. Below this, there are three rounded rectangular buttons stacked vertically. The top button contains the text "RE-ESTABLISH STATE IN EFFECT BEFORE ALARM/HOLD AND RESUME OPERATION" in black. The middle button contains the text "RESUME OPERATION WITH CURRENT STATE" in black. The bottom button contains the text "CLOSE" in black.

Click **Re-establish state in effect before alarm/hold and resume operation** to restore the flowpath and pump status that were in place before the alarm. The process will restart at its previous state.

Click **Resume operation with current state** to resume without restoring the previous state. Use this option to end a process manually instead of with the current recipe.

## Security

### Overview

The security system consists of group accounts, user accounts, and security areas. A typical system uses four group accounts: Operator, Supervisor, System Administrator, and QA Users. Each user belongs to a group account that corresponds to his or her permitted access level.

The login name and password identify each user account. A user account assigns security privileges to a single user. Group accounts, application features, and security areas are assigned to each user account. Login timeouts can also be assigned for each user. Different passwords restrict access to the system. Only users belonging to group accounts with appropriate security privileges are permitted access to the security areas of the software. In ascending order of security level, the group accounts are: Operator, Supervisor, and System Administrator. QA User is reserved for specific quality assurance actions.

The program acknowledges each user as having certain privileges, defined as application features and security areas. Security areas are sections of the software or process that are accessible only if a user account or the user's group account authorizes access to that security area. Application features are also defined for each group or user account. If an attempt is made to gain access to an unauthorized area, an "Unauthorized Access Attempt" message will flash on the screen.

Further detail on the security system is provided for the System Administrator in the [Security](#) section.

## Standard Security Access

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
<b>User Interface Navigation and Display</b>									
Basic navigation	100-Basic navigation	Enable basic navigation across the whole application.	100	YES	YES	YES	YES	YES	YES
Display config	101-Display config	Enable/Disable sensor location and readable/tag labels display	101	YES	YES	YES	YES	YES	YES
Language navig	102-Language navig	Open language pop-up	102	NO	YES	YES	YES	NO	YES
Language Cmd	103-Language Cmd	Set HMI language	103	NO	NO	YES	YES	NO	YES
Screensaver Cmd	104-Screensaver Cmd	Start screensaver	104	YES	YES	YES	YES	YES	YES
Screensaver Conf	105-Screensaver Conf	Enable/Disable screensaver, edit screensaver parameters	105	NO	YES	YES	YES	NO	YES
Lock screen	106-Lock screen	Lock screen (black screen for cleaning)	106	YES	YES	YES	YES	YES	YES
CloseApplication	107-CloseApplication	Close application	107	NO	NO	NO	NO	NO	YES
Shutdown	108-Shutdown	Shutdown Windows	108	NO	NO	NO	NO	NO	YES
<b>Process</b>									
Default state	110-Default state	Set system to default state	110	NO	YES	YES	YES	NO	YES
UserTotaliz Cmd	111-UserTotaliz Cmd	Start/Stop/Reset user totalizer	111	NO	YES	YES	YES	NO	YES
LogComment	112-LogComment	Log Comment	112	NO	YES	YES	YES	YES	YES
Alarm ack	120-Alarm ack	Acknowledge alarms	120	NO	YES	YES	YES	NO	YES
Alarm buzzer ack	121-Alarm buzzer ack	Stop buzzer	121	NO	YES	YES	YES	NO	YES
Alarm config	122-Alarm config	Set alarm criticality & delay	122	NO	NO	NO	NO	NO	YES
Alarm enable	123-Alarm enable	Enable/Disable alarm	123	NO	NO	YES	YES	NO	YES
Alarm setpoints	124-Alarm setpoints	Set alarm (LL,L,H,HH) setpoint	124	NO	NO	YES	YES	NO	YES
Flowpath command	130-Flowpath command	Select predefined flowpath	130	NO	NO	YES	YES	NO	YES
Valve command	131-Valve command	Open/Close valves	131	NO	NO	YES	YES	NO	YES
BBT command	132-BBT command	Enable/Disable BBT autovent	132	NO	NO	YES	YES	NO	YES
Filter command	133-Filter command	Enable/Disable filter autovent	133	NO	NO	YES	YES	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
Flow command	134-Flow command	Start/Stop pump1, pump2	134	NO	NO	YES	YES	NO	YES
Mixing command	135-Mixing command	Start/Stop mixing	135	NO	NO	YES	YES	NO	YES
UV command	136-UV command	Start/Stop Peak detection & inflection point	136	NO	NO	YES	YES	NO	YES
Valve mode A/M	140-Valve mode A/M	Switch valves operating mode (auto/manu)	140	NO	NO	YES	YES	NO	YES
Pump mode A/M	141-Pump mode A/M	Switch pumps operating mode (auto/manu)	141	NO	NO	YES	YES	NO	YES
All Auto	149-All Auto	Set all operating modes at once to Auto	149	NO	NO	YES	YES	NO	YES
Flow setpoint	150-Flow setpoint	Set flow setpoints pump1, pump2	150	NO	NO	YES	YES	NO	YES
Mixing setpoint	151-Mixing setpoint	Set mixing control mode (percentage/conductivity) and setpoints	151	NO	NO	YES	YES	NO	YES
UV setpoint	152-UV setpoint	Set Peak detection & inflection point setpoints	152	NO	NO	YES	YES	NO	YES
PCV setpoint	153-PCV setpoint	Set PCV position setpoint	153	NO	NO	YES	YES	NO	YES
Mixing config	160-Mixing config	Snap conductivity and Enable/Disable look-up table	160	NO	NO	YES	YES	NO	YES
Filter config	161-Filter config	Set filter autovent parameter	161	NO	NO	YES	YES	NO	YES
Column config	162-Column config	Set column parameters (bed height, column volume)	162	NO	NO	YES	YES	NO	YES
UV config	163-UV config	Set UV new zero	163	NO	NO	YES	YES	NO	YES
PCV config	164-PCV config	Set PCV ramping rates	164	NO	NO	YES	YES	NO	YES
Flow Ctrl tuning	170-Flow Ctrl tuning	Set Flow control loop parameters	170	NO	NO	NO	YES	NO	YES
Mix Ctrl tuning	171-Mix Ctrl tuning	Set control tunings for mixing (edit look up table, loop parameters)	171	NO	NO	NO	YES	NO	YES
UV Ctrl tuning	172-UV Ctrl tuning	Set peak detection control tunings	172	NO	NO	NO	YES	NO	YES
<b>Trends</b>									
trends command	180-trends command	View preconfigured trend groups, set chart mark	180	NO	YES	YES	YES	NO	YES
trends config	181-trends config	Set and configure trend groups	181	NO	NO	YES	YES	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
<b>Reports</b>									
Report Editor	190-Report Editor	Access Report Client	190	NO	YES	YES	YES	NO	YES
<b>Unit Procedures and Unit Operations</b>									
Recipe Read	33-Recipe Read	Access Recipe Editor (read and download only)	33	NO	YES	YES	YES	YES	YES
Recipe Edit	2-Recipe Edit	Edit recipes through Recipe Editor	2	NO	NO	YES	YES	NO	YES
Recipe EditValid	35-Recipe EditValid	Edit and Validate recipes through Recipe Editor	35	NO	NO	NO	YES	YES	YES
RecipePool Load	230-RecipePool Load	Select and launch a Procedure listed in the Recipe pool screen.	230	NO	YES	YES	YES	NO	YES
RecipePool Conf	231-RecipePool Conf	Select Procedures to be displayed in the Recipe pool screen	231	NO	NO	YES	YES	NO	YES
Recipe abort	232-Recipe abort	Abort Procedure	232	NO	NO	YES	YES	NO	YES
Recipe start	234-Recipe start	Start Procedure	234	NO	YES	YES	YES	NO	YES
Recipe prompts	235-Recipe prompts	Answer to procedure prompts	235	NO	YES	YES	YES	NO	YES
Recipe jump	236-Recipe jump	Jump a recipe step	236	NO	YES	YES	YES	NO	YES
Rec. Phase Pause	237-Rec. Phase Pause	Pause a recipe phase	237	NO	YES	YES	YES	NO	YES
Rec. Phase Abort	238-Rec. Phase Abort	Abort a recipe phase	238	NO	YES	YES	YES	NO	YES
System Hold	240-System Hold	Put the system in Hold State	240	NO	YES	YES	YES	NO	YES
System Resume	241-System Resume	Resume the system from Hold State	241	NO	YES	YES	YES	NO	YES
<b>System Administration and Maintenance</b>									
SYS Navigation	200-SYS Navigation	Open System settings pop-up (must be enabled to access SYS areas)	200	NO	NO	NO	YES	NO	YES
SYS ConfComments	201-SYS ConfComments	Open pre-configured comments file	201	NO	NO	NO	NO	NO	YES
SYS ConfirmLevel	202-SYS ConfirmLevel	Set confirmation level	202	NO	NO	NO	NO	NO	YES
SYS DBCapacity	203-SYS DBCapacity	Set database capacity limit	203	NO	NO	NO	NO	NO	YES
SYS Explorer	204-SYS Explorer	Open an explorer windows	204	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
SYS FlowpathConfig	205-SYS FlowpathConf	Open Flowpath config pop-up, Configure/test flowpath	205	NO	NO	NO	NO	NO	YES
SYS HistTrendAss	206-SYS HistTrendAss	Open Historical Trend Assign window	206	NO	NO	NO	NO	NO	YES
SYS Login Logout	207-SYS Login Logout	Set Login mode at start-up and Logout inactivity timer	207	NO	NO	NO	NO	NO	YES
SYS iFixSettings	208-SYS iFixSettings	Open iFix setting	208	NO	NO	NO	NO	NO	YES
SYS Maint Simul	209-SYS Maint Simul	Starts Maintenance and Simulation modes	209	NO	NO	NO	YES	NO	YES
SYS FactSettings	210-SYS FactSettings	Open Options pop-up & set factory settings	210	NO	NO	NO	NO	NO	YES
SYS RecipeSign	212-SYS RecipeSign	Start/stop save recipe signature; Start/stop Acrobat recipe signature	212	NO	NO	NO	NO	NO	YES
SYS StorCapacity	214-SYS StorCapacity	Set computer storage capacity	214	NO	NO	NO	NO	NO	YES
SYS User&group	215-SYS User&group	Open user&group setting window	215	NO	NO	NO	NO	NO	YES
Backup&Restore	216-Backup&Restore	Save, delete, restore back-up	216	NO	NO	NO	NO	NO	YES
AI scale&filter	217-AI scale&filter	Scale & filter analog inputs	217	NO	NO	NO	YES	NO	YES

## Standard Application Features

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
Application Validator - Creation of Baselines	Application Validator - Creation of Baselines	Generate baseline files in the Application Validator.	n/a	NO	NO	NO	NO	NO	YES
Application Validator - Run-time Access	Application Validator - Run-time Access	Run the Application Validator and generate reports.	n/a	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
Background Task Exit	Background Task Exit	Stop any background task such as SAC, Session Monitor, or Historical Collect. The iFIX - System Shutdown and Background Task Exit application features should be assigned on an individual basis, to anyone responsible for shutting down iFIX. If no one is assigned these features, it will be impossible to shut down iFIX programs in an orderly fashion.	107	NO	NO	NO	NO	NO	YES
Batch Execution - [Action Name]	Batch Execution - [Action Name]	Perform a specified action in the Proficy Batch Execution product. [58 actions]	n/a	NO	NO	NO	NO	NO	YES
Change Management	Change Management	Use Change Management version control features in iFIX.	n/a	NO	NO	NO	NO	NO	YES
Data Provider service	Data Provider service	Undocumented application feature	n/a	NO	NO	NO	NO	NO	YES
Database Block Add-Delete	Database Block Add-Delete	Add a block to, delete a block from, or modify a block in a database. NOTE: In FIX32, this application feature only allows add and delete functionality.	n/a	NO	NO	NO	NO	NO	YES
Database Manager	Database Manager	Configure individual blocks in a database and import, export, save, print, query, sort, and summarize the contents of a database.	n/a	NO	NO	NO	NO	NO	YES
Database Reload	Database Reload	Reload the database in memory or load a different database.	n/a	NO	NO	NO	NO	NO	YES
Database Save	Database Save	Save the database in memory to disk.	n/a	NO	NO	NO	NO	NO	YES
EDA Feature #1-55	EDA Feature #1-55	Access an Easy Database Access (EDA) application feature. You can provide access for up to 55 EDA application features.	n/a	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
Electronic Signature - Bypass	Electronic Signature - Bypass	"Bypass the Electronic Signature option, and test an application without the need to repeatedly enter signatures. NOTE: Selecting Add All when you are adding application features to a user or group account will not add this application feature. You must select it explicitly."	n/a	NO	NO	NO	NO	NO	YES
Electronic Signature - Perform By	Electronic Signature - Perform By	Perform signed actions.	n/a	NO	NO	NO	NO	NO	YES
Electronic Signature - Verify By	Electronic Signature - Verify By	Verify signed actions.	n/a	NO	NO	NO	NO	NO	YES
Enable Ctrl-Alt-Del	Enable Ctrl-Alt-Del	Log off, shut down the computer, access the Windows Task Manager, or change the computer's password by pressing Ctrl+Alt+Del. The logged-in user needs this if iFIX is running as a service and they log off the machine.	108	NO	NO	NO	NO	NO	YES
Enable Task Switching	Enable Task Switching	Switch between tasks.	108	NO	NO	NO	NO	NO	YES
FIX32 - [Action]	FIX32 - [Action]	Perform a specified action in a FIX Desktop application. [9 actions]	n/a	NO	NO	NO	NO	NO	YES
GE Fanuc OEM Reserved #1-12	GE Fanuc OEM Reserved #1-12	Access an application feature defined by an OEM (Original Equipment Manufacturer). You can provide access for up to 12 OEM application features.	n/a	NO	NO	NO	NO	NO	YES
Historical Trend Assign	Historical Trend Assign	Configure the Classic Historical Assign program.	206	NO	NO	NO	NO	NO	YES
Historical Trend Collection	Historical Trend Collection	Stop the Classic Historian HTC program.	n/a	NO	NO	NO	NO	NO	YES
Historical Trend Export	Historical Trend Export	Legacy application feature that is not used in iFIX	n/a	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
iFIX - System Shutdown	iFIX - System Shutdown	Shut down iFIX. The iFIX - System Shutdown and Background Task Exit application features should be assigned on an individual basis, to anyone responsible for shutting down iFIX. If no one is assigned these features, it will be impossible to shut down iFIX programs in an orderly fashion.	108	NO	NO	NO	NO	NO	YES
Manual Failover	Manual Failover	Manually switch (fail over) between two SCADA servers	n/a	NO	NO	NO	NO	NO	YES
Project Backup-Restore	Project Backup-Restore	Back up and restore the iFIX files on the local node.	n/a	NO	NO	NO	NO	NO	YES
Recipe Builder Development Window	Recipe Builder Development Window	Create master and control recipes, enable and disable the audit trail, assign tag groups to recipes, and scale a batch.	n/a	NO	NO	NO	NO	NO	YES
Recipe Builder Operations Window	Recipe Builder Operations Window	Modify control recipes and override recipe items within specific limits.	n/a	NO	NO	NO	NO	NO	YES
Recipe Download from Recipe Builder	Recipe Download from Recipe Builder	Download recipes from the Recipe Builder	n/a	NO	NO	NO	NO	NO	YES
Recipe Load	Recipe Load	Legacy application feature that is not used in iFIX.	n/a	NO	NO	NO	NO	NO	YES
Recipe Save	Recipe Save	Legacy application feature that is not used in iFIX.	n/a	NO	NO	NO	NO	NO	YES
Recipe Save from Recipe Builder	Recipe Save from Recipe Builder	Save recipes.	n/a	NO	NO	NO	NO	NO	YES
Recipe Text Output from Recipe Builder	Recipe Text Output from Recipe Builder	Create recipe reports, master text recipes, and control text recipes.	n/a	NO	NO	NO	NO	NO	YES
Recipe Upload from Recipe Builder	Recipe Upload from Recipe Builder	Upload recipes from the Recipe Builder.	n/a	NO	NO	NO	NO	NO	YES
Runtime Visual Basic Editor Access	Runtime Visual Basic Editor Access	Open the Visual Basic Editor from the run-time environment.	n/a	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
Security Configuration	Security Configuration	"Configure the security system, create and delete user and group accounts and name security areas. This application feature must also be assigned on an individual basis. The Security Configuration application feature should be assigned to your system administrator or the person in your organization responsible for creating and maintaining iFIX security. In fact, iFIX security requires you to assign the application feature to at least one user account; providing access to the program with a group account does not fulfill this requirement."	208	NO	NO	NO	NO	NO	YES
Security Synchronizer	Security Synchronizer	Run the Security Synchronizer.	n/a	NO	NO	NO	NO	NO	YES
Startup Profile Manager	Startup Profile Manager	Run the Startup Profile Manager application.	n/a	NO	NO	NO	NO	NO	YES
System Configuration	System Configuration	Configure node connections, system paths, alarm services, and the SCADA configuration for a node.	n/a	NO	NO	NO	NO	NO	YES
System User Login	System User Login	Log in as the system user.	n/a	NO	NO	NO	NO	NO	YES
System User Logout	System User Logout	Log out as the system user.	n/a	NO	NO	NO	NO	NO	YES
Tag Group Editor	Tag Group Editor	"Create, edit, and save tag groups. NOTE: When you assign the Tag Group Editor application feature to a user, you must also assign the WorkSpace Configure application feature to that same user. If both these application features are not assigned, the user is considered unauthorized for the Tag Group Editor application."	n/a	NO	NO	NO	NO	NO	YES
Tag Status	Tag Status	View tag status information.		NO	NO	NO	NO	NO	YES
VisiconX Writes	VisiconX Writes	Allow VisiconX to do writes.	n/a	NO	NO	NO	NO	NO	YES

Security Area Name	Security Area Name (limited to 20 characters; contains ID)	Security Area Description	Security Area ID	Default User "NONE"	Operators	Supervisors	Engineers	QA Users	System Administrators
WorkSpace Configure	WorkSpace Configure	Switch to the Proficy iFIX WorkSpace configuration environment.	n/a	NO	NO	NO	NO	NO	YES
WorkSpace Runtime	WorkSpace Runtime	Switch to the Proficy iFIX WorkSpace run-time environment.	n/a	YES	YES	YES	YES	YES	YES
WorkSpace Runtime Exit	WorkSpace Runtime Exit	Quit the Proficy iFIX WorkSpace from the run-time environment.	"107 108"	NO	NO	NO	NO	NO	YES

# Shutting Down the Control System

## CAUTION

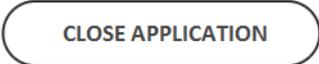
Close all programs and shut down the Windows® operating system before switching off power to the computer. Failure to do so may damage any Historical Data files that are open when the computer is turned off.

Only users with sufficient access privileges can use the Close Application and Shutdown Windows buttons.



Use the  button to access the Close Application button and the Shutdown Windows button.

Click the **Close Application** button. Click the **Shut Down Windows** button.

Button	Description
 CLOSE APPLICATION	Closes the iFIX Workspace (iFIX service is still running) and gives access to the Windows® desktop. It is then possible to shut down Windows® through its Start menu.
 SHUTDOWN WINDOWS	Closes the iFIX Workspace and shuts down Windows®

**NOTE** If the Close Application and Shutdown Windows buttons are not accessible, log into the system with a user ID that has sufficient privileges to shut down the system.

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# Software Administration

# Security

## Introduction

The Common Control Platform® (CCP®) software system security is configured using Windows® 7 Security and the iFIX® Security Configuration programs. The two security programs work together.

Improper security configurations can cause security breaches.

## Default Windows® Operating System and iFIX® User Names and Passwords

Function	User name	Password
Operator	op	op
Supervisor	sup	sup
Engineer	eng	eng
Quality Assurance	QAuser	qa

## Security Reports

### Generating a Security Report

The Login utility records all system security data and login attempts in an audit trail file called the Security Report. This report includes the user name and login/logout times of everyone who logs in. All successful and unsuccessful login attempts are recorded. Changes to security configuration are also documented in this report.

1. Access the Report Client from the User Interface by clicking the **Reports** icon in the toolbar.
2. Open the Report Generator by clicking the **Report Generator** icon in the toolbar of the Report Client.
3. In the Report Selections box, select the Security Report option. Click one of the following buttons: **Preview Report**, **Print Report**, or **Save Report**.

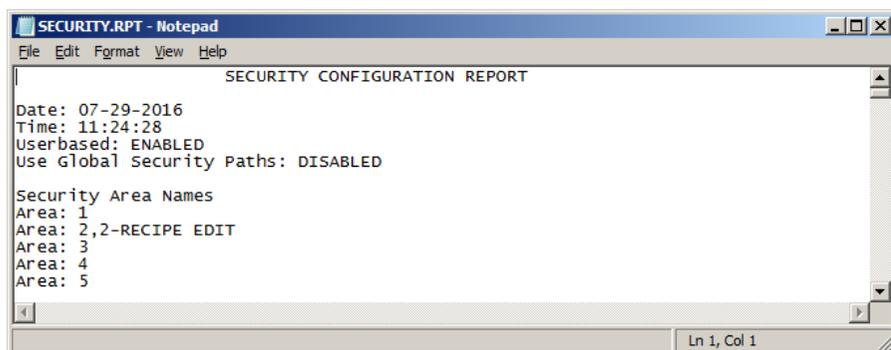


## Generating a Security Configuration Report

The export feature of the iFIX® Security Configuration program can be used to obtain a Security Configuration Report. The export feature creates an ASCII file that lists configuration information for groups, users, etc.

To obtain a Security Configuration Report:

1. Open the iFIX® Security Configuration program.
2. Select **File > Export** from the main menu. The export file name defaults to SECURITY.RPT.
3. Select the export location and click **Save**.
4. Use any text editor to open and view the exported report file.



# Archiving and Restoring Utilities

## Overview

The CCP® software provides an Archive Utility that backs up and restores the numerical and event data compiled during operation of the unit.

Data backed up by the archive utility includes all the data that are stored in the Historian database (trending information) and SQL database (events).

These two databases are located in the Current Active Data Location. When a backup is run, data from the Current Active Data Location is copied to the Backup File Location.

Each backup consists of several files that are organized in one directory. That directory is automatically named to indicate the date and time at which it was generated. These individual backup directories are located in the Backup File Location.

During a Restore operation, files are copied from the Backup File Location and put into the Current Active Data Location. The incoming restored files replace the files that are in the active data location.

## Archiving Intervals

The databases store the data logging files. These files grow in size as new data is collected and logged into the archives. Even if the archives are backed up, their size does not decrease. Because the databases continue to grow, the backup files also grow.

Monitor the backup files size over a period of routine use and examine the growth rate of these files. From this growth rate and the total size of the hard disk, decide at what intervals to back up the archives.

Backup files include data only up to the time of the backup.

The system is equipped with a warning message to alert users when the data has exceeded 1.8 Gb of the 2 Gb capacity.



## Starting the Archive Utility

Launch the Archive Utility from the Recipe Editor, with the iFIX® software off. An attempt to launch the Archive Utility while iFIX® is still running results in an error message.

There are two ways to open the Archive Utility:

- Start the Recipe Editor from Windows® Explorer. Find the file named **CCPRecipeEditor.exe**. Its default location is: **C:\Millipore\CCPSystem\**.
- Start the Recipe Editor from the touchscreen. Close the user interface display and shutdown iFIX®.

Administrator privileges are required to access the Windows® Internet Explorer® browser, and to close down the touchscreen. Once a specific task has been selected in the Archive Utility, the user name and password prompt for a member of the CCP® Administrators group appears.

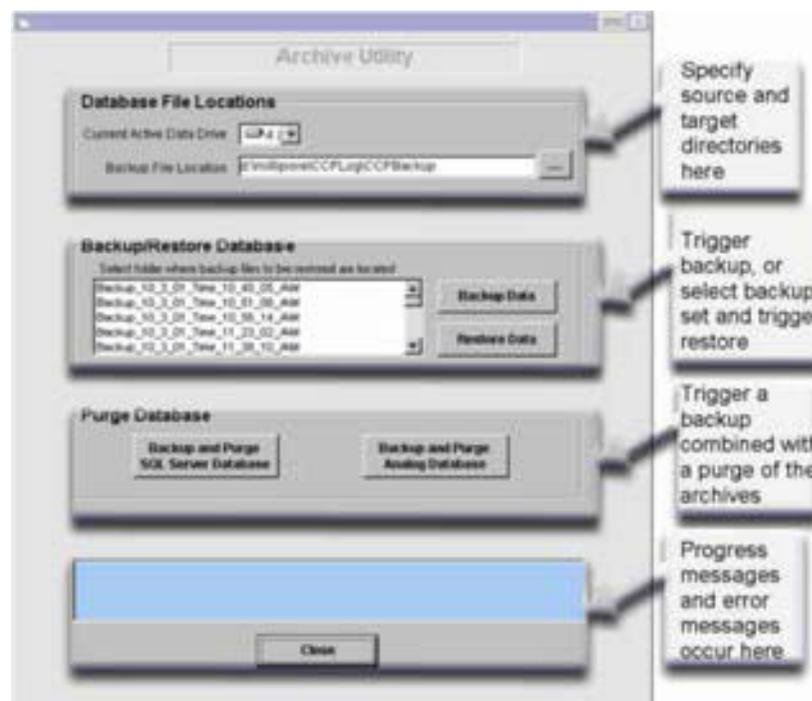
To start the archiving utility, select **Archive Utility** from the **Tools** menu on the Recipe Editor tool bar.

## Using the Archive Utility Screen

There are three main parts of the Archive Utility screen:

- Database File Locations
- Backup/Restore Database
- Purge Database

At the bottom of the screen is a report box for progress and messages.

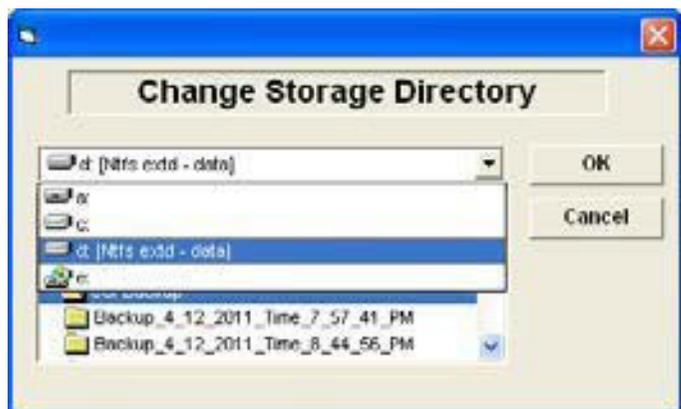


## Database File Locations

Set the Current Active Data Drive and the Backup File Location. Open the Change Storage Directory window by clicking the "...” button.

**NOTE** The settings made in this part of the screen determine from where and to where data will be copied during backup and restore. Ensure the settings are correct before triggering either action.

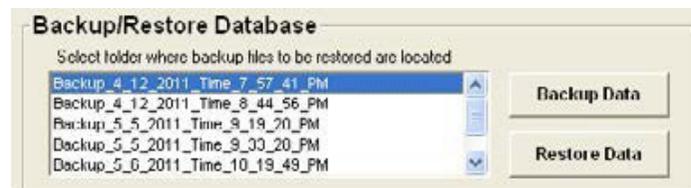
The Change Storage Directory window with the Active Drive selected from the drop-down menu is shown here:



Select the correct location and click **OK**. The default location for the backup files is **D:\Millipore\ccplog\CCPBackup**. Modify the backup file location by selecting any directory name from any drive on the system. Locations on the local network appear in this list as additional drives.

## Backing Up and Restoring a Database

When the database file locations are appropriately set, execute either a backup or a restore operation.



### Backing Up a Database

To back up a database, click **Backup Data**.

Each backup action generates one backup directory with a unique name. That directory name records the exact time of the backup.

Depending on the size of the archive files and the backup location, the backup process may take considerable time. During backup, the archive utility displays progress messages and a message box.

When the backup process is complete, the message "Successfully backed up data!!" is displayed.

### Restoring a Database

Select the appropriate data set from the selection box. Click **Restore Data**. An error message is displayed if no data set is selected.

#### CAUTION

The data from the backup data set replaces any existing database files in the current active data location. Data that are logged in the active data location that are not backed up are not recoverable.

Before restoration begins a prompt appears to confirm the overwrite of the current active databases. Click **OK** to proceed with the restore. Click **Cancel** to abort the process and keep the currently active databases. At the end of the successful restoration the message **Successfully Restored Selected to Backup** appears.

### Purging Databases

The Event Archive and the Historical Archive continue to grow. Depending on the size of the hard disk and the growth rate of the equipment, it may be necessary to permanently reduce the amount of data on the disk. To export data from the archives, use the **Purge Database** feature of the Archiving Utility.



The login prompt appears. Comments can also be added at this time.

The Purge Database function copies the currently active archives to the specified archiving location, and replaces the currently active archives with empty shells. After the purge, all active archive files are at minimum size and ready to log new data.

To restore the previous contents, see [Restoring Data](#).

**NOTE** To view the backup set created during the purge database operation in the list of available backup sets, leave and reenter the Archive Utility.

## Managing iFIX® Software Data Collection

### Using the Historical Assign Program

The data collection software in CCP® software is configured for customer use. Use the Historical Assign program to assign database blocks to be collected for use with the historical trending software. It should be used only by properly trained and authorized users to:

- Start the Historical Assign program
- Select database blocks for a collection group
- Use Historical Assign to set up the group to collect process data and store it in historical data files.

#### CAUTION

The data collection settings are configured at the factory. Only authorized and trained users familiar with iFIX® Open Historical Assign (HTA) software should alter these settings.

Two separate operations are required to save changes to the configuration using the CCP® Historical Assign program. See [Saving Changes to the Historical Assign Configuration](#).

Data collection and batch reporting do not function unless both operations to save the configuration have been performed.

## Default Historical Assign Configuration

The CCP® software data collection will initially be configured as shown in the following table.

**NOTE** The following table shows configuration for a full-options system. The actual configuration may vary with the active options of the system.

Group Number	Node	Rate	Phase
1	THISNODE	10s	0s
2	THISNODE	10s	2s
3	THISNODE	10s	4s
4	THISNODE	10s	6s
5	THISNODE	10s	8s
6	THISNODE	2s	0s

The phase field is used to offset the collection intervals of groups to prevent collection overruns in the event that too much data is being collected in a single scan.

The data collections groups is listed in the following table.

Group	Data	Deadband
1	PI001	0.01
1	PI002	0.01
1	PI003	0.01
1	PI004	0.01
1	PI005	0.01
1	FIC001	0.01
1	FIC002	0.01
1	TI006	0.5
2	SIC001_AO	0.1
2	SIC002_AO	0.1
3	FLC001_Speed SP	0.1
3	FLC001_Flow SP	0.1

Group	Data	Deadband
3	FLC001_LV SP	0.1
3	FLC002_Speed SP	0.1
3	FLC002_Flow SP	0.1
3	FLC002_LV SP	0.1
3	MIX_TotalFlow_Speed SP	0.1
3	MIX_TotalFlow_Flow SP	0.1
3	MIX_TotalFlow_LV SP	0.1
3	MIX_PercentageSP	0.1
3	MIX_ConductivitySP	0.1
4	PHASE0 Totalizer (L)	0.1
4	PHASE0 Totalizer (CV)	0.1
4	PROCEDURE Totalizer (L)	0.1
4	PROCEDURE Totalizer (CV)	0.1
4	USER Totalizer (L)	0.1
4	USER Totalizer (CV)	0.1
5	BH	0.1
5	CV	0.1
5	FT_TOT	0.1
5	LV	0.1
5	LV001	0.1
5	LV002	0.1
5	DP_FILTER	0.1
5	DP_COLUMN	0.1
6	Chart Mark	0.5
6	AI001	0.01
6	AI002	0.01
6	AI004A	0.01
6	AI004B	0.01
6	AI005	0.01
6	AI007	0.001
6	AI008	0.001

The limit field provides a deadband limit to eliminate recording data within the specified range of the last recorded value. This prevents the database from filling up with data from signal noise and changes smaller than the limit.

## Starting the Historical Assign Program

Historical Assign starts when iFIX® is started at power up.

To edit Historical Assign, administrator access is required and a keyboard must be plugged into system.

To start the Historical Assign program, click the **Log Rate** button in the **System Settings** window.

	Node	Rate	Phase	Qualifier	Status	Tags
1	THISNODE	10s	0s		Active	19
2	THISNODE	10s	2s		Active	9
3	THISNODE	10s	4s		Active	11
4	THISNODE	10s	6s		Active	8
5	THISNODE	10s	8s		Active	8
6	THISNODE	2s	0s		Active	7
7						
8						
9						
10						
11						
12						
13						
14						
15						

## Creating A New Collection Group in the Assign Program

To create a historical collection group from the Historical Assign window, select **Add** from the Group menu. The Group Configuration dialog box opens and lists the tag names and the collection parameters for the group being created.



### Group Configuration Parameters

Parameter	Description
Node	The name of the node that contains the database blocks that this collection group uses during collection.
Qualifier	Optional database block that determines whether data collection for the group is on or off.
Rate	Determines how often data will be collected for the block tag names in the collection group.
Phase	Determines how the system distributes the data collection load.

Parameter	Description
Tag name List	Displays the database block from where the data is collected.
Tag name Field	Used to find tags to add to the Tag name List.
Limit	Provides a deadband limit to eliminate recording data within a specified range of the last recorded value.
Add, Modify, Delete Buttons	Apply to the tag names listed in the tag name area. Select a tag name. Select the button to perform the action.
Save	Saves the changes made in the Group Configuration dialog box and closes the window.

### Populating the Fields in the Group Configuration Dialog Box

#### 1. Select a Node

In the Node field in the Group Configuration dialog box, enter the name of the SCADA software node that contains the block tag names for the collection group.

To display a list of the SCADA software nodes being communicated with, click "..." next to the Node field. The standard Node Select dialog box opens.

To search the node list, enter characters in the Filter field. For example, to display a list of nodes that begin with N, type "N\*" and click **Filter**.

Select a node from the list in the Node Select dialog box and click **OK**. The node is entered in the Node field in the Group Configuration dialog box.



**NOTE** All tag names in a collection group must be located on the same node.

2. Enter a Qualifier Block for On/Off Collection State (optional). This will collect data for a specific interval when process data has changed.

In the Qualifier field, enter the block name that determines when the data collection state for the group will be on or off. The Qualifier block is usually a Digital Input or Digital Output block. A Digital Register block cannot be used as a qualifier block. When the digital block changes from Open to Closed, data collection starts for the group. When the digital block changes from Closed to Open, data collection stops.

If the qualifier block is a block other than a digital block, enter a value of 0 to stop collection. Any value other than 0 starts collection.

If a non-digital block is assigned as a qualifier, the following message appears: "The qualifier is not a digital point. Use anyway?"

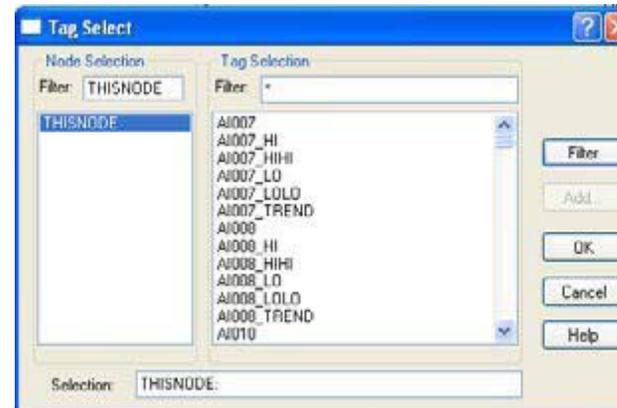
If a non-existent block is assigned as a qualifier, the following message appears: "This qualifier not found in database. Use anyway?"

When starting Historical Collect, an operator message is generated warning that the qualifier is not found.

To choose the qualifier block from a list of tag names for the node entered in the Node field click "..." to the right of the Qualifier field.

The tag names for the node displayed in the Node field are shown in the standard Tag Select dialog box.

To quickly search through a tag list for the node, enter the initial letters of a tag name in the Filter field. For example, type "C\*" and click **Filter** to display a list of tags beginning with C.



Select a Qualifier tag from the list in the Tag Select dialog box by tapping on the touchscreen. It will appear in the Selection field next to the collection node.

Click **OK**. The qualifier tag is entered in the Qualifier field in the Group Configuration dialog box.

### 3. Enter a Data Collection Rate

In the Rate field in the Group Configuration dialog box, enter how often values should be collected for the tag names in the collection group.

Click "..."/> to display a list of available rate values. The Rate field defaults to 30 seconds.

Select a collection rate from the list and then select **OK**. The selected rate is entered in the Rate field in the Group Configuration dialog box.

**NOTE** For remote nodes, the minimum recommended collection rate is 10 seconds. The 1- and 2-second collection rates are recommended for use only on local nodes.

The collection rate operates off the system clock rather than when Historical Collection is started. Time increments (hours, minutes, and seconds) for clock time are maintained from midnight (00:00:00) to the present.

### 4. Enter Phase Value

Phasing offsets the collection process for a group by the amount of time entered in the field. When collection starts, the phase period elapses once. Thereafter, data is collected according to the rate defined for the group.

The main benefit of phasing collection rates is to prevent overruns. A historical collection overrun occurs when the Historical Collect program cannot collect all the data at the rate specified. When an overrun occurs, the collection program does not collect values for some tag names.

If a Phase time of 2 seconds and a Rate time of 10 seconds are assigned, then once collection starts, data is collected at 2 seconds, 12 seconds, 22 seconds, 32 seconds, and every 10 seconds thereafter.

**NOTE** A total of 80 tag names can be assigned to a collection group. The Historical Collect program uses less CPU time to process one group containing 80 tag names than it does to process eight different groups with ten tag names per group.

In the Phase field, enter the number of seconds by which the collection will be staggered.

Click "..."/> to display a list of available phase values.

The Phase value choices are in two-second increments from 0 to 58 seconds. The Phase field defaults to 0 seconds for the first group added in Historical Assign, and then increments by two seconds for each additional group added.

**NOTE** The Phase value entered must always be smaller than the Rate value.

Select a Phase value from the list and click **OK**. The selected phase value is entered in the Phase field in the Group Configuration dialog box.

### 5. Select Tag names

In the Tag name field in the Group Configuration dialog box, enter the tag name you want to add to the collection group.

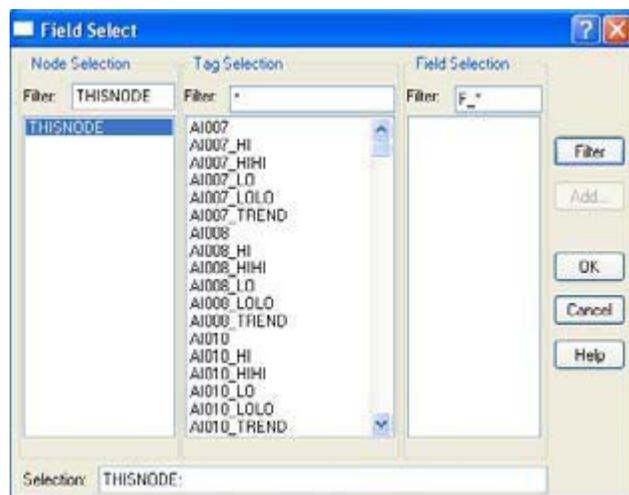
To choose from a list of tag names for the selected node click "..."/>. The standard Field Select dialog box displays a list of tag names and fields for the node.

To quickly search through the tag list for a specific tag, enter the beginning letters for a tag in the Filter field. For example, enter "A\*" and click **Filter** to view a list of tags beginning with "A".

To quickly search through the fields for a tag, select the tag, and then follow the same procedure as in Step 2. For Historical Assign, all the tags have the same field: F\_CV.

When the tag and field have been selected click **OK** in the Field Select dialog box. The chosen tag to trend is shown in the Tag name field in the Group Configuration dialog box.

Click **Add** to add the tag to the list of Tag names.



**NOTE** Only floating point fields (F\_) can be trended.

#### 6. Enter a Deadband Limit for Data Collection

Using a deadband limit is a convenient and powerful way to compress data. During times when process values change by insignificant amounts, the deadband limit can improve system performance and decrease

the amount of disk space used by historical data files. The deadband limit accomplishes this by controlling how much the current value can deviate from the last recorded value before Historical Collect records the value in the historical data file. See [Limit Example](#) for an example of data collected using a deadband limit.

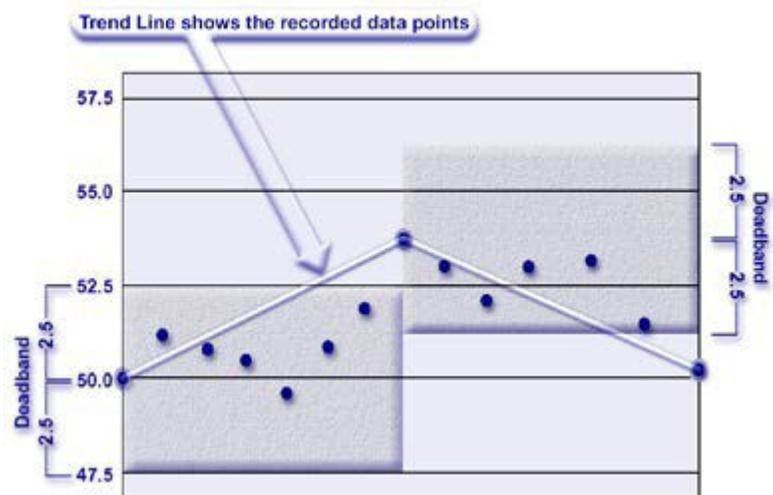
**NOTE** If the limit value is 0, the system saves every sample. Tag names with a limit value of 0 use the maximum amount of disk space available.

#### 7. Save changes.

When the definition of a collection group in the Group Configuration dialog box is complete, click **Save Changes** to save the group. The dialog box closes and the Historical Assign window reappears.

### Limit Example

The following diagram illustrates how setting the Limit field reduces the amount of data collected by Historical Collect. In this example the Limit field is set to 2.5. Of the 16 data points shown, Historical Collect records only three. Data points within the shaded areas are not recorded because they fall within the 2.5 deadband limit.



The first recorded value shown is 50. The next value that Historical Collect records must be  $\geq 52.5$  or  $\leq 47.5$ .

The second value recorded is 54. The deadband limit now applies to the current value of 54. Therefore, the third value that Historical Collect records must be  $\geq 56.5$  or  $\leq 51.5$ .

The third value recorded is 51. The deadband limit now applies to the current recorded value of 51.

### Suspending a Collection Group

A collection group can be suspended temporarily if the current data does not need to be viewed, or if the data is taking up too much disk space on the system.

To suspend a group, select the group in the Historical Assign window. Click **Deactivate** in the Group menu. The Status field for the group changes to Inactive.

To reactivate a group, select the group and click **Activate** in the Group menu.

### Modifying a Collection Group

To change the collection parameters for a group, select the group in the Historical Assign window and double-click or select **Modify** from the Group menu. The Group Configuration dialog box opens. To make changes, see [Creating A New Collection Group in the Assign Program](#).

**NOTE** If changes are made to a collection group in the Historical Assign program (such as adding new tags to a group), after the Historical Collection program has started, stop and restart Historical Collect so the system can read the new configuration.

### Deleting a Tag from the Tag Name List

1. Select the tag in the Tag name list.
2. Click **Delete**.

### Modifying a Tag in the Tag Name List

1. Select the tag to be modified from the Tag name field.
2. Modify the tag in the Tag name box. To select a new tag for trending from a list, click **"?"**.
3. After the tag has been changed, click **Modify**. The new tag is shown in the Tag name field and list.

### Deleting a Collection Group

1. Select the group in the Historical Assign window
2. Click **Delete** from the Group menu. The following message appears: "Are you sure you want to delete this group?"
3. Click **Yes** to delete the collection group, or **No** to cancel the deletion.

### Saving Changes to the Historical Assign Configuration

Two separate operations are required:

1. Select **File > Save**. This saves the changes made to support data collection.
2. Select **File > Save As**. In the File name field in the Save As window, enter the following path and filename:  
**C:\millipore\ccpsystem\ini\hta-cfg.csv**

This operation saves the changes made, to support batch reporting.

### Exiting the Historical Assign Program

Select **File > Exit**. The window closes. If changes have not been saved, the system prompts the user to do so before exiting.

**NOTE** Do *not* exit the Historical Assign Program until *both* operations described under [Saving Changes to the Historical Assign Configuration](#) have been performed.

Data collection and batch reporting will not function as desired unless both operations to save the configuration have been performed.

## Using the Historical Collect Program

### Starting the Historical Collect Program

Starting the Historical Collect application enables data collection. Historical Collect starts automatically when the system starts up and collects data according to configurations in the Historical Assign program.

After making changes Historical Assign, reboot the system.

### Data File Storage and Backup

Historical Data is collected using the iFIX® Historian software. iFIX® Historian is a component that is embedded in iFIX® software. The Historian Server logs the assigned data into databases. An Archiving Utility that performs Backup and Restore operations on both the Event Log and the Historical Data are included in the CCP® Software. See [Archiving and Restoring Data](#).

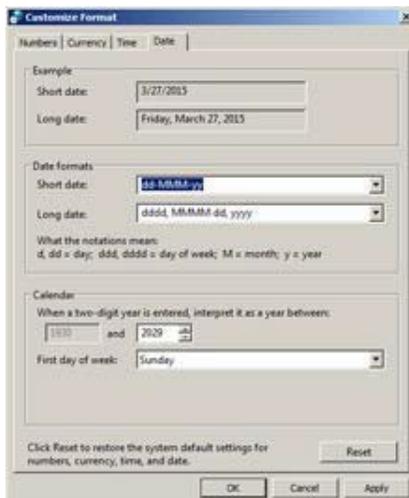
## Changing the Date and Time Format

1. Access the Windows® task bar and click **Start**.
2. Select **Control Panel > Region and Language Options**.



3. Click **Additional Settings**.

4. In the Customize Regional Options window, click the Date tab.



5. In the Short date field, select or enter one of the following supported formats:
- MM-DD-YYYY
  - DD-MM-YYYY
  - YYYY-MM-DD For Korean do not use default time format with tt (AM/PM) in front of time. Place tt after time or use 24 hour time: **HH:MM:SS TT** or **HH:MM:SS**.

**NOTE** Choosing any format other than the ones listed here could cause errors when using CCP® software.

Changing the date format may damage the historical data. Before making any change, back up data and purge the database.

By default, the daylight saving time shift is disabled. Enabling this function may damage the historical data.

## Creating an Image of the Hard Disc with Acronis® Backup and Recovery

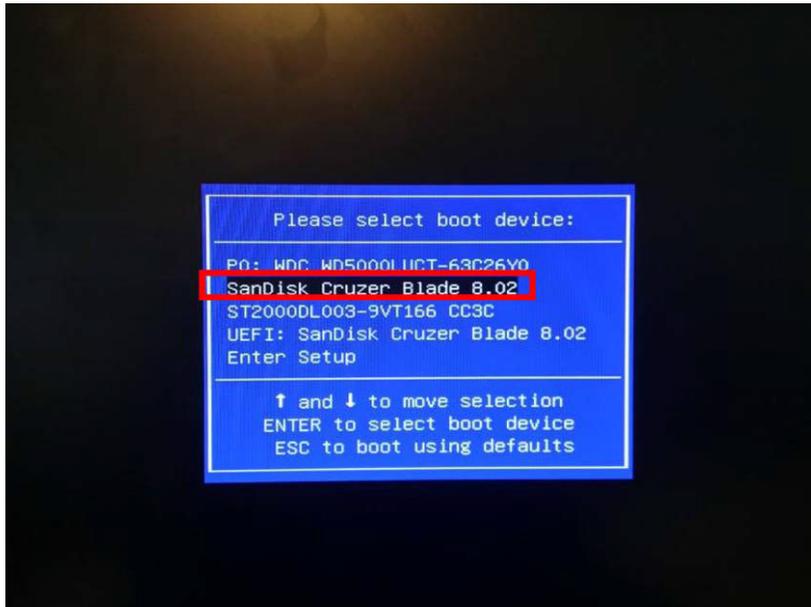
### Required Material

- External Acronis® Backup & Recovery USB boot device
- External USB storage device to store the backup image or where the image backup is stored
- USB keyboard
- USB mouse

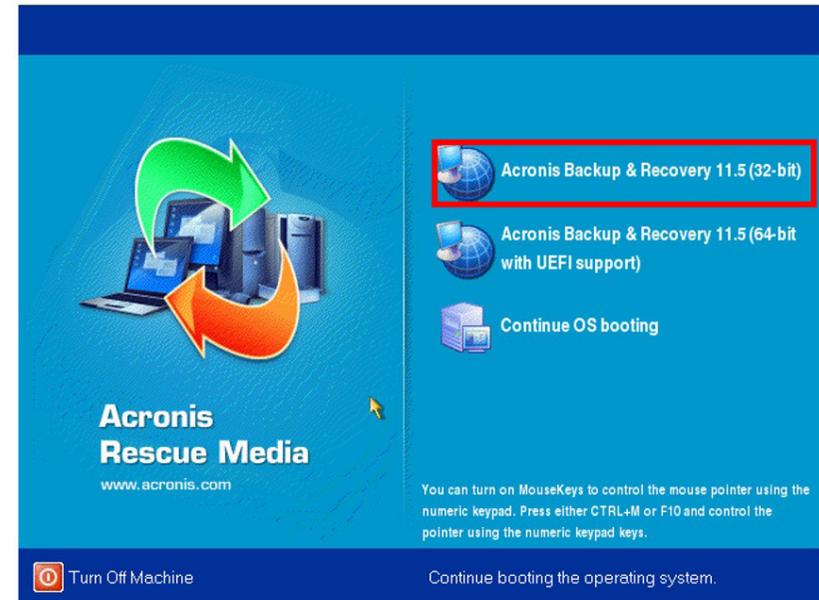
### Creating a Backup Image

1. Shut down the PC.
2. Connect to the PC USB ports:
  - The keyboard
  - The mouse
  - The external Acronis® Backup & Recovery USB boot device
3. Switch on the PC. When the BIOS splash screen appears, press the key that corresponds to the boot menu (depending on the PC manufacturer; for example, for B&R PC press F11; for Allen Bradley PC press F12).

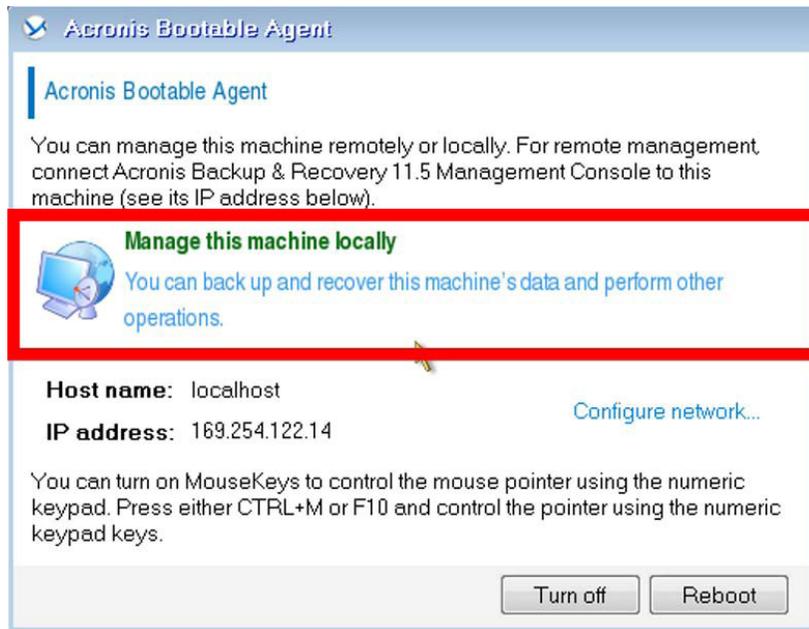
- The boot menu appears. Select the external USB boot device and press **Enter**.



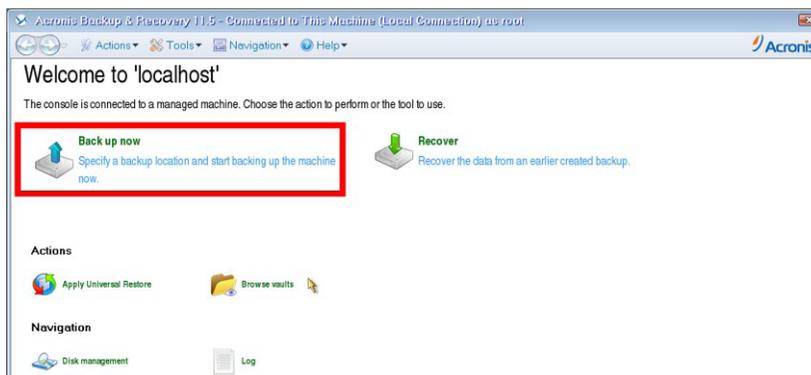
- If the following popup appears, click **Acronis® Backup & Recovery**.



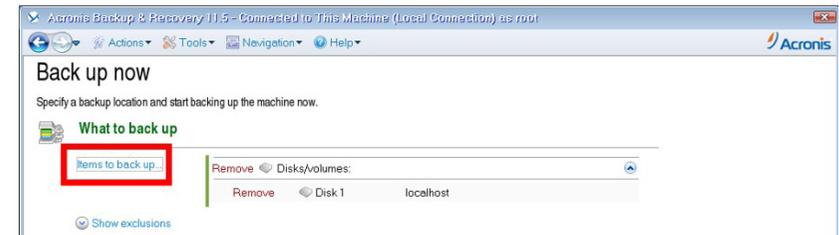
6. Connect the external USB storage device. If the following popup appears, click **Manage this machine locally**.



7. Click **Back up now**.

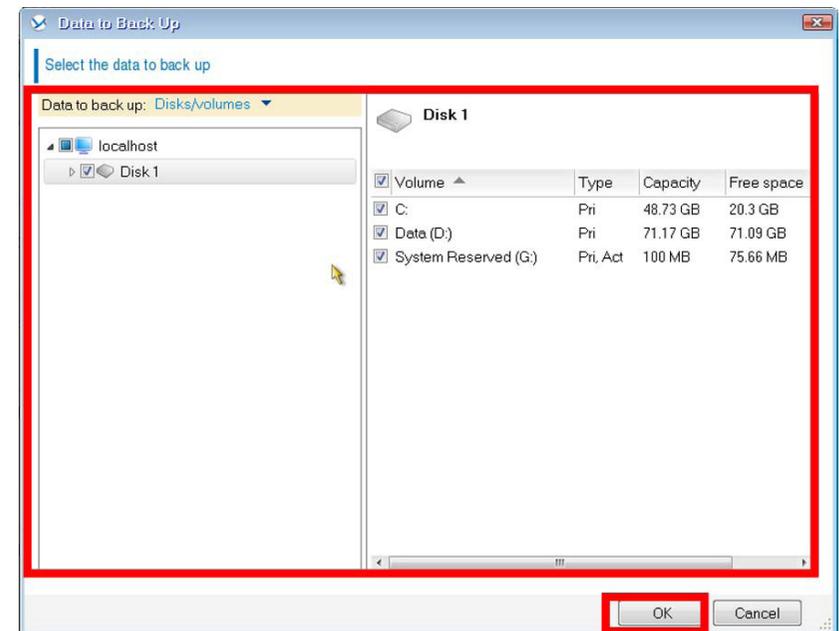


8. In the "What to back up" section, click **Items to back up**.

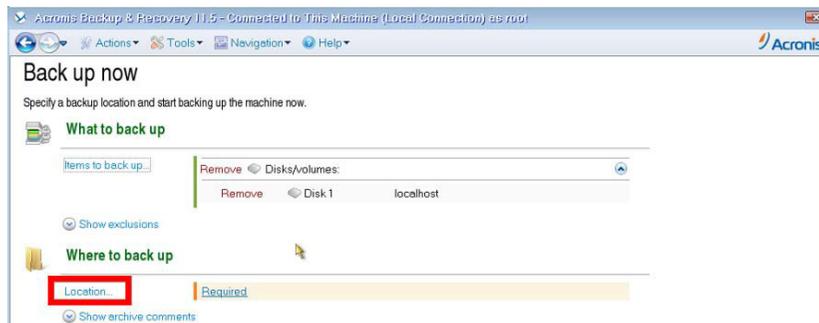


9. Select the disk to back up. This disk typically contains the following volumes: C:, D:, and System reserved. Click **OK**.

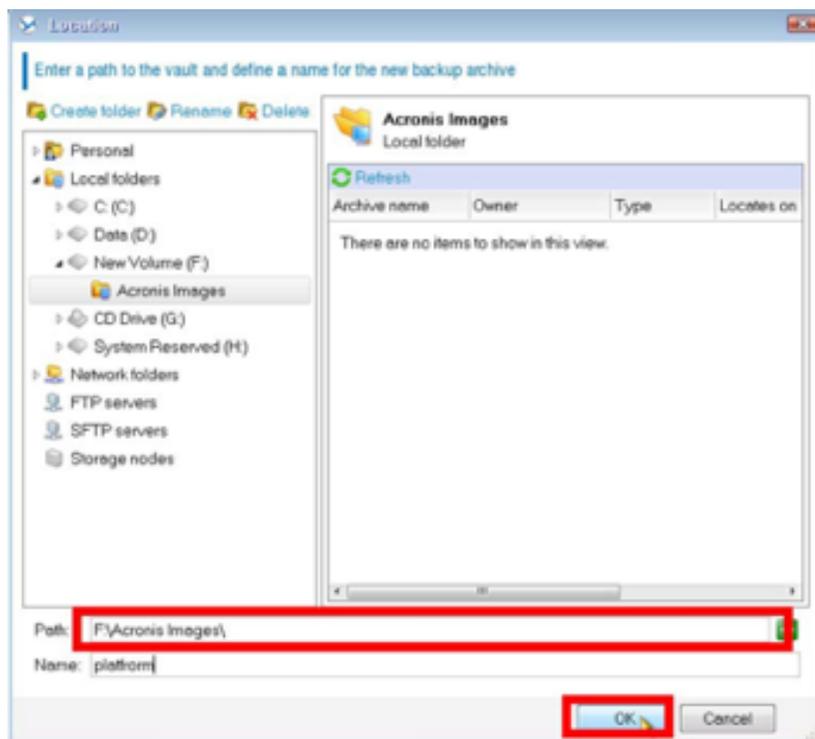
**NOTE** This disk is now a second external Acronis® Backup & Recovery USB boot device.



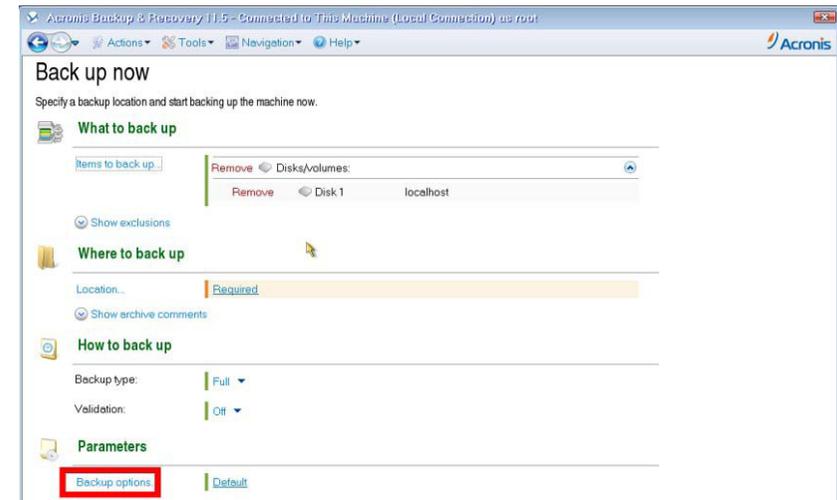
10. In the “Where to back up” section, click **Location**.



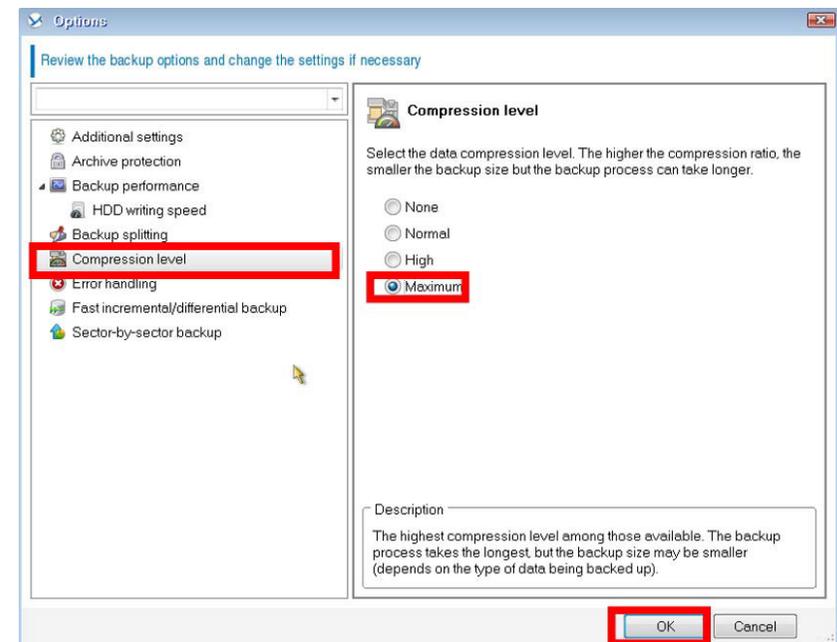
11. Choose the path and define a name for the backup. Click **OK**.



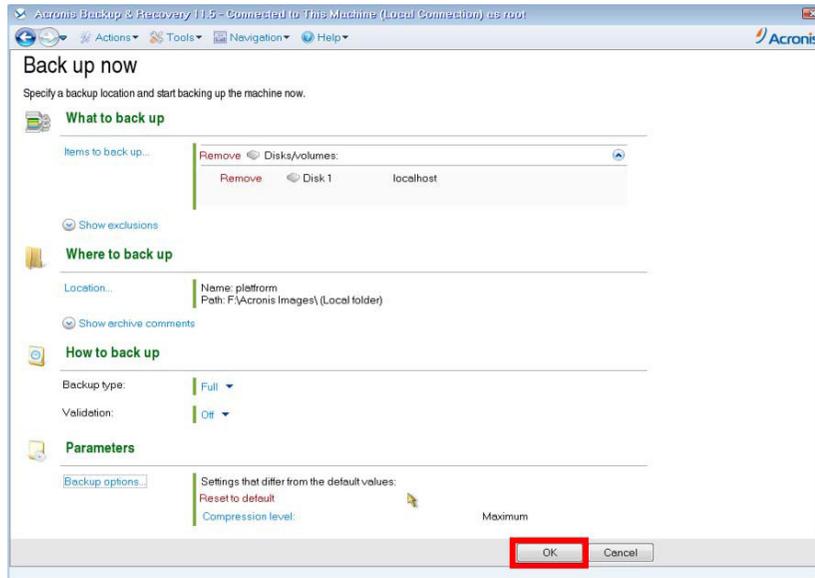
12. In the “Parameters” section, click **Backup options**.



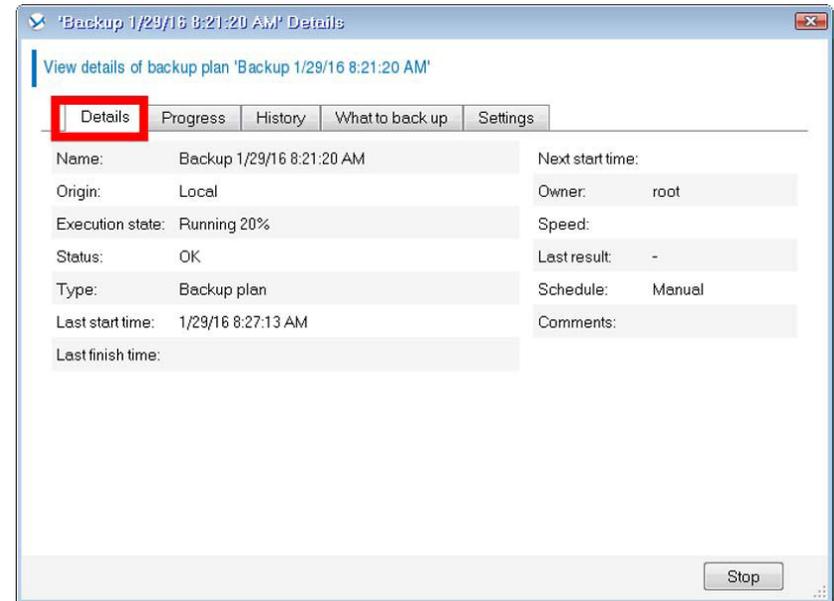
13. In the left-hand list, select **Compression level**. In the right-hand panel, select **Maximum**. Click **OK**.



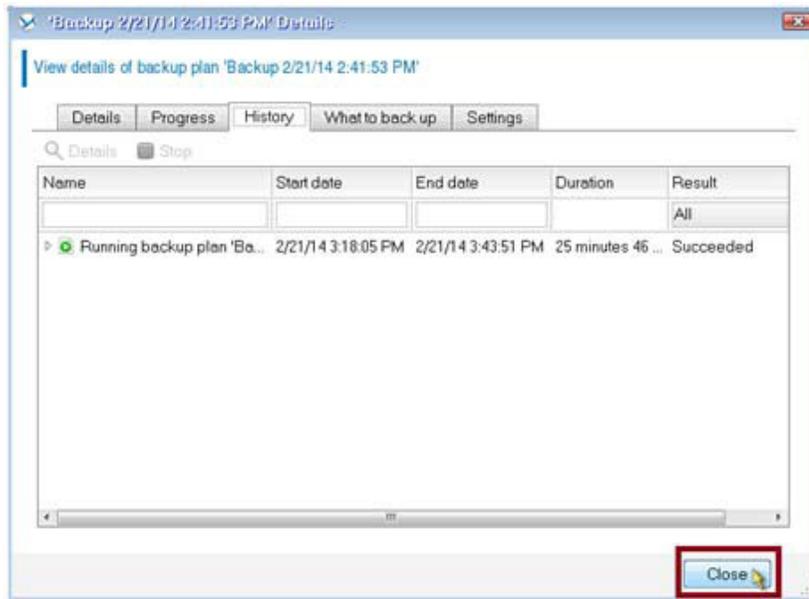
14. Verify that the configurations entered are correct. If they are, click **OK** to start the backup.



15. Backup begins. Click the Details tab to see details of the backup job that is in progress. Wait until backup is over.



16. When backup is over, check the results on the history tab. If the backup is successful, click **Close**. If it is not successful, repeat the backup procedure.



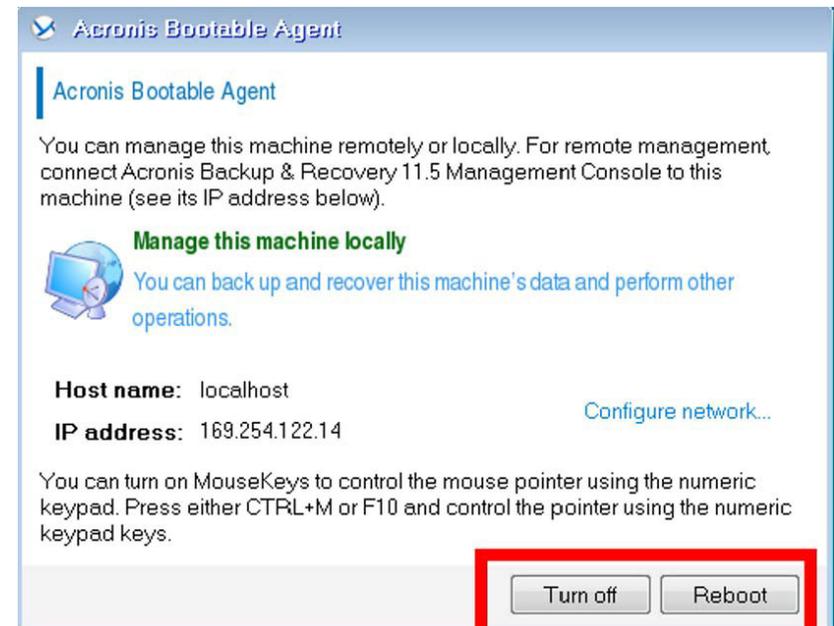
17. Click **Actions**. Click **Exit**.



18. Do one of the following:

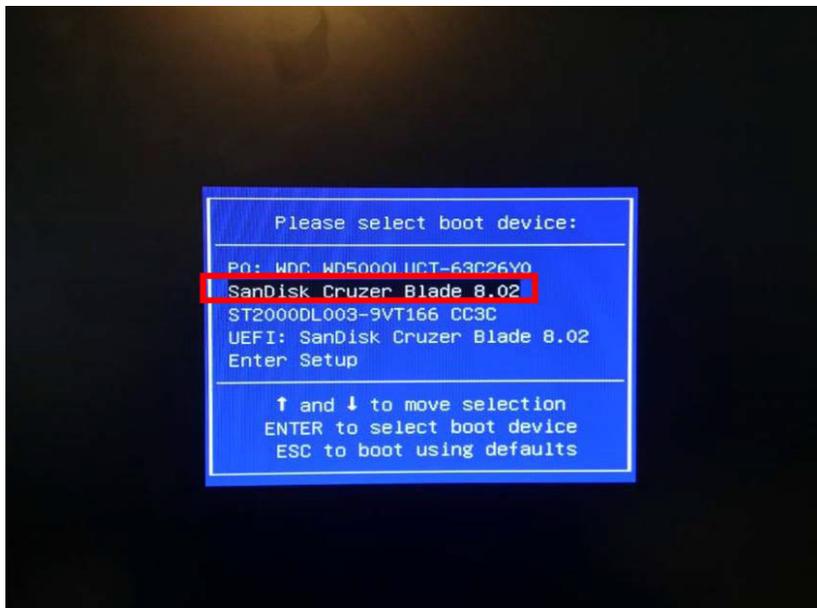
- Click **Reboot** to restart the PC
- Click **Turn off** to shut down the PC.

After the PC has restarted or shut down, disconnect the external USB boot device and the external USB storage device from the PC.

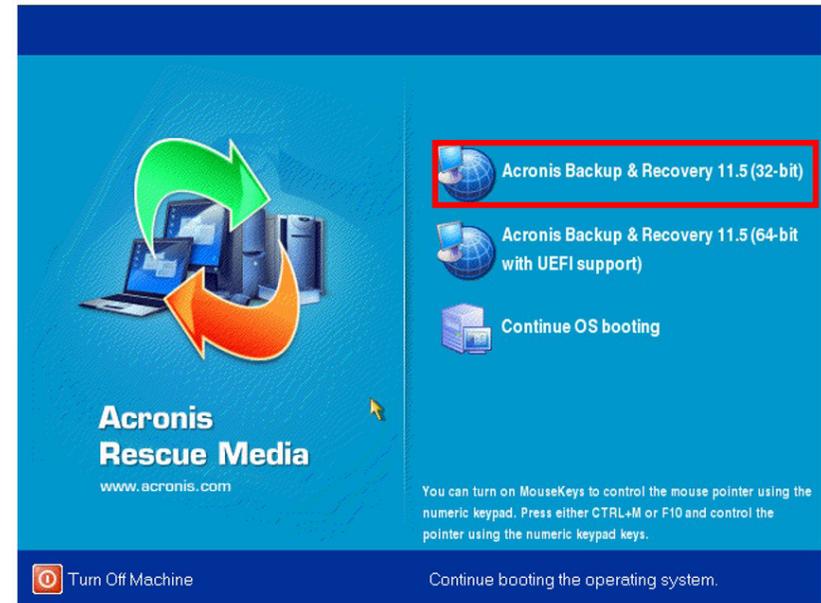


## Restoring a Backup Image

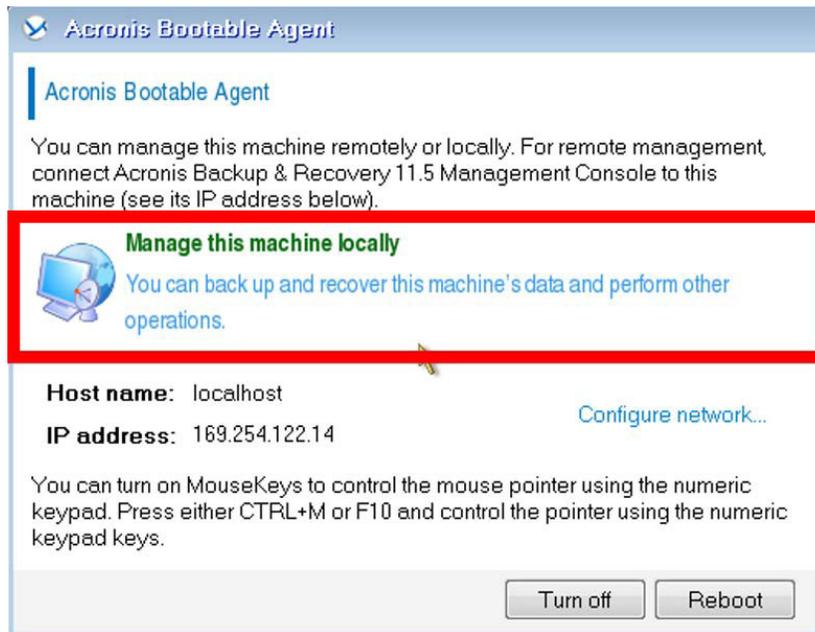
1. Shut down the PC.
2. Connect to the PC USB ports:
  - The keyboard
  - The mouse
  - The external Acronis® Backup & Recovery USB boot device
3. Switch on the PC. When the BIOS splash screen appears, press the key that corresponds to the boot menu (depending on the PC manufacturer; for example for B&R PC press F11, for Allen Bradley PC press F12).
4. The boot menu appears. Select the external USB boot device and press **Enter**.



5. If the following popup appears, click **Acronis Backup & Recovery**.



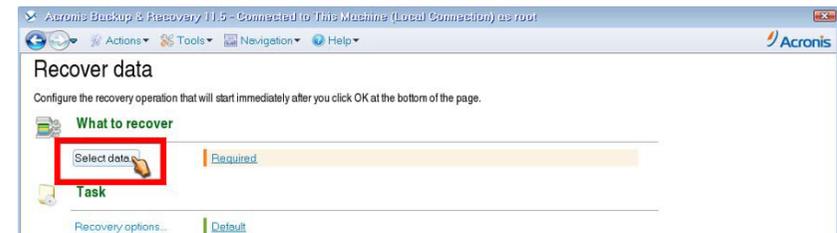
6. Connect the external USB storage device. If the following popup appears, click **Manage this machine locally**.



7. Click **Recover**.



8. In the **What to recover** section, click **Select data**.

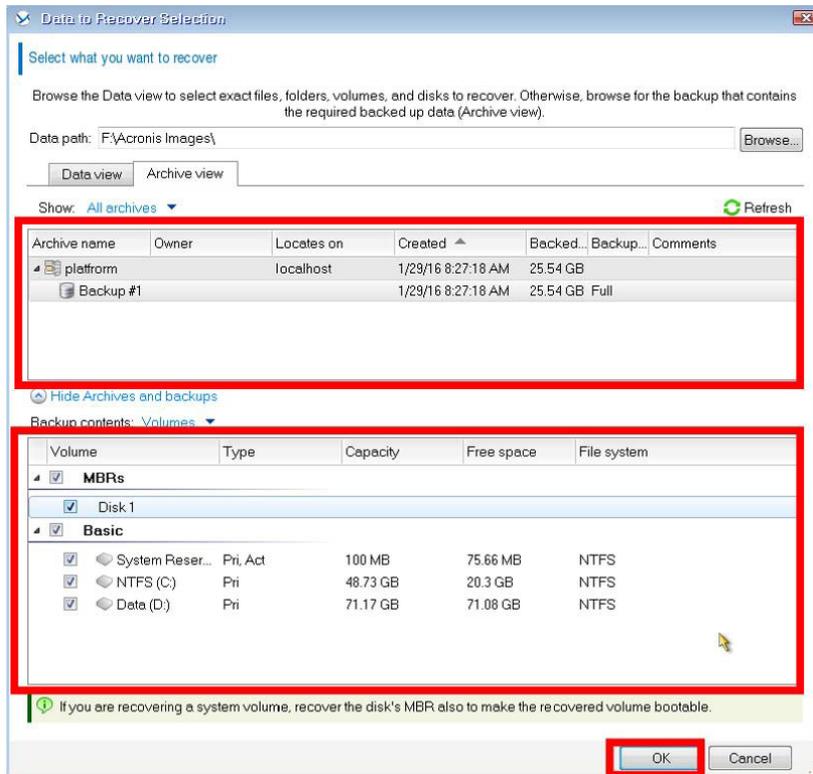


9. Click **Browse**.

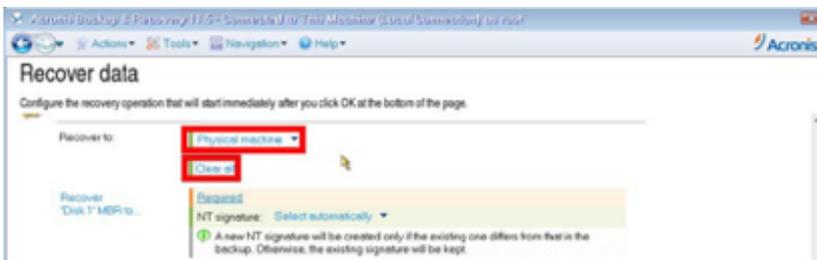


**NOTE** A backup image created with a previous version of Acronis® may not be visible in the bootable USB device. To see it, click **Refresh**.

10. Select the backup image archive and verify the Backup contents. Select the volume as described in previous step. Click **OK**.



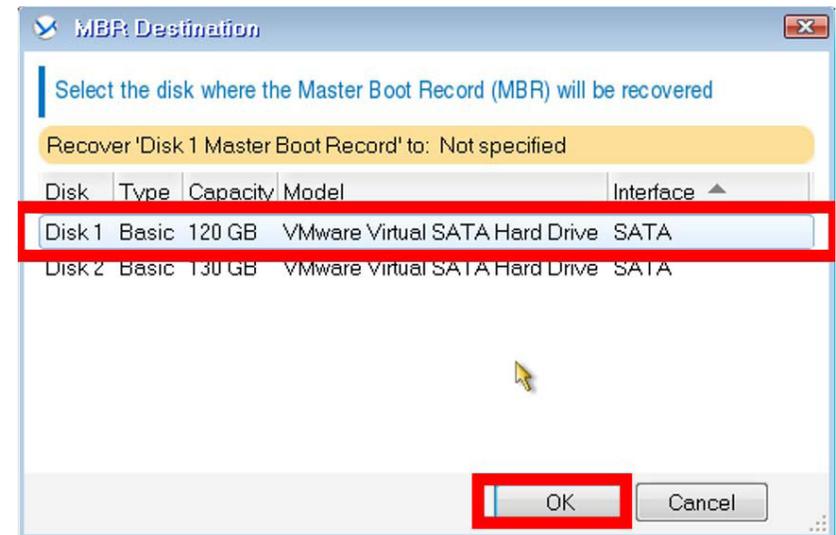
11. In the **Where to recover** section, select **Physical machine**. Click **Clear all** to configure all volumes to be restored.



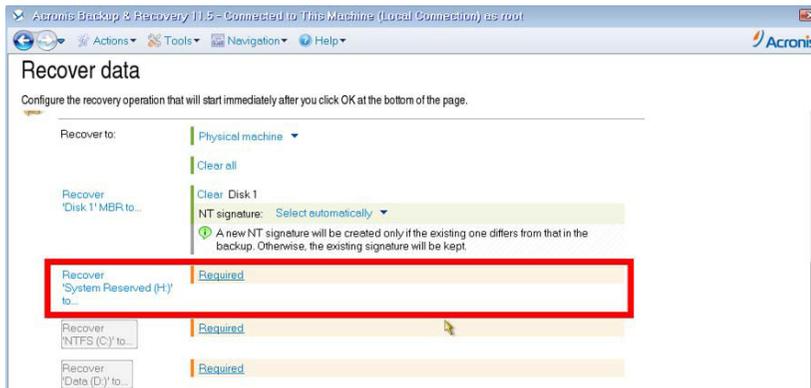
12. Next to **Recover 'Disk 1' MBR To**, click **Required**.



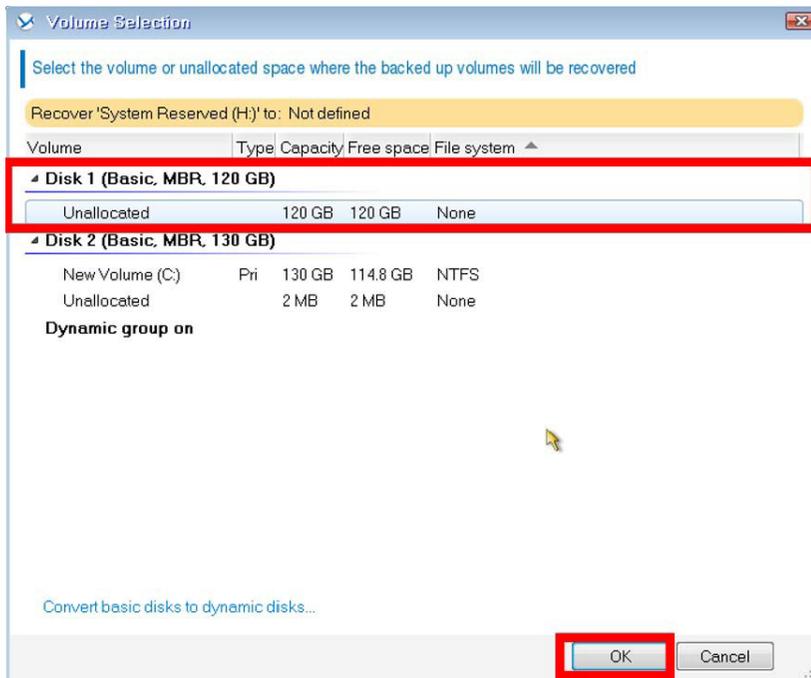
13. Select the Disk where the MBR will be recovered from the backup image archive. This is typically Disk 1. Click **OK**.



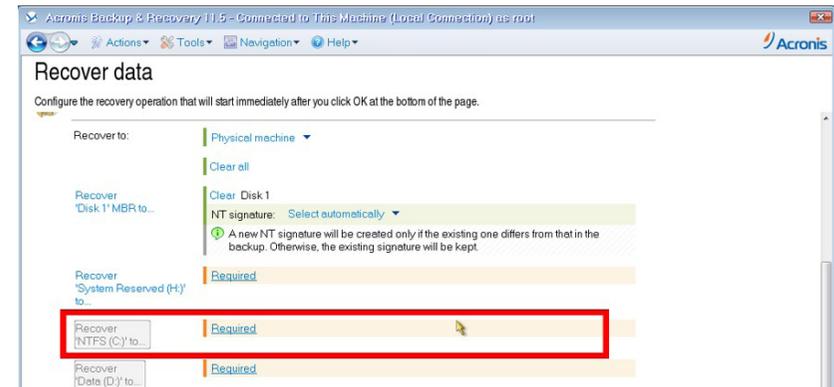
14. Next to **Recover 'System Reserved (H:)' to**, click **Required**.



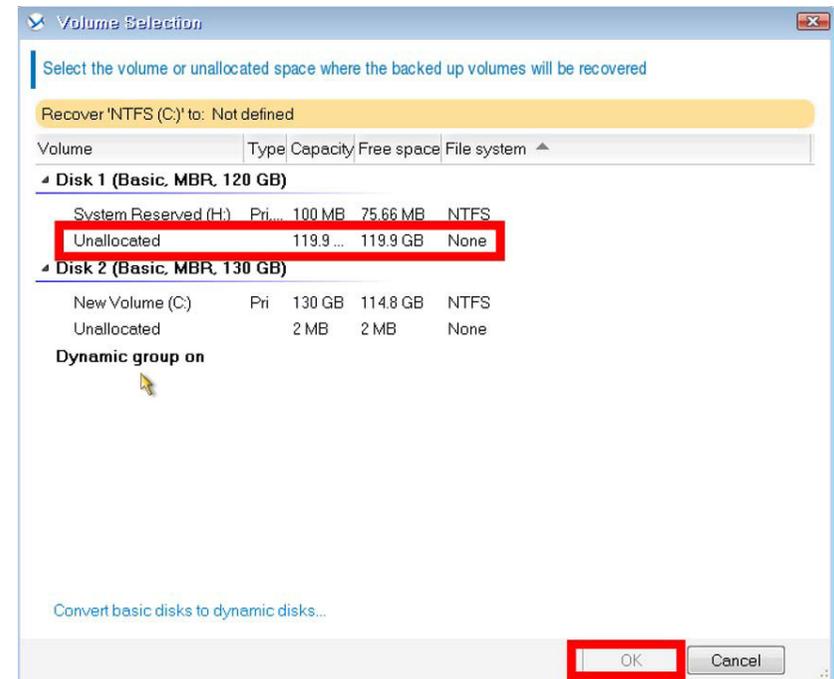
15. Select the target disk where the partition will be restored from the backup. This is typically Disk 1. If the target disk is already partitioned, select the corresponding partition. Click **OK**.



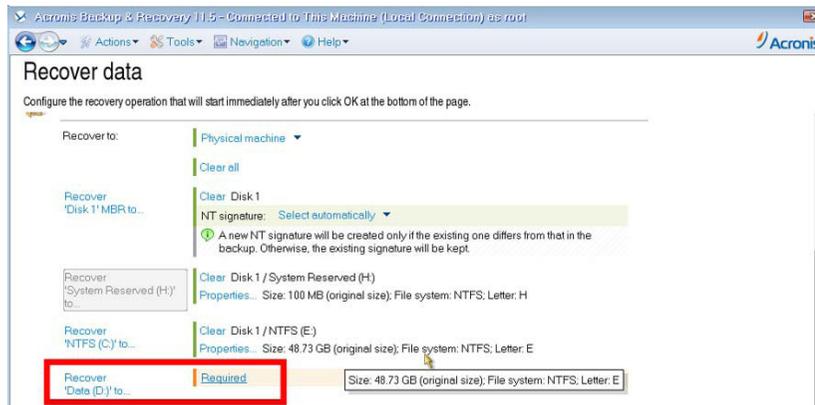
16. Next to **Recover 'NTFS (C:)' to**, click **Required**.



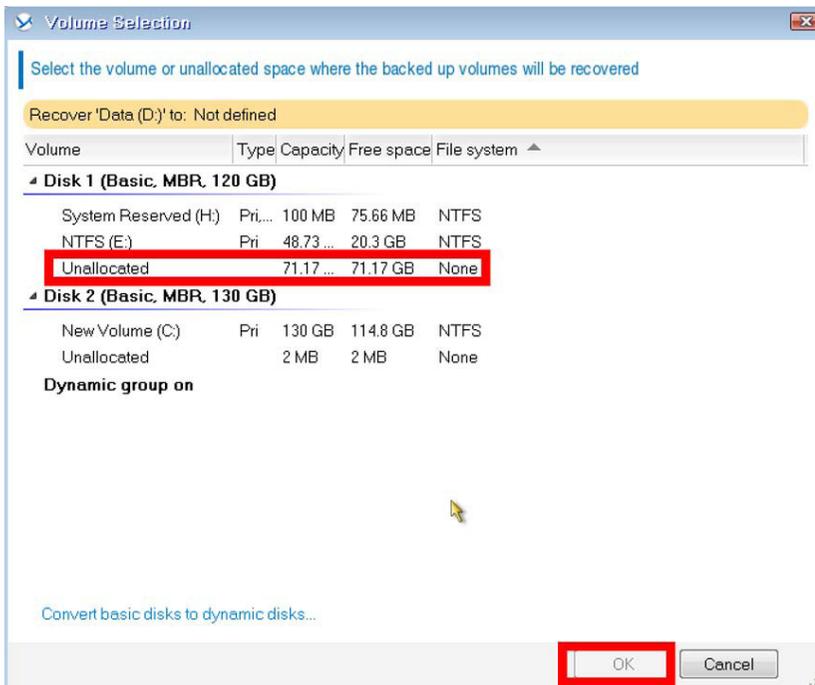
17. In the Disk 1 section, select **Unallocated**. If the disk is already partitioned, select the corresponding partition. Click **OK**.



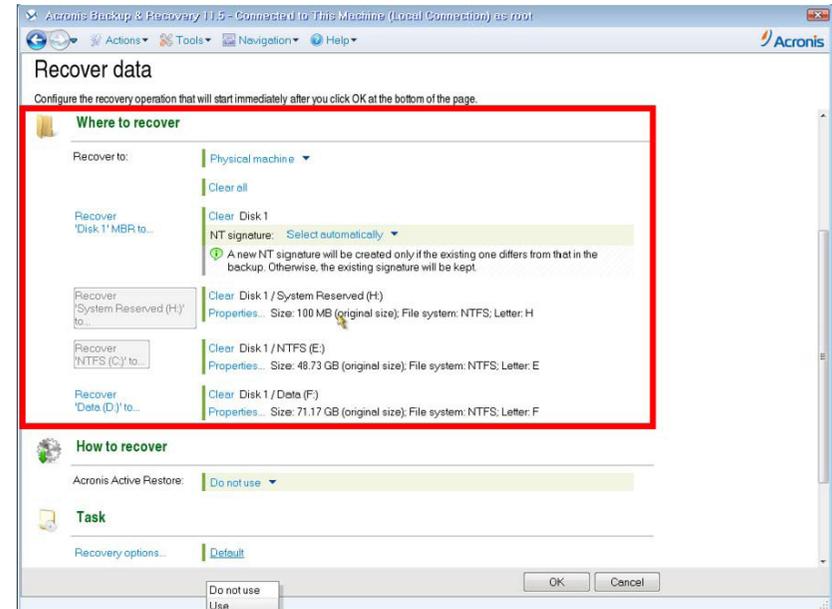
18. Next to **Recover Data (D:) to**, click **Required**.



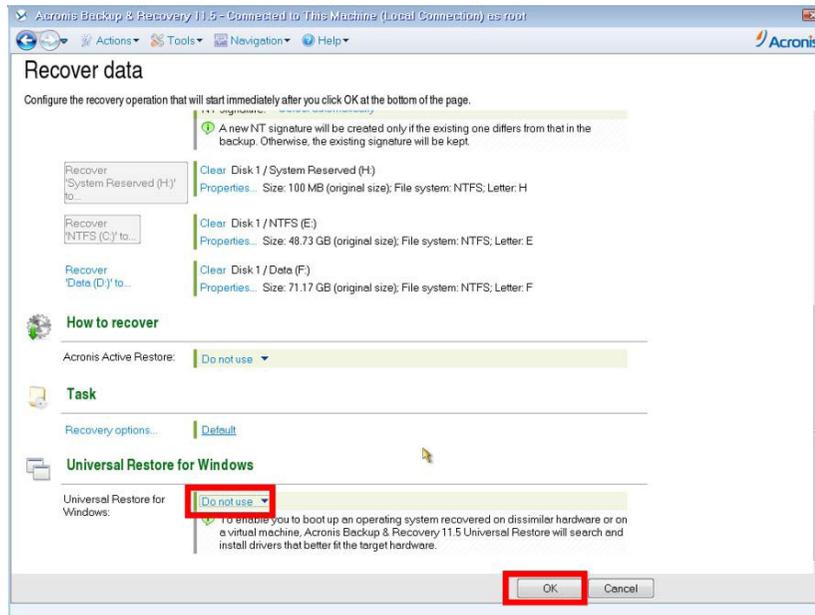
19. In the Disk 1 section, select **Unallocated**. If the disk is already partitioned, select the corresponding partition. Click **OK**.



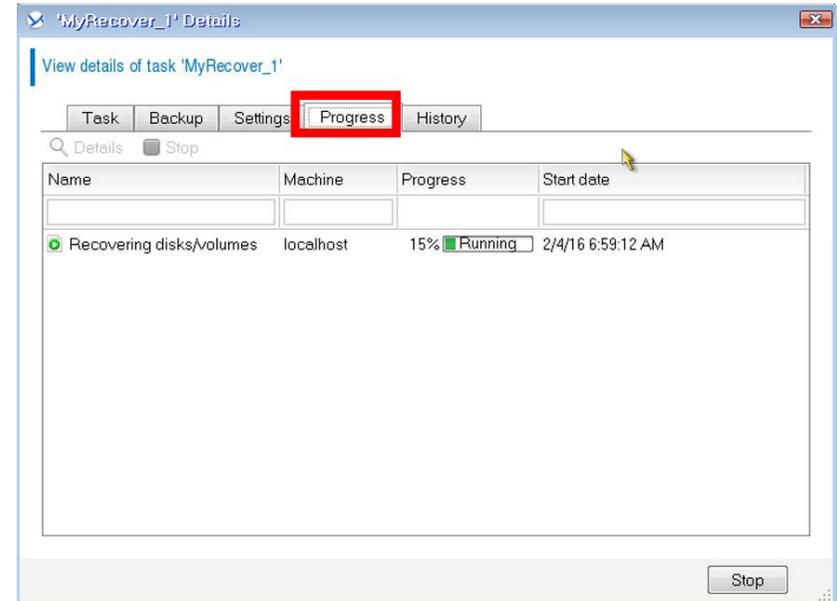
20. Verify that all information in the **Where to recover** section is correct.



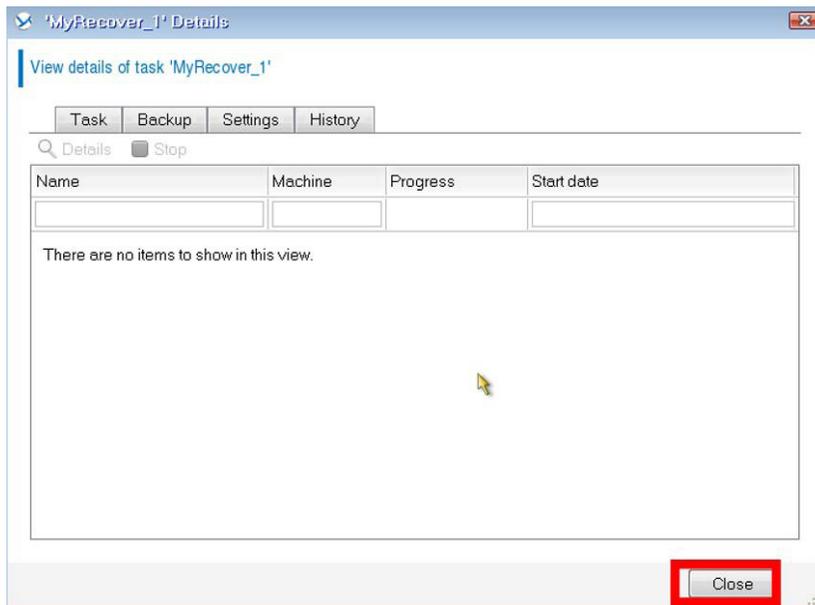
21. Scroll down to the **Universal Restore for Windows** section. Next to Universal Restore for Windows, select **Do not use**. Click **OK**. The restoration process starts.



22. Access the Progress tab to see the information about the recovering.



23. When the recovery is complete, click **Close**.



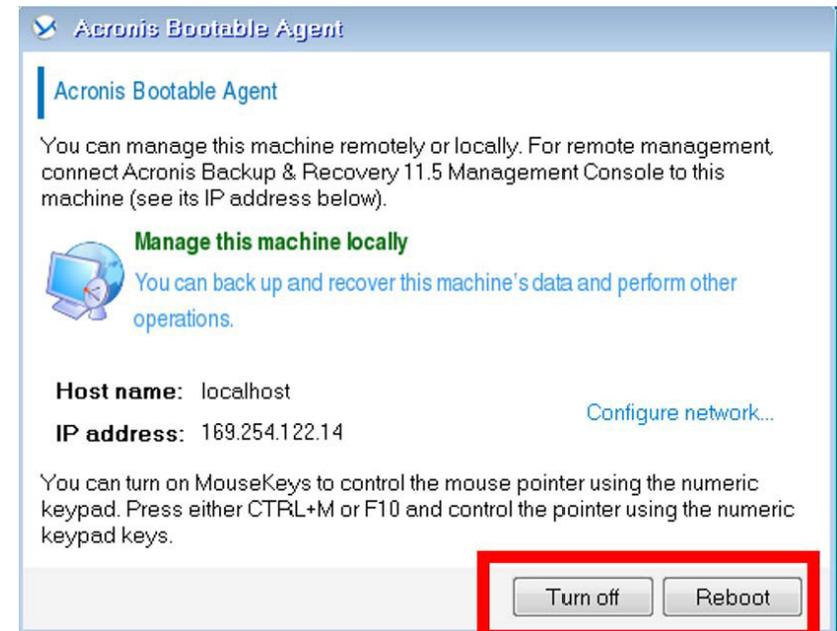
24. Click **Actions**. Click **Exit**.



25. Do one of the following:

- Click **Reboot** to restart the PC
- Click **Turn off** to shut down the PC.

After the PC has restarted or shut down, disconnect the external USB boot device and the external USB storage device from the PC.



# System Maintenance

## General Maintenance

Before doing any work, read and understand [Operator and Equipment Safety](#).

The following schedule is only a guideline. Depending on use, components may need more frequent maintenance.

### Maintenance Schedule

Schedule	Maintenance Procedures	Procedures
Every Three Months	System Cleaning	Frequency of routine cleaning should be determined by the user.
		Cleaning agents must be compatible with the system materials of construction.
		After cleaning, drain the system and rinse all cleaned lines and components with purified water.
	General Inspection	Ensure there are no leaks in valves, holders, pumps, connectors and gaskets.
		After assembly or maintenance, ensure that all components are properly installed and tightened.
	Mechanical Preventive Maintenance	Ensure that all connections, pumps and valve seals are closed and tightened.
		Ensure that the pressure regulators (low pressure and high pressure) are working properly.
	Electrical Preventive Maintenance	Ensure that all cables and electrical connections are secure and undamaged.
		Ensure that the system is electrically grounded.
		Ensure that the covers and electrical box doors are closed.
Sensor Maintenance	Ensure that the key sensors are working properly. (Refer to the manufacturer's technical documentation.)	

Every Six Months	External Cleaning	To minimize corrosion, completely dismantle and clean all fittings. During cleaning, verify that gaskets, membranes, and other safety components are in good condition.
		Do not use a water hose or spray gun.
		Do not use abrasive material.
		Do not expose the equipment to hydrogen peroxide.
		Do not allow long-term contact with chlorides.
	See <a href="#">Cleaning Procedure</a> .	
Safety and Electrical Maintenance	Ensure that all safety elements are working properly.	
	Ensure that all electrical connections are secure.	
	Ensure that the emergency stops are working properly.	
Pump Maintenance	Ensure the pump seal, O-rings, nuts, and bolts are secure and not damaged.	
Seal Maintenance	Replace all seals (connection, pump, valves...).	
Calibration	Verify the calibration of all instruments.	
Annually	General Inspection	Visually inspect the system for damage and corrosion.
		Ensure that the system position is correct (for example, length of legs).
	Replace Components	Replace all valve membranes and seals.
		Replace all gaskets and seals of all connections of the piping (TC and O-rings).
		Replace the sensor seals.
		Release air in the air regulators. Remove and clean the air filter.
		Replace the air filter mats in the electrical cabinet.
	Electrical Maintenance	Ensure that the main connections in the electrical box are tight.
		Investigate the alarm list (or log book) since last maintenance and check the alarms that have stopped the system, for example "pump defect". Ensure that all problems have been corrected.
	PC Maintenance	Delete all temporary files (.TMP) from the hard disk using the Windows® file manager or Explorer.
		To ensure there is always enough free space on the hard disk to write automatic backup files during production runs, delete or save all unnecessary files onto an external USB storage device.
Clean the screen with a special anti-static spray and a soft wipe.		

## Pressure Switch Activation

Check the integrity of the pump diaphragms and manometer, pH, pressure, etc if the pressure switch (PSH001 or PSH 002) is activated.

## Cleaning Procedure

1. Wet a soft cloth or sponge with a cleaning agent compatible with 303 and 304 stainless steel.
2. Clean all external stainless steel parts.
3. Rinse thoroughly with clean cloth or sponge soaked with rinse water.
4. Remove rinse water with absorbent wipes (corrosive impurities may be contained in rinse water).
5. Wipe down all parts of the system with a cloth dampened with a 70% ethanol or isopropyl alcohol solution.
6. Ensure that no rinse water or cleaning solution is left on the equipment.

## UV Lamp

**NOTE** Strong vibrations, high temperatures, and frequent on and off switching of the system can negatively effect the life of the UV lamp. A typical life span is from 1 to 2 years (8,000 to 16,000 hours).

### CAUTION

The UV lamp contains mercury.



## General Recommendations

- The UV lamps are fragile. Handle them with care.
- Wear gloves for manipulating a UV lamp. Any deposit on the quartz surface can cause premature aging and reduce performance.
- Store new lamps securely in a break proof container.
- The UV lamps contain mercury. Recycle or dispose of used or broken bulbs according to local, state, or federal laws.

## Replacing a Lamp

- Allow the lamp to cool completely before replacing it.
- Touch only the lamp socket. Never touch the glass bulb or tubes.
- Keep new lamps in original packaging until they are used.

## Handling a Broken Lamp

- Do not bend over broken shards or inhale the vapors. Mercury vapor is a health hazard.
- Disconnect the lamp from the power supply by switching off the device, unplugging it, or switching off the house fuse.
- Air out the room for up to 20 minutes.
- Wear disposable gloves when removing the shards. Prevent injury from sharp edges.
- Collect the shards and remaining parts of the lamp in a sealable container.
- Label the container and dispose of it according to local, state, or federal laws.

# Calibration

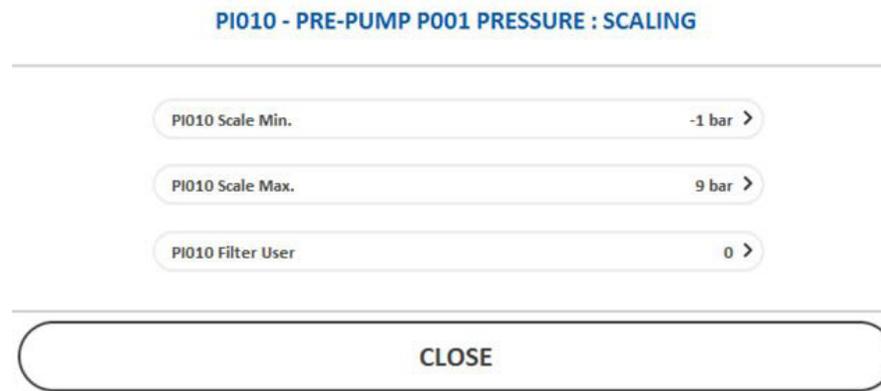
# Calibrating the Analog Instruments

**NOTE** Calibration events are not automatically recorded as electronic records by CCP software. For information on compliance with 21CFR211.68, refer to installation SOPs.

Adjust the calibration of analog instruments using the Scaling popup on the user interface display. The popup is accessible for each analog value that can be calibrated.



Press **Scaling** to open the Scaling popup:



## Scale Min. / Scale Max.

Analog inputs are scaled to engineering units in the PLC. Zero and full-scale values for each analog input are configurable from the associated scaling popup. Raw data is not modifiable.

To modify the Scale Min. or Scale Max. values, click the value and enter a new value in the Data Entry Prompt that appears.

## Input Filtering

Analog inputs can be configured to include filtering of the raw data signal. A value of 0 disables filtering; a value of 99 enables maximum filtering.

The PLC computes an actual filter value from  $(100 - \text{User Filter Value}) / 100$  which converts the 0–99 user filter value to 1.00–0.01 to be used in the filtering equation.

The filtered raw value is computed once per second using the equation:

$(\text{Raw Value} \times \text{Actual Filter Value}) + (\text{Previous Filtered Raw Value} \times (1 - \text{Actual Filter Value}))$

To modify the Filter Value, click the value in the scaling popup and enter a new value in the Data Entry Prompt that appears.

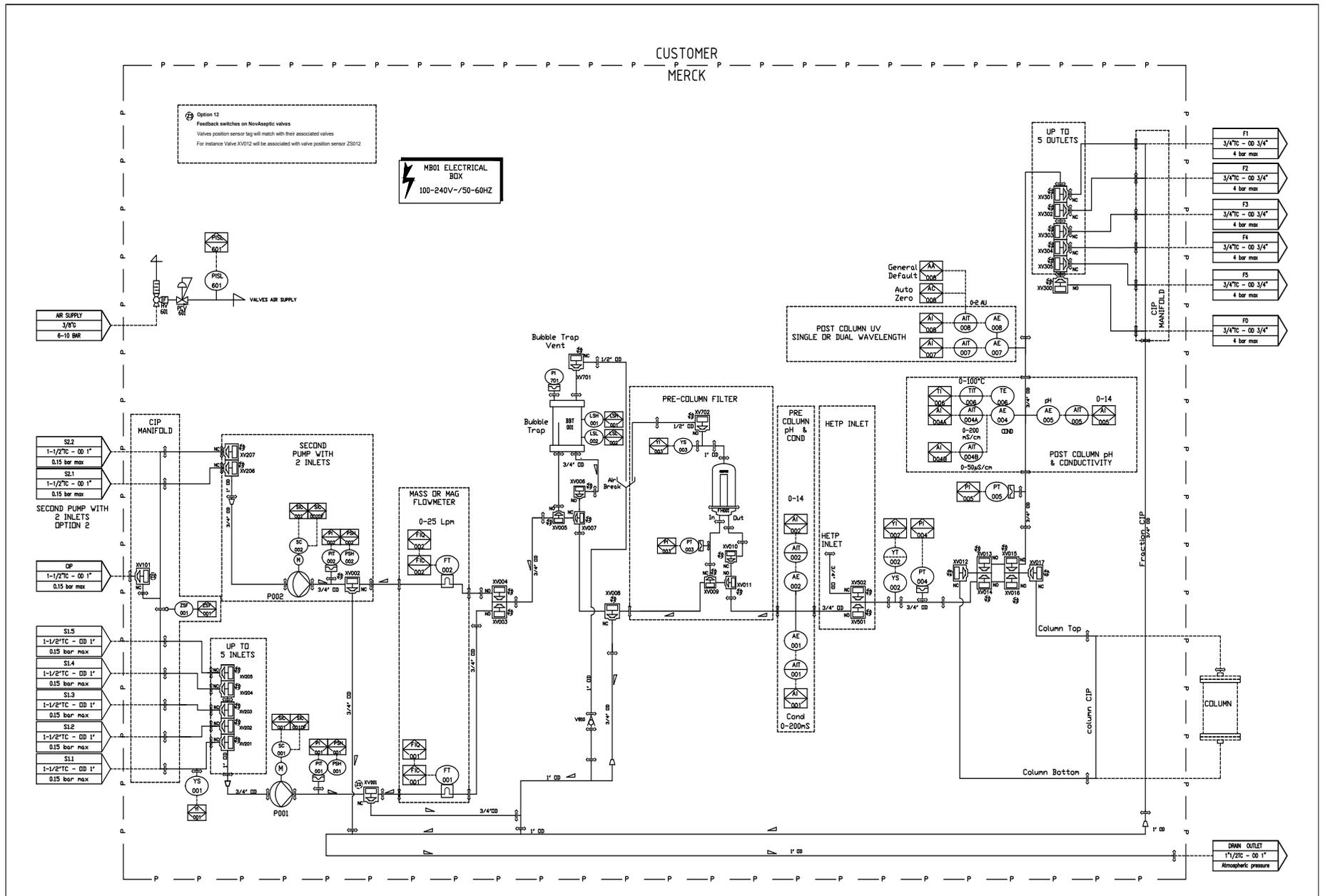
## Calibration Verifications

### Pressure PIT001, PIT002 (option), PT003 (option), PT004, PT005

Estimated duration: 1 hour

1. Clamp the pressure sensors off the system and install them on a manifold with a reference (calibrated) pressure sensor. Depending on the manifold, all sensors can be checked at once, or in several batches.
2. Record the 0 pressure for all pressure sensors, including reference sensor.
3. Increase pressure inside the manifold with compressed air to 2 bar  $\pm 0.2$ . Wait for pressure to stabilize.
4. Record the pressure for all pressure sensors, including reference sensor.
5. Increase pressure to 3.9 bar  $\pm 0.2$ . Do not exceed 4.1 bar. Wait for pressure to stabilize.
6. Record the pressure for all pressure sensors, including reference sensor.
7. Release the pressure.
8. Clamp off the sensors and reconfigure the system as usual.
9. Check that all records are within  $\pm 0.1$  bar from the reference sensor.

**NOTE** PI701 accuracy can be checked when performing calibration of one or more pressure sensors ( $\pm 0.4$  bar).



## UV AIT007 (option) and AIT008 (option)

Estimated duration: 30 minutes.



1. Place into the UV emitting chamber (dedicated drawer) one reference (calibrated) filter – value between 0 and 2 AU. Wait for absorbance to stabilize (filter warm-up time).
2. Record the absorbance user interface value for the UV sensors according to their wavelength.
3. Remove the first filter and place a second one. Wait for absorbance to stabilize (filter warm-up time).
4. Record the absorbance values.
5. Do the same for the third filter.
6. Reconfigure the system as usual.
7. Ensure that all records are within  $\pm 0.04$  AU from the reference filters.

## Conductivity AIT001 (option), AIT004A (option), and AIT004B (option)

Estimated duration: 1 hour

1. Prepare following solutions:
  - Solution\_10: volume > 0.3 L  
5 mS/cm < conductivity < 20 mS/cm
  - Solution\_100: volume > 0.3 L  
80 mS/cm < conductivity < 120 mS/cm
  - Solution\_200: volume > 0.3 L  
160 mS/cm < conductivity < 190 mS/cm

**NOTE** For solution\_200, specific conductivity solution may be used.

2. Prepare a reference conductivity sensor calibrated for this conductivity range.
3. Remove the conductivity probes AE001 (option) and AE004 (option).
4. Dip the probes into solution\_10. Wait for conductivity to stabilize.
5. Record the user interface and reference conductivity values. Rinse and dry the probes.
6. Dip the probes into solution\_100. Wait for conductivity to stabilize.
7. Record the HMI and reference conductivity values. Rinse and dry the probes.
8. Dip the probes into solution\_200. Wait for conductivity to stabilize.
9. Record the user interface and reference conductivity values. Rinse and dry the probes.

10. Install the probes back on the system and reconfigure the system as usual.
11. Ensure that all records are within  $\pm 4$  mS/cm of the reference sensor.

## Conductivity AIT004B (option)

Estimated duration : 1 hour

1. Prepare following solutions :
  - Solution\_5: volume > 0.3 L  
1  $\mu$ S/cm < conductivity < 10  $\mu$ S/cm
  - Solution\_20: volume > 0.3 L  
10  $\mu$ S/cm < conductivity < 30  $\mu$ S/cm
  - Solution\_50: volume > 0.3 L  
30  $\mu$ S/cm < conductivity < 50  $\mu$ S/cm
2. Prepare a reference conductivity sensor calibrated for this conductivity range.
3. Remove the conductivity probe AE004 (option).
4. Dip the probes into solution\_5. Wait for conductivity to stabilize.
5. Record the user interface and reference conductivity values. Rinse and dry the probes.
6. Dip the probes into solution\_20. Wait for conductivity to stabilize.
7. Record the user interface and reference conductivity values. Rinse and dry the probes.
8. Dip the probes into solution\_50. Wait for conductivity to stabilize.
9. Record the user interface and reference conductivity values. Rinse and dry the probes.

10. Install the probes back on the system and reconfigure the system as usual.
11. Ensure that all records are within  $\pm 1 \mu$  S/cm of the reference sensor.

## Temperature TIT006 (option)

Estimated duration: 2 hours

1. Prepare a TCU and a reference calibrated temperature sensor.
2. Prepare a temperature control bath.
3. Remove the temperature probe TE006.
4. Dip the probes into a temperature control bath set at 2 °C. Wait for temperature to stabilize.
5. Record the user interface and reference temperature values.
6. Dip the probes into the temperature control bath set at 20 °C. Wait for temperature to stabilize.
7. Record the user interface and reference temperature values.
8. Dip the probes into the temperature control bath set at 40 °C. Wait for temperature to stabilize.
9. Record the user interface and reference temperature values.
10. Install the probes back on the system and reconfigure the system as usual.
11. Ensure that all records are within  $\pm 1$  °C of the reference sensor.

## pH AIT002 (option) and AIT005 (option)

Estimated duration: 1 hour

1. Prepare following pH buffers:
  - Buffer\_4: buffer pH  $\approx$  4
  - Buffer\_7: buffer pH  $\approx$  7
  - Buffer\_9: buffer pH  $\approx$  9
2. Prepare a reference pH sensor calibrated for this conductivity range. Or prepare certified reference pH buffers.
3. Remove the pH probes AE002 (option) and AE005 (option).
4. Dip the probes into buffer\_4. Wait for pH to stabilize.
5. Record the user interface value and reference pH values if used. Rinse and dry the probes.
6. Dip the probes into buffer\_7. Wait for pH to stabilize.
7. Record the user interface value and reference pH values if used. Rinse and dry the probes.
8. Dip the probes into buffer\_9. Wait for pH to stabilize.
9. Record the user interface value and reference pH values if used. Rinse and dry the probes.
10. Install the probes back on the system and reconfigure the system as usual.
11. Ensure that all records are within  $\pm 0.1$  pH of the reference sensor.

## Flowmeter FT001 (option)

Estimated duration: 1.5 hours

1. Open flowpath P001 (speed control). close XV004, bypass the BBT and the filter. Open S1.1 inlet flowpath.
2. Open column forward flowpath (with the column CIP spool installed). Close F0.
3. Clamp on F0 a reference (calibrated) flowmeter.
4. Record the 0 flowrate, including reference sensor.
5. Open F0. Run P001 at 25%. Wait for flowrate to stabilize.
6. Record the flowrate, including reference.
7. Increase P001 speed to 50%. Wait for flowrate to stabilize.
8. Record the flowrate, including reference.
9. Increase P001 speed to 100%. Wait for flowrate to stabilize.
10. Record the flowrate, including reference.
11. Stop the pump. Clamp off the reference flowmeter and reconfigure the system as usual.
12. Ensure that all records are within  $\pm 1\%$  of the measured value from the reference flowmeter.

## Flowmeter FT002 (option)

Estimated duration: 1.5 hours

1. Open flowpath P002 (speed control). Close XV003, bypass the BBT and the filter. Open S2.1 inlet flowpath.
2. Open column forward flowpath (with the column CIP spool installed). Close F0.
3. Clamp a reference (calibrated) flowmeter on F0.
4. Record the 0 flowrate, including reference sensor.
5. Open F0. Run P002 at 25%. Wait for flowrate to stabilize.
6. Record the flowrate, including reference.
7. Increase P002 speed to 50%. Wait for flowrate to stabilize.
8. Record the flowrate, including reference.
9. Increase P002 speed to 100%. Wait for flowrate to stabilize.
10. Record the flowrate, including reference.
11. Stop the pump. Clamp off the reference flowmeter and reconfigure the system as usual.
12. Ensure that all records are within  $\pm 1\%$  of the measured value from the reference flowmeter.

# Troubleshooting

# Troubleshooting

Component	Symptom	Corrective Action
System	No system components are operating and there is no power.	Ensure that system is plugged in to an electrical source and switched on.
		Ensure that the main disconnect is not turned off.
		Ensure that energy supply specifications are met.
		Ensure that the Emergency Stop is not engaged and the reset emergency/ HP blue light is illuminated.
		Ensure that all circuit breakers are on.
		Ensure that all circuit breakers are not stripped.
		Ensure that correct tapings are selected on the transformer.
	No system components are operating, but system has power.	Ensure that Ethernet cables are connected and plugged in properly and there is power to the internal hub.
		Ensure that the software is correctly installed.
		Ensure that all 24 VDC fuses are intact.
		Ensure that air supply is connected and turned on.
		Ensure that the system is not in critical alarm status.
No power to the system.	Press the Reset emergency/HP button if the light is not blue.	
	Ensure that the circuit breaker is ON.	
Pneumatics	No pressure or low pressure	Ensure that the system power is connected to the PLC.
		Purge the filter to ensure that the regulator filter is not blocked.
		Operate the purge valve to ensure there is no air leak in the pressure regulator.
	High pressure alarm is activated at incorrect level	Verify that the pressure setting is correct (for the correct value, see the P&ID).
		Ensure that high pressure alarm is set correctly.

PLC	The system does not respond when any button is clicked	Ensure that the PLC is in Run mode.
	There is no communication	Ensure that PLC is powered up, RUN LED is on, and LINK LEDs are flashing.
		Verify that the Fault light is not illuminated. Ensure that PC and PLC connections and cables are not faulty.
PLC is not in Run mode and/or the LINK LED is not flashing	Ensure that the software is correctly installed.	
Pump	Pump does not operate	Ensure that the system is not in critical status. Ensure that the main circuit breaker in the electrical cabinet is on. Ensure that there is no alarm on the pump, directly on the drive. Verify that the pressure is not above 4.2 bar.
		Pump speed at 100%. Velocity not optimal: potential protein denaturation.
Valves	Valve does not operate.	Ensure that the system is not in critical alarm status.
		Ensure the integrity of the pneumatic hoses; check them for leaks and pinches.
Individual components and instruments	See manufacturers' documentation.	

# Spare Parts

Parts necessary for annual maintenance are listed with "YES" in the Preventive Maintenance column.

Description	Preventive Maintenance	Quantity per Package	Catalog Number
CoPrime™ TC Gaskets Kit	YES	1	SPKCBS20LGKT001
CoPrime™ 2nd Pump TC gasket Kit	YES	1	SPKCBS20LGKT002
CoPrime™ Bubble Trap Gasket Kit	YES	1	SPKCBS20LBBT001
CoPrime™ Bubble Trap Tube and Gasket Kit	NO	1	SPKCBS20LBBT002
Valve Diaphragm NA12/22, EPDM	NO	1	NA12/22
Valve Diaphragm NA18/22, EPDM	NO	1	NA18/22
Valve Diaphragm NA25/22, EPDM	NO	1	NA25/22
CoPrime™ Valve Diaphragms Kit	YES	1	SPKCBS20LVLV001
CoPrime™ 2nd Pump Valve Diaphragms Kit	YES	1	SPKCBS20LVLV002
CoPrime™ Quattroflow 1200S pump elastomer kit	YES	1	SPKCBS20LPMP001
CoPrime™ Quattroflow 1200S pump shaft-bearing-cap unit	NO	1	SPKCBS20LPMP002
CoPrime™ Check Valve	YES	1	SPKCBS20LNRV001
CoPrime™ Pressure switch 4.2 bar	NO	1	SPKCBS000INS001
CoPrime™ Pressure sensor 5 bar	NO	1	SPKCBS000INS002
CoPrime™ Pressure gauge 5 bar	NO	1	SPKCBS000INS003
CoPrime™ Level detector	NO	1	SPKCBS000INS004
CoPrime™ Level detector adaptator	NO	1	SPKCBS000INS005
CoPrime™ Bubble Trap level switches	NO	2	SPKCBS000INS006
CoPrime™ Air detector	NO	1	SPKCBS000INS007
CoPrime™ Cable blank label sheet	NO	1	SPKCBS000LBL001
CoPrime™ Tags label sheet	NO	1	SPKCBS000LBL002
Pneumatic actuator PA25/110, normally closed, stainless steel	NO	1	PA25/110
Pneumatic actuator PA18/100, normally open, stainless steel	NO	1	PA18/100
Pneumatic actuator PA18/110, normally closed, stainless steel	NO	1	PA18/110

Description	Preventive Maintenance	Quantity per Package	Catalog Number
Pneumatic actuator PA12/100, normally open, stainless steel	NO	1	PA12/100
Pneumatic actuator PA12/110, normally closed, stainless steel	NO	1	PA12/110
CoPrime™ Swivel casters	NO	2 (one with lock and one without)	SPKCBS000FRM001
NA12 Pneumatic actuator with Red Comp Spring, normally closed	NO	1	SPKCBS20LVLV003
Locking ring key NA12/90	NO	1	NA12/90
Locking ring key NA18/90	NO	1	NA18/90
Locking ring key NA25/90	NO	1	NA25/90
CoPrime™ Air Supply Kit	NO	1	SPKCBS000FRM002
CoPrime™ pH conductivity gaskets set	YES	2	SPKCBS000INS008
CoPrime™ conductivity sensor 200 mS/cm kit	NO	1	SPKCBS000INS009
CoPrime™ pH probe 0–14	NO	1	SPKCBS000INS010
CoPrime™ UV cell window gasket kit	YES	1 for 1 UV cell	SPKCBS000INS011
CoPrime™ UV Windows Kit, optical path length 10 mm	NO	1	SPKCBS000INS012
CoPrime™ UV Windows Kit, optical path length 20 mm	NO	1	SPKCBS000INS013
CoPrime™ UV Windows Kit, optical path length 5 mm	NO	1	SPKCBS000INS014
CoPrime™ UV Windows Kit, optical path length 2.5 mm	NO	1	SPKCBS000INS015
CoPrime™ UV Windows Kit, optical path length 1 mm	NO	1	SPKCBS000INS016
CoPrime™ UV Lamp and Gaskets Kit	NO	1	SPKCBS000INS017
CoPrime™ Dualbeam 254–280 μm UV sensor	NO	1	SPKCBS000INS018
CoPrime™ Dualbeam 254–300 μm UV sensor	NO	1	SPKCBS000INS019
CoPrime™ Dualbeam 254–313 μm UV sensor	NO	1	SPKCBS000INS020
CoPrime™ Dualbeam 280–300 μm UV sensor	NO	1	SPKCBS000INS021
CoPrime™ Dualbeam 280–313 μm UV sensor	NO	1	SPKCBS000INS022
CoPrime™ Dualbeam 300–313 μm UV sensor	NO	1	SPKCBS000INS023
CoPrime™ Single beam 254 μm UV sensor	NO	1	SPKCBS000INS024
CoPrime™ Single-beam 280 μm UV sensor	NO	1	SPKCBS000INS025
CoPrime™ Single-beam 300 μm UV sensor	NO	1	SPKCBS000INS026
CoPrime™ Single-beam 313 μm UV sensor	NO	1	SPKCBS000INS027
CoPrime™ Inductive sensor	NO	1	SPKCBS000INS028

Description	Preventive Maintenance	Quantity per Package	Catalog Number
CoPrime™ Mass flowmeter 25 LPM	NO	1	SPKCBS000INS029
CoPrime™ Mag flowmeter 25 LPM	NO	1	SPKCBS000INS030
Single position indicator	NO	1	PA1251/SP
CoPrime™ ZS labels sheet	NO	1	SPKCBS000LBL003
CoPrime™ Power supply 85–264 VAC, 48 VDC	NO	1	SPKCBS20LELC001
CoPrime™ Power supply 85–264 VAC, 24 VDC	NO	1	SPKCBS000ELC001
CoPrime™ PLC power supply 24 VDC, 5 VDC	NO	1	SPKCBS000ELC002
CoPrime™ Electronic circuit breaker 6A	NO	1	SPKCBS000ELC003
CoPrime™ Ebox filters IP55	YES	3	SPKCBS000ELC004
CoPrime™ Covers for connectors	NO	3	SPKCBS000ELC005
CoPrime™ Cube Ethernet/IP	NO	1	SPKCBS000ELC006
CoPrime™ Cube 32 digital input	NO	1	SPKCBS000ELC007
CoPrime™ Cube 16 digital output	NO	1	SPKCBS000ELC008
CoPrime™ Cube 4 analog input	NO	1	SPKCBS000ELC009
CoPrime™ Cube 4 analog output	NO	1	SPKCBS000ELC010
CoPrime™ Cube connection 20/67	NO	1	SPKCBS000ELC011
CoPrime™ Cube 24 digital outputs for solenoid valves	NO	1	SPKCBS000ELC012
CoPrime™ Converter pulse frequency 4–20 mA	NO	1	SPKCBS000ELC013
CoPrime™ Air sensor controller	NO	1	SPKCBS000ELC014
CoPrime™ Air sensor cable	NO	1	SPKCBS000ELC015
CoPrime™ Pump 1200S cable	NO	1	SPKCBS000ELC016
CoPrime™ M12 4-pin not shielded cable	NO	1	SPKCBS000ELC017
CoPrime™ M12 4-pin shielded cable	NO	1	SPKCBS000ELC018
CoPrime™ M12 8-pin shielded cable	NO	1	SPKCBS000ELC019
CoPrime™ 2 x 3/2 Evalves	NO	2	SPKCBS000ELC020
CoPrime™ Dual-beam UV sensor cable	NO	1	SPKCBS000ELC021
CoPrime™ Conductivity sensor cable	NO	1	SPKCBS000ELC022
CoPrime™ Single-beam UV sensor cable	NO	1	SPKCBS000ELC023
CoPrime™ pH sensor cable	NO	1	SPKCBS000ELC024
C8000 Custom configuration	NO	1	

## Conformity to the European Union Directive 2012/19/EU



In accordance to the European Union Directive 2012/19/EU on Waste Electric and Electronic Equipment (WEEE), the presence of this logo on the product indicates that it should not be disposed of in the normal waste stream but collected separately.

Go to [www.merckmillipore.com/weee](http://www.merckmillipore.com/weee) for details on how to ensure proper treatment of the product in different countries.

For information about recycling this product in accordance with European Union Directive 2012/19/EU, go to [http://www.merckmillipore.com/company/flx4/eu\\_regulatory\\_compliance](http://www.merckmillipore.com/company/flx4/eu_regulatory_compliance)

## Standard Product Warranty

The applicable warranty for the products listed in this publication may be found at: [www.merckmillipore.com/terms](http://www.merckmillipore.com/terms) (within the “Terms and Conditions of Sale” applicable to your purchase transaction).

## Technical Assistance

For more information, contact the office nearest you or visit the Technical Service page at [www.emdmillipore.com/techservice](http://www.emdmillipore.com/techservice).

Worldwide contact information is available at [www.emdmillipore.com/offices](http://www.emdmillipore.com/offices).

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