Operating Instructions

Original Operating Instructions

Resolute® BioSC Software

For Resolute® Flowdrive Atex S, M, L XL | Resolute® BioSC Pilot | Resolute® Flowdrive MU

SARTORIUS

Contents

1 About These Instructions

1.1 Scope

1.1.1 High Level Description: Hardware and Software

These operating instructions refer to a solvent module equipped with Resolute® BioSC software.

The solvent module is controlled by an automated system based on a human-machine interface, as shown on the figure below:

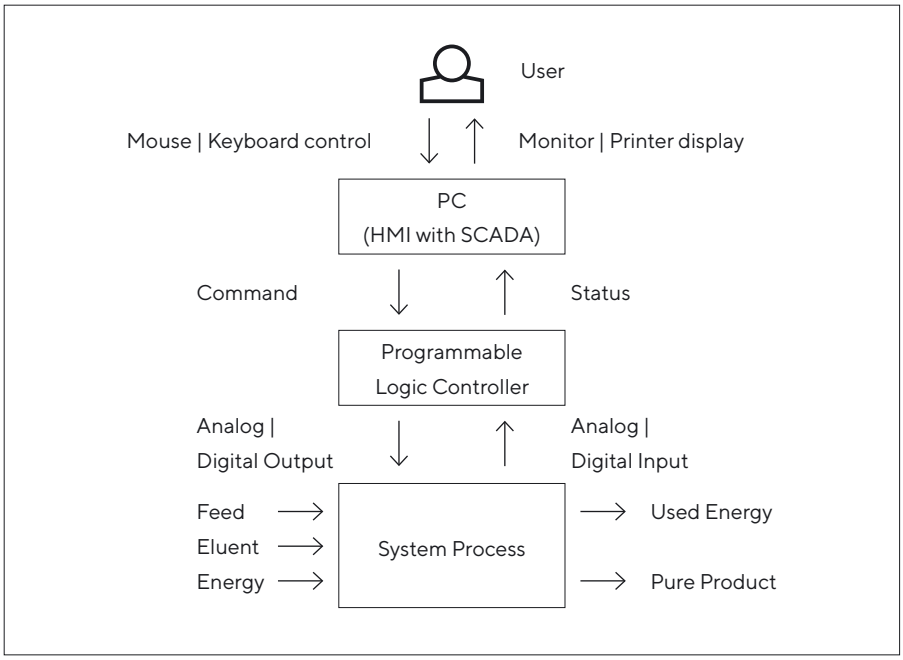


Fig. 1: Hardware architecture of the Resolute® control module

The Resolute® BioSC control system includes a computer, operator interface, controller, and decentralized modules connected to a process field network. Each module is assigned to its own specific address so it can be differentiated from its neighbor.

The computer is housed in the electrical cabinet.

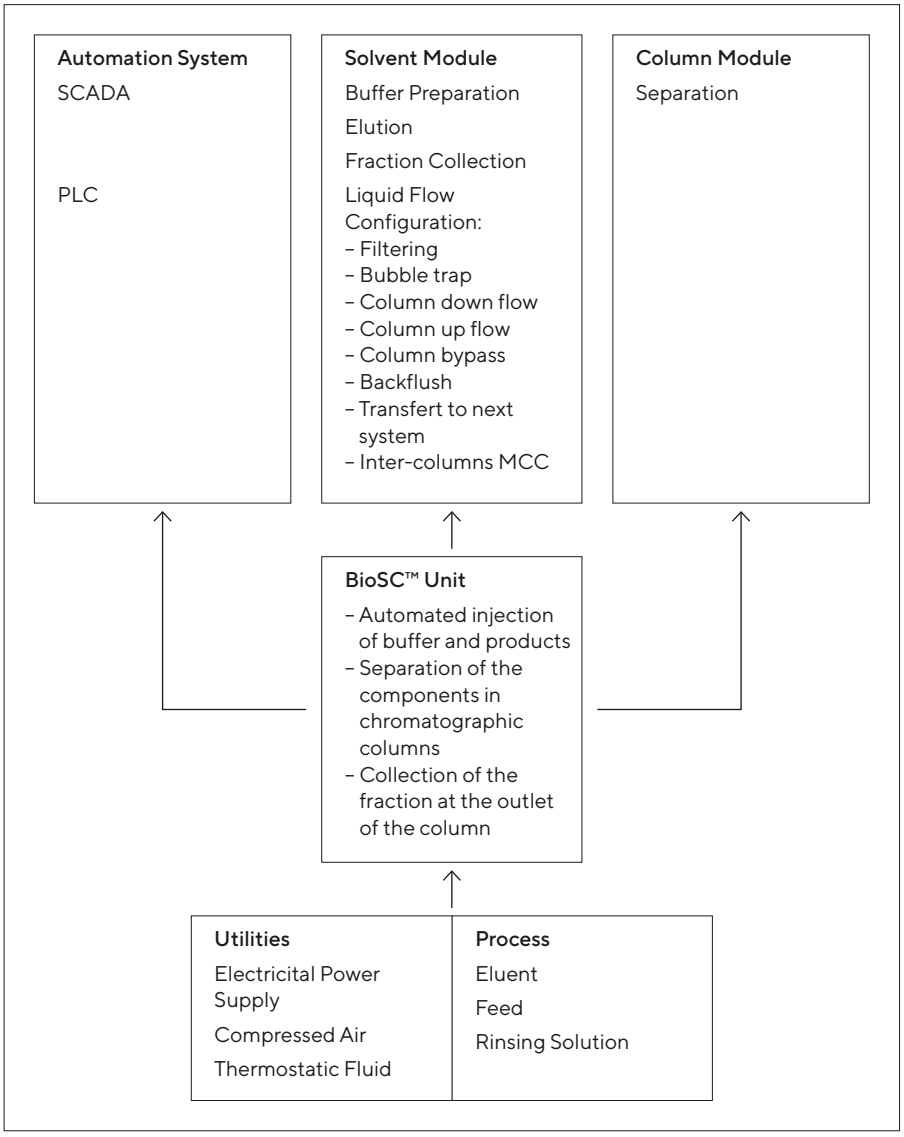
The controller performs all operations of the Resolute® BioSC device (transmitter, valves, pumps etc.) via decentralized digital and analog inputs | outputs to get | set the information from | to the device components.

The SCADA computer (Supervisory Control And Data Acquisition) acts as the interface between the Resolute® BioSC process and the operator, via the supervisor software.

Data transmission between the SCADA software and the controller is performed by a Siemens OPC Server (OLE for Process Control) over the computer bus. The card driver is an OPC server, and iFix acts as a client of this server.

1.1.2 High Level Description: General Principle

The diagram below gives an overview of the various systems and functions of the Resolute® BioSC unit:



The software is designed to run all chromatographic processes (Batch, B-MCC, S-MCC, and MS-MCC) either manually or automatically, as pre-defined in a recipe. A configuration file is used to set up the HMI and the PLC according to the installed module on the liquid handling system setup.

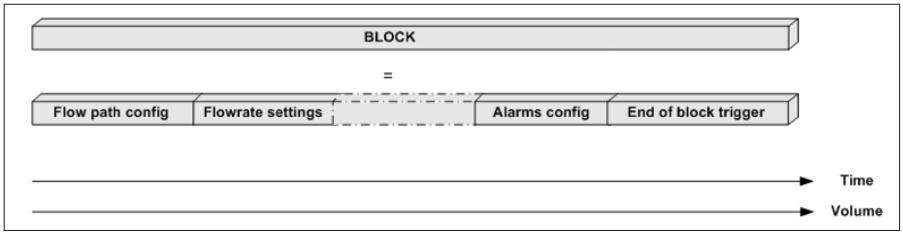
1.1.3 High Level Description: Operation

Resolute® BioSC is designed to run a chromatographic process either manually or automatically as predefined in a recipe (or method).

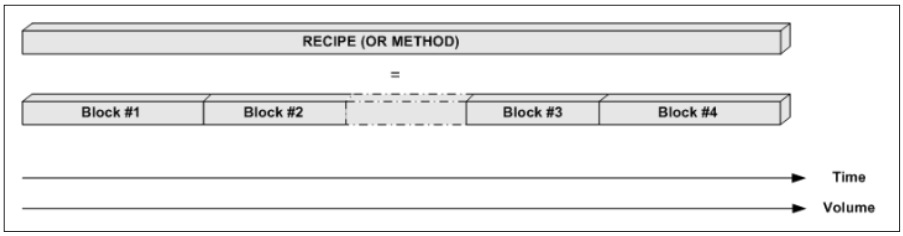
The general operational approach of the Resolute® BioSC software is based upon a sequential progress of the process steps.

Definitions

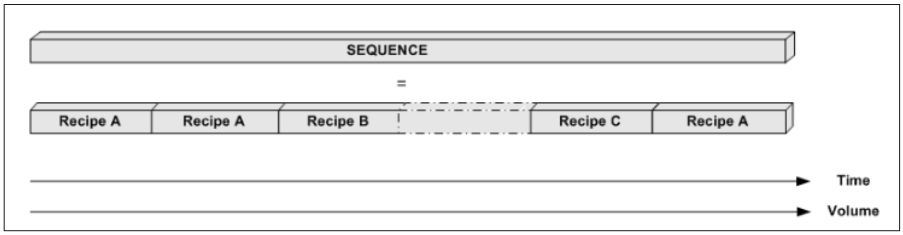
- Run: A run corresponds to a period of time (minutes, hours or days) of continuous processing. A run is typically the period of time needed to process a complete batch of feed.
- Block: A block is a set of predefined instructions that can be used to perform a chromatography step (e.g.: elution, cleaning, equilibration, UV baseline update, pause).



- Recipe (or method): A recipe is a user-defined set of instructions that can be used to run a complete process on a device (e.g.: purification run, column performance test, system CIP). A recipe consists of one or several blocks chained together.



- Sequence: A run may require the execution of one or several recipes chained one after the other. A sequence can be used to perform a single recipe repeatedly or to chain various recipes.



Operating a Resolute® BioSC is the same as operating a standard batch device. The user creates a recipe from a series of blocks. A block comprises a set of actions. All available actions are listed in Annex 1.

1.2 Declaration of Conformity

The serial number is indicated on the device. The respective certificates will be provided separately from the operating instructions.

1.3 Symbols Used

1.3.1 Warnings in Operation Descriptions

⚠ WARNING

Denotes a danger with risk that death or severe injury may result if it is not avoided.

⚠ CAUTION

Denotes a danger with risk that moderate or minor injury may result if it is not avoided.

NOTICE

Denotes a danger that can result in property damage if it is not avoided.

1.3.2 Other Symbols Used

▶	Required action: Describes activities that must be carried out. The activities in the sequence must be carried out in succession.
▷	Result: Describes the result of the activities carried out.
[ ]	Refers to operating and display elements. Indicates status, warning, and error messages.

Figures in These Instructions

Depending on the software configuration, the figures depicting the software and operating display may differ slightly from the supplied device. The variants shown in these instructions are examples.

2 Operating Design

2.1 Device Configuration

2.1.1 Device Description

This Resolute® BioSC device is a multi-system equipped with:

Module	Functionality
Buffer pumping	Back flush, Bypass, Filtration, and inter-column. Flowpath configuration
Buffer preparation	pH, Conductivity, Concentration In line Dilution
Detection	UV Spectrophotometer and | or Refractometer
Collect	2 to 10 collection valves

2.1.2 Operating Conditions

The device is designed to operate under the following conditions:

- The operating limits of the pumps depend on the Resolute® BioSC category (this pump is equipped with a variable frequency drive).
- The number of devices is capped to 3. A one-batch module is considered as one device and a device **cannot** have include more than two batches. The maximum number of columns is six.
- Buffer or products must be supplied to the skid inlet with a pressure regulated to a minimum of 0.5 bar (refer to the Interface Design Specification for minimum value).

2.2 Hipersep® Control

2.2.1 Hardware

The Hipersep® control device combines a Programmable Logical Controller (PLC) and a Personal Computer (PC). The PLC is the physical interface between the device and the computer. The computer, known as the Supervisor Control And Data Acquisition (SCADA), is the interface between the PLC and the user.

The PLC is located on a Peripheral Component Interconnect (PCI) card in the PC.

2.2.2 Software

The control software is based on the Intellution iFIX supervisor. This supervisor gives access to several screens, each dedicated to software functions.

Your installed software version will be written at the bottom right-hand corner of the computer screen.

The software provides:

- **Device operation:** All operations can be undertaken by the control module.
- **Operator safety:** All security devices are controlled by the PLC with fast reaction time, except for the strictly mechanical safety devices such as relief valves.
- **Process safety:** In the event of PLC failure, the device is designed to switch to a safe position (pneumatic valves are equipped with spring return positioning).
- **Data storage:** Data are automatically stored onto a hard drive.
- **Access management:** Individual access levels can be defined for various users (from no access to complete access).
- **User-friendly interface:** Flow sheets and the main parameters are displayed in one of the main windows (specific pages are dedicated to device configuration).

⚠ WARNING

The file structure defined on the hardware must not be modified, as this would cause device failure.

2.3 Exemplary Introduction

When the Resolute® BioSC software is launched, this screen appears:

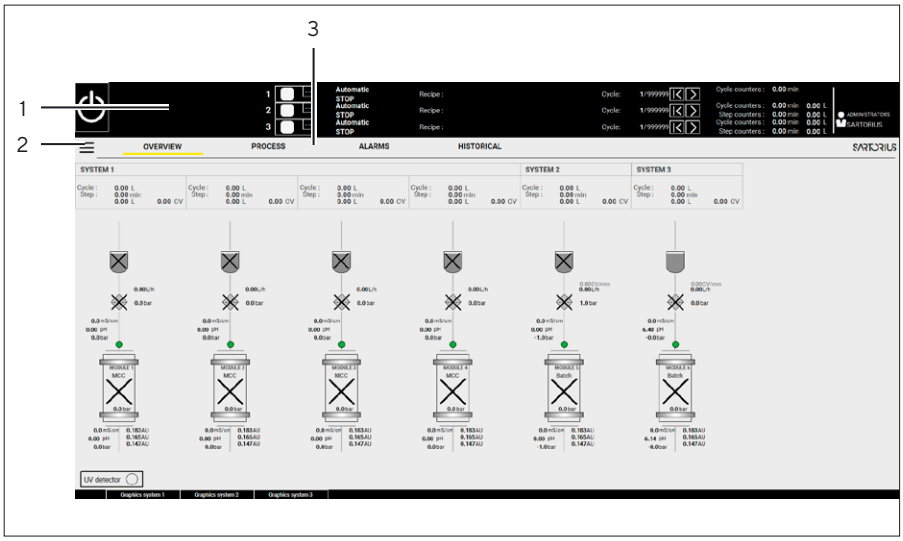


Fig. 2: Home screen

Pos.	Name	Description
1	Status Bar	This enables you to: – Switch power on | off (unavailable for Resolute® Flowdrive MU devices) – Switch Process Run | Stop – Login | logout – Check recipe information and counters – Check current date and time
2	Function Bar (Accessible by moving the cursor on the left side)	Access to various functions.
3	Screen Selection	Are selected using the following tabs: – OVERVIEW – PROCESS – ALARMS – HISTORICAL

2.4 Starting Up

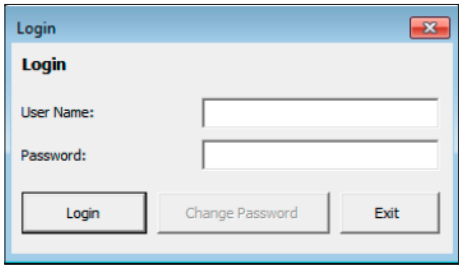
Procedure

- ▶ When starting up Resolute® BioSC for the first time or after a long period without use, please refer to the operating instuctions provided with the device.
- ▷ It is not necessary to power down the electrical cabinets except when the device is not going to be used for a long period (several weeks).
- ▶ Before starting the Resolute® BioSC unit, check that the electrical cabinet is powered up. If not, turn the master switch to the “ON” position. The white light must be on.
- ▶ If the “Emergency Stop” has been used, push the acknowledgment button (blue button near the “Emergency Stop”) to reset the “Emergency Stop” relay.
- ▷ The PC will automatically open Windows and then load the Fix software and the Resolute® BioSC software. Shortly afterwards, the home screen of the software will be displayed.

2.4.1 Logging In | Out | Password Change

Procedure

- ▶ Click the [Login] button.



- ▷ The login window appears.
  - ▶ Use the user name and password set by Sartorius:
    - Username: “ADMIN”
    - Password: “ADMIN” (for administrator)

- ▶ To change the user name and password, or if you need more information about Windows utilization, please refer to the Windows instruction manual.
- ▶ Users can modify their password by clicking on the “change password” button from the login window (see above).

2.4.2 Changing the Views

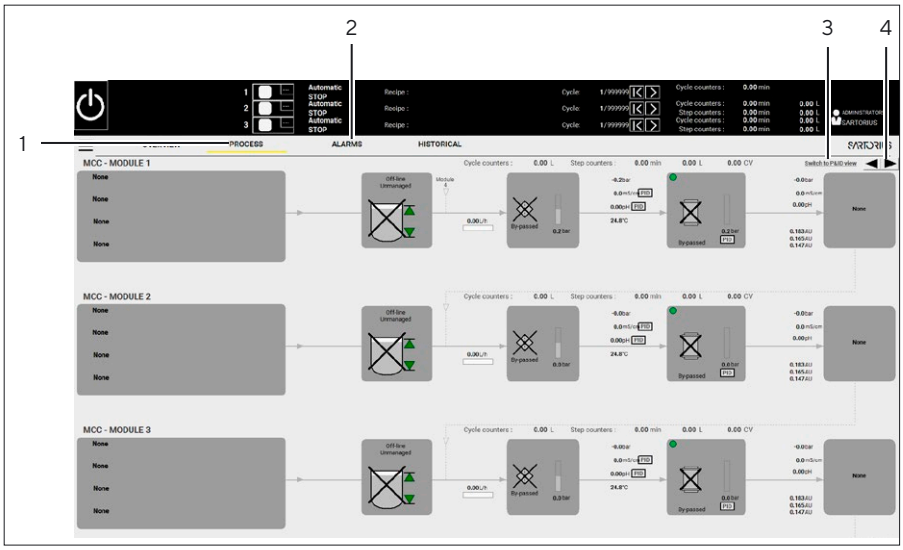


Fig. 3: [PROCESS] view

Pos.	Description
1	Process tab
2	Alarms sceen
3	Access to P&ID view
4	Access to module 4,5 and 6 if installed

Procedure

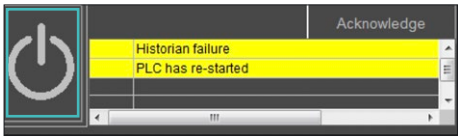
- ▶ Click on the [PROCESS] tab to access a screen showing a schematic flow sheet of the Resolute® device.
- ▷ This shows a simplified view of your device, with its various inlets and outlets, its flow path and the key data to monitor.
- ▶ Click on [Switch to P&ID view] to access a detailed view on the valve status.
- ▶ Use [Ctrl] + [T] to display the tags of all process parts (you can also click on this button).

Fig. 4: [PROCESS] view

▶ Click on the [Acknowledge] button or use [Ctrl] + [F8] to acknowledge any active alarms.

2.4.3 Turning Devices On | Off

Procedure



▶ At this stage, you can press on the [Power] button to turn on the devices.

Button	Action
ON	Power on. Shortcut [Ctrl] + [F11] can be also used.
OFF	Power off. Shortcut [Ctrl] + [F12] can be also used.

▷ When power is on, the [Power] button is green.

2.4.4 Icon Bars

The function bar icons on the left-hand side of the screen are organized in various groups. Each group corresponds to a particular software functionality.

Icon	Function
	Edit a recipe or a sequence
	Set up parameters, system and process lines
	User security
	Running time information and volume counters
	Define batch management parameters
	Access chromatographic data charts
	Enlarge the function bar
	Check software version and online documentation
	Close software

2.5 Symbols and Parameters

The software uses certain conventions in terms of display and utilization.

2.5.1 Parameter Values

Parameters are listed in tables. When the user is authorized to modify the values, the associated fields are displayed in white (except for the section “Reserved Parameters”). When the user is not entitled to modify the values (hence tables are displayed as read only), the relevant fields are displayed in grey.

Procedure

▶ To modify a parameter, click on the relevant field, enter the new value and press [OK] to confirm (see example below for inlet configuration in the settings section).

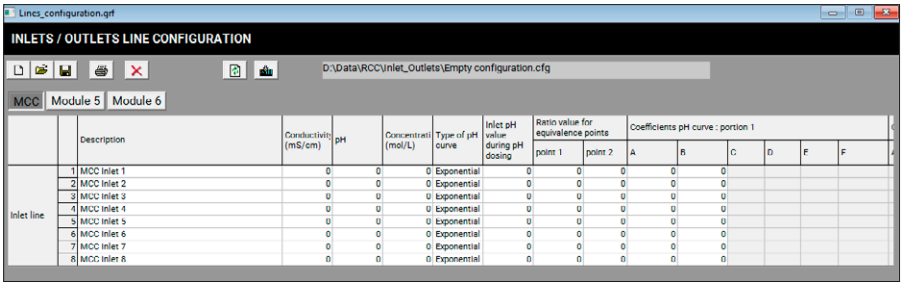


Fig. 5: Modifying parameters

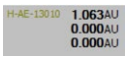
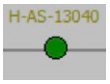
2.5.2 Symbols

On the flow sheet screen, devices such as valves or pumps are shown as symbols. Learning what each of these symbols means will enable you to operate the software efficiently.

Mechanical Elements

Icon	Description
	2-ways Valve
	Pump
	Filter and Bypass Valve
	Filter, Bypass Valve and Vent Valve (only for Resolute® Flowdrive MU)
	Column
	Chromatography Valve
	Collect Valve
	Bubble Trap
	Back Pressure Regulator (only for Resolute® Flowdrive MU)

Instruments

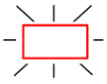
Icon	Description
	Flowmeter
	UV Detector
	Level Switch
	Pressure Transmitter
	Air Switch
	pH Meter
	Conductometer
	Temperature Transmitter

White color means that the process part is not activated (e.g., pump stopped, valve closed).

Green color means that the process part is “on” (e.g., pump activated, valve opened).

For the level and air switches, green colour means that a fluid is detected.

Caption

Icon	Description
	2-ways valve closed
	2-ways valve open
	Faulty part Blinking red rectangle
	Faulty and inhibited part Blinking orange rectangle

2.6 Access Levels and Password Configuration

2.6.1 Access Levels

Access to the various sections of the software depends of each user's login profile. There are three main access levels:

Group name	Access level
ADMINISTRATOR	Full access to the software, the iFix tools and the operating system (Windows).
SUPERVISOR	Large access to the software.
OPERATOR	Access is limited in the software. Reserved parameters are not accessible with this level.

Access is password-protected. This can be done with the iFix login utility. Usernames and passwords are defined in the Windows "User Manager" program. Please refer to chapter „2.6.2 Creating Users", page 22 for details on creating a username associated to a specific access level.

NOTICE

Failure to create or access an account due to unproper user name format!

- ▶ Ensure the user name does not exceed 15 characters and does not include any special characters.

Capture of the Windows user in the iFix utility is done with Security Configuration (SECCFG.EXE) from the iFix Software Package. 2 operator groups, 2 supervisor groups and 1 administrator group are defined. Access rights are defined as the following:

		USER GROUPS				
		OPERATORS1	OPERATORS2	SUPERVISORS1	SUPERVISORS2	ADMINISTRATORS
General functions	Acknowledge alarms	General	General	General	General	General
	Power supply command Off | On	General	General	General	General	General
	Process command Stop | Run	General	General	General	General	General
	Access to Operating system					Admin
	Exit application					Admin
Counters	Access to screen “Counter_Volume.grf”	General	General	General	General	General
	Reset volume counters	General	General	General	General	General
Operation in automatic mode	Select automatic mode	General	General	General	General	General
Operation in manual mode	Select manual mode		Manual	Manual	Manual	Manual
	Start | Stop pump		Manual	Manual	Manual	Manual
	Switch valve		Manual	Manual	Manual	Manual
	Change setpoint		Manual	Manual	Manual	Manual
Operation in maintenance mode	Select maintenance mode				Maintenance	Maintenance
	Start | Stop pump				Maintenance	Maintenance
	Switch valve				Maintenance	Maintenance
	Change setpoint				Maintenance	Maintenance
	Reset running time				Maintenance	Maintenance
Navigation in screens	Access to screen “Air_Switch_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Alarms.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Bubble_Trap_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Counter_Volume.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Documentation.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Overview.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Process_PID.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Process_Simple.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Pump_Ana_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization

		USER GROUPS				
		OPERATORS1	OPERATORS2	SUPERVISORS1	SUPERVISORS2	ADMINISTRATORS
Navigation in screens	Access to screen “Recipe_Status.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Regulator_PID_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Running_Time.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Transmitter_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Transmitter_UV_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Valve_TOR_1.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
	Access to screen “Version.grf”	Visualization	Visualization	Visualization	Visualization	Visualization
Batch management	Access to screen “Batch_Management.grf”	General	General	General	General	General
	Create a batch	General	General	General	General	General
	Modify a batch	General	General	General	General	General
	End a batch	General	General	General	General	General
	Print a batch	General	General	General	General	General
	Delete a batch					Admin

		USER GROUPS				
		OPERATORS1	OPERATORS2	SUPERVISORS1	SUPERVISORS2	ADMINISTRATORS
Historical	Access to screen “Historical.grf”	General	General	General	General	General
	Manage historical files	General	General	General	General	General
	Print historical trends	General	General	General	General	General
	Export historical trends	General	General	General	General	General
Security function	Login | Logout	x	x	x	x	x
	Password changing	x	x	x	x	x
	Access to screen “Security.grf”					Admin
	Modification of logout management settings					Admin
	Windows user accounts					Admin
Recipe functions	Open the screen “Recipe_Editor.grf”	General	General	General	General	General
	Open a recipe	General	General	General	General	General
	Print a recipe	General	General	General	General	General
	Load a recipe	General	General	General	General	General
	Create | modify a recipe			RCP	RCP	RCP
	Delete a recipe					Admin

		USER GROUPS				
		OPERATORS1	OPERATORS2	SUPERVISORS1	SUPERVISORS2	ADMINISTRATORS
Sequence functions	Open the screen “Sequence_Editor.grf”	General	General	General	General	General
	Open a sequence	General	General	General	General	General
	Print a sequence	General	General	General	General	General
	Load a sequence	General	General	General	General	General
	Abort a sequence	General	General	General	General	General
	Create	modify a sequence			RCP	RCP	RCP
	Delete a sequence					Admin
Reserved parameters	Access to screen “Reserved_Parameters.grf”	Visu	Visu	Visu	Visu	Visu
	Print reserved parameters	General	General	General	General	General
	Modify a reserved parameter			RSD	RSD	RSD
	Load reserved parameters			RSD	RSD	RSD
	Save reserved parameters			RSD	RSD	RSD
Lines configuration	Access to screen “Inlets_Outlets.grf”	Visu	Visu	Visu	Visu	Visu
	Print Lines parameters	General	General	General	General	General
	Modify a line parameter			RCP	RCP	RCP
	Load line parameters	General	General	General	General	General
	Save line parameters			RCP	RCP	RCP
Inhibition	Modify Inhibition			RSD	RSD	RSD

- ▶ To change the current access level, press [Ctrl] + [L] to open the login information dialog box:
  - ▶ Enter the name: “ADMIN” for administrator, “SUPER1” (“SUPER2”) for supervisor or “OPERA1” (“OPERA2”) for operator.
  - ▶ Enter the password: refer to the BioSC unit manager.
  - ▶ Click on the [Login] button.

NOTICE

If the Resolute® BioSC is already logged into under another name, it is necessary to logout before logging in with the new name.

- ▶ Any user can change their password by clicking on the “change password” button.
- ▷ A pop-up window will then open to create the new user password.
- ▷ User will be automatically logged out after a certain period if of inactivity (no typing, no mouse motion).
- ▷ A warning message is first displayed after a certain duration (user-definable) indicating that automatic logout will occur after a certain duration (also user-definable, in the screen security) if no action is taken.

2.6.2 Creating Users

Various usernames, each with its own password, can be added under a group name. Changes can only be made if the device is logged in by an administrator-level user.

The recommended and more secure method is to create users on the Windows side and then synchronize them with iFix.

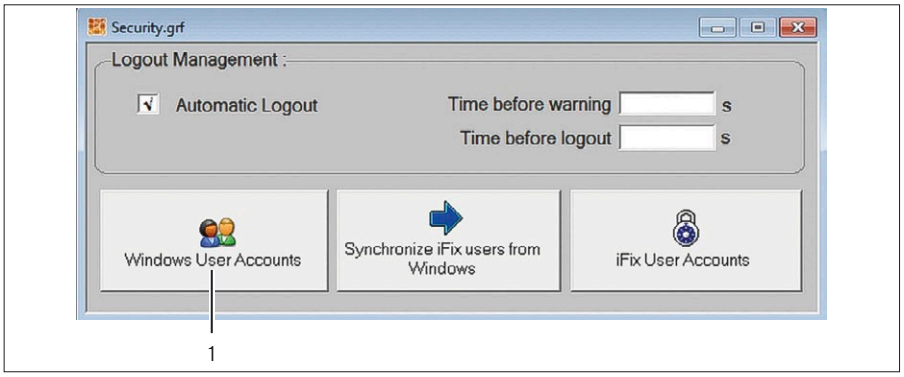
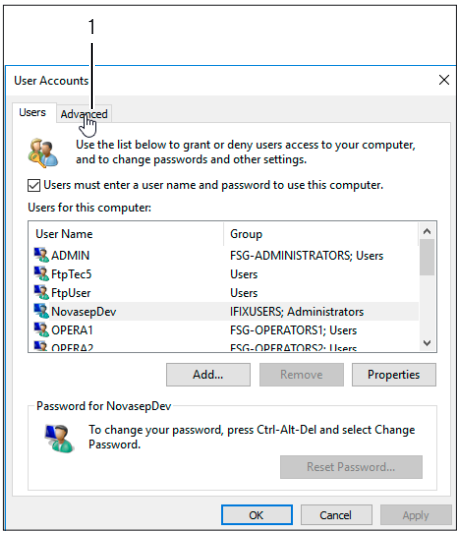


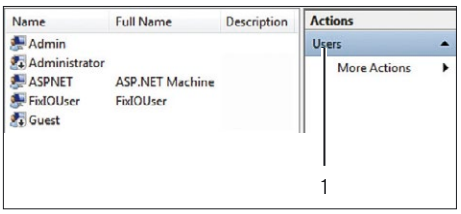
Fig. 6: [Security] screen

Procedure

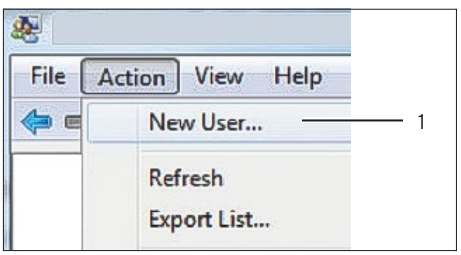
- ▶ In the screen [Security], click on the [Windows User Accounts] button (1).
- ▷ The [User Accounts] window opens.
- ▶ Click on the “Advanced” tab (1) and select [Advanced].

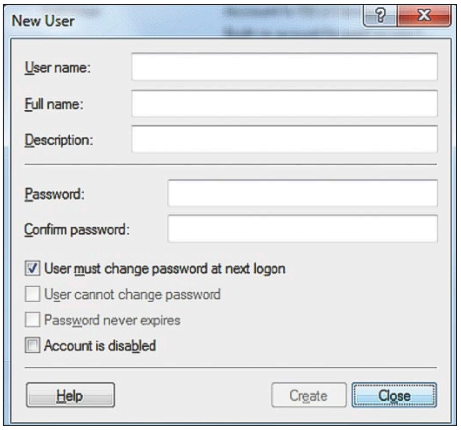


- ▶ In the [Local Users and Groups] screen, click on “Users” (1) in the tree on the left-hand side of the screen.



- ▶ In the “Action” drop-down, select “New User ...” (1).





▷ The [New User] window is displayed.
▶ Enter "XXXXX" as User name (where "XXXXX" is one name created in the iFix declaration user).
▶ Do not use spaces or special characters.
▶ Enter "XXXXX" as Full name.
▶ Enter and confirm the password.
▶ Select options as desired or as per user account policy.
▶ Click on [Create].
▶ Repeat the process for other users to be created.
▶ Click on [Close].

▷ The [Local Users and Groups] screen is displayed:

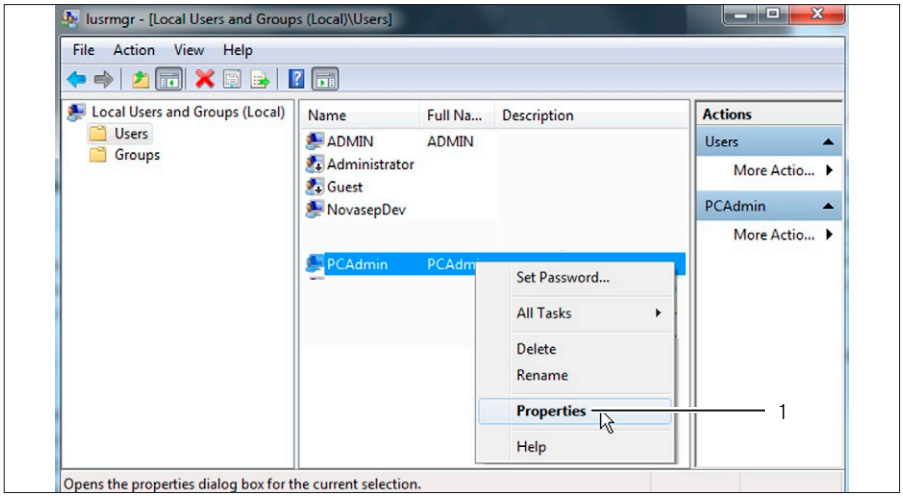
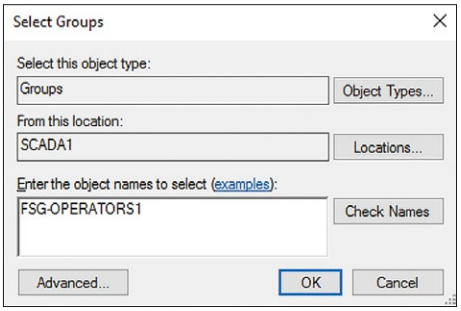


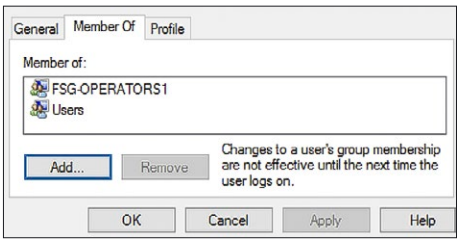
Fig.7: [Local Users and Groups] screen

▶ For each user created, open "properties" (1).
▶ In the [Properties] window, click on the "Member Of" tab.
▶ Select [Add...] for the highlighted user.
▶ In the following window, enter the appropriate group for the user and validate.



▷ 5 predefined groups can be used in relation to the iFix user groups :
– FSG-OPERATORS1 : Group Operators 1
– FSG-OPERATORS2 : Group Operators 2
– FSG-SUPERVISORS1 : Group Supervisors 1
– FSG-SUPERVISORS2 : Group Supervisors 1
– FSG-ADMINISTRATORS : Group Administrators

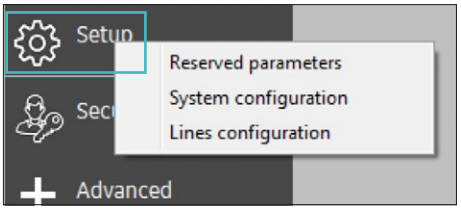
Each group corresponds to the required access level.
▶ In this window, click [OK].



▷ The [Local Users and Groups] screen is displayed again.
▶ In the “File” drop-down, select “Exit” to close the window.
▶ In the screen [Security], click on the [Synchronize iFix users from Windows] button.
▷ Users created, modified or deleted in Windows are synchronized in the iFix security configuration.

2.7 Setting Up

Reserved parameter screens are only accessible to users logged in under the administrator, supervisor (1 and 2), or operator (1 and 2) group levels. Fields within these screens can only be modified by users in the administrator or supervisor (1 and 2) group levels.



This menu lists the access to the various Setup screens (“Reserved parameters”, “System configuration”, “Lines configuration”). It is accessed by clicking on the “Setup” button on the main screen.

2.7.1 Reserved Parameters

The reserved parameters contain all parameters that should not be modified at recipe level (e.g. sensor scale, regulation parameters).

In this section, all parameters are readable but not editable. To modify a reserved parameter, you must be logged in with a “supervisor1”, “supervisor2” or “administrator” account and click on the “component” symbol in the “PID view” (see chapter „2.8.1 Maintenance Mode“, page 32).

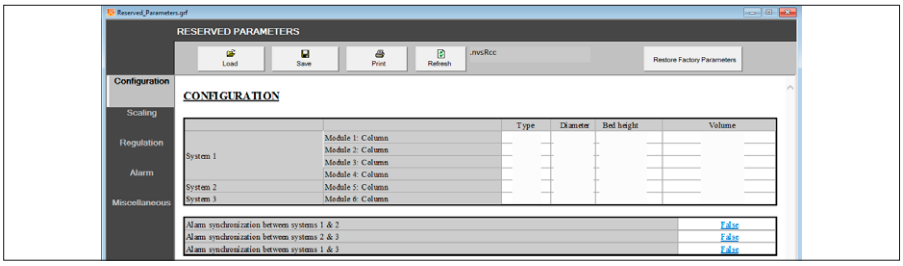


Fig. 8: [Reserved Parameters] screen (example)

The buttons accessible within this window are described in the table below:

Button	Action
Configuration	Setup system configuration
Scaling	Setup min | max values for sensors, pump flow rate and UV signal and wavelength
Regulation	Setup pump regulation parameters, pressure drop conductivity and pH (PID regulator)
Alarms	Setup alarm thresholds, and band and delay values

Button	Action
Miscellaneous	Setup bubble trap parameters (time to fill) and back pressure regulators setpoints (only for Resolute® Flowdrive MU).
Load	Load the last reserved parameter sheet recorded from the PC onto the PLC.
Save	Create a new reserved parameter sheet by recording the modifications from the previous one.
Print	Print a list of reserved parameters
Refresh	Update the current sheet
Restore factory	Restore factory parameters

NOTICE

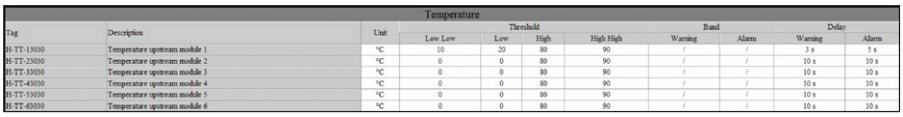
Only one sheet of reserved parameters can stored on the computer at any one time.

If a change is made and saved, the previous version is automatically overwritten.

These parameters are set by Sartorius and are only likely to be changed after maintenance work (change of a sensor). As an example, you can set 4 – 20 mA signals, warning and alarm level.

NOTICE

The values written in the sensors and actuators scaling window are only for information and do not correspond to your device.



Temperature										
			Threshold				Band		Delay	
Tag	Description	Unit	Low Low	Low	High	High High	Warning	Alarm	Warning	Alarm
H-TT-13030	Temperature upstream module 1	°C	10	20	80	90	/	/	3 s	5 s
H-TT-23030	Temperature upstream module 2	°C	0	0	80	90	/	/	10 s	10 s
H-TT-33030	Temperature upstream module 3	°C	0	0	80	90	/	/	10 s	10 s
H-TT-43030	Temperature upstream module 4	°C	0	0	80	90	/	/	10 s	10 s
H-TT-53030	Temperature upstream module 5	°C	0	0	80	90	/	/	10 s	10 s
H-TT-63030	Temperature upstream module 6	°C	0	0	80	90	/	/	10 s	10 s

Fig. 9: Temperature parameters

Sartorius has set threshold values during system qualification, which represent the system's operating limits. The user may find it useful to adapt these values to the process conditions (e.g. set up new pressure high limits to prevent excessive pressure on a fragile stationary phase, or set up new temperature low and high limits for a temperature-sensitive separation).

This window shows all the options available for the various units. Each module has predefined options and each unit has its own set of options.

For each sensor (pressure and temperature), you can define a range within which the values may fluctuate. Beyond this range, you can set a warning zone. If the current value remains in this warning zone for a certain user-defined duration (Delay value), a warning message will appear. Beyond this warning zone, you can also define an alarm zone. If the current value fluctuates within this zone, an alarm message is displayed and the unit is put on pause.

Please see example below:

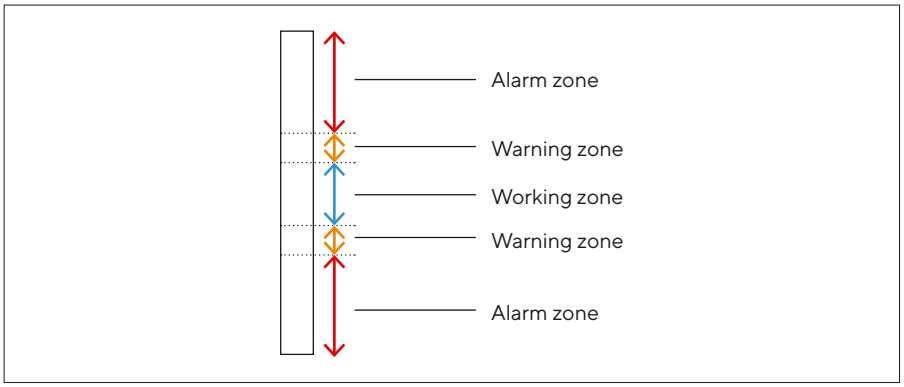


Fig. 10: Defining ranges

For example, with H-TT-13030:

If the current value is <10 °C for more than 3 s, a warning message appears. If the current value is <10 °C for more than 5 s, an alarm message appears and the unit is put on pause.

If the current value is >80 °C for more than 3 s, a warning message appears. If the current value is >80 °C for more than 5 s, an alarm message appears and the unit is put on pause.

For the flowmeter, the warning band and the alarm threshold are expressed as a percentage of signal, which corresponds to the 20 mA outlet. For example, if the 20 mA in the “sensors & actuators scaling” window corresponds to 1 L/h, in the example above, ±60% corresponds to ±600 mL/h and ±80% to ±800 mL/h.

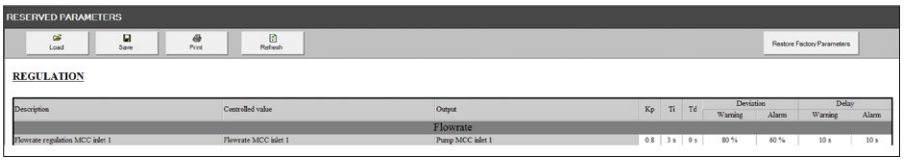


Fig. 11: Reserved parameters

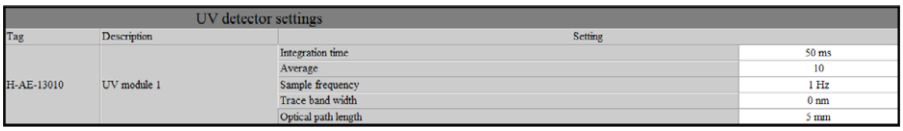
Regulation loop parameters are defined as follows:

Parameter	Description
KP	Proportional constant of the PID regulator
Ti	Integral constant of the PID regulator.
Td	Clipping integral error. Integral error is limited to this value.

These parameters relate to the control of pump motor speed (for flow rate regulation), the analogue valves (for gradient making), the control of column pressure drop management and the buffer preparation functionality.

They have been set by Sartorius during commissioning and should not be changed. Only the buffer preparation parameters can be adjusted, depending on the buffer used.

Definition of the UV detector: This part is accessible in the Miscellaneous section.



UV detector settings

Tag	Description	Setting	
H-AE-13010	UV module 1	Integration time	50 ms
		Average	10
		Sample frequency	1 Hz
		Trace band width	0 nm
		Optical path length	5 mm

Fig. 12: UV detector settings

Settings are edited in the parameters of the first UV detector H-AE-13010:

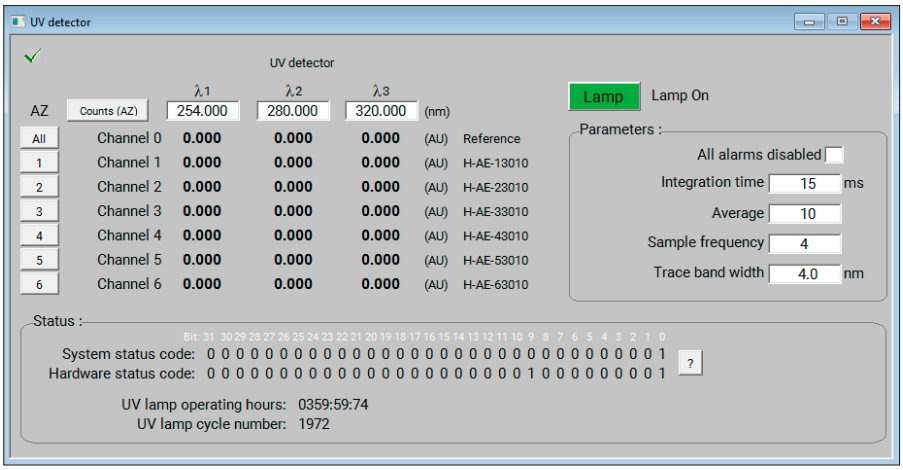
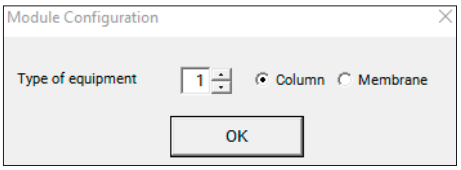


Fig. 13: UV detector parameters

2.7.2 Configurating the System

Procedure

- ▶ Before starting a recipe, or if using the device for the first time, select if using a column or a membrane.
- ▶ Enter the characteristics of the columns or membranes used in the “Module configuration” section.



- ▶ Enter the diameter and bed height values, and the software will calculate column volume.

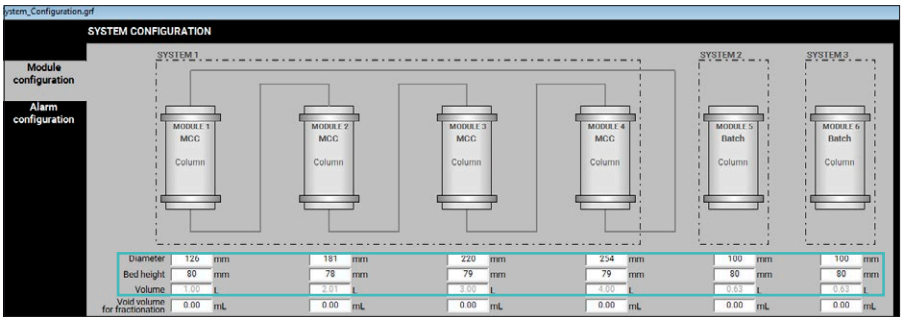


Fig. 14: Column configuration

- ▶ Define the various columns (entering diameter and bed height values) and define the overall chain configuration.
- ▶ Optional: Define the void volume for fractionation.
- ▷ The void volume is a reserved parameter for outlet action. In automatic mode, when the outlet is triggered, the outlet valve opens once the triggering conditions are met and the void volume has been measured by the column volume counter.
- ▷ MCC column modules are automatically linked so that loading is perform ed in series.
- ▶ Click on the first column of the MCC device to choose which collect valve will be used for transfer to the other device (if any):

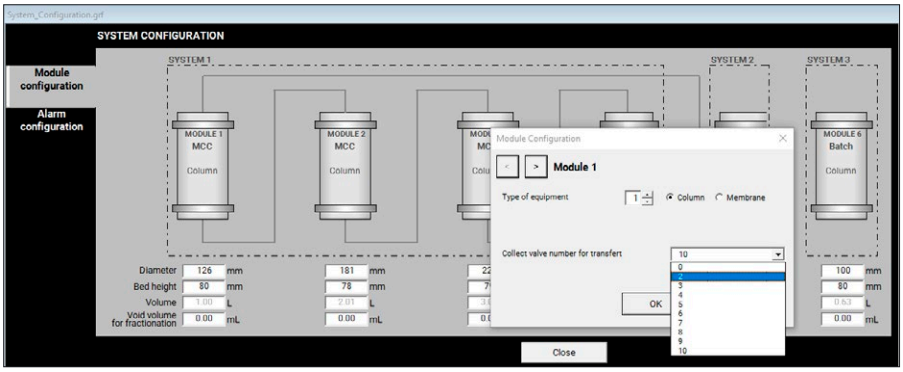


Fig.15: Module configuration

- ▷ Apart from the MCC column, device chaining from MCC device to Batch or from Batch to Batch is performed from one outlet to transfer valve H-AV-Y3220 (“Y” corresponding to the column number).
- ▶ Click on each column of the batch devices (up to 2) to configure the inlet and collect valve.

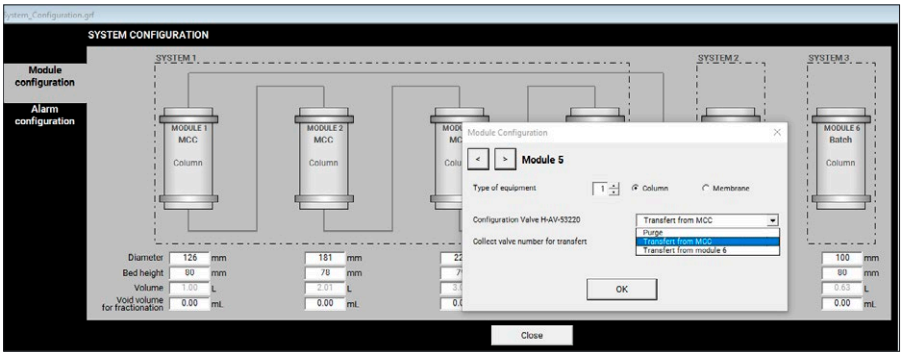


Fig.16: Module configuration (Module 5)

These settings are also configurable in the recipe editor when creating a new sequence in automatic mode (see chapter „2.8.3 Automatic Mode: Creating a Sequence“, page 43). The outlet dedicated for the transfer must be defined by the user prior to set the recipe.

System configuration also gives access to the alarm configuration section, where you can define the alarm synchronization between the various devices:

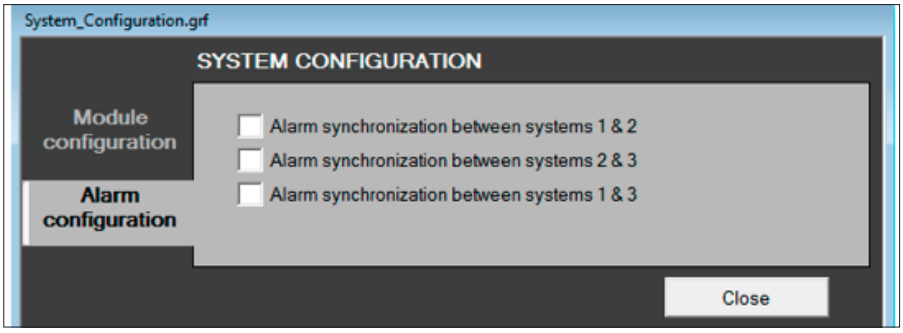


Fig.17: Alarm configuration

Resolute® BioSC can include up to 3 devices. Most of the alarms are dedicated to one device. This synchronisation allows for stopping a device if an alarm from another device is triggered.

2.7.3 Lines Configuration

This section covers the configuration of gradient-In line dilution for the control of:

- Conductivity
- pH
- Concentration

The adjustment of pH, conductivity and concentration or buffer preparation uses a maximum of 4 pumps:

- 1st pump: buffer
- 2nd pump: acid or base solution
- 3rd pump: conductivity solution
- 4th pump: dilution solution (usually water)

▶ In the [Inlets | Outlets Line Configuration] screen, the user can rename the inlet and outlet lines corresponding to their product. To do this, double click on the description column:

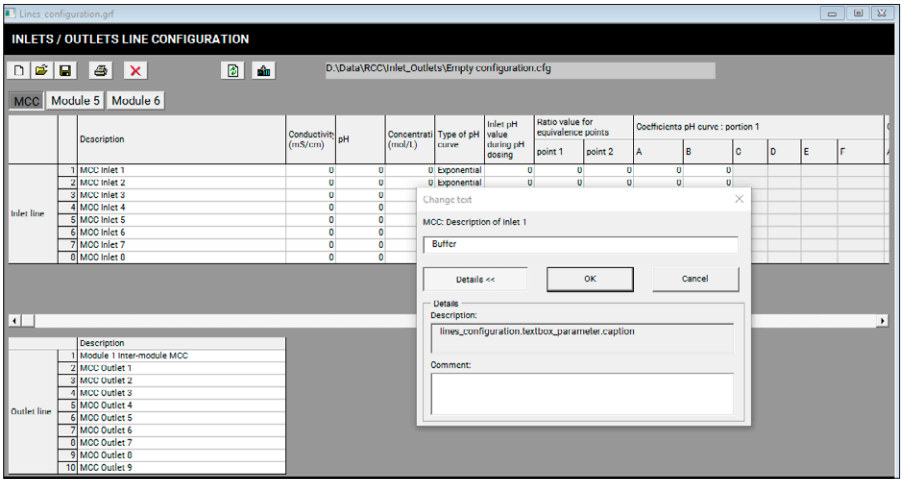


Fig.18: Inlets | outlets line configuration

In-line adjustment or buffer preparation needs some data to be programmed into the software beforehand. To learn how to generate these data, please refer to the “pH-conductivity adjustment protocol”.

The next section explains how the user can program the application in the Resolute® BioSC software.

- Start a buffer preparation or in-line adjustment is a two-step process.
  - First, the “Line Configuration” table must be filled in.
  - Second, buffer preparation is programmed in the “pumping” action in the recipe editor (see chapter „2.8.3 Automatic Mode: Creating a Sequence“, page 43).

Line Configuration table:

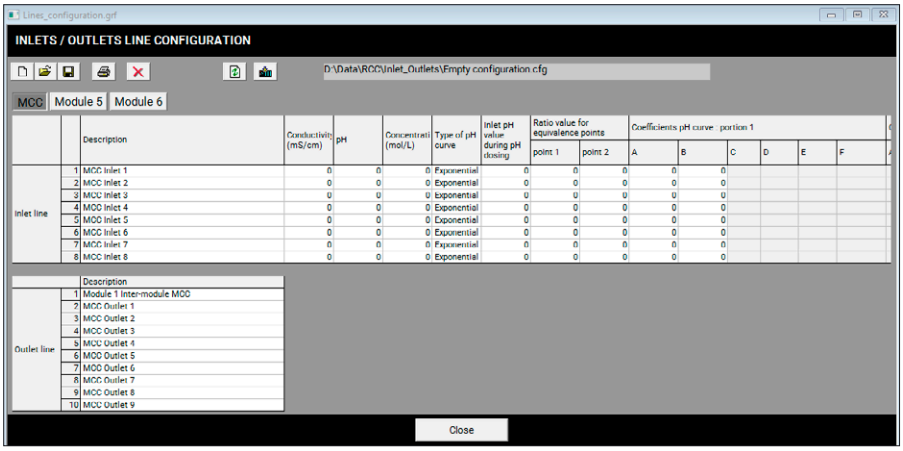
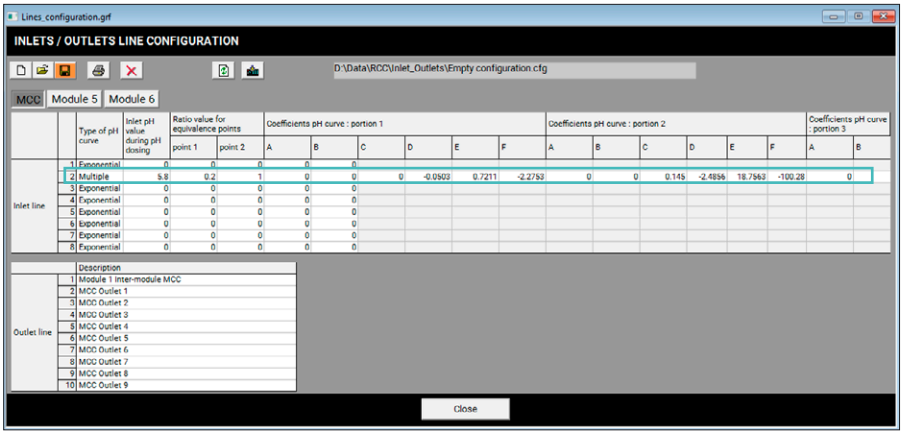


Fig. 19: Inlets | outlets line configuration

- In the “Buffer” line, initial values of the buffer solution must be entered for conductivity, pH and concentration.
- In the “Conductivity Solution” line, the initial conductivity value of the conductivity solution must be entered.
- In the “Water” line, no value is required.
- Select the type of pH curve (with a phmetric dosage) between “Multiple”, “Polynomial”, “Exponential” and “Power” (see picture below).
- Then, enter the initial pH value of the buffer during the phmetric dosage. For pH curve type “Multiple”, also enter the ratio values for equivalence points that divide the pH curve of the phmetric dosage into 3 sections.
- Finally, enter the coefficients of pH curve (for portions 1, 2 and 3 if the pH curve type is “Multiple”; and for portion 1 if the pH curve type is “Polynomial”, “Power” or “Exponential”).



▶ Click on [Save] to save the table.
▶ Data can then be loaded by clicking on [Load].

NOTICE

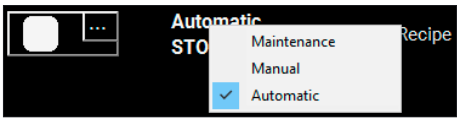
The user can fill in only the lines needed for buffer preparation (e.g. "buffer" line, "pH solution" line and "water" line for a buffer preparation with pH and concentration regulation).

2.8 Modes of Operation

▶ Once you have set up the various process parts for your separation, you can start defining the recipe and its associated parameters.

Resolute® BioSC offers 3 modes of operation (with some interlocks allowing for safe operation):
- Maintenance mode, where all actions are ordered "manually" from the user interface (no recipe) for each individual element.
- Manual mode, where the process can be run "manually" from the user interface with elemental function actions. The pump flow can be regulated apart from a recipe.
- Automatic mode, where the process is run from a recipe. Depending on the user access level, it may or may not be possible to edit parameters while running the recipe.

▶ When the mode of operation is idle, the user can change the Resolute® BioSC mode by clicking on this button.



▶ The user can then choose between 3 available modes:
  - Maintenance
  - Manual
  - Automatic

▶ Click on the chosen mode to enter.
▷ In the example above, the automatic mode has been selected. The mode is then displayed on the upper part of the monitor screen in the "Mode" window.

▶ From the upper part of the screen, you also access other information such as:
  - Mode (maintenance, manual or automatic)
  - Current cycle (not available in maintenance mode)
  - Current time (not available in maintenance mode)
  - Current volume (not available in maintenance mode)
  - Number of the cycles (not available in maintenance mode)
  - Name of the recipe

2.8.1 Maintenance Mode

This mode can be used to:

- Carry out maintenance | calibration | troubleshooting tests.
- Flush the device before a new production run.
- Calibrate the valves or run the device manually.

The various elements (pumps, valves, detectors) are controlled individually.

⚠ WARNING

Maintenance mode is for maintenance work only and should not be used for regular separation operations.

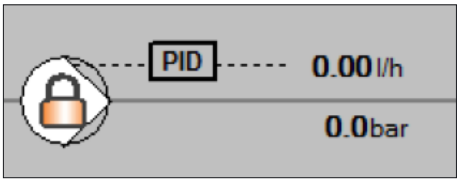
This mode also covers alarm management and alarm inhibition capacity.

In this mode, parts can be manually actuated by clicking on their respective icons. Clicking on the symbol of H-P-3100 pump will give you access to detailed commands such as: Run | Stop, flowrate set point, switching a valve.

The automatic valves on the Resolute® BioSC device can be rotated from the SYNOPTIC screen using Maintenance Mode. Move the mouse to the desired valve and left-click to rotate the valve. After a few seconds, the screen updates to reflect the new valve status.

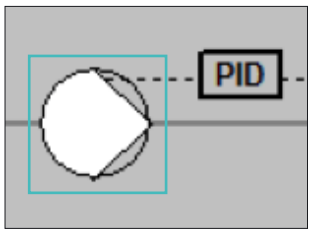
⚠ WARNING

Pumps cannot be started if valves are not open on both sides (suction line and discharge line).

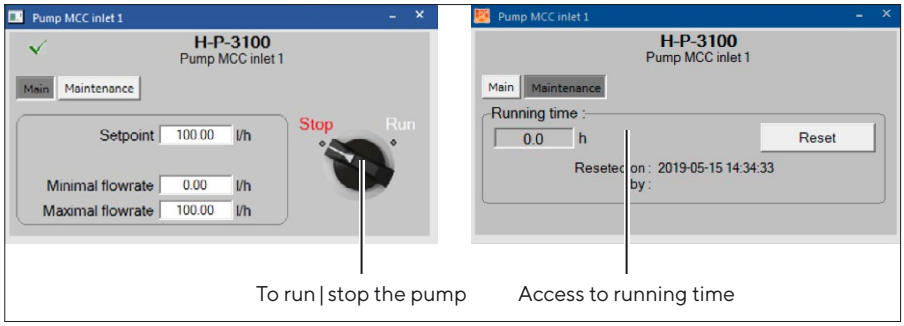


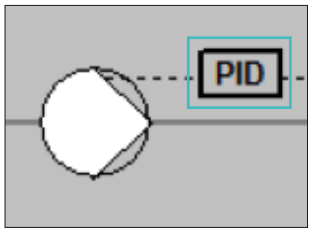
If the flow path is not defined, the pump appears with a padlock symbol.

2.8.1.1 Pump Pop-Ups



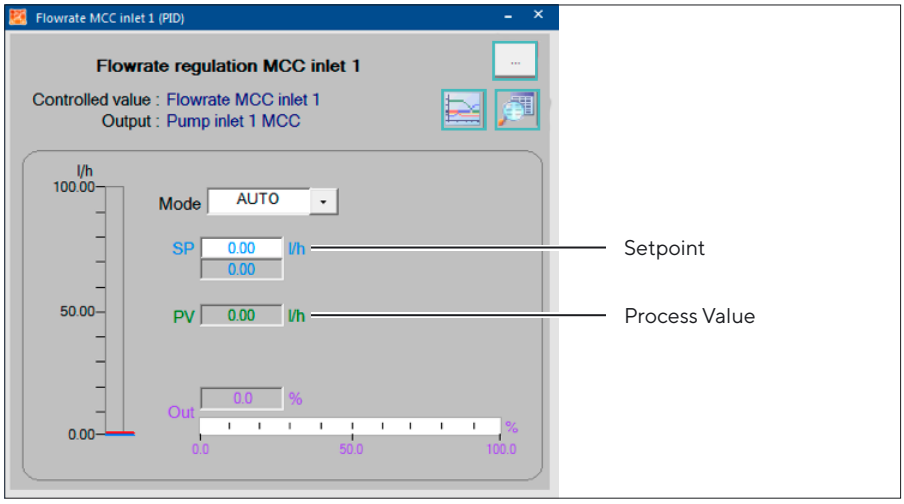
▶ Click on the pump to open the following window:
  ▶ To run | stop the pump.
  ▶ Access to running time.





▶ Clicking on “PID” to open regulation parameters.

Regulation Pop-Ups



The 3 buttons (framed in teal on the screenshot above) are explained on the following pages.

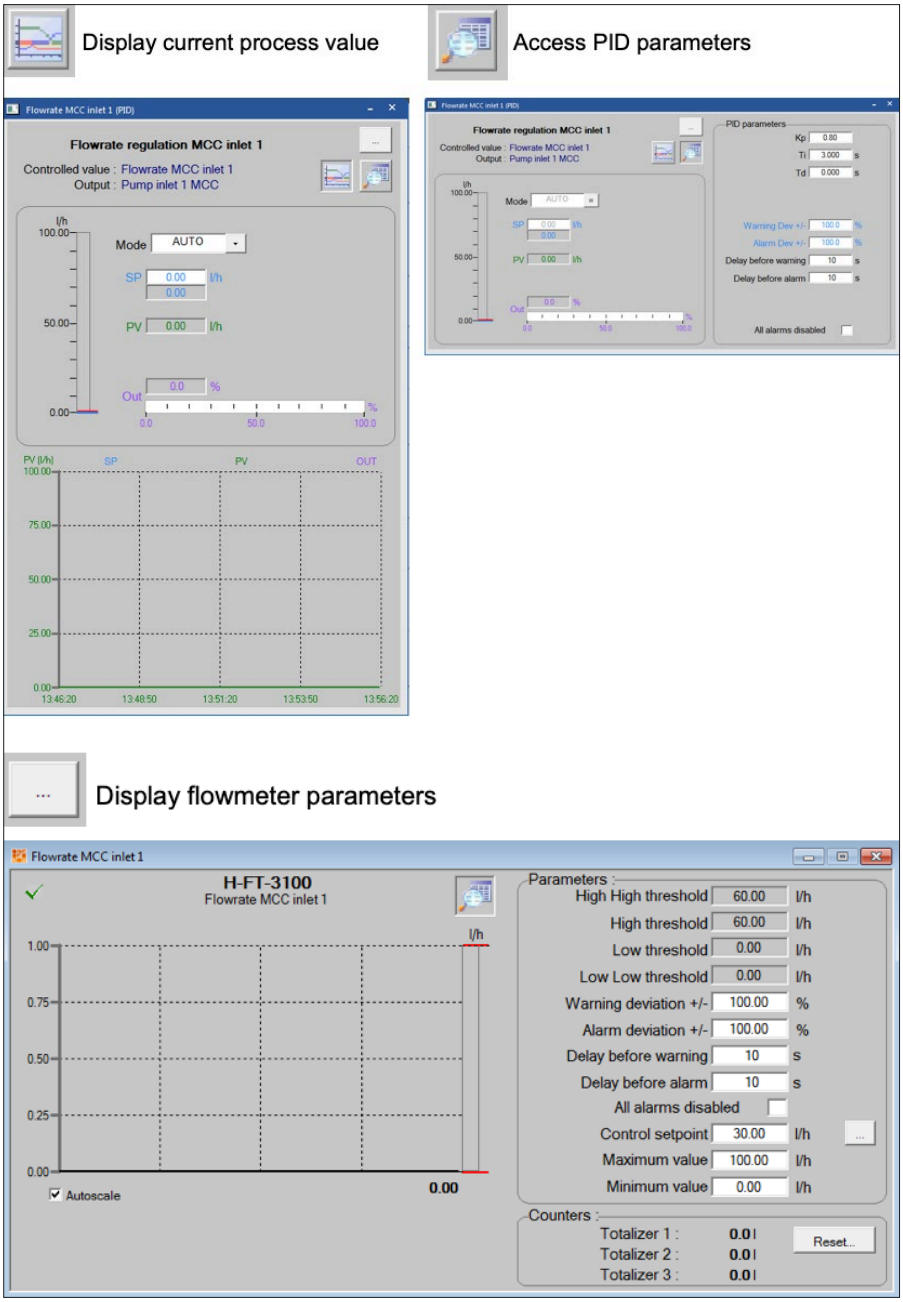
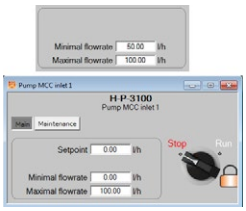


Fig. 20: Button explanations

Item	Function
	Click on this virtual switch to start or stop the pump.
	This box allows you to enable or disable pump flow regulation control. **Auto:** you define a flowrate setpoint (the device, with the PID parameters, will automatically control the targeted flowrate setpoint). **Manual:** you define a percentage setpoint corresponding to the flowmeter range. **Disable:** stop the regulation.
	When the pump is started and regulation is disabled, the operator must set minimal and maximal flowrate values: the pump will then work at a constant speed and minimum flowrate. When regulation is enabled, the operator must enter a setpoint value: the regulation loop will then automatically adjust the VFD speed in order to maintain a stable flow (as per flowmeter measurement).
	In Manual mode, the operator must set a setpoint percentage. This percentage defines the frequency of the pump variator.
	These are the parameters for pump regulation. These are the same those displayed on the main menu when clicking on the “reserved parameters” button. It is possible to disable all regulation alarms.

⚠ WARNING

Pumps cannot be started if valves are not open on both sides (suction line and discharge line).

2.8.1.2 Instrument Pop-Ups

For each process value on the synoptic, you have the possibility to display a window showing current values. An example is given below with pressure transmitter H-PT-13140. These windows are pre-sized and **cannot** be resized.

The window offers visual access to information that can be useful to the operator:

- Current time on the abscissa
- Current value (in this example, pressure before column).
- Each time a warning or an alarm occurs, a red cross appears.

For example:

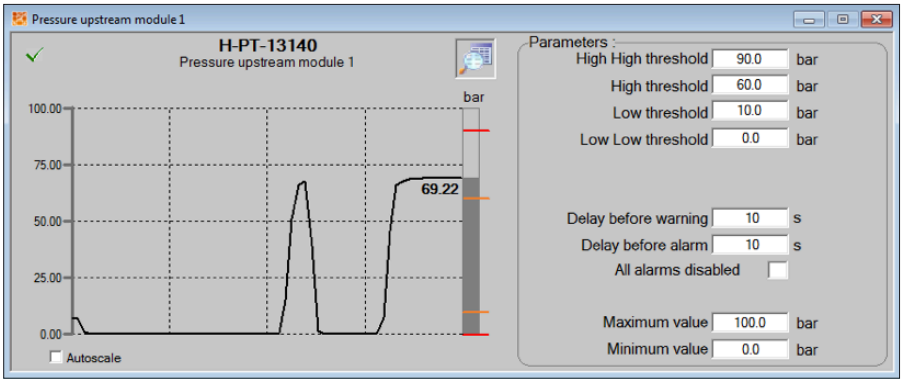
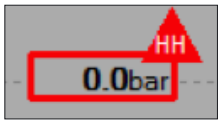


Fig. 21: Pressure upstream module alarm (example)

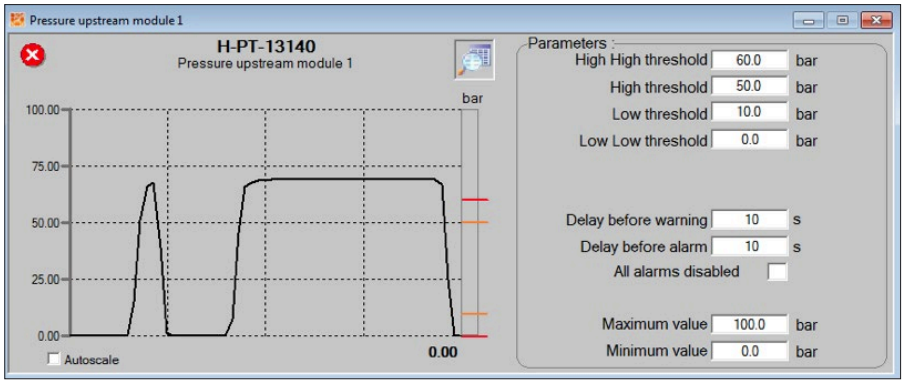
In this case a Hi alarm occurred, corresponding to a warning message.

You can check visually if the current value is within the orange band (i.e. the operating range). If, for some reasons, the current value goes over and inside the orange band, then after a certain duration as set in the “Delay before warning” parameter, a warning message appears and a red cross is displayed.

If the current value rises again into the red band, an alarm message appears and a red cross is also displayed in “HIHI alarm” (see next window screen grab). The unit is then either paused or stopped, depending on the type of alarm. A similar principle applies with the “LO” and “LOLO” alarms when the current value decreases from its setpoint.



On the “Process” view, you can also see the alarm pop-up on the component symbol.



▶ Clicking on the UV detector symbol (H-AE-1310) displays a control window: UV real time signal and UV slope on the left, parameters and running time on the right.

NOTICE

That UV parameters and running time are just available on the first module.

On the other modules (depending on the number of modules), UV signal real time, UV slope and Autozero function are available. There is a detector, so parameters implemented on the first module are available for all modules.

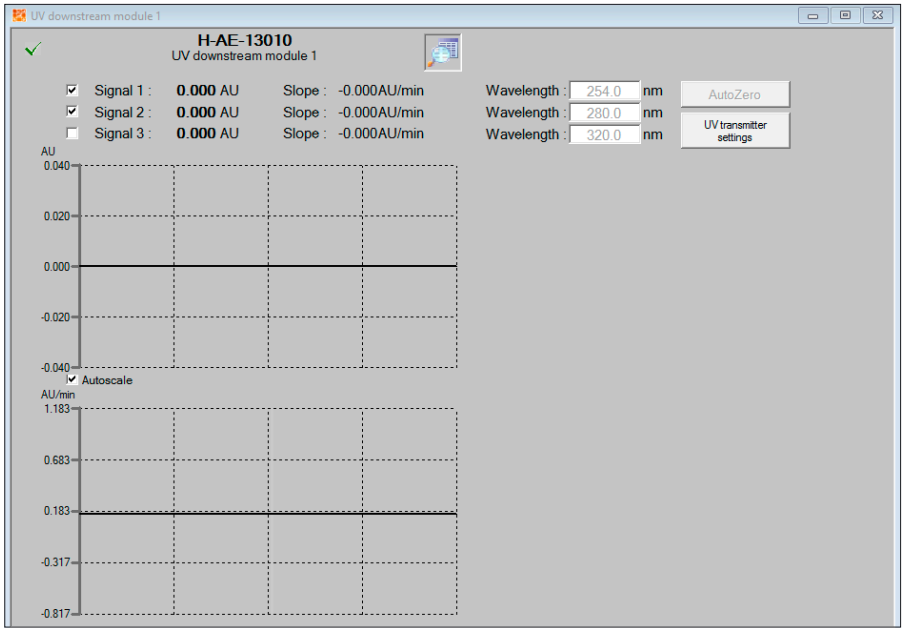
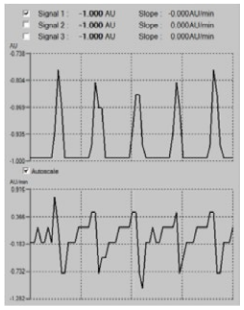
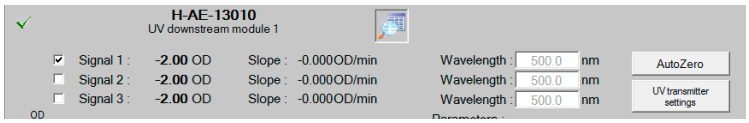
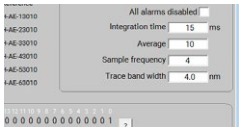


Fig. 22: UV parameters

Item	Function
	This part of the window is dedicated to the real-time curve of UV absorbance and the UV slope graph. You can display up to three signals on the graph by clicking on the relevant check box. You can change the ordinate axis by selecting the Autoscale button. You can also define a signal range in the parameters.
	UV remote control parameters are shown here: — Wavelength: the user can enter the requested wavelength here, except for Resolute ® Flowdrive Multi-Use devices, where the wavelengths are fixed by the component itself. — UV signal and UV slope: real-time value (raw UV absorbance) are displayed in AU and AU/min. — Autozero: clicking on this button triggers an “Autozero” on UV transmitter: current output is reset to 0.00. Not available in automatic mode, it is set in the recipe.
	Parameters and running time (on the first UV detector): — Parameters: integration time, average, sample frequency, trace band width are displayed in the “Miscellaneous” section of reserved parameters — Max and Mini signal and wavelength for alarm control — Reset running time

2.8.2 Manual Mode

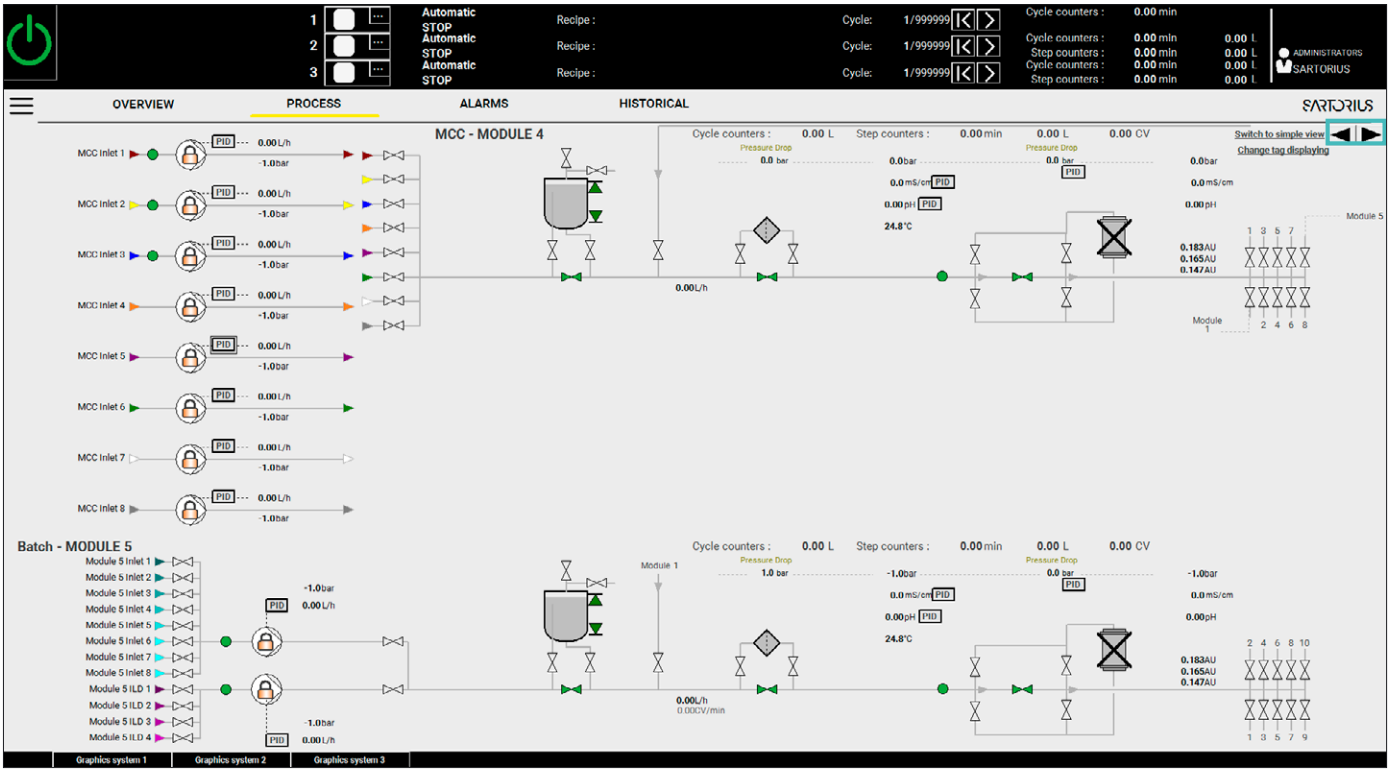
This mode is used for separation work where the user manually defines and sequences the steps as required. It is appropriate for development work or short production runs.

This mode should be used in conjunction with graphics displaying the most significant values.

Elements (pumps, valves, detectors) are controlled individually. You can click on the valve icons. Safety interlocks are provided (one collect valve open at a time, pump run only if one inlet line is open,...). The pump starts when you request to start a step or an elution (gradient) step.

Alarm management and alarm inhibition are provided.

▶ To control the unit, display the simple view of the Process state bar. You can configure any of the modules (up to 6) by clicking on the arrow.

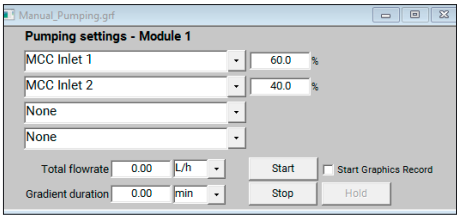


NOTICE

Firstly, check that the power supply is on position “ON” and that devices are running in “Manual” mode.

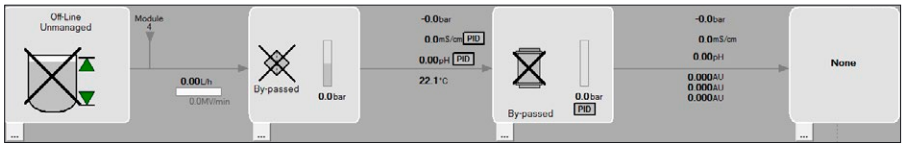
Procedure

To configure the device, follow this procedure:



▶ Control panel: Inlets
  ▶ Select up to 4 inlets with the expected composition.

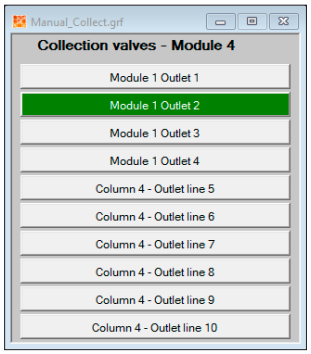
▶ Control panel: Flow Path
  ▶ Select up to 4 inlets with the expected composition.



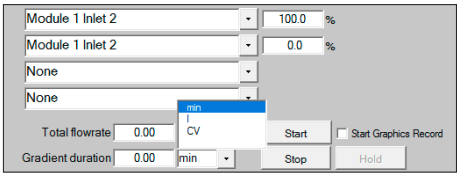
NOTICE

Regulation parameters are available via PID buttons.

The “Autozero” function is also accessible in Manual mode.

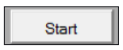


- Control panel: Outlets
  - Select an outlet for the device before starting pumps.
  - For MCC configuration, you must select the outlet chained with the next inlet module.

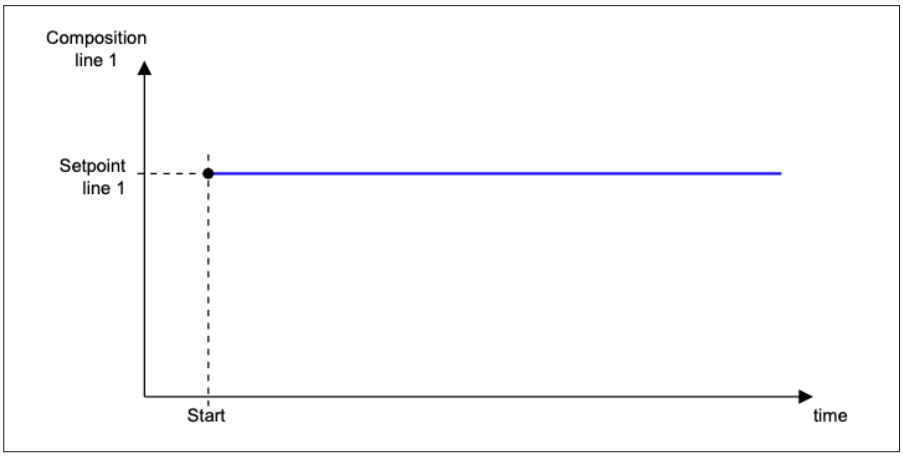


- Control Panel: Flow Rate Configuration
  - Below the inlet configuration, the user sets the conditions for an elution step:
    - Composition inlets
    - Total flowrate
    - Gradient length (in time, volume or CV)

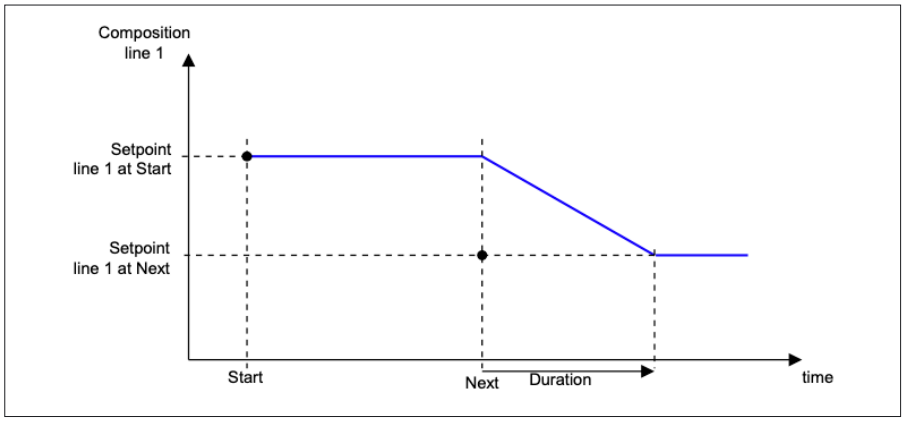
▷ Once composition, gradient duration and total flowrate are set, the gradient or elution (1:1 dilution rate) can be started.

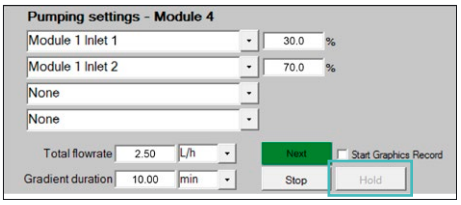


- Click on “Start” to initiate a step | isocratic dilution (or gradient). In this example, the automation control software will start a step consisting of 50% buffer (line 1 H-P-3100) and 50% water (line 2 “Dilution pump rate” H-P-3200) at a flow rate of 2.5 L/h during 10 min.

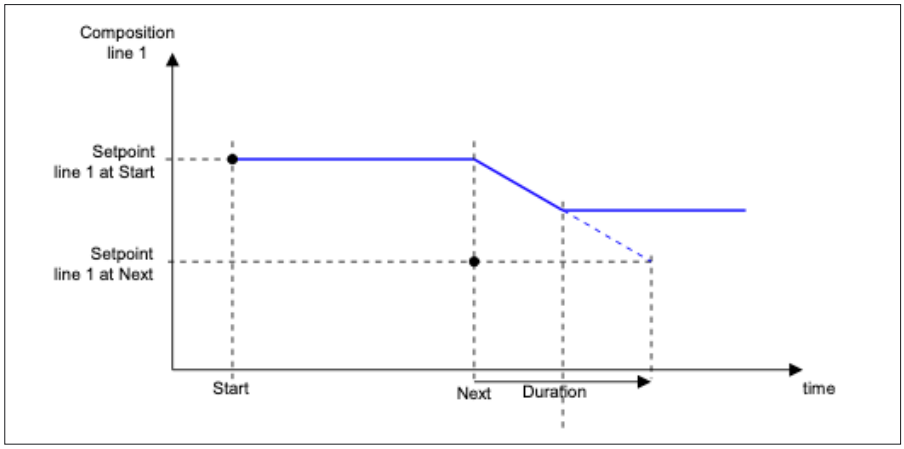


▶ If the user sets 30% on line 1 (the software will automatically calculate the dilution pump rate and dilution rate), and sets a duration of 10 min, clicking on “Next” initiates a linear gradient. The gradient is calculated between current composition (50%) and end composition (70%) within the set duration (10 min). In this example, start to enter the end composition for line 1 (70%), then set the time increment to 10 min. Flow rate can also be changed in a similar manner.

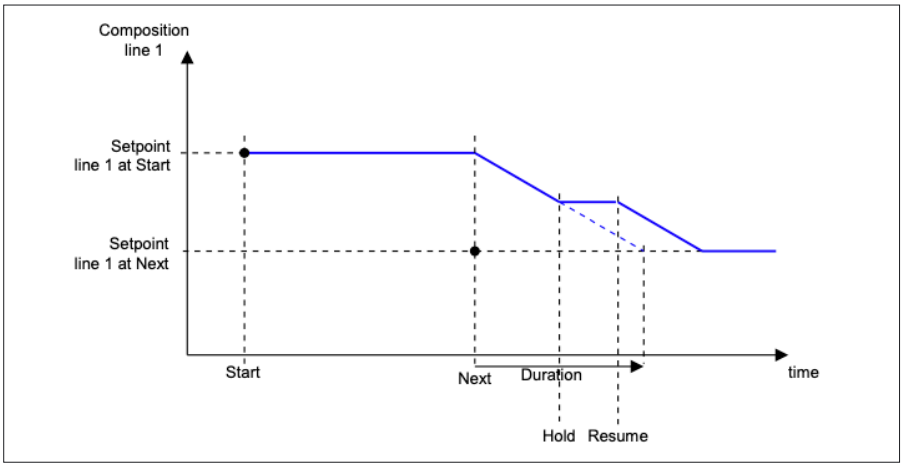




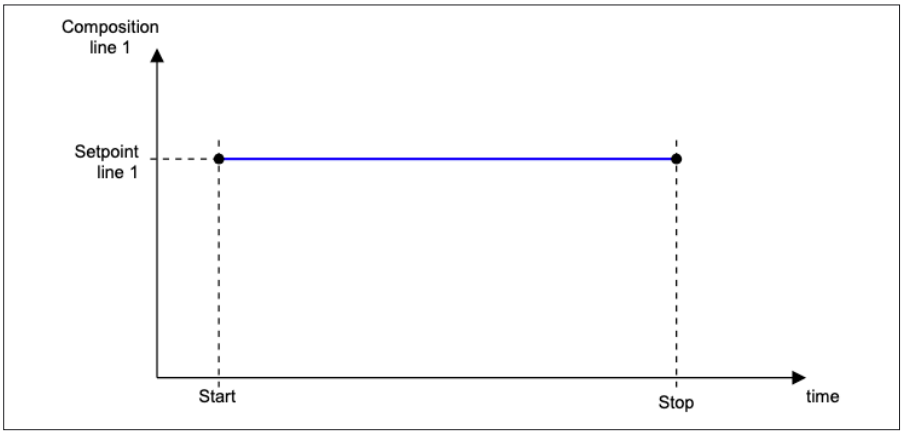
▶ Click on “Hold“ to freeze the gradient process. The elution process will continue to run using the composition value that was reached at the time of pressing the “Hold” command.



▶ Click on “Resume” to restart the gradient process. The process will resume starting from the composition value that was reached at the time of pressing the “Hold” command and progressing to the initial setpoint. If the user clicks on the “Next” button instead of the “Resume” button at that time, another gradient will be initiated between the current composition value and the end composition for the full duration as defined in time step.



▶ To abort or end the step, click on “Stop”.



▶ Click on “Start Graphics Record” to start and display the graphics module (see chapter „2.10 Graphics“, page 70).

2.8.3 Automatic Mode: Creating a Sequence

A sequence is made up of one or several recipes. This section describes the key steps for running a sequence. Before creating a sequence, you must create a recipe in which you will define all its actions and parameters, which will make up the recipe for your separation.

2.8.3.1 Creating a Recipe

Resolute® BioSC comprises up to 3 devices.

For a Batch device, recipe creation can only be made in “custom configuration” mode.

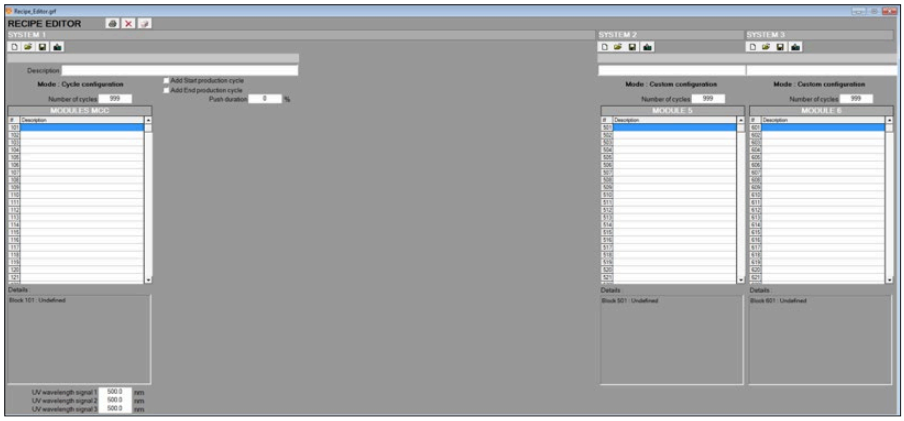
For MCC device, both “custom configuration” and “cycle configuration” modes are available.

Description of Modes

- A custom configuration recipe is the standard way of programming a batch process. The recipe manages only one column. As an example, the chaining of 3 batch processes can be performed by programming 3 custom configuration recipes on the 3 column modules.
- A cycle configuration recipe is used for programming a multi column process. This recipe is available for column modules in the MCC device and manages all columns in the device. The recipe is made of blocks (Load, Wash, Elution...) organized chronologically and entered in the same way as for a batch recipe.

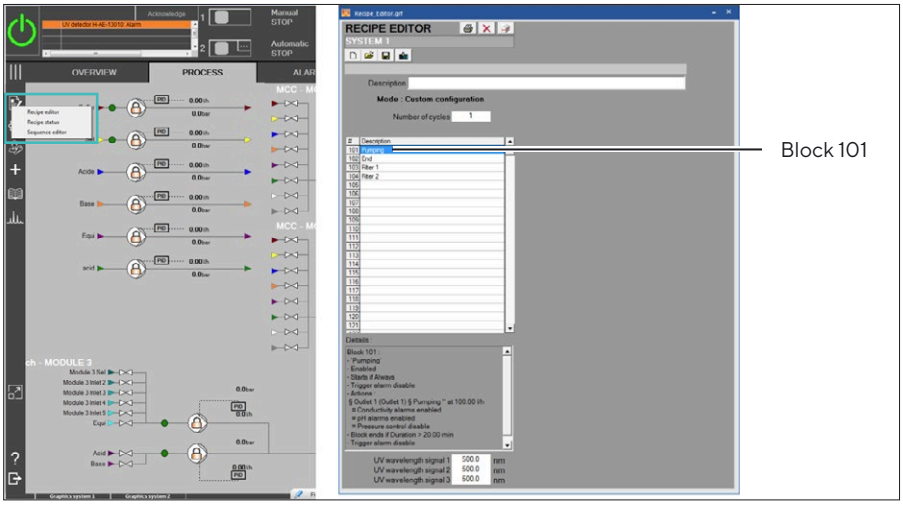
In the case of S-MCC, additional parameters are necessary compared with a traditional batch recipe. The recipe parameters and notably the Loading volume can be determined by Resolute® BioSC Predict software.

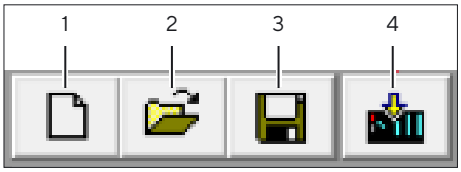
Example with cycle configuration for MCC device and custom configuration for batch devices:



Custom Configuration

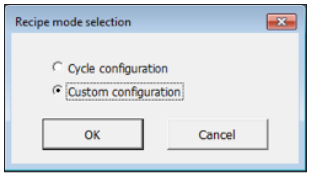
▶ To open the recipe editing window, the user must select the “Recipe editor” on the left hand side of the screen:





▷ The window “Recipe editor” opens.

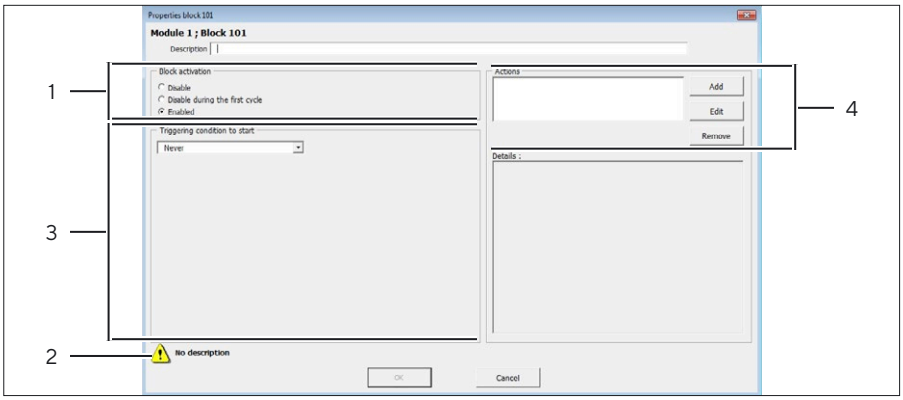
- ▶ To open a new recipe (1) with mode selection “Custom configuration” or “Cycle configuration”.
- ▶ To load a previously defined recipe (2).
- ▶ To save the recipe table as currently defined (3).
- ▶ To load the current recipe into the PLC (4).



▷ When opening a new recipe, the following window appears (only for systems with at least 1 MCC device).

- ▶ Select “Custom configuration”.

▷ As explained above, a block is a set of predefined instructions.
▶ When you double click on a line in the recipe editor (e.g. line 101 on previous page), you open the settings for that block:



Pos.	Description
1	Block Activation
2	Some warning | help messages may be displayed on the bottom left of the window
3	Triggers
4	Actions List

▶ Before creating your block, enter a description.

The window is divided into 3 parts:

— Block Activation
— Triggers
— Actions

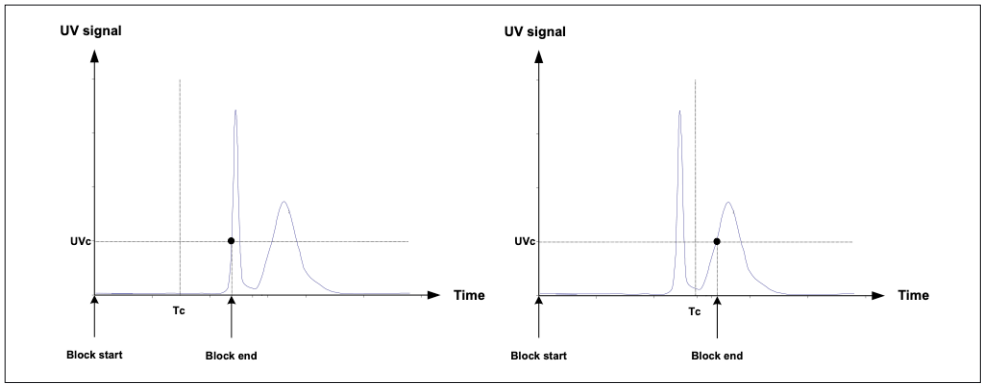
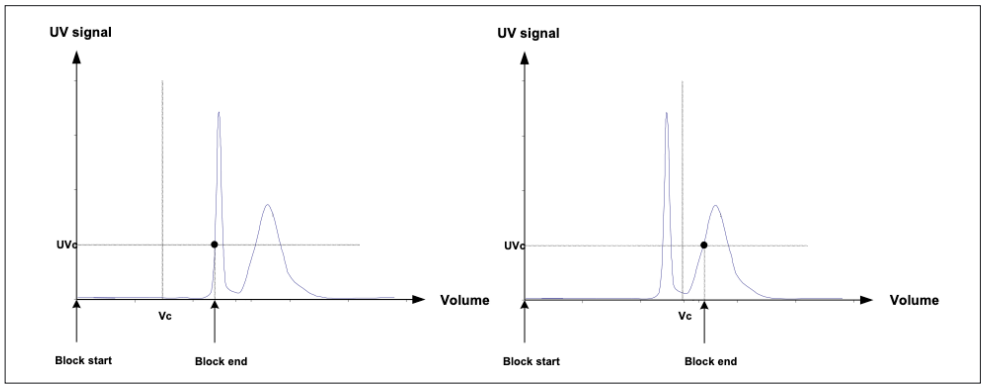
Block Activation

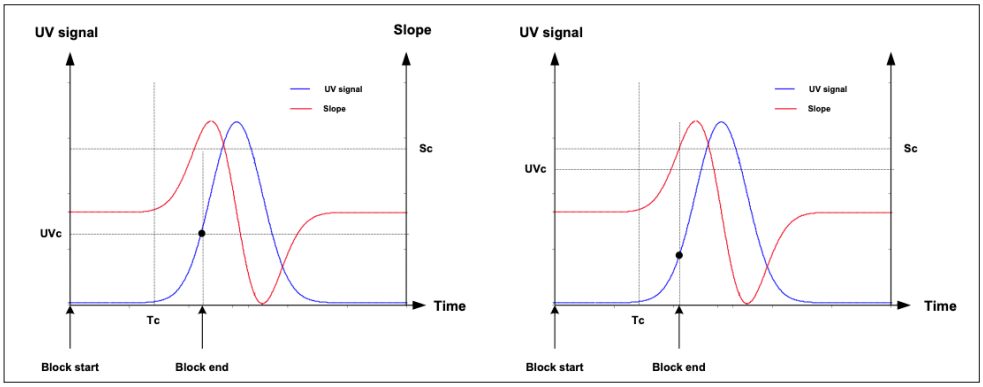
In this part you can choose to disable the current block or disable it only during the first cycle. In most cases, the block will be considered as “Enabled”.

Triggers

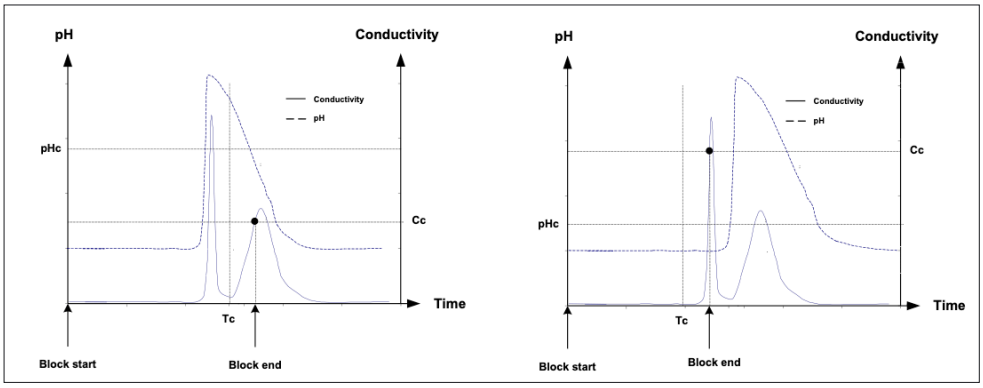
You can select a trigger to start the block and another trigger to stop the pumping action. The following table lists the various combinations of events, trigger types and associated parameters.

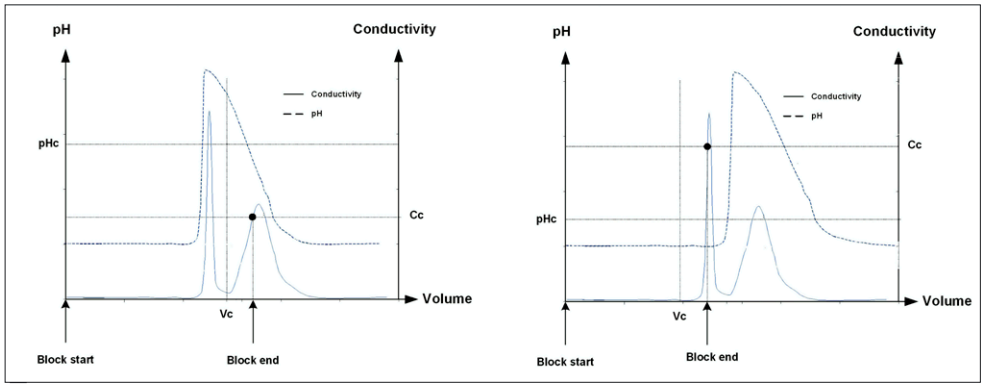
Triggers	Description
None	Selecting this action will erase the selected line.
Time	Some actions and blocks may be started or ended using the "Time" trigger. As start of block, the trigger is called "Time" and as end of block the trigger is called "Duration". The block will last as long as the duration setpoint is not reached (based on block time counter). The action will start when the time counter setpoint is reached.
Volume	This action allows for working in volume units. The volume displayed is taken directly from the flowmeter, taking time and flow rate into account. All actions will be triggered as soon as the defined volume is equal to the current cycle volume.
Block trigger	Block start-up is conditioned upon the situation of another block. Block triggers can refer to a block which is not on the same recipe table (i.e. not on the same device). Three triggers are available:
Block start + time	Block starts when a certain time duration has passed after the related block start-up.
Block start + volume	Block starts when a certain volume has passed through the device after the related block start-up.
Previous block completed	Block starts after the end of the previous block.
Air detection	Action will last as long as there is no air detected at the pump inlet lines. The block will start when air is detected at the pump inlet lines.
UV signal	Action will last as long as UV signal has not reached the setpoint. The block will start when UV signal has reached the setpoint. UV signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as UV signal becomes superior or equal to X. — < X means the step will start or end as soon as UV signal becomes strictly inferior to X
Time &/or air detection	This trigger is performed by combining 2 triggers. The block will last as long as the time duration setpoint is not reached or while no air is detected. The action will start when the time duration setpoint is reached or while air is detected. One of the 2 conditions will trigger the end of the block or the start of the action.
Volume &/or air detection	This trigger is performed by combining 2 triggers. The block will last as long as the volume pumped through the system has not reached the setpoint or while no air is detected. The action will start when the volume pumped through the system has reached the setpoint or while air is detected. One of the 2 conditions will trigger the end of the block or the start of the action.

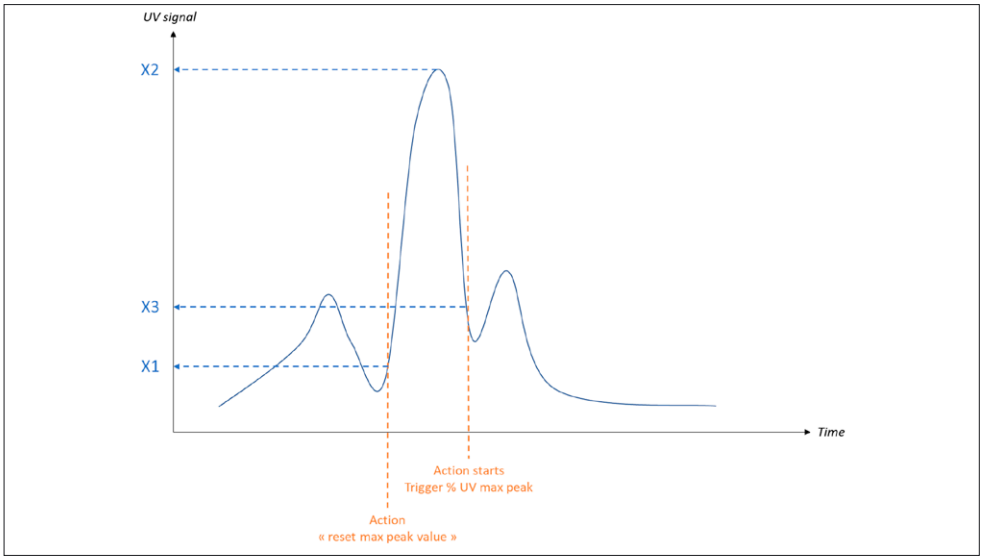
Triggers	Description
Time & UV signal	This trigger is performed by combining two triggers. The action will last as long as time duration and UV signal have not both reached the setpoints. The block will start when time duration and UV signal have both reached the setpoints. Both conditions have to be reached. UV signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start as soon as UV signal becomes superior or equal to X. — < X means the step will start as soon as UV signal becomes strictly inferior to X. Example 1: Time = Tc; UV signal ≥ Uvc 
Volume & UV signal	Action will last as long as the volume pumped through the device and the UV signal have not both reached the setpoints. The block will start when the volume pumped through the device and the UV signal have both reached the setpoints. Both conditions must be reached. UV signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as UV signal becomes superior or equal to X. — < X means the step will start or end as soon as UV signal becomes strictly inferior to X. Example 1: Volume = Vc ; UV signal ≥ UVc 

Triggers	Description
Time & (UV signal or slope)	Action will last as long as time duration setpoint and UV signal or UV signal slope have not reached the setpoints. The block will start when time duration setpoint and UV signal or UV signal slope have reached the setpoints. Both set of conditions (time & UV signal) or (time & slope) must be reached at the same time. UV signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as UV signal becomes superior or equal to X. — < X means the step will start or end as soon as UV signal becomes strictly inferior to X. Example: Time = Tc; UV ≥ Uvc or Slope ≥ Sc 
Time & (UV signal and slope)	This trigger is performed by combining 2 triggers. The block will last as long as time duration setpoint and the UV signal and the UV signal slope have not reached the setpoints. The action will start when time duration setpoint and the UV signal and the UV signal slope have reached the setpoints. The 3 conditions have to be reached at the same time. UV signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as UV signal becomes greater than or equal to X. — < X means the step will start or end as soon as UV signal becomes strictly less than X.
Volume & (UV signal or slope)	This trigger is performed by combining 2 triggers. The block will last as long as the volume pumped through the system and UV signal or UV signal slope have not reached the setpoints. The action will start when the volume pumped through the system and UV signal or UV signal slope have reached the setpoints. Both set of conditions (volume & UV signal) or (volme & slope) have to be reached at the same time. UV signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the UV signal becomes greater than or equal to X. — < X means the step will start or end as soon as the UV signal becomes strictly less than X.

Triggers	Description
Volume & (UV signal and slope)	This trigger is performed by combining 2 triggers. The block will last as long as the volume pumped through the system and UV signal and UV signal slope have not reached the setpoints. The action will start when the volume pumped through the system and UV signal and UV signal slope have reached the setpoints. The 3 conditions have to be reached at the same time. UV signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the UV signal becomes greater than or equal to X. — < X means the step will start or end as soon as the UV signal becomes strictly less than X.
Time & pH	This trigger combines two triggers. The action will last as long as time duration and pH signal have not reached the setpoints at the same time. The block will start when time duration and pH signal have both reached the setpoints. Both conditions must be reached. pH signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as the pH signal becomes greater than or equal to X. — < X means the step will start or end as soon as the pH signal becomes strictly less than X.
Volume & pH	This trigger is performed by combining 2 triggers. The block will last as long as the volume pumped through the system and pH signal have not reached the setpoints at the same time. The action will start when the volume pumped through the system and pH signal have reached the setpoints at the same time. Both conditions have to be reached. pH signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the pH signal becomes greater than or equal to X. — < X means the step will start or end as soon as the pH signal becomes strictly less than X.
Time & conductivity	This trigger is performed by combining two triggers. The block will last as long as time duration and conductivity signal have not reached the setpoints at the same time. The action will start when time duration and conductivity signal have reached the setpoints at the same time. Both conditions have to be reached. Conductivity signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the conductivity signal becomes greater than or equal to X. — < X means the step will start or end as soon as the conductivity signal becomes strictly less than X.

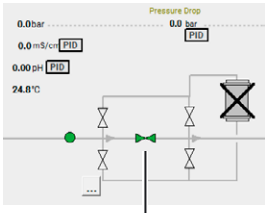
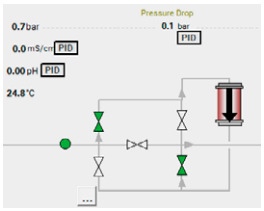
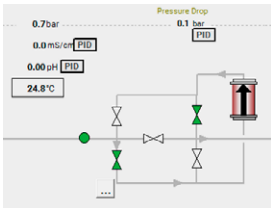
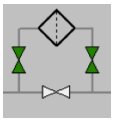
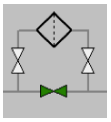
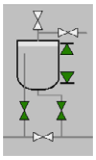
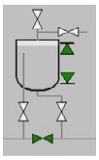
Triggers	Description
Volume & conductivity	This trigger combines two triggers. The action will last as long as the volume pumped through the device and conductivity signal have not reached the set-points at the same time. The block will start when the volume pumped through the device and conductivity signal have both reached the setpoints. Both conditions must be reached. Conductivity signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as conductivity signal becomes superior or equal to X. — < X that mean the step will start or end as soon as conductivity signal becomes strictly inferior to X.
Time & pH & Conductivity	This trigger combines three triggers. The action will last as long as time duration and conductivity signal & pH signal have not reached the setpoints at the same time. The block will start when time duration and conductivity signal & pH signal have all reached the setpoints. The 3 conditions must be reached. Conductivity signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as conductivity signal becomes superior or equal to X. — < X means the step will start or end as soon as conductivity signal becomes strictly inferior to X. pH signal setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as pH signal becomes superior or equal to X. — < X means the step will start or end as soon as pH signal becomes strictly inferior to X. 

Triggers	Description
Volume & pH and conductivity	This trigger is performed by combining 2 triggers. The block will last as long as the volume passed through the system and conductivity signal & pH signal have not reached the setpoints at the same time. The action will start when the volume passed through the system and conductivity signal & pH signal have reached the setpoints at the same time. The 3 conditions have to be reached. Conductivity signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the conductivity signal becomes greater than or equal to X. — < X means the step will start or end as soon as the conductivity signal becomes strictly less than X. pH signal setpoint may be specified as ≥ or < at a certain value. It is implicit that if the setpoint is specified as: — ≥ X means the step will end as soon as the pH signal becomes greater than or equal to X. — < X means the step will start or end as soon as the pH signal becomes less than X. 
Time & External request	The action or block start or end is related to an external request and a time duration. The external request is a hardware signal, digital input, sent by another device. The external request can come from a weighting device, an external detector or another biopharma device. One digital input (= one external request) per column module and another one on the main Resolute® BioSC unit.
Time & Block & Block	This trigger combines 2 triggers. The block starts when a certain time duration has passed after the related block start-up and another block has been started.
Time & MCC outlet volumes	The block will last as long as time duration and fixed outlet volume counter of the MCC device is reached.
Time/volume & Pressure drop of column	This trigger is performed by combining 2 triggers. Action will last as long as pressure drop of column has not reached the setpoint. The block will start when pressure drop of column has reached the setpoint. Pressure drop of column setpoint may be specified as ≥ or < compared to a certain value: — ≥ X means the step will start or end as soon as the pressure drop of the column becomes greater than or equal to X. — < X means the step will start or end as soon as the pressure drop of the column becomes strictly less than X.

Triggers	Description
Time/Volume & UV Max peak	Some actions and blocks may be started or ended using the “UV max peak” trigger. The block will last while UV signal has not reach the setpoint. The action will start when UV signal has reached the setpoint. UV signal setpoint may be specified as ≥ or < at a certain value in % of the maximum UV signal reached during the process. It is implicit that if the setpoint is specified as: — ≥ X means the step will start or end as soon as the UV signal becomes greater than or equal to X. — < X means the step will start or end as soon as the UV signal becomes strictly less than X. The maximum value of the UV signal reach during the process is a value obtained by screening continuously the UV signal and store it when the current value is above (data buffer). The action “reset max peak value” allows to reset to “0” AU the stored value. The stored value is reset to “0” if the cycle is reset or when the recipe switches to the next cycle. The value stored in the data buffer must be displayed in the synoptic dynamically. Trigger combination of the “UV Max peak” trigger is possible with time and volume as for “UV signal” trigger.  In the illustration above: — X1 is the UV value stored in the buffer when action “reset max peak value” is performed — X2 is the UV value stored in the buffer when the UV signal reaches its maximum — X3 is the UV setpoint value set in % of the maximum UV signal (X2) and used as a trigger for actions

Actions List

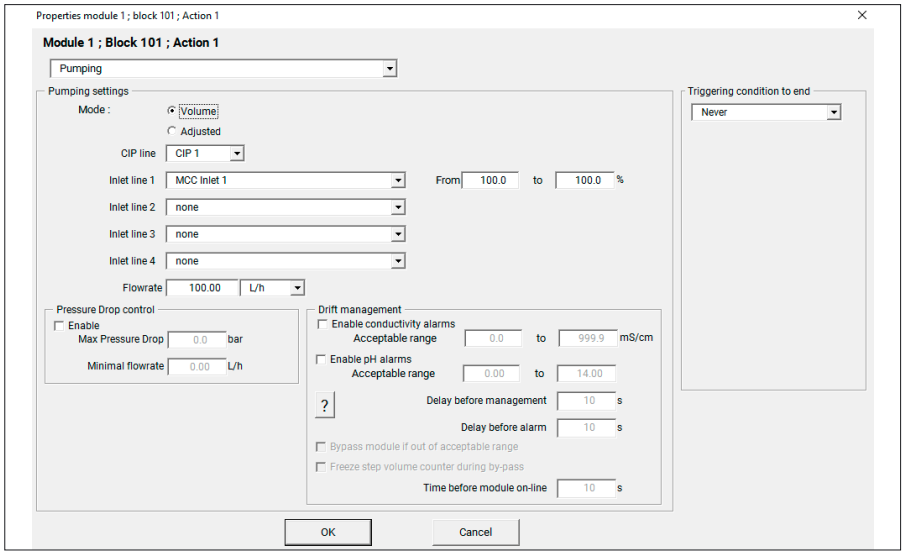
Actions List: Up to 5 actions can be added at the block. Each action begins at the same time and they have their own properties. The table below describes the actions in details:

Event Type	Possible Actions	
Column | membrane	Off-line  Bypass valve **Position by Default**	
Column | membrane	Downflow 	Upflow 
Filter	On-line 	Off-line  **Position by Default**
Bubble trap	On-line 	Off-line  **Position by Default**

Actions	Description
Pumping	See description below.
Outlet	Select the outlet for product.
Enable from previous module	If the module is connected to another module, open the valve H-AV-Y3220.
Autozero UV	Bring the UV signal base line to zero.
Stop pump	Stop and reset all the actions defined in the pumping action.
Alarm	Trigger an alarm during the recipe.
Message	Display a message to the operator during the recipe. Recipe keeps running.
Wait	Put the pumping action on stand-by. Time counters keep running.
Pause	Put the device on pause. Time counters are paused. Ability to include a message.
Reset all MCC outlet volumes	Reset the volume counters on each outlet valves for MCC device.
Reset max peak UV value	Reset the max peak value record-ed by the UV detector on the module used.
Next recipe	Stop the current recipe and run the next one defined in the sequence editor.
End cycle	End the current recipe cycle. After execution of this action, process goes to next cycle if any. If it is the last cycle, process switches off.
Disable block	Disable a block during the current recipe cycle.
None	No action

– **Pumping Action:** Pumping is the primary action. It is used to set flowrates and compositions for the different inlets.
This action lets the user define the gradient and | or buffer preparation | in-line adjustment parameters. It is also used to set the CIP inlet to use during CIP process phase just by selecting one of the 3 different CIP lines. (To use the CIP line, it is also necessary to set an inlet line in the same pumping action).

▶ Click on “Add” to choose from the list pumping action.
▷ The following window will appear:



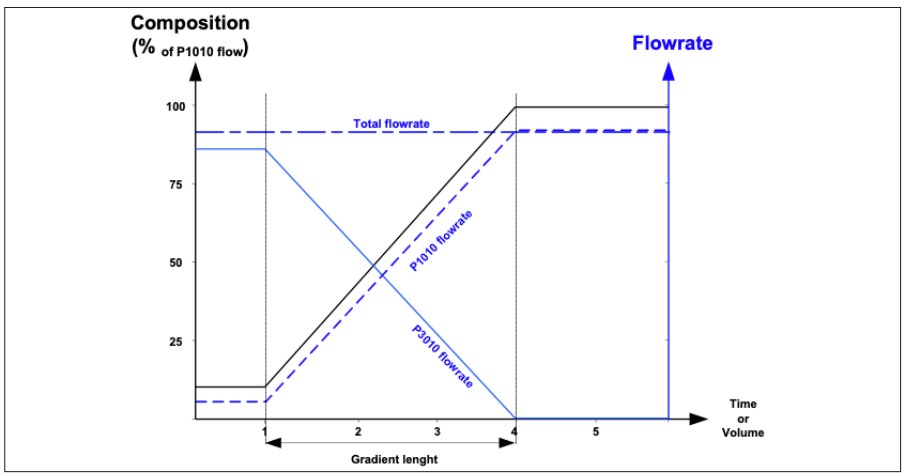
Contrary to block settings, pumping is determined by a trigger condition to end. The same previously mentioned triggers are available and you can combine up to four triggers. Different flowrate units are available between mL/min, L/min, L/h, m^3/h, CV/min or CV/h.

For pumping settings, two modes are available:

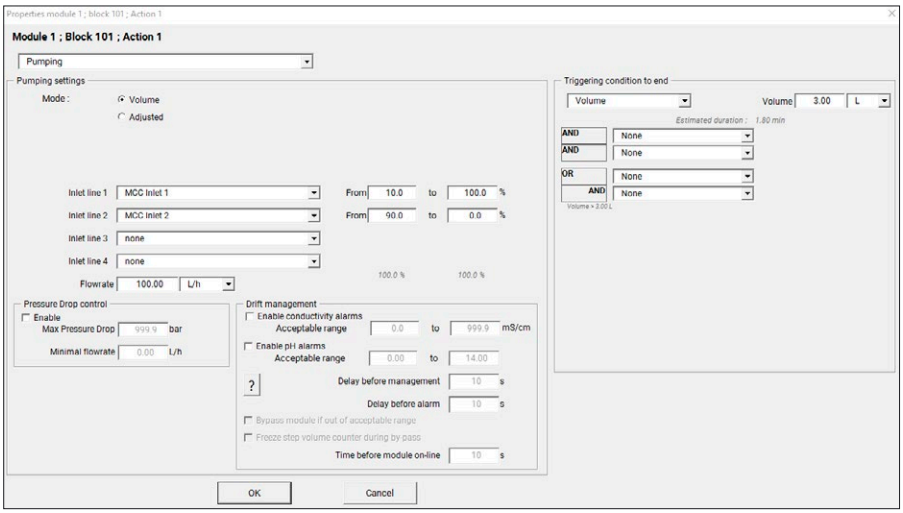
- **Volume:** In order to perform gradient or inline dilution, you can configure the composition as a percentage of total flow. Two inlets must be selected to perform the mixing.
  - Gradient length: This is the duration of the gradient specified as volume, column volumes or time (if the gradient length is 0, the device will perform a “step” (isocratic mode)). In the following example, gradient length is set at 3 CV.
  - Composition: This is the final composition to be reached for the buffer, specified as volumetric percentage of total flow.
    Total flow rate: this is the cumulative flow rate of all pumps.

Example 1:

- As an example, pumps are named as: Pump #1 = P1010;
  Pump #2 = P3010
- Current composition P1010 = 10%, P3010 = 90%
- New composition P1010 =100%, P3010 = 0%
- Gradient length 3 CVs



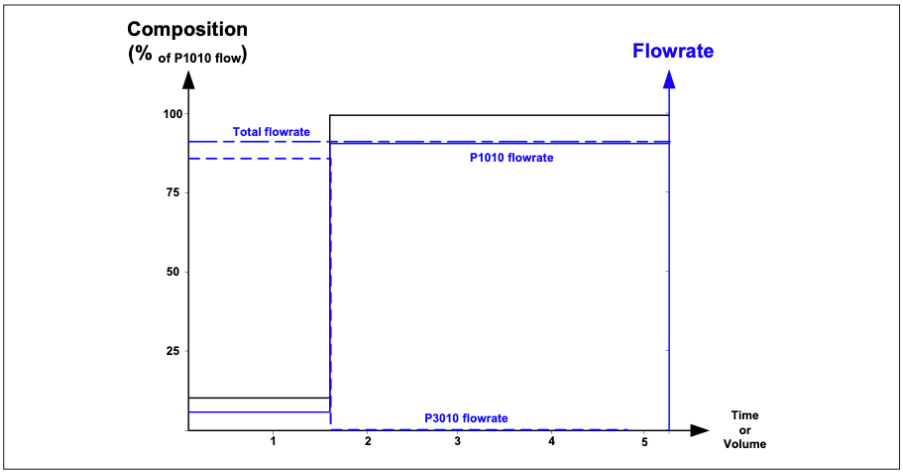
In the pumping action, it will be set as follow:



The device will perform a linear gradient from the current composition 10% “of P1010” to 100% “of P1010” into 3 CVs.

Example 2:

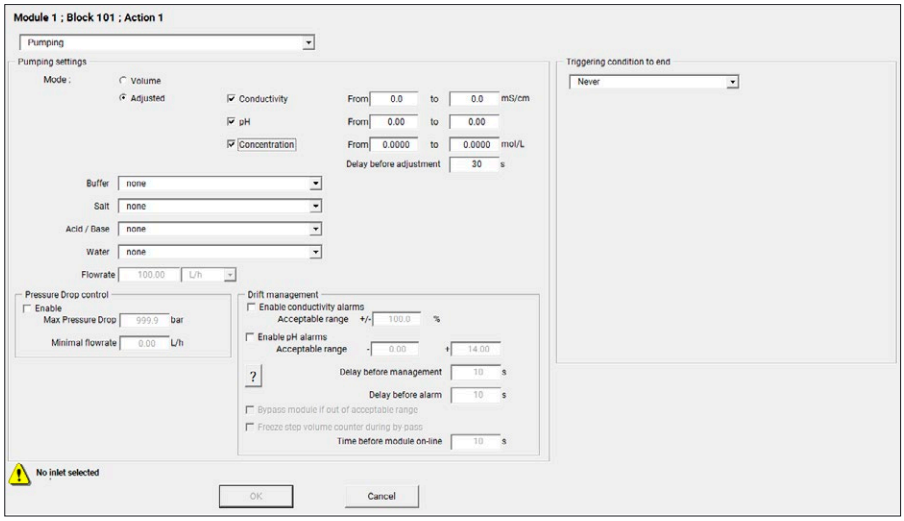
- As an example, pumps are named as: Pump #1 = P1010 ; Pump #2 = P3010 Current
- Composition P1010 = 10%, P3010 = 90%
- New composition P1010 =100%, P3010 = 0%
- Gradient length 0 min



The device will perform a “step” from the current composition 10% “of P1010” to 100% “of P1010” almost instantly.

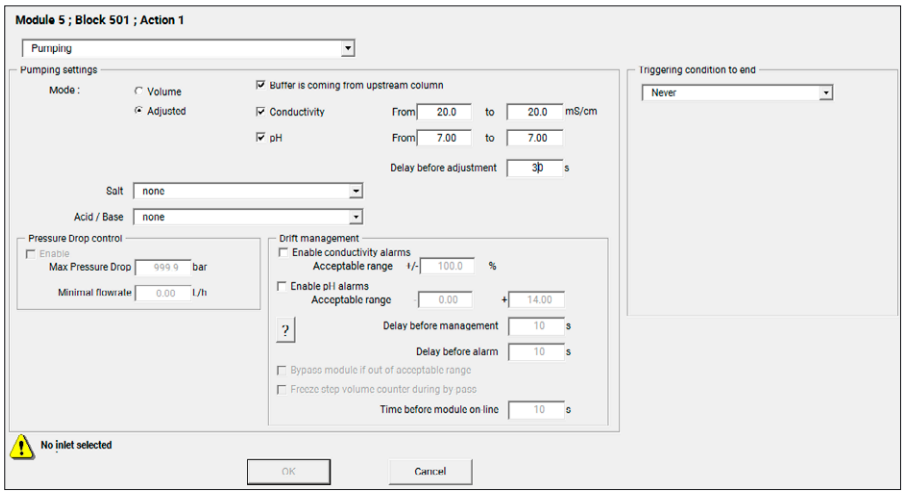
- Adjusted:
  ▶ Click on “Adjusted”.
  ▷ Depending on the device, settings are not the same.

- MCC and Batch device: Buffer preparation
  All the information necessary for buffer preparation are displayed.



- ▶ Click on the square(s) corresponding to the expected regulation. Available choices are: “conductivity”, “pH”, “concentration”, “conductivity + pH”, “conductivity + concentration”, “pH + concentration” and “conductivity + pH + concentration”.
- ▶ Enter the corresponding final setpoints. You can program a gradient.
- ▶ Select the inlets corresponding to the indicated solutions.
- ▶ Enter the total flow rate.
- ▶ Optional: Set a delay before to start the adjustement.
- ▷ Buffer preparation is now ready.

– Batch device: In-line adjustment
For in-line adjustment in a batch device, the window below will be displayed:



- ▶ Click on “Buffer is coming from upstream column” to do an in-line adjustment. With this option, the buffer is coming from the upstream column with its own flow rate. Click on the square(s) corresponding to the expected adjustment. Available choices are “conductivity”, “pH” and “conductivity + pH”,
- ▶ Enter the corresponding final setpoints. Optional: Program a gradient.
- ▶ Select the inlets corresponding to the indicated solutions.

NOTICE

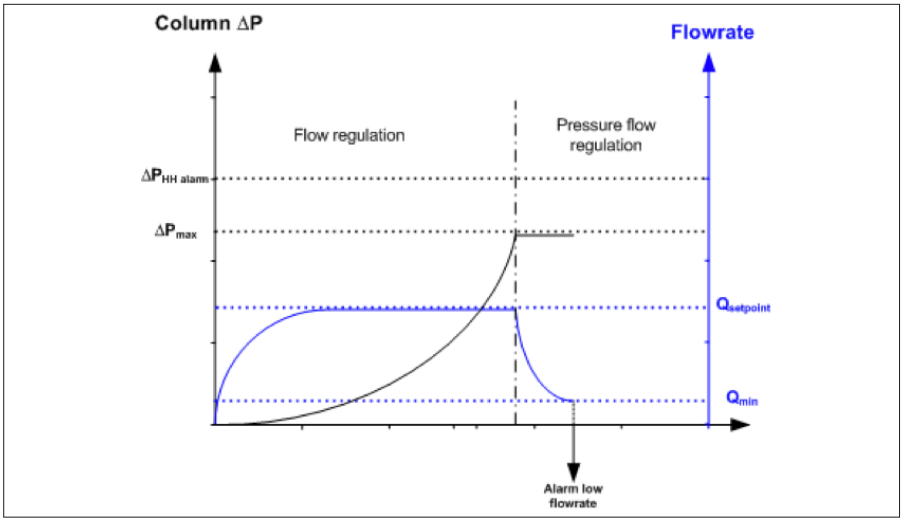
If “Buffer is coming from upstream column” is not selected, program a buffer preparation on the batch device.

▶ Click on the square corresponding to the expected regulation.
▷ Available choices are “conductivity” and “pH”. Protocol is the same for a buffer preparation on the MCC device.

The table below gives a summary of the various combinations available for buffer preparation:

Setpoint	Number of pumps required	MCC device	Batch device
Conductivity	2	X	X
pH	2	X	X
Concentration	2	X	-
pH and concentration	3	X	-
pH and conductivity	3	X	-
Conductivity and concentration	3	X	-
pH, conductivity and concentration	4	X	-

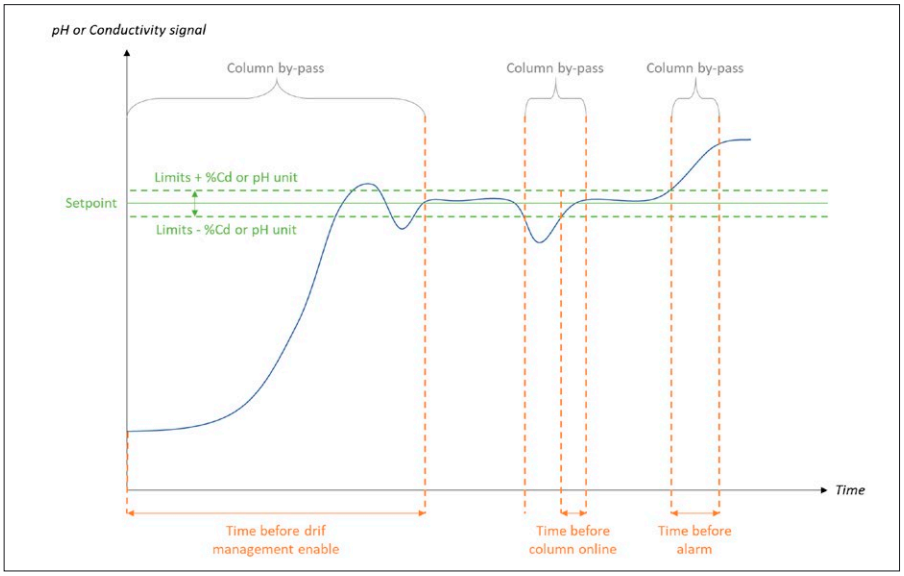
– Pressure drop control: In both modes, the user can enable or disable pressure drop control.
  Pressure flow regulation gives the operator the option to manage the pressure drop into the column or membrane. When the maximum pressure (setpoint) is reached, flowrate is adjusted in order to:
  – Maximize flow rate and keep membrane pressure drop equal or below the maximum allowed value (ΔPmax)
  – Manage an alarm if flow rate decreases below a predefined minimum setpoint



- pH and conductivity drift management: In both modes, the user can enable or disable pH and conductivity drift management. The purpose of the drift management is to avoid sending non-compliant product (pH and | or Conductivity out of specifications) to the chromatography column | membrane. The pH | Conductivity limits are defined by the user. The system will automatically bypass the chromatography column | membrane when the pH and | or conductivity value(s) are above the limits. The drift management parameters are:
  - Drift management ON | OFF: This parameter allows to enable or disable the drift management.
  - pH acceptable deviation in pH unit : This parameter defines the limit in pH where the current value is considered out of specifications. The parameter is set in pH unit around the pH setpoint in adjusted mode. pH setpoint is a recipe parameter of the Gradient – Inline dilution functionality. In the case of pH gradient the limit changes over time as pH setpoint changes. The parameter is set in pH value min and max in volume mode.
  - Conductivity acceptable deviation: This parameter defines the limit in Conductivity where the current value is considered out of specifications. The parameter is set in % of the conductivity setpoint in adjusted mode. Conductivity setpoint is a recipe parameter of the Gradient – Inline dilution functionality. In the case of conductivity gradient the limit changes over time as conductivity setpoint changes. The parameter is set in conductivity value min and max in volume mode.
  - Delay before drift management: At the starting of the pumping action and when pH and | or conductivity online control is enable the pH and/or conductivity current value(s) take time to reach the steady state. During this amount of time the product is out of specification. To avoid the triggering of the pH | Conductivity drift alarm, the “Delay before drift management” parameter disables the drift alarm during a certain amount of time defined by the user to reach the steady state.
  - Time before module online: To protect the chromatography column | membrane from out of specification products, the system will come back with column | membrane online if current pH and/or conductivity value(s) are in the specified range during a certain amount of time. This time is corresponding to the “Time before column online” parameter.
  - Delay before alarm: If the current pH and | or conductivity value(s) are out of specifications during a certain amount of time the system triggers an alarm. This time is corresponding to the “Time before alarm” parameter.
  - Freeze step volume counter during by-pass: This parameter allows to enable or pause the step volume counter when column | membrane is by-passed. By default, the step volume counter is paused when column | membrane is bypassed.

The pH and conductivity drift management is based on the values of the sensors located just before the column if the sensors are present. In the case of non-presence of the sensors before column, the pH and conductivity drift management is based on the sensors located just after the mixing point.

Hereunder an example of the pH and conductivity drift management in adjusted mode for illustration:

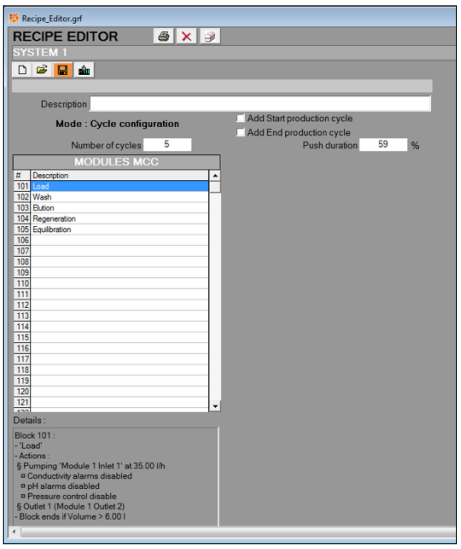


- Back pressure regulator CIP setpoint: A pressure setpoint in bar can be set in the reserved parameters. When the pressure setpoint is reached, the back pressure regulator is open to let the liquid pass through the pump. In the pumping action, the user can choose if the pressure setpoint dedicated to the CIP needs to be use or not.

- Cycle configuration: Cycle configuration is the main function.
  It enables the user to program the steady state recipe of the device.
  Recipe parameters for cycle configuration are:
  - Number of blocks
  - Number of cycles to be processed
  - Name of the block

NOTICE

The first block in cycle configuration is always “Load”.

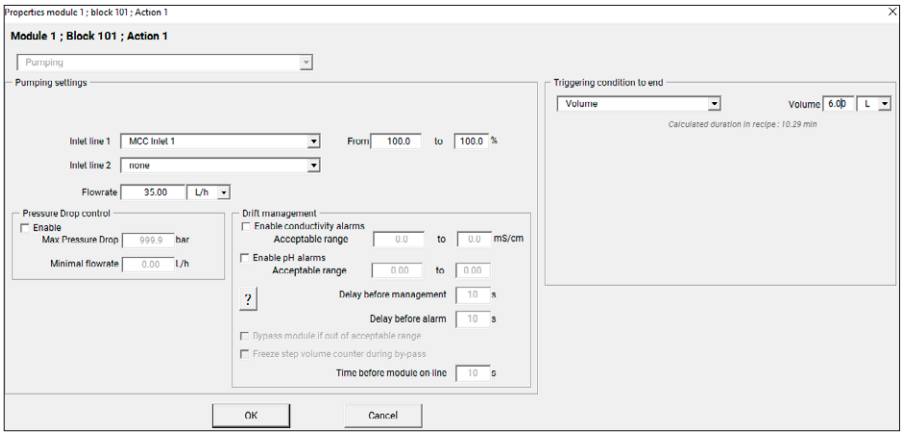


- Inlet pump used for each block. This parameter lets you choose the inlet pump between 1 and 8 (corresponding to the 8 inlet pumps).
- Outlet used for each block (see collection valve management)
- Duration of the “push”, expressed in percentage of time of the “Wash” step. This parameter is given by the Resolute® BioSC Predict software.
- Flow rate of the pump for each block.

Example of a cycle configuration function:

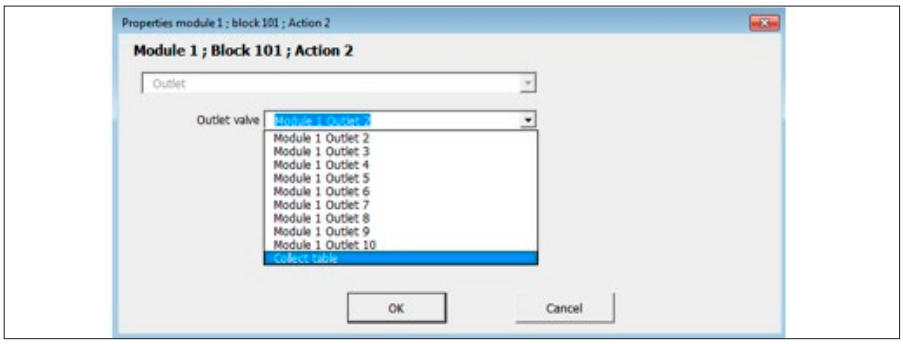
Block Name	Flow rate (L/h)	Volume trigger to end (L)
Load	35	6
Wash	15	2
Elution	16	1
Regeneration	19	4
Equilibration	20	4

Pumping action should be entered as below:



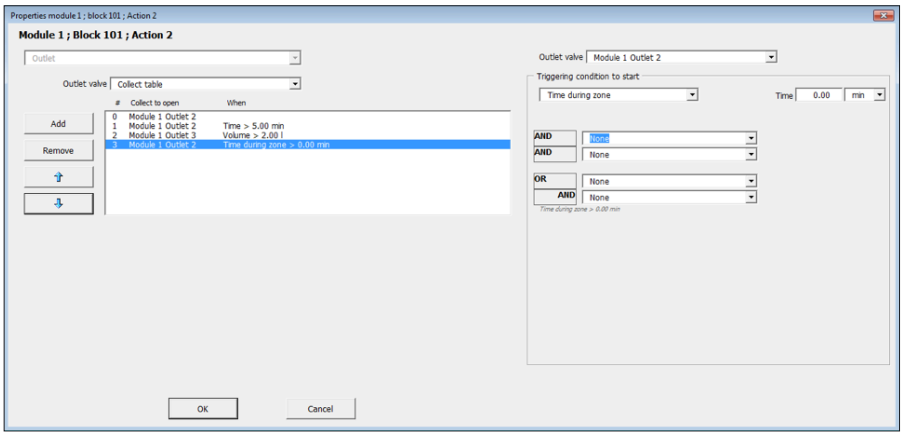
Note that gradient is already available in cycle configuration.

The second step in creating of block pumping is the selection of the collect:



The “collect table” is managed via a dedicated action. Valve switches can be triggered by time or by volume or they can be event-based.

The “collect table” trigger features are identical to the action or block triggers (refer to previous “Trigger” section for detailed information).



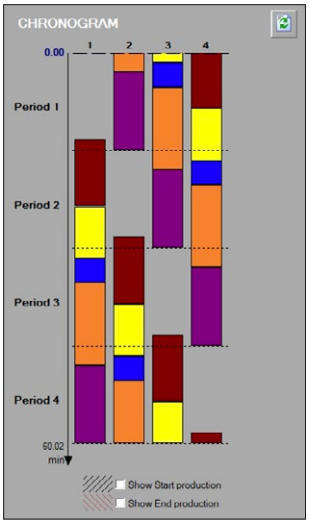
For an MCC device and for a cycle configuration recipe, collects are done sequentially and chronologically, as per the “collect table”.

Example:

- Default collect #10,
- Collect #2: t= 5 min,
- Collect #3: V=2 L,
- Collect #2: time during zone = x min

This means that collect #10 will open at the beginning of the block; collect #1 will open after 5 minutes; then when 2 L is passed through the column, collect #2 will open.

Please be mindful of “Time during zone” trigger: There will be no action if the time is longer than the duration of the step.



– Chronogram: The chronogram is a representation of the status of the columns throughout the cycle. It gives the user a quick view of the process for all columns involved in the cycle.
Sequences of the cycle configuration are based on the number of columns per zone.

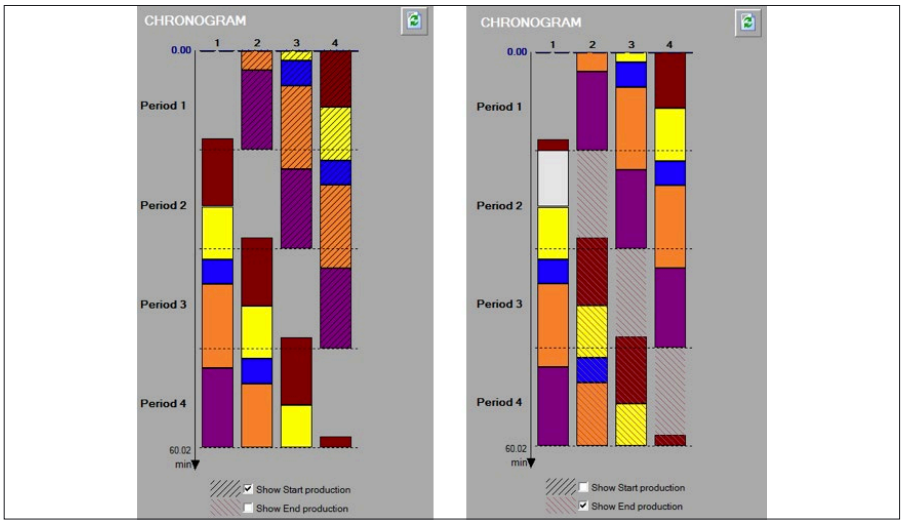
  The total number of columns for all zones should be equal to the number of columns installed on the device.

– Start production: Start production is the starting sequence before the cycle configuration recipe. It will process one specific cycle so that a steady state can be smoothly reached for purification.
The Start production cycle is an option, which must be checked by the user in the recipe editor.

  The chronogram of the Start production is similar to that of the cycle configuration recipe, but with a different starting time and with some of the columns disabled (see chronogram section, next page).

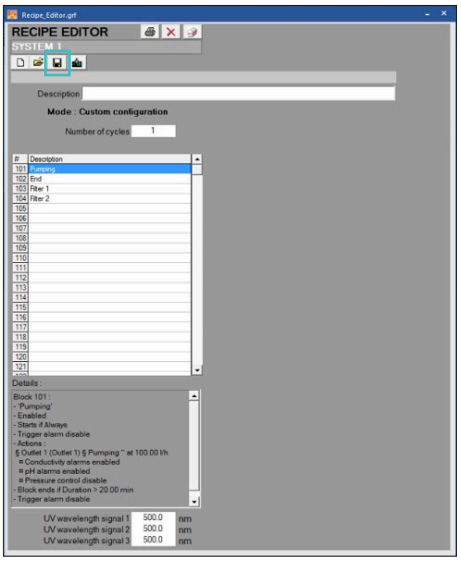
– End production: End production is the final sequence after the cycle configuration recipe. It will process one specific cycle so that purification can be finished and columns be emptied progressively.
The End of production cycle is an option, which must be checked by the user in the recipe editor. If the option is checked, the End of production cycle will start when the cycle configuration recipe ends.

  The chronogram of the End of production is similar to that of the cycle configuration recipe, but with some of the columns and zones disabled (see chronogram section, next page).

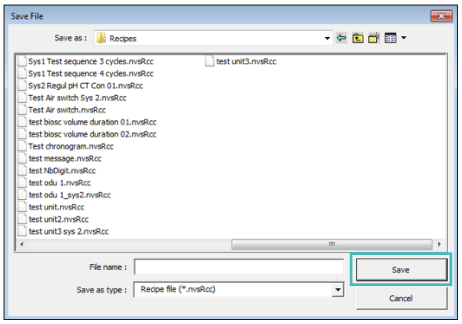


2.8.3.2 Saving a Recipe

Procedure



▶ Once all blocks have been defined, click on “save as” to save the recipe.

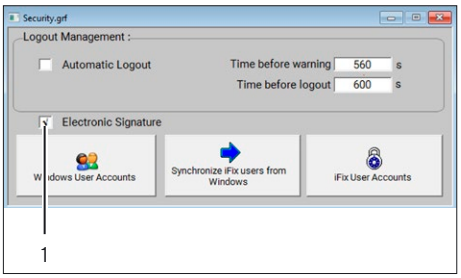


▶ If you click on “Save Recipe”, the window appears:
  ▶ Enter a new name, then click on “Save”.

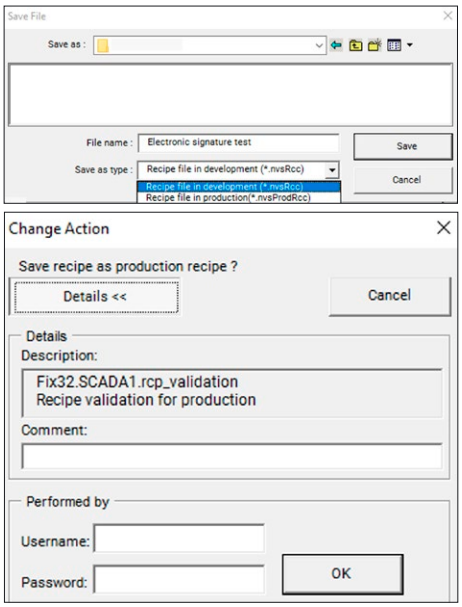
2.8.3.3 Enabling an Electronic Signature

It is possible to enable the electronic signature in “Security” parameters to save the recipe.

Procedure



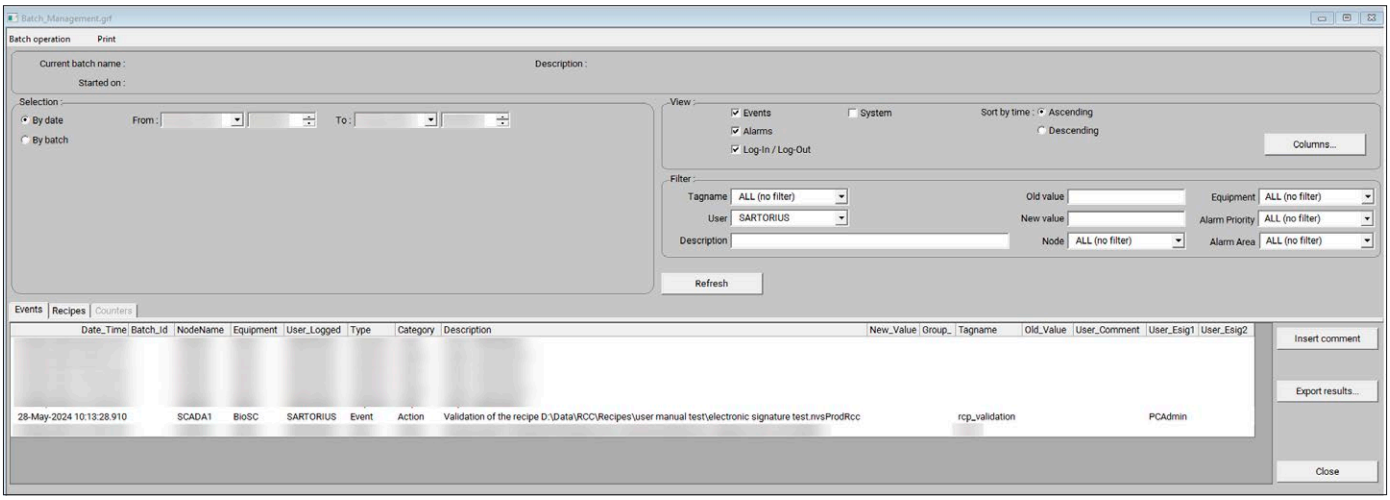
▶ Select the checkbox “Electronic Signature” (1).



▷ When changing the recipe status during saving, from development recipe to production recipe, the electronic signature is required. Production recipes can be modified and saved from supervisor access level.

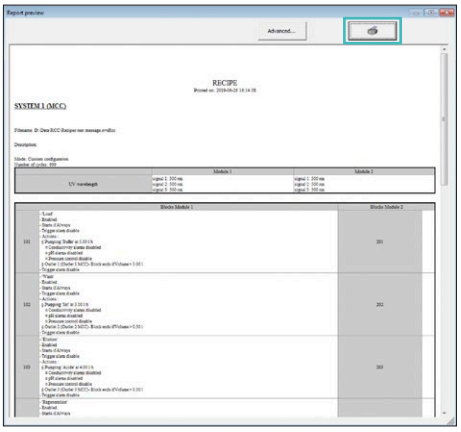
▷ When a recipe is electronically signed and performed, the following information is saved in the batch management::

- Date
- Hour
- Tagname
- Description
- Comment
- Full name of the logged user
- Full name for Performed by



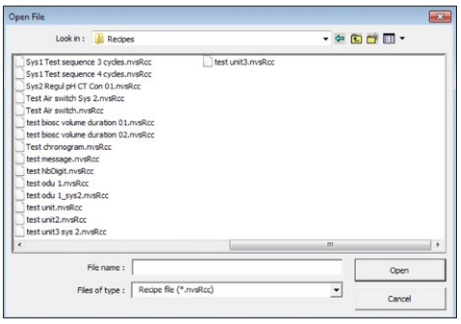
2.8.3.4 Printing a Recipe

- ▶ Click on to print a 2-page report of your created recipe.
- ▶ Then click on the “print” button in the window:



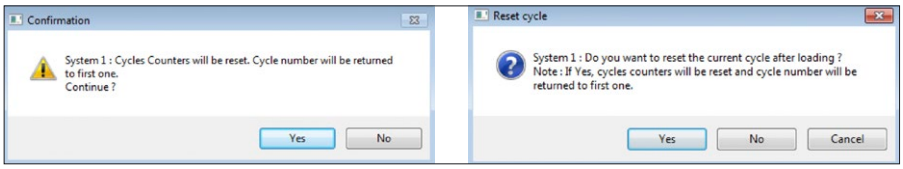
2.8.3.5 Opening a Recipe

- ▶ From the on-line recipe editor , the user can open a recipe already created by clicking on .



2.8.3.6 Loading a Recipe

- ▶ To load a recipe, click on the “load” button.
- ▶ When the window appears, select the recipe to be loaded from the recipe list and click on the “open” button.



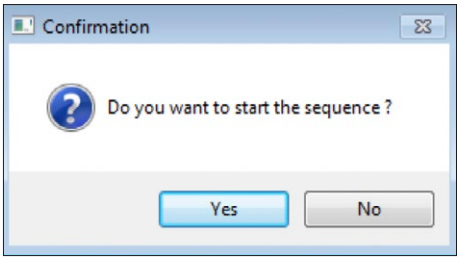
- ▶ To load a recipe, the unit must be in process “STOP” position.
- ▶ Once the recipe is loaded, its name appears on the main screen just next to “Recipe:”.

2.8.3.7 Starting a Recipe

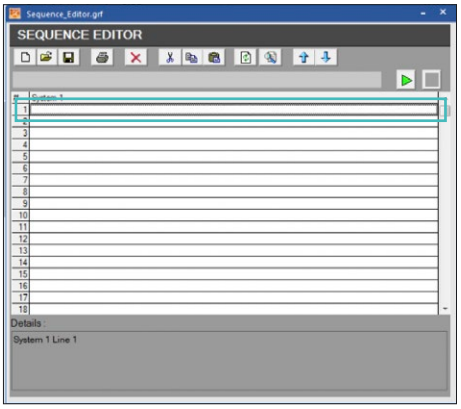
- ▶ To run a recipe that has been loaded or created, simply click on the “process” button.
- ▷ The process button turns into a green triangle and the recipe runs automatically.
- ▶ To stop the recipe, click on the “process” button again.

2.8.3.8 Sequence

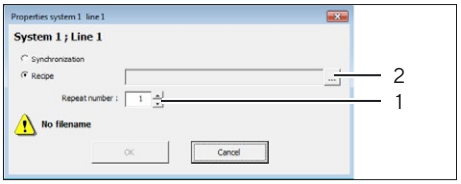
A sequence is a linkage of several recipes or a repetition of the same recipe. A sequence is defined by a series of recipe(s) and the order in which these recipes are to be processed.



▶ To load a sequence, click on the “load” button , then on “Yes”.



▶ When this window appears, double-click on the first line of the sequence grid, select the recipe to be loaded from the list, and click on the “open” button.



▶ Choose the number (1).
▶ Select the recipe (2).

▶ If you want to repeat the same recipe x times, simply choose the number of repetitions required.

▶ You can then change the order of the recipes to be processed by clicking on the arrows.

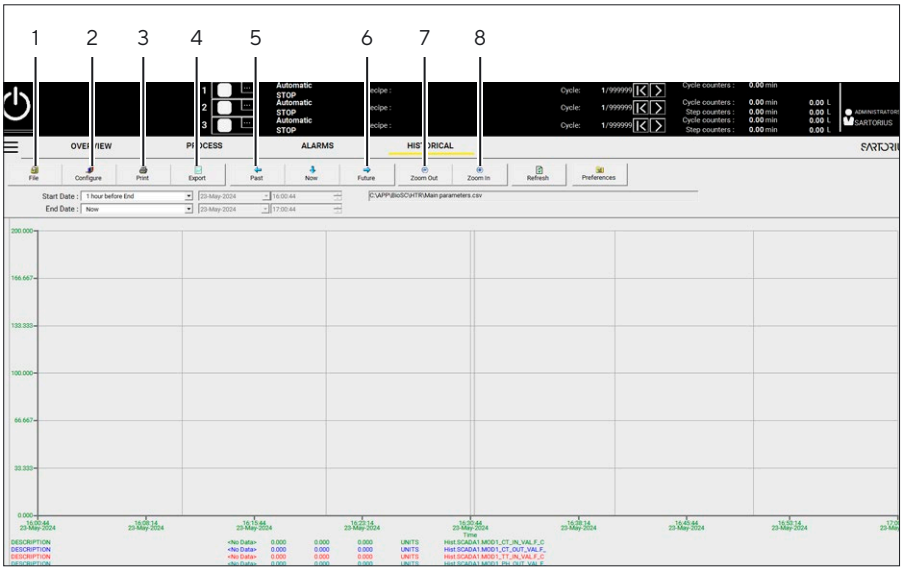
▶ Click on the “save” button to save the sequence.

▶ To print a sequence, click on the “print” button.

▶ To run a sequence that has been loaded or created, simply click on the “process” button.

2.9 Historical Data

This screen is accessible to all users by clicking on the “HISTORICAL” tab on the main screen.

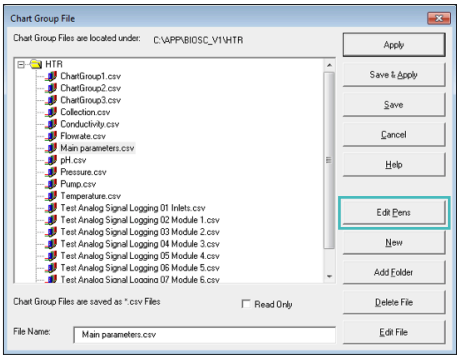


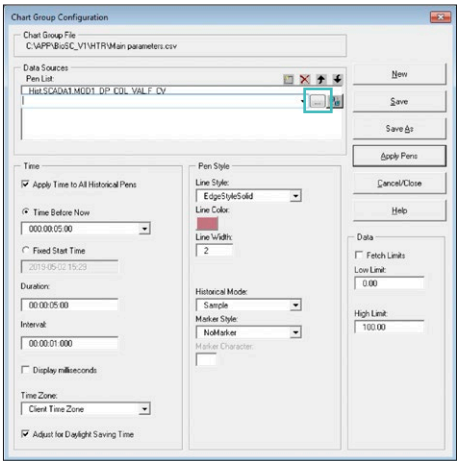
Pos.	Description
1	Open save and delete files
2	Configure another group of data
3	Print your result
4	Save your file on your hard drive or external drive (so you can read these values later on an Excel spreadsheet, for example).
5	See past data
6	See future data
7	Decrease abscissa scale
8	Increase abscissa scale

Description

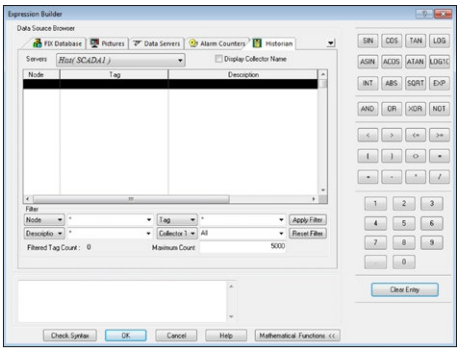
On the abscissa axis, you have the time and date. You can configure it by clicking on the chart. You can change the date (to check what happened the day before, for example) and the time (if you need to «zoom» in on a part).

- Click on  to see what happens “now”.
- You can configure another group of data by clicking on  or double clicking on the chart screen. When you click on this button, this screen appears.
- Click on “Edit Pens” to access chart configuration, where you can define the properties of your historical data.





- Click on  to enter the chart called “expression builder”.



- Open the folder «Proficy Historian». You can now access the tags, corresponding to each process element that you want to store.
- Select one and click on “OK”.
- For each data, you can select color, line width.
- Click on “Help” if you require further information about the possibilities of the “historical trends” module.

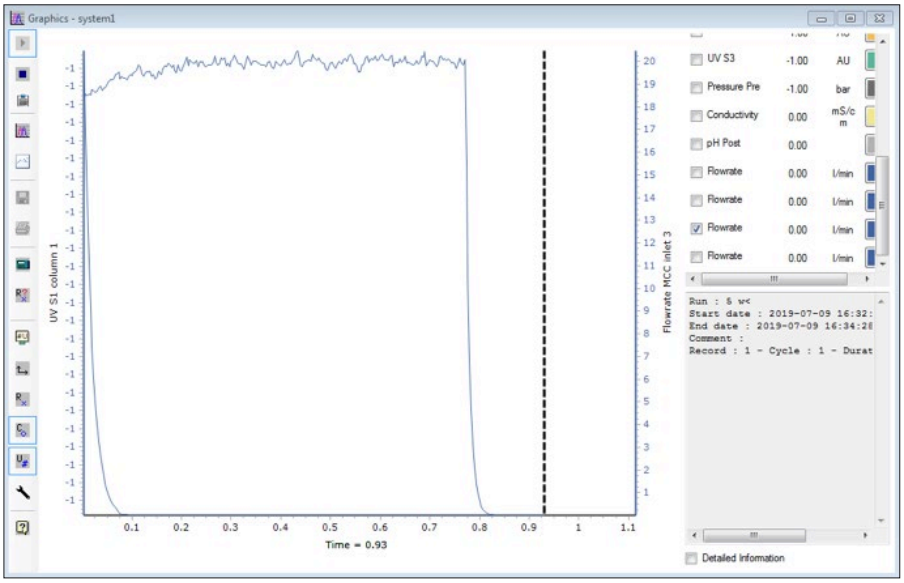
- To select the file that you have defined: enter the historical data view, double click on the chart, select your file below “HTR” and click on “Apply”. Then close the chart group file.

2.10 Graphics

Sartorius designed a specific module to support customer in the evaluation of their process quality.

This module has capability to perform column efficiency calculation and determine number of theoretical plates and peak asymmetry offline. Graphics allows visualization of all signals time base with quick data acquisition. Signals are saved into record files and can be accessible by the user after production run.

▶ To access, click on “Graphis” on the main screen.



Graphics allows to overlay trends to compare your recorded run.

A single run can last up to one day. For longer or continuous production campaigns, the user must stop the run to restart a new one manually or automatically, creating a new recipe in the sequence editor.

▷ The user manual of this module can be found on your PC.
▶ To access, click on from the main menu of the Graphics section.

2.11 Batch Management

This module enables you to monitor and record:

- The consumption of crude material and solvents
- The production of the Resolute® BioSC (as defined in collect lines)
- All events such as alarms, login | logout, historical data, etc.

It is recommended that a new batch be set for each production run so that the consumption of solvent(s) may be identified for a given production run. This module also lets you gather all information related to a particular production run. For example:

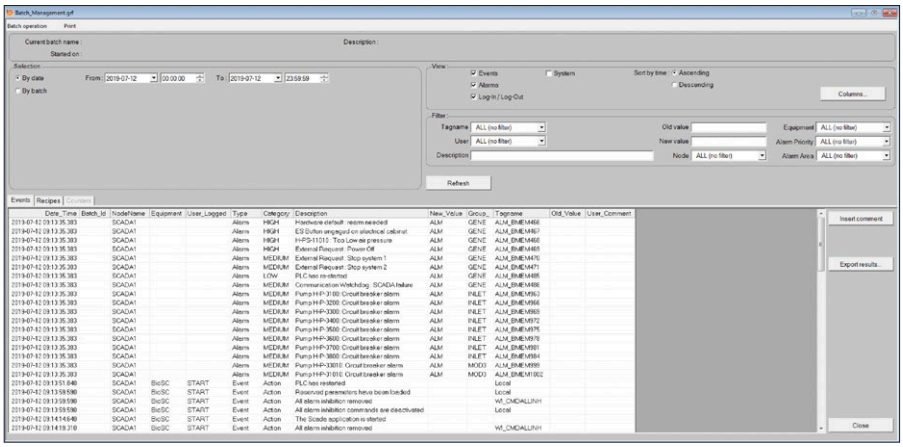
- Consumption of solvent and product, production in each collect line
- Batch administration (date of creation, creator)
- Historic data (all trends recorded during the batch run)
- Events (all actions taken during production run)
- Alarms (all alarms generated during production run)
- Log (all logins and logouts performed during production run)

All events, alarms, login operations and historical data are stored by the control device during a batch run and can be displayed (or printed).

Batch management

▶ To create a batch, click on the button to access the batch management tab “Batch management” .

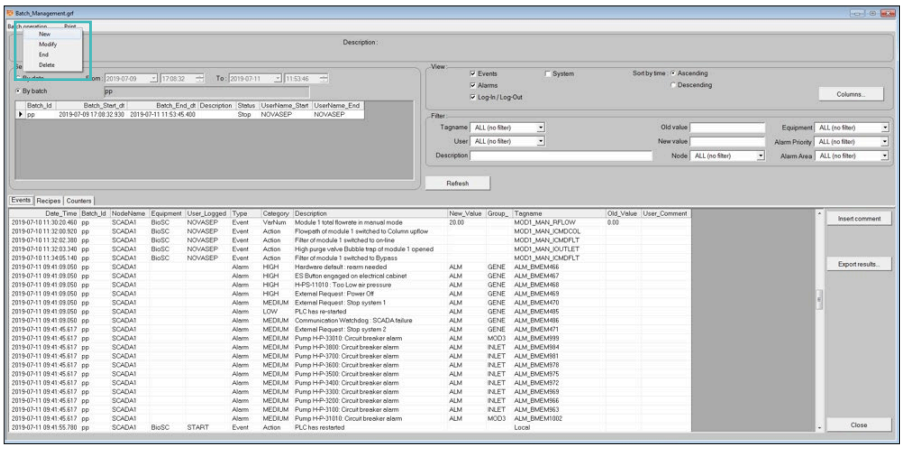
▷ This screen appears:

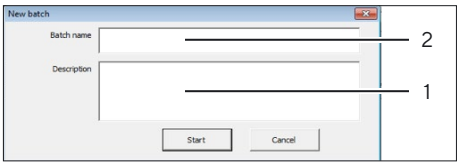


All parameters are described in the events tab.

You can do a search by date or batch in the selection window.
The counters tab is accessible if the selection is done by batch.

▶ Click on “Batch operation”, then on “New”, to create a batch.





▶ Enter here (1) any relevant parameters about the batch (date, process, etc.).
▶ Enter the new batch name (2); you can also write a comment in the description.
▶ Click to modify the description and delete the batch (only the description and the counters will be deleted).
▶ If required, click on “End” on the drop-down menu (batch operation) to stop the batch (counters and event reporting will be stopped).

NOTICE

You can only display “Events” when the current batch is stopped or if an old batch file has been selected from the drop-down menu.

3 Data Backup | Recovery

Those sections describe the data generated by the control software. It is located on the SCADA hard drive.

NOTICE

The software creates daily files and collects data while the software is running (even when the device is not started).

These files are an important part of your production. You need to perform periodical backups for disaster recovery. It is also required to perform maintenance of the data (at least once a year) to ensure optimum performance and stability of the device.

3.1 Overview

The data generated by the device include:

- Database storing all actions, alarms and events, as well as batch information
- iFix files, which store all actions, alarms and events
- Historical trends, which store all values of monitored tags
- Recipes and reserved parameters of your unit
- Chromatographic data recorded using the Graphics module

All files are located in the same folder to facilitate data backup.

All backup operations require access to the operating system. You need to login in iFix with adequate access rights to gain access to the Windows operating system.

3.1.1 The Database

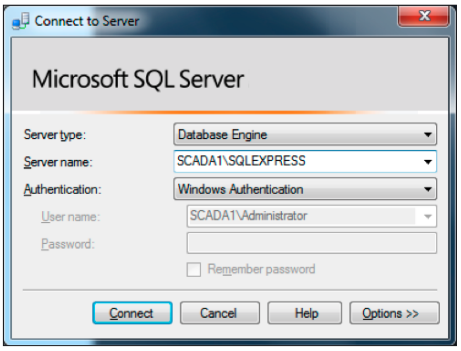
All user actions (setpoint changes, logins | logouts, device alarms) are stored in a relational database.

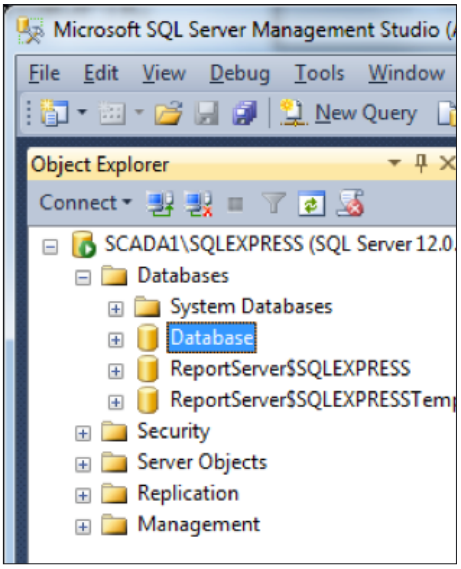
This database also stores batch information (see “Batch management” module).

This database is located in the “D:\Data\database\” folder and managed by the SQL server program.

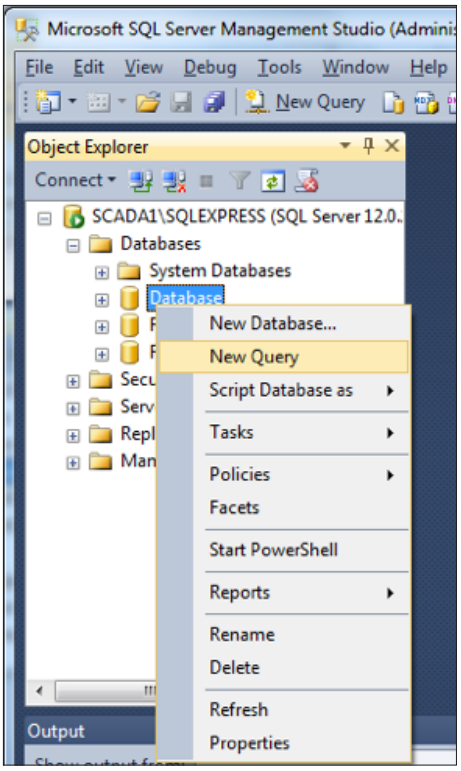
The database is limited to 10 GB in size in Microsoft SQL Express and 2017, so be mindful of the space used in the database. Make a habit of backing up regularly and clearing the database to stay below the maximum size and ensure optimal performance.

- ▶ You can check the current database size by running the following query: “use [database] exec sp_spacesused”
- ▶ Run “SQL Server Management Studio” from the start menu.
- ▶ Connect to the Server using the options and parameters as specified in the screen.

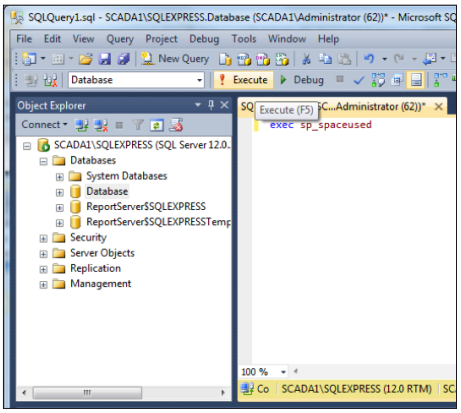




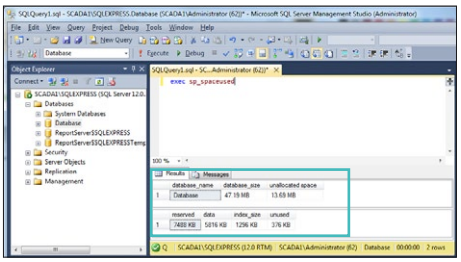
- ▶ In the tree, select the “Database” entry.



- ▶ Right click to choose the “New Query” menu item.



▶ In the right hand window, type the “exec sp_spaceused” command and hit the “Execute” button.



▶ You can check database size in the result tab:

3.1.2 iFix’s Files

All user actions (setpoint changes, logins | logouts, system alarms) are stored in text files. These files are named using the following format **yymmdd[extension]**.

Where **[extension]** can be:

- **.alm:** user actions such as setpoint change, logins | logouts, system alarms and internal status
- **.evt:** internal iFix application status
- **.log:** login or logout in the iFix application

These files are located into the “D:\Data\log\” folder.

The .alm files are automatically purged. The number of days to pass before an alarm file is erased can be set by adjusting the «file_live_days» parameter in file “c:\app\BIOSC\local\Alarm.ini”. The valid range is from 1 to 365 days.

NOTICE

By default, “file_live_days” is set to 30 days.

3.1.3 Historian Historical Data

To display trends on the monitored tags, iFix passes data to the historian collector and the historian stores data a DataStore. By default, a new historian archive is created each day. The new file has a number incremented.

There are 2 types of files in an historian archive folder:

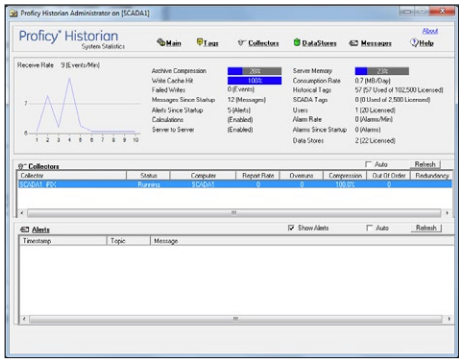
- **SCADA1_Config.ihc:** contains information about the historical data and configuration.
- **SCADA1_Config.ihc:** contains recovery info about **SCADA1_Config.ihc**.
- ***.iha:** contains data
- ***.iha:** contains recovery info about the ***.iha** file

These files are located in the “D:\Data\Proficy historian data\Archives\” folder.

There are 2 kinds of archives where “XXX” is an incremented number:

- **User_SCADA1_ArchiveXXX.iha:** stores the data of your tags.
- **System_SCADA1_ArchiveXXX.iha:** stores Proficy historian messages.

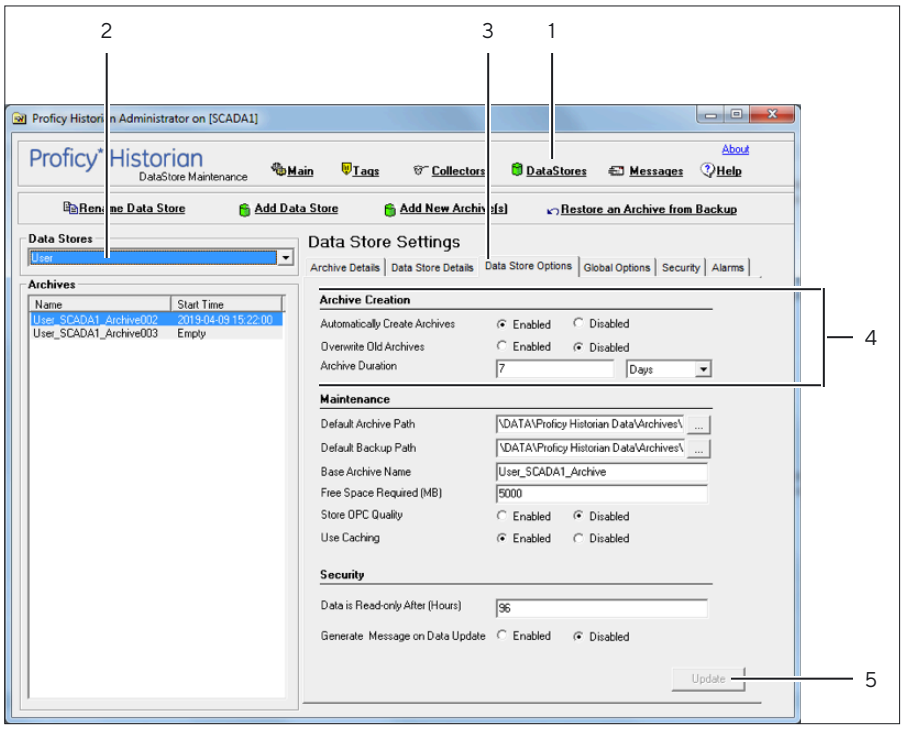
Historical configuration like pen colours are stored in “C:\APP\BIOSC\HTR\” in various “.csv” files.



By running the “Proficy Historian Administrator” program, you can change storage options.

- ▶ Click on “DataStores” (1).
- ▶ Select “User” in the “Data Stores” drop-down menu (2).
- ▶ Go to the “Data Store Options” tab (3).
- ▶ In the “Archive Creation” section, you can archive (4):
  - By Size (100MB by default) or
  - By duration (in days).

▶ Hit the “Update” button to apply changes (5).



3.1.4 Recipes, Sequences and Reserved Parameters Files

Recipes for automatic processing are stored on the hard drive for subsequent upload to the PLC. They are stored as text files, and named using the recipe name with “.nvsRCC” or “.nvsProdRcc” extension.

These files are located in the following “D:\Data\RCC\” sub-folders:

- “D:\Data\RCC\RECIPES\”: User recipes. This can also contain some-user created folders to organize recipes.
- “D:\Data\RCC\RESERVED\”: Reserved device parameters.
- “D:\Data\RCC\SEQ\”: User sequences of recipes.
- “D:\Data\RCC\Inlet_Outlets” : Parameters of inlets and outlets.

3.1.5 Chromatographic Data - Graphics

Chromatographic data recorded using the Graphics module are stored on the hard drive for later display. They are stored as binary files, with “.data” and “.rec” extensions.

These files are located in “D:\Data\chr\” sub-folders.

3.2 Backup of Data Files

NOTICE

It is recommended to close all iFix windows before proceeding with data backup.

You can choose to use any of the following options to perform the backup:

- USB memory key
- Writable Disk
- Network shared drive
- A temporary folder that you compress later using a zip-type archiver program.

This location will be referred in this document as the “Backup location”. It is recommended to create sub-folders using the same architecture as the “d:\Data\” folder inside your backup location. This will help you to restore data easily to the right location when required.

3.2.1 Backing up Database Files

You **cannot** simply copy the database files, as the server maintains state and integrity throughout. You must use the tools provided to perform a live backup.

NOTICE

The database size is limited to 10 GB.

The database must be replaced by an empty one at least once a year to ensure optimum software operation.

3.2.2 Live Backup of Database Files

Run the provided script Backup_SQL_Server_Database.bat from the folder “C:\APP\EXE\”.

The script will create a full database backup in a new file named “Database_FULL_ddmmyyyy_hhMMss.BAK” and located in folder “D:\Data\Database\Backup\”.

You can make your own backup script based on the one provided if you need to change the location of the backup. You can also do a differential backup, instead of full backup, if you have an automated backup and a proven restoration strategy.

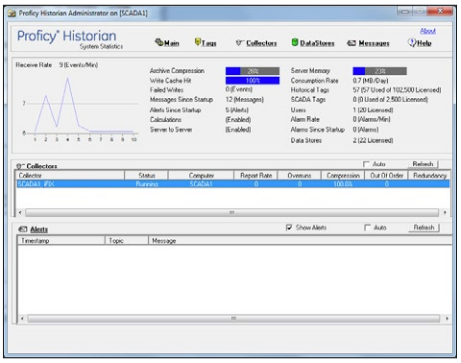
3.2.3 Backup of iFix Files

- ▶ Use “Windows Explorer” to copy the iFix files to the backup location.
- ▶ Copy every file from the “D:\Data\log\” folder to the backup location.

3.2.4 Backing up Historical Data

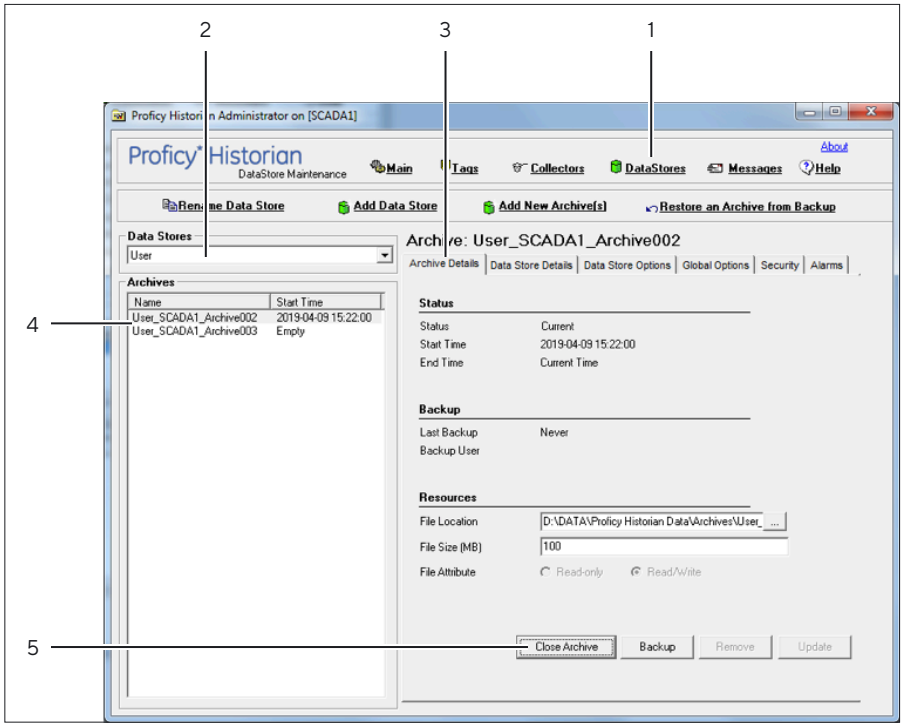
- ▶ When logged in iFix as an administrator, switch to the Windows menu (of the operating device) and run the Proficy Historian Administrator program.

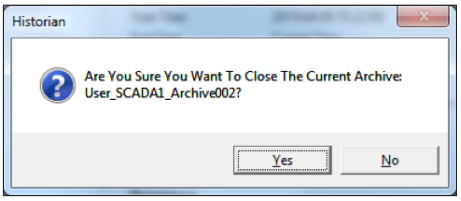
3.2.5 Periodical Backup of Historical Data



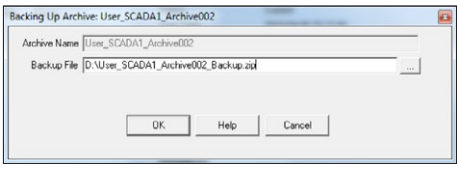
- ▶ You should plan to backup these data as part of a scheduled routine. We recommend doing so at least once a month.

- ▶ Click on “DataStores” (1).
- ▶ Select “User” in the “Data Stores” drop-down menu (2).
- ▶ Go to the “Archive Details” tab (3).
- ▶ Select the current archive file in the list (4).
- ▶ Click on “Close Archive” (5).





▶ Confirm closing.



Adjusting the Backup File Path

▶ You can then move the backup zip file to your “backup location”.
▶ You can free some disk space by removing old archives.
▶ To do so, use the “Remove” button. Please note, however, that those data will **not** show up in the historical view anymore, so we recommend that you only remove archives that more than a year old.

3.2.5.1 Occasional Backup of Historical Configuration Data

▶ You also need to back up the “System” Data Store at least once. Use the same procedure as with the “User” Data Store.
▶ You need to backup historical configuration files containing tags and pen colours. They are stored in “C:\APP\BIOSC\HTR\” as “*.csv” files. Copy every “*.csv” to your “backup location”.

3.2.6 Backing up Recipes, Sequences, Inlets & Outlets, and Reserved Parameters

Use “Windows Explorer” to copy the recipe files to the backup location.

▶ Copy all files from the “D:\Data\rcc\recipes\” folder and sub-folder to the backup location.

Use the “Window Explorer” to copy the inlets & outlets files to the backup location.

▶ Copy all files from the “D:\Data\rcc\Inlets_Outlets” folder to the backup location.

Use “Windows Explorer” to copy the sequence files to the backup location.

▶ Copy all files from the “D:\Data\rcc\seq\” folder and sub-folder to the backup location.

Use “Windows Explorer” to copy the reserved parameters file to the backup location.

▶ Copy all files from the “D:\Data\rcc\reserved\” folder to the backup location.

If you want to save some disk space:

▶ Remove unwanted recipes from the “D:\Data\rcc\recipes\” sub-folder.
▶ Remove unwanted sequences from the “D:\Data\rcc\seq\” sub-folder.

⚠ WARNING

Never remove any "*.nvsRcm" files as these are required for proper operation of the software.

Files in the "D:\Data\rcc\reserved\" folder are required for proper operation of the software.

3.2.7 Backing up of Chromatographic Data - Graphics

Use "Windows Explorer" to copy the chromatographic files to the backup location.

- ▶ Copy all files from the "D:\Data\chr\" folder and sub-folder in the backup location.

If you want to save some disk space:

- ▶ Remove needed Run files "xxxx.data" and "xxxx.rec" from the "D:\Data\chr\" sub-folder where "xxxx" is the run number.

NOTICE

Graphics software numbers runs based on the highest run present.

To avoid breaking uniqueness of Run ID, never remove the latest Run (with the highest ID).

3.3 Recovering Data Files

To perform the restoration of the data files, it is preferable to shutdown iFIX software.

3.3.1 Database Recovery

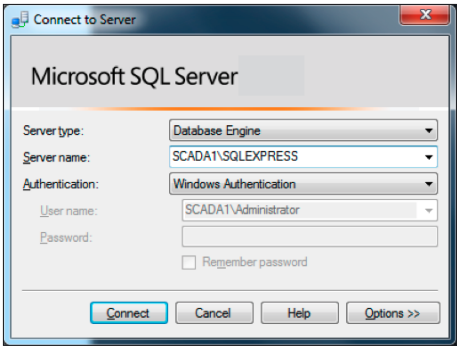
NOTICE

This recovery operation will overwrite you current database.

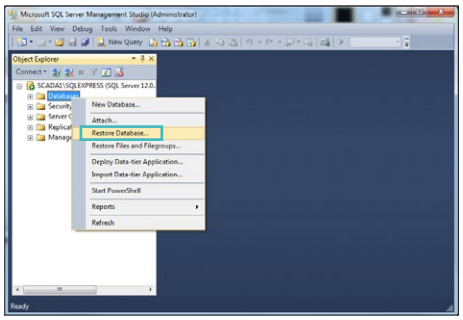
Before any recovery, perform a backup of the database to prevent any loss of data.

To restore the database, you need to shutdown iFix. This is mandatory to let the database software release the database file locks. Database locks prevent you to restore the database file.

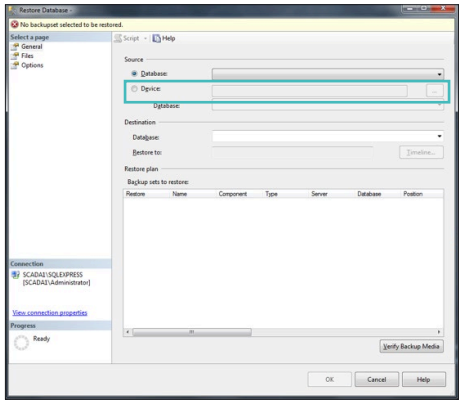
3.3.1.1 Recovery from a full Backup



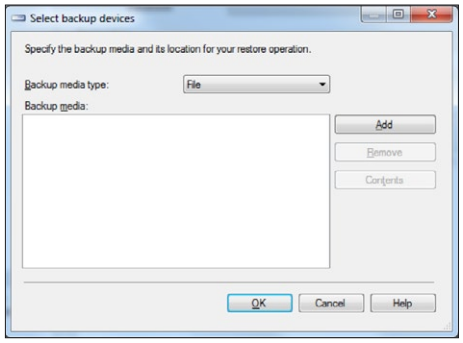
- ▶ Run “SQL Server Management Studio” from the start menu.
- ▶ Connect to the Server using the options and parameters showed in the picture below:



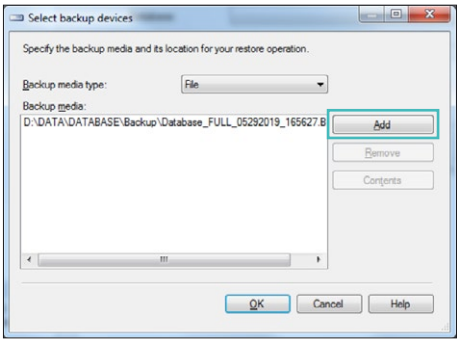
- ▶ In the tree, select the database entry and right click to choose the “Restore Database...” menu item.



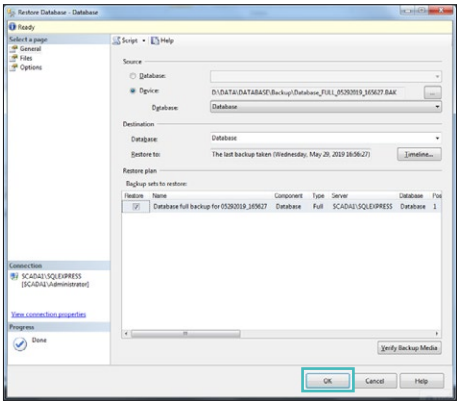
- ▶ Select “Device:” option and click on the “Browse” ... button.



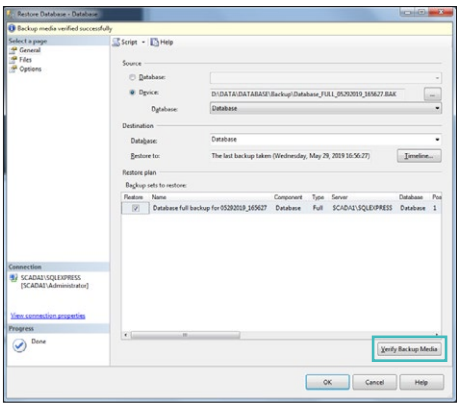
- ▶ The “Select backup devices” window opens.



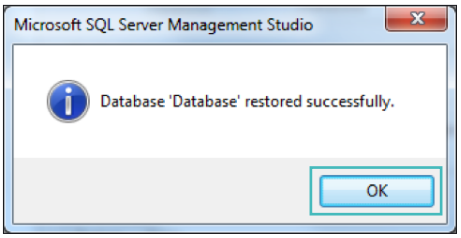
▶ Click on “Add” and select your backup file “Database_FULL_ddmmyyyy_hhMMss.BAK” from your “backup location”:



▶ Click on “OK”:



▶ Click on “Verify Backup Media”:



▶ Click on “OK”:

▶ Click on “OK”.
▶ Close “SQL Server Management Studio”.

3.3.1.2 Clearing the Database

To clear the database, you need to restore an empty database. Use the recovery from a full backup procedure and use the provided backup located in “d:\DATA\DATABASE\Empty\Empty database SQL Server 2019 BioSC.bak”.

3.3.1.3 Partial Database Restore

In case you need to read the content of an old database backup without removing your current data, please contact Sartorius Service for a detailed explanation concernant a partial restore part of your database.

3.3.2 iFIX Files Recovery

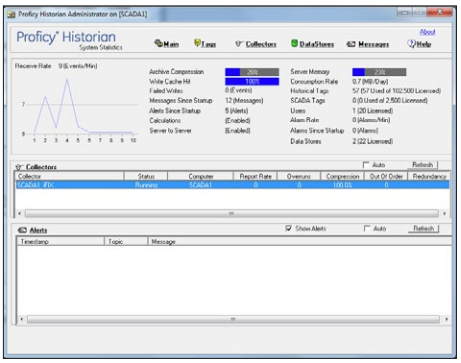
These files are text based and can be opened using a text editor such as “NOTEPAD.exe” directly from the backup location without restoration.

3.3.3 Historical Data Recovery

If you want to read old data from a removed archive, you need to perform a restoration of historical data. In case of a major disaster like hard drive failure, you may also need to restore the historical configuration files.

3.3.3.1 Restoration of old Historical Data

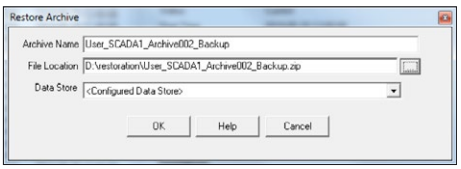
First copy the needed backup files from the “backup location” to a temporary folder on the computer like: “D:\restoration\”.



▶ Run the “Proficy Historian Administrator” program.

▶ Click on “DataStores”.

▶ Click on “Restore an Archive from Backup”.



▶ Select the file you need to restore from the temporary folder “D:\restoration\User_SCADA1_ArchiveXXX_Backup.zip”.

▶ To view trends, restart “iFix” and go the usual trend window.

3.3.3.2 Historical Data Recovery

You need to restore the “System” Data Store first. Use the same procedure as with the “User” Data Store.

To restore backup historical configuration files containing tags and pen colours, copy the “*.csv” files from the “backup location” to their original place in the “C:\APP\BIOSC\HTR\” folder.

3.3.4 Recipes, Sequences, Inlets & Outlets and Reserved Parameter Files Recovery

- ▶ Use “Windows Explorer” to copy the recipe files from the backup location.
- ▶ Copy the files needed to the “D:\Data\rcc\recipes\” folder and sub-folder.
- ▶ Use “Windows Explorer” to copy the sequence files from the backup location.
- ▶ Copy the files needed to the “D:\Data\rcc\seq\” folder and sub-folder.
- ▶ Use “Windows Explorer” to copy the Inlets & Outlets files from the back-up location.
- ▶ Copy the files needed to the “D:\Data\rcc\Inlets_Outlets” folder and sub-folder.
- ▶ Use “Windows Explorer” to copy the reserved parameters files from the backup location.
- ▶ Copy the files needed to the “D:\Data\rcc\reserved\” folder.

NOTICE

There can only be one “Reserved.nvsRcc” file and one “ReservedFactory.nvsRcc” file at a time.

Restoring reserved parameters will permanently overwrite your current reserved parameters.

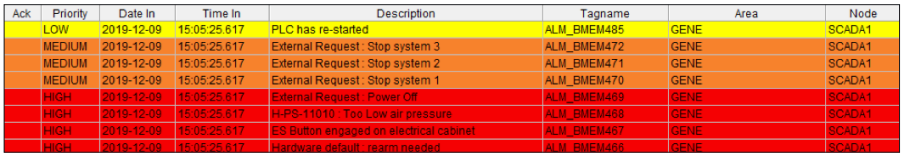
3.3.5 Chromatographic Data – Graphics Recovery

Use “Windows Explorer” to copy the chromatographic files from the backup location.

- ▶ Copy the files needed to the “D:\Data\chr\ folder”.
- ▶ To read the data, restart the graphics and use the selection windows to display the runs and records you want.

3.4 Alarms

When a new alarm is detected, the message is displayed in the dedicated area on the main screen.



Ack	Priority	Date In	Time In	Description	Tagname	Area	Node
	LOW	2019-12-09	15:05:25.617	PLC has re-started	ALM_BMEM485	GENE	SCADA1
	MEDIUM	2019-12-09	15:05:25.617	External Request : Stop system 3	ALM_BMEM472	GENE	SCADA1
	MEDIUM	2019-12-09	15:05:25.617	External Request : Stop system 2	ALM_BMEM471	GENE	SCADA1
	MEDIUM	2019-12-09	15:05:25.617	External Request : Stop system 1	ALM_BMEM470	GENE	SCADA1
	HIGH	2019-12-09	15:05:25.617	External Request : Power Off	ALM_BMEM469	GENE	SCADA1
	HIGH	2019-12-09	15:05:25.617	H-PS-11010 : Too Low air pressure	ALM_BMEM468	GENE	SCADA1
	HIGH	2019-12-09	15:05:25.617	ES Button engaged on electrical cabinet	ALM_BMEM467	GENE	SCADA1
	HIGH	2019-12-09	15:05:25.617	Hardware default : rearm needed	ALM_BMEM466	GENE	SCADA1

In the event of an alarm appearing, the software will display a flashing red symbol and will go on pause (unless inhibit is selected for that particular alarm). When an alarm is linked to a device mounted on the skid, the device will also display a flashing red alarm (green if the alarm has been inhibited) to enable the operator to identify immediately where the fault has occurred.

Some alarms will shut down the power (for example if air supply is too low, or in the event of a pump circuit breaker cutting off) but most of them will simply put the unit on pause. Once the problem has been solved, the user must click on the «Acknowledge» button to clear the alarm, then click on the process button to resume the separation work.

An alarm is triggered if an event does not occur when expected or when a device fails. It is possible to inhibit some alarms. Inhibition means that if an alarm is detected by the Resolute® BioSC, the user is informed of the alarm (as a warning message) but the Resolute® BioSC will continue to operate. Inhibiting an alarm is done from the alarm menu, in the reserved parameters.

NOTICE

For certain alarms, it is also possible to set up a time delay, meaning that a fault must occur for the duration of the set delay time (in seconds) before being detected by the Resolute® BioSC as an alarm condition.

Alarm inhibitions can be defined by a user with supervisor access level in the relevant sensor window.

The alarm screen is accessible to all users by clicking on the “ALARMS” tab on the main screen. This screen is used to display the alarms recorded by Resolute® BioSC.

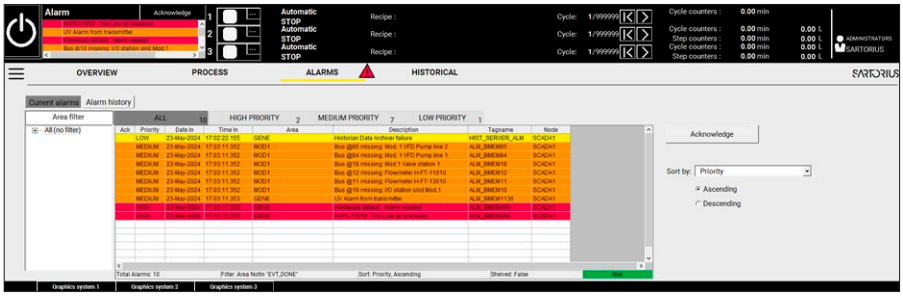
Clicking on the “ALARM” button will display the alarm window. This window has two tabs.

Current Alarms

This window lets you sort the alarms (by time, tagname, description, area) and acknowledge the alarms.

Alarm History

This window lets you sort | search the alarms (by time, tagname,description,area). You can also export the filtered alarms on a “csv” file.



3.5 Shortcut Keys - Reminder

The following shortcut keys will help you to be become quicker and more proficient when using Resolute® BioSC:

Action	To...
Ctrl + F11	Power on
Ctrl + F12	Power off
Ctrl + F1	Start
Ctrl + F2	Stop
Ctrl + L	Log on	log out
Ctrl + F8	Acknowledge alarms
Ctrl + T	Show	hide tags

Warning | Alarm Messages List

Alarms | Warnings are described below.

For each alarm, a type is defined:

Type	Description
Type 1	Warning message only
Type 10 alarm	Stop the unit
Type 20 alarm	Stop the unit and shut down power supply

Legend

	Description
Y	Yes
N	No
NA	Not Applicable
RP	Defined in Reserved Parameters
HW	The triggering of the alarm depends on a HardWare element
SW	The triggering of the alarm depends on a SoftWare condition

	Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
	BPLCWATALM	Communication Watchdog: PLC failure	LOW	HW	NA	15 s	No response of PLC detected by the SCADA
	HISTORIAN_ALM	Historian Collector failure	LOW	SW	NA	60 s	No response of Historian collector detected by the SCADA
	HIST_SERVER_ALM	Historian Data Archiver failure	LOW	SW	NA	60 s	The service Data Archiver is not running
	DISKSPACEALM	Available free disk space < 10 %	LOW	SW	NA	1 h	The available free disk space for D: is < 10 %
	ALM_BMEM3	Bus @3 missing: UV transmitter	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM4	Bus @4 missing: I/O station skid General	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM10	Bus @10 missing: I/O station skid Mod.1	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM11	Bus @11 missing: Flowmeter H-FT-13010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM12	Bus @12 missing: Flowmeter H-FT-11010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM13	Bus @13 missing: DP72 level H-BT-13010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM14	Bus @14 missing: DP72 AS-13030/AS-13040	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM15	Bus @15 missing: DP72 H-AS-13020	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM16	Bus @16 missing: pH/Conductivity Module 1	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM17	Bus @17 missing: pH/Cond. Post Mixing Module 1	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM18	Bus @18 missing: Mod.1 Valve station 1	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM19	Bus @19 missing: Mod.1 Valve station 2	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM20	Bus @20 missing: I/O station skid Mod.2	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM21	Bus @21 missing: Flowmeter H-FT-23010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM22	Bus @22 missing: Flowmeter H-FT-21010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM23	Bus @23 missing: DP72 level H-BT-23010	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM24	Bus @24 missing: DP72 AS-23030/AS-23040	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM25	Bus @25 missing: DP72 H-AS-23020	MEDIUM	HW	N	N	No response of the station
	ALM_BMEM26	Bus @26 missing: pH/Conductivity Module 2	MEDIUM	HW	N	N	No response of the station

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM27	Bus @27 missing: pH/Cond. Post Mixing Module 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM28	Bus @28 missing: Mod.2 Valve station 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM29	Bus @29 missing: Mod.2 Valve station 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM30	Bus @30 missing: I/O station skid Mod.3	MEDIUM	HW	N	N	No response of the station
ALM_BMEM31	Bus @31 missing: Flowmeter H-FT-33010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM32	Bus @32 missing: Flowmeter H-FT-31010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM33	Bus @33 missing: DP72 level H-BT-33010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM34	Bus @34 missing: DP72 AS-33030/AS-33040	MEDIUM	HW	N	N	No response of the station
ALM_BMEM35	Bus @35 missing: DP72 H-AS-33020	MEDIUM	HW	N	N	No response of the station
ALM_BMEM36	Bus @36 missing: pH/Conductivity Module 3	MEDIUM	HW	N	N	No response of the station
ALM_BMEM37	Bus @37 missing: pH/Cond. Post Mixing Module 3	MEDIUM	HW	N	N	No response of the station
ALM_BMEM38	Bus @38 missing: Mod.3 Valve station 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM39	Bus @39 missing: Mod.3 Valve station 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM40	Bus @40 missing: I/O station skid Mod.4	MEDIUM	HW	N	N	No response of the station
ALM_BMEM41	Bus @41 missing: Flowmeter H-FT-43010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM42	Bus @42 missing: Flowmeter H-FT-41010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM43	Bus @43 missing: DP72 level H-BT-43010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM44	Bus @44 missing: DP72 AS-43030/AS-43040	MEDIUM	HW	N	N	No response of the station
ALM_BMEM45	Bus @45 missing: DP72 H-AS-43020	MEDIUM	HW	N	N	No response of the station
ALM_BMEM46	Bus @46 missing: pH/Conductivity Module 4	MEDIUM	HW	N	N	No response of the station
ALM_BMEM47	Bus @47 missing: pH/Cond. Post Mixing Module 4	MEDIUM	HW	N	N	No response of the station
ALM_BMEM48	Bus @48 missing: Mod.4 Valve station 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM49	Bus @49 missing: Mod.4 Valve station 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM50	Bus @50 missing: I/O station skid Mod.5	MEDIUM	HW	N	N	No response of the station
ALM_BMEM51	Bus @51 missing: Flowmeter H-FT-53010	MEDIUM	HW	N	N	No response of the station

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM52	Bus @52 missing: Flowmeter H-FT-51010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM53	Bus @53 missing: DP72 level H-BT-53010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM54	Bus @54 missing: DP72 AS-53030/AS-53040	MEDIUM	HW	N	N	No response of the station
ALM_BMEM55	Bus @55 missing: DP72 H-AS-53020	MEDIUM	HW	N	N	No response of the station
ALM_BMEM56	Bus @56 missing: pH/Conductivity Module 5	MEDIUM	HW	N	N	No response of the station
ALM_BMEM57	Bus @57 missing: pH/Cond. Post Mixing Module 5	MEDIUM	HW	N	N	No response of the station
ALM_BMEM58	Bus @58 missing: Mod.5 Valve station 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM59	Bus @59 missing: Mod.5 Valve station 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM60	Bus @60 missing: I/O station skid Mod.6	MEDIUM	HW	N	N	No response of the station
ALM_BMEM61	Bus @61 missing: Flowmeter H-FT-63010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM62	Bus @62 missing: Flowmeter H-FT-61010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM63	Bus @63 missing: DP72 level H-BT-63010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM64	Bus @64 missing: DP72 AS-63030/AS-63040	MEDIUM	HW	N	N	No response of the station
ALM_BMEM65	Bus @65 missing: DP72 H-AS-63020	MEDIUM	HW	N	N	No response of the station
ALM_BMEM66	Bus @66 missing: pH/Conductivity Module 6	MEDIUM	HW	N	N	No response of the station
ALM_BMEM67	Bus @67 missing: pH/Cond. Post Mixing Module 6	MEDIUM	HW	N	N	No response of the station
ALM_BMEM68	Bus @68 missing: Mod.6 Valve station 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM69	Bus @69 missing: Mod.6 Valve station 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM84	Bus @84 missing: Mod. 1 VFD Pump line 1	MEDIUM	HW	N	N	No response of the station
ALM_BMEM85	Bus @85 missing: Mod. 1 VFD Pump line 2	MEDIUM	HW	N	N	No response of the station
ALM_BMEM100	Bus @100 missing: I/O station skid pump	MEDIUM	HW	N	N	No response of the station
ALM_BMEM101	Bus @101 missing: DP72 AS-3100/AS-3200	MEDIUM	HW	N	N	No response of the station
ALM_BMEM102	Bus @102 missing: DP72 AS-3300/AS-3400	MEDIUM	HW	N	N	No response of the station
ALM_BMEM103	Bus @103 missing: Flowmeter H-FT-3100	MEDIUM	HW	N	N	No response of the station
ALM_BMEM104	Bus @104 missing: Flowmeter H-FT-3200	MEDIUM	HW	N	N	No response of the station

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM105	Bus @105 missing: Flowmeter H-FT-3300	MEDIUM	HW	N	N	No response of the station
ALM_BMEM106	Bus @106 missing: Flowmeter H-FT-3400	MEDIUM	HW	N	N	No response of the station
ALM_BMEM107	Bus @107 missing: Flowmeter H-FT-3500	MEDIUM	HW	N	N	No response of the station
ALM_BMEM108	Bus @108 missing: Flowmeter H-FT-3600	MEDIUM	HW	N	N	No response of the station
ALM_BMEM109	Bus @109 missing: Flowmeter H-FT-3700	MEDIUM	HW	N	N	No response of the station
ALM_BMEM110	Bus @110 missing: Flowmeter H-FT-3800	MEDIUM	HW	N	N	No response of the station
ALM_BMEM111	Bus @111 missing: UV H-AE-13010	MEDIUM	HW	N	N	No response of the station
ALM_BMEM112	Bus @112 missing: UV H-AE-13020	MEDIUM	HW	N	N	No response of the station
ALM_BMEM113	Bus @113 missing: UPS	MEDIUM	HW	N	N	No response of the station
ALM_BMEM129	Error in the recipe table: block 101	LOW	SW	NA	N	A recipe is running in Custom Configuration: * The event is linked to an invalid previous event: – The number of the block linked is 0 – The number of the block linked is current block – The block linked is not in the table – The block linked is not triggered – The block linked has an action "end of cycle" – The block linked has an action "Next recipe" * For action "Pumping", the flowrate setpoint is 0 (If trigger ≠ never)
ALM_BMEM130	Error in the recipe table: block 102	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM131	Error in the recipe table: block 103	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM132	Error in the recipe table: block 104	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM133	Error in the recipe table: block 105	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM134	Error in the recipe table: block 106	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM135	Error in the recipe table: block 107	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM136	Error in the recipe table: block 108	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM137	Error in the recipe table: block 109	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM138	Error in the recipe table: block 110	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM139	Error in the recipe table: block 111	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM140	Error in the recipe table: block 112	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM141	Error in the recipe table: block 113	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM142	Error in the recipe table: block 114	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM143	Error in the recipe table: block 115	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM144	Error in the recipe table: block 116	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM145	Error in the recipe table: block 117	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM146	Error in the recipe table: block 118	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM147	Error in the recipe table: block 119	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM148	Error in the recipe table: block 120	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM149	Error in the recipe table: block 121	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM150	Error in the recipe table: block 122	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM151	Error in the recipe table: block 123	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM152	Error in the recipe table: block 124	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM153	Error in the recipe table: block 125	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM154	Error in the recipe table: block 126	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM155	Error in the recipe table: block 127	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM156	Error in the recipe table: block 128	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM157	Error in the recipe table: block 129	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM158	Error in the recipe table: block 130	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM185	Error in the recipe table: block 201	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM186	Error in the recipe table: block 202	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM187	Error in the recipe table: block 203	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM188	Error in the recipe table: block 204	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM189	Error in the recipe table: block 205	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM190	Error in the recipe table: block 206	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM191	Error in the recipe table: block 207	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM192	Error in the recipe table: block 208	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM193	Error in the recipe table: block 209	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM194	Error in the recipe table: block 210	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM195	Error in the recipe table: block 211	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM196	Error in the recipe table: block 212	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM197	Error in the recipe table: block 213	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM198	Error in the recipe table: block 214	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM199	Error in the recipe table: block 215	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM200	Error in the recipe table: block 216	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM201	Error in the recipe table: block 217	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM202	Error in the recipe table: block 218	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM203	Error in the recipe table: block 219	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM204	Error in the recipe table: block 220	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM205	Error in the recipe table: block 221	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM206	Error in the recipe table: block 222	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM207	Error in the recipe table: block 223	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM208	Error in the recipe table: block 224	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM209	Error in the recipe table: block 225	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM210	Error in the recipe table: block 226	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM211	Error in the recipe table: block 227	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM212	Error in the recipe table: block 228	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM213	Error in the recipe table: block 229	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM214	Error in the recipe table: block 230	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM241	Error in the recipe table: block 301	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM242	Error in the recipe table: block 302	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM243	Error in the recipe table: block 303	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM244	Error in the recipe table: block 304	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM245	Error in the recipe table: block 305	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM246	Error in the recipe table: block 306	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM247	Error in the recipe table: block 307	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM248	Error in the recipe table: block 308	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM249	Error in the recipe table: block 309	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM250	Error in the recipe table: block 310	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM251	Error in the recipe table: block 311	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM252	Error in the recipe table: block 312	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM253	Error in the recipe table: block 313	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM254	Error in the recipe table: block 314	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM255	Error in the recipe table: block 315	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM256	Error in the recipe table: block 316	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM257	Error in the recipe table: block 317	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM258	Error in the recipe table: block 318	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM259	Error in the recipe table: block 319	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM260	Error in the recipe table: block 320	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM261	Error in the recipe table: block 321	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM262	Error in the recipe table: block 322	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM263	Error in the recipe table: block 323	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM264	Error in the recipe table: block 324	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM265	Error in the recipe table: block 325	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM266	Error in the recipe table: block 326	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM267	Error in the recipe table: block 327	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM268	Error in the recipe table: block 328	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM269	Error in the recipe table: block 329	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM270	Error in the recipe table: block 330	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM297	Error in the recipe table: block 401	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM298	Error in the recipe table: block 402	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM299	Error in the recipe table: block 403	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM300	Error in the recipe table: block 404	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM301	Error in the recipe table: block 405	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM302	Error in the recipe table: block 406	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM303	Error in the recipe table: block 407	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM304	Error in the recipe table: block 408	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM305	Error in the recipe table: block 409	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM306	Error in the recipe table: block 410	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM307	Error in the recipe table: block 411	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM308	Error in the recipe table: block 412	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM309	Error in the recipe table: block 413	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM310	Error in the recipe table: block 414	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM311	Error in the recipe table: block 415	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM312	Error in the recipe table: block 416	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM313	Error in the recipe table: block 417	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM314	Error in the recipe table: block 418	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM315	Error in the recipe table: block 419	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM316	Error in the recipe table: block 420	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM317	Error in the recipe table: block 421	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM318	Error in the recipe table: block 422	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM319	Error in the recipe table: block 423	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM320	Error in the recipe table: block 424	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM321	Error in the recipe table: block 425	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM322	Error in the recipe table: block 426	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM323	Error in the recipe table: block 427	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM324	Error in the recipe table: block 428	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM325	Error in the recipe table: block 429	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM326	Error in the recipe table: block 430	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM353	Error in the recipe table: block 501	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM354	Error in the recipe table: block 502	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM355	Error in the recipe table: block 503	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM356	Error in the recipe table: block 504	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM357	Error in the recipe table: block 505	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM358	Error in the recipe table: block 506	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM359	Error in the recipe table: block 507	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM360	Error in the recipe table: block 508	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM361	Error in the recipe table: block 509	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM362	Error in the recipe table: block 510	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM363	Error in the recipe table: block 511	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM364	Error in the recipe table: block 512	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM365	Error in the recipe table: block 513	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM366	Error in the recipe table: block 514	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM367	Error in the recipe table: block 515	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM368	Error in the recipe table: block 516	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM369	Error in the recipe table: block 517	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM370	Error in the recipe table: block 518	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM371	Error in the recipe table: block 519	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM372	Error in the recipe table: block 520	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM373	Error in the recipe table: block 521	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM374	Error in the recipe table: block 522	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM375	Error in the recipe table: block 523	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM376	Error in the recipe table: block 524	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM377	Error in the recipe table: block 525	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM378	Error in the recipe table: block 526	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM379	Error in the recipe table: block 527	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM380	Error in the recipe table: block 528	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM381	Error in the recipe table: block 529	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM382	Error in the recipe table: block 530	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM409	Error in the recipe table: block 601	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM410	Error in the recipe table: block 602	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM411	Error in the recipe table: block 603	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM412	Error in the recipe table: block 604	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM413	Error in the recipe table: block 605	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM414	Error in the recipe table: block 606	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM415	Error in the recipe table: block 607	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM416	Error in the recipe table: block 608	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM417	Error in the recipe table: block 609	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM418	Error in the recipe table: block 610	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM419	Error in the recipe table: block 611	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM420	Error in the recipe table: block 612	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM421	Error in the recipe table: block 613	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM422	Error in the recipe table: block 614	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM423	Error in the recipe table: block 615	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM424	Error in the recipe table: block 616	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM425	Error in the recipe table: block 617	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM426	Error in the recipe table: block 618	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM427	Error in the recipe table: block 619	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM428	Error in the recipe table: block 620	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM429	Error in the recipe table: block 621	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM430	Error in the recipe table: block 622	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM431	Error in the recipe table: block 623	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM432	Error in the recipe table: block 624	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM433	Error in the recipe table: block 625	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM434	Error in the recipe table: block 626	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM435	Error in the recipe table: block 627	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM436	Error in the recipe table: block 628	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM437	Error in the recipe table: block 629	LOW	SW	NA	N	Idem alarm 129

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM438	Error in the recipe table: block 630	LOW	SW	NA	N	Idem alarm 129
ALM_BMEM465	Power supply discrepancy	HIGH	HW	N	5 s	The power contactor status is different then the command
ALM_BMEM466	Hardware default: rearm needed	HIGH	HW	N	N	The hardware relay is in alarm state
ALM_BMEM467	ES Button engaged on electrical cabinet	HIGH	HW	N	N	The emergency stop button is engaged
ALM_BMEM468	H-PS-11010: Too Low air pressure	HIGH	HW	N	2 s	The instrument air pressure is too low
ALM_BMEM469	External Request: Power Off	HIGH	HW	N	N	The digital input "External request to shut dow" is false (contact opened)
ALM_BMEM470	External Request: Stop system 1	MEDIUM	HW	N	N	The digital input "External request to stop system 1" is false (contact opened)
ALM_BMEM471	External Request: Stop system 2	MEDIUM	HW	N	N	The digital input "External request to stop system 2" is false (contact opened)
ALM_BMEM472	External Request: Stop system 3	MEDIUM	HW	N	N	The digital input "External request to stop system 3" is false (contact opened)
ALM_BMEM478	3-phases power supply failure	MEDIUM	HW	N	N	3 phases power supply is faulty
ALM_BMEM479	24 V power supply failure	MEDIUM	HW	N	N	24 V power supply is faulty
ALM_BMEM485	PLC has re-started	LOW	SW	NA	N	Detection of restarting of the PLC
ALM_BMEM486	Communication Watchdog: SCADA failure	MEDIUM	HW	N	15 s	No response of SCADA detected by the PLC (alarm displayed when communication re-established)

	Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
	ALM_BMEM487	Communication Watchdog: SCADA2 failure	MEDIUM	HW	N	15 s	No response of SCADA detected by the PLC (alarm displayed when communication re-established)
	ALM_BMEM488	MCC: Same inlet on 2 columns	LOW	SW	NA	N	For Cycle Configuration recipe, one inlet is used at the same time on several columns
	ALM_BMEM489	MCC: Invalid column number	LOW	SW	NA	N	The recipe is not corresponds to the number of columns
	ALM_BMEM490	MCC: Invalid zone number	LOW	SW	NA	N	The number of zones is 0
	ALM_BMEM491	Pressure H-PT-3100: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
	ALM_BMEM492	Pressure H-PT-3100: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
	ALM_BMEM493	Pressure H-PT-3100: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
	ALM_BMEM494	Pressure H-PT-3100: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
	ALM_BMEM495	Pressure H-PT-3100: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
	ALM_BMEM496	Pressure H-PT-3200: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
	ALM_BMEM497	Pressure H-PT-3200: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM498	Pressure H-PT-3200: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM499	Pressure H-PT-3200: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM500	Pressure H-PT-3200: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM501	Pressure H-PT-3300: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM502	Pressure H-PT-3300: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM503	Pressure H-PT-3300: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM504	Pressure H-PT-3300: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM505	Pressure H-PT-3300: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM506	Pressure H-PT-3400: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM507	Pressure H-PT-3400: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM508	Pressure H-PT-3400: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM509	Pressure H-PT-3400: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM510	Pressure H-PT-3400: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM511	Pressure H-PT-3500: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM512	Pressure H-PT-3500: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM513	Pressure H-PT-3500: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM514	Pressure H-PT-3500: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM515	Pressure H-PT-3500: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM516	Pressure H-PT-3600: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM517	Pressure H-PT-3600: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM518	Pressure H-PT-3600: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM519	Pressure H-PT-3600: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM520	Pressure H-PT-3600: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM521	Pressure H-PT-3700: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM522	Pressure H-PT-3700: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM523	Pressure H-PT-3700: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM524	Pressure H-PT-3700: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM525	Pressure H-PT-3700: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM526	Pressure H-PT-3800: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM527	Pressure H-PT-3800: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM528	Pressure H-PT-3800: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM529	Pressure H-PT-3800: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM530	Pressure H-PT-3800: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM531	Flowrate H-FT-3100: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM532	Flowrate H-FT-3100: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM533	Flowrate H-FT-3100: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM534	Flowrate H-FT-3100: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM535	Flowrate H-FT-3100: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM536	Flowrate H-FT-3200: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM537	Flowrate H-FT-3200: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM538	Flowrate H-FT-3200: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM539	Flowrate H-FT-3200: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM540	Flowrate H-FT-3200: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM541	Flowrate H-FT-3300: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM542	Flowrate H-FT-3300: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM543	Flowrate H-FT-3300: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM544	Flowrate H-FT-3300: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM545	Flowrate H-FT-3300: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM546	Flowrate H-FT-3400: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM547	Flowrate H-FT-3400: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM548	Flowrate H-FT-3400: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM549	Flowrate H-FT-3400: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM550	Flowrate H-FT-3400: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM551	Flowrate H-FT-3500: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM552	Flowrate H-FT-3500: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM553	Flowrate H-FT-3500: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM554	Flowrate H-FT-3500: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM555	Flowrate H-FT-3500: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM556	Flowrate H-FT-3600: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM557	Flowrate H-FT-3600: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM558	Flowrate H-FT-3600: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM559	Flowrate H-FT-3600: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM560	Flowrate H-FT-3600: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM561	Flowrate H-FT-3700: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM562	Flowrate H-FT-3700: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM563	Flowrate H-FT-3700: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM564	Flowrate H-FT-3700: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM565	Flowrate H-FT-3700: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM566	Flowrate H-FT-3800: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM567	Flowrate H-FT-3800: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM568	Flowrate H-FT-3800: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM569	Flowrate H-FT-3800: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM570	Flowrate H-FT-3800: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM571	Pressure H-PT-13010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM572	Pressure H-PT-13010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM573	Pressure H-PT-13010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM574	Pressure H-PT-13010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM575	Pressure H-PT-13010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM576	Pressure H-PT-11010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM577	Pressure H-PT-11010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM578	Pressure H-PT-11010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM579	Pressure H-PT-11010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM580	Pressure H-PT-11010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM581	Flowrate H-FT-13010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM582	Flowrate H-FT-13010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM583	Flowrate H-FT-13010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM584	Flowrate H-FT-13010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM585	Flowrate H-FT-13010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM586	Flowrate H-FT-11010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM587	Flowrate H-FT-11010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM588	Flowrate H-FT-11010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM589	Flowrate H-FT-11010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM590	Flowrate H-FT-11010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM591	Pressure H-PT-13140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM592	Pressure H-PT-13140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM593	Pressure H-PT-13140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM594	Pressure H-PT-13140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM595	Pressure H-PT-13140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM596	Pressure H-PT-13160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM597	Pressure H-PT-13160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM598	Pressure H-PT-13160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM599	Pressure H-PT-13160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM600	Pressure H-PT-13160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM603	DeltaP chromatography module 1: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM604	DeltaP chromatography module 1: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM608	DeltaP Filter Module 1: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM609	DeltaP Filter Module 1: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM611	Temperature H-CE-13030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM612	Temperature H-CE-13030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM613	Temperature H-CE-13030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM614	Temperature H-CE-13030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM615	Temperature H-CE-13030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM621	Conductivity H-CE-13030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM622	Conductivity H-CE-13030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM623	Conductivity H-CE-13030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM624	Conductivity H-CE-13030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM625	Conductivity H-CE-13030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM626	pH H-pHE-13030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM627	pH H-pHE-13030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM628	pH H-pHE-13030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM629	pH H-pHE-13030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM630	pH H-pHE-13030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM631	pH H-pHE-13020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM632	pH H-pHE-13020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM633	pH H-pHE-13020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM634	pH H-pHE-13020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM635	pH H-pHE-13020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM636	Pressure H-PT-23010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM637	Pressure H-PT-23010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM638	Pressure H-PT-23010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM639	Pressure H-PT-23010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM640	Pressure H-PT-23010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM641	Pressure H-PT-21010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM642	Pressure H-PT-21010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM643	Pressure H-PT-21010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM644	Pressure H-PT-21010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM645	Pressure H-PT-21010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM646	Flowrate H-FT-23010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM647	Flowrate H-FT-23010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM648	Flowrate H-FT-23010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM649	Flowrate H-FT-23010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM650	Flowrate H-FT-23010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM651	Flowrate H-FT-21010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM652	Flowrate H-FT-21010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM653	Flowrate H-FT-21010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM654	Flowrate H-FT-21010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM655	Flowrate H-FT-21010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM656	Pressure H-PT-23140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM657	Pressure H-PT-23140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM658	Pressure H-PT-23140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM659	Pressure H-PT-23140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM660	Pressure H-PT-23140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM661	Pressure H-PT-23160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM662	Pressure H-PT-23160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM663	Pressure H-PT-23160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM664	Pressure H-PT-23160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM665	Pressure H-PT-23160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM668	DeltaP chromatography module 2: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM669	DeltaP chromatography module 2: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM673	DeltaP Filter Module 2: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM674	DeltaP Filter Module 2: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM676	Temperature H-CE-23030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM677	Temperature H-CE-23030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM678	Temperature H-CE-23030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM679	Temperature H-CE-23030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM680	Temperature H-CE-23030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM686	Conductivity H-CE-23030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM687	Conductivity H-CE-23030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM688	Conductivity H-CE-23030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM689	Conductivity H-CE-23030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM690	Conductivity H-CE-23030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM691	pH H-pHE-23030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM692	pH H-pHE-23030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM693	pH H-pHE-23030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM694	pH H-pHE-23030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM695	pH H-pHE-23030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM696	pH H-pHE-23020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM697	pH H-pHE-23020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM698	pH H-pHE-23020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM699	pH H-pHE-23020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM700	pH H-pHE-23020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM701	Pressure H-PT-33010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM702	Pressure H-PT-33010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM703	Pressure H-PT-33010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM704	Pressure H-PT-33010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM705	Pressure H-PT-33010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM706	Pressure H-PT-31010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM707	Pressure H-PT-31010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM708	Pressure H-PT-31010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM709	Pressure H-PT-31010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM710	Pressure H-PT-31010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM711	Flowrate H-FT-33010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM712	Flowrate H-FT-33010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM713	Flowrate H-FT-33010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM714	Flowrate H-FT-33010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM715	Flowrate H-FT-33010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM716	Flowrate H-FT-31010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM717	Flowrate H-FT-31010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM718	Flowrate H-FT-31010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM719	Flowrate H-FT-31010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM720	Flowrate H-FT-31010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM721	Pressure H-PT-33140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM722	Pressure H-PT-33140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM723	Pressure H-PT-33140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM724	Pressure H-PT-33140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM725	Pressure H-PT-33140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM726	Pressure H-PT-33160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM727	Pressure H-PT-33160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM728	Pressure H-PT-33160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM729	Pressure H-PT-33160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM730	Pressure H-PT-33160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM733	DeltaP chromatography module 3: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM734	DeltaP chromatography module 3: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM738	DeltaP Filter Module 3: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM739	DeltaP Filter Module 3: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM741	Temperature H-CE-33030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM742	Temperature H-CE-33030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM743	Temperature H-CE-33030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM744	Temperature H-CE-33030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM745	Temperature H-CE-33030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM751	Conductivity H-CE-33030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM752	Conductivity H-CE-33030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM753	Conductivity H-CE-33030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM754	Conductivity H-CE-33030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM755	Conductivity H-CE-33030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM756	pH H-pHE-33030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM757	pH H-pHE-33030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM758	pH H-pHE-33030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM759	pH H-pHE-33030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM760	pH H-pHE-33030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM761	pH H-pHE-33020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM762	pH H-pHE-33020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM763	pH H-pHE-33020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM764	pH H-pHE-33020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM765	pH H-pHE-33020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM766	Pressure H-PT-43010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM767	Pressure H-PT-43010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM768	Pressure H-PT-43010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM769	Pressure H-PT-43010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM770	Pressure H-PT-43010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM771	Pressure H-PT-41010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM772	Pressure H-PT-41010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM773	Pressure H-PT-41010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM774	Pressure H-PT-41010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM775	Pressure H-PT-41010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM776	Flowrate H-FT-43010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM777	Flowrate H-FT-43010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM778	Flowrate H-FT-43010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM779	Flowrate H-FT-43010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM780	Flowrate H-FT-43010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM781	Flowrate H-FT-41010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM782	Flowrate H-FT-41010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM783	Flowrate H-FT-41010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM784	Flowrate H-FT-41010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM785	Flowrate H-FT-41010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM786	Pressure H-PT-43140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM787	Pressure H-PT-43140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM788	Pressure H-PT-43140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM789	Pressure H-PT-43140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM790	Pressure H-PT-43140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM791	Pressure H-PT-43160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM792	Pressure H-PT-43160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM793	Pressure H-PT-43160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM794	Pressure H-PT-43160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM795	Pressure H-PT-43160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM798	DeltaP chromatography module 4: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM799	DeltaP chromatography module 4: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM803	DeltaP Filter Module 4: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM804	DeltaP Filter Module 4: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM806	Temperature H-CE-43030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM807	Temperature H-CE-43030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM808	Temperature H-CE-43030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM809	Temperature H-CE-43030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM810	Temperature H-CE-43030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM816	Conductivity H-CE-43030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM817	Conductivity H-CE-43030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM818	Conductivity H-CE-43030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM819	Conductivity H-CE-43030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM820	Conductivity H-CE-43030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM821	pH H-pHE-43030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM822	pH H-pHE-43030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM823	pH H-pHE-43030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM824	pH H-pHE-43030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM825	pH H-pHE-43030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM826	pH H-pHE-43020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM827	pH H-pHE-43020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM828	pH H-pHE-43020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM829	pH H-pHE-43020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM830	pH H-pHE-43020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM831	Pressure H-PT-53010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM832	Pressure H-PT-53010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM833	Pressure H-PT-53010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM834	Pressure H-PT-53010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM835	Pressure H-PT-53010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM836	Pressure H-PT-51010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM837	Pressure H-PT-51010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM838	Pressure H-PT-51010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM839	Pressure H-PT-51010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM840	Pressure H-PT-51010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM841	Flowrate H-FT-53010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM842	Flowrate H-FT-53010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM843	Flowrate H-FT-53010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM844	Flowrate H-FT-53010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM845	Flowrate H-FT-53010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM846	Flowrate H-FT-51010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM847	Flowrate H-FT-51010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM848	Flowrate H-FT-51010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM849	Flowrate H-FT-51010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM850	Flowrate H-FT-51010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM851	Pressure H-PT-53140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM852	Pressure H-PT-53140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM853	Pressure H-PT-53140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM854	Pressure H-PT-53140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM855	Pressure H-PT-53140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM856	Pressure H-PT-53160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM857	Pressure H-PT-53160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM858	Pressure H-PT-53160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM859	Pressure H-PT-53160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM860	Pressure H-PT-53160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM863	DeltaP chromatography module 5: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM864	DeltaP chromatography module 5: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM868	DeltaP Filter Module 5: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM869	DeltaP Filter Module 5: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM871	Temperature H-CE-53030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM872	Temperature H-CE-53030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM873	Temperature H-CE-53030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM874	Temperature H-CE-53030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM875	Temperature H-CE-53030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM881	Conductivity H-CE-53030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM882	Conductivity H-CE-53030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM883	Conductivity H-CE-53030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM884	Conductivity H-CE-53030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM885	Conductivity H-CE-53030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM886	pH H-pHE-53030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM887	pH H-pHE-53030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM888	pH H-pHE-53030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM889	pH H-pHE-53030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM890	pH H-pHE-53030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM891	pH H-pHE-53020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM892	pH H-pHE-53020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM893	pH H-pHE-53020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM894	pH H-pHE-53020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM895	pH H-pHE-53020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM896	Pressure H-PT-63010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM897	Pressure H-PT-63010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM898	Pressure H-PT-63010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM899	Pressure H-PT-63010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM900	Pressure H-PT-63010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM901	Pressure H-PT-61010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM902	Pressure H-PT-61010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM903	Pressure H-PT-61010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM904	Pressure H-PT-61010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM905	Pressure H-PT-61010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM906	Flowrate H-FT-63010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM907	Flowrate H-FT-63010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM908	Flowrate H-FT-63010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM909	Flowrate H-FT-63010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM910	Flowrate H-FT-63010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM911	Flowrate H-FT-61010: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM912	Flowrate H-FT-61010: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM913	Flowrate H-FT-61010: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM914	Flowrate H-FT-61010: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM915	Flowrate H-FT-61010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM916	Pressure H-PT-63140: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM917	Pressure H-PT-63140: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM918	Pressure H-PT-63140: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM919	Pressure H-PT-63140: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM920	Pressure H-PT-63140: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM921	Pressure H-PT-63160: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM922	Pressure H-PT-63160: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM923	Pressure H-PT-63160: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM924	Pressure H-PT-63160: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM925	Pressure H-PT-63160: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM928	DeltaP chromatography module 6: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM929	DeltaP chromatography module 6: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM933	DeltaP Filter Module 6: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM934	DeltaP Filter Module 6: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM936	Temperature H-CE-63030: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM937	Temperature H-CE-63030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM938	Temperature H-CE-63030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM939	Temperature H-CE-63030: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM940	Temperature H-CE-63030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM946	Conductivity H-CE-63030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM947	Conductivity H-CE-63030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM948	Conductivity H-CE-63030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

	Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
	ALM_BMEM949	Conductivity H-CE-63030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
	ALM_BMEM950	Conductivity H-CE-63030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
	ALM_BMEM951	pH H-pHE-63030: Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
	ALM_BMEM952	pH H-pHE-63030: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
	ALM_BMEM953	pH H-pHE-63030: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
	ALM_BMEM954	pH H-pHE-63030: High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
	ALM_BMEM955	pH H-pHE-63030: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
	ALM_BMEM956	pH H-pHE-63020: LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
	ALM_BMEM957	pH H-pHE-63020: Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
	ALM_BMEM958	pH H-pHE-63020: Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
	ALM_BMEM959	pH H-pHE-63020: HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM960	pH H-pHE-63020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM961	Pump H-P-3100: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM962	Pump H-P-3100: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM963	Pump H-P-3100: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM964	Pump H-P-3200: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM965	Pump H-P-3200: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM966	Pump H-P-3200: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM967	Pump H-P-3300: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM968	Pump H-P-3300: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM969	Pump H-P-3300: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM970	Pump H-P-3400: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM971	Pump H-P-3400: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM972	Pump H-P-3400: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM973	Pump H-P-3500: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM974	Pump H-P-3500: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM975	Pump H-P-3500: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM976	Pump H-P-3600: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM977	Pump H-P-3600: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM978	Pump H-P-3600: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM979	Pump H-P-3700: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM980	Pump H-P-3700: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM981	Pump H-P-3700: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM982	Pump H-P-3800: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM983	Pump H-P-3800: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM984	Pump H-P-3800: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM985	Pump H-P-13010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM986	Pump H-P-13010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM987	Pump H-P-13010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM988	Pump H-P-11010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM989	Pump H-P-11010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM990	Pump H-P-11010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM991	Pump H-P-23010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM992	Pump H-P-23010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM993	Pump H-P-23010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM994	Pump H-P-21010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM995	Pump H-P-21010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM996	Pump H-P-21010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM997	Pump H-P-33010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM998	Pump H-P-33010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM999	Pump H-P-33010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1000	Pump H-P-31010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1001	Pump H-P-31010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1002	Pump H-P-31010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1003	Pump H-P-43010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1004	Pump H-P-43010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1005	Pump H-P-43010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1006	Pump H-P-41010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1007	Pump H-P-41010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1008	Pump H-P-41010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1009	Pump H-P-53010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1010	Pump H-P-53010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1011	Pump H-P-53010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1012	Pump H-P-51010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1013	Pump H-P-51010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1014	Pump H-P-51010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1015	Pump H-P-63010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1016	Pump H-P-63010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1017	Pump H-P-63010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1018	Pump H-P-61010: Frequency drift alarm	MEDIUM	SW	Y	RP	Process On AND loop OK AND frequency out of the drift range
ALM_BMEM1019	Pump H-P-61010: VFD alarm	MEDIUM	HW	N	3 s	Alarm activated on VFD
ALM_BMEM1020	Pump H-P-61010: Circuit breaker alarm	MEDIUM	HW	N	N	Circuit breaker is Off (contact opened)
ALM_BMEM1021	Air detected in inlet line 1 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1022	Air detected in inlet line 2 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1023	Air detected in inlet line 3 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1024	Air detected in inlet line 4 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1025	Air detected in inlet line 5 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1026	Air detected in inlet line 6 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1027	Air detected in inlet line 7 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1028	Air detected in inlet line 8 MCC	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1029	Air detected in inlet line 1 module 1	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1030	Air detected in inlet line 2 module 1	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1031	Air switch H-AS-13040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch
ALM_BMEM1032	Air detected in inlet line 1 module 2	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1033	Air detected in inlet line 2 module 2	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1034	Air switch H-AS-23040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch
ALM_BMEM1035	Air detected in inlet line 1 module 3	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1036	Air detected in inlet line 2 module 3	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1037	Air switch H-AS-33040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1038	Air detected in inlet line 1 module 4	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1039	Air detected in inlet line 2 module 4	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1040	Air switch H-AS-43040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch
ALM_BMEM1041	Air detected in inlet line 1 module 5	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1042	Air detected in inlet line 2 module 5	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1043	Air switch H-AS-53040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch
ALM_BMEM1044	Air detected in inlet line 1 module 6	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1045	Air detected in inlet line 2 module 6	MEDIUM	HW	Y	RP	System is running in automatic mode or manual mode AND Air detected in the line AND pump is running AND not used in Trigger condition
ALM_BMEM1046	Air switch H-AS-63040: Alarm	MEDIUM	HW	Y	RP	System in automatic or manual mode AND the column is on-line AND pumping in progress through the air switch
ALM_BMEM1047	UV detector H-AE-13010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1048	UV detector H-AE-23010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1049	UV detector H-AE-33010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1050	UV detector H-AE-43010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1051	UV detector H-AE-53010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1052	UV detector H-AE-63010: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1053	Bubble trap H-BT-13010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line
ALM_BMEM1054	Bubble trap H-BT-23010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line
ALM_BMEM1055	Bubble trap H-BT-33010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line
ALM_BMEM1056	Bubble trap H-BT-43010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1057	Bubble trap H-BT-53010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line
ALM_BMEM1058	Bubble trap H-BT-63010:level discrepancy	MEDIUM	HW	Y	5 s	Fluid detected on high level switch AND not on low level switch And bubble trap on-line
ALM_BMEM1059	H-BT-13010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1060	H-BT-23010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1061	H-BT-33010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1062	H-BT-43010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1063	H-BT-53010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1064	H-BT-63010: level not reached in filling	MEDIUM	SW	Y	RP	The low level switch is not detected during filling
ALM_BMEM1065	H-PT-3100: High pressure pump H-P-3100	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1066	H-PT-3200: High pressure pump H-P-3200	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1067	H-PT-3300: High pressure pump H-P-3300	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1068	H-PT-3400: High pressure pump H-P-3400	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1069	H-PT-3500: High pressure pump H-P-3500	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1070	H-PT-3600: High pressure pump H-P-3600	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1071	H-PT-3700: High pressure pump H-P-3700	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1072	H-PT-3800: High pressure pump H-P-3800	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1073	H-PT-13010: High pressure pump H-P-13010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1074	H-PT-11010: High pressure pump H-P-11010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1075	H-PT-23010: High pressure pump H-P-23010	HIGH	HW	N	N	Too high pressure after pump

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1076	H-PT-21010: High pressure pump H-P-21010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1077	H-PT-33010: High pressure pump H-P-33010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1078	H-PT-31010: High pressure pump H-P-31010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1079	H-PT-43010: High pressure pump H-P-43010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1080	H-PT-41010: High pressure pump H-P-41010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1081	H-PT-53010: High pressure pump H-P-53010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1082	H-PT-51010: High pressure pump H-P-51010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1083	H-PT-63010: High pressure pump H-P-63010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1084	H-PT-61010: High pressure pump H-P-61010	HIGH	HW	N	N	Too high pressure after pump
ALM_BMEM1085	Pump H-P-3100: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1086	Pump H-P-3200: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1087	Pump H-P-3300: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1088	Pump H-P-3400: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1089	Pump H-P-3500: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1090	Pump H-P-3600: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1091	Pump H-P-3700: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1092	Pump H-P-3800: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1093	Pump H-P-13010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1094	Pump H-P-11010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1095	Pump H-P-23010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1096	Pump H-P-21010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1097	Pump H-P-33010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1098	Pump H-P-31010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1099	Pump H-P-43010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1100	Pump H-P-41010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1101	Pump H-P-53010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1102	Pump H-P-51010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1103	Pump H-P-63010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1104	Pump H-P-61010: Discrepancy alarm	MEDIUM	HW	N	3 s	Power On AND state of pump different than the command
ALM_BMEM1105	Conductivity H-CE-13020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1106	Conductivity H-CE-23020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1107	Conductivity H-CE-33020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1108	Conductivity H-CE-43020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1109	Conductivity H-CE-53020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1110	Conductivity H-CE-63020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1111	UV detector H-AE-13010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1112	UV detector H-AE-23010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1113	UV detector H-AE-33010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1114	UV detector H-AE-43010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1115	UV detector H-AE-53010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1116	UV detector H-AE-63010: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1117	Delay elapsed for trigger on block	MEDIUM	SW	N	N	Delay elapsed to trigger the block
ALM_BMEM1118	DeltaP chromatography module 1: Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control
ALM_BMEM1119	DeltaP chromatography module 2 : Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control
ALM_BMEM1120	DeltaP chromatography module 3 : Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control
ALM_BMEM1121	DeltaP chromatography module 4 : Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control
ALM_BMEM1122	DeltaP chromatography module 5 : Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control
ALM_BMEM1123	DeltaP chromatography module 6 : Low flowrate reached	MEDIUM	SW	N	N	Low flowrate reached during Pressure Drop control

Tag Scada	Description	Alarm Priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1124	UV detector H-AE-13020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1125	UV detector H-AE-23020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1126	UV detector H-AE-33020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1127	UV detector H-AE-43020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1128	UV detector H-AE-53020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1129	UV detector H-AE-63020: Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1130	UV detector H-AE-13020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1131	UV detector H-AE-23020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1132	UV detector H-AE-33020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1133	UV detector H-AE-43020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1134	UV detector H-AE-53020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1135	UV detector H-AE-63020: Alarm	MEDIUM	HW	Y	N	Power On AND alarm from UV detector
ALM_BMEM1136	UV Alarm from transmitter	MEDIUM	SW	Y	N	Default from transmitter
ALM_BMEM1137	UV Sequence time-out	MEDIUM	SW	Y	N	Time-out during sequence
ALM_BMEM1138	UV Lamp Off with power On	INFO	SW	N	N	The power is On and the UV lamp is Off
ALM_BMEM1139	UV Lamp On with power Off	INFO	SW	N	N	The power is Off and the UV lamp is On

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1140	Single Use flow kit not inserted	MEDIUM	SW	N	N	Unit is running and flowpath not inserted
ALM_BMEM1141	Pressure Post Mixing module 1 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1142	Pressure Post Mixing module 1 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1143	Pressure Post Mixing module 1 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1144	Pressure Post Mixing module 1 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1145	Pressure Post Mixing module 1 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1146	Pressure Post Mixing module 2 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1147	Pressure Post Mixing module 2 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1148	Pressure Post Mixing module 2 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1149	Pressure Post Mixing module 2 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1150	Pressure Post Mixing module 2 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1151	Pressure Post Mixing module 3 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1152	Pressure Post Mixing module 3 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1153	Pressure Post Mixing module 3 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1154	Pressure Post Mixing module 3 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1155	Pressure Post Mixing module 3 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1156	Pressure Post Mixing module 4 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1157	Pressure Post Mixing module 4 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1158	Pressure Post Mixing module 4 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1159	Pressure Post Mixing module 4 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1160	Pressure Post Mixing module 4 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1161	Pressure Post Mixing module 5 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1162	Pressure Post Mixing module 5 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1163	Pressure Post Mixing module 5 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1164	Pressure Post Mixing module 5 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1165	Pressure Post Mixing module 5 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1166	Pressure Post Mixing module 6 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1167	Pressure Post Mixing module 6 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1168	Pressure Post Mixing module 6 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1169	Pressure Post Mixing module 6 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1170	Pressure Post Mixing module 6 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1171	Temperature Post Mixing module 1 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1172	Temperature Post Mixing module 1 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1173	Temperature Post Mixing module 1 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1174	Temperature Post Mixing module 1 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1175	Temperature Post Mixing module 1 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1176	Temperature Post Mixing module 2 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1177	Temperature Post Mixing module 2 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1178	Temperature Post Mixing module 2 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1179	Temperature Post Mixing module 2 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1180	Temperature Post Mixing module 2 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1181	Temperature Post Mixing module 3 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1182	Temperature Post Mixing module 3 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1183	Temperature Post Mixing module 3 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1184	Temperature Post Mixing module 3 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1185	Temperature Post Mixing module 3 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1186	Temperature Post Mixing module 4 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1187	Temperature Post Mixing module 4 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1188	Temperature Post Mixing module 4 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1189	Temperature Post Mixing module 4 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1190	Temperature Post Mixing module 4 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1191	Temperature Post Mixing module 5 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1192	Temperature Post Mixing module 5 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1193	Temperature Post Mixing module 5 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1194	Temperature Post Mixing module 5 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1195	Temperature Post Mixing module 5 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1196	Temperature Post Mixing module 6 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1197	Temperature Post Mixing module 6 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1198	Temperature Post Mixing module 6 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1199	Temperature Post Mixing module 6 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1200	Temperature Post Mixing module 6 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1201	Conductivity Post Mixing module 1 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1202	Conductivity Post Mixing module 1 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1203	Conductivity Post Mixing module 1 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1204	Conductivity Post Mixing module 1 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1205	Conductivity Post Mixing module 1 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1206	pH Post Mixing module 1 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1207	pH Post Mixing module 1 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1208	pH Post Mixing module 1 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1209	pH Post Mixing module 1 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1210	pH Post Mixing module 1 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1211	Conductivity Post Mixing module 2 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1212	Conductivity Post Mixing module 2 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1213	Conductivity Post Mixing module 2 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1214	Conductivity Post Mixing module 2 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1215	Conductivity Post Mixing module 2 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1216	pH Post Mixing module 2 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1217	pH Post Mixing module 2 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1218	pH Post Mixing module 2 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1219	pH Post Mixing module 2 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1220	pH Post Mixing module 2 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1221	Conductivity Post Mixing module 3 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1222	Conductivity Post Mixing module 3 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1223	Conductivity Post Mixing module 3 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1224	Conductivity Post Mixing module 3 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1225	Conductivity Post Mixing module 3 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1226	pH Post Mixing module 3 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1227	pH Post Mixing module 3 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1228	pH Post Mixing module 3 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1229	pH Post Mixing module 3 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1230	pH Post Mixing module 3 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1231	Conductivity Post Mixing module 4 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1232	Conductivity Post Mixing module 4 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1233	Conductivity Post Mixing module 4 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1234	Conductivity Post Mixing module 4 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1235	Conductivity Post Mixing module 4 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1236	pH Post Mixing module 4 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1237	pH Post Mixing module 4 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1238	pH Post Mixing module 4 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1239	pH Post Mixing module 4 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1240	pH Post Mixing module 4 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1241	Conductivity Post Mixing module 5 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1242	Conductivity Post Mixing module 5 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1243	Conductivity Post Mixing module 5 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1244	Conductivity Post Mixing module 5 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1245	Conductivity Post Mixing module 5 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1246	pH Post Mixing module 5 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1247	pH Post Mixing module 5 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1248	pH Post Mixing module 5 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1249	pH Post Mixing module 5 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1250	pH Post Mixing module 5 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1251	Conductivity Post Mixing module 6 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1252	Conductivity Post Mixing module 6 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1253	Conductivity Post Mixing module 6 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1254	Conductivity Post Mixing module 6 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1255	Conductivity Post Mixing module 6 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1256	pH Post Mixing module 6 : Low Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value < threshold Low
ALM_BMEM1257	pH Post Mixing module 6 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1258	pH Post Mixing module 6 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1259	pH Post Mixing module 6 : High Drift alarm	MEDIUM	SW	Y	RP	Pumping with drift management On AND loop OK AND current value > threshold High
ALM_BMEM1260	pH Post Mixing module 6 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1261	Temperature Post chromatography module 1 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1262	Temperature Post chromatography module 1 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1263	Temperature Post chromatography module 1 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1264	Temperature Post chromatography module 1 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1265	Temperature Post chromatography module 1 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1266	Temperature Post chromatography module 2 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1267	Temperature Post chromatography module 2 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1268	Temperature Post chromatography module 2 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1269	Temperature Post chromatography module 2 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1270	Temperature Post chromatography module 2 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1271	Temperature Post chromatography module 3 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1272	Temperature Post chromatography module 3 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1273	Temperature Post chromatography module 3 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1274	Temperature Post chromatography module 3 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1275	Temperature Post chromatography module 3 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1276	Temperature Post chromatography module 4 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1277	Temperature Post chromatography module 4 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1278	Temperature Post chromatography module 4 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1279	Temperature Post chromatography module 4 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1280	Temperature Post chromatography module 4 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1281	Temperature Post chromatography module 5 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1282	Temperature Post chromatography module 5 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1283	Temperature Post chromatography module 5 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1284	Temperature Post chromatography module 5 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1285	Temperature Post chromatography module 5 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1286	Temperature Post chromatography module 6 : LoLo alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value < threshold Low Low
ALM_BMEM1287	Temperature Post chromatography module 6 : Lo warning	LOW	SW	NA	RP	System is running AND loop OK AND current value < threshold Low
ALM_BMEM1288	Temperature Post chromatography module 6 : Hi warning	LOW	SW	NA	RP	System is running AND loop OK AND current value > threshold High
ALM_BMEM1289	Temperature Post chromatography module 6 : HiHi alarm	MEDIUM	SW	Y	RP	System is running AND loop OK AND current value > threshold High High
ALM_BMEM1290	Temperature Post chromatography module 6 : Loop alarm	MEDIUM	HW	Y	1500 ms	Power On during 40 s AND loop opened
ALM_BMEM1600	MCC: Different CIP on 2 columns	MEDIUM	SW	N	N	Several CIP valves are used at the same time on several columns
ALM_BMEM1601	Void volume unreachable for collection module 1	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection
ALM_BMEM1602	Void volume unreachable for collection module 2	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection

Tag Scada	Description	Alarm priority	Hard | soft	Inhibition	Delay	Condition
ALM_BMEM1603	Void volume unreachable for collection module 3	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection
ALM_BMEM1604	Void volume unreachable for collection module 4	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection
ALM_BMEM1605	Void volume unreachable for collection module 5	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection
ALM_BMEM1606	Void volume unreachable for collection module 6	LOW	SW	NA	N	System is running in automatic mode AND no pumping in progress during the waiting of void volume for collection
ALM_BMEM1607	UV Post.: Flash counts > 80% of lifetime	LOW	SW	NA	N	Flashcounts > 800 000 000 (for UV Tec5)
ALM_BMEM1608	UV Pre.: Flash counts > 80% of lifetime	LOW	SW	NA	N	Flashcounts > 800 000 000 (for UV Tec5)
ALM_BMEM1609	UV: Lamp operating hours > 90% of lifetime	LOW	SW	NA	N	UV lamp operating hours > 1800 hours
ALM_BMEM1610	UV Post.: Measurement Off with power On	INFO	SW	N	N	The power is On and the UV measurement is Off for UV Post.
ALM_BMEM1611	UV Post.: Measurement On with power Off	INFO	SW	N	N	The power is Off and the UV measurement is On for UV Post.
ALM_BMEM1612	UV Pre.: Measurement Off with power On	INFO	SW	N	N	The power is On and the UV measurement is Off for UV Pre.
ALM_BMEM1613	UV Pre.: Measurement On with power Off	INFO	SW	N	N	The power is Off and the UV measurement is On for UV Pre.
ALM_BMEM1614	Failure of power supply / activation of UPS	HIGH	HW	N	N	The power supply is Off

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Masculine or feminine forms are used to facilitate legibility in these instructions and always simultaneously denote all genders.

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