Accord

Template Summary

AT Biogas C1 Operator Manual.docx

Table of Contents

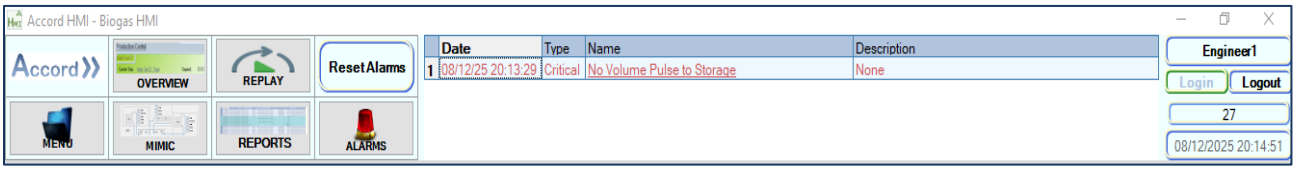
1 Introduction

This Operator Manual is to describe the operation of an initial Biogas Template in the Accord platform. The system controls 3 Reception Tanks, 6 Storage Tanks and 3 Digesters.

The area is controlled by 1 PLC

2 Top Banner and Menu:

2.1 Top Banner



2.1.1 Alarm Banner and Alarm Reset Button

The alarm banner is located in the top centre of the screen. It displays a list of currently active and unacknowledged alarms for the area. A panel for the device in Alarm appears when the device in the list is pressed.

Pressing 'Reset Alarms' is used to acknowledge and attempt to reset all current alarms or errors.

2.1.2 LifeByte

The lifebyte values should always update every 1 or 2 seconds. This lifebyte indicates a healthy connection with the PLC. The lifebyte can be found in the top right.

2.1.3 Login - Security Control

The Security Control is used to log into the Scada service. The name of the User who is currently Logged In User is shown. "Engineer1" is logged in above.

2.1.4 Alarms Button

The 'Alarms' button will display the current and unacknowledged alarms in full screen.

2.1.5 Overview Button

The 'Overview' button will display a screen showing the status of all automatic sequence programs and settings.

2.1.6 Replay Button

The 'Replay' button will allow Mimic re-simulation of past processes. A time is defined and the devices on a mimic replay through a historical sequence of a process.

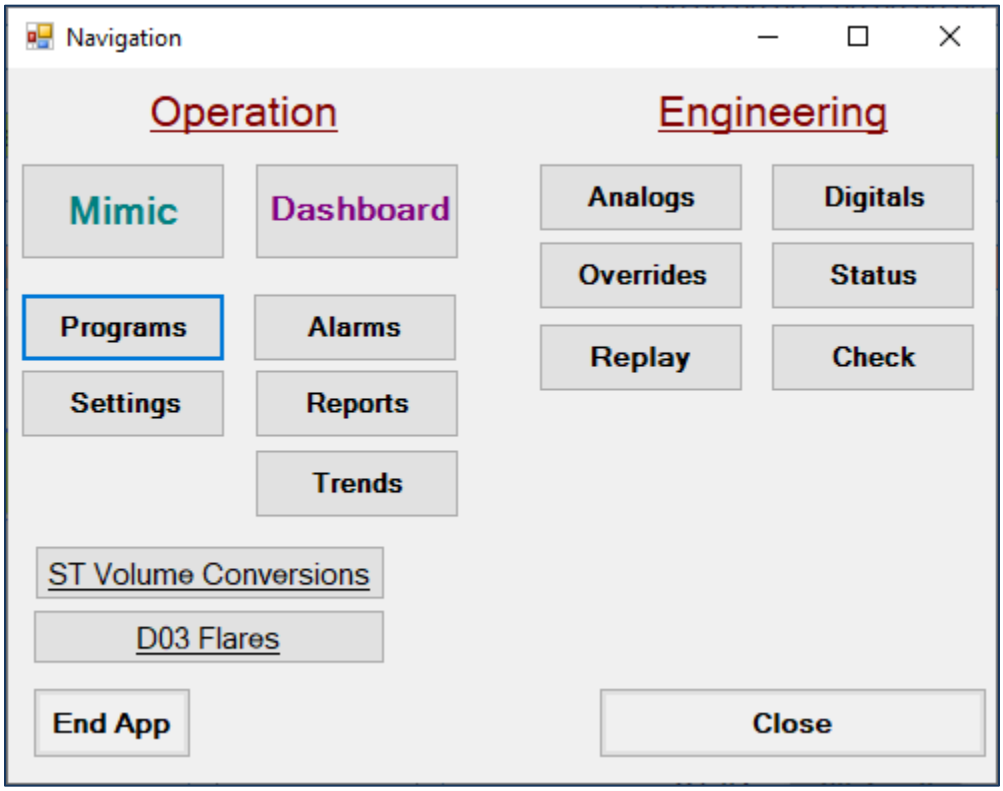
2.1.7 Mimic Button

The 'Mimic' Button will open the Main mimic for this project.

2.1.8 Reports Button

The 'Report' Button will allow for the lookup of historical logged information.

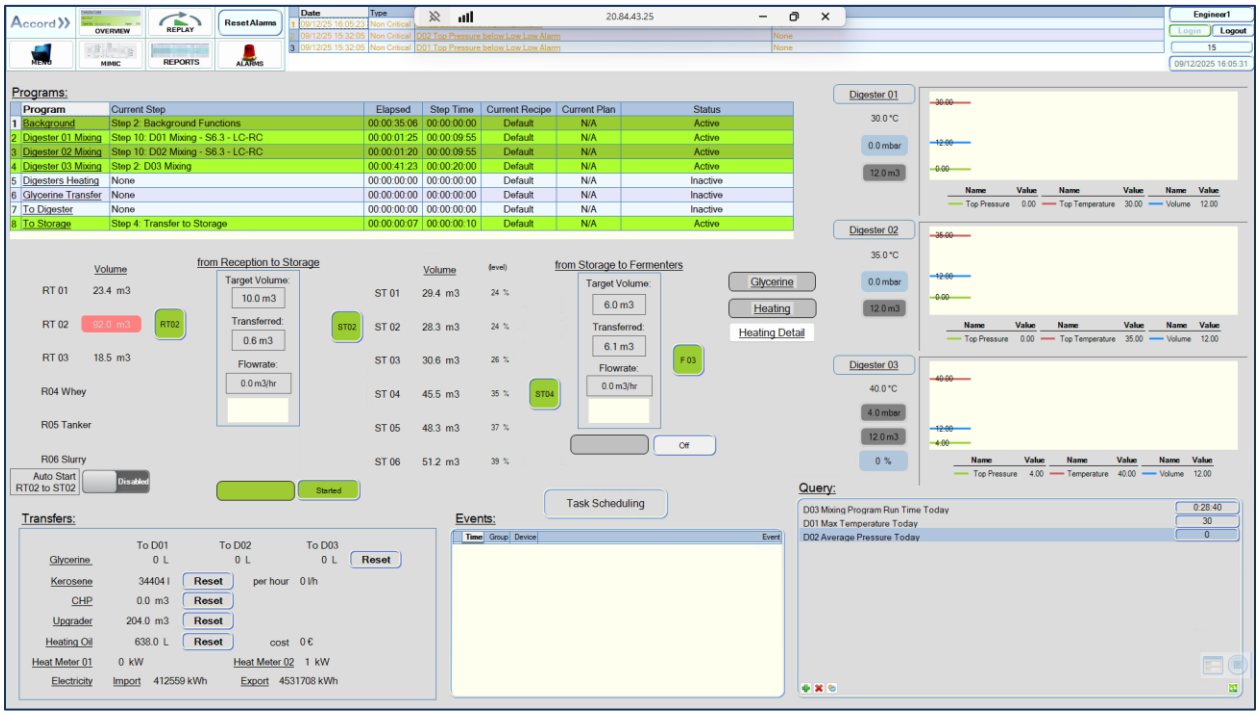
2.2 HMI Menu



This general navigation menu accessed by clicking on the 'Menu' Button in the Top Banner. It allows access to all screens; Mimic & Dashboard, and list based screens for Programs, Alarms, Analog Devices, Digital Devices, Overridden Devices, Device Status, Device Values, and screens for configurable Reports, Trends, and Check for Diagnostics. Popup screens for Storage Tank Volume Conversions and Digester 03 Flare control are also shown. Pressing the Close Button will close the Menu. Pressing the End App button will end the HMI application program.

3 Overview / Dashboard Screen

This screen contains an active summary list of the programs, selections for each program and start buttons for the transfers. Main readings for Volumes and Flowrates.
Summary information and Trends for the Digesters is given at the right.
A Button which brings up the Task Scheduler is included.
The bottom of the screen shows a summary of consumptions, a list of recent events and a Query control, where the database can be queried for specific information.

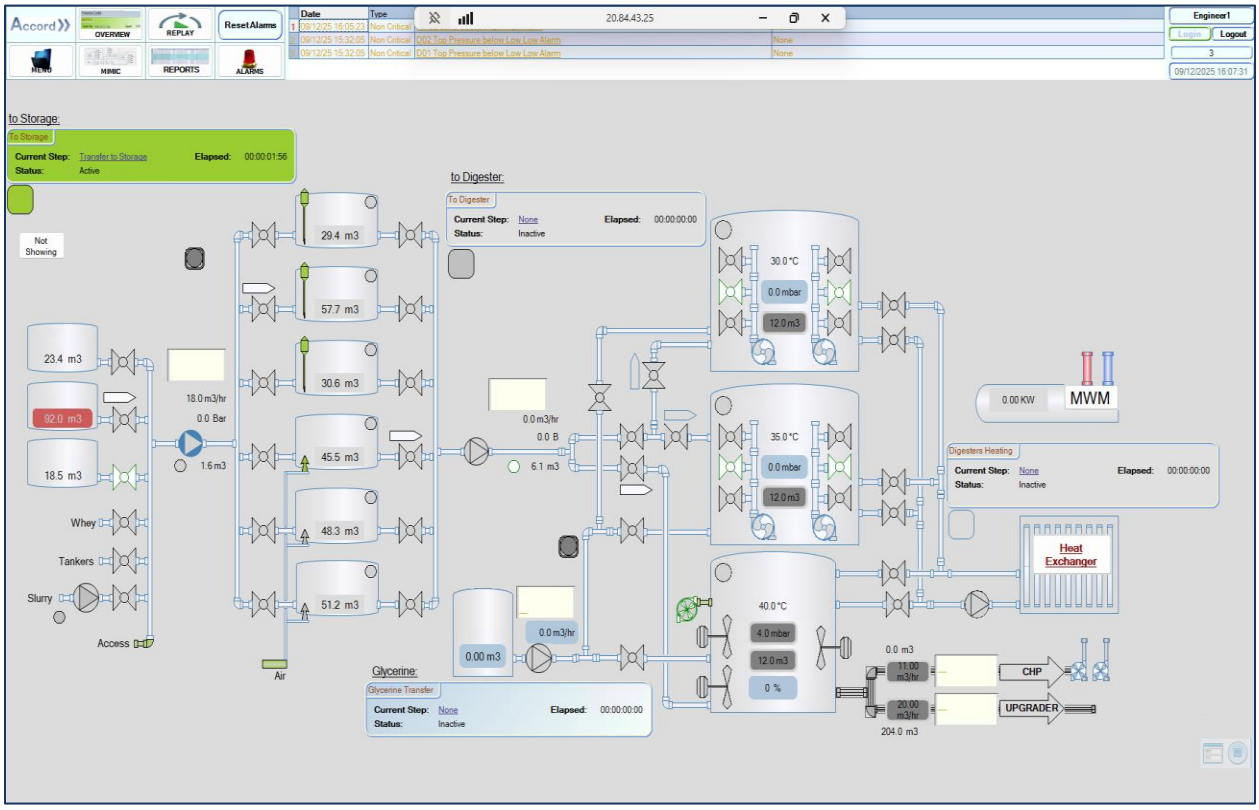


Overview Screen

4 Mimic Screen

This screen contains:

1. An active mimic representation of the Biogas System Tanks and Lines. This includes values for current filled Volumes for all tanks, and Pressure and Temperatures in the Digesters.
2. Filling and Transfer lines with line flowmeters with small trends and Volumes transferred.
3. Heat Exchanger for Digester Heating.
4. Program Controls for transfers ‘To Storage’, ‘To Digester’, ‘Glycerine Transfer’ and for ‘Digester Heating’.



Mimic Screen

4.1 System Colours:

Devices and Programs are shown and can be accessed by pressing on them.

Devices colours:

- Grey: Inactive
- White / Green: Active / On
- Red: Alarm / Error
- Purple: Masked – Error is not checked

Program Control colours;

- Light Blue: Idle
- Green: Active
- Red: Alarm
- Yellow: In Hold /Pause

See section 8 for more information on HMI controls.

5 Programs

A program is started by choosing a program, then pressing Start. Program selections are made prior to starting a program. Ending can be carried out from the program faceplate.
The system checks for the Tanks and Lines for any alarms when starting, and during programs.

5.1 Programs List

1. Digesters Heating
2. Digester 01 Mixing
3. Digester 02 Mixing
4. Digester 03 Mixing

Transfer Programs

5. Reception to Storage
6. Storage to Digesters
7. Glycerine Transfer

5.1.1 Alarms General

The following general Alarms are monitored in the Programs;
Attempt to run while in Maintenace Mode.
Low Flow from the pumps.
Tank Empty
Tank at High High Level
Tank at Low Low Level
Tank at High Pressure
Tank at High Temperature

5.1.2 Setpoints

The following Setpoints are available in the programs.

Background	Heating Oil Cost per L
Background	ST01 Volume Factor
Background	ST02 Volume Factor
Background	ST03 Volume Factor
Background	ST04 Volume Factor
Background	ST05 Volume Factor
Background	ST06 Volume Factor
Background	Count Converter Glycerin
Background	Heating Oil L per pulse
Background	Kerosene Converter
Digester 03 Mixing	D03 Mixing Cycle Time
Digester 03 Mixing	D03 Mixer 01 Start Time
Digester 03 Mixing	D03 Mixer 02 Start Time
Digester 03 Mixing	D03 Mixer 03 Start Time
Digester 03 Mixing	D03 Mixer 01 Stop Time
Digester 03 Mixing	D03 Mixer 02 Stop Time
Digester 03 Mixing	D03 Mixer 03 Stop Time
Digester 03 Mixing	D03 Starting Pressure Flare 02
Digester 03 Mixing	D03 Minimum Pressure Flare 02
Digester 03 Mixing	D03 Starting Pressure Flare 01
Digester 03 Mixing	D03 Minimum Pressure Flare 01
Digester 03 Mixing	D03 Minimum Balloon Height Flare 02
Digester 03 Mixing	D03 Starting Balloon Height Flare 02
Digester 03 Mixing	D03 Minimum Balloon Height Flare 01
Digester 03 Mixing	D03 Starting Balloon Height Flare 01
Digesters Heating	D01 Heat On SP
Digesters Heating	D02 Heat On SP
Digesters Heating	D01 Heat Off SP
Digesters Heating	D02 Heat Off SP
Digesters Heating	D03 Heat On SP
Digesters Heating	D03 Heat Off SP
To Digester	Transfer Volume Target
To Storage	to Storage Target Volume

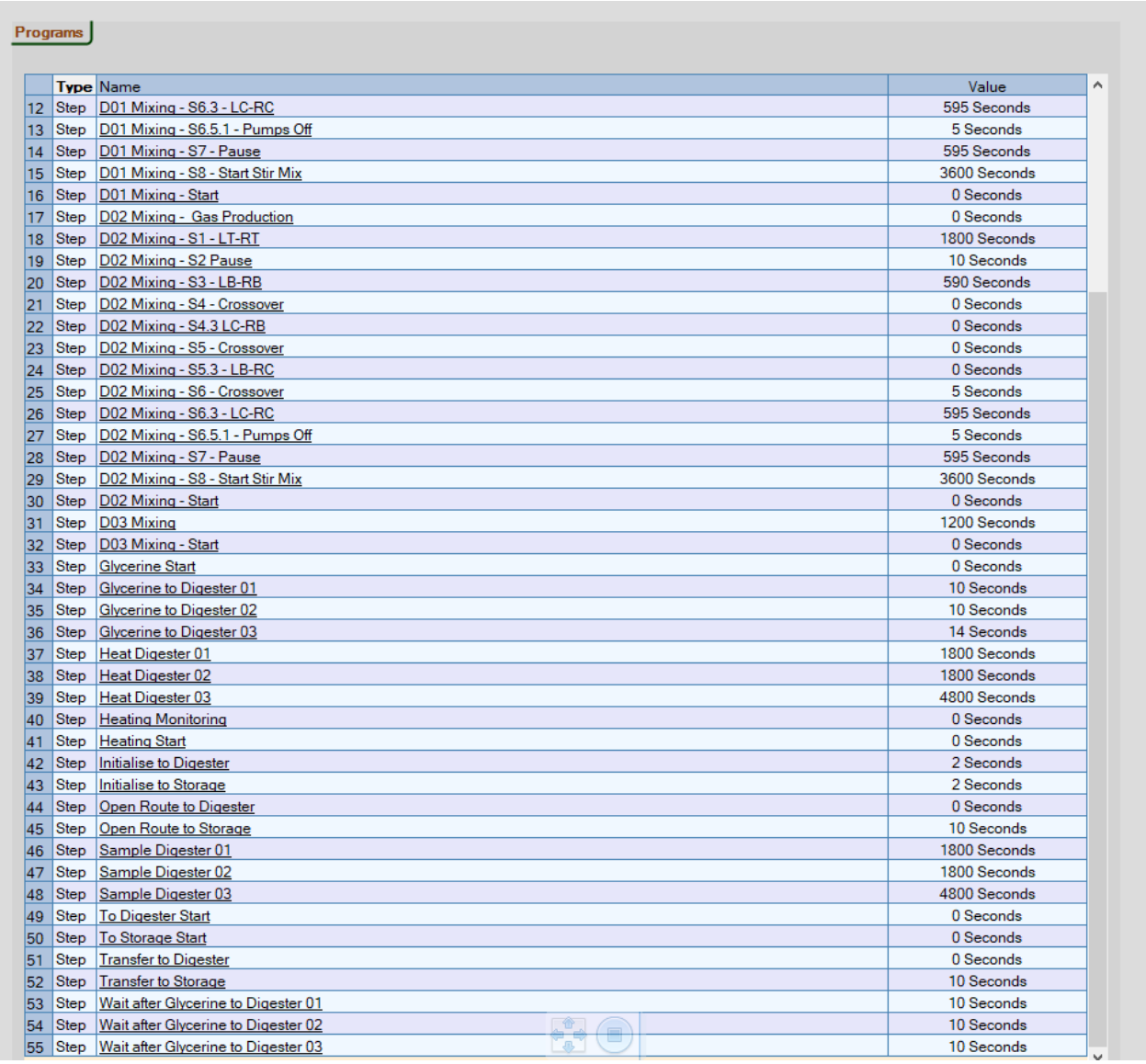
Setpoints

	Type	Name	Value
1	Setpoint	Count Converter Glycerin	1.00
2	Setpoint	D01 Heat Off SP	43.00 * C
3	Setpoint	D01 Heat On SP	40.00 * C
4	Setpoint	D02 Heat Off SP	43.00 * C
5	Setpoint	D02 Heat On SP	40.00 * C
6	Setpoint	D03 Heat Off SP	44.00 * C
7	Setpoint	D03 Heat On SP	40.00 * C
8	Setpoint	D03 Minimum Balloon Height Flare 01	93.00 %
9	Setpoint	D03 Minimum Balloon Height Flare 02	93.00 %
10	Setpoint	D03 Minimum Pressure Flare 01	4.50 mbar
11	Setpoint	D03 Minimum Pressure Flare 02	4.50 mbar
12	Setpoint	D03 Mixer 01 Start Time	1.00 min
13	Setpoint	D03 Mixer 01 Stop Time	15.00 min
14	Setpoint	D03 Mixer 02 Start Time	1.00 min
15	Setpoint	D03 Mixer 02 Stop Time	30.00 min
16	Setpoint	D03 Mixer 03 Start Time	1.00 min
17	Setpoint	D03 Mixer 03 Stop Time	15.00 min
18	Setpoint	D03 Mixing Cycle Time	60.00 min
19	Setpoint	D03 Starting Balloon Height Flare 01	95.00 %
20	Setpoint	D03 Starting Balloon Height Flare 02	95.00 %
21	Setpoint	D03 Starting Pressure Flare 01	4.90 mbar
22	Setpoint	D03 Starting Pressure Flare 02	4.90 mbar
23	Setpoint	Heating Oil Cost per L	0.00
24	Setpoint	Heating Oil L per pulse	1.00 l
25	Setpoint	Kerosene Converter	1.00 Imp/l
26	Setpoint	ST01 Volume Factor	1.20
27	Setpoint	ST02 Volume Factor	1.20
28	Setpoint	ST03 Volume Factor	1.20
29	Setpoint	ST04 Volume Factor	1.30
30	Setpoint	ST05 Volume Factor	1.30
31	Setpoint	ST06 Volume Factor	1.30
32	Setpoint	to Storage Target Volume	10.00 m3
33	Setpoint	Transfer Volume Target	1.00 m3

HMI Programs screen Setpoints section

5.1.3 Step Times

The Step Times can be accessed from the Program faceplate or from the Step Times section in the Program Screen.



Programs

	Type	Name	Value
12	Step	D01 Mixing - S6.3 - LC-RC	595 Seconds
13	Step	D01 Mixing - S6.5.1 - Pumps Off	5 Seconds
14	Step	D01 Mixing - S7 - Pause	595 Seconds
15	Step	D01 Mixing - S8 - Start Stir Mix	3600 Seconds
16	Step	D01 Mixing - Start	0 Seconds
17	Step	D02 Mixing - Gas Production	0 Seconds
18	Step	D02 Mixing - S1 - LT-RT	1800 Seconds
19	Step	D02 Mixing - S2 Pause	10 Seconds
20	Step	D02 Mixing - S3 - LB-RB	590 Seconds
21	Step	D02 Mixing - S4 - Crossover	0 Seconds
22	Step	D02 Mixing - S4.3 LC-RB	0 Seconds
23	Step	D02 Mixing - S5 - Crossover	0 Seconds
24	Step	D02 Mixing - S5.3 - LB-RC	0 Seconds
25	Step	D02 Mixing - S6 - Crossover	5 Seconds
26	Step	D02 Mixing - S6.3 - LC-RC	595 Seconds
27	Step	D02 Mixing - S6.5.1 - Pumps Off	5 Seconds
28	Step	D02 Mixing - S7 - Pause	595 Seconds
29	Step	D02 Mixing - S8 - Start Stir Mix	3600 Seconds
30	Step	D02 Mixing - Start	0 Seconds
31	Step	D03 Mixing	1200 Seconds
32	Step	D03 Mixing - Start	0 Seconds
33	Step	Glycerine Start	0 Seconds
34	Step	Glycerine to Digester 01	10 Seconds
35	Step	Glycerine to Digester 02	10 Seconds
36	Step	Glycerine to Digester 03	14 Seconds
37	Step	Heat Digester 01	1800 Seconds
38	Step	Heat Digester 02	1800 Seconds
39	Step	Heat Digester 03	4800 Seconds
40	Step	Heating Monitoring	0 Seconds
41	Step	Heating Start	0 Seconds
42	Step	Initialise to Digester	2 Seconds
43	Step	Initialise to Storage	2 Seconds
44	Step	Open Route to Digester	0 Seconds
45	Step	Open Route to Storage	10 Seconds
46	Step	Sample Digester 01	1800 Seconds
47	Step	Sample Digester 02	1800 Seconds
48	Step	Sample Digester 03	4800 Seconds
49	Step	To Digester Start	0 Seconds
50	Step	To Storage Start	0 Seconds
51	Step	Transfer to Digester	0 Seconds
52	Step	Transfer to Storage	10 Seconds
53	Step	Wait after Glycerine to Digester 01	10 Seconds
54	Step	Wait after Glycerine to Digester 02	10 Seconds
55	Step	Wait after Glycerine to Digester 03	10 Seconds

HMI Programs screen Step times section

5.2 Transfer Reception to Storage Tank

The program is started from the Overview / Dashboard screen by selecting Reception Source and Storage Target Tanks and a Target Volume and pressing the Start button. The status changes from Off to Started and the program status can be seen in the Programs list in the top. The program activates valves and pumps until the target volume is transferred.

Normal Step Order

Order	Name
1	Transfer to Storage Startup Step
2	Initialise to Storage
3	Open Route to Storage
4	To Storage Start
5	Transfer to Storage

5.3 Transfer Storage to Digester

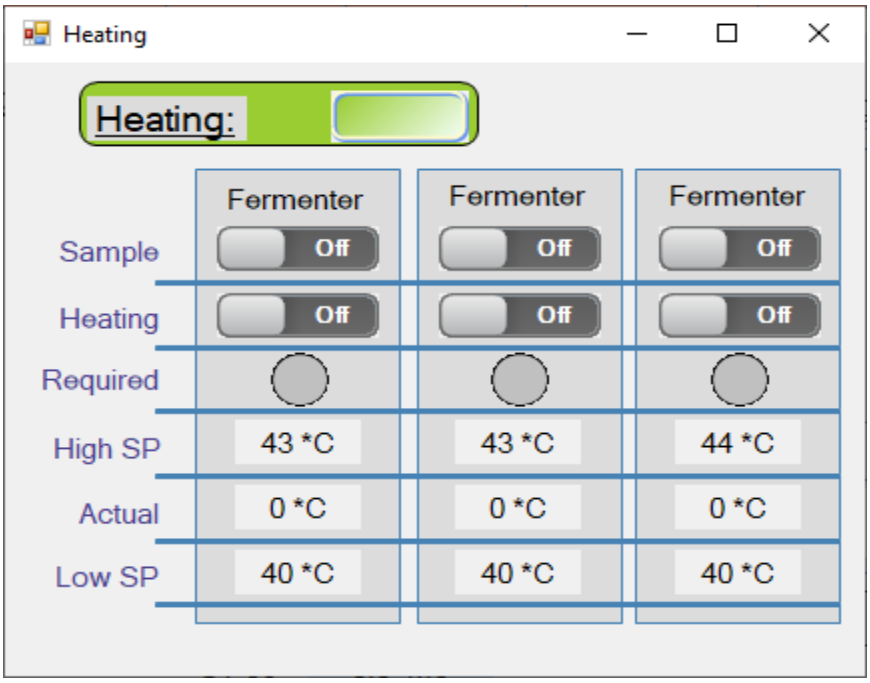
The program is started from the Overview / Dashboard screen by selecting Storage Source and Digester Target and entering a Target Volume and pressing the Start button. The status changes from Off to Started and the program status can be seen in the Programs list in the top. The program activates valves and pumps until the target volume is transferred.

Normal Step Order

Order	Name
1	Transfer to Digester Startup Step
2	Initialise to Digester
3	Open Route to Digester
4	To Digester Start
5	Transfer to Digester

5.4 Digesters Heating

The program generally waits in a Monitoring step and goes to the required step to transfer digestate from digester, through the Heat Exchanger and back to the Digester when required due to a fall in temperature in the Digester. The Heating must be enabled for the Digester. There is also the facility to Sample a Digester. The Enable and Sampling are available in Heating popup.



The Heating is called when the Actual Temperature, or Average Temperature, falls below the Low Setpoint, and continues until the Actual Temperature rises above the High Setpoint.
Toggling the Sample to On causes the transfer through the Heat Exchanger for a fixed time of 30 minutes.

Normal Step Order:

Order	Name
1	Digesters Heating Startup Step
2	Heating Start
3	Heating Monitoring
4	Heat Digester 01
5	Heat Digester 02
6	Heat Digester 03
7	Sample Digester 01
8	Sample Digester 02
9	Sample Digester 03

5.5 Digester 01 Mixing

This program performs a mixing cycle, using internal valves and pumps.

Normal Step Order:

Order	Name
1	Digester 01 Mixing Startup Step
2	D01 Mixing - Start
3	D01 Mixing - S1 - LT-RT
4	D01 Mixing - S2 Pause
5	D01 Mixing - S3 - LB-RB
6	D01 Mixing - S4 - Crossover
7	D01 Mixing - S4.3 LC-RB
8	D01 Mixing - S5 - Crossover
9	D01 Mixing - S5.3 - LB-RC
10	D01 Mixing - S6 - Crossover
11	D01 Mixing - S6.3 - LC-RC
12	D01 Mixing - S6.5.1 - Pumps Off
13	D01 Mixing - S7 - Pause
14	D01 Mixing - S8 - Start Stir Mix
15	D01 Mixing – Gas Production

5.6 Digester 02 Mixing

Normal Step Order:

Order	Name
1	Digester Mixing Startup Step
2	D02 Mixing - Start
3	D02 Mixing - S1 - LT-RT
4	D02 Mixing - S2 Pause
5	D02 Mixing - S3 - LB-RB
6	D02 Mixing - S4 - Crossover
7	D02 Mixing - S4.3 LC-RB
8	D02 Mixing - S5 - Crossover
9	D02 Mixing - S5.3 - LB-RC
10	D02 Mixing - S6 - Crossover
11	D02 Mixing - S6.3 - LC-RC
12	D02 Mixing - S6.5.1 - Pumps Off
13	D02 Mixing - S7 - Pause
14	D02 Mixing - S8 - Start Stir Mix
15	D02 Mixing – Gas Production

5.7 Glycerine Transfer

This program transfers a set amount of Glycerine to each Digester in turn. The amount is set up in the settings from the program faceplate or the general Programs Settings.

Normal Step Order:

Order	Name
1	Glycerine Transfer Startup Step
2	Gylcerine to Digester 01
3	Wait after Gylcerine to Digester 01
4	Gylcerine to Digester 02
5	Wait after Gylcerine to Digester 02
6	Gylcerine to Digester 03
7	Wait after Gylcerine to Digester 03

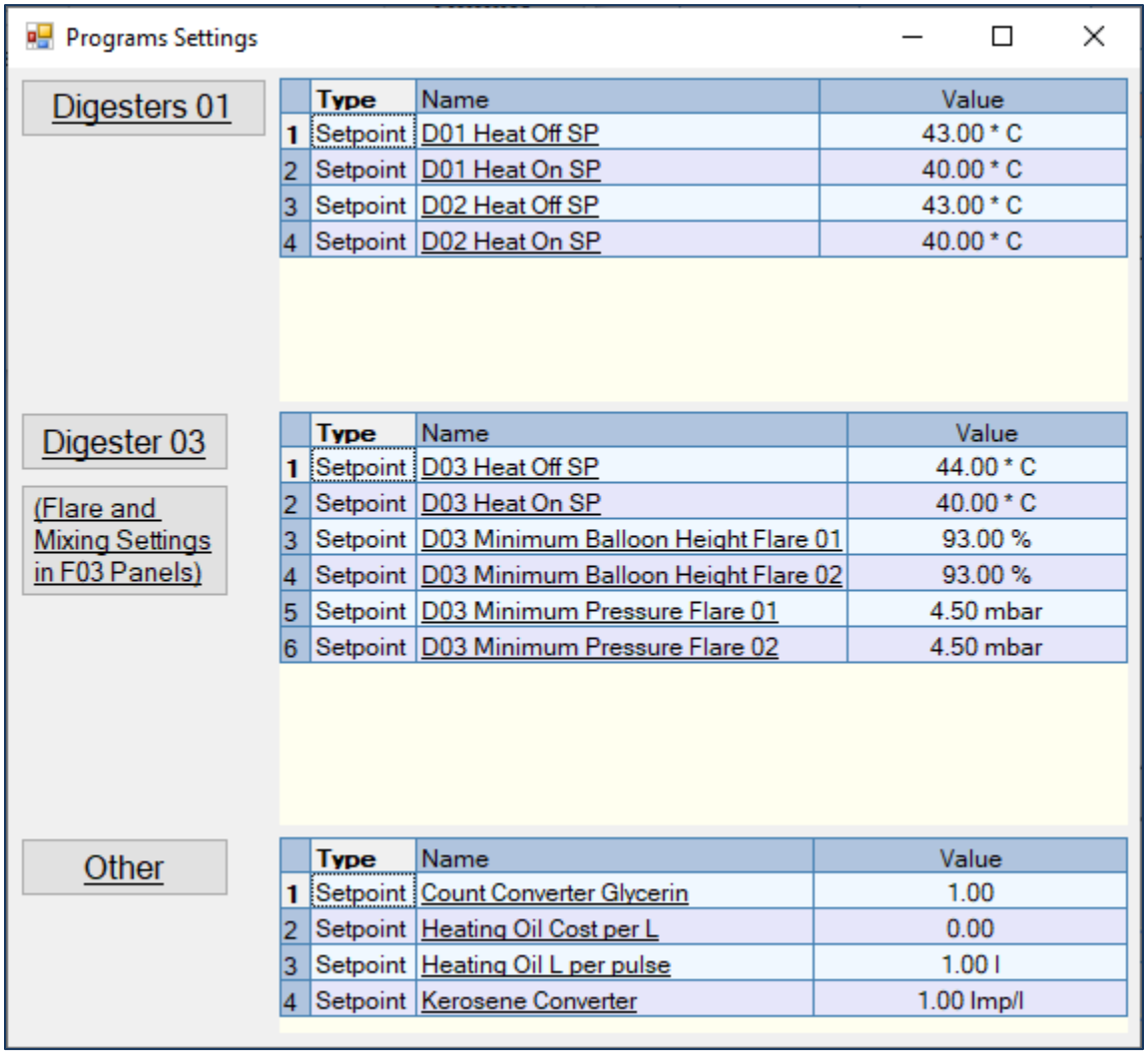
5.8 0 Common - Background

This program will start automatically on a PLC Start-up or reboot or may be stopped and started from PC. The Program has only one Step and should never be ended.

6 Other Screens

6.1 Settings Popup

This is a summary of main Programs Setpoints.
Each setpoint may be selected for change by pressing on the underlined text.

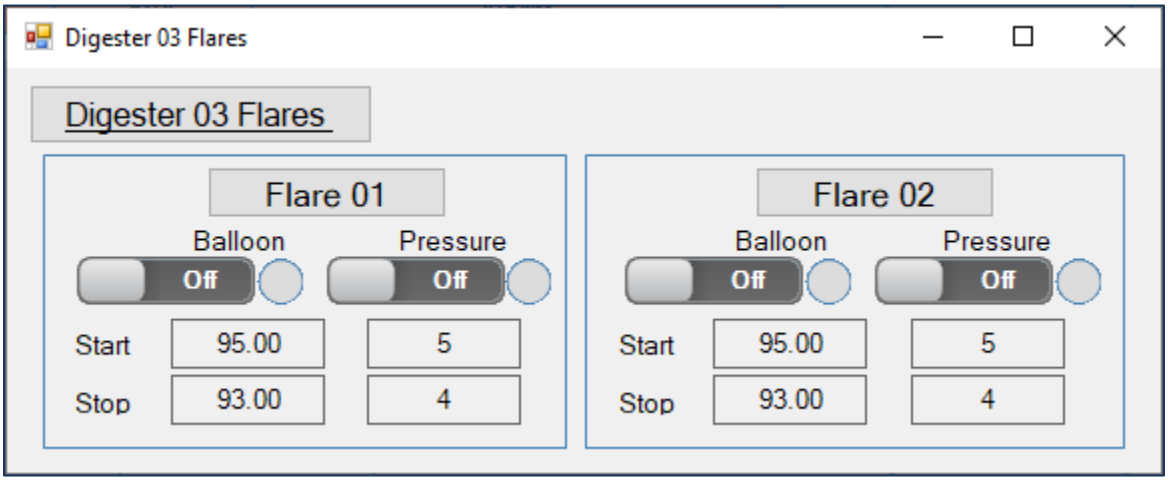


	Type	Name	Value
1	Setpoint	D01 Heat Off SP	43.00 * C
2	Setpoint	D01 Heat On SP	40.00 * C
3	Setpoint	D02 Heat Off SP	43.00 * C
4	Setpoint	D02 Heat On SP	40.00 * C

	Type	Name	Value
1	Setpoint	D03 Heat Off SP	44.00 * C
2	Setpoint	D03 Heat On SP	40.00 * C
3	Setpoint	D03 Minimum Balloon Height Flare 01	93.00 %
4	Setpoint	D03 Minimum Balloon Height Flare 02	93.00 %
5	Setpoint	D03 Minimum Pressure Flare 01	4.50 mbar
6	Setpoint	D03 Minimum Pressure Flare 02	4.50 mbar

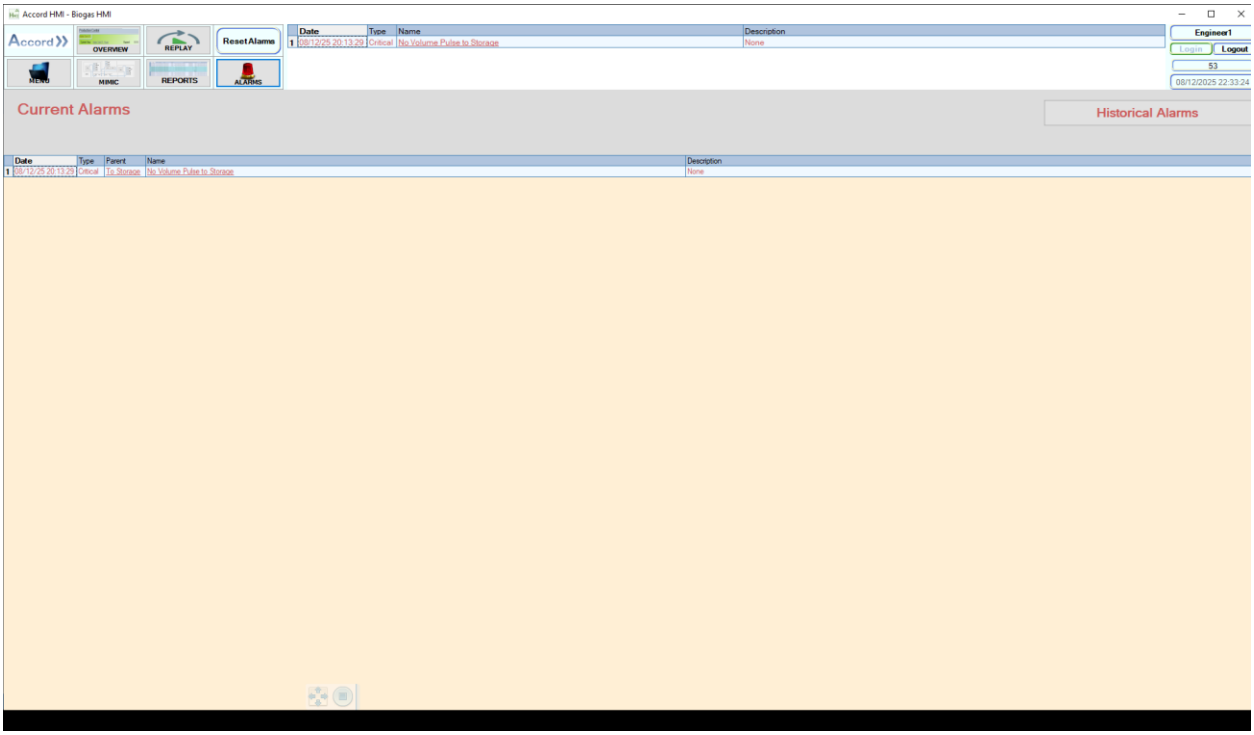
	Type	Name	Value
1	Setpoint	Count Converter Glycerin	1.00
2	Setpoint	Heating Oil Cost per L	0.00
3	Setpoint	Heating Oil L per pulse	1.00 l
4	Setpoint	Kerosene Converter	1.00 Imp/l

6.2 Digester 03 Flares Popup



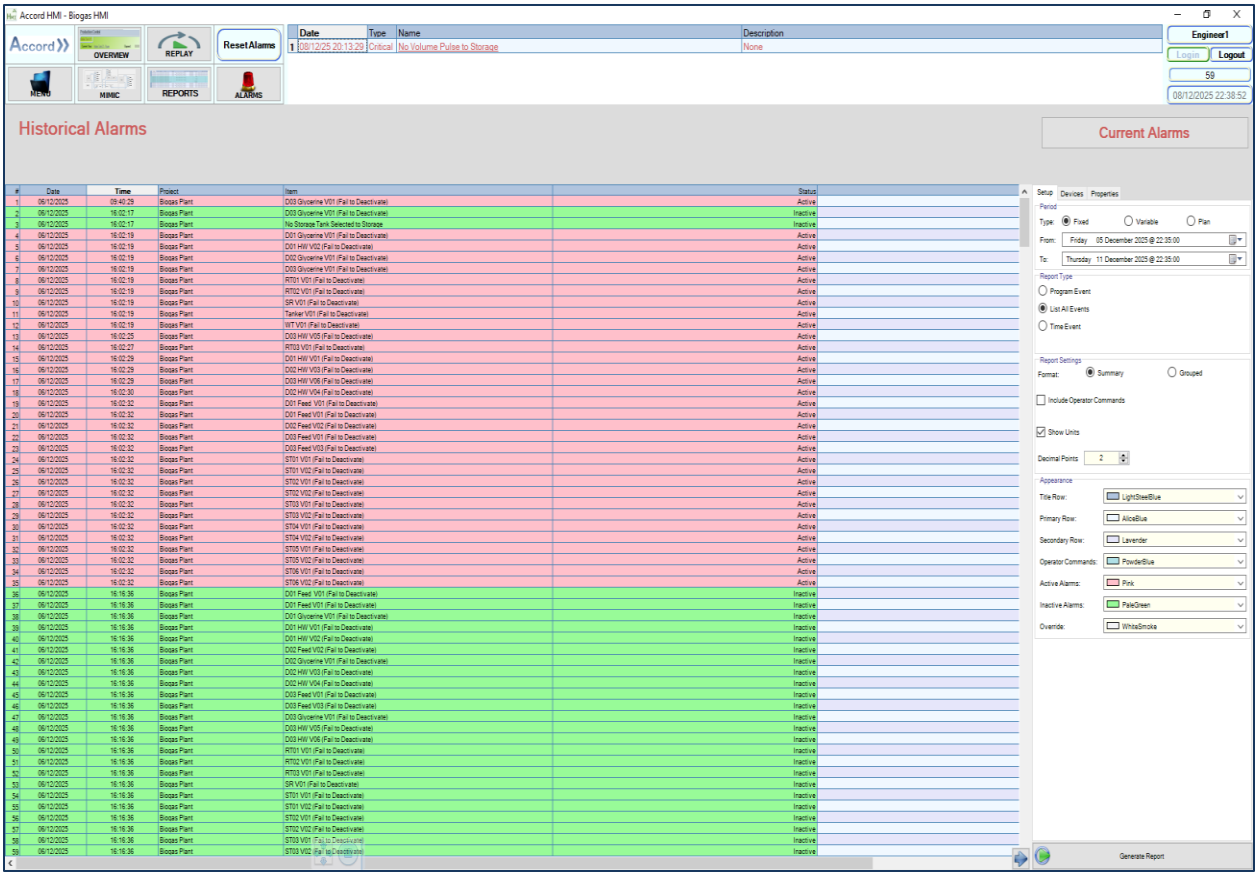
This gives control of Flares from Digester 03 by either Balloon Height or Pressure to activate each of the two flares.

6.3 Alarms Screen



Clicking on a Device item in the list will bring up the associated Faceplate, and overrides etc may be carried out from here.

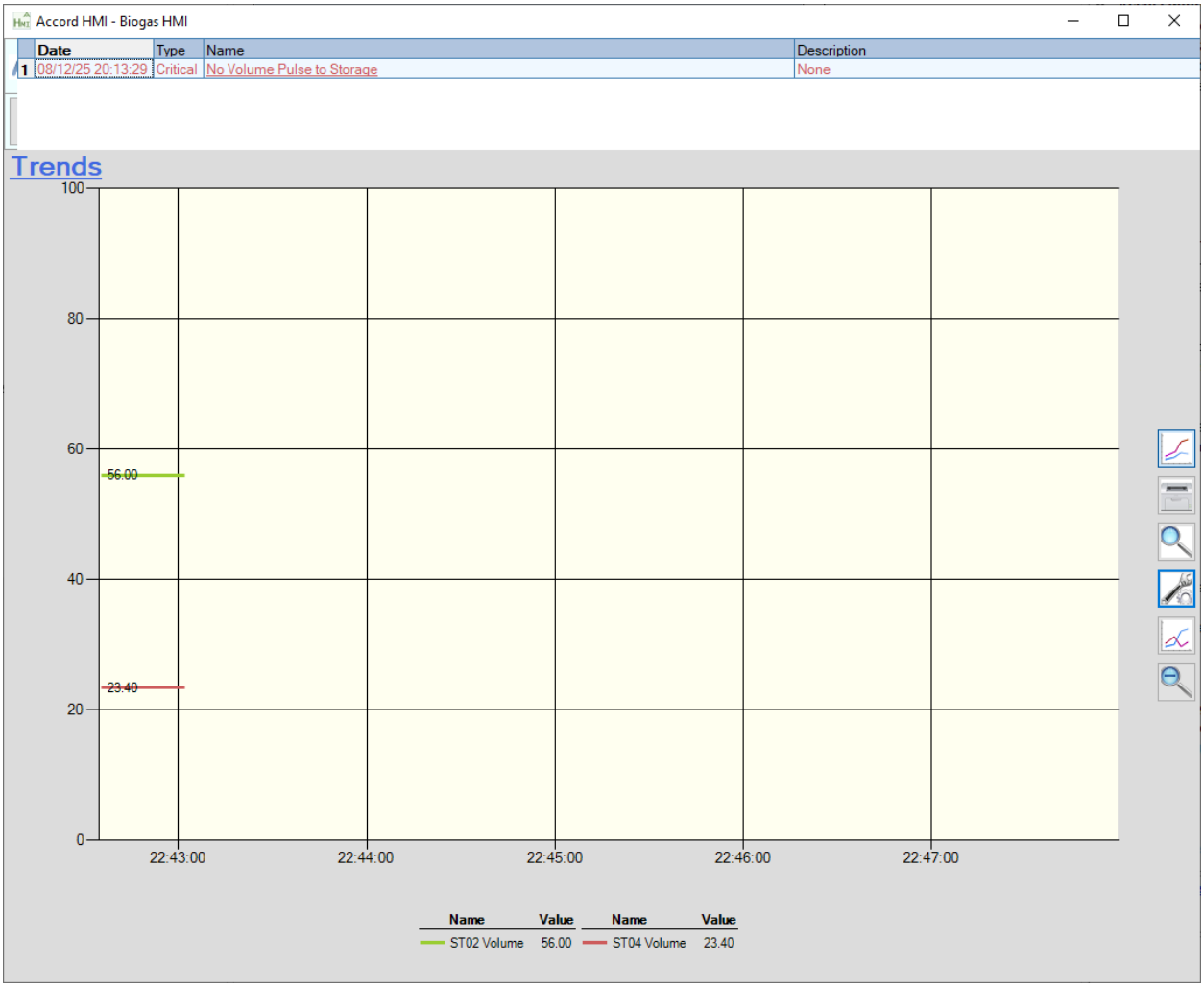
6.4 Historical Alarms Screen



This is in form of a configurable database query Report. The style of the report, the start and end times and the devices to be queried may all be selected on the right hand side panels.

6.5 Trends

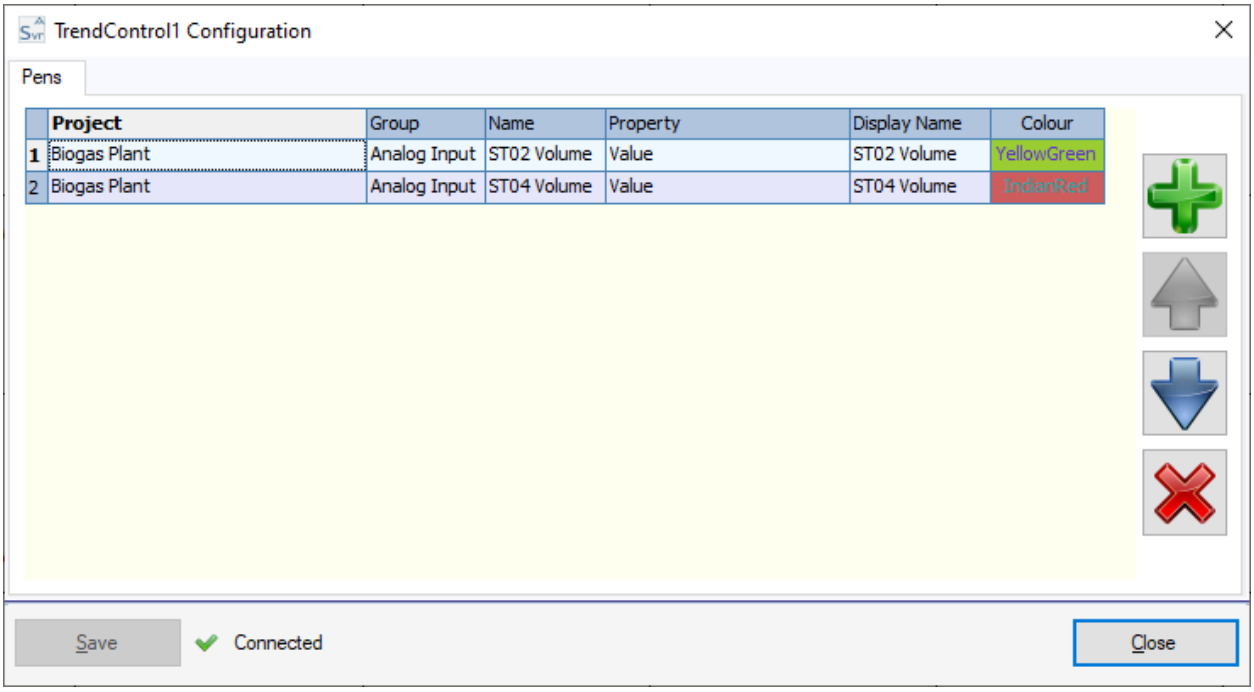
The Trend control can be used to display a live or historical trend graph of values. Historical trends are available for Logged devices. Selections and style settings are available at the right hand side.



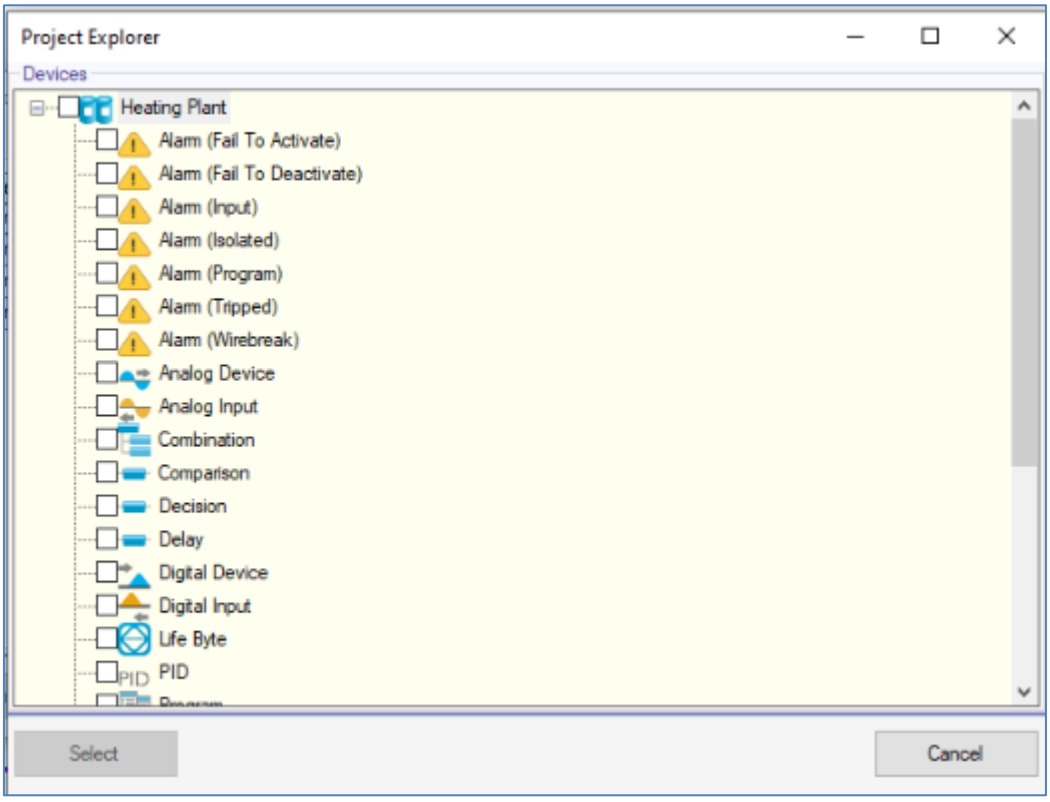
The following configuration options are available to the Trend control:

Right-click on the Trend allows the Trend Pens to be configured.

- An explorer window allows the required device to be accessed for the pen.
- A property of the device may also be assigned. Usually, the Value property is used.
- Text can be entered for the Display Name if required. The Device name will be used by default.
- A colour may be assigned to the Pen using the colour picker.



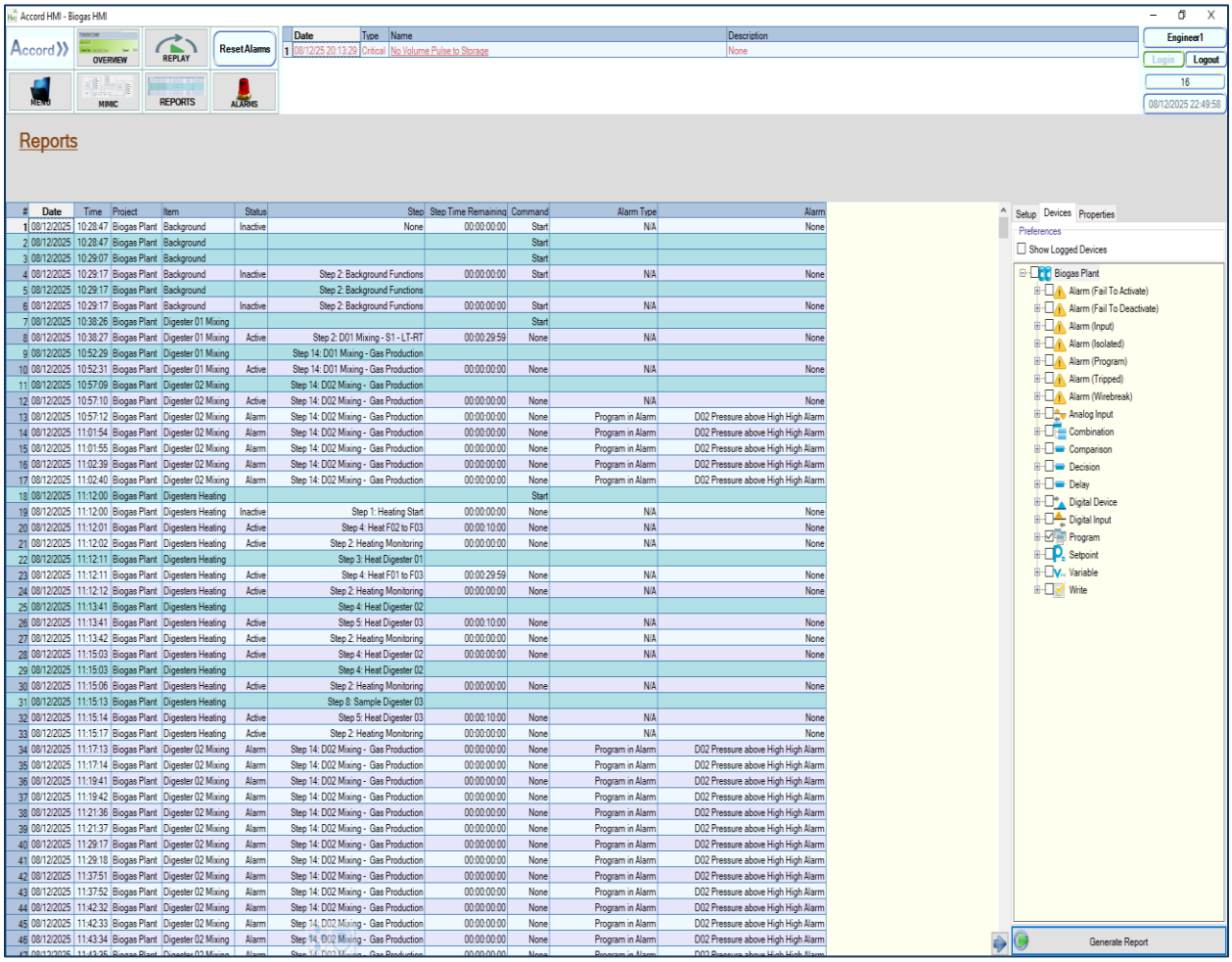
The required items for trend pens are selected using the Explorer, by pressing "+"



6.6 History Reports

The History Control is used to view a report of historical data via the HMI during Runtime. This is in form of a configurable database query Report. The style of the report, the start and end times and the devices to be queried may all be selected on the right hand side panels.

The select desired devices and timescale and report types are selectd before clicking ‘Generate Report’.

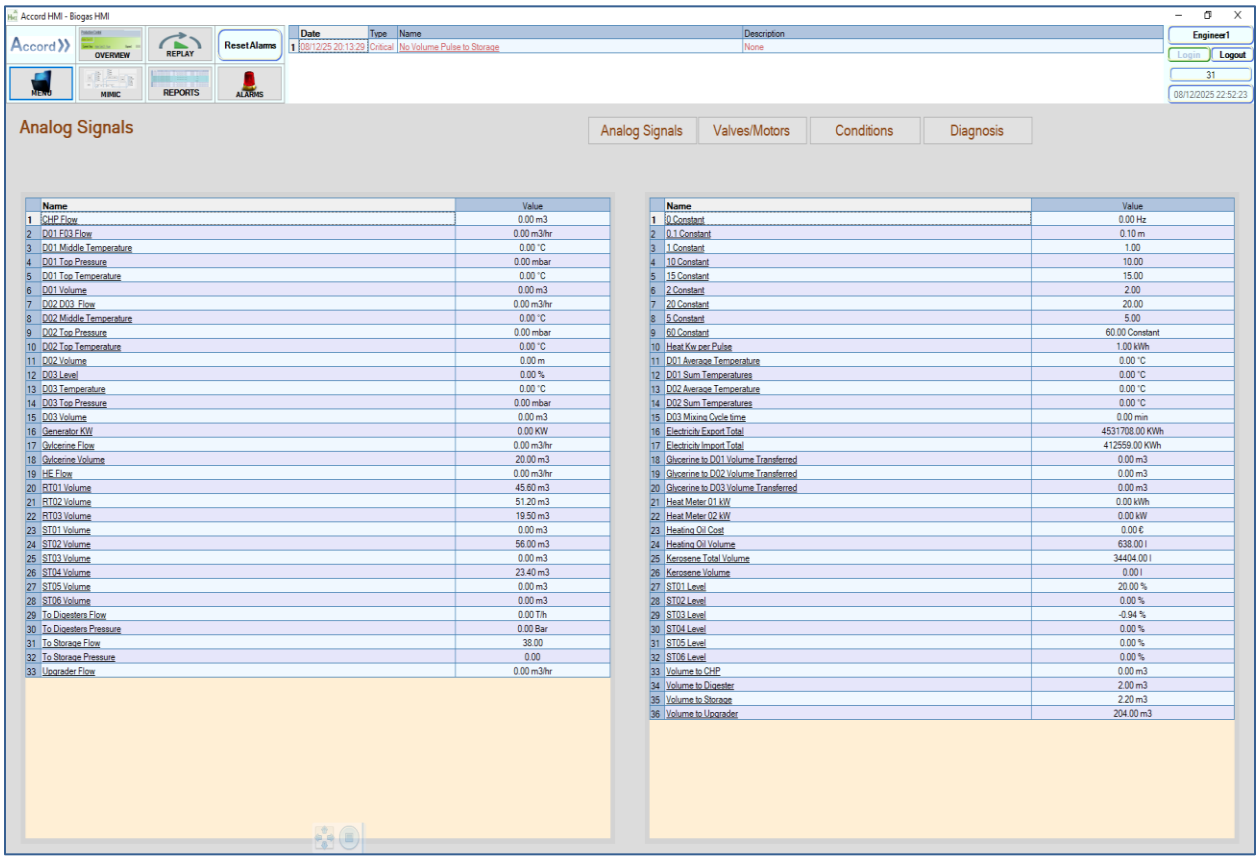


6.7 Engineering List Screens

These screens provide summary information on devices

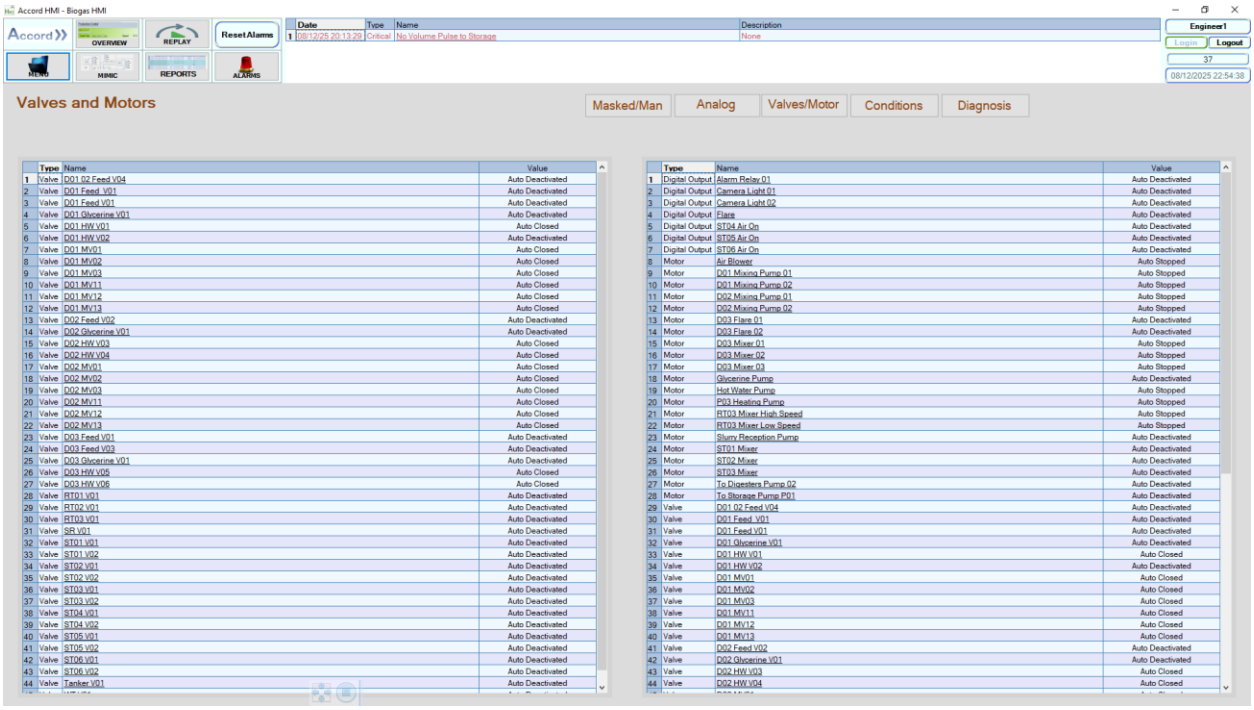
6.7.1 Analogs

This provides the current status of all analog inputs and variable values in the controller. All devices may be accessed by clicking to select.



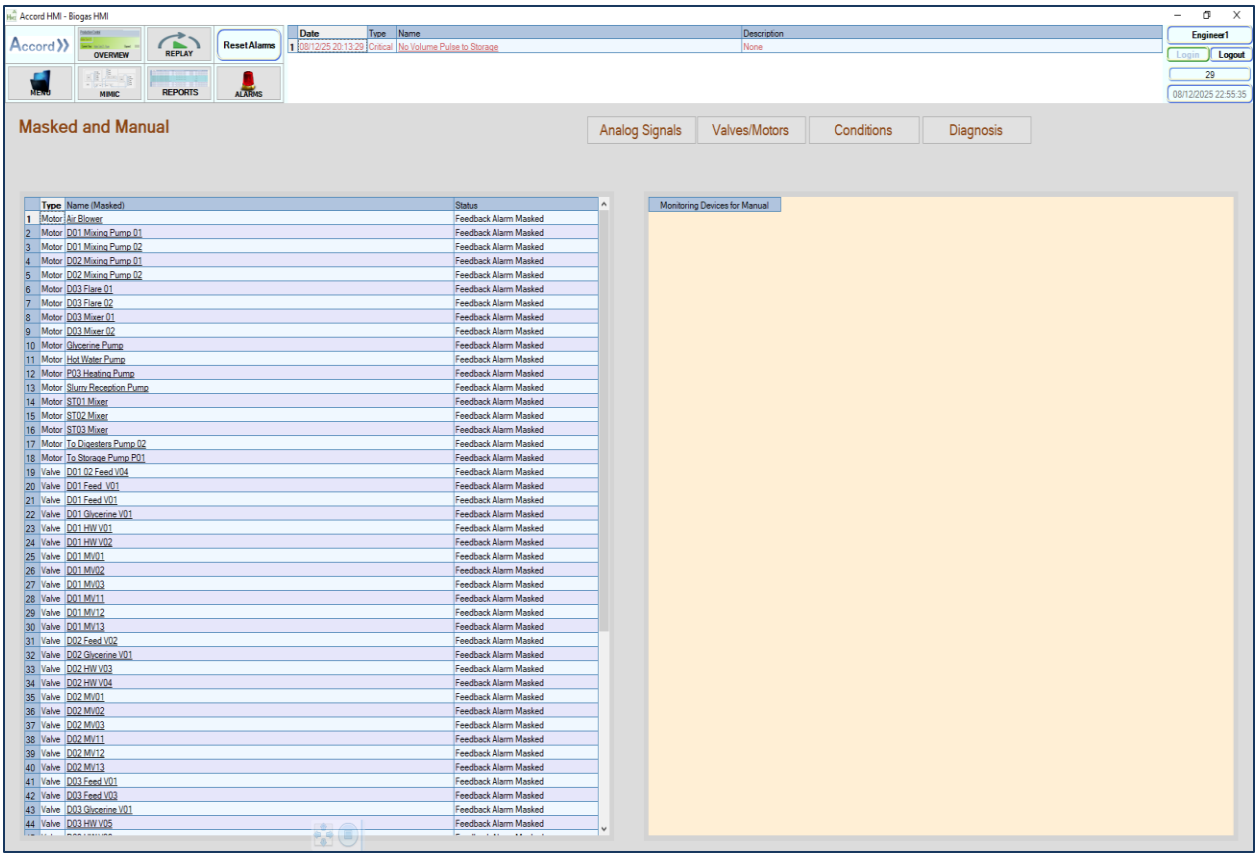
6.7.2 Digitals

This displays the current status and values for all digital inputs and digital outputs in the system. Device faceplates may be accessed by clicking on the underlined name.



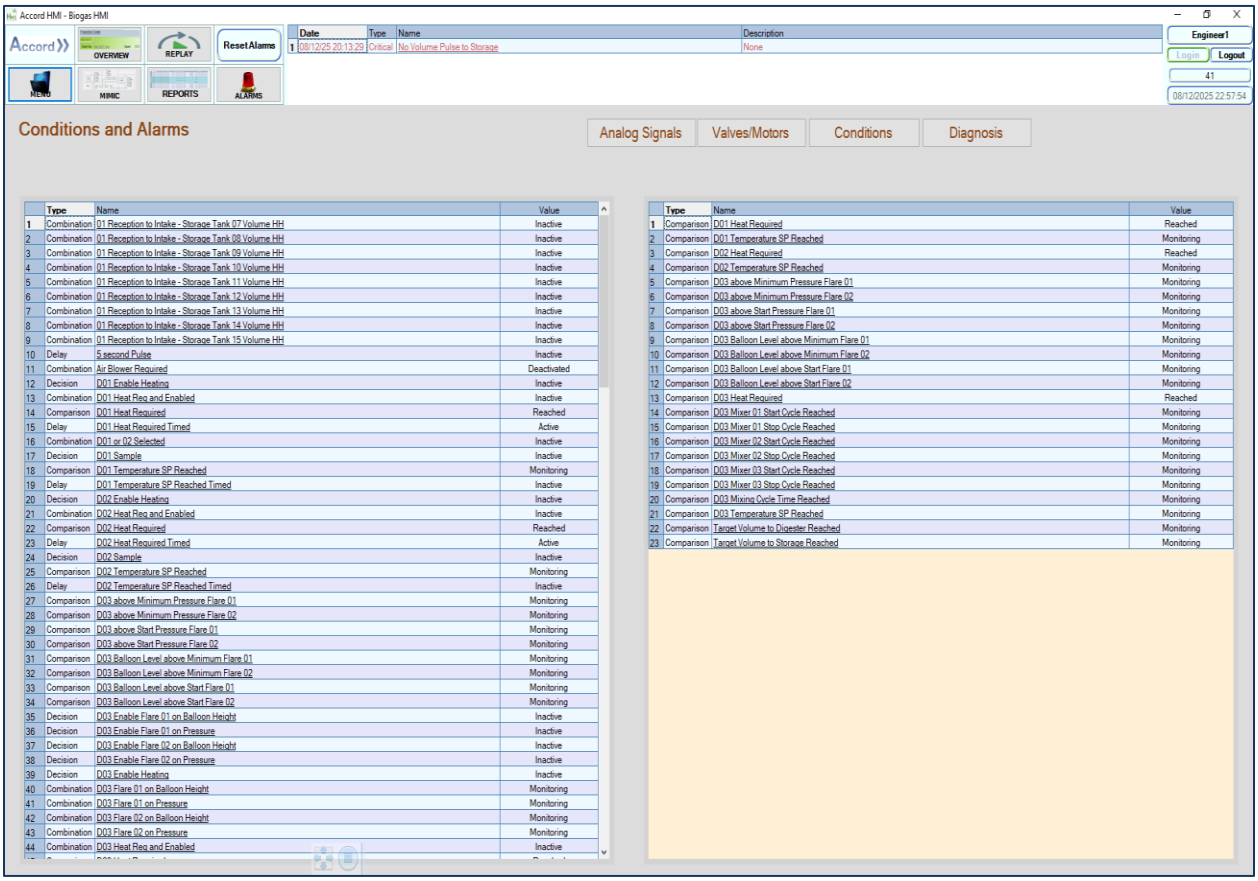
6.7.3 Overrides

Displays all devices in the system that are in manual, override or have feedback alarm masked.



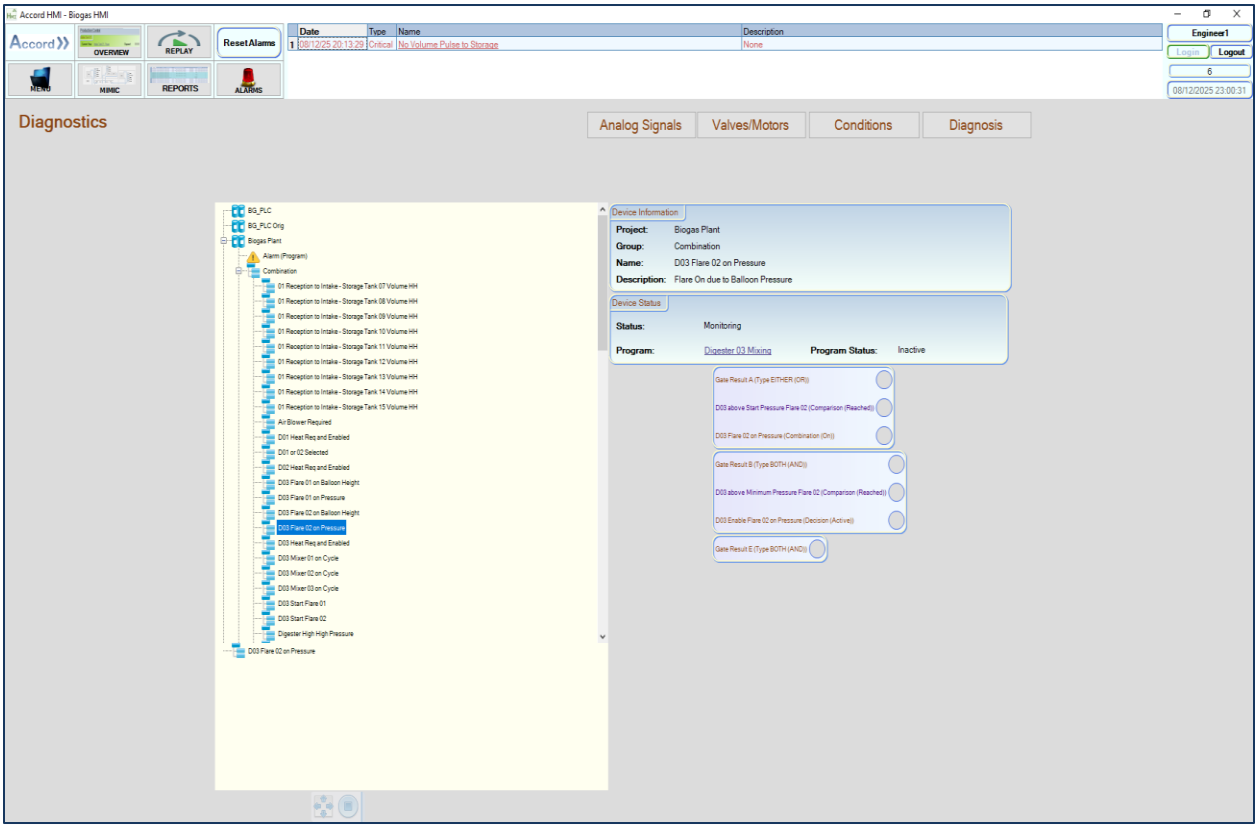
6.7.4 Status

Displays the current state of Comparisons and Combinations and Delays in the controller.



6.7.5 Check

This control is used to Check the reasons for Activations, and can query the status of components of logic.



To select an item to analyse, navigate the tree menu at the left of the control and click on a Device name.

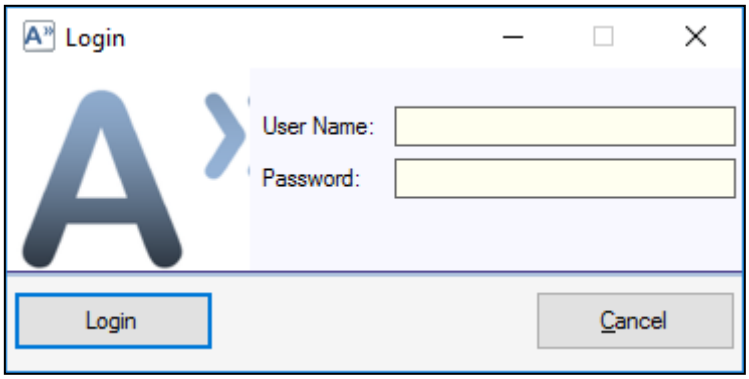
Once selected, relevant information about the Device will be displayed on the right of the control, along with a graphical representation of any logical operations.

7 Screen Functions and general operation

7.1 Security Control

The Security Control is used to log into the HMI for control of programs and devices.

Clicking on the “Login” button on the top banner brings up the Login window and the user name and password are entered. The username is then shown in the top banner.



7.2 Alarm Reset

The Alarm Reset Control is used to acknowledge and attempt to reset all alarms.
You must be logged in to use the Alarm Reset.

Once a user logs into Scada service, the button will be enabled.

7.3 Program Control

The Program Control is used to display the status and other information of Program.

The Program Faceplate shows the following information:

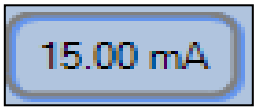
- **Name:** The name of the Program.
- **Current Step:** The name of the step which is currently running. If logged in, a user may click the step name to step to a selected step.
- **Step Number:** The recipe position of the current step.
- **Status:** The status of the Program.
- **Expected:** The step time setpoint which has been configured.
- **Remaining:** The duration remaining before the step time setpoint has elapsed.
- **Elapsed:** The amount of time for which the current step has been active.

Once logged in the command buttons may be used.

- **Start:** Start the Program if it is not running.
- **End:** End the Program if it is currently running.
- **Resume:** Resume the Program if it is currently in hold.
- **Hold:** Place the Program into hold if it is currently running.
- **Step On:** End the current step and start the next step in the recipe step order.
- **Step To:** End the current step and step to the selected step.
- **Timing / Time Held:** Toggle whether or not the step time will increment.
- **Settings:** Examine related program conditions and change Setpoints and Step Times.

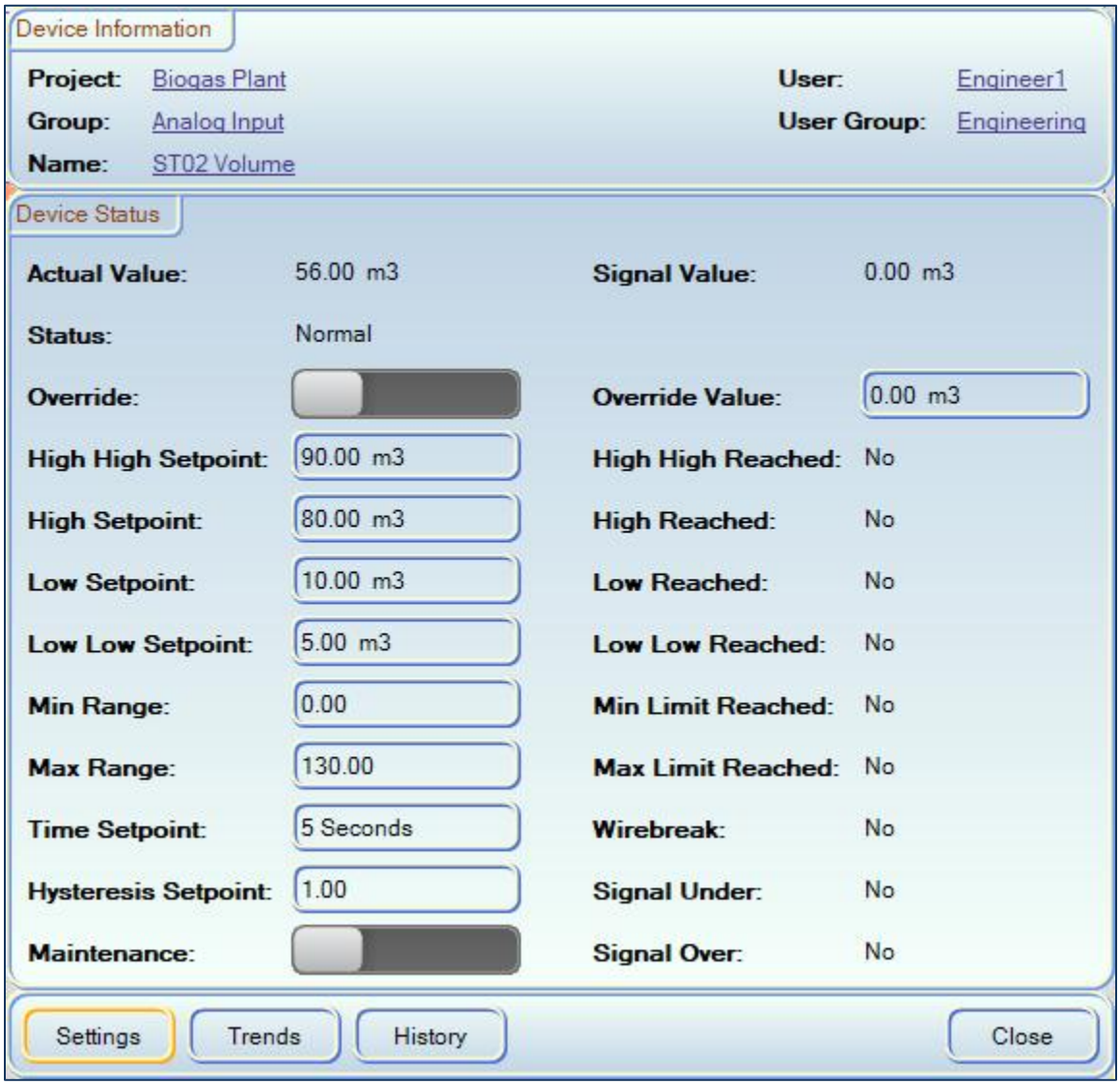
7.4 Value Control

The Value control is used to display a numerical value result from an Accord Server Device. During Runtime and once connected to the Scada service, the Value Control will show the current value in the desired format with the configured engineering units used, if applicable.



Clicking on the Value Control in Runtime will bring up the Device Faceplate associated with the device to which the control is bound.

7.5 Analog Input



The Analog Input Faceplate shows the following information:

- **Actual Value:** The value returned from the instrument, scaled into Engineering Units.
- **Alarm:** The current device alarm, if any, which is active.
- **Status:** This shows the highest priority status of the item.
- **High High Reached:** The instrument value is above the High High Setpoint.
- **High Reached:** The instrument value is above the High Setpoint.
- **Low Reached:** The instrument value is below the Low Setpoint.
- **Low Low Reached:** The instrument value is below the Low Low Setpoint.
- **Min Limit Reached:** The instrument value is at the Lower Limit of the range.
- **Max Limit Reached:** The instrument value is at the Upper Limit of the range.

- **WireBreak:** An instrument failure has occurred, a faulty signal has been returned to the PLC.
- **Current Under:** The signal returned to the PLC is below the lowest allowed value
- **Current Over:** The signal returned to the PLC is above the highest allowed value

Once logged into the Scada service, the command buttons may be used to issue commands to the Analog Input.

- **Override:** This allows the value returned from the instrument to be over-written.
- **Override Value:** The over-write value if the instrument is being placed in Manual Override.
- **High High Setpoint:** The value for the instrument to register a High High Alarm.
- **High Setpoint:** The value for the instrument to register a High Alarm.
- **Low Setpoint:** The value for the instrument to register a Low Alarm.
- **Low Low Setpoint:** The value for the instrument to register a Low Low Alarm.
- **Min Range:** The lower limit of the range.
- **Max Range:** The upper limit of the range.
- **Maintenance:** The item may be put into maintenance here.
- **Time Setpoint:** The number of seconds required before the High High, High, Low or Low Low alarms are achieved or reset
- **Hysteresis Setpoint:** The deadband value to release alarms.

7.6 Analog Device

The Analog Device Faceplate shows the following information:

- **Output Value:** The current value being output by the Analog Device.
- **Auto Value:** The value to which the output is set once the device is in Automatic mode.
- **Status:** Indicates the current status of the device.

Once logged into the Scada service, the command buttons may be used to issue commands to the Analog Device.

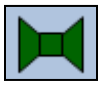
- **Manual:** This allows the Device to be put into Manual Mode, overwriting the Automatic activation from the Program.
- **Manual Value:** This is the value to which the output is set once the Device is in Manual mode.
- **Min Range:** The minimum value to which the output of the Device can be set.
- **Max Range:** The maximum value to which the output of the Device can be set.
- **Maintenance:** This allows the device to be put into Maintenance.

There are currently no Analog Devices in the system.

7.7 Digital Devices

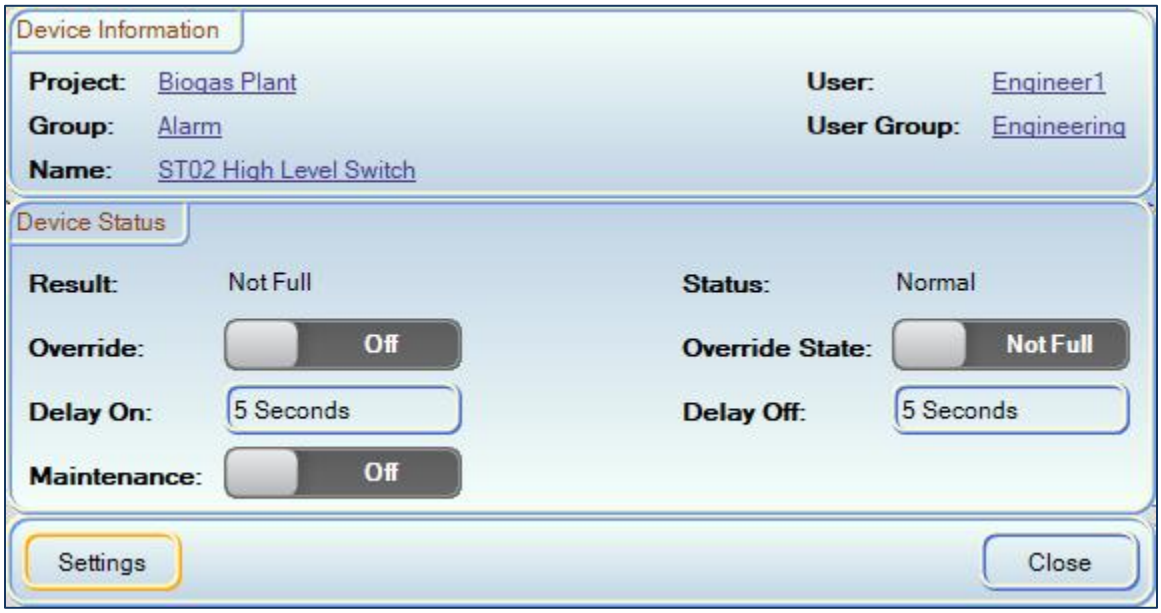
The Device Control is used to give a graphical representation of any device hosted by the Accord Server.

 - Example of a Device Control representing a motor.

 - Example of a Device Control representing a valve.

Clicking on a Device Control in Runtime will bring up the Device Faceplate associated with the device to which the control is bound.

7.8 Digital Input



The Digital Input Faceplate shows the following information:

- **Status:** The current status of the Digital Input.
- **Result:** The display value of the result as configured within Accord Builder.

Once logged into the Scada service, the command buttons may be used to issue commands to the Digital Input.

- **Override Feedback:** Override the result of the device to the desired value.
- **Result Override:** The value to which the result is overridden once Override Feedback is active.
- **Delay Setpoint (On):** This is the number of seconds that the Device Output activation will be delayed for following an Automatic activation request.
- **Delay Setpoint (Off):** This is the number of seconds that the Device Output de-activation will be delayed for following loss of an Automatic activation request.

7.9 Digital Output / Device

The Digital Output Faceplate shows the following information:

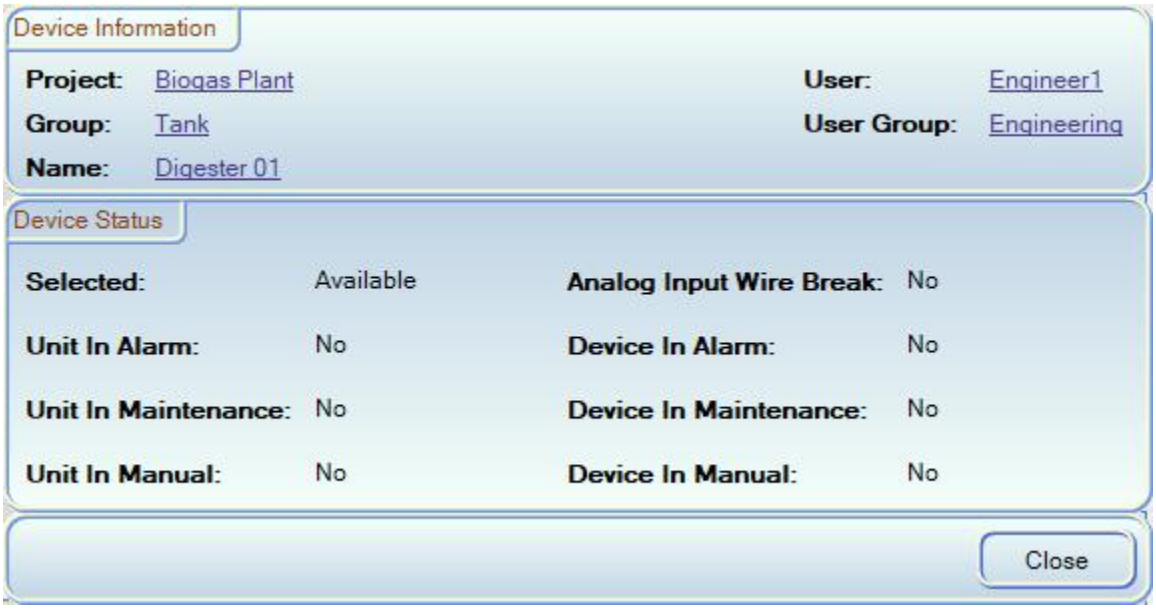
- **Status:** The current status of the Digital Output.
- **Output:** The value of the output as configured within Accord Builder.
- **Interlock:** This shows that the item is currently interlocked by another device state. The list of interlocking devices can be found in the Equipment List document.
- **Pulse Active:** The device is being activated for a time as indicated in the Pulse Time setup.

- **Pulse Command:** This shows that the Pulse activation command for the device is being generated by a Program.
- **Auto Reserved:** This shows that the item is part of a unit which is being reserved by a Program, but the Program is not activating the item.
- **Auto Reserved Enabled:** This shows if the device is enabled for reserved for automatic.

Once logged into the Scada service, the command buttons may be used to issue commands to the Digital Output.

- **Manual Mode:** This allows the item to be put into Manual Mode, overwriting the Automatic activation from the Program.
- **Manual Command:** This allows the item to be manually activated, overwriting the Automatic activation state. The item will be activated or deactivated immediately.
- **Interlock Override:** Enable this to allow the device to activate even when interlocked.
- **Delay Setpoint (On):** This is the number of seconds that the Device Output activation will be delayed for following an Automatic activation request.
- **Delay Setpoint (Off):** This is the number of seconds that the Device Output de-activation will be delayed for following loss of an Automatic activation request.
- **Override Reserve:** Enable this to allow the device to be set to manual mode even when reserved for automatic operation.
- **Maintenance:** Enable this to place the device into maintenance mode, preventing the device from activating.
- **Pulse Cycle Time:** This is the overall time in the Pulse Cycle.
- **Plus Time Setpoint:** This is the time that the item is activated for in the Pulse Cycle.

7.10 Unit



The Unit Faceplate shows the following information:

- **Selected:** Indicates whether a Unit can be selected for use by a Program.
- **Analog Input Wire Break:** Indicates whether an Analog Device within the Unit has a Wire Break alarm active.
- **Unit in Alarm:** Indicates whether a Unit is in an alarm state.
- **Device in Alarm:** Indicates whether a Device within the Unit is in an alarm state.
- **Unit in Maintenance:** Indicates whether a Unit is in maintenance mode.
- **Device in Maintenance:** Indicates whether a Device within the Unit is in maintenance mode.
- **Unit in Manual:** Indicates whether a Unit is in manual mode.
- **Device in Manual:** Indicates whether a Device within the Unit is in manual mode.