TECHDOCS
Application Note

WAGO Pump Controller

*smart*Pump Controller V1.0.1

Internal

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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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1 Notes about this Documentation

Note

Always retain this documentation!
This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user. In addition, ensure that any supplement to this documentation is included, if necessary.

1.1 Copyright

This Manual, including all figures and illustrations, is copyright-protected. Any further use of this Manual by third parties that violate pertinent copyright provisions is prohibited. Reproduction, translation, electronic and phototechnical filing/archiving (e.g., photocopying) as well as any amendments require the written consent of WAGO Corporation, Minden, Germany. Non-observance will involve the right to assert damage claims.

1.2 Symbols

⚠ DANGER

Personal Injury!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ DANGER

Personal Injury Caused by Electric Current!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Personal Injury!
Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Personal Injury!
Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Damage to Property!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

NOTICE

Damage to Property Caused by Electrostatic Discharge (ESD)!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

Note

Important Note!
Indicates a potential malfunction which, if not avoided, however, will not result in damage to property.

Information

Additional Information:
Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

1.3 Number Notation

Table 1: Number Notation

Number Code	Example	Note
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In quotation marks, nibble separated with dots (.)

1.4 Font Conventions

Table 2: Font Conventions

Font Type	Indicates
italic	Names of paths and data files are marked in italic-type. e.g.: *C:\Program Files\WAGO Software*
Menu	Menu items are marked in bold letters. e.g.: **Save**
>	A greater-than sign between two names means the selection of a menu item from a menu. e.g.: **File** > **New**
Input	Designation of input or optional fields are marked in bold letters, e.g.: **Start of measurement range**
“Value”	Input or selective values are marked in inverted commas. e.g.: Enter the value “4 mA” under **Start of measurement range**.
[Button]	Pushbuttons in dialog boxes are marked with bold letters in square brackets. e.g.: **[Input]**
[Key]	Keys are marked with bold letters in square brackets. e.g.: **[F5]**

1.5 Additional Documentation

This function description provides a description of use for more complex features of the Energy Data Management application (EDM) based on practical examples and serves as a supplement to the “Energy Data Management Application” manual.

Information

Please note the additional documentation!
Additional documentation on the smartPump Controller can be found in the download area on the WAGO website!

2 Important Notes

This section describes the legal principles and system requirements for using the software in compliance with intended purpose, underlying provisions and stated specifications.

2.1 Legal Bases

2.1.1 Subject to Changes

WAGO Corporation reserves the right to provide for any alterations or modifications. WAGO Corporation owns all rights arising from the granting of patents or from the legal protection of utility patents. Third-party products are always mentioned without any reference to patent rights. Thus, the existence of such rights cannot be excluded.

2.1.2 Personnel Qualification

Any steps related to the use of WAGO software may only be performed by qualified employees with sufficient knowledge of handling the respective PC system used.

Steps in which files are created or changed on the PC system may only be performed by qualified employees with sufficient knowledge in the administration of the PC system used in addition to the aforementioned.

Steps in which the behavior of the PC system in a network is changed may only be performed by qualified employees with sufficient knowledge in the administration of the network used in addition to the aforementioned.

2.2 Safety Advice (Precautions)

Note

Use up-to-date security software!
Secure operation of the PC system can be at risk as a result of malware such a viruses and Trojans, as well as related threats such as denial-of-service attacks. Therefore, make sure that the latest security software and definitions are always installed on the PC system.

Information

Disable or uninstall software that is no longer required!
The vulnerability of a PC system against malware and related threats increases with the number of installed or active software components (applications and services). Therefore, uninstall or disable software components that are not needed for the purpose at hand.

3 Device Configuration

There are two optional pre-packaged solutions, one is based on a WAGO 751-9402 controller and the other is based on a WAGO 750-8001 controller with pre-configured IO.

Figure 1: WAGO 751-9402 Controller

Figure 2: WAGO 750-8001 Controller

3.1 751-9402 Supply Voltage – X4

The connection is made via 2-pole picoMAX® Pluggable Connector with Push-in CAGE CLAMP'S technology.

Table 3: 751-9402 Pin Assignment Supply Voltage

Contact	Signal	Description
1	US+	Supply voltage
2	GND	Ground

3.2 750-8001 System Supply/Field Supply

Table 4: 750-8001 Pin Assignment Supply Voltage

Position	Description
1	System supply DC 24 V (-25 % … +30%)
5	System supply 0 V
2	Field supply DC 24 V (-25 % … +30%)
3	Field supply 0 V

3.3 751-9402 IO Connections

Table 5: Digital Inputs (X12)

DI-X	Item	Configuration
1	pump1Running	24 Vdc Input
2	pump2Running	24 Vdc Input
3	highLevelFloat	24 Vdc Input
4	lowLevelFloat	24 Vdc Input
5	stageOneFloat (Lead)	24 Vdc Input
6	stageTwoFloat (Lag)	24 Vdc Input
7	stopFloat	24 Vdc Input
8	spare	24 Vdc Input

Table 6: Digital Inputs/Outputs (X5)

DIO-X	Item	Configuration
1	pump1Run	24 Vdc Output
2	pump2Run	24 Vdc Output
3	highAlarm	24 Vdc Output
4	lowAlarm	24 Vdc Output
5	pump1Fault	24 Vdc Input
6	pump1Auto	24 Vdc Input
7	pump2Fault	24 Vdc Input
8	pump2Auto	24 Vdc Input

Table 7: Analog Inputs (X14)

AI-X	Item	Configuration
1	levelTransmitter	4-20 mA Input
2	stationEffluent	4-20 mA Input

Table 8: Analog Inputs/Outputs (X6)

AIO-X	Item	Configuration
1	forceMainPressure	4-20 mA Input
2	spare	4-20 mA Input

Table 9: RTD Inputs (X13)

AI-X	Item	Configuration
1	pump1MotorTemperature	RTD Input
2	pump2MotorTemperature	RTD Input

3.4 750-8001 IO Connections

Table 10: Digital Outputs (Slot 1, 750-1504)

Channel	Item	Configuration
1	pump1Run	24 Vdc Output
2	pump2Run	24 Vdc Output
3	highAlarm	24 Vdc Output
4	lowAlarm	24 Vdc Output
5	spare	24 Vdc Output
6	spare	24 Vdc Output
7	spare	24 Vdc Output
8	spare	24 Vdc Output
9	spare	24 Vdc Output
10	spare	24 Vdc Output
11	spare	24 Vdc Output
12	spare	24 Vdc Output
13	spare	24 Vdc Output
14	spare	24 Vdc Output
15	spare	24 Vdc Output
16	spare	24 Vdc Output

Table 11: Digital Inputs (Slot 2, 750-1405)

Channel	Item	Configuration
1	pump1Running	24 Vdc Input
2	pump2Running	24 Vdc Input
3	highLevelFloat	24 Vdc Input
4	lowLevelFloat	24 Vdc Input
5	stageOneFloat (Lead)	24 Vdc Input
6	stageTwoFloat (Lag)	24 Vdc Input
7	stopFloat	24 Vdc Input
8	spare	24 Vdc Input
9	pump1Fault	24 Vdc Input
10	pump1Auto	24 Vdc Input
11	pump2Fault	24 Vdc Input
12	pump2Auto	24 Vdc Input
13		24 Vdc Input
14		24 Vdc Input
15		24 Vdc Input
16		24 Vdc Input

Table 12: Analog Inputs (Slot 3, 750-455)

Channel	Item	Configuration
1	levelTransmitter	4-20 mA Input
2	stationEffluent	4-20 mA Input
3	forceMainPressure	4-20 mA Input
4	spare	4-20 mA Input

Table 13: Analog Outputs (Slot 4, 750-555)

Channel	Item	Configuration
1	spare	4-20 mA Output
2	spare	4-20 mA Output
3	spare	4-20 mA Output
4	spare	4-20 mA Output

Table 14: RTD Inputs (Slot 5, 750-461)

Channel	Item	Configuration
1	pump1MotorTemperature	RTD Input
2	pump2MotorTemperature	RTD Input

3.5 Modifying the Controller IP Address

In order to modify the controller IP address, you must navigate to the web-based management of the controller by entering the following for each controller (by default) into a standard web browser:

751-9402: https://192.168.1.70/wbm

750-8001: https://192.168.1.70

Login with the default username and password:

User Name: admin
Password: wago

Navigate to Network->TCP/IP and modify the local IP address settings there. For more information on configuration options of each controller, see the device specific product manual, which can be found on https://www.wago.com. Note: Modifying the IP address on the network may require additional devices to be re-configured to properly work on the network.

NOTICE

Change your password for cyber security reasons!
To reduce the risk of unauthorized access to your system received, change the default password before the first start-up.

4 HMI

4.1 Web Panel 400

The web panel 400 (762-3404) is an optional component of the system to view operations and configure the system.

Figure 3: Web Panel 400 (762-3404)

4.2 Web Panel Configuration

This optional component can be configured by powering on the device, navigating to the web-based management to configure an IP address compatible with the pump controller device (ex. 192.168.1.200). In addition, navigate to the browser favorites section of the web-based management, and enter the pump controller visualization url in the browser favorites and set it as the start page. See below for default urls per controller:

751-9402: https://192.168.1.70/webvisu/webvisu.htm

750-8001: https://192.168.1.70:8443/webvisu.htm

For more detailed information on configuring the web panel 400, see the device specific product manual, which can be found on https://www.wago.com.

5 System Visualization

5.1 Web Interface

The web interface can be accessed via any standard web browser. You must ensure the connecting device is on the same subnet as the controller (192.168.1.70) by default. Once connected, the web interface can be accessed via the following link per controller:

751-9402: https://192.168.1.70/webvisu/webvisu.htm

750-8001: https://192.168.1.70:8443/webvisu.htm

Figure 4: Login Web Visualization

To access the application, enter the admin or operator user credentials below:

User Name: admin
Password: wago

User Name: operator
Password: wago

The admin user profile allows the user full access to configure the system. The operator profile has limited access to only view the operation. Once logged in as an administrator, the user can modify and/or add additional users of each type to the system by navigating to the Settings->Setup tab.

6 System Operation

6.1 Menu Overview

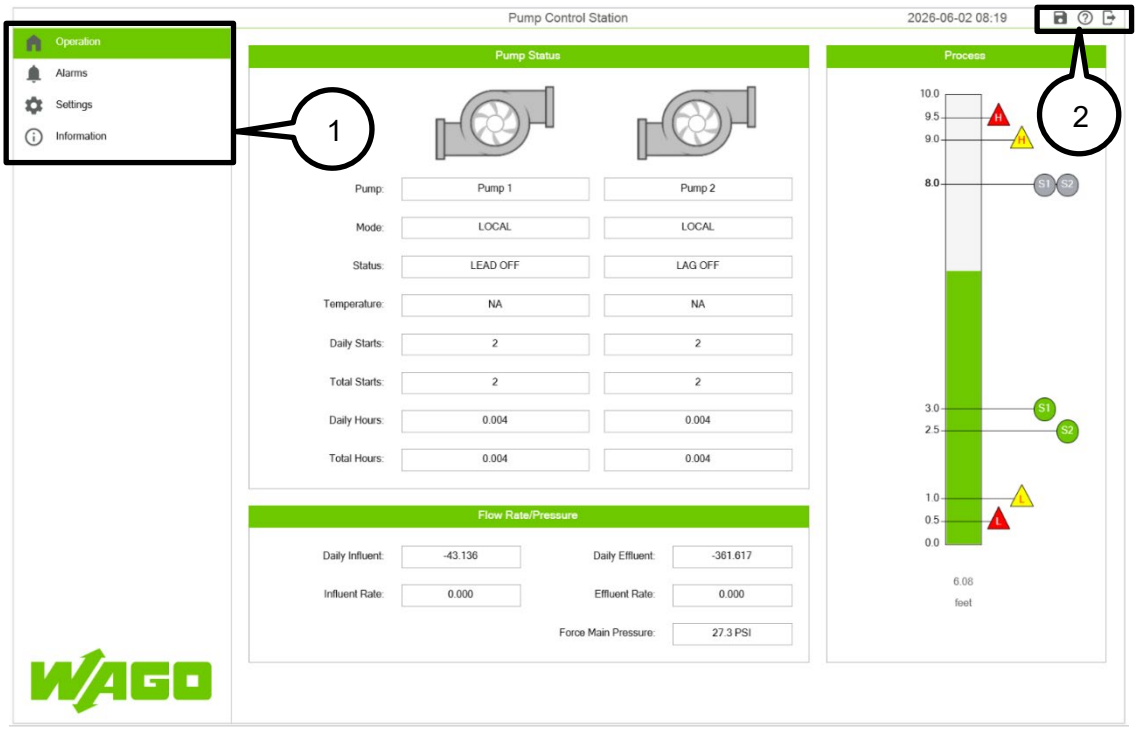

Figure 5: Menu Overview

Table 15: Menu Overview

Item	Description
1	Main Navigation Menu
2	Application Menu

Table 16: Main Navigation Menu

Item	Description
Operation	View Status/Feedback of the running system, including but not limited to pump status, tank level, influent and effluent rates.
Alarms	Access to view the currently active and historical alarms generated by the system.
Settings	Access to modify all parameters of the system including application/alternation type, stages, pumps, vessel information, etc.
Information	Displays information about the application and controller with links to technical support resources.

Table 17: Application Menu

Item	Description
	Allows the operator to save configuration changes
	Access to help documentation
	Logout of the system

6.2 Configuration of the system

Configuration of the system is accessed via the Settings menu option of the main navigation menu.

6.2.1 System Settings

The system settings are accessible via the System Settings tab.

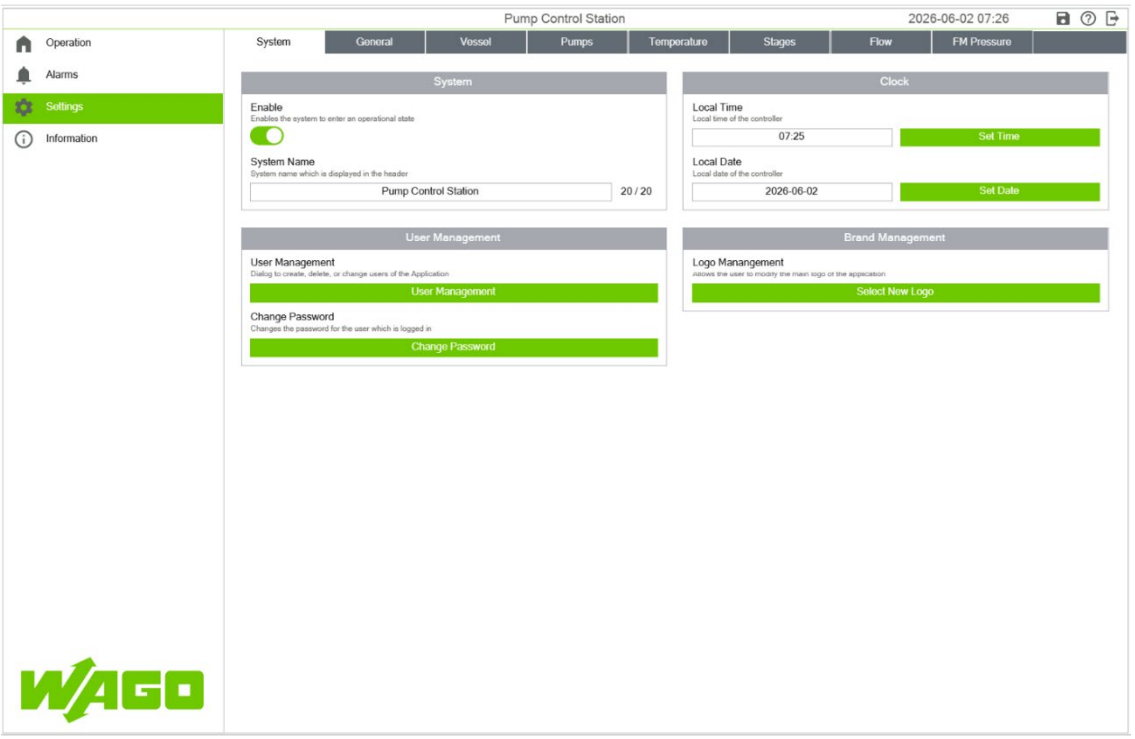

Figure 6: System Settings

Table 18: System Settings

Section	Item	Description
System	Enable	Enables the system and allows it to enter operational mode
System	System Name	Allows the user to give the system a unique installation name.
User Management	User Management	Allows the user to create and edit the current users of the system
User Management	Change Password	Allows the user to modify the currently used password for the logged in profile
Clock	Local Time	Allows the user to modify the local time to reflect the time on location
Clock	Set Date	Allows the user to modify the date
Brand Management	Select New Logo	Allows the user to upload and use a custom logo. The original size of the logo is set to 208x77, this should be kept in mind when utilizing a new logo.

6.2.2 General Settings

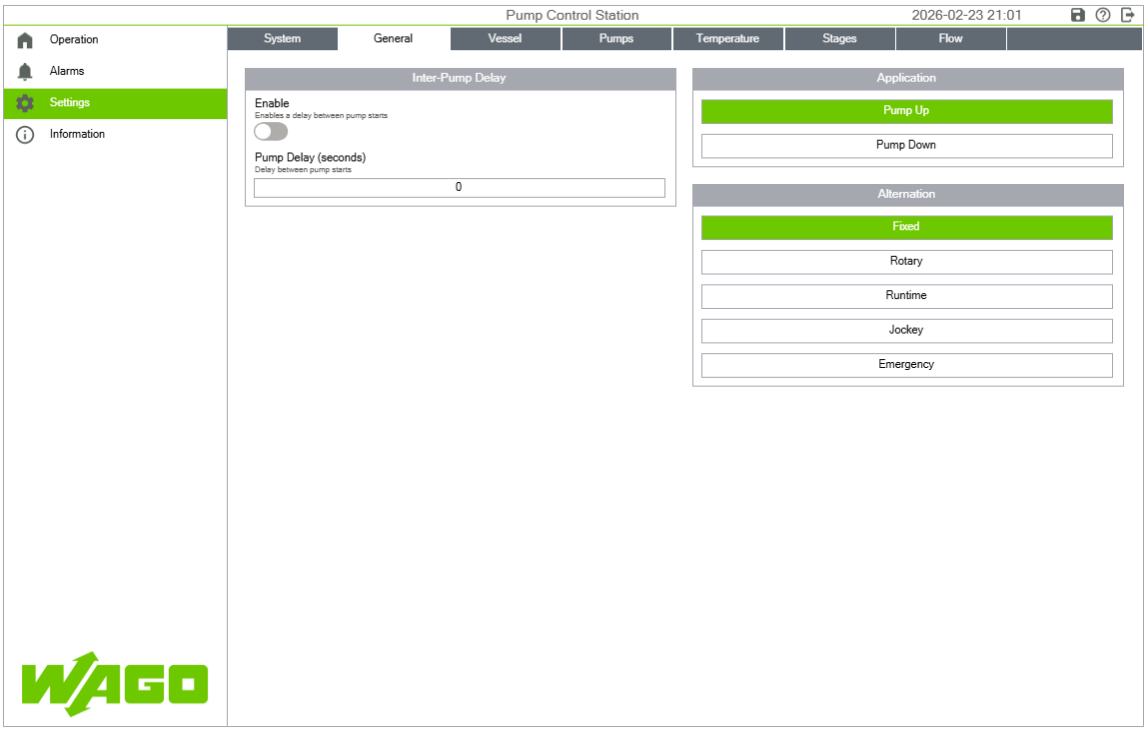

Figure 7: General Settings

Table 19: General Settings

Section	Item	Description
Inter-Pump Delay	Enable	Enables the inter-pump delay option
Inter-Pump Delay	Pump Delay	Time, in seconds, to delay between pump starts
Application	Pump Up	Enables the pump up application type
Application	Pump Down	Enables the pump down application type
Alternation	Fixed	Enables a fixed alternation of the pumps
Alternation	Rotary	Enables a rotary alternation of the pumps
Alternation	Runtime	Enables a runtime alternation of the pumps
Alternation	Jockey	Enables a jockey alternation of the pumps
Alternation	Emergency	Enables an emergency type alternation of the pumps

6.2.3 Vessel Settings

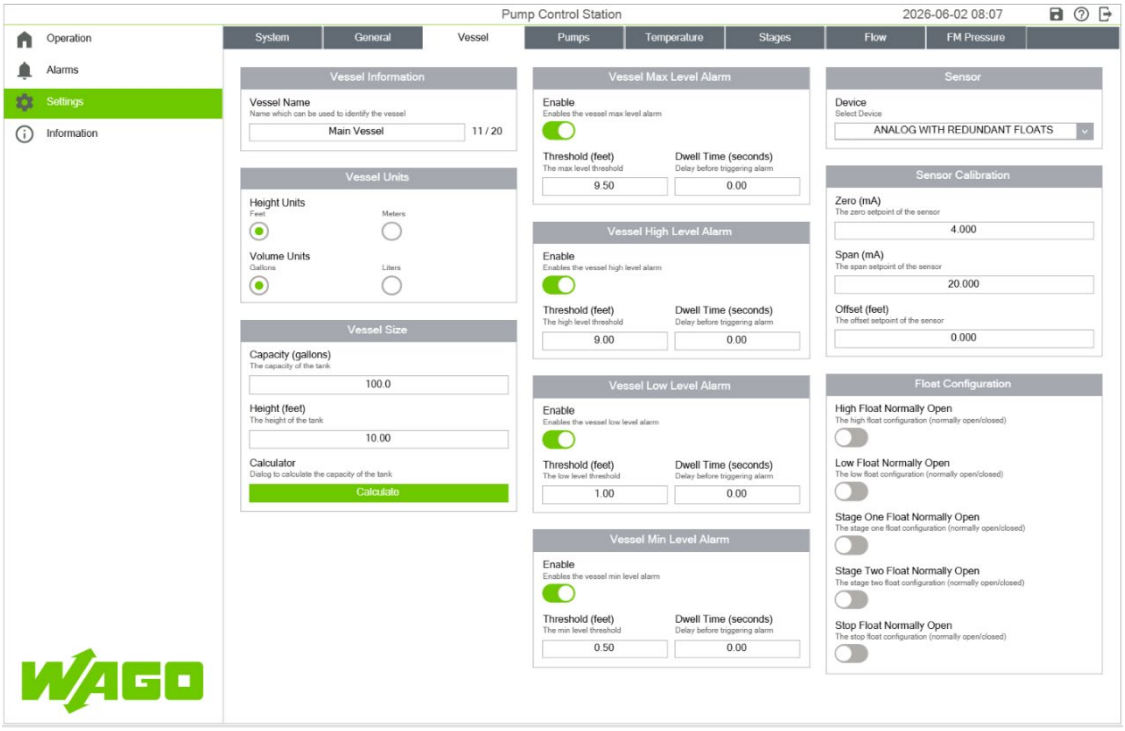

Figure 8: Vessel Settings

Table 20: Vessel Settings

Section	Item	Description
Vessel Information	Vessel Name	Allows the user to give the vessel a unique name
Vessel Units	Height Units	Allows the user to switch the height units between feet and meters
Vessel Units	Volume Units	Allows the user to switch the volume units between gallons and liters
Vessel Size	Capacity	Allows the user to set the max capacity of the vessel
Vessel Size	Height	Allows the user to set the height of the vessel
Vessel Size	Calculator	Opens a dialog to assist with calculating the max capacity of the vessel by specifying its generic shape and dimensions
Vessel Max Level Alarm	Enable	Allows the operator to enable the max level alarm
Vessel Max Level Alarm	Threshold	The threshold setting for the max level alarm
Vessel Max Level Alarm	Dwell Time	Adds a threshold dwell time prior to triggering the alarm
Vessel High Level Alarm	Enable	Allows the operator to enable the high level alarm
Vessel High Level Alarm	Threshold	The threshold setting for the high level alarm

Vessel High Level Alarm	Dwell Time	Adds a threshold dwell time prior to triggering the alarm
Vessel Low Level Alarm	Enable	Allows the operator to enable the low level alarm
Vessel Low Level Alarm	Threshold	The threshold setting for the low level alarm
Vessel Low Level Alarm	Dwell Time	Adds a threshold dwell time prior to triggering the alarm
Vessel Min Level Alarm	Enable	Allows the operator to enable the min level alarm
Vessel Min Level Alarm	Threshold	The threshold setting for the min level alarm
Vessel Min Level Alarm	Dwell Time	Adds a threshold dwell time prior to triggering the alarm
Sensor	Device	Allows the operator to select the vessel input devices, either an analog level sensor of digital floats, or both while using the level sensor as the primary and the floats as a redundant backup
Sensor Calibration	Zero (mA)	Allows the user to set the zero calibration point for the level sensor
Sensor Calibration	Span (mA)	Allows the user to set the span calibration point for the level sensor
Sensor Calibration	Offset	Allows the sensor reading to be offset by a height for more accurate feedback of the system
Sensor Calibration	High Float Normally Open	Allows the user to set the float normally open or normally closed
Sensor Calibration	Low Float Normally Open	Allows the user to set the float normally open or normally closed
Sensor Calibration	Stage One Float Normally Open	Allows the user to set the float normally open or normally closed
Sensor Calibration	Stage Two Float Normally Open	Allows the user to set the float normally open or normally closed
Sensor Calibration	Stop Float Normally Open	Allows the user to set the float normally open or normally closed

6.2.4 Pumps Settings

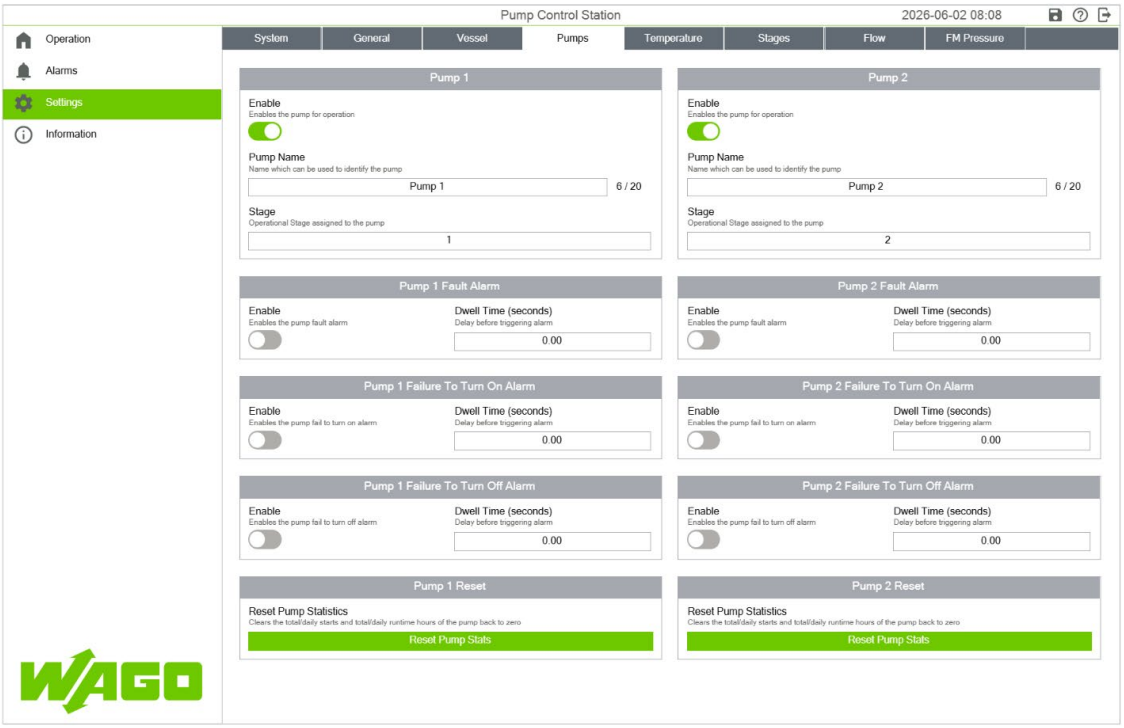

Figure 9: Pumps Settings

Table 21: Pumps Settings

Section	Item	Description
Pump 1	Enable	Enables the pump for operation
Pump 1	Pump Name	Allows the operator to give the pump a unique name
Pump 1	Stage	Sets which stage the pump should be associated with.
Pump 1 Failure To Turn On Alarm	Enable	Enables the Alarm
Pump 1 Failure To Turn On Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Pump 1 Failure To Turn Off Alarm	Enable	Enables the Alarm
Pump 1 Failure to Turn Off Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Pump 1 Reset	Reset Pump Stats	Allows the operator to reset the runtime/daily hours and starts/daily starts of the pump. Typical when replacing a pump.
Pump 2	Enable	Enables the pump for operation
Pump 2	Pump Name	Allows the operator to give the pump a unique name
Pump 2	Stage	Sets which stage the pump should be associated with.
Pump 2 Failure To Turn On Alarm	Enable	Enables the Alarm
Pump 2 Failure To Turn On Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm

Pump 2 Failure To Turn Off Alarm	Enable	Enables the Alarm
Pump 2 Failure to Turn Off Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Pump 2 Reset	Reset Pump Stats	Allows the operator to reset the runtime/daily hours and starts/daily starts of the pump. Typical when replacing a pump.

6.2.5 Temperature Settings

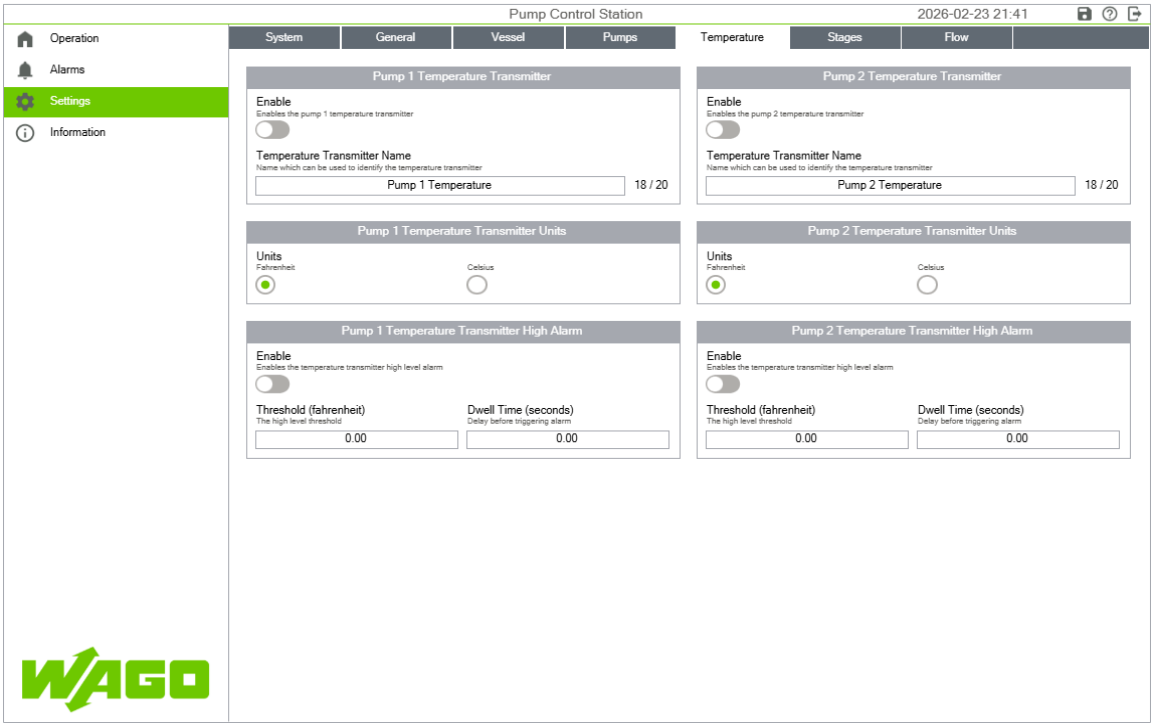

Figure 10: Temperature Settings

Table 22: Temperature Settings

Section	Item	Description
Pump 1 Temperature Transmitter	Enable	Enables the pump 1 temperature transmitter feedback
Pump 1 Temperature Transmitter	Temperature Transmitter Name	Allows the user to give the temperature transmitter a unique name
Pump 1 Temperature Transmitter Units	Units	Allows the user to choose the units of the temperature transmitter between Fahrenheit and Celsius
Pump 1 Temperature Transmitter High Alarm	Enable	Enables the Alarm
Pump 1 Temperature Transmitter High Alarm	Threshold	Sets the temperature alarm threshold

Pump 1 Temperature Transmitter High Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Pump 2 Temperature Transmitter	Enable	Enables the pump 2 temperature transmitter feedback
Pump 2 Temperature Transmitter	Temperature Transmitter Name	Allows the user to give the temperature transmitter a unique name
Pump 2 Temperature Transmitter Units	Units	Allows the user to choose the units of the temperature transmitter between Fahrenheit and Celsius
Pump 2 Temperature Transmitter High Alarm	Enable	Enables the Alarm
Pump 2 Temperature Transmitter High Alarm	Threshold	Sets the temperature alarm threshold
Pump 2 Temperature Transmitter High Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm

6.2.6 Stages Settings

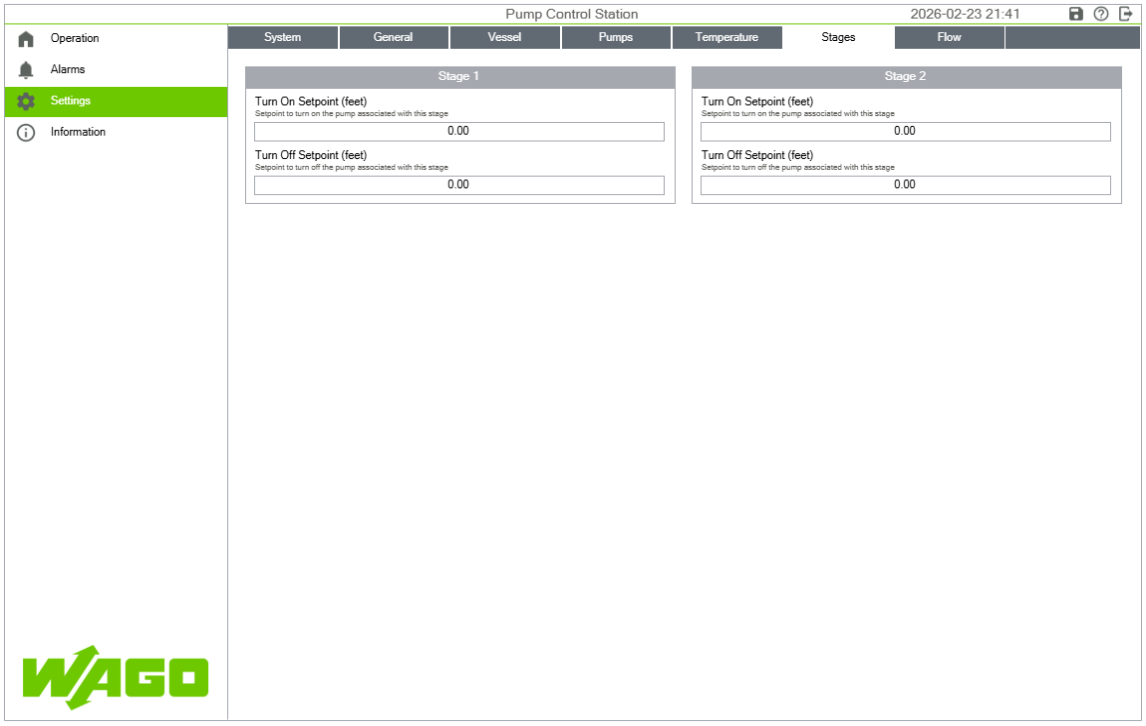

Figure 11: Stages Settings

Table 23: Stages Settings

Section	Item	Description
Stage 1	Turn On Setpoint	Sets the threshold for when this stage should turn on the appropriate pump
Stage 1	Turn Off Setpoint	Sets the threshold for when this stage should turn off the appropriate pump
Stage 2	Turn On Setpoint	Sets the threshold for when this stage should turn on the appropriate pump
Stage 2	Turn Off Setpoint	Sets the threshold for when this stage should turn off the appropriate pump

6.2.7 Flow Settings

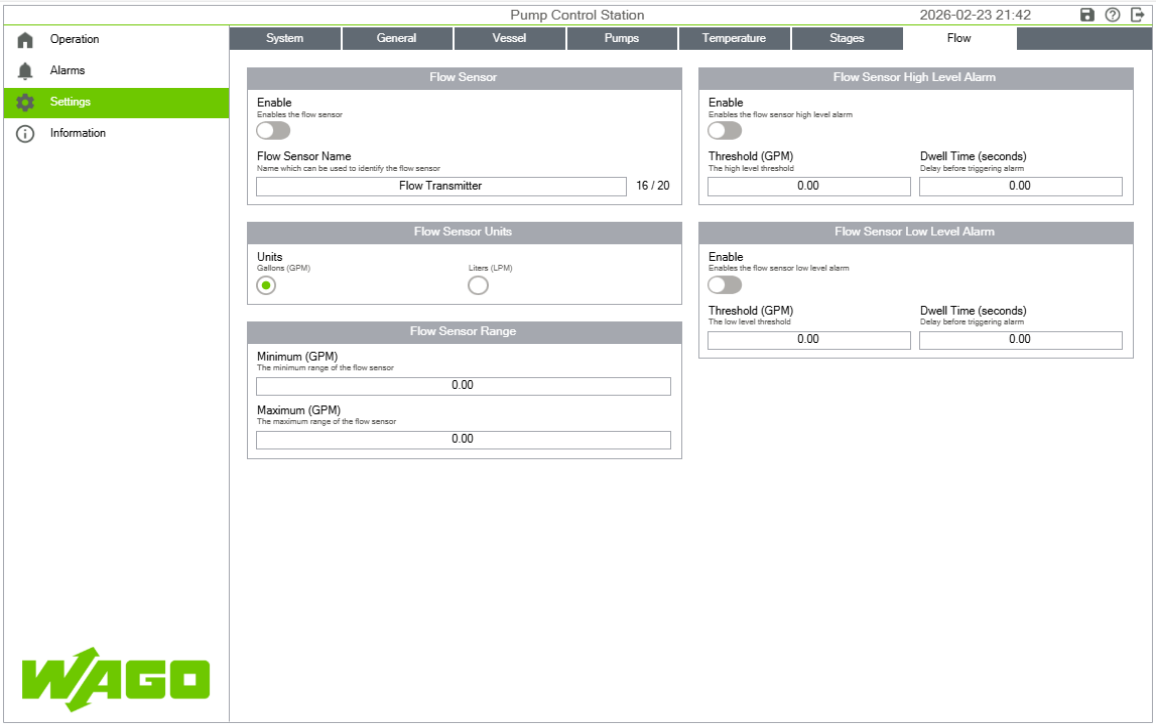

Figure 12: Flow Settings

Table 24: Flow Settings

Section	Item	Description
Flow Sensor	Enable	Allows the operator to enable the use of a flow sensor
Flow Sensor	Flow Sensor Name	Allows the operator to give the flow sensor a unique name
Flow Sensor Units	Units	Allows the operator to set the units of the flow sensor between GPM and LPM
Flow Sensor Range	Minimum	The minimum flow for the flow sensor
Flow Sensor Range	Maximum	The maximum flow for the flow sensor
Flow Sensor High Level Alarm	Enable	Enables the Alarm
Flow Sensor High Level Alarm	Threshold	Sets the flow sensor alarm threshold
Flow Sensor High Level Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Flow Sensor Low	Enable	Enables the Alarm

Level Alarm		
Flow Sensor Low Level Alarm	Threshold	Sets the flow sensor alarm threshold
Flow Sensor Low Level Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm

6.2.8 Force Main Pressure Settings

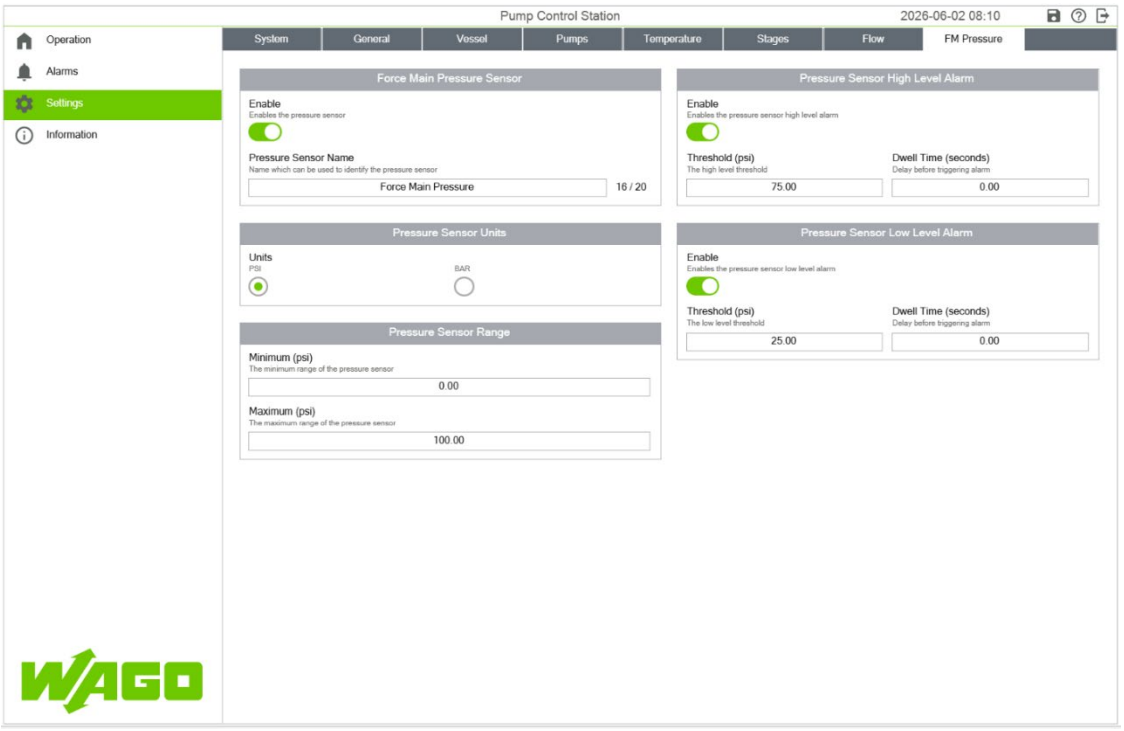

Figure 13: Force Main Pressure Settings

Table 25: Flow Settings

Section	Item	Description
Force Main Pressure Sensor	Enable	Allows the operator to enable the use of a pressure sensor
Force Main Pressure Sensor	Pressure Sensor Name	Allows the operator to give the pressure sensor a unique name
Pressure Sensor Units	Units	Allows the operator to set the units of the pressure sensor between PSI and BAR
Pressure Sensor Range	Minimum	The minimum pressure for the sensor
Pressure Sensor Range	Maximum	The maximum pressure for the sensor
Pressure Sensor High Level Alarm	Enable	Enables the Alarm
Pressure Sensor High Level Alarm	Threshold	Sets the pressure sensor alarm threshold
Pressure Sensor High Level Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm
Pressure Sensor Low Level Alarm	Enable	Enables the Alarm
Pressure Sensor	Threshold	Sets the pressure sensor alarm threshold

Low Level Alarm		
Pressure Sensor Low Level Alarm	Dwell Time	Sets the dwell time necessary prior to triggering the alarm

6.3 Operation Overview

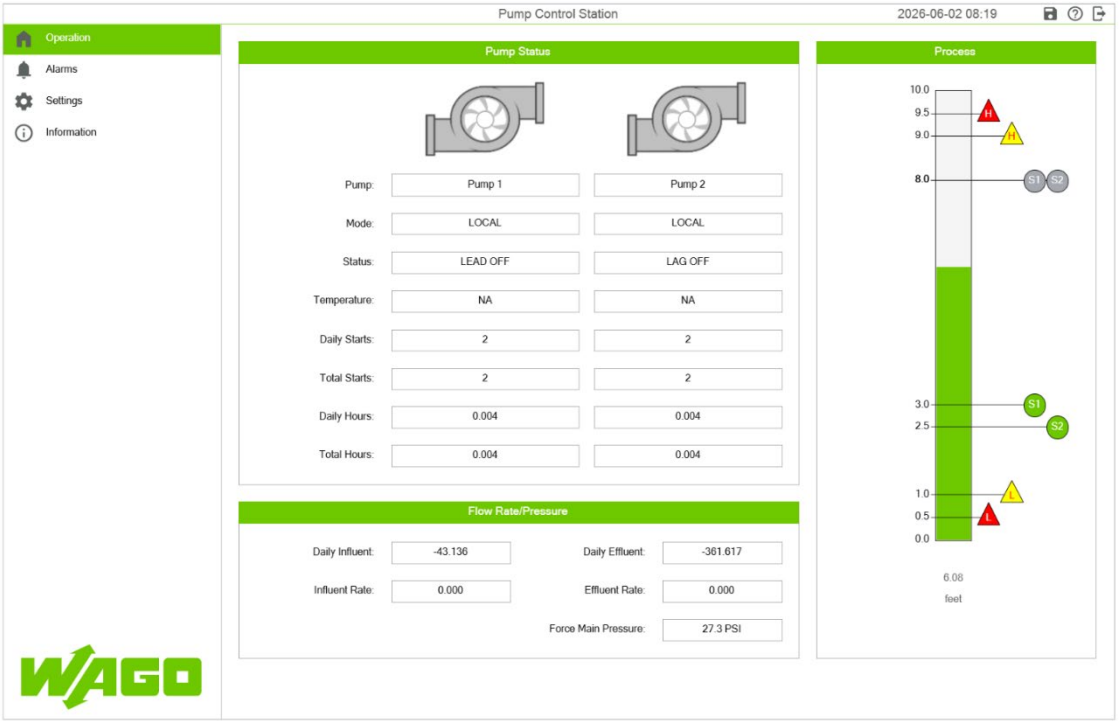

Figure 14: Operation Overview

Table 26: Operation Overview

Section	Item	Description
Pump Status	Pump	Indicates the pump name
Pump Status	Mode	Indicates whether the pump is in auto mode
Pump Status	Status	Indicates the status of the pump, whether it is the lead/lag pump and it's on/off status
Pump Status	Temperature	Indicates the current pump temperature
Pump Status	Daily Starts	Indicates the number of daily starts of the pump
Pump Status	Total Starts	Indicates the total starts for the pump
Pump Status	Daily Hours	Indicates the daily runtime hours for the pump
Pump Status	Total Hours	Indicates the total runtime hours for the pump
Flow Rate/Pressure	Daily Influent	Indicates the daily influent into the vessel
Flow Rate/Pressure	Influent Rate	Indicates the current influent rate
Flow Rate/Pressure	Daily Effluent	Indicates the daily effluent leaving the vessel
Flow Rate/Pressure	Effluent Rate	Indicates the current effluent rate
Flow Rate/Pressure	Force Main Pressure	Indicates the current force main pressure reading
Process		Indicates the current level of the vessel
Process		Indicates the position of the max level alarm setpoint

Process		Indicates the position of the high level alarm setpoint
Process		Indicates the position of the low level alarm setpoint
Process		Indicates the position of the min level alarm setpoint
Process		Indicates the position of the stage 1 turn on setpoint
Process		Indicates the position of the stage 2 turn on setpoint
Process		Indicates the position of the stage 1 turn off setpoint
Process		Indicates the position of the stage 2 turn off setpoint
Process		Digital read out of the current level with it's units

6.4 Alarms Overview

6.4.1 Active Alarms

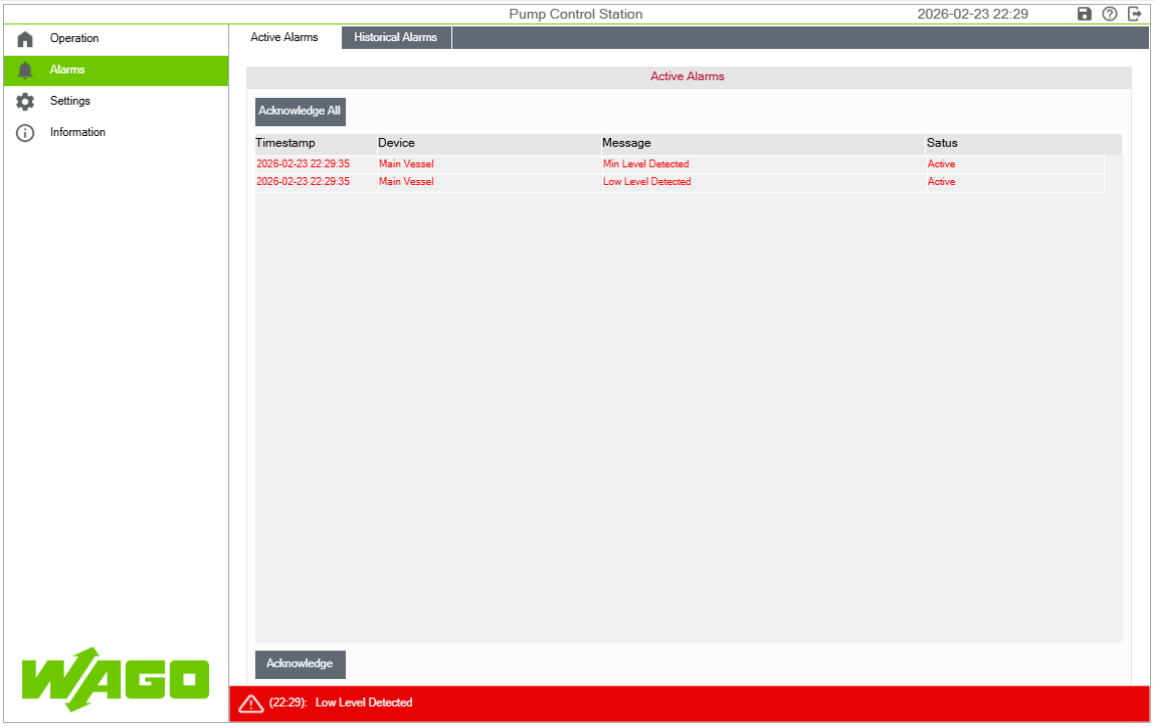

Figure 15: Active Alarms

Displays all of the active alarms for the system. Alarms can be acknowledged if the alarm is no longer present.

6.4.2 Historical Alarms

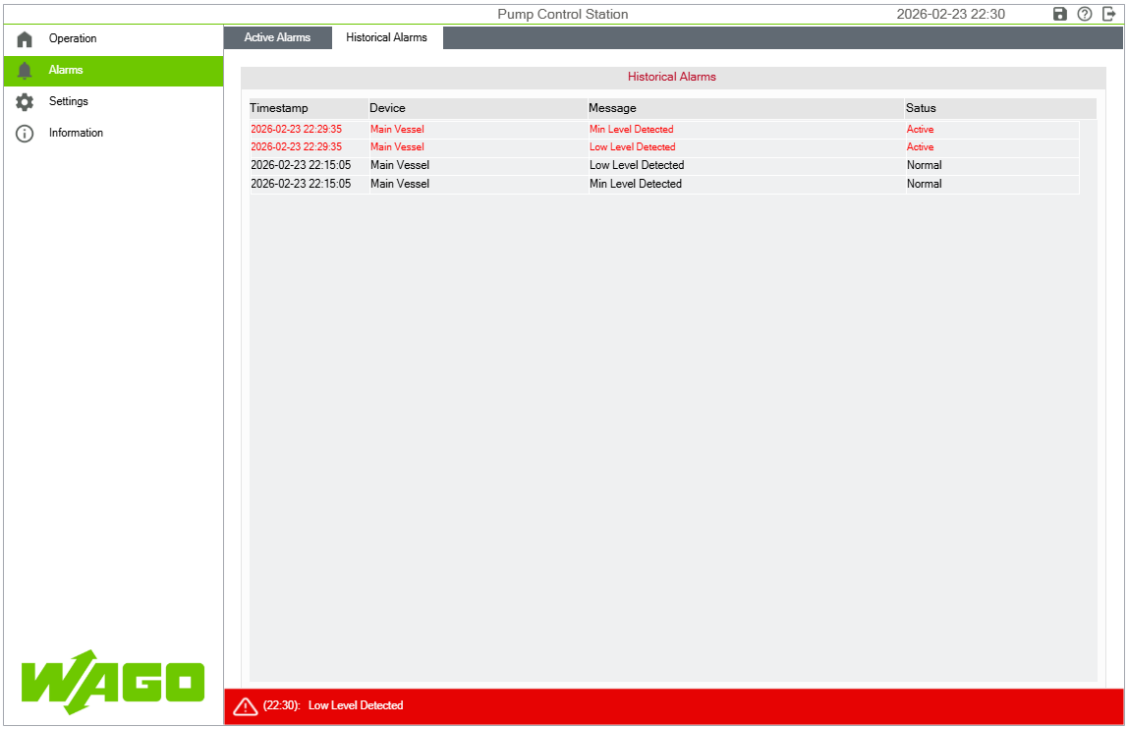

Figure 16: Historical Alarms

Displays all of the historical alarms for the system. This will include any active or previously cleared alarms.

6.5 Information Overview

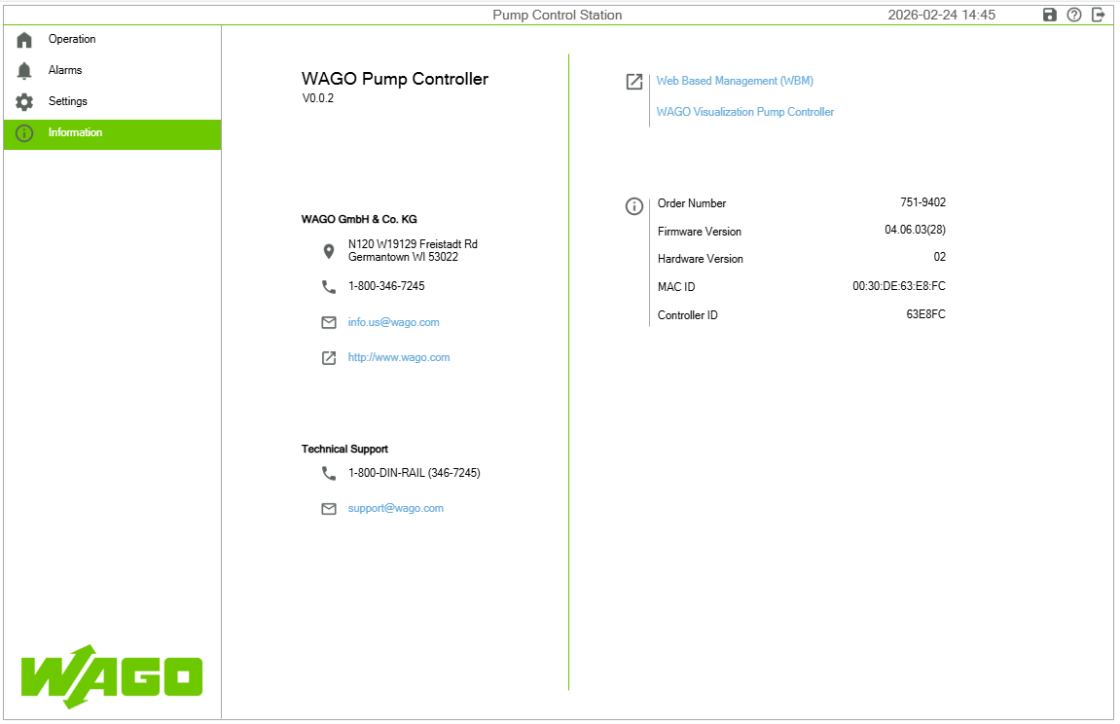

Figure 17: Information Overview

Displays information/links to technical support resources as well as unit/controller information.

7 Data Connections

7.1 OPC UA

All of the status information regarding the system is available via OPC UA. The server endpoint is at opc.tcp://192.168.1.70:4840. See below for documentation of items that are available via the connection.

Table 27: OPC UA Structure

Item	NodeID	DataType	Access
month	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.bMonth	BYTE	Read
day	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.bDay	BYTE	Read
year	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.wYear	WORD	Read
hour	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.bHour	BYTE	Read
minutes	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.bMinutes	BYTE	Read
seconds	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.status.physicalStatus.dateAndTime.bSeconds	BYTE	Read
turnOffHeight	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.aStages[0].rTurnOffHeight	REAL	Read
turnOnHeight	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.aStages[0].rTurnOnHeight	REAL	Read
turnOffHeight	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.aStages[1].rTurnOffHeight	REAL	Read
turnOnHeight	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.aStages[1].rTurnOnHeight	REAL	Read
tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.sTagID	STRING	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.xEnabled	BOOL	Read
interPumpDelay	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configurati	BYTE	Read

		on.bInterPumpDelay		
	alternation	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.eAlternation	WORD	Read
	application	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.eApplication	WORD	Read
	interPumpDelayEnabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.configuration.xInterPumpDelayEnabled	BOOL	Read
	units	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.eUnits	WORD	Read
	mainPressureOutputMax	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.rPressureOutputMax	REAL	Read
	mainPressureOutputMin	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.rPressureOutputMin	REAL	Read
	tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.sTagID	STRING	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.highLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.highLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.highLevelAlarm.xEnabled	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.lowLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.lowLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.setpoints.lowLevelAlarm.xEnabled	BOOL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.configuration.xEnabled	BOOL	Read
	highLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.status.conditionStatus	BOOL	Read

		alarms.xHighLevelAlarm		
	lowLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.status.conditionStatus.alarms.xLowLevelAlarm	BOOL	Read
	pressure	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.forceMainPressure.status.measurement.rPressure	REAL	Read
	normallyOpen	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.highLevelFloatSwitch.configuration.xNormallyOpen	BOOL	Read
	underRangeAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.levelTransmitter.status.conditionStatus.alarms.xUnderRangeAlarm	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.emptyLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.emptyLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.emptyLevelAlarm.xEnabled	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.fullLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.fullLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.fullLevelAlarm.xEnabled	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.highLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.highLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.highLevelAlarm.xEnabled	BOOL	Read

	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.lowLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.lowLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.setpoints.lowLevelAlarm.xEnabled	BOOL	Read
	tankHeightUnits	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.tankUnits.eTankHeightUnits	WORD	Read
	tankVolumeUnits	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.tankUnits.eTankVolumeUnits	WORD	Read
	height	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.rHeight	REAL	Read
	tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.sTagID	STRING	Read
	maxCapacityVolume	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.rMaxCapacityVolume	REAL	Read
	sensorType	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.eSensorType	WORD	Read
	zeromA	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.rZeromA	REAL	Read
	spanmA	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.rSpanmA	REAL	Read
	heightOffset	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.configuration.rHeightOffset	REAL	Read
	emptyLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.conditionStatus.alarms.xEmptyLevelAlarm	BOOL	Read
	fullLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.conditionStatus.alarms.xFullLevelAlarm	BOOL	Read
	highLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.conditionStatus.alarms.xHighLevelAlarm	BOOL	Read

	lowLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.conditionStatus.alarms.xLowLevelAlarm	BOOL	Read
	levelHeight	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.measurement.rLevelHeight	REAL	Read
	dailyInfluentTotal	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.measurement.rDailyInfluentTotal	REAL	Read
	dailyEffluentTotal	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.measurement.rDailyEffluentTotal	REAL	Read
	influentRate	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.measurement.rInfluentRate	REAL	Read
	effluentRate	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.status.measurement.rEffluentRate	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.highLevelAlarm.xEnabled	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.highLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.highLevelAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.lowLevelAlarm.xEnabled	BOOL	Read
	threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.lowLevelAlarm.rThreshold	REAL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.setpoints.lowLevelAlarm.tDwellTime	REAL	Read
	units	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.eUnits	WORD	Read

	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.xEnabled	BOOL	Read
	tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.sTagID	STRING	Read
	flowOutputMin	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.rFlowOutputMin	REAL	Read
	flowOutputMax	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.configuration.rFlowOutputMax	REAL	Read
	overRangeAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.status.conditionStatus.alarms.xOverRangeAlarm	BOOL	Read
	highLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.status.conditionStatus.alarms.xHighLevelAlarm	BOOL	Read
	lowLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.flowTransmitter.status.conditionStatus.alarms.xLowLevelAlarm	BOOL	Read
	normallyOpen	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.lowLevelFloatSwitch.configuration.xNormallyOpen	BOOL	Read
	normallyOpen	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.stageOneFloatSwitch.configuration.xNormallyOpen	BOOL	Read
	normallyOpen	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.stageTwoFloatSwitch.configuration.xNormallyOpen	BOOL	Read
	normallyOpen	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.mainTank.stopFloatSwitch.configuration.xNormallyOpen	BOOL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.setpoints.failToOnAlarm.xEnabled	BOOL	Read
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.setpoints.failToOnAlarm.tDwellTime	REAL	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].c	BOOL	Read

		onfiguration.setpoints.failToOffAlarm.xEnabled		
	dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.setpoints.failToOffAlarm.tDwellTime	REAL	Read
	tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.sTagID	STRING	Read
	enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.xEnabled	BOOL	Read
	stage	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].configuration.bStage	BYTE	Read
	on	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.physicalStatus.xOn	BOOL	Read
	mode	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.physicalStatus.eMode	WORD	Read
	dailyStarts	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.measurement.wDailyStarts	WORD	Read
	totalStarts	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.measurement.dwStarts	DWORD	Read
	dailyRunTimeHours	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.measurement.rDailyRunTimeHours	REAL	Read
	totalRunTimeHours	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.measurement.rTotalRunTimeHours	REAL	Read
	faultAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.conditionStatus.alarms.xFaultAlarm	BOOL	Read
	failToOnAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.conditionStatus.alarms.xFailToOnAlarm	BOOL	Read
	failToOffAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].status.conditionStatus.alarms.xFailToOffAlarm	BOOL	Read
	temperature	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.status.measurement.rTemperature	REAL	Read
	underRangeAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.status.co	BOOL	Read

	nditionStatus.alarms.xUnderRangeAlarm		
highLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.status.conditionStatus.alarms.xHighLevelAlarm	BOOL	Read
lowLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.status.conditionStatus.alarms.xLowLevelAlarm	BOOL	Read
threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.setpoints.highLevelAlarm.rThreshold	REAL	Read
dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.setpoints.highLevelAlarm.tDwellTime	REAL	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.setpoints.highLevelAlarm.xEnabled	BOOL	Read
units	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.eUnits	WORD	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.xEnabled	BOOL	Read
tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[0].temperatureTransmitter.configuration.sTagID	STRING	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.setpoints.failToOnAlarm.xEnabled	BOOL	Read
dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.setpoints.failToOnAlarm.tDwellTime	REAL	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.setpoints.failToOffAlarm.xEnabled	BOOL	Read
dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.setpoints.failToOffAl	REAL	Read

	arm.tDwellTime		
tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.sTagID	STRING	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.xEnabled	BOOL	Read
stage	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].configuration.bStage	BYTE	Read
on	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.physicalStatus.xOn	BOOL	Read
mode	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.physicalStatus.eMode	WORD	Read
dailyStarts	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.measurement.wDailyStarts	WORD	Read
totalStarts	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.measurement.dwStarts	DWORD	Read
dailyRunTimeHours	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.measurement.rDailyRunTimeHours	REAL	Read
totalRunTimeHours	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.measurement.rTotalRunTimeHours	REAL	Read
faultAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.conditionStatus.alarms.xFaultAlarm	BOOL	Read
failToOnAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.conditionStatus.alarms.xFailToOnAlarm	BOOL	Read
failToOffAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].status.conditionStatus.alarms.xFailToOffAlarm	BOOL	Read
temperature	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.status.measurement.rTemperature	REAL	Read
underRangeAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.status.conditionStatus.alarms.xUnderRangeAlarm	BOOL	Read
highLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.status.co	BOOL	Read

	nditionStatus.alarms.xHighLevelAlarm		
lowLevelAlarm	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.status.conditionStatus.alarms.xLowLevelAlarm	BOOL	Read
threshold	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.setpoints.highLevelAlarm.rThreshold	REAL	Read
dwellTime	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.setpoints.highLevelAlarm.tDwellTime	REAL	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.setpoints.highLevelAlarm.xEnabled	BOOL	Read
units	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.eUnits	WORD	Read
enabled	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.xEnabled	BOOL	Read
tagID	ns=4;s=|var|PLC.Application.PLC_PRG.pumpController.pump[1].temperatureTransmitter.configuration.sTagID	STRING	Read

7.2 Modbus TCP

All of the status information regarding the system is available via Modbus TCP. The server IP Address is 192.168.1.70 on port 2000. See below for documentation of items that are available via the connection.

Table 28: Modbus TCP Addresses

Register	Item	DataType	Access
40001	lifeWord	WORD	Read
40002.0	systemEnabled	BOOL	Read
40002.1	forceMainPressureEnabled	BOOL	Read
40002.2	mainVesselEnabled	BOOL	Read
40002.3	pump1Enabled	BOOL	Read
40002.4	pump2Enabled	BOOL	Read
40002.5	flowTransmitterEnabled	BOOL	Read
40002.6	highLevelFloatEnabled	BOOL	Read
40002.7	lowLevelFloatEnabled	BOOL	Read
40002.8	stageOneFloatEnabled	BOOL	Read
40002.9	stageTwoFloatEnabled	BOOL	Read
40002.10	stopFloatEnabled	BOOL	Read
40002.11	levelTransmitterEnabled	BOOL	Read
40002.12	pump1TemperatureTransmitterEnabled	BOOL	Read
40002.13	pump2TemperatureTransmitterEnabled	BOOL	Read
40003-40004	stage1TurnOnHeight	REAL	Read
40005-40006	stage1TurnOffHeight	REAL	Read
40007-40008	stage2TurnOnHeight	REAL	Read
40009-40010	stage2TurnOffHeight	REAL	Read
40011	application	WORD	Read
40012	alternation	WORD	Read
40013	forceMainPressureUnits	WORD	Read
40014-40015	vesselHeight	REAL	Read
40016	vesselHeightUnits	WORD	Read
40017	vesselVolumeUnits	WORD	Read
40018	flowTransmitterUnits	WORD	Read
40019	pump1Stage	WORD	Read
40020	pump2Stage	WORD	Read
40021	pump1TemperatureTransmitterUnits	WORD	Read
40022	pump2TemperatureTransmitterUnits	WORD	Read
40023-40024	dailyEffluentAverage	REAL	Read
40025-40026	dailyEffluentAverage	REAL	Read
40027-40028	dailyEffluentTotal	REAL	Read
40029-40030	dailyInfluentAverage	REAL	Read
40031-40032	dailyInfluentTotal	REAL	Read
40033-40034	effluentRate	REAL	Read
40035-40036	effluentTotal	REAL	Read
40037-40038	fillVolume	REAL	Read

40039-40040	influentRate	REAL	Read
40041-40042	influentTotal	REAL	Read
40043-40044	levelHeight	REAL	Read
40045-40046	pump1Starts	DWORD	Read
40047-40048	pump1AverageRuntimeMinutes	REAL	Read
40049-40050	pump1AverageStartsPerDay	REAL	Read
40051-40052	pump1DailyRuntimeHours	REAL	Read
40053-40054	pump1TotalRuntimeHours	REAL	Read
40055	pump1DailyStarts	WORD	Read
40056-40057	pump2Starts	DWORD	Read
40058-40059	pump2AverageRuntimeMinutes	REAL	Read
40060-40061	pump2AverageStartsPerDay	REAL	Read
40062-40063	pump2DailyRuntimeHours	REAL	Read
40064-40065	pump2TotalRuntimeHours	REAL	Read
40066	pump2DailyStarts	WORD	Read
40067.0	pump1Running	BOOL	Read
40067.1	pump2Running	BOOL	Read
40068.0	generalAlarm	BOOL	Read
40068.1	forceMainPressureHighLevelAlarm	BOOL	Read
40068.2	forceMainPressureLowLevelAlarm	BOOL	Read
40068.3	highHighLevelAlarm	BOOL	Read
40068.4	highLevelAlarm	BOOL	Read
40068.5	lowLevelAlarm	BOOL	Read
40068.6	lowLowLevelAlarm	BOOL	Read
40068.7	pump1FaultAlarm	BOOL	Read
40068.8	pump1FailToOnAlarm	BOOL	Read
40068.9	pump1FailToOffAlarm	BOOL	Read
40068.10	pump2FaultAlarm	BOOL	Read
40068.11	pump2FailToOnAlarm	BOOL	Read
40068.12	pump2FailToOffAlarm	BOOL	Read
40068.13	levelTransmitterUnderRangeAlarm	BOOL	Read
40068.14	flowTransmitterOverRangeAlarm	BOOL	Read
40068.15	highFlowDetectedAlarm	BOOL	Read
40069.0	lowFlowDetectedAlarm	BOOL	Read
40069.1	pump1TempUnderRange	BOOL	Read
40069.2	pump1HighTempAlarm	BOOL	Read
40069.3	pump2TempUnderRange	BOOL	Read
40069.4	pump2HighTempAlarm	BOOL	Read

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