Reference Manual
00809-0100-4541, Rev GA
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Emerson Plantweb™ Insight

EMERSON

Contents

1 Introduction

1.1 Using this manual

This document is intended for system administrators and will provide details on how to set up Plantweb Insight. For more details and configuration information on specific applications, refer to the appropriate appendix sections.

It is recommended administrators complete all steps in the order described. An overview of these steps is described below:

1.1.1 Install and launch

Procedure

1. Ensure system meets minimum requirements.
2. Install the Plantweb Insight virtual machine.
3. Launch Plantweb Insight web interface from a supported web browser.

   Refer to Installation for more information.

1.1.2 Customize system settings

Procedure

1. Set up users for access.
2. Connect to Emerson Wireless Gateways and other data systems.
3. Backup and restore your system to avoid loss of settings.

   Refer to Configuration for more information.

1.1.3 Application configuration

Procedure

1. Configure application specific global settings.
2. Add, edit, or delete assets via asset management.

   Refer to Configuration for more information.

1.2 Product recycling/disposal

Recycling of equipment and packaging should be taken into consideration and disposed of in accordance with local and national legislation/regulations.

2 Installation

2.1 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operation. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

2.2 System requirements

Plantweb Insight is delivered as a fully developed virtual machine (e.g. .ova file). Users will receive a complete virtual machine image to install in user provided virtualization software or hypervisors.

The Plantweb Insight virtual machine contains a web server that can be accessed by any web client with network access. All configuration and visualization will be completed from the web browser user interface.

Plantweb Insight can be installed on a network server or PC/laptop. Both installations have the same requirements and installation steps. Network connection settings can be made subject to organization policies. Any pertinent Gateways must be accessible on the network.

Before you begin, verify your system meets the minimum requirements.

2.2.1 Host operating system

Virtualization software/hypervisor

- VMware Workstation Pro™ 10 or higher (requirements can be found here)
- VMware vSphere® 5.5 or higher (requirements can be found here)

OR

- Contact Rosemount™ support if utilizing a different virtualization software (Microsoft® Hyper-V®)

2.2.2 Guest operating system

- Processors = 4
- Memory = 16 GB RAM minimum
- Hard drive = 100 GB of free space

2.2.3 Application

Browsers (recent versions supported)

- Chrome™ browser
- Microsoft Internet Explorer®

2.2.4 Other requirements

- A DVD drive is required for installations
- A DHCP server is required to assign a valid IP address (static IP address can be configured once connected to the Plantweb Insight web interface)

2.2.5 Gateway compatibility

Plantweb Insight is compatible with Emerson Wireless 1410/1420 Gateways on firmware version 4.7.68 or higher. Plantweb Insight may experience calculation response issues on certain applications when Gateway firmware is not up to date. These may effect the Pump, Heat Exchanger, Air Cooled Heat Exchanger, and Pressure Relief Device applications.

2.2.6 Device compatibility

Emerson devices must be in Emerson Optimized burst configuration. If devices are not set to this, change using a device configuration tool.

Devices without this capability must be in either of the two configuration modes to be compatible with Plantweb Insight:

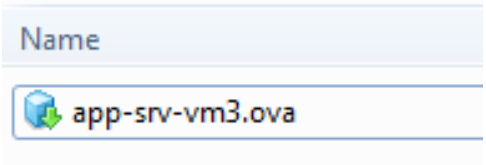
- command 9 and command 48
- command 3 and command 48

2.3 Installation procedure

Two DVDs will be supplied for installations.

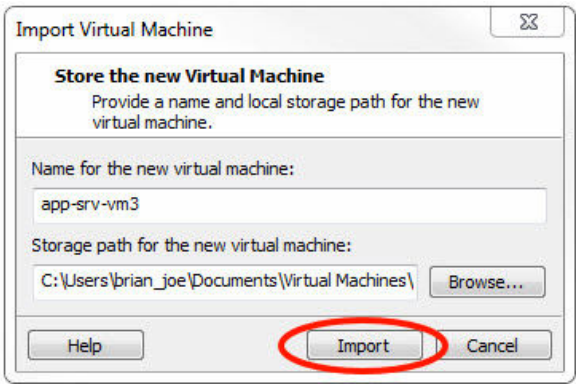
Procedure

1. Exit/close all programs, including any running in the background.
2. Insert Disk 1 into the DVD drive.
3. Open the .ova file. This file will prompt VMware Workstation/vSphere to open with an *Import Virtual Machine* pop-up.

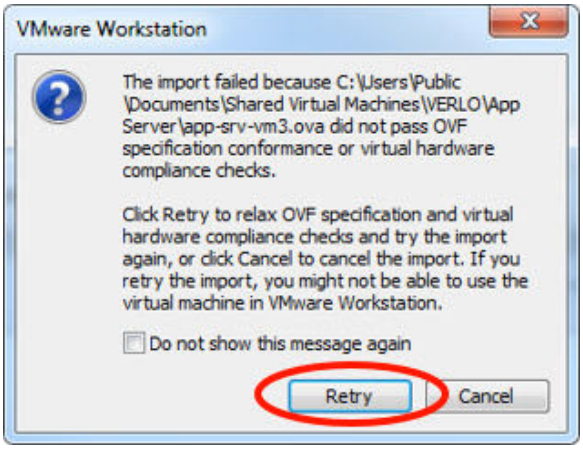


Note
This file name may change based on version and type.

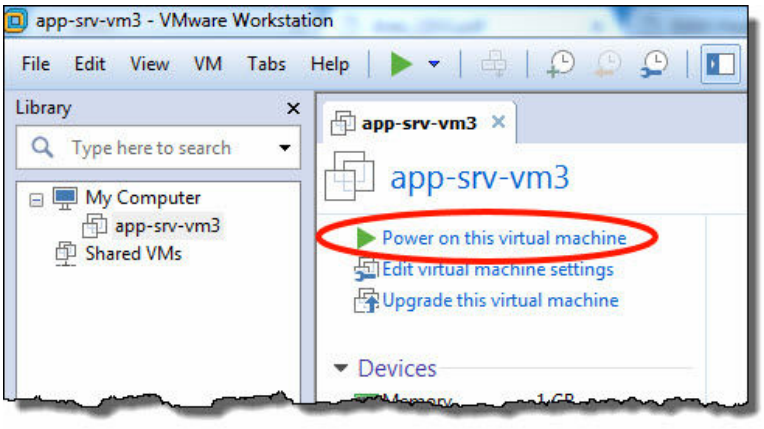
4. Name and store the new virtual machine, then select **Import**.



5. If the following message appears select,**Retry**.



6. Wait for the virtual machine to load.
7. Select **Power on this virtual machine** once the loading process is complete.



8. Find the IP address in the command window.

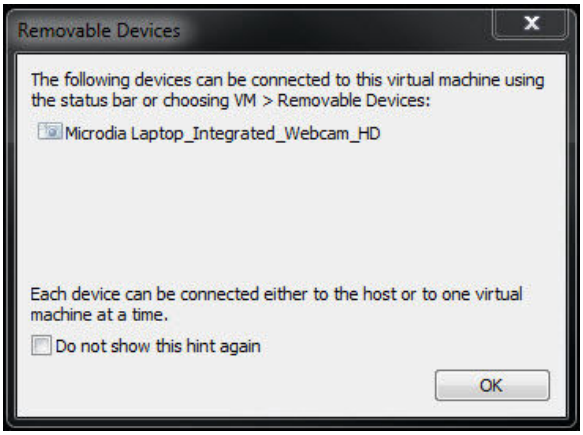
```
eth0: 10.224.40.17
appsrv-vm0 login:
```

Note
This IP address will vary depending on installation. What is shown here will not be your IP address.

A DHCP server will be required to assign an IP address. If no DHCP server is available, contact Rosemount support (contact information on last page).

Note
The virtual machine login and password are not necessary and will not be provided.

Note
A message about features may pop up during the installation process; select **OK**.



⚠ CAUTION

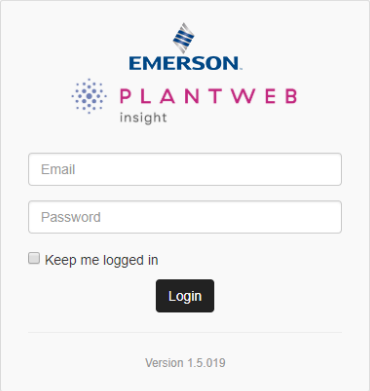
End users should not change any settings besides the ones outlined above. Alterations could impact the performance and functionality of Plantweb Insight.

2.4 Launching the application

The Plantweb Insight web interface can be launched from any of the supported web browsers shown in the system requirements.

Procedure

1. Open a supported web browser.
2. Beginning with **"https://"**, enter the IP address found in Step 8 of Installation procedure.
3. Login with the following credentials:
   - Email: **admin@emerson.com**
   - Password: **Default.1234**



Note
Both the email and password are case sensitive.

4. Change your password as prompted (default settings are listed below and can be changed in *System Settings*).
   - Minimum length: 12
   - Minimum lowercase: 1
   - Minimum uppercase: 1
   - Minimum numbers: 1
5. Login with the updated credentials.

3 Configuration

3.1 Overview

This section contains information on customizing system settings and configuring Plantweb Insight.

3.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operation. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

3.3 Customize system settings

System settings should be configured during the setup of Plantweb Insight.

3.3.1 Users

User accounts

Add users

Procedure

1. Navigate to **System Settings** → **Users** → **User Accounts** then select the **Add User Account** button.
2. Enter the user's email, role, and password then select **Save**.

Table 3-1: Roles and Privileges

User role	Privileges
Admin	Read and write
User	Read

Edit users

Procedure

1. Navigate to **System Settings** → **Users**.
2. Select the button next to the user to be edited.

Note
If the user is disabled, you can enable the user in the modal window.

3. Update the information and select **Save**.

Note
Users can be deleted by selecting the **Delete this account** box.

Password options

Password requirements and settings can be made in the *Password Option* page. These settings include password limitations and requirements (e.g. uppercase letters, lowercase letters, numbers, characters), session idle timeouts, and account locking details.

Change password

Login password can be changed in the *Change Password* page.

3.3.2 Data source configuration

Gateway connections

Add Gateway

Procedure

1. Navigate to **System Settings** → **Data Sources** → **Gateway Connections**.
2. Select the **Add Gateway** button.
3. Enter the IP Address, Port, and Description and select **Save**.

Note
HART-IP™ Port 5094. Ensure both HART-IP TCP and HART-IP UDP are enabled in the Gateway.

Edit Gateway

Procedure

1. Navigate to **System Settings** → **Data Sources** → **Gateway Connections**.
2. Select the button next to the user to be edited.
3. Update the information and select **Save**.

Delete Gateway

Procedure

1. Select the check box/boxes next to the Gateway/s to be deleted.
2. Select red **Delete Selected** button.

OPC UA Server Connection

Add OPC UA Server

Procedure

1. Navigate to **System Settings** → **Data Sources** → **OPC UA Server** Connections.
2. Select **Add OPC UA Server** button.
3. Enter the IP Address, Port, Tag, and Description and select **Save**.

Note
The OPC UA® Port in Plantweb Insight is designated as 4880 (the OPC UA Server must be set up for this port). Plantweb Insight uses a opc.tcp:// connection to the OPC UA Server. Tag and Description are used for explanatory reasons only.

The IP address field will only accept IP addresses and will not accept full URLs (it assumes the opc.tcp://).The OPC UA Server must be configured to security configuration “none” and “allow anonymous login”.

Edit OPC UA Server

Procedure

1. Navigate to **System Settings** → **Data Sources** → **OPC UA Server Connections**.
2. Select the button next to the Server to be edited.
3. Update the information and select **Save**.

Delete OPC UA Server

Procedure

1. Select the check box/boxes next to the Server/s to be deleted.
2. Select red **Delete Selected** button.

3.3.3 Network configuration (optional)

⚠ CAUTION

Use caution when making changes to IP network settings. If they are lost of improperly configured, it may be difficult to log into the application. Contact the network administrator for information on the proper IP network setting to apply.

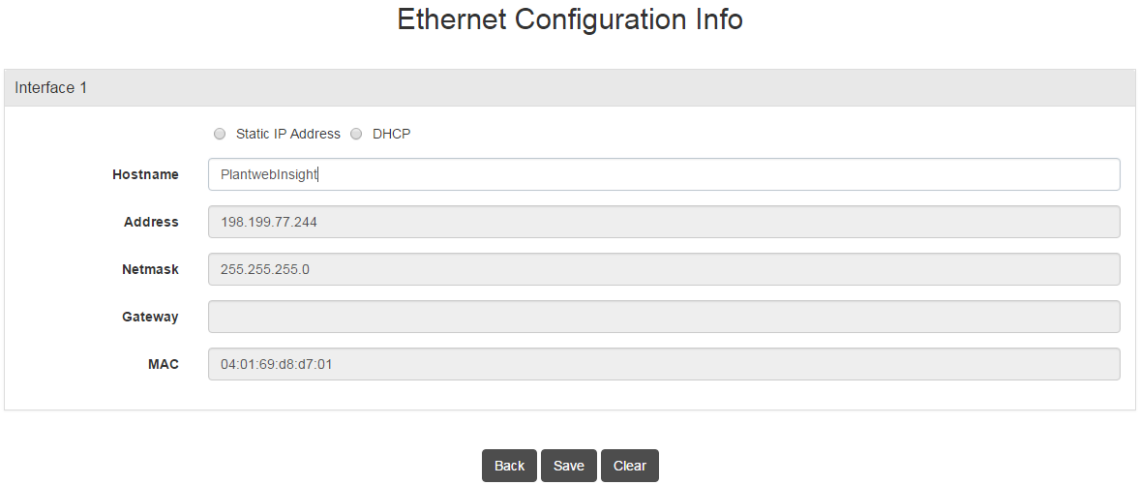
Plantweb Insight contains two network interfaces. Only network interface 1 allows web client access. Network interface 1 will be associated to network adapter 1 of the virtual machine. Network interface 2 will be associated to network adapter 2 of the virtual machine. Network interface 2 is non-routable.

The second network adapter needs to be configured in VMware Workstation/vSphere to activate the functionality of the second network.

To change IP Network Settings:

Procedure

1. Navigate to **System Settings** → **Platform Settings** → **Ethernet Communication**.
2. To change network interface 1, select **Static IP Address**.
3. Enter the following:
   - Hostname
   - IP Address
   - Netmask
   - Gateway
4. To enable network interface 2, select the **enable check box**.
5. Select **Static IP Address**.
6. Enter the following:
   - IP Address
   - Netmask
7. Select **Save**.



3.3.4 Platform settings

Plantweb Insight has a system backup and restore feature that saves all user configured data. It is best practice that a system backup be performed periodically throughout the installation and configuration process.

Save system backup

Procedure

1. Navigate to **System Settings** → **Platform Settings** → **Backup and Restore**.
2. Create a Passphrase then select **Save Backup** button.

Note
Passphrase is required for restoring your system to these settings.

Restore system

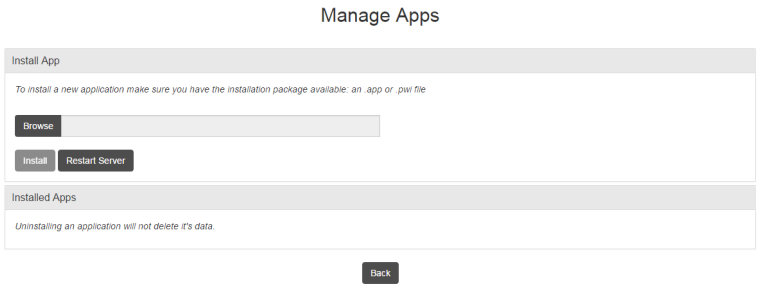
Procedure

1. Navigate to **System Settings** → **Platform Settings** → **Backup and Restore**.
2. Enter the system backup passphrase.
3. Browse for the backup file then select **Install** button.

3.4 Application installation

Procedure

1. Insert Disk 2 into the DVD drive.
2. In the web interface navigate to **System Settings** → **Platform Settings** → **Manage Applications**.



3. Under the *Install App* section, select the **Browse** button.
4. Navigate to *Disk 2*.
5. Select the pertinent **.app** file then select **Open**.
6. Select **Install**.
7. An action prompt will appear - select **Restart Server** if this is the last app to install. Otherwise, select **Resume** and repeat Step 3-Step 6 for subsequent apps.
8. Navigate to *Home* and the apps installed will appear.

3.5 Application configuration

There are a few configuration steps that are consistent across specific Plantweb Insight applications. These are briefly discussed below. More information about configuration can be found in the specific Appendix.

Note
All configuration mentioned below is specific to Plantweb Insight. Changes will not be communicated to the Gateway or devices.

3.5.1 Global settings

Each application contains specific global settings that should be set before any asset configuration. Global settings apply to all assets. These settings could include units used for inputs (e.g. inlet pressure units), units used for calculations (e.g. currency), or key performance indicators to be tracked on the dashboard (e.g. overall health index).

3.5.2 Adding assets

There are two ways to add assets. The options are discussed below. Configuration of devices occurs during addition of assets.

Add an asset

Use this method to add a single asset.

Procedure

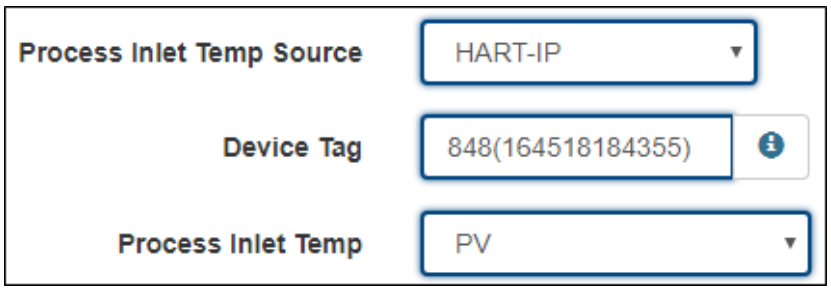
1. Navigate to the *Asset Summary* tab then select the **Add an Asset** button.
2. Complete all information on the *New Asset modal* window then select **Save** (field descriptions can be found in the Appendix.

Add a measurement point
Wireless device from an Emerson Wireless Gateway

Depending on the application, wireless devices can either be added using a drop-down list or a search function.

Procedure

1. For applications (Steam Trap application) requiring specific devices, the devices can be added by selecting the appropriate device via a drop-down list. The drop-down list will contain all devices with the pertinent device type.
2. For applications with generic measurements (pressure, temperature, flow, etc.) the wireless devices can be added using the following:
    a. Select Source: **HART-IP**
    b. Begin to type the device tag. After a few characters, a dropdown list of recognized devices will appear. Select the pertinent device.
    c. Select the pertinent variable (ex: PV).

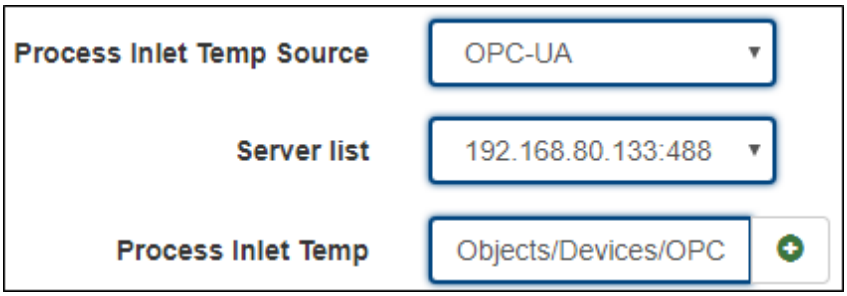


OPC-UA tags

OPC-UA® tags can be set up for certain measurement points.

Procedure

1. Select Source: **OPC-UA**
2. Select the pertinent OPC-UA server.
3. Type in the complete path to the pertinent measurement point (ex: Objects/Devices/OPC_Server1/3051S/PV).
   - Use forward slashes, "/", for path breaks
   - The entire path is case sensitive

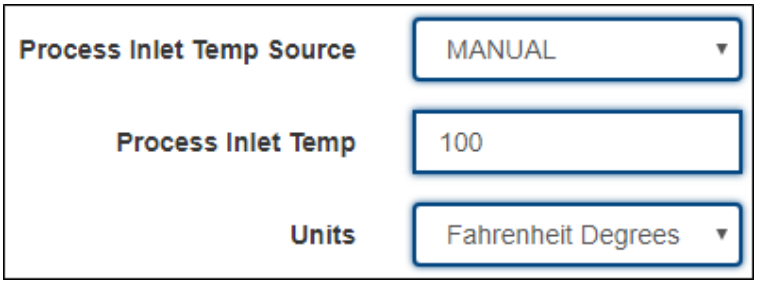


Manual input

Manual inputs should be used sparingly for measurement points. They should only be considered for known consistent conditions (motor speed).

Procedure

1. Select Source: **Manual**
2. Type in the manual value.
3. Select the pertinent units.



Note
Depending on the application, it will likely take time for the calculations to begin processing. Certain applications require capturing a baseline. This process is described in the Appendix.

Import asset config

Use this method to add/edit multiple assets at the same time.

Procedure

1. Navigate to *Asset Summary* tab then select **Import Asset Config** button.
2. Select **Download asset configuration** to download the csv file.

   Note
   If there are no assets configured, select the **Empty File** box.

3. Complete the csv file and save files.

   Note
   Data fields have strict requirements for entries; these can be found in **Import Specs File**.

Configuring device

For configuring the device, use the following guides.

For HART-IP™ from a *Wireless*HART® Gateway:

Entry tag	Description	Data type	Values	Example
XXXX_source	Data source	String	HART-IP	HART-IP
XXXX_tag	Device tag	String	String	3051S
XXXX_value	Device parameter	String	• PV • SV • TV • QV	PV

For OPC UA data points:

Entry tag	Description	Data type	Values	Example
XXXX_source	Data source	String	OPC UA	OPC UA
XXXX_tag	Device tag	String	String	3051S.PV

For Manual data entry:

Entry tag	Description	Data type	Values	Example
XXXX_source	Data source	String	Manual	Manual
XXXX_tag	Parameter value	Float	Any value	100.00

Procedure

1. Browse and upload the csv file via the *Import Asset Config modal* window then select **Save**.

2. Check all assets were successfully downloaded.
3. If assets fail download, check all fields are filled out correctly and download again.

3.5.3 Editing assets

There are two ways to edit assets. The options are discussed below.

Edit singular asset

Procedure

1. Navigate to **Asset Summary** tab.
2. Select **Asset** to edit. The *Details modal* window will pop up with all fields to edit.
3. Select **Save** when complete.

Note
Assets can be deleted by selecting the *Delete Asset* button.

Import asset config

Procedure

1. Navigate to *Asset Summary* tab and select the **Import Asset Config** button.
2. Select **Download asset configuration** and download the csv file.
3. Edit the csv file and save files.

Note
Data fields have strict requirements for entries; these can be found in the appropriate manual supplement.

4. Browse and upload the csv file via the *Import Asset Config modal* window and select **Save**.
5. Check all assets were successfully downloaded.
6. If assets fail download, check all fields are filled out correctly and download again.

4 Version Upgrades

Backup all files before installing a new version.

4.1 Virtual machine upgrades

Procedure

1. Ensure an up to date backup has been saved following the steps in the *Save System Backup* procedure.
2. Install the new Plantweb Insight virtual machine following the steps in Installation procedure.
3. Restore the backup file following the steps in the *Restore System* procedure.

4.2 Application upgrades

Procedure

1. Navigate to **System Settings** → **Platform Settings** → **Manage Applications**.
2. Install the new version following the steps in Application installation. You will receive a prompt to replace the old version of the application.
3. If applicable, restore the system backup to retrieve configuration.

4.3 Platform upgrades

Procedure

1. Navigate to **System Settings** → **Platform Settings** → **Manage Base Platform**.
2. Browse and upload the pertinent upgrade file.
3. Select **Update**.
4. Select **Restart Server**.
5. If applicable, restore the system backup to retrieve configuration.

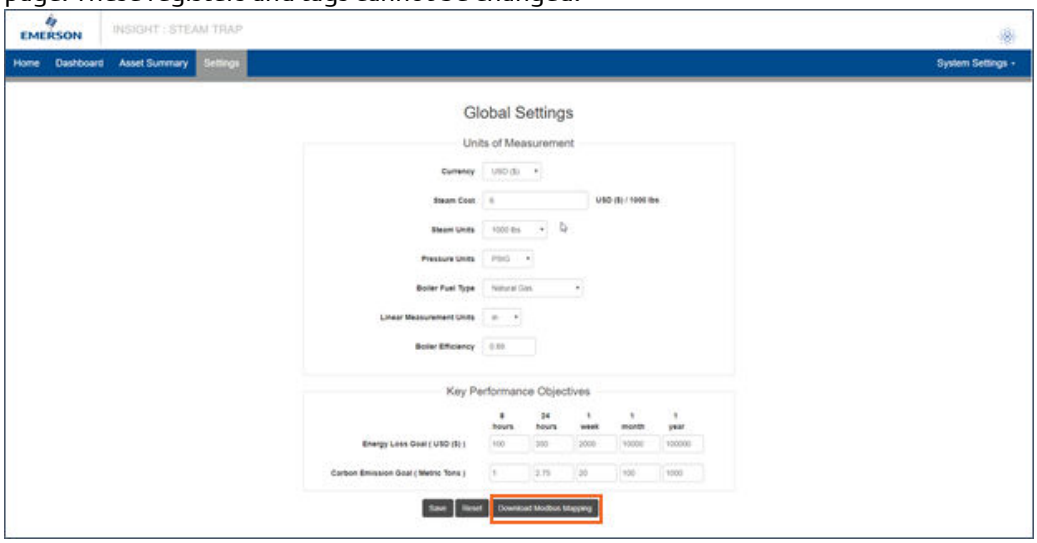
5 Modbus TCP Mapping

The following default Modbus® TCP ports are defined in Plantweb™ Insight:

Table 5-1: Modbus TCP Ports

Application	Modbus TCP port
Steam trap	502
Pump	503
Heat exchanger	505
Air cooled heat exchanger	506
Pressure relief valve	507
Cooling tower	508

Registers and tags are prepopulated in specific Plantweb Insight applications and can be accessed using the **Download Modbus Mapping** csv file in each application's *Settings* page. These registers and tags cannot be changed.



An example csv file will appear like the table shown below.

Function	Register	Tag
1	0	ST-001.OOS
4	0	ST-001.STATE
4	1	ST-001.EMISSIONS
4	3	ST-001.COST

The function in the first column refers to the generic Modbus TCP function codes.

Function code	Function	Description
01	Read Coil	Obtain status of one or more discrete outputs
02	Read Discrete Input	Obtain status of one or more discrete inputs
03	Read Holding Registers	Obtain value of one or more output data registers
04	Read Input Registers	Obtain value of one or more input data registers
05	Write Single Coil	Force a single discrete output
06	Write Single Holding Register	Force a single data register to a specified value
15	Write Multiple Coils	Force multiple discrete outputs
16	Write Multiple Holding Registers	Force multiple data registers to a specified value

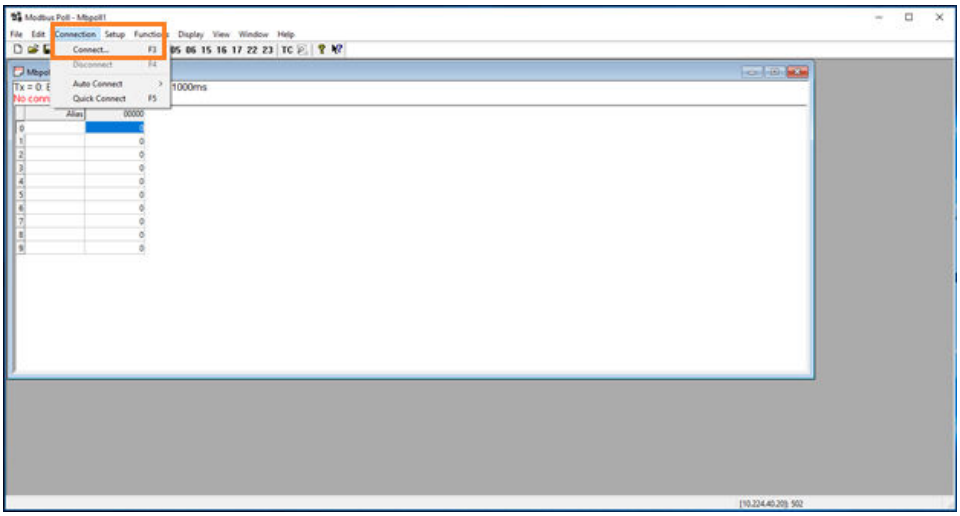
The second column refers to the register number (ex: ST-001.STATE uses function code 4 – read input registers, starting at 30000):

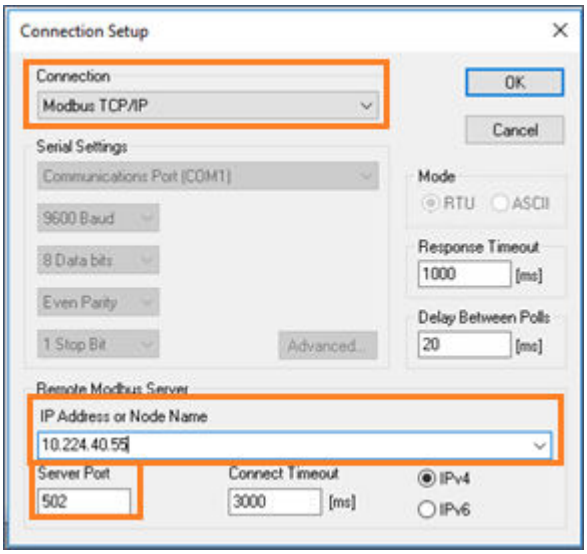
Function	Register #s (Data addresses)	Read	Write single	Write multiple
Coil	00000-09999	FC01	FC05	FC15
Discrete Input	10000-19999	FC02	N/A	N/A
Input Register	30000-39999	FC04	N/A	N/A
Holding Register	40000-49999	FC03	FC06	FC16

5.1 Setting up Modbus TCP from data system

Procedure

1. In the Modbus TCP enabled device, establish connection to Plantweb Insight. Select **Connection** > **Connect (F3)**



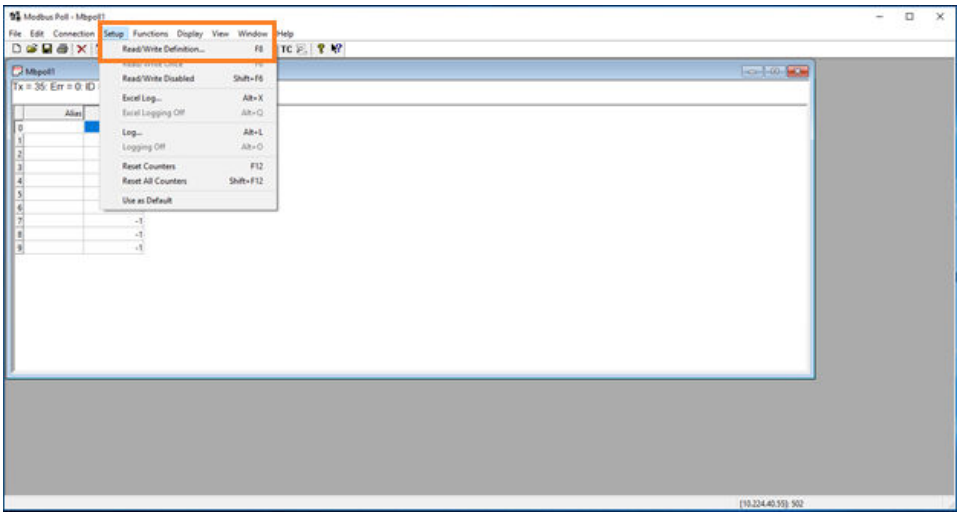


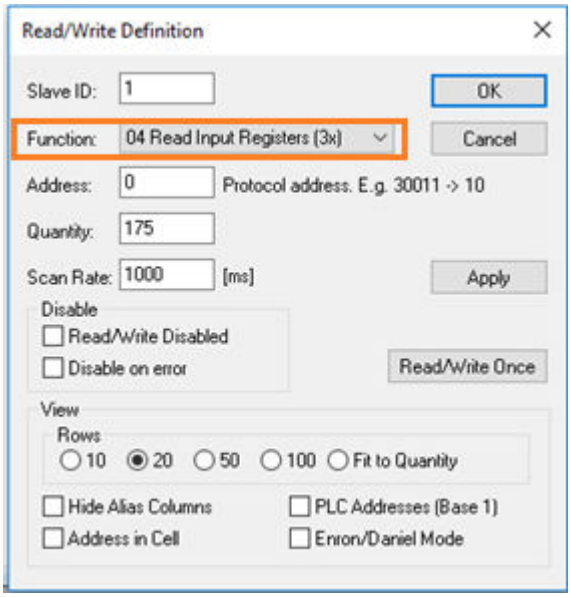
Connection: Modbus TCP/IP

IP Address: IP address of Plantweb Insight

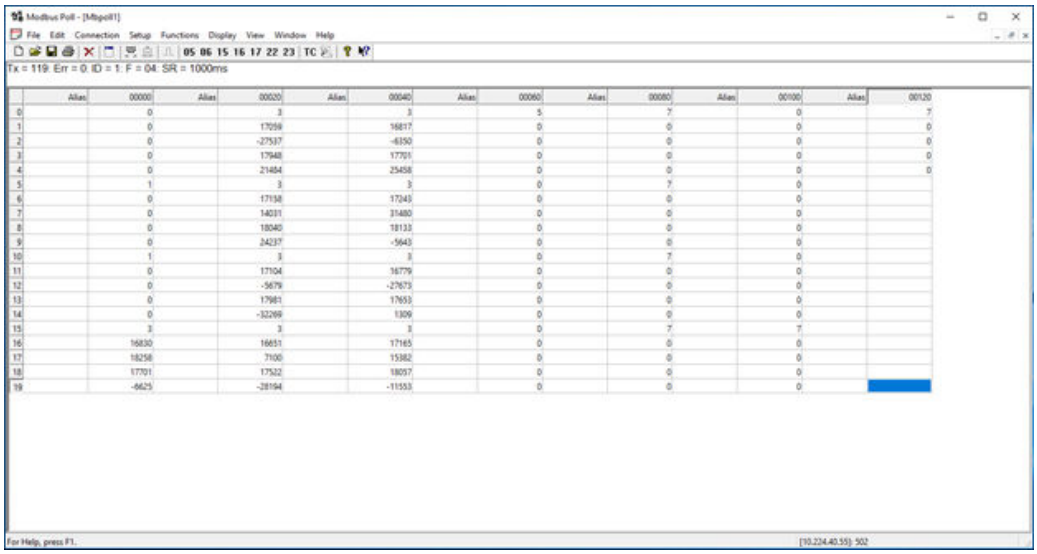
Server Port: TCP Port of the application being connected (ex: Steam Trap application = 502)

2. Configure the read/write definitions properly. Select **Setup** > **Read/Write Definition...**





Function: 04 Read Input Registers (3x)

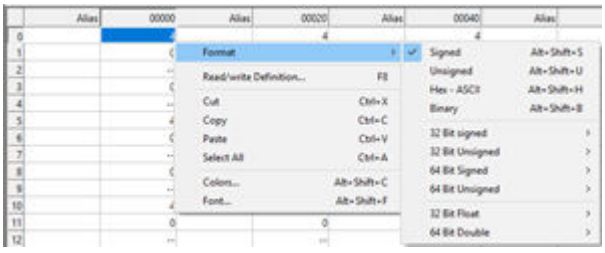


Result formats may need to be changed to match the following requirements:

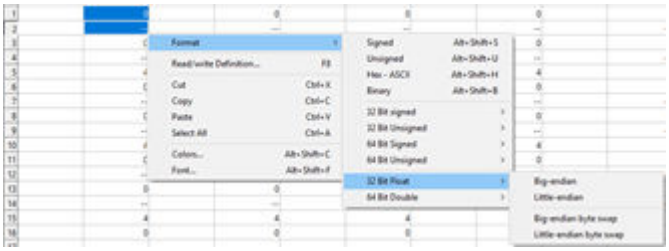
Output	Format
State	16-bit signed
Emissions	32-bit signed float big-endian
Cost	32-bit signed float big-endian
Health	32-bit signed float big-endian
Alert	16-bit signed

See below example:

- State:



- Emissions:



6 Troubleshooting

6.1 Service support

To expedite the return process outside of the United States, contact the nearest Emerson representative.

Within the United States, call the Emerson Instrument and Valve Response Center using the 1-800-654-RSMT (7768) toll-free number. This center, available 24 hours a day, will assist you with any needed information or materials.

The center will ask for product model and serial numbers, and will provide a Return Material Authorization (RMA) number. The center will also ask for the process material to which the product was last exposed.

⚠ CAUTION

Individuals who handle products exposed to a hazardous substance can avoid injury if they are informed of and understand the hazard. Returned products must include a copy of the required Safety Data Sheet (SDS) for each substance.

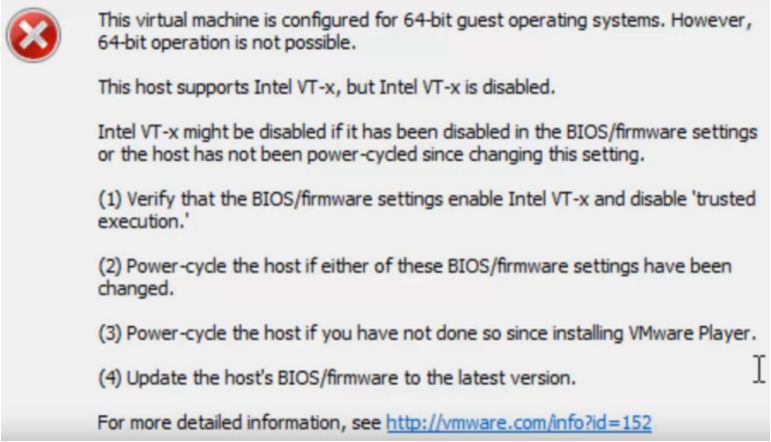
Emerson Instrument and Valve Response Center representatives will explain the additional information and procedures necessary to return goods exposed to hazardous substances.

NOTICE

Shipping considerations for wireless products.

- The unit was shipped to you without the Power Module installed. Please remove the Power Module prior to shipping the unit.
- Each Power Module contains two "C" size primary lithium/thionyl chloride batteries. Primary lithium batteries (charged or discharged) are regulated during transportation by the U.S. Department of Transportation. They are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Consult current regulations and requirements before shipping.

6.2 Plantweb Insight: Unable to load Plantweb Insight Virtual Machine



Possible cause: Intel VT-x is diabled

Recommended actions

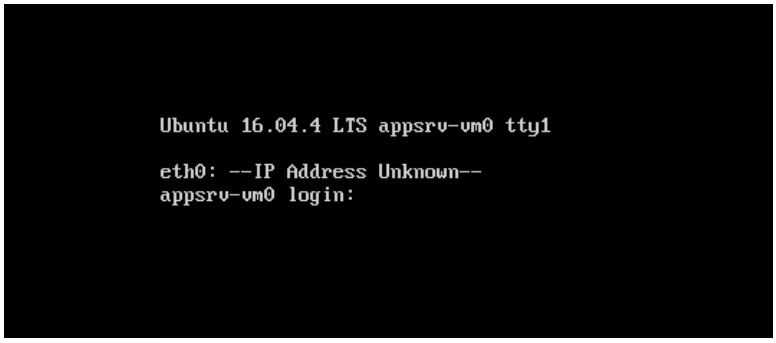
1. Verify that the BIOS/firmware settings enable Intel VT-x and disable 'trusted execution.'
2. Power-cycle the host if either of these BIOS/firmware settings have been changed.
3. Power-cycle the host if you have not done so since installing VMware Player.
4. Update the host's BIOS/firmware to the latest version.
5. For more detailed information, see http://vmware.com/info?id=152.

Possible cause: System settings configuration

Recommended action

Follow the steps in the video to resolve. Different operating systems and hardware will have similar procedures.

6.3 Plantweb Insight: Virtual machine displaysv--IP Address Unknown--



Possible cause: No available DHCP server to assign a valid IP address

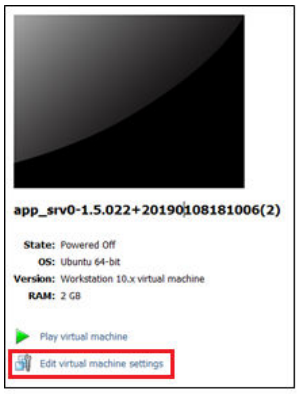
Recommended actions

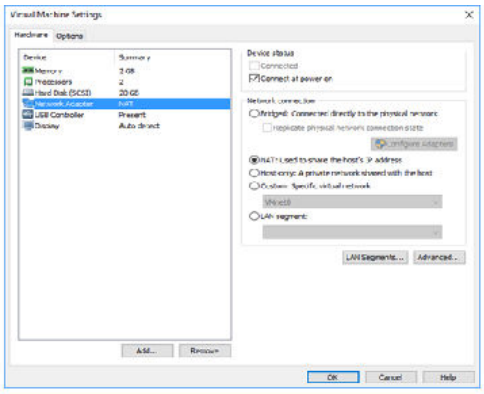
1. Ensure the Plantweb Insight machine has access to a DHCP server.
2. Check both VMware Workstation Pro™/EXSi virtual network editor settings and the Ethernet adapter settings.
3. Contact Rosemount Customer Central if a static IP address is necessary from the start (static IP can be configured once into the web user interface).

   VMware Workstation Pro does contain a native DHCP server. When utilizing this program, the following procedure can be followed.

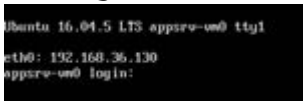
   If there is no DHCP server available, VMware Workstation Pro contains a native DHCP server through its NAT connections.

   a. To utilize this, load the virtual machine and set the Network Adapter to NAT.





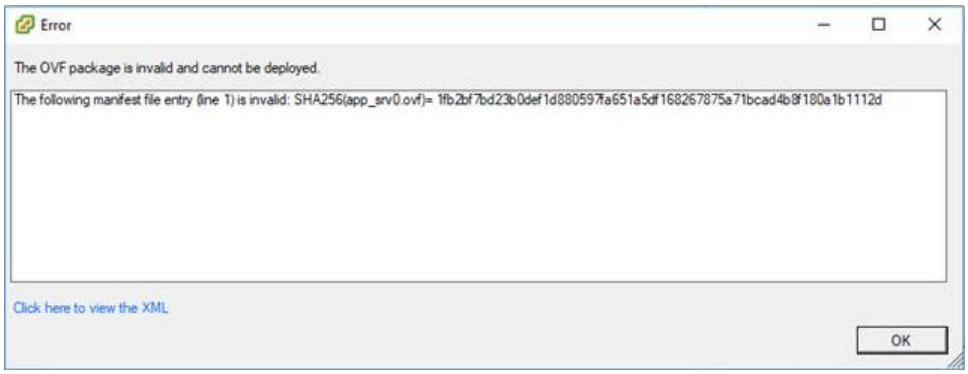
   b. Power on the virtual machine. It will return an IP address like the following.



c. Type the IP address into a supported browser and begin the initial configuration.

d. Configure a Static IP address using instructions found in Network configuration (optional).

6.4 Plantweb Insight: OVF file error



Possible cause: Plantweb Insight virtual machine is installed in VMware vSphere client

Recommended actions

Install the Plantweb Insight virtual machine in the VMware vSphere® Web Client or ESXi Embedded Host Client.

6.5 Plantweb Insight: Web interface cannot be accesed

Recommended actions

1. Ping Plantweb Insight IP address to check for connection (ping is open).
2. Ensure client and Plantweb Insight are connected to the same subnet.
3. Ensure connection is through https://.
4. This could relate to a DHCP server related issue - Consult Rosemount Customer Central.

6.6 Plantweb Insight: Web interface login continues to spin after inputting email and password

Recommended actions

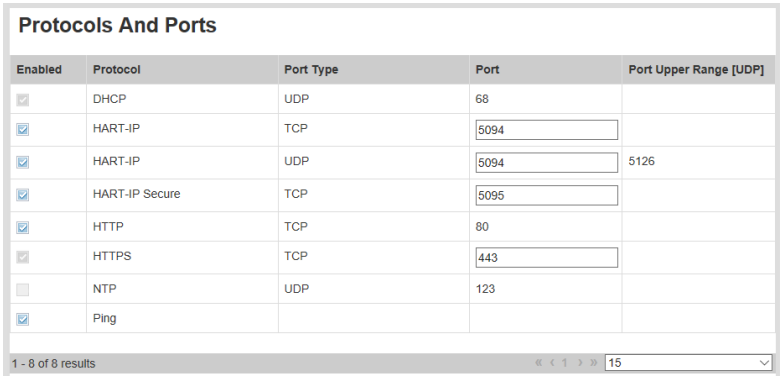
External connections that are port forwarded to the Plantweb Insight platform will likely cause issues - if this is necessary, consult Rosemount Customer Central.

6.7 Plantweb Insight: Cannot connect to *Wireless*HART Gateway

Recommended actions

After navigating to **System Settings > Data Source Config > Gateway Connections**, theGateway IP Address, Port (5094), and description were inputted. The Inactive box is stillchecked.

1. Ensure *Wireless*HART® Gateway is upgraded to the most recent firmware version.
2. Ensure HART-IP UDP and HART-IP TCP are both enabled in the Gateway.
   a. In the Gateway, navigate to **System Setting → Protocols → Protocols and Ports**



3. Ensure Plantweb Insight has access to the *Wireless*HART Gateway.
   a. The Plantweb Insight machine needs to be able to see and communicate with the Gateway.
   b. Both must be on the same subnet.
   c. HART-IP traffic must be allowed through the communication channel.

6.8 Plantweb Insight: Click on application logo and nothings happens

After installing applications and navigating to the homepage the user selects an application. Nothing occurs when the user clicks on the application.

Possible cause: Application installed is not compatible with the Plantweb Insight version

Recommended actions

Check the compatibility matrix below. If a different application and/or platform is required, contact Rosemount Customer Central.

		v1.0.022*	v1.1.016*	v1.2.049	v.1.3.002	v1.4.016	v1.5.022
Steam Trap	v1.0223			✓	✓		
	v1.0409					✓	
	v1.0507						✓
Pump	v1.0013			✓	✓		
	v1.0108					✓	
	v1.0207						✓
Heat Exchanger	v1.0013			✓	✓		
	v1.0108					✓	
	v1.0207						✓
Wireless Pressure Gauge	v1.0013			✓			
	v1.0307				✓		
	v1.0317					✓	
	v1.0402						✓
Air Cooled Heat Exchanger	v1.0110					✓	
	v1.0206						✓
Pressure Relief Device	v1.0020						✓
Network Management	v1.0007						✓

* the Steam Trap application was packaged with v1.0 and v1.1 versions

6.9 Steam trap application: Asset status displays "NoData/Error" after configuration

Possible cause: The steam trap algorithm takes around 90 minutes to calculate a status once it is configured

Recommended actions

1. Wait for 90 minutes until status populates.
2. To ensure this is the error, you may check the Device Health field and make sure it has a “Good” status.

6.10 Steam trap application: Asset status display "No Config"

Possible cause: Failure configuration of the required inputs

Recommended actions

More information on a “No Config” error can be viewed on the “Device Health” field of the Asset Details.

1. Configure these required inputs for the Steam Strap Application:
   - Pressure inlet
   - Pressure outlet
   - Line size
   - Orifice size
   - Trap type
2. Ensure the Rosemount Wireless Acoustic 708 Transmitter update rate is between one minute and five minutes.

6.11 Steam trap application: Asset status in question

Use the following table to troubleshoot asset status questions. If these do not resolve the issue, contact Rosemount Customer Central.

Plantweb insight asset status	Confirmed steam trap status	Comments
Blowthrough	Good	• Check the outlet pressure user input. Keep in mind this value is pertaining to the condensate return line. If the trap is venting to atmosphere, the pressure outlet should be 0. Only if there is backpressure in the condensate line should this value be greater than 0. • There is a possibility the steam trap is being overused and registering a blowthrough status due to excessive operation. This could indicate the trap is undersize for its application. Ensure this is not the case before adjusting settings. • The Rosemount 708 transmitter is indicating a high acoustic count situation. If this is due to background noise and not the steam trap, there are two steps to alleviate: — Change the steam trap configuration to “medium” or “high” noise filter level to account for background noise. — Enable the “noise suppression” function in the Rosemount 708.
Inactive		• The Rosemount 708 transmitter is reading a very low skin temperature of the steam pipe. If this is incorrect, ensure the Rosemount 708 foot has flush contact to the steam pipe.
Good	Blowthrough	• Ensure all configuration inputs are current (inlet pressure, outlet pressure, etc.). • The Rosemount 708 transmitter is reading low acoustic counts. If this is incorrect, ensure the Rosemount 708 foot has flush contact to the steam pipe and ensure the Rosemount 708 is installed according to best practices (six inches from the inlet of the steam trap).
Plugged/flooded	Good	• Ensure all configuration inputs are correct (inlet pressure, outlet pressure, etc.). • The Rosemount 708 transmitter is reading relatively low skin temperature of the steam pipe. If this is incorrect, ensure the Rosemount 708 foot has flush contact to the steam pipe.

6.12 Pressure Relief Device Application: Numerous “No_Data/Error” events

No_Data/Error events occur when data from the Rosemount 708 is not received in Plantweb Insight in a reasonable time interval. It is designed to indicate when there is a loss of visibility into the operation of a pressure relief device.

The Plantweb Insight platform does provide leeway for missed updates, however, if the Rosemount 708 update rate is close to the minimum event duration of the PRD (ex: four second update rate for the Rosemount 708 and four second minimum event duration) there is an increased possibility of No_Data/Error events. To reduce the frequency of these events, lengthen the minimum event duration or shorten the Rosemount 708 update rate (keep network best practices in mind).

Note

Rule of thumb

Minimum event duration should be four times the Rosemount 708 update rate.

A Steam Trap Application configuration and information

A.1 Overview

This document provides information on set up and configuration of the Steam Trap Application within Plantweb™ Insight.

Prior to configuring your Steam Trap Application, be sure to complete all steps in the Plantweb Insight Quick Start Guide. Some steps in the guide will be reiterated in this document in more detail.

A.2 Global settings

Global settings should be set before any asset configuration is completed. These settings apply to all assets within a specific application but do not change any settings within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

Table A-1: Units of Measurement

Field	Input type	Description/use
Currency	Drop-down selection	Used for determining the currency unit of your energy costs
Steam cost	Number entry	Used for calculations
Steam units	Drop-down selection	Used for steam cost units
Pressure units	Drop-down selection	Used for inlet and outlet pressure entries
Boiler fuel type	Drop-down selection	Used for calculations
Linear measurement units	Drop-down selection	Used for orifice size and pipe size entries
Boiler efficiency	Number entry (0–1)	Used for calculations

Table A-2: Key Performance Objectives

Field	Input type	Description/use
Energy loss goal	Number entry	Used on dashboard for energy costs gauge goal
Carbon emissions goal	Number entry	Used on dashboard for carbon emissions gauge goal

A.3 Adding assets

A.3.1 Fields of note

Pressure inlet

The inlet pressure can be tracked using a manual input, HART-IP™ variable, or OPC-UA® variable. To configure HART-IP and OPC-UA variables, follow the instructions from Adding assets.

Orifice size

If orifice size information is not available, the table below can be used as a guide.

Table A-3: Orifice Specifications

		Pressure (PSIG)										
		0	**5**	**10**	**20**	**25**	**50**	**75**	**100**	**125**	**150**	**200**	**250**
Line size (in.)	**0**	0.000			0.000								
	¼				0.125	0.125	0.125	0.094	0.094	0.094	0.094	0.094	0.094
	3/8				0.188	0.188	0.125	0.125	0.125				
	½				0.250	0.250	0.188	0.156	0.156	0.125	0.125		
	¾				0.375	0.313	0.250	0.219	0.188	0.156	0.125	0.125	0.125
	1				0.500	0.438	0.344	0.313	0.281	0.250	0.219	0.188	0.188
	1½					0.500	0.469	0.438	0.375	0.375	0.344	0.313	0.281
	1¾						0.500	0.469	0.438	0.438	0.375	0.344	0.344
	2							0.500	0.500	0.500	0.469	0.438	0.375

		Pressure (BARG)										
		0	**0.3**	**0.7**	**1**	**2**	**3.5**	**5**	**7**	**8.5**	**11**	**15**	**20**
Line size (mm)	**0**	0			0								
	5				3	3	3	2.5	2.5	2.5	2	2	2
	10				5	5	4	3	3	2.5	2.5	2	2
	15				7	7	5	4	3.5	3	3	3	2.5
	20				10	9	7	6	5.5	5	4.5	4	3
	25				13	11	9	8	7.5	7	6	5.5	5
	40					12.5	12	11	10.5	10	9	7.5	7
	45					13	13	12	11.5	11	10	9.5	9
	50					13	13	13	13	13	11	10	9.5

Noise filter level

In noisy environments it may become necessary to filter out the surrounding noise so sensitivity to leaking steam noise is restored. This can be accomplished by using the Noise Filter Level advanced setting.

Temp deadband

Use *Temperature Deadband* settings to slow or contain state change “flipping”. Flipping may occur when a trap is operating under “swinging” temperature conditions, including heavy loads and rapidly modulating steam supply.

Temp rate alarm

Some critical steam systems require rapid indication of condensate accumulation. The thermal mass of the trap and piping system introduce a significant thermal lag that can be compensated through calculation. When *Temp Rate Alarm* is enabled, transition occurs quickly.

A.4 Calculated fields

The Rosemount 708 Acoustic Transmitters update period must be between one and five minutes due to polling and filtering considerations. The steam trap application will take at least 90 minutes to complete its filtering and calculation cycle. During this time period, the steam trap status will indicate “NO DATA/ERROR”.

A.4.1 Trap status

Trap state calculations are derived from ultrasonic amplitude (acoustic) and temperature readings from the Rosemount 708 Acoustic Transmitters as well as static configuration information. The following states are calculated.

Table A-4: State Descriptions

Value	Name	Description	Action
0	GOOD	Trap operating normally	None
1	INACTIVE	Trap is near room temperature	None
2	UNUSED	N/A	N/A
3	BLOW-THROUGH	Trap is within operational temperature limits and is continuously allowing steam to escape into the condensate return	Investigate trap
4	NO DATA/ ERROR	The Rosemount 708 is not publishing data or is publishing a fault condition	Investigate Rosemount 708
5	NO CONFIG	Critical user configuration information is missing	Configure asset
6	OUT OF SERVICE	The trap is out of service (user writable)	None
7(1)	PLUGGED	The trap is stuck in the closed position or there is a blockage in the trap inlet or outlet	Investigate trap

Table A-4: State Descriptions *(continued)*

Value	Name	Description	Action
8(1)	FLOODED	The trap temperature is below expected operation limits but acoustic energy is present (trap is operating)	Investigate trap sizing and/or load conditions

(1) To ensure safety, check trap temperature before performing maintenance on a cold trap.

A.4.2 Lost energy cost

When a steam trap is in a blow through state, unnecessary energy is used to produce excess steam. There are different ways the lost energy costs can be viewed. One is a accumulation of cost over the selected time period (8 hours, 24 hours, 1 week, 1 month, 1 year). Costs can also be viewed as an annual projection of the current state of the trap.

A.4.3 Emissions lost

When a steam trap is in a blow-through state, unnecessary emissions are expended to produce excess steam. There are different ways the emissions loss can be viewed. One is a accumulation of loss over the selected time period (8 hours, 24 hours, 1 week, 1 month, 1 year). Losses can also be viewed as an annual projection of the current state of the trap.

A.4.4 Device status

Table A-5: Device Status

Device health	Description	Action
GOOD	Device operating normally	None
POWER_MODULE_LOW	Power module has low battery	Prepare to replace power module
POWER_MODULE_CRITICAL	Power module has a critically low battery	Replace power module
DEVICE_MALFUNCTION	Device has a malfunction	Investigate device
NO_DATA	No polling data was found	Investigate device
ASSET_OUT_OF_SERVICE	The asset is set to out of service (user writable)	None
DEVICE_NOT_FOUND	The asset's device can not be found	Investigate device
DEVICE_OUT_OF_SERVICE	The asset's device is set to out of service	None
GATEWAY_NOT_FOUND	The Gateway associated with the asset's device can not be found	Investigate Gateway
GATEWAY_OUT_OF_SERVICE	The Gateway associated with the asset's device is set to out of service	None
NO_APP_TYPE	The steam trap type is not configured	Configure the steam trap type

Table A-5: Device Status *(continued)*

Device health	Description	Action
NO_O_SIZE	The steam trap orifice size is not configured	Configure the steam trap orifice size
NO_L_SIZE	The steam trap line size is not configured	Configure the steam trap line size
NO_P_IN	The steam trap inlet pressure is not configured	Configure the steam trap inlet pressure
NO_P_OUT	The steam trap outlet pressure is not configured	Configure the steam trap outlet pressure
UPDATE_RATE<60s	The Rosemount 708 update rate is less than 60 seconds	Configure the Rosemount 708 update rate to the recommended 5 minutes
DATA_TOO_OLD	Polling data period is longer than anticipated	Investigate device

A.5 Modbus® TCP mapping

Procedure

1. There are three Modbus TCP outputs and one Modbus TCP input that are pre-defined in the steam trap app for every asset.

Input	Out of service
Output	Steam trap status (value described in Table A-4)
Output	Lost energy cost
Output	Emissions lost

2. Modbus TCP registers and tags are pre-populated in Plantweb Insight and cannot be changed.
3. Registers and codes can be found in each app by going to the app *Settings* (Global Settings) and then selecting **Download Modbus Mapping**.
4. A csv file will open with the listed registers and tags.

B Pump Application configuration and information

B.1 Overview

This document provides information on set up and configuration of the pump application within Plantweb™ Insight.

Prior to configuring your pump application, be sure to complete all steps in the Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

B.2 Global settings

Global settings should be set before any configuration is completed. These settings apply to all assets within a specific application but do not change any setting within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

B.2.1 Overall health index goal

Overall Health Index Goal is a number entry from 0–100 percent (100 percent = completely healthy). It is used on the dashboard for the overall health index goal indicator.

B.2.2 Alert weights

Select the **Alert Weights** button on the *Settings* page.

Alert weights correspond to the severity of an alert (0 least severe, 100 most severe). Defaults values are preconfigured for the application and can be changed at any time. The most severe alert weight will be used for the health index indication for a given pump.

Alert Weight	Severity
0–15	Good
16–50	Warning
50+	Critical

B.3 Configuring assets

To finish configuring assets, navigate to the specific asset *Details* page by selecting the asset from the *Asset Summary* page.

B.3.1 Capture baseline

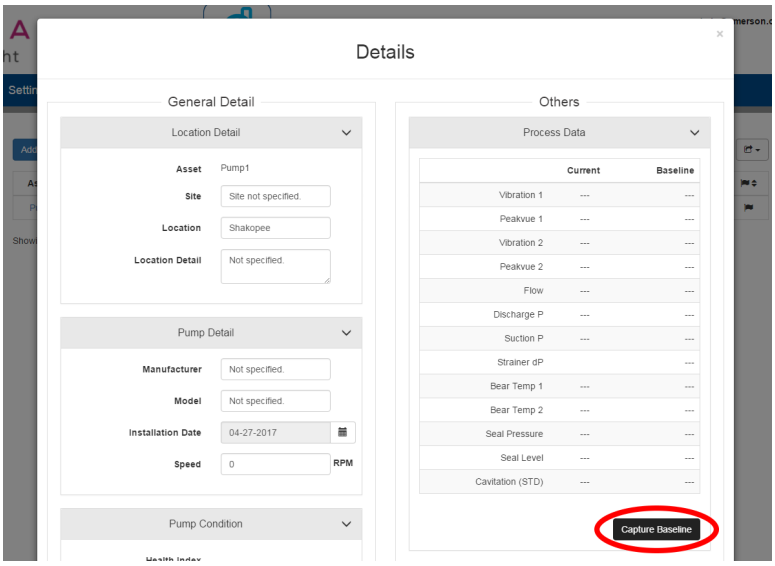
The pump application compares the current state of a pump against a baseline. The baseline should be captured after all pertinent measurement points are configured and the pump is in an ideal/typical operating state.

Once these criteria are met, the admin should capture a baseline using the following steps:

Procedure

1. Select the **Capture Baseline button** on the *Details* page. See Figure B-1.

Figure B-1: Capture Baseline

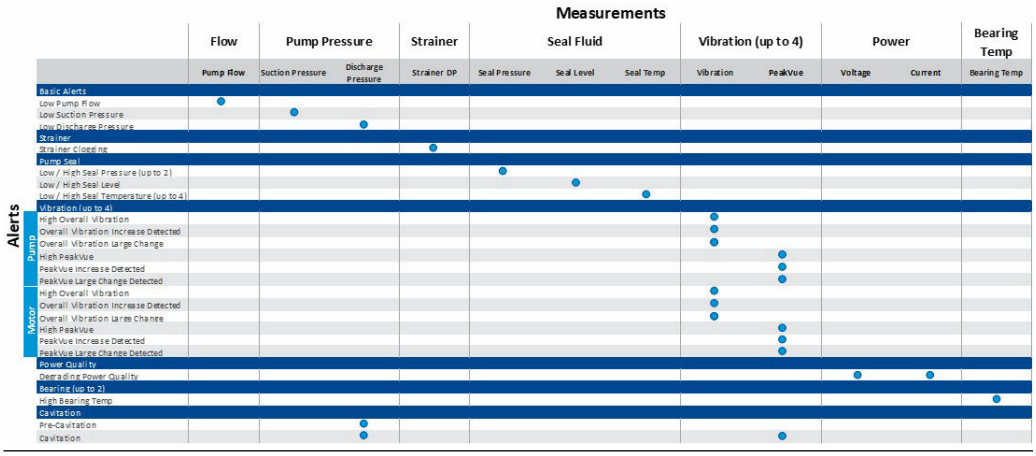


2. Ensure this is the indented baseline pump condition and select **Yes**.

B.3.2 Editing alerts

After the baseline is captured, the pump application will automatically set alert thresholds and limits for measurement points and calculations. Alerts will only be enabled when the applicable measurement points are available. Use the below fault matrix to identify which measurement points are required for which alerts. Alerts can be disabled and thresholds can be manually configured.

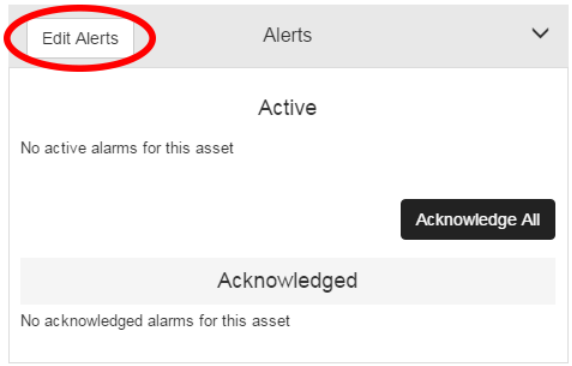
Figure B-2: Pump Fault Matrix



Procedure

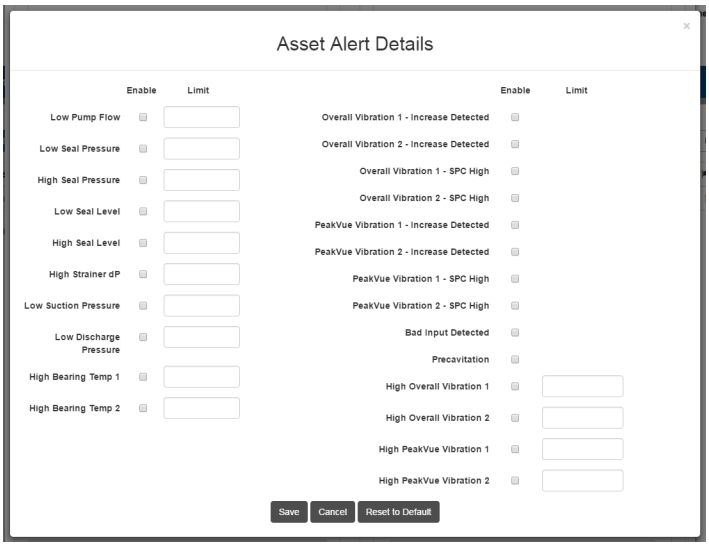
1. Select the **Edit Alerts** button on the *Details* page, as shown in the figure below.

Figure B-3: Edit Alerts



2. Use the **Enable** check boxes to enable/disable alerts.
3. Configure alert limits by manually filling in boxes. See figure below.

Figure B-4: Asset Alert Details



Note
Some alerts may have complex calculations that do not allow configuration.

Note
Alerts can be reset to defaults at any time using the **Reset to Default** button.

B.4 Calculated fields

B.4.1 Measurement point thresholds

Based on the baseline capture, the pump application will automatically configure thresholds for measurement points (Example: low pump flow, high DP across the strainer, etc.). These thresholds are meant to alert the user to abnormal conditions pertaining to the pump that could affect the overall health and performance.

B.4.2 Vibration and PeakVue increase

The “increase detected” and “SPC” (statistical performance calculation) alerts for both vibration and PeakVue are used to identify statistically relevant changes in the vibration measurements. These calculations use statistical analysis to detect an increase in vibration readings over a period of time.

B.4.3 Cavitation detection

Pump cavitation is detected from a significant increase in the discharge pressure (standard deviation) and an increase in the PeakVue parameter of the pump. If the pump vibration is not available, the standard deviation of the discharge pressure can be used to indicate “precavitation” with less certainty.

B.4.4 Pump health index

The Pump Health Index is a 0–00 percent variable determined by the severity of pump alerts. The pump health is 100 percent if there are not active alerts. Otherwise, the pump health is calculated based on the following equation (100 percent – highest alert weight). Therefore, pump status and health index are correlated to the alert weights. See Table B-1 and Table B-2.

Table B-1: Pump Health Index

Health index	Pump status
86–100%	Good
51–85%	Warning
≤50%	Critical

B.4.5 Pump status

Table B-2: Pump Status

Value	Pump state	Description
0	GOOD	Pump health > 85%
4	NO DATA/ERROR	There is not enough data for the pump state to calculate
5	NO CONFIG	Baseline has not been captured for the pump
6	OUT OF SERVICE	Pump is out of service (user writable)
7	WARNING	Pump health is between 50% and 85%
8	CRITICAL	Pump health is < 50%

B.5 Modbus TCP mapping

There are three Modbus® Transmission Control Protocol (TCP) outputs and one Modbus TCP input that are predefined in the pump app for every asset. See table below.

Table B-3: Modbus TCP Definitions

Modbus TCP	Definition
Input	Out of service
Output	Pump state (value described in Table B-2)
Output	Pump alert
Output	Pump health

Note
Modbus TCP registers and tags are automatically populated in Plantweb Insight and cannot be changed.

Procedure

1. Registers and codes can be found in each app by going to the app *Settings* (Global Settings) then select **Download Modbus Mapping**.
2. A csv file will open with the listed registers and tags.

C Heat Exchanger Application configuration and information

C.1 Overview

This document provides information on set up and configuration of the Heat Exchanger Application within Plantweb™ Insight.

Prior to configuring your Heat Exchanger Application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

C.2 Global settings

Global settings should be set before any configuration is completed. These settings apply to all assets within a specific application but do not change any setting within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

C.2.1 Energy loss goal

Used in the dashboard for energy costs gauge goal.

C.2.2 Alert weights

Select the **Alert Weights** button on the *Settings* page.

Alert weights correspond to the severity of an alert (0 least severe, 100 most severe). Defaults values are preconfigured for the application and can be changed at any time. The most severe alert weight will be used for the health index indication for a given heat exchanger.

Alert weight	Severity
0–15	Good
16–50	Warning
50+	Critical

C.3 Configuring assets

To finish configuring assets, navigate to the specific asset *Details* page by selecting the asset from the *Asset Summary* page.

C.3.1 Capture baseline

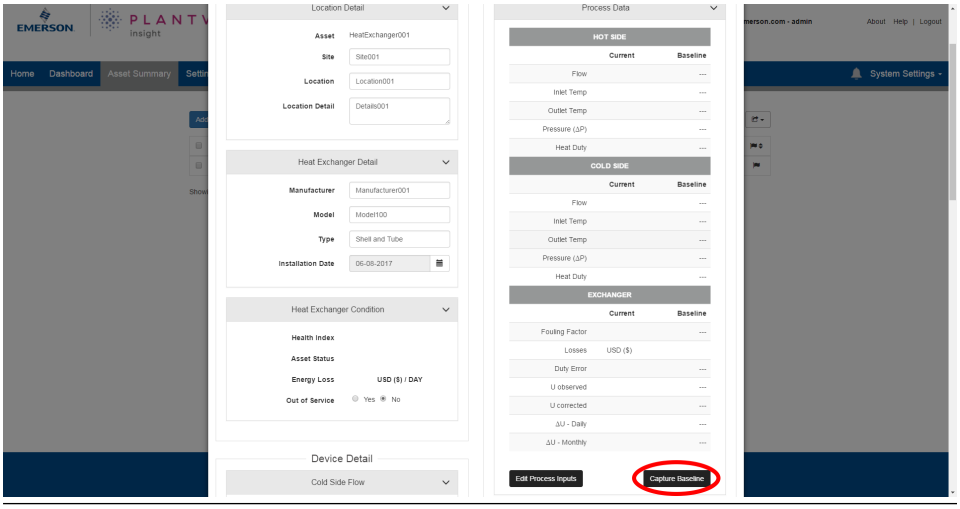
The Heat Exchanger Application compares the current state of a heat exchanger against a baseline. The baseline should be captured after all pertinent measurement points are configured and the heat- exchanger is in an ideal/typical operating state (usually after cleaning).

Once these criteria are met, the admin should capture a baseline using the following steps:

Procedure

1. Select the **Capture Baseline** button on the *Details* page. See Figure C-1.
2. Ensure this is the intended baseline heat exchanger condition and select **Yes**.

Figure C-1: Capture Baseline



C.3.2 Editing alerts

After the baseline is captured, the Heat Exchanger Application will automatically set alert thresholds and limits for measurement points and calculations. Alerts will only be enabled when the applicable measurement points are available. Use the below fault matrix to identify which measurement points are required for which alerts. Alerts can be disabled and thresholds can be manually configured.

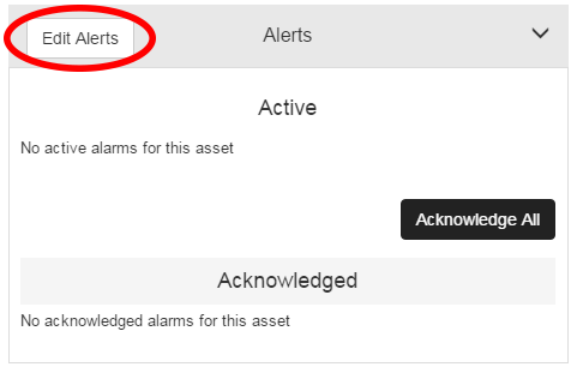
Figure C-2: Heat Exchanger Fault Matrix

Alerts	Measurements							
	Temperature				Flow		Differential Pressure	
	Cold Side Inlet Temp	Cold Side Outlet Temp	Hot Side Inlet Temp	Hot Side Outlet Temp	Cold Side Flow	Hot Side Flow	Cold Side DP	Hot Side DP
Basic Alerts								
High Cold Side Inlet Temp	●							
Low Cold Side Outlet Temp		●						
Low Hot Side Inlet Temp			●					
High Hot Side Inlet Temp			●					
High Hot Side Outlet Temp				●				
Low Cold Side Flow					●			
Low Hot Side Flow						●		
Exchanger Plugging / Leaking								
High Cold Side DP							●	
Hight Hot Side DP								●
Exchanger Fouling								
Exchanger Fouling (Option 1)	●	●	●	●	●			
Exchanger Fouling (Option 2)	●	●	●	●		●		
Heat Duty								
Heat Duty Cold Side	●	●			●			
Heat Duty Hot Side			●	●		●		
Heat Duty Error	●	●	●	●	●	●		
Costs								
Cost of Degradation (Option 1)	●	●	●	●	●			
Cost of Degradation (Option 2)	●	●	●	●		●		
Cleaning								
Cleaning Required (Option 1)	●	●	●	●	●		●	
Cleaning Required (Option 2)	●	●	●	●		●		●
Cleaning Required (Option 3)	●	●	●	●	●			
Cleaning Required (Option 4)	●	●	●	●		●		

Procedure

1. Select the **Edit Alerts** button on the *Details* page, as shown in figure below.

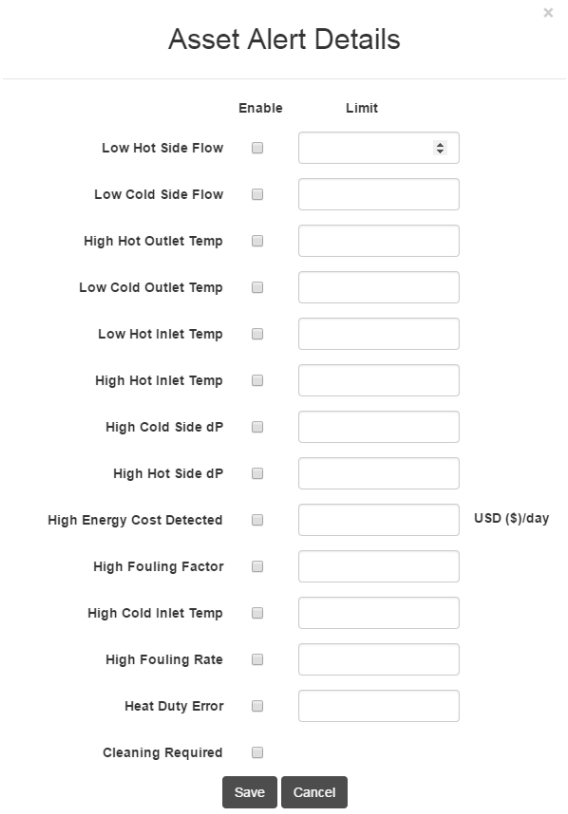
Figure C-3: Edit Alerts



2. Use the **Enable** check boxes to enable/disable alerts
3. Configure alert limits by manually filling in boxes. See Figure C-4.

Note
Some alerts may have complex calculations that do not allow configuration.

Figure C-4: Asset Alert Details



Note
Alerts can be reset to defaults at any time using the **Reset to Default** button.

C.4 Calculated fields

C.4.1 Measurement point thresholds

Based on the baseline capture, the heat exchanger application will automatically configure thresholds for measurement points (Example: low hot side flow, high cold side DP, etc.). These thresholds are meant to alert the user to abnormal conditions pertaining to the heat exchanger that could affect the overall health and performance.

C.4.2 Heat duty

Heat duty is calculated using flow, temperature, heat capacity, vapor fractions, and heat of vaporization. It can be used as an indication of the amount of heat transferred from one fluid to another. Heat duty is calculated for both the hot and cold sides as well as a delta to check degradation.

C.4.3 Heat exchanger coefficient

The heat exchanger coefficient is an indication of current heat transfer coefficient.

C.4.4 Fouling factor

The current heat exchanger coefficient is compared to the baseline value to determine the fouling factor. When the fouling rate is higher than anticipated, an alert will be triggered.

C.4.5 Lost energy cost/cost of degradation

The cost of degradation is an indication of the lost energy costs resulting from a fouled heat exchanger.

C.4.6 Cleaning required indication

When multiple alarms are triggered (lost energy cost, fouling factor, dP) the “exchanger cleaning required” alert will be shown.

C.4.7 Heat exchanger health index

The heat exchanger health index is a 0–100 percent variable determined by the severity of heat exchanger alerts. The heat exchanger health is 100 percent if there are not active alerts. Otherwise, the heat exchanger health is calculated based on the following equation (100 percent– highest alert weight). Therefore, pump status and health index are correlated to the alert weights. See Table C-1 and Table C-2.

Table C-1: Heat Exchanger Health Index

Health index	Heat exchanger status
86–100%	Good
51–85%	Warning
≤ 50%	Critical

C.4.8 Heat exchanger status

Table C-2: Heat Exchanger Status

Value	State	Description
0	GOOD	Heat exchanger health > 85%
4	NO DATA/ERROR	There is not enough data for the heat exchanger state to calculate
5	NO CONFIG	Baseline has not been captured for the heat exchanger or required inputs are not entered
6	OUT OF SERVICE	Heat exchanger is out of service (user writable)
7	WARNING	Heat exchanger health is between 50% and 85%
8	CRITICAL	Heat exchanger health is < 50%

C.5 Modbus TCP mapping

Procedure

1. There are four Modbus® Transmission Control Protocol (TCP) outputs and one Modbus TCP input that are predefined in the heat exchanger app for every asset. See table below.

   Table C-3: Modbus TCP Definitions

Modbus TCP	Definition
Input	Out of service
Output	Heat exchanger state (value described on the table in section 5.8)
Output	Heat exchanger alert
Output	Heat exchanger health
Output	Heat exchanger lost energy costs

2. Modbus TCP registers and tags are automatically populated in Plantweb Insight and cannot be changed. The Modbus TCP port for the Heat Exchanger Application is 505.
3. Registers and codes can be found in each app by going to the app *Settings* (Global Settings) and then selecting **Download Modbus Mapping**.
4. A csv file will open with the listed registers and tags.

D Wireless Pressure Gauge Application configuration and information

D.1 Overview

This document provides information on set up and configuration of the Emerson Wireless Pressure Gauge Application within Plantweb™ Insight.

Prior to configuring your Wireless Pressure Gauge Application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

D.2 Adding devices

Pressure threshold alerts

When pressure drops below or rises above the configured limit, a pressure threshold alert is triggered.

Low pressure warning limit

User configurable low pressure threshold. When the pressure drops below this value, a *Low Pressure Warning* alert will be triggered.

High pressure warning limit

User configurable high pressure threshold. When the pressure rises above this value, a *High Pressure Warning* alert will be triggered.

D.3 Calculated fields

D.3.1 Pressure status

The wireless pressure gauge application within Plantweb Insight calculates the following pressure value (PV) states, shown below.

Table D-1: Calculated Pressure Status

Status	Description
NORMAL	Pressure is within the anticipated range
LOW PRESSURE WARNING	Pressure is below the anticipated range
HIGH PRESSURE WARNING	Pressure is above the anticipated range
OVERPRESSURE NOTIFICATION	Pressure exceeded 105% of the maximum working pressure of the device. Physical device must be reset.

E Air-Cooled Heat Exchanger Application configuration and information

E.1 Overview

This document provides information on set up and configuration of the Air-Cooled Heat Exchanger Application within Plantweb™ Insight.

Prior to configuring your Air-Cooled Heat Exchanger Application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

E.2 Global settings

Global settings should be set before any configuration is completed. These settings apply to all assets within a specific application but do not change any setting within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

E.2.1 Overall health index goal

Overall Health Index Goal is a number entry from 0–100 percent (100 percent = completely healthy). It is used on the dashboard for the overall health index goal indicator.

E.2.2 Alert weights

Select the **Alert Weights** button on the *Settings* page.

Alert weights correspond to the severity of an alert (0 least severe, 100 most severe). Defaults values are preconfigured for the application and can be changed at any time. The most severe alert weight will be used for the health index indication for a given air-cooled heat exchanger.

Alert weight	Severity
0–15	Good
16–50	Warning
50+	Critical

E.3 Configuring assets

To finish configuring assets, navigate to the specific asset *Details* page by selecting the asset from the *Asset Summary* page.

E.3.1 Capture baseline

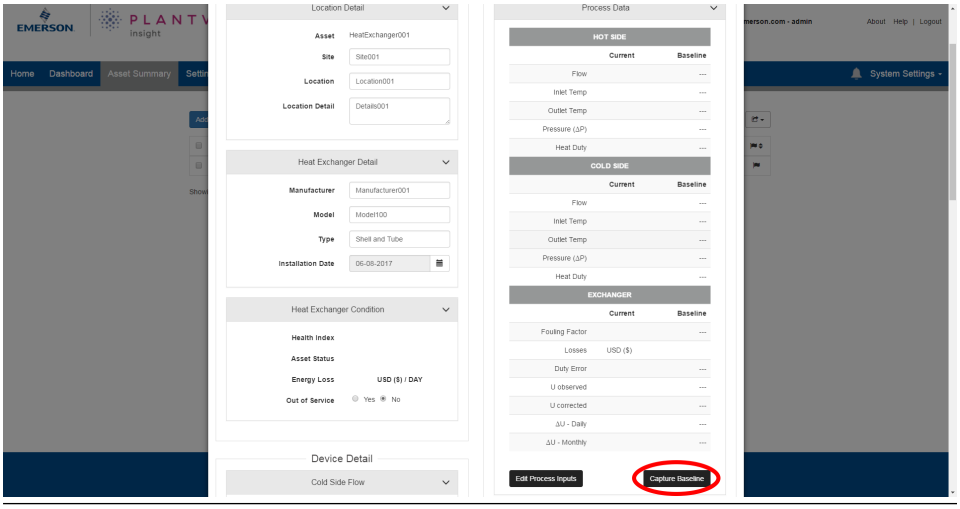
The Air-Cooled Heat Exchanger Application compares the current state of a heat exchanger against a baseline. The baseline should be captured after all pertinent measurement points are configured and the air-cooled heat exchanger is in an ideal/ typical operating state (usually after cleaning).

Once these criteria are met, the admin should capture a baseline using the following steps:

Procedure

1. Select the **Capture Baseline** button on the *Details* page. See Figure E-1.
2. Ensure this is the indented baseline air-cooled heat exchanger and select **Yes**.

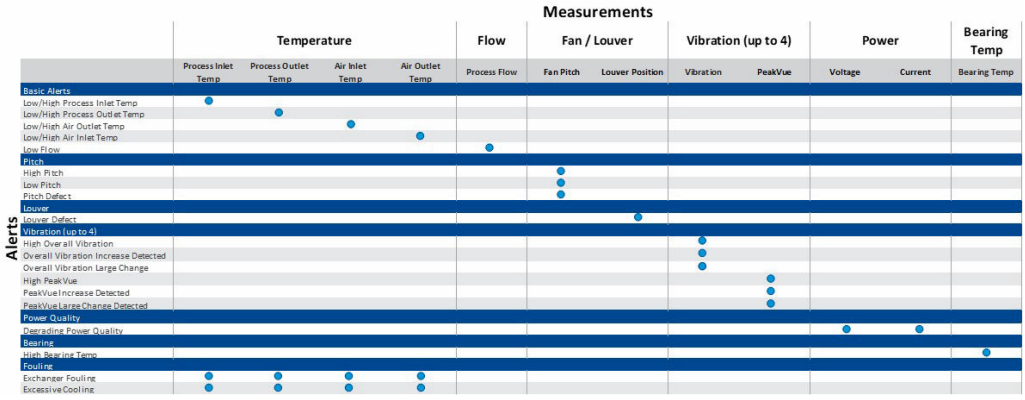
Figure E-1: Capture Baseline



E.3.2 Editing alerts

After the baseline is captured, the Air-Cooled Heat Exchanger Application will automatically set alert thresholds and limits for measurement points and calculations. Alerts will only be enabled when the applicable measurement points are available. Use the below fault matrix to identify which measurement points are required for which alerts. Alerts can be disabled and thresholds can be manually configured.

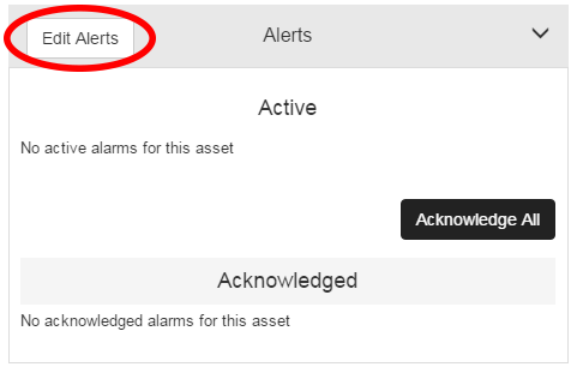
Figure E-2: Air-Cooled Heat Exchanger Fault Matrix



Procedure

1. Select the **Edit Alerts** button on the *Details* page, as shown in Figure E-3.

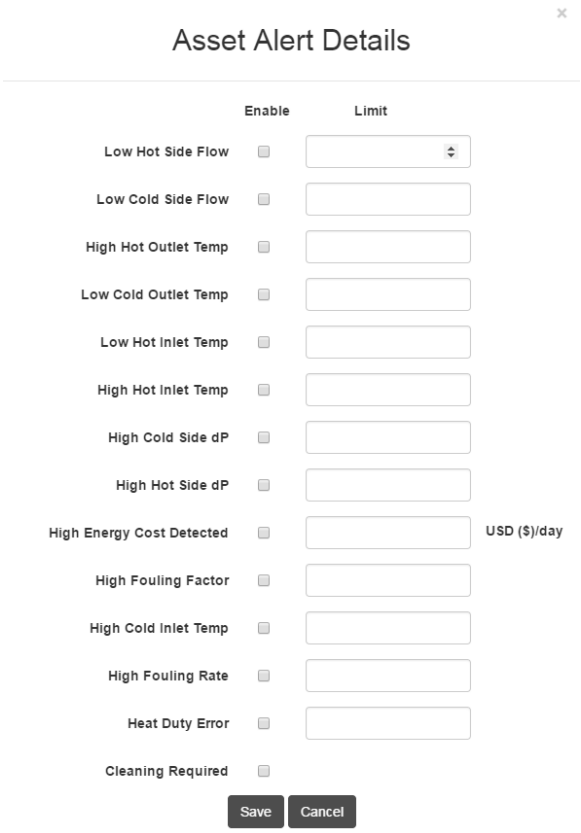
Figure E-3: Edit Alerts



2. Use the **Enable** check boxes to enable/disable alerts.
3. Configure alert limits by manually filling in boxes. See Figure E-4, as an example.

Note
Some alerts may have complex calculations that do not allow configuration.

Figure E-4: Asset Alert Details



Note
Alerts can be reset to defaults at any time using the **Reset to Default** button.

E.4 Calculated fields

E.4.1 Measurement point thresholds

Based on the baseline capture, the Air-Cooled Heat Exchanger Application will automatically configure thresholds for measurement points (e.g. high vibration, low process flow, etc.). These thresholds are meant to alert the user to abnormal conditions pertaining to the air-cooled heat exchanger that could affect the overall health and performance.

E.4.2 Reverse fan suggestions

If the inlet air temp falls below the low temperature inlet threshold (stop), a stop fan suggestion alert will be triggered.

E.4.3 Stop fan operation suggestion

If the inlet air temp falls below the low temperature inlet threshold (stop), a stop fan suggestion alert will be triggered.

E.4.4 Fouling detected

If the differential temperature of the air temperature falls below the minimum differential temperature, a fouling alert will be triggered.

E.4.5 Excessive cooling

If the differential temperature of the process fluid exceeds the maximum differential temperature, an excessive cooling alert will be triggered.

E.4.6 Louver defect

A mismatch between the implied and actual louver position can imply a louver mechanical defect. If both variables are available, a comparison between the two will be performed.

E.4.7 Pitch defect

A mismatch between the implied and actual louver position can imply a pitch actuator mechanical defect. If both variables are available, a comparison between the two will be performed.

E.4.8 Air-cooled heat exchanger health index

The air-cooled heat exchanger health index is a 0–100 percent variable determined by the severity of pump alerts. The air-cooled heat exchanger health is 100 percent if there are not active alerts. Otherwise, the air-cooled heat exchanger health is calculated based on the following equation (100 percent – highest alert weight). Therefore, air-cooled heat exchanger status and health index are correlated to the alert weights.

Table E-1: Air-Cooled Heat Exchanger Health Index

Health index	Air-cooled heat exchanger status
86–100%	Good
51–85%	Warning
≤ 50%	Critical

E.4.9 Air-cooled heat exchanger status

Value	State	Description
0	GOOD	Air-cooled heat exchanger health >85%
4	NO DATA/ERROR	There is not enough data for the air-cooled heat exchanger state to calculate
5	NO CONFIG	Baseline has not been captured for the air-cooled heat exchanger
6	OUT OF SERVICE	Air-cooled heat exchanger is out of service (user writable)
7	WARNING	Air-cooled heat exchanger health is between 50 and 85%
8	CRITICAL	Air-cooled heat exchanger health is <50%

E.5 Modbus TCP mapping

There are four Modbus® Transmission Control Protocol (TCP) outputs and one Modbus TCP input that are predefined in the Air-Cooled Heat Exchanger Application for every asset. See table below.

Table E-2: Modbus TCP Definitions

Modbus TCP	Definition
Input	Out of service
Output	Air-Cooled heat exchanger state (value described in #unique_145/unique_145_Connect_42_table_nqc_qlz_4hb)
Output	Air-Cooled Heat Exchanger alert
Output	Air-Cooled Heat Exchanger health

Note
Modbus TCP registers and tags are automatically populated in Plantweb Insight and cannot be changed.

Procedure

1. Registers and codes can be found in each app by going to the app *Settings* (Global Settings) and then selecting **Download Modbus Mapping**.
2. A csv file will open with the listed registers and tags.

F Pressure Relief Device (PRD) Application configuration and information

F.1 Overview

This document provides information on set up and configuration of the Pressure Relief Device Application within Plantweb™ Insight.

Prior to configuring your Pressure Relief Device Application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in the guide will be reiterated in this document in more detail.

F.2 Global settings

Global settings should be set before any asset configuration is completed. These settings apply to all assets within a specific application but do not change any settings within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

Table F-1: Unit of Measurement

Field	Input type	Description/use
Currency	Drop-down selection	Used for determining the currency unit of production costs
Gas units		Used for calculations
Pressure units		Used for pressure inlet and set pressure entries
Temperature units		Used for gas temperature entry
Linear measurement units		Used for orifice size entry

Table F-2: Key Performance Objectives

Field	Input type	Description/use
Number of releases	Number entry	Used on dashboard for number of releases horseshoe goal
Total release duration goal	dd:hh:mm	Used on dashboard for release duration horseshoe goal
Lost emissions goal	Number entry	Used on dashboard for lost emissions horseshoe goal
Lost product cost goal		Used on dashboard for lost product cost horseshoe goal

F.3 Adding assets

F.3.1 Add an asset

Fields of note

Temperature consideration

If enabled, temperature will be considered when determining whether a PRD is releasing. This can be used when multiple PRDs are in close proximity. This should be activated for situations such as shared headers.

F.4 Baseline

F.4.1 Capturing baseline

Once assets are configured within the Pressure Relief Device application the user needs to complete a baseline. The baseline is used to characterize background noise from the PRD surroundings. To capture a baseline, first ensure the PRD does not release for the extent of the baseline. This allows the application algorithm to correctly identify and characterize releases. If a release does occur, the baseline can be stopped and restarted or can be deleted later. To capture a baseline, complete the following steps:

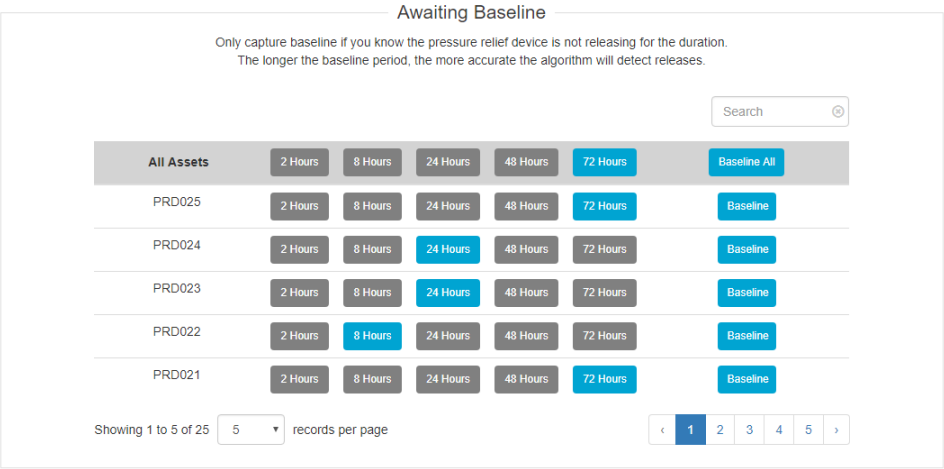
Procedure

1. Navigate to *Asset Summary* tab and select **Baseline** button.
2. Under *Awaiting Baseline* section, select a baseline time frame for all assets or individually for each asset.

   Note
   The longer the baseline, the more accurate the release algorithm. Allowing the baseline to run longer helps characterize background noise to its full extent.

3. Select the **baseline** button for each individual asset, or select **baseline all** to run all baselines.

Figure F-1: Baseline Page



The baseline page shows the user's progress through the baseline process.

F.4.2 Selecting minimum event duration

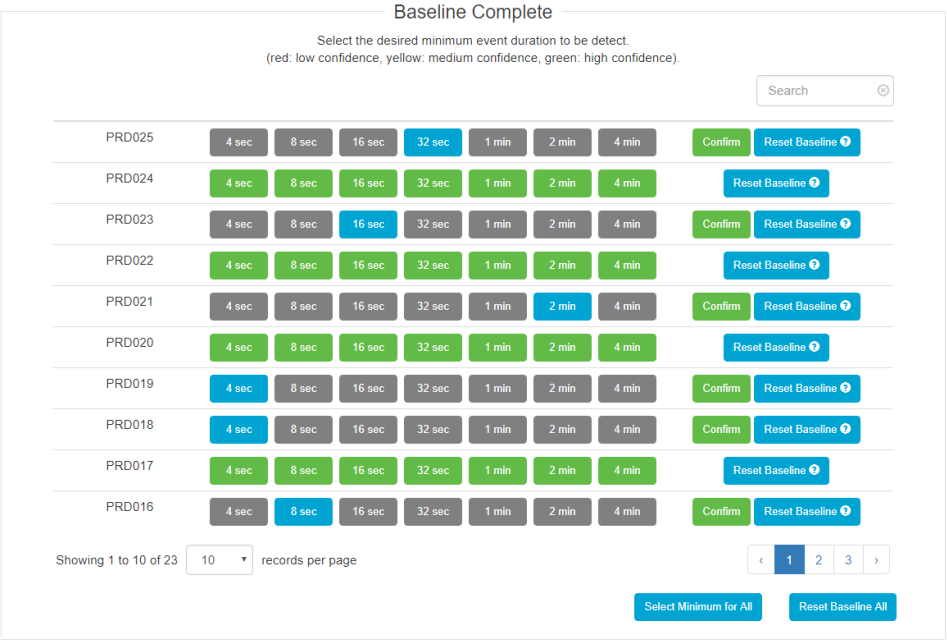
Once baselines are completed, the user must select a minimum event duration. The minimum event duration is the quickest release the PRD application will detect. For example, if the user is only receiving data every eight seconds from the acoustic transmitter, it is impossible to detect to a four-second release. A rule of thumb is to multiply the Rosemount 708 Acoustic Transmitter update rate by four to get the shortest available release length. To select a minimum event duration, complete the following steps:

Procedure

1. Navigate to *Asset Summary* tab and select **Baseline** button.
2. Under *Baseline Complete* section, select the minimum event duration individually for each asset or select the **Minimum for All** button.

Note
Selecting a longer minimum event duration increases the confidence interval of the algorithm by allowing it to analyze more data over a possible release.

Figure F-2: Baseline Complete



F.5 Calculated fields

F.5.1 PRD status

PRD state calculations are derived from ultrasonic amplitude (acoustic) readings from the Rosemount 708 Acoustic Transmitters and the built-in Plantweb Insight algorithm. The following states are calculated.

Table F-3: State Descriptions

Value	Name	Description	Action
0	NORMAL OPERATION	PRD operating normally	None
1	RELEASE	Plantweb Insight has recognized a potential PRD release	Investigate event log and/or PRD
4	NO DATA/ ERROR	The Rosemount 708 is not publishing data or is publishing a fault condition	Investigate Rosemount 708
5	NO CONFIG	Critical user configuration information is missing	Configure asset
6	OUT OF SERVICE	The PRD is set to out of service (user writable)	None
7	BASELINE_ NEEDED	PRD Asset it configured and is waiting for the user to prompt a baseline	Run baseline function (see Trap status)

Table F-3: State Descriptions *(continued)*

Value	Name	Description	Action
8	CAPTURING_BASELINE	Baseline is being captured	None
9	AWAITING_EVENT_DURATION	Baseline is complete and asset is awaiting a minimum event duration to be selected	Select minimum event duration (see Lost energy cost)

F.5.2 Emissions loss

When a PRD is releasing, excess emissions are lost. The emissions loss value represents the total aggregated emissions due to releasing PRDs over the selected time period.

F.5.3 Lost production cost

When a PRD is releasing, production materials may be lost. The lost production costs value represents the total aggregated production loss due to releasing PRDs over the selected time period.

F.5.4 Device status

Device health	Description	Action
GOOD	Device operating normally	None
POWER_MODULE_LOW	Power module has a low battery	Prepare to replace power module
POWER_MODULE_CRITICAL	Power module has a critically low battery	Replace power module
DEVICE_MALFUNCTION	Devide has a malfunction	Investigate device
NO_DATA	No polling data was found	
DEVICE_NOT_FOUND	The asset’s device cannot be found	
DEVICE_OUT_OF_SERVICE	The asset's device is set to out of service	None
GATEWAY_NOT_FOUND	The Gateway associated with the asset’s device cannot be found	Investigate Gateway
GATEWAY_OUT_OF_SERVICE	The Gateway associated with the asset’s device is set to out of service	None

F.6 Modbus TCP mapping

Procedure

1. There are three Modbus® TCP outputs and one Modbus TCP input that are pre-defined in the app for every asset.

Modbus TCP	Definition
Input	Out of service
Output	PRD status (value described in Table F-3)
	Lost energy cost
	Emissions lost

2. Modbus TCP registers and tags are pre-populated in Plantweb Insight and cannot be changed.
3. Registers and codes can be found in each app by going to app *Settings* (Global Settings) then select **Download Modbus Mapping**.

G Cooling Tower Application configuration and information

G.1 Overview

This document provides information on set up and configuration of the Cooling Tower Application within Plantweb™ Insight.

Prior to configuring your Cooling Tower Application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

G.2 Global settings

Global settings should be set before any configuration is completed. These settings apply to all assets within a specific application but do not change any setting within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

G.2.1 Overall Health Index Goal

Overall Health Index Goal is a number entry from 0-100 percent (100% = completely healthy). It is used on the dashboard for the overall health index goal indicator.

G.2.2 Alert weights

Select the **Alert Weights** button on the *Settings* page.

Alert weights correspond to the severity of an alert (0 least severe, 100 most severe). Defaults values are preconfigured for the application and can be changed at any time. The most severe active alert weight will be used for the health index indication for a given cooling tower. See below table.

Alert weight	Severity
0-15	Good
16-50	Warning
50+	Critical

G.3 Adding assets

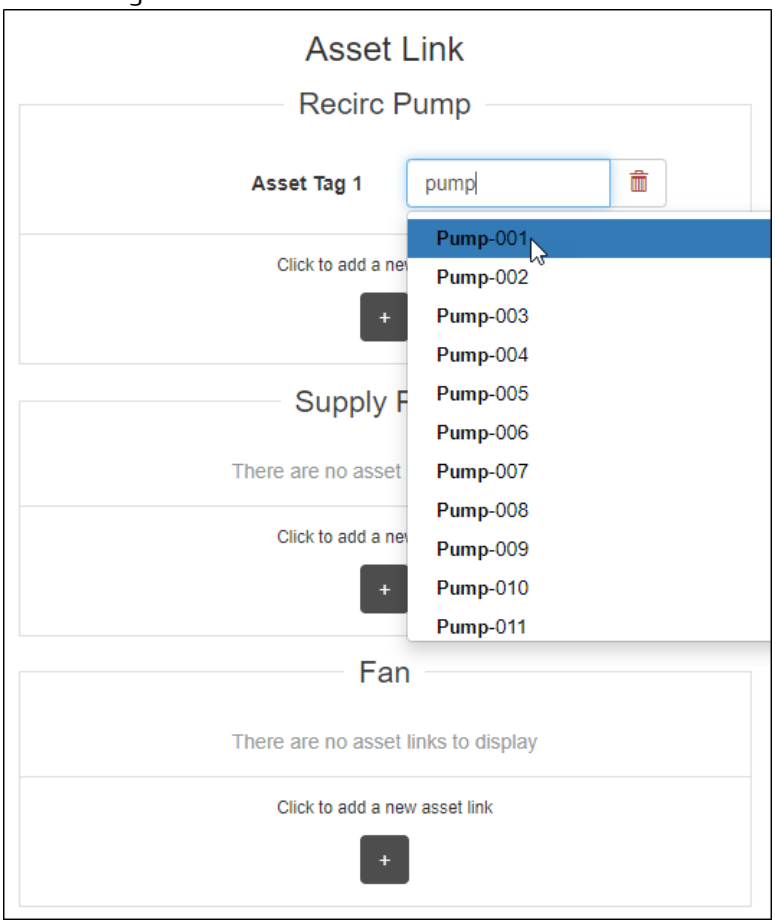
Fields of note

Asset link

The Cooling Tower application links to other Plantweb Insight applications to provide a holistic view into the Cooling Tower health. The Cooling Tower application can link to assets within both the Cooling Tower and ACHE (fan) applications. To accomplish this, use the following instructions.

Procedure

1. Navigate to the *New Asset* page.
2. Under the Asset Link section, select the **"+"** button for the corresponding asset (recirculation Cooling Tower, supply Cooling Tower, or fan).
3. Type in the asset tag and select the asset.



G.4 Configuring assets

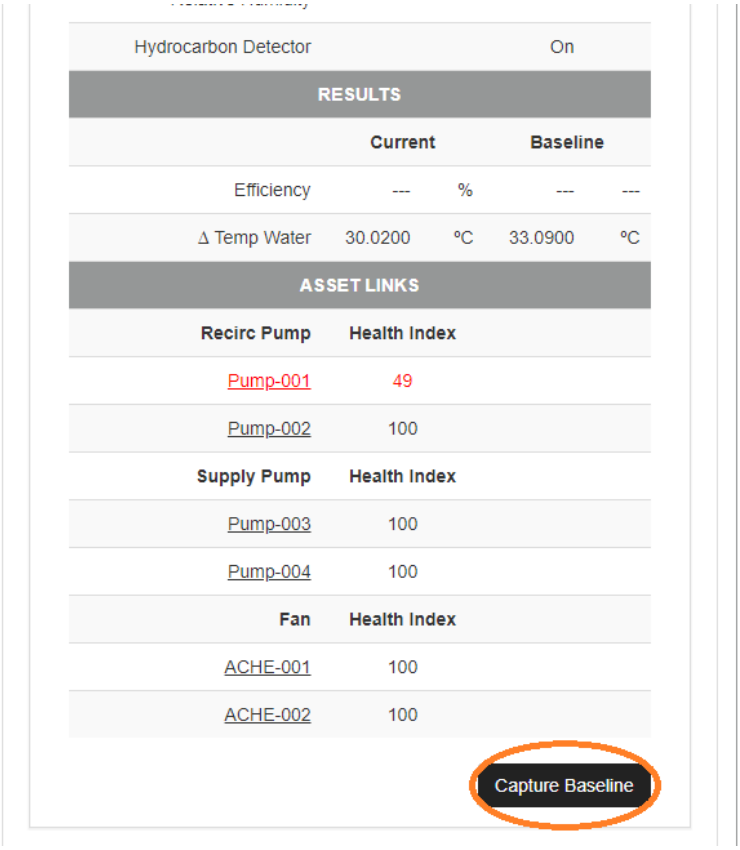
To finish configuring assets, navigate to the specific asset *Details* page by selecting the asset from the *Asset Summary* page.

G.4.1 Capture baseline

The Cooling Tower application compares the current state of a Cooling Tower against a baseline. The baseline should be captured after all pertinent measurement points are configured and the Cooling Tower is in an ideal/typical operating state. Once these criteria are met, the admin should capture a baseline:

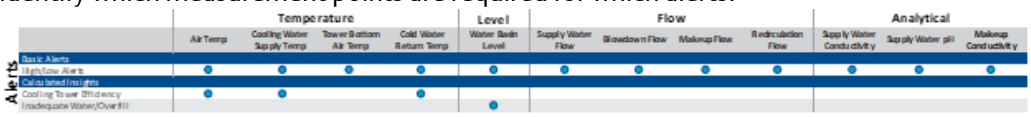
Procedure

1. Select the **Capture Baseline** button on the *Details* page.
2. Ensure this is the intended baseline Cooling Tower condition and select **Yes**.



G.4.2 Editing alerts

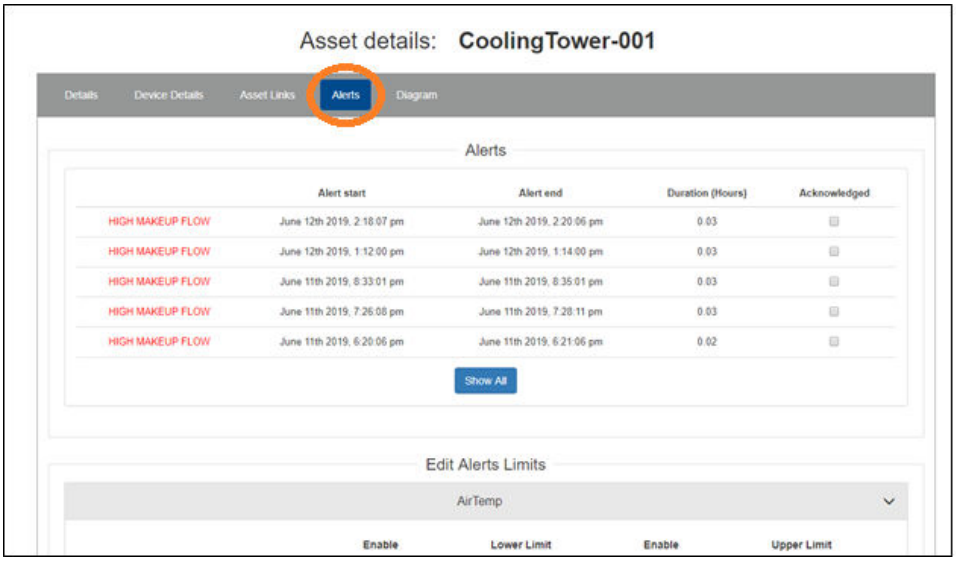
After the baseline is captured, the Cooling Tower application will automatically set alert thresholds and limits for measurement points and calculations. Alerts can only be enabled when the applicable measurement points are available. Use the below fault matrix to identify which measurement points are required for which alerts.



Alerts can be disabled and thresholds can be manually configured.

Procedure

1. Select the **Alerts** button on the *Details* page.



2. Use the **Enable** check boxes to enable/disable alerts.
3. Configure alert limits by manually filling in boxes (some alerts may have complex calculations that do not allow configuration).

Note
Alerts can be reset to defaults at any time using the **Reset to Default** button.

G.5 Calculated fields

G.5.1 Measurement point thresholds

Based on the baseline capture, the Cooling Tower application will automatically configure thresholds for measurement points (ex: low flow, high pH, etc.). These thresholds are meant to alert the user to abnormal conditions pertaining to the cooling tower that could affect the overall health and performance.

G.5.2 Efficiency

Plantweb Insight uses temperature throughout the a water cycle to determine the efficiency of the cooling tower.

G.5.3 Cooling Tower health index

The Cooling Tower health index is a 0-100 percent variable determined by the severity of cooling tower alerts. The Cooling Tower Health is 100 percent if there are not active alerts. Otherwise, the Cooling Tower health is calculated based on the following equation (100 percent – highest alert weight). Therefore, cooling tower status and health index are correlated to the alert weights.

Table G-1: Cooling Tower Health Index

Health index	Cooling Tower status
86–100%	Good
51–85%	Warning
≤ 50%	Critical

G.5.4 Cooling Tower status

Table G-2: Cooling Tower Status

Value	State	Description
0	GOOD	Cooling Tower health > 85%
4	NO DATA/ERROR	There is not enough data for the Cooling Tower state to calculate
5	NO CONFIG	Baseline has not been captured for the Cooling Tower
6	OUT OF SERVICE	Cooling Tower is out of service (user writable)
7	WARNING	Cooling Tower health is between 50% and 85%
8	CRITICAL	Cooling Tower health is less than 50%

G.6 Modbus TCP mapping

Procedure

1. There are four Modbus® Transmission Control Protocol (TCP) outputs and one Modbus TCP input that are predefined in the Cooling Tower Application for every asset. See table below.

Table G-3: Modbus TCP Definitions

Modbus TCP	Definition
Input	Out of service
Output	Cooling tower state (value described on the table in section 5.8)

Table G-3: Modbus TCP Definitions *(continued)*

Modbus TCP	Definition
Output	Cooling tower alert
Output	Cooling tower health
Output	Cooling tower lost energy costs

2. Modbus TCP registers and tags are automatically populated in Plantweb Insight and cannot be changed. The Modbus TCP port for the Cooling Tower Application is 508.
3. Registers and codes can be found in each app by going to the app *Settings* (Global Settings) then select **Download Modbus Mapping**.
4. A csv file will open with the listed registers and tags.

H Network Management Application configuration and information

H.1 Overview

This document provides information on set up and configuration of the Network Management application within Plantweb™ Insight.

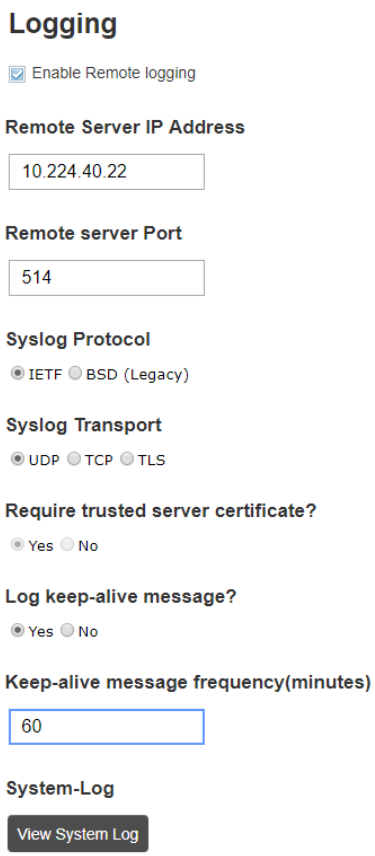
Prior to configuring the application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in the guide will be reiterated in this document in more detail.

H.2 Global settings

Global settings should be in place before any application configuration is completed. These settings apply to all networks within the application but do not change any settings within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

H.2.1 Alert weights

Alert weights correspond to the severity of an alert (informational, warning, critical). Defaults values are preconfigured for the application and can be changed at any time. Alerts from the Network Management application come from the Gateway Syslog server. This Syslog server must be connected to Plantweb Insight. To do so: navigate to the Gateway user interface **System Settings > Logging** page. The Plantweb Insight IP address should be inputted as the Remote Server IP address. Other settings should match below:



H.2.2 Calculated fields

Network status

Network Status is based on a pre-defined network reliability calculation. This is different than the reliability displayed in Gateway web page.

Name	Description	Action
GOOD	Operating normally	None
WARNING	Network reliability is below best practices.	Investigate ***Network Details*** for areas of improvement
CRITICAL	Network reliability is severely below best practices.	

Device status

Device status is based on the reliability of the device.

Name	Description	Action
GOOD	Operating normally	None
PROBLEM	Device reliability is below expected.	Investigate Network Details and diagram for areas of improvement
UNREACHABLE	Device has dropped off the network.	Locate device to troubleshoot. Possible power module replacement

Network load index

Based on the network load of each Gateway. Results are categorized into high, medium, and low load networks.

H.2.3 Gateway best practices (details page)

Total live devices

Each network should contain at least five active devices.

Gateway neighbors

25 percent of active devise should be direct gateway neighbors.

Device neighbors

Every device should have at least three neighbors with 70 percent path stability or higher.

Hops (fast sampling)

Fast sampling devices (eight-second update rate or faster) should have fewer than two hops to the gateway

Hops (regular sampling)

Regular sampling devise (more than eight-second update rate) should have fewer than seven hops to the Gateway.

H.2.4 Network diagram

A network diagram for each network will be available in the Network Management Application. The following navigation tools are available.

Drag and drop

Select and hold a device or gateway to move around the diagram

Device details

Hover over a device to see more information (device name, device type, etc.)

Device neighbors

Double click a device to highlight the device's neighbors. Double click again on the device to display the normal view.

I Power Module Application configuration and information

I.1 Overview

This document provides information on set up and configuration of the Power Module Management application within Plantweb™ Insight.

Prior to configuring the application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in the guide will be reiterated in this document in more detail.

I.2 Global settings

Global settings should be in place before any Power Module configuration is completed. These settings apply to all Power Modules within this application but do not change any settings within the Gateway or devices. Changing any of these settings can be done in the *Settings* tab.

I.2.1 Estimated remaining life

The estimated remaining life configuration is used to set the second dashboard donut.

I.2.2 Estimated total lifespan

The estimated total lifespan configuration is used to set the third dashboard donut.

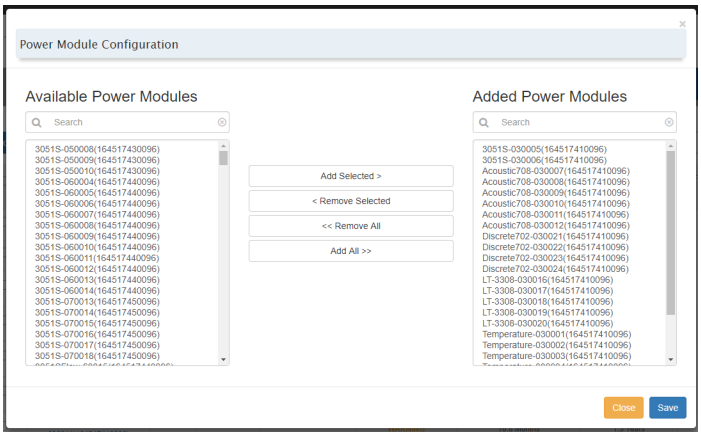
I.3 Adding power modules

I.3.1 Add power modules

Use this method to add power modules with default settings.

Procedure

1. Navigate to *Power Module Summary* tab and select **Add Power Modules** button. The Power Module Configuration will appear.
2. Select **Power Modules** to add then select **Add Selected** button or select **Add All** button.
3. Select **Save** and **OK**.
4. After adding power modules, ensure the installation date is correct. This field is used for calculations and should be set to the date the power module was installed.



Calculated fields

Power module status

Power module status is determined using the supply voltage symptoms.

Name	Description	Action
GOOD	Operating normally	None
LOW	Device is in a low power condition.	Replace power module
CRITICAL	Device is in a critical power condition.	

Estimated remaining life

Based on the conditions of the power module and the installation date, the remaining estimated life of the power module can be determined. This is a high-level estimate and should be treated as such, but can provide an indication for maintenance planning.

Estimate total lifespan

Based on the current configuration of the device (update rate, etc.), a total lifespan can be estimated. This is a high-level estimate designed to notify the users of power modules that will need to be replace frequently.

Note

Whenever new power modules are installed, the user must configure the device as such. To do so, reference the specific device manual. This process can be accomplished using a Field Communicator or device manager (e.g. **Service Tools → Maintenance → Other → Install New Power Module**)

J Inline Corrosion application configuration and information

J.1 Overview

This document provides information on set up and configuration for the Inline Corrosion application within Plantweb™ Insight.

Prior to configuring your inline corrosion application, be sure to complete all steps in the Emerson Plantweb Insight Quick Start Guide. Some steps in this guide will be reiterated in this document in more detail.

J.2 Global settings

The global settings should be in place before any internal corrosion monitoring device configuration is completed. These settings apply to all installed corrosion monitoring devices within the application and do not change the settings within the gateway or devices. Changing any of these settings can be done in the *Settings* tab.

J.2.1 Default thresholds

Each new device created in the application will have defaulted thresholds, that further can be changed for each device according to its process requirements.

In the *Threshold Tab,* the user can setup the threshold values for an alert to be triggered in the application. The thresholds are:

- **Low Battery Level**: An alert is triggered when the battery reaches the pre-defined voltage level, notifying the user that the device or tag needs a battery replacement.
- **Probe Device Lifespan**: An alert is triggered when the probe reaches the pre-defined lifespan, notifying the user that the device or tag needs a probe replacement.
- **Fluid Corrosion Rate Limit**: An alert is triggered when the process corrosivity level reaches the pre-defined limit, notifying the user.
- **No Data**: An alert is triggered when no data is received from the transmitter within the time set in this field.

Table J-1: Defaulted Thresholds

Category	Unit	Min	Max	Defualted thresholds
Low battery level	Volts	5.5	7	6
Probe lifespan	% of half the thickness of the element	0	100	85
Corrosivity rate	mm/year	0.0125	0.25	0.25

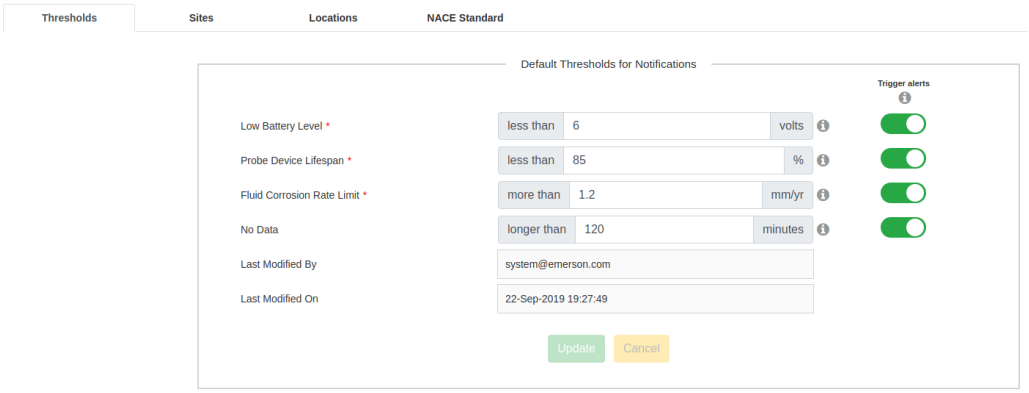
Table J-1: Defaulted Thresholds *(continued)*

Category	Unit	Min	Max	Defualted thresholds
No data interval	Minutes	15	4320	480

The user can also select if the defaulted thresholds shall be used or not, to trigger an alert by clicking in the **Enable** button on the right side of the threshold table.

Click **Update** to save threshold settings.

Figure J-1: Global Settings-Default Thresholds



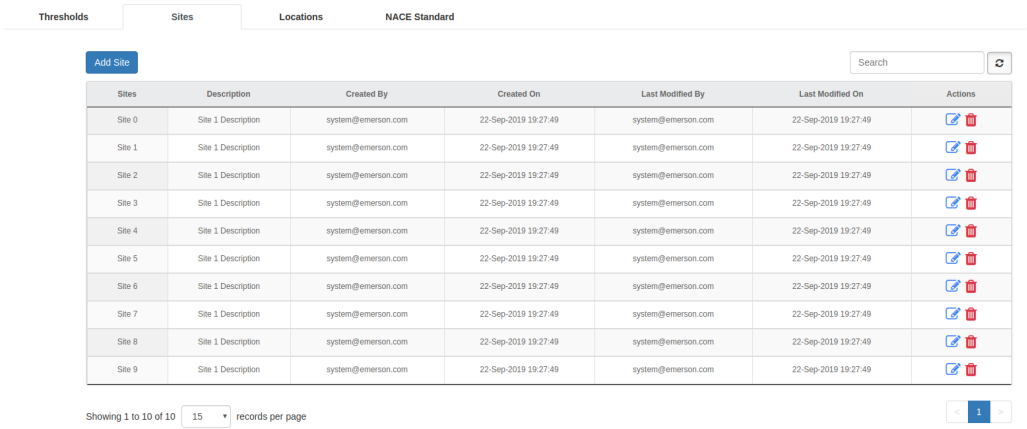
J.2.2 Adding sites

Sites are used in the application for tracking the primary location where the inline corrosion monitoring device is installed. The user can add as many Sites as required.

Suggested Sites can be units, systems or parts of the customer's plant. For example, in a refinery plant, a common site would be "Crude Oil Distillation Unit (CDU)", which has various internal locations that will be further configured in the *Locations Tab* in the Global Settings.

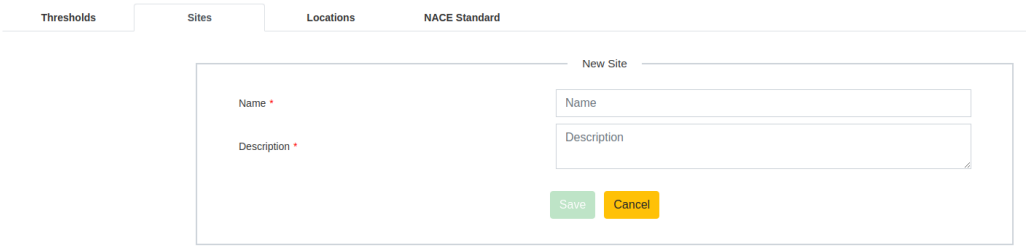
To add a Site, navigate to the *Sites* tab then click on the **Add Site** button.

Figure J-2: Global Settings-Sites Tab



In the Site adding screen, the user shall name the Site and include a short Site description for internal reference. Click **Save** to add a site.

Figure J-3: Global Settings-Site Adding Screen

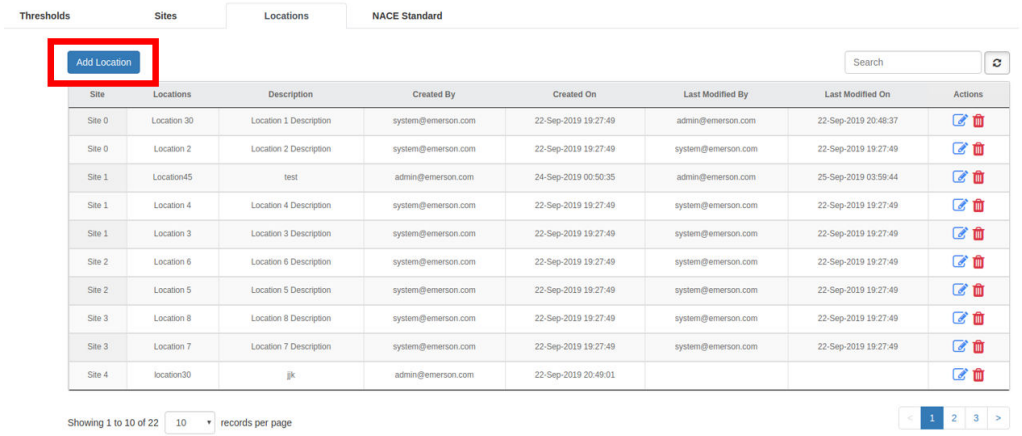


J.2.3 Adding locations

After adding the site(s), the user can add the **Locations** inside of each site to specify with more details where the Inline Corrosion Monitoring Device is located. Following the previous example, in a refinery plant, a common site would be “Crude Oil Distillation Unit (CDU)” and a common Location would be “Outlet Line of the Distillation Tower”. Each site can have as many locations as required.

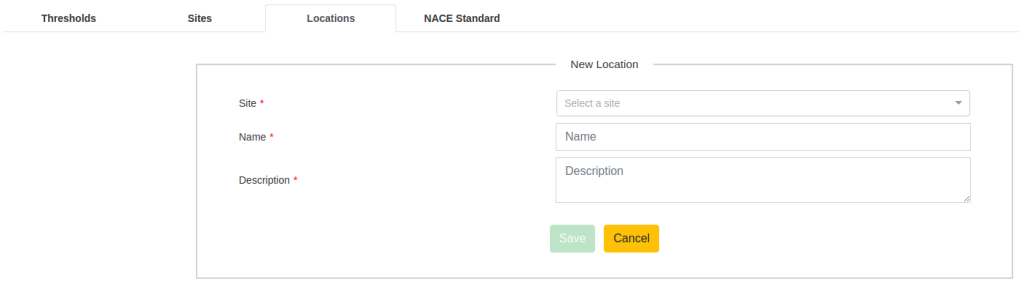
To add a Location, navigate to the *Locations* tab then click on the **Add Location** button.

Figure J-4: Global Settings-Locations Tab



In the location adding screen, the user shall select from a drop-down list in the respective site that this location is part of. After selecting the site, the user shall name the location and include a short location description for internal reference, for example; the line number or P&ID. Click **save** to add Location.

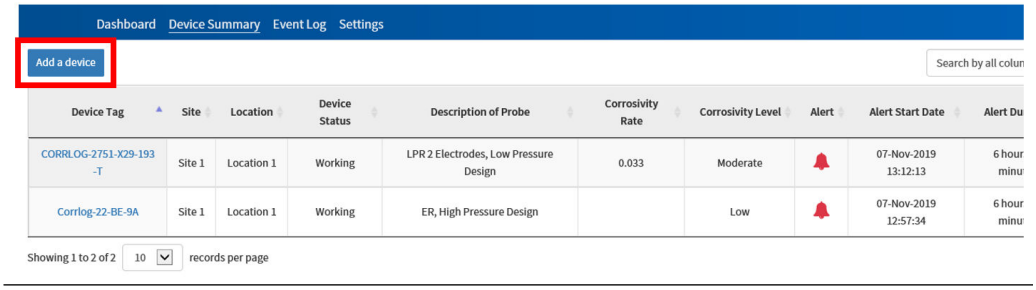
Figure J-5: Global Settings-Location Adding Screen



J.3 Adding devices

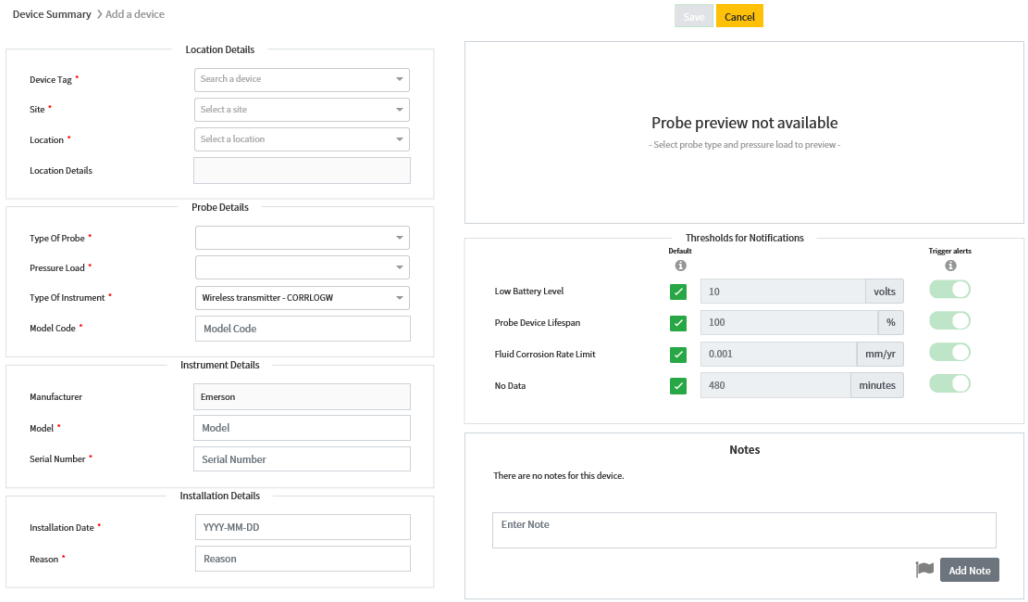
To add a Corrosion Monitoring Device in the application, navigate to the *Device Summary* tab and click the **Add a Device** button.

Figure J-6: Device Summary Screen



When clicking the button, an *Add a Device Screen* will appear. For each corrosion monitoring device, the user shall input the required information regarding location details, probe details, instrument details, installation details, and thresholds for the Device being added. The user is required to select from a drop-down menu or manually fill in all required fields. Click **Save** to add the Device.

Figure J-7: Add a Device Screen



J.3.1 Location details

In the location details table, the user shall setup the identification information about the corrosion monitoring device. The location details include:

- **Device Tag**: The Device Tag refer to the unique identification number configured in the device *Wireless*HART settings during the instrument commissioning. It is the *Long Tag* of each instrument that is communicating with the gateway. The user shall select the correct Device Tag identification number from a drop down menu, respective of the device being added in the application. The user can manually change the Tag name if required directly in the gateway or using a handheld or AMS.
- **Site**: Select the applicable site from the drop-down list containing all the Sites previously added in the Global Settings (see Adding sites).
- **Location**: The Location inside of the Site where the tag is installed. Select the Location from the drop-down menu containing all the Locations of the selected Site, previously added in the Global Settings (see Adding locations).
- **Location Details**: This field will show the Location description previously added when adding the Location. (see Adding locations).

J.3.2 Probe details

In the Probe Details table, the user shall setup the details of the corrosion probe being used for the Device or Tag that is being added. The probe details include:

- **Type of Probe**: Select from a pre-defined drop-down menu, the technology type of the probe, that can be: *Electrical Resistance (ER)* or *Linear Polarization Resistance(LPR) with 2 or 3 electrodes*.
- **Pressure Load**: Select the probe's pressure design probe from the drop-down menu; *Low Pressure Design (also known as Retractable Type)* or *High Pressure Design (also known as Retrievable Type)*.
- **Type of Instrument**: Select the type of instrument being used from the drop-down menu for the tag that is being added.
- **Element Thickness**: Input the sensing Element Thickness of the probe. Only applicable if ER probes type is selected.
- **Model Code**: Recommended to add model code for future reference.

When type of Probe and Pressure Load are selected, a reference picture will be shown in the upper-right side of the Add a Device Screen.

J.3.3 Instrument details

In the Instrument Details table, the user shall set up the details of the instrument being used for the tag that is being added. The instrument details include:

- **Manufacturer**: Emerson. This field cannot be edited.
- **Model**: Input the transmitter model code
- **Serial Number**: Input the transmitter serial number

J.3.4 Installation details

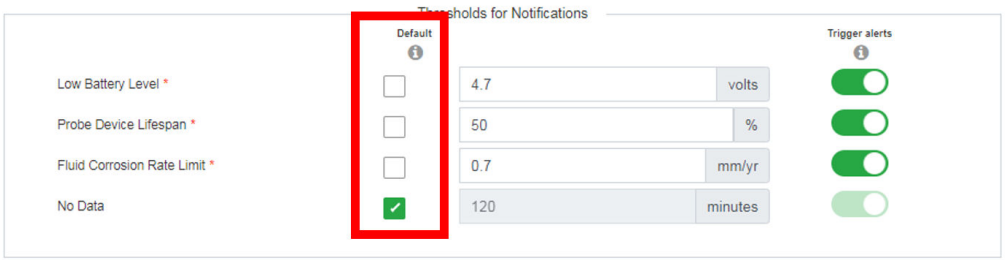
In the Installation Details table, the user shall set up the details of the installation of the corrosion probe. The installation details include:

- **Installation Date**: The date when the corrosion probe was installed.
- **Integration Period**: The time expected for the corrosion probe to adapt to the process fluids for the reading to stabilize. The integration period is fixed at 7 days.
- Add a reason for why the probe was installed.

J.3.5 Tesholds for notifications

When adding a device, the user can choose to use the Default Thresholds (see Default thresholds) or to set up specific Thresholds for the tag being added. To change the Thresholds, the user shall click on the check-box on the left side of the table and add the desired values.

Figure J-8: Add Device Screen-Thresholds for Notifications

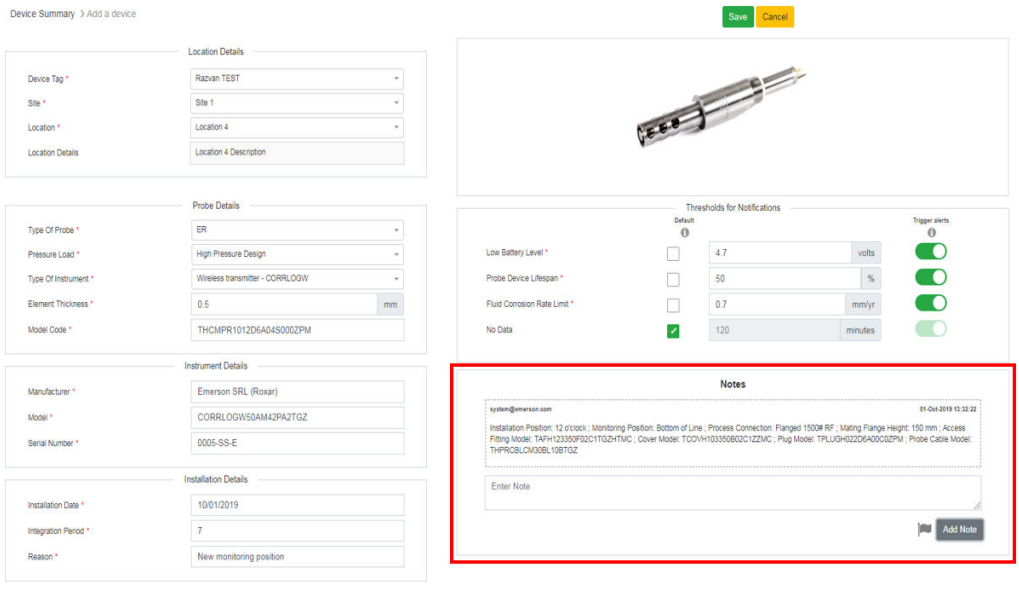


The user can select to trigger alerts based on the specific threshold values by clicking on the right sliding bars.

J.3.6 Device notes

Each tag has a free-text field on the lower right side of the Add a Device Screen where the user can add any important note related to the specific Tag. Suggested information that can be added in this field are, for example, the probe installation position (6 or 12 o'clock), the monitoring position (top of line, middle of line, bottom of line), process connection type (flanged, threaded or flareweld, etc.)

Figure J-9: Add a Device Screen - Notes



J.4 Dashboard user interaction

The Plantweb Insight Inline Corrosion application is designed for continuous analysis and corrosion monitoring trends for installed wireless corrosion probes. The application delivers insight to instrument health and provide alerts on pre-set thresholds for high corrosivity, probe life-span, low battery level and more. An intuitive heatmap is displayed with intelligence on corrosivity of fluid levels based on the NACE standard. (Ref. NACE SP0775-2013).

J.4.1 KPIs

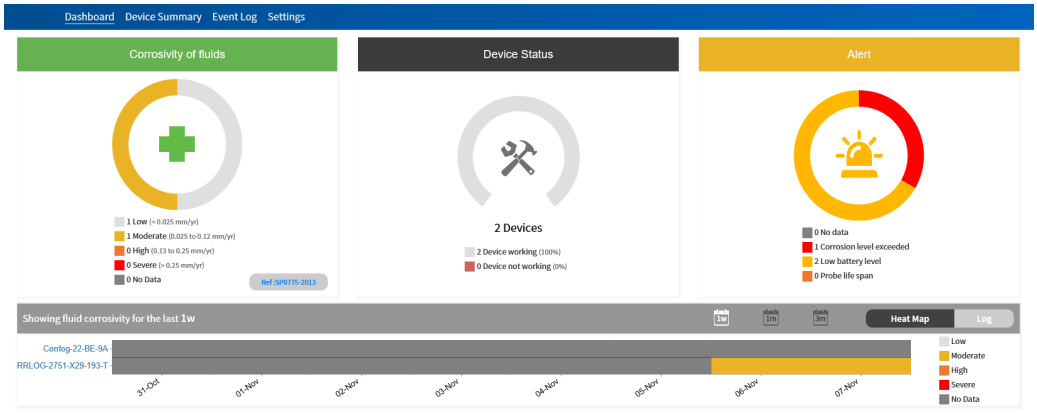
The Inline Corrosion application dashboard features a 3 key performance indicators (KPI) section for easy visualization of the user's asset health. The 3- KPI section gives the user an insight of:

- **Corrosivity of Fluids**: The left icon on the dashboard classifies the devices that are sensing different levels of corrosivity.
- **Device Status**: The middle icon on the dashboard provides information related to device health. The devices that are not functioning will be shown in this icon.
- **Alert**: The right icon on the dashboard shows the number of alerts on-going.

J.4.2 Heat map interaction

In the right-upper side of the heat map, the user can select to show data of three different time periods: *1 Week*, *1 Month* or *3 Months*.

Figure J-10: Inline Corrosion Dashboard



The corrosivity levels shown in the heat map are classified based on the international standard NACE SP0775-2013.

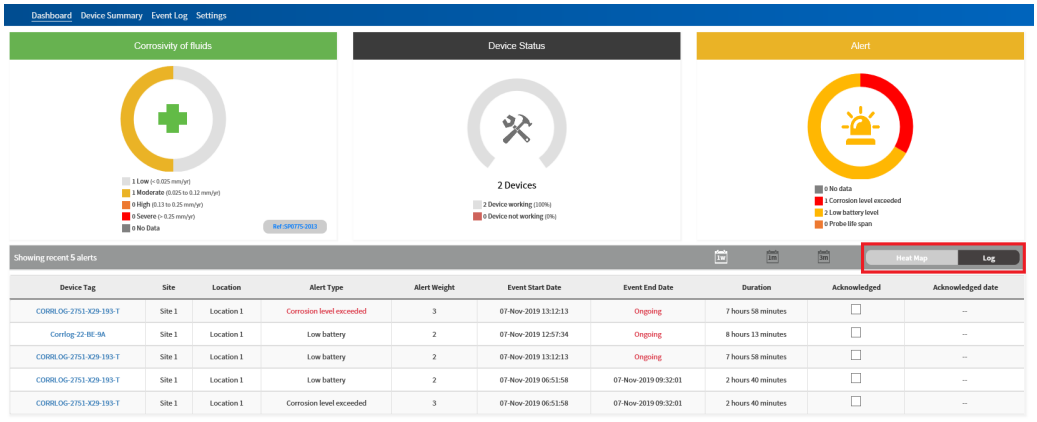
Table J-2:

Color coding		Level	Corrosion rate
	Gray	Low	<0.025 mm/year; <1 mpy
	Yellow	Moderate	0.025 to 0.12 mm/ year; 1 to 5 mpy
	Orange	High	0.13 to 0.25 mm/year; 5 to 10 mpy
	Red	Severe	>0.25 mm/year; >10 mpy

J.4.3 Alert log

In the dashboard, the user can see the last five recent alerts by clicking on the *Log* button on top of the heat map.

Figure J-11: Alert Log



J.5 Device summary user interaction

In the **Device Summary** tab, the user has access to all the corrosion monitoring devices being monitored by the application.

Figure J-12: Device Summary Tab

The ***Device Summary*** tab brings the following information of each tag:

- **Device tag**: The Device tag refer to the unique identification number configured in the device WirelessHART settings during the instrument commissioning. It is the *long tag* of each instrument that is communicated to the Gateway. The user shall select for each device being add into the application the correct Device tag from a drop-down list containing all tags received from the Gateway.
- **Site**: Select the applicable site from a drop-down list containing all the Sites previously added in the Global Settings (see Adding sites).
- **Location**: The Location is within the respected Site where the tag is installed. The user can select the Location from a drop-down menu containing all the Locations of the selected Site, previously added in the Global Settings (see Adding locations).
- **Device Status**: Indicate the status of the tag instrument (working or not-working).
- **Description of Probe**: Indicates the type of corrosion probe being used within the tag.
- **Corrosivity**: The last value measured by the tag.
- **Corrosivity Level**: Indicates in what level of corrosivity which the tag is being classified. (see Table J-2).
- **Alert**: Indicates if the tag has one or more on-going alerts.
- **Alert Start Date**: Indicates what is the starting date of the last on-going Alert.
- **Alert Duration**: Indicates for how long the last on-going Alert is active.
- **Flag**: The tag can be flagged in the event of highlighting the importance of an event for that specific tag.
- **Notes**: The icon shows if the tag has a note. (see Device notes).
- **Actions**: In this column the user can open the *Device Detail Screen* by clicking on the *Edit* button or to Delete the Device by clicking on the *Delete* button. (see Device details and Delete device).

J.5.1 Export device summary

The user can export the entire device summary in .xlsx or CSV file by clicking on the **Export** button on top of the device table.

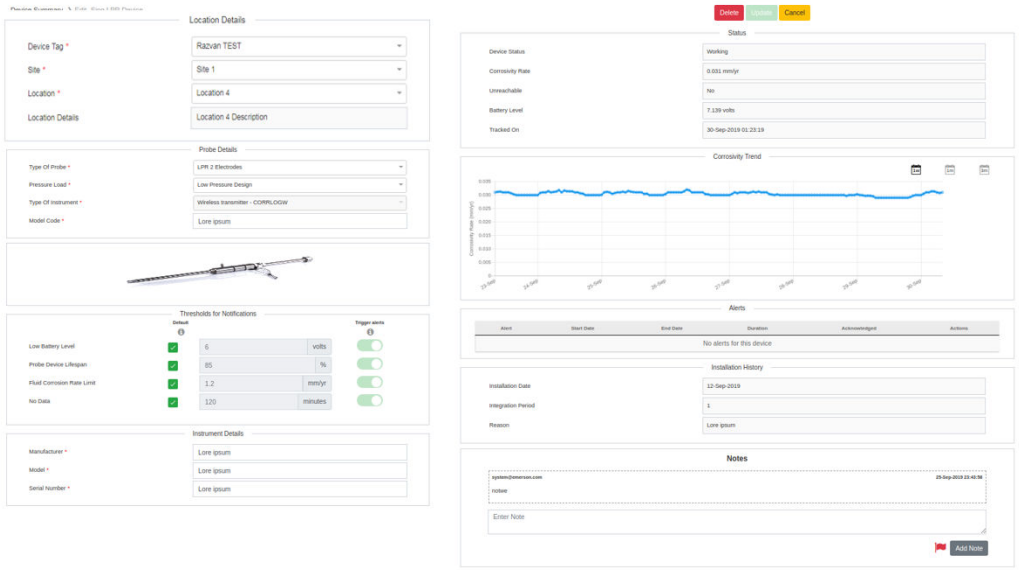
Figure J-13: Device Summary Export Button

J.5.2 Device details

The user can view all the details of a corrosion monitoring device by clicking on the tag number.

The ***Device Screen*** will be open, and the user can see the summary of the device and the setup information.

Figure J-14: Device Screen



The user can edit the device parameters from the same screen when a probe is replaced, in order to keep traceability of any changes for that specific tag.

When a change has been made, select the date and insert reason for the change before clicking the **Update** button.

J.5.3 Delete device

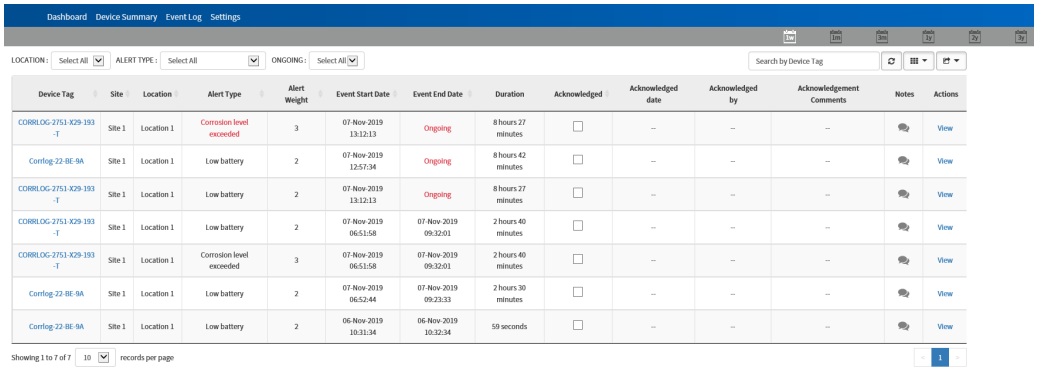
The admin user can delete a corrosion monitoring device if required by clicking in the **Delete** button on the right side of the device table or by clicking the **Delete** button on top of the device screen.

Note
When a device is deleted, the configuration and history of the tag is lost.

J.6 Event log user interaction

The *Event Log* table shows the alert history of all the corrosion monitoring devices within the application. In this screen the user has access to up to 1 year of alerts history, that can be filtered by different time periods: *Last 8 Hours*, *Last 24 Hours*, *Last 1 Week*, *Last 1 Month* or *Last 1 Year*.

Figure J-15: Event Log



Each event will be logged with an *Alert Type*, *Event Start Date*, *Event End Date* and *Duration* of the vvent.

J.6.1 Alerts type

The inline corrosion application provide five types of alerts, these are sorted based on priority. (The top alert has highest priority):

- **No Data**: This alert is triggered when a device is not sending data for a period longer than set Thresholds (see Default thresholds).
- **Corrosivity level exceeded**: This alert is triggered when a device is measuring Corrosion rates above the limit setup in the Thresholds (see Default thresholds).
- **Low Battery**: This alert is triggered when a device's battery show voltage below the limit setup in the Thresholds (see Default thresholds).
- **Probe Lifespan**: This alert is applicable only for ER probes. The alert is triggered when the probe lifespan is below the limit setup in the Thresholds (see Default thresholds).
- **No Alert**: A device that does not have any alerts triggered will show up in this category. If all probes have a triggered alert, this field will be hidden.

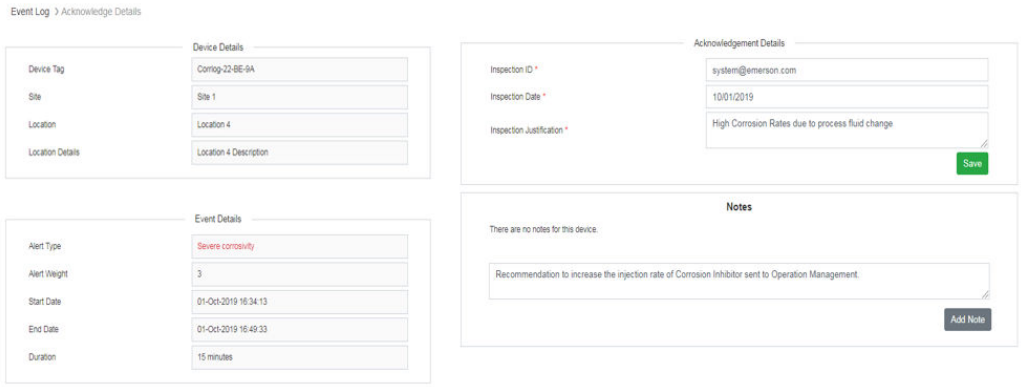
J.6.2 Acknowledge function

An alert that is triggered in the event log indicates that a possible action is required from the user or personnel responsible for the corrosion monitoring devices, and for actions tracking purposes the application allows the user to acknowledge the alert.

The user may click in the Acknowledge check-box at the Event log table when an action is starting for fixing the alert. When clicking the check-box, the Acknowledge details screen

will appear, where the user can see details about the alert and allows the user to input valuable information about the actions being taken.

Figure J-16: Acknowledge Details Screen



The user can still acknowledge an alert that ended in order to include details about the actions taken to fix the alert.

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