



SteamEye®

Technology That Transforms How Steam Systems Are Managed Installation and Maintenance

Starter Kit

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the Armstrong SteamEye. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or its local representative if further information is required.

Congratulations on your purchase of the SteamEye Starter Kit, "Technology That Transforms How Steam Systems Are Managed".

SteamEye Starter Kit Contents

- One (1) 4000 series Gateway (receiver) and power transformer (transformer not pictured)
- One (1) 4000 series repeater and power transformer (transformer not pictured)
- Four (4) Model 4700 Transmitters
- Four (4) Waveguides (3 - ¾" & 1 - 1")
- Two (2) Insulation wraps
- Two (2) Heat Sink (for pressures above 200 psi)

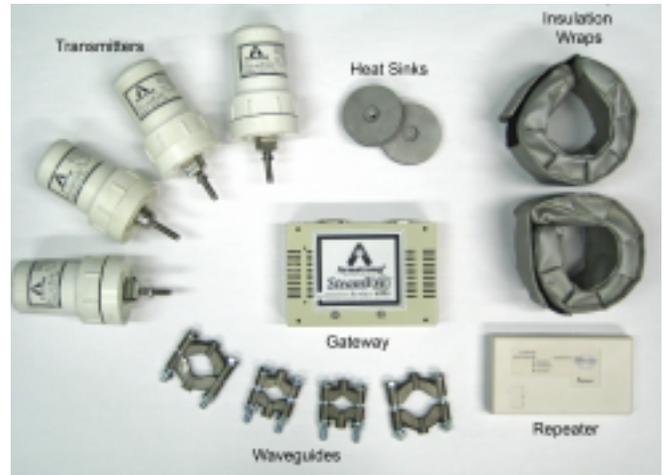


Figure 1. SteamEye® Starter Kit Components

Overview

The SteamEye system is a wireless steam trap monitoring system that consists of SteamEye transmitters (monitors), repeaters and a Gateway (receiver). The transmitters are installed on the upstream side of a steam trap and monitors its operation. Using wireless transmissions, they report the status of the steam trap operation. The repeaters "pick up" the transmission and repeat the signal when distances are too great for the original signal to travel to the receiver. The Gateway processes the signals and stores the information for viewing through any computer connected to the local area network. An example of a system is illustrated in Figure 2. Please note: The average distance of the transmission is 1200 ft line of sight and about 300 ft indoors with some obstructions. These distances can be greatly affected by obstructions and their material (e.g. Concrete absorbs the signal, metal reflects it).

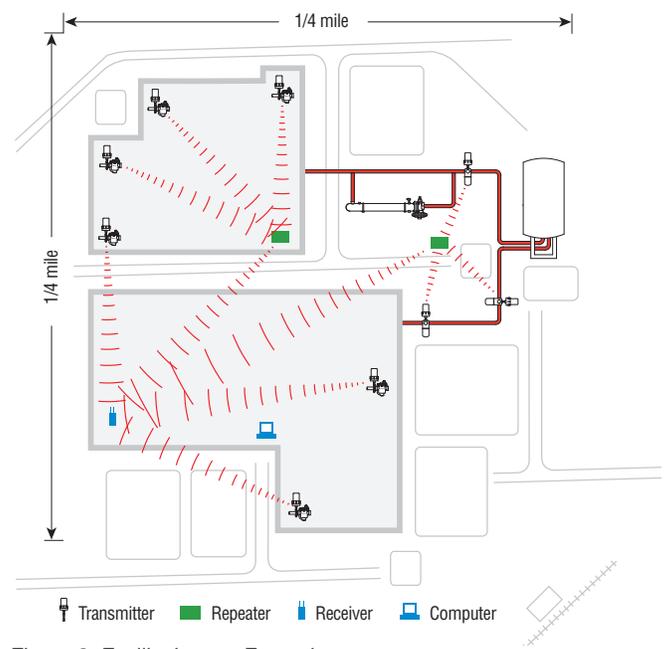


Figure 2. Facility Layout Example

Transmitter Model URFC 4700

Features

- Identifies blow through steam traps using ultrasonic sound recognition technology
- Monitors temperature to identify a plugged steam trap

Installation Instructions:

1. Identify steam pressure, if pressure is 200 psi or more install a heat sink (see heat sink installation on Page 4)
2. If installation location is outside or in an area where high heat is lost through the transmitter stem, such as by a door, install an insulation wrap (see insulation wrap installation on Page 4).
3. Verify tag number on the transmitter as shown in Figure 3 and install on the steam trap associated with this number.
4. Install waveguide on inlet pipe of steam trap.
 - **IMPORTANT:** To insure proper operation the waveguide must be located no greater than 6 inches from steam trap inlet.
 - Ensure waveguide orientation provides clearance for transmitter installation.
 - Torque waveguide bolts to 200 inch-lb (16.5 ft lbs). For alternate transmitter mounting options, consult your local Armstrong rep.
5. Thread transmitter onto waveguide and tighten using a 3/4" open ended wrench.
 - Torque transmitter to 150 inch-lb (12.5 ft lbs).

CAUTION: Do not over tighten.

6. Using 1/2" open ended wrench tighten jam nut.

Note: After the transmitter is installed it may report as "cold" while the base of the unit warms up

Note: The transmitter can be mounted in any orientation.

Heat sink installation (see figure 5):

200-600 psi (14-41 bar) saturated steam
389°F-486°F (198°C-252°C) pipe temperature

- Thread the heat sink onto the transmitter stem (cup side up) and hand tighten

Note: Do not over tighten.

Additional heat sink and expansion available for temperatures to 596°F (313°C)

Insulation wrap installation (see figure 6):

For outdoor applications

- Wrap the insulation wrap around the stem and secure the Velcro.



Figure 3. Transmitter Tag

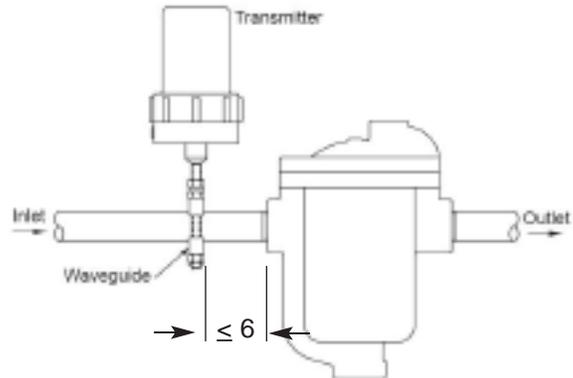


Figure 4. Model URFC4700 Installation



Figure 5. Heat sink installation



Figure 6. Insulation wrap installation

Repeater 4700

Installation Procedure:

A repeater may or may not be needed depending on the facility layout (see Overview section). If transmitters are not reporting the repeater may need to be relocated or additional repeaters may be needed.

1. Locate where the repeater will be installed
2. If in an outside or hazardous location mount the receiver inside an approved enclosure.
3. See instructions included with the repeater for wiring details.
4. Verify all power lights are activated.



Figure 7. Repeater

Gateway 4000 (receiver)

Gateway Setup:

There are 2 setup configurations your Gateway can come from the factory.

1. DHCP (default)
2. Static IP address (special request)

DHCP:

- Find the attached configuration sheet locate the "MAC Address" (example: 00:0B:AB:0E:4F:8B)
- Give this address to the IT department and ask them to setup an IP address for it. Please Do Not plug the Gateway into your network until IT has assigned an address.
- Ask them to give you the address (it should look like <http://###.###.###.###>)
- Connect the power supply and network cables to the Gateway (Please note, the device may take a minute or two to start-up and you will not be able to connect to it during this time)
- On any networked computer open the internet browser and type the IP address into the address bar. Please be sure to enter this address carefully (there is no www. or .com associated with this address)
- Once connected and the log in page is on your screen you may want to save the page to your "favorites" for easy access later
- Enter the username and password given on the configuration sheet. (If personal usernames and passwords are desired contact your local Armstrong Representative to make arrangements to have them entered)
- Navigate through the pages as you would any "web page"

Static IP

(If the Gateway was ordered with a static IP address)

- Check with the IT department to make sure everything is setup for the Gateway
- If IT has everything setup, connect the power supply and network cables to the Gateway (Please note, the device may take a minute or two to start-up and you will not be able to connect to it during this time)
- On any networked computer open the internet browser and type the IP address (given on the configuration sheet) into the address bar. Please be sure to enter this address carefully (there is no www. or .com associated with this address)
- Once connected and the log in page is on your screen you may want to save the page to your "favorites" for easy access later
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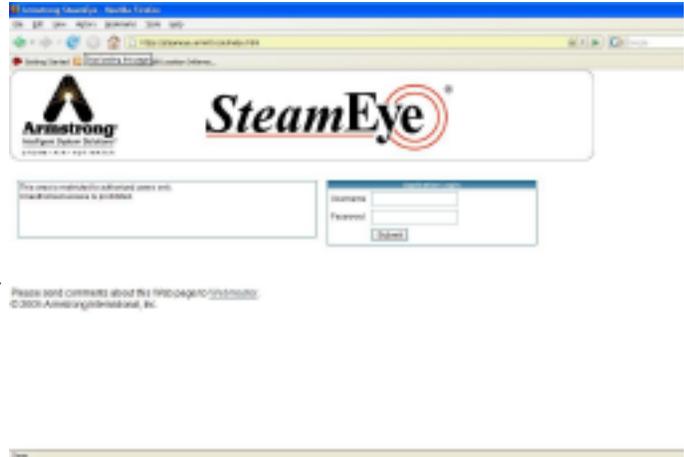


Figure 8. Login screen



Figure 9. Device status summary screen

Common Functions in the Gateway

Changing steam trap information

This task can be completed in two different ways (*note: requires administrator level access*)

SteamStar enabled:

1. Update the steam trap database in SteamStar including SteamEye transmitter numbers and location information
2. After logging into SteamEye click on the Configuration tab
3. Click the "Update from SteamStar" button
4. The device will then ask for confirmation whether you want to update, click "yes" and the database will be automatically updated with the information on the SteamStar site. Please note: This step will reset all State Change count to zero

Manually entering the steam trap information:

1. Login into the Gateway
2. Click the transmitter number on the left side of the screen and an edit screen will come up
3. Enter the steam trap information and click the save button
4. The device will return to the monitoring page and you can repeat this process for the other devices in your SteamEye population

Sorting by device type

1. SteamEye has the ability to sort the population by device type
2. At the top of the "All Equipment" device summary page there is a box that says Device type, select device to filter. Click on the arrow to pull down the list.
3. Select from the list the device you would like to filter by clicking on it
4. The information from only the device type you selected will now be displayed.

System Operation and Troubleshooting

SteamEye is indicating a BLOWTHRU condition on a steam trap that is known to be operating properly:

1. The steam trap may be undersized. Sometimes extended periods of heavy loads will "sound" similar to a blowthru to the ultrasonic processor.
2. Is there a large amount of air at the steam trap?
3. Consult factory if steam trap is "good" and problem persists.

SteamEye is indicating a COLD condition:

1. Is steam turned on to the steam trap?
2. Strainer ahead of steam trap may need cleaning
3. Are valves upstream and downstream of the steam trap working properly?
4. Steam trap maybe undersized.
5. Excessive air in the steam system can cause "air binding".
6. Dirt and scale in the system may have plugged the orifice or the bucket vent inside the steam trap.
7. Does the SteamEye Transmitter need an insulation wrap?

LOST indicated

1. Make sure transmitter is still installed in the steam trap.
2. Repeater may not be close enough to transmitter or may not be functioning properly. Make sure power is supplied to repeater.
3. Replace battery (See #4 for procedure)

LOW battery status indicated

CAUTION: If the transmitter is located in a hazardous area remove it and bring it to a safe location BEFORE opening

1. Replace battery by:
 - a. Wipe down unit with damp cloth to remove any potential electrical discharge.
 - b. Unscrew the cap (counterclockwise) from the base.
 - c. Remove battery clip and battery.
 - d. Replace battery (use only a Duracell Lithium battery part no. DL123A).
 - e. Snap battery clip back into place.
 - f. Screw cap back onto base unit.

Overview:

SteamStar is an internet based application that offers additional steam trap management functions and is included with the purchase of the SteamEye Starter Kit. SteamStar can be used to calculate steam loss, monetary losses, CO2 emissions, and many other things caused by failed traps.

SteamStar can be used independently to help manage your entire trap population or it can be linked through the internet to allow real time loss analysis when steam traps fail. For example, when a steam trap fails SteamEye will notify SteamStar of the failure. SteamStar will then calculate the losses through that steam trap. Additionally SteamStar will allow tracking of when changes take place. This link is not necessary for SteamEye to work but without it these features are not available. Talk with your IT department to setup permissions for the information to be sent through company firewalls.

Figures 10 and 11 show screen shots from SteamStar. For more information please see the SteamStar Manual at www.steamstar.com. A generic username and password should be included on your Gateway Configuration Sheet. Please call Armstrong International, Inc. at 269-273-1415 to set up additional personalized usernames and passwords.

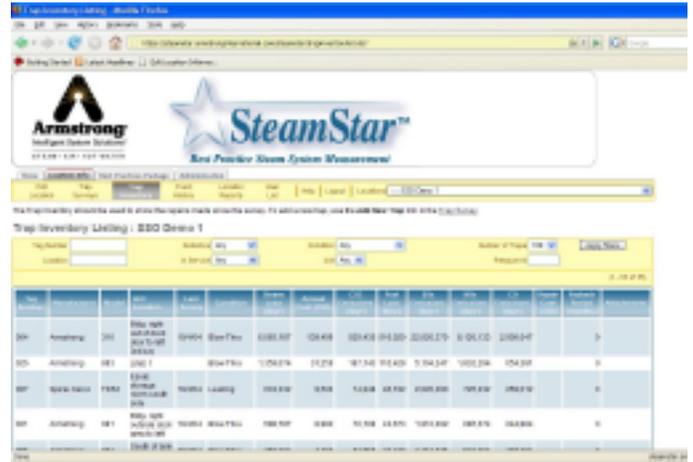
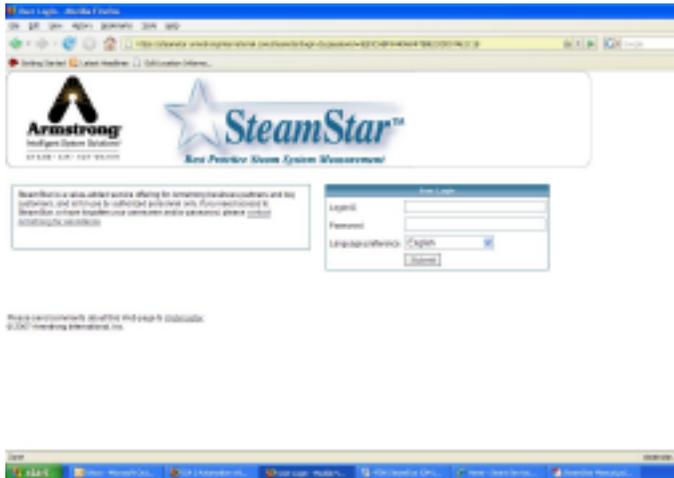


Figure 10. SteamStar web page

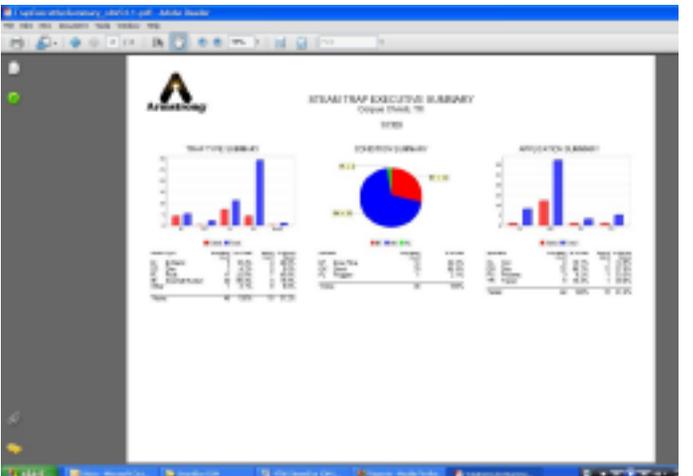
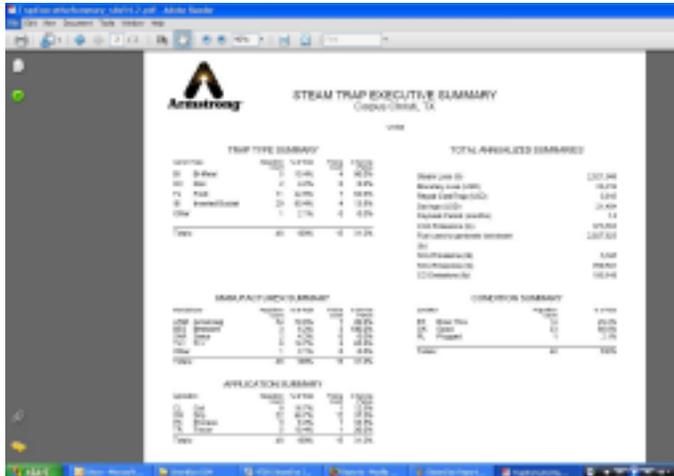


Figure 11. Reports generated from SteamStar

Available items to expand your SteamEye system

Everything in the kit is available separately along with these additional items:

- 4700 Ultrasonic type steam trap monitors
 - Steam Trap monitor for constant pressure
 - Steam Trap monitor for on/off steam systems*
 - Steam Trap Remote Monitoring
- 4300 Conductivity type
 - Steam Trap monitor for constant pressure
 - Steam Trap monitor for on/off steam systems *
 - Steam Trap Remote monitoring
- Pressure switch
- Safety Relief Valve monitor
- Liquid Level Monitor
- Pump Trap Monitoring
- Universal Switch
- Nema enclosure for repeater
- Waveguide of various sizes and other mounting options
- Additional heat sink with extension for installations on pipes up to 1500 psi (103 bar) saturated steam, temperature to 596°F (313°C)

*Pressure switch to be used on systems where steam may be shut off. This will prevent false "Cold" alarms.

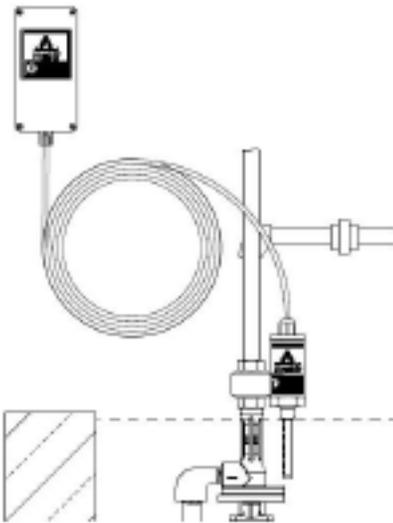


Figure 12.
Liquid Monitoring



Figure 13.
Remote Mount, ideal for steam vaults



Figure 14.
Safety Relief Valve monitoring