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STAPS
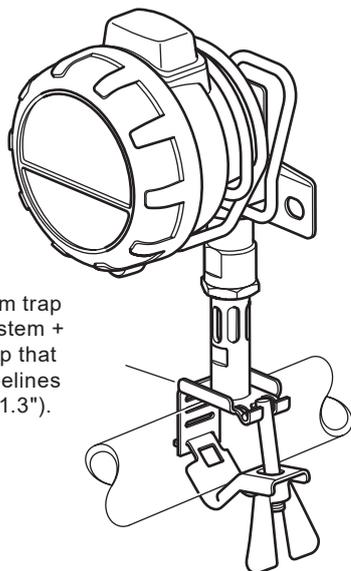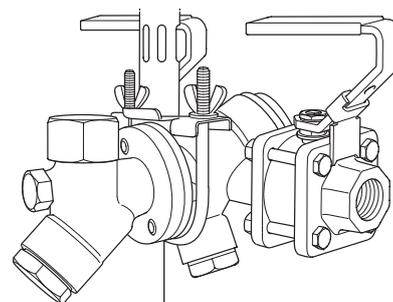# Wireless Steam Trap Monitoring System

Description

The STAPS wireless steam trap monitoring system has been designed to efficiently monitor and evaluate steam trap operation. It surveys the operation of the steam trap at regular intervals and identifies poor performance that can cause reduced plant efficiency and increased energy consumption. It can diagnose both failed-open steam traps that leak live steam and those that have failed-closed or are blocked that result in waterlogging leading to plant damage, product spoilage and health and safety concerns. Using non-intrusive installation technology combined with a 2.4 GHz wireless network, it is an ideal solution for steam trap monitoring. It is suitable for use with all types of steam trap and can be connected to pipework up to 100 mm (4"), via an adjustable clamp.

Benefits include:

- Continuously monitoring of all steam traps.

- Reduces energy and emissions loss significantly.

- Immediate identification of failure location for quick response / action.

- Ability to validate losses via integrated software.

- Non-intrusive – no need to break into the steam pipeline to install.

- A range of clamps to suit pipework ranging up to 100 mm (4").

- No need for height access equipment to check trap operation.
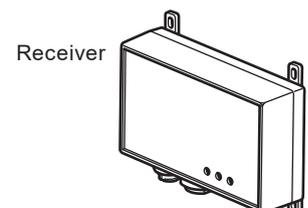
- Typically 3 years battery life.

Wireless steam trap monitoring system + wing nut clamp that is used on pipelines up to 32 mm (1.3").

Wireless steam trap monitoring system + 'U' bolt and wing nuts for use on STS17 or STS17.2 compact pipeline steam trapping stations.
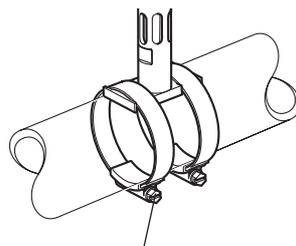
Receiver

Wireless steam trap monitoring system + jubilee clamp that is used on pipelines from 40 mm (1.6") to 100 mm (4").

Certification and Approvals

EMC Emissions and immunity: Emissions class B and Industrial immunity. Complies with FCC rules CFR 47 (1st October 2011).
                                Safety to IEC / EN 61010-1 2001 (second edition). CSA 22.2

-   EN 61326-2-1: 2006

-   EN 61326-2-3: 2006

Associated equipment:

-   Repeater.

-   Laptop / PC software.

-   Receiver.

-   Access to the company's LAN network is preferred, giving improved network coverage.

-   For stand alone PC systems, it is recommended that a network switch device is used between the PC and receiver.

PC application:

-   Allows quick and easy viewing of whole steam trap population.

-   Alerts the user to any issues with traps.

-   Historical view of data and maintenance on each trap.

Sizes and pipe connections

The STAPS wireless monitoring system is suitable for connecting to pipework up to 100 mm (4"), via an adjustable clamp. The head can be directly mounted to the sensor or fitted remotely.

Materials

	Head casing	PA12 glass filled
	Sensor housing	Stainless steel 316 / 304
	Sensor	PZT
	Clamp	Stainless steel 430 / 304
	Winged nut	Stainless steel 316
Head unit	LED enclosure	PA12
	Sensor cable	FEP / PTFE insulation
	Probe	Stainless steel
	Mounting Bracket	Stainless steel 430
	Sensor guide	Stainless steel 304
Receiver / Repeater	Casing	ABS

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STAPS Wireless Steam Trap Monitoring System

Technical information

Head unit: Available with post or tethered head mountings.	**Integral battery**	Lithium Thionyl Chloride
	Maximum altitude	3 000 m (9843 ft) (0.7 bar (10.2 psi) atmospheric)
	Ambient temperature range	-29 to +70 °C (-20.2 to +158 °F)
	Maximum pipe temperature	425 °C (797 °F)
	Maximum relative humidity	95%
	Enclosure rating	IP65
	Output	Wireless 2.4 GHz (frequency range 2.405 GHz to 2.480 GHz)
	Display	LED
	Operating modes	Trap monitoring unit - end device or repeater / end device
	Maximum output transmitting power	6.3 mW
	Modulation type	QPSK
	Channel space	5 MHz
	Antenna gain	0 dBi

System requirements	**PC**	Windows XP .NET 3.5
		Windows 7 .NET 4.5
		Network switch or access to company LAN network

Receiver / Repeater	**Power**	Mains powered 100 – 250 Vac, 50 – 60 Hz
	Current	ac – 0.5 A 100 Vac
		dc – 1.5 A 12 V
	Connector	ac – 2 pin IEC 320-C8
		3 pin UK, US and European mains plug
		dc – 2 pin IP65 connector
	Maximum altitude	3 000 m (9843 ft) (0.7 bar (10.2 psi) atmospheric)
	Ambient temperature range	-29 to +70 °C (-20.2 to +158 °F)
	Maximum relative humidity	95%
	Enclosure rating	IP65 (Excluding external power supply)
	Display	LED
	Output	Wireless 2.4 GHz (frequency range 2.405 to 2.480 GHz), Ethernet.
	Operating modes	Receiver or repeater

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STAPS Wireless Steam Trap Monitoring System

How does it work?

A head unit assembly mounted on the pipe upstream of the trap to be monitored 'listens' to the sound signature of the trap in operation. This sound signature is categorised and transmitted via 2.4 GHz wireless network to a central PC. The PC determines the trap condition and calculates any steam loss.

Each STAPS head unit assembly is powered by a long life Lithium battery (typical battery life of over 3 years). It can communicate directly to a receiver that is connected to the PC software via a LAN connection or via another intelligent head or repeater. The PC software can be installed onto a PC on the sites internal network, or onto a standalone local PC.

The STAPS head, repeater and receiver create a network and can communicate with each other, passing on the steam trap data to the supervisory PC. The illustration below illustrates a typical network.

STAPS Wireless Steam Trap Monitoring System
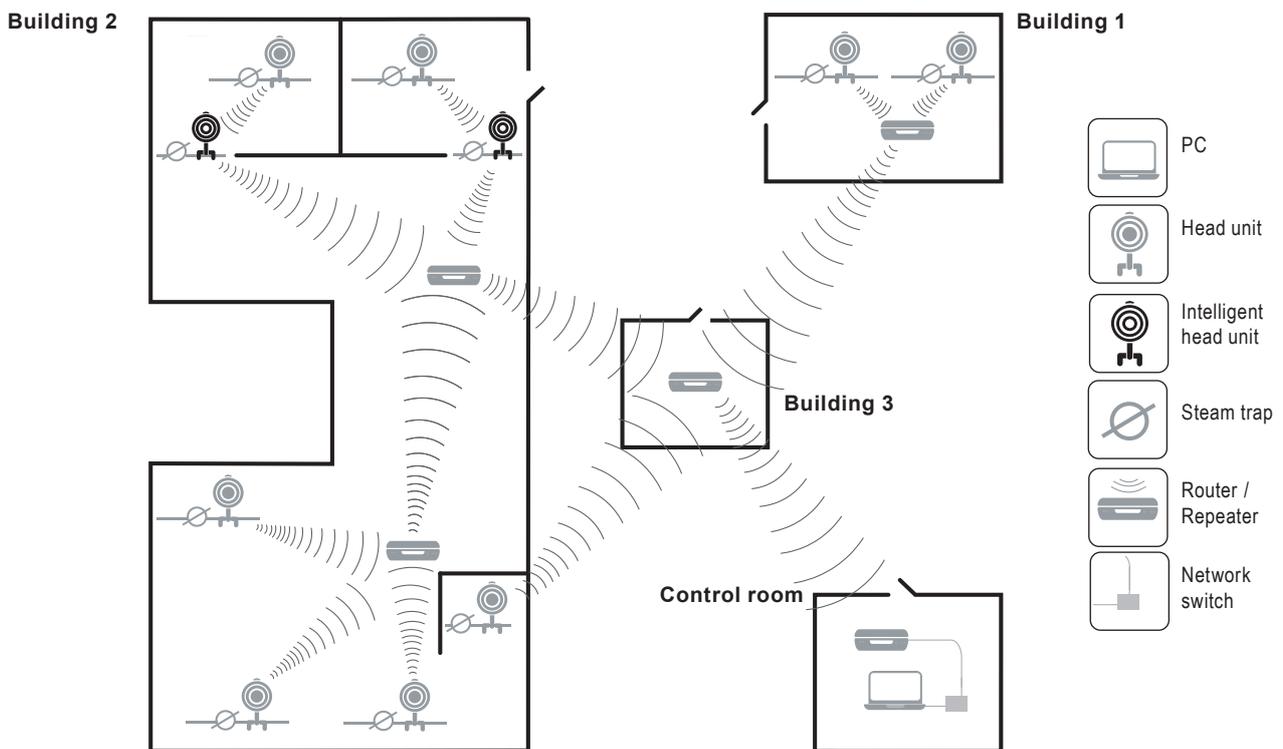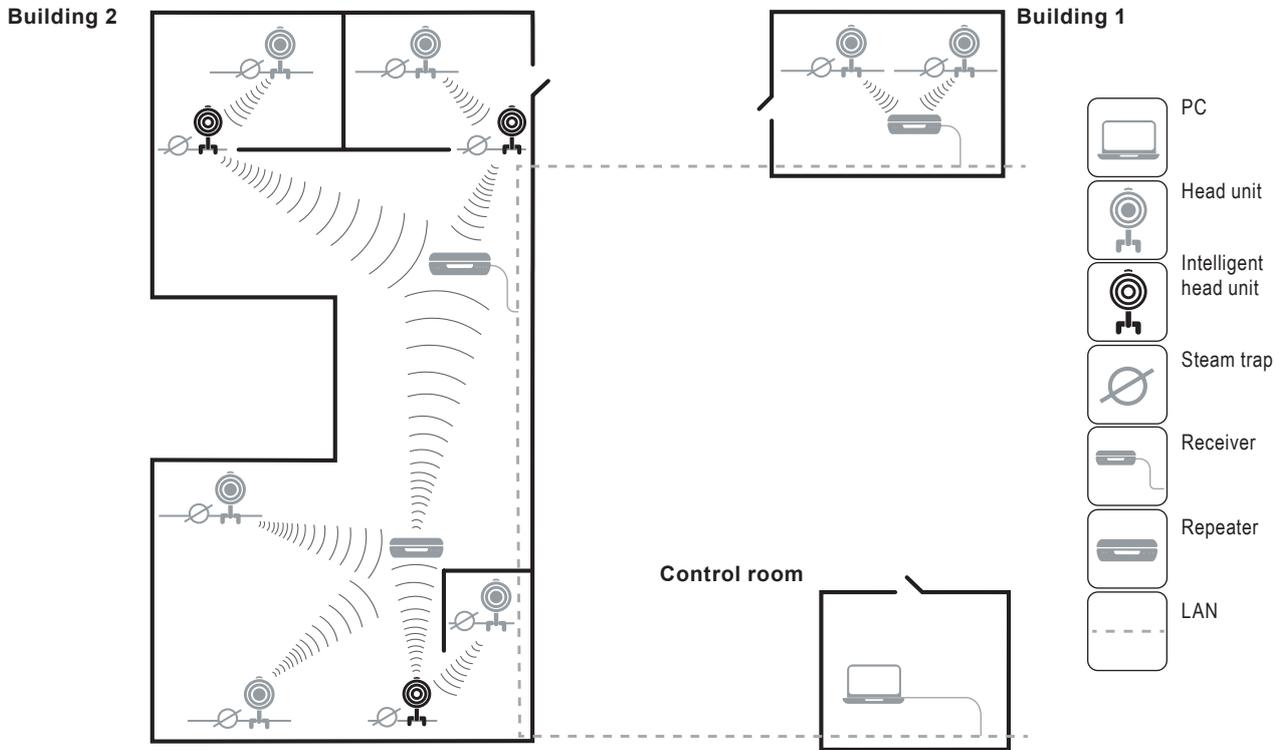
Dimensions / weights (approximate) in mm (inches) and kg (lbs)

Wireless steam trap monitoring system + wing-nut clamp

Receiver
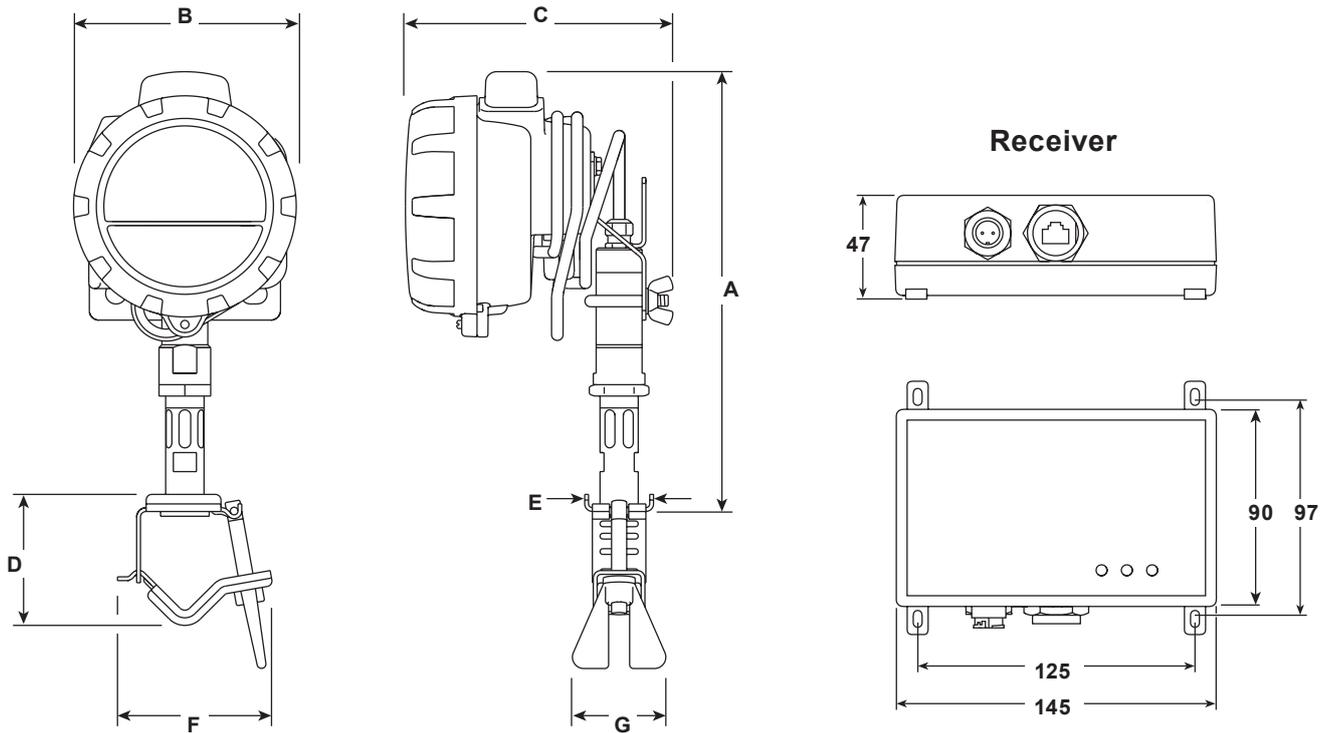
Size	A	B	C	D	E	F	G	Weight
DN15 - ½"								
DN20 - ¾"				44 - 69 (1.73 - 2.72)	36 (1.42)	55 (2.17)	50 (1.97)	
DN25 - 1"								
DN32 - 1¼"	234 (9.21)	117 (4.61)	126 (4.96)					1 kg (2.20)
DN40 - 1½"								
DN50 - 2"								
DN65 - 2½"					50 (1.97)	30 (1.18)		
DN80 - 3"								
DN100 - 4"								

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product.

Disposal:
- The Lithium Thionyl Chloride battery must be disposed of in line with local legislation. It must be remembered that battery hazards remain even when the cells are discharged.
- The Piezo sensor should be disposed of in line with local lead disposal guidelines.

No other ecological hazard is anticipated with the disposal of this product. It should be disposed of within the local recycling procedures.

How to order

Please contact your local Spirax Sarco representative to arrange a site survey and installations.

A **preliminary site survey** of the plant must be conducted by trained personnel, the survey will identify the optimum number of Receivers and Repeaters together with their most effective location, to give the most robust wireless network.
It will also establish the requirements for the IT network.

Spare parts

Only the parts listed below are available for the STAPS system. No other parts are supplied as spares.

Available spares

Battery (SAFT LS 33600 3.6 V battery)		**1**
'O' ring spares kit		**2**
Head mounting bracket, 'U' bolt and wing nuts		**8**, **9**, **10** and **19**
Ethernet cable spares kit		**15**
Clamp	'T' bolt and wing nut	**5**, **6** and **7**
	'U' bolt and wing nuts for STS17 or STS17.2	**20, 21** and **22**
Power supply	(UK) spares kit	**11** and **14**
	(US) spares kit	**12** and **14**
	(EU) spares kit	**13** and **14**
Front cover spares kit		**3** and **4**
Spare receiver mounting kit		**6**, **17** and **18**

How to order spares

Always order spare parts by using the description given in the column headed 'Available spares' and state the size and unit nomenclature that they are intended for.

Example:

1 off   Battery spares kit (SAFT LS 33600 3.6 V battery) and

1 off   Wall mounting spares kit or

1 off   Clamp for use with an STS17.2 pipeline trapping station.

These spares are for STAPS up to DN32 pipe size wireless steam trap monitoring system.

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