TI-P014-22
EMM Issue 4

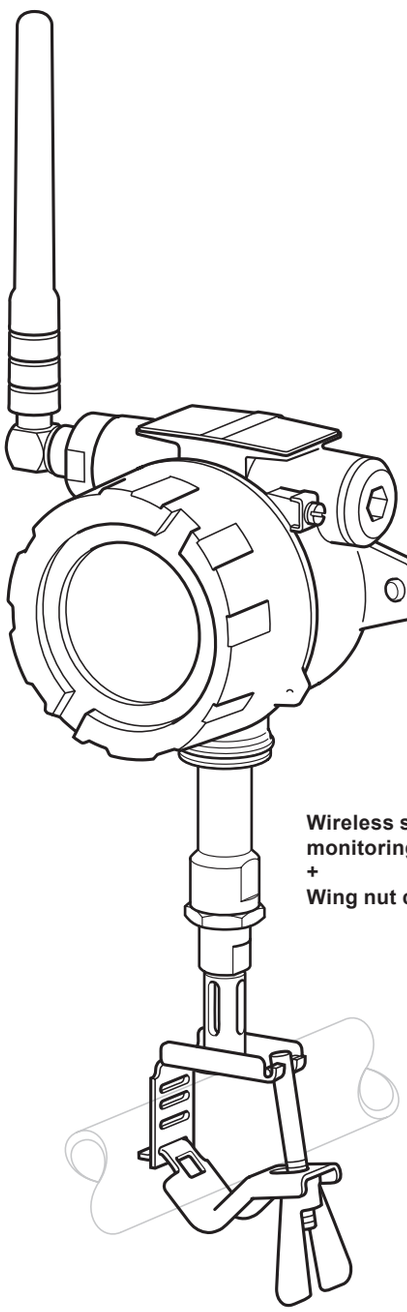
STAPS Wireless Head Unit for ISA100.11a applications

Description

The STAPS ISA100 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, resulting in waterlogging, leading to plant damage, product spoilage and health and safety concerns.
Using non-intrusive installation technology combined with an ISA100 wireless network makes it 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:

- Fully ISA100.11a compliant.
- Continuous monitoring of all steam traps.
- Reduces energy and emissions loss significantly.
- Immediate identification of failure location for quick response / action.
- Non-intrusive – no need to break into the steam line 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.
- Security assured wireless network certified to ISA100.11a.
- Intrinsically safe for hazardous zones



Wireless steam trap monitoring system + Wing nut clamp

Certification and Approvals

Radio:
Complies to EN 300 328 V2.1.1
FCC CFR 47 part 15.247
EMC Emissions and immunity:

- EN 61326 -1: 2013
- EN 61326-2-1: 2013
- EN 61326-2-3: 2013

Safety:

- Complies with IEC / EN 61010 1 2010 (third edition) CSA 22.2.

Hazard area approvals:

- IECEx certification and ATEX intrinsic safety certification.
  - IECEx certificate : IECEx SIR 15.0070X
  - ATEX certificate : Sira 15ATEX2197X

Associated equipment:

- ISA100.11a compliant gateway (not supplied).
- Infrared network configuration tool (not supplied).

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Sizes and pipe connections

The STAPS wireless monitoring system is suitable for connecting to pipework up to 100 mm (4"), via an adjustable clamp.

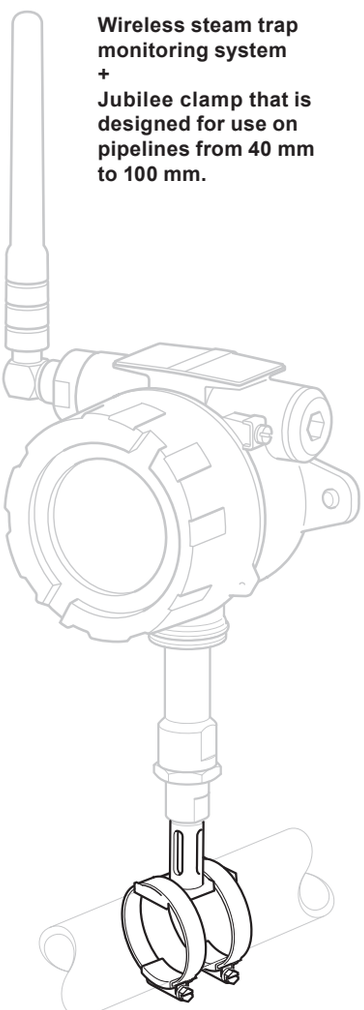
Options

- +4 dBi Antenna with 3 m RF cable. Contact Spirax Sarco for model reference.
- Heat Shield Kit

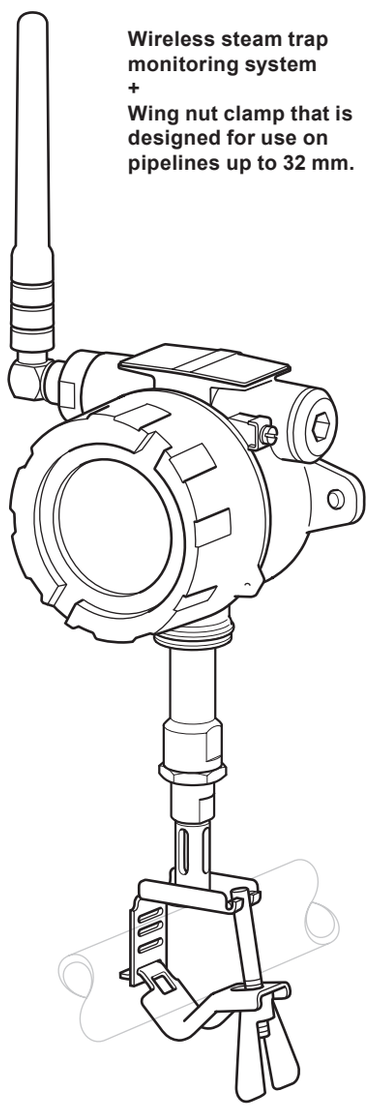
Materials

Head unit	**Head casing**	Epoxy coated copper free aluminium (less than 0.4% copper)
	Sensor housing	Stainless steel 316
	Sensor	PZT
	Clamp	Stainless steel 316
	Winged nut	Stainless steel 316
	Probe	Stainless steel
	Antenna	Stainless steel 316
	Antenna casing	ABS
	'O' ring	Oil proof TPE rubber

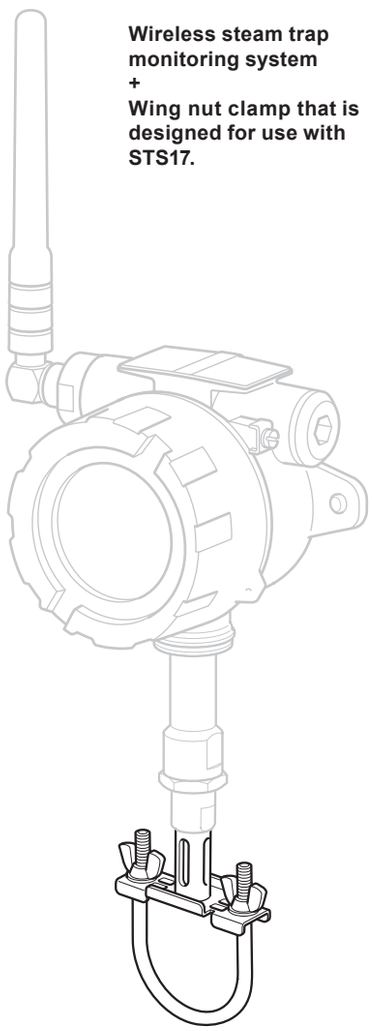
Wireless steam trap monitoring system + Jubilee clamp that is designed for use on pipelines from 40 mm to 100 mm.



Wireless steam trap monitoring system + Wing nut clamp that is designed for use on pipelines up to 32 mm.



Wireless steam trap monitoring system + Wing nut clamp that is designed for use with STS17.



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Technical information

Head unit:

Available with remote +4 dBi antenna.

Integral battery	Lithium Thionyl Chloride		
Maximum altitude	3 000 m		
Ambient temperature range	-20 to +70 °C		
Maximum pipe temperature	427 °C		
Maximum relative humidity	95%		
Enclosure ingress rating	IP66 / NEMA4X		
Output	Protocol	ISA100 11a	
	Data rate	250 kbps	
	Frequency	2400 – 2483.5 MHz free ISM band	
	Radio security	AES 128 bit codified	
	Output power	10 dBm (fixed)	
	Antenna	+2 dBi Omni directional monopole type (4dBi option). Maximum output transmitting power 15.85 mW.	
ISA100.11a analog inputs	Process pipe surface temperature		
	Sensor temperature		
	Trap condition (good, leak, cold)		
	Steam loss		
Configuration	Trap type		
	Polling rate		
	Orifice diameter		
	Pressure		
	Return line type		
Diagnostics	Battery status		
	Signal strength		
	DIAG_STATUS		
Certification The certification and approvals are only valid if the product is installed using the genuine supplied component parts and accessories, including consumable items such as batteries and power leads.	**IECEx**	Equipment protection level	IECEx certificate : IECEx SIR 15.0070X
		Gas	Ex ia op is IIC T4 Ga
		Dust	Ex ia IIIC op is T135 °C Da
		Tamb	-20 to +70 °C
		T process	-20 to +427 °C
		For use with Tadiran SL 2880 3.6 V Lithium Thionyl Chloride Battery only.	
		Standards used	IEC 60079-0, IEC 60079-11 and IEC 60079-28
	European	ATEX intrinsic safety Ⓔx	ATEX certificate : Sira 15ATEX2197X
		Gas	Ex ia op is IIC T4 Ga
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How does the STAPS ISA100 wireless steam trap monitoring system 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 categorized and a steam loss value is calculated and transmitted via an ISA100, 2.4 GHz wireless network to an ISA100 wireless compliant gateway (Not Supplied).

Each STAPS head unit is powered by a long life Lithium battery (typical battery life of over 3 years).

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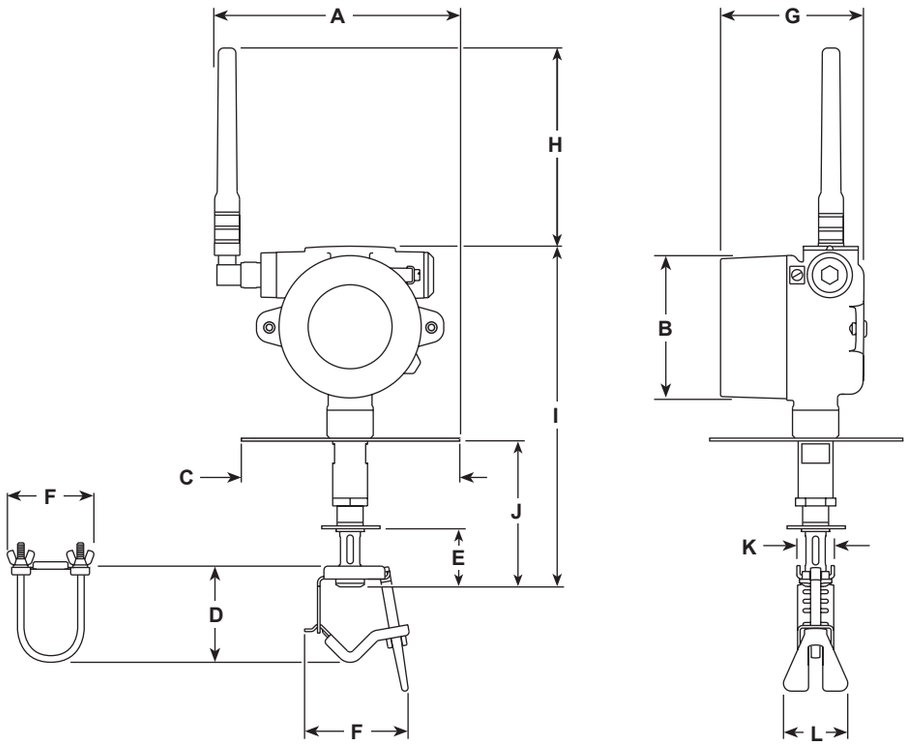
Dimensions / weights (approximate) in mm and kg



Size	A	B	C	D	E	F	G	H	I	J	K	L	Weight
DN15 - ½"	180	110	150	50	42	87	110	154	284	154	29	50	2.3 kg
DN20 - ¾"	180	110	150	56	42	87	110	154	284	154	29	50	2.3 kg
DN25 - 1"	180	110	150	64	42	87	110	154	284	154	29	50	2.3 kg
DN32 - 1¼"	180	110	150	74	42	87	110	154	284	154	29	50	2.3 kg
DN40 - 1½"	180	110	150		42		110	154	284	154	46		2.3 kg
DN50 - 2"	180	110	150		42		110	154	284	154	46		2.3 kg
DN65 - 2½"	180	110	150		42		110	154	284	154	46		2.3 kg
DN80 - 3"	180	110	150		42		110	154	284	154	46		2.3 kg
DN100 - 4"	180	110	150		42		110	154	284	154	46		2.3 kg
STS17.2				85		90							

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P014-23) 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

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

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Spare parts

Only the parts listed below are available for the STAPS ISA100 wireless steam trap monitoring system. No other parts are supplied as spares.

Available spares	
Battery (Tadiran SL 2880 3.6 V battery)	**11**
Enclosure 'O' ring spares kit	**10**
Clamp, 'T' bolt and wing nut for pipe sizes ½" to 1¼"	**4** and **5**
Clamp for pipe size 1½"	**12**
Clamp for pipe size 2" - 2½"	
Clamp for pipe size 3" - 4"	
Clamp for STS17 (trap station)	**13**
Antenna (standard) Antenna +4 dBi	**9**
Heat Shield Kit	**14**

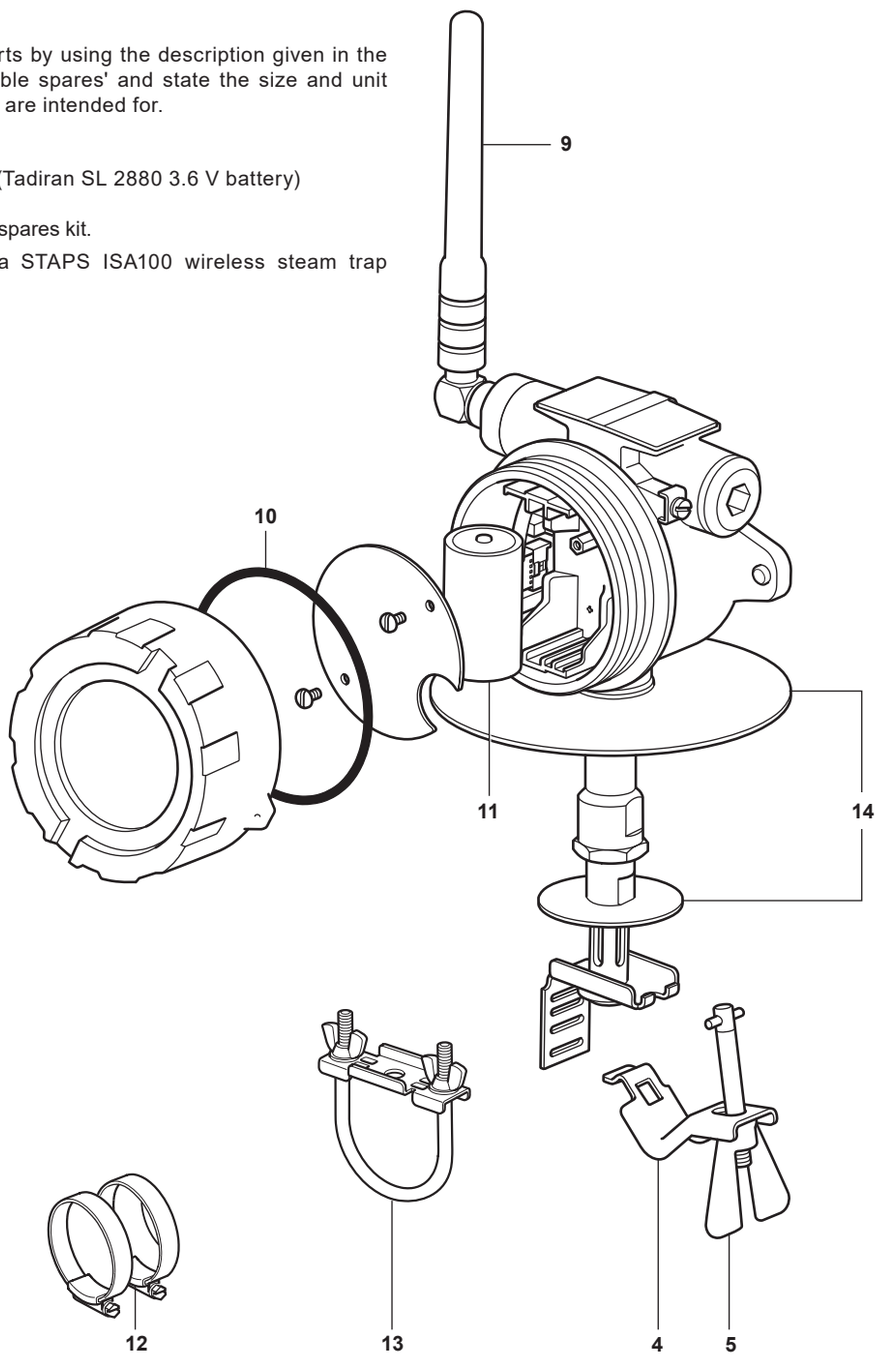
How to order spares

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 (Tadiran SL 2880 3.6 V battery)
and
1 off Enclosure 'O' ring spares kit.

These spares are for a STAPS ISA100 wireless steam trap monitoring system.



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8 Steam traps

Steam trap management