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.

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

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:

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).
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

<table>
<thead>
<tr>
<th>Head unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head casing</td>
<td>Epoxy coated copper free aluminium (less than 0.4% copper)</td>
</tr>
<tr>
<td>Sensor housing</td>
<td>Stainless steel 316</td>
</tr>
<tr>
<td>Sensor</td>
<td>PZT</td>
</tr>
<tr>
<td>Clamp</td>
<td>Stainless steel 316</td>
</tr>
<tr>
<td>Winged nut</td>
<td>Stainless steel 316</td>
</tr>
<tr>
<td>Probe</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Antenna</td>
<td>Stainless steel 316</td>
</tr>
<tr>
<td>Antenna casing</td>
<td>ABS</td>
</tr>
<tr>
<td>‘O’ ring</td>
<td>Oil proof TPE rubber</td>
</tr>
</tbody>
</table>

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 ST517.
## Technical information

### Head unit:
Available with remote +4 dBi antenna.

<table>
<thead>
<tr>
<th>Integral battery</th>
<th>Lithium Thionyl Chloride</th>
</tr>
</thead>
</table>

### 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

<table>
<thead>
<tr>
<th>Protocol</th>
<th>ISA100.11a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data rate</td>
<td>250 kbps</td>
</tr>
<tr>
<td>Frequency</td>
<td>2400 – 2483.5 MHz free ISM band</td>
</tr>
<tr>
<td>Radio security</td>
<td>AES 128 bit codified</td>
</tr>
<tr>
<td>Output power</td>
<td>10 dBm (fixed)</td>
</tr>
<tr>
<td>Antenna</td>
<td>+2 dBi Omni directional monopole type (4dBi option). Maximum output transmitting power 15.85 mW.</td>
</tr>
</tbody>
</table>

### 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 IIIIC op is T135 °C Da
- Tamb: -20 to +70 °C
- Tprocess: -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: ATEX certificate : Sira 15ATEX2197X
- Gas: Ex ia op is IIC T4 Ga
- Dust: Ex ia IIIIC op is T135 °C Da
- Tamb: -20 to +70 °C
- Tprocess: -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

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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).
Dimensions / weights (approximate) in mm and kg

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN15</td>
<td>180</td>
<td>110</td>
<td>150</td>
<td>50</td>
<td>42</td>
<td>87</td>
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<td>154</td>
<td>284</td>
<td>154</td>
<td>29</td>
<td>50</td>
<td>2.3 kg</td>
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<td>110</td>
<td>150</td>
<td>56</td>
<td>42</td>
<td>87</td>
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<td>154</td>
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<td>154</td>
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<td>42</td>
<td>87</td>
<td>110</td>
<td>154</td>
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<td>84</td>
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<td>284</td>
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<td>284</td>
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<tr>
<td>STS17.2</td>
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<td></td>
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<td></td>
<td></td>
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<td>2.3 kg</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (Tadiran SL 2880 3.6 V battery)</td>
<td>11</td>
</tr>
<tr>
<td>Enclosure 'O' ring spares kit</td>
<td>10</td>
</tr>
<tr>
<td>Clamp, 'T' bolt and wing nut for pipe sizes ½&quot; to 1½&quot;</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Clamp for pipe size 1½&quot;</td>
<td>12</td>
</tr>
<tr>
<td>Clamp for pipe size 2&quot; - 2½&quot;</td>
<td></td>
</tr>
<tr>
<td>Clamp for pipe size 3&quot; - 4&quot;</td>
<td></td>
</tr>
<tr>
<td>Clamp for STS17 (trap station)</td>
<td>13</td>
</tr>
<tr>
<td>Antenna (standard)</td>
<td>9</td>
</tr>
<tr>
<td>Antenna +4 dBi</td>
<td></td>
</tr>
<tr>
<td>Heat Shield Kit</td>
<td>14</td>
</tr>
</tbody>
</table>

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.