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

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 (10 ft) RF cable. Contact Spirax Sarco for model reference.
- Heat Shield Kit

Materials

<table>
<thead>
<tr>
<th>Head casing</th>
<th>Epoxy coated copper free aluminium (less than 0.4% copper)</th>
</tr>
</thead>
<tbody>
<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 (1½”) to 100 mm (4”).

Wireless steam trap monitoring system + Wing nut clamp that is designed for use on pipelines up to 32 mm (1¼”).

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

Head unit:
Available with remote +4 dBi antenna.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integral battery</td>
<td>Lithium Thionyl Chloride</td>
</tr>
<tr>
<td>Maximum altitude</td>
<td>3 000 m</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>-20 to +70°C (-4 to +158°F)</td>
</tr>
<tr>
<td>Maximum pipe temperature</td>
<td>427°C (800°F)</td>
</tr>
<tr>
<td>Maximum relative humidity</td>
<td>95%</td>
</tr>
<tr>
<td>Enclosure ingress rating</td>
<td>IP66 / NEMA4X</td>
</tr>
</tbody>
</table>

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
IECEx
- Equipment protection level
  - Gas: Ex ia op is IIC T4 Ga
  - Dust: Ex ia IIIC op is T135°C Da
  - Tamb: -20 to +70°C (-4 to +158°F)
  - Tprocess: -20 to +427°C (-4 to +800°F)
- 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
  - Gas: Ex ia op is IIC T4 Ga
  - Dust: Ex ia IIIC op is T135°C Da
  - Tamb: -20 to +70°C (-4 to +158°F)
  - Tprocess: -20 to +427°C (-4 to +800°F)
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- Standards used: IEC 60079-0, IEC 60079-11 and IEC 60079-28

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 inches and lb

<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>
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<tbody>
<tr>
<td>½&quot;</td>
<td>7&quot;</td>
<td>4½&quot;</td>
<td>6&quot;</td>
<td>2&quot;</td>
<td>1½&quot;</td>
<td>3½&quot;</td>
<td>4½&quot;</td>
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<td>11&quot;</td>
<td>6&quot;</td>
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<td>2&quot;</td>
<td>5 lb</td>
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<tr>
<td>¾&quot;</td>
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<td>6&quot;</td>
<td>11&quot;</td>
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<td>5 lb</td>
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<td>4½&quot;</td>
<td>6&quot;</td>
<td>11&quot;</td>
<td>6&quot;</td>
<td>1¼&quot;</td>
<td>5 lb</td>
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<td>4½&quot;</td>
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<td>11&quot;</td>
<td>6&quot;</td>
<td>1¾&quot;</td>
<td>5 lb</td>
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<td>STS17.2</td>
<td>3½&quot;</td>
<td>3½&quot;</td>
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</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” to 1¼”</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Clamp for pipe size 1½”</td>
<td></td>
</tr>
<tr>
<td>Clamp for pipe size 2” - 2¼”</td>
<td>12</td>
</tr>
<tr>
<td>Clamp for pipe size 3” - 4”</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.