Thermocouple, athermanous & heating wires
AXON’ thermocouple extension cables have the following properties:
- Made with cost effective but vacuum compatible materials including bare copper, constantan® and FEP. These thermocouple extension cables can be left inside the satellite for flight.
- Accurate and reliable: AXON’ thermocouple extension cables are delivered with a calibration certificate made by qualified laboratories.
- Compatible with dedicated contacts and connectors (please contact us).

Examples of construction

Thermocouple extension cable 2xKT2407

1 - 2407 AWG Bare copper conductor,
2 - 2407 AWG Constantan® (T-type) conductor (-200°C to 350°C)*,
3 - FEP insulation (colours upon request).
Wire operating temperature: -90°C / +200°C.

Thermocouple extension cable 2xKT2801

1 - 2801 AWG Bare copper conductor,
2 - 2801 AWG Constantan® (T-type) conductor (-200°C to 350°C)*,
3 - FEP insulation (colours upon request).
Wire operating temperature: -90°C / +200°C.

24, 26 and 30 AWG also available.

For applications requiring very high temperatures, such as a rocket motor, other conductor materials* can be offered:
- J-type: Iron / Constantan® (-40°C to +750°C),
- E-type: Chromel® / Constantan® (-200°C to +900°C),
- N-type: Nicrosil® / Nisil® (-200°C to +1200°C).

*: Temperature range of the thermocouple conductors. Wire operation temperature will depend on the insulation material used. Don’t hesitate to contact us for special queries.
Both AXON® athermanous and heating wires have the following properties:
- Can be made with any ESCC construction available in our ESA Wires & Cables chapter.
  Custom constructions available on request.
- Compatible with dedicated contacts and connectors (please contact us).

Examples of construction

**Shielded jacketed single stainless steel wire**

1 - Stranded stainless steel conductor,
2 - PTFE insulation,
3 - Stainless steel,
4 - PFA insulation.

**Twisted pair**

1 - Stranded brass conductor,
2 - Extruded PTFE insulation,
3 - Polyimide protective coating.

Designed to cover a range of thermal conductivity and linear resistance requirements, AXON® uses the following conductor types:

<table>
<thead>
<tr>
<th></th>
<th>Copper</th>
<th>Brass</th>
<th>Stainless steel 316L</th>
<th>Kanthal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal conductivity (W/mK)</td>
<td>400</td>
<td>150</td>
<td>15</td>
<td>11 (Ø 50°C)</td>
</tr>
<tr>
<td>Linear resistance (Ω.m)</td>
<td>1.724 x 10⁻³</td>
<td>6.3 x 10⁻³</td>
<td>76 x 10⁻⁴</td>
<td>145 x 10⁻⁴</td>
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</tbody>
</table>

*Other grades of stainless steel are available