Strain gauges on collar
### Strain Gauge Type

![Diagram of strain gauge](image)

<table>
<thead>
<tr>
<th>Ordering number</th>
<th>Nominal (rated) resistance [Ω]</th>
<th>Dimensions [mm/inch]</th>
<th>Solder terminals</th>
<th>Preferred types</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-XC1x-1.5/350</td>
<td>350</td>
<td>Measuring grid: a 1.5, b 1.5, c 6 0.059, 0.059, 0.236</td>
<td>LS5</td>
<td></td>
</tr>
</tbody>
</table>

- **Sensible area:** 4×2 mm
- **Total groove in collars:** 6×6 mm
optimized SG position

- sensible area, where total strain is shown
- total grooved area
strain in optimized SG position with collars of nominal thickness

\[ \varepsilon_x \text{ after collaring} \]
-334 \(\mu\varepsilon\) to -319 \(\mu\varepsilon\)

\[ \varepsilon_y \text{ after collaring} \]
84 \(\mu\varepsilon\) to 95 \(\mu\varepsilon\)

\[ \varepsilon_x \text{ after cool down} \]
-310 \(\mu\varepsilon\) to -293 \(\mu\varepsilon\)

\[ \varepsilon_y \text{ after cool down} \]
96 \(\mu\varepsilon\) to 110 \(\mu\varepsilon\)

\[ \varepsilon_x \text{ after energization} \]
-87 \(\mu\varepsilon\) to -80 \(\mu\varepsilon\)

\[ \varepsilon_y \text{ after energization} \]
21 \(\mu\varepsilon\) to 26 \(\mu\varepsilon\)
strain in optimized SG position with collars of reduced thickness (1.5 mm of reduction in grooved area)

\[ \varepsilon_x \text{ after collaring} \]
-413 \( \mu \varepsilon \) to -383 \( \mu \varepsilon \)

\[ \varepsilon_y \text{ after collaring} \]
104 \( \mu \varepsilon \) to 125 \( \mu \varepsilon \)

\[ \varepsilon_x \text{ after cool down} \]
-376 \( \mu \varepsilon \) to -363 \( \mu \varepsilon \)

\[ \varepsilon_y \text{ after cool down} \]
121 \( \mu \varepsilon \) to 136 \( \mu \varepsilon \)

\[ \varepsilon_x \text{ after energization} \]
-109 \( \mu \varepsilon \) to -98 \( \mu \varepsilon \)

\[ \varepsilon_y \text{ after energization} \]
26 \( \mu \varepsilon \) to 35 \( \mu \varepsilon \)
Central beam tube support
Proposal for the central beam support