Thermocouple assembly D
for welding with interchangeable insert

Application
- Temperature measurement in pipe systems and tanks with gasses and fluid medias such as air, steam and water at high pressure and flow velocity
- Operating range is up to 600°C, max. 450 bar (water) and 60 m/sec. (steam)
- Fields of application
  - Boilers
  - Power plants
  - Chemical process engineering

Technical features
- Thermocouple type J, K or N acc. to IEC 584-1
- Permissible mechanical and thermal stress acc. to DIN 43763
- Installed to the process by welding
- The measuring insert can be exchanged or calibrated without closing down the process
- Measuring insert is a mineral insulated type, vibrationproof
- Thermowell drilled from bar stock
- Optionally, can be supplied with head mounted transmitter

Ordering
The requested sensor is selected from the table below
The colour code means:
- Standard: Built of standard modules (short delivery time)
- Variant: Modified standard modules
- Special: Special versions and material. We are specialist in temperature measurement.
  Please contact us and we shall do our utmost to solve your specific measuring task

Ordering information
<table>
<thead>
<tr>
<th>Specification number</th>
<th>Sensor</th>
<th>Transmitter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1306-</td>
<td></td>
</tr>
</tbody>
</table>

Thermowell
Type:
- D1 Length L=140 Conus K= 65 .......................... 0
- D2 Length L=200 Conus K=125 .......................... 1
- D4 Length L=200 Conus K= 65 .......................... 2
- D5 Length L=280 Conus K=125 .......................... 3
- Special: ........................................... 4
None. Insert for D1 (140) ................................. a
None. Insert for D2 (200) ................................. b
None. Insert for D4 (200) ................................. c
None. Insert for D5 (260) ................................. d
None. Insert for special ................................ e

Material:
- W.no. 1.5415 15Mo3 .................................... 0
- W.no. 1.7335 13CrMo44 .................................. 1
- W.no. 1.7380 10CrMo910 .................................. 2
- W.no. 1.4571 XCNiMoTr17122 ............................. 3
- Special: ............................................. 4

Extension tube (mm)
- 52 ................................................................ 0
- 102 ............................................................ 1
- 152 ............................................................ 1
- 202 ............................................................ 2
- Special (Min. 52, max. 502) .............................. 2

Connection head
- B: Degree of protection IP 65 ............................ 0
- BHS: Degree of protection IP 65, high cap for transmitter .......................... 1

Accessories
- Measuring insert See data sheet 9108-01 Thermowell: See data sheet 9111
- Transmitter: See data sheet 9168 Extension: See data sheet 9111

Customer information
Name: 
Tel: 

Transmitter, 2-wire, 4-20mA output
None
- FPTU Standard version. As terminal block
- FPTU Standard version. In high cap (B-head)
- FPTU galvanic isolated. As terminal block
- FPTU galvanic isolated. In high cap (B-head)
- FPTU galvanic isolated. EEXialCT4/6. As terminal block
- FPTU galvanic isolated. EEXialCT4/6. In high cap (B-head)
- FPTT galvanic isolated. As terminal block
- FPTT galvanic isolated. In high cap (B-head)
- FPTT galvanic isolated. EEXialCT4/6. As terminal block
- FPTT galvanic isolated. EEXialCT4/6. In high cap (B-head)
Special
Note 4: Please specify measuring range

Tolerance acc to IEC 584-2
- Class 2, for J, K and N, i.e. ±2.5°C or 0.0075 x t actual (°C) 3
- Class 1, for J, K and N, i.e. ±1.5°C or 0.0040 x t actual (°C) 3
Note 3: The highest value apply

Number of thermocouples
- 1
- 2

Measuring insert
Model | Thermocouple | Type | Diam.Type | Continuous | Shortl.
--- | -------------- | ---- | ---------- | ---------- | ----
TK80 | Fe-CuNi       | J    | 6 Ml 2)   | 800°C     | 850°C
TK115| NiCr-Ni      | K    | 6 Ml 2)   | 1000°C    | 1150°C
TK125| Nirosil-Niil | N    | 6 Ml 2)   | 1100°C    | 1250°C

Special: Note 1: The values apply for the thermocouple.
Note 2: Ml= Mineral insulated.
Stress diagram for thermowell acc. to DIN 43763

Permissible stress diagram

<table>
<thead>
<tr>
<th>Material</th>
<th>Fig. 1</th>
<th>Fig. 2</th>
<th>Fig. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type DIN 43767</td>
<td>1.7335</td>
<td>1.7380</td>
<td>1.4571</td>
</tr>
<tr>
<td>Maximum flow velocity</td>
<td>Air</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Superheated steam</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Response time

<table>
<thead>
<tr>
<th>Thermowell</th>
<th>Response time in seconds (guidelines)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In water @ 0.4m/sec.</td>
<td>In air @ 1m/sec.</td>
</tr>
<tr>
<td>tA</td>
<td>tB</td>
</tr>
<tr>
<td>D1, D4</td>
<td>8</td>
</tr>
<tr>
<td>D2, D5</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: The 0.5/0.9 time is the time that it takes the sensor to reach 50%/90% of the final value of a temperature change of a medium. If media and velocity are different from the ones stated, the time can change significantly.