**Product Description**

The externally removable measuring probe consists of a measuring head, held against the thin, flat bottom of an entirely glass-lined baffle thermowell (DR) or valve head/stem (SVR) with a spring device. The head features 2 (DR2) or 3 (DR3) platinum 100 W resistors with a thin ceramic support which are embedded into insulating materials. For the DR probe, a bayonet at the lower end of the baffle permits easy assembly into the socket. Spring pressure maintains the necessary force to hold the measuring head against the thin corrosion resistant bottom of the baffle or thermowell. The assembly or removal of the system is made from the outside of the vessel by means of a tool, which incorporates another bayonet welded to an extension tube.

**ADVANTAGES**

- Separate electric circuit for each element
- Completely glass-lined:
  - No gasket to leak
  - No maintenance required
- Probe disengages from the outside of the reactor
  - During the process
  - For replacement or calibration
- Spring loading and special conductive grease ensure good contact
- Short response time due to:
  - Thin film ceramic Pt 100 W elements
  - Minimum wall thickness
  - Anti-oxidation treatment of the thin bottom
  - Ceramic insulation material
**Response Time**

By utilizing platinum resistors embedded on thin ceramic supports, which are then mounted in an insulating material, the system achieves a response time equivalent to that of a tantalum tip. Also, the quality of the contact between the measuring element and the bottom of the baffle or thermowell, together with the constant force of the spring and locking bayonet design, assures quick and reliable response times.

<table>
<thead>
<tr>
<th>ΔT(%)</th>
<th>50%</th>
<th>63.2%</th>
<th>80%</th>
<th>90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tantalum tip</td>
<td>11</td>
<td>18</td>
<td>27</td>
<td>35</td>
</tr>
<tr>
<td>DR probe standard execution</td>
<td>10</td>
<td>17</td>
<td>31</td>
<td>51</td>
</tr>
<tr>
<td>SVR probe in 2&quot; x 1-1/2&quot; valve</td>
<td>13</td>
<td>23</td>
<td>41</td>
<td>67</td>
</tr>
<tr>
<td>SVR probe in 3&quot; x 2&quot; valve</td>
<td>20</td>
<td>33</td>
<td>61</td>
<td>98</td>
</tr>
</tbody>
</table>

**Maintenance**

The DR probe reduces the down time of the reactor to a minimum since it is easy to replace externally without entering the vessel, or removing the baffle or thermowell.

**Possible Configurations Standard**

- DR2 & SVR2 with 2 Pt 100 W elements
- DR3 with 3 Pt 100 W elements

**Accuracy**

Equipped with 3-wire, Pt 100 W resistors, the probes give an accuracy of ± 2.7°F (1.5°C) throughout the working range of the vessels, i.e. –20°F to 400°F (-28°C to 204°C). Calibration certificates are available upon request. The recommended current intensity is: I < 2mA. Beyond this value a deviation must be taken into account due to the self-heating of the probe. Maximum current intensity: I = 10mA.

**Protection class: Intrinsically safe electric circuit**

The Pt 100 W probes, situated inside the baffle or valve (without gasketing), are in a Zone 1 area. They are passive elements of the measuring circuit and require a very low intensity (2mA, 150mV). Due to this fact, they are classified as intrinsically safe electric circuits, which exempts them from certification and marking when one of the 2 following conditions is fulfilled:

1. The circuit is protected by Zener barriers placed in a non-dangerous Zone, or
2. A 4-20mA intrinsically safe transmitter is assembled inside the connection housing

**Optional Features**

- Thermocouples J, K, T or E with 1, 2 or 3 elements
- Mixed Pt 100 W and thermocouples, for example:
  - DR2J = 2 Pt 100 W +1 J thermocouple
  - DR2K = 2 Pt 100 W + 1 K thermocouple
  - DR2J = 1 Pt 100 W + 2 J thermocouple
  - DRJK = 1 Pt 100 W + 1 J thermocouple +1K thermocouple

**TEMPERATURE MEASURING PROBES**

**TYPE DR & SVR**

<table>
<thead>
<tr>
<th>Enamel thickness 1mm</th>
<th>Response time in seconds</th>
</tr>
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<tbody>
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<td>ΔT(%)</td>
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