

AVAILABLE FROM  
01. NOVEMBER 2020

An Anderson-Negele Temperature sensor cannot be made better ?

## TSM – One Temperature sensor for All

### NEW: IO-Link and 4...20 mA with Flex-Hybrid Technology

The Flex Hybrid Technology with IO-Link and 4...20 mA combines the best of two worlds: Data can be transmitted from the sensor in **digital, analog, or parallel mode**.

- Thanks to its flexible communication with plug and play, **installation and commissioning are time- and cost-saving**.
- **Simple individual programming** with IO-Link Master, e.g., for changing the measuring range or for two-point calibration using offset and span
- Sensor replacement is **easier than ever before**, thanks to the "Smart Replace Design" with automatic sensor identification, configuration, and parameter setting.

### The new standard for temperature: Further improved quality

The Anderson-Negele TFP temperature sensors are already **synonymous with quality, reliability, and durability**. The new TSM series can outperform even this.

- **Extended process temperature range: -200...400°C**
- Considerably **improved measuring accuracy:  $< \pm 0.1 \text{ }^\circ\text{C}$**
- Higher **ambient temperature resistance (90 °C)**
- **Robust One-piece design** entirely in stainless steel: Long-term stability and application reliability

### Consistently modular and compatible with TFP

Thanks to the **completely modular concept**, you can configure **your individual sensor** in just a few steps. Nearly all combinations are possible.

- For **new equipment**, Flex-Hybrid technology offers maximum flexibility and sustainability.
- For **retrofitting**, TSM can replace any TFP mini-sensor in existing installations - with all the additional benefits of
- For the **replacement of third-party devices**, a suitable model is always possible due to the large selection of process adaptations and maximum flexibility in the configuration

**Also available soon:**  
**Version TSB (head Ø 55 mm) with extended functions**



### Technical specification at a glance

- **One Temperature sensor for all applications**
- Extremely **compact Mini version** (Head Ø 18 mm)
- **Flex-Hybrid Technology** with digital + analog interface (**IO-Link + 4...20 mA**)
- **Modular Design: step-by-step configuration** from the economic basic version to the high-end model
- Insertion length from **0 up to 2000 mm**
- **Version for flush installation available**
- **T<sub>90</sub> response time < 1.5 s** with sensor tip 3 mm
- Installation with thermowell possible, thus **sensor removal without process opening**
- **Protection class IP 69K** for max. application safety
- **Two-point calibration** possible using offset and span

### Modular design: Maximum flexibility for easy individual configuration



Overview of the configuration options

TSM	Temperature Sensor Mini
	<p><b>Process connection standard temperature range</b></p> <p><b>T05</b> Tri-Clamp 1/2" and 3/4"  <b>T10</b> Tri-Clamp DN10  <b>TC1</b> Tri-Clamp 1" and 1½"  <b>TC2</b> Tri-Clamp 2"  <b>T25</b> Tri-Clamp 2½"  <b>TC3</b> Tri-Clamp 3"  <b>V10</b> Varivent type B DN10/15  <b>V25</b> Varivent type F DN25  <b>V40</b> Varivent type N DN40/50  <b>C01</b> CLEANadapt M12  <b>C02</b> CLEANadapt G1/2"  <b>C03</b> CLEANadapt G1/2" frontflush  <b>C04</b> CLEANadapt G1/2" frontflush short  <b>N01</b> without thread  <b>G01</b> thread G1/2"  <b>G02</b> thread G1/4"  <b>M02</b> FLEXadapt ESF G3/8" cap nut</p> <p><b>Process connection wide temperature range</b></p> <p><b>CH1</b> CLEANadapt M12 (-200...400 °C)  <b>CH2</b> CLEANadapt G1/2" (-200 ...400 °C)  <b>GH1</b> thread G1/2" (-200...400 °C)  <b>NH1</b> without thread (-200...400 °C)</p> <p><b>Process connection Pharma</b></p> <p><b>G03</b> Sensor tip 3 mm, thread G¼", spring-loaded  <b>M01</b> PHARMadapt ESP 3/8" external thread, spring-loaded  <b>M04</b> Sensor tip 4 mm, G3/8" external thread, spring-loaded  <b>I46</b> Ingold 46 mm (Fermenter)  <b>I52</b> Ingold 52 mm (Fermenter)  <b>E08</b> PHARMadapt EPA-8  <b>E18</b> PHARMadapt EPA-18</p> <p><b>Spacer</b></p> <p><b>X</b> without spacer (≤ 100 °C)  <b>S</b> spacer 50 mm (≤ 150 °C)  <b>H</b> spacer 100 mm (≤ 250 °C)</p> <p><b>RTD type (selection Pt100, Pt1000, wiring, accuracy: see product information)</b></p> <p><b>Sensor length [mm]</b></p> <p><b>0...500</b> in steps of 10 mm  <b>501...1000</b> in steps of 50 mm  <b>1001...2000</b> in steps of 100 mm</p> <p><b>Diameter thermowell</b></p> <p><b>03</b> 3 mm  <b>04</b> 4 mm (fixed for process connection M02)  <b>06</b> 6 mm  <b>08</b> 8 mm  <b>10</b> 10 mm  <b>12</b> 12 mm</p> <p><b>Diameter sensor tip [mm]</b></p> <p><b>X</b> without reduction (fixed for process connection M02)  <b>3</b> for thermowell 6 mm (sensor length ≥ 50 mm)  <b>4</b> for thermowell 6, 8, 10 mm (sensor length ≥ 50 mm)  <b>6</b> for thermowell 8, 10, 12 mm (sensor length ≥ 50 mm)</p> <p><b>Surface finish (see product information)</b></p> <p><b>Transmitter</b></p> <p><b>O</b> without transmitter  <b>I</b> TTM.I (digital IO-Link output only)  <b>H</b> TTM.H (hybrid: analog and IO-Link output)</p> <p><b>Measurement range (see product information)</b></p> <p><b>Electrical connection with transmitter</b></p> <p><b>4</b> M12 plug (4 pin)</p> <p><b>Electrical connection without transmitter</b></p> <p><b>8</b> M12 plug (8 pin)  <b>P</b> fixed cable PVC (&lt; 90 °C)  <b>S</b> fixed cable silicone (&lt; 150 °C)  <b>T</b> fixed cable PTFE (&lt; 250 °C)</p> <p><b>Cable length [m] (with fixed cable only)</b></p> <p><b>1...50</b></p>
TSMF /	C01 / X / O / 100 / 06 / 4 / O / I / 00C / 4 /

AVAILABLE FROM  
01. NOVEMBER 2020