

# Specifications

## CONTACTLESS OPTICAL TEMPERATURE SENSORS

### 1 SENSOR SPECIFICATIONS

Specifications are valid for temperature sensor spots (item no.: **TPSP5**), self-adhesive temperature sensor spots (item no.: **TPSP5-ADH**), temperature sensor foil (item no.: **TPFOIL**), for the temperature sensor of sensor vials (item no.: **TOVIAL20**, **PHTOVIAL20-PKx**, **PHTVIAL20-PKx**), and for the temperature sensor of flow-through cells (item no.: **TPFTC2**, **TOFTC2**, **TPFLOW**).

#### 1.1 Specifications in gas & water/aqueous samples

Specifications	
Measuring Range	0 to 50°C (273-323 K; 32-122 °F)
Accuracy	± 0.5°C (1-point calibrated)
Resolution	0.04°C
Drift	<0.2°C / week at 25°C

\* For 1-point calibrated sensor.

#### 1.2 General Characteristics

Response time ‡ (t90) in water	<1 s
Minimum Lifetime	10,000,000 data points
Calibration Modes	1-point calibration
Application Areas	Laboratory, industry, research. <b>NOT</b> for medical or any safety-critical application. <b>NOT</b> for application in humans. <b>NOT</b> for application in food intended for human consumption.

‡ Typical response times for 90% signal change.

## 1.3 Specific Characteristics of TPFLOW

<b>Materials of FLOW cell</b> (apart from sensing layer)	Polycarbonat and Polyamid (item no. <b>TPFLOW</b> )
<b>Tubing Connectors (Luer-Lock)</b>	ID tubing 3.2 or 4.8 mm (item no. <b>TPFLOW</b> )
<b>Recommended flow rate for liquids</b>	1-500 mL/min (item no. <b>TPFLOW</b> )
<b>Pressure Range</b>	0 to 3 bar (differential pressure) (item no. <b>TPFLOW</b> )

## 1.4 Specific Characteristics of Sensor Vial

<b>Material of Septum</b> (Sensor Vials)	Butyl/PTFE
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## 2 APPLICABILITY AND CROSS-SENSITIVITY

	Applicability	Cross-Sensitivity
<b>Water/Aqueous solutions</b>	X	
<b>Gas Phase (typ. air components)</b>	X	
<b>Ethanol<sup>1</sup></b>	short-term only	
<b>Methanol<sup>1</sup></b>	short-term only	
<b>Isopropanol<sup>1</sup></b>	short-term only	
<b>Other organic solvents<sup>2</sup></b>		X
<b>Bleach</b>		X
<b>pH 1-14<sup>3</sup></b>	X	

<sup>1</sup> Only for temperature compensation of oxygen measurements (in combination with contactless oxygen sensor).

<sup>2</sup> Includes liquid solvents and solvent vapors

<sup>3</sup> pH 2-9 for **TPSP5-ADH**

### 3 CLEANING, STERILIZATION, STORAGE

<b>Cleaning</b>	3% H <sub>2</sub> O <sub>2</sub> , soap solution, short-term ethanol
<b>Sterilization</b>	<p><b>TPSP5:</b> Sterilization with short-term 70% ethanol and 70% isopropanol; sterilization with ethylene oxide (EtO, EO) (details on request); autoclavable few cycles at 121°C for 15 min with special precautions (details on request).</p> <p><b>TOVIAL20:</b> Sterilization with short-term 70% ethanol and 70% isopropanol; sterilization with ethylene oxide (EtO, EO) (details on request); autoclavable few cycles at 121°C for 15 min only without lid &amp; septum and with special precautions (details on request).</p> <p><b>PHTOVIAL20-PKx, PHTVIAL20-PKx:</b> Sterilization with 2% glutaraldehyde solution; sterilization with ethylene oxide (EtO, EO) (details on request); autoclavable <b>once</b> at 121°C for 15 min only without lid &amp; septum and with special precautions (details on request).</p> <p><b>TPFTC2, TOFTC2:</b> Sterilization with short-term 70% ethanol and 70% isopropanol; <b>not</b> autoclavable.</p> <p><b>TPFLOW:</b> delivered pre-sterilized with 25kGy beta-radiation, Sterilization with short-term 70% ethanol and 70% isopropanol; autoclavable few cycles at 121°C for 15 min without the optical fiber and with special precautions (details on request).</p>
<b>Storage</b>	>3 years in darkness at room temperature

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