

# Specifications

## pH Sensors

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### 1 PH SENSOR SPECIFICATIONS

Only valid in physiological solutions (ionic strength = 150mM) at 25°C for 2-point calibrated sensors. Specifications are valid for pH sensor spots (item no.: **PHSP5-PKx**), self-adhesive sensor spots (item no.: **PHSP5-PKx-ADH**), sterilized self-adhesive sensor spots (item no.: **PHSP5-PK7-ADH-STER**), pH sensor of pH sensor vials (item no.: **PHTOVIAL20-PKx**), robust screw cap probes (item no.: **PHROBSC-PKx**), including underwater versions (option **-SUB**) and pH cap probes (item no.: **PHCAP-PKx(-AF)-SUB**).

#### 1.1 General Characteristics

<b>Response Time (<math>t_{90}</math>) at 25°C<sup>1</sup></b> -PK5, -PK8(T), -PK8(T)-AF-SUB -PK6, -PK7, -PK7-ADH-STER -PK7-AF-SUB	<60 sec <100 sec <120 sec
<b>Temperature Range</b>	-1°C (30°F) to 50°C (122°F)
<b>Influence of Salinity<sup>2</sup></b>	Specified for measurements between 20-500 mM ionic strength (approx. 1-30 PSU). Exception: <b>PK8T</b> sensors are only specified between 20 and 40 PSU. Response time and accuracy at lower or higher salinities are not specified. Rough compensation is enabled in the software.
<b>Influence of Hydrostatic Pressure</b>	ca. + 0.029 pH/100 bar hydrostatic pressure
<b>Calibration Modes</b>	1-point calibration or 2-point calibration (recommended), pre-calibration mode <sup>3</sup>
<b>Calibration Solution</b>	PyroScience buffer capsules or a self-made buffer (details on request) must be used
<b>Background Fluorescence</b>	Minimized due to REDFLASH technology
<b>Optical Isolation</b>	The sensor is equipped with an optical isolation to minimize interference from strong external illumination and light-sensitive / fluorescent samples.

<b>Sensor Dimensions</b> Length without cable (ca.) Shaft diameter (ca.) Sensor tip diameter (ca.) Cable length (ca.)	<b>PHROBSC-PKx</b> 100 mm 3 -4 mm (tapered) 4 mm 2 m
<b>Application time</b>	For self-adhesive sensor spots (-ADH) limited to max. 1 month
<b>Material of Septum</b> (Sensor Vials)	Butyl/PTFE
<b>Application Areas</b>	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.

<sup>1</sup> time for 90% of the total sensor signal change in stirred media

<sup>2</sup> PK8T versions are specified for measurements between PSU 20-40

<sup>3</sup> sensors can be used once without manual calibration (reduced accuracy), only in combination with pre-calibration ready **FireSting-PRO** devices (labeled with "precal pH")

Important: Please note that the -AF versions are sensor caps with an anti-(bio)fouling layer containing **zineb**. It is strongly recommended to wear gloves during handling, especially in case of a known contact allergy. If your application involves a closed chamber with living organisms, be aware that exposure to zineb may cause adverse effects such as toxicity, allergic reactions, or respiratory irritation, potentially harming the organisms. **Handle with care.**

## 1.2 Specifications

### PK5 - Version

Specifications	
Item No.	PHSP5-PK5, PHSP5-PK5-ADH, PHROBSC-PK5
<b>Measuring Range</b> Optimum Maximum	4.0 - 6.0 3.5 - 6.5
<b>Accuracy</b> after 2-point calibration pH 4-4.5 pH 4.5-6	±0.1 ±0.05
<b>Accuracy</b> pre-calibration pH 4-4.5 pH 4.5-6	±0.2 ±0.1

<b>Resolution</b> at pH 5.0	0.003
<b>Drift</b> at pH 5.0	< 0.005 / day at 25°C

## PK6 - Version

Specifications	
<b>Item No.</b>	PHSP5-PK6, PHSP5-PK6-ADH, PHROBSC-PK6
<b>Measuring Range</b> Optimum Maximum	5.0 - 7.0 4.5 - 7.5
<b>Accuracy</b> after 2-point calibration pH 5-5.5 pH 5.5-7	±0.1 ±0.05
<b>Accuracy</b> pre-calibration pH 5-5.5 pH 5.5-7	±0.2 ±0.1
<b>Resolution</b> at pH 6.0	0.003
<b>Drift</b> at pH 6.0	< 0.005 / day at 25°C

## PK7 - Version

Specifications	
<b>Item No.</b>	PHSP5-PK7, PHSP5-PK7-ADH, PHSP5-PK7-ADH-STER, PHROBSC-PK7(-SUB), PHTOVIAL20-PK7, PHCAP-PK7(-AF)-SUB
<b>Measuring Range</b> Optimum Maximum	6.0 - 8.0 5.5 - 8.5
<b>Accuracy</b> after 2-point calibration pH 6-6.5 pH 6.5-8	±0.1 ±0.05
<b>Accuracy</b> pre-calibration pH 6-6.5 pH 6.5-8	±0.2 ±0.1
<b>Resolution</b> at pH 7.0	0.003
<b>Drift</b> at pH 7.0	< 0.005 / day at 25°C

**PK8 - Version**

<b>Specifications</b>	
<b>Item No.</b>	PHSP5-PK8, PHSP5-PK8-ADH, PHROBSC-PK8(-SUB), PHTOVIAL20-PK8, PHCAP-PK8(-AF)-SUB
<b>Measuring Range</b> Optimum Maximum	7.0 - 9.0 6.5 - 9.5
<b>Accuracy</b> after 2-point calibration pH 7-7.5 pH 7.5-9	±0.1 ±0.05
<b>Accuracy</b> pre-calibration pH 7-7.5 pH 7.5-9	±0.2 ±0.1
<b>Resolution</b> at pH 8.0	0.003
<b>Drift</b> at pH 8.0	< 0.005 / day at 25°C

**PK8T - Version**

<b>Specifications</b>	
<b>Item No.</b>	PHSP5-PK8T, PHSP5-PK8T-ADH, PHROBSC-PK8T(-SUB), PHCAP-PK8T(-AF)-SUB
<b>pH Scale</b>	"pH total scale" for marine /oceanographic applications
<b>Measuring Range</b> Optimum Maximum	7.0 - 9.0 6.5 - 9.5
<b>Accuracy</b> after 2-point calibration pH 7-7.5 pH 7.5-9	±0.1 ±0.05
<b>Accuracy</b> pre-calibration pH 7-7.5 pH 7.5-9	±0.2 ±0.1
<b>Resolution</b> at pH <sub>T</sub> 8.0	0.003
<b>Drift</b> at pH <sub>T</sub> 8.0	< 0.005 / day at 25°C
<b>Influence of Salinity</b>	Negligible between PSU 30 and 40

## 2 APPLICABILITY AND CROSS-SENSITIVITY

	Applicability	Cross-Sensitivity	NO Cross-Sensitivity
Water/Aqueous solutions	X		
Hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )		X	
Chlorinated Water		X	
Diluted Ethanol (<5%)	short-term		
Other organic solvents		X	
Charged surfactants (e.g. sodium dodecyl sulfate)		X	
Calibration buffers for pH electrodes		X	
Certified Reference Materials (CRMs) *		X	
Uncharged antifoam agents (e.g. polyethylene glycol, Tween80)			X
Phenol red			X
Ammonium > 25 mM		X	
pH 2-11			X

\* except TRIS buffer solution in synthetic seawater (Dr. A. Dickson))

### 3 CLEANING & STORAGE

<b>Cleaning</b>	Deionized water
<b>Sterilization</b>	<ul style="list-style-type: none"><li>• ethylene oxide (EtO, EO) sterilization (not applicable for <b>PHSP5-PK7-ADH-STER</b>) (details on request)</li><li>• 2% glutaraldehyde solution</li><li>• autoclave sterilization is possible for the following types: <b>PHSP5, PHSP5-ADH, PHSC</b> (details on request)</li><li>• beta or gamma sterilization is <u>not</u> possible (pre-sterilized products are available)</li></ul>
<b>Storage</b>	Original packaging: 12 months at room temperature

#### Contact

**PyroScience GmbH**  
Kackertstraße 11  
52072 Aachen  
Deutschland

Tel.: +49 (0)241 5183 2210  
Fax: +49 (0)241 5183 2299  
info@pyroscience.com  
[www.pyroscience.com](http://www.pyroscience.com)