Datasheet

Potassium sensor S-601 PET 190 µm

accensors

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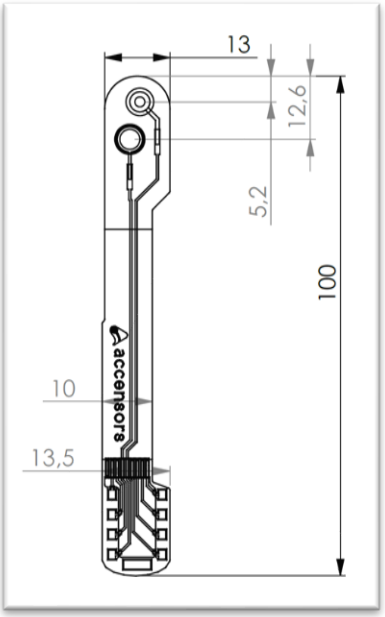
Foil sensor for potassium monitoring

The S-601 is a foil sensor with electrodes for electrochemical determination of potassium concentrations of samples. The accensors pH-sensor consists of two electrodes (a K^+-sensitive and a non-sensitive Ag/AgCl reference electrode) on a transparent PET foil. The readings are taken by measuring the open circuit potential/voltage between both electrodes. Potential (E) and pH have a linear relationship (between the operating range of pH 1 µM and 0.1 M) so the potassium concentration of an unknown analyte can be calculated using the pre-determined slope and an offset E value (E_0 determined by measuring the potential in a calibration solution of known K^+ concentration). The reference electrode and overall sensor can be used in analytes with different chloride concentrations thanks to a solid-state electrolyte layer. Once used, the sensor must be kept hydrated for further application and not allowed to dry out.

The foil carrier is made of transparent PET material and the sensor is flexible, although care should be taken not bend the electrode spots. A connection between sensor and measurement electronics can be established via accensors connect or ZiF-connector. Contact pads are covered with an oxidation protection. The data given refers to the use of the sensor in combination with the ACO accensors D-301 measurement device and our accensors iOS application. The measuring output will display the measured potential (in mV) or if the sensor is calibrated (one-point software calibration at 21 °C or two-point at other temperature) output can be given as concentration K^+.

Technical Data	
Dimensions L x W x H in mm	100,0 x 13,0 x 0,2
Measurement range	1 µM and 0.1 M
Accuracy (in aqueous solutions)	+/- 4 mV
Potential response (at 21 °C)	58.2 mV per decade +/- 0.7
Set-up time (time till stable output)	30 min
Response time (t_{90})	< 20 sec
Sensor drift	8 mV in first 24 hrs then stable
Max lifetime (in use)	7 days
Lifetime (in storage)	3 months
Storage temperature	10 °C - 20 °C
Storage humidity	35 % RH - 50 % RH
Measuring environment	
Temperature	18 °C - 25 °C
Samples	Diverse*

TRL 8 MRL 8



*must be sufficient moisture for contact to be maintained between both electrodes

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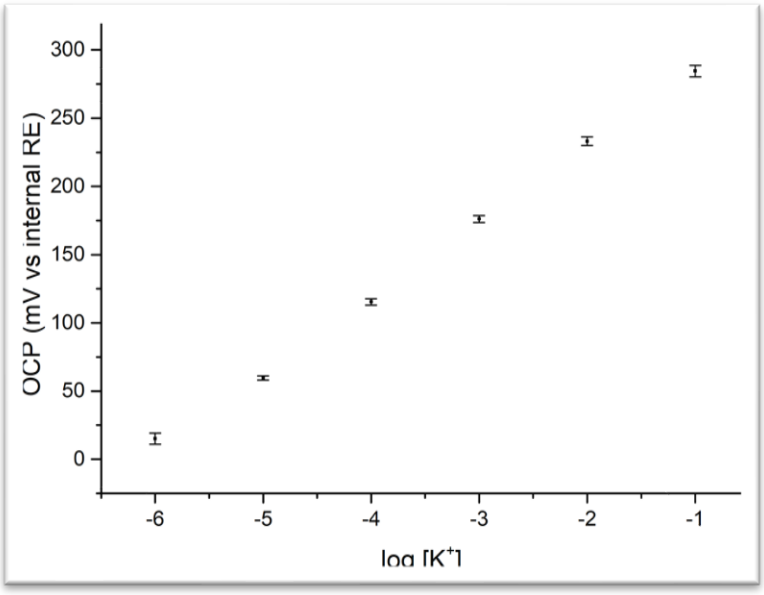

Fig.1 Output potential for sensors measured in different buffer solutions (no. sensors = 5)

All mechanical dimensions are valid at 25 °C ambient temperature, if not differently indicated. All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics. Technical changes without previous announcement as well as mistakes reserved. Load with extreme values during a longer period can affect the reliability. Typing errors and mistakes reserved. Product specifications are subject to change without notice.

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Technology Readiness Level

TRL 0	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9
Idea unproven concept no testing has been performed.	Problem Solving Core principles are explored and observed but no experimental proof available.	Concept Generation Concept & application have been explored.		Proof of concept Prototype Testing done on care mechanismus and function	Rough Working-Prototype Tested in intended environment	Prototype Field Trials Tested in intended environment close to expected performance	Pre-Production Prototype Operating in operational environment at precommercial scale.	First Production Runs Manufacturing issues solved.	Full Commercial-Production Technology available for consumers.
	• Concepts identified • Research carried out and refined • Technology • development • Identify material concerns			• Early indications of materials identified • Manufacturing feasibility determined • Manufacturing processes identified	• Characteristics identified • Early supply chain assessment	• Initial trade studies • Quality thresholds established	• Assessed supply chain • BOM in development • Materials being tested • Demonstrate supply chain BOM Draft	• Establish multiple sources • Pilot line builds validated • Materials proven Quality characteristics validated • BOM finalised	• Continous process improvments • Materials in control • Quality validated with LRIP articles • Make/buy supports
	Prior Consultancy Knowledge As a consultancy, having worked on puccessful solutions for many Industries, the first 3 manufacturing readiness levels are tackled and kept in mind by our early sage product-development stages.			Small Scale Prototype Crude prototypes to test technology	Refine Manufacturing Strategy Identification of enabling technologies and components.	Prototype Development Manufacturing pocesses have been defined but requires design for manufacturing	Design for Manufacturing Manufacturing detailing is underway.	Pilot Line Demonstration Manufacturing processes are proved	Manufacturing Production Getting the quality, costs and performance on target.
MRL 1	MRL 2	MRL 3	MRL 4	MRL 5	MRL 6	MRL 7	MRL 8	MRL 9	MRL 10

LEVEL EXIT CRITERIA

Manufacturing
Managment Applied
Six Sigma to the production

Manufacturing Readiness Level

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