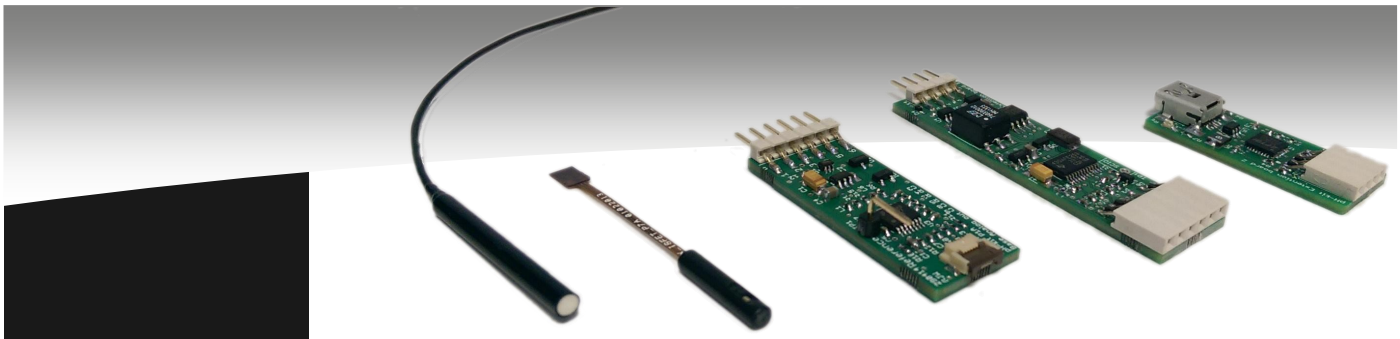
Sentron

ISFET pH-sensor kit



Modular pH-kit for development and testing

Sentron offers a glass-free modular pH-kit designed specifically for development and testing purposes.

With this pH-kit, development engineers and researchers have a large degree of flexibility in how they integrate our proprietary ISFET pH sensor into their applications or experimental set-ups.

Due to the modular design, the functionality can be expanded as required and components can be replaced individually.

Replaceable pH sensor and reference electrode

The pH sensor and reference electrode are separate components that attach to the control modules through a connector. This allows replacement of the sensor module and reference electrode, e.g. when a next version of a prototype or experimental setup is created, without having to replace the control modules.

If circumstances require, it is also possible to attach a custom reference electrode to the control module.

Small dimensions

De dimensions of the pH sensor module, reference electrode and control modules are kept as small as possible. Thanks to the small size of our ISFET pH sensor, the pH-kit can be used to measure small volumes or develop applications with small form factors.

The ISFET pH sensor module has a diameter of 3mm and a length of 15mm, while the reference electrode has a diameter of 3 mm and a length of 30 mm. The pH sensor module contains a PT1000 temperature sensor in addition to the ISFET pH sensor chip.

Expandable control modules

The pH-kit consist of a Core AO module with an uncalibrated analog pH output signal (voltage output 0 — 3.3V with ~ 52 mV / pH and pH 7 between 500 and 1800 mV). The PT1000 is wired directly to the Core AO module output.

The reference electrode also connects to the Core AO module and either the standard reference electrode with porous PTFE diaphragm can be used or a suitable custom reference electrode can be attached.

An optional AD Converter module can be attached to the Core AO module. This extension module with microprocessor, AD Converter and galvanic isolation makes it well suited for use in embedded applications.

The communication with the AD Converter is based on a serial RS232 interface with a 115k2 8N1 baud rate setting. Using a standard serial interface it is possible to perform calibrations and read pH and temperature values. Application of a temperature correction algorithm to the pH signal is performed directly by the microcontroller of the AD Converter module. The 1.5kV galvanic isolation provides an extra safety barrier and prevents ground loops.

With the optional USB Interface extension module, which connects to the AD Converter module, it is possible to request measured pH and temperature values from a laptop or PC with a USB port (USB 1.1 or 2.0). The USB Interface extension module, with appropriate user developed software, allows the pH-kit to be used for applications that require direct connection to a PC, such as real time monitoring of pH values in an experiment or process.

Accurate, reliable and robust

The pH-kit's advanced electronics can achieve an accuracy of +/- 0.01 pH, a level that is sufficient for most applications. If higher levels of accuracy are required Sentron can work with you to design custom sensor modules and control electronics.

The pH-kit ability to offer reliable pH measurements under a wide range conditions is the result of the robust ISFET sensor integrated into the probe. Unlike glass pH electrodes, ISFET pH sensors are highly resilient and do not require wet storage.

Highlights

- Replaceable pH sensor and reference electrode
- Small dimensions
- Expandable control modules
- Accurate, reliable and robust

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For engineers and researchers

The pH-kit does not contain a user interface and is not a “plug-and-play” solution. If you are looking for a simple and user friendly pH measurement solution we recommend using a probe and meter from our SI pH meter line.

The analog output from the Core AO module will require the user to develop his own calibration algorithm that converts the mV output signal into a meaningful pH value. Use of the features of the AD Converter and USB Interface modules requires knowledge of programming serial communication in embedded applications. Integration of our ISFET pH sensor with a user supplied reference electrode requires in-depth knowledge on reference electrode functioning and characteristics. We hence recommend this test kit should only be used by engineers that have a good understanding of pH measurement, electronics and programming.

Please note that the control modules will only work with Sentron pH sensor modules designed for the pH-kit.

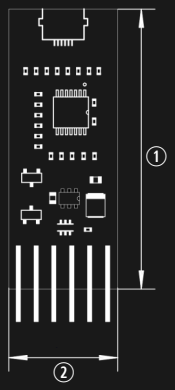
About Sentron

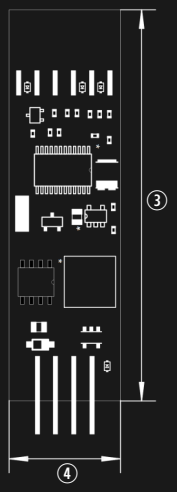
Sentron is an innovative technology company specialized in the development and production of small sensors for medical and analytical applications. The company leverages more than 15 years of experience to develop and produce its high quality ISFET pH and pressure sensors. Peripheral equipment for the sensors, like measurement instruments, are designed, developed and produced in house as well.

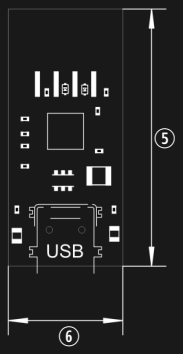
Sentron is ISO 13485: 2003 certified for the development, manufacture and sales of sensors, subassemblies and meters for the determination of physical and chemical measured values in the engineering field, including medical applications.

Sentron is part of Wellinq, a Dutch high tech company with activities in sensoring and medical devices. Please visit www.wellinq.com for more information.

Please contact one of our distributors or visit our website for more information about the company, potential applications and for probes and accessories available for this meter.







①	40 mm	1.57”
②	15.5 mm	0.61”
③	52 mm	2.0”
④	15.5 mm	0.61”
⑤	35 mm	1.38”
⑥	15.5 mm	0.61”

Specifications

	ISFET Sensor	Reference	Analog Front-end	AD Converter	USB Interface
Product order code	A120-001	A120-002	A120-003	A120-004	A120-005
pH					
Sensor	Glass-free Ion Sensitive Field Effect Transistor (ISFET)				
Accuracy	+/- 0.01 pH				
Range	pH 0.00...14.00				
Drift *(total after 24 hours in pH7 @ 25°C)*	Max. 0.14 pH				
Reference system					
Elektrode		Ag/AgCl			
Type		Non-flow			
Diafragm		Porous PTFE			
Reference solution		Gelled KCl			
Temperature					
Sensor	PT1000				
Accuracy	+/- 0.5°C (0.9°F)				
Range	0...80°C (32...176°F)				
Physical properties					
					
Dimensions					
Total length	46 mm (1,81")	350 mm (13.78")	45 mm (1.77")	59.5 mm (2.34")	40 mm (1.57")
Length	15 mm (0.59")	30 mm (1.81")	40 mm (1.57")	54.5 mm (2.15")	35 mm (1.38")
Diameter/Width	3 mm (0.12")	3 mm (0.12")	15.5 mm (0.61")	15.5 mm (0.61")	15.5 mm (0.61")
Materials					
Barrel	PEEK	PEEK			
PCB			FR4	FR4	FR4
Weight	0.15 gr.	1.29 gr.	3.18 gr.	4.69 gr.	3.10 gr.
Operation / storage					
Temperature	0...80°C (32...176°F)				
Humidity	30 %...80 % Relative humidity				
Electrical properties					
Power					
Supply input			3.3 VDC +/-100 mV	5 VDC +/-100 mV	5 VDC +/-100 mV
Consumption typical	100 nA		8 mA @ 3.3 V	13 mA @ 5V	2.5 mA @ 5 V
Comunication					
Sampling frequency				3 Hz	3 Hz
Baud rate				115k2 8N1	115k2 8N1
Voltage Level				5V	5V
Connection					
Connector type(s)	6p FFC 0.5 mm pitch	1p Receptacle	6p FPC 0.5 mm pitch 6p header 2.54 mm pitch	6p Receptacle 2.54 mm pitch 4p header 2.54 mm	4p header 2.54 mm pitch Mini USB B Receptacle