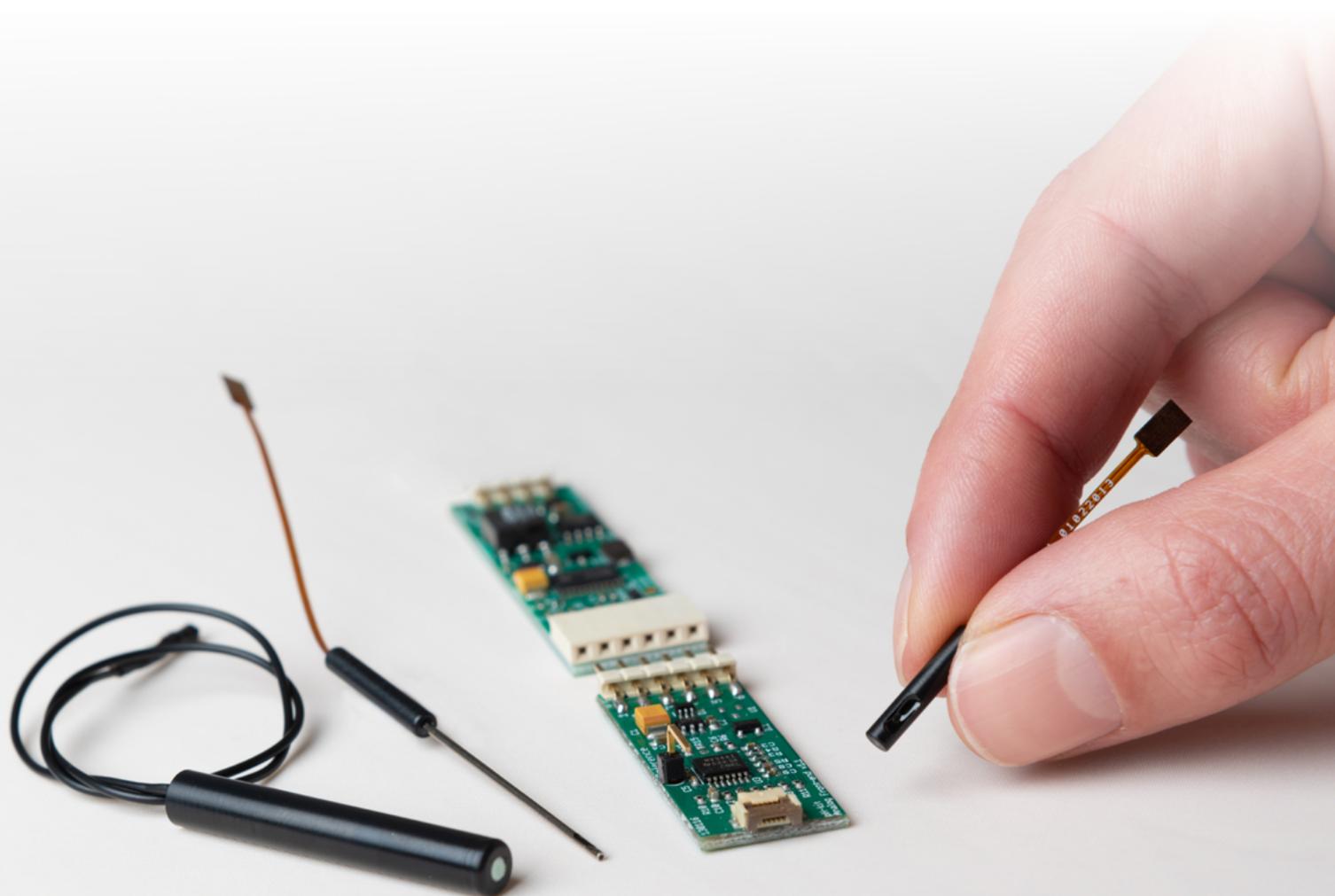


# SENSOR INTEGRATION SERVICES





# Sensor Integration Services

Do you want to obtain sensor data anytime anywhere?

Do you need engineering help to integrate a sensor into your product?

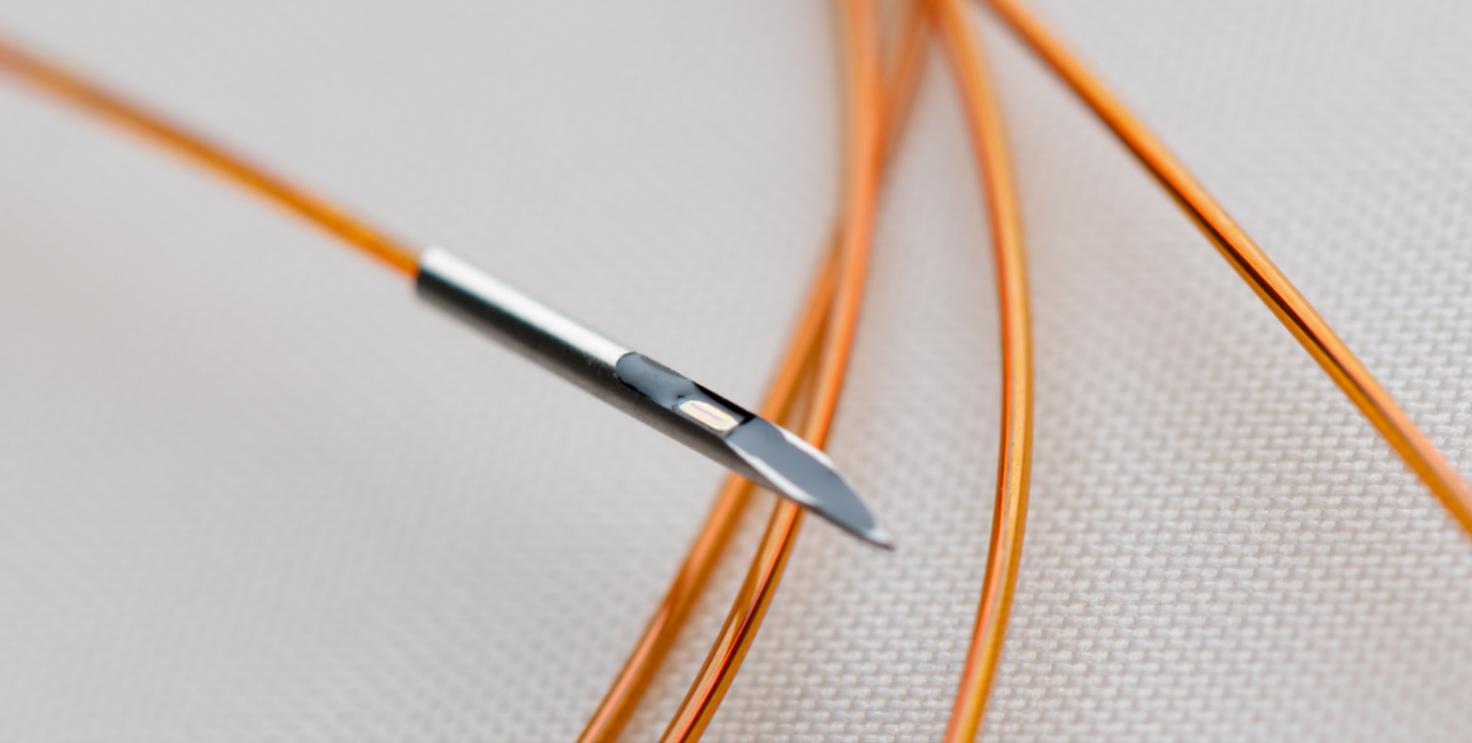
We can support you through contract development and contract manufacturing of sensor assemblies that fit your needs.

Get more insight into our pressure sensor and pH ISFET sensor.

Our sensor assemblies are used successfully in the market of FDA approved and CE certificated medical devices.

Interested? [🔗 Visit our website!](#)

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## ISFET pH

pH is a critical parameter in many areas, for example: agriculture, horticulture, water environment, food industry, medical applications like gastro-enterology and life science research.

### Main features of our Sentron's ISFET pH sensor:

- Glass-free
- Robust
- Dry storage
- Comes in different sizes: from small to very small

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Get started  
with the R&D  
evaluation  
pH kit

### R&D evaluation pH kit

We understand that you may want to test and evaluate our sensors before contracting us as your partner. The R&D evaluation pH kit is specifically designed for these situations. It is a modular and flexible ISFET pH sensor platform for research and development purposes. It can be integrated into prototypes and experimental setups.

### ISFET (Ion Sensitive Field Effect Transistor) pH sensor

The non-glass ISFET pH sensor is one of the sensors that we produce in our semiconductor production facility. It is robust and does not require wet storage, which makes it well suited for, e.g., agriculture, water environment, food and other industrial applications. Our ISFET assemblies are used successfully in the market of FDA approved and CE certificated medical devices for the medical application in gastro-enterology.



# Specifications for the R&D evaluation pH kit

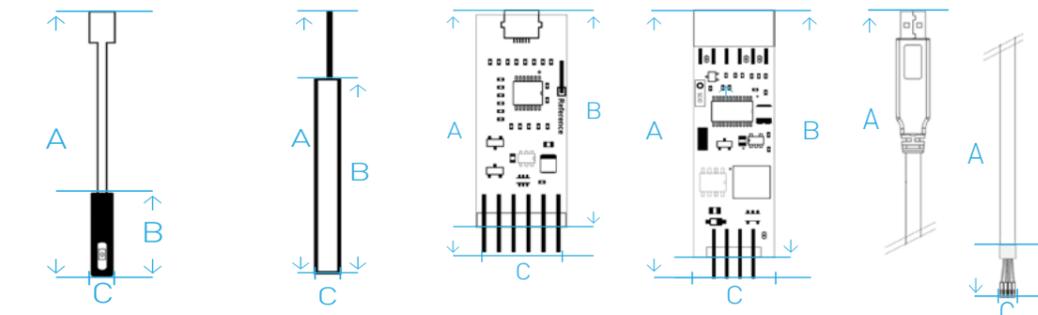
Complete set (R&D pH evaluation kit)	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
A120-200	A120-001	A120-002	A120-003	A120-004	A120-005
					
General description	Module contains ISFET pH sensor chip as well as a PT1000 temperature sensor.	Module contains gel-filled reference.	Module provides analog voltage output pH signal when the pH-kit ISFET pH sensor module and the pH-kit reference electrode are attached.	Optional Analog-Digital Converter that provides RS232 serial output when attached to the pH-kit Analog Front-end module.	Optional USB Interface module to be attached to the AD Converter module. It enables pH values to be read directly by a PC with a USB port.
	To be used with: <ul style="list-style-type: none"> <li>A120-002</li> <li>A120-003</li> </ul>	To be used with: <ul style="list-style-type: none"> <li>A120-001</li> <li>A120-003</li> </ul>	To be used with: <ul style="list-style-type: none"> <li>A120-001</li> <li>A120-002</li> </ul>	To be used with: <ul style="list-style-type: none"> <li>A120-001</li> <li>A120-002</li> <li>A120-003</li> </ul>	To be used with: <ul style="list-style-type: none"> <li>A120-001</li> <li>A120-002</li> <li>A120-003</li> <li>A120-004</li> </ul>

pH	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
Sensor	Glass-free Ion Sensitive Field Effect Transistor semiconductor				
Accuracy	+/- 0.01 pH				
Range	pH 0.00... 14.00				
Drift maximal (in pH7 @ 25°C)	0.14 pH/day				
Drift typical (in pH7 @ 25°C)	0.05 pH/day and lower				

Reference system	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
Electrode		Ag/AgCl			
Type		Non-flow			
Diaphragm		Porous PTFE			
Reference solution		Gelled KCl			

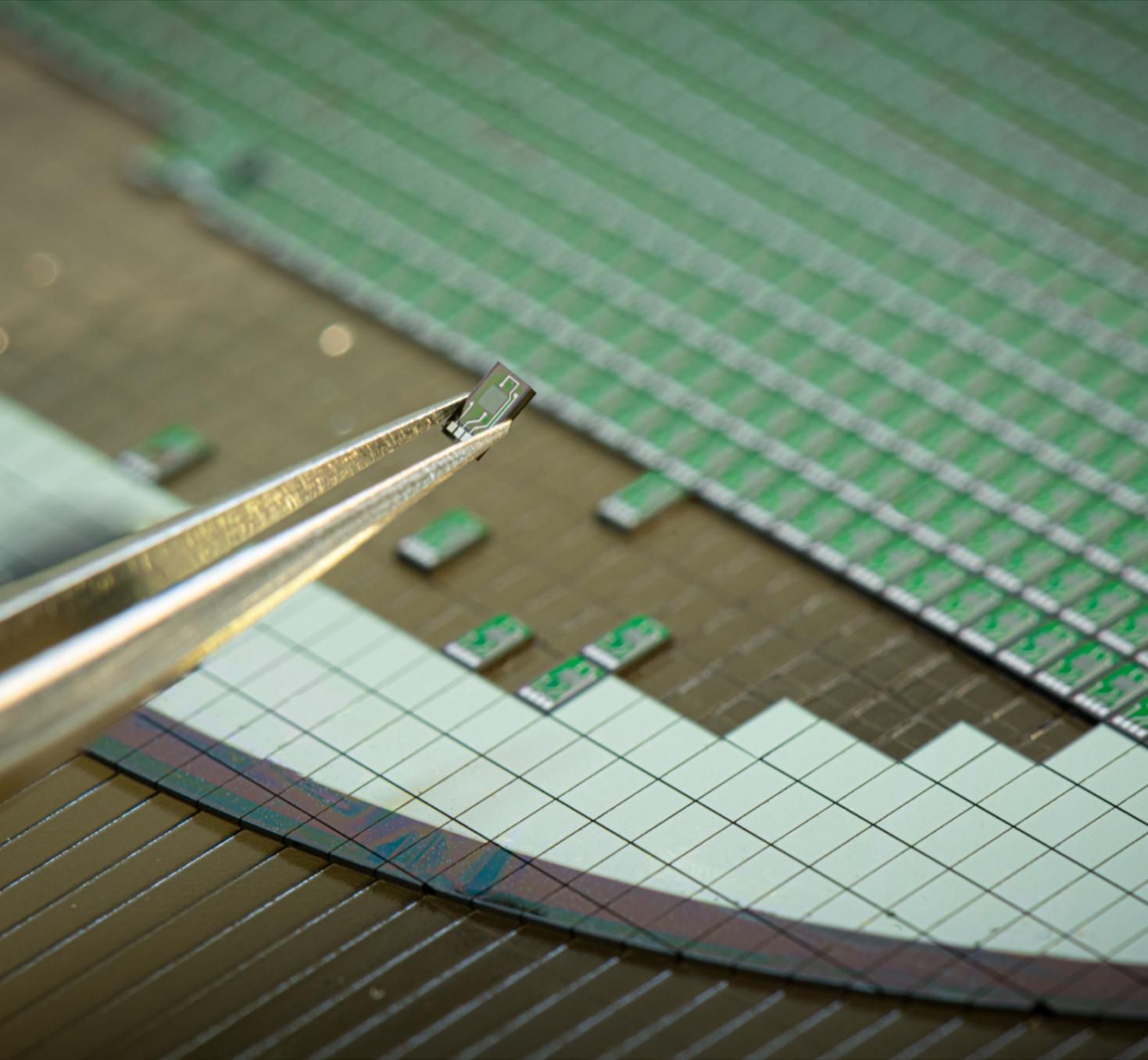
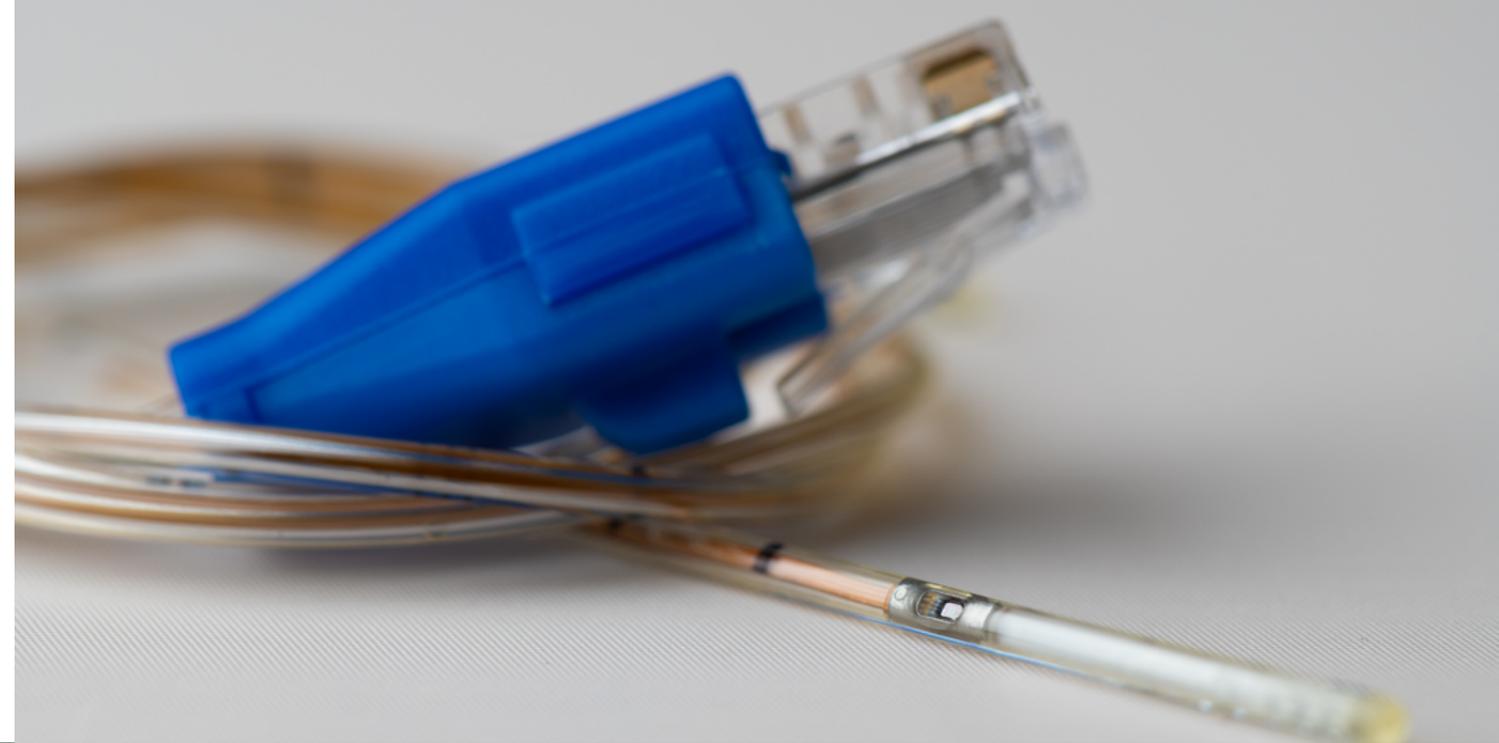
Temperature	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
Sensor	PT1000				
Accuracy	+/- 0.5°C (0.9°F)				
Range	0...80°C (32...176°F)				

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Physical properties	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
					
Dimensions					
Total length (A)	46 mm (1.81")	300 mm (11.8")	45 mm (1.77")	59.5 mm (2.34")	1,860 mm (73.2")
Length part (B)	15 mm (0.59")	41 mm (1.61")	40 mm (1.57")	54.5 mm (2.15")	4.5 mm (0.18")
Diameter/Width (C)	3 mm (0.12")	6 mm (0.24")	15.5 mm (0.61")	15.5 mm (0.61")	10 mm (0.39")
Materials					
Barrel	PEEK	PEEK			
PCB			FR4	FR4	FR4
Weight					
Weight	0.15 gr. (0.005 oz)	2.10 gr. (0.074 oz)	3.18 gr. (0.112 oz)	4.69 gr. (0.165 oz)	78.4 gr. (2.77 oz)
Operation / storage					
Temperature	0...80°C (32...176°F)	0...80°C (32...176°F)	0...80°C (32...176°F)	0...80°C (32...176°F)	0...80°C (32...176°F)
Relative Humidity	30 %...80 %	30 %...80 %	30 %...80 %	30 %...80 %	30 %...80 %
Electrical properties	ISFET pH sensor module	Reference electrode module	Analog Front-end module	AD Converter module	USB Interface module
Power					
Supply input			3.3 VDC +/-100 mV	5 VDC +/-100 mV	5 VDC +/-100 mV
Consumption typical	100 uA		8 mA @ 3.3 V	13 mA @ 5V	2.5 mA @ 5 V
Communication					
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 FFC 0.5 mm pitch 6p header 2.54 mm pitch	6p receptacle 2.54 mm pitch 4p header 2.54 mm pitch	4p header 2.54 mm pitch USB A header

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# Pressure sensor equipped with full Wheatstone bridge for differential pressure measurements



#### Differential, so no atmospheric influence

In our facility we produce the advanced miniature piezo resistive sensor that is equipped with a full Wheatstone bridge for differential pressure measurements. Thanks to this technology atmospheric changes have no effect. The sensor is stable with low drift in varying pressure and temperature environments.

The narrow dimensions of this pressure sensor make it ideally suited for medical applications. Our pressure sensor assemblies are already on the market in FDA approved and CE certificated medical devices for cardiology, as well as for neurology and urology catheters.

#### Cardiology, Neurology and Urology

An OEM pressure sensor module typically consists of sub-assemblies containing the pressure sensor, housing parts and control electronics. The narrow dimensions and the high quality of this pressure sensor make it ideally suited for medical applications in fields such as cardiology, neurology and urology. Examples of applications for which we have designed the sensor sub-assemblies are: ventricular pressure-volume measurements for optimization of pacemaker electrode placement, cranial pressure measurement, flow measurement for the world's smallest heart pump, pressure measurement in urology and gastro-enterology catheters, and in-vivo blood pressure monitoring.

Interested? [🔗](#) Visit our website for more information!

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## Vertically Integrated Capabilities

### Sensor Manufacturing

At our inhouse semi-conductor factory, we have many years of experience in developing and producing high quality miniature sensors. We perform the lithography and chemical vapor deposition ourselves, as well as the diffusion and annealing furnaces. After testing the wafers, they are diced and picked by well-trained special operators.

Interested? [✉](#) Contact us for more information!

### Product Development

Sentron is your partner for the full process: starting with semiconductor processing to documentation required for the MDR. Anything is possible, depending on the preferences of the customer. At the start of the partnership, we will discuss which processes the customer would like Sentron to do. This can vary between the bare sensor die to a full sensor product with GUI. During the prototyping phase the sensor module design can be changed and concepts can be tested. After the engineering project has been finalized, Sentron offers standardized volume assembly of the sensor. The sensor component is subsequently assembled into the end product by the customers.

### Extensive facilities

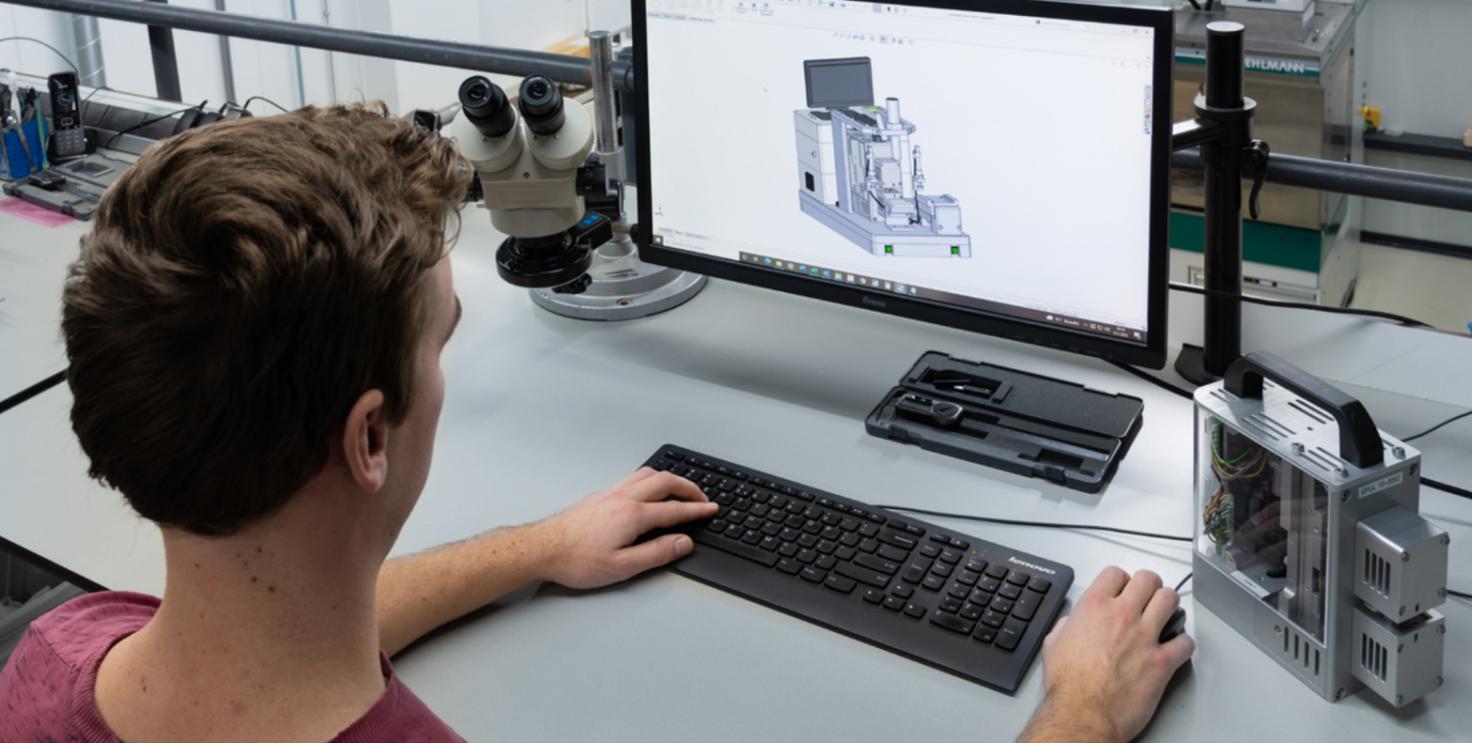
We have all the necessary equipment in place at our Leek facility, including a semi-conductor production and testing factory, a fully equipped tooling shop (including a 5-axel CNC milling machine), an electronic and PCB circuit design facility, a software development unit and a fully equipped sensor and product assembly facility. We have a clean room facility for development, manufacturing, product testing, and qualification services of sensors, assemblies and meters. These are necessary for the determination of physical and chemical values measured in the engineering field.

### Sensor Integration

Sentron has specific know-how of die attaching, wire bonding, encapsulating, steering and compensating the sensor. We can provide successful R&D engineering services for any sensor integration into your product. This contract development and manufacturing of sensor assemblies is feasible for any shape or dimension and for any kind of product and application. Processes required for the pH prototypes include the placement of our pH ISFET sensor on the PCB after which it will be wire-bonded, glob-topped and encapsulated. The reference electrode has to be designed such that it fits into the assembly. A diaphragm is placed in the reference chamber wall and the chamber will be gel filled. For the pressure sensor prototypes the outline is similar. However, this sensor does not require a reference electrode. The design of electronics that is required for the steering of the sensor is included, as well as the custom-made housing for the assembly. Finally, a cable is attached, if required.

### Certifications

We are ISO 13485:2016 certified and have the required REACH and RoHS compliance declarations.



#### Design Verification and Validation

After the prototypes have been built and tested, your test results will be evaluated. The conclusions of the verification and validation process are incorporated. Next, the phase of transfer to manufacturing will be started.

#### Transfer to Manufacturing

Depending on the outcome of the design verification and validation, the product specification is set and preparations are made for high volume production. Work instructions are finalized and test equipment will be designed and manufactured. If necessary, special tools will be manufactured for the production of the sensor assembly.

#### Volume Production

When the preparation for production of the sensor is finished, the production of high volumes is no problem at our facility. We will discuss the best delivery schedules and make sure you will receive your high quality sensors in time.

Interested? [✉ Contact us for more information!](#)

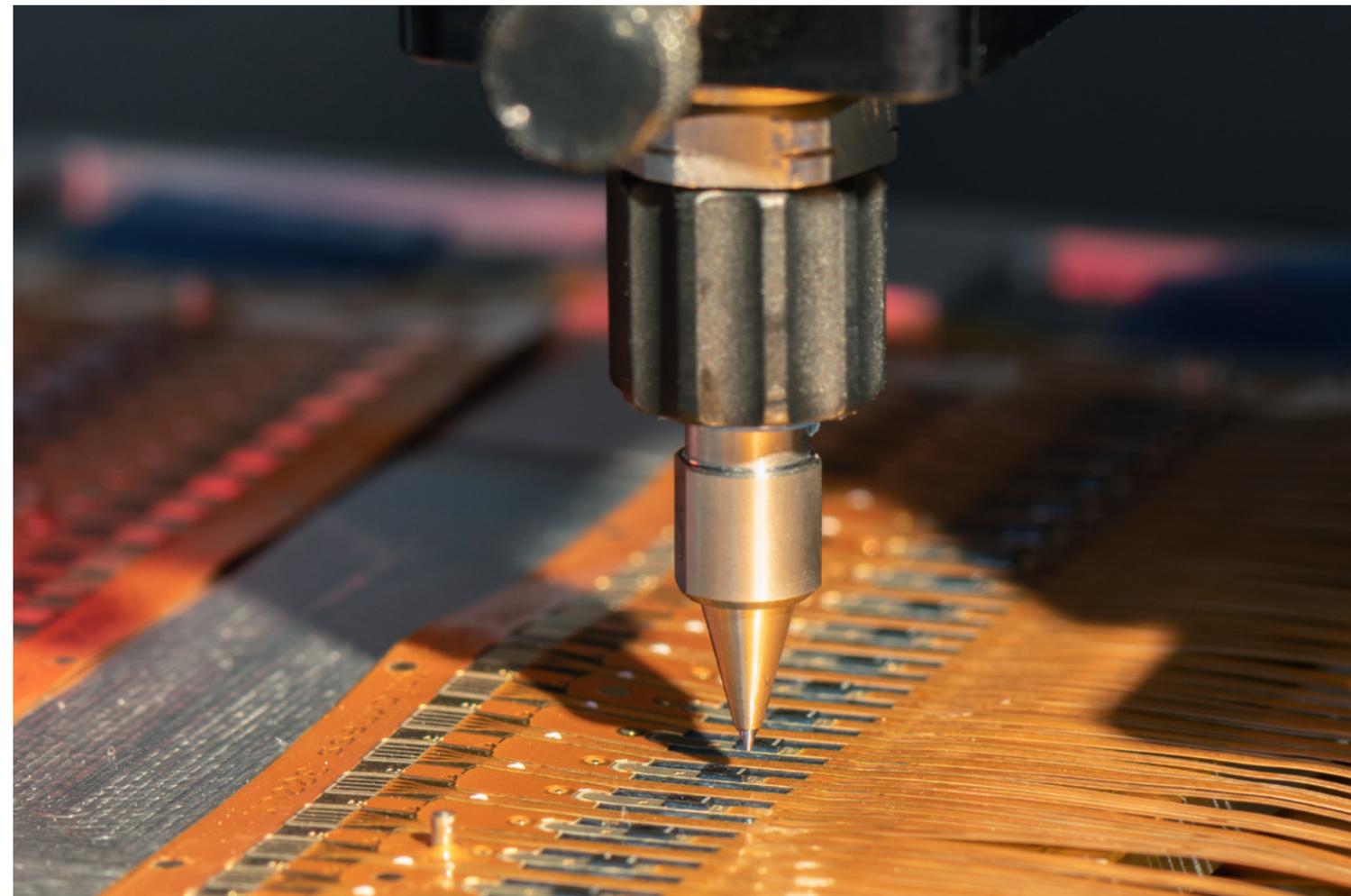
## Contract Development and Manufacturing

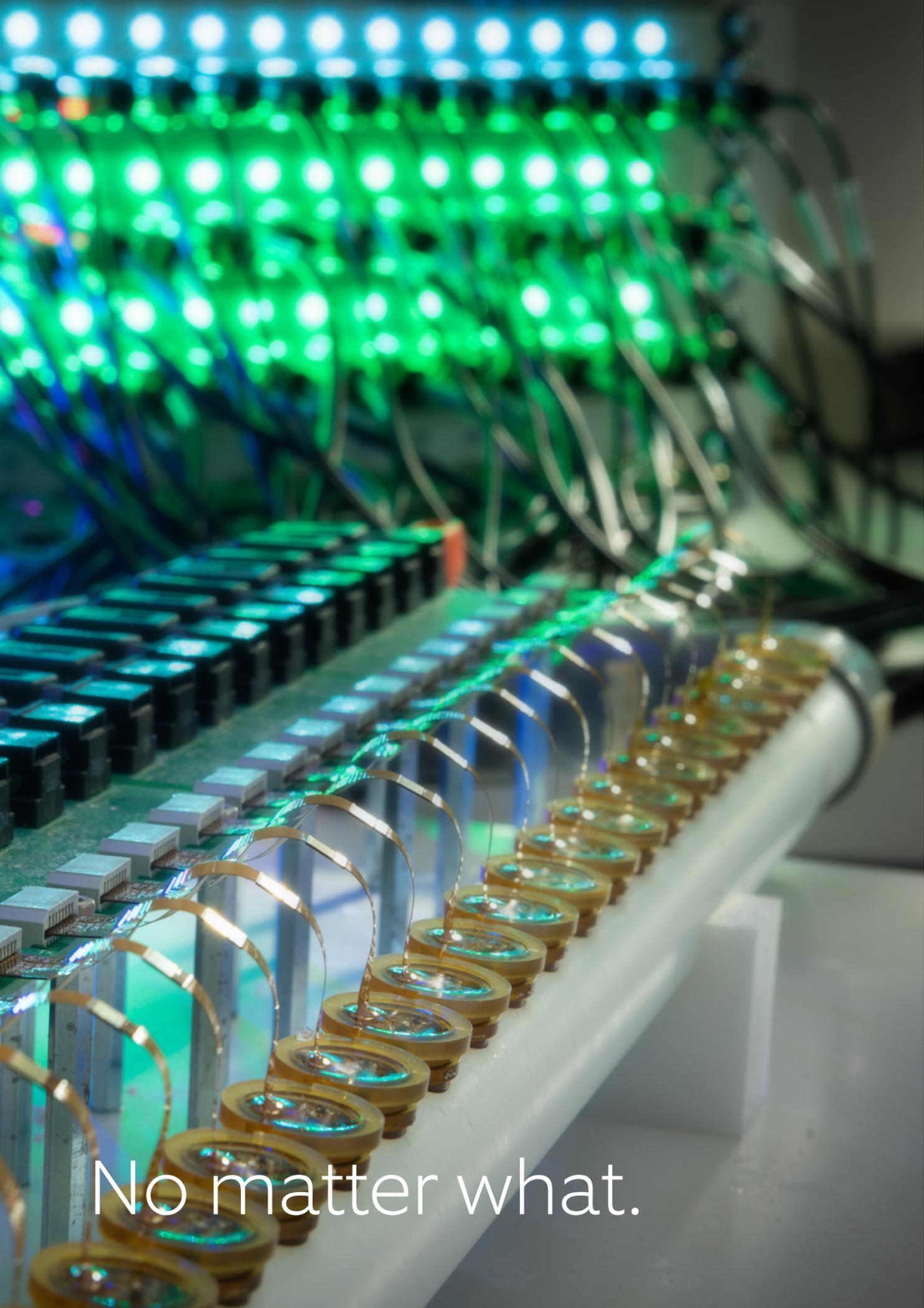
#### Project Idea & Concept Phase

Sentron has broad experience in and has the in-house capabilities for performing contract development based on sensor solutions. Typically, these projects start in the project idea & concept phase. The engineering team assists in the design and integration of the pH ISFET or Wheatstone full bridge pressure sensor in the product of the customer.

Based on the requirements, the application and the annual forecast we will propose the most suitable sensor assembly that fits the customer needs the best. When we do not have a suitable sensor in our portfolio, we will propose a 3rd party supplier sensor. Alternatively, we will develop the sensor ourselves. The sensor will have a seamless connection to your product or production process, including mounting the hardware, cabling, connectors and housing.

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No matter what.

#### Contact

Sentron Europe B.V. is a member of the [Welling Group](#), together with PendraCare. Originally Sentron is a spin-off of Johnson & Johnson.

#### Address

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Kamerlingh-Onnesstraat 5  
9351 VD Leek  
The Netherlands  
[info@sentron.nl](mailto:info@sentron.nl)

#### More info

At Sentron, we develop and produce sensors in our inhouse semiconductor lab. We have many years of experience and specific know-how in die attaching, wire bonding, encapsulating, steering and compensating sensors. We design and manufacture OEM sensor assemblies and complete products with our pH and pressure sensors as well as with third party sensors. In addition, we have developed our own ISFET-based pH product line for wireless, glass-free pH measurements.

[See our leaflet](#) for the pH product line for these ready-to-use products or visit our webshop.

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