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**All-in-one solution with a single electrical connection:  
Measure ventilation air flow and pressure at the patient's side**

**Now you can take proximal measurements, not only of respiratory gas flow rates, but also of associated ventilation pressure, in a single solution – this product is the result of a collaborative effort between Sensirion AG and Nicolay GmbH (GPE Group) and will be available to ventilator manufacturers from May 2021 as an evaluation kit. Manufacturers will be able to integrate the various standardized options into their devices with no development or equipment costs. For medium to large orders, Nicolay can configure and produce custom designs.**

The two companies have already demonstrated how successfully they work together. Their last joint product is widely used for proximal measurements of inspiratory and expiratory respiratory gas flow rates in order to improve ventilation and adapt to the individual patient's values at any given time. Sensirion produces the flow sensors, which are located proximally in the system using the specially designed connector and cable from Nicolay. This solution has been available as an evaluation kit through Sensirion's distribution network for more than two years. "Having received many inquiries from ventilator manufacturers about whether we could expand our existing solution to include a pressure sensor, we decided to work on this with our partner Nicolay," explains Dr. Andreas Alt, Sales Director Medical at Sensirion. "Nicolay immediately took up the idea and implemented it – and can now offer all versions of our proximal products with an additional pressure sensor." For this purpose, Nicolay's cable specialists have integrated the pressure sensor physically into the connector cap and on the software side in the evaluation electronics. Ventilator manufacturers can receive an evaluation kit as a sample. They can use it to test the combined solution or even start developing prototypes with it. The first manufacturers to purchase the new solution are already working to incorporate it into their devices.

**When it comes to the number of connections, less is more**

Constant monitoring of respiratory pressure is crucial to both volume-controlled and pressure-controlled ventilation. With the new solution from Sensirion and Nicolay, pressure measurements are taken and converted into an electrical signal directly at the patient's side; the pressure signal is then sent to the ventilator electronically. Until now, it has been common practice to tap pressure using a patient-side port, convey it via a tube to the device and measure it inside the ventilator. By comparison, the new product from Nicolay provides improved signal quality and faster signal transit time. It also offers exceptionally reliable measurement values, which can be processed with minimum delay. Furthermore, the signal is transmitted through an existing cable used to measure respiratory gas flow values. The tube for tapping pressure can now be only a few centimeters long and run from the WYE straight to the cap on the flow sensor, where the pressure signal is converted into an electrical signal. This eliminates the need for a long pressure tube running from the patient back to the device. As a result, the solution is easier for care givers to handle because there is a lower risk of getting the wrong tube or getting caught on it when treating the patient. "Tubes that convey air, delay measurement when compared to direct, patient-side proximal pressure measurement," says Benjamin Fessele, Product Development at Nicolay. "By measuring pressure and converting the signal within the Nicolay sensor cap, measurement values can be evaluated and processed more quickly, ultimately improving the safety and quality of ventilation. This also leaves space in the ventilator for manufacturers to either add other features or design a more compact device."

Learn more at <https://www.sensirion.com>, <https://nicolay.de/> and <https://gpe-group.de/>.  
Standardized solutions are available at: <https://www.sensirion.com/en/distributor-search/>.

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**About Sensirion – Experts for Environmental and Flow Sensor Solutions**

Headquartered in Stäfa, Switzerland, Sensirion AG is a leading manufacturer of digital microsensors and systems. Its product range includes gas and liquid flow sensors, differential pressure sensors and environmental sensors for the

measurement of humidity and temperature, volatile organic compounds (VOC), carbon dioxide (CO<sub>2</sub>), formaldehyde and particulate matter (PM2.5). An international network with sales offices in the USA, Europe, China, Taiwan, Japan and Korea supplies international customers with standard and custom sensor system solutions for a wide range of applications. Sensirion sensors are commonly used in the medical, industrial and automotive sectors, and in analytical instruments, consumer goods and HVAC products.

One of the hallmark features of Sensirion products is the use of its patented CMOSens® Technology, which allows for intelligent system integration of the sensor element, logic, calibration data and digital interface on a single chip. Sensirion's credentials as a reliable supplier are evident from its loyal customer base, reputation for quality (ISO/TS 16949) and excellent customer pedigree.

More information: <https://www.sensirion.com>, [info@sensirion.com](mailto:info@sensirion.com), Tel. +41 44 306 40 00, Fax +41 44 306 40 30

### About the GPE Group

Nicolay is part of the GPE Group. The Group produces tailored solutions for its customers in plastic, silicone, metal and sheet metal, as well as cable and sensor systems. As a system supplier specializing in the medical technology industry, the GPE Group offers everything from a single source.

More information: <https://gpe-group.de/>.

### About Nicolay

Nicolay GmbH is based in Nagold and develops and manufactures cable systems, connector systems and sensors that are used around the world in non-invasive patient monitoring and diagnostics. Founded in 1964 as a plastic injection molding plant, the company is now known for the high quality of its customer-specific medical technology solutions, which frequently form the link between monitor and patient. With its extensive expertise, the company is not only a reliable supplier, but also an application consultant and problem solver. For complex products in particular, Nicolay's experts often take on the entire development process for its customers.

Together with its manufacturing plant in Târgu Mureș, Romania, the company currently employs around 320 members of staff. In 2019 it generated an annual revenue of around EUR 36 million.

Nicolay is certified to DIN EN ISO 13485 (quality management) and DIN EN ISO 14001 (environmental management) standards.

More information: <https://nicolay.de/>.

### Pictures



**Image 1:** The new product with an integrated pressure sensor: One can clearly see the adapter with the short tube that enables both pressure measurement and signal conversion within the connector cap



**Image 2:** The flow sensor solution has two parts and, with the pressure sensor, three – yet still remains easy to handle



**Image 3:** The flow sensor solution without the pressure sensor is already widely used. In the image you can clearly see the flow sensor between the mask and breathing tube

Image 1 und 2: Nicolay GmbH (GPE Group); Image 3: Sensirion AG