

## Linear and Rotary Position Sensors in Medical Technology



### When sensors become lifesavers

When exact data and durability are required, Novotechnik sensors are on call. Whether in fitness equipment or physical therapy, in medical analysis or diagnostics, in mobile or stationary treatment equipment or patient positioning ... the applications are as diverse as people themselves.



## Medical Analytics and Diagnostics

In medical analysis and diagnostics, new technologies and technical improvements lead to faster and more accurate results and thus to better treatment results. Sensors and sensor systems are an essential part of this development.



## Treatment Instruments

Precise and reliable sensors in medical devices such as dialysis pumps, cardiac massage devices or radiation devices ensure targeted and gentle treatment of patients.



## Patient Beds and Operating Tables

Rotary and linear position transducers are used for various adjustment options for appropriate patient positioning during diagnosis or when performing surgical interventions.



## Rehabilitation and Therapy Devices

To improve mobility for people with disabilities or to cure medical treatments sensors are essential in many fields: for example, when creating prostheses or surgical instruments with a 3D printer, to limit the stress on the joints when training with therapy devices, or for independent everyday coping with electric wheelchairs.

### Security and Reliability

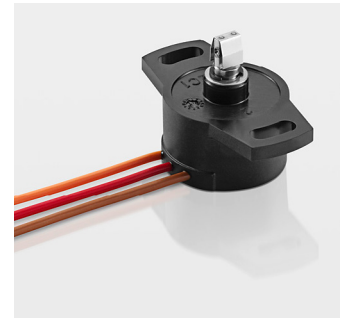
Sensors play an important role in medical technology. For example, they provide data on conditions and progress, which makes the high quality, safety, reliability and efficiency of observation, diagnosis and treatment of patients possible.

The fact that we are ISO 9001 certified shows just how high our quality standards are. At Novotechnik the process that begins with stringent and demanding specifications ends with the inspection of every single product. This helps us to ensure that every product we manufacture works perfectly. Each batch of sensor components within the production and supply chain can be traced back using the type identification on the sensor.

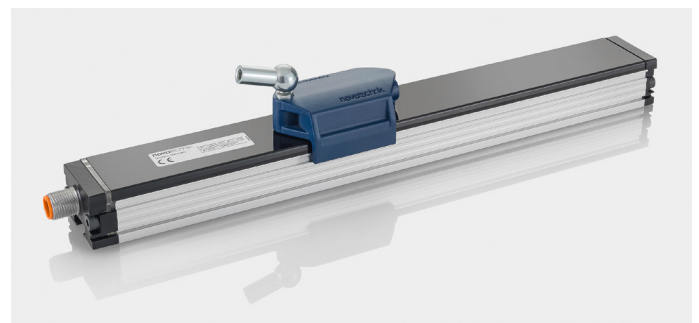
The knowledge and experience from more than 70 years in the field of measurement technology is the basis for usage especially in safety-relevant applications.

### The optimal product for every application

Whether from the modification of a standard product to a completely new development of a sensor according to your specifications: we offer tailor-made solutions. Please contact us. There are countless applications for Novotechnik sensors. For example, our solutions

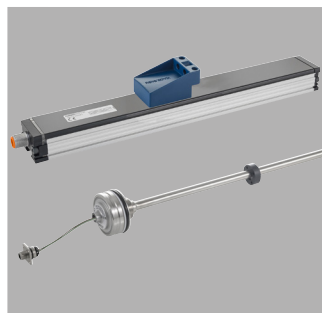


For more information click on the pictures

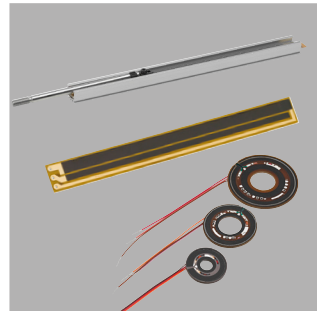


ensure the optimal position of patient beds and X-ray tables, the exact measurement of the valve position in blood analyses devices, the level measurement in suction systems, up to rotation detection in electric wheelchairs and an improvement in quality of life through usage in therapy- and rehabilitation equipment. Depending on the technology and design, Novotechnik sensors can be used for tempera-

ture ranges from -40 °C up to +125 °C. They do not only meet the standard protection classes up to IP69K: our sensors are tested for the toughest requirements, which go beyond the mere standards. Many series are available in redundant versions and meet the requirements for functional safety.



Technology	Non-contacting Transducers	Touchless Hall Sensors with separate position marker	True-Power-On Multiturn Sensors with GMR-Technology
Series	TF1, TM1	RFC-4800 RFD-4000	RSM-2800
Application examples	<ul style="list-style-type: none"> <li>• Level measurement in suction equipment for surgical fluids</li> <li>• Precise positioning e.g. height adjustment of patient beds in ambulances</li> </ul>	<ul style="list-style-type: none"> <li>• Measurement of valve position e.g. in blood analyzers</li> <li>• x-/y-adjustment e.g. in X-ray tables or 3D printers</li> </ul>	<ul style="list-style-type: none"> <li>• Rotation detection in electric wheelchairs</li> <li>• Position measurement e.g. in over 360° swiveling 3D X-ray or mammography devices</li> </ul>
Special features	<ul style="list-style-type: none"> <li>• Non-contacting measurement technology (magnetostrictive or inductive)</li> <li>• Pressure resistant rod style transducer for level measurement, in stainless steel</li> <li>• Non-contacting position detection with separate position marker</li> <li>• Unlimited mechanical life</li> <li>• High protection class up to IP69</li> <li>• Absolute signal output</li> <li>• Traceability of sensor components</li> </ul>	<ul style="list-style-type: none"> <li>• Touchless Hall technology</li> <li>• 2-part design with large working distances up to 10 mm, mechanically decoupled, wear-free</li> <li>• Simple mounting (no coupling necessary)</li> <li>• Very flat design for limited spaces</li> <li>• High protection class through encapsulated electronics</li> <li>• Single and redundant versions</li> <li>• Suitable for safety-related applications</li> <li>• Excellent price/performance ratio</li> <li>• Traceability of sensor components</li> </ul>	<ul style="list-style-type: none"> <li>• True-Power-On system: Turns are counted even with power off, precise position is restored when power is up again</li> <li>• Non-contacting, magnetic</li> <li>• Miniature design</li> <li>• Available with push-on coupling or marked shaft</li> <li>• Electrical range 720° up to 5760° (2 ... 16 turns)</li> <li>• Traceability of sensor components</li> </ul>
Electrical interfaces	Voltage, current, SSI, CANopen, IO-Link	Voltage, current, ratiometric, SSI, IO-Link, CANopen	voltage, current, ratiometric, SSI
Measuring range	up to 4250 mm	up to 360°	up to 5760°
Repeatability	up to 5 µm	typical ±0.1°	≤ ±0.5°
EMC	EMC compliance according to EN 61000-6-2/-3	EMC compliance according to EN 61000-6-2/-3	EMC compliance according to EN 61000-6-2/-3
Link to product finder	<a href="#">Non-contacting Transducers</a>	<a href="#">Touchless Hall Sensors with separate position marker</a>	<a href="#">True-Power-On Multiturn-Sensors with GMR-Technology</a>



Technology	Potentiometric rotary Sensors	Potentiometric Elements
Series	SP-2800	PTP / PTN / XT / PRS
Application examples	<ul style="list-style-type: none"> <li>• Angle adjustment e.g. for patient examination or surgical tables</li> <li>• Measurement of valve position e.g. in analyzers</li> </ul>	<ul style="list-style-type: none"> <li>• Integration in examination-, treatment or physical therapy devices e.g. for automatic stroke limitation in chest compression systems</li> <li>• x-/y adjustment e.g. at X-ray tables or 3D printers</li> </ul>
Special features	<ul style="list-style-type: none"> <li>• Real-time signal, i.e. no time delay between real position and associated measurement</li> <li>• Sensor housing made of high temperature resistant plastic</li> <li>• Available with push-on coupling or marked shaft</li> <li>• 1-channel or 2-channel output (electrically fully redundant)</li> <li>• Excellent price/performance ratio</li> </ul>	<ul style="list-style-type: none"> <li>• Compact dimensions</li> <li>• Cost-optimized solution for integration in housed applications</li> <li>• Very long life up to 50 million movements</li> <li>• Variable mechanical customer interfaces</li> <li>• Customized versions even for small quantities</li> </ul>
Electrical interfaces	Voltage divider	Voltage divider
Measuring range	up to 360°	up to 300 mm resp. up to 350°
Repeatability	up to $\leq \pm 0.03^\circ$	10 $\mu\text{m}$ bzw. $\leq \pm 0.01^\circ$
EMC	Passive system, highly immune to electrical and magnetic interferences	Passive system, highly immune to electrical and magnetic interferences
Link to product finder	<a href="#">Potentiometric Rotary Sensors</a>	<a href="#">Potentiometric Elements, linear</a> <a href="#">Potentiometric Elements, rotary</a>



## Representatives worldwide

Today, Novotechnik is represented in all of the world's major markets - be it with our own subsidiaries or by approved dealers.

Wherever our customers will be, thanks to this tightly-knit network we can ensure that, they can rely on first-class service and customer care.

Your contacts can be found <https://www.novotechnik.de/nc/en/service/representatives/>

Wherever in the world a linear displacement or an angular position needs to be measured with the highest precision, sensors from Novotechnik are the products of choice. The measuring technology expertise that we have gathered in the course of more than 70 years represents just one of the secrets behind a success story that began in 1947:

The other cornerstones of our success include a passion for technology and an obsession with precision and reliability. Then, there is our love of solution-oriented thinking, coupled with a fascination with new materials and production methods. And of course, there is our constant awareness of the importance of providing sound advice and first-rate service, complementing our overall goal of continuous improvement of our measuring systems.

The greatest secret of our success, however, has been our passion for devising the best possible solution for each individual customer application. To this end, we will continue to focus on the strengths that made us the successful company that we are today.

Leading OEMs from a multitude of different industries are putting their trust in position transducers and rotary sensors by Novotechnik: whether in medical technology, mechanical engineering, hydraulics and pneumatics, measurement technology or in automotive engineering.

And, talking of the automobile industry: more than 50,000 of our sensor components are installed into new cars, each and every day.