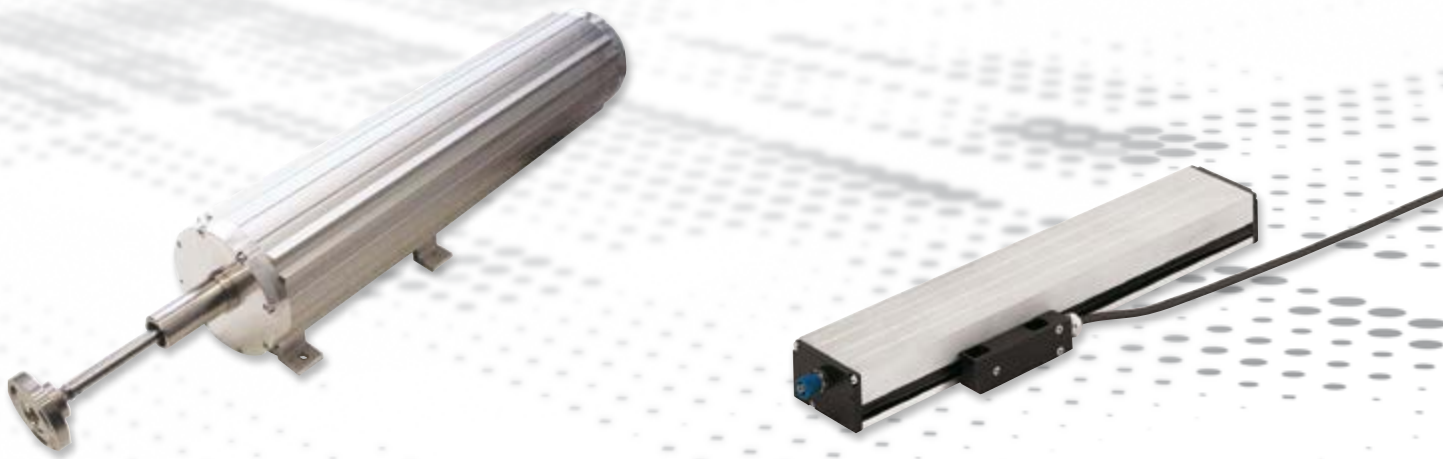


Linear Encoders

Glass Scale / Transformation



Glass Scale / Transformation



High-resolution absolute position sensors with glass scale

The TR measurement systems of the LT product family work on the principle of photoelectric scanning of an absolute coded glass scale. A sensor array scans several tracks that contain high resolution measurement information on the 3D coordinates and angular position between the glass scale and the scanning unit.

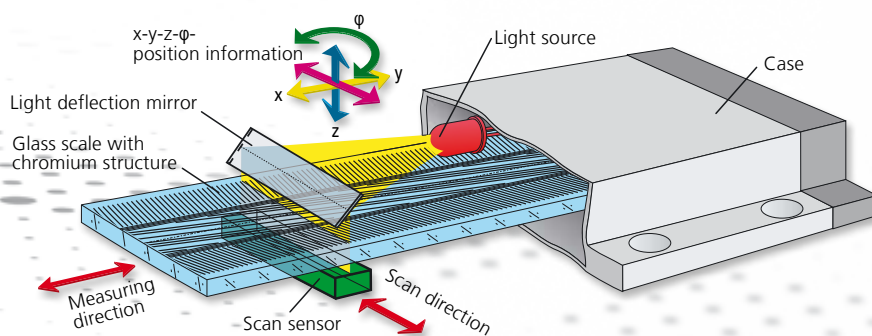
Evaluating the measurement signals, the coded measurement position is determined by the sensor signal and thanks to the additional measurement information, guidance and adjustment errors are completely corrected.

With a smallest measurement step of 0.1 μm our transformation measurement systems are especially suitable for applica-

tions with high demands on resolution and accuracy.

Due to their robust construction, they find their application even in machines with strong vibrations. With absolute detection, no more referencing is necessary – even when using only the incremental interface, controls can benefit from the virtual referencing.

On request, the measurement system sends a number of incremental signals that represent the absolute position value read by the sensor. The counter in the control is loaded with the absolute position information without any mechanical movement of the axis. As detection is absolute, the only limitation in travel speed is given by mechanics with approx.

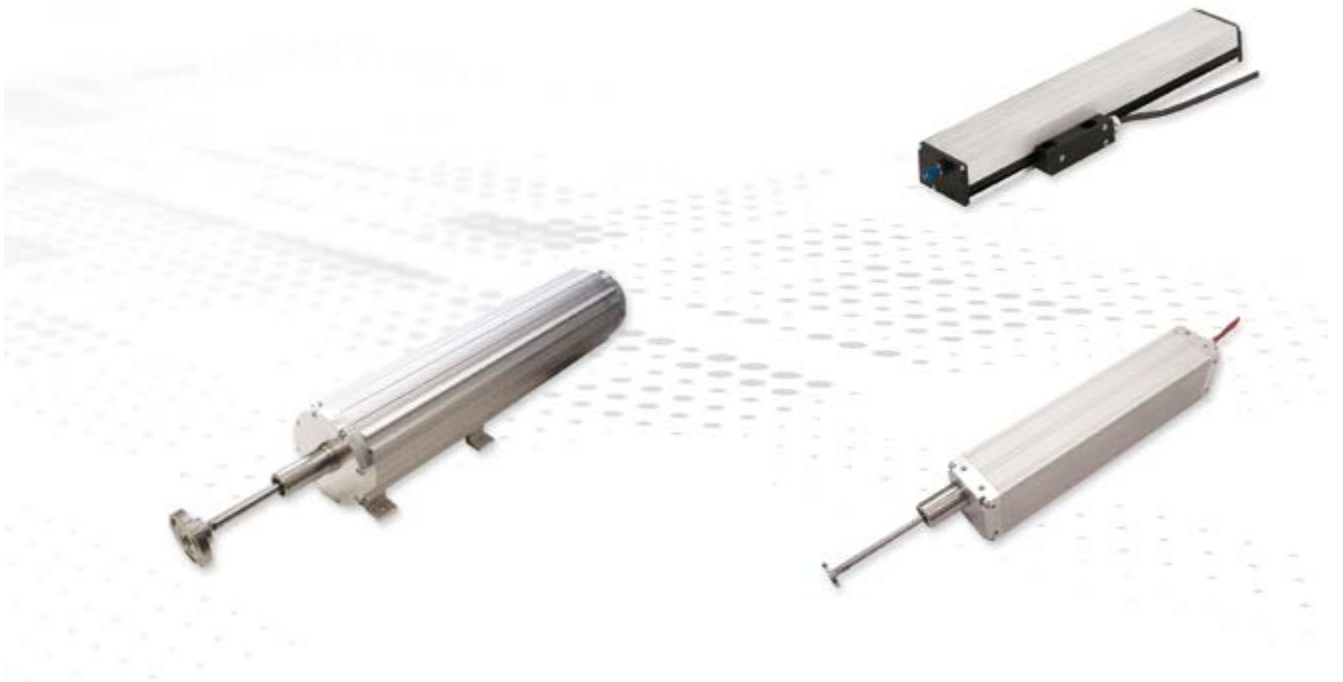


10 m/s. The measurement system always provides valid measurement values.

Our measurement systems of the LT series are available in following versions:

- _ Features measuring slide, also features several sensing heads within the same system, e.g. for the positioning of several cutting blades in paper cutters.
- _ Features mechanically non-interacting measuring axis, suitable for application in running production.
- _ With special protective housing for heavy-duty applications, e.g. directly on rolling production lines.

Linear Encoders - Transformation (Glass Scale)



The rugged, absolute glass scale for precise measurement directly on your manufacturing line

High-resolution glass scales made by TR-Electronic work even in the harsh conditions of a manufacturing facility. Due to the internal absolute detection, a current absolute reading value is available shortly after power up and without any mechanical referencing. With the feature “virtual referencing”, even systems that use only the incremental track can take full advantage of absolute measurement. Different executions fit different applications.

LT-S: Measurement system with sliders, that can hold multiple sliders on one glass track. This system is mechanically compatible with incremental scales of other manufacturers. With

optional inlets for sealing air, this measurement system can be used in dusty surroundings.

LT-PI: The rugged version for normal production applications. Either as a probe sensing system or with a spring-loaded probe. This is the system for accurate measurement in your machine.

LT-RV: In extreme conditions, the protective housing of LT-RV keeps the electronics safe even with strong vibration and shock.

Slider

Touch probe

Heavy-duty touch probe

Product	LT-S	LT-PI	LT-RV
			
Mechanic execution	Slider	Encapsulated touch rod probe measurement system	Heavy-duty touch rod probe measurement system
Range	140 ... 3040 mm (steps of 100 mm)	100, 200 mm	400, 520 mm (up to 800 mm on request)
Reproducibility	< 0,2µm	< 0,2µm	< 0,2µm
Supply	24 VDC (8...30)	24 VDC (8...30)	24 VDC (8...30)
Resolution	0,1µm, 0,2µm, 0,5µm, 1µm, 2µm, 5µm, 10µm	0,1µm, 0,2µm, 0,5µm, 1µm, 2µm, 5µm, 10µm	0,1µm, 0,2µm, 0,5µm, 1µm, 2µm, 5µm, 10µm
Division incremental signal	0,4µm, 1µm, 2µm, 4µm, 10µm, 20µm, 40 µm	0,4µm, 1µm, 2µm, 4µm, 10µm, 20µm, 40 µm	0,4µm, 1µm, 2µm, 4µm, 10µm, 20µm, 40 µm
Signal level incremental	TTL, HTL	TTL, HTL	TTL, HTL
Division sin/cos	10µm, 20µm, 40µm	10µm, 20µm, 40µm	10µm, 20µm, 40µm
Ambient temperature	0°C...65°C (option -20°C...65°C)	-10 ... +60°C	0 °C...40 °C (option -10...+60°C)
Protection class	IP53	IP66	IP65
Options	Multiple sliders, sealing air	Spring loaded sensing probe	
Maximim speed	10 m/s	10 m/s	10 m/s
Orientation	Any desired	Any desired	Any desired
Interface	SSI	SSI	SSI
Option, additional interfaces (on request)	INC	INC	INC
Weblink	www.tr-electronic.de/f/TR-VLT-TI-GB-0200	www.tr-electronic.de/f/TR-VLT-TI-GB-0300	www.tr-electronic.de/f/TR-VLT-TI-GB-0400
QR-Code			

Can't find the right variant? Please contact us (info@tr-electronic.de)

Suggested Products

Ordering code	Name	Remark	Measurement length	Tube length	Resolution
LT-S Slider measurement system					
3200-00025	LT140-S SSI		140 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00108	LT240-S SSI		240 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00002	LT340-S SSI		340 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00004	LT440-S SSI		440 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00021	LT540-S SSI		540 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00135	LT640-S SSI		640 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00005	LT740-S SSI		740 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00007	LT840-S SSI		840 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00142	LT940S-SSI		940 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00001	LT1040-S SSI		1040 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00014	LT1140-S SSI		1140 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00149	LT1240-S SSI		1240 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00152	LT1340S-SSI		1340 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00153	LT1440S-SSI		1440 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00154	LT1540S-SSI		1540 mm	3 m cable, connector M23 12 pin	0,1µm

For further product information simply enter the order number in the search field at www.tr-electronic.de.

We will help you to select the most suitable products from the complete TR range. Please contact us (info@tr-electronic.de).

Ordering code	Name	Remark	Measurement length	Tube length	Resolution
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LT-S Slider measurement system

3200-00155	LT1640S-SSI		1640 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00156	LT1840-S SSI		1840 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00157	LT2040-S SSI		2040 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00160	LT2240-S SSI		2240 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00161	LT2440-S SSI		2440 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00162	LT2640-S SSI		2640 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00163	LT2840-S SSI		2840 mm	3 m cable, connector M23 12 pin	0,1µm
3200-00022	LT3040-S SSI		3040 mm	3 m cable, connector M23 12 pin	0,1µm

LT-PI Touch rod probe

3300-00003	LT100-PI SSI	With spring loaded probe	100 mm	3 m cable	0,1µm
3300-00015	LT200-PI SSI		200 mm	3 m cable	0,1µm

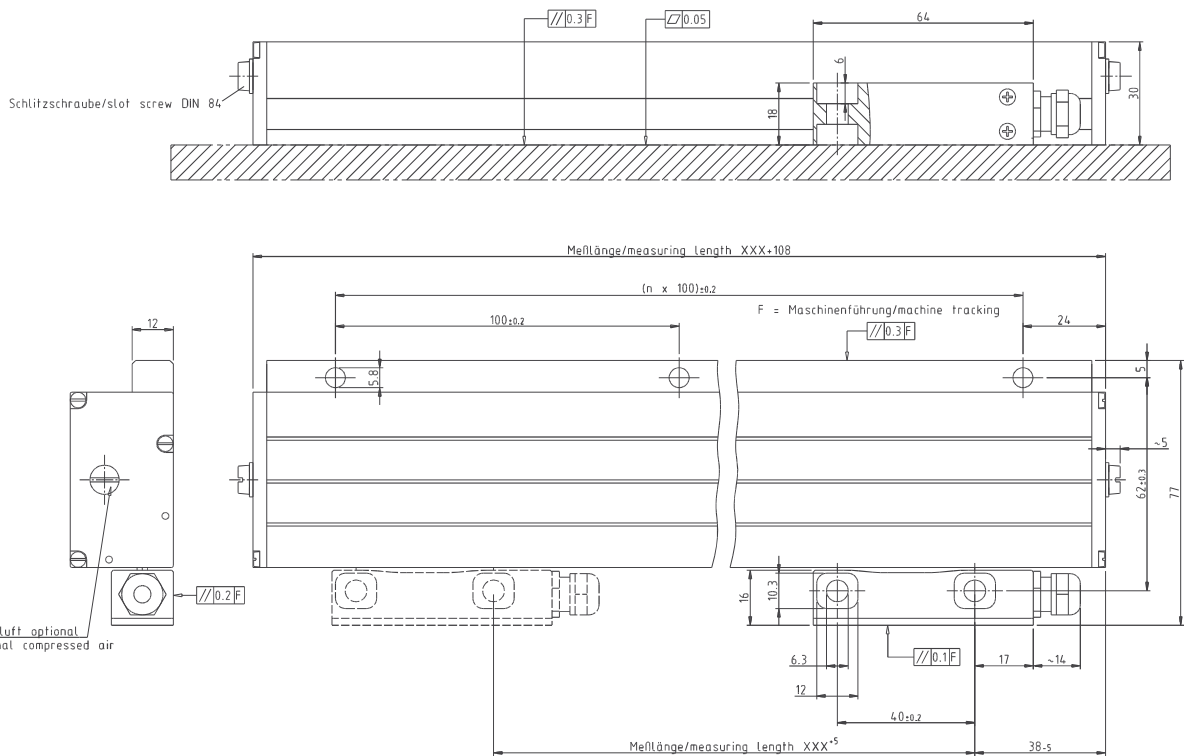
LT-RV Heavy-duty measurement system

3400-00004	LT400-PI SSI		400 mm	3 m cable	0,1µm
3400-00007	LT520-PI SSI		520 mm	3 m cable	0,1µm

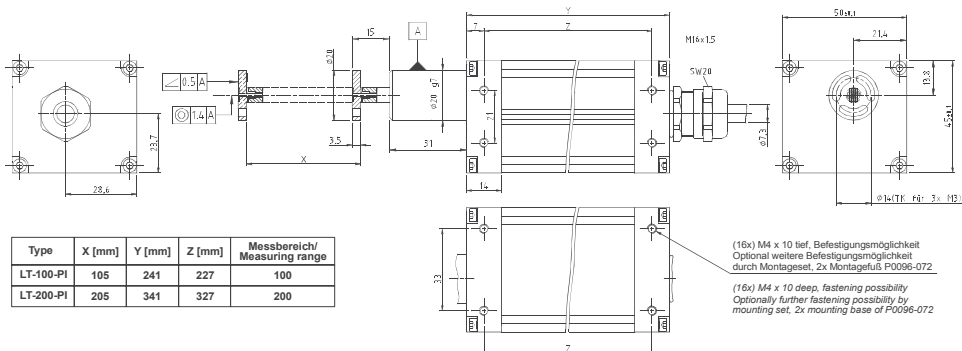
For further product information simply enter the order number in the search field at www.tr-electronic.de.

Dimensional Drawings

LT-S Slider



LT-PI Touch probe





Based in the region, present throughout the world

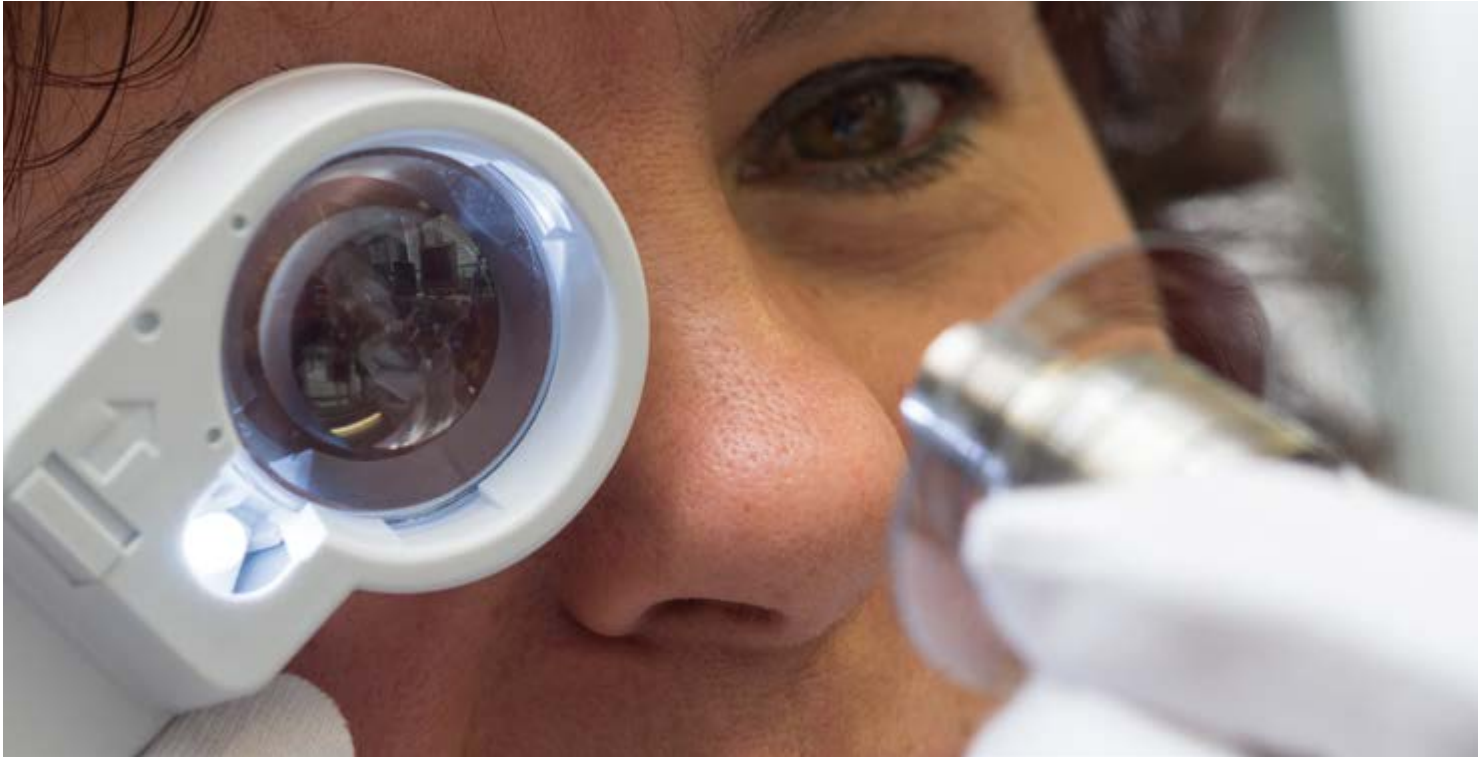
Characterized by the typical Swabian inclination to hard work, TR-Electronic has strong regional roots while at the same time being active throughout the world. Its most important customer is the mechanical and plant engineering industry, which has a strong tradition in Germany. In addition to the primary location of Trossingen, our subsidiaries and technical sales partners in Europe, the USA, Canada, Brazil and Asia offer professional advice and project planning and ensure worldwide access to the TR product range. TR's sales subsidiary established in China in 2010, with head office in Beijing, is now the direct contact for production locations in Asia for many European companies and supports ambitious industrial projects in the Far East.

The basis of our innovative products and growing global success are the experts, their ideas and development expertise in Trossingen. The optimal combination of longstanding



experience and the fresh inspiration provided by qualified new employees ensures a competitive advantage in terms of the functionality, quality and cost efficiency of our product range, both today and in the future.

**This is what we stand for. This is what we work for.
And this is what we want to be measured by!**



Technology leader and quality from the very start

TR-Electronic develops, manufactures and sells sensors and actuators for industrial applications in automation technology. In order to better integrate the individual areas of expertise and make them more transparent for our customers, we have organized the company into business units: Products in the Rotary Encoders Business Unit with optical or magnetic scanning are required to detect the angular movement of a rotating shaft.

Magnetostrictive linear encoders measure the position of a linear movement without contact, for example in a hydraulic cylinder. Intelligent compact drives from the Drives Business Unit are used as actuators or, in the high-end version, as process drives.

Customized control and measuring modules in combination with special know-how in pressing and punching processes complete the extensive product portfolio. Automation com-



Modern production technology in the SMD department

ponents from the Components Business Unit round out the product range.

The development services provided by the Automation Business Unit bring press lines to new levels of performance, provide smart metering solutions for efficient energy utilization and fair billing, enable remote monitoring of water supply networks or ensure a cosy environment through intelligent heating automation.

TR-Electronic – your partner in automation

Rotary encoders

Absolute encoder, incremental rotary encoder, wire-actuated encoder

Rotary encoders with optical and magnetic scanning function register the precise position in a wide variety of applications and industries.

In medical engineering, miniature versions ensure correct positioning while SIL3-approved absolute rotary encoders provide the necessary safety. We offer not only high-quality rotary encoders (from Ø 22 to 160 mm) for almost any application but also comprehensive accessories.

Linear encoders

Linear absolute measuring systems, laser displacement measurement

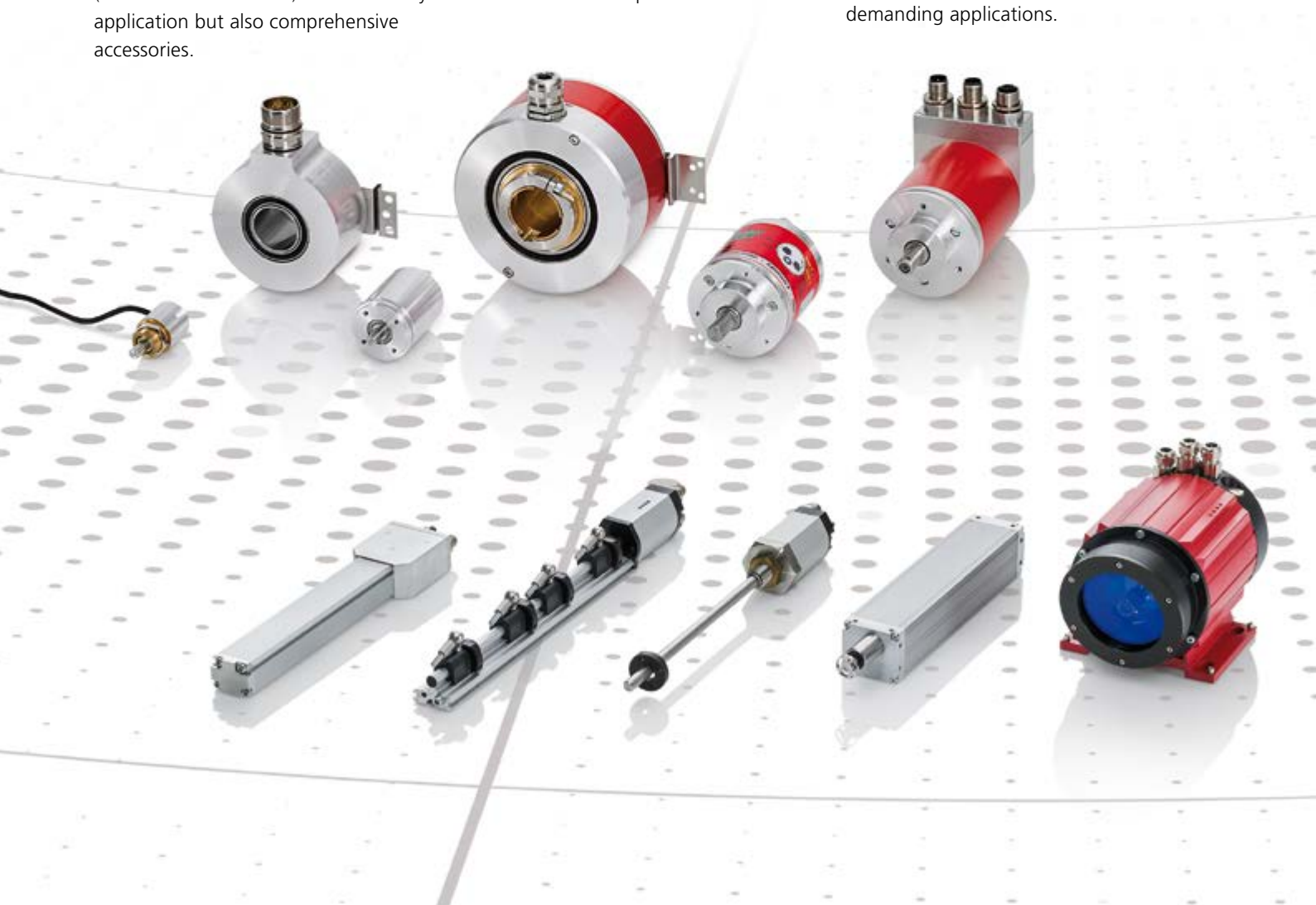
Linear encoders register linear motions in machines, tools and systems according to specific requirements using different technologies.

Linear encoders allow measuring distances of max. 20 m almost without any wear. This value is max. 240 m for laser measuring systems. Machines and systems can be precisely controlled to reach their desired positions.

Motion

Servo drives, compact drives, process drives

Intelligent encoTRive drives are available with the current field bus systems, such as PROFIBUS, PROFINET and CANopen, within a power range of up to 300 watts. The drives are configured to meet customer requirements and can be freely combined with precision gear, holding brake and I/O. Values of up to 4,350 rpm and powerful 200 Nm are available to cope with demanding applications.



Components

**Industrial PC, field bus I/O,
PLC, HMI controller**

Industrial PCs are available in numerous variants and offer customized calculation power for PC-assisted automation. Programmable logic controllers (PLC) are the traditional means for automation. HMI controllers establish the interface to the user. Field bus nodes, I/O modules and cam controllers complete the range of automation components.

Automation

**Consulting and implementation
for new machines and retrofit**

You want to set up a largely automated new machine or retrofit and modernize your existing machine with automation systems? Then you just need our extensive expert knowledge and the more than 20 years of our experience.

Unidor

**Blanking and forming,
systems, controls and sensors**

Trendsetting blanking and forming technology for more than 30 years. We are your reliable partner in the world of blanking and pressing and can prove this with thousands of machines which we have successfully installed all over the world. Sensors, controls and systems ensure optimal results in machines, tools and retrofit projects.



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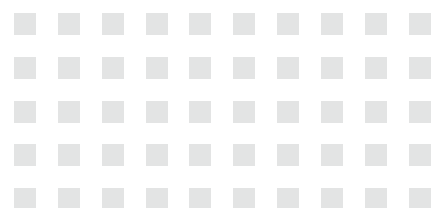
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Änderungen in Technik und Design vorbehalten.

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