Linear Encoders
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 applications 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.
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.

**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.

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

### Touch probe

### Heavy-duty touch probe

<table>
<thead>
<tr>
<th>Product</th>
<th>LT-S</th>
<th>LT-PI</th>
<th>LT-RV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanic execution</td>
<td>Slider</td>
<td>Encapsulated touch rod probe measurement system</td>
<td>Heavy-duty touch rod probe measurement system</td>
</tr>
<tr>
<td>Range</td>
<td>140 … 3040 mm (steps of 100 mm)</td>
<td>100, 200 mm</td>
<td>400, 520 mm (up to 800 mm on request)</td>
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<tr>
<td>Reproducibility</td>
<td>&lt; 0.2μm</td>
<td>&lt; 0.2μm</td>
<td>&lt; 0.2μm</td>
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<tr>
<td>Supply</td>
<td>24 VDC (8…30)</td>
<td>24 VDC (8…30)</td>
<td>24 VDC (8…30)</td>
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<tr>
<td>Resolution</td>
<td>0,1μm, 0,2μm, 0,5μm, 1μm, 2μm, 5μm, 10μm</td>
<td>0,1μm, 0,2μm, 0,5μm, 1μm, 2μm, 5μm, 10μm</td>
<td>0,1μm, 0,2μm, 0,5μm, 1μm, 2μm, 5μm, 10μm</td>
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<tr>
<td>Division incremental signal</td>
<td>0,4μm, 1μm, 2μm, 4μm, 10μm, 20μm, 40 μm</td>
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<td>0,4μm, 1μm, 2μm, 4μm, 10μm, 20μm, 40 μm</td>
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<tr>
<td>Signal level incremental</td>
<td>TTL, HTL</td>
<td>TTL, HTL</td>
<td>TTL, HTL</td>
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<tr>
<td>Division sin/cos</td>
<td>10μm, 20μm, 40μm</td>
<td>10μm, 20μm, 40μm</td>
<td>10μm, 20μm, 40μm</td>
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<tr>
<td>Ambient temperature</td>
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<td>-10 … +60°C</td>
<td>0 °C…40 °C (option -10…+60°C)</td>
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<tr>
<td>Protection class</td>
<td>IP53</td>
<td>IP66</td>
<td>IP65</td>
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<tr>
<td>Options</td>
<td>Multiple sliders, sealing air</td>
<td>Spring loaded sensing probe</td>
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<tr>
<td>Maximim speed</td>
<td>10 m/s</td>
<td>10 m/s</td>
<td>10 m/s</td>
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<td>Orientation</td>
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<tr>
<td>Interface</td>
<td>SSI</td>
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<tr>
<td>Option, additional interfaces (on request)</td>
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<td>QR-Code</td>
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</table>

Can’t find the right variant? Please contact us (info@tr-electronic.de)
Linear Encoders - Transformation (Glass Scale)

Suggested Products

<table>
<thead>
<tr>
<th>Ordering code</th>
<th>Name</th>
<th>Remark</th>
<th>Measurement length</th>
<th>Tube length</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>3200-00025</td>
<td>LT140-S SSI</td>
<td>140 mm, 3 m cable, connector M23 12 pin</td>
<td>0,1 μm</td>
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<td>3200-00180</td>
<td>LT140-S SSI</td>
<td>140 mm, 3 m cable, connector M23 12 pin</td>
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<tr>
<td>3200-00108</td>
<td>LT240-S SSI</td>
<td>240 mm, 3 m cable, connector M23 12 pin</td>
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<td>3200-00002</td>
<td>LT340-S SSI</td>
<td>340 mm, 3 m cable, connector M23 12 pin</td>
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<td>3200-00004</td>
<td>LT440-S SSI</td>
<td>440 mm, 3 m cable, connector M23 12 pin</td>
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<td>3200-00021</td>
<td>LT540-S SSI</td>
<td>540 mm, 3 m cable, connector M23 12 pin</td>
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<td>LT640-S SSI</td>
<td>640 mm, 3 m cable, connector M23 12 pin</td>
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<td>3200-00005</td>
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<td>3200-00142</td>
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<td>3200-00149</td>
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<td>0,1 μm</td>
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</table>

For further product information simply enter the order number in the search field at www.tr-electronic.com.
We will help you to select the most suitable products from the complete TR range. Please contact us (info@tr-electronic.de).

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<thead>
<tr>
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<td>LT1640-S SSI</td>
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<td>1.640 mm</td>
<td>3 m cable, connector M23 12 pin</td>
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<td>3200-00156</td>
<td>LT1840-S SSI</td>
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<td>1.840 mm</td>
<td>3 m cable, connector M23 12 pin</td>
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<td>2.040 mm</td>
<td>4 m cable, connector M23 12 pin</td>
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<td>3200-00160</td>
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<td>2.240 mm</td>
<td>4 m cable, connector M23 12 pin</td>
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<td>3200-00161</td>
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<td>2.440 mm</td>
<td>4 m cable, connector M23 12 pin</td>
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<td>3200-00163</td>
<td>LT2840-S SSI</td>
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<td>2.840 mm</td>
<td>4 m cable, connector M23 12 pin</td>
<td>0.1 μm</td>
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<td>3200-00171</td>
<td>LT3040-S SSI</td>
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<td>3.040 mm</td>
<td>4 m cable, connector M23 12 pin</td>
<td>10.0 μm</td>
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</tbody>
</table>

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Dimensions Drawings

**LT-S**
Slider

Illustrations are schematic diagrams. Binding dimension drawings and CAD data for specific order numbers at www.tr-electronic.com or on request.
Dimensional Drawings

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