

Thickness Gauging System LTM-MAXI

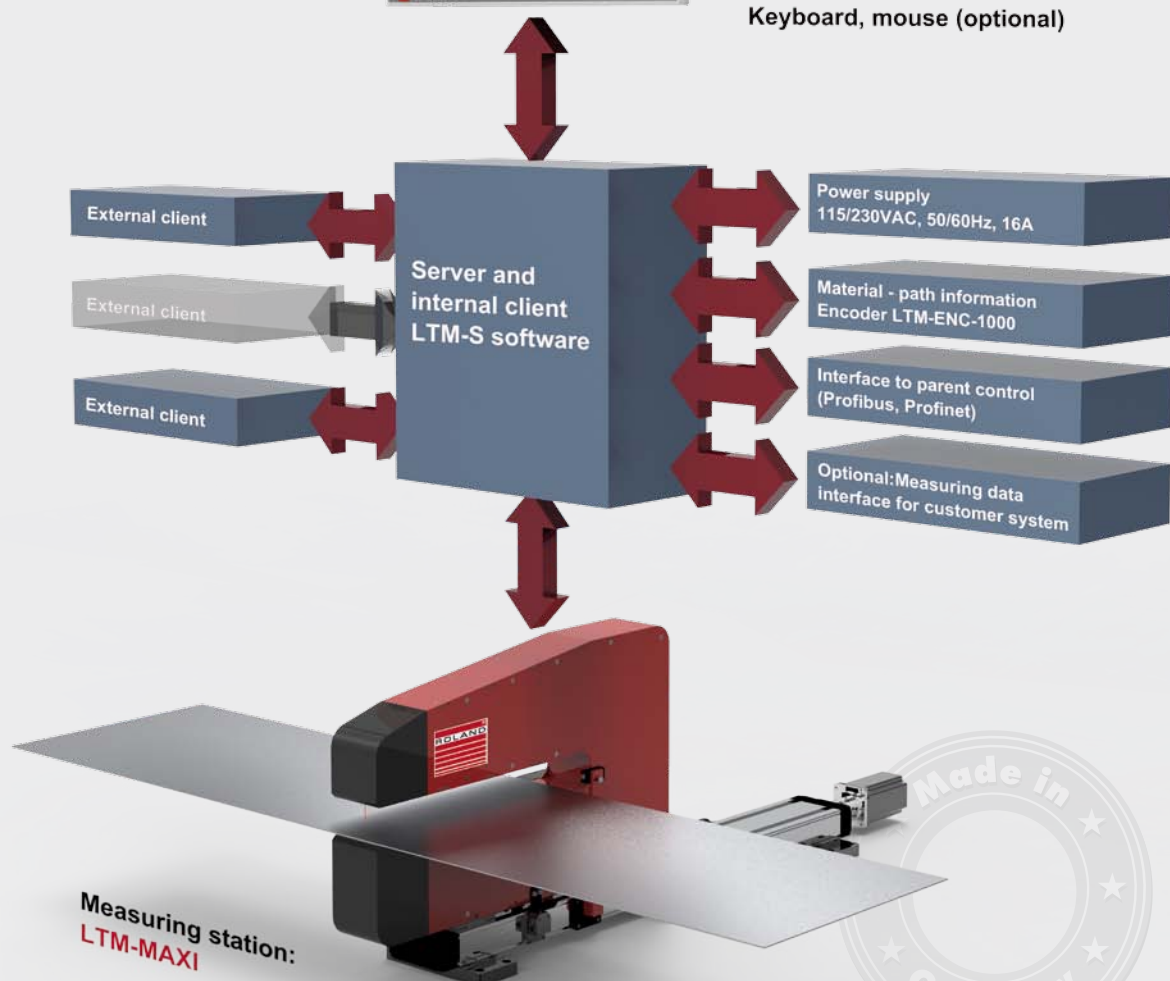
High performance measuring system for Static and Dynamic Thickness Gauging, with a measurement range from 300 to 1000mm



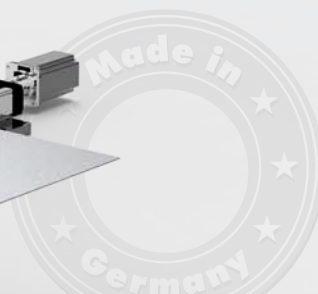
- Measurable material thickness from 0.05 to 8mm
- Following measurement modes are possible:
 - Line measurement
 - Micro-traversing
 - Macro-traversing
 - Macro-traversing with track measurement
- High sampling frequency
- Innovative operating software LTM-S
- Possible interfaces: Profibus, Profinet



Touch screen:
LTM-TOUCH-21.5
Keyboard, mouse (optional)

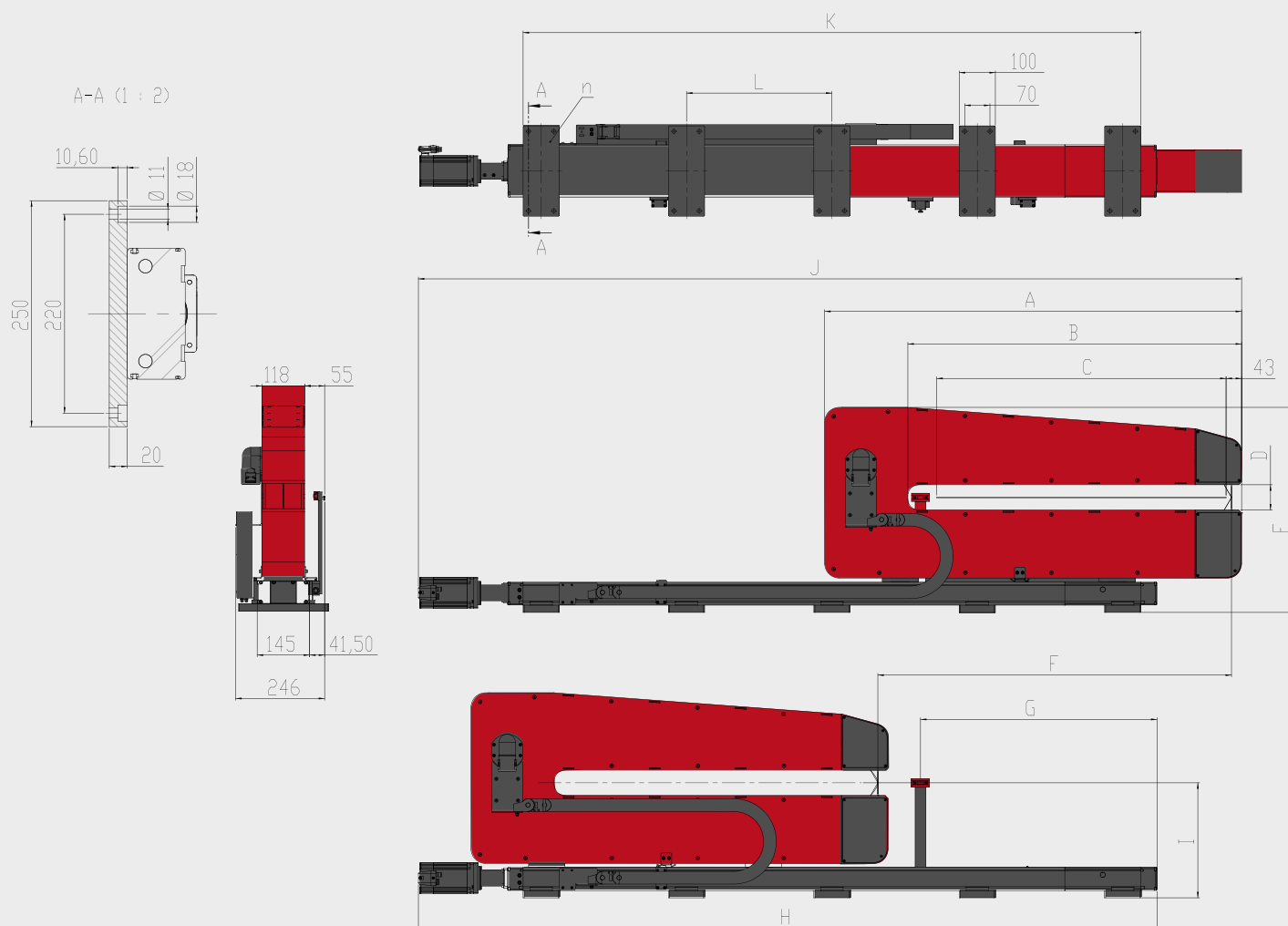


THICKNESS GAUGING



THICKNESS GAUGING SYSTEM LTM-MAXI

Dimensions / Configuration



Dimensions of LTM-MAXI (All information in mm)

LTM Variant / Dimension	300-20	450-20	600-20	800-20	1000-20
Measuring jaw length A	653	803	953	1153	1353
Fork depth B	423	573	723	923	1123
Max. measuring distance C	300	450	600	800	1000
Fork width D	70	70	70	70	70
Total height E	567	567	567	567	567
Max. travelling distance F	478	628	778	978	1178
Position calibration unit G	269	388	484	654	800
Total length base plate H	1242.5	1492.5	1692.5	2042.5	2342.5
Measurement range center I	318	318	318	318	318
Start travelling range J	1361.5	1642.5	1896.5	2276.5	2630.5
Cable carrier overhang K	908	1158	1358	1708	2008
Distance betw. drilled holes L	2 x 404	2 x 529	4 x 314.5	4 x 402	4 x 477
Number of mounting plates n	3	3	5	5	5

Configuration table of the Thickness Gauging System LTM-MAXI (All information in mm)

Technical Data

System configuration		
Type of measurement / Measurement mode	Static and dynamic / Line measuring, Micro-taversing, Macro-traversing, Macro-traversing with track measuring	
Number of measuring stations ¹⁾ :	1	
Operation:	Via client software, e.g. internal client ROLAND LTM-S via 21.5" touch display	
Electric interface / Data interface:	Profibus respectively Profinet / Ethernet	
Data type:	Measurement protocol on measurement history with minimum, maximum and determined average thickness as CSV format	
Integrated measuring system analysis:	Yes, integrated via ROLAND Thickness Gauging Software LTM-S	
Calibration of the system:	Electromecanic	
	Control is integrated via ROLAND Thickness Gauging Software LTM-S	
Track unit transversal to the material transport direction:	Present, axis with step motor	
Max. measuring distance ²⁾ :	300mm / 450mm / 600mm / 800mm / 1000mm	
Positioning accuracy	± 1mm	
Positioning velocity	12m/min	
Measurement speed	6m/min	
Process parameters		
Measuring material:	Fe-, NF - materials (non-transparent)	
Material velocity ³⁾ :	max. 1.800m/min	
Material temperature ⁴⁾ :	max. 100°C (212°F)	
Permissible residual moisture on the strip surface	500mg/ m² per side, evenly distributed	
Metrological characteristics		
Measurable material thickness:	0.05mm ... 8mm	
Max. deviation of measurement at calibration normal ⁵⁾ :	3µm	
Work space:	20mm (± 10mm around measuring focus)	
Resolution:	0.1µm	
Repeatability ⁶⁾ :	± 1.0µm	
	± 3 mm	The specified repeat accuracy respectively measurement deviation applies to an angle deviation ≤ 1° and variation of the pass line
Sampling interval:	20 / 50 / 100 / 200 / 500 / 1000µs	
Laser characteristics		
Linearity:	± 4.0µm	
Light spot dimensions:	0.05mm x 2.0mm	
Measuring principle:	Laser triangulation	
Laser type, wave length:	Semi conductor, red, 650 nm	
Laser class:	2 (DIN / IEC), max. 0.95mW	
Connections, consumption, ambient conditions		
Electric connection:	115V/230VAC, 16A	
Protection class:	Switch cabinet IP65 / Sensors IP67	
Ambient temperatures:	Measuring stations ⁶⁾ : 5 – 45°C (41-113°F) / Control unit: 5 – 45 °C (41-113°F) / relative air humidity: 10 – 95%	
Air supply:	Pressure: min. 6bar; max. 8bar / ammount approx. 15m³/h	
Compressed air quality ⁷⁾ :	Solid particles: quality class 5 = max. 40µm / particle density < 10mg/m³ / water content: quality class 5 = 9.4g/m³ at 10°C / oil content: quality class 4 < 5mg/m³	
Mechanic connection of compressed air	Hose 6 / 4mm	
¹⁾ A measuring station consists of 2 laser sensors ²⁾ The measuring path depends on the selected system and at the same time it describes the max. possible material width that can be measured. ³⁾ The distance of the measuring points increases with increasing speed, depending on the selected sampling interval. ⁴⁾ Other material temperatures upon request ⁵⁾ The specified repeatability respectively the deviation of measurement applies to an angular deviation of ≤ 1° and variation of the passing line ⁶⁾ Only if the prescribed calibration protocol is followed ⁷⁾ DIN ISO 8573-1, before the maintenance unit (scope of delivery)		

Order information

Designation	Part name	Description
Control cabinet with server and internal client, as well as the necessary pneumatic units	LTM-CONTROL-C1-PY¹⁾	<p>Rittal compact control cabinet 800mm x 600mm x 350mm with all necessary electrical hardware components to realize the measurement task.</p> <ul style="list-style-type: none"> • Beckhoff Industrial PC CX5140 with operating system and I/O module mounted on TwinCat, Profinet or Profibus interface, license clamp etc. • Measurement controller / Laser control unit for two laser separation distance sensors. • Integrated interface for control from the customer's side Y¹⁾, Profibus or Profinet. • Server and client software LTM-S with recipe database, measurement mode selection, profile and trend display, user administration, etc. • With all the necessary electrical connections for the C-Frames, reference and limit switches etc. on the terminal strip. • Separate accessories, such as pressure switch for air purge.
Measuring C-frame version LTM-MAXI	LTM-MAXI-XXXX²⁾-20	<p>Measuring C-frame with linear axis, a maximum possible measuring range of XXXX²⁾ mm, stepper motor, two separation distance sensors (triangulation lasers), calibration unit and all other necessary units to enable the measuring task (except control and operation). The measuring yoke consists of the following components:</p> <ul style="list-style-type: none"> • Anti-vibration and rigid C-frame made from solid steel welded construction. • Linear axis with guide and ball screw, as well as a stepper motor with encoder to ensure the traverse movement of the C-frame. • 2 separation distance sensors (triangulation lasers) with a measuring range of 20mm (± 10mm). • Temperature sensors, end and reference switches. • Integrated calibration unit with quick change adapter for the supplied measuring standard • Laser air purge unit
Connection cables	LTM-C-SCSENS-GG	<p>Connection cable for the C-frame (sensors) LTM-MAXI to the control cabinet type LTM-Control-C1-PY¹⁾.</p> <ul style="list-style-type: none"> • 2 pieces per C-frame as required for a LTM-MAXI. • One end with circular connector for connection to the sensor, the other end with rectangular connector for connection to the measuring controller • Standard length 10m³⁾.
	LTM-C-CABLE-SET	<p>Connection cable for the drive unit of the C-frame of LTM-MAXI to the control cabinet LTM-Control-C1-PY¹⁾ consisting of:</p> <ul style="list-style-type: none"> • 1 piece of motor power and control cable for connecting the LTM-MAXI to the control cabinet LTM-CONTROL-C1-PY¹⁾. • 2 piece limit switch cable for connecting the LTM-MAXI to the control cabinet LTM-CONTROL-C1-PY¹⁾ • 1 piece reference switch cable for connecting the LTM-MAXI to the control cabinet LTM-CONTROL-C1-PY¹⁾ • Standard length 5m³⁾.
	LTM-C-CENCODS-G (Option)	<p>Connection cable for encoder to the ROLAND system, with straight M23 cable socket equipped for connection to the encoder and prepared at the other end for terminal connection in the control cabinet. Standard length 5m³⁾.</p>
Option Control unit	LTM-TOUCH-21.5	<p>21.5" touch monitor for displaying and operating the internal client LTM-S</p> <ul style="list-style-type: none"> • Rittal compact control cabinet 600mm x 380mm x 200mm with all necessary electrical hardware components, incl. 2 x USB port 3.0. • 21.5" touch monitor, mounted in the control cabinet. • With cable set 5m³⁾ for connection to the corresponding control cabinet LTM-CONTROL-C1-PY¹⁾.
Option Encoder	LTM-ENC-1000	<p>Installation in the customer's system to generate the necessary travel signals with clamping flange 58mm and a shaft diameter of 10mm.</p> <p>Optionally, if no route information can be provided by the customer.</p>

¹⁾ Interface to customer control: Y = N - Profinet, Y = R - Profibus

²⁾ Maximum measuring distance XXXX = 300mm or 450mm or 600mm or 800mm or 1000mm.

³⁾ Other lengths upon request.

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