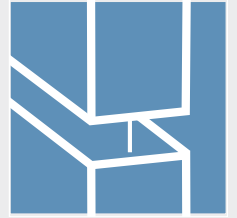


Thickness Gauging System LTM-BASE

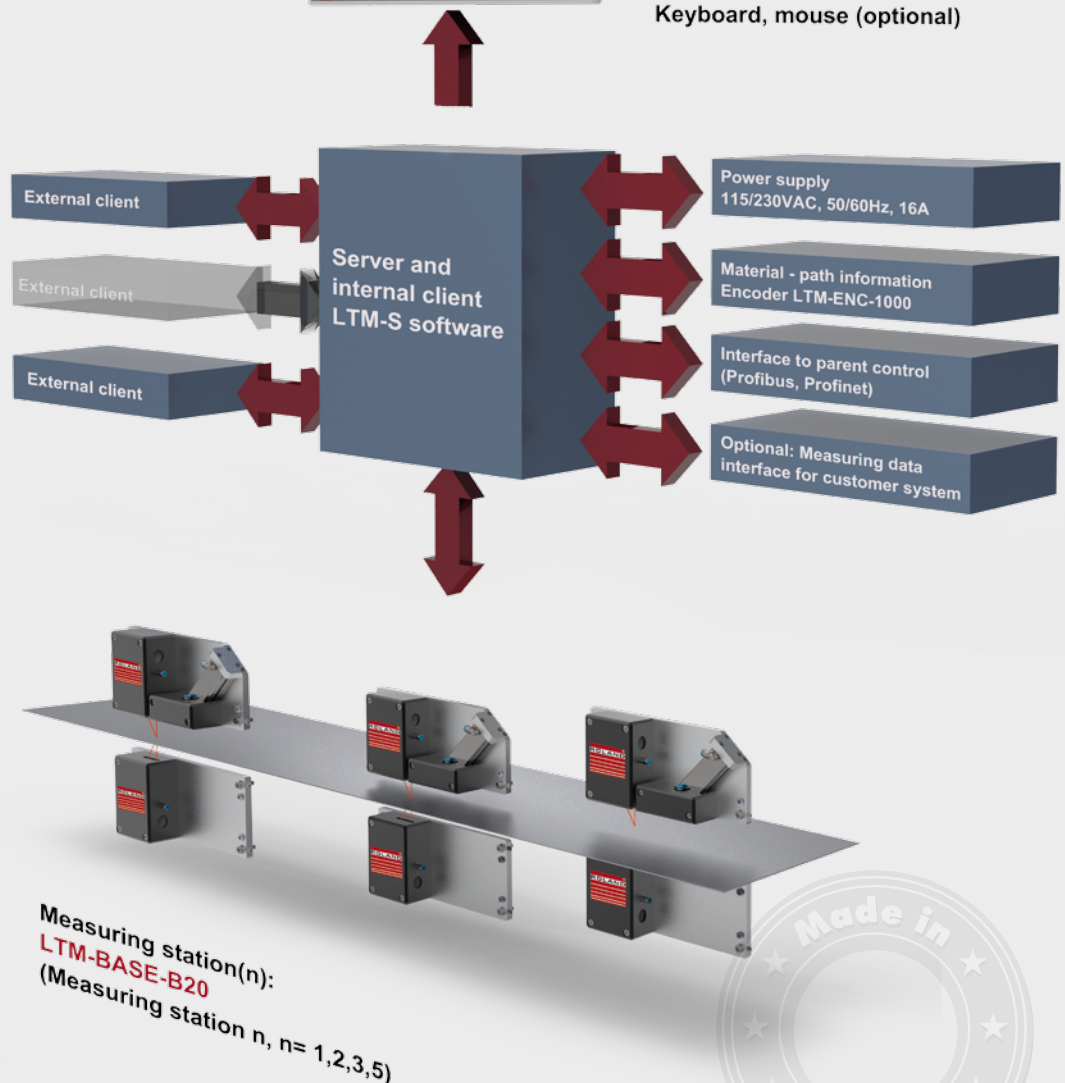
High performance measuring system for Static Thickness Gauging
with maximum 5 tracks



- Measurable material thickness from 0.05 to 8mm
- Non-contacting measurement during continuous operation
- Measurement mode: Line measurement
- Simple integration
- Innovative operating software LTM-S
- Possible interfaces: Profibus, Profinet



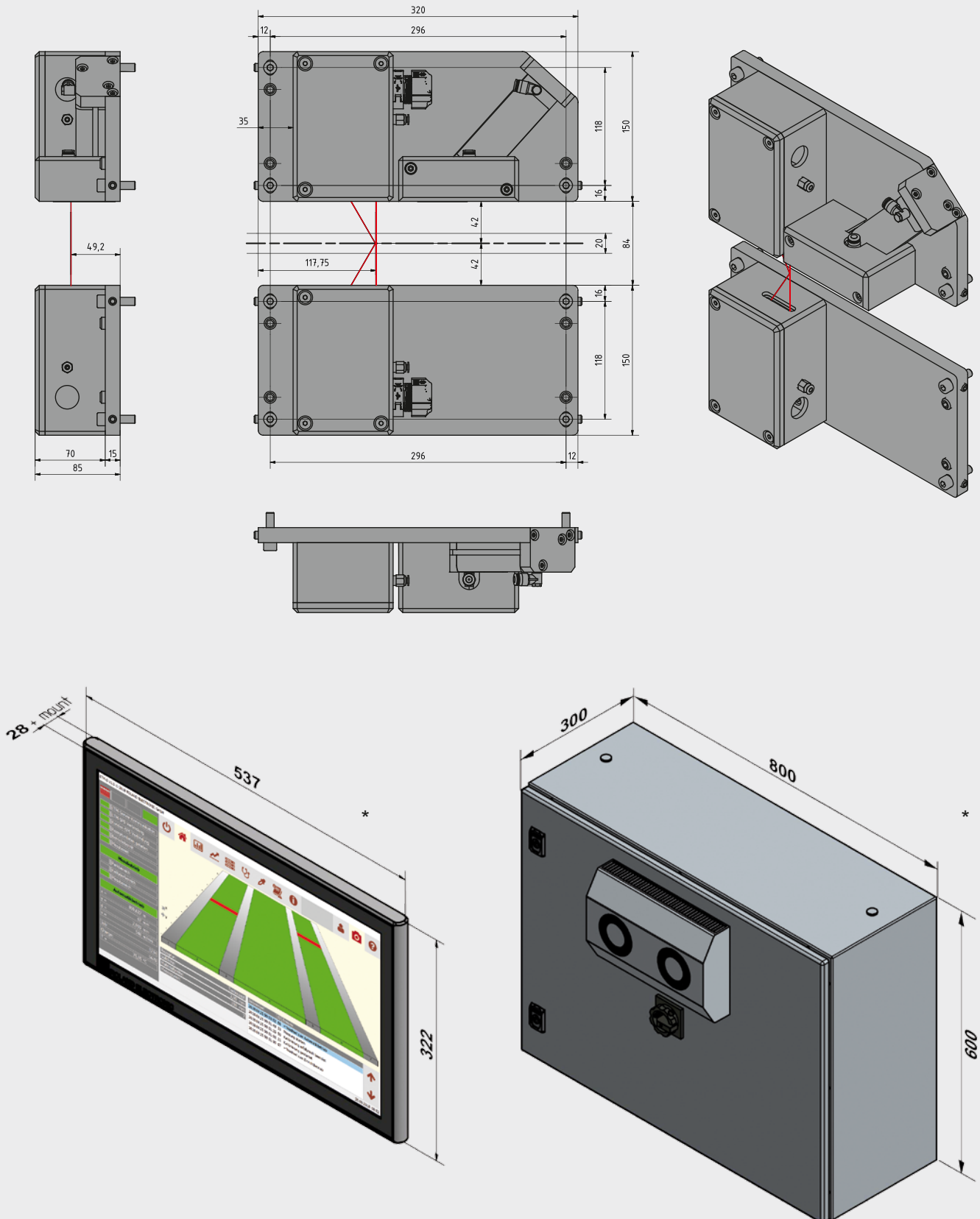
Touch screen:
LTM-TOUCH-21.5
Keyboard, mouse (optional)



THICKNESS GAUGING



Dimensions



Dimensions of LTM-BASE (All information in mm). * Also for LTM-SMART und LTM-MAXI

Technical Data

System configuration		
Type of measurement / Measurement mode	Static / Line measuring	
Number of measuring stations ¹⁾ :	1 to max. 5	
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:	Pneumatic-mecanic	
	Control is integrated via ROLAND Thickness Gauging Software LTM-S	
Track unit transversal to the material transport direction:	Not present	
Max. measuring distance ²⁾ :	---	
Positioning accuracy	---	
Positioning velocity	---	
Measurement speed	---	
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:	0.05 ... 8mm	
Max. deviation of measurement at calibration normal ⁵⁾ :	5µm	
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 / 1000 µs	
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 deliverv)		

THICKNESS GAUGING SYSTEM LTM-BASE

Order information

Designation	Part name	Description
Control cabinet with server and internal client and the necessary pneumatic units	LTM-CONTROL-BX¹⁾-PY²⁾	<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 X¹⁾ measuring stations. • Integrated interface for control from the customer's side Y²⁾, 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 purging.
Measuring station	LTM-BASE-B20	<p>1,2,3 or 5 measuring stations can be connected. A measuring station consists of:</p> <ul style="list-style-type: none"> • 2 Sensor enclosures with purging air connection, equipped with high-precision distance sensors with a measuring range of 20mm (±10mm) connected to the control cabinet LTM-Control-BX¹⁾-PY²⁾ • Alignment aid for mounting the measuring station in the customer system. • 1 unit with bracket and calibration standard 2mm and pneumatic cylinder with magnetic limit switch for position monitoring of the pneumatic cylinder.
Connection cables	LTM-B-SCSENS-GG	<p>Connection cable for the measuring stations (sensor) LTM-BASE-B20.</p> <ul style="list-style-type: none"> • 2 pcs. necessary for each measuring station. • 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-B-CABLE-SET	<p>Connection cable for the measuring stations (magnetic limit switch calibration cylinder) LTM- BASE-B20.</p> <ul style="list-style-type: none"> • 2 pcs. are necessary for each measuring station. • One end with M8 connector for connection to the switch, the other end prepared for terminal connection. • Standard length 10m³⁾
	LTM-B-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>
Hose sets	LTM-B-TUBE-SET	<p>Hose set for the first measuring station LTM- BASE-B20 (Only necessary for the first track)</p> <ul style="list-style-type: none"> • 2x10m³⁾ Hose 6mm for direct connection to magnetic valve and cylinder • 2x10m³⁾ Hose 4mm for connecting the purging air with a Y-distributor 4mm - 4mm - 4mm and a T-distributor 6mm - 4mm - 6mm • For each additional extension track order separately: LTM-B-TUBE-SET-EXT
	LTM-B-TUBE-SET-EXT	<p>Extension hose set for each additional measuring station LTM- BASE-B20 (Not necessary for the first measuring station)</p> <ul style="list-style-type: none"> • 2x2m³⁾ Hose 6mm for Festo cylinder Type ADNGF • 2x2m³⁾ Hose 4mm for connecting the purging air. • 2 pcs. Y-distributors 4mm - 4mm - 4mm and 2 pcs. Y-distributors 6mm - 6mm - 6mm
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-BX¹⁾-PY²⁾
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⁾ Maximum connectable measuring stations X=1,2,3 or 5

²⁾ Interface for customer control: Y = N - Profinet, Y = R - Profibus

³⁾ Other lengths upon request.

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