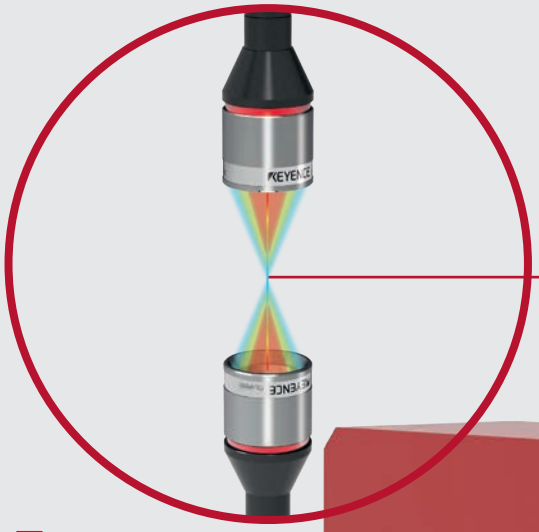
ROLAND®

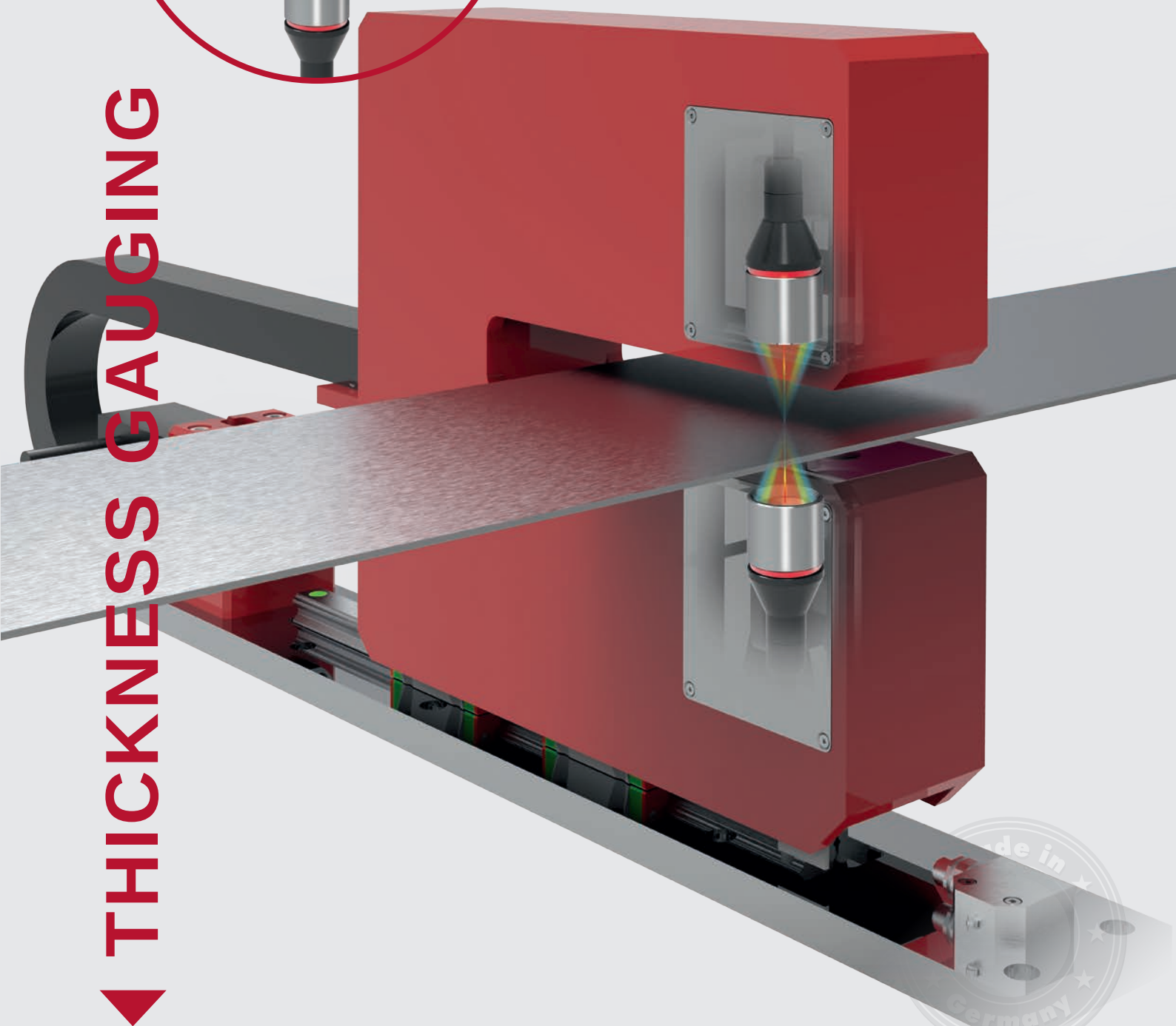
ROLAND ELECTRONIC



LTM-ULTRA

Confocal ● Ultra precise ● Adapted to Industry 4.0

THICKNESS GAUGING



Innovation **IS OUR LIFE**

LTM-ULTRA

- Measurable material thickness from 0.01 to 3.0mm
- Realizable measurement modes:
  - Line measurement
  - Micro-Traversing
  - Macro-Traversing
  - Macro-Traversing with track measurement
- High-precision thickness measurement thanks to the multicolour confocal process
- Adapted to the requirements of “Industry 4.0”
- Measurements on any materials or surfaces
- Innovative operation and measurement software LTM-S

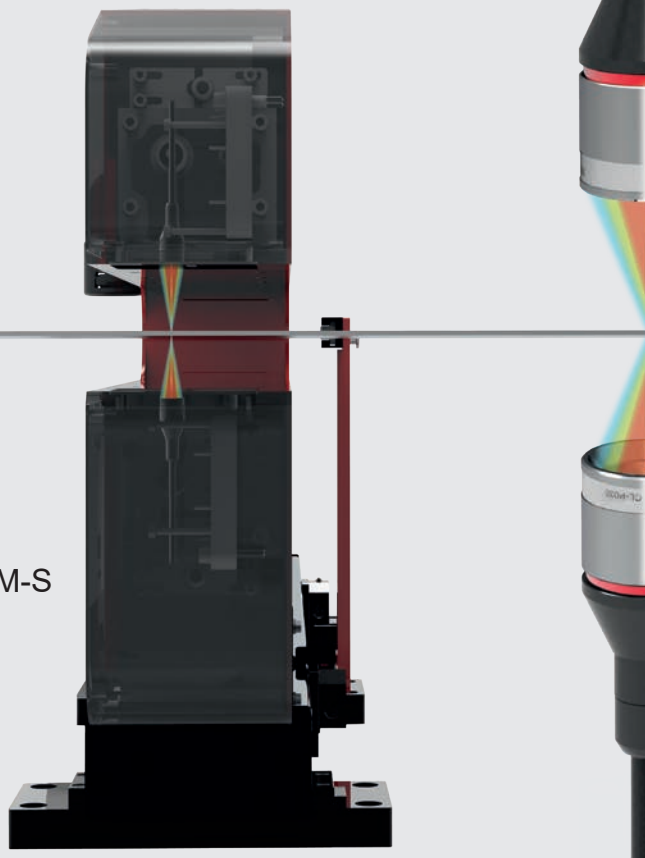


Fig. ROLAND LTM-ULTRA system

The ROLAND LTM-ULTRA high-performance thickness measuring system enables touch-free operation and high-precision thickness measurement. The combination of state-of-the-art confocal sensors and their integration into modern technology in conjunction with a measurement software specially developed for this requirement allows the acquisition, evaluation, visualization, analysis of data and archiving of thickness values as well as cross-section measured values for your application.

The LTM-ULTRA high-performance thickness measuring system from ROLAND ELECTRONIC was developed to enable the non-contacting measurement of a wide variety of materials and surfaces with very high accuracy down to the µm range. The system has been designed specifically for the usage in the metalworking industry and is used in rolling mills, longitudinal and cross-section plants, press lines, the can industry, metal sheet processing and many more.

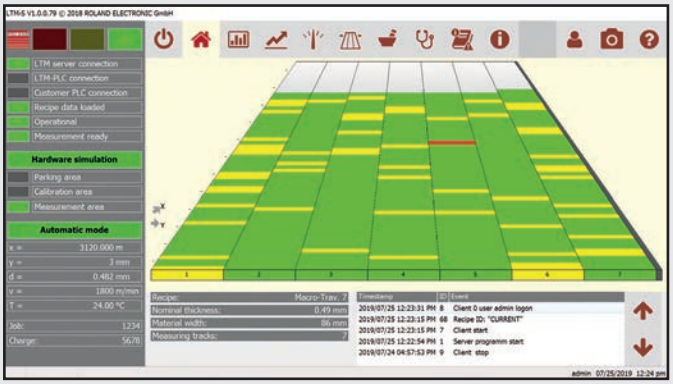


Fig. Start screen of the Thickness Gauging Software LTM-S

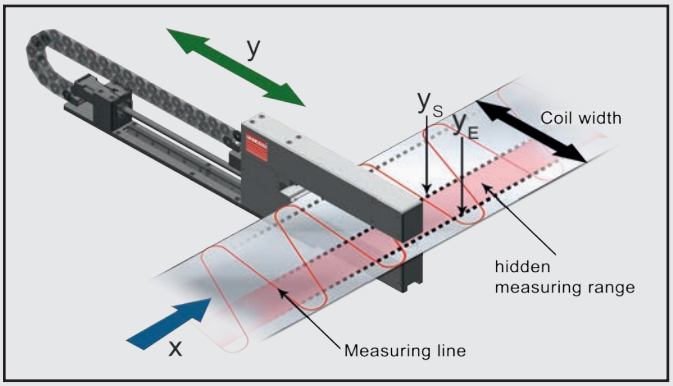


Fig. Measurement mode Macro-Traversing with track measuring

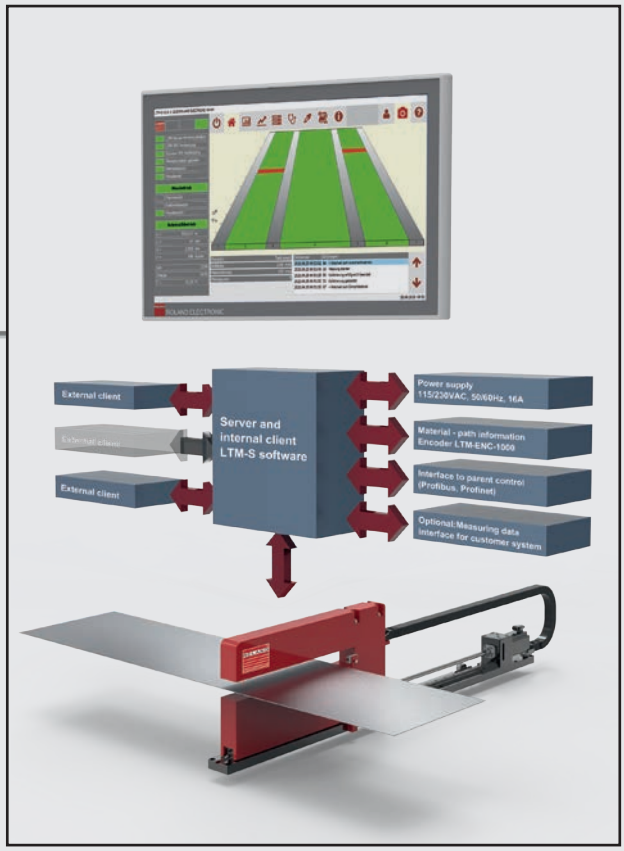


Fig. Components of the ROLAND LTM-ULTRA system

Fig. LTM-S tool „Thickness trend course in X-direction“

Fig. LTM-S “Thickness trend course in Y-direction/cross section“

The basic control principle is based upon on a so-called server-client solution. Internally, on the CPU (Beckhoff), the necessary server and the included internal client are installed. The communication with the higher-level control system is performed through a defined interface (Profibus, Profinet). Optional, there is the possibility to save the determined thickness measurements values additionally to the customer´s network, e.g. as CSV format.
The thickness measuring software LTM-S (internal client) is included in the scope of delivery and includes all necessary tools for the operation, processing, presentation and delivery of the recorded thickness measurement values. In addition to the simple, intuitive operation, the clear presentation of the thickness measurement values enables our customers to optimally assess the dimensional thickness of the material as a function of the path. In order to maintain the quality of measurement, the accuracy respectively correctness of the measurement during the current production process, the system possess a corresponding software tool for performing the so-called “Measurement system analysis according to method 1”.

Fig. LTM-S tool “Measuring values-numerical“

Fig. LTM-S tool “Measurement system analysis according to method 1”

Technical Data

System configuration	
Type of measurement:	Static and dynamic
Measurement mode:	Line measuring, Micro-Traversing, Macro-Traversing, Macro-Traversing with track measuring
Number of measuring stations:	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 with step motor
Max. measuring distance:	150mm
Positioning accuracy / Positioning velocity:	± 1mm / 12m/min
Process parameters	
Measuring material:	FE-, NF materials, plastic, paper, wood and also foils
Material velocity / Material temperature:	max. 1.800m/min / max. 100°C
Permissible residual moisture on the strip surface	200mg/ m² per side, evenly distributed
Metrological characteristics	
Measurable material thickness / Resolution:	0.01mm ... 3.0mm / 0.25µm
Max. deviation of measurement at calibration normal:	0.5µm (The specified repeat accuracy respectively measurement deviation applies to an angle deviation ≤ 1° and variation of the pass line.)
Work space:	7.4mm, ± 3.7mm around measuring focus
Laser characteristics	
Linearity / Light spot dimensions:	± 1.88µm / Ø 38µm
Measuring principle / Laser class:	Multicolour confocal method / 1 (DIN / IEC)
Connections, consumption, ambient conditions	
Electric connection:	115V/230VAC,16A
Protection class:	Switch cabinet IP65 / Sensors IP67
Ambient temperatures:	Measuring station: 5 – 45°C / Control unit: 5 – 45°C / relative air humidity: 20 – 85%

Order information

Designation	Part name	Description
Control system	**LTM-CONTROL-CU1-XX***	Control system for thickness measuring units LTM-ULTRA with comfortable operation and display possibilities of the collected data by the measuring software LTM-S and for the communication with a higher-level control system. ***XX= ET** (EtherCAT), **PN** (Profinet), **PR** (Profibus)
Measuring C-frame version LTM-ULTRA:	**LTM-ULTRA-0150-C74**	Ultra high-performance measuring frame for measuring material thicknesses as C-frame version with a maximum traversing measuring distance of **150**mm (**LTM-ULTRA-0150-C74**), **300**mm (**LTM-ULTRA-0300-C74**) and **450**mm (**LTM-ULTRA-0450-C74**).
	LTM-ULTRA-0300-C74	
	LTM-ULTRA-0450-C74	
Connection cables:	**LTM-CU-CABLE-SET**	Cable set for connecting the terminal switch, the reference switch, the pressure switch, the temperature switch an the stepper motor incl. the corresponding encoder (mounted in the C-frame version LTM-ULTRA) to the control cabinet of the control system LTM-CONTROL-CU1-XX* (XX*= see control system type). Length each 10m.
	LTM-CU-SCSENSS-GG	Cable for connecting to a confocal sensor, mounted into the C-frame LTM-ULTRA to the control cabinet of the Roland control system LTM-CONTROL-CU1-PR, LTM-CONTROL-CU1-PN resp. LTM-CONTROL-CU1-ET. Length each 10m.
Option Control unit:	**LTM-TOUCH**	Touch monitor 21.5“ for operation and display of the internal client LTM-S With cable set 5m to connect to the control system LTM-CONTROL-CU1-XX*.

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