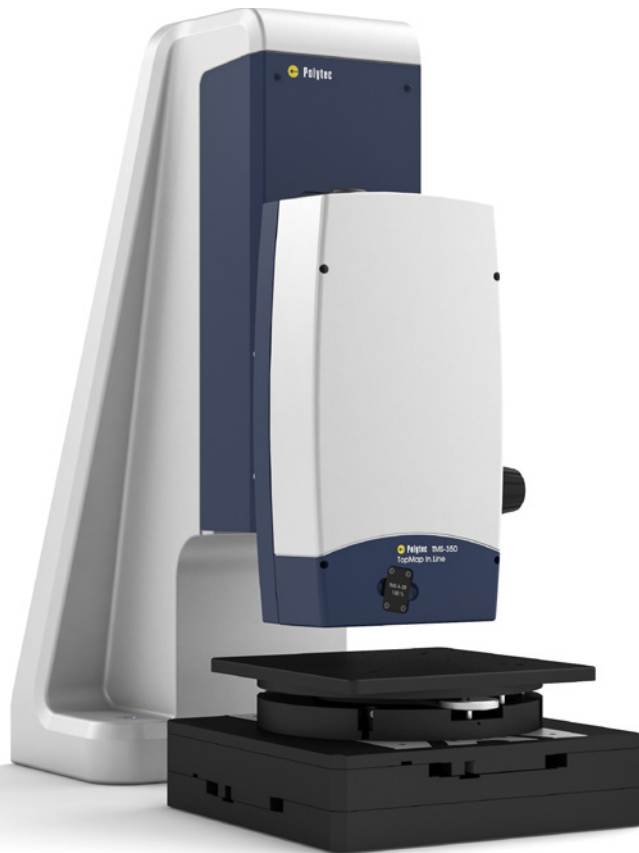


TopMap In.Line

The compact design of the TMS-350 TopMap In.Line enables an elegant and easy integration into the production line. The system measures the form deviation, such as flatness or waviness, without contact, reliably and within short cycle times. Since no objectives are needed, collisions and damage to the optics or sample are avoided. The whitelight-interferometer measures even surfaces within deep holes with exact step heights from a safe working distance thanks to its special optical design.



Highlights

- Short cycle time measurements in production
- Easy to integrate, automatable, robust and low-maintenance
- Highly repeatable: tolerances checked reliably
- Smart Surface Scanning Technology for reflective or matte surfaces
- Integrated interface, for example in-house databases and QS-STAT™

TopMap In.Line

Fast Surface Characterization in the Production Line

Datasheet



Technical Data

The information for the model TMS-350 TopMap In.Line comply with the initiative "Fair Data Sheet" for optical surface measurement devices.

i General Features	TMS-350 L	TMS-350 M	TMS-350 S
Positioning volume	200 x 200 x 0.25 mm = 0.00001 m ³		
Max. number of points in a single measurement	X: 648, Y: 488, X.Y: 316 224		
Maximum number of measuring points	X: 5116, Y: 5116, X.Y: 26173456	X: 10103, Y: 9943, X.Y: 100454129	X: 15000, Y: 15000, X.Y: 225000000
Objective-specific Features			
Measuring area	Ø 21 mm (excluding top and bottom), 336.8 mm ²	X: 13.68 mm Y: 10.31 mm X.Y: 141.0 mm ²	X: 6.43 mm Y: 4.84 mm X.Y: 31.1 mm ²
Working distance	40 ±1 mm	40 ±1 mm	40 ±1 mm
Vertical measuring range	500 µm	500 µm	500 µm
Calculated maximum angle	0.94°	1.82°	3.8°
Measuring point spacing	X: 40.2 µm Y: 40.2 µm	X: 21.15 µm Y: 21.15 µm	X: 9.92 µm Y: 9.92 µm
Calculated lateral optical resolution	19.5 µm	10.1 µm	4.8 µm
Extended Measuring Range			
Extended lateral range	214.9 mm x 214.9 mm	213.68 mm x 210.31 mm	148.8 mm x 148.8 mm
Extended measuring area with data reduction	214.9 mm x 214.9 mm	213.68 mm x 210.31 mm	148.8 mm x 148.8 mm
Extended vertical range	500 µm	500 µm	500 µm
Performance Features			
Measurement noise	< 0.5 nm (Phase evaluation)		
Vertical resolution	1.4 nm (Phase evaluation)		
General Specifications			
Dimensions [L x W x H] Controller TMS-E-350 Sensor head TMS-I-350	240 mm x 140 mm x 420 mm 376 mm x 199 mm x 112.5 mm		
Weight Controller TMS-E-350 Sensor head TMS-I-350	5.5 kg 10 kg		
Power	100 ... 240 VAC ± 10 %, 50/60 Hz; max. 30 W		
Ambient temperature range	20 ±3 °C		
Operation/Storage temperatur	+5 °C ... 40°C / -10 °C... +65 °C		
Relative humidity	max. 80 %, non-condensing		
Photobiological safety	IEC/EN 62471:2009-03		
Electrical safety	IEC/EN 61010-1:2011-07; EMV: IEC/EN 61326:2006-10		
Scope of delivery	Interferometer, controller, industrial PC with TFT-monitor, connection cable, 1 reference filter, TMS software with hardlock (Dongle), dryer cartridge		

Other Features			
Measuring principle	Scanning white-light interferometry (Michelson)		
Optical setup	Telecentric; light source: long-life LED, 525 nm		
Data formats	Topography formats: SUR, ASCII Export formats: qs-STAT, PDF, BMP, PNG, TIFF, GIF		
Application-specific Features			
Typical flatness measurement¹			
Flatness deviation	Smooth surfaces ² : < 14 nm, rough surfaces ³ : < 125 nm		
Reproducibility ⁵	Smooth surfaces ² : < 1 nm, rough surfaces ³ : < 35 nm		
Typical step height measurement⁴			
Nominal step height	5 µm	50 µm	450 µm
Reproducibility ⁵	0.05 µm	0.05 µm	0.05 µm
Maximum deviation of a step height measurement ⁶	0.12 µm	0.23 µm	0.29 µm

¹ Rounded values derived by empirical measurement data and a statistical evaluation of the measured flatness for several TMS-350 TopMap In.Line at different sample increments and for both correlogram evaluation procedures. Measurements on a plane mirror (95% of the maximum field of view used).

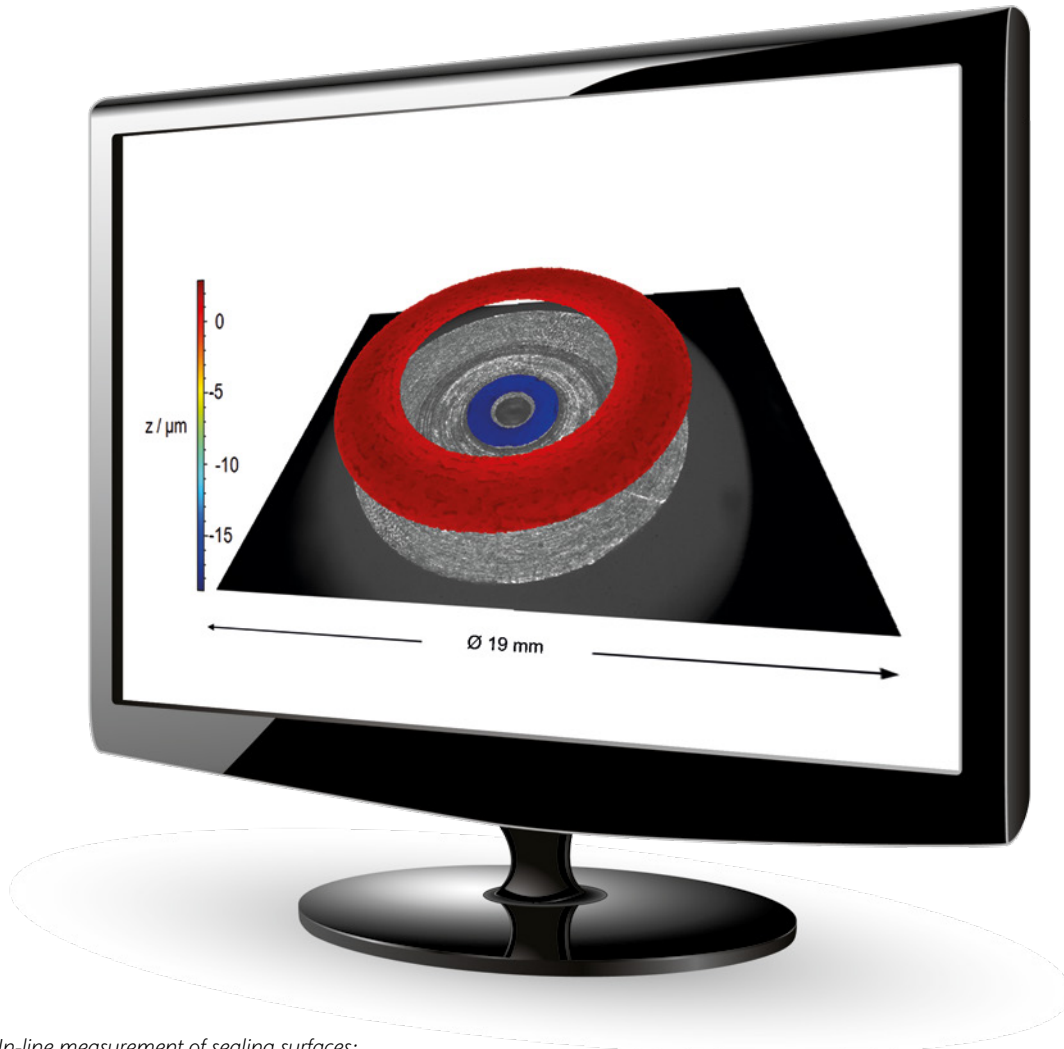
² Evaluation of the correlogram phase

³ Evaluation of the correlogram envelope

⁴ Empirically determined representative performance for measurements on a calibrated PTB depth setting standard type A1 (ISO 5436-1).

⁵ Variation of the measurement values for a series of measurements under repeatability conditions, averaged for several measurement devices.

⁶ 7 measurements under reproducibility conditions




In-line measurement of sealing surfaces:

The TopMap In.Line captures even large samples with varying steps quickly and without stitching thanks to its large field of view.

The configurable software with integrated QS-STAT interface makes surface characterization easy and comfortable.

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