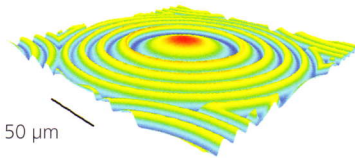
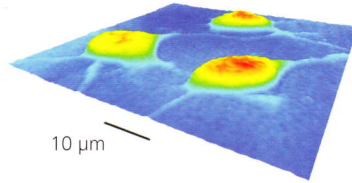


DHM® T1000 series

The transmission configured optical profiler
with real-time full-field sub-nanometer resolution



Height: 1 µm



Height: 5 µm

Lyncée Tec's DHM T1000 series is composed of the only transmission configured optical profilers on the market. Based on Digital Holographic Microscopy technology, its contactless full-field 3D optical topography performed at video rate makes it an ideal tool for quantitative dynamic and static measurements.

Providing quantitative phase measurements, transmission configured microscopes give unrivalled possibilities for characterizing phase objects, such as:

- biological media
- micro-optics
- micro-fluidics

In life science applications, DHM provides precise morphology measurements without the addition of any contrast agent and with very low illumination power. It is thus very sensitive to small shape modifications or intra-cellular composition changes. DHM T1001 and T1002 are thus ideal instruments for high-throughput screening, time lapse measurements and time monitoring. They can be completed with a fluorescence module enabling simultaneous DHM-fluorescence measurements. DHM T1001 is also compatible with the stroboscopic module.

In transparent or partially transparent material science applications, such as micro-optics or micro-fluidics, DHM measures the transmitted wavefront providing information on the sample's shape, refractive index and optical transfer function. Refractive index liquids may be used for characterization of sharp slope samples like micro-corner cubes, Fresnel lenses...

Additionally, ease-of-use and productivity is maximized by DHM's unique features:

- widest available choice of microscope objectives: DHM can be configured with any standard microscope objectives. This versatility ensures you to work with the objectives best adapted for your application (high NA, long working distance, oil or water immersion...)
- automatic coherence compensation: DHM allows measurements of immersed samples and samples covered by glass plates as well as in air. Optimal and precise compensation is performed for any thickness and refractive index
- optional motorized stages up to 200 mm × 100 mm × 20 mm travel range for samples up to 200 mm × 200 mm enables time lapse measurements and stitching over large areas.



Technical specifications

System

Measurement technique:	single wavelength digital holographic microscopy in transmission configuration
Image types:	intensity and quantitative phase contrast image (DHM mode)
Light source:	monochromatic laser source
Sample stage:	manual or automated XYZ stages up to 200 mm × 100 mm × 20 mm travel range
Camera:	1392 × 1040 pixels, 8 bits
Available objectives:	standard, high NA, long working distance, water/oil immersion microscope objectives
Objective & condenser mounting:	4-position turret
Computer:	Dell workstation with latest Intel® processor, optimized and configured for DHM, with 19" SXGA monitor
Software:	Lyncée Tec proprietary Koala classic software based on C++ and .NET

Performance

Accuracy ¹ :	0.1° (0.5 nm)*
Vertical resolution ² :	0.2° (1.0 nm)*
Repeatability ³ :	< 0.01° (< 0.05 nm)*
Vertical measuring range:	sample dependent
Lateral resolution:	objective dependent, down to 300 nm with oil immersion objectives (1.4 NA)
Field of view:	objective dependent, up to 4.4 mm
Working distance:	objective dependent, from 0.3 to 18 mm
Digital focusing range:	up to 50× depth of field (objective dependent)
Grabbing time (1 hologram):	down to 1 μs in a single image grab (no scanning mechanism, no phase shifting)
Spatial sampling:	1024 × 1024 pixels (hologram)
Acquisition rate:	15 fps (1024 × 1024 pixels) (optional up to 300 fps)
Reconstruction rate:	15 fps (512 × 512 pixels), 4 fps (1024 × 1024 pixels)
Sample illumination:	down to 1 μW/cm ²
Maximum sample size:	L × W: 200 × 200 mm

Power requirements

Input voltage:	85-260 VAC - 50/60 Hz
Power requirements (w/o computer):	max. 480 W

Dimensions & weight

Dimensions (L × W × H):	500 × 500 × 500 mm
Weight:	35 kg

Compatibility

	T1001	T1002
Fluorescence module:	optional	optional
Stroboscopic module:	optional	no

¹ As demonstrated by taking the temporal standard deviation on 1 pixel over 30 measurements.

² Defined as twice the accuracy.

³ As demonstrated by taking the one sigma Rq value of 30 repeatability measurements without sample.

* converted value for measurements in air with sample refractive index $n = 1.5$

