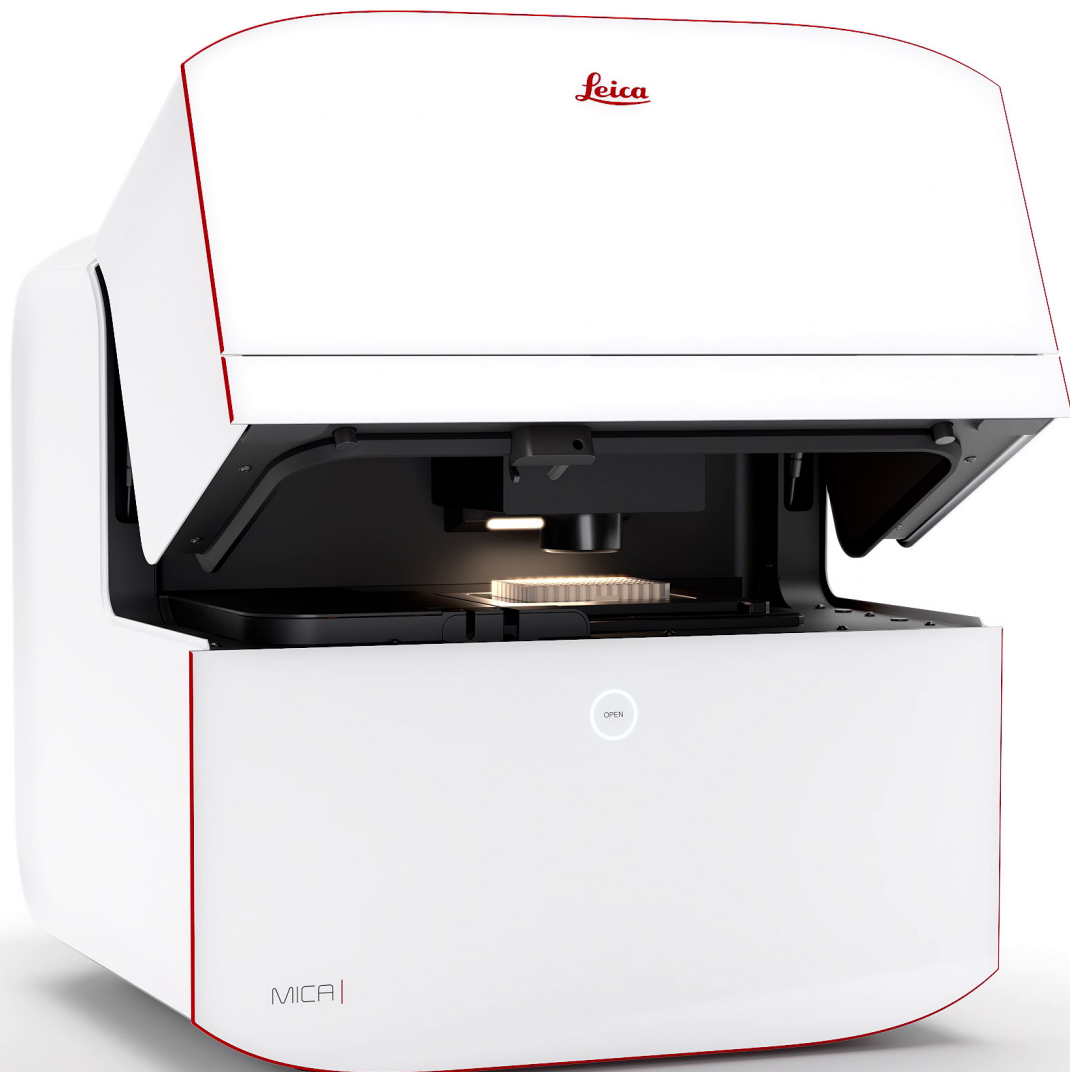


From Eye to Insight



Mica – the world's first Microhub

Technical Documentation | May 2026



reddot winner 2023

SPECIFICATIONS

		Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
TRANSMITTED LIGHT CONTRAST	Integrated modulation contrast (IMC), automatically adjusted and brightfield contrast in RGB or gray scale mode	x	x	x	x
INCIDENT FLUORESCENCE ILLUMINATION	LED				
	365 nm	100 mW (direct LLG output)	x	x	x
	470 nm	170 mW (direct LLG output)	x	x	x
	555 nm	170 mW (direct LLG output)	x	x	x
	625 nm	170 mW (direct LLG output)	x	x	x
FluoSync WIDEFIELD DETECTION	FluoSync Widefield Unit				
	Simultaneous detection channels	4	x	x	x
	Emission separation	FluoSync™	x	x	x
	Detector type	5 MP CMOS, all detectors automatically aligned with 0.3 px precision	x	x	x
	Digitalization resolution	12 Bit	x	x	x
	Max. system frame rate	4 fluorophores simultaneously acquired at 25 fps (Mica High Power Workstation) or 10 fps (Mica Workstation)	x	x	x
	Quantum efficiency (QE)	61% @ 450 nm, 64% @ 500 nm, peak: 67% @ 536 nm, 46% @ 700 nm	x	x	x
	Spectral detection range	420 - 705 nm with high photon transmission due to fixed quad-band distribution on the 4 detection channels	x	x	x
	Readout noise	2.3 e ⁻	x	x	x

			Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
	Full well depth	10970 e ⁻	x	x	x	x
CONFOCAL ILLUMINATION	Laser diode					
	405 nm	10 mW direct fiber output			x	x
	488 nm	10 mW direct fiber output			x	x
	561 nm	2 mW direct fiber output			x	x
	638 nm	10 mW direct fiber output			x	x
	Illumination modulation	All diodes are directly modulated. Global neutral density filters to automatically adjust dynamic range to match the sample.			x	x
	Laser Safety	Laser class 1			x	x
FluoSync CONFOCAL DETECTION	FluoSync Confocal Unit					
	Simultaneous detection channels	4			x	x
	Emission separation	FluoSync™			x	x
	Detector type	HyD FS			x	x
	Detection mode	Analog			x	x
	Digitalization resolution	8 / 12 Bit			x	x
	Photon detection efficiency (PDE)	20% @ 400 nm, 30% @ 500 nm, 40% @ 600 nm, 31% @ 700 nm			x	x
	Spectral detection range	415 - 750 nm with high photon transmission due to fixed quad-band distribution onto the 4 detection channels			x	x
	Imaging	Simultaneous or frame sequential			x	x
	UV/405 nm correction	Unified concept with CS2 optics			x	x

			Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
	Pinhole	Stable single pinhole (maintenance-free)			x	x
	Pinhole-diameter control	Automatically adjusted			x	x
SCANNER XY	Scanner					
	Scanning concept	XY scanner with scanning at low inertia			x	x
	Maximal line frequency	3600 lines/s			x	x
	Line frequency	Automatically adjusted			x	x
	Frame rate	3 fps (800 px x 672 px); 10 fps (192 px x 168 px)			x	x
	Maximal accessible frame resolution	4096 px x 3426 px			x	x
	Scan zoom	1 – 6x			x	x
	Field diameter	18 mm			x	x
	Scan modes	xyz, xyt, xyzt			x	x
ENVIRONMENTAL CONTROL	Incubator	Complete sample space is under environmental control		x		x
	Temperature	Room temperature +3 °C to 45 °C, accuracy: ± 0.1 °C		x		x
	CO ₂	0 to 10 %, accuracy: ± 0.1 %		x		x
	Humidity	65% - feedback controlled to minimize media evaporation while avoiding condensation		x		x
HYPOXIA UPGRADE	Stage-top	Replaces standard incubator, can be used with and without oxygen control		Opt.		Opt.
	Temperature	Room temperature +3 °C to 45 °C, accuracy: ± 0.1 °C		Opt.		Opt.
	CO ₂	0 to 10 %, accuracy: ± 0.1 %		Opt.		Opt.
	O ₂	1% to air, accuracy: ± 0.1 %		Opt.		Opt.
	Humidity	Gas is humidified by means of a water vapor semi-permeable tube immersed in a water bath		Opt.		Opt.

			Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
SCANNING STAGE	XY STAGE					
	Travel range	127 mm x 83 mm	x	x	x	x
	Resolution	< 0.02 µm	x	x	x	x
	Reproducibility	< 1 µm	x	x	x	x
	Max. speed	37 mm/sec	x	x	x	x
OBJECTIVE PACKAGES	Objectives included	HC PL FLUOTAR 1.6x/0.05 HC PL FLUOTAR 10x/0.32 (for fixed and live cell samples)	x	x	x	x
	Optional objectives (recommended)	HC PL APO 20x/0.75 CS2 (for fixed and live cell samples)	x	x	x	x
		HC PL APO 40x/1.30 OIL CS2 (for fixed samples)	x	x	x	x
		HC PL APO 40x/1.10 W CS2 motCORR (for fixed and live cell samples)	x	x	x	x
		HC PL APO 63x/1.40 OIL CS2 (for fixed samples)	x	x	x	x
		HC PL APO 63x/1.20 W CS2 motCORR (for fixed and live cell samples)	x	x	x	x
		HC PL FLUOTAR L 20x/0.60 motCORR (for fixed and live cell samples)	x	x	x	x
IMMERSION DISPERSION	Closed loop water dispenser	Forming and maintaining water immersion for one objective is feedback controlled and does not require any interaction	Opt.	x	Opt.	x
THUNDER	Methods	ICC, SVCC, LVCC	x	x	x	x
LIGHTNING	Methods	Basic, upgradeable to LIGHTNING Expert			x	x
VIBRATION ISOLATION	Anti-vibration table	Passive	x	x	x	x
MICROSCOPE FOCUS	Focus options					
	Autofocus	Reflection-based Adaptive Focus Control (AFC). Image Based Autofocus for transmitted light and fluorescence images. Can be combined with AFC.	x	x	x	x
	Z-drive	Minimum step size 50 nm	x	x	x	x

KEY FUNCTIONALITIES	Name	Description	Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
	FluoSync™	FluoSync™ detection hardware with fully integrated digital spectral hybrid unmixing for the acquisition of up to 4 labels simultaneously	x	x	x	x
	OneTouch	Sets all technical excitation and detection parameters according to the experimental demands automatically or with a single click on-demand	x	x	x	x
	Focusing	Keeps sample in focus throughout the experiment with a simple selection out of 3 focus strategies	x	x	x	x
	3D Imaging	Allows acquisitions of 3D volumes in widefield and confocal	x	x	x	x
	Mixed TL&CLSM	Combines transmitted light with confocal imaging			x	x
	Mixed TL&WF	Combines transmitted light with widefield imaging	x	x	x	x
	Sample Finder	Quickly and automatically generates an in-focus overview of the relevant sample areas	x	x	x	x
	Navigator	Powerful package including Assay Editor, Stitching and Mark and Find license. Uses overview for navigation and for defining positions and regions in any shape. Displays all acquired images in spatial relation to all other images.	x	x	x	x
	Objective Collision Prevention	Prevents the objective from colliding with a microtiter plate to protect the objective and sample	x	x	x	x
	Learn & Results	Mica's pixel classifier for 2D and maximum intensity projection analysis. Easy to train and directly integrated into LAS X, it generates fast, reproducible image segmentation and beautifully visualized results with full traceability of the data points to the source in the image.	x	x	x	x

			Mica Widefield	Mica Widefield Live Cell	Mica WideFocal	Mica WideFocal Live Cell
KEY FUNCTIONALITIES	Name	Description				
	Aivia Accelerate	Comprehensive, pre-trained, deep learning–based analysis for well plates and for 2D–5D data. The intuitive AI driven image visualization, analysis, and interpretation platform enables rapid exploration of relationships between key variables in experiments with minimal setup and no coding required.	x	x	x	x
INCLUDED SOFTWARE LICENSES	Name	Description				
	LAS X Mica Base License	Enables all acquisition, THUNDER, and LIGHTNING functionalities	x	x	x	x
	LAS X Learn & Results	Mica’s pixel classifier for 2D and maximum intensity projection analysis	x	x	x	x
	Aivia Accelerate Perpetual	Comprehensive, pre trained, deep learning–based analysis for well plates and for 2D–5D data. Includes either 1 year (Mica Workstation) or 5 years (Mica High Power Workstation) maintenance of Aivia from the date of license delivery.	x	x	x	x
OPTIONAL SOFTWARE LICENCES	Name	Description				
	LAS X LIGHTNING Expert	Customizable image information extraction by adaptive deconvolution	Opt.	Opt.	Opt.	Opt.
	LAS X 3D Visualization Advanced	For true 3D real time rendering with GPU based processing, advanced module	Opt.	Opt.	Opt.	Opt.
	LAS X 3D Analysis	Including Interactive Measurement, Analysis Wizard, Classifier and Processing Toolbox. (Requires LAS X 3D Visualization Advanced)	Opt.	Opt.	Opt.	Opt.
	LAS X DSE powered by Aivia	Dynamic Signal Enhancement (DSE) for better SNR and/or temporal resolution of time lapse acquisitions	Opt.	Opt.	Opt.	Opt.

X - included

Opt. - optional

SPACE REQUIREMENTS

Inverted Stand (options)

The Microhub may differ from the illustration. Configurational variants can be configured by combining a fixed core unit of Mica WF with the upgrade to confocal (confocal module) and the upgrade to a live cell compatible system. The two upgrades are not exclusive but can be combined. Detailed room requirements can be found in the corresponding Mica Room Requirement document. In terms of live cell conditions, please see the white paper Okolab "Indoor CO2 Concentration Limits".

Dimensions of the Microhub (width x depth x height)

without incubator

69 cm x 79 cm x 140 cm + work table*
(27.2" x 31.1" x 55.1" + work table*)

with incubator

69 cm x 85 cm x 140 cm + work table*
(27.2" x 33.5" x 55.1" + work table*)

*Work table: min. 90 cm x 80 cm
(min. 35.4" x 31.4")



Figure 1: Microhub with inverted imager, incubator, and the flexible supply unit under the anti-vibration table. Small computer table.

1	Microhub
2	Anti-vibration table
3	Supply Unit
4	Workstation
5	Monitor
6	Mouse, keyboard, Smart Move
7	Work table (optional)
8	Incubator

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