PhotoSound®

Life Science Imaging in High Definition

TriTom *Basic Edition*

Specifications 2024

PhotoAcoustic (PA) Imaging Channel		
Type	3D	*High-resolution deep tissue molecular, physiological, and anatomical imaging, subcutaneous & skin imaging*
Spatial resolution	150 µm x 150 µm 150 µm x 420 µm	*Transverse anatomical planes* *Sagittal and coronal anatomical planes*
Molecular imaging sensitivity	100 nM ICG	*In vitro tests, CNR = 2*
PA excitation range	532 nm & 650 - 1320 nm	
Detection points per scan	> 69,000	*Single scan, 360 deg azimuthal rotation*
Detector configuration	Curve-linear array	*Cylindrical focusing*
Detector central frequency	6 MHz ± 10%	*T/R measurements, optimized sensitivity in receive mode*
Number of array elements	96	*Wide-angle 3D imaging transducers*
PA signal digitizer	LEGION ADC	*12-bit, 256 parallel channels, up to 400 Hz frame rate, 40 MHz sampling rate, programmable amplifier 46-91 dB*

Control Station (typical specs are provided, subject to change without notice)		
Form Factor	Desktop	*MidTower or Mini ITX case*
Configuration	High-performance Nvidia GPU, high-performance SSD, MS Windows 10 /11, 1440p or higher resolution monitor, keyboard, mouse	
Imaging Software	TriTom Imaging Suite - *for data acquisition, image reconstruction, and molecular imaging* 3D Slicer - *for visualization & image analysis of 3D volumes*	
Data formats	Scan data: *raw, mat;* 3D Image: *vtk, mat*	

Image Acquisition Unit		
Standard scan time	36 s	*360 deg azimuthal rotation, 720 data frames*
Scan types	*Continuous azimuthal rotation or reverse scans (≤360 deg), time-limited by 10 min*	
Excitation sequence	*Single wavelength; Linear or custom wavelength sweep; Popular spectral unmixing presets for molecular, physiological and anatomical imaging*	
Max size of a single-scan 3D image	50 mm x 50 mm x 30 mm	
Whole body imaging	*Enabled as a stack of 3D volumes, manual axial positioning of the test subject for optimized single-scan imaging of head/neck, chest, or abdomen regions; 10 mm positioning steps, 40 mm total positioning range, 50 mm x 50 mm x 70 mm total imaging range*	
***In vivo* imaging subjects**	*Mice, rats (< 200 g); any fur should be shaved/depilated from the studied section of the body before imaging procedure*	
Max weight of the test subject	0.5 kg	
Coupling medium	DI water	*Subject is submerged under anesthesia during the scan, degassing enabled*
Environment temperature control	20-40 ± 0.5 °C	*Controlled heating and circulation of the coupling liquid*
Test subject monitoring	*Visual monitoring with a camera*	
Laser safety	*Light-tight imaging chamber, laser interlocks, no eye protection required*	
Chassis type	Benchtop	
Dimensions (L x W x H)	70 cm x 35 cm x 70 cm	*55 cm x 35 cm footprint*
Power requirements	208-240 V 4A or 120 V 8A, 50/60 Hz	

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Laser Excitation Unit		
Tunable wavelength range	532 nm & 650 - 1320 nm	
Pulse repetition frequency	20 Hz	
Pulse Energy	> 130 mJ @ 700 nm > 10 mJ @ 532 nm	*Before fiber bundle transmission*
Energy meter	*Real-time automatic pulse energy measurements*	
Fast wavelength switching (FWS)	*Change to any wavelength between 650 - 1320 nm every 50 ms*	
Chassis type	Mobile	*Rolled on wheels, positioned on the floor next to the Image Acquisition Unit*
Dimensions (L x W x H)	68 cm x 44 cm x 89 cm	
Power requirements	208 or 240 VAC, single phase 50/60 Hz, < 1.5 kVA	

Excitation Fiberoptic Bundle	
Transmission	> 70%
Excitation spot, axial size	30 mm
Length	2 m

Accessories		
Gas Anesthesia System	Mice and small rats	*Includes animal induction chamber*
Mouse restrainer	*B-type optimized for imaging abdominal region and legs of a live mouse* *H-type optimized for imaging thoracic region, head and neck of a live mouse*	
Microcuvette holder	*An accessory for scanning up to ten 50 µl cuvettes containing liquid samples, quick setup*	
Microcuvettes	*Cylindrical PTFE cuvettes, 0.8 mm ID, 50 µm wall thickness, for making ≤50 µl samples*	
Containers for coupling liquid	*Used to fill and drain the Image Acquisition Unit with coupling liquid*	

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