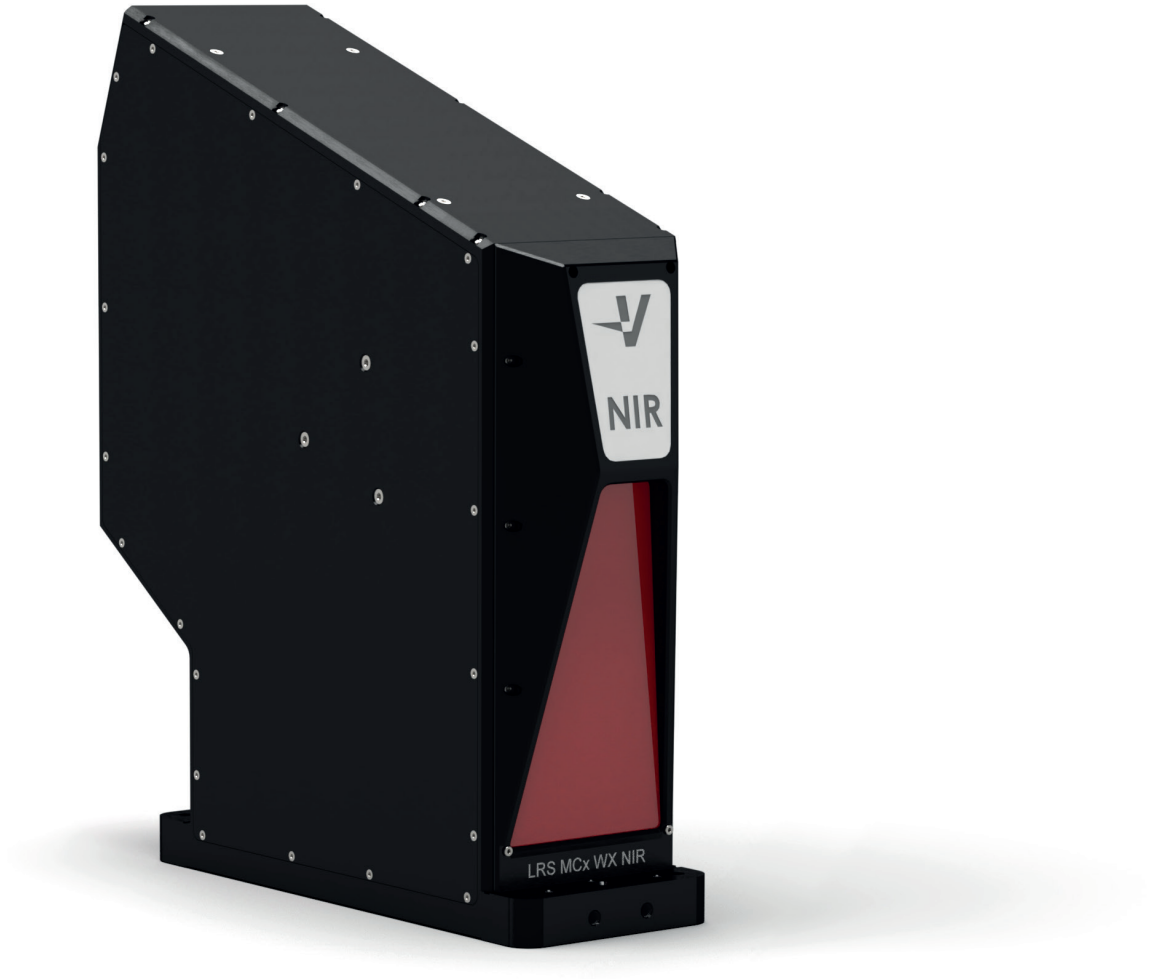

LUXBEAM® RAPID SYSTEM – MCx NIR

SCALABLE SUBSYSTEM FOR LARGE BUILD AREAS

Speed, resolution, and build area for PBF

The LRS-MCx NIR removes the traditional limitations of polymer-based powder bed fusion (PBF). With unprecedented near-infrared power and flexible static or scrolling arrangement options, the subsystem opens new doors for high-throughput, high-resolution additive manufacturing using PBF.

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LUXBEAM® RAPID SYSTEM – MCx NIR

UNPRECEDENTED POWER

Visitech introduces the LRS-MCx NIR light engine, providing unprecedented near-infrared power of more than 100 W in the projected 2D image. For polymer-based powder bed fusion (PBF), the subsystem offers a path toward high productivity systems. An alternative to classical selective laser sintering (SLS) technologies – where the polymer material is heated up sequentially, point-by-point, and layer-by-layer, the LUXBEAM® Rapid System LRS-MCx NIR rationalizes towards a pure layer-by-layer approach, with instant 2D imaging.

ACCELERATING POWDER BED FUSION

The liquid-cooled LRS-MCx NIR modules offer stackability for stitched images in static, step-and-flash, or scrolling configurations. For single-pass linear motion systems, this enables the highest manufacturing throughput. In addition, alignment features grant pixel-precise alignment of the modules. Featuring the highly robust and reliable high-resolution DLP650LNIR WXGA chipset, the system operates with an external, fiber-coupled NIR laser in the 800-1200 nm range.

DIRECT IMAGE SINTERING (DIS): THE NEW PBF METHOD

Visitech's new DIS concept uses DLP and powerful IR laser diode arrays to substantially increase print speed, resolution, and build area over traditional polymer PBF methods. Exposing the entire print layer in one shot is the critical driver of build speed. Applying Visitech's scrolling subsystem, stacking multiple, powerful IR light engines in a motion stage that scrolls them over a vast build area, effectively removes established polymer-based PBF limitations. With the DIS concept's ability to maintain high resolution across the build area, a world of opportunities opens for innovative system builders seeking actual mass production capabilities for their polymer powder bed fusion systems.

Maximum throughput in powder bed fusion

LUXBEAM® RAPID SYSTEM – MCx NIR
Recommended implementation • Multihead scrolling systems • Static systems
Resolution • 1280 x 800 WXGA (NIR)
Laser Wavelengths • 1064 nm • Other configuration upon request
Optical Power Output • Up to 100 Watts
Projection Lens Options • 1.85x • 3.7x • 7.0x • 16.0x
Electronics • LUXBEAM® LB4800

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LUXBEAM® RAPID SYSTEM – MCx NIR

UNIQUE LIGHT SOURCE

The LRS-MCx NIR light engine comprises Visitech's proprietary integrated laser diode module, IgnitIR®. The module provides maximum control in throughput and safeguards system components such as the DMD to perform their best – for static or dynamic implementations.

ADVANCED CONTROLLER

The LAMA STANDARD software package and API allow you to choose any motion controller in their basic configuration for the LRS-MCx NIR. 10G bandwidth even allows streaming. For advanced users, the LAMA PRO software version allows advanced operation modes, including subpixelation (improved surface finish) and edge blending for perfect stitching. However, achieving maximum performance and complete functionality requires a dedicated motion controller configuration.

LUXBEAM® RAPID SYSTEM – MCx MOTION STAGE: PLUG-AND-PLAY SOLUTION FOR MULTIHEAD SCROLLING

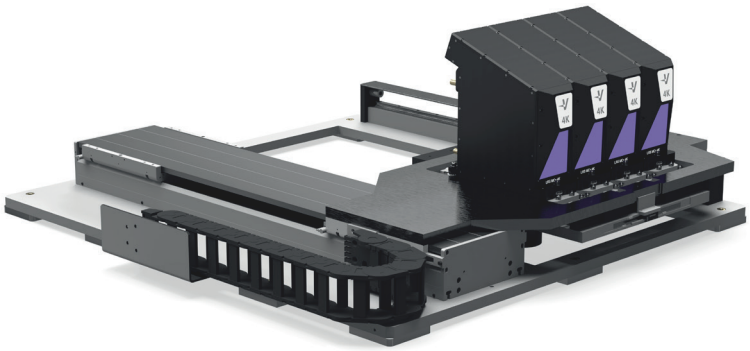
ENLARGING THE BUILD AREA

While introducing multi-head scrolling as the most advanced solution for scaling up 3D print stereolithography systems productivity, Visitech adds a plug-and-play reference stage to its portfolio. It is designated for expert static 3D print machine developers and manufacturers, who will find that the LRS-MCx motion stage opens for new business opportunity exploration. Implementing scalable motion systems allows for enlarged build areas.

FLEXIBLE MOTION STAGE PLATFORM

Designed for installation in bottom-up and top-down configurations, the motion stage rooms up to four LRS-MCx light engines.

A wide projection lens selection enables various configuration options, allowing for seamless stitching of native images – with pixel pitch as small as 50 microns. The flexible platform of the motion stage is suitable for UV stereolithography and works equally well in polymer-based powder bed fusion installations.



Scroll Range • 700 mm	**Clearance** • 500 mm
Scroll Speed • 300 mm/sec	**Software** • Luxbeam® Additive Manufacturing Application (LAMA)

Configuration with lens	Number of Photoheads	Pixel Pitch in Image (µm)	Total Pixel Count	Total Build Size (mm²)
LRS-MCx-WX NIR with 7.0x NIR	4	75	8.400 x 5.120	630 x 384
LRS-MCx-WX NIR with 16.0x NIR	2	175	3.200 x 2.548	560 x 446

LUXBEAM® RAPID SYSTEM – MCx NIR

Properties	
DMD Type	DLP650LNIR 0,65" WXGA (NIR)
Resolution	WXGA 1280 x 800 (NIR)
Operation Mode	Native pixel mode / Scrolling
Projector Output Power	Up to 100 Watts
LED Options	1064nm (LASER)
LED Driver	IgnitIR
Power Uniformity	> 99% PPC corrected
Dimensions w/o lens	305 mm (H) x 92 mm (W) x 240 mm (L)
Total weight w/o PSU	5 kg (w/o lens)
Power consumption	Max 1000 Watts
Cooling system	Liquid cooling
Software	LAMA (Luxbeam Additive Manufacturing Application)
Features	NEOS, PPC (LAMA STD), SSw

Electrical connections	Signal
Power supply	12 V DC
Image Data	Pattern Streaming with LAMA
Communication	Ethernet
UV / IR Safety	LED Safety Switch (enable/disable)
Frame Sync	External Frame Synchronization (Optical Sync)

Lens Options	Pixel Pitch in Image [µm]	Native Image Size [mm²]	Working Distance [mm]	Mounting Distance [mm]
MCx 1.85x NIR	20.0	25.6 x 16.0	71.0	186
MCx 3.7x NIR	40.0	51.1 x 32.0	150.0	302
MCx 7.0x NIR	75.0	96.0 x 60.0	220.0	352
MCx 16.0x NIR	175.0	224.0 x 140.0	210.0	349

All specifications and features subject to change.

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