Novanta PHOTONICS

ENGINEERED BY CAMBRIDGE TECHNOLOGY

LIGHTNING™ II 3-AXIS DIGITAL SCAN HEAD

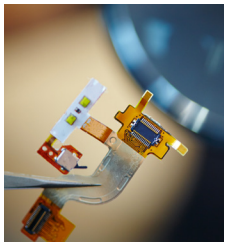
ALL-DIGITAL 3-AXIS SCAN HEAD FEATURING HIGHEST SPEED, ACCURACY, AND STABILITY

Novanta develops photonics solutions through our globally recognized brands— ARGES, Cambridge Technology, Laser Quantum and Synrad— specializing in cutting-edge components and sub-systems for laser-based diagnostic, analytical, micromachining and fine material processing applications. Powerful lasers, coupled with advanced beam steering and intelligent sub-systems incorporating software and controls, deliver extreme precision and performance, tailored to our customers' demanding applications.

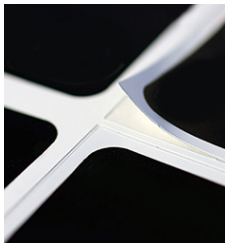
IMPROVED LASER PROCESSING SPEED

Our 3-axis scan head, the LIGHTNING™ II from Cambridge Technology, feature a Dynamic Focusing Module (DFM) that offers substantial flexibility to system integrators for material processing over large work fields and three-dimensional surfaces. This modular, integrated z-axis scan head focuses the laser into a small spot, which improves laser processing speed and quality. The DFM ensures the laser spot remains in focus across the entire working field. In addition, the 3-axis scan head can adjust to varying working distances and active field sizes to accommodate different parts to be processed.

Additive

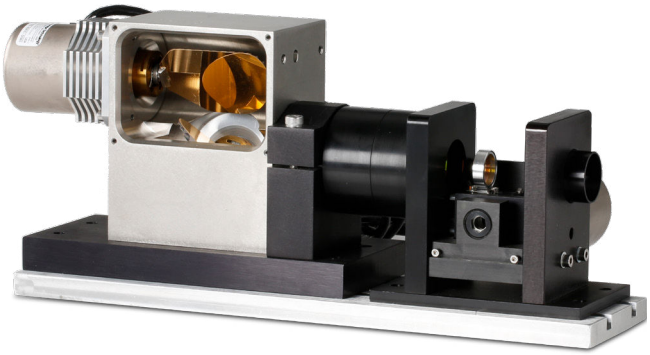


Micromachining



Converting

The LIGHTNING™ II digital scan head offers the highest speed, accuracy, and stability, and excels at applications such as additive manufacturing, converting, and micromachining that require high stability over a 24+ hour period. We offer a variety of optics options and mirror coatings for lasers ranging from UV to IR wavelengths.



The 3-axis LIGHTNING™ IIi is modular, z-axis integrated scan head.

INCREASE YOUR SYSTEM'S FLEXIBILITY AND FIELD SIZE

- Industry's highest-precision scanning speed for maximum throughput
- Robust, versatile system that easily switches from job to job
- Range of options available for processing specific material-type
- System stability and reliability reduce production downtime
- Tested with other Novanta products including Cambridge Technology's ScanMaster Controller

LIGHTNING™ II 3-AXIS DIGITAL SCAN HEAD

Specifications	20 mm	30 mm	50 mm
Mirror Aperture Size	20 mm	30 mm	50 mm
Scan Angle	±20°	±22°	±22°
Wavelength Options	355 nm	1050 nm -1080 nm | 9.36 µm / 10.6 µm	1050 nm -1080 nm | 9.36 µm / 10.6 µm
Typical Processing Speed	50 rad/s	50 rad/s	18 rad/s
Field Size Range[1]	200 – 2500 mm	100 – 1200 mm 100 – 1000 mm	100 – 1200 mm 100 – 1000 mm
Input Beam Size	1 – 3 mm | 2 – 3 mm	10 mm | 17 mm	10 mm | 17 mm
Minimum Spot Size (200 x 200 mm)	12 µm | 18 µm	21 µm | 213 µm	21 µm | 213 µm
Tracking Delay	0.2 ms	0.2 ms	0.4 ms
Command Resolution	24-bit	24-bit	24-bit
Repeatability[2]	<2 µrad	<2 µrad	<2 µrad
Long Term Drift[2, 3]	<10 µrad	<10 µrad	<10 µrad
Thermal Drift	<2 µrad/°C	<2 µrad/°C	<2 µrad/°C

Notes:
All angles are in optical degrees, unless otherwise noted. All specifications are subject to change without notice.

References:
1. Work field range and input aperture varies with three-lens assemblies. 2. Optical RMS, per axis. 3. During 8 hours of operation after 30 minutes of warm up. 4. Spot sizes are calculated assuming M^2 value of 1.0 5. λ = 10.6µm

LIGHTNING™ II 3-AXIS DIGITAL SCAN HEAD

3-Axis Scan Head for CO_2 Lasers (λ: 10.6 µm, 9.4 µm)							
General			Spot Size (µm)[4,5]				
Mirror Aperture Size	Field Size Range	Input Aperture Size	Field Size 200 x 200 mm	Field Size 500 x 500 mm	Field Size 750 x 750 mm	Field Size 1000 x 1000 mm	Tracking Error
30 mm	10 - 1000 mm	17 mm	215 µm	470 µm	681 µm	892 µm	0.2 ms
50 mm			148 µm	305 µm	436 µm	568 µm	0.4 ms

3-Axis Scan Head for Fiber/YAG Lasers (λ: 1060 nm - 1090 nm)							
General			Spot Size (µm)[4]				
Mirror Aperture Size	Field Size Range	Input Aperture Size	Field Size 100 x 100 mm	Field Size 400 x 400 mm	Field Size 750 x 750 mm	Field Size 1000 x 1000 mm	Tracking Error
30 mm	100 - 1200 mm	10 mm	13 µm	37 µm	66 µm	87 µm	0.2 ms
50 mm		20 mm	10 µm	25 µm	43 µm	56 µm	0.4 ms

3-Axis Scan Head for Other Lasers (λ: 355 nm)							
General			Spot Size (µm)[4]				
Mirror Aperture Size	Field Size Range	Input Aperture Size	Field Size 100 x 100 mm	Field Size 400 x 400 mm	Field Size 750 x 750 mm	Field Size 1000 x 1000 mm	Tracking Error
355 nm (20 mm)	200 - 2500 mm	1 - 3 mm	10 µm	18 µm	23 µm	30 µm	0.2 ms
523 nm (20 nm)		2 - 3 mm	15 µm	32 µm	39 µm	53 µm	0.2 ms

Notes:
All angles are in optical degrees, unless otherwise noted. All specifications are subject to change without notice.
For product drawings, request CAD files from our representatives.

References:
1. Work field range and input aperture varies with three-lens assemblies. 2. RMS, per axis. 3. During 8 hours of operation after 30 minutes of warm up. 4. Spot sizes are calculated assuming M^2 value of 1.0 5. λ = 10.6µm

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