



Lightning™ II Scan Heads

2-Axis, Modular

Product Highlights

Our Lightning™ II digital scan head is the industry's most advanced scan head, enabling a broad range of advanced applications that require fast, precise laser beam scanning and continuous operation. High performance is achieved by integrating our optimized galvanometers, servos, mirrors, as well as software and controls into one scan head. The Lightning II model is ideal for advanced industrial and electronics applications such as via-hole drilling, laser additive manufacturing, converting, and micromachining.

Our scan heads may be configured with F-Theta lenses to support a variety of field sizes. A wide selection of mirror coatings is available to accommodate lasers ranging from UV to IR wavelengths. The modular interface enables compact system integration. Options of water-cooled or air-cooled galvanometer are available.

Take advantage of our highest-performing technology in a modular format

- Industry's most advanced scanning solution maximizes throughput and accuracy
- Uses 24-bit low drift encoder technology for ultra-high position accuracy and stability
- Includes Pulse-Width-Modulation drive for <90% servo power efficiency
- Beryllium mirrors are specially engineered to support high dynamic performance
- 24-bit command resolution using our ScanMaster Controller enables high precision
- A variety of tuning types available for specific applications

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Product Specifications	14 mm	20 mm	25 mm	30 mm
Mirror Aperture Size (mm)	14	20	25	30
Scan Angle	± 22°	± 20°	± 17°	± 20°
Step Response Time ¹ (ms)	0.36	0.37	0.36	0.55
Typical Processing Speed (rad/s)	50	50	50	50

Shared Specifications

Wavelength Options	355 nm / 532 nm / 1030 nm - 1080 nm / 9.4 μm - 10.6 μm Broadband Coatings: 350 nm - 12 μm
Repeatability ²	<1 μrad
Dither ²	<1 μrad
Long Term Drift ³	10 μrad
Temperature Drift	2 μrad/°C
Linearity	99.9%
Position Resolution	24-bit
Digital Communication	GSBus or XY2-100
Status Signals	Status Signals Position Acknowledge, System Ready
Command Resolution	24-bit (GSB) or 16-bit (XY2-100)
Cooling Water Temperature ⁴	20.0°C ± 2.5°C
Water Requirements ⁴	Distilled water with corrosion inhibitor/algaeicide such as Optishield® Plus or equivalent.
Power Requirements	+15V to +48V DC, 3A RMS each, 6A peak
Operating Temperature	15°C to 35°C

Notes:

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

References:

1. X-axis, step size of 10 mrad-optical. 2. RMS, per axis. 3. During 8 hours of operation after 30 minutes of warm up, per axis. 4. For water-cooled galvanometer.

About Cambridge Technology

With close to 50 years of expertise, Cambridge Technology designs, develops, and manufactures innovative beam steering solutions including polygon- and galvanometer-based optical scanning components, 2-axis and 3-axis scan heads, scanning subsystems, high power scanning heads, and controlling hardware and software. We excel in collaborating with our key OEM partners to engineer products that meet their needs from the largest engineering solution to the smallest component. Key market applications include advanced industrial processes like additive manufacturing, laser converting, laser marking, and via-hole drilling, and medical applications such as laser treatment and optical coherence tomography. Cambridge Technology is a Novanta company.

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