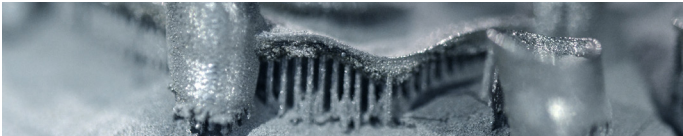


FIREFLY 3D, 3-AXIS SCAN HEAD

INTEGRATED ADDITIVE MANUFACTURING SCANNER DELIVERS MASS PRODUCTIVITY

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.

SIMPLIFYING AM PROCESSES



Designed to be used in the heart of Laser Powder Based Fusion (LPBF) machines, Firefly 3D is Novanta's latest generation of high performance laser beam steering solutions. This 3-axis scan head focuses on the fundamentals of Additive Manufacturing (AM) processes and delivers precision, high-performance and versatility.

Firefly 3D brings together several powerful technology elements in a compact form factor, while simplifying the process and cost of integrating and operating AM systems.

Key Highlights

- Dedicated high fidelity optical process monitoring ports
- High performance digital scanning architecture based on our Lightning™ II technology
- Integrated sensor data collection and aggregation
- Hermetically sealed optical chamber
- Compact form factor
- Flexible laser coupling solutions
- Process control toolkits to support development of custom real time process control solutions



INCREASE YOUR SYSTEM'S PRODUCTIVITY

Process Monitor and Control

Firefly 3D supports a wide range of process monitoring wavelengths. Armed with high quality process data, and flexible tool kits to make real time changes to scanning operations, users can achieve a fully capable process control solution.

Power and Speed on Demand

Used in conjunction with our ScanMaster Controller featuring, ScanPack and other powerful AM focused trajectory control algorithms, the complete Firefly 3D solution enables unparalleled control over the process.

Simplified and Faster Integration

The Firefly 3D is an enclosed solution with a number of features designed to speed installation. Prior to delivery, this scan head will have been configured to an agreed working distance. Alignment is made significantly easier through the use of our recommended alignment fixture, and field correction is automated by reducing time spent on the machine.

Reduction of Overall Cost of Ownership

Firefly 3D is designed to be used within a serial machine building environment. Its flexible laser adapter allows multiple machine configurations to be supported with one scan head assembly. Its mounting orientation ensures that additional hardware or model variants is reduced

FIREFLY 3D, 3-AXIS SCAN HEAD

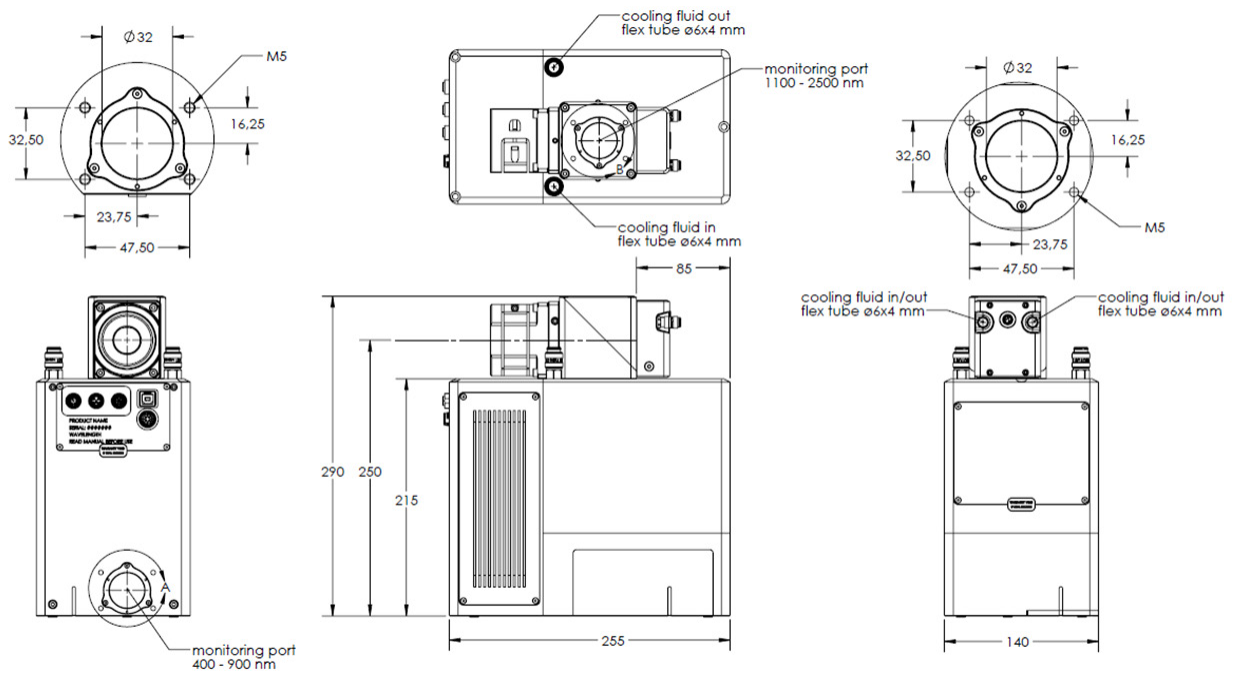
Specifications	
Optical	
Wavelength	1050 nm - 1090 nm
Laser Power	max. 1100 W
Input Clear Aperture	20 mm
Max Angular Velocity	50 rad/s
Integrated Pointer Laser Wavelength	633 nm
Process Monitoring	
Low Monitoring Band	450 nm - 950 nm
High Monitoring Band	1200 nm - 2000 nm
Communications & Interfaces	
Laser Power Monitoring	Power Monitoring Port Optional: Power Sensor
Protocols	XY2-100 XY2-100 (enhanced) GSB
Process Monitoring Sensor Interface	High Speed Serial Output Analog Inputs
Analog Inputs	2 Analog Input Channels (0-10Vdc)
Diagnostics Port	USB or bridged access via SMC to allow access to servo driver function and status reporting
Cooling	
Cooling Method	Water Cooled
Cooling Water Inlet Temperature	18°C - 20°C
Inlet Pressure	3 Bar - 4 Bar
Volume Flow	1.2 l/min - 2.2 l/min
Humidity (non-condensing)	max. 80 %RH
Enclosure	
Hermetically Sealed Optical Chamber IP Rating	IP65
Scanner Enclosure IP Rating	IP56
Max Dry Weight	12 Kg
Dimensions (L x W x H)	290 mm x 255 mm x 140 mm
Electrical Supply	48 Vdc +/- 2 Vdc

Notes:

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

FIREFLY 3D, 3-AXIS SCAN HEAD

DIMENSIONS (MM)



Notes:

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

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