Novanta

VECTRIA™ 3-AXIS SCAN HEAD (30MM)

HIGH-THROUGHPUT BEAM SCANNING FOR LARGE-FIELD CO_2 DIGITAL MANUFACTURING

Enabling faster processing, consistent quality, and scalable production in high-demand industrial environments

Vectria is Novanta's NEW 3-axis beam steering solution designed for high-power CO_2 laser applications in converting and large-area processing Engineered for OEMs and system integrators, Vectria combines high-speed scanning, large field coverage, and precise digital control to maximize throughput while maintaining consistent process quality. When paired with Novanta's CO_2 laser sources and control solutions, Vectria enables fully optimized laser processing systems that reduce complexity and accelerate production scalability.

MAXIMIZE THROUGHPUT ACROSS LARGE PROCESSING FIELDS

The Vectria 3-axis scan head is optimized for high-speed processing across large working areas, enabling higher line speeds without sacrificing accuracy or repeatability. Its hybrid architecture, combining analog galvos with Novanta's proprietary digital control (SMC), delivers fast dynamic response and stable, repeatable performance, even in demanding high-throughput environments.

TECHNOLOGY HIGHLIGHTS

Hybrid analog + digital beam steering architecture
Enables faster response, improved stability, and repeatable performance at high speeds

Large-aperture 30 mm design for high-power CO_2 lasers
Supports demanding applications requiring higher density and throughput

Advanced 3-axis optical architecture
Maintains accuracy and process consistency across large fields with distortion correction

Compact, integration-ready design
Simplifies machine design and reduces system footprint

KEY BENEFITS

- Maximize Throughput: High-speed scanning combined with large field coverage increases line productivity and overall system throughput
- Ensure Process Consistency at Scale: Precise beam positioning and stable control deliver uniform results across large working areas
- Unlock Digital Control Advantages: Proprietary digital architecture improves dynamic response, stability, and repeatability versus traditional analog-only systems
- Simplify OEM Integration: Compact design and flexible interfaces reduce integration effort and accelerate time-to-market
- Leverage Novanta Engineering Partnership: Global application and field support ensure optimized system performance and faster deployment

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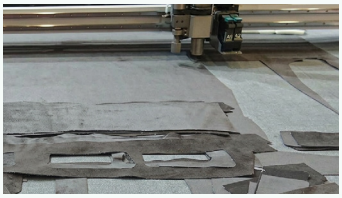
OPTIMIZED FOR:

Flexible packaging & converting :
High-speed cutting, perforation, and film processing

Marking & coding:
Fast, precise on-the-fly identification

Plastics & polymer processing :
Consistent quality across large areas



Textile processing:
Scalable cutting and patterning

Specifications	30 mm
Mirror Aperture Size	30 mm
Max. Laser Power	500 W
Scan Angle (optical)	± 22°
Entrance Beam Aperture1	9.5 mm
Tune Type[2]	All Purpose Tune
Step Response Time 1% of Full Scale3	< 650 µs
Step Response Time 10% of Full Scale3	< 3450 µs
Positioning Speed (optical)	26 rad/sec (9m/s @WD 350mm)
Max acceleration (optical)	132.000 rad/s²
Tracking Error	< 320 µs
Linearity	99.5%
Non-Linearity	<0,35 mrad /44°
Gain Error	<5 mrad
Laser Wavelength	CO2: 9.3, 10.2, 10.6 µm Fiber 1.030- 1.070 µm (on request)
Power Supply Requirement	48 V DC / 5 A RMS
Servo-Technology	Hybrid-Digital Servo
Position Resolution	NVL-100 / 20-bit [HR1.1][HR1.2] XY2-100/16-bit
Water cooling Housing	Recommended
Water cooling Aperture	Mandatory
IP-Rating	IP61
Stacking-Distance Beam Exit to Exit	120 mm
Max. Dry Weight	10 kg[HR2.1]
Dimension (L x W x H)	346,9 mm x 145 mm x 171,3 mm

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Working Distance [mm]	Field Size [mm x mm]	Spot Size $1/e^2$ [µm] for M^2=1.0; Wavelength= 10.6µm
250	266	349
300	317	394
350	360	441
400	406	487
450	453	533
500	500	579
600	593	672
700	686	764
800	780	859
900	872	953
1000	966	1045

Notes: All angles are in optical degrees, unless otherwise noted. All specifications are subject to change without notice.
References: [1] Optical path designed for incoming collimated gaussian laser beams of d = 9 mm ($1/e^2$) [2] Further Tunes available to match customer specific requirements [3]Settling to within 1% of position.

WHY CHOOSE NOVANTA?

- Proven performance in high-volume industrial applications
- Seamless integration with Novanta ecosystem CO_2 lasers and control platforms
- Global engineering support for OEMs and integrators
- Designed for reliability, scalability, and long-term operation

CONTACT US

Americas, Asia Pacific
Novanta Headquarters
Bedford, USA
P +1-781-266-5700

Photonics@Novanta.com

Europe, Middle East, Africa
Novanta Europe GmbH
Wackersdorf, Germany
P +49 9431 7984-0

Milan, Italy
P +39-039-793-710

Photonics@Novanta.com

China
Novanta Sales & Service Office
Shenzhen, China
P +86-755-8280-5395

Suzhou, China
P +86-512-6283-7080

Photonics.China@Novanta.com

Japan
Novanta Service & Sales Office
Tokyo, Japan
P +81-3-5753-2460

Photonics.Japan@Novanta.com