

Chapter 1 Summary of RF8330-3D-1200

RF8330-3D-1200 Dynamic Focusing Scanning System adopts advanced optical design scheme and linear drive Z-axis system, and owns independent intellectual property rights, integrated the functions of data acquisition, data processing, electronic control, mechanical servo, optical imaging, optical compensation, and optical scanning, etc. The whole structure adopts separate type, which is convenient for installation and upgrading, super high speed big aperture galvanometer scanner adopting double circular water cooling system, which guarantees stability in long term working condition.

The control software adopted the advanced Newton interpolation correction algorithm and dynamic light compensation point by point tracking algorithm, embedded marking control board can realize offline working, and is convenient for batch processing. This whole system can realize small focal spot, big scanning field and high flexible laser scanning applications.

RF8330-3D-1200 Dynamic focusing scanning system is applicable on the areas of large-size laser engraving, cutting, drilling, laser micro processing, 3D applications, laser rapid prototyping, etc., is applicable on leather, rubber, wood, bamboo, organic glass, ceramic tile, plastic, marble, cloth and other non-metallic materials.

RF8330-3D-1200 Dynamic focusing scanning system has good running stability, high positioning accuracy, higher marking speed, and strong anti-interference ability. In the process of dynamic marking, the marking line has high precision, distortion free, power uniform; pattern without distortion, the overall performance has reached the international leading level in the field. The advantages are as following:

- Adopted the photoelectric sensors which imported from America, and owned the proprietary intellectual property rights.
- Differential photoelectric sensor for accurate detection of motor rotor position, good linearity, lower drift, high resolution and repeat positioning.

- Adopted MM3D/Marking Mate 3D software system to support a variety of file formats, vector, bitmap and text bar code import, which is easy to learn and operate.
- Maximum working range 1200×1200mm, it is customizable for any printing field from 300×300mm to 1200mm×1200mm.
- Accurate load design for 30 mm mirrors, high accuracy of motor assembly, reasonable structure, very small static friction coefficient and zero offset, all ensured the best dynamic characteristics for the whole system.
- Drives with advanced detection ability of position and speed, greatly improved the dynamic response performance and scanning speed of the whole system.
- The whole system adopted the optimization Designing of electromagnetic compatibility, with high signal-to-noise ratio and strong anti-interference ability.
- This scanner system solved the common problems of motor temperature drift, signal interference and zero drift, etc.

Examples of Field Size, Focal Length, and Spot Size Configurations

Field Size	Focal Length	Spot Size
300×300mm	438mm	239 μ m
400×400mm	585mm	314 μ m
500×500mm	730mm	389 μ m
600×600mm	877mm	464 μ m
700×700mm	1024mm	539 μ m
800×800mm	1169mm	614 μ m
900×900mm	1316mm	689 μ m
1000×1000mm	1462mm	764 μ m
1100×1100mm	1610mm	839 μ m
1200×1200mm	1754mm	914 μ m

Chapter 2 RF8330-3D-1200 Technical Parameters

Laser Type	10600nm RF CO2 laser source	
Printing Field	300×300mm~1200×1200mm	
Input Beam Size	2.5~3mm	
X&Y Axes Mirrors Aperture Size	30mm	
Speed		
Marking Speed	1000mm/s	
Positioning Speed	1000mm/s	
Writing Speed	125cps	
Step Response Time(1% of full scale)	940us	
Step Response Time(10% of full scale)	1500us	
Tracking Error Time	≤440us	
Precision and Error		
Linearity	99.9%	
Repeatability (RMS)	<8μRad	
Gain Error	<5mRad	
Zero Offset	<5mRad	
Long-term Drift Over 8 Hours	<0.5mRad	
Scale Drift	<40PPM/°C	
Zero Drift	<15μRad/°C	
Power and Signal		
Input Voltage	±24VDC	
Rated Current	4A	
Interface Signal	Digital	XY2-100
Machinery Scan Angle	±12.5°	
Working Current, Temperature, Dimension		
Working Temperature	0°C~45°C	
Storage Temperature	-10°C~60°C	
Galvanometer Scanner Dimension	556.5×158×188mm (L×W×H)	
Galvanometer Scanner Weight	≈16.78Kg	

Chapter 3 The Galvanometer Structure and Wiring

3.1 Scanner Housing



3.2 Housing Dimension Drawing

