Femtosecond Laser Micro-Nano Automatic Processing Equipment for Fiber Bragg Gratings

Model: SA-FSD-1000IR

SA-FSD-1000IR Femtosecond Laser Automatic Micro-Nano Processing Equipment is engineered for industrial mass production. Equipped with a fiber reel-based continuous feeding mechanism and a machine vision automatic alignment system, it enables high-precision femtosecond laser processing for kilometer-length optical fibers.

Feature

- Femtosecond processing
- Micro-holes and micro-grooves
- Material modification
- High-consistency processing

Application

- Low-loss waveguide fabrication
- Waveguide end-face profile control
- Processing with arbitrary 3D vector path, energy and velocity modulation
- Supports fabrication of multiple grating types

Specifications：

Parameter	Descriptions
Processing Position	Mass production of typical fiber gratings Kilometer-length fiber processing
Waveklength	515nm
Objective Lens	60×
Illumination	Transmission
Functional Configuration	External energy adjustment
Optional	Spatial Light Modulator (SLM), 2D motorized slit
Adjustment Stage	Motorized
Travel Range of Motion Stage	100 mm ×100 mm
Fixture & Workstation	Automatic fixture for fiber grating fabrication
Automatic fiber winding	Full-function automatic fiber winding

Fabrication Parameters for Fiber Gratings：

Parameter	Descriptions
Reflectivity	0.01%-90%,adjustable
Side-Mode Suppression Ratio (SMSR)	>18dB
Typical Bandwidth-3dB	≤0.25 nm
Central Wavelength Deviation	≤±0.15 nm

Software & Processing Capabilities：

1.Support two processing modes: constant-speed processing and pulse-position triggered processing.

2.Support grating types include: conventional single- wavelength gratings, apodized gratings, metagratings, chirped gratings, phase-shifted gratings, etc.

3.Support script-programmed processing, enabling machining of complex fiber arrays via programmable control of the fiber winding machine.