



FemtoFBG

A Laser Workstation for Fiber Bragg Gratings Writing

FemtoFBG is a laser micromachining workstation optimized for fiber Bragg gratings (FBG) writing. It is a perfect choice for scientific laboratories, R&D centers, and industrial clients working with fiber lasers, distributed sensors, and telecommunications.

Femtosecond FBG writing is a proven technology for universal Bragg Gratings writing in various optical fibers, including not UV-sensitized fibers.

The main advantage of the femtosecond laser writing unlimited length or structure of Bragg grating is not using a phase mask. Femtosecond lasers can be applied for Point-by-Point (PbP) and Line-by-Line (LbL) for up to 2nd order FBGs writing in various optical fibers, including multicore fibers. The smallest pitch in PbP writing is ~1 μm.

Femtosecond FBG writing using a phase mask enables long-term modifications that are impossible with Excimer lasers.

Configurations

	Standard	Advanced	Custom
Micromachining technologies	Direct laser writing	Direct laser writing, Mask writing	The system can include fiber drilling, marking, and other functionalities
Laser	Single-wavelength	Dual-wavelength	Design wavelengths/wavelengths can be chosen, including integration of the customer's provided laser source
FBG writing options	Point-by-Point (PbP) writing, Line-by-Line (LbL) writing, Apodized gratings	Point-by-Point (PbP) writing, Line-by-Line (LbL) writing, Apodized gratings, FBGs are written using a phase mask	Optional interferometric technique
Fibers	Single-mode fibers, multicore fibers	Versatile	Versatile
Maximum fiber diameter	1 mm	Customer's choice	Customer's choice
Maximum working range	50x50x5	50x100x35	Up to 300×300
Flat samples processing	Included	Included	Included
Fiber core autofocus	–	Digital	Digital
Fiber tension control	–	Included	Holder designed according to individual requirements
Polarization control	–	Motorized	Motorized Linear Polarization rotation, Circular, Elliptical, Azimuthal, other
Writing	With positioning system	With positioning system and/or scanning unit	Positioning and scanning units can be chosen by the customer
Power control	Integrated external control	Integrated external control	Option for real-time pulse energy measurement
Vibration control	Passive	Antivibration isolation	Passive/Active

Main Features

- Direct writing (point-by-point, line-by-line, plane-by-plane)
- Precise reflection/transmission spectrum control
- Direct writing without immersion oil
- Ultra-long FBGs
- Apodized Bragg Gratings
- Variety of optical fibers (single-mode, dual-cladding, multi-core, etc.)
- Femtosecond FBG writing with a phase mask

► FBG Writing Benefits vs. Other Methods ()

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