Splicing and Glass Processing System

LAZERMaster®

LZM-125 Series

Tremendous Capability for Production:

- Splices and glass processing of fibers with 80 µm up to 2.0 mm diameter
- High resolution motion for precise control during splicing and glass processing operations
- Extensive library of applications which are transferable between the LZM and FSM family
- FPS PC GUI provides additional measurement capabilities and glass shaping control

CO_2 Laser Heat Source for Splicing and Glass Shaping:

- Clean modular laser heat source: Absolutely no deposits on fiber surface as might occur with filaments or electrodes.
- Substantially reduces maintenance and calibration requirements
- Proprietary feedback system ensures heating power stability
- No need for external process gas (as required with filament systems) or Vacuum systems
- Class 1 System with redundant automated laser safety features
- Motorized mirrors to automatically adjust the beam path

Models (see specs on following pages)

- LZM-125M/125P
  - 10 mm Maximum Z Travel Length
  - 8 mm Maximum Taper Length
- LZM-125M+/125P+
  - 36 mm Maximum Z Travel Length
  - 32 mm Maximum Taper Length
- LZM-125A+
  - 36 mm Maximum Z Travel Length
  - 32 mm Maximum Taper Length

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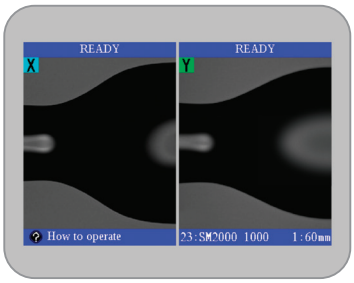
LZM-125 Series

The LAZERMaster LZM-125 Series is a splicing and glass processing system that uses a CO2 laser heat source to perform splicing, tapering (to create MFAs), lensing, or other glass shaping operations with glass diameters of 2.0 mm or less. The high resolution optical analysis system works in conjunction with on-board firmware for fully automatic splicing, tapering and other glass shaping processes.

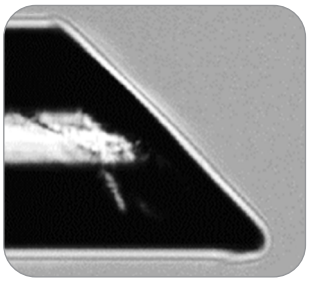
High precision glass processing is enabled by the intuitive and user-friendly on-board firmware (virtually identical to that of the Fujikura FSM-100 splicers). Operations may also be performed manually and by PC control. The FPS PC control GUI is supplied with the LZM-125 Series to provide additional features, greater flexibility, and finer control. The FSP GUI may be used on a PC chosen by the customer. Customers can also create proprietary PC control algorithms using a complete set of PC control commands.

LZM-125 models include LZM-125M/125P, LZM-125M+/125P+ and LZM-125A+. Refer to specifications on following pages.

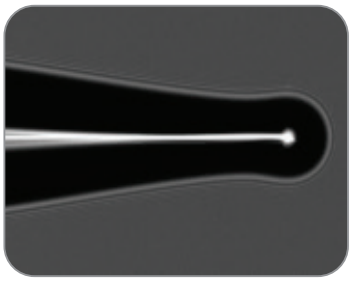
Table Top Design



1 mm to 2 mm X-LDF Splice

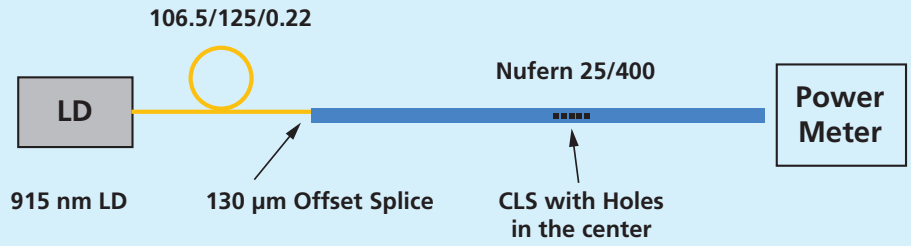


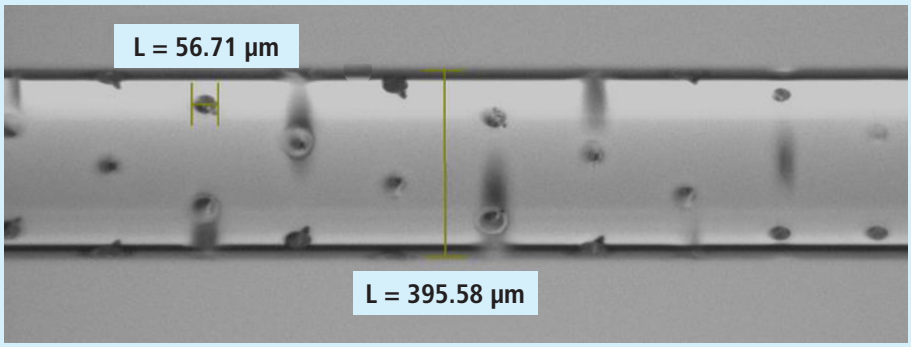
Ablated Fiber Surface



Tapered Probe with Small Ball End

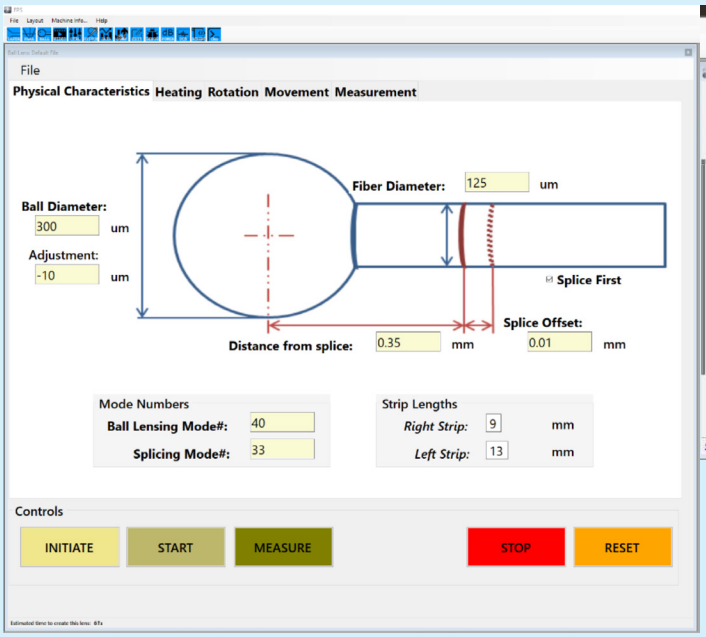
CMS (Clad Mode Stripper)

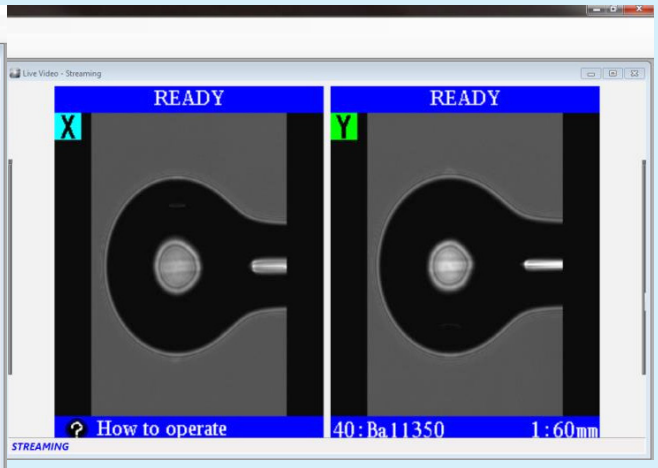




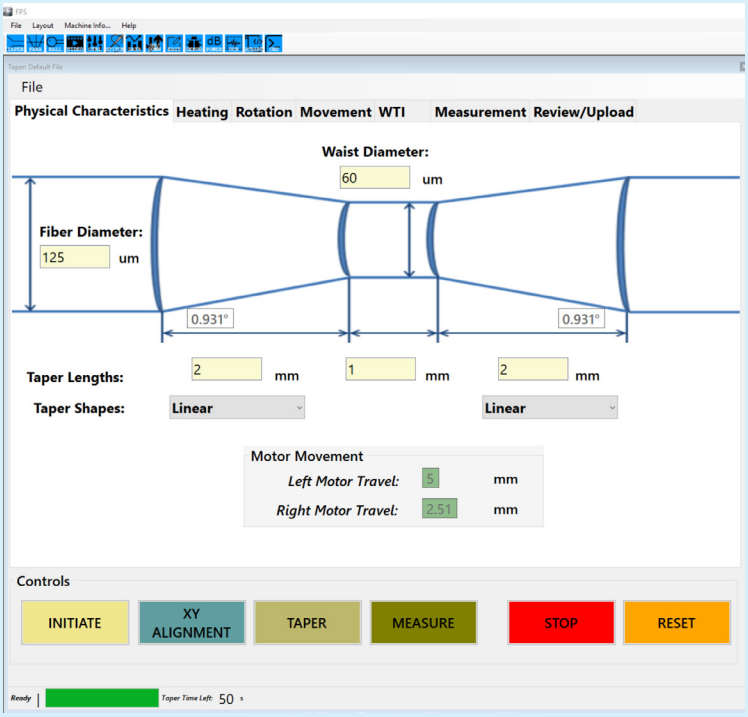
User-Friendly Graphical User Interface

Advanced Ball Lens Capability





Advanced Taper Capability



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LZM-125M/125P

ORDERING INFORMATION

DESCRIPTION	ITEM NO.
LAZERMaster LZM-125M Glass Processing and Splicing System (Standard baseline LZM-125 system. Includes AC adapters, cords and FPS PC software)	S016410
LAZERMaster LZM-125P Glass Processing and Splicing System (Standard baseline LZM-125 system. Includes AC adapters, cords and FPS PC software)	S016412
Optional Tablet PC (includes FPS software pre-installed) (recommended)	S016772

SPECIFICATIONS

Fiber Heating and Splicing Method	CO_2 Laser
CO_2 Laser Power	30 W standard
Laser Safety Features	Metal cover with multiple interlocks, class 1 enclosure, automatic actuation of safety shutter, automatic laser power cutoff
Laser Beam Control	Proprietary feedback system assures laser beam power stability
Typical Splice Loss	0.02 dB for SMF (ITU-T G.652)
Typical Splice Strength	250+ kpsi for SMF (ITU-T G.652) using appropriate fiber preparation equipment
Camera Field of View	2.3 mm
Fiber Observation Methods	PAS (Profile Alignment System) via transverse fiber observation WSI (Warm Splice Image) and WTI (Warm Taper Image)
Applicable Fiber Diameter	80 µm to 2000 µm for automatic alignment by PAS Larger diameter endcaps may be aligned manually
V-groove Clamping System	Infinitely variable from 80 µm up to 2000 µm Clamping bare fiber or fiber coating Patented "split V-groove" system
Fiber Handling	Fujikura FSM-100, FSM-45, and FSM-40 splicer fiber holders
Alignment Methods	3 methods for PM alignment: • PAS (Profile Alignment System, automatic alignment by camera observation) Manual • Other methods by PC control • Power meter feedback via GPIB
Endless Theta Rotation	360° endless rotation for 125P model, angle resolution 0.1°
X/Y Alignment Resolution	0.1 µm
Maximum Z Travel Length	5 mm (both left and right Z units) as well as sweep with a total of 10 mm
Z Travel Resolution	0.125µm theoretical
Maximum Taper Length	8 mm
Maximum Taper Ratio	10:1 standard (For uniform direction, one-pass tapering) Dual direction tapering offers greatly increased taper ratios, as does tapering with more than one tapering pass.
Maximum Taper Speed	1 mm/sec standard
Splicing Control	Internal firmware or operation by PC
Fiber Tapering and Glass Shaping Control	Internal firmware or operation by PC
PC Control	FPS software will be provided complete command set for PC control
PC Option	Tablet computer is available as an option. Use of the FPS software on a PC provides finer control and additional features compared to the LZM-125 internal firmware.
Interface Ports	USB 2.0 (For PC communications, data and image download, etc.) GPIB (for power meter feedback)
Electrical Power	100-240 VAC
Operating/Storage Conditions	15 to 30°C / 15 to 40°C
Rotation Motors	Optional (Provides theta rotational motion for PM fiber alignment in the LZM-125P model)
PM Fiber Alignment Methods	• PAS (For PANDA and other PM fibers) • IPA (Interrelation Profile Alignment, applicable to almost all PM fibers. Three distinct IPA methods available.) • Power meter feedback (Requires polarizer and analyzer, as well as GPIB interface) • Manual • Other methods by PC control
Flexibility for Customer Design Input	Customizable platform

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LZM-125M+/125P+

ORDERING INFORMATION

DESCRIPTION	ITEM NO.
LAZERMaster LZM-125M+ Glass Processing and Splicing System (Standard baseline LZM-125 system. Includes AC adapters, cords and FPS PC software)	S016411
LAZERMaster LZM-125P+ Glass Processing and Splicing System (Standard baseline LZM-125 system. Includes AC adapters, cords and FPS PC software)	S016413
Optional Tablet PC (includes FPS software pre-installed) (recommended)	S016772

SPECIFICATIONS

Fiber Heating and Splicing Method	CO_2 Laser
CO_2 Laser Power	30 W standard
Laser Safety Features	Metal cover with multiple interlocks, class 1 enclosure, automatic actuation of shutter, automatic laser power cutoff
Laser Beam Control	Proprietary feedback system assures laser beam power stability
Typical Splice Loss	0.02 dB for SMF (ITU-T G.652)
Typical Splice Strength	250+ kpsi for SMF (ITU-T G.652) using appropriate fiber preparation equipment
Camera Field of View	2.3 mm
Fiber Observation Methods	PAS (Profile Alignment System) via transverse fiber observation WSI (Warm Splice Image) and WTI (Warm Taper Image) End-view observation
Applicable Fiber Diameter	80 µm to 2000 µm for automatic alignment by PAS Larger diameter endcaps may be aligned manually
V-groove Clamping System	Infinitely variable from 80 µm up to 2000 µm Clamping bare fiber or fiber coating Patented "split V-groove" system
Fiber Handling	Fujikura FSM-100, FSM-45, and FSM-40 splicer fiber holders
Alignment Methods	4 methods for PM alignment: • PAS (Profile Alignment System, automatic alignment by camera observation) Manual • Other methods by PC control • Power meter feedback via GPIB • End-view
Endless Theta Rotation	360° endless rotation for 125P+ model, angle resolution 0.1° (LZM-125P+ only)
X/Y Alignment Resolution	0.1 µm
Maximum Z Travel Length	18 mm (both left and right Z units) as well as sweep with a total of 36 mm
Z Travel Resolution	0.125 µm theoretical
Maximum Taper Length	32 mm
Maximum Taper Ratio	10:1 standard (For uniform direction, one-pass tapering) Dual direction tapering offers greatly increased taper ratios, as does tapering with more than one tapering pass
Maximum Taper Speed	1 mm/sec standard
Splicing Control	Internal firmware or operation by PC
Fiber Tapering and Glass Shaping Control	Internal firmware or operation by PC
PC Control	FPS software will be provided complete command set for PC control
PC Option	Tablet computer is available as an option. Use of the FPS software on a PC provides finer control and additional features compared to the LZM-125 internal firmware.
Interface Ports	USB 2.0 (For PC communications, data and image download, etc.) GPIB (for power meter feedback)
Electrical Power	100-240 VAC
Operating/Storage Conditions	15 to 30°C / 15 to 40°C
Rotation Motors	Optional (Provides theta rotational motion for PM fiber alignment Available for both left and right fibers, or one side only depending upon customer requirements)
PM Fiber Alignment Methods	• PAS (For PANDA and other PM fibers) • IPA (Interrelation Profile Alignment, applicable to almost all PM fibers. Three distinct IPA methods available.) • End-view • Power meter feedback (Requires polarizer and analyzer, as well as GPIB interface) • Manual • Other methods by PC control
End-View Observation and Alignment	Internal end-view system
Flexibility for Customer Design Input	Customizable platform

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LZM-125A+

ORDERING INFORMATION

DESCRIPTION	ITEM NO.
LAZERMaster LZM-125A+ Glass Processing and Splicing System (Standard baseline LZM-125 system. Includes AC adapters and cords and FPS PC software.)	S017140
Optional Tablet PC (includes FPS software pre-installed) (recommended)	S016772
LZM Training (Optional US based at customer locations)	S015867
LZM Training (Optional International)	S015868
Splicer V-Groove Cleaning Kit	S014397

SPECIFICATIONS

Fiber Heating and Splicing Method	CO_2 Laser
CO_2 Laser Power	30 W standard
Laser Safety Features	Metal cover with multiple interlocks, class 1 enclosure, automatic actuation of shutter, automatic laser power cutoff
Laser Beam Control	Proprietary feedback system assures laser beam power stability Standard beam size is 4.5 mm X 2 mm and a minimum spot of 30 µm for ablations)
Typical Splice Loss	0.02 dB for SMF (ITU-T G.652)
Typical Splice Strength	250+kpsi for SMF (ITU-T G.652) using appropriate fiber preparation equipment
Camera Field of View	2.3 mm
Fiber Observation Methods	PAS (Profile Alignment System) via transverse fiber observation; WSI (Warm Splice Image) and WTI (Warm Taper Image); End-view observation
Applicable Fiber Diameter	80 µm to 2000 µm for automatic alignment by PAS Larger diameter endcaps may be aligned manually
V-Groove Clamping System	Infinitely variable from 80 µm up to 2000 µm; Clamping bare fiber or fiber coating in the "split V-groove" system
Fiber Handling	Fujikura FSM-100, FSM-45, and FSM-40 splicer fiber holders; Custom fixtures to meet specific customer requirements
Alignment Methods	• PAS (Profile Alignment System, automatic alignment by camera observation) • Manual • PC control with Power Meter feedback via GPIB/USB • End-view
Endless Theta Rotation	360° endless rotation, angle resolution 0.1°
X/Y Alignment Resolution	Sub-micron
Maximum Z Travel Length	18 mm (both left and right Z units) as well as sweep with a total of 36mm
Z Travel Resolution	0.125 µm theoretical
Maximum Taper Length	32 mm
Maximum Taper Ratio	10:1 standard (For uniform direction, one-pass tapering) Dual direction tapering offers greatly increased taper ratios, as does tapering with more than one tapering pass.
Maximum Taper Speed	1 mm/sec standard
Splicing Control	Internal firmware or operation by PC
Fiber Tapering and Glass Shaping Control	Internal firmware or operation by PC
PC Control	FPS software will be provided Complete command set for PC control
PC Option	Optional Tablet PC (includes FPS software pre-installed). Use of the FPS software on a PC provides finer control and additional features compared to the LZM-110 internal firmware
Interface Ports	USB 2.0 (For PC communications, data and image download, etc.) GPIB/USB (for power meter feedback)
Electrical Power	100-240 VAC
Operating Conditions / Storage Conditions	5 to 40°C / -10 to 60°C
Rotation Motors	For LZM-125A+, theta rotational motion is available for PM fiber alignment.
PM Fiber Alignment Methods	• PAS (For PANDA and other PM fibers) • IPA (Interrelation Profile Alignment, applicable to almost all PM fibers. Three distinct IPA methods available.) • End-view • Power meter feedback (Requires polarizer and analyzer, as well as GPIB interface) • Manual • Other methods by PC control
End-View Observation and Alignment	Internal end-view system
Flexibility for Customer Design Input	Customizable platform

Fujikura Ltd.
Phone: +81-3-5606-1164
www.fujikura.co.jp

Fujikura Asia Ltd.
Phone: +65-6-271-1312
www.fujikura.co.sg

Fujikura Europe Ltd.
Phone: +44-20+8240-2000
www.fujikura.co.uk

AFL (North America)
Phone: +1-864-433-0333
www.AFLglobal.com

Fujikura (China) Co., Ltd
Phone: +86-21-6841-3636
www.fujikura.com.cn