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Splicing and Glass Processing System

LAZERMaster

CO₂ Laser Heat Source for Splicing & Glass Shaping:
- Very clean heat source: Absolutely no deposits on fiber surface as might occur with filaments or electrodes
- Provides extremely stable & repeatable operation with virtually no maintenance
- Eliminates electrode or filament instability and maintenance & calibration requirements
- Proprietary feedback system ensures heating power stability
- No need for process gas (as required with filament systems)
- Redundant automated laser safety features
- Excellent performance for dissimilar diameter fiber splicing

Tremendous Capability for R&D and Production:
- Ultra high-strength splicing
- Splices and processes fibers with up to 2.3 mm diameter
- Long travel / high resolution Z motion for very long adiabatic tapers
- Onboard multi-step “Special Functions” simplifies complicated glass shaping processes
- Splicelab PC GUI provides additional glass shaping control & measurement capabilities

Adaptable to Meet Specific Customer Needs:
- An advanced configurable system capable of producing tapers, ball lenses, combiners, MFRs, glass shaping and splicing
- Customizable chassis & mechanical architecture
- Laser beam size, shape & power can be tailored to meet customer requirements
- Complete set of PC command codes enables users to develop proprietary processes
- End-View observation & alignment system options

Simple & Easy Operation:
- Simple onboard menus and parameters common to Fujikura FSM-100 splicers
- Intuitive Splicelab PC GUI: Easy to understand, navigate and operate
- Patented “split V-groove” clamping system automatically adjusts for 80 to 2,300 μm fibers
- Compatible with standard fiber preparation equipment and methods

Fujikura’s new LBM-100 “LAZERMaster” has been developed to meet the most demanding requirements for photonics applications. While sharing many features and the ease of use of the Fujikura FSM-100 ARCMaster fusion splicers, the LAZERMaster utilizes a CO₂ laser heat source and other advanced functionality to provide unprecedented capabilities, performance, and reliability for splicing, tapering, and other glass shaping operations. Additional information can be found on www.StateoftheARC.com which is the central repository of information for all of Fujikura’s latest fiber splicer products. Stay tuned to www.StateoftheARC.com for the latest development concerning the LAZERMaster and ARCMaster products.

Fujikura’s FSM-100 splicers feature the intuitive Splicelab PC GUI, which provides additional glass shaping control and measurement capabilities.

Fujikura’s advanced configurable system can produce tapers, ball lenses, combiners, MFRs, glass shaping and splicing.

Fujikura’s FSM-100 splicers offer ultra high-strength splicing capabilities and can process fibers up to 2.3 mm diameter.

Fujikura’s FSM-100 splicers feature precise and repeatable laser beam size, shape and power control.

Fujikura’s FSM-100 splicers are adaptable to meet specific customer needs, including the ability to develop proprietary processes.

Fujikura’s FSM-100 splicers are designed for simple and easy operation, with intuitive onboard menus and parameters.

Fujikura’s FSM-100 splicers are compatible with standard fiber preparation equipment and methods.

Fujikura’s FSM-100 splicers feature a patented “split V-groove” clamping system that automatically adjusts for fibers ranging from 80 to 2,300 μm.

Fujikura’s FSM-100 splicers are equipped with a custom fixture system to meet specific customer requirements.

Fujikura’s FSM-100 splicers feature a robust and reliable fiber heating and splicing method using a CO₂ laser.
The LZM-100 LAZERMaster is a glass processing and splicing system that uses a CO2 laser heat source to perform splicing, adiabatic tapering (to create MFAs or pump combiners), lensing, or other glass shaping operations with glass diameters of 2.3 mm or more. 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 ARCMaster splicers). Operations may also be performed manually and by PC control. A SpliceLab PC control GUI is supplied with the LZM-100 to provide additional features, greater flexibility and finer control. The SpliceLab GUI is pre-installed on the All-in-one computer. Customers can also create proprietary PC control algorithms using a complete set of PC control commands.

Clean & Stable Heating by CO2 Laser

The LZM-100 LAZERMaster uses a CO2 laser heat source to heat fibers, ensuring repeatable performance and low maintenance, and eliminating electrode or filament maintenance and instability. CO2 laser heating also eliminates any deposits on the fiber surface that might occur from use of a filament or electrodes. The very clean and deposit-free fiber surface ensures reliable operation of very high power fiber lasers or power delivery systems.

Laser Power Stability

Typical CO2 lasers have an output power fluctuation of +/- 5%. This produces inconsistent splicing results and may cause irregularity and ripple in a taper profile.

The LZM-100 utilizes proprietary (patent pending) closed-loop power stabilization techniques, resulting in power stability within 0.5%, as shown to left. This enables highly repeatable processes and very smooth taper profiles.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>ITEM NO.</th>
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<tbody>
<tr>
<td>LAZERMaster LZM-100 Glass Processing &amp; Splicing System (Standard baseline LZM-100 system. Includes AC adapters &amp; cords and SpliceLab PC software)</td>
<td>S015871</td>
</tr>
<tr>
<td>LAZERMaster LZM-100 (with dual theta motors)</td>
<td>S015872</td>
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<tr>
<td>All-in-one Computer (includes keyboard and mouse, monitor stand for mounting all-in-one computer. SpliceLab software pre-installed.) (required)</td>
<td>S015242</td>
</tr>
<tr>
<td>End-View Observation &amp; Alignment Option</td>
<td>S015244</td>
</tr>
<tr>
<td>Side Table Work Surface Option (Work surface to provide additional area for accessories such as fiber preparation equipment... May be attached to the left or right side of the LZM-100 or both. Folds down against the side of the LZM-100 chassis when not needed or to allow easy movement through narrow doorways)</td>
<td>S015247</td>
</tr>
<tr>
<td>Cylindrical Lens &amp; Lens Holder (optional)</td>
<td>S015251</td>
</tr>
<tr>
<td>LZM-100 Training (USA)</td>
<td>S015867</td>
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<tr>
<td>LZM-100 Training (International)</td>
<td>S015868</td>
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Warm Tapering Image Monitoring for Precise Control of Heating Power

The Warm Tapering Image (WTI) brightness level is captured in real time during the tapering process. The WTI value can be used to adjust the CO2 laser output power in real time to a level appropriate for the decreasing mass of a fiber as it is tapered to a smaller diameter. This can be critical to ensure achievement of the desired taper shape.

Advanced Adiabatic Tapering Capability

User-Friendly Tapering Graphical User Interface

Real-Time Motor Movement Indicator & Manual Motor Control

Taper Profile Setup

Taper Profile Image Capture

Taper Profile Image with Taper Measurement Overlay

Process Controls

All-in-one computer

SpliceLab PC software

(Ball lens GUI shown)

Rugged Aluminium Work Station with heavy-duty casters.