

Comprehensive Guide to Fiber Drop Cable Splicing - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the deployment and operational management of fiber drop cable splicing, tailored for carrier-grade access networks. As network densification accelerates and fiber-to-the-premises (FTTP) deployments push deeper into diverse environmental terrains, the integrity and performance of drop cable splicing have become paramount. This datasheet details the comprehensive suite of hardware, enclosures, and field procedures engineered to ensure minimal insertion loss, long-term environmental sealing, and rapid deployment, all while adhering to Telcordia GR-326 and GR-3120 core standards. Our solution provides a unified platform for fusion splicing, mechanical splicing, and pre-connectorized drop terminations, designed to reduce OPEX and increase network reliability.



ARCHITECTURE & CHASSIS DESIGN

The fiber drop cable splicing architecture is built upon a modular, field-proven platform designed for both aerial and buried plant environments. The core of the system comprises a high-strength, corrosion-resistant enclosure available in multiple form factors: a compact 2-port dome for pedestal mounting, a mid-size 6-port inline splice closure for hand-hole or strand mounting, and a high-density 12-port cabinet for FTTA and MDU applications. The chassis design features a unique "splice tray stacking" mechanism that allows for up to 144 individual fusion splices (using 12-fiber ribbon or single-fiber mass fusion) within a single closure. A central gel-sealed entry port system accommodates drop cables ranging from 3.0mm to 16.0mm in diameter, utilizing a patent-pending "O-ring plus compression seal" technology that provides a waterproof rating of IP68 (1.5 meters for 72 hours). The internal organizer

provides a clear, bend-radius protected path, separating the incoming feeder cable, the splice point, and the outgoing drop cables, with dedicated storage for slack loops to facilitate future re-entry without disturbing active splices.

HARDWARE FEATURES

Field Termination Kits: Our premium splice-on-connector (SOC) kits support SC, LC, and ST form factors, featuring pre-polished zirconia ceramic ferrules with an APC (Angled Physical Contact) polish for optimal return loss (< -60 dB). The mechanical splice kits utilize a V-groove alignment system with index-matching gel, providing a typical insertion loss of 0.2 dB without the need for a fusion splicer, ideal for rapid restoration.

Fusion Splicer Integration: The platform is fully compatible with our flagship FTTH-3000 fusion splicer, featuring core-to-core alignment via a 4-motor system. The splicer's ruggedized design includes a high-luminance LCD display for direct splice loss estimation and a built-in heater for 60mm and 40mm heat-shrink protectors. The splicer offers an industry-leading splice cycle time of 7 seconds and a heat shrink time of 15 seconds, significantly accelerating field workflows.

Environmental Protection: All components are rated for operation from -40°C

to +75°C. The hardware includes a re-enterable, gel-filled closure that provides pressure equalization via a desiccated breather valve, preventing internal condensation. A built-in grounding lug ensures compliance with safety standards for aerial installations exposed to lightning strikes.

COMPLIANCE & STANDARDS

The entire splicing hardware ecosystem adheres to the following critical telecom standards and directives:

- Telcordia GR-326-CORE: Generic Requirements for Optical Fiber Connectors and Splices.
- Telcordia GR-3120-CORE: Generic Requirements for Optical Fiber Cable Splice Closures.
- IEC 61300-3-6: Environmental testing for optical fiber interconnecting devices (Salt Spray, Dust, Water Immersion).
- IEC 61753-1: Performance standard for passive optical components (Category C for controlled environments, Category G for outdoor).
- RoHS 3 (EU Directive 2015/863): Restriction of Hazardous Substances.
- REACH: Registration, Evaluation, Authorization, and Restriction of Chemicals.
- UL 94 V-0: Flammability rating for the enclosure polymer materials.

TECHNICAL SPECIFICATIONS

The following specifications define the physical and operational parameters of the standard 6-port inline splice closure, which serves as the baseline for most FTTH distribution architectures.

Parameter	Specification
Form Factor	Inline Splice Closure (6 Ports)
Cable Port Diameters	3.0mm to 16.0mm (Multi-entry)
Splice Capacity	Up to 144 Single Splices (Mass Fusion) / 48 Single Splices (Discrete)
Insertion Loss (Typical)	< 0.08 dB (Fusion) / < 0.20 dB (Mechanical)
Return Loss	> 60 dB (APC) / > 50 dB (PC)
Operating Temperature	-40°C to +75°C
Waterproof Rating	IP68 (1.5m / 72h)
Material	High-Impact ABS + UV Stabilizer
Dimensions (L x W x H)	380mm x 180mm x 130mm
Weight	2.8 kg (Empty)
MTBF	> 25 Years

ORDERING OPTIONS

The model numbering convention follows a standardized SKU logic: SS - [Port Count] - [Splice Type] - [Environment]. A comprehensive ordering matrix is available below to facilitate procurement.

- Base Closures: SS-2P (2-port pedestal), SS-6P (6-port aerial/buried), SS-12C (12-port cabinet).
- Splice Trays: ST-24S (24 single splices), ST-12R (12 ribbon splices, 12-fiber ribbon).
- Accessories: MS-SOC-KIT (Mechanical SOC kit, 10 units), FS-SOC-KIT (Fusion SOC kit, 10 units), CL-200 (Closure re-entry tool kit).
- Fusion Splicers: FTTH-3000 (Core alignment, with battery), FTTH-1000 (Fixed V-groove, entry-level).

Each standard closure order includes: 1x Main Enclosure, 2x Cable Entry Glands (expandable), 1x Base Splice Tray (empty), 1x Grounding Kit, and comprehensive installation manual. Extended warranty packages (5-year and 10-year) are available for critical infrastructure projects.

