Pasivní prvky 3M na optické přístupové síti
Martina Kubalíková

Solutions for Outside Plant
3M Optical Fiber Splice Closures Range

BPEO Closure Range
BPEO Cable Entry Ports

- **TOOL FREE MECHANICAL CABLE SEALS**
  - Patented innovative fully mechanical cable seal,
  - Prepared outside the box
  - No risk of damaging working circuit
  - Round and Oval ports

- **PORT ALLOCATIONS AND CABLE DIAMETERS**
  - Small Size BPEO Size 1 – BUTT Application
    - from 5 to 20 mm
    - from 5 to 18 mm
    - from 5 to 12 mm
    - from 4 to 8 mm
  - Medium and Large Sizes; BPEO Size 2, BPEO Size 3 – BUTT and INLINE Application
    - from 5 to 27 mm

BPEO Direct Splice Drop Closures
BPEO Terminal Drop Closures

- Example: BPEO Size 1
  - FRP type drop cables 6 x 6 drops (36)
  - With FA (Field Assembly) connectors

- Example: BPEO Size 3
  - Standard patch cables
  - With SC (SC/APC) pre-terminated pigtails

BPEO Special Applications
FDT 08S Direct Splice

- Hermetically-sealed fiber dome terminal closure for aerial, buried above-grade, and buried below-grade applications
- Accommodates up to 12 direct fusion or mechanical spliced drop terminations
- Accommodates 4, 6, or 8 SC/APC or SC/UPC ECAM FD factory terminated drops
- Oval main cable port accommodates two 20mm (0.79") all-dielectric or armored cables
- Designed for butt, single or ribbon fiber applications
- Splice Capacity (single & mass fusion)
- FDT 08: 72 single & 216 mass fusion
FDT 08M Direct Splice

- Hermetically-sealed fiber dome terminal closure for aerial, buried above-grade, and buried below-grade applications
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FDC 08S Direct Splice

- Air valve for flush test
- Simple dome latching system allows for easy initial sealing or re-entry
- Fixed position crimp reduces the potential for craft error during the closure sealing process
- Oval port for copper cable applications accommodates up to 27 mm (0.64 in.) O.D. cables
SLIC 530 Direct Splice

- Weather-tight, free-breathing, aerial, strand mount fiber terminal closure
- Comprised of two separate chambers: Distribution cable splice and Drop termination chamber
- Allows easy & secure access for service connections & drop maintenance (cleaning & testing) without entering the closure splice chamber
- Designed for strand-mount in-line, butt, or taut sheath single or ribbon fiber applications
- Accommodates up to 12 fusion or mechanical direct spliced drops
- Accommodates 4, 6, 8, & 12 factory terminated SC/APC or SC/UPC ECAM FD Fiber Drops

12mm ECAM Drop Cable Entry System

Features:
- O-ring sealing
- Latching/Locking Mechanism
- L5 = 510x180 mm – 1 oval port (two 25 mm cables), 5 round ports (20 mm)
- S4 = 485x160 mm – 1 oval port (two 28 mm cables), 4 round ports (20 mm)
- L5 = 6 splices trays max / S4 = 2 splices trays max
- 2533 trays 24 fusion splices
- 2,4 mm x 60 mm fusion sleeves
- 2 ground lugs max

Benefits:
- Flash Test = 10 PSI
- IP 68
- Simple & Flexible design for high installation productivity
- Trays holder for mechanical & ribbon splices
- Price competitive solution

Fiber Dome Heat Shrink Closure – FDC-HS-L5 (S4)
Light Linker (LL2) Fiber Optic Splice Closure

**Choices for Flexible Design**

3M offers a full range of closure sizes in diameters from 76 mm to 305 mm (3" to 12"), and lengths to 914 mm (36"). This range gives system designers the flexibility to locate splices for maximum reliability. Larger fiber optic closures can be used to provide extra storage space for ribbon or buffered tube fiber. 3M Fiber Optic Closures are compatible with all types of fiber optic cable in cut, uncut and taut sheath applications. Interchangeable endplates allow each closure to house up to 8 cables per end.

**Applications**

- Watertight
- Underground
- Aerial
- Central Office/Building
- Wall Mount (LL2-418 only)
### 1.1.2 Series Models 4, 5, 7, 8, 9 and 12 Fiber Optic Closures

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructed from thermoplastic material</td>
<td>Extremely chemical and U.V. resistant</td>
</tr>
<tr>
<td>Sheath retention, central member termination system</td>
<td>Allows easy installation and reduces the potential for microbending</td>
</tr>
<tr>
<td>No special tools required</td>
<td>Low cost installation</td>
</tr>
<tr>
<td>Can be flash tested</td>
<td>Ensures seal integrity</td>
</tr>
<tr>
<td>Complies with Telcordia (formerly Bellcore) GR-277 requirements and</td>
<td>Lab tested under various applications</td>
</tr>
<tr>
<td>International standards for fiber optic splice closures</td>
<td></td>
</tr>
<tr>
<td>Hinged trays</td>
<td>Allows for easy fiber organization and access to multiple levels</td>
</tr>
<tr>
<td>Plugging spoons are provided in each kit</td>
<td>Allows extra cables to be added at any time</td>
</tr>
<tr>
<td>Closures are available in standard black and gray</td>
<td>Meets requirements for vault and building entrance applications</td>
</tr>
<tr>
<td>Anti-rotation stops are provided in each kit</td>
<td>Maintains closure stability during assembly and fiber splicing</td>
</tr>
<tr>
<td>Stack trays may be added below tray platforms</td>
<td>Allows storage of ribbon or buffer tube fiber</td>
</tr>
<tr>
<td>A variety of kits are available for closure re-entry, adding cables to</td>
<td>All plant configurations can be accommodated</td>
</tr>
<tr>
<td>existing splices or converting butt splices into inline configurations</td>
<td></td>
</tr>
</tbody>
</table>

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### 2178 Family Fiber Optic Splice Closures

![Image of 2178 Family Fiber Optic Splice Closures]

1. 2178-XL
2. 2178-LL
3. 2178-LS
4. 2178-S
5. 2178-XSB
## 2178 Family Fiber Optic Splice Closures

### 3M Fiber Optic Splice Closure: 2178 Product Family

- **Product Features for Base Models**

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Size in. (mm)</th>
<th>Splice Configuration</th>
<th>Cable Entry Ports</th>
<th>Maximum Splice Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2178-XSB</td>
<td>14.6 x 10.1 x 4.9 (369.8 x 256.5 x 117.3)</td>
<td>Butt</td>
<td>3 Butt</td>
<td>48 Single Fusion 144 Mass Fusion</td>
</tr>
<tr>
<td>2178-S</td>
<td>21.9 x 8.5 x 4.7 (556.3 x 215.9 x 119.4)</td>
<td>Inline Butt</td>
<td>4 Inline 2 Butt</td>
<td>96 Single Fusion 288 Mass Fusion</td>
</tr>
<tr>
<td>2178-LS</td>
<td>21.9 x 8.5 x 8.0 (556.3 x 215.9 x 203.2)</td>
<td>Inline Butt</td>
<td>4 Inline 2 Butt</td>
<td>288 Single Fusion 96 Mass Fusion</td>
</tr>
<tr>
<td>2178-LL</td>
<td>21.9 x 8.5 x 11.3 (556.3 x 215.9 x 287.0)</td>
<td>Inline Butt</td>
<td>4 Inline 2 Butt</td>
<td>288 Single Fusion 96 Mass Fusion</td>
</tr>
<tr>
<td>2178-XL</td>
<td>20.0 x 13.3 x 11.0 (666.4 x 336.6 x 279.4)</td>
<td>Inline Butt</td>
<td>8 Inline 4 Butt</td>
<td>576 Single Fusion 1728 Mass Fusion</td>
</tr>
</tbody>
</table>

### Adaptable to any environment
- Highly chemical-resistant material construction & gasket seal technology makes it ideal for manhole, handhole, aerial, pedestal, and direct buried applications; fire retardant for cable vault & building applications

### Easy to install
- Requires no special tools or complicated training procedures

### Simple and economical reentry
- Reusable gasket seal allows easy reentry with no additional material costs

### Flexible
- Multiple cable entry options allow for both butt and in-line configurations for aerial, buried, and underground applications

### Expandable
- Interchangeable parts permit expansion of cable entry ports and splice capacity to meet current and future network needs without splice rebuilding

### Versatile
- Small to large (24 to 1728 individual or ribbon fiber capacity, flame retardant or OSP protection with common functionality & installation procedures

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2179-CS Fiber Optic Splice Closure

Molded plastic enclosure!
Fully mechanical.
No special tooling!

For buried, underground, aerial and pedestal applications!
Outside Dimensions (LxWxH); 15.7” x 6.9” x 4.2”
Splice chamber space (LxWxH); 12” x 4.7” x 3.3”
Weight (closure body); 1715 gr
Cable port diameter; 0.4-1 inch
Number of Cable entry ports 4 (2 on each side)
Quantity of cables installed 2-4
Maximum number of splice trays
2524SR 2 (24 splices per tray)
DIN 4 (12 splices per tray)
Looping length of bare fibers >2 x 0.8m
Looping length of loose-tube >2 x 0.8m

Features:
- Dim = 447x175,2x106,7 mm
- 2 cables entrance at each end
- Cables diameter from 10,1 to 25,4 mm
- 4 trays of 12 splices ↔ 48 splices
- IP68

Advantages – Benefits:
- Compact size
- Butt or In Line splicing
- Sliding latch mechanism
- Wide area of usage = aerial, buried, pedestal
- Proven sealing technology
2179-C Series Closures

- 2179CLS Closure
- 2179CLM Clos
- "2179CL with 2525 trays"

‘Last Mile’ Branch Off Closures

- µQODC, QODC Closure for G657 Fibre Splices
- OSSC & OSLC
- BOC (Branch Off Closure)
8900D Series Cabinet

- Outdoor Modular design
- IP-55
- IK-08
- Double-wall
  - Painted steel Outside
  - Aluminum Inside
- 3M plating and sealing
- 3M 4411 pedestal seal

8900DL  8900D  8900DS

8900DL

576C fiber cross cabinet with 16 1x32 PLC splitters
1600mm X 1360mm X 360mm
Total 48 trays for 576C, all patch cords will operate at the middle of cabinet. All coupling are toward middle with some angle.

Eight small boxes for sixteen 1x32 PLC splitter

Tray with angle to right

For fiber jumper management

Thirty six coupling splitter fiber pre-stay can be draw out for splitter fiber pre-stay and storage

8900D

288C fiber cross cabinet with 6 1x32 PLC splitters

1450mm X 760mm X 360mm
Total 24 trays for 288C, all patch cords will operate at the right of the cabinet. All couplings are towards right with some angle.

The tray with the wire management.

12 trays for direct splice.

25 PG29 for optical cable in-out.

Three small boxes for six 1X32 PLC splitter

The splitter can be fix easily
144C fiber cross cabinet with 2 1x32 splitters
800mm X 650mm X 315mm

- All fiber cables will come into cabinet from the top
- Wall mount installation
- The hollow structure avoid to clot water
- Special tray for 1x32 splitter
MDU Dbx 89 series Metallic Distribution Boxes

- **MDU Dbx 8912EU M**:
  - Metallic box with locking mechanism
  - Organizer type PBPO/C 12 fibers (common)
  - Window Cut Cable application
  - Storage area for micro structures or loose tubes
  - 4 trays 5 mm or 2 trays 10 mm
  - 2 SC/APC couplings
  - Dimensions: 300 x 180 x 55 mm
  - IP 44

- **MDU Dbx 8934EU M**:
  - Metallic box with locking mechanism
  - Separate access for drop connections
  - Capacity of 32 SC/APC couplings
  - Uncut cable management
  - Storage of the patch cords management
  - Dedicated space for jacketed splitter
  - Dimensions: 430 x 355 x 100 mm
  - IP 44

- **MDU Dbx 8980EU M**:
  - Metallic box with locking mechanism
  - Separate access for drop connections
  - Capacity of 73 SC/APC couplings
  - Uncut cable management
  - Storage of the patch cords management
  - Dedicated space for jacketed splitter
  - Dimensions: 450 x 400 x 131 mm
  - IP 44

Communication Markets Division

Diky za pozornost!

mkubailkova@mmm.com

Make the Most of your Network

3M