Fiber Array Unit (FAU) Series

Features and Benefits

Highly customizable

High reliability under harsh environment

Ultra-accurate core pitch position

High density

Compact design

Flexibility in fiber selection

Various termination methods
Also available with reduced-clad bend-insensitive (RCBI) fiber

Corning OEM offers a broad range of Fiber Array Units (FAUs) for long-haul, metro networks and data center applications. With customizable V-groove chips and covers, and Corning’s capability of developing and making specialty fibers, our FAU products can meet a wide variety of customer requirements on the inter-fiber core pitch and its precision, channel number, fiber type, and termination type. All of our FAUs feature ultra-accurate fiber core position with low insertion loss and high optical return loss, guaranteed by our advanced dicing machines and core pitch measurement machines. With the support of Corning’s innovation in materials science, we can also develop FAU-integrated connectors and interposers to meet future photonic integrated circuit (PIC) industry needs.

Standards

RoHS2011/65/EU

GR-1221-Core

GR-1209
## Fiber Array Unit (FAU) Series

### Specifications

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Standard Fiber</th>
<th>RCBI Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material choice (chip and cover)</td>
<td>Glass/fused silica/quartz</td>
<td>Glass/fused silica/quartz</td>
</tr>
<tr>
<td>Number of channels</td>
<td>1-96, typical and &gt; 96 upon request</td>
<td>1-96, typical and &gt; 96 upon request</td>
</tr>
<tr>
<td>Core pitch spacing for fiber to fiber</td>
<td>127 or 250 μm, typical, or any other</td>
<td>84 or 165 μm, typical, or any other</td>
</tr>
<tr>
<td>Core pitch tolerance</td>
<td>± 0.7 μm (dR) for channel # ≤ 16&lt;br&gt;± 1.0 μm for channel # ≤ 48&lt;br&gt;± 1.5 μm for channel # ≤ 72</td>
<td>± 0.6 μm (dR) for channel # ≤ 16&lt;br&gt;± 0.8 μm (dR) for channel # ≤ 48&lt;br&gt;± 1.2 μm (dR) for channel # ≤ 72</td>
</tr>
<tr>
<td>Fiber type</td>
<td>Single-mode, polarization-maintaining fiber (PM), multimode</td>
<td>Single-mode, multimode</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>≤ 0.15 dB, typical</td>
<td>≤ 0.15 dB, typical</td>
</tr>
<tr>
<td>Return loss</td>
<td>≥ 14 dB, but ≤ 20 dB for 0-degree polished&lt;br&gt;≥ 50 dB for &gt; 5-degree polish</td>
<td>≥ 14 dB, but ≤ 20 dB for 0-degree polished&lt;br&gt;≥ 50 dB for &gt; 5-degree polish</td>
</tr>
<tr>
<td>Polish angle</td>
<td>0 or 8 ± 0.3 degree, typical</td>
<td>0 or 8 ± 0.3 degree, typical</td>
</tr>
<tr>
<td>Fiber protrusion</td>
<td>0 ± 200 nm</td>
<td>0 ± 200 nm</td>
</tr>
<tr>
<td>Polish flatness</td>
<td>≤ 1.6 μm, typical</td>
<td>≤ 1.6 μm, typical</td>
</tr>
<tr>
<td>Reflectance (R) for anti-reflection (AR) coating</td>
<td>≤ 0.25%</td>
<td>≤ 0.25%</td>
</tr>
<tr>
<td>Length</td>
<td>L ± 0.5 mm, typical</td>
<td>L ± 0.5 mm, typical</td>
</tr>
<tr>
<td>Width</td>
<td>W ± 0.1 mm, typical</td>
<td>W ± 0.1 mm, typical</td>
</tr>
<tr>
<td>Thickness</td>
<td>T (≥ 1 mm) ± 0.1 mm, typical</td>
<td>T (≥ 1 mm) ± 0.1 mm, typical</td>
</tr>
<tr>
<td>Connector</td>
<td>LC/FC ferrule, MPO, receptacle</td>
<td>MPO</td>
</tr>
</tbody>
</table>

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**Figure 3 – Drawing of an FAU-MTP® Assembly**

**Figure 4 – Standard vs RCBI FAU end face**
Fiber Array Unit (FAU) Series

FAU for Data Center

Corning offers a wide variety of FAUs to put inside transceivers and connect to a PIC.

Ordering Information

<table>
<thead>
<tr>
<th>TFA</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
</table>

**A&B: Device End**
- 0: none
- 2: two types of termination
- A: PLC w/FAU
- D: DLC UPC connection with fan-out
- K: LC receptacle
- L: LC PC connection with fan-out
- M: LC ferrule
- F: FAU
- P: FC PC
- Q: FC APC connection with fan-out
- R: Prism
- U: MPO, 80 \( \mu \)m hole
- V: MPO, 125 \( \mu \)m hole

**C: Fiber Count**
- 01: 1 F
- 04: 4 F
- 06: 6 F
- 08: 8 F
- 12: 12 F
- 20: 20 F
- 24: 24 F

**D: Cable Type**
- 1: SM
- 2: MM
- 3: PM
- 4: others
- X: more than one fiber
- S: splice

**E: Customer Code**
- A: A Company

**F: Running Number**

**G: Optional Code**
- Reserve for special use

FAU for Long-Haul and Metro Networks

An FAU can be put inside a reconfigurable optical add-drop multiplexer (ROADM) and function as an optical transmission for the wavelength selective switch (WSS) to switch traffic remotely from a wavelength division multiplexing (WDM) system at the wavelength layer.

There are other functions within long-haul and metro networks that require FAUs, and they are amplifier/DP module, coherent mixer, multiport wavelength switch, multicast switch, and optical channel monitor.
Fiber Array Unit (FAU) Series

Ordering Information

**Material Type**
- A: Borosilicate
- F: Fused silica
- S: Silicon
- P: PYREX® or BOROFLOAT®
- Q: Quartz
- B: BK7

**Port Count**
- 1: single port
- 2: 2 ports
- 3: 3 ports
- 4: 4 ports
- 5: 5~6 ports
- 6: 7 ports
- A: two 4 ports
- 8: 8 ports
- B: two 8 ports
- 9: 9 ports
- E: 10 ports
- G: 11~12 ports
- H: 16 ports
- J: 20 ports
- X: 24 ports
- K: 25~28 ports
- C: four 8 ports
- T: 32 ports
- U: 33~39 ports
- Y: 40 ports
- S: 44 ports
- D: six 8 ports
- F: 48 ports
- L: 49 ports
- W: 64 ports
- M: 65~128 ports
- Z: customized

**Fiber Type**
- S: single, 900 μm tight buffer, Corning® SMF-28®
- B: single, 900 μm SBJ fiber
- D: single, 250 μm, SMF-28
- G: single 165 μm, RCBI fiber
- L: lensed fiber
- 2: 2-fiber ribbon, 250 μm, SMF-28
- 4: 4-fiber ribbon, 250 μm, SMF-28
- 5: 4-fiber ribbon, 250 μm, G657
- 6: 6-fiber ribbon, 250 μm, SMF-28
- 7: 6-fiber ribbon, 250 μm, G657
- 8: 8-fiber ribbon, 250 μm, SMF-28
- 9: 8-fiber ribbon, 250 μm, G657
- A: 8-fiber ribbon, 250 μm + single 900 μm, SMF-28
- C: 8-fiber ribbon, PVC jacket
- T: 12-fiber ribbon, 250 μm, SMF-28
- U: 12-fiber ribbon, PVC jacket
- V: 12-fiber ribbon, PVC, G657
- W: 12-fiber ribbon, G657
- M: OM3 fiber
- P: PM fiber
- R: round cable
- X: small core
- Z: customized

**Polished Angle**
- 0: Flat (90.0 degrees)
- C: 96 degrees
- 8: +8 degrees (98)
- A: -8 degrees (82)
- B: -12 degrees (78)
- D: -6 degrees (84)
- E: 45 degrees
- F: Tilt -8 degrees (L to R down, rear view)
- G: Tilt +8 degrees (R to L down, rear view)
- P: protruded
- T: +12 degrees (102)
- Z: customized

**Port Spacing**
- 0: no spacing
- S: 84 μm spacing
- H: 127 μm spacing
- 9: 129 μm spacing
- F: 250 μm spacing
- C: 500 μm spacing
- E: 750 μm spacing
- A: 900 μm spacing
- B: 1250 μm spacing
- 2: 2 mm
- 3: 3 mm
- U: uneven
- Z: customized
- D: 2D FAU

**FAU Thickness**
- 4: 1.0-1.49 mm
- 1: 1.50-1.99 mm
- A: 2.0-2.49 mm
- 2: 2.50-2.99 mm
- 3: 3.00-3.99 mm
- 4: 4.00-4.99 mm
- Z: customized

**Connector Code**
- 0 = none
- 1 = none; bare ribbon fiber with fan-out
- K = LC APC connectors with fan-out
- L = LC PC connectors with fan-out
- M = MT RJ connectors with fan-out
- P = FC PC connectors with fan-out
- Q = FC APC connectors with fan-out
- R = LC receptacle
- S = SC PC connectors with fan-out
- T = SC APC connectors with fan-out
- U = MU PC connectors with fan-out
- V = MTP® connectors with fan-out
- N = SnapMate connectors with fan-out

**Hermetic/Running #**
- A: AR coating
- H: HR coating
- L: 90-degree light turn
- C: cerrocast
- F: glass feed-through
- Running #: 0-9

**Running #**
- 0-9
Main Coupling Methods for FAU

1. Edge coupling with our conventional FAUs: These FAUs can easily be used to bond with a customer's PLC waveguide from the edge.

2. Grating coupling with Corning 90-degree light-turn FAUs: With low-loss, high-reliability 90-degree light-turn FAUs, the signal light can be conveniently coupled from and to the PIC via a diffractive grating.