Fiber Array Unit (FAU) Series

CORNING

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

Standards

RoHS2011/65/EU

GR-1221-Core

GR-1209

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.

Figure 1 – FAU with MTP® Connector

Figure 2 – 90-Degree FAU with MTP Connector

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Specifications

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

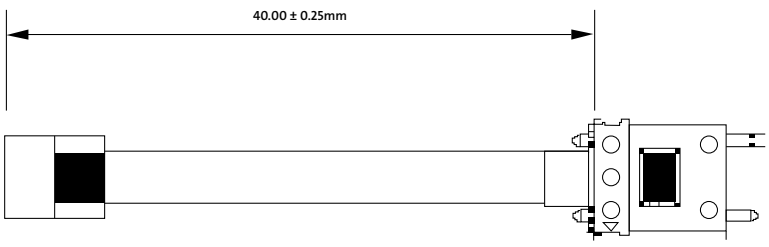

Figure 3 – Drawing of an FAU-MTP® Assembly

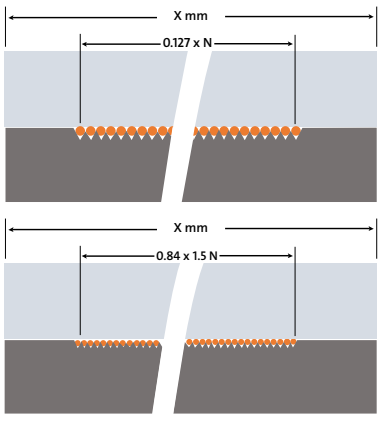

Figure 4 – Standard vs RCBI FAU end face

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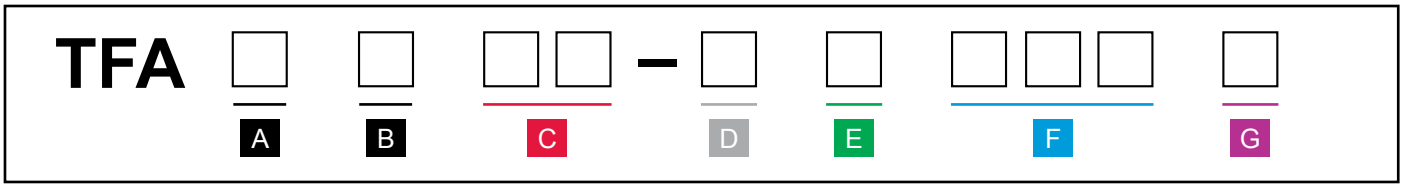
FAU for Data Center

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

Ordering Information



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 µm hole
V: MPO, 125 µm 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/CP module, coherent mixer, multiport wavelength switch, multicast switch, and optical channel monitor.

Fiber Array Unit (FAU) Series

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Ordering Information

PFA ☐ ☐ ☐ ☐ – ☐ ☐ ☐ ☐ ☐

1 2 3 4 5 6 7 8 9

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

2 Port Count
1: single port
2: 2 ports
3: 3 ports
4: 4 ports
6: 5~6 ports
7: 7 ports
A: two 4 ports
8: 8 ports
B: two 8 ports
9: 9 ports
E: 10 ports
G: 11~12 ports
5: 13~15 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

3 Fiber Type
S: single, 900 µm tight buffer, Corning® SMF-28®
B: single, 900 µm SBJ fiber
1: single, 250 µm, SMF-28
D: single, 250 µm, G657
I: 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

4 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

5 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

6 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

7 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

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

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.

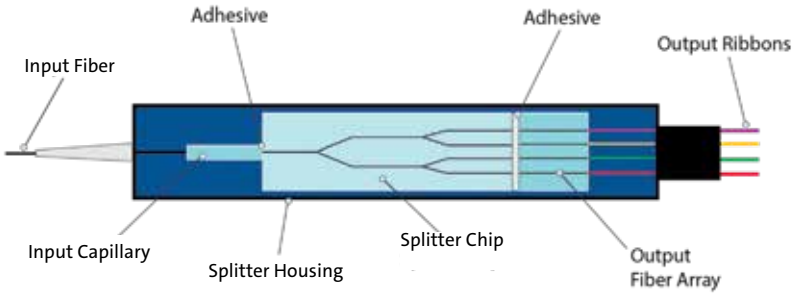

Figure 5 – Illustration of Edge Coupling between an FAU and a Planar Lightwave Circuit (PLC)

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.

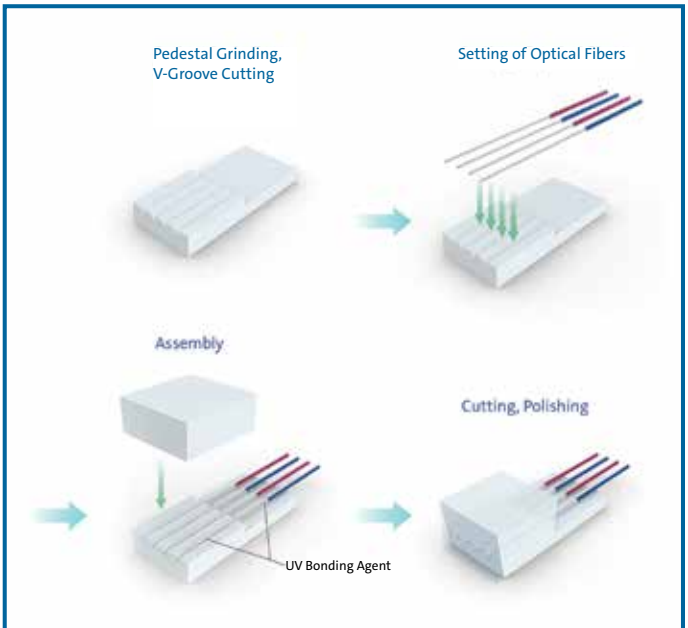

Figure 6 – FAU Assembly Steps

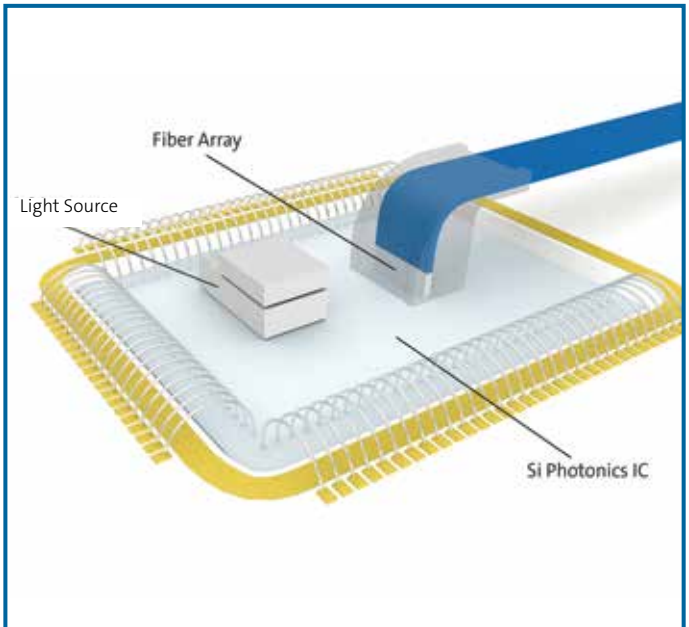

Figure 7 – FAU with Grating Coupling

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