

FNN & SHINHAN NETWORKS

Technology / Development / Innovation / Friendly emotion

FNN SHINHAN



WE ALWAYS
BE **THERE** FOR **YOU**



FNN & SHINHAN NETWORKS

Who are we?

Hello everyone!

F&N Co. Ltd. is a specialized manufacturer of spare parts for optical communication equipments needed for infrastructure of BcN which is considered as the core of information technology age combining communication and broadcasting.

Based on our past experience and know-how, we promise to exert our best and continuous efforts to develop and manufacture products to suit your requirements and all our staff and employees will treasure and fulfill our commitments to our clients.

Based on your continuous support, we will also try to rise as the world's leading manufacturer through state of the art facilities and quality control.

We sincerely hope that we will grow hand in hand with all our clients and solicit your continuous support and patronage. Thank you.

Our history

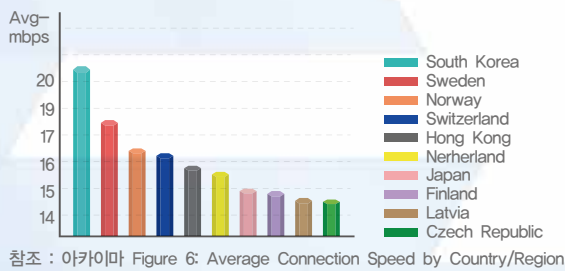


Our advantage!

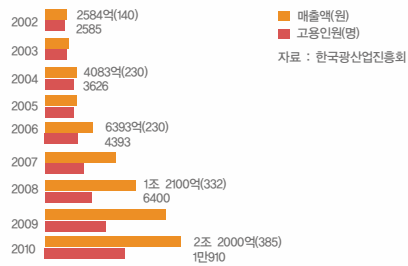
+ 세계를 이끄는 리딩컴퍼니



■ 세계를 이끄는 광통신 강국 대한민국, 대한민국에서도 광주는 광부품 분야 특화 지역입니다. FNN은 광주의 리딩컴퍼니입니다. 광주를 이끄는 기업이 세계를 이끽니다.



광주 광산업 현황



+ 글로벌 회사와의 오랜 파트너십



■ 본사는 세계적인 통신회사 에릭슨, infinera, hexatornics등 다양한 글로벌 기업들과 오랜(9~12년이상) 파트너십을 유지하고 있는 믿을 수 있는 회사입니다.

■ Global 시장 접근, 제품 promotion, 품질관리, 생산 납품 경험 풍부합니다.

+

제품에 대한 **안정성과**
납품기일에 대한 약속을
꼭 지키는 회사



PC-ASSY



LC-ASSY



APC-ASSY



MU-ASSY

- 광통신의 핵심 부품인 (ferrile, sc/ apc/ lc/ mu 등) 대한민국 유일하게 광페룰생산설비를 구축한 회사입니다. 부품들을 직접 생산함으로 더욱더 정확한 납품기일에 대해 약속합니다.
- 철저하게 재료를 전부 검사하며 꼼꼼한 계측 설비를 통해 100% 제품에 대한 안정성을 약속하며 제품 에러율 0%에 도전합니다.

+

베트남과 한국에 공장을두어
가격과 품질에 대한
선택지가 많은 회사



- FNN은 인건비가 저렴한 베트남에 공장을 소유함으로 가격경쟁력을 갖추었습니다. 이로 인해 가격과 품질에 대한 선택지가 많습니다. 기업은 원하는 것을 선택만 하면 됩니다.



베트남공장전경



베트남공장전경



한국공장전경

Product

Optical Fiber Patch Cord



Splitter Module Portfolio

Micro FTTx Module



Compact Micro FTTx Module



Bulkhead Micro FTTx Module



Connector

SC



SC 4.0, 4.8



LC Unibody



Adapter

SC



ST



FC



LC



MU



E2000



MPO



PANDA Patch Cord



Coupler



Optical Fiber Ferrule



Plug Type Attenuator / Terminator

SC



FC



MU



TERMINATOR



ST



LC



Patch Cord

SC



FC



ST



LC



E2000



MT-RJ



DIN



MU



In-Line Attenuator



Optical Fiber Fan-out Cord



Fiber Array



Optical PLC Splitter

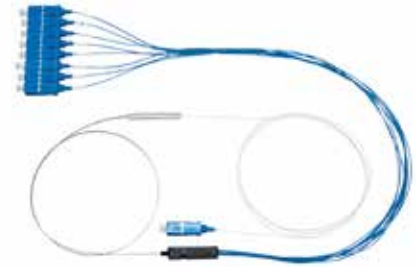
1xN , 2xN SPLITTER / Ribbon, Fan-out type, Various connector types

Features and Benefits

01. Low Insertion Loss
02. Low Return Loss
03. Low PDL
04. High Uniformity

Application

01. Optical Communication System
02. CATV Networks
03. FTTH
04. Passive Optical Networks (PON)



Optical Specification

| Parameter | Type | Unit | 1x4 | 1x8 | 1x16 | 1x32 | 1x64 | 2x4 | 2x8 | 2x16 | 2x32 | |
|----------------------|------|------|--------------|------|------|------|------|-----|------|------|------|--|
| Wavelength | | nm | 1260 to 1650 | | | | | | | | | |
| Insertion Loss (IL)* | | dB | 7.6 | 10.5 | 13.9 | 17.2 | 20.6 | 7.8 | 11.2 | 14.5 | 18.0 | |
| Return Loss (RL)* | | dB | ≥55 | | | | | | | | | |
| PDL (dB)* | | dB | <0.3 | | | | | | | | <0.4 | |
| Uniformity* | | dB | 0.8 | 1.0 | 1.5 | 1.8 | 1.8 | 1.2 | 1.5 | 2.0 | 2.5 | |
| Directivity | | dB | ≥55 | | | | | | | | | |
| Operation Temp | | dB | -40~+85°C | | | | | | | | | |

*: Without connector

Splitter Module Portfolio

Modular design for 19" / ETSI racks and cabinet systems



Features and Benefits

01. Optional coupling ratio
02. High stability and reliability
03. Compact design

Application

01. Optical communication system
02. FTTx PON Networks
03. CATV Networks
04. Local Area Networks

Specification

- Customized panel / coupler / splitter types are available(PLC, FBT, WDM & CWDM etc)
- Optional connector and adapter combinations available on request

Full size FTTx 19" type

- Adapter interface with a diverse range of configurations
- Standard 1:16 to 4x1:16, 1:32 & 2x1:32 or 1:64 configured on 1U height

Adapter

SC / ST / FC / LC / MU / E2000 / DIN / Hybrid (SC / FC, SC / LC, SC / ST, SC / MU, LC / MU, LC / FC, ST / FC...)



SC



ST



FC



LC



MU



E2000

Features and Benefits

01. Compliant with : JIS, IEC, Bellcore
02. Ceramic or Phosphorous Bronze Sleeves available
03. Convenience and easy of handling
04. Flanged or threaded mounting hardware
05. Various Types available

Application

01. Telecommunication Networks
02. CATV Networks
03. Data Communications Networks
04. Instrumentation
05. Local Area Networks

Specification

| Characteristics | Conditions | Values |
|---------------------|------------------------------|--------|
| Mating Durability | Cycling rate>3sec, 500 times | <0.2dB |
| Temperature Cycling | -40~+80°C (42Cycles) | <0.2dB |
| Humidity Cycling | 75°C, 95% / 336hr | <0.2dB |
| Vibration | 10~55Hz (2hr) | <0.2dB |
| Impact | 1.5m drop, 8 times | <0.2dB |
| Coupling | 40N±1N, 120sec | <0.2dB |

PANDA & 4~8 Fiber Aligned Patch Cord

Polarization-maintaining and Absorption reducing patch cord

Features and Benefits

01. Compatible optical fiber : SM.15-P, SM.13-P
02. Cord Type(μm) :250, 400, 900
03. Various connector type available
04. Compact size, light weight

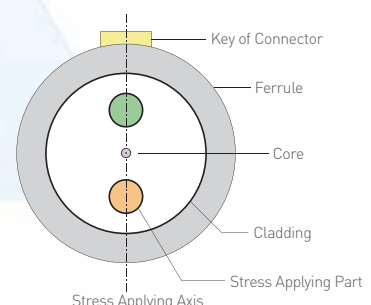
Application

01. LD Module
02. Polarization Maintaining Fiber Coupler
03. External modulator
04. High-speed transmission system
05. PMD compensator



Specification

| Fiber Mode | SM | | |
|---------------------|--------|------|------|
| Type | SC, FC | | |
| Ext. Diameter (mm) | 0.9 | | |
| Polishing Quality | PC | UPC | APC |
| Insertion Loss (dB) | <0.5 | <0.5 | <0.5 |
| Return Loss (dB) | >40 | >50 | >60 |
| Axial Alignment | ±3° | ±3° | ±3° |



Optical Fiber Patch Cord

SC/ FC/ ST/ LC



Features and Benefits

1. Compliant with : JIS C-5973, IEC, Bellcore
2. Optical performance 100% factory tested
3. Standard length of SC and FC, ST assemblies in stock
4. Customized assemblies available include of lengths, connector styles and performance
5. Precision ceramic ferrule with endface geometry per IEC proposal

Application

1. Telecommunication Networks
2. CATV Networks
3. Active Device Termination
4. Local Area Networks

Specification

| Characteristics | Conditions | Values |
|---------------------|---|------------------|
| Insertion Loss | Against reference connector | < 0.1dB, < 0.2dB |
| Return Loss | UPC | > 55dB |
| | APC | > 65dB |
| Durability | 500times | < 0.2dB |
| Temperature Cycling | -40~+80℃(21Cycles), 168hr | < 0.2dB |
| Humidity Cycling | -10~+65℃, 95%RH, 168hr | < 0.2dB |
| Vibration | 20G, 20~2000Hz, 4min/cy, 4cy/axis, 6axis | < 0.2dB |
| Flex Test | 0° -> 90° -> 0° -> 90°, 5kgf(100cycles) | < 0.2dB |
| Twist Test | ∅0.9mm:0.75kgf, ∅2.0mm:1.53kgf | < 0.2dB |
| Straight Pull Test | 100N Load, 5sec at least | < 0.2dB |
| Impact | 5times / direction, 6direction, 500G, 1ms | < 0.2dB |

*Customized Specification is available upon request. "Production according to customers specifications and packing requirements"

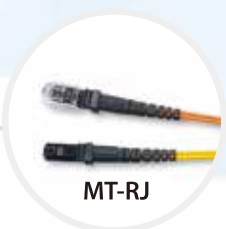


DIN

*Other Connectors are available upon request



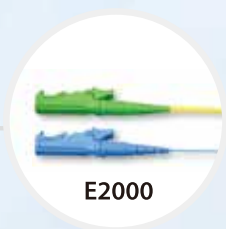
MU



MT-RJ



MPO



E2000

Plug Type Attenuator / Terminator

SC / FC / MU / ST / LC / TERMINATOR



SC



FC



MU



TERMINATOR



ST



LC

Features and Benefits

01. Optical performance 100% factory tested
02. PC, UPC and APC available
03. Polarization insensitive
04. Compact design fits in existing connections or patch panels
05. Convenience and easy of handling

Application

01. Telecommunication Networks
02. CATV Networks
03. Data Communications Networks
04. Instrumentation
05. Local Area Networks

Specification

| Characteristics | | SM (9/125 μ m) | MM (50/125 μ m) |
|--------------------------|-----------|-----------------------------------|-----------------------|
| Attenuation Values | | 1dB to 20dB (1dB step) 25dB, 30dB | 1dB to 25dB(1dB step) |
| Operating Wavelength | | 1260nm~1620nm | 850nm or 1310nm |
| Return Loss | PC | ≥ 45 dB | - |
| | UPC | ≥ 55 dB | |
| | APC | ≥ 65 dB | |
| Attenuation Tolerance | 1dB~10dB | ± 0.5 dB | ± 0.5 dB |
| | 11dB~30dB | $\pm 10\%$ | |
| Durability | | 500 times | |
| Temperature Cycling | | -40~+80°C | |
| Humidity Cycling | | 75°C, 95% / 336hr | |
| Vibration | | 10~55Hz (2hr) | |
| Maximum Power Capability | | 1W | |

In-Line Attenuator



Features and Benefits

01. Optical performance 100% factory tested
02. Environmentally stable
03. Precision ceramic ferrule with end-face geometry per IEC proposal
04. Polarization insensitive
05. Standard length assemblies in stock

Application

01. Telecommunication Networks
02. Data Communications
03. Instrumentation
04. CATV Networks
05. Active device termination

Specification

| Characteristics | Conditions | Values |
|---------------------|-----------------------------------|------------------------------|
| Attenuation Values | * Including connector termination | ± 0.5 dB (for 1dB~10dB) |
| | | ± 1.5 dB (for 10dB~30dB) |
| Return Loss | PC | ≥ 45 dB |
| | UPC | ≥ 55 dB |
| | APC | ≥ 65 dB |
| Durability | 500 times | <0.2dB |
| Temperature Cycling | -40~+80°C (42Cycles) | <0.2dB |
| Humidity Cycling | 75°C, 95% / 336hr | <0.2dB |
| Vibration | 10~55Hz(2hr) | <0.2dB |
| Impact | 1.5m drop, 8 Cycles | <0.2dB |

Optical Fiber Ferrule

PC/APC/LC/MU

Features and Benefits

- 01. Smooth fiber insertion
- 02. High durability and connection reliability
- 03. Reduced Assembly time
- 04. Available for angle PC application

Application

- 01. Optical fiber connector
- 02. Optical device



Specification

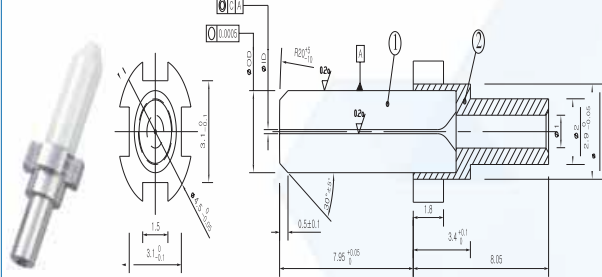
SM

| TYPE | SC (PC/APC) | LC | MU |
|----------------------------------|--------------------------------|---------------------------------------|----|
| Inner Diameter (μm) | | $\varnothing 125.0 / 125.5 / 126.0+1$ | |
| Concentricity (μm) | | $\leq 0.5 / \leq 1.0 / \leq 1.4$ | |
| Outer Diameter (mm) | $\varnothing 2.499 \pm 0.0005$ | $\varnothing 1.249 \pm 0.0005$ | |
| Material | ZIRCONIA | | |

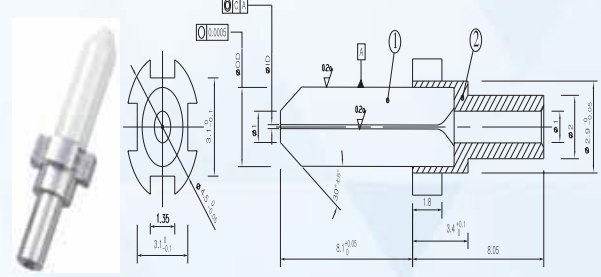
MM

| TYPE | SC (PC/APC) | LC | MU |
|----------------------------------|-------------------------------|---------------------------------------|---------------------------------------|
| Inner Diameter (μm) | | 125.0 / 126.0 / 127.0+4 | |
| Concentricity (μm) | | $\leq 3.0 / \leq 5.0$ | |
| Outer Diameter (mm) | $\varnothing 2.499 \pm 0.001$ | $\varnothing 1.249 + 0.0007 - 0.0023$ | $\varnothing 1.249 + 0.0007 - 0.0015$ |
| Material | ZIRCONIA | | |

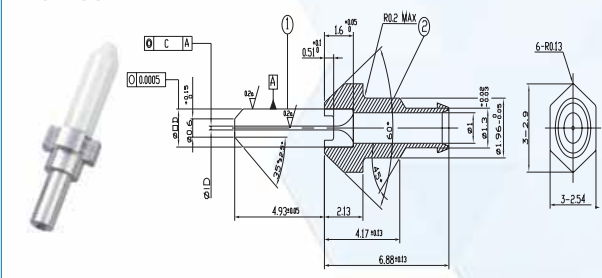
PC-ASSY



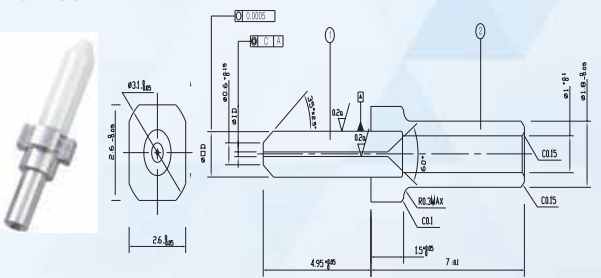
APC-ASSY



LC-ASSY



MU-ASSY



ODC Cable Assembly

Features and Benefits

01. Cost effective solution for in house termination
02. IP68 Water immersion and Dust protection
03. operational temperature for outside plant -40~+70°C
04. cables to be used, 5-8mm OD cable with two 2.0mm to 3.0mm jacketed subunits
05. Chemical Resistance
06. Intermatable to other Industrial LC adaptor per IEC 61076-3-106
07. Simple assembly requiring no special tools
08. Durable mechanical mating, minimum of 500 mating



Specification

| Characteristics | SM | MM |
|---------------------|--------------------|---------|
| LC Connector | Typical | Typical |
| Insertion Loss | 0.1dB | 0.2dB |
| Return Loss | ≥55dB | – |
| Durability | Cycling rate >3Sec | <0.2dB |
| Temperature Cycling | -40~+70°C | |
| IP Rating | IP68 | |

MPO



Features and Benefits

01. Low insertion loss
02. Precision MT ferrule
03. Push/Pull latching mechanism
04. Easy to distinguish SM/MM by color coded housing
05. Jacketed and bare ribbon cable are available

Application

01. CATV/Access Networks
02. Telecommunication Networks
03. Modules

Specification

| Characteristics | SM | MM |
|-----------------------|---|-------------------------|
| IL | ≤0.75 Max | ≤0.5 Max |
| RL | ≥55 (APC 8°) | – |
| Durability | <0.3dB change 500 times | <0.2dB change 500 times |
| Operating Temperature | -40~+80°C | |
| Cable Type | 4, 8, 12, 24 Bare fiber ribbon / Ruggedized cable | |
| Housing Color | Green, Beige, Yellow | |
| Boot Type | Bare fiber ribbon, Ruggedized cable | |

Fiber Distribution Frame



Drawer Type Round Type Wall Mount Type



Mini FDF (Metal) Mini FDF (Plastic)

Features and Benefits

01. Compact size
02. Locking mechanism can be possible
03. Easy to install

Application

01. Data / Telecommunication Networks
02. FTTx Networks
03. CATV Networks

Drawer Type (Aluminum)

| Model | Fiber Capacity | Dimension (WxDxH) |
|-----------|----------------|-------------------|
| FDF-DA-12 | 12 Core | 490 x 350 x 1U |
| FDF-DA-24 | 24 Core | |
| FDF-DA-48 | 48 Core | |

Splice(Joint) Closure

STC-HTS



Dimension and Weight

| Closure packing | |
|--------------------------|---|
| Dimension (mm) | Weight (kg) |
| 330(L) x 186(W) x 125(H) | 2.20 Excluding trays |
| 340(L) x 200(W) x 140(H) | 3.50 Including 4trays and a mounting pipe |

Specification

| | | |
|--------------------------|-----|------------------------------------|
| Cable inlet ports | 6 | 3ports at each ends |
| Air Pressurization valve | 1 | For testing air leakage |
| Max. stack of trays | 4 | Max. 3trays for attaching splitter |
| Max. diameter of cable | Ø17 | |

STC-HTM



Dimension and Weight

| Closure packing | |
|--------------------------|---|
| Dimension (mm) | Weight (kg) |
| 574(L) x 222(W) x 138(H) | 4.55 Excluding trays |
| 600(L) x 240(W) x 170(H) | 6.25 Including 4trays and a mounting pipe |

Specification

| | | |
|--------------------------|-----|---|
| Cable inlet ports | 6 | 3ports at each ends |
| Air Pressurization valve | 1 | For testing air leakage |
| Max. stack of trays | 6 | Max. 5trays for ribbon-fiber connection |
| Max. diameter of cable | Ø27 | |

STC-HTL



Dimension and Weight

| Closure packing | |
|--------------------------|--|
| Dimension (mm) | Weight (kg) |
| 620(L) x 290(W) x 210(H) | 8.20 Excluding trays |
| 640(L) x 320(W) x 240(H) | 11.20 Including 4trays and a mounting pipe |

Specification

| | | |
|--------------------------|-----|---|
| Cable inlet ports | 6 | 3ports at each ends, each port can hold up to 2cables |
| Air Pressurization valve | 1 | For testing air leakage |
| Max. stack of trays | 4 | |
| Max. diameter of cable | Ø28 | |

STC-DTM

Specification



| Type | Details | Remarks |
|---------------------|------------------|--------------------------------|
| External size (mm) | Ø174(Ø135) X 415 | Packing size : 205 X 510 X 185 |
| Weight (kg) | 2.6 | Include accessories |
| Inlet Ports | 6 | 1 multi, 4 single |
| Cable Diameter (mm) | Ø8 - Ø22 | |
| Tray Capacity | 4 | Single 24core(max. 96øore) |



Korea HQ & Factory

61088, Cheomdanyeonsin-ro 288beon-gil, Buk-gu, Gwangju, Korea
Tel 82-62-973-4401 Fax 82-62-973-4405

Vietnam factory

Lô V2 KCN Thuận Thành 3, Thành Kương, Thuận Thành, Tỉnh Bắc Ninh, Việt Nam.
Tel +84-241-1379-8316/+82-70-7569-4505
<http://www.efnn.co.kr>