



# 광통신케이블

## 실내용 케이블

Simplex , Duplex Zip

Distribution, Breakout

Patch cord / Jumper cord

## FTTH용 케이블

Fiber To The Home

High speed internet, network

Round / Figure '8' / Flat type

## 광전 복합케이블

Optical + Electrical

Hybrid for FTTA

Hybrid for Antenna

## 선박용 광케이블

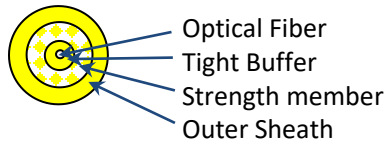
Shipboard/offshore

NEK 606 Type

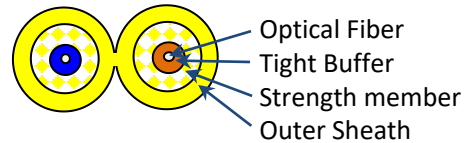
AICI / QFCI / QFCU

# 실내용 광케이블

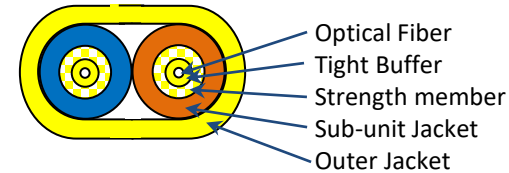
## • SIMPLEX



## • DUPLEX ZIP



## • DUPLEX TWIN FLAT



Type	Number of Fiber	Buffer Diameter (μm)	Cable Diameter (mm)	Cable Weight (kg/km)	Min. Bending Radius (mm)	Tensile Load	
						Installation (N)	Operation (N)
Simplex	1	600±50	1.6	3.0	24	90	50
			1.8	3.5	27	100	60
		900±50	2.0	4.0	30	150	70
			2.4	6.5	36	190	90
			3.0	9.0	45	200	100
Duplex ZIP	2	600±50	1.6*3.2	6.5	24	180	80
			1.8*3.6	7.5	27	200	100
		900±50	2.0*4.0	8.0	30	300	140
			2.4*4.8	12.5	36	380	180
			3.0*6.0	18.5	45	400	200
Duplex Twin	2	900±50	3.0*5.0	17	30	300	140
			3.8*6.6	25	38	400	200

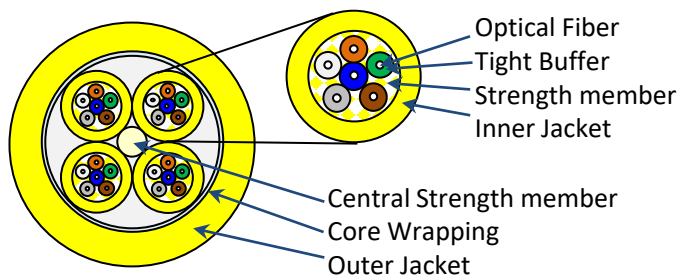


### Application & Features

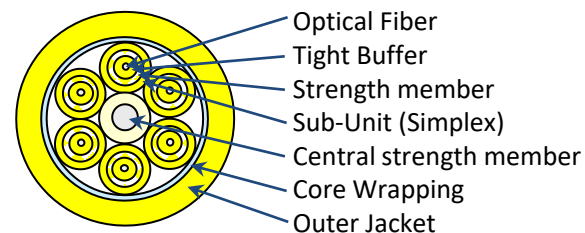
- Jumpers, Pigtails and Interconnected cable
- Single-mode and multi-mode, Tight buffered, Flame retardant
- Alternative jacket material and colors
- UL certified OFN, OFNR



## • DISTRIBUTION CABLE



## • BREAKOUT CABLE



No. of Fibers	Units	Buffer Diameter (μm)	Cable Diameter (mm)	Approx. Cable Weight (kg/km)	Cable Bending Radius (mm)	Tensile Load	
						Installation (N)	Operation (N)
2	2F x 1U	900±50	4.3	17	65	700	350
4	4F x 1U		4.7	21	70	700	350
6	6F x 1U		5.5	27	82	800	400
8	8F x 1U		6.1	32	92	800	400
12	12F x 1U		6.5	38	98	1000	500
24	24F x 1U	900±50	9.0	67	135	1400	700
24(M)	4F x 6U		14.0	160	210	3000	1500
36(M)	6F x 6U		16.6	210	249	3200	1600
48(M)	8F x 6U		19.0	274	285	3600	1800
48(M)	12F x 4U		16.6	205	249	3200	1600

### Application & Features

- SMF and MMF / Bundled Tight buffer / Alternative jacket material and colors
- Flame retardant, UL certified OFN, OFNR

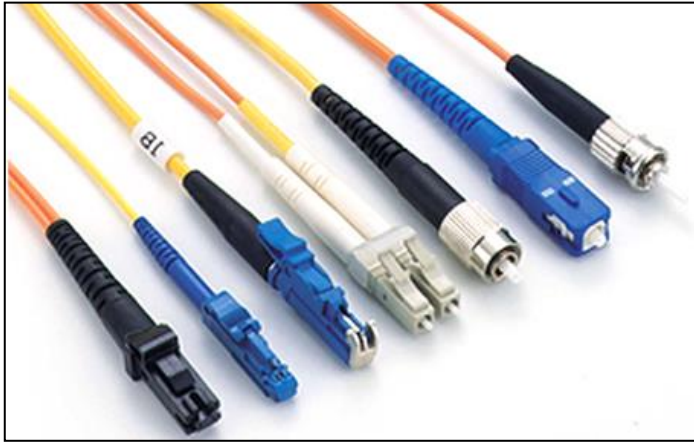


No. of Fibers	Buffer Diameter (μm)	Sub-unit Diameter (mm)	Cable Diameter (mm)	Approx. Cable Weight (kg/km)	Min. Bending Radius (mm)	Tensile Load	
						Installation (N)	Operation (N)
2	600±50 or 900±50	2.0	6.5	43	90	400	200
4			7.2	50	100	700	400
6			8.2	72	120	900	600
8			10.0	95	150	1500	700
12			12.0	150	170	1500	900
16			17.0	170	250	1400	800
24			15.3	218	230	1800	900

### Application & Features

- SMF and MMF / Individual Tight buffer / Ruggedized Simplex unit
- Alternative jacket material and colors
- UL certified OFN, OFNR





광 점퍼코드는 싱글모드와 멀티모드로 설계된 광케이블에 LC, SC, FC 및 MPO와 같은 커넥터를 종단에 연결하여 사용, 네트워크 장비간의 신호전송에 사용가능하며, 우수한 성능 및 품질을 유지하여 효과적인 통신 시스템을 구현

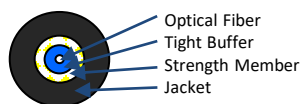
## ➤ Advantage

- ✓ 쉽고 빠르게 설치 가능한 보편화된 커넥터 사용
- ✓ 고객 요구에 맞는 길이로 제작/공급
- ✓ 안정적인 품질이 확보된 생산으로 설치후 통신품질 향상

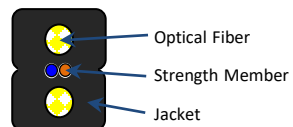
Parameter		Sing-Mode	Multi-Mode
Insertion Loss	LC, SC, FC	$\leq 0.3\text{dB @ } 1310/1550\text{nm, Typical}$	$\leq 0.3\text{dB @ } 850/1310\text{nm, Typical}$
	MPO	$\leq 0.75\text{dB @ } 1310/1550\text{nm, Typical}$	$\leq 0.75\text{dB @ } 850/1310\text{nm, Typical}$
Return Loss	UPC	$\geq 50\text{dB @ } 1310/1550\text{nm, Typical}$	-
	APC	$\geq 60\text{dB @ } 1310/1550\text{nm, Typical}$	-
End Face Geometry		Telcordia GR 326 Core	
Operating Temperature		$-40 \sim +70\text{C}^{\circ}$	

# FTTH용 케이블

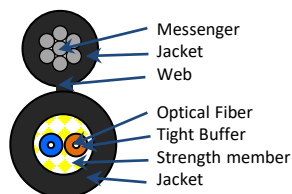
## • Round type



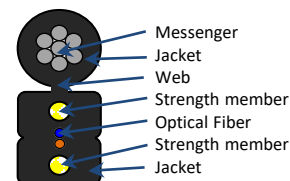
## • Flat type



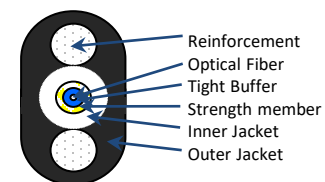
## • Round(Fig.8)



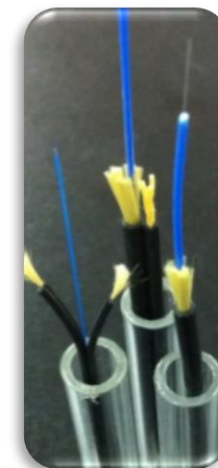
## • Flat(Fig.8)



## • Round Flat



Type	Number of Fiber	Buffer Diameter (μm)	Cable Diameter (mm)	Jacket Material	Strength member Material	Messenger Material
Round	1, 2, 4	600±50, 900±50	3.0, 4.8	LSZH, TPU	Aramid yarn	N/A
Flat	1 ~ 12	N/A	2.0 x 2.4, 2.0 x 6.0	LSZH	FRP, ARP, Steel wire	FRP or ARP, Steel wire
Round(Fig.8)	2, 4	600±50, 900±50	2.0 x 4.8	LSZH, TPU	Aramid yarn	FRP or ARP, Steel wire Aramid yarn
Flat(Fig.8)	1 ~ 12	N/A	2.0 x 4.8, 3.8 x 6.5	LSZH	FRP, ARP, Steel wire	FRP or ARP, Steel wire, Aramid yarn
Round Flat	1, 2	600±50, 900±50	4.5 x 8.2	HDPE	FRP, ARP, Steel wire	N/A



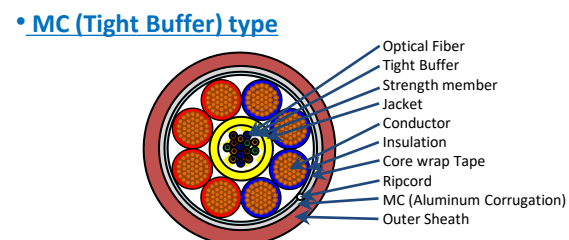
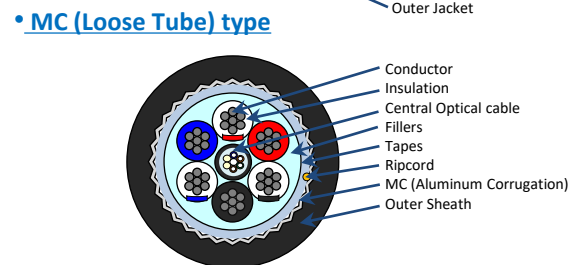
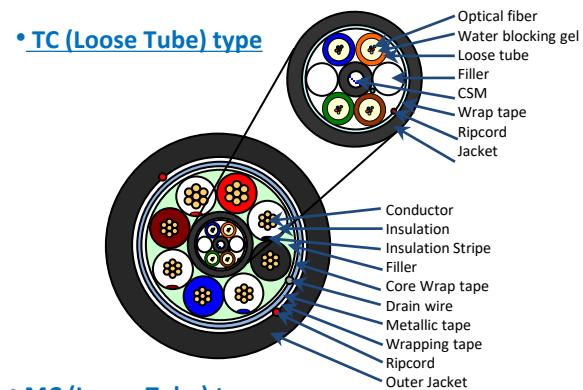
### Application & Features

- SMF and MMF / Indoor or Indoor/Outdoor dwelling unit
- Light weight and compact size and easy handling



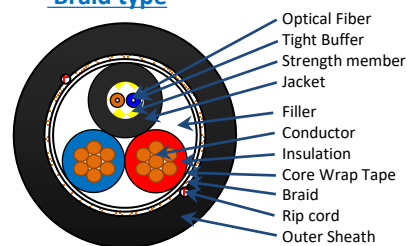
# 광전 복합케이블

## • HYBRID FEEDER CABLE

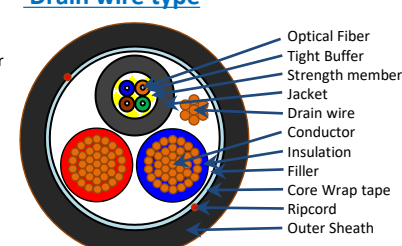


## • HYBRID JUMPER CABLE

### • Braid type

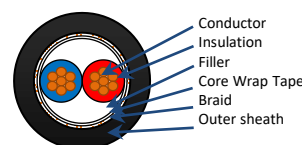


### • Drain wire type

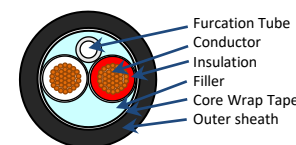


## • POWER JUMPER CABLE

### • Braid type

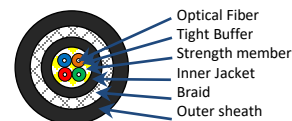


### • Furcation tube type

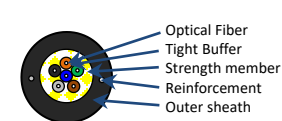


## • OPTICAL JUMPER CABLE

### • Braid type



### • Reinforced wire type

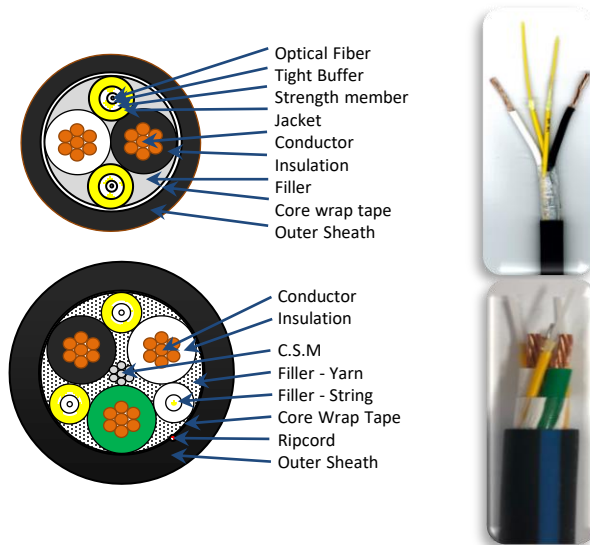


### ■ Application & Features

- Cable for FTTA and PTTA (Fiber and Power to the Antenna) solution
- Indoor/Outdoor
- Customized design



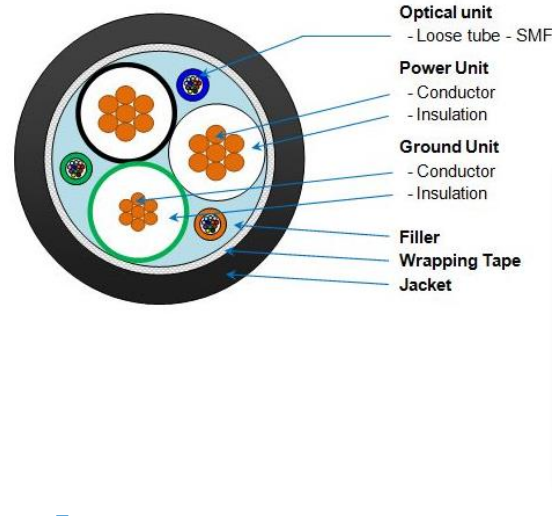
## Tight Buffered type



### Application & Features

- Small cell or In-building cellular area
- Light weight and compact size and easy handling
- Extend able construction of optical fiber

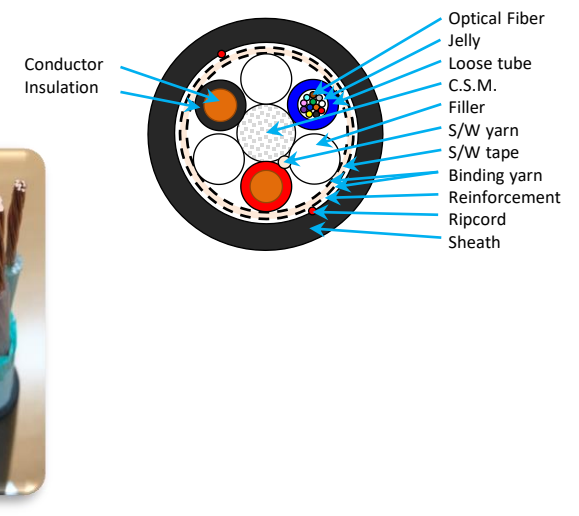
## Loose tube type



### Application & Features

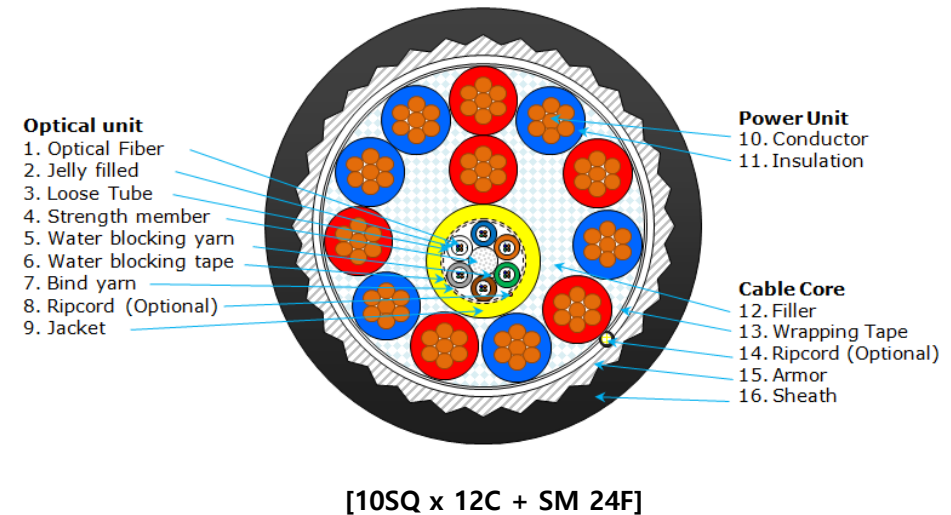
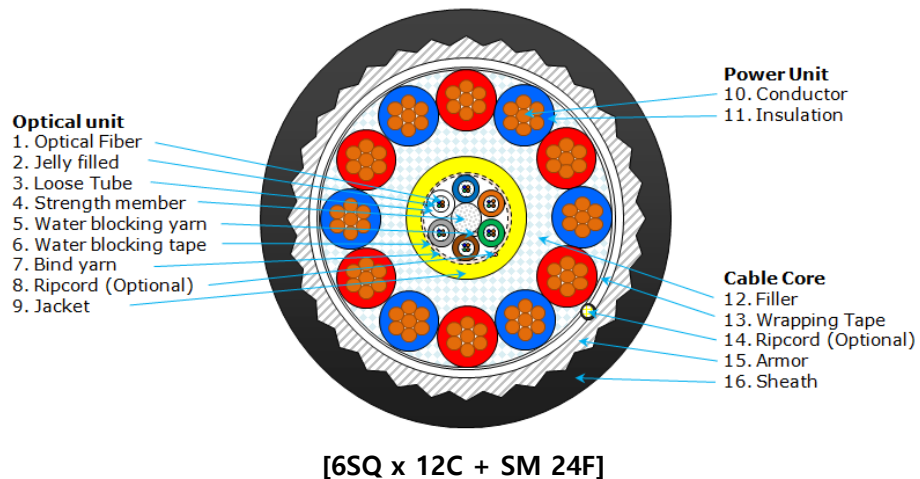
- Meet with IEC 60502-1 0.6/1kV
- Indoor/Outdoor
- Duct, Tunnel, Subway

## Loose tube type



## ■ Hybrid Cable (0.6/1kV)

### ➤ 6-RRHs Feeder Cable (6mm<sup>2</sup> & 10mm<sup>2</sup>)

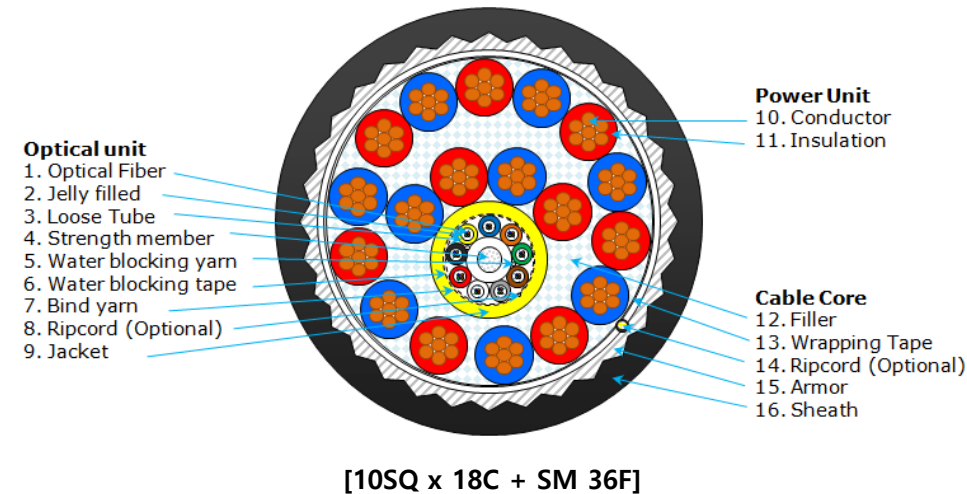
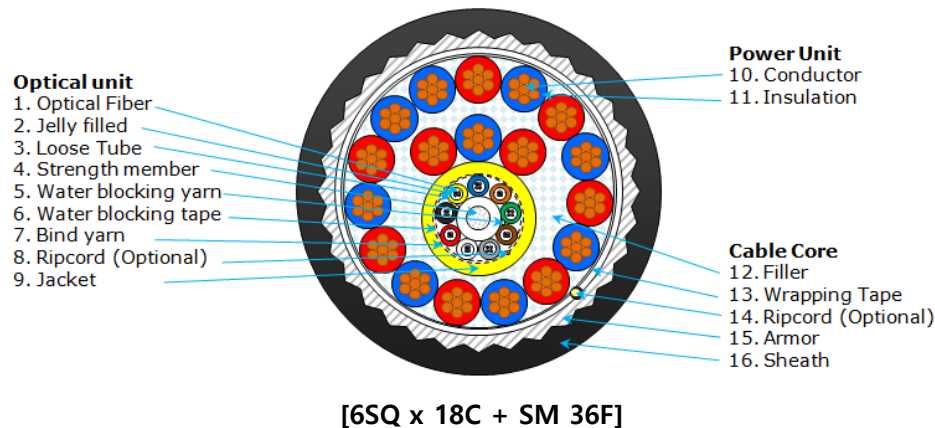


### ➤ Specification

Parameter	6mm <sup>2</sup>	10mm <sup>2</sup>
Number of Optical Tube	4 fiber x 6 Tube (SM G.657_B3 or G.657_A2)	
Optical Unit Jacket Dimension	Nom. 9.0mm (LSZH PO / Yellow)	
Armor	Corrugation (UL 1569) / Aluminum	
Outer Sheath	FRPE (ST8 of IEC 60502-1) / Black color	
Outer Dimension	Nom. 30.6mm	Nom. 34.5mm
Approximate Net weight	1,230kg / km	1,770kg / km

## ■ Hybrid Cable (0.6/1kV)

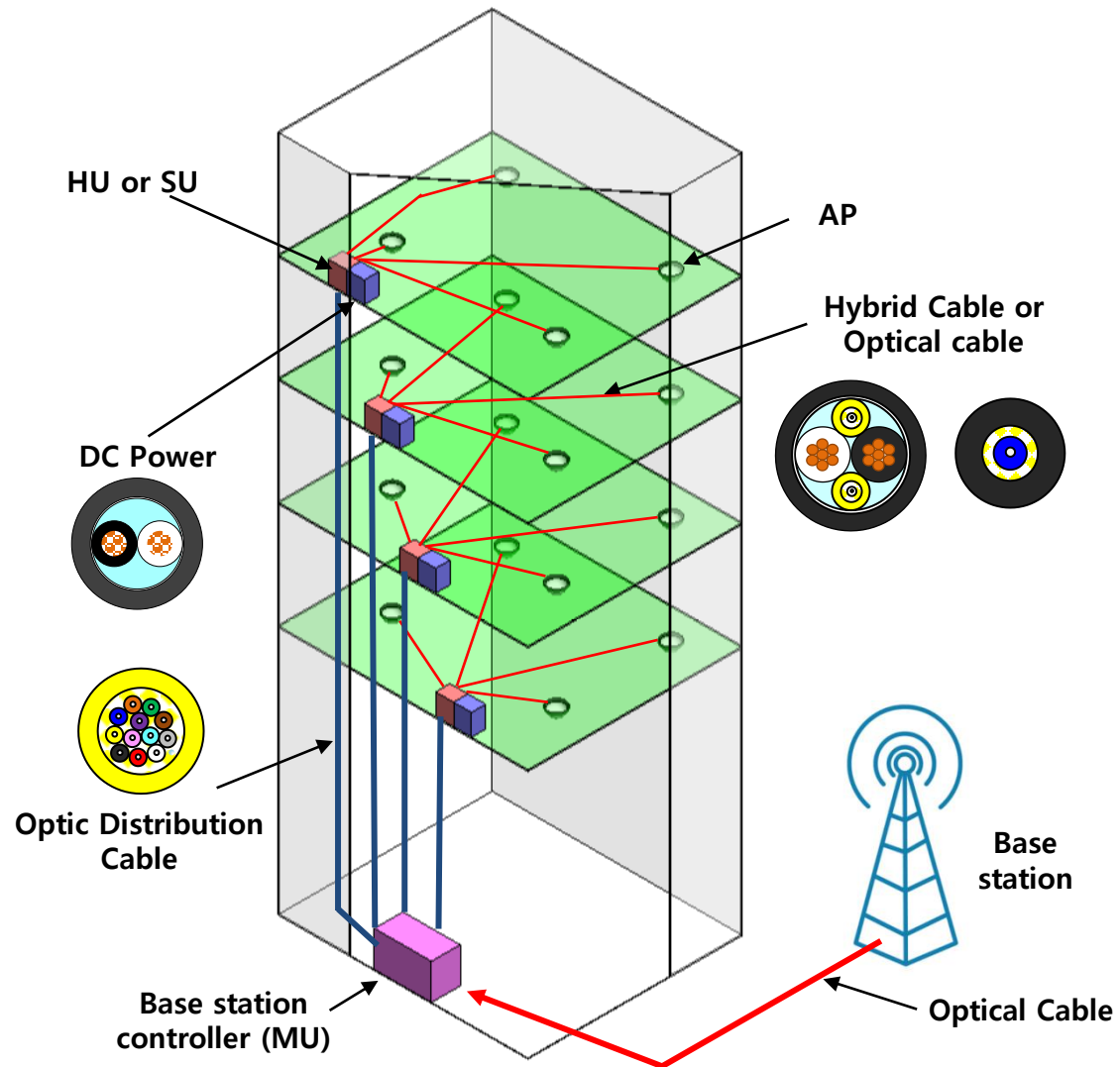
### ➤ 9-RRHs Feeder Cable (6mm<sup>2</sup> / 10mm<sup>2</sup>)



### ➤ Specification

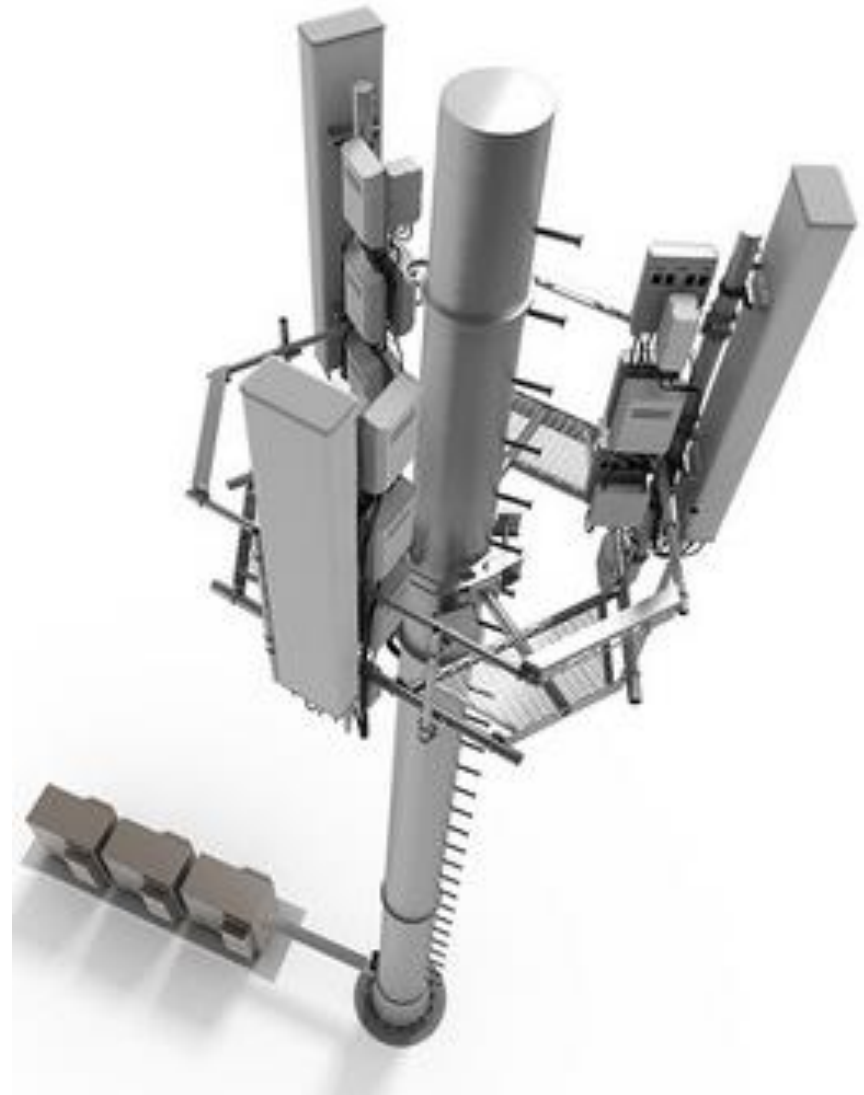
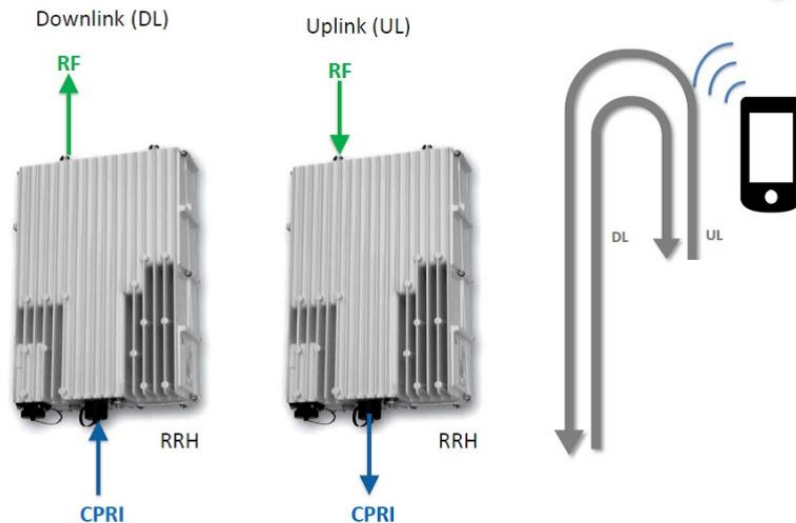
Parameter	6mm <sup>2</sup>	10mm <sup>2</sup>
Number of Optical Tube	4 fiber x 9 Tube (SM G.657_B3 or G.657_A2)	
Optical Unit Jacket Dimension	Nom. 11.0mm (LSZH PO / Yellow)	
Armor	Corrugation (UL 1569) / Aluminum	
Outer Sheath	FRPE (ST8 of IEC 60502-1) / Black color	
Outer Dimension	Nom. 35.3mm	Nom. 40.3mm
Approximate Net weight	1,730kg / km	2,510kg / km

# 설치 사례



5G site 및 무선통신 기지국에 설치시간 및 성능향상을  
위해 커넥터가 연결된 Pre-Connected Ass'y를 공급하여  
사용자가 쉽고 편리하게 설치할수 있는 솔루션을 제공

- ✓ CPRI Optic & Power cable Assembly
- ✓ Perfect Outdoor Connectors for RRH system
- ✓ Hybrid Connector Solutions





## ■ Hybrid Jumper Cable Solution

Antenna Solution은 원터치형 커넥터 또는 상용화된 커넥터를 적용 및 조립하여 공급하며, 현장에서 설치시간 단축에 효과적으로 설계

- ✓ 현장 설치시 쉽고, 용이하게 시설이 가능한

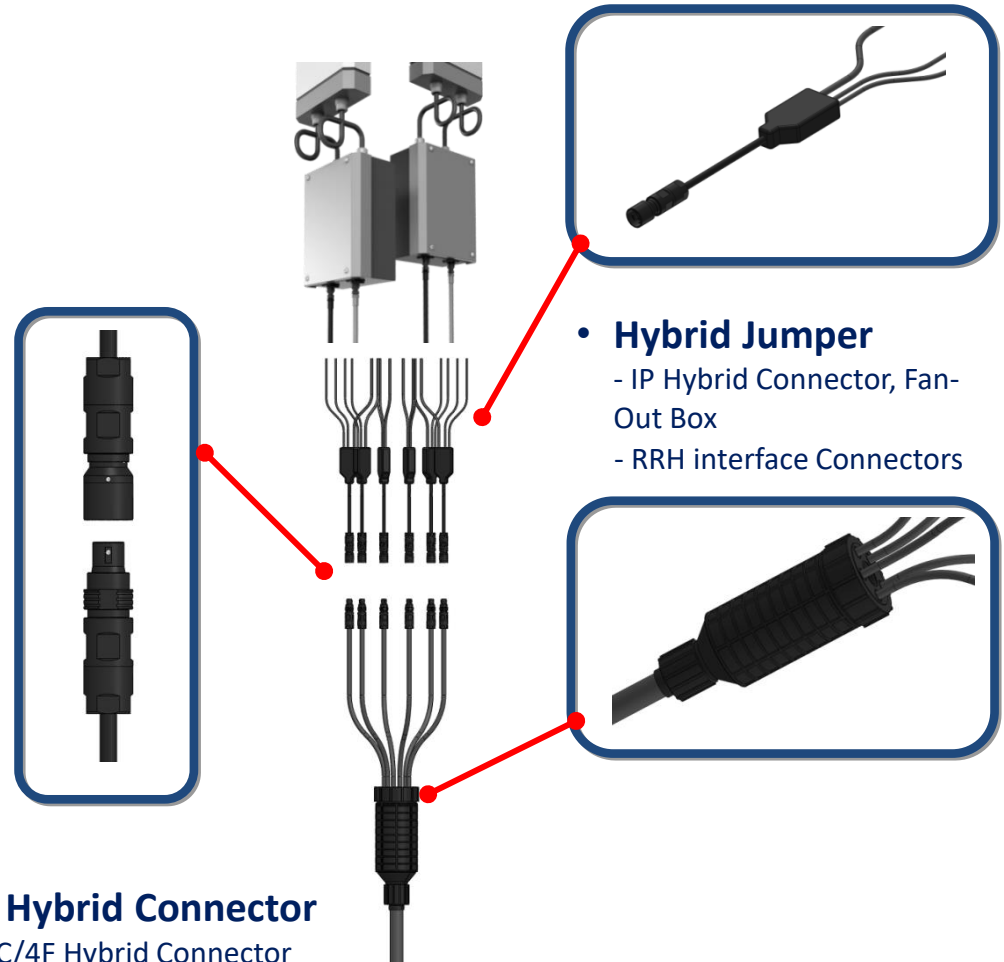
Connected Hybrid cable

- ✓ 전용 Tool 이 필요하지 않음.

- ✓ 설치 시간을 효과적으로 단축하고, 안정적임.

- ✓ Push-Pull 또는 상용화된 커넥터를 사용하여 설치기사의 쉬운 이해

- **IP Hybrid Connector**
  - 2C/4F Hybrid Connector
  - IP-68 / Push-Pull Type



- **Hybrid Jumper**
  - IP Hybrid Connector, Fan-Out Box
  - RRH interface Connectors

# 공급 실적

구분	고객	공급제품	공급시기	비고
미국	Sprint	안테나용 Hybrid Ass'y cable	2013 ~ 2018	
	Verizon	FTTH용 Drop cable	2010 ~ 현재	
	Corning	미디오용 Hybrid cable	2017 ~ 현재	
	Dist	FTTH용 Drop cable	2020 ~ 현재	
호주	Telstra	안테나용 Hybrid cable	2013 ~ 2019	
유럽	Dist	FTTH용 Optical cable	2019 ~ 현재	
	Dist	Data center용 Optical cable	2019 ~ 현재	
일본	Softbank	Hybrid cable	2011~2014	
한국	KT	FTTH용 Optical cable	2000 ~ 현재	
	SK	안테나용 Hybrid cable	2018 ~ 현재	