



OptLINK FTTA/PTTA Solution

Optronics offers state-of-the-art custom solutions for cellular network operators. The OptLINK connectivity solution is a custom product made to be configured to support up to 6 RRHs. Cables are terminated with IP 67 outdoor connectors at the Remote Radio Head (RRH) side. An IK 10 rated ruggedised enclosure enables the fitted fiber optic cable or power cable for direct connectivity to the Remote Radio Head (RRH) or the connectivity through jumpers.

At the Remote Radio Head (RRH) side, the cables are terminated with IP67 rated industrial duplex LC (FTTA) or 3-pin power (PTTA) connectors.

At the Baseband Unit (BBU) side, both fibre optic and power cables are blunt cut.

Applications

- Indoor/Outdoor FTTA installations
- Indoor/Outdoor PTTA installations

Enclosure



Features

- Connectivity of up to 6 RRHs
 - PTTA
 - FTTA
- Ruggedised PC/ABS construction
- IK 10 rated
- Compact and aerodynamic design
- Allows quick and easy installation/configuration/re-configuration
- Direct access to reciprocal/adaptor for immediate connections and management

Waterproof Industrial Fibre Optic Connector and Reciprocal



Features

- Ruggedised PC/ABS construction
- Duplex LC connector/adaptor design
- Robust PBT connector shell construction
- Flame Retardant according to UL94-Vo
- IP 67 rated
- Use of spring nap lock for connection

Fibre Optic Connector Specification

Parameter	Value
Wire specification	0.15Mm ² ~0.2Mm ² /26-24AWG
Line diameter range	Φ5.5mm~Φ7mm
Contact diameter × number	2
Insertion Force	4.5N (max)
Durability	1700 times
Screw torque	4.2-5.3(N·m) Torque wrench 200(N·m)
Working temperature	-40°C - 80°C
Vibration	Frequency 5-200Hz, amplitude: 5mm, speed 10m/s, 0.10us without instantaneous break
Impact resistance	294m/s ²
Salt fog	PH6.5-7.2, NaCl, 5% 48H
Protection level	IP 67
Certification standard	Comply with the TUV and UL certification standards

Waterproof Industrial Power Connector and Reciprocal



Features

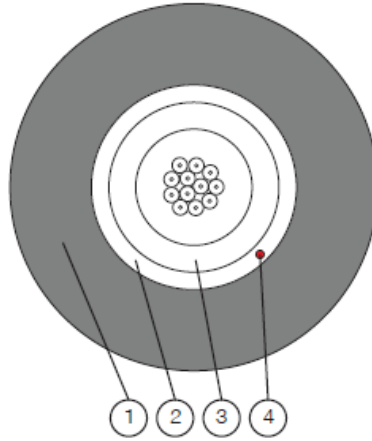
- 3-pin connector/adaptor design
- Gold plated connector
- Robust PBT connector shell construction
- Flame Retardant according to UL94-Vo
- IP 67 rated
- Use of spring nap lock for connection

Power Connector Specification

Parameter	Value
Number of pins	3
Rated current	25A
Operating voltage	500V
Withstanding Voltage	2500V
Contact resistance	<1.0mΩ
Temperature rise	25A 30°C↓ 30A 40°C↓ 35A 50°C↓
Contact diameter	Φ3.0*3
Insertion and extraction force	4.5N Max.
Mating cycle	1700 times
Screw torque	42-53(N·m) Torque wrench 200(N·m)
Temperature and humidity	-40°C ~ +80°C;40°C,85%RH.

Vibration	Frequency:5~200Hz, Amplitude:5mm, Speed :10m/s, No instantaneous short circuit in 0.10us.
Impact resistance	294m/s ²
Salt Spray	PH6.5-7.2,NaCl,5% 48H
Applicable wire diameter	Scope of application (OD: Φ 4- Φ 14) mm With waterproof ring (Φ 7mm、 Φ 14mm)
Protection level	IP 67

Fibre Optic Cable



Features

- LSZH (Low Smoke Zero Halogen) outer sheath (1)
- Water blocking e-glass strength members (2)
- Gel filled loose tube 250um (3)
- Rip cord (4)
- Dielectric and rodent protected cable design
- TIA/EIA 598-B compliant fibre colour coding

Fibre Optic Cable Specification

Number of fibres	12
Outer sheath nominal (mm)	1.8
Overall diameter nominal (mm)	11.0±0.5
Weight (nominal) (kg/km)	99

Mechanical and Environmental Characteristics of Fibre Optic Cable

Parameter	Value	Acceptance criteria	Accordance with
Tensile strength (short term - installation)	1500 N	$\Delta\alpha < 0.05$ dB reversible, fibre strain $< 0.33\%$	IEC 60794-1-2E1
Crush resistance (short term)	1000 N/10cm	$\Delta\alpha < 0.05$ dB reversible, no damage	IEC 60794-1-2E3
Impact resistance	10 N. m, 3 impacts spaced, R= 30 mm	$\Delta\alpha < 0.05$ dB reversible, no damage	IEC 60794-1-2E4
Torsion	$\pm 180^\circ$, 5 cycles, 50 N	$\Delta\alpha < 0.05$ dB reversible, no damage	IEC 60794-1-2E7
Bending (static) Repeated bending (dynamic)	R= 10 x D, 5 turns, 3 cycles R= 15 x D, 50 N, 30 cycles	$\Delta\alpha < 0.05$ dB reversible, no damage	IEC 60794-1-2E11 IEC 60794-1-2E6
Temperature cycling	-40°C to +70°C	$\Delta\alpha < 0.05$ dB/km	IEC 60794-1-2F1
Flame propagation	1m cable, 60 seconds	Damaged cable not to reach the upper end.	IEC 60332-1
Acidity of combustion gases	0.5 g sheath, 20 minutes, 800°C	HCl $< 0.5\%$	IEC 60754-1
Acidity of combustion gases	1.0 g sheath, 30 minutes, 935°C	pH > 4.3 , conductivity < 10 $\mu\text{S}/\text{mm}$.	IEC 60754-2
Storage temperature Installation temperature Operating temperature	-40°C to +70°C -20°C to +60°C -40°C to +70°C		IEC 60794
Fire Performance: Smoke emission Flammability Toxicity Acid gas emission			IEC 61034-1 & 2 IEC 60332-1 IEC 60754-1 IEC 60754-2

Singlemode Fibre 9/125 ITU-T G.657.A1 Characteristics

Parameter	Value
Cladding diameter	125.0 ± 0.7 μm
Cladding non-circularity	≤ 0.7 μm
Coating diameter	245.0±5 μm
Coating-cladding concentricity error	≤12 μm
Coating non-circularity	≤6.0 %
Core-cladding concentricity error	≤0.5 μm
Mode field diameter at 1310 nm	8.4 - 9.2 μm
Attenuation coefficient at 1310 nm	≤ 0.35 dB/km
Attenuation coefficient at 1383 nm	≤ 0.35 dB/km
Attenuation coefficient at 1460 nm	≤ 0.25 dB/km
Attenuation coefficient at 1550 nm	≤ 0.21 dB/km
Attenuation coefficient at 1625 nm	≤ 0.23 dB/km
Cable cut-off wavelength λ_{cc}	$\lambda_{cc} \leq 1260$ nm
Chromatic dispersion coefficient at 1285-1340 nm	≤ 3.4 ps/(nm×km)
Chromatic dispersion coefficient at 1550 nm	≤18 ps/(nm×km)
Chromatic dispersion coefficient at 1625 nm	≤22 ps/(nm×km)
Zero-dispersion wavelength λ_0	1300 < λ_0 < 1324 nm
Zero-dispersion slope S_0	≤0.092 ps/(nm ² ×km)
PMD	≤ 0.10 ps/√km
Proof test	≥ 1% (100 kpsi or 0.7 GPa)

Multimode Fibre 50/125 OM3 Characteristics

Parameter	Value
Core diameter	50 ± 2.5
Core non-circularity	≤5.0 %
Cladding diameter	125.0 ± 1.0 µm
Cladding non-circularity	≤1.0 %
Coating diameter	245 ± 7 µm
Coating/Cladding concentricity error	≤10 µm
Coating non-circularity	≤6.0 %
Core/Cladding concentricity error	≤1 µm
Attenuation coefficient at 850 nm	≤ 2.4 dB/km
Attenuation coefficient at 1300 nm	≤ 0.6 dB/km
Overfilled modal bandwidth at 850 nm	700 / 1500 / 3500 Mhz. km
Overfilled modal bandwidth at 1300 nm	500 / 500 / 500 Mhz. km
Numerical Aperture	0.200±0.015

Fibre Optic FTTA LC-LC Duplex Jumper



Features

- Available in Singlemode G.657.A1 and Multimode OM3
- 2 optical fibres (duplex)
- LSZH (Low Smoke Zero Halogen) jacket
- UV resistant
- IP 67 industrial LC connector (OptLINK enclosure side)
- Uniboot LC connector (RRH side)
- Ruggedised construction

Optical Performance

Parameter	Multimode (OM3)	Singlemode (G.657A1)
Max. Insertion Loss (61300-3-4), method B	≤0.35dB	≤0.30dB
Min. Return Loss (61300-3-6)	-	≥50dB
Operating temperature	-25°C to +70°C	-25°C to +70°C

Mechanical Characteristics

Parameter	Value
Tensile Strength	Short Term: 200N Long Term: 400N
Crush resistance	Short Term: 1100N Long Term: 2200N
Impact resistance	1 N.m, add attenuation $\leq 0.1\text{dB}$
Bending	20 N, 300 times, add attenuation $\leq 0.1\text{dB}$
Twist	20 N, 20 times, $\pm 180^\circ$, add attenuation $\leq 0.1\text{dB}$
Bending radius	Dynamic: 20xD Static: 10xD

Fibre Characteristics

Parameter	Singlemode G.657.A1	Multimode OM3
Fibre attenuation	0.4dB/km @ 1310 nm 0.3dB/km @ 1550 nm	3.5dB/km @ 850 nm 1.5dB/km @ 1300 nm
Bandwidth	-	$\geq 1500\text{ MHz.km @ }850\text{ nm}$ $\geq 500\text{ MHz.km @ }1300\text{ nm}$
Core diameter	-	$50 \pm 3\ \mu\text{m}$
Cladding diameter	$125 \pm 0.7\ \mu\text{m}$	$125 \pm 1.5\ \mu\text{m}$
Cladding-non-circularity	$\leq 1\%$	$\leq 1.5\%$
Core concentricity error	$\leq 0.8\ \mu\text{m}$	$\leq 2\ \mu\text{m}$

Power Cable



Features

- LSZH (Low Smoke Zero Halogen) outer sheath
- Cable cross-section: 4, 6, 10, 16mm²
- 8 x D minimum bending radius during installation

Power Cable Specification

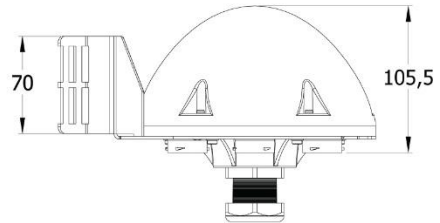
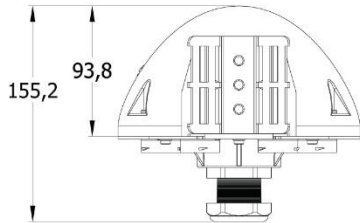
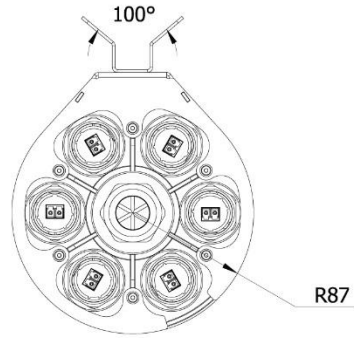
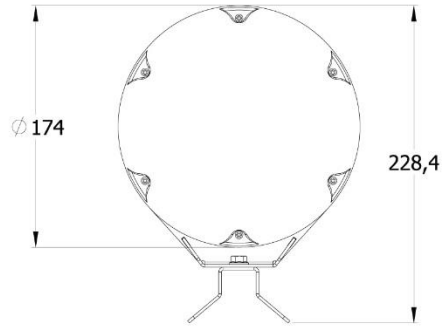
Conductors	Annealed bare copper round stranded compacted class 2 IEC 60228
Insulation	XLPE according to IEC 60502-1 of 0.5mm nominal thickness. Core identification with number.
Sheath	UV-resistant LSZH type ST8 (IEC 60502-1)
Sheath Colour	Black
Copper shield	Copper wires helically applied over core and wrapped with a copper tape laid in open helix

Power Cable Weights and Diameters

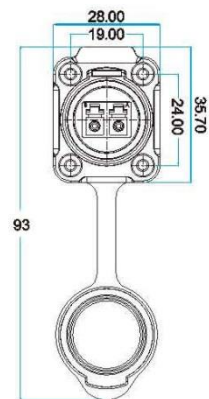
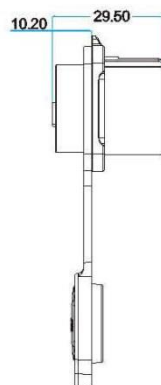
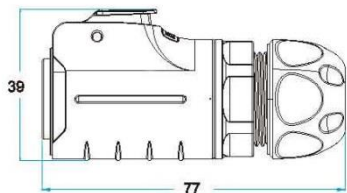
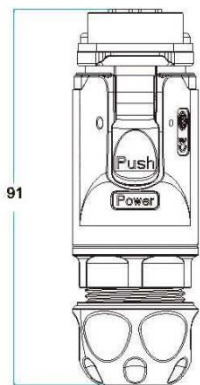
Cross Section	Outer Sheath Thickness	Cable Overall Diameter (mm)	Cable Overall Weight (kg/m)
6 x 2 x 4	1.8	21.5	0.85
6 x 2 x 6	1.8	24.0	1.10
6 x 2 x 10	1.8	27.5	1.65

Technical Drawings

Enclosure



Fibre optic connector and reciprocal



OptLINK FTTA/PTTA Enclosure System Ordering Information

	Application		Cable Type		No. of Reciprocals		Length	
ODLS	F	FTTA	3L	12 fibre Loose Tube OM3 (use with F option)	06	6 reciprocals with LC duplex for FTTA or 6 3-pin power reciprocals for PTTA	01	1m
	P	PTTA	A1L	12 fibre Loose Tube G.657.A1 (use with F option)		
			P1	Power 6x2x4 (use with P option)			xxx	Specify
			P2	Power 6x2x6 (use with P option)				
			P3	Power 6x2x10 (use with P option)				

Example order code

ODLS	-	F	-	A1L	-	06	-	70
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OptLINK FTTA Enclosure with 6 FO reciprocals, 12 fibre loose tube cable blunt cut (RRU side) length 70m

ODLS	-	P	-	P1	-	06	-	35
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OptLINK PTTA Enclosure with 6 PO reciprocals, 6x2x4 power cable blunt cut (PSU side), length 35m

Fibre Optic FTTH LC-LC Jumper Ordering Information

	Connector RRH Side		Connector OptLINK Side		Fibre Type		Wavelength		Configuration	
	Uo	Uniboot LC	Io	Waterproof Industrial LC	A1	SM G.657.A1	2	Duplex	o1	1m
OJFF					3	OM3		
									xx	Specify

Example order code

OJFF - UOIO - A12 - 20

FTTH Jumper Uniboot LC – Waterproof Industrial LC, SM G.657.A.1, duplex 20m

OJFF - UOIO - 32 - 50

FTTH Jumper Uniboot LC – Waterproof Industrial LC, MM OM3, duplex 50m