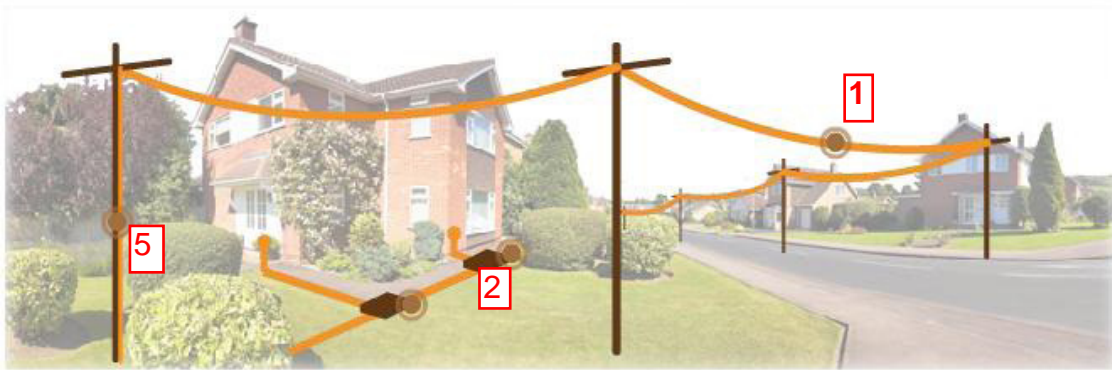
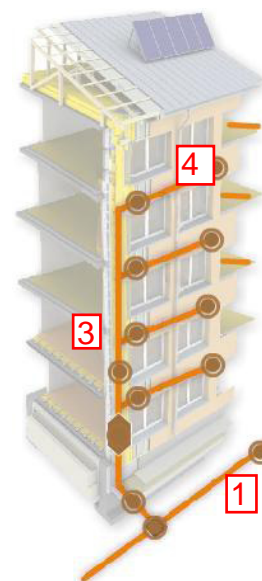
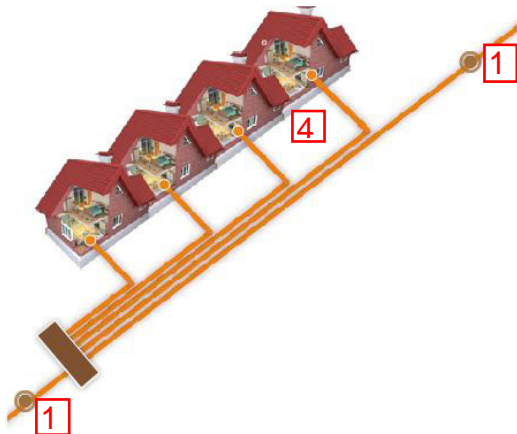


Câbles de fibre optique pour réseaux FTTx



Caractéristiques techniques

Liaison	Type de câble
Réseau d'accès (1): Câbles standard, choisis en fonction de l'environnement	
Conduite standard	PKP, PSP, DP, DSP.
Microconduite	ABD, HD
Pose aérienne	ADSS,...
Câble DROP : En général, des câbles jusqu'à 24 f.o. reliant les câbles du réseau d'accès aux baies et coffrets de distribution ou à l'abonné.	
Pose en extérieur (2)	CAR R200, ADSS F200, ABD 01...
Pose en intérieur (3)	CAR R100, CAR R105 ou CDV (+ de 2 abonnés)
Réseau d'abonné (4)	CAS S100-115 (en conduite) ; CAS FLAT (Fixé au mur) ; CAR R100 ou 105 (Fixé au mur)

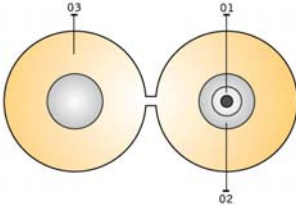


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OPTRAL



CAR / R2 – Drop Cable Figure 8



Cable description

- 01. Tight Buffered Fibre
- 02. Aramid
- 03. Outer Jacket

Applications

Outdoor
Self-supported drop cable FTTx

Options

Fibre type
Outer jacket colour



Advantages

Excellent mechanical resistance / Dielectric / Tough / Resistant.



All technical specifications are subject to change without prior notice. Consult OPTRAL for the latest edition.

Type	SPECIFICATIONS	
	R200	R205
Fibre Count	1	2
Buffer Diameter (mm)	0.9	0.6
Fibre Type	G.657A	G.657A
Self-supporting Element	Aramid Yarns	Aramid Yarns
Outer Jacket	LSZH ¹	LSZH ¹
Jacket Colour	Black	Black
Weight (Kg/Km)	13	13
Outer Ø (mm)	2.5 x 5.2	2.5 x 5.2
Tensile Load Permanent / Instal. (N)	250 / 400	250 / 400
Crush (N/100mm)	600	600
Impact (Nm/100 impacts)	1.5	1.5
Temperature Range	-20°C to +80°C	-20°C to +80°C

Standards

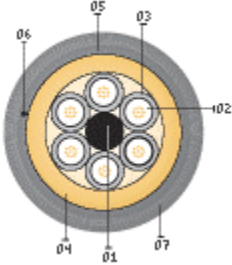
Mechanical and environmental tests according to EN187000, IEC60794.

Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267-1/2 (IEC60754-1/2) / UNE-EN 61034-1/2 (IEC 61034-1/2).

Fibres colour code : 1 FO: Natural / 2 FO: Red – Green.

¹ LSZH: Halogen free, low smoke emission, flame retardant compound.

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Cable Description

- 01. Central Filler
- 02. Fibre Optics
- 03. Loose tube (jelly filled)
- 04. Inner jacket
- 05. Aramid
- 06. Ripcord
- 07. Outer jacket

Applications

Aerial Installations

Options

- Anti-Tracking Jacket
- Ballistic Protection
- Special Colour Code (TIA 598)

Aerial Installation Conditions (1)

Wind (Km/h)	Ice (mm)	Span (m)
100	0	250
0	10	270
0	15	155
60	10	200

NESC Aerial Installation Conditions (1)

	Span
NESC Light	255
NESC Medium	200

Advantages

Excellent mechanical resistance / Totally dielectric / Tough / Resistant / High density of fibres / Self-supported aerial applications.



All technical specifications are subject to change without prior notice. Consult OPTRAL for the latest edition.

SPECIFICATIONS

	4	6	8	12	16	24	32	36	48	64	72	96
Fibres	4	6	8	12	16	24	32	36	48	64	72	96
Fibres per Tube	2	2	2	2	4	4	8	6	8	8	12	12
Total Tubes	6	6	6	6	6	6	6	6	6	8	6	8
Inner Jacket	Polyethylene											
Strength Members	Aramid Yarns											
Outer Jacket	Polyethylene											
Colour	Black											
Weight (Kg/Km)	123	125	127	132	128	132	145	133	151	186	153	188
Outer Ø (mm)	12.8 ^{±0.5}	12.8 ^{±0.5}	12.8 ^{±0.5}	12.8 ^{±0.5}	12.8 ^{±0.5}	12.8 ^{±0.5}	13.7 ^{±0.5}	12.8 ^{±0.5}	13.7 ^{±0.5}	15.3 ^{±0.5}	13.7 ^{±0.5}	15.3 ^{±0.5}
Maximum Length	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100
MAT (N)	8000											
EDS (N)	3200											
Impact	5 J											
Temperature Range	-40° C to +70°C											
Min. Bending Radius	20 x Outer Ø											

Environmental and Mechanical Tests according to EN 187000 and IEC 60794.

Fibres Colours: Red, green, blue, yellow, grey, violet, brown, orange, white, pink, black and natural.

Max. Induced Voltage = 12 KV

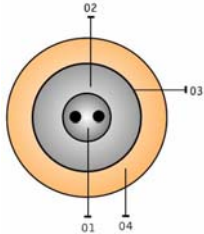
(1) Typical values for a 48 fibres cable.

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OPTRAL

ABD-01

Unitube Distribution Cable FTTx



Cable description

- 01. Fibre Optics
- 02. Secondary Loose Tube
- 03. Aramid
- 04. Outer Jacket

Applications

Indoor

Fire Resistance

Flame retardant
Halogen free
Low smoke emission



All technical specifications are subject to change without prior notice.

Advantages

Compact / Tough / Resistant / Totally Dielectric / Suitable for "blow air" systems.



TOTALLY DIELECTRIC



MOISTURE PROTECTED



HIGH FLEXIBILITY



FLAME RETARDANT



LOW SMOKE EMISSION



HALOGEN FREE

SPECIFICATIONS

SPECIFICATIONS	
Fibre Count	2 .. 12
Strength Members	Aramid Yarns
Outer Jacket	Thermoplastic LSZH ¹
Colour	Black
Weight (Kg/Km)	10
Outer Ø (mm)	3.5 ±0.1
Tensile Load (N)	80
Temperature Range	-30 °C to +70 °C
Min. Bending Radius (mm)	20 x Outer Ø

Standards

Environmental and Mechanical tests according to EN 187000 and CEI 60794.

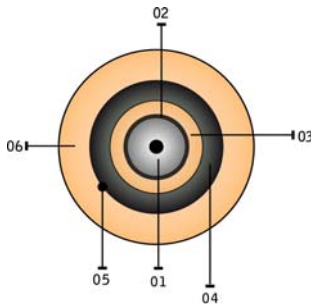
Fibres colour code: red, green, blue, yellow, grey, violet, brown, orange, white, pink, black, natural.

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OPTRAL



CAR / R1 – Reinforced Drop Cable



Cable description

- 01. Tight Buffered Fibre
- 02. Aramid
- 03. Inner Jacket
- 04. Aramid
- 05. Outer Jacket

Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

Applications

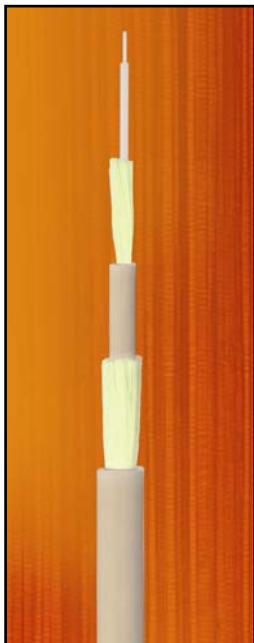
- Indoor
- Drop cable
- Pigtail and jumper connections
- Direct connection to terminal equipments FTTx

Options

- Fibre type
- Special colour code
- Jacket colour
- Special packaging "Reel in a Box" ¹

Advantages

Flexible / Resilient / Dielectric / Reinforced / Direct connectorization.



All technical specifications are subject to change without prior notice. Consult OPTRAL for the latest edition.

SPECIFICATIONS

Type	R100	R105
Fibre Count	1	2
Buffer Diameter (mm)	0.9	0.6
Fibre Type	G.657A	G.657A
Strength Members	Aramid Yarns	Aramid Yarns
Inner Jacket	LSZH ²	LSZH ²
Outer Jacket	LSZH ²	LSZH ²
Jackets Colour	Ivory	Ivory
Weight (Kg/Km)	21	21
Outer Ø (mm)	4.6 ± 0.2	4.6 ± 0.2
Tensile Load Permanent / Instal. (N)	350 / 650	350 / 650
Crush (N/100mm)	800	800
Temperature Range	-10°C to +70°C	-10°C to +70°C
Min. Bending Radius (mm)	5 x Outer Ø	5 x Outer Ø

Standards

Mechanical and environmental tests according to EN187000, IEC60794.

Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267-1/2 (IEC60754-1/2) / UNE-EN 61034-1/2 (IEC 61034-1/2).

Fibres colour code : 1 FO: Natural / 2 FO: Red – Green.

¹ Consult available lengths.

² LSZH – Halogen free, low smoke emission, flame retardant compound.

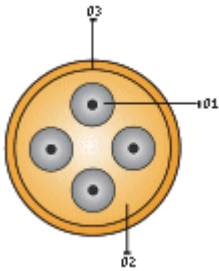


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OPTRAL



CDV / V1 – Vertical Distribution Cable



Cable description

- 01. Tight Buffered Fibre (0.9 mm)
- 02. Aramid Yarns
- 03. Outer Jacket

Fire resistance

Flame / Fire retardant
Halogen free
Low smoke emission

Applications

Indoor
Drop cable (vertical)
Direct connectorizations in FTTx applications

Options

Fibre type
Special colour code
Outer jacket colour
Special packaging "Reel in a Box" ¹



Advantages

Compact / Lightweight / Flexible / Easy to strip (gel free) / Totally dielectric / Direct connectorization / Saves installation costs.



Todas las especificaciones sujetas a cambio sin previo aviso. Consultar a OPTRAL las ediciones en vigor.

SPECIFICATIONS

Type	V100				
Fibre Count	2	4	6	8	12
Fibre Type	G.657A				
Strength Members	Aramid Yarns				
Outer Jacket	Thermoplastic LSZH ²				
Colour	Ivory				
Weight (Kg/Km)	23	26	36	43	56
Outer Ø (mm)	4.9 ± 0.3	5.3 ± 0.3	6.1 ± 0.3	6.7 ± 0.3	7.7 ± 0.3
Tensile Load Perm / Inst. (N)	400 / 650	400 / 650	400 / 650	550 / 1000	550 / 1000
Crush (N/100mm)	1000	1000	1000	1200	1200
Temperature Range	-10°C to +70°C				
Min. Bending Radius (mm)	5 x Outer Ø				

Standards

Mechanical and environmental tests acc/ EN 187000, IEC60794.

Fire tests: UNE-EN 50266 (IEC 60332-3) / UNE-EN 50267 (IEC 60754-2-1/-2) / UNE-EN 61034 (IEC 61034-2-1/-2).

Fibres colour code: red – green – grey – yellow – blue – natural – white – brown – violet – orange – pink – black.

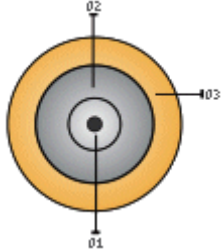
¹ Consult available lengths.

² LSZH – Halogen free, low smoke and flame retardant thermoplastic compound.

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CAS / S1 – Simplex Drop Cable



Cable description

- 01. Tight Buffered Fibre
- 02. Aramid
- 03. Outer Jacket

Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

Applications

- Indoor
- Pigtail and jumper connections
- Direct connection to terminal equipments FTTx

Options

- Fibre type
- Special colour code
- Jacket colour
- Special packaging "Reel in a Box" ¹

Advantages

Flexible / Dielectric / Direct connectorization.



SPECIFICATIONS

Type	S100	S105	S110	S115
Fibre Count	1	2	1	2
Buffer Diameter (mm)	0.9	0.6	0.9	0.9
Fibre Type	G.657A			
Strength Members	Aramid Yarns			
Outer Jacket	LSZH ²			
Jacket Colour	Ivory			
Weight (Kg/Km)	7	7	14	14
Outer Ø (mm)	2.9 ± 0.15	2.9 ± 0.15	3.6 ± 0.1	3.6 ± 0.1
Tensile Load Permanent / Instal. (N)	200 / 350	200 / 350	350 / 650	350 / 650
Crush (N/100mm)	500	500	700	700
Temperature Range	-10°C to +70°C			
Min. Bending Radius (mm)	5 x Outer Ø			

Standards

Environmental and mechanical tests according to EN187000 and IEC60794.

Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267 (IEC 60754-1/2) / UNE-EN 61034 (IEC 61034-1/2).

Fibres colour code : 1 FO: Natural / 2 FO: Red – Green.

¹ Consult available lengths.

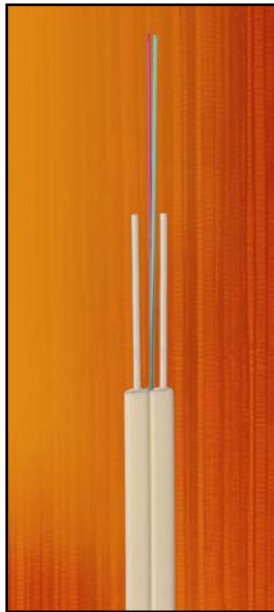
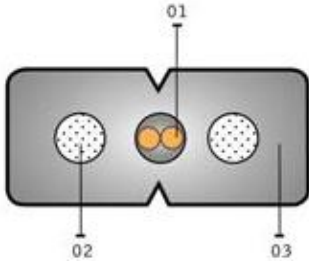
² LSZH – Halogen free, low smoke emission, flame retardant compound.

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OPTRAL



CAS FLAT / F1 – Flat Drop Cable



Cable Description

- 01. Fibre Optics (250 µm)
- 02. FRP
- 03. Outer Jacket

Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

Advantages

Light / Resistant / Dielectric / Small diameter.

Applications

- Indoor
- Drop cable in FTTx applications



COMPLETELY DIELECTRIC



FLAME RETARDANT



LOW SMOKE EMISSION



HALOGEN FREE

SPECIFICATIONS

SPECIFICATIONS	
Type	F100
Fibre Count	2
Fibre Type	G.657
Fibres Identification	Colour Code ¹
Strength Members	FRP
Outer Jacket	LSZH ²
Jacket Colour	Ivory
Weight (Kg/m)	7.6
Outer Ø (mm)	2.0 x 3.0 ± 0.20
Max. Tensile Load (N)	100
Crush (N/10cm)	1000
Temperature Range	-30°C to +70°C

Standards

Mechanical and environmental tests according to EN187000, IEC60794-1-2.

¹ Colour code: Red – Green.

² LSZH: Halogen free, low smoke emission, flame retardant compound.

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La fibra óptica monomodo insensible a las curvaturas (G657) proporciona una gran resistencia a las pérdidas adicionales debidas a macrocurvaturas. Ideal para el montaje de cable en el interior de edificios, cables patchcords y/o cables de interconexión. Adecuada para aplicaciones en redes de acceso "Fibre-to-the-Home".

Estas fibras cumplen con IEC 60793-2-50, UIT G.652D, G.657A&B, Telcordia GR-20-CORE, ANSI/IECA S-87-640.

PROPIEDADES GEOMÉTRICAS / MECÁNICAS	G.657.A	G.657.B
Diámetro Revestimiento	125 ± 0.7 μm	
Concentricidad Núcleo / Revestimiento	≤ 0.5 μm	
No Circularidad Revestimiento	≤ 0.7 %	
Diámetro Recubrimiento Primario	242 ± 0.7 μm	
Concentricidad Recubrimiento Primario / Revestimiento	≤ 12 μm	≤ 10 μm
No Circularidad Recubrimiento Primario	≤ 5 %	
Proof Test	≥ 8.8 N / ≥ 1 % / ≥ 100 Kpsi	

PROPIEDADES ÓPTICAS	G.657.A	G.657.B	
Atenuación con Curvatura (1550 nm)	1 vuelta / Mandril 10mm	≤ 0.75	≤ 0.10
	10 vueltas / Mandril 15mm	≤ 0.25	≤ 0.03
Diámetro Campo Modal (μm)	1310 nm	9.0 ± 0.4	8.5 – 9.3
	1550 nm	10.1 ± 0.5	9.4 – 10.4
Coeficiente Atenuación (dB/Km)	1310 nm	≤ 0.35	
	1383 nm	≤ 0.35	
	1460 nm	≤ 0.25	
	1550 nm	≤ 0.21	
	1625 nm	≤ 0.23	
Dispersión Cromática (ps/nm.Km)	1285 – 1330 nm	≤ 3	
	1550 nm	≤ 18	
	1625 nm	≤ 22	
Longitud Onda Cero Dispersión (nm)	1300 – 1322	1300 – 1324	
Pendiente Dispersion Cero (ps / nm ² Km)	≤ 0.090	≤ 0.092	
Longitud Onda Corte Cable (nm)	≤ 1260		
PMD (ps / (ps/√Km))	1550 nm	≤ 0.1	

Propiedades conforme a UIT-T G.652D, G.657A, G.657B, CEI 60793-2-50, ISO/IEC 11801, EN 50173, Telcordia GR-20-CORE y ANSI/IECA S-87-640.

Nota Importante.- Las fibras G.657 no son reconocidas por algunos modelos de máquinas de empalme. Compruebe su máquina antes de su uso o contacte con su distribuidor local.



CABLES FTTx Line 2010

					Peso	Kg/km		Kg/caja				
Descripción					Tipo FO	Nº FO	Φ Ext(mm)	Espec.Téc.	Bobina	Box 305	Box 500	Box 1000
INTERIOR ABONADO	Cable de fibra óptica CAS S100	G657A	1	2,9 ± 0,15	52021/02	7,00	4,00	5,50	9,00			
	Cable de fibra óptica CAS S105	G657A	1	3,6 ± 0,1	52021/02	14,00	6,00	9,00	16,00			
	Cable de fibra óptica CAS S105	G657A	2	3,6 ± 0,2	52021/02	14,00	6,00	9,00	16,00			
	Cable de fibra óptica CAS S100	G652D	1	2,9 ± 0,15	52021/02	7,00	4,00	5,50	9,00			
	Cable de fibra óptica CAS S105	G652D	1	3,6 ± 0,1	52021/02	14,00	6,00	9,00	16,00			
	Cable de fibra óptica CAS S105	G652D	2	3,6 ± 0,2	52021/02	14,00	6,00	9,00	16,00			
	Cable de fibra óptica CAS FLAT F100	G657A	2	2 × 3 ± 0,2	52020/02	7,60	4,00	6,00	9,50			
	Cable de fibra óptica CAS FLAT F100	G652D	2	2 × 3 ± 0,2	52020/02	7,60	4,00	6,00	9,50			

INT/EXT	Cable de fibra óptica CAR R100	G657A	1	4,6 ± 0,2	52022/02	25,00	9,50	14,50			
	Cable de fibra óptica CAR R200	G657A	1	2,5 × 5,2 ± 0,2	52023	13,00	6,00	8,50			
	Cable de fibra óptica CAR R200	G657A	2	2,5 × 5,2 ± 0,2	52023	13,00	6,00	8,50			
	Cable de fibra óptica CAR R100	G652D	1	4,6 ± 0,2	52022/02	25,00	9,50	14,50			
	Cable de fibra óptica CAR R200	G652D	1	2,5 × 5,2 ± 0,2	52023	13,00	6,00	8,50			
	Cable de fibra óptica CAR R200	G652D	2	2,5 × 5,2 ± 0,2	52023	13,00	6,00	8,50			

CABLES FTTx Line 2010

					Peso	Kg/km		Kg/caja							
Descripción					Tipo FO	Nº FO	Φ Ext(mm)	Espec.Téc.	Bobina	Box 100	Box 150	Box 200	Box 250	Box 305	Box 500
INTERIOR ACOMETIDA VERTICAL	Cable de fibra óptica CDV V100	G657A	2	4,9 ± 0,3	53010/01	23,00						8,00	9,00	13,50	
	Cable de fibra óptica CDV V100	G657A	4	5,5 ± 0,3	53010/01	28,00						8,00	9,00	10,50	
	Cable de fibra óptica CDV V100	G657A	6	6,2 ± 0,3	53010/01	38,00					8,00	9,50	11,50	13,50	
	Cable de fibra óptica CDV V100	G657A	8	6,9 ± 0,3	53010/01	46,00	6,50	9,00	11,00	13,50					
	Cable de fibra óptica CDV V100	G657A	12	7,9 ± 0,3	53010/01	59,00	8,00	11,00	14,00						
	Cable de fibra óptica CDV V100	G652D	2	4,9 ± 0,3	53010/01	23,00							8,00	9,00	13,50
	Cable de fibra óptica CDV V100	G652D	4	5,5 ± 0,3	53010/01	28,00						8,00	9,00	10,50	
	Cable de fibra óptica CDV V100	G652D	6	6,2 ± 0,3	53010/01	38,00					8,00	9,50	11,50	13,50	
	Cable de fibra óptica CDV V100	G652D	8	6,9 ± 0,3	53010/01	46,00	6,50	9,00	11,00	13,50					
	Cable de fibra óptica CDV V100	G652D	12	7,9 ± 0,3	53010/01	59,00	8,00	11,00	14,00						