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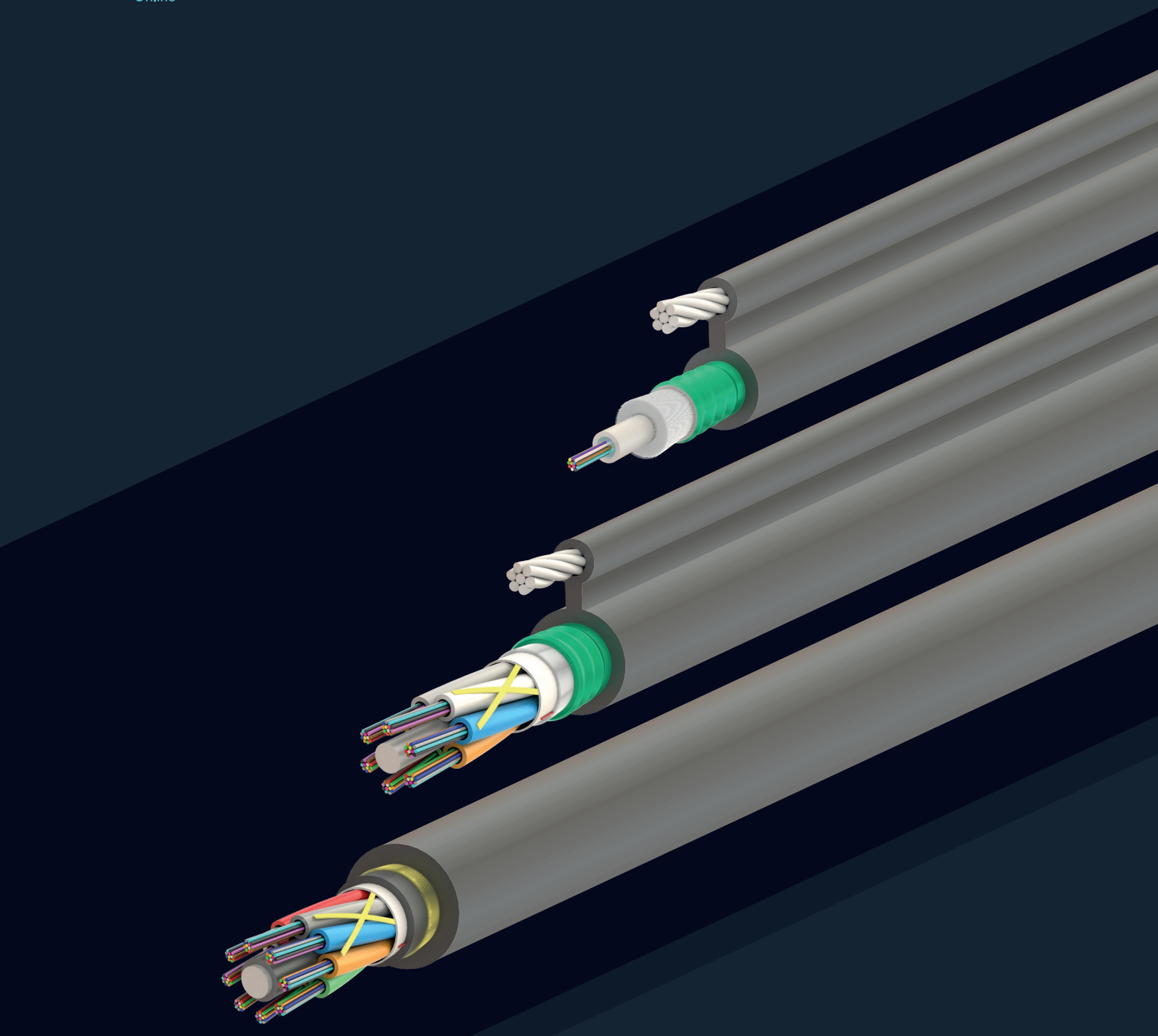
FIBER OPTIC CABLES

samm teknoloji



AERIAL

Founded in 2003, SAMM Technology offers cutting-edge products and services in the fields of telecommunication infrastructure and data center by producing in line with the expectations and needs of its customers.

With more than 20 years of experience, SAMM Technology has become one of the important suppliers of Europe in terms of capacity, technology and innovation by continuously investing in production, technology, R&D and people.

SAMM Teknoloji produces high performance fiber optic cables, fiber optic cable assemblies, data center infrastructure products and structured cabling solutions in its two factories located in the Gosb/Gebze industrial zone.

SAMM also has a ministry-approved research and development center since 2017.

20+ Years' Experience

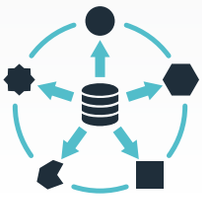
With more than 200 employees and 2 factories, we have achieved several significant projects in telecommunication fiber optic infrastructure.

World Class Production

With systematic and scientific methods, we always focus on reaching the highest quality in our fiber optic cable production and assembly lines.

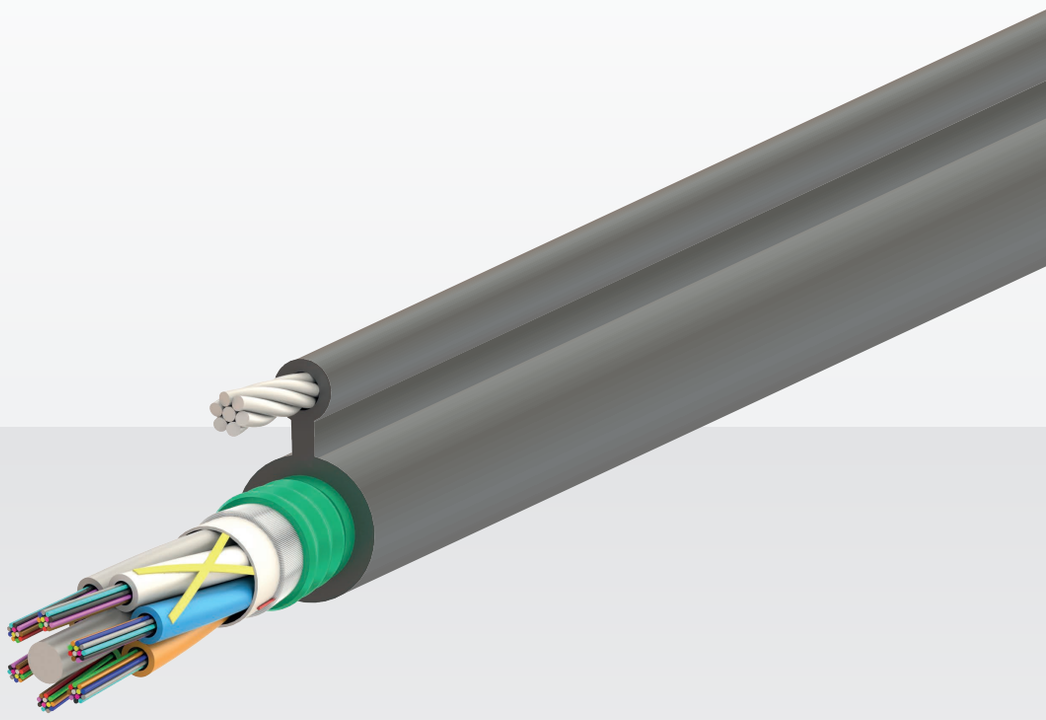
Connecting Continents

An advantageous shipping location, at the intersection of Asia, Europe and the Middle-East.



Innovative Solutions

We are passionate about responding to customer demand and keeping pace with the ever-evolving telecommunication and fiber optic technologies.



AERIAL FIBER OPTIC CABLES

Single-mode Fiber Specifications

Optical Characteristics of Single-mode Fiber

	Conditions	Unit	E9/125			
			G.652.D	G.657.A1	G.657.A2	G.657.B3
Attenuation typical (in cable)	1310 nm	dB/km	≤ 0.34	≤ 0.35	≤ 0.35	≤ 0.35
	1383 nm	dB/km	≤ 0.34	≤ 0.35	≤ 0.35	≤ 0.35
	1550 nm	dB/km	≤ 0.20	≤ 0.21	≤ 0.21	≤ 0.21
	1625 nm	dB/km	≤ 0.24	≤ 0.23	≤ 0.23	≤ 0.23
Attenuation maximum (in cable)	1310 nm	dB/km	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40
	1383 nm	dB/km	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40
	1550 nm	dB/km	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
	1625 nm	dB/km	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
Cable cut-off wavelength λcc	standard	nm	≤ 1260	≤ 1260	≤ 1260	≤ 1260
Chromatic dispersion	1285 - 1330 nm	ps/nm × km	≤ 3.50	≤ 3.50	≤ 3.50	≤ 3.50
	1550 nm	ps/nm × km	≤ 18	≤ 18	≤ 18	≤ 18
Zero dispersion wavelength λo	-	-	1300 - 1324	1300 - 1324	1300 - 1324	1300 - 1324
Zero dispersion slope S0 at λo	-	-	≤ 0.092	≤ 0.092	≤ 0.092	≤ 0.092
Polarisation mode dispersion	link value	ps/√km	≤ 0.06	≤ 0.06	≤ 0.06	≤ 0.06
	individual	ps/√km	≤ 0.10	≤ 0.10	≤ 0.10	≤ 0.10
Mode-field diameter	1310 nm	µm	8.7 - 9.5	8.4 - 9.2	8.4 - 9.2	8.2 - 9.0
	1550 nm	µm	9.8 - 10.8	9.3 - 10.3	9.3 - 10.3	9.1 - 10.1
Macrobending loss r = 5.0 mm, 1 turn	1550 nm	dB	-	-	-	≤ 0.15
	1625 nm	dB	-	-	-	≤ 0.45
Macrobending loss r = 7.5 mm, 1 turn	1550 nm	dB	-	-	≤ 0.50	≤ 0.08
	1625 nm	dB	-	-	≤ 1.0	≤ 0.25
Macrobending loss r = 10 mm, 1 turn	1550 nm	dB	-	≤ 0.75	≤ 0.1	≤ 0.03
	1625 nm	dB	-	≤ 1.50	≤ 0.2	≤ 0.1
Macrobending loss r = 15 mm, 10 turn	1550 nm	dB	-	≤ 0.25	≤ 0.03	≤ 0.02
	1625 nm	dB	-	≤ 1.00	≤ 0.1	≤ 0.05
Macrobending loss r = 16/30 mm, 1/100 turn	1550 nm	dB	≤ 0.05	-	-	-
	1625 nm	dB	≤ 0.05	-	-	-

Geometrical Characteristics

	Unit	E9/125			
		G.652.D	G.657.A1	G.657.A2	G.657.B3
Cladding diameter	µm	125 ± 0.7	125 ± 0.7		
Coating diameter (uncoloured)	µm	235-250	235-245		
Concentricity error core/cladding	µm	≤ 0.6	≤ 0.5		
Concentricity error cladding/coating	µm	≤ 12.0	≤ 12.0		
Cladding non-circularity	%	≤ 1.0	≤ 0.7		
Coating non-circularity	%	≤ 6.0	≤ 6.0		

Mechanical and Environmental characteristics

	Unit	E9/125			
		G.652.D	G.657.A1	G.657.A2	G.657.B3
Tensile proof test (fiber elongation ≤ 1 %)	N (kpsi)	≥ 9.0 (100)			
Operation temperature range −60 to 85 °C (1310, 1550 and 1625 nm)	Δ dB/km	≤ 0.05			
Water immersion 23 °C for 30 days (1310, 1550 and 1625 nm)	Δ dB/km	≤ 0.05			

Specifications

	E9/125			
	G.652.D	G.657.A1	G.657.A2	G.657.B3
Standards	ITU-T G.652.D IEC 60793-2-50 B-652.D	ITU-T G.657.A1 IEC 60793-2-50 B-657.A1	ITU-T G.657.A2 IEC 60793-2-50 B-657.A2	ITU-T G.657.B3 IEC 60793-2-50 B-657.B3

Multi-mode Fiber Specifications

Optical Characteristics of Multi-mode Fiber

	Conditions	Unit	G62.5/125	G50/125				
			OM1	OM2	OM2+	OM3	OM4	OM5
Effective Modal Bandwidth	850 nm	MHz × km	N/A	N/A	950	2000	4700	4700
Overfilled Modal Bandwidth	850 nm	MHz × km	200	500	700	1500	3500	3500
	1300 nm	MHz × km	500	500	500	500	500	500
1000BASE-SR	850 nm	m	275	500	750	1000	1100	N/S
10GBASE-SR	850 nm	m	N/S	83	150	300	550	N/S
40GBASE-SR4 / 100GBASE-SR10	850 nm	m	N/A	N/A	N/A	140	170	200
Bending loss at 850/1300 nm	r= 37.5 mm	dB	0.5/0.5	0.1/0.2				
	r= 15.0 mm	dB	-	0.1/0.3				
	r= 7.5 mm	dB	-	0.2/0.5				
Attenuation typical (in cable)	850 nm	dB/km	2.6	2.3				
	1300 nm	dB/km	0.5	0.5				
Attenuation maximum (in cable)	850 nm	dB/km	≤ 3	≤ 2.7				
	1300 nm	dB/km	≤ 1.0	≤ 1.0				
Numerical aperture	-	-	0.275±0.015	0.200 ± 0.015				

Geometrical Characteristics

	Unit	G62.5/125	G50/125				
		OM1	OM2	OM2+	OM3	OM4	OM5
Core diameter	µm	62.5 ± 2.5	50 ± 2.5				
Cladding diameter	µm	125 ± 1	125 ± 1				
Coating diameter	µm	245 ± 7	242 ± 7				
Concentricity error core/cladding	µm	≤ 1.5	≤ 1.0				
Core non-circularity	µm	≤ 5.0	≤ 5.0				
Cladding non-circularity	%	≤ 1.0	≤ 1.0				
Coating non-circularity	%	≤ 6.0	≤ 6.0				

Mechanical and Environmental Characteristics

	Unit	G62.5/125	G50/125				
		OM1	OM2	OM2+	OM3	OM4	OM5
Coating strip force (Typical/Peak)	N	1.0 to 3.0 / 1.3 to 8.9					
Tensile proof test at fiber elongation ≤ 1 %	N (kpsi)	≥ 9.0 (100)					
Temperature range max. Δ 0.1 dB/km 850/1300 nm	°C	−60 to +85					
Water immersion max. Δ 0.2 dB/km 850/1300 nm	-	23 °C more than 30 days					

Specifications

	G62.5/125	G50/125				
	OM1	OM2	OM2+	OM3	OM4	OM5
Standards	IEC 60793-2-10	IEC 60793-2-10 (ITU-T G.651.1)				
	A1-OM1	A1-OM2b	A1-OM2b	A1-OM3b	A1-OM4b	A1-OM5b

Fiber Optic Color Coding

Fiber Color Coding

ANSI/TIA-598 (Samm Standard)

Number	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

DIN VDE V 0888-100-1-1

Number	1	2	3	4	5	6	7	8	9	10	11	12
Color	Red	Green	Blue	Yellow	White	Gray	Brown	Violet	Aqua	Black	Orange	Pink

IEC 60794-2

Number	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Yellow	Red	White	Green	Violet	Orange	Gray	Aqua	Black	Brown	Pink

Note: If the color sequence is repeated for fibers 13-24, the fibers are marked with black stripes or dashes.

Tube Color Coding

ANSI/TIA-598 (Samm Standard)

Number	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Notes:

- If the color sequence is repeated for fibers 13-24, the fibers are marked with black stripes or dashes.
- If loose tubes are devided into layers, the tube colors restart from 1 for each layer.

Color Abbrivation According to IEC-60757

Abb.	BU	OG	GN	BN	GY	WH	RD	BK	YE	VT	PK	AQ
Color	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Standard Jacket Colors

Abb.	OG	GY	WH	BK	YE	VT	AQ	LG
Color	Orange	Gray	White	Black	Yellow	Violet	Aqua	Lime Green

Fiber Optic Cable Design Coding Guide

Design Number	=	A_1	B_1	C_1	D_1	E_1

Desing Number Example: 30121901

Design Code	=	A_2	-	B_2	C_2	D_2	-	E_2

Desing Code Example: A-D1Q(ZN-GY)(SR)2Y-1D250

A_1	A_2	Description
1	I	Indoor
2	U	Indoor&Outdoor
3	A	Outdoor
4	IT	Indoor Breakout / Multi Tube
5	UT	Indoor&Outdoor Breakout / Multi Tube
6	AT	Outdoor Breakout / Multi Tube

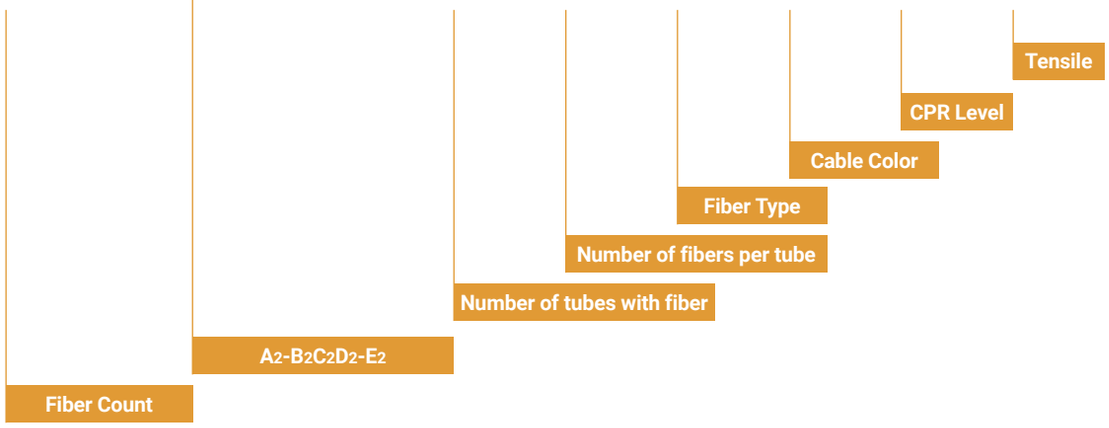
B_2	B_1	Description
00		No Tube
01	D1	Gel-Filled Loose Tube-PBT
02	D2	Gel-Filled Loose Tube-PC+PBT
03	D3	Gel-Filled Loose Tube-PA
04	D4	Gel-Filled Loose Tube-LSZH
05	D5	Gel-Filled Loose Tube-PBT-FR
06	B1	Gel-Free Loose Tube-LSZH
07	B2	Gel-Free Loose Tube-PP
08	B3	Gel-Free Loose Tube-LSZH (with Aramid)
09	B4	Gel-Free Loose Flex-LSZH
10	VS9	Semi-Tight Buffer 900 mic LSZH
11	VT6	Tight Buffer 600 mic LSZH
12	VT9	Tight Buffer 900 mic LSZH
13	WS9	Semi-Tight Buffer 900 mic TPE-E
14	WT6	Tight Buffer 600 mic TPE-E
15	WT9	Tight Buffer 900 mic TPE-E
16	PS9	Semi-Tight Buffer 900 mic PA
17	PT6	Tight Buffer 600 mic PA
18	PT9	Tight Buffer 900 mic PA

C_1	C_2	Description
0		Non-Loose Tbe
1	F	Gel-Filled Core
2	Q	Dry Core

E_1	E_2	Description
00		Non-Loose-Tube
01	1D250	1 Gel-filled Loose Tube 2.5 mm
02	1D300	1 Gel-filled Loose Tube 3.0 mm
03	6D200	6 Gel-filled Loose Tube 2.0 mm
04	8D200	8 Gel-filled Loose Tube 2.0 mm
05	12D200	12 Gel-filled Loose Tube 2.0 mm
06	18D200	18 Gel-filled Loose Tube 2.0 mm
07	18D280	18 Gel-filled Loose Tube 2.8 mm
08	24D200	24 Gel-filled Loose Tube 2.0 mm
09	6D170	6 Gel-filled Loose Tube 1.7 mm
10	8D170	8 Gel-filled Loose Tube 1.7 mm
11	12D170	12 Gel-filled Loose Tube 1.7 mm
12	24D170	24 Gel-filled Loose Tube 1.7 mm
13	6D140	6 Gel-filled Loose Tube 1.4 mm
14	8D140	8 Gel-filled Loose Tube 1.4 mm
15	12D140	12 Gel-filled Loose Tube 1.4 mm
16	24D140	24 Gel-filled Loose Tube 1.4 mm
17	24D190	24 Gel-filled Loose Tube 1.9 mm
18	1B250	1 Gel-free Loose Tube 2.5 mm
19	1B300	1 Gel-free Loose Tube 3.0 mm
20	4B200	4 Gel-free Loose Tube 2.0 mm
21	6B200	6 Gel-free Loose Tube 2.0 mm
22	6B250	6 Gel-free Loose Tube 2.5 mm
23	1S200	1 Steel Spiral Tube 2.0 mm
24	1S290	1 Steel Spiral Tube 2.9 mm
25	2U200	2 Simplex Tube 2.0 mm
26	4U200	4 Simplex Tube 2.0 mm
27	6U200	6 Simplex Tube 2.0 mm
28	8U200	8 Simplex Tube 2.0 mm
29	10U200	10 Simplex Tube 2.0 mm
30	12U200	12 Simplex Tube 2.0 mm
31	16U200	16 Simplex Tube 2.0 mm
32	18U200	18 Simplex Tube 2.0 mm
33	20U200	20 Simplex Tube 2.0 mm
34	24U200	24 Simplex Tube 2.0 mm
35	5B200	5 Gel-free Loose Tube 2.0 mm
36	4B250	4 Gel-free Loose Tube 2.5 mm
37	1U060	1 Tight Tube 0.6 mm
38	2U060	2 Tight Tube 0.6 mm
39	1U090	1 Tight Tube 0.9 mm
40	2U090	2 Tight Tube 0.9 mm
41	4U090	4 Tight Tube 0.9 mm
42	6U090	6 Tight Tube 0.9 mm
43	8U090	8 Tight Tube 0.9 mm
44	12U090	12 Tight Tube 0.9 mm
45	16U090	16 Tight Tube 0.9 mm
46	18U090	18 Tight Tube 0.9 mm
47	20U090	20 Tight Tube 0.9 mm
48	22U090	22 Tight Tube 0.9 mm
49	24U090	24 Tight Tube 0.9 mm
50	6D230	6 Gel-filled Loose Tube 2.3 mm
51	8D230	8 Gel-filled Loose Tube 2.3 mm
52	6D250	6 Gel-filled Loose Tube 2.3 mm
53	8D250	8 Gel-filled Loose Tube 2.3 mm
54	1B090	1 Flex tube 0.9 mm
55	1B105	1 Flex tube 1.05 mm
56	1B110	1 Flex tube 1.10 mm
57	5B300	5 Gel-free Loose Tube 3.0 mm
58	6B300	6 Gel-free Loose Tube 3.0 mm
59	12B300	12 Gel-free Loose Tube 3.0 mm
60	8U400	8 MTBO LSZH Tube
61	8B300	8 Gel-free Loose Tube 3.0 mm
62	X	No Tube
63	4B300	4 Gel-free Loose Tube 3.0 mm

Fiber Optic Cable Order Coding Guide

Ordering Code = 000F - Design Code - 00 x 00 - G - H - I - J



Ordering Code Example: 012F-A-D1Q(ZN-GY)(SR)2Y-1D250-1x12-2D-BK-Fca-1.2kN

D_1	D_2	Description
00		
01	Y	PVC sheath
02	H	LSZH sheath
03	2Y	PE sheath
04	4Y	PA sheath
05	11Y	PUR sheath
06	(L)2Y	Aluminium multi-layer under PE sheath
07	(SR)2Y	Corrugated steel tape reinforcement under PE sheath
08	(SR)H	Corrugated steel tape reinforcement under LSZH sheath
09	(ZN-AY)2Y	Aramid yarn under PE sheath
10	(ZN-GY)2Y	Glass yarn under PE sheath
11	(ZN-AY)H	Aramid yarn under LSZH sheath
12	(ZN-GY)H	Glass yarn under LSZH sheath
13	(ZM)H	Metallic strain relief element under LSZH sheath
14		
15	(ZN-GY)B2Y	Glass yarn and rodent protection under PE sheath
16	(ZN-AY)H	Aramid yarn and rodent protection under LSZH sheath
17	(ZN-GY)BH	Glass yarn and rodent protection under LSZH sheath
18	(ZN-AY)(SR)2Y	Aramid yarn and corrugated steel tape under PE sheath
19	(ZN-GY)(SR)2Y	Glass yarn and corrugated steel tape under PE sheath
20	(ZN-AY)(SR)H	Aramid yarn and corrugated steel tape under LSZH sheath
21	(ZN-GY)(SR)H	Glass yarn and corrugated steel tape under LSZH sheath
22	-SH	Steel wire for aerial application
23	(ZN-2S)H	Steel strength member under LSZH sheath
24	(ZN-2S)HT	Steel strength member+steel messenger under LSZH sheath
25	(ZN-2P)H	FRP strength member under LSZH sheath
26	(ZN-2P)HT	FRP strength member+steel messenger under LSZH sheath
27	(ZN-AY)HH	Aramid yarn under double LSZH sheath
28	(ZN-GY)HH	Glass yarn under double LSZH sheath
29	(ZN-AY)H(ZN-AY)H	Aramid yarn under LSZH sheath, under, aramid yarn under LSZH sheath
30	(ZN-AY)H(ZN-GY)H	Aramid yarn under LSZH sheath, under, glass yarn under LSZH sheath
31	(ZN-GY)H(ZN-GY)H	Glass yarn under LSZH sheath, under, glass yarn under LSZH sheath
32	(ZN-GY)2Y(SR)2Y	Glass yarn under PE sheath, under, corrugated steel tape under PE sheath
33	(ZN-GY)2YT	Glass yarn under PE sheath with Steel Messenger
34	(ZN-GY)(SR)2YT	Glass yarn and corrugated steel tape under PE sheath with Steel Messenger
35	2Y(ZN-AY)2Y	PE sheath, under, aramid yarn under PE sheath
36	(ZN-AY)H(ZN-GY)BH	Aramid yarn under LSZH sheath, under, glass yarn and rodent protection under LSZH sheath
37	(ZN-AY)H(ZN-GY)H (ZN-GY)BH	Aramid yarn under LSZH sheath, under, glass yarn under LSZH sheath, under, glass yarn and rodent protection under LSZH sheath
38	(ZN-AY)11Y	Aramid yarn under PUR sheath
39	(ST)(ZN-AY)H	Steel Spiral Tube and aramid yarn under lszh sheath
40	(ST)(SB)H	Steel Spiral tube and Steel baraiding under LSZH sheath
41	(ZN-AY)H(ZN-GY)H	Aramid yarn under LSZH sheath, under, glass yarn under LSZH sheath
42	2Y(ZN-AY)2Y+ATR	PE sheath,under, aramid yarn, under anti track ressistance PE sheath
43	(ZN-AY)2Y+ATR	Aramid yarn, under anti track ressistance PE sheath

G	Fiber Type
2D	Single Mode G652.D
A1	Single Mode G657.A1
A2	Single Mode G657.A2
B3	Single Mode G657.B3
5D	Single Mode G655.D
M1	Multi Mode G651.OM1
M2	Multi Mode G651.OM2
M3	Multi Mode G651.OM3
M4	Multi Mode G651.OM4
M5	Multi Mode G651.OM5

H	Cable Color
BK	Black
YE	Yellow
OG	Orange
AQ	Aqua
VT	Violet
WH	White
IV	Ivory
BU	Blue
LG	Lime Green

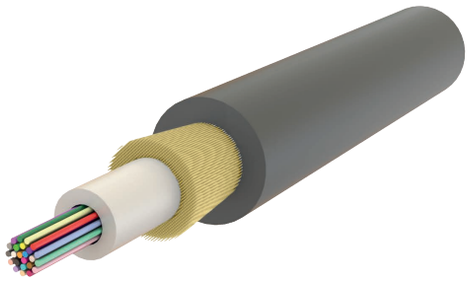
I	CPR Level
	B2ca
	Cca
	Dca
	Eca
	Fca

J	Tensile
	kN

CLT, ADSS, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

Design Type **A-D1Q(ZN-AY)2Y**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1



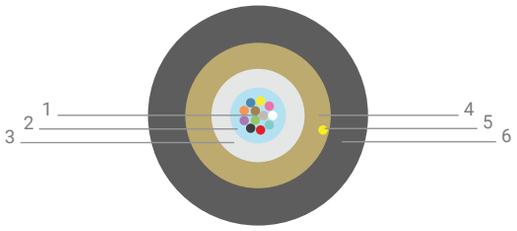


Fig.01 Scale 5:1

Properties

All-dielectric self-supporting (ADSS) cable
Designed for easy and economical one-step installation
Stable performance over a wide temperature range
Single-jacket design with multiple span distance options
Dry Water-blocking materials
One-step installation using standard hardware
Span distances are stated in the table below

Cable Construction

1	**Fiber**	SM/MM (250 µ)
2	**Tube Filling Compound**	Thixotropic Gel
3	**Loose Tube**	PBT
4	**Strength Member**	Aramid Yarn & Swellable Yarn
5	**Ripcord**	Polyester
6	**Outer Jacket**	UV Resistant HDPE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	-	IEC 60794-1-21-E1	1350 N (MAT)
Crush Resistance	-	IEC 60794-1-21-E3	1500 N/10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant

Span Properties

	NESC Light	NESC Medium	NESC Heavy
	Wind Speed: **25 m/s**, Ice Load: **0 mm**	Wind Speed: **17 m/s**, Ice Load: **6.5 mm**	Wind Speed: **7 m/s**, Ice Load: **12.5 mm**
	Extra Load: **0.07 kg/m**, Temp.: **-1 °C**	Extra Load: **0.25 kg/m**, Temp.: **-10 °C**	Extra Load: **0.44 kg/m**, Temp.: **-20 °C**
	Cable and Fiber Strain: **0.46%**	Cable and Fiber Strain: **0.46%**	Cable and Fiber Strain: **0.46%**
	Span Distance	**Span Distance**	**Span Distance**
Tube Count x Fiber Count	Installed Sag: **1.0%**, Max. Sag: **3.5%**	Installed Sag: **1.0%**, Max. Sag: **3.9%**	Installed Sag: **1.0%**, Max. Sag: **4.1%**
1x4	110 m	57 m	32 m
1x6	110 m	57 m	32 m
1x8	110 m	57 m	32 m
1x12	100 m	54 m	31 m
Tube Count x Fiber Count	Installed Sag: **2.0%**, Max. Sag: **4.3%**	Installed Sag: **2.0%**, Max. Sag: **4.5%**	Installed Sag: **2.0%**, Max. Sag: **4.5%**
1x4	131 m	64 m	36 m
1x6	131 m	64 m	36 m
1x8	131 m	64 m	36 m
1x12	120 m	62 m	34 m
Tube Count x Fiber Count	Installed Sag: **3.0%**, Max. Sag: **4.9%**	Installed Sag: **3.0%**, Max. Sag: **5.1%**	Installed Sag: **3.0%**, Max. Sag: **5.1%**
1x4	150 m	75 m	42 m
1x6	150 m	75 m	42 m
1x8	149 m	72 m	40 m
1x12	137 m	69 m	38 m

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
30120902	004F-A-D1Q(ZN-AY)2Y-1D300-1x4-..-BK-Fca-1.35kN	4	1	3.0	6.6	35
30120902	006F-A-D1Q(ZN-AY)2Y-1D300-1x6-..-BK-Fca-1.35kN	6	1	3.0	6.6	35
30120902	008F-A-D1Q(ZN-AY)2Y-1D300-1x8-..-BK-Fca-1.35kN	8	1	3.0	6.6	35
30120902	012F-A-D1Q(ZN-AY)2Y-1D300-1x12-..-BK-Fca-1.35kN	12	1	3.0	6.6	35

*** Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4**

Packaging

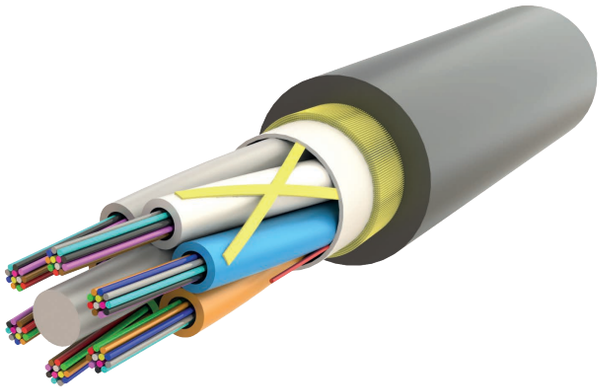
Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	800 mm	900 mm
Drum core diameter	500 mm	500 mm
Outside width	600 mm	650 mm

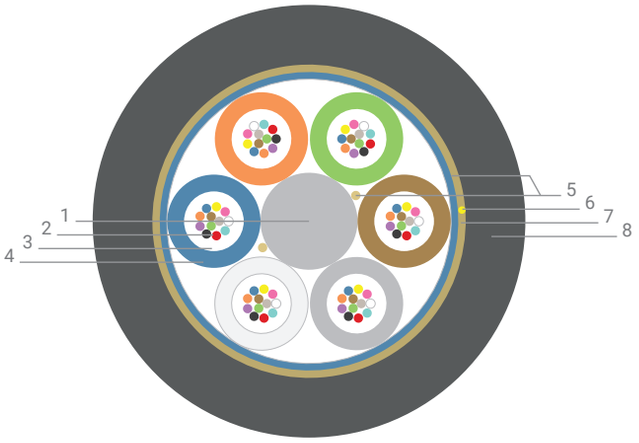
MLT, ADSS, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

Design Type **AT-D1Q(ZN-AY)2Y-6D230**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Aerial Applications | Water Resistant | Metal Free





Properties

All-dielectric self-supporting (ADSS) cable
Designed for easy and economical one-step installation
Stable performance over a wide temperature range
Single-jacket design with multiple span distance options
Dry Water-blocking materials
One-step installation using standard hardware
Span distances are stated in the table below

Cable Construction

1	**Central Strength Member**	FRP
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Strength Member**	Aramid Yarn
8	**Outer Jacket**	UV Resistant HDPE*

*Track resistance option is available for use with ≥ 25kV potential

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4500 N (MAT)
	In Service		3000 N (MOT)
Crush Resistance	-	IEC 60794-1-21-E3	2200 N/10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant

Span Properties

	NESC Light	NESC Medium	NESC Heavy
	Wind Speed: 25 m/s	Wind Speed: 17 m/s	Wind Speed: 17 m/s
	Ice Load: 0 mm	Ice Load: 6.5 mm	Ice Load: 12.5 mm
	Extra Load: 0.07 kg/m	Extra Load: 0.25 kg/m	Extra Load: 0.44 kg/m
	Installed Sag: 1.5%	Installed Sag: 1.5%	Installed Sag: 1.5%
Tube Count x Fiber Count	Span Distance	Span Distance	Span Distance
1x12	150 m	100 m	55 m
2x12	150 m	100 m	55 m
3x12	150 m	100 m	55 m
4x12	150 m	100 m	55 m
5x12	150 m	100 m	55 m
6x12	150 m	100 m	55 m

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60120950	012F-AT-D1Q(ZN-AY)2Y-6D230-1x12-..-BK-Fca-4.5kN	12	1	5	2.3	11.0	94
60120950	024F-AT-D1Q(ZN-AY)2Y-6D230-2x12-..-BK-Fca-4.5kN	24	2	4	2.3	11.0	95
60120950	036F-AT-D1Q(ZN-AY)2Y-6D230-3x12-..-BK-Fca-4.5kN	36	3	3	2.3	11.0	96
60120950	048F-AT-D1Q(ZN-AY)2Y-6D230-4x12-..-BK-Fca-4.5kN	48	4	2	2.3	11.0	97
60120950	060F-AT-D1Q(ZN-AY)2Y-6D230-5x12-..-BK-Fca-4.5kN	60	5	1	2.3	11.0	98
60120950	072F-AT-D1Q(ZN-AY)2Y-6D230-6x12-..-BK-Fca-4.5kN	72	6	0	2.3	11.0	99
60124350	012F-AT-D1Q(ZN-AY)2Y-ATR+6D230-1x12-..-BK-Fca-4.5kN	12	1	5	2.3	11.0	100
60124350	024F-AT-D1Q(ZN-AY)2Y-ATR+6D230-2x12-..-BK-Fca-4.5kN	24	2	4	2.3	11.0	101
60124350	036F-AT-D1Q(ZN-AY)2Y-ATR+6D230-3x12-..-BK-Fca-4.5kN	36	3	3	2.3	11.0	102
60124350	048F-AT-D1Q(ZN-AY)2Y-ATR+6D230-4x12-..-BK-Fca-4.5kN	48	4	2	2.3	11.0	103
60124350	060F-AT-D1Q(ZN-AY)2Y-ATR+6D230-5x12-..-BK-Fca-4.5kN	60	5	1	2.3	11.0	104
60124350	072F-AT-D1Q(ZN-AY)2Y-ATR+6D230-6x12-..-BK-Fca-4.5kN	72	6	0	2.3	11.0	105

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 072F-AT-D1Q(ZN-AY)2Y-ATR+6D230-6x12-2D-BK-Fca-4.5kN

* ATR stands for Anti-Track Resistance

Packaging

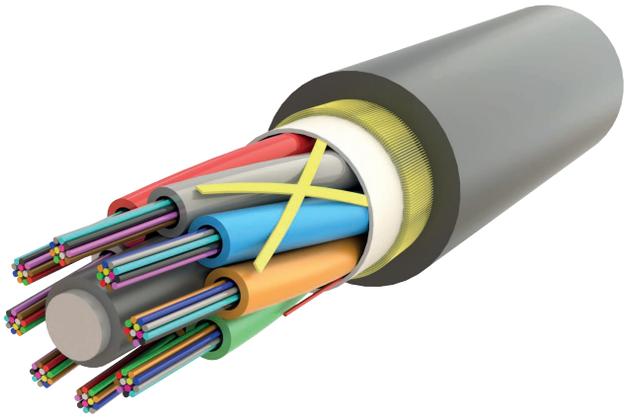
Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1100 mm	1200 mm
Drum core diameter	500 mm	600 mm
Outside width	650 mm	1000 mm

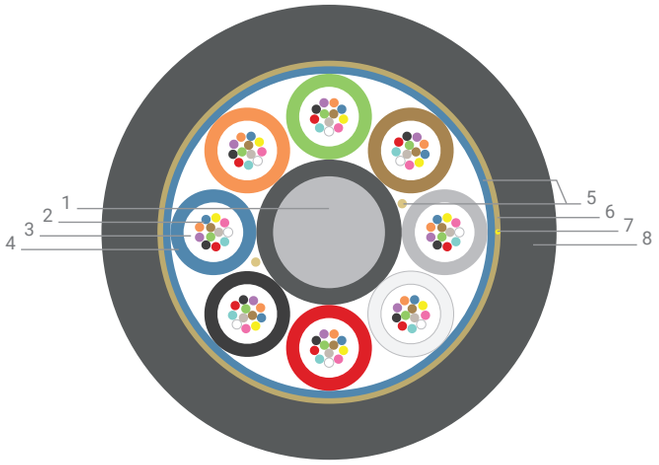
MLT, ADSS, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

Design Type **AT-D1Q(ZN-AY)2Y-8D230**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Aerial Applications | Water Resistant | Metal Free





Properties

All-dielectric self-supporting (ADSS) cable
Designed for easy and economical one-step installation
Stable performance over a wide temperature range
Single-jacket design with multiple span distance options
Dry Water-blocking materials
One-step installation using standard hardware
Span distances are stated in the table below

Cable Construction

1	**Central Strength Member**	FRP / PE Coating
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Strength Member**	Aramid Yarn
8	**Outer Jacket**	UV Resistant HDPE*

*Track resistance option is available for use with ≥ 25kV potential

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4500 N (MAT)
	In Service		3000 N (MOT)
Crush Resistance	-	IEC 60794-1-21-E3	2200 N/10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant

Span Properties

	NESC Light	NESC Medium	NESC Heavy
	Wind Speed: 25 m/s	Wind Speed: 17 m/s	Wind Speed: 17 m/s
	Ice Load: 0 mm	Ice Load: 6.5 mm	Ice Load: 12.5 mm
	Extra Load: 0.07 kg/m	Extra Load: 0.25 kg/m	Extra Load: 0.44 kg/m
	Installed Sag: 1.5%	Installed Sag: 1.5%	Installed Sag: 1.5%
Tube Count x Fiber Count	Span Distance	Span Distance	Span Distance
8x12	150 m	100 m	55 m

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60120951	096F-AT-D1Q(ZN-AY)2Y-8D230-8x12-..-BK-Fca-4.5kN	96	8	0	2.3	12.3	131
60124351	096F-AT-D1Q(ZN-AY)2Y-ATR+8D230-8x12-..-BK-Fca-4.5kN	96	8	0	2.3	12.3	138

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Sample Code: 096F-AT-D1Q(ZN-AY)2Y-ATR+8D230-8x12-2D-BK-Fca-4.5kN
* ATR stands for Anti-Track Resistance

Packaging

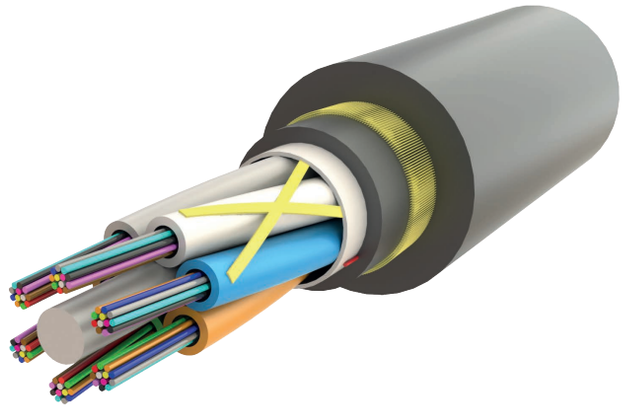
Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1000 mm	1300 mm
Drum core diameter	500 mm	500 mm
Outside width	1000 mm	1000 mm

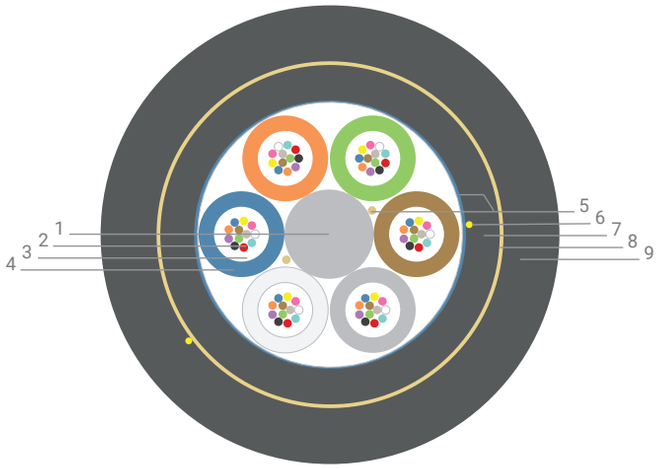
MLT, ADSS, Gel-Filled, Dry Core, Non-Armoured, DJ, PE

Design Type **AT-D1Q2Y(ZN-AY)2Y-6D250**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Aerial Applications | Water Resistant | Metal Free





Properties

All-dielectric self-supporting (ADSS) cable
Designed for easy and economical one-step installation
Stable performance over a wide temperature range
Double-jacket design with multiple long span distance options
Dry Water-blocking materials
One-step installation using standard hardware
Span distances are stated in the table below

Cable Construction

1	**Central Strength Member**	FRP
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Inner Jacket**	PE
8	**Strength Member**	Aramid Yarn
9	**Outer Jacket**	UV Resistant HDPE*

*Track resistance option is available for use with ≥ 25kV potential

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	7000 N (MAT)
	In Service		5000 N (MOT)
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant

Span Properties

	NESC Light	NESC Medium	NESC Heavy
	Wind Speed: 25 m/s	Wind Speed: 17 m/s	Wind Speed: 17 m/s
	Ice Load: 0 mm	Ice Load: 6.5 mm	Ice Load: 12.5 mm
	Extra Load: 0.07 kg/m	Extra Load: 0.25 kg/m	Extra Load: 0.44 kg/m
	Installed Sag: 1.5%	Installed Sag: 1.5%	Installed Sag: 1.5%
Tube Count x Fiber Count	Span Distance	Span Distance	Span Distance
1x12	250 m	180 m	100 m
2x12	250 m	180 m	100 m
3x12	250 m	180 m	100 m
4x12	250 m	180 m	100 m
5x12	250 m	180 m	100 m
6x12	250 m	180 m	100 m

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123552	012F-AT-D1Q2Y(ZN-AY)2Y-6D250-1x12-..-BK-Fca-7.0kN	12	1	5	2.5	13.0	133
60123552	024F-AT-D1Q2Y(ZN-AY)2Y-6D250-2x12-..-BK-Fca-7.0kN	24	2	4	2.5	13.0	133
60123552	036F-AT-D1Q2Y(ZN-AY)2Y-6D250-3x12-..-BK-Fca-7.0kN	36	3	3	2.5	13.0	132
60123552	048F-AT-D1Q2Y(ZN-AY)2Y-6D250-4x12-..-BK-Fca-7.0kN	48	4	2	2.5	13.0	131
60123552	060F-AT-D1Q2Y(ZN-AY)2Y-6D250-5x12-..-BK-Fca-7.0kN	60	5	1	2.5	13.0	130
60123552	072F-AT-D1Q2Y(ZN-AY)2Y-6D250-6x12-..-BK-Fca-7.0kN	72	6	0	2.5	13.0	129
60124252	012F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-1x12-..-BK-Fca-7.0kN	12	1	5	2.5	13.0	141
60124252	024F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-2x12-..-BK-Fca-7.0kN	24	2	4	2.5	13.0	140
60124252	036F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-3x12-..-BK-Fca-7.0kN	36	3	3	2.5	13.0	139
60124252	048F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-4x12-..-BK-Fca-7.0kN	48	4	2	2.5	13.0	138
60124252	060F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-5x12-..-BK-Fca-7.0kN	60	5	1	2.5	13.0	137
60124252	072F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-6x12-..-BK-Fca-7.0kN	72	6	0	2.5	13.0	136

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Sample Code: 072F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-6x12-2D-BK-Fca-7.0kN
* ATR stands for Anti-Track Resistance

Packaging

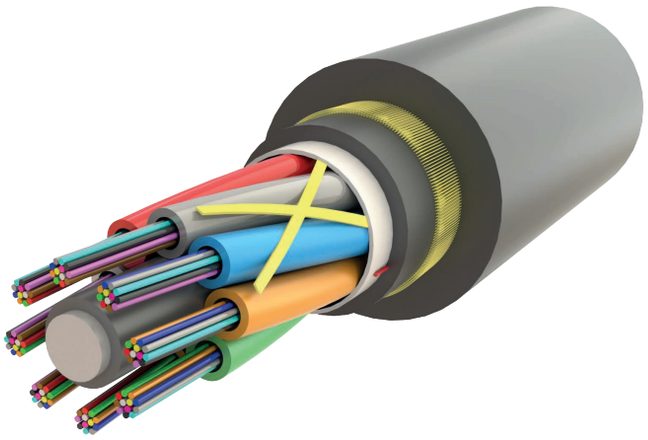
Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1100 mm	1400 mm
Drum core diameter	600 mm	600 mm
Outside width	1000 mm	1000 mm

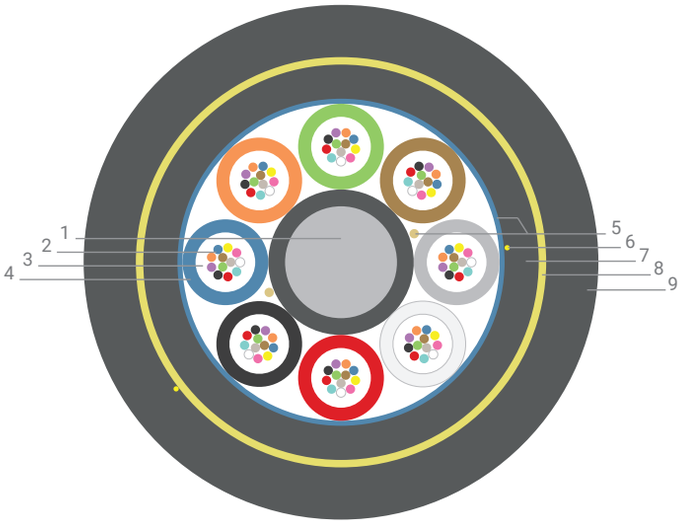
MLT, ADSS, Gel-Filled, Dry Core, Non-Armoured, DJ, PE

Design Type **AT-D1Q2Y(ZN-AY)2Y-8D250**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Aerial Applications | Water Resistant | Metal Free





Properties

All-dielectric self-supporting (ADSS) cable
Designed for easy and economical one-step installation
Stable performance over a wide temperature range
Double-jacket design with multiple long span distance options
Dry Water-blocking materials
One-step installation using standard hardware
Span distances are stated in the table below

Cable Construction

1	**Central Strength Member**	FRP
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Inner Jacket**	PE
8	**Strength Member**	Aramid Yarn
9	**Outer Jacket**	UV Resistant HDPE*

*Track resistance option is available for use with ≥ 25kV potential

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	6500 N (MAT)
	In Service		4500 N (MOT)
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant

Span Properties

	NESC Light	NESC Medium	NESC Heavy
	Wind Speed: 25 m/s	Wind Speed: 17 m/s	Wind Speed: 17 m/s
	Ice Load: 0 mm	Ice Load: 6.5 mm	Ice Load: 12.5 mm
	Extra Load: 0.07 kg/m	Extra Load: 0.25 kg/m	Extra Load: 0.44 kg/m
	Installed Sag: 1.5%	Installed Sag: 1.5%	Installed Sag: 1.5%
Tube Count x Fiber Count	Span Distance	Span Distance	Span Distance
8x12	250 m	180 m	100 m

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123553	096F-AT-D1Q2Y(ZN-AY)2Y-8D250-8x12-..-BK-Fca-6.5kN	96	8	0	2.5	14.5	165
60124253	096F-AT-D1Q2Y(ZN-AY)2Y-ATR+8D250-8x12-..-BK-Fca-6.5kN	96	8	0	2.5	14.5	173

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Sample Code: 072F-AT-D1Q2Y(ZN-AY)2Y-ATR+6D250-6x12-2D-BK-Fca-7.0kN
* ATR stands for Anti-Track Resistance

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1200 mm	1500 mm
Drum core diameter	600 mm	600 mm
Outside width	1000 mm	1000 mm

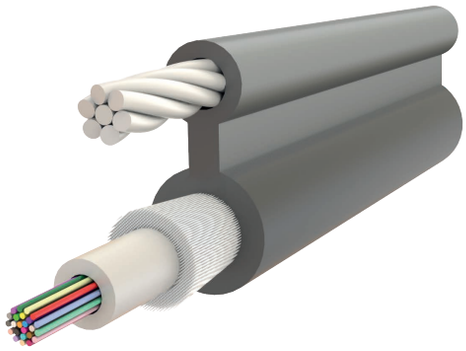
CLT, Fig-8, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

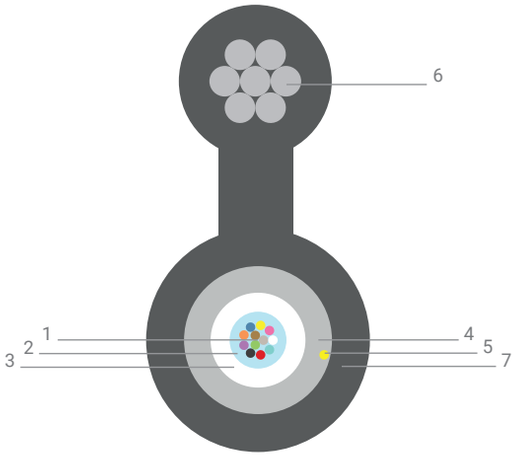
Design Type **A-D1Q(ZN-GY)2YT-1D300**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 24 Fiber

Cable Construction

1	**Fiber**	Single-mode or Multi-mode
2	**Tube Filling Material**	Thixotropic Gel
3	**Loose Tube**	PBT
4	**Water Blocking**	Glass Yarn
5	**Ripcord**	Polyester
6	**Messenger**	Steel
7	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation In Service	IEC 60794-1-21-E1	1800 N 1100 N
Crush Resistance	-	IEC 60794-1-21-E3	1500 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
30123302	004F-A-D1Q(ZN-GY)2YT-1D300-1x4-..-BK-Eca-1.8kN	4	1	0	3.0	6.0 / 12.6	68
30123302	008F-A-D1Q(ZN-GY)2YT-1D300-1x8-..-BK-Eca-1.8kN	8	1	0	3.0	6.0 / 12.6	68
30123302	012F-A-D1Q(ZN-GY)2YT-1D300-1x12-..-BK-Eca-1.8kN	12	1	0	3.0	6.0 / 12.6	68
30123302	024F-A-D1Q(ZN-GY)2YT-1D300-1x24-..-BK-Eca-1.8kN	24	1	0	3.0	6.0 / 12.6	68

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 012F-A-D1Q(ZN-GY)2YT-1D300-1x12-2D-BK-Eca-1.8kN

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	900 mm	1000 mm
Drum core diameter	500 mm	500 mm
Outside width	650 mm	1000 mm

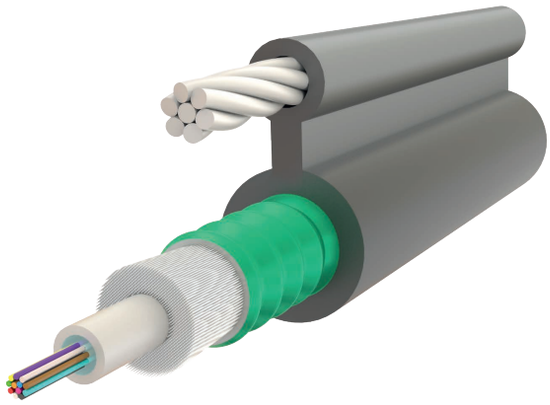
CLT, Fig-8, Gel-Filled, Dry Core, Steel Armoured, SJ, PE

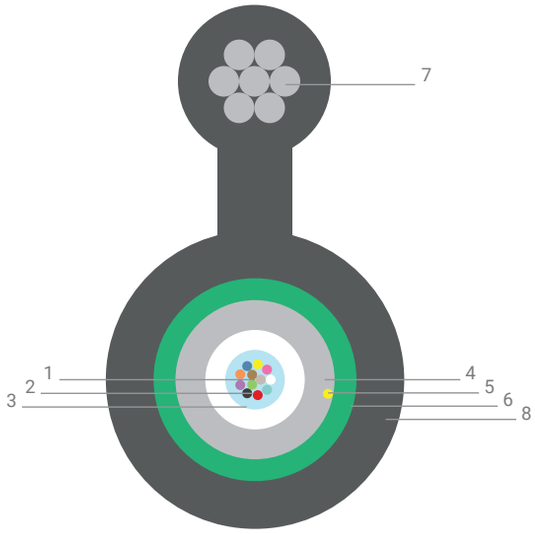
Design Type **A-D1Q(ZN-GY)(SR)2YT-1D300**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 24 Fiber

Cable Construction

1	**Fiber**	Single-mode or Multi-mode
2	**Tube Filling Material**	Thixotropic Gel
3	**Loose Tube**	PBT
4	**Water Blocking**	Glass Yarn
5	**Ripcord**	Aramid
6	**Armoured Material**	Corrugated Steel
7	**Messenger**	Steel
8	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	2000 N
	In Service		1000 N
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=20J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
30123402	004F-A-D1Q(ZN-GY)(SR)2YT-1D300-1x4-..-BK-Fca-2.0kN	4	1	0	3.0	7.8 / 14.4	103
30123402	008F-A-D1Q(ZN-GY)(SR)2YT-1D300-1x8-..-BK-Fca-2.0kN	8	1	0	3.0	7.8 / 14.4	103
30123402	012F-A-D1Q(ZN-GY)(SR)2YT-1D300-1x12-..-BK-Fca-2.0kN	12	1	0	3.0	7.8 / 14.4	103
30123402	024F-A-D1Q(ZN-GY)(SR)2YT-1D300-1x24-..-BK-Fca-2.0kN	24	1	0	3.0	7.8 / 14.4	103

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 012F-A-D1Q(ZN-GY)(SR)2YT-1D300-1x12-2D-BK-Fca-2.0kN

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1000 mm	1100 mm
Drum core diameter	500 mm	500 mm
Outside width	650 mm	1000 mm

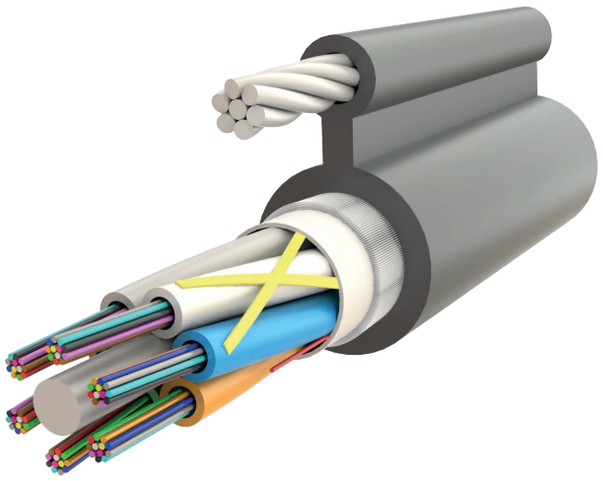
MLT, Fig-8, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

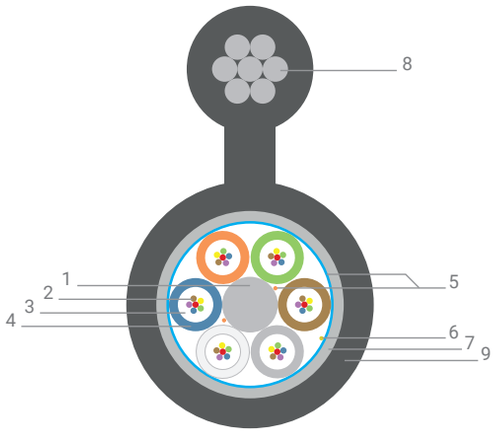
Design Type **AT-D1Q(ZN-GY)2YT-6D200**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 72 Fiber

Cable Construction

1	**Central Strength Member**	FRP
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Strength Member**	Swellable Glass Yarn
8	**Messenger**	Steel
9	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4000 N
	In Service		2000 N
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123303	008F-AT-D1Q(ZN-GY)2YT-6D200-1x8-..-BK-Fca-4.0kN	8	1	5	2.0	9.8 / 17.6	136
60123303	008F-AT-D1Q(ZN-GY)2YT-6D200-2x4-..-BK-Fca-4.0kN	8	2	4	2.0	9.8 / 17.6	137
60123303	008F-AT-D1Q(ZN-GY)2YT-6D200-4x2-..-BK-Fca-4.0kN	8	4	2	2.0	9.8 / 17.6	137
60123303	012F-AT-D1Q(ZN-GY)2YT-6D200-1x12-..-BK-Fca-4.0kN	12	1	5	2.0	9.8 / 17.6	136
60123303	012F-AT-D1Q(ZN-GY)2YT-6D200-6x2-..-BK-Fca-4.0kN	12	6	0	2.0	9.8 / 17.6	140
60123303	016F-AT-D1Q(ZN-GY)2YT-6D200-2x8-..-BK-Fca-4.0kN	16	2	4	2.0	9.8 / 17.6	137
60123303	016F-AT-D1Q(ZN-GY)2YT-6D200-4x4-..-BK-Fca-4.0kN	16	4	2	2.0	9.8 / 17.6	138
60123303	024F-AT-D1Q(ZN-GY)2YT-6D200-2x12-..-BK-Fca-4.0kN	24	2	4	2.0	9.8 / 17.6	137
60123303	024F-AT-D1Q(ZN-GY)2YT-6D200-6x4-..-BK-Fca-4.0kN	24	6	0	2.0	9.8 / 17.6	140
60123303	048F-AT-D1Q(ZN-GY)2YT-6D200-4x12-..-BK-Fca-4.0kN	48	4	2	2.0	9.8 / 17.6	139
60123303	048F-AT-D1Q(ZN-GY)2YT-6D200-6x8-..-BK-Fca-4.0kN	48	6	0	2.0	9.8 / 17.6	140
60123303	072F-AT-D1Q(ZN-GY)2YT-6D200-6x12-..-BK-Fca-4.0kN	72	6	0	2.0	9.8 / 17.6	140

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 072F-AT-D1Q(ZN-GY)2YT-6D200-6x12-2D-BK-Fca-4.0kN

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1000 mm	1300 mm
Drum core diameter	500 mm	500 mm
Outside width	1000 mm	1000 mm

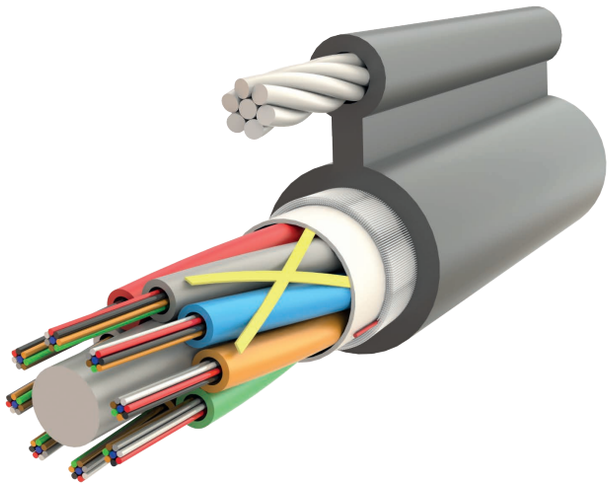
MLT, Fig-8, Gel-Filled, Dry Core, Non-Armoured, SJ, PE

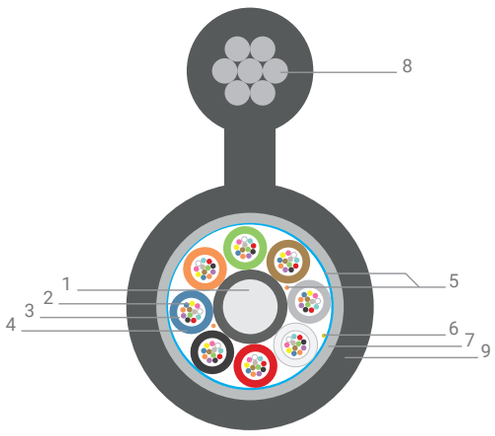
Design Type **AT-D1Q(ZN-GY)2YT-8D200**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 96 Fiber

Cable Construction

1	**Central Strength Member**	FRP / PE Coating
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Polyester
7	**Strength Member**	Swellable Glass Yarn
8	**Messenger**	Steel
9	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4000 N
	In Service		2000 N
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123304	096F-AT-D1Q(ZN-GY)2YT-8D200-8x12-..-BK-Eca-4.0kN	96	8	0	2.0	11.2 / 18.7	165

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 096F-AT-D1Q(ZN-GY)2YT-8D200-8x12-2D-BK-Fca-4.0kN

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1100 mm	1500 mm
Drum core diameter	500 mm	600 mm
Outside width	1000 mm	1000 mm

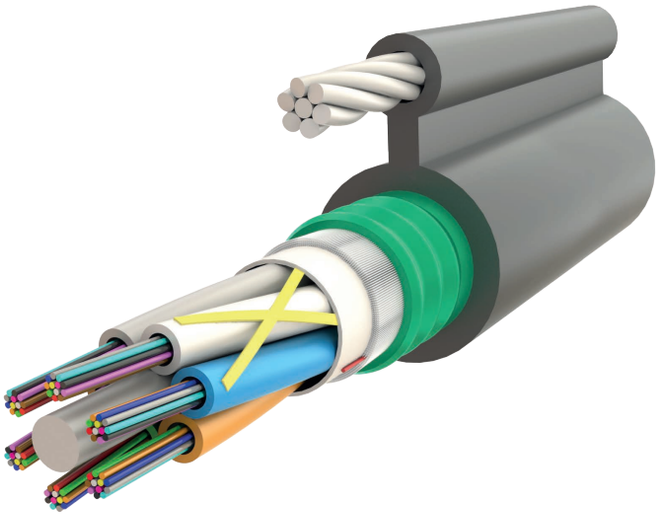
MLT, Fig-8, Gel-Filled, Dry Core, Steel Armoured, SJ, PE

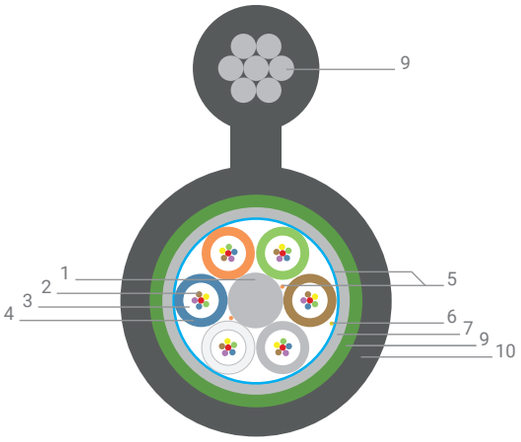
Design Type **AT-D1Q(ZN-GY)(SR)2YT-6D200**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Corrugated Steel Armoured
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 72 Fiber

Cable Construction

1	**Central Strength Member**	FRP / PE Coating
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Aramid
7	**Strength Member**	Swellable Glass Yarn
8	**Armoured Material**	Corrugated Steel
9	**Messenger**	Steel
10	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4000 N
	In Service		2000 N
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=20J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123403	008F-AT-D1Q(ZN-GY)(SR)2YT-6D200-1x8-..-BK-Fca-4.0kN	8	1	5	2.0	11.2 / 19.0	184
60123403	008F-AT-D1Q(ZN-GY)(SR)2YT-6D200-2x4-..-BK-Fca-4.0kN	8	2	4	2.0	11.2 / 19.0	185
60123403	008F-AT-D1Q(ZN-GY)(SR)2YT-6D200-4x2-..-BK-Fca-4.0kN	8	4	2	2.0	11.2 / 19.0	186
60123403	012F-AT-D1Q(ZN-GY)(SR)2YT-6D200-1x12-..-BK-Fca-4.0kN	12	1	5	2.0	11.2 / 19.0	184
60123403	012F-AT-D1Q(ZN-GY)(SR)2YT-6D200-6x2-..-BK-Fca-4.0kN	12	6	0	2.0	11.2 / 19.0	188
60123403	016F-AT-D1Q(ZN-GY)(SR)2YT-6D200-2x8-..-BK-Fca-4.0kN	16	2	4	2.0	11.2 / 19.0	185
60123403	016F-AT-D1Q(ZN-GY)(SR)2YT-6D200-4x4-..-BK-Fca-4.0kN	16	4	2	2.0	11.2 / 19.0	186
60123403	024F-AT-D1Q(ZN-GY)(SR)2YT-6D200-2x12-..-BK-Fca-4.0kN	24	2	4	2.0	11.2 / 19.0	185
60123403	024F-AT-D1Q(ZN-GY)(SR)2YT-6D200-6x4-..-BK-Fca-4.0kN	24	6	0	2.0	11.2 / 19.0	188
60123403	048F-AT-D1Q(ZN-GY)(SR)2YT-6D200-4x12-..-BK-Fca-4.0kN	48	4	2	2.0	11.2 / 19.0	187
60123403	048F-AT-D1Q(ZN-GY)(SR)2YT-6D200-6x8-..-BK-Fca-4.0kN	48	6	0	2.0	11.2 / 19.0	188
60123403	072F-AT-D1Q(ZN-GY)(SR)2YT-6D200-6x12-..-BK-Fca-4.0kN	72	6	0	2.0	11.2 / 19.0	189

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 072F-AT-D1Q(ZN-GY)(SR)2YT-6D200-6x12-2D-BK-Fca-4.0kN

Packaging

Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1100 mm	1500 mm
Drum core diameter	500 mm	600 mm
Outside width	1000 mm	1000 mm

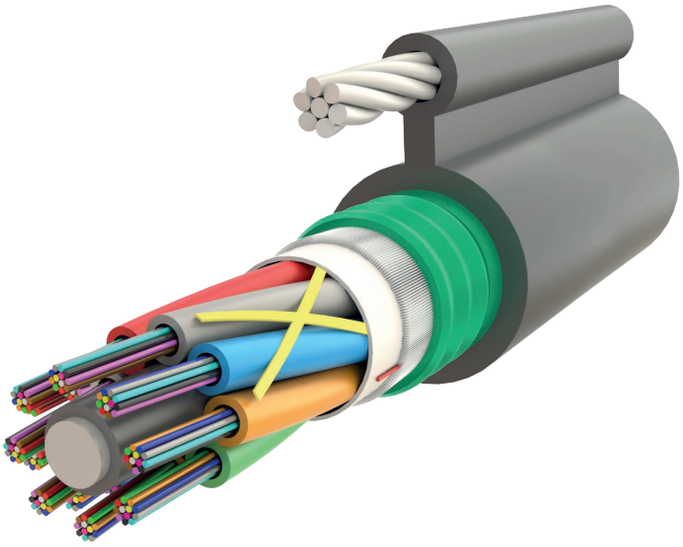
MLT, Fig-8, Gel-Filled, Dry Core, Metallic Armoured, SJ, PE

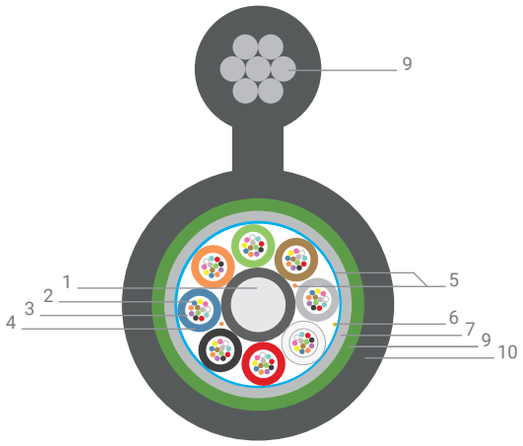
Design Type **AT-D1Q(ZN-GY)(SR)2YT-8D200**

Standards: IEC 60794-1 / IEC 60794-6 / IEC 60793-1

Anti-Rodent Protection

Water Resistant





Properties

Aerial cable with steel messenger
Corrugated Steel Armoured
Glass yarn strength member
Gel-Filled loose tube
Low fire load for high safety requirements
Longitudinal and transversal water resistant cable
Has a ripcord for easy stripping
Up to 96 Fiber

Cable Construction

1	**Central Strength Member**	FRP / PE Coating
2	**Fiber**	Single-mode or Multi-mode
3	**Tube Filling Material**	Thixotropic Gel
4	**Loose Tube**	PBT
5	**Water Blocking**	Tape & Yarn
6	**Ripcord**	Aramid
7	**Strength Member**	Swellable Glass Yarn
8	**Armoured Material**	Corrugated Steel
9	**Messenger**	Steel
10	**Outer Jacket**	UV Resistant PE

Identification

Print Color	White	(length marking 1 m intervals)
Sub-Unit Identification	Tube Coloring and Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation	IEC 60794-1-21-E1	4000 N
	In Service		2000 N
Crush Resistance	-	IEC 60794-1-21-E3	2200 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=20J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-30 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +80 °C
Water Penetration	3 meter specimen,1 m water altitude	IEC 60794-1-22-F5B	No leakage in 24 hours
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Fca

Ordering Codes

Design Number	Order Code	Fiber Count	Tube Count	Filler Count	Tube Diameter (mm) nom.	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
60123404	096F-AT-D1Q(ZN-GY)(SR)2YT-8D200-8x12-..-BK-Eca-4.0kN	96	8	0	2.0	12.5 / 20.0	215

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4

* Sample Code: 096F-AT-D1Q(ZN-GY)2YT-8D200-8x12-2D-BK-Fca-4.0kN

Packaging

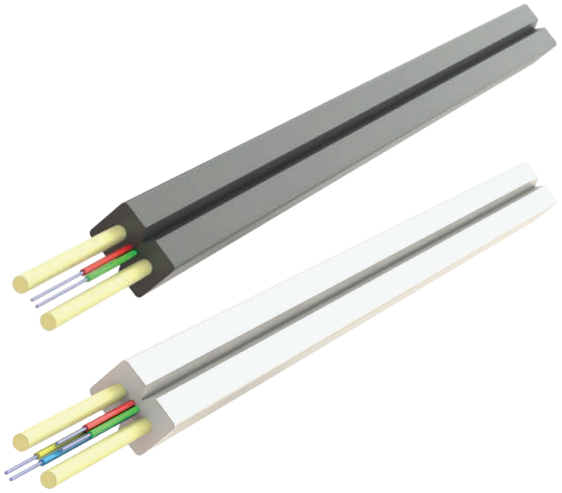
Drum length/Tolerance	2000 m ± 5%	4000 m ± 5%
Drum Flange diameter	1200 mm	1600 mm
Drum core diameter	600 mm	600 mm
Outside width	1000 mm	1000 mm

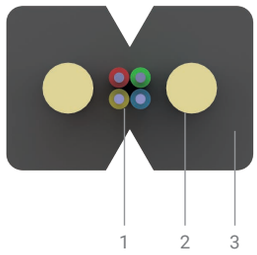
Flat Drop Cable | FRP Strength Member

Design Type **U-(ZN-2P)H**

Standards: IEC 60794-1 / IEC 60794-4 / IEC 60793-1

Flame Retardant | All Dry Materials | Metal Free





Properties

Metal free indoor and outdoor cable
Halogen free and non-corrosive fire gases
Low fire load for high safety requirements

Cable Construction

1	**Fiber**	SM/MM (250 µ)
2	**Strength Member**	FRP ø 0.5 mm
3	**Outer Jacket**	UV Resistant LSZH

Identification

Print Color	White or Black	(length marking 1 m intervals)
Sub-Unit Identification	Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation In Service	IEC 60794-1-21-E1	100 N 40 N
Crush Resistance	-	IEC 60794-1-21-E3	4000 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-5 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +70 °C
Fire Propagation	Vertical single cable	IEC 60332-1-2	passed
Smoke Density	-	IEC 61034-2	passed
Halogen Acid Gas	Jacket material	IEC 60754-1	passed
Degree of Acidity	Jacket material	IEC 60754-2	passed
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Eca

Ordering Codes

Design Number	Order Code	Fiber Count	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
20002500	001F-U-(ZN-2P)H-1x1-..-..-Eca	1	2.0x3.0	8
20002500	002F-U-(ZN-2P)H-1x2-..-..-Eca	2	2.0x3.0	8
20002500	004F-U-(ZN-2P)H-1x4-..-..-Eca	4	2.0x3.0	8

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Available colors are White, Black
* Sample Code: 002F-U-(ZN-2P)H-1x2-A2-BK-Eca

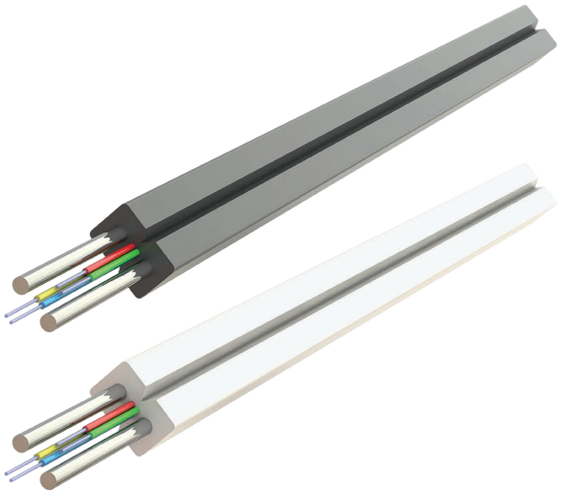
Flat Drop Cable | Steel Strength Member

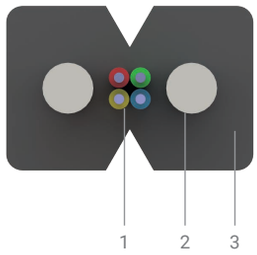
Design Type **U-(ZN-2S)H**

Standards: IEC 60794-1 / IEC 60794-4 / IEC 60793-1

Flame Retardant

All Dry Materials





Properties

Indoor and outdoor cable
Halogen free and non-corrosive fire gases
Low fire load for high safety requirements

Cable Construction

1	**Fiber**	SM/MM (250 µ)
2	**Strength Member**	Steel ø 0.5 mm
3	**Outer Jacket**	UV Resistant LSZH

Identification

Print Color	White or Black	(length marking 1 m intervals)
Sub-Unit Identification	Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation In Service	IEC 60794-1-21-E1	200 N 100 N
Crush Resistance	-	IEC 60794-1-21-E3	4000 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-5 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +70 °C
Fire Propagation	Vertical single cable	IEC 60332-1-2	passed
Smoke Density	-	IEC 61034-2	passed
Halogen Acid Gas	Jacket material	IEC 60754-1	passed
Degree of Acidity	Jacket material	IEC 60754-2	passed
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Eca

Ordering Codes

Design Number	Order Code	Fiber Count	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
20002300	001F-U-(ZN-2S)H-1x1-..-..-Eca	1	2.0x3.0	10
20002300	002F-U-(ZN-2S)H-1x2-..-..-Eca	2	2.0x3.0	10
20002300	004F-U-(ZN-2S)H-1x4-..-..-Eca	4	2.0x3.0	10

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Available colors are White, Black
* Sample Code: 002F-U-(ZN-2S)H-1x2-A2-BK-Eca

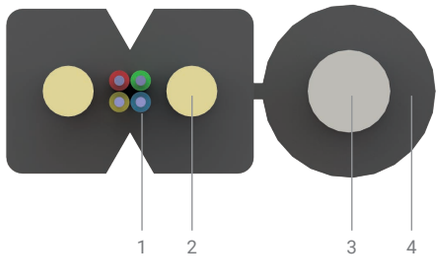
Flat Drop Cable | FRP Strength Member with Messenger

Design Type **U-(ZN-2P)HT**

Standards: IEC 60794-1 / IEC 60794-4 / IEC 60793-1

Flame Retardant

All Dry Materials



Properties

Indoor and outdoor cable with steel messenger
Halogen free and non-corrosive fire gases
Low fire load for high safety requirements

Cable Construction

1	**Fiber**	SM/MM (250 µ)
2	**Strength Member**	FRP ø 0.5 mm
3	**Messenger**	Steel ø 1.0 mm
4	**Outer Jacket**	UV Resistant LSZH

Identification

Print Color	White or Black	(length marking 1 m intervals)
Sub-Unit Identification	Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation In Service	IEC 60794-1-21-E1	600 N 300 N
Crush Resistance	-	IEC 60794-1-21-E3	4000 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180º, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-5 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +70 °C
Fire Propagation	Vertical single cable	IEC 60332-1-2	passed
Smoke Density	-	IEC 61034-2	passed
Halogen Acid Gas	Jacket material	IEC 60754-1	passed
Degree of Acidity	Jacket material	IEC 60754-2	passed
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Eca

Ordering Codes

Design Number	Order Code	Fiber Count	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
20002600	001F-U-(ZN-2P)HT-1x1-..-..-Eca	1	2.0x5.2	18
20002600	002F-U-(ZN-2P)HT-1x2-..-..-Eca	2	2.0x5.2	18
20002600	004F-U-(ZN-2P)HT-1x4-..-..-Eca	4	2.0x5.2	18

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Available colors are White, Black
* Sample Code: 002F-U-(ZN-2P)HT-1x2-A2-BK-Eca

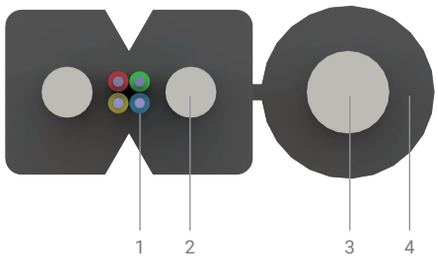
Flat Drop Cable | Steel Strength Member with Messenger

Design Type **U-(ZN-2S)HT**

Standards: IEC 60794-1 / IEC 60794-4 / IEC 60793-1

Flame Retardant

All Dry Materials



Properties

Indoor and outdoor cable with steel messenger
Halogen free and non-corrosive fire gases
Low fire load for high safety requirements

Cable Construction

1	**Fiber**	SM/MM (250 µ)
2	**Strength Member**	Steel ø 0.5 mm
3	**Messenger**	Steel ø 1.0 mm
4	**Outer Jacket**	UV Resistant LSZH

Identification

Print Color	White or Black	(length marking 1 m intervals)
Sub-Unit Identification	Fiber Coloring; According to coloring code (ANSI/TIA-598)	
Cable Printing	SAMM, Design Type, Fiber Count, Fiber Type, WO Number, Date, Meter	

Mechanical Properties

Test	Conditions	Test Standard	Specified Value
Tensile Force	Installation In Service	IEC 60794-1-21-E1	800 N 400 N
Crush Resistance	-	IEC 60794-1-21-E3	4000 N / 10 cm
Impact	-	IEC 60794-1-21-E4	Wp=10J, R:30cm, 3 impacts
Repeated Bending	-	IEC 60794-1-21-E6	R= 20 x D, 25 cycles
Torsion	-	IEC 60794-1-21-E7	L:1 m, ±180°, 5 cycles
Cable Bending	-	IEC 60794-1-21-E11A	R= 20 x D, 4 turns, 3 cycles

Environmental Properties

Property	Conditions	Test Standard	Result / Value
Temperature Range	Installation	-	-5 to +50 °C
	In Service		-40 to +70 °C
	Storage		-40 to +70 °C
Fire Propagation	Vertical single cable	IEC 60332-1-2	passed
Smoke Density	-	IEC 61034-2	passed
Halogen Acid Gas	Jacket material	IEC 60754-1	passed
Degree of Acidity	Jacket material	IEC 60754-2	passed
2011/65/EC (RoHS)	-	-	compliant
(EU) No 305/2011 (CPR)	-	EN 50575	Eca

Ordering Codes

Design Number	Order Code	Fiber Count	Cable Diameter (mm) nom.	Cable Weight (Kg/Km) nom.
20002400	001F-U-(ZN-2S)HT-1x1-..-..-Eca	1	2.0x5.2	20
20002400	002F-U-(ZN-2S)HT-1x2-..-..-Eca	2	2.0x5.2	20
20002400	004F-U-(ZN-2S)HT-1x4-..-..-Eca	4	2.0x5.2	20

* Available fiber types are G652.D, G657.A1, G657.A2, G651.OM2, G651.OM3, G651.OM4
* Available colors are White, Black
* Sample Code: 002F-U-(ZN-2S)HT-1x2-A2-BK-Eca

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