FIBER OPTIC CABLE · ADSS-S

ADSS-S

All-Dielectric Self-Supporting Aerial Cable — Single Jacket

G.652D / G.655 · 2–288 cores · aerial on HV towers

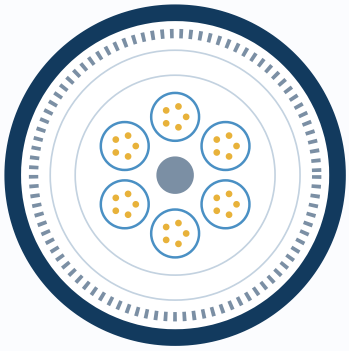
PRODUCT DESCRIPTION

ADSS-S is an all-dielectric self-supporting cable for aerial installation on live power lines. The stranded loose tube core is built on an FRP central member, wrapped with a PE inner sheath, reinforced with two contra-helically stranded layers of aramid yarn and finished with a single PE outer sheath. Because the cable carries no metal, it can be installed on energised circuits and needs no earthing; the aramid yarn volume is selected per project to match the required span and mechanical load.

KEY FEATURES

- Installed on energised lines — no outage, no earthing, no induction path
- Aramid yarn quantity matched to span, ice and wind load per project
- PE sheath for 10–35 kV lines; track-resistant AT sheath for 110–220 kV
- Small diameter and low weight reduce ice build-up and tower loading
- Design service life above 30 years

Other fibre types, core counts and sheath compounds are available on request — see the ordering information on page 2.



Cross-section — schematic, not to scale

Outer sheath, PE / AT
Aramid yarn layers
Inner PE sheath / loose tube
250 µm fibre

GENERAL SPECIFICATIONS

CABLE TYPE	**ADSS-S**
APPLICATION	**Aerial on 10–220 kV towers · River and valley crossings**
STANDARDS	**YD/T 980 · IEC 60794-4 · IEEE 1222**
TEMPERATURE	**-40 °C to +60 °C**
SHEATH OPTIONS	**PE · AT**

CABLE CONSTRUCTION

Central strength member	FRP rod, non-metallic
Loose tube	PBT, gel-filled, max. 12 fibres per tube
Core assembly	Tubes and fillers stranded around the FRP rod
Inner sheath	PE over the stranded core
Reinforcement	Aramid yarn, two contra-helical layers, sized per span
Outer sheath	PE (10–35 kV) or track-resistant AT (110–220 kV)

Options: AT (track-resistant) sheath · dry core · core counts above 144 built to order · matched aramid design for non-standard spans.

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STRUCTURE AND DIMENSIONS

Cable OD (mm)	Weight, PE sheath (kg/km)	Weight, AT sheath (kg/km)	Daily average tension (kN)	Max. working tension (kN)	RTS (kN)	Aramid area (mm²)	E (kN/mm²)	CTE (×10⁻⁶/K)
12.5	125	136	1.5	4	10	4.6	7.6	1.8
13.0	132	142	2.25	6	15	7.6	8.3	1.5
13.3	137	148	3.0	8	20	10.35	9.45	1.3
13.6	145	156	3.6	10	24	13.8	10.8	1.2
13.8	147	159	4.5	12	30	14.3	11.8	1.0
14.5	164	177	5.4	15	36	18.4	13.6	0.9
14.9	171	185	6.75	18	45	22.0	16.4	0.6
15.1	179	193	7.95	22	53	26.4	18.0	0.3
15.5	190	204	9.0	26	60	32.2	19.1	0.1
15.6	194	208	10.5	28	70	33.0	19.6	0.1
16.3	211	226	12.75	34	85	40.0	20.1	0.1
16.8	226	242	15.45	41	103	48.0	24.0	-0.4
17.2	236	253	16.2	45	108	51.0	25.1	-0.5
17.9	249	266	18.0	50	120	58.8	26.1	-0.8

CORE COUNT	TEMPERATURE	SHEATH
2–288	**-40 to +60**	**PE / AT**
cores	°C	by line voltage

SUITABLE SPAN BY LOAD ZONE (M)

Cable OD (mm)	Zone A 25 m/s, 0 mm ice	Zone B 35 m/s, 0 mm ice	Zone C 10 m/s, 5 mm ice	Zone D 10 m/s, 10 mm ice
12.5	160	100	140	100
13.0	230	150	200	150
13.3	300	200	290	200
13.6	370	250	350	250
13.8	420	280	400	280
14.5	480	320	460	320
14.9	570	380	550	380
15.1	670	460	650	460
15.5	750	530	750	510
15.6	800	560	800	560
16.3	880	650	880	650
16.8	1000	750	1000	760
17.2	1100	800	1100	830
17.9	1180	880	1180	900

Zone A
Wind 25 m/s
Ice 0 mm
Load 0.7 N/m

Zone B
Wind 35 m/s
Ice 0 mm
Load 0.7 N/m

Zone C
Wind 10 m/s
Ice 5 mm
Load 2.5 N/m

Zone D
Wind 10 m/s
Ice 10 mm
Load 4.4 N/m

> Suitable span is set by cable OD, not core count. The OD is fixed on the order drawing — confirm it before applying this table.
> Values assume equal tower heights and 1 % installation sag. Other spans on request.

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OPTICAL CHARACTERISTICS

Fibre type	Attenuation 1310 nm (dB/km) typ. / max	Attenuation 1550 nm (dB/km) typ. / max	Cut-off λcc (nm)	Remark
G.652D	0.36 / 0.50	0.22 / 0.40	≤ 1260	Low water peak, full band 1260–1625 nm
G.655	0.40 / 0.50	0.23 / 0.40	≤ 1450	Non-zero dispersion shifted, for DWDM backbone
G.657A1/A2	0.36 / 0.50	0.22 / 0.40	≤ 1260	Bend insensitive, min. bend radius 10 mm

> Attenuation measured at +20 °C on cabled fibre, before splicing. Multimode fibre (OM1–OM4) available on request.

INSTALLATION GUIDELINES

- String under tension control with a dynamometer; never exceed the daily average tension listed above.
- Minimum sheave diameter 40 × cable OD; line sheaves every 30–40 m on straight runs.
- Fit anti-twist devices at every tower and every 300–500 m to stop the aramid layers untwisting.
- Use a cable stocking for pulling — never clamp a wire rope directly onto the sheath.
- Set sag from the installation chart at the prevailing temperature; the span table assumes 1 % sag.
- AT sheath is mandatory above 110 kV. The attachment side is fixed by the field-strength calculation.

TYPE TESTS

Test	Method	Acceptance
Tensile strength	IEC 60794-1-21 E1	Rated load applied, no fibre strain, Δα ≤ 0.05 dB
Crush	IEC 60794-1-21 E3	Rated load applied, Δα ≤ 0.05 dB after recovery
Impact	IEC 60794-1-21 E4	10 impacts, 4.5 J, R300 mm, Δα ≤ 0.05 dB
Temperature cycling	IEC 60794-1-22 F1	−40 °C to +70 °C, 2 cycles, Δα ≤ 0.05 dB/km
Water penetration	IEC 60794-1-22 F5B	1 m head, 24 h, no water at the far end

ORDERING INFORMATION

Order code: **ADSS-[cores]Xn-[fibre type]-[sheath]-[OD].** Example: ADSS-48Xn-G652D-AT-Ø15.6. State the line voltage, span, ice and wind load, sag limit and attachment height so the aramid lay length and sheath compound can be matched. Standard drum length 2 km, 3 km or 4 km.

> Nominal values, subject to normal manufacturing tolerances.
>
> Core counts and fibre types outside the table are built to order — weight, tensile and bending data confirmed on the order drawing.

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