> FiberWay™ Product Overview

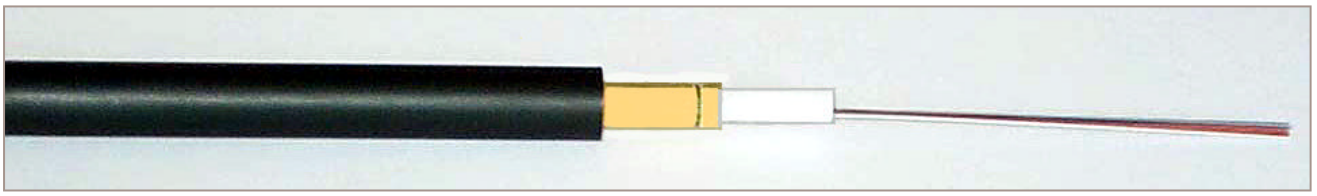
Application	Features Design	Dry Core	Rodent Protection		Termite Protection	Moisture Barrier	Oil resistant	Self-Supporting	Designed for Mini Ducts
			dielectric	metallic					
Duct & Buried	A-DQ(ZN)2Y...LG FWLT##-#001 SLT design	■							
	A-DQ(BN)2Y...LG FWLT##-#003 SLT design	■	■						
	A-DQ(ZN)2Y4Y...LG FWLT##-#004 SLT design	■			■		■		
	A-DQ(ZN)(L)2Y...LG FWLT##-#002 SLT design	■				■			
	A-DQ(ZN)(SR)2Y...LG FWLT##-#005 SLT design	■		■					
	A-DQ(ZN)2Y(SR)2Y...LG FWLT##-#006 SLT design	■		■					
	A-D(ZM)(SG)2Y FWCT##-#001 CT design			■					
	Mini Xtend SLT FWML##-#001 SLT design	■							■
	Mini Xtend CT FWMC##-#001 CT design								■
Aerial	A-D(T)2Y 5,4 mm^2 FWAC##-#001 ADSS, CT design							■	
	A-D(T)2Y 7,2 mm^2 FWAC##-#002 ADSS, CT design							■	
	A-D(T)2Y 15 mm^2 FWAC##-#003 ADSS, CT design							■	
	A-DQT2Y...LG FWFL##-#001 Figure-8, SLT design	■							

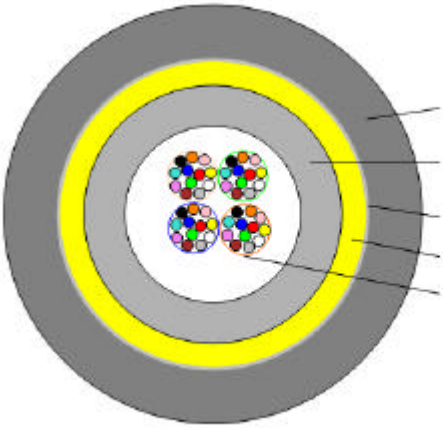
■ =>The product conforms to the listed feature.

All Dielectric Self Supporting Aerial Cable (ADSS)

telecom application, central tube design, non-metallic

A-D(T)2Y 5.4 mm²





Applications

- Aerial self supporting
- Installation along wooden or concrete poles or lattice towers
- Suitable for railway or telecommunication links

Special features

- Minimised loads due to small diameter and low weight
- Proven design; resistant to severe environmental conditions
- Close control of excess fibre length during manufacture provides wide operational range
- All dielectric construction

Test procedures to IEC 60793-1 and 60794-1-2

- Tensile strength
- Impact resistance
- Crush resistance
- Bending characteristics
- Temperature cycling
- Aolian vibration

Temperature range

Laying and installation	–5ºC to 50ºC
Operation	–30ºC to 70ºC
Transport and storage	–40ºC to 70ºC

Color code for fibers/fiber units:Telcordia (Bellcore)

Standard attenuation values for standard single-mode fiber according to ITU-T G.652.D

- 1310 nm: 0,36 dB / km
- 1550 nm: 0,22 dB / km

Product data

Ordering number	Number of fibers	Fibers per bundle	Number of fibers per bundle	OuterØ (mm)	Net weight (kg/km)	Tensile rating-MAT*-(N) *Max. allowable tensile strength	Min. bending radius during installation (mm)
FWAC01-S0012-U001	12	12	1	9.6	70	4200	163
FWAC01-S0024-U001	24	12	2	10.8	92	4800	185
FWAC01-S0036-U001	36	12	3	10.8	92	4800	185
FWAC01-S0048-U001	48	12	4	10.8	92	4800	185

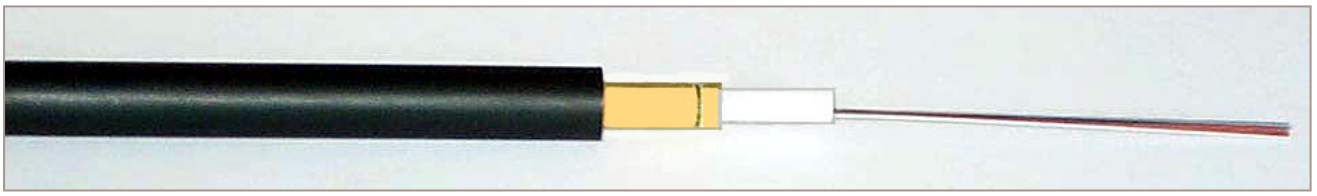
Typical maximum span length 70m depending on environmental conditions.

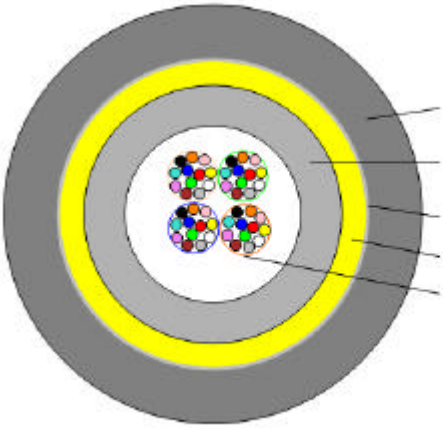
Other attenuation values, fiber counts, fiber types, cable designs and color codes on request.

All Dielectric Self Supporting Aerial Cable (ADSS)

telecom application, central tube design, non-metallic

A-D(T)2Y 7.2 mm²





Applications

- Aerial self supporting
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- Suitable for railway or telecommunication links

Special features

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Product data

Ordering number	Number of fibers	Fibers per bundle	Number of fibers per bundle	OuterØ (mm)	Net weight (kg/km)	Tensile rating-MAT*-(N) *Max. allowable tensile strength	Min. bending radius during installation (mm)
FWAC01-S0012-U002	12	12	1	9.6	71	5600	163
FWAC01-S0024-U002	24	12	2	10.8	88	6400	185
FWAC01-S0036-U002	36	12	3	10.8	88	6400	185
FWAC01-S0048-U002	48	12	4	10.8	88	6400	185
FWAC01-S0060-U002	60	12	5	12.7	118	5600	215
FWAC01-S0072-U002	72	12	6	12.7	118	5600	215
FWAC01-S0096-U002	96	12	8	12.7	118	5600	215
FWAC01-S0120-U002	120	12	10	14.5	155	5600	245
FWAC01-S0144-U002	144	12	12	14.5	155	5600	245

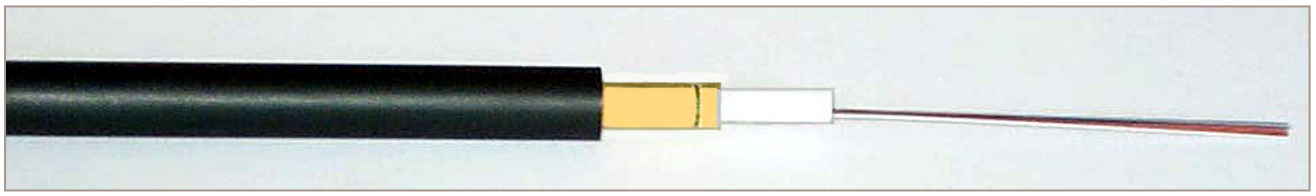
Typical maximum span length 80m depending on environmental conditions.

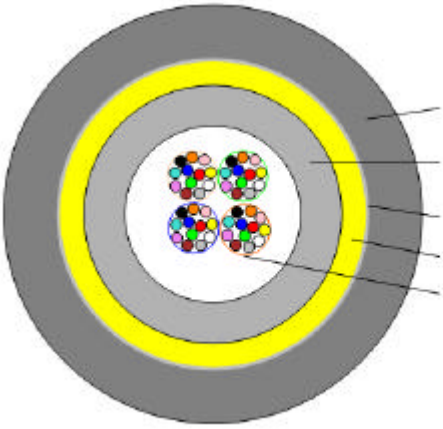
Other attenuation values, fiber counts, fiber types, cable designs and color codes on request.

All Dielectric Self Supporting Aerial Cable (ADSS)

telecom application, central tube design, non-metallic

A-D(T)2Y 15 mm^2





Applications

- Aerial self supporting
- Installation along wooden or concrete poles or lattice towers
- Suitable for railway or telecommunication links

Special features

- Minimised loads due to small diameter and low weight
- Proven design; resistant to severe environmental conditions
- Close control of excess fibre length during manufacture provides wide operational range
- All dielectric construction

Temperature range

Laying and installation	–5°C to 50°C
Operation	–30°C to 70°C
Transport and storage	–40°C to 70°C

Test procedures to IEC 60793-1 and 60794-1-2

- Tensile strength
- Impact resistance
- Crush resistance
- Bending characteristics
- Temperature cycling
- Aolian vibration

Color code for fibers/fiber units:Telcordia (Bellcore)

Standard attenuation values for standard single-mode fiber according to ITU-T G.652.D

- 1310 nm: 0,36 dB / km
- 1550 nm: 0,22 dB / km

Product data

Ordering number	Number of fibers	Fibers per bundle	Number of fibers per bundle	OuterØ (mm)	Net weight (kg/km)	Tensile rating-MAT*-(N) *Max. allowable tensile strength	Min. bending radius during installation (mm)
FWAC01-S0012-U003	12	12	1	10.8	94	11700	190
FWAC01-S0024-U003	24	12	2	11.8	108	13500	205
FWAC01-S0036-U003	36	12	3	11.8	108	13500	205
FWAC01-S0048-U003	48	12	4	11.8	108	13500	205
FWAC01-S0060-U003	60	12	5	13.7	138	11700	240
FWAC01-S0072-U003	72	12	6	13.7	138	11700	240
FWAC01-S0096-U003	96	12	8	13.7	138	11700	240
FWAC01-S0120-U003	120	12	10	15.4	174	11700	270
FWAC01-S0144-U003	144	12	12	15.4	174	11700	270

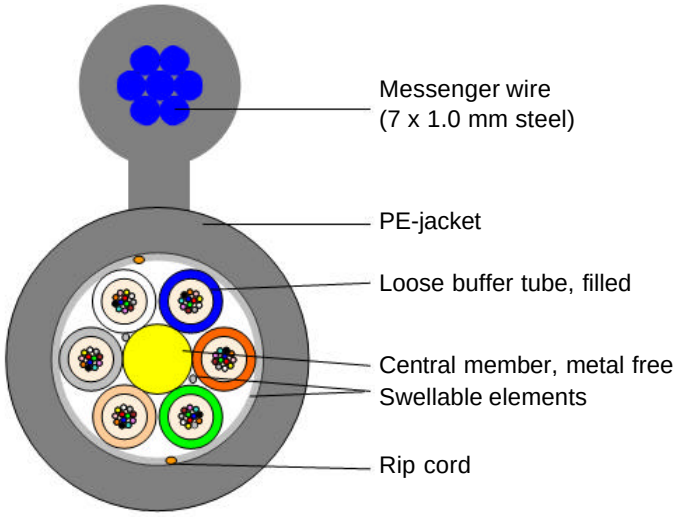
Typical maximum span length 150m depending on environmental conditions.

Other attenuation values, fiber counts, fiber types, cable designs and color codes on request.

Figure-8 Aerial Cable

loose tube design, steel messenger wire

A-DQT2Y...LG



Applications

- Aerial installation along wooden or concrete poles or lattice towers
- Suitable for railway or telecommunication lines
- Not used on high voltage power lines

Special features

- Proven design; resistant to severe environmental conditions
- Compatible with a wide range of fittings and hardware
- Stranded loose tube dry core design
- 7 x 1.0 mm stranded steel messenger wire

Temperature range

Laying and installation	–5ºC to 50ºC
Operation	–30ºC to 70ºC
Transport and storage	–40ºC to 70ºC

Test procedures to IEC 60793-1, 60794-1-2

- Tensile strength
- Impact resistance
- Crush resistance
- Bending characteristics
- Temperature cycling
- Water penetration

Standard attenuation values for standard single-mode fiber according to ITU-T G.652.D

- 1310 nm: 0,36 dB / km
- 1550 nm: 0,22 dB / km

Color code for fibers/fiber units:Telcordia (Bellcore)

Product data

Ordering number	Number of fibers	Fibers per bundle	Number of fibers per bundle	OuterØ (mm)	Net weight (kg/km)	Tensile rating-MAT*-(N) *Max. allowable tensile strength	Min. bending radius during installation (mm)
FWFL01-S0012-U001	12	12	1	11.2 x 20.2	162	4000	190
FWFL01-S0024-U001	24	12	2	11.2 x 20.2	162	4000	190
FWFL01-S0036-U001	36	12	3	11.2 x 20.3	162	4000	190
FWFL01-S0048-U001	48	12	4	11.2 x 20.4	162	4000	190
FWFL01-S0060-U001	60	12	5	11.2 x 20.5	162	4000	190
FWFL01-S0072-U001	72	12	6	11.2 x 20.6	162	4000	190
FWFL01-S0096-U001	96	12	8	12.7 x 21.7	192	4000	215
FWFL01-S0120-U001	120	12	10	14.3 x 23.3	225	4000	245
FWFL01-S0144-U001	144	12	12	16.0 x 25.0	260	4000	275

Typical maximum span length 80m depending on environmental conditions.

Other attenuation values, fiber counts, fiber types, cable designs and color codes on request.

> Technical terms

Absorption
The reduction in strength (loss) of radiation as it passes through a material (for light, part of the radiation energy is converted into heat for example)

ADSS
All dielectric self supporting cable

Armoring
Protective element (generally made of steel tapes, wires or belts) for cables used under special conditions, e.g. for use when directly buried, undersea or in mines, or for rodent protection

Attenuation
The factor by which the signal power at the end of the cable has fallen relative to that at the input end of the cable. Main causes in the case of optical fibers: scatter, absorption, light losses in connectors and spliced connections

Bandwidth
Frequency at which the value of the transmission function for an optical fiber has decreased to half of the value which it has at the central frequency; i.e. when the attenuation of the light signal has increased by 3 dB

Central member (element)
An element which runs along the center of a cable; for fiber optic cables it is generally an anti-buckling and strengthening element

Cladding
Outer layer of an optical fiber, with a lower refractive index than its core

Coating
A plastic layer applied to the outer surface of the fiber sheath to give mechanical protection

Core
The inner part of a cable without the jacket, mainly the tubes stranded around a central member

Core glass (fiber core)
The core of an optical fiber, which has a higher refractive index than its cladding

Dispersion
Dispersion causes light pulses in a fiber to experience a widening over time. A distinction is made between mode dispersion, material dispersion and fiber dispersion

FTTx
Fiber to the x. A fiber in the local exchange network. Depending on the end-point of the fiber link, it is classified as:
- FTTB – fiber to the building
- FTTC – fiber to the curb (of road)
- FTTH – fiber to the home
- FTTP – fiber to the premises (front-end equipment)
- FTTD – fiber to the desk (fiber optic cabling through to the workplace)

GRP element
Anti-buckling and strength member made of glass filaments (GRP – glass fiber reinforced plastic)

Graded index profile
Profile of the refractive index across an optical fiber. There is a steady decline in the refractive index, generally parabolic in form, from the core to the sheath

LAN
Local Area Network. A local network for serial transmissions between independent items of terminal equipment

LSZH
Low smoke zero halogen cable jacket material

Loose buffer tube
A filled tube in which the fibers float without tension and where they are protected against environmental influences

MAN
Metropolitan Area Network. A fast data system which allows data and speech to be transmitted

Microbending
Tiny curvatures in a fiber causing light loss and hence increased attenuation

Modes
All the light waves which are capable of propagation in an optical fiber

Multimode fiber
An optical fiber which has a core diameter that is large in comparison to the wavelength (see wavelength) of light, so that a large number of modes (see modes) can be propagated

> Technical terms

Optical fiber (fiber)
A transparent dielectric waveguide used for transmitting signals by means of electromagnetic waves in the optical frequency range

PON
Passive Optical Network. A passive optical network for FTTx (see FTTx), using passive elements such as closures, splitters and plug connectors

Refractive index
The factor by which the speed of light in an optical medium (e.g. glass) is less than in a vacuum

Single-mode fiber
An optical fiber which has a core diameter that is so small in comparison to the wavelength (see wavelength) of light that only one mode (see modes) can be propagated

Slotted core cable
A cable in which the fibers or fiber ribbons lie in lengthwise slots in the surface of the central member

Splice connection
A permanent connection of two optical fibers, which can be produced by fusion or glueing

Splitter
An optical component which divides the light power from one fiber into a number of fibers

Star coupler
An active or passive component which ensures that light power from a number of incoming fibers is distributed equally into the same number of outgoing fibers

Step index profile
Fiber with a sharp fall off in the refractive index between the core and the sheath, with the refractive indices of the core and sheath being constant

Telcordia color code
Color code for identification of fibers, fiber bundles and tubes

The colors are

#1	blue	#7	red
#2	orange	#8	black
#3	green	#9	yellow
#4	brown	#10	violet
#5	slate	#11	rose
#6	white	#12	turquoise

Time division multiplex
A transmission procedure in which several incoming parallel digital signals are transmitted as a serial data stream on a single fiber

Wavelength
Length of one complete oscillation (the period) of a wave. In optical communication technology three wavelength ranges are commonly used: 850 nm, 1310 nm and 1550 nm

Wavelength division multiplex (WDM)
A transmission procedure in which several items of data are transmitted simultaneously, at different wavelengths, on one fiber

> Type Codes For Fiber Optic Cables

A-	Outdoor cable
B	Armoring
(BN)	Glass yarn, non-metallic armo-ring, e.g. for rodent protection
D	Loose buffer tube, filled
E	Single-mode fiber
F	Filling compound in the cable core
FR	Cable with improved burning behavior
...F...	Attenuation coefficient in dB/km and dispersion in ps/(nm km) at a wavelength of 1310 nm
G	Multimode fiber Halogen-free jacket
H	Attenuation coefficient in dB/km and dispersion in ps/(nm km) at a wavelength of 1550 nm
...H...	
J-	Indoor cable
K	Slotted core
N	Fiber in central core tube without buffer
NC	Non-corrosive smoke fumes
(L)	Laminated Aluminum sheath
LG	Stranded in layers

S	Metallic elements in the core
Q	Dry swellable material in the cable core (dry core)
(SG)	Armoring by laminated, smooth, longitudinal, overlapped steel tape
(SR)	Armoring by laminated, corrugated, longitudinal, overlapped steel tape
(T)	Nonmetallic, concentric, load-bearing elements
T	Supporting element of steel, textile or plastic
Y	Jacket or protective cover of polyvinyl chloride (PVC)
2Y	Jacket or protective cover of polyethylene (PE)
4Y	Jacket or protective cover of polyamide (PA)
(ZM)	Metallic anti-buckling and strength members in the jacket
(ZN)	Non-metallic anti-buckling and strength members
(...ZN)	Number of non-metallic anti-buckling and strength members in the jacket
VDE	Association of German Electrical engineers