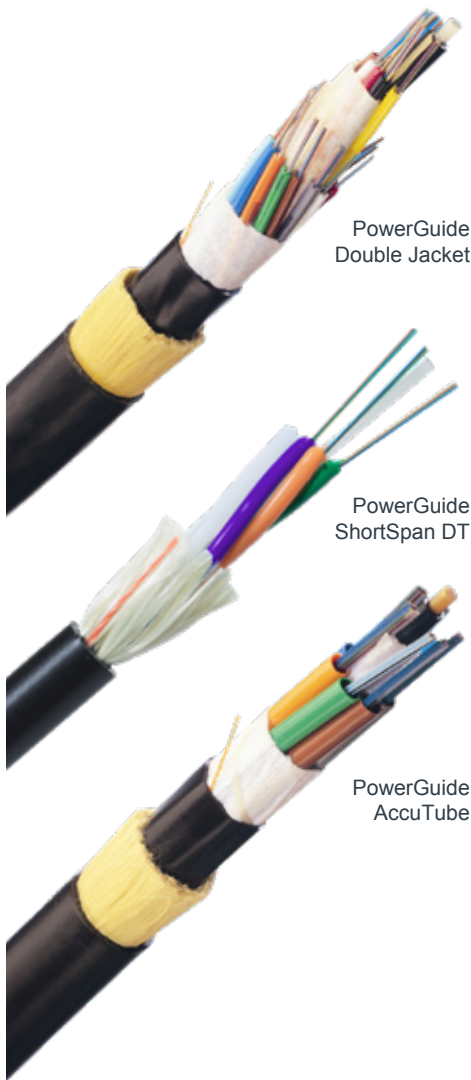




A Furukawa Company

PowerGuide® Loose Tube Fiber Optic Cables

Your Solution for High-Performance ADSS Cable



Features

- Proven all-dielectric loose tube construction
- Immune to electromagnetic fields
- Fast, one-step installation
- Integrated torque-balanced aramid yarn strength elements
- Superior cable strength and stability
- Round cable profiles minimize wind and ice loading

Benefits

- Eliminates the need for expensive cable shielding and grounding
- Uses simple attachment hardware (no pre-installed messenger)
- Outstanding cable performance, strength and stability
- Reduced cable sag and tensile forces on towers and support hardware

Product Description

When you need a durable, high-performance cabling solution for your electrical power network or other aerial use, look to the PowerGuide family of loose tube fiber optic cables. Whether your application is long or short span, requires increased carrying capacity or involves high electric field space potentials, OFS offers a PowerGuide cable to meet your needs. In fact, the unsurpassed optical performance, durability and reliability of our PowerGuide cables have placed them among the world's leading, all-dielectric, self-supporting (ADSS) cables. Delivering seamless performance from the national power grid to your living room, the PowerGuide product line includes PowerGuide Double Jacket Cable, PowerGuide ShortSpan DT Cable and PowerGuide AccuTube® Cable.

Why the PowerGuide ADSS Cables?

Each PowerGuide ADSS Cable design offers proven all-dielectric loose tube construction for outstanding performance, reliability and immunity to electromagnetic fields, eliminating the need for expensive cable shielding or grounding. In addition, these cables offer fast, one-step installation using simple attachment hardware (without a pre-installed messenger) and normally without interrupting electrical service.

PowerGuide Cables also feature integrated, torque-balanced aramid yarn strength elements for superior cable strength and stability. They also have a round cable profile that minimizes wind and ice loading for reduced cable sag and tensile forces on towers and support hardware.

Finally, all PowerGuide Cables are fully qualified in accordance with applicable Telcordia Technologies, EIA/TIA, IEEE and RDUP standards - your assurance of exceptional performance, reliability and value.

PowerGuide ADSS Cables

The matrix below outlines the key applications and span lengths for each PowerGuide cable design. Our technical staff is available to provide additional information and assist you in selecting the right cable for your fiber optic installation. For questions or assistance, please contact us at 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.

Cable	Fiber Counts	Span Lengths	Applications
PowerGuide Double Jacket	2 to 288	3,281 feet (1,000 meters or more)*	<ul style="list-style-type: none"> • Aerial use (self-supporting) • Long spans including electric transmission towers and river crossings • Power transmission and distribution networks • Direct use in ducts • Aerial-to-duct transitions • Electric field space potentials up to 12 kV
PowerGuide TR (Tracking Resistant)	2 to 288	Same as above	<ul style="list-style-type: none"> • Same as above, except for electric field space potentials up to 25 kV
PowerGuide ShortSpan DT	2 to 144	Up to 1,150 feet (350 meters)*	<ul style="list-style-type: none"> • Aerial use (self-supporting) • Short spans (including distribution networks) • Direct use in ducts • Aerial-to-duct transitions • Aerial-to-underground installations
PowerGuide AccuTube	300 to 864	Up to 1,000 feet (300 meters)*	<ul style="list-style-type: none"> • Aerial use (self-supporting) • High-growth and high-bandwidth applications • Mass fusion splicing for high-density applications • Transmission and distribution networks

* Exact span lengths depend on loading conditions, fiber count and clearance requirements.

PowerGuide® Double Jacket Cable

Double Jacket, All Dielectric, Self Supporting (ADSS) Aerial Loose Tube Fiber Optic Cable

PowerGuide Double Jacket Cable is your prime cabling solution for high-performance aerial applications, including power transmission and distribution networks, with excellent long-span capability up to 3,281 feet (1,000 meters or more)*. Each PowerGuide Cable is custom designed to ensure exceptional long-term reliability and performance.

Features

- Fiber counts to 288
- Custom engineered per application
- Single cable diameter for 2 to 60 fibers simplifies hardware selection and splicing
- Proven all-dielectric loose tube construction
- Special tracking-resistant sheath available for high field space potentials (see PowerGuide Tracking Resistant cable above)
- Broad range of fiber types

Benefits

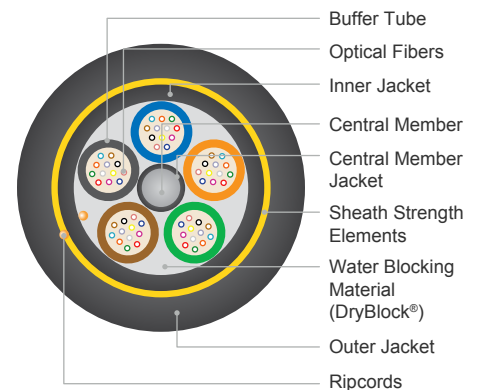
- Outstanding optical performance, durability and field reliability
- Excellent long-span capability
- Fast, one-step installation for valuable time and cost savings
- Easily strippable sheath for quick, convenient cable preparation

Design

Our highly reliable, field-proven loose tube design lies at the core of each PowerGuide Double Jacket Cable. In this design, the optical fibers are placed within color-coded, gel-filled buffer tubes to protect the fibers from external forces. The buffer tubes are then stranded around a dielectric central member using the reverse oscillating lay (ROL) stranding technique for fast, mid-span fiber access. DryBlock water-blocking material is then applied to the cable core to prevent water migration. In the final steps, a carefully determined number of aramid strength elements are placed between inner and outer polyethylene jackets to achieve the performance needed for your application. Using a comprehensive software program, our engineers can analyze electric field space potentials to determine the appropriate outer jacket material and provide recommended cable attachment locations for your application. This custom design ensures stable optical performance over a wide range of loads and temperatures, and assures a long cable life.

PowerGuide Tracking Resistant (TR) Cable

Because ADSS cables are often installed near energized power conductors, we offer two PowerGuide outer jacket materials. For electric field space potentials up to 12 kV, PowerGuide Double Jacket Cable features a polyethylene sheath. For space potentials up to 25 kV, PowerGuide Tracking Resistant Double Jacket Cable features a specially formulated jacket that resists tracking (dry band arcing). Contact us for a complete system analysis to determine which PowerGuide cable design to employ.



PowerGuide Double Jacket Cable
Cross-Section



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PowerGuide® ShortSpan DT Cable

Totally Gel-Free, Single Jacket, All-Dielectric, Self-Supporting (ADSS) Aerial Loose Tube Fiber Optic Cable

PowerGuide ShortSpan DT Cable offers an outstanding, totally gel-free solution for short aerial cable spans ranging up to 1,150 feet (350 meters)*, including distribution networks and duct installations. Featuring one of the world's smallest ADSS cable diameters, ShortSpan DT Cable is lightweight and easy to handle, saving time and money on installation. This cable's compact size and small bend radius make it easy to use in aerial-to-underground installations.

Features

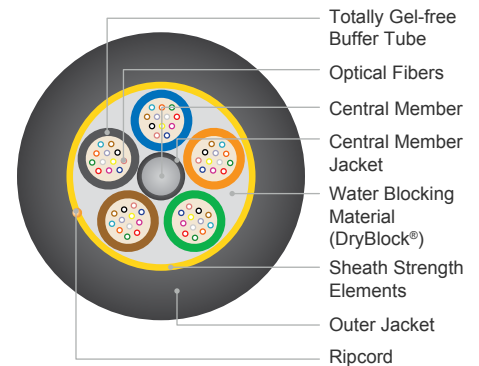
- Fiber counts to 144
- Totally gel-free cable design
- Small nominal cable diameter and bend radius
- Smaller round profile further minimizes wind and ice loading
- Single cable diameter for 2 to 60 fibers simplifies hardware selection and splicing
- Broad range of fiber types

Benefits

- Excellent short-span capability
- Effective, economical alternative for short spans
- Lightweight and easy to handle and install
- Single jacket for fast, convenient cable preparation

Design

Our proven loose tube design is at the heart of our PowerGuide ShortSpan DT Cable. The optical fibers are placed within color-coded, gel-free buffer tubes to protect the fibers from mechanical and environmental forces. The buffer tubes are then stranded around a dielectric central member using the reverse oscillating lay (ROL) stranding technique. Unlike other methods, ROL makes it easy to "untwist" the buffer tubes and gain quick, mid-span access. Next, DryBlock water-blocking material is applied, and aramid strength elements are placed over the cable core. In the final step, a robust polyethylene outer jacket is applied to complete the construction of a light-weight, durable cable that is easy to handle and install.



PowerGuide ShortSpan DT Cable
Cross-Section

PowerGuide® AccuTube® Cable

Double Jacket, All-Dielectric, Self-Supporting (ADSS),
Enhanced AccuRibbon in Loose Tube Fiber Optic Cable

PowerGuide AccuTube Cable is designed to meet the demands of today's high-growth, high-bandwidth communications applications. With up to 864 fibers, PowerGuide AccuTube Cable delivers increased carrying capacity with one of the highest fiber counts of any ADSS cable available today. The result is a cable that allows easy, cost-effective mass fusion splicing while delivering powerful and reliable performance.

Features

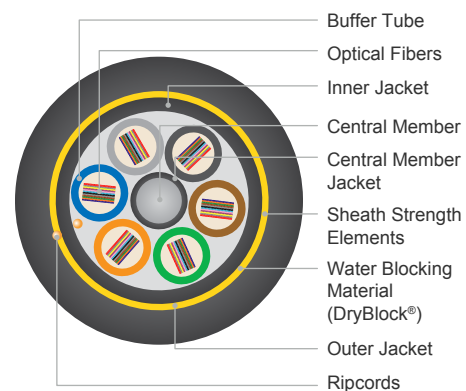
- Fiber counts from 300 to 864
- Enhanced AccuRibbon technology for efficient, cost-effective mass fusion splicing
- Custom engineered per application
- DryBlock water-blocking technology for a more craft-fielding care core
- Broad range of fiber types

Benefits

- Increased bandwidth and carrying capacity for high-density applications
- Efficient, cost-effective mass fusion splicing for easier installation and savings on labor costs
- Excellent performance for span lengths up to 1,000 feet (300 meters)* depending on sag and loading conditions

Design

The performance of PowerGuide AccuTube Cable begins with our proven loose tube design and construction. Each Enhanced AccuRibbon matrix contains 12 optical fibers color coded for easy fiber management. Up to 12 matrix structures are arranged within each gel-filled loose buffer tube. Next, up to six color-coded buffer tubes are stranded around a dielectric central member using the reverse oscillating lay (ROL) stranding technique for fast, mid-span fiber access. The cable core is then protected with DryBlock water-blocking material for excellent water penetration resistance and easier cable handling. Finally, a carefully determined number of aramid strength elements are placed between inner and outer polyethylene jackets to deliver the strength needed for your special application.



PowerGuide AccuTube Cable
Cross-Section

Fiber Type ²							
Single-Mode Optical Fiber	Fiber (S1)	Fiber (S2)	Fiber (SF)	Fiber Standards	Wavelengths (nm)	Typical* Attenuation (dB/km)	Maximum Cable on Reel Attenuation (dB/km)
AllWave® ZWP Optical Fiber	3	B	E	G.652.D	1310/1385/1550	-	0.35/0.31/0.25
AllWave+ ZWP Optical Fiber	3	C	E	G.652.D/G.657.A1	1310/1385/1550	-	0.35/0.31/0.25
AllWave FLEX ZWP Optical Fiber	5	B	E	G.652.D/G.657.A1	1310/1385/1550	-	0.35/0.31/0.25
AllWave One Optical Fiber	3	F	E	G.652.D/G.657.A1	1310/1385/1550	0.33/0.31/0.19	0.35/0.31/0.22
AllWave ULL Fiber	3	H	E	G.652.D/G.657.B	1310/1550	0.31/0.17	0.33/0.19
TrueWave® RS LWP Optical Fiber	6	2	6	G.655.C & D	1550	0.21	0.25
TeraWave® Optical Fiber	6	2	R	G.654.B	1550	0.20	0.25
TeraWave ULL Optical Fiber	6	9	R	G.654.B	1550	0.18	0.22
Multimode Optical Fiber							
62.5 µm Optical Fiber	R	U	9	OM1 62.5 µm	850/1300	-	3.4/1.0
LaserWave® FLEX 300 Optical Fiber	L	F	2	OM3 50 µm	850/1300	-	2.4/0.7
LaserWave FLEX 550 Optical Fiber	L	H	2	OM4 50 µm	850/1300	-	2.4/0.7

PowerGuide ADSS Loose Tube Cable Ordering Information

Example: **AT-3BE27DT-NNN- E1, E2, E3, E4¹**

Part Number: **AT- S1 S2 SF S3 S4 S5 S6 - N N N - [E1] [E2] [E3] [E4]¹**

S1 = Fiber Selection See S1 Fiber Table above	Tensile Load 7 = PowerGuide Double Jacket, PowerGuide TR, PowerGuide ShortSpan DT and PowerGuide AccuTube	Fibers per Tube 2 = 2 Fibers 4 = 4 Fibers 6 = 6 Fibers 8 = 8 Fibers N = 10 Fibers T = 12 Fibers (12-fiber ribbons only for AccuTube design)
S2 = Fiber Transmission Performance See S2 Fiber Table above		
SF = Fiber Type² See SF Fiber Table above	Core Type D = DryBlock® A = Loose Tube Ribbon DryBlock (available in AccuTube design only)	NNN = Fiber Count = 002-288
S3 = Sheath Construction 2 = Double Jacket ADSS 1 = Single Jacket ADSS		Custom Special [E1]* = Outer Jacket [E2][E3][E4]* = Dielectric Sheath Strength Elements

¹ Part Number shown is for a PowerGuide ADSS Cable with standard AllWave ZWP attenuation and standard cable print. Maximum AllWave ZWP attenuation: 0.35/0.31/0.27/0.25/0.27 dB/km @ 1310/1385/1490/1550/1625 nm. Standard Print, example for PowerGuide ADSS Cable: **OFS OPTICAL CABLE AT-3BE27DT-NNN-E1, E2, E3, E4 [MM-YY] [HANDSET SYMBOL] [NNN] F [SERIAL #]**

² Contact OFS Order Management for information on other cable variations, including additional fiber types, attenuation, and custom cable print.

NOTE: For more information regarding typical attenuation as well as attenuation parameters on Link Design Value (LDV) (Maximum end-to-end attenuation over a concatenated span), please see OFS Application Note AN-111 which can be downloaded at www.ofsoptics.com or contact your OFS representative.

* **Custom/Special:** Consult with us regarding your application, span lengths and loading conditions to complete the custom design and part number of your sheath strength system.

For PowerGuide Double Jacket, PowerGuide Tracking Resistant and PowerGuide AccuTube Cables:

[E1][E2][E3][E4] Outer Jacket [E1] and Dielectric Sheath Strength Elements [E2][E3][E4]*

For PowerGuide ShortSpan DT Cable

[C][M][E][A] or [C][L][G][A] Outer Jacket [C] and Dielectric Sheath Strength Elements [M, E, A]* or [L, G, A]*

PowerGuide® Loose Tube Fiber Optic Cables

Your Solution for High-Performance ADSS Cable



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PowerGuide Double Jacket, Tracking Resistant and ShortSpan DT Cable Performance Data			
Parameters	Specifications	Typical Test Results	Test Performed
Low and High Temperature Band	4 Turns @ -30 °C and +60 °C	Complies at 6 Turns @ -40 °C & +70 °C	FOTP-37
Impact Resistance	25 Impacts	Complies at 100 Impacts	FOTP-25
Compressive Strength	≥ 220 N/cm	≥ 220 N/cm	FOTP-41
Tensile Strength of Cable	Custom design tensile strength variable based on application		
Cable Twist	10 Cycles	Complies at 100 Cycles	FOTP-85
Cable Cyclic Flex	25 Cycles	Complies at 100 Cycles	FOTP-104
Cable Freezing	No Attenuation Change	No Attenuation Change	FOTP-98
Water Penetration	No Leakage	No Leakage	FOTP-82
Filling Compound Flow	No Flow @ 80 °C	No Flow @ 80 °C	FOTP-81
Temperature Cycling	Operation -40 °C to +70 °C	-40 °C to +70 °C -60 °C to +70 °C*	FOTP-3
	Installation -30 °C to +70 °C Storage/Shipping -40 °C to +75 °C	*Available on request -30 °C to +70 °C -40 °C to +75 °C	
Cable Aging	+85 °C (168 hour exposure)	+85 °C (168 hour exposure)	FOTP-3
High Frequency (Aeolian) Vibration	100 Million Vibration Cycle	No Mechanical Damage to Cable or Hardware	IEEE P1222
Low Frequency (Galloping) Vibration	100 Thousand Vibration Cycles	No Mechanical Damage to Cable or Hardware	IEEE P1222
Electrical Testing	to 12 kV space potential for PowerGuide Double Jacket	No adverse effects to polyethylene jacket	IEEE P1222
Electrical Testing	to 25 kV space potential for PowerGuide Tracking Resistant	No adverse effects to specially formulated jacket	IEEE P1222



Installation and Hardware

PowerGuide Cables are compatible with a complete range of hardware that can accommodate diverse installation conditions. We are fully equipped to serve as your hardware provider and be your “one-stop-shopping” service. Or, if you prefer, you may purchase the approved hardware separately.



Quality

We’re an ISO 9001 and ISO 14001 certified manufacturer that adheres to strict quality control requirements for product design, development, manufacturing and business operations. Product performance is verified on each product manufactured prior to shipment, ensuring many years of reliable performance.



Services

OFS provides you with an experienced, professional staff to meet your cable design and installation needs. Our engineering staff offers support ranging from tutorials on the basics of fiber optics to product design and selection. Our technical services staff provides rapid on-site assistance and valuable “hands-on” training in proper cable handling, pole attachment hardware selection and testing and installation methods.

For additional information please contact your sales representative.

You can also visit our website at www.ofsoptics.com or call 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.



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