TACTICAL FIBER OPTIC CABLE

Tactical | Breakout | Tight Buffered
Rodent-Deterrent | Copper/Fiber Composite
Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise and industrial markets as well as several emerging markets.

AFL’s products are in use in over 130 countries and include fiber optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, fusion splicers and training.

AFL also offers a wide variety of services supporting data center, enterprise, wireless and outside plant applications.

AFL is dedicated to bringing our customers a quality product as well as delivering superior value.
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Harsh Environments
Characterized by diverse operating conditions not found in most commercial locations, industrial applications require rugged and dependable network components. These applications must be able to transmit and receive large amounts of data reliably and across long distances in order for operations to function safely and efficiently. Research has shown that most network failures in industrial applications are a result of failed transmissions. This makes selecting the right network components including cable, a mission-critical function.

For applications requiring high-bandwidth and high-speed functionality, fiber optics can be a natural solution. Unlike copper cable, fiber optic cabling is resistant to electromagnetic interference (EMI), making it an ideal option for environments involving high voltages or machinery with variable frequency drives. Fiber optic cables do not conduct electricity, nor do they ignite in the presence of flammable materials, making them a safe alternative to traditional wiring.

Designed for extreme environmental conditions, AFL's Tactical Cable product line provides bandwidth, performance and versatility for applications where standard communication cables would never survive. Our ruggedized tactical jackets and diverse cable constructions protect cables from temperature extremes, UV/sunlight, solvents, abrasion and impact. As a leading manufacturer and innovator of fiber optic cables, AFL's Tactical Cables deliver predictable, repeatable and durable performance in the most demanding conditions.

Industrial Environments
From heavy industrial manufacturing and complex hydraulic fracturing drills to deployable broadcasting studios and positive train controls, the need for reliable high-bandwidth cable to deliver critical data transmissions is vital. Industrial applications like these require AFL's Tactical Fiber Optic Cables.

Designed for performance in the most severe conditions, AFL's family of Tactical Cables provide reliability and outstanding performance characteristics for supplying critical data. Our expertise in developing and manufacturing tactical fiber optic cables allow networks to run safer, with less disruption, and better productivity than any other system on the market. AFL's Tactical Cables have been deployed in many industries, including:

- Industrial Product Manufacturing
- Oil & Gas Refineries
- Transportation Hubs
- Chemical Plants
- Deployable Broadcasting Applications
- Automotive Manufacturing
- Avionic Communication Systems
- Distribution Pipelines
- Light Rail Monitoring
- On-Demand Broadcasts
- Military Deployable Communications
- Topside Mining Operations
- Broadcast Studios
Fiber Optic Cable
www.AFLglobal.com or (800)235-3423

The Right Tactical Cable for the Job
AFL's background in fiber optic cable development has created a solid foundation for our Tactical Cable product line. However, our design services don't just stop at the standard product line. We understand that every situation is unique. Each installation has its own environmental challenges and performance requirements. That's why we offer customized real-problem, value-engineered solutions.

Our designers and engineers are experts in their field, offering an array of knowledge on every job with an emphasis on timeliness and quality. With years of experience in communications infrastructures, AFL provides system-wide solutions to include necessary materials, installation, testing and turnup. Some of our unique capabilities include:

- Unique cable constructions based on existing formations to increase fiber counts or decrease OD parameters
- Cable jacket options that provide resistance to distinctive environmental conditions such as rodents or the presence of chemical solvents
- Cable additive choices that can provide increased abrasion or crush resistance
- Cable armoring options for even more durability

Tactical Cables At-a-Glance
Rely on AFL's line of ruggedized tactical cables for superior performance and reliability at a smaller size.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>OD &amp; WEIGHT</th>
<th>FIBER COUNT</th>
<th>CRUSH/IMPACT RESISTANCE</th>
<th>ABRASION/CUT RESISTANCE</th>
<th>FLEXIBILITY</th>
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</thead>
<tbody>
<tr>
<td>TRADITIONAL TIGHT BUFFERED</td>
<td>GOOD</td>
<td>GOOD</td>
<td>GOOD</td>
<td>GOOD</td>
<td>GOOD</td>
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<tr>
<td>TACTICAL</td>
<td>BETTER</td>
<td>BETTER</td>
<td>BETTER</td>
<td>BETTER</td>
<td>BETTER</td>
</tr>
<tr>
<td>TACTICAL+</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
</tr>
<tr>
<td>MICRO-TACTICAL</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
</tr>
<tr>
<td>TACTICAL BREAKOUT</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
<td>BEST</td>
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</tr>
</tbody>
</table>

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Specifications are subject to change without notice.
Sidewinder™
Rapid Cable Deployment System

AFL’s Sidewinder Rapid Cable Deployment System allows for fast deployment and retrieval of tactical fiber optic cables used in field deployable applications. The system is made using lightweight high impact grade polymer that is non-corrosive and able to withstand extreme temperatures. Additionally, the reel features built-in connector storage in the center hub as well as a removable handle for fast Sidewinding action.

The unique design of the reel allows them to be stacked and locked together for transport or for field deployment. The specially engineered foam insert within the hub allows safe storage of the connectors when not in use. The reel is available in three sizes to store cables up to 1000 meters in length. The reels can also be supplied with cable stands, connector cleaning kits and military-approved transit cases.

Features and Benefits

Reels

• The reel is made from lightweight, high-impact materials. All assembly parts are made from 316/304 grade stainless steel. This makes them well suited for use in mining and marine environments.
• The reels can be easily stacked together for storage and transportation. They also have four points of contact when secured to another reel. Once fastened together, they can be locked with the use of two locking pins.
• The connector at the inner end of the cable can be stored within the hub. The outer flange can store up to 5 meters of cable slack for maximum access once deployed. The outer connector of the cable assembly is stored in the adjacent opening.
• The center hub is internally lined with a foam insert and connector retention grommets for ultimate connector storage and protection.
• The reel is supplied with a 1” round hole to suit the deployment stand. A 1” square hole option is also available for applications requiring simultaneous cable deployments.
• An optional cleaning kit is available to maintain the performance of the connectors. This kit is housed within the center hub.
• The removable handle allows for quick deployment and retrieval of the cable.

Stand

• The sturdy folding stand is made from durable 304 grade stainless steel and well suited in any environment.
• It accommodates both the 300 meter and 500 meter reels. A collar is used to keep the reel in a single position during cable deployment.
• The stand has a removable pin to allow for quick assembly of the two pieces.
• The stand can also be used as a caddy to pull the reel along the ground. This reduces the need for heavy lifting and simplifies transport of cable systems.
• The stand can also be set up within the transit case to allow for easy cable deployment.

Applications

• Mobile telecommunication systems
• Military tactical communication systems
• Mining
• Oil and gas
• Field deployable broadcast communications
Sidewinder™ Rapid Cable Deployment System

Technical Specifications

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>AFL NO.</th>
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<tbody>
<tr>
<td></td>
<td>AFL-REEL-300-XX</td>
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<td>Cable capacity (using 5.5 mm cable)</td>
<td>300 mts</td>
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<tr>
<td>Reel diameter</td>
<td>420 mm</td>
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<tr>
<td>Reel width</td>
<td>208 mm</td>
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<tr>
<td>Reel weight</td>
<td>2.83 kg</td>
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<tr>
<td>Maximum connector diameter</td>
<td>53 mm</td>
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<tr>
<td>Colors available</td>
<td>Black is standard, Desert Tan and Olive Drab also available.</td>
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Ordering Information

<table>
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<th>AFL NO.</th>
<th>DESCRIPTION</th>
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<tr>
<td>REEL</td>
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<tr>
<td>AFL-REEL-300-BKS</td>
<td>Cable deployment reel, 300 mts, black with square hole</td>
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<tr>
<td>AFL-REEL-300-BKR</td>
<td>Cable deployment reel, 300 mts, black with round hole</td>
</tr>
<tr>
<td>AFL-REEL-300-DTS</td>
<td>Cable deployment reel, 300 mts, Desert tan with square hole</td>
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<tr>
<td>AFL-REEL-300-DTR</td>
<td>Cable deployment reel, 300 mts, Desert tan with round hole</td>
</tr>
<tr>
<td>AFL-REEL-300-ODS</td>
<td>Cable deployment reel, 300 mts, Olive drab with square hole</td>
</tr>
<tr>
<td>AFL-REEL-300-ODR</td>
<td>Cable deployment reel, 300 mts, Olive drab with round hole</td>
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<tr>
<td>AFL-REEL-500-BKS</td>
<td>Cable deployment reel, 500 mts, black with square hole</td>
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<td>AFL-REEL-500-BKR</td>
<td>Cable deployment reel, 500 mts, black with round hole</td>
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<td>AFL-REEL-500-DTS</td>
<td>Cable deployment reel, 500 mts, Desert tan with square hole</td>
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<tr>
<td>AFL-REEL-500-DTR</td>
<td>Cable deployment reel, 500 mts, Desert tan with round hole</td>
</tr>
<tr>
<td>AFL-REEL-500-ODS</td>
<td>Cable deployment reel, 500 mts, Olive drab with square hole</td>
</tr>
<tr>
<td>AFL-REEL-500-ODR</td>
<td>Cable deployment reel, 500 mts, Olive drab with round hole</td>
</tr>
<tr>
<td>AFL-REEL-1000-BKS</td>
<td>Cable deployment reel, 1000 mts, black with square hole</td>
</tr>
<tr>
<td>AFL-REEL-1000-DTS</td>
<td>Cable deployment reel, 1000 mts, Desert tan with square hole</td>
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<tr>
<td>AFL-REEL-1000-ODS</td>
<td>Cable deployment reel, 1000 mts, Olive drab with square hole</td>
</tr>
<tr>
<td>STAND ACCESSORIES</td>
<td></td>
</tr>
<tr>
<td>AFL-REELSTAND-500-SS</td>
<td>Cable deployment folding stand for AFL reel, SS</td>
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<tr>
<td>AFL-REELSTAND-COL-25MM</td>
<td>Replacement collar for AFL cable stand</td>
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<tr>
<td>AFL-REEL-CLKIT1</td>
<td>Connector cleaning kit for AFL cable reel</td>
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<tr>
<td>AFL-REEL-500-CASE-DT</td>
<td>Transit case for AFL cable deployment reel, Desert Tan</td>
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<tr>
<td>AFL-REEL-500-CASE-BK</td>
<td>Transit case for AFL cable deployment reel, Black</td>
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<tr>
<td>AFL-REEL-500-CASE-OD</td>
<td>Transit case for AFL cable deployment reel, Olive Drab</td>
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</tbody>
</table>
Tactical Tight Buffered Cable

AFL Tactical Tight Buffered Cables are ideal for use in installations where extreme environmental conditions are present. Designed to be deployed and retrieved in the field, AFL’s Tactical Tight Buffered Cables are highly resistant to damage caused by repeated impacts crushing forces, abrasion and extreme temperatures.

Features
- Cut resistant polyurethane jacket with flame retardant options available
- Highly flexible construction allows for multiple deployments
- All aramid strength members
- Performance in wide temperature range
- High impact and crush resistance
- Durable in high traffic areas
- MIL-PRF-46291 qualified fiber available (-RH designation)
- Tested to meet MIL-PRF-85045

Applications
- Field deployment in abusive environments
- Temporary installation of critical communications lines where quick retrieval and re-use is necessary
- High Traffic areas
- Security and Sensing applications
- Broadcast deployments
- Installations in harsh environments

Cable Components

Polyurethane outer jacket
aramid strength member
250 µm or 500 µm optical fiber
900 µm Elastomeric Tight Buffer

Specifications

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>TEST PROCEDURE</th>
<th>PERFORMANCE</th>
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<tbody>
<tr>
<td>Tensile and elongation</td>
<td>EIA/TIA-455-33</td>
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<td>Operating tensile strength</td>
<td>EIA/TIA-455-33</td>
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<tr>
<td>Low-temp flexibility</td>
<td>EIA/TIA-455-37</td>
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<tr>
<td>Cyclic flexing</td>
<td>EIA/TIA-455-104</td>
<td>2000</td>
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<td>Crush resistance</td>
<td>EIA/TIA-455-41</td>
<td>1800 N/cm or greater</td>
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<td>Impact</td>
<td>EIA/TIA-455-25</td>
<td>200</td>
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<tr>
<td>Temperature cycling</td>
<td>EIA/TIA-455-3</td>
<td>-46°C to 85°C</td>
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<tr>
<td>Temperature/humidity cycling</td>
<td>EIA/TIA-455-5 Method B</td>
<td></td>
</tr>
<tr>
<td>Life aging</td>
<td>EIA/TIA-455-4</td>
<td></td>
</tr>
<tr>
<td>Freezing water immersion</td>
<td>EIA/TIA-455-98</td>
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## Tactical Tight Buffered Cable

### Mechanical Data

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<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIAMETER</th>
<th>NOMINAL WEIGHT</th>
<th>MAXIMUM TENSILE LOAD</th>
<th>MINIMUM BEND RADIUS</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES (MM)</td>
<td>LBS/1000FT (KG/KM)</td>
<td>INSTALLATION N (LBS)</td>
<td>LONG TERM INCHES (CM)</td>
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<td>X%001*301#0H</td>
<td>1</td>
<td>0.12 (3.0)</td>
<td>5.4 (8)</td>
<td>135 (600)</td>
<td>40 (178)</td>
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<td>X%001*401#0H</td>
<td>1</td>
<td>0.16 (4.0)</td>
<td>9.1 (13.5)</td>
<td>180 (800)</td>
<td>54 (240)</td>
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<tr>
<td>X%001*461#0H</td>
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<td>0.18 (4.6)</td>
<td>12.2 (18.1)</td>
<td>180 (800)</td>
<td>54 (240)</td>
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<td>X%002*551#0H</td>
<td>2</td>
<td>0.22 (5.5)</td>
<td>16.2 (25)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
</tr>
<tr>
<td>X%004*551#0H</td>
<td>4</td>
<td>0.22 (5.5)</td>
<td>16.2 (25)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
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<td>0.23 (5.8)</td>
<td>21.5 (32)</td>
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<td>130 (578)</td>
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<tr>
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<td>4</td>
<td>0.23 (5.8)</td>
<td>21.5 (32)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
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<tr>
<td>X%006*611#0H</td>
<td>6</td>
<td>0.24 (6.1)</td>
<td>22.2 (33)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
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<tr>
<td>X%008*641#0H</td>
<td>8</td>
<td>0.25 (6.4)</td>
<td>28.8 (44)</td>
<td>470 (2090)</td>
<td>160 (712)</td>
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<td>X%012*6641#0H</td>
<td>12</td>
<td>0.25 (6.4)</td>
<td>30.8 (47)</td>
<td>470 (2090)</td>
<td>160 (712)</td>
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<td>38.7 (59)</td>
<td>670 (2980)</td>
<td>220 (979)</td>
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</table>

Note: Diameter and weight subject to change without notice.

Replace percent (%) in AFL No. with corresponding jacket type below.

1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4 = StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.

5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

500 µm primary coated fiber available.
Customer specified print available.

See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Tactical+ Tight Buffered Cable

AFL’s new Tactical+ fiber optic cables with StrataJac® encapsulation set a new standard for extreme environments. The Tactical+ cable combines the performance of a rugged industrial jacket compound with the reliability of a military cable design. This new tactical design provides superior abrasion resistance when compared to traditional industry leading military cables. Tested beyond standards, the unique Tactical+ fiber optic cables offer a low friction, tough, abrasion resistant encapsulation that will outlast any cable on the market. Available in single and double jacketed configurations with extra aramid yarn or glass yarn reinforcement AFL Tactical+ cables are virtually indestructible.

Features

- Superior abrasion and cut resistance
- High impact resistance for unforeseen trauma to cables
- Performance in wide temperature ranges
- Extremely durable outer jacket enables survivability in deployment and retrieval applications
- Resistant to the harshest industrial chemicals
- Aramid strength members for exceptional pull strength
- Available in a wide range of fiber types and channel counts
- Compatible with AFL’s rodent deterrent additive for extra protection against rodent attacks

Applications

- Outside Broadcast
- Military
- Security
- Direct burial with rodent deterrent additive
- Instrumentation and control
- Pipeline and industrial asset monitoring
- Oil and gas

Specifications

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>TEST PROCEDURE</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile and elongation</td>
<td>EIA/TIA-455-33</td>
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<td>Operating tensile strength</td>
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<tr>
<td>Low-temp flexibility</td>
<td>EIA/TIA-455-37</td>
<td></td>
</tr>
<tr>
<td>Cyclic flexing</td>
<td>EIA/TIA-455-104</td>
<td>&gt;2000</td>
</tr>
<tr>
<td>Crush resistance</td>
<td>EIA/TIA-455-41</td>
<td>&gt;4,000 N/cm by design</td>
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<tr>
<td>Impact</td>
<td>EIA/TIA-455-25</td>
<td>200</td>
</tr>
<tr>
<td>Temperature cycling</td>
<td>EIA/TIA-455-3</td>
<td>-46°C to +85°C</td>
</tr>
<tr>
<td>Temperature/humidity cycling</td>
<td>EIA/TIA-455-5 Method B</td>
<td></td>
</tr>
<tr>
<td>Life aging</td>
<td>EIA/TIA-455-4</td>
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<tr>
<td>Freezing water immersion</td>
<td>EIA/TIA-455-98</td>
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Specifications are subject to change without notice.
# Tactical+ Tight Buffered Cable

## Ordering Information

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIAMETER</th>
<th>WEIGHT</th>
<th>TENSION</th>
<th>MINIMUM BEND RADIUS</th>
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<tr>
<td></td>
<td></td>
<td>INCHES (MM)</td>
<td>LBS/1000 FT (KG/KM)</td>
<td>INSTALLATION</td>
<td>LONG TERM</td>
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<tr>
<td>X4002*551#0H</td>
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<td>0.22 (5.5)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
<td>3.4 (8.5)</td>
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<td>X4004*551#0H</td>
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<td>0.22 (5.5)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
<td>3.4 (8.5)</td>
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<tr>
<td>X4006*611#0H</td>
<td>6</td>
<td>0.24 (6.1)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
<td>3.7 (9.4)</td>
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<tr>
<td>X4012*641#0H</td>
<td>12</td>
<td>0.25 (6.4)</td>
<td>470 (2090)</td>
<td>160 (712)</td>
<td>4.3 (10.8)</td>
</tr>
</tbody>
</table>

Note: Diameter and weight subject to change without notice.

Replace percent (%) in AFL No. with corresponding jacket type below.
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2 = Flame Retardant Polyurethane
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K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

500 µm primary coated fiber available.
Customer specified print available.
See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Micro-Tactical Cable

AFL’s new Micro-Tactical Fiber Optic Cable combines the ruggedness of military tactical cable designs with the ultra-high fiber density of AFL’s micro-cable technology. Designed for rapid deployment in optical networks requiring high mechanical performance specifications, extreme environmental exposure, and highly dynamic operating conditions, the military grade micro-tactical cable is able to withstand high tensile loads, severe crushing forces, repeated impacts, and extreme temperatures. And with AFL’s selection of tactical cable jacket materials, the cable can be used in applications requiring exposure to UV, moisture, industrial chemicals or confined spaces. With fiber counts up to 96, the micro-tactical from AFL is the highest fiber count military grade tactical cable available on the market today.

Features

• Highly flexible for rapid deployment and ease of installation
• Ruggedized tactical cable design for operating in harsh conditions
• High fiber density allows for longer deployment lengths
• Longer assembly lengths reduce number of optical connections and enhance network performance
• Supportive of all fiber types for high speed optical networking

Applications

• Broadcast
• Petrochemical
• Rail
• Mining
• Military

Performance Data—Testing per MIL PRF 85045

<table>
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<th>CHARACTERISTIC</th>
<th>PERFORMANCE</th>
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<tr>
<td>Operating Temperature</td>
<td>-46°C to +85°C</td>
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<tr>
<td>Storage Temperature</td>
<td>-55°C to +85°C</td>
</tr>
<tr>
<td>Crush Resistance</td>
<td>2000 N/cm of cable OD</td>
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<tr>
<td>Impact Resistance</td>
<td>50 per ANSI/TIA 455-25 Military Requirements</td>
</tr>
<tr>
<td>Flex Resistance</td>
<td>2000</td>
</tr>
</tbody>
</table>

Rodent-deterrent Jacket Option Available

www.AFLglobal.com or (800)235-3423
**Micro-Tactical Cable**

**Ordering Information**

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIA.</th>
<th>NOMINAL WT.</th>
<th>MAXIMUM TENSILE LOAD</th>
<th>MINIMUM BEND RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES (MM)</td>
<td>LBS/1000FT (KG/KM)</td>
<td>LBS (N) INSTALLATION</td>
<td>LONG TERM INSTALLATION</td>
</tr>
<tr>
<td>X%004*301#0Q:4</td>
<td>Up to 4</td>
<td>0.12 (3.0)</td>
<td>5.4 (8)</td>
<td>135 (600)</td>
<td>40 (178)</td>
</tr>
<tr>
<td>X%004*401#0Q:4</td>
<td>Up to 4</td>
<td>0.16 (4.0)</td>
<td>9.1 (13.5)</td>
<td>180 (800)</td>
<td>54 (240)</td>
</tr>
<tr>
<td>X%004*461#0Q:4</td>
<td>Up to 4</td>
<td>0.18 (4.6)</td>
<td>12.2 (18.1)</td>
<td>180 (800)</td>
<td>54 (240)</td>
</tr>
<tr>
<td>X%016*551#0Q:4</td>
<td>Up to 16</td>
<td>0.22 (5.5)</td>
<td>16.2 (25)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
</tr>
<tr>
<td>X%024*611#0Q:4</td>
<td>Up to 24</td>
<td>0.24 (6.1)</td>
<td>22.2 (33)</td>
<td>400 (1780)</td>
<td>130 (578)</td>
</tr>
<tr>
<td>X%048*641#0Q:4</td>
<td>Up to 48</td>
<td>0.25 (6.4)</td>
<td>28.8 (44)</td>
<td>470 (2090)</td>
<td>160 (712)</td>
</tr>
<tr>
<td>X%096*851#0Q:4</td>
<td>Up to 96</td>
<td>0.33 (8.5)</td>
<td>38.7 (59)</td>
<td>670 (2980)</td>
<td>220 (979)</td>
</tr>
</tbody>
</table>

Replace percent (%) in AFL No. with corresponding jacket type below.
1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4= StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.
5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

Customer specified print available.
See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Braided Armored Tactical Tight Buffered Cable

AFL Armored Tactical Tight Buffered Cables are ideal for use in installations where extreme environmental conditions are present. With the addition of a wire braid embedded within the jacketing system, these cables are highly resistant to damage caused by repetitive impacts, high flex, crush, and abrasion as well as other harsh conditions. By utilizing AFL’s tight buffered fiber technology field, termination is simplified.

Features

- Cut resistant polyurethane outer jacket
- Highly flexible construction allows for multiple deployments
- Performance in wide temperature range
- High impact and crush resistance
- Durable in high traffic areas
- Water and UV resistant
- Multiple jacket colors available
- Capable of supporting all Multi-Gigabit Ethernet Protocols

Applications

- Field deployment in abusive environments
- High traffic areas
- Security and sensing applications
- High Flex Applications
- Installations in industrial environments
- Temporary installation of critical communications lines where quick retrieval and re-use is necessary

Temperature Range

Operating: -46°C to +85°C
Installation: -20°C to +85°C
Storage: -57°C to +85°C

Cable Components

- Tight Buffered Fiber
- Bronze Braiding
- Aramid Yarn
- Inner TPU Jacket
- Outer TPU Jacket

Rodent-deterrent Jacket Option Available

www.AFLglobal.com or (800)235-3423

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Braided Armored Tactical Tight Buffered Cable

Ordering Information

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIAMETER</th>
<th>NOMINAL WEIGHT</th>
<th>TENSION LBS (N)</th>
<th>MINIMUM BEND RADIUS</th>
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</thead>
<tbody>
<tr>
<td>X%001*301#0H-BB</td>
<td>1</td>
<td>0.26</td>
<td>6.6</td>
<td>42.4</td>
<td>64</td>
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<tr>
<td>X%002*581#0H-BB</td>
<td>2</td>
<td>.374</td>
<td>9.5</td>
<td>82.5</td>
<td>124</td>
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<tr>
<td>X%004*581#0H-BB</td>
<td>4</td>
<td>.374</td>
<td>9.5</td>
<td>82.5</td>
<td>124</td>
</tr>
<tr>
<td>X%006*611#0H-BB</td>
<td>6</td>
<td>.386</td>
<td>9.8</td>
<td>85.5</td>
<td>128</td>
</tr>
<tr>
<td>X%012*701#0H-BB</td>
<td>12</td>
<td>.421</td>
<td>10.7</td>
<td>104.7</td>
<td>156</td>
</tr>
</tbody>
</table>

Note: Diameter and weight subject to change without notice

Replace percent (%) in AFL No. with corresponding jacket type below.
1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4 = StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.
5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace H in AFL number with number corresponding below.
G = 500 µm Coated Optical Fiber
H = 250 µm Coated Optical Fiber

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

500 µm primary coated fiber available.
Customer specified print available.

See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Tactical Breakout Cable

AFL’s Tactical Breakout Cables are ideal for use in harsh environment applications requiring a rugged deployable cable solution. Consisting of 2 mm sub-cables, each optical fiber is suitable for direct termination allowing fast and easy installation. This reduced diameter, light weight and high strength cable features a tough abrasion resistant polyurethane jacket that offers exceptional performance through a wide range of temperatures. It is also impervious to common chemicals found in industrial environments. Available with a flame retardant jacket option the BU series breakout cable is ideal for use in mines, petrochemical facilities and other industrial applications.

Features
• Deployable design
• UV, Fungus and water resistant
• Highly crush and impact resistant
• 2.0 mm sub-cables available in a variety of colors
• Available with shiny or matte low-friction jacket
• Custom colors available
• Available with bend insensitive SM and MM optical fiber
• Supports all multi-gigabit Ethernet standards
• RoHS compliant

Specifications
• MIL PRF 85045
• ANSI/ICEA-S-104-696
• RoHS Compliant
• Highly abrasion and cut resistant
• Resistant to most fuels, oils and greases
• Excellent low-temperature flexibility

Temperature Range
Operating: -55°C to +85°C
Storage: -60°C to +85°C
Installation: -50°C to +85°C

Cable Components

Mechanical

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>2112 (475)</td>
</tr>
<tr>
<td>Operational</td>
<td>333 (75)</td>
</tr>
</tbody>
</table>
Tactical Breakout Cable

Ordering Information

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIAMETER</th>
<th>NOMINAL WEIGHT</th>
<th>PHYSICAL PROPERTIES</th>
<th>MINIMUM BEND RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES/MM</td>
<td>LBS/1,000 FT/KG/KM</td>
<td>CRUSH (N/CM) IMPACTS</td>
<td>INCHES/CM</td>
</tr>
<tr>
<td>8%002*201#XH</td>
<td>2</td>
<td>0.307/7.8</td>
<td>35/52</td>
<td>2000/200</td>
<td>3.1/7.8</td>
</tr>
<tr>
<td>8%002*201#XH-7.5</td>
<td>2</td>
<td>0.295/7.5</td>
<td>30/44</td>
<td>2000/200</td>
<td>3.0/7.5</td>
</tr>
<tr>
<td>8%004*201#XH</td>
<td>4</td>
<td>0.307/7.8</td>
<td>35/52</td>
<td>2000/200</td>
<td>3.1/7.8</td>
</tr>
<tr>
<td>8%004*201#XH-7.5</td>
<td>4</td>
<td>0.295/7.5</td>
<td>30/44</td>
<td>2000/200</td>
<td>3.0/7.5</td>
</tr>
<tr>
<td>8%006*201#XH</td>
<td>6</td>
<td>0.346/8.8</td>
<td>39/58</td>
<td>2000/200</td>
<td>3.5/8.8</td>
</tr>
<tr>
<td>8%008*201#XH</td>
<td>8</td>
<td>0.394/10.0</td>
<td>52/77</td>
<td>2000/200</td>
<td>4/10</td>
</tr>
<tr>
<td>8%012*201#XH</td>
<td>12</td>
<td>0.449/11.4</td>
<td>66/97</td>
<td>2000/200</td>
<td>4.5/11.4</td>
</tr>
</tbody>
</table>

Replace percent (%) in AFL No. with corresponding jacket type below.
1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4 = StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.
5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = 5M Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

500 µm primary coated fiber available.
Customer specified print available.
See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Braided Armored Tactical Breakout Cable

AFL’s Braided Armored Tactical Breakout Cables are ideal for use in harsh environment applications requiring a rugged deployable cable solution. Consisting of 2 mm sub-cables, each optical fiber is suitable for direct termination enabling fast and easy installation. This reduced diameter, light weight, and high strength cable features a tough abrasion resistant polyurethane jacket that offers exceptional performance through a wide range of temperatures. It is also impervious to common chemicals found in industrial environments. Available with a flame retardant jacket option the BU series breakout cable is ideal for use in mines, petrochemical facilities, and other industrial applications.

Features
- Deployable design
- UV, Fungus, and water resistant
- Highly crush and impact resistant
- 2.0 mm sub-cables available in a variety of colors
- Available with shiny or matte low-friction jacket
- Custom colors available
- Available with bend insensitive SM and MM optical fiber
- Supports all multi-gigabit Ethernet standards
- RoHS compliant

Specifications
- MIL PRF 85045
- ANSI/ICEA-S-104-696
- RoHS Compliant
- Highly abrasion and cut resistant
- Resistant to most fuels, oils and greases
- Excellent low-temperature flexibility
- Braid application per IEEE 1580 available

Temperature Range
Operating: -55°C to +85°C
Storage: -60°C to +85°C
Installation: -50°C to +85°C

Mechanical

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>2112 (475)</td>
</tr>
<tr>
<td>Operational</td>
<td>333 (75)</td>
</tr>
</tbody>
</table>

Cable Components

- 2 mm Breakout Unit
- Bronze Braiding
- Inner TPU Jacket
- Outer TPU Jacket units

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Specifications are subject to change without notice.
Braided Armored Tactical Breakout Cable

Ordering Information

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>FIBER COUNT</th>
<th>NOMINAL DIAMETER</th>
<th>NOMINAL WEIGHT</th>
<th>PHYSICAL PROPERTIES</th>
<th>MINIMUM BEND RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES/MM</td>
<td>LBS/1,000 FT/KG/KM</td>
<td>CRUSH (N/CM)</td>
<td>IMPACTS</td>
</tr>
<tr>
<td>B%002 #201#XH-BB</td>
<td>2</td>
<td>0.452</td>
<td>11.5</td>
<td>113</td>
<td>68</td>
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<tr>
<td>B%004 #201#XH-BB</td>
<td>4</td>
<td>0.452</td>
<td>11.5</td>
<td>113</td>
<td>68</td>
</tr>
<tr>
<td>B%006 #201#XH-BB</td>
<td>6</td>
<td>0.492</td>
<td>12.5</td>
<td>124</td>
<td>185</td>
</tr>
<tr>
<td>B%008 #201#XH-BB</td>
<td>8</td>
<td>0.539</td>
<td>13.7</td>
<td>147</td>
<td>219</td>
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<tr>
<td>B%012 #201#XH-BB</td>
<td>12</td>
<td>0.610</td>
<td>15.5</td>
<td>178</td>
<td>9265</td>
</tr>
</tbody>
</table>

Replace percent (%) in AFL No. with corresponding jacket type below.

1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4 = StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.

5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.

500 µm primary coated fiber available.
Customer specified print available.

See Tactical Cable Ordering Guide on page 23 for AFL No. designations.
Tactical Copper/Fiber Composite Cable

AFL’s tactical copper/fiber composite cables are ruggedized and easy to use in rapid deployment networks and other applications requiring high mechanical performance standards, environmental exposure, or dynamic end use where low voltage power and high speed fiber optic communications are combined. Constructed as a breakout style cable, each optical fiber has enhanced protection in an elastomeric sub-cable jacket. Additionally, each electrical conductor is constructed utilizing high strand count copper with premium ETFE insulation. Offered in a tactical breakout cable construction, AFL’s tactical copper/fiber composite cable offers excellent tensile strength, crush resistance, impact resistance, bending performance and a wide operating temperature range. And with AFL’s selection of tactical cable jacket materials, the cable can be used in applications requiring exposure to UV, moisture, industrial chemicals or confined spaces.

Features

- Highly flexible for rapid deployment and ease of installation
- Ruggedized tactical cable design for operating in harsh conditions
- Combination power and fiber minimizes number of cables and saves space
- Supports all formats of high speed optical networking

Applications

- Military
- Broadcast
- Petrochemical
- Rail
- Mining

Performance Data—Testing per MIL PRF 85045

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>PERFORMANCE</th>
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</thead>
<tbody>
<tr>
<td>Testing per Installation Tensile Load</td>
<td>540 lbs</td>
</tr>
<tr>
<td>Operating Tensile Load</td>
<td>135 lbs</td>
</tr>
<tr>
<td>Min. Bend Radius Short Term</td>
<td>7.8 cm</td>
</tr>
<tr>
<td>Min. Bend Radius Long Term</td>
<td>3.9 cm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-60°C to +85°C</td>
</tr>
<tr>
<td>Crush Resistance</td>
<td>2000 N/cm of cable OD</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>200</td>
</tr>
<tr>
<td>Flex Resistance</td>
<td>2000</td>
</tr>
</tbody>
</table>

Rodent-deterrent Jacket Option Available
## Tactical Copper/Fiber Composite Cable

### Ordering Information

<table>
<thead>
<tr>
<th>AFL NO.</th>
<th>MAXIMUM ATTENUATION (dB/km)</th>
<th>OVERFILLED LAUNCH MINIMUM BANDWIDTH (MHz·km)</th>
<th>1 GIGABIT ETHERNET MINIMUM LINK DISTANCE (METERS)</th>
<th>10 GIGABIT ETHERNET MINIMUM LINK DISTANCE (METERS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>850 nm</td>
<td>1300 nm</td>
<td>1550 nm</td>
<td>850 nm</td>
</tr>
<tr>
<td>B%002*201#XH-2CU16</td>
<td>N/A</td>
<td>0.5</td>
<td>0.5</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Replace percent (%) in AFL No. with corresponding jacket type below.

1 = Tactical Polyurethane
2 = Flame Retardant Polyurethane
3 = LSZH Polyurethane
4 = StrataJac® Tactical+ Encapsulation

Replace asterisk (*) in AFL No. with corresponding fiber type below.

5 = 50/125 µm multimode GIGA-Link™ 600
6 = 62.5/125 µm multimode GIGA-Link™ 300
9 = Single-mode
K = SM Futureguide SR-15e Bend Insensitive
L = 50/125 µm OM3
C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide on page 23.
Rodent-deterrent Cable Jackets

Cables placed in outside plant or harsh environment applications are designed to endure the extreme challenges associated with temperature fluctuations, crush and impact, tensile loading, and even immersion or burial applications. Yet, surprisingly one of the biggest threats to fiber optic cable signal integrity is rodents chewing on cables to whittle down their incisors hence damaging the fibers within. The result is exposed or broken fiber links causing increased maintenance costs, reduced productivity and possibly lost revenue.

To combat these furry attacks, AFL has developed a new Rodent-deterrent enhancement option for its tactical and OSP fiber optic cables. These new jacket options significantly reduce cable damage from gnawing rodents. Tests show that the AFL bittering agent used in our new Rodent-deterrent Tactical and OSP cables repel rodents for far longer than cables without it.

Physical barriers like conduit can be effective for direct burial applications but they increase installation and material costs. Armoring tapes included in the cable construction can be effective as well but increase the diameter and weight of the cable. They will also require gloves for installation and electrical grounding and bonding become necessary concerns. Electrical current applied to the outside of the cable has been known to be used but holds little success and can be hazardous to technicians and installers. As a last resort, some installers have turned to rodenticides or lethal poisons to prevent rodent damage. Of course these are never a good idea due to the toxicity to humans and their environmental effects. AFL now offers an optimal alternative to these less than ideal methods. They provide a much safer and economical method of preventing rodent damage and since the bittering agents are incorporated directly into the cable jacket, there is no significant size or weight increase.

While there have been many methods to prevent rodents from chewing on fiber optic cables, by utilizing AFL’s new Rodent-deterrent cable jackets, customers can realize reduced maintenance costs and longer cable life cycles. Overall, these new cable jacket options offer a non-toxic, safe and effective method of controlling damage caused by rodents while still offering the ruggedness expected from AFL’s tactical and OSP fiber optic cables. AFL Rodent-deterrent bittering agents are available in outside plant loose tube cables, outdoor tight buffered cables, and our complete line of tactical tight-buffered cables. Contact AFL for specific ordering or specification information.

AFL offers a variety of cables that offer the Rodent-deterrent Jacket. Visit www.AFLglobal.com/rodent for more information.
Rodent-deterrent Cable Jackets

![Graph showing the effectiveness of rodent-deterrent cable jackets](graph.png)

Figure 1 – Rodent-deterrent Greatly reduces "rodent bites" on cables with additives in outer jacket

*The above data is for comparison value only and does NOT represent, constitute nor warrantee customer application performance.
# Tactical Cable Ordering Guide

**X1012K64188H-RD**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>X</td>
<td>Tactical Breakout</td>
</tr>
<tr>
<td>1</td>
<td>Breakout</td>
</tr>
<tr>
<td>012</td>
<td>Fiber Count 012</td>
</tr>
<tr>
<td>K</td>
<td>Fiber Type</td>
</tr>
<tr>
<td>64</td>
<td>Unit Jacket Dia. 64 = 6.4 mm</td>
</tr>
<tr>
<td>1</td>
<td>Jacket Print 1 = AFL Standard, 2 = Non-Standard, U = Unprinted</td>
</tr>
<tr>
<td>8</td>
<td>Jacket Color 1 = Blue, 2 = Orange, 3 = Green, 4 = Brown, 5 = Slate, 6 = White, 7 = Red, 8 = Black, 9 = Yellow, A = Violet, B = Rose, C = Aqua, K = Erika Violet, H = Desert Tan, D = Olive Drab, X = Mixed Fiber</td>
</tr>
<tr>
<td>8</td>
<td>Tight Buffer Color 1 = Blue, 2 = Orange, 3 = Green, 4 = Brown, 5 = Slate, 6 = White, 7 = Red, 8 = Black, 9 = Yellow, A = Violet, B = Rose, C = Aqua, K = Erika Violet, H = Desert Tan, D = Olive Drab, X = Mixed Fiber</td>
</tr>
<tr>
<td>H</td>
<td>Tight Buffer Type</td>
</tr>
<tr>
<td>RD</td>
<td>Extensions</td>
</tr>
</tbody>
</table>

*RD = Rodent Deterrent, SS = Stainless Steel Braid, BB = Bronze Braid, CuXX = (XX) Number of conductors, (XX) = 4 Fiber MicroTactical*
Please contact your AFL Sales Representative for information about our other products or services.

**FIBER OPTIC CABLE**  
(OPGW, ADSS, Loose Tube)

**FIBER OUTSIDE PLANT EQUIPMENT**

**FUSION SPLICING SYSTEMS AND ACCESSORIES**

**TEST AND INSPECTION EQUIPMENT**

Along with a broad range of products, we offer professional training through the Light Brigade®. Over 55,000 people worldwide have completed Light Brigade training. Our instructor-led classes provide critical knowledge and skills for technicians, engineers and others. Check out our standard and specialty courses at www.lightbrigade.com