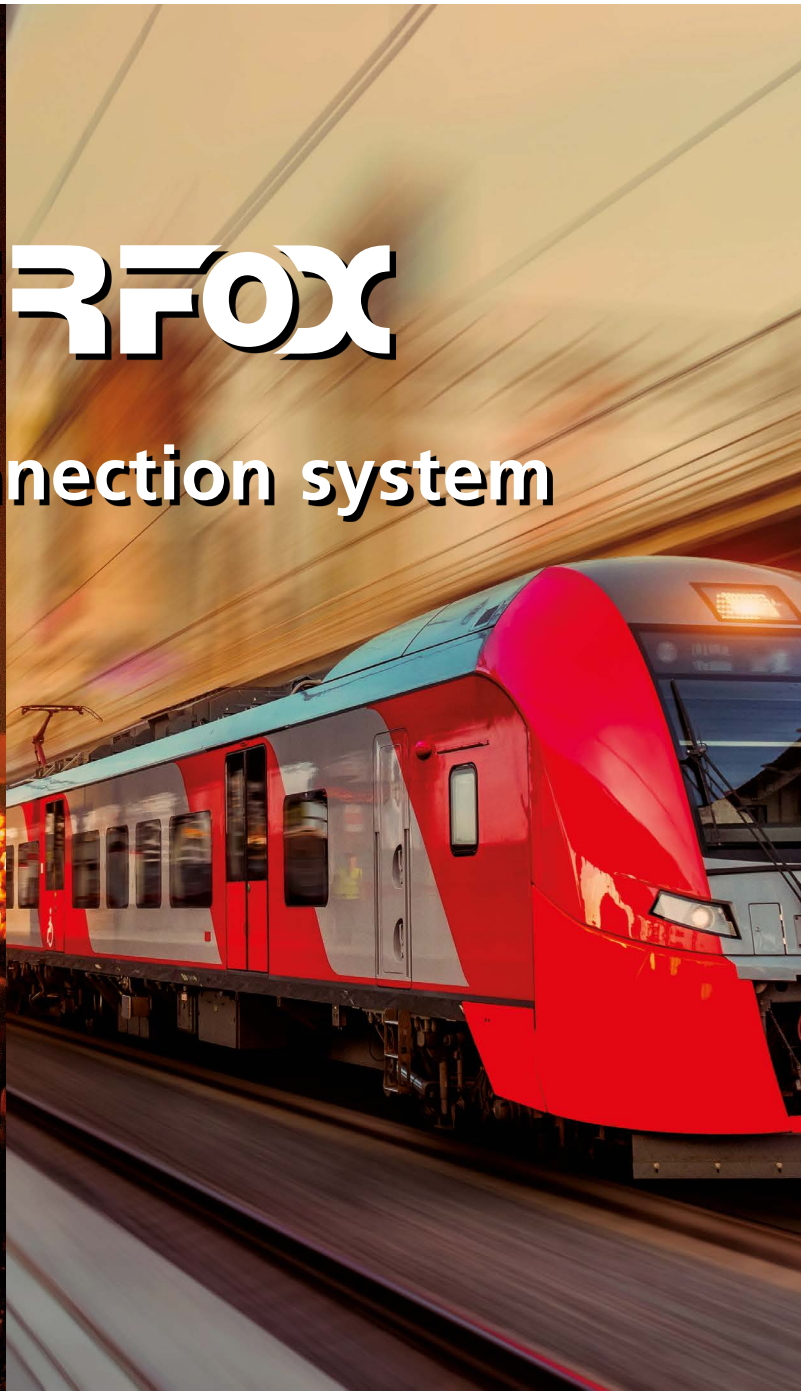




EXPANDED BEAM CONNECTOR

FIBERFOX

Fiber optic connection system



**TRUST
THE
ORIGINAL**

NEUTRIK®

A brand of the Neutrik Group

FIBERFOX

Fiber optic connection system



EBC15



EBC25

EXPANDED BEAM SOLUTIONS



FIBERFOX Expanded Beam Fiber Optic Connectors are designed to meet the requirements of MIL-DTL-83526 Military Specifications. While our EBC15 comes in a standard D-size format and is compatible to the MIL specification we also offer an EBC25 connector in a jam-nut design which is fully compliant to the MIL-DTL-83526. Expanded Beam fiber optic connectors are designed to operate in harsh environments, they use non-physical contact fiber optic termini that are IP68 sealed behind an anti-reflective coated ball lens.

This lens expands the beam to many times its original size aiding optical alignment and minimizing the effects of dust, debris and other environmental conditions. Because there is no wear on the optical surfaces / end faces of the termini during use, the FIBERFOX connector has excellent durability, in excess of 10'000 mating

cycles, providing a long service life interconnect solution. FIBERFOX is a hermaphroditic connector allowing multiple plug-to-plug cable assemblies to be combined to extend the length of the system. These connectors are available with two or four channels multimode lenses in Single & Multimode Technology.

In addition to the standard plugs on Multimode, FIBERFOX bridge receptacles are suitable with standard LC Patch Cables and acts as a unique LC to Expanded Beam converter.

FIBERFOX Connectors are used in Lighting, Network, PA, Video, Broadcast, Defense & Government, Railway and Oil & Gas for Communications, Audio / Video, and Sensing Applications.

Lighting & Network



PA Market



Video



Broadcast



Defense & Government



Railway



Oil & Gas Station



CORE TECHNOLOGY EXPANDED BEAM

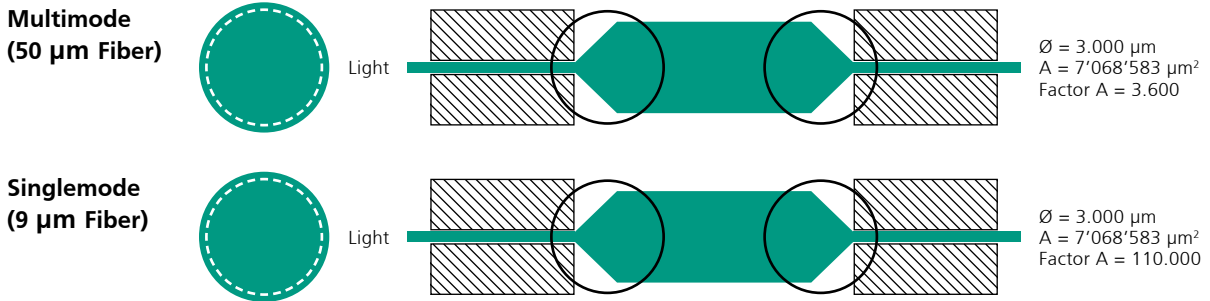
Expanded beam fiber optic connectors utilize a lens to expand and collimate the light emitting from an optical fiber. This collimated light beam is transmitted through an air gap to a mating connector, where the light is collected and focussed by a second lens into a second optical fiber to complete the connection. Like shown below.

With 50/125 multimode fiber, the expanded and collimated light beam has an active area

of around 3'600 times larger than the original 50 µm multimode fiber core, 9 µm singlemode the advantage of or expanded beam to 3 mm gets even higher.

The effect of collimating and greatly increasing the beam diameter, means that the connector is less sensitive to small particles of dust or other contamination which could completely obscure transmission in physical contact type connectors.

NEUTRIK FIBERFOX SOLUTION



The following diagram is a scale representation of physical contact and expanded beam diameters showing typical contaminant sizes:

Clean Surface	Contaminated	Result
		Dust Particle of $\varnothing = 100 \mu\text{m}$ can cover the full transmission core of the fiber and cleaning is mandatory.
		Dust Particle of $\varnothing = 100 \mu\text{m}$ covers 3.33 % of the lens surface and 90 % of the transmission power is still given.

● Dust Particle $\varnothing = 100 \mu\text{m}$

FIBERFOX 2CH Cable Connector

- Available in Singlemode & Multimode
- High performance IL & RL values
- $\varnothing = 5$ mm, PUR flame-retardant, halogen-free, bent tolerant Cable (Standard Cable)
- Heavy-duty connectors
- Cables are direct prolongable, no couplers required
- Wear-free connectors, > 10'000 mating cycles without any maintenance
- No special cleaning or measurement tools required
- Compatible with 2CH FIBERFOX System and all MIL-DTL-83526 Systems

SPECIFICATIONS – 2CH

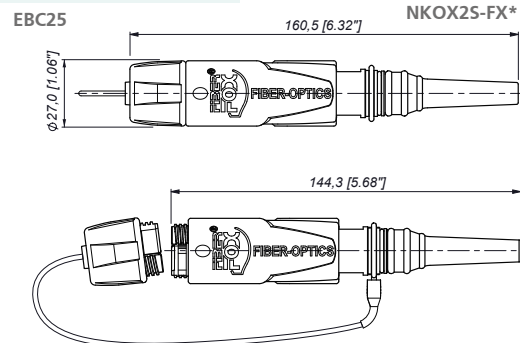
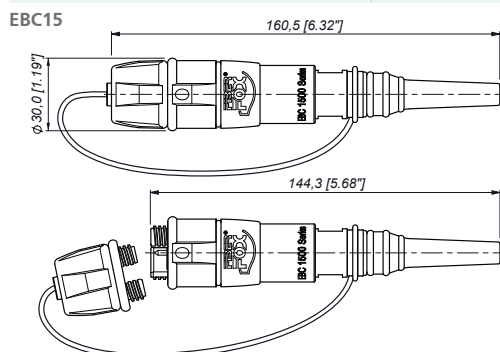
Gender	Hermaphroditic	
Channel	2	
Fiber Type	Singlemode	Multimode
Insertion Loss	typical 1.0dB*/per connection	typical 0.7dB/per connection
	max. 2.0dB*/per connection	max. 1.0dB/per connection
Return Loss	typical > 32 dB	N/A
According with	IEC 61300-3-4**	IEC 61300-3-6**
Wavelengths	850 nm / 1300 nm	
Lifetime	> 10'000 mating cycles	
Tensile Strength	1'800 N	
Compressive load	50'000 N	
IP Rating	EBC15:	IP68 mated & unmated (1 m for 60 min.)
	EBC25:	IP68 mated (15 m for 24 h acc. MIL-DTL-83526D Section 3.11.28) & unmated (1 m for 24 h)
Free fall Resistance	500 falls onto concrete from 1.2 M height	
Bump Resistance	4'000 bumps @ 40 g acceleration	
Vibrational Sinusoidal	10 - 500 Hz, 0.75 amplitude @ 10 g acceleration	
Compatibility	MIL-DTL-83526	
Flammability	UL94 V-0	
Temperature Range	-40° C to +70° C	



NKO2M3-FX* (EBC15 MM)
NKOX2M3-FX* (EBC15 MM X-TREME)
NKO25-FX* (EBC15 SM)
NKOX25-FX* (EBC15 SM X-TREME)



NKO2M3-FG (EBC25 MM)
NKOX2M3-FG* (EBC25 MM X-TREME)
NKO25-FG* (EBC25 SM)
NKOX25-FX* (EBC25 SM X-TREME)



* When tested with reference quality launch/receive cable assemblies.
** subject to termination method and fibre grade

FIBERFOX 4CH Cable Connector

- Available in Singlemode & Multimode
- High performance IL & RL values
- $\varnothing = 5.5$ mm, PUR flame-retardant, halogen-free, bent tolerant Cable (Standard Cable)
- Heavy-duty connectors
- Cables are direct prolongable, no couplers required
- Wear-free connectors, > 10'000 mating cycles without any maintenance
- No special cleaning or measurement tools required
- Compatible with 4CH FIBERFOX System and all MIL-DTL-83526 Systems

SPECIFICATIONS – 4CH

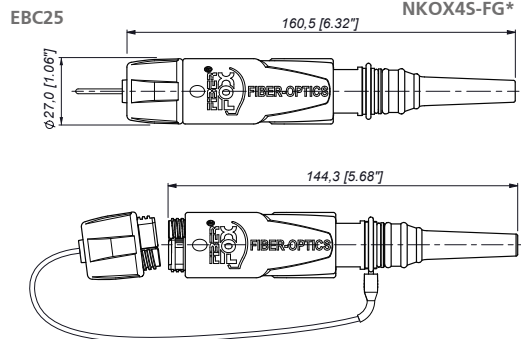
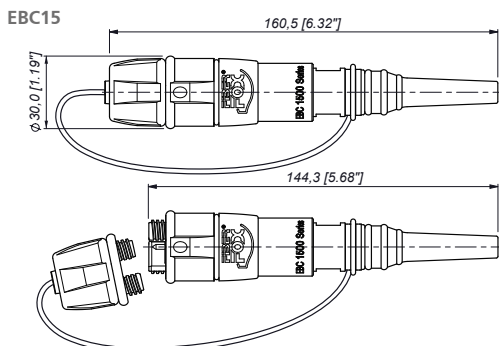
Gender	Hermaphroditic	
Channel	4	
Fiber Type	Singlemode	Multimode
Insertion Loss	typical 1.0dB*/per connection	typical 0.7dB/per connection
	max. 2.0dB*/per connection	max. 1.0dB/per connection
Return Loss	typical > 32 dB	N/A
According with	IEC 61300-3-4**	IEC 61300-3-6**
Wavelengths	850 nm / 1300 nm	
Lifetime	> 10'000 mating cycles	
Tensile Strength	1'800 N	
Compressive load	50'000 N	
IP Rating	EBC15:	IP68 mated & unmated (1 m for 60 min.)
	EBC25:	IP68 mated (15 m for 24 h acc. MIL-DTL-83526D Section 3.11.28) & unmated (1 m for 24 h)
Free fall Resistance	500 falls onto concrete from 1.2 M height	
Bump Resistance	4'000 bumps @ 40 g acceleration	
Vibrational Sinusoidal	10 - 500 Hz, 0.75 amplitude @ 10 g acceleration	
Compatibility	MIL-DTL-83526	
Flammability	UL94 V-0	
Temperature Range	-40° C to +70° C	



NKO4M-FX* (EBC15 MM)
NKOX4M3-FX* (EBC15 MM X-TREME)
NKO4S-FX* (EBC15 SM)
NKOX4S-FX* (EBC15 SM X-TREME)



NKO4M3-FG* (EBC25 MM)
NKOX4M3-FG* (EBC25 X-TREME)
NKO4S3-FG* (EBC25 SM)
NKOX4S-FG* (EBC25 SM X-TREME)



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** subject to termination method and fibre grade

FIBERFOX

Cable Connector Overview

EBC15

EBC25

Multimode

2CH

Standard Cable

X-TREME Cable



4CH

Standard Cable

X-TREME Cable

2CH

Standard Cable

X-TREME Cable



4CH

Standard Cable

X-TREME Cable

Singlemode

2CH

Standard Cable



4CH

Standard Cable

X-TREME Cable

2CH

Standard Cable



4CH

Standard Cable

X-TREME Cable

FIBERFOX 2CH

Chassis Connector

- Suitable for installation and wireways without special tools Integration of other fiber optic systems into FIBERFOX
- No splicer, no expertise required for Installation
- Very compact design - fits in every D-hole just like opticalCON®
- Easy patching with common patch Cords (LC to LC, LC to SC, LC to ST) with bridgE Solution for Multimode
- Fixed LC Patch Cables with Singlemode Chassis
- Extremely service-friendly

SPECIFICATIONS – 2CH

Gender	Hermaphroditic	
Mounting Direction	Front & Rear Mounting	
Chassis Shape	D-shape / Jam-Nut	
Locking device	Screwed	
Fiber Type	Singlemode	Multimode
Insertion Loss	typical 1.0dB*/per connection max. 2.0dB*/per connection	typical 0.7dB/per connection max. 1.0dB/per connection
Return Loss	typical > 32 dB	N/A
According with	IEC 61300-3-4**	IEC 61300-3-6**
Wavelengths	850 nm / 1300 nm	
Lifetime	> 10'000 mating cycles	
Tensile Strength	1'800 N	
Compressive load	50'000 N	
IP Rating	EBC15:	IP68 mated & unmated (1 m for 60 min.)
	EBC25:	IP68 mated (15 m for 24 h acc. MIL-DTL-83526D Section 3.11.28) & unmated (1 m for 24 h)
Free fall Resistance	500 falls onto concrete from 1.2 M height	
Bump Resistance	4'000 bumps @ 40 g acceleration	
Vibrational Sinusoidal	10-500 Hz, 0.75 amplitude @ 10 g acceleration	
Compatibility	MIL-DTL-83526	
Flammability	UL94 V-0	
Temperature Range	-40° C to +70° C	

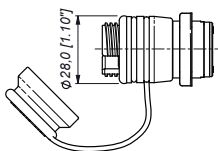


NO2M4DW-FX (EBC15 MM)
NO2SDW-FX (EBC15 SM)

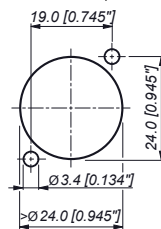


NO2M4JW-FG (EBC25 MM)
NO2SJW-FG (EBC25 SM)

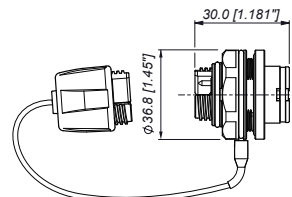
EBC15



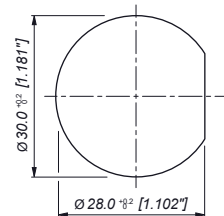
Panel Cutout D-shape (rear side)



EBC25



Panel Cutout Jam-Nut



* When tested with reference quality launch/receive cable assemblies.
** subject to termination method and fibre grade

FIBERFOX 4CH

Chassis Connector

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- No splicer, no expertise required for Installation
- Very compact design - fits in every D-hole just like opticalCON®
- Easy patching with common patch Cords (LC to LC, LC to SC, LC to ST) with bridgE Solution for Multimode
- Fixed LC Patch Cables with Singlemode Chassis

SPECIFICATIONS – 4CH

Gender	Hermaphroditic	
Mounting Direction	Front & Rear Mounting	
Chassis Shape	D-shape / Jam-Nut	
Locking device	Screwed	
Fiber Type	Singlemode	Multimode
Insertion Loss	typical 1.0dB*/per connection	typical 0.7dB/per connection
	max. 2.0dB*/per connection	max. 1.0dB/per connection
Return Loss	typical > 32 dB	N/A
According with	IEC 61300-3-4**	IEC 61300-3-6**
Wavelengths	850 nm / 1300 nm	
Lifetime	> 10'000 mating cycles	
Tensile Strength	1'800 N	
Compressive load	50'000 N	
IP Rating	EBC15:	IP68 mated & unmated (1 m for 60 min.)
	EBC25:	IP68 mated (15 m for 24 h acc. MIL-DTL-83526D Section 3.11.28) & unmated (1 m for 24 h)
Free fall Resistance	500 falls onto concrete from 1.2 M height	
Bump Resistance	4'000 bumps @ 40 g acceleration	
Vibrational Sinusoidal	10-500 Hz, 0.75 amplitude @ 10 g acceleration	
Compatibility	MIL-DTL-83526	
Flammability	UL94 V-0	
Temperature Range	-40° C to +70° C	

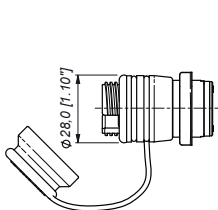


NO4M4DW-FX (EBC15 MM)
NO4SDW-FX (EBC15 SM)

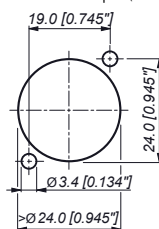


NO2M4JW-FG (EBC25 MM)
NO4SJW-FG (EBC25 SM)

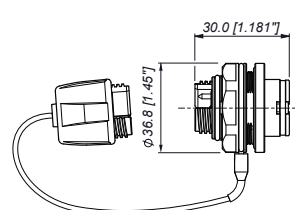
EBC15



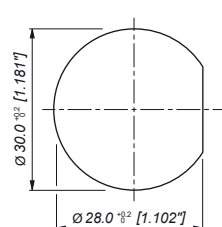
Panel Cutout D-shape (rear side)



EBC25



Panel Cutout Jam-Nut



* When tested with reference quality launch/receive cable assemblies.
** subject to termination method and fibre grade

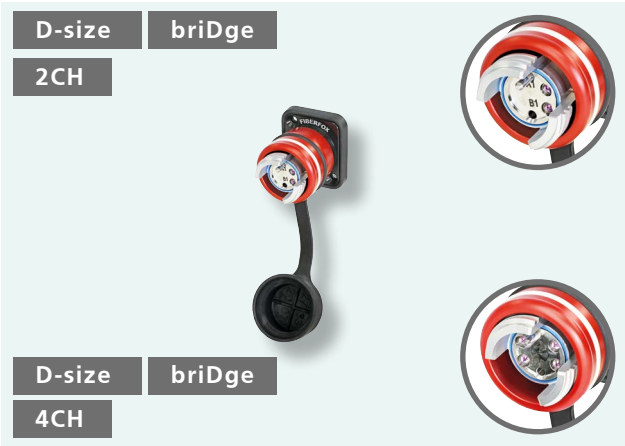
FIBERFOX

Chassis Connector Overview

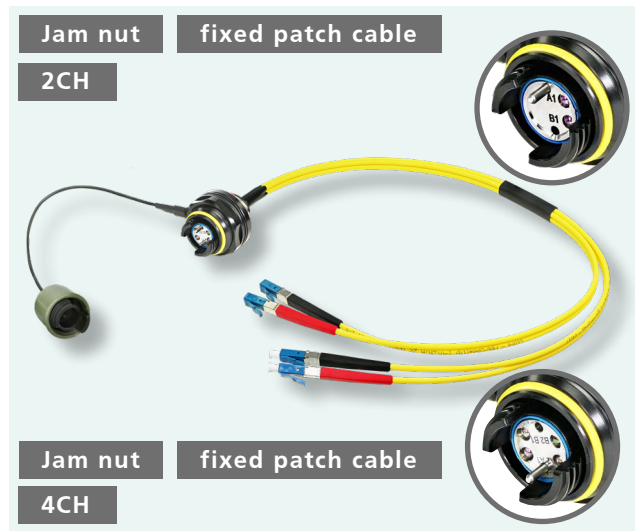
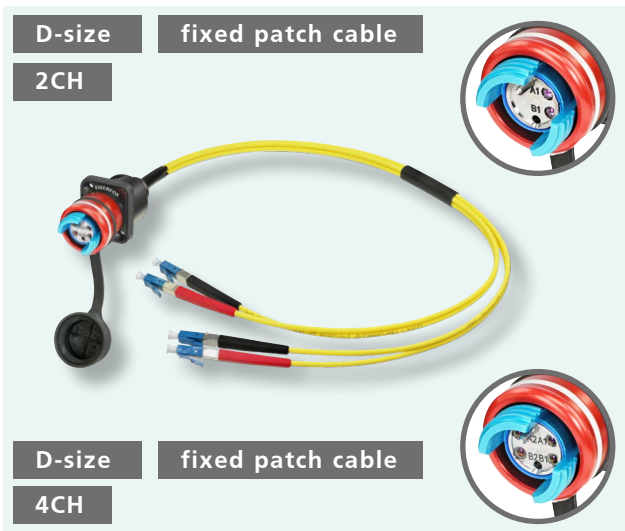
EBC15

EBC25

Multimode



Singlemode



FIBERFOX

MOBILE FIELD CABLE RANGE

Standard CABLE

FIBERFOX Multimode / Singlemode 2CH

Rugged and lightweight 2-channel mobile field cable, excellent cable retention due to aramid yarn, black PUR outer jacket, military approved.



FIBERFOX Multimode / Singlemode 4CH

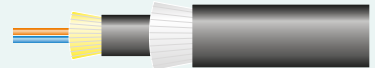
Rugged and lightweight 4-channel mobile field cable, excellent cable retention due to aramid yarn, black PUR outer jacket.



X-TREME CABLE

FIBERFOX X-TREME Multimode / Singlemode 2CH

2-channel X-TREME cable offering a cut-proof and rodent resistant double jacket glass yarn armoured cable construction, excellent cable retention due to aramid yarn, black PUR outer jacket.



FIBERFOX X-TREME Multimode / Singlemode 4CH

4-channel X-TREME cable offering a cut-proof and rodent resistant double jacket glass yarn armoured cable construction, excellent cable retention due to aramid yarn, black PUR outer jacket.



FIBERFOX SPLIT Cable Connector

- Custom configurations available
- FIBERFOX multichannel solution based on FIBERFOX EBC15 & EBC25
- Maximum flexibility, combining up to 12-channel
- 1m SPLIT fanout
- Color coding for channel identification
- Field assembly possible
- Dust and water resistant in mated condition

SPECIFICATIONS – SPLIT

Gender	Hermaphroditic	
Channel	4	
Fiber Type	Multimode	
Insertion Loss	typical 0.7 dB / max. 1.0 dB per connection	
Return Loss	N/A	
According with	IEC 61300-3-4**	IEC 61300-3-6**
Wavelengths	850 nm / 1300 nm	
Lifetime	> 10'000 mating cycles	
Tensile Strength	1'800 N	
Compressive load	50'000 N	
IP Rating	IP65	
Free fall Resistance	500 falls onto concrete from 1.2 M height	
Bump Resistance	4'000 bumps @ 40 g acceleration	
Vibrational Sinusoidal	10 - 500 Hz, 0.75 amplitude @ 10 g acceleration	
Compatibility	MIL-DTL-83526	
Flammability	UL94 V-0	
Temperature Range	-40° C to +70° C	



Triple SPLIT FF (EBC15)



Triple SPLIT FF (EBC25)

ORDERING & PACKAGING OPTIONS

-0	Airspool
-1	Case
-2	Drum Schill GT310
-3	Drum Schill GT380
-4	Drum Schill HT582
-5	Drum Schill GT450
-6	Drum Schill SK4812



0



1



2



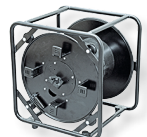
3



4



5



6

FIBERFOX SPLIT

Cable Connector Overview

EBC15

EBC25

Multimode

SPLIT

Standard Cable

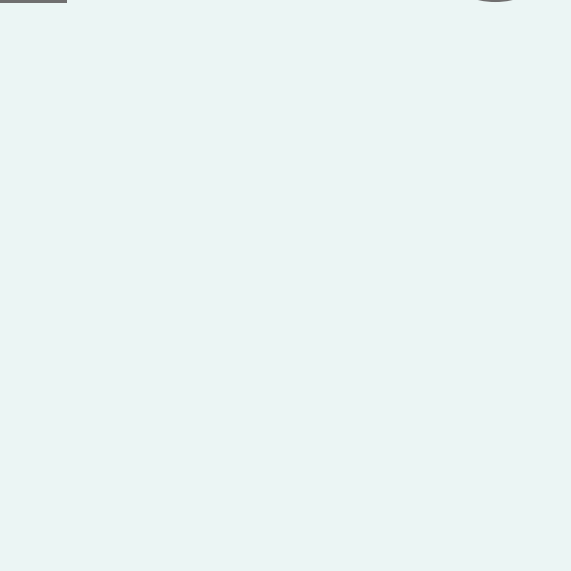
2CH



SPLIT

Standard Cable

4CH



SPLIT

Standard Cable

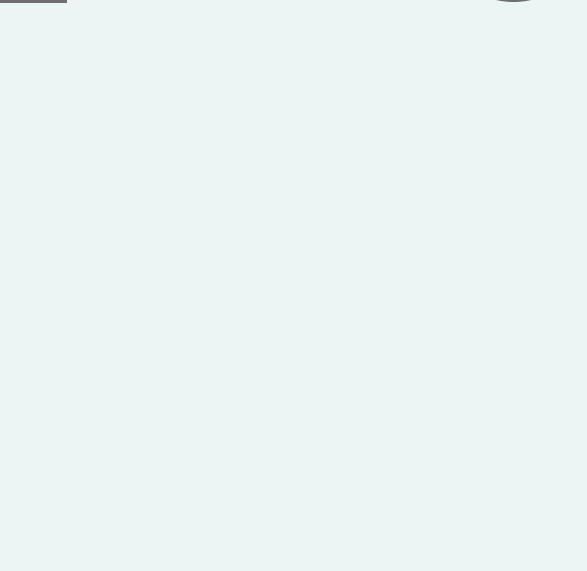
2CH



SPLIT

Standard Cable

4CH





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