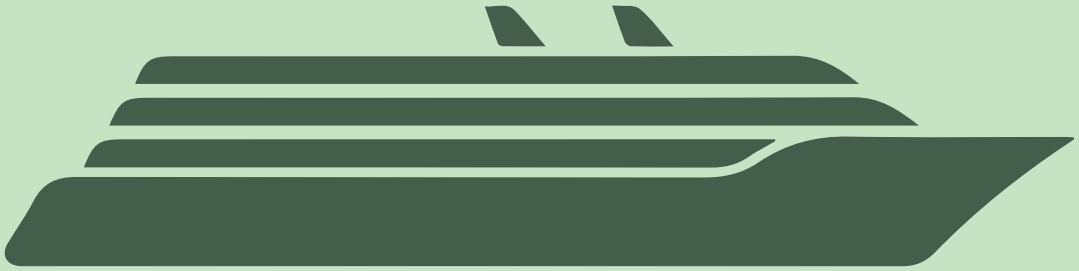
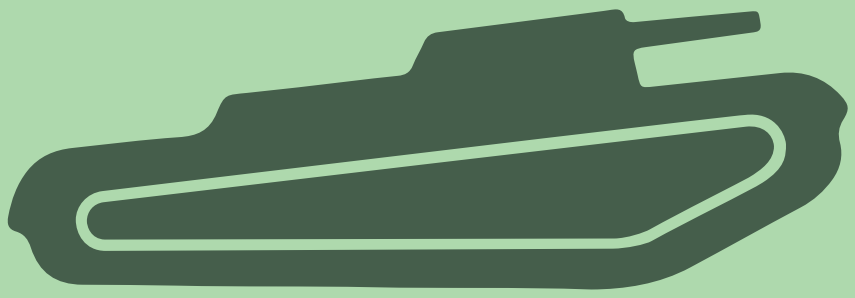
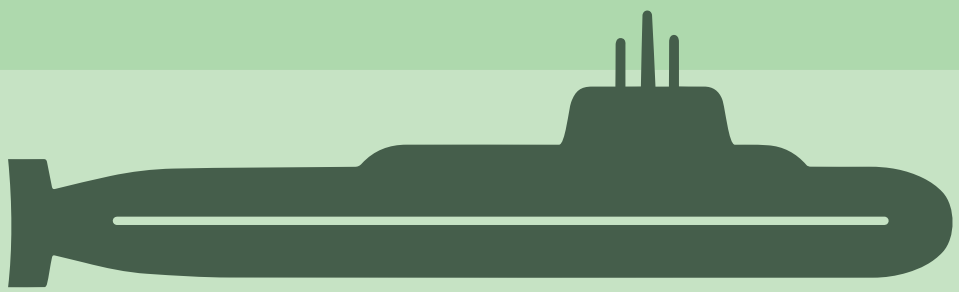
Customized fiber optic cables

for extreme and mission-critical operations







The past, present, and future of photonics excellence.

Quality
made in
Germany

WEINERT

Content

Welcome to the forefront of optical technology with WEINERT'S fiber optic cables brochure.

03 A look back at our evolution

04 Our strengths, your advantage

05 Product solutions for every application

06 **Marine cables**

07 Universal cable (SHF1)

08 Universal cable with resistance to fire (SHF1)

09 Universal cable with resistance to fire (SHF2)

10 Breakout cable (SHF1)

11 Special breakout cable (SHF1)

12 Cable for remotely operated vehicles (ROV)

13 Cable for oil in water monitoring

14 Material classes

16 **Military cables**

17 Mobile field cable: 2–4 fibers

18 Mobile field cable: drag chain qualified

19 Mobile field cable: double sheathed

20 Mobile field cable: 6–12 fibers

21 Cable for armored vehicle with radiation resistant fiber

22 **Naval cables**

23 Cable for submarine antenna masts

24 Acc. to VG 95218 part 30 type A

25 Acc. to VG 95218 part 30 type B

26 Acc. to VG 95218 part 7 type F

27 Acc. to VG 95218 part 7 type FA

28 VG fiber specifications

29 Assembly with installation aid system

30 The coolest spot in the solar system

31 Why choose WEINERT

A look back at our evolution

1991

In the established industrial environment of Roth, Franconia, Germany, the foundation for our journey was laid. This year marked the beginning of fiber optic cable production within LEONI's facilities – a decisive step into a technology that would define our future.

2001

Driven by entrepreneurial vision and technological ambition, Andreas Weinert founded FO Systems GmbH. This marked the transition from production expertise towards independent development and specialized fiber optic solutions.

2003

With growing capabilities and market relevance, FO Systems GmbH became part of the LEONI Group. This integration strengthened industrial capabilities and expanded access to global markets.

2007

Strategic expansion continued with the acquisition of Fibertech GmbH in Berlin. This step broadened the technological base and reinforced expertise in advanced fiber optic solutions.

2010

A year of significant growth and internationalization. The integration of j-Plasma GmbH in Jena enhanced technological depth, while the acquisition of Romack Fiber Optics Inc. in Williamsburg, USA, marked a major step into the North American market.

2021

A defining milestone in our history. Through a management buyout led by Andreas Weinert and Marcus Bloom-Pflug, the Fiber Optics business unit of LEONI was acquired. This included optical preforms, specialty fibers, fiber optic cables, and optical components and systems. With this step, WEINERT Industries AG was established as an independent and focused technology company.

2022

Continuing our global expansion, WEINERT Optic Electric Technology (Jiangsu) Co., Ltd. was founded. At the same time, the acquisition of assets in the specialty fiber segment further strengthened our position in high-performance fiber technologies.

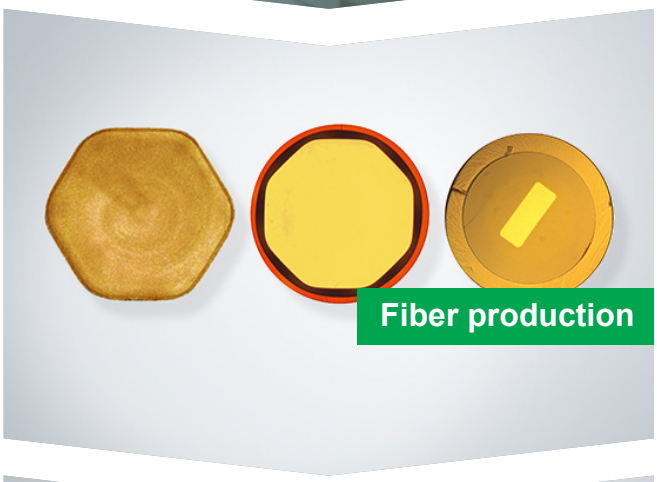
Today

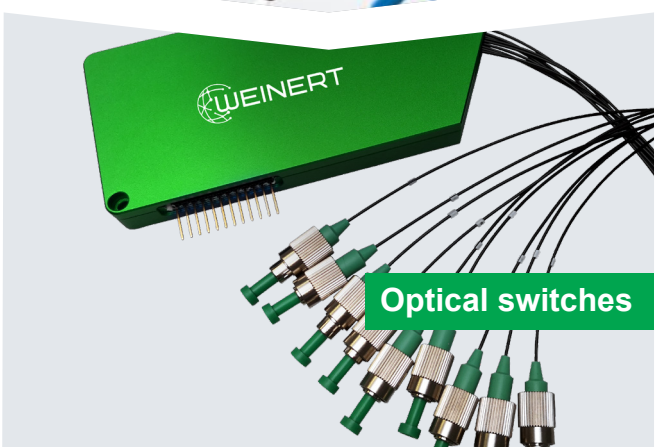
WEINERT stands for high-performance fiber optic solutions engineered for demanding and mission-critical environments worldwide.

Our strengths, your advantage

- Integrated value chain
- Client-specific product and system solutions
- International development and engineering partner
- OEM service and integration partner
- Quality made in Germany
- Global presence and support
- Active participation in international standardization committees (IEC, DIN)

Direct influence at every stage of the value chain





Product solutions for every application

Our fields of competence

- **Communications**
  wiring systems for buildings and industry
- **Energy**
  mining, wind, solar, nuclear, petroleum, utilities
- **Mechanical and plant engineering**
  drag chains and switches
- **Automation and robotics**
  Industrial Ethernet, bus systems, high-performance lasers for materials processing
- **Transportation engineering**
  air and space travel, transport
- **Defense**
  system components and tactical field cables
- **Laser technology**
  active and passive fiber optic cables for laser welding/laser processing
- **Medicine & life sciences**
  laser probes, endoscopic equipment
- **Sensor technology/analytics**
  color, opacity and gas sensor technology, environmental engineering
- **Naval & maritime engineering**
  steering control cables
- **Spectroscopy**
  chemical and food industries, astrophysics
- **Scientific institutions**
  universities, research centers
- **Optical engineering**
  synthetic fused silica

FiberConnect® marine cables

Type approval from Det Norske Veritas (DNV) ensures that the shipyards install optical cables tested and certified in accordance with valid class program standards. In shipbuilding in particular, the reliable interaction of many components is of crucial importance for trouble-free operation. It is also vital in the event of fire to be able to rely on the function of the fiber optic cables for a verified period (functional integrity).

WEINERT solutions for marine applications

With the market Marine, WEINERT provides the customers with all the expertise of a global enterprise, focused on the needs of the shipbuilding industry. With an extensive portfolio of products and services, WEINERT will assist you across the entire lifecycle of your projects – worldwide. As a strong partner, WEINERT offers application-specific cables and cable system solutions meeting national and international standards. You can trust in the well-founded sector and product knowledge as well as many years of experience. Innovative quality products, prove and project-related system solutions, as well as highest availability and sustainable service management are matter, of course for WEINERT.

Universal cable with sheathing compound SHF1

FiberConnect® U-DQ(ZN)BH n …

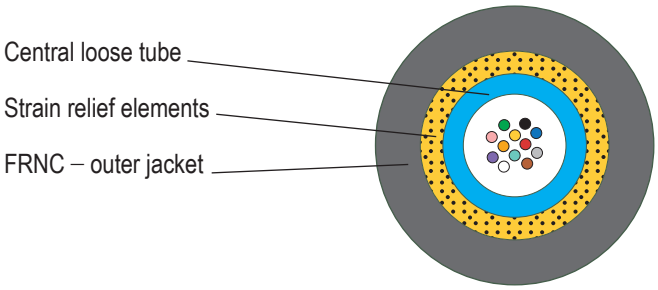
DNV ☑ approved

Flame-retardant

Halogen-free

Rodent protection

Longitudinally waterproof



Description

Longitudinally waterproof fiber optic cable. For fixed installation in ships, in cable ducts, tubes and also suitable for interconnections.

Design

Cable core	Jelly-filled loose tube
Strain relief elements	E-glass yarns
Cable jacket	Halogen-free and flame-retardant material (FRNC), sheathing compound type SHF1, acc. to IEC 60092-360

Thermal properties

Transport and storage	-25 °C to +70 °C
Installation	-5 °C to +50 °C
In use acc. IEC 60794-1-22 F1	-25 °C to +70 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2 and IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of the combustion gases	acc. to IEC 60754-2
Fluorine content	acc. to IEC 60684-2

Mechanical properties

Min. bending radius fixed (static) acc. to IEC 60794-1-111 E11A	10 x outside diameter
Max. tensile force acc. to IEC 60794-1-21 E1, short-term	1,000 N
Max. crush resistance acc. to IEC 60794-1-21 E3, short-term	2,500 N/dm

Standardization

IEC 60092-378; electrical installation in ships – Part 378: optical fiber cables, DNV type approval, certificate no. TAE000053M; IEC 60794-2

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Fire load [MJ/m]
4	84138023#	U-DQ(ZN)BH 4...	7.0	56.9	0.84
8	84138045#	U-DQ(ZN)BH 8...	7.0	57.1	0.83
12	84138067#	U-DQ(ZN)BH 12...	7.0	57.2	0.83
16	8413808B#	U-DQ(ZN)BH 16...	7.5	64.1	0.98
20	8413810D#	U-DQ(ZN)BH 20...	7.5	64.3	0.97
24	8413812F#	U-DQ(ZN)BH 24...	7.5	64.4	0.96

Universal cable with resistance to fire 180 min and sheathing compound SHF1

FiberConnect® U-D(ZN)BH n … FS ZB

DNV ☑ approved

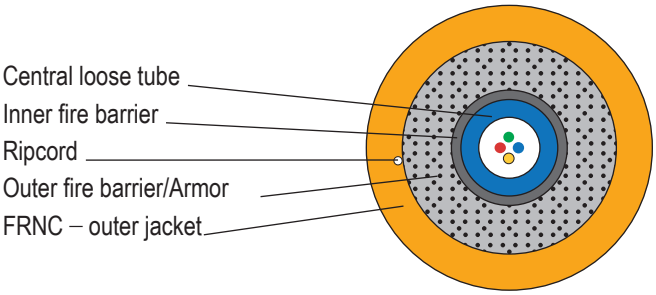
CPR ☑ approved

Fire-resistant

Flame-retardant

Halogen-free

Rodent protection



Description

Fiber optic universal cable with circuit integrity with a non-metallic armor and for enhanced tensile load.
For fixed installation in ships, in cable ducts and in tubes.

Design

Cable core	Jelly-filled loose tube, inner fire barrier: fire protection tape made of woven glass
Armor	Outer fire barrier: multifunctional E-glass yarns, two layers (S and Z), as strain relief element and non-metallic rodent protection
Cable jacket	Halogen-free and flame-retardant material FRNC (SHF1, IEC 60092 Part 360)

Thermal properties

Transport and storage	-40 °C to +70 °C
Installation	-5 °C to +50 °C
In use	-40 °C to +60 °C

Fire performance

Flame retardancy	acc. to IEC 60332-1-2 and IEC 60332-3-22 Cat. A
Smoke density	acc. to IEC 61034
Acidity of the combustion gases	acc. to IEC 60754-1
Halogen-free	acc. to IEC 60754-2
Circuit integrity 90 min	acc. to IEC 60331-11 and -25 max. change of attenuation, 2.0 dB VDE test report 111100-9020-0001/11291
Resistance to fire	acc. to EN 50200: 2015 (830, +40/-0 °C, 180 min)

Mechanical properties

Min. bending radius (IEC 60794-1-2 G1)	
static 15 x outside diameter, dynamic 20 x outside diameter	
Max. pull force (IEC 60794-1-2 E1)	2,500 N
Max. crush resistance (IEC 60794-1-2 E3)	3,000 N/dm

Standardization

IEC 60794-2
DNV type approval, certificate no. TAE0000156,
EN 50575: 2014 + A1: 2016 no. of declaration of performance
CDERF0000005 V5

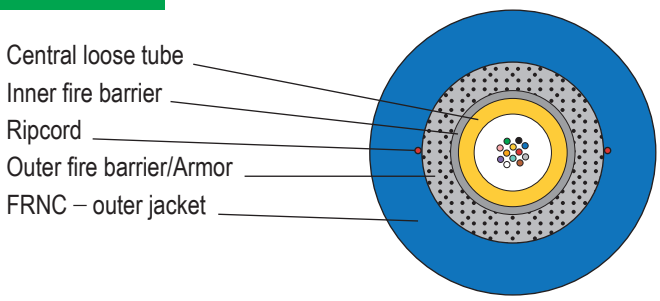
Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Fire load [MJ/m]
4	84040023####ZGELO	U-D(ZN)BH 4... FS ZB	10.3	127	1.03
6	84040034####ZGELO	U-D(ZN)BH 6... FS ZB	10.3	127	1.03
8	84040045####ZGELO	U-D(ZN)BH 8... FS ZB	10.3	127	1.03
12	84040067####ZGELO	U-D(ZN)BH 12... FS ZB	10.3	127	1.03
24	8404012F####ZGELO	U-D(ZN)BH 24... FS ZB	10.8	134	1.28

Universal cable with resistance to fire 90 min and sheathing compound SHF2

FiberConnect® U-DQ(ZN)BH n … ZB FS UV QFAU XS

DNV ☑ approved
Fire-resistant
Flame-retardant
Halogen-free
Mud-resistant
Oil-resistant
Rodent protection
UV-resistant



Description

Longitudinally waterproof fiber optic cable for fixed installation indoor and outdoor in cable ducts and in tubes and also suitable for inter-connections with non-metallic rodent protection and for higher tensile force. Designed to comply with requirements for offshore, railway and marine applications where high performance to chemical environment is required.

Design

Cable core	Jelly-filled loose tube consisting of two layers. Inner fire barrier: fire protection tape made of woven glass
Armour	Outer fire barrier: multifunctional E-glass yarns, two layers (S and Z), as strain relief element and non-metallic rodent protection
Cable jacket	Halogen-free and flame-retardant material (FRNC), LE.X.CO (WEINERT X-linked COmpound), type SHF2 (cross-linked compound according to IEC 60092-360), type SHF mud (halogen-free, mud-resistant thermoset compound according to NEK TS 606)

Thermal properties

Transport and storage	-25 °C to +85 °C
Installation	-5 °C to +50 °C
In use	-20 °C to +70 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2
Cable is flame-retardant	acc. to IEC 60332-3-22 Cat. A
Cable is flame-retardant	acc. to IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of the combustion gases	acc. to IEC 60754-2
Circuit integrity test (750 °C, 90 min)	acc. to IEC 60331-11, IEC 60331-25

Mechanical properties

Min. bending radius during installation (dynamic) with additional tensile strain acc. to IEC 60794-1-2 E6	15 x outside diameter
Min. bending radius in moved application (dynamic) without additional tensile strain acc. to IEC 60794-1-2 E6	20 x outside diameter
Max. tensile force acc. to IEC 60794-1-2 E1	2,500 N
Water penetration acc. to IEC 60794-1-2 F5 B	24 h, 3 m
Max. crush resistance acc. to IEC 60794-1-2 E3, long-term	3,000 N/dm

Standardization

IEC 60794-2, IEC 60092-360, NEK TS 606,
DNV type approval, certificate no. TAE000019H

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Fire load [MJ/m]
4	84100023####	U-DQ(ZN)BH 4... ZB FS UV QFAU XS	10.3	125	1.51
6	84100034####	U-DQ(ZN)BH 6... ZB FS UV QFAU XS	10.3	125	1.51
8	84100045####	U-DQ(ZN)BH 8... ZB FS UV QFAU XS	10.3	125	1.51
12	84100067####	U-DQ(ZN)BH 12... ZB FS UV QFAU XS	10.3	125	1.51
24	8410012F####	U-DQ(ZN)BH 24... ZB FS UV QFAU XS	10.8	130	1.68

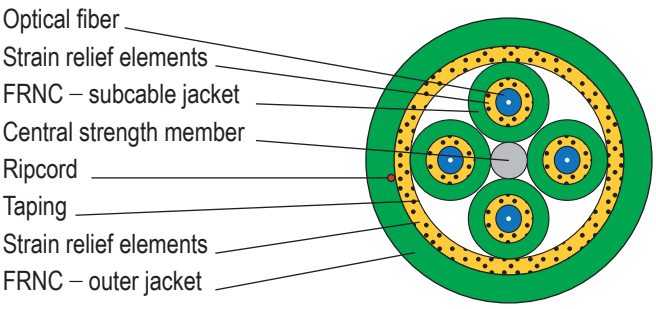
Breakout cable with sheathing compound SHF1

FiberConnect® AT-V(ZN)H(ZN)H n …

DNV ☑ approved

Flame-retardant

Halogen-free



Description

Rugged cable for the application in heavy ambiance. For the installation in cable ducts and in tubes and for direct connector assembly.

Design

Cable core	Semi-tight buffered fiber, outer diameter 0.9 mm, strain relief elements (aramid), subcable jacket FRNC, FRP-element in center, breakout subcables stranded in layers
Strain relief	Aramid yarns, wrapped in two layers (left and right spin)
Cable jacket	Halogen-free and flame-retardant material FRNC (SHF1, IEC 60092 Part 360)

Thermal properties

Transport and storage	-25 °C to +85 °C
Installation	-5 °C to +50 °C
In use acc. to IEC 60794-1-2 F1	-20 °C to +80 °C

Fire performance

Flame retardancy	acc. to IEC 60332-1-2 and to IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of combustion gases	acc. to IEC 60754-2
No corrosive and toxic fumes	

Mechanical properties

Min. bending radius acc. to IEC 60794-1-2 G1	
static 10 x outside diameter, dynamic 15 x outside diameter	
Max. crush resistance acc. to IEC 60794-1-2 E3	
short-term, 4,000 N/dm, long-term	1,000 N/dm
Impact strength acc. to IEC 60794-1-2 E4	
(radius 300 mm, 30 cycles/minute,10 cycles)	2 Nm
Max. pulling force acc. to IEC 60794-1-2 E1	1,200 N

Standardization

Based on IEC 60794-2,
DNV type approval, certificate no. TAE0000152

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Fire load [MJ/m]
2	84950481#	AT-V(ZN)H(ZN)H 2…	10.1	85	1.48
4	84950478#	AT-V(ZN)H(ZN)H 4…	10.1	85	1.48
6	84950482#	AT-V(ZN)H(ZN)H 6…	11.8	120	2.01
8	84950483#	AT-V(ZN)H(ZN)H 8…	13.6	155	2.79
10	84950484#	AT-V(ZN)H(ZN)H 10…	15.6	185	3.31
12	84950485#	AT-V(ZN)H(ZN)H 12…	17.4	270	4.65

Cable for remote diagnostic system with sheathing compound SHF1

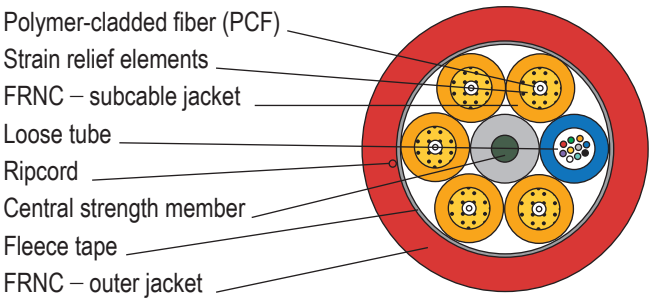
FiberConnect® AT-VD(ZN)HH 5K200/230 + 10G62.5/125

DNV ☑ approved

Flame-retardant

Halogen-free

Oil-resistant



Description

Robust breakout cable for installation on ships in below-deck and on deck applications but not under water. For fixed indoor and outdoor installation in cable ducts, on cable trays or in cable conduits and direct connector assembly. Detects faults in the electronics or entire drive system.

Design

Cable core	Polymer-cladded optical fiber 200/230 µm (step index) Strain relief elements (aramid), subcable jacket FRNC Jelly-filled loose tube outer diameter 2.4 mm with 2–10 optical fibers
Stranding	Loose tube and the breakout subcable elements are stranded around a central strength member (GFR)
Cable jacket	Halogen-free, flame-retardant and oil-resistant material (FRNC), type SHF1

Thermal properties

Transport and storage	-30 °C to +85 °C
Installation	-20 °C to +50 °C
During operation	-20 °C to +85 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2
Cable is flame-retardant	acc. to IEC 60332-3-22 Cat. A
Cable is flame-retardant	acc. to IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034
Halogen-free (except ETFE buffer on the fibers)	acc. to IEC 60754-1
Acidity of the combustion gases (except ETFE buffer on the fibers)	acc. to IEC 60754-2

Mechanical properties

Min. bending radius	static 100 mm dynamic 150 mm
Pull force, max.	static 200 N dynamic 800 N
Crush resistance, max.	short-term 4,000 N/dm long-term 1,000 N/dm

Standardization

Multimode fibers (K200/230), category A3e IEC 60793-2-30, IEC 60794-3, DNV type approval, certificate no. TAE0000177

Order numbers

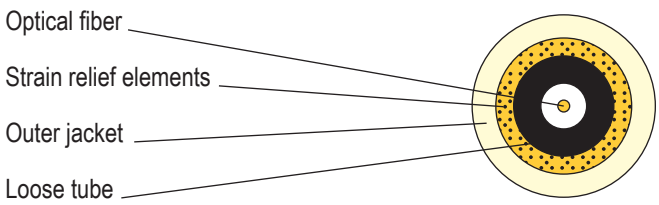
No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Fire load [MJ/m]
5 + 10	84951090Z###	AT-VD(ZN)HH 5K200/230 + 10...	9.4	89	1.97

Cable for remotely operated vehicles (ROV)

FiberConnect® U-D(ZN)9Y 1E9/125 G657A2/B2 3,0

Halogen-free

Oil-resistant



Description

Cable can be used under water (maximum deepness have to be tested by the customer).
Floating/buoyant cable acc. to ISO 1183: Density: approx. 0.9 +/- 0.1 g/cm³ Design.

Design

Cable core	Jelly-filled loose tube
Strain relief	Braided
Cable jacket	Polypropylene (PP)

Thermal properties

Transport and storage	-30 °C to +80 °C
Installation	-20 °C to +80 °C
In use	-20 °C to +80 °C

Fire performance

Cable is halogen-free

Mechanical properties

Min. bending radius	35 mm
Min. breaking strength	nominal 3,000 N
Max. tensile force in operation	
at 1.1% fiber elongation	950 N
Max. crush resistance	
long-term	500 N/dm
Impact resistance	3 impacts, 1 Nm, R = 12.5 mm

Standardization

IEC 60794-2

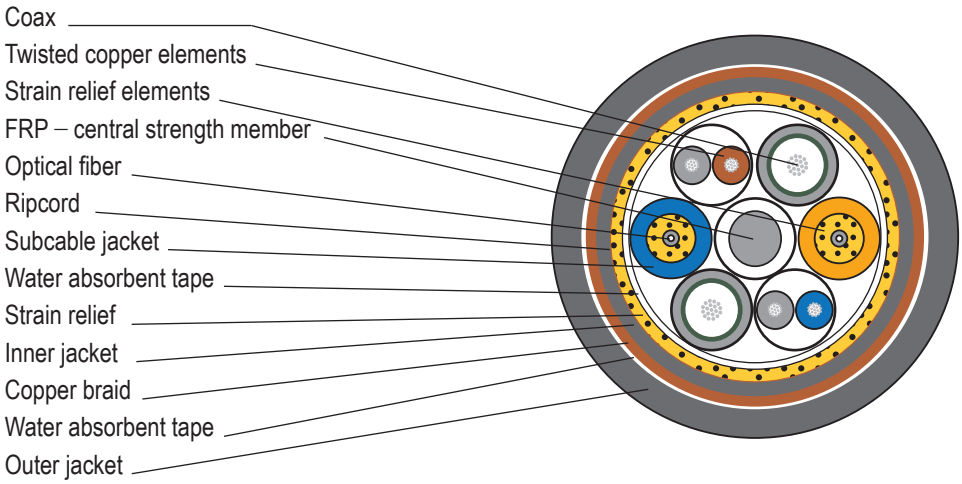
Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
1	84951046U###	U-D(ZN)9Y 1E9/125 G657A2/B2 3,0	3.0	8.5

Cable for oil in water monitoring

FiberConnect® AT-VQ(ZN)H(ZN)H(C)2YFR 2S600/660 + 2xZ50 + 2x2x0.5 mm²

- Flame-retardant
- Halogen-free
- Oil-resistant
- UV-resistant



Description

Breakout cable for the installation indoor and outdoor, in cable ducts and in tubes. For direct connector assembly.
Fiber optic elements for laser-induced fluorescence based measurement principle.

Design

Cable core	AS600/660UVST, tr, 920 multimode – step index – fiber, twisted copper elements, coax elements
Strain relief	Aramid yarns, wrapped in two layers (left and right spin)
Inner jacket	Halogen-free and flame-retardant material
Copper braid	C-Shield with tinned copper wires
Outer jacket	Halogen-free and flame-retardant material

Thermal properties

Transport and storage	-40 °C to +85 °C
Installation	-5 °C to +50 °C
In use	-20 °C to +80 °C

Fire performance

Corrosivity of combustion gases	acc. to IEC 60754-2
Halogen-free	acc. to IEC 60754-1 (except ETFE buffer)
Flame retardancy	acc. to IEC 60332-1-2 and to IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034

Mechanical properties

Min. bending radius	static	15 x outside diameter
	dynamic	20 x outside diameter
Max. crush resistance	long-term	3,000 N/dm
Max. pull force	short-term	3,000 N
	long-term	1,500 N

Standardization

Tests according to IEC 60794-1-2

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
2	84Y00300Z###	AT-VQ(ZN)H(ZN)H(C)2YFR 2S600/660 + 2xZ50 + 2x2x0.5 mm²	19.6	410

FiberConnect® marine cables

Material classes

The characteristic of mud resistance is based on a special long-term test of resistance to agents typically encountered in offshore engineering – of calcium bromide brine, IRM 903 testing oil as well as the oil-based EDC 95-11 testing agent. WEINERT offers a wide range of shipbuilding cables, most of them are designed for installation on ships and similar installations such as offshore platforms.

What should be considered, however, is that these cables are fitted with differing jacket materials and these decisively define their suitability for varying areas of application. The jacket material's classification according to the IEC 60092-360 standard provides an initial guide.

Sheathing materials for shipboard and offshore cables according to IEC 60092-30

Jacket material	Main areas of maritime application	
SHF1	Installation ›	■ in ship interiors ■ in protected areas on ship decks ■ in areas that can briefly come into contact with seawater[1] ■ in areas that can briefly come into contact with oil[2] (e.g. diesel or engine oil)
SHF2 with improved resistance to oil	Installation ›	■ in ship interiors ■ on ship decks ■ in the interior of offshore platforms ■ in and on offshore wind turbines ■ in and on converter stations of offshore wind farms ■ in areas that can come into continuous[3] contact with seawater ■ in areas that can come into continuous[4] contact with oil (e.g. diesel or engine oil)
SHF2 with mud resistance[6]	Installation ›	■ in the interior of offshore platforms ■ on deck of offshore drilling platforms ■ in areas that can come into continuous and long-term[3] contact with seawater ■ in areas that can come into continuous and long-term[5] contact with oil (e.g. crude oil or refinery derivatives)

[1] Contact with seawater lasts only a few hours and the cable sheath can dry completely again › ambient temperature max. +30 °C

[2] Contact with oil only takes a few minutes and the cable sheath can dry completely again › ambient temperature max. +40 °C

[3] Contact with seawater can be permanent

[4] Contact with oil only lasts a few days and the cable sheathing can dry completely again › ambient temperature max. +40 °C

[5] Contact with oil can last for several years › ambient temperature max. +40° C

[6] Cables with the ‘SHF2 with mud resistance’ characteristic can also be deployed for applications where the ‘SHF2 and SHF2 with improved resistance to oil’ material is recommended because this characteristic is higher grade

FiberConnect® military cables

The military frequently uses optical cables in mobile use for connecting command posts due to their protection against tapping. These cables must be resistant to abrasion, reelable at all temperatures and they should reliably protect the fibers despite their small outer diameter. This type of cable is usually assembled with optical lens connectors. In addition, optical cables are used in military technology such as tanks and artillery for connecting weapon control systems. These cables have to withstand enormous mechanical stress and temperatures. Regardless of whether you need cables for tactical field use or for other special applications – we have the solution.

© Boevaya mashina

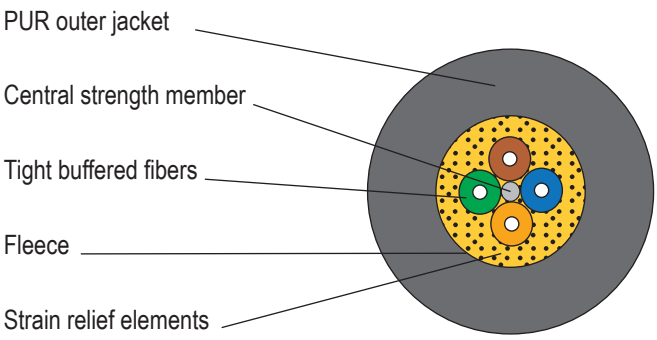
Cable for mobile field application

FiberConnect® A-V(ZN)11Y n … TB900L

Halogen-free

Oil-resistant

UV-resistant



Description

Flexible cable for moved application indoor and outdoor, for harsh industrial environment, with abrasion-resistant PUR jacket. For direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid, wrapped
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-55 °C to +85 °C
Installation	-55 °C to +85 °C
In use acc. to IEC 60794-1-2 F1	-55 °C to +85 °C

Fire performance

Halogen-free	acc. to IEC 60754-1

Mechanical properties

Max. tensile force	
acc. to IEC 60794-1-2 E1, short-term	see table below
Min. bending radius during assembly	
(dynamic) with additional tensile strain	
acc. to IEC 60794-1-2 E6	10 x outside diameter
Min. bending radius in moved application	
(dynamic) without additional tensile strain	
acc. to IEC 60794-1-2 E6	15 x outside diameter
Max. crush resistance	
acc. to IEC 60794-1-2 E3, short-term	see table below
Torsion	
acc. to IEC 60794-1-2 E7	5,000 cycles, +/-1080° at -40 °C
	3,000 cycles, +/-1080° at -55 °C

Standardization

IEC 60794-3

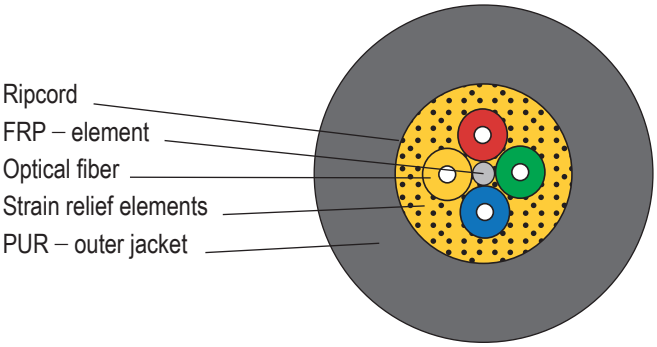
Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Max. tensile force [N]	Max. crush resistance [N/dm]
2	84951333####	A-V(ZN)11Y 2... TB900L	5.0	22	700	1,800
4	84951334####	A-V(ZN)11Y 4... TB900L	5.8	30	900	2,000

Cable for mobile field application

FiberConnect® A-V(ZN)11Y n … TB900L

- Drag chain qualified
- Halogen-free
- Oil-resistant
- UV-resistant



Description

Flexible cable for moved application indoor and outdoor. Ruggedized for industrial application, chemical resistance, abrasion resistance and crush resistance. For direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid, with additional compression relief elements
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-55 °C to +85 °C
Installation	-55 °C to +85 °C
In use acc. to IEC 60794-1-2 F1	-55 °C to +85 °C

Fire performance

Halogen-free	acc. to IEC 60754-1

Mechanical properties

Min. bending radius acc. to IEC 60794-1-2, method E11, procedure 1	static 10 x outside diameter dynamic 15 x outside diameter
Max. tensile strength acc. to IEC 60794-1-2, method E1	short-term max. 2,500 N long-term max. 1,500 N
Max. crush resistance acc. to IEC 60794-1-2, method E3	short-term max. 8,000 N/dm long-term max. 4,000 N/dm
Impact resistance acc. to IEC 60794-1-2, method E4, 3 impacts, 1.5 Nm, flexing test acc. to IEC 60794-1-2 E8	(2,000 cycles, D = 80 mm, F = 10 N, L (pulling path) = 1.5 m)
Drag chain test	2,000,000 cycles

Standardization

IEC 60794-3

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
2	84951035####	A-V(ZN)11Y 2... TB900L	5.5	28
4	84951036####	A-V(ZN)11Y 4... TB900L	5.5	28.5

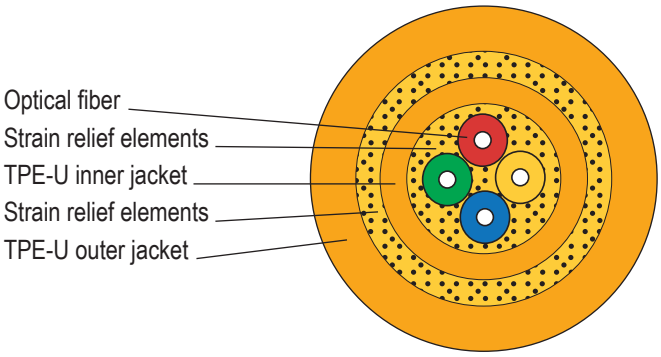
Cable for mobile field application

FiberConnect® A-V(ZN)11Y(ZN)11Y 4 … TB900L

Halogen-free

Oil-resistant

UV-resistant



Description

Flexible cable for moved application indoor and outdoor. Ruggedized for industrial application, chemical resistance, abrasion resistance and crush resistance. For direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-55 °C to +80 °C
Installation	-40 °C to +70 °C
In use acc. to IEC 60794-1-2 F1	-40 °C to +70 °C

Fire performance

Halogen-free	acc. to IEC 60754-1

Mechanical properties

Min. bending radius fixed (static)	
acc. to IEC 60794-1-2 E11A	90 mm
Min. bending radius during assembly (dynamic)	
with additional tensile strain	
acc. to IEC 60794-1-2 E6	120 mm
Max. tensile force	
acc. to IEC 60794-1-2 E1	2,000 N
Max. crush resistance	
acc. to IEC 60794-1-2 E3, long-term	1,000 N/dm
Impact resistance	
acc. to IEC 60794-1-2 E4	30 impacts, 1 Nm, R = 12.5 mm

Standardization

IEC 60794-3

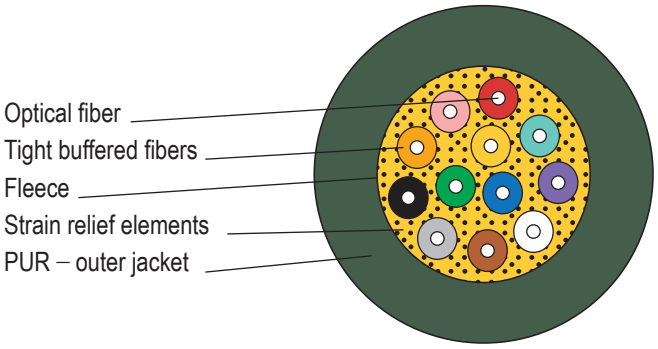
Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
4	84950042####	A-V(ZN)11Y(ZN)11Y 4... TB900L	6.0	33

Cable for mobile field application

FiberConnect® A-V(ZN)11Y n … TB900L

Oil-resistant



Description

For mobile applications, can be used both inside and outside buildings.
The outer jacket has a very high abrasion resistance. For direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-40 °C to +85 °C
Installation	-25 °C to +50 °C
In use	-40 °C to +85 °C

Fire performance

Halogen-free	acc. to IEC 60754-1

Mechanical properties

Min. bending radius in use (static)	10 x outside diameter
during installation (dynamic)	15 x outside diameter
Max. tensile force	see table below
Max. crush resistance, long-term	see table below

Standardization

IEC 60794-3

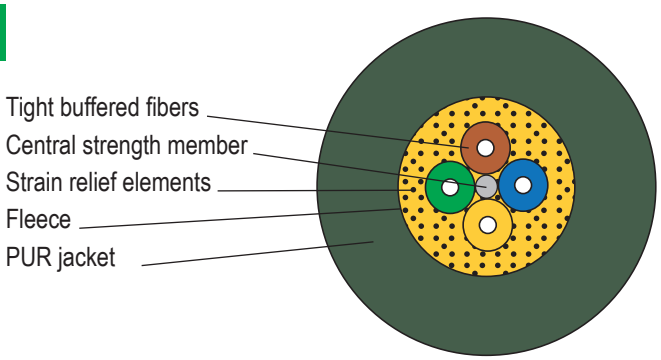
Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	Max. tensile force [N]	Max. crush resistance [N/dm]
6	84950864####	A-V(ZN)11Y 6... TB900L	6.0	30	2,000	2,000
8	84951831####	A-V(ZN)11Y 8... TB900L	6.8	30	900	2,000
12	84951852####	A-V(ZN)11Y 12... TB900L	6.5	33	1,400	2,000

Cable for armored vehicle with radiation-resistant fiber

FiberConnect® A-V(ZN)11Y 4… TB900L RR

- Flame-retardant
- Halogen-free
- Oil-resistant
- Radiation-resistant
- UV-resistant



Description

Flexible cable for moved application indoor and outdoor. For harsh industrial environment, with abrasion-resistant PUR jacket and direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid, wrapped
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-46 °C to +90 °C
Installation	-46 °C to +90 °C
In use acc. to IEC 60794-1-2 F1	-46 °C to +90 °C

Fire performance

Flame-retardant	acc. to IEC 60332-1-2
Cable is halogen-free	acc. to IEC 60754-1

Mechanical properties

Min. bending radius fixed (static) acc. to IEC 60794-1-2 E11A	5 x outside diameter
Min. bending radius in moved application (dynamic) without additional tensile strain acc. to IEC 60794-1-2 E6	10 x outside diameter
Max. tensile force acc. to IEC 60794-1-2 E1, short-term	800 N
Max. crush resistance acc. to IEC 60794-1-2 E3, short-term	2,000 N/dm
Torsion acc. to IEC 60794-1-2 E7	1,000 cycles, +/-360° per m
Impact resistance acc. IEC 60794-1-2 E4	15 impacts, 2.0 Nm, R = 300 mm

Standardization

IEC 60794-3

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
4	84951896####	A-V(ZN)11Y 4... TB900L RR	5.3	30

FiberConnect® naval cables

With our WEINERT naval products we have specialized in the demands of naval shipbuilding. For instance, along with inboard cables for all naval vessels, we supply laterally and longitudinally waterproof cables for outboard applications on submarines.

Neutral buoyancy and floating trailing and underwater cables or tensile cables with either steel or aramid strain relief elements for rated loads up to several tons as well as coiled cables round off our range for naval shipbuilding.

WEINERT naval cabling

- longitudinally and transversally water-blocked cables
- inboard and outboard applicable
- compliant with VG standards, everything is done in our own production plants

As a manufacturer of customized outboard installation cables for naval vessels, WEINERT offers, for more than ten years now, a wide range of cables with the following characteristics:

- seawater resistance
- operating lifetime
- transversal and/or longitudinal water blocking up to a pressure of 63 bar

The cables are for example installed in submarines operating in

- Israel
- Germany
- South Africa
- Turkey
- Greece
- Korea

© Salvatore Todaro

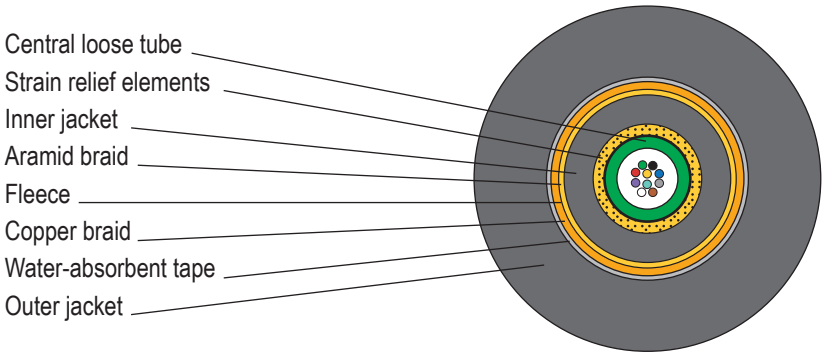
Cable for submarine antenna masts

FiberConnect® A-DQ(ZN)2Y(ZN)(C)11Y 4E9/125 + 6G50/125

Halogen-free

Oil-resistant

Longitudinally waterproof



Description

Longitudinally waterproof fiber optic cable for fixed installation indoor and outdoor, in cable ducts and in tubes. For harsh industrial and marine environment, with abrasion-resistant PUR jacket. For flexible routing under motion and vibration. The fiber optic cable is specifically designed for demanding environments where dynamic mechanical stress, continuous bending movements and repetitive flexing occur, such as marine and offshore antenna masts.

Design

Cable core	Jelly-filled loose tube
Strain relief	Aramid, swellable
Inner jacket	Polyethylene (PE), braided with aramid yarn & copper braid
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-40 °C to +70 °C
Installation	-5 °C to +50 °C
In use acc. to IEC 60794-1-2 F1	-25 °C to +70 °C

Fire performance

Halogen free acc. to IEC 60754-1

Mechanical properties

Min. bending radius fixed (static)	
acc. to IEC 60794-1-2 E11A	200 mm
Min. bending radius in moved application (dynamic)	
with additional tensile strain	
acc. to IEC 60794-1-21 E6	250 mm
Max. tensile force	
acc. to IEC 60794-1-2 E1	1,800 N
Max. crush resistance	
acc. to IEC 60794-1-2 E3, long-term	2,000 N/dm
Longitudinally waterproof	
acc. to IEC 60794-1-2 F5A	l = 3 m, t = 24 h

Standardization

IEC 60794-3

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]
10	84951895Z###	A-DQ(ZN)2Y(ZN)(C)11Y 4E9/125 + 6G50/125	13.2	190

Central loose tube cable acc. to VG 95218 part 30 type A

FiberConnect® U-DQ(ZN)H n … ZB VG

VG ☑ approved

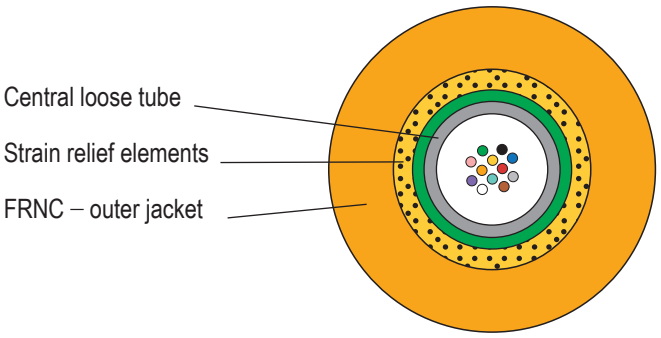
Flame-retardant

Halogen-free

Oil-resistant

UV-resistant

Longitudinally waterproof



Description

Ruggedized for industrial application, chemical resistance, abrasion resistance, crush resistance.
Cable for the installation on ships in below-deck and on deck applications but not under water.

Design

Cable core	Jelly-filled loose tube
Strain relief	Aramid, swellable
Outer jacket	Halogen-free and flame-retardant material (FRNC)

Thermal properties

Transport and storage	-33 °C to +85 °C
Installation	-15 °C to +50 °C
In use acc. to IEC 60794-1-2 F1	-33 °C to +85 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of the combustion gases	acc. to IEC 60754-2

Mechanical properties

Min. bending radius fixed (static)	
acc. to IEC 60794-1-2 E11A	15 x outside diameter
Min. bending radius during assembly (dynamic)	
acc. to IEC 60794-1-2 E6	20 x outside diameter
Max. tensile force	
acc. to IEC 60794-1-2 E1	2,000 N
Max. crush resistance	
acc. to IEC 60794-1-2 E3, long-term	2,000 N/dm
Impact resistance	
acc. to IEC 60794-1-2 E4	3 impacts, 2.0 Nm, R = 12.5 mm
Longitudinally waterproof	
acc. to IEC 60794-1-2 F5A	l = 3 m, t = 24 h
Torsion acc. to IEC 60794-1-2 E7	10 cycles, l = 1 m, F = 50 N

Standardization

Approval according to VG 95218-30 type A

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	VG part number
12	84065067####	U-DQ(ZN)H 12... ZB VG	10.5	110	VG95218T030A02#
24	8406512F####	U-DQ(ZN)H 24... ZB VG	10.5	120	VG95218T030A01#

Breakout cable acc. to VG 95218 part 30 type B

FiberConnect® I-V(ZN)HH n… TB900L 2,2 VG

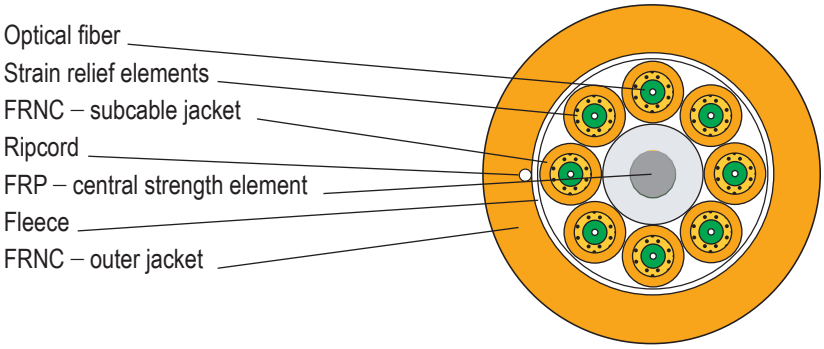
VG ☑ approved

Flame-retardant

Halogen-free

Oil-resistant

UV-resistant



Description

Ruggedized for industrial application, chemical resistance, abrasion resistance, crush resistance. Robust breakout cable for the installation on ships in below-deck and on deck applications but not under water. For direct connector assembly.

Design

Cable core	Tight buffered fiber TB900L, outer diameter 0.9 mm Strain relief elements (aramid), subcable jacket (FRNC)
Stranding	Breakout subcable and if necessary fillers stranded around a central strength member (FRP)
Outer jacket	Halogen-free, flame-retardant and oil-resistant material (FRNC)

Thermal properties

Transport and storage	-33 °C to +85 °C
Installation	-15 °C to +50 °C
In use acc. to IEC 60794-1-2 F1	-33 °C to +85 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2
Cable is flame-retardant	acc. to IEC 60332-3-24 Cat. C
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of the combustion gases	acc. to IEC 60754-2

Mechanical properties

Min. bending radius installed (static)	
acc. to IEC 60794-1-2 E11A	10 x outside diameter
Min. bending radius during the installation (dynamic)	
without additional tensile strain	
acc. to IEC 60794-1-2 E6	20 x outside diameter
Max. tensile force	
acc. to IEC 60794-1-2 E1	2,400 N
Max. crush resistance	
acc. to IEC 60794-1-2 E3, long-term	2,000 N/dm
Impact resistance	
acc. to IEC 60794-1-2 E4	15 impacts, 2.0 Nm, R = 12.5 mm
Torsion acc. to IEC 60794-1-2 E7	10 cycles, l = 1 m, F = 50 N

Standardization

Approval according to VG 95218-30 type B

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	VG part number
4	8406602L####	I-V(ZN)HH 4... TB900L 2,2 VG	8.7	80	VG95218T030B08#
6	8406604L####	I-V(ZN)HH 8... TB900L 2,2 VG	11.5	145	VG95218T030B09#
8	8406606L####	I-V(ZN)HH 12... TB900L 2,2 VG	15.3	260	VG95218T030B10#
12	8406608L####	I-V(ZN)HH 16... TB900L 2,2 VG	15.0	230	VG95218T030B11#

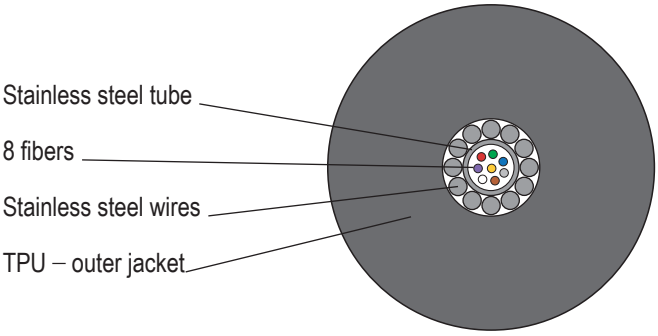
Cable for underwater applications acc. to VG 95218 part 7 type F

FiberConnect® A-D(S)(R 0,6)11Y 8… VG

VG ☑ approved

Flame-retardant

Oil-resistant



Description

Ruggedized for industrial application, chemical resistance, abrasion resistance, crush resistance. Cable for the installation on ships in below-deck and on deck applications but not under water. Suitable for use under water up to a depth of 600 m.

Design

Cable core	Jelly-filled stainless steel tube with stranding around, number of stranded wires 12
Stranding	Breakout subcable and if necessary fillers stranded around a central strength member (FRP)
Outer jacket	Polyurethane (TPE-U), halogen-free, flame-retardant

Thermal properties

Transport and storage	-46 °C to +85 °C
Installation	-5 °C to +50 °C
In use acc. to IEC 60794-1-2 F1	-46 °C to +85 °C

Fire performance

Cable is flame-retardant

Mechanical properties

Min. bending radius in moved application (dynamic)	
without additional tensile strain	
acc. to IEC 60794-1-21 E6	10 x outside diameter
Max. tensile force	
acc. to IEC 60794-1-2 E1	2,000 N
Max. crush resistance	
acc. to IEC 60794-1-2 E3, long-term	4,000 N/dm

Standardization

Cable according to VG 95218-7 type F

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	VG part number
8	84951322A000	A-D(S)(R 0,6)11Y 8E9/125 VG	10.0	125	VG95218T007F01D
8	84951322M000	A-D(S)(R 0,6)11Y 8G62,5/125 VG	10.0	125	VG95218T007F01A
8	84951322J000	A-D(S)(R 0,6)11Y 8G50/125 OM5BI VG	10.0	125	VG95218T007F01P

Cable for mobile field application acc. to VG95218 part 7 type FA

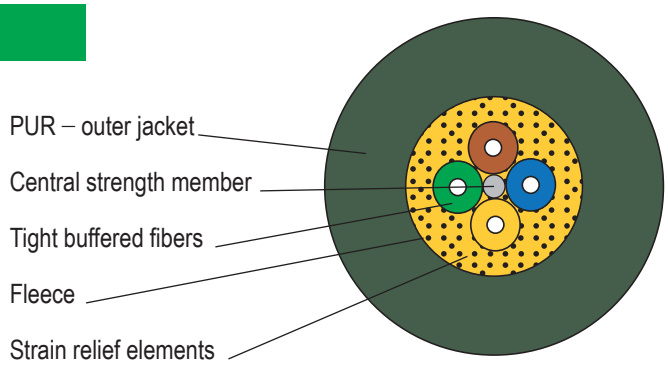
FiberConnect® A-V(ZN)11Y n … TB900L VG

VG ☑ approved

Flame-retardant

Oil-resistant

UV-resistant



Description

Flexible cable for moved application indoor and outdoor. For harsh industrial environment, with abrasion-resistant PUR jacket and direct connector assembly.

Design

Cable core	Tight buffered fibers TB900L, outer diameter 0.9 mm
Strain relief	Aramid, wrapped
Outer jacket	Polyurethane (TPE-U)

Thermal properties

Transport and storage	-46 °C to +85 °C
Installation	-46 °C to +85 °C
In use acc. to IEC 60794-1-2 F1	-46 °C to +85 °C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2

Mechanical properties

Max. tensile force	
acc. to IEC 60794-1-2 E1, short-term	800 N
Min. bending radius during assembly (dynamic)	
with additional tensile strain	
acc. to IEC 60794-1-2 E6	15 x outside diameter
Min. bending radius in moved application (dynamic)	
without additional tensile strain	
acc. to IEC 60794-1-2 E6	10 x outside diameter
Max. crush resistance	
acc. to IEC 60794-1-2 E3, short-term	2,000 N/dm
Torsion acc. to IEC 60794-1-2 E7	1,000 cycles, +/-360° per m
Impact resistance	
acc. to IEC 60794-1-2 E4	15 impacts, 2.0 Nm, R = 300 mm

Standardization

According to VG 95218-7 type FA

Order numbers

No. of fibers	Part number	Cable description	Outer diameter [mm]	Weight [kg/km]	VG part number
2	84951475####	A-V(ZN)11Y 2... TB900L VG	5.8	35	VG95218T007FA01#
4	84951476####	A-V(ZN)11Y 4... TB900L VG	5.8	35	VG95218T007FA02#

Fiber specifications according to VG standard

We deploy singlemode, multimode, and specialty optical fibers – including large core, radiation-resistant, and polymer optical fibers (POF) – optimized for performance in demanding and mission-critical environments. We incorporate optical fibers compliant with relevant VG standards, ensuring proven performance and reliability for military and defense applications:

Fiber specifications

VG fiber type (Dash no.)	A	B	C	D	E	F
IEC	G62.5/125 OM1	G50/125 OM2	G50/125 OM3	E9/125 OS1	G50/125 OM4	G50/125 OM5
IEC 60793-10 or -50 type A1b	A1b	A1a.1	A1a.2	B6a	A1a.3	A1a.4
Order no.	84######L	84######X	84######V	84######A	84######W	84######J
				84######U		

Geometry/mechanical properties

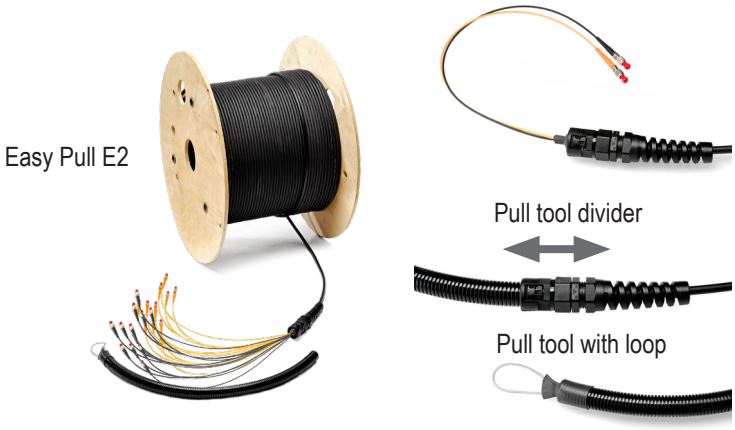
Core diameter (µm)	62.5 ± 3	50 ± 2.5	50 ± 2.5	–	50 ± 2.5	50 ± 2.5
Mode field diameter (at 1,310 nm) (µm)	–	–	–	9.2 ± 0.4	–	–
Cladding diameter (µm)	125 ± 2	125 ± 1	125 ± 1	125 ± 0.7	125 ± 1	125 ± 1
Coating diameter (µm)	245 ± 10	245 ± 10	245 ± 10	245 ± 10	245 ± 10	245 ± 10
Core non-circularity (%)	< 5	< 5	< 5	–	< 5	< 5
Cladding non-circularity (%)	< 1	< 1	< 1	< 0.7	< 1	< 1
Core/clad concentricity error (µm)	< 1.5	< 1.5	< 1.5	< 0.5	< 1.5	< 1.5
Eccentricity of coating (µm)	< 10	< 10	< 10	< 10	< 10	< 10
Screen test	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi

Transmission properties

Wavelength (nm)	850		1,300		850		1,300		850		1,300		1,310		1,550		850		1,300		850	953		1,300
Attenuation max. (dB/km)	3.5		1.5		3.5		1.5		3.5		1.5		0.4		0.4		3.5		1.5		3.0	3.0		1.5
Bandwidth min. (MHz · km)	200		500		500		500		1,500		500		–		–		3,500		500		3,500	1,850		500
Effective group of refraction	1,497		1,493		1,483		1,478		1,483		1,478		1,4695		1,4701		1,483		1,478		1,483			1,478
Numerical aperture	0.275 ± 0.015				0.200 ± 0.015				0.200 ± 0.015				–		–		0.200 ± 0.015				0.200 ± 0.015			
Dispersion coefficient max. (ps/nm · km)	–				–				–				3.5		18		–				–			
Zero dispersion wavelength (nm)	–				–				–				1,304		– 1,324		–				–			
Dispersion slope (ps/nm² · km)	–				–				–				≤ 0.092				–				–			
Cutoff wavelength (cabled) (nm)	–				–				–				≤ 1,260				–				–			
Polarization mode dispersion (ps/√km)	–				–				–				≤ 0.1				–				–			

Installation aid system for fiber numbers from 1 to 32

FiberConnect® Easy Pull



Description

This installation system can be used to protect assemblies with up to 32 single fibers with IP54 protection. The protective conduit can be easily unlatched and removed after pulling-in. The connectors can be joined to adapters or transceivers as normal. Gauging the assembly in the plant is an integral part of the delivery package.

Fanout

The fanout specially developed for the Easy Pull E2 system contains no metal and is especially sturdy despite its low weight.
The installation protection is splashproof and offers good protection against mechanical damage. The high flexibility permits trouble-free installation, even under difficult conditions. The installation protection can be removed without any tools.

Properties

- **Sturdy, watertight, flexible and UV-resistant protective conduit made from PA 6, with pulling eye**
- **Cable gland can be used for quick and secure fixing in control cabinets and boxes**
- **Torsion-free removal of the protective conduit for protecting the connector**
- **With more than two fibers, the individual whips are graduated in accordance with the customer's requirements**

No. of fibers	2	4	5–12	13–32
Min. bending radius of cable	acc. to cable datasheet	acc. to cable datasheet	acc. to cable datasheet	acc. to cable datasheet
Min. bending radius buffered fiber/whip	30 mm	30 mm	30 mm	30 mm
Outer Ø fanout element	14 mm	14 mm	21 mm	30 mm
Resistance to a pull pressure protective conduit	350 N	350 N	350 N	350 N
Max. pull force on tool	500 N	500 N	600 N	600 N
PG gland	M20 / PG13.5	M25 / PG21	M25 / PG21	M50 / PG36
Outer Ø of protective conduit	20 mm	30 mm	30 mm	55 mm
Min. hole Ø for throughfeeds with cabinets and walls	35 mm	40 mm	45 mm	60 mm
Material-protective conduit	PA 6, flame-retardant / halogen-free / UV-stable			

Proven under the most extreme conditions – from deep sea to space

When systems must perform without compromise, reliable components are essential – whether deployed underwater, in military applications, or even in outer space. A compelling example is NASA's "Cold Atom Lab" (CAL) aboard the International Space Station (ISS). In this highly complex experiment, temperatures of just 100 picokelvin are achieved – one billionth of a degree above absolute zero and therefore colder than most areas of outer space.

Under these extreme conditions, optical switches from WEINERT Fiber Optics are used. They precisely control laser processes, required for cooling and analyzing atoms. These components must meet the highest demands: ultra-fast switching times, maximum reliability, minimal losses, and stable performance, even under vibration, radiation, and long-term operational stress. The sensitivity of quantum experiments on the ISS highlights the critical importance of absolute precision: Even the smallest disturbances, such as stray light, can affect measurement results. The deployed components enable controlled and stable signal transmission, even under these extreme physical conditions.

This experience, gained through collaboration with the Jet Propulsion Laboratory (JPL), demonstrates WEINERT Fiber Optics ability to develop solutions for the most demanding applications – far beyond traditional fields of use. What works in space also delivers maximum safety and reliability for marine, naval, and defense applications. Whether under harsh environmental conditions, high mechanical stress, or in long-term mission-critical operations – our technologies are designed to perform where other systems reach their limits.

Why choose WEINERT

German excellence
Products designed, developed and made in Germany.

Integrated fiber production
Vertical integration into the value chain: The technology for the production of glass fibers, from the preform to the cable, comes from a single source.

State-of-the-art facilities
State-of-the-art production facilities in Germany.

Ethical commitment
Strong commitment to “business and human rights”.

Knowledge sharing
No cultural barriers through direct know-how exchange with the R&D department.

Strategic sourcing
Best possible availability through forward-looking raw material sourcing.

Eco-friendly logistics
Sustainable, intelligent packing solutions and short distances.

Mittelstand support
Supporting the German Mittelstand, the innovation and technology engine of Germany: Our employees are the key to our success.

Agile family-owned business
Short decision-making paths, since we’re a majority family-owned business.

Top-quality standards
Highest quality standards for telecom, medical and military.

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