
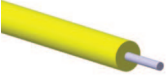


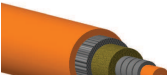







## Overview

### Simplex

	Cable type	Class of rodent protection	Application	Number of fibers	Cable outer diameter (mm)	Tensile strength (N)	Crush resistance	Weight (kg/km)	Jacket material	Temperature range (°C)	Page
	Buffer, 0,6mm	NRP	Indoor	1	0,6	3	6 (N/10cm)	0,7	LSZH PVC	-20°C +70°C	12
	Buffer, 0,9mm	NRP	Indoor	1	0,9	3	6 (N/10cm)	0,9	LSZH PVC	-20°C +70°C	13
	Simplex, CST	NRP	Indoor	1	1,6 - 2,8	80 - 150	200-500 (N/10cm)	3 - 7	LSZH PVC	-20°C +60°C	14
	Simplex CST	FRP	Indoor	1	2,0 - 3,0	150 - 200	2000 (N/10cm)	6 - 11	FRNC PVC PUR	-40°C +85°C	15
	Simplex metal braiding	FRP	Indoor	1	2,0 - 3,0	200 - 300	2000 (N/10cm)	7 - 15	FRNC PVC PE PUR	-40°C +85°C	16

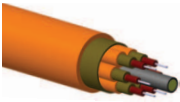
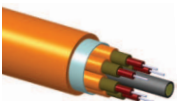
### Duplex, Quadplex

	Duplex Fig.8	NRP	Indoor	2	1,8 - 2,8	160-200	500-1000 (N/10cm)	7 - 14	LSZH PVC	-20°C +60°C	17
	Duplex Fig.0	NRP	Indoor	2	3 - 4,4	300	500-1000 (N/10cm)	16-31	LSZH PVC	-20°C +60°C	18
	Duplex CST	FRP	Indoor	2	2,0 - 3,0	225 - 300	2000 (N/10cm)	12 - 21	LSZH PVC PUR	-40°C +85°C	19
	Duplex Metal braiding	FRP	Universal Indoor Outdoor	2	2,0 - 3,0	300 - 450	2000 (N/10cm)	14 - 29	LSZH PVC PE PUR	-40°C +85°C	20
	Quadplex	NRP	Indoor	4	2,0 x 8,6	180	300 (N/10cm)	20	FRNC	-5°C +60°C	21


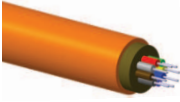
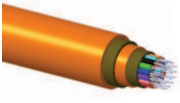
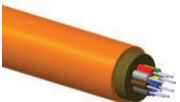
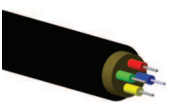
### Breakout

	Breakout NCM 2,0mm	NRP	Indoor	4 - 48	6,5 - 17	400 - 3500	3000 (N/10cm)	49-316	FRNC	-25°C +60°C	22
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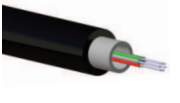
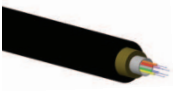
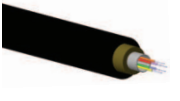

## Overview

	Cable type	Class of rodent protection	Application	Number of fibers	Cable outer diameter (mm)	Tensile strength (N)	Crush resistance	Weight (kg/km)	Jacket material	Temperature range (°C)	Page
	Breakout 2,0/2,4mm IRP	IRP	Indoor	4 - 24	8 - 19	2200 - 5500	2000 (N/10cm)	73-297	FRNC	-25°C +60°C	23
	Breakout 2,0/2,4mm	NRP	Indoor	4 - 48	7 - 19	500 - 5000	2000 (N/10cm)	51-326	FRNC	-25°C +60°C	24


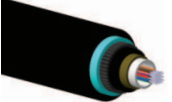
### Minibreakout, DROP

	Minibreakout	NRP	Universal Indoor Outdoor	2 - 24	4 - 9	530 - 1600	2000 (N/10cm)	20 - 73	FRNC	-40°C +60°C	25
	Minibreakout IRP	IRP	Universal	2 - 24	5 - 11	850 - 3500	2000 (N/10cm)	24 - 108	FRNC PUR	-20°C +50°C	26
	Minibreakout Double jacket	IRP	Universal	2 - 24	8 - 14	2500 - 4100	2000 (N/10cm)	83-181	FRNC	-40°C +60°C	27
	DROP	SRP	Universal Outdoor	2 - 24	3 - 4	500	500 - 1000 (N/10cm)	10 - 16	FRNC PUR	-20°C +60°C	28
	Military	NRP	Universal	4	5,5	1000	2000 (N/10cm)	32	HFFR	-40°C +60°C	29

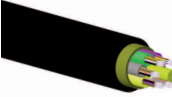
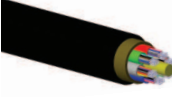
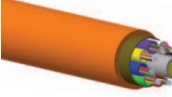



### Central Loose Tube

	CLT microcable	NRP	Universal Outdoor	2 - 24	3-4	50	1000 (N/10cm)	8 - 17	LDPE FRNC	-20°C +70°C	30
	CLT SRP	SRP	Universal Outdoor	2 - 24	5 - 7	1100	2000 (N/10cm)	27 - 49	HDPE FRNC	-30°C -70°C	31
	CLT IRP	IRP	Universal Outdoor	2 - 24	6 - 8	2000 - 2500	2000 (N/10cm)	39 - 68	FRNC HDPE	-30°C +70°C	32
	CLT FRPA	FRP	Outdoor	2 - 24	7,4 - 7,7	2200	3000 (N/10cm)	53-55	HDPE FRNC	-30°C +70°C	33

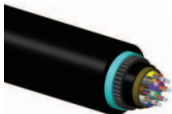
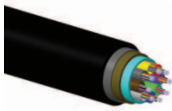
## Overview

	Cable type	Class of rodent protection	Application	Number of fibers	Cable outer diameter (mm)	Tensile strength (N)	Crush resistance	Weight (kg/km)	Jacket material	Temperature range (°C)	Page
	CLT CST	FRP	Universal Outdoor	2 - 24	10	2500	10000 (N/10cm)	98-124	HDPE FRNC	-30°C +70°C	<b>34</b>
	CLT SWA	FRP	Universal Outdoor	2 - 24	10,7	4000	4000 (N/10cm)	150-190	HDPE FRNC	-30°C +70°C	<b>35</b>

## Multi Loose Tube

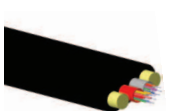
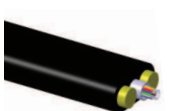
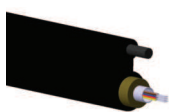
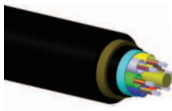
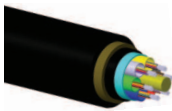
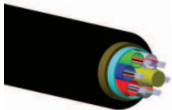
	MicroFlex cable	NRP	Indoor	144	5,8-8,5	250	100 (N/10cm)	23 - 68	FRNC	-5°C +50°C	<b>36</b>
	MLT Microcable	NRP	Outdoor	24-288	5 - 9	450 - 2000	1500 (N/10cm)	27 - 97	HDPE PA	-40°C +70°C	<b>37</b>
	MLT Minicable	NRP	Universal Outdoor	24 - 216	5 - 11	450 - 3000	900 - 2000 (N/10cm)	28-122	HDPE LSZH	-40°C +70°C	<b>38</b>
	MLT NRP	NRP	Universal Outdoor	24 - 216	8 - 15	800 - 2400	2000 (N/10cm)	59-199	FRNC HDPE	-40°C +70°C	<b>39</b>
	MLT SRP	SRP	Universal Outdoor	48 - 432	9 - 23	1000 - 4800	2000-4000 (N/10cm)	66-426	HDPE LSZH	-40°C +70°C	<b>40</b>
	MLT SRP, RD	SRP	Universal Outdoor	12 - 216	8 - 12	1200 - 6000	2000 (N/10cm)	55-156	FRNC HDPE	-40°C +70°C	<b>41</b>
	MLT IRP	IRP	Universal Outdoor	36 - 216	9 - 18	2000 - 10000	2000 (N/10cm)	79-295	FRNC HDPE	-40°C +70°C	<b>42</b>
	MLT IRP, RD	IRP	Universal Outdoor	36-216	9 - 13	3600-10000	2000 (N/10cm)	81-179	HDPE FRNC	-40°C +70°C	<b>43</b>
	MLT FRPA	FRP	Outdoor	48 - 96	10 - 14	3800 - 9000	2000-4000 (N/10cm)	103-186	HDPE	-40°C +70°C	<b>44</b>

## Overview



Cable type	Class of rodent protection	Application	Number of fibers	Cable outer diameter (mm)	Tensile strength (N)	Crush resistance	Weight (kg/km)	Jacket material	Temperature range (°C)	Page
MLT CST	FRP	Universal Outdoor	48 - 216	11 - 18	1200 - 4500	10000 (N/10cm)	127-309	HDPE FRNC	-40°C +70°C	45
MLT SWA	FRP	Universal Outdoor	48-216	13 - 19	4000 - 8000	3000-4000 (N/10cm)	268-592	PE FRNC	-40°C -70°C	46

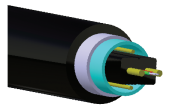
### Aerial



ADSS 3kN	IRP	Outdoor	12 - 144	10-17	3000 - 3200	2000 (N/10cm)	79-205	HDPE	-40°C +70°C	47
ADSS 6kN	IRP	Outdoor	12 - 144	15-21	6000-6300	2000-3000 (N/10cm)	182-313	HDPE	-40°C +70°C	48
ADSS 10kN	IRP	Outdoor	12 - 144	16-22	10000	3000 (N/10cm)	201-328	HDPE	-40°C +70°C	49
CLT Fig.8	NRP	Universal Outdoor	2 - 24	8,5	3000 - 7000	2000 (N/10cm)	139-199	LDPE	-40°C +70°C	50
CLT Fig.8-drop	NRP	Universal Outdoor	2 - 12	5,9x12 5,8x10	1000	1000 (N/10cm)	44-80	FRNC LDPE	-40°C +70°C	51
FLAT	NRP	Universal Outdoor	2 - 12	3,8 x 7,7	1600	4000 (N/10cm)	36	MDPE	-40°C +70°C	52
FLAT TWIN	NRP	Universal Outdoor	16 - 24	3,8 x 9,1	1300	4000 (N/10cm)	39	MDPE	-40°C +70°C	53

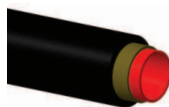
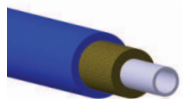
## Overview

### Flat drop cables



Cable type	Class of rodent protection	Application	Number of fibers	Cable outer diameter (mm)	Tensile strength (N)	Crush resistance	Weight (kg/km)	Jacket material	Temperature range (°C)	Page
Flat drop cable	NRP	Indoor	12	1,6x2,0 2,0x3,0 3,0x4,0	80 - 95	1000 (N/10cm)	5 - 19	LSZH PVC	-20°C +60°C	54
Flat drop cable	NRP	Indoor	12	3,0x4,0 4,1x6,1	80 - 95	1000 (N/10cm)	15 - 35	LSZH PVC	-20°C +60°C	55
Flat drop cable SWM	NRP	Universal	12	2,0x5,0 3,0x7,0	600	2200 (N/10cm)	20 - 40	LSZH PVC	-20°C +60°C	56
Flat drop cable SWM	NRP	Universal	12	3,0x7,0 4,2x9,0	600	2200 (N/10cm)	35 - 53	LSZH PVC	-20°C +60°C	57
Flat drop cable aluminum tape armored	IRP	Universal	2	6,8	200	1000 (N/10cm)	60	LSZH PE	-20°C +60°C	58

### Protection tubes



Fiber protection tube	NRP	Universal Outdoor	1-2	1,8 - 3,6	100	500 (N/10cm)	3,2-13,5	FRNC	-25°C +90°C	59
DUCT with rodent protection	IRP	Universal Outdoor	-	2,0 - 3,0	100 (N/10cm)	500	58-263	HDPE	-50°C +90°C	60

### Legend :

NRP	No Rodent Protection
SRP	Standard Rodent Protection
IRP	Improved Rodent Protection
FRP	Full Rodent Protection
CST	Corrugated Steel Tape armored
SWA	Steel Wire Armoured
FRPA	Fiber Reinforced Plastic Armoured
CLT	Central Loose Tube
MLT	Multi Loose Tube
RD	Reduced Diameter
NCM	No Central Member
MB	Metal Braiding
SWM	Steel Wire Messenger
LT	Loose Tube

## Specifications and standards of fiber optics cables

ITU-T Rec. G.652	International Telecommunication Union - Telecommunication Standardization Sector recommendation G.652 - characteristics of a single-mode optical fiber and cable with zero-dispersion wavelength around 1310nm.
ITU-T Rec. G.655	International Telecommunication Union - Telecommunication Standardization Sector recommendation G.655 - characteristics of a non-zero dispersion-shifted single-mode optical fiber and cable.
ITU-T Rec. G.656	International Telecommunication Union - Telecommunication Standardization Sector recommendation G.656 - characteristics of a non-zero dispersion for wideband optical transport.
ITU-T Rec. G.651	International Telecommunication Union - Telecommunication Standardization Sector recommendation G.651 - characteristics of a 50/125µm multi-mode graded index optical fiber and cable.
ITU-T Rec. G.657	International Telecommunication Union - Recommendation G.657 - basic geometric, transmission and mechanical parameters of the singlemode optical fibres with reduced susceptibility of fiber to the bends in acces of the telecommunication networks.
EN 60793-1	Optical Fibres - Part 1 : General Specification : measurement methods and test procedures.
EN 60794-1	Fiber Optic Cables - General specification and test procedures.
EN 60794-2	Fiber Optic Cables - Indoor cables.
EN 60794-3	Fiber Optic Cables - Outdoor cables.
EN 50266-1 EN 50266-2-2	Common test methods for cables under fire conditions - Test for vertical flame spread of vertically-mounted bunched wires or cables.
EN 50267-1 EN 50267-2-2 EN 50267-2-3	Common test methods for cables under fire conditions - Test on gases evolved during combustion of materials from cables.
EN 61034-1 EN 61034-2	Measurement of smoke density of cables burning under defined conditions.
IEC 60331-11	Test of electric cables under fire conditions - Circuit integrity - Part 11 : Device - a singly burning at a temperature of at least 750°C.
IEC 60331-25	Test for electric cables under fire conditions - Circuit integrity - Part 25 : Measurement methods - Fiber Optic Cables.
IEC 60332-1-1	Test of electric and fiber optic cables under fire conditions - Part 1-1 : Test of vertical flame spread to wire or cable with a small section of insulation - Testing equipment.
IEC 60332-2-1	Test of electric and fiber optic cables under fire conditions - Part 2-1 : Test of vertical flame spread to wire or cable with a small section of insulation - Testing equipment.
IEC 60332-3	Test on electric cables under fire condition.

### Manufacture and testing

All our fiber optic cables are manufactured in accordance with IEC 60793 and are tested according to IEC 60794. LSZH (Low Smoke Zero Halogen) jackets, where mentioned, are understood flame retardant according to recognize standards, as well.

## Cable jacket material

Designation	Polyolefine flame retardant	Polyvinylchloride	Polyethylene		Polyurethane flame retardant	Polyamide
Abbreviation	LSZH/FRNC	PVC	LDPE	HDPE	PUR	PA
Code	H	Y	2Y	2Y HD	11Y	4A
<b>Combustion properties</b>						
Halogen free	yes	no	yes	yes	yes	yes
Flame retardant	yes	yes	no	no	no	no
Smoke emission	low	strong	medium	strong	strong	strong
Corrosive gases	low	high	no	low	no	no
<b>Mechanical properties</b>						
Abrasion resistance	low	medium	medium	good	good	good
Flexibility	high	high	medium	low	high	low
Hardness	medium	soft	medium	hard	soft	hard
<b>Resistance against</b>						
Oil/fuel <sup>(1)</sup>	good/ satisfactory <sup>(2)</sup>	satisfactory	good/satisfactory	good	good	good
Water	good/ satisfactory <sup>(2)</sup>	good	very good	good	satisfactory	satisfactory

- 1) This information is meant as decision guidance to the best of our today's knowledge, it is based on typical values.  
The resistance of cables has to be verified due to the wide variety of oils and fuels.
- 2) Depending on the cable design different types of LSZH materials are used for the cable jacket.

### Rodent protection

Cable constructions containing e-glass yarns (e.g. as peripheral strength members) or cables with PA outer jacket are considered as cables with improved rodent protection. Nevertheless, only armour (e.g. SWA, CST, FRPA) provides full rodent protection.

## Fiber and buffer color code

### Color coding (according to 60304):

#### Fibres in loose tube (according to IEC 60304)

1st to 12th :

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	Red	Green	Blue	Yellow	White	Grey	Brown	Violet	Turquoise	Black	Orange	Pink

13th to 24th (with black ring) (black color is substituted by natural color)

No.	13	14	15	16	17	18	19	20	21	22	23	24
Color	Red	Green	Blue	Yellow	White	Grey	Brown	Violet	Turquoise	Natural	Orange	Pink

#### Tight buffers (according to IEC 60304)

1st to 12th :

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	Red	Green	Blue	Yellow	White	Grey	Brown	Violet	Turquoise	Black	Orange	Pink

13th to 24th (with black ring)

No.	13	14	15	16	17	18	19	20	21	22	23	24
Color	Red	Green	Blue	Yellow	White	Grey	Brown	Violet	Turquoise	Black	Orange	Pink

\*with white ring

#### Loose tube buffers

1st : red, 2nd : green, rest of tubes: white

### Color coding TIA/EIA-598 (according to EN 50174-1):

1st to 12th :

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Yellow	Red	White	Green	Violet	Orange	Grey	Turquoise	Black	Brown	Pink

Multi fiber loose tube up to 24 fibers, fiber number 13 - 24 with black ring

13th to 24th :

No.	13	14	15	16	17	18	19	20	21	22	23	24
Color	Blue	Yellow	Red	White	Green	Violet	Orange	Grey	Turquoise	Black	Brown	Pink

\*with white ring

### Color coding IEC (according to 60794-2):

1st to 12th :

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Red	Grey	Yellow	Brown	Violet	White	Black	Pink	Turquoise

Multi fiber loose tube up to 24 fibers, fiber number 13 - 24 with black ring

13th to 24th :

No.	13	14	15	16	17	18	19	20	21	22	23	24
Color	Blue	Orange	Green	Red	Grey	Yellow	Brown	Violet	White	Black	Pink	Turquoise

\*with white ring

Other fiber and buffer color sequences available on request



## Cable code legend and construction code

### Cable code legend:

Application	J A J/A	Indoor Outdoor Universal
Tube type	D Q F V	Jelly filled multifibre loose buffer tube Dry water blocking agent in cable core Gel filled cable core Tight buffered optical fibre
Cable design	(ZN) (ZZN) (BN) (SR) B (L)	Nonmetallic strength member under sheath 2 nonmetallic strength member under sheath Nonmetallic strength member under sheath with improved rodent protection Corrugated steel tape armoring Armoring (FRPA, SWA) Water blocking aluminium tape
Jacket material	2Y 4Y H 2Y HD Y 11Y	PE jacket PA jacket LSZH/FRNC jacket HDPE jacket PVC jacket PUR jacket
Supporting element	T (T)	Steel wire messenger Self-supporting element

### Construction code :

TYPE OF CABLE		PROTECTION CLASS		CABLE CORE FILLING		MATERIAL OF JACKETS	
A	Buffer 0,9mm	A	NRP	0	No cable core filling, no wet protection	1	Polyvinylchlorid, PVC outer jacket
B	Simplex	B	SRP	1	Dry water blocking agent in cable core	2	Flame retardant jacket FRNC/LSZH(halogen free)
C	Duplex	C	IRP	2	Cable core filling	8	PVC inner jacket / PVC outer jacket
D	Minibreakout	D	FRP (CST)			9	Polyurethane, PUR jacket
E	Breakout 2,0mm	E	FRP (FRPA)			A	Low density PE outer jacket
F	Breakout 2,4	F	FRP (SWA)			B	Polyethylen, PE jacket
G	Breakout no central member	G	FRP (MB,CST)			C	Polyamid, PA jacket
H	DROP	H	SRP RD			D	Halogen free flame retardant PUR outer jacket
I	Central loose tube	I	IRP RD			F	Al/PE, Polyethylen composite layer sheath
J	Multi loose tube					K	High density polyethylen, HDPE jacket
K	Minicable					R	Low density PE inner jacket/FRNC outer jacket
L	Microcable					Z	Low density PE inner jacket/HDPE outer jacket
M	Aerial Fig.8					W	LSZH/FRNC inner jacket / LSZH/FRNC outer jacket
N	FLAT					Y	PE inner jacket / HDPE outer jacket
O	FLAT TWIN					X	PE inner jacket / PE outer jacket
P	ADSS 3kN						
Q	ADSS 6kN						
R	ADSS 10kN						
S	Special						
T	Buffer 0,6mm						
U	Quadplex						
V	Flat Drop						
X	Flat Drop with LT						
Y	Flat Drop with SWM						
Z	Flat Drop with SWM and LT						
1	MLT Fig.8						

# Fiber specification

Multi mode fiber		62,5/125 μm OM1	50/125μm OM2	50/125μm OM2+	50/125μm OM2++	50/125μm OM3	50/125μm OM4
Bandwidth(overfilled launch) @ 850nm @1300nm	Mhz.km	≥220 ≥660	≥500 ≥500	≥600 ≥1200	≥600 ≥1200	≥1500 ≥500	≥3500 ≥500
Bandwidth (laser EMB ) @ 850nm @1300nm	Mhz.km	- -	- -	- -	- -	≥2000 ≥500	≥4700 ≥500
1Gbps Ethernet operation Link lengths @ 850nm @1300nm	m	≤300 ≤550	550 <sup>(1)</sup> 550 <sup>(2)</sup>	≤600 <sup>(1)</sup> ≤600 <sup>(2)</sup>	≤750 <sup>(1)</sup> ≤2000 <sup>(2)</sup>	- -	- -
10Gigabit Ethernet Link Lengths @ 850nm	m	-	-	-	-	≤300	550
Attenuation Loose Tube Cables @ 850nm (typical/maximum) @1300nm (typical/maximum)	dB/km	2.6/3.0 0.5/1.0	2.4/3.5 0.7/1.5	2.3/3.0 0.6/1.0	2.3/3.0 0.6/1.0	2.0/3.0 0.5/1.0	2.0/3.0 0.5/1.0
Attenuation Tight Buffer Cables @ 850nm (typical/maximum) @1300nm (typical/maximum)	dB/km	2.6/3.2 0.5/1.0	2.0/3.5 0.5/1.5	2.0/3.5 0.5/1.5	2.0/3.5 0.5/1.5	2.1/3.5 0.7/1.5	2.1/3.5 0.7/1.5
Numerical Aperture	μm	0,275±0,015	0,20±0,015	0,20±0,015	0,20±0,015	0,20±0,015	0,20±0,015
Core diameter	μm	62.5±2.5	50.0±2.5	50.0±2.5	50.0±2.5	50.0±2.5	50.0±2.5
Core Non-Circularity	%	≤5	≤5	≤5	≤5	≤5	-
Cladding Diameter	μm	125±1.0	125±1.0	125±1.0	125±1.0	125±1.0	125±1.0
Clad Non-Circularity	%	≤1	≤1	≤1	≤1	≤1	≤1
Coating Diameter	μm	245±10	245±10	245±10	245±10	245±10	245±10
Coating Non-Circularity	%	≤5	≤5	≤5	≤5	≤5	-
Core/Clad Concentricity Error	μm	≤1.0	≤1.5	≤1.5	≤1.5	≤1.5	≤1.5
Coating-Clad Concentricity Error	μm	≤8	≤8	≤8	≤8	≤8	≤8
Zero Dispersion Wavelength (λ0)	nm	1320 -1365	1295 -1340	1295 -1340	1295 -1340	1295 -1340	1295 -1340
Group Refractive Index at 850nm at 1300nm		1.496 1.491	1.483 1.479	1.483 1.479	1.483 1.479	1.483 1.479	1.483 1.479

(1) - Serial Laser 1000 BASE-SX

(2) - Serial Laser 1000 BASE-LX

(3) - Effective Modal Bandwidth per TIA/EIA-492 AAACand draft IEC 60793-2-10 for type A1a.2, ensured by DMD performance specifications for sources meeting launch conditions specified in 10Gbit Ethernet (IEEE 802.3ae), OIF OC-192/STM-64 VSR-4-04, and 10 Gbit Fibre Channel (10GFC).

Single mode fiber		9/125μmOS2 G.652D-ZWP	9/125μmOS2 G.657.A1	9/125μmOS2 G657.A2	9/125μmOS2 G657.B3	9/125μm G.655 C&D	9/125μm G.655C&E, G.656
Chromatic dispersion @1285-1330nm @1550 nm @1530-1565nm @1565-1625nm @1460-1625nm	ps/(nm.km)	≤3.5 ≤18 - - -	- - - - -	- - - - -	- - - - -	- - 2.6-6.0 4.0-8.9 1.0-8.9	- - 5.5-8.9 6.9-11.4 2.0-11.4
Attenuation Loose Tube Cables @1310nm (typical/maximum) @1550nm (typical/maximum) @1625nm (typical/maximum)	dB/km	0.31/0.35 0.20/0.24 0.21/0.26	0.31/0.35 0.20/0.24 0.21/0.26	0.31/0.35 0.20/0.24 0.21/0.26	0.31/0.35 0.20/0.24 0.21/0.26	0.25/0.30 0.27/0.34	0.25/0.30 0.27/0.34
Attenuation Tight Buffer Cables @1310nm (typical/maximum) @1550nm (typical/maximum) @1625nm (typical/maximum)	dB/km	0.35/0.40 0.25/0.30 0.35/0.40	0.35/0.40 0.25/0.30 0.35/0.40	0.35/0.40 0.25/0.30 0.35/0.40	0.35/0.40 0.25/0.30 0.35/0.40	- 0.25/0.35 0.27/0.40	- 0.25/0.35 0.27/0.40
Cable Cut-Off Wavelength (λcc)	μm	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7
Mode Field Diameter @1310nm @1550nm	μm	9.2±0.4 10.4±0.5	8.6-9.3 9.5-10.5	8.8±0.4 -	6.3-9.5 9.2-10.4	- 8.4±0.6	- 8.6±0.4
Cladding Diameter	μm	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7	125.0±0.7
Clad Non-Circularity		≤1%	≤1%	≤1%	≤1μm	≤0.7%	≤0.7%
Coating Diameter	μm	235-245	235-245	235-245	245±10	245±5	245±5
Core/Clad Concentricity Error	μm	≤0.5	≤0.5	≤0.5	-	≤0.5	≤0.5
Coating-Clad Concentricity Error		≤12μm	≤12μm	≤5%	≤5%	≤10μm	≤10μm
Zero Dispersion Wavelength (λ0)	nm	1302-1322	1302-1322	1302-1322	1302-1324	-	≤1405
Group Refractive Index @1310nm @1550nm		1467 1468	1467 1468	- -	- 1468	1471 1470	1471 1470
Fiber PMD Individual fiber	ps/√km	0.1	0.1	0.1	0.2	0.1	0.1

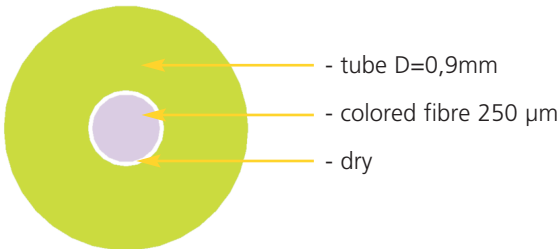
ZWP - Zero Water Peak

General information:

Normally we use optical fibres from OFS company. Use optical fibres from other company upon request.

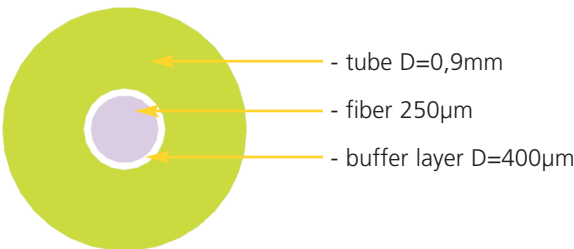
# Terms and definitions

## Semi-tight buffered tube:



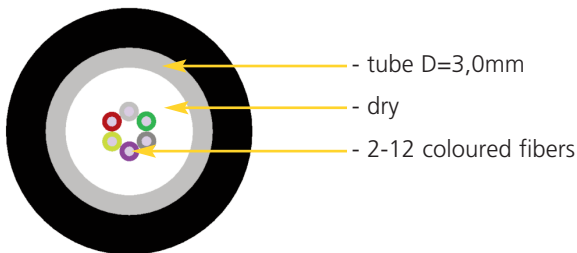
- Features:**
- Easiest stripping more than 100cm
  - No cleaning
  - Direct pre-termination

## Tight buffered tube:

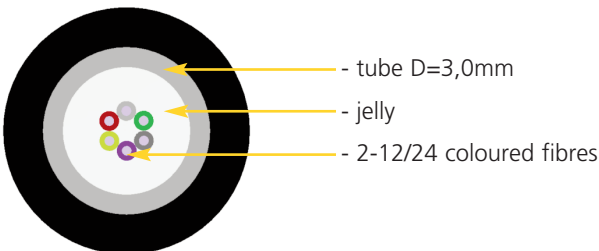


- Features:**
- Mechanically rugged
  - Easy stripping up to 10cm
  - Wide temperature range

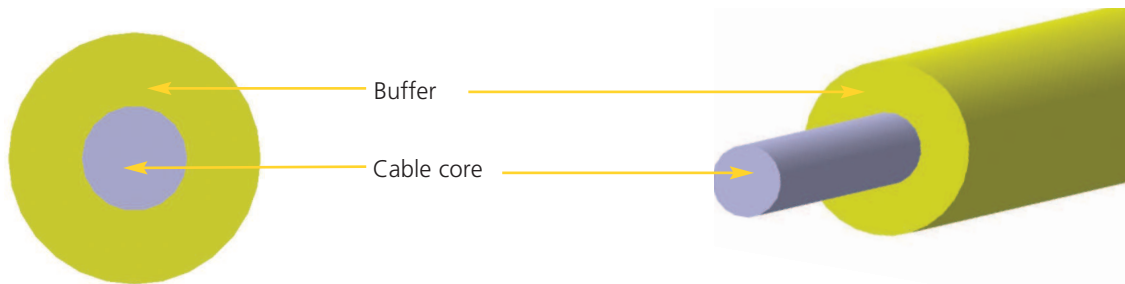
## Multi-fiber loose tube, dry for jellyfree cable:



## Multi-fiber loose tube, jellyfilled:



C-EN-D01-11/13-000



**Features**

- For direct connector assembly
- Tight or semi-tight version is available
- High flexibility
- Halogen free and non-corrosive fire gases
- Tight bending radius
- Jelly free

**Temperature range**

LSZH, PVC jacket -20°C to +70°C  
Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

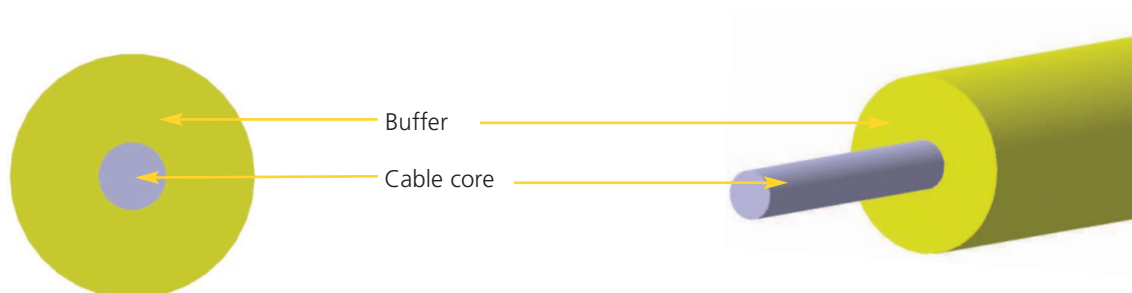
- Pigtail assemblies for fusion or mechanical splicing within distribution frames and termination boxes
- Mini patch cables within protected enclosures
- For termination with passive optical components such as connectors

**Technical specifications**

Fibers	1 colour coded singlemode or multimode optical fiber
Colour	See the section color information
Lifetime	30 years

**Technical data:**

Construction code	TA02/TA01
Cable diameter (µm)	600
Nominal weight (kg/km)	0,7
Standard put-up length (m)	2000
Tensile strength (N)	3
Impact resistance (w/g)	50
Crush resistance (N/10cm)	6
Min. bending radius (mm)	3xD
Outer jacket	LSZH,PVC



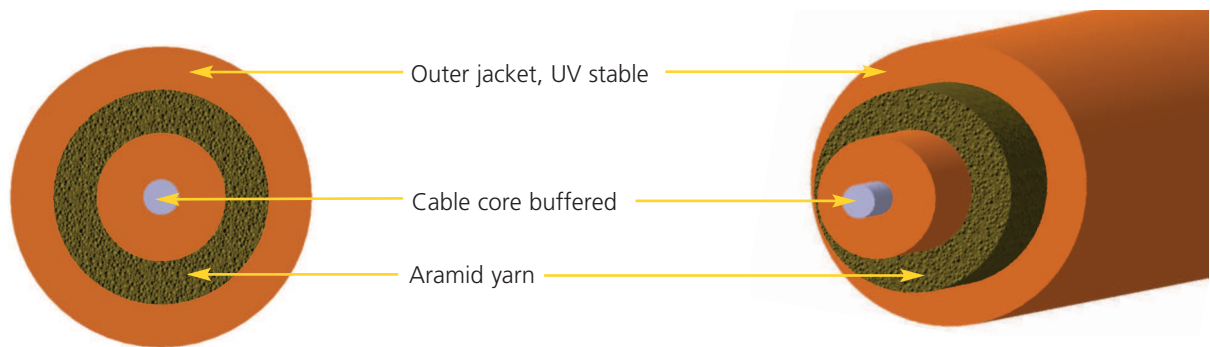
Features
- For direct connector assembly
- Tight or semi-tight version is available
- High flexibility
- Halogen free and non-corrosive fire gases
- Tight bending radius
- Jelly free

Temperature range
LSZH, PVC jacket -20°C to +70°C
Temperature range according to (IEC 60794-1-2-F1)

Field of Application
- Pigtail assemblies for fusion or mechanical splicing within distribution frames and termination boxes
- Mini patch cables within protected enclosures
- For termination with passive optical components such as connectors

Technical specifications	
Fibers	1 colour coded singlemode or multimode optical fiber
Colour	See the section color information
Lifetime	30 years

Technical data:	
Construction code	AA02/AA01
Cable diameter (µm)	900
Nominal weight (kg/km)	0,9
Standard put-up length (m)	2000
Tensile strength (N)	3
Impact resistance (w/g)	50
Crush resistance (N/10cm)	6
Min. bending radius (mm)	3xD
Outer jacket	LSZH,PVC



**Features**

- Indoor installation possible
- Aramid yarn
- Can be terminated directly
- Flexible and resilient
- Tight bending radius

**Temperature range**

LSZH jacket	-20°C to +60°C
PVC jacket	-20°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Installation inside of telecommunication and datasystems
- Installation in dry and dump rooms
- Underground laying is not allowed

**Product description**

Simplex cable is flexible and resilient. This cable can be terminated directly. Water blocking aramid yarn provides better tensile strength of cable. Suitable for indoor installation.

**Technical specifications**

Fibers	1 colour coded singlemode or multimode optical fiber
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	BA02/BA01	BA02/BA01	BA02/BA01	BA02/BA01	BA02/BA01
Cable diameter (mm)	1,6	1,8	2,1	2,4	2,8
Cable core diameter (µm)	250/600	250/600	250/900	250/900	250/900
Nominal weight (kg/km)	2,9	3,2	3,9	5,2	6,7
Standard put-up length (m)	2000	2000	2000	2000	2000
Tensile strength (N)	80	80	100	100	150
Impact resistance (w/g)	100	100	100	100	100
Crush resistance (N/10cm)	200	200	200	200	200
Min. bending radius (mm)	10xD	10xD	10xD	10xD	10xD
Outer jacket	LSZH,PVC	LSZH,PVC	LSZH,PVC	LSZH,PVC	LSZH,PVC

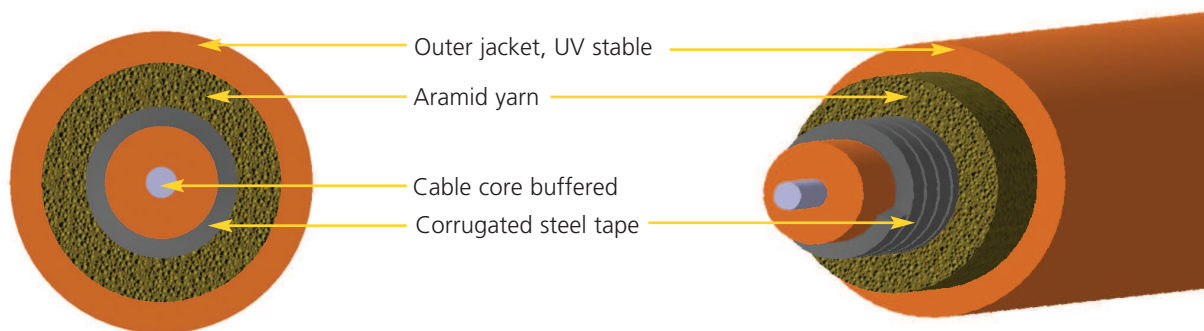
# Simplex cable

Fiber Optic Cables  
Indoor



J-V(ZN)(SR)H (BD02)  
J-V(ZN)(SR)Y (BD01)  
J-V(ZN)(SR)11Y (BD09)

Corrugated steel tape



Features
- Indoor installation possible
- Aramid yarn
- High compression resistant
- Full rodent protection
- Micro diameter
- Good flexibility

Temperature range
LSZH jacket -40°C to +75°C
PVC jacket -20°C to +85°C
PUR jacket -40°C to +85°C
Temperature range according to (IEC 60794-1-2-F1)

Field of Application
- Workstation connecting cables
- Indoor/outdoor cabling
- Make jumper, patchcord

## Product description

Simplex cable with full rodent protection has good flexibility and high compression resistant. Aramid yarn and metal armoring provides better tensile strength of cable. Suitable for indoor installation.

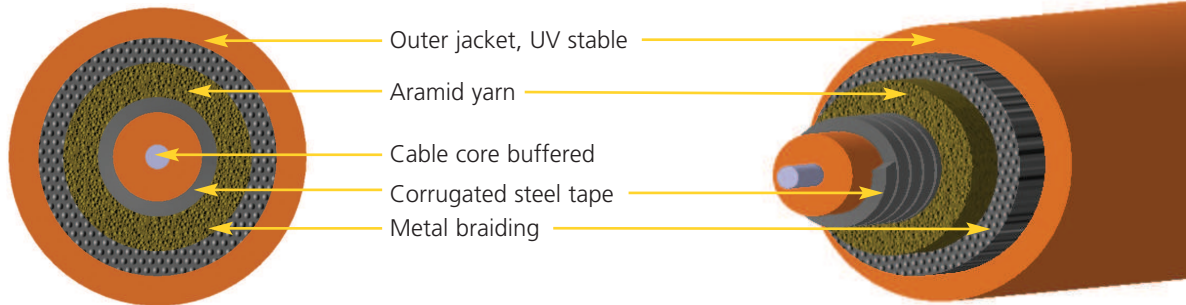
## Technical specifications

Fibers	1 colour coded singlemode or multimode optical fiber
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

## Technical data:

Construction code	BD02/BD01/BD09	BD02/BD01/BD09	BD02/BD01/BD09	BD02/BD01/BD09
Cable diameter (mm)	2,0	2,4	2,8	3,0
Cable core diameter (µm)	250/600	250/600	250/600	250/600
Nominal weight (kg/km)	6	9,6	10	10,6
Standard put-up length (m)	500,1000,2000	500,1000,2000	500,1000,2000	500,1000,2000
Tensile strength (N)	150	200	200	200
Impact resistance (w/g)	200	200	200	200
Crush resistance (N/10cm)	2000	2000	2000	2000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH,PVC,PUR	LSZH,PVC,PUR	LSZH,PVC,PUR	LSZH,PVC,PUR

J-V(SR)(ZN)(SR)H (BG02) / J-V(SR)(ZN)(SR)Y (BG01)  
J-V(SR)(ZN)(SR)11Y (BG09) / J-V(SR)(ZN)(SR)2Y (BG0B)



**Features**

- Indoor installation possible
- Aramid yarn
- The highest rodent protection
- Corrugated steel tape
- Metal braiding

**Temperature range**

LSZH, PE jacket	-40°C to +75°C
PVC jacket	-20°C to +85°C
PUR jacket	-40°C to +85°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Workstation connecting cables
- Indoor/outdoor cabling
- Make jumper, patchcord

**Product description**

Simplex cable with full rodent protection has good flexibility and high compression resistant. This cable contain coat of aramid yarn between coat of twisted steel and metal braiding coat. This protection provides the highest level of strength. Suitable for indoor installation.

**Technical specifications**

Fibers	1 colour coded singlemode or multimode optical fiber
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

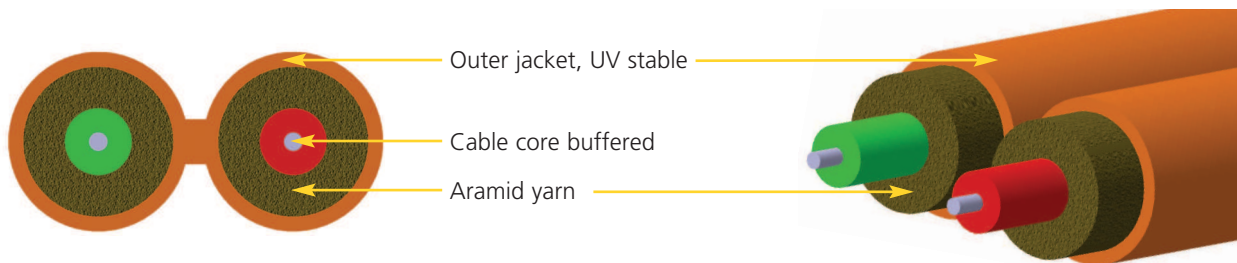
**Technical data:**

Construction code	BG02/BG01/BG0B/BG09	BG02/BG01/BG0B/BG09	BG02/BG01/BG0B/BG09	BG02/BG01/BG0B/BG09
Cable diameter (mm)	2,0	2,4	2,8	3,0
Cable core diameter (µm)	250/500	250/600	250/600	250/600
Nominal weight (kg/km)	7	9,5	14	14,5
Standard put-up length (m)	500,1000,2000	500,1000,2000	500,1000,2000	500,1000,2000
Tensile strength (N)	200	300	300	300
Impact resistance (w/g)	200	200	200	200
Crush resistance (N/10cm)	2000	2000	2000	2000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH,PVC,PE,PUR	LSZH,PVC,PE,PUR	LSZH,PVC,PE,PUR	LSZH,PVC,PE,PUR



Fig.8

J-V(ZN)H (CA02)  
J-V(ZN)Y (CA01)



### Features

- Indoor installation possible
- Aramid yarn
- Can be terminated directly
- Flexible and resilient
- Tight bending radius
- Figure "8" easy to divide

### Temperature range

LSZH jacket	-20°C to +60°C
PVC jacket	-20°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Installation inside of telecommunication and datasystems
- Installation in dry and dump rooms
- Underground laying is not allowed

### Product description

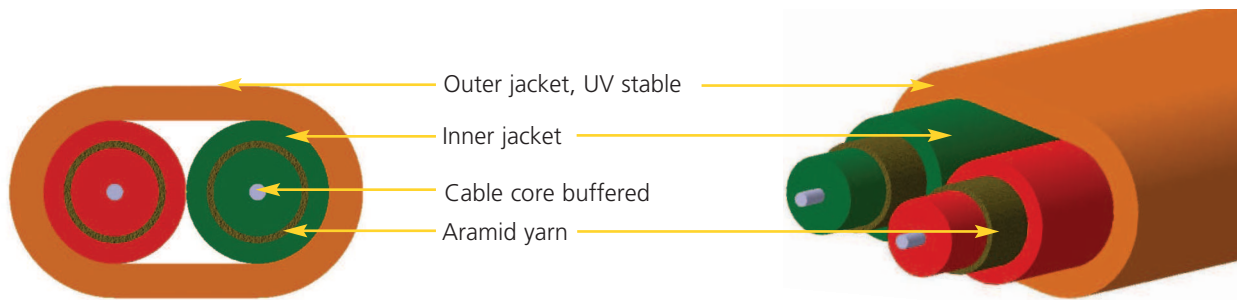
Duplex cable is flexible and resilient. This cable can be terminated directly. Aramid strength member provides better tensile strength of cable. Suitable for indoor installation. Duplex cable Fig. "8" is easy to divide.

### Technical specifications

Fibers	Two singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm), FRNC buffered cable core
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	CA02/CA01	CA02/CA01	CA02/CA01	CA02/CA01
Cable size (mm)	1,8x3,7	2,1x4,3	2,4x4,9	2,8x5,7
Cable core diameter (µm)	250/600	250/900	250/900	250/900
Nominal weight (kg/km)	7,3	8,8	9,9	13,5
Standard put-up length (m)	1000	1000	1000	1000
Tensile strength (N)	160	200	200	200
Impact resistance (g)	100	100	100	100
Crush resistance (N/10cm)	500	1000	1000	1000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC



**Features**

- Indoor installation possible
- Aramid yarn
- Can be terminated directly
- Flexible and resilient
- Tight bending radius

**Temperature range**

LSZH jacket	-20°C to +60°C
PVC jacket	-20°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Installation inside of telecommunication and datasystems
- Installation in dry and dump rooms
- Underground laying is not allowed

**Product description**

Duplex cable is flexible and resilient. Two single fiber cables lying parallel to one another with strain relief elements (aramid) and halogen-free, flame-retardant jacket. This cable can be terminated directly. Aramid strength member provides better tensile strength of cable. Suitable for indoor installation.

**Technical specifications**

Fibers	Two singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm), FRNC buffered cable core
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	CA0W/CA08	CA0W/CA08	CA0W/CA08	CA0W/CA08
Cable size (mm)	3,0x4,8	3,2x5,2	3,6x6,0	4,4x7,0
Cable core diameter (µm)	250/600	250/900	250/900	250/900
Nominal weight (kg/km)	16	18	22	31
Standard put-up length (m)	1000	1000	1000	1000
Tensile strength (N)	300	300	300	300
Impact resistance (g)	100	100	100	100
Crush resistance (N/10cm)	500	500	1000	1000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC

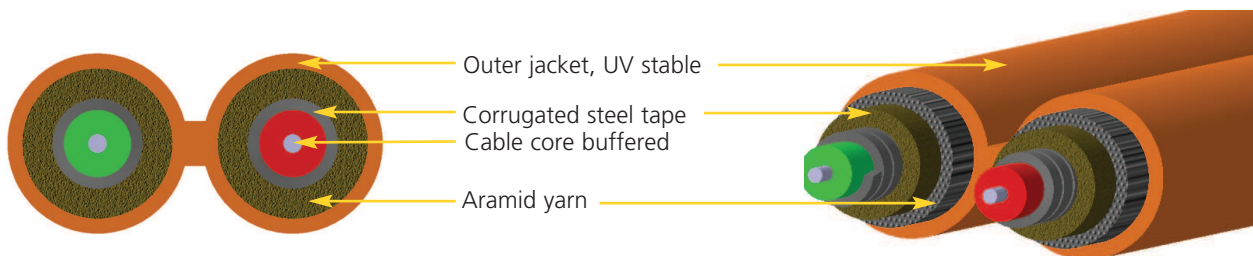
# Duplex cable

Fiber Optic Cables  
Indoor



Corrugated steel tape

J-V(ZN)(SR)H (CD02)  
J-V(ZN)(SR)Y (CD01)  
J-V(ZN)(SR)11Y (CD09)



Features
- Full rodent protection
- Avoid improper twisting
- High tensile resistance
- Flexible, convenient to connection and easy to deploy
- Suitable for indoor use

Temperature range
LSZH jacket -40°C to +75°C
PVC jacket -20°C to +85°C
PUR jacket -40°C to +85°C
Temperature range according to (IEC 60794-1-2-F1)

Field of Application
- Workstation connecting cables
- Computer room cabling
- Short run office cabling
- Suitable outdoor placement

## Product description

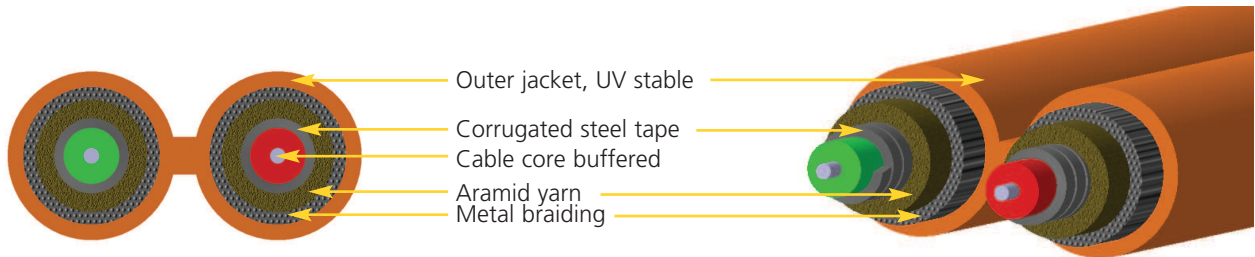
Duplex armoured cable with full rodent protection has high tensile strength. Coat of aramid yarn and corrugated steel tape armoring provides high level of strength. Suitable for indoor installation.

## Technical specifications

Fibers	2 colour coded singlemode or multimode optical fibers
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

## Technical data:

Construction code	CD02/CD01/CD09	CD02/CD01/CD09	CD02/CD01/CD09	CD02/CD01/CD09
Cable size (mm)	2,0x4,2	2,4x5,0	2,8x5,8	3,0x6,2
Cable core diameter (µm)	250/600	250/600	250/600	250/600
Nominal weight (kg/km)	12	19,2	20	21,2
Standard put-up length (m)	500,1000,2000	500,1000,2000	500,1000,2000	500,1000,2000
Tensile strength (N)	225	300	300	300
Impact resistance (g)	200	200	200	200
Crush resistance (N/10cm)	2000	2000	2000	2000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH/PVC/PUR	LSZH/PVC/PUR	LSZH/PVC/PUR	LSZH/PVC/PUR



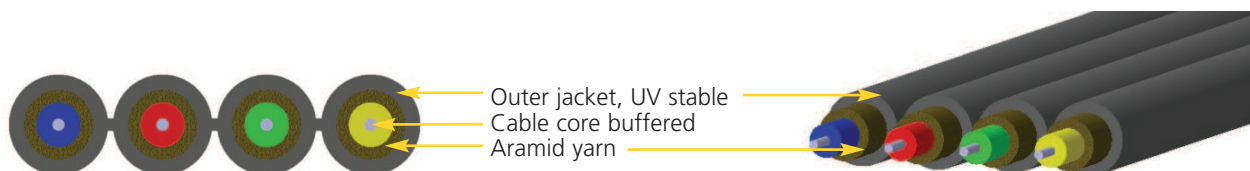
Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Full rodent protection</li> <li>- Avoid improper twisting</li> <li>- The highest rodent protection</li> <li>- Flexible, convenient to connection and easy to deploy</li> <li>- Suitable for indoor use</li> <li>- Metal braiding</li> </ul>	<p>LSZH, PE jacket      -40°C to +75°C                      PVC jacket            -20°C to +85°C                      PUR jacket            -40°C to +85°C</p> <p>Temperature range according to (IEC 60794-1-2-F1)</p>	<ul style="list-style-type: none"> <li>- Workstation connecting cables</li> <li>- Computer room cabling</li> <li>- Short run office cabling</li> <li>- Suitable outdoor placement</li> </ul>

**Product description**

Duplex armored cable with full rodent protection has high tensile strength. This cable contains a coat of aramid yarn between a coat of twisted steel and metal braiding coat. This protection provides the highest level of strength. Suitable for indoor installation.

Technical specifications	
Fibers	2 colour coded singlemode or multimode optical fibers
Colour	Fibers - see the section color information table Jacket - orange (other colors available upon request)
Lifetime	30 years

Technical data:				
Construction code	CG02/CG01/CG0B/CG09	CG02/CG01/CG0B/CG09	CG02/CG01/CG0B/CG09	CG02/CG01/CG0B/CG09
Cable size (mm)	2,0x4,2	2,4x5,0	2,8x5,8	3,0x6,2
Cable core diameter (µm)	250/600	250/600	250/600	250/600
Nominal weight (kg/km)	14	19	28	29
Standard put-up length (m)	500,1000,2000	500,1000,2000	500,1000,2000	500,1000,2000
Tensile strength (N)	300	450	450	450
Impact resistance (g)	200	200	200	200
Crush resistance (N/10cm)	2000	2000	2000	2000
Min. bending radius (mm)	10xD	10xD	10xD	10xD
Outer jacket	LSZH/PVC/PE/PUR	LSZH/PVC/PE/PUR	LSZH/PVC/PE/PUR	LSZH/PVC/PE/PUR



Features	Temperature range	Field of Application						
<ul style="list-style-type: none"> <li>- Indoor installation possible</li> <li>- Gel filled loose tube</li> <li>- Standard rodent protection</li> <li>- Water blocking E-glass yarn (WBF)</li> </ul>	<table border="1"> <tr> <td>Installation</td> <td>5°C to +50°C</td> </tr> <tr> <td>Operating</td> <td>-5°C to +50°C</td> </tr> <tr> <td>Storage</td> <td>-5°C to +60°C</td> </tr> </table> <p>Temperature range according to (IEC 60794-1-2-F1)</p>	Installation	5°C to +50°C	Operating	-5°C to +50°C	Storage	-5°C to +60°C	<ul style="list-style-type: none"> <li>- Workstation connecting cables</li> <li>- Computer room cabling</li> <li>- Placement in cable ducts</li> <li>- Short run office cabling</li> </ul>
Installation	5°C to +50°C							
Operating	-5°C to +50°C							
Storage	-5°C to +60°C							

## Product description

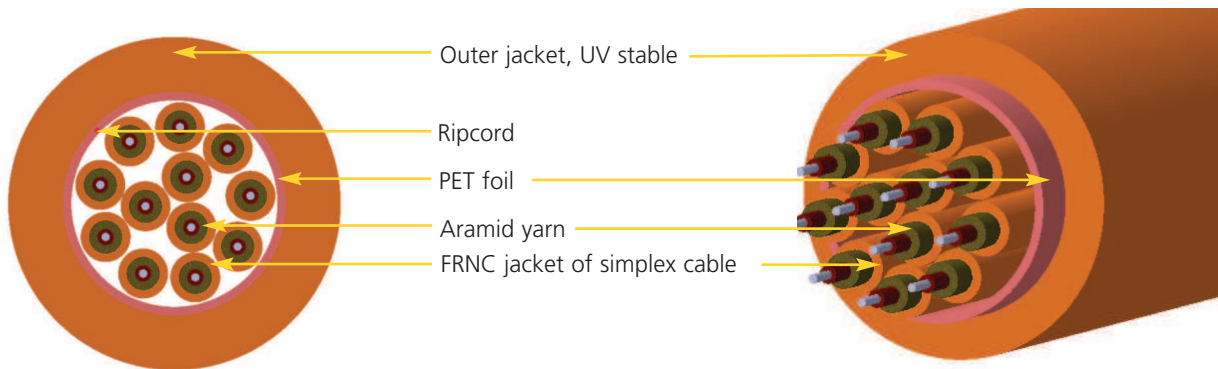
The quadplex cable is suitable for internal cabling in FTTx application. Water blocking aramid yarn provides better tensile strength of cable. The number of fibers can be 4. Suitable for indoor installation.

## Technical specifications

Fibers	4 colour coded singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm), FRNC buffer D=0,9mm
Colour	Fibers - see the section color information table Buffer - 1.blue, 2.red, 3.green, 4.yellow (other colors available upon request) Sheath - yellow (E9), green (E50), orange (62,5) (other colors available upon request)
Lifetime	30 years

## Technical data:

Construction code	UA02
Number of fibers	4
Cable size (mm)	2,0 x 8,6±0,4
Nominal weight (kg/km)	20
Standard put-up length (m)	2100
Tensile strength (N)	810
Impact resistance (w/4Nm)	3
Crush resistance (N/10cm)	300
Min. bending radius (mm)	10xD
Outer jacket	FRNC



This pictures represents cable with 12 fibers inside

**Features**

- Indoor use
- Aramid yarn
- PET foil

**Temperature range**

Installation	-5°C to +40°C
Operation	-5°C to +50°C
Storage	-25°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Computer room cabling
- Short run office cabling
- Placement in cable ducts

**Product description**

Breakout cable is suitable for indoor use. Cable has FRNC buffered optical fibres. The number of fibers can be max 48.

**Technical specifications**

Fibers	4 to 48 simplex cables D=2,0mm. Singlemode or multimode optical fibers in tight (stripability up to 10cm) or semi-tight (stripability more than 100cm), FRNC buffer D=0,9mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

**Technical data:**

Construction code	GA0W	GA0W	GA0W	GA0W	GA0W	GA0W	GA0W
Max. fiber count	4	6	8	12	16	24	48
Simplex diameter (mm)	2,0	2,0	2,0	2,0	2,0	2,0	2,0
Cable diameter (mm)	6,9	8,1	9,3	10,8	11,9	13,5	16,8
Nominal weight (kg/km)	49	67	87	114	139	192	316
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	400	550	800	1100	1500	2000	3500
Impact resistance (w/10Nm)	3	3	3	3	3	3	3
Crush resistance (N/10cm)	3000	3000	3000	3000	3000	3000	3000
Min. bending radius (mm)	10xD	10xD	10xD	10xD	10xD	10xD	10xD
Outer jacket	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC

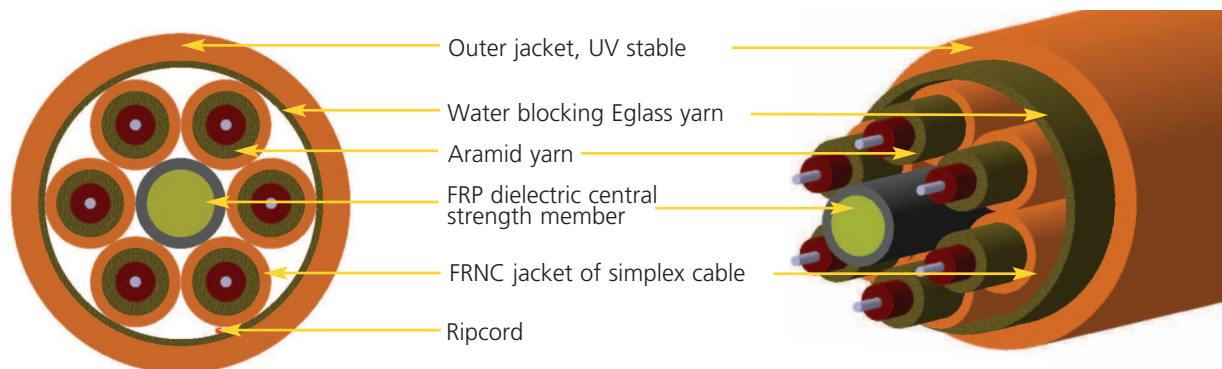
# Breakout cable

Fiber Optic Cables  
Indoor



Improved rodent protection

J-V(ZN)H(BN)H WBF (2,0mm) (ECOW)  
J-V(ZN)H(BN)H WBF (2,4mm) (FCOW)



This pictures represents cable with 6 fibers inside.

### Features

- Indoor use
- Water blocking E-glass yarn
- Central FRP strength member (PE coated when necessary)

### Temperature range

Installation	-5°C to +40°C
Operation	-5°C to +50°C
Storage	-25°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Computer room cabling
- Short run office cabling
- Placement in cable ducts

## Product description

Breakout cable is suitable for indoor use. Cable has improved rodent protection through central FRP strength member and coat of water blocking E-glass yarn and aramid yarn inside simplex cables. The number of fibres can be max 24.

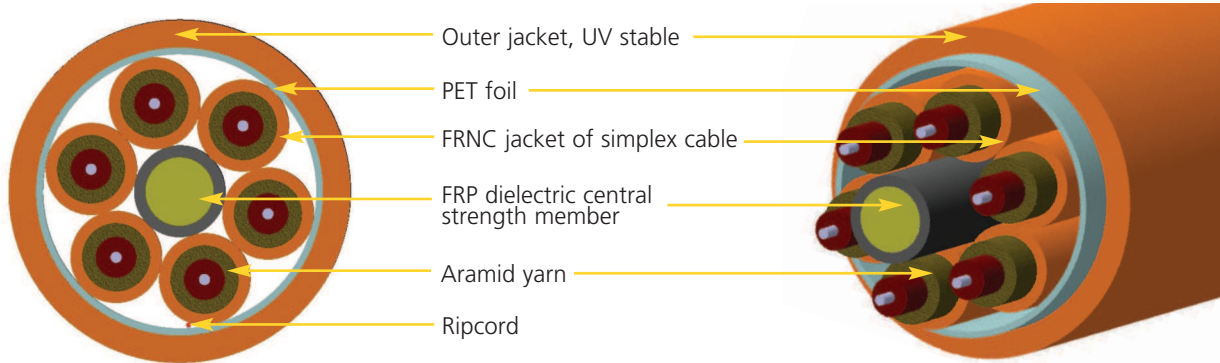
## Technical specifications

Fibers	4 to 24 simplex cables D=2,0mm/2,4mm, helically stranded around central member in common FRNC outer jacket. Singlemode or multimode optical fibers in tight (stripability up to 10cm) or semi-tight (stripability more than 100cm), FRNC buffered D=0,9mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

### Technical data:

Construction code	ECOW/FCOW	ECOW/FCOW	ECOW/FCOW	ECOW/FCOW	ECOW/FCOW	ECOW/FCOW	ECOW/FCOW
Max. fiber count	4	6	8	12	16	18	24
Simplex diameter (mm)	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4
Cable diameter (m)	8,3/9,5	9,3/10,8	10,7/12,3	13,1/15,5	12,7/14,9	13,3/15,8	15,9/18,5
Nominal weight (kg/km)	73/83	92/89	118/117	167/220	154/209	169/228	224/297
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	2400/2200	2800/2900	3700/3300	4100/4400	3500/4600	3900/4800	5200/5500
Impact resistance (w/20Nm)	3	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000	2000	2000
Min. bending radius (mm)	10xD	10xD	10xD	10xD	10xD	10xD	10xD
Outer jacket	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC

J-V(ZN)HH (2,0mm) (EA0W)  
J-V(ZN)HH (2,4mm) (FA0W)



This pictures represents cable with 6 fibers inside.

**Features**

- Indoor use
- Water blocking aramid yarn
- Central FRP strength member

**Temperature range**

Installation	-5°C to +40°C
Operation	-5°C to +50°C
Storage	-25°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Computer room cabling
- Short run office cabling
- Placement in cable ducts

**Product description**

Breakout cable is suitable for indoor use. Cable has standard rodent protection through central FRP strength member and coat of aramid yarn. The number of fibers can be max 48.

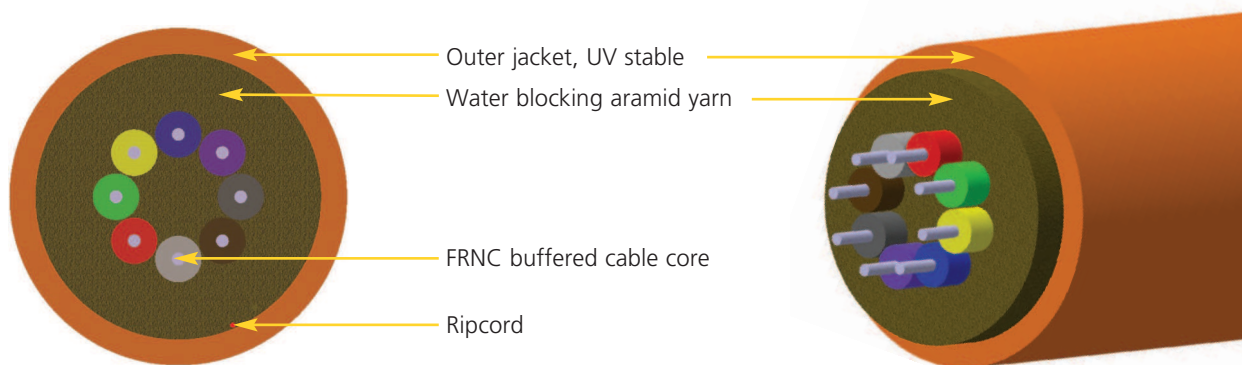
**Technical specifications**

Fibers	4 to 24/48 simplex cables D=2,4mm/2,0mm, helically stranded around central member in common LSZH outer jacket. Singlemode or multimode optical fibers in tight (stripability up to 10cm) or semi-tight (stripability more than 100cm) FRNC buffer D=0,9mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

**Technical data:**

Construction code	EA0W/FA0W	EA0W/FA0W	EA0W/FA0W	EA0W/FA0W	EA0W/FA0W	EA0W/FA0W	EA0W/FA0W	EA0W	EA0W
Max. fiber count	4	6	8	12	16	18	24	36	48
Simplex diameter (mm)	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0/2,4	2,0	2,0
Cable diameter (mm)	7,0/8,2	8,0/9,5	9,3/11,0	11,8/14,2	11,6/13,6	12,0/14,5	14,5/17,2	16,3	18,7
Nominal weight (kg/km)	51/64	70/87	90/117	138/187	131/172	144/191	192/261	247	326
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	500/650	800	1500/1600	1800/1900	2000	2200	3000/2800	3500	5000
Impact resistance (w/20Nm)	3	3	3	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD/10xD	15xD/10xD	15xD/10xD	15xD/10xD	15xD/10xD	15xD/10xD	15xD/10xD	15xD	15xD
Outer jacket	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC





This pictures represents cable with 8 fibers inside.

Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Indoor or outdoor use</li> <li>- Aramid yarn</li> <li>- FRNC buffered optical fibres</li> </ul>	Installation      -5°C to +40°C Operation            -20°C to +50°C Storage                -40°C to +60°C <small>Temperature range according to (IEC 60794-1-2-F1)</small>	<ul style="list-style-type: none"> <li>- Computer room cabling</li> <li>- Short run office cabling</li> <li>- Placement in cable ducts</li> </ul>

## Product description

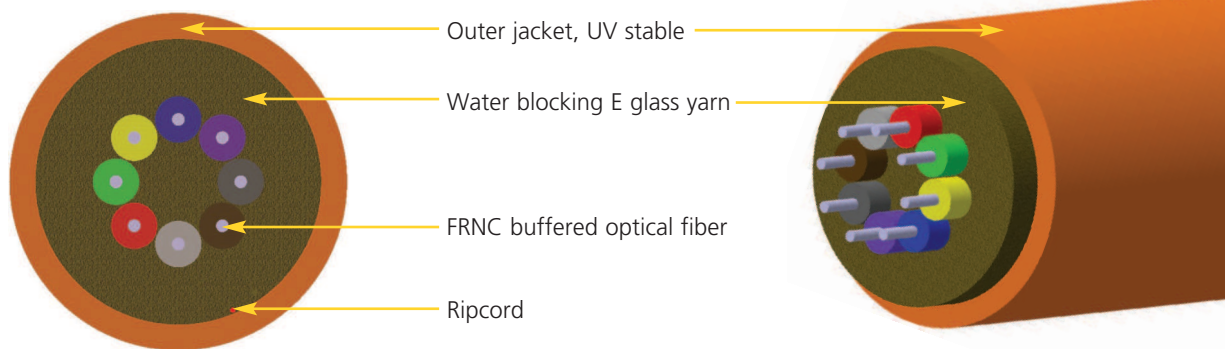
Minibreakout cable has low abrasion and good cut resistance. The cable has a standard level of rodent protection. Water-blocking aramid yarn provides better tensile strength of cable. The number of fibers can be max 24. Suitable for indoor and outdoor installation.

## Technical specifications

Fibers	2 to 24 singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm), FRNC buffer D=0.9 mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

## Technical data:

Construction code	DA12/DA19	DA12/DA19	DA12/DA19	DA12/DA19	DA12/DA19	DA12/DA19	DA12/DA19	DA12/DA19
Max. fiber count	2	4	6	8	10	12	16	24
Cable diameter (mm)	4,6	5,1	5,5	6,1	6,3	6,6	7,5	8,5
Nominal weight (kg/km)	23/20	28/24	33/29	39/34	42/37	46/40	58/51	73/65
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	530	650	850	950	950	1100	1300	1600
Impact resistance (w/20Nm)	3	3	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR



This pictures represents cable with 8 fibers inside.

Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Indoor and outdoor installation possible</li> <li>- Water blocking Eglass yarn</li> <li>- FRNC buffered optical fibers</li> </ul>	Installation -5°C to +50°C Operation -20°C to +50°C Storage -20°C to +50°C	<ul style="list-style-type: none"> <li>- Computer room cabling</li> <li>- Short run office cabling</li> <li>- Placement in cable ducts</li> </ul>

Temperature range according to (IEC 60794-1-2-F1)

**Product description**

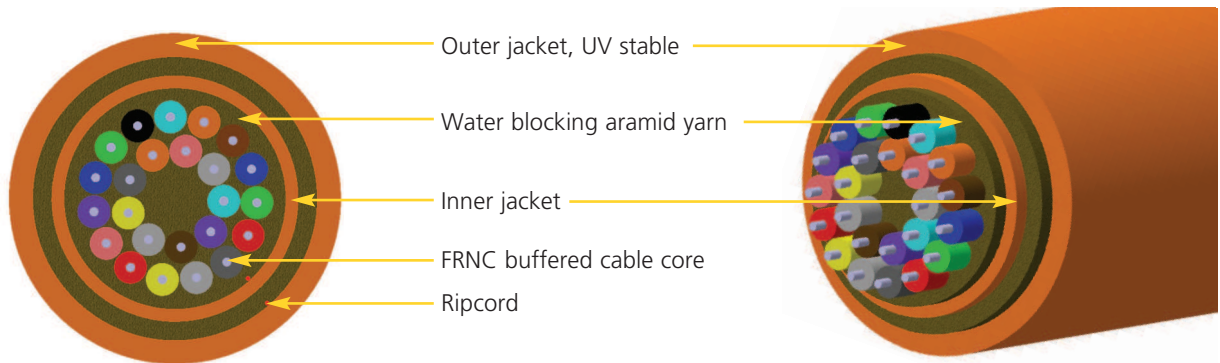
Minibreakout cable has low abrasion and good cut resistance. The cable has a higher level of rodent protection. Water blocking E-glass yarn provides better tensile strength of cable. The number of fibers can be max 24. Suitable for indoor and outdoor installation.

**Technical specifications**

Fibers	2 to 24 singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm), FRNC buffer D=0,9 mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

**Technical data:**

Construction code	DC12/DC19	DC12/DC19	DC12/DC19	DC12/DC19	DC12/DC19	DC12/DC19	DC12/DC19
Max. fiber count	2	4	6	8	12	16	24
Cable diameter (mm)	5,0	5,6	6,2	7,3	8,3	9,5	11,4
Nominal weight (kg/km)	28/24	37/31	41/35	54/47	68/60	83/73	108/96
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	850	1200	1200	1500	2500	2700	3500
Impact resistance (w/20Nm)	3	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR



This pictures represents cable with 24 fibers inside.

Features
- Indoor and outdoor installation possible
- Water blocking aramid yarn
- FRNC buffered optical fibers
- Double jacket

Temperature range	
Installation	-5°C to +40°C
Operation	-20°C to +50°C
Storage	-40°C to +60°C
Temperature range according to (IEC 60794-1-2-F1)	

Field of Application
- Computer room cabling
- Short run office cabling
- Placement in cable ducts

## Product description

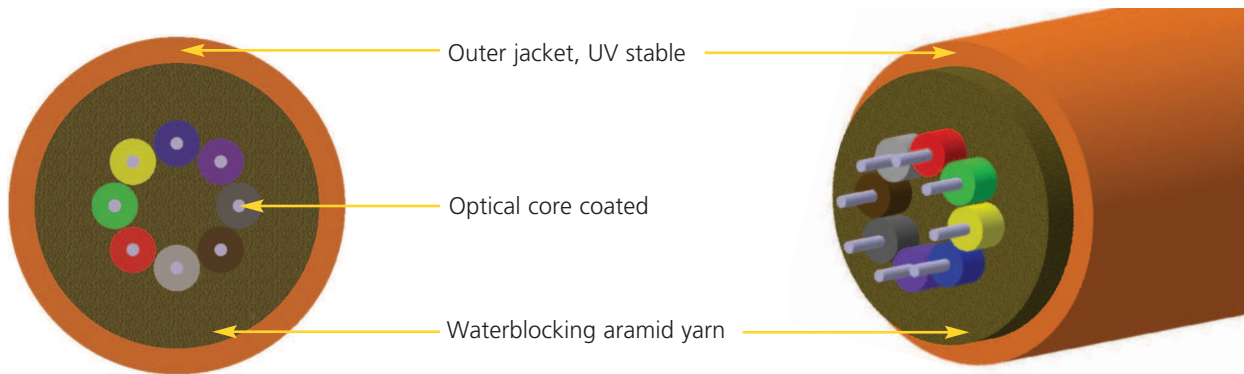
The cable has a higher level of rodent protection. Water blocking aramid yarn and double FRNC jacket provides better tensile strength of cable. The number of fibers can be max 24. Suitable for indoor and outdoor installation.

## Technical specifications

Fibers	2 to 24 singlemode or multimode optical fibers in tight (stripability up to 10 cm) or semi-tight (stripability more than 100 cm) FRNC buffer, D=0.9 mm.
Colour	Fibers - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

## Technical data:

Construction code	DC1W	DC1W	DC1W	DC1W	DC1W	DC1W	DC1W	DC1W
Max. fiber count	2	4	6	8	10	12	16	24
Cable diameter (mm)	8,2	8,8	9,4	9,8	9,9	10,5	11,2	13,5
Nominal weight (kg/km)	83	95	105	112	120	128	147	181
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N)	2500	2800	3000	3300	3500	3600	3800	4100
Impact resistance (w/20Nm)	3	3	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC	FRNC



This pictures represents cable with 8 fibers inside.

**Features**

- Indoor and outdoor installation possible
- Water blocking aramid yarn
- Color coded buffer of fibres

**Temperature range**

Installation	-5°C to +40°C
Operation	-20°C to +60°C
Storage	-20°C to +60°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Computer room cabling
- Short run office cabling
- Placement in cable ducts

**Product description**

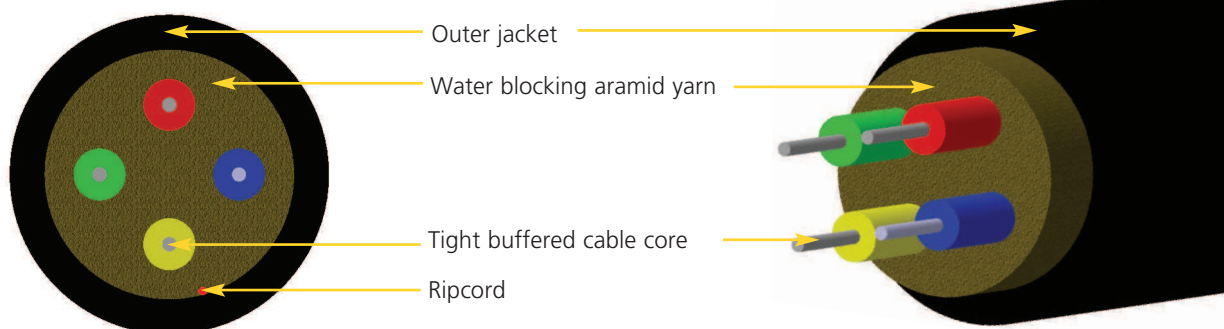
DROP cable is not contain loose tube. Water blocking aramid yarn provides better tensile strength of cable. The number of fibers can be max 24. Suitable for indoor and outdoor installation.

**Technical specifications**

Fibers	2 to 24 singlemode fibres G.657A , 250µm coated fiber
Colour	Fibres - see separate fiber color table Simplex sheath and cable jacket : SM 9/125 yellow, MM 50/125 green, MM 62,5/125 orange
Lifetime	30 years

**Technical data:**

Construction code	HB02/HB09	HB02/HB09	HB02/HB09	HB02/HB09
Max. fiber count	2,4,6	12	16	24
Cable diameter (mm)	3,0	3,4	3,7	4,0
Nominal weight (kg/km)	10,0/8,0	12,0/9,5	13,5/11,0	15,5/13,5
Standard put-up length (m)	2100,4100	2100,4100	2100,4100/2100	2100,4100
Tensile strength (N)	3600	7000	10000	4000
Impact resistance (w/18Nm)	3	3	3	3
Crush resistance (N/10cm)	500/1000	500/1000	500/1000	500/1000
Min. bending radius (mm)	12	12	12	12
Outer jacket	FRNC/PUR	FRNC/PUR	FRNC/PUR	FRNC/PUR



This pictures represents cable with 4 fibers inside.

Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Indoor and outdoor installation possible</li> <li>- Water blocking aramid yarn</li> <li>- Halogen free flame retardant (HFFR) outer jacket</li> </ul>	Installation -15°C to +50°C Operation -40°C to +60°C Storage -40°C to +60°C Temperature range according to (IEC 60794-1-2-F1)	<ul style="list-style-type: none"> <li>- CCTV wiring</li> <li>- Computer room cabling</li> <li>- Placement in cable ducts</li> <li>- Short run office cabling</li> <li>- Suitable for connection redeployable systems and moving devices</li> <li>- Adverse enviroment</li> <li>- Improved chemical resistance</li> </ul>

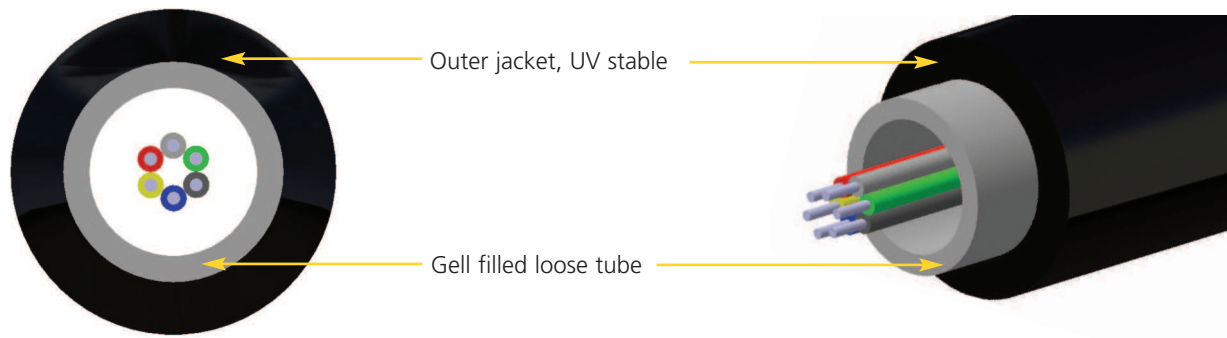
## Product description

Military cable is suitable for indoor or outdoor use, is resistant to abrasion. The cable has good protection against chemicals. Water blocking aramid yarn provides better tensile strength of cable. The number of fibers can be 4. Military cable is coated by special halogen free flame retardant (HFFR) PUR outer jacket.

## Technical specifications

Fibers	4 singlemode or multimode optical fibres, Tight buffer D=0.9 mm
Colour	Fibers - see separate fiber color table Cable jacket - black (other color available on request)
Lifetime	30 years

Technical data:	
Construction code	SA1D
Number of fibers	4
Cable diameter (µm)	5,5
Nominal weight (kg/km)	26,5
Standard put-up length (m)	2100
Tensile strength (N)	1000
Impact resistance (w/15Nm)	3
Crush resistance (N/10cm)	2000
Min. bending radius (mm)	20
Outer jacket	HFFR



This picture represents cable with 6 fibers inside.

#### Features

- Outdoor or indoor installation possible
- Gel filled loose tube
- Small outer diameter

#### Temperature range

Installation	-5°C to +50°C
Operation	-20°C to +70°C
Storage	-20°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

#### Field of Application

- Suitable for air-blown installation method
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Secondary distribution

#### Product description

Central loose tube cable, Microcable has no rodent protection. The number of fibers can be max 24, in 1 central loose tube. Suitable for indoor and outdoor installation.

#### Technical specifications

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=2.1mm (up to 12 fibers) , D=2,8mm (up to 24 fibers)
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

#### Technical data:

Construction code	LA02/LA0K	LA02/LA0K
Max. fiber count	12	24
Cable diameter (mm)	3,1	4,0/3,8
Nominal weight (kg/km)	11/8,5	17,5/13,0
Standard put-up length (m)	2100	2100
Tensile strength (N)	50	50
Impact resistance (w/7Nm)	3	3
Crush resistance (N/10cm)	1000	1000
Min. bending radius (mm)	40	40
Outer jacket	FRNC/HDPE	FRNC/HDPE

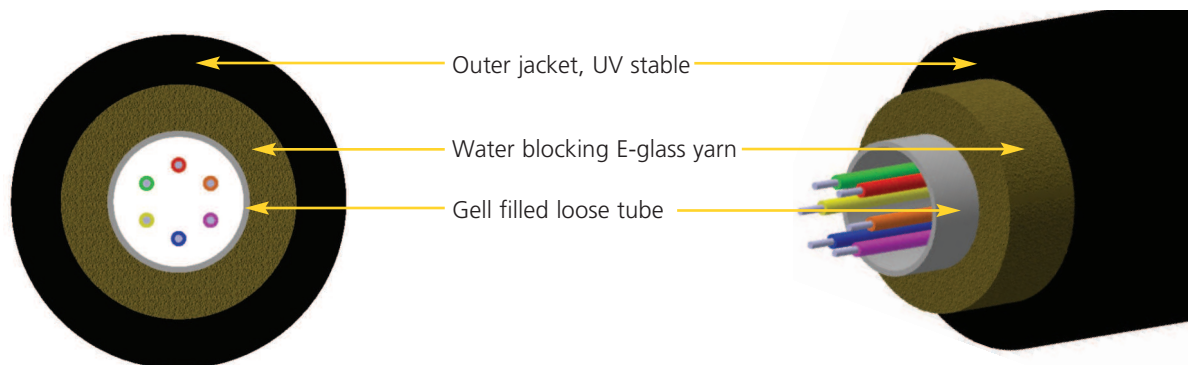
# Central Loose Tube Cable

Fiber Optic Cables  
Universal



Standard rodent protection

J/A-DQ(ZN)H WBF (IB12)  
A-DQ(ZN)2Y HD WBF (IB1K)



This pictures represents cable with 6 fibers inside.

### Features

- Indoor and outdoor installation possible
- Gel filled loose tube
- Standard rodent protection
- Water blocking E-glass yarn (WBF)

### Temperature range

Installation	-5°C to +50°C
Operation	-20°C to +70°C
Storage -	-30°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Secondary distribution

### Product description

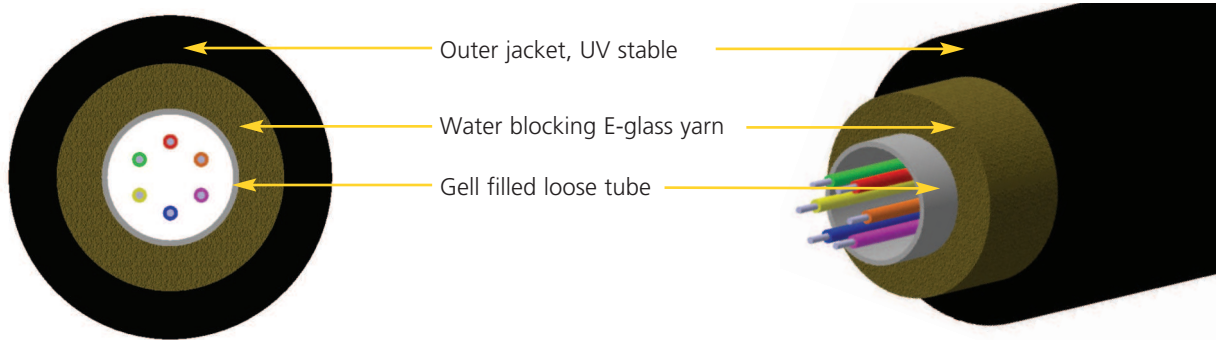
Central loose tube cable with standard rodent protection. Water blocking E-glass yarn provides better tensile strength of cable. The number of fibers can be max 24, in 1 central loose tube. Suitable for indoor and outdoor installation.

### Technical specifications

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=2.3mm (up to 12 fibers) , D=3mm (up to 24 fibers)
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	IB12/IB1K	IB12/IB1K
Max. fiber count	12	24
Cable diameter (mm)	5,4	6,4/5,8
Nominal weight (kg/km)	36/27	49/31
Standard put-up length (m)	2100	2100
Tensile strength (N)	1100	1100
Impact resistance (w/20Nm)	3	3
Crush resistance (N/10cm)	2000	2000
Min. bending radius (mm)	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE



This pictures represents cable with 6 fibers inside.

**Features**

- Indoor and outdoor installation possible
- Gel filled loose tube
- Standard rodent protection
- Water blocking E-glass yarn (WBF)

**Temperature range**

- Installation -5°C to +50°C
  - Operation -20°C to +70°C
  - Storage - -30°C to +70°C
- Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Secondary distribution

**Product description**

Central loose tube cable with improved rodent protection. More water blocking E-glass yarn provides better tensile strength of cable. The number of fibers can be max 24, in 1 central loose tube. Suitable for indoor and outdoor installation.

**Technical specifications**

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=2.5mm (up to 12 fibers) , D=3mm (up to 24 fibers)
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	IC12/IC1K	IC12/IC1K
Max. fiber count	12	24
Cable diameter (mm)	6,5	7,7
Nominal weight (kg/km)	52/39	68/51
Standard put-up length (m)	2100	2100
Tensile strength (N)	2000	2500
Impact resistance (w/20Nm)	3	3
Crush resistance (N/10cm)	2000	2000
Min. bending radius (mm)	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE



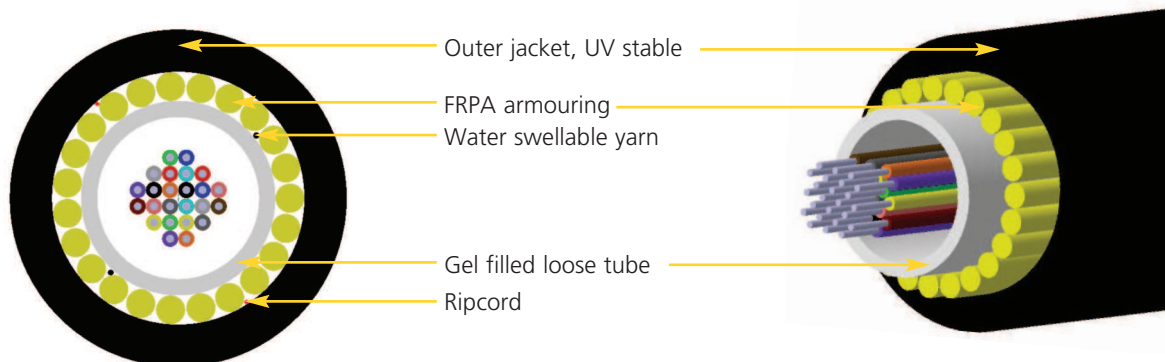
# Central Loose Tube Cable

Fiber Optic Cables  
Outdoor



Fibre reinforced plastic rod armoured FRPA

A-DQ(BN)BH (R1,0) (IE12)  
A-DQ(BN)B2Y HD (R1,0) (IE1K)



This pictures represents cable with 24 fibers inside.

### Features

- Outdoor installation possible
- Gel filled loose tube
- Improved rodent protection
- FRP dielectric strength members
- Water blocking yarn

### Temperature range

Installation	-15°C to +50°C
Operation	-20°C to +70°C
Storage	-30°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays or direct burial
- Secondary distribution

### Product description

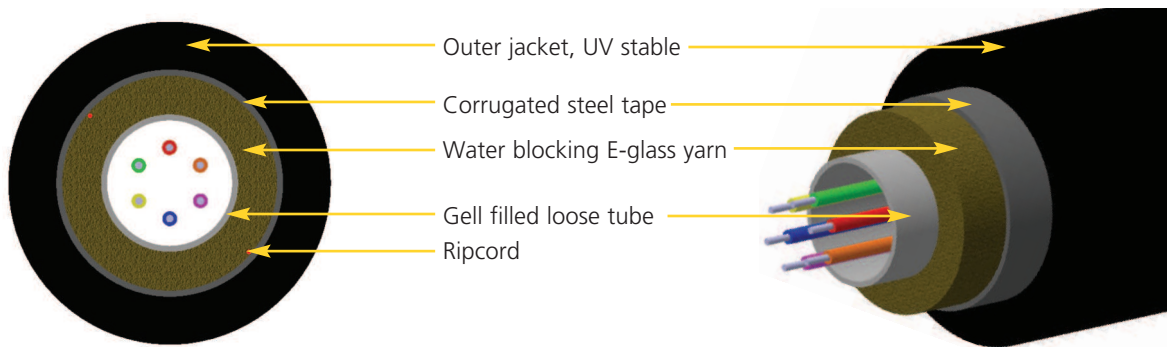
Central loose tube cable with high level of rodent protection, direct burial possible. Improved rodent protection provides good tensile strength of cable. This cable contain FRP dielectric strength members (FRP 1,0 means, that diameter of FRP is 1,0mm) around central loose gel filled tube inside. The number of fibers can be max 24, in 1 central loose tube. Suitable for outdoor installation.

### Technical specifications

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=3,0mm
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	IE12/IE1K
Max. fiber count	24
Cable diameter (mm)	7,4
Nominal weight (kg/km)	68/53
Standard put-up length (m)	2100,4100
Tensile strength (N)	2200
Impact resistance (w/20Nm)	3
Crush resistance (N/10cm)	3000
Min. bending radius (mm)	15xD
Outer jacket	FRNC/HDPE



This pictures represents cable with 6 fibers inside.

**Features**

- Indoor and outdoor installation possible
- Gel filled loose tube
- Full rodent protection
- Water blocking E-glass yarn (WBF)
- Direct burial possible

**Temperature range**

Installation	-5°C to +40°C
Operation	-20°C to +70°C
Storage -	-30°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays or direct burial
- Secondary distribution

**Product description**

Central loose tube cable with corrugated steel tape armoured (CST) has full rodent protection, direct burial possible. Full rodent protection provides very good strength properties of cable. Cable contain E-glass yarn, which provides good tensile strength. The number of fibers can be max 24, in 1 central loose tube.

**Technical specifications**

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=3.0mm
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	ID12/ID1K
Max. fiber count	24
Cable diameter (mm)	10, 1/9, 9
Nominal weight (kg/km)	124/98
Standard put-up length (m)	2100, 4100
Tensile strength (N)	2500
Impact resistance (w/29Nm)	3
Crush resistance (N/10cm)	10000
Min. bending radius (mm)	15xD
Outer jacket	FRNC/HDPE

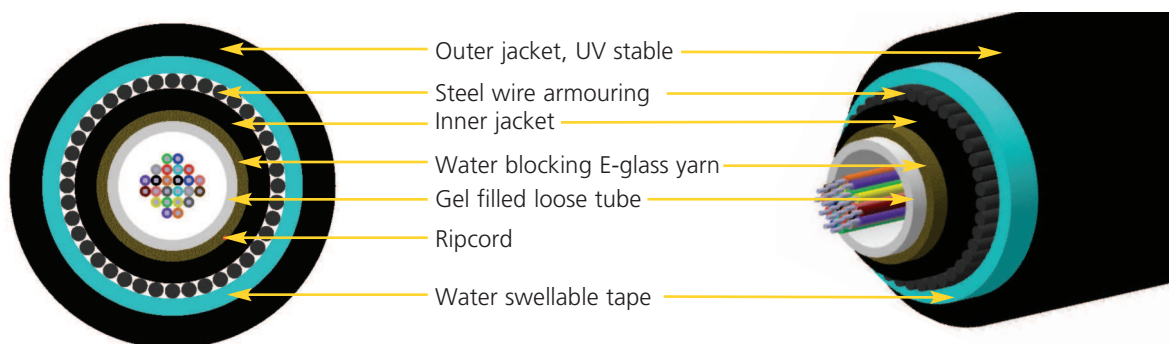
# Central Loose Tube Cable

Fiber Optic Cables  
Universal



Steel wire armoured (SWA)

J/A-DQ(ZN)2YBH WBF (R0,63 vzk) (IF1R)  
 A-DQ(ZN)HBH WBF (R0,63vzk) (IF1W)  
 A-DQ(ZN)2YB2Y HD WBF (R0,63vzk) (IF1Z)



This pictures represents cable with 24 fibers inside.

### Features

- Indoor or outdoor installation possible
- Full rodent protection
- Steel wire armour (SWA)
- Water blocking E-glass yarn
- Water swellable tape

### Temperature range

Installation	-15°C to +50°C
Operation	-20°C to +70°C
Storage -	-30°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays or direct burial
- Secondary distribution

### Product description

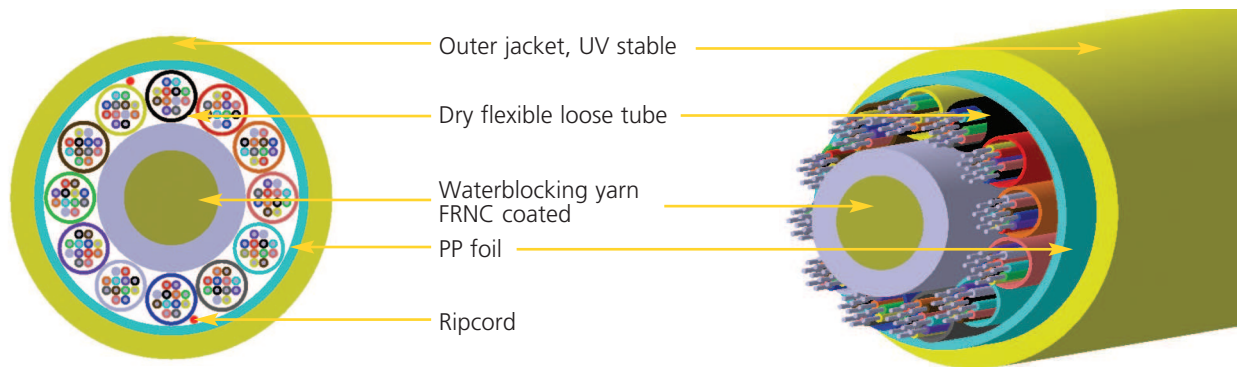
Central loose tube cable with steel wire armoured (SWA) has full rodent protection, direct burial possible. Full rodent protection provides very good strength properties of cable. SWA (R 0,63 vzk) means, that cable is armoured with galvanized steel wire D=0,63mm. Cable contain water swellable tape and double jacket. The number of fibers can be max 24, in 1 central loose tube. Suitable for indoor or outdoor installation.

### Technical specifications

Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=3.0mm
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	IF1R/IF1W/IF1Z
Max. fiber count	24
Cable diameter (mm)	10,7
Nominal weight (kg/km)	182/191/150
Standard put-up length (m)	2100
Tensile strength (N)	4000
Impact resistance (w/30Nm)	3
Crush resistance (N/10cm)	4000
Min. bending radius (mm)	15xD
Outer jacket	LDPE/FRNC/HDPE
Inner jacket	FRNC/FRNC/MDPE



This pictures represents cable with 144 fibers inside.

Features	Temperature range	Field of Application						
<ul style="list-style-type: none"> <li>- Indoor installation possible</li> <li>- PP foil</li> <li>- Flexible dry loose tubes</li> <li>- Central strength member</li> <li>- Ripcord</li> </ul>	<table border="1"> <tr> <td>Installation</td> <td>5°C to +50°C</td> </tr> <tr> <td>Operation</td> <td>-5°C to +50°C</td> </tr> <tr> <td>Storage</td> <td>-5°C to +50°C</td> </tr> </table> <p>Temperature range according to (IEC 60794-1-2-F1)</p>	Installation	5°C to +50°C	Operation	-5°C to +50°C	Storage	-5°C to +50°C	<ul style="list-style-type: none"> <li>- Computer room cabling</li> <li>- Short run office cabling</li> <li>- Placement in cable ducts</li> <li>- FTTx</li> </ul>
Installation	5°C to +50°C							
Operation	-5°C to +50°C							
Storage	-5°C to +50°C							

**Product description**  
 MicroFlex cable has flexible dry loose tubes. Cable contain central dielectric strength member, FRNC jacket and PP foil. The number of fibers can be max 144, in 12 loose tubes. Suitable just for indoor installation.

Technical specifications	
Fibers	12 x 12 singlemode optical fibers G.652D in dry tight tube, each stranded around FRNC coated aramid yarn, 250µm coated fiber
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - yellow (other colors available upon request)
Lifetime	30 years

Technical data:					
Construction code	SA0W	SA0W	SA0W	SA0W	SA0W
Max. fiber count	48	60	72	96	144
Cable diameter (mm)	5,8	6,0	6,2	6,6	8,5
Nominal weight (kg/km)	23	25	28	40	68
Standard put-up length (m)	max.1200	max.1200	max.1200	max.1200	max.1200
Tensile strength (N)	250	250	250	250	250
Impact resistance (w/8Nm)	3	3	3	3	3
Crush resistance (N/10cm)	100	100	100	100	100
Min. bending radius (mm)	160	160	160	160	160
Outer jacket	FRNC	FRNC	FRNC	FRNC	FRNC

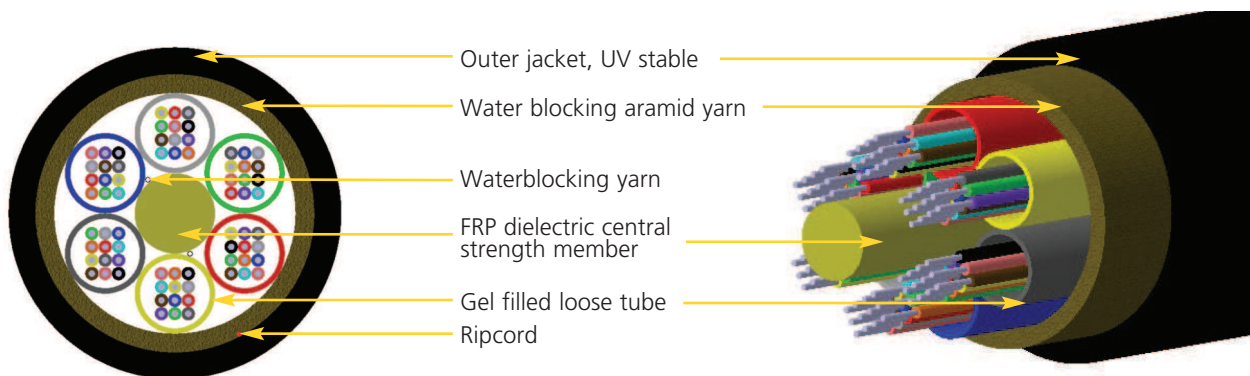
# Multi Loose Tube Cable

Fiber Optic Cables  
Outdoor



Microcable

A-DQ(ZN)2Y HD (LB1K)  
A-DQ(ZN)4Y (LB1C/SB1C)



This pictures represents cable with 96 fibers inside.

Features
- Outdoor installation possible
- Water blocking aramid yarn
- FRP dielectric central strength member
- Gel filled loose tubes
- Standard rodent protection
- Water blocking yarn

Temperature range	
Installation	-15°C to +50°C
Operation	-30°C to +70°C
Storage -	-40°C to +70°C
Temperature range according to (IEC 60794-1-2-F1)	

Field of Application
- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable
- Suitable for air-blown

## Product description

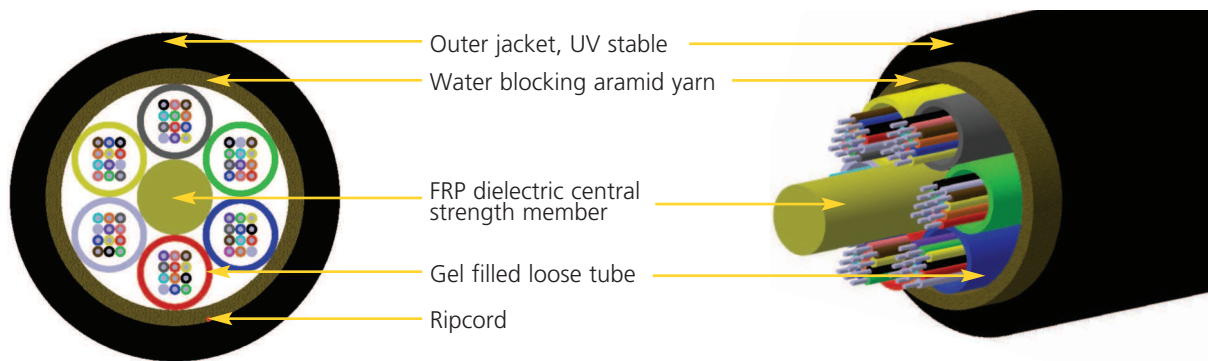
Multi loose tube microcable is suitable for air-blown installation. Water blocking aramid yarn provides better tensile strength of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 288, in 12 loose tubes. Suitable for outdoor installation.

## Technical specifications

Fibers	2 to 12 loose tubes with up to 12/24(SB1C) colour coded singlemode or multimode optical fibers in each stranded around fiber enforced plastic (FRP) central strength member (OD 0,5mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=1,5mm, D=2,3mm (SB1C)
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

## Technical data:

Construction code	LB1K	LB1K	LB1K/LB1C	SB1C
Max. fiber count	72	96	144	288
Cable diameter (mm)	5,6	6,5	8,5/7,0	10,0
Nominal weight (kg/km)	29	41	65/40	97
Standard put-up length (m)	2100,4100	2100,4100	2100,4100/2100	2100,4100
Tensile strength (N)	850	1500	2000/450	800
Impact resistance (w/10Nm)	3	3	3 (w/15Nm)	3 (w/20Nm)
Crush resistance (N/10cm)	1500	1500	1500	1500
Min. bending radius (mm)	15xD	15xD	15xD/10xD	20xD
Outer jacket	HDPE	HDPE	HDPE/PA	PA



This picture represents cable with 96 fibers inside.

Features
- Indoor and outdoor installation possible
- FRP dielectric central strength member
- Gel filled loose tubes
- Standard rodent protection
- Water blocking aramid yarn

Temperature range	
Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C
Temperature range according to (IEC 60794-1-2-F1)	

Field of Application
- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable
- Suitable for an air-blown

**Product description**

Multi loose tube cable minicable has no rodent protection. Water blocking aramid yarn and central dielectric strength member provides better tensile strength of cable. The number of fibers can be max 216, in 18 loose tubes. Suitable for indoor and outdoor installation.

**Technical specifications**

Fibers	5, 6, 8, 12 or 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber reinforced plastic (FRP) central strength member (D= 1,3mm-2,3mm), 250µm coated fiber
Loose tube O.D.	D=1,7mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	KB12/KB1K	KB12/KB1K	KB12/KB1K	KB12/KB1K	KB12/KB1K
Max. fiber count	60	72	96	144	216
Cable diameter (mm)	7,1/5,7	7,5/6,1	8,8/7,2	10,8/9,4	11,1/9,5
Nominal weight (kg/km)	55/28	62/33	84/49	120/76	122/72
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	450	750	2500	3000	1000
Impact resistance (w/20Nm)	3	3	3	3	3(w/6Nm)
Crush resistance (N/10cm)	2000	2000	2000	2000	900
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/PE

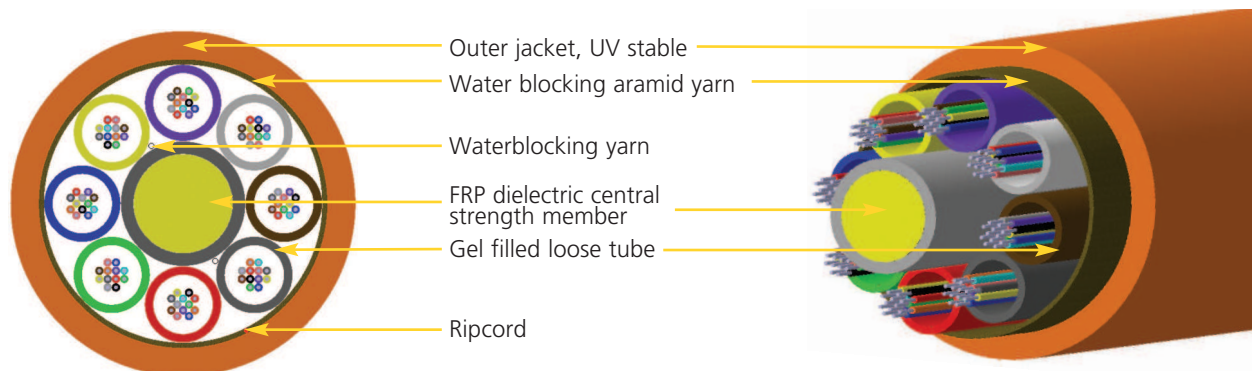
# Multi Loose Tube Cable

Fiber Optic Cables  
Universal



NRP

J/A-DQ(ZN)H (JA12)  
A-DQ(ZN)2Y HD (JA1K)



This pictures represents cable with 96 fibers inside.

### Features

- Indoor or outdoor installation possible
- FRP dielectric central strength member
- Gel filled loose tubes
- Water blocking yarn
- Water blocking aramid yarn

### Temperature range

Installation	-5°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable

### Product description

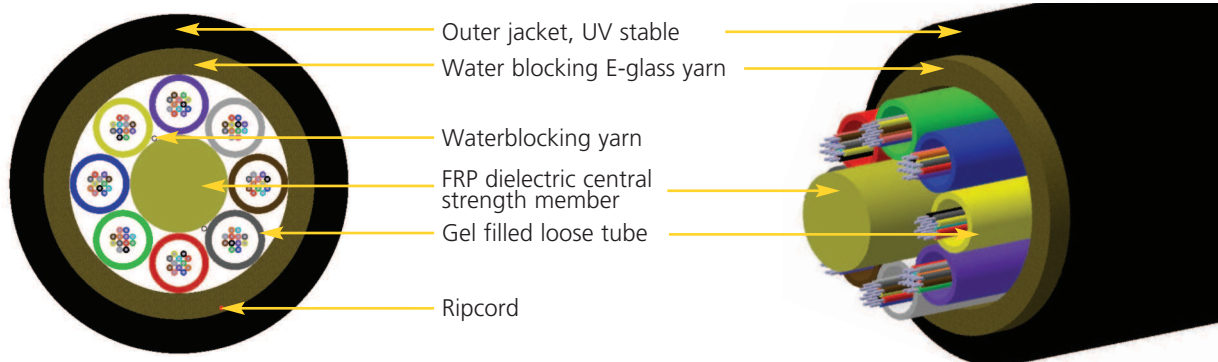
Multi loose tube cable „NRP“ has no rodent protection. Water blocking aramid yarn and central dielectric strength member provides better tensile strength of cable. The number of fibers can be max 216, in 18 loose tubes. Suitable for indoor or outdoor installation.

### Technical specifications

Fibers	4 to 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (OD 1,0mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=2,3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - Orange (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	JA12/JA1K	JA12/JA1K	JA12/JA1K	JA12/JA1K	JA12/JA1K
Max. fiber count	48	72	96	144	216
Cable diameter (mm)	8,6/8,2	10,1/9,7	11,5/11,1	14,3/13,9	14,7
Nominal weight (kg/km)	82/59	106/78	132/99	197/155	199/165
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	800	1400	1800	2400	1500
Impact resistance (w/20Nm)	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE



This pictures represents cable with 96 fibers inside.

**Features**

- Indoor and outdoor installation possible
- Water blocking E-glass yarn (WBF)
- FRP dielectric central strength member
- Gel filled loose tubes
- Standard rodent protection
- Water blocking agent

**Temperature range**

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable

**Product description**

Multi loose tube cable with standard rodent protection. Water blocking E-glass yarn provides better tensile strength of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 432, in 36 loose tubes. Suitable for outdoor or indoor installation.

**Technical specifications**

Fibers	4 to 36 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (OD 1,0mm-2,7mm), 250µm coated fiber
Loose tube O.D.	D=2,3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	JB12/JB1K	JB12/JB1K	JB12/JB1K	JB12/JB1K	JB12/JB1K	JB12/JB1K
Max. fiber count	48	72	96	144	216	432
Cable diameter (mm)	9,1	10,5	11,8	14,6	17,8	22,6
Nominal weight (kg/km)	87/66	117/92	144/117	210/174	269/219	426/370
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100	2100
Tensile strength (N)	1000	2400	3400	4800	2400	2400
Impact resistance (w/20Nm)	3	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000/4000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/PE	FRNC/PE



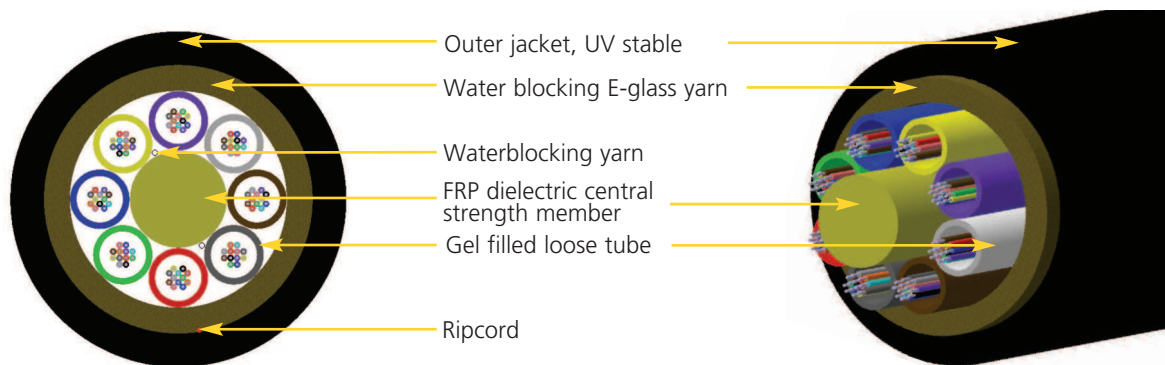
# Multi Loose Tube Cable

Fiber Optic Cables  
Universal



Standard rodent protection,  
reduced diameter

J/A-DQ(ZN)H WBF (JH12)  
A-DQ(ZN)2Y HD WBF (JH1K)



This pictures represents cable with 96 fibers inside.

### Features

- Indoor and outdoor installation possible
- Water blocking E-glass yarn (WBF)
- FRP dielectric central strength member
- Standard rodent protection
- Reduced diameter

### Temperature range

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable

### Product description

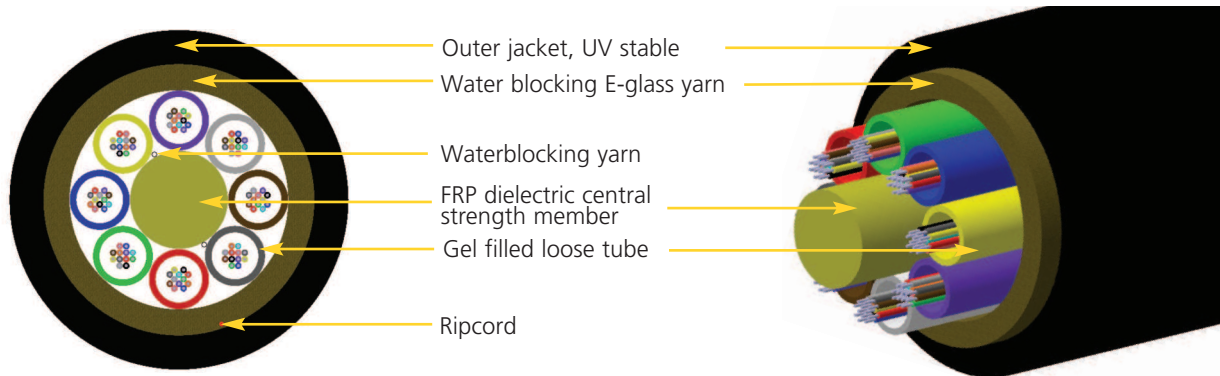
Multi loose tube cable with standard rodent protection and reduced diameter. Water blocking E-glass yarn provides better tensile strength of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 216, in 18 loose tubes. Suitable for outdoor or indoor installation.

### Technical specifications

Fibers	5 to 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (OD 1,3mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=1,7mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	JH12/JH1K	JH12/JH1K	JH12/JH1K	JH12/JH1K	JH12/JH1K
Max. fiber count	60	72	96	144	216
Cable diameter (mm)	7,8	8,2	9,6	11,8	12/11,6
Nominal weight (kg/km)	73/55	82/63	108/85	156/123	144/108
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	1200	1800	3500	6000	2200
Impact resistance (w/15Nm)	3	3	3	3	3 (w/20Nm)
Crush resistance (N/10cm)	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE



This pictures represents cable with 96 fibers inside.

**Features**

- Indoor and outdoor installation possible
- Water blocking E-glass yarn (WBF)
- FRP dielectric central strength member
- Gel filled loose tubes
- Improved rodent protection
- Water blocking agent

**Temperature range**

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable

**Product description**

Multi loose tube cable with improved rodent protection. Water blocking E-glass yarn provides better tensile strength of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 216, in 18 loose tubes. Suitable for outdoor or indoor installation.

**Technical specifications**

Fibers	4, 6, 8, 12 or 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (OD 1,0mm-2,7mm), 250µm coated fiber
Loose tube O.D.	D=2,3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

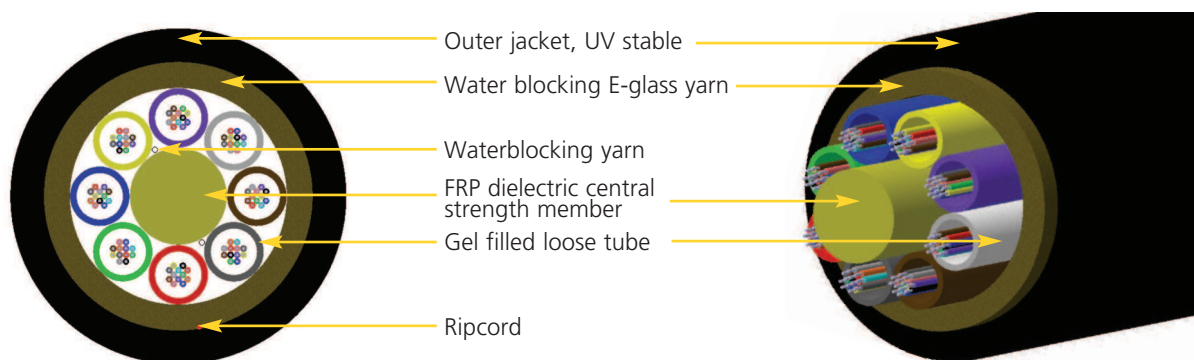
**Technical data:**

Construction code	JC12/JC1K	JC12/JC1K	JC12/JC1K	JC12/JC1K	JC12/JC1K
Max. fiber count	48	72	96	144	216
Cable diameter (mm)	9,7	11,3	12,6	15,4	17,5
Nominal weight (kg/km)	104/79	139/110	173/140	242/201	295/243
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	2000	4500	7000	10000	4000
Impact resistance (w/15Nm)	3	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE

# Multi Loose Tube Cable

Improved rodent protection  
reduced diameter

J/A-DQ(BN)H WBF (J112)  
A-DQ(BN)2Y HD WBF (J11K)



This pictures represents cable with 96 fibers inside.

### Features

- Indoor and outdoor installation possible
- Water blocking E-glass yarn (WBF)
- FRP dielectric central strength member
- Improved rodent protection
- Reduced diameter

### Temperature range

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Drop cable

### Product description

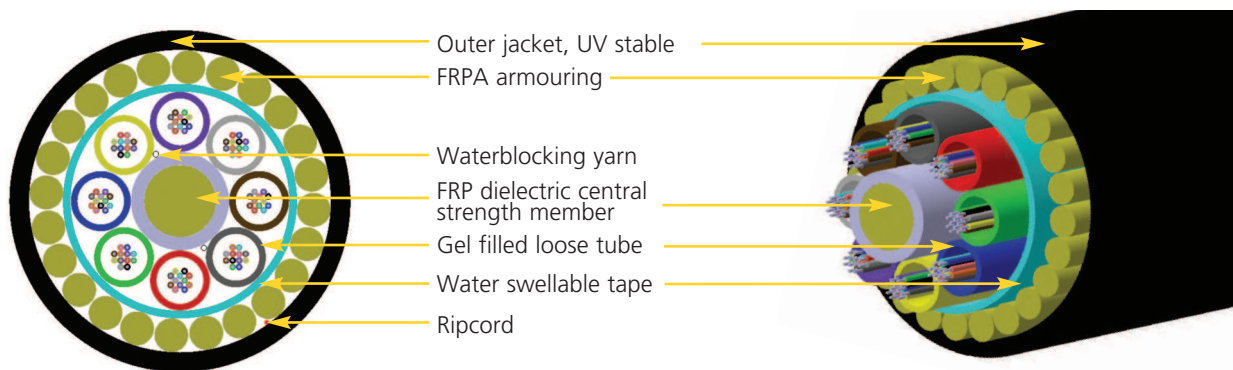
Multi loose tube cable with improved rodent protection and reduced diameter. Water blocking E-glass yarn provides better tensile strength of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 216, in 18 loose tubes. Suitable for outdoor or indoor installation.

### Technical specifications

Fibers	4 to 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (OD 1,7mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=1,7mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	J12/J11K	J12/J11K	J12/J11K	J12/J11K
Max. fiber count	72	96	144	216
Cable diameter (mm)	9,4	10,6	12,8	12,4
Nominal weight (kg/km)	102/81	130/107	179/150	166/133
Standard put-up length (m)	2100,4100	2100,4100	2100,4100/2100	2100,4100
Tensile strength (N)	3600	7000	10000	4000
Impact resistance (w/20Nm)	3	3	3	3
Crush resistance (N/10cm)	2000	2000	1500	1500
Min. bending radius (mm)	15xD	15xD	15xD/10xD	20xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/PE



This picture represents cable with 96 fibers inside.

Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Indoor or outdoor installation possible</li> <li>- Water swellable tape</li> <li>- FRP armoring (1,0)</li> <li>- Gel filled loose tubes</li> <li>- Water-blocking yarn</li> <li>- FRP central dielectric strength member (OD 2,5mm)</li> </ul>	<p>Installation -15°C to +50°C                      Operation -40°C to +70°C                      Storage -40°C to +70°C</p> <p>Temperature range according to (IEC 60794-1-2-F1)</p>	<ul style="list-style-type: none"> <li>- Backbone network routes</li> <li>- Telecommunication and data trunk</li> <li>- Placement in ducts on cable trays</li> <li>- Building interconnections</li> <li>- Drop cable</li> <li>- Secondary distribution</li> <li>- Aerial installation</li> </ul>

**Product description**

Multi loose tube cable with fibre reinforced plastic rod armoured. FRP dielectric strength members armoring contain FRP strength members D=1,0mm. This armoring provides very good tensile strength properties of cable. Cable contain water swellable tape and FRP central strength member. The number of fibers can be max 96, in 8 loose tubes. Suitable for outdoor or indoor installation.

**Technical specifications**

Fibers	4, 6, or 8 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber reinforced plastic (FRP) central strength member (D=1,0mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=2.3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	JE12/JE1K	JE12/JE1K	JE12/JE1K
Max. fiber count	48	72	96
Cable diameter (mm)	11,1/10,7	12,6/12,2	14,5/14,1
Nominal weight (kg/km)	134/103	174/138	228/186
Standard put-up length (m)	2100,4100	2100,4100	2100,4100
Tensile strength (N)	3800	7000	9000
Impact resistance (w/25Nm)	3	3	3
Crush resistance (N/10cm)	4000	4000	4000
Min. bending radius (mm)	15xD	15xD	15xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE

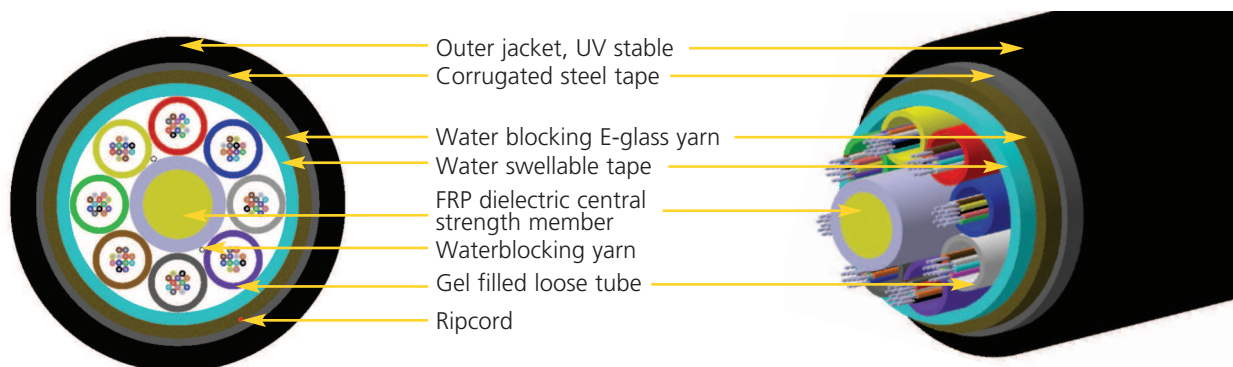
# Multi Loose Tube Cable

Fiber Optic Cables  
Universal



Corrugated steel armored (CST)

J/A-DQ(ZN)(SR)H WBF (JD12)  
A-DQ(ZN)(SR)2Y HD WBF (JD1K)



This pictures represents cable with 96 fibers inside.

### Features

- Indoor and outdoor installation possible
- Water swellable tape
- Corrugated steel tape
- Gel filled loose tubes
- Water-blocking yarn
- Water-blocking E-glass yarn

### Temperature range

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays
- Building interconnections
- Secondary distribution

### Product description

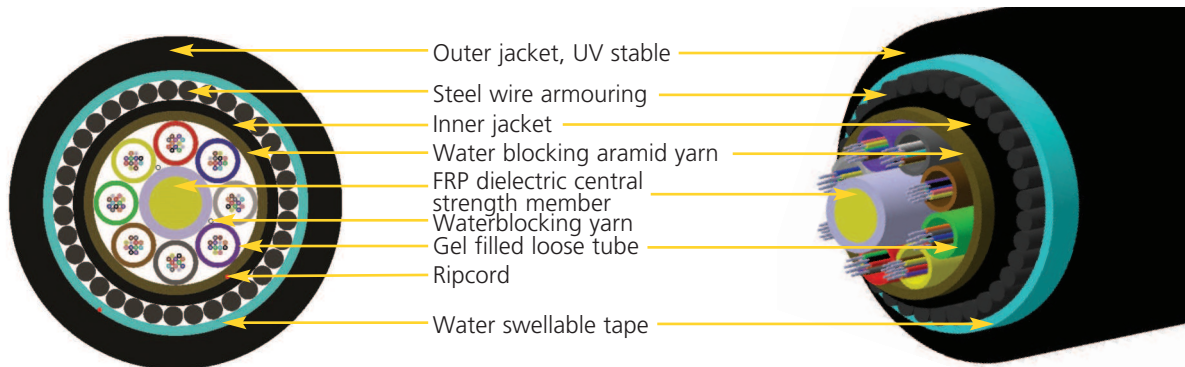
Multi loose tube cable corrugated steel tape armored has full rodent protection, direct burial possible. Corrugated steel tape armoring and central dielectric strength member provides very good strength properties of cable. Cable contain water swellable tape and waterblocking E-glass yarn. The number of fibers can be max 216, in 18 loose tubes.

### Technical specifications

Fibers	4, 6, 8, 12 or 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic central strength member (D=1,0mm-2,7mm), 250µm coated fiber
Loose tube O.D.	D=2.3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	JD12/JD1K	JD12/JD1K	JD12/JD1K	JD12/JD1K	JD12/JD1K
Max. fiber count	48	72	96	144	216
Cable diameter (mm)	11,5	12,5	14,5	17,5	17,5
Nominal weight (kg/km)	153/127	184/154	222/189	301/264	309/268
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	1200	2400	3200	4500	2400
Impact resistance (w/30Nm)	3	3	3	3	3
Crush resistance (N/10cm)	10000	10000	10000	10000	10000
Min. bending radius (mm)	20xD	20xD	20xD	20xD	20xD
Outer jacket	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE	FRNC/HDPE



This picture represents cable with 96 fibers inside.

Features
- Indoor or outdoor installation possible
- Water swellable tape
- Steel wire armoring (SWA)
- Water blocking aramid yarn
- FRP central strength member
- Water blocking E-glass yarn

Temperature range
Installation -5°C to +50°C
Operation -30°C to +70°C
Storage -40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

Field of Application
- Backbone network routes
- Telecommunication and data trunk
- Placement in ducts on cable trays or direct burial
- Building interconnections
- Secondary distribution

**Product description**

Multi loose tube cable with steel wire armoured has full rodent protection, direct burial possible. FRP central dielectric strength member provides very good strength properties of cable. SWA (R 1,0 vzk) means, that cable is armoured with galvanized steel wire D=1,0mm. Cable contain water swellable tape and double jacket. The number of fibers can be max 216, in 18 loose tubes. Suitable for indoor or outdoor installation.

**Technical specifications**

Fibers	4, 6, 8, 12 or 18 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber enforced plastic (FRP) central strength member (OD 2,5mm), 250µm coated fiber
Loose tube O.D.	D=2.3mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	JF1W/JF1X	JF1W/JF1X	JF1W/JF1X	JF1W/JF1X	JF1W/JF1Y
Max. fiber count	48	72	96	144	216
Cable diameter (mm)	13,1	14,6	16,0	18,8	19,2
Nominal weight (kg/km)	316/268	380/324	444/381	573/497	592/524
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	4000	6000	7000	8000	8000
Impact resistance (w/20Nm)	3	3	3	3	3
Crush resistance (N/10cm)	4000	4000	4000	4000	3000
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD
Outer jacket	FRNC/PE	FRNC/PE	FRNC/PE	FRNC/PE	FRNC/HDPE
Inner jacket	FRNC/PE	FRNC/PE	FRNC/PE	FRNC/PE	FRNC/PE

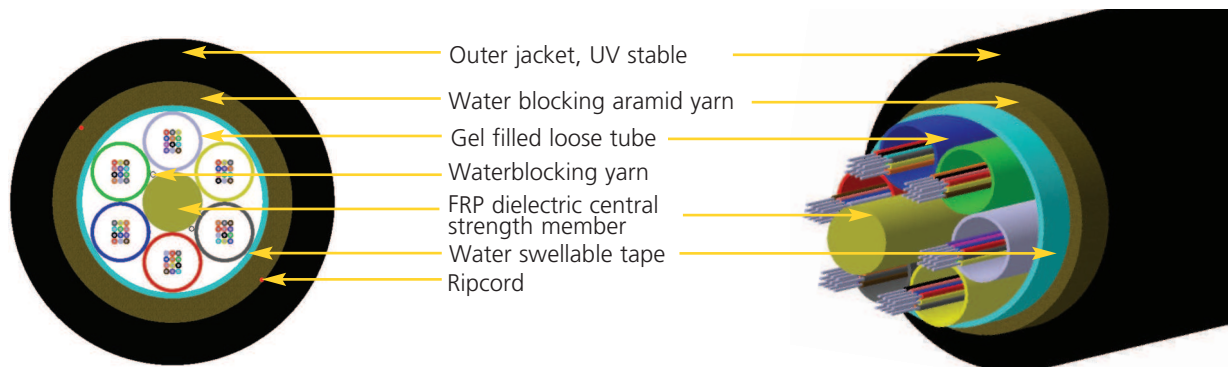
# Multi Loose Tube Cable

Fiber Optic Cables  
Outdoor



ADSS (3kN)

A-DQ(ZN)2Y(T) HD (PC1K)



This pictures represents cable with 72 fibers inside.

### Features

- Outdoor installation possible
- Water blocking aramid yarn
- FRP dielectric central strength member
- Gel filled loose tubes
- Standard rodent protection
- Water swellable tape

### Temperature range

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage -	40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Telecommunications by power utilities and private network groups
- Underbuild applications
- Telecom network, where quick and low-cost installation is priority

### Product description

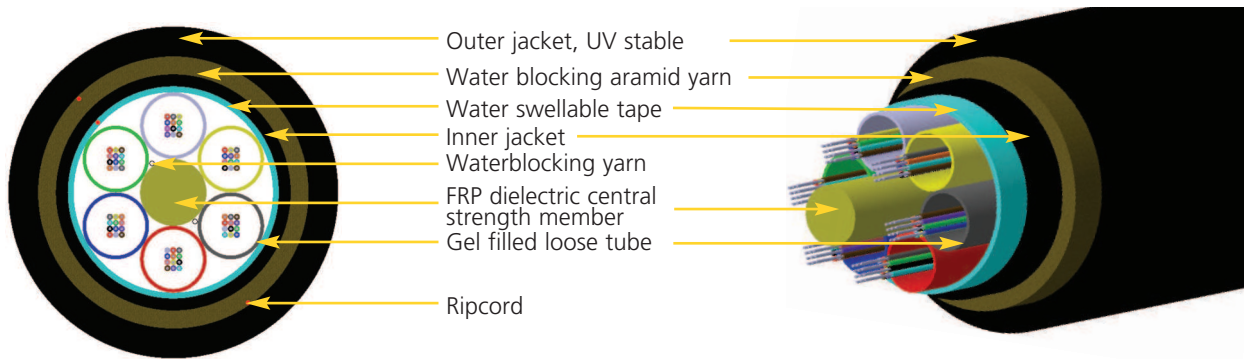
All dielectric self supporting cable with standard rodent protection. Water swellable tape provides good water resistance of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 144, in 12 gel filled loose tubes. Suitable for outdoor installation.

### Technical specifications

Fibers	2 to 12 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber einforced plastic (FRP) central strength member (D=1,0mm-2,5mm), 250µm coated fiber
Loose tube O.D.	D=2,5mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	PC1K	PC1K	PC1K	PC1K
Max. fiber count	48	72	96	144
Cable diameter (mm)	10,2	11,9	13,3	16,4
Nominal weight (kg/km)	79	111	136	205
Standard put-up length (m)	2100,4100	2100,4100	2100,4100	2100,4100
Tensile strength (N)	3200	3000	3000	3000
Impact resistance (w/20Nm)	3	3	3	3
Crush resistance (N/10cm)	2000	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD	15xD
Outer jacket	HDPE	HDPE	HDPE	HDPE



This picture represents cable with 96 fibers inside.

**Features**

- Outdoor installation possible
- Water blocking aramid yarn
- FRP dielectric central strength member
- Gel filled loose tubes
- Water swellable tape
- Double jacket

**Temperature range**

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Telecommunications by power utilities and private network groups
- Underbuild applications
- Telecom network, where quick and low-cost installation is priority

**Product description**

All dielectric self supporting cable has a double jacket. Water swellable aramid tape provides good water resistance of cable. Cable contain FRP dielectric central strength member and double jacket. The number of fibers can be max 144, in 12 gel filled loose tubes. Suitable for outdoor installation.

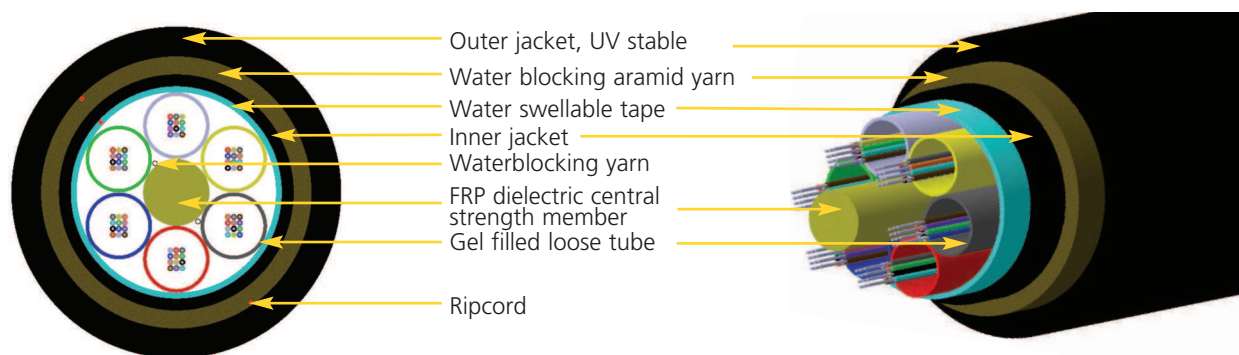
**Technical specifications**

Fibers	2 to 12 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fiber enforced plastic (FRP) central strength member (D=1,0mm-3,0mm), 250µm coated fiber
Loose tube O.D.	D=2,8mm (96 fibres cable has D=2,5mm)
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	QC1Z	QC1X	QC1Z
Max. fiber count	72	96	144
Cable diameter (mm)	15,3	16,9	20,5
Nominal weight (kg/km)	182	216	313
Standard put-up length (m)	2100,4100	2100,4100	2100,4100
Tensile strength (N)	6300	6300	6000
Impact resistance (w/20Nm)	3	3	3
Crush resistance (N/10cm)	2000	2000	2000
Min. bending radius (mm)	15xD	15xD	15xD
Outer jacket	HDPE	PE	HDPE
Inner jacket	LDPE	PE	LDPE





This pictures represents cable with 96 fibers inside

### Features

- Outdoor installation possible
- Water blocking aramid yarn
- FRP dielectric central strength member
- Gel filled loose tubes
- Water swellable tape
- Double jacket

### Temperature range

Installation	-15°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C
Temperature range according to (IEC 60794-1-2-F1)	

### Field of Application

- Telecommunications by power utilities and private network groups
- Underbuild applications
- Telecom network, where quick and low-cost installation is priority

### Product description

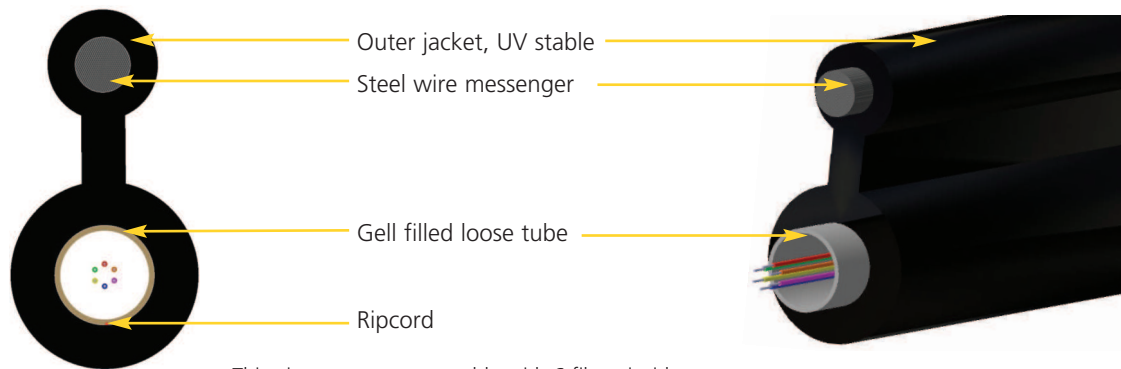
All dielectric self supporting cable has a double jacket. Water swellable aramid tape provides good water resistance of cable. Cable contain FRP dielectric central strength member. The number of fibers can be max 144, in 12 gel filled loose tubes. Suitable for outdoor installation.

### Technical specifications

Fibers	2 to 12 loose tubes with up to 12 colour coded singlemode or multimode optical fibers in each stranded around fibre enforced plastic (FRP) central strength member (D=1,0mm-2,7mm), 250µm coated fiber
Loose tube O.D.	D=2,8mm
Colour	Fibers - see separate fiber color table Tubes - see separate color information Sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	RC1Z	RC1Z	RC1Z
Max. fiber count	72	96	144
Cable diameter (mm)	16,7	18,0	21,3
Nominal weight (kg/km)	201	232	328
Standard put-up length (m)	2100,4100	2100,4100	2100,4100
Tensile strength (N)	10000	10000	10000
Impact resistance (w/20Nm)	3	3	3
Crush resistance (N/10cm)	3000	3000	3000
Min. bending radius (mm)	15xD	15xD	15xD
Outer jacket	HDPE	HDPE	HDPE
Inner jacket	LDPE	LDPE	LDPE



This pictures represents cable with 6 fibers inside.

Features
- Outdoor installation possible
- Steel wire messenger (OD 3,0mm)
- Central gel filled loose tube

Temperature range	
Installation	-15°C to +50°C
Operation	-30°C to +70°C
Storage	-40°C to +70°C
Temperature range according to (IEC 60794-1-2-F1)	

Field of Application
- Aerial use
- Telecommunication and data trunk
- FTTX
- Building interconnections
- Drop cable

**Product description**  
Central loose tube self supporting cable is suitable for aerial use. Cable contain steel wire messenger. This messenger provide higher strength. The number of fibers can be max 24. Suitable for outdoor installation.

Technical specifications	
Fibers	2 to 24 colour coded singlemode or multimode optical fibers in loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=4,5mm
Steel wire messenger	D=3,0mm (100m installation span), D=4,5mm (150m installation span)
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

Technical data:			
Construction code	MA0B		MA0B
Max. fiber count	24		24
Installation span (m)	100		150
Cable size (mm)	8,5 x 17,0		8,5 x 20
Nominal weight (kg/km)	139		199
Standard put-up length (m)	2100		2100
Tensile strength (N)	3000		7000
Impact resistance (w/20Nm)	3		3
Crush resistance (N/10cm)	2000		2000
Min. bending radius (mm)	15xD		15xD
Outer jacket	LDPE		LDPE

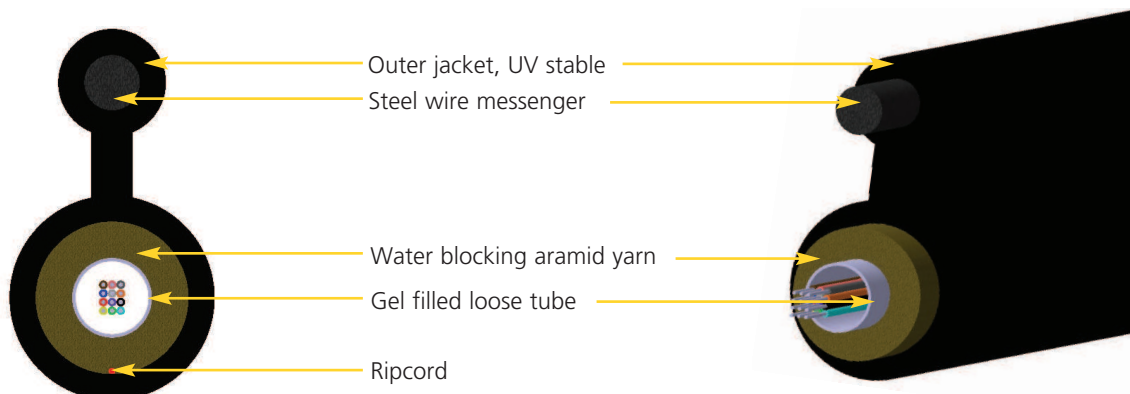
# Central Loose Tube Cable

Fiber Optic Cables  
Universal



Self-supporting cable - Fig.8 - drop

J/A-DQ(ZN)HT (MA12)  
A-DQ(ZN)2YT (MA1B)



This picture represents cable with 12 fibers inside.

Features	Temperature range	Field of Application						
<ul style="list-style-type: none"> <li>- Outdoor or indoor installation possible</li> <li>- Steel wire messenger (OD 1,6mm)</li> <li>- Central gel filled loose tube</li> </ul>	<table border="1"> <tr> <td>Installation</td> <td>-5°C to +50°C</td> </tr> <tr> <td>Operation</td> <td>-30°C to +70°C</td> </tr> <tr> <td>Storage</td> <td>-40°C to +70°C</td> </tr> </table> <p>Temperature range according to (IEC 60794-1-2-F1)</p>	Installation	-5°C to +50°C	Operation	-30°C to +70°C	Storage	-40°C to +70°C	<ul style="list-style-type: none"> <li>- Aerial use</li> <li>- Telecommunication and data trunk</li> <li>- FTTX</li> <li>- Building interconnections</li> <li>- Drop cable</li> </ul>
Installation	-5°C to +50°C							
Operation	-30°C to +70°C							
Storage	-40°C to +70°C							

## Product description

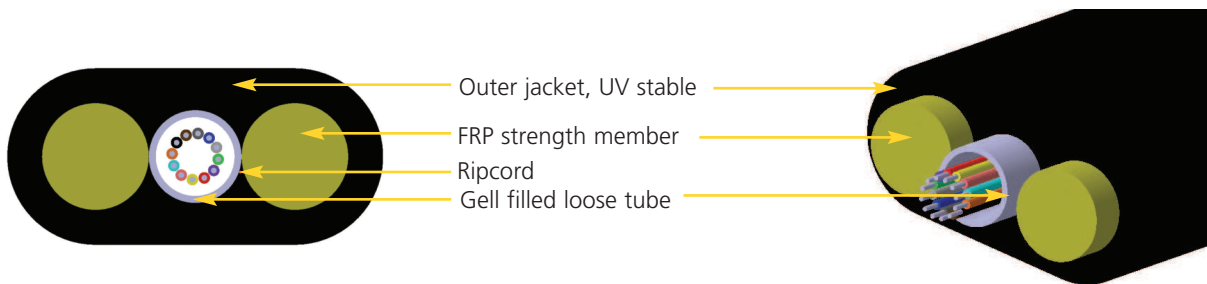
Central loose tube self supporting cable is suitable for aerial use. Cable contains steel wire messenger and aramid yarn. This messenger provides higher strength. The number of fibers can be max 24. Suitable for indoor or outdoor installation.

## Technical specifications

Fibers	2 to 12 colour coded singlemode or multimode optical fibers in gel filled loose buffer tube, 250µm coated fiber
Loose tube O.D.	D=2,3mm
Steel wire messenger	D=1,6mm (Fe/Zn galvanized steel rope)
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Sheath - black (other colors available upon request)
Lifetime	30 years

## Technical data:

Construction code	MA12/MA1B
Max. fiber count	12
Installation span (m)	50
Cable size (mm)	5,9x12,2 / 5,8x10,0
Nominal weight (kg/km)	80/40
Standard put-up length (m)	2100
Tensile strength (N)	1000
Impact resistance (w/5Nm)	3
Crush resistance (N/10cm)	1000
Min. bending radius (mm)	15xD
Outer jacket	FRNC/LDPE



This pictures represents cable with 12 fibers inside.

Features	Temperature range	Field of Application
<ul style="list-style-type: none"> <li>- Outdoor installation possible</li> <li>- Two FRP supporting elements</li> <li>- Gel filled loose tube</li> <li>- Ripcord</li> </ul>	Installation -5°C to +50°C Operation -40°C to +70°C Storage -40°C to +70°C Temperature range according to (IEC 60794-1-2-F1)	<ul style="list-style-type: none"> <li>- Telecommunication and data trunk</li> <li>- FTTx</li> <li>- Aerial use</li> <li>- Drop cable</li> </ul>

**Product description**

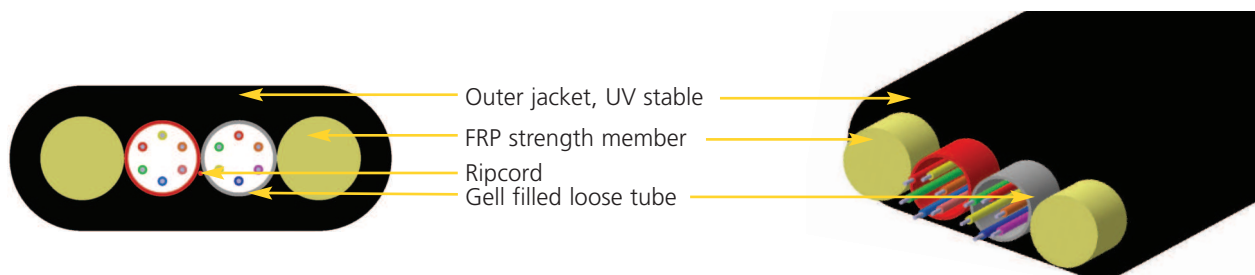
Loose tube flat cable self supporting is suitable for outdoor aerial use or direct burial to sand bed. Cable contain two FRP dielectric strength members. The number of fibres can be max 12. Suitable for outdoor installation.

**Technical specifications**

Fibers	2 to 12 colour coded singlemode or multimode optical fibers in loose buffer tube with 2 FRP elements, 250µm coated fiber
Loose tube O.D.	D=2,0mm
Colour	Fibers - see separate fiber color table Tube - white (other colors available upon request) Outer sheath - black (other colors available upon request)
Lifetime	30 years

**Technical data:**

Construction code	NA1B
Max. fiber count	12
Cable size (mm)	7,7x3,8
Nominal weight (kg/km)	36
Standard put-up length (m)	2100,4100
Tensile strength (N)	1600
Impact resistance (w/20Nm)	3
Crush resistance (N/10cm)	4000
Min. bending radius (mm)	120
Outer jacket	MDPE



This picture represents cable with 12 fibers inside.

### Features

- Outdoor installation possible
- Two FRP supporting elements
- Two gel filled loose tubes
- Ripcord

### Temperature range

Installation	-5°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Field of Application

- Telecommunication and data trunk
- FTTx
- Aerial use
- Drop cable

### Product description

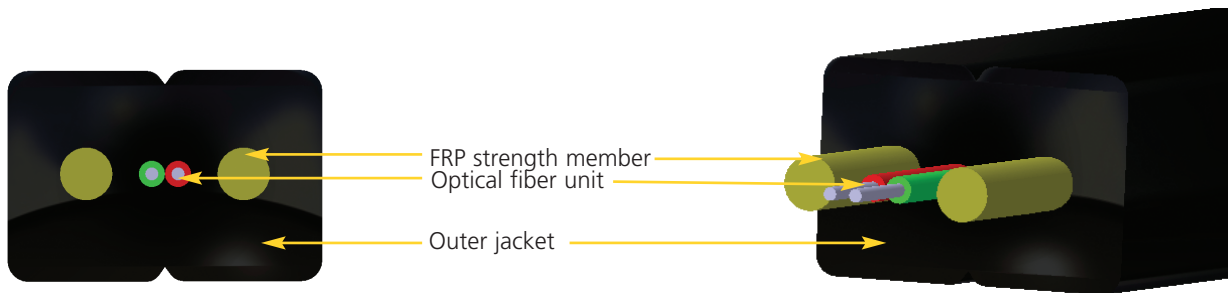
Loose tube flat cable self supporting is suitable for outdoor aerial use or direct burial to sand bed. Cable contains two FRP dielectric central strength members and two gel filled loose tubes. The number of fibers can be max 24 (2x12). Suitable for outdoor installation.

### Technical specifications

Fibers	2 x 12 colour coded singlemode or multimode optical fibers in loose buffer tube with 2 FRP elements, 250µm coated fiber
Loose tube O.D.	D=2,0mm
Colour	Fibers - see separate fiber color table Tube - red and natural (other colors available upon request) Outer sheath - black (other colors available upon request)
Lifetime	30 years

### Technical data:

Construction code	OA1B
Max. fiber count	2x8 , 2x12
Cable size (mm)	9,1x3,8
Nominal weight (kg/km)	39
Standard put-up length (m)	2100,4100
Tensile strength (N)	1300
Impact resistance (w/8Nm)	3
Crush resistance (N/10cm)	4000
Min. bending radius (mm)	100
Outer jacket	MDPE



This pictures represents cable with 2 fibers inside.

**Features**

- Indoor or installation possible
- Color coded buffer of fibers
- Two fiber reinforced plastic FRP
- Simple structure, low weight

**Temperature range**

Installation -20°C to +60°C  
Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Access building cable
- FTTH use
- Placement in cable ducts

**Product description**

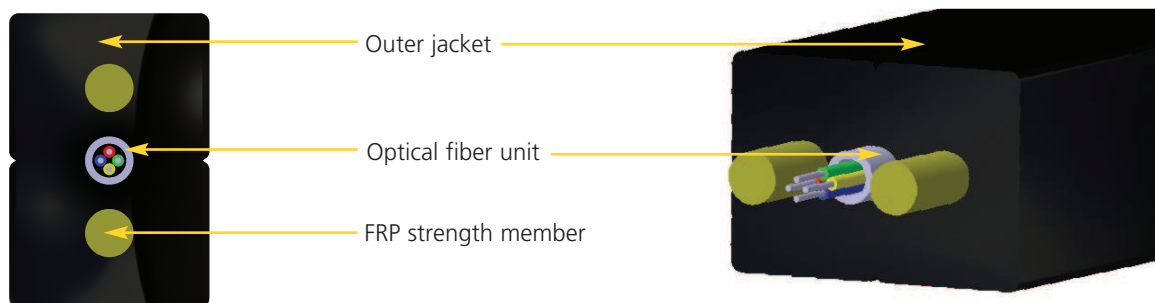
DROP cable is not contain loose tube. Two parallel fiber reinforced plastic FRP strength members ensure good performance of crush resistance. The optical fiber unit is positioned in the center of cable. The number of fibers can be max 12. Suitable for indoor installation.

**Technical specifications**

Fibers	1 to 12 colour coded singlemode optical fibers, LSZH buffer , 250µm coated fiber
Waterblocking yarn	
Colour	Fibers - see separate fiber color table Outer jacket : Black (other colours available on request)
Range of temperature	-20°C to +60°C

**Technical data:**

Construction code	VA02/VA01	VA02/VA01	VA02/VA01	VA02/VA01	VA02/VA01	VA02/VA01	VA02/VA01
Fiber count	1	1	2	4	6	8	12
Cable size (mm)	1.6 x 2.0	2.0 x 3.0	2.0 x 3.0	2.0 x 3.0	3.0 x 4.0	3.0 x 4.0	3.0 x 4.0
Nominal weight (kg/km)	5	8	8.5	9	14	16	19
Standard put-up length (m)	2100	2100	2100	2100	2100	2100	2100
Tensile strength (N) (short term)	80	80	80	80	85	90	95
Impact resistance (w/5Nm)	3	3	3	3	3	3	3
Crush resistance (N/100mm) (short tem)	1000	1000	1000	1000	1000	1000	1000
Bending radius (mm) (Static)	10	10	10	10	10	10	10
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC



This pictures represents cable with 4 fibers inside.

Features
- Indoor installation possible
- Color coded buffer of fibers
- Two fiber reinforced plastic FRP
- Simple structure

Temperature range
Installation -20°C to +60°C
Temperature range according to (IEC 60794-1-2-F1)

Field of Application
- Access building cable
- FTTH using

## Product description

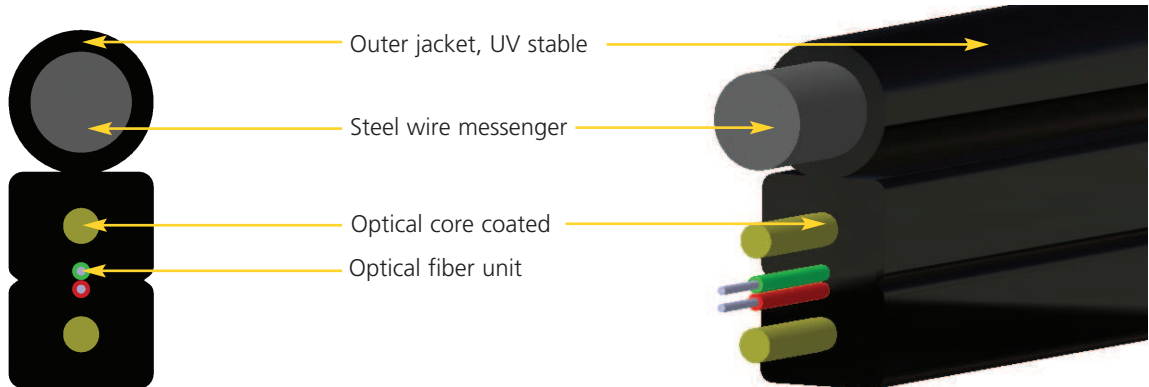
Two parallel fiber reinforced plastic FRP strength members ensure good performance of crush resistance. The optical fiber unit is positioned in central loose tube. The number of fibers can be max 12. Suitable for indoor installation.

## Technical specifications

Fibers	1 to 12 colour coded singlemode optical fibers, LSZH buffer , 250µm coated fiber
Waterblocking yarn	
Colour	Fibers - see separate fiber colour table Outer jacket : Black (other colours available on request)
Range of temperature	-20°C to +60°C

## Technical data:

Construction code	YA02/YA01	YA02/YA01	YA02/YA01	YA02/YA01	YA02/YA01	YA02/YA01
Max. fiber count	1	2	4	6	8	12
Cable size (mm)	3.0 x 4.0	3.0 x 4.0	3.0 x 4.0	4.1 x 6.1	4.1 x 6.1	4.1 x 6.1
Nominal weight (kg/km)	15	17	20	30	32	35
Standard put-up length (m)	2100	2100	2100	2100	2100	2100
Tensile strength (N) (short term)	80	80	80	85	90	95
Impact resistance (w/5Nm)	3	3	3	3	3	3
Crush resistance (N/100mm) (short tem)	1000	1000	1000	1000	1000	1000
Bending radius (mm) (Static)	10	10	10	10	10	10
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC



This picture represents cable with 2 fibers inside.

**Features**

- Indoor or outdoor installation possible
- Color coded buffer of fibers
- Two fiber reinforced plastic FRP
- Simple structure
- Steel wire messenger

**Temperature range**

Installation -20°C to +60°C  
Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Access building cable
- From outdoor to indoor aerial access cabling

**Product description**

Two parallel fiber reinforced plastic FRP strength members ensure good performance of crush resistance. Cable is reinforced by steel wire messenger. The optical fiber unit is positioned in center of cable. The number of fibers can be max 12. Suitable for indoor or outdoor installation.

**Technical specifications**

Fibers	1 to 12 colour coded singlemode optical fibers, LSZH buffer , 250µm coated fiber
Waterblocking yarn	
Colour	Fibers - see separate fiber colour table Outer jacket : Black (other colours available on request)
Range of temperature	-20°C to +60°C

**Technical data:**

Construction code	ZA02/YA01	ZA02/YA01	ZA02/YA01	ZA02/YA01	ZA02/YA01	ZA02/YA01
Fiber count	1	2	4	6	8	12
Cable size (mm)	2.0 x 5.0	2.0 x 5.0	2.0 x 5.0	3.0 x 7.0	3.0 x 7.0	3.0 x 7.0
Nominal weight (kg/km)	20	21	23	35	38	40
Standard put-up length (m)	2100	2100	2100	2100	2100	2100
Tensile strength (N) (short term)	600	600	600	600	600	600
Impact resistance (w5Nm)	3	3	3	3	3	3
Crush resistance (N/100mm) (short tem)	2200	2200	2200	2200	2200	2200
Bending radius (mm) (Static)	10	10	10	10	10	10
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC



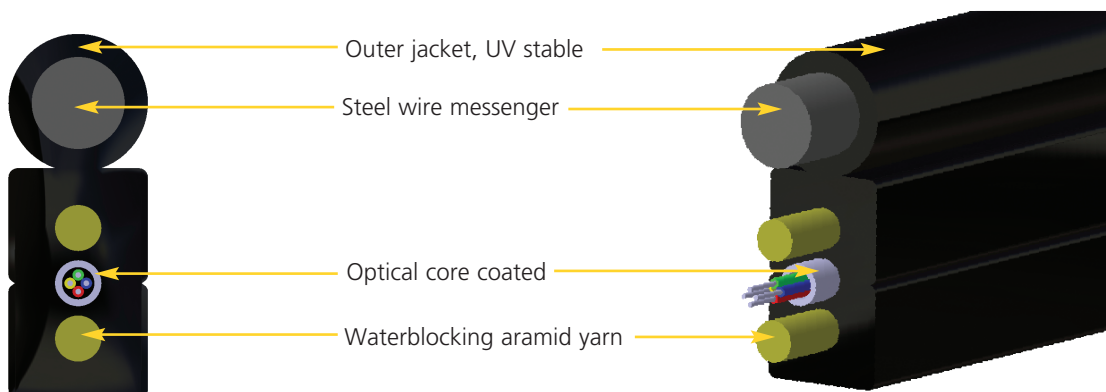
# Flat DROP cable

Fiber Optic Cables  
Universal



steel wire messenger

J/A-VY-T (ZA01)  
J/A-VH-T (ZA02)



This pictures represents cable with 8 fibers inside.

**Features**

- Indoor or outdoor installation possible
- Color coded buffer of fibers
- Two fiber reinforced plastic FRP
- Simple structure
- Steel wire messenger

**Temperature range**

Installation -20°C to +60°C  
Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Access building cable
- From outdoor to indoor aerial access cabling

## Product description

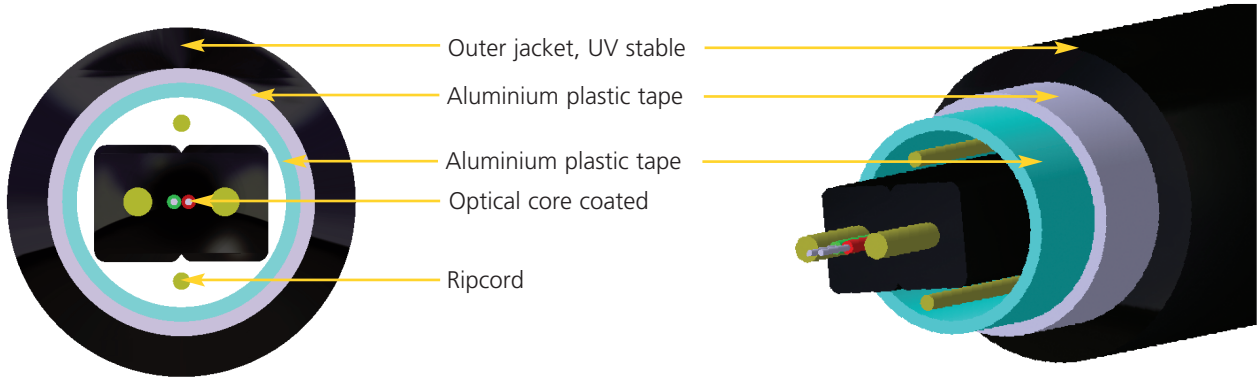
Two parallel fiber reinforced plastic FRP strength members ensure good performance of crush resistance. Cable is reinforced by steel wire messenger. The optical fiber unit is positioned in central loose tube. The number of fibers can be max 12. Suitable for indoor or outdoor installation.

## Technical specifications

Fibers	1 to 12 colour coded singlemode optical fibers, LSZH buffer , 250µm coated fiber
Waterblocking yarn	
Colour	Fibers - see separate fiber colour table Outer jacket : Black (other colours available on request)
Range of temperature	-20°C to +60°C

## Technical data:

Construction code	ZA02/ZA01	ZA02/ZA01	ZA02/ZA01	ZA02/ZA01	ZA02/ZA01	ZA02/ZA01
Fiber count	1	2	4	6	8	12
Cable size (mm)	3.0 x 7.0	3.0 x 7.0	3.0 x 7.0	4.2 x 9.0	4.2 x 9.0	4.2 x 9.0
Nominal weight (kg/km)	35	38	40	48	50	53
Standard put-up length (m)	2100	2100	2100	2100	2100	2100
Tensile strength (N) (short term)	600	600	600	600	600	600
Impact resistance (w/5Nm)	3	3	3	3	3	3
Crush resistance (N/100mm) (short tem)	1100	1100	1100	1100	1100	1100
Bending radius (mm) (Dynamic)	20	20	20	20	20	20
Outer jacket	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC	LSZH/PVC



This pictures represents cable with 8 fibers inside.

**Features**

- Indoor or outdoor installation possible
- Color coded buffer of fibers
- Two fiber reinforced plastic FRP
- Simple structure, low weight

**Temperature range**

Installation -20°C to +60°C  
Temperature range according to (IEC 60794-1-2-F1)

**Field of Application**

- Building aerial and duct access cabling

**Product description**

This DROP cable contain aluminium tape armour. Optical units are placed parallel to the sides of non-metallic reinforcement, covered by a flame retardant material forming, placed on the aluminium longitudinal assure. Cable has water-proof tape inside. The number of fibers can be 2. Suitable for indoor or outdoor installation.

**Technical specifications**

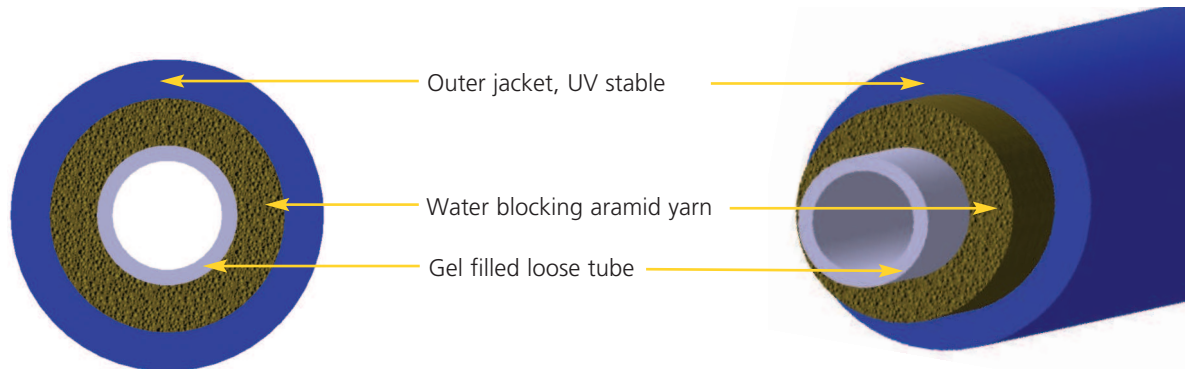
Fibers	2 colour coded singlemode optical fibers, LSZH buffer , 250µm coated fiber
Waterblocking yarn	
Colour	Fibers - see separate fiber color table Outer jacket : Black (other colours available on request)
Range of temperature	-20°C to +60°C

**Technical data:**

Construction code	HCO2/HCOB
Fiber count	2
Cable size (mm)	6.8
Nominal weight (kg/km)	60
Standard put-up length (m)	2100
Tensile strength (N) (short term)	200
Crush resistance (N/100mm) (short tem)	500
Bending radius (mm) (Static)	10
Outer jacket	LSZH/PE

## Fiber protection tube (Hollow core)

SA02



### Product description

Fiber protection tube (Hollow core) provides standard level of cable protection. Protection tube contain aramid yarn. Cable can contain one or two tubes inside.

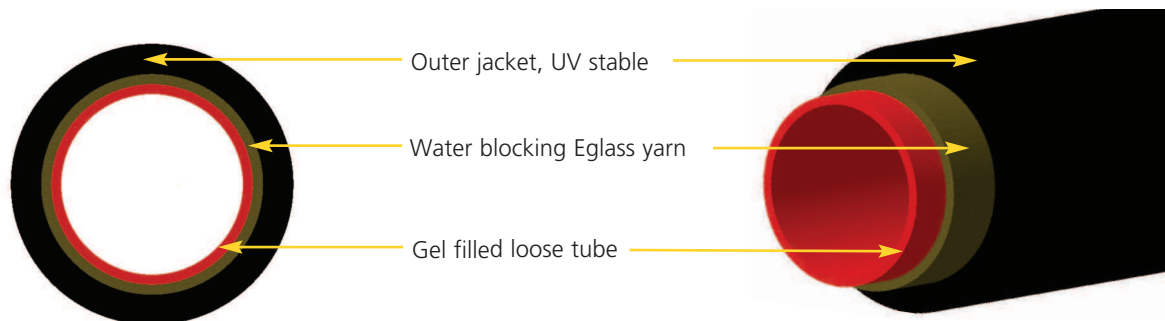
### Technical specifications

Outer sheath	FRNC
Strength member	Water blocking aramid yarn
Temperature range:	
Installation	-5°C to +50°C
Operation	-25°C to +90°C
Storage	-5°C to +50°C

Temperature range according to (IEC 60794-1-2-F1)

### Technical data:

Construction code	SA02	SA02	SA02	SA02	SA02	SA02	SA02
Tube diameter (mm)	0,9	0,9	0,9	0,9	2	2,8	0,9
Outer diameter (mm)	2,0	2,7	1,8	3,4	3,0	3,6	3,0
Number of fibers	1	1	1	1	12	24	2x1
Nominal weight (kg/km)	4,1	8,2	3,2	13,5	8,2	11,1	6,7
Tensile strength (N)	100	100	100	100	100	100	100
Crush resistance (N/10cm)	500	500	500	500	500	500	500
Impact resistance (w/2Nm)	3	3	3	3	3	3	3
Min. bending radius (mm)	15xD	15xD	15xD	15xD	15xD	15xD	15xD
Standard put up length (m)	2100	2100	2100	2100	2100	2100	2100



### Product description

HDPE duct with improved rodent protection provides high level of cable protection. This product contains water blocking E-glass yarn.

### Technical specifications

Outer sheath	HDPE
Tube	HDPE
Strength member	Water blocking E-glass yarn
Temperature range:	
Installation	-20°C to +50°C
Operation	-50°C to +70°C
Storage	-50°C to +70°C

Temperature range according to (IEC 60794-1-2-F1)

### Technical data:

Construction code	SB0K	SB0K	SB0K	SB0K	SB0K	SB0K	SB0K	SB0K	SB0K
HDPE duct OD (mm)	5	6	7	8	10	12	15	16	20
Outer diameter (mm)	8,9	9,9	10,9	11,9	13,9	16,0	18,0	20,0	24,0
Nominal weight (kg/km)	58	71	85	102	112	134	162	214	263
Tensile strength (N)	2000	2200	2300	2900	3500	4000	4900	5500	6500
Crush resistance (N/10cm)	1500	1500	1500	1500	1500	1500	1500	1500	1500
Impact resistance (w/20Nm)	3	3	3	3	3	3	3	3	3
Min. bending radius (mm)	20xD	20xD	20xD	20xD	20xD	20xD	20xD	20xD	20xD
Standard put up length (m)	2100	2100	2100	2100	2100	2100	2100	2100	2100