030.6497

Fiber Optic Cables
Product Catalog 2020

R&M

R&M generates added value
Connectivity that matters

R&M (Reichle & De-Massari AG) is a leading global producer of future-proof products and systems for communication and data networks. The company's close collaboration with certified partners results in pioneering work in the sectors LAN, Public and Telecom Networks as well as Data Centers. The Swiss family company stands for innovation, quality, and customer orientation. Thanks to the innovative strength of the company, R&M now covers the entire connectivity range.

Quality

High product quality and farsighted system design

090.7586

Innovation

More than 100 patents and collaboration in international standard-setting bodies

010.3625

Availability

Maximum availability with cost-effective operation

030.5742

Protection of investment

Future-proof networks and secure investments long term

090.6943

Customer proximity

Represented in more than 35 countries with proprietary market organizations

070.0206

Sustainability

Keeping the balance between economic, ecological and social aspects

090.7595

R&M develops and produces cabling solutions for high-end communication networks since 1964.

We offer complete solutions with perfectly coordinated products as well as comprehensive services which correspond to your own specific requirements.

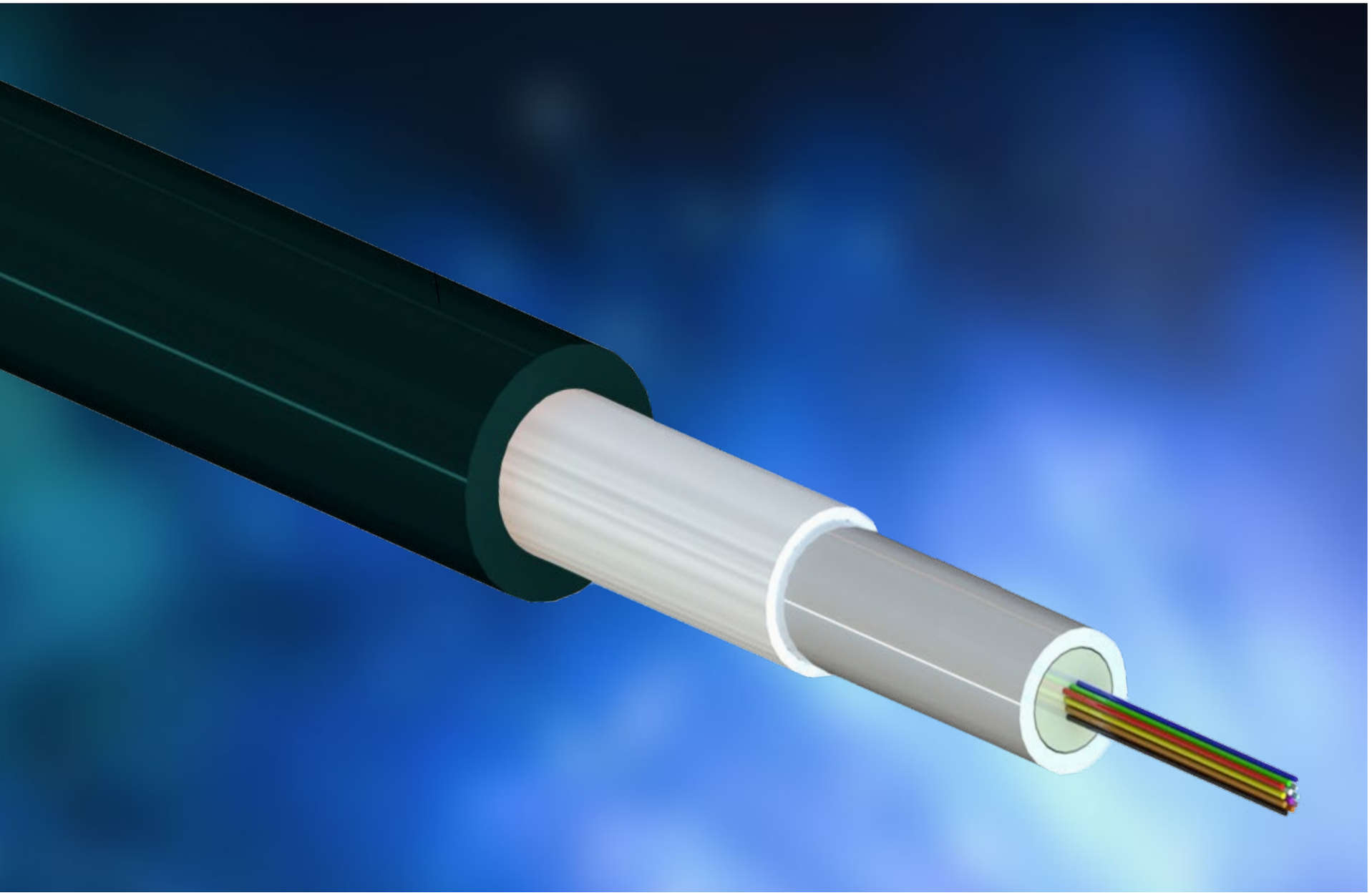
«We can rely on the solution provided by R&M and this will enable us to have a future-proof network.»

Harish M. Shrivastava, General Manager IT Infrastructure, BitWise Solutions Pvt. Ltd.

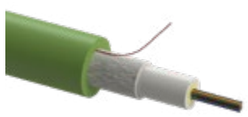
Content.
Fiber optic installation cables

030.5912

Central Loose Tube Cables.
CLT

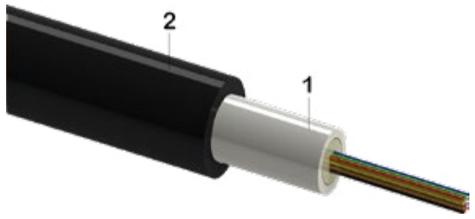


Central Loose Tube Cables
Overview

Cable type	Cable family	Page	Product Classification	Application	Fiber count	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance short [N]	Crush [N/100 mm]	Temp. range in operation	Fire resistance EN 60331-25
Micro Cable													
	MT1H	12	R&M	outdoor	12 fibers	UV - HDPE	Fca	3.0	8.0	50	500	-20 °C to 70 °C	
	MX1H	14	R&M	outdoor	24 fibers	UV - HDPE	Fca	4.0	14.0	50	500	-20 °C to 70 °C	
Gel-free (dry) Duct Cable													
	IFEF FiRis	16	R&M*freenet*	indoor	24 fibers	FRLSZH	B2ca-s1a,d0,a1	5.4	32.0	1000	1000	-20 °C to 60 °C	
Standard Duct Cable													
	UT1EF	18	R&M*freenet*	universal	12 fibers	UV - FRLSZH	Dca-s2,d1,a1	5.2	33.0	1000	2000	-30 °C to 70 °C	
	UX1EF	20	R&M*freenet*	universal	24 fibers	UV - FRLSZH	Dca-s2,d1,a1	5.8	41.0	1000	2000	-30 °C to 70 °C	
	OT1EL	22	R&M*freenet*	outdoor	12 fibers	UV - LDPE	Fca	5.8	29.0	1000	2000	-20 °C to 70 °C	
	OX1EL	24	R&M*freenet*	outdoor	24 fibers	UV - LDPE	Fca	6.5	37.0	1000	2000	-20 °C to 70 °C	
Intensified Rodent Protected (IRP) Cable													
	UT1GF	26	R&M*freenet*	universal	12 fibers	UV - FRLSZH	Dca-s2,d1,a1	6.2	45.0	1800	2000	-30 °C to 70 °C	
	UX1GF	28	R&M*freenet*	universal	24 fibers	UV - FRLSZH	Dca-s2,d1,a1	7.2	58.0	2000	2000	-30 °C to 70 °C	
	OT1GL	30	R&M*freenet*	outdoor	12 fibers	UV - LDPE	Fca	6.5	37.0	1800	2000	-20 °C to 70 °C	
	OX1GL	32	R&M*freenet*	outdoor	24 fibers	UV - LDPE	Fca	7.4	50.0	2000	2000	-20 °C to 70 °C	
Steel Wire Armoured Cable – SWA													
	UX1EFWF	34	R&M	universal	24 fibers	UV - FRLSZH	Dca-s2,d2,a1	9.9	180.0	4500	4000	-30 °C to 70 °C	
	OX1ELWH	36	R&M	outdoor	24 fibers	UV - HDPE	Fca	9.9	150.0	4500	4000	-20 °C to 70 °C	
Corrugated Steel Tape Armoured Cable – CSTA / single jacketed													
	UX1ECF	38	R&M*freenet*	universal	24 fibers	UV - FRLSZH	Dca-s2,d2,a1	7.7	84.0	1500	5000	-30 °C to 70 °C	
	OX1ECH	40	R&M*freenet*	outdoor	24 fibers	UV - HDPE	Fca	7.7	70.0	1500	5000	-20 °C to 70 °C	

Central Loose Tube Cables
Overview

Cable type	Cable family	Page	Product Classification	Application	Fiber count	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance [N]	Crush [N/100 mm]	Temp. range in operation	Fire resistance EN 60331-25
Corrugated Steel Tape Armoured Cable – CSTA / double jacketed													
	UX1EFCF FiRis	42	R&M	universal	24 fibers	UV - FRLSZH	B2ca-s1a,d0,a1	10.0	125.0	1500	5000	-30 °C to 70 °C	
	OX1ELCH	44	R&M	outdoor	24 fibers	UV - HDPE	Fca	10.0	100.0	1500	5000	-20 °C to 70 °C	
Fiber Reinforced Plastic Rod Armoured Cable – FRPA													
	UX1PF	46	R&M	universal	24 fibers	UV - FRLSZH	Fca	7.4	65.0	2500	3000	-30 °C to 70 °C	
	OX1PH	48	R&M	outdoor	24 fibers	UV - HDPE	Fca	7.4	52.0	2500	3000	-20 °C to 70 °C	
Fire Resistant Cable / Non-Armoured													
	QT1GF	50	R&M	universal	12 fibers	UV - FRLSZH	Dca-s1,d1,a1	7.0	58.0	2000	2000	-30 °C to 70 °C	180 min at 750 °C
	QX1GF	52	R&M	universal	24 fibers	UV - FRLSZH	Dca-s2,d1,a1	7.8	68.0	2000	2000	-30 °C to 70 °C	180 min at 750 °C
Fire Resistant Cable / Corrugated Steel Tape Armoured – CSTA / single jacketed													
	QX1ECF FiRis	54	R&M	universal	24 fibers	UV - FRLSZH	Cca-s1a,d0,a1	8.0	90.0	3000	7000	-30 °C to 70 °C	180 min at 750 °C
Fire Resistant Cable / Corrugated Steel Tape Armoured – CSTA / double jacketed													
	QX1EFCF FiRis	56	R&M	universal	24 fibers	UV - FRLSZH	B2ca-s1a,d0,a1	11.0	150.0	3000	4000	-30 °C to 70 °C	180 min at 750 °C
Fire Resistant Cable / Steel Wire Armoured – SWA / double jacketed													
	QX1EFWF FiRis	58	R&M	universal	24 fibers	UV - FRLSZH	B2ca-s1a,d2,a1	10.1	185.0	6000	4000	-20 °C to 70 °C	180 min at 750 °C P90-R



030.6307.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube Micro-Cable for up to a maximum of 12 fibers, used outdoors for „air-blown“ installations into Microducts.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	MT1H
Product code	CLT-D01x2.0-NNONS-N3Y_A-MFNR
DIN/VDE code	A-D2Y
Loose tube nominal diameter	2.0 mm
Outer jacket nominal thickness	0.5 mm
Cable outer diameter	3.0 mm
Cable informative weight	8.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
2	R855479	R855485
4	R855480	R855486
6	R848280	R855487
8	R855481	R855488
12	R848281	R855489

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

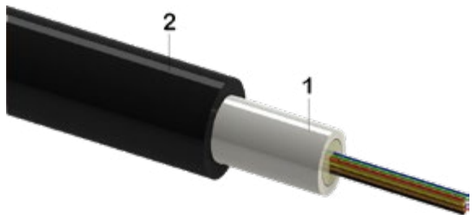
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - during installation	IEC 60794-1-21:E1	50 N (short term)	Δα ≤ 0,05 dB after test
Crush resistance - short term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	1 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Kink	IEC 60794-1-21:E10	d = 40 x cable diameter	no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R = 40 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6307.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube Micro-Cable for up to a maximum of 24 fibers, used outdoors for „air-blown" installations into Microducts.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	MX1H
Product code	CLT-D01x3.0-NNONS-N3Y_A-MFNR
DIN/VDE code	A-D2Y
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	0.5 mm
Cable outer diameter	4.0 mm
Cable informative weight	14.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
24	R855491	R855493

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

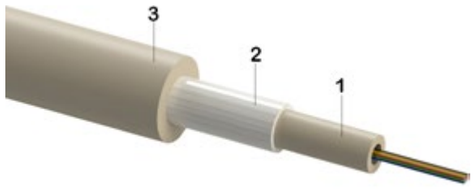
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - during installation	IEC 60794-1-21:E1	50 N (short term)	Δα ≤ 0,05 dB after test
Crush resistance - short term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	1 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Kink	IEC 60794-1-21:E10	d = 40 x cable diameter	no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R = 40 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



1. **Dry tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **FRLSZH outer jacket**

030.6309.H/ similar product

GENERAL DESCRIPTION

Rodent protected, non-metallic and dry central loose tube cable for up to a maximum of 24 fibers for indoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	IFEF FiRis
Product code	CLT-B01x2.4-NEONS-N1H_I-SBNF
DIN/VDE code	J-B(ZN)H wbg
Loose tube nominal diameter	2.4 mm
Outer jacket nominal thickness	0.9 mm
Cable outer diameter	5.4 mm
Cable informative weight	32.0 kg/km
Outer jacket material	FRLSZH
Jacket colour	OM2 orange, OM3 turquoise, OM4 heather violet, OM5 lime green, G657.A1 yellow
Sheath marking	Ink-Jet, black or white depending on the jacket colour
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

CABLE FAMILY	FIBER COUNT	OM2	OM3	OM4	OM5	G657.A1
IFEF FiRis	4	R857768	R857774	R857780	R857786	R857792
	6	R857769	R857775	R857781	R857787	R857793
	8	R857770	R857776	R857782	R857788	R857794
	12	R857771	R857777	R857783	R857789	R857795
	16	R857772	R857778	R857784	R857790	R857796
	24	R857773	R857779	R857785	R857791	R857797

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

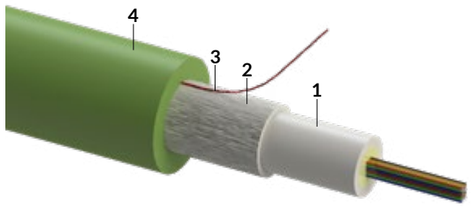
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - during installation	IEC 60794-1-21:E1A	1000 N (5 min.)	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	500 N/100 mm (long term -15min)	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	5 Nm, 3 impacts, d=20 mm, R=12,5 mm	no fiber breakage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles, F= 20N	no fiber breakage
Kink	IEC 60794-1-21:E10	d = 20 x cable diameter	no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 6 turns, 10 cycles	no fiber breakage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles, m = 4kg	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +60 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +60 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +60 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +60 °C	in storage & transport

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	B2ca-s1a,d0,a1



1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV-stable FRLSZH outer jacket**

030.6308.B / similar product

GENERAL DESCRIPTION

Rodent protected, non-metallic central loose tube cable for up to a maximum of 12 fibers for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UT1EF
Product code	CLT-D01x2.3-QEONS-N1H_U-SDNF
DIN/VDE code	U-DQ(ZN)H wbg
Loose tube nominal diameter	2.3 mm
Outer jacket nominal thickness	1.0 mm
Cable outer diameter	5.2 mm
Cable informative weight	33.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
4	R855539	R855545	R855558
6	R855540	R855546	R855559
8	R855541	R852312	R855560
12	R853221	R852313	R855561

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

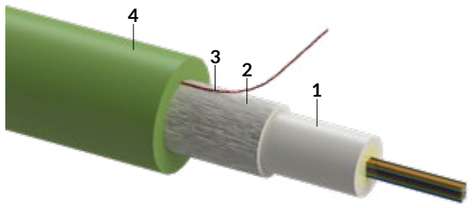
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	300 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d1,a1



1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV-stable FRLSZH outer jacket**

030.6308.B / similar product

GENERAL DESCRIPTION

Rodent protected, non-metallic central loose tube cable for up to a maximum of 24 fibers for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UX1EF
Product code	CLT-D01x3.0-QEONS-N1H_U-SDNF
DIN/VDE code	U-DQ(ZN)H wbg
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.1 mm
Cable outer diameter	5.8 mm
Cable informative weight	41.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
24	R855566	R855567	R852308

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

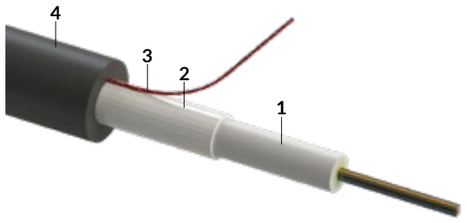
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	300 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d1,a1



030.6308.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV stable LDPE outer jacket**

GENERAL DESCRIPTION

Rodent protected, non-metallic central loose tube cable for up to a maximum of 12 fibers for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OT1EL
Product code	CLT-D01x2.8-QEONS-N2Y_A-SFNF
DIN/VDE code	A-DQ(ZN)2Y wbg
Loose tube nominal diameter	2.8 mm
Outer jacket nominal thickness	1.0 mm
Cable outer diameter	5.8 mm
Cable informative weight	29.0 kg/km
Outer jacket material	UV stable LDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855505	R855512
6	R855506	R855513
8	R855507	R855514
12	R855508	R855515

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

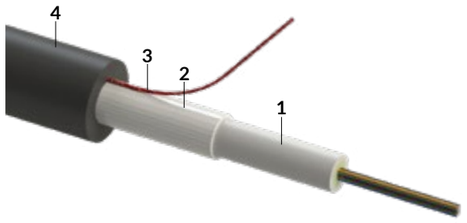
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	300 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E6	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6308.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV stable LDPE outer jacket**

GENERAL DESCRIPTION

Rodent protected, non-metallic central loose tube cable for up to a maximum of 24 fibers for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1EL
Product code	CLT-D01x3.5-QEONS-N2Y_A-SFNF
DIN/VDE code	A-DQ(ZN)2Y wbg
Loose tube nominal diameter	3.5 mm
Outer jacket nominal thickness	1.1 mm
Cable outer diameter	6.5 mm
Cable informative weight	37.0 kg/km
Outer jacket material	UV stable LDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
24	R855517	R855518

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

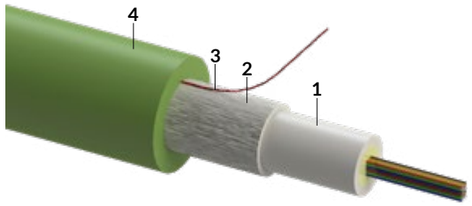
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	300 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E6	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6308.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV-stable FRLSZH outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube cable with improved rodent protection. With up to 12 fibers maximum, suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UT1GF
Product code	CLT-D01x2.3-QEONS-G1H_U-SDNF
DIN/VDE code	U-DQ(BN)H wbg
Loose tube nominal diameter	2.3 mm
Outer jacket nominal thickness	1.1 mm
Cable outer diameter	6.2 mm
Cable informative weight	45.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
4	R855616	R855622	R855637
6	R855617	R855623	R855638
8	R855618	R855624	R855639
12	R855619	R855625	R855640

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

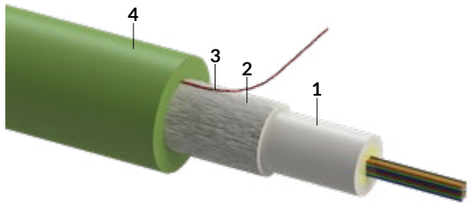
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	600 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1800 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d1,a1



030.6308.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV-stable FRLSZH outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube cable with improved rodent protection. With up to 24 fibers maximum, suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UX1GF
Product code	CLT-D01x3.0-QEONS-G1H_U-SDNF
DIN/VDE code	U-DQ(BN)H wbg
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.2 mm
Cable informative weight	58.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
24	R855646	R855648	R855651

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

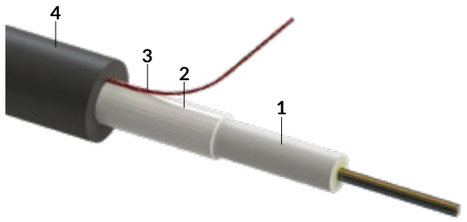
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d1,a1



030.6308.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV stable LDPE outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube cable with improved rodent protection. With up to 12 fibers maximum, suitable for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OT1GL
Product code	CLT-D01x2.8-QEONS-G2Y_A-SFNF
DIN/VDE code	A-DQ(BN)2Y wbg
Loose tube nominal diameter	2.8 mm
Outer jacket nominal thickness	1.1 mm
Cable outer diameter	6.5 mm
Cable informative weight	37.0 kg/km
Outer jacket material	UV stable LDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855581	R855588
6	R855582	R855589
8	R855583	R855590
12	R855584	R851102

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

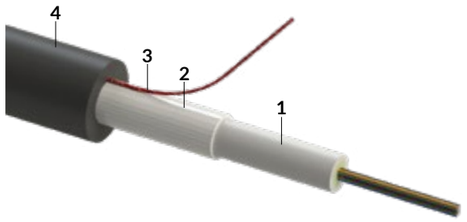
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	600 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1800 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6308.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **UV stable LDPE outer jacket**

GENERAL DESCRIPTION

Non-metallic central loose tube cable with improved rodent protection. With up to 24 fibers maximum, suitable for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1GL
Product code	CLT-D01x3.5-QEONS-G2Y_A-SFNF
DIN/VDE code	A-DQ(BN)2Y wbg
Loose tube nominal diameter	3.5 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.4 mm
Cable informative weight	50.0 kg/km
Outer jacket material	UV stable LDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
24	R855594	R848355

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

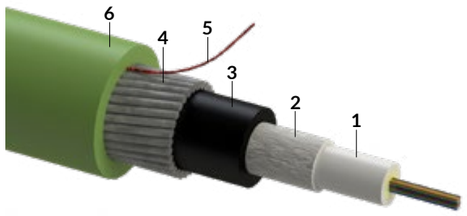
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6310.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **FRLSZH UV stable inner jacket**
4. **Zn galvanized steel wire armour fixed by PET tape**
5. **Rip-cord**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Steel wire armoured central loose tube cable with good mechanical protection and thus rodent protected. The cable features a two jacket construction with up to 24 fibers maximum and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable familiy code	UX1EFWF
Product code	CLT-D01x3.0-QEO1H-W1H_U-SDNR
DIN/VDE code	U-DQ(ZN)HBH wbg (R 0,63vzk)
Loose tube nominal diameter	3.0 mm
Inner jacket nominal thickness	1.1 mm
Steel wire nominal diameter	0.63 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	9.9 mm
Cable informative weight	180.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855696	R855705
6	R855697	R855706
8	R855698	R855707
12	R855699	R855708
24	R855700	R855709

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

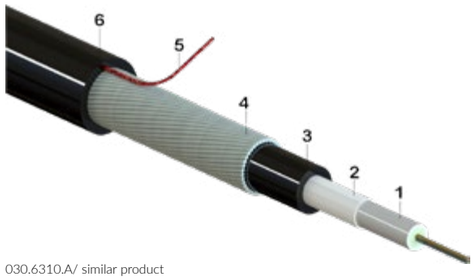
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	4500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d2,a1



030.6310.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **LDPE UV stable inner jacket**
4. **Zn galvanized steel wire armour fixed by PET tape**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Steel wire armoured central loose tube cable with good mechanical protection and thus rodent protected.
The cable features a two jacket construction with up to 24 fibers maximum and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1ELWH
Product code	CLT-D01x3.1-QEO2Y-W3Y_A-SFNR
DIN/VDE code	A-DQ(ZN)2YB2Y wbg (R 0,63vzk)
Loose tube nominal diameter	3.1 mm
Inner jacket nominal thickness	1.1 mm
Steel wire nominal diameter	0.63 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	9.9 mm
Cable informative weight	150.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855657	R855667
6	R855658	R855668
8	R855659	R855669
12	R855660	R855670
24	R855661	R855671

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

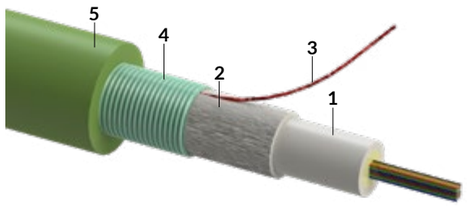
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	4500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6311.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **Corrugated steel tape armour**
5. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. With up to 24 fibers maximum, suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UX1ECF
Product code	CLT-D01x3.0-QEONS-C1H_U-SDNF
DIN/VDE code	U-DQ(ZN)(SR)H wbg
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.7 mm
Cable informative weight	84.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855748	R855767
6	R855749	R855768
8	R855750	R855769
12	R855751	R855770
24	R855752	R855771

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

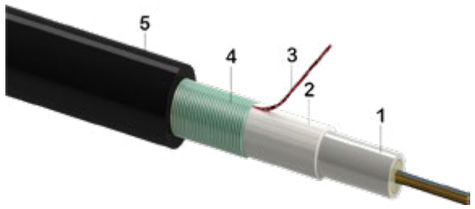
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d2,a1



030.6311.A/ similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **Rip-cord**
4. **Corrugated steel tape armour**
5. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. With up to 24 fibers maximum, suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1ECH
Product code	CLT-D01x3.0-QEONS-C3Y_A-SFNF
DIN/VDE code	A-DQ(ZN)(SR)2Y wbg
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.7 mm
Cable informative weight	70.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855720	R855728
6	R852285	R855729
8	R855721	R855730
12	R855722	R855731
24	R855723	R855732

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

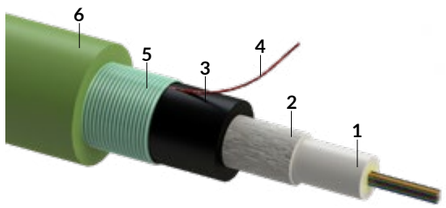
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6312.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **FRLSZH UV stable inner jacket**
4. **Rip-cord**
5. **Corrugated steel tape armour**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected.
The cable features a two jacket construction with up to 24 fibers maximum and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UX1EFCF FiRis
Product code	CLT-D01x3.0-QEO1H-C1H_U-SBNR
DIN/VDE code	U-DQ(ZN)H(SR)H wbg
Loose tube nominal diameter	3.0 mm
Inner jacket nominal thickness	0.8 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	10.0 mm
Cable informative weight	125.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855845	R855864
6	R855846	R855865
8	R855847	R855866
12	R855848	R855867
24	R855849	R855868

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

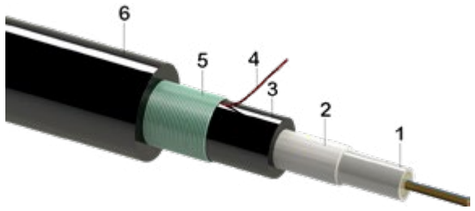
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	B2ca-s1a,d0,a1



030.6312.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking e-glass yarn**
3. **LDPE UV stable inner jacket**
4. **Rip-cord**
5. **Corrugated steel tape armour**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected.
The cable features a two jacket construction with up to 24 fibers maximum and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1ELCH
Product code	CLT-D01x3.1-QEO2Y-C3Y_A-SFNR
DIN/VDE code	A-DQ(ZN)2Y(SR)2Y wbg
Loose tube nominal diameter	3.1 mm
Inner jacket nominal thickness	0.8 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	10.0 mm
Cable informative weight	100.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION

FIBER COUNT	OM4	G657.A1
4	R855777	R855786
6	R855778	R855787
8	R855779	R855788
12	R855780	R855789
24	R855781	R855790

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

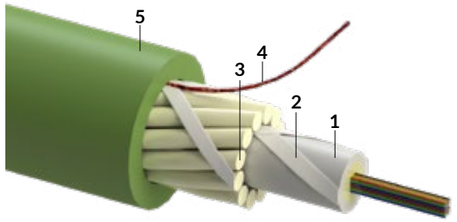
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	1500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6313.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking yarn**
3. **Armour of FRP rods**
4. **Rip-cord**
5. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fiber Reinforced Plastic (FRP) rod armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. With up to 24 fibers maximum, suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	UX1PF
Product code	CLT-D01x3.0-QNONS-P1H_U-SFNR
DIN/VDE code	U-DQ(ZN)BH (FRP 1,0)
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.4 mm
Cable informative weight	65.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	G657.A1
4	R855922
6	R855923
8	R855924
12	R855925
24	R855926

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

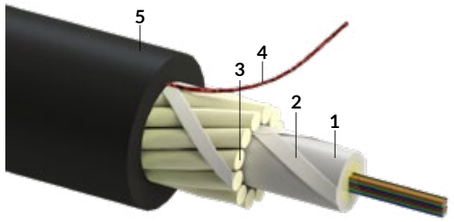
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	3000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6313.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Water-blocking yarn**
3. **Armour of FRP rods fixed by PET tape**
4. **Rip-cord**
5. **UV stable HDPE outer jacket**

GENERAL DESCRIPTION

Fiber Reinforced Plastic (FRP) rod armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. With up to 24 fibers maximum, suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	OX1PH
Product code	CLT-D01x3.0-QNONS-P3Y_A-SFNR
DIN/VDE code	A-DQ(ZN)B2Y (FRP 1,0)
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	7.4 mm
Cable informative weight	52.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	G657.A1
4	R855883
6	R855884
8	R855885
12	R855886
24	R855887

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

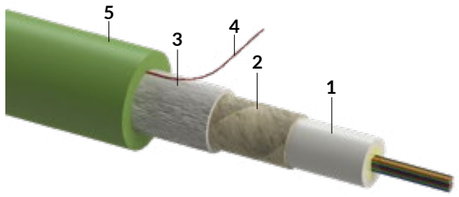
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	3000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6314.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Fire-resistant tape**
3. **Water-blocking e-glass yarn**
4. **Rip-cord**
5. **UV-stable FRLSZH outer jacket**

GENERAL DESCRIPTION

Non-metallic fire-resistant central loose tube cable with improved rodent protection. With up to 12 fibers maximum, suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	QT1GF
Product code	CLT-D01x2.3-QEONS-N1H_U-QDNR
DIN/VDE code	U-DQ(BN)H wbg fr
Loose tube nominal diameter	2.3 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	7.0 mm
Cable informative weight	58.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
4	R855931	R855939	R855954
6	R855932	R855940	R855955
8	R855933	R855941	R855956
12	R855934	R855942	R855957

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

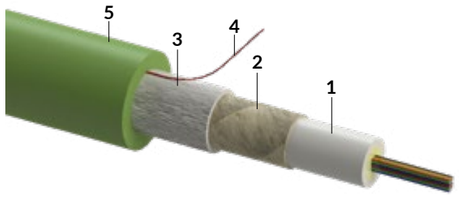
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s1,d1,a1



030.6314.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Fire-resistant tape**
3. **Water-blocking e-glass yarn**
4. **Rip-cord**
5. **UV-stable FRLSZH outer jacket**

GENERAL DESCRIPTION

Non-metallic fire-resistant central loose tube cable with improved rodent protection. With up to 24 fibers maximum, suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	QX1GF
Product code	CLT-D01x3.0-QEONS-N1H_U-QDNR
DIN/VDE code	U-DQ(BN)H wbg fr
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	7.8 mm
Cable informative weight	68.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
24	R855959	R855961	R855964

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

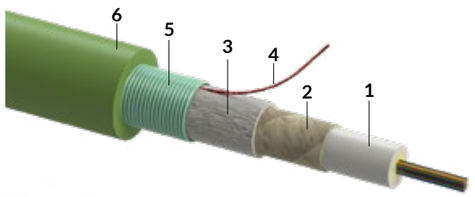
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Dca-s2,d1,a1



030.6315.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Fire-resistant tape**
3. **Water-blocking e-glass yarn**
4. **Rip-cord**
5. **Corrugated steel tape armour**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fire-resistant and corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. With up to 24 fibers maximum, suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	QX1ECF FiRis
Product code	CLT-D01x3.0-QEONS-C1H_U-QCNR
DIN/VDE code	U-DQ(ZN)(SR)H wbg fr
Loose tube nominal diameter	3.0 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	8.0 mm
Cable informative weight	90.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
4	R855970	R855980	R855999
6	R855971	R855981	R856000
8	R855972	R855982	R856001
12	R855973	R855983	R856002
24	R855974	R855984	R856003

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

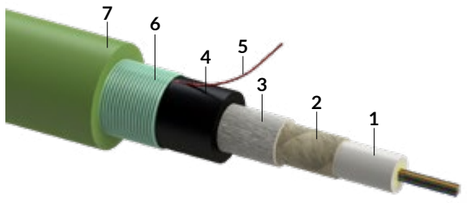
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	3500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	7000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Cca-s1a,d0,a1



030.6405.B / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **Fire-resistant tape**
3. **Water-blocking e-glass yarn**
4. **FRLSZH UV stable inner jacket**
5. **Rip-cord**
6. **Corrugated steel tape armour**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fire-resistant and corrugated steel tape armoured central loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable features a two jacket construction with up to 24 fibers maximum and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	QX1EFCF FiRis
Product code	CLT-D01x3.0-QEO1H-C1H_U-QBNR
DIN/VDE code	U-DQ(ZN)H(SR)H wbg fr
Loose tube nominal diameter	3.0 mm
Inner jacket nominal thickness	1.0 mm
Outer jacket nominal thickness	1.2 mm
Cable outer diameter	11.0 mm
Cable informative weight	150.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)
Maximum length	4100 m ± 5%

ORDER INFORMATION B2CA-S1A,D0,A1

FIBER COUNT	OM3	OM4	G657.A1
4	R856009	R856019	R856038
6	R856010	R856020	R856039
8	R856011	R856021	R856040
12	R856012	R856022	R856041
24	R856013	R856023	R856042

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

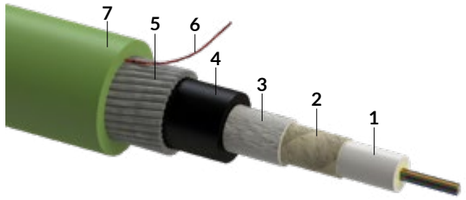
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	B2ca-s1a,d0,a1



1. **Gel filled PBT loose tube with optical fibers**
2. **Fire-resistant tape**
3. **Water-blocking e-glass yarn**
4. **FRLSZH UV stable inner jacket**
5. **Zn galvanized steel wire armour fixed by PET tape**
6. **Rip-cord**
7. **FRLSZH UV stable outer jacket**

030.6316.B / similar product

GENERAL DESCRIPTION

Fire-resistant and steel wire armoured central loose tube cable with good mechanical protection and thus rodent protected.
The cable features a two jacket construction with up to 24 fibers maximum and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	QX1EFWF FiRis
Product code	CLT-D01x3.0-QEO1H-W1H_U-QBNR
DIN/VDE code	U-DQ(ZN)HBH wbg (R 0,63vzk) fr
Loose tube nominal diameter	3.0 mm
Inner jacket nominal thickness	1.0 mm
Steel wire nominal diameter	0.63 mm
Outer jacket nominal thickness	1.3 mm
Cable outer diameter	10.1 mm
Cable informative weight	185.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	green
Sheath marking	Ink-Jet, black
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT	OM3	OM4	G657.A1
4	R856048	R856058	R856077
6	R856049	R856059	R856078
8	R856050	R856060	R856079
12	R856051	R856061	R856080
24	R856052	R856062	R856081

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	6000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

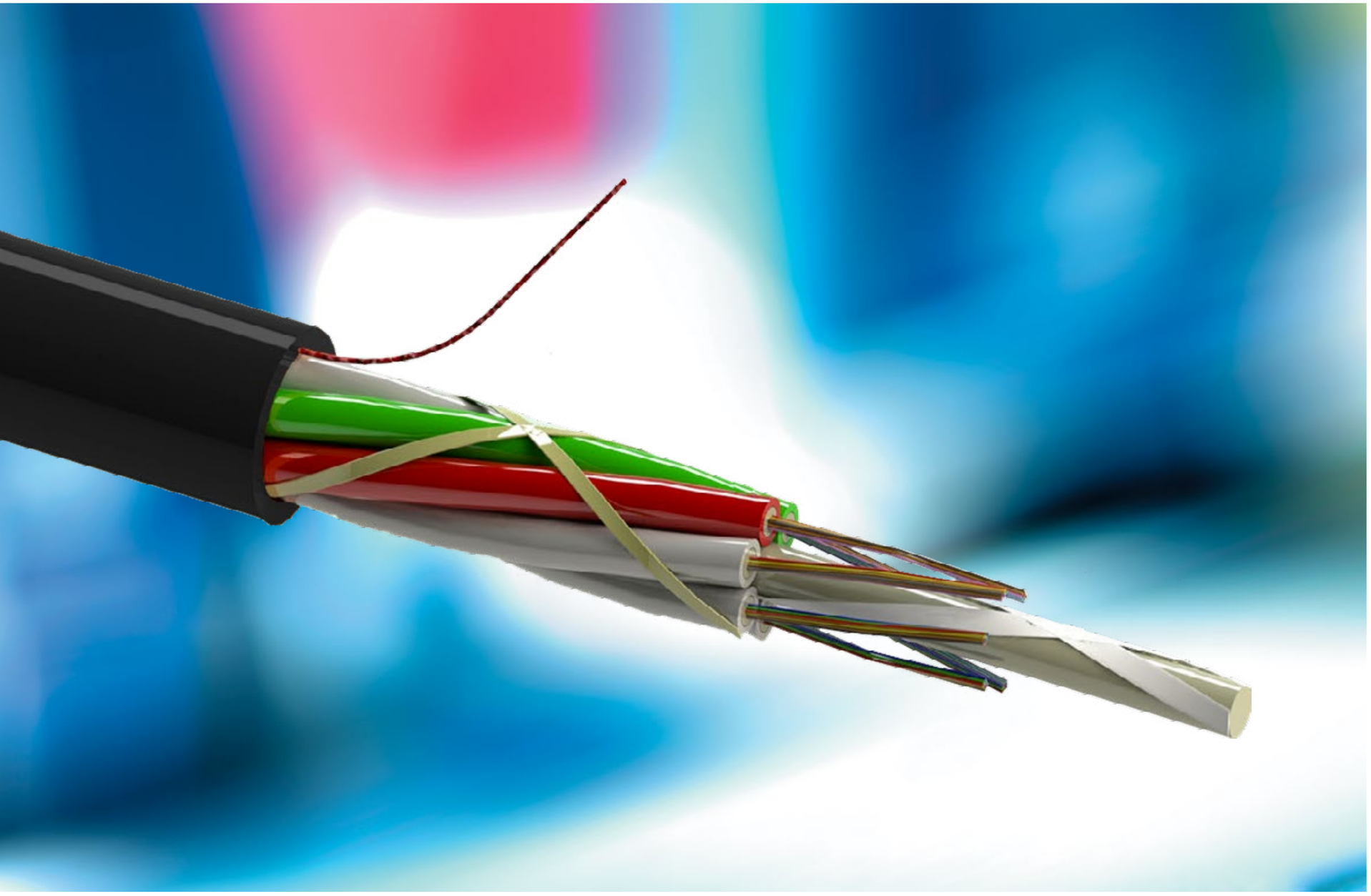
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-35 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-30 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-35 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	B2ca-s1a,d2,a1
Circuit integrity maintenance of cable systems under fire conditions	ČSN 73 0895, DIN 4102-12, (< 0,3 dB /m*)	P90-R

** ČSN EN 50582 - Procedure to assess the circuit integrity of optical fibres in a cable under resistance to fire testing determines the maximum increase in attenuation 1,0 dB /m*

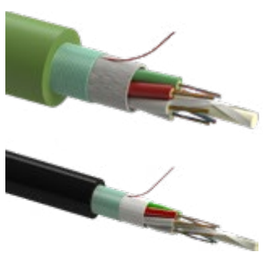
Stranded Loose Tube Cables.
SLT



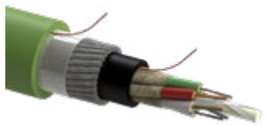
Stranded Loose Tube Cables
Overview

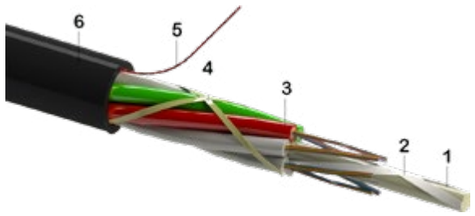
Cable type	Cable family	Page	Product Classification	Application	Fiber count	Loose tubes count	Loose tube nominal Ø [mm]	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance short [N]	Crush [N/100 mm]	Temperatur range in operation	Fire resistance EN 60331-25
Micro Cable															
	MT6x1,5AH	68	R&M	outdoor	72 fibers	6	1.55	UV - HDPE	Fca	5.7	30.0	600	1000	-40 °C to 70 °C	
	MT8x1,5AH				96 fibers	8				6.6	40.0	1200			
	MT3x1,5AH				144 fibers	12				8.6	64.0	1200			
	MT9x1,5AH				216 fibers	18 (6 + 12)				8.9	64.0	800			
Micro Cable 12 tubes on two layers (3+9)	MT3x1,5AHs	70	R&M	outdoor	144 fibers	12	1.55	UV - HDPE	Fca	7.6	44.0	400	500	-40 °C to 70 °C	
Standard Duct Cable / D.x1,7															
	UT6x1,7F	72	R&M*freenet*	universal	72 fibers	6	1.7	UV - FRLSZH	Eca	7.8	70.0	2000	2000	-40 °C to 70 °C	
	UT8x1,7F				96 fibers	8				9.5	90.0				
	UT3x1,7F				144 fibers	12				11.7	130.0				
	UT9x1,7F				216 fibers	18 (6 + 12)				11.8	135.0				
	OT6x1,7H	74	R&M*freenet*	outdoor	72 fibers	6	1.7	UV - HDPE	Fca	7.8	55.0	2000	2000	-40 °C to 70 °C	
	OT8x1,7H				96 fibers	8				9.5	70.0				
	OT3x1,7H				144 fibers	12				11.7	105.0				
	OT9x1,7H				216 fibers	18 (6 + 12)				11.8	110.0				
Intensified Rodent Protected (IRP) Cable / D.x1,7															
	UT6x1,7GF	76	R&M*freenet*	universal	72 fibers	6	1.7	UV - FRLSZH	Eca	9.0	90.0	2700	2000	-40 °C to 70 °C	
	UT8x1,7GF				96 fibers	8				10.0	115.0	4000			
	UT3x1,7GF				144 fibers	12				12.2	155.0	4500			
	UT9x1,7GF				216 fibers	18 (6 + 12)				12.7	160.0	4500			
	OT6x1,7GH	78	R&M*freenet*	outdoor	72 fibers	6	1.7	UV - HDPE	Fca	9.0	70.0	2700	2000	-40 °C to 70 °C	
	OT8x1,7GH				96 fibers	8				10.0	90.0	4000			
	OT3x1,7GH				144 fibers	12				12.2	130.0	4500			
	OT9x1,7GH				216 fibers	18 (6 + 12)				12.7	135.0	4500			
Standard Duct Cable / D.x2,3 / 12 fibers per tube															
	UT6x2,3EF	80	R&M*freenet*	universal	72 fibers	6	2.3	UV - FRLSZH	Eca	10.0	100.0	2000	2000	-40 °C to 70 °C	
	UT8x2,3EF				96 fibers	8				11.4	130.0	2700			
	UT3x2,3EF				144 fibers	12				14.2	190.0	3000			
	UT9x2,3EF				216 fibers	18 (6 + 12)				14.6	195.0	3000			
	OT6x2,3EH	82	R&M*freenet*	outdoor	72 fibers	6	2.3	UV - HDPE	Fca	10.0	80.0	2000	2000	-40 °C to 70 °C	
	OT8x2,3EH				96 fibers	8				11.4	110.0	2700			
	OT3x2,3EH				144 fibers	12				14.2	170.0	3000			
	OT9x2,3EH				216 fibers	18 (6 + 12)				14.6	170.0	3000			
Standard Duct Cable / D.x2,3 / 24 fibers per tube															
	UX3x2,3EF	84	R&M*freenet*	universal	288 fibers	12	2.3	UV - FRLSZH	Eca	14.2	190.0	3000	2000	-40 °C to 70 °C	
	UX9x2,3EF				432 fibers	18 (6 + 12)				14.6	195.0				
	OX3x2,3EH	86	R&M*freenet*	outdoor	288 fibers	12	2.3	UV - HDPE	Fca	14.2	170.0	3000	2000	-40 °C to 70 °C	
	OX9x2,3EH				432 fibers	18 (6 + 12)				14.6	175.0				

Stranded Loose Tube Cables
Overview

Cable type	Cable family	Page	Product Classification	Application	Fiber count	Loose tubes count	Loose tube nominal Ø [mm]	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance short [N]	Crush [N/100 mm]	Temperatur range in operation	Fire resistance EN 60331-25
Intensified Rodent Protected (IRP) Cable / D.x2,3 / 12 fibers per tube															
	UT6x2,3GF	88	R&M*freenet*	universal	72 fibers	6	2.3	UV - FRLSZH	Eca	11.0	120.0	3500	2000	-40 °C to 70 °C	
	UT8x2,3GF				96 fibers	8				12.5	150.0	4000			
	UT3x2,3GF				144 fibers	12				15.3	220.0	5000			
	UT9x2,3GF				216 fibers	18 (6 + 12)				15.7	230.0	5000			
	OT6x2,3GH	90	R&M*freenet*	outdoor	72 fibers	6	2.3	UV - HDPE	Fca	11.0	100.0	3500	2000	-40 °C to 70 °C	
	OT8x2,3GH				96 fibers	8				12.5	130.0	4000			
	OT3x2,3GH				144 fibers	12				15.3	190.0	5000			
	OT9x2,3GH				216 fibers	18 (6 + 12)				15.7	195.0	5000			
Intensified Rodent Protected (IRP) Cable / D.x2,3 / 24 fibers per tube															
	UX3x2,3GF	92	R&M*freenet*	universal	288 fibers	12	2.3	UV - FRLSZH	Eca	15.3	220.0	5000	2000	-40 °C to 70 °C	
	UX9x2,3GF				432 fibers	6 + 12 (18)				15.7	230.0				
	OX3x2,3GH	94	R&M*freenet*	outdoor	288 fibers	12	2.3	UV - HDPE	Fca	15.3	190.0	5000	2000	-40 °C to 70 °C	
	OX9x2,3GH				432 fibers	18 (6 + 12)				15.7	195.0				
Corrugated Steel Tape Armoured Cable –CSTA / D.x1,7 / single jacketed															
	UT6x1,7ECF	96	R&M*freenet*	universal	72 fibers	6	1.7	UV - FRLSZH	Fca	11.0	135.0	2500	5000	-40 °C to 70 °C	
	UT8x1,7ECF				96 fibers	8				12.0	165.0	4000			
	UT3x1,7ECF				144 fibers	12				14.0	210.0	4000			
	UT9x1,7ECF				216 fibers	18 (6 + 12)				14.0	210.0	3500			
	OT6x1,7ECH	98	R&M*freenet*	outdoor	72 fibers	6	1.7	UV - HDPE	Fca	11.0	115.0	2500	5000	-40 °C to 70 °C	
	OT8x1,7ECH				96 fibers	8				12.0	140.0	4000			
	OT3x1,7ECH				144 fibers	12				14.0	185.0	4000			
	OT9x1,7ECH				216 fibers	18 (6 + 12)				14.0	185.0	3500			
Corrugated Steel Tape Armoured Cable – CSTA / D.x1,7 / double jacketed															
	UT6x1,7EFCF	100	R&M*freenet*	universal	72 fibers	6	1.7	UV - FRLSZH	Fca	12.1	180.0	2500	5000	-40 °C to 70 °C	
	UT8x1,7EFCF				96 fibers	8				13.1	210.0	4000			
	UT3x1,7EFCF				144 fibers	12				15.1	270.0	4000			
	UT9x1,7EFCF				216 fibers	18 (6 + 12)				16.1	290.0	4000			
	OT6x1,7ELCH	102	R&M	outdoor	72 fibers	6	1.7	UV - HDPE	Fca	12.1	145.0	2500	5000	-40 °C to 70 °C	
	OT8x1,7ELCH				96 fibers	8				13.1	175.0	4000			
	OT3x1,7ELCH				144 fibers	12				15.1	220.0	4000			
	OT9x1,7ELCH				216 fibers	18 (6 + 12)				16.1	240.0	4000			
Steel Wire Armoured Cable – SWA / D.x2,3															
	UT6x2,3FWF	104	R&M	universal	72 fibers	6	2.3	UV - FRLSZH	Fca	14.5	370.0	5000	4000	-40 °C to 70 °C	
	UT8x2,3FWF				96 fibers	8				15.8	430.0	6000			
	UT3x2,3FWF				144 fibers	12				19.4	670.0	8000			
	OT6x2,3LWH	106	R&M	outdoor	72 fibers	6	2.3	UV - HDPE	Fca	14.5	330.0	5000	4000	-40 °C to 70 °C	
	OT8x2,3LWH				96 fibers	8				15.8	385.0	6000			
	OT3x2,3LWH				144 fibers	12				19.4	610.0	8000			

Stranded Loose Tube Cables
Overview

Cable type	Cable family	Page	Product Classification	Application	Fiber count	Loose tubes count	Loose tube nominal Ø [mm]	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance short [N]	Crush [N/100 mm]	Temperatur range in operation	Fire resistance EN 60331-25
Fiber Reinforced Plastic Armoured Cable – FRPA / D.x2,3															
	UT6x2,3FPF UT8x2,3FPF UT3x2,3FPF	108	R&M	universal	72 fibers 96 fibers 144 fibers	6 8 12	2.3	UV - FRLSZH	Fca	14.5 15.8 19.4	230.0 270.0 390.0	5000 6000 10000	4000	-40 °C to 70 °C	
	OT6x2,3LPH OT8x2,3LPH OT3x2,3LPH	110	R&M	outdoor	72 fibers 96 fibers 144 fibers	6 8 12	2.3	UV - HDPE	Fca	14.5 15.8 19.4	185.0 220.0 335.0	5000 6000 10000	4000	-40 °C to 70 °C	
Fire Resistant Cable / Non-Amoured															
	QT6x2,3GF QT8x2,3GF QT3x2,3GF	112	R&M	universal	72 fibers 96 fibers 144 fibers	6 8 12	2.3	UV - FRLSZH	Fca	13.0 14.6 18.0	180.0 225.0 340.0	4500 4500 6000	2000	-40 °C to 70 °C	180 min at 750 °C
Fire Resistant Cable / Corrugated Steel Tape Armoured – CSTA / double jacketed															
	QT6x2,3EFCF QT8x2,3EFCF QT3x2,3EFCF	114	R&M	universal	72 fibers 96 fibers 144 fibers	6 8 12	2.3	UV - FRLSZH	Fca	16.5 17.5 21.5	300.0 350.0 500.0	3000 3000 3500	5000	-40 °C to 70 °C	180 min at 750 °C
Fire Resistant Cable / Steel Wire Armoured – SWA															
	QT6x2,3FWF QT8x2,3FWF QT3x2,3FWF	116	R&M	universal	72 fibers 96 fibers 144 fibers	6 8 12	2.3	UV - FRLSZH	Fca	15.6 17.7 21.1	440.0 570.0 800.0	5000 8000 10000	4000	-40 °C to 70 °C	180 min at 750 °C



030.6397.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking aramid yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic stranded loose tube Micro cable with up to 216 fibers in a 18-strand stranding, used outdoors for „air-blown" installations into Microducts.

CONSTRUCTION AND DESCRIPTION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	MT6x1,5AH	MT8x1,5AH	MT3x1,5AH	MT9x1,5AH
Product code	SLT-D06x1.5-QNKNS-N3Y_A-MFNR	SLT-D08x1.5-QNKNS-N3Y_A-MFNR	SLT-D12x1.5-QNKNS-N3Y_A-MFNR	SLT-D18x1.5-QNKNS-N3Y_A-MFNR
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.55 mm	1.55 mm	1.55 mm	1.55 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.5 mm	2.5 / 4.5 mm	1.7 mm
Outer jacket nominal thickness	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Cable outer diameter	5.7 mm	6.6 mm	8.6 mm	8.9 mm
Cable informative weight	30.0 kg/km	40.0 kg/km	64.0 kg/km	64.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y nx1,5			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
1 x 12f	12f	R856105	R856135
2 x 12f	24f	R856106	R856136
3 x 12f	36f	R856107	R856137
4 x 12f	48f	R856108	R856138
5 x 12f	60f	R856109	R856139
6 x 12f	72f	R856110	R851115
8 x 12f	96f	R856111	R856140
12 x 12f	144f	R856112	R851116
18 x 12f	216f	R856113	R856141

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

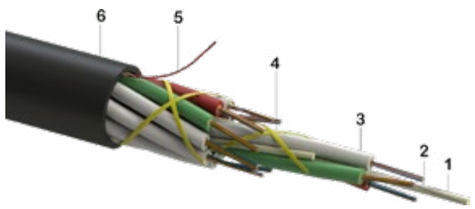
DESCRIPTION	TEST METHOD	MT6X 1,5AH	MT8x 1,5AH	MT3x 1,5AH	MT9x 1,5AH	ACCEPTANCE CRITERIA
Tensile performance	IEC 60794-1-21:E1	600 N	1200 N	1200 N	800 N	Δα ≤ 0,05 dB after test
Crush resistance - short term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	5 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Kink	IEC 60794-1-21:E10	d = 40 x cable diameter				no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R = 40 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m,1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6398.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking aramid yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic stranded loose tube Micro cable with up to 144 fibers maximum in a 12-strand stranding, used outdoors for „air-blown“ installations into Microducts.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	MT3x1,5AHs
Product code	SLT-D12x1.5-QNKNS-N3Y_A-MFNR
Fiber count	144
Fiber count per tube	12
Loose-tube count	12
Loose tube nominal diameter	1.55 mm
Outer jacket nominal thickness	0.5 mm
Cable outer diameter	7.6 mm
Cable informative weight	44.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y 12x1,5
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
12 x 6f	72f	R856142	R856145	R856151
12 x 8f	96f	R856087	R856103	R856133
12 x 12f	144f	R856144	R856147	R856153

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

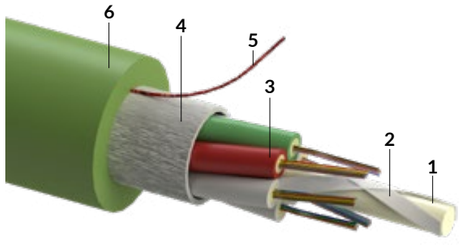
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance	IEC 60794-1-21:E1	400 N	Δα ≤ 0,05 dB after test
Crush resistance - short term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	1 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles	no damage
Kink	IEC 60794-1-21:E10	d = 40 x cable diameter	no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R = 40 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6399.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking tape or yarn**
5. **Rip-cord**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x1,7F	UT8x1,7F	UT3x1,7F	UT9x1,7F
Product code	SLT-D06x1.7-QEKNS-N1H_U-SENF	SLT-D08x1.7-QEKNS-N1H_U-SENF	SLT-D12x1.7-QEKNS-N1H_U-SENF	SLT-D18x1.7-QEKNS-N1H_U-SENF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Cable outer diameter	7.8 mm	9.5 mm	11.7 mm	11.8 mm
Cable informative weight	70.0 kg/km	90.0 kg/km	130.0 kg/km	135.0 kg/km
DIN/VDE code	U-DQ(ZN)H nx1,7			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheath marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION (BLACK)

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R856271	R856303	R856365
3 x 12f	36f	R856272	R856304	R856366
4 x 12f	48f	R856273	R856305	R856367
5 x 12f	60f	R856274	R856306	R856368
6 x 12f	72f	R856275	R856307	R856369
8 x 12f	96f	R856276	R856308	R856370
12 x 12f	144f	R856277	R856309	R856371
18 x 12f	216f	R856279	R856311	R856373

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

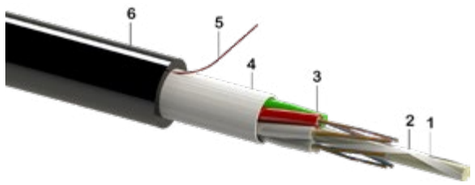
DESCRIPTION	TEST METHOD	UT6x 1,7F	UT8x 1,7F	UT3x 1,7F	UT9x 1,7F	ACCEPTANCE CRITERIA
Tensile performance	IEC 60794-1-21:E1	800 N	800 N	800 N	800 N	Δα ≤ 0,05 dB after test
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	2000 N	2000 N	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6399.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking tape or e-glass yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x1,7H	OT8x1,7H	OT3x1,7H	OT9x1,7H
Product code	SLT-D06x1.7-QEKNS-N3Y_A-SFNF	SLT-D08x1.7-QEKNS-N3Y_A-SFNF	SLT-D12x1.7-QEKNS-N3Y_A-SFNF	SLT-D18x1.7-QEKNS-N3Y_A-SFNF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Cable outer diameter	7.8 mm	9.5 mm	11.7 mm	11.8 mm
Cable informative weight	55.0 kg/km	70.0 kg/km	105.0 kg/km	110.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y nx1,7			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R856161	R856177	R856207
3 x 12f	36f	R856162	R856178	R856208
4 x 12f	48f	R856163	R856179	R856209
5 x 12f	60f	R856164	R856180	R856210
6 x 12f	72f	R856165	R856181	R856211
8 x 12f	96f	R856166	R856182	R856212
12 x 12f	144f	R856167	R856183	R856213
18 x 12f	216f	R856169	R856185	R856215

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

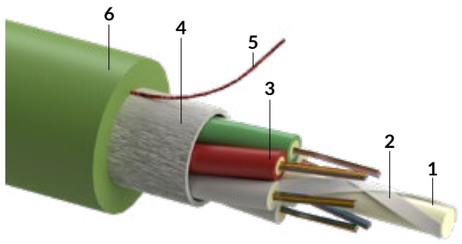
DESCRIPTION	TEST METHOD	OT6x 1,7H	OT8x 1,7H	OT3x 1,7H	OT9x 1,7H	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	800 N	800 N	800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	2000 N	2000 N	2000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	EN 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	EN 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6401.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x1,7GF	UT8x1,7GF	UT3x1,7GF	UT9x1,7GF
Product code	SLT-D06x1.7-QEKNS-G1H_U-SENF	SLT-D08x1.7-QEKNS-G1H_U-SENF	SLT-D12x1.7-QEKNS-G1H_U-SENF	SLT-D18x1.7-QEKNS-G1H_U-SENF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm	1.4 mm	1.4 mm
Cable outer diameter	9.0 mm	10.0 mm	12.2 mm	12.7 mm
Cable informative weight	90.0 kg/km	115.0 kg/km	155.0 kg/km	160.0 kg/km
DIN/VDE code	U-DQ(BN)H wbg nx1,7			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheat marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM2	OM3	OM4	G657.A1
2 x 12f	24f	R856686	R856718	R856750	R856813
3 x 12f	36f	R856687	R856719	R856751	R856814
4 x 12f	48f	R856688	R856720	R856752	R856815
5 x 12f	60f	R856689	R856721	R856753	R856816
6 x 12f	72f	R856690	R856722	R856754	R856817
8 x 12f	96f	R856691	R856723	R856755	R856818
12 x 12f	144f	R856692	R856724	R856756	R856819
18 x 12f	216f	R856694	R856726	R856758	R856821

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

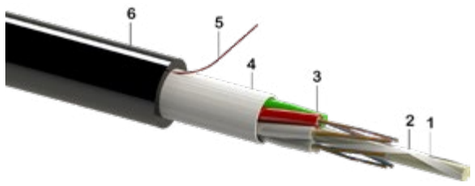
DESCRIPTION	TEST METHOD	UT6x 1,7GF	UT8x 1,7GF	UT3x 1,7GF	UT9x 1,7GF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	900 N	1200 N	1400 N	1400 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2700 N	4000 N	4500 N	4500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6401.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x1,7GH	OT8x1,7GH	OT3x1,7GH	OT9x1,7GH
Product code	SLT-D06x1.7-QEKNS-G3Y_A-SFNF	SLT-D08x1.7-QEKNS-G3Y_A-SFNF	SLT-D12x1.7-QEKNS-G3Y_A-SFNF	SLT-D18x1.7-QEKNS-G3Y_A-SFNF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.4 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm	1.4 mm	1.4 mm
Cable outer diameter	9.0 mm	10.0 mm	12.2	12.7 mm
Cable informative weight	70.0 kg/km	90.0 kg/km	130.0 kg/km	135.0 kg/km
DIN/VDE code	A-DQ(BN)2Y wbg nx1,7			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION (GREEN)

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R856623	R856654
3 x 12f	36f	R856624	R856655
4 x 12f	48f	R856625	R856656
5 x 12f	60f	R856626	R856657
6 x 12f	72f	R856627	R856658
8 x 12f	96f	R856628	R856659
12 x 12f	144f	R856629	R856660
18 x 12f	216f	R856631	R856662

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

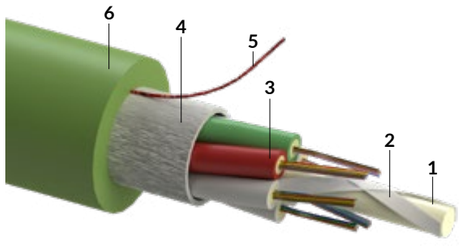
DESCRIPTION	TEST METHOD	OT6x 1,7GH	OT8x 1,7GH	OT3x 1,7GH	OT9x 1,7GH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	900 N	1200 N	1400 N	1400 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2700 N	4000 N	4500 N	4500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6400.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x2,3EF	UT8x2,3EF	UT3x2,3EF	UT9x2,3EF
Product code	SLT-D06x2.3-QEKNS-N1H_U-SENF	SLT-D08x2.3-QEKNS-N1H_U-SENF	SLT-D12x2.3-QEKNS-N1H_U-SENF	SLT-D18x2.3-QEKNS-N1H_U-SENF
Fiber count	72	96	144	192
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.9 mm	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Cable outer diameter	10.0 mm	11.4 mm	14.2 mm	14.6 mm
Cable informative weight	100.0 kg/km	130.0 kg/km	190.0 kg/km	195.0 kg/km
DIN/VDE code	U-DQ(ZN)H wbg nx2,3			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheath marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R856482	R856514	R856575
3 x 12f	36f	R856483	R856515	R856576
4 x 12f	48f	R856484	R856516	R856577
5 x 12f	60f	R856485	R856517	R856578
6 x 12f	72f	R856486	R856518	R856579
8 x 12f	96f	R856487	R856519	R856580
12 x 12f	144f	R856488	R856520	R856581
18 x 12f	216f	R856490	R856522	R856583

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

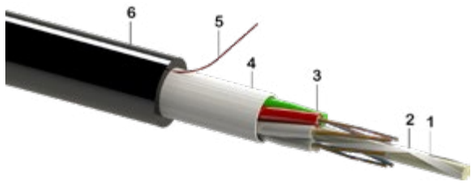
DESCRIPTION	TEST METHOD	UT6x 2,3EF	UT8x 2,3EF	UT3x 2,3EF	UT9x 2,3EF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	900 N	1000 N	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	2700 N	3000 N	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6400.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x2,3EH	OT8x2,3EH	OT3x2,3EH	OT9x2,3EH
Product code	SLT-D06x2.3-QEKNS-N3Y_A-SFNF	SLT-D08x2.3-QEKNS-N3Y_A-SFNF	SLT-D12x2.3-QEKNS-N3Y_A-SFNF	SLT-D18x2.3-QEKNS-N3Y_A-SFNF
Fiber count	72	96	144	192
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.9 mm	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Cable outer diameter	10.0 mm	11.4 mm	14.2 mm	14.6 mm
Cable informative weight	80.0 kg/km	110.0 kg/km	170.0 kg/km	170.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y wbg nx2,3			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R856413	R856442
3 x 12f	36f	R856414	R856443
4 x 12f	48f	R856415	R856444
5 x 12f	60f	R856416	R856445
6 x 12f	72f	R856417	R856446
8 x 12f	96f	R856418	R856447
12 x 12f	144f	R856419	R856448
18 x 12f	216f	R856421	R856450

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

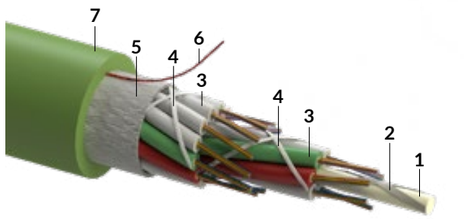
DESCRIPTION	TEST METHOD	OT6x 2,3EH	OT8x 2,3EH	OT3x 2,3EH	OT9x 2,3EH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	900 N	1000 N	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2000 N	2700 N	3000 N	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6410.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fixation yarn**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 432 fibers in a 18-strand stranding, for indoor or outdoor duct installation. Individual loose tubes are equipped with 24 fibers.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE	
Cable family code	UX3x2,3EF	UX9x2,3EF
Product code	SLT-D12x2,3-QEKNS-N1H_U-SENF	SLT-D18x2,3-QEKNS-N1H_U-SENF
Fiber count	288	432
Fiber count per tube	24	24
Loose-tube count	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm
Cable outer diameter	14.2 mm	14.6 mm
Cable informative weight	190.0 kg/km	195.0 kg/km
DIN/VDE code	U-DQ(ZN)H wbg nx2,3	
Outer jacket material	UV stable FRLSZH	
Jacket colour	green	
Sheath marking	Ink-Jet, black	
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)	
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)	
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)	

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
12 x 24f	288f	R856586	R856590	R856598
18 x 24f	432f	R856587	R856591	R856599

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

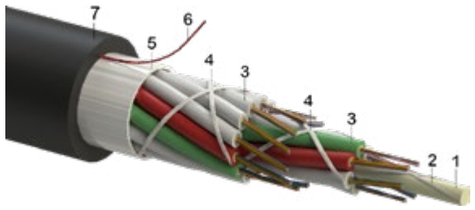
DESCRIPTION	TEST METHOD	UX3x2,3EF	UX9x2,3EF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1000 N	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3000 N	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm		Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm		Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm		Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles		no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles		Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles		no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6410.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fixation yarn**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Rodent-protected, non-metallic stranded loose tube cable with up to 432 fibres in a 18-strand stranding, for outdoor duct installation. Individual loose tubes are equipped with 24 fibers.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE	
Cable family code	OX3x2,3EH	OX9x2,3EH
Product code	SLT-D12x2,3-QEKNS-N3Y_A-SFNF	SLT-D18x2,3-QEKNS-N3Y_A-SFNF
Fiber count	288	432
Fiber count per tube	24	24
Loose-tube count	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.2 mm	1.2 mm
Cable outer diameter	14.2 mm	14.6 mm
Cable informative weight	170.0 kg/km	175.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y wbg nx2,3	
Outer jacket material	UV stable HDPE	
Jacket colour	black	
Sheath marking	Ink-Jet, white	
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)	
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)	
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)	

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
12 x 24f	288f	R856453	R856457
18 x 24f	432f	R856454	R856458

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

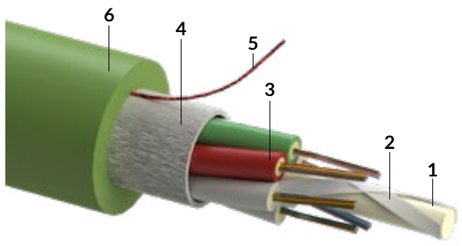
DESCRIPTION	TEST METHOD	OX3x2,3EH	OX9x2,3EH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1000 N	1000 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3000 N	3000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm		Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm		Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm		Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles		no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles		Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles		no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m,1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6402.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x2,3GF	UT8x2,3GF	UT3x2,3GF	UT9x2,3GF
Product code	SLT-D06x2.3-QEKNS-G1H_U-SENF	SLT-D08x2.3-QEKNS-G1H_U-SENF	SLT-D12x2.3-QEKNS-G1H_U-SENF	SLT-D18x2.3-QEKNS-G1H_U-SENF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.9 mm	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm	1.4 mm	1.4 mm
Cable outer diameter	11.0 mm	12.5 mm	15.3 mm	15.7 mm
Cable informative weight	120.0 kg/km	150.0 kg/km	220.0 kg/km	230.0 kg/km
DIN/VDE code	U-DQ(BN)H wbg nx2,3			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheath marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2. green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R856964	R857027
3 x 12f	36f	R856965	R857028
4 x 12f	48f	R856966	R857029
5 x 12f	60f	R856967	R857030
6 x 12f	72f	R856968	R857031
8 x 12f	96f	R856969	R857032
12 x 12f	144f	R856970	R857033
18 x 12f	216f	R856972	R857035

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

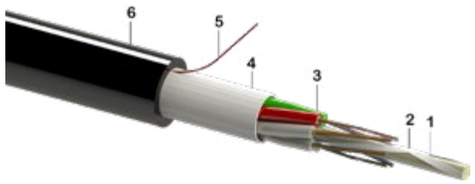
DESCRIPTION	TEST METHOD	UT6x 2,3GF	UT8x 2,3GF	UT3x 2,3GF	UT9x 2,3GF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1100 N	1200 N	1500 N	1500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3500 N	4000 N	5000 N	5000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	In storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6402.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking tape or e-glass yarn**
5. **Rip-cord**
6. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 216 fibers in a 18-strand stranding, for outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x2,3GH	OT8x2,3GH	OT3x2,3GH	OT9x2,3GH
Product code	SLT-D06x2.3-QEKNS-G3Y_A-SFNF	SLT-D08x2.3-QEKNS-G3Y_A-SFNF	SLT-D12x2.3-QEKNS-G3Y_A-SFNF	SLT-D18x2.3-QEKNS-G3Y_A-SFNF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.9 mm	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm	1.4 mm	1.4 mm
Cable outer diameter	11.0 mm	12.5 mm	15.3 mm	15.7 mm
Cable informative weight	100.0 kg/km	130.0 kg/km	190.0 kg/km	195.0 kg/km
DIN/VDE code	A-DQ(BN)2Y wbg nx2,3			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R856861	R856892
3 x 12f	36f	R856862	R856893
4 x 12f	48f	R856863	R856894
5 x 12f	60f	R856864	R856895
6 x 12f	72f	R856865	R856896
8 x 12f	96f	R856866	R856897
12 x 12f	144f	R856867	R856898
18 x 12f	216f	R856869	R856900

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

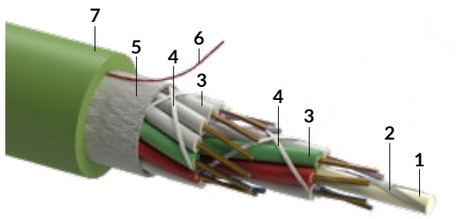
DESCRIPTION	TEST METHOD	OT6x 2,3GH	OT8x 2,3GH	OT3x 2,3GH	OT9x 2,3GH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1100 N	1200 N	1500 N	1500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3500 N	4000 N	5000 N	5000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6410.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fixation yarn**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 432 fibers in a 18-strand stranding, for indoor or outdoor duct installation. Individual loose tubes are equipped with 24 fibers.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE	
Cable family code	UX3x2,3GF	UX9x2,3GF
Product code	SLT-D12x2,3-QEKNS-G1H_U-SENF	SLT-D18x2,3-QEKNS-G1H_U-SENF
Fiber count	288	432
Fiber count per tube	24	24
Loose-tube count	12	18 (6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm
Cable outer diameter	15.3 mm	15.7 mm
Cable informative weight	220 kg/km	230 kg/km
DIN/VDE code	U-DQ(BN)H wbg nx2,3	
Outer jacket material	UV stable FRLSZH	
Jacket colour	green	
Sheath marking	Ink-Jet, black	
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)	
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)	
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)	

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
12 x 24f	288f	R857042	R857050
18 x 24f	432f	R857043	R857051

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

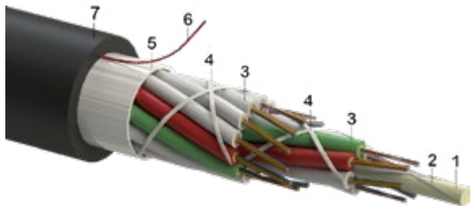
DESCRIPTION	TEST METHOD	UX3x2,3GF	UX9x2,3GF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1500 N	1500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	5000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm		Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm		Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm		Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles		no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles		Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles		no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Eca



030.6410.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fixation yarn**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Improved rodent-protected, non-metallic stranded loose tube cable with up to 432 fibers in a 18-strand stranding, for outdoor duct installation. Individual loose tubes are equipped with 24 fibers.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE	
Cable family code	OX3x2,3GH	OX9x2,3GH
Product code	SLT-D12x2,3-QEKNS-G3Y_A-SFNF	SLT-D18x2,3-QEKNS-G3Y_A-SFNF
Fiber count	288	432
Fiber count per tube	24	24
Loose-tube count	12	18(6+12) - two layers
Loose tube nominal diameter	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 / 6.7 mm	2.5 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm
Cable outer diameter	15.3 mm	15.7 mm
Cable informative weight	190 kg/km	195 kg/km
DIN/VDE code	A-DQ(BN)2Y wbg nx2,3	
Outer jacket material	UV stable HDPE	
Jacket colour	black	
Sheath marking	Ink-Jet, white	
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)	
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink 13.-24.: red, green, blue, yellow, white, grey, brown, violet, turquoise, natural, orange, pink (ring-marked)	
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)	

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
12 x 24f	288f	R856903	R856907
18 x 24f	432f	R856904	R856908

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

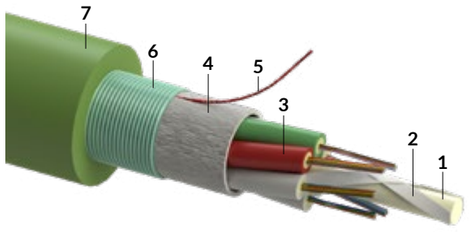
DESCRIPTION	TEST METHOD	OX3x2,3GH	OX9x2,3GH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1500 N	1500 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	5000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm		Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm		Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm		Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles		no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles		Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles		no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature rang		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6404.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **Corrugated steel tape armour**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable is built with up to 216 fibers in a 18-strand stranding and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x1,7ECF	UT8x1,7ECF	UT3x1,7ECF	UT9x1,7ECF
Product code	SLT-D06x1.7-QEKNS-C1H_U-SFNF	SLT-D08x1.7-QEKNS-C1H_U-SFNF	SLT-D12x1.7-QEKNS-C1H_U-SFNF	SLT-D18x1.7-QEKNS-C1H_U-SFNF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	11.0 mm	12.0 mm	14.0 mm	14.0 mm
Cable informative weight	135.0 kg/km	165.0 kg/km	210.0 kg/km	210.0 kg/km
DIN/VDE code	U-DQ(ZN)(SR)H wbg nx1,7			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheath marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			
Maximum length	4100 m ± 5%			

ORDER INFORMATION (GREEN)

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R857203	R857235	R857298
4 x 12f	48f	R857205	R857237	R857300
5 x 12f	60f	R857206	R857238	R857301
6 x 12f	72f	R857207	R857239	R857302
8 x 12f	96f	R857208	R857240	R857303
12 x 12f	144f	R857209	R857241	R857304
18 x 12f	216f	R857211	R857243	R857306

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

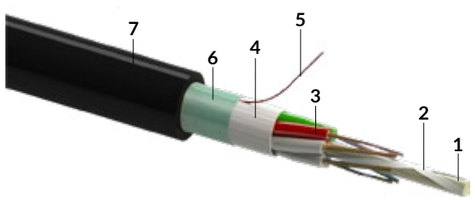
DESCRIPTION	TEST METHOD	UT6x 1,7ECF	UT8x 1,7ECF	UT3x 1,7ECF	UT9x 1,7ECF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	1200 N	1200 N	1100 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	4000 N	4000 N	3500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m,1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6404.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **Corrugated steel tape armour**
7. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable is built with up to 216 fibers in a 18-strand stranding and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x1,7ECH	OT8x1,7ECH	OT3x1,7ECH	OT9x1,7ECH
Product code	SLT-D06x1.7-QEKNS-C3Y_A-SFNF	SLT-D08x1.7-QEKNS-N3Y_A-SFNF	SLT-D12x1.7-QEKNS-N3Y_A-SFNF	SLT-D18x1.7-QEKNS-N3Y_A-SFNF
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	11.0 mm	12.0 mm	14.0 mm	14.0 mm
Cable informative weight	115.0 kg	140.0 kg/km	185.0 kg/km	185.0 kg/km
DIN/VDE code	A-DQ(ZN)(SR)2Y wbg nx1,7			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			
Maximum length	4100 m ± 5%			

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R857092	R857108	R857139
4 x 12f	48f	R857094	R857110	R857141
5 x 12f	60f	R857095	R857111	R857142
6 x 12f	72f	R857096	R857112	R857143
8 x 12f	96f	R856166	R856182	R857144
12 x 12f	144f	R856167	R856183	R857145
18 x 12f	216f	R856169	R856185	R857147

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

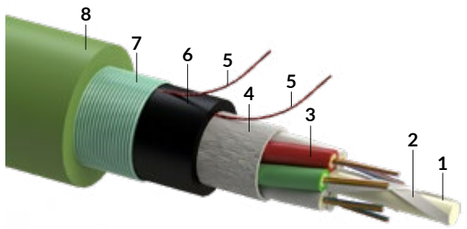
DESCRIPTION	TEST METHOD	OT6x 1,7ECH	OT8x 1,7ECH	OT3x 1,7ECH	OT9x 1,7ECH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	1200 N	1200 N	1100 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	4000 N	4000 N	3500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6406.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **FRLSZH UV stable inner jacket**
7. **Corrugated steel tape armour**
8. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Corrugated steel tape armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected.
The cable features a two jacket construction, is built with up to 216 fibers in a 18-strand stranding and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UT6x1,7EFCF	UT8x1,7EFCF	UT3x1,7EFCF	UT9x1,7EFCF
Product code	SLT-D06x1.7-QEK1H-C1H_U-SFNR	SLT-D08x1.7-QEK1H-C1H_U-SFNR	SLT-D12x1.7-QEK1H-C1H_U-SFNR	SLT-D18x1.7-QEK1H-C1H_U-SFNR
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Inner jacket nominal thickness	0.9 mm	0.9 mm	0.9 mm	0.9 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	12.1 mm	13.1 mm	15.1 mm	16.1 mm
Cable informative weight	180.0 kg/km	210.0 kg/km	270.0 kg/km	290.0 kg/km
DIN/VDE code	U-DQ(ZN)H(SR)H wbg nx1,7			
Outer jacket material	UV stable FRLSZH			
Jacket colour	green			
Sheath marking	Ink-Jet, black			
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			
Maximum length	4100 m ± 5%			

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R857457	R857520
4 x 12f	48f	R857459	R857522
5 x 12f	60f	R857460	R857523
6 x 12f	72f	R857461	R857524
8 x 12f	96f	R857462	R857525
12 x 12f	144f	R857463	R857526
18 x 12f	216f	R857465	R857528

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

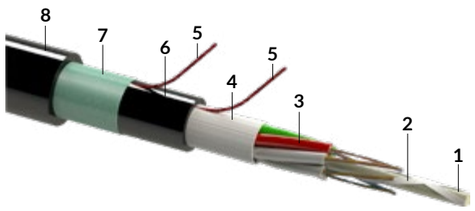
DESCRIPTION	TEST METHOD	UT6x 1,7EFCF	UT8x 1,7EFCF	UT3x 1,7EFCF	UT9x 1,7EFCF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	1200 N	1200 N	1200 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	4000 N	4000 N	4000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m,1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Water-blocking e-glass yarn**
5. **Rip-cord**
6. **UV stable LDPE inner jacket**
7. **Corrugated steel tape armor**
8. **UV stable HDPE outer jacket**

030.6406.A / similar product

GENERAL DESCRIPTION

Corrugated steel tape armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable features a two jacket construction, is built with up to 216 fibers in a 18-strand stranding and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	OT6x1,7ELCH	OT8x1,7ELCH	OT3x1,7ELCH	OT9x1,7ELCH
Product code	SLT-D06x1.7-QE-K2Y-C3Y_A-SFNR	SLT-D08x1.7-QE-K2Y-C3Y_A-SFNR	SLT-D12x1.7-QE-K2Y-C3Y_A-SFNR	SLT-D18x1.7-QE-K2Y-C3Y_A-SFNR
Fiber count	72	96	144	216
Fiber count per tube	12	12	12	12
Loose-tube count	6	8	12	18 (6+12) - two layers
Loose tube nominal diameter	1.7 mm	1.7 mm	1.7 mm	1.7 mm
FRP/coat. CSM nominal thickness	1.7 mm	2.8 mm	2.5 / 5.0 mm	1.7 mm
Inner jacket nominal thickness	0.9 mm	0.9 mm	0.9 mm	0.9 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	12.1 mm	13.1 mm	15.1 mm	16.1 mm
Cable informative weight	145.0 kg/km	175.0 kg/km	220.0 kg/km	240.0 kg/km
DIN/VDE code	A-DQ(ZN)2Y(SR)2Y wbg nx1,7			
Outer jacket material	UV stable HDPE			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Loose-tube colour coding	1.red, 2.green- on each layer, rest of tubes white (fillers uncoloured or black)			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			
Maximum length	4100 m ± 5%			

ORDER INFORMATION

FIBER COUNT		G657.A1
2 x 12f	24f	R857361
4 x 12f	48f	R857363
5 x 12f	60f	R857364
6 x 12f	72f	R857365
8 x 12f	96f	R857366
12 x 12f	144f	R857367
18 x 12f	216f	R857369

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

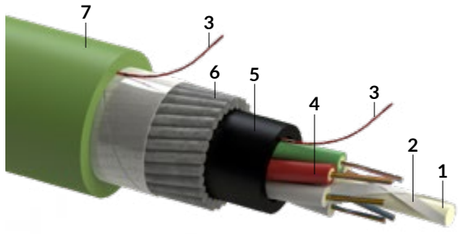
DESCRIPTION	TEST METHOD	OT6x 1,7ELCH	OT8x 1,7ELCH	OT3x 1,7ELCH	OT9x 1,7ELCH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	800 N	1200 N	1200 N	1200 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	2500 N	4000 N	4000 N	4000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm				Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm				Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm				Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles				no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles				Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles				no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6403.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Rip-cord**
4. **Gel filled PBT loose tube with optical fibers**
5. **FRLSZH UV stable inner jacket**
6. **Zn galvanized steel wire armour fixed by PET tape**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Steel wire armoured stranded loose tube cable with good mechanical protection and thus rodent protected. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	UT6x2,3FWF	UT8x2,3FWF	UT3x2,3FWF
Product code	SLT-D06x2.3-QNK1H-W1H_U-SFNR	SLT-D08x2.3-QNK1H-W1H_U-SFNR	SLT-D12x2.3-QNK1H-W1H_U-SFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.8 mm	2.5 / 6.7 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Steel wire nominal diameter	1.0 mm	1.0 mm	1.3 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	14.5 mm	15.8 mm	19.4 mm
Cable informative weight	370.0 kg/km	430.0 kg/km	670.0 kg/km
DIN/VDE code	U-DQHBH (R...vzk) nx2,3		
Outer jacket material	UV stable FRLSZH		
Jacket colour	green		
Sheath marking	Ink-Jet, black		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R857065	R857079
3 x 12f	36f	R857066	R851131
4 x 12f	48f	R857067	R857080
5 x 12f	60f	R857068	R857081
6 x 12f	72f	R857069	R857082
8 x 12f	96f	R857070	R857083
12 x 12f	144f	R857071	R857084

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

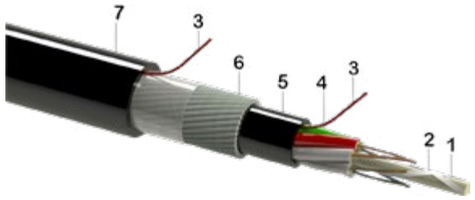
DESCRIPTION	TEST METHOD	UT6x 2,3FWF	UT8x 2,3FWF	UT3x 2,3FWF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	n.a.	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	6000 N	8000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending		R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6403.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Rip-cord**
4. **Gel filled PBT loose tube with optical fibers**
5. **LDPE UV stable inner jacket**
6. **Zn galvanized steel wire armour fixed by PET tape**
7. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Steel wire armoured stranded loose tube cable with good mechanical protection and thus rodent protected. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	OT6x2,3LWH	OT8x2,3LWH	OT3x2,3LWH
Product code	SLT-D06x2.3-QNK2Y-W3Y_A-SFNR	SLT-D08x2.3-QNK2Y-W3Y_A-SFNR	SLT-D12x2.3-QNK2Y-W3Y_A-SFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.8 mm	2.5 / 6.7 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Steel wire nominal diameter	1.0 mm	1.0 mm	1.3 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	14.5 mm	15.8 mm	19.4 mm
Cable informative weight	330.0 kg/km	385.0 kg/km	610.0 kg/km
DIN/VDE code	A-DQ2YB2Y (R...vzk) nx2,3		
Outer jacket material	UV stable HDPE		
Jacket colour	black		
Sheath marking	Ink-Jet, white		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION

FIBER COUNT		G657.A1
2 x 12f	24f	R857052
3 x 12f	36f	R857053
4 x 12f	48f	R857054
5 x 12f	60f	R857055
6 x 12f	72f	R857056
8 x 12f	96f	R857057
12 x 12f	144f	R851130

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

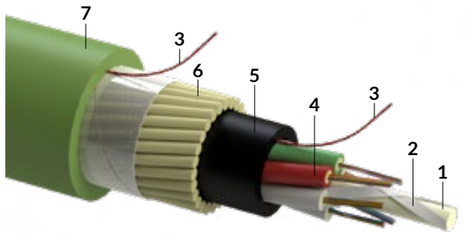
DESCRIPTION	TEST METHOD	OT6x 2,3LWH	OT8x 2,3LWH	OT3x 2,3LWH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	n.a.	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	6000 N	8000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6420.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Rip-cords**
4. **Gel filled PBT loose tube with optical fibers**
5. **FRLSZH UV stable inner jacket**
6. **Fibre reinforced plastic armour fixed by PET tape**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fiber Reinforced Plastic (FRP) rod armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for indoor or outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	UT6x2,3FPF	UT8x2,3FPF	UT3x2,3FPF
Product code	SLT-D06x2.3-QNK1H-P1H_U-SFNR	SLT-D08x2.3-QNK1H-P1H_U-SFNR	SLT-D12x2.3-QNK1H-P1H_U-SFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5 / 3.8 mm	2.5 / 6.7 mm
FRP rods (armour) nominal diameter	1.0 mm	1.0 mm	1.3 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	14.5 mm	15.8 mm	19.4 mm
Cable informative weight	230.0 kg/km	270.0 kg/km	390.0 kg/km
DIN/VDE code	U-DQH(ZN)BH (FRP...) nx2,3		
Outer jacket material	UV stable FRLSZH		
Jacket colour	green		
Sheath marking	Ink-Jet, black		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION

FIBER COUNT		OM4	G657.A1
2 x 12f	24f	R857550	R857564
3 x 12f	36f	R857551	R857828
4 x 12f	48f	R857552	R857565
5 x 12f	60f	R857553	R857566
6 x 12f	72f	R857554	R857567
8 x 12f	96f	R857555	R857568
12 x 12f	144f	R857556	R857569

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

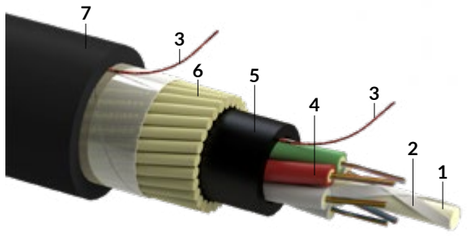
DESCRIPTION	TEST METHOD	UT6x 2,3FPF	UT8x 2,3FPF	UT3x 2,3FPF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	n.a.	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	6000 N	10000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6420.A / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Rip-cords**
4. **Gel filled PBT loose tube with optical fibers**
5. **LDPE UV stable inner jacket**
6. **Fibre reinforced plastic armour fixed by PET tape**
7. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Fiber Reinforced Plastic (FRP) rod armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for outdoor duct or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	OT6x2,3LPH	OT8x2,3LPH	OT3x2,3LPH
Product code	SLT-D06x2.3-QNKNS-P3Y_A-SFNR	SLT-D08x2.3-QNKNS-P3Y_A-SFNR	SLT-D12x2.3-QNKNS-P3Y_A-SFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.5 mm	2.5/3.8 mm	2.5 / 6.7 mm
FRP rods (armour) nominal diameter	1.0 mm	1.0 mm	1.3 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Outer jacket nominal thickness	1.3 mm	1.3 mm	1.3 mm
Cable outer diameter	14.5 mm	15.8 mm	19.4 mm
Cable informative weight	185.0 kg/km	220.0 kg/km	335.0 kg/km
DIN/VDE code	A-DQ2Y(ZN)B2Y (FRP...) nx2,3		
Outer jacket material	UV stable HDPE		
Jacket colour	black		
Sheath marking	Ink-Jet, white		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION (GREEN)

FIBER COUNT		G657.A1
2 x 12f	24f	R857536
3 x 12f	36f	R857537
4 x 12f	48f	R857538
5 x 12f	60f	R857539
6 x 12f	72f	R857540
8 x 12f	96f	R857541
12 x 12f	144f	R857542

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

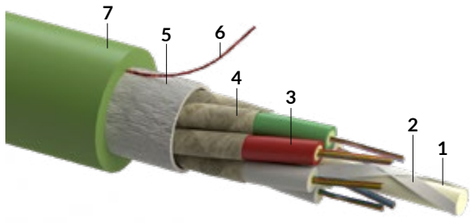
DESCRIPTION	TEST METHOD	OT6x 2,3LPH	OT8x 2,3LPH	OT3x 2,3LPH	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	n.a.	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	6000 N	10000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m,1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6407.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fire-resistant tape**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic fire-resistant stranded loose tube cable with improved rodent protection.
The cable is built with up to 144 fibers in a 12-strand stranding and is suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	QT6x2,3GF	QT8x2,3GF	QT3x2,3GF
Product code	SLT-D06x2.3-QEKNS-N1H_U-QFNR	SLT-D08x2.3-QEKNS-N1H_U-QFNR	SLT-D12x2.3-QEKNS-N1H_U-QFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 mm	2.5 / 4.5 mm	2.8 / 7.8 mm
Outer jacket nominal thickness	1.8 mm	1.8 mm	1.8 mm
Cable outer diameter	13.0 mm	14.6 mm	18.0 mm
Cable informative weight	180.0 kg/km	225.0 kg/km	340.0 kg/km
DIN/VDE code	U-DQ(BN)H wbg nx2,3 fr		
Outer jacket material	UV stable FRLSZH		
Jacket colour	black		
Sheath marking	Ink-Jet, white		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R857590	R857597	R857604
3 x 12f	36f	R857591	R857598	R857605
4 x 12f	48f	R857592	R857599	R857606
5 x 12f	60f	R857593	R857600	R857607
6 x 12f	72f	R857594	R857601	R857608
8 x 12f	96f	R857595	R857602	R857609
12 x 12f	144f	R857596	R857603	R857610

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

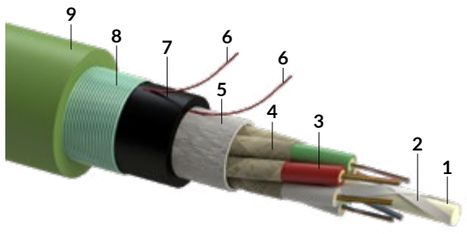
DESCRIPTION	TEST METHOD	QT6x 2,3GF	QT8x 2,3GF	QT3x 2,3GF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1400 N	1400 N	1800 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	4500 N	4500 N	6000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	1000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6408.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fire-resistant tape**
5. **Water-blocking e-glass yarn**
6. **Rip-cord**
7. **FRLSZH UV stable inner jacket**
8. **Corrugated steel tape armour**
9. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fire-resistant and corrugated steel tape armoured stranded loose tube cable with excellent mechanical protection and thus secure rodent protected. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	QT6x2,3EFCF	QT8x2,3EFCF	QT3x2,3EFCF
Product code	SLT-D06x2.3-QEK1H-C1H_U-QFNR	SLT-D08x2.3-QEK1H-C1H_U-QFNR	SLT-D12x2.3-QEK1H-C1H_U-QFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 mm	2.5 / 4.5 mm	2.8 / 7.8 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Outer jacket nominal thickness	1.5 mm	1.5 mm	1.5 mm
Cable outer diameter	16.5 mm	17.5 mm	21.5 mm
Cable informative weight	300.0 kg/km	350.0 kg/km	500.0 kg/km
DIN/VDE code	U-DQ(ZN)H(SR)H wbg nx2,3 fr		
Outer jacket material	UV stable FRLSZH		
Jacket colour	green		
Sheath marking	Ink-Jet, black		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		
Maximum length	4100 m ± 5%		

030.6408.B / similar product

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R857631	R857638	R857645
4 x 12f	48f	R857633	R857640	R857647
5 x 12f	60f	R857634	R857641	R857648
6 x 12f	72f	R857635	R857642	R857649
8 x 12f	96f	R857636	R857643	R857650
12 x 12f	144f	R857637	R857644	R857651

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

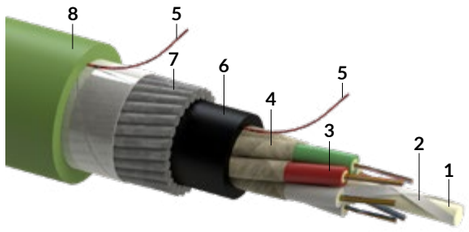
DESCRIPTION	TEST METHOD	QT6x 2,3EFCF	QT8x 2,3EFCF	QT3x 2,3EFCF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	900 N	900 N	1100 N	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	3000 N	3000 N	3500 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2500 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	5000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	20 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6409.B / similar product

1. **FRP central strength member**
2. **Water-blocking yarn**
3. **Gel filled PBT loose tube with optical fibers**
4. **Fire-resistant tape**
5. **Rip-cord**
6. **FRLSZH UV stable inner jacket**
7. **Zn galvanized steel wire armour fixed by PET tape**
8. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Fire resistant and steel wire armoured stranded loose tube cable with excellent mechanical and thus full rodent protection. The cable features a two jacket construction, is built with up to 144 fibers in a 12-strand stranding and is suitable for indoor or outdoor duct installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE		
Cable family code	QT6x2,3FWF	QT8x2,3FWF	QT3x2,3FWF
Product code	SLT-D06x2.3-QNK1H-W1H_U-QFNR	SLT-D08x2.3-QNK1H-W1H_U-QFNR	SLT-D12x2.3-QNK1H-W1H_U-QFNR
Fiber count	72	96	144
Fiber count per tube	12	12	12
Loose-tube count	6	8	12
Loose tube nominal diameter	2.3 mm	2.3 mm	2.3 mm
FRP/coat. CSM nominal thickness	2.8 mm	2.5 / 4.5 mm	2.8 / 7.8 mm
Inner jacket nominal thickness	1.0 mm	1.0 mm	1.0 mm
Steel wire nominal diameter	1.0 mm	1.2 mm	1.4 mm
Outer jacket nominal thickness	1.4 mm	1.4 mm	1.4 mm
Cable outer diameter	15.6 mm	17.7 mm	21.1 mm
Cable informative weight	440.0 kg/km	570.0 kg/km	800.0 kg/km
DIN/VDE code	U-DQHBH (R...vzk) nx2,3 fr		
Outer jacket material	UV stable FRLSZH		
Jacket colour	green		
Sheath marking	Ink-Jet, black		
Loose-tube colour coding	1.red, 2.green - on each layer, rest of tubes white (fillers uncoloured or black)		
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink		
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)		

ORDER INFORMATION

FIBER COUNT		OM3	OM4	G657.A1
2 x 12f	24f	R857672	R857679	R857686
3 x 12f	36f	R857673	R857680	R857687
4 x 12f	48f	R857674	R857681	R857688
5 x 12f	60f	R857675	R857682	R857689
6 x 12f	72f	R857676	R857683	R857690
8 x 12f	96f	R857677	R857684	R857691
12 x 12f	144f	R857678	R857685	R857692

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

DESCRIPTION	TEST METHOD	QT6x 2,3FWF	QT8x 2,3FWF	QT3x 2,3FWF	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	n.a.	n.a.	n.a.	Δα ≤ 0,05 dB
Tensile performance - during installation	IEC 60794-1-21:E1	5000 N	8000 N	10000 N	Δα ≤ 0,05 dB after test
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm			Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm			Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	25 Nm, 3 impacts, d=20 mm, R=300 mm			Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180°, 10 cycles			no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=20 x cable diameter, 4 turns, 3 cycles			Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles			no damage

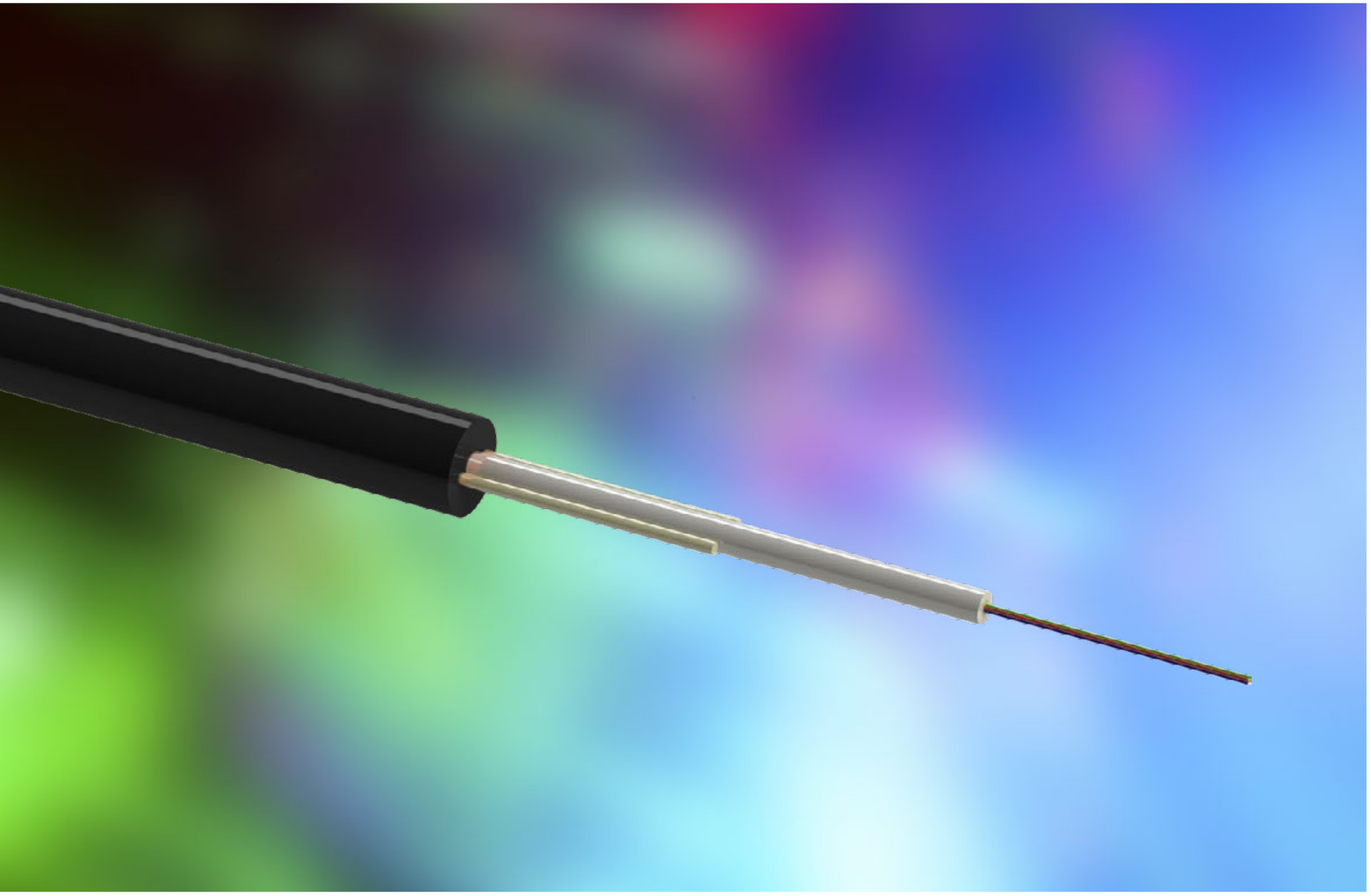
CLIMATICAL DATA

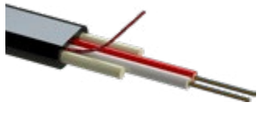
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-40 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature range		-40 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-40 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage under inner sheath

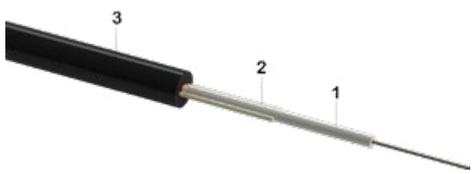
FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Fire resistance	EN 60331-25 (180 min at 750 °C)	Pass
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca

FTTx Cables.



Cable type	Cable family	Page	Product Classification	Application	Fiber count	Loose tubes count	Loose tube nominal Ø [mm]	Jacket material	CPR classification	Nominal cable Ø [mm]	Cable weight [kg/km]	Tensile performance short [N]	Crush [N/100 mm]	Temperatur range in operation	Fire resistance EN 60331-25
Micro Cable															
	MT1RF	122	R&M	universal	4	1	1.2	UV - FRLSZH	Fca	3.0	11.0	150	500	-20 °C to 70 °C	
Flat Self-Supporting Loose Tube Cable / Aerial FTTx Drop															
	ST1fH	124	R&M	outdoor	12	1	1.9	UV - HDPE	Fca	8.0 x 4.0	38.0	1600	4000	-20 °C to 70 °C	
Flat Self-Supporting Loose Tube Cable / Aerial FTTx Drop															
	ST2fH	126	R&M	outdoor	24	2	1.9	UV - HDPE	Fca	9.8 x 4.0	59.0	1600	4000	-20 °C to 70 °C	
MiniCore Cable / Aerial FTTx Drop															
	UAF250	128	R&M	universal	6 12	0	n.a.	UV - FRLSZH	Fca	2.8 3.2	9.0 11.0	250	1000	-20 °C to 60 °C	
	UAF250 FiRis	128	R&M	universal	6 12	0	n.a.	UV - FRLSZH	Cca-s2,d0,a1	2.8 3.2	9.0 11.0	250	1000	-20 °C to 60 °C	
MiniCore Cable - Intensified / Aerial FTTx Drop															
	UAF1000	130	R&M	universal	2 8 12	0	n.a.	UV - FRLSZH	Fca	3.2 3.6 3.8	11.0 13.0 14.0	1000	1000	-20 °C to 70 °C	
	UAF1000 FiRis	130	R&M	universal	2 8 12	0	n.a.	UV - FRLSZH	Cca-s2,d0,a1	3.2 3.6 3.8	11.0 13.0 14.0	1000	1000	-20 °C to 70 °C	



030.6411.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **FRP strength members**
3. **FRLSZH UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic Micro-Cable in a mini central loose tube construction designed for up to a maximum of 4 fibers.
The cable is designed for indoor or outdoor use for blow-in technology in Microducts.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	MT1RF
Product code	FLT-D01x1.2-NNRNS-N1H_U-MFNR
DIN/VDE code	U-DQ(ZN)H (2FRP 0,5)
Fiber count	4
Loose-tube count	1
Loose tube nominal diameter	1.2 mm
Outer jacket nominal thickness	0.9 mm
Cable outer diameter	3.0 mm
Cable informative weight	11.0 kg/km
Outer jacket material	UV stable FRLSZH
Jacket colour	black, green, ivory
Sheath marking	Ink-Jet, white (black sheath) or black (green, ivory sheath)
Fiber color code (IEC 60304)	1.–4.: red, green, blue, yellow
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT		G657.A1	JACKET COLOUR
1 x 2f	2f	R857693	black
1 x 4f	4f	R851139	black
1 x 2f	2f	R857694	green
1 x 4f	4f	R857695	green
1 x 2f	2f	R857696	ivory
1 x 4f	4f	R857697	ivory

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

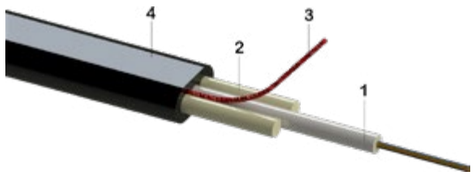
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - during installation	IEC 60794-1-21:E1	150 N	Δα ≤ 0,05 dB after test
Crush resistance - short term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	1 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,1 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L = 1 m, rotation angle ±180° 10 cycles	no damage
Kink	IEC 60794-1-21:E10	d = 40 x cable diameter	no kink
Cable bend - no tension	IEC 60794-1-21:E11A	d=40 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R = 40 x cable diameter, 25 cycles	no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Flammability - vertical cable bundle	EN 60332-3-22 (cat. A)	Pass
Smoke density	EN 61034-1, EN 61034-2	Pass
Halogen free, acid gases	EN 60754-2	Pass
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6412.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **FRP strength members**
3. **Rip-cord**
4. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic and flat self-supporting loose tube cable in a uni-tube construction for up to 12 fibers. The cable is built for outdoor aerial or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	ST1fH
Product code	FST-D01x1.9-NNFNS-N3Y_A-AFNR
DIN/VDE code	A-D(ZN)2YT (2FRP 2,0)
Fiber count	12
Fiber count per tube	12
Loose-tube count	1
Loose tube nominal diameter	1.9 mm
Outer jacket nominal thickness	1.0 mm
Cable outer diameter	8.0 x 4.0 mm
Cable informative weight	38.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT		G657.A1
1 x 2f	2f	R857698
1 x 4f	4f	R857699
1 x 6f	6f	R857700
1 x 8f	8f	R857701
1 x 12f	12f	R851140

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

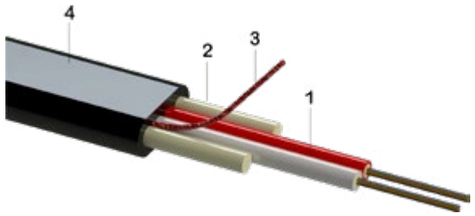
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1600 N (max. allow-able tension)	Δα ≤ 0,15 dB
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L=2 m, rotation angle ±180°, 5 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	R=150 mm, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=150 mm, 25 cycles	no damage
Maximal recommended span	TELENCO clamp ODWAC 5126	100 m (minimal mid-span sag 1 m), maximum allow-able tension	Δα ≤ 0,05 dB, no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +70 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



030.6413.A / similar product

1. **Gel filled PBT loose tube with optical fibers**
2. **FRP strength members**
3. **Rip-cord**
4. **HDPE UV stable outer jacket**

GENERAL DESCRIPTION

Non-metallic and flat self-supporting loose tube cable in a twin-tube construction for up to 24 fibers. The cable is built for outdoor aerial or direct buried installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE
Cable family code	ST2fH
Product code	FST-D02x1.9-NNFNS-N3Y_A-ANNR
DIN/VDE code	A-D(ZN)2YT (2FRP 2,0)
Fiber count	24
Fiber count per tube	12
Loose-tube count	2
Loose tube nominal diameter	1.9 mm
Outer jacket nominal thickness	1.0 mm
Cable outer diameter	9.8 x 4.0 mm
Cable informative weight	59.0 kg/km
Outer jacket material	UV stable HDPE
Jacket colour	black
Sheath marking	Ink-Jet, white
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)

ORDER INFORMATION

FIBER COUNT		G657.A1
2 x 4f	8f	R857702
2 x 6f	12f	R857703
2 x 8f	16f	R857704
2 x 12f	24f	R851160

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

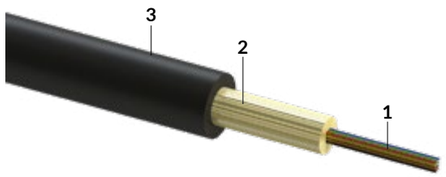
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1600 N (max. allow-able tension)	Δα ≤ 0,15 dB
Crush resistance - long term	IEC 60794-1-21:E3A	2000 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	4000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	10 Nm, 3 impacts, d=20 mm, R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L=2 m, rotation angle ±180° 5 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	R=150 mm, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=150 mm, 25 cycles	no damage
Maximal recommended span	TELENCO clamp ODWAC 5126	100 m (minimal mid-span sag 1 m), maximum allow-able tension	Δα ≤ 0,05 dB, no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +70 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-30 °C ÷ +70 °C	Δα ≤ 0,15 dB, reversible
Temperature range -		-20 °C ÷ +70 °C	in service
Temperature range -		-5 °C ÷ +50 °C	during installation
Temperature range -		-30 °C ÷ +70 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE
Euro classification to CPR	EN 50575, EN 13501-6	Fca



1. **Optical fibers**
2. **Aramid yarn**
3. **FRLSZH UV stable outer jacket**

030.6414.A / similar product

GENERAL DESCRIPTION

Non-metallic aerial drop cable with up to 12 fibers for indoor or outdoor duct, facade or aerial installation.

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE			
Cable family code	UAF250		UAF250 FiRis	
Product code	MCC-A12x0.2-NAONS-N1H_U-AFNR		MCC-A12x0.2-NAONS-N1H_U-ACNR	
DIN/VDE code	U-(ZN)H			
Fiber count	1-6	8-12	1-6	8-12
Outer jacket nominal thickness	0.8 mm	0.8 mm	0.8 mm	0.8 mm
Cable outer diameter	2.8 mm	3.2 mm	2.8 mm	3.2 mm
Cable informative weight	9.0 kg/km	11.0 kg/km	9.0 kg/km	11.0 kg/km
Outer jacket material	UV stable FRLSZH			
Jacket colour	black			
Sheath marking	Ink-Jet, white			
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink			
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)			

ORDER INFORMATION

CABLE FAMILY	FIBER COUNT	G657.A1
UAF250	2	R857705
	4	R857706
	6	R851161
	8	R857707
	12	R851162
UAF250 FiRis	2	R857713
	4	R857714
	6	R857715
	8	R857716
	12	R857717

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

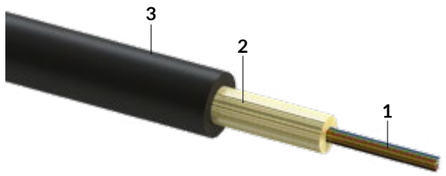
DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	250 N (max. allow-able tension)	Δα ≤ 0,15 dB
Crush resistance - long term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	3 Nm, 3 impacts, d=20 mm,R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L=2 m, rotation angle ±180° 5 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=15 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage
Maximal recommended span	TELENCO clamp 7593	40 m (minimal sag 60 cm), maximum allow-able tension	Δα ≤ 0,05 dB, no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +60 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +60 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +60 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +60 °C	in storage & transport
Moisture resistance	IEC 60794-1-22 F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	UAF250	UAF250 FiRis
Euro classification to CPR	EN 50575, EN 13501-6	Fca	Cca-s2,d0,a1



1. **Optical fibers**
2. **Aramid yarn**
3. **FRLSZH UV stable outer jacket**

030.6414.A / similar product

GENERAL DESCRIPTION

Non-metallic aerial drop cable with up to 12 fibers for indoor or outdoor duct, facade or aerial installation.
Additionally, this cable construction features an intensified tensile force

CONSTRUCTION AND DIMENSION

DESCRIPTION	VALUE / VALUE RANGE					
Cable family code	UAF1000			UAF1000 FiRis		
Product code	MCC-A12x0.2-NAONS-A1H_U-AFNR			MCC-A12x0.2-NAONS-A1H_U-ACNR		
DIN/VDE code	U-(ZN)H					
Fiber count	1-2	4-8	10-12	1-2	4-8	10-12
Outer jacket nominal thickness	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm
Cable outer diameter	3.2 mm	3.6 mm	3.8 mm	3.2 mm	3.6 mm	3.8 mm
Cable informative weight	11.0 kg/km	13.0 kg/km	14.0 kg/km	11.0 kg/km	13.0 kg/km	14.0 kg/km
Outer jacket material	UV stable FRLSZH					
Jacket colour	black					
Sheath marking	Ink-Jet, white					
Fiber color code (IEC 60304)	1.-12.: red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink					
Standard put-up length on drum	2100 m ± 5% (alternatively 4100 m ± 5% available on special request)					

ORDER INFORMATION

CABLE FAMILY	FIBER COUNT	G657.A1
UAF1000	2	R857723
	4	R857724
	6	R851164
	8	R857725
	12	R851165
UAF1000 FiRis	2	R857731
	4	R857732
	6	R857733
	8	R857734
	12	R857735

other fiber counts and/or fiber types available on request.

MECHANICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Tensile performance - in service	IEC 60794-1-21:E1	1000 N (max. allow-able tension)	Δα ≤ 0,15 dB
Crush resistance - long term	IEC 60794-1-21:E3A	500 N/100 mm	Δα ≤ 0,05 dB prior release, no damage
Crush resistance - short term	IEC 60794-1-21:E3A	1000 N/100 mm	Δα ≤ 0,05 dB after release, no damage
Impact resistance	IEC 60794-1-21:E4	3 Nm, 3 impacts, d=20 mm,R=300 mm	Δα ≤ 0,05 dB after test, no damage
Torsion	IEC 60794-1-21:E7	L=2 m, rotation angle ±180° 5 cycles	no damage
Cable bend - no tension	IEC 60794-1-21:E11A	d=15 x cable diameter, 4 turns, 3 cycles	Δα ≤ 0,05 dB after test, no damage
Repeated bending	IEC 60794-1-21:E6	R=20 x cable diameter, 25 cycles	no damage
Maximal recommended span	TELENCO clamp 7593	60 m (minimal sag 90 cm), maximum allow-able tension	Δα ≤ 0,05 dB, no damage

CLIMATICAL DATA

DESCRIPTION	TEST METHOD	VALUE / VALUE RANGE	ACCEPTANCE CRITERIA
Temperature cycling	IEC 60794-1-22:F1	-20 °C ÷ +60 °C	Δα ≤ 0,05 dB
Temperature cycling - reversible	IEC 60794-1-22:F1	-25 °C ÷ +60 °C	Δα ≤ 0,15 dB, reversible
Temperature range		-20 °C ÷ +60 °C	in service
Temperature range		-5 °C ÷ +50 °C	during installation
Temperature range		-25 °C ÷ +60 °C	in storage & transport
Moisture resistance	IEC 60794-1-22:F5B	L = 3 m, 1 m water height, 24 h	no water leakage

FIRE PROPERTIES

DESCRIPTION	TEST METHOD	UAF1000	UAF1000 FiRis
Euro classification to CPR	EN 50575, EN 13501-6	Fca	Cca-s2,d0,a1

Explanations.

Fiber Specifications.

Geometrical and Transmission Parameters

Fiber type according ITU-T	OS2 – E9/125 G.652.D	OS2 – E9/125[1] G.657.A1	OS2 – E9/125[1] G.657.A2	E9/125 G.655.A-D
Fiber Nomenclature	S2	S7	S8	S5
Mode Field Diameter (µm)				
@ 1310 nm	9.0 ± 0.4		8.8 ± 0.4	
@ 1550 nm	10.1 ± 0.5		9.8 ± 0.5	9.6 ± 0.4
Group Index of Refraction[2]				
@ 1310 nm	1.467		1.467	
@ 1550 nm	1.468		1.467	
@ 1625 nm	1.468		1.468	1.469
Cladding Diameter (µm)	125 ± 0.7			
Coating Diameter (µm)	242 ± 7			
Attenuation [3/4] (dB /km)				
typical / max. @ 1310 nm	**0.33 /** 0.4			
typical / max. @ 1550 nm	**0.20 /** 0.4		**0.20 /** 0.4	
typical / max. @ 1625 nm	**0.24 /** 0.4		**0.24 /** 0.4	

Fiber type	OM1 (62.5/125)	OM2 (50/125)[1]	OM3 (50/125)[1]	OM4 (50/125)[1]	OM5 (50/125)[1]
Fiber Nomenclature	M1	M2	M3	M4	M5
Numerical Aperture (µm)	0.275 ± 0.015	0.200 ± 0.015			
Core Diameter (µm)	62.5 ± 2.5	50.0 ± 2.5			
Cladding Diameter (µm)	125 ± 1.0				
Coating Diameter (µm)	242 ± 5				
Overfilled Modal Bandwidth (MHz x km)					
@ 850 nm	≥ 200	≥ 500	≥ 1500	≥ 3500	
@ 1300 nm	≥ 500	≥ 500	≥ 500	≥ 500	
Group Index of Refraction					
@ 850 nm	1.496	1.482			
@ 1300 nm	1.491	1.477			
Attenuation[4] (dB /km)					
typical / max. @ 850 nm	**2.8 /** 3.5	**2.5 /** 3.5			**2.5 /** 3.0
typical / max. @ 1300 nm	**0.6 /** 1.5	**0.6 /** 1.5			**0.6 /** 1.5

Notes:
1 - Bending-optimized fibers
2 - values may vary depending on used fiber brand, actual MFD and GIR values available on request
3 - valid for loose-tube cables (OS2)
4 - Max. attenuation value acc. to ISO IEC 11801-1

Product Code.
Cable construction part

Cable type –

CLT	Central Loose Tube cable
FLT	FTTH - Mini Loose Tube cable
SLT	Stranded Loose Tube cable
FBO	Breakout cable
MBO	MiniBreakout cable
MCC	MiniCore cable
FXT	FlexTube cable
FST	Flat Self-supporting Loose Tube cable
SMP	Simplex-Cord cable
ZDP	Duplex Zip-Cord cable - fig. 8
HDP	Heavy Duplex-Cord cable - fig. 0
BTF	Butterfly cable

Fiber type & protection

A	Single fiber
R	Ribbon fiber
T	Tight buffered fiber
H	dry semi-tight buffered fiber
W	gel filled semi-tight buffered fiber
B	dry tube
D	gel filled tube
S	Stainless-Steel Tube

Buffer count x diameter –

NNx0.6	amount x buffered fibers (0,600mm)
NNx0.9	amount x buffered fibers (0,900mm)
NNx1.4	amount x buffered fibers (1,4mm)
NNx2.0	amount x buffered fibers (2,0mm)
NNxZ.Z	amount loose tubes x tube diameter

Core filling

Q	Longitudinal watertightness with water-blocking yarn
F	Filling compound for filling of stranding interstices
N	No core filling

Peripheral strength members

A	Aramid yarns
E	E-glass yarn, standard rodent protection
N	No yarn

Other strength member

O	no strength member
K	FRP Central strength member, non metallic
R	2 FRP rods integrated in outer sheet
D	2 steel wires integrated in outer sheet
F	2 FRP rods under outer sheet, flat construction

Inner sheath material –

1H	FRLSZH – **F**ire-**R**etardant, **L**ow-**S**moke **Z**ero-**H**alogen
2Y	LDPE – **L**ow-**D**ensity **P**oly**E**thylene
3Y	HDPE – **H**igh-**D**ensity **P**oly**E**thylene
0Y	PVC – **P**oly**V**inyl**C**hloride
1Y	PUR – **P**oly**Ur**ethane
4Y	PA – **P**oly**A**mide
ZH	Laminated aluminum tape under FRLSZH sheat
ZY	Laminated aluminum tape under PE sheat
NS	no inner jacket

Armouring

C	CSTA – **C**orrugated **S**teel **T**ape **A**rmour
W	SWA – **S**teel **W**ire **A**rmour
P	FRPA – **F**iber **R**einforced **P**lastic Rod **A**rmour
G	E-glass yarn, improved rodent protection
A	Aramid yarn, reinforced tensile strength
N	No armouring

Outer sheath material _

1H	FRLSZH sheath
2Y	LDPE sheath
3Y	HDPE sheath
0Y	PVC sheath
1Y	PUR sheath
4Y	PA sheath
9Y	PP sheath

Application –

I	indoor-use
A	outdoor-use
U	universal-use

Style

S	No special style
Z	Sensor cable
M	Mini / Micro cable
A	ADSS aerial
K	Aerial - figure 8
Q	Fire-resistant

Euro Classification to CPR

B	B2ca
C	Cca
D	Dca
E	Eca
F	Fca
N	Non Applicable

UL rating

P	UL Plenum rated
R	UL Riser rated
N	Non Applicable

R&M product classification –

F	R&M*freenet*
R	R&M

Fiber and buffer number –

NNxMM NNxMMf

Fiber type –

M1	OM1
M2	OM2
M3	OM3
M4	OM4
M5	OM5
S2	G652.D
S5	G.655
S6	G.656
S7	G.657.A1
S8	G.657.A2/B2

Outer sheath colour

bk	Black
gy	Gray
rd	Red
br	Brown
gn	Green
vt	Violet
hv	Heather Violet
bl	Blue
tr	Turquoise
yl	Yellow
or	Orange
wt	White
pk	Pink
iv	Ivory
bg	Beige
lm	Lime Green

Final code example

R855970	CLT	-	D01x3.0	-	QEONS	-	C1H	_	U	-	QFNR	-	01x04	-	M3	-	gn

Cable Family Code.

Way of installation

I	indoor
O	outdoor
U	universal
S	ADSS (All Dielectric Self-Supporting)
K	Fig.8 (self-supporting with steel rope messenger)
Q	Fire-resistant to EN60331-25
M	Micro-cable (for blowing to micro-duct)

Buffer type

B	900µm tight buffer
T	gel filled PBT loose-tube (with up to 12 fibers)
X	gel filled PBT loose-tube (with up to 24 fibers)
t	flexible loose-tube (with up to 12 fibers)
x	flexible loose-tube
s	stainless-steel loose-tube

Buffer count & diameter in mm e.g. 6x2,3

1	unitube (LT) or simplex construction (TB)
2	2 loose-tubes (flat LT cable) or duplex construction (TB)
3	12 loose-tubes or tight-buffers
4	number of loose-tubes or tight-buffers
5	number of loose-tubes or tight-buffers
6	number of loose-tubes or tight-buffers
8	number of loose-tubes or tight-buffers
7	16 (5+11) loose-tubes or tight-buffers (in two layers)
9	18 (6+12) loose-tubes or tight-buffers (in two layers)
0	24 (9+15) loose-tubes or tight-buffers (in two layers)

Water-blocking

J	jelly filled cable core

Strength member(s) in/under sheath

A	aramid yarns
E	e-glass yarns (standard rodent protection)
G	e-glass yarns (improved rodent protection)
R	2 FRP rods integrated in the outer sheath
D	2 steel wires integrated in the outer sheath
f	2 FRP rods under the outer sheath - flat construction

Armour

C	corrugated steel tape armour (CSTA)
W	steel wire armour (SWA)
P	fiber reinforced plastic rod armour (FRPA)
Z	laminated aluminium tape under sheath

Sheath material

F	FRLSZH (fire-retardant, low-smoke, zero-halogen)
H	HDPE (high-density polyethylene)
L	LDPE (low-density polyethylene)
N	PA (polyamide)
Y	PVC (polyvinylchloride)
V	PUR (polyurethane)

DIN / VDE 0888 Cable Code.

1 Application area

A	outdoor cable
AT	divideable outdoor cable
B	loose tube gel-free
D	loose tube with gel filled
F	fiber
H	reinforced tube, empty
J	indoor cable
U	universal cable (for indoor and outdoor)
V	tight tube
W	reinforced tube, filled

2 Tube type

B	loose tube, gel-free
D	loose tube, gel filled
H	reinforced tube, gel-free
V	tight tube
W	reinforced tube, gel filled

3 Cable construction

B	reinforcement, armor
F	core filled
Q	dry and longitudinal watertight
(ZN)	non-metallic strain-relief
(BN)	improved non-metalic strain-relief
(ZS)	strain-relief with steel
(SR)	overlapping corrugated steel tape

4 Jacket material

H	halogen free jacket (FRLSZH)
Y	PVC, polyvinylchloride
2Y	PE, polyethylen (LDPE; HDPE)
4Y	PA, polyamide
11Y	PUR, polyurethane

5 Quantity of fiber resp. tube

n	amount of fiber
nxm	amount of loose tube × amount of fiber per tube

6a Fiber type

E	single-mode fiber (glass core/glass buffer)
G	multimode, graded index fiber (glass core/glass buffer)
GK	multimode, graded index fiber – PCF (glass core/plastic buffer)
K	multimode, step index fiber – PCF (glass core/plastic buffer)
P	plastic fiber – POF (plastic core/plastic buffer)
S	multimode step index fiber (glass core/glass buffer)

6b Core diameter

n	diameter in µm *e.g. 9, 50, 62.5, 200*

6c Cladding diameter

n	diameter in µm *e.g. 125, 250*

7a Attenuation

xx	attenuation at wave length in dB /km

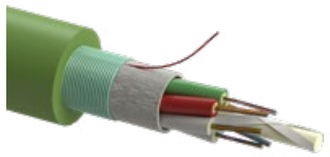
7b Wave length

A	at 650 nm
B	at 850 nm
F	at 1300 nm (MM)
F	at 1310 nm (SM)
H	at 1550 nm

7c Bandwidth

yy	MHz × 100 m bandwidth at 650 nm
yy	MHz × km bandwidth at 850 nm / 1300 nm
yy	ps/(nm × km) dispersion at 1310 nm / 1550 nm

Example



Cable family: UT.x1,7ECF, page 96

DIN/VDE code

U	-	D	Q	(ZN)	(SR)	H

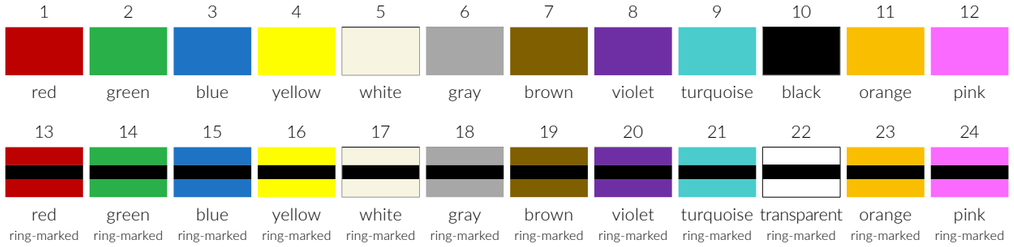
4	halogen free jacket (FRLSZH)
3	overlapping corrugated steel tape
3	non-metallic strain-relief
3	dry and longitudinal watertight
2	loose tube, gel filled
1	universal cable (for indoor and outdoor)

from cable core to outer sheath

Color Codes.

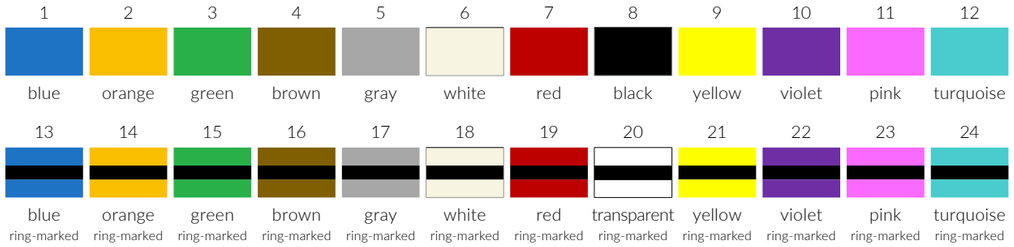
Color code for fibers

IEC 60304 – R&M Standard

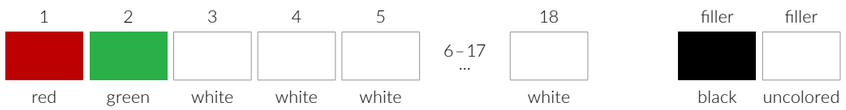


Color code for fibers

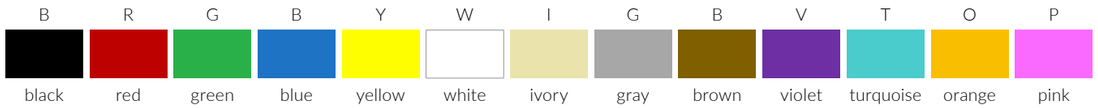
ANSI/TIA-598



Loose-tube color coding



Outer jacket color



Cable Sheath Materials.

Chemical resistance

As a rule, chemical resistance is only required in heavily polluted or potentially hazardous environments. Knowledge of the effects of chemical exposure on the cabling component is of primary importance for the assessment of the suitable product. Put simply, the combination of the intensity and duration of chemical exposure can be interpreted as „chemical exposure".

Basically, a distinction is made between 3 types of exposure:

- Exposure to less aggressive chemicals
- Exposure to aggressive chemicals
- Exposure to swelling chemicals

The following table gives an overview of the commercially available sheath materials and shall be seen as a simple orientation aid.

	Description	Polyolefins flame retardant	Polyethylene		Polybutylene terephthalate	Polyurethane	Polyamide	Polyvinyl-chloride
	Abbreviation	**FRLSZH**	**LDPE**	**HDPE**	**PBT**	**PUR**	**PA**	**PVC**
Groups of chemicals	Oil	ML	ML		OK	ML	OK	ML
	Petrol /Kerosene	NR	ML		OK	ML	ML	NR
	Salt water	OK	OK		OK	OK	OK	OK
	Aggressive, watery acids	OK	OK		ML	ML	ML	ML
	Diluted, watery acids	OK	OK		OK	ML	OK	ML
	Aggressive, watery lye's	OK	OK		NR	NR	ML	ML
	Diluted, watery lye's	OK	OK		ML	OK	OK	ML
	Acids, less aggressive	OK	OK		NR	ML	ML	OK
	Acids, aggressive	OK	OK		NR	ML	OK	ML
	Soaps	OK	OK		OK	NR	OK	OK
	Solvents, thinners	NR	NR		NR	NR	NR	NR

OK: no problem, constant exposure causes no damage
ML: suitable for medium load, some effect after few days of constant exposure
NR: not recommended, immediate damage

Mechanical Properties

Mechanical properties describe its behavior under the action of loads on it. There are many mechanical properties of materials and some key properties related to cable sheath are given below. These properties are mostly of importance during installation.

Description	Polyolefins flame retardant	Polyethylene		Polybutylene terephthalate	Polyurethane	Polyamide	Polyvinyl-chloride
Abbreviation	**FRLSZH**	**LDPE**	**HDPE**	**PBT**	**PUR**	**PA**	**PVC**
Abrasion resistance	low	med	good	good	good	good	medium
Flexibility	high	med	low	low	high	low	high
Hardness	medium	med	hard	hard	soft	hard	soft

Combustion Properties

Flammability and/or combustion properties come into play any time a part or product will be used in a regulated space or application, such as aircraft, residential living units, public buildings, and so on.

Description	Polyolefins flame retardant	Polyethylene		Polybutylene terephthalate	Polyurethane	Polyamide	Polyvinyl-chloride
Abbreviation	**FRLSZH**	**LDPE**	**HDPE**	**PBT**	**PUR**	**PA**	**PVC**
Halogen free	yes	yes		yes	yes	yes	no
Flame retardant	yes	no		no	no	no	yes
Smoke emission	low	low		strong	strong	medium	strong
Corrosive gasses	low	no		no	low	low	high

CPR.

Construction Products Regulation.

Euro class B2ca and class Cca
Products with very high or high fire protection, no continuous flame propagation, limited fire development, and a limited heat release rate.

Euro class Dca
Products with medium fire protection, continuous flame propagation, moderate fire development, and a limited heat release rate.

Euro class Eca
Products with normal fire protection, exposure to a small flame may ignite the cable, low resistance to temperature increases.

Additional classification

Production/density of smoke
There are three classes for smoke production and density in cables:
- **s1** weak smoke production
- **s1a** **s1** plus transmission value according to EN 61034-2 ≥ 80 %
- **s1b** **s1** plus transmission value according to EN 61034-2 ≥ 60 % < 80 %
- **s2** moderate smoke production
- **s3** potentially strong smoke production

Euro classification (ca)	Classification criteria	Additional criteria	Assessing and examining the consistency of the performance system
A	**EN ISO 1716** Gross heat of combustion		**1+** **Verification documents:** Type testing Regular works audit Regular sampling of ongoing production
B1	**EN 50399** Heat release Flame propagation **EN 60332-1-2** Flame propagation	**Smoke production** (s1a, s1b, s2, s3) EN 50399 / EN 61034-2 **Acidity** (a1, a2, a3) EN 50267-2-3 **Flaming droplets** (d0, d1, d2) EN 50399	
B2			
C			
D			**3** **Verification documents:** Type testing
E	**EN 60332-1-2** Flame propagation		
F			**4** No verification documents

Acid production/corrosivity
There are three classifications of corrosivity:
- **a1** slightly corrosive fumes
- **a2** moderately corrosive fumes
- **a3** potentially highly corrosive fumes

Flaming droplets
There are three classes for the production of flaming droplets:
- **d0** no flaming droplets
- **d1** flaming droplets for a short time
- **d2** potentially long-lasting flaming droplets

Recommendations for the future use of EU fire protection classification

First and foremost, the CPR enables a comparison between the fire protection properties of different products. However, every member state is instructed and required to define the minimum necessary fire protection classification for the various applications themselves. The requirements placed on products can thus differ greatly across Europe for each building type. Therefore, the planner must check and comply with the local regulations. Various organizations and international associations have also declared their own recommendations, which sometimes go well beyond the legal minimum requirements.
In consideration of cost vs. benefit, R&M makes the following recommendation:

Euro classification	Additional classification			Fire protection level of the installation cables (Use recommendations from R&M)*
Flame propagation Heat production	Smoke production/ density	Acid production/ corrosivity	Flaming droplets	
Aca				NA
B1ca				NA
B2ca	s1	a1	d1	Very high (e.g. escape routes, tunnels, high-risk industries)
Cca	s1	a1	d1	High (e.g. hospitals, nursing homes, schools)
Dca	s2	a2	d1	Medium (e.g. public buildings, hotels, airports, industrial environments)
Eca				Normal (e.g. normal office buildings, residential premises)
Fca				Low (not recommended)

* The necessary fire protection classification for installation cables is prescribed by the relevant fire prevention authority.

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Walter Epp, Data Center Project Lead, CKW AG

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