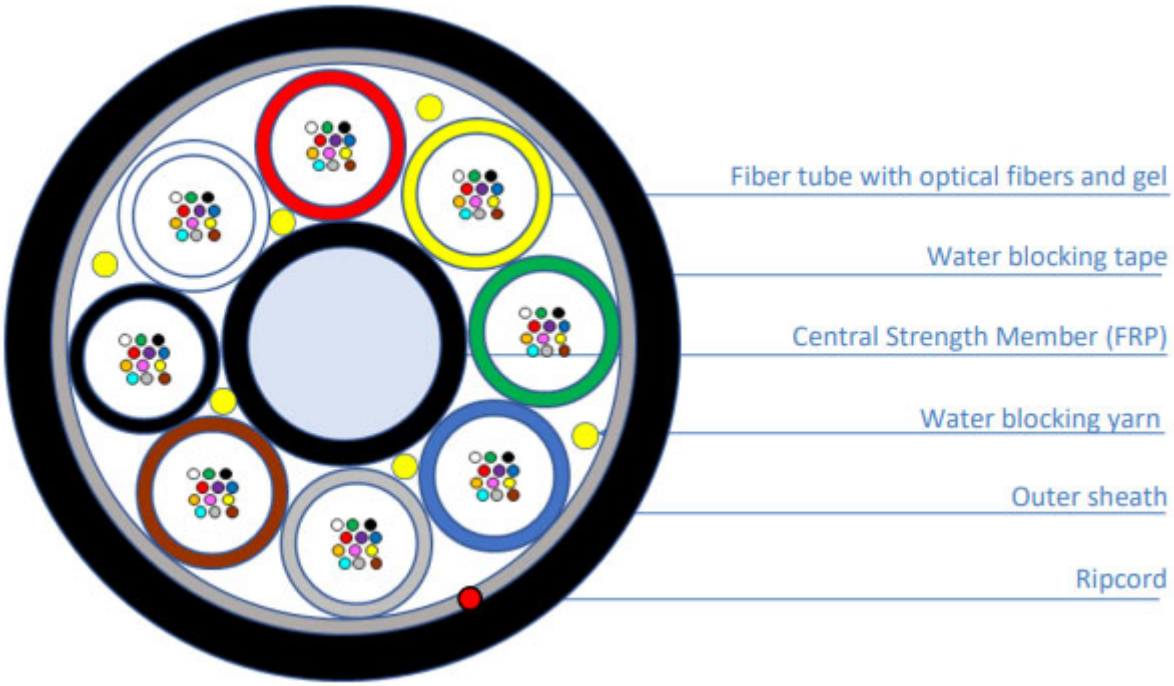
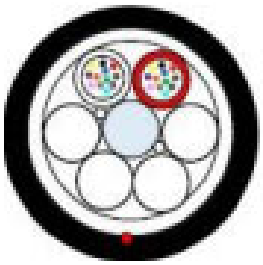
QXXE LITE, FIBER OPTICAL DUCT CABLE

FOR BLOWING/PULLING INSTALLATION IN CABLE DUCTS



1. APPLICATION/CONSTRUCTION

Identification	QXXE LITE- 12/24/48/96,144/192/288/432 G.652.D		
Application	Duct installation by the means of blowing/pulling		
Cross section (not to scale)	12/24/48/96/144 fibers 	288 fibers 	192/216/432 fibers 
Configuration	- Loose tubes with up to 24 optical fibers, filled with thixotropic compound. - Stranded loose tubes, SZ strand. Central strength member made of fiber reinforced plastic (FRP), or coated FRP. - Cable strand: Dry, with water blocking yarns and tape. - Outer sheath: HDPE, black, one ripcord under the sheath.		
Temperature Range	Storage and transport -40 to +70°C	Installation -20 to +60°C	Operation -40 to +70°C
Standards	IEC 60793-1, IEC 60793-2, IEC 60794-3-10		
CPR	Fca (EN 50575:2014+A1:2016)		

2. DIMENSIONS

Number of fibers		12	24	48	96	144	192	216	288	432
Loose tube x fibers	/	1x12	2x12	4x12	8x12	12x12	16x12	16x12	24x12	18x24
Loose tube/Dummies	/	1/5	2/4	4/2	8/0	12/0	6/0 10/2	16/0	9/0 15/0	6/0 12/0
Loose tube ø (±0,1)	mm	2.25								2.7
CSM (FRP)	mm	2.4			3.8 (3.0)	6.7 (3.0)	2.4		4.5 (3.5)	2.8
Outer sheath thickness	mm	1.0					1.2			
Outer diameter (±0,2)	mm	9.3			10.7	14.0	14.7		16.9	17.0
Weight/km	mm	72			92	148	136	137	206	200

Sizes and values without tolerances are nominal values, sheath thickness does not consider ripcord portion.

3. MECHANICAL PROPERTIES

Number of fibers		12	24	48	96	144	192	288	432
Max tensile load	N	2000							
Crush resistance/10 cm	N	2000							
Bending radius (Dynamic)	/	20 x OD							
Bending radius (Static)	/	12 x OD							
Loose tube bending radius	mm	50							

See point 6: Test Methods

4. MARKING

Fiber colors	1	2	3	4	5	6	7	8	9	10	11	12
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet	Aqua	Orange	Pink
	13	14	15	16	17	18	19	20	21	22	23	24
	White	Red	Yellow	Green	Blue	Grey	Brown	Natural	Violet	Aqua	Orange	Pink

Tube colors 12~144F	1	2	3	4	5	6	7	8	9	10	11	12
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet	Aqua	Orange	Pink

Tube colors 192/432F Inner layer	1	2	3	4	5	6
	White	Red	Yellow	Green	Blue	Grey

Tube colors 192/432F Outer layer	7	8	9	10	11	12	13	14	15	16	17	18
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet	Aqua	Orange	Pink

Tube colors 288F Inner layer	1	2	3	4	5	6	7	8	9			
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet			
Tube colors 288F Outer layer	10	11	12	13	14	15	16	17	18	19	20	21
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet	Aqua	Orange	Pink
	22	23	24									
	Aqua	Orange	Pink									

Remark:
13~24th fiber color: Same as 1~12 fiber with black ring. Except 20th fiber color is natural with black ring
192/432F cable: 7~16th tubes with black tracer, except 14th with white tracer.
192F cable has two dummies in outer layer.
288F cable: 10~21st tube with black tracer, except 17th tube with white tracer. 22~24th tube no tracer.

Outer sheath marking: Black, ink jet white print marking with 1-meter intervals as follows:

FIBERWORKS QXXE-LITE <n> G.652.D <batch ID> <meter marking>

<n>: Fiber qty.

5. OPTICAL FIBER

Standard	ITU-T G.652.D ZTT-ALF®		
Optical	Fiber attenuation, cabled	1310 nm: ≤0.36dB/km	1550 nm: ≤0.22dB/km
	Mode Field Diameter (MFD)	1310 nm: 9.2 ± 0.4μm	1550 nm: 10.4 ± 0.6μm
	Zero dispersion wavelength	1300~1324 nm	
	Zero dispersion slope	≤0.092 ps/nm²·km	
	Polarization mode dispersion (PMD)	≤0.2 ps/√km	
	Cut-off wavelength	≤1260 nm	
	Macro bending loss 100 turns ø50mm	1550 nm: ≤0.05 dB	1625 nm: ≤0.10 dB
Geometrical	Outer diameter (uncolored)	245 ± 10 μm	
	Cladding diameter	125 ± 1.0 μm	
	Core/clad concentricity error	≤0.6 μm	
	Cladding non-circularity	≤1.0 %	
Mechanical	Proof stress	≥0.69 Gpa	

6. TEST METHODS

Test	Conditions	Acceptance criteria
Tensile Strength IEC 60794-1-2 E1	Tensile load: see Point 3 Sample length: ≥ 50 m Test duration: 1 min	- Fiber strain ≤0.6% - No damage to outer jacket nor inner element
Crush resistance IEC 60794-1-2 E3	Crush: see Point 3 Test duration: 1 min Number of tests: 3	- Additional attenuation: ≤0,1dB after test - No damage to outer jacket nor inner element
Repeated bending IEC 60794-1-2 E6	Bending radius: 20x cable ø 25N, 35 cycles	- No obvious additional attenuation - No damage
Torsion IEC 60794-1-2 E7	Sample length: 2 m: Angles: ± 180° Cycles: 10, 40N	- Δα ≤0.1dB - No damage
Temperature cyclingIEC 60794-1-2 F1	Steps: -40°C~+70°C Duiration:12 hours Cycles: 2	- Δα ≤ 0.05 dB/km - Attenuation reversible - No damage
Water penetration IEC 60794-1-2 F5	Sample length: 3 m Duration: 24 h Water column height: 1 m	- No water leak through the open end
Filling compound flow IEC 60794-1-2-E14	Sample length: 0.2 m Duration: 24 h Temperature: 70°C	- No compound flow from the cable

7. ORDERING INFORMATION

Elnr.	Product code	Product	Fiber qty	Fiber type	Category (fiber)
1025416	K-QXEL-S-G2D-G12	QXXE LITE, 12x G.652.D	12	SM 9/125	OS2
1025417	K-QXEL-S-G2D-G24	QXXE LITE, 24x G.652.D	24	SM 9/125	OS2
1025418	K-QXEL-S-G2D-G48	QXXE LITE, 48x G.652.D	48	SM 9/125	OS2
1025419	K-QXEL-S-G2D-G96	QXXE LITE, 96x G.652.D	96	SM 9/125	OS2
1025420	K-QXEL-S-G2D-G144	QXXE LITE, 144x G.652.D	144	SM 9/125	OS2
1025421	K-QXEL-S-G2D-G192	QXXE LITE, 192x G.652.D	192	SM 9/125	OS2
	K-QXEL-S-G2D-G216	QXXE LITE, 216x G.652.D	216	SM 9/125	OS2

1025422	K-QXEL-S-G2D-G288	QXXE LITE, 288x G.652.D	288	SM 9/125	OS2
1025423	K-QXEL-S-G2D-G432	QXXE LITE, 432x G.652.D	432	SM 9/125	OS2