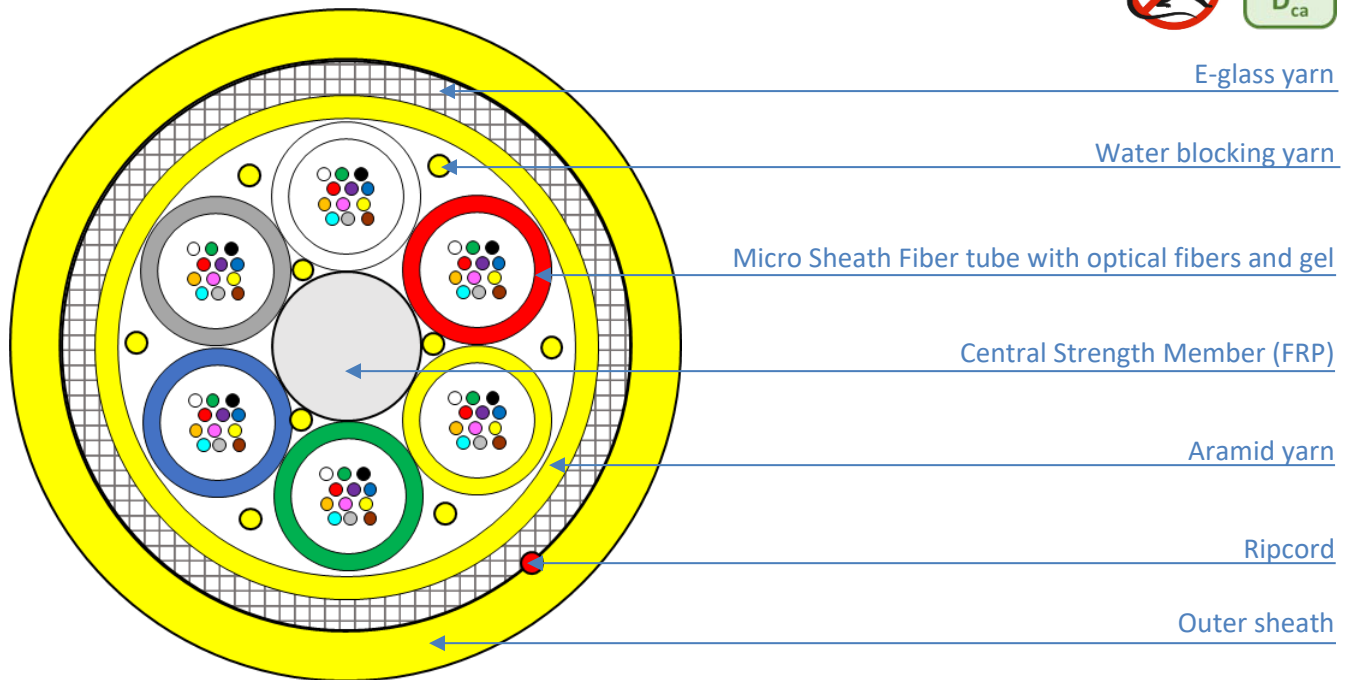
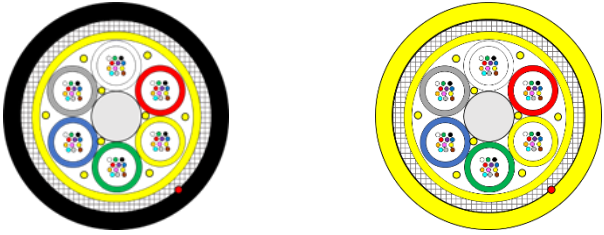


QXAI-I/O (QXXI) MICRO SHEATH CABLE

INDOOR & OUTDOOR LOOSE TUBE CABLE (OUTDOOR IN DUCTS)



1. APPLICATION/CONSTRUCTION

Identification	QXAI-I/O (QXXI) MICRO SHEATH 24/48/96/144 G.657A1+G.652.D (MFD 9.2μm)		
Application	Combined indoor and outdoor installations (outdoor in ducts) Somewhat rodent resistant with the use of E-glass yarn		
			
Configuration	-Micro sheath fiber loose tubes (micro module) with 12 optical fibers and gel -FRP or coated (LSZH) FRP strength member -Stranded loose tube and fillers (if necessary), SZ stranding -Aramid yarns and water blocking yarns -E-glass yarn for rodent resistance -Outer sheath: LSZH, black (UV resistant) or yellow, ripcord under the sheath		
Temperature range	Storage and Transport -40 to +70°C	Installation -20 to +50°C	Operation -40 to +70°C
Standards	IEC 60793-1, IEC 60793-2, IEC 60794-2		
CPR	Dca s2d2a1 (EN 50575:2014+A1:2016)		
DoP	231158-01/01		

2. DIMENSIONS

Number of fibers	/	12	24	48	96	144
Loose tube x fibers	pcs	1 x 12	2 x 12	4 x 12	8 x 12	12 x 12
Loose tube/dummies	pcs	1/5	2/4	4/2	8/0	12/0
CSM (FRP) diameter	mm	1.0 ±0.1			1.6 ±0.1	
CSM (FRP) coating diameter	mm	1.55 ±0.1			2.5 ±0.1	4.5 ±0.1
Loose tube diameter	mm	1,55 ±0.1				
Loose tube thickness	mm	0.15 ~ 0.20				
Outer sheath thickness	mm	1,1 ±0.1			1.2 ±0.1	
Cable outer diameter	mm	7.8 ±5			9.0 ±5	11.0 ±5
Weight/km	kg	62.5 ±5			84 ±7	126 ±10

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

MECHANICAL PROPERTIES

Number of fibers	/	12	24	48	96	144
Max tensile load (Installation)	N	1600				
Max tensile load (Permanent)	N	700				
Crush resistance / 10 cm	N	1500				
Bending radius (Dynamic)	/	20 x cable ø				
Bending radius (Static)	/	10 x cable ø				

See point 6: Test Methods

3. FIRE PROPERTIES

Flame retardant (EN/IEC 60332-3-24)	Yes
Halogen free (IEC 60754-2)	Yes
Low smoke (IEC 61034-2)	Yes
Reaction to fire (EN 13501-6)	Dca
Smoke development (EN 13501-6)	s2
Flaming droplets (EN 13501-6)	d2
Acidity (EN 13501-6)	a1

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
Tube 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

Cable with yellow outer sheath: Black ink jet print marking with 1-meter intervals as follows:

Fiberworks QXAI MS <n> G.652.D+G.657.A1 CPR: Dca s2d2a1 <batch ID> <meter marking>

<n>: Fiber qty.

Cable with black outer sheath: White ink jet print marking with 1-meter intervals as follows

Fiberworks QXAI MS <n> G.652.D+G.657.A1 CPR: Dca s2d2a1 <batch ID> <meter marking>

<n>: Fiber qty.

5. OPTICAL FIBER CHARACTERISTICA

Standard	ITU-T G.657.A1		
Optical	Fiber attenuation, cabled	1310 nm: ≤ 0.36 dB/km	1383 nm: ≤ 0.26 dB/km
		1550 nm: ≤ 0.22 dB/km	1625 nm: ≤ 0.24 dB/km
	Mode field diameter (MFD)	1310 nm: 9.2 ± 0.4 μ m	1550 nm: 10.4 ± 0.6 μ m
	Zero dispersion wavelength	1300 ~ 1324 nm	
	Zero dispersion slope	≤ 0.092 ps/nm ² · km	
	Polarization mode dispersion (PMD)	≤ 0.2 ps/√km	
	Cut-off wavelength	≤ 1260 nm	
	Macro bending loss	1550 nm	1625 nm
	10 turns \varnothing 30mm	≤ 0.03 dB	≤ 0.1 dB
	1 turn \varnothing 20mm	≤ 0.1 dB	≤ 0.2 dB
1 turn \varnothing 15mm	≤ 0.5 dB	≤ 1.0 dB	
Geometric	Outer diameter (uncolored)	245 ± 10 μ m	
	Cladding diameter	125 ± 1.0 μ m	
	Core/clad concentricity error	≤ 0.6 μ m	
	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 $\leq 0.6\%$ - $\Delta\alpha$ reversible - No damage to outer jacket and inner elements
Crush resistance IEC 60794-1-2 E3	Crush: see Point 3 Test duration: 5 min Number of tests: 3	- Additional attenuation: ≤ 0.1 dB after test - $\Delta\alpha$ reversible - No damage to outer jacket and inner elements
Impact IEC 60794-1-2 E4	Impact energy: 1 J R = 300 mm Impact points/number: 3/1	- No obvious additional attenuation - No damage to outer jacket and inner elements
Repeated bending IEC 60794-1-2-11A	Bending radius: 15x cable \varnothing Turn number: 4 Cycles:3	- No obvious additional attenuation - No damage to outer jacket and inner elements

Torsion IEC 60794-1-2 E7	Sample length: 2 m Angles: $\pm 180^\circ$ Cycles: 10	- No obvious additional attenuation - No damage to outer jacket and inner elements
Temperature cycling IEC 60794-1-2 F1	Steps: $-30^\circ\text{C}\sim+60^\circ\text{C}$ Cycles: 2 Test duration: 12 hours	- $\Delta\alpha \leq 0.15$ dB/km - $\Delta\alpha$ reversible - No damage
Water penetration IEC 60794-1-2 F5	Sample length: 3 m Water column height: 1 m Test duration: 24 hours	- No water leak through the open end
Filling compound flow IEC 60794-1-2-E14	Sample length: 0,2 m Temperature: 60°C Test duration: 24 hours	- No compound flow from the cable

All optical measurements performed @ 1550 nm

7. LOGISTICS

Cable Type	/	0,5 km drum -1% / +3%	2 km drum -1% / +3%
G12	Drum type Weight	Plywood 35kg	Wood 135kg
G24		Plywood 35kg	Wood 135kg
G48		Plywood 35kg	Wood 135g
G96		Plywood 49kg	Wood 185kg
G144		Plywood 70kg	Wood 260kg

9. ORDERING INFORMATION

Elnr.	Product code	Product	Fiber Qty.	Fiber type	Category (fiber)
1025486	K-LTMS-Y-7A1-G12-2K	G12 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 2km trommel	12	SM 9/125	OS2
1025487	K-LTMS-Y-7A1-G24-2K	G24 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 2 km trommel	24	SM 9/125	OS2
1025488	K-LTMS-Y-7A1-G48-2K	G48 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 2 km trommel	48	SM 9/125	OS2
1025489	K-LTMS-Y-7A1-G96-2K	G96 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 2 km trommel	96	SM 9/125	OS2
1025490	K-LTMS-Y-7A1-G144-2K	G144 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 2 km trommel	144	SM 9/125	OS2

	K-LTMS-B-7A1-G12-2K	G12 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 2 km trommel	12	SM 9/125	OS2
	K-LTMS-B-7A1-G24-2K	G24 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 2km trommel	24	SM 9/125	OS2
	K-LTMS-B-7A1-G48-2K	G48 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 2 km trommel	48	SM 9/125	OS2
	K-LTMS-B-7A1-G96-2K	G96 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 2 km trommel	96	SM 9/125	OS2
	K-LTMS-B-7A1-G144-2K	G144 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 2 km trommel	144	SM 9/125	OS2
	K-LTMS-Y-7A1-G12-5H	G12 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 500 trommel	12	SM 9/125	OS2
	K-LTMS-Y-7A1-G24-5H	G24 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 500 m trommel	24	SM 9/125	OS2
	K-LTMS-Y-7A1-G48-5H	G48 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 500 m trommel	48	SM 9/125	OS2
	K-LTMS-Y-7A1-G96-5H	G96 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 500 m trommel	96	SM 9/125	OS2
	K-LTMS-Y-7A1-G144-5H	G144 QXAI MICRO SHEATH, Yellow OS2 G.652.D+G.657.A1, 500 m trommel	144	SM 9/125	OS2
	K-LTMS-B-7A1-G12-5H	G12 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 500 m trommel	12	SM 9/125	OS2
	K-LTMS-B-7A1-G24-5H	G24 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 500 m trommel	24	SM 9/125	OS2
	K-LTMS-B-7A1-G48-5H	G48 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 500 m trommel	48	SM 9/125	OS2
	K-LTMS-B-7A1-G96-5H	G96 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 500 m trommel	96	SM 9/125	OS2
	K-LTMS-B-7A1-G144-5H	G144 QXAI MICRO SHEATH, Black OS2 G.652.D+G.657.A1, 500 m trommel	144	SM 9/125	OS2

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