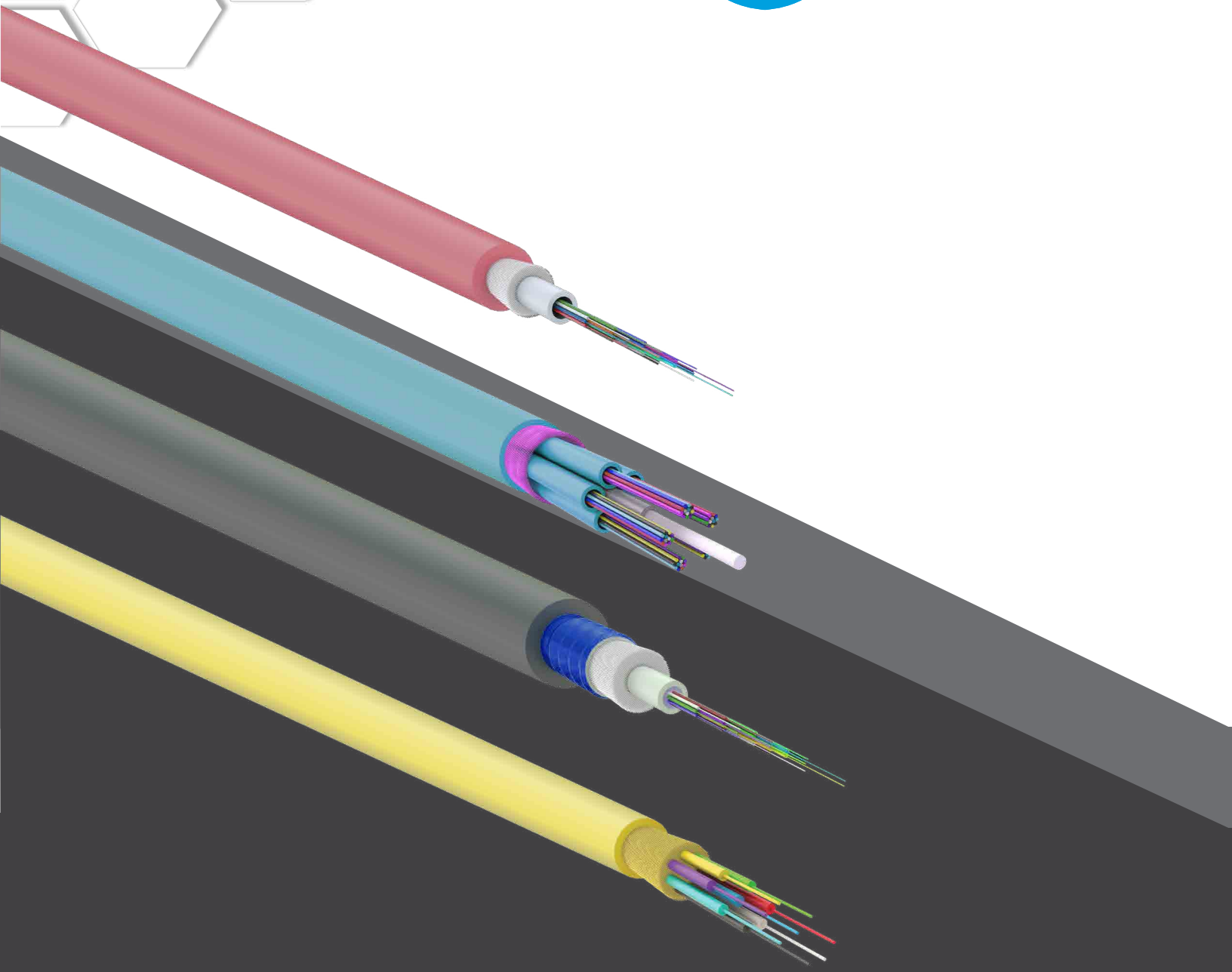
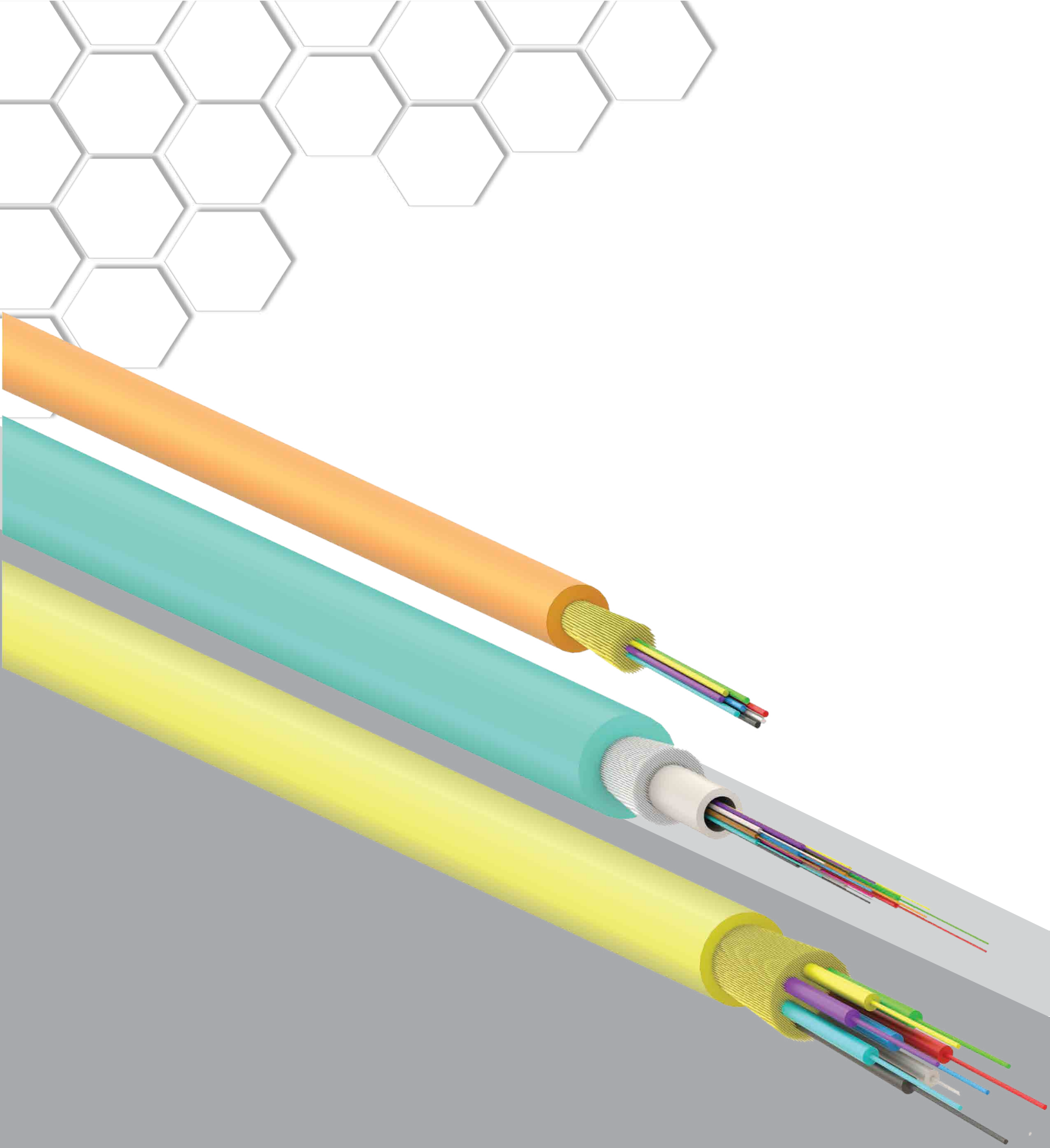




**XTND**  
CONNECT



# FIBER OPTIC CABLES



INDOOR FIBER OPTIC CABLES

# FIBER OPTIC CABLES

## SIMPLEX FIBER CABLE

Design Type I-V (ZN) H Indoor

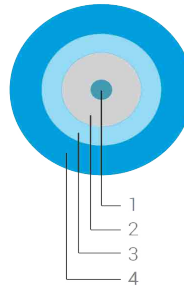
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0



### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid yarn
4. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Marking	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM1	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Yellow	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-
	@1550 nm	≤ 0.30	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	-	1000 meters
	@1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	-	300 meters
	@1300 nm	-	-	-	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Semi Tight Diameter	-	All Types	0.9	mm	IEC 60811-203
Approx. Cable Diameter/ Approx. Cable Weight	-	1.8mm 2.0mm 2.7mm	3.5 4.1 7.4	kg/km	IEC 60811-203
Max. Tensile Strength	During installation In service	1.8 / 2.0	200 100	N	IEC 60794-1-2 E1
	During installation In service	2.7	400 200	N	IEC 60794-1-2 E1
Min. Bending Radius	During installation In service	1.8 / 2.0	50 25	N	IEC 60794-1-2 E11
	During installation In service	2.7	50 25	N	IEC 60794-1-2 E11
Crush Resistance	Short Term Long Term	1.8 / 2.0	3000 1000	N/dm	IEC 60794-1-2 E3
	Short Term Long Term	2.7	4000 1000	N/dm	IEC 60794-1-2 E3
Impact Resistance	Wp $\leq$ 0.5J Wp $\leq$ 1.0J	1.8 / 2.0 2.7	3 20	impact	IEC 60794-1-2 E4
Repeated Bending	r=25mm	All Types	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation		-10 to $\leq$ 50		
	In Service	All Types	-25 to $\leq$ 70	$^{\circ}$ C	IEC 60794-1-22 F1
	In Storage		-40 to $\leq$ 70		

## Combustion Properties

Property	Test Conditions	Type	Value	Unit	Result	Method
Fire Load	-	1.8 2.0 2.7	0.07 0.08 0.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	All Types	-	-	Passed	IEC 60794-1-22 F1
Smoke Density		All Types	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Diameter:	2.4mm: 24	Buffer Type:	S- Tight 900 $\mu$ m: S9H
Fiber Count:	1 Fiber: 01	Fiber Type:	SM.G.657 B3: B3	Color:	Ivory: IV B3
Cable Type:	Simplex: SX	Sheath Mat.	LSZH: H		

# FIBER OPTIC CABLES

## Drop Fiber Cable 2.4 mm

Design Type I-V (ZN) H Indoor 2.4 mm

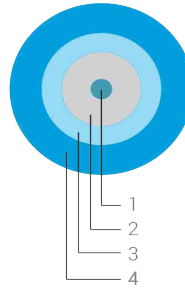
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0



### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 $\mu$ )
2. Semi-Tight Buffer Tube	900 $\mu$ LSZH
3. Strength Member	Aramid yarn
4. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type		ITU-T G.657 B3
Jacket Color	-	Ivory
Mode Field	$\varnothing$ 1310 nm	8.8 $\pm$ 0.4
Diameter ( $\mu$ m)	$\varnothing$ 1550 nm	9.8 $\pm$ 0.5
Cladding Diameter ( $\mu$ m)	-	125 $\pm$ 0.7
Primary Coating Diameter ( $\mu$ m)	-	242 $\pm$ 5
Attenuation (max. in cable) (db/km)	$\varnothing$ 1310 nm $\varnothing$ 1550 nm	$\leq$ 0.35 $\leq$ 0.21
Attenuation with Bending dB/km	1 turn on 10 mm radius mandrel	$\varnothing$ 1550 nm $\leq$ 0.05 $\varnothing$ 1625 nm $\leq$ 0.1
	1 turn on 7.5 mm radius mandrel	$\varnothing$ 1550 nm $\leq$ 0.08 $\varnothing$ 1625 nm $\leq$ 0.15
	1 turn on 5.0 mm radius mandrel	$\varnothing$ 1550 nm $\leq$ 0.15
		$\varnothing$ 1625 nm $\leq$ 0.25

## Mechanical and Environmental

Test	Test Conditions	Value	Unit	Method
Tube Diameter	-	0.9	mm	IEC 60811-203
Cable Diameter	-	2.4 ±0.1	mm	IEC 60811-203
Approx. Weight	-	6.0 ±0.5	kg/km	-
Max. Tensile Strength	During Installation In Service	400 200	N	IEC 60794-1-2 E1
Min. Bending Radius	During Installation In Service	5.0 7.5	N	IEC 60794-1-2 E11
Crush Resistance	Short Term Long Term	400 200	N/dm	IEC 60794-1-2 E3
Impact Resistance	Wp=1.0 J	3	Impact	IEC 60794-1-2 E4
Repeated Bending	r=25mm	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation In Service In Storage	-10 to +50 -25 to +70 -40 to +70	°C	IEC 60794-1-22 F12

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.17	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Diameter:	2.4mm: 24	Buffer Type:	S- Tight 900µm: S9H
Fiber Count:	1 Fiber: 01	Fiber Type:	SM.G.657 B3: B3		Tight 900 µm: T9H
Cable Type:	Simplex: SX	Sheath Mat.	LSZH: H	Color:	Ivory: IV B3

# FIBER OPTIC CABLES

## Drop Fiber Cable 2.7 mm

Design Type I-V (ZN) H Indoor 2.7 mm

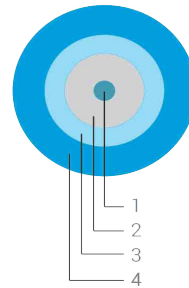
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0



### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid yarn
4. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type		ITU-T G.657 A2	ITU-T G.657 B3	
Jacket Color	-	Ivory	Ivory	
Mode Field	ø1310 nm	8.8 ±0.4	50 ±2.5	
Diameter (μm)	ø1550 nm	9.8 ±0.5	125 ±5.0	
Cladding Diameter (μm)	-	125 ±0.7	125 ±0.7	
Primary Coating Diameter (μm)	-	242 ±7	242 ±5	
Attenuation (max. in cable) (db/km)	ø1310 nm	≤ 0.35	≤ 0.35	
	ø1550 nm	≤ 0.21	≤ 0.21	
Attenuation with Bending dB/km	1 turn on 10 mm radius mandrel	ø1550 nm ≤ 0.1 ø1625 nm ≤ 0.2	≤ 0.05 ≤ 0.1	
	1 turn on 7.5 mm radius mandrel	ø1550 nm ≤ 0.5 ø1625 nm ≤ 1.0	≤ 0.08 ≤ 0.15	
	1 turn on 5.0 mm radius mandrel	ø1550 nm - ø1625 nm -	- -	≤ 0.15 ≤ 0.25

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Tube Diameter	-	0.9	mm	IEC 60811-203
Cable Diameter	-	2.7	mm	IEC 60811-203
Approx. Weight	-	7.0	kg/km	-
Max. Tensile Strength	During Installation In Service	400 200	N	IEC 60794-1-2 E1
Min. Bending Radius	During Installation In Service	7.5 10	mm	IEC 60794-1-2 E11
Crush Resistance	Short Term Long Term	4000 1000	N/dm	IEC 60794-1-2 E3
Impact Resistance	Wp=1.0 J	20	impacttt	IEC 60794-1-2 E4
Repeated Bending	r=25mm	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation In Service In Storage	-10 to +50 -25 to +70 -40 to +70	°C	IEC 60794-1-22 F12

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.17	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Diameter:	2.7mm: 27	Buffer Type:	S- Tight 900µm: S9H
Fiber Count:	1 Fiber: 01	Fiber Type:	SM G.657 A2: A2 SM G.657 B3: B3		Tight 900 µm: T9H
Cable Type:	Simplex: SX	Sheath Mat.	LSZH: H	Color:	Ivory: IV A2



# FIBER OPTIC CABLES

## Duplex Fig8 Fiber Cable 1x2

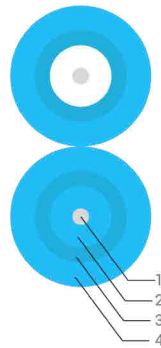
Design Type I-V(ZN)H Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid yarn
4. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type		SM	OM1	OM2	OM3	OM4
Jacket Color		Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)		9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)		125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)		245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-	-
	@1550 nm	≤ 0.30	-	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km	3500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	-	1000 meters	1040 meters
	@1300 nm	-	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	-	300 meters	550 meters
	@1300 nm	-	-	-	300 meters	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Approx. Cable Diameter		1.8x3.7 mm	3.5		
Approx. Cable Weight	-	2.0x4.1mm	4.1 7.4	kg/km	IEC 60811-203
Max. Tensile Strength	During installation	All Types	400	N	IEC 60794-1-2 E1
	In service		200		
Min. Bending Radius	During installation	All Types	50	mm	IEC 60794-1-2 E11
	In service		25		
Crush Resistance	Short Term	All Types	4000	N/dm	IEC 60794-1-2 E3
	Long Term		1000		
Impact Resistance	Wp=0.74J	All Types	40	impact	IEC 60794-1-2 E4
	Wp=1J		20		
Repeated Bending	r=25mm w=0.5 kg	All Types	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation	All Types	-10 to +50	°C	IEC 60794-1-22 F1
	In Service		-25 to +70		
	In Storage		-40 to +70		

## Combustion Properties

Property	Test Conditions	Type	Value	Unit	Result	Method
Fire Load	-	1.8x3.7	0.13	Mj/m	-	-
		2.0x4.1	0.22			
		2.7x5.5	0.34			
Fire Propagation	On a vertical single cable	-	-	-	Passed	IEC 60332-1-2
Smoke Density	Jacket material	All Types	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Duplex: ZX
Fiber Count:	2 Fiber: O2	Buffer Type:	S- Tight 900µm: S9H, Tight 900 µm: T9H
Diameter:	1.8x3.7 mm: 1837, 2.0x4.1 mm: 2041	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, 51 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Duplex FigO Fiber Cable 1x2

Design Type I-V(ZN)H Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid yarn
4. Inner Jacket	LSZH
5. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	∅1310 nm	≤ 0.40	-	-	-
	∅1550 nm	≤ 0.30	-	-	-
	∅850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	∅1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	∅850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	∅1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	∅850 nm	-	-	-	1000 meters
	∅1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	∅850 nm	-	-	-	300 meters
	∅1300 nm	-	-	-	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Sub-Unit Diameter	-	2.0	mm	IEC 60811-203
Cable Diameter	-	3.1x5.2	mm	IEC 60811-203
Approx. Weight	-	1.8	kg/km	-
Max. Tensile Strength	During installation	400	N	IEC 60794-1-2 E1
	In service	200		
Min. Bending Radius	During installation	50	mm	IEC 60794-1-2 E11
	In service	25		
Crush Resistance	Short Term	7000	N/dm	IEC 60794-1-2 E3
	Long Term	5000		
Impact Resistance	Wp=1J	20	impact	IEC 60794-1-2 E4
Repeated Bending	r=25mm	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation	-10 to +50	°C	IEC 60794-1-22 F12
	In Service	-25 to +70		
	In Storage	-25 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.33	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Duplex Fig O: DX
Fiber Count:	2 Fiber: O2	Buffer Type:	S- Tight 900µm: S9H, Tight 900 µm: T9H
Diameter:	3.1x5.2 mm: 3152	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OR M1, Orange: OR M2, Aqua: AQ M3, Violet: VI M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Duplex Round Fiber Cable 1x2

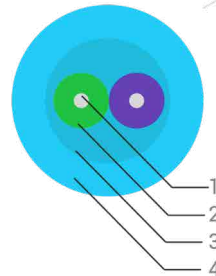
Design Type I-V(ZN)H Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 $\mu$ )
2. Semi-Tight Buffer Tube	900 $\mu$ LSZH
3. Strength Member	Aramid yarn
4. Inner Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter ( $\mu$ m)	9.0 $\pm$ 0.5	62.5 $\pm$ 2.5	50 $\pm$ 2.5	50 $\pm$ 2.5	50 $\pm$ 2.5
Cladding Diameter ( $\mu$ m)	125 $\pm$ 5.0	125 $\pm$ 5.0	125 $\pm$ 5.0	125 $\pm$ 5.0	125 $\pm$ 5.0
Primary Coating Diameter ( $\mu$ m)	245 $\pm$ 10	245 $\pm$ 10	245 $\pm$ 10	245 $\pm$ 10	245 $\pm$ 10
Attenuation (max. in cable) (dB/km)	@1310 nm	$\leq$ 0.40	-	-	-
	@1550 nm	$\leq$ 0.30	-	-	-
	@850 nm	-	$\leq$ 3.4	$\leq$ 3.0	$\leq$ 3.0
	@1300 nm	-	$\leq$ 1.0	$\leq$ 1.0	$\leq$ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	1000 meters	1040 meters
	@1300 nm	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	300 meters	550 meters
	@1300 nm	-	-	300 meters	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Tight Diameter	-	0.6	mm	IEC 60811-203
Cable Diameter	-	2.1	mm	IEC 60811-203
Approx. Weight	-	4.3	kg/km	-
Max. Tensile Strength	During installation	300	N	IEC 60794-1-2 E1
	In service	150		
Min. Bending Radius	During installation	10	mm	IEC 60794-1-2 E11
	In service	15		
Crush Resistance	Short Term	5000	N/dm	IEC 60794-1-2 E3
	Long Term	900		
Impact Resistance	Wp=0.5 J	3	impact	IEC 60794-1-2 E4
Repeated Bending	r=25mm	5000	cycles	IEC 60794-1-2 E6
Temperature Range	During installation	-10 to +50	°C	IEC 60794-1-22 F12
	In Service	-25 to +70		
	In Storage	-25 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.11	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Round Duplex: RD
Fiber Count:	2 Fiber: O2	Buffer Type:	Tight 600µm: T6H
Diameter:	2.1 mm: 21	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Distribution Cable up to 24 Fibers

Design Type I-(ZN)H Indoor 3.0 mm

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	∅1310 nm	≤ 0.40	-	-	-
	∅1550 nm	≤ 0.30	-	-	-
	∅850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	∅1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	∅850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	∅1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	∅850 nm	-	-	-	1000 meters
	∅1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	∅850 nm	-	-	-	300 meters
	∅1300 nm	-	-	-	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Jacket Diameter	-	All Types	3.0	mm	-
Approx. Weight	-	All Types	8.0	kg/km	-
Max. Tensile Strength	During installation	All Types	200	N	IEC 60794-1-2 E1
	In service		100		
Min. Bending Radius	During installation	All Types	20	mm	IEC 60794-1-2 E11
	In service		10		
Crush Resistance	Short Term	All Types	1000	N/dm	IEC 60794-1-2 E3
	Long Term		100		
Impact Resistance	Wp=0.5 J	All Types	50	impact	IEC 60794-1-2 E4
Temperature Range	During installation	All Types	-10 to +50	°C	IEC 60794-1-22 F12
	In Service		-10 to +60		
	In Storage		-20 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.17	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Multi-Fiber: MF
Fiber Count:	4 Fiber: O4, 8 Fiber: O8, 12 Fiber: 12, 24 Fiber: 24	Buffer Type:	Tight 600µm: T6H
Diameter:	3.0 mm: 30	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2 : A2, SM G.657 B3 : B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		



# FIBER OPTIC CABLES

## Mini Breakout Cable up to 24 Fibers

Design Type IT-V(ZN)H Indoor

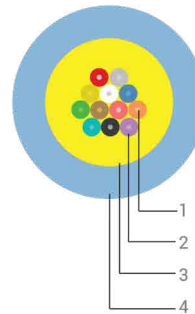
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements



### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid
4. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	①310 nm	≤ 0.40	-	-	-
	①550 nm	≤ 0.30	-	-	-
	①850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	①300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	①850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	①300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	①850 nm	-	-	1000 meters	1040 meters
	①300 nm	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	①850 nm	-	-	300 meters	550 meters
	①300 nm	-	-	300 meters	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Tight Diameter	-	All Types	0.9	mm	IEC 60811-203
Approx. Cable Diameter - Weight	-	4 Fibers 6 Fibers 8 Fibers 12 Fibers 24 Fibers	4.6 - 16 5.2 - 20 5.8 - 31 6.5 - 42 8.0 - 55	mm - kg/km	IEC 60811-203
Max. Tensile Strength	During installation	All Types	800	N	IEC 60794-1-2 E1
	In service		500		
Min. Bending Radius	During installation	All Types	15xD	mm	IEC 60794-1-2 E11
	In service		10xD		
Crush Resistance	Short Term	All Types	4000	N/dm	IEC 60794-1-2 E3
	Long Term		1500		
Impact Resistance	Wp=2.21 J	All Types	100	Impact	IEC 60794-1-2 E4
Repeated Bending	r=40mm, weight=1kg	4 Fibers	1000	Cycles	IEC 60794-1-2 E3
	r=50mm, weight=1kg	6-24 Fibers	2000		
Temperature Range	During installation	All Types	-10 to +50	°C	IEC 60794-1-22 F12
	In Service		-20 to +70		
	In Storage		-25 to +70		

## Combustion Properties

Property	Test Conditions	Type	Value	Unit	Result	Method
Fire Load	-	4 FO	0.4	-	mJ/M	-
		6 FO	0.7			
		8 FO	0.9			
		12 FO	1.1			
		24 FO	1.7			
Fire Propagation	On a vertical single cable	-	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Riser: RI
Fiber Count:	4 Fiber: O4, 6 Fiber: O6 8, Fiber: O8, 12 Fiber: 12, 24 Fiber: 24	Buffer Type:	S-Tight 900µm:S9H, Tight 900µm:T9H
Diameter:	4.6 mm: 46, 5.2 mm: 52, 5.8 mm: 58, 6.5 mm: 65, 8.0 mm: 80	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Breakout Cable up to 24 Fibers

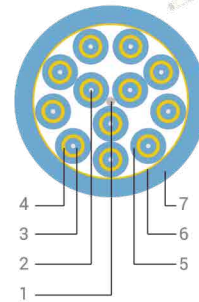
Design Type IT-V(ZN)H(ZN)H Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Central Strength Member	FRP
2. Fiber	SM or MM (250 μ)
3. Semi Tight Buffer Tube	900μ LSZH
4. Strength Member	Swellable Aramid Yarn
5. Inner Jacket	LSZH
6. Strength Member	Swellable Aramid Yarn
7. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	①310 nm	≤ 0.40	-	-	-
	①550 nm	≤ 0.30	-	-	-
	①850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	①300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	①850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	①300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	①850 nm	-	-	-	1000 meters
	①300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	①850 nm	-	-	-	300 meters
	①300 nm	-	-	-	300 meters
					1040 meters
					600 meters
					550 meters
					300 meters

# FIBER OPTIC CABLES



## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Sub- Unit Diameter	-	All Types	2.0	mm	-
Approx. Cable Diameter - Weight	-	4F 6F 8F 12F 24F	7.2 - 46 7.2 - 48 8.5 - 70 10.7 - 105 14.2 - 195	mm - kg/km	-
Max Tensile Strength	During Installation / In Service	4F 6F 8F 12F 24F	1300/600 1300/600 1800/1000 2000/1000 3000/1500	N	IEC 60794-1-2 E1
Min. Bending Radius	During installation In service	All Types	15xD 10xD	mm	IEC 60794-1-2 E11
Crush Resistance	Short Term Long Term	All Types	7500 2000	N/dm	IEC 60794-1-2 E3
Impact Resistance	Wp=2.21 J	All Types	50	Impact	IEC 60794-1-2 E4
Water Penetration	L=1m, 24 h, p<1m		Passed		IEC 60794-1-2 F5A
Temperature Range	During Installation In Service In Storage	All Types	During Installation In Service In Storage	°C	IEC 60794-1-22 F12

## Combustion Properties

Property	Test Conditions	Type	Result	Method
Euro Class CPR Level	-	All Types	B2ca, s1a, d0, a1	IEC 61034-2
Fire Propagation	On a vertical single cable	All Types	Passed	IEC 60332-1-2
Smoke Density	-	All Types	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Breakout 2mm: B20
Fiber Count:	2 Fiber: O2, 4 Fiber: O4, 6 Fiber: O6, 12 Fiber: 12, 24 Fiber: 24	Buffer Type:	S-Tight 900µm:S9H, Tight 900µm:T9H
Diameter:	7.2 mm: 72, 8.5 mm: 85, 10.7 mm: 107, 14.2 mm: 142	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Multi Dry Loose Tube Cable up to 144 Fibers

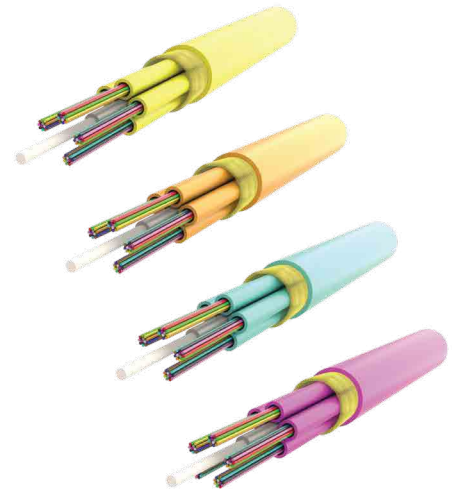
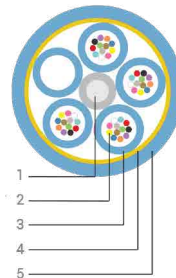
Design Type IT-BQ(ZN)H Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Central Strength Member	FRP
2. Fiber	SM or MM (250 μ)
3. Loose Tube	LSZH
4. Strength Member	Aramid Yarn
5. Outer Jacket	LSZH



### SHEATH MARKING

Print Color/Method: Black / Ink-Jet (length marking 1 m intervals)

Cable Printing: Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	①310 nm	≤ 0.40	-	-	-
	①550 nm	≤ 0.30	-	-	-
	①850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	①300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	①850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	①300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	①850 nm	-	-	-	1000 meters
	①300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	①850 nm	-	-	-	300 meters
	①300 nm	-	-	-	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Tube Diameter	-	4x12-6x12	2.0	mm	-
		6x24	3.0		
Approx. Cable Diameter - Weight	-	4 x 12	6.8 - 38.5	mm - kg/km	-
		6 x 12	7.3 - 45.0		
		6 x 24	8.9 - 67.0		
Max Tensile Strength	During Installation / In Service	4 x 12	1000/500	N	IEC 60794-1-2 E1
		6 x 12	1200/800		
		6 x 24	1200/800		
Min. Bending Radius	During installation	All Types	15xD	mm	IEC 60794-1-2 E11
	In service		10xD		
Crush Resistance	Short term	All Types	5000	N/dm	IEC 60794-1-2 E3
	Long term		1000		
Impact Resistance	Wp=2.21 J	All Types	50	Impact	IEC 60794-1-2 E4
Temperature Range	During Installation	-	-10 to $\leq$ 50	°C	IEC 60794-1-22 F12
	In Service		-10 to $\leq$ 60		
	In Storage		-20 to $\leq$ 70		

## Combustion Properties

Property	Test Conditions	Type	Result	Method
Euro Class CPR Level	-	All Types	B2ca, s1a, d0, a1	-
Fire Propagation	On a vertical single cable	All Types	Passed	IEC 60332-1-2
Smoke Density	-	All Types	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Multi Dry Loose Tube: MDL
Fiber Count:	248 Fiber: 48, 72 Fiber: 72, 144 Fiber: 144	Tube Type:	Distribution: DI
Diameter:	6.8 mm: 68, 7.3 mm: 73, 8.9 mm: 89	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Multi-Fiber Breakout Cable up to 144 Fibers

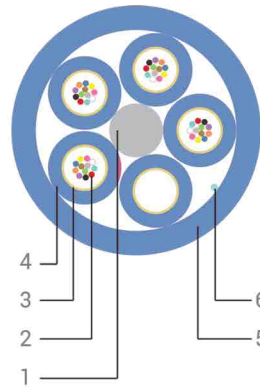
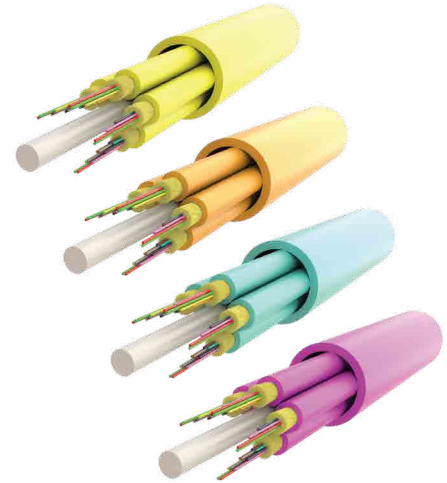
Design Type IT-(ZN)HH Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Central Strength Member	FRP
2. Fiber	SM or MM (250 μ)
3. Strength Member	Swellable Aramid Yarn
4. Inner Jacket	LSZH UV Resistant
5. Outer Jacket	LSZH - FR, UV Resistant
6. Rip Cord	Polyester



### SHEATH MARKING

Print Color/Method: Black / Ink-Jet (length marking 1 m intervals)

Cable Printing: Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	①1310 nm	≤ 0.40	-	-	-
	①1550 nm	≤ 0.30	-	-	-
	①850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	①1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	①850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	①1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	①850 nm	-	-	1000 meters	1040 meters
	①1300 nm	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	①850 nm	-	-	300 meters	550 meters
	①1300 nm	-	-	300 meters	300 meters

# FIBER OPTIC CABLES



## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Tube Diameter	-	All Types	3.0	mm	-
Approx. Cable Diameter - Weight	-	2x12 4x12 6x12 8x12 12x12	10.2 - 93.0 10.2 - 95.0 11.2 - 115.0 13.1 - 136.0 17.0 - 275.0	mm - kg/km	-
Max Tensile Strength	During Installation	All Types	2000	N	IEC 60794-1-2 E1
	In Service		1500		
Max. Bending Radius	During Installation	2x12 / 4x12 6x12 8x12 12x12	100/150 115/170 130/195 170/255	mm	IEC 60794-1-2 E11
	In Service				
Crush Resistance	Short term	All Types	2200	N/dm	IEC 60794-1-2 E3
	Long term		1000		
Impact Resistance	W <sub>p</sub> =1.0 J	All Types	20	impact	IEC 60794-1-2 E4
Temperature Range	During Installation	-	-10 to +50	°C	IEC 60794-1-22 F12
	In Service		-10 to +60		
	In Storage		-20 to +70		

## Combustion Properties

Property	Test Conditions	Type	Result	Method
Euro Class CPR Level	-	All Types	B2ca, s1a, d0, a1	-
Fire Propagation	On a vertical single cable	All Types	Passed	IEC 60332-1-2
Smoke Density	-	All Types	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Multi-Fiber Breakout: MFB
Fiber Count:	24 Fiber: 24, 48 Fiber: 48, 72 Fiber: 72, 96 Fiber: 96, 144 Fiber: 1441	Tube Type:	Multi-Fiber: MF
Diameter:	10.2 mm: 102, 11.2 mm: 112, 13.1 mm: 131, 17.0 mm: 170	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SF SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		



# FIBER OPTIC CABLES

## Multi-Fiber Breakout Cable up to 144 Fibers

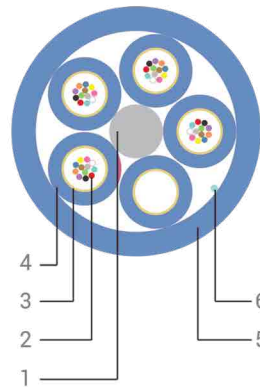
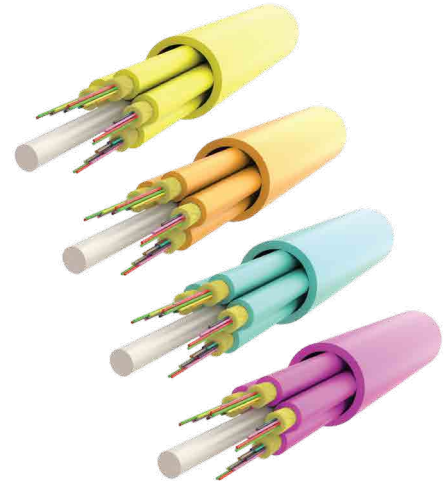
Design Type IT-(ZN)HH Indoor

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Central Strength Member	FRP
2. Fiber	SM or MM (250 μ)
3. Strength Member	Swellable Aramid Yarn
4. Inner Jacket	LSZH UV Resistant
5. Outer Jacket	LSZH - FR, UV Resistant
6. Rip Cord	Polyester



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-
	@1550 nm	≤ 0.30	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	1000 meters	1040 meters
	@1300 nm	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	300 meters	550 meters
	@1300 nm	-	-	300 meters	300 meters

# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

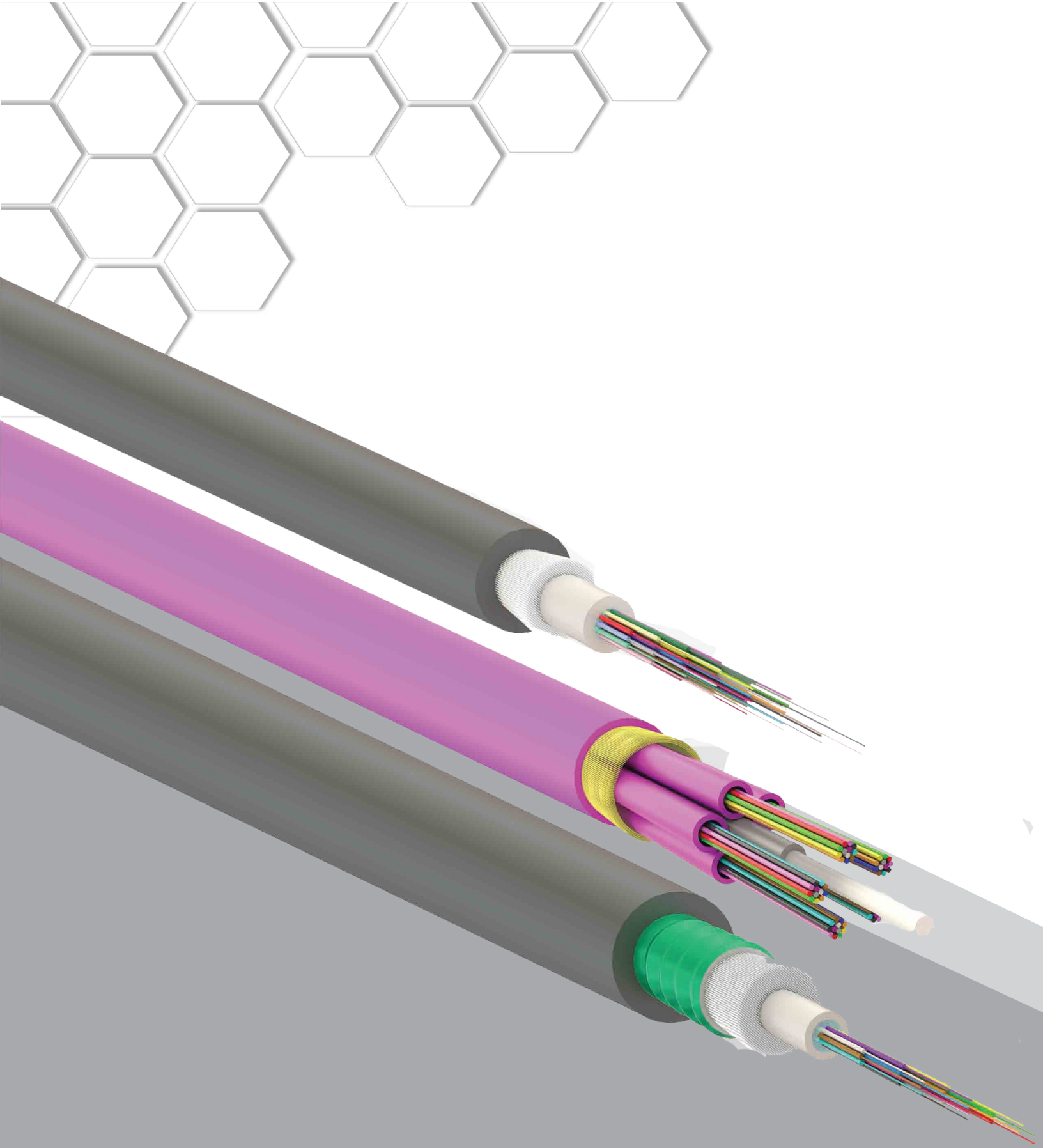
Test	Test Conditions	Type	Value	Unit	Method
Tube Diameter	-	All Types	3.0	mm	-
Approx. Cable Diameter - Weight	-	2x12 4x12 6x12 8x12 12x12	10.2 - 93.0 10.2 - 95.0 11.2 - 115.0 13.1 - 136.0 17.0 - 275.0	mm - kg/km	-
Max Tensile Strength	During Installation	All Types	2000	N	IEC 60794-1-2 E1
	In Service		1500		
Max. Bending Radius	During Installation	2x12 / 4x12 6x12 8x12 12x12	100/150 115/170 130/195 170/255	mm	IEC 60794-1-2 E11
	In Service				
Crush Resistance	Short term	All Types	2200	N/dm	IEC 60794-1-2 E3
	Long term		1000		
Impact Resistance	Wp=1.0 J	All Types	20	impact	IEC 60794-1-2 E4
Temperature Range	During Installation	-	-5 to +50	°C	IEC 60794-1-22 F12
	In Service		-20 to +60		
	In Storage		-40 to +70		

## Combustion Properties

Property	Test Conditions	Type	Result	Method
Euro Class CPR Level	-	All Types	B2ca, s1a, d0, a1	-
Fire Propagation	On a vertical single cable	All Types	Passed	IEC 60332-1-2
Smoke Density	-	All Types	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	Passed	IEC 60754-2

## Cable Coding System

Type:	Indoor: 1	Cable Type:	Multi-Fiber Breakout: MFB
Fiber Count:	24 Fiber: 24, 48 Fiber: 48, 72 Fiber: 72, 96 Fiber: 96, 144 Fiber: 1441	Tube Type:	Multi-Fiber: MF
Diameter:	10.2 mm: 102, 11.2 mm: 112, 13.1 mm: 131, 17.0 mm: 170	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		



UNIVERSAL FIBER OPTIC CABLES

# FIBER OPTIC CABLES

## Multi-Fiber Breakout Cable up to 288 Fibers

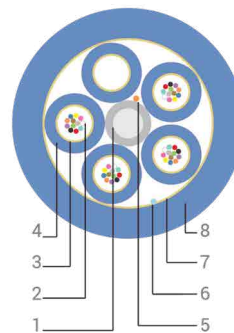
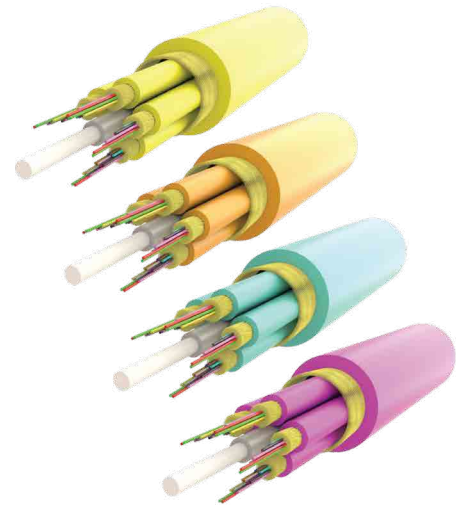
Design Type UT-(ZN)H(ZN)H Universal

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0

### CABLE CONSTRUCTION

1. Central Strength Member	FRP
2. Fiber	SM or MM (250 μ)
3. Strength Member	Swellable Aramid Yarn
4. Inner Jacket	LSZH UV Resistant
5. Water Blocking Element	Water Swellable Yarn
6. Ripcord	Polyester
7. Strength Member	Swellable Aramid Yarn
8. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	∅1310 nm	≤ 0.40	-	-	-
	∅1550 nm	≤ 0.30	-	-	-
	∅850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	∅1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	∅850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	∅1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	∅850 nm	-	-	-	1000 meters
	∅1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	∅850 nm	-	-	-	300 meters
	∅1300 nm	-	-	-	300 meters

# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

Test	Test Conditions	Type	Value	Unit	Method
Tube Diameter	-	All Types	3.0	mm	-
Approx. Cable Diameter - Weight	-	4x12 6x12 12x12 12x24	11.5 - 124.0 12.4 - 147.0 18.0 - 315.0 18.6 - 350.0	mm - kg/km	-
Max Tensile Strength	During Installation / In Service	4x12	1800/1300	N	IEC 60794-1-2 E1
		6x12 / 12x12	2400/1500		
		12x24	4000/3000		
Max. Bending Radius	During Installation / In Service	4x12	115/170	mm	IEC 60794-1-2 E11
		6x12	125/185		
		12x12 12x24	180/270 185/280		
Crush Resistance	Short term	All Types	3000	N/dm	IEC 60794-1-2 E3
	Long term		1500		
Impact Resistance	Wp=2.21 J	All Types	20	impact	IEC 60794-1-2 E4
Temperature Range	During Installation	-	-5 to +50	°C	IEC 60794-1-22 F12
	In Service		-20 to +60		
	In Storage		-40 to +70		

## Combustion Properties

Property	Test Conditions	Type	Result	Method
Euro Class CPR Level	-	All Types	B2ca, s1a, d0, a1	-
Fire Propagation	On a vertical single cable	All Types	Passed	IEC 60332-1-2
Smoke Density	-	All Types	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	All Types	Passed	IEC 60754-1
Degree of Acidity	Jacket material	All Types	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Multi-Fiber Breakout: MFB
Fiber Count:	48 Fiber: 48, 72 Fiber: 72, 144 Fiber: 144, 288 Fiber: 288	Tube Type:	Multi-Fiber: MF
Diameter:	11.5 mm: 115, 12.4 mm: 124, 18.0 mm: 180, 18.6 mm: 186	Sheath Mat.:	LSZH: H
Color:	Yellow: YE A2, Yellow: YE B3, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VT M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3 MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Flat FRP Drop Cable up to 4 Fibers

Design Type U-(ZN)H Universal 2.0x3.0 mm

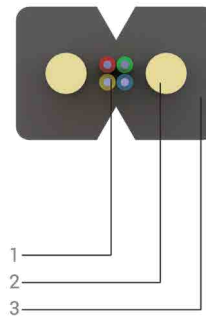


### PROPERTIES

- Completely dry design
- 1-2-4 Fibers Option
- Enforced with FRP Strength Member
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Strength Member	FRP
3. Outer Jacket	LSZH - FR, UV Resistant



Flame Retardant



All Dry Materials



All Dielectric Construction

### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	A2	Unit
Jacket Color	Black	-
Core Diameter (μm)	9.0 ±0.5	μm
Cladding Diameter (μm)	125 ±5.0	μm
Primary Coating Diameter (μm)	245 ±10	μm
Attenuation	≤ 0.40 (850 nm)	dB/km
max. in cable)	≤ 0.30 (1300 nm)	dB/km

# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Fiber Diameter	-	0.25	mm	IEC 60811-203
FRP Diameter	-	0.5 ± 10%	mm	IEC 60811-203
Outer Jacket Diameter	-	2.0 x 3.0	mm	IEC 60811-203
Approx. Weight	-	10.0 ± 10%	kg/km	-
Max. Tensile Strength	During installation	100	N	IEC 60794-1-2 E1
	In service	40		
Min. Bending Radius	During installation	20	mm	IEC 60794-1-2 E11
	In service	15		
Crush Resistance	Short term	4000	N/dm	IEC 60794-1-2 E3
	Long term	2000		
Repeated Bending	r=100mm, 1 kg	100	cycles	IEC 60794-1-2 E6
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-30 to +70		
	In Storage	-30 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type: Universal: U

Fiber Count: 1 Fiber: O1, 2 Fibers: O2, 4 Fibers: O4

Diameter: 2.0x3.0 mm: 2030

Color: Black: BK A2, White WH A2

Fiber Type: SM G.657 A2: A2

Cable Type: FRP Drop:FD

Buffer Type: Bare Fiber 250µm:B25

Sheath Mat.: LSZH: H

# FIBER OPTIC CABLES

## Messenger Flat FRP Drop Cable up to 4 Fibers

Design Type U-(ZN)H Universal 2.0x3.0 mm

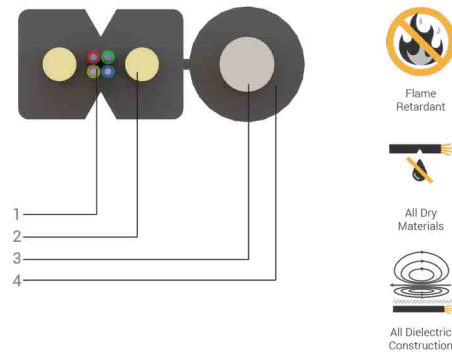


### PROPERTIES

- Completely dry design
- 1-2 Fibers Option
- Steel Messenger Wire
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Strength Member	FRP
3. Messenger Wire	FeZn Wire
4. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	A2	Unit
Jacket Color	Black	-
Core Diameter (μm)	9.0 ±0.5	μm
Cladding Diameter (μm)	125 ±5.0	μm
Primary Coating Diameter (μm)	245 ±10	μm
Attenuation	≤ 0.40 (850 nm)	dB/km
max. in cable)	≤ 0.30 (1300 nm)	dB/km



# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Fiber Diameter	-	0.25	mm	IEC 60811-203
FRP Diameter	-	0.5 ± 10%	mm	IEC 60811-203
Steel Wire Diameter	-	1.0 ± 10%	mm	IEC 60811-203
Outer Jacket Diameter	-	2.0 x 5.2	mm	IEC 60811-203
Approx. Weight	-	20 ± 10%	kg/km	-
Max. Tensile Strength	During installation	600	N	IEC 60794-1-2 E1
	In service	300		
Min. Bending Radius	During installation	20	mm	IEC 60794-1-2 E11
	In service	15		
Crush Resistance	Short term	4000	N/dm	IEC 60794-1-2 E3
	Long term	2000		
Impact Resistance	Wp=5J	3	impact	IEC 60794-1-2 E4
Repeated Bending	r=120mm, 1 kg	10	cycles	IEC 60794-1-2 E6
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-30 to +70		
	In Storage	-30 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Outdoor: O	Cable Type:	Steel Wire and FRP: SF
Fiber Count:	1 Fiber: O1, 2 Fibers: O2, 4 Fibers: O4	Buffer Type:	Bare Fiber 250µm:B25
Diameter:	2.0x5.2 mm: 2052	Sheath Mat.:	LSZH: H
Color:	Black: BK A2		
Fiber Type:	SM G.657 A2: A2		

# FIBER OPTIC CABLES

## Flat Steel Drop Cable up to 4 Fibers

Design Type U-(ZM)H Universal 2.0x3.0 mm

### PROPERTIES

- Completely dry design
- 1-2 Fibers Option
- Enforced with Steel Wire Strength Member
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Strength Member	FeZn Wire
3. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	A2	Unit
Jacket Color	Black or White	-
Core Diameter (μm)	9.0 ±0.5	μm
Cladding Diameter (μm)	125 ±5.0	μm
Primary Coating Diameter (μm)	245 ±10	μm
Attenuation	≤ 0.40 (850 nm)	dB/km
max. in cable)	≤ 0.30 (1300 nm)	dB/km

# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Fiber Diameter	-	0.25	mm	IEC 60811-203
FRP Diameter	-	0.5 ± 10%	mm	IEC 60811-203
Outer Jacket Diameter	-	2.0 x 3.0	mm	IEC 60811-203
Approx. Weight	-	10.0 ± 10%	kg/km	-
Max. Tensile Strength	During installation	200	N	IEC 60794-1-2 E1
	In service	100		
Min. Bending Radius	During installation	20	mm	IEC 60794-1-2 E11
	In service	15		
Crush Resistance	Short term	4000	N/dm	IEC 60794-1-2 E3
	Long term	2000		
Impact Resistance	Wp=2,21J	3	impact	IEC 60794-1-2 E4
Repeated Bending	r=100mm, 1 kg	100	cycles	IEC 60794-1-2 E6
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-30 to +70		
	In Storage	-30 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Steel Drop: SD
Fiber Count:	1 Fiber: O1, 2 Fibers: O2, 4 Fibers: O4	Buffer Type:	Bare Fiber 250µm:B25
Diameter:	2.0x3.0 mm: 2030	Sheath Mat.:	LSZH: H
Color:	Black: BK A2, White: WH A2		
Fiber Type:	SM G.657 A2: A2		

# FIBER OPTIC CABLES

## Messenger Flat Steel Drop Cable up to 4 Fibers

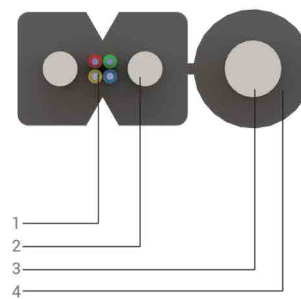
Design Type U-(ZM)H-SH Outdoor 2.0x2.5 mm

### PROPERTIES

- Completely dry design
- 1-2 Fibers Option
- Enforced with Steel Wire Strength Member
- Steel Messenger Wire
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Strength Member	FeZn Wire
3. Messenger Wire	FeZn Wire
3. Outer Jacket	LSZH - FR, UV Resistant



Flame Retardant



All Dry Materials



All Dielectric Construction

### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	A2	Unit
Jacket Color	Black	-
Core Diameter (μm)	9.0 ±0.5	μm
Cladding Diameter (μm)	125 ±5.0	μm
Primary Coating Diameter (μm)	245 ±10	μm
Attenuation	≤ 0.40 (850 nm)	dB/km
max. in cable)	≤ 0.30 (1300 nm)	dB/km

# FIBER OPTIC CABLES

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Fiber Diameter	-	0.25	mm	IEC 60811-203
FRP Diameter	-	0.5 ± 10%	mm	IEC 60811-203
Steel Wire Diameter	-	1.0 ± 10%	mm	IEC 60811-203
Outer Jacket Diameter	-	2.0 x 5.2	mm	IEC 60811-203
Approx. Weight	-	20 ± 10%	kg/km	-
Max. Tensile Strength	During installation	800	N	IEC 60794-1-2 E1
	In service	400		
Min. Bending Radius	During installation	20	mm	IEC 60794-1-2 E11
	In service	15		
Crush Resistance	Short term	4000	N/dm	IEC 60794-1-2 E3
	Long term	2000		
Impact Resistance	Wp=5J	3	impact	IEC 60794-1-2 E4
Repeated Bending	r=120mm, 1 kg	10	cycles	IEC 60794-1-2 E6
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-30 to +70		
	In Storage	-30 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type: Outdoor: O

Fiber Count: 1 Fiber: O1, 2 Fibers: O2, 4 Fibers: O4

Diameter: 2.0x5.2 mm: 2052

Color: Black: BK A2

Fiber Type: SM G.657 A2: A2

Cable Type: Steel Wire and Steel: SS

Buffer Type: Bare Fiber 250µm: B25

Sheath Mat.: LSZH: H

# FIBER OPTIC CABLES



## Distribution Cable up to 24 Fibers

Design Type U-(ZN)H(ZN)H Universal 4.8 mm

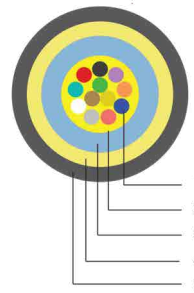
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- For direct connector assembly
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Jacket material in accordance with UL 94V-0
- LSZH - FR, UV Resistant Outer Jacket



### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Strength Member	Aramid Yarn
3. Inner Jacket	LSZH
4. Strength Member	Swellable Aramid yarn
5. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type		SM	OM1	OM2	OM3	OM4
Jacket Color		Black	Black	Black	Black	Black
Core Diameter (μm)		9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)		125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)		245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	ø1310 nm	≤ 0.40	-	-	-	-
	ø1550 nm	≤ 0.30	-	-	-	-
	ø850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0	≤ 3.0
	ø1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	ø850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km	3500 Mhz*km
	ø1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	ø850 nm	-	-	-	1000 meters	1040 meters
	ø1300 nm	-	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	ø850 nm	-	-	-	300 meters	550 meters
	ø1300 nm	-	-	-	300 meters	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Jacket Diameter	-	4.8	mm	-
Approx. Weight	-	23	kg/km	-
Max. Tensile Strength	During installation	800	N	IEC 60794-1-2 E1
	In service	500		
Min. Bending Radius	During installation	100	mm	IEC 60794-1-2 E11
	In service	70		
Crush Resistance	Short Term	5000	N/dm	IEC 60794-1-2 E3
	Long Term	500		
Impact Resistance	Wp=2.21 J	50	impact	IEC 60794-1-2 E4
Temperature Range	During installation	-10 to +50	°C	IEC 60794-1-22 F12
	In Service	-20 to +70		
	In Storage	-20 to +7A0		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.10	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Multi-fiber: MF
Fiber Count:	8 Fibers: O8, 12 Fibers: 12, 24 Fibers: 24	Buffer Type:	Tight 600µm: T6H
Diameter:	4.8 mm: 48	Sheath Mat.:	LSZH: H
Color:	Black: BK A2, Black: BK B3, Black: BK M1, Black: BK M2, Black: BK M3, Black: BK M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

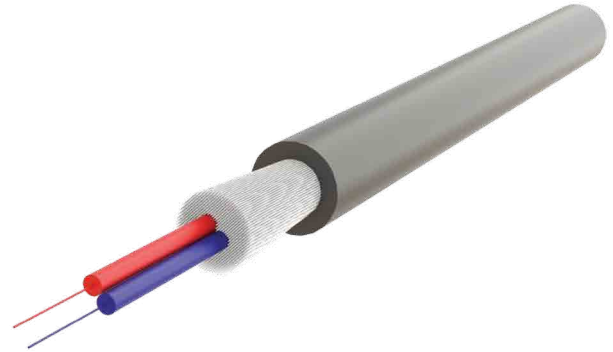
# FIBER OPTIC CABLES

## Mini Breakout Cable 2 Fibers

Design Type UT-V(ZN)BH Universal 4.8 mm

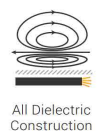
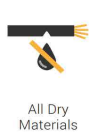
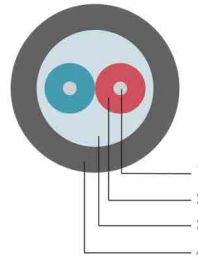
### PROPERTIES

- Metal free indoor cable
- Completely dry design
- Water swellable glass yarn strength member
- Rodent protected with glass armour
- For direct connector assembly
- For vertical applications
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket



### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Semi-Tight Buffer Tube	900μ LSZH
3. Strength Member	Swellable Glass Yarn
4. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type		SM	OM1	OM2	OM3	OM4
Jacket Color		Black	Black	Black	Black	Black
Core Diameter (μm)		9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)		125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)		245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	ø1310 nm	≤ 0.40	-	-	-	-
	ø1550 nm	≤ 0.30	-	-	-	-
	ø850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0	≤ 3.0
	ø1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	ø850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km	3500 Mhz*km
	ø1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	ø850 nm	-	-	-	1000 meters	1040 meters
	ø1300 nm	-	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	ø850 nm	-	-	-	300 meters	550 meters
	ø1300 nm	-	-	-	300 meters	300 meters



# FIBER OPTIC CABLES



## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Tight Diameter	-	0.9	mm	IEC 60811-203
Cable Diameter	-	4.8 ±0.1	mm	IEC 60811-203
Approx. Cable Weight	-	27	kg/km	-
Max. Tensile Strength	During installation	800	N	IEC 60794-1-2 E1
	In service	500		
Min. Bending Radius	During installation	100	mm	IEC 60794-1-2 E11
	In service	70		
Crush Resistance	Short Term	4000	N/dm	IEC 60794-1-2 E3
	Long Term	1500		
Approx. Cable Weight	-	27	kg/km	-
Temperature Range	During installation	-10 to +50	°C	IEC 60794-1-22 F12
	In Service	-20 to +70		
	In Storage	-25 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	0.46	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Riser: RI
Fiber Count:	2 Fibers: O2	Buffer Type:	S-Tight 900µm:S9H, Tight 900µm:T9H
Diameter:	4.8 mm: 48	Sheath Mat.:	LSZH: H
Color:	Black: BK A2, Black: BK B3, Black: BK M1, Black: BK M2, Black: BK M3, Black: BK M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Breakout Cable 2 Fibers

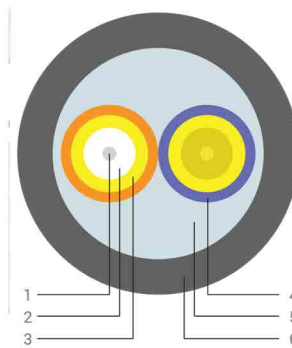
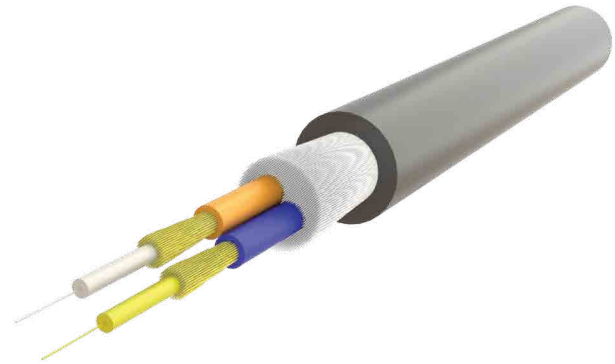
Design Type UT-V(ZN)H(ZN)BH Universal 7.0 mm

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- Rodent protected with glass armour
- For direct connector assembly with strain relief
- For vertical applications
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Tight Buffer Tube	900μ LSZH
3. Strength Member	Aramid
4. Inner Jacket	LSZH
5. Strength Member	Swellable Glass Yarn
6. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM2
Jacket Color	Black	Black
Core Diameter (μm)	9.0 ±0.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm ≤ 0.40 @1550 nm ≤ 0.30 @850 nm - @1300 nm -	- - ≤ 3.0 ≤ 1.0
Bandwidth (overfilled)	@850 nm - @1300 nm -	500 Mhz*km 500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm - @1300 nm -	-
Serial Ethernet 10 Gigabit	@850 nm - @1300 nm -	-

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Tight Diameter	-	0.9	mm	IEC 60811-203
Single Cable Diameter	-	2.0 ± 0.1	mm	IEC 60811-203
Jacket Diameter	-	7.0 ± 0.2	mm	IEC 60811-203
Approx. Weight	-	55 ± 5	kg/km	-
Max. Tensile Strength	During installation	1600	N	IEC 60794-1-2 E1
	In service	800		
Min. Bending Radius	During installation	140	mm	IEC 60794-1-2 E11
	In service	70		
Crush Resistance	Short term	3000	N/dm	IEC 60794-1-2 E3
	Long term	1500		
Repeated Bending	r=20mm, 1 kg	1000	cycles	IEC 60794-1-2 E6
Torsion	±360°	10	cycles	IEC 60794-1-2 E7
Water Penetration	L=1m, 24 h, p<3m	passed	-	IEC 60794-1-2 F5A
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-30 to +70		
	In Storage	-30 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type: Universal: U  
 Fiber Count: 2 Fibers: O2  
 Diameter: 7.0 mm: 70  
 Color: Black: BK A2, Black: BK B3, Black: BK M2  
 Fiber Type: SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM2: M2

Cable Type: Breakout 2mm: B20  
 Buffer Type: S-Tight 900µm: S9H  
 Sheath Mat.: LSZH: H

# FIBER OPTIC CABLES

## Ruggedized Breakout Fiber Cable

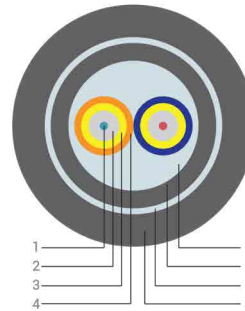
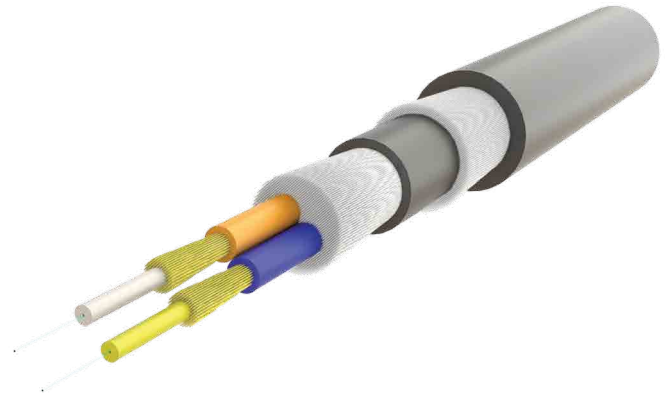
Design Type UT-V(ZN)H(ZN)BH(ZN)BH Universal 8.2 mm

### PROPERTIES

- Metal free indoor cable
- Completely dry design
- Rodent protected with glass armour
- For direct connector assembly with strain relief
- High flexibility and light weight
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- LSZH - FR, UV Resistant Outer Jacket

### CABLE CONSTRUCTION

1. Fiber	SM or MM (250 μ)
2. Tight Buffer Tube	900μ LSZH
3. Strength Member	Swellable Aramid
4. Sub-Unit Jacket	LSZH
5. Strength Member	Swellable Glass Yarn
6. Inner Jacket	LSZH - FR, UV Resistant
7. Strength Member	Swellable Glass Yarn
8. Outer Jacket	LSZH - FR, UV Resistant



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	A2	OM2	OM3
Jacket Color	Black	Black	Black
Core Diameter (μm)	9.0 ±0.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-
	@1550 nm	≤ 0.30	-
	@850 nm	-	≤ 3.0
	@1300 nm	-	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	500 Mhz*km
	@1300 nm	-	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-
	@1300 nm	-	-
Serial Ethernet 10 Gigabit	@850 nm	-	-
	@1300 nm	-	-

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Tight Buffer Diameter	-	0.9	mm	IEC 60811-203
Sub-Unit Diameter	-	2.0 ± 0.1	mm	IEC 60811-203
Inner Jacket Diameter	-	5.7 ± 0.1	mm	IEC 60811-203
Outer Jacket Diameter	-	8.2 ± 0.2	mm	IEC 60811-203
Approx. Weight	-	70 ± 10%	kg/km	-
Max. Tensile Strength	During installation	2000	N	IEC 60794-1-2 E1
	In service	1500		
Min. Bending Radius	During installation	120	mm	IEC 60794-1-2 E11
	In service	80		
Crush Resistance	Short term	3000	N/dm	IEC 60794-1-2 E3
	Long term	1500		
Repeated Bending	r=120mm, 1 kg	10	cycles	IEC 60794-1-2 E6
Torsion	±360°	10	cycles	IEC 60794-1-2 E7
Water Penetration	L=1m, 24 h, p<3m	passed	-	IEC 60794-1-2 F5A
Temperature Range	During Installation	+5 to +50	°C	IEC 60794-1-22 F1
	In Service	-40 to +70		
	In Storage	-40 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Breakout 2mm: B20
Fiber Count:	2 Fibers: O2	Buffer Type:	Tight 900µm: T9H
Diameter:	8.2 mm: 82	Sheath Mat.:	LSZH: H
Color:	Black: BK A2, Black: BK B3, Black: BK M2		
Fiber Type:	SM G.657 A2: A2, MM G.651 OM2: M2, MM G.651 OM3: M3		

# FIBER OPTIC CABLES

## Gel-Free Central Loose Tube Cable up to 24 Fibers

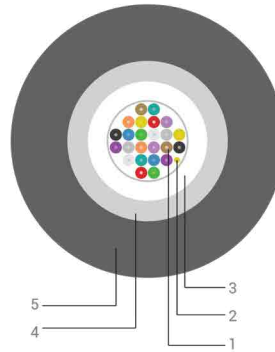
Design Type U-BQ(ZN)BH Indoor/Outdoor

### PROPERTIES

- Metal free indoor cable
- Glass Yarn strength member
- Dry tube (Gel-Free)
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Longitudinal and transversal water resistant cable

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Tube Filling Compound	Water Swellable Yarn
3. Loose Tube	LSZH
4. Strength Member	Swellable Glass Yarn
5. Outer Jacket	UV Resistant LSZH



### SHEATH MARKING

Print Color/Method	Black Jacket: White / Ink-Jet , Other Colors: Black / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Black or Yellow	Orange	Orange	Aqua	Violet
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-
	@1550 nm	≤ 0.30	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	-	1000 meters
	@1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	-	300 meters
	@1300 nm	-	-	-	300 meters

# FIBER OPTIC CABLES



## Mechanical and Environmental Properties

Test	Test Conditions	Value		Unit	Method
Tight Buffer Diameter	-	4-12F	24F	-	-
Tube Diameter	-	2.5 ±3%	3.0 ±3t	mm	IEC 60811-203
Approx. Cable Diameter	-	6.1 ±0.2	6.5 ±0.2	mm	IEC 60811-203
Approx. Cable Weight	-	45 ±10%		mm	
Max. Tensile Strength	During installation (Loaded)	1200		N	IEC 60794-1-2 E1
	In service (Unloaded)	600			
Min. Bending Radius	During installation (Loaded)	115		mm	IEC 60794-1-2 E11
	In service (Unloaded)	85			
Crush Resistance	Short term	2000		N/dm	IEC 60794-1-2 E3
	Long term	800			
Impact Resistance	Wp=1.5J	3		impact	IEC 60794-1-2 E4
Repeated Bending	r=20xD	25		cycles	IEC 60794-1-2 E6
Water Penetration	h=1m, 48h, p < 3m	passed		-	IEC 60794-1-22 F5B
Temperature Range	During Installation	0 to +50		°C	IEC 60794-1-22 F1
	In Service	-20 to +60			
	In Storage	-40 to +70			

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.15	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Universal: U	Cable Type:	Central Dry Loose Tube: CDT
Fiber Count:	0 to +50, -20 to +60, -40 to +70	Tube Type:	Distribution: DI
Diameter:	6.1 mm: 61, 6.5 mm: 65	Sheath Mat.:	LSZH: H
Color:	Black: BK SM, Yellow: YE SM, Orange: OG M1, Orange: OG M2, Aqua: AQ M3, Violet: VI M4		
Fiber Type:	SM G.657 A2: A2, MM G.651 OM2: M2, MM G.651 OM3: M3		

# FIBER OPTIC CABLES

## Gel-Filled Central Loose Tube Cable up to 24 Fibers

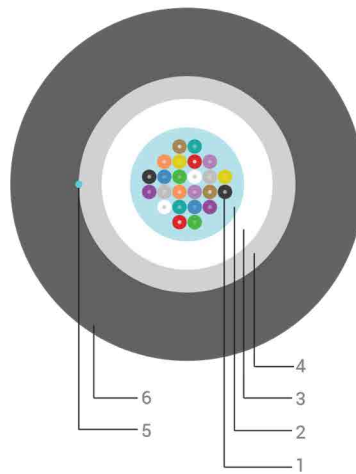
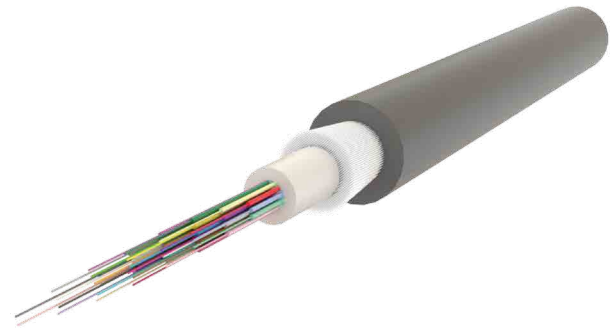
Design Type A-DQ(ZN)B2Y Indoor/Outdoor

### PROPERTIES

- Metal free indoor cable
- Glass Yarn strength member
- Ripcord for easy stripping
- Gel filled tube
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Longitudinal and transversal water resistant cable

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Tube Filling Material	Thixotropic Gel
3. Loose Tube	PBT
4. Strength Member	Swellable Glass Yarn
5. Ripcord	Polyester
6. Outer Jacket	UV Resistant PE



Water Resistant



All Dielectric Construction



Anti-Rodent



Compact and Flexible



Flame Retardant

### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Black	Black	Black	Black	Black
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm ≤ 0.40 @1550 nm ≤ 0.30 @850 nm - @1300 nm -	- - ≤ 3.4 ≤ 1.0	- - ≤ 3.0 ≤ 1.0	- - ≤ 3.0 ≤ 1.0	- - ≤ 3.0 ≤ 1.0
Bandwidth (overfilled)	@850 nm - @1300 nm -	200 Mhz*km 500 Mhz*km	500 Mhz*km 500 Mhz*km	1500 Mhz*km 500 Mhz*km	3500 Mhz*km 500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm - @1300 nm -	-	-	1000 meters 600 meters	1040 meters 600 meters
Serial Ethernet 10 Gigabit	@850 nm - @1300 nm -	-	-	300 meters 300 meters	550 meters 300 meters



## Mechanical and Environmental Properties

Test	Test Conditions	Value		Unit	Method
Fiber Count	-	4-12F	24F	-	-
Tube Diameter	-	2.5 ±3%	3.0 ±3%	mm	IEC 60811-203
Approx. Cable Diameter	-	5.1 ±0.2	5.8 ±0.2	mm	IEC 60811-203
Approx. Cable Weight	-	25 ±10%	28 ±10%	kg/km	
Max. Tensile Strength	During installation (Loaded)	1200		N	IEC 60794-1-2 E1
	In service (Unloaded)	600			
Min. Bending Radius	During installation (Loaded)	115		mm	IEC 60794-1-2 E11
	In service (Unloaded)	85			
Crush Resistance	Short term	1500		N/dm	IEC 60794-1-2 E3
	Long term	800			
Impact Resistance	Wp=1.5J	3		impact	IEC 60794-1-2 E4
Repeated Bending	r=20xD	25		cycles	IEC 60794-1-2 E6
Water Penetration	h=1m, 48h, p < 3m	passed		-	IEC 60794-1-22 F5B
Temperature Range	During Installation	-10 to +50		°C	IEC 60794-1-22 F1
	In Service	-40 to +70			
	In Storage	-40 to +80			

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.3	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Outdoor: O	Cable Type:	Central Loose Tube: CLT
Fiber Count:	4 Fiber: O4, 6 Fiber: O6, 8 Fiber: O8, 12 Fiber: 12, 24 Fiber: 24	Tube Type:	Distribution: DI
Diameter:	5.1 mm: 51, 5.8 mm: 58	Sheath Mat.:	Polyethylene: P
Color:	Black: BK A2, Black: BK B3, Black: BK M1, Black: BK M2, Black: BK M3, Black: BK M4		
Fiber Type:	SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3, MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Gel-Filled Central Loose Tube Cable up to 24 Fibers

Design Type A-DQ(ZN)B2Y Indoor/Outdoor

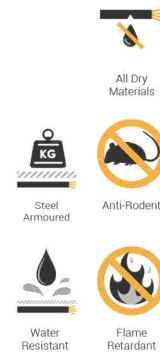
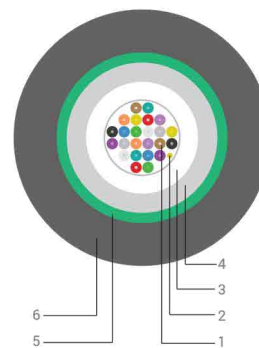
### PROPERTIES

- Metal free outdoor cable
- Glass Yarn strength member
- Ripcord for easy stripping
- Gel filled tube
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Longitudinal and transversal water resistant cable



### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Tube Filling Material	Thixotropic Gel
3. Loose Tube	PBT
4. Strength Member	Swellable Glass Yarn
5. Ripcord	Polyester
6. Outer Jacket	UV Resistant PE



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Black	Black	Black	Black	Black
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-
	@1550 nm	≤ 0.30	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	-	1000 meters
	@1300 nm	-	-	-	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	-	300 meters
	@1300 nm	-	-	-	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Value	Unit	Method
Fiber Count	-	4-12F 24F	-	-
Tube Diameter	-	3.0 ±3% 3.0 ±3%	mm	IEC 60811-203
Approx. Cable Diameter	-	7.9 ±0.2 7.9 ±0.2	mm	IEC 60811-203
Approx. Cable Weight	-	82.5 ±10% 82.5 ±10%	kg/km	
Max. Tensile Strength	During installation (Loaded)	1000	N	IEC 60794-1-2 E1
	In service (Unloaded)	400		
Min. Bending Radius	During installation (Loaded)	20xD	mm	IEC 60794-1-2 E11
	In service (Unloaded)	15xD		
Crush Resistance	Short term	3000	N/dm	IEC 60794-1-2 E3
	Long term	1600		
Impact Resistance	Wp=1.5J	3	impact	IEC 60794-1-2 E4
Repeated Bending	r=20xD	35	cycles	IEC 60794-1-2 E6
Water Penetration	h=1m, 48h, p < 3m	passed	-	IEC 60794-1-22 F5B
Temperature Range	During Installation	-30 to +60	°C	IEC 60794-1-22 F1
	In Service	-20 to +70		
	In Storage	0 to +70		

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.5	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Outdoor: O	Cable Type:	Steel Armoured Dry Central Loose Tube: SDC
Fiber Count:	4 Fiber: O4, 6 Fiber: O6, 8 Fiber: O8, 12 Fiber: 12, 24 Fiber: 24	Tube Type:	Distribution: DI
Diameter:	7.9 mm: 79	Sheath Mat.:	LSZH: H
Color:	Black: BK DD Black: BK A2, Black: BK B3, Black: BK M1, Black: BK M2, Black: BK M3, Black: BK M4		
Fiber Type:	SM G.652 D: DD, SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3 MM G.651 OM4: M4		

# FIBER OPTIC CABLES

## Steel-Armoured Gel-Filled Central Loose Tube Cable up to 24 Fibers

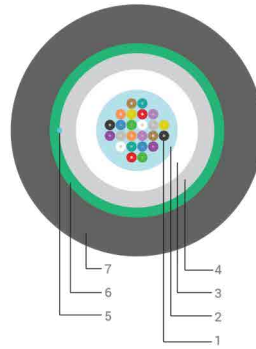
Design Type A-DQ(ZN)B2Y Indoor/Outdoor

### PROPERTIES

- Corrugated Steel Armoured Outdoor Cable
- Glass Yarn strength member
- Ripcord for easy stripping
- Gel filled tube
- Halogen free and non-corrosive fire gases
- Low fire load for high safety requirements
- Longitudinal and transversal water resistant cable

### CABLE CONSTRUCTION

1. Fiber	SM (250 μ)
2. Tube Filling Material	Thixotropic Gel
3. Loose Tube	PBT
4. Strength Member	Swellable Glass Yarn
5. Ripcord	Polyester
6. Armoured Material	Corrugated Steel
7. Outer Jacket	UV Resistant PE



### SHEATH MARKING

Print Color/Method	White / Ink-Jet	(length marking 1 m intervals)
Cable Printing	Manufacturer name, fiber count, fiber type, product code, cable type, date, meter marking	

### Optical Characteristics and Physical Properties

Fiber Type	SM	OM1	OM2	OM3	OM4
Jacket Color	Black	Black	Black	Black	Black
Core Diameter (μm)	9.0 ±0.5	62.5 ±2.5	50 ±2.5	50 ±2.5	50 ±2.5
Cladding Diameter (μm)	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0	125 ±5.0
Primary Coating Diameter (μm)	245 ±10	245 ±10	245 ±10	245 ±10	245 ±10
Attenuation (max. in cable) (dB/km)	@1310 nm	≤ 0.40	-	-	-
	@1550 nm	≤ 0.30	-	-	-
	@850 nm	-	≤ 3.4	≤ 3.0	≤ 3.0
	@1300 nm	-	≤ 1.0	≤ 1.0	≤ 1.0
Bandwidth (overfilled)	@850 nm	-	200 Mhz*km	500 Mhz*km	1500 Mhz*km
	@1300 nm	-	500 Mhz*km	500 Mhz*km	500 Mhz*km
Serial Ethernet 1 Gigabit	@850 nm	-	-	1000 meters	1040 meters
	@1300 nm	-	-	600 meters	600 meters
Serial Ethernet 10 Gigabit	@850 nm	-	-	300 meters	550 meters
	@1300 nm	-	-	300 meters	300 meters

## Mechanical and Environmental Properties

Test	Test Conditions	Value		Unit	Method
Fiber Count	-	4-12F	24F	-	-
Tube Diameter	-	2.5 ±3%	3.0 ±3%	mm	IEC 60811-203
Approx. Cable Diameter	-	8.0 ±0.2	8.2 ±0.2	mm	IEC 60811-203
Approx. Cable Weight	-	68 ±10%	76 ±10%	kg/km	
Max. Tensile Strength	During installation (Loaded)	1000		N	IEC 60794-1-2 E1
	In service (Unloaded)	400			
Min. Bending Radius	During installation (Loaded)	20xD		mm	IEC 60794-1-2 E11
	In service (Unloaded)	15xD			
Crush Resistance	Short term	3000		N/dm	IEC 60794-1-2 E3
	Long term	1600			
Impact Resistance	Wp=1.5J	3		impact	IEC 60794-1-2 E4
Repeated Bending	r=20xD	35		cycles	IEC 60794-1-2 E6
Water Penetration	h=1m, 48h, p < 3m	passed		-	IEC 60794-1-22 F5B
Temperature Range	During Installation	-30 to +60		°C	IEC 60794-1-22 F1
	In Service	-20 to +70			
	In Storage	0 to +70			

## Combustion Properties

Property	Test Conditions	Value	Unit	Result	Method
Fire Load	-	1.3	Mj/m	-	-
Fire Propagation	On a vertical single cable	-	-	Passed	IEC 60332-1-2
Smoke Density	-	-	-	Passed	IEC 61034-2
Halogen Acid Gas	Jacket material	-	-	Passed	IEC 60754-1
Degree of Acidity	Jacket material	-	-	Passed	IEC 60754-2

## Cable Coding System

Type:	Outdoor: O	Cable Type:	Steel Armoured Central Loose Tube: SCL
Fiber Count:	4 Fiber: O4, 6 Fiber: O6, 8 Fiber: O8, 12 Fiber: 12, 24 Fiber: 24	Tube Type:	Distribution: DI
Diameter:	8.0 mm: 80, 8.2 mm: 82	Sheath Mat.:	LSZH: H
Color:	Black: BK DD Black: BK A2, Black: BK B3, Black: BK M1, Black: BK M2, Black: BK M3, Black: BK M4		
Fiber Type:	SM G.652 D: DD, SM G.657 A2: A2, SM G.657 B3: B3, MM G.651 OM1: M1, MM G.651 OM2: M2, MM G.651 OM3: M3 MM G.651 OM4: M4		



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