

GIBS

Breakout Cables

Indoor

I-K(ZN)HH

2017-08-24 v10.0

Ordering Information

Belden European Part Numbers

Fibre Description / count	2	4	6	8	12	24
62.5/125-OM1	GIBS102	GIBS104	GIBS106	GIBS108	GIBS112	GIBS124
50/125-OM2 BI	GIBS202	GIBS204	GIBS206	GIBS208	GIBS212	GIBS224
50/125-OM3 BI	GIBSD02	GIBSD04	GIBSD06	GIBSD08	GIBSD12	GIBSD24
50/125-OM4 BI	GIBSE02	GIBSE04	GIBSE06	GIBSE08	GIBSE12	GIBSE24
9/125 ITU G.657A1 BI	GIBSA02	GIBSA04	GIBSA06	GIBSA08	GIBSA12	GIBSA24
9/125 ITU G.657A2 BI	GIBSF02	GIBSF04	GIBSF06	GIBSF08	GIBSF12	GIBSF24
9/125 ITU G.657B3 BI	GIBSI02	GIBSI04	GIBSI06	GIBSI08	GIBSI12	GIBSI24
Std. reel (non-returnable)	Ø 800 * 475 mm weight 7.65 kg		Ø 1000 * 530 mm weight 18 kg		Ø 1250 * 688 mm weight 81 kg	
Std. delivery length	2100 ± 105m					

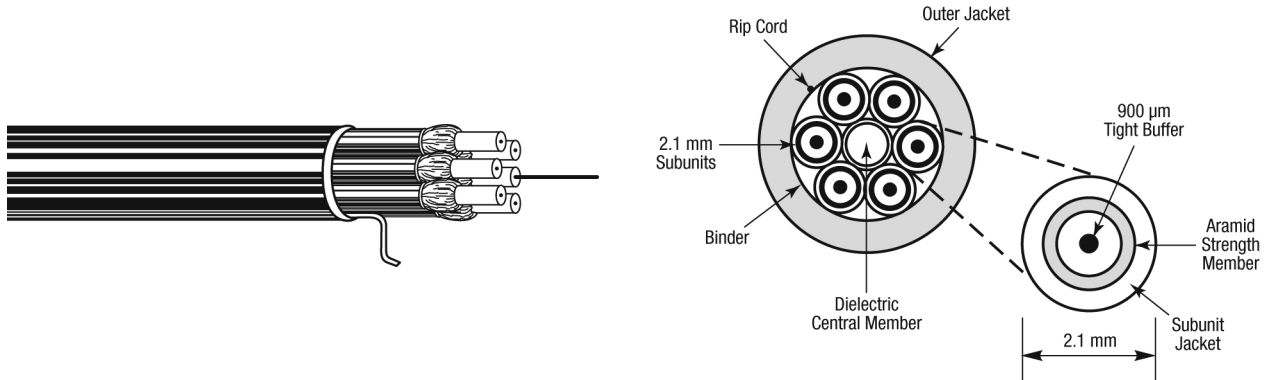
Applications

- Structured (premises) wiring systems: **building backbone (riser) and/or horizontal cabling.**
- Support all computer network applications such as FDDI, Gigabit Ethernet and ATM.
- **Easy to install** in ducts, tunnels and trenches.

Features & Benefits

- The individual single fibre units (of which these metal-free breakout cables are composed) permit direct **(detensioned) terminations with separate single-way connectors**, which eliminate splicing of pigtails and/or breakout kits.
- These cables are **halogen-free** (= FRNC and LSNH) and **metal-free** (all dielectric).
- **Predicted lifetime > 30 years.**

Construction & Dimensions



Cable Specifications (construction in accordance with IEC 60794)

1. Primary coated optical fibres: $\text{Ø } 245 \pm 10 \text{ µm}$.
2. Dry FRNC / LSNH Semi-Tight buffer: $\text{Ø } 0.90 \pm 0.1 \text{ mm}$.
3. Aramid yarns as strength members.
4. **Yellow** (SM fibre) or **Orange** (MM fibre) halogen-free (FRNC/LSNH) numbered jacket ($\text{Ø } 2.1 \pm 0.2\text{mm}$)
5. Tape.
6. **Yellow** (SM fibre) or **Orange** (MM fibre) halogen-free (FRNC/LSNH) outer jacket with rip cord.
Identification: BELDEN OFC – "cable type" – "number x type of fibre" + date-, meter-and P/N-marking.

Mechanical Data

No. of fibres	2	4	6	8	12	24
Cable core	2+2BE	CE+4	CE+6	CE+8	3+9	2+8+14
Ø nom. (mm)	5.3	6.2	8.0	9.4	10.5	14.3
Max. pulling tension (N)						
Short term	400	400	590	770	870	1750
Weight (kg/km)	26	33	62	83	92	162
Energy of Flame (kJ/m)	379	507	928	1235	1424	2677

CE = Central Element, BE = Blind Element (filler)

Optical Characteristics

Characteristics Single-Mode – Matched-Cladded optical fibres according to ITU.

European P/N Coding, Position 5	Fibre-Type	Mode-Field /Cladding Diameter (um)	Wave-length (nm)	Attenuation ^B typical/ max. (dB/km)	Dispersion (ps/(nm·km))	PMD ^A (ps/km)	Cable Cut-off Wave-length (nm)
A	9/125 G.657A1 BI	8.9 ± 0.4 124.8 ± 0.3	1310 1550 1625	0.34 / 0.35 0.19 / 0.21 0.20 / 0.24	≤ 3.5 ≤ 18	≤ 0.06	≤ 1260
F	9/125 G.657A2 BI	8.9 ± 0.4 124.8 ± 0.3	1310 1550 1625	0.34 / 0.35 0.19 / 0.21 0.20 / 0.24	≤ 3.5 ≤ 18	≤ 0.06	≤ 1260
I	9/125 G.657B3 BI	8.8 ± 0.4 125 ± 0.4	1310 1550 1625	0.34 / 0.35 0.19 / 0.21 0.20 / 0.23	≤ 3.5 ≤ 18	≤ 0.06	≤ 1260

Note A- Link design value

Note B- Due to cabling the optical attenuation values can increase with max 0.15 dB/km (1310 nm), max. 0.09 dB/km (1550 nm) and max. 0.27 dB/km (1625 nm)

Characteristics Multi-Mode Graded-Index optical fibres according to IEC 60793

European P/N Coding, Position 5	Fibre-Type	Core/ Cladding Diameter (um)	Wave-length (nm)	Attenuation ^C typical/ max. (dB/km)	Bandwidth (MHz·km)	Ethernet Performance (m)		Num. Apert. (um)
						1 GBE	10 GBE	
1	62.5/125 OM1	62.5 ± 2.5 125 ± 1	850 1300	2.7 / 3.0 0.7 / 0.8	≥ 200 ≥ 600	220 550	33 300	0.275 ± 0.015
2	50/125 OM2 BI	50 ± 2.5 125 ± 1	850 1300	2.3 / 2.5 0.5 / 0.6	≥ 500 ≥ 500	600 600	83 300	0.20 ± 0.015
D	50/125 OM3 BI	50 ± 2.5 125 ± 1	850 1300	2.3 / 2.5 0.5 / 0.6	≥ 1500 ≥ 500	1000 550	300 300	0.20 ± 0.015
E	50/125 OM4 BI	50 ± 2.5 125 ± 1	850 1300	2.3 / 2.5 0.5 / 0.6	≥ 3500 ≥ 500	1100 550	550 300	0.20 ± 0.015

Note C- Due to cabling the optical attenuation values can increase with max. 0.4 dB/km

Macro Bending Performance Fibers

Maximum attenuation increase for Bend Insensitive Single Mode fibers in dB depending on turns and radius.

European P/N Coding, Position 5	Fibre-Type	Wave-length (nm)	Turns 100 Radius 25 mm (dB)	Turns 10 Radius 15 mm (dB)	Turn 1 Radius 10 mm (dB)	Turn 1 Radius 7.5 mm (dB)	Turn 1 Radius 5 mm (dB)
A	9/125 G.657A1	1550 1625	0.01 0.05	0.2 0.5	0.2 0.5		
F	9/125 G.657A2	1550 1625		0.03 0.1	0.1 0.2	0.5 1.0	
I	9/125 G.657B3	1550 1625			0.03 0.10	0.08 0.25	0.15 0.45

Maximum attenuation increase for Bend Insensitive Multi Mode fibers in dB depending on turns and radius.

European P/N Coding, Position 5	Fibre-Type	Wave-length (nm)	Turns 100 Radius 37.5 mm (dB)	Turns 2 Radius 15 mm (dB)	Turns 2 Radius 7.5 mm (dB)
1	62.5/125 OM1	850 1300	0.5 0.5		
2	50/125 OM2 BI	850 1300	0.5 0.5	0.1 0.3	0.2 0.5
D	50/125 OM3 BI	850 1300	0.5 0.5	0.1 0.3	0.2 0.5
E	50/125 OM4 BI	850 1300	0.5 0.5	0.1 0.3	0.2 0.5

Mechanical, Physical and/or Environmental Characteristics

Description:	Tested according to:	Requirement:	According to Family specification:
Storage Temperature Range Installation Temperature Range Operating Temperature Range	IEC 60794-1-22-F1	-30 to +70 °C -5 to +50 °C -5 to +55 °C	IEC 60794-2-20
Strippability Secondary coating only Secondary + primary coating		≤ 30 cm ≤ 10 mm	
Bending radii for fibres and tight buffers Installation/operation For Bend Insensitive fibres		>25 mm See Optical Characteristics	
Cable Min. Bend Radius Operation (Long Term) Cable Min. Bend Radius Installation (Short Term)	IEC 60794-1-21-E11 IEC 60794-1-21-E6	10 x Cable Diam. 20 x Cable Diam.	IEC 60794-2-20
Cable Max. Tensile Strength Operation (Short Term)	IEC 60794-1-21-E1	See table with dimensions	IEC 60794-2-20
Cable Max. Crush Resistance Operation (Long Term) Cable Max. Crush Resistance Installation (Short Term)	IEC 60794-1-21-E3	3 kN/m 5 kN/m	IEC 60794-2-20

Safety

	Testing standard	Description / Value
Reaction to fire	IEC 60332-1 IEC 60332-3-24 EN 50575	4 core: Dca-s1,d1,a1 6 core: Cca-s1,d1,a1 8 core: Cca-s1,d2,a1 12 core: B2ca-s1,d1,a1
Smoke density	IEC 61034-2	
Halogen acid gas content	IEC 60754-1	Zero
Degree of acidity of gases	IEC 60754-2 IEC 60754-2	Min. 4.3 pH Max. 10 µS/mm

Guide to installation and handling

- When laying and installing optical fibre cables **it is vitally important not to exceed the specified values** set for pulling tension, bending radii and temperature. The installation methods have to be in accordance with the common standards standard colours.
- If a cable needs to be fastened, constrictions must be avoided.
- To ease insertion certified lubricants (e.g. paraffin) may be used.
The use of soap or similar substances as lubricants is strictly prohibited.
- Indoor optical fibre cables have been designed for use inside buildings. Consequently they are not longitudinal watertight.
- It is advisable to cap the cable-ends during storage

Options

- Breakout cables with Tight Buffered fibres.
- Mixed Fibre types.
- Non-standard cable constructions and colours