

GUSL

Central Loose Tube Cables Universal – Indoor/ Outdoor A/I-DQ(ZN)BH

Standard Rodent Protection
2017-03-07 v13.0

Ordering Information

Belden European Part Numbers

Fibre Description / count	4	6	8	12	24
62.5/125-OM1	GUSL104	GUSL106	GUSL108	GUSL112	GUSL124
50/125-OM2 BI	GUSL204	GUSL206	GUSL208	GUSL212	GUSL224
50/125-OM3 BI	GUSLD04	GUSLD06	GUSLD08	GUSLD12	GUSLD24
50/125-OM4 BI	GUSLE04	GUSLE06	GUSLE08	GUSLE12	GUSLE24
9/125 ITU G.655 C&D	GUSL704	GUSL706	GUSL708	GUSL712	GUSL724
9/125 ITU G.652D & G.657A1 BI	GUSL804	GUSL806	GUSL808	GUSL812	GUSL824
9/125 ITU G.657A2 BI	GUSLF04	GUSLF06	GUSLF08	GUSLF12	GUSLF24
9/125 ITU G.657B3 BI	GUSLI04	GUSLI06	GUSLI08	GUSLI12	GUSLI24
Std. plywood reel (non-returnable)	Ø800*475mm7.65 kg				
Std. delivery length	2100m ± 105m				

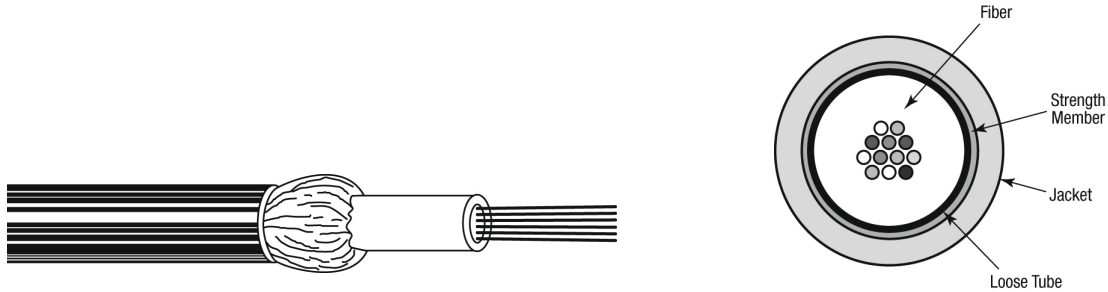
Applications

- For **outdoor and indoor** use in structured (data) wiring systems such as **campus backbone, 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. Suitable for **direct burial**.

Features & Benefits

- These cables are **halogen-free** (= FRNC and LSNH) and therefore suitable for both outdoor and indoor use. Consequently splicing can be avoided and the installation gets more cost-effective.
- A simple **all dielectric** cable construction (and consequently **more cost-effective up to 24 fibres** than multi-tube cables) with standard rodent protection.
- **The cable has been designed to meet the requirements of LUL 1-085 standard.**
- **Predicted lifetime > 30 years.**

Construction & Dimensions



Cable Specifications (construction in accordance with IEC 60794)

- Primary coated optical fibres: $\varnothing 250 \pm 15 \mu\text{m}$.
- Central tube, jelly filled (**non-dripping and silicon-free**) with **up to 24 fibres**.
Individually colour coded optical fibres:
1 – 12: red – natural – yellow – blue – green – violet – brown – black – orange – turquoise – pink and white.
13 – 24: red – natural – yellow – blue – green – violet – brown – grey – orange – turquoise – pink and white with rings.
- Swellable (for the longitudinal watertightness) yarns as strength members and for the standard rodent protection.
- Halogen-free (FRNC/LSNH) outer jacket for colors see table below.
Identification: "BELDEN OFC - FRNC CENTRAL TUBE LUL SECTION 12 - A/I-DQ (ZN) BH ...*/125-OM?
+ date/metermarking + 7EPN

Fibre type / count	Jacket color
62.5/125-OM1	Orange
50/125-OM2 BI	Orange
50/125-OM3 BI	Turquoise (Aqua)
50/125-OM4 BI	Purple (Violet)
9/125 ITU G652/655/657	Yellow

Mechanical Data

No. of fibres	Max. 24
\varnothing Central tube (mm)	3.3
\varnothing nom./max. (mm)	6.5 / 7.0
Energy of flame (kJ/m)	550
Weight (kg/km)	47

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)
7	9/125 G.655 C&D	8.4 ± 0.6 125 ± 0.7	1550 1625	0.2 / 0.22 0.21 / 0.24	≤ 4.5 ≤ 7.9	≤ 0.04	≤ 1260
8	9/125 G.652D & G.657A1 BI OS2	9.2 ± 0.4 125 ± 0.7	1310 1550 1625	0.33 / 0.34 0.18 / 0.19 0.20 / 0.24	≤ 3.2 ≤ 17	≤ 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	≤ 0.2	≤ 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. 0.05 dB/km

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. (µm)
						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 30 mm (dB)	Turns 10 Radius 15 mm (dB)	Turn 1 Radius 16 mm (dB)	Turn 1 Radius 10 mm (dB)	Turn 1 Radius 7.5 mm (dB)	Turn 1 Radius 5 mm (dB)
7	9/125 G.655 C & D	1550 1625	0.05 0.05		0.5 0.5			
8	9/125 G.652D & G.657A1 BI OS2	1550 1625	0.03 0.03	0.25 1.0		0.75 1.5		
F	9/125 G.657A2 BI	1550 1625		0.03 0.1		0.1 0.2	0.5 1.0	
I	9/125 G.657B3 BI	1550 1625				0.03 0.1	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	IEC 60794-1-22-F1	-30 to +70 °C	IEC 60794-3-10
Installation Temperature Range		-5 to +40 °C	
Operating Temperature Range		-30 to +70 °C	
Bending Radius Tube (Installation and Operation)		> 25 mm	
Cable Water Blocking	IEC 60794-1-22-F5	Pass	
Cable Min. Bend Radius Operation (Long Term)	IEC 60794-1-21-E11	10 x Cable Diam.	IEC 60794-3-10
Cable Min. Bend Radius Installation (Short Term)	IEC 60794-1-21-E6	20 x Cable Diam.	
Cable Max. Tensile Strength Operation (Long Term)	IEC 60794-1-21-E1	420 N	IEC 60794-3-10
Cable Max. Tensile Strength Installation (Short Term)		1250 N	
Cable Max. Crush Resistance Operation (Long Term)	IEC 60794-1-21-E3	7.5 kN/m	IEC 60794-3-10
Cable Max. Crush Resistance Installation (Short Term)		15 kN/m	

Safety

	Testing standard	Description / Value
Reaction to fire	IEC 60332-1 IEC 60332-3-25 LUL 1-085 EN 50575	Dca-s2,d1,a1
Toxicity	NF X 70-100-2 LUL 1-085	
Smoke density	IEC 61034-2 LUL 1-085	
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 **vitaly 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.
- To ease insertion into tubes by means of compressed air or pulling wire, certified lubricants (e.g. paraffin) may be used. The use of soap or similar substances as lubricants is strictly prohibited.
- If a cable needs to be fastened, constrictions > 0.3 mm must be prevented.
- The jelly filling inside the tubes can be removed using a tissue soaked in turpentine.
- It is advisable to cap the cable-ends during storage.

Note:

Below are the P/N's that were previously used. These are discontinued as of version 5.0, and replaced by the GUSL P/N's in table above.

Fibre type / count	4	8	12	24
62.5/125-OM1	YE02687	YE02688	YE02689	YE02690
50/125-OM2 BW 600/1200	YE02602	YE02356	YE02603	YE02691
50/125-OM3	YE02604	YE02605	YE02606	YE02692
50/125-OM4	YE02607	YE02608	YE02609	YE02686
9/125 ITU G.652D	YE02610	YE02611	YE02612	YE02693
Std. plywood reel (non-returnable)	Ø800*475mm 7.65 kg Ø1000*530mm 18 kg			
Std. delivery length	2100m / 4100 ± 100m			