

## GUSN

### Central Loose Tube Cables (Distribution)

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	2	4	6	8	12	16	24
62.5/125-OM1	GUSN102	GUSN104	GUSN106	GUSN108	GUSN112	GUSN116	GUSN124
50/125-OM2 BI	GUSN202	GUSN204	GUSN206	GUSN208	GUSN212	GUSN216	GUSN224
50/125-OM3 BI	GUSND02	GUSND04	GUSND06	GUSND08	GUSND12	GUSND16	GUSND24
50/125-OM4 BI	GUSNE02	GUSNE04	GUSNE06	GUSNE08	GUSNE12	GUSNE16	GUSNE24
9/125 ITU G.655 C&D	GUSN702	GUSN704	GUSN706	GUSN708	GUSN712	GUSN716	GUSN724
9/125 ITU G.652D & G.657A1 BI	GUSN802	GUSN804	GUSN806	GUSN808	GUSN812	GUSN816	GUSN824
9/125 ITU G.657A2 BI	GUSNF02	GUSNF04	GUSNF06	GUSNF08	GUSNF12	GUSNF16	GUSNF24
9/125 ITU G.657B3 BI	GUSNI02	GUSNI04	GUSNI06	GUSNI08	GUSNI12	GUSNI16	GUSNI24
Std. plywood reel (non-returnable)	Ø800*475mm 7.65 kg						
Std. delivery length	2100m ± 105m						

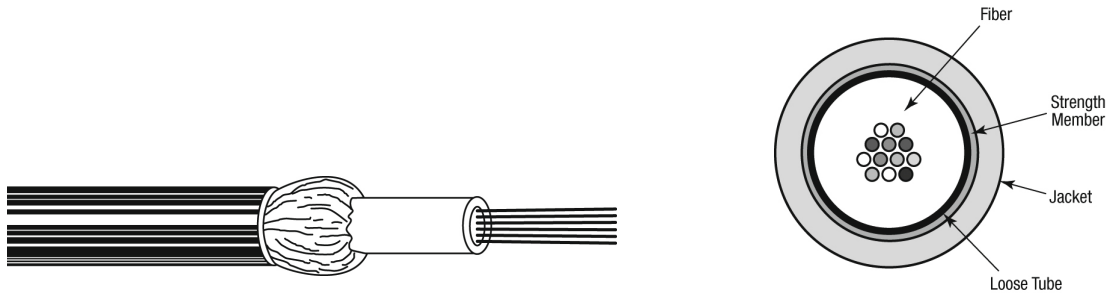
### Applications

- 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** then multi-tube cables) with standard rodent protection.
- **Predicted lifetime > 30 years**.

## Construction & Dimensions



### Cable Specifications (construction in accordance with IEC 60794)

1. Primary coated optical fibres:  $\varnothing 250 \pm 15 \text{ um}$ .
2. Central tube, jelly filled (**non-dripping and silicon-free**) with **up to 24 fibres**.  
Individually colour coded optical fibres:
  - Standard Belden color code, P/N codes GUSNxxy.0z:
    - 1 – 12: red – natural – yellow – blue – green – violet – brown – black – orange – turquoise – pink – white.
    - 13 – 24: red – natural – yellow – blue – green – violet – brown – grey – orange – turquoise – pink – white with rings.
  - TIA 598 color code, P/N codes GUSNxxy.Tz:
    - 1 – 12: blue – orange – green – brown – slate – white – red – black – yellow – violet – rose – aqua
    - 13 – 24: blue – orange – green – brown – slate – white – red – black – yellow – violet – rose – aqua with rings
3. Swellable (for the longitudinal watertightness) glass yarns as strength members and for the standard rodent protection.
4. UV resistant (FRNC/LSNH) outer jacket.  
Identification: BELDEN OFC – “cable type” – “number x type of fibre” +date-, meter- and P/N-marking.

## Mechanical Data

No. of fibres	Max. 24
$\varnothing$ Central tube (mm)	3.3
$\varnothing$ nom./max. (mm)	5.8 / 6.1
Energy of flame (kJ/m)	550
Weight (kg/km)	37

## 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 <sup>B</sup> typical/ max. (dB/km)	Dispersion (ps/(nm·km))	PMD <sup>A</sup> (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 <sup>C</sup> 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
<b>Reaction to fire</b>	IEC 60332-1 EN 50575	Dca-s2,d1,a1
<b>Toxicity</b>	NF X 70-100-2	
<b>Smoke density</b>	IEC 61034-2	
<b>Halogen acid gas content</b>	IEC 60754-1	Zero
<b>Degree of acidity of gases</b>	IEC 60754-2	Min. 4.3 pH
	IEC 60754-2	Max. 10 µS/mm

## Guide to installation and handling

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- 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.

## Options

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- Outdoor cables with a black PE outer jacket.
- **Non-standard cable constructions**, colours, details and/or additional information regarding specifications are available on request.