

## GBRG

Multi Loose Tube Cables  
Outdoor  
A-DQ(ZN)B2Y  
Improved Rodent Protection

### Ordering Information

Belden European Part Numbers

| Fibre type / count                    | 4                        | 8       | 12      | 18      | 24      | 30      | 36      |
|---------------------------------------|--------------------------|---------|---------|---------|---------|---------|---------|
| 62.5/125-OM1                          | GBRG104                  | GBRG108 | GBRG112 | GBRG118 | GBRG124 | GBRG130 | GBRG136 |
| 50/125-OM2 BW 600/1200                | GBRG204                  | GBRG208 | GBRG212 | GBRG218 | GBRG224 | GBRG230 | GBRG236 |
| 50/125-OM3                            | GBRG304                  | GBRG308 | GBRG312 | GBRG318 | GBRG324 | GBRG330 | GBRG336 |
| 50/125-OM2e                           | GBRG404                  | GBRG408 | GBRG412 | GBRG418 | GBRG424 | GBRG430 | GBRG436 |
| 50/125-OM2 BW 500/500                 | GBRG504                  | GBRG508 | GBRG512 | GBRG518 | GBRG524 | GBRG530 | GBRG536 |
| 50/125-OM4                            | GBRG604                  | GBRG608 | GBRG612 | GBRG618 | GBRG624 | GBRG630 | GBRG636 |
| 9/125 ITU G.655                       | GBRG704                  | GBRG708 | GBRG712 | GBRG718 | GBRG724 | GBRG730 | GBRG736 |
| 9/125 ITU G.652D-OS2                  | GBRG804                  | GBRG808 | GBRG812 | GBRG818 | GBRG824 | GBRG830 | GBRG836 |
| Std. plywood reel<br>(non-returnable) | Ø 1250 * 688 mm<br>93 kg |         |         |         |         |         |         |
| Std. delivery length                  | 2100 ± 100m              |         |         |         |         |         |         |

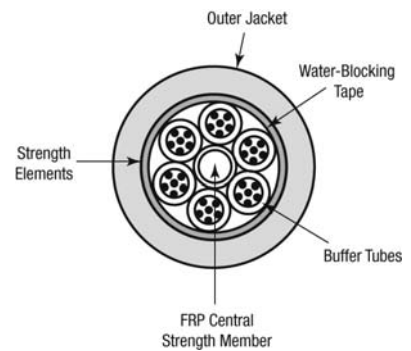
### Applications

- For **outdoor** use in structured (data) wiring systems such as (**campus backbone**).
- For **outdoor** use in networks for telecom, cable TV and/or broadcast.
- Easy to install in ducts, tunnels and trenches by means of compressed air or pulling wire.
- Suitable for direct burial.

### Features & Benefits

- **Dry Construction.**
- **Improved rodent protection** provided by waterblocking glassyarns.
- **Predicted lifetime > 30 years.**

## Construction & Dimensions



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

1. Dielectric central element of glass reinforced plastic (GRP), also as protection against kinks, surrounded by swelling yarns.
2. Jelly filled (non-dripping and silicon-free) loose tubes with primary coated optical fibres ( $\text{Ø } 250 \pm 15 \mu\text{m}$ ).  
Individually colour coded optical fibres: red – green – blue – yellow – violet – pink .
3. The loose tubes are stranded around the central element, if necessary with fillers (PE-natural), surrounded by swelling tape.  
Colour coding of the loose tubes: 1. red – 2. green – rest white.
4. Swellable (for the longitudinal watertightness) glass yarns as strength members and for improved rodent protection.
5. Black UV resistant PE outer jacket.  
Identification: BELDEN OFC – “cable type” – “number x fibre type” + date-, meter- and P/N marking.

### Mechanical Data

| No. of fibres          | Max. 36     |
|------------------------|-------------|
| Cable core             | 6 tubes     |
| Ø Central element (mm) | 2.1         |
| Ø Loose tube (mm)      | 1.9         |
| Ø nom./max. (mm)       | 11.8 / 12.1 |
| Energy of flame (kJ/m) | 3200        |
| Weight (kg/km)         | 105         |

## Optical Characteristics

### Characteristics (cabled) Single-Mode – Matched-Cladded optical fibres according to ITU.

| European Partnumber Coding, Position 5 | Fibre-Type             | Mode-Field /Cladding Diameter (um) | Wave-length (nm) | Attenuation average/ max. (dB/km) | Dispersion (ps/(nm-km)) | PMD (ps/km)        | Cable Cut-off Wave-length (nm) |
|--|------------------------|------------------------------------|------------------|-----------------------------------|-------------------------|--------------------|--------------------------------|
| 8                                      | 9/125<br>G.652D<br>OS2 | 9.2 ± 0.4<br>125 ± 0.7             | 1310<br>1550     | 0.32 / 0.40<br>0.21 / 0.30        | ≤ 3.5<br>≤ 18           | ≤ 0.2              | ≤ 1260                         |
| 7                                      | 9/125<br>G.655         | 8.4 ± 0.6<br>125 ± 1               | 1550             | 0.25 / 0.30                       | 3.5 – 8.5               | ≤ 0.1 <sup>A</sup> | ≤ 1260                         |

Note A- Link design value

### Characteristics (cabled) Multi-Mode Graded-Index optical fibres according to IEC 60793

| European Partnumber Coding, Position 5 | Fibre-Type      | Mode-Field Diameter (um) | Wave-length (nm) | Attenuation average/ max. (db/km) | Bandwidth (MHz•km) | Ethernet Performance (m) |             | Num. Apert. (µm) | Refr. Index    |
|--|-----------------|--------------------------|------------------|-----------------------------------|--------------------|--------------------------|-------------|------------------|----------------|
|  |                 |                          |                  |                                   |                    | 1GBE                     | 10 GBE      |                  |                |
| 1                                      | 62.5/125<br>OM1 | 62.5 ± 2.5<br>125 ± 1    | 850<br>1300      | 2.7 / 3.2<br>0.6 / 1.1            | ≥ 200<br>≥ 600     | 275<br>550               | 33<br>n.a.  | 0.275 ±<br>0.015 | 1.495<br>1.490 |
| 5                                      | 50/125<br>OM2   | 50 ± 2.5<br>125 ± 1      | 850<br>1300      | 2.4 / 3.0<br>0.7 / 1.0            | ≥ 500<br>≥ 500     | 600<br>600               | 82<br>n.a.  | 0.20 ±<br>0.015  | 1.481<br>1.476 |
| 2                                      | 50/125<br>OM2   | 50 ± 2.5<br>125 ± 1      | 850<br>1300      | 2.3 / 2.8<br>0.6 / 0.9            | ≥ 600<br>≥ 1200    | 600<br>600               | 82<br>n.a.  | 0.20 ±<br>0.015  | 1.481<br>1.476 |
| 4                                      | 50/125<br>OM2e  | 50 ± 2.5<br>125 ± 1      | 850<br>1300      | 2,3 / 2,8<br>0,6 / 0,9            | ≥ 600<br>≥ 1200    | 750<br>2000              | 110<br>na   | 0.20 ±<br>0.015  | 1,481<br>1,476 |
| 3                                      | 50/125<br>OM3   | 50 ± 2.5<br>125 ± 1      | 850<br>1300      | 2.5 / 3.0<br>0.5 / 1.0            | ≥ 1500<br>≥ 500    | 900<br>550               | 300<br>n.a. | 0.20 ±<br>0.015  | 1.482<br>1.477 |
| 6                                      | 50/125<br>OM4   | 50 ± 2.5<br>125 ± 1      | 850<br>1300      | 2.5 / 3.0<br>0.5 / 1.0            | ≥ 6000<br>≥ 500    | 900<br>550               | 550<br>n.a. | 0.20 ±<br>0.015  | 1.482<br>1.477 |

A test report (attenuation) is supplied with each delivery.

## Mechanical, Physical and/or Environmental Characteristics

| Requirements   |   |
|--|---|
| <b>Temperature range</b> according to IEC 60794-1-2-F1<br>Transport/storage<br>Installation<br>Operation     | -30 to + 70 °C<br>-5 to + 50 °C<br>-30 to + 70 °C |
| <b>Pulling tension</b> according to IEC 60794-1-2-E1<br>Long term<br>Short term                              | ≤ 3000 N<br>≤ 6000 N                              |
| <b>Bending radii for fibres and tubes</b><br>Installation/operation  | >25 mm  |
| <b>Watertightness</b> according to IEC 60794-1-2-F5  | Yes   |
| <b>Crush resistance</b> according to IEC 60794-1-2-E3<br>Cable   | ≤ 20 KN/m   |
| <b>Bending radii cable</b><br>Static according to IEC 60794-1-2-E11<br>Dynamic according to IEC 60794-1-2-E6 | 15 x Ø<br>20 x Ø                                  |

## 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.

## Options

- Cables for indoor/outdoor use.
- **Non-standard cable constructions**, colors, details and/or additional information regarding specifications are available on request.

Revision

| Rev.           | Description         | Date        | Init.                       |
|----------------|---------------------|-------------|-----------------------------|
| 02             | OM3+ changed to OM4 | 12/10/09    | JW                          |
| 03             | OS2 added           | 30/11/09    | JW                          |
| 04             | Changed energy      | 22/11/10    | TvR                         |
| Date: 06/02/09 |                     | Page 1 of 1 |                             |
| Orig.: SN      |                     | Review:     |                             |
|                |                     |             | Part Number:<br><b>GBRG</b> |