OPGW-DABB 48E9 (AA/ACS 221/22)

Cross Section

Central-Element: 6,3 mm filled Aluminum Tube
1st Layer: 6 x 3,75 mm Aluminum Alloy Wire + 2 x 3,75 mm Aluminum Clad Steel Wire (Left Hand Lay)
2nd Layer: 14 x 3,75 mm Aluminum Alloy Wire (Right Hand Lay)

Technical Characteristics

Rated Tensile Strength (RTS) 88 kN
Diameter (approx.) 21,3 mm
Weight of Cable (approx.) 830 kg/km
Modulus of Elasticity 67 kN/mm²
Cross Section AA Wire / Cross Section ACS Wire 221 / 22 mm²
Total Metallic Cross Section 263 mm²
I²t (T initial = 20°C) calculated with 27,4 kA / 1 sec 749 kA²s
DC Resistance (T = 20°C) 0,13 Ohm/km
Coefficient of Linear Expansion 20,8 10⁻⁶/K
Bending Radius; During Installation / After Installation > 430 / > 320 mm
Standard Delivery Length 3 - 5 km
Temperature Range for Installation -10 to +50 °C
Temperature Range for Transportation and Operation -50 to +80 °C
Max. Attenuation SMF E9 at 1310 nm / at 1550 nm 0,36 / 0,22 dB/km
Max. Dispersion SMF E9; 1288 nm to 1339 nm / at 1550 nm 3,5 / 18 ps/(nm·km)
Fiber Standard: SMF E9 fibers according to ITU-T G.652.D

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Armoring: Double Layer Armoring

A double layer of armoring wires is stranded around an aluminum central buffer tube. The specific wire materials are given in the enclosed cross section drawing. This design provides excellent lightning protection under mechanical load and prevents the fiber from thermal stress under fault current conditions. Before stranding the wires are pre-formed. This allows the wires to remain in position, even when the cable is cut. Thus simple cable termination and field operations are ensured.

Optical Unit: Aluminum Central Buffer Tube

A hermetically sealed optical unit is formed by a central aluminum buffer tube. Fibers are enclosed in the tube with a defined excess length in order to ensure a suitable operating window. This means, even if a tensile load is applied to the cable causing cable elongation, there will be no fiber strain and no increase in fiber attenuation. Central Buffer Technology provides excellent thermal and mechanical protection of the fibers. The tube is filled with a water blocking filling compound in order to avoid water penetration and migration. As a result, the optical fibers will not be affected by external influences.

Fiber Identification: Groups of Bundled Fibers

The fibers are colored with UV-cured ink. 12 different colors according to TIA/EIA-598 ("Telcordia Code") are available. Customized coloring is available on request. The central buffer tube contains 48 fibers. To allow identification, the fibers are divided in 4 groups of 12 fibers. These groups are held together by colored binders. The following color code is used:

<table>
<thead>
<tr>
<th>Fiber Color Coding</th>
<th>Group / Binder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
<td>1 / blue</td>
</tr>
<tr>
<td>blue, orange, green, brown, slate, white, red, black, yellow, violet, rose, aqua</td>
<td>2 / orange</td>
</tr>
<tr>
<td>blue, orange, green, brown, slate, white, red, black, yellow, violet, rose, aqua</td>
<td>3 / green</td>
</tr>
<tr>
<td>blue, orange, green, brown, slate, white, red, black, yellow, violet, rose, aqua</td>
<td>4 / brown</td>
</tr>
</tbody>
</table>

General: Applicable Standards for Cable and Wire

- IEC 60794-4-1 Optical Fibre Cables – Part 4-1: Aerial Optical Cables for High-Voltage Power Lines
- European Standard (EN) 50182: Conductors for overhead lines, Round wire concentric lay stranded conductors
- IEC 60104 Aluminium-Magnesium-Silicon Alloy Wire for Overhead Line Conductors
- IEC 61232 Aluminium-Clad Steel Wires for Electrical Purposes