ZPFU & ZPFU-SH Main & Local Signalling Cables
(DC Electrified Lines)

Applications

The cables are designed for the main signalling circuits of 1500V DC electrified lines.

Standards

- SNCF CT 445
- NF F 55-698

Construction

- Conductors: Solid annealed copper, 1.0mm² nominal cross section area.
- Insulation: Solid polyethylene.
- Cabling Element: Two conductors are twisted to form a pair.
- Stranding: Pairs are helically stranded to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: PE. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Mechanical Protection: Two helically applied steel tapes (0.15, 0.2/0.5mm, depending on pair count).
- Outer Sheath: PE/PVC. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).

Electrical Characteristics at 20°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Conductor Diameter</td>
<td>mm</td>
<td>1.13</td>
</tr>
<tr>
<td>Nominal Cross Section Area</td>
<td>mm²</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Conductor Resistance (DC)</td>
<td>Ω/km</td>
<td>18.1</td>
</tr>
<tr>
<td>Minimum Insulation Resistance @500 V DC (3mins)</td>
<td>MΩ.km</td>
<td>5000</td>
</tr>
<tr>
<td>Maximum Mutual Capacitance (AC) @1000Hz</td>
<td>nF/km</td>
<td>55</td>
</tr>
<tr>
<td>Maximum Capacitance Unbalance @1000Hz</td>
<td>pF/500 m</td>
<td>400</td>
</tr>
<tr>
<td>Attenuation @45KHz</td>
<td>dB/km</td>
<td>2.5</td>
</tr>
<tr>
<td>Characteristic Impedance @45KHz</td>
<td>Ω</td>
<td>120</td>
</tr>
<tr>
<td>Dielectric Strength, conductor to conductor</td>
<td>V</td>
<td>4500</td>
</tr>
<tr>
<td>Operating Voltage AC/DC</td>
<td>V</td>
<td>450/750</td>
</tr>
</tbody>
</table>

Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +70°C (during operation); -20°C to +50°C (during installation)
## Dimensions and Weight

<table>
<thead>
<tr>
<th>Cable Code</th>
<th>No. of Pairs</th>
<th>Inner Diameter mm</th>
<th>Outer Diameter mm</th>
<th>Nominal Sheath Thickness mm</th>
<th>Nominal Overall Diameter mm</th>
<th>Nominal Weight kg/km</th>
<th>Armour Thickness mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS/ZPFU-2Y2YB2Y-1P1S</td>
<td>1</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>11.7</td>
<td>207</td>
<td>0.15</td>
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<tr>
<td>RS/ZPFU-2Y2YB2Y-2P1S</td>
<td>2</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>12.9</td>
<td>257</td>
<td>0.2</td>
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<tr>
<td>RS/ZPFU-2Y2YB2Y-4P1S</td>
<td>4</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>16.8</td>
<td>509</td>
<td>0.2</td>
</tr>
<tr>
<td>RS/ZPFU-2Y2YB2Y-7P1S</td>
<td>7</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>19.0</td>
<td>653</td>
<td>0.5</td>
</tr>
<tr>
<td>RS/ZPFU-2Y2YB2Y-14P1S</td>
<td>14</td>
<td>1.2</td>
<td>1.5</td>
<td>1.2</td>
<td>24.1</td>
<td>1011</td>
<td>0.5</td>
</tr>
<tr>
<td>RS/ZPFU-2Y2YB2Y-21P1S</td>
<td>21</td>
<td>1.2</td>
<td>2.0</td>
<td>1.2</td>
<td>27.8</td>
<td>1304</td>
<td>0.5</td>
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<tr>
<td>RS/ZPFU-2Y2YB2Y-28P1S</td>
<td>28</td>
<td>1.2</td>
<td>2.2</td>
<td>1.2</td>
<td>31.0</td>
<td>1594</td>
<td>0.5</td>
</tr>
<tr>
<td>RS/ZPFU-2Y2YB2Y-56P1S</td>
<td>56</td>
<td>1.3</td>
<td>2.5</td>
<td>1.3</td>
<td>40.5</td>
<td>2630</td>
<td>0.5</td>
</tr>
</tbody>
</table>

- **UV Resistant**
- **Mineral Oil Resistant**
- **Rated Voltage**: 750V DC/450V AC
- **Buried in Ground**
- **Laid In Ducts**

- **PE Sheath**
  - Zero Halogen
  - IEC 60754-1/NF C20-454
  - EN 50267-2-1

- **PVC Sheath**
  - Flame Retardant
  - NF C32-070-2.1(C2)
  - IEC 60332-1/EN 50265-2-1

- **LSZH Sheath**
  - Flame Retardant
  - NF C32-070-2.1(C2)
  - IEC 60332-1/EN 50265-2-1
  - Fire Retardant
  - NF C32-070-2.2(C1)
  - IEC 60332-3/EN 50266
  - Zero Halogen
  - IEC 60754-1/NF C20-454
  - EN 50267-2-1
  - Low Smoke Emission
  - IEC 61034/NFC20-902
  - EN 50268/NF C32-073
  - EN 50267-2-2/NF C32-074
  - IEC 60754-2/NF C20-453
  - Low Corrosivity
  - Low Toxicity