## APPENDIX 2 - Current Carrying and Voltage Drop Tables for PVC insulated and XLPE Insulated Cables

**TABLE (1) Single-core PVC insulated cables, non-armoured, with or without sheath (COPPER CONDUCTORS)**

BS6004 / BS6346 / GB5023 / GB/T12706.1 / IEC60227 / IEC60502

**CURRENT CARRYING CAPACITY (Amperes):**

<table>
<thead>
<tr>
<th>Conductor cross-sectional area</th>
<th>Reference Method 4 (enclosed in conduit in thermally insulting wall etc.)</th>
<th>Reference Method 3 (enclosed in conduit on a wall or in trunking etc.)</th>
<th>Reference Method 1 (clipped direct)</th>
<th>Reference Method 11 (on a perforated cable tray horizontal or vertical)</th>
<th>Reference Method 12 (free air)</th>
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</thead>
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<td></td>
<td>2 cables, single-phase a.c. or d.c.</td>
<td>2 cables, single-phase a.c. or d.c.</td>
<td>2 cables, single-phase a.c.</td>
<td>3 or 4 cables, three-phase a.c., flat and touching</td>
<td>2 cables, single-phase a.c. or d.c., flat and touching</td>
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<td>3 or 4 cables, three-phase a.c.</td>
<td>3 or 4 cables, three-phase a.c.</td>
<td>3 or 4 cables, three-phase a.c.</td>
<td>3 or 4 cables, three-phase a.c., flat and touching or trefoil</td>
<td>3 or 4 cables, three-phase a.c., flat and touching or trefoil</td>
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Ambient temperature: 30°C

Conductor operating temperature: 70°C
### Table (1)(Cont.)

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<th>3 or 4 cables-three-phase a.c.</th>
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S.G.H. Electric Wire & Cable Co., Ltd. V2.0
TABLE (2) Multicore PVC insulated cables, non-armoured (COPPER CONDUCTORS) BS6004 / BS6346 / GB5023 / GB/T12706.1 / IEC60227 / IEC60502

Ambient temperature: 30°C
Conductor operating temperature: 70°C

**CURRENT CARRYING CAPACITY (Amperes):**

<table>
<thead>
<tr>
<th>Conductor cross-sectional area</th>
<th>Reference Method 4 (enclosed in an insulated wall, etc.)</th>
<th>Reference Method 3 (enclosed in conduit on a wall or ceiling, or in trunking)</th>
<th>Reference Method 1 (clipped direct)</th>
<th>Reference Method 11 (on a perforated cable tray), or Reference method 13 (free air)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mm²</strong></td>
<td>1 two-core cable*, single-phase a.c. or d.c.</td>
<td>1 three-core cable*, or 1 four-core cable, three-phase a.c.</td>
<td>1 two-core cable*, single-phase a.c. or d.c.</td>
<td>1 three-core cable*, or 1 four-core cable, three-phase a.c.</td>
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*S.G.H. Electric Wire & Cable Co., Ltd. V2.0*
<table>
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<th>Conductor cross-sectional area</th>
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<th>mV</th>
<th>Two-core cable single phase a.c.</th>
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<th>Three-or four-core cable three phase a.c.</th>
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<tbody>
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TABLE (2) (Cont.)

VOLTAGE DROP (per ampere per metre):

- Conductor operating temperature: 70°C

S.G.H. Electric Wire & Cable Co., Ltd. V2.0
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<th>Reference Method 1 (clipped direct) 2 cables, single-phase a.c. or d.c., flat and touching</th>
<th>Reference Method 11 (on a perforated cable tray) 2 cables, single-phase a.c. or d.c., flat and touching</th>
<th>Reference Method 12 (free air) 2 cables single phase a.c.</th>
<th>Reference Method 12 (free air) 2 cables d.c.</th>
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<td>3 or 4 cables-three phase a.c.</td>
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<td>Reference Methods 1 &amp; 11 (Touching)</td>
<td>Reference Method 12 (Spaced*)</td>
<td>Reference Methods 1, 11 and 12 (in trefoil touching)</td>
<td>Reference Methods 1 &amp; 11 (Flat and touching)</td>
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<td>0.140 0.155 0.21</td>
<td>0.165 0.22 0.28</td>
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<td>0.105 0.165 0.195</td>
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<td>0.095 0.16 0.185</td>
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<td>0.079 0.135 0.155</td>
<td>0.125 0.165 0.21</td>
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**TABLE (4) Multicore armoured PVC insulated cables (COPPER CONDUCTORS)**  
BS6346 / GB/T12706.1 / IEC60502

**CURRENT CARRYING CAPACITY (Amperes):**  
Conductor cross-sectional area

<table>
<thead>
<tr>
<th>Conductor cross-sectional area mm²</th>
<th>Reference Method 1 (clipped direct)</th>
<th>Reference Method 11 (on a perforated horizontal or vertical cable tray), or Reference Method 13 (free air)</th>
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<td>1 two-core cable, single-phase a.c. or d.c.</td>
<td>1 three- or four-core cable, three-phase a.c.</td>
<td>1 two-core cable, single-phase a.c. or d.c.</td>
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<td>Conductor cross-sectional area</td>
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<td>Two-core cable single phase a.c.</td>
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### TABLE (5) Single core XLPE insulated cables, non-armoured, with or without sheath (COPPER CONDUCTORS)

<table>
<thead>
<tr>
<th>Conductor cross-sectional area</th>
<th>Reference Method 4 (enclosed in conduit in thermally insulating wall etc.)</th>
<th>Reference Method 3 (enclosed in conduit on a wall or in trunking etc.)</th>
<th>Reference Method 1 (clipped direct)</th>
<th>Reference Method 11 (on a perforated cable tray horizontal or vertical)</th>
<th>Reference Method 12 (Free air)</th>
</tr>
</thead>
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<td>2 cables, single-phase a.c. or d.c.</td>
<td>2 cables, single-phase a.c. or d.c.</td>
<td>3 or 4 cables three-phase a.c.</td>
<td>3 or 4 cables three-phase a.c. flat and touching</td>
<td>3 or 4 cables three-phase a.c. flat and touching</td>
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</table>

**NOTE:**
1. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036.
2. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature.
3. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C PVC insulated cables (BS 6004, BS 6346) shall be used.
4. The current carrying capacity in columns 2 to 5 are also applicable to flexible cables to BS 7211 Table 3(b) where the cables are used in fixed installations.
5. For cable in rigid PVC conduit, the values stated in table A6 (1) are applicable.
<table>
<thead>
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<th>Cross-sectional area</th>
<th>S.G.H Electric Wire &amp; Cable Co., Ltd. V2.0</th>
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<td>Conductors</td>
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<td>Method 12 (Flat touching)</td>
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<td>Reference Methods 1 &amp; 11 (In trefoil)</td>
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<td>Reference Methods 3 &amp; 4 (Enclosed in conduit etc. in or on a wall)</td>
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<td>Reference Methods 3 &amp; 4 (Enclosed in conduit etc. in or on a wall)</td>
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<td>Conductor cross-sectional area mm²</td>
<td>Reference Method 4 (enclosed in an insulated wall, etc.)</td>
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<td>185</td>
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<td>300</td>
<td>386</td>
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<td>400</td>
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**TABLE (6) Multicore XLPE insulated cables, non-armoured (COPPER CONDUCTORS)**

BS7211 / GB/T12706.1 / IEC60502

**Ambient temperature:** 30°C

**Conductor operating temperature:** 90°C

**CURRENT CARRYING CAPACITY (Amperes):**
<table>
<thead>
<tr>
<th>Conductor cross-sectional area</th>
<th>Two-core cable d.c.</th>
<th>Two-core cable single phase a.c.</th>
<th>Three-or four-core cable three phase a.c.</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm²</td>
<td>mV</td>
<td>mV</td>
<td>mV</td>
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<tr>
<td>1</td>
<td>46</td>
<td>46</td>
<td>40</td>
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<tr>
<td>1.5</td>
<td>31</td>
<td>31</td>
<td>27</td>
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<tr>
<td>2.5</td>
<td>19</td>
<td>19</td>
<td>16</td>
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<tr>
<td>4</td>
<td>12</td>
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<td>6</td>
<td>7.9</td>
<td>7.9</td>
<td>6.8</td>
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<td>10</td>
<td>4.7</td>
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<td>r</td>
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<td>0.155</td>
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<td>0.49</td>
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<td>0.31</td>
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<td>0.140</td>
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<td>0.155</td>
<td>0.16</td>
<td>0.140</td>
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<td>400</td>
<td>0.120</td>
<td>0.13</td>
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</table>
### TABLE (7) Single-core XLPE insulated cables (non-magnetic armour) (COPPER CONDUCTORS)

<table>
<thead>
<tr>
<th>Ambient temperature: 30°C</th>
<th>Conductor operating temperature: 90°C</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Conductor cross-sectional area</th>
<th>Reference Method 11 (clipped direct)</th>
<th>Reference Method 1 (on a perforated cable tray)</th>
<th>Reference Method 12 (free air)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 cables, single-phase a.c. or d.c. flat and touching</td>
<td>2 cables, single-phase a.c. or d.c. flat &amp; touching</td>
<td>2 cables single phase a.c.</td>
</tr>
<tr>
<td></td>
<td>3 or 4 cables, three-phase a.c. flat and touching</td>
<td>3 or 4 cables, three-phase a.c. flat &amp; touching</td>
<td>2 cables d.c.</td>
</tr>
<tr>
<td></td>
<td>2 cables, single-phase a.c. or d.c. flat and touching</td>
<td>3 or 4 cables, three-phase a.c. flat &amp; touching</td>
<td>3 or 4 cables, three-phase a.c.</td>
</tr>
<tr>
<td>mm²</td>
<td>A</td>
<td>A</td>
<td>A</td>
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<tr>
<td>50</td>
<td>237</td>
<td>220</td>
<td>253</td>
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<td>755</td>
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<td>853</td>
<td>717</td>
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### Table (7) (Cont.)

**VOLTAGE DROP** (per ampere per metre):

Conductor operating temperature: 90°C

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<th>Conductor cross-sectional area</th>
<th>2 cables d.c.</th>
<th>2 cables-single phase a.c.</th>
<th>3 or 4 cables-three phase a.c.</th>
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</thead>
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<td><strong>Reference Methods 1 &amp; 11</strong></td>
<td><strong>Reference Method 12</strong></td>
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<td></td>
<td>(Touching)</td>
<td>(Spaced*)</td>
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<td><strong>Reference Methods 1, 11</strong></td>
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<td></td>
<td></td>
<td>and 12 (in trefoil touching)</td>
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<td><strong>Reference Methods 1 &amp; 11</strong></td>
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<td></td>
<td></td>
<td>(Flat and touching)</td>
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<td></td>
<td><strong>Reference method 12</strong></td>
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<td>(Flat spaced*)</td>
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<tr>
<td>mm²</td>
<td>mV</td>
<td>mV</td>
<td>mV</td>
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<td>r x z</td>
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## TABLE (8) Multicore armoured XLPE insulated cables (COPPER CONDUCTORS)

**BS5467 / BS6724 / BS7846 / GB/T12706.1 / IEC60502**

**Ambient temperature: 30°C**

**Conductor operating temperature: 90°C**

### CURRENT CARRYING CAPACITY (Amperes):

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<th>Conductor cross-sectional area (mm²)</th>
<th>Reference Method 1 (clipped direct)</th>
<th>Reference Method 11 (on a perforated horizontal or vertical cable tray), or Reference Method 13 (free air)</th>
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<td>Conductor core: 1 three or four-core cable, three-phase a.c.</td>
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<td>Two-core cable single phase a.c.</td>
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