

**Type P Instrument Pairs Signal Cable Individual + Overall Shield  
AL/PS tape (0.6/1kV) Flame Retardant**



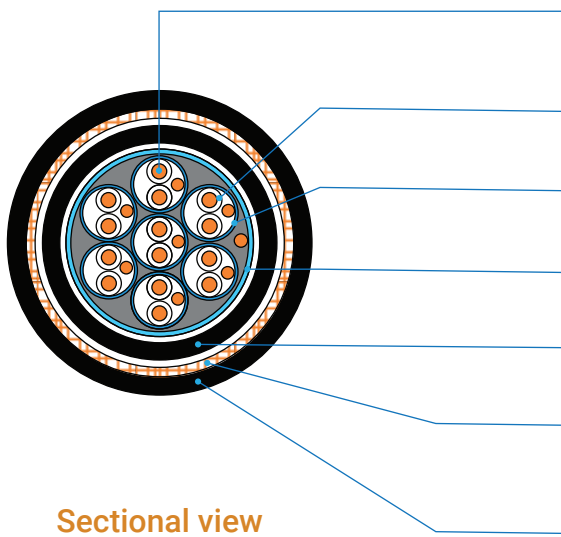
**CABLE DESIGNATION**

0.6/1kV TP(IS-OS)PN, TP(IS-OS)PNB, TP(IS-OS)PNBS

**APPLICATION STANDARD**

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| Design guide        | IEEE 1580(2010) , UL 1309(2017)                                |
| Insulation material | IEEE 1580, Type P UL 1309, X110                                |
| Sheath material     | IEEE 1580, Type N                                              |
| Flame retardant     | IEEE 1202 & IEC 60332-3 Category A                             |
| Fire resistance     | IEC 60331-21(90min),<br>IEC 60331-1,-2(120min), FS-type only   |
| Cold bend / impact  | CSA C22.2 NO. 2556(-40°C/-40°C)<br>(Formerly CSA C22.2 NO.0.3) |

**CONSTRUCTION**



**Sectional view**

**Core identification**

Colored insulation plus

Arabic number printing on the insulation

Each core color : pair \_ Black, White(or Red)

**Conductor**

- Flexible stranded tinned annealed copper wires as per IEEE 1580
- A suitable separator tape(s) may be applied over the conductor

**Insulation**

XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309

**Individual shield**

Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire

**Overall shield**

Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire

**Jacket**

Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309

**Armor**

- Braid of commercial bronze wires
- A suitable separator tape(s) may be applied under / over the armor

**Sheath**

- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
- Outer sheath color : Black

**Fire resisting layer(optional)**

Mica/glass tape (FS Type cable only)

**Twisting**

Two/Three Insulated cores shall be twisted together to form a pair / triad

**Cabling**

- Individual shielded pairs / triads shall be cabled
- Flame retardant & non-hygroscopic fillers may be used
- Suitable tape(s) may be applied on the cabled core
- A Filler may be applied to obtain a circular Cable

## Type P Instrument Pairs Signal Cable Individual + Overall Shield AL/PS tape (0.6/1kV) Flame Retardant

### 0.6/1kV TP(IS-OS)PN, 0.6/1kV TP(IS-OS)PNB, 0.6/1kV TP(IS-OS)PNBS

| No. of Pairs | Conductor    | Thickness of Insulation | Thickness of Jacket | Thickness of Sheath | Unarmor          |                | Armor            |                | Armor and Sheath |                |
|--------------|--------------|-------------------------|---------------------|---------------------|------------------|----------------|------------------|----------------|------------------|----------------|
|              | Nominal Area |                         |                     |                     | Nom.Dia. Approx. | Weight Approx. | Nom.Dia. Approx. | Weight Approx. | Nom.Dia. Approx. | Weight Approx. |
| No.          | AWG          | mm/inch                 | mm/inch             | mm/inch             | mm/inch          | kg/km          | mm/inch          | kg/km          | mm/inch          | kg/km          |
| 2 P          | 18           | 0.76/0.030              | 1.14 / 0.045        | 1.52 / 0.060        | 13.3 / 0.524     | 210            | 15.1 / 0.594     | 350            | 18.5 / 0.728     | 490            |
| 3 P          |              |                         | 1.52 / 0.060        | 1.52 / 0.060        | 15.0 / 0.591     | 290            | 16.8 / 0.661     | 450            | 20.2 / 0.795     | 600            |
| 4 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 15.9 / 0.626     | 350            | 17.7 / 0.697     | 510            | 22.2 / 0.874     | 720            |
| 5 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 17.8 / 0.701     | 420            | 19.6 / 0.772     | 600            | 24.1 / 0.949     | 840            |
| 6 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 19.0 / 0.748     | 480            | 20.8 / 0.819     | 680            | 25.3 / 0.996     | 920            |
| 7 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 19.0 / 0.748     | 520            | 20.8 / 0.819     | 720            | 25.3 / 0.996     | 960            |
| 8 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 20.3 / 0.799     | 590            | 22.1 / 0.870     | 800            | 26.6 / 1.047     | 1,060          |
| 10 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 23.9 / 0.941     | 780            | 25.7 / 1.012     | 1,030          | 30.2 / 1.189     | 1,320          |
| 12 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 25.0 / 0.984     | 890            | 26.8 / 1.055     | 1,140          | 31.3 / 1.232     | 1,450          |
| 14 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 26.0 / 1.024     | 990            | 27.8 / 1.094     | 1,250          | 32.3 / 1.272     | 1,570          |
| 16 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 27.8 / 1.094     | 1,120          | 29.6 / 1.165     | 1,400          | 34.1 / 1.343     | 1,740          |
| 18 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 29.1 / 1.146     | 1,230          | 30.9 / 1.217     | 1,530          | 35.4 / 1.394     | 1,880          |
| 20 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 29.7 / 1.169     | 1,330          | 31.5 / 1.240     | 1,630          | 36.0 / 1.417     | 1,990          |
| 24 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 32.8 / 1.291     | 1,580          | 34.6 / 1.362     | 1,910          | 39.1 / 1.539     | 2,300          |
| 2 P          | 16           | 0.76/0.030              | 1.52 / 0.060        | 1.52 / 0.060        | 14.6 / 0.575     | 270            | 16.4 / 0.646     | 420            | 19.8 / 0.780     | 570            |
| 3 P          |              |                         | 1.52 / 0.060        | 1.52 / 0.060        | 15.6 / 0.614     | 340            | 17.4 / 0.685     | 500            | 20.8 / 0.819     | 650            |
| 4 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 16.6 / 0.654     | 400            | 18.4 / 0.724     | 580            | 22.9 / 0.902     | 800            |
| 5 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 18.6 / 0.732     | 490            | 20.4 / 0.803     | 680            | 24.9 / 0.980     | 920            |
| 6 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 19.9 / 0.783     | 570            | 21.7 / 0.854     | 770            | 26.2 / 1.031     | 1,030          |
| 7 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 19.9 / 0.783     | 620            | 21.7 / 0.854     | 820            | 26.2 / 1.031     | 1,080          |
| 8 P          |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 22.3 / 0.878     | 750            | 24.1 / 0.949     | 980            | 28.6 / 1.126     | 1,260          |
| 10 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 25.1 / 0.988     | 920            | 26.9 / 1.059     | 1,170          | 31.4 / 1.236     | 1,480          |
| 12 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 26.1 / 1.028     | 1,040          | 27.9 / 1.098     | 1,310          | 32.4 / 1.276     | 1,630          |
| 14 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 27.1 / 1.067     | 1,170          | 28.9 / 1.138     | 1,440          | 33.4 / 1.315     | 1,780          |
| 16 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 29.1 / 1.146     | 1,320          | 30.9 / 1.217     | 1,620          | 35.4 / 1.394     | 1,970          |
| 18 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 30.4 / 1.197     | 1,460          | 32.2 / 1.268     | 1,770          | 36.7 / 1.445     | 2,140          |
| 20 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 31.1 / 1.224     | 1,580          | 32.9 / 1.295     | 1,900          | 37.4 / 1.472     | 2,270          |
| 24 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 34.4 / 1.354     | 1,880          | 36.2 / 1.425     | 2,230          | 40.7 / 1.602     | 2,640          |
| 2 P          | 14           | 0.76/0.030              | 1.52 / 0.060        | 1.52 / 0.060        | 15.8 / 0.622     | 340            | 17.6 / 0.693     | 510            | 21.0 / 0.827     | 660            |
| 3 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 16.9 / 0.665     | 430            | 18.7 / 0.736     | 610            | 23.2 / 0.913     | 830            |
| 4 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 18.0 / 0.709     | 530            | 19.8 / 0.780     | 710            | 24.3 / 0.957     | 950            |
| 5 P          |              |                         | 1.52 / 0.060        | 2.03 / 0.080        | 20.2 / 0.795     | 640            | 22.0 / 0.866     | 850            | 26.5 / 1.043     | 1,110          |
| 6 P          |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 22.8 / 0.898     | 800            | 24.6 / 0.969     | 1,040          | 29.1 / 1.146     | 1,320          |
| 7 P          |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 22.8 / 0.898     | 870            | 24.6 / 0.969     | 1,110          | 29.1 / 1.146     | 1,390          |
| 8 P          |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 24.3 / 0.957     | 980            | 26.1 / 1.028     | 1,230          | 30.6 / 1.205     | 1,530          |
| 10 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 27.4 / 1.079     | 1,210          | 29.2 / 1.150     | 1,490          | 33.7 / 1.327     | 1,820          |
| 12 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 28.5 / 1.122     | 1,380          | 30.3 / 1.193     | 1,670          | 34.8 / 1.370     | 2,020          |
| 14 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 29.6 / 1.165     | 1,560          | 31.4 / 1.236     | 1,860          | 35.9 / 1.413     | 2,210          |
| 16 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 31.8 / 1.252     | 1,770          | 33.6 / 1.323     | 2,090          | 38.1 / 1.500     | 2,470          |
| 18 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 33.2 / 1.307     | 1,950          | 35.0 / 1.378     | 2,290          | 39.5 / 1.555     | 2,690          |
| 20 P         |              |                         | 2.03 / 0.080        | 2.03 / 0.080        | 34.0 / 1.339     | 2,120          | 35.8 / 1.409     | 2,460          | 40.3 / 1.587     | 2,870          |
| 24 P         |              |                         | 2.03 / 0.080        | 2.79 / 0.110        | 37.6 / 1.480     | 2,530          | 39.4 / 1.551     | 2,910          | 45.4 / 1.787     | 3,510          |

**Note.** For outer diameter, it is applied to  $\pm 5\%$  manufacturing tolerance.