

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



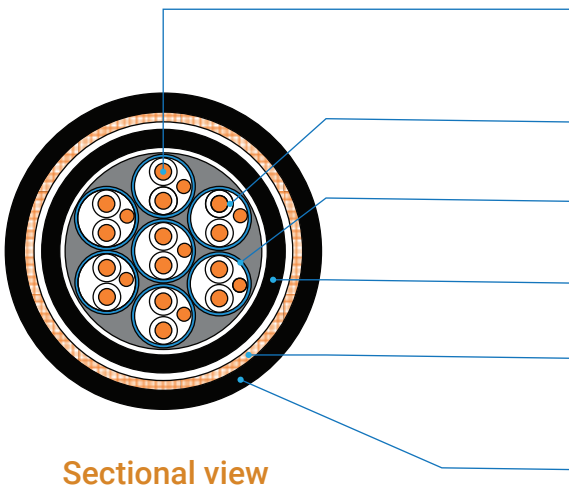
CABLE DESIGNATION

0.6/1kV TP(IS)PN, TP(IS)PNB, TP(IS)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 60331-2I(90min), IEC 60331-1,-2(120min), FS-type only
Cold bend / impact	CSA C22.2 NO. 2556(-40°C/-40°C) (Formerly CSA C22.2 NO.0.3)

CONSTRUCTION



Sectional view

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

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

Core identification

Colored insulation plus
Arabic number printing on the insulation
Each core color : pair _ Black, White(or Red)

Fire resisting layer(optional)

Mica/glass tape (FS Type cable only)

Twisting

Two Insulated cores shall be twisted together to form a pair

Cabling

- Individual shielded pairs 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 Shield
AL/PS tape (0.6/1kV) Flame Retardant**

0.6/1kV TP(IS)PN, 0.6/1kV TP(IS)PNB, 0.6/1kV TP(IS)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
1 P	18	0.76/0.030	1.14 / 0.045	1.52 / 0.060	8.9 / 0.350	100	10.7 / 0.421	200	14.1 / 0.555	300
2 P			1.14 / 0.045	1.52 / 0.060	13.2 / 0.520	200	15.0 / 0.591	340	18.4 / 0.724	470
3 P			1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	280	16.7 / 0.657	430	20.1 / 0.791	580
4 P			1.52 / 0.060	1.52 / 0.060	15.8 / 0.622	330	17.6 / 0.693	490	21.0 / 0.827	650
5 P			1.52 / 0.060	2.03 / 0.080	17.7 / 0.697	400	19.5 / 0.768	590	24.0 / 0.945	820
6 P			1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	470	20.7 / 0.815	660	25.2 / 0.992	900
7 P			1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	500	20.7 / 0.815	700	25.2 / 0.992	940
8 P			1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	570	22.0 / 0.866	780	26.5 / 1.043	1,030
10 P			2.03 / 0.080	2.03 / 0.080	23.8 / 0.937	760	25.6 / 1.008	1,000	30.1 / 1.185	1,300
12 P			2.03 / 0.080	2.03 / 0.080	24.9 / 0.980	860	26.7 / 1.051	1,120	31.2 / 1.228	1,430
14 P			2.03 / 0.080	2.03 / 0.080	25.9 / 1.020	970	27.7 / 1.091	1,230	32.2 / 1.268	1,550
16 P			2.03 / 0.080	2.03 / 0.080	27.7 / 1.091	1,090	29.5 / 1.161	1,380	34.0 / 1.339	1,710
18 P			2.03 / 0.080	2.03 / 0.080	29.0 / 1.142	1,210	30.8 / 1.213	1,500	35.3 / 1.390	1,860
20 P			2.03 / 0.080	2.03 / 0.080	29.6 / 1.165	1,300	31.4 / 1.236	1,600	35.9 / 1.413	1,960
24 P			2.03 / 0.080	2.03 / 0.080	32.7 / 1.287	1,550	34.5 / 1.358	1,880	39.0 / 1.535	2,280
1 P			16	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.2 / 0.362	120	11.0 / 0.433	220
2 P	1.52 / 0.060	1.52 / 0.060			14.5 / 0.571	250	16.3 / 0.642	400	19.7 / 0.776	550
3 P	1.52 / 0.060	1.52 / 0.060			15.5 / 0.610	320	17.3 / 0.681	480	20.7 / 0.815	630
4 P	1.52 / 0.060	2.03 / 0.080			16.5 / 0.650	380	18.3 / 0.720	550	22.8 / 0.898	770
5 P	1.52 / 0.060	2.03 / 0.080			18.5 / 0.728	470	20.3 / 0.799	660	24.8 / 0.976	900
6 P	1.52 / 0.060	2.03 / 0.080			19.8 / 0.780	550	21.6 / 0.850	750	26.1 / 1.028	1,000
7 P	1.52 / 0.060	2.03 / 0.080			19.8 / 0.780	590	21.6 / 0.850	800	26.1 / 1.028	1,050
8 P	2.03 / 0.080	2.03 / 0.080			22.2 / 0.874	730	24.0 / 0.945	950	28.5 / 1.122	1,230
10 P	2.03 / 0.080	2.03 / 0.080			25.0 / 0.984	890	26.8 / 1.055	1,150	31.3 / 1.232	1,460
12 P	2.03 / 0.080	2.03 / 0.080			26.0 / 1.024	1,020	27.8 / 1.094	1,280	32.3 / 1.272	1,600
14 P	2.03 / 0.080	2.03 / 0.080			27.0 / 1.063	1,140	28.8 / 1.134	1,420	33.3 / 1.311	1,750
16 P	2.03 / 0.080	2.03 / 0.080			29.0 / 1.142	1,300	30.8 / 1.213	1,590	35.3 / 1.390	1,940
18 P	2.03 / 0.080	2.03 / 0.080			30.3 / 1.193	1,430	32.1 / 1.264	1,740	36.6 / 1.441	2,110
20 P	2.03 / 0.080	2.03 / 0.080			31.0 / 1.220	1,550	32.8 / 1.291	1,870	37.3 / 1.469	2,240
24 P	2.03 / 0.080	2.03 / 0.080			34.3 / 1.350	1,850	36.1 / 1.421	2,200	40.6 / 1.598	2,610
1 P	14	0.76/0.030			1.14 / 0.045	1.52 / 0.060	9.9 / 0.390	150	11.7 / 0.461	250
2 P			1.52 / 0.060	1.52 / 0.060	15.7 / 0.618	320	17.5 / 0.689	480	20.9 / 0.823	630
3 P			1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	410	18.6 / 0.732	580	23.1 / 0.909	800
4 P			1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	500	19.7 / 0.776	680	24.2 / 0.953	920
5 P			1.52 / 0.060	2.03 / 0.080	20.1 / 0.791	610	21.9 / 0.862	820	26.4 / 1.039	1,080
6 P			2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	770	24.5 / 0.965	1,010	29.0 / 1.142	1,290
7 P			2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	840	24.5 / 0.965	1,080	29.0 / 1.142	1,360
8 P			2.03 / 0.080	2.03 / 0.080	24.2 / 0.953	950	26.0 / 1.024	1,200	30.5 / 1.201	1,500
10 P			2.03 / 0.080	2.03 / 0.080	27.3 / 1.075	1,180	29.1 / 1.146	1,450	33.6 / 1.323	1,790
12 P			2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,350	30.2 / 1.189	1,640	34.7 / 1.366	1,980
14 P			2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,520	31.3 / 1.232	1,820	35.8 / 1.409	2,180
16 P			2.03 / 0.080	2.03 / 0.080	31.7 / 1.248	1,730	33.5 / 1.319	2,050	38.0 / 1.496	2,430
18 P			2.03 / 0.080	2.03 / 0.080	33.1 / 1.303	1,920	34.9 / 1.374	2,250	39.4 / 1.551	2,650
20 P			2.03 / 0.080	2.03 / 0.080	33.9 / 1.335	2,090	35.7 / 1.406	2,430	40.2 / 1.583	2,830
24 P			2.03 / 0.080	2.79 / 0.110	37.5 / 1.476	2,490	39.3 / 1.547	2,870	45.3 / 1.783	3,470

Note. For outer diameter, it is applied to ±5% manufacturing tolerance.