

Type P Instrument Pairs Signal Cable Individual Shield AL/PS tape (0.6/1kV) Fire Resistant



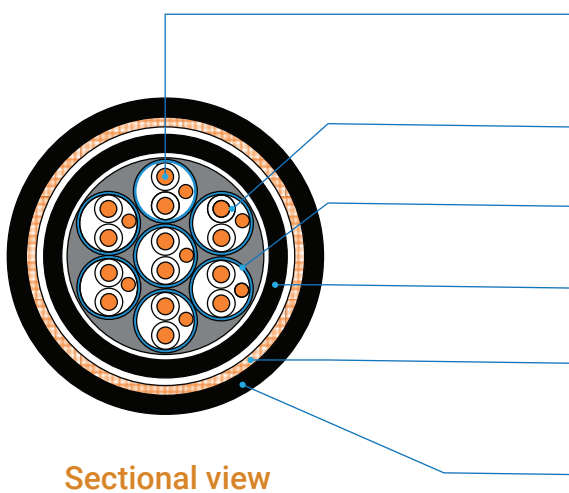
CABLE DESIGNATION

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



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

- Insulated conductors 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) Fire Resistant

0.6/1kV FS-TP(IS)PN, 0.6/1kV FS-TP(IS)PNB, 0.6/1kV FS-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
1P	18	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.9 / 0.390	120	11.7 / 0.461	230	15.1 / 0.594	330
2P			1.52 / 0.060	1.52 / 0.060	15.7 / 0.618	260	17.5 / 0.689	430	20.9 / 0.823	580
3P			1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	330	18.6 / 0.732	500	23.1 / 0.909	720
4P			1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	390	19.7 / 0.776	580	24.2 / 0.953	810
5P			1.52 / 0.060	2.03 / 0.080	20.1 / 0.791	480	21.9 / 0.862	690	26.4 / 1.039	940
6P			2.03 / 0.080	2.03 / 0.080	22.6 / 0.890	610	24.4 / 0.961	840	28.9 / 1.138	1,130
7P			2.03 / 0.080	2.03 / 0.080	22.6 / 0.890	660	24.4 / 0.961	890	28.9 / 1.138	1,170
8P			2.03 / 0.080	2.03 / 0.080	24.1 / 0.949	740	25.9 / 1.020	980	30.4 / 1.197	1,280
10P			2.03 / 0.080	2.03 / 0.080	27.2 / 1.071	910	29.0 / 1.142	1,180	33.5 / 1.319	1,520
12P			2.03 / 0.080	2.03 / 0.080	28.3 / 1.114	1,030	30.1 / 1.185	1,310	34.6 / 1.362	1,660
14P			2.03 / 0.080	2.03 / 0.080	29.4 / 1.157	1,150	31.2 / 1.228	1,450	35.7 / 1.406	1,800
16P			2.03 / 0.080	2.03 / 0.080	31.6 / 1.244	1,300	33.4 / 1.315	1,620	37.9 / 1.492	2,000
18P			2.03 / 0.080	2.03 / 0.080	33.1 / 1.303	1,440	34.9 / 1.374	1,770	39.4 / 1.551	2,170
20P			2.03 / 0.080	2.03 / 0.080	33.8 / 1.331	1,550	35.6 / 1.402	1,890	40.1 / 1.579	2,300
24P			2.03 / 0.080	2.79 / 0.110	37.4 / 1.472	1,850	39.2 / 1.543	2,230	45.2 / 1.780	2,830
1P	16	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.2 / 0.402	140	12.0 / 0.472	240	15.4 / 0.606	350
2P			1.52 / 0.060	2.03 / 0.080	16.3 / 0.642	300	18.1 / 0.713	460	22.6 / 0.890	680
3P			1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	370	19.2 / 0.756	550	23.7 / 0.933	780
4P			1.52 / 0.060	2.03 / 0.080	18.6 / 0.732	450	20.4 / 0.803	640	24.9 / 0.980	880
5P			1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	550	22.7 / 0.894	770	27.2 / 1.071	1,030
6P			2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	700	25.3 / 0.996	940	29.8 / 1.173	1,230
7P			2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	750	25.3 / 0.996	990	29.8 / 1.173	1,290
8P			2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	850	27.0 / 1.063	1,110	31.5 / 1.240	1,420
10P			2.03 / 0.080	2.03 / 0.080	28.3 / 1.114	1,050	30.1 / 1.185	1,330	34.6 / 1.362	1,680
12P			2.03 / 0.080	2.03 / 0.080	29.4 / 1.157	1,190	31.2 / 1.228	1,490	35.7 / 1.406	1,840
14P			2.03 / 0.080	2.03 / 0.080	30.6 / 1.205	1,330	32.4 / 1.276	1,640	36.9 / 1.453	2,010
16P			2.03 / 0.080	2.03 / 0.080	32.8 / 1.291	1,510	34.6 / 1.362	1,840	39.1 / 1.539	2,240
18P			2.03 / 0.080	2.03 / 0.080	34.4 / 1.354	1,670	36.2 / 1.425	2,020	40.7 / 1.602	2,430
20P			2.03 / 0.080	2.03 / 0.080	35.1 / 1.382	1,810	36.9 / 1.453	2,160	41.4 / 1.630	2,580
24P			2.03 / 0.080	2.79 / 0.110	39.0 / 1.535	2,170	40.8 / 1.606	2,560	46.8 / 1.843	3,180
1P	14	0.76/0.030	1.14 / 0.045	1.52 / 0.060	11.0 / 0.433	170	12.8 / 0.504	280	16.2 / 0.638	400
2P			1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	360	19.3 / 0.760	540	23.8 / 0.937	770
3P			1.52 / 0.060	2.03 / 0.080	18.8 / 0.740	470	20.6 / 0.811	660	25.1 / 0.988	900
4P			1.52 / 0.060	2.03 / 0.080	20.0 / 0.787	570	21.8 / 0.858	770	26.3 / 1.035	1,030
5P			2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	760	25.4 / 1.000	1,000	29.9 / 1.177	1,300
6P			2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	880	27.3 / 1.075	1,140	31.8 / 1.252	1,460
7P			2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	960	27.3 / 1.075	1,220	31.8 / 1.252	1,540
8P			2.03 / 0.080	2.03 / 0.080	27.2 / 1.071	1,090	29.0 / 1.142	1,360	33.5 / 1.319	1,690
10P			2.03 / 0.080	2.03 / 0.080	30.5 / 1.201	1,340	32.3 / 1.272	1,650	36.8 / 1.449	2,010
12P			2.03 / 0.080	2.03 / 0.080	31.8 / 1.252	1,530	33.6 / 1.323	1,850	38.1 / 1.500	2,240
14P			2.03 / 0.080	2.03 / 0.080	33.0 / 1.299	1,730	34.8 / 1.370	2,060	39.3 / 1.547	2,450
16P			2.03 / 0.080	2.03 / 0.080	35.5 / 1.398	1,960	37.3 / 1.469	2,320	41.8 / 1.646	2,740
18P			2.03 / 0.080	2.79 / 0.110	37.2 / 1.465	2,180	39.0 / 1.535	2,550	45.0 / 1.772	3,150
20P			2.03 / 0.080	2.79 / 0.110	38.0 / 1.496	2,360	39.8 / 1.567	2,740	45.8 / 1.803	3,350
24P			2.03 / 0.080	2.79 / 0.110	42.2 / 1.661	2,830	44.0 / 1.732	3,260	50.0 / 1.969	3,920

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