songhyun TMC



P-Route®

Oil & Gas Offshore Cable

Type"P & E" | IEEE 1580, UL 1309, UL 1072

ENTERPRISE WITH DREAM, HOPE, AND FUTURE



TMC Co., Ltd has been pursuing innovation in technology and products for marine, oil and gas industry.

For 20 years TMC has had a single-minded focus on delivering superior customer services with specialized marine and offshore cable solutions.

The operational excellence of TMC is underpinned by its products with the best quality and the flexibility to meet specific requirements that makes us the world's most experienced marine and offshore cable manufacturer.





Company History

1991 Establishment of Seojin Industry Co.,Ltd.
1998 ISO 9001 Certification by LRQA (Quality)
2004 ISO 14001 Certification by LRQA (Environment & Quality)
2005 Changed the name of company to TMC Co.,Ltd.
2006 Won the 30 million USD Export Tower Award granted by the Ministry of Knowledge Economy
2006 Earned recognition by Hyundai Mipo Dockyard Co., Ltd. as one of the excellent suppliers.
2007 Won the 70 million USD Export Tower Award granted by the Ministry of Knowledge Economy
2007 Received the High quality supplier Certification from DSME
2007 Achieved Korean world-class product award 2007
2008 Won the 100 million USD Export Tower Award granted by the Ministry of Knowledge Economy
2008 OHSAS 18001 Certification by LRQA (for Health, Safety and Environment)
2009 Awarded the Q-Mark as a Silver grade for Offshore Cable supplier by Samsung Heavy Industries
2010 Awarded the Best Supplier for Offshore & Marine Cable by Ocean Rig
2010 Earned recognition by DSME as one of the excellent supplier
2011 Awarded the Best Supplier for Offshore & Marine Cable by Stena Sphere
2011 KEPIC Certification by KEA (Manufacture of Class 1E cable)
2012 Won the 200 million USD Export Tower Award granted by the Ministry of Knowledge Economy

Certificates

- Type Approval Certification for shipboard cables : ABS, BV, CCS, DNV, GL, KR, LR, NK and RINA
- Type Approval Certification for NEK 606(2004) offshore cables : ABS, DNV and LR
- Type Approval Certification by ABS for offshore cables and listed on ETL
- Type Approval Certification for Passenger ships cables : ABS, DNV,LR, BV and CCS
- Obtained Patent of Paint Resistant Shipboard Cables (Patent N0. 10-0627241)
- Type Approval Certification for IEEE1580 Type P cables : ABS and DNV and listed on ETL
- Type Approval Certification for LNG Carrier cables : ABS, DNV, LR and BV
- Gost-R Certification for NEK 606(2004) offshore cables by GOSSTANDART
- Type Approval Certification for Marine Optical Fiber Cables : ABS and DNV


TMC



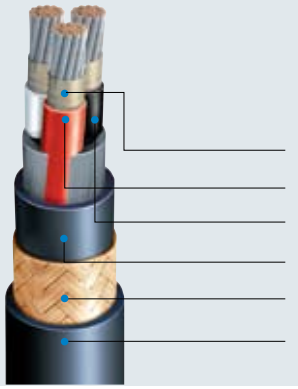


Code Designation

Cable Type	Group Shielding	Insulation Type	Jacket and/or Sheath Type	Armor
S Single-conductor Distribution	**(None)** Unshielded	**E** Ethylene Propylene Rubber	**T** Thermoplastic Polyvinyl Chloride	**(None)** Unarmored
D Two-conductor Distribution	**(OS)** Overall shield	**X** Cross-linked Polyethylene	**CP** Thermosetting Chlorosulfonated Polyethylene(Hypalon)	**A** Aluminum
T Three-conductor Distribution	**(IS)** Individually shielded	**T** Polyvinyl Chloride	**N** Thermosetting Polychloroprene(neoprene)	**B** Bronze
F Four-conductor Distribution	**(IS-OS)** Individually shielded and Overall shielded	**T/N** Polyvinyl Chloride/Nylon	**L** Cross-linked Polyolefin (Low-smoke)	**T** Tin-coated Copper
Q Five-conductor Distribution	**(OBS)** Overall tinned copper braid shield	**S** Silicone Rubber	**TPO** Thermoplastic Polyolefin (Low-smoke)	**S*** Armor with Sheath
C Control		**P** Cross-linked Polyolefin		
TP Twisted Pair		**LSX** Low-smoke Cross-linked Polyolefin		
TT Twisted Triad		**LSE** Low-smoke Ethylene Propylene Rubber		
FS Fire Resistance				
VFD VFD Power (Distribution)				

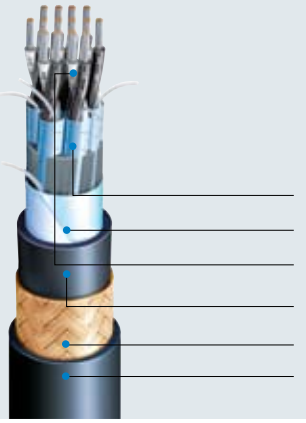
NOTE : * Add type of armor(A, B or T) before the S.

Example



0.6/1kV FS-TPNBS

- Voltage
- Fire Resisrant Layer
- No. of Conductor(Three)
- Insulation(Type P)
- Jacket(Neoprene)
- Armor(Bronze)
- Sheath(Neoprene)



0.6/1kV TP(IS-OS)PNBS

- Voltage
- Twisted Pair
- Individually Shielded(AL/PS Tape)
- Overall Shielded(AL/PS Tape)*
- Insulation(Type P)
- Jacket(Neoprene)
- Armor(Bronze)
- Sheath(Neoprene)

* AL/PS Tape Aluminum backed polyester tape

P-Route®
IEEE 1580, UL1309, UL1072

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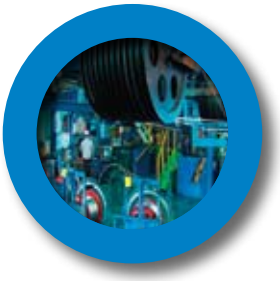
High Voltage Power Cable

Cable type		Designation	Page
Flame retardant	5kV Power Cable	5kV SEN, SENB, SENBS 5kV TEN, TENB, TENBS	07 ~09
	8kV Power Cable	8kV SEN, SENB, SENBS 8kV TEN, TENB, TENBS	10 ~11
	15kV Power Cable	15kV SEN, SENB, SENBS 15kV TEN, TENB, TENBS	12 ~13

Low & Midium Voltage Power Cable

Cable type		Designation	Page
Flame retardant	2kV Distribution	2kV SP(HD), SPB(HD), SPBS(HD) 2kV SP, SPB, SPBS	15 ~ 47
	0.6/1kV Distribution	0.6/1kV SP, SPB, SPBS 0.6/1kV DPN, DPNB, DPNBS 0.6/1kV TPN, TPNB, TPNBS 0.6/1kV FPN, FPNB, FPNBS 0.6/1kV QPN, QPNB, QPNBS	
	0.6/1kV Control	0.6/1kV CPN, CPNB, CPNBS 0.6/1kV C(OS)PN, C(OS)PNB, C(OS)PNBS 0.6/1kV C(OBS)PN, C(OBS)PNB, C(OBS)PNBS	
	0.6/1kV Signal	0.6/1kV TP(OS)PN, TP(OS)PNB, TP(OS)PNBS 0.6/1kV TP(OBS)PN, TP(OBS)PNB, TP(OBS)PNBS 0.6/1kV TP(IS)PN, TP(IS)PNB, TP(IS)PNBS 0.6/1kV TP(IS-OS)PN, TP(IS-OS)PNB, TP(IS-OS)PNBS 0.6/1kV TT(OS)PN, TT(OS)PNB, TT(OS)PNBS 0.6/1kV TT(IS-OS)PN, TT(IS-OS)PNB, TT(IS-OS)PNBS	
Fire resistance	2kV Distribution	2kV FS-SP, FS-SPB, FS-SPBS 2kV FS-SP(HD), FS-SPB(HD), FS-SPBS(HD)	
	0.6/1kV Distribution	0.6/1kV FS-SP, FS-SPB, FS-SPBS 0.6/1kV FS-DPN, FS-DPNB, FS-DPNBS 0.6/1kV FS-TPN, FS-TPNB, FS-TPNBS 0.6/1kV FS-FPN, FS-FPNB, FS-FPNBS 0.6/1kV FS-QPN, FS-QPNB, FS-QPNBS	
	0.6/1kV Control	0.6/1kV FS-CPN, FS-CPNB, FS-CPNBS 0.6/1kV FS-C(OS)PN, FS-C(OS)PNB, FS-C(OS)PNBS 0.6/1kV FS-C(OBS)PN, FS-C(OBS)PNB, FS-C(OBS)PNBS	
	0.6/1kV Signal	0.6/1kV FS-TP(OS)PN, FS-TP(OS)PNB, FS-TP(OS)PNBS 0.6/1kV FS-TP(OBS)PN, FS-TP(OBS)PNB, FS-TP(OBS)PNBS 0.6/1kV FS-TP(IS)PN, FS-TP(IS)PNB, FS-TP(IS)PNBS 0.6/1kV FS-TP(IS-OS)PN, FS-TP(IS-OS)PNB, FS-TP(IS-OS)PNBS 0.6/1kV FS-TT(OS)PN, FS-TT(OS)PNB, FS-TT(OS)PNBS 0.6/1kV FS-TT(IS-OS)PN, FS-TT(IS-OS)PNB, FS-TT(IS-OS)PNBS	
Flame retardant	2kV VFD Power Cable	2kV TPN(VFD), TPNB(VFD), TPNBS(VFD)	49 ~ 50
Technical data & Installation information			52 ~ 67





HV Power Cable



5kV SEN, SENB, SENBS, TEN, TENB, TENBS
8kV SEN, SENB, SENBS, TEN, TENB, TENBS
15kV SEN, SENB, SENBS, TEN, TENB, TENBS **07 ~ 13**



High Voltage (5kV, 8kV, 15kV) Power Cable

P-Route®
IEEE 1580, UL1309, UL1072



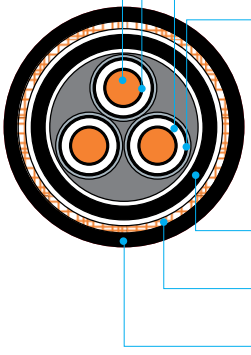
Cable Designation

5kV SEN, SENB, SENBS, TEN, TENB, TENBS
8kV SEN, SENB, SENBS, TEN, TENB, TENBS
15kV SEN, SENB, SENBS, TEN, TENB, TENBS

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- Insulation material : IEEE 1580, Type E
- Sheath material : IEEE 1580, Type N
- Flame retardant : IEEE 1202 & IEC 60332-3 Category A
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	T(S)	- Flexible stranded tinned annealed copper wires as per IEEE 1580
	Conductor screen		- Semi-conducting layer (tape / compound)
	Insulation	E	- EPR (Type E) as per IEEE 1580 & UL 1072 & UL 1309
	Insulation screen		- Non-metallic part : Semi-conducting layer (tape / compound) - Metallic part : Braid of tinned annealed copper wire - A suitable separator tape(s) may be applied over the metallic part
	Cabling		- Three metallic braided 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
	Jacket	N	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1072 & UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under / over the armor
	Sheath	S	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1072 & UL 1309 - Outer sheath color : Black
	Core identification		- 1C : Off- White or Black - 3C : Black, White, Red

High Voltage (5kV, 8kV, 15kV) Power Cable

5kV SEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
	8	37 / 0.511	3.45	2.28 / 0.090	1.52 / 0.060	1.52 / 0.060	15.8 / 0.622	390	17.3 / 0.683	550	20.8 / 0.819	710
	6	61 / 0.511	4.45	2.28 / 0.090	1.52 / 0.060	2.03 / 0.080	16.9 / 0.665	470	18.4 / 0.726	640	22.9 / 0.902	860
	4	105 / 0.511	6.55	2.28 / 0.090	1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	620	20.5 / 0.809	810	25.0 / 0.984	1,060
	2	150 / 0.511	8.23	2.28 / 0.090	1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	740	21.7 / 0.856	950	26.2 / 1.031	1,200
	1	209 / 0.511	9.17	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	22.8 / 0.898	960	24.3 / 0.958	1,190	28.8 / 1.134	1,470
	1/0	266 / 0.511	10.34	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	1,110	25.5 / 1.006	1,350	30.0 / 1.181	1,650
	2/0	342 / 0.511	11.71	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	1,300	26.7 / 1.053	1,550	31.2 / 1.228	1,860
	3/0	418 / 0.511	12.95	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	26.7 / 1.051	1,490	28.2 / 1.112	1,760	32.7 / 1.287	2,080
1	4/0	532 / 0.511	14.61	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,760	29.9 / 1.179	2,050	34.4 / 1.354	2,390
	262	646 / 0.511	16.61	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	30.0 / 1.181	2,040	31.5 / 1.242	2,340	36.0 / 1.417	2,700
	313	777 / 0.511	18.29	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	31.7 / 1.248	2,340	33.2 / 1.309	2,660	37.7 / 1.484	3,040
	373	925 / 0.511	19.94	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	33.4 / 1.315	2,680	34.9 / 1.376	3,020	39.4 / 1.551	3,410
	444	1110 / 0.511	21.84	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	35.3 / 1.390	3,100	36.8 / 1.450	3,450	41.3 / 1.626	3,860
	535	1332 / 0.511	23.90	2.28 / 0.090	2.03 / 0.080	2.79 / 0.110	37.4 / 1.472	3,590	38.9 / 1.533	3,960	44.9 / 1.768	4,560
	646	1591 / 0.511	26.14	2.28 / 0.090	2.03 / 0.080	2.79 / 0.110	39.6 / 1.559	4,150	41.1 / 1.620	4,550	47.1 / 1.854	5,170
	777	1924 / 0.511	28.75	2.28 / 0.090	2.03 / 0.080	2.79 / 0.110	41.8 / 1.646	4,860	43.3 / 1.706	5,280	49.3 / 1.941	5,930
	1111	2745 / 0.511	34.39	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	48.5 / 1.909	6,760	50.0 / 1.970	7,250	56.0 / 2.205	7,990

5kV SEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
	8	37 / 0.511	3.45	2.92 / 0.115	1.52 / 0.060	2.03 / 0.080	17.1 / 0.673	440	18.6 / 0.732	620	23.1 / 0.909	840
	6	61 / 0.511	4.45	2.92 / 0.115	1.52 / 0.060	2.03 / 0.080	18.1 / 0.713	520	19.6 / 0.772	710	24.1 / 0.949	940
	4	105 / 0.511	6.55	2.92 / 0.115	1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	680	21.7 / 0.854	880	26.2 / 1.031	1,140
	2	150 / 0.511	8.23	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	22.5 / 0.886	860	24.0 / 0.945	1,090	28.5 / 1.122	1,370
	1	209 / 0.511	9.17	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	1,030	25.5 / 1.004	1,270	30.0 / 1.181	1,570
	1/0	266 / 0.511	10.34	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	1,180	26.7 / 1.051	1,430	31.2 / 1.228	1,740
	2/0	342 / 0.511	11.71	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	26.4 / 1.039	1,370	27.9 / 1.098	1,630	32.4 / 1.276	1,950
	3/0	418 / 0.511	12.95	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	28.0 / 1.102	1,570	29.5 / 1.161	1,850	34.0 / 1.339	2,190
1	4/0	532 / 0.511	14.61	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	29.7 / 1.169	1,850	31.2 / 1.228	2,150	35.7 / 1.406	2,500
	262	646 / 0.511	16.61	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	31.2 / 1.228	2,120	32.7 / 1.287	2,430	37.2 / 1.465	2,800
	313	777 / 0.511	18.29	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	32.9 / 1.295	2,430	34.4 / 1.354	2,760	38.9 / 1.531	3,150
	373	925 / 0.511	19.94	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	34.6 / 1.362	2,770	36.1 / 1.421	3,120	40.6 / 1.598	3,530
	444	1110 / 0.511	21.84	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	36.5 / 1.437	3,190	38.0 / 1.496	3,560	44.0 / 1.732	4,140
	535	1332 / 0.511	23.90	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	38.6 / 1.520	3,690	40.1 / 1.579	4,080	46.1 / 1.815	4,690
	646	1591 / 0.511	26.14	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	40.8 / 1.606	4,260	42.3 / 1.665	4,670	48.3 / 1.902	5,310
	777	1924 / 0.511	28.75	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	44.5 / 1.752	5,120	46.0 / 1.811	5,570	52.0 / 2.047	6,270
	1111	2745 / 0.511	34.39	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	49.7 / 1.957	6,890	51.2 / 2.016	7,380	57.2 / 2.252	8,150

P-Route®
IEEE 1580, UL1309, UL1072

5kV TEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	8	37 / 0.511	3.45	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	31.2 / 1.228	1,440	32.7 / 1.287	1,750	37.2 / 1.465	2,120
	6	61 / 0.511	4.45	2.28 / 0.090	2.03 / 0.080	2.03 / 0.080	33.6 / 1.323	1,730	35.1 / 1.382	2,070	39.6 / 1.559	2,470
	4	105 / 0.511	6.55	2.28 / 0.090	2.03 / 0.080	2.79 / 0.110	38.1 / 1.500	2,290	39.6 / 1.559	2,680	45.6 / 1.795	3,280
	2	150 / 0.511	8.23	2.28 / 0.090	2.03 / 0.080	2.79 / 0.110	40.7 / 1.602	2,740	42.2 / 1.661	3,150	48.2 / 1.898	3,790
	1	209 / 0.511	9.17	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	45.4 / 1.787	3,470	46.9 / 1.846	3,930	52.9 / 2.083	4,640
	1/0	266 / 0.511	10.34	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	48.0 / 1.890	4,010	49.5 / 1.949	4,490	55.5 / 2.185	5,240
	2/0	342 / 0.511	11.71	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	50.6 / 1.992	4,660	52.1 / 2.051	5,170	58.1 / 2.287	5,950
	3/0	418 / 0.511	12.95	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	53.8 / 2.118	5,370	55.3 / 2.177	5,910	61.3 / 2.413	6,730
	4/0	532 / 0.511	14.61	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	57.5 / 2.264	6,350	59.0 / 2.323	6,920	65.0 / 2.559	7,800
	262	646 / 0.511	16.61	2.28 / 0.090	2.79 / 0.110	2.79 / 0.110	61.0 / 2.402	7,320	62.5 / 2.461	7,920	68.5 / 2.697	8,850
	313	777 / 0.511	18.29	2.28 / 0.090	2.79 / 0.110	3.56 / 0.140	64.6 / 2.543	8,400	66.1 / 2.602	9,040	73.6 / 2.898	10,280
	373	925 / 0.511	19.94	2.28 / 0.090	2.79 / 0.110	3.56 / 0.140	68.3 / 2.689	9,600	69.8 / 2.748	10,280	77.3 / 3.043	11,590
	444	1110 / 0.511	21.84	2.28 / 0.090	3.56 / 0.140	3.56 / 0.140	73.9 / 2.909	11,330	75.4 / 2.969	12,060	82.9 / 3.264	13,470
	535	1332 / 0.511	23.90	2.28 / 0.090	3.56 / 0.140	3.56 / 0.140	78.4 / 3.087	13,080	79.9 / 3.146	13,860	87.4 / 3.441	15,340
	646	1591 / 0.511	26.14	2.28 / 0.090	3.56 / 0.140	3.56 / 0.140	83.1 / 3.272	15,070	84.6 / 3.331	15,900	92.1 / 3.626	17,470
	777	1924 / 0.511	28.75	2.28 / 0.090	3.56 / 0.140	3.56 / 0.140	87.9 / 3.461	17,530	89.4 / 3.520	18,400	96.9 / 3.815	20,050
	1111	2745 / 0.511	34.39	2.28 / 0.090	3.56 / 0.140	3.56 / 0.140	99.1 / 3.902	23,560	100.6 / 3.961	24,550	108.1 / 4.256	26,400

5kV TEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	8	37 / 0.511	3.45	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	34.0 / 1.339	1,650	35.5 / 1.398	2,000	40.0 / 1.575	2,400
	6	61 / 0.511	4.45	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	36.2 / 1.425	1,950	37.7 / 1.484	2,320	42.2 / 1.661	2,740
	4	105 / 0.511	6.55	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	40.7 / 1.602	2,540	42.2 / 1.661	2,950	48.2 / 1.898	3,590
	2	150 / 0.511	8.23	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	44.8 / 1.764	3,160	46.3 / 1.823	3,610	52.3 / 2.059	4,310
	1	209 / 0.511	9.17	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	48.0 / 1.890	3,760	49.5 / 1.949	4,240	55.5 / 2.185	4,990
	1/0	266 / 0.511	10.34	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	50.6 / 1.992	4,310	52.1 / 2.051	4,820	58.1 / 2.287	5,600
	2/0	342 / 0.511	11.71	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	53.2 / 2.094	4,980	54.7 / 2.154	5,510	60.7 / 2.390	6,330
	3/0	418 / 0.511	12.95	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	56.6 / 2.228	5,720	58.1 / 2.287	6,280	64.1 / 2.524	7,150
	4/0	532 / 0.511	14.61	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	60.3 / 2.374	6,720	61.8 / 2.433	7,320	67.8 / 2.669	8,240
	262	646 / 0.511	16.61	2.92 / 0.115	2.79 / 0.110	3.56 / 0.140	63.5 / 2.500	7,680	65.0 / 2.559	8,310	72.5 / 2.854	9,530
	313	777 / 0.511	18.29	2.92 / 0.115	2.79 / 0.110	3.56 / 0.140	67.2 / 2.646	8,800	68.7 / 2.705	9,460	76.2 / 3.000	10,750
	373	925 / 0.511	19.94	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	72.4 / 2.850	10,280	73.9 / 2.909	11,000	81.4 / 3.205	12,380
	444	1110 / 0.511	21.84	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	76.5 / 3.012	11,780	78.0 / 3.071	12,540	85.5 / 3.366	13,990
	535	1332 / 0.511	23.90	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	81.0 / 3.189	13,550	82.5 / 3.248	14,360	90.0 / 3.543	15,890
	646	1591 / 0.511	26.14	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	85.7 / 3.374	15,570	87.2 / 3.433	16,430	94.7 / 3.728	18,040
	777	1924 / 0.511	28.75	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	90.5 / 3.563	18,060	92.0 / 3.622	18,950	99.5 / 3.917	20,650

High Voltage (5kV, 8kV, 15kV) Power Cable

8kV SEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	6	61 / 0.511	4.45	2.92 / 0.115	1.52 / 0.060	2.03 / 0.080	18.3 / 0.720	530	19.8 / 0.780	720	24.5 / 0.965	960
	4	105 / 0.511	6.55	2.92 / 0.115	1.52 / 0.060	2.03 / 0.080	20.4 / 0.803	690	21.9 / 0.862	890	26.7 / 1.051	1,170
	2	150 / 0.511	8.23	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	870	24.2 / 0.953	1,100	29.0 / 1.142	1,400
	1	209 / 0.511	9.17	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	24.2 / 0.953	1,040	25.7 / 1.012	1,280	30.6 / 1.205	1,610
	1/0	266 / 0.511	10.34	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	25.4 / 1.000	1,190	26.9 / 1.059	1,450	31.8 / 1.252	1,790
	2/0	342 / 0.511	11.71	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	26.6 / 1.047	1,380	28.1 / 1.106	1,650	33.0 / 1.299	2,000
	3/0	418 / 0.511	12.95	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	28.2 / 1.110	1,580	29.7 / 1.169	1,870	34.6 / 1.362	2,240
	4/0	532 / 0.511	14.61	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	29.9 / 1.177	1,860	31.4 / 1.236	2,160	36.4 / 1.433	2,560
	262	646 / 0.511	16.61	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	31.4 / 1.236	2,130	32.9 / 1.295	2,450	37.9 / 1.492	2,870
	313	777 / 0.511	18.29	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	33.1 / 1.303	2,440	34.6 / 1.362	2,780	39.6 / 1.559	3,210
	373	925 / 0.511	19.94	2.92 / 0.115	2.03 / 0.080	2.03 / 0.080	34.8 / 1.370	2,790	36.3 / 1.429	3,140	41.4 / 1.630	3,600
	444	1110 / 0.511	21.84	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	36.7 / 1.445	3,210	38.2 / 1.504	3,580	44.9 / 1.768	4,230
	535	1332 / 0.511	23.90	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	38.8 / 1.528	3,700	40.3 / 1.587	4,090	47.0 / 1.850	4,790
	646	1591 / 0.511	26.14	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	41.0 / 1.614	4,280	42.5 / 1.673	4,690	49.2 / 1.937	5,410
	777	1924 / 0.511	28.75	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	44.7 / 1.760	5,140	46.2 / 1.819	5,590	53.0 / 2.087	6,390
	1111	2745 / 0.511	34.39	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	49.9 / 1.965	6,910	51.4 / 2.024	7,410	58.3 / 2.295	8,300

8kV SEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	6	61 / 0.511	4.45	3.56 / 0.140	1.52 / 0.060	2.03 / 0.080	19.6 / 0.772	590	21.1 / 0.831	790	25.9 / 1.020	1,050
	4	105 / 0.511	6.55	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	22.8 / 0.898	810	24.3 / 0.957	1,040	29.1 / 1.146	1,340
	2	150 / 0.511	8.23	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	940	25.5 / 1.004	1,180	30.4 / 1.197	1,510
	1	209 / 0.511	9.17	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	1,110	27.0 / 1.063	1,370	31.9 / 1.256	1,710
	1/0	266 / 0.511	10.34	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	26.7 / 1.051	1,260	28.2 / 1.110	1,530	33.1 / 1.303	1,890
	2/0	342 / 0.511	11.71	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	27.9 / 1.098	1,460	29.4 / 1.157	1,740	34.3 / 1.350	2,110
	3/0	418 / 0.511	12.95	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,660	31.0 / 1.220	1,960	36.0 / 1.417	2,360
	4/0	532 / 0.511	14.61	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	31.2 / 1.228	1,940	32.7 / 1.287	2,260	37.7 / 1.484	2,680
	262	646 / 0.511	16.61	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	32.7 / 1.287	2,220	34.2 / 1.346	2,550	39.2 / 1.543	2,980
	313	777 / 0.511	18.29	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	34.4 / 1.354	2,540	35.9 / 1.413	2,880	41.0 / 1.614	3,350
	373	925 / 0.511	19.94	3.56 / 0.140	2.03 / 0.080	2.03 / 0.080	36.1 / 1.421	2,880	37.6 / 1.480	3,250	42.7 / 1.681	3,730
	444	1110 / 0.511	21.84	3.56 / 0.140	2.03 / 0.080	2.79 / 0.110	38.0 / 1.496	3,310	39.5 / 1.555	3,690	46.2 / 1.819	4,370
	535	1332 / 0.511	23.90	3.56 / 0.140	2.03 / 0.080	2.79 / 0.110	40.1 / 1.579	3,810	41.6 / 1.638	4,210	48.3 / 1.902	4,930
	646	1591 / 0.511	26.14	3.56 / 0.140	2.03 / 0.080	2.79 / 0.110	42.3 / 1.665	4,390	43.8 / 1.724	4,810	50.6 / 1.992	5,570
	777	1924 / 0.511	28.75	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	46.0 / 1.811	5,270	47.5 / 1.870	5,730	54.3 / 2.138	6,550
	1111	2745 / 0.511	34.39	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	51.2 / 2.016	7,040	52.7 / 2.075	7,560	59.6 / 2.346	8,470

P-Route®
IEEE 1580, UL1309, UL1072

8kV TEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	6	61 / 0.511	4.45	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	36.6 / 1.441	1,990	38.1 / 1.500	2,350	44.8 / 1.764	3,010
	4	105 / 0.511	6.55	2.92 / 0.115	2.03 / 0.080	2.79 / 0.110	41.1 / 1.618	2,580	42.6 / 1.677	2,990	49.3 / 1.941	3,720
	2	150 / 0.511	8.23	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	45.2 / 1.780	3,200	46.7 / 1.839	3,650	53.5 / 2.106	4,460
	1	209 / 0.511	9.17	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	48.5 / 1.909	3,820	50.0 / 1.969	4,300	56.9 / 2.240	5,180
	1/0	266 / 0.511	10.34	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	51.0 / 2.008	4,360	52.5 / 2.067	4,870	59.4 / 2.339	5,780
	2/0	342 / 0.511	11.71	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	53.6 / 2.110	5,030	55.1 / 2.169	5,560	62.1 / 2.445	6,530
	3/0	418 / 0.511	12.95	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	57.1 / 2.248	5,780	58.6 / 2.307	6,350	65.7 / 2.587	7,400
	4/0	532 / 0.511	14.61	2.92 / 0.115	2.79 / 0.110	2.79 / 0.110	60.7 / 2.390	6,770	62.2 / 2.449	7,380	69.3 / 2.728	8,480
	262	646 / 0.511	16.61	2.92 / 0.115	2.79 / 0.110	3.56 / 0.140	64.0 / 2.520	7,750	65.5 / 2.579	8,390	74.3 / 2.925	9,840
	313	777 / 0.511	18.29	2.92 / 0.115	2.79 / 0.110	3.56 / 0.140	67.6 / 2.661	8,860	69.1 / 2.720	9,530	77.9 / 3.067	11,060
	373	925 / 0.511	19.94	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	72.8 / 2.866	10,340	74.3 / 2.925	11,070	83.3 / 3.280	12,740
	444	1110 / 0.511	21.84	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	76.9 / 3.028	11,850	78.4 / 3.087	12,610	87.4 / 3.441	14,380
	535	1332 / 0.511	23.90	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	81.4 / 3.205	13,620	82.9 / 3.264	14,430	92.0 / 3.622	16,320
	646	1591 / 0.511	26.14	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	86.2 / 3.394	15,670	87.7 / 3.453	16,530	96.9 / 3.815	18,540
	777	1924 / 0.511	28.75	2.92 / 0.115	3.56 / 0.140	3.56 / 0.140	90.9 / 3.579	18,130	92.4 / 3.638	19,040	101.7 / 4.004	21,180

8kV TEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	6	61 / 0.511	4.45	3.56 / 0.140	2.03 / 0.080	2.79 / 0.110	39.4 / 1.551	2,230	40.9 / 1.610	2,630	47.6 / 1.874	3,330
	4	105 / 0.511	6.55	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	45.4 / 1.787	3,010	46.9 / 1.846	3,470	53.7 / 2.114	4,280
	2	150 / 0.511	8.23	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	48.0 / 1.890	3,500	49.5 / 1.949	3,980	56.4 / 2.220	4,840
	1	209 / 0.511	9.17	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	51.3 / 2.020	4,140	52.8 / 2.079	4,650	59.8 / 2.354	5,580
	1/0	266 / 0.511	10.34	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	53.8 / 2.118	4,690	55.3 / 2.177	5,230	62.3 / 2.453	6,200
	2/0	342 / 0.511	11.71	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	56.4 / 2.220	5,370	57.9 / 2.280	5,940	65.0 / 2.559	6,970
	3/0	418 / 0.511	12.95	3.56 / 0.140	2.79 / 0.110	2.79 / 0.110	59.9 / 2.358	6,150	61.4 / 2.417	6,740	68.5 / 2.697	7,840
	4/0	532 / 0.511	14.61	3.56 / 0.140	2.79 / 0.110	3.56 / 0.140	63.5 / 2.500	7,160	65.0 / 2.559	7,790	73.8 / 2.906	9,240
	262	646 / 0.511	16.61	3.56 / 0.140	2.79 / 0.110	3.56 / 0.140	66.8 / 2.630	8,160	68.3 / 2.689	8,820	77.1 / 3.035	10,340
	313	777 / 0.511	18.29	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	71.9 / 2.831	9,540	73.4 / 2.890	10,250	82.3 / 3.240	11,890
	373	925 / 0.511	19.94	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	75.6 / 2.976	10,800	77.1 / 3.035	11,550	86.1 / 3.390	13,290
	444	1110 / 0.511	21.84	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	79.7 / 3.138	12,330	81.2 / 3.197	13,120	90.3 / 3.555	14,970
	535	1332 / 0.511	23.90	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	84.2 / 3.315	14,130	85.7 / 3.374	14,970	94.9 / 3.736	16,940
	646	1591 / 0.511	26.14	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	89.0 / 3.504	16,210	90.5 / 3.563	17,090	99.8 / 3.929	19,190
	777	1924 / 0.511	28.75	3.56 / 0.140	3.56 / 0.140	3.56 / 0.140	93.7 / 3.689	18,700	95.2 / 3.748	19,630	104.6 / 4.118	21,850

High Voltage (5kV, 8kV, 15kV) Power Cable

15kV SEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	2	150 / 0.511	8.23	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	26.2 / 1.031	1,060	27.7 / 1.091	1,320	32.6 / 1.283	1,670
	1	209 / 0.511	9.17	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	27.7 / 1.091	1,240	29.2 / 1.150	1,520	34.1 / 1.343	1,880
	1/0	266 / 0.511	10.34	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	28.9 / 1.138	1,400	30.4 / 1.197	1,690	35.4 / 1.394	2,080
	2/0	342 / 0.511	11.71	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	30.1 / 1.185	1,590	31.6 / 1.244	1,900	36.6 / 1.441	2,300
	3/0	418 / 0.511	12.95	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	31.6 / 1.244	1,800	33.1 / 1.303	2,120	38.1 / 1.500	2,540
	4/0	532 / 0.511	14.61	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	33.3 / 1.311	2,090	34.8 / 1.370	2,430	39.8 / 1.567	2,870
	262	646 / 0.511	16.61	4.44 / 0.175	2.03 / 0.080	2.03 / 0.080	34.9 / 1.374	2,380	36.4 / 1.433	2,730	41.5 / 1.634	3,200
	313	777 / 0.511	18.29	4.44 / 0.175	2.03 / 0.080	2.79 / 0.110	36.6 / 1.441	2,700	38.1 / 1.500	3,070	44.8 / 1.764	3,730
	373	925 / 0.511	19.94	4.44 / 0.175	2.03 / 0.080	2.79 / 0.110	38.3 / 1.508	3,060	39.8 / 1.567	3,440	46.5 / 1.831	4,120
	444	1110 / 0.511	21.84	4.44 / 0.175	2.03 / 0.080	2.79 / 0.110	40.2 / 1.583	3,490	41.7 / 1.642	3,890	48.4 / 1.906	4,610
	535	1332 / 0.511	23.90	4.44 / 0.175	2.03 / 0.080	2.79 / 0.110	42.3 / 1.665	4,000	43.8 / 1.724	4,420	50.6 / 1.992	5,180
	646	1591 / 0.511	26.14	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	46.0 / 1.811	4,750	47.5 / 1.870	5,210	54.3 / 2.138	6,030
	777	1924 / 0.511	28.75	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	48.2 / 1.898	5,480	49.7 / 1.957	5,960	56.6 / 2.228	6,830
	1111	2745 / 0.511	34.39	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	53.4 / 2.102	7,280	54.9 / 2.161	7,810	61.9 / 2.437	8,780

15kV SEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	SEN		SENB		SENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	2	150 / 0.511	8.23	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	28.0 / 1.102	1,170	29.5 / 1.161	1,450	34.0 / 1.339	1,790
	1	209 / 0.511	9.17	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,350	31.0 / 1.220	1,650	35.5 / 1.398	2,000
	1/0	266 / 0.511	10.34	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	30.7 / 1.209	1,520	32.2 / 1.268	1,830	36.7 / 1.445	2,190
	2/0	342 / 0.511	11.71	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	31.9 / 1.256	1,720	33.4 / 1.315	2,040	37.9 / 1.492	2,420
	3/0	418 / 0.511	12.95	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	33.5 / 1.319	1,940	35.0 / 1.378	2,270	39.5 / 1.555	2,670
	4/0	532 / 0.511	14.61	5.46 / 0.215	2.03 / 0.080	2.03 / 0.080	35.2 / 1.386	2,230	36.7 / 1.445	2,590	41.2 / 1.622	3,000
	262	646 / 0.511	16.61	5.46 / 0.215	2.03 / 0.080	2.79 / 0.110	36.7 / 1.445	2,520	38.2 / 1.504	2,890	44.2 / 1.740	3,470
	313	777 / 0.511	18.29	5.46 / 0.215	2.03 / 0.080	2.79 / 0.110	38.4 / 1.512	2,850	39.9 / 1.571	3,230	45.9 / 1.807	3,840
	373	925 / 0.511	19.94	5.46 / 0.215	2.03 / 0.080	2.79 / 0.110	40.1 / 1.579	3,210	41.6 / 1.638	3,610	47.6 / 1.874	4,240
	444	1110 / 0.511	21.84	5.46 / 0.215	2.03 / 0.080	2.79 / 0.110	42.0 / 1.654	3,650	43.5 / 1.713	4,070	49.5 / 1.949	4,730
	535	1332 / 0.511	23.90	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	45.6 / 1.795	4,330	47.1 / 1.854	4,780	53.1 / 2.091	5,490
	646	1591 / 0.511	26.14	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	47.8 / 1.882	4,930	49.3 / 1.941	5,410	55.3 / 2.177	6,150
	777	1924 / 0.511	28.75	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	50.0 / 1.969	5,670	51.5 / 2.028	6,170	57.5 / 2.264	6,940
	1111	2745 / 0.511	34.39	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	55.2 / 2.173	7,490	56.7 / 2.232	8,040	62.7 / 2.469	8,890

P-Route®
IEEE 1580, UL1309, UL1072

15kV TEN(BS) / SHIELD 100% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	2	150 / 0.511	8.23	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	52.8 / 2.079	4,050	54.3 / 2.138	4,570	61.3 / 2.413	5,530
	1	209 / 0.511	9.17	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	56.0 / 2.205	4,700	57.5 / 2.264	5,260	64.5 / 2.539	6,270
	1/0	266 / 0.511	10.34	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	58.6 / 2.307	5,300	60.1 / 2.366	5,880	67.2 / 2.646	6,950
	2/0	342 / 0.511	11.71	4.44 / 0.175	2.79 / 0.110	2.79 / 0.110	61.2 / 2.409	6,000	62.7 / 2.469	6,610	69.8 / 2.748	7,730
	3/0	418 / 0.511	12.95	4.44 / 0.175	2.79 / 0.110	3.56 / 0.140	64.4 / 2.535	6,780	65.9 / 2.594	7,430	74.7 / 2.941	8,890
	4/0	532 / 0.511	14.61	4.44 / 0.175	2.79 / 0.110	3.56 / 0.140	68.1 / 2.681	7,850	69.6 / 2.740	8,520	78.5 / 3.091	10,080
	262	646 / 0.511	16.61	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	73.0 / 2.874	9,130	74.5 / 2.933	9,860	83.5 / 3.287	11,540
	313	777 / 0.511	18.29	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	76.7 / 3.020	10,320	78.2 / 3.079	11,080	87.2 / 3.433	12,850
	373	925 / 0.511	19.94	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	80.3 / 3.161	11,600	81.8 / 3.220	12,400	90.9 / 3.579	14,260
	444	1110 / 0.511	21.84	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	84.4 / 3.323	13,170	85.9 / 3.382	14,010	95.1 / 3.744	15,980
	535	1332 / 0.511	23.90	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	89.0 / 3.504	15,040	90.5 / 3.563	15,920	99.8 / 3.929	18,020
	646	1591 / 0.511	26.14	4.44 / 0.175	3.56 / 0.140	3.56 / 0.140	93.7 / 3.689	17,140	95.2 / 3.748	18,070	104.6 / 4.118	20,290

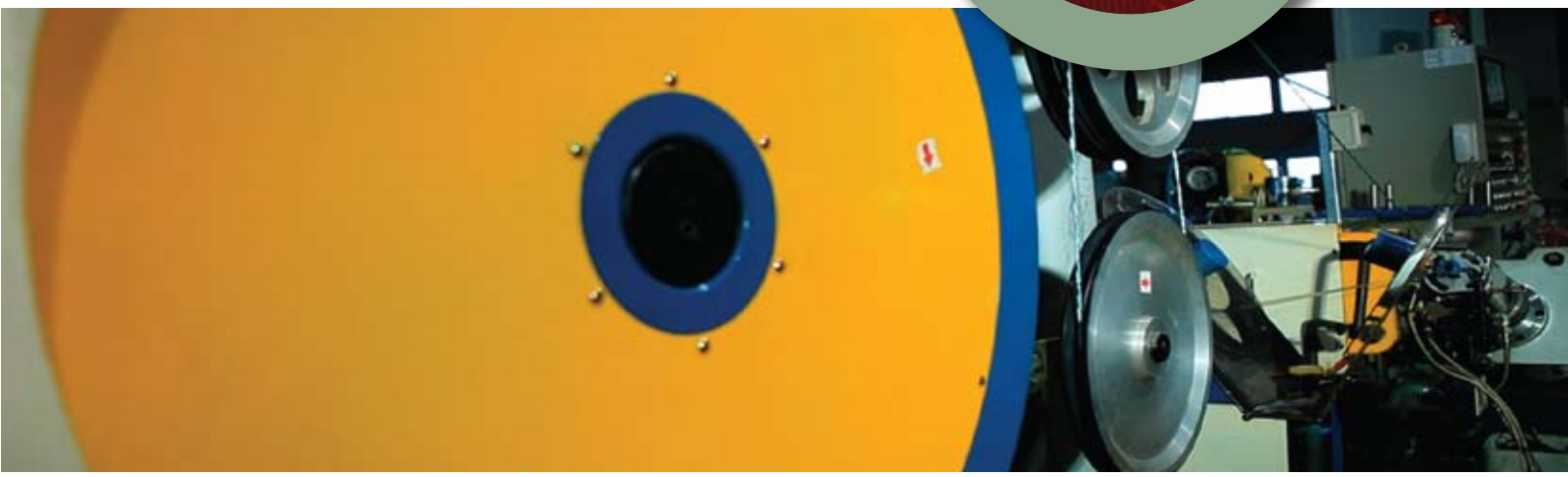
15kV TEN(BS) / SHIELD 133% INSULATION LEVEL

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	TEN		TENB		TENBS	
	Nominal Area	Strand	Dia.				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	2	150 / 0.511	8.23	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	57.1 / 2.248	4,590	58.6 / 2.307	5,160	65.7 / 2.587	6,200
	1	209 / 0.511	9.17	5.46 / 0.215	2.79 / 0.110	2.79 / 0.110	60.3 / 2.374	5,270	61.8 / 2.433	5,870	68.9 / 2.713	6,970
	1/0	266 / 0.511	10.34	5.46 / 0.215	2.79 / 0.110	3.56 / 0.140	62.9 / 2.476	5,890	64.4 / 2.535	6,520	73.2 / 2.882	7,950
	2/0	342 / 0.511	11.71	5.46 / 0.215	2.79 / 0.110	3.56 / 0.140	65.5 / 2.579	6,620	67.0 / 2.638	7,270	75.8 / 2.984	8,760
	3/0	418 / 0.511	12.95	5.46 / 0.215	2.79 / 0.110	3.56 / 0.140	68.9 / 2.713	7,440	70.4 / 2.772	8,130	79.3 / 3.122	9,710
	4/0	532 / 0.511	14.61	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	74.1 / 2.917	8,800	75.6 / 2.976	9,540	84.6 / 3.331	11,240
	262	646 / 0.511	16.61	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	77.3 / 3.043	9,860	78.8 / 3.102	10,620	87.8 / 3.457	12,400
	313	777 / 0.511	18.29	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	81.0 / 3.189	11,080	82.5 / 3.248	11,890	91.6 / 3.606	13,760
	373	925 / 0.511	19.94	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	84.6 / 3.331	12,400	86.1 / 3.390	13,240	95.3 / 3.752	15,210
	444	1110 / 0.511	21.84	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	88.7 / 3.492	14,000	90.2 / 3.551	14,890	99.5 / 3.917	16,970
	535	1332 / 0.511	23.90	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	93.3 / 3.673	15,910	94.8 / 3.732	16,840	104.2 / 4.102	19,050
	646	1591 / 0.511	26.14	5.46 / 0.215	3.56 / 0.140	3.56 / 0.140	98.0 / 3.858	18,050	99.5 / 3.917	19,030	109.0 / 4.291	21,370





Power(Distribution) Cable





Flame Retardant

2kV SP(HD), SPB(HD), SPBS(HD)
2kV SP, SPB, SPBS
0.6/1kV SP, SPB, SPBS

Fire Resistance

2kV FS-SP(HD), FS-SPB(HD), FS-SPBS(HD)
2kV FS-SP, FS-SPB, FS-SPBS
0.6/1kV FS-SP, FS-SPB, FS-SPBS 15 ~ 18

Flame Retardant

0.6/1kV DPN, DPNB, DPNBS
0.6/1kV TPN, TPNB, TPNBS
0.6/1kV FPN, FPNB, FPNBS
0.6/1kV QPN, QPNB, QPNBS

Fire Resistance

0.6/1kV FS-DPN, FS-DPNB, FS-DPNBS
0.6/1kV FS-TPN, FS-TPNB, FS-TPNBS
0.6/1kV FS-FPN, FS-FPNB, FS-FPNBS
0.6/1kV FS-QPN, FS-QPNB, FS-QPNBS 19 ~ 23

Power(Distribution) Cable

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

2kV SP(HD), SPB(HD), SPBS(HD)
2kV SP, SPB, SPBS
0.6/1kV SP, SPB, SPBS

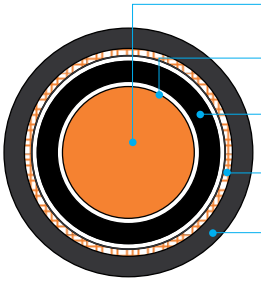
FIRE RESISTANCE

2kV FS-SP(HD), FS-SPB(HD), FS-SPBS(HD)
2kV FS-SP, FS-SPB, FS-SPBS
0.6/1kV FS-SP, FS-SPB, FS-SPBS

Application Standard

- Design guide : IEEE 1580(2010) , UL 1309(2011)
- 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), IEC 60331-1,-2(120min), FS-type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	S	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	FS-	- Mica/glass tape (FS Type cable only)
	Insulation	P	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under / over the armor
	Sheath	S	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Black

Power(Distribution) Cable

FLAME RETARDANT 2kV SP(HD) / 2kV SPB(HD), 2kV SPBS(HD)

No. of Cores	Conductor			Thickness of Insulation	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)			Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	4/0	532 / 0.511	14.61	2.67 / 0.105	2.03 / 0.080	20.9 / 0.823	1,210	22.7 / 0.894	1,420	27.0 / 1.063	1,680
	262	646 / 0.511	16.61	2.67 / 0.105	2.03 / 0.080	22.4 / 0.882	1,440	24.2 / 0.953	1,670	28.5 / 1.122	1,940
	313	777 / 0.511	18.29	2.67 / 0.105	2.03 / 0.080	24.1 / 0.949	1,710	25.9 / 1.020	1,950	30.2 / 1.189	2,240
	373	925 / 0.511	19.94	2.67 / 0.105	2.03 / 0.080	25.8 / 1.016	2,010	27.6 / 1.087	2,270	31.9 / 1.256	2,570
	444	1110 / 0.511	21.84	2.67 / 0.105	2.03 / 0.080	27.7 / 1.091	2,380	29.5 / 1.161	2,660	33.8 / 1.331	2,980
	535	1332 / 0.511	23.90	3.05 / 0.120	2.03 / 0.080	30.6 / 1.205	2,870	32.4 / 1.276	3,180	36.7 / 1.445	3,530
	646	1591 / 0.511	26.14	3.05 / 0.120	2.03 / 0.080	32.8 / 1.291	3,390	34.6 / 1.362	3,720	38.9 / 1.531	4,090
	777	1924 / 0.511	28.75	3.05 / 0.120	2.03 / 0.080	35.0 / 1.378	4,050	36.8 / 1.449	4,400	41.1 / 1.618	4,800
	1111	2745 / 0.511	34.39	3.05 / 0.120	2.79 / 0.110	40.2 / 1.583	5,670	42.0 / 1.654	6,070	47.8 / 1.882	6,690

FLAME RETARDANT 2kV SP/ 2kV SPB, 2kV SPBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)			Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	18	19 / 0.254	1.24	1.14 / 0.045	1.14 / 0.045	3.8 / 0.150	20	5.6 / 0.220	70	8.3 / 0.327	110
	16	19 / 0.297	1.50	1.14 / 0.045	1.14 / 0.045	3.9 / 0.154	30	5.7 / 0.224	70	8.4 / 0.331	120
	14	19 / 0.373	1.88	1.14 / 0.045	1.14 / 0.045	4.3 / 0.169	30	6.1 / 0.240	90	8.8 / 0.346	130
	12	19 / 0.470	2.36	1.14 / 0.045	1.14 / 0.045	4.8 / 0.189	50	6.6 / 0.260	100	9.3 / 0.366	150
	10	37 / 0.424	2.87	1.14 / 0.045	1.14 / 0.045	5.5 / 0.217	70	7.3 / 0.287	130	10.0 / 0.394	190
	8	37 / 0.511	3.45	1.40 / 0.055	1.14 / 0.045	6.6 / 0.260	100	8.4 / 0.331	170	11.1 / 0.437	240
	6	61 / 0.511	4.45	1.40 / 0.055	1.14 / 0.045	7.6 / 0.299	150	9.4 / 0.370	240	12.1 / 0.476	300
	5	91 / 0.511	6.20	1.40 / 0.055	1.52 / 0.060	9.5 / 0.374	220	11.3 / 0.445	320	14.7 / 0.579	430
	4	105 / 0.511	6.55	1.40 / 0.055	1.52 / 0.060	10.0 / 0.394	250	11.8 / 0.465	360	15.2 / 0.598	470
	3	125 / 0.511	7.32	1.40 / 0.055	1.52 / 0.060	10.6 / 0.417	290	12.4 / 0.488	400	15.8 / 0.622	520
	2	150 / 0.511	8.23	1.40 / 0.055	1.52 / 0.060	11.2 / 0.441	340	13.0 / 0.512	460	16.4 / 0.646	580
	1	209 / 0.511	9.17	1.65 / 0.065	1.52 / 0.060	13.2 / 0.520	480	15.0 / 0.591	620	18.4 / 0.724	750
	1/0	266 / 0.511	10.34	1.65 / 0.065	1.52 / 0.060	14.4 / 0.567	590	16.2 / 0.638	740	19.6 / 0.772	890
	2/0	342 / 0.511	11.71	1.65 / 0.065	1.52 / 0.060	15.6 / 0.614	750	17.4 / 0.685	910	20.8 / 0.819	1,060
	3/0	418 / 0.511	12.95	1.65 / 0.065	2.03 / 0.080	17.2 / 0.677	900	19.0 / 0.748	1,080	23.5 / 0.925	1,310
	4/0	532 / 0.511	14.61	1.65 / 0.065	2.03 / 0.080	18.9 / 0.744	1,130	20.7 / 0.815	1,320	25.2 / 0.992	1,570
	262	646 / 0.511	16.61	1.90 / 0.075	2.03 / 0.080	20.9 / 0.823	1,380	22.7 / 0.894	1,590	27.2 / 1.071	1,860
	313	777 / 0.511	18.29	1.90 / 0.075	2.03 / 0.080	22.6 / 0.890	1,640	24.4 / 0.961	1,870	28.9 / 1.138	2,150
	373	925 / 0.511	19.94	1.90 / 0.075	2.03 / 0.080	24.3 / 0.957	1,930	26.1 / 1.028	2,180	30.6 / 1.205	2,480
	444	1110 / 0.511	21.84	1.90 / 0.075	2.03 / 0.080	26.2 / 1.031	2,300	28.0 / 1.102	2,560	32.5 / 1.280	2,880
	535	1332 / 0.511	23.90	2.29 / 0.090	2.03 / 0.080	29.1 / 1.146	2,780	30.9 / 1.217	3,070	35.4 / 1.394	3,430
	646	1591 / 0.511	26.14	2.29 / 0.090	2.03 / 0.080	31.3 / 1.232	3,290	33.1 / 1.303	3,610	37.6 / 1.480	3,980
	777	1924 / 0.511	28.75	2.29 / 0.090	2.03 / 0.080	33.5 / 1.319	3,940	35.3 / 1.390	4,280	39.8 / 1.567	4,680
	1111	2745 / 0.511	34.39	2.79 / 0.110	2.79 / 0.110	39.7 / 1.563	5,630	41.5 / 1.634	6,030	47.5 / 1.870	6,660

P-Route®
IEEE 1580, UL1309, UL1072

FLAME RETARDANT 0.6/1kV SP, / 0.6/1kV SPB, 0.6/1kV SPBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)			Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	18	19 / 0.254	1.24	0.76 / 0.030	1.14 / 0.045	3.0 / 0.118	20	4.8 / 0.189	50	7.5 / 0.295	90
	16	19 / 0.297	1.50	0.76 / 0.030	1.14 / 0.045	3.2 / 0.124	20	5.0 / 0.197	60	7.7 / 0.303	100
	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	3.5 / 0.139	30	5.3 / 0.209	70	8.0 / 0.315	110
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	4.0 / 0.157	40	5.8 / 0.228	90	8.5 / 0.335	130
	10	37 / 0.424	2.87	0.76 / 0.030	1.14 / 0.045	4.7 / 0.186	60	6.5 / 0.256	120	9.2 / 0.362	170
	8	37 / 0.511	3.45	1.14 / 0.045	1.14 / 0.045	6.1 / 0.238	90	7.9 / 0.311	160	10.6 / 0.417	220
	6	61 / 0.511	4.45	1.14 / 0.045	1.14 / 0.045	7.1 / 0.279	140	8.9 / 0.350	220	11.6 / 0.457	290
	5	91 / 0.511	6.20	1.14 / 0.045	1.52 / 0.060	9.0 / 0.354	210	10.8 / 0.425	310	14.2 / 0.559	410
	4	105 / 0.511	6.55	1.14 / 0.045	1.52 / 0.060	9.5 / 0.373	240	11.3 / 0.445	340	14.7 / 0.579	450
	3	125 / 0.511	7.32	1.14 / 0.045	1.52 / 0.060	10.1 / 0.397	280	11.9 / 0.469	390	15.3 / 0.602	500
	2	150 / 0.511	8.23	1.14 / 0.045	1.52 / 0.060	10.7 / 0.420	330	12.5 / 0.492	440	15.9 / 0.626	560
	1	209 / 0.511	9.17	1.40 / 0.055	1.52 / 0.060	12.7 / 0.500	460	14.5 / 0.571	600	17.9 / 0.705	730
	1/0	266 / 0.511	10.34	1.40 / 0.055	1.52 / 0.060	13.9 / 0.547	580	15.7 / 0.618	720	19.1 / 0.752	860
	2/0	342 / 0.511	11.71	1.40 / 0.055	1.52 / 0.060	15.1 / 0.594	730	16.9 / 0.665	890	20.3 / 0.799	1,040
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	16.7 / 0.656	880	18.5 / 0.728	1,060	23.0 / 0.906	1,280
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.03 / 0.080	18.4 / 0.723	1,110	20.2 / 0.795	1,300	24.7 / 0.972	1,540
	262	646 / 0.511	16.61	1.65 / 0.065	2.03 / 0.080	20.4 / 0.803	1,350	22.2 / 0.874	1,560	26.7 / 1.051	1,820
	313	777 / 0.511	18.29	1.65 / 0.065	2.03 / 0.080	22.1 / 0.870	1,610	23.9 / 0.941	1,840	28.4 / 1.118	2,120
	373	925 / 0.511	19.94	1.65 / 0.065	2.03 / 0.080	23.8 / 0.937	1,910	25.6 / 1.008	2,150	30.1 / 1.185	2,450
	444	1110 / 0.511	21.84	1.65 / 0.065	2.03 / 0.080	25.7 / 1.012	2,270	27.5 / 1.083	2,530	32.0 / 1.260	2,850
	535	1332 / 0.511	23.90	2.03 / 0.080	2.03 / 0.080	28.6 / 1.124	2,750	30.4 / 1.197	3,040	34.9 / 1.374	3,390
	646	1591 / 0.511	26.14	2.03 / 0.080	2.03 / 0.080	30.8 / 1.211	3,260	32.6 / 1.283	3,570	37.1 / 1.461	3,940
	777	1924 / 0.511	28.75	2.03 / 0.080	2.03 / 0.080	33.0 / 1.298	3,910	34.8 / 1.370	4,240	39.3 / 1.547	4,630
	1111	2745 / 0.511	34.39	2.79 / 0.110	2.79 / 0.110	39.7 / 1.562	5,620	41.5 / 1.634	6,020	47.5 / 1.870	6,660

FIRE RESISTANCE 2kV FS-SP(HD) , 2kV FS-SPB(HD), 2kV FS-SPBS(HD)

No. of Cores	Conductor			Thickness of Insulation	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)			Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	4/0	532 / 0.511	14.61	2.67 / 0.105	2.03 / 0.080	21.2 / 0.835	1,230	23.0 / 0.906	1,450	27.3 / 1.075	1,710
	262	646 / 0.511	16.61	2.67 / 0.105	2.03 / 0.080	22.8 / 0.896	1,470	24.6 / 0.969	1,700	28.9 / 1.138	1,970
	313	777 / 0.511	18.29	2.67 / 0.105	2.03 / 0.080	24.5 / 0.963	1,740	26.3 / 1.035	1,990	30.6 / 1.205	2,280
	373	925 / 0.511	19.94	2.67 / 0.105	2.03 / 0.080	26.2 / 1.030	2,040	28.0 / 1.102	2,310	32.3 / 1.272	2,610
	444	1110 / 0.511	21.84	2.67 / 0.105	2.03 / 0.080	28.1 / 1.105	2,410	29.9 / 1.177	2,700	34.2 / 1.346	3,020
	535	1332 / 0.511	23.90	3.05 / 0.120	2.03 / 0.080	30.9 / 1.217	2,910	32.7 / 1.287	3,220	37.0 / 1.457	3,570
	646	1591 / 0.511	26.14	3.05 / 0.120	2.03 / 0.080	33.1 / 1.304	3,430	34.9 / 1.374	3,760	39.2 / 1.543	4,140
	777	1924 / 0.511	28.75	3.05 / 0.120	2.03 / 0.080	35.3 / 1.391	4,090	37.1 / 1.461	4,440	41.4 / 1.630	4,840
	1111	2745 / 0.511	34.39	3.05 / 0.120	2.79 / 0.110	40.5 / 1.595	5,710	42.3 / 1.665	6,120	48.1 / 1.894	6,740

Power(Distribution) Cable

FIRE RESISTANCE

0.6/1kV FS-SP, 0.6/1kV FS-SPB, 0.6/kV FS-SPBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)			Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	4.0 / 0.159	30	5.9 / 0.232	80	8.6 / 0.339	130
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	4.5 / 0.178	50	6.3 / 0.248	100	9.0 / 0.354	150
	10	37 / 0.424	2.87	0.76 / 0.030	1.14 / 0.045	5.2 / 0.206	70	7.1 / 0.280	130	9.8 / 0.386	180
	8	37 / 0.511	3.45	1.14 / 0.045	1.14 / 0.045	6.6 / 0.259	100	8.4 / 0.331	170	11.1 / 0.437	240
	6	61 / 0.511	4.45	1.14 / 0.045	1.14 / 0.045	7.6 / 0.299	150	9.4 / 0.370	240	12.1 / 0.476	310
	5	91 / 0.511	6.20	1.14 / 0.045	1.52 / 0.060	9.3 / 0.366	220	11.1 / 0.437	320	14.5 / 0.571	420
	4	105 / 0.511	6.55	1.14 / 0.045	1.52 / 0.060	9.8 / 0.386	250	11.6 / 0.457	360	15.0 / 0.591	460
	3	125 / 0.511	7.32	1.14 / 0.045	1.52 / 0.060	10.4 / 0.409	290	12.2 / 0.480	400	15.6 / 0.614	510
	2	150 / 0.511	8.23	1.14 / 0.045	1.52 / 0.060	11.0 / 0.433	340	12.8 / 0.504	460	16.2 / 0.638	580
	1	209 / 0.511	9.17	1.40 / 0.055	1.52 / 0.060	13.0 / 0.513	480	14.8 / 0.583	610	18.2 / 0.717	750
	1/0	266 / 0.511	10.34	1.40 / 0.055	1.52 / 0.060	14.2 / 0.560	600	16.0 / 0.630	740	19.4 / 0.764	890
	2/0	342 / 0.511	11.71	1.40 / 0.055	1.52 / 0.060	15.4 / 0.607	750	17.2 / 0.677	910	20.6 / 0.811	1,060
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	17.0 / 0.668	900	18.8 / 0.740	1,080	23.3 / 0.917	1,300
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.03 / 0.080	18.7 / 0.735	1,130	20.5 / 0.807	1,320	25.0 / 0.984	1,570
	262	646 / 0.511	16.61	1.65 / 0.065	2.03 / 0.080	20.7 / 0.816	1,380	22.5 / 0.886	1,590	27.0 / 1.063	1,850
	313	777 / 0.511	18.29	1.65 / 0.065	2.03 / 0.080	22.4 / 0.883	1,640	24.2 / 0.953	1,870	28.7 / 1.130	2,150
	373	925 / 0.511	19.94	1.65 / 0.065	2.03 / 0.080	24.1 / 0.950	1,940	25.9 / 1.020	2,180	30.4 / 1.197	2,480
	444	1110 / 0.511	21.84	1.65 / 0.065	2.03 / 0.080	26.0 / 1.024	2,300	27.8 / 1.094	2,570	32.3 / 1.272	2,890
	535	1332 / 0.511	23.90	2.03 / 0.080	2.03 / 0.080	28.9 / 1.137	2,780	30.7 / 1.209	3,080	35.2 / 1.386	3,430
	646	1591 / 0.511	26.14	2.03 / 0.080	2.03 / 0.080	31.1 / 1.224	3,290	32.9 / 1.295	3,610	37.4 / 1.472	3,980
	777	1924 / 0.511	28.75	2.03 / 0.080	2.03 / 0.080	33.3 / 1.310	3,950	35.1 / 1.382	4,280	39.6 / 1.559	4,680
	1111	2745 / 0.511	34.39	2.79 / 0.110	2.79 / 0.110	40.0 / 1.575	5,670	41.8 / 1.646	6,070	47.8 / 1.882	6,710

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

0.6/1kV DPN, DPNB, DPNBS
0.6/1kV TPN, TPNB, TPNBS
0.6/1kV FPN, FPNB, FPNBS
0.6/1kV QPN, QPNB, QPNBS

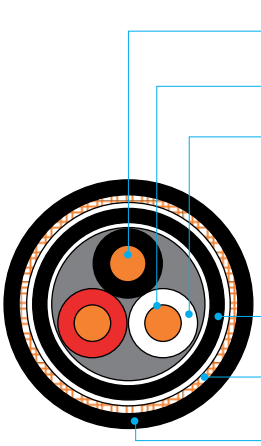
FIRE RESISTANCE

0.6/1kV FS-DPN, FS-DPNB, FS-DPNBS
0.6/1kV FS-TPN, FS-TPNB, FS-TPNBS
0.6/1kV FS-FPN, FS-FPNB, FS-FPNBS
0.6/1kV FS-QPN, FS-QPNB, FS-QPNBS

Application Standard

- Design guide : IEEE 1580(2010) , UL 1309(2011)
- 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), IEC 60331-1,-2(120min), FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	**D (T,F,Q)**	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	**FS-**	- Mica/glass tape (FS Type cable only)
	Insulation	**P**	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	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
	Jacket	**N**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	**B**	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	**S**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Colored insulation or Arabic number printing on the insulation 2C : Black, White or Red 3C : Black, White, Red or Blue 4C : Black, White, Red, Green or Orange 5C : Black, White, Red, Green, Orange

Power(Distribution) Cable

FLAME RETARDANT 0.6/1kV DPN , 0.6/1kV DPNB, 0.6/1kV DPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	9.6 / 0.378	120	11.4 / 0.449	220	14.8 / 0.583	330
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	10.6 / 0.417	160	12.4 / 0.488	270	15.8 / 0.622	380
	10	37 / 0.424	2.87	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.0 / 0.472	210	13.8 / 0.543	340	17.2 / 0.677	460
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	1.52 / 0.060	15.4 / 0.606	330	17.2 / 0.677	490	20.6 / 0.811	640
	6	61 / 0.511	4.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	460	19.3 / 0.760	640	23.8 / 0.937	870
	5	91 / 0.511	6.20	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	640	22.7 / 0.894	850	27.2 / 1.071	1,120
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	23.0 / 0.906	770	24.8 / 0.976	1,010	29.3 / 1.154	1,290
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	24.2 / 0.953	880	26.0 / 1.024	1,120	30.5 / 1.201	1,420
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	1,000	27.3 / 1.075	1,260	31.8 / 1.252	1,570
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,340	31.3 / 1.232	1,640	35.8 / 1.409	2,000
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	31.9 / 1.256	1,620	33.7 / 1.327	1,950	38.2 / 1.504	2,330
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	34.3 / 1.350	1,980	36.1 / 1.421	2,330	40.6 / 1.598	2,730
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	37.4 / 1.472	2,360	39.2 / 1.543	2,740	45.2 / 1.780	3,330
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	40.8 / 1.606	2,890	42.6 / 1.677	3,300	48.6 / 1.913	3,950
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	46.4 / 1.827	3,650	48.2 / 1.898	4,120	54.2 / 2.134	4,850

FLAME RETARDANT 0.6/1kV TPN, 0.6/1kV TPNB, 0.6/1kV TPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	16	19 / 0.297	1.50	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	9.4 / 0.370	120	11.2 / 0.441	240	14.6 / 0.575	320
	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	10.2 / 0.402	150	12.0 / 0.472	260	15.4 / 0.606	370
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	11.2 / 0.441	200	13.0 / 0.512	320	16.4 / 0.646	440
	10	37 / 0.424	2.87	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.8 / 0.504	280	14.6 / 0.575	410	18.0 / 0.709	540
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	16.2 / 0.638	420	18.0 / 0.709	590	22.5 / 0.886	810
	6	61 / 0.511	4.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	18.6 / 0.732	610	20.4 / 0.803	800	24.9 / 0.980	1,040
	5	91 / 0.511	6.20	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	23.3 / 0.917	910	25.1 / 0.988	1,150	29.6 / 1.165	1,440
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	1,010	26.2 / 1.031	1,260	30.7 / 1.209	1,570
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.8 / 1.016	1,160	27.6 / 1.087	1,420	32.1 / 1.264	1,740
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	27.1 / 1.067	1,330	28.9 / 1.138	1,610	33.4 / 1.315	1,940
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	31.4 / 1.236	1,800	33.2 / 1.307	2,120	37.7 / 1.484	2,500
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	34.0 / 1.339	2,200	35.8 / 1.409	2,540	40.3 / 1.587	2,950
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	36.6 / 1.441	2,700	38.4 / 1.512	3,070	44.4 / 1.748	3,660
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	39.9 / 1.571	3,230	41.7 / 1.642	3,630	47.7 / 1.878	4,260
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	45.1 / 1.776	4,140	46.9 / 1.846	4,600	52.9 / 2.083	5,300
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	49.5 / 1.949	4,990	51.3 / 2.020	5,490	57.3 / 2.256	6,260
	313	777 / 0.511	18.29	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	53.2 / 2.094	5,870	55.0 / 2.165	6,410	61.0 / 2.402	7,230
	373	925 / 0.511	19.94	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	56.9 / 2.240	6,850	58.7 / 2.311	7,420	64.7 / 2.547	8,300
	444	1110 / 0.511	21.84	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	61.0 / 2.402	8,060	62.8 / 2.472	8,670	68.8 / 2.709	9,610
	535	1332 / 0.511	23.90	2.03 / 0.080	2.79 / 0.110	3.56 / 0.140	67.1 / 2.642	9,680	68.9 / 2.713	10,350	76.4 / 3.008	11,640
	646	1591 / 0.511	26.14	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	73.4 / 2.890	11,620	75.2 / 2.961	12,360	82.7 / 3.256	13,760
	777	1924 / 0.511	28.75	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	78.1 / 3.075	13,740	79.9 / 3.146	14,520	87.4 / 3.441	16,010

P-Route®
IEEE 1580, UL1309, UL1072

FLAME RETARDANT 0.6/1kV FPN, 0.6/1kV FPNB, 0.6/1kV FPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
4	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	11.1 / 0.437	200	12.9 / 0.508	320	16.3 / 0.642	440
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.2 / 0.480	270	14.0 / 0.551	400	17.4 / 0.685	520
	10	37 / 0.424	2.87	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	14.7 / 0.579	400	16.5 / 0.650	550	19.9 / 0.783	700
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	17.8 / 0.701	580	19.6 / 0.772	760	24.1 / 0.949	1,000
	6	61 / 0.511	4.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	20.4 / 0.803	840	22.2 / 0.874	1,040	26.7 / 1.051	1,300
	5	91 / 0.511	6.20	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.7 / 1.012	1,250	27.5 / 1.083	1,510	32.0 / 1.260	1,830
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	26.9 / 1.059	1,400	28.7 / 1.130	1,670	33.2 / 1.307	2,000
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,600	30.2 / 1.189	1,890	34.7 / 1.366	2,240
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	29.8 / 1.173	1,840	31.6 / 1.244	2,140	36.1 / 1.421	2,500
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	34.7 / 1.366	2,520	36.5 / 1.437	2,870	41.0 / 1.614	3,280
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	37.6 / 1.480	3,070	39.4 / 1.551	3,450	45.4 / 1.787	4,060
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	40.5 / 1.594	3,780	42.3 / 1.665	4,190	48.3 / 1.902	4,830
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	45.7 / 1.799	4,690	47.5 / 1.870	5,140	53.5 / 2.106	5,860
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	49.8 / 1.961	5,770	51.6 / 2.031	6,260	57.6 / 2.268	7,040
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	54.8 / 2.157	6,980	56.6 / 2.228	7,530	62.6 / 2.465	8,380
	313	777 / 0.511	18.29	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	58.9 / 2.319	8,230	60.7 / 2.390	8,820	66.7 / 2.626	9,720
	373	925 / 0.511	19.94	1.65 / 0.065	2.79 / 0.110	3.56 / 0.140	63.0 / 2.480	9,610	64.8 / 2.551	10,240	72.3 / 2.846	11,460
	444	1110 / 0.511	21.84	1.65 / 0.065	2.79 / 0.110	3.56 / 0.140	67.6 / 2.661	11,320	69.4 / 2.732	11,990	76.9 / 3.028	13,290
	535	1332 / 0.511	23.90	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	76.0 / 2.992	13,910	77.8 / 3.063	14,670	85.3 / 3.358	16,110
	646	1591 / 0.511	26.14	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	81.3 / 3.201	16,300	83.1 / 3.272	17,110	90.6 / 3.567	18,650

FLAME RETARDANT 0.6/1kV QPN, 0.6/1kV QPNB, 0.6/1kV QPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
5	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	250	13.9 / 0.547	370	17.3 / 0.681	500
	12	19 / 0.470	2.36	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	14.1 / 0.555	350	15.9 / 0.626	500	19.3 / 0.760	640
	10	37 / 0.424	2.87	0.76 / 0.030	1.52 / 0.060	2.03 / 0.080	16.0 / 0.630	480	17.8 / 0.701	650	22.1 / 0.870	850
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	19.5 / 0.768	710	21.3 / 0.839	910	25.8 / 1.016	1,160
	6	61 / 0.511	4.45	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	1,080	25.3 / 0.996	1,320	29.8 / 1.173	1,610
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	30.3 / 1.193	1,730	32.1 / 1.264	2,040	36.6 / 1.441	2,400
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	33.5 / 1.319	2,280	35.3 / 1.390	2,620	39.6 / 1.559	3,000
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	39.0 / 1.535	3,120	40.8 / 1.606	3,520	46.6 / 1.835	4,120
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	42.2 / 1.661	3,810	44.0 / 1.732	4,240	49.8 / 1.961	4,880
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	47.0 / 1.850	4,860	48.8 / 1.921	5,330	54.6 / 2.150	6,040
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	51.2 / 2.016	5,810	53.0 / 2.087	6,330	58.8 / 2.315	7,090
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	55.8 / 2.197	7,160	57.6 / 2.268	7,720	63.4 / 2.496	8,550

Power(Distribution) Cable

FIRE RESISTANCE 0.6/1kV FS-DPN , 0.6/1kV FS-DPNB, 0.6/1kV FS-DPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	10.7 / 0.421	160	12.5 / 0.492	280	15.9 / 0.626	390
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	11.6 / 0.457	210	13.4 / 0.528	330	16.8 / 0.661	450
	10	37 / 0.424	2.87	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	13.1 / 0.516	270	14.9 / 0.587	410	18.3 / 0.720	550
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	16.3 / 0.642	420	18.1 / 0.713	580	22.6 / 0.890	800
	6	61 / 0.511	4.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	18.5 / 0.728	570	20.3 / 0.799	760	24.8 / 0.976	1,000
	5	91 / 0.511	6.20	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	23.0 / 0.906	860	24.8 / 0.976	1,090	29.3 / 1.154	1,380
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	950	25.8 / 1.016	1,190	30.3 / 1.193	1,490
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.3 / 0.996	1,070	27.1 / 1.067	1,330	31.6 / 1.244	1,640
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	26.5 / 1.043	1,220	28.3 / 1.114	1,490	32.8 / 1.291	1,810
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	30.5 / 1.201	1,630	32.3 / 1.272	1,940	36.8 / 1.449	2,310
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	32.9 / 1.295	1,970	34.7 / 1.366	2,300	39.2 / 1.543	2,690
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	35.3 / 1.390	2,370	37.1 / 1.461	2,730	41.6 / 1.638	3,150
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	38.4 / 1.512	2,830	40.2 / 1.583	3,220	46.2 / 1.819	3,830
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	41.9 / 1.650	3,460	43.7 / 1.720	3,880	49.7 / 1.957	4,550
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	47.4 / 1.866	4,340	49.2 / 1.937	4,810	55.2 / 2.173	5,560

FIRE RESISTANCE 0.6/1kV FS-TPN, 0.6/1kV FS-TPNB, 0.6/1kV FS-TPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	11.3 / 0.445	190	13.1 / 0.516	310	16.5 / 0.650	430
	12	19 / 0.470	2.36	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.3 / 0.484	250	14.1 / 0.555	380	17.5 / 0.689	500
	10	37 / 0.424	2.87	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	14.6 / 0.575	360	16.4 / 0.646	510	19.8 / 0.780	660
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	17.3 / 0.681	510	19.1 / 0.752	690	23.6 / 0.929	910
	6	61 / 0.511	4.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	19.7 / 0.776	720	21.5 / 0.846	920	26.0 / 1.024	1,170
	5	91 / 0.511	6.20	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	1,060	26.2 / 1.031	1,310	30.7 / 1.209	1,610
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.6 / 1.008	1,180	27.4 / 1.079	1,440	31.9 / 1.256	1,760
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	26.9 / 1.059	1,340	28.7 / 1.130	1,610	33.2 / 1.307	1,940
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	28.2 / 1.110	1,530	30.0 / 1.181	1,820	34.5 / 1.358	2,160
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	32.6 / 1.283	2,070	34.4 / 1.354	2,400	38.9 / 1.531	2,790
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	35.1 / 1.382	2,500	36.9 / 1.453	2,860	41.4 / 1.630	3,280
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	37.7 / 1.484	3,060	39.5 / 1.555	3,440	45.5 / 1.791	4,040
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	41.1 / 1.618	3,650	42.9 / 1.689	4,070	48.9 / 1.925	4,720
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	46.3 / 1.823	4,650	48.1 / 1.894	5,120	54.1 / 2.130	5,840
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	50.7 / 1.996	5,610	52.5 / 2.067	6,110	58.5 / 2.303	6,900
	313	777 / 0.511	18.29	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	54.3 / 2.138	6,570	56.1 / 2.209	7,110	62.1 / 2.445	7,950
	373	925 / 0.511	19.94	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	58.0 / 2.283	7,650	59.8 / 2.354	8,230	65.8 / 2.591	9,130
	444	1110 / 0.511	21.84	1.65 / 0.065	2.79 / 0.110	3.56 / 0.140	62.1 / 2.445	8,980	63.9 / 2.516	9,600	71.4 / 2.811	10,810
	535	1332 / 0.511	23.90	2.03 / 0.080	2.79 / 0.110	3.56 / 0.140	68.2 / 2.685	10,790	70.0 / 2.756	11,470	77.5 / 3.051	12,780
	646	1591 / 0.511	26.14	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	74.5 / 2.933	12,910	76.3 / 3.004	13,650	83.8 / 3.299	15,070
	777	1924 / 0.511	28.75	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	79.2 / 3.118	15,200	81.0 / 3.189	15,980	88.5 / 3.484	17,490

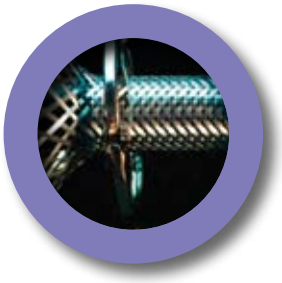
P-Route®
IEEE 1580, UL1309, UL1072

FIRE RESISTANCE 0.6/1kV FS-FPN, 0.6/1kV FS-FPNB, 0.6/1kV FS-FPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
4	14	19 / 0.373	1.88	0.76 / 0.030	1.14 / 0.045	1.52 / 0.060	12.4 / 0.488	240	14.2 / 0.559	370	17.6 / 0.693	500
	12	19 / 0.470	2.36	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	14.2 / 0.559	330	16.0 / 0.630	480	19.4 / 0.764	620
	10	37 / 0.424	2.87	0.76 / 0.030	1.52 / 0.060	2.03 / 0.080	15.9 / 0.626	440	17.7 / 0.697	610	22.2 / 0.874	820
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	630	20.8 / 0.819	830	25.3 / 0.996	1,070
	6	61 / 0.511	4.45	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	950	24.5 / 0.965	1,180	29.0 / 1.142	1,470
	5	91 / 0.511	6.20	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	27.0 / 1.063	1,330	28.8 / 1.134	1,600	33.3 / 1.311	1,940
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	28.2 / 1.110	1,480	30.0 / 1.181	1,770	34.5 / 1.358	2,110
	3	125 / 0.511	7.32	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	29.6 / 1.165	1,680	31.4 / 1.236	1,980	35.9 / 1.413	2,340
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	31.1 / 1.224	1,930	32.9 / 1.295	2,250	37.4 / 1.472	2,620
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.03 / 0.080	35.9 / 1.413	2,620	37.7 / 1.484	2,980	42.2 / 1.661	3,400
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	38.8 / 1.528	3,180	40.6 / 1.598	3,570	46.6 / 1.835	4,190
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	41.7 / 1.642	3,900	43.5 / 1.713	4,310	49.5 / 1.949	4,980
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	47.0 / 1.850	4,830	48.8 / 1.921	5,300	54.8 / 2.157	6,040
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	51.1 / 2.012	5,920	52.9 / 2.083	6,430	58.9 / 2.319	7,230
	262	646 / 0.511	16.61	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	56.0 / 2.205	7,140	57.8 / 2.276	7,700	63.8 / 2.512	8,570
	313	777 / 0.511	18.29	1.65 / 0.065	2.79 / 0.110	2.79 / 0.110	60.1 / 2.366	8,400	61.9 / 2.437	9,000	67.9 / 2.673	9,920
	373	925 / 0.511	19.94	1.65 / 0.065	2.79 / 0.110	3.56 / 0.140	64.2 / 2.528	9,790	66.0 / 2.598	10,430	73.5 / 2.894	11,670
	444	1110 / 0.511	21.84	1.65 / 0.065	2.79 / 0.110	3.56 / 0.140	68.8 / 2.709	11,510	70.6 / 2.780	12,200	78.1 / 3.075	13,520
	535	1332 / 0.511	23.90	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	77.2 / 3.039	14,130	79.0 / 3.110	14,890	86.5 / 3.406	16,370
	646	1591 / 0.511	26.14	2.03 / 0.080	3.56 / 0.140	3.56 / 0.140	82.5 / 3.248	16,530	84.3 / 3.319	17,350	91.8 / 3.614	18,920

FIRE RESISTANCE 0.6/1kV FS-QPN, 0.6/1kV FS-QPNB, 0.6/1kV FS-QPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
5	14	19 / 0.373	1.88	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	14.2 / 0.559	310	16.0 / 0.630	460	19.4 / 0.764	600
	12	19 / 0.470	2.36	0.76 / 0.030	1.52 / 0.060	1.52 / 0.060	15.5 / 0.610	400	17.3 / 0.681	560	20.7 / 0.815	710
	10	37 / 0.424	2.87	0.76 / 0.030	1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	540	19.2 / 0.756	720	23.5 / 0.925	930
	8	37 / 0.511	3.45	1.14 / 0.045	1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	770	22.7 / 0.894	990	27.2 / 1.071	1,250
	6	61 / 0.511	4.45	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	1,160	27.0 / 1.063	1,420	31.5 / 1.240	1,730
	4	105 / 0.511	6.55	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	31.2 / 1.228	1,810	33.0 / 1.299	2,130	37.5 / 1.476	2,500
	2	150 / 0.511	8.23	1.14 / 0.045	2.03 / 0.080	2.03 / 0.080	34.4 / 1.354	2,370	36.2 / 1.425	2,720	40.5 / 1.594	3,110
	1	209 / 0.511	9.17	1.40 / 0.055	2.03 / 0.080	2.79 / 0.110	39.9 / 1.571	3,230	41.7 / 1.642	3,630	47.5 / 1.870	4,250
	1/0	266 / 0.511	10.34	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	44.6 / 1.756	4,080	46.4 / 1.827	4,530	52.2 / 2.055	5,210
	2/0	342 / 0.511	11.71	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	47.8 / 1.882	4,980	49.6 / 1.953	5,460	55.4 / 2.181	6,180
	3/0	418 / 0.511	12.95	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	52.0 / 2.047	5,940	53.8 / 2.118	6,470	59.6 / 2.346	7,240
	4/0	532 / 0.511	14.61	1.40 / 0.055	2.79 / 0.110	2.79 / 0.110	56.6 / 2.228	7,300	58.4 / 2.299	7,870	64.2 / 2.528	8,710





0.6/1kV Control Cable



0.6/1kV CPN, CPNB, CPNBS

0.6/1kV FS-CPN, FS-CPNB, FS-CPNBS **25 ~ 29**

0.6/1kV C(OS)PN, C(OS)PNB, C(OS)PNBS

0.6/1kV FS-C(OS)PN, FS-C(OS)PNB, FS-C(OS)PNBS **30 ~ 31**

0.6/1kV C(OBS)PN, C(OBS)PNB, C(OBS)PNBS

0.6/1kV FS-C(OBS)PN, FS-C(OBS)PNB, FS-C(OBS)PNBS **32 ~ 33**



Power(Control) Cable

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

0.6/1kV CPN, CPNB, CPNBS

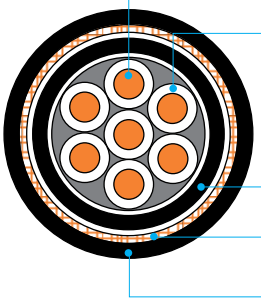
FIRE RESISTANCE

0.6/1kV FS-CPN, FS-CPNB, FS-CPNBS

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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)
  IEC 60331-1,-2(120min)
  FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	C	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	FS-	- Mica/glass tape (FS Type cable only)
	Insulation	P	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	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
	Jacket	N	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	S	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Colored insulation or Arabic number printing on the insulation

Power(Control) Cable

FLAME RETARDANT 0.6/1kV CPN, 0.6/1kV CPNB, 0.6/1kV CPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2					1.14 / 0.045	1.14 / 0.045	8.6 / 0.339	90	10.4 / 0.409	180	13.1 / 0.516	260
3					1.14 / 0.045	1.52 / 0.060	9.0 / 0.354	110	10.8 / 0.425	200	14.2 / 0.559	300
4					1.14 / 0.045	1.52 / 0.060	9.8 / 0.386	130	11.6 / 0.457	230	15.0 / 0.591	340
5					1.14 / 0.045	1.52 / 0.060	10.7 / 0.421	150	12.5 / 0.492	270	15.9 / 0.626	380
6					1.14 / 0.045	1.52 / 0.060	11.6 / 0.457	180	13.4 / 0.528	300	16.8 / 0.661	420
7					1.14 / 0.045	1.52 / 0.060	11.6 / 0.457	190	13.4 / 0.528	310	16.8 / 0.661	430
8					1.14 / 0.045	1.52 / 0.060	12.5 / 0.492	220	14.3 / 0.563	350	17.7 / 0.697	480
10					1.52 / 0.060	1.52 / 0.060	15.3 / 0.602	300	17.1 / 0.673	460	20.5 / 0.807	610
12					1.52 / 0.060	1.52 / 0.060	15.7 / 0.618	330	17.5 / 0.689	490	20.9 / 0.823	650
14	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	370	18.3 / 0.720	540	22.8 / 0.898	760
16					1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	420	19.2 / 0.756	600	23.7 / 0.933	820
19					1.52 / 0.060	2.03 / 0.080	18.3 / 0.720	470	20.1 / 0.791	660	24.6 / 0.969	900
20					1.52 / 0.060	2.03 / 0.080	18.8 / 0.740	500	20.6 / 0.811	690	25.1 / 0.988	930
24					2.03 / 0.080	2.03 / 0.080	22.3 / 0.878	660	24.1 / 0.949	880	28.6 / 1.126	1,160
30					2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	770	25.4 / 1.000	1,010	29.9 / 1.177	1,300
37					2.03 / 0.080	2.03 / 0.080	25.4 / 1.000	900	27.2 / 1.071	1,160	31.7 / 1.248	1,480
44					2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,080	30.2 / 1.189	1,370	34.7 / 1.366	1,710
60					2.03 / 0.080	2.03 / 0.080	31.4 / 1.236	1,380	33.2 / 1.307	1,700	37.7 / 1.484	2,080
91					2.03 / 0.080	2.79 / 0.110	37.4 / 1.472	1,990	39.2 / 1.543	2,370	45.2 / 1.780	2,970
2					1.14 / 0.045	1.52 / 0.060	8.9 / 0.350	100	10.7 / 0.421	190	14.1 / 0.555	290
3					1.14 / 0.045	1.52 / 0.060	9.4 / 0.370	120	11.2 / 0.441	220	14.6 / 0.575	320
4					1.14 / 0.045	1.52 / 0.060	10.2 / 0.402	150	12.0 / 0.472	260	15.4 / 0.606	370
5					1.14 / 0.045	1.52 / 0.060	11.1 / 0.437	170	12.9 / 0.508	290	16.3 / 0.642	410
6					1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	210	13.9 / 0.547	330	17.3 / 0.681	460
7					1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	220	13.9 / 0.547	350	17.3 / 0.681	470
8					1.14 / 0.045	1.52 / 0.060	13.0 / 0.512	250	14.8 / 0.583	390	18.2 / 0.717	520
10					1.52 / 0.060	2.03 / 0.080	15.9 / 0.626	340	17.7 / 0.697	510	22.2 / 0.874	720
12					1.52 / 0.060	2.03 / 0.080	16.4 / 0.646	390	18.2 / 0.717	560	22.7 / 0.894	770
14	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	17.2 / 0.677	430	19.0 / 0.748	610	23.5 / 0.925	840
16					1.52 / 0.060	2.03 / 0.080	18.2 / 0.717	490	20.0 / 0.787	670	24.5 / 0.965	910
19					1.52 / 0.060	2.03 / 0.080	19.1 / 0.752	550	20.9 / 0.823	750	25.4 / 1.000	1,000
20					1.52 / 0.060	2.03 / 0.080	19.7 / 0.776	580	21.5 / 0.846	790	26.0 / 1.024	1,040
24					2.03 / 0.080	2.03 / 0.080	23.4 / 0.921	770	25.2 / 0.992	1,010	29.7 / 1.169	1,300
30					2.03 / 0.080	2.03 / 0.080	24.8 / 0.976	900	26.6 / 1.047	1,150	31.1 / 1.224	1,460
37					2.03 / 0.080	2.03 / 0.080	26.6 / 1.047	1,070	28.4 / 1.118	1,340	32.9 / 1.295	1,660
44					2.03 / 0.080	2.03 / 0.080	29.8 / 1.173	1,280	31.6 / 1.244	1,580	36.1 / 1.421	1,940
60					2.03 / 0.080	2.03 / 0.080	32.9 / 1.295	1,640	34.7 / 1.366	1,970	39.2 / 1.543	2,360
91					2.03 / 0.080	2.79 / 0.110	39.3 / 1.547	2,380	41.1 / 1.618	2,770	47.1 / 1.854	3,400
2					1.14 / 0.045	1.52 / 0.060	9.6 / 0.378	120	11.4 / 0.449	220	14.8 / 0.583	330
3					1.14 / 0.045	1.52 / 0.060	10.2 / 0.402	150	12.0 / 0.472	260	15.4 / 0.606	370
4					1.14 / 0.045	1.52 / 0.060	11.1 / 0.437	190	12.9 / 0.508	310	16.3 / 0.642	420
5					1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	230	13.9 / 0.547	350	17.3 / 0.681	480
6					1.14 / 0.045	1.52 / 0.060	13.2 / 0.520	270	15.0 / 0.591	400	18.4 / 0.724	540
7					1.14 / 0.045	1.52 / 0.060	13.2 / 0.520	290	15.0 / 0.591	430	18.4 / 0.724	560
8					1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	350	16.7 / 0.657	510	20.1 / 0.791	660
10					1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	450	19.2 / 0.756	630	23.7 / 0.933	850
12					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	500	19.7 / 0.776	690	24.2 / 0.953	920
14	14	19/0.373	1.88	0.76/0.030	1.52 / 0.060	2.03 / 0.080	18.8 / 0.740	570	20.6 / 0.811	760	25.1 / 0.988	1,010
16					1.52 / 0.060	2.03 / 0.080	19.8 / 0.780	640	21.6 / 0.850	840	26.1 / 1.028	1,090
19					1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	730	22.7 / 0.894	950	27.2 / 1.071	1,210
20					2.03 / 0.080	2.03 / 0.080	22.6 / 0.890	830	24.4 / 0.961	1,060	28.9 / 1.138	1,340
24					2.03 / 0.080	2.03 / 0.080	25.6 / 1.008	1,000	27.4 / 1.079	1,260	31.9 / 1.256	1,580
30					2.03 / 0.080	2.03 / 0.080	27.1 / 1.067	1,190	28.9 / 1.138	1,460	33.4 / 1.315	1,790
37					2.03 / 0.080	2.03 / 0.080	29.1 / 1.146	1,410	30.9 / 1.217	1,710	35.4 / 1.394	2,060
44					2.03 / 0.080	2.03 / 0.080	32.7 / 1.287	1,690	34.5 / 1.358	2,020	39.0 / 1.535	2,410
60					2.03 / 0.080	2.79 / 0.110	36.2 / 1.425	2,190	38.0 / 1.496	2,560	44.0 / 1.732	3,140
91					2.79 / 0.110	2.79 / 0.110	44.7 / 1.760	3,360	46.5 / 1.831	3,810	52.5 / 2.067	4,510

P-Route®
IEEE 1580, UL1309, UL1072

FLAME RETARDANT 0.6/1kV CPN, 0.6/1kV CPNB, 0.6/1kV CPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2					1.14 / 0.045	1.52 / 0.060	10.6 / 0.417	160	12.4 / 0.488	270	15.8 / 0.622	380
3					1.14 / 0.045	1.52 / 0.060	11.2 / 0.441	200	13.0 / 0.512	320	16.4 / 0.646	440
4					1.14 / 0.045	1.52 / 0.060	12.2 / 0.480	250	14.0 / 0.551	380	17.4 / 0.685	500
5					1.52 / 0.060	1.52 / 0.060	14.1 / 0.555	320	15.9 / 0.626	470	19.3 / 0.760	610
6					1.52 / 0.060	1.52 / 0.060	15.3 / 0.602	380	17.1 / 0.673	540	20.5 / 0.807	690
7					1.52 / 0.060	1.52 / 0.060	15.3 / 0.602	420	17.1 / 0.673	570	20.5 / 0.807	730
8					1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	470	18.3 / 0.720	640	22.8 / 0.898	860
10					1.52 / 0.060	2.03 / 0.080	19.3 / 0.760	600	21.1 / 0.831	800	25.6 / 1.008	1,050
12					1.52 / 0.060	2.03 / 0.080	19.9 / 0.783	680	21.7 / 0.854	890	26.2 / 1.031	1,140
14	12	19/0.470	2.36	0.76/0.030	1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	770	22.7 / 0.894	990	27.2 / 1.071	1,250
16					2.03 / 0.080	2.03 / 0.080	23.2 / 0.913	930	25.0 / 0.984	1,170	29.5 / 1.161	1,460
19					2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	1,070	26.2 / 1.031	1,320	30.7 / 1.209	1,620
20					2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	1,120	27.0 / 1.063	1,380	31.5 / 1.240	1,690
24					2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,350	30.2 / 1.189	1,640	34.7 / 1.366	1,990
30					2.03 / 0.080	2.03 / 0.080	30.1 / 1.185	1,620	31.9 / 1.256	1,920	36.4 / 1.433	2,290
37					2.03 / 0.080	2.03 / 0.080	32.4 / 1.276	1,940	34.2 / 1.346	2,260	38.7 / 1.524	2,650
44					2.03 / 0.080	2.79 / 0.110	36.4 / 1.433	2,320	38.2 / 1.504	2,690	44.2 / 1.740	3,270
60					2.03 / 0.080	2.79 / 0.110	40.4 / 1.591	3,040	42.2 / 1.661	3,440	48.2 / 1.898	4,080
91					2.79 / 0.110	2.79 / 0.110	49.9 / 1.965	4,640	51.7 / 2.035	5,140	57.7 / 2.272	5,920
2					1.14 / 0.045	1.52 / 0.060	12.0 / 0.472	210	13.8 / 0.543	340	17.2 / 0.677	460
3					1.14 / 0.045	1.52 / 0.060	12.8 / 0.504	280	14.6 / 0.575	410	18.0 / 0.709	540
4					1.52 / 0.060	1.52 / 0.060	14.7 / 0.579	370	16.5 / 0.650	520	19.9 / 0.783	670
5					1.52 / 0.060	2.03 / 0.080	16.0 / 0.630	450	17.8 / 0.701	610	22.3 / 0.878	830
6					1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	530	19.3 / 0.760	710	23.8 / 0.937	940
7					1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	580	19.3 / 0.760	760	23.8 / 0.937	990
8					1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	660	20.7 / 0.815	860	25.2 / 0.992	1,100
10					2.03 / 0.080	2.03 / 0.080	23.3 / 0.917	900	25.1 / 0.988	1,140	29.6 / 1.165	1,430
12					2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	1,030	25.8 / 1.016	1,270	30.3 / 1.193	1,570
14	10	37/0.424	2.87	0.76/0.030	2.03 / 0.080	2.03 / 0.080	25.3 / 0.996	1,170	27.1 / 1.067	1,420	31.6 / 1.244	1,740
16					2.03 / 0.080	2.03 / 0.080	26.7 / 1.051	1,310	28.5 / 1.122	1,580	33.0 / 1.299	1,910
19					2.03 / 0.080	2.03 / 0.080	28.1 / 1.106	1,510	29.9 / 1.177	1,800	34.4 / 1.354	2,140
20					2.03 / 0.080	2.03 / 0.080	28.9 / 1.138	1,590	30.7 / 1.209	1,880	35.2 / 1.386	2,230
24					2.03 / 0.080	2.03 / 0.080	32.8 / 1.291	1,930	34.6 / 1.362	2,260	39.1 / 1.539	2,650
30					2.03 / 0.080	2.03 / 0.080	34.8 / 1.370	2,310	36.6 / 1.441	2,660	41.1 / 1.618	3,080
37					2.03 / 0.080	2.79 / 0.110	37.5 / 1.476	2,780	39.3 / 1.547	3,160	45.3 / 1.783	3,760
44					2.03 / 0.080	2.79 / 0.110	42.3 / 1.665	3,340	44.1 / 1.736	3,770	50.1 / 1.972	4,440
60					2.79 / 0.110	2.79 / 0.110	48.5 / 1.909	4,560	50.3 / 1.980	5,050	56.3 / 2.217	5,810
91					2.79 / 0.110	2.79 / 0.110	57.9 / 2.280	6,700	59.7 / 2.350	7,280	65.7 / 2.587	8,170

Power(Control) Cable

FIRE RESISTANCE 0.6/1kV FS-CPN, 0.6/1kV FS-CPNB, 0.6/1kV FS-CPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2					1.14 / 0.045	1.52 / 0.060	9.6 / 0.378	120	11.4 / 0.449	220	14.8 / 0.583	330
3					1.14 / 0.045	1.52 / 0.060	10.2 / 0.402	140	12.0 / 0.472	250	15.4 / 0.606	360
4					1.14 / 0.045	1.52 / 0.060	11.1 / 0.437	170	12.9 / 0.508	290	16.3 / 0.642	410
5					1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	200	13.9 / 0.547	330	17.3 / 0.681	460
6					1.14 / 0.045	1.52 / 0.060	13.1 / 0.516	240	14.9 / 0.587	380	18.3 / 0.720	510
7					1.14 / 0.045	1.52 / 0.060	13.1 / 0.516	250	14.9 / 0.587	380	18.3 / 0.720	520
8					1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	310	16.7 / 0.657	470	20.1 / 0.791	610
10					1.52 / 0.060	2.03 / 0.080	17.3 / 0.681	410	19.1 / 0.752	590	23.6 / 0.929	820
12					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	450	19.7 / 0.776	630	24.2 / 0.953	870
14	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	18.8 / 0.740	500	20.6 / 0.811	690	25.1 / 0.988	940
16					1.52 / 0.060	2.03 / 0.080	19.8 / 0.780	560	21.6 / 0.850	760	26.1 / 1.028	1,010
19					1.52 / 0.060	2.03 / 0.080	20.9 / 0.823	630	22.7 / 0.894	840	27.2 / 1.071	1,110
20					2.03 / 0.080	2.03 / 0.080	22.6 / 0.890	720	24.4 / 0.961	950	28.9 / 1.138	1,240
24					2.03 / 0.080	2.03 / 0.080	25.6 / 1.008	910	27.4 / 1.079	1,170	31.9 / 1.256	1,480
30					2.03 / 0.080	2.03 / 0.080	27.0 / 1.063	1,030	28.8 / 1.134	1,300	33.3 / 1.311	1,630
37					2.03 / 0.080	2.03 / 0.080	29.1 / 1.146	1,210	30.9 / 1.217	1,500	35.4 / 1.394	1,860
44					2.03 / 0.080	2.03 / 0.080	32.6 / 1.283	1,500	34.4 / 1.354	1,830	38.9 / 1.531	2,220
60					2.03 / 0.080	2.79 / 0.110	36.1 / 1.421	1,870	37.9 / 1.492	2,240	43.9 / 1.728	2,820
91					2.79 / 0.110	2.79 / 0.110	44.6 / 1.756	2,860	46.4 / 1.827	3,310	52.4 / 2.063	4,010
2					1.14 / 0.045	1.52 / 0.060	10.0 / 0.394	140	11.8 / 0.465	240	15.2 / 0.598	350
3					1.14 / 0.045	1.52 / 0.060	10.5 / 0.413	160	12.3 / 0.484	270	15.7 / 0.618	380
4					1.14 / 0.045	1.52 / 0.060	11.5 / 0.453	190	13.3 / 0.524	310	16.7 / 0.657	430
5					1.14 / 0.045	1.52 / 0.060	12.5 / 0.492	230	14.3 / 0.563	360	17.7 / 0.697	490
6					1.52 / 0.060	1.52 / 0.060	14.3 / 0.563	290	16.1 / 0.634	440	19.5 / 0.768	590
7					1.52 / 0.060	1.52 / 0.060	14.3 / 0.563	300	16.1 / 0.634	450	19.5 / 0.768	600
8					1.52 / 0.060	1.52 / 0.060	15.5 / 0.610	350	17.3 / 0.681	510	20.7 / 0.815	670
10					1.52 / 0.060	2.03 / 0.080	18.0 / 0.709	470	19.8 / 0.780	650	24.3 / 0.957	890
12					1.52 / 0.060	2.03 / 0.080	18.6 / 0.732	510	20.4 / 0.803	700	24.9 / 0.980	940
14	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	19.5 / 0.768	570	21.3 / 0.839	770	25.8 / 1.016	1,020
16					1.52 / 0.060	2.03 / 0.080	20.6 / 0.811	640	22.4 / 0.882	850	26.9 / 1.059	1,110
19					2.03 / 0.080	2.03 / 0.080	22.8 / 0.898	780	24.6 / 0.969	1,010	29.1 / 1.146	1,300
20					2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	820	25.3 / 0.996	1,060	29.8 / 1.173	1,360
24					2.03 / 0.080	2.03 / 0.080	26.6 / 1.047	1,030	28.4 / 1.118	1,300	32.9 / 1.295	1,630
30					2.03 / 0.080	2.03 / 0.080	28.1 / 1.106	1,180	29.9 / 1.177	1,470	34.4 / 1.354	1,810
37					2.03 / 0.080	2.03 / 0.080	30.3 / 1.193	1,390	32.1 / 1.264	1,700	36.6 / 1.441	2,060
44					2.03 / 0.080	2.03 / 0.080	33.9 / 1.335	1,720	35.7 / 1.406	2,060	40.2 / 1.583	2,460
60					2.03 / 0.080	2.79 / 0.110	37.6 / 1.480	2,160	39.4 / 1.551	2,540	45.4 / 1.787	3,140
91					2.79 / 0.110	2.79 / 0.110	46.5 / 1.831	3,300	48.3 / 1.902	3,770	54.3 / 2.138	4,50
2					1.14 / 0.045	1.52 / 0.060	10.7 / 0.421	160	12.5 / 0.492	280	15.9 / 0.626	390
3					1.14 / 0.045	1.52 / 0.060	11.3 / 0.445	190	13.1 / 0.516	310	16.5 / 0.650	430
4					1.14 / 0.045	1.52 / 0.060	12.4 / 0.488	240	14.2 / 0.559	370	17.6 / 0.693	500
5					1.52 / 0.060	1.52 / 0.060	14.2 / 0.559	310	16.0 / 0.630	460	19.4 / 0.764	600
6					1.52 / 0.060	1.52 / 0.060	15.4 / 0.606	370	17.2 / 0.677	530	20.6 / 0.811	680
7					1.52 / 0.060	1.52 / 0.060	15.4 / 0.606	380	17.2 / 0.677	540	20.6 / 0.811	690
8					1.52 / 0.060	2.03 / 0.080	16.7 / 0.657	440	18.5 / 0.728	620	23.0 / 0.906	840
10					1.52 / 0.060	2.03 / 0.080	19.5 / 0.768	590	21.3 / 0.839	790	25.8 / 1.016	1,040
12					1.52 / 0.060	2.03 / 0.080	20.1 / 0.791	650	21.9 / 0.862	850	26.4 / 1.039	1,110
14	14	19/0.373	1.88	0.76/0.030	2.03 / 0.080	2.03 / 0.080	22.2 / 0.874	780	24.0 / 0.945	1,010	28.5 / 1.122	1,290
16					2.03 / 0.080	2.03 / 0.080	23.4 / 0.921	870	25.2 / 0.992	1,110	29.7 / 1.169	1,400
19					2.03 / 0.080	2.03 / 0.080	24.7 / 0.972	980	26.5 / 1.043	1,230	31.0 / 1.220	1,540
20					2.03 / 0.080	2.03 / 0.080	25.4 / 1.000	1,040	27.2 / 1.071	1,300	31.7 / 1.248	1,610
24					2.03 / 0.080	2.03 / 0.080	28.7 / 1.130	1,300	30.5 / 1.201	1,590	35.0 / 1.378	1,940
30					2.03 / 0.080	2.03 / 0.080	30.4 / 1.197	1,500	32.2 / 1.268	1,810	36.7 / 1.445	2,180
37					2.03 / 0.080	2.03 / 0.080	32.8 / 1.291	1,780	34.6 / 1.362	2,110	39.1 / 1.539	2,500
44					2.03 / 0.080	2.79 / 0.110	36.8 / 1.449	2,190	38.6 / 1.520	2,560	44.6 / 1.756	3,160
60					2.03 / 0.080	2.79 / 0.110	40.9 / 1.610	2,790	42.7 / 1.681	3,200	48.7 / 1.917	3,850
91					2.79 / 0.110	2.79 / 0.110	50.4 / 1.984	4,240	52.2 / 2.055	4,750	58.2 / 2.291	5,530

P-Route®
IEEE 1580, UL1309, UL1072

FIRE RESISTANCE 0.6/1kV FS-CPN, 0.6/1kV FS-CPNB, 0.6/1kV FS-CPNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2					1.14 / 0.045	1.52 / 0.060	11.6 / 0.457	210	13.4 / 0.528	330	16.8 / 0.661	450
3					1.14 / 0.045	1.52 / 0.060	12.3 / 0.484	250	14.1 / 0.555	380	17.5 / 0.689	500
4					1.52 / 0.060	1.52 / 0.060	14.2 / 0.559	330	16.0 / 0.630	480	19.4 / 0.764	620
5					1.52 / 0.060	1.52 / 0.060	15.5 / 0.610	400	17.3 / 0.681	560	20.7 / 0.815	710
6					1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	470	18.6 / 0.732	640	23.1 / 0.909	870
7					1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	490	18.6 / 0.732	670	23.1 / 0.909	890
8					1.52 / 0.060	2.03 / 0.080	18.2 / 0.717	570	20.0 / 0.787	760	24.5 / 0.965	1,000
10					2.03 / 0.080	2.03 / 0.080	22.4 / 0.882	820	24.2 / 0.953	1,050	28.7 / 1.130	1,330
12					2.03 / 0.080	2.03 / 0.080	23.1 / 0.909	900	24.9 / 0.980	1,140	29.4 / 1.157	1,430
14	12	19/0.470	2.36	0.76/0.030	2.03 / 0.080	2.03 / 0.080	24.3 / 0.957	1,010	26.1 / 1.028	1,260	30.6 / 1.205	1,560
16					2.03 / 0.080	2.03 / 0.080	25.7 / 1.012	1,140	27.5 / 1.083	1,400	32.0 / 1.260	1,720
19					2.03 / 0.080	2.03 / 0.080	27.1 / 1.067	1,290	28.9 / 1.138	1,570	33.4 / 1.315	1,900
20					2.03 / 0.080	2.03 / 0.080	27.9 / 1.098	1,370	29.7 / 1.169	1,650	34.2 / 1.346	1,990
24					2.03 / 0.080	2.03 / 0.080	31.6 / 1.244	1,710	33.4 / 1.315	2,030	37.9 / 1.492	2,410
30					2.03 / 0.080	2.03 / 0.080	33.4 / 1.315	1,980	35.2 / 1.386	2,320	39.7 / 1.563	2,720
37					2.03 / 0.080	2.79 / 0.110	36.1 / 1.421	2,360	37.9 / 1.492	2,730	43.9 / 1.728	3,310
44					2.03 / 0.080	2.79 / 0.110	40.6 / 1.598	2,920	42.4 / 1.669	3,330	48.4 / 1.906	3,970
60					2.79 / 0.110	2.79 / 0.110	46.6 / 1.835	3,900	48.4 / 1.906	4,360	54.4 / 2.142	5,090
91					2.79 / 0.110	2.79 / 0.110	55.6 / 2.189	5,670	57.4 / 2.260	6,230	63.4 / 2.496	7,090
2					1.14 / 0.045	1.52 / 0.060	13.1 / 0.516	270	14.9 / 0.587	410	18.3 / 0.720	550
3					1.52 / 0.060	1.52 / 0.060	14.6 / 0.575	360	16.4 / 0.646	510	19.8 / 0.780	660
4					1.52 / 0.060	2.03 / 0.080	15.9 / 0.626	440	17.7 / 0.697	610	22.2 / 0.874	820
5					1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	540	19.2 / 0.756	720	23.7 / 0.933	950
6					1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	640	20.8 / 0.819	840	25.3 / 0.996	1,080
7					1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	680	20.8 / 0.819	870	25.3 / 0.996	1,120
8					1.52 / 0.060	2.03 / 0.080	20.6 / 0.811	790	22.4 / 0.882	1,000	26.9 / 1.059	1,260
10					2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	1,120	27.3 / 1.075	1,380	31.8 / 1.252	1,690
12					2.03 / 0.080	2.03 / 0.080	26.3 / 1.035	1,240	28.1 / 1.106	1,510	32.6 / 1.283	1,830
14	10	37/0.424	2.87	0.76/0.030	2.03 / 0.080	2.03 / 0.080	27.6 / 1.087	1,390	29.4 / 1.157	1,670	33.9 / 1.335	2,010
16					2.03 / 0.080	2.03 / 0.080	29.1 / 1.146	1,560	30.9 / 1.217	1,860	35.4 / 1.394	2,210
19					2.03 / 0.080	2.03 / 0.080	30.7 / 1.209	1,780	32.5 / 1.280	2,100	37.0 / 1.457	2,470
20					2.03 / 0.080	2.03 / 0.080	31.6 / 1.244	1,890	33.4 / 1.315	2,200	37.9 / 1.492	2,580
24					2.03 / 0.080	2.03 / 0.080	35.9 / 1.413	2,360	37.7 / 1.484	2,720	42.2 / 1.661	3,150
30					2.03 / 0.080	2.79 / 0.110	38.1 / 1.500	2,770	39.9 / 1.571	3,150	45.9 / 1.807	3,760
37					2.03 / 0.080	2.79 / 0.110	41.2 / 1.622	3,310	43.0 / 1.693	3,720	49.0 / 1.929	4,380
44					2.79 / 0.110	2.79 / 0.110	47.9 / 1.886	4,250	49.7 / 1.957	4,730	55.7 / 2.193	5,480
60					2.79 / 0.110	2.79 / 0.110	53.2 / 2.094	5,450	55.0 / 2.165	5,980	61.0 / 2.402	6,810
91					2.79 / 0.110	3.56 / 0.140	63.6 / 2.504	7,970	65.4 / 2.575	8,610	72.9 / 2.870	9,840

Power(Control) Cable



Cable Designation

FLAME RETARDANT

0.6/1kV C(OS)PN, C(OS)PNB, C(OS)PNBS

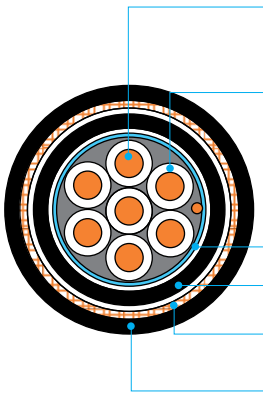
FIRE RESISTANCE

0.6/1kV FS-C(OS)PN, FS-C(OS)PNB, FS-C(OS)PNBS

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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)
  IEC 60331-1,-2(120min)
  FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	C	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	FS-	- Mica/glass tape(FS Type cable only)
	Insulation	P	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	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
	Overall shield	(OS)	- Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire
	Jacket	N	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	S	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Colored insulation or Arabic number printing on the insulation

P-Route®
IEEE 1580, UL1309, UL1072

FLAME RETARDANT 0.6/1kV C(OS)PN, 0.6/1kV C(OS)PNB, 0.6/1kV C(OS)PNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	20	19/0.201	0.99	0.76/0.030	1.14 / 0.045	1.14 / 0.045	8.6 / 0.339	100	10.4 / 0.409	190	13.1 / 0.516	260
4					1.14 / 0.045	1.52 / 0.060	9.3 / 0.366	110	11.1 / 0.437	210	14.5 / 0.571	320
5					1.14 / 0.045	1.52 / 0.060	10.0 / 0.394	130	11.8 / 0.465	240	15.2 / 0.598	350
6					1.14 / 0.045	1.52 / 0.060	10.9 / 0.429	150	12.7 / 0.500	270	15.9 / 0.626	380
3	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.1 / 0.358	110	10.9 / 0.429	210	14.1 / 0.555	310
4					1.14 / 0.045	1.52 / 0.060	9.9 / 0.390	140	11.7 / 0.461	240	14.9 / 0.587	340
6					1.14 / 0.045	1.52 / 0.060	11.7 / 0.461	190	13.5 / 0.531	310	16.7 / 0.657	430
25					2.03 / 0.080	2.03 / 0.080	22.4 / 0.882	690	24.2 / 0.953	920	28.5 / 1.122	1,190
3	16	19/0.297	1.50	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.5 / 0.374	130	11.3 / 0.445	230	14.5 / 0.571	330
4					1.14 / 0.045	1.52 / 0.060	10.3 / 0.406	160	12.1 / 0.476	270	15.3 / 0.602	370
5					1.14 / 0.045	1.52 / 0.060	11.2 / 0.441	180	13.0 / 0.512	300	16.2 / 0.638	410
12					1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	400	18.3 / 0.720	570	22.6 / 0.890	780
3	14	19/0.373	1.88	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.3 / 0.406	160	12.1 / 0.476	270	15.3 / 0.602	370
7					1.14 / 0.045	1.52 / 0.060	13.3 / 0.524	300	15.1 / 0.594	440	18.3 / 0.720	570
4	12	19/0.470	2.36	0.76/0.030	1.14 / 0.045	1.52 / 0.060	12.3 / 0.484	260	14.1 / 0.555	390	17.3 / 0.681	510
3	10	37/0.424	2.87	0.76/0.030	1.14 / 0.045	1.52 / 0.060	12.9 / 0.508	290	14.7 / 0.579	420	17.9 / 0.705	550

FIRE RESISTANCE 0.6/1kV FS-C(OS)PN, 0.6/1kV FS-C(OS)PNB, 0.6/1kV FS-C(OS)PNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
3	20	19/0.201	0.99	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.7 / 0.382	130	11.5 / 0.453	230	14.9 / 0.587	340
4					1.14 / 0.045	1.52 / 0.060	10.5 / 0.413	150	12.3 / 0.484	260	15.7 / 0.618	380
5					1.14 / 0.045	1.52 / 0.060	11.4 / 0.449	180	13.2 / 0.520	300	16.6 / 0.654	420
6					1.14 / 0.045	1.52 / 0.060	12.4 / 0.488	210	14.2 / 0.559	340	17.4 / 0.685	460
3	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.3 / 0.406	150	12.1 / 0.476	260	15.3 / 0.602	360
4					1.14 / 0.045	1.52 / 0.060	11.2 / 0.441	180	13.0 / 0.512	300	16.2 / 0.638	410
6					1.14 / 0.045	1.52 / 0.060	13.2 / 0.520	250	15.0 / 0.591	390	18.2 / 0.717	520
25					2.03 / 0.080	2.03 / 0.080	25.8 / 1.016	940	27.6 / 1.087	1,200	31.9 / 1.256	1,500
3	16	19/0.297	1.50	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.6 / 0.417	170	12.4 / 0.488	280	15.6 / 0.614	390
4					1.14 / 0.045	1.52 / 0.060	11.6 / 0.457	200	13.4 / 0.528	320	16.6 / 0.654	440
12					1.52 / 0.060	2.03 / 0.080	18.7 / 0.736	530	20.5 / 0.807	720	24.8 / 0.976	950
3	14	19/0.373	1.88	0.76/0.030	1.14 / 0.045	1.52 / 0.060	11.4 / 0.449	200	13.2 / 0.520	330	16.4 / 0.646	440
3	10	37/0.424	2.87	0.76/0.030	1.52 / 0.060	1.52 / 0.060	14.7 / 0.579	370	16.5 / 0.650	530	19.7 / 0.776	660

Power(Control) Cable



Cable Designation

FLAME RETARDANT

0.6/1kV C(OBS)PN, C(OBS)PNB, C(OBS)PNBS

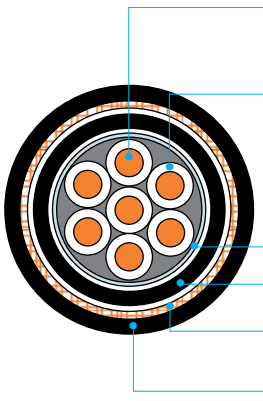
FIRE RESISTANCE

0.6/1kV FS-C(OBS)PN, FS-C(OBS)PNB, FS-C(OBS)PNBS

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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)
  IEC 60331-1,-2(120min)
  FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	**C**	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	**FS-**	- Mica/glass tape(FS Type cable only)
	Insulation	**P**	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	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
	Overall shield	**(OBS)**	- Tinned copper wire braid
	Jacket	**N**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	**B**	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	**S**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Colored insulation or Arabic number printing on the insulation

P-Route®
IEEE 1580, UL1309, UL1072

FLAME RETARDANT 0.6/1kV C(OBS)PN, 0.6/1kV C(OBS)PNB, 0.6/1kV C(OBS)PNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
4	20	19/0.201	0.99	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.7 / 0.382	150	11.5 / 0.453	260	14.9 / 0.587	360
3	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.8 / 0.386	160	11.6 / 0.457	260	15.0 / 0.591	370
4					1.14 / 0.045	1.52 / 0.060	10.6 / 0.417	180	12.4 / 0.488	300	15.8 / 0.622	410
7					1.14 / 0.045	1.52 / 0.060	12.4 / 0.488	260	14.2 / 0.559	390	17.4 / 0.685	510
12					1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	420	18.3 / 0.720	590	22.6 / 0.890	800
20					1.52 / 0.060	2.03 / 0.080	19.6 / 0.772	610	21.4 / 0.843	810	25.7 / 1.012	1,050
15	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	18.5 / 0.728	570	20.3 / 0.799	760	24.6 / 0.969	980
2	14	19/0.373	1.88	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.4 / 0.409	180	12.2 / 0.480	290	15.4 / 0.606	390
3					1.14 / 0.045	1.52 / 0.060	11.0 / 0.433	210	12.8 / 0.504	330	16.0 / 0.630	440
5					1.14 / 0.045	1.52 / 0.060	12.9 / 0.508	300	14.7 / 0.579	430	17.9 / 0.705	560
7					1.52 / 0.060	1.52 / 0.060	14.7 / 0.579	390	16.5 / 0.650	540	19.7 / 0.776	680
14					1.52 / 0.060	2.03 / 0.080	19.6 / 0.772	680	21.4 / 0.843	880	25.7 / 1.012	1,120
19					2.03 / 0.080	2.03 / 0.080	22.8 / 0.898	920	24.6 / 0.969	1,150	28.9 / 1.138	1,420
30					2.03 / 0.080	2.03 / 0.080	28.1 / 1.106	1,350	29.9 / 1.177	1,640	34.2 / 1.346	1,960
44					2.03 / 0.080	2.03 / 0.080	33.7 / 1.327	1,900	35.5 / 1.398	2,240	39.8 / 1.567	2,620
60					2.03 / 0.080	2.79 / 0.110	37.2 / 1.465	2,420	39.0 / 1.535	2,800	44.8 / 1.764	3,370
91					2.79 / 0.110	2.79 / 0.110	45.7 / 1.799	3,640	47.5 / 1.870	4,090	53.3 / 2.098	4,790

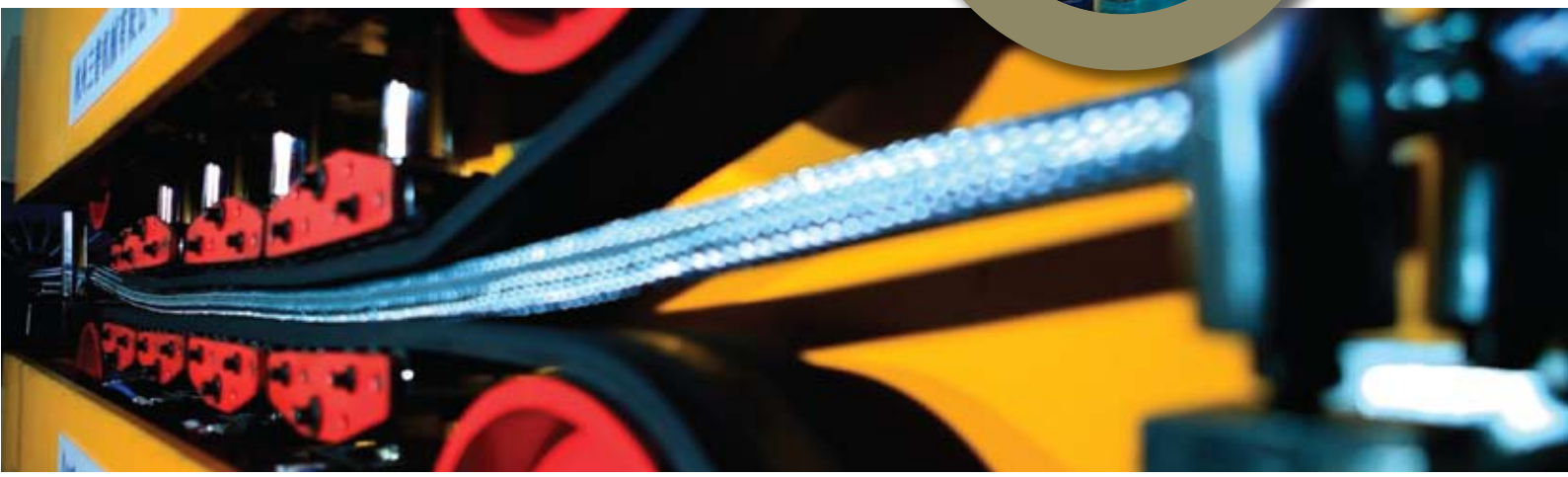
FIRE RESISTANCE 0.6/1kV FS-C(OBS)PN, 0.6/1kV FS-C(OBS)PNB, 0.6/1kV FS-C(OBS)PNBS

No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
4	20	19/0.201	0.99	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.9 / 0.429	190	12.7 / 0.500	310	16.1 / 0.634	430
3	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	11.0 / 0.433	200	12.8 / 0.504	320	16.2 / 0.638	430
4					1.14 / 0.045	1.52 / 0.060	11.9 / 0.469	240	13.7 / 0.539	360	17.1 / 0.673	480
7					1.52 / 0.060	1.52 / 0.060	14.6 / 0.575	350	16.4 / 0.646	500	19.6 / 0.772	640
12					1.52 / 0.060	2.03 / 0.080	18.7 / 0.736	560	20.5 / 0.807	750	24.8 / 0.976	980
20					2.03 / 0.080	2.03 / 0.080	23.4 / 0.921	850	25.2 / 0.992	1,090	29.5 / 1.161	1,370
15	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	20.8 / 0.819	720	22.6 / 0.890	930	26.9 / 1.059	1,190
2	14	19/0.373	1.88	0.76/0.030	1.14 / 0.045	1.52 / 0.060	11.5 / 0.453	230	13.3 / 0.524	350	16.5 / 0.650	460
3					1.14 / 0.045	1.52 / 0.060	12.1 / 0.476	260	13.9 / 0.547	390	17.1 / 0.673	510
5					1.52 / 0.060	1.52 / 0.060	15.0 / 0.591	390	16.8 / 0.661	550	20.0 / 0.787	690
7					1.52 / 0.060	2.03 / 0.080	16.2 / 0.638	470	18.0 / 0.709	640	22.3 / 0.878	840
14					2.03 / 0.080	2.03 / 0.080	23.0 / 0.906	910	24.8 / 0.976	1,140	29.1 / 1.146	1,420
19					2.03 / 0.080	2.03 / 0.080	25.7 / 1.012	1,130	27.5 / 1.083	1,390	31.8 / 1.252	1,700
30					2.03 / 0.080	2.03 / 0.080	31.4 / 1.236	1,690	33.2 / 1.307	2,010	37.5 / 1.476	2,370
44					2.03 / 0.080	2.79 / 0.110	37.8 / 1.488	2,430	39.6 / 1.559	2,810	45.4 / 1.787	3,390
60					2.03 / 0.080	2.79 / 0.110	41.9 / 1.650	3,050	43.7 / 1.720	3,470	49.5 / 1.949	4,110
91					2.79 / 0.110	2.79 / 0.110	51.4 / 2.024	4,560	53.2 / 2.094	5,070	59.0 / 2.323	5,840





0.6/1kV Signal Cable



0.6/1kV TP(OS)PN, TP(OS)PNB, TP(OS)PNBS
0.6/1kV TT(OS)PN, TT(OS)PNB, TT(OS)PNBS
0.6/1kV FS-TP(OS)PN, FS-TP(OS)PNB, FS-TP(OS)PNBS
0.6/1kV FS-TT(OS)PN, FS-TT(OS)PNB, FS-TT(OS)PNBS **35 ~ 38**

0.6/1kV TP(OBS)PN, TP(OBS)PNB, TP(OBS)PNBS
0.6/1kV FS-TP(OBS)PN, FS-TP(OBS)PNB, FS-TP(OBS)PNBS **39 ~ 40**

0.6/1kV TP(IS)PN, TP(IS)PNB, TP(IS)PNBS
0.6/1kV FS-TP(IS)PN, FS-TP(IS)PNB, FS-TP(IS)PNBS **41 ~ 43**

0.6/1kV TP(IS-OS)PN, TP(IS-OS)PNB, TP(IS-OS)PNBS
0.6/1kV TT(IS-OS)PN, TT(IS-OS)PNB, TT(IS-OS)PNBS
0.6/1kV FS-TP(IS-OS)PN, FS-TP(IS-OS)PNB, FS-TP(IS-OS)PNBS
0.6/1kV FS-TT(IS-OS)PN, FS-TT(IS-OS)PNB, FS-TT(IS-OS)PNBS **44 ~ 47**



Power(Signal) Cable

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

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

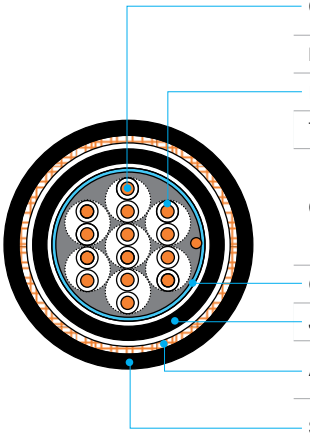
FIRE RESISTANCE

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

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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), IEC 60331-1,-2(120min), FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor		- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the Conductor
	Fire resisting layer(optional)	**FS-**	- Mica/glass tape(FS Type cable only)
	Insulation	**P**	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	Twisting	**TP/TT**	- Two/Three Insulated cores shall be twisted together to form a pair / triad
	Cabling		- Twisted 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
	Overall shield	**(OS)**	- Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire
	Jacket	**N**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	**B**	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	**S**	- 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) triad _ Black, White, Red

Power(Signal) Cable

FLAME RETARDANT **0.6/1kV TP(OS)PN, 0.6/1kV TP(OS)PNB, 0.6/1kV TP(OS)PNBS**

No. of Pairs	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2P	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	12.5 / 0.492	180	14.3 / 0.563	310	17.7 / 0.697	440
3P					1.52 / 0.060	1.52 / 0.060	14.1 / 0.555	240	15.9 / 0.626	390	19.3 / 0.760	530
4P					1.52 / 0.060	1.52 / 0.060	15.0 / 0.591	290	16.8 / 0.661	440	20.2 / 0.795	590
5P					1.52 / 0.060	2.03 / 0.080	16.7 / 0.657	420	18.5 / 0.728	610	23.0 / 0.906	840
7P					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	420	19.7 / 0.776	610	24.2 / 0.953	840
8P					1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	470	20.8 / 0.819	670	25.3 / 0.996	910
10P					2.03 / 0.080	2.03 / 0.080	22.4 / 0.882	630	24.2 / 0.953	860	28.7 / 1.130	1,140
12P					2.03 / 0.080	2.03 / 0.080	23.3 / 0.917	710	25.1 / 0.988	940	29.6 / 1.165	1,240
14P					2.03 / 0.080	2.03 / 0.080	24.2 / 0.953	780	26.0 / 1.024	1,030	30.5 / 1.201	1,330
16P					2.03 / 0.080	2.03 / 0.080	26.1 / 1.028	880	27.9 / 1.098	1,150	32.4 / 1.276	1,470
19P					2.03 / 0.080	2.03 / 0.080	27.2 / 1.071	990	29.0 / 1.142	1,270	33.5 / 1.319	1,600
24P					2.03 / 0.080	2.03 / 0.080	30.7 / 1.209	1,230	32.5 / 1.280	1,540	37.0 / 1.457	1,910
2P	16	19/0.297	1.50	0.76/0.030	1.14 / 0.045	1.52 / 0.060	13.1 / 0.516	210	14.9 / 0.587	350	18.3 / 0.720	480
3P					1.52 / 0.060	1.52 / 0.060	14.7 / 0.579	280	16.5 / 0.650	430	19.9 / 0.783	580
4P					1.52 / 0.060	1.52 / 0.060	15.6 / 0.614	330	17.4 / 0.685	490	20.8 / 0.819	640
5P					1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	490	19.3 / 0.760	680	23.8 / 0.937	920
7P					1.52 / 0.060	2.03 / 0.080	18.7 / 0.736	490	20.5 / 0.807	680	25.0 / 0.984	920
8P					1.52 / 0.060	2.03 / 0.080	19.9 / 0.783	550	21.7 / 0.854	750	26.2 / 1.031	1,010
10P					2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	730	25.3 / 0.996	970	29.8 / 1.173	1,270
12P					2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	820	26.2 / 1.031	1,070	30.7 / 1.209	1,370
14P					2.03 / 0.080	2.03 / 0.080	25.5 / 1.004	920	27.3 / 1.075	1,180	31.8 / 1.252	1,490
16P					2.03 / 0.080	2.03 / 0.080	27.3 / 1.075	1,030	29.1 / 1.146	1,310	33.6 / 1.323	1,650
19P					2.03 / 0.080	2.03 / 0.080	28.6 / 1.126	1,170	30.4 / 1.197	1,460	34.9 / 1.374	1,810
24P					2.03 / 0.080	2.03 / 0.080	32.2 / 1.268	1,450	34.0 / 1.339	1,780	38.5 / 1.516	2,160
2P	14	19/0.373	1.88	0.76/0.030	1.52 / 0.060	1.52 / 0.060	15.0 / 0.591	290	16.8 / 0.661	440	20.2 / 0.795	590
3P					1.52 / 0.060	2.03 / 0.080	16.1 / 0.634	360	17.9 / 0.705	520	22.4 / 0.882	740
4P					1.52 / 0.060	2.03 / 0.080	17.1 / 0.673	420	18.9 / 0.744	600	23.4 / 0.921	830
5P					1.52 / 0.060	2.03 / 0.080	19.1 / 0.752	640	20.9 / 0.823	850	25.4 / 1.000	1,110
7P					1.52 / 0.060	2.03 / 0.080	20.5 / 0.807	640	22.3 / 0.878	850	26.8 / 1.055	1,110
8P					2.03 / 0.080	2.03 / 0.080	23.0 / 0.906	780	24.8 / 0.976	1,010	29.3 / 1.154	1,300
10P					2.03 / 0.080	2.03 / 0.080	25.9 / 1.020	950	27.7 / 1.091	1,210	32.2 / 1.268	1,530
12P					2.03 / 0.080	2.03 / 0.080	26.9 / 1.059	1,070	28.7 / 1.130	1,350	33.2 / 1.307	1,680
14P					2.03 / 0.080	2.03 / 0.080	28.0 / 1.102	1,200	29.8 / 1.173	1,490	34.3 / 1.350	1,830
16P					2.03 / 0.080	2.03 / 0.080	30.0 / 1.181	1,360	31.8 / 1.252	1,660	36.3 / 1.429	2,030
19P					2.03 / 0.080	2.03 / 0.080	31.4 / 1.236	1,550	33.2 / 1.307	1,870	37.7 / 1.484	2,240
24P					2.03 / 0.080	2.03 / 0.080	35.5 / 1.398	1,930	37.3 / 1.469	2,280	41.8 / 1.646	2,710

P-Route®
IEEE 1580, UL1309, UL1072

FIRE RESISTANCE 0.6/1kV FS-TP(OS)PN, 0.6/1kV FS-TP(OS)PNB, 0.6/1kV FS-TP(OS)PNBS

No. of Pairs	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2P	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	1.52 / 0.060	15.3 / 0.602	240	17.1 / 0.673	400	20.5 / 0.807	550
3P					1.52 / 0.060	2.03 / 0.080	16.4 / 0.646	290	18.2 / 0.717	460	22.7 / 0.894	680
4P					1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	350	19.2 / 0.756	530	23.7 / 0.933	750
5P					1.52 / 0.060	2.03 / 0.080	19.5 / 0.768	570	21.3 / 0.839	800	25.8 / 1.016	1,080
7P					2.03 / 0.080	2.03 / 0.080	22.1 / 0.870	570	23.9 / 0.941	800	28.4 / 1.118	1,080
8P					2.03 / 0.080	2.03 / 0.080	23.5 / 0.925	640	25.3 / 0.996	880	29.8 / 1.173	1,170
10P					2.03 / 0.080	2.03 / 0.080	26.5 / 1.043	780	28.3 / 1.114	1,050	32.8 / 1.291	1,380
12P					2.03 / 0.080	2.03 / 0.080	27.5 / 1.083	880	29.3 / 1.154	1,160	33.8 / 1.331	1,490
14P					2.03 / 0.080	2.03 / 0.080	28.6 / 1.126	970	30.4 / 1.197	1,260	34.9 / 1.374	1,610
16P					2.03 / 0.080	2.03 / 0.080	30.7 / 1.209	1,100	32.5 / 1.280	1,410	37.0 / 1.457	1,780
19P					2.03 / 0.080	2.03 / 0.080	32.1 / 1.264	1,240	33.9 / 1.335	1,560	38.4 / 1.512	1,950
24P					2.03 / 0.080	2.79 / 0.110	36.3 / 1.429	1,540	38.1 / 1.500	1,910	44.1 / 1.736	2,490
2P	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	15.9 / 0.626	270	17.7 / 0.697	430	22.2 / 0.874	650
3P					1.52 / 0.060	2.03 / 0.080	17.0 / 0.669	330	18.8 / 0.740	500	23.3 / 0.917	730
4P					1.52 / 0.060	2.03 / 0.080	18.1 / 0.713	390	19.9 / 0.783	580	24.4 / 0.961	810
5P					1.52 / 0.060	2.03 / 0.080	20.3 / 0.799	650	22.1 / 0.870	880	26.6 / 1.047	1,170
7P					2.03 / 0.080	2.03 / 0.080	22.9 / 0.902	650	24.7 / 0.972	880	29.2 / 1.150	1,170
8P					2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	720	26.2 / 1.031	970	30.7 / 1.209	1,280
10P					2.03 / 0.080	2.03 / 0.080	27.5 / 1.083	890	29.3 / 1.154	1,170	33.8 / 1.331	1,500
12P					2.03 / 0.080	2.03 / 0.080	28.6 / 1.126	1,000	30.4 / 1.197	1,290	34.9 / 1.374	1,630
14P					2.03 / 0.080	2.03 / 0.080	29.7 / 1.169	1,110	31.5 / 1.240	1,410	36.0 / 1.417	1,770
16P					2.03 / 0.080	2.03 / 0.080	31.9 / 1.256	1,260	33.7 / 1.327	1,580	38.2 / 1.504	1,960
19P					2.03 / 0.080	2.03 / 0.080	33.4 / 1.315	1,420	35.2 / 1.386	1,760	39.7 / 1.563	2,160
24P					2.03 / 0.080	2.79 / 0.110	37.8 / 1.488	1,770	39.6 / 1.559	2,150	45.6 / 1.795	2,760
2P	14	19/0.373	1.88	0.76/0.030	1.52 / 0.060	2.03 / 0.080	17.1 / 0.673	320	18.9 / 0.744	500	23.4 / 0.921	720
3P					1.52 / 0.060	2.03 / 0.080	18.3 / 0.720	400	20.1 / 0.791	590	24.6 / 0.969	830
4P					1.52 / 0.060	2.03 / 0.080	19.6 / 0.772	480	21.4 / 0.843	680	25.9 / 1.020	940
5P					2.03 / 0.080	2.03 / 0.080	23.1 / 0.909	800	24.9 / 0.980	1,060	29.4 / 1.157	1,370
7P					2.03 / 0.080	2.03 / 0.080	24.9 / 0.980	800	26.7 / 1.051	1,060	31.2 / 1.228	1,370
8P					2.03 / 0.080	2.03 / 0.080	26.5 / 1.043	900	28.3 / 1.114	1,170	32.8 / 1.291	1,500
10P					2.03 / 0.080	2.03 / 0.080	29.7 / 1.169	1,110	31.5 / 1.240	1,410	36.0 / 1.417	1,770
12P					2.03 / 0.080	2.03 / 0.080	31.0 / 1.220	1,260	32.8 / 1.291	1,570	37.3 / 1.469	1,940
14P					2.03 / 0.080	2.03 / 0.080	32.2 / 1.268	1,400	34.0 / 1.339	1,730	38.5 / 1.516	2,110
16P					2.03 / 0.080	2.03 / 0.080	34.6 / 1.362	1,590	36.4 / 1.433	1,940	40.9 / 1.610	2,350
19P					2.03 / 0.080	2.79 / 0.110	36.2 / 1.425	1,810	38.0 / 1.496	2,180	44.0 / 1.732	2,760
24P					2.03 / 0.080	2.79 / 0.110	41.1 / 1.618	2,270	42.9 / 1.689	2,680	48.9 / 1.925	3,330

Power(Signal) Cable

FLAME RETARDANT 0.6/1kV TT(OS)PN, 0.6/1kV TT(OS)PNB, 0.6/1kV TT(OS)PNBS

No. of Triads	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1T					1.14 / 0.045	1.52 / 0.060	9.2 / 0.362	120	11.0 / 0.433	220	14.4 / 0.567	320
2T					1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	250	16.7 / 0.657	410	20.1 / 0.791	560
3T					1.52 / 0.060	1.52 / 0.060	15.8 / 0.622	310	17.6 / 0.693	470	21.0 / 0.827	630
4T					1.52 / 0.060	2.03 / 0.080	17.3 / 0.681	380	19.1 / 0.752	550	23.6 / 0.929	780
5T	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	450	20.8 / 0.819	650	25.3 / 0.996	890
7T					2.03 / 0.080	2.03 / 0.080	22.5 / 0.886	640	24.3 / 0.957	870	28.8 / 1.134	1,150
8T					2.03 / 0.080	2.03 / 0.080	24.0 / 0.945	720	25.8 / 1.016	960	30.3 / 1.193	1,260
12T					2.03 / 0.080	2.03 / 0.080	28.6 / 1.126	1,000	30.4 / 1.197	1,290	34.9 / 1.374	1,640
16T					2.03 / 0.080	2.03 / 0.080	31.6 / 1.244	1,250	33.4 / 1.315	1,570	37.9 / 1.492	1,950
1T					1.14 / 0.045	1.52 / 0.060	9.6 / 0.378	140	11.4 / 0.449	240	14.8 / 0.583	350
2T					1.52 / 0.060	1.52 / 0.060	15.5 / 0.610	290	17.3 / 0.681	450	20.7 / 0.815	600
3T					1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	360	18.3 / 0.720	530	22.8 / 0.898	750
4T					1.52 / 0.060	2.03 / 0.080	18.0 / 0.709	430	19.8 / 0.780	620	24.3 / 0.957	850
5T	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	19.9 / 0.783	520	21.7 / 0.854	730	26.2 / 1.031	980
7T					2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	740	25.4 / 1.000	980	29.9 / 1.177	1,280
8T					2.03 / 0.080	2.03 / 0.080	25.2 / 0.992	830	27.0 / 1.063	1,090	31.5 / 1.240	1,400
12T					2.03 / 0.080	2.03 / 0.080	30.0 / 1.181	1,170	31.8 / 1.252	1,470	36.3 / 1.429	1,840
16T					2.03 / 0.080	2.03 / 0.080	33.1 / 1.303	1,470	34.9 / 1.374	1,800	39.4 / 1.551	2,200
1T					1.14 / 0.045	1.52 / 0.060	10.4 / 0.409	180	12.2 / 0.480	290	15.6 / 0.614	400
2T					1.52 / 0.060	2.03 / 0.080	16.9 / 0.665	360	18.7 / 0.736	540	23.2 / 0.913	760
3T					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	460	19.7 / 0.776	640	24.2 / 0.953	870
4T					1.52 / 0.060	2.03 / 0.080	19.7 / 0.776	560	21.5 / 0.846	770	26.0 / 1.024	1,020
5T	14	19/0.373	1.88	0.76/0.030	2.03 / 0.080	2.03 / 0.080	22.9 / 0.902	740	24.7 / 0.972	970	29.2 / 1.150	1,260
7T					2.03 / 0.080	2.03 / 0.080	25.8 / 1.016	960	27.6 / 1.087	1,220	32.1 / 1.264	1,540
8T					2.03 / 0.080	2.03 / 0.080	27.6 / 1.087	1,080	29.4 / 1.157	1,360	33.9 / 1.335	1,700
12T					2.03 / 0.080	2.03 / 0.080	32.9 / 1.295	1,530	34.7 / 1.366	1,870	39.2 / 1.543	2,260
16T					2.03 / 0.080	2.79 / 0.110	36.4 / 1.433	1,940	38.2 / 1.504	2,310	44.2 / 1.740	2,890

FIRE RESISTANCE 0.6/1kV FS-TT(OS)PN, 0.6/1kV FS-TT(OS)PNB, 0.6/1kV FS-TT(OS)PNBS

No. of Triads	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1T					1.14 / 0.045	1.52 / 0.060	10.4 / 0.409	140	12.2 / 0.480	250	15.6 / 0.614	360
2T					1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	300	18.6 / 0.732	480	23.1 / 0.909	700
3T					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	370	19.7 / 0.776	560	24.2 / 0.953	790
4T					1.52 / 0.060	2.03 / 0.080	19.6 / 0.772	450	21.4 / 0.843	650	25.9 / 1.020	910
5T	18	19/0.254	1.24	0.76/0.030	2.03 / 0.080	2.03 / 0.080	22.9 / 0.902	610	24.7 / 0.972	840	29.2 / 1.150	1,130
7T					2.03 / 0.080	2.03 / 0.080	25.8 / 1.016	780	27.6 / 1.087	1,040	32.1 / 1.264	1,360
8T					2.03 / 0.080	2.03 / 0.080	27.5 / 1.083	870	29.3 / 1.154	1,150	33.8 / 1.331	1,490
12T					2.03 / 0.080	2.03 / 0.080	32.8 / 1.291	1,230	34.6 / 1.362	1,560	39.1 / 1.539	1,950
16T					2.03 / 0.080	2.79 / 0.110	36.3 / 1.429	1,530	38.1 / 1.500	1,900	44.1 / 1.736	2,480
1T					1.14 / 0.045	1.52 / 0.060	10.7 / 0.421	160	12.5 / 0.492	270	15.9 / 0.626	390
2T					1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	340	19.3 / 0.760	520	23.8 / 0.937	750
3T					1.52 / 0.060	2.03 / 0.080	18.6 / 0.732	420	20.4 / 0.803	610	24.9 / 0.980	850
4T					1.52 / 0.060	2.03 / 0.080	20.4 / 0.803	520	22.2 / 0.874	730	26.7 / 1.051	990
5T	16	19/0.297	1.50	0.76/0.030	2.03 / 0.080	2.03 / 0.080	23.7 / 0.933	690	25.5 / 1.004	930	30.0 / 1.181	1,220
7T					2.03 / 0.080	2.03 / 0.080	26.8 / 1.055	880	28.6 / 1.126	1,160	33.1 / 1.303	1,490
8T					2.03 / 0.080	2.03 / 0.080	28.6 / 1.126	1,000	30.4 / 1.197	1,290	34.9 / 1.374	1,630
12T					2.03 / 0.080	2.03 / 0.080	34.1 / 1.343	1,400	35.9 / 1.413	1,750	40.4 / 1.591	2,150
16T					2.03 / 0.080	2.79 / 0.110	37.8 / 1.488	1,770	39.6 / 1.559	2,150	45.6 / 1.795	2,750

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

0.6/1kV TP(OBS)PN, TP(OBS)PNB, TP(OBS)PNBS

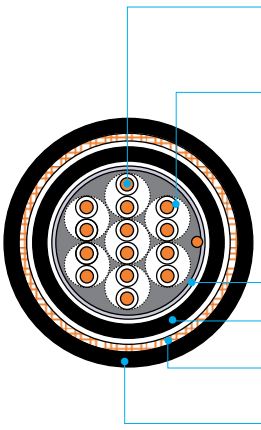
FIRE RESISTANCE

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

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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)
  IEC 60331-1,-2(120min)
  FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor		- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the Conductor
	Fire resisting layer(optional)	**FS-**	- Mica/glass tape(FS Type cable only)
	Insulation	**P**	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL1309
	Twisting	**TP**	- Two Insulated cores shall be twisted together to from a pair
	Cabling		- Twisted 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
	Overall shield	**(OBS)**	- Tinned copper drain wire
	Jacket	**N**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	**B**	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	**S**	- 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 - Pair : Black , White (or Red)

Power(Signal) Cable

FLAME RETARDANT 0.6/1kV TP(OBS)PN, 0.6/1kV TP(OBS)PNB, 0.6/1kV TP(OBS)PNBS

No. of Pairs	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1P	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.4 / 0.370	120	11.2 / 0.441	220	14.6 / 0.575	320
2P					1.52 / 0.060	1.52 / 0.060	14.3 / 0.563	230	16.1 / 0.634	380	19.5 / 0.768	520
4P					1.52 / 0.060	2.03 / 0.080	16.1 / 0.634	290	17.9 / 0.705	460	22.4 / 0.882	660
7P					1.52 / 0.060	2.03 / 0.080	19.1 / 0.752	390	20.9 / 0.823	590	25.4 / 1.000	830
9P					2.03 / 0.080	2.03 / 0.080	23.1 / 0.909	550	24.9 / 0.980	790	29.4 / 1.157	1,060
10P					2.03 / 0.080	2.03 / 0.080	23.7 / 0.933	580	25.5 / 1.004	820	30.0 / 1.181	1,100
14P					2.03 / 0.080	2.03 / 0.080	25.8 / 1.016	680	27.6 / 1.087	950	32.1 / 1.264	1,250
15P					2.03 / 0.080	2.03 / 0.080	26.4 / 1.039	710	28.2 / 1.110	980	32.7 / 1.287	1,290
1P	16	19/0.297	1.50	0.76/0.030	1.14 / 0.045	1.52 / 0.060	9.7 / 0.382	140	11.4 / 0.449	250	14.8 / 0.583	350
2P					1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	290	16.6 / 0.654	440	20.0 / 0.787	590
4P					1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	400	18.5 / 0.728	570	23.0 / 0.906	790
7P					1.52 / 0.060	2.03 / 0.080	20.0 / 0.787	580	21.7 / 0.854	780	26.2 / 1.031	1,040
8P					2.03 / 0.080	2.03 / 0.080	22.4 / 0.882	700	24.1 / 0.949	930	28.6 / 1.126	1,210
9P					2.03 / 0.080	2.03 / 0.080	24.3 / 0.957	800	26.0 / 1.024	1,040	30.5 / 1.201	1,340
10P					2.03 / 0.080	2.03 / 0.080	24.9 / 0.980	850	26.6 / 1.047	1,100	31.1 / 1.224	1,410
12P					2.03 / 0.080	2.03 / 0.080	26.2 / 1.031	950	27.9 / 1.098	1,220	32.4 / 1.276	1,540
14P					2.03 / 0.080	2.03 / 0.080	27.2 / 1.071	1,050	28.9 / 1.138	1,330	33.4 / 1.315	1,660
15P					2.03 / 0.080	2.03 / 0.080	27.8 / 1.094	1,100	29.5 / 1.161	1,390	34.0 / 1.339	1,720

FIRE RESISTANCE 0.6/1kV FS-TP(OBS)PN, 0.6/1kV FS-TP(OBS)PNB, 0.6/1kV FS-TP(OBS)PNBS

No. of Pairs	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG or kcmil	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1P	18	19/0.254	1.24	0.76/0.030	1.14 / 0.045	1.52 / 0.060	10.4 / 0.409	140	12.2 / 0.480	250	15.6 / 0.614	360
2P					1.52 / 0.060	2.03 / 0.080	16.0 / 0.630	270	17.8 / 0.701	440	22.3 / 0.878	650
4P					1.52 / 0.060	2.03 / 0.080	18.1 / 0.713	350	19.9 / 0.783	540	24.4 / 0.961	760
7P					2.03 / 0.080	2.03 / 0.080	22.8 / 0.898	550	24.6 / 0.969	780	29.1 / 1.146	1,050
9P					2.03 / 0.080	2.03 / 0.080	26.6 / 1.047	690	28.4 / 1.118	960	32.9 / 1.295	1,270
10P					2.03 / 0.080	2.03 / 0.080	27.3 / 1.075	730	29.1 / 1.146	1,000	33.6 / 1.323	1,320
14P					2.03 / 0.080	2.03 / 0.080	29.4 / 1.157	850	31.2 / 1.228	1,150	35.7 / 1.406	1,490
15P					2.03 / 0.080	2.03 / 0.080	30.1 / 1.185	890	31.9 / 1.256	1,200	36.4 / 1.433	1,540

P-Route®
IEEE 1580, UL1309, UL1072



Cable Designation

FLAME RETARDANT

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

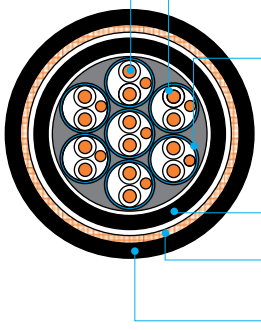
FIRE RESISTANCE

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

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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)
  IEC 60331-1,-2(120min)
  FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor		- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	FS-	- Mica/glass tape(FS Type cable only)
	Insulation	P	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	Twisting	TP	- Two Insulated cores shall be twisted together to form a pair
	Individual shield	(IS)	- Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire
	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
	Jacket	N	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	S	- 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 - Pair : Black , White (or Red)

Power(Signal) Cable

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	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1P					1.14 / 0.045	1.52 / 0.060	8.9 / 0.350	100	10.7 / 0.421	200	14.1 / 0.555	300
2P					1.14 / 0.045	1.52 / 0.060	13.2 / 0.520	200	15.0 / 0.591	340	18.4 / 0.724	470
3P					1.52 / 0.060	1.52 / 0.060	14.9 / 0.587	280	16.7 / 0.657	430	20.1 / 0.791	580
4P					1.52 / 0.060	1.52 / 0.060	15.8 / 0.622	330	17.6 / 0.693	490	21.0 / 0.827	650
5P					1.52 / 0.060	2.03 / 0.080	17.7 / 0.697	400	19.5 / 0.768	590	24.0 / 0.945	820
6P					1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	470	20.7 / 0.815	660	25.2 / 0.992	900
7P					1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	500	20.7 / 0.815	700	25.2 / 0.992	940
8P	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	570	22.0 / 0.866	780	26.5 / 1.043	1,030
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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
1P					1.14 / 0.045	1.52 / 0.060	9.2 / 0.362	120	11.0 / 0.433	220	14.4 / 0.567	320
2P					1.52 / 0.060	1.52 / 0.060	14.5 / 0.571	250	16.3 / 0.642	400	19.7 / 0.776	550
3P					1.52 / 0.060	1.52 / 0.060	15.5 / 0.610	320	17.3 / 0.681	480	20.7 / 0.815	630
4P					1.52 / 0.060	2.03 / 0.080	16.5 / 0.650	380	18.3 / 0.720	550	22.8 / 0.898	770
5P					1.52 / 0.060	2.03 / 0.080	18.5 / 0.728	470	20.3 / 0.799	660	24.8 / 0.976	900
6P					1.52 / 0.060	2.03 / 0.080	19.8 / 0.780	550	21.6 / 0.850	750	26.1 / 1.028	1,000
7P					1.52 / 0.060	2.03 / 0.080	19.8 / 0.780	590	21.6 / 0.850	800	26.1 / 1.028	1,050
8P	16	19/0.297	1.50	0.76/0.030	2.03 / 0.080	2.03 / 0.080	22.2 / 0.874	730	24.0 / 0.945	950	28.5 / 1.122	1,230
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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
1P					1.14 / 0.045	1.52 / 0.060	9.9 / 0.390	150	11.7 / 0.461	250	15.1 / 0.594	360
2P					1.52 / 0.060	1.52 / 0.060	15.7 / 0.618	320	17.5 / 0.689	480	20.9 / 0.823	630
3P					1.52 / 0.060	2.03 / 0.080	16.8 / 0.661	410	18.6 / 0.732	580	23.1 / 0.909	800
4P					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	500	19.7 / 0.776	680	24.2 / 0.953	920
5P					1.52 / 0.060	2.03 / 0.080	20.1 / 0.791	610	21.9 / 0.862	820	26.4 / 1.039	1,080
6P					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
7P					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
8P	14	19/0.373	1.88	0.76/0.030	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
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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

P-Route®
IEEE 1580, UL1309, UL1072

FIRE RESISTANCE 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	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
1P					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	18	19/0.254	1.24	0.76/0.030	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					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	16	19/0.297	1.50	0.76/0.030	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					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	14	19/0.373	1.88	0.76/0.030	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

Power(Signal) Cable



Cable Designation

FLAME RETARDANT

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

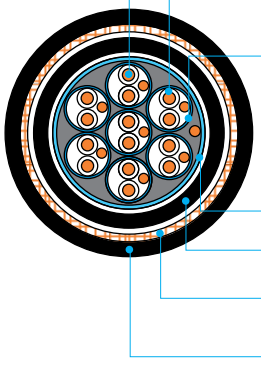
FIRE RESISTANCE

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

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- 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), IEC 60331-1,-2(120min), FS- type only
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor		- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Fire resisting layer(optional)	**FS-**	- Mica/glass tape(FS Type cable only)
	Insulation	**P**	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	Twisting	**TP/TT**	- Two/Three Insulated cores shall be twisted together to form a pair / triad
	Individual shield	**(IS)**	- Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire
	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
	Overall shield	**(OS)**	- Polyester/aluminum tape (AL/PS tape) + Tinned copper drain wire
	Jacket	**N**	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	**B**	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	**S**	- 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 - Pair : Black , White (or Red)

P-Route®
IEEE 1580, UL1309, UL1072

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	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2P	18	19/0.254	1.24	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
3P					1.52 / 0.060	1.52 / 0.060	15.0 / 0.591	290	16.8 / 0.661	450	20.2 / 0.795	600
4P					1.52 / 0.060	2.03 / 0.080	15.9 / 0.626	350	17.7 / 0.697	510	22.2 / 0.874	720
5P					1.52 / 0.060	2.03 / 0.080	17.8 / 0.701	420	19.6 / 0.772	600	24.1 / 0.949	840
6P					1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	480	20.8 / 0.819	680	25.3 / 0.996	920
7P					1.52 / 0.060	2.03 / 0.080	19.0 / 0.748	520	20.8 / 0.819	720	25.3 / 0.996	960
8P					1.52 / 0.060	2.03 / 0.080	20.3 / 0.799	590	22.1 / 0.870	800	26.6 / 1.047	1,060
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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
2P	16	19/0.297	1.50	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
3P					1.52 / 0.060	1.52 / 0.060	15.6 / 0.614	340	17.4 / 0.685	500	20.8 / 0.819	650
4P					1.52 / 0.060	2.03 / 0.080	16.6 / 0.654	400	18.4 / 0.724	580	22.9 / 0.902	800
5P					1.52 / 0.060	2.03 / 0.080	18.6 / 0.732	490	20.4 / 0.803	680	24.9 / 0.980	920
6P					1.52 / 0.060	2.03 / 0.080	19.9 / 0.783	570	21.7 / 0.854	770	26.2 / 1.031	1,030
7P					1.52 / 0.060	2.03 / 0.080	19.9 / 0.783	620	21.7 / 0.854	820	26.2 / 1.031	1,080
8P					2.03 / 0.080	2.03 / 0.080	22.3 / 0.878	750	24.1 / 0.949	980	28.6 / 1.126	1,260
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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
2P	14	19/0.373	1.88	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
3P					1.52 / 0.060	2.03 / 0.080	16.9 / 0.665	430	18.7 / 0.736	610	23.2 / 0.913	830
4P					1.52 / 0.060	2.03 / 0.080	18.0 / 0.709	530	19.8 / 0.780	710	24.3 / 0.957	950
5P					1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	640	22.0 / 0.866	850	26.5 / 1.043	1,110
6P					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
7P					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
8P					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
10P					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
12P					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
14P					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
16P					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
18P					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
20P					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
24P					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

Power(Signal) Cable

FIRE RESISTANCE

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

No. of Pairs	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2P	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	15.8 / 0.622	280	17.6 / 0.693	440	22.1 / 0.870	650
3P					1.52 / 0.060	2.03 / 0.080	16.9 / 0.665	340	18.7 / 0.736	520	23.2 / 0.913	740
4P					1.52 / 0.060	2.03 / 0.080	18.0 / 0.709	410	19.8 / 0.780	600	24.3 / 0.957	830
5P					1.52 / 0.060	2.03 / 0.080	20.2 / 0.795	500	22.0 / 0.866	710	26.5 / 1.043	970
6P					2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	630	24.5 / 0.965	860	29.0 / 1.142	1,150
7P					2.03 / 0.080	2.03 / 0.080	22.7 / 0.894	680	24.5 / 0.965	910	29.0 / 1.142	1,190
8P					2.03 / 0.080	2.03 / 0.080	24.2 / 0.953	760	26.0 / 1.024	1,010	30.5 / 1.201	1,310
10P					2.03 / 0.080	2.03 / 0.080	27.3 / 1.075	930	29.1 / 1.146	1,210	33.6 / 1.323	1,540
12P					2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,050	30.2 / 1.189	1,340	34.7 / 1.366	1,680
14P					2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,170	31.3 / 1.232	1,470	35.8 / 1.409	1,830
16P					2.03 / 0.080	2.03 / 0.080	31.7 / 1.248	1,330	33.5 / 1.319	1,650	38.0 / 1.496	2,030
18P					2.03 / 0.080	2.03 / 0.080	33.2 / 1.307	1,470	35.0 / 1.378	1,800	39.5 / 1.555	2,200
20P					2.03 / 0.080	2.03 / 0.080	33.9 / 1.335	1,580	35.7 / 1.406	1,920	40.2 / 1.583	2,320
24P					2.03 / 0.080	2.79 / 0.110	37.5 / 1.476	1,880	39.3 / 1.547	2,260	45.3 / 1.783	2,860
2P	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	16.4 / 0.646	320	18.2 / 0.717	480	22.7 / 0.894	700
3P					1.52 / 0.060	2.03 / 0.080	17.5 / 0.689	390	19.3 / 0.760	570	23.8 / 0.937	800
4P					1.52 / 0.060	2.03 / 0.080	18.7 / 0.736	470	20.5 / 0.807	660	25.0 / 0.984	900
5P					2.03 / 0.080	2.03 / 0.080	22.1 / 0.870	630	23.9 / 0.941	860	28.4 / 1.118	1,130
6P					2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	720	25.4 / 1.000	960	29.9 / 1.177	1,260
7P					2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	780	25.4 / 1.000	1,020	29.9 / 1.177	1,310
8P					2.03 / 0.080	2.03 / 0.080	25.3 / 0.996	870	27.1 / 1.067	1,130	31.6 / 1.244	1,440
10P					2.03 / 0.080	2.03 / 0.080	28.4 / 1.118	1,070	30.2 / 1.189	1,360	34.7 / 1.366	1,710
12P					2.03 / 0.080	2.03 / 0.080	29.5 / 1.161	1,210	31.3 / 1.232	1,510	35.8 / 1.409	1,870
14P					2.03 / 0.080	2.03 / 0.080	30.7 / 1.209	1,360	32.5 / 1.280	1,670	37.0 / 1.457	2,040
16P					2.03 / 0.080	2.03 / 0.080	32.9 / 1.295	1,540	34.7 / 1.366	1,870	39.2 / 1.543	2,270
18P					2.03 / 0.080	2.03 / 0.080	34.5 / 1.358	1,700	36.3 / 1.429	2,050	40.8 / 1.606	2,460
20P					2.03 / 0.080	2.03 / 0.080	35.2 / 1.386	1,840	37.0 / 1.457	2,190	41.5 / 1.634	2,610
24P					2.03 / 0.080	2.79 / 0.110	39.1 / 1.539	2,200	40.9 / 1.610	2,590	46.9 / 1.846	3,220
2P	14	19/0.373	1.88	0.76/0.030	1.52 / 0.060	2.03 / 0.080	17.6 / 0.693	390	19.4 / 0.764	570	23.9 / 0.941	800
3P					1.52 / 0.060	2.03 / 0.080	18.9 / 0.744	490	20.7 / 0.815	690	25.2 / 0.992	930
4P					1.52 / 0.060	2.03 / 0.080	20.1 / 0.791	600	21.9 / 0.862	800	26.4 / 1.039	1,060
5P					2.03 / 0.080	2.03 / 0.080	23.7 / 0.933	790	25.5 / 1.004	1,030	30.0 / 1.181	1,330
6P					2.03 / 0.080	2.03 / 0.080	25.6 / 1.008	920	27.4 / 1.079	1,180	31.9 / 1.256	1,490
7P					2.03 / 0.080	2.03 / 0.080	25.6 / 1.008	990	27.4 / 1.079	1,250	31.9 / 1.256	1,570
8P					2.03 / 0.080	2.03 / 0.080	27.3 / 1.075	1,120	29.1 / 1.146	1,400	33.6 / 1.323	1,730
10P					2.03 / 0.080	2.03 / 0.080	30.6 / 1.205	1,370	32.4 / 1.276	1,680	36.9 / 1.453	2,050
12P					2.03 / 0.080	2.03 / 0.080	31.9 / 1.256	1,570	33.7 / 1.327	1,890	38.2 / 1.504	2,270
14P					2.03 / 0.080	2.03 / 0.080	33.1 / 1.303	1,760	34.9 / 1.374	2,100	39.4 / 1.551	2,490
16P					2.03 / 0.080	2.03 / 0.080	35.6 / 1.402	2,000	37.4 / 1.472	2,360	41.9 / 1.650	2,780
18P					2.03 / 0.080	2.79 / 0.110	37.3 / 1.469	2,220	39.1 / 1.539	2,590	45.1 / 1.776	3,190
20P					2.03 / 0.080	2.79 / 0.110	38.1 / 1.500	2,400	39.9 / 1.571	2,780	45.9 / 1.807	3,390
24P					2.03 / 0.080	2.79 / 0.110	42.3 / 1.665	2,870	44.1 / 1.736	3,300	50.1 / 1.972	3,970

FLAME RETARDANT 0.6/1kV TT(IS-OS)PN, 0.6/1kV TT(IS-OS)PNB, 0.6/1kV TT(IS-OS)PNBS

No. of Triads	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2T	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	1.52 / 0.060	15.4 / 0.606	290	17.2 / 0.677	450	20.6 / 0.811	600
3T					1.52 / 0.060	2.03 / 0.080	16.3 / 0.642	350	18.1 / 0.713	520	22.6 / 0.890	740
4T					1.52 / 0.060	2.03 / 0.080	17.9 / 0.705	430	19.7 / 0.776	620	24.2 / 0.953	850
5T					1.52 / 0.060	2.03 / 0.080	19.8 / 0.780	530	21.6 / 0.850	730	26.1 / 1.028	980
7T					2.03 / 0.080	2.03 / 0.080	23.4 / 0.921	740	25.2 / 0.992	980	29.7 / 1.169	1,270
8T					2.03 / 0.080	2.03 / 0.080	25.1 / 0.988	840	26.9 / 1.059	1,090	31.4 / 1.236	1,400
12T					2.03 / 0.080	2.03 / 0.080	29.8 / 1.173	1,180	31.6 / 1.244	1,480	36.1 / 1.421	1,840
16T					2.03 / 0.080	2.03 / 0.080	33.0 / 1.299	1,480	34.8 / 1.370	1,820	39.3 / 1.547	2,210
2T	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	16.0 / 0.630	330	17.8 / 0.701	490	22.3 / 0.878	710
3T					1.52 / 0.060	2.03 / 0.080	17.0 / 0.669	410	18.8 / 0.740	590	23.3 / 0.917	810
4T					1.52 / 0.060	2.03 / 0.080	18.7 / 0.736	510	20.5 / 0.807	700	25.0 / 0.984	940
5T					1.52 / 0.060	2.03 / 0.080	20.7 / 0.815	620	22.5 / 0.886	830	27.0 / 1.063	1,090
7T					2.03 / 0.080	2.03 / 0.080	24.4 / 0.961	870	26.2 / 1.031	1,120	30.7 / 1.209	1,420
8T					2.03 / 0.080	2.03 / 0.080	26.2 / 1.031	980	28.0 / 1.102	1,250	32.5 / 1.280	1,570
12T					2.03 / 0.080	2.03 / 0.080	31.2 / 1.228	1,390	33.0 / 1.299	1,700	37.5 / 1.476	2,080
16T					2.03 / 0.080	2.03 / 0.080	34.5 / 1.358	1,760	36.3 / 1.429	2,100	40.8 / 1.606	2,520

FIRE RESISTANCE 0.6/1kV FS-TT(IS-OS)PN, 0.6/1kV FS-TT(IS-OS)PNB, 0.6/1kV FS-TT(IS-OS)PNBS

No. of Triads	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
	Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
No.	AWG	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
2T	18	19/0.254	1.24	0.76/0.030	1.52 / 0.060	2.03 / 0.080	17.4 / 0.685	340	19.2 / 0.756	520	23.7 / 0.933	750
3T					1.52 / 0.060	2.03 / 0.080	18.5 / 0.728	420	20.3 / 0.799	610	24.8 / 0.976	850
4T					1.52 / 0.060	2.03 / 0.080	20.3 / 0.799	520	22.1 / 0.870	730	26.6 / 1.047	980
5T					2.03 / 0.080	2.03 / 0.080	23.6 / 0.929	690	25.4 / 1.000	930	29.9 / 1.177	1,220
7T					2.03 / 0.080	2.03 / 0.080	26.7 / 1.051	890	28.5 / 1.122	1,160	33.0 / 1.299	1,480
8T					2.03 / 0.080	2.03 / 0.080	28.5 / 1.122	1,000	30.3 / 1.193	1,290	34.8 / 1.370	1,630
12T					2.03 / 0.080	2.03 / 0.080	34.0 / 1.339	1,410	35.8 / 1.409	1,750	40.3 / 1.587	2,160
16T					2.03 / 0.080	2.79 / 0.110	37.6 / 1.480	1,770	39.4 / 1.551	2,150	45.4 / 1.787	2,750
2T	16	19/0.297	1.50	0.76/0.030	1.52 / 0.060	2.03 / 0.080	18.0 / 0.709	380	19.8 / 0.780	570	24.3 / 0.957	800
3T					1.52 / 0.060	2.03 / 0.080	19.2 / 0.756	480	21.0 / 0.827	680	25.5 / 1.004	930
4T					2.03 / 0.080	2.03 / 0.080	22.2 / 0.874	650	24.0 / 0.945	880	28.5 / 1.122	1,160
5T					2.03 / 0.080	2.03 / 0.080	24.5 / 0.965	780	26.3 / 1.035	1,030	30.8 / 1.213	1,340
7T					2.03 / 0.080	2.03 / 0.080	27.7 / 1.091	1,020	29.5 / 1.161	1,300	34.0 / 1.339	1,640
8T					2.03 / 0.080	2.03 / 0.080	29.6 / 1.165	1,150	31.4 / 1.236	1,450	35.9 / 1.413	1,810
12T					2.03 / 0.080	2.03 / 0.080	35.4 / 1.394	1,630	37.2 / 1.465	1,990	41.7 / 1.642	2,410
16T					2.03 / 0.080	2.79 / 0.110	39.2 / 1.543	2,060	41.0 / 1.614	2,460	47.0 / 1.850	3,080





2kV VFD Power Cable



2kV TPN(VFD), TPNB(VFD), TPNBS(VFD) 49 ~ 50



2kV VFD Power Cable

P-Route®
IEEE 1580, UL1309, UL1072



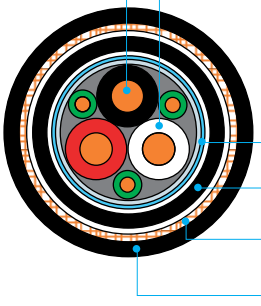
Cable Designation

2kV TPN(VFD), TPNB(VFD), TPNBS(VFD)

Application Standard

- Design guide : IEEE 1580(2010)
  UL 1309(2011)
- Insulation material : IEEE 1580, Type P UL 1309, X 110
- Sheath material : IEEE 1580, Type N
- Flame retardant : IIEEE 1202 & IEC 60332-3 Category A
- Cold bend / impact : CSA 22.2 No. 03 (-40℃/-35℃)

Construction

Sectional view	Classification	Code	Construction detail
	Conductor	T	- Flexible stranded tinned annealed copper wires as per IEEE 1580 - A suitable separator tape(s) may be applied over the conductor
	Insulation	P	- XLPO (Type P) as per IEEE 1580 & XLPO (X110) as per UL 1309
	Cabling		- Three main conductors & Three ground 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
	Overall shield	(VFD)	- Tinned copper wire braid - Polyester/aluminum tape (AL/PS tape)
	Jacket	N	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309
	Armor	B	- Braid of commercial bronze wires - A suitable separator tape(s) may be applied under/over the armor
	Sheath	S	- Thermosetting Neoprene (Type N) as per IEEE 1580 & UL 1309 - Outer sheath color : Black
	Core identification		- Colored insulation or Arabic number printing on the insulation 3C+3G : Black, White, Red, Green(or Green/Yellow)

2kV VFD Power Cable

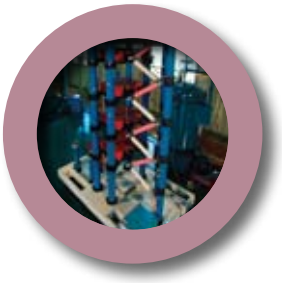
2kV TPN(VFD), 2kV TPNB(VFD), 2kV TPNBS(VFD) - For equipment grounding applications

Conductors	No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
		Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
	No.	AWG or MCM	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
Main	3	3/0	418 / 0.511	12.95	1.65 / 0.065	2.79 / 0.11	2.79 / 0.11	46.9 / 1.846	4,440	48.6 / 1.913	4,900	54.9 / 2.161	5,650
Grounding	3	8	37 / 0.511	3.45	1.40 / 0.055								
Main	3	4/0	532 / 0.511	14.61	1.65 / 0.065	2.79 / 0.11	2.79 / 0.11	50.6 / 1.992	5,410	52.3 / 2.059	5,910	58.6 / 2.307	6,710
Grounding	3	6	61 / 0.511	4.45	1.40 / 0.055								
Main	3	262	646 / 0.511	16.61	1.90 / 0.075	2.79 / 0.11	2.79 / 0.11	54.9 / 2.161	6,580	56.6 / 2.228	7,120	62.9 / 2.476	7,980
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	313	777 / 0.511	18.29	1.90 / 0.075	2.79 / 0.11	2.79 / 0.11	58.6 / 2.307	7,530	60.3 / 2.374	8,110	66.6 / 2.622	9,030
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	373	925 / 0.511	19.94	1.90 / 0.075	2.79 / 0.11	3.56 / 0.14	62.2 / 2.449	8,580	63.9 / 2.516	9,190	71.7 / 2.823	10,420
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	444	1110 / 0.511	21.84	1.90 / 0.075	2.79 / 0.11	3.56 / 0.14	66.3 / 2.610	9,880	68.0 / 2.677	10,520	75.8 / 2.984	11,820
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	535	1332 / 0.511	23.90	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	74.1 / 2.917	11,930	75.8 / 2.984	12,650	83.6 / 3.291	14,090
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	646	1591 / 0.511	26.14	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	78.8 / 3.102	13,730	80.5 / 3.169	14,490	88.3 / 3.476	16,020
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								
Main	3	777	1924 / 0.511	28.75	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	83.6 / 3.291	15,960	85.3 / 3.358	16,770	93.1 / 3.665	18,380
Grounding	3	4	105 / 0.511	6.55	1.40 / 0.055								

2kV TPN(VFD), 2kV TPNB(VFD), 2kV TPNBS(VFD) - For system grounding applications

Conductors	No. of Cores	Conductor			Thickness of Insulation	Thickness of Jacket	Thickness of Sheath	Unarmor		Armor		Armor and Sheath	
		Nominal Area	Strand	Dia. (Max.)				Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.	Nom.Dia. Approx.	Weight Approx.
	No.	AWG or MCM	No./mm	mm	mm/inch	mm/inch	mm/inch	mm/inch	kg/km	mm/inch	kg/km	mm/inch	kg/km
Main	3	3/0	418 / 0.511	12.95	1.65 / 0.065	2.79 / 0.11	2.79 / 0.11	52.3 / 2.059	5,410	54.0 / 2.126	5,920	60.3 / 2.374	6,750
Grounding	3	2	150 / 0.511	8.23	1.40 / 0.055								
Main	3	4/0	532 / 0.511	14.61	1.65 / 0.065	2.79 / 0.11	2.79 / 0.11	58.3 / 2.295	6,780	60.0 / 2.362	7,350	66.3 / 2.610	8,270
Grounding	3	1	209 / 0.511	9.17	1.65 / 0.065								
Main	3	262	646 / 0.511	16.61	1.90 / 0.075	2.79 / 0.11	3.56 / 0.14	63.3 / 2.492	8,100	65.0 / 2.559	8,720	72.8 / 2.866	9,960
Grounding	3	1/0	266 / 0.511	10.34	1.65 / 0.065								
Main	3	313	777 / 0.511	18.29	1.90 / 0.075	2.79 / 0.11	3.56 / 0.14	65.8 / 2.591	8,980	67.5 / 2.657	9,620	75.3 / 2.965	10,920
Grounding	3	1/0	266 / 0.511	10.34	1.65 / 0.065								
Main	3	373	925 / 0.511	19.94	1.90 / 0.075	2.79 / 0.11	3.56 / 0.14	69.3 / 2.728	10,450	71.0 / 2.795	11,130	78.8 / 3.102	12,480
Grounding	3	2/0	342 / 0.511	11.71	1.65 / 0.065								
Main	3	444	1110 / 0.511	21.84	1.90 / 0.075	3.56 / 0.14	3.56 / 0.14	76.3 / 3.004	12,600	78.0 / 3.071	13,340	85.8 / 3.378	14,820
Grounding	3	3/0	418 / 0.511	12.95	1.65 / 0.065								
Main	3	535	1332 / 0.511	23.90	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	83.8 / 3.299	15,160	85.5 / 3.366	15,970	93.3 / 3.673	17,590
Grounding	3	4/0	532 / 0.511	14.61	1.65 / 0.065								
Main	3	646	1591 / 0.511	26.14	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	86.3 / 3.398	16,760	88.0 / 3.465	17,600	95.8 / 3.772	19,260
Grounding	3	4/0	532 / 0.511	14.61	1.65 / 0.065								
Main	3	777	1924 / 0.511	28.75	2.29 / 0.090	3.56 / 0.14	3.56 / 0.14	92.8 / 3.654	19,840	94.5 / 3.720	20,740	102.3 / 4.028	22,520
Grounding	3	262	646 / 0.511	16.61	1.90 / 0.075								





Technical Data **& Installation** Information





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Cable Technical Data

1. Construction and Resistance of Conductor

Flexible Stranded Conductors

AWG or Kcmil	Conductor area in circular mils	Nominal	Nominal stranding			Max. conductor		Maximum dc resistance	
			No. of wire	Individual strand dia.		Dia.		Ω/1000-ft at 25°C	Ω/km at 25°C
		mm²		in	mm	in	mm		
22	754	0.38	19	0.0063	0.16	0.0315	0.8	18.46	60.6
20	1216	0.62	19	0.008	0.203	0.04	1.02	11.62	38.1
18	1900	0.96	19	0.01	0.254	0.052	1.32	6.342	20.8
16	2601	1.32	19	0.0117	0.297	0.062	1.56	4.527	14.9
or 16	2426	1.23	19	0.0113	0.287	0.06	1.51	4.915	16.1
14	4106	2.08	19	0.0147	0.373	0.076	1.92	2.835	9.3
or 14	3831	1.94	19	0.0142	0.361	0.073	1.85	3.11	10.2
12	6503	3.29	19	0.0185	0.47	0.095	2.4	1.784	5.85
or 12	6088	3.08	19	0.0179	0.455	0.092	2.32	1.958	6.42
10	10908	5.53	27	0.0201	0.511	0.128	3.25	1.101	3.61
or 10	10319	5.23	37	0.0167	0.424	0.117	2.97	1.11	3.64
8	16564	8.4	41	0.0201	0.511	0.147	3.73	0.692	2.27
or 8	14948	7.6	37	0.0201	0.511	0.147	3.73	0.765	2.51
6	26261	13.3	65	0.0201	0.511	0.207	5.26	0.445	1.46
or 6	24645	12.5	61	0.0201	0.511	0.207	5.26	0.478	1.57
5	36765	18.6	91	0.0201	0.511	0.244	6.2	0.353	1.16
4	41668	21.1	133	0.0177	0.45	0.258	6.55	0.286	0.94
or 4	42421	21.5	105	0.0201	0.511	0.264	6.71	0.279	0.92
3	53733	27.2	133	0.0201	0.511	0.295	7.49	0.221	0.73
or 3	50501	25.6	125	0.0201	0.511	0.29	7.37	0.231	0.76
2	66140	33.5	133	0.0223	0.566	0.324	8.23	0.193	0.63
or 2	60602	30.7	150	0.0201	0.511	0.325	8.23	0.193	0.63
or 2	65046	33	161	0.0201	0.511	0.325	8.26	0.175	0.58
1	84438	42.8	209	0.0201	0.511	0.361	9.17	0.14	0.46
or 1	90902	46.1	225	0.0201	0.511	0.39	9.91	0.128	0.42
1/0	107467	54.5	266	0.0201	0.511	0.407	10.34	0.111	0.37
or 1/0	111103	56.3	275	0.0201	0.511	0.44	11.18	0.106	0.35
2/0	131303	66.5	325	0.0201	0.511	0.477	12.12	0.09	0.29
or 2/0	138171	70	342	0.0201	0.511	0.461	11.71	0.0885	0.29
3/0	168876	85.6	418	0.0201	0.511	0.51	12.95	0.0703	0.23
or 3/0	181805	92.1	450	0.0201	0.511	0.565	14.35	0.0646	0.21
4/0	214933	109	532	0.0201	0.511	0.575	14.61	0.0557	0.183
or 4/0	222206	113	550	0.0201	0.511	0.62	15.75	0.053	0.174
262	262607	133	650	0.0201	0.511	0.66	16.76	0.0459	0.151
313	313108	159	775	0.0201	0.511	0.725	18.42	0.0383	0.126
373	373709	189	925	0.0201	0.511	0.795	20.19	0.0319	0.105
444	444411	225	1100	0.0201	0.511	0.87	22.1	0.0269	0.088
535	535313	271	1325	0.0201	0.511	0.97	24.64	0.0223	0.073
597	597935	303	1480	0.0201	0.511	1.02	25.91	0.0217	0.071
646	646416	328	1600	0.0201	0.511	1.06	26.92	0.0186	0.061
777	777719	394	1925	0.0201	0.511	1.13	28.7	0.0154	0.051
1111	1111028	563	2750	0.0201	0.511	1.34	34.04	0.011	0.036

Note) The total number of wire should be as specified ±1% providing that the maximum conductor diameter and conductor resistance dose not exceed the values indicated.

Tolerance for maximum resistance

Single conductor		Rmax = value from the Table
Multiple conductor		
	one layer	Rmax = value from the Table x 1.02
	More than one layer two layer	Rmax = value from the Table x 1.03
	Pair or other precabled units	Rmax = value from the Table x 1.04
	More than one layer Pairs or other precabled units	Rmax = value from the Table x 1.05

P-Route®
IEEE 1580, UL1309, UL1072

2. Minimum Insulation Resistance and High-voltage AC Test Potentials

Type P (X110) Insulated Cables

Conductor Size	Insulation Resistance (MΩ • 1,000 ft at 15.6 °C)	Test Potentials (Volt)	
AWG/kcmil	0 ~ 2000 V	0 ~ 600 V / 1000 V	1,001 V ~
22 ~15	3,000	1,500	-
14 ~ 9	1,600	3,500	5,500
8 ~ 2	1,200	5,500	7,000
1 ~ 4/0	800	7,000	8,000
250 ~ 525	650	8,000	9,500
526 and larger	550	10,000	11,500

Type E Insulated Cables for 5 ~ 15kV Shielded Conductors

Voltage rating of cable (phase-to-phase circuit voltage)	Insulation resistance constant K (based on1,000 feet, 15.6 °C)	100% Insulation level (grounded neutral)	133% Insulation level (ungrounded neutral)
		a.c.	a.c.
		kV	kV
5 kV	20,000	18	13
8 kV	20,000	28	22
15 kV	20,000	48	33

Note) Based on a conductor kilometer : K=6100 (see, table 12.6 of UL 1072)

3. Calculation Electrical Characteristics

Inductance : for 2, 3 & 4 conductor cables is given by the formula:

$L = 0.2 \times \left(\ln\left(\frac{2a}{d}\right)\right) + 0.25 \times 10^{-6}$

L = Inductance in H/m and phase
a = Axial space between conductor in mm.
a = conductor diameter

Reactance : for 2, 3 & 4 conductor cables is given by the formula:

$X = 2 \times \pi \times f \times L \times l$

X = Reactance in ohm per phase
f = frequency in Hz
L = Inductance in H/m and phase
l = conductor length in meter

Impedance : for 2, 3 & 4 conductor cables is given by the formula:

$Z = \sqrt{(R^2+X^2)}$

Z = Impedance in ohm per phase
R = Resistance at operating temp. in ohm per phase
X = Reactance in ohm per phase

Cable Technical Data

4. Capacitance, Inductance, Reactance, Inpeadance & Voltage Drop

High Voltage Cable (5kV, 8kV, 15kV)

5kV Cable (Single Core)

Conductor Nominal Area	5kV 100% Insulation Level						5kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
AWG/kcmil	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M
8	0.217	0.485	0.153	0.183	2.849	4.935	0.184	0.507	0.160	0.191	2.850	4.936
6	0.250	0.466	0.147	0.176	1.794	3.107	0.211	0.476	0.150	0.180	1.794	3.108
5	0.302	0.431	0.136	0.163	1.363	2.361	0.252	0.440	0.139	0.166	1.364	2.362
4	0.318	0.422	0.133	0.159	1.188	2.057	0.265	0.431	0.136	0.163	1.188	2.058
2	0.356	0.403	0.127	0.152	0.846	0.263	0.295	0.419	0.132	0.158	0.847	1.468
1	0.404	0.391	0.123	0.148	0.591	1.024	0.333	0.399	0.126	0.151	0.592	1.026
1/0	0.442	0.378	0.119	0.143	0.478	0.829	0.363	0.385	0.121	0.146	0.479	0.830
2/0	0.480	0.366	0.115	0.138	0.388	0.671	0.393	0.374	0.118	0.141	0.389	0.673
3/0	0.529	0.353	0.111	0.133	0.316	0.548	0.432	0.361	0.114	0.136	0.317	0.550
4/0	0.584	0.341	0.107	0.129	0.263	0.455	0.475	0.348	0.110	0.131	0.264	0.457
262	0.632	0.332	0.104	0.125	0.227	0.394	0.514	0.338	0.106	0.128	0.229	0.397
313	0.686	0.322	0.102	0.122	0.199	0.345	0.556	0.329	0.104	0.124	0.201	0.348
373	0.740	0.314	0.099	0.119	0.178	0.308	0.599	0.320	0.101	0.121	0.179	0.311
444	0.799	0.307	0.097	0.116	0.161	0.280	0.646	0.319	0.101	0.121	0.165	0.286
535	0.866	0.306	0.096	0.116	0.149	0.258	0.699	0.311	0.098	0.118	0.151	0.261
646	0.935	0.299	0.094	0.113	0.137	0.238	0.753	0.304	0.096	0.115	0.139	0.241
777	1.004	0.292	0.092	0.110	0.128	0.222	0.808	0.303	0.095	0.114	0.131	0.228
1,111	1.168	0.285	0.090	0.108	0.117	0.203	0.938	0.289	0.091	0.109	0.118	0.205

5kV Cable(Three Core)

Conductor Nominal Area	5kV 100% Insulation Level						5kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
AWG/kcmil	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M
8	0.217	0.380	0.120	0.144	2.904	5.030	0.184	0.400	0.126	0.151	2.904	5.030
6	0.250	0.358	0.113	0.135	1.826	3.162	0.211	0.375	0.118	0.142	1.826	3.163
5	0.302	0.332	0.104	0.125	1.386	2.401	0.252	0.347	0.109	0.131	1.387	2.402
4	0.318	0.325	0.102	0.123	1.207	2.090	0.265	0.340	0.107	0.128	1.207	2.091
2	0.356	0.312	0.098	0.118	0.857	1.485	0.295	0.325	0.103	0.123	0.858	1.486
1	0.404	0.298	0.094	0.113	0.595	1.030	0.333	0.311	0.098	0.117	0.596	1.032
1/0	0.442	0.289	0.091	0.109	0.478	0.828	0.363	0.301	0.095	0.114	0.479	0.830
2/0	0.480	0.282	0.089	0.107	0.385	0.666	0.393	0.293	0.092	0.111	0.386	0.668
3/0	0.529	0.274	0.086	0.103	0.310	0.537	0.432	0.285	0.090	0.108	0.312	0.540
4/0	0.584	0.266	0.084	0.101	0.254	0.441	0.475	0.277	0.087	0.105	0.256	0.443
262	0.632	0.261	0.082	0.099	0.217	0.377	0.514	0.270	0.085	0.102	0.219	0.379
313	0.686	0.256	0.081	0.097	0.188	0.325	0.556	0.264	0.083	0.100	0.189	0.328
373	0.740	0.251	0.079	0.095	0.165	0.286	0.599	0.259	0.082	0.098	0.167	0.289
444	0.799	0.247	0.078	0.093	0.147	0.255	0.646	0.254	0.080	0.096	0.149	0.259
535	0.866	0.242	0.076	0.092	0.132	0.229	0.699	0.250	0.079	0.094	0.134	0.232
646	0.935	0.239	0.075	0.090	0.120	0.208	0.753	0.245	0.077	0.093	0.122	0.212
777	1.004	0.235	0.074	0.089	0.111	0.193	0.808	0.242	0.076	0.091	0.113	0.195
1,111	1.168	0.229	0.072	0.087	0.099	0.171	0.938	0.235	0.074	0.089	0.100	0.174

P-Route®
IEEE 1580, UL1309, UL1072

8kV Cable (Single Core)

Conductor Nominal Area	8kV 100% Insulation Level						8kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
AWG/kcmil	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M
6	0.206	0.482	0.152	0.182	1.794	3.11	0.181	0.492	0.155	0.186	1.795	3.11
5	0.246	0.446	0.140	0.168	1.364	2.36	0.214	0.463	0.146	0.175	1.365	2.36
4	0.258	0.436	0.137	0.165	1.189	2.06	0.225	0.453	0.143	0.171	1.189	2.06
2	0.288	0.424	0.134	0.160	0.848	1.47	0.249	0.434	0.136	0.164	0.849	1.47
1	0.324	0.404	0.127	0.153	0.593	0.265	0.280	0.412	0.130	0.156	0.593	1.028
1/0	0.354	0.390	0.123	0.147	0.480	0.831	0.305	0.398	0.125	0.150	0.480	0.832
2/0	0.383	0.378	0.119	0.143	0.389	0.674	0.329	0.386	0.122	0.146	0.390	0.676
3/0	0.421	0.366	0.115	0.138	0.318	0.551	0.360	0.373	0.117	0.141	0.320	0.554
4/0	0.462	0.353	0.111	0.133	0.265	0.459	0.395	0.360	0.113	0.136	0.266	0.461
262	0.500	0.343	0.108	0.129	0.230	0.398	0.426	0.349	0.110	0.132	0.231	0.400
313	0.541	0.334	0.105	0.126	0.202	0.350	0.460	0.340	0.107	0.128	0.203	0.352
373	0.582	0.325	0.102	0.123	0.181	0.313	0.494	0.339	0.107	0.128	0.184	0.319
444	0.628	0.324	0.102	0.122	0.166	0.287	0.533	0.330	0.104	0.125	0.168	0.291
535	0.678	0.316	0.099	0.119	0.151	0.262	0.575	0.321	0.101	0.121	0.153	0.265
646	0.731	0.309	0.097	0.117	0.141	0.244	0.619	0.319	0.101	0.121	0.144	0.249
777	0.785	0.307	0.097	0.116	0.133	0.231	0.663	0.313	0.098	0.118	0.135	0.234
1,111	0.910	0.294	0.093	0.111	0.120	0.208	0.767	0.299	0.094	0.113	0.122	0.211

8kV Cable (Three Core)

Conductor Nominal Area	8kV 100% Insulation Level						8kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
AWG/kcmil	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	μF/km	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M
6	0.206	0.378	0.119	0.143	1.826	3.16	0.181	0.394	0.124	0.149	1.827	3.16
5	0.246	0.349	0.110	0.132	1.387	2.40	0.214	0.365	0.115	0.138	1.387	2.40
4	0.258	0.342	0.108	0.129	1.207	2.09	0.225	0.357	0.112	0.135	1.208	2.09
2	0.288	0.328	0.103	0.124	0.858	1.49	0.249	0.341	0.108	0.129	0.859	1.49
1	0.324	0.313	0.099	0.118	0.596	1.032	0.280	0.326	0.103	0.123	0.597	1.034
1/0	0.354	0.303	0.096	0.115	0.480	0.831	0.305	0.315	0.099	0.119	0.481	0.832
2/0	0.383	0.295	0.093	0.112	0.386	0.669	0.329	0.307	0.097	0.116	0.387	0.671
3/0	0.421	0.287	0.090	0.108	0.312	0.540	0.360	0.297	0.094	0.112	0.313	0.543
4/0	0.462	0.278	0.088	0.105	0.256	0.443	0.395	0.288	0.091	0.109	0.258	0.446
262	0.500	0.272	0.086	0.103	0.219	0.380	0.426	0.281	0.089	0.106	0.221	0.382
313	0.541	0.266	0.084	0.100	0.189	0.328	0.460	0.275	0.087	0.104	0.192	0.332
373	0.582	0.260	0.082	0.098	0.167	0.289	0.494	0.269	0.085	0.102	0.169	0.293
444	0.628	0.255	0.081	0.097	0.150	0.260	0.533	0.263	0.083	0.100	0.152	0.263
535	0.678	0.251	0.079	0.095	0.135	0.233	0.575	0.258	0.081	0.098	0.137	0.237
646	0.731	0.246	0.078	0.093	0.122	0.212	0.619	0.253	0.080	0.096	0.125	0.216
777	0.785	0.243	0.077	0.092	0.114	0.197	0.663	0.249	0.079	0.094	0.115	0.200
1,111	0.910	0.235	0.074	0.089	0.100	0.174	0.767	0.241	0.076	0.091	0.102	0.177

Cable Technical Data

High Voltage Cable (5kV, 8kV, 15kV)

15kV Cable (Single Core)

Conductor Nominal Area	15kV 100% Insulation Level						15kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
			50 Hz	60 Hz	at 60 Hz	V / A / km			50 Hz	60 Hz	at 60 Hz	V / A / km
AWG/kcmil	μF/km	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M	μF/km	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M
2	0.217	0.443	0.139	0.167	0.849	1.47	0.191	0.451	0.142	0.170	0.850	1.47
1	0.242	0.422	0.133	0.159	0.594	1.029	0.212	0.430	0.135	0.162	0.595	1.031
1/0	0.262	0.408	0.129	0.154	0.482	0.834	0.229	0.415	0.131	0.157	0.483	0.836
2/0	0.282	0.396	0.125	0.149	0.392	0.678	0.246	0.403	0.127	0.152	0.393	0.680
3/0	0.307	0.382	0.120	0.144	0.321	0.249	0.267	0.389	0.122	0.147	0.322	0.558
4/0	0.335	0.369	0.116	0.139	0.268	0.464	0.291	0.375	0.118	0.142	0.269	0.467
262	0.361	0.358	0.113	0.135	0.233	0.403	0.312	0.371	0.117	0.140	0.236	0.409
313	0.388	0.356	0.112	0.134	0.207	0.359	0.336	0.360	0.113	0.136	0.208	0.361
373	0.416	0.346	0.109	0.131	0.186	0.323	0.359	0.351	0.111	0.133	0.188	0.325
444	0.447	0.337	0.106	0.127	0.169	0.294	0.385	0.342	0.108	0.129	0.171	0.296
535	0.481	0.335	0.105	0.126	0.157	0.272	0.413	0.338	0.107	0.128	0.158	0.275
646	0.517	0.327	0.103	0.123	0.146	0.252	0.443	0.330	0.104	0.125	0.147	0.255
777	0.553	0.319	0.101	0.121	0.138	0.238	0.473	0.322	0.102	0.122	0.138	0.240
1,111	0.637	0.305	0.096	0.115	0.124	0.214	0.544	0.307	0.097	0.116	0.125	0.216

15kV Cable (Three Core)

Conductor Nominal Area	15kV 100% Insulation Level						15kV 133% Insulation Level					
	Capacitance	Inductance	Reactance	Reactance	Impedance	Volt drop	Capacitance	Inductance	Reactance	Impedance	Impedance	Volt drop
	C	L	X	X	Z		C	L	X	X	Z	
			50 Hz	60 Hz	at 60 Hz	V / A / km			50 Hz	60 Hz	at 60 Hz	V / A / km
AWG/kcmil	μF/km	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M	μF/km	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M
2	0.217	0.358	0.113	0.135	0.860	1.49	0.191	0.374	0.118	0.141	0.861	1.49
1	0.242	0.342	0.108	0.129	0.598	1.036	0.212	0.357	0.112	0.135	0.599	1.038
1/0	0.262	0.331	0.104	0.125	0.482	0.835	0.229	0.345	0.109	0.130	0.483	0.837
2/0	0.282	0.322	0.101	0.121	0.389	0.673	0.246	0.335	0.106	0.127	0.391	0.677
3/0	0.307	0.311	0.098	0.118	0.316	0.547	0.267	0.324	0.102	0.122	0.317	0.549
4/0	0.335	0.302	0.095	0.114	0.260	0.450	0.291	0.314	0.099	0.119	0.262	0.454
262	0.361	0.294	0.093	0.111	0.223	0.387	0.312	0.305	0.096	0.115	0.225	0.390
313	0.388	0.287	0.090	0.108	0.194	0.336	0.336	0.298	0.094	0.112	0.196	0.340
373	0.416	0.280	0.088	0.106	0.172	0.297	0.359	0.291	0.092	0.110	0.174	0.302
444	0.447	0.274	0.086	0.104	0.155	0.268	0.385	0.284	0.090	0.107	0.157	0.271
535	0.481	0.269	0.085	0.101	0.139	0.241	0.413	0.278	0.088	0.105	0.142	0.246
646	0.517	0.263	0.083	0.099	0.127	0.220	0.443	0.272	0.086	0.103	0.130	0.225
777	0.553	0.259	0.082	0.098	0.119	0.205	0.473	0.267	0.084	0.101	0.121	0.210
1,111	0.637	0.250	0.079	0.094	0.105	0.182	0.544	0.257	0.081	0.097	0.108	0.186

P-Route®
IEEE 1580, UL1309, UL1072

Low Voltage Cable

2kV SP (HD) Cable

Conductor Nominal Area	2kV SP(HD)						2kV SPBS(HD)					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
AWG/kcmil	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M
4/0	0.255	0.080	0.096	0.239	0.477	0.413	0.333	0.105	0.126	0.252	0.504	0.437
262	0.249	0.079	0.094	0.204	0.408	0.353	0.325	0.102	0.123	0.219	0.438	0.379
313	0.244	0.077	0.092	0.176	0.353	0.305	0.316	0.099	0.119	0.192	0.384	0.332
373	0.240	0.076	0.091	0.156	0.311	0.270	0.308	0.097	0.116	0.171	0.343	0.297
444	0.236	0.075	0.089	0.139	0.278	0.241	0.300	0.094	0.113	0.156	0.311	0.270
535	0.238	0.075	0.090	0.127	0.253	0.219	0.296	0.093	0.112	0.143	0.286	0.248
646	0.234	0.074	0.088	0.115	0.230	0.200	0.296	0.093	0.112	0.134	0.269	0.233
777	0.231	0.073	0.087	0.107	0.214	0.185	0.289	0.091	0.109	0.126	0.251	0.217
1,111	0.225	0.071	0.085	0.096	0.191	0.165	0.282	0.089	0.107	0.116	0.231	0.200

2kV SP Cable

Conductor Nominal Area	2kV SP						2kV SPBS					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
AWG/kcmil	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M
14	0.363	0.114	0.137	11.129	22.26	19.28	0.506	0.159	0.191	11.129	22.26	19.28
12	0.337	0.106	0.127	6.982	13.96	12.09	0.471	0.148	0.178	6.983	13.97	12.09
10	0.310	0.098	0.117	4.416	8.83	7.65	0.430	0.135	0.162	4.418	8.84	7.65
8	0.311	0.098	0.117	2.715	5.43	4.70	0.416	0.131	0.157	2.717	5.43	4.71
6	0.289	0.091	0.109	1.706	3.41	2.96	0.382	0.120	0.144	1.709	3.42	2.96
5	0.274	0.086	0.104	1.295	2.59	2.24	0.362	0.114	0.137	1.298	2.60	2.25
4	0.269	0.085	0.102	1.127	2.25	1.95	0.353	0.111	0.133	1.130	2.26	1.96
3	0.263	0.083	0.100	0.929	1.86	1.61	0.343	0.108	0.130	0.932	1.86	1.61
2	0.259	0.082	0.098	0.800	1.60	1.39	0.335	0.106	0.127	0.804	1.61	1.39
1	0.257	0.081	0.097	0.555	1.11	0.961	0.323	0.102	0.122	0.560	1.12	0.969
1/0	0.250	0.079	0.095	0.446	0.891	0.772	0.312	0.098	0.118	0.451	0.902	0.781
2/0	0.245	0.077	0.093	0.358	0.715	0.620	0.302	0.095	0.114	0.364	0.727	0.630
3/0	0.239	0.075	0.090	0.288	0.576	0.499	0.302	0.095	0.114	0.296	0.593	0.513
4/0	0.234	0.074	0.088	0.235	0.471	0.408	0.292	0.092	0.110	0.244	0.489	0.423
262	0.235	0.074	0.089	0.202	0.404	0.349	0.288	0.091	0.109	0.211	0.423	0.366
313	0.231	0.073	0.087	0.174	0.348	0.301	0.280	0.088	0.106	0.184	0.368	0.319
373	0.228	0.072	0.086	0.153	0.306	0.265	0.274	0.086	0.104	0.164	0.327	0.283
444	0.225	0.071	0.085	0.137	0.273	0.237	0.268	0.084	0.101	0.147	0.294	0.255
535	0.227	0.072	0.086	0.124	0.248	0.215	0.267	0.084	0.101	0.135	0.269	0.233
646	0.224	0.071	0.085	0.113	0.226	0.196	0.261	0.082	0.099	0.124	0.248	0.215
777	0.222	0.070	0.084	0.105	0.209	0.181	0.257	0.081	0.097	0.115	0.231	0.200
1,111	0.222	0.070	0.084	0.095	0.189	0.164	0.258	0.081	0.098	0.107	0.214	0.186

Cable Technical Data

Low Voltage Cable

0.6/1kV Distribution Cable (Single & Multi core)

Conductor Nominal Area	Single core(SP type)						Single core(SPBS type)						Multi core(2, 3, 4 cores)					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
AWG/kcmil	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M
14	0.323	0.102	0.122	11.128	22.26	19.28	0.487	0.153	0.184	11.129	22.26	19.28	0.323	0.102	0.122	11.351	22.70	19.66
12	0.302	0.095	0.114	6.982	13.96	12.09	0.453	0.143	0.171	6.983	13.97	12.09	0.302	0.095	0.114	7.121	14.24	12.33
10	0.280	0.088	0.106	4.416	8.83	7.65	0.413	0.130	0.156	4.417	8.83	7.65	0.280	0.088	0.106	4.504	9.01	7.80
8	0.295	0.093	0.111	2.714	5.43	4.70	0.407	0.128	0.154	2.716	5.43	4.70	0.295	0.093	0.111	2.768	5.54	4.80
6	0.276	0.087	0.104	1.706	3.41	2.95	0.374	0.118	0.141	1.708	3.42	2.96	0.276	0.087	0.104	1.740	3.48	3.01
5	0.263	0.083	0.100	1.295	2.59	2.24	0.355	0.112	0.134	1.298	2.60	2.25	0.259	0.082	0.098	1.320	2.64	2.29
4	0.259	0.082	0.098	1.127	2.25	1.95	0.346	0.109	0.131	1.130	2.26	1.96	0.254	0.080	0.096	1.149	2.30	1.99
3	0.254	0.080	0.096	0.928	1.86	1.61	0.337	0.106	0.127	0.932	1.86	1.61	0.250	0.079	0.094	0.946	1.89	1.64
2	0.250	0.079	0.094	0.800	1.60	1.38	0.329	0.104	0.124	0.804	1.61	1.39	0.246	0.077	0.093	0.815	1.63	1.41
1	0.249	0.079	0.094	0.554	1.108	0.960	0.318	0.100	0.120	0.559	1.118	0.968	0.246	0.078	0.093	0.565	1.13	0.978
1/0	0.243	0.077	0.092	0.445	0.890	0.771	0.307	0.097	0.116	0.451	0.901	0.780	0.240	0.076	0.091	0.453	0.907	0.785
2/0	0.238	0.075	0.090	0.357	0.714	0.618	0.298	0.094	0.112	0.363	0.726	0.629	0.236	0.074	0.089	0.363	0.727	0.629
3/0	0.233	0.074	0.088	0.287	0.575	0.498	0.298	0.094	0.113	0.296	0.592	0.513	0.231	0.073	0.087	0.292	0.585	0.506
4/0	0.229	0.072	0.086	0.235	0.469	0.406	0.288	0.091	0.109	0.244	0.488	0.423	0.226	0.071	0.086	0.239	0.477	0.414
262	0.230	0.073	0.087	0.201	0.402	0.348	0.284	0.090	0.107	0.210	0.421	0.364	0.228	0.072	0.086	0.204	0.407	0.353
313	0.227	0.072	0.086	0.173	0.347	0.300	0.277	0.087	0.105	0.183	0.367	0.318	0.225	0.071	0.085	0.175	0.351	0.304
373	0.224	0.071	0.085	0.152	0.304	0.264	0.271	0.085	0.102	0.162	0.325	0.281	0.222	0.070	0.084	0.154	0.308	0.266
444	0.221	0.070	0.084	0.136	0.272	0.236	0.265	0.083	0.100	0.146	0.293	0.254	0.219	0.069	0.083	0.137	0.274	0.237
535	0.224	0.071	0.085	0.123	0.246	0.213	0.264	0.083	0.100	0.134	0.268	0.232	0.222	0.070	0.084	0.124	0.248	0.214
646	0.221	0.070	0.084	0.112	0.224	0.194	0.259	0.082	0.098	0.123	0.246	0.213	0.220	0.069	0.083	0.112	0.225	0.195
777	0.219	0.069	0.083	0.104	0.208	0.180	0.254	0.080	0.096	0.114	0.229	0.198	0.218	0.069	0.082	0.104	0.207	0.180
1,111	0.218	0.069	0.083	0.094	0.187	0.162	0.255	0.080	0.096	0.105	0.211	0.183	-	-	-	-	-	-

P-Route®
IEEE 1580, UL1309, UL1072

2kV FS-SP (HD) Cable

Conductor Nominal Area	2kV FS-SP(HD)						2kV FS-SPBS(HD)					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
AWG/kcmil	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M
4/0	0.255	0.080	0.096	0.239	0.477	0.413	0.333	0.105	0.126	0.252	0.504	0.437
262	0.249	0.079	0.094	0.204	0.408	0.353	0.325	0.102	0.123	0.219	0.438	0.379
313	0.244	0.077	0.092	0.176	0.353	0.305	0.316	0.099	0.119	0.192	0.384	0.332
373	0.240	0.076	0.091	0.156	0.311	0.270	0.308	0.097	0.116	0.171	0.343	0.297
444	0.236	0.075	0.089	0.139	0.278	0.241	0.300	0.094	0.113	0.156	0.311	0.270
535	0.238	0.075	0.090	0.127	0.253	0.219	0.296	0.093	0.112	0.143	0.286	0.248
646	0.234	0.074	0.088	0.115	0.230	0.200	0.296	0.093	0.112	0.134	0.269	0.233
777	0.231	0.073	0.087	0.107	0.214	0.185	0.289	0.091	0.109	0.126	0.251	0.217
1,111	0.225	0.071	0.085	0.096	0.191	0.165	0.282	0.089	0.107	0.116	0.231	0.200

2kV FS-SP Cable

Conductor Nominal Area	2kV FS-SP						2kV FS-SPBS					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
AWG/kcmil	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M	mH / km	50 Hz Ω/km	60 Hz Ω/km	at 60 Hz Ω/km	V / A / km mV / A / M	V / A / km mV / A / M
14	0.363	0.114	0.137	11.129	22.26	19.28	0.506	0.159	0.191	11.129	22.26	19.28
12	0.337	0.106	0.127	6.982	13.96	12.09	0.471	0.148	0.178	6.983	13.97	12.09
10	0.310	0.098	0.117	4.416	8.83	7.65	0.430	0.135	0.162	4.418	8.84	7.65
8	0.311	0.098	0.117	2.715	5.43	4.70	0.416	0.131	0.157	2.717	5.43	4.71
6	0.289	0.091	0.109	1.706	3.41	2.96	0.382	0.120	0.144	1.709	3.42	2.96
5	0.274	0.086	0.104	1.295	2.59	2.24	0.362	0.114	0.137	1.298	2.60	2.25
4	0.269	0.085	0.102	1.127	2.25	1.95	0.353	0.111	0.133	1.130	2.26	1.96
3	0.263	0.083	0.100	0.929	1.86	1.61	0.343	0.108	0.130	0.932	1.86	1.61
2	0.259	0.082	0.098	0.800	1.60	1.39	0.335	0.106	0.127	0.804	1.61	1.39
1	0.257	0.081	0.097	0.555	1.11	0.961	0.323	0.102	0.122	0.560	1.12	0.969
1/0	0.250	0.079	0.095	0.446	0.891	0.772	0.312	0.098	0.118	0.451	0.902	0.781
2/0	0.245	0.077	0.093	0.358	0.715	0.620	0.302	0.095	0.114	0.364	0.727	0.630
3/0	0.239	0.075	0.090	0.288	0.576	0.499	0.302	0.095	0.114	0.296	0.593	0.513
4/0	0.234	0.074	0.088	0.235	0.471	0.408	0.292	0.092	0.110	0.244	0.489	0.423
262	0.235	0.074	0.089	0.202	0.404	0.349	0.288	0.091	0.109	0.211	0.423	0.366
313	0.231	0.073	0.087	0.174	0.348	0.301	0.280	0.088	0.106	0.184	0.368	0.319
373	0.228	0.072	0.086	0.153	0.306	0.265	0.274	0.086	0.104	0.164	0.327	0.283
444	0.225	0.071	0.085	0.137	0.273	0.237	0.268	0.084	0.101	0.147	0.294	0.255
535	0.227	0.072	0.086	0.124	0.248	0.215	0.267	0.084	0.101	0.135	0.269	0.233
646	0.224	0.071	0.085	0.113	0.226	0.196	0.261	0.082	0.099	0.124	0.248	0.215
777	0.222	0.070	0.084	0.105	0.209	0.181	0.257	0.081	0.097	0.115	0.231	0.200
1,111	0.222	0.070	0.084	0.095	0.189	0.164	0.258	0.081	0.098	0.107	0.214	0.186

Cable Technical Data

Low Voltage Cable

0.6/1kV FS Distribution Cable (Single & Multi core)

Conductor Nominal Area	Single core (FS-SP type)						Single core (FS-SPBS type)						Multi core(2, 3, 4 cores)					
	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop	Inductance	Reactance	Reactance	Impedance	Volt drop	Volt drop
	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph	L	X	X	Z	1 ph	3 ph
		50 Hz	60 Hz	at 60 Hz	V / A / km	V / A / km		50 Hz	60 Hz	at 60 Hz	V / A / km	V / A / km		50 Hz	60 Hz	at 60 Hz	V / A / km	V / A / km
AWG/kcmil	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M	mV / A / M	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M	mV / A / M	mH / km	Ω/km	Ω/km	Ω/km	mV / A / M	mV / A / M
14	0.323	0.102	0.122	11.128	22.26	19.28	0.487	0.153	0.184	11.129	22.26	19.28	0.323	0.102	0.122	11.351	22.70	19.66
12	0.302	0.095	0.114	6.982	13.96	12.09	0.453	0.143	0.171	6.983	13.97	12.09	0.302	0.095	0.114	7.121	14.24	12.33
10	0.280	0.088	0.106	4.416	8.83	7.65	0.413	0.130	0.156	4.417	8.83	7.65	0.280	0.088	0.106	4.504	9.01	7.80
8	0.295	0.093	0.111	2.714	5.43	4.70	0.407	0.128	0.154	2.716	5.43	4.70	0.295	0.093	0.111	2.768	5.54	4.80
6	0.276	0.087	0.104	1.706	3.41	2.95	0.374	0.118	0.141	1.708	3.42	2.96	0.276	0.087	0.104	1.740	3.48	3.01
5	0.263	0.083	0.100	1.295	2.59	2.24	0.355	0.112	0.134	1.298	2.60	2.25	0.259	0.082	0.098	1.320	2.64	2.29
4	0.259	0.082	0.098	1.127	2.25	1.95	0.346	0.109	0.131	1.130	2.26	1.96	0.254	0.080	0.096	1.149	2.30	1.99
3	0.254	0.080	0.096	0.928	1.86	1.61	0.337	0.106	0.127	0.932	1.86	1.61	0.250	0.079	0.094	0.946	1.89	1.64
2	0.250	0.079	0.094	0.800	1.60	1.38	0.329	0.104	0.124	0.804	1.61	1.39	0.246	0.077	0.093	0.815	1.63	1.41
1	0.249	0.079	0.094	0.554	1.108	0.960	0.318	0.100	0.120	0.559	1.118	0.968	0.246	0.078	0.093	0.565	1.13	0.978
1/0	0.243	0.077	0.092	0.445	0.890	0.771	0.307	0.097	0.116	0.451	0.901	0.780	0.240	0.076	0.091	0.453	0.907	0.785
2/0	0.238	0.075	0.090	0.357	0.714	0.618	0.298	0.094	0.112	0.363	0.726	0.629	0.236	0.074	0.089	0.363	0.727	0.629
3/0	0.233	0.074	0.088	0.287	0.575	0.498	0.298	0.094	0.113	0.296	0.592	0.513	0.231	0.073	0.087	0.292	0.585	0.506
4/0	0.229	0.072	0.086	0.235	0.469	0.406	0.288	0.091	0.109	0.244	0.488	0.423	0.226	0.071	0.086	0.239	0.477	0.414
262	0.230	0.073	0.087	0.201	0.402	0.348	0.284	0.090	0.107	0.210	0.421	0.364	0.228	0.072	0.086	0.204	0.407	0.353
313	0.227	0.072	0.086	0.173	0.347	0.300	0.277	0.087	0.105	0.183	0.367	0.318	0.225	0.071	0.085	0.175	0.351	0.304
373	0.224	0.071	0.085	0.152	0.304	0.264	0.271	0.085	0.102	0.162	0.325	0.281	0.222	0.070	0.084	0.154	0.308	0.266
444	0.221	0.070	0.084	0.136	0.272	0.236	0.265	0.083	0.100	0.146	0.293	0.254	0.219	0.069	0.083	0.137	0.274	0.237
535	0.224	0.071	0.085	0.123	0.246	0.213	0.264	0.083	0.100	0.134	0.268	0.232	0.222	0.070	0.084	0.124	0.248	0.214
646	0.221	0.070	0.084	0.112	0.224	0.194	0.259	0.082	0.098	0.123	0.246	0.213	0.220	0.069	0.083	0.112	0.225	0.195
777	0.219	0.069	0.083	0.104	0.208	0.180	0.254	0.080	0.096	0.114	0.229	0.198	0.218	0.069	0.082	0.104	0.207	0.18
1,111	0.218	0.069	0.083	0.094	0.187	0.162	0.255	0.080	0.096	0.105	0.211	0.183	-	-	-	-	-	-

Low Voltage Signal Cable

Cable type \ Size		Unit	18 AWG	16 AWG	14AWG
Mutual Capacitance	Individual Shield	nF/km	94	102	118
	Collective Shield	nF/km	85	85	90
Inductance		mH/km	0.74	0.70	0.65

P-Route®
IEEE 1580, UL1309, UL1072

5. Max. Current-Carrying Capacity

5.1 Distribution, Control, and Signal Cables - Single-Banked, Maximum Current-Carrying Capacity (Type T, T/N, E, X, S, LSE, LSX, and P @ 45°C Ambient)

AWG/Kcmil	Cross Sectional Area		Single Conductor			Two Conductor			Three Conductor		
	mm²	Circular mils	T	LSE LSX T/N E, X	S, P	T	LSE LSX T/N E, X	S, P	T	LSE LSX T/N E, X	S, P
			75 °C	90 °C	100 °C	75 °C	90 °C	100 °C	75 °C	90 °C	100 °C
20	0.517	1,020	9	11	12	8	9	10	6	8	9
18	0.821	1,620	13	15	16	11	13	14	9	11	12
16	1.31	2,580	18	21	23	15	18	19	13	15	16
-	1.5	2,960	20	24	26	17	20	22	14	17	18
15	1.65	3,175	21	26	28	18	22	23	15	18	19
14	2.08	4,110	28	34	37	24	27	31	20	24	25
12	3.31	6,530	35	43	45	31	36	40	24	29	31
10	5.26	10,400	45	54	58	38	46	49	32	38	41
8	8.37	16,500	56	68	72	49	60	64	41	48	52
7	10.5	20,800	5	77	84	59	72	78	48	59	63
6	13.3	26,300	73	88	96	66	79	85	54	65	70
5	16.8	33,100	84	100	109	78	92	101	64	75	82
4	21.2	41,700	97	118	128	84	101	110	70	83	92
3	26.7	52,600	112	134	146	102	121	132	83	99	108
2	33.6	66,400	129	156	169	115	137	149	93	111	122
1	42.4	83,700	150	180	194	134	161	174	110	131	143
1/0	53.5	10,600	174	207	227	153	183	199	126	150	164
2/0	67.4	133,000	202	240	262	187	233	242	145	173	188
3/0	85.0	168,000	231	278	300	205	245	265	168	201	218
4/0	107.2	212,000	271	324	351	237	284	307	194	232	252
250Kcmil	126.7	250,000	300	359	389	264	316	344	217	259	282
262Kcmil	133.1	262,600	314	378	407	278	333	358	228	273	294
300Kcmil	152	300,000	345	412	449	296	354	385	242	290	316
313Kcmil	158.7	313,100	351	423	455	303	363	391	249	298	321
350Kcmil	177.3	350,000	372	446	485	324	387	421	265	317	344
373Kcmil	189.4	373,700	393	474	516	339	406	442	277	332	361
400Kcmil	203	400,000	410	489	533	351	419	455	286	342	371
444Kcmil	225.2	444,400	453	546	588	391	468	504	319	382	411
500Kcmil	253.3	500,000	469	560	609	401	479	520	329	303	428
535Kcmil	271.3	535,000	485	579	630	415	496	538	340	407	443
600Kcmil	304	600,000	521	623	678	450	539	585	368	440	478
646Kcmil	327.6	646,000	557	671	731	485	581	632	396	474	516
750Kcmil	380	750,000	605	723	786	503	602	656	413	494	537
777Kcmil	394.2	777,000	627	755	822	525	629	684	431	516	562
1,000Kcmil	506.7	1,000,000	723	867	939	601	721	834	193	592	641
1,111Kcmil	563.1	1,111,000	767	942	1,025	637	784	854	523	644	701
1,250Kcmil	635	1,250,000	824	990	1,072	-	-	-	-	-	-
1500Kcmil	761	1,500,000	917	1,100	1,195	-	-	-	-	-	-
2,000Kcmil	1,013	2,000,000	1,076	1,292	1,400	-	-	-	-	-	-

Cable Technical Data

5.2 Distribution, Control and Signal Cable - Signal Banked Maximum Current Carrying-Capacity (UL-1309-2011, Type " X110" @45°C Ambient)

AWG/Kcmil	Cross Sectional Area		Single Conductor	Two Conductor	Three Conductor
	mm²	Circular mils	Maximum conductor temperature : 110°C		
14	2.1	4,410	39	33	27
12	3.3	6,530	49	41	33
10	5.3	10,400	61	52	43
8	8.4	16,500	77	68	55
7	10.6	20,800	88	82	67
6	13.3	26,300	100	90	74
5	16.8	33,100	114	105	85
4	21.1	41,700	134	115	95
3	26.7	52,600	153	138	113
2	33.6	66,400	178	156	126
1	42.4	83,700	205	183	149
1/0	53.5	106,000	236	208	171
2/0	67.4	133,000	274	265	197
3/0	85.0	168,000	317	279	229
4/0	107	212,000	369	323	264
	127	250,000	409	360	295
	152	300,000	470	403	330
	177	350,000	508	441	361
	203	400,000	557	494	390
	253	500,000	638	546	448
	271	535,000	660	565	464
	304	600,000	710	614	502
	327	646,000	-	-	-
	380	750,000	824	686	563
	394	777,000	-	-	-
	507	1,000,000	988	-	-
	562	1,110,000	-	-	-
	633	1,250,000	1,128	-	-
	706	1,500,000	1,254	-	-
	1,013	2,000,000	1,473	-	-

Note)

1. Current ratings are for ac or dc.

2. Current-carrying capacity of four-conductor cables where one conductor does not act as a normal current-carrying conductor (e.g., grounded neutral or grounding conductor), is the same as three-conductor cables.

3. Correction factors for various ambient air temperature.

Ambient Temperature	30 °C	40 °C	50 °C	60 °C	70 °C
Type T insulated cables	1.22	1.08	0.91	-	-
Type T/N, X, E, LSE, LSX insulated cables	1.15	1.05	0.94	0.82	0.74
Type S and P insulated cables	1.13	1.04	0.95	0.85	0.74

4. The above current-carrying capacities are for marine installations with cables arranged in a single bank per hanger and are 85% of the ICEA calculated values. Double banked of distribution-type cables should be avoided. For those instances where cable must be double banked, the current-carrying capacities in the above table should be multiplied by 0.8.

5. The ICEA calculated current capacities of these cables are based on cables installed in free air, that is at least one cable diameter spacing between adjacent cables.

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5.3 Ampacities for Medium-Voltage power Cable, Copper Conductor-Single-Banked(Single-Layered), Maximum Current-Carrying Capacity Based on 45°C Ambient, Shields Grounded on One End (Open-Circuited Shields)

AWG/Kcmil	mm²	Circular mils	Single-conductor cable	
			Up to 8 kV shielded	8,001 - 15,000 V shielded
			90 °C	90 °C
6	12.30	26,240	91	-
4	21.15	41,740	120	-
2	33.62	66,360	158	158
1	42.40	83,690	182	182
1/0	53.50	105,600	210	210
2/0	67.44	133,100	242	241
3/0	85.02	167,800	279	278
4/0	107.2	211,600	324	321
250	126.7	250,000	359	356
263	133.1	262,600	370	366
313	158.6	313,100	413	409
350	177.3	350,000	444	440
373	189.3	373,700	462	456
444	225.2	444,400	515	508
500	253.3	500,000	557	549
535	271.2	535,300	580	571
646	327.5	646,400	652	641
750	380.0	750,000	720	706
777	394.0	777,700	735	721
1000	506.7	1,000,000	859	842

Note)

a) The actual conductor operating temperature must be compatible with the connected equipment, especially at the connection points.

b) Conductor selection should be coordinated with circuit and system, overcurrent and short-circuit protection to avoid cable damage during through-fault conditions.
See ICEA P32-382 to determine conductor short-circuit withstand current.

c) Current-carrying capacity of four-conductor cables, in which one conductor is not a current-carrying phase conductor (e.g., neutral of grounding conductor), is the same as three-conductor cables.

d) If ambient temperatures differ from 45°C, cable ampacities should be multiplied by the following factors:

Type E insulated cables	30 °C	40 °C	45 °C	50 °C	55 °C	60 °C	70 °C
	1.10	1.05	1.00	0.94	0.90	0.82	0.67

e) The current-carrying capacities are for cable installations with cables arranged in a single bank per hanger and are 85% of the calculated free air values. Double banking of medium voltage cables is not recommended.

f) The calculated current capacities are based on cables installed in free air, that is, at least one cable diameter spacing between adjacent cables. See IEEE Std 835-1994.

g) For cables with maintained spacing of at least 1 cable diameter apart, the ampacities may be increased by dividing by 0.85.

h) If more than one circuit of parallel runs of the same circuit are installed, there should be a maintained spacing of 2.15 times one conductor diameter between each triangular configuration group. Otherwise cables are considered double-banked.

Installation Information

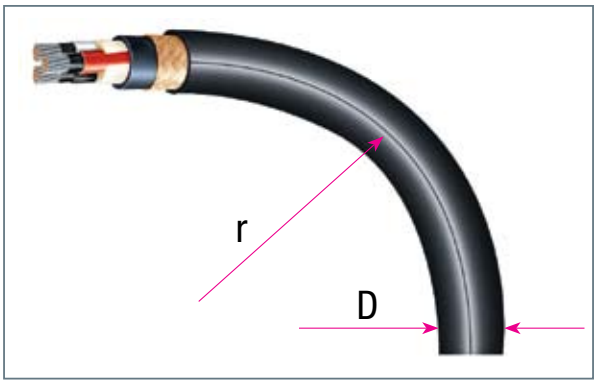
1. Maximum Conductor Temperature

Insulation Type	Max conductor temperature (°C)
P (XLPO)	100
E (EPR)	90

2. Minimum Bending Radius

Cable Type	Minimum Bending Radius
Armored Cable	8 D
Unarmored Cable	6 D

D : Completed cable's overall diameter (mm)
r : Bending Radius



3. Single-Conductor AC Cables

To avoid an undesirable inductive effect in ac installations, the following precautions should be observed.

Closed magnetic circuits around single-conductor ac cable should be avoided, and no magnetic material should be permitted between cables of different phases of a circuit.

a) Single-conductor ac cables should not be located closer than 76 mm from parallel magnetic material.

b) Single conductor ac cable should be supported on insulators. Armor, if used, should be grounded only at approximately the midpoint of the cable run.

c) Where single-conductor ac cables penetrate the bulkhead, conductors of each phase of the same circuit should pass through a common nonferrous bulkhead plate to prevent heating of the bulkhead.

d) Single-conductor cables in groups should be arranged to minimize their inductive effect.
This may be accomplished by the transposition of cables in groups of three (one each phase) to give the effect of triplexed cable.
This transposition should be made at intervals of not over 15 m and need not be made in cable runs of less than 30 m.

4. Cable Continuity and Grounding

All cable should be continuous between terminations; however, splicing is permitted under certain conditions. For cable provided with armor, the armor should be electrically continuous between terminations and should be grounded at each end (multiconductor cables only), except that for final subcircuits, the armor may be grounded at the supply end only.

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5. Cable Locations

Cable installation should avoid spaces where excessive heat and gases may be encountered such as galleys, boiler rooms and pump rooms, and spaces where cables may be exposed to damage such as cargo spaces and exposed sides of deck houses. Cables should not be located in cargo tanks, ballast tanks, fuel tanks, or water tanks except to supply equipment and instrumentation specifically designed for such locations and whose functions require it to be installed in the tank.
Such equipment may include submerged cargo pumps and associated control devices, cargo monitoring, and underwater navigation systems.

Unless unavoidable, cables should not be located behind or embedded in structural heat insulation.
Where cables are installed behind paneling, all connections should be readily accessible and the location of concealed connection boxes should be indicated. Cables should preferably not be run through refrigerated cargo spaces.

Cables should not be located below the faceplate of the vessel's main bottom structural members of within.6 m above any double bottom tanktop.

6. Cable Protection

Cables should be adequately protected where exposed to damage.
Cables should be secured against displacement due to vibration and fault currents.
Cables passing through tanks and where exposed on weather decks where they are particularly liable to damage, such as locations in way of cargo ports, hatches, tank entry trunks, and where crossing walkways should be protected by installation in pipe, under angle iron supports, covered raceways, or equivalent means.

Where cables pass through insulation, a continuous pipe should protect them.
For wiring entering refrigerated compartments, the pipe should be of heat-insulating material (fiber or phenolic tubing) joined to the bulkhead stuffing tube, or a section of such material should be inserted between the bulkhead stuffing tube and the metallic pipe.

Where cables are installed in pipes, the space factor (ratio of the sum of the cross-sectional areas corresponding to the external diameter of the cables to the internal cross-sectional areas of the pipe) shall not be greater than 0.41, except for two cables, where the space factor shall not exceed 0.31. Pipes shall be so arranged or designed or designed to prevent the accumulation of internal condensation.

7. Cable Pulling-in Force

Care should be taken to prevent damage to insulation or distortion of cable during installation.

The pulling force in Newtons should not exceed 0.036 times the circular mil area of the copper cross-sectional area times the number of conductors in the cable when pulling on the conductors utilizing pulling eyes and bolts. Pulling force for multicore cables when utilizing eyes or bolts should not include drain or ground conductors in the copper cross-sectional area.
When pulling with a basket weave grip, maximum pulling tension (per grip) should not exceed 4.5 kN, or the value calculated for eyes or bolts, whichever is greater.

The sidewall pressure should not exceed a maximum of 7.3 kN per meter of the inside radius of the bend.

Cables should not be pulled in freezing conditions. If conditions are below 0 °C,consult the manufacturer.

If it is necessary to pull in these conditions, cables should be stored at a temperature above 10 °C for 24 h prior to installation, if the cable has been previously stored in an area under 0 °C.

When installing low smoke cables, additional consideration should be given to handling and lubrication due to their possible lower tear strength and higher coefficient of friction than other marine cable.

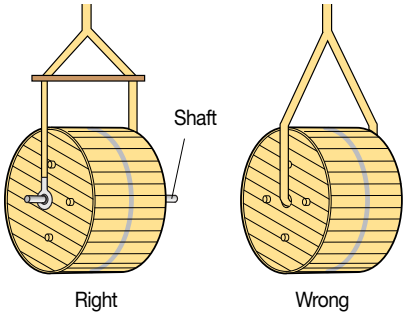
Handling, Installation Method & Notice

■ Loading & Transportation

1. In case of a crane

Should transport by using standard rope and a shaft which is put in the center of drum.

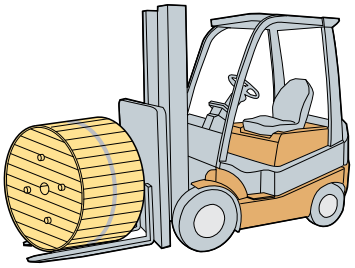
* Matters that requires attention
- Placing it even with the ground.
- Should move slowly and when it placedown, don't do sudden stop.



2. In case of a forklift

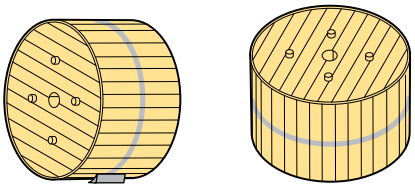
Drums should not be damaged by a forklift.

* Matters that requires attention:
- Place the drum on the center of a fork.
- The width of a fork should be longer than drum size.



■ Transportation and Unloading

*** Matters that requires attention while handling cables.**
- Don't lie drums down.
- Don't move it 20m longer when rolling it.
- Don't use gimlets or something like sharp when moving.
- Don't roll a damaged drum.
- Don't roll at projecting surface.
- Don't store drum near to stove and heater.



Check point while handling cables(Storage)

■ Storage

- Don't leave the protecting packing materials and outside package until remove it for setting up cables.
- Should construct a fence to protect against damages by moving machines.
- Keep it inside or in depository when safekeeping in long term.
  (For reference, drums and packages can stand against dry whether outside the house)
- Must seal both sides of cables remaining in the drums the cap and heat-contracting tube so that moisture doesn't soak in after finishing the removal of exterior packing materials and cutting and installing cables.

Certificates Approved

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IEEE 1580, UL1309, UL1072



LRQA Business Assurance

CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

TMC Co., Ltd.
Seoul and Cheonan-si
Korea

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

ISO 9001:2008
KS Q ISO 9001:2009

The Quality Management System is applicable to:

Design and manufacture of shipboard cables, offshore cables, electrical cables and fiber optic cables.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: SEO 0981028

Original Approval: 2 December 1998
Current Certificate: 1 January 2011
Certificate Expiry: 31 December 2013

Issued by: LRQA (Korea) Ltd. for and on behalf of Lloyd's Register Quality Assurance Limited

Cert. of ISO 9001



LRQA Business Assurance

CERTIFICATE OF APPROVAL

This is to certify that the Environmental Management System of:

TMC Co., Ltd.
368-7, Gasan-ri, Ibjang-myeon, Cheonan-si
Chungnam, 330-821, Korea

has been approved by Lloyd's Register Quality Assurance to the following Environmental Management System Standard:

ISO 14001:2004
KS I ISO 14001:2009

The Environmental Management System is applicable to:

Design and manufacture of shipboard cables, offshore cables, electrical cables and fiber optic cables.

Approval Certificate No: SEO 0052017

Original Approval: 1 February 2006
Current Certificate: 1 February 2012
Certificate Expiry: 31 January 2015

Issued by: LRQA (Korea) Ltd. for and on behalf of Lloyd's Register Quality Assurance Limited

Cert. of ISO 14001



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CERTIFICATE OF APPROVAL

This is to certify that the Occupational Health & Safety Management System of:

TMC Co., Ltd.
Cheonan-si, Chungnam
Korea

has been approved by Lloyd's Register Quality Assurance to the following specification:

OHSAS 18001:2007

The Occupational Health & Safety Management System is applicable to:

Design and manufacture of shipboard cables, off-shore cables, electrical cables and fiber optic cables.

Approval Certificate No: SEO 6004071

Original Approval: 22 July 2008
Current Certificate: 22 July 2011
Certificate Expiry: 21 July 2014

Issued by: LRQA (Korea) Ltd. for and on behalf of Lloyd's Register Quality Assurance Limited

Cert. of OHSAS 18001

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