

0.6/1kV PVC Insulated Control Cables (Non-armoured & Armoured Type)

With/Without copper tape or braid Shield

(0.6/1kV TFR-CVV, TFR-CVV-S, TFR-CVV-SB, TFR-CVWAV, TFR-CVWAV-S)

SCOPE

This cable is designed for the purpose of using in control system in power plant and substation.

APPLICATION STANDARDS

IEC 60502-1 Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) - Part 1: Cables for rated voltages of 1 kV (Um = 1,2 kV) and 3 kV (Um = 3.6 kV)

IEC 60332-3-24 Tests on electric cables under fire conditions - Part 3-24 : Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C

MATERIALS & CONSTRUCTION

Conductor	Annealed copper wires, Class 2(Circular stranded type)
Insulation	PVC (Max. operating conductor temperature, 70°C)
Common Shield	Annealed copper tape or braid of copper wires (for shielded cables only)
Inner Covering	Extruded black PVC (for armoured cables only)
Armour	Galvanized steel round wires (for armoured cables only)
Oversheath	Flame retardant black PVC (FR-PVC/ST1)

CORE IDENTIFICATION

2cores	Brown and Black
3cores	Brown, Black and Gray
3cores + N	Brown, Black, Gray + Blue
3cores + PE	Brown, Black, Gray + Green/Yellow
5cores and above	Numbering on black colored insulation

Different color of core identification and oversheath

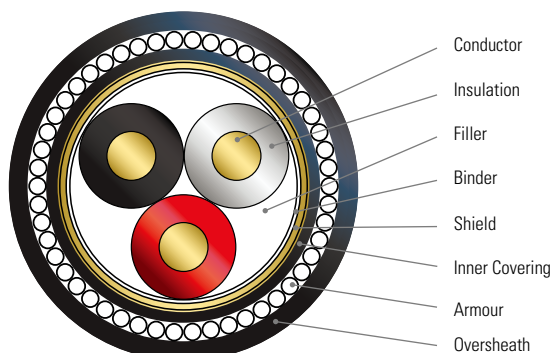
Flame Retardant : Cat. A or Cat. B in accordance with IEC 60332-3-22, -23

Oil Resistance, Anti-termite, Anti-rodent, Ozone resistance

Non-armoured Type



Armoured Type



**Non-armoured Type (0.6/1kV CU/PVC/PVC, CU/PVC/CTS/PVC, CU/PVC/CSB/PVC)
(0.6/1kV TFR-CVV, TFR-CVVS, TFR-CVV-SB)**

Nos. of Core	Conductor			Thick. of Insulation (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)			Max. D.C Conductor Resistance (20°C) Ω/km	A.C Voltage Test V/5min.	Net Weight (approx.)		
	Size	Construction	Outer Dia. (approx.)			A type	B type	C type			A type	B type	C type
	mm ²	Nos./mm	mm			mm	mm	mm			mm	kg/km	kg/km
2	1.5	7/0.53	1.59	0.8	1.8	12	13	13	12.1	3500	142	168	165
	2.5	7/0.67	2.01	0.8	1.8	13	14	14	7.41	3500	175	203	200
	4	7/0.85	2.55	1.0	1.8	15	16	16	4.61	3500	241	274	271
	6	7/1.04	3.12	1.0	1.8	16	17	17	3.08	3500	300	336	339
	10	7/1.35	4.05	1.0	1.8	18	19	18	1.83	3500	417	458	454
3	1.5	7/0.53	1.59	0.8	1.8	13	13	13	12.1	3500	172	199	197
	2.5	7/0.67	2.01	0.8	1.8	14	14	14	7.41	3500	213	242	240
	4	7/0.85	2.55	1.0	1.8	16	17	17	4.61	3500	300	336	336
	6	7/1.04	3.12	1.0	1.8	17	18	18	3.08	3500	384	423	426
	10	7/1.35	4.05	1.0	1.8	19	20	19	1.83	3500	544	588	583
4	1.5	7/0.53	1.59	0.8	1.8	14	14	14	12.1	3500	203	233	231
	2.5	7/0.67	2.01	0.8	1.8	15	15	15	7.41	3500	256	289	292
	4	7/0.85	2.55	1.0	1.8	17	18	18	4.61	3500	371	409	411
	6	7/1.04	3.12	1.0	1.8	19	19	19	3.08	3500	479	522	524
	10	7/1.35	4.05	1.0	1.8	21	22	22	1.83	3500	688	737	739
5	1.5	7/0.53	1.59	0.8	1.8	15	15	15	12.1	3500	241	273	271
	2.5	7/0.67	2.01	0.8	1.8	16	17	17	7.41	3500	305	342	342
	4	7/0.85	2.55	1.0	1.8	19	19	19	4.61	3500	447	487	483
	6	7/1.04	3.12	1.0	1.8	20	21	21	3.08	3500	573	624	612
	10	7/1.35	4.05	1.0	1.8	23	24	23	1.83	3500	835	889	865
6	1.5	7/0.53	1.59	0.8	1.8	16	16	16	12.1	3500	278	313	320
	2.5	7/0.67	2.01	0.8	1.8	17	18	18	7.41	3500	356	396	395
	4	7/0.85	2.55	1.0	1.8	20	21	21	4.61	3500	514	568	561
	6	7/1.04	3.12	1.0	1.8	22	23	23	3.08	3500	666	731	719
	10	7/1.35	4.05	1.0	1.8	25	26	25	1.83	3500	966	1047	1032
7	1.5	7/0.53	1.59	0.8	1.8	16	16	16	12.1	3500	298	333	334
	2.5	7/0.67	2.01	0.8	1.8	17	18	18	7.41	3500	386	426	428
	4	7/0.85	2.55	1.0	1.8	20	21	21	4.61	3500	571	61	619
	6	7/1.04	3.12	1.0	1.8	22	23	23	3.08	3500	743	799	788
	10	7/1.35	4.05	1.0	1.8	25	26	25	1.83	3500	1093	1155	1150
8	1.5	7/0.53	1.59	0.8	1.8	17	18	17	12.1	3500	338	374	376
	2.5	7/0.67	2.01	0.8	1.8	18	19	19	7.41	3500	439	482	482
	4	7/0.85	2.55	1.0	1.8	22	22	22	4.61	3500	640	699	694
	6	7/1.04	3.12	1.0	1.8	24	25	25	3.08	3500	838	908	907
	10	7/1.35	4.05	1.0	1.8	27	28	28	1.83	3500	1232	1319	1309
10	1.5	7/0.53	1.59	0.8	1.8	19	20	20	12.1	3500	405	461	450
	2.5	7/0.67	2.01	0.8	1.8	21	22	21	7.41	3500	532	596	593
	4	7/0.85	2.55	1.0	1.8	25	26	26	4.61	3500	789	871	857
	6	7/1.04	3.12	1.0	1.8	27	28	28	3.08	3500	1068	1136	1116
	10	7/1.35	4.05	1.0	1.8	31	32	32	1.83	3500	1550	1652	1643
12	1.5	7/0.53	1.59	0.8	1.8	20	21	21	12.1	3500	460	505	503
	2.5	7/0.67	2.01	0.8	1.8	22	22	22	7.41	3500	606	656	660
	4	7/0.85	2.55	1.0	1.8	26	27	27	4.61	3500	902	964	975
	6	7/1.04	3.12	1.0	1.8	29	29	29	3.08	3500	1198	1266	1282
	10	7/1.35	4.05	1.0	1.8	33	34	34	1.83	3500	1538	1617	1648

Nos. of Core	Conductor			Thick. of Insulation (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)			Max. DC Conductor Resistance (20°C)	A.C Voltage Test	Net Weight (approx.)		
	Size	Construction	Outer Dia. (approx.)			A type	B type	C type			A type	B type	C type
	mm ²	Nos./mm	mm			mm	mm	mm			mm	kg/km	kg/km
15	1.5	7/0.53	1.59	0.8	1.8	21	22	22	12.1	3500	545	595	596
	2.5	7/0.67	2.01	0.8	1.8	23	24	24	7.41	3500	726	780	797
	4	7/0.85	2.55	1.0	1.8	28	29	29	4.61	3500	1093	1159	1171
	6	7/1.04	3.12	1.0	1.8	31	32	32	3.08	3500	1452	1526	1561
20	1.5	7/0.53	1.59	0.8	1.8	24	25	25	12.1	3500	686	742	760
	2.5	7/0.67	2.01	0.8	1.8	27	27	27	7.41	3500	924	986	1010
	4	7/0.85	2.55	1.0	1.8	32	33	33	4.61	3500	1396	1472	1503
	6	7/1.04	3.12	1.0	1.8	35	36	36	3.08	3500	1871	1956	2001
30	1.5	7/0.53	1.59	0.8	1.8	28	29	29	12.1	3500	979	1046	1081
	2.5	7/0.67	2.01	0.8	1.8	31	32	32	7.41	3500	1336	1409	1417
	4	7/0.85	2.55	1.0	1.9	38	39	39	4.61	3500	2048	2139	2172

Note) A type cables, without shielded cables (0.6/1kV CU/PVC/PVC)

B type cables, with copper tape cables for common shield (0.6/1kV CU/PVC/CTS/PVC)

C type cables, with braid of copper wires for common shield (0.6/1kV CU/PVC/CSB/PVC)

Armoured Type (without shielded cables, 0.6/1kV CU/PVC/PVC/SWA/PVC) (0.6/1kV TFR-CVVWAV)

Nos. of Core	Conductor			Thickness		Dia. of wire (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)	Max. DC Conductor Resistance at 20°C	A.C Voltage Test	Net weight (approx.)
	Conductor Size	Construction	Outer Dia.(approx.)	Insulation (nom.)	Inner covering (approx.)						
	mm ²	Nos./mm	mm	mm	mm						
2	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	17	12.1	3500	365
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	18	7.41	3500	415
	4	7/0.85	2.55	1.0	1.0	0.8	1.8	20	4.61	3500	524
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	23	3.08	3500	842
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	24	1.83	3500	911
3	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	17	12.1	3500	443
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	18	7.41	3500	464
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	22	4.61	3500	721
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	23	3.08	3500	842
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	25	1.83	3500	1063
4	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	18	12.1	3500	454
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	20	7.41	3500	529
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	23	4.61	3500	828
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	25	3.08	3500	975
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	27	1.83	3500	1257
5	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	19	12.1	3500	513
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	22	7.41	3500	726
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	25	4.61	3500	942
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	26	3.08	3500	1117
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	29	1.83	3500	1454
6	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	22	12.1	3500	688
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	23	7.41	3500	814
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	26	4.61	3500	1057
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	29	3.08	3500	1393
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	32	1.83	3500	1823
7	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	22	12.1	3500	708
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	23	7.41	3500	843
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	26	4.61	3500	1114
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	29	3.08	3500	1471
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	32	1.83	3500	1950

Nos. of Core	Conductor			Thickness		Dia. of wire (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)	Max. DC Conductor Resistance at 20°C	A.C Voltage Test	Net weight (approx.)
	Conductor Size	Construction	Outer Dia.(approx.)	Insulation (nom.)	Inner covering (approx.)						
	mm ²	Nos./mm	mm	mm	mm						
8	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	23	12.1	3500	783
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	24	7.41	3500	922
	4	7/0.85	2.55	1.0	1.0	1.6	1.8	29	4.61	3500	1332
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	31	3.08	3500	1624
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	34	1.83	3500	2150
10	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	25	12.1	3500	913
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	28	7.41	3500	1220
	4	7/0.85	2.55	1.0	1.0	1.6	1.8	32	4.61	3500	1614
	6	7/1.04	3.12	1.0	1.0	1.6	1.9	34	3.08	3500	1984
	10	7/1.35	4.05	1.0	1.0	2.0	2.0	40	1.83	3500	2854
12	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	26	12.1	3500	991
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	29	7.41	3500	1332
	4	7/0.85	2.55	1.0	1.0	1.6	1.9	33	4.61	3500	1781
	6	7/1.04	3.12	1.0	1.0	1.6	1.9	36	3.08	3500	2174
	10	7/1.35	4.05	1.0	1.2	2.0	2.0	42	1.83	3500	2963
15	1.5	7/0.53	1.59	0.8	1.0	1.6	1.8	28	12.1	3500	1253
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	30	7.41	3500	1493
	4	7/0.85	2.55	1.0	1.0	1.6	1.9	35	4.61	3500	2049
	6	7/1.04	3.12	1.0	1.0	2.0	2.0	39	3.08	3500	2754
20	1.5	7/0.53	1.59	0.8	1.0	1.6	1.8	31	12.1	3500	1498
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	33	7.41	3500	1807
	4	7/0.85	2.55	1.0	1.0	2.0	2.0	40	4.61	3500	2729
	6	7/1.04	3.12	1.0	1.2	2.0	2.1	45	3.08	3500	3435
30	1.5	7/0.53	1.59	0.8	1.0	1.6	1.9	35	12.1	3500	1935
	2.5	7/0.67	2.01	0.8	1.0	2.0	1.9	39	7.41	3500	2621
	4	7/0.85	2.55	1.0	1.2	2.5	2.2	48	4.61	3500	4069

Armoured Type (with copper tape for common shield, 0.6/1kV CU/PVC/CTS/PVC/SWA/PVC) (0.6/1kV TFR-CVVWAV-S)

Nos. of Core	Conductor			Thickness		Dia. of wire (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)	Max. DC Conductor Resistance at 20°C	Net weight (approx.)
	Conductor Size	Construction	Outer Dia.(approx.)	Insulation (nom.)	Inner covering (approx.)					
	mm ²	Nos./mm	mm	mm	mm					
2	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	18	12.1	405
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	19	7.41	457
	4	7/0.85	2.55	1.0	1.0	0.8	1.8	21	4.61	573
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	24	3.08	898
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	25	1.83	971
3	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	18	12.1	487
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	19	7.41	513
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	23	4.61	774
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	24	3.08	898
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	26	1.83	1126
4	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	19	12.1	498
	2.5	7/0.67	2.01	0.8	1.0	0.8	1.8	20	7.41	576
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	24	4.61	885
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	25	3.08	1046
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	28	1.83	1324

Nos. of Core	Conductor			Thickness		Dia. of wire (nom.)	Thick. of Oversheath (nom.)	Overall Diameter (approx.)	Max. DC Conductor Resistance at 20°C	Net weight (approx.)
	Conductor Size	Construction	Outer Dia.(approx.)	Insulation (nom.)	Inner covering (approx.)					
	mm ²	Nos./mm	mm	mm	mm					
5	1.5	7/0.53	1.59	0.8	1.0	0.8	1.8	20	12.1	560
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	23	7.41	779
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	25	4.61	1013
	6	7/1.04	3.12	1.0	1.0	1.25	1.8	27	3.08	1193
	10	7/1.35	4.05	1.0	1.0	1.25	1.8	30	1.83	1538
6	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	22	12.1	750
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	24	7.41	870
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	27	4.61	1122
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	30	3.08	1470
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	33	1.83	1909
7	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	22	12.1	771
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	24	7.41	899
	4	7/0.85	2.55	1.0	1.0	1.25	1.8	27	4.61	1179
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	30	3.08	1548
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	33	1.83	2037
8	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	23	12.1	839
	2.5	7/0.67	2.01	0.8	1.0	1.25	1.8	25	7.41	992
	4	7/0.85	2.55	1.0	1.0	1.6	1.8	29	4.61	1442
	6	7/1.04	3.12	1.0	1.0	1.6	1.8	31	3.08	1706
	10	7/1.35	4.05	1.0	1.0	1.6	1.9	35	1.83	2243
10	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	26	12.1	985
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	28	7.41	1294
	4	7/0.85	2.55	1.0	1.0	1.6	1.8	33	4.61	1699
	6	7/1.04	3.12	1.0	1.0	1.6	1.9	35	3.08	2072
	10	7/1.35	4.05	1.0	1.0	2.0	2.0	41	1.83	2968
12	1.5	7/0.53	1.59	0.8	1.0	1.25	1.8	27	12.1	1055
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	29	7.41	1409
	4	7/0.85	2.55	1.0	1.0	1.6	1.9	34	4.61	1870
	6	7/1.04	3.12	1.0	1.0	1.6	1.9	37	3.08	2270
	10	7/1.35	4.05	1.0	1.2	2.0	2.0	43	1.83	3082
15	1.5	7/0.53	1.59	0.8	1.0	1.6	1.8	28	12.1	1324
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	31	7.41	1591
	4	7/0.85	2.55	1.0	1.0	1.6	1.9	36	4.61	2144
	6	7/1.04	3.12	1.0	1.0	2.0	2.0	40	3.08	2867
20	1.5	7/0.53	1.59	0.8	1.0	1.6	1.8	32	12.1	1581
	2.5	7/0.67	2.01	0.8	1.0	1.6	1.8	34	7.41	1896
	4	7/0.85	2.55	1.0	1.0	2.0	2.0	41	4.61	2845
	6	7/1.04	3.12	1.0	1.2	2.0	2.1	45	3.08	3535
30	1.5	7/0.53	1.59	0.8	1.0	1.6	1.9	36	12.1	2030
	2.5	7/0.67	2.01	0.8	1.0	2.0	1.9	40	7.41	2733
	4	7/0.85	2.55	1.0	1.2	2.5	2.2	49	4.61	4176