

氟塑料绝缘耐高温控制电缆

High-temperature resistant Control Cable with Fluoroplastics Insulation

本产品适用于交流额定电压450/750V及以下控制、监控回路以及电器仪表的连接线和自动控制系统的传输线。产品具有耐油、防水、耐磨、耐酸碱及各种化学试剂（除氯仿外）和各种腐蚀性气体、耐老化、不燃烧等优异性能；本产品主要用于冶金、电力、化工、石油等工矿企业在高温、低温及各种恶劣环境中作电器、仪表的连接线和自动控制系统的传输线。氟塑料绝缘和护套耐高温控制电缆采用聚全氟乙丙烯材料，产品具有比普通控制电缆更高的耐热等级。

It is used as connection cable for electric appliances & instruments and transmission cable for automatic control system in controlling and supervising loop of A.C.rated voltage of 450/750V or lower. It has good feature of oil resistance, abrasion resistance, acid & alkali resistance, resistant to various chemical reagent(except chloroform) and corrosive gas resistance, aging resistance and incombustible etc. It is used as connection cable for electric appliances & instruments and transmission cable for automatic control system under bad environment of extreme temperature mainly in the field of metallurgy, power, chemical and petroleum enterprises. FEP material used in high temperature resistant cable with fluoroplastic insulation and sheath. It has better heat resistant degree compared with common control cable.

一、生产执行标准

TICW3-2009.

Executive standard

TICW3-2009.

二、使用特性

- 1、交流额定电压：U0/U为450/750V；
- 2、电缆导体长期允许工作温度为：氟塑料绝缘为200℃；
- 3、电缆的敷设温度应不低于：硅橡胶护套电缆-20℃，氟塑料护套电缆-20℃；
- 4、电缆推荐允许弯曲半径：无铠装层的电缆，应不小于电缆外径的8倍；有铠装层的电缆或带铜带屏蔽结构的电缆，应不小于电缆外径的15倍。

Operational performance

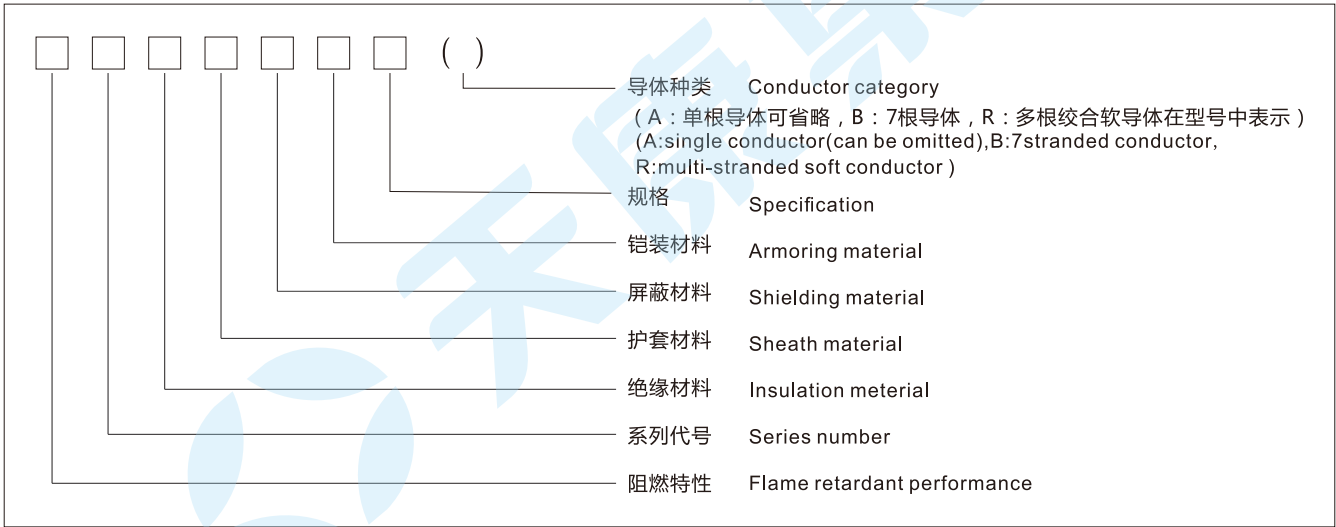
- 1.A.C. rated voltage U0/U: 450/750V.
- 2.Long-term working temperature of cable conductor : Temperature of fluoroplastics insulation is 200℃.
- 3.Temperature for installing cable is no lower than: -20 ℃ for cable with silicon rubber sheath.-20 ℃ for cable with fluoroplastic sheath.
- 4.Bending radius allowed by cable:It is no less than 8 times that of cable OD for cable with unarmored.It is no less than 15 times that of cable OD for cable with armored layer or copper tape shielding.

三、电缆型号及名称

1、型号结构组合形式

Type and Description

Type-naming Indication



2、基本型号与名称

Basic Type and Description

型号 Type	名称 Description
KFF	氟塑料绝缘氟塑料护套控制电缆 Control cable with fluoroplastic insulation and sheath
KFFP	氟塑料绝缘氟塑料护套铜丝编织屏蔽控制电缆 Control cable with fluoroplastic insulation and sheath,copper wire braided shielding
KFFR	氟塑料绝缘氟塑料护套控制软电缆 Control flexible soft cable with fluoroplastic insulation and sheath
KFFRP	氟塑料绝缘氟塑料护套铜丝编织屏蔽控制软电缆 Copper wire braid shield soft control cable with fluoroplastic insulation and sheath
KFG	氟塑料绝缘硅橡胶护套控制电缆 Control cable with fluoroplastic insulation,silicon rubber sheath
KFGP	氟塑料绝缘硅橡胶护套铜丝编织屏蔽控制电缆 Control cable with fluoroplastic insulation,silicon rubber sheath,copper wire braided shielding
KFGR	氟塑料绝缘硅橡胶护套控制软电缆 Control flexible soft cable with fluoroplastic insulation,silicon rubber sheath
KFGRP	氟塑料绝缘硅橡胶护套铜丝编织屏蔽控制软电缆 Control soft cable with fluoroplastic insulation,silicon rubber sheath,copper wire braided shielding

四、代号名称及含义

Codes Meaning

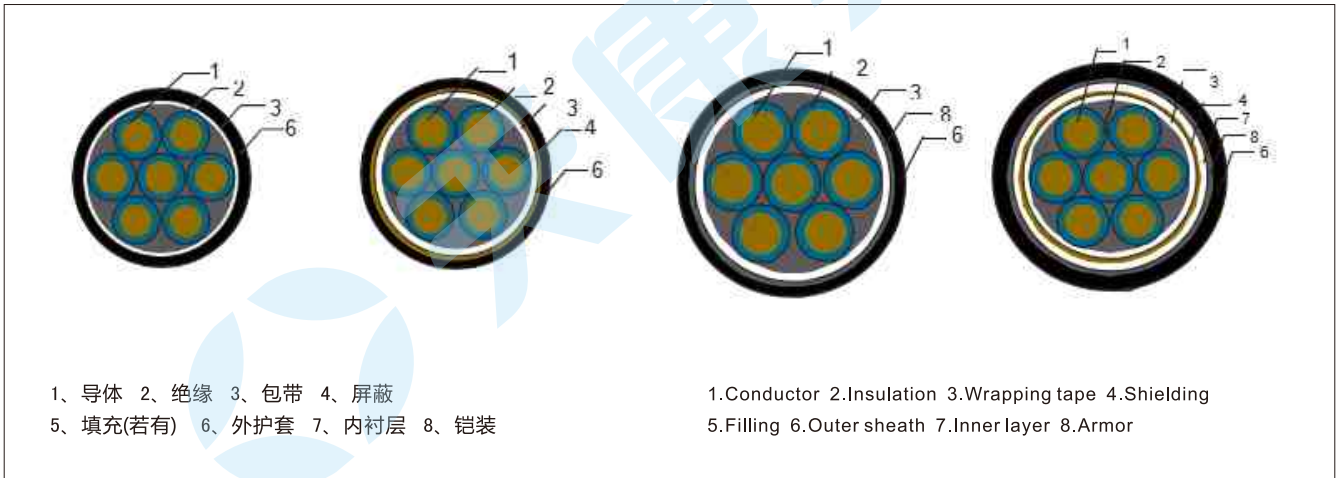
项目 Item	代号 Code	说明 Description
阻燃特性 Flame-retarding characteristics	ZRA/ZA	A类阻燃 Flame retardance of category A
	ZRB/ZB	B类阻燃 Flame retardance of category B
	ZRC/ZC	C类阻燃 Flame retardance of category C
系列代号 Series number	K	控制电缆 Control cable
绝缘材料 Insulation material	F	聚全氟乙丙烯 FEP
护套材料 Sheath material	F	聚全氟乙丙烯 FEP
屏蔽材料 Shielding material	P	铜丝编织屏蔽 Copper wire braided shielding
	P1	镀锡铜丝编织屏蔽 Tinned copper wire braided shielding
	P2	铜带屏蔽 Copper tape shielding
铠装材料 Armoring material	92	细钢丝编织铠装 Fine steel wire armored

注：可根据用户需要生产、设计特殊规格和型号电缆。

Note: we also produce cable with special specification and type according to the requirement of customer.

五、电缆的结构图

The figure of cable structure



六、电缆的规格如下表所示

Specification of Cable in Following Table

型号 Type	额定电压 V Rated voltage	导体标称截面 mm ² Nominal cross section of conductor area							
		0.5	0.75	1.0	1.5	2.5	4	6	10
		芯数 Core number							
KFF,KFG,KFFP KFGP,KFFP2	450/750	2~19				2~12			
KFFP,KFGP,FFRP KFGR,KFFR		2~19				-			
KFF92		-	7~61		2~61		2~12		
注：推荐的芯数系列为2、3、4、5、7、8、10、12、14、16、19芯，如用户有特殊需要，也可生产61芯以下任意芯数的电缆。 Note: Recommended series of core number 2,3,4,5,7,8,10,12,14,16,19. we also produce cables with any number of cores below 61 cores.									

七、主要技术指标

Main Technical Indices

标称截面 mm ² Nominal cross section area	导体结构根数/直径 mm Number of conductor/diameter	20℃导体直流电阻(Ω/km) Conductor DC resistance at 20℃		耐电压强度 Voltage withstanding stress
		不镀锡 Non tinned	镀锡 Tinned	
0.5	1/0.8	36.0	36.7	3kV/5min绝缘无击穿 Insulation without puncture
	7/0.30	36.0	36.7	
	16/0.20	39.0	40.1	
0.75	1/0.97	24.5	24.8	
	7/0.37	24.5	24.8	
	24/0.20	26.0	26.7	
1.0	1/1.13	18.1	18.2	
	7/0.43	18.1	18.2	
	32/0.20	19.5	20.0	
1.5	1/1.38	12.1	12.2	
	7/0.52	12.1	12.2	
	30/0.25	13.3	13.7	
2.5	1/1.78	7.41	7.56	
	7/0.68	7.41	7.56	
	19/0.41	7.41	7.56	
	49/0.25	7.98	8.21	
4	1/2.25	4.61	4.70	
	7/0.68	4.61	4.70	
	19/0.52	4.61	4.70	
	56/0.30	4.95	5.09	
6	1/2.76	3.08	3.11	
	7/1.04	3.08	3.11	
	19/0.64	3.08	3.11	
	84/0.30	3.30	3.39	
10	7/1.35	1.83	1.84	

八、常用规格结构尺寸及参考重量如下表

The usual specification structure size and reference weight are shown in the table below.

Table 1 KFF、KFFP、KFFP2

芯数×标称截面 mm ² Core No.*nominal cross	线芯结构(根数/直径) mm Core structure (No./Diameter)	最大外径 mm Max. outer diameter			参考重量kg/km Reference weight		
		KFF	KFFP	KFFP2	KFF	KFFP	KFFP2
2×0.5	1/0.80	4.5	5.4	5.0	35	51	69
2×0.75	1/0.97	4.9	5.8	5.4	45	63	84
2×1.0	1/1.13	5.2	6.1	5.7	52	72	95
2×1.5	1/1.38	5.8	6.7	6.3	65	86	111
2×2.5	1/1.78	6.5	7.4	7	92	118	151
2×4	1/2.25	7.8	8.7	8.3	142	165	175
2×6	1/2.76	8.9	9.8	9.4	211	245	279
3×0.5	1/0.80	4.7	5.6	5.2	44	62	80
3×0.75	1/0.97	5.2	6.1	5.7	57	77	99
3×1.0	1/1.13	5.3	6.2	5.8	69	89	114
3×1.5	1/1.38	6.1	7	6.6	88	110	141
3×2.5	1/1.78	7.1	8	7.6	126	153	191
3×4	1/2.25	8.5	9.4	9	215	255	278
4×0.5	1/0.80	5.1	6	5.6	54	73	94
4×0.75	1/0.97	5.7	6.6	6.2	70	92	118
4×1.0	1/1.13	6.2	7.1	6.7	86	109	140
4×1.5	1/1.38	6.8	7.7	7.3	111	136	174
4×2.5	1/1.78	7.7	8.6	8.2	157	187	234
4×4	1/2.25	9.6	10.5	10.1	270	295	311
5×0.5	1/0.80	5.9	6.8	6.4	64	85	110
5×0.75	1/0.97	6.4	7.3	6.9	85	108	138
5×1.0	1/1.13	6.8	7.7	7.3	103	129	165
5×1.5	1/1.38	7.5	8.4	8	134	162	207
5×2.5	1/1.78	8.8	9.7	9.3	191	224	280
5×4	1/2.25	10.6	11.5	12.1	325	362	395
7×0.5	1/0.80	6.3	7.3	6.8	82	106	136
7×0.75	1/0.97	7.1	8.1	7.6	110	136	174
7×1.0	1/1.13	7.4	8.4	7.9	135	164	208
7×1.5	1/1.38	8.2	9.2	8.7	177	208	260
7×2.5	1/1.78	9.5	10.5	10	262	300	369
7×4	1/2.25	11.6	12.6	12.1	415	458	485
8×0.5	1/0.80	6.8	7.8	7.3	97	122	150
8×0.75	1/0.97	7.5	8.5	8	128	157	192
8×1.0	1/1.13	7.9	8.9	8.4	157	189	229
8×1.5	1/1.38	8.7	9.7	9.2	207	241	284
8×2.5	1/1.78	10.3	11.3	10.8	314	367	426

Sequel table1 KFF、KFFP、KFFP2

芯数×标称截面 mm² Core No.*nominal cross	线芯结构(根数/直径) mm Core structure (No./Diameter)	最大外径 mm Max. outer diameter			参考重量kg/km Weight for reference		
		KFF	KFFP	KFFP2	KFF	KFFP	KFFP2
10×0.5	1/0.80	7.9	8.9	8.4	113	153	188
10×0.75	1/0.97	8.7	9.7	9.2	152	186	227
10×1.0	1/1.13	9.3	10.3	9.8	202	241	292
10×1.5	1/1.38	10.3	11.3	10.8	263	316	373
10×2.5	1/1.78	12.1	13.1	12.6	378	442	513
12×0.5	1/0.80	8.2	9.2	8.7	130	161	198
12×0.75	1/0.97	9.0	10	9.5	177	212	259
12×1.0	1/1.13	9.6	10.6	10.1	233	274	332
12×1.5	1/1.38	10.8	11.8	11.3	305	360	425
12×2.5	1/1.78	12.5	13.5	13	442	508	589
14×0.5	1/0.80	8.8	9.8	9.3	147	179	220
14×0.75	1/0.97	9.9	10.9	10.4	215	255	311
14×1.0	1/1.13	11.5	12.6	12.3	265	319	386
14×1.5	1/1.38	11.6	12.7	12.4	350	409	483
14×2.5	1/1.78	13.3	14.4	14.1	533	613	675
16×0.5	1/0.80	9.5	10.6	10.3	165	199	245
16×0.75	1/0.97	10.4	11.5	11.2	241	282	344
16×1.0	1/1.13	11.0	12.1	11.8	298	355	430
16×1.5	1/1.38	13.0	14.3	13.8	394	457	539
16×2.5	1/1.78	15.1	16.4	16.0	604	694	764
19×0.5	1/0.80	10.3	11.4	11.1	205	243	296
19×0.75	1/0.97	11.3	12.4	12.1	279	336	407
19×1.0	1/1.13	12.7	14.0	14.0	345	407	480
19×1.5	1/1.38	13.7	15.2	14.8	459	525	609
19×2.5	1/1.78	16.0	17.2	16.8	707	813	894
24×0.5	1/0.80	11.7	12.8	12.5	255	312	378
24×0.75	1/0.97	13.2	14.4	14.0	348	414	489
24×1.0	1/1.13	15.2	16.4	16.0	423	486	535
24×1.5	1/1.38	15.9	17.1	17.0	586	674	741
24×2.5	1/1.78	19.1	20.6	20.1	901	1036	1139
27×0.5	1/0.80	12.2	13.7	13.2	280	339	410
27×0.75	1/0.97	13.4	14.9	14.5	384	452	533
27×1.0	1/1.13	14.5	16.5	16.0	469	539	593
27×1.5	1/1.38	16.3	18.0	17.5	651	749	824
27×2.5	1/1.78	19.5	21.0	20.5	1002	1153	1268
30×0.5	1/0.80	12.6	14.2	13.6	307	367	444
30×0.75	1/0.97	13.7	15.4	14.7	422	485	534
30×1.0	1/1.13	14.6	17.0	15.6	516	593	652
30×1.5	1/1.38	16.9	18.6	18.1	718	825	908
30×2.5	1/1.78	20.3	21.8	21.3	1106	1271	1399

Sequel table1 KFF、KFFP、KFFP2

芯数×标称截面 mm² Core No.*nominal cross	线芯结构(根数/直径) mm Core structure (No./Diameter)	最大外径 mm Max. outer diameter			参考重量kg/km Weight for reference		
		KFF	KFFP	KFFP2	KFF	KFFP	KFFP2
33×0.5	1/0.80	13.1	14.6	14.1	333	396	479
33×0.75	1/0.97	14.2	15.5	15.0	460	529	582
33×1.0	1/1.13	15.2	16.7	16.2	563	648	712
33×1.5	1/1.38	17.8	19.3	18.8	797	917	1008
33×2.5	1/1.78	21.1	--	--	1209	--	--
37×0.5	1/0.80	13.6	15.2	14.6	268	434	525
37×0.75	1/0.97	14.8	16.3	15.8	510	587	645
37×1.0	1/1.13	15.9	17.6	17.1	625	719	791
37×1.5	1/1.38	18.5	20.0	19.5	886	1018	1120

37×2.5	1/1.78	22.0	--	--	1346	--	--
44×0.5	1/0.80	14.3	15.6	15.1	433	497	547
44×0.75	1/0.97	16.9	18.4	17.9	615	707	777
44×1.0	1/1.13	18.1	19.6	19.1	752	865	951
44×1.5	1/1.38	20.9	21.9	--	1047	1205	--
48×0.5	1/0.80	14.5	16.0	15.5	467	537	590
48×0.75	1/0.97	17.2	18.7	18.2	663	763	839
48×1.0	1/1.13	18.4	19.9	19.4	813	935	1028
48×1.5	1/1.38	21.3	--	--	1134	--	--
52×0.5	1/0.80	15.0	16.5	16.0	502	577	634
52×0.75	1/0.97	17.7	19.2	18.7	713	820	902
52×1.0	1/1.13	18.9	20.4	19.9	875	1006	1107
52×1.5	1/1.38	21.9	--	--	1222	--	--

Sequel table 2 KFFR、KFFRP、KFFRP2

芯数×标称截面 mm² Core No.*nominal cross	线芯结构(根数/直径) mm Core structure (No./Diameter)	最大外径 mm Max. outer diameter			参考重量kg/km Weight for reference		
		KFF	KFFP	KFFP2	KFF	KFFP	KFFP2
2×0.5	16/0.20	5.1	6.3	5.7	38	55	74
2×0.75	24/0.20	5.9	7.1	6.5	50	68	92
2×1.0	32/0.20	6.3	7.5	6.9	58	79	104
2×1.5	30/0.25	6.7	7.9	7.3	72	94	121
2×2.5	49/0.25	8.5	9.7	9.1	104	132	169
3×0.5	16/0.20	5.4	6.6	6	48	66	85
3×0.75	24/0.20	6.4	7.6	7	64	86	85
3×1.0	32/0.20	6.8	8	7.4	76	98	125
3×1.5	30/0.25	7.3	8.5	7.9	97	121	155
3×2.5	49/0.25	8.9	10.1	9.5	144	173	216
4×0.5	16/0.20	5.9	7.1	6.5	59	79	102
4×0.75	24/0.20	7.0	8.2	7.6	80	102	131
4×1.0	32/0.20	7.6	8.8	8.2	96	121	155
4×1.5	30/0.25	8.1	9.3	8.7	123	149	191
4×2.5	49/0.25	9.8	11	10.4	181	213	266
5×0.5	16/0.20	6.4	7.6	7	69	91	117
5×0.75	24/0.20	7.7	8.9	8.3	96	121	155
5×1.0	32/0.20	8.4	9.6	9	116	143	183
5×1.5	30/0.25	8.9	10.1	9.5	149	178	228
5×2.5	49/0.25	10.6	11.8	11.2	219	255	319
7×0.5	16/0.20	7.2	8.4	7.8	90	115	147
7×0.75	24/0.20	8.5	9.7	9.1	125	153	196
7×1.0	32/0.20	9.1	10.3	9.7	151	182	233
7×1.5	30/0.25	9.7	10.9	10.3	197	230	288
7×2.5	49/0.25	11.8	13	12.4	303	343	422
8×0.5	16/0.20	7.9	9.1	8.5	105	133	164
8×0.75	24/0.20	9.2	10.4	9.8	145	176	215
8×1.0	32/0.20	9.9	11.1	10.5	177	210	254
8×1.5	30/0.25	10.6	11.8	11.2	231	267	315
8×2.5	49/0.25	12.8	14	13.4	262	418	485
10×0.5	16/0.20	9.1	10.3	9.7	124	156	192
10×0.75	24/0.20	10.8	12	11.4	173	210	256
10×1.0	32/0.20	11.6	12.8	12.2	227	269	325
10×1.5	30/0.25	12.4	13.6	13	294	350	413
10×2.5	49/0.25	15.4	16.6	16	438	507	588
12×0.5	16/0.20	9.4	10.6	10	142	172	212
12×0.75	24/0.20	11.2	12.4	11.8	200	238	290
12×1.0	32/0.20	12.0	13.2	12.6	261	304	368
12×1.5	30/0.25	12.8	14	13.4	340	398	470
12×2.5	49/0.25	16.0	17.2	16.6	512	584	677

Sequel table 2 KFFR、KFFRP、KFFRP2

芯数×标称截面 mm ² Core No.*nominal cross	线芯结构(根数/直径) mm Core structure (No./Diameter)	最大外径 mm Max. outer diameter			参考重量kg/km Weight for reference		
		KFF	KFFP	KFFP2	KFF	KFFP	KFFP2
14×0.5	16/0.20	9.9	11.0	10.6	162	196	241
14×0.75	24/0.20	10.7	11.8	11.4	244	286	349
14×1.0	32/0.20	12.8	13.9	13.5	298	355	430
14×1.5	30/0.25	13.7	14.8	14.4	390	452	533
14×2.5	49/0.25	16.3	17.4	17	597	687	756
16×0.5	16/0.20	10.4	11.5	11.1	181	217	267
16×0.75	24/0.20	12.4	13.5	13.1	274	318	388
16×1.0	32/0.20	13.5	14.6	14.2	335	396	479
16×1.5	30/0.25	14.5	15.6	15.2	440	506	597
16×2.5	49/0.25	17.2	18.3	17.9	625	719	791
19×0.5	16/0.20	11.0	12.1	11.7	225	265	323
19×0.75	24/0.20	13.3	14.4	14	318	385	466
19×1.0	32/0.20	14.3	15.4	15	389	454	536
19×1.5	30/0.25	14.8	15.9	15.5	507	583	641
19×2.5	49/0.25	18.3	19.4	19	792	850	1002
24×0.5	16/0.20	13.1	14.2	13.8	281	341	413
24×0.75	24/0.20	14.4	15.5	15.1	388	446	491
24×1.0	32/0.20	15.3	16.4	16	456	524	577
24×1.5	30/0.25	17.8	18.9	18.5	635	730	803
24×2.5	49/0.25	22.3	23.4	23	1009	--	--
27×0.5	16/0.20	13.4	14.5	14.1	308	370	448
27×0.75	24/0.20	14.4	15.5	15.1	429	494	543
27×1.0	32/0.20	15.3	16.4	16	505	581	639
27×1.5	30/0.25	17.8	18.9	18.5	705	811	892
27×2.5	49/0.25	22.3	23.4	23	1122	--	--
30×0.5	16/0.20	13.9	15	14.6	338	402	486
30×0.75	24/0.20	15.0	16.1	15.7	472	543	597
30×1.0	32/0.20	15.9	17	16.6	556	639	703
30×1.5	30/0.25	18.5	19.6	19.2	777	894	983
33×0.5	16/0.20	13.9	15	14.6	366	433	524
33×0.75	24/0.20	15.6	16.7	16.3	515	592	651
33×1.0	32/0.20	16.6	17.7	17.3	607	698	765
33×1.5	30/0.25	19.5	20.6	20.2	860	995	1101
37×0.5	16/0.20	14.5	15.6	15.2	420	480	530
37×0.75	24/0.20	16.2	17.3	16.9	568	650	720
37×1.0	32/0.20	17.3	18.4	18	670	775	855
37×1.5	30/0.25	20.3	21.4	21	965	1150	1215
44×0.5	16/0.20	16.3	17.4	17	495	570	625
44×0.75	24/0.20	18.5	19.6	19.2	685	785	870
44×1.0	32/0.20	19.7	20.8	20.4	810	935	1050
48×0.5	16/0.20	16.8	17.9	17.5	536	616	678
48×0.75	24/0.20	18.9	20.0	19.6	742	854	945
48×1.0	32/0.20	20.6	21.7	21.3	880	1108	1172
52×0.5	16/0.20	17.5	18.6	18.2	582	665	735
52×0.75	24/0.20	19.5	20.6	20.2	799	925	1015
52×1.0	32/0.20	20.8	21.9	21.5	945	1100	1205

九、交货长度

根据双方协议允许任何长度交货；
长度计量误差不超过±0.5%。

Delivery length

Delivery length of cable depends on both agreements with
length error allowance of ±0.5%.