东峰电缆
DONGFENG CABLE
江苏东峰电缆有限公司
JIANG SU DONGFENG CABLE CO.,LTD.

产品选型手册
PRODUCT SELECTION MANUAL

江苏东峰电缆有限公司
JIANG SU DONGFENG CABLE CO.,LTD.

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企业微信公众号

特种电缆
SPECIAL CABLE

铝合金芯电缆
ALUMINUM ALLOY CONDUCTOR CABLE

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企业简介

BRIEF INTRODUCTION TO ENTERPRISE

一、企业概况

江苏东峰电缆有限公司创建于1988年，是集科研，开发生产各种电线电缆为一体的高科技民营企业。目前公司注册资金3.08亿元、总资产达23亿元。公司厂区面积16万平方米，建筑面积12万平方米，拥有江苏省级技术中心一个，职工人数585余人，其中各类中高级职称技术人员188人，年销售收入为30亿元。

企业近年来分别被上级政府和主管部门命名为“高新技术企业”、“江苏省知名企业”、“江苏省质量诚信企业”、“无锡市先进集体”、“无锡市双文明单位”、“AAA级信用企业”、“重合同守信用企业”、“全国用户满意企业”。“云峰”牌电线电缆获得“中国驰名商标”、“江苏省名牌产品”、“中国知名品牌”等荣誉称号。2020年在全国人民抗击“新冠肺炎”战役中，我公司参与捐助湖北武汉“雷神山”、“火神山”医院的建设重任，并受到中建三局集团有限公司发来的感谢信和武汉红十字会的荣誉证书；2016年东峰电缆参与“神舟十一号”载人航天飞船脐带塔平台控制系统用电缆经任务检验，性能稳定、工作可靠，并收到了中国酒泉卫星发射中心寄来的感谢信，感谢公司为祖国航天事业作出的巨大贡献。企业连续多年在质量、服务、信誉方面赢得广大客户好评，被中国保护消费者基金会评为“服务诚信让消费者满意”企业，已成为我国电缆行业重点企业之一。

二、主要产品

公司现有的主要产品是：220kV、110kV、66kV高压电力电缆；35kV及以下中低压交联聚乙烯绝缘电力电缆、35kV、10kV、1kV架空绝缘电缆、0.6/1kV聚氯乙烯绝缘电力电缆、电气装备用电线电缆、通用橡套电缆、矿用电缆、电焊机电缆、控制电缆、计算机电缆、铝绞线及钢芯铝绞线等；涉及的电缆材料有：超净可交联聚乙烯、超光滑半导电屏蔽料、聚氯乙烯、聚乙烯、交联聚乙烯、天然胶与合成橡胶及其他特种高分子材料；并重点开发了低烟无卤、低烟低卤、分支电缆及各种环保型、阻燃型、耐火型、屏蔽型、氟塑料耐高温电缆等特种产品。目前我公司生产电缆导体最大截面为2500mm²。

三、技术装备及生产能力

本公司坚持以科技进步为动力，不断进行技术改造，拥有国际先进水平的中压、高压、超高压交联电缆生产线6条，其中包括德国TROESTER公司的500kV立式（VCV）交联生产一条，芬兰Maillefer公司的220kV悬链式（CCV）交联生产一条，以及其他悬链生产线4条，每条交联线均配置了德国希科拉（Sikora）公司的在线偏芯厚度测试仪。高压局放设备采用美国凤凰Phenix（LDIC）公司进口的700kV交流谐振测试系统。并配套国内外一流的其他主要生产设备300余台套，检测设备200余台套，目前已形成年生产电线电缆200万公里的能力，并均可按国家或国际先进标准生产，也可按用户要求组织生产和供货。

四、质量保证体系

质量方针：云峰品牌，绿色能源的纽带，以人为本，企业服务的宗旨。

质量是企业的生命，百分之百的合格不能令我们满足，百分之百的优秀才是“东峰”的追求。江苏东峰电缆有限公司质量管理体系完善，设有技术中心、质量检测中心等质量保证机构，通过质量体系ISO9001认证、环境管理体系通过ISO14001认证，职业健康安全管理体系通过GB/T28001-2001认证，企业将利用我国大力发展电力事业的机遇，充分发挥自身的优势，适应市场的需求，努力建设创新型企业，以一流的产品为新老客户服务!

江苏东峰电缆有限公司
JIANGSU DONGFENG CABLE CO.,LTD.

生产装备 Manufacturing equipment





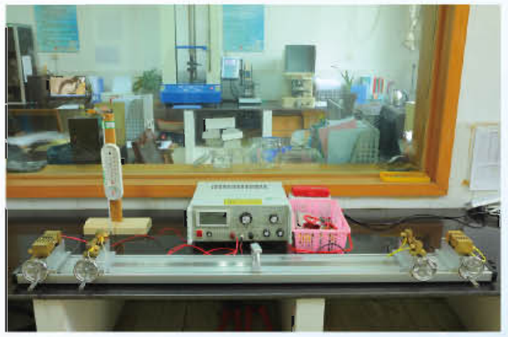
生产装备 Manufacturing equipment





生产装备 Manufacturing equipment

检测设备 Testing equipment



办公大楼

江苏东峰电缆有限公司
JIANGSU DONGFENG CABLE CO.,LTD.

DONGFENG CABLE 目 录
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A、特种电缆
SPECIAL CABLE

江苏东峰电缆有限公司
JIANGSU DONGFENG CABLE CO.,LTD.

耐高温电线电缆
High temperature resistant wire and cable

产品标准 Standard

企业标准 Enterprise Standards

适用范围 Applications

本产品在高温200℃及以下能保持较好的机械物理性能及电气性能，且具有耐溶剂、耐腐蚀、耐高温等特性，适用于高温等一些使用条件恶劣，额定电压0.6/lkV及以下配电网、工业装置、控制回路、信号传输的回路中使用。

This product can keep a good physical and mechanical properties and electrical properties when temperature at 200℃ or bellow. It has good performance of solvent resistance、corrosion resistance、high temperature resistance. It is suitable for in bad conditions such as high temperature, for loop of distribution network、industrial device、control loop and signal transmission for rated voltage 200℃ and bellow.

使用特性 Operating characteristics

1、额定电压：0.6/1kV及以下。

2、电缆导体的长期允许工作温度：硅橡胶绝缘为180℃，氟塑料绝缘为200℃。

3、电缆敷设温度应不低于0℃。

4、允许弯曲半径：无铠装层或有屏蔽结构软电缆应不小于电缆外径的12倍；有铠装层或铜带屏蔽结构的电缆应不小于电缆外径的15倍。

1、Rated voltage：up to and including 0.6/lkV

2、Permissible Max. continuous operating temperature of conductor：silicon rubber insulated 180℃，fluoroplastic insulated 200℃.

3、Ambient temperature of installation not less than 0℃

4、The allowable bending radius：not less than 12 times of cable diameter for non-armored cable or screened flexible cable；not less than 15 times of cable diameter for armored cable or copper tape screened cable.

电缆的型号和名称 Type and name of cable

代 号 Code	名 称 Name
F系列 Series F	氟塑料绝缘系列 Fluoroplastic insulated series
G系列 Series G	硅橡胶绝缘系列 Silicon rubber insulated series

生产范围 Products' Range

额定电压0.6/lkV及以下电力电缆、额定电压450/750V及以下电线、控制电缆、仪表电缆等。

Power cable for rated power frequency voltage 0.6/lkV、wire、control cable、measuring cable for rated voltage at 0.6/lkV and bellow.

电缆的主要技术性能 Main technical characteristic of cable

1、20℃时的导体直流电阻符合GB/T 3956的规定。

2、电缆能经受5min、3500V耐压试验。

3、阻燃和耐火电缆能通过GB/T 19666规定的燃烧试验。

1、The D.C resistance at 20℃ of conductor should conform to GB/T 3956.

2、The cable should withstand 300V voltage test for 5 minutes.

3、The fire-retardant and fire-resistant cable should be made firing tests regulated in GB/T 19666

防白蚁、防鼠电线电缆
Termite and rodent resistant cables

产品标准 Standard

企业标准 Enterprise Standards

适用范围 Applications

本产品采用环保性电缆护套材料，适用于有昆虫或啮齿动物的噬咬以及来自白蚁和蚂蚁破坏的条件恶劣环境中使用。

This product is environmentally friendly nature of cable jacket materials for insects or rodents bite and damage from termites and ants used in harsh environment conditions.

使用特性 Operating characteristics

1、额定电压(U_0/U)，按不同产品系列分别从300/300V到26/35kV。

2、电缆的最高长期允许工作温度，执行相应电线电缆标准的规定。

3、电缆在环境温度不低于0℃敷设时，无需预先加温，敷设时不受落差限制。

4、电缆弯曲半径，执行相应电线电缆标准的规定。

1、Rated voltage：from 300/300V to 26/35kV according to different series

2、Permissible Max. Continuous operating temperature of conductor：according to the relevant standards of wire and cable

3、When cable is laid in ambient temperature 0℃，is need not permeation and limitation of fall.

4、The allowable bending radius：shall be according to the relevant standards of wire and cable

电缆的型号和名称 Type and name of cable

代 号 Code	名 称 Name
FY-X	防白蚁电缆 Termite resistant cable
FSH-X	防鼠电缆 Rodent resistant cable
FSY-X	防白蚁、防鼠电缆 Termite and rodent resistant cable

注：X表示普通电缆的型号规格。Note：X means the type and specification of the ordinary cable

生产范围 Products' Range

额定电压26/35kV及以下电力电缆、额定电压450/750V及以下电线、控制电缆、仪表电缆等。

Power cable for rated power frequency voltage26/35kV、wire control cable、measuring cable for rated voltage at 450/750V and bellow.

电缆的主要技术性能 Main technical characteristic of cable

1、防白蚁电缆(FY)

Termite resistant cable (FY)

电缆具有长期防止白蚁破坏的性能。

Cable has good performance of preventing termite biting in the long run

2、防鼠电缆(FSH)

Rodent resistant cable(FSH)

电缆具有长期防止鼠破坏的性能。

Cable has good performance of preventing mouse biting in the long run

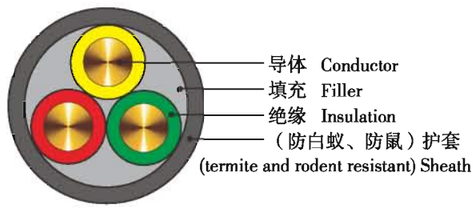
3、防白蚁、防鼠电缆(FSY)

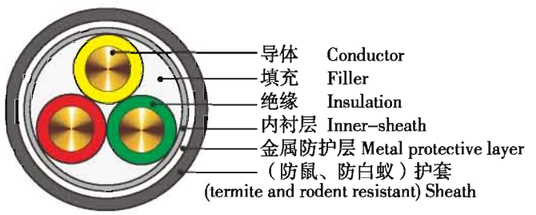
Termite and rodent resistant cable(FSY)

电缆具有长期防止白蚁和鼠破坏的性能。

Cable has good performance of preventing termite and mouse biting in the long run

电缆结构图 Construction of cable





防水系列
Water proof series

产品标准 Standard

企业标准 Enterprise Standards

适用范围 Applications

本产品具备径向或纵向防水功能，适合于潮湿、或长期有水浸泡、对设备安全要求较高的场所。

This product has the radial and longitudinal water proof funcation and fits for using in wet places or those places under water or where equipment safty standard is high.

使用特性 Operating characteristics

1、额定电压(U_0/U)，按不同产品系列分别从300/300V到26/35kV。

1、Rated voltage：from 300/300V to 26/35kV according to different series.

2、电缆的最高长期允许工作温度，执行相应电线电缆标准的规定。

2、Permissible Max. Continuous operating temperature of conductor：according to the relevant standards of wire and cable.

3、电缆在环境温度不低于0℃敷设时，无需预先加温，敷设时不受落差限制。

3、When cable is laid in ambient temperature 0℃，is need not permeation and limitation of fall.

4、电缆具有径向或纵向防水功能。

4、Cable has the radial or vertical direction waterproof function.

5、电缆弯曲半径不小于20倍电缆外径。

5、The allowable bending radius：not less than 20 times of the cable diameter.

电缆的型号和名称 Type and name of cable

代 号 Code	名 称 Name
FS-X	防水电缆 Water proof series

注：X表示普通电缆的型号规格。

Note：X means the type and specification of the ordinary cable

生产范围 Products' Range

额定电压26/35kV及以下电力电缆、额定电压450/750V控制电缆、仪表电缆等。

Power cable for rated voltage 26/35kV and bellow，control cable and measuring cable for rated voltage 450/750V.

主要技术性能 Main technical characteristic of cable

1、径向防水电缆。

radial direction waterproofing cable

绝缘表面无水分，绝缘电阻变化率不大于5%。

Insulated surface with no water，the rate of change of electric resistance no higher than 5%

2、纵向防水电缆

vertical direction waterproofing cable

电缆通过GB/T 12706规定的透水试验。

Cable should be made permeable tests regulated in GB/T 12706

环保型直流电缆
Eco-friendly direct current cable

产品标准 Standard

企业标准 Enterprise Standards

适用范围 Applications

本产品具有柔软、低烟、无卤、低毒、防水、防鼠等特点，适用于地铁、轻轨等交通工程。

This product has good performance of non-halogen、low-smoke、low mammalian toxicity、waterproof and termite resistant. It is suitable for the traffic projects such as subway and light-weight track.

使用特性 Operating characteristics

1、额定电压1500V。

1、Rated voltage：1500V

2、电缆的最高长期允许工作温度为90℃。

2、Permissible Max. Continuous operating temperature of conductor：90℃

3、电缆在环境温度不低于0℃敷设时，无需预先加温，敷设时不受落差限制。

3、When cable is laid in ambient temperature 0℃，there is no need of preheating and limitation of fall.

4、电缆弯曲半径不小于12倍电缆外径。

4、The allowable bending radius: not less than 12 times of the cable diameter.

电缆的型号和名称 Type and name of cable

代 号 Code	名 称 Name
(FZ-FSY)-WD-TZYJY	（防紫外线、防鼠防蚁）铜芯交联聚乙烯绝缘热塑型聚烯烃护套无卤低烟直流电缆 (UV protection and termite and rodent resistant) Copper conductor XLPE insulated thermoplastice type polyolefin sheathed non-halogen and low-fume power cable
(FZ-FSY)-WD-TZYJTJ	（防紫外线、防鼠防蚁）铜芯交联聚乙烯绝缘热固型聚烯烃护套无卤低烟直流电缆 (UV protection and termite and rodent resistant) Copper conductor XLPE insulated thermosetting type polyolefin sheathed non-halogen and low-fume power cable
(FZ-FSY)-WD-TZEY	（防紫外线、防鼠防蚁）铜芯乙丙绝缘热塑型聚烯烃护套无卤低烟直流电缆 (UV protection and termite and rodent resistant) Copper conductor ethylene-propylene insulated thermoplastics type polyolefin sheathed non-halogen and low-fume power cable
(FZ-FSY)-WD-TZEYJ	（防紫外线、防鼠防蚁）铜芯乙丙绝缘热固型聚烯烃护套无卤低烟直流电缆 (UV protection and termite and rodent resistant) Copper conductor ethylene-propylene insulated thermosetting type polyolefin sheathed non-halogen and low-fume power cable

注：可根据要求，生产ZA、ZB、ZC级阻燃型电缆。

Note：ZA、ZB、ZC flame retardant Cable may be supplied according to request

生产范围 Products' Range

截面积400mm²及以下直流电缆。

Direct current cable for sectional area at 400mm² and bellow.

主要技术性能 Main technical characteristic of cable

1、正常运行时导体最高允许温度90℃，短路(最长持续5s)250℃。

2、导体直流电阻符合相应的标准要求。

3、电缆通过3.5kV交流或8.4kV直流耐压试验。

4、无卤电缆透光率不小于60% 。

5、无卤电缆燃烧时逸出气体的PH值不小于4.3，电导率不大于10 μs/mm。

1、Permissible Max. Continuous operating temperature of conductor no higher than 90℃，upon short circuit (Max. Duration time 5s)250℃.

2、Conductor direct-current resistance should according to relevant standard.

3、Cable should be made 3.5kV alternating current resistance withstand voltage or 8.4kV Direct current withstand voltage tests

4、Light transmittance of no-halogen cable not less than 60%.

5、PH of escaping gas of burning no-halogen cable not less than 4.3.conductivity no higher than 10 μs/mm.

光伏电缆
Photovoltaic cable

产品标准 Standard

本产品按2PfG 1169/08.2007 EN50618:2014《光伏电缆要求》标准生产。

The product is manufactured according to the 2 PfG 1169/08.2007 EN50618:2014 "The Requirements of Photovoltaic Cable" standard.

适用范围 Applications

2PfG 1169/08.2007 EN50618:2014适用于最高允许1.8kV(线芯对线芯，非接地系统）直流电压、在光伏系统中DC侧（光伏装置中从光伏电池到光伏换流器直流端子之间的部分）使用的单芯软电缆（电线），该产品适合于Ⅱ类安全等级下使用，电缆可以多根并联使用。

2 PfG 1169/08.2007 EN50618:2014 covers the single core flexible cables(wires)used in DC sides of photovoltaic system which max. permissible DC voltage is 1.8kV(line to line, non ground system). The product is applicable to the environment which safety degree is under Class Ⅱ, and it can be parallel used.

使用特性 Operating characteristics

- 额定电压：AC 0.6/1kV； DC 1.8kV，AC 1.0/1.0kV；DC 1.5kV。
  Rated voltage:AC 0.6/1kV； DC 1.8kV，AC 1.0/1.0kV；DC 1.5kV.
- 工作温度：–40～90℃；
  Operating temperature:–40～90℃；
  最高导体温度：120℃；
  Max.short circuit temperature:+120℃;
  短时最高短路温度为+200℃；
  Max.conductor temperature:200℃;
  使用寿命不低于25年；
  Service life shall not be less then 25 years;
  具备良好的抗臭氧和耐酸碱特性；
  Ozone resistant and acid–resistant;
  优良的绝缘电阻；
  Good insulation resistance;
  良好的低温卷绕和低温弯曲性能；
  Good performance of cold bend and cold winding;
  电缆的低烟性能；
  Low–smoke;
  环保符合欧盟RoHS命令。
  Environmentally friendly, conforms to RoHS compliant.
- 电缆敷设时环境温度应不低于–20℃.
  For installation, the ambient temperature shall be not less than –20℃.
- 电缆弯曲半径：4D（D:电缆外径）。
  Bending radius of cable:4D(D:Overall diameter).

电缆的型号和名称 Type and name of cable

型　号 Type	名　称 Name
PV1–F	交联聚烯烃绝缘交联聚烯烃护套太阳能光伏电缆 Corssilinked polyolefin insulation crosslinked polyolefin sheath solar photovoltaic cable
H1Z2Z2–K	

电缆的生产范围 Production range of cable

型　号 Type	额定电压 Rated voltage	芯　数 No.of cores	导体截面 Cross Sectional Area	标　准 Standard
PV1–F	DC 1.8kV AC 0.6/1kV	1	1.5~35mm²	2PfG 1169/08.2007
H1Z2Z2–K	DC 1.5kV AC 1.0/1.0kV	1	1.5~240mm²	EN50618:2014

电缆结构尺寸及技术参数 Cable Structure Size and Technical Parameter

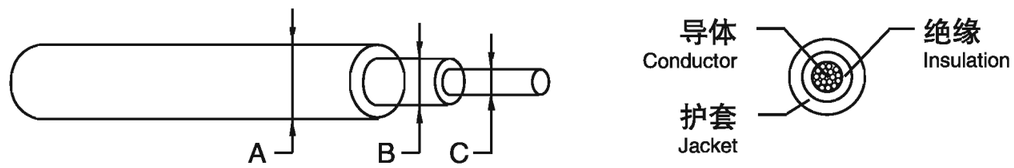
PV1-F 交联聚烯烃绝缘交联聚烯烃护套太阳能光伏电缆。
PV1-F crosslinked polyolefin insulation crosslinked polyolefin sheath solar photovoltaic cable

标称截面mm² Nominal cross sectional area mm²	(镀锡铜)导体种类 (tinned copper) conductor type	导体计算外径mm Calculated conductor overall diameter(mm)	电缆计算外径mm Calculated cable overall diameter (mm)	电缆计算重量kg/km Calculated cable weight(kg/km)	20℃导体最大直流电阻Ω/km Max.DC resistance at 20℃(Ω/km)
1.5	5	1.6	5.1	41	13.7
2.5	5	2.0	5.5	53	8.21
4	5	2.6	6.2	73	5.09
6	5	3.2	6.8	96	3.39
10	5	4.2	7.9	149	1.95
16	5	5.5	9.2	208	1.24
25	5	7.2	11.2	310	0.795
35	5	8.2	12.2	411	0.565

光伏发电系统H1Z2Z2火用电缆　H1Z2Z2 power cable of photovoltaic power generation system

导体芯数及标称截面积 Conductor core number and nominal sectional area	绝缘厚度规定值 Specified value of insulation thickness	护套厚度规定值 Specified value of sheath thickness	外径平均值上限参考值 Outside diameter average upper limit reference value	20℃时最小绝缘电阻 Minimum insulation resistance at 20℃	90℃时最小绝缘电阻 Minimum insulation resistance at 90℃
mm²	mm	mm	mm	MΩ · km	MΩ · km
1 × 1.5	0.7	0.8	5.4	860	0.85
1 × 2.5	0.7	0.8	5.9	690	0.69
1 × 4	0.7	0.8	6.6	580	0.58
1 × 6	0.7	0.8	7.4	500	0.50
1 × 10	0.7	0.8	8.8	420	0.42
1 × 16	0.7	0.9	10.1	340	0.34
1 × 25	0.9	1.0	12.5	340	0.34
1 × 35	0.9	1.1	14.0	290	0.29
1 × 50	1.0	1.2	16.3	270	0.27
1 × 70	1.1	1.2	18.7	250	0.25
1 × 95	1.1	1.3	20.8	220	0.22
1 × 120	1.2	1.3	22.8	210	0.21
1 × 150	1.4	1.4	25.5	210	0.21
1 × 185	1.6	1.6	28.5	200	0.20
1 × 240	1.7	1.7	32.1	200	0.20

电缆结构图 Cable Construction



电缆的载流量 Cable current-carrying capacity

环境温度：60℃
Ambient Temperature:60℃
最高导体温度：120℃
Max.Conductor temperature:120℃

表1 环境温度60℃时PV1-F电缆的载流量
Table 1 Current-carrying Capacity of PV1-F Cable under ambient temperature 60℃

标称截面 Nominal cross sectional area	安装类型 Installation Type		
	单芯电缆在自由流通空气中敷设 Single core cable laid in free circulation of air	单芯电缆地表敷设 Single core cable laid on the ground surface	地表相邻电缆 Parallel cable on the ground surface
mm²	A	A	A
1.5	30	29	24
2.5	40	39	33
4	55	52	44
6	70	67	57
10	98	93	79
16	132	125	107
25	176	167	142
35	218	207	176

表1 环境温度60℃时PV1-F电缆的载流量
Table 1 Current-carrying Capacity of PV1-F Cable under ambient temperature 60℃

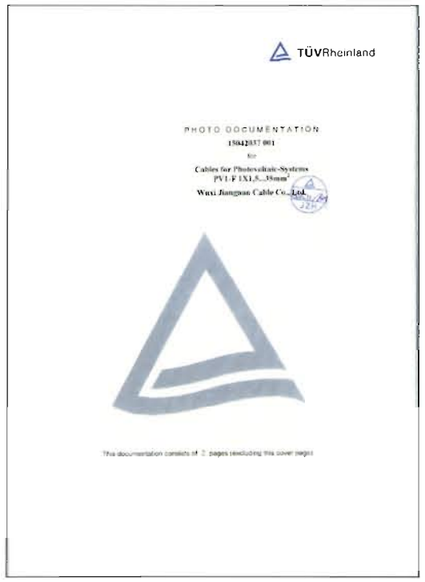
室温 Room temperature ℃	换算系数 conversion factor
60	1.00
70	0.91
80	0.82
90	0.71
100	0.58
110	0.41

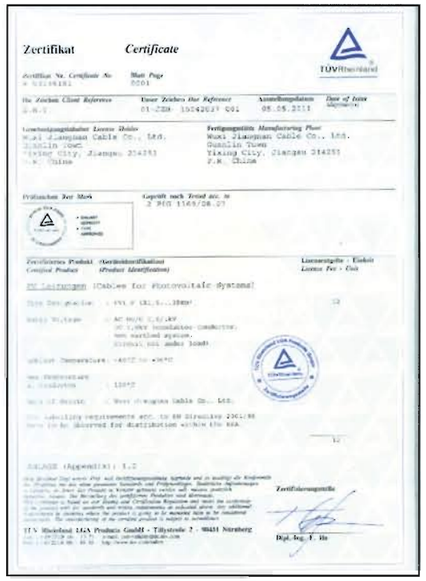
标称截面积 Nominal sectional area	根据敷设方法的载流量 Carrying capacity according to laying method		
	单根电缆悬空在空气中 A single cable is suspended in the air	单根电缆在表面上 A single cable is suspended in the air	在表面上两根接触的带负载电缆 A two load cable with two contacts on the surface
mm^2	A	A	A
1.5	30	29	24
2.5	41	39	33
4	55	52	44
6	70	67	57
10	98	93	79
16	132	125	107
25	176	167	142
35	218	207	176
50	276	262	221
70	347	330	278
95	416	395	333
120	488	464	390
150	566	538	453
185	644	612	515
240	775	736	620
环境温度：60℃（其他环境温度见下表） 导体最高温度：120℃ Ambient temperature: 60℃(See table below for other environmental temperatures) Maximum conductor temperature：120℃			
注：在120℃的导体最高温度下和90℃的最高环境温度下的预期使用时间限制为20000h。 Note: the expected operating time limit is 20000h at the maximum temperature of 120℃ and the highest ambient temperature at 90℃.			

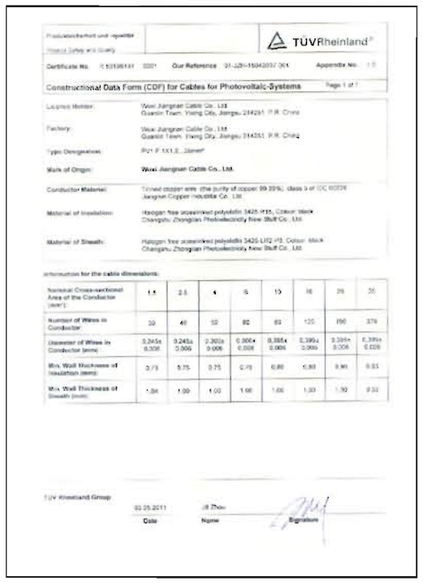
不同环境温度的额定电流换算因数 Rated current conversion factor at different ambient temperatures

环境温度℃ Ambient temperature℃	换算因数 Conversion factor
小于等于60	1.00
70	0.92
80	0.84
90	0.75

莱茵证书 TUV certificates







矿物绝缘电缆
Mineral Insulated Cable

电缆优越性/防爆·防腐·耐高温·耐损伤

Explosion Proof and High
Corrosion Resistance High Temperature Resistance Resistance to Mechanical Impact
Advantages of MI Cable

防爆 Explosion Proof

由于矿物绝缘电缆采用的铜护套是无缝铜管，而且氧化镁粉又是紧密压实的，可燃性气体、油汽、火焰就不能到达与电缆连接的电气设备，因此电缆具备防爆特性。

The MI cable is made up of seamless copper sheath，magnesium oxide powder compacted a tightly solid, So it can prevent the steam，gas and blaze into the electrical equipment connected with the cable. So it has the quality of explosion proof.

耐腐蚀 High Corrosion Resistance

由于铜有较好的耐腐蚀性，在正常使用的环境下不需要任何附加的保护，在特殊的环境条件下，如对铜有较强的腐蚀作用的环境中，只需在电缆外面增加一层塑料外护套就可以达到防腐性，所以电缆有很好的耐腐蚀性。

The copper sheath of MI cables has the self-character of high corrosion resistance. Only in any area where would corrode the copper，it must be covered with a PVC outer sheath to prevent the corrosion.

耐高温 High Temperature Resistance

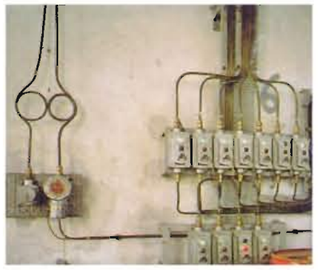
电缆可在250℃高温下连续正常工作，在接近铜的熔点1083℃下短时工作，而氧化镁绝缘材料此时不会发生任何性质的变化。该特性适合在冶金、水泥及其它高温环境中使用。

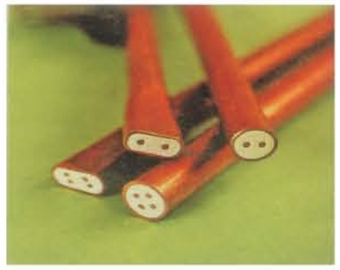
This cable works normally and continuously at 250℃ high temperature. works in a short time when it is close to 1083℃-the melting point of copper，and magnesia insulation material doesn't change in the nature. This characteristic is suitable to be used in metallurgy Cement and other high temperature environment.

耐机械损伤 Resistance to Mechanical Impact

由于电缆的导体、金属护套有一定的强度和韧性，氧化镁在电缆加工过程中又是经过高度压缩的，导体、护套、绝缘组成了一个密实的整体。所以电缆在遭受冲击弯曲、压扁、扭转等变形时护套不会损坏，芯线之间以及芯线和护套之间的相对位置保持不变，不会产生短路，也不会影响电气性能。

Because conductor and metal sheath of the cable have good strength and toughness，and magnesium oxide is highly compacted during Conductor，sheath and insulation constitutes a dense integral. The relative position between cores and between core and sheath keeps constant when suffering bending，wavering，torsion etc. So there is no short-circuit and electric property can not be influenced.





电缆/优越性能 Advantages of MI Cable

弯曲半径小、敷设空间小

Small curve radius，small space required for laying

矿物绝缘电缆是一密实的整体，最小弯曲半径不大于6D(D一电缆的直径)，所以安装方便，减少了线路敷设所占用的空间。适合代替母线槽，敷设在空间小的场所。

The mineral-insulated cable is of a compact body. with a minimum curve radius less than or equivalent to 6D (D being the diameter of the cable). Therefore, the installation of the cable is rather easy and doesn't take much space, making it an ideal substitute for busways to be laid in places where small space is required.

无烟无毒

NO Toxicity and Halogen-free

由于电缆全都是由无机物（金属铜和氧化镁粉）组成，因而即使在火灾条件下电缆不会自燃也不会产生烟雾和有毒气体，是真正意义上的安全、环保电缆。

This cable totally consists of inorganic materials (copper and magnesia powder)，So it doesn't self-ignite，produce smokes or toxic gases when fire breaks out. Therefore. it is a safe and environment. friendly cable in the real sense.

耐过载

High Overload

由于绝缘采用氧化镁，氧化镁的熔点是2800℃，与普通塑料电缆相比，矿物绝缘电缆的载流量可以提高一个截面等级，同时能承受相当大的过载，其过载能力可以达到正常载流量的10倍以上。

同时矿物绝缘电缆，过电压后可以很快恢复，不会损坏绝缘。

Since this cable makes use of magnesia whose melting point is 2800℃，compared with ordinary plastic cables，the current. carrying capacity of mineral insulated cable can be raised to a higher sectional level. At the same time. mineral insulated cable iS able to endure very great overload. which can be over 10 times larger than normal current-carrying capacity.

Mineral insulated cable recovers quickly after over-voltage，and its insulation is not harmed.

护套厚度减薄 Reduction of sheath thickness (mm)	250℃ 年（Year）	400℃ 年（Year）	800℃ 小时（Hour）
25.4	2.57	0.0583	0.259
50.8	10.3	0.233	1.04
127.0	64.3	1.46	6.48
254.0	257	5.83	25.9

寿命长

Long Service Life

由于电缆采用的材料全部是无机材料，不老化。使用寿命可以按照铜护套氧化腐蚀的速率来计算。资料显示(见P9)，护套氧化0.25mm在250℃的环境温度下需要257年，而矿物绝缘电缆的铜护套厚度一般都在0.31—1.17mm之间，实际使用温度又低于250℃，所以该电缆是一种永久性的电缆。

Because MI cable is made up of inorganic material without ageing, we can compute its l ife span according to oxide, etch velocity of copper tube. P9 It is reported that 0.25mm sheath will take 257years to oxide etch under the condition of 250℃, Also, the thickness of Ml cable sheath is 0.31–1.17mm and operating temperature is under 250℃, so MI cable has the quality of long service life.

铜护套可以作接地线

Copper Sheath as a Ground Wire

对于矿物绝缘电缆，由于铜护套的连续性和极低的接地电阻，因此可以作为接地导线使用。铜护套作为接地导线使用时接地连接线截面应符合JGJ232—2011《矿物绝缘电缆敷设技术规程》的规定。

The MI cable is a good ground wire, for continuity and extremely low grounding resistance, When the copper sheath is used as the grounding wire, the cross-section should comply with the regulation of JGJ232–2011 Technical specification for the laying of mineral insulated cables.

产品用途：由于矿物绝缘电缆具有的特殊性能，因此，它适用于额定电压1000V及以下的以下线路中：

Application: As MI cable has special performances, therefore can be used in fire circuit under 1000V as follows:

消防电气线路 Fire extinguishing system	应急照明线路 应急广播线路 Emergency lighting Emergency broadcasting	应急电梯和升降设备线路 Emergency exits and escalators
火灾报警控制线路 Fire alarm control circuit	计算机房控制线路 Computer information center	冷冻机组 Refrigeration units
发电机房输电线路 Power room transmitting circuit	不能断电的供电线路 Constant power supply circuits	双电源控制线路 Double power source system
公共场所照明线路 Public lighting circuit	主干/分干配电系统线路 Trunk and branch power distribution system	名胜古迹照明线路 Scenic spot and historic resort ligheing
高温环境动力和控制线路 Power supply and high temperature places and control circuit	油泵、油管线路 Oil pump circuits	潜在危险爆炸区域线路 The circuit in environments where potential explosion gases are present

电缆/生产流程 Production Process

1

2

1.瓷柱压制
2.瓷柱烧结
3.电缆装配
4–5.电缆拉伸
6–7.电缆退火
8.浸水检测
9.成品检测
10.成品

1. ceramic column extrusion
2. ceramic column sintering
3. cable assembly
4-5. cable stretching
6-7. cable annealing
8. Immersion inspction
9. Inspection of finished products
10. End products

3

4

5

6

7

8

10

9

产品标准及规范 Standards

一、矿物绝缘电缆制造标准：

Manufacturing standard of MI cable

1、GB/T13033-2007 额定电压750V及以下矿物绝缘电缆及终端

GB/T13033-2007 mineral insulated cable with a rated voltage not exceeding 750V and its terminals

2、IEC60702-2002 额定电压不超过750V的矿物绝缘电缆及其终端

IEC60702-2002 mineral insulated cable with a rated voltage not exceeding 750V and its terminals

3、BS6207-2001 额定电压750V及以下矿物绝缘电缆

BS6207-2001 mineral insulated cable with a rated voltage not exceeding 750V

二、矿物绝缘电缆的特性标准：

Performance standard of MI cable

1、BS6387:2013 用于火灾条件下保持电路完整的电缆的性能标准（英国）

BS6387 performance requirements for cable required to maintain circuit integrity under fire conditions Britain

2、GA306.1~306.2-2007 公安部消防标准

GA306.1~306.2-2007 Fire standard of Ministry of Public Security

3、IEC60332-3 电缆在火焰条件下的燃烧试验

IEC60332-3 Test during flame combustion of cable

4、GB/T18380.1-.3-2001 电缆在火焰条件下的燃烧试验

GB/T18380.1-.3-2001 Test during flame combustion of cable

5、GB/T17651.2-1998 电缆或光缆在特定条件下燃烧的烟密度测定

GB/T17651.2-1998 Smoke density test of the cable under specific combustion

6、GB/T17650.2-1998 取自电缆的材料燃烧时析出气体的试验

GB/T17650.2-1998 Test on gases evolved during combustion of cable

7、GB/T19216-2003 电线电缆耐火特性试验方法

GB/T19216-2003 Test method of fire resistant characteristics on cable

8、IEC60331 电线电缆耐火特性试验方法

IEC60331 Cable fire resistance characteristics

9、UL2196 电缆耐火性能测试（美国）

UL2196 Test of fire resistant cables USA

10、IEC60754-2 酸性和腐蚀性气体的挥发

IEC60754-2 Test of extracted gases from burning of cable meterials

11、IEC60134-2 烟密度试验

IEC60134-2 Smoke density test



三、矿物绝缘电缆的应用标准

Application standard of MI cable

1、GB50016-2014建筑设计防火规范
GB50016-2014 Code for fire protection design of buildings

2、JGJ16-2008民用建筑电气设计规范
JGJ16-2008 Code for electrical design of civil buildings

3、GB50217-2007电力工程电缆设计规范
GB50217-2007 Code for design of power engineering cables

4、GB50116-2013火灾自动报警系统设计规范
GB50116-2013 Code for design of automatic fire alarm system

5、GB50157-2013地铁设计规范
GB50157-2013 Code for metro design

6、GB50067-97汽车库、修车库、停车场设计防火规范
GB50067-97 Code for fire protection design of garage，motor repair shop and parking area

7、GB50333-2002医院、洁净手术部建筑技术规范
GB50333-2002 Technical code for buildings of hospital and clean operating department

8、DBJ50-054-2006大型商业建筑设计防火规范(重庆)
DBJ50-054-2006 Code for the fire protection design of big commercial buildings(Chongqing)

9、DGJ08-2048-2008民用建筑电线电缆防火设计规程(上海)
DGJ08-2048-2008 Code for the fire protection design of wires and cables of civil buildings(Shanghai)

10、DB21 / T2116-2013建筑消防安全技术规程(辽宁)
DB21 / T2116-2013 Technical regulation for fire protection safety of buildings(Liaoning)

11、DBJ50-164-2013民用建筑电线电缆防火设计规范(重庆)
DBJ50-164-2013 Code for the fire protection design of wires and cables of civil buildings(Chongqing)

12、09D101-6矿物绝缘电缆敷设
09D101-6 Laying of mineral insulated cables

13、JGJ232-2011矿物绝缘电缆敷设技术规程
JGJ232-2011 TechnicaI regulation for the Iaying of mineral insulated cables

14、BS5345用于可能有爆炸性气体环境的电气装置的选择、安装和维护的惯用规则
BS5345 Customary rule for the selection，installation and maintenance of the electrical devices which may have explosive gas environment

15、AS2293建筑物中火灾探测和报警
AS2293 Fire detection and alarm in buildings

16、AS300线规则中消防设备和电梯
AS300 Fire-fighting equipments and elevators in the wire regulation

17、GB / T16895.15-2002建筑物电气装置-布线系统载流量
GB / T16895.15-2002 Electrical devices in buildings-carrying capacity of the wiring system

18、BS7671电气安装要求(英国)
BS7671 Electrical installation requirements(England)

19、08ZD02中南地区建筑标准设计电气图集
08ZD02 Standard design of electrical atlas of buildings in the mid—south region

电缆设计选型 Design Method

一、设计选型方法

Design and Model Selection Method

1、型号的选择

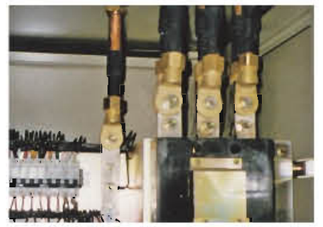
Type Selection

BTTZ、BTTVZ、WD-BTTYZ(重载)适用于线芯和护套之间以及线芯和线芯之间的电压不超过750V交流和直流有效值的场合。

BTTZ，BTTVZ and WD-BTTYZ(heavy-duty)apply to occasions where the voltage between wire core and sheath, between wire core and wire core is no larger than 750V alternating current and direct current virtual value.

BTTQ、BTTVQ、WD-BTTYQ(轻载)适用于线芯和护套之间以及线芯和线芯之间的电压不超过500V交流和直流有效值的场合。

BTTQ，BTTVQ and WD-BTTYQ(light-duty)apply to occasions where the voltage between wire core and sheath, between wire core and wire core is no larger than 500V alternating current and direct current virtual value.



下列情况应采用带塑料护套的矿物绝缘电缆

Under following circumstances. mineral insulated cable shall be used with plastic sheath.

1.1电缆敷设在对铜护套有腐蚀作用的环境。

1.1If the cable is laid where it is corrosive to copper sheath；

1.2直埋或穿管敷设时。

1.2When the cable is buried directly or in conduits；

1.3明敷设在建筑物非技术空间，有美观要求的场所。
有防火要求的地方，应采用无卤低烟的塑料外护套。

1.3When the cable is exposed in non-technical space of buildings, where have aesthetic requirements；
For fire prevention places. halogen-free low-smoke plastic outer sheaths shall be used.

2、规格的选择

2、Type Selection

2.1根据电缆的敷设环境，确定电缆最高使用温度，合理选择相应的电缆载流量，确定电缆规格。

2.1According to laying environment of cables，we shall decide maximum operation temperature of cables, reasonably choose the corresponding current-carrying capacity，and then decide the cable specification.

2.1.1矿物绝缘电缆按电缆温度不同有两种载流量的选择：

According to different cable temperatures. mineral insulated cable has 2 kinds of current-carrying capacity.

温度为70℃的载流量见表1、表3。

Current-carrying capacity when the temperature is 70℃ is shown in Table 1 and 3.

温度为105℃的载流量见表2、表4。

Current-carrying capacity when the temperature is105℃ iS shown in Table 2 and 4.

2.1.2下列敷设条件下，应按正常的工作温度为70℃，选用电缆载流量

2.1.2Under following laying conditions，current-carrying capacity shall be chosen according to normal operation temperature-70℃.

a.沿墙，支架，顶板及桥架等明敷线路。

a.Exposed laying along walls，brackets，roof plates and bridges；

b.与其他种类电缆共同敷设在同一桥架，竖井，电缆沟，电缆隧道的线路。

b.Mineral insulated cable is laid together with other types of cables in the same bridge，silo，cable trench and cable tunnel.

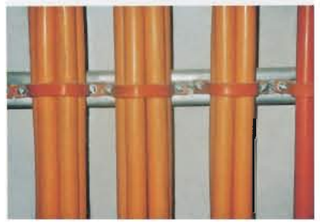
c.其它由于电缆护套温度过高易引起人员伤害的或设备损坏的场所。

c.Other places where too high temperature of cable sheaths easily hurt humans or damage the equipment.

2.1.3电缆单独敷设于桥架，电缆沟，穿管无人触及的场所，可按正常工作温度105℃选用载流量。

2.1.3 If mineral insulated cable is laid separately in bridges，cable trenches and conduits where no human touches it，current-carrying capacity can be chosen according to normal operation temperature 105℃.

2.2应根据线路实际长度及电缆交货长度，合理确定矿物绝缘电缆规格。
According to actual length of line and length of delivered cable，we shall reasonably decide the specification of mineral insulated cable.
由于矿物绝缘电缆加工长度受到原材料的限制，大规格单芯和多芯电缆的交货长度，无法同塑料电缆一样长(见P18电缆数据表)。因此选择规格时需要考虑电缆的交货长度。尽可能避免使用中间接头。
Because machining length of mineral insulated cable is constricted by raw materials，delivery length of large-size single core and multi-core cable is unable to as long as that of plastic cables(P18 see cable data sheet). Therefore，please consider the delivery length of cable when choosing the specification，and avoid joints in the middle as much as possible.
例1：计算负荷为1000A的线路，按照最高使用温度不超过70℃要求。根据表3选择400mm²。交货长度(根据电缆数据表)为60米。若线路长度大于60米则选用240m²双拼，交货长度达到99米，可避免使用中间联接，更长的线路也采用240m²双拼联接。因为线路越长敷设条件越苛刻。采用小规格的电缆易敷设。例2：根据计算负荷采用4x25mm²的多芯电缆，若超过交货长度124米的，可以考虑采用4x(1x25)的单芯电缆，其交货长度可以达到425米。无需中间接头。
Example 1：calculate a line whose load is 1000A，and maximum operation temperature doesn’t exceed 70℃. As a result，400mm² is chosen according to Table 3. Delivery length is 60 meters according to “cable data sheet”：if the line is longer than 60 meters，please choose 240m² double combinations. Middle joints can be avoided if delivery length reaches 99 meters，and longer lines can uses 240m² double combinations. The longer the line is，the more complex the laying condition is. It is easy to lay small-size cables. Example 2：Use 4×25mm² multi-core cable according to load calculation. If it is longer than delivery length 124 meter，consider using 4×(1X25) single-core cable，whose delivery length reaches 425 meters and middle ioints are Unnecessary.



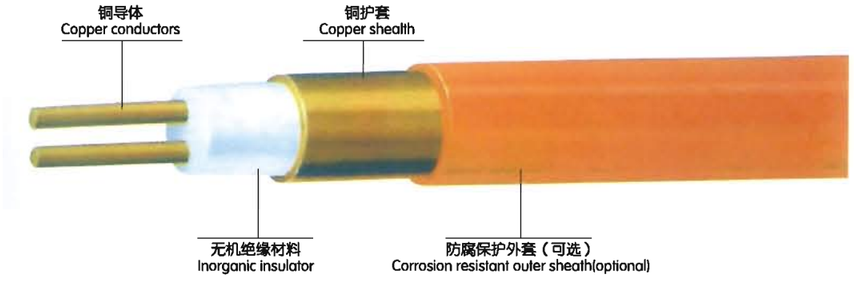
3、设计要点：
3、Design Essentials
3.1铜护套可做PE接地线，故一般无需PE线。
3.1 Copper sheath can be used as PE ground lead. so PE line is unnecessary generally.
3.2对应于16mm²以上塑料电缆可以降截面使用。若塑料电缆设计4x185+95，那么对应的矿物绝缘电缆为BTTZ 4X(1X150)。
3.2 Corresponding to over 16mm2 plastic cable，the section can be reduced. If plastic cable iS designed 4x185+95，the Corresponding mineral insulated cable iS BTTZ 4X(1X150).
3.3双拼、多拼一般无需考虑系数。
3.3 It is not necessary to consider coefficients in the case of double Combinations and multiple combinations.

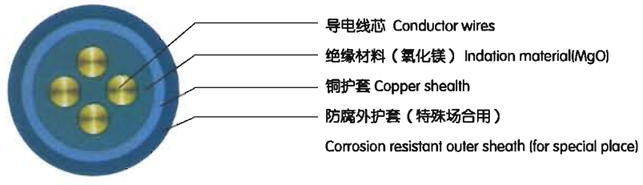
3.4利用大截面电缆双拼或多拼代替母线槽，可降低工程投资，增加线路安全性。
3.4 If double combinations or multiple combinations of large-section cables are used to replace bus duct，construction investment can be reduced and Iine security is enhanced.
3.5采用我公司专用分支接线盒，可以实现电缆的分支(分支箱见P28)。
3.5 Our special branch terminal box makes cable branching possible(Refer to P28 for the Branch Box).

电缆技术参数 Technical Parameters

产品技术参数
Product Technical Parameters
1、矿物绝缘电缆的额定电压：轻载（BTTQ、BTTVQ、WD-BTTYQ）500V和重载（BTTZ、BTTVZ、WD-BTTYZ）750V。
1、The rated voltage of mineral-insulated cables: light load（BTTQ、BTTVQ、WD-BTTYQ）500V and heavy load （BTTZ、BTTVZ、WD-BTTYZ）750V.
2、矿物绝缘电缆成品试验电压；轻载2000V/1min，重载2500V/1min
2、Testing voltage of mineral-insulated cables: light load 2000V/1min and heavy 2500V/1min.
3、矿物绝缘电缆的绝缘电阻应大于1000MΩ，当电缆长度小于100m时，绝缘电阻应大于10000MΩ
The insulation resistance of mineral-insulation cables shall be more than 1000MW; when the length of cable is less than 1000m, the insulateion resistance shall be more than 10,000MW.
4、矿物绝缘电缆的长期工作温度；矿物绝缘电缆长期工作温度是70℃，在无人触及的场合矿物绝缘电缆的长期工作温度是105℃，在特殊高温场合，长期工作温度可以在250℃及以下。在950-1000℃可以持续供电3h以上，短时或非常短时工作温度可以达到1083℃。
4、Long-term service temperature of mineral-insulated cables: The long-term service temperature of mineral insulated cables is 70℃. In areas inaccessible to people ,the long-term service temperature is 105℃; in special high temperature circumstance, the long-trem service temperature can reach 250℃. When the temperature keeps at 950-1000℃, the cable can sustain power supply for at least 3 hours; during a short or extremely short period, the service temperature can reach 1083℃.
5、弯曲半径：矿物绝缘电缆允许最小弯曲半径符合下表的要求
Curve radius: The possible minimum curve radius of mineral-insulated cables shall be in line with the above form.

电缆的外径D(mm) External diamter of the cable	D<7	7≤D<12	12≤D<12	D≥15
电缆内侧最小弯曲半径R(mm) Minimum curve radius	2D	3D	4D	6D





电缆数据表 Cable Data Sheet

型号 Model	导体芯数x标准截面 Number of cores x Standard cross section size	电缆外径 External diameter of the cable		额定载流量 Rated current capacity		铜护套横截面积 Cross section size of copper sheath	成品电缆最大长度 Maximum length of a finished cable		近似重量 Theoretical Weight	
		裸电缆 Bare cable	塑料护层 Plastic sheath	裸电缆 Bare cable	塑料护层 Plastic sheath				裸电缆 Bare cable	塑料护层 Plastic sheath
	mm^2	mm	mm	A	A	mm^2	m		Kg/Km	Kg/Km
BTTQ (BTTVQ) (WD-BTTYQ)	2×1.0	5.1	6.4	17.5	19.5	6.0	800	交货时以实际交货长度为准 Base on actual delivery length	104	125
	2×1.5	5.7	7.0	22.5	25	7.1	800		130	153
	2×2.5	6.6	7.9	30	33	9.4	600		179	205
	2×4	7.7	9.2	40	44	12.1	450		248	287
	3×1.0	5.8	7.1	15	16.5	7.6	800		135	159
	3×1.5	6.4	7.7	19	21	8.9	650		168	193
	3×2.5	7.3	8.8	25	28	10.7	500		224	261
	4×1.0	6.3	7.6	14.5	16	8.8	700		161	187
	4×1.5	7.0	8.3	19	21	10.2	550		202	230
	4×2.5	8.1	9.6	25	28	12.8	400		278	319
	7×1.0	7.6	9.1	10	11	11.6	650		233	271
	7×1.5	8.4	9.9	12.5	14	13.3	530		291	333
	7×2.5	9.7	11.2	17	19	17.4	400		407	455
BTTZ (BTTVZ) (WD-BTTYZ)	1×1.5	4.9	6.2	30	33	5.8	880		97	117
	1×2.5	5.3	6.6	39	43	6.4	780		116	137
	1×4	5.9	7.2	51	56	7.7	640		146	170
	1×6	6.4	7.7	63	69	8.9	720		180	206
	1×10	7.3	8.8	81	90	10.7	550		241	278
	1×16	8.3	9.8	107	119	13.2	438		329	371
	1×25	9.6	11.1	139	154	17.0	336		455	502
	1×35	10.7	12.2	168	187	20.2	280		584	637
	1×50	12.1	13.6	207	230	24.7	230		773	831
	1×70	13.7	15.2	251	279	30.9	185		1022	1088
	1×95	15.4	17.4	300	333	36.7	164		1315	1403
	1×120	16.8	18.8	344	382	42.6	145		1604	1701
	1×150	18.4	20.4	388	431	49.5	119		1950	2054
	1×185	20.4	22.9	434	482	58.1	97		2360	2496
	1×240	23.3	25.8	483	537	70.1	89		2993	3147
	1×300	26.0	28.6	795	883	86.7	80		3680	3852
	1×400	30.0	32.8	948	1053	110.8	60		4805	5007
	2×1.5	7.9	9.4	23.5	26	12.5	465		230	270
	2×2.5	8.7	10.2	32	36	14.6	380		284	327
	2×4	9.8	11.3	42	47	17.6	313		365	413
	2×6	10.9	12.4	54	60	20.9	257		459	512
	2×10	12.7	14.2	74	82	26.7	185		634	695
	2×16	14.7	16.2	98	109	34.1	138		871	941
	2×25	17.1	19.1	128	142	43.4	114		1201	1299
	3×1.5	8.3	9.8	20	22	13.6	418		260	302
	3×2.5	9.3	10.8	27	30	16.1	325		332	378
	3×4	10.4	11.9	36	40	19.3	280		426	477
	3×6	11.5	13.0	46	51	23.1	230		537	593
	3×10	13.6	15.1	62	69	30.3	160		768	833
	3×16	15.6	17.6	83	92	38.1	125		1050	1140
	3×25	18.2	20.2	108	120	47.4	100		1460	1564
	4×1.5	9.1	10.6	20.5	23	15.8	335		312	358
	4×2.5	10.1	11.6	27	30	18.5	278		395	444
	4×4	11.4	12.9	36	40	22.9	235		519	574
	4×6	12.7	14.2	46	51	26.7	183		658	719
	4×10	14.8	16.3	61	68	34.4	138		927	997
	4×16	17.3	19.3	80	89	45.8	120		1353	1455
	4×25	20.1	22.6	104	116	56.0	96		1822	1956
	7×1.5	10.8	12.3	14	15.5	20.7	220		444	496
	7×2.5	12.1	13.6	19	21	24.7	170		562	620
	10×1.5	13.5	15.1	12.5	13.5	26.0	150		638	703
	10×2.5	15.2	17.2	17	19	29.7	120		836	924
	12×1.5	14.1	15.6	11.5	13	32.2	156		706	774
	12×2.5	15.6	17.6	15.5	17	38.1	137		907	997
	19×1.5	16.6	18.6	10	11	41.6	110		982	1077

表1 矿物绝缘电缆，带塑料外护层或允许接触的裸电缆敷设在木质墙上
金属护套温度70℃，环境温度：30℃

Form 1 Mineral-insulated cables, cabels with plastic sheath or touchable bare cables installed on wooden wall
The temperature of the metal sheath:70℃; temperature of the environment:30℃

导体标称截面mm^2 Standard cross section of conductors mm^2	载流量A Current carrying capacity A	
	二根负荷导体 二芯或单芯电缆 Two loading conductors, two-core or single-core cables	三根负荷导体 Thee loading conductors
		多芯或三角形排列的单芯电缆 Multi-core cables or single-core cables lined up in a triangular shape
	500V	
1.5	23	19
2.5	31	26
4	40	35
	750V	
1.5	25	21
2.5	34	28
4	45	37
6	57	48
10	77	65
16	102	86
25	133	112
35	163	137
50	202	169
70	247	207
95	296	249
120	340	286
150	388	327
185	440	371
240	514	434
300	782	748
400	940	893

导体标称截面mm^2 Standard cross section of conductors mm^2	三根负荷导体 扁平排列的单芯电缆 Single-core cables lined up in a flat array
500V	
1.5	21
2.5	29
4	38
750V	
1.5	23
2.5	31
4	41
6	52
10	70
16	92
25	120
35	147
50	181
70	221
95	264
120	303
150	346
185	392
240	457
300	879
400	1032

注：
1.回路中单芯电缆铜护套两端相互连接在一起。
2.对于允许接触的裸护套电缆其载流量值应按该表乘以0.9。

Note:
1. The two ends of the copper sheath of a single-core cable are connected in the circuit.
2. The current capacity values of touchable bare cables shall be the data in this Form multiplied by 0.9.

表2 矿物绝缘电缆不允许人接触的裸电缆敷设在砖石墙上
金属护套温度105℃，环境温度：30℃

Form2 Mineral-insulated cables, untouchable bare cables installed on a brick wall
The temperature of the metal sheath:105℃; temperature of the environment: 30℃

导体标称截面mm^2 Standard cross section of conductors mm^2	载流量A Current carrying capacity A	
	二根负荷导体 二芯或单芯电缆 Two loading conductors, two-core or single-core cables	三根负荷导体 Thee loading conductors
		多芯或三角形排列的单芯电缆 Multi-core cables or single-core cables lined up in a triangular shape
	500V	
1.5	28	24
2.5	38	33
4	51	44
	750V	
1.5	31	26
2.5	42	35
4	55	47
6	70	59
10	96	81
16	127	107
25	166	140
35	203	171
50	251	212
70	307	260
95	369	312
120	424	359
150	485	410
185	550	465
240	643	544
300	973	947
400	1230	1136

导体标称截面mm^2 Standard cross section of conductors mm^2	三根负荷导体 扁平排列的单芯电缆 Single-core cables lined up in a flat array
500V	
1.5	27
2.5	36
4	47
750V	
1.5	30
2.5	41
4	53
6	67
10	91
16	119
25	154
35	187
50	230
70	280
95	334
120	383
150	435
185	492
240	572
300	964
400	1146

注：
1.回路中单芯电缆铜护套两端相互连接在一起。
2.成束敷设时，电缆载流量值不需要校正。

Note:
1. The two ends of the copper sheath of a single-core cable are connected in the circuit.
2. When installed in a bundle, the cable current capacity value doesn't need to be adjusted.

表3 矿物绝缘电缆，塑料外护层或允许接触的裸电缆敷设在空气中 金属护套温度70℃，环境温度：30℃

Form 3 Mineral-insulated cables, cabels with plastic sheath or touchable bare cables exposed in the air
The temperature of the metal sheath:70℃; temperature of the environment:30℃

导体标称截面mm² Standard cross section of conductors mm²	载流量A Current carrying capacity A				
	二根负荷导体 二芯或单芯电缆 Two loading conductors, two-core or single-core cables	三根负荷导体 Thee loading conductors			
		多芯或三角形排列的单芯电缆 Multi-core cables or single-core cables lined up in a triangular shape	相互接触的单芯电缆 Connected single-core cables	单芯电缆垂直平行敷设留有间距 Intervals are created when single-core cables are vertically installed	单芯电缆水平敷设留有间距 Intervals are created when single-core cables are horizontally installed
	500V				
1.5	25	21	23	26	29
2.5	33	28	31	34	39
4	44	37	41	45	51
	750V				
1.5	26	22	26	28	32
2.5	36	30	34	37	43
4	47	40	45	49	56
6	60	51	57	62	71
10	82	69	77	84	95
16	109	92	102	110	125
25	142	120	132	142	162
35	174	147	161	173	197
50	215	182	198	213	242
70	264	223	241	259	294
95	317	267	289	309	351
120	364	308	331	353	402
150	416	352	377	400	454
185	472	399	426	446	507
240	552	466	496	497	565
300	812	758	789	792	889
400	965	913	933	938	1058

注：
1.回路中单芯电缆铜护套两端相互连接在一起。
2.对于允许接触的裸护套电缆其载流量值应按该表乘以0.9。
3.有间距敷设时留有的间距应至少有1根电缆外径。

Note:
1. The two ends of the copper sheath of a single-core cable are connected in the circuit.
2. The current capacity values of touchable bare cables shall be the data in this Form multiplied by 0.9.
3. When intervals exist, the intervals shall be at least as long as the external diameter of one cable

表4 矿物绝缘电缆，不允许人接触的裸电缆敷设在空气中 金属护套温度105℃，环境温度：30℃

Form 4 Mineral-insulated cables, untouchable cables exposed in the air
The temperature of the metal sheath:105℃; temperature of the environment:30℃

导体标称截面mm² Standard cross section of conductors mm²	载流量A Current carrying capacity A				
	二根负荷导体 二芯或单芯电缆 Two loading conductors, two-core or single-core cables	三根负荷导体 Thee loading conductors			
		多芯或三角形排列的单芯电缆 Multi-core cables or single-core cables lined up in a triangular shape	相互接触的单芯电缆 Connected single-core cables	单芯电缆垂直平行敷设留有间距 Intervals are created when single-core cables are vertically installed	单芯电缆水平敷设留有间距 Intervals are created when single-core cables are horizontally installed
	500V				
1.5	31	26	29	33	37
2.5	41	35	39	43	49
4	54	46	51	56	64
	750V				
1.5	33	28	32	35	40
2.5	45	38	43	47	54
4	60	50	56	61	70
6	76	64	71	78	89
10	104	87	96	105	120
16	137	115	127	137	157
25	179	150	164	178	204
35	220	184	200	216	248
50	272	228	247	266	304
70	333	279	300	323	370
95	400	335	359	385	441
120	460	385	411	411	505
150	526	441	469	498	565
185	596	500	530	557	629
240	697	584	617	624	704
300	1012	945	973	1026	1098
400	1197	1129	1161	1209	1312

注：
1.回路中单芯电缆铜护套两端相互连接在一起。
2.成束敷设时，载流量不需要校正。
3.有间距敷设时留有的间距应至少有1根电缆外径。

Note:
1. The two ends of the copper sheath of a single-core cable are connected in the circuit.
2. When installed in a bundle, the cable current capacity value doesn't need to be adjusted.
3. When intervals exist, the intervals shall be at least as long as the external diameter of one cable

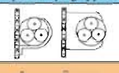
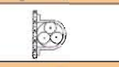
表5 环境空气温度不等于30℃时的校正系数

Form 5 Adjustment Coefficients when Air Temperature in the Environment is not Equal to 30℃

环境温度℃ Temperature of the environment ℃	塑料外护套和易于接触的裸电缆70℃ Plastic sheath and touchable bare cables 70℃	不允许接触的裸电缆105℃ Untouchable bare cables105℃
10	1.26	1.14
15	1.21	1.11
20	1.14	1.07
25	1.07	1.04
34	0.93	0.96
40	0.85	0.92
45	0.77	0.88
50	0.67	0.84
55	0.57	0.80
60	0.45	0.75
65	—	0.70
70	—	0.65
75	—	0.60
80	—	0.54
85	—	0.47
90	—	0.40
95	—	0.32

表6 敷设方式一览表（查取各种敷设方式载流量的索引）

Form 6 List of Laying Approaches (index for checking current capacities of various installation approaches)

项号 Item number	敷设方式示例 Example of laying approach	说明 Explanation	载流量选择方式 Current capacity selection approach
1		单芯或多芯电缆-固定敷设在木质墙上 Single-core or multi-core cables Fixed on a wooden wall	按表1选用 Select accoring to Form 1
2		单芯或多芯电缆 -固定敷设在砖墙上 Single-core or multi-core cables Fixed on a brick wall	按表2选用 Select accoring to Form 2
3		-直接固定在木质的天花板下 Directly fixed under a wooden ceiling	按表1. 2选用 Select accoring to Form 1、2
4		-敷设在无孔托盘上 Laid on a tray without holes	按表1. 2选用 Select accoring to Form 1、2
5		-敷设在有孔托盘上 Laid on a tray with holes	按表3. 4选用 Select accoring to Form 3、4
6		-敷设在托架或金属网上 Laid on a supporter or metal net	按表3. 4选用 Select accoring to Form 3、4
7		-敷设在梯架上 Laid on a scarcement	按表3. 4选用 Select accoring to Form 3、4
8		-吊装在悬索上 Hung on a suspension line	按表3. 4选用 Select accodring to Form 3、4
9		-电缆直埋在砖石墙内 Vertically buried in a brick wall	按表1. 2选用 Select accoring to Form 1、2
10		-电缆敷设在墙内或天花板的线槽里 Laid inside a wall or notch in the ceiling	按表3. 4载流量乘0.8 Multiply the current carrying capacity in Form 3 and 4 by 0.8


▲ 沿墙 Side wall


▲ 桥架 Bridge trestle


▲ 支架 Support


▲ 吊架 Hanger

表7 电压降 Form 7 Voltage Drop

标称截面mm² Nominal cross section mm²	单相供电时的电压降mV/A/m Voltage drop in single-phase powe supply mV/A/m		三相供电时的电压降mV/A/m Voltage drop in three-phase powe supply mV/A/m			
	2根单芯电缆相接触 2 connected single-core cable	多芯电缆 Multi-core cable	三根单芯电缆 Three single-core cables			多芯电缆 Multi-core cable
			三角形接触排列 Triangular connecter array	水平接触排列 Horizontal connecter array	水平间距排列 Horizontal array with intervals	
1	–	42	–	–	–	36
1.5	–	28	–	–	–	24
2.5	–	17	–	–	–	14
4	–	10	–	–	–	9.1
6	–	7	–	–	–	6.0
10	4.2	4.2	3.6	3.6	3.6	3.6
16	2.6	2.6	2.3	2.3	2.3	2.3
25	1.65	1.65	1.45	1.45	1.45	1.45
35	1.20	–	1.05	1.05	1.05	–
50	0.89	–	0.78	0.97	0.82	–
70	0.62	–	0.54	0.55	0.58	–
95	0.46	–	0.40	0.41	0.44	–
120	0.37	–	0.32	0.33	0.36	–
150	0.30	–	0.26	0.29	0.32	–
185	0.25	–	0.21	0.25	0.28	–
240	0.19	–	0.165	0.21	0.26	–
300	0.15	–	0.130	0.16	0.18	–
400	0.112	–	0.097	0.12	0.14	–

电缆附件 Accessory

电缆附件包括：终端、接线端子、接地片、中间连接器附件
Accessory includes terminals，wiring terminals，copper grounding plate，straight through joints etc

一、终端

Terminals

安装在矿物绝缘电缆末端的一个完整端部，通常包括一个封端和一个填料函或者一个组合的封端／填料函。每根电缆都需安装终端。

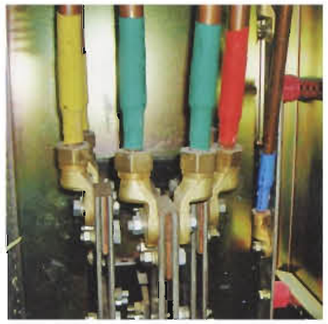
MI cables must be prorided with terminals Which include one seal and one gland or one Combined seal/gland.

终端的表示方法：铜芯铜护套矿物绝缘电缆终端，额定电压750V，适用于单芯4mm²电缆。

表示为：ZA-750 1×4

Indication of terminals：

Example：A 4 mm² single-core copper core and Sheath MI cable terminal is indicated as ZA-750 1 × 4.

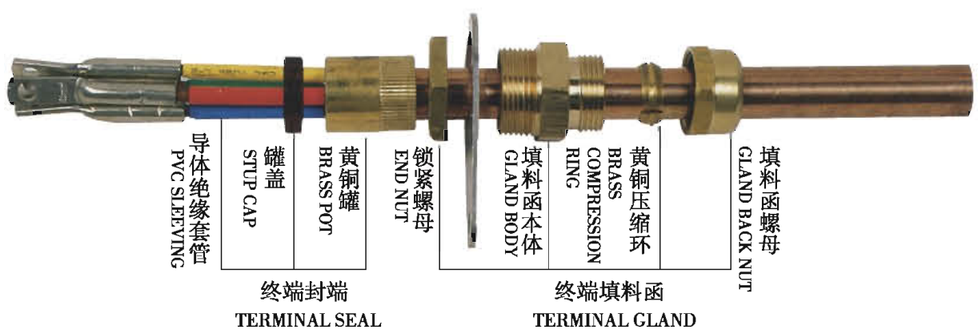


1、终端封端：电缆终端的一部分，用以密封电缆的端部，防止潮气进入。封端包括黄铜密封罐、密封罐盖板、终端密封料、导体外露部分绝缘管。单芯电缆可以不带密封罐及密封罐盖板。

1. As one part of cable terminal，end capping seals the end of cable and prevents humidity from entering. End capping includes brass sealed can. cover plate of sealed can，terminal sealant and insulation pipe for exposed conductor. Single core cable can do without sealed can and cover plate of sealed can.

2、终端填料函：电缆终端的一部分，主要是用于连接电缆和开关柜、分支箱，它包括填料函本体、压缩环、填料函螺母、锁紧螺母。

2. As one part of cable terminal，terminal stuffing box is mainly used to connect cable with switch cabinet and branch box, including stuffing box itself，compression ring，nut of stuffing box and locknut.



终端 TERMINALS

二、接线端子

Cable Connector Terminals

用于连接导体和控制柜接线柱或电源。它由压装螺母、压装斜块、端子本体构成。接线端子有二种形式，其一、压装型接线端子，适用于35mm²以上电缆的连接，其二、压接型接线端子，适用于6-25mm²电缆的连接。小规格电缆4mm²及以下可以不带接线端子。

It is used to connect conductor and terminal of control board or power source, including back nut, compressing screw, terminal body. There are two types of terminals: pressure connector terminal used for more than 35mm² MI cables; compression connector terminal used for 6-25mm² cables. Those MI cables not exceeding 4mm² can carry no terminals.

压装型接线端子

Pressing installation-type wiring terminal

三、接地片

Copper Grounding Plate

电缆铜护套用作接地时或与电缆铜护套连接的其它电气设备的接地，需要采用接地片

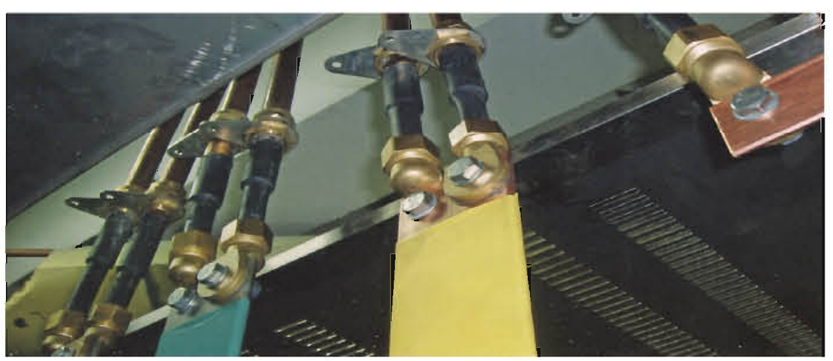
Copper grounding plate should be introduced when copper sheath or other electric equipments connected

电缆附件的选配方法（不带中间连接器附件）

Selection of canle accessory (no straight through joints)

电缆 Cable	封端 Termination seal			填料函 Gland	接线端子 Cable connector terminals	接地片 Copeer grounding plate
	黄铜密封罐 Brass pot	密封料 Brass material	绝缘套管 Insulated sleeve			
单芯 Single core	—	按密封绝缘附件选 According to sealinginsulating accessory	按表14 see table 14	按表9 see table 9	按表11/12 see table 11/12	按表13 see table 13
多芯 Multi core	按表10 see table 10	按密封绝缘附件选 According to sealinginsulating accessory	按表14 see table 14	按表9 see table 9	按表12 see table12	按表13 see table 13

备注：根据实际需要选配电缆附件 Select the cable accessories according to your need.

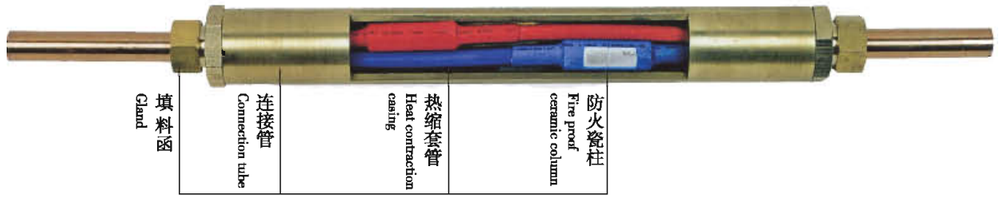


四、中间连接器附件

Straight through joints

当电缆长度不够长时需要采用中间连接器附件，它是将两种相同规格的电缆连接起来成为一根电缆的装置，包括中接填料函、中间连接铜管、两套终端密封罐(单芯电缆不需要)、热缩套管、中间连接端子、防火瓷柱。其中中接填料函包括填料函本体、压缩环、填料函螺母，主要用于连接中间连接管和电缆。中间连接端子是用于连接两根相同规格电缆的导体，它有三种形式：其一、压接型，适用连接4mm²及以下电缆，其二、压装型，适用连接35mm²以上电缆，其三、螺丝连接型，适用连接6–25mm²的电缆。

When installing the cable，yt maybe requires straightthrough joints to make longer circuits by connecting two short cables. The straight through joint is used for two same type MI cables A Straight through joint includes one seamless sleeve. two terminal pots(unnecessary for single—core cable)，heat shrinkable sleeves，some tinned copper tubes and middle connecting accessories. In addition，oneseamless sleeve includes a gland body，a compressing ring，a gland back nut，used to connect straight through joint with cables. Straight through joints are used for connecting two cables，including three types：threaded compression straight—through fitting used for more than 35mm² MI cables；compression sleeve terminal used for not exceeding 4mm² cables；compression straight—through fitting with screws used for 6–25 mm² cables.



中间连接器附件 Straight through joints

中间连接器附件表示方法：铜芯铜护套矿物绝缘电缆中间连接，额定电压750V，适用于单芯4mm²电缆的连接。
表示为：TGZJ–I 750 1X4

Way of middle connector accessories：the middle connection of copper–core copper–sheathed mineral–insulated cables. rated voltage 750V suited for the connection of 4mm² Single–core cables. Indicated as TGZJ—I 750 1X4

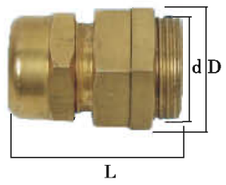
表8 中间连接器附件 Form 8 Straight through joints

型号 Models	电缆型号 Cable models	适用电缆规格 Specifications of applicable cable
TGZJ–I	BTTZ BTTVZ WD–BTTYZ	1×1–1×35、2×1–2×6、3×1–3×4、4×1–4×2.5
	BTTQ BTTVQ WD–BTTYQ	1×1–1×4、2×1–2×4、3×1–3×2.5、4×1–4×2.5、7×1–7×2.5
TGZJ–II	BTTZ BTTVZ WD–BTTYZ	1×50–1×95、2×10–2×16、3×6–3×16、4×4–4×10、7×1–7×4、10×1.5–10×2.5、12×1.5–12×2.5
TGZJ–III	BTTZ BTTVZ WD–BTTYZ	1×120、1×150、2×25、3×25、4×16、19×1.5
TGZJ–IV	BTTZ BTTVZ WD–BTTYZ	1×185、1×240、4×25
TGZJ–V	BTTZ BTTVZ WD–BTTYZ	1×300、1×400

电缆附件结构参数 Accessory Structure and Parameters

表9 终端填料函

Form 9 Terminal gland



型号 Model	D(mm)	d(mm)	L(mm)	电压等级 Voltage class	适用的电缆规格 Specifications of applicable cable
ZD–I	M20	24	34	750V	1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
				500V	1x1–1x4、2x1–2x4、3x1–3x2.5 4x1–4x2.5、7x1–7x2.5
ZD–II	M25	29	37	750V	1x50–1x95、2x10–2x16、3x6–3x16 4x4–4x10、7x1–7x4、10x1.5–10x2.5 12x2.5
ZD–III	M32	36	38	750V	1x120、1x150、2x25、3x25、4x16、19x15
ZD–IV	M40	45	42	750V	1x185、1x240、4x25
ZD–V	M42	46	56	750V	1x300、1x400

表10 终端及中间连接密封罐

Form 10 Terminal and middle connection seal pot

密封罐规格 Seal modle	D(mm)	L(mm)	电压等级 Voltage class	适用的电缆规格 Specifications of applicable cable
20	15	17	750V	1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
			500V	1x1–1x4、2x1–2x4、3x1–3x2.5 4x1–4x2.5、7x1–7x2.5
25	21	25	750V	1x50–1x95、2x10–2x16、3x6–3x16 4x4–4x10、7x1–7x4、10x1.5–10x2.5 12x2.5
32	26.5	32	750V	1x120、1x150、2x25、3x25、4x16、19x15
40	33.5	40	750V	1x185、1x240、4x25
50	365	50	750V	1x300、1x400

表11 压装型接线端子

Form 11 Pressing installation–type wiring terminal

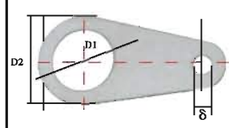
序号 NO.	L(mm)	D(mm)	d(mm)	电压等级 Voltage class	适用的电缆规格 Specifications of applicable cable
YZ–I	52.5	22	8	750V	1x35
YZ–II	52.5	22	10.5	750V	1x50 1x95
YZ–III	72	27	12	750V	1x120 1x150
YZ–IV	88	32	14	750V	1x185 1x240
YZ–V	101	40	16	750V	1x300 1x400

表12 压接型接线端子（铜鼻子）

Form 12 Pressing connection–type wiring terminal (copper fastener)

导体截面mm² Cross section of conductors mm²	端子型号 Terminal model	d(mm)	D(mm)
6	DT–4	2.8	5
10	DT–6	3.5	6
16	DT–10	4.5	8
25	DT–16	6	9

表13 接地片 Form 13 Copper Grounding Plate



型号 Modle	D1(mm)	D2(mm)	d(mm)	电压等级 Voltage class	适用的电缆规格 Specifications of applicable cable
I	20.5	30	6	750V	1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
				500V	1x1–1x4、2x1–2x4、3x1–3x2.5 4x1–4x2.5、7x1–7x2.5
II	25.5	35	6	750V	1x50–1x95、2x10–2x16、3x6–3x16 4x4–4x10、7x1–7x4、10x1.5–10x2.5 12x2.5
III	32.5	48	8	750V	1x120、1x150、2x25、3x25、4x16、19x15
IV	40.5	56	8	750V	1x185、1x240、4x25
V	42.5	58	8	750V	1x300、1x400

密封绝缘附件

SeaI&Insulation Accessories

密封绝缘附件有密封料、导体外露部分绝缘套管两种。密封料适用多芯电缆，导体外露部分绝缘套管适用单芯电缆。

Seal & insulation accessories include two types of sealants and insulation casings that expose outside the conductors. Sealants are applicable to multi–core cables while insulation casings that exposed outside the conductors are applicable to single––core cables.

1、密封料：密封泥呈腻状，最高使用温度为250℃。

1. Sealant：reveals a state of half fluid medium，and its highest use temperature is 70℃，while the lute of 250℃ reveals a greasy state，and its highest use temperature is 250℃.

2、导体外露部分绝缘套管：分为塑料热收缩套管和瓷套管，塑料热收缩套管分70℃、250℃，250℃的塑料绝缘套管是采用辐照聚稀烃材料；瓷套管是采用陶瓷材料压制而成，主要用于高温及防火场所。

2. Insulation casing that exposes outside the conductors：it is divided into thermal contraction casings made of plastics and those made of porcelain. Plastic casings are divided into two types of 70℃ and 250℃，of which plastic casings of 250℃ adopt irradiation polyolefin materials；porcelain casings are made by pressing ceramic materials and they are mainly used under high temperature conditions and on fire. proof occasions.

表14 热收缩套管规格表

Form 14 Specifications of Thermal Contraction Casings

规格(mm)(收缩前/收缩后) Specifications(mm)(before contraction/after contraction)	收缩后壁厚(mm) Thickness of wall after contraction under(mm)	使用场合 use occacions	适用的电缆规格mm² Specifications of applicable cable mm²
6/2.0	0.65	单芯电缆导体绝缘或铜护套与导体的密封 Insulation of conductors with single–core cables or seals of copper sheaths and conductors	1.0 1.5 2.5
6.5/2.0	0.65		4
7/2.5	0.7		6
8.0/3.5	0.7		10
9.0/4.0	0.7		16
11.0/5.0	0.7		25
12/6.0	0.8		35
15/7.5	0.8		50
20/90	0.8		70 95 120
25/12.5	0.9		150 185
30/14	1.0		240 300
35/16	1.0		400
3/1.0	0.65	多芯电缆导体绝缘 Insulation of conductors with multi–core cables	1.0 1.5 2.5
4/2.0	0.65		4 6
7/2.5	0.7		10 16
11/5.0	0.7		25
对于中间接头需要防水密封的电缆，需要在接头外加热收缩套管 For cables with water–proof requirements on their middle connecter, thermal contraction casings are required to be added outside the joints			
33/11	1.0	用于中间连接铜管和电缆外径的密封 Seals used for middle connecting copper tubes and external diameter of conductors	BTTZ 1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
			BTTQ 1x1–1x4、2x1–2x4、3x1–3x2.5、4x1–4x2.5、7x1–7x2.5
40/11	1.0		BTTZ 1x50–1x95、2x10–2x16、3x6–3x16、4x4–4x10 7x1–7x4、10x1.5–10x2.5、12x1.5–12x2.5
48/16	1.0		BTTZ 1x120、1x150、2x25、3x25、4x16、19x1.5
55/19	1.0		BTTZ 1x185、1x240、4x25
60/25	1.2		BTTZ 1x300、1x400

中间连接器附件

Accessories for Middle Connectors

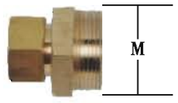
表15 中间连接套管规格

Form 15 Specifications of middle connecting casings

型号 Model	L(mm)	D(mm)	d(mm)	型号 Models	适用的电缆规格 Specifications of applicable cable
ZJ–I	260	28	22	BTTZ	1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
				BTTQ	3x1–1x2.5、4x1–4x2.5、7x1–7x2.5 1x1–1x4、2x1–2x4
ZJ–II	280	36	30	BTTZ	1x50–1x95、2x10、2x16、3x6–3x16 4x4–4x10、7x1–7x4、10x1.5、10x2.5 12x1.5、12x2.5
ZJ–III	320	43	37	BTTZ	1x120、1x150、2x25、3x25、4x16、19x1.5
ZJ–IV	320	50	44	BTTZ	1x185、1x240、4x25
ZJ–V	360	57	51	BTTZ	1x300、1x400

表16 中接填料函

Form 16 Middle Connection gland



型号 Models	M	型号 Models	适用的电缆规格 Specifications of applicable cable
ZF–I	25x1.5	BTTZ	1x1–1x35、2x1–2x6、3x1–3x4、4x1–4x2.5
		BTTQ	3x1–3x2.5、4x1–4x2.5、7x1–7x2.5 1x1–1x4、2x1–2x4
ZF–II	32x1.5	BTTZ	1x50–1x95、2x10、2x16、3x6–3x16 4x4–4x10、7x1–7x4、10x1.5、10x2.5 12x1.5、12x2.5
ZF–III	40x1.5	BTTZ	1x120、1x150、2x25、3x25、4x16、19x1.5
ZF–IV	46x1.5	BTTZ	1x185、1x240、4x25
ZF–V	54x1.5	BTTZ	1x300、1x400

中间连接端子

Middle connecting terminals

A、压装型中间连接端子：由压装螺母、压装斜块、端子本体组成。主要适用于35mm²及以上的电缆导体连接。（见表17）。

A. Pressing installation–type middle connecting terminal: it is composed of pressing nuts, pressing inclined block and the terminal itself. It is mainly applicable to connection of cable conductors with specifications of 35mm² and above (see Form 17).

压装型中间连接端子示意图

Schematic Diagram of Pressing installation–type Middle Connection Terminals

表17 Form 17

序号 NO.	型号 Models	适用的电缆规格 Specifications of applicable cable	
		型号 Models	规格 Specifications
1	YZ/ZL–I	BTTZ	1x35
2	YZ/ZL–II	BTTZ	1x50 1x95
3	YZ/ZL–III	BTTZ	1x120 1x150
4	YZ/ZL–IV	BTTZ	1x185 1x240
5	YZ/ZL–V	BTTZ	1x300 1x400

B、压接型中间连接端子：（铜鼻子），在市场上有标准件。主要适用于1.5–4mm²的电缆导体连接。

B. Pressing connection–type middle connecting terminal:(copper fastener), has standard unit in the market. It is mainly applicable to connection of cable conductors with specifications of 1.5–4mm².

C、螺丝连接型中间连接端子：主要适用于6–25mm²的电缆导体连接。（见表18）

C. Screw connection–type middle connecting terminal: it is mainly applicable to connection of cable conductors with specifications of 6–25mm² . (see Form 18).

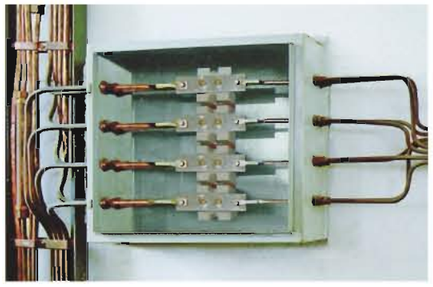
螺丝连接型中间连接端子示意图

Schematic Diagram of Screw Connection–type Middle Connection Terminals

表18 Form 18

线芯截面mm² Standard cross section of conductors mm²	L(mm)	d(mm)	D(mm)
6	35	2.96	6.7
10	35	3.77	7.5
16	55	4.71	10
25	55	5.84	11

分支电缆
Branch Cable



矿物绝缘可以实现分支，通过采用T接、十字接分支接线盒，解决了矿物绝缘电缆在任何地方、任何场合分支的问题，同时也解决了一般耐火塑料电缆分支处的阻燃、耐火特性。

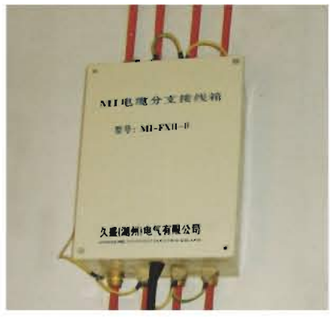
Mineral insulated cable realizes branching Use T joint，cross joint to connect branch junction box it solves the branching problem of mineral-insulated cables in any places and on any occasions，and it also solves the flame-retardant and fire. resistance characteristics of general fire-resistance plastic cables at their branch points.

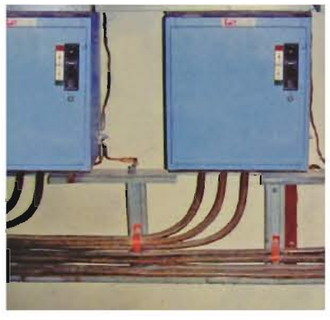
矿物绝缘电缆分支接线盒的选用：用户只要提供主干进线及分支线的规格，根据主干进线确定分支接线盒的规格，分支接线盒的结构由我们来设计。

Selection of the branch connecting box for mineral—insulated cables：users only need to provide specifications of main wires and branch wires，specifications of the branch connecting box can be determined according to main wires，and the structure of the branch connecting box will be designed by us.

分支接线盒的型号规格　Model & specifications of branch connecting box

型号 Model	外形尺寸（长×宽×高）mm Overall dimension(length × width × height) mm	电缆主干进线规格 Specifications of main cable wires
MI-FZ-I	360×230×140	35及以下　35 and the following
MI-FZ-II	360×230×140	1×50-1×95
MI-FZ-III	350×310×140	1×120-1×150
MI-FZ-IV	410×340×160	1×185-1×240
MI-FZ-V	450×400×180	1×300-1×400





电缆敷设和安装 Laying and Installation

一、矿物绝缘电缆敷设的一般要求

I. General Requirements on Laying of Mineral-insulated Cables

1、矿物绝缘电缆敷设方法见表6

1. See Form 6 for laying method of mineral-insulated cables

2、电缆在敷设前，均应检查电缆是否完好，绝缘电阻是否达到标准要求。

2. Before laying of cables，cables shall be checked if they are complete and if insulation resistances reach standard requirements.

3、电缆敷设时，其固定点之间的间距，除支架敷设在支架处固定外，其余可按下表推荐的数值固定。

3. When laying cables，for the distance between fixed points，except the laying of supported in fixed at the support，the remaining can be fixed according to the number recommended in following Form.

在明敷部位，如果相同走向的电缆大、中、小规格都有，从整齐、美观方面考虑，可按最小规格电缆标准要求固定，也可分档距离固定。当电缆倾斜敷设时，电缆与垂直方向成30°及以下时，按垂直间距固定；大于30°时，按水平间距固定。

On the obvious laying positions，if cables with large，middle and small specifications all exist，considering from the orderly and beautiful aspects they can be fixed by adopting specifications of the cables with lhe smallest specifications and they can also be fixed with space separation When laying cables slantwise，if the angle between the cable and vertical direction is equivalent to or less than 30°，the cables will be fixed according to vertical space，if this angle exceeds 30°，the horizontal space with be based on.

电缆外径(mm) Cable diameter		D<9	9≤D<15	D≥15
固定点之间的最大距离 The maximum distance between fixed points	水平 Level	600	900	1500
	垂直Vertical	800	1200	2000

4、电缆敷设时，在转弯处、中间连接器两侧，有条件固定的应加以固定。

4. When laying cables，joints and two sides of middle connectors shall be fixed if with proper conditions.

5、计算敷设电缆所需长度时，应考虑留有1%的余量。

5. When calculating the length required for laying cables. 1%tolerance shall be considered to be left.

6、对电缆在运行中可能遭受到机械损伤的部位，应采取适当的保护措施。

6. For positions that may suffer from mechanical damage during the running of cables proper protective measu res shall be taken.

7、单芯电缆敷设时，应逐根敷设，待每组布齐并矫直后，再作排列绑扎，绑扎间距以1-1.5m为宜。

7. When laying single-core cables，they shall be laid separately，and after each g roup is wi red orderly. then they can be arranged for binding and sulForm binding space shall be 1-15m.

8、电缆在对铜护套有腐蚀作用的环境中敷设时，或在部分埋地或穿管敷设时，应采用聚氯乙烯外护套或低烟无卤外护套。

8. When laying cables in an envi ronment that has corrosion effect on copper sheaths，or part of cables are embedded under the g round，or when they are laid by penetrating the tubes External protective sleeves made of polyvinyl chloride or halogen-free external protective sleeves with low smoke shall be adopted.

9、布线过程中，电缆锯断后应立即对其端部进行临时性密封。

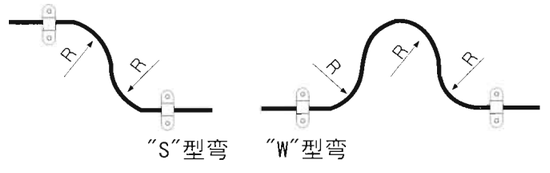
9. During the wiring process，temporal seal shall be carried out for the ends of cables when they are sawed up.

10、电缆全长均为直线敷设或联接用电器可能产生振动时，要在允许的场合设置膨胀环

10. When the whole cables are laid straightly or electrical appliances may produce vibration，expansion rings shall be set on allowable occasions.

11、一般矿物绝缘电缆无需穿管敷设，特殊场合必须穿管的参见右表(单芯电缆不允许单独穿金属管敷设)

11 General mineral-insulated cables need not be laid by penetrating the tubes，on special occasions when penetration of tubes is required，please refer to the Form at the right side (independent penetration of metal tubes is not allowed for single-core cables).



穿管规格表 Specification of Penetration Tube

单芯电缆 Single-core cable			
电缆规格 Cable Specification	2根 Two	3根 Three	4根 Four
1×10	Sc25	Sc25	Sc40
1×16	Sc25	Sc25	Sc50
1×25	Sc32	Sc32	Sc50
1×35	Sc32	Sc32	Sc65
1×50	Sc40	Sc40	Sc65
1×70	Sc40	Sc50	Sc80
1×95	Sc50	Sc50	Sc80
1×120	Sc50	Sc65	Sc100
1×150	Sc65	Sc65	Sc100

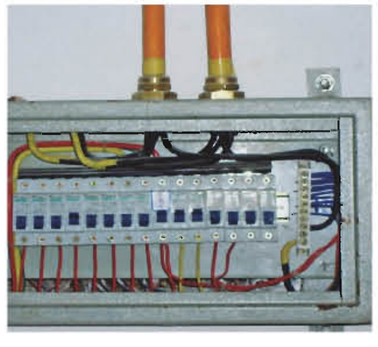
多芯电缆 Multi-core cable					
电缆规格(轻载) Cable Specification(light duty)	穿管规格 Cable Specification	电缆规格(重载) Cable Specification(heavy duty)	穿管规格 Cable Specification	电缆规格(重载) Cable Specification(heavy duty)	穿管规格 Cable Specification
2×1.0	Sc15	2×1.5	Sc15	4×1.5	Sc15
2×1.5	Sc15	2×2.5	Sc15	4×2.5	Sc20
2×2.5	Sc15	2×4	Sc20	4×4	Sc20
2×4	Sc15	2×6	Sc20	4×6	Sc20
3×1.0	Sc15	2×10	Sc20	4×10	Sc25
3×1.5	Sc15	2×16	Sc25	4×16	Sc32
3×2.5	Sc15	2×25	Sc32	4×25	Sc40
4×1.0	Sc15	3×1.5	Sc15	7×1.5	Sc20
4×1.5	Sc15	3×2.5	Sc15	7×2.5	Sc20
4×2.5	Sc15	3×4	Sc20	10×1.5	Sc25
7×1.0	Sc15	3×6	Sc20	10×2.5	Sc25
7×1.5	Sc15	3×10	Sc25	12×1.5	Sc25
7×2.5	Sc20	3×16	Sc25	12×2.5	Sc25
		3×25	Sc32	19×1.5	Sc32

12、可以埋地敷设，但最好不要有中间接头，如无法避免，则接头处需做好防水处理或设置电缆井。

12. Embedded laying is allowed. but it is better without middle joint, if it can not be avoided, then the joint shall go through waterproof treatment.

13、对于大截面单芯电缆，用于交流电网时应采取涡流消除措施，在交变电流作用下，铜护套上会形成横向涡流，会造成能量损耗。当线路负荷特别大而需要两组以上的电缆时，可按图1 a.b的的形式排列两组或多组电缆，但每组之间要留有两倍电缆外径的距离，而且每组电缆接线位置应相同。此外，在电缆进配电箱、柜时，为固定电缆需在箱柜的板面上打孔，同样为防止电缆在进箱、柜的铁皮面上产生旋涡，在箱柜板面上应按图2所示的方式开孔，或加垫非磁性材料的隔板固定电缆，这种支架一般采用铝母线或铜母线加工制作、打孔，当采用扁钢或角钢制作支架时，这时也应参照上述方法开孔，以防涡流产生。

13. For single-core cables with large sections, vortex elimination measures shall be taken when used in A.C. power grid Under the effect of alternating current, horizontal vortex will be formed on the copper sheaths and therefore cause energy consumption When the load of lines is extremely big and over two groups of cables are required, two groups of cables or more can be arranged according to Form a and bin Diag ram 1, however, space over two limes of the external diameter of the cables shall be left for each group and the wiring position of each group of wires shall be the same. In addition, when cables enter the distribution box and distribution cabinet, holes shall be
drilled on the panel of box and cabinet in order to fix cables, likewise, in order to prevent vortex produced on the iron surface when cables enter the box and cabinet. holes shall be drilled on the panel of the box and cabinet as showed in Diagram 2 or fix cables with baffles made of nonmagnetic materials Such suppod is generally processed and made by adopting aluminium or copper generatrix and holes are also drilled When making supports by adopting flat bar or angle bar the above method shall also be referred to for drilling holes to prevent the appearence of vortex.



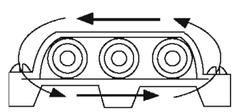


图1、涡流的产生及其消除措施示意图
Figure 1. Schematic Diagramof Production of Vortex and Its

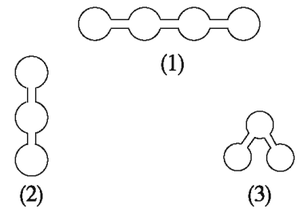


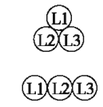
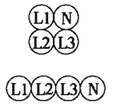
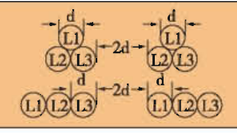
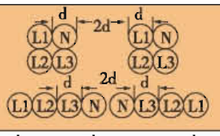
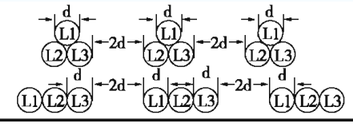
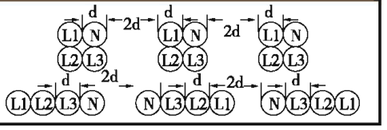
图2、电气箱、柜进线孔示意图
Figure 2. Schematic Diagram of Wiring Holes of Electric Box and Cabinet

14、单芯电缆敷设时，推荐按表19中列出的电缆排列方法进行敷设，且每路电缆之间留有不少于电缆外径2倍的间隙，如不留间隙则应考虑载流量减少系数。

14. When laying single-core cables, it is recommended that they shall be laid by adoptiong the arrangement methods of wires listed in Form 22, and space that is no less than two times of the external diameter of the cables shall be left between each line of cables. If space is not left, the coefficient of current carrying capacity shall be considered to be reduced.

表19 电缆排列方法

Form 19 Arrangement Methods of Cables

敷设方式 Laying method	三相三线 Three-phase three-wire	三相四线 Three-phase four-wire
单路电缆 Single-line cables		
两路平行电缆 Two-line parallel cables		
三路或多路平行电缆 Three-line or multi-line parallel cabels		

二、电缆附件的制作

电缆终端的制作步骤：

1、用专用割刀在距电缆末端20cm处割出一痕线，用斜口钳剥除铜皮，并用干布清除氧化镁粉

2、将密封罐拧在电缆铜护套上(单芯电缆不需要密封罐)

3、用喷灯火焰驱除电缆末端处的潮气

4、在密封罐中填加密封泥并压实、盖上密封盖

5、将热收缩套管套在线芯上

6、测试绝缘电阻

具体详见本公司的安装施工手册

中间连接制作步骤

1、制作终端绝缘密封

2、制作线芯绝缘

3、安装中接端子

4、制作中接端子绝缘

5、安装中间连接器

具体详见本公司的安装施工手册

II. Manufacturing of Cable Accessories

The manufacturing process of cable terminal:

1. Use a special shear to cut a line in the place 20cm from the cable end, a pair of diagonal cutting pliers to strip off copper sheet and clear magnesia powder with dry cloth

2. Fastened sealed tank onto the copper sheath of the cables (single—core cables need not sealtanks)

3. Use blowtorch flame to dry humidity in the cable end

4. Stuff sealed mud in the sealed tank, press tightly and put on the cover

5. Put heat contraction casings on the cable core

6. Test insulation resistances

The details can be seen in the Installation and Construction ManuaI of our company

Procedures of middle connecting manufacturing

1. Manufacturing terminaIinsulation seals

2. Manufacturing conductor core insulators

3. Installing middle connecting terminals

4. Manufacturing middIe connecting terminal insulators

5. Installing middle connectors

The details can be seen in the Installation and Construction ManuaI of our company.

三、安装施工注意事项

Ⅲ.Points for Attention in Installation and Construction

1、由于电缆的绝缘材料在空气中易吸潮，施工时应做好防潮，当发现潮气进入端部，可剪去受潮段。也可用火焰喷灯直接对电缆受潮段加热驱潮、直到用500V兆欧表检测电缆的绝缘电阻达到100MΩ以上才能进行安装终端和中间联接器。

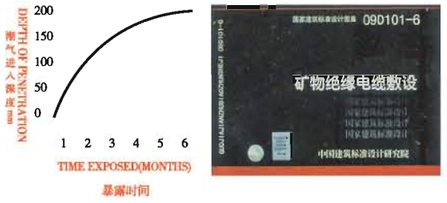
1. For the insulating materials of cables, protection against humidity shall be well done on construction If it is found that the ends are humid, the humid ends can be cut, or flame—thrower lamps can be used to heat the humid ends. Until insulting resistance reaches 100MΩ or more tested by 500V mega—meter, terminals and middle connectors can be installed.

2、在终端和中间联接器的安装过程中，要多次及时测量电缆的绝缘电阻值，因安装时电缆受潮，或金属碎屑未清除干净，均可造成绝缘不合格。

2. In the installation process of terminals and middle connectors, insulating resistance of cables shall be tested for many times in time, for cables become humid on construction or metal crumb is not cleared off, insulation may be not qualified.

3、电缆的终端应牢固地固定在电缆和电气设备上，利用铜护套作接地线时，应接地可靠。

3 The terminals of cables shall be fixed tightly on the cables or electric appliance When using a copper sheath as an earth connector,it is reliable that it shall be connected to the earth.



4、矿物绝缘电缆，吸潮以后膨胀成为氢氧化镁，阻止了潮气进一步进入，右图为暴露时间与潮气进入深度的曲线表。

4 Because it is easy for magnesia powder of mineral—insulated cables to become humid, it will bulge into magnesium hydroxide after being humid So humidity is prevented from further entry. On the right is the chart of disclosure time and humidity entry depth.

5、在桥架T形弯、L型弯、穿越墙洞、电气竖井、进出配电柜箱等弯曲度大、空间狭小处敷设时要按照工厂安装说明的弯曲方法和力度进行冷弯，以免在操作中损伤电缆铜护套。

5. When laying in the places of large curves and small space such as T—shape curve and L—shape curve of bridge, traversing a wall hole, a electric silo and a distribution tank, they shall be chilly curved in accordance to the curving methods and degree of installation instruction less copper sheath of cables is destroyed in the process。

6、根据设计图纸绘制“电缆敷设走向图”，认真核对电缆的根数、规格、长度、走向、中间接头位置及与其他管道交叉的间距等。敷设时应在专用的电缆放线架上进行，逐根放线、逐路捆扎、做到横平竖直。在处理中间接头、终端头时要留足操作余量。在穿钢管及桥架的转角、分支等处，要按照事先排布好的顺序平滑均匀地过渡，避免交叉和重叠，电缆平行敷设时，如有多个中间联接器，其位置应相互错开。

6. Cable Layout is drafted according to a design drawing The number,specification, length, trend, location of middle connectors as well as space between crossed tubes etc shall be checked carefully While laying, they shall be carried out one by one in special cable drum rack and bundled one by one Besides, they shall be done horizontally and vertically. When handling with middle connectors and terminals, operation space shall be sufficiently left While traversing the curves or branches of steel tubes or bridge, order shall be arranged to transit smoothly,and cross and repeat shall be avoided When laying cables horizontally. middle connectors shall be staggered if there are many.

产品应用领域 Application Fields

矿物绝缘电缆已广泛应用于高层建筑、购物中心、星级酒店、医院、剧场、会议中心、图书馆、博物馆、政府机关、金融中心、广电中心、体育中心、工矿、机场、隧道、地铁、轻轨、地下车库、人防、船舶、石油化工、海上石油平台、航空航天、钢铁冶金、烟草、军工等。

Mineral insulated cable has been widely used in high—rise buildings, shopping centers, star hotels, hospitals, theatres, conference centers libraries, museums, government offices, financial centers, TV and radio centers, sports centers, factories and mines, airports, tunnels, subways, light rails, underground garage, civil defense, boats, petrochemical, offshore oil platforms, aVialion and aerospace, Steel metallurgy, tobacco and war industry and so on.

1、高层建筑

High—rise Buldings

普通照明、应急照明、火灾报警、消防电气线路、应急电梯和升降设备线路、计算机房控制线路、主干/分干配电系统线路、双电源控制线路

Ordinary lighting, emergency lighting, fire alarm, firefighting electricaI circuit, emergency lines for elevators and Iifts, control circuits of computer rooms, circuits of trunk/branch power distribution systems and double—power control circuits.

2、机场候机楼

Airport Terminal Building

普通照明和供电、应急照明、火灾监测系统、火灾报警系统、消防电气线路

Ordinary lighting, power supply, emergency lighting, fire monitoring systems and fire alarm systems, firefighting electrical circuit

3、地铁、轻轨、遂道

Subway, Light rails and Tunnels

普通照明、应急照明、火灾报警、消防电气线路、通风线路和救生系统

Ordjnary lighting, emergency lighting, fire alarm. firefighting electrical circuit, ventilation circuits and Lifesaving System

4、购物中心、酒店、医院

Shopping Centers, Hotels and Hospitals

普通照明、应急照明线路、应急广播线路、应急电梯、消防线路和升降设备线路

Ordinary lighting, emergency lighting, emergency radio circuits, emergency elevators, circuits for firefighting circuits and lifting equipment

5、会议中心、体育中心、剧院

Conference Centers, Sports Centers and Theatres

普通照明、应急照明线路、应急广播线路、应急电梯和升降设备线路

Ordinary lighting, emergency lighting, emergency radio circuits, circuits for emergency elevators and lifting equipment

6、图书馆、博物馆、数据处理中心

Libraries, Museums and Data Processing Centers

普通照明、应急照明线路、火灾报警控制线路、消防电气线路

Ordinary lighting, emergency lighting, Control circuits of fire alarm, firefighting electrical circuit

7、停车场、地下车库、人防

Parking Lot, Underground Garage, Civil Defense

普通照明、应急照明、火灾报警、消防线路和通风线路

Ordinary lighting, emergency lighting, fire alarm, flue gas emission firefighting circuitand ventilation circuits

8、名胜古迹

Places of Historic Interest and Scenic Beauty

普通照明、应急照明、火灾报警、消防电气线路

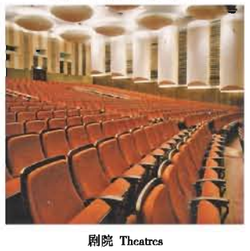
Ordinary lighting, emergency lighting, fire alarm and firefighting electrical circuit


高层建筑 High—rise Buildings


机场候机楼 Airport Terminal Building


地铁、轻轨、隧道 Subway, Light rails

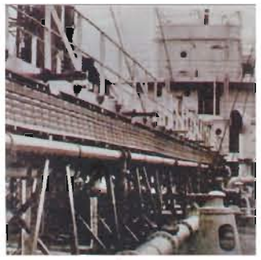

会展中心 Conference Centers


剧院 Theatres

9、石油化工、石油平台
Petrochemical and Oil Platforms
普通照明、应急照明线路、高温场所、消防线路、大动力线路、潜在危险爆炸区域线路
Ordinary lighting, emergency lighting, high temperature places, firefighting circuits, large power circuits and circuits for potential hazardous explosion zone
10、军舰、船舶
Warships and Boats
发电机房输电线路、火灾监测系统、火灾报警系统、烟气排放和通风线路、厨房用电线路、大动力线路、双电源控制线路、应急照明、应急广播线路、计算机房控制线路
Power supply circuits for generator rooms, fire monitoring systems, fire alarm systems, flue gas emission and Ventilation circuits, kitchen electrical circuits, large power circuits, double-power control circuits, emergency lighting, emergency radio circuits, control circuits of computer rooms
11、钢铁冶金
Steel Metallurgy
高温环境动力和控制线路、应急电源、大动力线路、不能断电的供电线路、发电机房输电线路
Power and control circuits under high temperature environment, emergency power supply large power circuits, continuous power supply circuits, power supply circuits for generator rooms
12、发电厂
Power plant
大动力线路、普通照明、应急照明、火灾报警、消防电气线路
Large power circuits, ordinary lighting, emergency lighting, fire alarm and firefighting circuits.
13、电站、核电站
Power Station. Nuclear Power Station
普通照明、应急照明线路、计算机房控制线路、大动力线路、高温环境动力和控制线路、潜在危险爆炸区域线路
Ordinary lighting, emergency lighting, control circuits of computer rooms, large power circuits, power and control circuits under high temperature environment, and circuits for potential hazardous explosion zone
14、航空航天
Aviation and Aerospace
普通照明、应急照明线路、计算机房控制线路、大动力线路、高温环境动力和控制线路、潜在危险爆炸区域线路
Ordinary lighting, emergency lighting, control circuits of computer rooms, large power circuits, power and control circuits under high temperature environment, and circuits for potential hazardous explosion zone
15、油库、弹药库
Oil Depots and Ammuntion Depots
普通照明、应急照明、火灾报警、烟气排放、易燃易爆和通风线路
Ordinary lighting, emergency lighting, fire alarm, flue gas emission, flammable, explosive and ventilation circuits
16、工矿
Factories and Mines
排烟风机、高频加热炉、高温场所、消防线路、大动力线路
Smoke exhaust fans, high-frequency heating furnace, high temperature places and firefighting circuits, large power circuits


石油平台 Oil Platforms


石油化工 Petrochemical


船舶 Boats


钢铁冶金 Steel Metallurgy


地下车库 Underground Garage


名胜古迹 Places of Historic Interest and Scenic Beauty


发电厂 Power plant

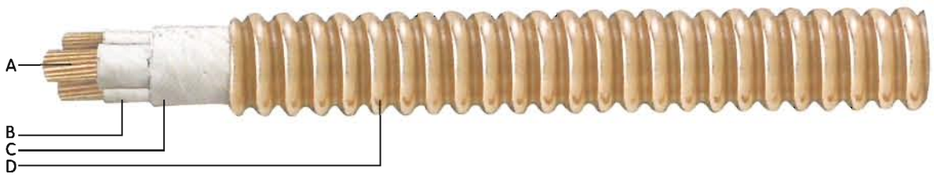

航空航天 Aviation and Aerospace

皱纹铜护套柔性防火电缆
Wrinkles copper sheath flexible fireproof cables

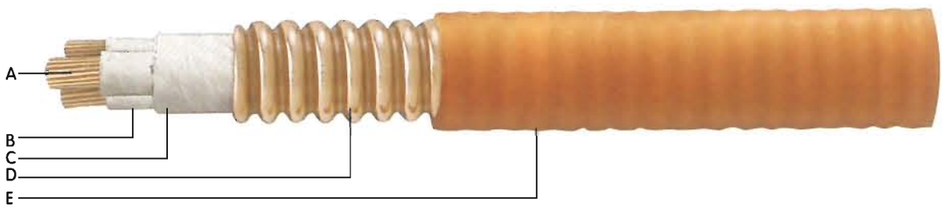
皱纹铜护套柔性防火电缆的结构
Structure of wrinkles copper sheath flexible fireproof cables

1、电缆导体：有多股铜线绞合而成，具有良好的弯曲特性。
2、绝缘层：采用耐高温，不燃烧的无机绝缘材质。
3、铜护套：铜质材料，经特殊加工有良好的弯曲特性，并作为PE线。
4、外护层：采用低烟无毒的塑性材质，有良好的防腐蚀特性。

1、Cable conductor:made up of stranded copper wires, with favorable flexural property.
2、Insulation layer:adopts high-temperature resistant inorganic insulation materials.
3、Copper sheath:copper materials,through special machining,with favorable flexural property,used as PE wire.
4、Outer sheath:made of plastic materials of low-smoke non-toxicity, with favorable corrosion protection.



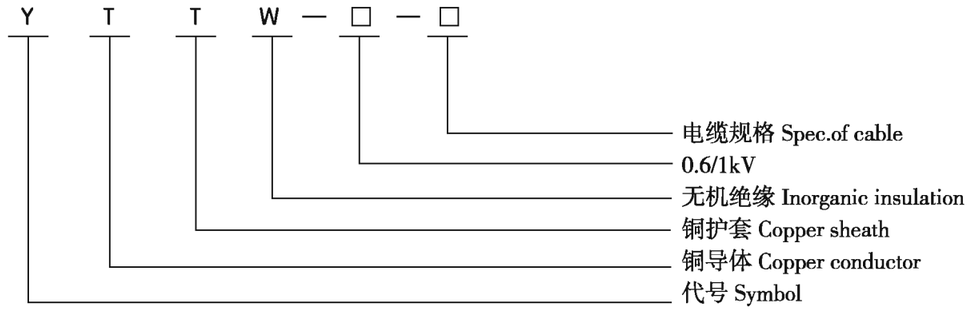
A、绞合铜导体 Stranded copper conductor
B、无机绝缘材料 Inorganic insulation
C、无机纤维填充料 Inorganic fiber packing material
D、铜护套 Copper sheath



A、绞合铜导体 Stranded copper conductor
B、无机绝缘材料 Inorganic insulation
C、无机纤维填充料 Inorganic fiber packing material
D、铜护套 Copper sheath
E、外护套（可选）Outer sheath(optional)

皱纹铜护套柔性防火电缆型号

Model of wrinkles copper sheath flexible fireproof cables



例1：YTTW4×50
表示：4芯，4根mm²截面的皱纹铜护套柔性防火电缆
例1：YTTW4×（1×150）
表示：4根单芯150mm²截面拼凑的皱纹铜护套柔性防火电缆。

Eg.1：YTTW 4×50
It means 4 wrinkles copper sheath flexible fireproof cables of 50mm² in sectional area.
Eg.2：YTTW 4×（1×150）
It means 4 wrinkles copper sheath flexible fireproof cables single core of 150mm² in cross section.

皱纹铜护套柔性防火电缆的耐火特性

Fire-resistant property of wrinkles copper sheath flexible fireproof cables

1、按国家标准，电线电缆燃烧试验方法耐火性试验 GB12666.6
A类在火焰温度950℃中燃烧，相间及相与外护套之间施加750V电压，历时90min绝缘不损坏。
B类在火焰温度750-800℃中燃烧相间及相与护套之间施加750V电压，历时90min绝缘不损坏。

1.According to national standards, fire-resistant wire and cable fire test method characteristic test, according to GB12666.6

Glass A, burn in fire with flame temperature 950℃， apply voltage of 750V between phase and phase and between phase and outer sheath, it should be able to withstand for 90min without breakdown.

Class B, burn in fire with flame temperature 750-800℃, apply voltage of 750V between phase and phase and between phase and sheath, it should be able to withstand for 90min without breakdown.

2、按英国BS378标准，皱纹铜护套柔性防火电缆能满足以下要求：
A级650℃3h
B级750℃3h
C级950℃3h
S级950℃20min

2.According to the BS 6378, wrinkles copper sheath flexible fireproof cables satisfies the following requirements:
Class A 650℃ 3h
Class B 750℃ 3h
Class C 950℃ 3h
Class S 950℃ 20min

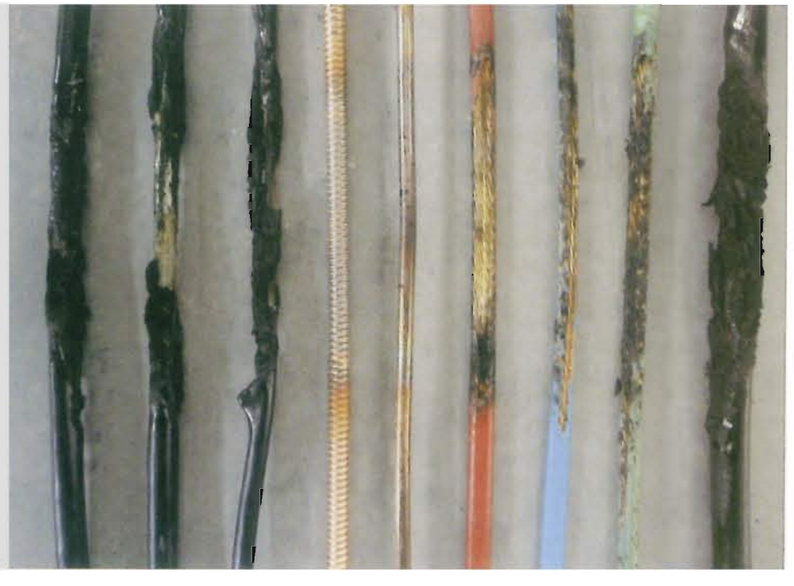
耐火特性试验前
Before fireproof property test

耐火特性试验后
After fireproof property test

皱纹铜护套柔性防火电缆的优点

Advantages of wrinkles copper sheath flexible fireproof cables

加温到300℃~950℃时
耐火试验比较图
Fire-resistive test
300℃~950℃



1、防火性能优异，耐火等级不仅满足国标GB12666.6A类950℃，90min，还可满足英国BS6387-1 994中规定的A级650℃3h；B级750℃ 3h；C级950℃ 3h要求；同时，在燃烧中还能耐受水喷与机械撞击；

1、Excellent fireproof property，the fireproof rating not only satisfies the national standard GB12666. 6：category A950℃ 90min，but also meet up with the U.K.standard BS6387-1994：class AC950℃ 3h；class B750℃ 3h；class C 950℃ 3h；meanwhile，it also is able to withstand the water spraying or mechanical strike；

2、连续长度长，不管是单芯，还是多芯电缆，其长度能满足供电长度需要，每根连续长度可达1000m以上；

2、Long continuous length：the length can satisfy the length demand for power supply in spite of single-core or multi-core cable，and continuous length of each cable can be as long as 1，000m.

3、截面大，单芯电缆截面可达630mm²，多芯电缆截面可达70mm²；

3、Large sectional area，sectional area of sinle-cope cable reaches 630mm。and that of multi—core cable reaches 70mm^2；

4、具有柔性，电缆可以盘在电缆盘上，其弯曲半径6-10D，(D为电缆外径)；

4、Property of flexibility，the cable can be wound on the cable reel，with the benging radius 6-10D，(D is the outer diameter of cable)；

5、燃烧时无烟无毒，绝缘采用无机材料(不燃烧体)，燃烧时不会产生任何有害气体，更不会发生2次污染，称得上是环保绿色产品。

5、Smoke-free non-toxicity when burning，it adopts inorganic materials(non-inflammable materials)for insulation，its burning would not produce any harmful gas or secondary pollution，it is a environmental protection product；

6、过载能力大，电缆不仅载流量大，而且具有较大的过载能力，根据布线要示，通常电缆表面温度≤70℃，若布线不可触摸，也不与可燃建筑材料相接触时，电缆护套温度可提高到105℃，过载时防火电缆长期工作温度可达250℃；

6、High overload capacity，the cable not only is high in current carrying capacity，but also has large overload capacity. Ac-cording to the wuring requirements。the surface temperature of cable usually is≤70℃，if it will not be touched or will not contact with flammable building materials，the temperature of cable sheath can be heighten to 105℃. when coming across overload. 10ng-term working temperatu re of fireproof cable can reach 250℃；

7、耐腐蚀，有机绝缘耐火电缆有时需穿塑料管或铁管，塑料管易老化变脆，铁管易锈蚀。防火电缆有铜护套不需穿管，铜护套耐腐蚀性好；

7、Property of corrosion proof，organic insulaated fireproof cable requires plastic tue or i ron tube sometimes，the plastic tube iS liable to deteriorate and iron tube is apt to rust or erode. but the fireproof cable has copper sheath and the tube is need—less，besides，copper sheath has favorable corrosion resistance；

8、无电磁干扰，防火电缆与信息、控制等线在同一竖井中敷设时，在铜护套的屏蔽下，不会对信号、控制电线电缆传输的信息产生干扰；

8、Free of electromagnetic interference，when wiring in the same vertical shaft with information wire and control wire，because of shielding of copper sheath，the fireproof cable would not interfere the single and control wires or cables；

9、安全性好，防火电缆能在火焰中正常供电，启动灭火设备，减少火灾损失，对人身安全也特别可靠，其铜护套是优良导体，是最好的接地PE线，且连续到电缆全长，大大提高了接地保护灵敏度与可靠性；

9、Favorable safeness，it is able to supply power and start the fire extinguishing apparatus normally in flame，it reduces fire damage. besides，it is reliable for personel safety，as its copper sheath is a kind of good conductor，is the best earthed PE wire，and covers the whole cable，The life of up to 100 years；

10、使用寿命长，无机绝缘材料耐温高，且不易老化，他的寿命比有机绝缘电缆高许多倍，在正常工作状态下，其寿命可达100年以上；

10、Long service life，high-temperature resistance and degradation-resistance of inorganic insulated material，its service life is many times of that of organic insulated cables，under normal working conditions，its service life can be as long as that of buildings；

11、皱纹铜护套柔性防火电缆的包装运输和安装配件近似于普通电缆，较简单；

11、Transportation and packaging of wrinkles copper sheath flexible fireproof cables includ-ing installation fittings are simple，nearl the same as that of general cables；

12、经济性好，皱纹铜护套柔性防火电缆由于制作工艺先进，安装简单，在同等条件下其综合费用比矿物绝缘电缆的费用明显降低。

12、Favorable economical efficiency，due to advanced manufacturing processes and simple installation，overall cost of wrinkles copper sheath flexible fireproof cables is much lower than that of mineral insulated cable underthe same conditions.

皱纹铜护套柔性防火电缆的电气特性

Electrical characteristics of wrinkles copper sheath flexible fire proof cables

1.额定电压：0.6／1kV；

1. Rated voltage：0.6／1 kV

2.额定电流：单芯25A-1800A，多芯16A-500A；

2. Rated current：single-core 25A-1,800A；multi-core 16A-500A；

3.绝缘电阻：绝缘电阻≥1000M Q·km。电缆长度小于100m，则绝缘电阻≥10000MQ；

3. Insulation resistance：insulation resistance≥1 000M Q·km.Cable length less than 100m,then the insulation resistance≥10000MQ。

4.工频耐压：500V等级电缆和750V等级电缆分别施加2000V和2500V电压在相与相，相与铜护套之间，历时15min，不应发生击穿。

4. Power frequency withstand voltage：apply voltage of 2,000V and 2,500V between phase and phase as well as phase and copper sheath of cables of 500V and 750V respectively，they should be able to withstand for 15min without broken down.

皱纹铜护套柔性防火电缆的制造标准

Manufacturing standards of wrinkles copper sheath flexible fireproof cables

中华人民共和国建筑工业行业标准JG/T 313-2011

The People's Republic of China construction industry standards JG/T 313-2011

额定电压750V及以下金属护套无机矿物绝缘电缆及终端

Rated voltage 750V up to and incldluing metal sheath inorganic mineral insulated cable and terminal

皱纹铜护套柔性防火电缆的规格及其参数（见表1-表9）

Specifications and parameters of wrinkles copper sheath flexible fireproof cables (refer to table 1-table 9)

表1.电缆结构尺寸

Table1.Structural dimension of cable

导体标称截面 Nominnal section of conductor mm^2	导体结构根/直径 Conductor structure Pcs./dia.	导体标称直径 Nominnal diameter of conductor mm	绝缘标称厚度 Nominnal insulation of conductor mm	金属护套厚度 Thickness of metallic sheath mm				电缆外径 O.D.of cable mm			
				1芯 1-core	2芯 2-cores	3芯 3-cores	4芯 4-cores	1芯 1-core	2芯 2-cores	3芯 3-cores	4芯 4-cores
1	1/1.13	1.13	0.8	0.4	0.5	0.5	0.5	3.53	5.66	5.96	6.46
1.5	1/1.38	1.38	0.8	0.4	0.5	0.5	0.6	3.78	6.16	6.50	7.06
2.5	1/1.78	1.78	0.8	0.4	0.5	0.6	0.6	4.18	6.96	7.56	8.23
4	1/2.25	2.25	0.8	0.5	0.6	0.6	0.6	4.85	8.10	8.57	9.36
6	1/2.76	2.76	0.8	0.5	0.6	0.6	0.6	5.36	9.12	9.67	10.59
10	7/1.34	4.02	1.00	0.5	0.7	0.7	0.7	7.02	12.44	13.22	14.52
16	7/1.68	5.04	1.00	0.6	0.7	0.7	0.8	8.24	14.48	15.42	17.18
25	7/2.12	6.36	1.00	0.6	0.8	0.8	0.9	9.56	17.32	18.46	20.57
35	7/2.50	7.50	1.00	0.6	0.8	0.9	1.0	10.90	19.90	21.43	23.86
50	19/1.76	8.80	1.2	0.7	0.9	0.9	1.0	12.60	23.00	24.55	27.34
70	19/2.12	10.60	1.2	0.7	1.0	1.0	1.0	14.40	26.80	28.63	31.69
95	19/2.50	12.50	1.2	0.8	1.0	1.0	–	16.50	30.60	32.72	–
120	37/2.02	14.14	1.2	0.8	1.0	–	–	18.14	33.88	–	–
150	37/2.25	15.75	1.40	0.8	–	–	–	20.15	–	–	–
185	37/2.50	17.50	1.40	0.9	–	–	–	22.10	–	–	–
240	37/2.87	20.09	1.40	0.9	–	–	–	24.69	–	–	–
300	61/2.50	22.50	1.60	1.0	–	–	–	27.70	–	–	–
400	61/2.80	25.20	1.60	1.0	–	–	–	30.40	–	–	–
500	91/2.60	29.20	1.80	1.1	–	–	–	37.40	–	–	–
630	91/2.88	33.00	1.80	1.1	–	–	–	43.50	–	–	–

注：1.*4芯导体也可有两种截面尺寸搭配组成3+1芯特殊结构电缆，电缆的外径则按组成计算。

2.电缆采用紧压线芯时，导体的直径应是标称直径的95%；金属护套外径则作相应调整而变小。增强绝缘时，电缆外径约增加5%。

3.特殊大规格2芯或3芯电缆，为减少电缆外径，导体线芯可采用半圆形或扇形。

4.经轧纹处理的铜护套厚度，将适当变薄，但应满足作为PE的电气性要求；若铜护套不做PE线要求，只须保证其机械强度。

Notes:

1.*4-core conductor may adopt two different sectional areas and combine into special structured 3+1-core cable,outer diameter of metallic sheath should be adjusted correspondingly.When en-hancing the combination.

2.When the cable employs compressed cores.diameter of cable should be 95%of nominal diameter; outer diameter of metallic sheath should be adjusted correspondingly.When enhancing the insulation.outer diameter of cable is increased for about 5%.

3.For specialIarge-spec.2-core or 3-core cables,it can adopt hemicycle or sector conductor core reduce the outer diameter of cables.

4.Thickness of copper sheath after corrugation treatment wilI be thinner.but sgould be satisfy the electrical requirements of PE; if the copper sheath wilI not be used as PE wire.it wilI be only required to guarantee its mechanicaI strength.

表2 电缆导体和铜护套在20℃时的直流电阻

Table 2.DC resistance of cable conductor and copper sheath at 20℃

导体标称截面 Nominnal section of conductor mm^2	导体结构根/直径 Conductor structure Pcs./dia.	导体计算截面 Calculation of conductor section mm	20℃导体电阻Ω/km不大于 Conductor resistance Ω/km at20℃ not more than	20℃铜护套计算电阻值Ω/km calculator of resistance Ω/km ofcopper sheath at 20℃			
				1芯 1-core	2芯 2-cores	3芯 3-cores	4芯 4-cores
1	1/1.13	1.003	18.1	4.53	2.20	2.08	1.90
1.5	1/1.38	1.496	12.1	4.19	2.00	1.89	1.73
2.5	1/1.78	2.488	7.41	3.75	1.75	1.36	1.24
4	1/2.25	3.976	4.61	2.61	1.26	1.18	1.08
6	1/2.76	5.983	3.08	2.33	1.11	1.04	0.945
10	7/1.34	9.872	1.83	1.74	0.689	0.646	0.586
16	7/1.68	15.52	1.15	1.19	0.587	0.550	0.432
25	7/2.12	24.71	0.727	1.05	0.429	0.401	0.320
35	7/2.50	34.36	0.524	0.935	0.377	0.141	0.28
50	19/1.76	46.22	0.387	0.680	0.285	0.266	0.215
70	19/2.12	67.07	0.268	0.591	0.220	0.205	0.185
95	19/2.50	93.27	0.193	0.451	0.191	0.179	–
120	37/2.02	118.6	0.153	0.408	0.172	–	–
150	37/2.25	147.1	0.124	0.366	–	–	–
185	37/2.50	181.6	0.0991	0.297	–	–	–
240	61/2.25	242.5	0.0754	0.263	–	–	–
300	61/2.50	299.4	0.0601	0.212	–	–	–
400	61/2.80	375.6	0.0470	0.193	–	–	–
500	91/2.60	482.9	0.0366	0.149	–	–	–
630	91/2.88	592.5	0.0283	0.129	–	–	–

注：*3+1芯为特殊电缆，20℃铜护套电阻根据下列公式计算：R20=0.0178÷*4÷［$D^2-(D-2h)^2$］*1000
式中：D–电缆外径；h–电缆铜护套厚度
Note：*3+1–core cable is aspecial，resistance of copper sheath at 20℃ can be gotten according to the following formula：
R20=0.0178÷*4÷［$D^2-(D-2h)^2$］*1000
Wherein：D–O.D. of cable；h–thickness of copper sheath

表3 电缆导体90℃和铜护套在70℃时的直流电阻
Table 3.DC resistance of cable conductor at 90℃ and copper sheath at 70℃

导体标称截面 Nominnal section of conductor mm^2	导体结构 根/直径 Conductor structure Pcs./dia.	90℃导体电阻 Ω/km不大于 Conductor resistance Ω/km at90℃ not more than	70℃铜护套电阻值Ω/km Resistance ofcopper sheath at 70℃Ω/km			
			1芯 1-core	2芯 2-cores	3芯 3-cores	4芯 4-cores
1	1/1.13	23.10	5.44	2.64	2.50	2.28
1.5	1/1.38	15.40	5.03	2.40	2.27	2.08
2.5	1/1.78	9.48	4.50	2.10	1.63	1.49
4	1/2.25	5.90	3.13	1.51	1.42	1.30
6	1/2.76	3.90	2.80	1.33	1.25	1.13
10	7/1.34	2.33	2.10	0.83	0.78	0.70
16	7/1.68	1.47	1.43	0.70	0.66	0.52
25	7/2.12	0.92	1.26	0.51	0.48	0.38
35	7/2.50	0.67	1.12	0.45	0.17	0.34
50	19/1.76	0.49	0.82	0.34	0.32	0.26
70	19/2.12	0.34	0.71	0.26	0.25	0.22
95	19/2.50	0.25	0.54	0.23	0.21	–
120	37/2.02	0.20	0.49	0.21	–	–
150	37/2.50	0.16	0.44	–	–	–
185	61/2.25	0.13	0.36	–	–	–
240	61/2.50	0.10	0.32	–	–	–
300	61/2.50	0.08	0.25	–	–	–
400	61/2.80	0.06	0.23	–	–	–
500	–	0.048	0.018	–	–	–
630	–	0.038	0.014	–	–	–

表4 环境温度为40℃时，单芯电缆载流量及其参数
Table 4. Current carrying capacity and parameters of single–core cable at ambient temperature 40℃

标称截面 Nominnal section mm^2	铜护套（PE线）截面 Copper sheath（PEwire）Sectional area（mm^2）	绝缘厚度 Insulation thickness（mm）	近似外径 Approximate O.D.（mm）	导体电阻90℃（Ω/km） Core resistance 90℃（W/km）	额定电流 Rated current（A）	额定电流 Rated current（A）	单位电压降 Specific voltage drop（V/A.Km）
1	4×4.4	0.8	3.53	23.10	–	–	23.10
1.5	4×4.7	0.8	3.78	15.40	32	26	15.40
2.5	4×5.2	0.8	4.18	9.48	42	34	9.48
4	4×7.6	0.8	4.85	5.90	56	44	5.90
6	4×8.4	0.8	5.36	3.90	70	56	3.90
10	4×11.0	1.00	7.02	2.33	97	77	2.33
16	4×15.5	1.00	8.24	1.47	125	100	1.47
25	4×18.0	1.00	9.56	0.92	165	130	0.92
35	4×20.5	1.00	10.70	0.67	200	160	0.67
50	4×27.7	1.20	12.60	0.49	245	195	0.49
70	4×31.7	1.20	14.40	0.34	305	245	0.34
95	4×41.4	1.20	16.50	0.25	375	300	0.25
120	4×55.6	1.20	18.14	0.20	435	350	0.20
150	4×50.6	1.40	20.15	0.16	500	400	0.16
185	4×62.4	1.40	22.10	0.13	580	465	0.13
240	4×70.2	1.40	24.85	0.10	685	550	0.10
300	4×87.0	1.60	27.70	0.08	795	635	0.08
400	4×95.4	1.60	30.40	0.06	930	745	0.06
500	4×125.4	1.80	36.35	0.048	1050	855	–
630	4×146.5	1.80	42.63	0.038	1198	998	–

注：表4单芯电缆用于3相4线系统时单位电压降应乘以$\sqrt{3}$，用于单相系统时单位电压降应乘以2
Note：when the single–core cables in table 4 are applied to 3–phase 4–wire systems, the specific voltage drop should be multiplled by$\sqrt{3}$，and be multiplied by 2 when are applied to single–phase systems.

表5.环境温度为40℃时，2芯电缆载流量及其参数

Table 5. Current carrying capacity and parameters of two-cores cable at ambient temperature 40℃

标称截面 Nominnal section mm^2	铜护套（PE线）截面 Copper sheath (PEwire) Sectional area (mm^2)	绝缘厚度 Insulation thickness (mm)	近似外径 Approximate O.D. (mm)	导体电阻90℃ (Ω/km) Core resistance 90℃ (W/km)	额定电流 Rated current (A)	单位电压降 Specific voltage drop (V/A.Km)
2×2.5	10	0.80	6.96	9.48	33	18.96
2×4	15	0.80	8.10	5.90	44	11.80
2×6	17	0.80	9.12	3.90	57	7.80
2×10	39	1.0	12.44	2.33	78	4.66
2×16	45	1.0	14.48	1.43	104	2.86
2×25	54	1.0	17.32	1.26	135	2.52
2×35	67	1.10	19.90	1.12	168	2.24
2×50	82	1.20	23.00	0.82	204	1.64
2×70	96	1.20	26.80	0.71	263	1.42
2×95	110	1.20	30.60	0.54	320	1.08
2×120	126	1.20	33.88	0.49	373	0.98

表6.环境温度为40℃时，3芯电缆载流量及其参数

Table 6. Current carrying capacity and parameters of three-cores cable at ambient temperature 40℃

标称截面 Nominnal section mm^2	铜护套（PE线）截面 Copper sheath (PEwire) Sectional area (mm^2)	绝缘厚度 Insulation thickness (mm)	近似外径 Approximate O.D. (mm)	导体电阻90℃ (Ω/km) Core resistance 90℃ (W/km)	额定电流 Rated current (A)	单位电压降 Specific voltage drop (V/A.Km)
3×2.5	13.6	0.80	7.56	9.48	29	16.40
3×4	15.4	0.80	8.57	5.90	38	10.20
3×6	17.4	0.80	9.67	3.90	46	6.74
3×10	27.7	1.0	13.22	2.33	68	4.03
3×16	32.3	1.0	15.42	1.47	85	2.54
3×25	44.3	1.0	18.46	0.92	118	1.59
3×35	57.8	1.10	21.43	0.67	150	1.16
3×50	66.2	1.20	24.55	0.49	192	0.85
3×70	85.8	1.20	28.63	0.34	228	0.59
3×95	98.1	1.20	32.72	0.25	273	0.43

表7. 环境温度为40℃时，3+1芯电缆载流量及其参数

Table 7. Current carrying capacity and parameters of 3+1 cores cable at ambient temperature 40℃

电缆规格 Cable spec. mm^2	铜护套（PE线）截面 Copper sheath (PEwire) Sectional area (mm^2)	绝缘厚度 Insulation thickness (mm)	近似外径 Approximate O.D. (mm)	导体电阻90℃ (Ω/km) Core resistance 90℃ (W/km)	额定电流 Rated current (A)	额定电流 Rated current (A)	单位电压降 Specific voltage drop (V/A.Km)
3×16+1×10	41.6	1.00	16.56	1.47	0.449	85	2.54
3×25+1×16	55.9	1.00	19.77	0.92	0.334	118	1.59
3×35+1×16	69.6	1.10	22.18	0.67	0.296	150	1.16
3×50+1×25	81.2	1.20	25.87	0.49	0.228	192	0.85
3×70+1×35	93.6	1.20	29.81	0.34	0.197	228	0.59
3×95+1×50	106.9	1.20	34.04	0.25	0.171	273	0.43

表8. 环境温度为40℃时，4芯等截面电缆载流量及其参数

Table 8. Current carrying capacity and parameters of 4-cores constant section cable at ambient temperature 40℃

电缆规格 Cable spec. mm^2	铜护套（PE线）截面 Copper sheath (PEwire) Sectional area (mm^2)	绝缘厚度 Insulation thickness (mm)	近似外径 Approximate O.D. (mm)	导体电阻90℃ (Ω/km) Core resistance 90℃ (W/km)	额定电流 Rated current (A)	单位电压降 Specific voltage drop (V/A.Km)
4×6	20.0	0.80	10.59	3.90	46	6.74
4×10	31.9	1.00	14.52	2.33	65	4.03
4×16	43.2	1.00	17.18	1.47	85	2.54
4×25	58.1	1.00	20.57	0.92	118	1.59
4×35	74.9	1.10	23.86	0.67	150	1.16
4×50	85.8	1.20	27.34	0.49	192	0.85
4×70	99.5	1.20	31.69	0.34	228	0.59

表9. 不同环境温度下载流量的修正系数

Table 9. Currection factor of current carrying capacity at different ambient temperatures

导体工作温度（℃） Working tempersture of conductor (℃)	环境温度（℃）（空气中）Ambient temperature(℃)(in air)								
	10	15	20	25	30	35	40	45	50
60	1.58	1.50	1.41	1.32	1.22	1.11	1.00	0.86	0.73
65	1.48	1.41	1.34	1.26	1.18	1.09	1.00	0.89	0.77
70	1.41	1.35	1.29	1.22	1.15	1.08	1.00	0.91	0.81
80	1.32	1.27	1.22	1.17	1.11	1.06	1.00	0.93	0.86
90	1.26	1.22	1.18	1.14	1.09	1.04	1.00	0.94	0.89
105	1.22	1.19	1.15	1.11	1.08	1.04	1.00	0.95	0.91

YTTW系列柔性防火电线电缆载流量的说明：

电线电缆的连续负荷载流量(额定电缆)，是一个重要而复杂的物理量，各厂家的样本几乎都不相同。国际上也互不相同，不同的因素很多，难以说明，但无论国内国外大家有个共同点：都遵循IEC国际标准。本公司完全参照IEC287标准定出柔性防火电线电缆的载流量，依据是环境温度40℃，线芯温度90℃，由于无机绝缘电线电缆优良的耐高温特性，是否能提高线芯温度，缩减截面，节省投资，当然可以，但本公司不提倡，因为这样会大大增加铜损，从综合经济效应来看是不合算的。

表4-8中的单位电压降是按线芯温度90℃时的电阻值算出是偏高的，仅供参考。

关于电线电缆敷设方式及载流量的修正系数，请查阅供配电设计手册。

Introduction to the current carrying capacity of YTTW series flexible fireproof wires and cables:

The continuous load current carrying capacity (rated current) of wires & cables is an important and complex physical quantity, it is always various in catalogue of domestic and international manu-facturers. It is hard to explain the causes for difference. but there is a common ground that these manufacturers follow the current carrying capacity of flexible fireproof wires and cables stipulated as the IEC287 standard. The basis is ambient temperature 40℃ and core temperature 90℃. Due to excellent high temperature resistance character of inorganic insulated wires and cables. the improvement of conductor temperature and reduction of the cross section are allowable, but we don't encourage that, because these behaviors will increase the loss of copper, to consider from the comprehensive econommic benefit. it is uneconomical.

The specific voltage drop in the table 4-8 is on the high side calculated on the basis of resistance at conductor temperature 90℃, it is only for reference.

For the wire cable layout mode and correction factor of cu rrent carrying capacity, please refer to the power supply and distribution design handbook.

YTTW电缆安装注意事项

Matters needing attention for Installation of YTTW cables

1. YTTW电缆安装方式同普通电缆一样不需要专业人员，也不需要进行安装培训，遵照厂家所提供的安装施工要领及注意事项，安装前厂家均可派人做指导。

2. 电缆盘直接到现场进行放线，放线时可以从下至上，也可以从上至下。

3. 电缆的支架与固定

a 水平吊架允许跨距1）电缆外径≤20mm，允许跨距400mm；2)电缆外径>20mm，允许跨距800mm

b 垂直支架允许跨距1）电缆外径≤20mm，允许跨距1500mm；2)电缆外径>20mm，允许跨距1000mm

c 在电缆桥架中敷设，固定电缆允许跨距可参照a、b项；

d 电缆敷设时允许存在自然的蛇形，但弯曲凸度应≤2D，D为电缆外径；

e 单芯电缆绑箍固定严禁采用磁性材质，例如铁丝等；

f 单芯电缆不能单根穿越磁性材质管及闭合的任何形状的磁性构件，必须穿过钢管时（如地下室与楼层）又不能三相四线一起穿，应将每根钢管锯开一条缝才能穿过。

1. YTTW cables are installed as the ordinary cables without the need of professional or specially-trained operators. The manufacturer will send related person(s) to direct the cable installation.

2. The cable is de-reeled from the reel previously transported to the work site. The de-reeling may be carried out from bottom to the top or from the top to the bottom.

3. Cable support and fixing

a. Permissible span for horizontal hangers: (1)400mm, for cable diameter≤20mm; (2)800mm, for cable diameter>20mm

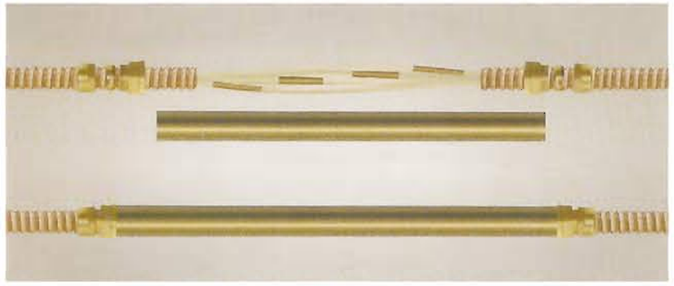
b. Permissible span for vertical support: (1)1500mm, for cable diameter≤20mm; (2)1000mm, for cable diameter>20mm

c. For installation in cable tray. "a" or "b" may be referenced for the permissible span for fixing the cable

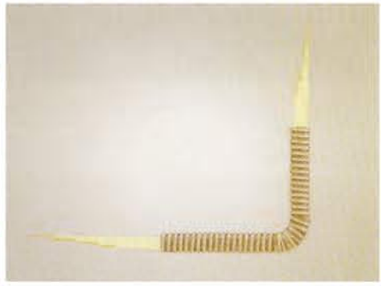
d. Natural snaking of cable is permissible during installation, but the curvature sahll≤2D, where D is the cable diameter.

e. It is strongly prohibited to bind and fix single-core cables with magnetic materials. e.g.Iron wire.

f. A single single-core cable shall bot pass through atube or closed component of any shape made of magnetic. Where it is necessary for the cable to pass through a stell tube(e.g.Connection between basement and floor)and where it is not allowed for the whole 3-phase-4 wire system to pass through the tube together, a seam shall have been sawn on each tube before cable passes througn it.



中间连接器
Straight-through connector



多芯电缆直角弯
Right-angled bending of a multicore cable

4. 电缆配件

a. 中间接头特长电缆或大截面多芯电缆(单根重量较重可分作丙段)中间配有接头，在现场连接，耐火等级等同于本体；

b. 直角弯头电缆直角转弯敷设时，现场弯曲难度大，可配预制直角弯接头，方便现场施工；

c. 终端接头根据用户需要，可配终端接头，也可以不配终端接头，在现场制作终端头时，剥去铜护套，端头剥去绝缘约30mm压制端子，用兆欧表检测铜护套及导体间绝缘电阻，合格后，套上热缩套管，保护未剥绝缘层：

5. 电缆弯曲

a. 电缆弯曲时，必须用直径不小于0. 5m圆轮衬垫，弯曲时也必须用圆弧衬垫收弯曲；

6. 电缆分割

a. 在现场电缆可以任意按需要分割，不必采用喷灯去湿；

b. 剥除铜护套时，严禁铜屑嵌入绝缘层。除肉眼查看外，应用兆欧表检测绝缘电阻(铜护套及导体间)，如绝缘电阻不合格，说明铜护套的边刺，刺入绝缘中并导体接触，必须清除。

4. Cable accessoriles

a. Straight-through connector: Extra-long cables or large size multicore cables may have a straight through connector in the middle. Because a continuous length of cable ia too heavy, it consists of two lengths. The two lengths of cable will be connected by the straight-throuhn connector on-site, which has the same fire rating as the cable itself.

b. Quarter bend: It is difficult to bend the cable for a right angle in the installation. For this reason a quarer bend is used to ease the installation

c. Termination: the termination may be provided or not provided depening on the requirement of the customer. When the termination is made on-sitr, the copper sheath shall be stripped at the cable end the insulaton shall be stripped for ca. 30mm from the end for making compressed terminal. The insulation resistance between the conductor and copper sheath shall be measured with a megohm-meter. If the measu rement complies with the standard, heat-shrinkable sleev shall be applied to protect the exposed insulation.

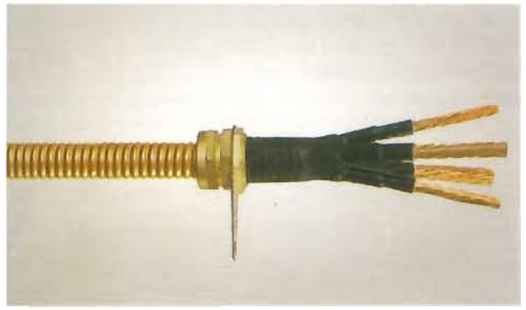
5. Bending

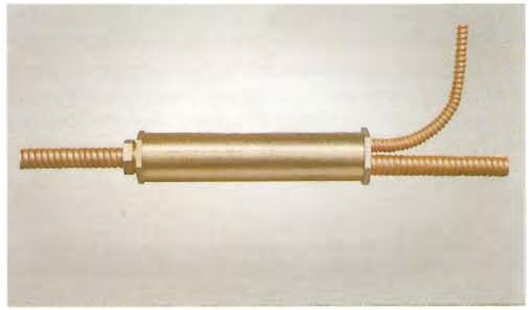
a. The cable shall be bent against a wheel having a diameter not smaller than 0.5m.

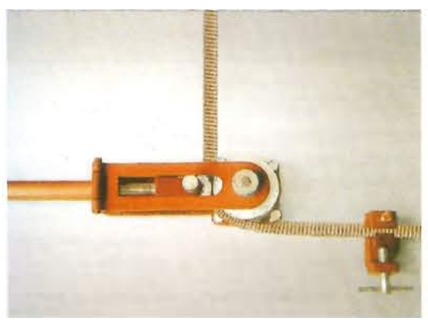
6. Cutting

a. The cable can be cut to any lengh on-site without the need of drying it bu burner.

b. Wheen stripping the copper sheath, it is strongly prohibited to let bits of copper penetrate into the insulation. In addition to visual ex-amination, the insulation resistance between the conductor and copper sheath shall be measured with a megohmmeter. Nonconformity indicates that burrs from the copper sheath have penetrated into the insulation and contact the conductor. These burrs must be removed.







① ②
③

1、终端 Termination
2、单芯分支电缆
Single-core branched cable
3、电缆弯管机
Cable pipe bending machine
电缆的弯曲半径为6-10D，D为电缆外径
The bending radius cable is 6-10D,hereinto D is the cable outer diameter.

7. 电缆接地

a. 多芯电缆铜护套一端或多处接地无特殊要求；

b. 单芯电缆铜护套应两端(多端也可)接地，若要节能单端接地时，另一端必须采用绝缘隔离，防止人员碰触，也要防止电缆周围有可燃材质；

C. 电缆接地可用铜带，铜卡紧固在铜护套上，用铜导体引到接地点。若采用铁质卡件，必须镀锌、镀铬件。

8. 电缆通电

a. 电缆两端已制作好终端，在接到电气设备之前，必须用千伏兆欧表检测绝缘电阻。单芯电缆检测导体及铜护套之间。多芯电缆检测，相线及相线之间，相线及中性线之间，相线及铜护套之间，中性线及铜护之间。

b. 电缆两端接到电气设备，对整个系统应用千伏兆欧表检测绝缘电阻，若≥0.5MΩ才可以通电。

7. Earthing

a. There are no special earthing requirements for multiocore cables which may be earhed at one end or at more than on each spot.

b. Single-core cables shall be earthed at both ends(more than two earth sports are permissible). If, for energy-saving, only one end of the copper sheath in a single-core cable is earthed, insulation isolation shall be provided at the other end to keep the cable fron being touched. AIso adjacent combustible shall be removed.

c. The cable may be earthed through a copper tape, which is securely fastened to the copper sheath and led to the earth and led to theearth spot bu a copper earth bond. Iron ferrule used shall be plated with zinc or chromium.

8. Energization

a. The cable shall be terminated at both ends. Befor connecting the cable to the electrical equipment, the insulation resistance shall be measured with a megohmmeter. For single-core cables, the measuurement shall be made between phase conductors, between phase conductor and neutral, be-tween phase conductor and the copper sheath and between neutral and the copper sheath.

b. The cable shall be connected to the electrical equipment. The insulation resistance of the system shalb be measured with a meg-ohmmeter. Onlywhen the insulation resistance is equal to or greater than 0.5MΩ can the cable be energized.

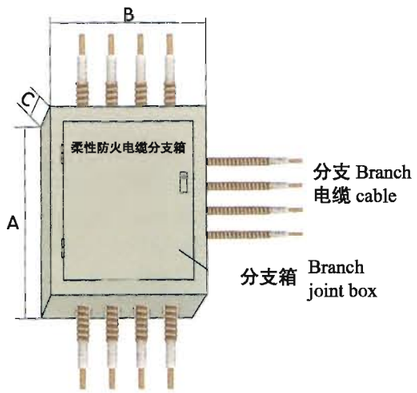
电缆分支箱 Branch joint box

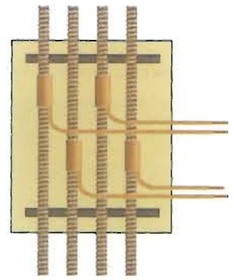
YTTW系统金属护套无机绝缘电缆的分支箱式YTTW分支电缆的配套产品。箱体采用高强度防火材料。经一次模压成型，外观美观、适应现代建筑的装饰要求，采用优先进口元器体，具有短路保护、过载保护、动作灵敏可靠，若将箱内的元器件改用过路铜牌，可做过路箱用。

The branch jioint box is a necessary prouduct for YTTW cables. The box is molded from high strength fire-resisting material. The body of the box is aesthetically pleasing and complies with the requirement for decoration of modern buildings. Encased are advanced components purchased from abroad which feature short-circuit protection overload protection and sensitive and reliable action. If copper busbar is substituted for the components in the box, then it may be used as a distribution box.

分支箱尺寸（mm）Dimensions of branch joint box

单芯电缆规格 Size of single-core cables (mm^2)	A	B	C
70、50	300	200	100
240、185、50、120	320	220	120
300、400	360	300	160
多芯电缆规格 Size of multicore cables (mm^2)	A	B	C
70、50	320	220	120
35、25	300	200	100





使用分支箱注意事项 Matters needing attention for use of branch joint box

1.树干式配电能节约大量投资，应首先考虑；

2.使用分支箱时，主干电缆不能敷设在线槽或桥架中，应直敷在支架上，因为线槽，桥架空间有限，很难装入分支箱；直接敷设在支架上，是符合规范的；

3.树干式配电宜采用单芯电缆便于分支；

4.本公司电缆分支时，主干电缆不会断开；

5.分支电缆长度不大于三米；

6.分支接头必须采用可靠的压缩连接；

7.分支头宜在制造厂预制。

1.Tree-type distribution system shall be considered first due to large reduction in costs;

2.When the branch joint box is used, the main cable shall be install directly on an open support instead of cable trough or cable tray, because the limited space in the cable trough or cable tray cannot accommodate a branch joint box. Direct installation on an open suppoet complies with the standard.

3.In a tree-type distribution system single-core cables are preferred for ease of branching.

4.As far as our products are concerned, the main cable will not be cut for branching.

5.The branch cable shall be not longer than 3m.

6.The branch joint shall be made by reliable compressed connection.

7.The branch joint shall be pre-fabricatd in factory.

设计导则 Design guidelines

1.选用皱纹铜护套柔性防火电缆应符合GB50217与DGJ08-93规范规程的要求；

2.无特殊要求时，默认耐火标准为A类如需耐火等级超A类或有其他特殊要求，应在设计时指明；

3.电缆在竖井或桥架中敷设不需穿管；

4.在计算长度时宜放长1-2m；

5.铜护套可以作PE线，如大截面防火电缆，铜护套截面小于PE线要求截面时，应附加PE线。但不管任何情况，铜护套必须接地；

6.腐蚀性特别严重的场所，应指明铜护套外加防腐护套；

7.计算短路电流及压降时采用的阻抗，只须用电缆导体及铜护套的直流电阻，其感抗、容抗可忽略不计及，由于电缆过载能力特大，一般不需验证热稳定：

近似压降计算公式Vd=K×I×L×Vo(V)

式中：1-工作电流或计算电流(A)

L-线路长度(m)

Vo-查表中单位压降(V/A·Km)

K-三相四线，K=；单相，K=1

8.500A以下可选取多芯电缆，大于500A时选单芯电缆；电缆结构尺寸、额定电缆、技术参数，详见表1至表9.

1.The selection of wrinkles copper sheath flexible fireproof cables should accord to the codes of Gb50217 and DGJ08-93.

2.In case of no special requirements, the fire-resistance stan-dard is defaulted to category A, if you have any other special requirements or need the fire-resistance class exceeding cattegory A. please indicate them in designing.

3.If the cable is laid in shaft ortray, the pipe inserting process is not needed.

4.When the length of cable is calculated, it should be lengthened about 1-2m;

5.The copper sheath may be used as the PE wire, we take the fire-proof cable of large cross section as example, if the cross section of copper sheath is smaller than that required by the PEwire, PEwire should be added. However, in all cases, the copper sheath must be earthed.

6.If the cable is used In the badly corrosive area. please indicate that the copper sheath should be provided with anticoorosion sheath additionally.

7.As for the resistance for caculating the short-circuit current and voltage drop, only the DCresistance of cable conductor and copper sheath is required, its inductance and capacitance may be negligible, the

Calculation formula of approximate voltage drop Vd=K × I × L × Vo(V)

Whereein，1--Working current or calculating current(A)

L--Line length(m)

Vo--Specific voltage drop of checking list(V/A · Km)

K--Three-phase four-wire，K=；single paase，K=1

8.For 500A below，multi-core cable may be selected.and for 500A abouv，the single-core is chosen. Rated current and technicaI parameter，ect..

运输与储存 Transit and storage

1.在运输过程中，电缆不能受机械撞击和雨雪侵袭受潮；

2.电缆应存储在干燥的库房内，同时库房中应不存在有损电缆的有害物质或气氛；

3.施工现场电缆应放在烦躁处；

4.施工完毕后，余下的电缆其端头应给与可靠的密封。

1.In transit，the cable should be free of mechanical impact or the attack of rain and snow;

2.The cable should be stored in the dry warehouse where the harmgul matter or gas should not exist;

3.In the construction site, the cable should be placed in the dry area;

4.After ending the construction，the terminals of residual cables should be given the reliable seal.

皱纹铜护套柔性防火电缆的应用范围

Range of application wrinkles copper sheath flexible fireproof cables

1.百米以上高层建筑 Hundreds of meter of high-rise buildings

2.军工单位 Military unit

3.学校 School

4.钢铁工业 Steel Industry

5.地铁 Subway

6.体育馆 Gymnasium

7.购物中心 Shopping Center

8.星级宾馆 Star Hotel

9.飞机场 Airport

10.商务楼 Commercial Building

11.医院 Hospital

12.百货大楼 Department Store

额定电压0.6/1kV柔性防火电缆

Flexible fire-proof cable for rated voltage 0.6/1kV

产品标准 Standard

本产品按Q/320282GAD085《额定电压0.6/1kV柔性防火电缆》标准生产，Q/320282GAD084《额定电压0.6/1kV铜芯柔性矿物绝缘金属护套电缆》。

通过GB/T 12706.1《额定电压1kV(Um=1.2kV)到35kV(Um=40.5kV)挤包绝缘电力电缆及附件 第1部分：额定电压1kV(Um=1.2kV)和3kV(Um=3.6kV)电缆》耐压试验。

通过GB/T 19216.21《在火焰条件下电缆或光缆的线路完整性试验 第21部分：试验步骤和要求——额定电压0.6/1kV及以下电缆》耐火试验。

通过BS 6387《火灾条件下保持电路完整性的电缆的性能要求》耐火试验。

The product is manufactured according to the Q/320282GAD085 "Flexible Fire-proof Cable for Rated Voltage 0.6/1kV" standard. Q/320282GAD084 "Rated voltage 0.6/1kV copper core flexible mineral insulated metal sheathed cable".

Pass the withstand voltage test of GB/T 12706.1 "Extruded Insulation Cable and Attachment for rated voltage from 1kV (Um=1.2kV) to 35kV(Um=40.5kV): Part 1: Cables for rated voltage from 1kV (Um=1.2kV) to 35kV(Um=40.5kV".

Pass the fire resistance test of GB/T 19216.21 "Circuit Integrity Test of Cables and Optical Cable under Flame Conditions Part 21: Test Procedures and Requirement-cables with rated voltage up to and including 0.6/1kV"

Pass the fire resistance test of BS 6387 "Performance Requirements for Cables Required to Maintain Circuit Integrity under Fire Conditions"

适用范围 Applications

该产品成品电缆连接长度长，中间无接头，有较大截面的多芯电缆，BTYRZ系列电缆，可预制成分支电缆，耐高温（950-1000℃，燃烧3h），无烟无毒，耐腐蚀、耐老化、耐辐照、防爆、抗虫害，能自动消除自然力（热胀冷缩）及电动力的破坏，使用寿命长，适用于有阻燃、耐火、无毒低烟、防腐等要求的场所。

The cable can be continuously manufactured without joints. Multiple core cables with big cross BTYRZ series cable sectional area can be prefabricated to the branch cables. The product has the property of high temperature resistance (950-1000℃, burning for 3h), smoke-free non-toxic, anti-corrosion, aging-resistant, anti-radiation, explosion-proof, pest-resistant, self-eliminating the damage by the natural force and electrical force, long life span, and is also suitable for the sites required for flame retardant, fire-proof, non-toxic low smoke, and anti-corrosion.

使用特性 Operating characteristics

- 额定电压：U0/U为0.6/1kV。
  The rated voltage U0/U is 0.6/1kV.
- 电缆导体的长期允许工作温度90℃。
  The continuous permissible operating temperature of conductor shall be 90℃。
- 电缆敷设温度应不低于0℃。
  The laying temperature should not be bellow 0℃.
- 允许弯曲半径：有铜护套电缆的允许弯曲半径不小于电缆外径的20倍，无铜护套电缆的允许弯曲半径不小于电缆外径的15倍。
  Permissible bending radius: the cables with copper sheath shall not be less then 20 times of the overall diameter of cables, and cables without copper sheath shall not be less then 15 times of the overall diameter fof cables.

电缆的型号和名称 Type and name of cable

型　号 Type	名　称 Name
BTTRZ	铜芯防火材料绝缘铜护套柔性防火电缆 Copper core fireproof insulation copper sheath flexible cables
BTTVRZ	铜芯防火材料绝缘铜护套聚氯乙烯护套柔性防火电缆 Copper core fireproof insulation PVC sheath flexible cables
BTTYRZ	铜芯防火材料绝缘铜护套无卤低烟聚烯烃护套柔性防火电缆 Copper core fireproof insulation LSOH polyolefin sheath flexible cables
BTYRZ	铜芯交联聚乙烯绝缘陶瓷化硅聚烯烃内护无卤低烟聚烯烃护套柔性防火电缆 Copper core XLPE insulated silicon ceramic polyolefin inner protection halogen free low smoke polyolefin sheathed flexible fireproof cable
BTVRZ	铜芯交联聚乙烯绝缘陶瓷化硅聚烯烃内护聚氯乙烯护套柔性防火电缆 Copper core XLPE insulated and ceramic silicon polyolefin inner protective PVC sheathed flexible fireproof cable
BTLY (NG-A)	铜芯柔性矿物绝缘铝护套电缆 copper core flexible mineral insulated aluminium sheathed cable

注：可以根据客户要求生产阻燃（ZA、ZB、ZC）、无卤低烟（WD）等柔性防火电缆
Note: according to the requirement of customers supply flame retardant (calss A, claa B, class C) and LSOH flexible cable.

电缆的生产范围 Production range of cable

型　号 Type	芯　数 No. of cores	标称截面mm² Nominal cross sectional area mm²
BTTRZ	单芯	10-400
BTTYRZ	多芯	2.5-120
BTTVRZ	多芯	
BTYRZ	1、2、3、4、5、3+1、3+2、4+1	2.5-400
BTVRZ	1、2、3、4、5、3+1、3+2、4+1	2.5-400
BTLY(NG-A)	单芯、多芯	10-400 1.5-120

电缆结构尺寸及技术参数 Cable Structure Size and Technical Parameter

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Insulation nominal thickness mm	铜护套标称厚度mm Copper sheath nominal thickness mm	BTTRZ 近似外径mm Approximate overall diameter mm	BTTYRZ、BTTVRZ 近似外径mm Approximate overall diameter mm
10	1.0	0.50	8.7	10.2
16	1.0	0.50	9.7	11.2
25	1.0	0.50	11.1	12.6
35	1.0	0.50	12.2	13.7
50	1.2	0.50	13.6	14.5
70	1.2	0.50	15.3	17.6
95	1.2	0.50	18.3	19.2
120	1.2	0.50	19.8	20.6
150	1.4	0.50	21.8	22.5
185	1.4	0.50	23.4	24.2
240	1.4	0.60	26.1	28.9
300	1.6	0.60	28.8	31.4
400	1.6	0.60	31.7	34.3

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Insulation nominal thickness mm	铜护套标称厚度mm Copper sheath nominal thickness mm	BTTRZ 近似外径mm Approximate overall diameter mm	BTTYRZ、BTTVRZ 近似外径mm Approximate overall diameter mm
2 × 2.5	0.8	0.50	10.3	12.9
2 × 4	0.8	0.50	12.7	14.2
2 × 6	0.8	0.50	13.8	15.3
2 × 10	1.0	0.50	16.1	18.1
2 × 16	1.0	0.50	18.1	20.4
2 × 25	1.0	0.50	20.9	23.4
2 × 35	1.0	0.50	23.1	25.6
2 × 50	1.2	0.50	24.7	27.2
2 × 70	1.2	0.50	28.9	31.4
2 × 95	1.2	0.50	32.1	34.6
2 × 120	1.2	0.50	34.9	37.4

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Insulation nominal thickness mm	铜护套标称厚度mm Copper sheath nominal thickness mm	BTTRZ 近似外径mm Approximate overall diameter mm	BTTYRZ、BTTVRZ 近似外径mm Approximate overall diameter mm
3 × 2.5	0.8	0.50	8.8	12.4
3 × 4	0.8	0.50	13.4	14.9
3 × 6	0.8	0.50	14.5	16.0
3 × 10	1.0	0.50	17.0	19.0
3 × 16	1.0	0.50	19.2	21.3
3 × 25	1.0	0.50	22.2	24.7
3 × 35	1.0	0.50	24.6	27.1
3 × 50	1.2	0.50	26.3	28.8
3 × 70	1.2	0.50	30.8	33.3
3 × 95	1.2	0.50	34.9	37.4
3 × 120	1.2	0.50	37.9	40.4

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Insulation nominal thickness mm	铜护套标称厚度mm Copper sheath nominal thickness mm	BTTRZ 近似外径mm Approximate overall diameter mm	BTTYRZ、BTTVRZ 近似外径mm Approximate overall diameter mm
3 × 16+1 × 10	1.0/1.0	0.40	18.8	22.9
3 × 25+1 × 16	1.0/1.0	0.40	21.6	26.0
3 × 35+1 × 16	1.1/1.0	0.40	23.7	28.0
3 × 50+1 × 25	1.2/1.0	0.40	24.3	31.3
3 × 70+1 × 35	1.2/1.0	0.50	28.2	35.9
3 × 95+1 × 50	1.2/1.2	0.50	32.8	39.9
3 × 120+1 × 70	1.2/1.2	0.50	37.2	43.5

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Insulation nominal thickness mm	铜护套标称厚度mm Copper sheath nominal thickness mm	BTTRZ 近似外径mm Approximate overall diameter mm	BTTYRZ、BTTVRZ 近似外径mm Approximate overall diameter mm
4 × 6	0.8	0.40	12.6	17.3
4 × 10	1.0	0.40	16.9	20.6
4 × 16	1.0	0.40	19.2	23.5
4 × 25	1.0	0.40	22.2	26.9
4 × 35	1.0	0.40	23.9	29.5
4 × 50	1.2	0.40	25.0	32.5
4 × 70	1.2	0.50	28.2	38.4
4 × 95	1.2	0.50	32.2	42.9
4 × 120	1.2	0.50	35.0	46.3

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	组合绝缘标称厚度mm Nominal Thickness of Insulation Combination mm	BTYRZ、BTVRZ 近似外径mm Approximate overall diameter mm
10	1.2	9.3
16	1.2	10.3
25	1.4	12.2
35	1.4	13.4
50	1.6	15.3
70	1.7	17.3
95	1.7	19.4
120	1.8	19.9
150	2.1	22.1
185	2.3	24.0
240	2.4	26.5
300	2.6	29.1
400	2.8	32.5

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	绝缘标称厚度mm Nominal Thickness of Insulation Combination mm	BTYRZ、BTVRZ 近似外径mm Approximate overall diameter mm
2 × 2.5	0.7	16.4
2 × 4	0.7	17.3
2 × 6	0.7	18.4
2 × 10	0.7	20.7
2 × 16	0.7	22.7
2 × 25	0.9	26.1
2 × 35	0.9	28.3
2 × 50	1.0	30.5
2 × 70	1.1	34.5
2 × 95	1.1	38.5
2 × 120	1.2	42.1
2 × 150	1.4	46.1
2 × 185	1.6	50.7

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	组合绝缘标称厚度mm Nominal Thickness of Insulation Combination mm	BTYRZ、BTVRZ 近似外径mm Approximate overall diameter mm
3 × 2.5	0.7	17.0
3 × 4	0.7	18.0
3 × 6	0.7	19.1
3 × 10	0.7	21.6
3 × 16	0.7	23.8
3 × 25	0.9	27.4
3 × 35	0.9	29.8
3 × 50	1.0	32.2
3 × 70	1.1	36.9
3 × 95	1.1	40.7
3 × 120	1.2	44.6
3 × 150	1.4	49.3
3 × 185	1.6	54.2
3 × 240	1.7	60.2
3 × 300	1.8	66.3
3 × 400	2.0	74.2

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	组合绝缘标称厚度mm Nominal Thickness of Insulation Combination mm	BTYRZ、BTVRZ 近似外径mm Approximate overall diameter mm
3 × 16+1 × 10	0.7	25.1
3 × 25+1 × 16	0.9/0.7	28.8
3 × 35+1 × 16	0.9/0.7	30.8
3 × 50+1 × 25	1.0/0.9	33.8
3 × 70+1 × 35	1.1/0.9	38.5
3 × 95+1 × 50	1.1/1.0	42.9
3 × 120+1 × 70	1.2/1.1	47.4
3 × 4+1 × 2.5	0.7	18.9
3 × 6+1 × 4	0.7	20.1
3 × 10+1 × 6	0.7	22.6
3 × 150+1 × 70	1.4/1.1	51.0
3 × 185+1 × 95	1.6/1.1	56.6
3 × 240+1 × 120	1.7/1.2	62.7
3 × 300+1 × 150	1.8/1.4	69.2
3 × 400+1 × 185	2.0/1.6	76.9

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

标称截面mm² Nominal cross sectional area mm²	组合绝缘标称厚度mm Nominal Thickness of Insulation Combination mm	BTYRZ、BTVRZ 近似外径mm Approximate overall diameter mm
4 × 2.5	0.7	18.1
4 × 4	0.7	19.2
4 × 6	0.7	20.5
4 × 10	0.7	23.3
4 × 16	0.7	25.7
4 × 25	0.9	29.8
4 × 35	0.9	32.5
4 × 50	1.0	35.5
4 × 70	1.1	40.8
4 × 95	1.1	45
4 × 120	1.2	49.7
4 × 150	1.4	54.5
4 × 185	1.6	60.3
4 × 240	1.7	66.9
4 × 300	1.8	73.8
4 × 400	2.0	82.5

额定电压0.6/1kV防火材料绝缘铜护套柔性防火电缆
Fireproof insulation copper sheath flexible cables for rated voltage 0.6/1kV

导体标称截面mm² Nominal cross sectional area mm²	20℃时导体最大直流电阻(Ω/km)
2.5	7.41
4	4.61
6	3.08
10	1.83
16	1.15
25	0.727
35	0.524
50	0.387
70	0.268
95	0.193
120	0.153
150	0.124
185	0.0991
240	0.0754
300	0.0601
400	0.0470
工频交流电压试验 Power frequency AC Voltage Test	试验电压3.5kV/5min Test voltage 3.5kV/5min

额定电压0.6/1kV柔性矿物绝缘铝护套电缆
Flexible mineral insulated aluminium sheathed cable rated voltage 0.6/1kV

标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径
1 × 10	18.7	2 × 1.5	21.7	3 × 1.5	22.2	4 × 1.5	22.8
1 × 16	19.7	2 × 2.5	22.5	3 × 2.5	23.1	4 × 2.5	23.8
1 × 25	20.9	2 × 4	23.5	3 × 4	24.2	4 × 4	25.0
1 × 35	22.0	2 × 6	24.6	3 × 6	25.3	4 × 6	26.2
1 × 50	23.4	2 × 10	26.2	3 × 10	27.1	4 × 10	28.3
1 × 70	24.9	2 × 16	28.2	3 × 16	29.2	4 × 16	30.6
1 × 95	26.6	2 × 25	30.6	3 × 25	31.8	4 × 25	33.5
1 × 120	28.1	2 × 35	33.0	3 × 35	34.4	4 × 35	36.3
1 × 150	30.7	2 × 50	35.8	3 × 50	37.5	4 × 50	39.7
1 × 185	32.3	2 × 70	38.9	3 × 70	40.8	4 × 70	43.3
1 × 240	34.7	2 × 95	42.4	3 × 95	44.6	4 × 95	47.5
1 × 300	36.8	2 × 120	45.5	3 × 120	47.9	4 × 120	51.1
1 × 400	41.7						
1 × 500	44.5						
1 × 630	47.8						

标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径	标称截面 mm²	NG-A (BTLY) 近似外径
5 × 1.5	23.7	3 × 2.5+1 × 1.5	23.6	3 × 2.5+2 × 1.5	24.4	4 × 2.5+1 × 1.5	23.2
5 × 2.5	24.8	3 × 4+1 × 2.5	24.7	3 × 4+2 × 2.5	25.6	4 × 4+1 × 2.5	24.5
5 × 4	26.1	3 × 6+1 × 4	25.9	3 × 6+2 × 4	27.0	4 × 6+1 × 4	25.8
5 × 6	27.5	3 × 10+1 × 6	27.7	3 × 10+2 × 6	28.8	4 × 10+1 × 6	27.8
5 × 10	29.9	3 × 16+1 × 10	30.0	3 × 16+2 × 10	31.4	4 × 16+1 × 10	30.4
5 × 16	32.5	3 × 25+1 × 16	32.8	3 × 25+2 × 16	34.4	4 × 25+1 × 16	33.5
5 × 25	35.7	3 × 35+1 × 16	34.9	3 × 35+2 × 16	36.3	4 × 35+1 × 16	36.0
5 × 35	38.8	3 × 50+1 × 25	38.1	3 × 50+2 × 25	39.8	4 × 50+1 × 25	39.7
5 × 50	42.6	3 × 70+1 × 35	41.6	3 × 70+2 × 35	43.6	4 × 70+1 × 35	43.6
5 × 70	46.6	3 × 95+1 × 50	45.5	3 × 95+2 × 50	47.8	4 × 95+1 × 50	48.0
5 × 95	51.3	3 × 120+1 × 70	49.1	3 × 120+2 × 70	51.8	4 × 120+1 × 70	52.0
5 × 120	55.3						

电缆载流量 Cable current-carrying capacity

● 空气中 air

导体 Conductor	导体标称截面mm² Conductor Nominal cross sectional area mm²	单芯 Single core		2芯 Two-core	3芯 Three-core 5芯 Five-core
		⊙⊙⊙⊙	⊙⊙ ⊙⊙		
铜 Cu	2.5			33	29
	4			44	38
	6			57	46
	10	97	77	78	65
	16	125	100	104	85
	25	165	130	135	118
	35	200	160	168	150
	50	245	195	204	192
	70	305	245	263	228
	95	375	300	320	273
	120	435	350	373	314
	150	500	400	405	350
	185	580	465	465	445
	240	685	550	525	480
	300	795	635	620	555
	400	930	745		640

● 不同环境温度下载流量修正系数
Correction Factors of Current Capacity at different Ambient Temperatures

导体工作温度℃ Conductor Operating Temperature ℃	环境温度(℃)(空气中) Ambient Temperatures (℃) (in air)								
	10	15	20	25	30	35	40	45	50
90	1.26	1.22	1.18	1.14	1.09	1.04	1.00	0.94	0.89

额定电压450/750V电动汽车充电电缆
EV charging cable for rated voltage 450/750V

电缆的型号和名称 Type and name of cable

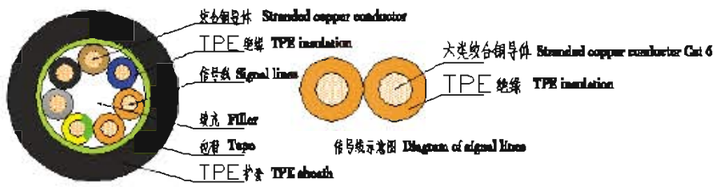
型号	名称	适用范围
EV07EE-H	铜芯热塑性弹性体绝缘弹性体护套汽车充电术士专用软电缆 Copper core thermoplastic elastomeric insulation and elastomeric sheathed special flexible cable for car charging	用于新能源充电专用电缆 Special cable for new energy charging
EV07EEC4E-H	铜芯热塑性弹性体绝缘弹性体护套信号线编织屏蔽充电桩专用软电缆 Copper core thermoplastic elastomeric insulation and elastomeric sheathed signal braided screened special flexible cable for charging pile	

电缆的生产范围 Production range of cable

型号 Type	芯数 No.of cores	标称截面 Norminal cross sectional area
EV07EE-H	2、3、4、5	1~70
EV07EEC4E-H	2、3、4、5	1~70
注：信号线的根数可根据要求进行调整。 Note: the number of signal lines can be adjusted according to the requirements		

电缆的结构 Cable structure

EV07EE-H (有两芯非屏蔽信号线) Two-core unshielded signal lines



EV07EEC4E-H (有一芯屏蔽信号线) Single-core shielded signal lines

EV充电桩的模式 Modes of EV Charging Point

充电模式：模式1
Charging Modes: Mode 1
使用标准插座进行充电
Use a standard socket for charging
只能使用交流充电：
Use only the AC charging
单相电：最高电压250V，最大电流16A
Single-phase power: maximum voltage 250V, maximum current 16A
三相电：最高电压480V，最大电流16A
Three-phase power: maximum voltage 480V, maximum current 16A
必须配备保护地线
It must be equipped with protective earth wire
选用漏电保护装置
Select earth leakage protection
该模式在美国和英国是禁止使用的。
This mode is prohibited in USA and UK
该模式在德国可实现最大性能
This mode can achieve maximum performance in Germany

充电模式：模式2
Charging Modes: Mode 2
使用标准插座进行充电：
Use a standard socket for charging
单相电：最高电压250V，最大电流32A
Single-phase power: maximum voltage 250V, maximum current 16A
三相电：最高电压480V，最大电流32A
Three-phase power: maximum voltage 480V, maximum current 16A
必须配备保护地线。
It must be equipped with protective earth wire
“线缆控制盒”上的控制先导（CP）至关重要。
CP on the "cable control box" is essential.
必须配备漏电保护装置。
It must be equipped with protective earth wire
在美国必须进行基于频率的漏电测试。
Leakage test based on frequency must be carried out in the United States.
该模式在德国的最大性能：
The maximum performance of this mode in Germany:
使用标准插座进行充电，电压230V，电流32A（充电功率≥7kW）；
Use a standard socket for charging, voltage 230V, current 32A (Charging power ≥ 7kW)
三相电，电压400V，电流32A（充电功率≥22kW）
Three-phase power: voltage 400V, current 32A(Charging power ≥22kW)

充电模式：模式3
Charging Modes: Mode 3
只能特定的充电站使用
Only be used in specific charging stations
只能使用交流充电：
Use only the AC charging:
单相电：最高电压250V，最大电流70A
Single-phase power: maximum voltage 250V, maximum current 70A
三相电：最高电压480V，最大电流63A
Three-phase power: maximum voltage 480V, maximum current 63A
必须配备保护地线和控制先导。
It must be equipped with protective earth wire and CP
车辆和充电站可以通过脉冲宽度（PWM），
Vehicles and charging stations via Pulse Width Modulation (PWM) to coordinate performance
在控制先导线上对性能要求和可用性进行协调。
requirements and availability on the CP.
车辆可以向电网反供电能。
Vehicles can supply energy to the power grid.
该模式在德国的最大性能：
The maximum performance of this mode in Germany:
单相电，电压230V，电流70A（充电功率≥16kW）；
Single-phase power, voltage 230V, current 70A (Charging power ≥16kW)
三相电，电压400V，电流63A（充电功率≥43kW）
Three-phase power: voltage 400V, current 63A(Charging power ≥43kW)

充电模式：模式4

Charging Modes: Mode 4

只能特定的充电站使用

Only be used in specific charging stations

电池充电线缆与充电站连接牢固

Battery charging cable and charging station are securely connected

只能使用直流充电：

Use only the DC charging:

二型直流：2针脚（直流+/直流−），电压330V，电流80A（充电功率≥25kW）

DC type II: 2 pins (DC +/ DC −), voltage 330V, current 80A (charging power ≥25kW)

二型直流：4针脚（直流+/直流−），电压330V，电流160A（充电功率≥50kW）

DC type II: 4 pins (DC +/ DC −), voltage 330V, current 160A (charging power ≥50kW)

组合2型：2针脚（直流+/直流−），电压850V，电流200A（充电功率≥170kW理论上可能）

Combination type II: 2−pin (DC + / DC −), voltage 850V, current 200A (charging power ≥170kW theoretically possible)

接头内部必须通过传感器实施温度监控

Internal fittings must be monitored in real time by the temperature sensor

车辆的性能可以通过控制先导或动力线通信（PLC）进行调整。

Performance of the vehicle can be adjusted by CP or PLC.

一个充电站也可以提供模式3交流和模式4直流充电。

A charging station can also provide AC Mode 3 and DC Mode 4 charging.

电缆的结构 Cable structure

EV07EE−H电缆的结构尺寸 Cable structure size

1	2	3	4	5	6
导体根数和截面积 The number of conductors and cross−sectional area	绝缘标称厚度 Norminal insulation thickness	护套标称厚度 Norminal sheath thickness	外 径 OD		70℃绝缘电阻最小值 The Min insulation resistance at 70℃
mm²	mm	mm	下 限 Lower limit mm	上 限 Upper limit mm	MΩ · km
2 × 1	0.8	1.3	7.7	10.0	0.013
2 × 1.5	0.8	1.5	8.5	11.0	0.012
2 × 2.5	0.9	1.7	10.2	13.1	0.010
2 × 4	1.0	1.8	11.8	15.1	0.0094
2 × 6	1.0	2.0	13.1	16.8	0.0081
2 × 10	1.2	3.1	17.7	22.6	0.0076
2 × 16	1.2	3.3	20.2	25.7	0.0062
2 × 25	1.4	3.6	24.3	30.7	0.0058
2 × 35	1.4	4.0	27.5	34.8	0.0049
2 × 50	1.6	4.3	31.8	40.1	0.0048
2 × 70	1.6	4.5	35.5	44.8	0.0041
3 × 1	0.8	1.4	8.3	10.7	0.013
3 × 1.5	0.8	1.6	9.2	11.9	0.012
3 × 2.5	0.9	1.8	10.9	14.0	0.010
3 × 4	1.0	1.9	12.7	16.2	0.0094
3 × 6	1.0	2.1	14.1	18.0	0.0081
3 × 10	1.2	3.3	19.1	24.2	0.0076
3 × 16	1.2	3.5	21.8	27.6	0.0062
3 × 25	1.4	3.8	26.1	33.0	0.0058
3 × 35	1.4	4.1	29.3	37.1	0.0049
3 × 50	1.6	4.5	34.1	42.9	0.0048
3 × 70	1.6	4.8	38.4	48.3	0.0041
4 × 1	0.8	1.5	9.2	11.9	0.013
4 × 1.5	0.8	1.7	10.2	13.1	0.012
4 × 2.5	0.9	1.9	12.1	15.5	0.010
4 × 4	1.0	2.0	14.0	17.9	0.0094
4 × 6	1.0	2.3	15.7	20.0	0.0081
4 × 10	1.2	3.4	20.9	26.5	0.0076
4 × 16	1.2	3.6	23.8	30.1	0.0062
4 × 25	1.4	4.1	28.9	36.6	0.0058
4 × 35	1.4	4.4	32.5	41.1	0.0049
4 × 50	1.6	4.8	37.7	47.5	0.0048
4 × 70	1.6	5.2	42.7	54.0	0.0041
5 × 1	0.8	1.6	10.2	13.1	0.013
5 × 1.5	0.8	1.8	11.2	14.4	0.012
5 × 2.5	0.9	2.0	13.3	17.0	0.010
5 × 4	1.0	2.2	15.6	19.9	0.0094
5 × 6	1.0	2.5	17.5	22.2	0.0081
5 × 10	1.2	3.6	22.9	29.1	0.0076
5 × 16	1.2	3.9	26.4	33.3	0.0062
5 × 25	1.4	4.4	32.0	40.4	0.0058
5 × 35	1.4	4.9	36.3	45.8	0.0049
5 × 50	1.6	5.4	42.2	53.1	0.0048
5 × 70	1.6	5.7	47.5	59.8	0.0041

EV07EEC4E-H电缆的结构尺寸 Cable structure size

1	2	3	4	5	6	7
导体根数和截面积 The number of conductors and cross-sectional area	绝缘标称厚度 Norminal insulation thickness	屏蔽层丝径最小标称值 Shield wire diameter minimum nominal value	护套标称厚度 Norminal sheath thickness	外 径 OD		70℃绝缘电阻最小值 The Min insulation resistance at 70℃
mm²	mm	mm	mm	下 限 Lower limit mm	上 限 Upper limit mm	MΩ · km
2 × 1	0.8	0.16	1.3	9.0	11.3	0.013
2 × 1.5	0.8	0.16	1.5	9.8	12.3	0.012
2 × 2.5	0.9	0.16	1.7	11.5	14.4	0.010
2 × 4	1.0	0.16	1.8	13.1	16.4	0.0094
2 × 6	1.0	0.21	2.0	14.6	18.3	0.0081
2 × 10	1.2	0.21	3.1	19.2	24.1	0.0076
2 × 16	1.2	0.21	3.3	21.7	27.2	0.0062
2 × 25	1.4	0.21	3.6	25.8	32.2	0.0058
2 × 35	1.4	0.26	4.0	29.2	36.5	0.0049
2 × 50	1.6	0.26	4.3	33.4	41.8	0.0048
2 × 70	1.6	0.26	4.5	37.2	46.5	0.0041
3 × 1	0.8	0.16	1.4	9.6	12.0	0.013
3 × 1.5	0.8	0.16	1.6	10.5	13.2	0.012
3 × 2.5	0.9	0.16	1.8	12.2	15.3	0.010
3 × 4	1.0	0.21	1.9	14.2	17.7	0.0094
3 × 6	1.0	0.21	2.1	15.6	19.5	0.0081
3 × 10	1.2	0.21	3.3	20.6	25.7	0.0076
3 × 16	1.2	0.21	3.5	23.3	28.2	0.0062
3 × 25	1.4	0.26	3.8	27.8	34.7	0.0058
3 × 35	1.4	0.26	4.1	31.0	38.8	0.0049
3 × 50	1.6	0.26	4.5	35.8	44.6	0.0048
3 × 70	1.6	0.31	4.8	40.3	50.2	0.0041
4 × 1	0.8	0.16	1.5	10.5	13.2	0.013
4 × 1.5	0.8	0.16	1.7	11.5	14.4	0.012
4 × 2.5	0.9	0.16	1.9	13.4	16.8	0.010
4 × 4	1.0	0.21	2.0	15.5	19.4	0.0094
4 × 6	1.0	0.21	2.3	17.2	21.5	0.0081
4 × 10	1.2	0.21	3.4	22.4	28.0	0.0076
4 × 16	1.2	0.21	3.6	25.3	31.6	0.0062
4 × 25	1.4	0.26	4.1	30.6	38.3	0.0058
4 × 35	1.4	0.26	4.4	34.2	42.8	0.0049
4 × 50	1.6	0.31	4.8	39.6	49.4	0.0048
4 × 70	1.6	0.31	5.2	44.6	55.9	0.0041
5 × 1	0.8	0.16	1.6	11.5	14.4	0.013
5 × 1.5	0.8	0.21	1.8	12.5	15.7	0.012
5 × 2.5	0.9	0.21	2.0	14.8	18.5	0.010
5 × 4	1.0	0.21	2.2	17.1	21.4	0.0094
5 × 6	1.0	0.21	2.5	19.0	23.7	0.0081
5 × 10	1.2	0.26	3.6	24.4	30.6	0.0076
5 × 16	1.2	0.26	3.9	28.1	35.0	0.0062
5 × 25	1.4	0.26	4.4	33.7	42.1	0.0058
5 × 35	1.4	0.26	4.9	38.0	47.5	0.0049
5 × 50	1.6	0.31	5.4	44.1	55.0	0.0048
5 × 70	1.6	0.31	5.7	49.4	61.7	0.0041

电缆运行温度 Cable operating temperature

型号 Type	绝缘材料 Insulation material	护套材料 Sheath material	导体允许的温度 Conductor permissible temperature		在电缆表面温度 Cable surface temperature	敷设时的最低温度 The lowest temperature when laying
			永久负载 Permanent load	短路 Short circuit		
EV07EE-H EV07EEC4E-H	热塑性弹性体(TPE) Thermoplastic elastomer	热塑性弹性体(TPE) Thermoplastic elastomer	+60	+200	+50	+25

电缆的技术参数 Technical data of cable

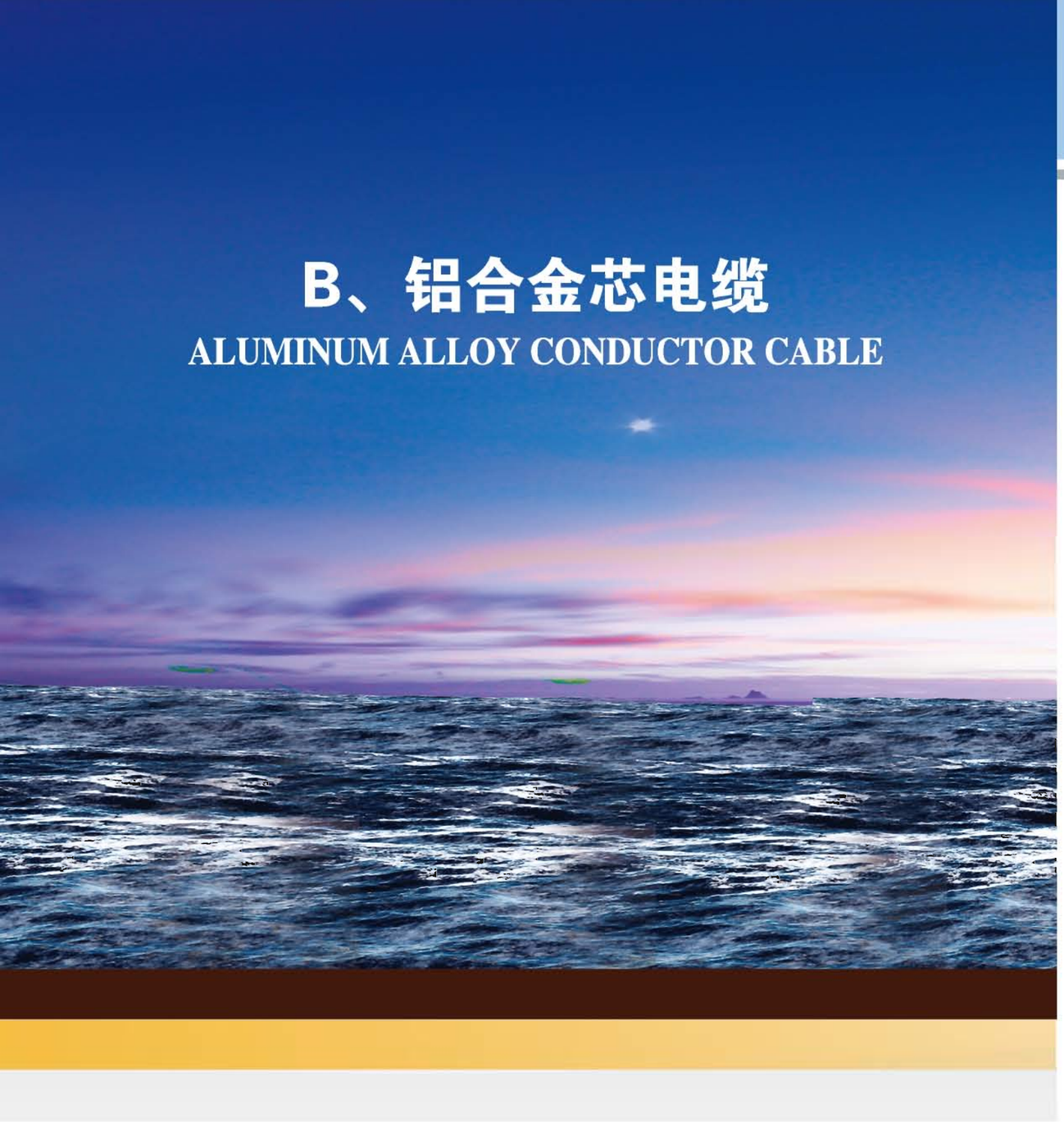
导体标称截面mm² Conductor nom. cross-sectional	铜导体20℃时最大直流电阻(Ω/km) Max copper conductor D.C. resistance at 20℃	
	不镀金属单线 Plain single-wire	镀金属单线 Metal-coated single-wire
1	19.5	20.0
1.5	13.3	13.7
2.5	7.98	8.21
4	4.95	5.09
6	3.30	3.39
10	1.91	1.95
16	1.21	1.24
25	0.780	0.795
35	0.554	0.565
50	0.386	0.393
70	0.272	0.277

工频交流电压试验：
主线芯、信号和无屏蔽控制线芯——2.5kV ≥15min；
信号和带屏蔽的控制线芯——线芯之间的闪流测试电压1.5kV，线芯和屏蔽之间的交流电压1kV，施加电压时间≥15min。

Frequency AC voltage test:
main core, signal and unshielded control wire core –2.5kV ≥ 15min;
signal and shielded control wire core – the flashback test voltage between wire cores 1.5kV, AC voltage between cores and shielding 1kV, time of voltage is applied ≥15min.

电缆的载流量 Current carrying capacity of cable

铜导体标称截面mm² Copper conductor nom.cross-sectional	电缆载流量参考A Current carrying capacity of cable reference
1	10.1
1.5	13.1
2.5	17.4
4	23
6	30
10	40
16	54
25	70
35	86
50	103
70	130



B、铝合金芯电缆
ALUMINUM ALLOY CONDUCTOR CABLE

江苏东峰电缆有限公司
JIANGSU DONGFENG CABLE CO.,LTD.

额定电压26/35kV及以下铝合金芯塑料绝缘电力电缆
Aluminum Alloy Conductor Plastic Insulated Power Cable for Rated Voltage up to and including 26/35kv

产品标准 Standard

本产品参照GB/T31840–2015标准生产，同时还可根据用户需要按国际电工委员会推荐标准IEC、英国标准及美国标准生产。

The product is manufactured according to the Standard of GB/T31840–2015 or IEC,BS,and ASTM upon request.

适用范围 Applications

本产品适用于额定电压26/35 kV及以下配电网或工业装置中固定敷设之用。

The product is suitable for using in power distribution networks or fixed installations for industrial equipments with rated voltage up to and including 26/35 kV.

使用特性 Operating Characteristics

1. ● 额定电压3.6/6kV ~ 26/35kV交联聚乙烯绝缘电力电缆
   XLPE Insulated Electrical Cable for rated power frequency voltage Uo/U:3.6/6kV~26/35kV.
   ● 电缆导体的允许长期最高工作温度为90℃
   Max,permissible continuous operating temperature of conductor:90℃
   ● 短路时(最长持续时间不超过5s)电缆导体的最高温度不超过250℃
   Max,short–circuit temperature of conductor shall not eceed 250℃(5s Max,Duration)
   ● 敷设电缆时环境温度不低于0℃
   The ambient temperature under installation shall not below 0℃.
   ● 电缆弯曲半径：三芯电缆不小于电缆外径10倍，单芯电缆不小于电缆外径15倍。
   The bending radius of single–core cable shall not less than 14 times of the cable diameter.
   The bending radius of three–core cable shall not less than 10 times of the cable diameter.
2. ● 额定电压0.6/lkV交联聚乙烯绝缘电力电缆
   XLPE Insulated Electrical Cable for rated power frequency voltage Uo/U:0.6/lkV
   ● 电缆导体的允许长期最高工作温度为90℃
   Max.permissible continuous operating temperature of conductor:90℃
   ● 短路时(最长持续时间不超过5s)电缆导体的最高温度不超过250℃
   Max.short–circuit temperature of conductor shall not exceed 250℃(4s Max.Duration)
   ● 敷设电缆时环境温度不低于0℃
   The ambient temperature under installation shall not below 0℃.
   ● 电缆弯曲半径不小于电缆外径7倍
   The bending radius of a cable shall not less than 7 times of the cable diameter.

电缆额定电压的选择 Voltage designation

- 电缆的额定电压应适合于电缆使用系统的运行状况，用Uo/U(Um)kV表示

Uo—电缆设计用的导体与屏蔽或金属套之间的额定工频电压；

U—电缆设计用的导体之间的额定工频电压；

Um—设备可承受的“最高系统电压”的最大值；

The rated voltage of the cable for a given application shall be suitable for the operating conditions in the system in which the cable is used,and is expressed in the form of Uo/U(Um)kV.

Where:

Uo—The rated power-frequency voltage between conductor and screen or metallic-sheath.for which the cable designed;

U—The rated power-frequency voltage between conductors.for which the cable designed;

Um—The maximum value of the “hight system voltage” for which the equipment may be operated.

- 三相系统用电缆的Uo值推荐如下表：

Rated voltaged of cable applied in three phrase system are given in table.

U	Um	Uo	
		第一类电缆 First class	第二类电缆 Second class
1	1.2	0.6	0.6
3	3.6	1.8	3.6
6	7.2	3.6	6
10	12	6	8.7
15	17.5	8.7	12
20	24	12	18
35	42	21	26

注：第一类——用于单向接地故障时间每一次一般不大于1min,亦可用于最长不超过8h,每年累计时间不超过125h的系统。

第二类——用于接地故障时间更长的系统及对电缆绝缘性能要求较高的场合。

The first class cable suitable for one single—phrase earth-fault time does not exceed l min each time and Max.time not exceed 8 hours,and not excced 125 hours in all in one year.

The second class cable suitable fir more earth-fault time and more better insulation performance.

额定电压0.6/1kV铝合金芯交联聚乙烯绝缘电力电缆
Aluminum Alloy Conductor XLPE Insulated Power Cable for Rated Voltage 0.6/1kV.

电缆的型号和名称 Type and name of cable

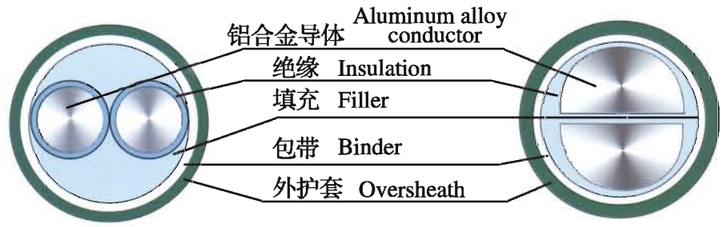
型号 Type	名称 Name	使用范围 Application
TC90(-40)/ YJLHV	铝合金芯交联聚乙烯绝缘聚氯乙烯护套电缆 Aluminum Alloy Conductor XLPE insulated PVC shyeathed power cable.	室内，隧道及电缆沟等场所，不需承受机械外力。单芯电缆不允许敷设在磁性管道中。For laid indoors,Intunels or cable trench,no need to bear external mechanical forces single “core cable shall not be laid in magnetic duct”.
YJLHV22	铝合金芯交联聚乙烯绝缘钢带铠装聚氯乙烯护套电力电缆 Aluminum Alloy Conductor XLPE insulated steel tape armoured PVC sheathed Power cable.	室内，隧道，及托架，电缆沟内或埋地敷设等，需承受一定的径向机械外力的场所。For laid indoors,intunels and tray cable trench,or directly in ground able to bear external mechanical forces,but unable to bear large pulling forces.
AC90(-40) /YJLHS	铝合金芯交联聚乙烯绝缘联锁铠装电力电缆 Aluminum Alloy Conductor XLPE insulated Interlocked armoured Power Cable.	
ACWU90(-40) /YJLHS2	铝合金芯交联聚乙烯绝缘联锁铠装聚氯乙烯护套电力电缆 Aluminum Alloy Conductor XLPE insulated Interlocked armored PVC sheathed Power Cable.	
YJLHV32	铝合金芯交联聚乙烯绝缘细钢丝铠装聚氯乙烯护套电力电缆 Aluminum Alloy conductor XLPE insulated steel wire armored PVC sheathed Power cable.	室内，隧道，电缆沟整井或埋地敷设等，能承受一定的拉力。For laid indoors,intunels cable trench well or directly in ground able to bear external mechanical forces and determinate pulling forces.

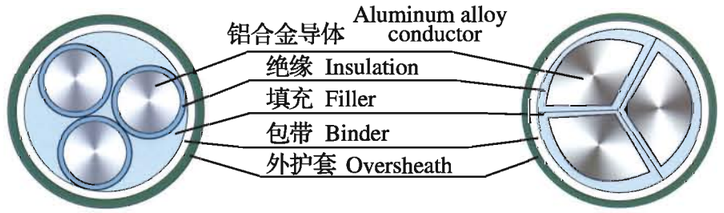
电缆的生产范围 Production Range of cable

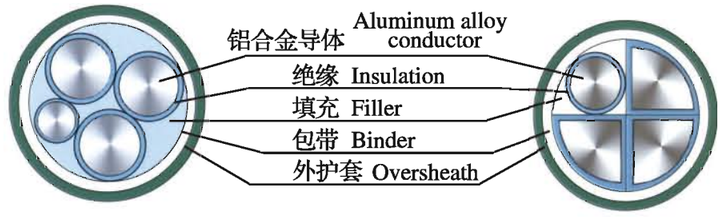
型号 Type 铝合金导体 Aluminum alloy conductor	芯数 No.of cores	标称截面 Nominal Cross sectional area m^2
TC90(–40)/ YJLHV YJLHV22 AC90(–40)/YJLHS ACWU90(–40)/YJLHS2 YJLHV32	1	4–800
	2	4–300
	3	4–630
	4	4–500
	3+1	4–630
	5	4–500
	4+1	4–500
	3+2	4–500

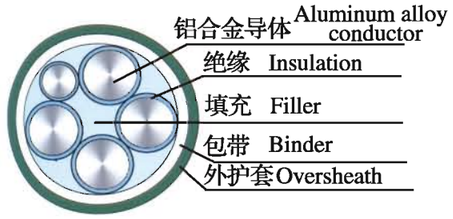
- 单芯铠装电缆适用于直流系统，若用于交流系统，应采用非磁性材料铠装或隔磁措施。
- The armoured single–core cables are used for D.C. system only. As for A.C. system.non–magnetic armoured material should be used,or magnetic isolation measures should be applied.

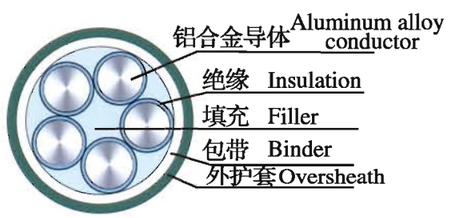
电缆的型号和名称 Construciton

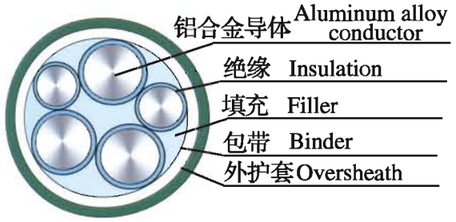


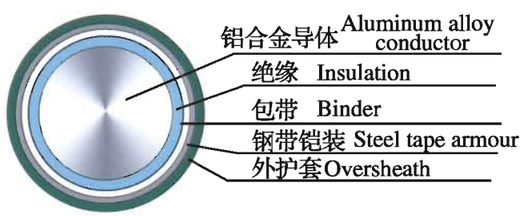


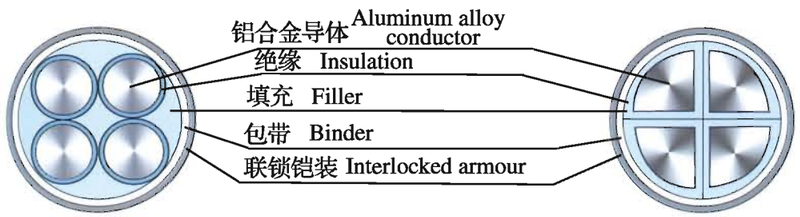




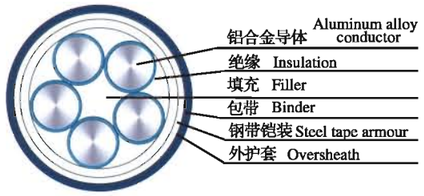


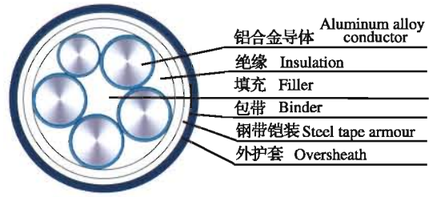


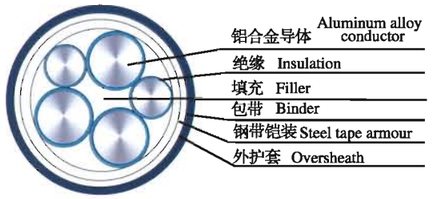


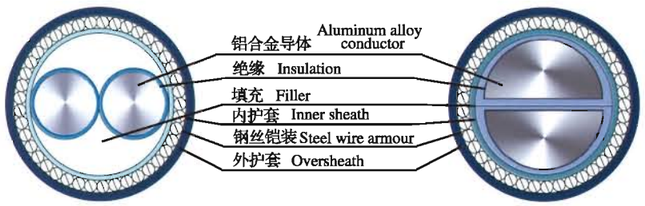


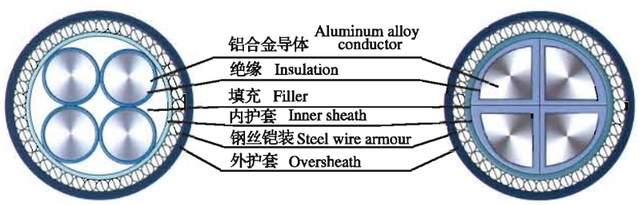
电缆的结构图 Construciton

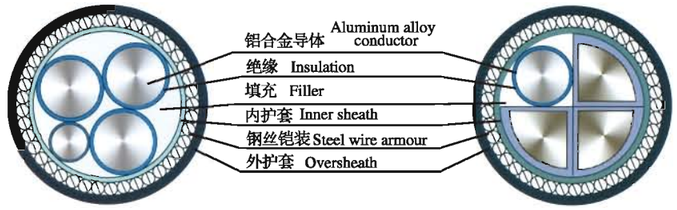


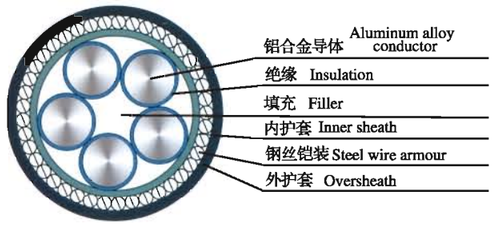


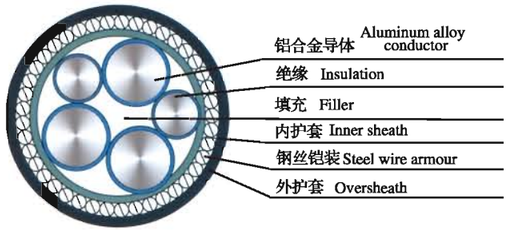


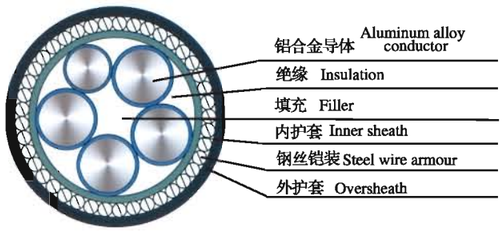












电缆的结构尺寸 Construciton

- 额定电压0.6/1kV交联聚乙烯绝缘电力电缆
  XLPE insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Nominal Insulation thickness mm	TC90(-40)/YJLHV		YJLHV22	
		电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
1×4	0.7	6.4	58	–	–
1×6	0.7	7.0	69	–	–
1×10	0.7	8.3	94	11.7	170
1×16	0.7	9.3	121	12.7	205
1×25	0.9	11.2	175	14.4	267
1×35	0.9	12.4	215	15.6	316
1×50*	1.0	14.1	278	17.1	382
1×70*	1.1	16.1	362	19.1	481
1×95*	1.1	18.2	468	21.0	590
1×120*	1.2	18.7	539	21.5	663
1×150*	1.4	20.7	658	23.5	795
1×185*	1.6	22.6	763	25.4	915
1×240*	1.7	25.1	952	27.9	1121
1×300*	1.8	27.5	1172	30.5	1369
1×400*	2.0	30.9	1478	35.9	2050
1×500*	2.2	34.5	1861	39.5	2492
1×630*	2.4	38.5	2299	43.7	3031
1×800*	2.8	46.0	2937	51.0	3796

*表示紧压导体
*Compoctod conductor

● 额定电压0.6/1kV交联聚乙烯绝缘电力电缆

XLPE insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Nominal Insulation thickness mm	TC90(–40)/YJLHV		YJLHV22		YJLHV32		AC90(–40)/YJLHS		ACWU90(–40)/YJLHS2	
		电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
2×4	0.7	11.7	115	13.5	215	–	–	–	–	–	–
2×6	0.7	12.7	139	14.5	250	–	–	–	–	–	–
2×10	0.7	15.3	195	17.1	318	20.9	783	15.2	167	18.5	302
2×16	0.7	17.4	257	19.2	398	23.0	920	17.2	220	20.5	371
2×25	0.9	20.8	269	22.6	540	26.4	1156	20.4	308	23.7	483
2×35	0.9	23.1	460	24.9	651	28.7	1328	22.4	383	25.7	575
2×50*	1.0	19.6	478	21.4	638	25.4	1231	25.4	505	28.7	720
2×70*	1.1	22.6	646	24.2	830	29.4	1733	29.2	655	32.7	915
2×95*	1.1	25.8	849	29.0	1314	32.4	2022	32.2	821	35.9	1122
2×120*	1.2	28.2	1042	31.4	1549	35.0	2328	36.2	1012	40.1	1381
2×150*	1.4	40.2	1520	43.6	2268	48.2	3799	39.4	1222	43.7	1644
2×185*	1.6	44.2	1800	47.6	2620	52.4	4305	43.8	1481	48.3	1968
2×240*	1.7	49.6	2329	53.0	3213	57.8	5124	48.6	1847	53.5	2433
2×300*	1.8	54.8	3076	58.0	3853	63.5	6408	53.2	2236	58.5	2926
3×4	0.7	12.2	135	14.0	242	–	–	–	–	–	–
3×6	0.7	13.4	167	15.2	284	–	–	–	–	–	–
3×10	0.7	16.1	238	17.9	368	31.7	856	16.0	212	19.3	353
3×16	0.7	18.4	318	20.2	468	24.0	1017	18.2	286	21.5	444
3×25	0.9	22.1	463	23.9	646	27.7	1296	21.6	406	24.9	591
3×35	0.9	24.6	584	26.4	787	30.2	1504	23.8	513	27.1	716
3×50*	1.0	23.7	677	25.5	873	29.7	1592	27.0	685	30.3	913
3×70*	1.1	27.9	929	31.3	1449	34.6	2215	31.1	898	34.8	1190
3×95*	1.1	31.3	1212	34.7	1794	38.1	2641	34.3	1138	38.4	1491
3×120*	1.2	38.4	1593	41.8	2309	45.2	3327	38.4	1411	42.7	1823
3×150*	1.4	43.1	2010	46.5	2811	51.1	4452	42.1	1716	46.6	2186
3×185*	1.6	47.4	2384	50.8	3263	55.8	5103	46.8	2089	51.7	2654
3×240*	1.7	53.2	3045	56.6	4029	61.8	6106	52.0	2624	57.1	3274
3×300*	1.8	58.7	3810	62.1	4896	67.3	7177	56.9	3193	62.4	3955
3×400*	2.0	66.5	4885	69.9	6114	77.0	9692	64.3	4149	70.4	5099

*表示紧压导体
*Compoctod conductor

● 额定电压0.6/1kV交联聚乙烯绝缘电力电缆

XLPE insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Nominal Insulation thickness mm	TC90(–40)/YJLHV		YJLHV22		YJLHV32		AC90(–40)/YJLHS		ACWU90(–40)/YJLHS2	
		电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
4×4	0.7	13.2	162	15.0	277	–	–	–	–	–	–
4×6	0.7	14.5	201	16.3	329	–	–	–	–	–	–
4×10	0.7	17.6	290	19.4	433	23.3	960	17.4	261	20.7	413
4×16	0.7	20.1	392	21.9	557	25.7	1153	19.8	355	23.1	526
4×25	0.9	24.3	577	26.1	779	29.9	1487	23.7	511	27.0	713
4×35	0.9	27.1	731	28.9	957	32.9	1755	26.1	650	29.4	871
4×50*	1.0	26.2	884	30.0	1391	33.0	2097	29.7	874	33.2	1139
4×70*	1.1	31.9	1236	35.3	1824	38.7	2692	34.3	1152	38.2	1488
4×95*	1.1	35.9	1595	39.3	2264	42.7	3221	37.9	1466	42.2	1873
4×120*	1.2	42.8	2064	46.2	2860	49.8	4492	42.5	1824	47.0	2298
4×150*	1.4	47.9	2579	51.3	3470	56.3	5333	46.6	2224	51.5	2787
4×185*	1.6	52.9	3085	56.3	4064	61.3	6103	51.9	2714	57.0	3363
4×240*	1.7	59.3	3939	62.5	5010	68.1	7368	57.7	3418	63.2	4191
4×300*	1.8	65.5	4929	68.9	6041	74.5	8368	63.3	4169	69.2	5075
4×400*	2.0	74.4	6351	77.8	7725	85.1	11732	71.5	5433	78.0	6553
5×4	0.7	14.2	190	16.0	315	–	–	–	–	–	–
5×6	0.7	15.6	237	17.4	377	–	–	–	–	–	–
5×10	0.7	19.1	346	20.9	519	24.7	1071	18.9	311	22.2	475
5×16	0.7	22.0	470	23.8	671	27.6	1296	21.6	427	24.9	612
5×25	0.9	26.6	697	28.4	943	32.4	1704	25.9	617	29.2	836
5×35	0.9	29.7	887	32.5	1201	36.5	2258	28.6	788	32.1	1043
5×50*	1.0	32.6	1132	36.4	1841	39.4	2620	32.7	1066	36.4	1371
5×70*	1.1	37.8	1536	41.2	2332	44.6	3244	37.8	1408	41.9	1795
5×95*	1.1	42.8	2053	46.2	2953	50.8	4479	41.9	1798	46.4	2265
5×120*	1.2	47.3	2541	50.7	3536	55.7	5265	47.0	2240	51.9	2807
5×150*	1.4	53.1	3201	56.5	4317	61.5	6241	51.6	2736	56.7	3381
5×185*	1.6	58.6	3692	58.0	4831	67.2	7188	57.5	3343	63.0	4113
5×240*	1.7	65.8	4882	69.2	6258	74.8	8703	64.0	4218	69.9	5132
5×300*	1.8	72.7	6108	76.1	7627	83.2	11332	70.2	5150	76.7	6251
5×400*	2.0	82.7	7899	87.3	10498	93.6	13889	79.4	6721	86.5	8073

*表示紧压导体
*Compoctod conductor

● 额定电压0.6/1kV交联聚乙烯绝缘电力电缆
XLPE Insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	芯数 No.of cores	绝缘标称厚度 Nominal Insulation thickness mm	TC90(-40)/YJLHV		YJLHV22		YJLHV32		AC90(-40)/YJLHS		ACWU90(-40)/YJLHS2	
			电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
3×4+1×2.5	3	0.7	12.9	154	14.7	266	–	–	–	–	–	–
	1	0.7										
3×6+1×4	3	0.7	14.1	191	15.9	315	–	–	–	–	–	–
	1	0.7										
3×10+1×6	3	0.7	16.8	267	18.6	402	22.4	9.7	–	–	–	–
	1	0.7										
3×16+1×10	3	0.7	19.4	365	21.2	524	25.0	1101	19.2	332	22.5	498
	1	0.7										
3×25+1×16	3	0.9	23.2	528	25.0	720	28.8	1398	22.8	472	26.1	667
	1	0.7										
3×35+1×16	3	0.9	25.2	642	27.0	851	31.0	1599	24.8	577	27.9	786
	1	0.7										
3×50+1×25	3*	1.0	26.0	805	28.0	1034	32.0	1805	28.3	784	31.8	1037
	1	0.9										
3×70+1×35	3*	1.1	31.7	1121	35.4	1721	38.5	2574	32.3	1027	36.0	1328
	1	0.9										
3×95+1×50	3*	1.1	35.9	1461	39.6	2136	42.7	3049	35.9	1319	40.0	1687
	1*	1.0										
3×120+1×70	3*	1.2	40.5	1845	44.2	2606	48.5	4151	40.5	1656	44.8	2089
	1*	1.1										
3×150+1×70	3*	1.4	44.3	2226	48.0	3058	52.5	4758	43.6	1957	48.3	2464
	1*	1.1										
3×185+1×95	3*	1.6	49.2	2705	52.9	3623	57.4	5491	48.5	2419	53.4	3004
	1*	1.1										
3×240+1×120	3*	1.7	55.0	2441	58.7	4467	63.4	6573	54.0	3039	59.3	3739
	1*	1.2										
3×300+1×150	3*	1.8	61.0	4313	64.5	5421	69.6	7799	59.2	3704	64.9	4525
	1*	1.4										
3×400+1×185	3*	2.0	68.7	5476	72.4	6755	79.2	9906	66.7	4777	73.0	5793
	1*	1.6										

*表示紧压导体
*Compoctod conductor

● 额定电压0.6/1kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	芯数 No.of cores	绝缘标称厚度 Nominal Insulation thickness mm	TC90(-40)/YJLHV		YJLHV22		YJLHV32		AC90(-40)/YJLHS		ACWU90(-40)/YJLHS2	
			电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
4×4+1×2.5	4	0.7	14.0	182	15.8	305	–	–	–	–	–	–
	1	0.7										
4×6+1×4	4	0.7	15.4	228	17.2	364	–	–	–	–	–	–
	1	0.7										
4×10+1×6	4	0.7	18.4	323	20.2	473	24.0	1023	–	–	–	–
	1	0.7										
4×16+1×10	4	0.7	21.4	445	23.2	621	27.0	1251	21.7	408	25.0	594
	1	0.7										
4×25+1×16	4	0.9	25.7	650	27.5	864	31.5	1624	26.1	587	29.4	808
	1	0.7										
4×35+1×16	4	0.9	28.1	800	30.1	1049	33.9	1863	28.8	728	32.1	970
	1	0.7										
4×50+1×25	4*	1.0	31.5	1039	34.9	1627	38.3	2482	32.0	988	36.6	1295
	1	0.9										
4×70+1×35	4*	1.1	36.1	1403	39.3	2058	42.9	3036	38.1	1300	42.2	1690
	1	0.9										
4×95+1×50	4*	1.1	40.8	1857	44.2	2614	49.0	4201	42.2	1688	46.5	2188
	1*	1.0										
4×120+1×70	4*	1.2	45.5	2346	48.9	3192	53.5	4914	47.4	2091	52.1	2639
	1*	1.1										
4×150+1×70	4*	1.4	50.0	2852	53.4	3782	58.2	5694	52.0	2494	56.9	3119
	1*	1.1										
4×185+1×95	4*	1.6	55.5	3451	58.9	4477	63.9	6606	58.0	3081	63.3	3830
	1*	1.1										
4×240+1×120	4*	1.7	62.1	4392	65.5	5541	70.9	7972	64.8	3875	70.3	4767
	1*	1.2										
4×300+1×150	4*	1.8	68.8	5501	72.2	6773	79.1	10474	70.9	4726	77.0	5769
	1*	1.4										
4×400+1×185	4*	2.0	77.8	7032	81.2	8468	88.5	12644	80.1	6112	87.0	7438
	1*	1.6										

*表示紧压导体
*Compoctod conductor

● 额定电压0.6/1kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 0.6/1 kV

标称截面 Nominal Cross-sectional area of Conductor mm²	芯数 No.of cores	绝缘标称厚度 Nominal Insulation thickness mm	TC90(-40)/YJLHV		YJLHV22		YJLHV32		AC90(-40)/YJLHS		ACWU90(-40)/YJLHS2	
			电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km	电缆计算外径 Approx overall diameter mm	电缆最大重量 Cable weight max kg/km
3×4+2×25	3	0.7	13.5	175	15.5	29.5	–	–	–	–	–	–
	2	0.7										
3×6+2×4	3	0.7	14.9	218	16.9	352	–	–	–	–	–	–
	2	0.7										
3×10+2×6	3	0.7	17.5	301	19.5	445	23.3	976	–	–	–	–
	2	0.7										
3×16+2×10	3	0.7	20.6	419	22.6	591	26.4	1205	21.6	380	24.9	574
	2	0.7										
3×25+2×16	3	0.9	23.9	604	26.5	810	30.3	1531	26.0	555	29.3	775
	2	0.7										
3×35+2×16	3	0.9	25.6	715	28.4	937	32.4	1722	28.7	666	32.0	907
	2	0.7										
3×50+2×25	3*	1.0	29.5	935	31.5	1184	36.5	2302	32.8	908	36.3	1198
	2	0.9										
3×70+2×35	3*	1.1	34.1	1258	37.3	1878	40.9	2812	38.0	1189	41.9	1560
	2	0.9										
3×95+2×50	3*	1.1	38.5	1631	42.3	2406	46.9	3904	42.1	1535	46.4	1984
	2*	1.0										
3×120+2×70	3*	1.2	43.5	2134	46.9	2944	51.5	4601	47.3	1937	51.8	2462
	2*	1.1										
3×150+2×70	3*	1.4	47.0	2511	50.4	3385	55.4	5216	51.9	2249	56.6	2847
	2*	1.1										
3×185+2×95	3*	1.6	52.3	3084	55.7	4052	60.7	6070	57.9	2796	63.0	3515
	2*	1.1										
3×240+2×120	3*	1.7	58.5	3912	61.9	4993	67.1	7265	64.5	3505	70.0	4364
	2*	1.2										
3×300+2×150	3*	1.8	64.9	4906	68.3	6107	73.7	8647	70.8	4271	76.7	5278
	2*	1.4										
3×400+2×185	3*	2.0	72.9	6186	76.3	7534	83.8	11508	80.0	5469	86.5	6717
	2*	1.6										

*表示紧压导体
*Compoctod conductor

电缆技术参数 Product data of cable

导体标称截面 Nominal Cross-sectional area of Conductor mm²	20℃时导体大直流电阻（Ω/km） Max.D.C resistance of conductor at 20℃
	铝合金 Alumintum allcy
4	7.19
6	4.48
10	2.99
16	1.85
25	1.17
35	0.843
50	0.622
70	0.430
95	0.311
120	0.246
150	0.200
185	0.159
240	0.121
300	0.0971
400	0.0755
500	0.0587
630	0.0455
800	0.0356
工频交流电压试验 Power frequency A.C. voltage test	试验电压3.5kV/5min Test voltage 3.5kV/5min

电缆载流量 Current carrying capacity of cable

● 在空气中 In the air

导体 Conductor	导体标称截面 Nominal Cross-sectional area of Conductor mm²	无铠装电缆 Unarmored cable				铠装电缆 Armored cable			
		单芯 Singe-core		2芯 2-cores	3芯 3-cores 5芯 5-cores	单芯 Singe-cores		2芯 2-cores	3芯 3-cores 5芯 5-cores
		品	三角			品	三角		
铝合金导体 Aluminum alloy conductor	4	32	42	34	29	32	42	–	–
	6	42	56	45	39	42	56	–	–
	10	55	72	58	50	55	72	58	50
	16	71	93	75	65	71	93	75	64
	25	94	120	100	87	94	120	100	86
	35	115	150	120	105	115	150	120	105
	50	140	180	150	130	140	180	145	125
	70	180	230	190	165	180	230	190	165
	95	220	285	235	205	220	285	235	200
	120	260	330	275	240	260	330	270	235
	150	300	380	315	270	300	380	310	270
	185	350	445	365	315	350	445	355	310
	240	414	530	415	375	414	530	–	365
	300	485	615	480	435	485	615	–	420
	400	570	720	560	510	570	720	–	495
	500	670	850	650	–	670	850	–	–
	630	790	1000	–	–	790	1000	–	–
	800	920	1180	–	–	920	1180	–	–

电缆载流量 Current carrying capacity of cable

● 在土壤中 In the ground

导体 Conductor	导体标称截面 Nominal Cross-sectional area of Conductor mm²	无铠装电缆 Unarmored cable				铠装电缆 Armored cable			
		单芯 Singe-core		2芯 2-cores	3芯 3-cores 5芯 5-cores	单芯 Singe-core		2芯 2-cores	3芯 3-cores 5芯 5-cores
		品	三角			品	三角		
铝合金导体 Alumintum alloy conductor	4	43	47	47	40	43	47	47	40
	6	56	60	61	52	56	60	61	50
	10	71	75	78	56	71	75	77	65
	16	97	97	100	85	91	97	105	85
	25	115	125	130	110	115	125	130	110
	35	140	150	155	130	140	150	155	130
	50	165	175	185	160	165	175	185	155
	70	205	215	225	195	205	215	230	190
	95	245	260	275	235	245	260	275	230
	120	280	295	315	165	280	295	315	260
	150	315	335	350	300	315	335	355	295
	185	360	380	395	340	360	380	400	335
	240	420	445	–	395	420	445	–	390
	300	475	505	–	445	475	505	–	440
	400	545	575	–	510	545	575	–	505
	500	620	665	–	–	620	665	–	–
	630	705	760	–	–	705	760	–	–
	800	800	875	–	–	800	875	–	–

电缆敷设运行条件 Installation and Operation Condition of Cable

● 在空气中敷设 In the air

1、单芯电缆平行敷设时中心距离：185m²及以下为电缆直径的2倍；240m²及以上为90mm。
2、周围环境空气温度：30℃
3、导体的长期最高工作温度：90℃

1.The distance between two adjacent cable' axle centers of single-core cables laid in parallel,cross-scection area of corductor ≤185mm²;2 times of the cable diameter corss-sectional area of conductor≥240mm²;90mm
2.Ambient air temperature:30℃.
3.Max.continous operating temperature of conductor:90℃.

● 不同环境温度下载流量的修正系数：
Current carrying rating factors for different ambient air tempertature:

环境温度 Ambient air temperature	20℃	25℃	30℃	35℃	40℃	45℃
修正系数 Correction factor	1.09	1.04	1.00	0.95	0.90	0.84

● 直埋敷设 Directly in the ground

1.单芯电缆不接触敷设时电缆中心距离为电缆直径的2倍
2.土壤温度：25℃
3.导体的长期最高工作温度：90℃
4.土壤热阻系数：1.0℃.m/W
5.直埋深度：0.7m

1.The single-core cables are installed separately.The distance between the cable center is 2 times of the cable Diameter.
2.Soil temperature:25℃.
3.Max continous operating temperature of conductor:90℃.
4.Thermal resistivity of soil:1.0℃.m/W
5.Depth of Direct-Buried:0.7m.

● 不同土壤温度下载流量的修正系数：
Current carrying rating factors for different Soil tempertature:

土壤温度 Soil temperature	20℃	25℃	30℃	35℃	40℃
修正系数 Correction factor	1.04	1.0	0.96	0.92	0.87

额定电压3.6/6kV-26/35kV铝合金交联聚乙烯绝缘电力电缆
Aluminum Alloy Conductor XLPE Insulated Power Cable for Rated Voltage 3.6/6kV-26/35kV

电缆型号和名称 Type and name of cable

型号 Type	名称 Name	适用范围 Application
YJLHV	铝合金交联聚乙烯绝缘聚氯乙烯护套电缆 Aluminum Alloy Conductor XLPE insulated PVC sheathed power cable.	室内，隧道及电缆沟等不需要承受机械外力的场所。单芯电缆不允许敷设在磁性管道中。 For laid indoors,intunels or cable trench,no need to bear external mechanical forces. single-core cable shall not laid in magnetic duct.
YJLHV22	铝合金芯交联聚乙烯绝缘钢带铠装聚氯乙烯护套电力电缆 Aluminum Alloy Conductor XLPE insulated steel tape armoured PVC sheathed Power cable.	室内、隧道、及托架电缆沟内或场地敷设等，需承受一定的径向机械外力的场所。 For laid indoors,intunels and tray, cable trench,or directly in ground able to bear external mechanical forces,but unable to bear large pulling forces.
YJLHV92	铝合金芯交联聚乙烯绝缘联锁铠装聚氯乙烯护套电力电缆 Aluminum Alloy Conductor XLPE insulated interlocked armoured PVC sheathed power cable.	
YJLHV32	铝合金芯交联聚乙烯绝缘钢丝铠装聚氯乙烯护套电力电缆 Aluminum Alloy conductor XLPE insulated steel tape armoured PVC sheathed power cable.	室内、隧道、及电缆沟等需要承受一定拉力的场所。 For laying in doors,intunels and direct in ground and wells, required to bear exterral mechanical forces and determinate pulling force.

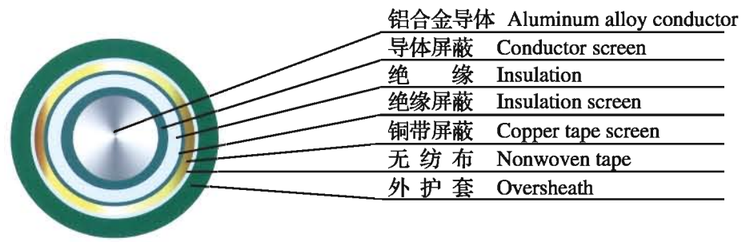
电缆生产的范围 Production Range of Cable

型号 Type	芯数 Cores	定额电压 Rated Voltage kV						
		3.6/6	6/6 6/10	8.7/10 8.7/15	12/20	18/20 18/30	21/35	26/35
		标称截面 Nominal cross-section mm²						
YJLHV YJLHV22	1	25–630	25–630	25–630	35–630	50–630	50–630	50–630
YJLHV92 YJLHV32	3	25–630	25–630	25–630	35–630	50–630	50–630	50–400

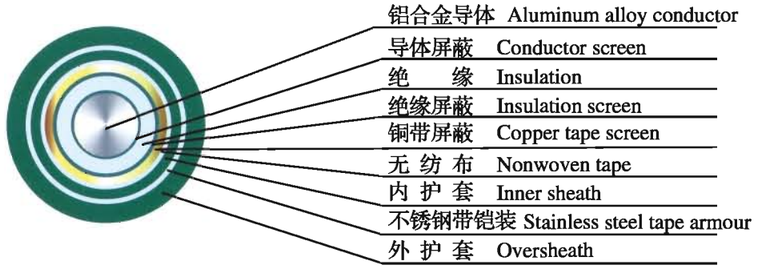
注：单芯铠装电缆适用于直流系统，若用以交流系统，应采用非磁性材料的铠装层或采用隔磁措施。
The armoured single-core cables are used for D.C. system only.As for A.C. system,the magnetic isolation should be applied on casle or non-magnetic materials should be used.

电缆结构图 Constuction of cable

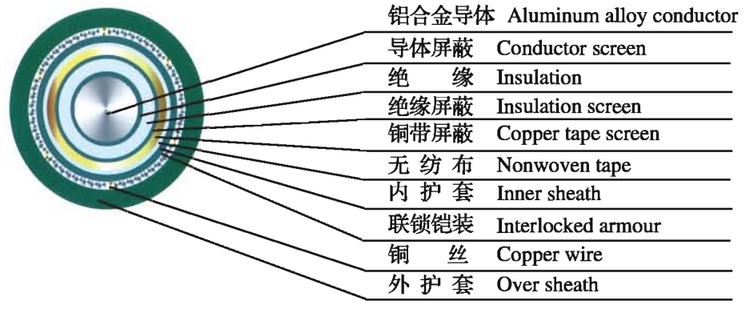
● 额定电压3.6/6kV~26/35kV单芯交联聚乙烯绝缘电力电缆
Single core XLPE insulation power cable for rated voltage from 3.6/6kV to 26/35kV



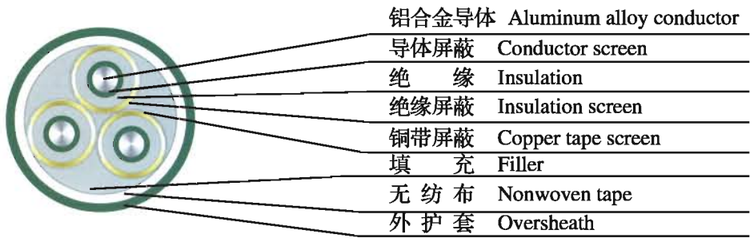
● 额定电压3.6/6kV~26/35kV单芯交联聚乙烯绝缘不锈钢带铠装电力电缆
Single core XLPE insulation stainless steel tape armoured power cable for rated voltage from 3.6/6kV to 26/35kV



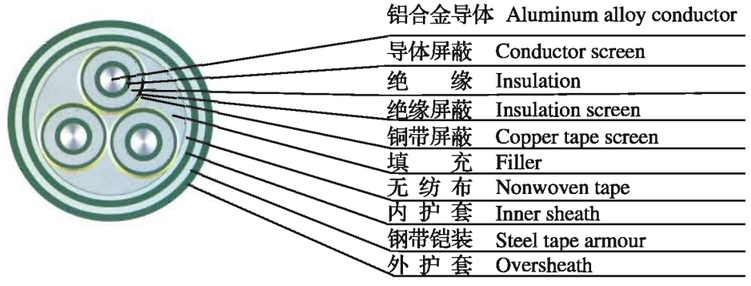
● 额定电压3.6/6kV~26/35kV单芯交联聚乙烯绝缘钢丝铠装电力电缆
Single core XLPE insulation Interlocked armoured power cable for rated voltage from 3.6/6kV to 26/35kV



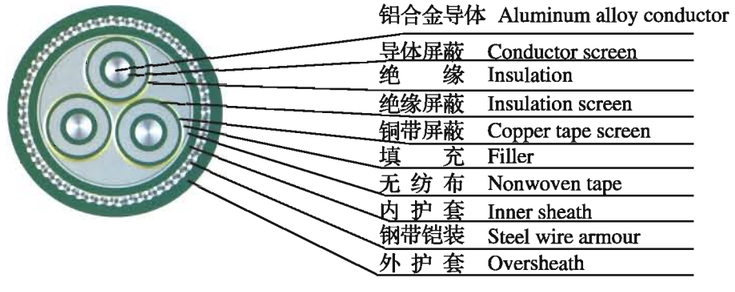
● 额定电压3.6/6kV~26/35kV三芯交联聚乙烯绝缘电力电缆
Three-core XLPE insulation power cable for rated voltage from 3.6/6kV to 26/35kV



● 额定电压3.6/6kV~26/35kV三芯交联聚乙烯绝缘钢带铠装电力电缆
Three-core XLPE insulation steel tape armouted power cable for rated voltage from 3.6/6kV to 26/35kV



● 额定电压3.6/6kV~26/35kV三芯交联聚乙烯绝缘钢丝铠装电力电缆
Three-core XLPE insulation steel wire armouted power cable for rated voltage from 3.6/6kV to 26/35kV



电缆的结构尺寸 Construciton

● 额定电压3.6/6kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 3.6/6kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km
1×25	2.5	17.9	390	21.7	550	24.7	1190
1×35	2.5	18.9	480	22.6	610	25.8	1290
1×50	2.5	20.3	550	24.0	690	27.2	1420
1×70	2.5	21.9	650	25.4	790	28.8	1590
1×95	2.5	23.7	760	27.2	920	30.6	1770
1×120	2.5	25.2	870	28.7	1040	32.1	1950
1×150	2.5	27.0	990	31.7	1330	34.9	2160
1×185	2.5	28.6	1140	33.3	1480	36.5	2360
1×240	2.6	31.2	1370	35.9	1730	39.1	2680
1×300	2.8	34.0	1640	38.7	1990	41.9	3020
1×400	3.0	37.6	2140	42.5	2420	45.6	3890
1×500	3.2	41.3	2610	46.3	2830	49.3	4440
1×630	3.2	44.9	3090	50.0	3380	53.1	5120
3×25	2.5	35.8	1280	40.5	2300	42.7	3160
3×35	2.5	38.1	1470	43.0	2550	46.2	3490
3×50	2.5	41.1	1740	46.1	2890	49.3	3940
3×70	2.5	44.5	2090	49.7	3340	52.9	4480
3×95	2.5	48.5	2470	53.8	3850	57.0	5120
3×120	2.5	51.7	2850	57.2	4310	60.4	5650
3×150	2.5	55.4	3310	60.9	4840	64.2	6320
3×185	2.5	58.8	3800	64.5	5430	67.8	7050
3×240	2.6	64.6	4600	70.5	6370	75.1	8940
3×300	2.8	70.6	5510	76.7	7610	81.3	10130
3×400	3.0	78.4	7750	86.2	10440	89.5	11930
3×500	3.2	86.2	8045	94.3	11256	97.6	13820
3×630	3.2	94.0	9749	102.4	13166	105.7	16050

● 额定电压6/6kV 6/10kV交联聚乙烯绝缘电力电缆

XLPE insulated power cable for rated voltage 6/6kV 6/10kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Calulated weight of cable kg/km
1×25	3.4	19.8	458	23.4	767	26.6	1384
1×35	3.4	20.8	514	24.4	840	27.6	1499
1×50	3.4	22.3	585	25.7	929	29.1	1628
1×70	3.4	23.8	681	27.2	1047	30.6	1810
1×95	3.4	25.7	805	29.1	1197	32.5	1999
1×120	3.4	27.1	913	31.9	1575	33.9	2192
1×150	3.4	28.7	1043	33.5	1743	35.7	2384
1×185	3.4	30.4	1165	35.2	1901	38.4	2869
1×240	3.4	32.9	1382	37.7	2173	40.9	3222
1×300	3.4	35.3	1642	39.9	2470	43.3	3606
1×400	3.4	38.5	1991	43.3	2866	46.7	4115
1×500	3.4	42.0	2418	47.0	3345	50.2	4724
1×630	3.4	45.6	2883	50.8	3895	54.0	5414
3×25	3.4	39.8	1451	44.8	2322	48.0	3766
3×35	3.4	42.2	1639	47.4	2569	50.6	4117
3×50	3.4	45.2	1874	50.4	2909	53.6	4571
3×70	3.4	48.6	2193	54.0	3335	57.2	5101
3×95	3.4	52.7	2653	57.9	3857	61.1	5765
3×120	3.4	55.9	3040	61.3	4317	64.5	6334
3×150	3.4	59.6	3503	65.4	4911	68.6	7080
3×185	3.4	63.0	3946	68.8	5460	72.0	7727
3×240	3.4	68.3	4729	74.3	6360	77.5	8844
3×300	3.4	73.3	5586	80.9	7406	84.2	11015
3×400	3.4	80.3	6822	88.1	9480	91.4	12698
3×500	3.4	87.9	8299	95.2	11256	99.2	14780
3×630	3.4	95.8	9949	104.0	13165	107.3	17052

● 额定电压8.7/10kV 8.7/15kV交联聚乙烯绝缘电力电缆

XLPE insulated power cable for rated voltage 8.7/10kV 8.7/15kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km
1×25	4.5	22.0	544	25.6	767	29.0	1587
1×35	4.5	23.0	604	26.6	840	30.0	1704
1×50	4.5	24.5	679	27.9	929	31.5	1839
1×70	4.5	26.2	780	30.8	1047	33.0	2002
1×95	4.5	27.9	910	32.7	1197	34.9	2220
1×120	4.5	29.5	1023	34.1	1575	37.5	2770
1×150	4.5	31.1	1158	35.9	1743	39.1	2907
1×185	4.5	32.8	1285	37.6	1901	40.8	3124
1×240	4.5	35.3	1525	39.9	2173	43.1	3485
1×300	4.5	37.7	1798	42.5	2470	45.7	3877
1×400	4.5	40.9	2156	45.7	2866	48.9	4396
1×500	4.5	44.4	2595	49.4	3345	52.6	5018
1×630	4.5	48.0	3074	53.4	3895	56.6	5746
3×25	4.5	45.0	1747	50.2	2739	52.4	4378
3×35	4.5	47.3	1947	52.3	2991	55.7	4740
3×50	4.5	50.3	2223	55.7	3383	58.9	5222
3×70	4.5	53.8	2586	59.4	3831	62.6	5815
3×95	4.5	57.6	3051	63.2	4285	66.4	6501
3×120	4.5	60.9	3458	66.7	4870	69.9	7068
3×150	4.5	64.5	3945	70.5	5475	73.7	7814
3×185	4.5	68.1	4429	74.1	6061	77.3	8510
3×240	4.5	73.3	5230	79.5	7041	84.2	10650
3×300	4.5	78.4	6154	86.2	8845	89.5	11934
3×400	4.5	85.3	7402	93.5	10343	96.8	13756
3×500	4.5	93.0	8950	101.2	12072	104.5	15836
3×630	4.5	100.7	10609	109.3	14082	112.6	18105

● 额定电压12/20kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 12/20kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km
1×35	5.5	25.4	720	30.1	1200	32.2	1820
1×50	5.5	26.8	850	31.5	1320	33.6	1980
1×70	5.5	28.4	980	33.1	1460	35.2	2150
1×95	5.5	30.2	1110	34.9	1640	37.0	2370
1×120	5.5	31.7	1240	36.4	1780	38.5	2550
1×150	5.5	33.4	1380	38.1	1970	40.2	2770
1×185	5.5	35.0	1550	39.7	2150	41.8	2990
1×240	5.5	37.4	1800	42.1	2440	45.4	3690
1×300	5.5	39.8	2050	44.7	2770	47.9	4110
1×400	5.5	43.0	2550	48.1	3250	51.3	4690
1×500	5.5	46.2	3030	51.4	3730	54.6	5280
1×630	5.5	49.8	3540	55.2	4320	58.4	6010
3×35	5.5	52.0	2570	57.4	3620	60.7	5330
3×50	5.5	55.0	2900	60.6	4010	63.8	5810
3×70	5.5	58.4	3330	64.1	4540	67.3	6430
3×95	5.5	62.3	3800	68.2	5090	72.8	7890
3×120	5.5	65.6	4240	71.5	5640	76.1	8580
3×150	5.5	69.2	4750	75.3	6260	79.9	9410
3×185	5.5	72.7	5320	78.9	6890	83.5	10180
3×240	5.5	78.0	6180	85.7	8690	89.0	11420
3×300	5.5	83.0	7100	91.0	9810	94.3	12720
3×400	5.5	90.0	8790	98.2	11560	101.5	14710
3×500	5.5	96.8	9580	105.3	13300	108.6	16710
3×630	5.5	104.6	11310	113.4	15370	116.7	19050

电缆的结构尺寸 Construciton

● 额定电压18/20kV 18/30kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 18/20kV 18/30kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km
1×35	8.0	31.9	1020	–	–	–	–
1×50	8.0	33.3	1250	35.4	1760	38.8	2610
1×70	8.0	34.9	1400	38.6	1910	40.7	2820
1×95	8.0	36.7	1550	40.1	2100	42.3	3030
1×120	8.0	38.2	1700	41.8	2290	43.9	3640
1×150	8.0	39.9	1860	43.4	2490	46.7	3900
1×185	8.0	41.5	2050	45.3	2690	48.5	4150
1×240	8.0	44.0	2310	47.6	3030	50.7	4580
1×300	8.0	46.3	2600	50.2	3300	53.5	4990
1×400	8.0	49.6	3060	53.4	3880	56.7	5620
1×500	8.0	52.8	3560	57.0	4390	60.3	6250
1×630	8.0	56.4	4120	61.2	5030	64.3	7010
3×50	8.0	68.4	4350	75.1	6250	79.7	8870
3×70	8.0	72.5	4930	78.7	6910	83.3	9610
3×95	8.0	75.9	5580	84.0	7620	87.4	10470
3×120	8.0	79.4	6100	87.5	8870	90.8	11220
3×150	8.0	82.6	6410	91.3	9580	94.6	12100
3×185	8.0	86.4	7370	94.9	10450	98.2	12990
3×240	8.0	91.4	8300	100.3	11590	103.7	14340
3×300	8.0	96.7	9300	105.6	12850	108.9	15710
3×400	8.0	103.8	10620	112.8	14410	116.1	17870
3×500	8.0	111.1	11780	119.3	16330	123.2	20030
3×630	8.0	119.2	13650	128.9	18970	131.3	22530

电缆的结构尺寸 Construciton

● 额定电压21/35kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 21/35kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km
1×50	9.3	36.1	1290	40.5	2070	43.0	2890
1×70	9.3	37.7	1420	42.2	2250	45.7	3490
1×95	9.3	39.5	1580	44.1	2460	47.6	3760
1×120	9.3	41.0	1720	45.6	2620	49.1	3980
1×150	9.3	42.7	1890	47.4	2840	50.9	4250
1×185	9.3	44.3	2070	49.0	3060	52.6	4530
1×240	9.3	46.7	2350	51.6	3400	55.1	4950
1×300	9.3	49.1	2640	54.1	3770	57.6	5359
1×400	9.3	52.3	3080	57.4	4280	61.0	6020
1×500	9.3	55.5	3540	60.7	4840	64.2	6690
1×630	9.3	59.1	4080	64.4	5470	68.0	7440
3×50	9.3	75.1	4640	82.7	7340	86.0	9960
3×70	9.3	78.6	5160	96.3	7990	89.6	10740
3×95	9.3	82.5	5730	90.4	8740	93.7	11670
3×120	9.3	85.7	6260	93.7	9420	97.0	12420
3×150	9.3	89.4	6860	97.5	10200	100.8	13330
3×185	9.3	92.8	7500	101.1	11010	104.4	14260
3×240	9.3	98.1	8520	106.6	12260	109.9	15710
3×300	9.3	103.1	9520	111.8	13450	115.1	17070
3×400	9.3	110.1	11120	119.0	15430	122.3	19290
3×500	9.3	116.9	12760	126.1	17390	129.4	21520
3×630	9.3	124.7	14710	134.2	19700	137.5	24090

● 额定电压26/35kV交联聚乙烯绝缘电力电缆
XLPE insulated power cable for rated voltage 26/35kV

标称截面 Nominal Cross-sectional area of Conductor mm²	绝缘标称厚度 Insulation thickness mm	YJLHV		YJLHV22		YJLHV32	
		电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km	电缆计算外径 Approx overall diameter mm	电缆参考重量 Caluated weight of cable kg/km
1×50	10.5	38.7	1437	43.7	2320	46.9	3490
1×70	10.5	40.2	1570	45.2	2480	48.4	3710
1×95	10.5	42.1	1750	47.1	2690	50.3	3990
1×120	10.5	43.7	1910	48.7	2860	51.9	4260
1×150	10.5	45.3	2090	50.5	3090	53.7	4540
1×185	10.5	47.0	2270	52.0	3305	55.2	4790
1×240	10.5	49.3	2550	54.7	3660	57.9	5230
1×300	10.5	51.7	2870	57.1	4040	60.3	5690
1×400	10.5	54.9	3308	60.5	4520	63.7	6310
1×500	10.5	59.8	3970	65.6	5290	68.8	7140
1×630	10.5	63.6	4550	69.2	5910	72.6	7950
3×50	10.5	80.8	5150	88.6	7820	91.9	11740
3×70	10.5	84.2	5650	92.0	8430	95.5	12560
3×95	10.5	88.1	6282	86.3	9270	99.6	13590
3×120	10.5	91.3	6830	99.7	9970	103.0	14460
3×150	10.5	94.9	7470	103.3	10730	106.6	15460
3×185	10.5	98.4	7470	107.0	11500	110.0	16335
3×240	10.5	103.5	8120	112.5	12800	115.2	17820
3×300	10.5	108.7	9140	117.7	14100	120.8	20280
3×400	10.5	115.5	10290	125.1	16080	127.8	25050

电缆技术参数 Technical data of cable

导体直流电阻和导体短路电流
D.C. resistance of conductor and conductor maximum short circuit current

标称截面 Nominal Cross-sectional area of Conductor mm²	20℃时导体最大直流电阻（Ω/km） Max.D.C resistance of conductor at 20℃	90℃时导体最大允许短路电流（1秒）(kA) Conductor maximun start circuit current(1s)at 90℃(1second)
	铝合金导体 Aluminum alloy conductor	铝合金导体 Aluminum alloy conductor
25	1.17	2.42
35	0.843	3.37
50	0.622	4.79
70	0.430	6.68
95	0.311	9.03
120	0.246	11.4
150	0.200	14.2
185	0.159	17.5
240	0.121	22.6
300	0.0971	28.2
400	0.0755	37.6
500	0.0687	47.0
630	0.0455	58.0

交流耐压和局部放电试验
Voltage test and Partial discharge test

序号 No	试用项目 Test items	额定电压 Rated voltage kV						
		3.6/6	6/6 6/10	8.7/10 8.7/15	12/20	18/20 18/30	21/35	26/35
1	工频交流电压试验 Power frequency A.C. Voltage test kV/5min	12.5	21	30.5	42	63	73.5 (53)*	91 (65)*
2	4小时工频交流电压试验 Power frequency A.C. Voltage testfor 4 hours kV	14.4	24	34.8	48	72	84	104
3	冲击电压试验 Impluse voltage test kV	60	75	95	125	170	200	250
4	局部放电试验1.73Uo 下最大局部放电量 Partial diacharge test Maximum discharge at 1.73Uo pc	5	5	5	5	5	5	5

*21/35kv和26/35kv电缆工频耐压可根据客户要求，按2.5Uo × 30min or 3.5Uo × 50min进行试验。
The power-frequenc Voltage test of cables for rated voltage 21/35kV shall be done upon request according to 2.5Uo × 30min of 3.5Uo × 50min.

电缆的电容
Capacitance of cable(reference vale)

导体标称截面 Nominal Cross-sectional area of Conductor mm²	额定电压 Rated voltage kV						
	3.6/6	6/6 6/10	8.7/10 8.7/15	12/20	18/20 18/30	21/35	26/35
	每相电容 Capacitance/phase μF/km						
25	0.2423	0.1922	0.1576	0.1378	0.1163	0.1064	0.0992
35	0.2684	0.2116	0.1725	0.1502	0.1251	0.1140	0.1061
50	0.3022	0.2367	0.1917	0.1661	0.1363	0.1239	0.1150
70	0.3462	0.2693	0.2167	0.1868	0.1508	0.1365	0.1263
95	0.3875	0.2999	0.2400	0.2060	0.1643	0.1483	0.1368
120	0.4236	0.3266	0.2603	0.2228	0.1760	0.1584	0.1460
150	0.4647	0.3570	0.2834	0.2418	0.1893	0.1700	0.1563
185	0.5059	0.3873	0.3123	0.2656	0.2026	0.1815	0.1665
240	0.5430	0.4290	0.3439	0.2616	0.2207	0.1972	0.1805
300	0.5589	0.4706	0.3755	0.3175	0.2387	0.2128	0.1945
400	0.5940	0.5311	0.4213	0.3551	0.2684	0.2354	0.2146
500	0.6167	0.5839	0.4613	0.3880	0.2876	0.2551	0.2321
630	0.6848	0.6481	0.5099	0.4278	0.3151	0.2789	0.2533

电缆电感
Inductance cable

导体标称截面 Nominal Cross-sectional atea of Conductor mm²	额定电压 Rated voltage kV						
	3.6/6	6/6 6/10	8.7/10 8.7/15	12/20	18/20 18/30	21/35	26/35
	电感 Inductance mH/km						
1×25	0.5954	0.6143	0.6474	–	–	–	–
1×35	0.5753	0.5932	0.6248	0.6390	–	–	–
1×50	0.5543	0.5711	0.6011	0.6145	0.6501	0.6675	0.6751
1×70	0.5357	0.5486	0.5765	0.5919	0.6252	0.6394	0.6467
1×95	0.5172	0.5318	0.5608	0.5726	0.6043	0.6180	0.6279
1×120	0.5059	0.5197	0.5473	0.5586	0.5891	0.6051	0.6118
1×150	0.4949	0.5079	0.5341	0.5449	0.5740	0.5895	0.5959
1×185	0.4885	0.5006	0.5252	0.5354	0.5640	0.5760	0.5839
1×240	0.4790	0.4890	0.5143	0.5216	0.5487	0.5615	0.5677
1×300	0.4749	0.4818	0.5032	0.5102	0.5376	0.5484	0.5540
1×400	0.4660	0.4702	0.4927	0.4991	0.5219	0.5343	0.5395
1×500	0.4600	0.4619	0.4848	0.4907	0.5218	0.5224	0.5272
1×630	0.4547	0.4563	0.4748	0.4827	0.5012	0.5101	0.5161
3×25	0.3552	0.3797	0.4061	0.4274	–	–	–
3×35	0.3384	0.3613	0.3862	0.4064	–	–	–
3×50	0.3211	0.3423	0.3655	0.3845	0.4396	0.4537	0.6979
3×70	0.3040	0.3232	0.3445	0.3620	0.4145	0.4286	0.4427
3×95	0.2915	0.3092	0.3290	0.3454	0.3956	0.0482	0.4208
3×120	0.2826	0.2992	0.3178	0.3392	0.3799	0.3909	0.4019
3×150	0.2742	0.2897	0.3071	0.3217	0.3642	0.3752	0.3862
3×185	0.2672	0.2817	0.3009	0.3145	0.3485	0.3611	0.3737
3×240	0.2608	0.2726	0.2904	0.3030	0.3360	0.3486	0.3611
3×300	0.2576	0.2651	0.2817	0.2935	0.3266	0.3776	0.3485
3×400	0.2516	0.2564	0.2714	0.2822	0.3014	0.3140	0.3266
3×500	0.2480	0.2503	0.2641	0.2742	–	–	–
3×630	0.2421	0.2442	0.2596	0.2661	–	–	–

金属屏蔽层的短路电流
Short circuit current of mechanic-screen

导体标称截面 Nominal Cross sectional area of conductor mm²	额定电压 Rated voltage kV						
	3.6/6	6/6 6/10	8.7/10 8.7/15	12/20	18/20 18/30	21/35	26/35
	短路电流 Short circuit cirrent A						
1×25	1075	1083	1094	–	–	–	–
1×35	1074	1082	1092	1096	–	–	–
1×50	1072	1080	1091	1095	1284	1286	1288
1×70	1070	1079	1090	1091	1281	1285	1286
1×95	1069	1077	1086	1272	1280	1284	1283
1×120	1068	1077	1266	1271	1279	1280	1282
1×150	1067	1076	1265	1270	1278	1279	1282
1×185	1064	1251	1264	1267	1275	1279	1279
1×240	1241	1250	1262	1266	1274	1276	1278
1×300	1239	1246	1261	1265	1271	1275	1277
1×400	1240	1245	1256	1260	1270	1272	1274
1×500	1243	1244	1253	1257	1266	1272	1273
1×630	1236	1238	1252	1253	1265	1270	1270
3×25	2958	2958	2958	–	–	–	–
3×35	2958	2958	2958	2958	–	–	–
3×50	2958	2958	2958	2958	3031	3031	3031
3×70	2958	2958	2958	2958	3031	3031	3031
3×95	2958	2958	2958	3031	3031	3031	3031
3×120	2958	2958	3031	3031	3031	3031	3031
3×150	2958	3031	3031	3031	3031	3031	3031
3×185	2958	3031	3031	3031	3031	3031	3031
3×240	3031	3031	3031	3031	3031	3031	3031
3×300	3031	3031	3031	3031	3031	3031	3031
3×400	3031	3031	3031	3031	–	–	–
3×500	3031	3031	3031	3031	–	–	–
3×630	3031	3031	3031	3031	–	–	–

电缆载流量 Current carrying capacity of cable

额定电压3.6/6~12/20kV铝合金芯交联聚乙烯绝缘电力电缆
Aluminum alloy conductor XLPE insulated power cable for rated voltage 3.6/6~12/20kV

导体 Conductor	导体标称截面 Nominal Cross sectional area of conductor mm²	空气中 In the air			土壤中 Under the ground		
		环境温度40℃ Air temperature:40℃			环境温度25℃ Air temperature:25℃		
		单芯 Single-croe		三芯 Three-croe	单芯 Single-croe		三芯 Three-croe
		△	○○○		△	○○○	
铝合金导体 Aluminum Alloy Conductor	25	110	130	90	115	120	100
	35	135	155	110	135	145	120
	50	160	190	130	160	175	140
	70	20	235	165	200	215	170
	95	24	290	200	240	255	210
	120	280	335	225	270	290	235
	150	32	380	255	305	330	260
	185	365	435	295	345	370	300
	240	435	515	345	400	435	345
	300	500	595	390	455	490	390
	400	585	695	450	520	565	440
	500	680	810	–	595	650	–
	630	790	950	–	680	745	–

注：用于交流系统的单芯钢丝铠装电力电缆的屏蔽铜带及钢丝（含所有隔磁铜丝）必须充分、有效接地。本载流量是按IEC推荐公式计算的。GB/T12706–2008认为单芯特殊结构钢丝铠装电力电缆实际载流量比IEC推荐载流量大为降低，截面选择宜适当放大。

The copper–tape–screen and steel wire of single–core steel wire armored power cable for AC system must be connected to earth well and effectively. The current carrying capacity is calcultaed by formulas of IEC.It is advised in the new edition of GB/T12706 that the current carrying capacity of steel wire armored power cable with special structure is lower than that in IEC standard,so the cross–section should be enlarged appropriately.

额定电压18/30~26/35kV铝合金芯交联聚乙烯绝缘电力电缆
Aluminum alloy conductor XLPE insulated power cable for rated voltage from 18/30~26/35kV

导体 Conductor	导体标称截面 Nominal Cross sectional area of conductor mm²	空气中 In the air			土壤中 In the soil		
		环境温度40℃ Air temperature:40℃			环境温度25℃ Air temperature:25℃		
		单芯 Single-croe		三芯 Three-croe	单芯 Single-croe		三芯 Three-croe
		△	○○○		△	○○○	
铝合金导体 Aluminum Alloy Conductor	50	170	190	145	165	175	170
	70	210	235	190	200	215	190
	96	255	285	215	240	255	230
	120	290	330	240	270	290	255
	150	330	375	280	305	325	295
	185	380	430	310	400	370	330
	240	435	505	365	455	430	380
	300	510	580	430	525	490	435
	400	595	680	485	600	565	500
	500	690	790	–	685	645	–
	630	800	920	–	–	740	–

注：用于交流系统的单芯钢丝铠装电力电缆的屏蔽铜带及钢丝（含所有隔磁铜丝）必须充分、有效接地。本载流量是按IEC推荐公式计算的。GB/T12706–2008认为单芯特殊结构钢丝铠装电力电缆实际载流量比IEC推荐载流量大为降低，截面选择宜适当放大。

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电缆敷设运行条件 Installation

导体最高工作温度	Max.Operation tempertature of conductor	90℃
环境空气温度	Ambient temperature in the Air	40℃
土壤温度	Soil Temperature	25℃
土壤热阻系数	Soil thermal resitivity	1.0℃m/w
埋设深度	Buried depth	0.8m

仅考虑一个回路 Single-Circuit only

单芯电缆为水平敷设，间距为一个电缆外径

Single-core cable is installed in parallel.Adjacent space is equivalent to the diameter of the cable.

不同土壤温度下载流量修正系数

Correction factors of current carrying for different soil temperature

土壤温度 ℃ Soil temperature	15	20	25	30	35	40	45
系数 Rating factor	1.07	1.04	1.0	0.96	0.92	0.87	0.83

不同土壤热阻载流量的修正系数

Correction factors of current carrying for different thermal resisivity

土壤热阻 Rating factors for soil Thermal resistivity ℃.m/W	1.0	1.2	1.5	2.0	2.5	3.0	3.5
三芯电缆 Three cores	1.0	0.943	0.877	0.792	0.736	0.675	0.641
单芯电缆 Single core	1.0	0.934	0.850	0.748	0.692	0.635	0.598

不同温度环境下载流量的校正系数

Correction factors of current carrying for different air temperature

环境空气温度℃ Air temperature ℃	20	25	30	35	40	45	50
系数 Correction factor	1.18	1.14	1.10	1.05	1.0	0.95	0.89

铝合金芯电力电缆与铜或铝芯电力电缆性能对比表

电缆类型	铜芯电缆	铝芯电缆	铝合金电缆	说　明
材质	电工铜	电工铝	合金	铝合金导体采用含铝、铜、镁、硼、钛、锌、硅、稀土等元素的8000系列铝合金，经过特殊的退火处理制成。
设计寿命（年）	≥30	≥30	≥40	
电能损耗	中	高	低	铝合金电缆采用先进的节能型导体结构，使得每相同的集效应与邻近效应大幅度的减少，大大降低了点能在线路中的损耗及电缆长期运行过程中的发热量
防腐性能（空气中）	差	优	优	铝材固有的防腐性能，缘自当铝表面与空气接触时的纯化效果，会立即形成薄而致密的氧化屏阻止其继续氧化
防腐性能（电化学）	无需过滤处理	需过滤处理	需过滤处理	铜铝过滤端子很好的解决了电化学腐蚀问题
抗蠕变性能	优	差	优	合金中的铁起了主要作用
接头链接稳定性	优	差	优	合金中的铁、铜和镁起了主要作用
电缆重量	重	轻	轻	同等载流量时，合金电缆总量中有铜芯电缆一半
弯曲半径	12d–15d	12d–15d	7d	d为电缆直径
最大牵引力（N/mm^2）	68.6	39.2	53.0	合金电缆截面与铜芯电缆增大1.1–1.5倍，所以合金电缆能够承受的张力最大。
回弹量	高	低	低	回弹率越低施工越方便，合金电缆回弹比铜芯电缆约低40%
铠装电缆抗测压力（N/m）	3000	3000	4380	决定于联锁铠装结构
导体柔软性	差	中	优	
导体抗折断性	优	差	优	
填充系数	75%–90%	75%–90%	大于90%	导体延压性能决定了这一系数，系数越低，导致绞合后直径变得越小
电缆直径	小	大	中	相同性能时
耐低温性能	零下15度	零下15度	零下40度	此性能与绝缘材料和护套材料的品质相关
耐紫外线老化性能	无	无	有	此性能与护套的品质相关
安装方便性	一般	一般	优	铝合金电缆重量轻、易弯曲、反弹小
性价比	差	中	优	因为铜资源的稀缺，铜原材料价格高，铜芯电缆性价比差，铜芯电缆安全性能低，永久性数设不推荐使用，铝合金电缆电器性能稳定，安全性高、价格适中、性价比优，电能在线路中的损耗低，长期运行更省电。

江苏东峰电缆有限公司

JIANGSU DONGFENG CABLE CO.,LTD.

Characteristics Performance Comparison for Power Cable with Aluminium Alloy Conductor,Aluminium Conductor or Copper Conductor

Cable type	Copper cable	Aluminum cable	Aluminum Alloy cable	Remark
Material	Electric copper	Electric Aluminum	Alloy	Aluminum Alloy Conductor apply the 8000series. Aluminum contains Al. Cu. Mg. Ti. Zn. Si. Rare Earth,etc.and be processed with special annealing technique.
Designed life span	≥30	≥30	≥40	
Electricity Loss	Moderate	High	Low	Aluminum Alloy Conductor apply advanced energy saved conductor structure which make skin effect and proximity effect reduced substantially and lower electric energy loss within the circuit and the heating value during the long term continuous,operation,
Anti-corrosion Performance (In Air)	Bad	Excellent	Excellent	Aluminum inherent anti-corrosion property.Due to the aluminum surface contact with the air will cause inactivation effect,which will prduce a thin compact oxilayer.
Anti-corrosion Performance (Electrochamintry)	No Need Fitering Process	Need Fitering Process	Need Fitering Process	Copper or aluminum transition terminals had soved the electrochemistry corrosion prolem properly.
Anti-creep Performance	Excellent	Bad	Excellent	Fe in the alloy take effect.
Joint connection Stability	Excellent	Bad	Excellent	Fe Cu. Mg in the alloy take effect.
Cable Weight	Heavy	Light	Light	With same current carry capacity, the weight of alloy cavle is only half of that of the copper cable.
Bending Radius	12d-15d	12d-15d	7d	Dis the cable Diameter.
Maximum Traction (N/mm^2)	68.6	39.2	53.0	Alloy cable increase 1.1to1.5 times than copper cable, so the tension of the cable to withstand alloy is the largest
Rebound Modulus	High	Low	Low	Lower rebound modulus,more conwenient for the installation.Alloy cable's rebound modulus is 40% lower than the copper cable's
Armored Cable Resistance to Lateral Pressure (K/m)	3000	3000	4380	Depend on interlocked armore structure.
Conductor Flexibility	Poor	Moderate	Excellent	
Conductor Resistance to Fracture	Moderate	Poor	Excellent	
Filling Factor	75%-90%	75%-91%	More than 90%	Conductor's continunous press performance can decide this factor.
Cable Diameter	Small	Large	Moderate	When the same performance
Low Temperature Performance	-15℃	-15℃	-40℃	This perdormance,is related with insulation & sheath material's quality
Ultraviolet Resistance Aging Performance	No	No	Yes	This performance is related with the sheath material's quality.
Installation Convenience	Ordinary	Ordinary	Excellent	Alloy cable has light weight flexible, low rebound modulus.
Cost Performance	Poor	Moderate	Excellent	As the copper resourse is rare the most of copper material is relativity high,so the cost performance of Coper Cable is poor.Aluminum cable's performance is relativily low.It is not recomanded for permanent installation.Alloy cable's electric properties are quite stable.The satety performance qre higher,the price is competitive,the cost performance is excellent.Electric energy is last relativity long.It can save more electricity for long term operation.