

## 分支电缆 Prefabricated Branch Cable

### 1 产品简介 Brief Introduction

随着现代建筑业的发展,建筑配电系统的复杂性、可靠性已成为人们日益关注和重视的一项课题。尤其在建筑施工现场配电系统的成本降低、施工周期的缩短、供电可靠性增强已成为建筑商、投资商及供电部门一致的强烈要求。为了适应市场的需求,我公司在上海电缆研究所专家及建筑专家的指导下,吸收了国外先进技术,独立自主的成功开发“正泰”牌分支电缆,并将以其先进的技术、可靠的质量、低廉的价格来满足用户的需要。竭诚欢迎广大用户选用“正泰”牌分支电缆。

With the development of modern construction, the complexity of building distribution systems, reliability has become a topic of growing concern and attention from customer. Especially reduce the cost of distribution system in the construction site, shorten the construction cycle, enhanced supply reliability has become the strong request from the builders, investors and the electricity sector. In order to meet the market requirement, under the guidance of the Shanghai Electric Cable Research Institute experts and construction specialists, our company absorbing advanced top technology from abroad, successfully developed the branch cable independently. "Chint" Brand branch cable and its advanced technology, reliable quality, low price to meet the requirement of users. We sincerely welcome customers to choose "Chint" brand branch cable.

### 2 产品的特长

#### Main advantages of prefabricate branch cable

- 具有优良的供电可靠性 With better reliability in safe power supply
  1. 主干电缆导体无接头,连续性好,减少了故障点。  
Conductor of main cable has no connector, better continuity to reduce failure point.
  2. 分支接头采用工厂全程机械化制作,降低了人为因素造成质量不良现象。  
Branch connectors adopt mechanical manufacturing for whole process.
  3. 分支接头结构合理,采用先进的工艺制作,接触电阻小,生产过程时间短,避免了铜导线因长时间裸露在空气中产生异物氧化而使接触电阻变大。  
Good branch connector structure, small contact resistance and short manufacturing process, keep contact resistance from growing larger owing to copper wire being oxidized in air.
  4. 分支部位采用高强度密闭接头,具有气密性高、防水防潮性能好。采用耐火型分支电缆可在燃烧情况下,保持90min的正常供电运行。  
Great moisture-resistant performance with high seal-ability contact. Adopt fire resistant branch cable and assure normal power supply for 90mins when during fire.
- 具有优良的经济效益 cost-effective
  1. 同母线槽相比,使用分支电缆可降低工程成本,且分支电缆的技术经济指标高。  
Low construction cost compared with bus-ducts
  2. 分支电缆占用建筑空间小,有利于建筑面积的有效使用。  
Space-saving
  3. 安装简方便,安装精度及安装技术要求不高,安装周期短,安装强度低,大大减少安装费用。  
Low installation cost owing to easy installation
  4. 分支电缆一次安装,终身免维护、免保养,具有很高的社会效益。  
Free maintenance



# ELECTRIC WIRES & CABLE

## 3 产品的用途 Application

1. 中高层建筑、平地、工厂内使用。  
Applicable for high buildings, plains and factories.
2. 隧道建筑及隧道照明用。  
Applicable for tunnel construction and lighting
3. 可替代使用中、小容量母线槽的各种场合。  
Can be alternatively used for small/middle capacity bus-ducts

## 4 标准 Standard

JCS 376	分支电缆 branch cable
IEC 60502	额定电压1kV ~ 30kV挤出型电气绝缘电力电缆 Rated voltage 1kV ~ 30kV extrusion-type extruding insulation power cable
JB/T 10636	额定电压0.6/1kV铜芯塑料绝缘预制分支电缆 Rated voltage 0.6/1kV Cu core rubber insulation prefabricated branch cable
IEC 60332	电缆在火焰条件下的燃烧试验 Cable combustion test under fire condition
IEC 60754	取自电缆或光缆的材料燃烧时释放气体的试验方法 Gas releasing test for cable materials in fire
GB 12666	电线电缆燃烧试验方法 Cable combustion test
IEC 601034	电缆在特定条件下燃烧的烟密度试验方法 Cable smoke density test when building under specific condition

## 5 产品型号和名称 Type and Title

型号 Type	名称 Title
FZW	铜芯聚氯乙烯绝缘聚氯乙烯护套预制分支电缆 Cu core PVC insulated PVC sheathed prefabricated branch cable
FZYJV	铜芯交联聚乙烯绝缘聚氯乙烯护套预制分支电缆 Cu core XLPE insulated PVC sheathed prefabricated branch cable
Z <sup>a</sup> -FZW	铜芯聚氯乙烯绝缘聚氯乙烯护套阻燃预制分支电缆 Cu core PVC insulated PVC sheathed flame-resistant prefabricated branch cable
Z <sup>a</sup> -FZYJV	铜芯交联聚乙烯绝缘聚氯乙烯护套阻燃预制分支电缆 Cu core XLPE insulated PVC sheathed flame-resistant prefabricated branch cable
WDZ <sup>a</sup> -FZYJV	铜芯交联聚乙烯绝缘无卤低烟聚烯烃护套阻燃预制分支电缆 Cu core XLPE insulated low smoke halogen free PE sheathed flame-resistant prefabricated branch cable
N <sup>b</sup> -FZYJV	铜芯交联聚乙烯绝缘聚氯乙烯护套耐火预制分支电缆 Cu core XLPE insulated PVC sheathed fire-resistant prefabricated branch cable

※ 备注：a 满足IEC 60332中A类、B类、C类要求的,代号分别为: ZA、ZB和ZC; 满足IEC 60332-3中D类要求代号为ZD。

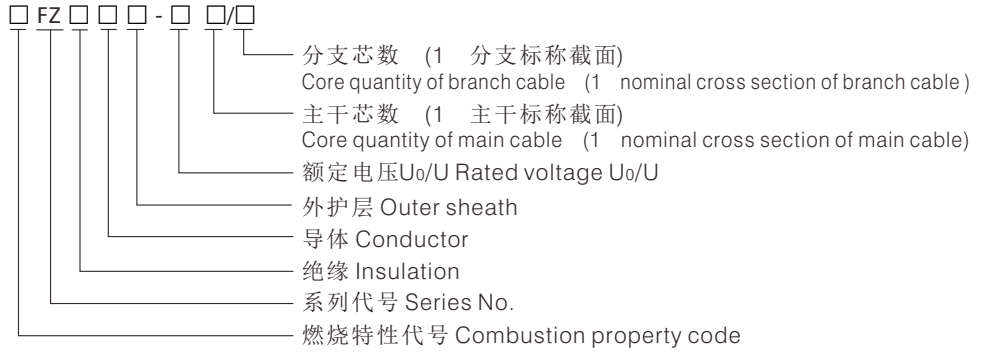
b 满足GB/T 19216.21中的A类和B类要求的,代号分别为:NA和NB

※ Note: (1) Products with “a” mark meet A class, B class and C class requirements of IEC 60332, the code of which are ZA, ZB and ZC respectively; ZD refers to products which meet D class of IEC 60332-3.

(2) Products with “b” mark b meet A class and B class of GB/T 19216.21, the code are: NA and NB respectively.

# 电线电缆类

## 型号说明 Type and Interpretation



### 系列代号 Series No.

预制分支电缆 Prefabricated branch cable FZ

按材料特性分 Sorted by material property

铜导体 Cu conductor 省略 Omitted

聚氯乙烯 PVC V

交联聚乙烯 XLPE YJ

聚乙烯(聚烯烃) PE Y

燃烧特性代号 Combustion property code

阻燃 Flame-resistant Z

耐火 Fire-resistant N

无卤 Halogen free W

低烟 Low smoke D

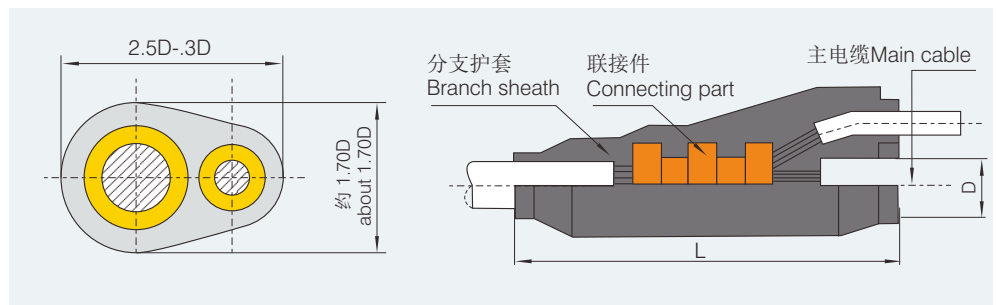
### 举例 Example

主干线电缆表示为 Main cable: ZC-FZYJV-0.6/1 4 (1 95)+PE (1 50)

分支线电缆表示为 Branch cable: ZC-FZYJV-0.6/1 4 (1 25)+PE (1 16)

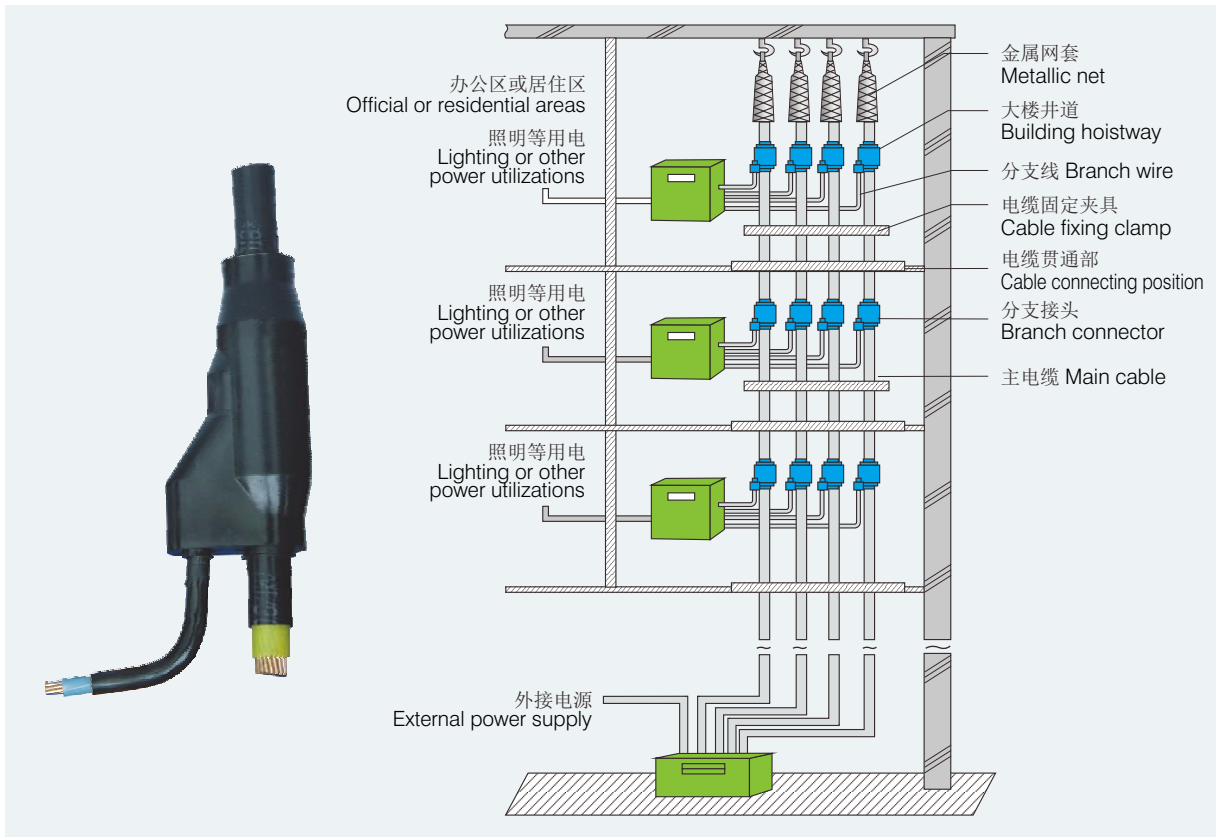
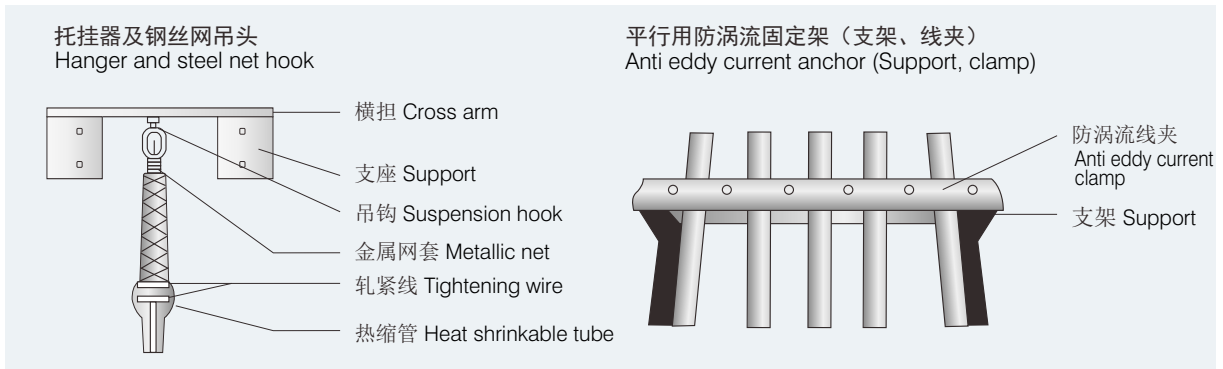
或表示为 Or together like: ZC-FZYJV-0.6/1 4 (1 95)+PE (1 50)/ 4 (1 25)+PE (1 16)

## 6 分支结构示意图及附件和安装 Branch Structure Diagram and Accessory



主干电缆规格 Specification of main cable (mm <sup>2</sup> )	35~50	70~120	150~240	300~400	500~630
L尺寸L dimension (mm)	110	130	150	180	200

# ELECTRIC WIRES & CABLE



## 安装 Installation

### 1 对土建的要求 Requirements of Civil Engineering

#### 1.1 电气竖井内楼板的开孔尺寸(mm):

Dimension of interior floor holes of electrical vertical bay (mm)

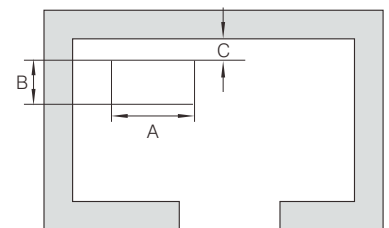
- A. 楼板预留孔长度(mm)  
Length of floor holes(mm)
- B. 楼板预留孔宽度(mm)  
Width of floor holes(mm)
- C. 楼板预留孔离墙距离(mm)  
Distance of floor holes from wall (mm)

A = 主干电缆根数 主干电缆外径 3  
A = the number of main cable OD of main cable 3

B = 主干电缆截面240mm<sup>2</sup>及以下，单回路取200，双回路取300；  
B = cross section of main cable less than 240mm<sup>2</sup>, single-loop 200, and two-loop 300;

主干电缆截面300mm<sup>2</sup>及以上，单回路取300，双回路取500；  
Cross section of main cable more than 300mm<sup>2</sup>, single-loop 300, and two-loop 500;

C = 50



# 电线电缆类

## 1.2 电缆的弯曲半径 Bend radius of cable:

单芯电缆 $R=20D$  Single-core  $R=20D$

## 2 分支电缆敷设方法 Installation Guideline

- 将电缆盘放在放线架上(一般电缆盘放在楼下,将电缆拉上去)。  
Put the cable tray on the supply frame.
- 提升用的绳索通过卷绕机下与电缆相连。  
Hosting rope connected with the cable by winding machine.
- 开动卷绕机将电缆提升上去(分支规格较小时,也可以用人力)。  
Start the winding machine to pull up the cable.
- 提升用的电缆网套或吊头到达楼层顶部时,将网套或吊头挂在准备好的吊钩上。  
Hang the metal braid on hook when metal braid reach top floor.
- 对中间部位进行固定。  
Fix the middle part.
- 将分支头与电流表或断流箱相接。  
Connect branch head and Ammeter.
- 将主干电缆与配电箱相接。  
Connect main cable and distribution box.

※ 注: 敷设也可由楼层顶部向下放线。

※ Note: Installation can be unwinded on the top floor.

## 3 施工注意事项 Notice of Construction

- 事先确认好分支电缆规格与现场需要的规格相符合。  
In advance to confirm the specification of branch cable meet the specification which site needs.
- 在安装时要确认分支部位是否能安全通过预留孔。  
Confirm whether branch part can pass reserved hole safely.
- 在安装时要注意避免分支被卡住或受划伤。  
Avoid the branch cable stuck.
- 使用的提升绳索要能承受电缆重量的4倍,在作业的整个过程不要对分支施加张力。  
The elevating rope should bear the 4 times the weight of cable. Do not exert tension on the branch cable.
- 电缆提升完毕后,应立即采用适当的方法对电缆加以固定。  
After cable elevation, fix the cable immediately.
- 单芯电缆禁止用铁质夹具,以防涡流损耗。  
In order to Prevent eddy current loss, do not use iron fixture to grip single core cable.

# ELECTRIC WIRES & CABLE

## 4 主要技术参数 Main Technical Parameter

表1: 结构参数  
Table1: Structural Parameter

主干电缆 Main cable					分支电缆 Branch cable				
标称 截面积 Normal cross sectional area	近似外径 mm Approximate OD(mm)				标称 截面积 Normal cross sectional area	近似外径 mm Approximate OD(mm)			
	mm <sup>2</sup>	W ZC-W	N-W	YJV ZC-YJV		N-YJV	mm <sup>2</sup>	W ZC-W	N-W
35	13.0	14.1	12.4	13.5	10	8.9	10.0	8.3	9.4
					16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
50	14.9	16.0	14.1	15.2	10	8.9	10.0	8.3	9.4
					16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
70	16.7	17.8	16.1	17.2	10	8.9	10.0	8.3	9.4
					16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
95	19.2	20.3	18.2	19.3	16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					16	9.9	11.0	9.3	10.4
120	20.8	21.9	20.0	21.1	25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					16	9.9	11.0	9.3	10.4
150	22.8	23.9	22.0	23.1	25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					16	9.9	11.0	9.3	10.4
185	25.0	26.1	24.2	25.3	25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
240	28.1	29.2	27.1	28.2	16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
240	28.1	29.2	27.1	28.2	120	20.8	21.9	20.0	21.1

# 电线电缆类

主干电缆 Main cable					分支电缆 Branch cable				
标称 截面积 Normal cross sectional area	近似外径 mm Approximate OD(mm)				标称 截面积 Normal cross sectional area	近似外径 mm Approximate OD(mm)			
mm <sup>2</sup>	W ZC-W	N-W	YJV ZC-YJV	N-YJV	mm <sup>2</sup>	W ZC-W	N-W	YJV ZC-YJV	N-YJV
300	30.9	32.0	29.7	30.8	16	9.9	11.0	9.3	10.4
					25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
					120	20.8	21.9	20.0	21.1
					150	22.8	23.9	22.0	23.1
400	34.3	35.4	33.1	34.2	25	11.8	12.9	11.2	12.3
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
					120	20.8	21.9	20.0	21.1
					150	22.8	23.9	22.0	23.1
					25	11.8	12.9	11.2	12.3
500	38.0	39.1	36.8	37.9	35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
					70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
					120	20.8	21.9	20.0	21.1
					150	22.8	23.9	22.0	23.1
					35	13.0	14.1	12.4	13.5
					50	14.9	16.0	14.2	15.3
630	41.9	43.0	41.1	42.2	70	16.7	17.8	16.1	17.2
					95	19.2	20.3	18.2	19.3
					120	20.8	21.9	20.0	21.1
					150	22.8	23.9	22.0	23.1

# ELECTRIC WIRES & CABLE

表 2: 结构参数及电性能

Table 2: Structural Parameters and Electrical Property

标称 截面积 Normal cross sectional area	导体 直径 Conduct Diameter	绝缘标称 厚度 Insulation thickness		护套标 称厚度 Sheath thickness	电缆近似重量 Cable approximate weight				导体最大 直流电阻 Max.D.C (20°C)
		PVC	XLPE		W ZC-W	N-W	YJV ZC-YJV	N-YJV	
10	4.0	1.0	0.7	1.4	170.4	191.6	152.1	170.5	1.83
16	5.1	1.0	0.7	1.4	235.6	258.5	214.6	234.7	1.15
25	6.3	1.2	0.9	1.5	352.6	379.4	325.0	348.6	0.727
35	7.1	1.2	0.9	1.5	454.9	483.6	424.0	449.6	0.524
50	8.3	1.4	1.0	1.6	606.4	639.0	561.7	590.5	0.387
70	10.0	1.4	1.1	1.6	821.1	856.7	776.6	808.7	0.268
95	11.6	1.6	1.1	1.7	1114.6	1155.1	1044.0	1079.8	0.193
120	13.2	1.6	1.2	1.7	1363.6	1406.8	1294.3	1333.1	0.153
150	14.5	1.8	1.4	1.7	1655.9	1702.7	1574.5	1616.7	0.124
185	16.2	2.0	1.6	1.7	2047.7	2098.7	1951.6	1997.7	0.0991
240	18.4	2.2	1.7	1.7	2640.5	2696.9	2514.6	2565.4	0.0754
300	20.6	2.4	1.8	1.7	3268.0	3329.6	3109.5	3164.7	0.0601
400	23.6	2.6	2.0	1.7	4118.4	4186.1	3933.1	3994.0	0.047
500	26.8	2.8	2.2	1.8	5146.3	5220.8	4930.5	4998.0	0.0366
630	30.2	2.8	2.4	1.9	6419.0	6500.1	6211.3	6286.1	0.0283

表3: 载流量

Table 3: Carrying Capacity

标称 截面积 Normal cross sectional area mm <sup>2</sup>	PVC绝缘,PVC护套 PVC insulation, PVC sheath			标称 截面积 Normal cross sectional area mm <sup>2</sup>	XLPE绝缘,PVC护套 XLPE insulation, PVC sheath		
	额定电流A(40°C) Rated current A(40°C)	电压降 (V/A.m) 10 Voltage Drop (V/A.m) 10	10		额定电流 A (40°C) Rated current A (40°C)	电压降 (V/A.m) 10 Voltage Drop (V/A.m) 10	10
	10	67	3.0		10	94	3.0
16	88	1.3	16	120	1.3	16	
25	111	0.84	25	155	0.84	25	
35	140	0.63	35	185	0.63	35	
50	168	0.49	50	220	0.49	50	
70	214	0.36	70	270	0.36	70	
95	260	0.29	95	320	0.29	95	
120	303	0.24	120	365	0.24	120	
150	349	0.21	150	410	0.21	150	
185	400	0.19	185	465	0.19	185	
240	475	0.16	240	540	0.16	240	
300	545	0.15	300	610	0.15	300	
400	642	0.131	400	695	0.131	400	
500	745	0.120	500	780	0.120	500	
630	856	0.111	630	880	0.111	630	



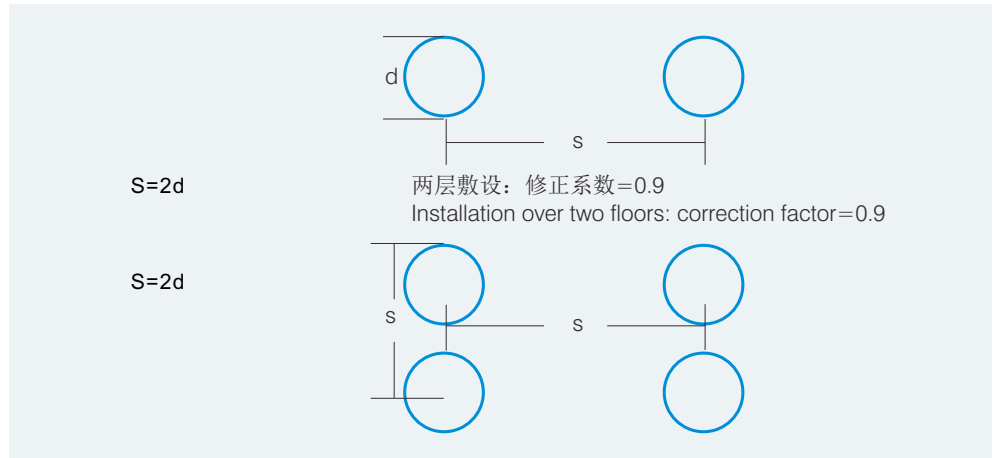
# 电线电缆类

## 10 载流量的计算 Calculation of Carrying Capacity

不同环境温度下载流量修正系数

Correction factor of carrying capacity at different environmental temperature

环境温度 Environmental temperature	20°C	25°C	30°C	35°C	40°C	45°C
校正系数 Correction factor	1.29	1.22	1.15	1.08	1.0	0.91



## 11 分支电缆末端压降的计算

### Calculation of Voltage Drop of End of Branch Cable

- ① 导体最高允许温度PVC为70°C, XLPE为90°C, 环境温度为40°C;
- ② 电缆为单芯平行敷设S=2d;
- ③ 功率因数Cos=0.8;
- ④ 末端允许压降=5% ;
- ⑤ Vd代表电压降

$$Vd = K \cdot I \cdot V \quad (V)$$

I: 工作电流或计算电流(A)

L: 线路长度m

V: 表内电压降(V/A.m) 10

K: 三相四线K=1.732; 单相K=1

单相时末端允许电压降为:

$$Vd = 220V \cdot 5\% = 11V$$

三相时末端允许电压降为:

$$Vd = 380V \cdot 5\% = 19V$$

- ⑥ 主干电缆允许长度计算公式为:

$$\text{单相 } L = 11 / (I \cdot V)$$

$$\text{三相 } L = 19 / (1.732 \cdot I \cdot V)$$

- ① Maximum allowable temperature of conductor: PVC 70°C, XLPE 90°C, environmental temperature 40°C;
- ② Parallel installation of single core cable: S=2d;
- ③ Power factor: Cos=0.8;
- ④ Allowable voltage drop of extremity =5% ;
- ⑤ Vd: voltage drop

$$Vd = K \cdot I \cdot V \quad (V)$$

I: working current or calculated current

L: line length

V: voltage drop inside meter(V/A.m) 10

K: three-phase four-wire K=1.732; single-phase K=1

Allowable voltage drop of extremity (single-phase) :

$$Vd = 220V \cdot 5\% = 11V$$

Allowable voltage drop of extremity (three-phase):

$$Vd = 380V \cdot 5\% = 19V$$

- ⑥ Formula of allowable length of main cable:

$$\text{Single-phase } L = 11 / (I \cdot V)$$

$$\text{Three-phase } L = 19 / (1.732 \cdot I \cdot V)$$

# ELECTRIC WIRES & CABLE

例如:主干电缆为70mm<sup>2</sup>,工作电流为200A,电压降V=0.36 10V/A.m

For instance: main cable 70mm<sup>2</sup>, working current 200A, current drop V=0.36 10V/A.m

三相允许长度为:  $L=19/(1.732 \times 200 \times 0.36 \times 10)=130\text{m}$

Allowable length (three-phase):  $L=19/(1.732 \times 200 \times 0.36 \times 10)=130\text{m}$

※ 注:若按逐段电流算, L可大于130米.

※ Note: If calculated by current period, L can be more than 130m.

## 12 订货须知 Ordering Information

为了更好的设计您的预制带分支电缆, 请用户提供以下资料:

In order to better design your prefabricated branch cable, please provide the following information:

- 建筑物类别: 高层建筑、体育场、公路等。  
Building Category: high buildings, stadiums, roads, etc.
- 建筑物构造: 建筑物配电系统图, 预制带分支电缆的布置。  
Building Construction: building power distribution system maps, prefabricated branch cable layout.
- 配电方式: 单相双线、单相三线、三相三线、三相四线、三相五线制。  
Distribution method: single-phase two-wire, single-phase three-wire, three-phase three-wire, three-phase four-wire, three-phase five-wire.
- 预制带分支电缆: 电缆型号、主干及分支电缆的截面、各分支连接盒间距离、主干电缆长度、分支电缆长度等。  
Prefabricated branch cable: cable type, the section of main and branch cables, the distance between the branch junction box, length of main cable, length of branch cable.
- 敷设方式: 由楼顶上拉下或从地面拉上楼顶。  
Installation method: pull down from the roof to ground or pull up from the ground to roof.
- 上端支撑: 用或不用电缆悬吊装置、电缆夹紧装置。  
Support of top: with or without cable suspension device, cable clamping device.
- 附件: 夹具、托架等。  
Accessories: clamps, brackets, etc.
- 电缆盘具。  
Cable tray.
- 其它要求。  
Other requirements.