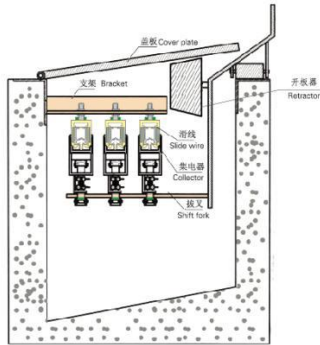




5、地沟安装滑触线断面图 Profile for ditch installed with slide-contact wire



六、订货及储运 Order, storage and transportation

- 订货：注明型号、规格、滑线数量，附件由本厂配供

Order: models, specifications and quantity of slide wire. Accessories are supplied by our plant.

- 成套件：产品出厂包含下列部件和资料：

Kit: the ex-factory products include the following parts and data:

- 1、产品及附件 按订货要求 Products and accessories according to order requirements
- 2、装箱单 Packing list 1份 set
- 3、产品质量合格证 Product qualification certificate 1份 set
- 4、产品使用说明书 Instruction manual 1份 set
- 5、用户意见反馈单 Client feedback sheet 1份 set

- 保用期：用户遵循本说明书原则，安装、操作符合要求，保用期一年(副片、集电器易损件不在保用范围)。

Guarantee period: one year (wearing parts such as brush and collector are not included) when users comply with the instruction manual and installation and operation conform to requirements.

- 产品储运 Storage and transportation of product

- 1、长途运输，应有包装箱，短途可由汽车装运。

Long-distance transportation shall be provided with packing box. Transportation by truck is allowed for short-distance transport.

- 2、运输过程中不得剧烈撞击、跌落。

Severe hit and falling in transit are not allowed.

- 3、储运时应水平放置，不得在产品上压放重物，远离高温发热源。

The products shall be placed horizontally during storage and transportation. Heavy objects are not allowed to be placed on the products. The products shall be placed far from heat source.

HXTS.HXTL 多极管式滑线 HXTS, HXTL Multi-pole Enclosed conductor rail

一、产品概述 Product overview

HXTS系列多极管式滑线是在高强度、高绝缘性能半封闭工程塑料导管内，嵌入多极铜排作为输电母线。

HXTS series carbon-brush current-collecting slide-wire guide rail is used as power transmission busbar when it is embedded with multi-pole copper bars under semi-enclosed engineering plastic pipes with high strength and high insulation performance.

HXTL系列多极管式滑线是在高刚度铝合金管内，嵌入带高绝缘性能工程塑料的铜排作为输电母线。是我厂在消化国外先进技术基础上研制生产的该系列产品。

HXTL series carbon-brush current-collecting slide-wire guide rail is used as power transmission busbar when it is embedded with copper bars with high insulation performance in high-strength aluminum alloy pipes. They are developed and manufactured by our plant by combining international advanced technology.

HXTL系列产品由于采用铝合金外壳、坚固、耐用，使用寿命长，耐高温、辐射、而且有输电线路屏蔽功能。

HXTL series products adopt hard and durable aluminum alloy enclosure, which makes the products feature longer service life, resistance against high temperature, radiation resistance and screening of transmission line.

HXTL、HXTS的导管内装有配合紧凑、移动灵活的集电器小车，在移动受电设施的拖动下，同步移动。同时通过在集电器上配置的多极电刷在导轨上的滑动接触，将导轨上的电源可靠地输送给移动受电设施。

Conduits of HXTL and HXTS are installed with compact and flexible collector trolley which can carry out simultaneous movement when it is driven by mobile powered equipment. Meanwhile, installation of collector with multi-pole brush to achieve sliding contact on guide rail will transmit power source from guide rail into mobile powered facilities in a reliable manner.

二、产品的特点及用途 Features and applications of products

- HXTS、HXTL系列产品的外壳防护等级为IP23，半封闭结构对操作维护人员接触导管外部无任何伤害。

The protection class of enclosure for HXTS and HXTL series products is IP23. the semi-enclosed structure will cause no harm to operators and maintenance personnel who contact outer parts of conduit.

- 输电铜排母线电流密度高、阻抗低、线路损失小。电刷具有良好的柔性和自润滑性，集电器移动灵活、定向性好、接触性好，有效地控制了接触电弧我串弧现象。

Copper busbar for power transmission features high density of current, low impedance and low line loss. The brush has good flexibility and self-lubricating performance and the collector has flexible movement, good positioning and sound contact, which effectively controls contact arc and arc spread.

- 多极输电母线集中于一个导管内，安装十分简便。其固定支架、连接、悬吊装置，均以标准提供、装拆、调整，维修十分方便。

The multi-pole power transmission busbars concentrate in a conduit, which offers convenient installation. The fixing brackets, connections and suspension devices are provided according to standard, which offers convenience for loading, folding, adjustment and maintenance.



●HXTS、HXTL系列由输电导管、集电器、正交器或同步器、导轨连接器、热膨胀补偿装置、悬吊装置组成，各种配件齐全，以满足不同场合的要求。

HXTS and HXTL series consist of power transmission conduit, collector, orthogonal correlator/synchronizer, guide rail connector, compensation device for thermal expansion and suspension devices. Complete sets of various components will meet requirements in different environments.

●HXTS、HXTL系列产品适用于电动葫芦、电动桥式起重机、龙门式起重机、堆垛机、移动式电动工具等移动式受电设施，工业产品的自动生产线、检测线、厂矿、车间的固定敷设母线。

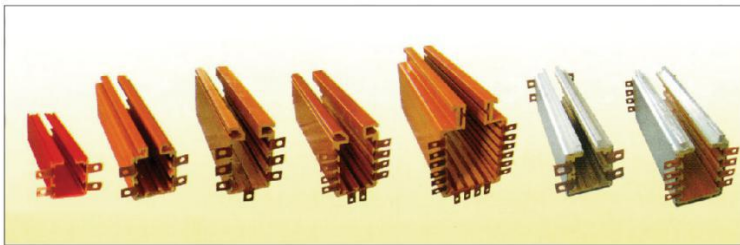
HXTS and HXTL series products are suitable for such mobile powered equipment as hoist, electric overhead travelling crane, gantry crane, stocker and movable electric tools etc.



HXTL 铝导管滑线
HXTL Aluminum Alloy Conductor Bar

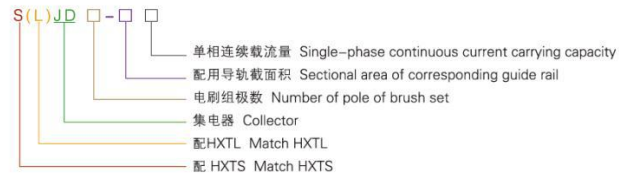


HXTS 塑导管滑线
HXTS PVC Housing Conductor Bar



多级铜排滑线
Multipole Copper Conductor Rail

三、产品的型号 Model of product



四、技术参数、规格参数 Technical parameters and specifications

表Table 4-1

序号 S/N	类别Type	指标值Index value
1	极间对地绝缘电阻 Pole-to-ground installed resistance	>10MΩ
2	绝缘介电强度 Dielectric strength	工频交流3000V、1min无击穿闪烁现象 No breakdown or flashing at power frequency alternating current of 3000V/1min
3	外壳防护等级 Protection class of enclosure	IP13IP55
4	电热稳定性 Electro-thermal stability	20倍(额定1s 20 times/rating 1s
5	耐化学腐蚀稳定性 Stability of resistance against chemical corrosion	耐酸、耐碱、耐盐雾腐蚀 Resistance against acid, alkali and salt fog
6	环境指标 Environmental index	1、耐高温试验：普通型+55℃ 金属复合型+65℃ High-temperature resistant test: common type +55℃; Metal composite type +65℃; 2、耐低温试验：-30℃ Low-temperature resistant test: -30℃ 3、耐湿热试验相对湿度：95%+25℃ Relative humidity for heat and humidity resistance test: 95%+25℃ 4、大气压力：86-106kPa Atmospheric pressure: 86-106kPa
7	阻燃性 Fire resistance	自熄 Self-extinguishment
8	输电导管参数 Parameters of power transmission guide rail	符合GB3049(电线电缆导体)标准要求 Conforming to requirements of GB3049 (Wire and Cable Conductor) 电阻率≤0.02Ω mm ² /(+20℃时) Resistivity ≤0.02Ω mm ² (at +20℃)
9	导电器 Conductive body	牵引力：F<80N；运动速度：V<200m/min Traction: F<80N; movement velocity: V<200m/min
10	电刷系数 Brush coefficient	电阻系数：0.1-0.35；摩擦系数：0.2 Resistance coefficient: 0.1-0.35; friction coefficient: 0.2 接触压降：0.3-0.1V；运行2000km；磨损量<0.7mm Contact voltage drop: 0.3-0.1V; abrasion is less than 0.7mm for running of 2000km 电刷有效磨损：4-6mm； Effective wearing of brush: 4-6mm; 有效工作压力：1.8-2.3N/cm ² Effective operating pressure: 1.8-2.3N/cm ²



1、安全滑触线导轨物理参数 Physical parameters of guide rail for safe slide-contact wire

表 Table 4-2

序号 S/N	导轨截面积 Sectional area of guide rail S		35℃允许连续载流量(A) Allowable continuous interrupting capacity (A)at 35℃	35℃百米电阻Ω Resistance Ω/100m at 35℃	50Hz、380V标准轨距允 许载电流百米阻抗 Impedance/100m of allowable current for 50Hz、380V standard track	T C					
	mm ²	w.t				Cu	Ω	Ω	25%	40%	100%
									25%	40%	100%
1	10	18×0.6	50	0.1823	0.184	60	40	33			
2	16	18×0.9	80	0.1140	0.116	100	68	53			
3	25	18×1.4	100	0.0729	0.075	120	92	66			
4	35	18×1.95	140	0.0529	0.055	170	128	86			
5	50	18×2.8	170	0.0365	0.040	240	184	121			
6	70	18×3.8	210	0.0260	0.028	367	288	184			
7	95	25×3.8	300	0.0192	0.025	434	338	217			



2、规格参数 Specifications and parameters

表 Table 4-3

HXTS (L) 系列多极管式滑触线 HXTS (L) series multi-pole tubular slide-contact wire							
型号规格 Specification	滑触线截面尺寸 Sectional dimension of slide-contact wire				极数 Number of pole	载流量 (A) Current-carrying capacity (A)	适配内置小车式集电器 Built-in trolley-type collector is provided
	A	B	C	E			
HXTS (L) -10/50	67.0	57.0	17.0	80.0	4-6	50	JD-(4-6)/25
HXTS (L) -16/80	67.0	57.0	17.0	80.0	4	80	JD-4/50
HXTS (L) -20/100	67.0	57.0	17.0	80.0	3-5	100	JD-(3-5)/50
HXTS (L) -35/140	67.0	57.0	17.0	80.0	4	140	JD-4/50
HXTS (L) -50/170	67.0	57.0	17.0	80.0	3-6	170	JD-(3-6)/50
HXTS (L) -70/210	67.0	57.0	17.0	80.0	4-6	210	JD-(4-6)/50
HXTS (L) -95/300	77.0	77.0	18.2	96.0	3-5	300	JD-(3-5)/100

注: 1: 滑触线标准长度: 4m。2: 滑触线极数3-16极。4: (导管外形尺寸)普通管56-67-16、防尘管64-69-19、高低脚管60-70-11、10极管65-92-19、16极管94-114-24。(铝塑管尺寸)4极63-72-12、7极71-81-18、8/10极75-100-18、16极105-127-25、4/5极71-80-14
Note: 1, standard length of slide-contact wire: 4m. 2. Number of pole of slide-contact wire. 4. (Overall dimension of conduit) common conduit-56-67-16, dust-proof pipe-64-69-19, bottom conduit-60-70-11, 10-pole pipe-65-92-19, 16-pole pipe-94-114-24. (Aluminum composite pipe) four poles--63-72-12, 7 poles--71-81-18, 8/10 pole---75-100-18, 16 poles---105-127-25, 4/5 pole---71-80-14.

五、产品规格型号及选型 Specifications of products and model selection

序号 S/N	型号 Model	产品编号 Catalogue Number	截面积 Sectional area mm ²	极数 Number of pole	载流量 Current- carrying capacity (A)	直流 电阻 DC resistance Ω/km	额定电 流时阻 抗 Impedance at rated current Ω/km	三相 交流 380V 时电 压降 Voltage drop at 380V 3-phase AC (%mm)	配用电动桥式起重机的位, 类别 和场所(大连起重机械厂产品为例) Match corresponding tonnage, type and site of electric overhead travelling crane (taking products manufactured by Dalian Crane Plant as examples)
1	HXTS-4-10/50	68TS57410	10	4	50	0.18	0.1925	3.55	1-3t/M5-M6电动葫芦电源线 1-3t/M5-M6 power line of hoist
2	HXTS-3-10/50	68TS57310	10	3	50	0.18	0.191	0.54	1-3t/M5-M6电动葫芦小车线 1-3t/M5-M6 trolley line of hoist
3	HXTS-4-16/80	68TS57416	16	4	80	0.12	0.138	9.4	5t/M5-M6 10t/M5 电源线 5t/M5-M6 10t/M5 power line
4	HXTS-3-20/100	68TS57320	20	3	100	0.09	0.095	2.9	5t/M6 10t/M6 电源线 5t/M6 10t/M6 power line
5	HXTS-4-35/140	68TS57435	35	4	140	0.0514	0.055	2.2	5t/M6 15t/M5 20t/M5 电源线 5t/M6 15t/M5 20t/M5 power line
6	HXTS-3-50/170	68TS64350	50	3	170	0.086	0.039	1.91	15t/M6 20t/M6 32t/M6 50t/M6
7	HXTS-4-50/170	68TS64450	50	4	170	0.036	0.039	1.91	同上Ditto
8	HXTS-4-25/120	68TS57425	25	4	120	0.036	0.0285	1.91	32t/M6 50t/M6 小车线(主吊) 32t/M6 50t/M6 trolley line (main hoist)
9	HXTS-4-70/210	68TS64470	70	4	210	0.0257	0.0285	1.78	根据要求选用 Selected according to requirements
10	HXTS-3-10/50	68TS57310	10	3	50	0.0257	0.028	1.78	同上Ditto
11	HXTS-3-95/300	68TS75395	95	3	300	0.018	0.0195	1.568	同上Ditto
12	HXTL-4-16/80	68TL66416	16	4	80	0.12	0.130	2.78	同上Ditto
13	HXTL-5-10/50	68TL66510	10	5	50	0.18	0.1925	3.55	1-3t/M5-M6电动葫芦电源线 1-3t/M5-M6 power line of hoist
14	HXTL-3-10/50	68TL66310	10	3	50	0.18	0.191	3.54	1-3t/M5-M6电动葫芦小车线 1-3t/M5-M6 trolley line of hoist
15	HXTL-3-20/100	68TL66320	20	3	100	0.09	0.095	2.8	5t/M5 10t/M5 电源线 5t/M5 10t/M5 power line
16	HXTL-4-20/100	68TL66420	20	4	100	0.12	0.138	9.4	5t/M6 10t/M5 电源线 5t/M6 10t/M5 power line
17	HXTL-4-35/140	68TL66435	35	4	140	0.0514	0.055	2.2	5t/M6 15t/M5 20t/M5 电源线 5t/M6 15t/M5 20t/M5 power line
18	HXTL-3-50/170	68TL66350	50	3	170	0.036	0.039	1.91	15t/M6 20t/M6 32t/M6 50t/M6
19	HXTL-4-50/170	68TL66450	50	4	170	0.036	0.0385	1.91	同上Ditto
20	HXTL-4-10/50	68TL66410	10	4	50	0.036	0.0385	1.91	32t/M6 50t/M6 小车线(主吊) 32t/M6 50t/M6 trolley line (main hoist)
21	HXTL-4-70/210	68TL66470	70	4	210	0.0257	0.0285	1.78	根据要求选用 Selected according to requirements
22	HXTL-3-25-120	68TL66325	25	3	120	0.0257	0.028	1.78	同上Ditto
23	HXTL-3-95/300	68TL66395	95	3	300	0.018	0.0195	1.563	同上Ditto

1、订货Order:

用户在填写订货单时, 应详细写明单位名称、地址及所需供电滑触线型号、规格、数量等有关事项。
Order: during filling of order sheet, customers are required to indicate name of unit, address, model of power-supply slide-contact wire, specifications and quantity etc.

2、储运及储存Storage and transportation:

供电滑触线主、附件分别装箱, 对于易损坏的零部件, 有防震材料隔离旋转但仍应注意防止剧烈碰撞或倒置, 以免损坏。供电滑触线运抵单位, 暂时不安装者, 其储存应具备良好的通风、干燥, 尽可能避开高温、热源和高湿度的地方。
Storage and transportation: main and auxiliary parts of power-supply slide-contact wire shall be packed separately. Though anti-vibration materials are used for wearing parts, attention shall be given to prevent severe shock or overturning which may cause damage. Where the power-supply slide-contact wires are not installed immediately upon arrival, they shall be stored in sound-ventilation and dry locations far from high temperature and heat source.



3、使用环境条件 Ambient conditions for application

- 环境温度:加强型 -30~+55℃ Ambient temperature: reinforced type -30~+55℃
金属壳复合型 -30~+65℃ 金属拼合型 -40~+80℃
Metal enclosure combined type -30~+65℃ Metal splicing type -40~+80℃
- 大气条件:+20℃相对湿度不大于95%
Atmosphere conditions: relative humidity of not more than 95% at +20℃
- 污染等级:IP13 3级 IP55 3级 Pollution class: class IP13 3 class IP55 3
- 振动与冲击:10~2000Hz加速度49m/S2 Vibration and shock: 49m/S2 at 10~2000Hz acceleration rate

六、系统组成 Composition of system

1、供电导管 Power supply conduit

承载电源导入的电流输送到导体,每根导管长为4M,亦可根据需方要求订做,规格参阅表4-1

Power supply conduit: it carries current from power source and transmits the current to conductive body.
Length of each conduit is 4m. The length may be customized as required. See table 4-1 for specification.

2、导体 Conductive body

在导管内与导轨滑动接触导入电流,并向其它移动式电器提供电流的装置(见图5-1)。

It contacts with guide rail in pipe to generate current and supply current to other mobile electrical appliances (see figure 5-1).



图5-1 导体
Figure 5-1 conductive body

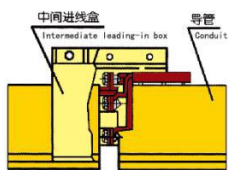


图5-2 中间进线盒
Figure 5-2 intermediate leading-in box

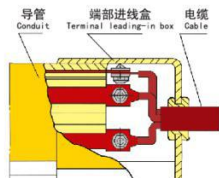


图5-3 端部进线盒
Figure 5-3 terminal leading-in box

3、连接夹 Connecting clamp

位于相邻两导管连接处,作连接固定和绝缘

it is located at joint of adjacent conduits for fixing and insulating purpose

4、定形夹 Fixing clamp

保持导管不变形

it is to prevent deformation of conduit

5、拨叉 Shift fork

向导体传递移动推力或拉力,并适度吸收传动误差和传动冲击,拨叉可根据导体数量和型号配用。

it is to transfer pushing or pulling force to electrical appliances and absorb transmission error and shock. The shift fork may be used according to quantity of conductive body and model.





七、系统选型与计算 Selection and calculation of system

1、导管选用 Selection of conduit

● 查表法：根据负载配置总功率，负载持续率、使用环境、起重机械吨位及其额定工作电流，查表4-1或表6-1确定导管规格。

Table-searching method: search table 4-1 or table 6-1 to determine specifications of conduit according to total power of load, continuity of load, application environment, capacity of crane and rated operating current.

2、功率估算法 Power estimation method

● 根据负载特点、估算负载总功率 Σp

Estimate total power Σp of loads according to load characteristics

a.n负载同时工作: $\Sigma p=Pa+Pb+...+Pn$

a.simultaneous operation of n loads: $\Sigma p=Pa+Pb+...+Pn$

b.n个负载不同时工作: $\Sigma p=Pa+Pb+Pc...$

b.n loads not operating simultaneously: $\Sigma p=Pa+Pb+Pc$

其中: p_a 最大一个负载功率; P_b 、 P_c 其余二个可能同时动作的负载功率。

Where, p_a is the maximum load power; P_b and P_c are other two load powers possibly under simultaneous operation.

3、吊车功率——导管轨道截面速查表 Power of crane——table of conduit rail cross-section

温度℃ Temperature °C	25	30	35	40	50	55	60
Kt温 Kt temperature	1	0.94	0.89	0.82	0.67	0.53	0.47

4、接电持续率修正系数表 Correction factor table for continuous operation duration factor

ϵ %	100	60	40	25	15	10
K ϵ 接 K ϵ connection	1	1.24	1.47	1.85	2.35	2.85

● 根据下表查供电滑触线导管承载三相交流功率PN保证PN> Σp

Find out, according to the following table, 3-phase AC power PN of bearing line of conduit for power-supply slide-contact wire to ensure PN> Σp .

● 负载持续率和许用环境温度以系数K ϵ 和Kt进行修正。

Load continuity and allowable ambient temperature are corrected using coefficient of K ϵ and Kt.

5、吊车功率——导管轨道截面速查表 Power of crane——table of conduit rail cross-section

吊车类型 Type of crane	起重量 Lifting capacity (t)	额定总功率 Rated total power (kW)	电动机功率 Power of motor				额定负载持续率 Rated load continuity $\epsilon=25\%$			额定负载持续率 Rated load continuity $\epsilon=40\%$	
			主钩 Main hook (kW/A)	副钩 Auxiliary hoist (kW/A)	大车Crane (kW/A)	小车Trolley (kW/A)	计算电流 Calculated current (A)	导线截面BBLX Cross-section of conductor mm ²	导管轨道截面 Cross-section of conduit track mm ²	计算电流 Calculated current (A)	40℃时导管轨道截面 Cross-section of conduit rail at 40℃ mm ²
电动葫芦 Hoist	0.5	1.1	0.8/3			0.3/0.9	3	2.5	10		10
	1	2.8	2.2/6.4			0.6/1.9	6.4	2.5	10		10
	2	4.1	3.5/9.2			0.6/1.9	9.2	2.5	10		10
	3	6	5/13			1/2.9	9.2	2.5	10		10
	5	8.5	7.5/19.7			1/2.9	19.2	4	10		10
梁式吊车桥式 Beam crane	0.5	3.3	0.8/3		2.5/5	0.3/0.9	5	2.5	10		10
	1	5	2.2/6.4		2.5/5	0.6/1.9	6.4	2.5	10		10
	2	6.3	3.5/9.2		2.2/5	0.6/1.9	9.2	2.5	10		10
	3	8.9	5/13		2.2/5	1.7/3.7	13	2.5	10		10
	5	11.4	7.5/19.7		2.2/5	1.7/3.7	19.7	4	10		10
吊车 crane	5	23.2	11/28			2.2/7.2	27.5	6	16	41	16
	10	29.5	16/43			3.5/10	35	10	16	58	25
	15/3	35.5	22/57	11/31		3.5/10	42	16	25	103	35
	20/5	48.5	30/72	16/43		3.5/10	58	25	25	103	35
	30/5	80	60/133	16/43		5/15	94	50	35	140	50
	50/10	89.5	60/133	30/80		7.5/21	105	50	50	156	70

● 电流估算法 Current estimation method

工作电流If估算: 按负载的额定工作电流选用导管, 当工作温度为40° C, 一般起重机;

Estimation of operating current If: conduit is selected according to rated operating current of load. When operating temperature is 40° C, the general crane has: $I_f = I_{fa} + I_{fb} + I_{fc}$

Ifa-最大功率电机折算或负载持续率。

Ifa-conversion of motor with maximum power, or load continuity

Jc=100%时的工作电流

Operating current when Jc=100%

Ifb、Ifc-其余可能同时动作二只电机, Ic=100%时折算工作电流。对于大容量、多电机起重机、由下列经验公式计算。

Ifb and Ifc-other two motors possibly under simultaneous operation, converted operating current when Ic=100%. For cranes with large capacity and several motors, the following empirical formulas shall be used for calculation.

$$I_f = K_a I_{ca} + K_b \Sigma i + A$$

其中: I_{ca} -起重机其余电机总电流 (Jc=25%时) Σi -起重机其余电机总电流 (Jc=25%时)

Where, I_{ca} -total current of other motors of crane (Jc=25%) Σi - total current of other motors of crane (Jc=25%)

A-其它负载工作电流一般取10 (A)

10 (A) is generally taken for operating current of other loads



6、Ka、Kb-功率电流转换系数表

Ka and Kb-table of coefficient for conversion between power and current

电流、系数、起重机型别 Current, coefficient and type of crane		轻级Light (M4)	中级Medium (M5)	重机Heavy (M6)	特重机Especially heavy (M7)
交流AC 380V	Ka	0.6	0.6	0.9	0.9
	Kb	0.2	0.3	0.4	0.6
直流DC 220V	Ka	1.2	1.2	1.8	1.8
	Kb	0.4	0.6	0.8	1.2

● 查《吊车功率—导管轨道截面速查表》确定选用规格，保证 $IN > 1.1 I_N$ ——导管 $35^\circ C$ 时连续载流量
Search "Power of crane—table of conduit rail cross-section" to determine specifications and ensure $IN > 1.1 I_N$ ——continuous current—carrying capacity of conduit at $35^\circ C$.

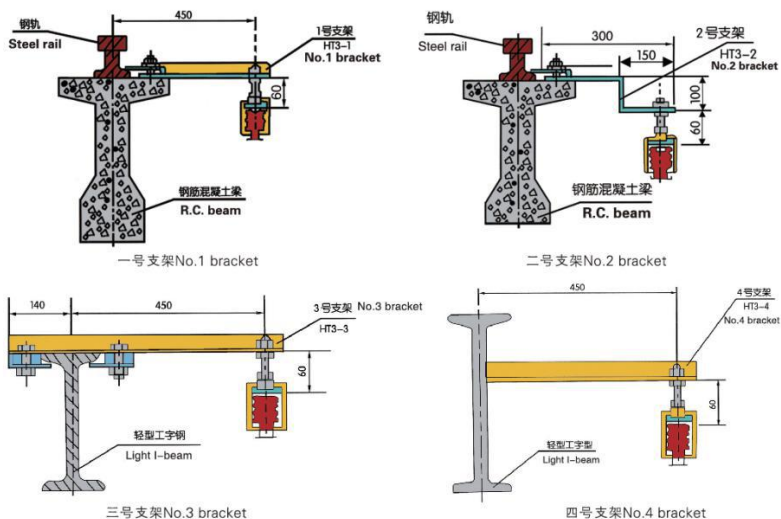
八、安装形式 Type of Installation

室外安全滑触线地沟结构

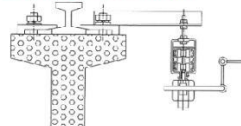
Structure of ditch for outdoor safe slide-contact wire

垂直安装图A、侧面安装图B、地沟活动盖板，每0.5米一块，盖合整个地沟，支架为基建时一次性建筑。

Vertical installation diagram A; side installation diagram B; one moveable cover plate of ditch provided every 0.5m to cover the whole ditch; the bracket is one-shot structure during foundation construction period.

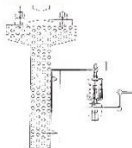


安装形式一 Install form 1



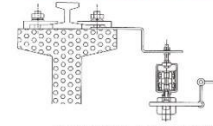
将滑触线用1#支架安装在移动设备轨道压板处
Layout drawing for 1# bracket fixed at the rail pressing plate

安装形式三 Install form 3



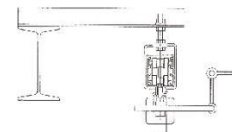
将滑触线用4#支架安装在墙或梁上
Layout drawing for 4# bracket fixed at the wall or beam

安装形式二 Install form 2



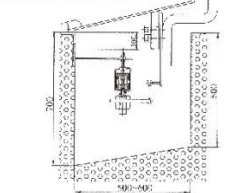
将滑触线用2#支架安装在移动设备轨道压板处
Layout drawing for 2# bracket fixed at the rail pressing plate

安装形式四 Install form 4

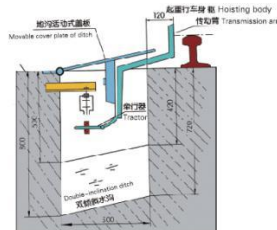


将滑触线用1#支架安装在移动设备轨道上方
Layout drawing for 1# bracket fixed above the rail

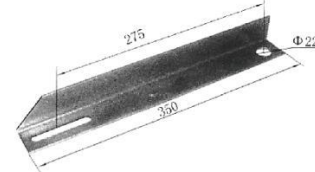
安装形式五 Install form 5



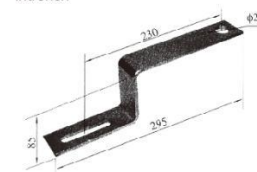
将滑触线用1#支架安装在地沟里
Layout drawing for 1# bracket in trench



室外地沟安全滑触线
Safe slide-contact wire of outdoor ditch



1#悬吊支架 1#bracket
用于吊装悬吊夹、固定悬吊夹 used to fixing the hanger
标准悬吊间距1.2~1.8米 standard space 1.2~1.8m



2#悬吊支架 2#bracket
用于吊装悬吊夹、固定悬吊夹 used to fixing the hanger
标准悬吊间距1.2~1.8米 standard space 1.2~1.8m



九、安装步骤 Instruction steps

1、安装位置选择 Installation site selection

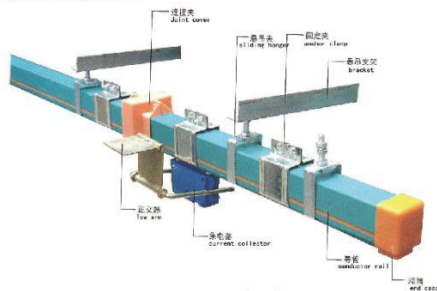
- 安装位置应靠近传动位置，靠近移动受电设施同侧。
Installation location should be close to the drive position and mobile device ipsilateral.
- 安装位置应无剧烈震动，无异物跌落冲击，尽量远离高温热源点。
Installation location should be no vibrations, no unknown object falling and striking and away from high-temperature heat source.
- 应保证人或运动物体通过无阻碍，应考虑维修的方便性。
For convenient maintenance, ensure staff or moving object pass through Unimpeded,

2、悬吊支架安装方式确定 Installation of Hanger support

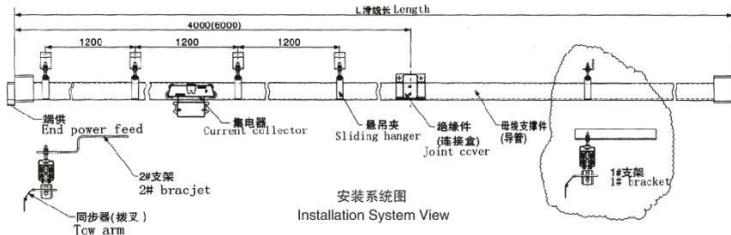
- 悬吊支架安装方式：根据P23选用悬吊间距一般为1.2m，悬吊支架由本公司标准生产，特殊规格可特殊订货。
Method of hanger support installation: According to IP23, the standard space between hanger supports is 1.2m. Hanger support manufactured in our factory is standard; special specification should be customized in advance.

3、安装前准备工作 Preparation before the installation.

- 绘制安装示意图 Drawing layout.



安装系统图
Installation System View



安装系统图
Installation System View

- 组件检查：Check Components
- 检查导管外观，不得扭曲变形，导轨接头应平直、光滑、搪锡良好、绝缘槽板应无断裂，导管槽口应大于10mm。过于狭窄，可用扁钢撬板适当撬大。

Conductor rail appearance: no distortion, straight and smooth joint, good coating, intact insulation and housing. The gap size of the conductor rail is more than 10mm.

- 集电器应在刷框中伸缩自如，且有一定压力，电刷应无破损。集电器每根导管内，应移动流畅。

Current collector should travel freely in the rail and suitable pressed. Brush should be intact and complete.

4、导管安装 conductor rail installation

- 根据安装示意图，将导管及热膨胀补偿段、断线段、弧形段、中间供电段等，按实际位置，顺序编号。
According to layout, number the conductor rail, expansion section, disconnection section, arc section and line feed the actual location.

- 将浮动悬吊夹、固定悬吊夹、以规定兼具配置数量，套入导管中。

Put the sliding hangers, fixpoint hangers on the conductor rail according to the configuration

- 起吊安装第一根导管时，应用固定悬吊夹悬吊在支架上，以作为全线校直基准，安装完毕后，如该段不作为固定悬吊段可用浮动夹代替。

Before install the first conductor rail, fix the fixpoint hanger on the bracket as alignment. After the installation, it can be replaced by a sliding hanger if it is not the fixed section.

- 吊起的第一根导管，将固定悬吊夹安装在支架上，调整与轨架在水平方向向上，垂直方向上的中心线平行度，要求不大于1.5/1000后，拧紧螺母，将之固定。

Fix the first conductor rail, align the Align the conductor rail sections laterally by sliding the support bolts as desired in the slotted holes of the brackets and adjust the height by means of the nuts.

- 接着起吊安装第二根，除符合第四条要求外，保证与第一根在水平和垂直方向直线度1.5/1000。

And then fix the second conductor rail as per the additionally it should be straight to the first conductor rail.

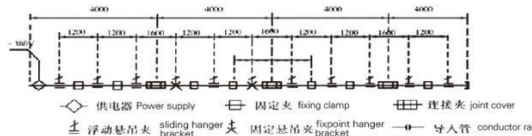


图 4.11 直线型安装示意图
Picture 4.11 Layout drawing for Straight conductor rail

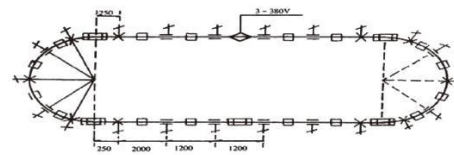


图 4.12 弧形轨道 安装示意图
Picture 4.12 layout drawing for Arc conductor rail



● 导管连接：不同导轨采用不同连接方式，如P10所示，请用户注意不论哪种连接方式，必须在接头处装有绝缘隔离板，防止因导轨窜动，接触金属外壳。连接后，如有凸台或不平整，不光滑过渡之处，应撑开槽口，用石油、锉刀修平。

Bolt the two conductor rails and Smooth the joints with the suitable tools if it is not.

● 连接夹安装：导轨连接号，盖上连接夹，并拧紧螺钉，连接夹为工程塑料型。对于室外使用场所，为防止雨水由连接夹侵入，必须在外壳对接端部开始，用绝缘粘带，连续反复裹覆二层，裹覆应是往复式，不能缠绕，以保证槽口畅通无阻。

Fix the joint cover and bolt them. For outdoors operation, cover the wrap the joint repeatedly with the insulation adhesive tap, making sure the free run of the slot by Reciprocating winding



平接头装置
Flat connector device



弯接头装置
Elbow connector device

● 导管外壳接地，每段导管端头，都有带接线端子的接线，用螺钉将相邻接线端子连接。

Earth the housing of the conductor rail, bolt the adjacent terminal connector.

● 端头或中间供电。本产品具有专门的供电段，供电段可根据需要，接在全线中部或端部，电缆进入接线盒时，必须保证橡胶套紧密卡紧电缆，以防止灰尘、雨水侵入。如有缝隙，必须用绝缘粘带带缠裹电缆，使之与护套有一定配合紧度。

Connect the end feed or line to the mains.

● 导管安装复检 check the installation of the conductor rail

● 全线安装完毕，端部套入端帽；

fix the end cap after the finishing the conductor rail installation.

● 进行全线直线度复检，对严重弯曲处，予以调整，校直。其中，导管全线与钢轨平行度为15mm，导管间直线度为15mm。

check the straightness of the whole powrail, adjust and alignment the bending point.

● 悬吊装置应与导管可靠夹紧，浮动悬吊不应歪斜、卡死，影响导管自由延伸。

Make sure conductor rail clamped enough with the anchor clamp and free movement and expansion in the sliding hanger.

● 测量极与极间和极与外壳间隙绝缘电阻不小于5MΩ。

Make sure the insulation resistance between phases and between phase and housing no less than 5MΩ.

5、牵引器安装 tow arm installation

● 牵引器应该安装于移动受电设备最贴近导管之处，表面与导管中心距离100mm左右。

Tow arm should be installed the side of mobile device, the space between surface to conductor rail is about 100mm.

● 牵引器拨杆应处于水平位置，第二铰链片与第一铰链片成45°。第一铰链片可用螺栓或焊接紧固于移动设备处。拨叉应能保证全线上40mm范围自由摆动，吸收传动误差和冲击。

The pulling bar of the tow arm should be fixed horizontally. The angle between the connecting plates is 45°. To buffer the transmission error and impact, the tow arm should swing freely in the range of 40mm.

● 集电器、供电段输入输出电缆引线，应按电工接线规范要求固定、连接。

Connecting cable should be fixed according to the Electrical wiring specification.

6、通电试运行 Pilot run.

● 通电前对全线进行复查，确认无误后，无关人员离开现场，进入机组调试。

Before switch on, check the whole powerail and make sure the irrelevant personnel leaving.

● 接通电源，接插静态通电状况，启动主电机（行走电机不动），运行10min然后启动运行走电机，慢速行驶，沿全线观察，对下述现象予以修正：

● 导管等摆动较大：调整直线度或修正牵引器的灵活性，或调整牵引器安装的位置；

● 集电器运行异常声响，导轨连接点未修平，重新修平。

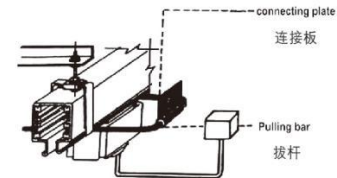
After the power on, check the whole operation (switch one the main, but the keep the mobile device switch off, 10 minutes later, switch the mobile device and run slowly):

Large swing range of the powerail: alignment the powerail, adjust the flexibility of the tow arm, or adjust the location of the tow arm.

abnormal noise of the current collector: smooth the conductor rail joints.

● 修正后如无异常，空载全速行走，磨合1.5小时后，交付使用。弧形，拱形导管，可参考上述步骤进行。

If the operation is smooth after adjustment, run full speed without load, after 1.5 hours, the system can be put into service.



十、维护手册 Maintenance

● 日常维护保养要注意安全指示 Before the start of the maintenance work consider the safety instructions

● 电轨 Powerail

● 标准周围环境和条件下需少量维修

Little maintenance is required in normal ambient and working conditions.

● 一年检查一次轨道的外部损坏

Check the rails at least once in a year for external damage.

● 每6-12个月，根据工作频率和运行距离，用压缩空气或者清洁集电器清洁电轨（根据要求）

Every 6 to 12 months, - depending on the frequency of operation and travel distance -, clean the powerail with compressed air or with a cleaning collector (on request).

● 检查开槽宽度 Check the slot width

● 集电器Current collector

● 每3-12个月，最多12个月 Every 3 up to max. 12 months

● 根据工作频率和运行距离，检查碳刷片和易损机械零件，如有必要，更换他们

Depending on the frequency of operation and travel distance -, check the carbon brushes and mechanical components for wear and replace them if necessary

● 检查系统集电器平滑运行，例如：有可能槽太窄或者连接电缆太短

Check the system for easy running of the current collector trolleys, i.e. there may be no resistance by an excessively narrow slot or pull by the connecting cable.

● 当磨损程度达到6mm磨损，更换集电器碳刷片。

When the wear mark of 6 mm is reached, the carbon brush of the current collector needs to be replaced.

● 检查滚轮磨损状况。滚轮可保证电刷在导管中上下左右位置，滚轮磨损过多，将使电刷被磨损或产生断电现象。

The wheels need to be replaced when their running diameter reduces avoiding the damage to the carbon brush or blackout.

HFP防尘安全滑触线
HFP Powerail Enclosed Conductor Systems

一、产品型号 Model of product

导管式滑触线是一款具有防意外冲击危害功能的滑线，室内外均可使用。其工程塑料绝缘外壳可装入不同截面形状的铜导线，其许用电流值为35A至240A。集电器的运行是由外壳引导的，主要是通过带弹簧的碳刷来传送。

配套的橡胶防尘条能有效提高滑线的IP防护等级，防护等级最高可达IP 43。

该系列滑触线为3极-16极装置。56系列为3极或4极装置。

HFP由铜排和螺钉式接头（或铜排折弯）由厂家事先组装在一起，其许用电流值为35A至240A。适合一般环境下使用。如采用特殊导管，则可满足高温环境或低温环境下使用。

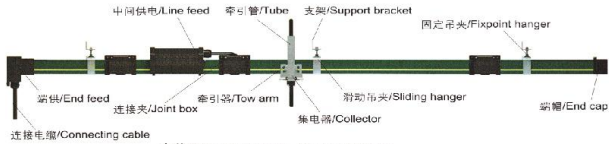
HFP-R型R型为弧型滑线，可制成R>800mm的弧型滑线。

通过以下认证：CCC、ISO9001和CE认证。

Powerail Enclosed conductor rail system is a powerail, protected from contact (IP 23), For indoor and outdoor plants. They are conductor lines in a rigid green PVC housing with different copper cross sections for rated currents of 35 - 240A. The current collectors, running in ball bearings, are guided by the housing.

The main is transferred by spring-stored carbon brushes. Type HFP-P: not include Sealing strip, with factory-mounted flat copper band and bolted-operated plug connectors. Type HFP-R: Curves for R > 800mm, with factory-mounted flat copper band and screw connectors.

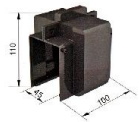
Approved and listed by: CCC, ISO9001 and CE.



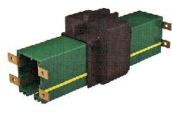
安装图示 Installation Drawing Showing

型号 Type	极数 Poles	单根横截面积 (mm²) Conductor cross section	额定载流量 (A) Max current	电气间隙 (mm) Leakage-distance	额定电压 (V) Max voltage	电阻 Q/km Resistance	产品编码 Order-NO
HFP66-4-8(35①)	4	8	35	35	600	1.944	880814
HFP66-4-10(50①)	4	10	50	35	600	1.656	881014
HFP66-4-12(65①)	4	12	65	35	600	1.321	881214
HFP66-4-15(80①)	4	15	80	35	600	1.137	881514
HFP66-4-20(100②)	4	20	100	33	600	1.011	882024
HFP66-4-25(120②)	4	25	120	33	600	0.713	882524
HFP66-4-35(140②)	4	35	140	33	600	0.522	883524
HFP66-4-50(170②)	4	50	170	33	600	0.337	885024
HFP66-4-70(210②)	4	70	210	33	600	0.265	887024
HFP66-4-80(240③)	4	80	240	30	600	0.223	888024

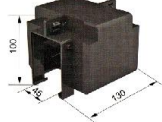
二、配件系列 accessories



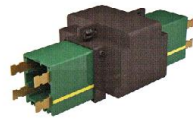
连接夹
jointing box



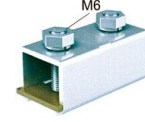
安装示例
ready installed



连接夹
jointing box



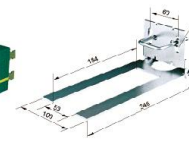
安装示例
ready installed



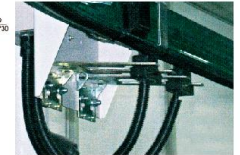
连接头
Connect the head



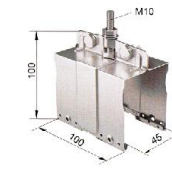
螺钉式接头
bolted joints



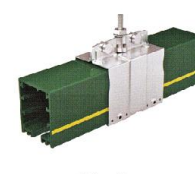
牵引器
tow arm



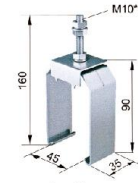
安装示例
ready installed



定位夹
hanger clamp



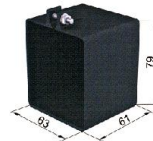
安装示例
ready installed



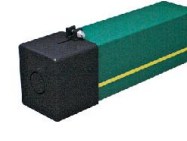
固定吊夹
fixpoint hanger



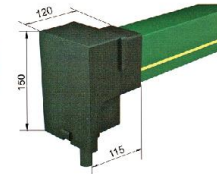
固定吊夹安装示例
fixpoint hanger at powerail section



端帽
end cap



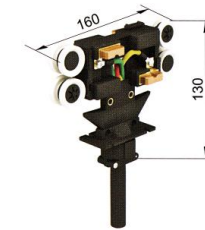
端帽安装示例
end cap ready installed



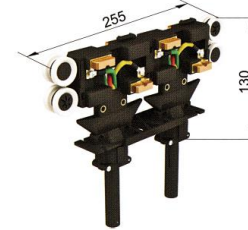
端部供电
end feed



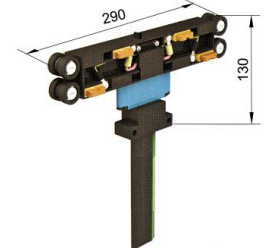
端部装置
end feeder



4极集电器 25A/40A
Collector for 4 poles powerail



4极集电器 60A
Collector for 4 poles powerail



4极集电器 80A
Collector for 4 poles powerail