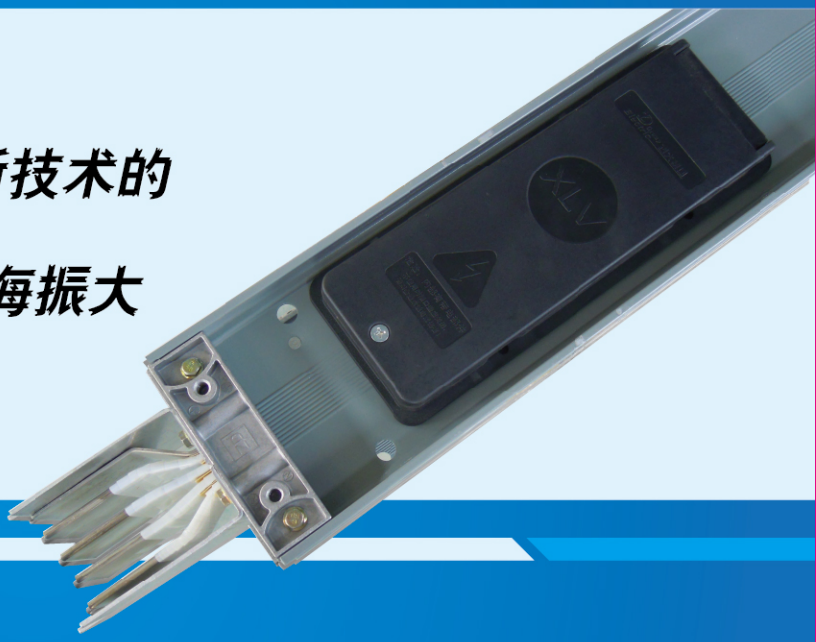
Group
Electric 振大集团

XLV 密集型母线槽系统

XLV COMPACT BUSBAR SYSTEM

引领母线新技术的

——XLV母线 来自上海振大



上海振大电器成套有限公司

SHANGHAI ZHENDA COMPLETE SETS OF ELECRICA EQUIPMENT CO.,LTD.

公司介绍

上海振大电器成套有限公司主要生产：高压管型母线系列、封闭母线系列、低压母线槽、高低压开关柜并提供设计、安装等一站式的整体综合制造、服务供应。

公司自1999年6月9日成立以来，一直致力于电力输配变电设备的研发和制造，主导产品分别有：复合屏蔽绝缘铜/铝管型母线、高低压绝缘矩形母线、防水母线、高压开关柜和低压配电箱、桥架等。这些系列产品在国内处于领先地位，在电力、石油、化工、冶金及煤矿、新能源等行业得到广泛应用，在行业市场上享有很高的称誉。其中应用工程有江西、陕西、湖北、河南、江苏等省电力公司物资招标项目、国网物资招标项目、三峡输变电工程、西电东送工程、晋东南–南阳–荆门特高压输电试验示范工程、云南–广东直流特高压输电工程，产品还出口到马来西亚、巴西、俄罗斯、肯尼亚、尼日利亚、巴基斯坦、苏丹等十多个国家的地区。

目前公司生产基地占地65000平方米，建筑面积30000多平方米，拥有国内一流的生产设备和具有国际先进水平的检测设备。公司全体员工600多人，其中专业技术工程师60人，研发人员30多人。产品通过了西安高压电器研究院实验认证中心等检测认证通过，国家电力工业电力线路器材质量检验测试中心、苏州电器科学研究所、东北电力科学研究院（东北电力电器产品质量检验站）以及获得国家专利30多项。我司在行业内还率先通过了ISO9001质量管理体系和ISO14001环境管理体系认证，OHSAS18001职业健康安全体系认证和国家强制3C认证等，同时在业内获得多项荣誉证书。

集团公司秉“广具特新努力让客户满意“的发展宗旨，”诚信至上“的经营理念，倡导”以人为本“的企业文化，弘扬”勇于进取：“的发展精神，为广大用户提供及时、高效优质的产品和服务，我们与各设计院和广大用户真诚合作、共创双赢，并为建设我国电气事业的繁荣和发展竭尽微薄之力！至此振大公司热忱的欢迎您和您的朋友来我公司参观考察。

Shanghai ZHENDA Complete Sets Of Electric Equipment Co.,Ltd, also called ZHENDA for short, mainly engaged in designing, manufacturing and instillation high voltage tubular bus bar system, enclosed bus bar system, low voltage bus bar system, HV/LV switchgear panel and providing the complete range of goods or services that a customer might require.

Since established in June 1999, ZHENDA has been dedicating to design and producing electricity transmission and distribution equipment. Main product includes composite shielding insulation copper/aluminum tubular busduct, HV/LV insulation common enclosure busduct, water–proof busduct, HV/LV switchgear panel, cable tray etc. All is widely used in electricity, petroleum, chemical industry, metallurgy, coal and new power section and enjoys high reputation in both domestic and oversea market. In past decades, ZHENDA has earned thousands of projects mainly including provincial power corps tender of Jiangxi, Shanxi, Hubei, Henan, Jiangsu etc, State power grid tender, Three Gorges Dam power transmission and distribution project, West–East Power Transmission, Southeast Shanxi–Nanyang–Jinmen UHV experimental demonstration project, Yunnan–Guangdong DC UHV power transmission project etc. Besides our products has been exported to Malaysia, Brazil, Russia, Kenya, Nigeria, Pakistan, Sudan and many other countries.

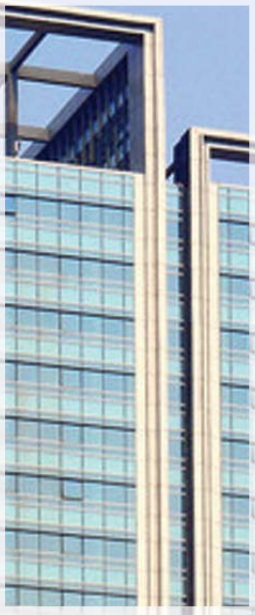
The factory owned by ZHENDA occupies an area of 65000 square meters with building area more than 30000 square meters. ZHENDA has first–class producing equipment and international advanced testing equipment. The total staff of ZHENDA is more than 600 containing 60 professional engineers and 30 developing employers. The product passes the test of certificate center of Xi’an High Voltage Apparatus Research Institute, National power industry power equipment and transmission material inspection test center, Suzhou electrical Apparatus science academy, Dongbei electrical science research institute and is awarded ISO9001, ISO14001, OHSAS18001 certificates and many other honor certificates.

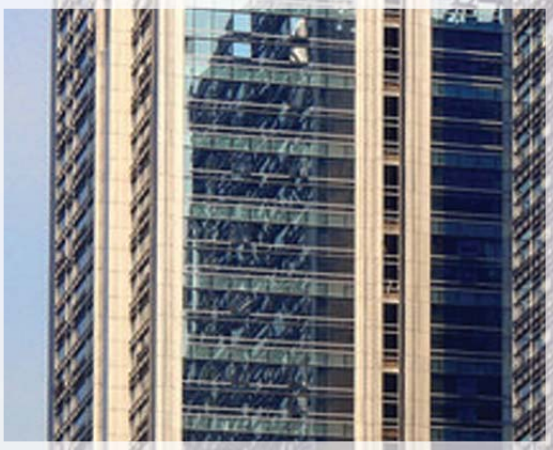
ZHENDA always advocates its development strategies of Internationalization, Technologicalization and Industrialization in the context of the economic globalization. The company attaches great importance to the innovation of institutional systems, science & technologies and management. ZHENDA is extending its reaches from the domestic market to the international market, leveraging the portfolios of its value chain from the single components to the integrated solutions, striving to meet the goal to develop ZHENDA into a world leading integrated low–voltage electrical solution provider.

信赖源于专业……

公司产品在上海世博会中国馆及其它场馆的建设中被大量选用，并受到馆方的一致好评。

信赖源于品质……





创优质　精心施工　　重承诺　真诚服务

Group 振大集團
Electric

公司部分照片集锦

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1、总经理参加苏商联席会议

2、总经理携集团上层前往盈江抗震救灾

3、总经理参加香港华润集团考察学习

4、（大连）全国苏商合影

5、总经理于北京银行首席代表腾波合影

6、郑州办领导与河南领导合影

7、总经理与招商局香港有限公司刘鹏董事长合影

8、上级领导参加集团公司新办公楼落成庆典

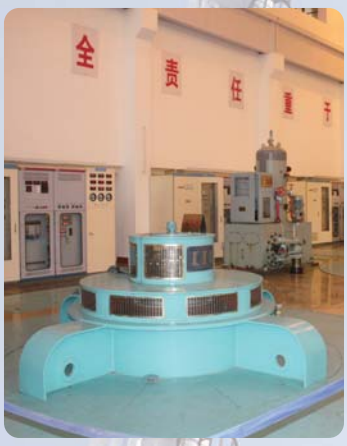
9、2011年振大集团发展战略规划研讨会留影

10、振大集团2012年业务发展论坛留影

11、振大集团2011年业务发展博鳌论坛

Group Electric 振大集團

示例工程



传导工业动力

负载民族希望

Group 振大集團
Electric

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母线槽系统应用概述

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概述

电力供电系统的设计，不仅要符合行业标准和设计规范，而且还要考虑到经济、安全、更能满足技术要求。对于电气设备的选择应以整个系统是否达到最佳配置为依据，而不受限于各个设备所具有的特性，比如说对于配电柜和变压器的选择，就应该考虑到设备之间的配套，将其作为一个整体，而不是单个进行选择。

元器件性能稳定，具有较强的适应能力，不仅适用于额定的工作环境，而且在相对恶劣的环境中也能使用。作为一套全新的电力输电系统应充分考虑到以下几点：

- 建筑物的类型、用途和形式（例如：高层建筑、平房和工业厂房等）。
- 变压器和配电柜的位置。
- 建筑管理部门的规定和指导方针。
- 供电部门的指导方针。

一般情况下，都会尽可能多的作出好几种设计方案，通过对技术和商务的综合考虑，选择最适合用户需求的、最经济节省的方案供用户最终确认。在作预算方案的时候，会优先考虑以下几点：

- 设计简单清晰
- 使用寿命长
- 实用性强
- 防火性能
- 建筑物更改时，设备能经过重新组装后再次使用

以上问题在工程项目中会经常碰到，母线槽系统由于其自身的特点能充分满足上述要求，所以在实际应用中，母线槽系统已经逐步替代了电缆，而成为工程人员心目中的首选输配电产品。

Overview

Creating a design concept for a power supply system, not only involves observing applicable standards and regulations, but also examining and clarifying economic and technical requirements. For electrical equipment selection should be based on whether the entire system can achieve the best configuration, but not limited to the integral features of equipments. For example, in choosing of connection between cabinets and transformers for the distribution, it should take into account the connections between devices as a whole rather than individual choice.

Components should not only be appropriate for rated operation, but should also be suitably dimensioned to withstand faults situations. A power distribution concept should also take the following points into consideration.

- Building type, use and form (for example, high-rise building, flat buildings and number of floors).
- Load centers and possible supply paths and location for transformers and main distribution boards
- Regulations and guidelines of building authorities
- Power supply company guidelines.

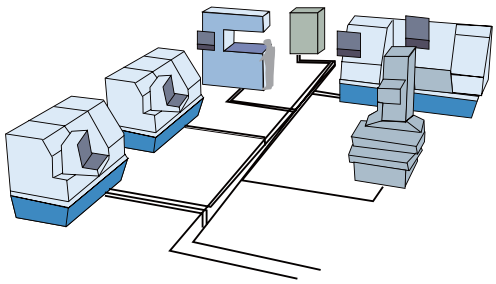
There will always be more than one possible solution which will have to be assessed in terms of its technical and economic advantages and disadvantages. In making this assessment, the following requirements should be a priority.

- Simple and transparent design
- Long service life
- High availability
- Low fire load
- Flexible adaptation to building modifications.

The above problems are frequently encountered in projects.Busbar system are able to meet requirements above thanks to its features,therefore,more and more engineers increasely their favor of busway system over cable for power transmission. ZHENDA provides busbar system with current rating from 140A to 6300A to meet the demand in various projects.

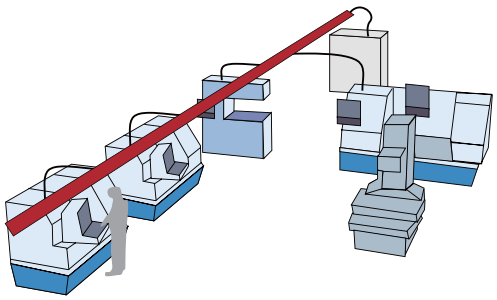
上海振大低压母线系统是替代电缆配电的经济、理想型方案

As a substitute for the cable distribution system, ZHENDA low-voltage busbar system is an economic, ideal solution!



安装电缆时，新负载线路只能按照传统方法连接分支配电屏，费用高且安装复杂。

When install cables, the new load lines only in accordance with traditional connection methods to connect branch distribution board, costly and complicated to install



母线槽的插接单元接近负载设备，现场布局更清晰、灵活，经济实用。

The tap-off units of busbar system are close to the loading equipments, enjoying clearer site layout, flexible, economical and practical features.

电缆布线复杂，火灾荷载高

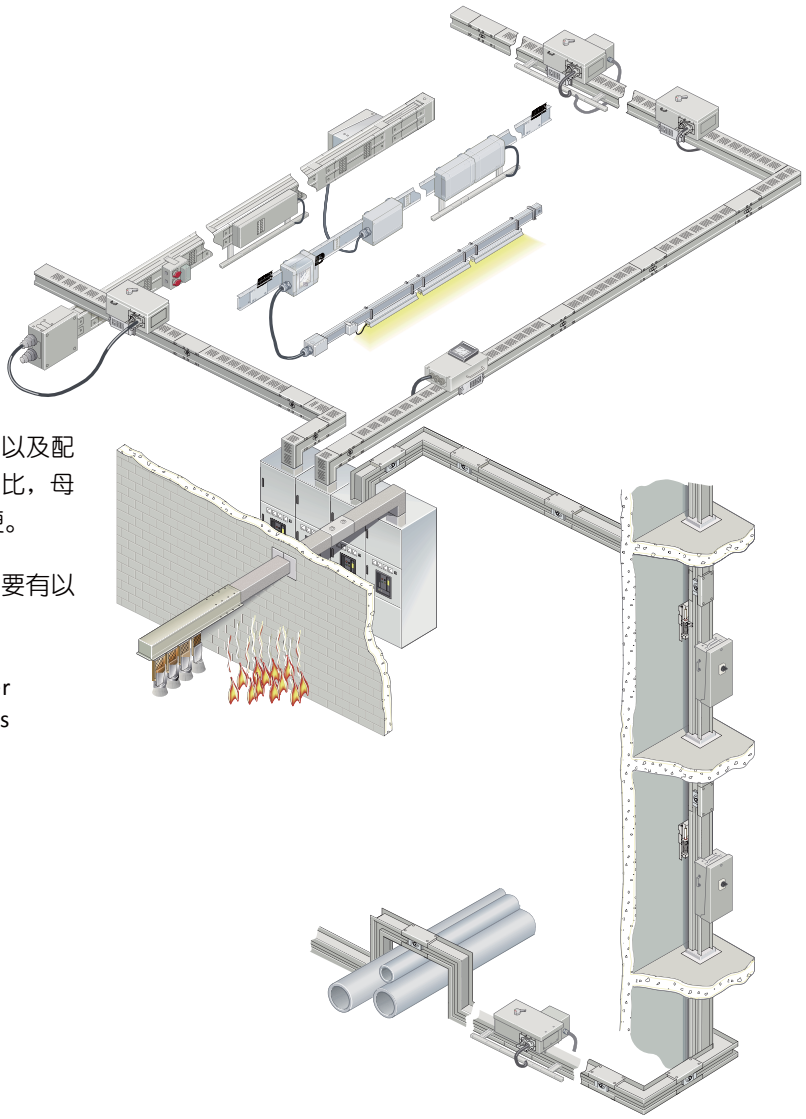
Cable distribution is complicated with high fire load

母线设计简单清晰，火灾荷载低

Busbar distribution is simple and clear with low fire load

上海振大低压母线系统

ZHENDA low voltage busbar system



母线槽系统主要作为变压器与配电柜之间的输电设备以及配电柜与负载之间的配电设备而被广泛使用，与电缆相比，母线槽系统不但安全，而且寿命长、性能可靠、使用方便。

上海振大电器成套有限公司生产的低压母线槽产品主要有以下几种类型：

As the power transmission system among transformer switchgear, and loading equipments, busbar system is widely applied. Such system is safe, long life-span, reliable and convenient to operate over cable.

The main busbar system of ZHENDA are as following:

Busbar System	Rated Current
XLV	100A~6300A
XLM	63A ~2000A
ZDFS	630A~5000A
CMC	100A~5000A
CCX	250A~5000A

公司生产的母线槽系统电流覆盖面广，产品种类齐全，能满足不同用户和工程项目的需求。所有母线槽系统均执行国际先进标准，并通过了国内外权威机构的各项检测与认证，如CE认证、CCC认证等，这样就为产品的性能提供了保证.

ZHENDA busbar system covers wide current range and variety and meet requirents of different projects. All busbar system comlies with international IEC standard and is awarded many certificates such as CCC,CE etc.

产品

PRODUCTS

适应性强的ZDFS 全封闭环氧树脂浇注母线系统

The Adaptive ZDFS Comlete Enclosed Resin Cast Busbar System

ZDFS系统设计电流从630A-5000A，外壳采用环氧树脂整体浇注，具有优越的电气绝缘性能及良好的散热性能，防护等级高达IP68 ，具有防水、防火、防腐等优势，是低压配电领域的新一代输配电系统。适用于各种恶劣与高洁净环境，被广泛应用于造船、机械电子、石油化工、钢铁冶金和大型建筑等各种场所。

The current range of ZDFS is from 630A-5000A.Its enclosure is made with resin casting which has excellent heat disperse performance with protective degree upto to IP68.It has features such as file-proof,water proof,corrosion-proof etc and can be used in extreme bad envoironment and many industries

图1：ZDFS浇注母线系统拥有IP68的超高防护等级，被广泛应用在造船、冶金、石油化工等各行业。

Figure 1: With high pretective degree upto IP68,it has been widely used in ship-building, metallurgy,oil and chemical industry

绿色节能的XLM系列母线槽

XLM Series Energy Saving Busbar System

XLM 母线槽系统是上海振大为了满足市场需求，针对国家节能减排而专门研制开发的母线槽输配电系统，设计电流为63A—2000A，适用居民住宅楼、商务写字楼、大型购物商场等场所，设计先进，其特殊的外壳结构能有效解决自身发热引起的系统高温，配备智能化监控系统，有效实时监控系统运行状态。产品本身从材料到生产工艺都采用绿色节能处理实施，大大节约能源的损耗。

In order to meet the market demands,XLM series energy saving busway has been developed.Its current range is from 630A to 2000A and suitable for Residential building,commercial building, supermarket etc.Its special enclosure construction are able to deal with heat produced during system operation.

图2：绿色节能的XLM母线系统适用于居民住宅楼、商务写字楼、大型购物广场等现代化建筑设施。

Figure 2: XLM Busbar System suitable for residential buildings, commercial office buildings, large shopping plaza and other modern building facilities

性能可靠的CMC空气型附加绝缘型母线槽系统
CMC Air-Insulated Busbar System

CMC系列母线作为大电流的输配电系统，主要用于电力变压器和低压配电屏以及重型负载之间的连接。它具有安装迅速、使用方便、安全可靠等特点，适用于汽车制造、电机制造、工业用电炉以及高层建筑的供电等。同时CMC母线槽系统在穿墙使用时采用专用防火栅，在发生火灾危险时，能阻止烟、火、热通过母线槽单元蔓延到临近房间或楼层，甚至能防止灭火时水的渗透。

As the big current power distribution and transmission busbar, CMC system from 100A to 5000A, mainly used for connecting low-voltage switchgear and transformer and other heavy-load equipments. It shares fast installation, convenience and safe performance etc. and serves for automotive industry, generator manufacturing, industrial workshop and power supply for high-rise etc. Meanwhile, CMC system uses special fire barrier through the wall, preventing the fire and smoke spreading into adjacent room or floor through the busbar, even can prevent from water's infiltration in fire fighting.

图3：CMC母线槽系统作为理想的大电流输配电设备被广泛应用在工矿企业。

Figure 3: CMC system is the ideal busbar for heavy current power distribution and transmission. It is mainly applied in industrial and mineral workshop etc.

经济适用的CCX密集型母线槽系统
CCX compact busbar system

CCX母线槽系统电流从250A~5000A，是一种常规密集型母线槽系统，广泛应用于中小型负载的配电，具体场所有工厂、高层建筑、实验室、展览中心等，该系统机械强度高、绝缘性能强，且具有操作简便、配置齐全等优势特征。

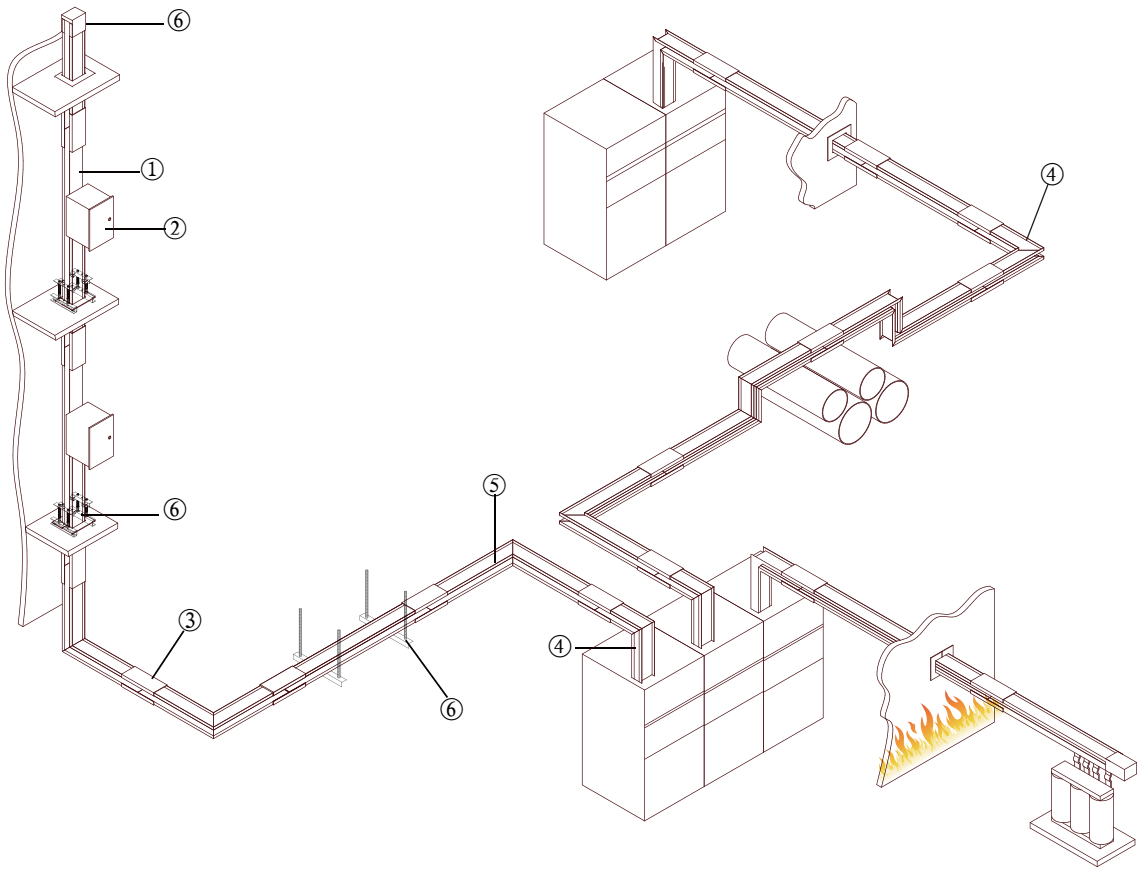
CCX busbar system rates from 250A-5000A, is a new type of compact system, which can be applied for workshop, high-rise, laboratory and exhibition center, etc. It enjoys advantages such as high mechanical strength, excellent insulation performance, light weight, easy operation and complete configuration, etc.

图4：CCX母线槽系统安装简便，适用于工厂、商业建筑、实验室和展览中心等。

Figure 4: CCX system enjoys easy installation, is the ideal busbar for workshop, commercial buildings, labs and exhibition hall.

XLV密集型母线槽系统

系统描述 System overview



① 直线段单元 Straight units (with or without tap-off unit)
② 插接箱单元 Tap-off units
③ 连接器单元 Joint units
④ 低压柜联络单元 Flanged end unit
⑤ 换向单元 Junction units
⑥ 安装附件 Installation accessories for wall/ceiling mounting

XLV密集型母线槽系统

系统部件 System components

系统部件基本描述

XLV母线槽系统既可应用在变压器与配电柜之间的连接，还可以为负载进行供电系统提供的防护等级最高可达IP65，能适应各种恶劣环境，插接箱输出电流最大可以达到1250A，为用户提供了可靠的负载环境，高的防护等级也为维护人员的安全提供了保证。

1. **直线段单元**
   根据需要可以加装穿墙套单元，
   防护等级IP54、IP65，

   馈电式和插接式
   标准长度
   XLVA/C：3m/2m/1m
   可选长度
   XLVA/C：0.5 – 2.99 m
   可垂直安装也可水平安装

   插接母线
   单面设插口
   双面设插口
   插口提供的防护等级为IP54

2. **插接单元**
   采用断路器保护或熔断器保护
   钢制外壳
   具有良好的接地
   防护等级高达IP54
   安装方便

3. **连接器单元**

4. **进线单元**

   配置有专门的硬连接(连接铜排)装置
   最大额定电流达到6300A

5. **换向单元**
   方便的更改一段母线的走向
   角度为70~175 度
   L型单元
   T型单元
   Z型单元

6. **附件**
   终端封
   安装件
   连接工具

System components overview

XLV System is the excellent choice to connect transformer and switchgear, and also to supply power for loading equipments. The highest protection degree of IP65 can meet different aggressive environment. The largest tapping current 1250A provides reliable power loading and higher personnel safety.

1. Straight length
   If needed wall-through cover unit is available.
   Protection degree: IP54, IP65

   Feed type and plug in type
   Standard length
   XLVA/C: 4m, 3m, 2m, 1m
   Optional length:
   XLVA/C: 0.5 - 2.99m
   Optional for vertical and horizontal installation

   Plug in straight length
   Single side with tap-off points
   Double sides with tap-off points
   Tap-off point protection degree is IP54

2. Tap-off unit
   Adopts breaker or fuse switch as protection
   Steel enclosure
   Excellent earth device
   Protection degree: IP54
   Easy installation

3. Joint pack Units

4. Feeder Units

   Special copper bar connection
   Rated current up to 6300A

5. Junction units
   Easily change the busbar system direction
   70° ~ 175°
   L unit
   T unit
   Z unit

6. Accessories
   End cap
   Fixing bracket
   Tools for connection

XLV密集型母线槽系统

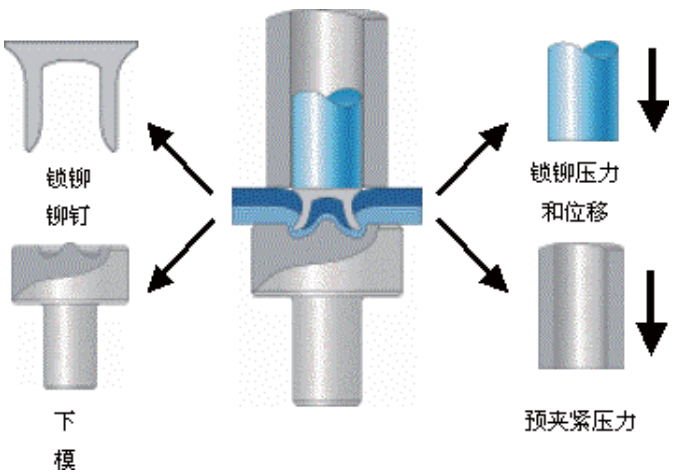
代码说明 Code interpretation

“XLV”为上海振大电器认证以及对外的专有代码，释义为：新型（X）、铝合金（L）、“V”型系统结构。

XLV密集型母线槽系统是上海振大电器成套有限公司自主研发的专利、节能、高强母线（专利号：ZL：2011.2.0207462.2）。此系统不仅符合国内外行业标准和设计规范，而且具备节能、轻质、高强、密闭四大优势功能。作为新型输配电的装置设备，XLV采用了国际最先进的搭接连接方式和单螺栓自动锁紧技术。其专利号为：ZL：2013.20124322.8。同时系统装配采用汽车钣金加工中的锁铆技术。

XLV密集型母线槽系统是上海振大的一种系统母线，此母线除本身所具备的安全、经济、节能等优势外，还具有智能管控预警功能。此系统可以在每一处连接部位和插接分支部位，均设计装有软件监控和传感报警装置。在设备运行中，可提前告知用户做预防和检修工作，杜绝使用中的安全事故，从而减少损失。XLV系统母线已通过了国家CCC强制性认证和欧盟的CE认证，正积极准备荷兰的KEMA认证，使产品适合国内外销售市场。

XLV采用自动铆接技术，将母线外壳与母排紧密贴合，此种技术在铆接过程中不影响涂层，并且强度大，质量持续稳定。



性能优势（与同等规格的其他产品比较）

对比项目	普通母线	XLV母线系统
能源节约	无	节材5%，节能2%
体积重量	无	体积小20%，重量轻15%
屈服强度	235MP	345MP
防护等级	IP42	IP54
散热性能★	外壳温升18K	外壳温升40K

注：散热性能是对比导体温升都在60K左右时，外壳的温升，温升越高，表示内部温度散发到外壳表面越快。

XLV密集型母线槽系统

加工设备 EQUIPMENT

上海振大拥有全球最先进的母线槽自动装配流水线。

母线装配

与传统密集型产品不同，XLV密集型母线系统引进德国Böllhoff自冲铆接技术，外壳整体结构采用铆钉铆接，自动化生产程度高。利用液压传动可获得较大、均匀的压力，使得母线槽整体强度得到大幅度提升，并且具备良好的密封效果和防渗功能，防护等级高，电气连续性优，外形整洁美观。

ZHENDA owns the international advanced automatic assembly line

Busbar assembly

We bring in Germany Böllhoff self-piercing riveting technology to rivete the overall structure of enclosure automatically. And Use hydraulic pressure technology to get a bigger average pressure,which greatly increase the strength and sealing performance of busway.It has features such as high protection degree, excellent electrical continuity, clean and smart appearance.

XLV密集型母线槽系统

技术数据 PARAMETER

系统通用参数 Technical Data

环境温度	
Min ./max ./24 小时平均温度	-5/+40/35°C
防护等级 (Protection degree)	IP54 、IP65
连接器力矩 (Torgue of joint)	70Nm
表面处理 (Powder coating)	喷塑 (Powder coating)
外壳材料 (Encosure material)	铝镁合金 (Aluminum-magnesium alloy)
外壳颜色 (Enclosure color)	国际标准灰（RAL7000 、RAL7032 、RAL7035 ），具体颜色也可用户确定
额定绝缘电压 U_i insulation voltage	1000VAC
额定工作电压 U_e working voltage	690VAC
额定频率 f frequency	50Hz
额定电流 I_e current	1)
额定短时耐受电流 I_{cw}	1) short-time withstand current
额定峰值耐受电流 I_{pk}	1) peak withstand current
导体截面 (Section of conductor)	1)
L1 , L2 , L3	1)
N	1)
PE	1)
单独一根导体作PE (indepandant PE)	1)
导体材料 (Material of conductor)	CU 、AL
每相铜排数 (Number of copper each phase)	1)
最大安装间距 (Maximum distance for installation)	
水平	
Horizontal ,flat	2m
外形尺寸 (Dimension)	1)
重量 (Weight)	1)

注：1) 选择不同的电流等级，相对应不同的数据。
2) 详细的数据可以参照下一节技术参数表部分。

Note: 1) Different current range gets its corresponding technical data.
2) Detailed data please refer the technical parameter list in the next chapter.

XLVC参数一览表

电流 (A)	短时耐受电流 (I_{CW}) KA	峰值耐受电流 (I_{PK}) KA	电阻／米 R (MΩ)	电抗／米 X (MΩ)	阻抗／米 Z (MΩ)	每米压降 (V)	外形尺寸		每米重量 Kg／米	
							宽度 (W)	高度 (H)	4 线制	5 线制
400	20	40	0.110	0.039	0.117	0.08	135	95	10.3	11
630	30	63	0.090	0.036	0.097	0.11	135	95	11.7	12.6
800			0.069	0.029	0.075	0.11	135	105	12.5	14.6
1000	50	105	0.060	0.027	0.066	0.11	135	115	15.4	16.7
1250			0.047	0.024	0.053	0.11	135	135	19.4	21.2
1400			0.041	0.020	0.046	0.11	135	155	23.5	25.7
1600			0.034	0.019	0.039	0.11	135	170	27.2	29.8
2000			0.028	0.017	0.033	0.11	135	205	33.7	37
2300			0.023	0.016	0.028	0.11	135	235	39	43
2500	80	176	0.020	0.015	0.025	0.11	135	255	44.8	49.3
3200			0.016	0.012	0.020	0.10	135	360	55.1	60.5
4000	100	220	0.013	0.011	0.017	0.10	135	430	67.6	74.2
4500			0.011	0.008	0.014	0.09	135	490	83.5	87.5
5000			0.009	0.006	0.011	0.09	135	530	95.7	100.2
6300			0.007	0.004	0.08	0.08	135	745	119.1	131.1

XLVA参数一览表

电流 (A)	短时耐受电流 (I_{CW}) KA	峰值耐受电流 (I_{PK}) KA	电阻／米 R (MΩ)	电抗／米 X (MΩ)	阻抗／米 Z (MΩ)	每米压降 (V)	外形尺寸		每米重量 Kg／米	
							宽度 (W)	高度 (H)	4 线制	5 线制
100	20	40	0.219	0.047	0.224	0.08	135	95	7.5	7.7
200			0.166	0.037	0.170	0.09	135	95	7.2	7.5
250			0.135	0.029	0.138	0.09	135	105	7.6	8.0
400			0.130	0.029	0.133	0.09	135	115	8.2	8.6
630	30	103	0.118	0.028	0.121	0.13	135	135	9.8	10.4
800			0.093	0.024	0.096	0.13	135	155	11.3	12
1000	50	105	0.065	0.020	0.068	0.12	135	170	12.6	13.4
1250			0.048	0.017	0.051	0.11	135	205	14.9	15.9
1400			0.044	0.016	0.047	0.11	135	235	17.3	18.5
1600			0.036	0.014	0.039	0.11	135	255	19.1	20.5
2000			0.029	0.012	0.032	0.11	135	360	25.8	27.4
2500	80	176	0.022	0.009	0.024	0.11	135	430	30.4	32.4
3200			0.017	0.006	0.018	0.10	135	530	38.7	41.5
4000			0.013	0.004	0.013	0.09	135	610	44.9	48.2

XLV密集型母线槽系统

产品编号

产品编号

XLV母线槽系统对一些基本的部件进行了编号，包括额定电流、导体配置、导体截面和导体材料等，下面的图示就反映了这一产品代码系统，用户可以根据此系统进行产品的订货选择。

Product code

XLV busbar system has a set of codes for basic units, including rated current, conductor configuration, conductor cross-section and conductor material. The customer can choose according to system codes below while ordering.

选型案例：

项目额定电流 2500A，应用铜母线系统，5 线制，外壳作 PE，防护等级为IP54 。
系统代码为：XLVC—255154

Example:

Rated current is 2500A, copper conductor, 5W, enclosure as PE
Then the system code is XLVC, 255154

Ordering type							
防火型 Fire protection	XLV						S120-X
常用型 Basic type	XLV						

Conduct or mat erial

Al	A
Cu	C

Rated curr ent Ie [A]

AL	CU	
100A	100A	01
200A	200A	02
250A	250A	03
400A	400A	04
630A	630A	06
800A	800A	08
1000A	1000A	10
1250A	1250A	12
1400A	1400A	14
1600A	1600A	16
2000A	2000A	20
2300A	2300A	23
2500A	2500A	25
3200A	3200A	32
4000A	4000A	40
4500A	4500A	45
5000A	5000A	50
6300A	6300A	63

1) 外壳作PE
2) 单独PE导体

1) Enclosure as PE
2) An independent bar as PE

Configuration of the conductors

L1+L2+ L3+ N	40
L1+L2+ L3+N+PE 1)	51
L1+L2+ L3+N+PE/PE 2)	53

Ingress Protection(IP)

IP 42	42
IP 54	54
IP 65	65

Fire protection

Positioning (X*)	

插接箱编号

编号	防护等级
42	IP42
54	IP54

编号	母线系统
40	XLV...40
51	XLV...51
53	XLV...53

编号	箱体规格
1	1#
2	2#
3	3#
4	4#
5	5#
6	6#

编号	额定电流
63S	63 A
80S	80 A
100S	100A
125S	125A
160S	160A
200S	200A
250S	250A
315S	315A
400S	400A
630S	630A
800S	800A

编号	开关极数
3P	三极
4P	四极

编号	开关操作方式
-	不带操作机构
R	旋转操作手柄
M	电动操作机构

XLV- . T .. . / ··· - ···· - .

举例：XLV-2T5154/125S-3P-R 表示箱体规格为2#、母线系统为51、防护等级为IP54的插接箱，采用断路器保护并带有旋转操作手柄，断路器为3极、额定电流为125A 。

Example: XLV-2T5154/125S-3P-R represents tap-off box specification is 2#, busbar system is 51, IP54, breaker protection and Rotary operating handle, breaker is 3 poles, and rated current is 125A.

XLV密集型母线槽系统

系统配置 System Configuration

外壳

XLV 系列母线槽采用优质铝镁合金型材作为外壳，为无磁性环保材料，重量轻，散热快，母线槽运行时无磁滞涡流损耗，并且其足够大的截面能取代PE线作为100% 整体式接地，表面静电粉末喷涂，通过1200h 的耐盐雾实验，可长期应用于空气湿度大、盐分高、污染等级高的环境。

Enclosure

XLV system adopts aluminum-magnesium as enclosure.It has features such as no magnetism,light weight,no eddy current loss during working and its section can be used as 100% earthing system. Its surface finished by powder coating andpasses 1200H salt-fog withstand test,which make it able to work high humidity, high salt and high pollution environment.

导体

XLV母线槽系统表面镀锡或者镀银，全长整体包裹高性能绝缘材料聚酯薄膜；

XLVC为铜导体系统，XLVA为铝导体系统。铝导体表面镀锡前做镀镍、镀铜处理。

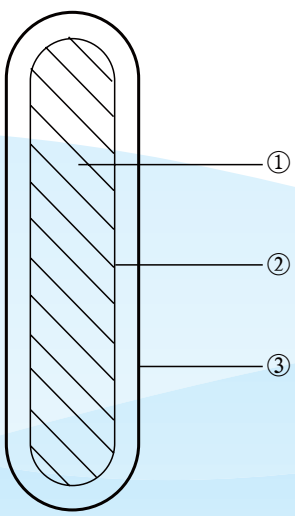
Conductor

The conductors of the XLV busbar system are normally tinplated or silver plated, totally covered with highly insulation material.

XLVC is copper system; XLVA is aluminum system. Aluminum conductor should be nickel-plated and copper-plated before tin-plated.

高性能绝缘材料

High performance insolation material



XLV母线系统

① 导体，铜排（XLVC ）；铝排（XLVA）
② 镀层，镀锡层（ XLVC ）；镀镍层，镀铜层，镀锡层（XLVA）
③ 高性能绝缘材料聚酯薄膜

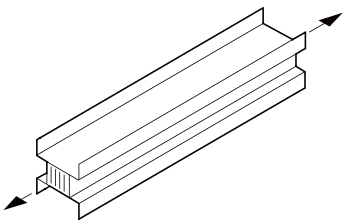
① Conductor, copper bar (XLVC), aluminum bar(XLVA)
② Coating. Tin coating (XLVC), nickel coating, copper coating, tin coating(XLVA)
③ Insulation Material

母线安装

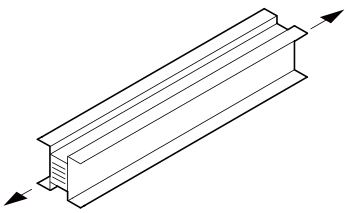
XLV 母线系统的内部为典型的三明治结构，而且保持全长密集，这种特殊的结构决定了XLV母线系统的承载电流不会受安装位置及安装方式的影响，我们将会根据现场情况设计一个合适的走向。

PRODUCTS

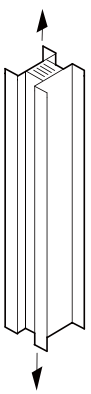
The sandwich-type construction of XLV decides the load current will not be affected by the way of instalation.We will provide a optimum installation layout according to actual condition



水平安装，立装
Vertical installation



水平安装，侧装
Horizontal installation



垂直安装
Horizontal installation, Edgewise

外形尺寸

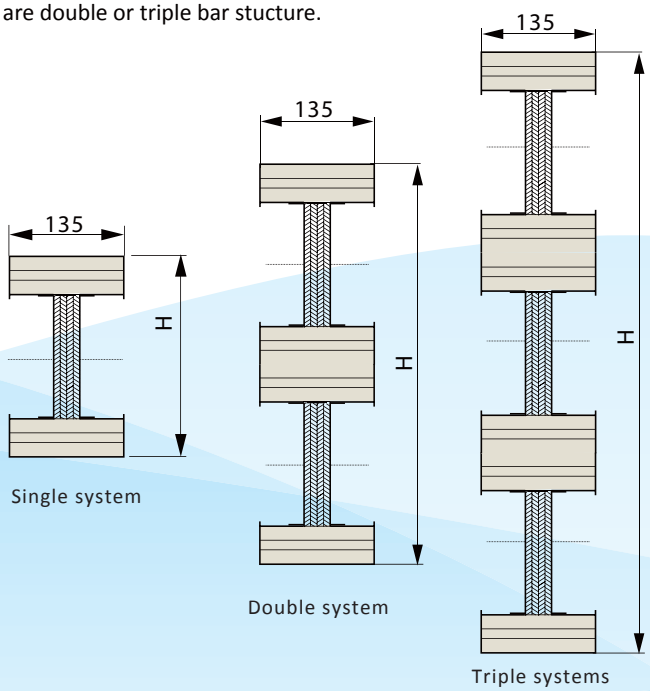
外形尺寸主要决定于母线槽系统的额定电流和导体材料，XLV系统总共分18个电流等级，其中13个小电流等级系统采用单排，其余为双排。

电流A	高H(mm)	
	XLVC	XLVA
100	/	95
200	/	95
250	/	105
400	95	115
630	95	135
800	105	155
1000	115	170
1250	135	205
1400	155	235
1600	170	255
2000	205	360
2300	235	/
2500	255	430
3200	360	530
4000	430	610
4500	490	/
5000	530	/
6300	745	/

注：宽度均为135mm
Width is always 135mm

Dimensions

The dimensions depend on the rated current and conductor material. XLV busbar system can be devided into 18 current ratings, 13 of them adopt single bar stucture and the rest are double or triple bar stucture.



XLV密集型母线槽系统

系统配置

导体配置

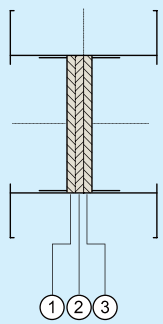
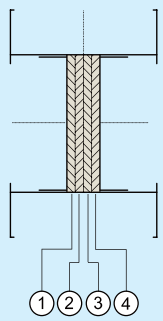
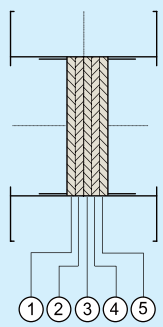
IEC364 标准规定配电设备的系统配置需根据整套系统配置进行选择，而且所选择的设备要充分保证整个系统的安全。

XLV 母线槽系统拥有多种导体配置系统，能适应不同工程对系统的要求。

Conductor Configurations

The IEC standard regulates that the power distribution equipment system configuration should be based on the entire system configuration, and the choice of equipment should fully guarantee the security of the entire system.

XLV busbar system offers many different conductor configurations to meet actual site requirement.

	系统 System	导体配置 Conductor configurations						外壳 Enclosure
		①	②	③	④	⑤	⑥	
	XLV ... 30	L1	L2	L3	–	–	–	外壳作 PE Is the PE conductor
	XLV ... 41	L1	L2	L3	PEN	–	–	外壳与 N 相连
	XLV ... 51	L1	L2	L3	N	–	–	外壳作 PE Is the PE conductor
	XLV ... 53	L1	L2	L3	N	PE	–	单独 PE 导体

外壳作PE：通过验证采用无磁性的铝镁合金外壳作为整体式接地导体，它的接地容量超过相线100%。当系统出现高容量的接地故障时，使系统直接与大地相通，它具备最短的接地途径。

Enclosure as PE: adopting excellent non-magnetism alloy enclosure as integral conductor. The earth capability is more than 100% phase conductor. When there is a high earthing fault, it connect busbar with the ground directly, which offers the shortest earth approach.

功能单元

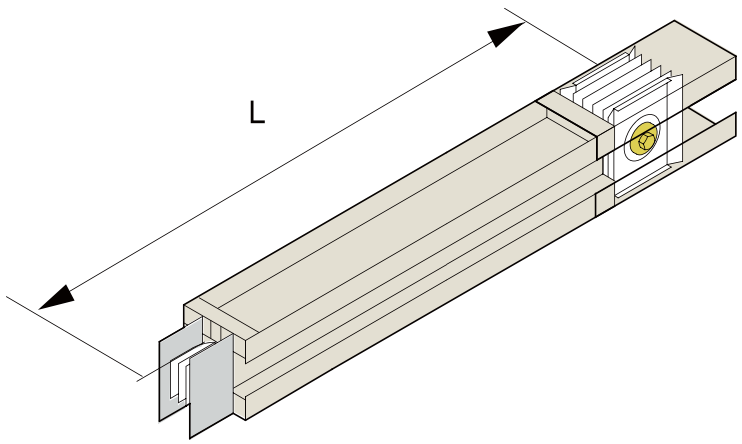
直线段单元 Straight Length

直线段单元

XLV密集绝缘型母线槽壳体结构为完全密封型，最高防护等级可达IP65，可在恶劣环境条件下使用。系统选择具有大于相线100%容量的整个外壳作接地系统，保证足够的安全性，为接地故障提供可靠的接地路径，为地线短路提供最短的路径。当发生高容量的接地故障时，可有效的接地和保护整个系统。馈电式母线槽可以垂直安装也可以水平安装。

Straight Length

The enclosure of XLV is completely enclosed structure with max protection degree upto IP65,which make it able to work in aggressive environment. The system adopts enclosure with more than 100% capacity phase as earthing system to guarantee safety. It provides a shortest earthing road and can protect entire system when high capcity earthing failue occurs. Both vertical and horizontal instalaltion is available for feed straight element.



标准长度	Standard length
XLVC	1m XLC-II … . -1
	2m XLC-II … . -2
	3m XLC-II … . -3
可选长度	**Optional length**
XLVC	0.35 m–0.99 XLC-II … . -（0.45-0.99）
	1.01 m–1.99 XLC-II … . -（1.01-1.99）
	2.01 m–2.99 XLC-II … . -（2.01-2.99）

标准长度	
XLVA	1m XLVA … -1
	2m XLVA … -2
	3m XLVA … -3
	4m XLVA … -4
可选长度	
XLVA	0.45 m–0.99 XLVA … . -(0.45-0.99)
	1.01 m–1.99 XLVA … . -(1.01-1.99)
	2.01 m–2.99 XLVA … . -(2.01-2.99)
	3.01 m–3.99 XLVA … . -(3.01-3.99)

功能单元

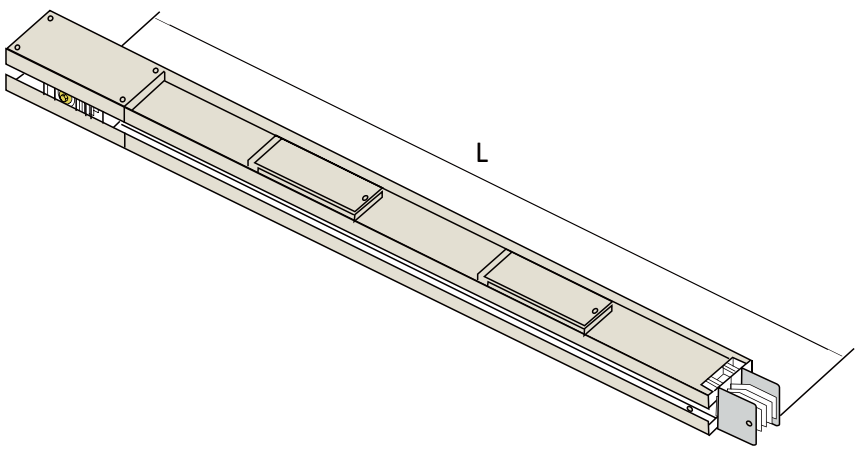
直线段单元 Straight Length

插接式母线

插接式母线槽系统可以垂直安装也可以水平安装，插口的设置比较灵活，双面都可以设插接口，插口之间的最小间距为575mm ，3米长标准段最多可以配置10个插口，用户可以根据具体情况预留插接口以便在设备负载更换位置或增加时，母线槽单元依然可以适应负载的要求，为用户提供安全可靠及便利的用电环境。

Plug In Length

Straight element with tap-off units are available in both vertical and horizontal installation. The tap-off point can be planned flexibly with double sides at the min span of 575mm. The 3m length straight unit can be planned with max 10 tap-off units. The users can reserve tap-off points in case of changing and increasing load equipment later according to the site condition.



标准长度	Standard length
XLVC	L = 1 、2、3m
可选长度	Optional length
XLVC	L = 0.7 2~ 2.99 m

标准长度	Standard length
XLVA	L = 1 、2、3、4m
可选长度	Optional length
XLVA	L = 0.72 ~ 3.99 m

功能单元

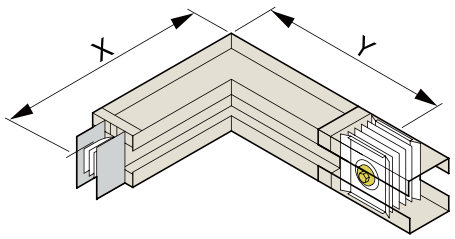
换向单元 Junction units

换向单元

为了方便更改一段母线槽系统的走向，XLV 系统设计有多种标准弯头，同时也可根据现场情况进行非标设计。

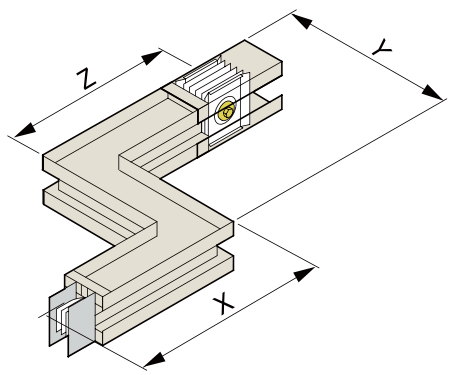
Junction units

In order to change the direction easily, XLV busbar system plans with multi standard junction units, and is available with non-standard planning according to site condition.



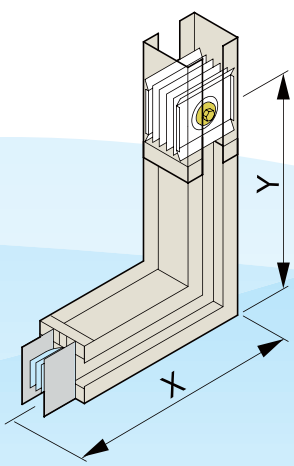
L型水平弯头(LR/LL) L Elbow (LR/LL)

标准长度	Standard length
XLVC	X/Y = 0.40
标准长度	Optional length
XLVA	X/Y = 0.40



水平Z型弯头(ZL/ZR) Z unit (ZL/ZR)

标准长度	Standard length
XLVC	X = 0.40m Y = 0.45m Z = 0.4m
标准长度	Optional length
XLVA	X = 0.40m Y = 0.45m Z = 0.40m



L垂直弯头(LV/LH) L Knee (LV/LH)

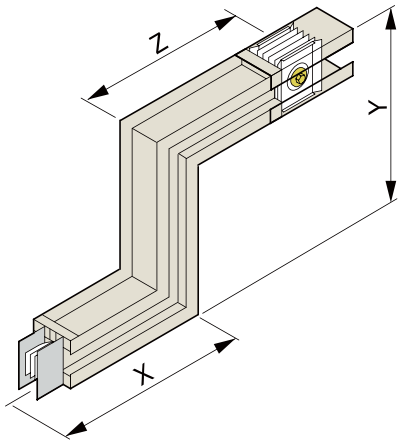
标准长度	Standard length
XLVC ... 04-14	X/Y = 0.40m
XLVC ... 16-25	X/Y = 0.55m
XLVC ... 32-50	X/Y = 0.8m
XLVC ...63	X/Y = 1.1m
标准长度	Optional length
XLVA ... 01-06	X/Y = 0.40m
XLVA ... 08-16	X/Y = 0.55m
XLVA ... 20-32	X/Y = 0.80m
XLVA ... 40	X/Y = 0.90m

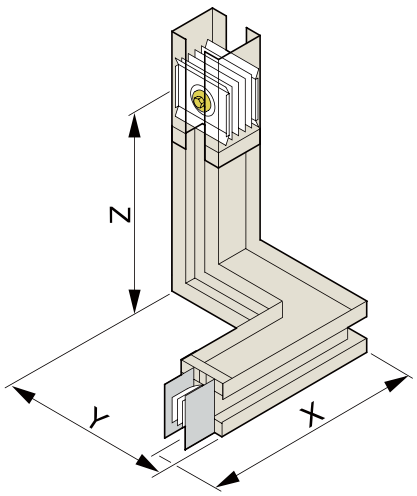
功能单元

换向单元 Junction units

垂直 Z 型弯头(ZV/ZH) Z unit(ZV/ZH)

标准长度	Standard length
XLVC ... 04-12	X = 0.4m Y = 0.40m Z = 0.4m
XLVC ... 14-25	X = 0.55m Y = 0.65m Z = 0.55m
XLVC ... 32-50	X = 0.8m Y = 0.9m Z = 0.8m
XLVC ... 63	X = 1.0m Y = 1.1 m Z = 1.0m
标准长度	Optional length
XLVA ... 01-06	X = 0.4m Y = 0.4m Z = 0.4m
XLVA ... 08-16	X = 0.55m Y = 0.65m Z = 0.55m
XLVA ... 20-32	X = 0.8m Y = 0.9m Z = 0.8m
XLVA ... 40	X = 0.85m Y = 1.0m Z = 0.85m



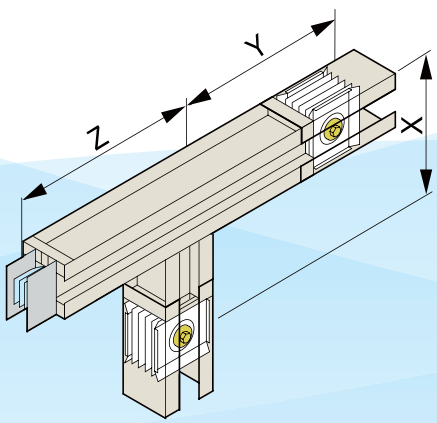


异型弯头(LLV～LHR) Offset unit (LLV～LHR)

标准长度	Standard length
XLVC ... 04-14	X = 0.4m Y = 0.45m Z = 0.40m
XLVC ... 16-25	X = 0.4m Y = 0.55m Z = 0.50m
XLVC ... 32-50	X = 0.4m Y = 0.8m Z = 0.8m
XLVC ... 63	X = 0.4m Y = 1.0m Z = 1.0m
标准长度	Optional length
XLVA .. 01-06	X = 0.4m Y=0.4m Z = 0.4m
XLVA .. 08-16	X 0.4m Y = 0.55m Z = 0.5m
XLVA .. 20-32	X = 0.4m Y = 0.8m Z = 0.8m
XLVA .. 40	X = 0.4m Y = 0.85m Z = 0.85m

T型垂直弯头(TV/TH) T Unit (TV/TH)

标准长度	Standard length
XLVC ... 04-14	X= 0.45m Y/Z = 0.35m
XLVC ... 16-25	X= 0.55m Y/Z = 0.40m
XLVC ... 32-50	X = 0.80m Y/Z = 0.55m
XLVC ... 63	X = 1.1m Y/Z = 0.65m
标准长度	Optional length
XLVA .. 01-06	X = 0.45m Y/Z = 0.35m
XLVA .. 08-16	X = 0.55m Y/Z = 0.40m
XLVA .. 20-32	X = 0.80m Y/Z = 0.55m
XLVA .. 40	X = 0.85m Y/Z = 0.60m



功能单元

进线单元

XLV 母线槽系统与配电柜的连接，连接时根据用户低压柜的具体出线方式进行调整设计，既可顶端出线，也可底端出线，电流最高达6300A，通常使用连接铜排进行转接，公司负责提供原材料及现场的指导安装，安装时保持现场连接最短路径及时间，进线单元中的始端母线配置有连接法兰，与设备密切结合，从而保证较高的防护等级。

We provide special flanged end feeder unit and connective unit to realize the connection between busway and low voltage switchgear panel.Both top outgoing and bottom outgoing according to actual condition is available. Usually copper bar is used with current rating upto 6300A.

功能单元

插接箱单元 Tap-off unit

插接箱单元

XLV 插接箱单元获得多项专利技术，其设计结构紧凑、外形美观、性能可靠，额定电流为16A~1250A ，每种电流等级可提供5种不同外形尺寸，设计更贴切用户需求。

内部配置

根据用户对插接箱的配置要求，可以在插接箱内安装3极或4极断路器对负载进行保护，断路器可配备正泰NM1或NM8，也可由用户自行选择，包括保护开关的附件，比如操作手柄、分励脱扣、热磁脱扣、漏电保护模块等，公司将按照用户的要求提供标准配置。同时公司可以在现场测量后，参照现场具体情况对插接箱的外形尺寸进行非标设计，以满足现场的要求。

电缆馈线

插接箱通过电缆引出电流给负载进行供电，出线方式灵活，在电缆出线口配置有专门的电缆保护套管，保护套管的直径可以根据电缆的直径进行配置。

插口装置

母排无间隙，真正实现了高密集，具有低阻抗、散热快等特点，且通用性强，适用于不同导体配置系统。

母线系统的插口装置与导电桩头之间设有超声波塑料焊接固定的高弹性橡胶防护垫，防护等级高，确保插接时安全可靠。

插接方式

国际专利支持的“T”型插脚稳定、可靠，载流能力更强。

16 - 630A 为单插口分接

800 - 1000A 为双插口分接

1250A 以上采用连接器分接

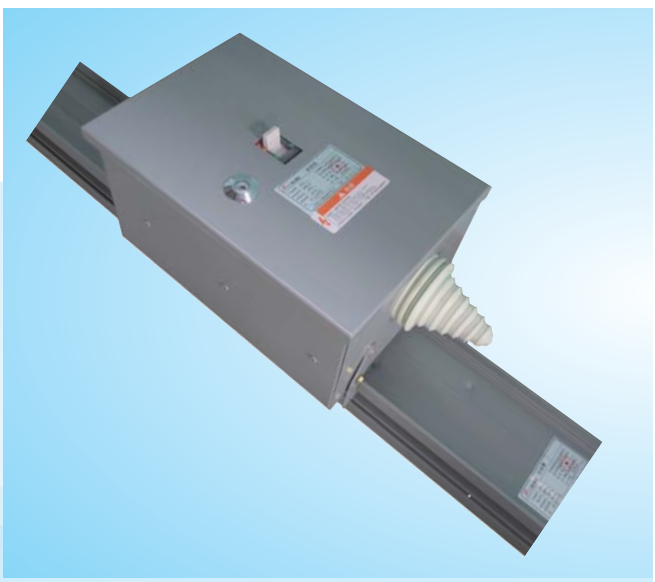
操作安全

防错相安装

提供IP54的防护等级

插脚均做镀银处理以保证系统可靠的电气连续性

插接箱内部多重联锁，防止在通电情况下插接箱门被打开，进一步保证了操作人员的人身安全。



Tap-off unit

Tap-off unit of XLV busbar system gains many patents, enjoying structure compact, nice appearance, reliable performance. The rated current is 16A-1250A, 5 different dimensions as per current rating. The design is closer to users.

Inside configuration

3 pole or 4 pole breaker is collocated according to user's requirements. The breaker is optional for CHNT NM1 or NM8 or the other brand as well, including the switch accessories, e.g. operating handle, protection, shunt release (trips) ST, thermal-magnetic trip, leaking protection. In the meantime special design on sizes of tap-off units can be make according to site details after site measurements.

Cable connection

The tap-off unit supplies power to loading equipments with flexible outputting line collocated with protection sleeves. The diameter depends on the cable size.

Tap -off point

Tap-off point of XLV busbar system truly achieves high compact structure, low impedance and universal application for different kinds of conductor configuration. High elastic rubber protective pad fixed by Ultrasonic Plastic Welding is planned between tap-off device and conductor, ensuring high level of protection, safe and reliable plugging.

Plugging method

International Patent supported T-pins ensure stable, reliable and large current-loading capacity.

16A to 630A is single side tapping;

800A to 1000A is double sides tapping;

1250 and above is joint pack connection.

Safe operation

Anti-wrong installation;

Protection degree of IP54;

Silver-plated plug feet ensure reliable electrical continuity;

Multi inter-lock prevents plugging on loading.

功能单元

连接器单元

“ QWIKMAKE™ ” 连接器

摒弃了传统的设计，使得安装速度较普通连接器快一倍。而且由于它不可翻转，两段母线在连接时不会发生错相，简化安装程序，更有助于安全快速的安装。

双头力矩螺栓

双头螺钉能保证在安装时，只需用19mm 普通扳手旋紧螺钉直至上面的螺栓头自动断裂，且螺钉上的黄色指示牌脱落，说明该接头力矩已达到最佳状态，可节约 75%安装时间。安装完毕后剩余的螺栓头可在维修、拆装时二次利用。

高压力均衡垫

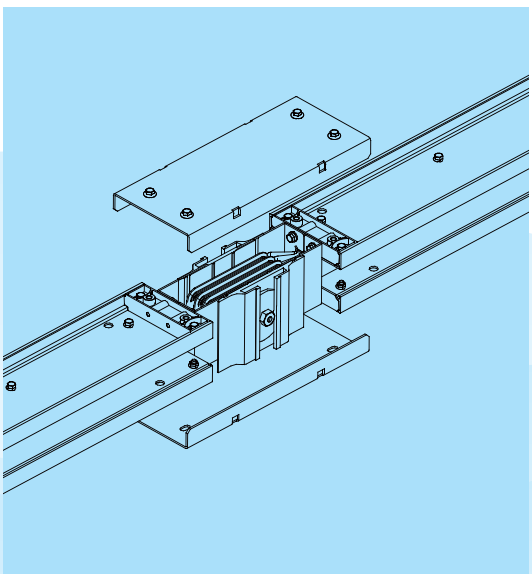
螺栓琐紧时产生的压力通过特殊设计的碟型垫圈传递至与铜排等截面的高压力均衡垫，确保整个母线连接处面压力均匀、松紧适度，电气连接安全可靠。

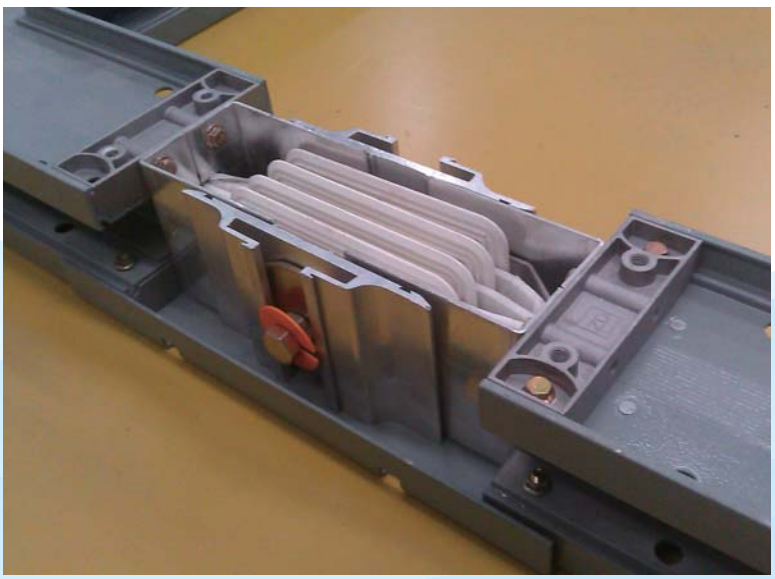
膨胀补偿

接头的设计(对接式)满足由于热膨胀而引起母线槽的线性伸缩，在不降低母线的机械强度、电气连续性、载流容量及短路流量的前提下，每个连接器提供7mm 的膨胀补偿，使得XLV母线槽系统在应用中无需安装特殊的膨胀节单元。

防护等级高

连接器各零部件之间均设计有防水措施，同时加有绝缘垫的连接盖板使得在母线连接处也能保证较高的防护等级。





International patent acquired “QWIKMAKE” TM joint pack

By abandoning the traditional design, its installation speed is twice faster than ordinary connector. But also because it can not be overturned, wrong phase operation won’t occur when connect two busbar units, simplifying the installation procedure, contributing to the rapid and safe installation.

Double-headed torque bolt

Only 19mm ordinary wrench than torque spanner is needed to tighten until the outside head as well as the yellow plate breaking off, which means the torque of the joints have reached the best condition. 75% time is saved. After installation, the rest head bolt can be reused in later maintenance and disassembly.

High pressure balanced clamp

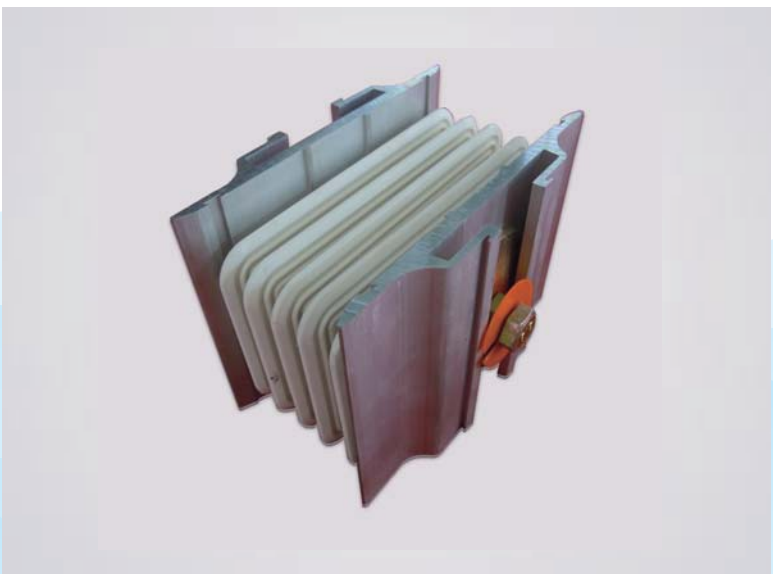
The pressure caused by bolt locking passes to the balanced clamp (the same section as copper) through a specially designed butterfly gasket, ensures that the appropriate pressure, uniform elastic, safe and reliable electrical continuity at system joints.

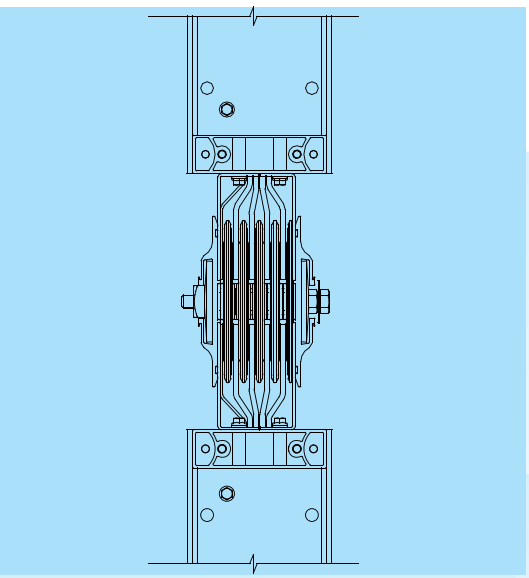
Compensation for expansion

Joint pack (butt type) of XLV busbar system meets linear expansion due to thermal expansion. Under the premise of never lowering the mechanical strength, electrical continuity, current-loading capacity and short-circuit capacity. Each joint pack is provided 7mm compensation for expansion, making the XLV busbar system never need to collocate with any special expansion unit.

High protection degree

Each part and component of joint pack is designed with waterproofing measures. Meanwhile, joint pack cover guarantees a higher level of protection.





功能单元

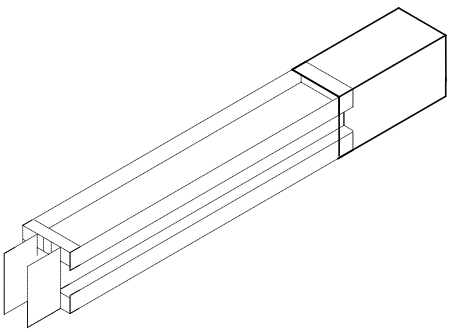
系统附件

终端单元

母线终端安装在母线槽系统的末端，用以防止导电部件的裸露。

End cap

End cap is mounted in the end to avoid exposing of conductors.

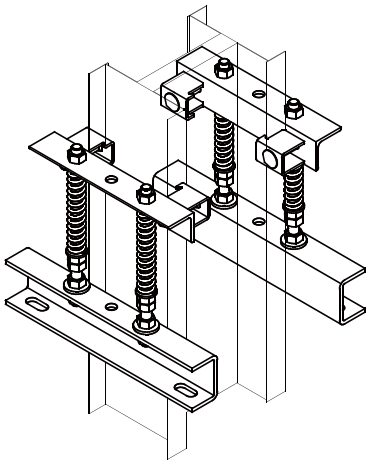


垂直安装支架

母线槽垂直安装时提供特殊的弹簧支撑件作为安装附件，每个弹簧支撑架都能承受母线及插接箱所带来的额外载重负荷。

Vertical installation

Special spring supports are available as installation accessories if requested.



水平安装支架

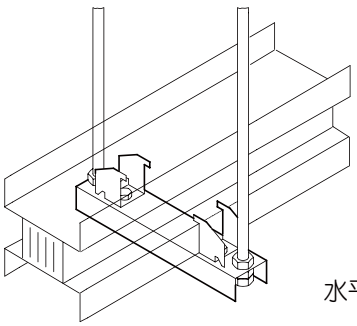
提供两种不同的安装支架
水平立装使用
水平侧装使用

安装支架上自带的定位装置能固定母线槽系统，使得安装好的系统更加稳固，同时这种定位装置是跟安装支架一起提供的。

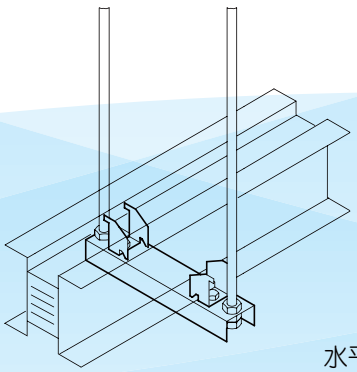
Horizontal mounting supports

two different mounting devices are availble
For horizontal flatwise
For horizontal edgewise

Clamps in the supports which make busbar trunking system stably are available if requested.



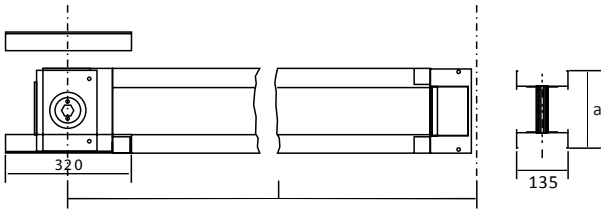
水平立装使用
edgewise



水平侧装使用
flatwise

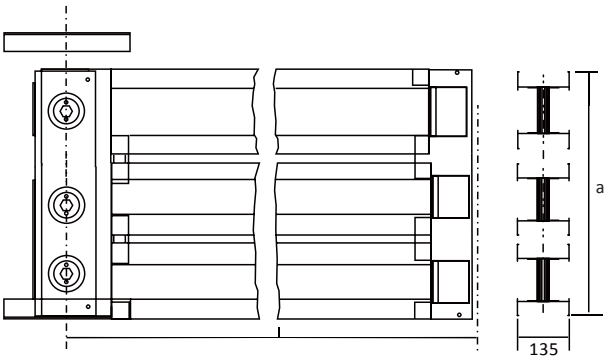
物理数据

Physical data



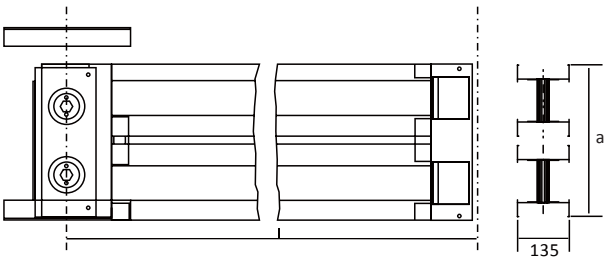
单排系统

Single system



三排系统

Triple system



双排系统

Double system

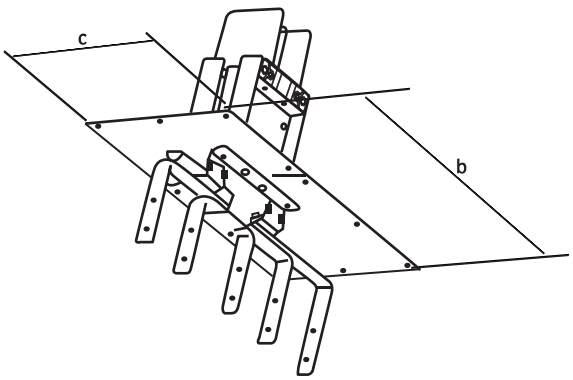
直线段单元 Straight element

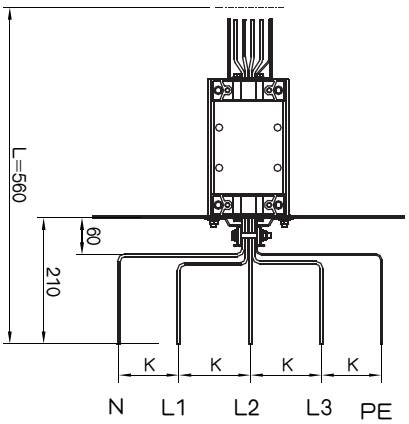
系统	a/mm	
	XLVA	XLVC
XLV 100A	95	/
XLV 200A	95	/
XLV 250A	105	/
XLV 400A	115	95
XLV 630A	135	95
XLV 800A	155	105
XLV 1000A	170	115
XLV 1250A	205	135
XLV 1400A	235	155

系统	a/mm	
	XLVA	XLVC
XLV 1600A	255	170
XLV 2000A	360	205
XLV 2300A	/	235
XLV 2500A	430	255
XLV 3200A	530	360
XLV 4000A	610	430
XLV 4500A	/	490
XLV 5000A	/	530
XLV 6300A	/	745

物理数据

Physical data



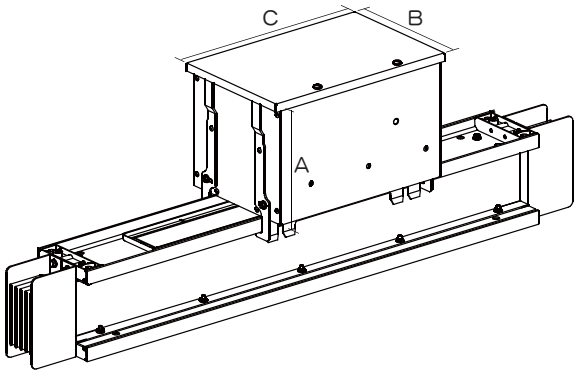


始端单元 Flanged End Unit

系统	b/mm		c/mm		K/mm	
	XLVA	XLVC	XLVA	XLVC	XLVA	XLVC
XLV 100A	350	/	155	/	80	/
XLV 200A	350	/	155	/	80	/
XLV 250A	350	/	165	/	80	/
XLV 400A	350	350	175	155	80	80
XLV 630A	350	350	195	155	80	80
XLV 800A	350	350	215	165	80	80
XLV 1000A	350	350	230	175	80	80
XLV 1250A	480	350	265	195	100	80
XLV 1400A	480	350	295	215	/	80
XLV 1600A	480	350	315	230	100	80
XLV 2000A	480	480	420	265	100	100
XLV 2300A	/	480	/	295	/	100
XLV 2500A	480	480	490	315	100	100
XLV 3200A	480	480	590	420	100	100
XLV 4000A	480	480	670	490	100	100
XLV 4500A	/	480	/	550	/	100
XLV 5000A	/	480	/	590	/	100
XLV 6300A	/	480	/	805	/	100

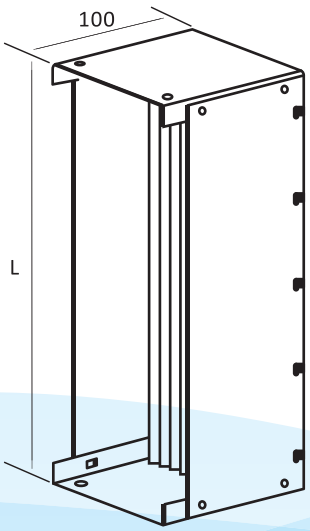
注：可根据项目实际情况确定K值，K值更改时，b值需相应作出更改。

Note:K can be customized as per situation. b need to be changed accordingly when k is different



插接箱单元 Tap-off Unit

保护单元	电流 (A)	A/mm	B/mm	C/mm
断路器（正泰NM1）MCCB (CHNT NM1)	16 - 100	235	240	375
	125 - 160	255	250	415
	200 - 250	275	270	535
	315 - 400	315	310	665
	630	345	340	815
	800	355	420	1015



终端 End Cap

系统	L/mm
XLVC 400A-6300A	H+5
XLVA 100A-4000A	H+5

注：H值为母线槽高度参考相关参数

Note: H mean the height of busbar system

其他

计算及选型

计算及选型

额定电流的计算

在安排母线槽系统布局时须注意以下几点：

- 负载或配电系统的场所、数量和连接方式
- 分散系数
- 设定的短路等级

与配电柜连接须提供

- 配电柜的型号
- 进线方式（顶端、底端或背面）

安装的地理位置和条件

- 空间尺寸
- 建筑物构造（针对悬挂和安装）
- 母线槽走向
- 环境条件（温度、湿度、空气质量等）
- 系统穿过的墙面

与其他系统配套–比如与母线槽系统安装配套的部分为：

- 供电线路的平面图
- 通风管道走向的位置
- 照明系统的平面图
- 需提供插接单元的数量和具体位置
- 母线槽系统严格按照上面提到的几点进行测量，第一步是计算额定电流。

PRODUCTS

the rated current calculation

The following tips is important for planning busbar system layout

- Location,number and connection way of loads or power system
- Rated diversity factor
- The setted short-circuit level

Information on distribution board to be supplied

- Distribution board type
- incoming way(top, bottom or rear)

Environment and condition for instalaltion

- Space dimention
- Building structure (for suspension and fixing)
- Transportation paths
- Ambient conditions (temperature, humidity, dirt, etc.)
- Wall cut-outs

Other system if any - used together with busbar system
For example

- Layout of power supply line
- Location and way of vent line
- Layout of lighting system
- Number and location of tap-off unit to be needed
- Measure busbar system strictly as per above.The first is to Calculate rated current

$$I_B = \frac{P_{inst} \cdot \alpha \cdot b}{\sqrt{3} \cdot U_e \cdot \cos\phi} \cdot 10^3$$

I_B =额定电流(A)

U_e =额定工作电压(V)

$\cos\phi$ =功率因数

P_{inst} =安装功率

α =分散系数

b =馈电系数

b =1 单面馈电

b =0.5双面馈电和中间馈电单元

I_B = Rated current (A)

U_e = Rated operational voltage (V)

$\cos\phi$ = power factor

P_{inst} = Installed power (KW)

α = Diversity factor

b = Feeder factor

b = 1 with single-ended feed

b = 0.5 with double-ended feed and centre feeder unit

主电路数	number main circuit	α
2 与 3	2 or 3	0.9
4 与 5	4 or 5	0.8
6 至 9	6 to 9	0.7
10 及以上	10 and above	0.6

除非特殊规定，一般情况下α都表示分散因数，这点可以参照IEC/EN 60439-标准

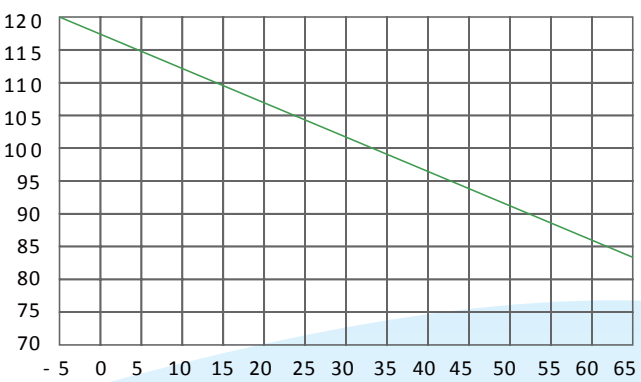
载荷容量与环境温度的关系。

额定电流I_e是基于一定的环境温度而言的(24小时平均温度为35°C，不超过40°C，右面的图表就表明了载荷容量是随着环境温度的变化而变化的。

Generally "α" represents diversity factor as per IEC/EN 60439 unless other specified

The effect between load capacity and ambient temperature

The rated curent "Ie" is based on a certain temperature(the average temperature in 24H is 35℃ and not exceeds 40℃. The right diagram shows load capacity varies from ambient temperature)



其他

设计实例

电压降的计算

如果母线槽系统长距离输配电，就必须考虑到电压降对系统的影响，下面是电压降的具体计算公式：

$\Delta U = a \cdot \sqrt{3} \cdot I_B \cdot I \cdot (R' \cdot \cos\phi + X' \cdot \sin\phi) \cdot 10^{-3}$

ΔU = 电压降 (V)

I_B = 额定电流 (A)

I = 系统总长度 (m)

a = 载荷分配系数

R' = 电阻 (mΩ/m)

X' = 电抗 (mΩ/m)

$\cos\phi$ = 功率因数

For long busbar lines, it may be necessary to calculate the voltage drop.

$\Delta U = a \cdot \sqrt{3} \cdot I_B \cdot I \cdot (R' \cdot \cos\phi + X' \cdot \sin\phi) \cdot 10^{-3}$

ΔU = voltage drop(V)

I_B = rated current(A)

I = total length of the system(m)

a = load distribution factor

R' = resistive load(m /m)

X' = inductive load(m /m)

$\cos\phi$ = power factor

载荷分配系数须根据载荷分配的类型而定，下面的图表反映了在额定电流一定的情况下载荷分配的不同方式。

Factor a used in the equation for calculating the voltage drop is dependent on the load distribution.

载荷分布		系数 A
A → B ↓	从A供电 B点插接配电	1
A → B ↓ C ↓ D ↓ E ↓	A点供电 B、C、D、E插接配电	0.5
B ↓ A ↑ C ↓	从A供电 B、C点插接配电	0.25
B ↓ D ↓ A ↑ E ↓ C ↓	A点供电 B、C、D、E插接配电	0.125

最小单极接地故障电流的安全断开回线阻抗决定了一极短路电流的大小，需要计算：
相线导体和保护导体
相线导体和PEN导体之间的回线阻抗

阻抗值主要取决于：
检测结果
计算结果
模拟系统

The loop impendance determines the size of the 1-pole short-circuitcurrent. The loop impedance is calculated between the phase conductor and protective conductor
Phase conductor and PEN conductor

This value may be determined by
Measuring with measuring instruments
Calculation
Simulating the network in the network model.

技术参数表中已经详细列明了XLV母线槽系统的阻抗值，因此可以根据阻抗值计算母线槽系统的回线阻抗，从而得到系统的总回线阻抗值。

通过整个母线槽系统的回线阻抗，很容易估算系统的1极最小短路电流，或通过计算得到。

The Technical Data includes a listing of the impedance values of the XL-II busbar trunking system so that you can calculate the loop impedances of a busbar system which forms part of the total loop impedance.

With the aid of the loop impedance of the entire busbar trunking system it is easy to calculate the smallest 1-pole short-circuit current which can be expected.

$$I_{k/min} = \frac{c.U_n}{\sqrt{3}.Z_K}$$

C = 电压系数 0.95 (Voltage factor)

U_n = 相间电压 (Voltage between phase)

Z_K = 阻抗 (Impedance)

过载及短路保护

母线槽系统在运行时必须进行过载及短路保护，通常情况下熔断器或断路器都是作为保护装置而在系统中广泛使用。选择时，需考虑短路电流的强度、系统的运行功能等因素。

在实际应用中由于熔断器的灵敏度非常高，而且当电流稍微超过额定电流时，熔断器就开始熔化，但熔化的时间比较长，所以熔断器不是很适合作为过载保护装置在系统中使用

若母线槽系统的过载保护装置使用熔断器，为了保证保护装置对母线槽系统提供合适的保护，熔断器的额定电流必须要比母线槽系统的额定电流低一个等级。

如果使用断路器进行保护，其保护单元可以根据母线槽系统的额定电流进行调整，也就是说母线槽系统可以达到 100% 的载流量。

若决定采用熔断器和断路器作为保护装置对母线槽系统进行短路保护时，所选型号的电流不要超过母线槽系统指定的保护电流，还需考虑短路电流的强度、是否需要带限流保护装置及所选保护装置的短路开关容量是多少等因素。

如下：

$I'' \leq I_{cc} \leq I_{cu}$

I"k = 估计的安装位置的短路电流

I_{cc} = 系统运行时的额定电流

I_{cu} = 断路器的额定短路容量

Overload and short-circuit protection

Busbar trunking systems must be protected against short-circuits and overloads. Fuses and circuit-breakers are used as protective devices.

When selecting these protective devices,the strength of the expected short-circuit currents, selectivity requirements, operating and signalling functions may also be factors in your decision.

Fuses are in general less suitable as overload protection on account of their relatively high response characteristics (1.3 to 1.6 times the ratedcurrent) and their long melting time with small over-currents.

To ensure adequate protection of the busbar trunking system against overloads using a fuse, its rated current must be a step lower than the rated current of the busbar trunking system which is to be protected.This means that the busbar trunking system may not necessarily be used optimally.

If circuit-breakers are used, the thermally delayed overload release must be set to the value of the rated current of the busbar trunking system. This means that the busbar trunking system can be loaded 100%.

When you decide on your short-circuit protection via fuses and circuitbreakers you must not exceed the specified short-circuit ratings of the busbar trunking systems. It will depend on the strength of the shortcircuit current expected whether a current-limiting protective device is required and what short-circuit breaking capacity the protective device should have.

A tabular overview is provided below of the circuit-breakers which can provide short-circuit and overload protection(400V and 50Hz) for the corresponding trunking system.

The following applies:

$K \leq I_{cc} \leq I_{cu}$

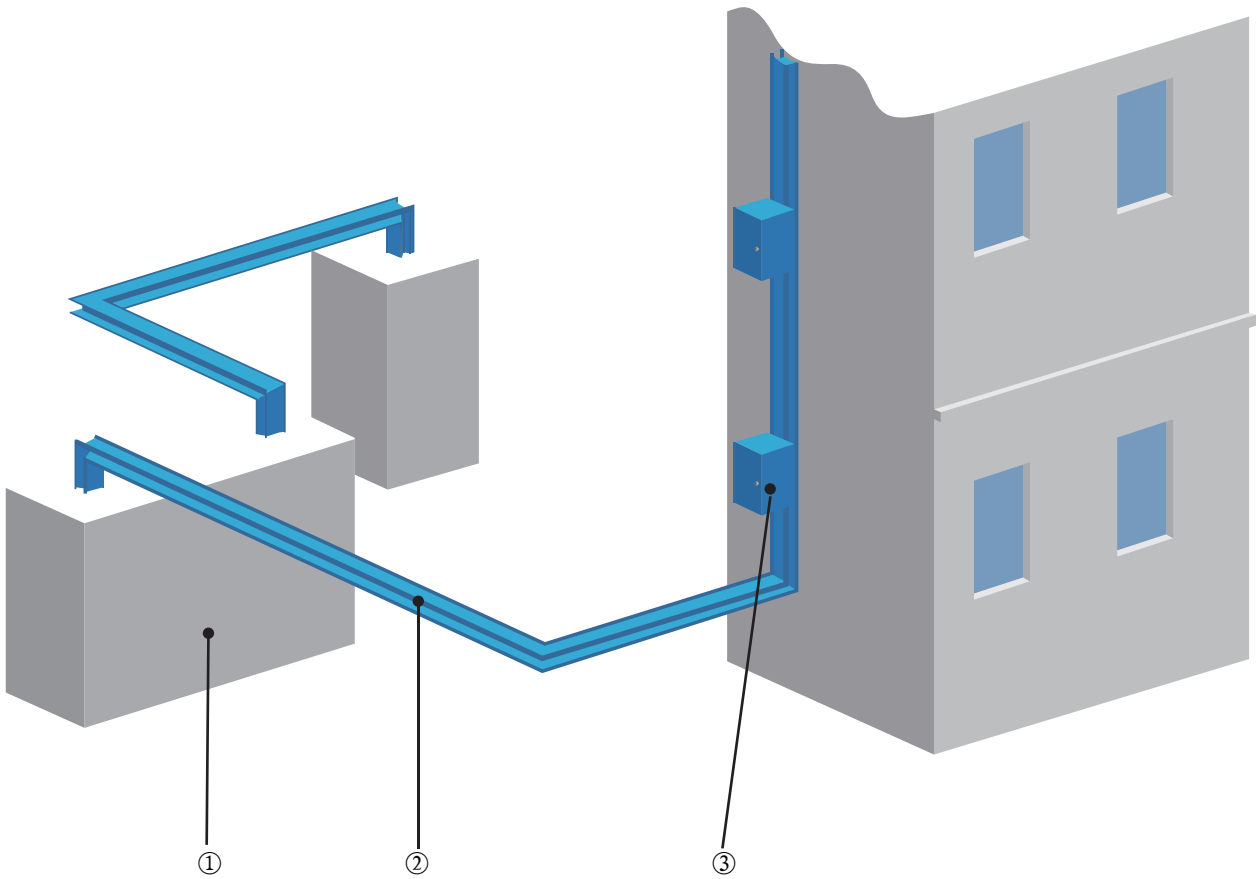
k = the short-circuit current expected at the place of installation

I_{cc} = conditional rated short-circuit current of the busbar run

I_{cu} = rated short-circuit breaking capacity of the circuit breaker

其他

设计实例　EXAMPLE



1	配电柜
2	母线槽系统
3	插接箱

1	Power distribution board
2	Busbar system
3	Tap-off unit

楼层数 number of floor	10 层（每层 8 个房间） 10 floors (with 8 rooms in each)	
每间房额定值	26KW	Power in each floor
额定工作电压 U_e	400V	Rated voltage
功率因数 cosϕ	0.9	Power factor
分散系数 α	0.6	Diversity factor
利用系数 β	0.5	Usage factor
变压器供电	1×1250KVA, U_k=6%	Power from Tr.
防护等级	IP54	Protect degree
系统型式	TN-S	System format

每层楼额定电流的计算

$$I_{BS} = \frac{P_{inst} \cdot \alpha}{\sqrt{3} \cdot U_e \cdot \cos\varphi} \cdot 10^3$$

I_{BS} = 每层楼的额定电流（A）

U_e = 额定工作电压（V）

COS ϕ = 功率因数

P_{inst} = 安装功率（KW）

α =分散系数

$$I_{BS} = \frac{8 \cdot 26 \cdot 0.6}{\sqrt{3} \cdot 400 \cdot 0.9} \cdot 10^3 = 200A$$

直线段额定电流的计算

$I_B = (I_{NS} \cdot \beta)$

$I_B = 10 \cdot 200 \cdot 0.5 = 1000A$

换算系数是总负载数的利用和分散系数，如果不知道具体的换算系数，可以咨询当地的供电公司，供电公司有详细的不同场合下的换算系数值。下面的图表列出了换算系数的平均值：

The conversion factor is the untilization and diversity factor of total load.It can be got from local power companies,which usually has detail value in different conditions.The table shows the average value in several different site.

从上面提到的几点，我们可以很容易就进行XLV母线槽系统的选择，例如：需三相五线制系统，100%中性线，所承载的电流为1250A，而相应的短时耐受电流为50KA。

母线槽系统为：XLVC125254

插接箱单元：箱体规格为2#，母线系统为52、防护等级为IP54的插接箱，采用断路器保护并带有旋转操作手柄，断路器为3极、额定电流为250A。

插接箱单元代码为：XLV—2T5254/250S—3P—R

The collated results lead to the selection of an XLV busbar system, 5-conductor with full N conductor cross-section, a current carrying capacity of 1250A and a short-circuit rating of Icw(t=1s)50kA.

Busbar System: XLVC 125254

tap-off box specification is 2#, busbar system is 51, IP54, breaker protection and Rotary operating handle, breaker is 3 poles, and rated current is 250A.

Tap-off unit code: XLV-2T5254/250S-3P-R

用户类型	β
电炉室或蒸汽炉室	0.1-0.2
商业性的办公场所和建筑的照明	0.7-0.9
电梯和服务设施	0.6-0.8
会议室	0.6-0.8
小型办公场所	0.5-0.7
大型办公场所	0.4-0.8

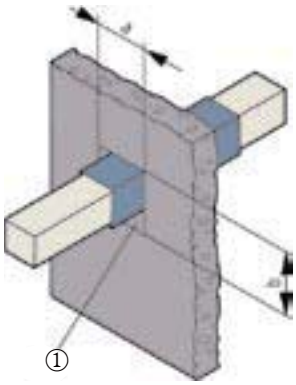
用户类型 User Types	β
Furnace chamber	0.1-0.2
Commercial office and lighting	0.7-0.9
Elevator and service facilities	0.6-0.8
Conferance room	0.6-0.8
Small office	0.5-0.7
Big office	0.4-0.8

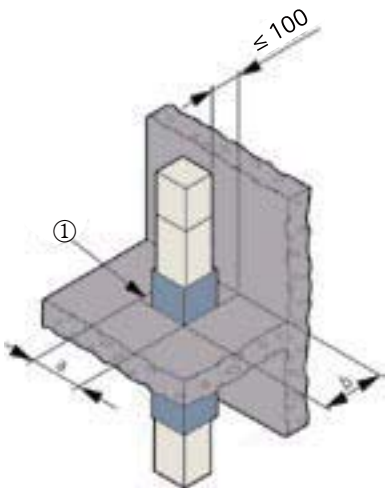
其他

母线槽系统的安装

下列图示表明了母线槽单元穿墙安装时的标准尺寸

The table below shows the standard dimensions while installation through walls.



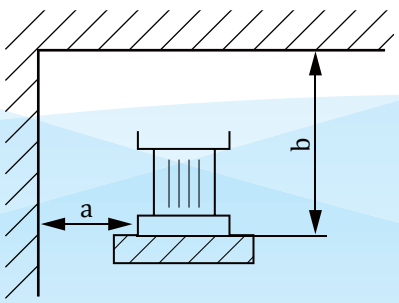


系统	a/mm		b/mm	
	XLVA	XLVC	XLVA	XLVC
XLV 100A	365	/	325	/
XLV 200A	365	/	325	/
XLV 250A	365	/	335	/
XLV 400A	365	365	345	325
XLV 630A	365	365	365	325
XLV 800A	365	365	385	335
XLV 1000A	365	365	400	345
XLV 1250A	365	365	435	365
XLV 1400A	365	365	465	385
XLV 1600A	365	365	485	400
XLV 2000A	365	365	590	435
XLV 2300A	/	365	/	465
XLV 2500A	365	365	660	485
XLV 3200A	365	365	760	590
XLV 4000A	365	365	840	660
XLV 4500A	/	365	/	720
XLV 5000A	/	365	/	760
XLV 6300A	/	365	/	975

水平安装尺寸要求

为了使母线槽系统和插接箱单元的安装更加简单方便，在进行设计时就必须考虑到系统安装的最小尺寸。

XLV 母线槽系统（不带插接箱）
XLV 馈电式母线槽系统的最小尺寸

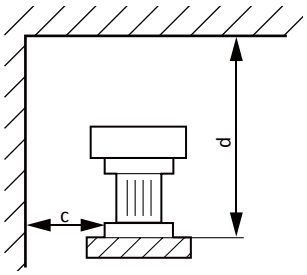


Requirements of dimensions for horizontal installation

In order to make busbar system and tap off units installation easy and convenient,the mini installation dimentsion has to be considered in design

XLV 母线槽系统（带插接箱）
XLV 馈电式母线槽系统的最小尺寸

Min. dimensions for XLV busbar trunking without tap-off units
Min. dimensions for XLV busbar trunking with tap-off units



垂直安装尺寸要求

XLV母线槽系统(不带插接箱）

下面的图示表明了母线槽系统安装时的最小尺寸，并没有反映安装附件的尺寸，在工程项目中安装时要充分考虑到。

XLV 母线槽系统(带插接箱）

下面的图示表明了母线槽系统安装时的最小尺寸，并没有反映安装附件的尺寸，在工程项目中安装时要充分考虑到。

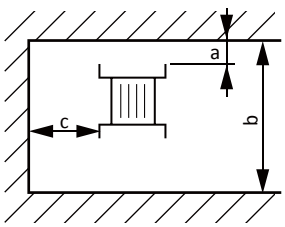
Requirements of dimensions for vertical installation

XLV busbar system without tap-off units

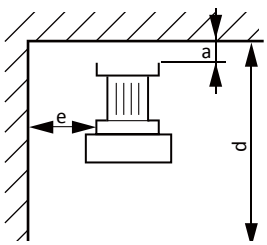
The table below only shows the mini dimension required for busbar system.But in installation,accessories size has to be considered

XLV busbar system with tap-off units

The table below only shows the mini dimension required for busbar system.But in installation,accessories size has to be considered



水平安装 Horizontal installation	XLVC	XLVA		XLVC	XLVA
	a	b	c	d	
100A	100	/	195	350	/	895
200A	100	/	195	350	/	895
250A	100	/	205	350	/	905
400A	100	195	215	350	895	915
630A	100	195	235	350	895	935
800A	100	205	255	350	905	955
1000A	100	215	270	350	915	970
1250A	100	235	305	350	935	1005
1400A	100	255	335	350	955	1035
1600A	100	270	355	350	970	1055
2000A	100	305	460	350	1005	1160
2300A	100	335	/	350	1035	/
2500A	100	355	530	350	1055	1230
3200A	100	460	630	350	1160	1330
4000A	100	530	710	350	1230	1410
4500A	100	590	/	350	1290	/
5000A	100	630	/	350	1330	/
6300A	100	845	/	350	1545	/



垂直安装 Vertical installation	XLVC	XLVA		XLVC	XLVA
	a	b	c	d	
100A	100	/	295	50	/	995
200A	100	/	295	50	/	995
250A	100	/	305	50	/	1005
400A	100	295	315	50	995	1015
630A	100	295	335	50	995	1035
800A	100	305	355	50	1005	1055
1000A	100	315	370	50	1015	1070
1250A	100	335	405	50	1035	1105
1400A	100	355	435	50	1055	1135
1600A	100	370	455	50	1070	1155
2000A	100	405	560	50	1105	1260
2300A	100	435	/	50	1135	/
2500A	100	455	630	50	1155	1330
3200A	100	560	730	50	1260	1430
4000A	100	630	810	50	1330	1510
4500A	100	690	/	50	1390	/
5000A	100	730	/	50	1430	/
6300A	100	845	/	50	1645	/

其他

母线槽系统的安装

安装方式

母线槽系统垂直安装时，对于插接箱的安装方式有着明确的规定，需采用底出线的方式，当L1导体在左手侧的时候，插接箱也要采用底出线的安装方式。

垂直安装

当XLV母线槽垂直安装时需要特殊的安装附件(弹簧支架)，而且如果是单套系统，每层楼则至少需加装一套弹簧支架装置，如果是双套系统，则至少需要加装两套弹簧支架装置，弹簧支架的作用主要是为了承载母线槽自身的重量及运行时产生的线性膨胀有两种不同的规格型号可供选择，在选择时要考虑到插接箱所带来的额外重量，同时对于输电母线和配电母线要有区别，针对不同的母线槽型号进行不同的选择。

Mounting position

The mode of installation is prescribed for tap-off units with vertical busbar runs. The tap-off cable must be connected from below. This will be the case when the L1 conductor is on the left-hand side(as seen from the front).

Vertical fixing

Speccial spring brackets are required for installing vertical XLV busbar runs. Per storey at least one bracket should be used for single systems and two bracket for double systems. The spring bracket is designed to carry and secure the inherent weight and the linear extension of the busbar trunking systems load. Two versions with different dimensions and spring force are available for this. In order to allow for the additional weight of tap-off units, type selection should distinguish between power transmission and power distribution.

	电流 A	数量
输电 Transmission	100 ~ 2500	1
	3250 ~ 6300	2
配电 Distribution	100 ~ 2500	1
	3250 ~ 6300	2

注：每层楼至少一套插接箱单元

Note:minimum one tap off unit in every floor

① 终端 End cap

② 插接箱单元 Tap-off unit

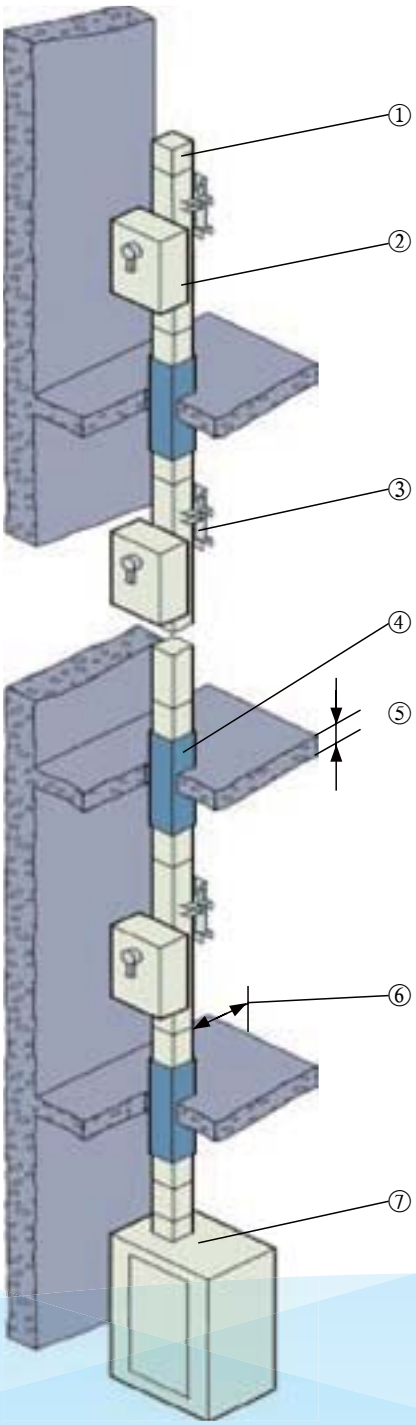
③ 弹簧支架 Spring hanger

④ 防火栅 floor flange

⑤ 天花板厚度 Ceiling thickness

⑥ 安装支架距离墙面需10cm Minimum distance is 10cm

⑦ 配电柜 Distribution switchgear panel

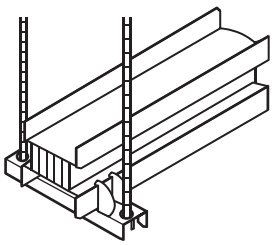


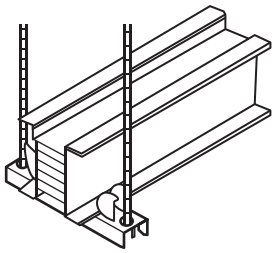
垂直安装的母线槽走向图

Vertical installation of the bus duct to figure

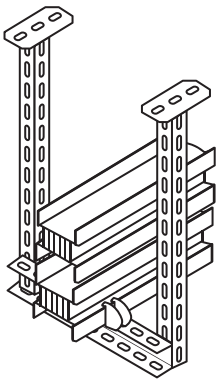
吊顶吊装

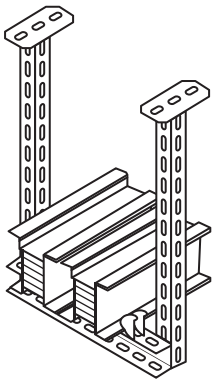
单排
Single bar





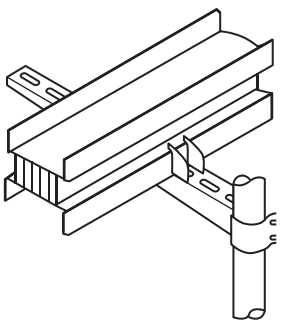
双排
Double bar

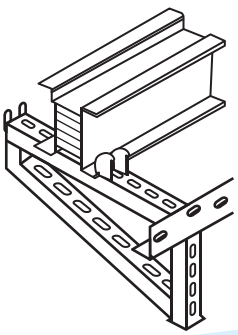




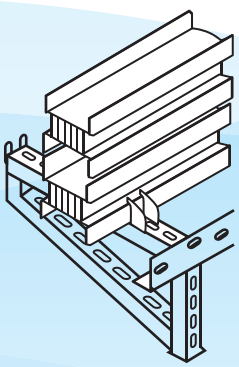
支架支撑

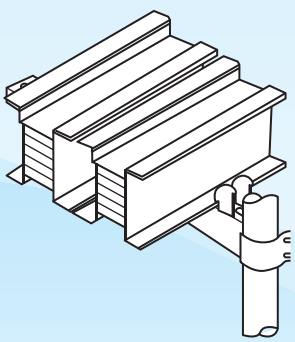
单排
Single bar





双排
Double bar





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