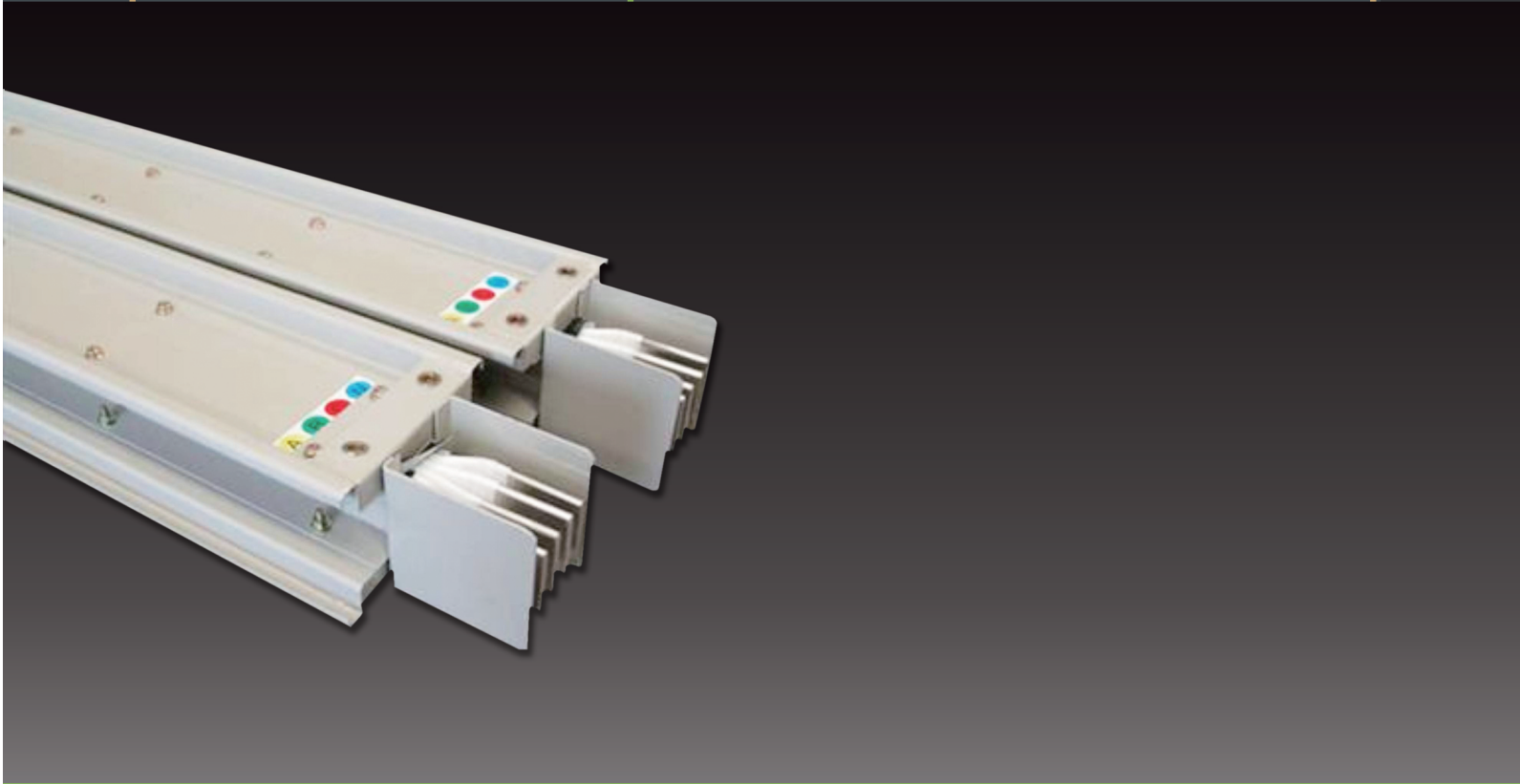


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# 封闭母线系列

## Enclosed Busways

### Enclosed Busways

Intelligent Electric Experts  
Service China Electric Power

智能电气专家  
服务中国电力

**ALSBURG**

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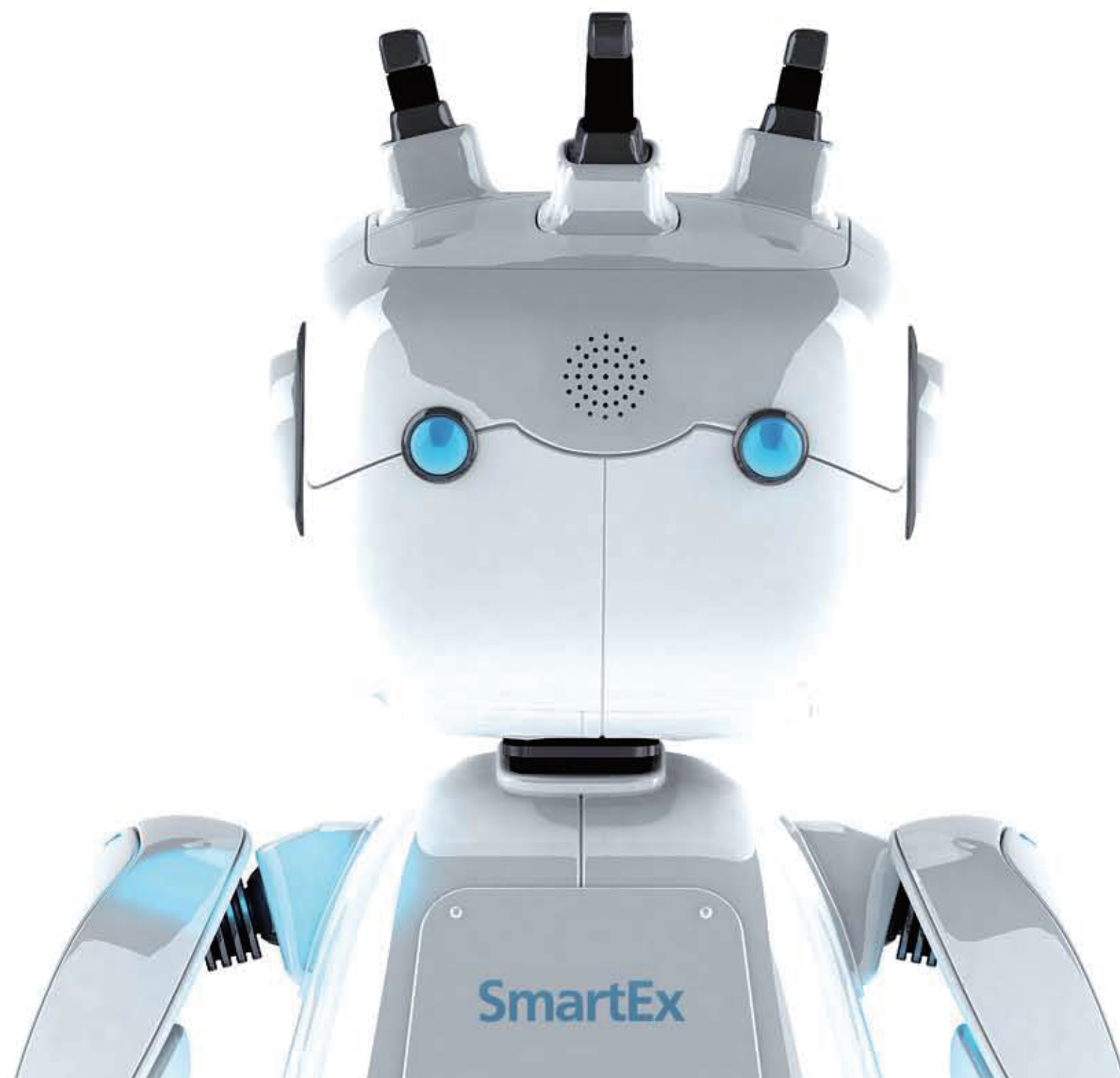
**ALSBURG**

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# 智能电气专家 服务中国电力

Intelligent Electric Experts  
Service China Electric Power

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SmartEx

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源自德国 电气精品

Quality Electrical from Germany

目录  
Contents

封闭母线综述	
General of Enclosed Busway .....	01
ASMMC系列密集绝缘母线槽	
ASMMC series of Intensive Insulation Busway .....	13
ASFMC全封闭树脂浇注防水母线槽	
ASFMC Fully enclosed casting resin waterproof bus duct .....	17
订货须知	
Notices in Ordering .....	26



# 系统概述

system overhead



ASMMC系列低阻抗密集母线槽内部采用典型的三明治结构，是一种灵活可靠的配电系统，设计合理、性能优越，具有稳定可靠、配电效能高、散热好、电压降低、耐机械冲击和安装简便等特点；适用于交流三相三线、三相四线、三相五线制，频率50~60Hz，额定工作电压至1000v，额定绝缘电压至1500v，额定工作电流100~6300A的供配电系统。

ASMMC系列低阻抗密集母线槽系统可以使用在大型商业、楼盘项目中，作为大电流的高效输配电系统。为了满足用户需求，ASMMC母线槽系统在设计上降低了母线槽自身的重量，充分考虑了竖井安装时对母线槽的高稳定性的要求，提高了系统的可靠性和适用性。



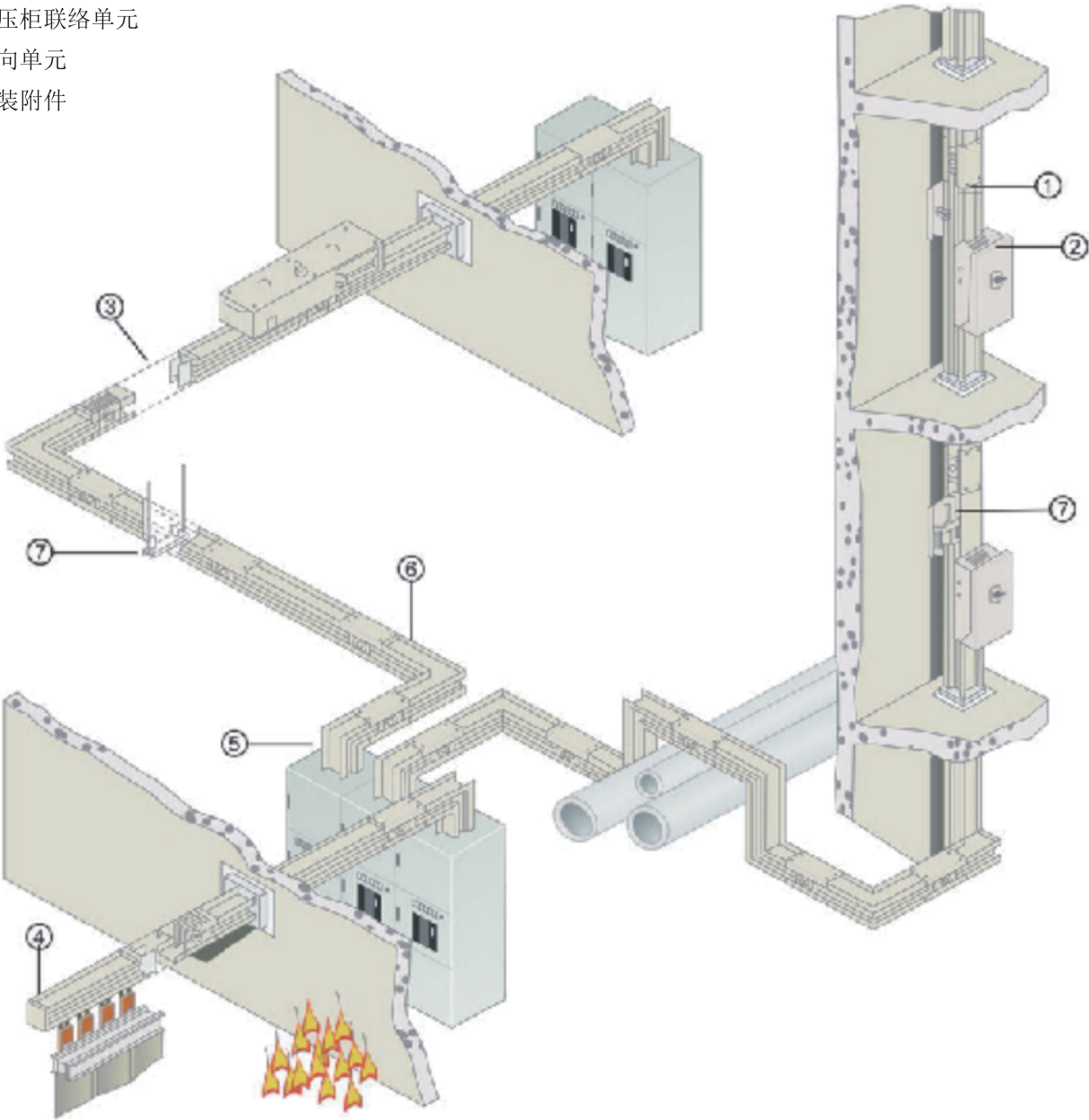
针对工矿企业对母线槽短时耐受电流、低阻抗等方面有很高的要求，以及可能存在的各类电磁干扰；ASMMC母线槽系统内可选的中性线（100%或200%），可满足各种电力系统中对消除谐波的要求。全弱磁材料（铝和铝镁合金）外壳，不会因大电流涡流磁滞损耗对母线槽系统造成影响。

ASMMC系列母线槽作为一种供工业厂房、医院、商场、高层建筑或高科技环境用的低成本、高效益的输配电方案，将为你带来高性能的完美组合。



## 系统描述

- ①直线段单元
- ②插接箱单元
- ③连接器单元
- ④变压器连接AS单元
- ⑤低压柜联络单元
- ⑥换向单元
- ⑦安装附件



ASMMC密集型母线槽是本公司综合中国市场的特点而研制的更贴近用户需求的新型密集型母线系统。该系统在原有基础上进行升级，自动化生产程度更高，能满足不同用户群的配电需求。



封闭母线综述

General of Enclosed Busway

封闭母线简介  
Brief Introduction to Enclosed Busway

- 外壳 Shell
- 本公司生产的各种封闭母线其外壳具备足够的强度以支撑和保护母线槽系统，避免机械受损。
- 外壳(除冲散热孔外)能提供**IP40-IP65**以上防护等级。
- 外壳材料一般采用钢板制成，其防腐处理可采用喷漆、喷塑、电镀、热浸锌和热喷锌等方法。对于**4000A**以上母线，因为外壳涡流发热的原因，可选用铝板、铝型材或不锈钢板制成。当用户有防腐等特殊要求时，**4000A**以下的母线槽也可选用铝板、铝型材或不锈钢板等防腐材料制成。
- 通过外壳本身保证良好的接地连续性。
- The shells of various enclosed busway produced by this Company have enough strength to support and protect the bus duct system and avoid the mechanical damage.
- The protection degree of shell (except radiating hole) can come up to IP40~IP65.
- The shell is made of steel plate in general and the corrosion-resistant treatment can include paint-spraying, plastics-spraying, hot-galvanizing by dipping, hot zinc-spraying and other methods. To above 4000A bus, the shell can be made of aluminium plate or stainless steel plate because of the eddy heat. Sometimes according to the special requirements from the customers, the bus duct below 4000A can also be made of aluminium plate ,aluminium section or stainless steel plate and other anticorrosive materials.
- The shell itself will ensure the fine continuity of ground connection.

- 导体 Conductor
- 载流部件是铜、铝或其合金材料，且均符合各自的标准要求。
- 母排的所有接点和连接处均镀锡。
- The current-carrying parts are made of copper, aluminium or their alloys and above materials all conform to their own standards.
- All the contacts and connections in the busway have been plated with tin.
- 绝缘材料 Insulating Material
- 封闭母线所选用的绝缘材料均具有能承受温升试验温度的长期耐热能力，并具备足够的绝缘能力、机械强度和抗老化能力。

The insulating materials used for enclosed buses can all bear the heat for a long time which comes up to the standard of temperature rise test, and also have enough insulating capacity, mechanical strength and anti-ageing capability.

封闭母线主要绝缘材料的技术参数如下：  
Technical Parameters for Main Insulating Material of Enclosed Buses are as Follows:

F4定向薄膜 F4 Directional Film

执行标准 Executive Standard	GB13542-92 《电气用塑料薄膜一般要求》 GB13542-92 "General Requirement for Plastic Film for Electric Use"		
主要性能参数 Parameters for Main Performance	延伸率	Percentage Elongation	≥30%
	抗拉强度	Tensile Strength	≥29.4MPa
	介电强度	Dielectric Strength	≥60kV/mm
	体积电阻率	Mass Resistivity	10 <sup>14</sup> ~10 <sup>15</sup> Ω·m
	工作温度	Working Temp.	-60~260℃

PVC热缩套管 PVC Hot Contract Cannula

主要性能参数 Parameters for Main Performance	抗拉强度	Tensile Strength	≥400MPa
	介电强度	Dielectric Strength	≥216kV/mm
	体积电阻率	Mass Resistivity	>10 <sup>13</sup> Ω·m
	工作温度	Working Temp.	125℃

聚酯薄膜 Polyester Film

执行标准 Executive Standard	GB13950-92 《聚脂薄膜》 GB13950-92 "Polyester Film"		
主要性能参数 Parameters for Main Performance	收缩率	Shrinkage Ratio	≥3%
	延伸率	Percentage Elongation	40~130%
	抗拉强度	Tensile Strength	147~206MPa
	介电强度	Dielectric Strength	≥130kV/mm
	体积电阻率	Mass Resistivity	10 <sup>14</sup> ~10 <sup>15</sup> Ω·m
	工作温度	Working Temp.	-60~130℃

聚酰亚胺薄膜 Polyimide Film

执行标准 Executive Standard	JB/T2726-1996 《聚酰亚胺薄膜》 JB/T2726-1996 "Polyimide Film"		
主要性能参数 Parameters for Main Performance	延伸率	Percentage Elongation	88%
	抗拉强度	Tensile Strength	188MPa
	介电强度	Dielectric Strength	≥275kV/mm
	体积电阻率	Mass Resistivity	10 <sup>14</sup> ~10 <sup>15</sup> Ω·m
	工作温度	Working Temp.	-60~250℃

LRS热缩套管 LRS Hot Contract Cannula

序号 No.	项 目 Item		普通型 Ordinary Type	阻燃型 Flame Retardant Type
1	连续工作温度范围（℃） Range of Continual Working Temp.（℃）		-40~90	-40~105
2	热缩性能 Hot Contrat Feature	热收缩温度（℃） Hot Shrinkage Temp.	120~140	
		轴向收缩率（%） Axial Shrinkage Ratio（%）	≤15	
3	电气性能 Electrical Feature	20℃体积电阻率（Ω·m） Mass Resistivity at 20℃（Ω·m）	> 10 <sup>12</sup>	
		介电强度（kV/mm） Dielectric Strength（kV/mm）	> 20	
4	机械性能 Mechanical Feature	抗拉强度（MPa） Tensile Strength（MPa）	> 13	> 8
		断裂伸长率（%） Extension Ratio at Break（%）	> 400	> 300
5	热老化性能 Hot Ageing Feature	拉伸强度变化率（%） Tensile strength Variable Ratio（%）	125℃/168h	136℃/168h
		断裂收缩率变化率（%） Shrinkage Variable Ratio at Break（%）	< 20	< 25

■ 接头 Connector

母线槽接头能确保有足够的接触面和绝缘能力。

所有接头螺栓设置均有利于进行安全检查和检修，其紧固力矩应符合下表要求：

The connectors of bus duct can ensure the enough touch area and insulating capacity.

All bolts arranged for connectors will be good for safe check and maintenance. The fastening moment should fit the requirements in the following table.

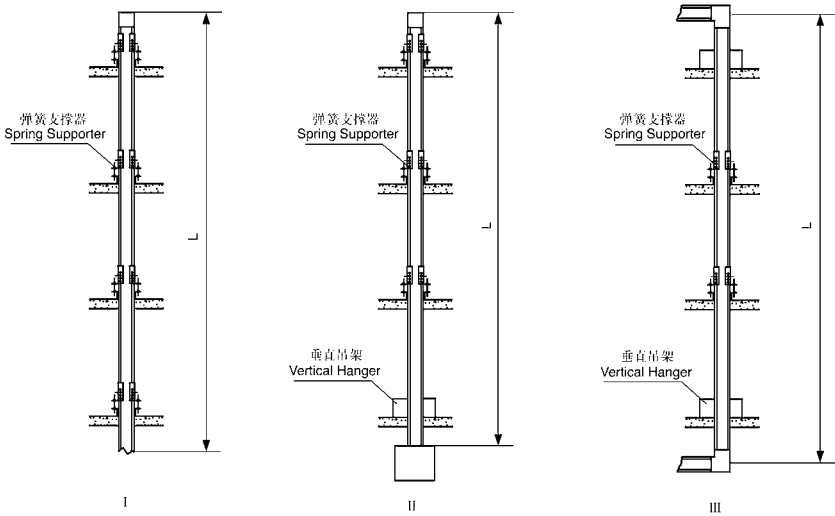
螺栓直径 Diameter of Bolt	紧固力矩 Fastening Moment (N·m)
M10	17.7 - 22.6
M12	31.4 - 39.2
M14	51.0 - 60.8
M16	78.5 - 98.1

■ 膨胀节(伸缩接头或温度补偿器) Expansion Joint (Prolonging-Contracting Joint or Temp. Compensator)

伸缩接头在需要的地方设置，其设置数量主要视母线槽系统长度、弯头情况而定。一般说来，对于水平安装的母线槽，在无弯头的情况下，每80米设置一节膨胀节；对于垂直安装的母线槽，膨胀节按下表设置：

The prolonging-contracting joint will be arranged at the places in demand. The quantity will be decided according to the length of Busway system and the elbow on the bus duct system. In general, to the horizontal installation, without elbows, one expansion joint will be settled every 80m; and to the vertical one, please see the following table:

支持情况 Supporting Condition	图例 Legend	不需设置膨胀节的系统长度 (m) The length in which expansion joint is in no need (m)
两端均不固定 Neither of two ends is fixed	I	≤120
一端固定，一端不固定 One end fixed, the other not	II	≤90
两端均固定 Both of the ends fixed	III	≤30



注：对于膨胀节的设置问题，水平安装与垂直安装不同主要是因为地面对负载的抗力是有限的。  
Notice: To the problem of setting expansion joints, why there's difference between horizontal and vertical installation is that the resisting power against the load from the ground is limited.

封闭母线正常工作条件

Normal Working Conditions for Enclosed Buses

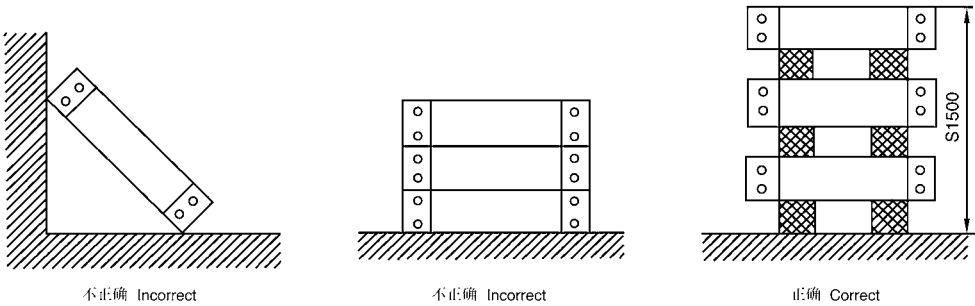
- 海拔高度不超过2000米；
- 周围空气温度不超过+40℃,并且在24小时内平均温度不超过+35℃,周围空气温度的下限为-5℃；
- 空气相对湿度在最高温度+40℃时不超过50%，在温度较低时允许有较高的相对湿度，例如+20℃时为90%；
- 无显著摇动或冲击振动的场所；
- 在无爆炸危险的介质中，且介质中无足以腐蚀金属和破坏绝缘的气体 and 导电尘埃；
- 母线槽周围污染等级为3级；
- 安装类别为Ⅱ、Ⅲ、Ⅳ级；
- 在没有雨雪侵袭的地方。
- Elevation≤2000 metres;
- Air temp. around buses shall be between +40℃ and -5℃and the average temp. within 24 hours shall be below +35℃;
- The relative humidity shall be below 50% when the max. temp. is at +40℃. If the temp. is lower, the humidity can be a little higher. For example, the humidity can be 90% when at 20℃;
- In the places without obvious shaking or impact;
- In the media which can't explode and have no gases or conductive dusts to corrode metal or damage the insulation;
- The pollution degree around buses is Grade 3;
- Installation grade can be divided into Grades Ⅱ, Ⅲ, Ⅳ;
- Without rain or snow's penetration.

现场安装工作注意事项

Important Notice for Installation in Site

■ 储存 Storage

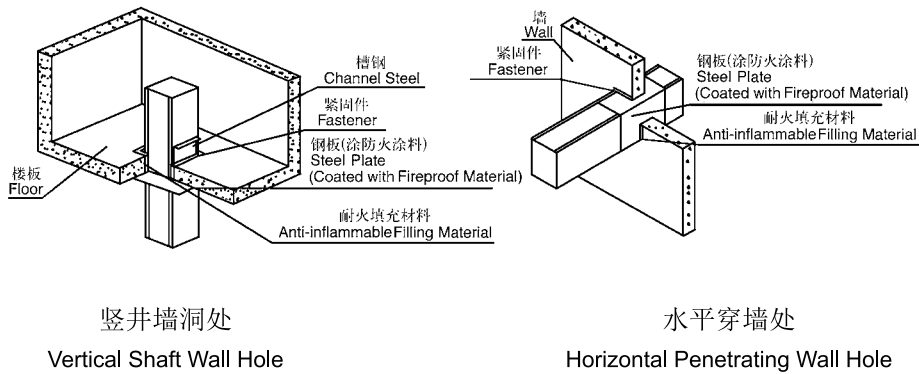
- 母线槽送至现场后，要根据发货清单检查主要组件与零件的形式及数量，并查看运输中是否有所损坏。
- 母线槽应放置在干燥的地方，而不要受到湿度、水份侵袭；且不可受到泥土沾染。
- 母线槽一般用塑料薄膜包装，安装前方可打开，以保证母线清洁。
- 不可将母线槽直接放置在地面上，一定要在底下加一层木板，且应按如图所示稳定地堆放在一起，堆放高度不超过1.5m。
- After the bus ducts are transported to the site, please check whether the quantity of components and parts is complete and the quality of them is perfect, according to the delivery list.
- The bus ducts should be stored in a dry place, without moisture, mud or dust.
- The bus ducts should be enclosed with plastic film. Only before installation, they can be opened to guarantee them from pollution.
- Don't directly put the bus ducts on the surface of ground, must add a layer of timber to the bottom, then pile them up steadily as following drawing shows, and the total height is less than 1.5m.





■ 准备 Preparation

- 对照图纸彻底检查母线槽安装路线，查看线路中是否有障碍（如风管、水管等）并事先检查已安装的设备是否按规定位置就绪，如有较大变动，需及时调整(允许位置误差±10mm)。
- 要检查由储存地点运至安装地点的途径。
- 检查母线槽周围环境是否受到损害，或是否因有水、湿度、高温、有毒气体、震动或尘土所引起的部分损害。
- 事先调整装配的现场情况以决定最有利的装配顺序，工程通常应从已定置的设备或某弯通功能单元开始。
- 首先安装支吊架。
- Check thoroughly the installing line for the bus duct according to the drawing, check again whether there's an obstacle (such as wind pipe or water pipe) on the line or not, then check whether the installed equipment is in order at the prearranged location or not. If there's a larger change, need adjust it immediately (position error allowance ±10mm).
- Check the route from storage place to installation site.
- Check whether the environment is ravaged or not and whether there's partial damage caused by water, moisture, high temp., poisonous gas, vibration and dust or not.
- Before installation, investigate the situation on the site to decide the most favourable order for assemblage, Normally, the engineering should begin with the settled equipment or some elbow unit.
- Install the support frame for hanging first.



■ 安装 Installation

- 使用足够坚固的材料，确保安装中运输及吊高过程的安全。
- 当使用绳索吊装母线槽时，在受力处应垫入厚布或波纹纸以保护母线槽，免受损坏。
- 当吊装2500A以上母线槽时，应用坚固木板夹住母线槽再用绳索捆绑，以防止母线槽外壳变形。
- 在连接母线槽前要检查接触表面或绝缘材料是否受到损坏，同时要检查是否沾到泥土、灰尘或其它异物，若有则一定要清洁干净。
- 在连接完整个母线系统后，若测得绝缘电阻不正常，再检查原因就比较困难，因此每连接一节母线槽都必须检测绝缘电阻。
- 依据走向布置图安装时确保安装线路各换向尺寸、定位尺寸、预留尺寸、接口段尺寸满足图纸要求。
- 当工程暂停时，必须将连接部分的端部用塑料薄膜重新包扎封闭，以使接头部分不受污染。
- 防火在高层建筑中显得非常重要，母线在高层建筑和水平走向穿墙处应使用防火栅作防火处理。在刚发生火灾时，它能阻止烟、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漏。
- Use the enough solid material to ensure the safety of transporting and lifting parts for installation.
- When the rope is used for hanging bus duct, the thick cloth or corrugated paper should be padded on the place which is stressed to protect the bus duct from damage.

- When over 2500A bus duct is lifted, it should be packed with solid timber, then again tied with the rope to avoid the deformation of the shell of bus duct.
- Before connecting with bust ducts, should check whether their touch surface or insulating material is damaged or not and check whether they touch mud, dust or other foreign matters or not, If they touch them, must clean them out.
- After finishing connecting the entire bus duct systems, it's more difficult to check the cause again if the abnormal phenomenon in insulating resistance is tested. Therefore, must test the insulating resistance carefully at every connection of them.
- When installing according to the running layout drawing, ensure that every directional size, fixing size, future hole size and interface segment size on the installing line meets the requirements of the drawing.
- When the engineering stops for the time being, must again enclose the connecting parts with plastic film to protect them from pollution.
- It's very important to take fireproof measures in the highrise buildings. When the bus duct penetrates through walls, or floors in horizontal or vertical direction, the fireproof grids must be used as fire-resistant treatment. As soon as a fire takes place, they can stop smoke, fire and heat from spreading to adjacent rooms or floors through bus duct and they can even prevent the penetration of water at extinguishing a fire.

母线槽的主要规格

Main Specifications of Bus Duct

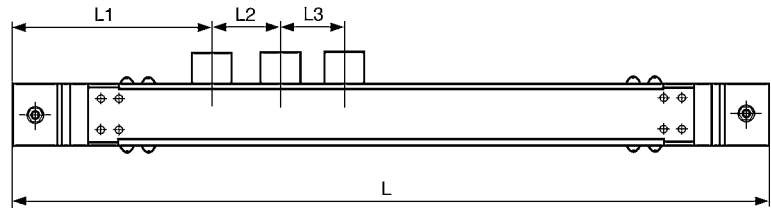
■ 直线段 Straightway

直线段母线按结构分为：无分线口的直线段和带分线口的直线段。

- 无分线口的直线段标准长度为500-6000mm。
- 带分线口的直线段见图：

By structure, the straightway bus can be divided into: straightway without branch ports and straightway with branch ports.

- The standard length of the straightway without branch ports is 500~6000mm.
- To the straightway with branch ports please see the drawing.



L1最小尺寸为500mm, L2、L3最小尺寸为800mm  
Min. size for L1 is 500mm and for L2, L3 is 800mm

■ 始端母线与始端进线箱 Top Bus & Top Leading-in Box

- 始端母线与始端进线箱可与任何型号的开关柜、变压器进行配套，用户根据需要自行确定始端母线的始端头的相间距离，一般按80mm设置，始端母线长度的最小尺寸500mm。
- 始端进线箱用于保护始端母线进线接口，使进线部分裸露母排全部封闭。
- The top bus and top leading-in box can be matched with any type of switch cabinets and transformers. The interphase distance of the top bus head can be decided by the customers themselves, according to their demands. The interphase distance is 80mm in general, and the min. size of the top bus length is 500mm.
- The top leading-in box is used to protect the leading-in interface of top bus and enclose the bare busbar in leading-in part entirely.

■ 变容节 Variable Joint

变容节为母线槽变换容量时的过渡节，电流等级小于1000A的母线，变容节最小尺寸为1000mm；电流等级大于1000A的母线，变容节最小尺寸为1500mm。

It's a transition joint used to change the capacity for bus duct. To less than 1000A bus, the min., size of the joint is 1000mm and more than 1000A, the min. size is 1500mm.

■ 膨胀节 Expansion Joint

因母线长期工作引起热膨胀，应在整列母线中设置膨胀节，其最小尺寸1500mm。

The bus can cause the heat expansion due to the fact that it runs for a long time. Therefore, one expansion joint should be settled at the symmetry centre of the whole bus row. And the min. size is 1500mm.

■ 变相节 Phase-changing Joint

变相节为母线变换相序时的过渡节，其最小尺寸为1500mm。

It's a transition joint used to change the phase sequence of bus. And the min. size is 1500mm.

■ 终端盖 End Cover

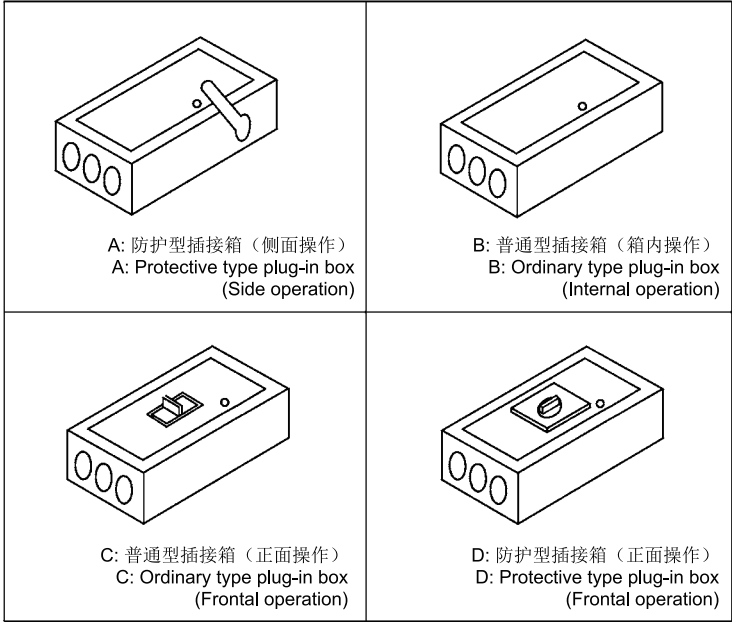
终端盖安装于母线(或分支母线)的终端处，使外界不能接触带电部位，从而使整个母线系统全封闭化。

It's installed at the terminal place of bus (or branch bus) to make the outside not contact with the charged part. Thus the whole bus system will realize an entire seal.

■ 插接箱 Plug-in Box

- 按额定电流分为：100A、250A、400A及630A共四种。
- 按结构形式分为：开关箱(内可装DZ20、TM30、CM1、TO、TG、C45N、H、ABB、NS、DH、GM等系列空气开关)；熔断器箱(内可装NT、RT等系列的熔断器)和无开关熔断器箱三种。对于装开关类的插接箱按操作方式可分为：箱内操作、箱外正面操作和侧面操作。(请顾客在订货时予以注明)。
- 插接箱在母线系统带电时可以插拔，但不可带负荷插拔。插接箱规格见图。

- By the rated current, it can be divided into: 100A, 250A, 400A and 630A.
- By structure, it can be divided into: switch box (in it there can be DZ20, TM30, CM1, TO, TG, C45N, H, ABB, NS, DH,GM and other series of air switches); fuse box (in it there can be NT, RT and other series of fuses) and no switch fuse box. By the operating method, the plug-in box with witches can be divided into: internal operation; outside frontal and side operations (please note them when ordering).
- The plug-in box can be plugged or pulled when the bus system is charged; but can't be operated with load. For the specifications of the plug-in box, please see the drawing.



安装方式与建筑施工

Installation and Construction

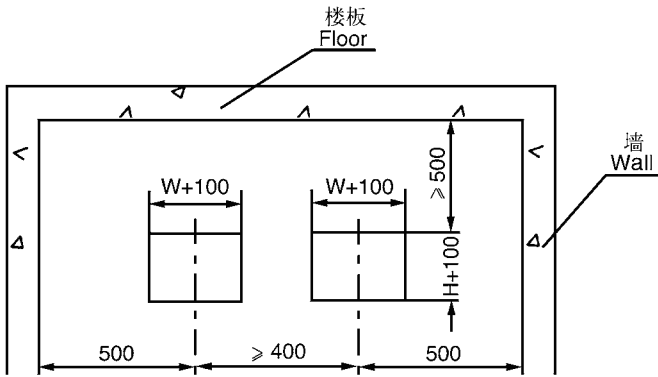
■ 水平安装 Horizontal Installation

● 水平穿墙安装

水平穿墙安装预留孔尺寸见图：

● Horizontal Through-wall Installation

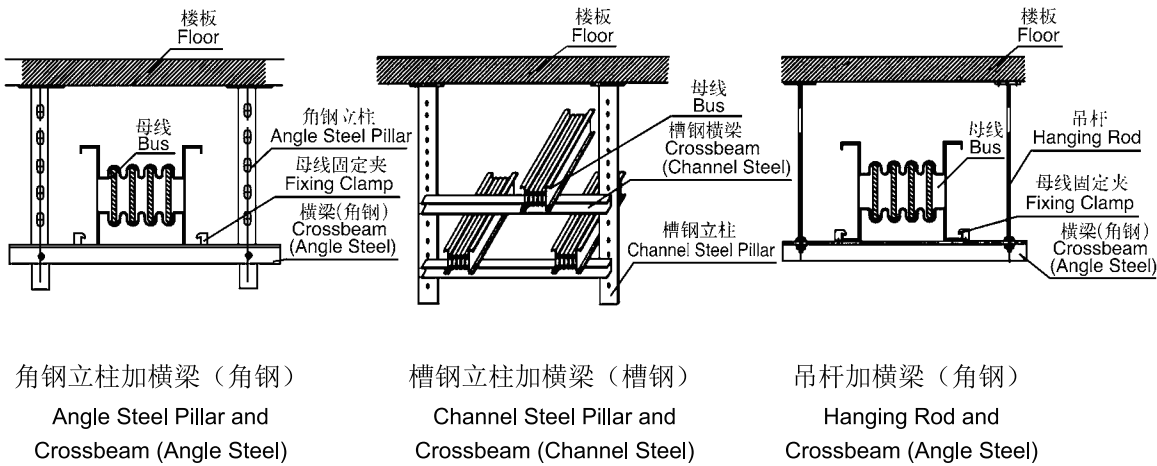
For the size of future hole for horizontal through-wall installation, please see the following drawing.



● 水平吊装安装 Horizontal Suspending Installation

母线吊顶安装时，应预先在楼板上打孔嵌入钢制膨胀螺栓(也可以现场打孔，以便灵活安装)或预埋钢制件现场焊接吊装支架，随产品出厂的吊装支架有角钢立柱(槽钢立柱、吊杆)加横梁，见图示，相邻吊架之间的距离设置一般不应超过2m，如有特殊要求请订货时说明。

When the bus is suspended under the ceiling, should, in advance, drill holes to the ceiling then insert the steel expansion bolts (can also drill holes on site for flexible installation) or preembd steel parts, then weld the support frames for suspending installation on site. The support frames for suspending installation together with the main products sold by the factory include angle steel pillar (channel steel pillar, hanging rod) and cross beam and they are shown as the following drawing. The distance between the adjacent frames is generally not more than 2m, If special demands are in need, please note them when ordering.



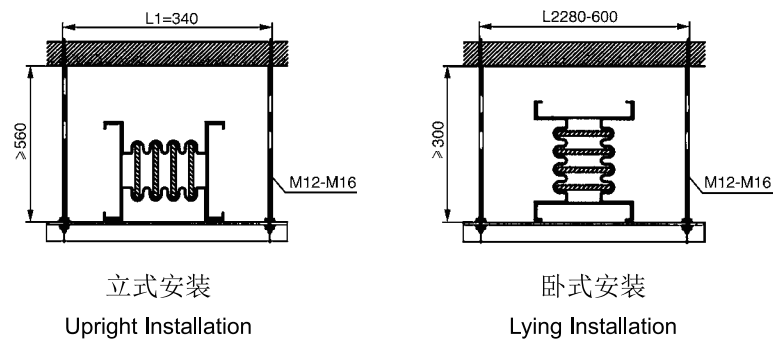


封闭母线综述

General of Enclosed Busway

母线水平吊装时有两种不同形式见图。

The bus has two different methods for horizontal suspending installation. Please see the following drawing.



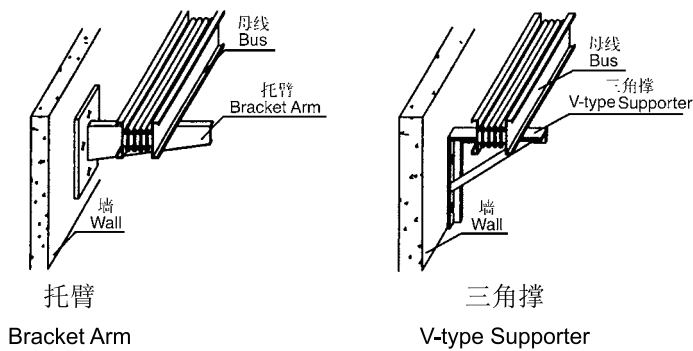
● 水平沿墙安装 Horizontal Installation against Wall

水平沿墙安装时，应预先在墙壁上或支柱打孔嵌入钢制膨胀螺栓或以其它方式固定安装支架，并注意安装孔的直线性(即整列支架安装在一水平面内)，安装形式参照图示。

水平沿墙侧装也有立式和卧式两种。

When the bus is horizontally installed against wall, should, in advance, drill holes on the wall or column, then insert the steel expansive bolts, or use other methods to fix the supporting frame for installation. And pay attention to the identity of the holes (ie the whole row of frames should be on the same level). The installing method is shown as the following drawing.

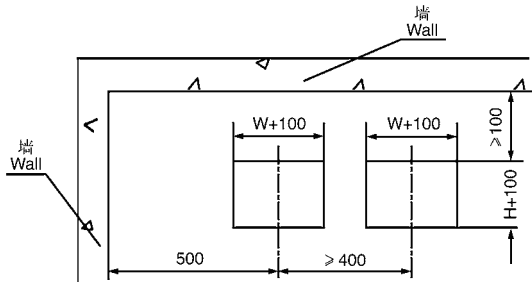
The horizontal installation against wall for bus also has two methods: upright and lying installations.



■ 垂直安装 Vertical Installation

垂直穿越楼层安装的母线预留孔尺寸见图，如为两列或两列以上母线穿过时，则应保证每两列母线的间距不小于400mm。见图：

To the size of future holes for the bus in vertical installation through floor, please see the drawing. If two or more than two rows of buses are through the floor, the interval between the rows should not be less than 400mm. See Drawing.

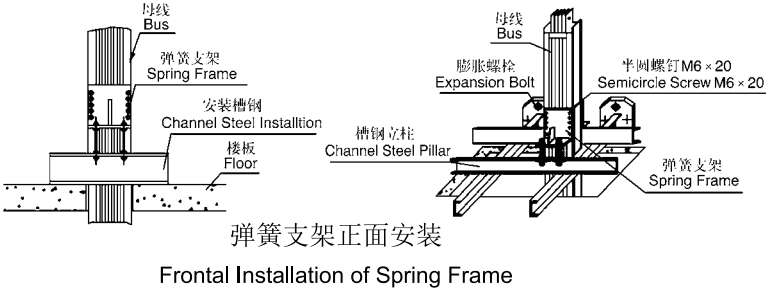


垂直固定使用弹簧支架，应把弹簧的弹力调整为(G+F)公斤(其中G为每层楼之间母线的重量，F为5~10公斤)。其安装主要有以下几种方式：

The spring frame is used for the vertical fixing and the elasticity should be adjusted to (G+F) kg (in which G is the weight of bus on each floor and F is 5~10kg). There are two installing methods:

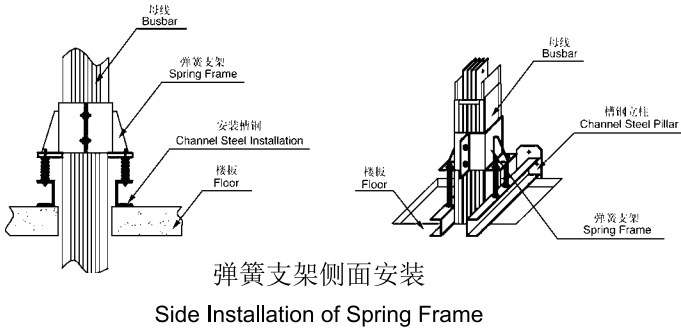
a. 弹簧支架正面安装的两两种型式见图：

There are two types for frontal installation of spring frame. Please see Drawing:



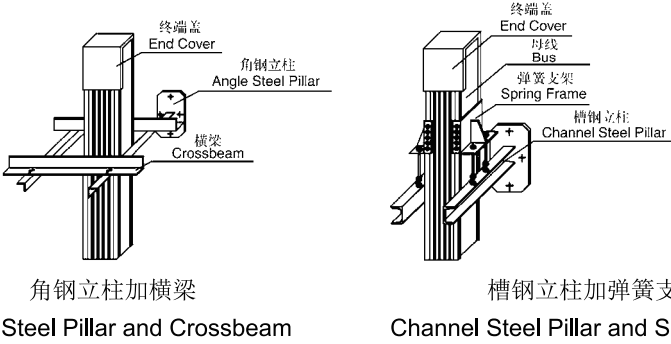
b. 弹簧支架侧面安装的两两种型式见图：

There are two types for side installation of spring frame. Please see Drawing:



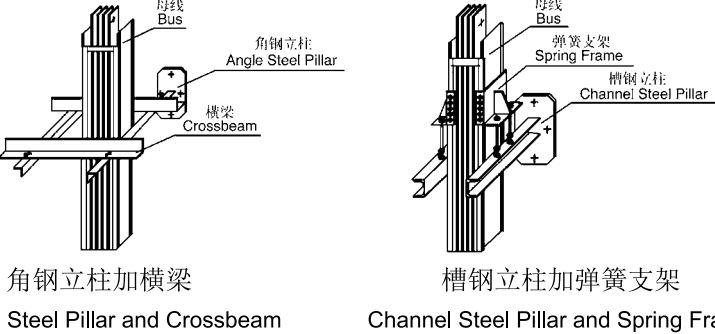
c. 垂直（竖井）安装母线终端的固定可参照图示的方法进行。

The fixing for the bus end in vertical (shaft) installation can be operated according to Drawing.

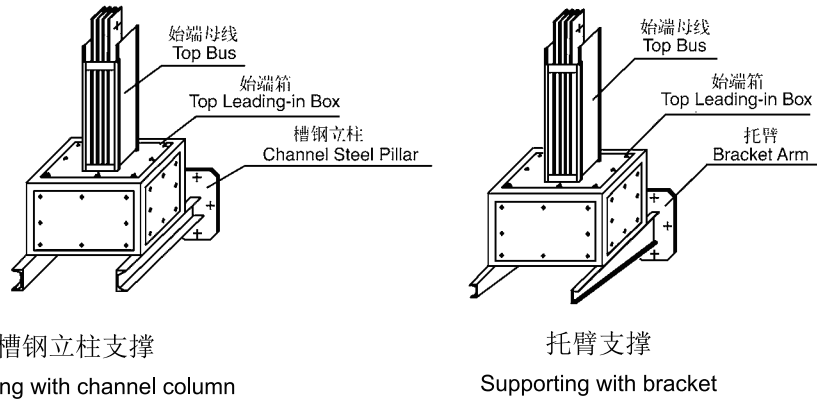


d. 垂直（竖井）安装母线需中间加固（一般当楼层超过4m或按用户的特殊要求），可参照图示的方法进行。

The middle of bus in vertical (shaft) installation need to reinforced when the height of floor is over 4 m or according to the special demand from users. The method see Drawing:

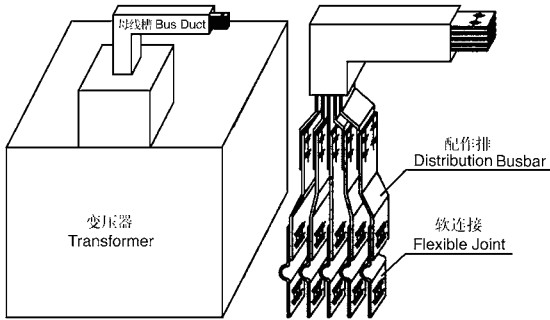


e. 垂直（竖井）安装母线始端进线箱的固定按图示的方式进行  
The fixing for top leading-in box of bus in vertical (shaft) installation can be operated according to Drawing:

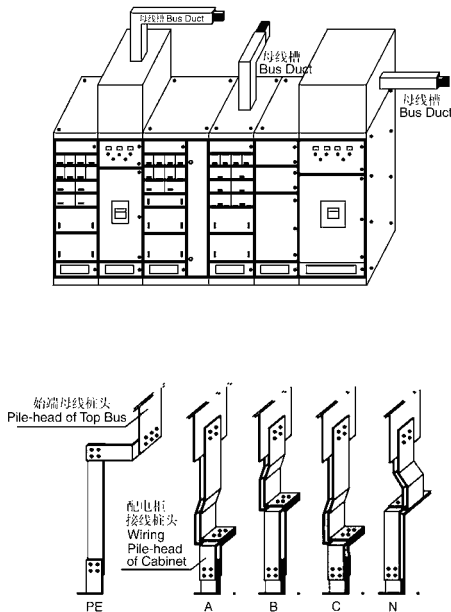


- 接口安装 Interface Installation
- 母线槽与变压器接口的典型安装方案见图。

The typical installing program for the interface between bus duct and transformer is shown as Drawing.



- 母线槽与配电柜接口的典型安装方案见图。
- The typical installing programe for the interface between bus duct and distribution cabinet is shown as Drawing.



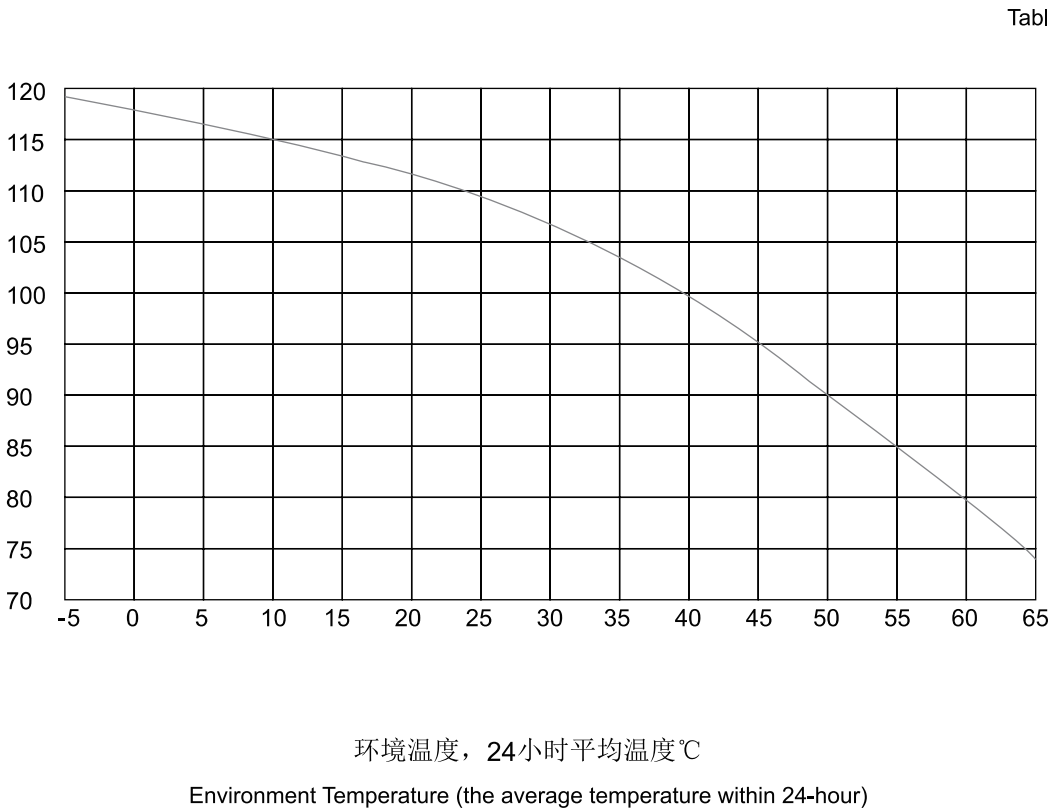
技术参数  
Technical Parameters

- 环境温度对使用的影响 The influence from enviroment temperature  
在40℃的环境温度下，母线槽系统可以在额定电流负载连续工作，并且外壳温升不超过30K。  
如果母线槽系统持续在高温的环境下工作，需要做降容设计。降容后的额定电流＝额定工作电流×降容系数（见下表）。

Under the enviroment temperature of 40℃, the busway system can be continuously worked under rated current, moreover, the temperature rise of shell is not exceed 30K.  
If the busway system should be continuously worked under high-temperature enviroment, the derating design should be adopted. The rated current after derating is equal to rated operating current multiplied by derating factor(please see the following form).

Table (1)

环境温度℃ Environment Temperature	降容系数 Derating Factor
40	1.00
45	0.95
50	0.90
55	0.85
60	0.80
65	0.74
70	0.67





ASMMC系列密集绝缘母线槽

ASMMC series of intensive insulation Busway

适用范围

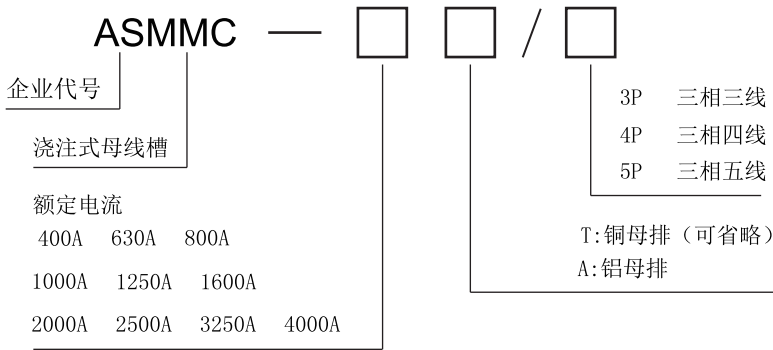
Application

ASMMC 系列密集绝缘母线槽适用于交流三相四线、三相五线制，频率50~60Hz，额定电流在160~6300A的供电系统，作为工矿、企事业和高层建筑中供配电系统输出电能之用，特别适合于车间、老企业的改造。

ASMMC Serial intensive insulation bus ducts are suitable for the supplying and distributing system of A.C. 3-phase 4-wire, 3-phase 5-wire systems, frequency 50~60Hz, rated current 160~6300A, and are used as transmitting energy in power supply and distribution system in industrial and mining enterprises, public institutions and highrise buildings; especially applied to modernizing the workshops and old enterprises.

型号标注

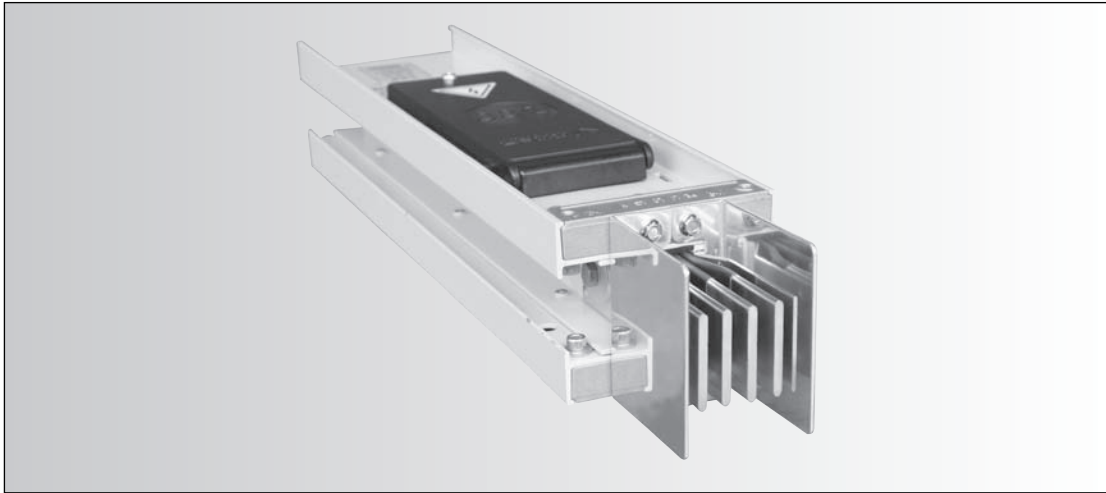
Type annotation



结构特点及技术参数

Structural Characteristics and Technical Parameters

■ 母线基本结构 Basic Structure of Bus



■ 结构特点 Feature of Structure

- 散热能力较强 stronger in thermal dissipation

该系列母线槽外壳采用新型铝合金外壳一次成型而成，能有效地减弱涡流引起的结构发热，铜母线系统内部为典型的三明治结构；形成了整体散热的传播途径，散热效果更好、载流量大，其铝合金外壳可作为主接地“PE”用。

接头采用标准连接器固定，接头螺栓采用双头力矩剪切螺栓，安装方便，同时采用双连接铜排搭接，有效增加了接触面积，大大降低了接头部位温升。

The shell of this busway is adopting new type aluminium alloy, which can effectively weaken the structure heat caused by eddy. The inner structure of copper bus is sandwich construction, with good thermal dissipation performance and large current carrying capacity.

The connector is fastened by standard connectors, and the double-head torque cutting bolt is adopted as joint bolt. Meanwhile, in order to effectively increase the contact area and greatly reduce temperature rise at joints, the double-joint copper bar is used.

● 结构新颖 Fashionable Structure

该系列母线槽盖板与侧板采用自动铆枪铆接工艺，坚固更加牢靠，精度更高

The cover and side plate of this type of busway are adopting automatic riveter riveting process.

■ 主要技术参数 Main Technical Parameters

- 母线槽符合IEC60439-2、GB7251.2-2006。
- 母线槽能保证在额定电流及110%的额定电压下长期正常工作。
- 母线槽根据表（1）的数据通过动、热稳定试验，且试验后母线呈无可觉察的永久变形。
- The bus duct conforms to the standard of IEC60439-2 and is produced according to the standard of GB7251.2-2006.
- The bus duct can guarantee that it can normally work for a long time under the rated current and 110% of rated voltage.
- The bus duct has passed the tests of dynamic and thermal standing current according to the data described on Table(1). There will be no deformation after it is tested.

Table(1)		
母线额定电流(A) Rated Current	热稳定电流有效值(kA) Thermal Standing Current Valid Value/Second	动稳定电流有效值(kA) Dynamic Standing Current Valid Value
160~630	15	30
630~1600	30	63
1600~3150	65	143
4000~6300	100	220

- ASMMC 系列母线槽能承受3750V工频耐压，历时5s无击穿和闪络现象。
- 在长期通以额定电流时，其导电部位的温升不超过表（2）所列的数值：
- ASMMC serial bus ducts can bear 3750V industrial frequency voltage endurance. There's no puncture or flashover within 5s.
- The temp. rise of conductive part will not exceed the data of Table(2) if the bus duct is used under the rated current for a long time.

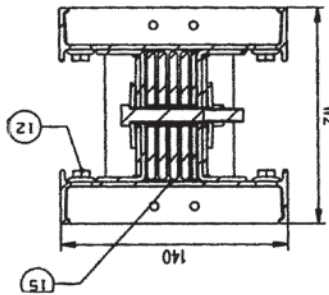
Table(2)	
导电部位名称 Conductive Part	最大允许温升 (K) Max Allowance Temperature Rise
母线与母线连接处 Connections between Bus and Bus	70
插接箱插头与母线连接处 Connections between Plug of Plug-in Box and Bus	70

- 插接箱与母线槽的插拔次数不少于200次。
- ASMMC系列母线槽为全封闭结构，防护等级可达IP65.

# ASMMC 系列密集绝缘母线槽

ASMMC series of intensive insulation Busway

- 母线槽横截面外形尺寸及每米重量见图(1)及表(3):
- The plug-in number between the plug-in box and the bus duct  $\geq 200$  times.
- ASMMC bus duct has a wholly enclosed structure and the protective grade comes up to IP65.
- About the boundary dimension of cross section of busduct and the weight/m, Please see Drawing (1) and Table (3).



Drawing (1)

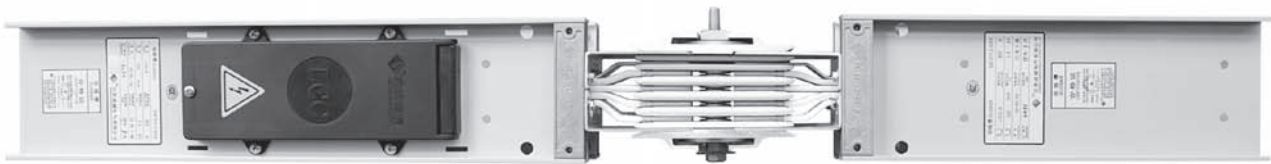
Table(3)

额定电流 A Rated Current	三相四线制 3-phase 4-wire System			三相五线制 3-phase 5-wire System		
	W (mm)	H (mm)	重量 Weight (kg/m)	W (mm)	H (mm)	重量 Weight (kg/m)
160	110	77	8.2	110	77	8.8
250	110	82	9.9	110	82	10.5
400	110	92	11.1	110	92	11.8
630	110	117	14.2	110	117	15.2
800	110	132	15.8	110	132	17
1000	110	152	18.6	110	152	19.8
1250	110	177	21.5	110	177	23.2
1600	110	212	29.2	110	212	31.3
2000	110	192	36.6	110	192	39.2
2500	110	242	47.2	110	242	50.8
3150	110	344	56.2	110	344	60.6
4000	110	404	72.8	110	404	78.6

## 连接与安装

### Connection and Installation

- ASMMC 母线槽备有高绝缘、高机械强度的绝缘板作连接附件，其接头连接方式见图(2)  
ASMMC bus duct is equipped with the insulating plate with high insulating and mechanical strength as accessory. About its connecting mode for the connectors, please see Drawing(2).



Drawing (2)

- 母线槽的安装见封闭母线综述。  
About the installation of the bus duct, please see "Summary of Enclosed Bus".



# ASFMC 全封闭树脂浇注防水母线槽

ASFMC Fully enclosed casting resin waterproof bus duct

## 特点

### Characteristic

- 防护等级IP68，具有优良的气密性和水密性 Outdoor IP68, Air and watertight wall bushings
- 耐压达到5000V以上 Break voltage up to 5000V
- 短路容量大 High short circuit withstand
- 整体绝缘，确保使用安全 Full insulated with cast resin ensuring the safe operation
- 电压降小，损耗低 Low voltage drop and small losses
- 机械强度高，可承受6焦耳的冲击力 High mechanical strength of standing the outer shock up to 6J
- 外形尺寸小 Small external dimensions
- 不存在电腐蚀，无迷流 Electro erosion resistance
- 抗化学品腐蚀 Chemical resistance
- 抗真菌侵蚀，抗动物、昆虫咬嚼 Resistance against fungi, animals, insects, rodent
- 抗紫外线 UV-resistance
- 自熄性绝缘材料 Self-extinguishing insulation
- 防火等级F120 Fire retarding wall bus hings F120
- 耐火：950℃ / 90min Fire resistance: 950℃ for 1.5hrs
- 防爆性能良好 EX-protected
- 无烟卤效应 Non chimney effect
- 可在全天候环境中使用 Suitable for all-weather application

(1) 可在人能短暂停留的环境中长期使用

Suitable for long-term application in the areas as long as human can stay temporarily

(2) 不受海拔高度限制

Suitable for application at any attitude height

(3) 可在户内、外最高污染等级4(\*)的环境中长期使用

Suitable for long-term application in aggressive atmo spheres (Pollution Degree up to 4)

(4) 可在有爆炸或火灾危险的场所使用

Suitable for application in explosive areas

- 安装简便 Simple erection
- 免维护 Maintenance free
- 规格范围广：100A~8000A Wide range from 100A~8000A
- 可提供特殊终端单元 Tailor made terminal-elements available

## 主要性能

### Major Performance

#### ■ ASFMC的耐火性能

采用无毒、阻燃绝缘材料，确保安全;符合GB/T12666. 6-1990A类特性，维持线路完整性90分钟以上；外壳防护等级IP68，能经受消防龙头喷水，确保母线槽不短路；正常环境中使用有良好的散热功能。

#### ■ Fire Resistance

The ASFMC insulation material is inflammable and emits no toxic gas to ensure safety, The whole ASFMC busway system remains integrated for 90 minutes or above under the fire-resistant test in accordance with the national regulation GB/T12666.6 - 1990A. Protection Degree for the ASFMC external casing reaches IP68, so as to ensure no short circuit when being watersprayed in case of fire. The ASFMC bueway system has ideal heat dissipation performance during normal working environment.

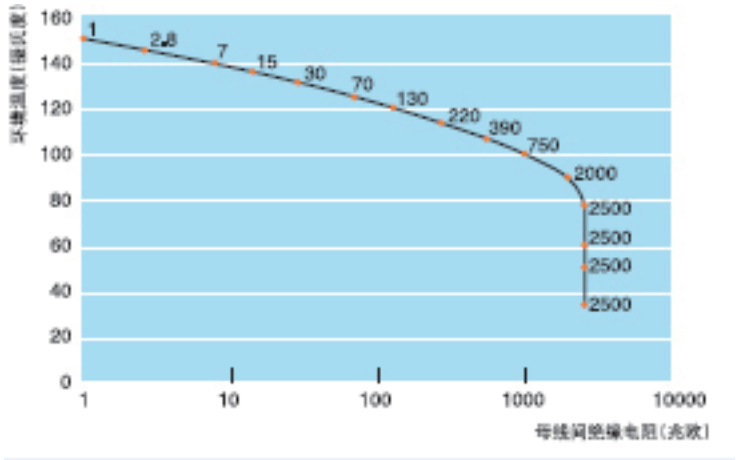
#### ■ ASFMC的绝缘性能

常温下每节母线槽绝缘电阻不低于1000MΩ；

环境温度在100℃的情况下每节母线槽绝缘电阻不低于200MΩ。

#### ■ Insulation

Under normal temperature, electric resistance for each FSMC element is not lower than 1000MΩ;Under ambient temperature at 100℃,electric resistance for each FSMC element is not lower than 200MΩ.



#### ■ ASFMC的耐腐性能

无金属外壳，抗各种化学品腐蚀。

#### ■ Chemical Resistance

The FSMC busway system without any metal external casing is resistant to various chemical erosions.

#### ■ ASFMC的耐水性能

外壳防护等级IP68(\*)，可长期在水中工作；可在电缆沟内使用。甚至埋地敷设。

#### ■ Watertight

The FSMC busway system is suitable for long-term application in the water or cable tunnel or even to be laid under the ground, benefited from the external casing protection rating of IP68 (\*).

#### ■ ASFMC的机械性能

能承受6焦耳的机械冲击；低温—50℃环境下长期使用不开裂。

# ASFMC 全封闭树脂浇注防水母线槽

ASFMC Fully enclosed casting resin waterproof bus duct

## ■ Mechanical Strength

The FSMC busway system can stand mechanical shock up to 6J and does not crack for long term application at the temperature up to -50℃.

## ■ ASFMC的安全性能

不存在空气间隙，无烟囱效应；母线毛刺或过载不会引起短路。

## ■ Safety

No air gap inside the FSMC busway system to ensure non chimney-effect. Furthermore, any burr remained or overload will not cause short circuit.

## 产品介绍 Product Inforduction

## ■ 用途

ASFMC全封闭树脂浇注母线槽系统额定电流1 0 0 A ~8000A，外壳防护等级达到IP68。ASFMC母线槽不仅耐火，而且耐水、耐腐，可确保电源不中断，因此能广泛应用于不能停电的重要工程、涉及生命安全的公共设施工程、救火困难的高层建筑、存在爆炸危险的场所等。ASFMC全封闭树脂浇注母线槽系统防护等级高、安全性强，设计、安装简便，基本免维护。

## ■ Application

The ASFMC busway system of current rating from 100A~8000A has a degree of protection IP68 and high resistance to fire, water and erosion, is therefore wide applied in important projects where uninterrupted power supply is necessary, public facilities where life and property safety is crucial, high buildings where firefighting is difficult as well as the areas where explosive risks exist and etc.The ASFMC busway system with its high degree of safety is simple to design, easy to install and ultimately maintenancefree.

## ■ 结构

FSMC全封闭树脂浇注母线槽系统，采用特殊配方的复合树脂和定量特选的混合材料相混合，制成高性能的绝缘材料FSMC-M28，将铜或铝母线直接浇注密封。绝缘材料FSMC-M28不含卤素，阻燃且不会释放出有毒气体；无金属外壳，在有迷流的环境中工作，不会发生外壳电腐蚀的现象；全天候产品，可长期在零下40℃的环境中工作，绝缘树脂不开裂；优良的耐水性能，可在水中长期工作，也可埋地敷设；A级耐火性，可在950~1000℃的火焰中工作90min以上，保持线路不中断；可在有爆炸危险、有腐蚀性液体的环境中长期工作；所采用的绝缘材料FSMC-M28，高温时仍能保持良好的绝缘性。FSMC母线并具有很高的机械强度，能承受6焦耳的机械冲击。

## ■ Construction

The concept of FSMC busway is based on the direct encapsulation of copper or aluminum conductors with a high insulation material (FSMC-M28) consisting of compound resin with a specific content of selected mixtures. The FSMC-M28 is halogen free, inflammable and emits no toxic gas. There is no metallic external casing for the FSMC busway system, and consequently electro-erosion does not exist.The FSMC-M28 does not crack for long term operation at the temperature up to -50, which guarantees the whole busway system suitable for all weather application. The FSMC-M28 has high watertight performance,which ensures the whole busway system suitable for long-term application in the water or even to be laid under the ground. The FSMC-M28 remains good insulation performance during fire temperature,which leads the FSMC busway system achieving a fire resistance rating of

Grade A - remaining normal operation for 90 minutes or above at fire temperature 950-1000℃, and suitable for long term application in explosive areas. The ASFMC-M28 has high mechanical strength, which assures the FSMC busway system can stand mechanical shock up to 6J.

## ■ 导体

导体截面为矩形并带圆角，采用优质电解铜ETP99.9%，符合GB5585.2-1985/GB/T467-1997标准。ASFMC全封闭树脂浇注母线槽提供两种标准产品：3相4线3P/100%N或3相5线3P/100%N/100%PE根据客户要求，我们可以提供200%的N相导体。其它特殊形式导体及直流应用也能提供，具体情况与我们的技术部门联系。

## ■ Construction

The ASFMC conductor bars have a rectangular section with rounded edges, made of electrolytic copper 99.9% in accordance with the national regulations GB5585.2-1985/GB/T467-1997,and are produced in the following standard versions:

-3 phases 4 conductors 3P/100%N

-3 phases 5 conductors 3P/100%N/100%PE

The neutral up to 200% from the PH-section is able to be provided upon request.Special versions with 3PH or for DC application are possible. We would advise you to consult our Technical Department on this matter.

## ■ 连接

两段母线间的机械及电气连接通过双面接触的特殊连接器来完成。采用先进的高强力矩螺栓，将两段母线连接，并保证足够的接触面积和可靠的电气连接。然后对连接完成的接头单元浇注高性能绝缘材料ASFMC-M28使母线达到防松和绝缘的双重目的。

ASFMC全封闭树脂浇注母线槽系统（包括接头在内）能达到IP68防护等级。在高强力矩螺栓的扭紧力未达到预先设定力矩时，系统自动拒绝安装。

## ■ Jointing

The electrical and mechanical jointing of the trunking elements is achieved by a special connect. The connect supported by large pressure plates is held by tightening a double headed torque bolt which ensures a high standard of pressure along with a secure electrical contact. The correct torque setting is achieved when the outer head shears at a pre-set torque level. The mechanical connection,junctions and element extremities are over cast with the ASFMC-M28.

The ASFMC busway system guarantees a degree of protection of IP68 over the total lengths. If the correct torque level on the connect is not reached, then it will not be possible to encase the joint with the mould.

## ■ 分接单元

我们能在母线任何位置提供分接输出单元，分接箱的额定电流从125A~1250A，并能根据要求安装保险丝、开关及断路器等。防护等级达到IP67/68。

## ■ Tap-off Units

We can supply elements with tap-off outlets at any position throughout the element. The tap-off boxes in ratings from 125A to 1250A,can be supplied fitted with fuse-switches or circuit breakers. Two standard versions are as follows:

- Protection Degree IP67

- Protection Degree IP68

ASFMC 全封闭树脂浇注防水母线槽

ASFMC Fully enclosed casting resin waterproof bus duct

■ 支撑件

根据ASFMC全封闭树脂浇注母线槽系统不同的安装环境，我们会提供相应的安装支撑件。在一般情况下，我们建议每1.5米安装一个支撑件。

■ Suspension Brackets

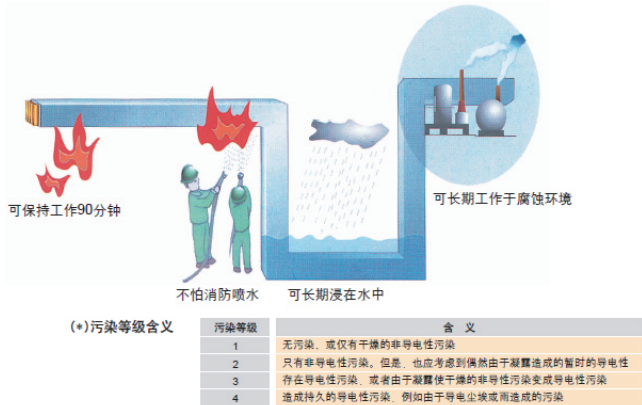
For optimum installation of the ASFMC busways in either ceilings, walls, floors or steel constructions, we would supply the relevant suspension brackets. The recommended fixing distance for such brackets is 1.5m in normal conditions.

■ 结构单元

根据客户的要求，我们能提供各种适应项目的结构单元。

■ Trunking Units

Tailor-made elements according to clients' specifications give total flexibility throughout the project.



■ 优点

1、大电流容量：

标准产品额定电流600A-5000A。

2、低电压降：

选用优质导电材料制造及适当排列，具有较低的阻抗值及电压降。

3、高短路强度：

汇流排导体间及外部应用环氧树脂绝缘系统，具有耐高短路强度之机械冲击特性及高耐热能力。

4、高耐火性：

由于选用具难燃性及自熄性材料，耐火等级符合UL94V0或IEC331相关要求。

5、高防护等级：

防火及防尘特性符合防护等级IP68之要求。

6、高信赖度：

以高可靠度之设计选用优质原料及配合先进制程，在正常使用条件下具有高信赖度及寿命特长之优点。

7、型小量轻及外貌优美：

模铸外壳上下被覆铝质护套可取代接地导体作为接地之用，以减轻重量，及缩小体积，并增加美观。

8、安装容易免保养：

因模铸外壳上下被覆铝质护套可避免搬运时之碰装损伤，而段间相接采用快速接法，无须使用特殊工具，安装容易，并可随指示确认已安全接续完成，在正常运转条件下几乎免保养。

9、系统设变弹性佳：

汇流排因采用特殊接头及插入式配件，拆解容易且不伤元件，在配电系统设计变更时可弹性配合其调整及变动。

■ Rabbit merit

1、Current capacity：

Standard product rated current 600A-5000A.

2、Low voltage drop：

Selects the high quality conducting material manufacture and the suitable arrangement, has the low resistance value and loss of voltage.

3、High short circuit intensity：

The exterior application epoxy resin insulated system between the bus conductor and, has bears the high short circuit intensity the mechanical shock characteristic and high heat-resisting ability.

4、High fire resistance：

Because chooses the apparatus flame retardancy and from extinguishes the material, the fireproof rank conforms to UL94V0 or the IEC331 related request.

5、High protection rank：

The fire protection and the dustproof characteristic meet requirement of the protection rank IP68.

6、High faith：

Selects the high quality raw material and the coordinate advanced system regulation design of by the high reliability, has the high faith under the regular service condition and merit of life special skill.

7、The small amount is light and the appearance is exquisite：

The die casting outer covering high and low superposition aluminum nature protective covering may substitute for the earth conductor as earth, reduces the weight, and the reduced volume, and increases artistically.

8、Installs easily to exempt the maintenance：

Because the die casting outer covering high and low superposition aluminum nature protective covering may avoid time the transporting bumping installs the damage, but the section docks uses the fast connection, does not need to use the special tool, the installment is easy, and may continue safely along with the instruction confirmation completes, exempts the maintenance nearly under the normal work condition.

9、The system supposes the variable elastic properties to be good：

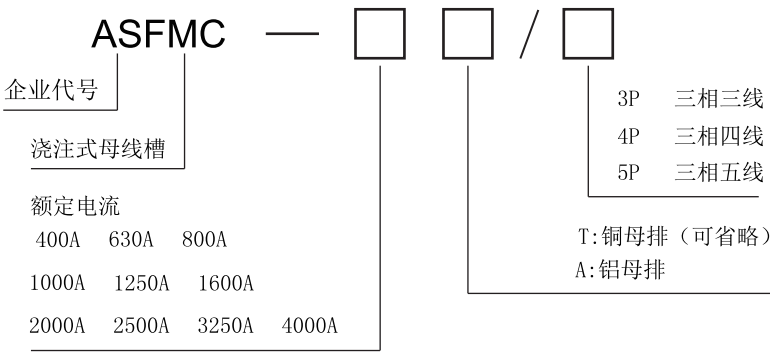
Because the bus uses the special attachment and the male accessory, opens the solution to be easy, and does not injury the part, when electrical power distribution system design alteration may the elasticity coordinate its adjustment and the change.



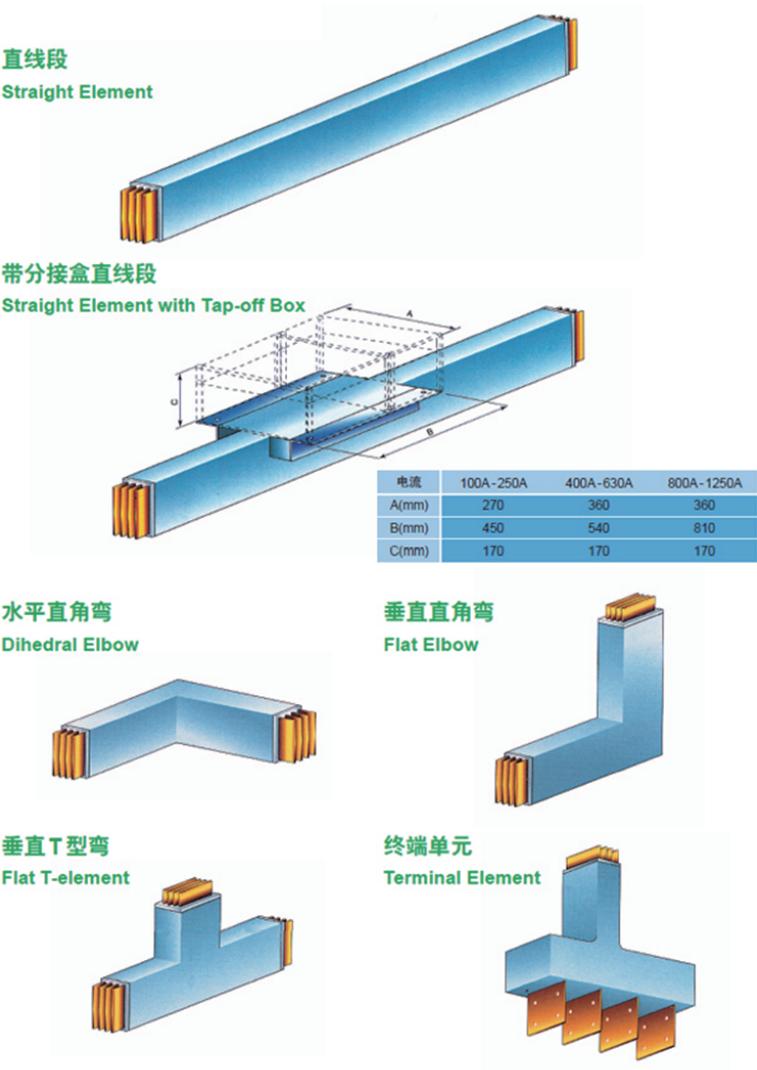
ASFMC 全封闭树脂浇注防水母线槽

ASFMC Fully enclosed casting resin waterproof bus duct

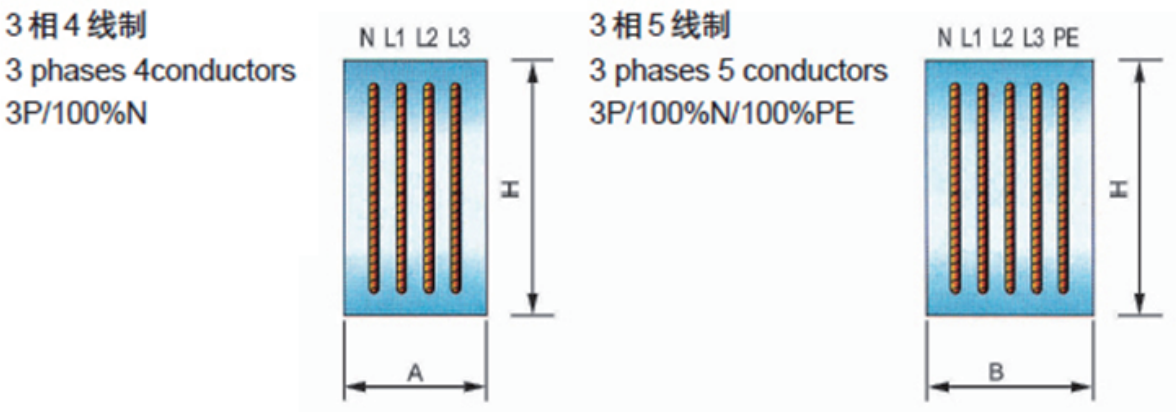
型号标注  
Type annotation



标准结构单元  
Standard Trunking Units

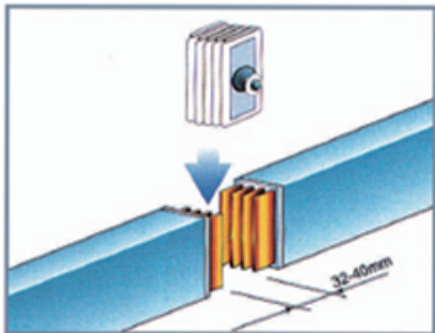


技术参数  
Technical Data



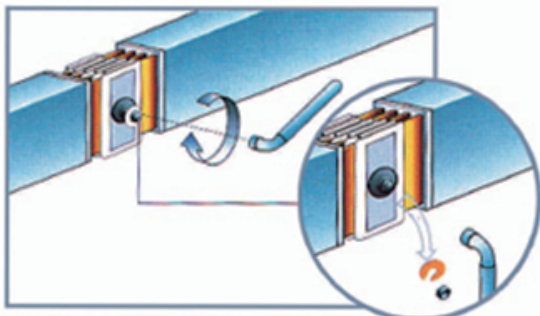
额定电流 A Rated Current	H (mm)	A (mm)	B (mm)	S (mm <sup>2</sup> )	I <sub>cw</sub> (kA)	U <sub>e</sub> (V)	U <sub>i</sub> (V)	R <sub>s</sub> (10 <sup>-5</sup> Ω/m)	X (10 <sup>-5</sup> Ω/m)	Weight (kg/m)
160	50	72	87	60	50	1000	1500	403	102	9.0
250	60	72	87	90	50	1000	1500	269	84	11.3
400	80	100	120	150	65	1000	1500	161	62	15.3
630	75	100	120	270	65	1000	1500	89	60	22.7
800	85	100	120	330	65	1000	1500	73	53	26.3
1000	110	100	120	480	65	1000	1500	50	39	35.6
1250	120	100	120	600	65	1000	1500	40	31	43.0
1600	150	100	120	660	65	1000	1500	34	25	50.3
2000	170	100	120	840	65	1000	1500	29	20	57.7
2500	220	100	120	1140	88	1000	1500	21	12	74.1
3150	250	100	120	1380	88	1000	1500	18	7	90.3
4000	330	115	140	1800	100	1000	1500	14	1.8	113.0

安装示例  
Assembly Instructions



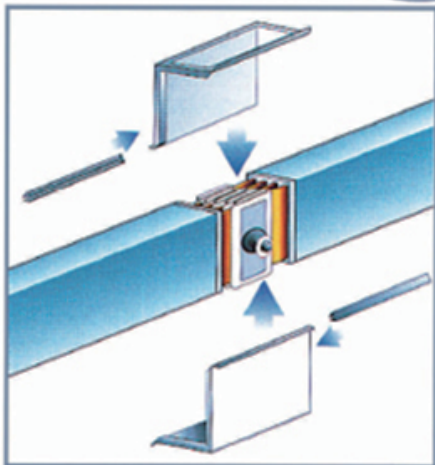
将两段待连接母线调节至一直线，插入连接器。

Elements and conductor ends should line up correctly. Slide the between the conductor ends and adjust accordingly.



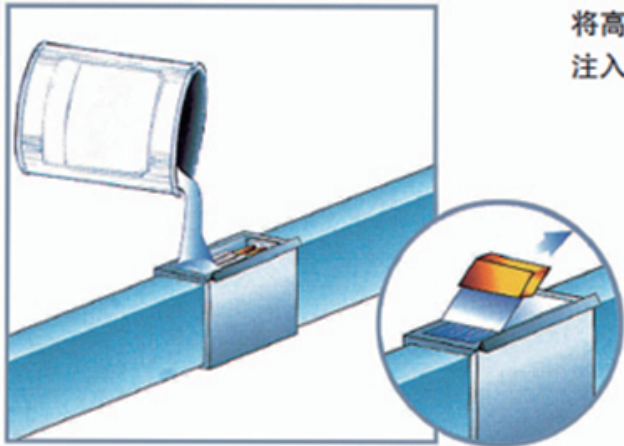
安装好连接器并旋紧连接器螺栓使其达到预先设定力矩，力矩螺母头会自行脱落。

Tighten the bolt unit until the shear of the outer head.



将连接器模具安装在母线连接位置。

Fit mould over junction.



将高性能绝缘材料浇注入模具中。

Pour high insulation material immediately into mould until completely filled up to rim.

尊敬的用户：  
Respected Customers:

非常荣幸，您能够耐心地读完我们的产品说明书，这已为我们相互了解奠定了初步的基础。真诚希望能给我们一次服务机会，我们将十分高兴地为您提供热情周到的服务。

衷心欢迎您来电来函垂询，并期待着您的光临。

衷心祈盼您能选用我公司系列母线槽产品，对您的一片厚爱我们将深深的感谢……

当您决定选用我公司产品的时候，真诚地忠告您注意如下事项：

- 订货前说明所需产品的型号、规格（容量）、数量及交货期；安装支吊架、接口等其它附件是否由我公司为您配套；接口设备的定置时间。
- 订货时应提供的资料
  - A. 主接线图、详细尺寸的走向布置图（一般由我公司专业技术人员现场测量）；
  - B. 工程平面布置图，接口设备的详细定位尺寸图；
  - C. 断面布置图；
  - D. 有关土建资料图样。
- 若用户对产品有特殊要求，可在订货时与我公司协商，我公司可按用户需要进行非标设计。

We feel greatly honoured by your finishing reading the "Technical Manual" for the products. This has lain a preliminary foundation for the understanding between you and us each other. We sincerely hope that you can give us an opportunity to serve you. We are willing to offer an enthusiastic and satisfactory service to you.

Heartily welcome your paying a visit to our Company or your making enquiries by mail. You'll be expected at any time.

We wholeheartedly look forward to your placing orders for our serial bus ducts and other products. Thank you for your kindness...

Please pay attention to the following items when you decide to use our products:

- Before ordering, please point out the types, specifications (capacity), and the time of delivery of the products you need; whether the supporters, suspending frames for installation, interface equipment and other accessories will be matched by our Company; and when the interface equipment will be settled.
- When ordering, should supply us with the following data:
  - a. "Main Wiring Drawing", "Running Layout Drawing" with detailed sizes (In general, the measurement will be completed by our technical personnel on the spot.);
  - b. "Engineering Plain Layout Drawing", "Detailed Location Dimension Drawing for Interface Equipment";
  - c. "Sectional Layout Drawing";
  - d. "Related Civil Engineering Materials and Drawings".
- If the special demands to the products are in need, can consult with our Company. Our Company can make non-standard designs according to the requirments from the customers.