乐仕电气
LE SHI ELECTRIC

BUSWAY SERIES

# 母线槽系列

江苏乐仕电气科技有限公司

JIAGNSU LESHI ELECTRIC TECHNOLOGY CO.,LTD.

乐仕电气
LE SHI ELECTRIC

# 驱动未来的力量！

江苏乐仕电气科技有限公司专业从事电缆桥架、母线槽、高低压开关柜、地面线槽、膨胀节、支吊架、环保设备、电站辅机设备等电力信号设备制造销售的专业公司。在长期的市场经营活动中，企业以严格的管理、优良的质量、贴心的服务、诚信的交往，赢得了众多客户的青睐和信任。企业先后被评为江苏省明星企业、文明单位、镇江市重合同、守信用单位，中国建设银行AAA级信用企业。企业通过了ISO9001质量保证体系认证，并获得了CQC颁发的“CCC”产品安全认证标志。

企业拥有国内外先进的生产和检测设备数台套。生产中采用统一的高精度工装模具，严格执行工艺纪律、完善的质检制度，有效地保证了产品质量。产品质量一直处于同行领先地位，多次被国家重点工程选用。

广泛应用与国防、化工、电力、冶金、交通(地铁)、金融、文教卫生、房地产等相关领域，产品覆盖全国31个省市区，为北京、上海、南京、苏州、杭州、宁波、天津、深圳、广州、昆明、重庆、武汉、沈阳、西安、长沙等地铁行业的重点工程提供了专用优质配套的产品。并出口到东南亚及非洲国家，一直以优异的质量，合理的价格，完善的服务而获得国内外用户的信赖。

企业始终奉行“务实、诚信、开拓、创新"的营销理念，真诚的欢迎社会各界朋友莅临指导、合作、双赢!

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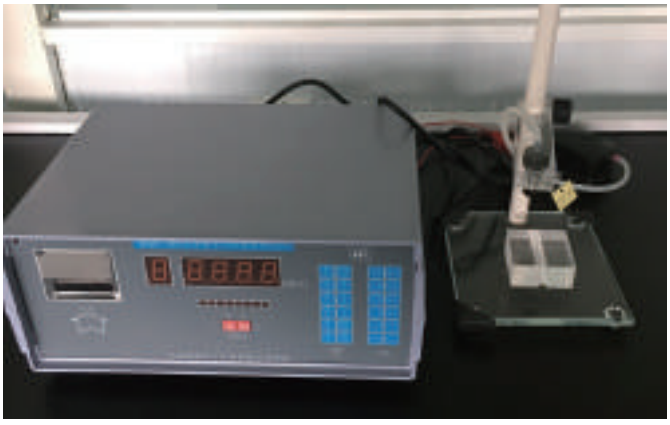

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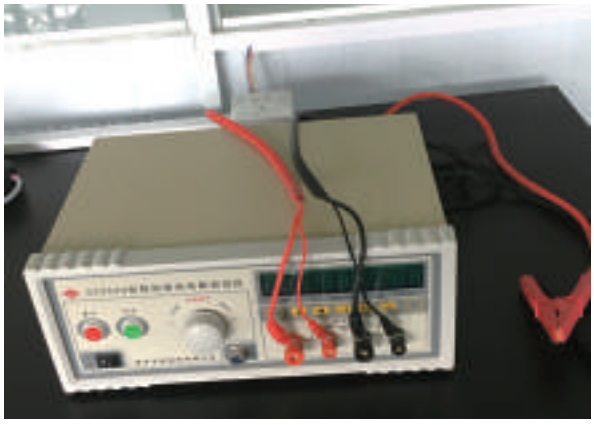

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# 企业生产检测设备
Enterprise production testing equipment

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# 母线槽系统应用概述

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

# System overview

Creating a design concept for a power supply system involves not only observing applicable standards and regulations, but also examining and clarifying 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 whole rather than individual choice.

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

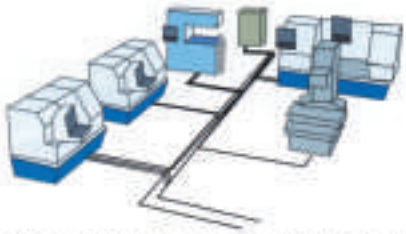
- Building type, use and form (for example, high-rise building, flat buildings and industrial workshop).
- Load centers and possible supply paths and location for transformers and main distribution boards
- Regulations and guidelines of building authorities
- Power supply company guidelines.

There will always be more than one possible solutions and economic advantages and disadvantages In making this assessment, the following requirements should be a priority.

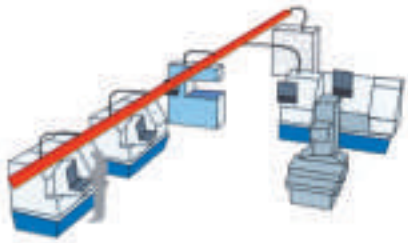
- Simple and transparent design
- Long service life
- High availability
- Fire resistance feature
- Flexible adaptation to building modifications

These requirements are generaUy easy to meet with appropriate busbar trunking systems. For this reason, engineers increasingly favor busbar trunking systems distribution applications.

# LSM-BUSWAY 低压母线系统是替代电缆配电的经济、理想型方案



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 installing cables, the new load lines can be connected to branch distribution board only in accordance with traditional connection methods(cosLSMy and complicated)

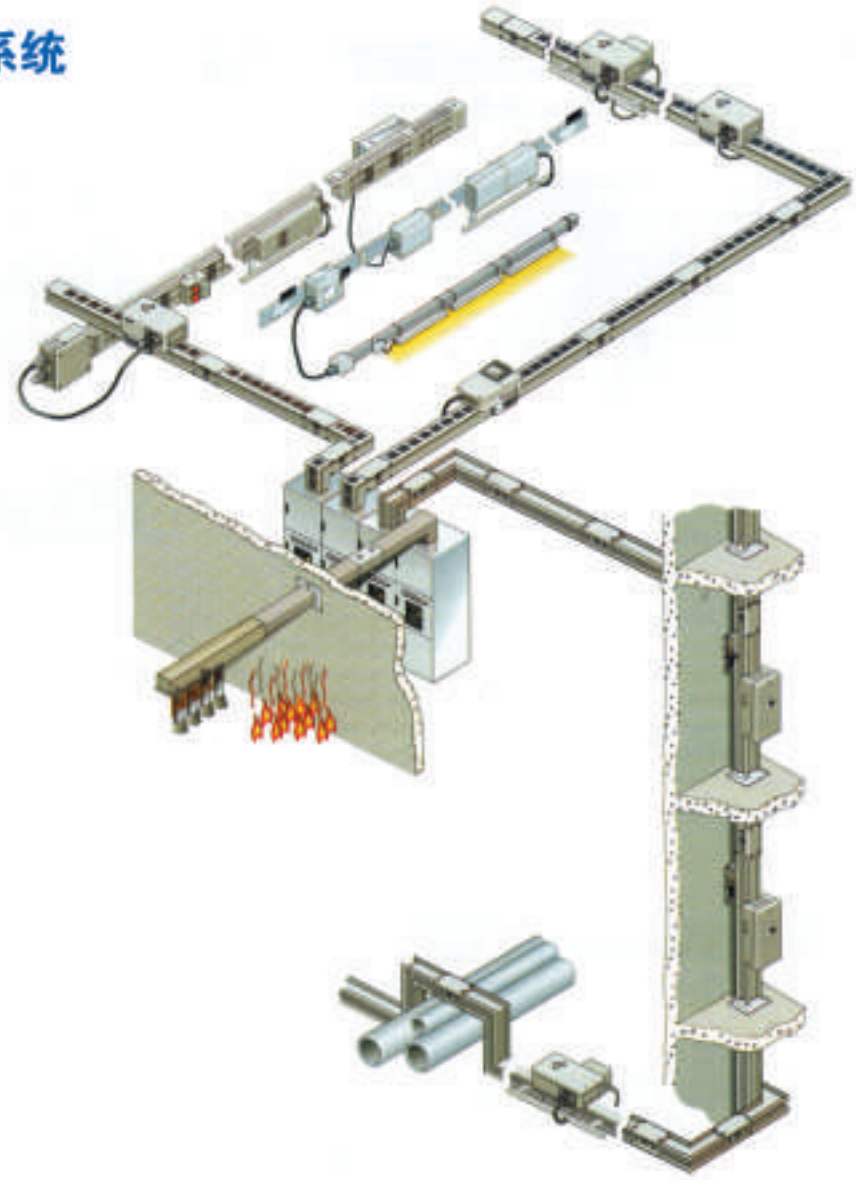


母线槽的插接单元接近负载设备，现场布局更清晰、灵活，经济实用。
The tap-off units of busbar system are close to the loading equipments, enjoying clearer site layout, flexible, economical and practical features.

电缆布线复杂，火灾荷载高
Cable layout is complex,high fire load

母线设计简单清晰，火灾荷载低
Busway planning is easy, low fire load

# LSM低压母线系统



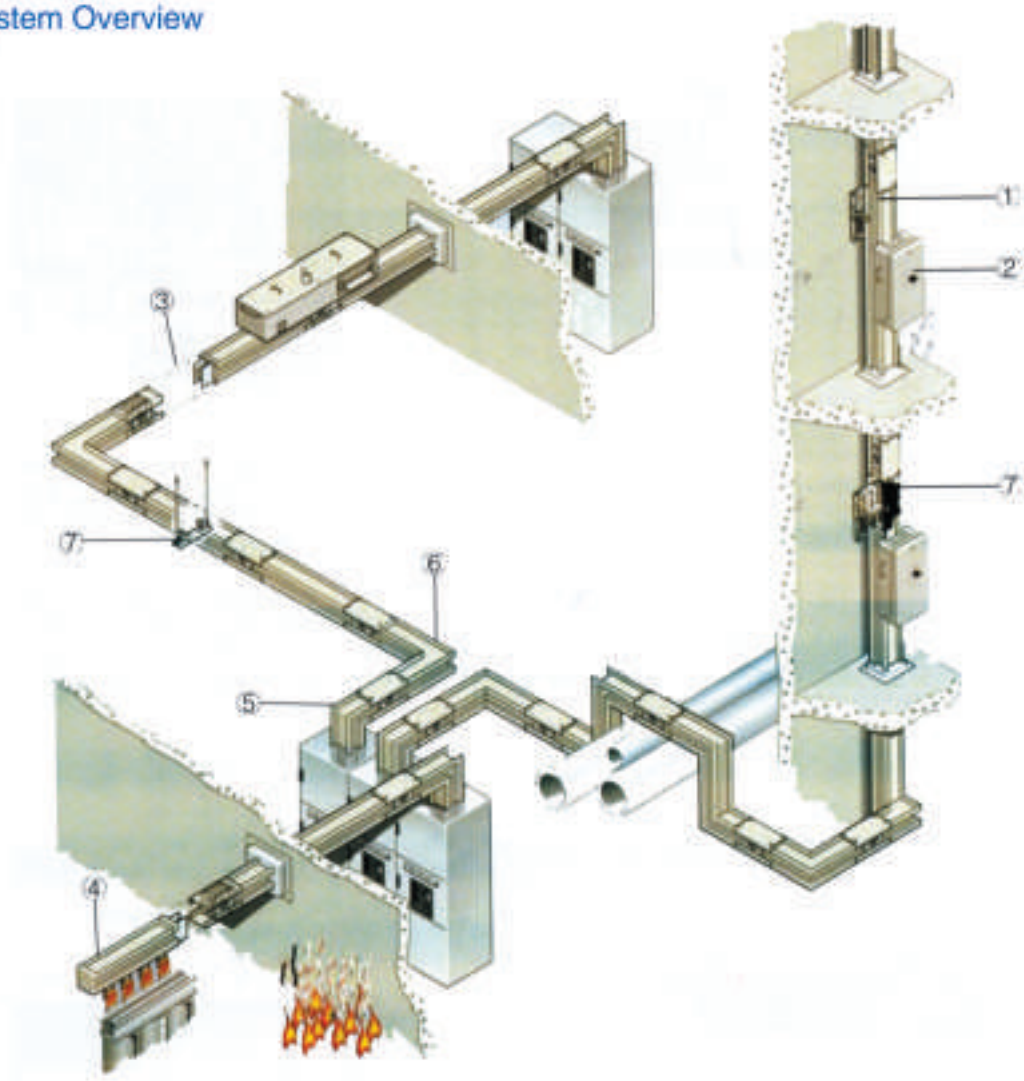
母线槽系统主要作为变压器与配电柜之间的输电设备以及配电柜与负载之间的配电设备而被广泛使用，与电缆相比，母线槽系统不但安全，而且寿命长、性能可靠、使用方便。

As the power distribution equipment between transformer and switchgear, between switchgear and loading equipments, busbar trunking system is widely applied. Such system is retiable with long life span and convenient to operate than cable installation.

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。

Products of LSM cover wide current range, varied products can meet the needs of different users and the demand for projects. All the busbar systems are type-tested low-voltage assembly (TTA) in accordance with international advanced standard IEC/EN, passed a series of international and domestic tests and certification.

## 系统描述 System Overview




①直线段部分 Straight trunking units(with or without tap-off points)
②插接箱部分 Tap-off units, can be connected whilst live
③连接器部分 Joint pack units
④变压器连接 AS部分 Feeder units
⑤低压柜联络部分 Connection to Siements power distribution boards
⑥换向部分 Junction units
⑦安装附件 Additional components for wall/ceiling mounting

LSM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。

LSM intensive Busway is the Company's consolidated characteristics of the Chinese market and the development of new intensive bus system closer to user needs. The system is based on the original up-grade, a higher degree of automation of production, and distribution to meet the needs of different user groups.

# 「系统部件」LSM-BUSWAY

## 系统部件基本描述

LSM 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，设计有 LSMC 铜母线系统，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。

## System components overview

LSM system is the excellent choice to connect trasformer and swichgear, 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 condition and higher personnel safely.

### 1 直线段单元

根据需要可以加装穿墙套单元，
防护等级 IP42，IP54，
(最高可以达到 IP65)

### 1 Straight trunking units

If needed wall-through cover units is available.
Protection degree:IP54
(The highest is IP65)

### 馈电式和插接式

标准长度
LSMC：4m/3m/2m/1m
可选长度
LSMC：0.5-4.0m
可垂直安装也可水平安装

### With or without tap-off points

Standard length:
LSMC：4m/3m/2m/1m
Optional length:
LSMC：0.5-4.0m
Optional for vertical and horizontal installation

### 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
能有效防止错相安装

### With tap-off points straight trunking unit

Single side with tap-off points
Double sides with tap-off points
Tap-off point protection degree is IP54
Anti-wrong installation device

### 防火单元

通过 JB/T10327-2002 规定
阻燃性能试验

### Anti-fire straight trunking unit

Passed the JB/T10327-2002 regulation
Anti-fire performance test

### 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
表面标准颜色：RAL7032 RAL7035
安装方便
机械联锁装置和自动定位装置
能有效防止错相安装
插脚镀银处理

### 2 Tap-off units

Adopts breaker or fuse switch as protection
Steel enclosure
Excellent earth device
Protection degree:IP54
Standard color:：RAL7032 RAL7035
Easy installation
Mecanical inter-lock device and auto-positioning device
Plug terminal silver plated

## 3 进线单元

### 变压器进线部分

配置有专门的软连接装置
最大额定电流达到 6300A

### 低压柜进线部分

配置有专门的硬连接(连接铜排)装置
最大额定电流达到 6300A

### 或采用电缆进线单元

## 3 Feeder Units

### Transformer feeder units

Special flexible connection
Rated current up to 6300A

### Distribution board feeder units

Special copper bar connection
Rated current up to 6300A

### Or cable feeder unit

## 4 与低压柜进行连接

从顶部进线
从底部进线

## 4 Connection to Siemens power distribution systems

Above
Below

## 5 换向单元

方便的更改的一段母线的走向
角度为 70~175 度
L 型单元
T 型单元
Z 型单元

## 5 换向单元

Easily change the busbar sys-
tem direction70° ~175°
L unit
T unit
Z unit

## 6 附 件

终端封
连接器
安装件
连接工具

## 6 附 件

End cap
Joint pack
Fixing bracket
Tools for connection

## 系统通用技术参数

| 符合标准 | IEC60439-1,2;GB 7251-1,2 |
|---|---|
| Min./max./24 小时平均温度 | -5/+40/35℃ |
| 防护等级 | IP42、IP54、IP65 |
| 连接器力矩 | 70 ± 6N.M |
| 表面处理 | 喷塑 |
| 外壳材料 | 铝镁合金 6063T6 |
| 外壳颜色 | 国际标准灰(RAL7032、RAL7035),具体颜色也可用户确定 |
| 额定绝缘电压 Ui | 1000VAC/1000VDC |
| 额定工作电压 Ue | 1000V |
| 额定频率 f | 50Hz/60Hz |
| 额定电流 1e | 1) |
| 额定短时耐受电流 | 1) |
| 额定峰值耐受电流 Ipk | 1) |
| 导体截面 | 1) |
| L1, L2, L3 | 1) |
| N | 1) |
| PE | 1) |
| 单独一根导体作 PE | 1) |
| 导体材料 | TMY/T2 |
| 每相铜排数 | 1) |
| 最大安装间距 | 2m |
| 水平 | |
| 外形尺寸 | 1) |
| 重量 | 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 to the technical specification table in next chapter.

## LSM 参数一览表(铜母线系统)

| 电流 | 短时耐受电流(ICW)KA | 峰值耐受电流(IPK)KA | 电阻/米(MΩ) | 电抗/米(MΩ) | 阻抗/米(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 | 30 | 63 | 0.110 | 0.039 | 0.116 | 0.08 | 128 | 100 | 10.9 | 11.8 |
| 500 | | | 0.094 | 0.035 | 0.101 | 0.11 | 128 | 100 | 11.8 | 12.7 |
| 630 | | | 0.073 | 0.031 | 0.079 | 0.11 | 128 | 100 | 12.7 | 13.50 |
| 800 | 50 | 105 | 0.060 | 0.028 | 0.066 | 0.11 | 128 | 110 | 14.95 | 16.50 |
| 1000 | | | 0.047 | 0.024 | 0.053 | 0.11 | 128 | 125 | 17.8 | 19.5 |
| 1250 | 65 | 143 | 0.033 | 0.020 | 0.039 | 0.11 | 128 | 140 | 20.5 | 22.7 |
| 1600 | | | 0.024 | 0.017 | 0.030 | 0.10 | 128 | 175 | 27.0 | 30.1 |
| 2000 | | | 0.018 | 0.014 | 0.023 | 0.10 | 128 | 210 | 33.4 | 37.6 |
| 2500 | 100 | 220 | 0.015 | 0.012 | 0.019 | 0.10 | 128 | 250 | 40.8 | 45.9 |
| 3150 | | | 0.011 | 0.009 | 0.014 | 0.10 | 128 | 360 | 54.8 | 61.3 |
| 3500 | | | 0.009 | 0.006 | 0.011 | 0.09 | 128 | 400 | 60.9 | 68.2 |
| 4000 | 120 | 264 | 0.007 | 0.004 | 0.008 | 0.08 | 128 | 420 | 64.0 | 71.7 |

## 产品编号

LSM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

LSM 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 IP54。
系统代码为：LSMC 0951

Example:
Rated current is 2500A,copper conductor,5W, enclosure as PE Protection degree IP54,
Then the system code is LSMC 0951

Ordering type

| 防火型 Fire protection | LSM | | S120-X | |
|---|---|---|---|---|
| 常用型 Basic type | LSM | | | |

Conductor material

| | |
|---|---|
| AL | A |
| Cu | C |

Rated current Ie [A]

| AL | Cu | |
|---|---|---|
| 400 | 400 | 01 |
| 500 | 500 | 02 |
| 630 | 630 | 03 |
| 800 | 800 | 04 |
| 1000 | 1000 | 05 |
| 1250 | 1250 | 06 |
| 1600 | 1600 | 07 |
| 2000 | 2000 | 08 |
| 2500 | 2500 | 09 |
| 3150 | 3150 | 10 |
| 3500 | 3500 | 11 |
| 4000 | 4000 | 12 |

Configuration of the conductors

| | |
|---|---|
| L1+L2+L3+PE1) | 30 |
| L1+L2+L3+PEN/PEN2) | 41 |
| L1+L2+L3+N+PE1) | 51 |
| L1+L2+L3+N+PE/PE3 | 53 |

Protection degree

| | |
|---|---|
| M | IP 54 |
| H | IP 65 |

Fire protection

| | |
|---|---|
| Positioning (X*) | |

1)外壳作 PE
2)外壳与 PE 相连
3)单独 PE 导体

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

## 插接箱编号

| 编号 | 防护等级 |
|---|---|
| L | IP42 |
| M | IP54 |

| 编号 | 母线系统 |
|---|---|
| 30 | LSM...30 |
| 41 | LSM...41 |
| 51 | LSM...51 |
| 53 | LSM...53 |

| 编号 | 箱体规格 |
|---|---|
| 1 | 1# |
| 2 | 2# |
| 3 | 3# |
| 4 | 4# |
| 5 | 5# |

| 编号 | 开关操作方式 |
|---|---|
| LS | 不带操作机构 |
| LSH | 旋转操作手柄 |
| LSM | 电动操作机构 |

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

| 编号 | 开关极数 |
|---|---|
| 3 | 三极 |
| 4 | 四极 |

LSM – . AK . . . / ... – .... – .

举例：LSM–2AK51M / LSH–125S–3 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:LSM–2AK51M/LSH–125S–3 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.

## 外 壳

LSM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

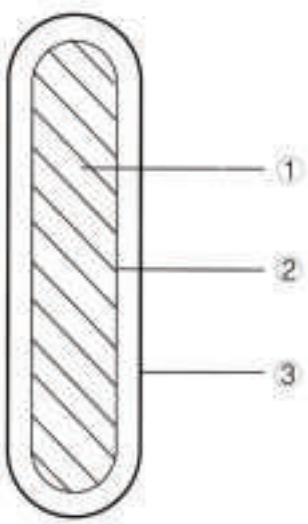
LSM system adopts excellent alloy as enclosure material, enjoys non-magnetism, environment protection, light weight and fast heat dissipation capability. No-eddy current loss when system on loading. The large enough Cross-section can replace the PE as 100% integral earth.The surface is powder painted and passed the 1200th salt withstand test, and can be used in environment with high air humidity, salt separating, high pollution etc.

## 导 体

LSM母线槽系统表面镀铅锡或者镀银，全长整体包裹高性能绝缘材料聚酯薄膜；
LSM为铜导体系统。

## Conductor

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




LSM母线槽系统

高性能绝缘材料

①导体，铜排（LSMC）
②镀层，镀锡层（LSMC）
③高性能绝缘材料聚酯薄膜

1. Conductor, copper bar (LSMC)
2. Coating, Tin coating (LSMC); Copper coating
3. Insulation Material

# 「系统配置」LSM-BUSWAY

## 导体配置

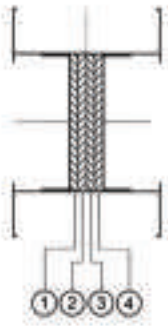
IEC439 标准规定配电设备的系统配置需根据整套系统配置进行选择，而且所选择的设备要充分保证整个系统的安全。

LSM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.

LSM busbar system offer many different conductor configurations to meet per actual site requirement.

| 系 统 System | | Conductor configurations 导体配置 | | | | | | Enclosure 外壳 |
|---|---|---|---|---|---|---|---|---|
| | | ① | ② | ③ | ④ | ⑤ | ⑥ | |
|  | LSM ···30 | L1 | L2 | L3 | – | – | – | 外壳作 PE |
|  | LSM ···41 | L1 | L2 | L3 | PEN | – | – | 外壳与 PE 相连 |
| | LSM ···51 | L1 | L2 | L3 | N | – | – | 外壳作 PE |
|  | LSM ···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。

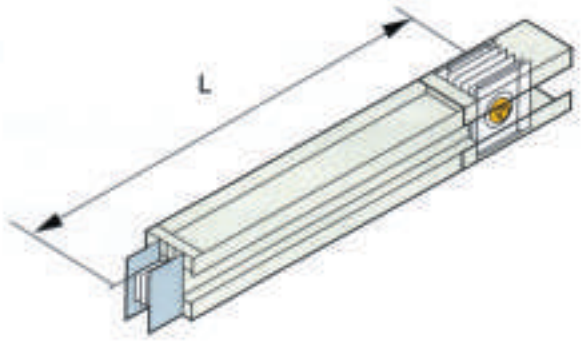
Enclosure as PE:adopting excellent non-magnetism alloy enclosure as integral conductor.The earth capability is a high earthing fault, it connect busbar with the group direcLSMy, which offers the shortest earth approach.

## 直线段单元

LSM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 trunking units

LSM busbar system adopts totally enclosed structure with the max protection degree of IP65, making the system be applied in aggressive environment and allowed entire enclosure (100% more capacity than phase conductor) as earth system, That guarantees system safety, shortest and reliable earth approach. When there is a high earthing fault, it can protect the entire system effectively, Straight runs without tap-off units are available with vertical and horizontal installation.

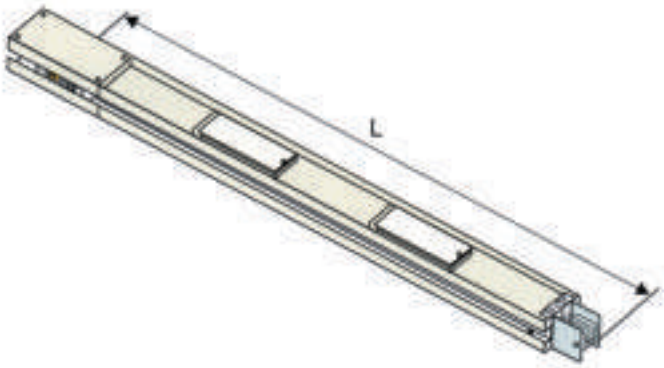



| 标准长度 | |
|---|---|
| LSMC | 1m LSMC-JY···,-1W* |
| | 2m LSMC-JY···,-2W* |
| | 3m LSMC-JY···,-3W* |
| | 4m LSMC-JY···,-4W* |
| **可选长度** | |
| LSMC | 0.35m-0.99 LSMC-JY ···,-1W* |
| | 1.01m-1.99 LSMC-JY ···,-2W* |
| | 2.01m-2.99 LSMC-JY ···,-3W* |
| | 3.01m-3.99 LSMC-JY ···,-4W* |

## 直线段单元

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。

Straight trunking with tap-off units are available with 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.



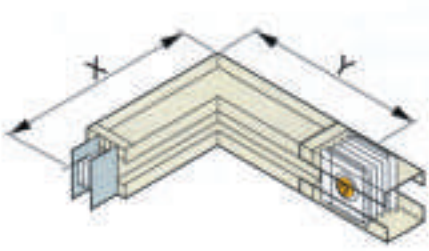

| 标准长度 | |
|---|---|
| LSMC | L=1、2、3、4m |
| 可选长度 | |
| LSMC | L=0.7-2.99、4m |

## 换向单元

为了方便更改一段母线槽系统的走向，LSM 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。

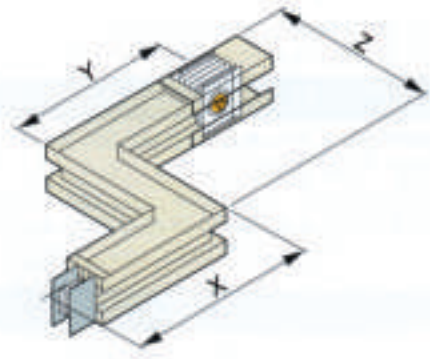
## Junction units

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



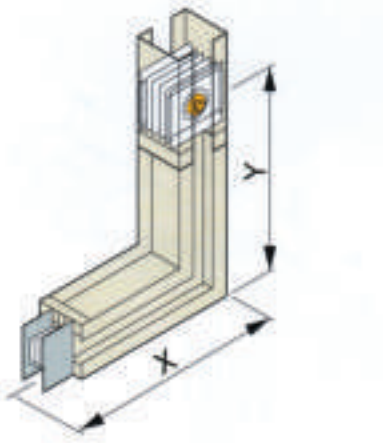

### L 型水平弯头(ER/EL)L Elbow (ER/EL)

| 标准长度 | |
|---|---|
| LSMC | X/Y=0.35 |




### 水平 Z 型弯头(RL/LR)Z unit (RL/LR)

| 标准长度 | |
|---|---|
| LSMC | X=0.35m Y=0.35m Z=0.4m |

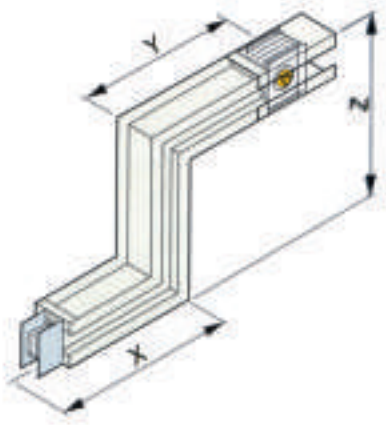


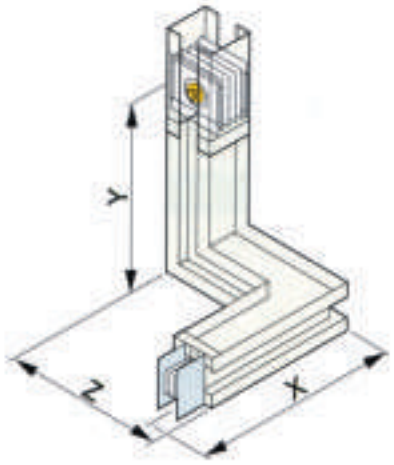

### L 垂直弯头(FO/FI)L Elbow(FO/FI)

| 标准长度 | |
|---|---|
| LSMC···01-05 | X/Y=0.35m |
| LSMC···06-08 | X/Y=0.5m |
| LSMC···09-11 | X/Y=0.8m |
| LSMC···12 | X/Y=0.9m |

## 垂直 Z 型弯头(IO/OI) Z unit(IO/OI)

| 标准长度 | |
|---|---|
| LSMC···01-05 | X/Y=0.35m Z=0.4m |
| LSMC···06-08 | X/Y=0.5m Z=0.5m |
| LSMC···09-11 | X/Y=0.8m Z=0.8m |
| LSMC···12 | X/Y=0.9m Z=1m |



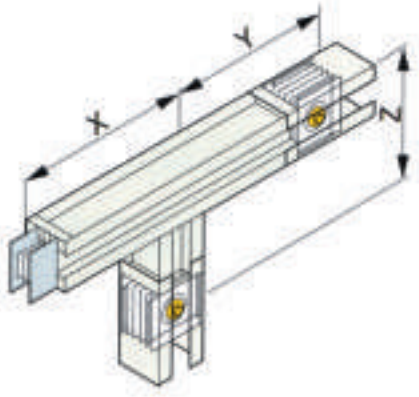




## 异型弯头(OL/IL) Offset unit (OL/IL)

| 标准长度 | |
|---|---|
| LSMC···01-05 | X/Y=0.35m Z=0.4m |
| LSMC···06-08 | X=0.5m Y=0.35m Z=0.5m |
| LSMC···09-11 | X=0.8m Y=0.35m Z=0.8m |
| LSMC···12 | X=0.9m Y=0.35m Z=0.9m |

## 垂直 Z 型弯头(TE) T unit (TE)

| 标准长度 | |
|---|---|
| LSMC···01-05 | X/Y/Z=0.35m |
| LSMC···06-08 | X/Y/Z=0.5m |
| LSMC···09-11 | X=Y=0.6m Z=0.8m |
| LSMC···12 | X=Y=0.6m Z=0.9m |



## 与低压配电柜连接

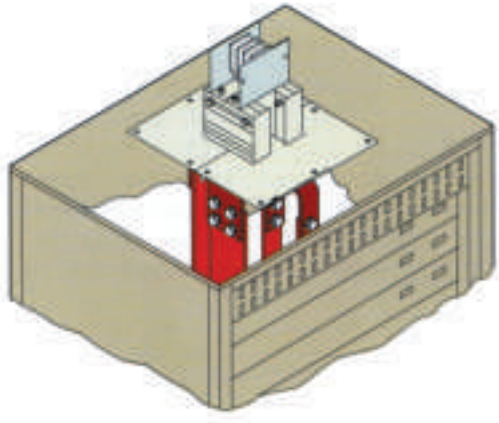
我们提供专门的始端进线单元和完整的连接单元实现LSM母线槽系统与配电柜的连接，连接时根据用户低压柜的具体出线方式进行调整设计，既可顶端出线，也可底端出线，通常使用连接铜排进行转接，公司负责提供原材料及现场的指导安装，安装时保持现场连接最短路径及时间，进线单元中的始端母线配置有连接法兰，与设备密切结合，从而保证较高的防护等级。

## Connection with low-voltage switchgear

LSM busbar system adopts the special entry-unit and integral connection unit to connect between busbar and switchgear. This connection can be made from above or below,thus ensuring flexible connections The copper connections are provided between busbar and switchgear. offers the raw material and site installation instruction, ensuring the shortest connection and installation time. End flange in the feeder unit is collocated with connection flange to ensure a high protection degree.

与低压柜可直接对接

Connect direcLSMy with Siemens low-voltage switchgear



与其他柜型连接

Connect with other low-voltage switchgear

# 插接箱单元

LSM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。

## 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。

## 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，断路器的配备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

# Tap-off unit

Tap-off unit of LSM busbar system gains many patents, enjoying compact structure, nice appearance,and reliable performance. The rated current is16A-1250A, 5 different dimensions as per current rating. The design is closer to users.

## Inside configuration

3 pole or4 pole breaker is collocated according to user' s requirements. The breaker is optional for SIEMENS 3VT,3VLorother brands 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 LSM 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;

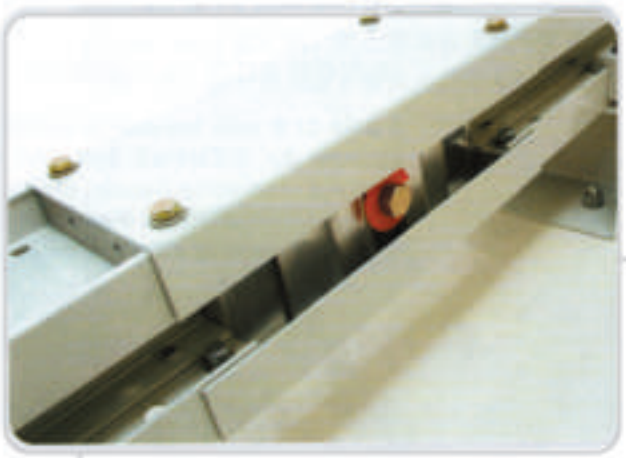
Protection degree of IP54;

Silver-plated plug feet ensure reliable electrical continuity;

Multi inter-lock prevents plugging on loading.

## 连接器单元

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

该通用件从英国原装进口，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

螺栓锁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。

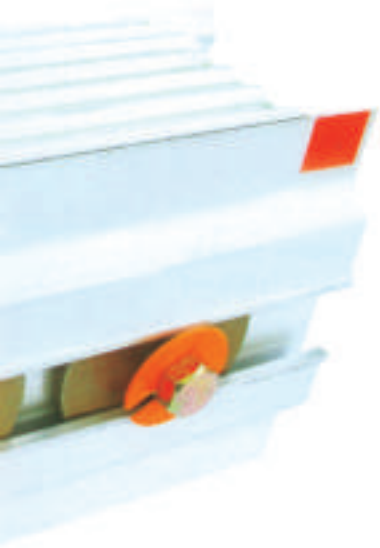
By abandoning the traditional design, its installation speed is twice faster than ordinary connector. But also because it can not be overturned, wrong phase operation won' t occur when connect two busbar units, simplifying the installation procedure, contributing to the rapid and safe installation.

## Double-headed torque bolt

Only 19mm ordinary wrench rather than torque spanner is needed to tighten until the outside head as well as the yellow plate break 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 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 LSM 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. Mearwhile, joint pack cover guarantees a higher level of protection.

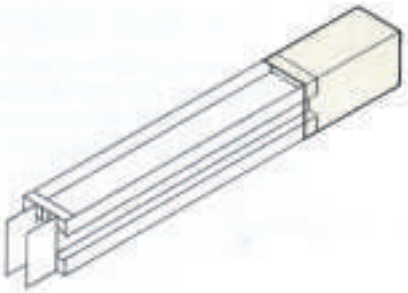
# 系 统 附 件

## 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.

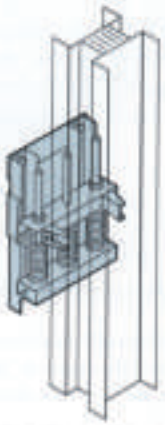


## 垂直安装支架

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

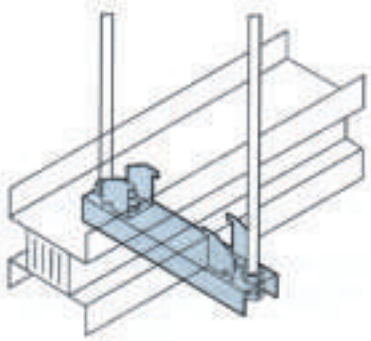
提供两种不同的安装支架
水平立装使用
水平侧装使用

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。

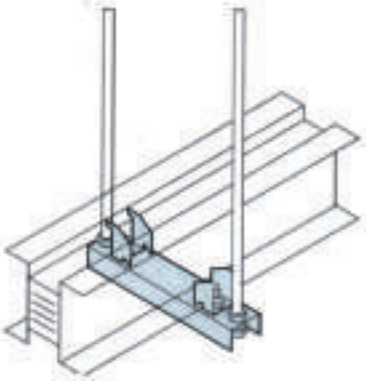
## Horizontal mounting supports

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

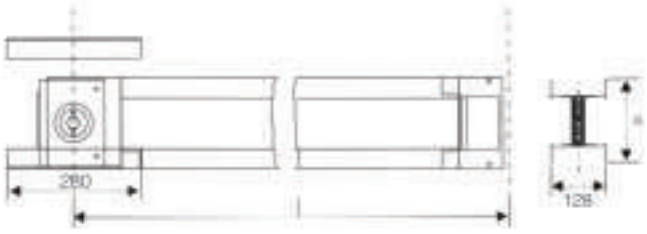
Clamps in the supports which make busbar trunking system stably are available if requested.



水平立装使用



水平侧装使用



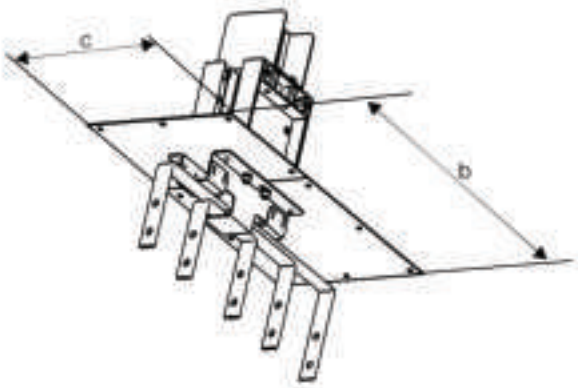

单排系统

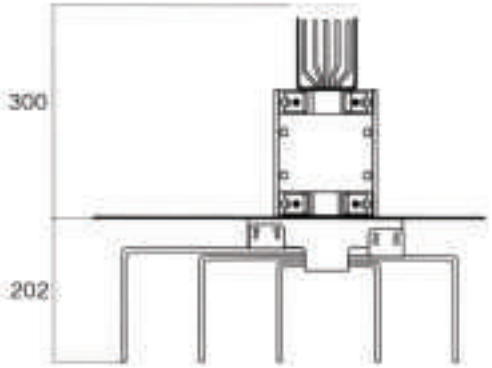

双排系统

## 直线段单元

| 系统 | a/mm |
|---|---|
| LSMC-400A | 100 |
| LSMC-500A | 100 |
| LSMC-630A | 100 |
| LSMC-800A | 110 |
| LSMC-1000A | 125 |
| LSMC-1250A | 140 |
| LSMC-1600A | 175 |
| LSMC-2000A | 210 |
| LSMC-2500A | 250 |
| LSMC-3150A | 360 |
| LSMC-3500A | 400 |
| LSMC-4000A | 420 |

# 「物理数据」LSM-BUSWAY




## 始端单元

| 系统 | b/mm | c/mm |
|---|---|---|
| LSMC-400A | 555 | 280 |
| LSMC-500A | 555 | 280 |
| LSMC-630A | 555 | 280 |
| LSMC-800A | 555 | 280 |
| LSMC-1000A | 555 | 285 |
| LSMC-1250A | 555 | 300 |
| LSMC-1600A | 555 | 330 |
| LSMC-2000A | 555 | 365 |
| LSMC-2500A | 555 | 410 |
| LSMC-3150A | 555 | 539 |
| LSMC-3500A | 555 | 609 |
| LSMC-4000A | 555 | 699 |

## 插接箱单元

| 保护单元 | 电流(A) | A/mm | B/mm | C/mm |
|---|---|---|---|---|
| 断路器 | 16–100 | 220 | 230 | 360 |
| | 125–160 | 250 | 250 | 400 |
| | 200–250 | 270 | 270 | 500 |
| | 315–400 | 310 | 310 | 650 |
| | 630 | 340 | 340 | 850 |
| | 800 | 350 | 420 | 1250 |

## 终 端

| 系统 | L/mm |
|---|---|
| LSMC–400A | 112 |
| LSMC–500A | 112 |
| LSMC–630A | 112 |
| LSMC–800A | 124 |
| LSMC–1000A | 137 |
| LSMC–1250A | 152 |
| LSMC–1600A | 187 |
| LSMC–2000A | 222 |
| LSMC–2500A | 262 |
| LSMC–3150A | 372 |
| LSMC–3500A | 412 |
| LSMC–4000A | 432 |

## 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)
- 母线穿过的墙面

### 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

### Calculating the rated current

The following information is important for planning busbar trunking for transporting and distributing power

- Location,number and connected loads of the consumers or subdistribution systems
- Rated diversity factor
- Information on the short-circuit level to be expected

### Information on distribution board to be supplied

- Distribution board type
- Supply(top,bottom,rear)

### Installation location and condition

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

### Coordination with other system sections with busbar trunking system

- system installation plan:
- With planned power lines
- With the planned locations of ventilation duct runs
- With lighting plans
- Required number and location of the tap-off points

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

$I_B$ = 额定电流(A)
Ue = 额定工作电压(V)
cosφ = 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

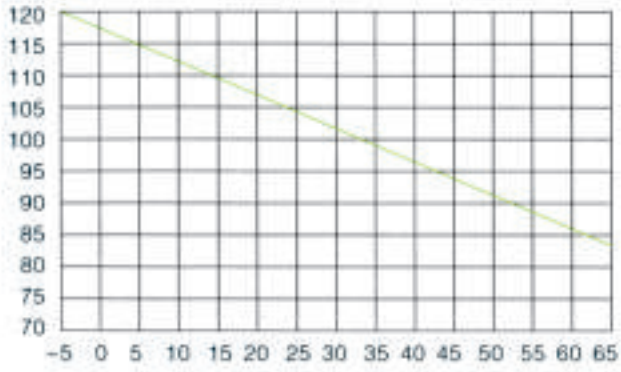
The busbar trunking system is dimensioned taking into account the restrictions mentioned above. The first step is to determine the rated current.

$I_B$ = Rated current(A)
Ue =Rated operational voltage(V)
cosφ =power factor
$P_{inst}$ =Installed power (KW)
α =Diversity factor
b =Feeder factor
b=1 with single-ended feed
b=05 with double-ended feed and centre feeder unit

| 主电路数 | α |
|---|---|
| 2 与 3 | 0.9 |
| 4 与 5 | 0.8 |
| 6 与 9 | 0.7 |
| 10 及以上 | 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 1EC/EN 60439-1 标准
载荷容量与环境温度的关系。
额定电流 1e 是基于一定的环境温度而言的 (24 小时平均温度为 35%,不超过 40℃,下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。

FrequenLSMy the diversity factor as per IEC/EN 60439-1 (see table)unless this is ruled out by particular application.
Relation between load-carrying capacity and the ambient temperature
The rated current Ie is based on an ambient temperature of 35℃.



## 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：

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

$\Delta U$ = 电压降(V)

$I_b$ = 额定电压(A)

l = 系数总长度(m)

a = 载荷分配系数

R' = 电阻(mΩ/m)

X' = 电抗(mΩ/m)

cosφ= 功率因数

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

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

$\Delta U$ =voltage drop(V)

$I_b$ =rated current(A)

l =total length of the system(m)

a =load distribution factor

R' =inductive load(m/m)

X' = 电抗(mΩ/m)

cosφ=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<br>B 点插接配电 | 1 |
| A→ B↓C↓D↓E↓ | A 点供电<br>B、C、D、E 插接配电 | 0.5 |
| B↓A↑C↓ | 从 A 供电<br>B、C 点插接配电 | 0.25 |
| B↓D↓A↑E↓C↓ | A 点供电<br>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 be-tween 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 LSM 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 LSM 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.

$$I_{kmin} = \frac{C \cdot U_o}{\sqrt{3} \cdot Z_K}$$

C = 电压系数 0.95

$U_o$ = 相间电压

$Z_K$ = 阻抗

## 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 " ≤Icc≤Icu

I " k= 估计的安装位置的短路电流

Icc= 系统运行时的额定电流

Icu= 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 put into consideration.

In general fuses are less suitable as over load 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 adopting not fuses and breakers as protection, the current must not exceed the specified short circuit ratings of the busbar trunking systems, and short circuit strength, current -limiting protection device and short circuit breaking capacity, etc. may also be put into consideration.

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:

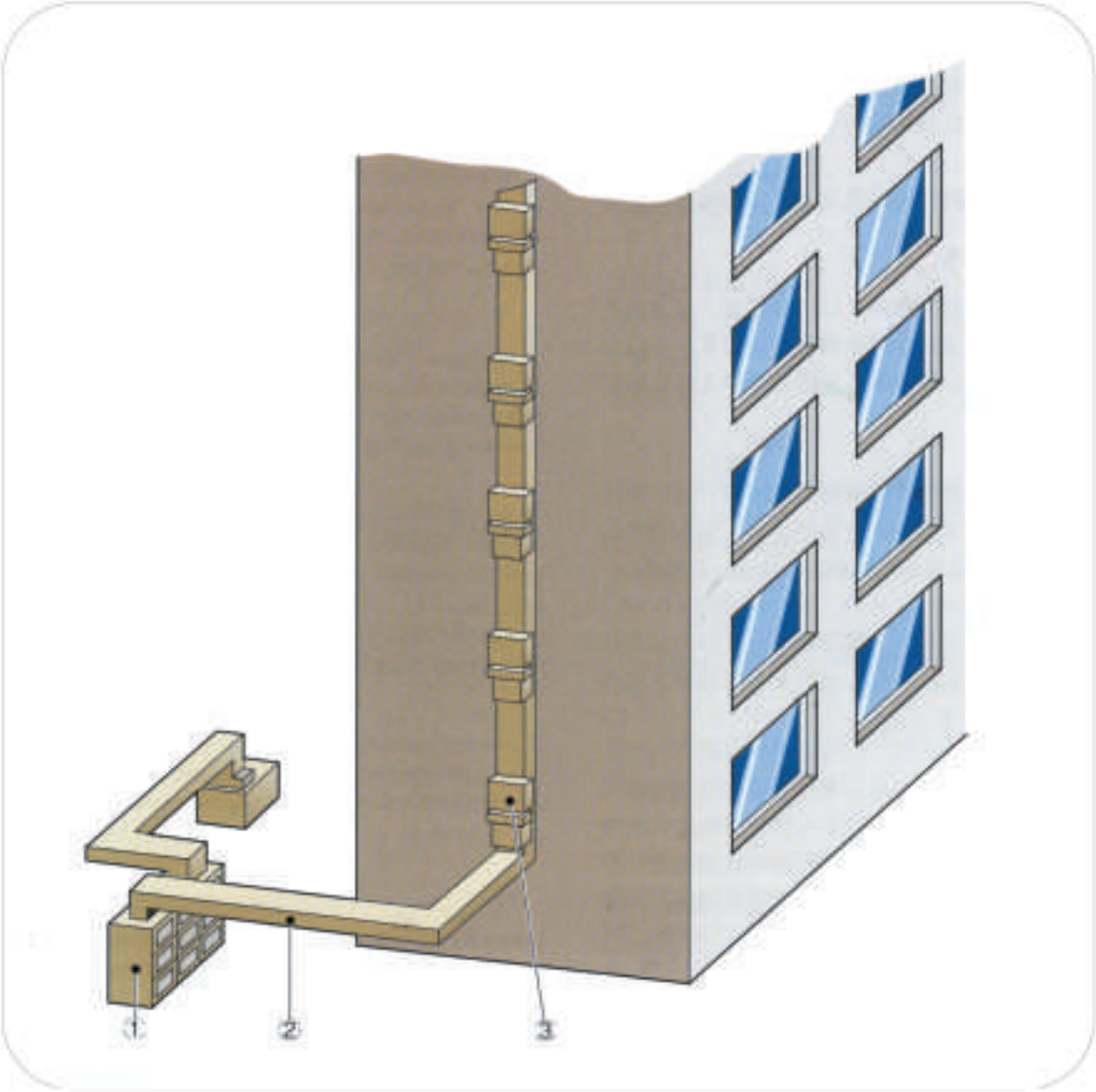
I"≤ Icc≤ Icu

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

Icc= conditional rated short-circuit current of the busbar run

Icu= rated short-circuit brea ing capacity of the circuit breaker

# 「设计实例」LSM-BUSWAY




| | |
|---|---|
| 1 | 配电柜 |
| 2 | 母线槽系统 |
| 3 | 插接箱 |

| | |
|---|---|
| 1 | Power distribution board |
| 2 | Busbar trunking system |
| 3 | Tap-off point |

| 楼层数 | 10 层(每层 8 个房间) |
|---|---|
| 每间房额定值 | 26KW |
| 额定工作电压 Ue | 100V |
| 功率因数 cos(符号) | 0.9 |
| 分散因数(符号) | 0.6 |
| 利用系数(符号) | 0.5 |
| 变压器供电 | 1 × 1250KVA,UK=6% |
| 防护等级 | IP54 |
| 系统型式 | TN-S |

## 每层楼额定电流的计算

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

$I_{ss}$ = 额定电流(A)
Ue = 额定工作电压(V)
cosφ = 功率因数
$P_{inst}$ = 安装功率
α = 分散系数

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

## 直线段额定电流的计算

$I_B = (I_{ss} \cdot \beta)$
$I_B = 10 \cdot 200 \cdot 0.5 = 1000A$

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 reduction factor is the utilization and rated diversity factor for thetotal number of loads. If no precise figures are known, good typical values can be obtained from the local power companies. They do however vary regionally. The table shows average values:

| 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 |

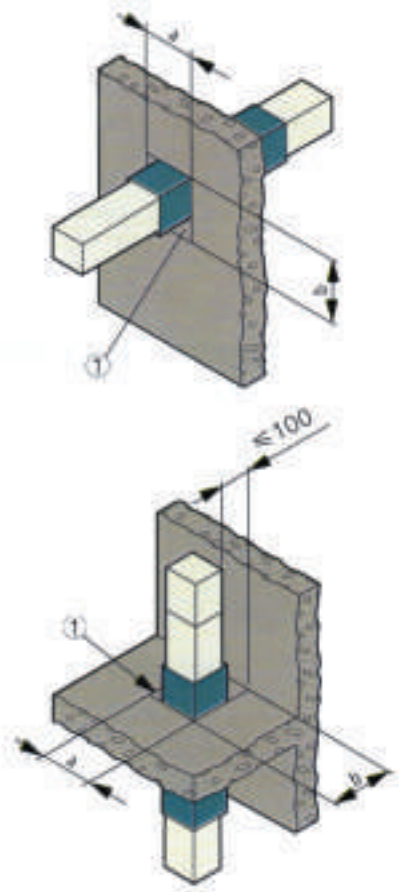
从上面提到的几点，我们可以很容易就进行 LSM 母线槽系统的选择，例如：需三相五线制系统，100%中性线，所承载的电流为 1250A，而相应的短时耐受电流为 50KA。
母线槽系统为：LSMC0551 插接箱单元：箱体规格为 2#、母线系统为 51、防护等级为 IP54 的插接箱，采用断路器保护并带有旋转操作手柄，断路器为 3 极、额定电流为 250A。
插接箱单元代码为：LSM-2AK51M/LSH-250S-3

The collated results lead to the selection of an LSM busbar system, 5-conductor with full N conductor cross-section, a current carrying capacity of 1250A and a short-circuit rating of Icw(t=ls)50kA.
Busbar System:LSMC 0551 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: LSM-2AK51M/LSH-250S-3

# 「母线槽系统的安装」LSM-BUSWAY

下列图示表明了母线槽单元穿墙安装时的标准尺寸

Charts below shows the standard dimensions while installation through walls.




| 电流 A | a/mm | b/mm |
|---|---|---|
| LSMC 400A | 350 | 320 |
| LSMC 500A | 350 | 320 |
| LSMC 630A | 350 | 320 |
| LSMC 800A | 350 | 320 |
| LSMC 1000A | 350 | 325 |
| LSMC 1250A | 350 | 340 |
| LSMC 1600A | 350 | 370 |
| LSMC 2000A | 350 | 405 |
| LSMC 2500A | 350 | 450 |
| LSMC 3150A | 350 | 580 |
| LSMC 3150A | 350 | 500 |
| LSMC 4000A | 350 | 650 |

## 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。

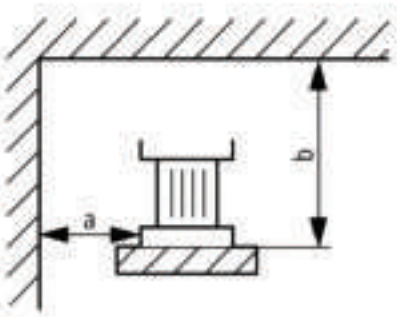
LSM母线槽系统(不带插接箱)

LSM 馈电式母线槽系统的最小尺寸

Requirements of dimensions for horizontal installation

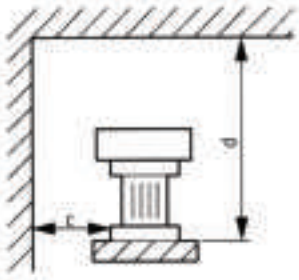
To ensure convinient installation of busbar trunking units and tap-off

units your design work should take into account the recommended distances from building components.



LSM母线槽系统(带插接箱)
LSM馈电式母线槽系统的最小尺寸

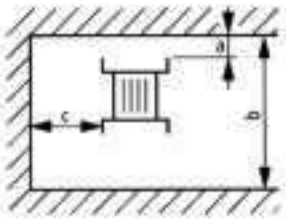
Min. dimensions for LSM busbar trunking without tap-off units
Min. dimensions for TL busbar trunking with tap-off units




## 垂直安装尺寸要求

LSM 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。

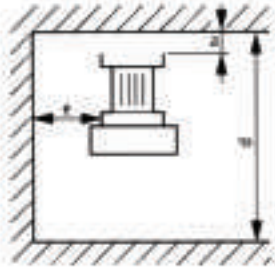
**Requirements of dimensions for vertical installation**
LSM busbar trunking without tap-off units
Charts below shows the Min. dimensions for busbar trunking systems without tap-off units. The dimensions of system fixing brackets not shown in the diagram should be taken into account.




| 水平安装 | | | |
|---|---|---|---|
| | a | b | c |
| 400 | 100 | 220 | 150 |
| 500 | 100 | 220 | 150 |
| 630 | 100 | 220 | 150 |
| 800 | 100 | 220 | 150 |
| 1000 | 100 | 220 | 150 |
| 1250 | 100 | 230 | 150 |
| 1600 | 100 | 240 | 150 |
| 2000 | 100 | 280 | 150 |
| 2500 | 100 | 300 | 150 |
| 3150 | 100 | 345 | 150 |
| 3500 | 100 | 395 | 150 |
| 4000 | 100 | 465 | 150 |

LSM 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。

LSM busbar trunking with tap-off units
Charts below shows the Min. dimensions for busbar trunking systems with tap-off units. The dimensions of system fixing brackets not shown in the diagram should be taken into account.




| 垂直安装 | | | |
|---|---|---|---|
| | a | b | c |
| 400 | 100 | 300 | 150 |
| 500 | 100 | 300 | 150 |
| 630 | 100 | 300 | 150 |
| 800 | 100 | 300 | 150 |
| 1000 | 100 | 300 | 150 |
| 1250 | 100 | 300 | 150 |
| 1600 | 100 | 350 | 150 |
| 2000 | 100 | 350 | 150 |
| 2500 | 100 | 400 | 150 |
| 3150 | 100 | 450 | 150 |
| 3500 | 100 | 500 | 150 |
| 4000 | 100 | 550 | 150 |

# 「母线槽系统的安装」LSM-BUSWAY

## 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 LSM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。

## Vertical fixing

Special spring brackets are required for installing vertical LSM busbarruns. Per floor at least one bracket should be used for single sy rem and two brackets 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. In order to allow for the additional weight of tap-off units, type selection should distinguish between power transmission and power distribution.

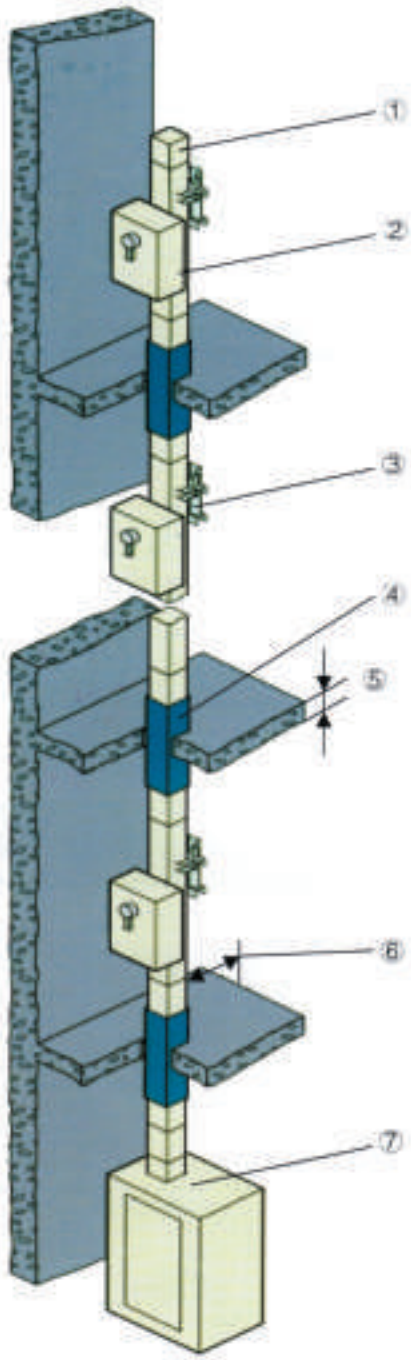
| | 电流(A) | 数量 |
|---|---|---|
| 输电 | 400-2500 | 1 |
| | 3150-4000 | 2 |
| 配电 | 400-2500 | 1 |
| | 3150-4000 | 2 |

注：每层楼至少一套插接箱单元

①终端
②插接箱单元
③弹簧支架
④防火闸
⑤天花板厚度
⑥安装支架距离墙面需 10cm
⑦配电柜

## Mounting position

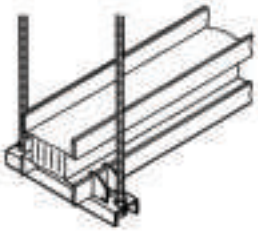
The mode of installation is prescribed for tap-off units with vertical busbar runs. The tap-off cable must be connected from below. This will be the case when the L1 conductor is on the left-hand side (as seen from the front).

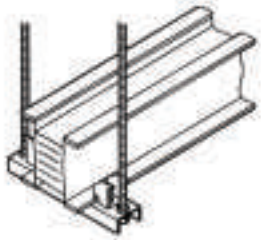



垂直安装母线槽走向图

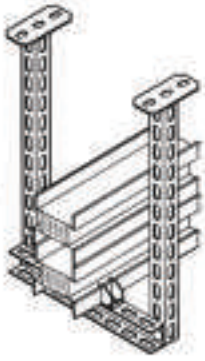
## 吊顶吊装

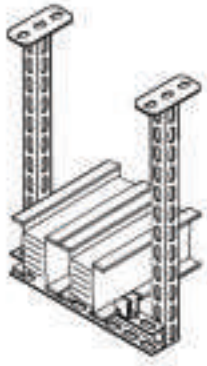
单 排
Single bar





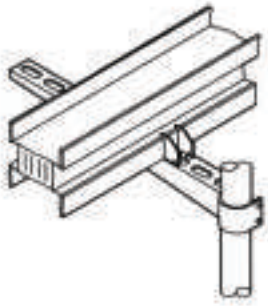
双 排
Double bar

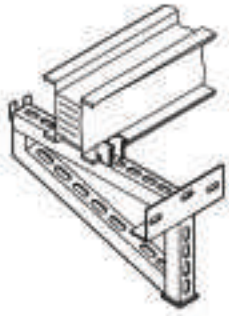




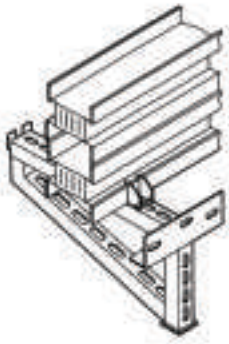
## 支架支撑

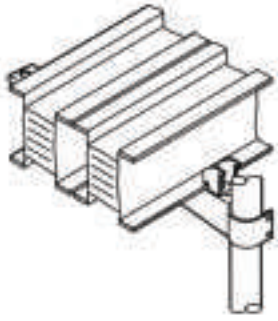
单 排
Single bar





双 排
Double bar



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