

CHIUCHEUNG COMPANY LIMITED  
照彰實業有限公司

Room 2404, 24/F, Cable TV Tower, 9 Hoi Shing Road, Tsuen Wan, N.T., Hong Kong  
香港新界荃灣海盛路9號有線電視大廈24字樓2404室

☎ (852) 2417 9229    📠 (852) 2402 2368    ✉ chiucheung@chiucheung.com.hk

CHIUCHEUNG (DONGGUAN) COMPANY LIMITED  
照彰实业（东莞）有限公司

No.108, Industrial Avenue, Shi Gu Village of Tang XiaTown, Dongguan, China    Postal Code: 523729  
中国东莞市塘厦镇石鼓第一工业区工业大道108号    邮编: 523729

☎ (0769) 8695 4033    📠 (0769) 8695 4089    ✉ sales@chiucheung.cn

BEIJING COMPANY    北京 分公司

北京市朝阳区曙光西里甲1号东域大厦B座305室

☎ (010) 5822 1529

📠 (010) 5822 1528

邮编: 100028

✉ beijing@chiucheung.cn

NANJING COMPANY    南京 分公司

南京市建邺区江东中路108号万达广场C座502室

☎ (025) 8580 9259

📠 (025) 8681 6390

邮编: 210019

✉ nanjing@chiucheung.cn

CHENGDU COMPANY    成都 分公司

成都市高新区天仁路387号大鼎世纪2栋2108室

☎ (028) 8522 2460

📠 (028) 8522 2939

邮编: 610041

✉ chengdu@chiucheung.cn

SHENYANG COMPANY    沈阳 分公司

沈阳市和平区中华路69号富丽华国际商务中心1203及1204室

☎ (024) 3150 2388

📠 (024) 3150 2392

邮编: 110002

✉ shenyang@chiucheung.cn

GUANGZHOU COMPANY    广州 分公司

广州市天河区林和西路3-15号耀中广场B座4012室

☎ (020) 3874 2739

📠 (020) 3874 2657

邮编: 510610

✉ guangzhou@chiucheung.cn



www.chiucheung.com    ☎ 400 822 3668



机房机柜节能技术方案  
Data Center Total Solution

卓越品质  
服务全球客户

Excellent quality  
Serving global customers

# 演绎精彩 再续传奇 Rack development

照彰一直为国际、国内五十多个国家和地区的民航、广电、数据中心、交管、安防、国家场馆和政府部门提供成熟的机柜整体解决方案。  
Chiu Cheung has supplied its own rack to over 50 regions and countries and covered various business fields such as aviation, broadcasting, data center, traffic control, public security, national venues and government institution.

RK I 第一代  
First generation



RK II 第二代  
Second generation



RK III 第三代  
Third generation



RK V 第五代  
Fifth generation



创新不间断  
Continuous innovation

全面拉开国内服务序幕  
Racks are widely served for various industries in China

- 2000 为深圳天威视讯提供RK III 型机柜，拉开为国内客户服务的序幕  
Developed and supplied our third generation rack - RK III (customer reference: Shenzhen Topway Video Communication Co., Ltd.)
- 2001 开始为广东省电视台制作机柜、控制台和电视墙等产品  
Solely supplied racks, consoles and monitor wall to Guangdong TV Station
- 2002 为香港电视有限公司将军澳新电视城提供超过1500套的机柜  
Solely supplied over 1500 racks to Television Broadcast Limited (TVB) - new TV city in TKO
- 2003 为国内各空管局、机场提供遥控盒机柜  
Supplied racks to ATCC of different regions in China
- 2006 为香港亚洲电视在大埔新电视城提供机柜  
Solely supplied over 500 racks to Asia Television Limited (Tai Po new site)

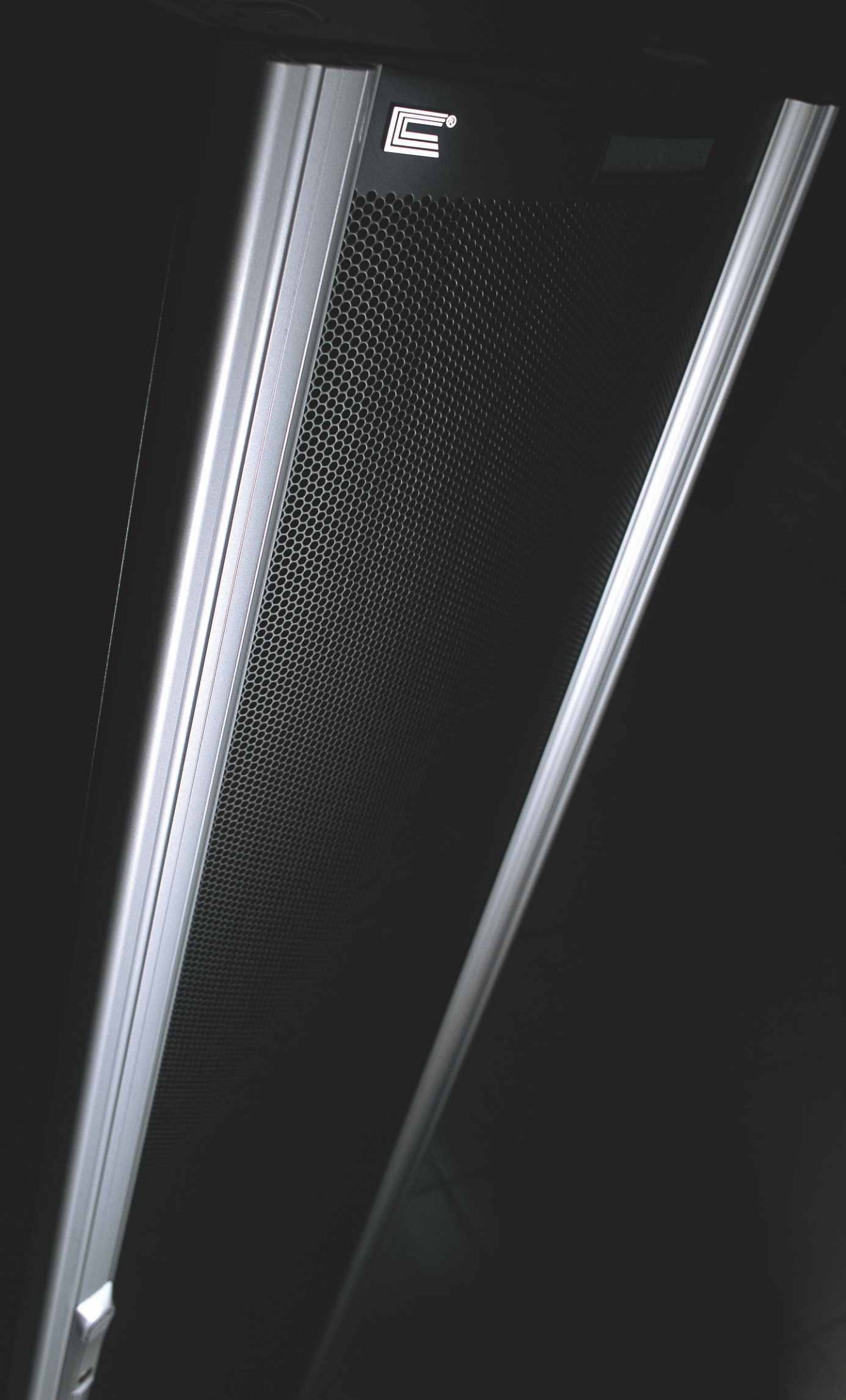
将EIA19" 标准引入国内  
Introduction of 19" EIA standard in China market

- 1992 为深圳华为提供有照彰产权的RK II 机柜，并将EIA19" 标准引进到国内  
Developed and supplied our second generation rack - RK II (customer refernece: Huawei, Shenzhen)
- 1993 为香港电讯及香港有线电视台提供机柜  
Solely supplied racks to HKT and HK Cable TV Limited

研发生产自主品牌机柜  
Design and manufacture its own rack

- 1947 照彰成立于香港  
Company established in Hong Kong
- 1968 已开始接触EIA 19" 标准  
Supplied 19" EIA rack and accessories
- 1986 研发生产照彰自主品牌技术的EIA 19" RK I 型机柜，并提供给香港TVB  
Developed our first rack - Racky I (customer reference: TVB)





# 机房整体解决方案的领先者

## The leading of the total solution in data center

照彰实业有限公司于1947年创立于香港，是一家专业提供控制台、机柜、电视墙等高级钣金设备的综合服务商。

照彰立足香港，在东莞设有研发中心和生产基地，销售市场覆盖中国内地，遍及全球。

70年，照彰励精图进，集设计研发、生产制造、销售服务于一体，矢志不渝的坚持自主创新和追求卓越的理念，以市场发展和客户需求为核心，为客户提供一站式机房整体解决方案。产品覆盖广电、航空、交通、安防、金融、能源、通讯、政府、数据中心等多个领域。照彰将不断超越自我，以更专业的技术和优质的服务，竭诚为不同需求的客户提供高性价比、高品质的整体解决方案，帮助客户构建科技、高效、环保的现代化数据中心。

Founded in Hong Kong since 1947, Chiu Cheung Company Limited is a professional integrated service provider of control consoles, equipment racks, TV walls / hanger and other high-end sheet metal fabricated product.

Based in Hong Kong, Chiu Cheung has set up the R & D and production center in Dongguan China and the sales service covers the mainland China and overseas as well.

After 70 years of dedication and hard-working, Chiu Cheung has become one of the world's leading designer and manufacturer for racks. By integrating design, research and development, production as well as sales and service, we commit to adhere to the concept of independent innovation and the pursuit of excellence. By placing market development and customers' need as our core, we provide customers with total solutions for the date centers. The wide range of business fields include broadcasting, air-traffic control, transportation, security & surveillance, finance & banking, energy, telecommunications, government institution, date centers and other domains of services.

In the future, Chiu Cheung will continue to improve and create breakthroughs. With more professional technology and quality service, we will exert every effort to provide customers with different needs and overall cost-effective, high quality solutions in order to help them to establish their ideal date centers that are technologically-advanced, efficient and environmentally friendly.



# 核心优势

## Core advantages

美观与实用的完美结合 Outlook and function are both emphasized
专业化EIA19"设计，拥有自主产权 Self design and supply, owned patent right
质量超群，承重力更强 Pursue for a high static loading capacity
多功能，兼容通用，适合各行业装机特点 Compatible for different industries used
全面的、专业的安全设计制作 Comprehensive and safety
结构更优化，拆装更方便 Flexible structure easy for assembly
满足量大和紧急交期的要求 Available on stock
厂家直销，保证品牌品质 Self manufactured to ensure high quality



绿色卫士认证      ISO14000/9000认证      CE认证      健康安全认证

RK机柜专利证书      承重测试报告      表面材料环保证书      冷轧镀锌板环保证书      包装材料环保证书



## 生产能力 Production capacity

照彰70年的历史，积累了丰富的制作及设计经验，各工序的主要人员都是从业多年技术骨干，确保各工序的质量达到完美衔接，同时配备有多种多样的专业设备。针对机柜产品，设立专线生产、喷涂线和组装车间，保证各类产品之间不会相互影响，效率高。

人、设备、环境、材料及制作工艺方法，是照彰能够设计及制作出优良产品的综合因素。每月可生产机柜1200个。



Chiu Cheung has accumulated 70 years experience on production and design. Most of the production staff has worked for the company over 10 years to ensure our products are qualified during the production. Also, Chiu Cheung has equipped with advanced machines. Dedicated production, spraying and assembly line are set up for the proudction of rack to maintain the efficiency.

People, equipment, environment, materials and production methods are essential factors for designing and manufacturing racks. Currently, the monthly production of racks has reached 1200 units.

## 照彰特色服务 Characteristic service

以高品质的产品、高素质人员，国际化标准为客户提供一站式优质的售后服务，不断创造新价值。

### 1年免费优质质保期，实行质量三包服务

优质质保期内，免费上门维修、免费更换正常使用下损坏的零件；照彰在各分公司设有配件备件仓库，可确保用户在提出更换需求时24小时内安装；提供货品维护时，该方案不会低于该设备包修期内维保的标准。

### 每周7天×24小时的技术支持和服务

出现技术问题或故障，照彰就近分公司会在1小时内作出响应，8个小时内维护人员可到现场对问题进行查勘，据情况及时修复或更换。

### 保质期外终身免费技术咨询服务

保质期外，为配合项目的急需及保证项目产品的及时维修，照彰备有充足的备品备件。



With high-quality products, high-calibre personnel and international standards, Chiu Cheung provides customers with one-stop service which is continuously value-added.

### 1-year of warranty and service guarantee

During the warranty period, free on-site maintenance service is provided. Spare parts are free to change if it is worked under normal run. It will keep certain stocks in each sub-office to ensure that repairing service should be given within 24 hours upon receipt of request.

### Technical support and services

In the case of technical problems or failures, the nearest sub-office will give their responds within 24 hours and provide timely repair or replacement.

### Lifelong technical support

Apart from the maintenance period, Chiu Cheung has also prepared sufficient spare parts in order to meet urgent needs and maintenance requested by our customers.



## 照彰机柜 8 大优势

### 8 advantages of Chiu Cheung's rack

## 1 国际标准产品工艺

### 19" EIA standard



独特结构设计，无烧焊，节能环保；实心三通连接；柜体刚性好，抗扭摆性、抗震性强；最大可承载1600Kg。  
( 承载测试报告编号：SDHGR120100027FT )

With symmetrical extruded 8-foldings hollow structural frame, high tensile strength and torque resistance; static loading capacity is about 1600kg.  
(Test report: SDHGR120100027FT)



严格遵循19寸EIA国际标准，把握机柜内通道准则和累计公差，保证机柜空间的最大程度利用。

Strictly follow 19" EIA international standard and the tolerance should be controlled within +2.0mm, -0.0mm

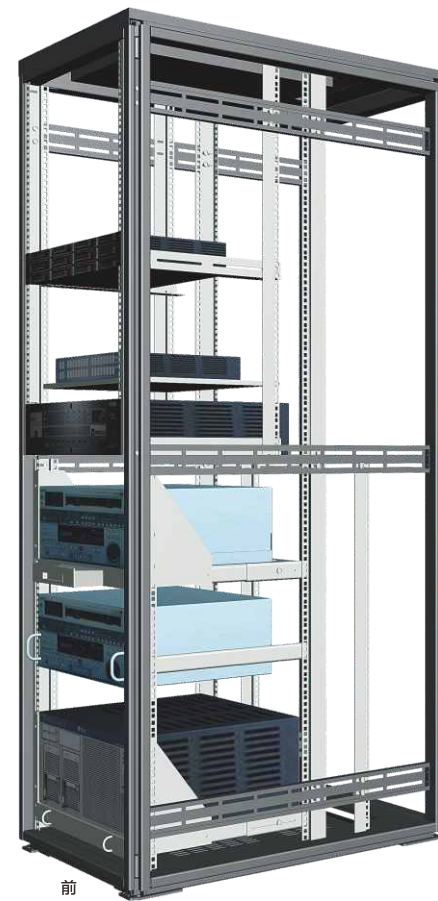
## 2 标准角特殊设计 Special rack angle arrangement

具备19寸标准及非标准设备的安装功能，前标准角可调至最前端，增大可利用空间，后标准角采用独特分段式设计，满足不同深度、不同类型设备装机需求。

3 pairs of rack angle in which the rear pair is in section to cope with different depth of equipment within one rack.

前后标准角(及横巴)均有刻度“U”数标示，确保便捷安装。

With "U" marking on both vertical rack angles and horizontal members to enhance re-positioning of rack angles and equipment installation.



前后标准角(及横巴)  
Front and rear rack angles  
(and horizontal members)



全导电连接，全接地  
Rack parts are conductive  
and connected to the ground

标准角可选配跟前标准角一致长度或分段式形式。  
Rear rack angle can be chosen either full height length  
or sectional type.

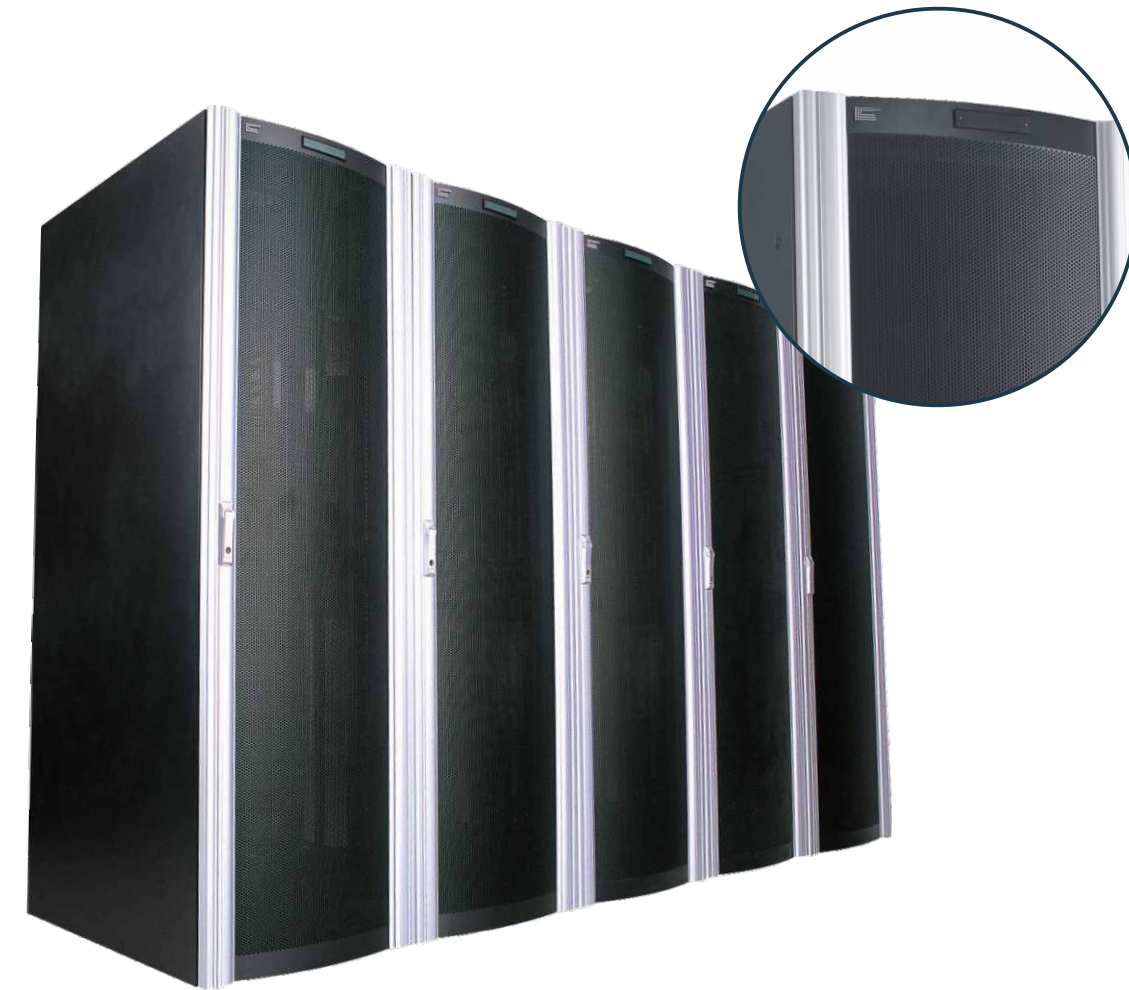
## 3 极简美学外观设计 Modernised outlook

采用最新前卫设计，稳重大气的全外盖式外观。  
机柜并柜时前后门可150° 打开，单柜使用时前后门可180° 打开。

Design is in covered door type.  
Door can be opened to 150° in a row and 180° in standalone.

无门并柜时，柜与柜之间设有卡入式拉铝装饰条，使整体更美观。

AL "Arc" sealing strip is available as an optional decorative features.





## 4 柜间系统独立安全

Electrically isolated for safety

并柜时，采用绝缘并柜连接器，柜与柜间绝缘连接，机柜与地架间作绝缘处理，保证每个柜系统独立安全。

Baying racks are electrically isolated for safety and enhancement of ease of fault-finding.

机柜制作按照MIL-454标准，机柜内无任何锐角和批锋，不伤人，不割线。

Followed by MIL-454 standard, sharp-corner and burrs are free.



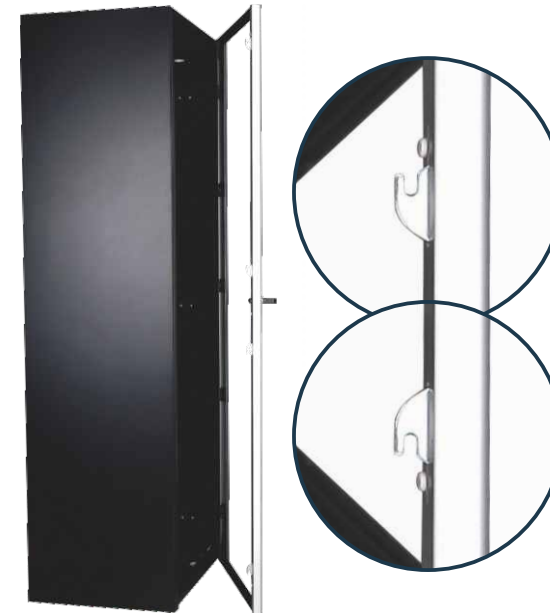
内藏式电源条设计，提供电力的同时不阻碍19寸装机通道。

Power strips houses at the back of rack without blocking the aperture width.



每柜设有一总接地点，整柜全导电，插拔式水线与门板双通，接地，保证安全。

Single main grounding point is provided in each rack. The whole rack is fully conductive. Plug-in type grounding wire is favorable for the disassembly and assembly of movable components like doors.



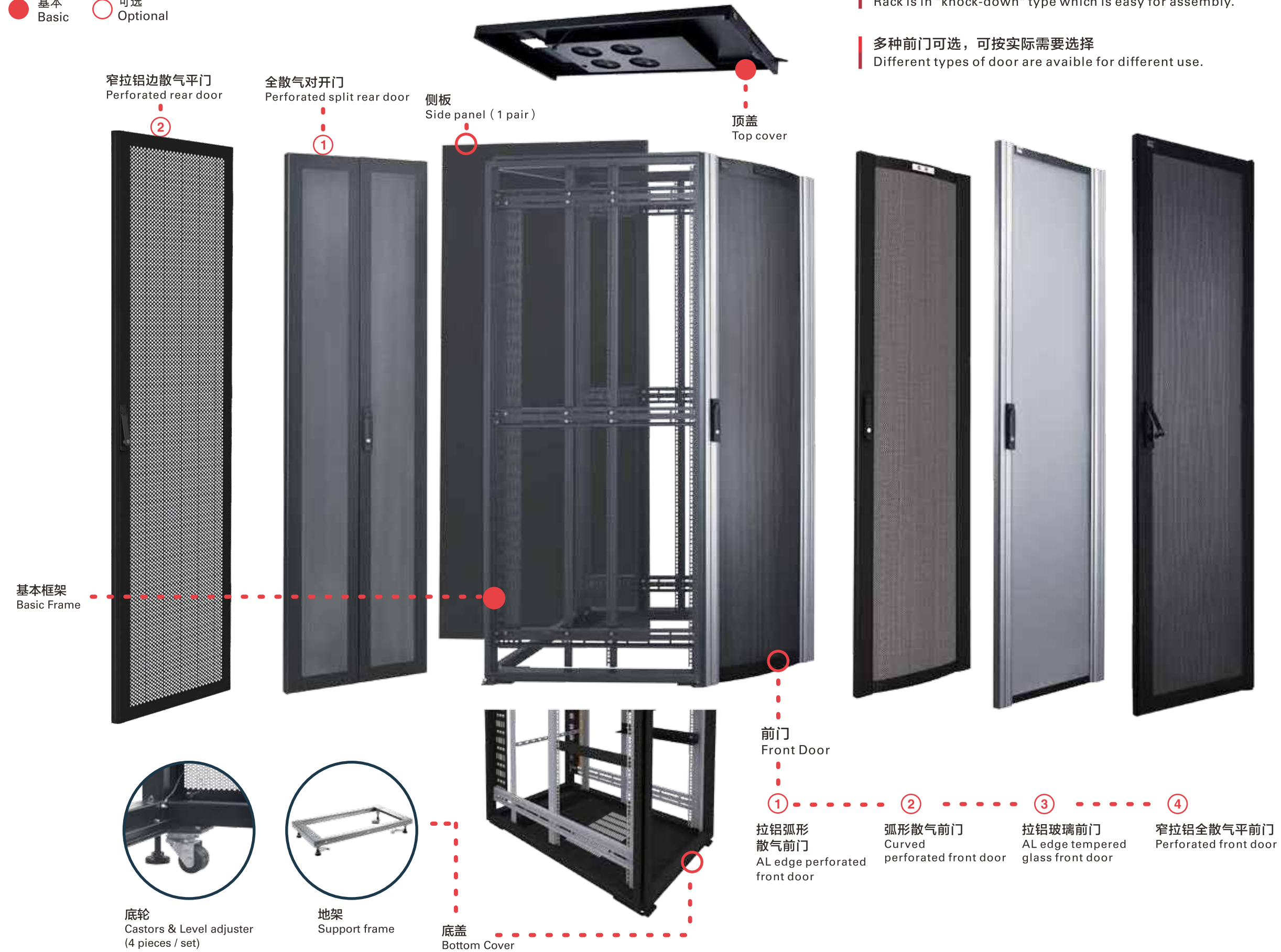
机柜门采用4点连锁设计，解决因门下坠、变形而关不上的问题。

4-pointed lock avoids the door being slanted, caused by the wear-out of the door hinge when the door is opened frequently.

## 5 组装灵活 Easy for assembly

● 基本  
Basic

○ 可选  
Optional



机柜采用模块式框架结构设计，全组合安装  
Rack is in "knock-down" type which is easy for assembly.

多种前门可选，可按实际需要选择  
Different types of door are available for different use.

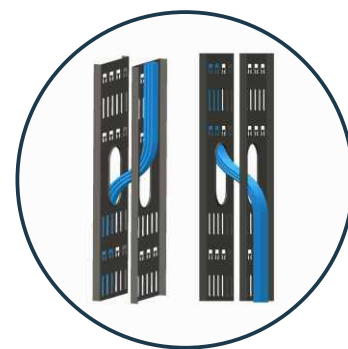


## 6 便捷的布线管理 Convenient cable management

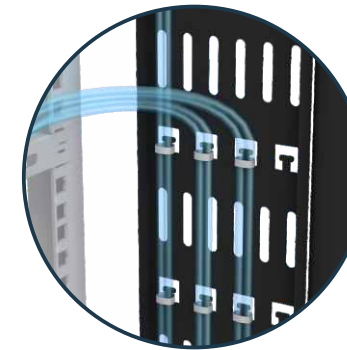


机柜前端布线  
Suggested cable management (front)

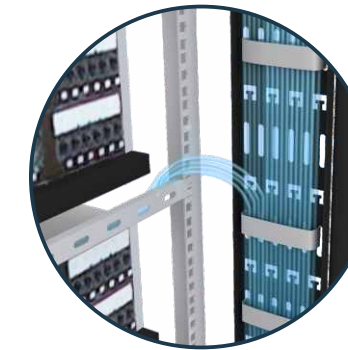
机柜后端布线  
Suggested cable management (rear)



■ 机柜并柜时，线缆可通过扎线槽圆形出线孔互通。  
Cables can go through racks when baying.



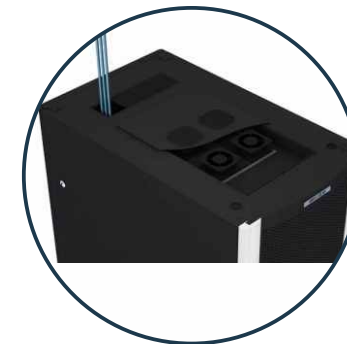
扎线方法一



扎线方法二

■ 机柜内创新结构设计解决传统布线困扰，具备全方位布线功能，满足不同工程现场布线需求。

Flexible cable management is highly considered. Special design cable tray is available to suit for different cable management practice.



■ 顶部、底部出线口盖模块式组合可按进线量调整开口大小，方便理线。

4 slot-in removable covers are equipped on the top and bottom cover to prevent dust-entry in different cable inlet volume.

■ 顶底进线量可达1200根（ $\Phi 6\text{mm}$ 的线缆）

Cable hole is available for max. 1200 pieces of  $\Phi 6\text{mm}$  cable.

## 7 超强承重力 Strong static loading capacity

## 8 双重性散热设计 Dual heat dissipation design

机柜顶盖安装风扇盒，前后门采用高密度网孔设计，通风率达65%—70%；  
Fan guard with 4 ventilation fans are equipped on the top.  
Perforation rate for door is about 70%.

柜内装气流面板和风扇盒，辅助机柜内散热  
Fan box and ventilation panel can be added for enhancing heat dissipation.



风扇盒  
Fan box

## 机柜基本资料 Rack information



基本资料  
Basic information

编号 No.	名称 Name	数量 Quantity
①	三通连接器 Tri connector	8
②	立柱 Column	4
③	侧梁 Side support	4
④	横梁 Front support	4
⑤	横巴 Cross bar	6
⑥	标准角 Rack angle	6
⑦	扎线槽 Cable tray	1
⑧	顶盖 Top cover	1

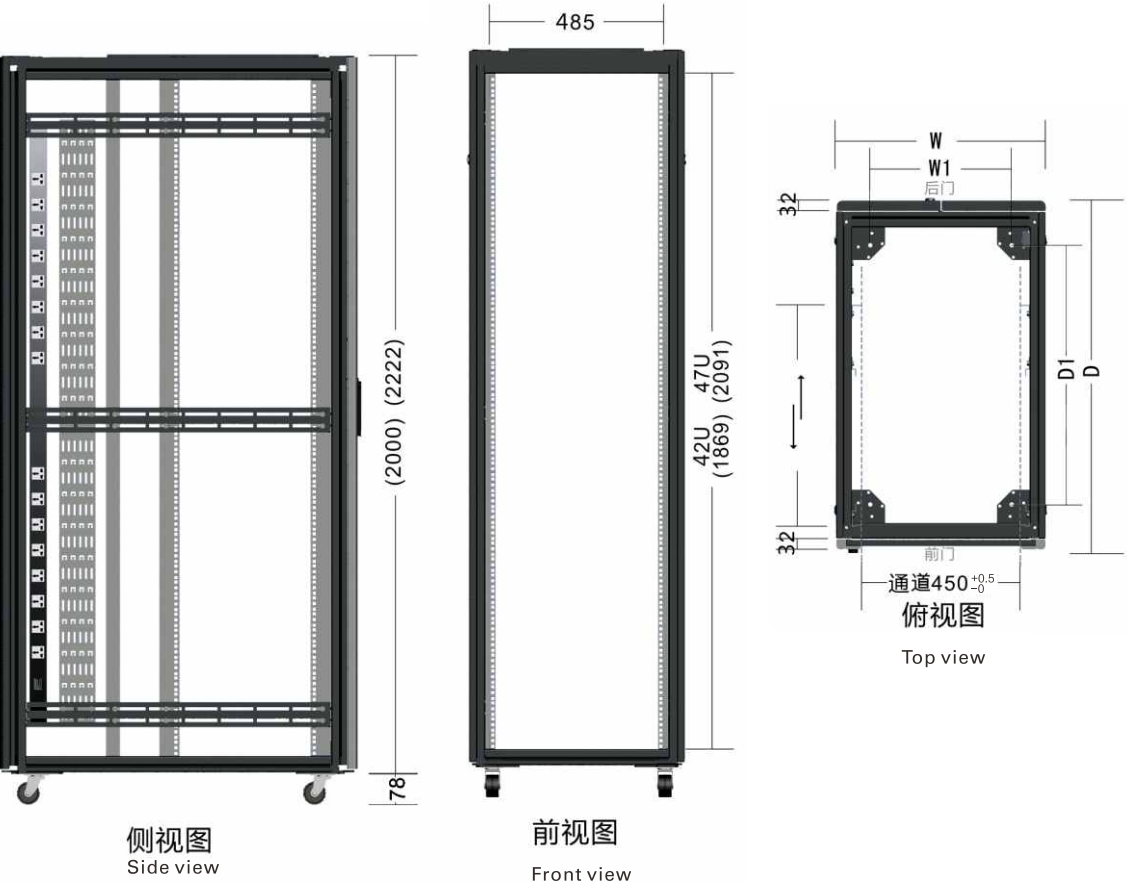
规格 Specification
宽度: 19 " EIA国际标准 Width: 19 " EIA
单位: 1U=44.45mm Unit
钢材: 镀锌防锈钢板 Steel: galvanized steel
粉尘厚度: 80um~100um Coating thickness
粉尘硬度: 3H Coating hardness
内通宽度: 450mm <sup>+0.5</sup> <sub>-0</sub> Inner width
垂直度: 90° ±0.25° Verticality
颜色: 黑色 Colour: black
高温喷粉: 180° High temperature powder coating



基本尺寸  
Dimensions

No.	高度 Height		宽度 Width		深度 Depth	
	外高 Outer	内高 Inner	外宽 Outer	内宽 Inner	外深 Outer	内深(参考) Inner (reference)
1	2000mm	42U	600mm 800mm	19"	800mm	730mm
2					1000mm	930mm
3					1100mm	1030mm
4					1200mm	1130mm
5	2222mm	47U	600mm 800mm	19"	800mm	730mm
6					1000mm	930mm
7					1100mm	1030mm
8					1200mm	1130mm

机柜地架固定孔位表 Position of mounting holes for support frame						
	600W (W1=390mm)				800W (W1=590mm)	
D1	590mm	790mm	890mm	990mm	590mm	790mm
D	800mm	1000mm	1100mm	1200mm	800mm	1000mm



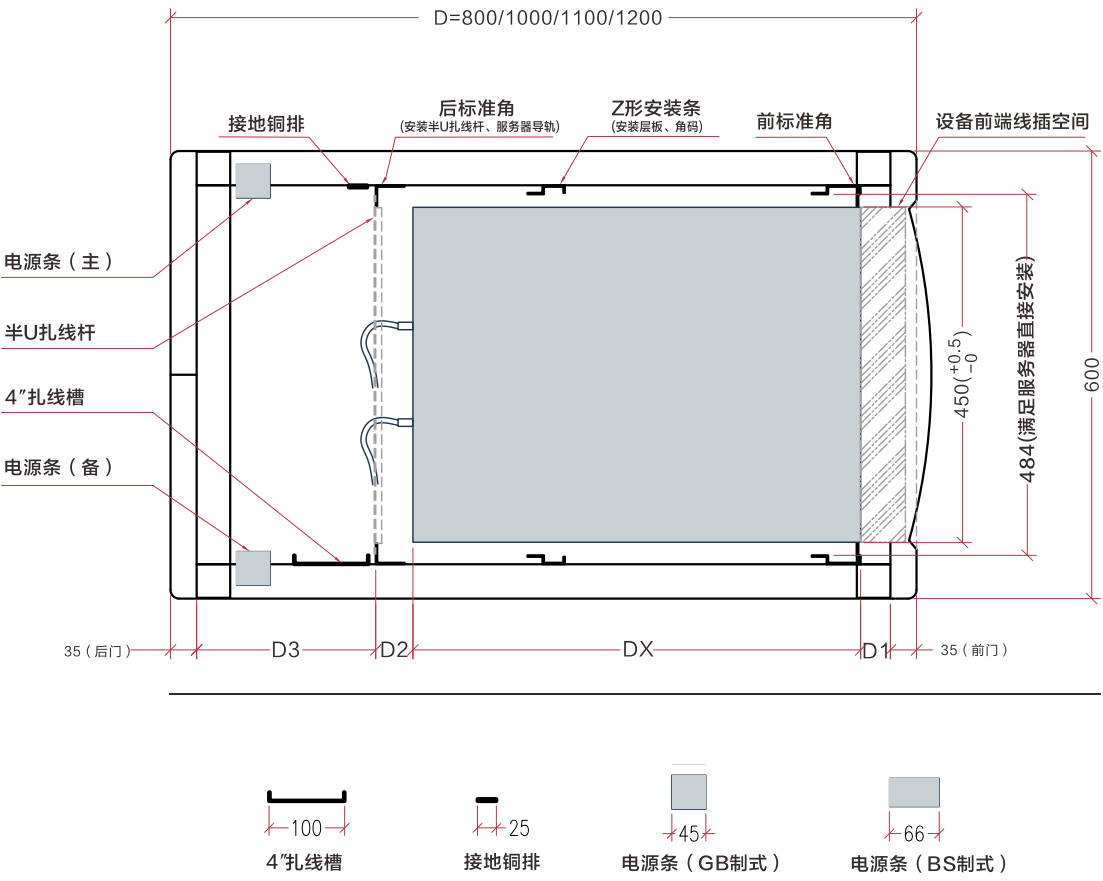
# 装机分析图

## Hints for assembly

机柜可放设备深度计算方法：  
Calculation the net space availble for equipment inside the rack:

$DX = D - 35 \text{ (前门 front door)} - D1 - D2 - D3 - 35 \text{ (后门 back door)}$

- DX: 设备安装深度，不含前边拉手、按键、不含后端线插头。  
Net space available for equipment.
- D: 柜深（含前后门），无前门或后门时，需减去门的厚度（前、后门后均为35mm）。  
Outer depth of rack.
- D1: 标准角离柱子前端尺寸，视线量与半U扎线杆安装位置而定，可变为0。  
Space for hand rail of equipment.
- D2: 半U扎线杆低于设备安装时（D2≥40mm）半U扎线杆平于设备安装时（D2≥75mm）  
Space (suggested distance) for fixing cable tie bar (max≥75mm)
- D3: 扎线杆，电源条，接地铜排，安装空间，视配件安装多少来定，配件尺寸见图。  
Space for fixing power strip or grouding copper bar.



# 机柜配件

## Optional 19" EIA accessories



封板  
Panel



卡扣封板  
Blank panel with spring clip

免螺丝安装，安装快捷高效；有1U – 3U可供选择。

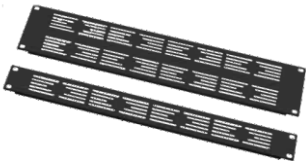
Without screw for fixing; stock available for 1U - 3U.



面板  
Blank panel

上下摺边加强面板力度；有1U – 3U可选择。

Re-enforcement folding edge; stock available for 1U - 3U.



散气封板  
Air vent panel

特制加强边；封板边呈圆弧型，为封板与封板间留有空隙，可避免碰撞而令面板表面破损；散热；配1U–3U选择。

Re-enforcement folding edge; Arc edge design in which an acceptable gap is made to prevent damage in between the panels; for heat dissipation; stock available for 1U - 3U.

承托配件  
Tray



层板  
Flat shelf

承重达50Kgs；深度：450mm / 620mm / 720mm 可选；一个人可以安装，节省人力。

Loading weight 50kgs; stock available for 450mm / 620mm / 720mm (depth).



托码  
Chassis support

为较重的19"标准仪器提供辅助承托；可按特定要求制作；承托高度可作微调，深度330mm / 450mm / 620mm可选。

For supporting equipment to be mounted on rack-mount angles to facilitate maintenance process; tailor made is available; stock available for 330mm / 450mm / 620mm (depth).



2U LCD活动盆  
2U LCD tray

承重达40Kgs；选用双节高质轴承18"导轨；可放17寸以下液晶显示器和超薄键盘。

Loading weight 40kgs; equipped with high quality imported ball bearing 18" slide; 17" LCD and keyboard can be fitted.



键盘盆  
Keyboard tray

承重达40Kgs；选用双节高质轴承 18"导轨；2U键盘盆顶部可放置显示器。

Loading weight 40kgs; equipped with high quality imported ball bearing slide 18" slide; monitors are able to stand on the 2U keyboard tray.



抽桶（开放式/封闭式）  
Drawer (open / closed)

承重达40Kgs；选用双节高质轴承18"导轨；有开放式（无锁）和封闭式（带锁）两种选择；配在机柜内，可以管理柜内设备资料 and 工具。

Loading weight 40kgs; equipped with high quality imported ball bearing 18" slide; with or without lock type are available for selection; for storage of accessories or enclosed type for important documents.



活动盘  
Movable tray

承重达75Kgs；双节高质轴承导轨，配散气孔；没散气孔的可做桌面用。

Loading weight 75kgs; equipped with high quality imported ball bearing slide and airvent holes; can serve as table if no airvent holes.

# 电器类

## Power distribution



6位电源条  
6-way power bar

输入电源：220V；额定电流：16A，可配10A万能插座或者新国标5孔插座；颜色可选：钛白、黑色。  
Input : 220V, 16A; color: grey or black.



12/18位电源条  
12/18 way power bar

输入电源：220V；额定电流：32A，可配10A万能插座或者新国标5孔插座；颜色可选：黑色、钛白；拉铝盒体，面板模块化；可根据需要增加漏电保护、空气开关箱、防雷等模块。  
Input: 220V, 32A; color: grey or black; tailor made is available.



电源箱  
Main distribution unit (MDU)

箱后备有10位元IEC插座，带有锁扣，备有美式插座可供选择；输入电源：220V，10Amp max；输出电源：5Amp；备有独立指示灯和保险丝；尺寸：标准EIA 1U\*200mm。  
10 way IEC socket with safety retainers at rear as power source; american flat pin socket is also available for selection; input: 220V, 10Amp max; output: 5Amp fuse control; with luminous main on / off switch, individual fuse and legend plate for identification; size: 1U x 200mm depth.

# 理线配件

## Cable management



伸缩条  
Extractor

配合活动盆一起使用，来固定电源线，可避免电源线下垂造成接触不良，或减低活动盆长期拉动时对电源线所造成的磨损。  
Used with movable tray and cable tray when cabling to avoid interception result in bad contact / disconnection / damage of cable.



扎线杆  
Cable tie bar

半U 扎线杆，扎线用，备有过线孔。  
Allow cable and power cord to turn horizontally and be accommodated properly.

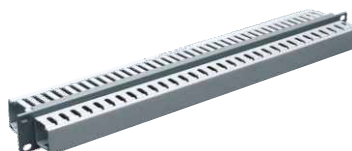


U型延伸扎线杆  
U-shape cable tie bar



扎线面板  
Hoop panel

相比扎线杆更能固定大量仪器的电源线和讯号线；配1U-2U选择。  
To assist in better cable arrangement for large quantity cable; 1U - 2U (H) is available.



线槽面板  
Panel with plastic cable trunking

当讯号线备用时，用悬挂用途。  
For holding the patching cord / fibre when not in use.



# 其他配件

Other accessories



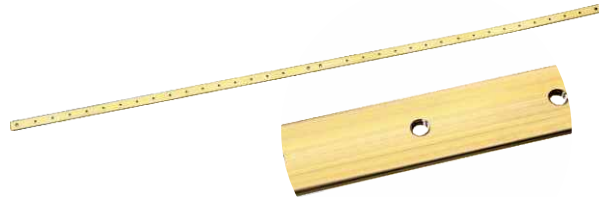
维修照明灯  
Luminous strip

竖装在机柜后端，方便维护照明。有感应装置，门打开，照明灯自动亮；门关闭，照明灯自动关。  
Vertically mounted at the rear for maintenance lighting;  
Sensor detected for switch.



2U照明灯  
2U Luminous panel

手动开关，向下照明。  
To be mounted in front of the rack for lighting purpose;  
Light source: filament PHILIPS 35W, 230AC.



接地铜条  
Grounding copper bar

规格：25mm宽\*3mm厚。  
Specifications: 25mm (W) \* 3mm (T).

# 经典案例

Job reference

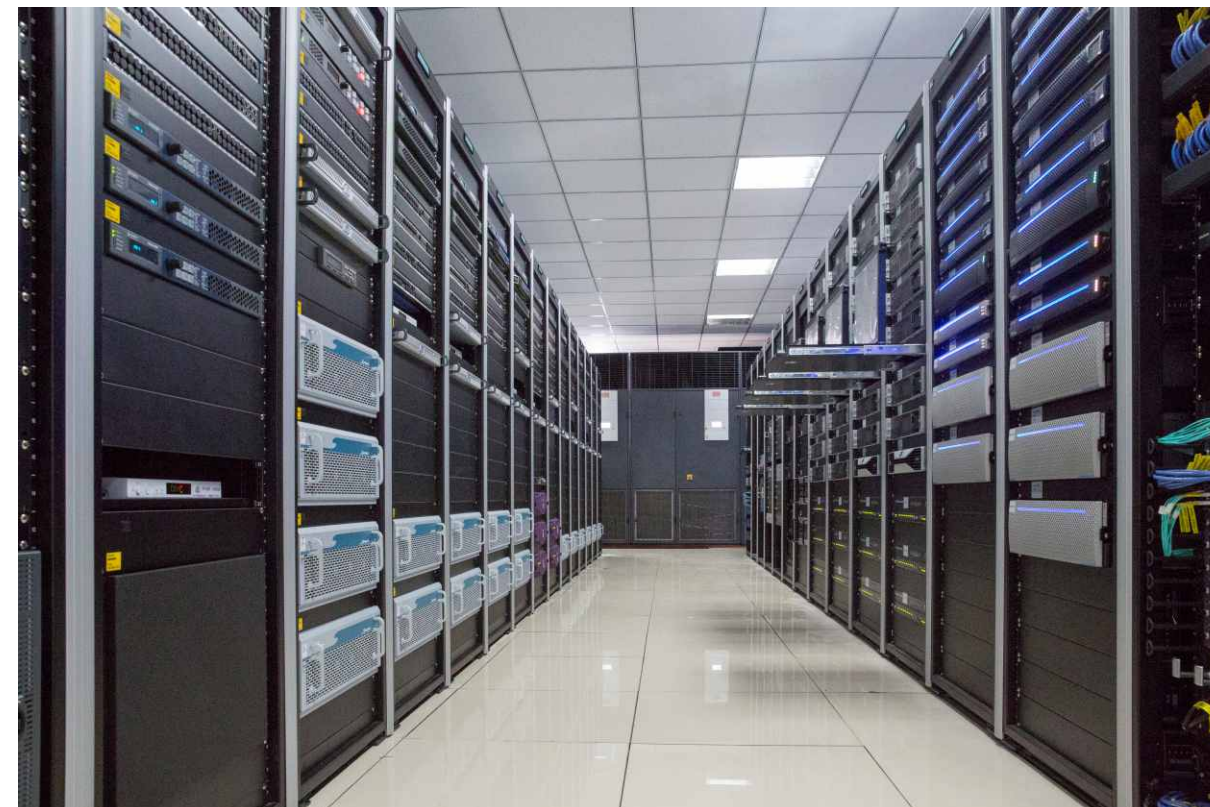
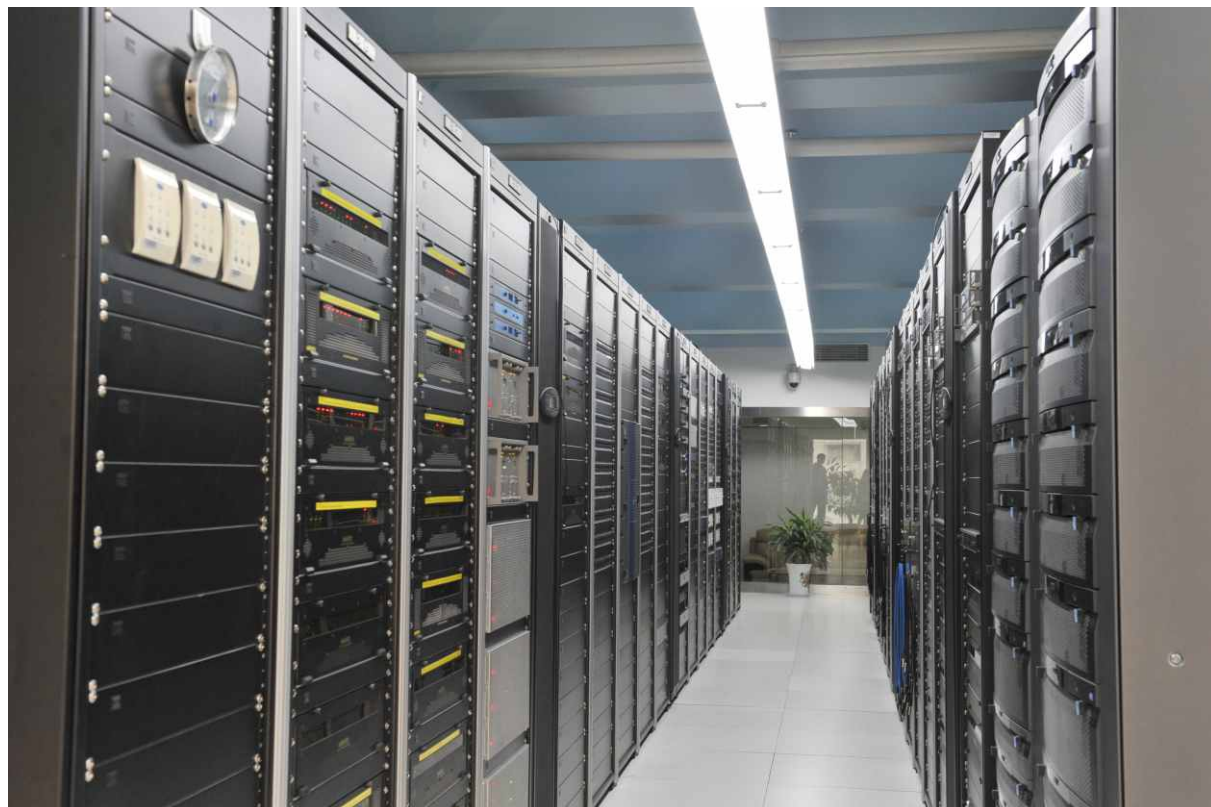
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西安电视台  
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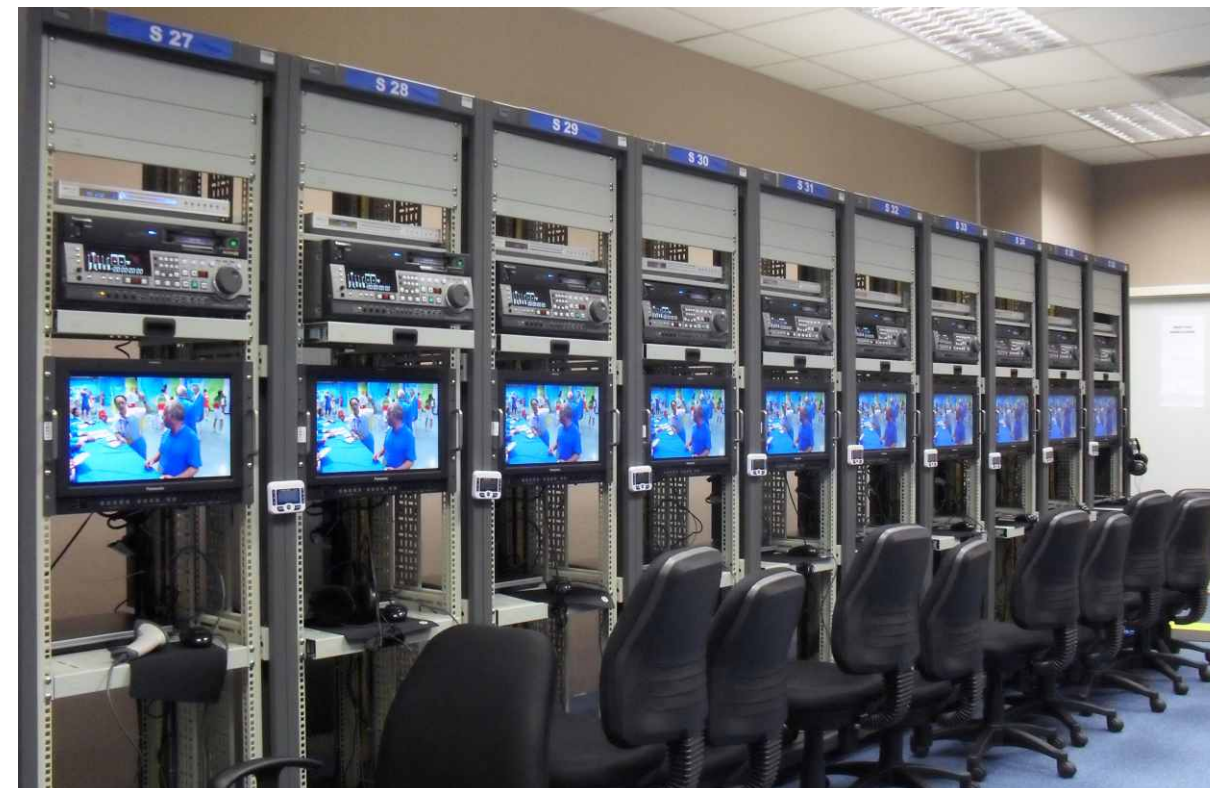
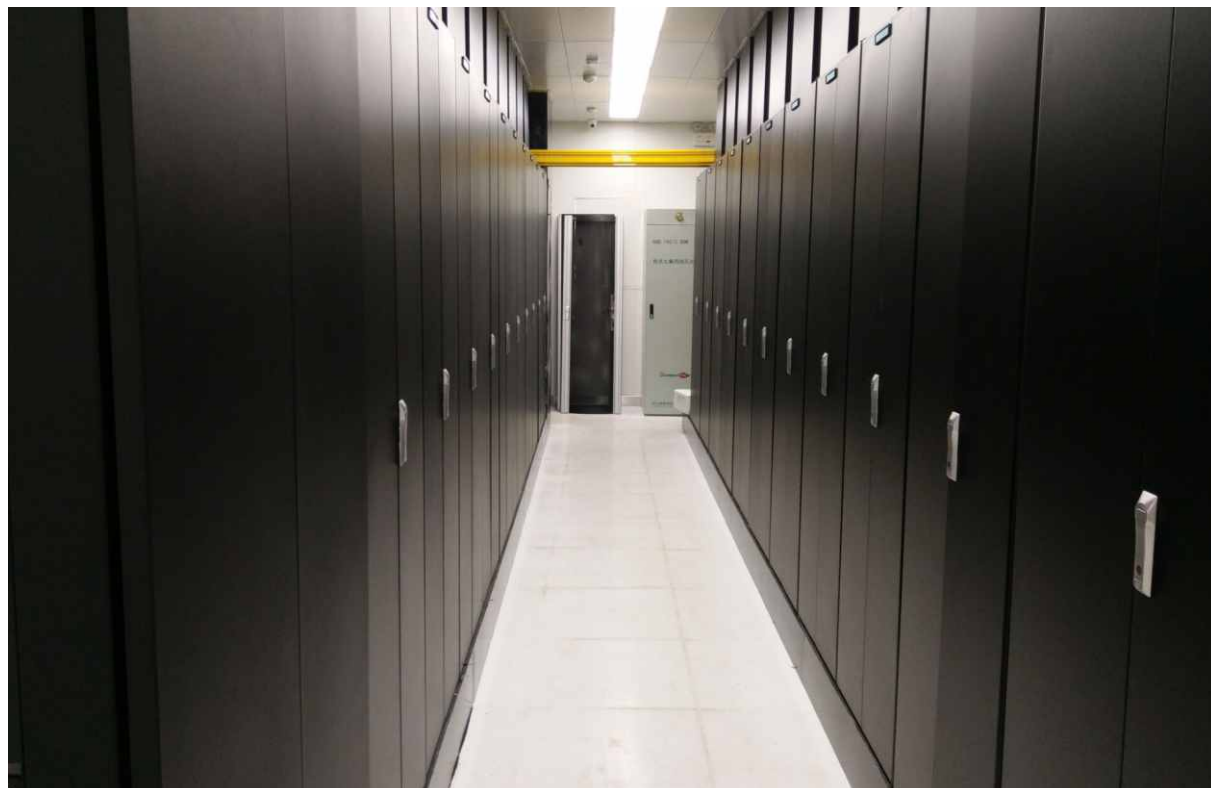
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西南空管局  
CAAC Southern  
Regional Administration

新疆空管局区管中心  
CAAC Xinjiang  
Regional Administration

# HOW TO CHOOSE YOUR RACK

机柜于1940开始在市场上采用，多用在19"标准仪器安装的设备里，现今广泛应用在IT、音响、计算机等硬件上，安全而又整齐。机柜市场目前参差不齐，很多时候人们只重价位而忽略了细节，照彰凭借在专业机柜生产领域多年实践经验，在此分享一些机柜选择及使用上的常识供参考。

19" EIA Rack has been used in market since 1940. It is mostly applied to install 19" EIA standard AV equipments. Nowadays, computers, IT equipments and consumable electronic appliances also require rack to provide safe and tidy accommodation. Many kinds of rack are available in spot market and most of them are emphasized on cost. Some of the requirements are being ignored, eventually affecting the proper use during application which include host of equipments, loading, labeling, heat dissipation & cable, etc. Below, we pointed out some major attentions that we should be aware of when choosing racks.

1

标准角方孔的制作尺寸严格按照1U=44.45mm标准制作，但因设备仪器的制作公差，安装仪器的标准孔可选用方型孔，内装浮动螺母盒，螺母在其中有0.5mm活动间隙；表面环保镀镍，这样可保证箱体不生锈，弹性好，方便卡入标准孔内，而在仪器安装时，较好的活动间隙，可使螺丝容易对位装入，仪器间的重叠公差会得到调整，在整体上可以保持位置的准确，间隙的均匀，设备平整；标准方孔可适于各类普遍应用的大品牌服务器的直接安装。

"Square" hole type rack-mount angles for caged nut insertion is highly recommended instead of traditional thread-tapped type rack-mount angles, which are long-lasting and suit for different screw type / size.

2

为使仪器能很好地装入，要求仪器的制作宽度应小于19"即482.6mm，而盒身的宽度应小于内通450mm，而与之配合的机柜上相关尺寸要遵循轴-孔配合的原理，应大于19"，但应限制一个公差范围，即483mm-485mm之间。当设备装入有困难时，应从上述两个方面理解，验证哪方违反了行业制作标准。

Strictly control on both outer width 19" which is equivalent to 482.6mm (usually round up to 483mm) and its aperture width 450mm, to host equipments. Tight tolerance must be kept at outer width 483mm (+2mm), in order to mount / dis-mount the panels / equipments smoothly.

3

机柜内的结构设计要符合各种布线需求，具备全方位布线功能，满足不同工程现场的布线需要，同时过线处有保护措施，避免伤线。

Deburring and removal of sharp angles are the major process in rack manufacturing. It is not only for the safety of cable / equipment installer, but also applicable to the protection of cables which would not be damaged whenever they pass through.

4

许多人对机柜的宽度不以为然，其实现代机房的地板规格一般为600mm，如果机柜宽度制作不是控制在600mm内公差，实际并柜后，最外边的机柜将会压住地板，不方便揭开地板理线，给布线和维修工作带来麻烦。为了设备运行安全，保证每套相连机柜间不通电，机柜并柜时，可采取特别方式连接，机柜与地架间也需做绝缘处理。标准角深度可调，方便固定不同深度的仪器。

Regarding to racking system, there are three points must be anticipated. First, the outer width of the rack should be within the size of computer floor, i.e. < 600 mm, to avoid the overlapping of raised floor tile. Second, racks when linked together should be electrically isolated. Lastly, the adjustment of rack-mount angles can facilitate the mounting of equipment in different position inside the designated rack.

5

机柜为了存放更多的仪器设备，对承重量也有相应要求。照彰机柜承重最高可达1600Kg。

The 1600kg loading capacity is being tested and certified by recognized laboratory as a guarantee to the end-user.

6

照彰配备不同种类的配件，如：面板、层板、PDU等，配合机柜使用。

Provisions of accessories are one of our distinctive points. After all these years experience, we have provided different types of panels, trays / shelves, fans products, PDU and cable management tools etc.

总的来说，一个好的机柜应兼备以上各项条件，要达到方便安装及使用，做到节省成本及省时。

Last but not least, a qualified rack with a skillful technical man to enhance the installation, integration and application, hence both time and cost are saved.



## 项目工程 及其它特殊用途机柜 Other specialties

### 布线机柜 Cabling rack

针对800mm宽的布线柜，配备合理的布线方式。  
For 800mm (W) cabling rack, cable path is well equipped.

机柜扣线环进线量可达280根 (Φ6mm) 的线缆  
Cable hooks at both sides allow a large volume of cables being went through at the same time.



## 节能冷池机柜 Self-cooling rack

实现大机房冷热分流管理，使地台板下冷气在静压箱作用下经机柜底部直接进入机柜内，对设备降温，高效散热，更经济更节能。

Data center facilitates cooling system by continuously pushing cool air through perforated plates on the raised floor to maintain a suitable temperature for all the racks in the room. An easier and inexpensive way to force the cool air to the equipment is to install a "Cool air box" at the bottom of the rack.



机柜从下方送风，在柜内设置的导风箱疏导下，冷气顺利进入柜内预留的前端通道。（机柜前门采用带密封的玻璃门，前端两侧采用封板将立柱与设备之间密封，造成一个密闭的设备前端冷气通道）设备向后抽风，将设备直接降温，热气从后端散出。

Cool air enters from void at bottom of cabinet. The "Cool air box" set the path for cool air to create a curtain of air at the front of the cabinet. Temper-glass front door, blanking panels placed in the front of any open areas of server racks and the sealing panel on the inner sides of column created a big impact by just blocking off those unused spaces, which should force the cool air to the designated equipments.

设备与设备之间安装1U-2U封板，无自带抽风设备之间需要安装散气封板。由于冷气压大于设备后部气压，冷气亦会有少量从封板与设备之间的缝隙（或散气孔）通过，使相邻设备之间的热气被带走，从而保证机柜内每个部位都有效散热。

Install 1U-2U vented panel between those equipments without ventilation fan, which aim at cooling the equipments by flow of cool air from vented panel to the space between equipments under natural convention.

机柜底部导风口安装有防鼠安全网和可调节风量的封板。

Advanced features at the bottom of the rack - size of void can be adjusted to control the volume of air-flow. Void is equipped with guard to prevent the entry of foreigner object into the rack.





# 冷通道系统

## Aisle containment

互联网，云计算及物联网技术的大发展带来了数据中心的爆发性增长。然而数据中心机房在使用过程中，受各种因素制约限制，造成机房气流组织不合理、不通畅。导致只能通过增加机房空调设备容量以满足机房需要，造成投资增大、运行费用增高，机房PUE值增大。

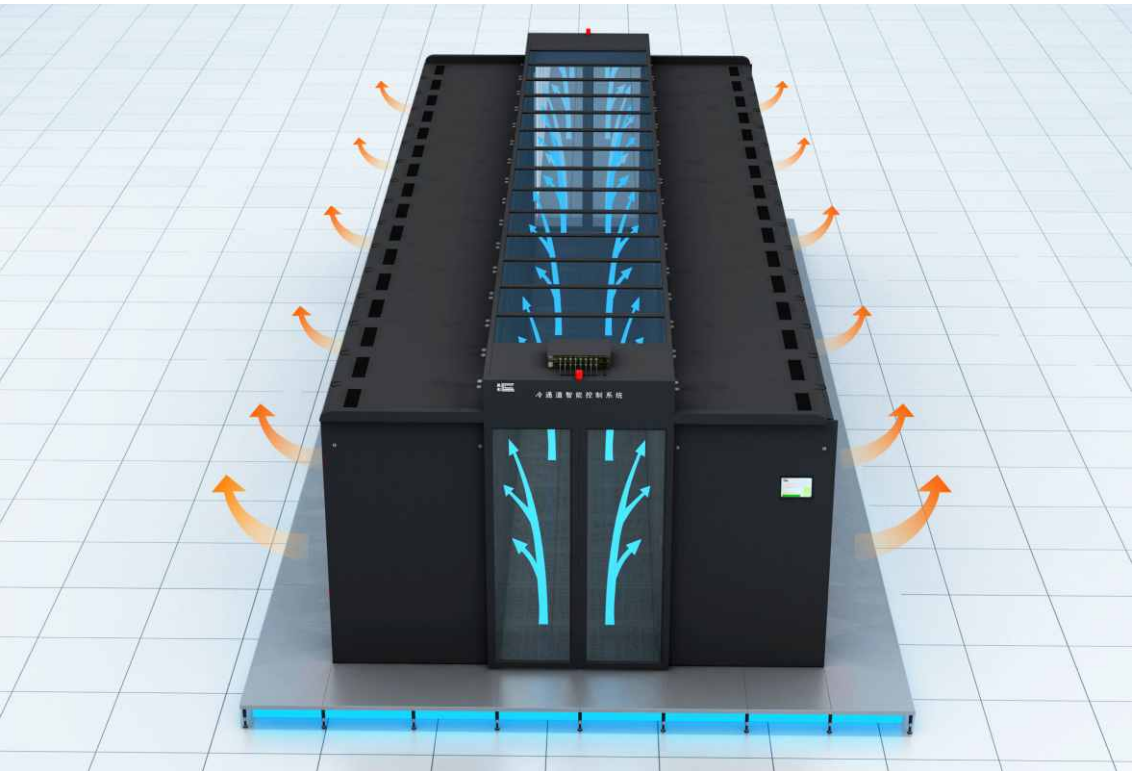
Due to the rapid demand on data center and increasing power of critical IT equipment which rise up heat density inside the racks, cooling costs are on the rise and space-utilization is becoming a great challenge.

因此如何规划好数据中心机房气流组织，有着非常重要的意义，冷通道系统解决方案是对机房内现有的不合理的气流组织，进行归纳分类，合理改造。避免不必要的冷热交换，提高空调系统效率，减少机房运行费用。

To minimize extraneous energy costs and power consumption, data center operations are increasingly turning to aisle containment to help on the optimization of airflow.

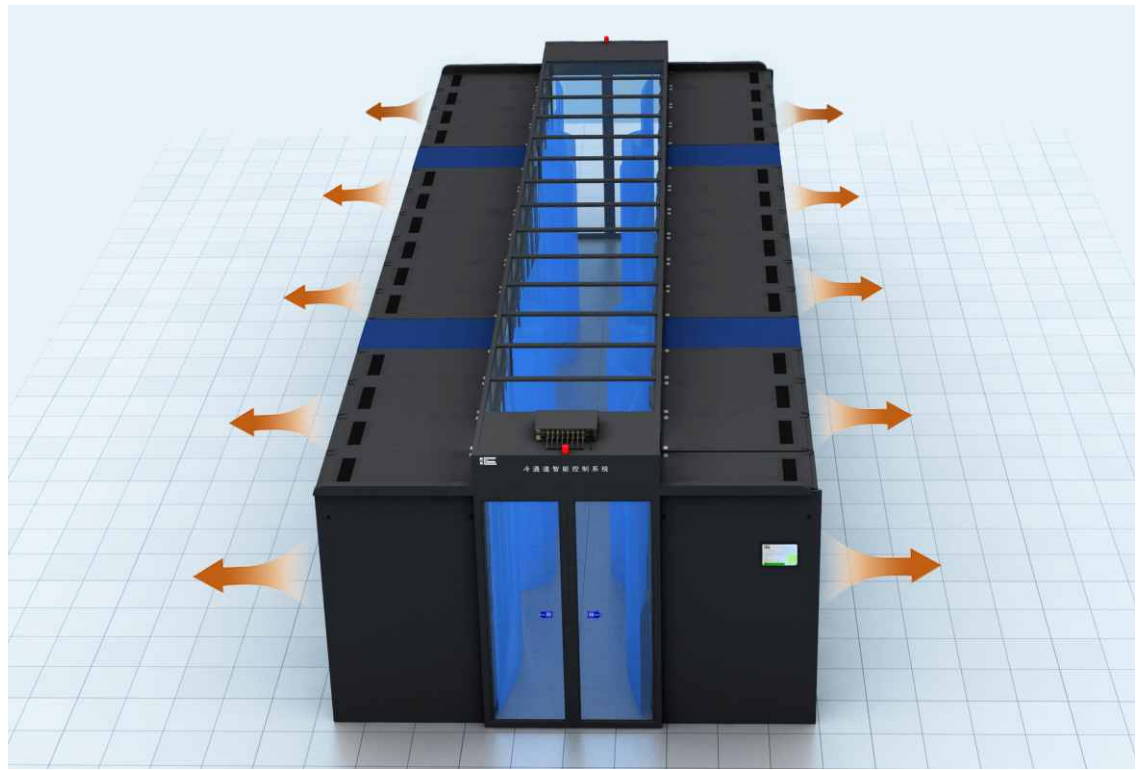
照彰冷通道系统响应“绿色、低碳、环保、低能耗、高功率”的要求，通过对机房内冷气合理有效的控制，改善整个冷却循环系统，从而消除机柜内的过热点，彻底解决高密度机柜散热的困扰。

Chiu Cheung Aisle Containment comply “environmental friendly, low carbon footprint, energy-saving and high efficiency ” by improving the temperature control, eliminating the “hot-spot” inside the racks and resolving the heat accumulation inside the densely populated racks. As a result, we could have an effective control on the IDC environment.



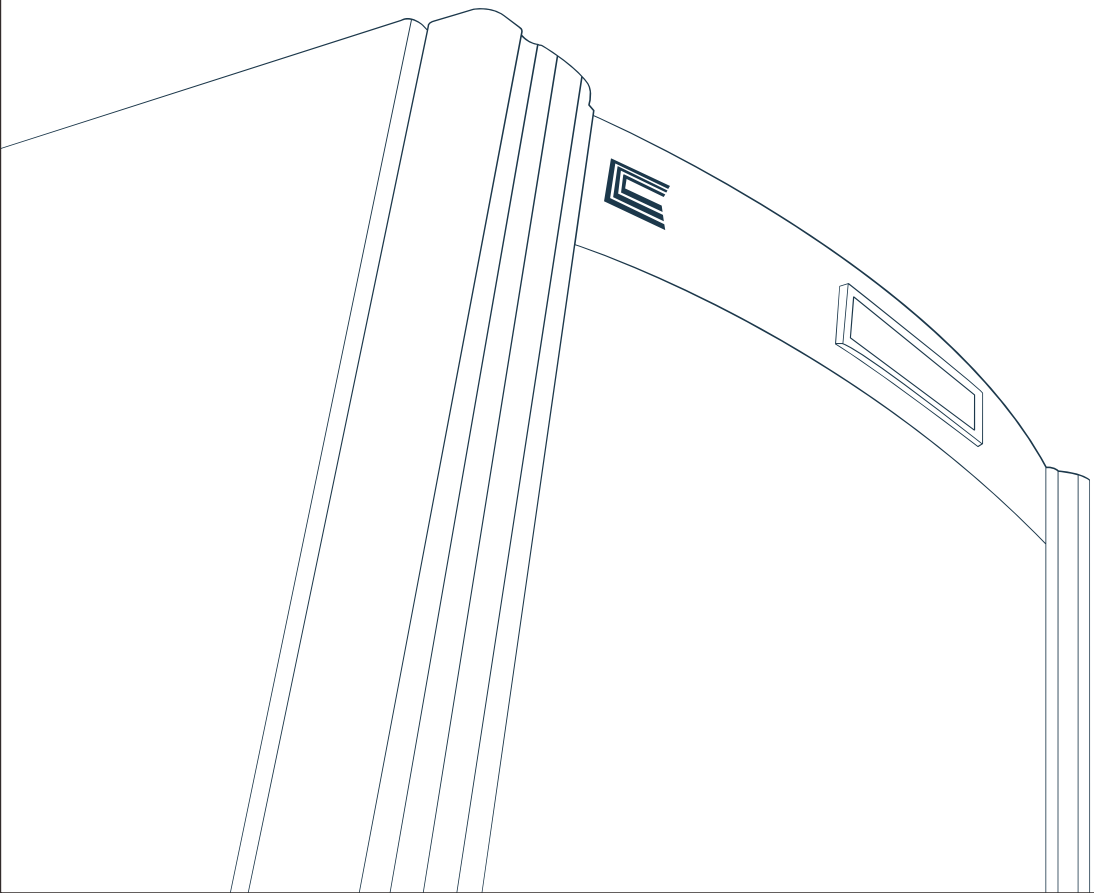
下送风布局图

Aisle containment with the computer floor



行级送风(水平送风)布局图

Aisle containment without computer floor



# 冷通道系统特点

## Features of aisle containment

### 模块化 Modularity

每两台机柜和一个顶天窗构成一个模块单元，冷通道由两端门和顶天窗组成，天窗采用模块式设计，方便装拆；可按实际需要增减天窗模块，不影响通道密闭。

Module consists of two racks fitted with one opened roof panel. Cold aisle is formed in areas that rack front doors facing each other. Modular type design is easy for flexible expansion.

### 智能化 Intelligence

冷通道天窗顶板翻转设计，通过控制单元与消防联动。发生温度过高或火警等紧急情况，自动打开，同时探测器会及时发出告警信号。

Swingable roof panels are connected to fire-alarm. Roof panels will be automatically opened when fire or smoke occurs and alarm signal is given as well.

### 安全性 Safety

天窗顶板和冷通道门材质采用铝合金和钢化玻璃，不易燃不助燃，符合消防要求。

Roof panel made of aluminum alloy and temper glass which meet with fire-safety requirement.

### 便捷性 Convenience

无门槛冷通道门，方便人员及推车等运输工具通行。

Without blockage on the entrance and exit of cooling bay, trolley with heavy-duty equipment will be easy to travel inside the aisle.

### 稳定性 Stability

产品根据机柜尺寸精心设计，与机柜紧密结合，稳定性高，使用寿命长。

High stability and high durability for the structure of aisle containment are perfectly fitted with racks.

### 美观性 Humanity

增加冷池通道内的美观性、科技性、亮度。

Optional accessories such as luminous strip and sensor detect make aisle containment looks smarter and helpful.



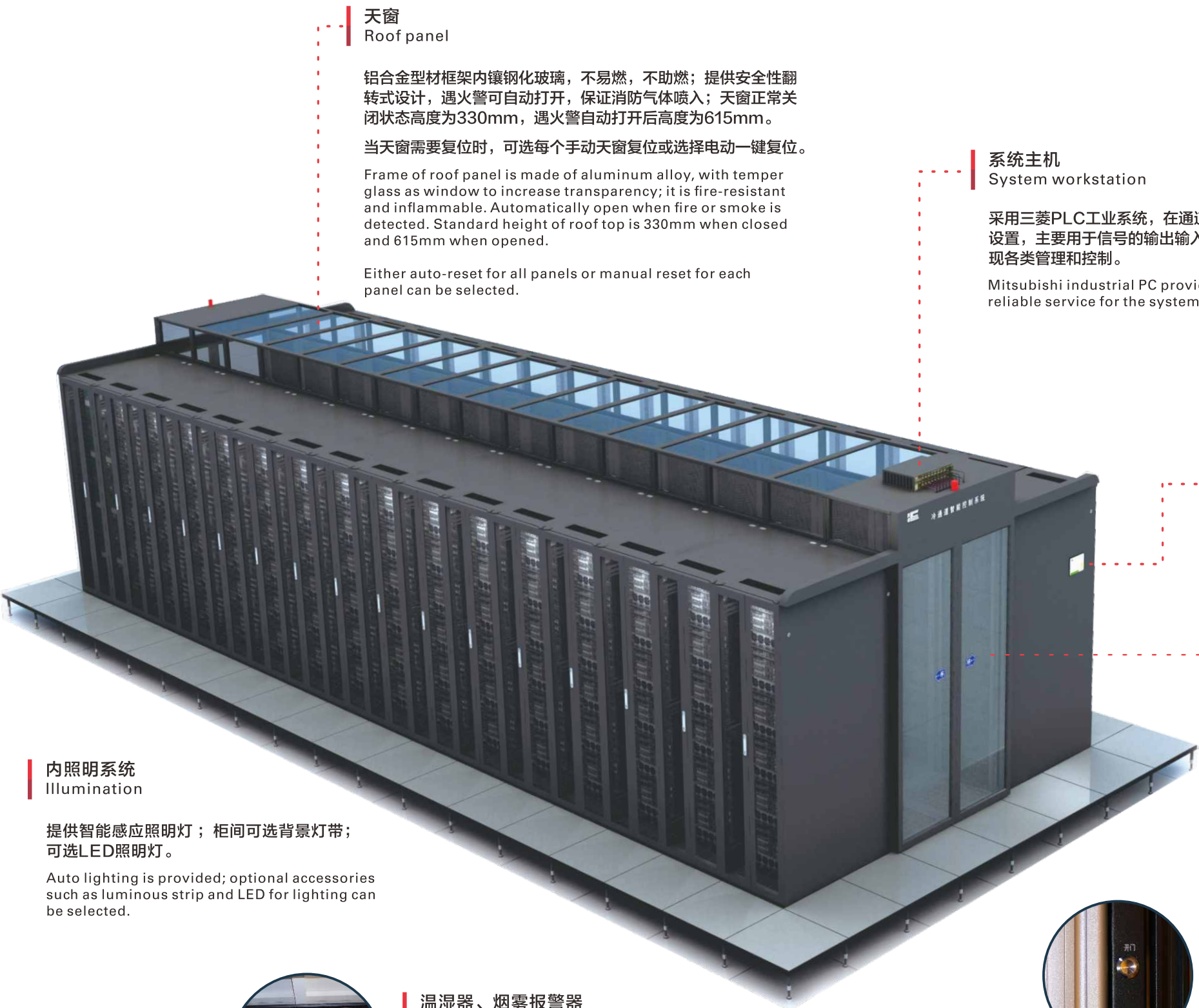
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Zhejiang Province Public Security Bureau





# 冷通道系统组成

## Elements of aisle containment



### 天窗 Roof panel

铝合金型材框架内镶钢化玻璃，不易燃，不助燃；提供安全性翻转式设计，遇火警可自动打开，保证消防气体喷入；天窗正常关闭状态高度为330mm，遇火警自动打开后高度为615mm。

当天窗需要复位时，可选每个手动天窗复位或选择电动一键复位。

Frame of roof panel is made of aluminum alloy, with temper glass as window to increase transparency; it is fire-resistant and inflammable. Automatically open when fire or smoke is detected. Standard height of roof top is 330mm when closed and 615mm when opened.

Either auto-reset for all panels or manual reset for each panel can be selected.

### 系统主机 System workstation

采用三菱PLC工业系统，在通道顶部设置，主要用于信号的输出输入，实现各类管理和控制。

Mitsubishi industrial PC provides reliable service for the system.



### 触摸屏 Touchscreen as display and control

显示冷通道相关状态信息及设定参数等功能。

All-in-one device is for operation and configuration setting.

### 端门 Entrance / exit door

双开玻璃移门，开启后与冷通道同宽，不占用冷通道空间；拆装式结构，无门槛，方便维修设备及人员通行；可选择普通机械锁和电子门禁锁。

手动推拉端门，配普通机械锁；自动推拉端门，配电子门解锁。

Pair-open entrance / exit door, no blockage nor occupy space of aisle containment for ease of maintenance or service.

Manual lock and auto lock is available.

### 紧急电控开锁按钮 Emergency exit button

冷通道内备有开锁按钮，作为断电或事故时可以后备紧急开门使用。

Emergency exit button is equipped inside the aisle containment in case of electricity shut down or fault occurrence.

### 内照明系统 Illumination

提供智能感应照明灯；柜间可选背景灯带；可选LED照明灯。

Auto lighting is provided; optional accessories such as luminous strip and LED for lighting can be selected.



### 温湿度器、烟雾报警器 Humidity detector, smoke detector and alarm

实时监控冷通道温度、湿度、烟雾等，并对异常状况发出预警信息。

Sensors for humidity measurement, smoke detection and alarm are equipped inside aisle containment.



紧急电控开锁按钮  
Emergency exit button

部分客户名录  
Client list



云南电视台  
YunnanTV Station

浙江省广电集团  
Zhejiang Radio andTelevision Group

山东电视台  
ShandongTV Station

西安电视台  
Xi'anTelevision

石家庄电视台  
ShijiazhuangTV Station

广东省广播电视网络股份有限公司  
Guangdong Broadcasting Network and Media Development Corporation

广东广播电视台  
Guangdong Radio andTelevision Station

四川省有线广播电视网络股份有限公司  
Sichuan CABLE TV Network Co.Ltd.

黑龙江广播电视台  
Heilongjiang Broadcast and Television Station

广州亚运会转播有限公司  
Guangzhou Asian Games BroadcastingCo.Ltd.

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CAAC Southern Regional Administration

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CAAC Nouthwest Regional Administration

新疆空管局区管中心  
CAAC Xinjiang Regional Administration

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Ziyang Public Security Bureau

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Xianning Public Security Bureau

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郑州地铁  
Zhengzhou Metro

北京市交通委员会  
Beijing Municipal Commission of Transport

(以上排名顺序不分先后)