



江苏大全长江电器股份有限公司
JIANGSU DAQO CHANGJIANG ELECTRIC CO.,LTD.



 大全集团

DQC系列户内柜式气体绝缘开关设备(C-GIS)



大全集团，主要从事高低压成套电气设备、智能元器件及光伏新材料的研发与制造；产业涵盖电气、新能源、轨道交通等领域；公司管理、制造水平及产品质量居行业前列；在全国拥有4大生产基地、23家制造企业、3个研究院、超万名员工；参与国家和行业标准制订11项、承担国家和省部级科技项目54项；先后荣获国家技术发明二等奖、国家科学技术进步一等奖、国家科学技术进步特等奖，是国家企业技术中心、智能制造试点示范、国家绿色工厂、全国用户满意标杆企业。

Daqo is mainly engaged in r&d and manufacturing of high and low voltage electrical equipment, intelligent components and photovoltaic new materials. The industry covers electrical, new energy, rail transportation, etc. Daqo's management, manufacturing level and product quality are in the forefront in the industry. It has 4 major production bases, 23 manufacturing enterprises, 3 research institutes and more than 10,000 employees. Participated in the formulation of national and industry standards, and undertook 54 national and provincial science and technology projects. It has won the second prize of National Technological Invention, the first prize of National Science and Technology Progress, and the special prize of National Science and Technology Progress. It is the National Enterprise Technology Center, intelligent manufacturing pilot demonstration, national green factory, national user satisfaction benchmark enterprise of user satisfaction.

DQC系列户内柜式气体绝缘开关设备

高可靠性

免维护

小

江苏大全长江电器股份有限公司，是大全集团的核心子公司，成立于2000年，注册资本1.1亿元，年销售额12亿元，年产能20000台，安全在运行设备已超20万台。公司占地面积5.6万平方米，拥有专业研发、技术人员90人，持续每年投入销售收入的3%-5%用于产品研发创新，拥有专利147件，其中发明专利13件，实用新型专利131件，外观设计专利3件。公司产品通过西高所、苏科院等国家权威实验室认证及ASTA、KEMA、TUV、欧盟CE等国际认证。

JiangSu DAQO ChangJiang Electric CO.,LTD. registered capital is 110 million yuan, Annual sales 1.2 billion yuan, Annual production capacity 200,000 sets, over 200,000 sets are safe working. The company has 90 professional R&D, technicians, innovation every year. It has 147 patents, including 13 invention patents and 3 appearance design patents. The products have been tested in XIHARI ASTA, acquired ASTA, KEMA, TUV, CE international certification.

使用环境 Service Conditions

- 环境温度：
 - 最高环境温度 +65°C
 - 最低环境温度（户内） -40°C
 - 海拔高度：不超过4500m;
 - 大气环境：不受污秽、烟尘、腐蚀性或可燃气体、盐雾等环境因素影响
 - 地震烈度：不超过8度
- 注：当海拔超过2000m时，请与制造商协商。

- Ambient temperature:
 - Max. +65°C
 - Min. (indoor) -40°C
 - Site altitude: not more than 4500m
 - Ambient air: The ambient air is not to be significantly contaminated by corrosive, flammable gases or salt etc.
 - Earthquake intensity: less than 8 magnitude
- Note: Site altitude more than 2000m are to be agreed by the manufacture and operator

技术特点 Characteristic

- 高压带电部件采用气体绝缘，不受环境影响
- 结构紧凑，占地面积小
- 采用界面绝缘结构，实现高压部件的插接以及柜体的扩展
- 断路器与隔离开关之间采用有效的联锁，防止误操作
- 高压元件组成若干标准模块，采用插接式连接，应用方便
- 柜与柜之间采用固体绝缘母线连接，开关柜拼装时不涉及气体操作
- 采用激光焊接和氦气检测技术，可靠性高
- 免维护
- IEC 62271-100,102,103,200 《高压开关设备和控制设备标准》

- Adopting gas insulated for high voltage electrification components, independence to environment influences.
- Structure compact, minimum space required.
- Adopting interface insulated structure, realizing high voltage electrification components insertion and switchgear extension.
- Adopting the effective interlocking between circuit breaker and the three position switch, preventing from mishandling.
- HV components constitutes some standard modules, adopts plug-in connection, application convenient.
- Adopting the solid insulation plug-in busbar connector, it is not need any gas operate. When connecting between cubicles.
- Technology of the laser weld and He Leak-check is applied, high reliability.
- Maintenance-free.
- IEC 62271-100 , 102 , 103 , 200 High-voltage switchgear and controlgear standards



TRUMPF Laser Cell 6005 三维激光加工机床
TRUMPF Laser Cell 6005 3D laser machine



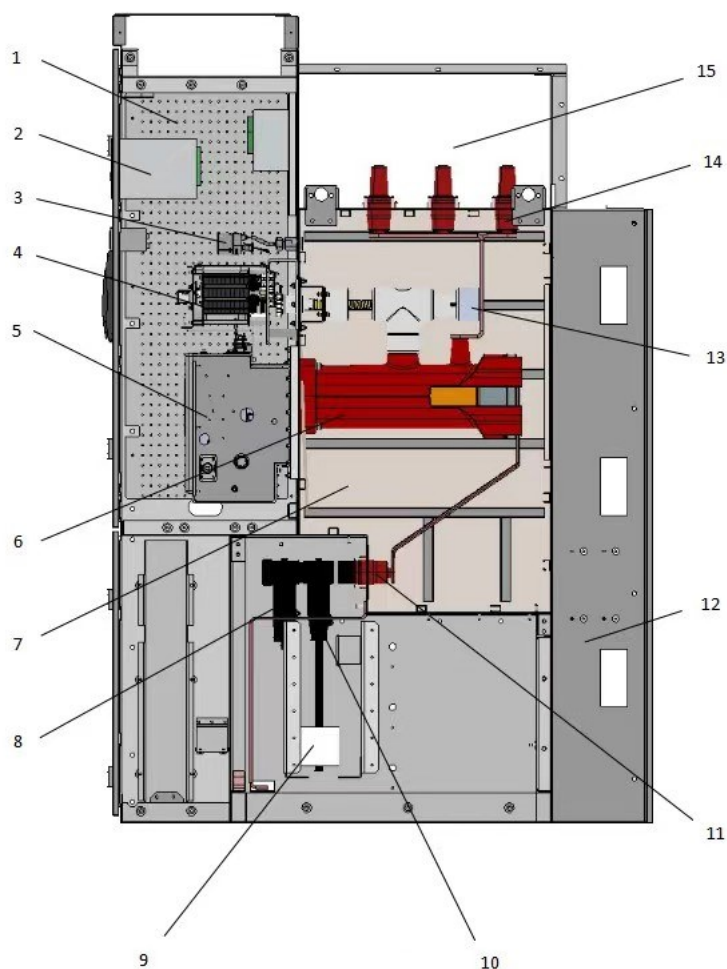
SEILER公司的全自动氦检设备
Automatic helium leak detection equipment

技术参数 Technical Data

参数名称 Parameter	单位 Unit	DQC-24
额定电压 Rated voltage	kV	24
额定频率 Rated frequency	Hz	50
额定工频耐受电压(1min) Rated power frequency withstand voltage(1min)	kV	65/79
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	125/145
主母线额定电流 Main busbar rated current	A	1250A
分支母线额定电流 Branchal busbar rated current	A	1250A
额定短时耐受电流 Rated short-time withstand current	kA	...31.5
额定峰值耐受电流 Rated peak withstand current	kA	80
气体密封室防护等级 Switchgear protection level		IP67
开关柜体防护等级 Switchgear protection level		IP42
绝缘气体 Insulating gas		SF6
额定工作压力(20°C表压) Rated operating pressure (at 20°C, gauge)	Mpa	0.03
最低工作压力(20°C表压) Minimum operating pressure (at 20°C, gauge)	Mpa	0.02
外形尺寸(宽×深×高) Outline dimensions (W×D×H)		600/800x1600x2300

结构示意图 Structure Sketch

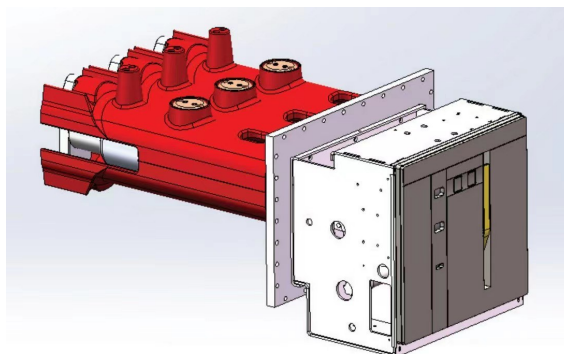
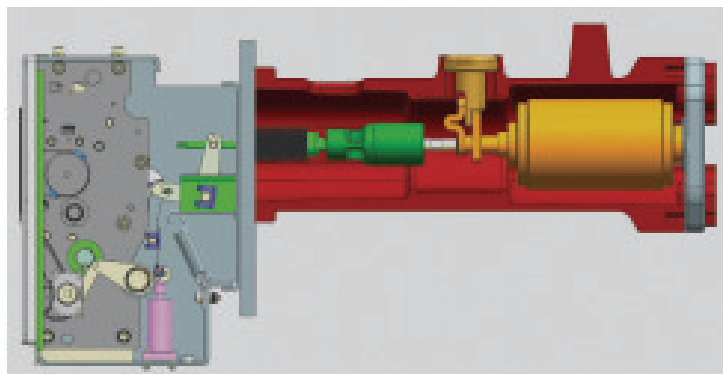
40.5kV C-GIS 典型结构 40.5kV C-GIS typical structure



- | | | |
|---|---|--|
| 1. 低压室
Low-voltage compartment | 6. 断路器一次部分
Circuit-breaker | 11. 出线套管
Cable bushing |
| 2. 控制单元
Control unit | 7. 充气间隔
Gas tank | 12. 压力释放通道 I
Pressure relief duct 1 |
| 3. 气压表
SF6 gas-pressure gauge | 8. 避雷器
Surge arrester | 13. 三工位开关
Three position disconnecter |
| 4. 三工位操作机构
Three-position operating mechanism | 9. 电流互感器(根据项目选择)
Current transformer | 14. 母线套管
Busbar bushing |
| 5. 断路器操作机构
Circuit-breaker operating mechanism | 10. 电缆插头
Cable terminal | 15. 母线室
Busbar compartment |

主要元件 Main Components

真空断路器 (型号 DQV-X-24) Vacuum circuit-breaker(Model:DQV-X-24)



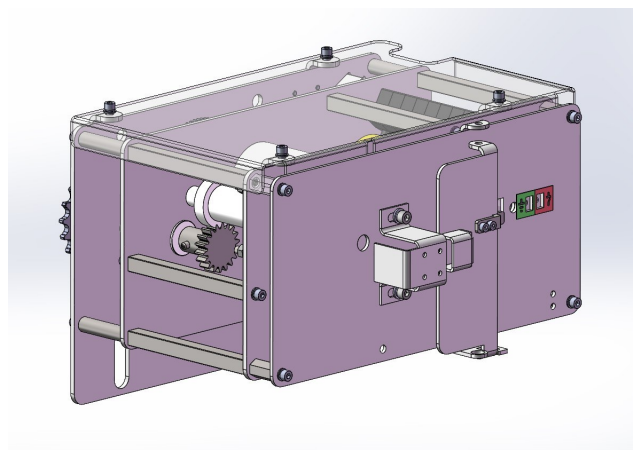
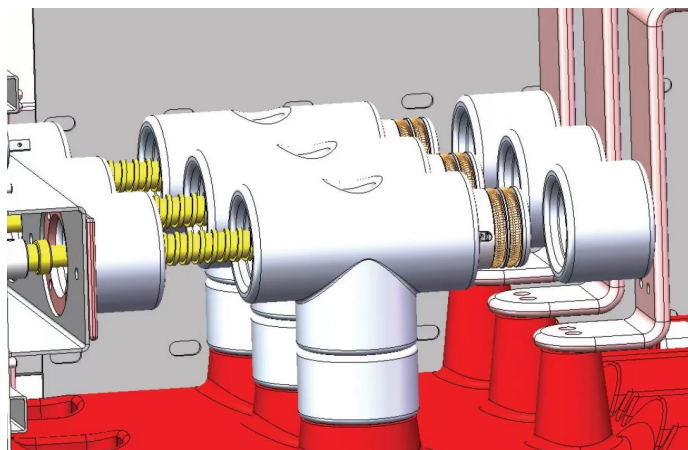
真空断路器特点 Vacuum circuit-breaker characteristics

- 真空断路器的功能包括:
 - 合、分额定电流
 - 开断短路电流
 - 与三工位开关配合进行接地操作
 - 断路器的三相极柱水平放置于气室内,与其它元件连接方便
 - 断路器的操动机构与极柱通过直动波纹管连接,传递动力
- Vacuum circuit-breaker performs the following function:
 - Opening and closing on rated current
 - Short-circuit breaking operations
 - Earthing function in conjunction with three-position switch
 - The circuit-breaker poles are installed horizontally in gas compartment easy connecting with other components
 - The circuit-breaker operating mechanism connected to the poles by a straight moving bellows, transmitting force

真空断路器技术参数 Vacuum circuit-breaker technical data

参数名称 Parameter	单位 Unit	DQV-X-24
额定电压 Rated voltage	kV	24
额定电流 Rated current	A	1250
额定频率 Rated frequency	Hz	50
额定工频耐受电压(1min) Rated power frequency withstand voltage(1min)	kV	65/79
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	125/145
额定短时耐受电流(4秒) Rated short-time withstand current (4s)	kA	...31.5
额定峰值耐受电流 Rated peak withstand current	kA	80
额定短路开断电流(有效值) Rated short-circuit breaking current (rms)	kA	...31.5
额定短路关合电流(峰值) Rated short-circuit breaking current (peak)	kA	80
机械寿命 Mechanical endurance	次 operations	M2
电寿命 Electrical endurance	次 operations	E2

三工位开关 Three-position switch



三工位开关特点 Three-position switch characteristic

- 三工位开关的功能包括：
 - 母线联接
 - 隔离
 - 接地
 - 三工位开关位于气室内，其操动机构模块位于气室外，两者之间通过特殊的磁流体密封结构实现连接
 - 动触头通过绝缘丝杠驱动
 - 可手动或电动操作
- The three-position disconnecter performs the following function:
 - Connecting
 - Disconnecting
 - Earthing
 - The three-position disconnecter is located in the gas compartment, and the operating mechanism block is outside, realizing connection by the magnetic fluid sealing structure between both
 - The moving contact by the insulating spindle driving
Operate by hand or by a motor

隔离开关技术参数 Three position switch technical data

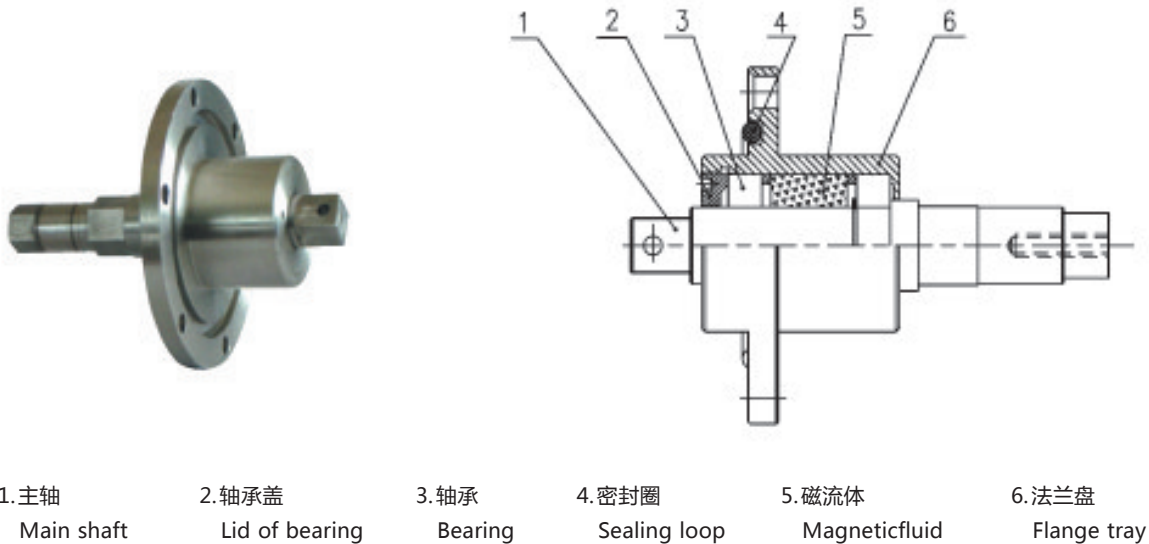
额定电压 Rated voltage	kV	24
额定电流 Rated current	A	1250
额定工频耐受电压(1min) Rated power frequency withstand voltage(1min)	kV	65/79
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	125/145
额定短时耐受电流(4秒) Rated short-time withstand current (4s)	kA	...31.5
额定峰值耐受电流 Rated peak withstand current	kA	80
机械寿命 Mechanical endurance	次 operations	3000
相间距 Pole-centre distance	mm	160/210

特殊结构 Special Structure

磁流体密封结构 Magneticfluid sealing structure

- 零泄漏
- 可靠性高、寿命长
- 耐压性能好

- Zero leakage
- High reliability and long life
- Excellent withstand pressure



1. 主轴
Main shaft

2. 轴承盖
Lid of bearing

3. 轴承
Bearing

4. 密封圈
Sealing loop

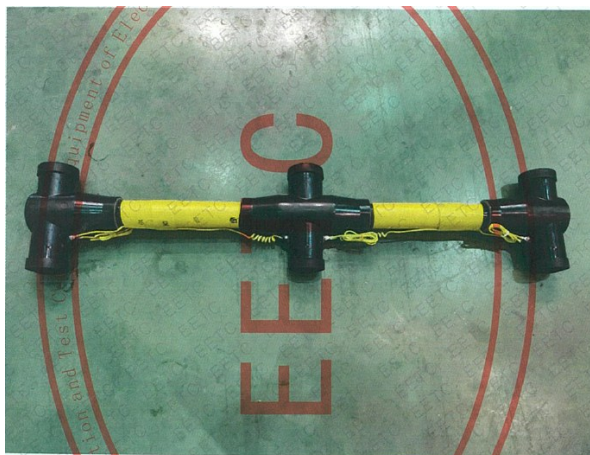
5. 磁流体
Magneticfluid

6. 法兰盘
Flange tray

母线连接系统 Busbar connection system

- 硅橡胶绝缘套管与环氧树脂母线套管配合解决绝缘问题
- 安装简单可靠
- 现场不涉及气体操作

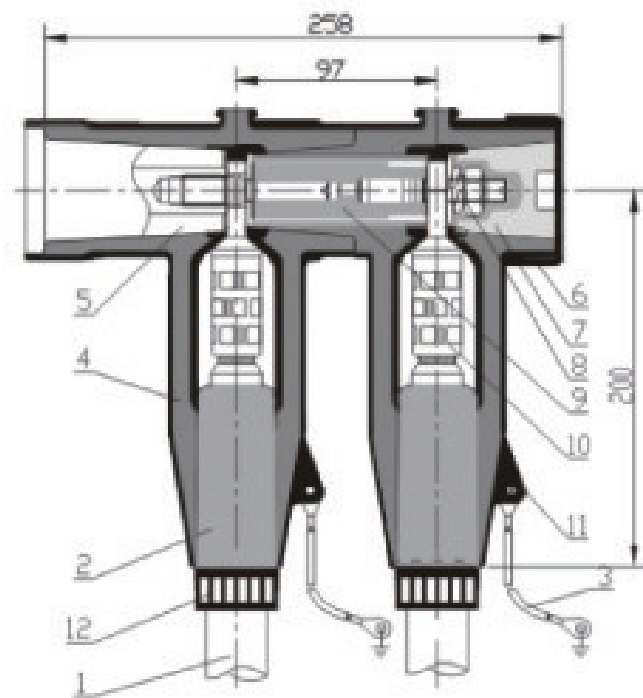
- Silicon rubber sleeve collaborates with epoxy resin on busbar insulation
- Installation simple and dependable
- No need any gas operating at site



插接式电缆 Cable with plug-connectors

- 全绝缘、全屏蔽
- 免维护、易安装

- Full insulated, full screen
- Maintenance-free, easy installation



- 具体的尺寸说明和安装要求，见电缆附件厂家资料
Detailed description and installation requirements, See cable connector manufacturer information

电压互感器 Voltage transformer

- 根据用户的需要，可以十分方便的安装电压互感器、电流互感器元件。
- 除采用常规电压互感器JDZ系列型号外，还可以选择特制的电缆插头式电压互感器：JSZV-10R型；大容量供电电源变压器DC-3，单只最大输出达到3kVA。



- The DQC-24 cable compartment size allows for the convenient installation of PT and CT.
- According to the customer's requirements, in addition to the conventional models JDZ type, special specifications of the Cable plug type voltage transformer JSZV-10R and the large capacity power supply transformer DC-3, output capacity up to 3kVA, also can be used.

电流互感器 Current transformer

- 电流互感器根据项目参数需要和安装条件，可以选择开启式，穿芯式，和跑道式产品。

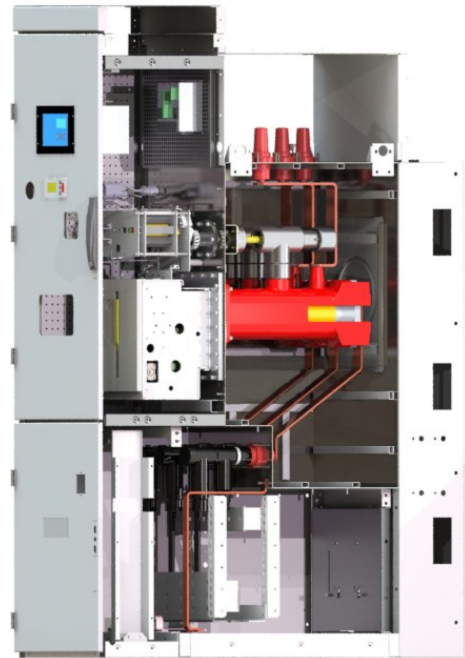
- Core open type, Ring core type and racetrack core type Current transformers can be choose according to project requirements.



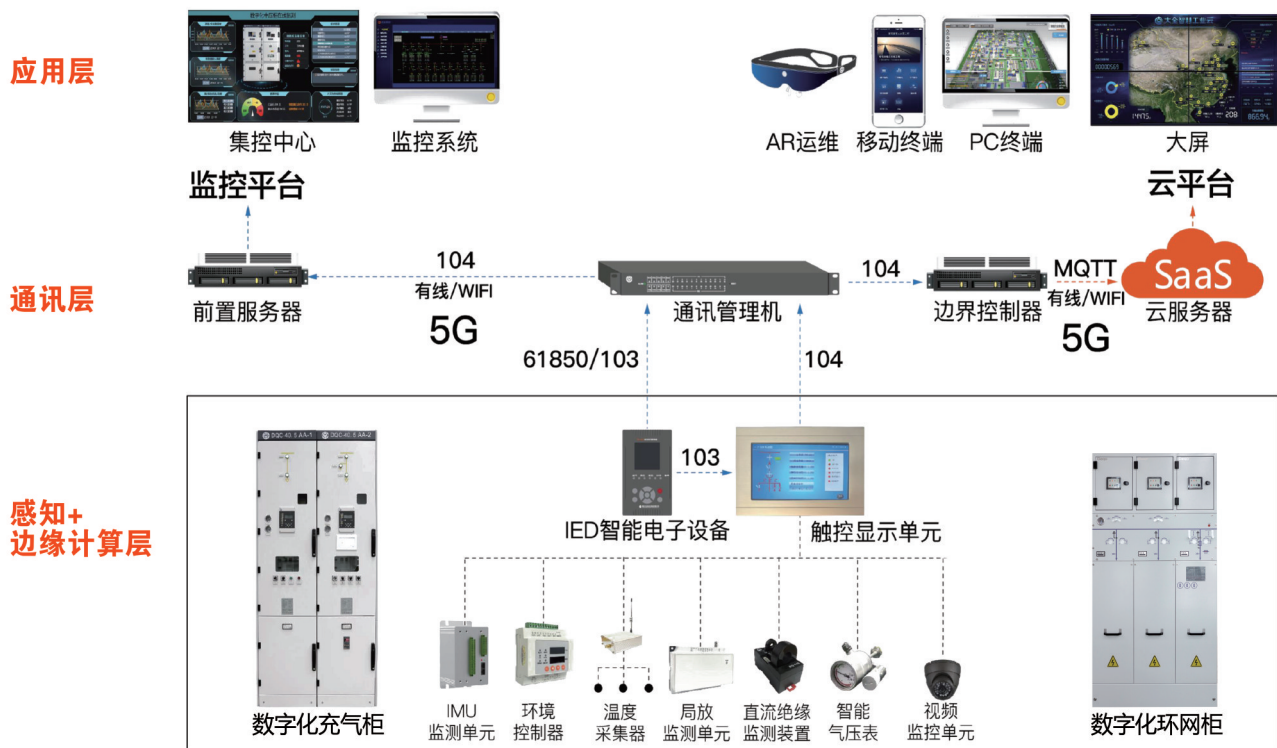
数字化中压柜 Digital medium pressure cabinet

大全新一代数字化中压柜在传统机械联锁、抗燃弧、抗震等方面进行了全面升级，产品操作简便，运行更安全。通过配套智能化器件，可以实现开关柜温度、断路器机械特性、分合位置等参量的感知知用功能。使用数字化中压柜，用户不仅可以实现自动采集所有数据，还能存储和分析这些数据，以便工作人员用它做出决策，从而降低综合成本。

DAQO new generation digital medium pressure switchgear has been fully upgraded in conventional meachnical interlocking、Arc resistance and Aseismatic function,it' s easy to oprate and safer to run.This switchgear can realize the sensing function of switchgear temperature、circuit breaker mechanical characteristics、 opening and closing position and other parameters by supporting intelligent devices. Users can not only collet all data automatically , but also store and analyse the data for making decison,thereby reducing costs through useing digital medium pressure switchgear.



数字化中压柜应用系统方案



数字化中压柜以及数字化系列产品在大全集团新疆园区、重庆园区、南京园区、扬中园区全面应用和示范。实现了设备的数字铭牌、状态评估、预测性维护和远程运维指导，为设备全生命周期管理提供了数字化基础。实现了百万点的电力集中监控、配电系统能耗分析及优化。根据特殊需求实现模块化定制，充分保障数据产权和数据安全。

Digital medium voltage cabinet and digital series of products in DAQO XingJiang park, ChongQing park, NanJing park and YangZhong park comprehensive application and demonstration. The digital nameplate, status assessment, predictive maintenance and remote operation and maintenance guidance of the equipment are realized, which provides a digital basis for the whole life cycle management of equipment. Centralized monitoring of millions of points of power, energy consumption analysis and optimization of power distribution system are realized. Modular customization is realized according to special requirements to fully protect data property rights and data security.



数字化解决方案 Digital solutions

- 大全集团的数字化解决方案采用配电物联网架构，即“系统应用、通讯管理、边缘计算、电气端设备”，以全系列的数字化产品为基础，支撑电力监控、设备运维、能源管理等系统及应用，提供数字化变电、智慧供配电、智慧用电等应用场景的整体解决方案。
- Daqo digital solutions using Power distribution architecture, means "system application, communication management, calculation, electrical equipment", on the basis of a full range of digital products, electric power monitoring and equipment operations, energy management system and application of digital substation, power supply, wisdom electricity application scenarios, such as the overall solution.
- 电力监控系统对电源、供配电设备、用电负荷等进行实时监视和控制，确保本地系统安全运行。
- The power monitoring system monitors and controls the power supply, power supply, distribution equipment and power load in real-time to ensure the safe operation of the local system.
- 设备运维系统提供各类电气设备的数字厂牌、设备故障诊断、预测性维护、专家远程指导等服务，全方位提升用户的运维能力。
- The equipment operation and maintenance system provides all kinds of electronic equipment digital brand, equipment fault diagnosis, predictive maintenance, expert remote guidance and other services, comprehensively improves the user's operation and maintenance ability.
- 能源管理系统对多种能源系统进行实时监控和统计分析，通过多能互补与多元协同控制，实现节能降耗、“双碳”达标。
- Energy management system for a variety of energy systems for real-time monitoring and statistical analysis, through multi-energy complementary and multi-collaborative control, energy saving and consumption reduction, "double carbon" standards.

技术特点 Technical Advantages

状态监测 Condition monitoring

- 设备具备状态在线监测功能。可以全方位进行数字化采集、状态监视、无线测温、故障预警与健康状态评估。

及时提醒并指导运维人员进行检修及故障处理，极大提高了配电房综合运维效率，将维护检修模式从“计划检修”向“状态检修”的转变。

- The device has the function of online monitoring. It can realize function of digital acquisition, condition monitoring, wireless temperature measurement, fault warning and health status assessment.

Promptly remind and guide the operation, maintenance personnel to repair and troubleshoot, greatly improve the comprehensive operation and maintenance efficiency of the power distribution room, and transform the maintenance mode from planned maintenance and state maintenance.



预防性维护 Preventive maintenance

- 根据设备状态，评估出设备风险等级，系统自动分级发送相关信息，一级为自动语音拨号、二级为短信推送，三级为无声屏幕推送，警示工作人员予以操作运维。

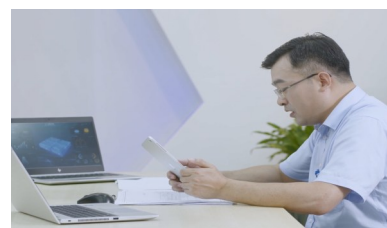
- According to the equipment status, the risk level of the equipment is assessed, and the system automatically classified the information related to startup. level 1 is automatic voice dialing, level 2 is note push, level 3 is silent screen push, warning staff to operation and maintenance.



AR远程指导 AR Remote mentoring

- 运用增强现实、音视频实时通讯等技术，提供可视化巡检、共享视界专家远程指导、远程验收、远程培训等围绕设备本体的动态信息发布及交互式运维功能，优化项目现场的数字化中压柜运维效率，扩展操作人员的能力范围。

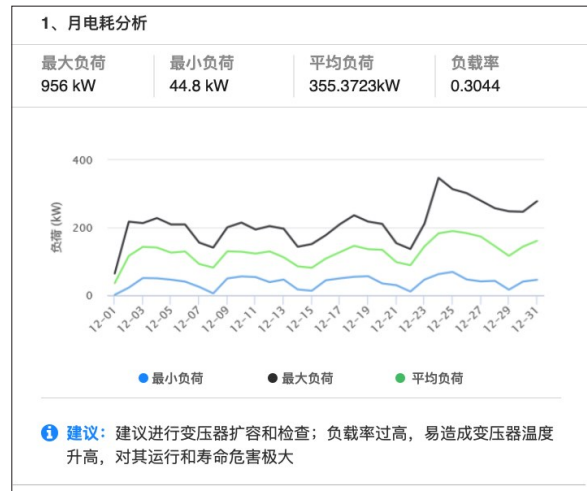
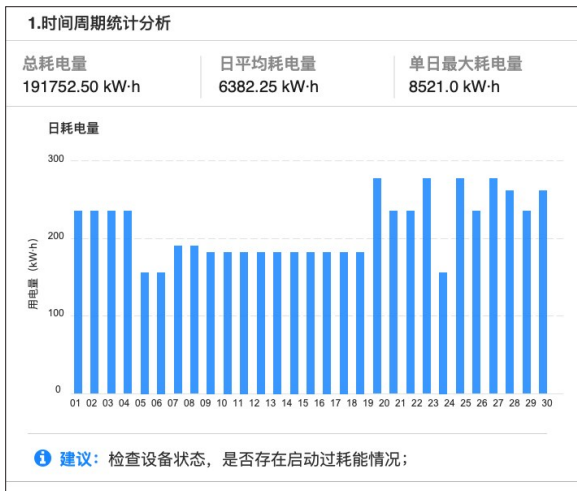
- Augmented reality, audio and video communication and other technologies are used to provide dynamic information release, interactive operation, maintenance functions centering on equipment ontology, such as visual inspection, remote guidance by shared vision experts, remote acceptance, and remote training, so as to optimize the operation and maintenance efficiency of digital medium-voltage switchgear on the project site and expand the scope of operator's ability.



能耗分析 analysis of energy consumption

- 能耗分析系统以直观的数据和图表对电能质量、电量消耗、负荷特性、异常耗损等进行分析，给出优化提升建议。

- The energy consumption analysis system shows power quality, power consumption, load characteristics, abnormal loss, etc. with intuitive data and charts, and give suggestions for optimization and improvement.



定制功能 Custom function

- 根据客户需求对原有设备进行智能化改造，加装智能元件或传感器。
- 轻松更换和升级已有开关设备中的部件和装置。
- 通过软件更新添加新功能，无需升级整个系统。

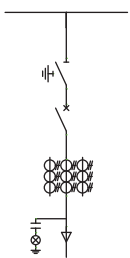
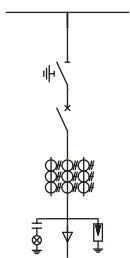
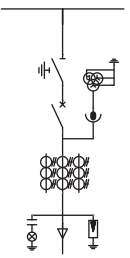
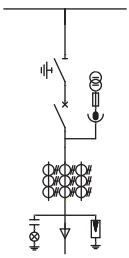
- According to customer demands, the original equipment for intelligent transformation, add intelligent components or sensors.
- Easily replace and upgrade components and devices in existing switchgear.
- Add new features through software updates without upgrading the entire system.

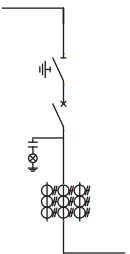
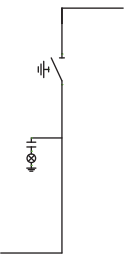
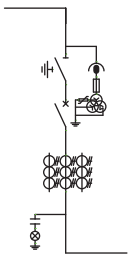
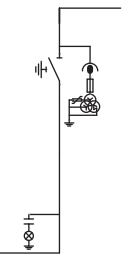
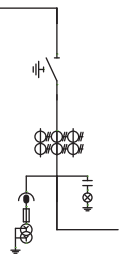
数据安全 Data security

- 具备公安部信息安全等级保护证书，确保用户的数据安全。
- 设备告警分级管理，确保数据提示正确性和可靠性。
- 电子设备操作票统一流程管理，确保人身安全。

- With the ministry of public security information security level protection certificate, to ensure user data security.
- Hierarchical management of device alarms ensures the correctness and reliability of data prompts.
- Electronic equipment operation ticket unified process management, to ensure personal safety.

一次方案(典型方案) Primary Schemes (Typical)

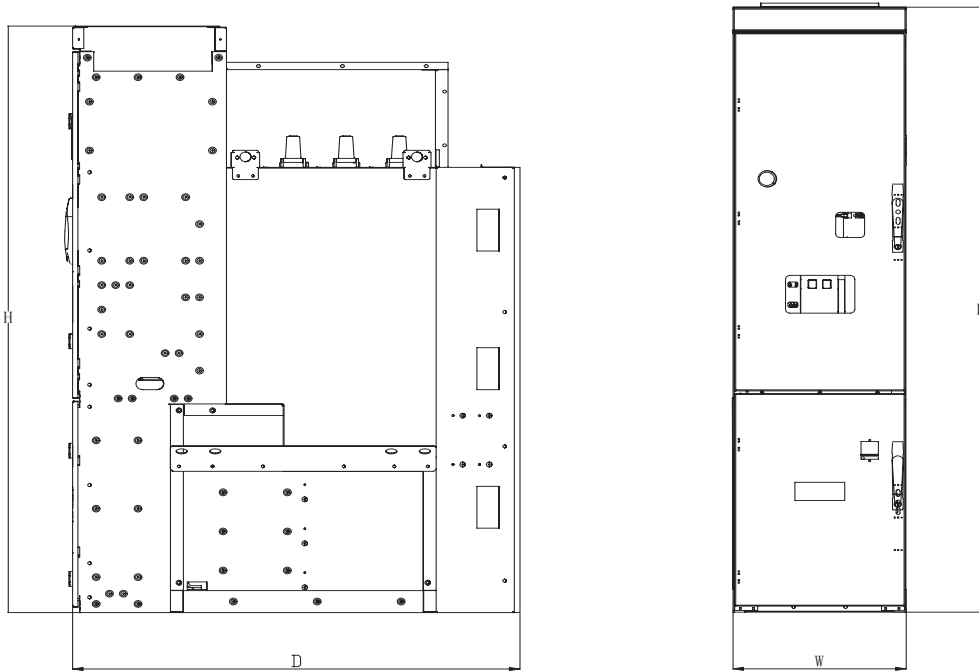
方案编号 Scheme No.		1	2	3	4
主接线方案 Single-line diagram					
用途 Application		馈线柜 Feeder	馈线柜 Feeder	馈线柜带线路PT Cable feeder+PT	馈线柜带线路PT Cable feeder+PT
额定电流 (A) Rated current		...1250	...1250	...1250	...1250
主要元件 Main Components	真空断路器 VCB DQV-X-24	1	1	1	1
	三工位开关 DQDS-24	1	1	1	1
	电流互感器 CT	3	3	3	3
	电压互感器 PT			3	1
	避雷器 Surge arrester CM-33/35		3	3	3
	带电显示器 Voltage indicator	1	1	1	1

方案编号 Scheme No.		6	7	8	9	10
主接线方案 Single-line diagram						
用途 Application		母联柜 Bus coupler	隔离柜 Disconnector	母联柜带母线PT Bus coupler+PT	隔离柜带母线PT Disconnector+PT	计量柜 Metering
额定电流 (A) Rated current		...1250	...1250	...1250	...1250	...1250
主要元件 Main Components	真空断路器 VCB DQV-X-24	1		1		
	三工位开关 DQDS-24	1	1	1	1	1
	电流互感器 CT	3	3	3	3	3
	电压互感器 PT			3	1	3
	避雷器 Surge arrester CM-33/35					
	带电显示器 Voltage indicator	1	1	1	1	1

DQC 系列户内柜式气体绝缘开关设备(C-GIS)

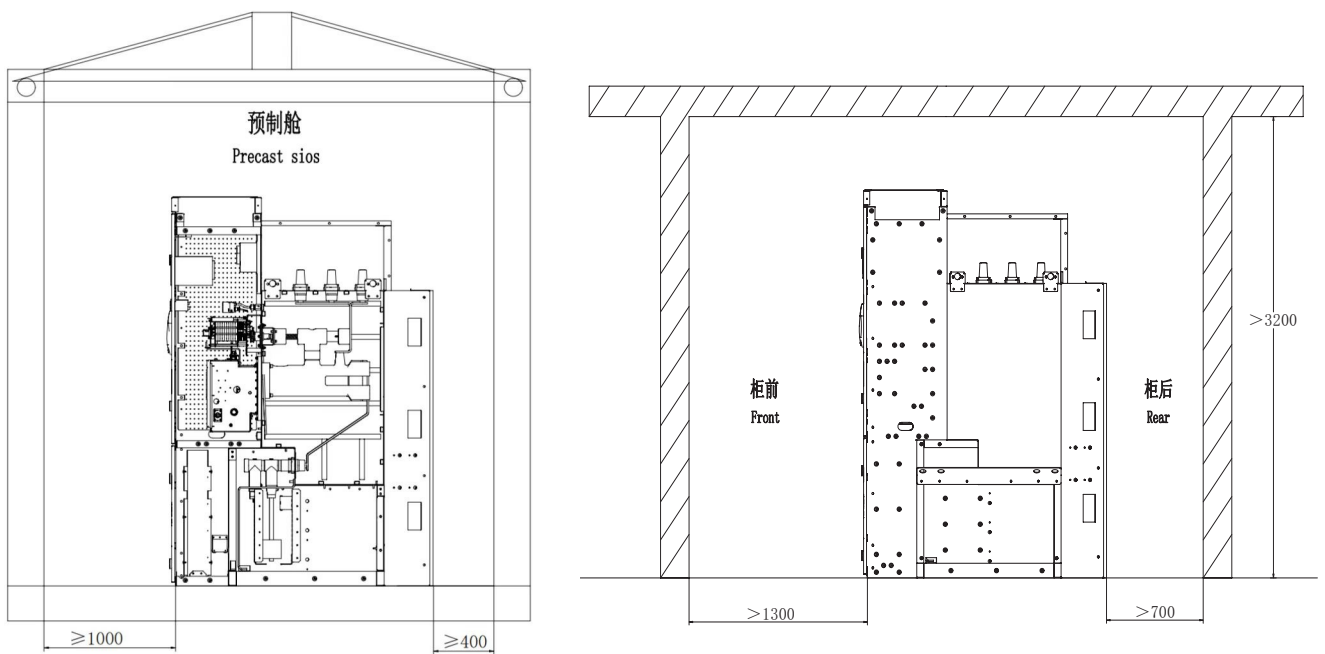
24kV C-GIS 安装 24kV C-GIS installation

开关柜外形尺寸图 Sketch of overall dimension for switchgear

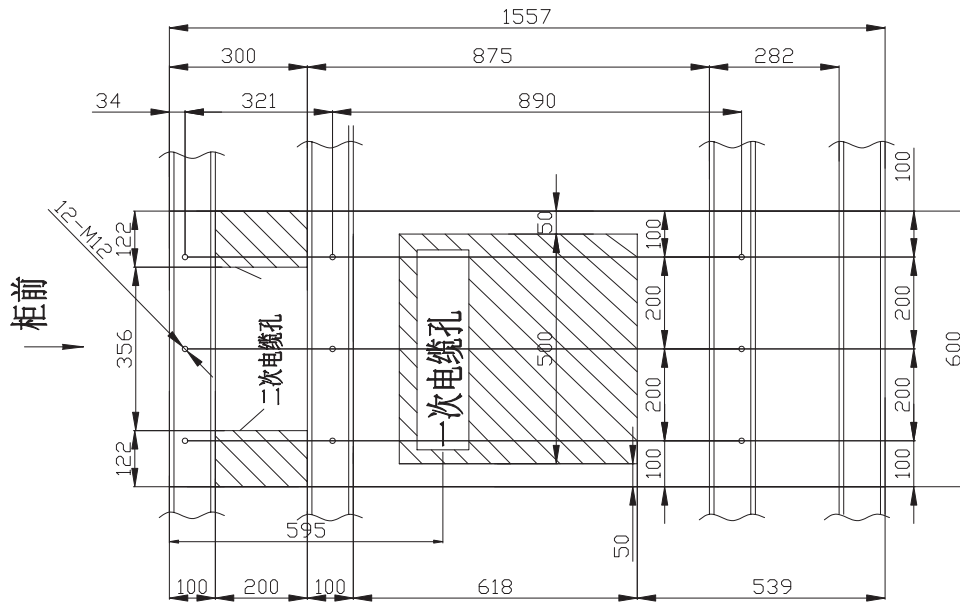


W	D	H
600/800	1600	2300

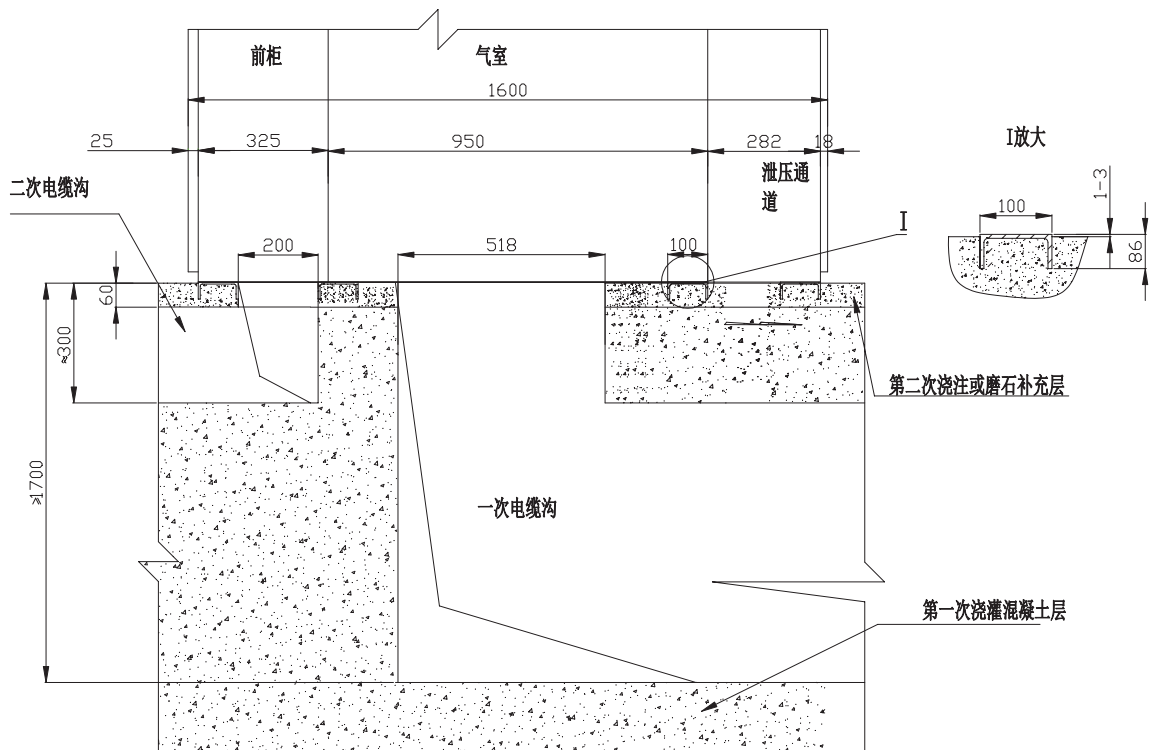
开关柜布置图 Sketch of switchgears for installation



底板开孔及固定示意图 Sketch of floor cutouts and fix points



安装基础示意图 Sketch of installing foundation details



- 一次电缆终端安装严格按相关工艺要求
- 后侧两组槽钢已完全支撑气箱重量，位置不允许变动。
- 其它详见“产品使用说明书”

- The fitting of primary cable terminals should be according to technology requirement strictly.
- Two sets of channel steel at the rear side have fully supported the weight of the air box, and the position is not allowed to change.
- Refer to "Operation Manual" for others.



产品订货须知 Ordering information

订货时需提供下列资料:

- 一次线路系统图, 其中包括进线的额定电压, 额定电流及短路容量
- 二次线路原理图, 其中包括操作、信号、保护回路的额定电流及各种电器元件的型号规格
- 开关柜排列图和布置尺寸
- 柜内电器元件的型号规格数量
- 备品备件清单
- 用户需要的特殊要求, 订货时可以与制造厂协商

The following information should be supplied by users when ordering:

- Primary circuit diagram, including rated voltage, rated current and short circuit capacity of incoming line
- Secondary circuit electrical diagram, including the rated current of operation, signal and protection circuit as well as the type and specification of each electric component
- The arrangement of cubicle and layout dimension
- The type, specification and quantity of component inside the cubicle
- Mandatory spare parts list
- If any special requirement, please discuss with manufacturer when ordering

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