

GGD

型交流低压配电柜



概述

GGD型交流低压配电柜适用于发电厂、变电所、工业企业等电力用户作为交流50Hz，额定工作电压380V，额定电流至3150A的配电系统中作为动力，照明及配电设备的电能转换、分配与控制之用。该产品分断能力高，额定短时耐受电流达50kA。线路方案灵活、组合方便、实用性强、结构新颖等特点。该产品是我国组装式、固定面板开关柜的代表产品之一。

该产品符合IEC439《低压成套开关设备和控制设备》，GB7251《低压成套开关设备中》等标准。

General

GGD AC low voltage distribution board is applicable to power plants, transformer substations and industrial corporations. It serves as power source, power transformation, distribution and control equipment of illumination and distribution equipment in AC 50Hz distribution systems which rated voltage is 380V and rated current is not above 3150A. The product has high breaking capacity, and its rated prospective short-circuit withstand current can reach 50kA. Because of its flexible wiring scheme, it provides convenient arrangement, favorable practicability and novel structure. The product is representative product of national assembled and fixable switchboard.

The product is compliant with Low Voltage Unit Switch Equipment and Control Equipment standard IEC439 and Low Voltage Unit Switch Equipment standard GB7251.

使用条件

- 2.1 周围空气温度不高于 + 40℃，不低于 - 5℃。24h 内的平均温度不得高于 + 35℃。
- 2.2 户内安装使用，使用地点的海拔不得超过 2000M。
- 2.3 周围空气相对湿度在最高温度为 + 40℃时不超过 50%，在较低温度时允许有较大的相对湿度：（例如 + 20℃时为 90%）应考虑到由于温度的变化可能会偶然产生凝露的影响。
- 2.4 设备安装时与垂直面的倾斜度不超过 5%。
- 2.5 设备应安装在无剧烈震动和冲击的地方，以及不足使电器元件受到腐蚀的场所。
- 2.6 用户有特殊要求时可与本公司协商解决。

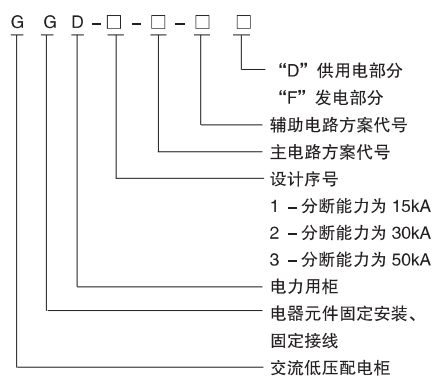
Service condition

- 2.1 The ambient temperature is between -5℃ and +40℃, and the mean temperature of 24 hours is not above +35℃.
- 2.2 It has outdoor installation. The altitude is not above 2000m.
- 2.3 Relative humidity is not above 50% when the ambient temperature is not above +40℃, when the temperature is relatively low, higher relative humidity is allowed (For example, the allowed relative humidity is 90% when the ambient temperature is +20℃). Condensation may occur occasionally due to temperature alternation.
- 2.4 The lean between equipment and vertical plane should not exceed 5% during installation.
- 2.5 In order to protect the electric components, the equipment should be mounted in a concussion and corrosion proof site.
- 2.6 Please consult our company if you have special requirement.

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产品型号及含义



主要技术参数 Main technical parameters

4.1 基本电气参数见表 The basic electric technical parameters are showed in table 1

型 号	额定电压 (V)	额定电流 (A)	额定短路开关电流 (kA)	额定短时耐受电流(I _S) (kA)	额定峰值耐受电流(kA)
GGD1	380	A 1000	15	15	30
		B 600(630)			
		C 400			
GGD2	380	A 1500(1600)	30	30	63
		B 1000			
		C 600			
GGD3	380	A 3150	50	50	105
		B 2500			
		C 2000			

4.2 辅助电路方案

辅助电路的设计分供电方案和发电厂方案两部分。

4.3 主母线

额定电流在1500A及以下时采用单铜排母线。额定电流大于1500A时采用双铜排母线。母线的搭接面均采用搪锡工艺处理。

4.4 电器元件选择

a. GGD 柜主要采用国内已能批量生产的较先进的电器元件。

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如RDW17、DZ20、DW15等。

b. HD13BX和HS13BX型旋转操作式刀开关是NLS为满足GGD柜独特结构的需要而设计的专用元件，它改变了机构的操作方式，保留了老产品的优点，是一种实用新型的电器元件。

c. 如设计部门根据用户需要，选用性能更优良，技术更先进的新型电器元件时，因GGD柜具有良好的安装灵活性，一般不会因更新电器元件造成制造和安装方面的困难。

d. 为进一步提高电路的动稳定能力，GGD柜的母线支撑采用专用的ZMJ型组合式母线夹和绝缘支撑件。母线夹由高强度、高阻燃型PPO复合材料热塑成型，绝缘强度高、自熄性能好，结构独特，只需调整积木式间块即可方便地组合成单母线或双母线夹。绝缘支撑是套筒式模压结构，成本低、强度高、解决了老产品爬电距离不够的缺陷。

4.2 Scheme of the auxiliary circuit

The scheme of the auxiliary circuit is composed of power supply scheme and power generation scheme.

4.3 Main busbars

The main busbars is mono-row copper busbars when the rated current is not above 1500A and is dual-row copper busbars when the rated current is above 1500A. The lap joints of the busbars are tin-coated.

4.4 Electric components choosing

a. The electric components of GGD board are mainly advanced batch component such as RDW17, DZ20, DW15 etc.

b. HD13BX and HS13BX rotary operating knife switches are special components meeting the requirement of the unique structure of GGD board which are designed by NLS. They are novel practical components, and they both change the operating pattern of the machine and reserve the advantages of the old product.

c. Because of the flexible installation of the GGD board, updating electric component causes no difficulties of manufacture and installation when the designer choose components of more excellent performance and more advanced technique according to the requirement of the client.

d. In order to improve the homeostasis of the circuit, the busbars support of the GGD board introduces special ZMJ combined busbars gripper and insulated support. The grippers are made up of thermo-molding PPO composite which has high intension and high flame retardance. The grippers have good self-quenching performance and unique structure. They can compose mono-gripper and dual-grippers only by adjusting the building blocks. The insulated support is press mold sleeve. It has low cost and high intension and overcome the insufficiency of power delivery distance of the old product.

结构特点

5.1 GGD 型交流低压配电柜的柜体采用通用柜的形式，框架用 8MF 冷弯型钢局部焊接或组装而成，框架零件及专用配套零件由本公司生产配套供货，以保证柜体的精度和质量。通用柜的零部件按模块原理设计，并有 20 模的安装孔，通用系数高。可以使工厂实现予生产。既缩短了生产制造周期，也提高了工作效率。

5.2 GGD 柜设计时充分考虑到柜体运行中的散热问题。在柜体上下两端均有不同数量的散热槽孔，当柜内电器元件发热时，热量上升，通过上端槽孔排出，而冷风不断地由下端槽孔补充进柜，使密封的柜体自下而上形成一个自然通风道，达到散热的目的。

5.3 GGD 柜按照现代工业产品造型设计的要求，采用黄金分割比的方法设计柜体外形和各部分的分割尺寸，使整柜美观大方。

5.4 柜门用转轴式活动铰链与构架相连、安装、拆卸方便。门的折边处均嵌有一根山型橡塑条，关门时门与构架之间的嵌条有一定的压缩行程，能防止门与柜体直接碰撞，也提高了门的防护等级。

5.5 装有电器元件的仪表门用多股软铜线与框架相连。柜内的安装件与框架间用滚花垫圈连接，整柜构成完整的接地保护系统。



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5.6 柜体面漆可选用聚脂桔形烘漆, 亦可选用喷塑粉工艺处理。均具有附着力强、质感好的特点。整柜呈亚光色调, 避免了眩光效应, 给值班人员创造了较舒适的视觉环境。

5.7 柜体的顶盖在需要时可拆除, 便于现场主母线的装配和调整, 柜顶的四角装有吊环, 用于起吊和装运。

5.8 柜体的防护等级为 IP30, 用户也可根据使用环境的要求在 IP20 ~ IP40 之间选择。

Structural features

5.1 The cabinet of GGD AC low voltage distribution board is of general form. The frame of it is composed of 8MF cold bending steel through welding and assembling. The parts of the frame and the special fittings should be supplied by our company in order to ensure the precision and the quality of the cabinet.

The parts of the general form cabinet are designed according to modularization principle. Furthermore, the cabinet has 20 modulus mounting holes. This improves the compatible coefficient of the cabinet and enables the factory to realize beforehand production. Therefore, the period of manufacture is reduced and the productivity is improved.

5.2 The heat dispersion problem is fully considered when designing the cabinet. There are various numbers of holes for heat dispersion at both the top and the bottom of the cabinet. When the electric components emit heat, the heat rises and disperses from the holes at the top. Simultaneously, cold air comes into the cabinet from the holes at the bottom. Thus a natural venting path is formed from bottom to top in the closed cabinet and the heat can be dispersed.

5.3 The GGD board is designed according to the requirement of modern formal designing of industrial product. The figure of the cabinet and the size each parts of the cabinet are compliant with golden section, so the whole cabinet is graceful.

5.4 The door is connected with the frame by rotatory active gemels. It can be assembled and disassembled conveniently. Each edge of the door has hill-shape elastomer strip. The strip can be compressed when the door is opened and closed. Therefore, the collision between the door and the cabinet is avoided and the protecting degree of the door is improved.

5.5 The instrument door on which the electric components installed is connected with the frame by multi soft copper strings. The fittings in the cabinet are connected with the frame by gridding washers. The whole cabinet forms complete protecting earth system.

5.6 The surface of the cabinet is painted with orange polyester baking paint or is processed with spray-plastic procedure. The features of this painting procedure are high adherence, fine texture etc. The whole cabinet is in a subdued hue. It avoids the dizzy hue effect and creates a comfortable visual environment for the operators.

5.7 The cover of the cabinet can be disassembled if necessary, so that the main busbars assembly and adjustment can be executed on the spot. There are hoisting rings at each top corner of the cabinet in order to hoist and handle the equipment.

5.8 The protecting degree of the cabinet is IP30. Other protecting degrees between IP20 and IP40 are available according to the service condition.

安装及使用

产品到达收货地点后，首先应当检查包装是否完整无损，发现问题应及时通知有关部门查找原因。对于不立即安装的产品，应根据正常使用条件的规定，置于适当的场所。

6.1 外型及安装

a. 外型结构（见图 1）

b. 产品的安装应按安装示意图进行（见图 2），基础槽钢和螺栓由用户自备，主母线安装时应将搭接面修理平整，处理干净，然后用螺栓紧固。

6.2 产品在安装完毕后，投入运行前需进行如下项目的检查与试验。

- a. 检查柜体面漆有无脱落，柜内是否干燥、清洁。
- b. 电器元件的操作机构是否灵活，不应有卡滞或操作力过大现象。
- c. 主要电器的通断是否可靠、准确。辅助接点的通断是否可靠准确。
- d. 仪表指示与互感器的变比及极性是否正确。
- e. 母线连接是否良好，绝缘支撑件、安装件及附件是否安装牢固可靠。
- f. 辅助接点是否符合要求，熔断器的熔芯规格是否正确，继电器的整定值是否符合设计要求。动作是否正确。
- g. 电路的接点是否符合电器原理图要求。
- h. 保护电路系统是否符合要求。
- i. 用 500 伏兆欧表测量绝缘电阻值不得低于 1 兆欧。

6.3 使用注意事项

- a. 本产品为不靠墙安装，单面（正面）操作，双面开门维修的低压配电柜。产品的维修通道及柜门，必须经考核合格的专业人员方可进入或开启进行操作、检查和维修。
- b. 空气断路器经过多次合、分后，会使主触点局部烧伤和产生碳类物质，使接触电阻增大，应定期对空气断路器按其使用说明书进行维护和检修。

Installation and Operation

On receiving the product, examine the packing immediately to check that no signs of damage are apparent. If the product is visibly damaged, inform the corresponding department to determine the cause. If the product is not installed immediately, it should be sited in proper place according to the proper operating regulations.

6.1 Figure and installation

a. Structure of the figure (see fig. 1)

b. The product installation should be held according to the installation sketch map (see fig. 2). You should prepare the basis channel steel and bolts, then smooth and clean the joint surface for the main busbars installation and tighten the assembly by bolts.

6.2 After installation, you should carry commissioning and check the following before operation:

- a. Whether the paint of the cabinet surface has flaked and whether it is dry and clean in the cabinet.
- b. Whether the operating machine of the electric components is flexible and whether blockage or excessive operating force occurs.
- c. Whether mainly electric components work reliably and perfectly and the auxiliary contacts switch reliably and perfectly.
- d. Whether the instruments indicate correctly and the transformers transform properly.
- e. Whether the busbars connection is perfect and the assembly of the insulated support, fittings and accessories is tightened.
- f. Whether the auxiliary contacts are in accordance with requirement, the specifications of the fuses are proper and the relays are tuned according to the designing parameters and work properly.

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- g. Whether the connections of the circuit is compliant with the circuit diagram.
- h. Whether the protecting system of the circuit meets the requirement.
- i. Whether the insulated resistance measured by 500VA multimeter is not below 1 million ohm.

6.3 Operating precaution

- a. The product should not be installed near the wall. It has one side (front side) for operating and dual doors for maintaining. All maintenance of the cabinet should be carried by trained and qualified personnel through opening the maintaining door.
- b. Air breaker may create partial burns of the main contact and generate carbonic matter after many times of switching. This causes the increase of the contact resistance. You should carry periodic inspection and maintenance of the air breaker according to its manual.

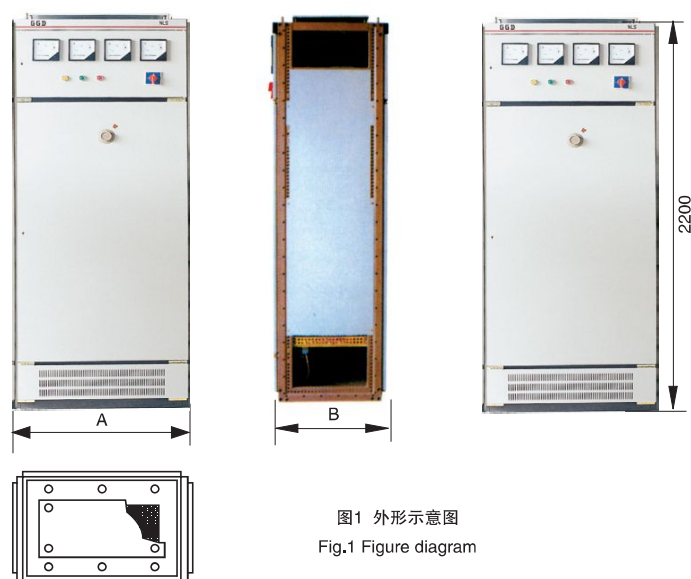


图1 外形示意图
Fig.1 Figure diagram

产品代号	A	B
GGD 06	600	600
GGD 06A	600	800
GGD 08	800	600
GGD 08A	800	800
GGD 10	1000	600
GGD 10A	1000	800
GGD 12	1200	800

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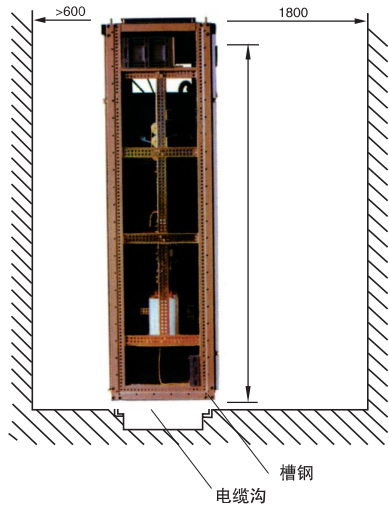
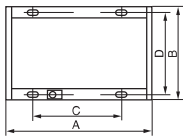


图 2 安装示意图
Fig.2 Installation diagram

产品代号	A	B	C	D
GGD 06	600	600	450	556
GGD 06A	600	800	450	756
GGD 08	800	600	650	556
GGD 08A	800	800	650	756
GGD 10	1000	600	850	556
GGD 10A	1000	800	850	756
GGD 12	1200	800	1050	756

订货须知

- a. 产品的全型号（包括主电路方案号和辅助电路方案号）。
- b. 主电路系统组合顺序图。
- c. 辅助电路电气原理图。
- d. 柜内元器件清单。
- e. 其它与产品正常使用条件不符的特殊要求。

Ordering notice

- a:The whole model of the product(including the scheme number of the lead circuit and the assistant circuit).
- b:The compose photo in turn of the lead circuit system.
- c:The electricity principle photo for the assistant circuit.
- d:The detailed list of the component in the case.
- e:Other special request that is unsuitable for normal using condition of the product.