

The GGF series Isolation Power Cabinet

Installation and Operation Manual V1.3

Declaration

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The contents of this description will be updated and amended constantly, and it is inevitable that there will be a slight discrepancy between the physical product and the description in the product function upgrading. Please refer to the physical product purchased and obtain the latest version of the description through www.acrel-electric.com or sales channels.

Modified Records

No.	Time	Versions	Reasons for revision
1	2012.05.24	V1.0	Primary version
2	2014.08.12	V1.1	Correct errors and omissions
3	2018.10.15	V1.2	Modify some contents
4	2022.12.08	V1.3	Change format, add content, add English version
Notes:			

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The GGF series Isolation Power Cabinet

1 Introduction

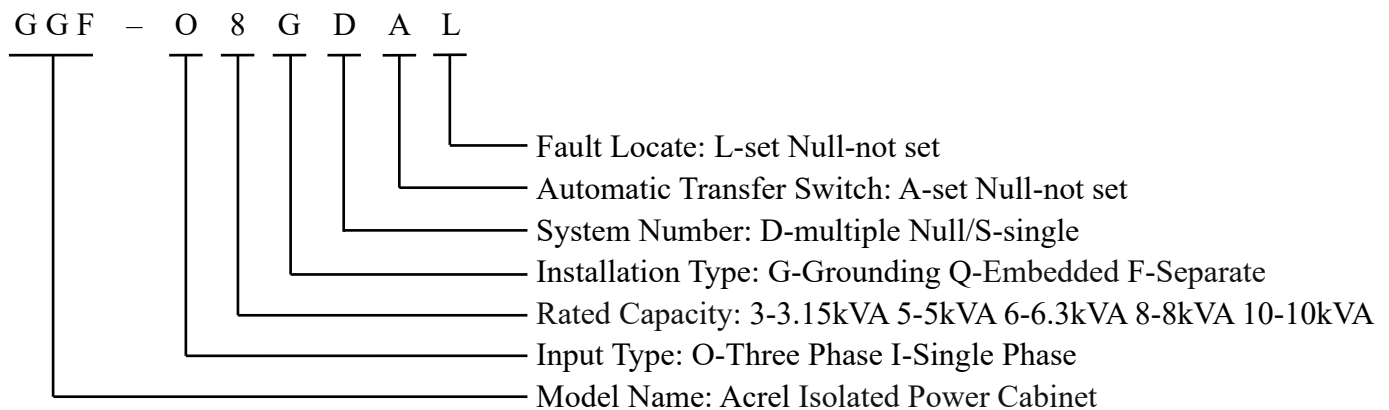
The GGF series isolation power cabinet is suitable for the power distribution system of the medical 2 class place or other IT systems, such as clean operation room, ICU/CCU intensive care unit, and emergency room. These places have high requirements on the reliability and security of the power supply system, so IT is necessary to use local IT system for power supply and implement local auxiliary equipotential measures. According to the different conditions of the operating room and intensive care unit, the corresponding power distribution scheme is provided.

The GGF series isolation power cabinet adopts the cabinet color that is relatively coordinated with the medical place, making it consistent with the overall environment of the medical place. The power cabinet can be installed in three ways, namely ground installation, embedded wall installation and split installation, which can be flexibly selected according to the site conditions.

The GGF series isolation power cabinets meet the standards of IEC 61439-2 *Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies* and IEC 60364-7-710:2021 *Low-voltage electrical installations - Part 7-710: Requirements for special installations or locations - Medical locations*.

The GGF series isolation power cabinet complies with the enterprise standard Q31/0114000129C009 *The GGF series Medical Isolation Power Cabinet*.

2 Product Model



Note: The product model is used to distinguish the specific configuration internally. The nameplate of the cabinet only shows the input type.

3 Function Features

- The GGF series isolated power cabinet can use a variety of cabinet body, the cabinet body is made of Q235A high quality cold rolled steel plate, stable structure is not easy to deformation;
- The GGF series isolation power supply cabinet has good heat dissipation, the cabinet body isolation transformer is installed in the heat dissipation fan, constitute the air duct, heat dissipation effect is obvious;

- The GGF series isolation power cabinet has a high level of protection, the heat dissipation part has dustproof measures to meet the requirements of protection level;
- The GGF series isolation power cabinet generally adopts the upper and lower wiring mode. The internal wiring is complete. The installation personnel only need to connect the incoming and outgoing wires to the corresponding wiring terminals, which is convenient for engineering construction;
- The GGF series isolation transformer in the isolation power cabinet will transform TN-S system into IT system, improve power supply stability, safety, and continuity;
- The GGF series isolation power cabinet insulation monitor can monitor the IT system to the ground insulation condition, when the insulation reduction or single-phase grounding situation, timely alarm, to remind the staff to troubleshoot;
- The insulation monitors in the GGF series isolation power cabinet can monitor the temperature and current of the isolation transformer, when the temperature is too high or current overload, timely alarm, remind the staff to troubleshoot;
- The GGF series isolation power cabinet if contains insulation fault location, insulation monitor can show the specific fault phase line and loop after alarm, staff should remove the fault loop in time.

4 Technical Parameters

The GGF series isolation power cabinet can be divided into two types and three installation methods, including: GGF-OXG, GGF-IXG floor isolation power cabinet; GGF-OXQ, GGF-IXQ embedded isolation power cabinet and GGF-OXF, GGF-IXF split isolation power cabinet.

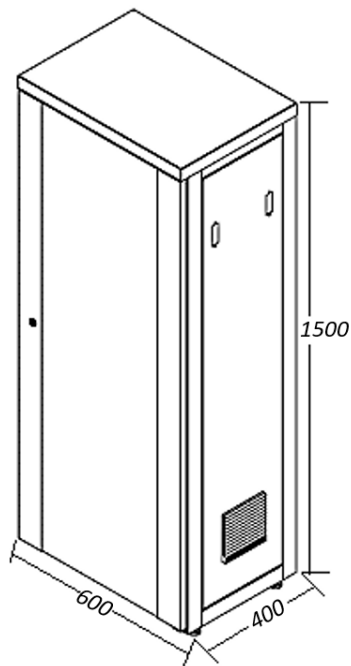
Technical parameters are shown in the following table:

Model Parameters	Single Phase - I			Three Phase - O		
	GGF-IXG	GGF-IXQ	GGF-IXF	GGF-OXG GGF-OXG	GGF-OXQ	GGF-OXF
Rated voltage	AC220V			AC380V/220V		
Rated capacity	3.15kVA, 5kVA, 6.3kVA, 8kVA, 10kVA			8kVA, 10kVA		
Rated current	16A, 25A, 32A, 40A, 50A			40A, 50A		
Rated frequency	50/60Hz			50/60Hz		
Distribution circuit	IT system: 4 loops, 8 loops or other loops (Customized)			IT system: 8 loops AC220V (Customized)		
				TN-S system: 1 loop AC380V, 8 loops AC220 (Customized)		
Protection class	IP31	IP31	IP34	IP31	IP31	IP34
Installation	Floor type	Embedded	Embedded	Floor type	Embedded	Embedded
Wire in and out	Top wire in, top wire out (Customized)					
Communication	RS485interface, Modbus-RTU protocol					

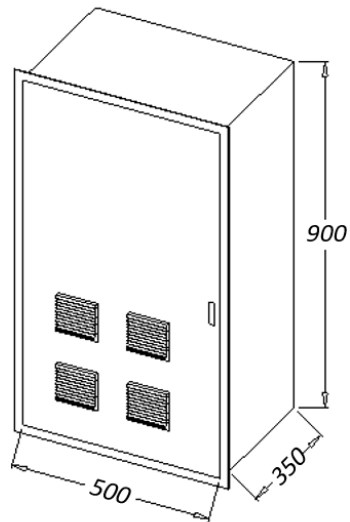
5 Installation and Wiring

5.1 Overall Dimensions

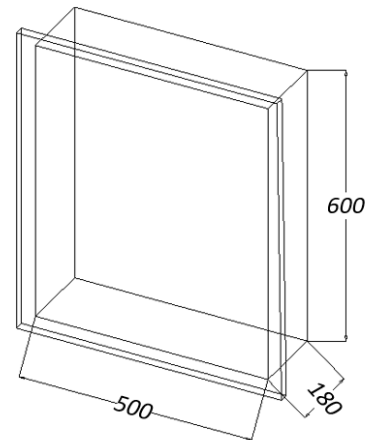
The appearance dimensions of various standard GGF series isolated power cabinets are shown in the following figure (unit: mm):



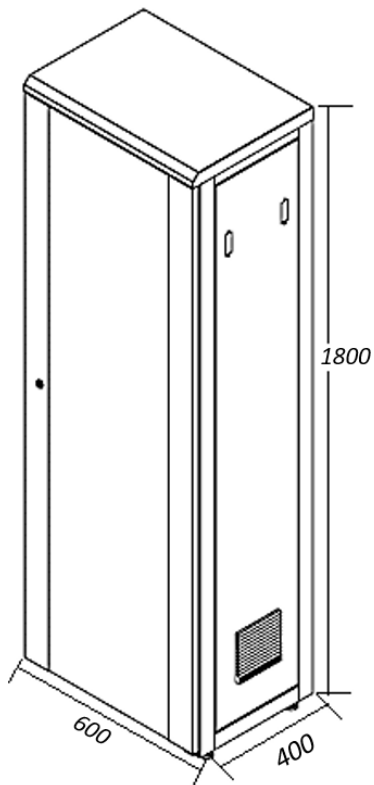
GGF-IXG series



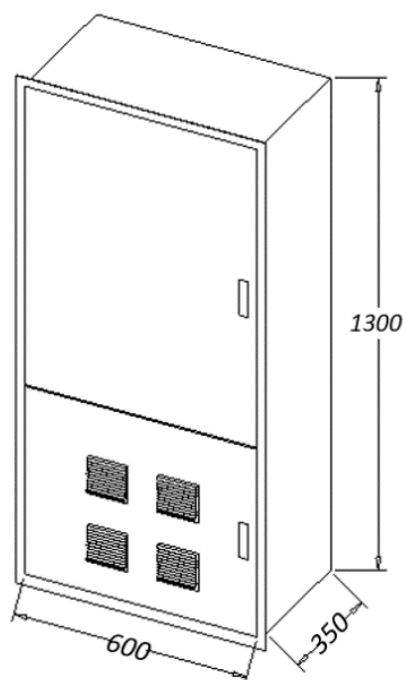
GGF-IXQ series



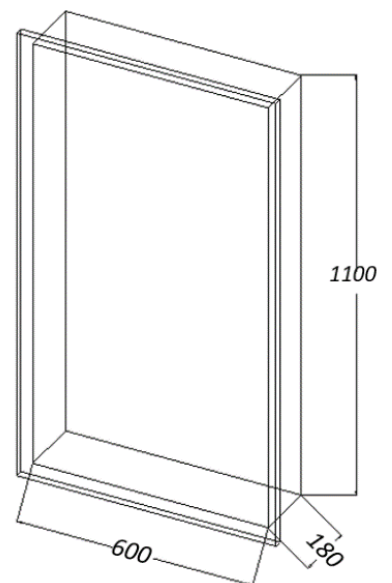
GGF-IXF series



GGF-OXGA/GGF-OXG series

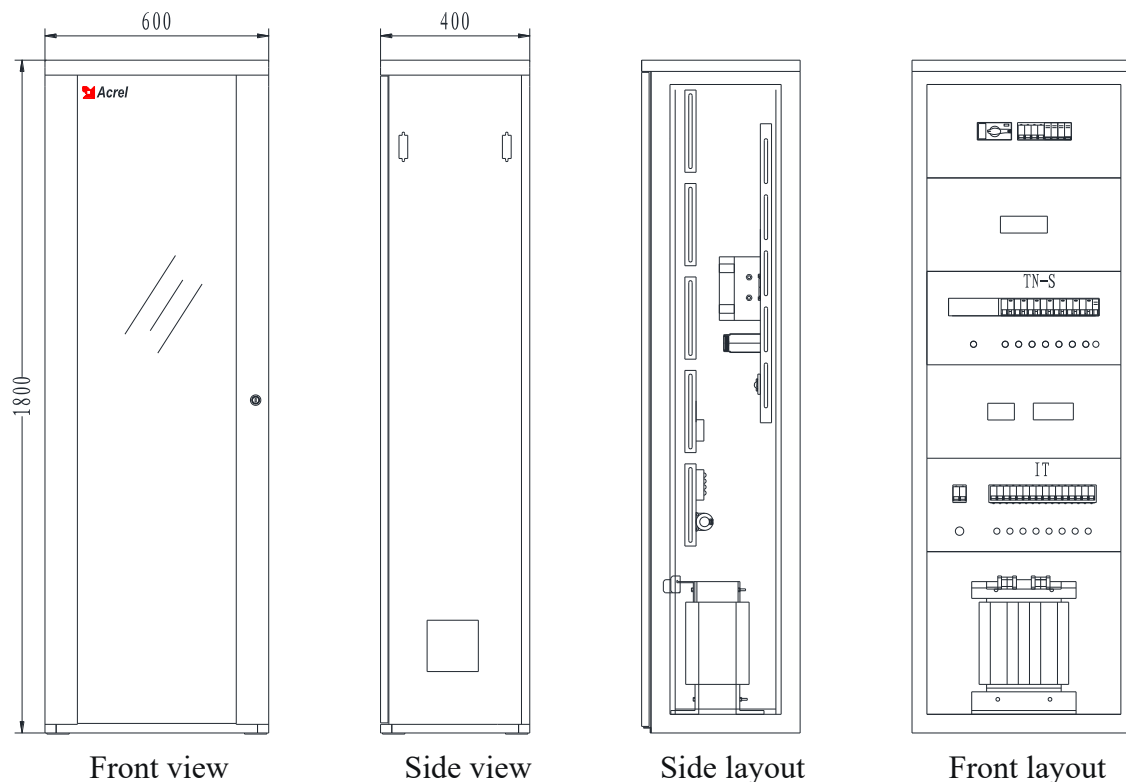


GGF-OXQ series

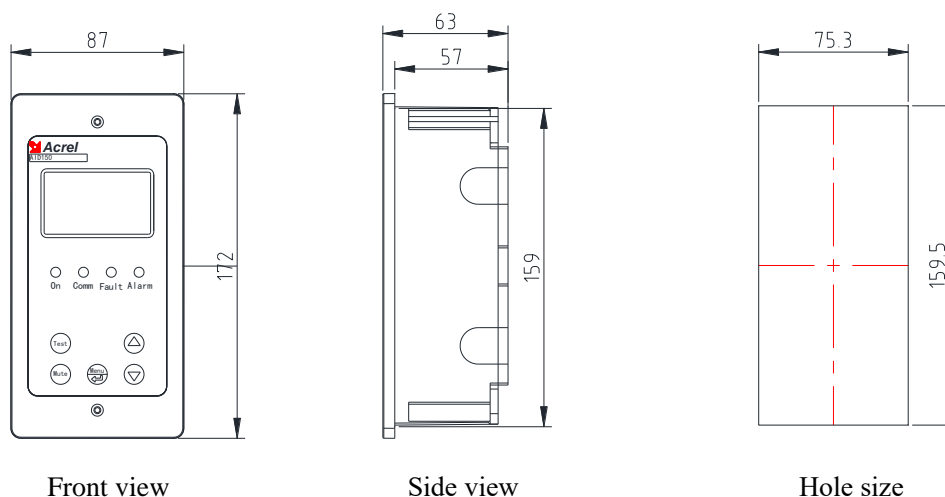


GGF-OXF series

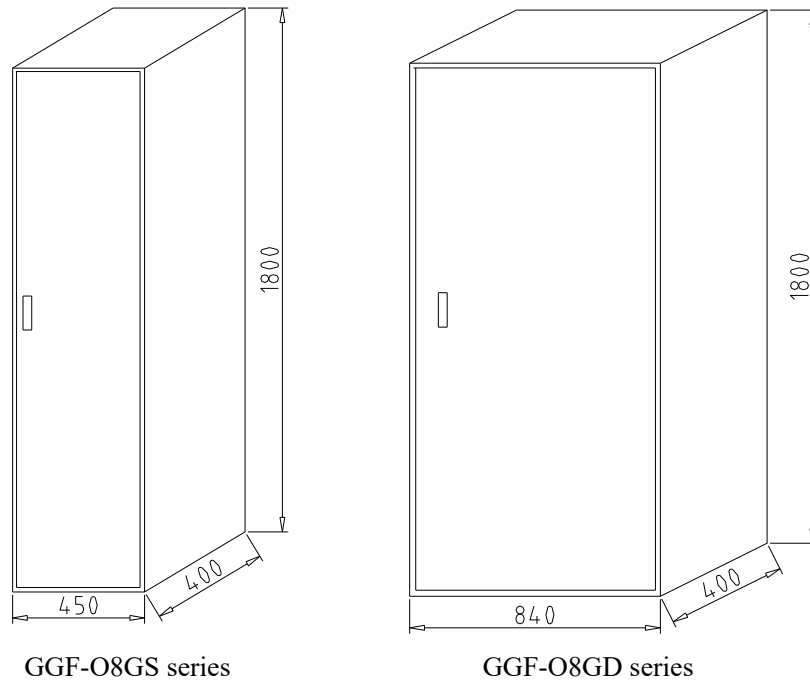
The internal layout and component configuration of GGF series power cabinet are designed according to the actual project site. The following takes GGF-OXGA as an example, and its internal layout is shown in the figure below (unit: mm):



The AID series external alarm and display instrument is installed outside the cabinet, usually installed in the operating room or nurses station wall. AID120 and AID150 have the same appearance size and different directions. AID120 is horizontal and AID150 is vertical. AID150 appearance dimensions as shown in the figure below (mm):



If multiple sets of IT systems are used on the practical project site, multiple sets of IT systems can be placed in a cabinet, usually no more than 4 sets. The cabinet is installed on the floor. The general cabinet model is GGF-O. Check the system diagram for the specific number of systems. The size of the cabinet is shown in the following figure (unit: mm):



Note: The cabinet with 3 or 4 sets of IT system does not mean the specific model, the conventional size is 800*2000*800 (width * height * depth).

5.2 Installation Method

The GGF series isolation power cabinet should be installed near the use place. Minimizing the capacity of the system, using fewer distribution loops, and shortening the length of the system's distribution lines can effectively reduce the ground leakage capacitance of the IT system.

The GGF series isolation power cabinet should be equipotential connection. For operating rooms that perform human heart surgery or are in contact with the human body, adequate electrical insulation measures should be taken so that all conductive parts within the extension range of the protected area are at the same potential level.

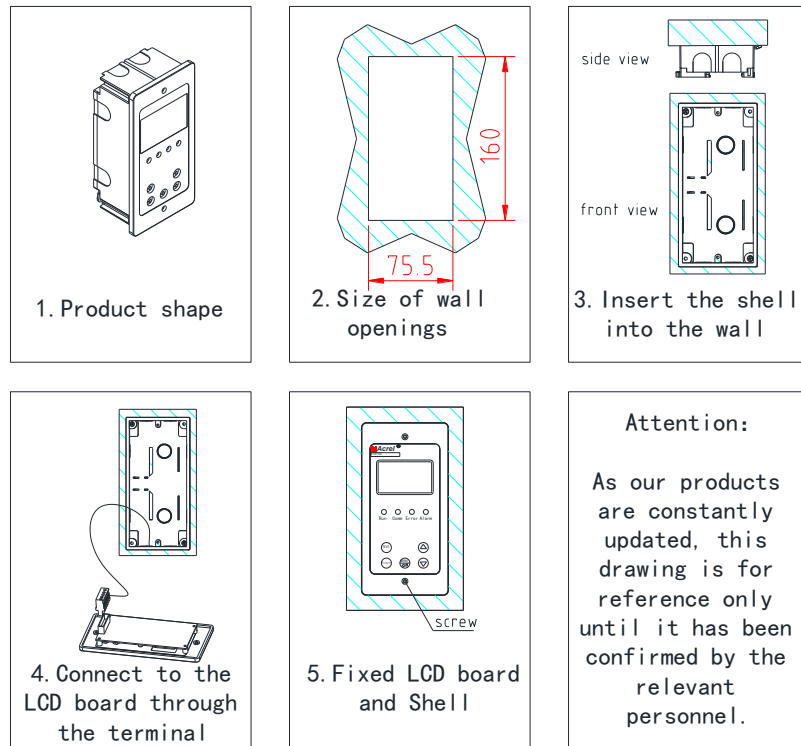
The GGF series isolation power cabinet floor cabinet should be installed against the wall, with fans on both sides reserved for effective cooling operation space; The embedded cabinet should be installed vertically, with space reserved on the front; Separate cabinet type contain transformer cabinet and component cabinet should be installed close to each other, transformer cabinet should reserve heat dissipation space.

The GGF series isolation power cabinet generally adopts the upper and upper out connection mode. Lead the incoming cable into the cabinet, connect the incoming cable to the wiring terminal of the circuit breaker, and then connect the outgoing cable to the outgoing circuit breaker terminal. When connecting a conductor to a terminal, use a crimping connector to tighten the connection.

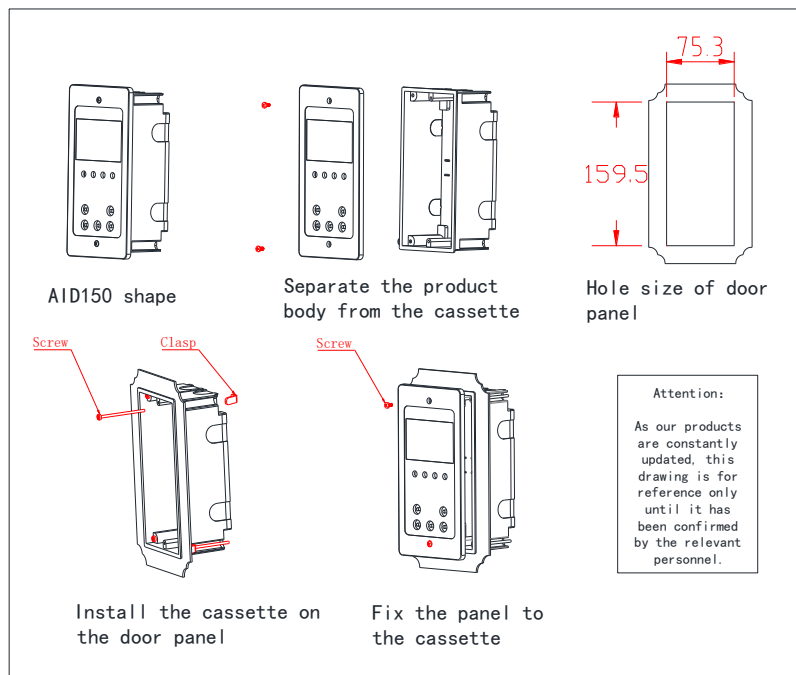
The GGF series isolation power cabinet external installation AID series external alarm and display instrument, alarm and display instrument can be installed in the wall, can also be installed on the panel, can also be installed on the rail. It can be installed on the inside wall of the operating room or on the wall of the nurse station. When installing, the installation position of the corresponding size should be

reserved, knock out the wire entry and wiring hole of the instrument back shell, and finally fix the panel on the back shell with screws.

The AID series external alarm display instrument usually adopts embedded installation, installation method is as follows:



If the cabinet door is installed with a hole, the installation method is as follows:

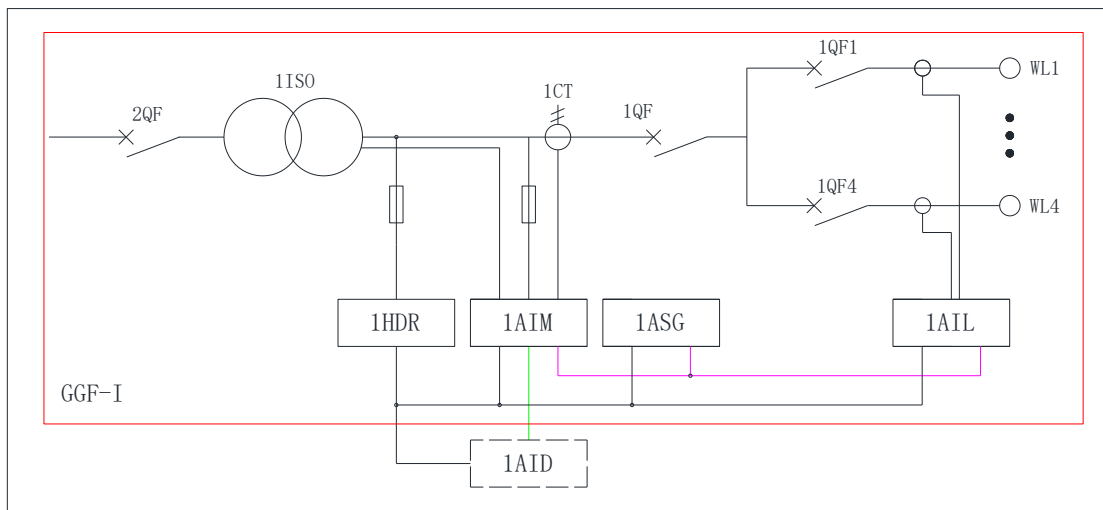


During the decoration, first open holes in the appropriate wall position or cabinet door position, and then pull out the connecting wire (two 1.5mm² power cable and one 2*1.5mm² shielded twisted pair cable) from the isolation power cabinet into the opening position, knock out the knock hole of the shell close to the pipeline, and then embed the external alarm and display shell into the wall and fix it. Connect

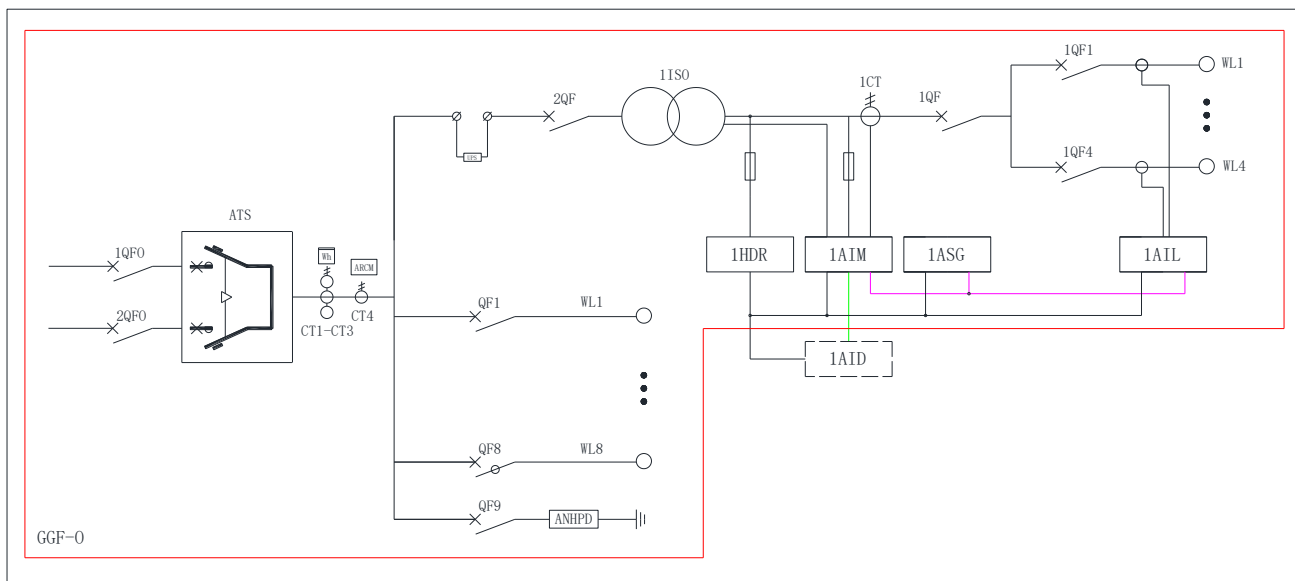
the wire to the external terminal according to certain rules, and then connect it to the corresponding terminal of the front cover circuit board. After the power supply and communication cables are connected to the isolated power cabinet, install the panel on the shell and fasten it with the attached self-tapping screws.

5.3 Connection Methods

The GGF series isolation power cabinet has flexible configuration and needs to be configured according to the actual project site. The attached accessories of the cabinet include primary system diagram and wiring schematic diagram. Typical primary system diagram is shown as the figure below:



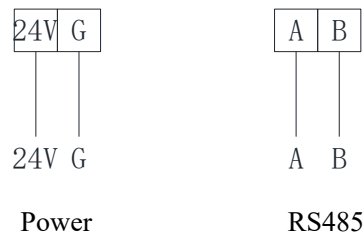
In the GGF-I cabinet primary system diagram, the left side is the incoming cable and the right side is the outgoing cable. During connection, find the incoming wiring terminal of 2QF circuit breaker in the cabinet and connect the project site incoming wiring; Locate the 1QF1 to 1QF4 outlet terminals in the cabinet, and connect the outlet loop to the outlet terminal of the circuit breaker.



In the GGF-O cabinet primary system diagram, the left side is the incoming cable and the right side is the outgoing cable. When connecting cables, find the incoming wiring terminals of the 1QF0 and 2QF0 circuit breakers in the cabinet and connect them to the incoming wires. If there is no dual power

switching device, find the three-phase inlet circuit breaker, access the inlet line; The UPS is reserved for access. Connect cables from outside the cabinet to the terminal. Locate the 1QF1 to 1QF4 outlet terminals in the cabinet, and connect the outlet loop to the outlet terminal of the circuit breaker.

The GGF series isolation power cabinet reserve 24V power output and communication bus wiring terminals, usually XT2. Confirm the wiring sequence of connecting to the external alarm and display terminals, and then connect the power and communication wires to the corresponding positions in the XT2 terminals. The wiring terminals of the external alarm and display terminals are shown below:



After connecting the wiring terminals in the isolated power cabinet, fix the external alarm and display panel with screws.

Make sure that the inlet and outlet lines and external alarm indicator are connected properly, open the upper switch, open the circuit breaker in the cabinet, and the isolation power cabinet starts to run.

The components and meters in the GGF series isolation power cabinet have been debugged before delivery. If the meters are damaged or have other problems, contact the manufacturer.

5.4 Matters Need Attention

5.4.1 When installing GGF series isolation power cabinet, it is necessary to strictly abide by the national electrical operation rules. No live operation is allowed. Please ask professional electrician to install, otherwise there may be electric shock accident.

5.4.2 The GGF series isolation power cabinet shall be installed in strict accordance with the electrical specifications. It is necessary to connect the equipotential terminal block of the isolation power cabinet to the equipotential terminal box on site to ensure reliable grounding of the cabinet.

5.4.3 The GGF series isolation power cabinet can be installed indoors according to different installation methods. The shell protection level is IP31. Ensure safe operation.

Power distribution devices such as circuit breakers in the isolation power cabinet can be selected according to the actual situation. Pay attention to the specifications and models. Any isolation transformer will generate impulse current when starting up. Therefore, when selecting the circuit breaker of the inlet circuit of the isolation transformer, the circuit breaker with the trip curve of D curve or the circuit breaker with the C and D trip curve of the national standard GB14048.2-2008 should be selected. The rated current of the circuit breaker is determined according to the capacity of the isolation transformer as follows: 10kVA – 63A; 8kVA – 50A; 6.3kVA – 40A; 5kVA – 40A; 3.15 kVA – 20A. The circuit breaker used in the inlet and outlet circuit of the isolation transformer should only have short circuit protection, without overload protection. If the appropriate circuit breaker is not selected according to the above requirements, the company shall not assume any responsibility for the

medical accident caused by the circuit breaker's difficulty in closing or the interruption in the operation process.

5.4.4 Please read this manual carefully before use. When it comes to insulation monitor and insulation fault locator products in-cabinet, refer to *076 Intelligent Insulation Monitoring Products of Medical IT System (Five-piece) Installation and Operation Manual* and *077 Insulation Monitoring and Fault Location Products of Medical IT System (Seven-piece) Installation and Operation Manual*.

6 Operation and Usage

After the product is installed, the following operations should be done:

If the GGF series isolation power cabinet is equipped with a dual power automatic transfer switch, ensure the reliability of the dual power supply. The power cabinet should be able to quickly switch to the standby power supply when the current working power supply is cut off. For example, if the current working power supply is power A and the standby power supply is power B, cut off power supply A and switch on power supply B quickly to ensure continuous power supply.

The GGF series isolation power cabinet is connected to the input line with the normal rated voltage, and the load switch, residual current protector, circuit breaker and other components can be switched off in turn. The circuit breaker should be correctly switched off.

After the GGF series isolation power cabinet is powered on, check whether the display data of the instrument on the cabinet is normal. The total inlet line measurement can indicate the current voltage and current value (GGF-O series cabinet); Insulation monitoring instrument should show the current IT system insulation resistance value, and no alarm feature.

After the above confirmation, the GGF series isolation power cabinet can be put into use.

In the process of use, if the external alarm display instrument is found to emit abnormal alarm, you can find the corresponding isolation power cabinet according to the alarm information, confirm the alarm type, and then carry out load disconnection operation until the insulation monitor recovers normal.

7 Typical Applications

The GGF series isolation power cabinet is mainly applied to the operating room and ICU power distribution system. The typical system diagram is as follows:

8 Application Environment

The GGF series isolation power cabinet must meet the following environmental requirements:

- 1) The ambient air temperature shall not exceed +40°C, and the average temperature within 24h shall not exceed +35°C. The ambient air temperature should not be lower than -10°C.
- 2) The ambient air is clean, and the relative humidity shall not exceed 50% when the highest temperature is +40°C. At lower temperatures, greater relative humidity is allowed.
- 3) The elevation of the installation site shall not exceed 2000m.

9 Attached Information

The GGF series isolation power cabinet should be delivered with the following documents:

- a) Plastic-sealed *Isolation Power Cabinet - Customer Wiring Instructions*, including primary system diagram, wiring terminal description and manual QR code;
- b) Factory inspection report;
- c) Qualification certificate of cabinet;
- d) Key of cabinet door.