



DPAS Series

直流双电源快切装置

DC Power Auto Switching



南京国高电气自动化有限公司

Nanjing Godgoal-Electric Automation Co.,Ltd

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本用户手册适用于DPAS系列V3.1版本程序。

本用户手册和产品今后可能会有小的改动, 请注意核对你使用的产品与手册的版本是否相符。

1	升级修改	2018-04-08
2	机箱升级, CCC测试名称调整	2020-12-08
3		

更多产品信息, 请访问: <http://www.godgoal.com>

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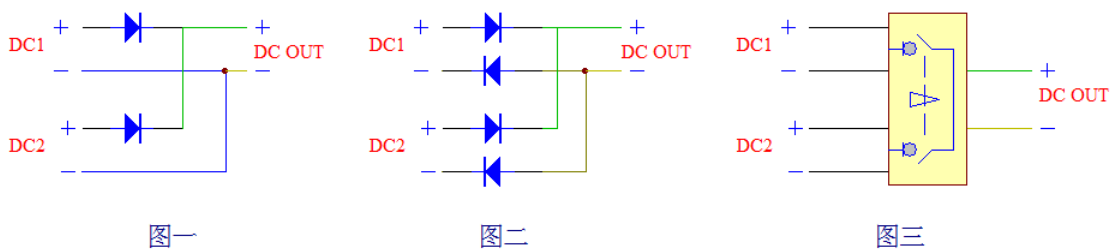
一、概述

DPAS 系列直流双电源快速切换装置为国高电气在多年从事多电源可靠供电系统研究过程中，针对电厂、电力、通信等多种直流控制系统供电需求提炼而成，也称为直流双电源无扰切换系统，是依据使用场合可以分为 DPAS-Z 型、DPAS-R 型和 DPAS-M 型，主要用于规模电厂、枢纽变电站、换流站等双直流系统完全隔离的场合以及直流单母线分段场合，具有零延时切换可选配母线绝缘自动检测等特性。

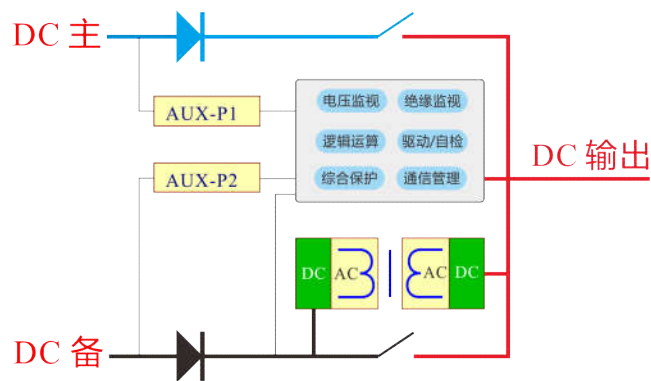
依据《电力二十五项反措细则》十三章规定“220kV 及以上电压等级线路保护应按双重化配置；100MW 及以上容量发电机变压器组，除非电气量保护以外，应按双重化原则配置微机保护。双重化配置的基本要求：两套保护装置的直流电源应取自不同蓄电池组供电的直流母线段”，另外在热工 MFT、ETS、DEH 等系统要求有可靠的直流系统，在一路直流失电时可无延时切换到另一路直流系统。

近年来随着高速处理器、电力电子技术及逆变技术的提升，无论在可靠性、速度性和大容量都非常成熟，满足直流供电的可靠性和隔离性的设计要求，该系列产品广泛适用于电力二次设备直流供电系统。

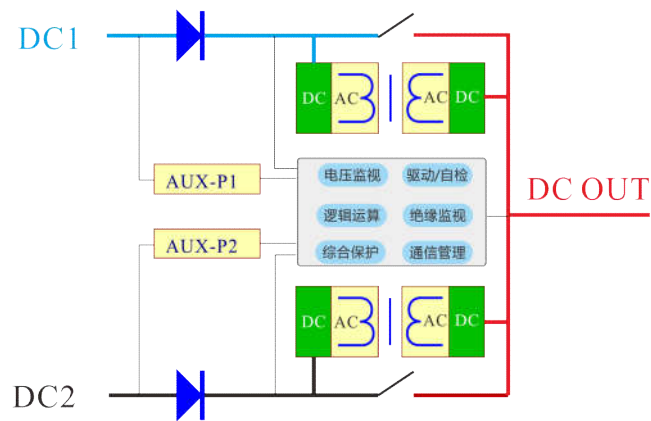
最为简单的连接两路直流系统的方法有，如下几种



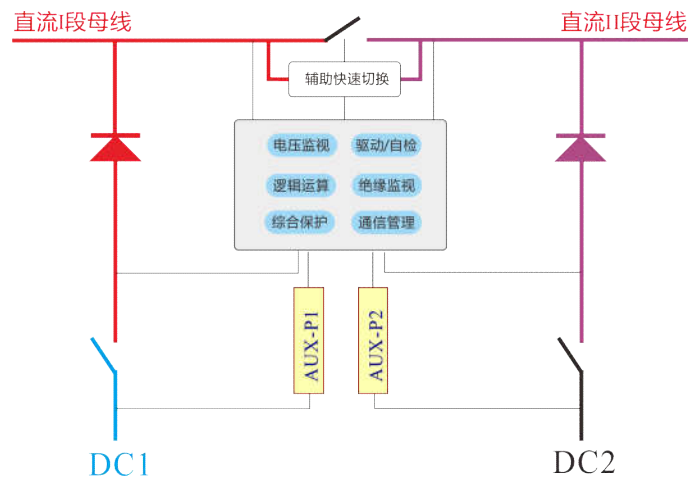
图一和图二都严重违反了反措细则(直流逻辑回路间不允许有任何电的联系)，而图三切换时间最快为几十毫秒满足不了细则需求。南京国高专业从事多电源可靠供电 10 多年，在电源投切领域拥有多个专利技术，该系列直流双电源快切装置融合了直流母线绝缘监视技术、大功率逆变技术、模拟隔离采集技术及电源跌落快速识别技术，确保实现直流电源系统快速切换，从根本上提高直流供电系统的可靠性，各种型号产品原理示意图如下：



图四 DPAS-Z 备用直流电源自投型



图五 DPAS-R 主备直流电源互投型



图六 DPAS-M 直流电源单母分段型

每种型号的产品都针对直流母线系统运行的反措要求，具有快速、可靠、隔离、综合保护的优势，产品不仅保障了直流母线切换的 0 毫秒延时的要求，同时对母线的绝缘状态进行实时监视；并具有通信综合管理功能，可以通过选配 Modbus-TCP、IEC61850、Profibus、CDT 等协议接入监控系统，或者接入直流屏、绝缘监视仪等直流电源管理终端，并远程到厂级综合监控管理中心。

二、DPAS 系列产品主要特点

- 数字化动态DC/DC隔离跟踪技术，确保0毫秒切换。
- 万次切换寿命，自动记录切换时间、切换前后信息且10年不丢失。
- 超强过载能力设计，瞬间过载能力强，长期满载工作可靠性高，且待机微功耗。
- 可选配母线绝缘在线监测，实时监测母线绝缘情况，并在绝缘异常时测试母线对地绝缘值并记录。
- 运行模式灵活，可以工作在单机模式或多机模式，多机模式自动均流。
- 标准 2U、4U 机架式安装，接线方便灵活，模块化组合进行扩容，升级更换灵活。

三、DPAS 系列产品选型表



注：对于超过 100A 的电流，需要根据要求定制，对于以上电压等级的回路如 24V, 28V 需要特殊定制说明。

举例：DPAS-Z-DC220V/40A，表示：用于主备型直流双电源隔离零延时无扰切换场合，直流母线电压为 220V, 母线电流 40A。

四、DPAS 系列技术参数表

本系列产品严格按照 GB/T 14048.11-2016 国家 CCC 标准检验并生产。

● 介电性能

冲击耐受电压：4.8KV, 1.2/50us, 正负各 5 次，间隔时间>1s

工频耐受电压：2.2kV, 施压时间 5s

泄漏电流测量：1.1 倍额定电压，泄漏电流≤0.5mA

● 电磁兼容（参考 GB/T 14598 相应项目）

静电放电：空气放电 8kV, 接触放电 4kV, 间接放电 8kV, 符合判别标准 1;

射频电磁场：水平垂直 0.15~80MHz 140dB(uV), 80-1000MHz 10V/m, 符合判别标准 1;
快速瞬变脉冲群：2kV/5kHz 1min, 信号端口 1kV/5kHz 1min, 符合判别标准 1;
浪涌：±2kV (线对地), ±1kV(线对线), 正负脉冲各 5 次, 符合判别标准 1;

● **机械性能**

振 动：参考标准 GB/T 11287-2000 严酷登记的振动, 试验后结构物损伤。

碰撞冲击：参考标准 GB/T 14537-1993 I 级碰撞试验

● **工作环境**

工作温度：-25℃ ~+60℃保证正常工作

存储温度：-40℃ ~+80℃

相对湿度：5%~95%内部不凝露、不结冰

大气压力：80 kpa~110kpa

● **结构尺寸**

安装方式：机架式(安装可以参阅本文 DPAS 系列产品安装)

产品尺寸：2U 型 430mm*89mm*356mm(宽*高*深)

4U 型 430mm*178mm*356mm(宽*高*深)

● **主要技术指标**

额定输入电压：DC220V, DC110V, DC48V(±10%)

失压切换阈值：75%~85% 额定电压 (可在 50%~100%整定)

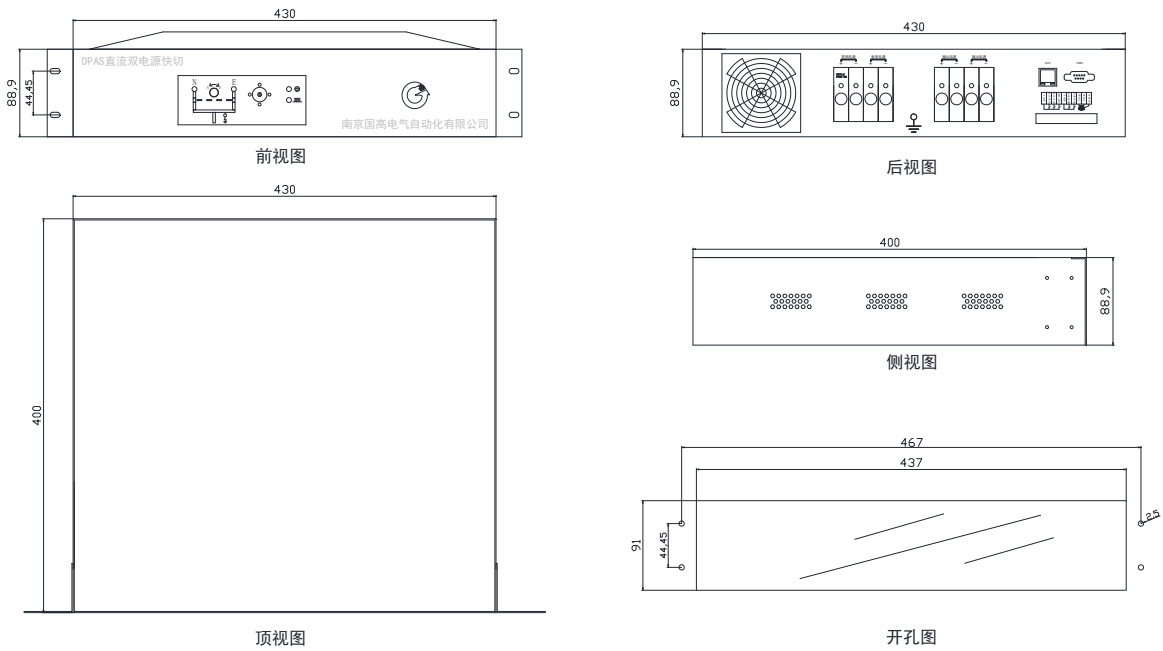
最快切换时间：400ns

最大切换电流：100A(超过 100A 需要定制)

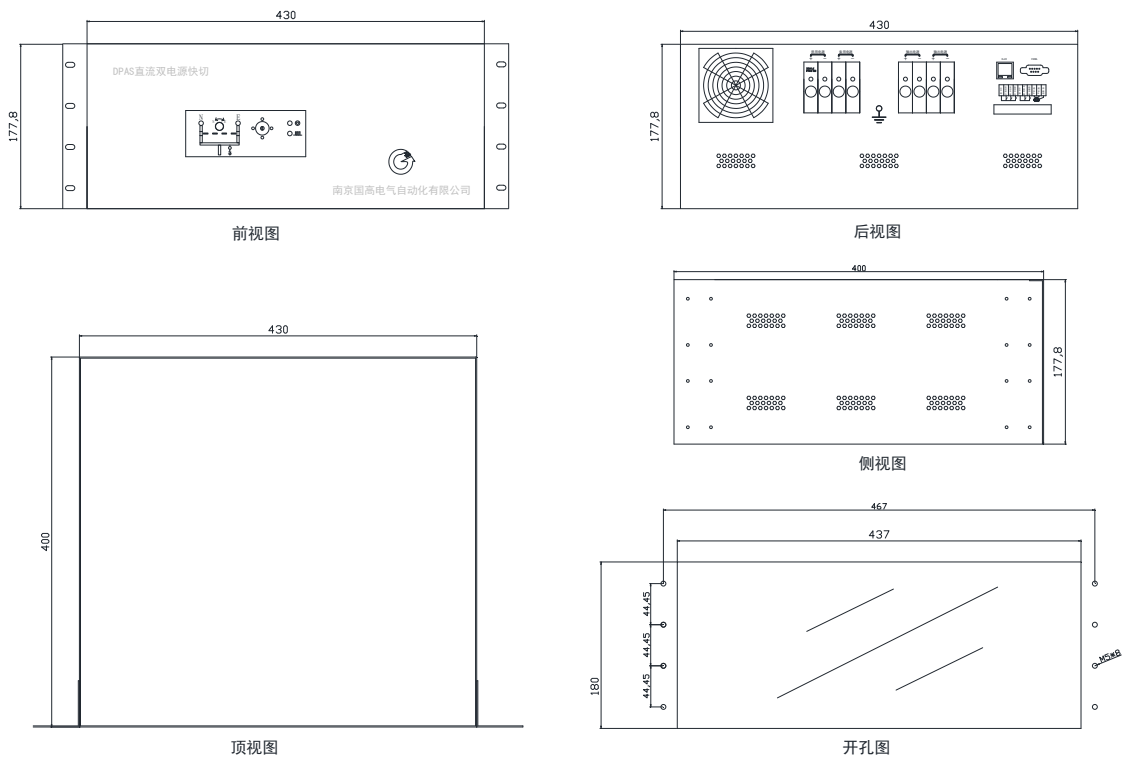
信号输出：5 路 (可现场编程通过专用的编程模块或笔记本)

系统最大功耗：30W

五、DPAS 系列产品安装

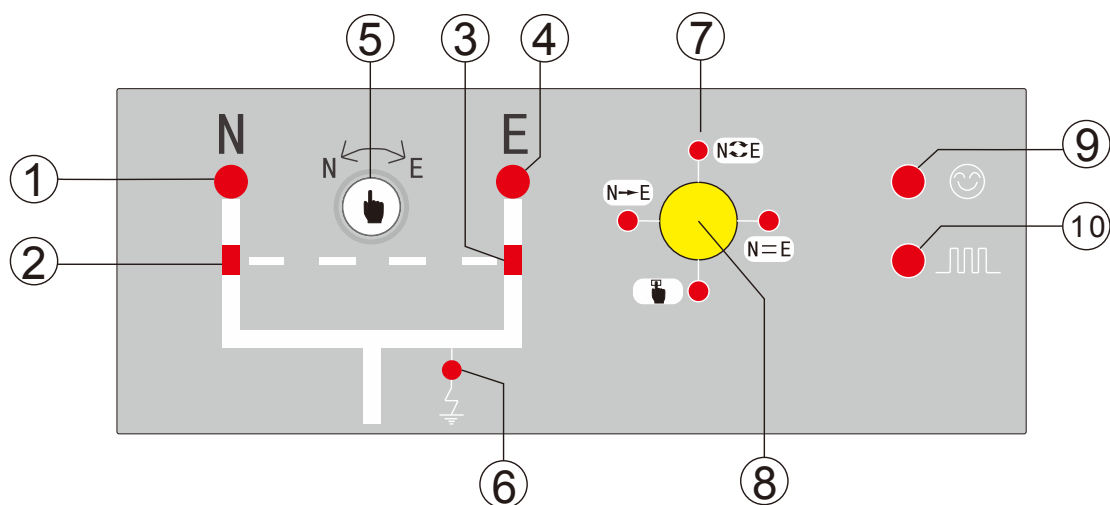


注：上图标注尺寸单位为 mm,为标准 2U(88.9mm)高度，标准机架安装即可，注意产品底部需要做机架支撑,该尺寸适用于 100A 以下延时切换型，和 40A 以下 0 切换延时型。



注：标注尺寸单位为 mm,产品为标准 4U 高度，标准机架安装即可，注意产品底部需要做机架支撑,适用于 200A 以下延时切换型，以及 100A 以下 0 切换延时型。

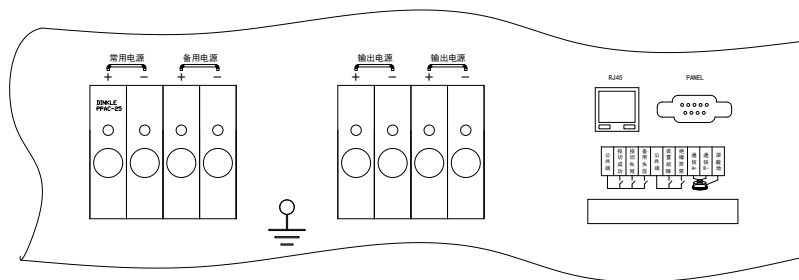
六、DPAS 系列产品面板介绍



编号	含义
1	绿色常亮：常用电源电压正常，绿色闪亮：常用电源电压异常。 红色常亮：常用电源带载中，熄灭：常用电源停电。
2	红色常亮：常用电源开关处于合闸位置，绿色常亮：开关处于分闸位置。
3	红色常亮：备用（应急）电源开关处于合闸位置，绿色常亮：备用（应急）开关处于分闸位置。
4	绿色常亮：备用（应急）电源电压正常，绿色闪亮：备用（应急）电源电压异常。 红色常亮：备用（应急）电源带载中，熄灭：备用（应急）电源停电。
5	切换按键：手动模式下，进行常用和备用（应急）电源切换。
6	绿色常亮：母线绝缘异常。
7	工作模式指示：共四个工作模式，通过旋转拨码进行选择，N→E 表示自投模式，N⇌E 表示自投自复模式，N=E 表示互投模式，☞ 表示手动操作模式，此时按下“切换按键”进行常用电源和备用（应急）间负荷切换，请根据具体需要选择工作模式。当选择的工作模式和你的订货模式不同时，可能引起负载瞬间停电，切记！
8	旋转开关：采用一字起对通过对开关旋转，选择相应的工作模式，当相应的工作模式选取后相应模式指示灯变亮，在系统运行带载中严谨随意改变工作模式，如需更改请确保装置停止运行后进行。
9	系统状态指示，绿色：代表系统正常待机，红色：表示备用失电、系统自检异常、投切失败等异常状态。
10	通信指示：当 RS485 通信进行收发通信时，改指示灯红绿交替闪烁。

注：定制产品，可能存在指示信息和上述不对应的情况，请咨询国高技术服务部。

七、DPAS 系列产品端子介绍



注：无论 2U 和 4U 高度，端子定义顺序是相同的，只是端子的载流量不同。

输入端子(横向)：

端子名称	DPAS-Z 型 DPAS-R 型	DPAS-M 型
左 1	常用电源+	S1 进线电源+
左 2	常用电源-	S1 进线电源-
左 3	备用电源+	S2 进线电源+
左 4	备用电源-	S2 进线电源-
左 5	输出电源+	I 段母线电源+
左 6	输出电源-	I 段母线电源-
左 7	输出电源+	II 段母线电源+
左 8	输出电源-	II 段母线电源-

信号端子(选配，定制产品默认不选配)：

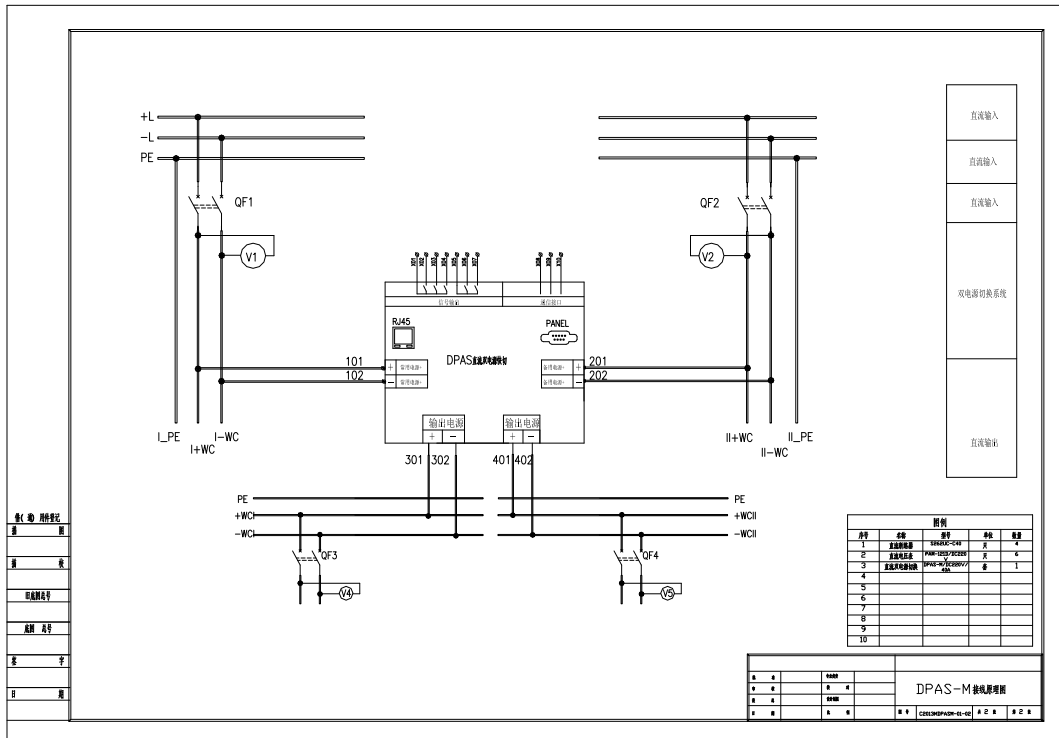
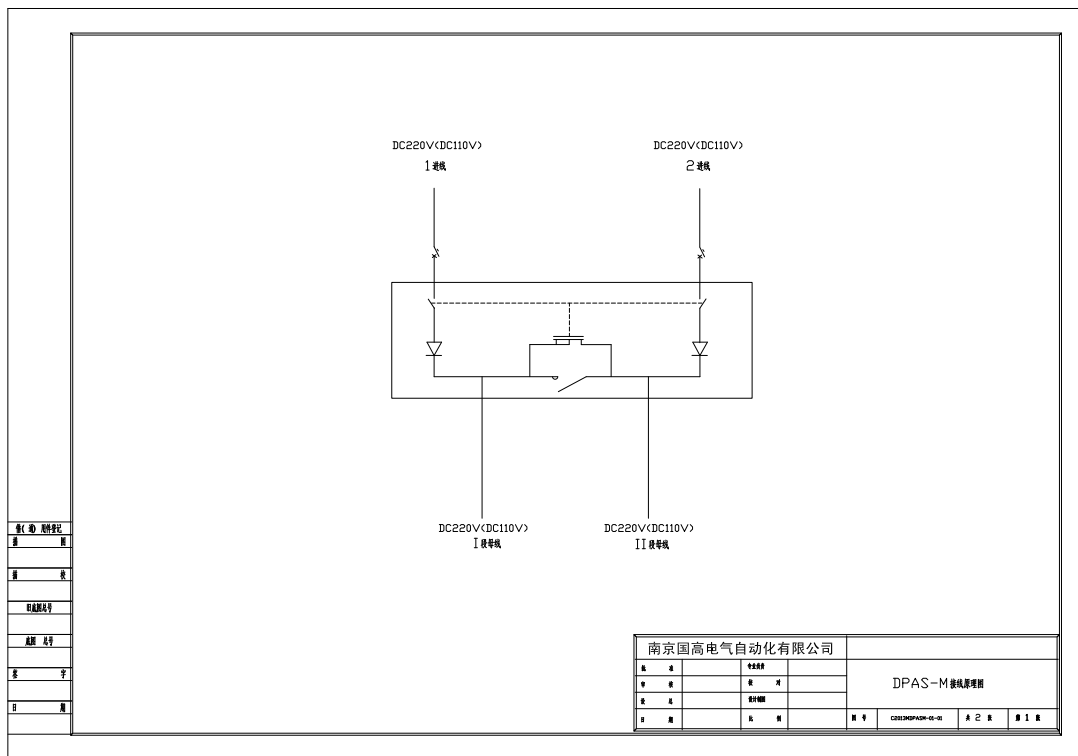
端子名称			功能含义
左一	左二	投切成功	当成功完成投切后该节点闭合。 延时默认 5 秒节点自动返回（可编程修改返回时间）。
	左三	投切失败	投切失败后，该节点闭合。一次正常投切动作或信号复归后节点返回。
	左四	备用异常	备用电源电压幅值，不满足投切条件时该常开节点闭合，满足自动返回。
左五	左六	装置故障	系统自检或内部接线异常时，内部继电器常开节点闭合
	左七	绝缘异常	选配功能，直流母线对地绝缘小于 500K 时，该端子常开节点闭合
	左八	通信口 A	RS485 通信 A+(可定制所对应支持规约)
	左九	通信口 B	RS485 通信 B-(可定制所对应支持规约)
	左十	屏蔽地	用于 RS485 通信信号屏蔽
注：	信号输出端子，控制输出可以通过显示编程面板修改含义，上表含义为默认情况。		

其它端口：

PANEL:用于选配“显示设置面板”，用来显示当前切换状态，以及设置定值和参数。详情请联系公司技术部，索要相关技术资料。

RJ45: 用于选配以太网通信，支持 IEC61850, MODBUS-TCP 以及其它硬件兼容规约。

1, DPAS-M 接线原理图:



九、DPAS 系列产品使用注意事项

用户须知：

- 1, 本产品为专业产品，非专业人员非法操作有可能带来人身安全或者产品损坏，严重情况引起火灾或有诱发其他事故的可能。
- 2, 本产品为电力运行保障产品，需要可靠接地。
- 3, 产品核对无误请检查接线端子，接线端子为大电流端子，必须连接可靠，由于产品标的物运输过程引起松动，请谨慎对待。

开箱注意：

- 1, 产品开箱检查所有的图纸和资料是否完整，产品外观是否有磨损或者变形，若任何的异常情况请致电公司的商务中心：025-66920807，确保你的产品可以使用。
- 2, 用户使用前请仔细阅读说明书，核对产品规格和订货要求，若有不相符，请致电公司技术部，技术电话：025-66920803。

安装须知：

- 1, 装置安装过程中需要考虑产品的自身重量，需要在屏柜对应产品的位置下方设置托板或者托架，并固定可靠。
- 2, 产品安装中的接地必须可靠，和其他二次自动化设备及控制设备具有同等的接地要求。
- 3, 安装接线的接头需要冷压后做镀锡处理，且建议采用环形冷压头，并保证表面无过度氧化层。

试运切记：

- 1, 确认两进线输入侧直流断路器处于断开位置，输出负载如果设置有断路器，请确保断开。
- 2, 用万用表测量相应电源的基本情况，是否符合额定电压的工作范围。
- 3, 核对接线的正确性，输入端的正负极，输入输出端的顺序，务必确保正确。

第一次上电：

- 1, 先对一路进线进行上电测试，对应进线指示灯点亮，若选配绝缘检测功能，如果此时母线绝缘出现故障，则对应绝缘故障灯亮起，并信号继电器闭合，如果此时系统自检内部故障则对应的系统故障灯亮起，并系统故障继电器闭合。由于此时备用电源未投入，则对应备用故障继电器闭合，并持续到备用电源正常为止。
- 2, 投入备用电源（应急电源），则备用异常继电器返回。若此时内部回路故障（辅助切换回路故障），则装置故障灯变红，正常则对应的系统自检灯为绿色。
- 3, 测量输出端电压是否正常，测量输出电压为输入电压减去 1V 左右，若正常则投入负载断路器或投入负载，并观察指示灯。
- 4, 负载输出正常后，断开常用进线则备用(应急)进线自动投入，对应指示灯亮起，负载无任何变化，则表明整个系统工作正常。
- 5, 对于 Z 型产品，若选择自投自复模式，则合上常用进线则负载自动切换到主进线。
- 6, 对于 M 型产品，则需要先单独对 S1 进线和 I 母进行测量，S2 进线和 II 母进行测量，校验方法如 3 条，而后对 S1 进线进行失压，此时母联断路器动作确保负荷无扰动电源切换到 2 路，S2 进线同一路。

定期测试:

- 1, 本产品为关键产品, 按照运行规程的要求需要定期做测试, 确保其可靠性, 一般的周期为六个月, 注意观察面板指示灯, 确保系统工作正常。
- 2, 重复第一次上电的第 3 条或者 4、5 条。
- 3, 不管何种测试, 最终都需要回到最初的运行状态。

结束语: 感谢你选择国高产品, 持续提升用电品质为公司多年坚持的使命, 围绕供电可靠性的解决方案目前应用于诸多领域, 如: 火电厂、水电站、光伏电站、高铁、通信、医疗、枢纽变电站等。公司渴望得到你的特殊需求, 并快速定制满足你的需求, 期待你致电或电邮我们, 把你的需求或改善意见反馈给我们, 我们全体国高人由衷感谢你的善举! 互动热线: 400-025-9008.

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This user manual is applicable to the DPAS series V3.1 version.

This user manual and product may have changes in the future. Please check whether the product you use is consistent with the version of the manual.

1	File all documents	2014-08-27
2	Upgrade Editor	2018-04-08
3		

For more product information, please visit: <http://www.godgoal.com>

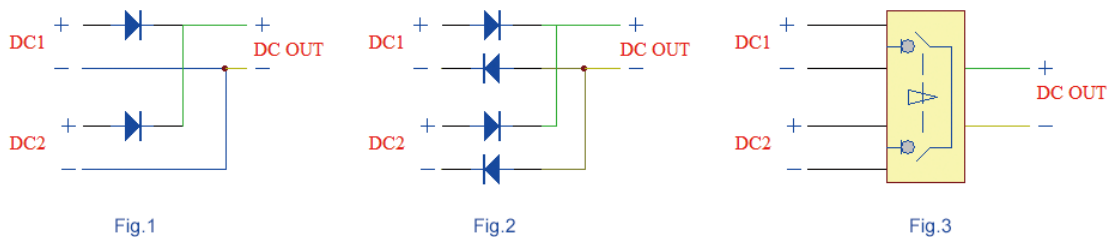
1 : Summary

DPAS quickly switch series DC double power supply device for the godgoal- electric power and reliable power supply system for many years engaged in the research process, in view of the power plant, electric power, communications, and other DC power supply control system needs to refine and become, also known as double undisturbed switching power supply system, DC is on the basis of using occasion can be divided into DPAS - Z, the DPAS - type R and DPAS - M type, it is mainly used for power plant scale, hub substation, on the occasion of double DC system is completely isolated and DC bus section occasion, with zero delay switch optional bus bar insulation character such as automatic detection.

According to the provisions of chapter 13 of power 25, **"the protection of voltage grade line of 220kV and above shall be configured according to the dual configuration; The transformer group of 100MW and above capacity generators should be protected according to the dual principle, except for the protection of electric quantity. Double configuration of basic requirements: two set of the DC power supply protection should be taken from different battery power supply of DC bus section "**, in the thermal MFT, ETS, DEH system requires reliable dc system, In all ways, there is no connection between two DC power sources.

In recent years, along with the high speed processor, power electronics technology, inverter technology promotion, whether in the reliability, speed and large capacity are very mature, satisfy the design requirements of the reliability of the DC power supply and isolation, this series of products are widely used in electric power secondary equipment of DC power supply system.

The simplest way to connect two DC systems is as follows :



Both FIG. 1 and FIG. 2 are in serious violation of the countermeasures (no electrical connection between the DC logic circuits), and the change time of figure 3 can not meet the requirements of the detailed rules for a few tens of milliseconds. Godgoal-Electric the high specialized is engaged in the power supply reliable power supply more than 10 years, have more than one in the field of power supply for patent technology, this series of DC double power fast cutting device is a blend of DC bus bar insulation monitoring technology, high-power inverter technology, analog acquisition technology and power drop quickly identify technology, ensure to quickly switch DC power supply system, and fundamentally improve the reliability of DC power supply system, various models product principle diagram is as follows:

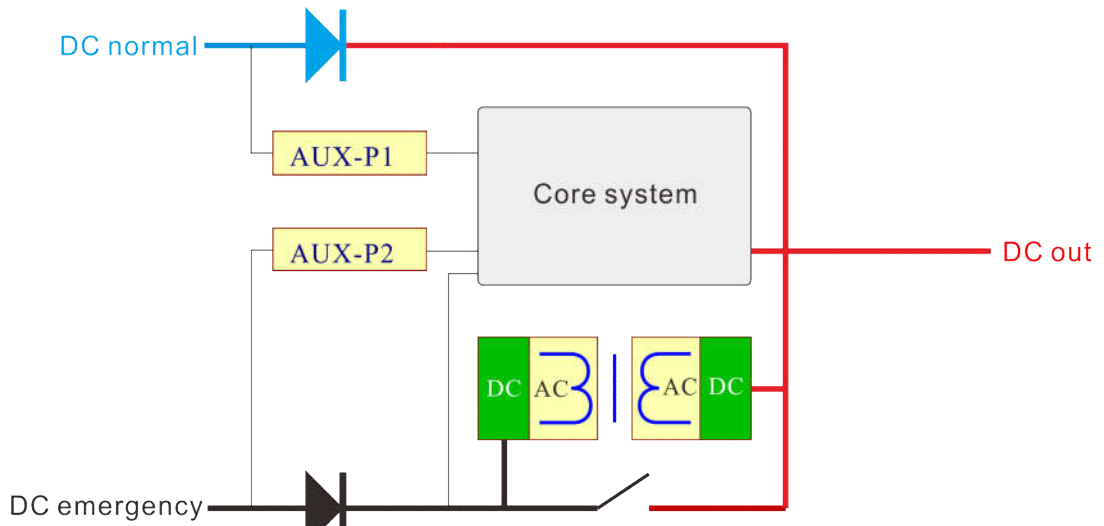


FIG.4 DPAS-Z Automatic switching of emergency power

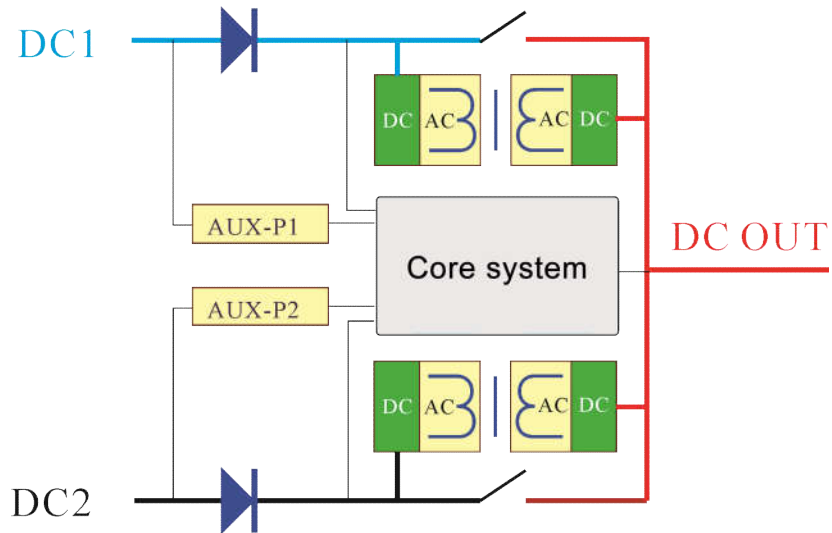


FIG.5 DPAS-R Switching between two power sources

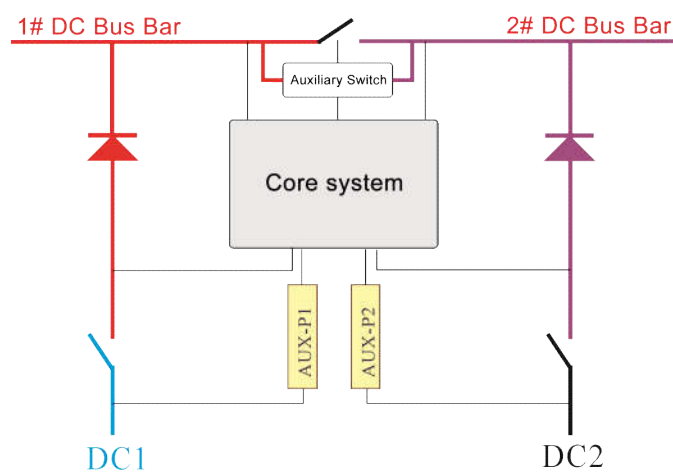


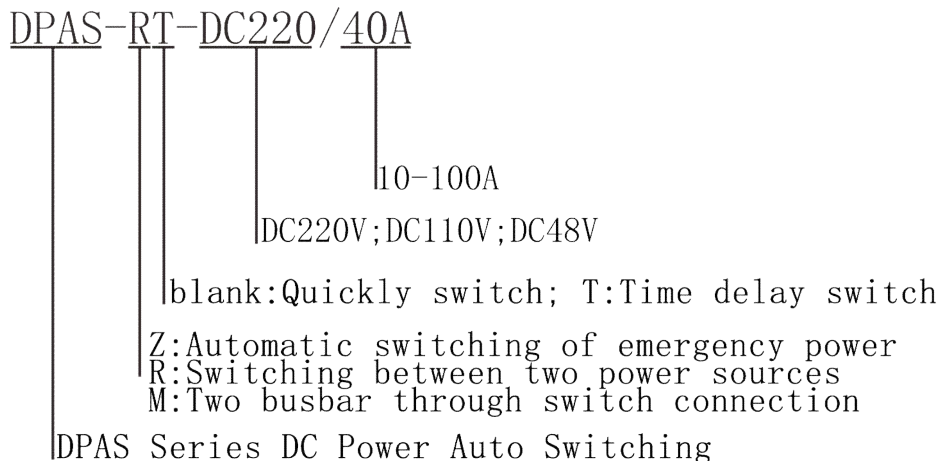
FIG.6 DPAS-M Two busbar through switch connection

Each type of product based on DC bus bar counter measures of the system operation requirements, has the advantage of fast, reliable, isolation, comprehensive protection, products not only guarantee the dc bus switching 0 millisecond delay requirements, real-time monitor the insulation status of bus at the same time; Integrated management and communication functionality, by matching the Modbus TCP, IEC61850, Profibus, the CDT protocol access monitoring and control system, DC screen or access, insulation monitors, such as DC power management terminal, and remote to plant-level comprehensive monitoring management center.

2: Main features of DPAS series products

- Digital dynamic DC/DC isolation tracking technology ensures 0 ms switching.
- It can automatically record the switching time, the information before and after the switch, and it will not be lost for 10 years.
- Super overload capacity design, quick overload ability, long - term full load work reliability high, and standby micro power consumption.
- It can be used to monitor the insulation of the bus, monitor the insulation of the bus in real time, and test the insulation value of the bus and record the insulation value.
- Flexible operation mode, can work in single mode or multi-machine mode, multi-machine mode automatic flow.
- Standard 2U, 4U frame type installation, convenient wiring, modular assembly to add capacity, upgrade and change flexibility.

3 : DPAS series product selection table.



Annotation: For the current of over 100A, it needs to be customized according to the requirements. For the circuit of the above voltage level, such as 24V, 28V needs special instructions.

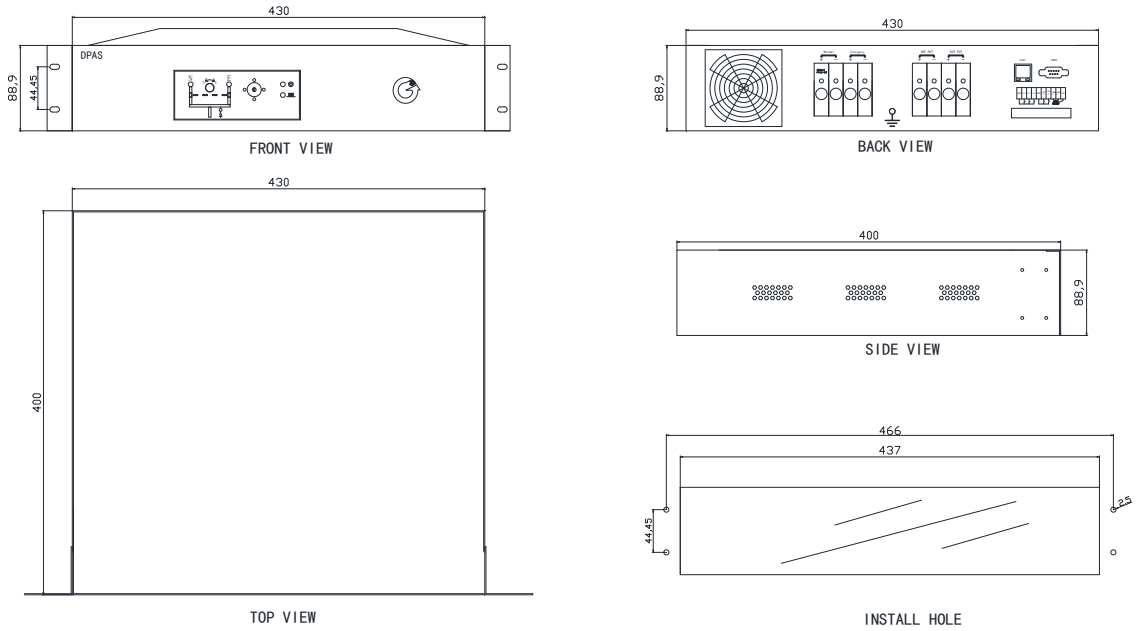
For example: DPAS-Z-DC220v /40A, indicating that the DC bus voltage is 220V and the busbar current 40A is used for the zero-delay undisturbed switching of the main standby DC dual power supply.

4: DPAS series of technical parameters

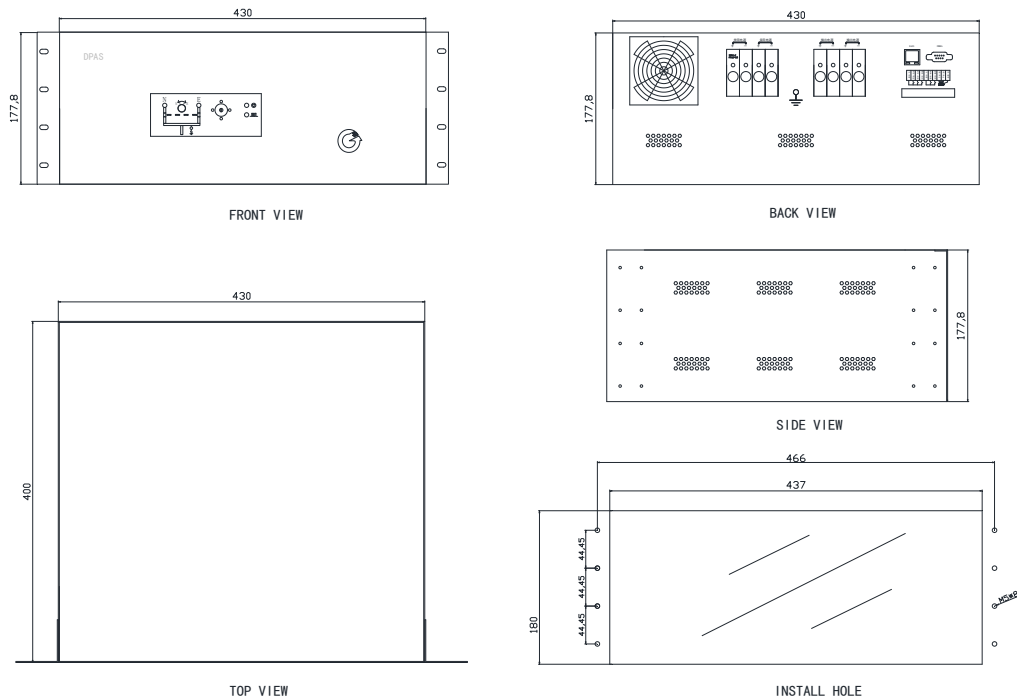
This series of products are inspected and produced according to GB/T 14048.11-2016.

- **Insulation performance**
 - Insulation resistance: 500VDC, greater than 100M
 - Resistant to high voltage: 2KVAC, 1min
 - Dielectric strength: 1.5KVAC,1min
 - Impact voltage: 5KV,1.2/50us
- **Electromagnetic compatibility** (refer to GB/T 14598 corresponding project)
 - Electrostatic discharge: Level 4
 - Fast transient pulse group: Level 4
 - Damped oscillation wave: Level 3
 - Radiation electromagnetic field: Level 3
 - 1.2/50-8/20 us surge: Level 3
 - Working frequency magnetic field: Level 4
- **Mechanical properties**
 - Vibration dynamic: Reference standard GB/T 11287-2000 severe register vibration, post-test structural damage.
 - Collision impact: Reference standard GB/T 14537-1993 I - class collision test.
- **The work environment**
 - Working temperature: - 25 °C ~ + 60 °C to ensure normal work
 - Storage temperature: - 40 °C ~ + 80 °C
 - Relative humidity: 5% ~ 95% of the interior is not exposed, does not freeze.
 - Atmospheric pressure: 80 kpa ~ 110kpa.
- **Structure size**
 - Installation method: rack type (installation can be seen in the DPAS series product installation)
 - Product size: 2U type 430mm*89mm*356mm(width * height * depth)
4U type 430mm*178mm*356mm(width * height * depth)
- **Main technical indicators**
 - Rated input voltage: DC220V,DC110V,DC48V(± 10%)
 - Voltage loss switching threshold: 75% ~ 85% rated voltage (adjustable from 50% to 100%)
 - Fastest switching time: 400ns.
 - Maximum switching current: 100A(more than 100A needs customization)
 - Signal output: 5 (field programming via dedicated programming module or notebook)
 - Maximum power consumption: 30W.

5: DPAS series product installation.



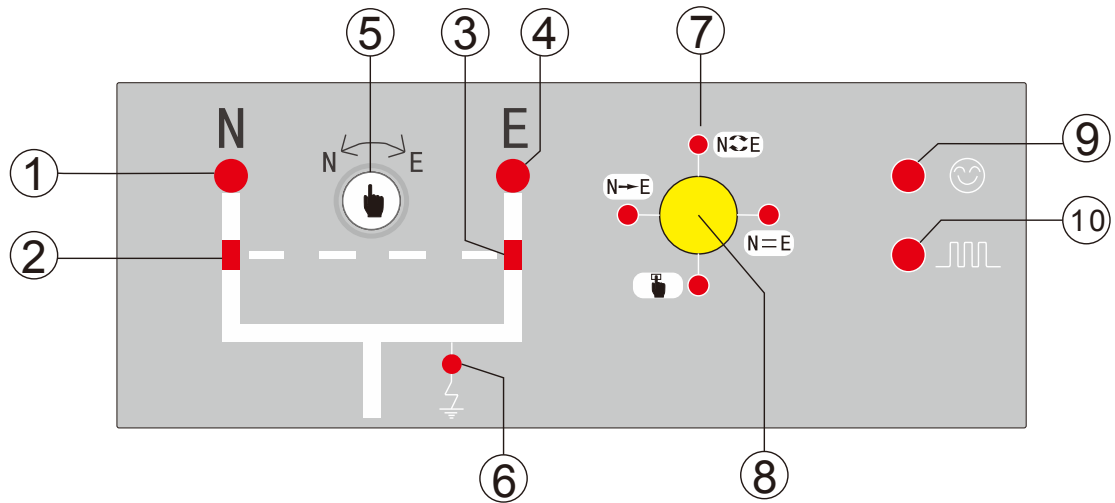
Annotation: The above image is marked in mm, the standard 2U(88.9mm) height, the standard rack mounting, and attention to the bottom of the product needs to be supported by the rack, the size is applicable to the time delay switch under 100A, and the 0 switch delay mode below 40A.



Annotation: Dimension unit for mm, products for the standard height of 4 u, standard rack installation, pay attention to the product needs to be done at the bottom of the frame support, suitable for below 200 a delay switch type, and under a 100 0 type switch

delay.

6 : Introduction of DPAS series product panel

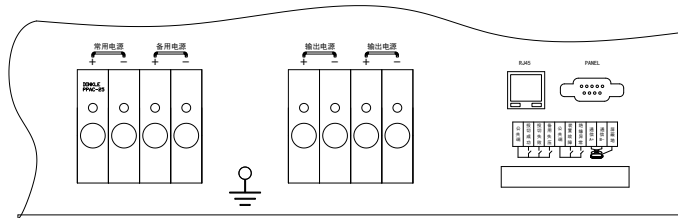


Number	Implication
1	Green light: power supply voltage is normal, green shiny: power supply voltage abnormal. Red light: power used, put out: power lost.
2	Red: the switch is in the closing position, green: the switch is opening position.
3	Red: the switch is in the closing position, green: the switch is opening position.
4	Green light: power supply voltage is normal, green shiny: power supply voltage abnormal. Red light: power used, put out: power lost.
5	Switch button: manual mode is used to switch between N(normal power) and E (emergency power)
6	Green bright: the busbar insulation is abnormal.
7	Work mode led: There are four modes of work. The N->E led shows the automatic input mode of the emergency power. The N<->E led indicates the emergency automatic input, and the normal power recovery is automatically cut back. The N=E led indicates Switching between two power sources. The finger pattern indicates the work in manual mode.please select the work mode according to specific needs. When the selected work mode and your order mode are not at the same time, may cause the load instantaneous power failure, remember!
8	Rotary switch: dial the switch to rotate, select the corresponding work mode, when the corresponding work mode select the corresponding LED lamp, the system runs in the corresponding mode, the work mode is carefully changed,

	the factory has been initialized according to the order, if must be modified, please remove all the load.
9	System status indicator, green: represents the system normal standby, red: indicates standby power loss, system self-check abnormality, throwing failure and other abnormal.
10	Communication instruction: when RS485 communication is sent and receive communication, the red and green light of the change indicator flicker alternately.

Annotation: for customized products, there may be indication information and the above situation, please consult the high technical service department.

7: Introduction of DPAS series product terminals



Annotation: Regardless of the height of 2U and 4U, the terminals are defined in the same order, except that the load flow of the terminal is different.

Input terminal (horizontal) :

Terminal name	DPAS-Z And DPAS-R	DPAS-M
Left 1	normal source +	S1 Line power supply +
Left 2	normal source -	S1 Line power supply -
Left 3	stand-by power +	S2 Line power supply +
Left 4	stand-by power -	S2 Line power supply -
Left 5	power out +	I Period Bus power supply +
Left 6	power out -	I Period Bus power supply -
Left 7	power out +	II Period Bus power supply +
Left 8	power out -	II Period Bus power supply -

Signal terminal (optional) :

Terminal name			Functional meaning
Left 1	Left 2	For successful	The node is closed after successful completion of the casting. The default 5-second node is automatically returned (programmatically modified return time).
	Left 3	For failure	The node closes after failure. The node returns after a normal cut action or signal return.
	Left 4	Standby abnormal	The standby power voltage amplitude is not satisfied when the casting condition is not satisfied.
Left 5	Left 6	Device failure	When the system self-check or internal wiring is abnormal, the internal relay normally open the node to close.

	Left 7	Insulation abnormal	Optional function, dc busbar to ground insulation less than 500K, the terminal often open node closure.
	Left 8	Communication port A	RS485 Communication A+(customizable corresponding support protocol)
	Left 9	Communication port B	RS485 communication B-(customizable corresponding support protocol)
	Left 10	Shielding ground	Used for RS485 communication signal shielding.
Note:	The signal output terminal, the control output can be modified by the display programming panel, the above table meaning is the default.		

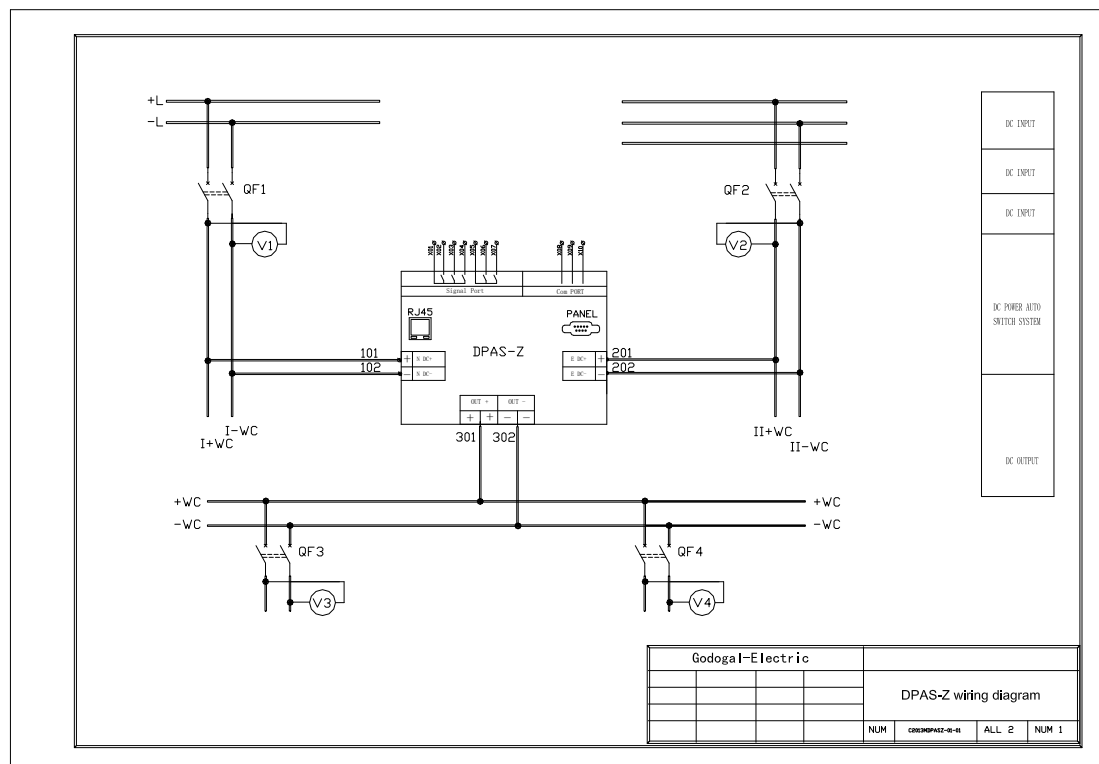
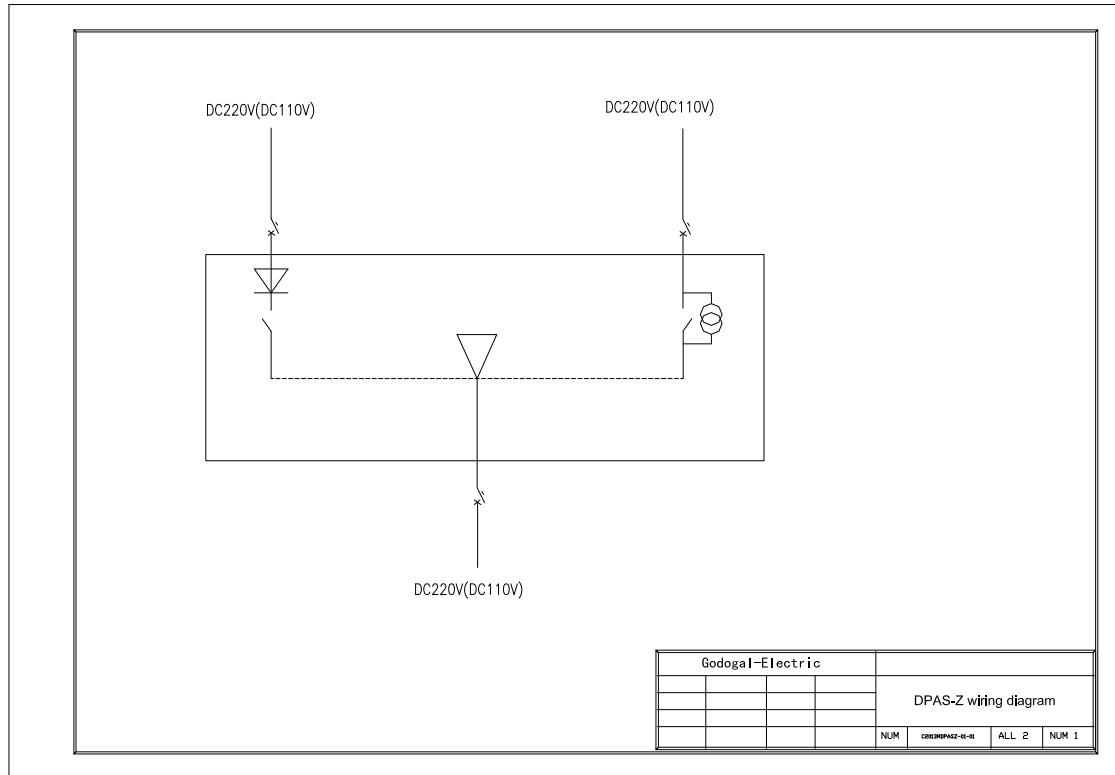
Other ports:

PANEL: Used to select the display Settings panel to display the current toggle state, as well as set values and parameters. Please contact the technical department of the company for details and ask for relevant technical information.

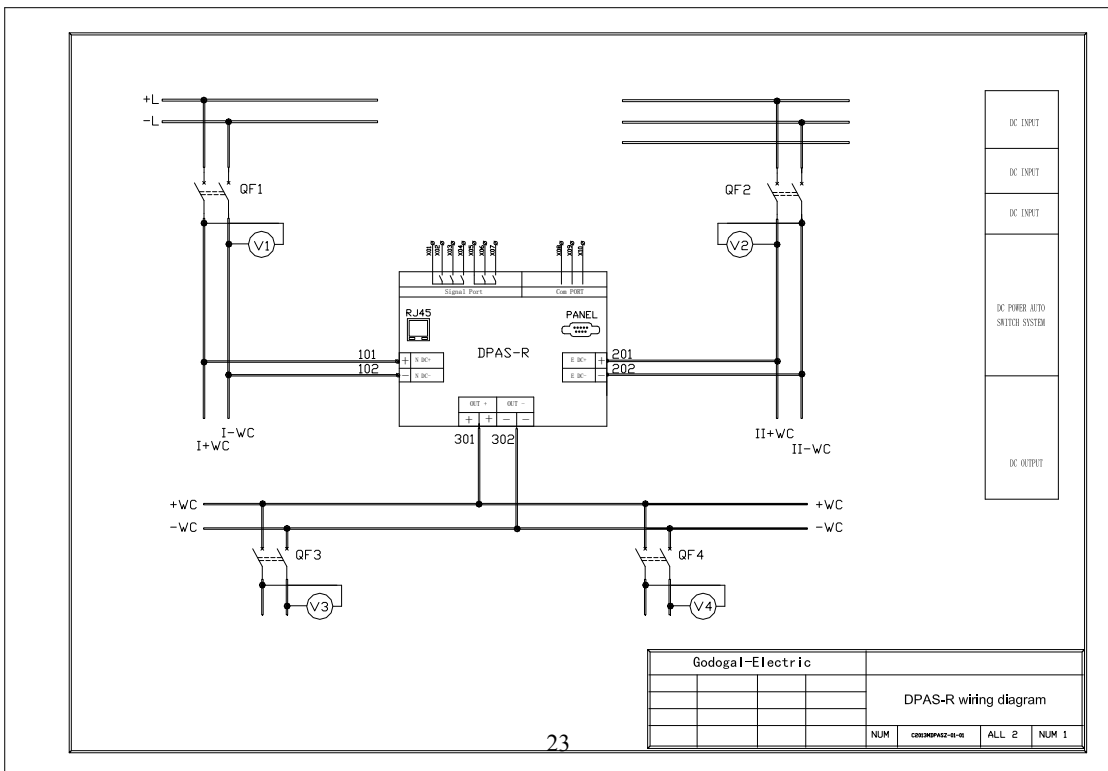
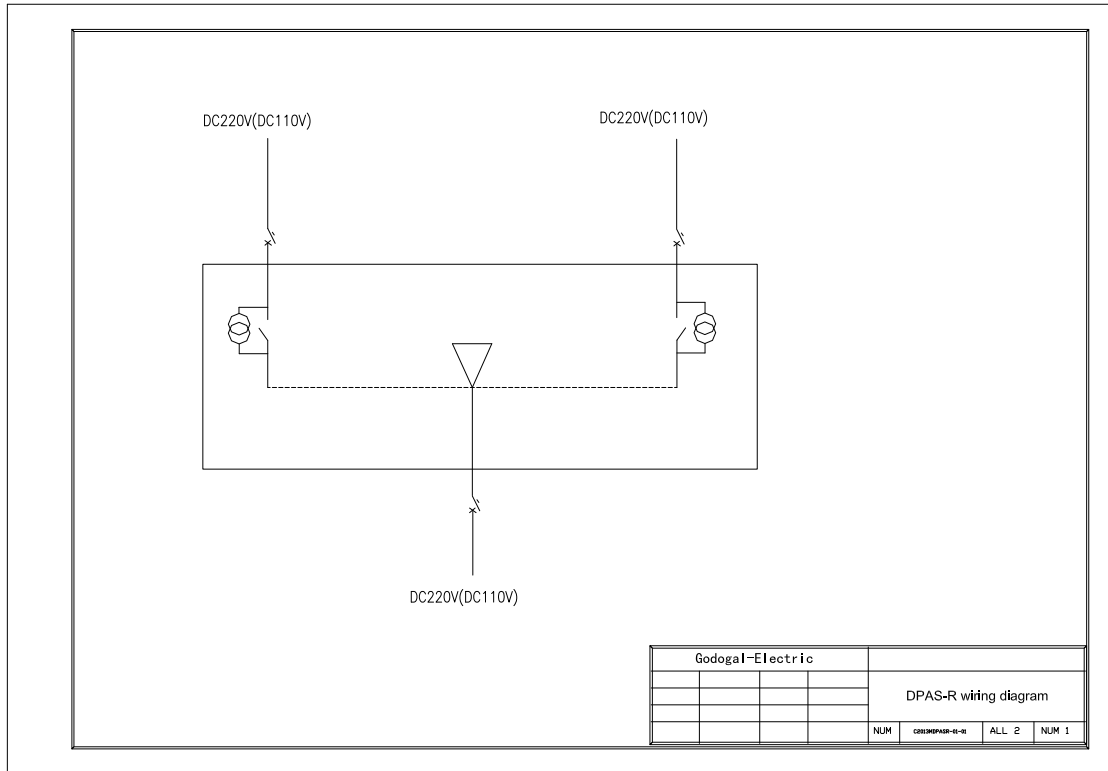
RJ45: Used for Ethernet communication, support for IEC61850, modbus-tcp and other hardware compatible protocols.

8: DPAS Series product wiring schematic diagram

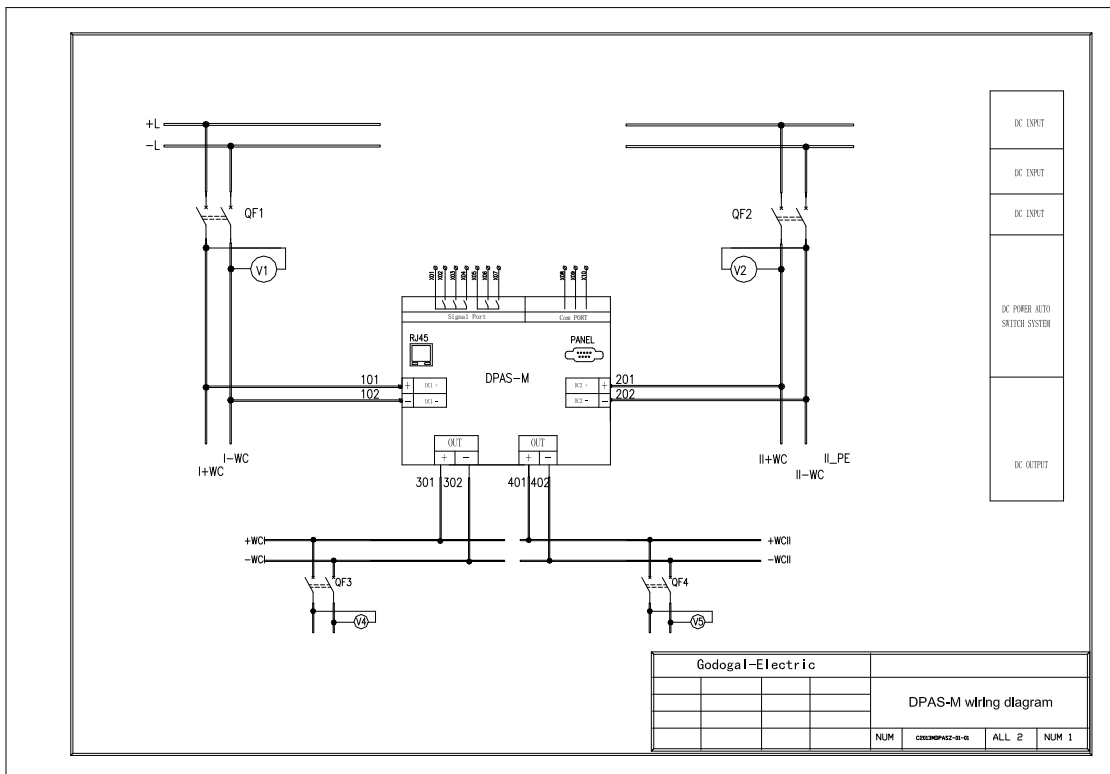
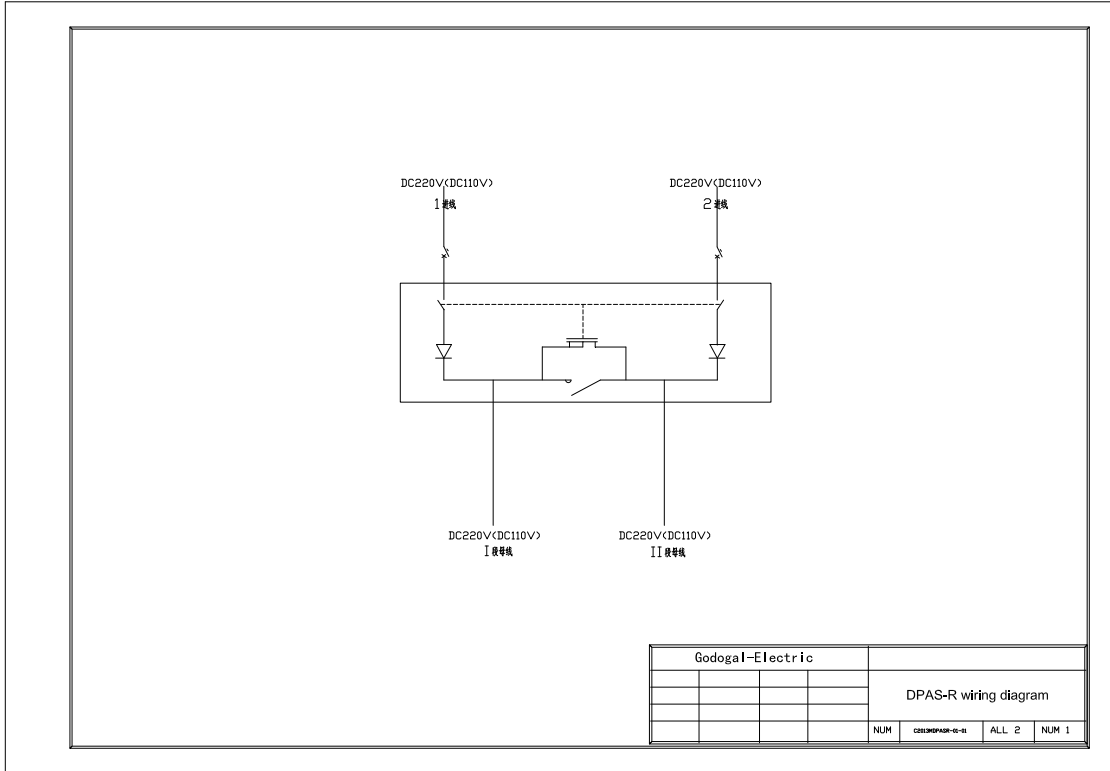
1. The typical Wiring Diagram about DPAS-Z:



2. The typical Wiring Diagram about DPAS-R:



3. The typical Wiring Diagram about DPAS-M.:



9: DPAS Series of products use precautions.

User notice:

- 1, This product is a professional product, and the illegal operation of non-professional personnel may result in personal safety or product damage, which may cause fire or other accidents.
- 2, This product shall be reliable grounding for power operation guarantee products.
- 3, Please check the connection terminal, and the terminal is large current terminal. It must be connected reliably. Please be careful because the transportation process of the product's subject matter is loose.

Open case note:

- 1, the product is out of the box to check all the drawings and the information is complete, product appearance whether there is worn or variant, if any abnormal situation, please contact the company's business centre: 025-66920807, make sure your products can be used.
- 2, Please read the instructions carefully before use, and check the product specifications and ordering requirements. If there is any discrepancy, please call the technology department of the company, and the technical phone: 025-66920803.

Installation instructions:

- 1, In the installation process of the device, the weight of the product should be considered, and the supporting plate or bracket shall be set up at the bottom of the corresponding product in the screen cabinet, and it shall be fixed and reliable.
- 2, The grounding in the product installation must be reliable, and other secondary automation equipment and control equipment shall have the same grounding requirements.
- 3, The connection of the installation wiring needs to be treated with cold pressing, and it is recommended to use ring cold head, and ensure that there is no excessive oxide layer on the surface.

Try to remember:

- 1, Confirm that the input side dc circuit breaker of the two input lines is in a disconnected position. If the output load is set with a circuit breaker, please ensure that it is disconnected.
- 2, Use the multimeter to measure the basic condition of the corresponding power supply, and whether it conforms to the working range of the rated voltage.
- 3, Check the correctness of the wiring, input the positive and negative terminals, input the order of the output, and make sure that it is correct.

The first power supply:

- 1, To all the way into the first line of electrical test, the corresponding lamp lit into the line, if equipped with insulation detection function, if the bus bar insulation fault occurs, the corresponding insulation fault indicator, and signal relay closed, if the system self-check internal fault is corresponding system failure indicator, and system fault relay is closed. Because the standby power is not input at this time, the standby failure relay is closed and continued until the standby power supply is normal.
- 2, When the standby power supply (emergency power supply) is put in, the standby abnormal relay is returned. If the internal loop fails (auxiliary switching circuit fault), the device will be red, and the corresponding system self-check lamp is green.

-
- 3, If the output voltage of the output voltage is normal, the output voltage is measured as input voltage minus 1V. If normal, input load circuit breaker or input load, and observe the indicator light.
 - 4, When the load output is normal, the normal input line is disconnected, and the standby (emergency) input line is automatically input. The corresponding indicator light is on, and the load is unchanged, which indicates that the whole system works normally.
 - 5, For z-type products, if you choose to self-submit self-recovery mode, then the load automatically switches to the main incoming line.
 - 6, For M type products, the need to separate the S1 into the line and I measured, S2 line measure and II, calibration methods, such as 3, and then to loss of pressure of S1 into line, then the power bus coupler circuit breaker action to ensure that the load is considered to switch to 2 road, S2 line into the same way.

Regular testing:

- 1, Key products, this product is in accordance with the requirements of the operating procedures need to do the test, to ensure its reliability, generally for a period of six months, observe the panel light, make sure the system work normally.
- 2, Repeat 3 or 4 or 5 of the first power.
- 3, Regardless of the test, you eventually need to go back to the original running state.

Conclusion: Thank you for taking the high products, continue to improve the quality of electricity for many years for the company adhere to the mission, on the solution of the power supply reliability is applied in many fields, such as: coal-fired power plants, hydropower plants and photovoltaic power station, high-speed rail, communication, medical, hub substation, etc. Company is eager to get your special demand and rapid customization to meet your requirements, we are looking forward to your call or email, your requirements or improve the feedback to us, we all countries master sincerely thank you for your kindness! Interactive hotline: 400-025-9008.