



多弧电源使用说明书
Multi-arc power supply instruction manual

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安全警告！ Safety warning!

- 1.本系列电源产品是我公司专门为真空多弧离子镀膜专用电源，禁止用于其它用途。
- 2.在安装和使用本设备之前请仔细阅读使用说明书。
- 3.本设备的安装和调试应由专业人士完成，为避免造成触电事故和财产损失。
- 4.未经我司授权禁止更改设备电路及结构。
- 5.如您在安装和操作时遇到困难，请按本手册的有关内容进行排查，或按本手册指引仍不能解决问题，请与你的供应商或我司服务中心取得联系，寻求专业人士的帮助。

1. This series of power supply products is our company's special power supply for vacuum multi-arc ion coating, prohibited for other purposes.
2. Please read the instruction manual carefully before installing and using the equipment.
3. The installation and commissioning of the equipment should be completed by professionals, in order to avoid electric shock accidents and property losses.
4. It is forbidden to change the circuit and structure of the equipment without our authorization.
5. If you encounter difficulties during installation and operation, please check according to the relevant contents of this manual, or the problem cannot be solved according to the guidelines of this manual, please contact your supplier or our service center for professional help.

产品特点 Product characteristics

HDY 系列电源应用于多弧离子镀膜和磁过滤电弧离子镀膜工艺中的电弧蒸发电源，采用先进的逆变技术和模块 IGBT 功率开关器件设计，采用 PWM 脉宽调制技术、稳定性好，效率高，对电网干扰小。具备电压陡降特性及自动稳流功能，极佳的负载匹配能力，内置灭弧检测及自动引弧功能。

HDY series power supply is used in arc evaporation power supply in multi-arc ion coating and magnetic filter arc ion coating process. It adopts advanced inverter technology and module IGBT power switch device design, adopts PWM pulse width modulation technology, has good stability, high efficiency and little interference to power grid. With voltage steep drop characteristics and automatic current stabilization function, excellent load matching ability, built-in arc detection and automatic arc ignition function.

主要技术参数:

1. 工作电压 20-30VDC，最大电流 20-250A，负载持续率 100%
2. 稳流精度 1%
3. 引弧电压可选：无源触点、AC220V、DC24V、DC70V
4. 具有过流、过热、短路保护（靶材与炉体短路、引弧针与靶材短路）功能
5. 控制方式可选：PLC、手动

Main technical parameters:

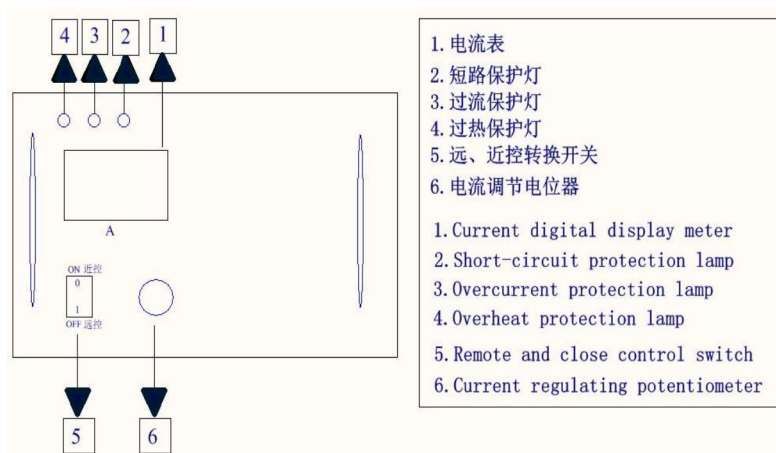
1. Working voltage 20-30VDC, maximum current 20-250A, load duration 100%
2. Steady current accuracy 1%
3. Arc striking voltage: passive contact, AC220V, DC24V, DC70V
4. It has the function of overcurrent, overheating and short circuit protection (short circuit between target and furnace body, short circuit between arc striking needle and target)
5. Control mode: PLC, manual

产品图 Product diagram

双模块 IGBT 系列: HDY-200IS
Dual module IGBT series: HDY-200IS



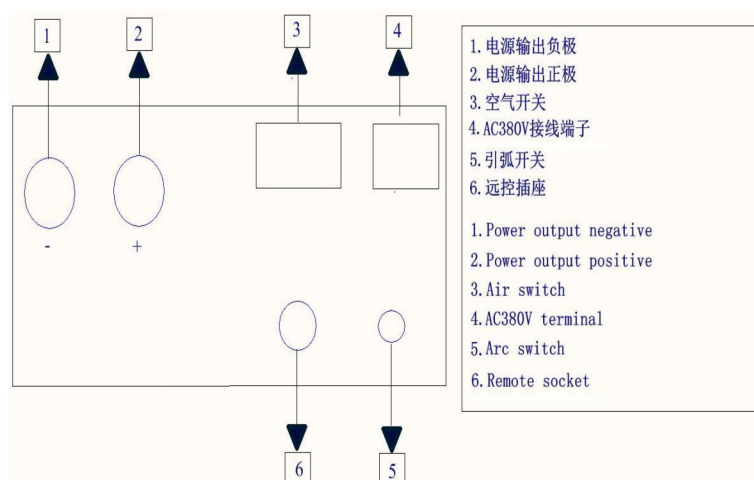
前面板
Front panel



单管 IGBT 系列: HDY-200D
Single tube IGBT series: HDY-200D



后面板
Rear panel



技术参数 Technical parameters

型号 Model number	HDY-160D	HDY-200D	HDY-200IS	HDY-250IS
输入电压 Input voltage	AC380V $\pm$ 10% , 50/60Hz	AC380V $\pm$ 10% , 50/60Hz	AC380V $\pm$ 10% , 50/60Hz	AC380V $\pm$ 10% , 50/60Hz
额定功率 Rated power	4.5KW	6KW	6.5KW	8.5KW
空载损耗 No-load loss	70W	70W	80W	80W
负载持续率 Load duration	100%	100%	100%	100%
额定电流 Rated current	20A-150A	20A-200A	20A-200A	20A-250A
空载电压 No-load voltage	70VDC	70VDC	80VDC	80VDC
额定电压 Rated voltage	150A (27V)	200A (30)	200A (30)	250A (35)
电流精度 Current accuracy	$\leq 1\%$	$\leq 1\%$	$\leq 1\%$	$\leq 1\%$
控制方式 Control mode	恒流 Constant current	恒流 Constant current	恒流 Constant current	恒流 Constant current
逆变单元 Inverter unit	单管 IGBT Single tube IGBT	单管 IGBT Single tube IGBT	双模块 IGBT Dual module IGBT	双模块 IGBT Dual module IGBT
冷却方式 Cooling mode	风冷 Air cooling	风冷 Air cooling	风冷 Air cooling	风冷 Air cooling
外型尺寸 External dimension	480(430)×530× 170mm	480(430)×530× 170mm	480(430)×530×1 70mm	480(430)×530× 170mm
重量 weight	14KG	14.5KG	18KG	18.5KG

安装说明 Installation instructions

1. 电源的输入电压为 $AC380V\pm 10\%$, 接好输入电源后需检验是否牢固可靠, 并将电源可靠接地。
2. 带载用万用表测量一下输入电压值是否在波动范围内。
3. 电源输出采用压线端子连接, 工作电流较大且时间较长, 应保证接触良好, 否则容易烧毁输出端子。
4. 电源的输出正极接地, 负极接弧靶。
5. 如果靶线较长, 请选择截面积大一些的导线, 以减少电缆的发热。
6. 为避免干扰外控连接线请使用屏蔽线, 且引脚功能不能接错, 否则可能造成电源损坏。

1. The input voltage of the power supply is $AC380V\pm 10\%$. After connecting the input power supply, check whether it is firm and reliable, and ground the power supply reliably.
2. Use a multimeter on load to measure whether the input voltage is within the fluctuation range.
3. the power output is connected with wire terminals, the working current is large and the time is long, should ensure good contact, otherwise it is easy to burn the output terminal.
4. The output positive terminal of the power supply is grounded, and the negative terminal is connected to the arc target.
5. if the target line is long, please choose a wire with a larger cross-sectional area to reduce the heat of the cable.
6. To avoid interference with the external control cable, use a shielded cable, and do not connect the pin function incorrectly, otherwise the power supply may be damaged.

本机操作 Local operation

1. 合上电源开关，数显表显示 000。
2. 将远近控开关拨到 ON 位置，电源启动，数显表显示当前电源实际输出电流值，根据工艺要求，选择电流值，工作结束将远近控开关拨到OFF 位置，电源停止工作。
3. 电源启动，冷却风机工作，电源停止，风机工作 360 秒后关闭，以充分冷却发热元器件并延长电源和风机的使用寿命。

1. Turn on the power switch, the digital display meter shows 000.
2. Turn the remote control switch to the ON position, the power supply starts, the digital display meter displays the actual output current value of the current power supply, according to the process requirements, select the current value, the end of the work the remote control switch to the OFF position, the power supply stops working.
3. The power supply starts, the cooling fan works, the power supply stops, and the fan shuts down after 360 seconds to fully cool the heating components and extend the service life of the power supply and the fan.

使用环境 Use environment

- 1.在比较干燥的环境中使用，空气湿度 $\leq 80\%$ 。
 - 2.环境温度-10℃至+40℃范围。
 - 3.避免在阳光直射或在露天落雨的地方使用。
 - 4.避免在较大灰尘或有腐蚀性气体的环境中工作。
-
1. In a dry environment, the air humidity is less than 80%.
 2. The ambient temperature ranges from -10℃ to +40℃.
 3. Avoid using it in direct sunlight or in open places where it rains.
 4. Avoid working in an environment with large dust or corrosive gases.

注意事项 Matters needing attention

1. 电源输出电流较大，内置直流高速风机进行强迫冷却。确保通风条件良好这对电源的正常运行和使用寿命均至关重要。
2. 本电源的输入电压范围参照“技术参数表”表格，在此情况下，机内的电压自动补偿电路，可保证镀膜电流不超过许可值，如电源电压高出规定值就可能造成元器件的损坏。
3. 电源在工作状态下不可切断或闭合电源后部的空气开关，只能通过控制模组或者远端电脑进行启动停止操作，否则可能导致电源损坏。
4. 电源内部有高压，在拆机移位或拆机检修前，必须注意停机 30 分钟以上，并在拆卸前使用直流电压表测量输出端电压低于 36V 时方可拆卸，确保人身安全。
5. 当产生较长时间停顿（超过 24 小时），重新投入工作前，应提前预热，冬季提前 30 分钟，夏季 15 分钟即可。可以延长电源使用寿命。
6. 每台电源后面都有一个接地螺丝，符号为接地标志，在工作前选截面为 10 平方毫米的导线将机壳与地可靠的连接，以免产生静电造成故障。

1. The output current of the power supply is large, and the built-in DC high-speed fan is forced to cool. Ensuring good ventilation conditions is essential for the normal operation and service life of the power supply.
2. The input voltage range of the power supply refer to the "Technical parameter table" table, in this case, the automatic voltage compensation circuit in the machine can ensure that the coating current does not exceed the allowable value, such as the power supply voltage higher than the specified value may cause damage to the components.
3. Do not cut off or close the air switch at the back of the power supply in the working state. Start and stop operation can only be performed through the control module or remote computer, otherwise the power supply may be damaged.
4. There is high voltage inside the power supply. Before disassembly or disassembly maintenance, pay attention to stopping the machine for more than 30 minutes, and use a DC voltmeter to measure the output voltage below 36V before disassembly to ensure personal safety.
5. When there is a long pause (more than 24 hours), before re-entering the work, it should be preheated in advance, 30 minutes in winter and 15 minutes in summer. Can extend the service life of the power supply.
6. There is a grounding screw behind each power supply, and the symbol is the grounding mark. Before working, a wire with a cross-section of 10 square millimeters is selected to connect the housing to the ground reliably, so as to avoid electrostatic failure.

日常维护 Routine maintenance

1. 定期除尘，用干燥的清洁的空气压缩空气在一般的空气中使用电源时每月至少做 1 次除尘处理。
2. 压缩空气要降到要求的压力，以免损坏电源内的元器件。
3. 检查内部的电气连接处确认良好（特别是接插件），加固已松动的接点，如有氧化现象要用砂纸将氧化膜除掉，重新连接。
4. 避免电源内进水或受潮，负责及时吹干，用兆欧表测量绝缘情况（包括连接节点之间及连接点与机壳之间）。只有证实没有异常情况，才可继续工作。
5. 如果电源长期不使用，应放入原包装，存放在干燥环境中。

1. Dust regularly, with dry clean air compressed air in the general air to use the power supply at least once a month to do dust treatment.
2. The compressed air should be reduced to the required pressure to avoid damaging the components in the power supply.
3. Check the internal electrical connection to confirm that it is good (especially the connector), strengthen the loose contact, if there is oxidation, use sandpaper to remove the oxide film and reconnect.
4. Avoid water or moisture in the power supply, blow dry in time, and measure the insulation with a megohm meter (including between the connection nodes and between the connection point and the housing). Work can only continue if no abnormal conditions are confirmed.
5. If the power supply is not used for a long time, it should be put into the original package and stored in a dry environment.

保修服务 Warranty Service

在用户遵守保管和使用规则条件下，中国境内销售产品自出厂之日起质保时间为 36 个月，中国境外销售产品自出厂之日起质保时间为 18 个月，质保期内因产品质量问题，我司免费为用户维修（或更换）零件或产品。未遵守保管和使用规则或人为因素造成的机器损坏，不属于保修范围，但我司仍负责维修。

Under the condition that the user complies with the rules of storage and use, the warranty time of products sold in China from the date of delivery is 36 months, and the warranty time of products sold outside China from the date of delivery is 18 months. During the warranty period, due to product quality problems, our company will repair (or replace) parts or products for users free of charge. Failure to observe the rules of storage and use or damage caused by human factors is not covered by the warranty, but our company is still responsible for repair.

外控连接 External control connection

控制插头 Control plug

10 芯控制插头 10-pin control plug	脚位功能 Foot function	
①	+10V（接电位器时 2W10K 电位器 2W10K potentiometer）	
②	接电位器时滑动电阻 Connecting the potentiometer causes the sliding resistor to be activated（PLC 电流给定 PLC Current setting+10V（10V-200A）	
③	地 GND	
④	电流反馈 Current feedback+（5V-200A）	
⑤	地 GND	
⑥	电压反馈 Voltage feedback+（5V-100V）	
⑦	启停开关一端 One end of the start-stop switch	闭合启动 Closed start
⑧	启停开关一端 One end of the start-stop switch	
⑨⑩	⑨输出 GND ⑩输出 DC5V(外控面板数显表电源） ⑨OutputGND ⑩OutputDC5V（External control panel digital display meter power supply）	

引弧插头 Arc plug

2 芯引弧插头 2-pin arc plug	引弧方式 Arc starting mode	
DC24V	接 DC24V 电磁阀 Connect DC24V solenoid valve	■
DC70V	接电磁线圈 (电磁线圈阻抗 $\geq 15 \Omega$) Connect to electromagnetic coil (electromagnetic coil impedance $\geq 15 \Omega$)	
AC220V	接 AC220V 电磁阀, ①②脚电源内部为一根单火线, 零线另取 Connect the AC220V solenoid valve, ①② foot power supply is a single live wire, neutral wire is taken	
触点 Contact point	引弧方式自由选择, 直流引弧信号需要加电火花吸收电路, 不可用作电磁线圈引弧 (内部电路功率原因) Free choice of arc starting mode, DC arc starting signal needs to add electrical spark absorption circuit, can not be used as electromagnetic coil arc starting (internal circuit power reason)	

联系方式 Contact information

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