一、Introduction to the functions of the plasma cleaning machine

The plasma jet power supply converts 220V AC mains electricity into a 310V peak DC voltage through a rectifier bridge and filtering capacitor. This DC power is then transformed into adjustable-frequency (20kHz–60kHz) AC via a phase-shifted full-bridge switch. After being stepped up to high-frequency, high-voltage AC by a transformer, the electricity is delivered to the plasma generator torch. The gas flowing through the torch ionizes and discharges under the high-voltage electric field, generating low-temperature plasma.

This plasma contains highly reactive species, including electrons, ions, free atoms, excited-state ions, and free radicals. These energetic active groups induce diverse physical and chemical reactions on material surfaces, achieving the purpose of surface treatment.

Currently, low-temperature plasma technology is widely applied in surface treatment across industries such as:

- Automotive components
- Laboratory instruments
- Electronics
- Glass lenses
- Footwear/textiles
- Medical devices
- Packaging/printing
- Food sterilization
- New energy batteries
- Agricultural breeding
- Aerospace

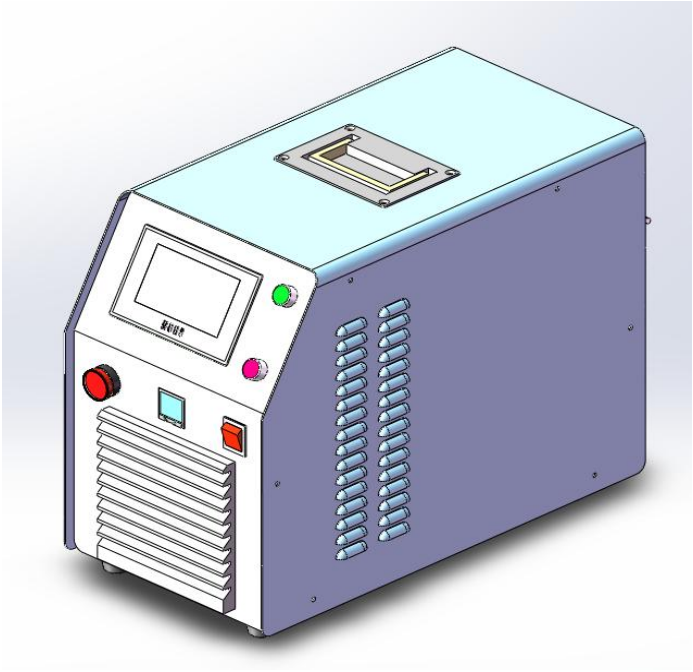
二、Power supply features

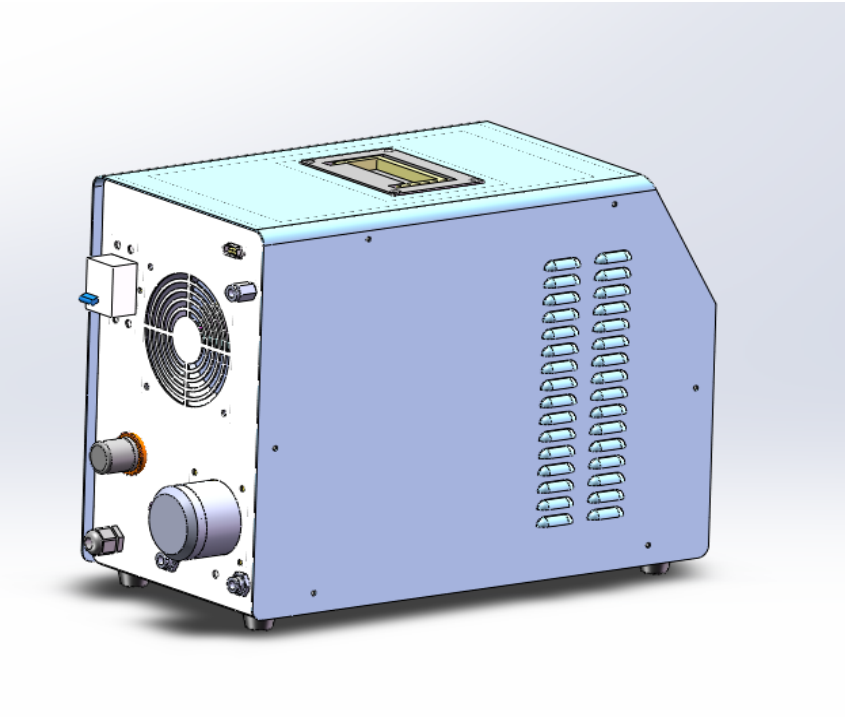
1.Digital power supply with constant power control, using ST series ARM microcontroller as the core control unit, manufactured with fully automatic SMD process, ensuring stable and reliable performance.
2. MODBUS communication function with fully isolated control and dual RS485 communication, meeting the communication needs of both the power supply and external devices. It can exchange data with external controllers and transmit internal parameters to the host computer or central control bus, facilitating connection to production lines.
3. The touchscreen interface is concise with good human-machine interaction, offering Chinese/English display options.
4. The power supply features discharge detection and spray gun rotation detection, issuing an alarm when there is no discharge or rotation.
5. The motor rotation function can be set to start or stop on the touchscreen interface.
6. The device includes an equipment maintenance reminder function, allowing users to set maintenance times, and reminding them to maintain the equipment when the time comes.
7. The communication station number of the power supply can be modified, making it easy for centralized management of multiple devices in

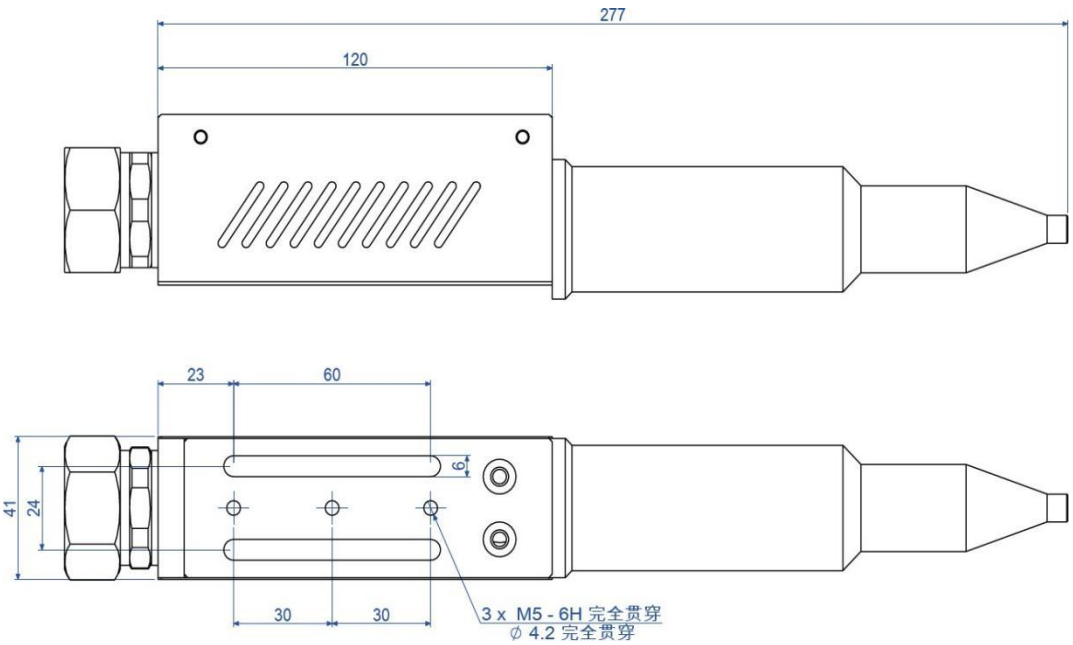
三、Power supply paramet

project	parameter	Remarks
Product model	SDF-1K0-JP-L25	
brand	Sodif	
Power supply	Single-phase 220V±10%, 50 or 60Hz. The diameter of the power supply wire shall not be less than 1mm² multi-core copper wire.	
Power level	1KW or 1.2KW	
Gas pressure	40～500kPa	
Operating frequency	25-40kHz	
Direct current	3.5A（max）	
Output voltage	10kV（max）	
Power adjustment	200-1000W	Related to the spray gun
Power adjustment mode	Move terms and adjust power	
Cooling method	Forced air cooling	
Operation control	4.3-inch touch screen / buttons / remote control	
Telecommunication	RS485	
External dimensions	490mm*233mm*343mm	
Spray gun	Direct injection or rotary spray gun head	
weight	16kG	Without spray gun
Usage environment	Temperature: -10 to +40°C, Humidity: ≤85%	
Power supply detection	DC voltage, DC current, air pressure detection, non-discharge detection, non-rotation detection of the spray gun, over-temperature detection of IGBT, over-current detection	

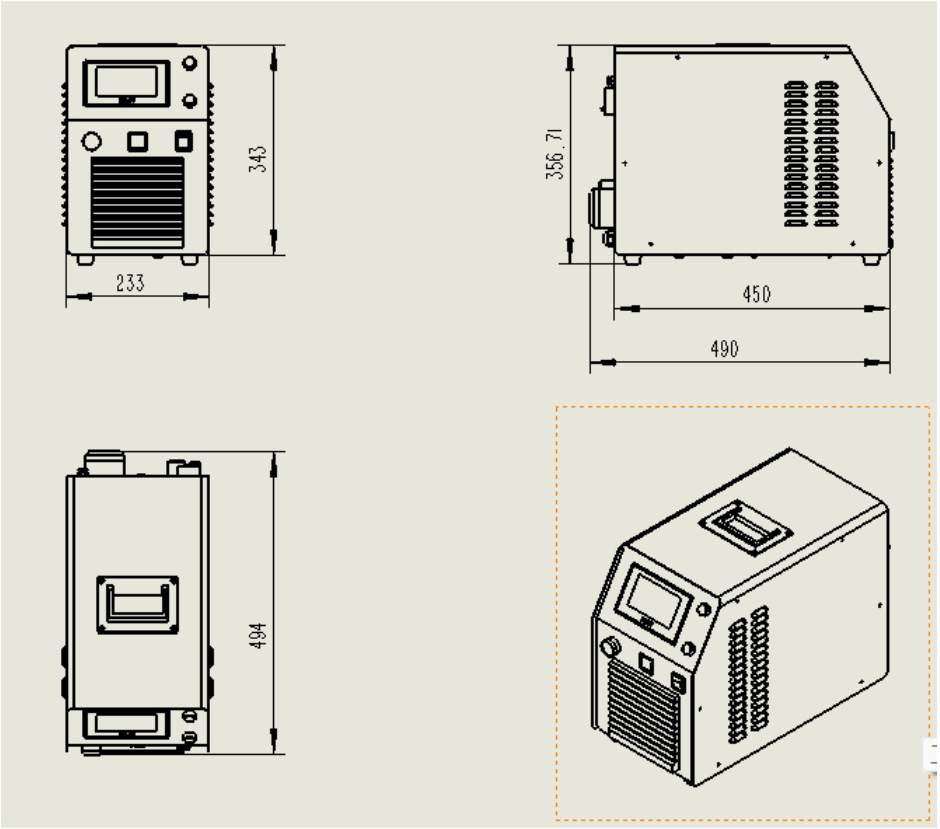
四、Overall dimensions





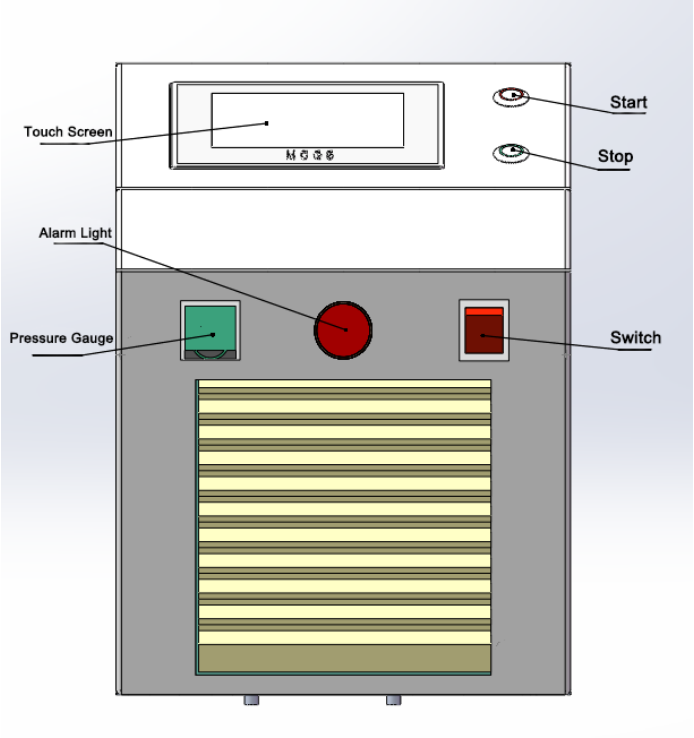


3X M5-6H Completely penetrate
4.2 Completely penetrate

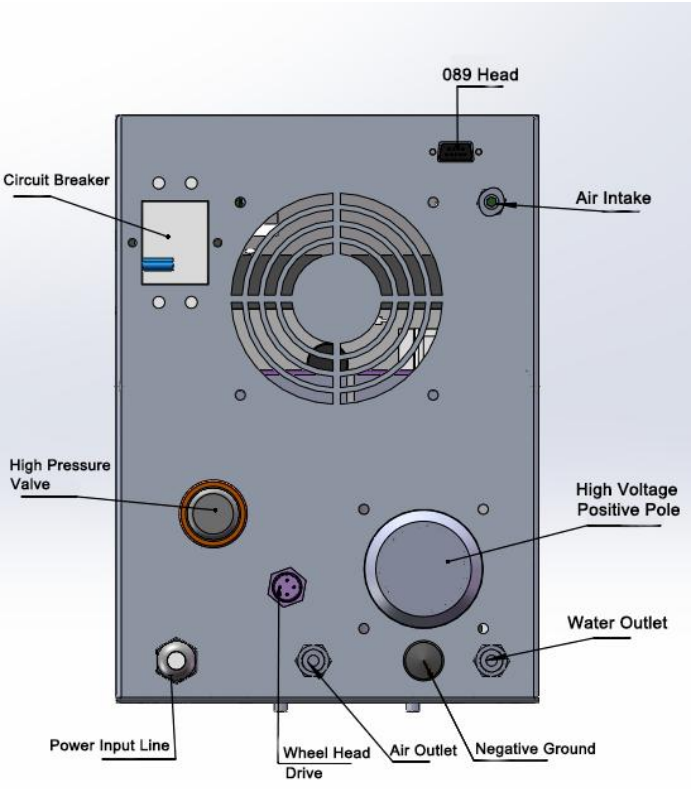


五、Description of the front and rear panels

1、Front panel description



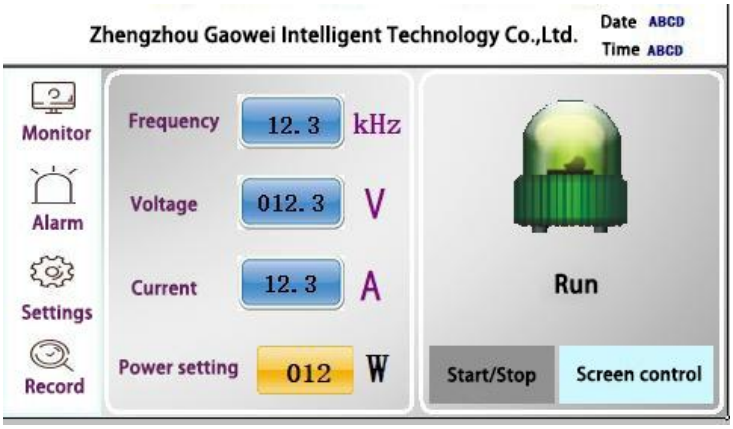
2、Rear panel wiring instructions



六、Touch screen interface

Enter the interface

Monitor page



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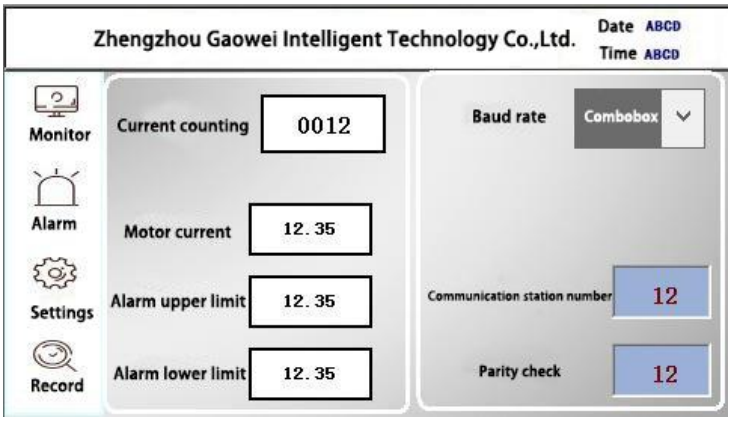
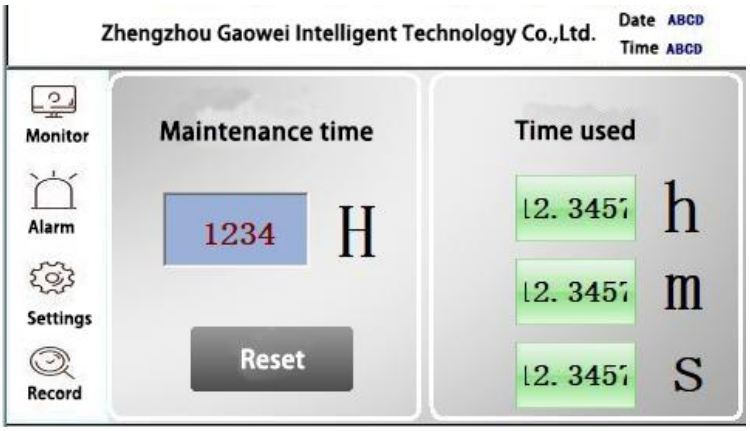
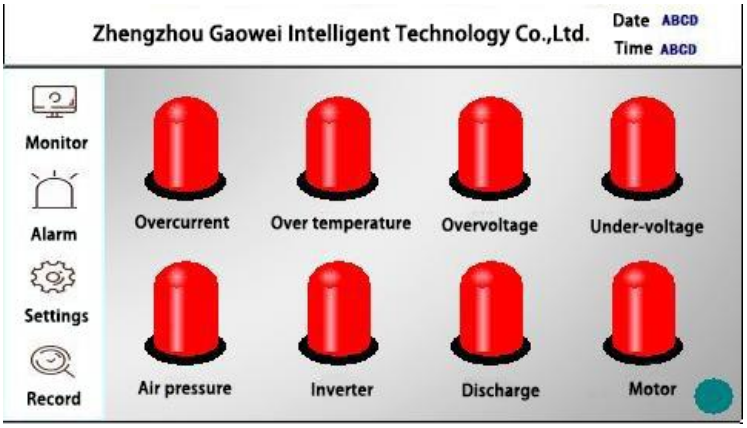
Motor parameter and station number setting page



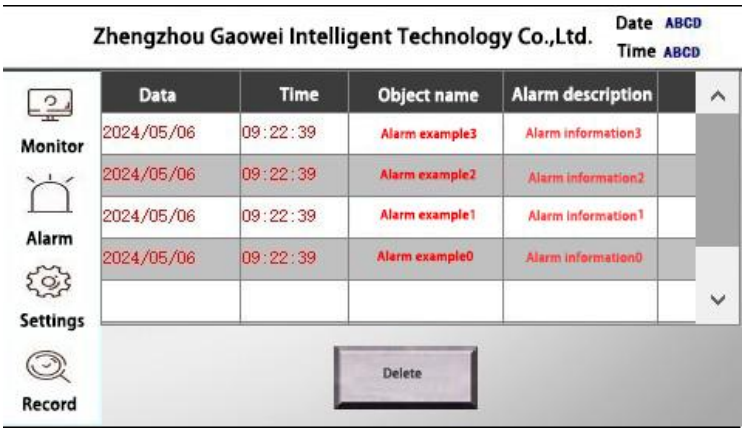
Maintenance time setting



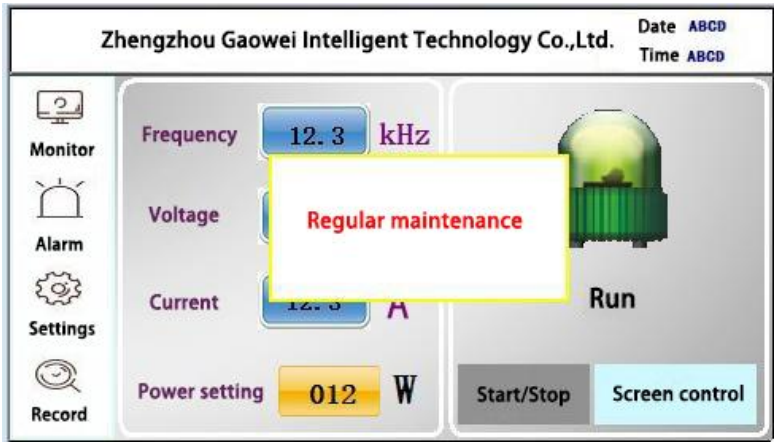
Alarm



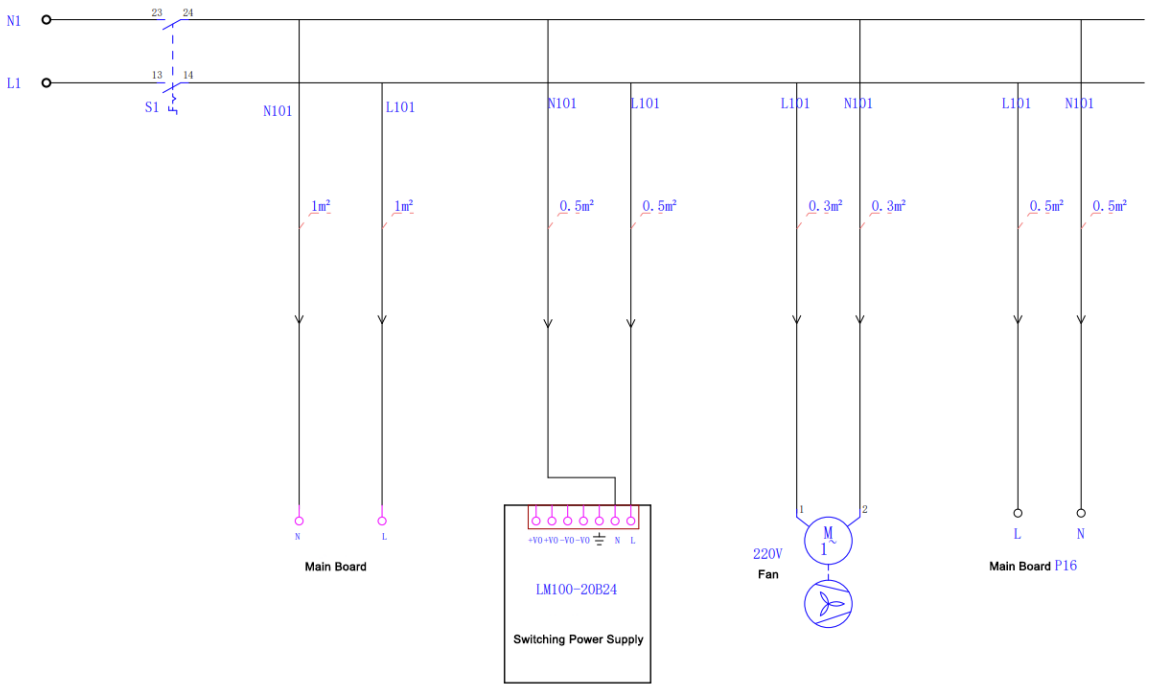
Alarm History

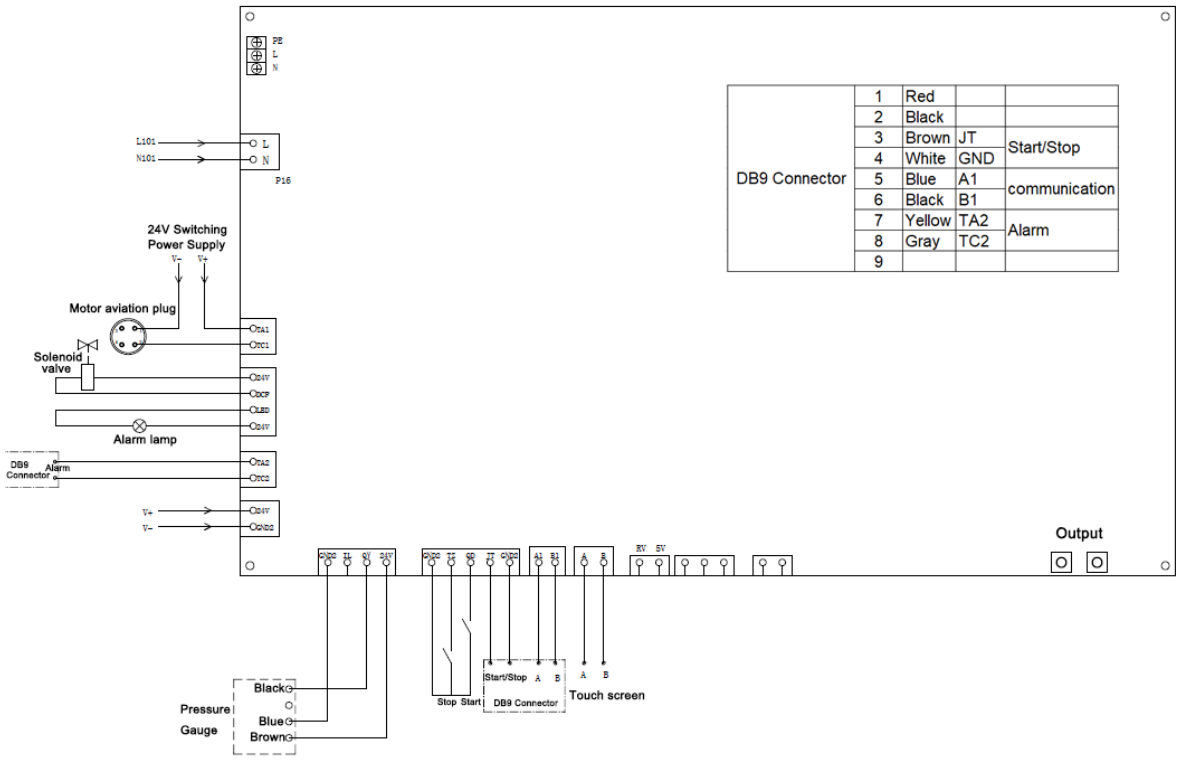


Maintenance Tips



七、Circuit board wiring diagram





DB9 Connector				
	1	Red		
	2	Black		
	3	Brown	JT	Start/Stop
	4	White	GND	
	5	Blue	A1	communication
	6	Black	B1	
	7	Yellow	TA2	Alarm
	8	Gray	TC2	
	9			

八、Address distribution

Communication protocol:MODBUS_RTU，Default communication address：01，Default baud rate：9600，Data verification method: No parity

Even parity, Data bits: 8 bits,
Stop bits: 1 bit

Description of the communication address distribution of the jet power supply

Register address	meaning	Data type	Read R/ Write W	Range	Description
0x4001	System status	Unsigned	R/W		System status
0x4002	Alarm	Unsigned	R		Alarm status
0x4003	Power setting	Unsigned	W		Power setting
0x4004	Inversion frequency	Unsigned	R		Frequency KHZ (1 decimal place)
0x4005	DC voltage	Unsigned	R		DC voltage (1 decimal place)
0x4006	Direct current (DC)	Unsigned	R		Direct current (3 decimal places)
0x4007	vision in information and power	Unsigned	R		The output power display (decimal point 1)
0x4008	Communication station number	Unsigned	W		Partion 1
0x4009	Communication baud rate	Unsigned	W		Default ：9600（Set baud rate must be correct）
0x4010	Communication parity check	Unsigned	W		0:no parity 1：parity
0x4011	Hardware version number	Unsigned	R		V2.30 show 230
0x4012	Software versioning	Unsigned	R		V2.33 show V233
0x4013	motor current	Unsigned	R		Motor current (two decimal)
0x4014	Upper limit of motor alarm	Unsigned	W		(two decimal)
0x4015	Lower limit of motor alarm	Unsigned	W		(two decimal)
0x4016	Motor current transfinite counting	Unsigned	W		

Definition of status bits for Sodif digital power supply system					
Digit	meaning		Digit	meaning	
0	0：Stop	1：start	8		
1	0：outage	1：electrify	9		
2	0：hardware	1：screen	10		
3	0：Stop	1：run	11		
4	0：test OK	1：Alarm	12		
Definition of alarm bits for Sodif digital power supply					
Bit	Meaning		Bit	Meaning	
0	No fault	1：Overcurrent	8	No fault	Inverter overcurrent
1	No fault	1：Over-temperature	9	No fault	No arcing alarm
2	No fault	1：Overvoltage	10	No fault	Motor non - rotation alarm
3	No fault	1：undervoltage	11	No fault	
4	No fault	1：air pressure	12	No fault	
5	No fault	1：Open circuit	13	No fault	
6	No fault	IGBT1 Overcurrent	14	No fault	
7	No fault	IGBT2 Overcurrent	15	No fault	

Common faults and causes of plasma cleaning machines					
Alarm indicator light	**Indicator light status**	**Fault content**	**Cause**	**Solution**	**Remarks**
Overcurrent	**Green indicates normal, red indicates malfunction.**	**Excessive current or interference signals**	**The direct current is too large, and the IGBT current is too large.**	**1.Check if the power supply driver board is normal. 2. Check if the IGBT is normal. 3. Check if the gun head is normal. 4. Re - wire or change the placement method**	**It is usually caused by interference.**
Over-temperature	**Green indicates normal, red indicates malfunction.**	**The radiator temperature is too high.**	**The fan is broken, or the ambient temperature is high and the power is too large.**	**1.Check if the fan is rotating. 2.The ambient temperature should not exceed 35 degrees. 3.Turn down the power.**	
Atmospheric pressure	**Green indicates normal, red indicates malfunction.**	**The air pressure is too high or too low.**	**If the air pressure is too high or too low, or the pressure regulating valve is damaged, close the remote control first and then start the machine.**	**Adjust the air pressure or replace the pressure regulating valve. Turn on the machine first and then give the closing signal.**	
Inversion	**Green indicates normal, red indicates malfunction.**	**IGBT overcurrent**	**Excessive current or IGBT damage**	**Check if the gun head is faulty, check if the IGBT is damaged, and check if the driver board is normal.**	

Discharge	**Green indicates normal, red indicates malfunction.**	**The gun tip isn't discharging electricity.**	**The gun tip is not discharging. The air path is blocked or the air pressure is low. There is interference.**	**Check if the gun head is faulty and check if the drive board is normal.**	**Sometimes it is caused by interference.**
Motor	**Green indicates normal, red indicates malfunction.**	**The gun barrel doesn't rotate.**	**The 24V power supply is broken or has insufficient power, or the motor of the gun head is faulty, resulting in an inappropriate current.**	**Replace the 24V switching power supply and replace the gun head.**	**Sometimes it is caused by interference.**