☆Preface☆

Thank you very much for choosing the X5000 series Xenon lamp electronic power supply produced by our company. The power supply combines modern electronic power technology such as vector control algorithm and IGBT inverter technology to make the product highly efficient, energy-saving, stable and reliable, precise control, small size, light weight, etc. It is mainly used in industries such as environmental experiment box, aerospace military, stage lighting, landscape lighting and so on.

This manual is a manual for the X5000 Series UV electronic power supply and is applicable to program version 5208.3 or above. It will provide you with related rules and precautions for X series UV electronic power supply installation, wiring, function parameters, routine maintenance, fault diagnosis and elimination.

In order to properly use the X5000 series Xenon lamp electronic power supply (hereinafter referred to as " electronic power supply" or "xenon lamp power supply"), to maximize the performance of the product and to ensure the safety of users and equipment, please read this manual carefully before using the product. Improper use may cause the product to operate abnormally, malfunction, reduce the service life, resulting in equipment damage, personal injury and other accidents!

This manual is sent with power supply. Please keep it properly for future maintenance and inspection. Due to continuous improvement and upgrade of the products, the information provided by the company is subject to change without notice.

X5000 Series Xenon Lamp Electronic Power Supply   User Manual

Version   V 1.0   Revision date   May 2018

Contents

Chapter 1 Product Information

1.1 Product Introduction

The X5000 series electronic power supply is a high-tech product developed for the driving of gas discharge lamps such as long-arc xenon lamps and spherical short-arc xenon lamps. It uses a high-performance MCU as the control core and a high-precision vector control algorithm to ensure stable energy output. Internal integrated DC trigger drive interface, no need to add additional cut-off circuit

1.2 Product Features Introduction

1) Flexible control mode: standard operation panel control, external terminal control, optional RS485 communication control.

2) Automatically match the lamp: As long as the rated power of the lamp is set correctly, the power supply automatically compensates for the rated voltage error of the lamp.

3) Automatic compensation for ambient temperature of lamps: automatically compensates for the energy drop caused by the exhaust.

4) Status monitoring: This machine comes with LCD human-machine interface to display the working status of the machine and lamp in real time.

5) Abundant status signal output: fan control, fault alarm, start-up completion, etc.

6)Standard operation panel is easy to use: start-stop control, power setting, status monitoring, parameter modification, etc.

1.3 Model Description (Label Description)

X5000-4 T A 060

Product series	
X5000	
	Series

Power Level（KW）	
30	3.0
40	4.0
50	5.0
60	6.0

Input Voltage	
2	220V
4	380V

Max Output Voltage	
C	220
B	450
A	550
0	1000
1	1250
2	1500
3	1750
4	2000
5	2250
6	2500

EPS Phase	
T	Three-phase
S	Single-phase
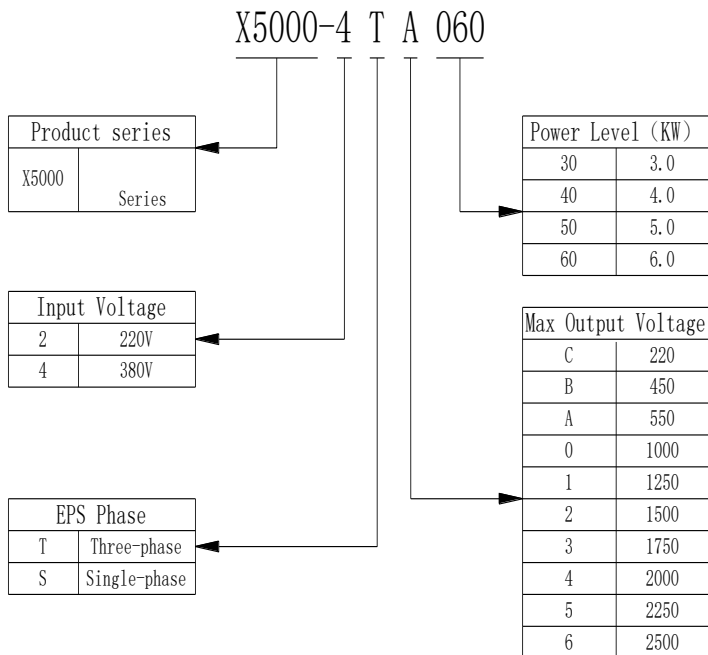
1.4 Technical Indicators and Specifications

Input	Rated voltage, frequency	three phase（4T#series）380V 50/60Hz
	Voltage allowable range	Determined by model
Output	Voltage	Determined by model
	Frequency	DC or (AC) 1K Hz
	Overload capability	110% 10min
Control Mode		vector control
Control	Power setting Resolution	1%

Characteristic	Current limitation		Power allowable setting
	Voltage limitation		110% of rated lamp voltage
	Power limitation		Maximum rated output power of the lamp
	Under-voltage suppression in operation		Especially for users with low grid voltage and frequent fluctuation of grid voltage, even below the allowable voltage range, the system can maintain the longest running time according to unique algorithm and residual energy allocation strategy.
Typical Function	Standby		Set standby power consumption when equipment is intermittent for energy-saving applications
	Working time record		can read lamp working time in operation
	RS485 Communication		Standard Configuration RS485 Communication Interface, Running and Stopping Commands and Machine Status Reading
	Operation		Using External Dry Contact Control to Start and Stop
	Fault analysis		with function of fault record query and fault cause analysis
Display	Operation panel display	Operation Status	Monitor output voltage, output current, set power, output power, etc.
		Parameter Setting	Set the relevant parameter values according to actual requirements.
Protection / Alarm			Protection / Alarm of Over current, overvoltage, under voltage, overtemperature, short circuit, internal memory failure
Environment	Ambient temperature		-10ºC--+50ºC（not frozen）
	Ambient humidity		Below 90%（no frost）
	Ambient environment		Indoor (no direct sunlight, no corrosion, no flammable gas, no oil mist, no dust, etc.)

	Altitude	Below 1000m
Structure	degree of protection	IP52
	Cooling method	Independent air-duct design forced air cooling

1.5 Installation Size

Applicable Models：X5000 series
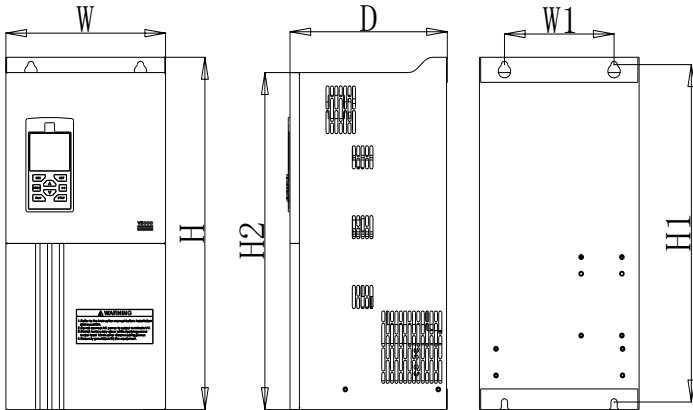
Figure 1-1 Drawing of electronic power supply installation dimension

X5000 series installation dimensions are as follows：

Power range	overall and installation dimensions (mm)							Weight
	W	H	D	W1	H1	H2	Screw	（KG）
6KW	255	530	250	175	507	507	M8	23

1.6 Product Model and Recommended Lamp Voltage

Model No.	Power Level(KW)	Input Current (A)	Output Voltage Range(V)	Max. Output Current (A)	Recommended lamp Voltage（V）
X5000-4TA060	6	9.3	200-550	32	200

Chapter 2 Wiring

2.1Wiring Precautions

1) Ensure that a circuit breaker is connected between the electronic power supply and the electricity supply to avoid the accident expansion when the electronic power supply fails.

2) To reduce electromagnetic interference, connect a surge absorber to the coil of the electromagnetic contactor, relay, and other devices in the circuit around the electronic power supply.

3)Analog signal wiring should use a shielded wire of 0.3mm² or above. The shielding layer is connected to the ground terminal of the electronic power supply (keeping the shielding layer single-ended grounding), and the wiring length is less than 30 m.

4) The wiring of the input and output circuits of the relay should choose twisted or shielded wires over 0.75 mm²

5) The main circuit wiring must match the power level of the electronic power supply.

Recommended spec. of electrical appliances, as following：

Electronic power supply power level	Input voltage （V）	Input average current(A)	Wire spec. （main circuit） （ mm² ）	Air circuit breaker （ A ）	electromagnetic contactor （ A ）
6KW	400	9.3	6	25	16

2.2 Electronic Power Supply Main Circuit Terminal Wiring

2.2.1　Applicable models：X5000-4TA060

Table 2-1 class I Terminal function of main circuit

Terminal symbols	Terminal name	Description	Terminal diagram
R、S、T	Input	Three phase AC Power supply	
U、V	High voltage output	Connect lamp	
Trig	Trigger power supply	Trigger supply positive	
E	Ground terminal	Connect the ground wire to the power supply	

2.2.2 Description of terminal function

Table 2-2 Description of terminal function

Category	Terminal symbols	Terminal function		Remark
380V AC input	R	three-phase power input	R	three-phase 380V Power Supply
	S	three-phase power input	S	
	T	three-phase power input	T	

Category	Terminal symbols	Terminal function	Remark
60V－260V Output	U	60V-260V high voltage output	Connect Xenon Lamp
	V		
	TRIG	300V controllable DC to trigger	Connect trigger
Ground	E	Grounding	Connect ground wire

Attention

➤ Wiring should be performed ten minutes after the panel indicator is off.

➤ Make sure that you have securely grounded the electronic power supply to prevent electric shock.

➤ Do not install power factor corrector and surge voltage absorber at the output.

2.3 Control Board Terminal Wiring

Table 2-3 Control Board Terminal

| X1 | X2 | X3 | X4 | CM | VCC | GND | AI1 | AI2 | 12V |
| RS+ | RS- | OC1 | OC2 | OC3 | CM | GND | AO1 | AO2 | 24V |

| TA | TB | TC |

0~10V

0~20mA
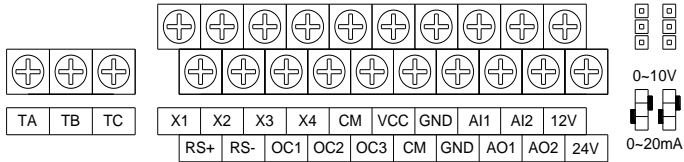
Table 2-4 Function of Control Board Terminal

Terminal	Symbol	Function	Remark
485 communication	RS-, RS+	R485communication interface	Connect touch panel、PLC
DC auxiliary power supply	12 V	Provide +12V/100mA power supply to the outside	Analog input reference power supply
	VCC	Provide +5V/100mA power supply to the outside	
	GND	12V、VCC、AI、AO reference point	12V、VCC、AI、AO common terminal
Analog input	AI1/AI2	Voltage signal input	0~10V voltage input, used for power given signals or other signals
Analog output	AO1/AO2	Voltage, current signal output	0~10V(0-20mA) analog output
Digital input	X1-X4	4-way switch signal input	switch signal input, connecting CM to work

| Terminal	Symbol	Function	Remark
OC output	OC1-OC3	3-way open collector output	OC signal output ，connecting CM to work
DC auxiliary power supply	24V	Provide +24V/100mA power supply to the outside	
	CM	X1-X4 input、OC1-OC3 output reference point	X、OC、24V common terminal
Relay output	TA	Normal TA-TC disconnection and TA-TB closure	contact capacity：AC 250V/1A Close TA and TC after start-up
	TB		
	TC		

2.4 Power Supply Basic Wiring Diagram
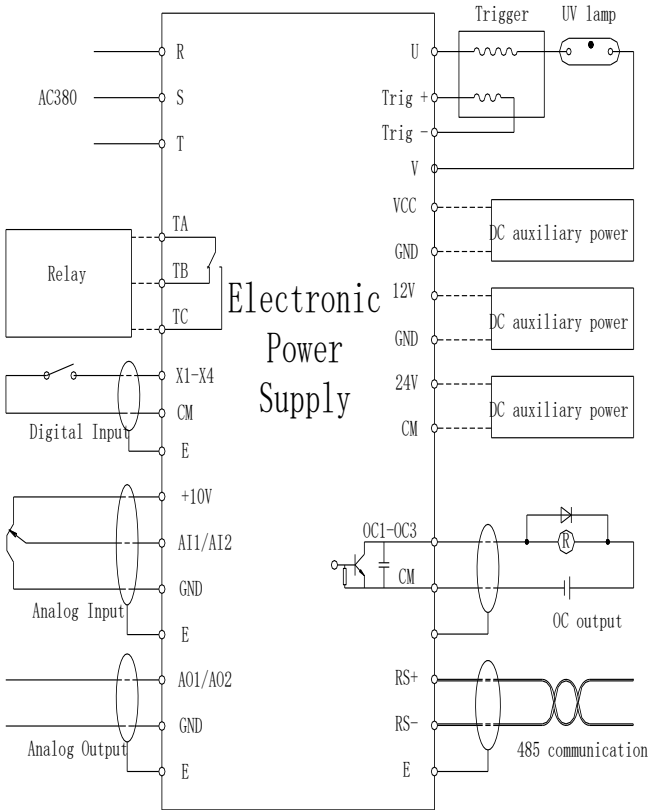
Table 2-5 Power Supply Basic Wiring Diagram

Chapter 3 Operation of Electronic Power Supply

3.1 Basic Functions of the Operation Panel

The operation panel is a standard configuration of the UV electronic power supply. The user can perform parameter setting, status monitoring, fault inquiry and other functions on the electronic power supply through the operation panel. Correspondingly, the operation panel can be divided into three working modes: state monitoring mode, internal parameter modification/query mode, and status parameter query mode.

3.1.1 Operation Panel Description

At the beginning of power on, the company's name was displayed, along with the serial number of electronic power supply and power level "X5000-4TA060". After 3 seconds, it was transferred to the status monitoring mode (operation panel is in a non-fault alarm state, if there was no key operation within 1 minute, it would return to the status monitoring mode).

The operation panel uses a 12864 dot matrix LCD to display abundant equipment status information. Under the condition monitoring, the machine model, running status, current given power, output voltage, output current, output power, command channel, power channel and other information can be switched and displayed. When the power channel is given to the panel, press Ʌ or V to increase or decrease the given power. Press SET to switch the menu to parameter setting and ESC to switch to the monitoring parameter.

3.1.2 Keyboard function of operation panel

Table 3-1 Keyboard function of operation panel

Item		Description
Function	**ESC**	Return key. In the state monitoring mode, press the key, enter the state parameters, monitoring parameters query mode, you can view the running state parameters. In any other operating state, pressing this key alone will return to the previous state.
	SET	Setting. Confirm the current status or parameters (parameters are stored in the internal memory) and enter the next menu.
	A	Data modification or increment. to modify function codes or state parameters.
	V	Data modification reduction, used to modify function code or state parameters.
	<<	Shift. Press **A**、**V** key to select the modified bits in any state where the data is modified by the keys. The modified bits flicker to display.
	STBY	Standby. Press this button in the running state, the machine standby, and press again, the machine resume normal operation.
	RUN	Running. After the self-check of the machine is completed, press this key to start lighting and running.
	STOP	Stop. Press this button in the running state, the machine turns off the light and ends running.

3.2 Operation Method of the Operation Panel

3.2.1 Status monitoring parameter query (example)

The status monitoring parameter query can query various status values of the current running of the electronic power supply, including: output power, output current, output voltage, module temperature, DC bus voltage, given power, fault code and fault record.
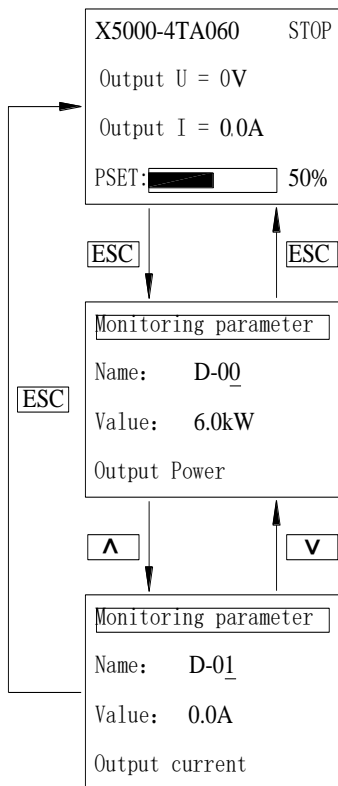
Chart 3-1 Status monitoring parameter query

3.2.2 Parameter query and modification (example)

Chart 3-2 Parameter query and modification (example)


```
X5000-4TA060      stop
   Output voltage: 0V
   Output current:0.0A
Given▓▓▓▓         50%
```

SET   ESC

```
Parameters setting
 1.FA basic parameter
 2.FB advanved
 parameters
 3.FF user parameter
```

ESC

SET   ESC

```
Parameter setting
Name:  FA.00
Value：3.0Kw
Rated power of lamp
```

∧

∨

```
Parameter setting
Name:  FA.01
Value:  500V
Rated voltage of lamp
```

SET+<<
+ ∧

SET+<<
+ ∨

ESC

```
Parameter setting
Name:  FA.01
Value：[550]V
Rated voltage of lamp
```

SET   SET

```
Parameter setting
Name:  FA.01
Value:  550V
Rated voltage of lamp
```

ESC

Chapter 4 Parameters of Function and Monitoring

Symbol description : "★" means that the parameter cannot be changed during the running ; "▲" means that the parameter is not suggested to be modified in the running state ; "◆"can be modified during the running.

4.1 Parameters of Function

type	code	Definition	description	Min. unit	Factory setting	Change
F A Basic parameter	FA.00	Lamp rated power	1.0-specified model	1	Rated	▲
	FA.01	Lamp rated Voltage	100V-specified model	1	Rated	▲
	FA.02	Digital power setting	FA.05-100%	1	100	◆
	FA.03	Lamp upper limit current	5.0A-specified model	0.1	Max.	▲
	FA.04	Lamp lower limit current	1.5A-5A	0.1	2.0	▲
	FA.05	Lamp lower limit power	2%-50%	1	10	▲
	FA.06	Control channel of Power supply	0000: Power Start Mode 0: Start Operating Panel 1:X1 terminal 2:RS485 Start 3: Extended Board Start 4：X2 terminal 5：X3 terminal 6：X4 terminal 0000: Power given channel 0: Operation panel setting 1: AI1 channel 2: AI2 channel 3: RS485 given 4: multi-segment power (X terminal given) 5: Extended board 6: Light intensity closed loop control 7: RS485 given power value 0000: Delayed standby 0: off	0000	0100	★

type	code	Definition	description	Min. unit	Factory setting	Change
			1: open 2: Transfer to standby after power is paused **0**000: standby signal channel 0: operation panel 1:X1 terminal 2: X2 terminal 3: X3 terminal 4: X4 terminal			
	FA.07	Reservation	Reservation	1	0	▲
	FA.08	Digital output setting	000<u>0</u>: Relay 00<u>0</u>0: OC1 0<u>0</u>00 : OC2 <u>0</u>000: OC3 0: Lamp exhaust signal 1: Fault alarm signal 2: System ready signal 3: Lighting preheating completion signal 4: Output power arrival signal 5: Lamp voltage arrival signal 6: Lamp current arrival signal 7: Power alarm signal 8: Signal during power operation 9: Extended function parameter FE.00 is determined	0000	7201	★
	FA.09	Analog output setting	000<u>0</u>: Reservation 00<u>0</u>0: Reservations 0<u>0</u>00: AO1 output correspondence <u>0</u>000: AO2 output correspondence 0: Correspondence of Output Lamp Power Relation 1: Correspondence of output lamp Voltage 2: Correspondence of Output Lamp Current 3: Correspondence of lamp box temperature 4: PID output of lamp exhaust 5: Conveyor Belt	0000	2100	★

type	code	Definition	description	Min. unit	Factory setting	Change
			Speed Control			
	FA.10	Functional switch selection	0000: Detection of the Missing phase of electricity supply 0: open 1: close 0000: power supply temperature alarm 0: open 1: close 0000: power supply cooling fan control 0: Running Start 1: Power-on and start 0000: OC output level selection 0: All low levels are effective 1: All high levels are effective 2:001 (OC1 high level effective, other low level effective) 3:010 (OC2 high level effective, other low level effective) 4:011 (OC1, OC2 high level, OC3 low level) 5:100 (OC3 high level effective, other low level effective) 6:101 (OC1, OC3 high level, OC2 low level) 7:110 (OC2, OC3 high level, OC1 low level)	0000	0000	★
	FA.11	parameter initialization	1: Standard initialization 2: Clear the fault record	0	0	★
	FA.12	RS485 communication setting	0000: Baud Rate Selection 0：1200 bps 1：2400 bps 2：4800 bps 3：9600 bps 4：19200 bps 0000: data format selection 0: No Check 1: odd check 2: Dual Check 0000: communication protocol 0: MODBUS 0000:	1	0003	★

type	code	Definition	description	Min. unit	Factory setting	Change
			communication failure handling 0: Keep the original state 1: stop			
	FA.13	RS485 Communication Address.	0: Broadcasting 1-247: Slave address	1	1	★
	FA.14	CAN Communication setting	Reservation		0	★
	FA.15	CAN Communication Address	Reservation		0	★
	FA.16	Long-term allowable current of lamp	1.0A-specified model	0.1	Max.	◆
	FA.17	Panel lock	0：open 1：lock	1	0	◆
	FA.18	Lamp control selection	0000: lamp type selection (H series) 0: High Voltage Mercury Lamp 1: Metal Halogen Lamps 0000: lamp preheating protection function 0: Close 1: Open 0000: maximum lamp preheating time 0：3min 1：5min 2：7min 3：10min 4：12min 5：15min 6：17min 7：20min 0000: Lamp Control Mode 0: EPS Control Mode0 1: EPS Control Mode1 2: EPS Control Mode2	1	1000	▲

type	code	Definition	description	Min. unit	Factory setting	Change
	FA.19	Light box temperature control	000<u>0</u>: PID type of lamp exhaust 0: Output Power Closed Loop 1. Lamp box temperature closed loop 2. Lamp voltage closed loop 00<u>0</u>0: lamp box temperature detection channel 0：AI1 1：AI2 2：RS485 3: Extended board 4: X1 temperature switch detection 5: X2 temperature switch detection 6: X3 temperature switch detection 7: X4 temperature switch detection 0<u>0</u>00: Given channel of lamp box temperature 0：AI1 1：AI2 2: Operation panel settings 3：RS485 4: Extended board <u>0</u>000: Lamp automatically maintains voltage (heat) 0: Close 1: Open	0000	0230	▲
	FA.20	Light intensity control	000<u>0</u>: Light intensity feedback channel 0: AI1 1: AI2 2: RS485 3: Extended board 00<u>0</u>0: Light intensity given channel 0: Operation panel setting 1: AI1 2: AI2 3: RS485 4: Extended board	00	0032	▲
	FA.21	Light box temperature digital given	30-500℃	1	70	◆
	FA.22	Light intensity number given	10-5000mW	1	5000	◆

type	code	Definition	description	Min. unit	Factory setting	Change
	FA.23	AI input range	2-10V	0.1	10	▲
	FA.24	Delay time of standby	1-3000s	1	10	▲
	FA.25	Delay time of Lamp exhaust	1-15min	1	3	▲
	FA.26	Voltage arrival	100-4000V	1	600	▲
	FA.27	Power arrival	0.5-30.0KW	0.1	1.8	▲
	FA.28	Current arrival	3.0-50.0A	0.1	5.0	▲
	FA.29	Lamp igniting time	6-60s	1	5	▲

	FB.00	Lamp exhaust lower limit (%)	0-100%	1	0	◆
	FB.01	Multi-segment power 1 value	FA.05-100%	1	20	▲
	FB.02	Multi-segment power 2 value	FA.05-100%	1	50	▲
	FB.03	Multi-segment power 3 value	FA.05-100%	1	100	▲
F B Advanced parameters	FB.04	Shutter control	000<u>0</u>: Open the Shutter to Position Detection Terminal 00<u>0</u>0: Close the Shutter to position detection terminal 0: invalid 1：X1 2：X2 3：X3 4：X4 0<u>0</u>00: Shutter detection mode 0: All switches are tested 1. Normally-Open Single Switch Detection 2: Normally-Closed Single Switch Detection 3: Control Only <u>0</u>000: Manual shutter response mode 0: Manual shutter control is not allowed 1. Shutdown, delay exhaust, manually control shutter in status of failure 2: Shutter can be manually controlled in any state.	1	0032	▲

	FB.05	AO corresponding current upper limit	1.0-30.0A	0.1	30.0	▲
	FB.06	AO corresponding voltage upper limit	100-4000V	1	3000	▲
	FB.07	AO corresponding power upper limit	1-30.0KW	0.1	30.0	▲
	FB.08	AI, AO corresponding light intensity value	100-5000mW	1	5000	▲
	FB.09	AI, AO corresponding temperature value	100-500℃	1	150	▲
	FB.10	Lightbox temperature alarm value	10.0-300.0	0.1	80.0	▲
	FB.11	Light box temperature control value P	1-1000	0.1	1.0	▲
	FB.12	Light box temperature control value I	1-1000	0.1	1.0	▲
	FB.13	Light intensity control value P	1-1000	0.1	1.0	▲
	FB.14	Light intensity control value I	1-1000	0.1	1.0	▲
	FB.15	Start value of maintaining the lamp voltage	0-100%	1	40	▲

	FB.16	Stop value of maintaining the lamp voltage	0-100%	1	60	▲
	FB.17	Lamp exhaust 0V corresponding value	0-90%	1	60	◆
	FB.18	Lamp exhaust 10V corresponding value	0-100%	1	95	◆

	FB.19	Low Voltage Protection and Bus Protection	000<u>0</u>: Low Grid Voltage Protection selection
			    0: Close
			    1: Open
			00<u>0</u>0: bus voltage anomaly detection
			    0: Close
			    1: Open
				1	11	◆

	FB.20	Multi-segment power setting	000<u>0</u>: multi-segment power 0000
			00<u>0</u>0: multi-segment power 0000
			    0：X1
			    1：X2
			    2：X3
			    3：X4
				00	32	◆

	FB.21	Shutter action timeout	0.1-60.0S	0.1	2.0	◆

	FB.22	Lamp timing and delayed power-off	000<u>0</u>: Enabled lamp timing function 0: Close 1: Open 00<u>0</u>0: The action while lamp life is over 0: No Action 1: Alarm and Continue Operation 2: alarm when next startup 0<u>0</u>00: Delayed power-off mode 0: Trip unit self-powered off and manually powered on, and the light-off signal is triggered. 1: X1 Trigger 2: x2 trigger 3: X3 Trigger 4: x4 trigger <u>0</u>000: Delayed power-off trigger switch type 0: Normal Closed type, Disconnect output and self-locking, Closed Trigger Power Off 1: Normal open type, closing output self-locking, disconnect triggers power off	0	0001	◆
	FB.23	Lamp availability time	0.1-6000.0 H	0.1	1000.0	◆

	FB.24	Delay the power-off time	0-120 Min If this parameter is less than the exhaust delay time, the shutdown power-off delay is calculated by the exhaust delay time, and after the exhaust is completed, output power-off signal; recommending to set this value slightly longer than the exhaust delay time to prevent the blower from being powered off before the blower is completely stopped.	1	15	◆

	FB.25	Advanced fault function	000<u>0</u>: External Fault Input Function 0: invalid 1：X1 2：X2 3：X3 4：X4 00<u>0</u>0: Lightbox temperature protection 0: Close 1: Open 0<u>0</u>00: lightbox temperature sensor type 0: Temperature Transmitter 1: Normal Open Temperature Switch 2: Normal Closed Temperature Switch <u>0</u>000: External fault input type 0: Normal Open Fault Input 1: Normal Closed Fault Input	1	000 0	◆
	FB.26	Lamp Excitation intensity	32-80	1	60	◆
	FB.27	Factory password	00000-65535	1	0	◆
	FB.28	Proxy password	00000-65535	1	0	◆
	FB.29	Allowed running time	1-65535H	1	0	◆

FE Extended parameters	FE.00	Digital Terminal Expansion Function Selection	0000: Relay Extension Function Selection 0000: OC1 extended function selection 0000: OC2 extended function selection 0000: OC3 extended function selection 0: No function 1. Delay power-off 2. Shutter Control 3.Communication Control	1	0000	◆
	FE.01	Delay time of Shutter closing	0-60000ms	1	0	◆
	FE.02	Default shutter state	0000: Shutter Status During Shutdown 0000: Shutter status During failure 0000: Delay shutter state during exhaust 0: Default Shutter Closed 1: Default Shutter Open 0000: Shutter trigger mode 0: Enter standby power trigger 1: Online Signal Triggering		0100	◆
	FE.03	Pause power	FA.05-100%	1	50	◆
	FE.04	Delay the time of pausing power	0-60000ms	1	0	◆
	FE.05	RS power given, holding register	0-100%	1	100 %	◆

	FE.06	Given value of AO speed	0-100 0-100 corresponds to 0-10V analog output	1	50	◆
	FE.07	Max. AO speed	0-300.0m/min setting the maximum speed of conveyor belt when AO output is 10V, and converting it into the current speed and display it on the interface.	0.1	10.0	◆
	FE.08	AI1 input range	1-10V	0.1	10.0	◆
	FE.09	AI2 input range	1-10V	0.1	10.0	◆
	FE.10	AO1 output range	1-10V	0.1	10.0	◆
	FE.11	AO2 output range	1-10V	0.1	10.0	◆
	FE.12	Enabled Operating State Lower Limit	0-1	1	0	◆
	FE.13	Running state lower limit power	FA.05-100%	1	60	◆

	FE.14	Enabled operation setting function	000<u>0</u>: Enabled operation Terminal Selection
			    0: Invalid function
			    1:X1
			    2:X2
			    3:X3
			    4:X4
			00<u>0</u>0: Type of enabled operation terminal
			    0: normal open type
			    1: Normal Closed Type
				1	00	◆

	…….					
	FE.39	Grid undervoltage value	Single-phase：200 three-phase：360			◆
	FF.00	语言 (Language)	0：Simplified Chinese 1：English	1	0	◆
F	FF.01	Backlight properties	0：Delay shutdown when no operation 1：always-on 2：always-on during operation, delay the off during shutdown	1	0	◆
F user parameters	FF.02	Screen extinguishing time when no operation	0-300S	1	60	◆
	FF.03	Version of Operation panel program	Factory program version			◆
	FF.04	Version of Property sheet program	Factory program version			◆

	FF.05	Read parameters to panel	0: No operation 1: Read the local parameters to the operation panel	1	0	★
	FF.06	Write parameters to the machine	0: no operation 1: Write the operation panel parameters to this machine	1	0	★
	FF.07	Indicator light brightness	0-5	1	5	◆
	……					
	FF.10	Permission level	0-1（enter visible agent password）	1	0	◆
	FF.11	Top Level Display Toggle Pages	1-5	1	4	◆
	FF.12	System information	0			

4.2 Table of Status Monitoring Parameter

Monitoring code	Content	Unit	Communication address (Hexadecimal)	Remark
D-00	Current output power of UV Power Supply	kW	D000(H)	10 times quantized Communication
D-01	Current output current	A	D001(H)	10 times quantized Communication
D-02	Current output voltage	V	D002(H)	
D-03	Max. Temp. Of Module	°C	D003(H)	10 times quantized Communication
D-04	Status of Power Supply		D004(H)	
D-05	Current fault code		D005(H)	
D-06	Current warning code		D006(H)	
D-07	Current input grid voltage	V	D007(H)	

D-08	Given power value	kW	D008(H)	10 times quantized Communication
D-09	DC bus voltage	V	D009(H)	
D-10	Current light intensity feedback value	mW	D00A(H)	
D-11	Current lightbox temperature value	℃	D00B(H)	10 times quantized Communication
D-12	Power supply running time	H	D00C(H)	
D-13	Power encryption run time	H	D00D(H)	
D-14	RS485 communication status		D00E(H)	
D-15	Light intensity target value	mW	D00F(H)	
D-16	Lightbox temperature target value	℃	D010(H)	10 times quantized Communication
D-17	Module temperature 1	℃	D011(H)	10 times quantized Communication
D-18	Module temperature 2	℃	D012(H)	10 times quantized Communication
D-19	Transformer temperature	℃	D013(H)	10 times quantized Communication

D-20	AI1 analog value	V	D014(H)	10 times quantized Communication
D-21	AI2 analog value	V	D015(H)	10 times quantized Communication
D-22	X1-X4 terminal status		D016(H)	
D-23	Digital output terminal status		D017(H)	
D-24	Last fault record		D018(H)	
D-25	Last two fault records		D019(H)	
D-26	Last three fault records		D01A(H)	
D-27	Last four fault records		D01B(H)	
D-28	Last five fault records		D01C(H)	
D-29	Program Version		D01D(H)	
D-30	AO1 output	%	D01E(H)	
D-31	AO2 output	%	D01F(H)	
D-32	IO status indication (BIT)		D020(H)	
D-33	Device using time	H	D021(H)	
D-34	Output Voltage	W	D022(H)	
D-35	Rated Power(W)	W	D023(H)	
D-36	Retention constant 0		D024(H)	
D-37	Shutter status		D025(H)	
D-38	Lamp running time	H	D026(H)	10 times quantized Communication
D-39	Lamp available remaining time	H	D027(H)	10 times quantized Communication

Chapter 5 Detailed Function Description

5.1 FA Basic Parameter Group

> *FA.00　Lamp　rated　power　　　Range　setting：　1.0KW～specified*

Used to set the rated power of the selected lamp, for example:

the selected model X5000-4TA060, and equipped with lamp rated power is 5.6KW；

this parameter should be set to 5.6KW

Attention

If the Lamp rated power is not set correctly, the lamp may be damaged.

> *FA.01Lamp rated Voltage　　Range setting：　100V～Specified Model*

Used to set the selected Lamp rated Voltage. Setting the lamp voltage correctly will give full play to the best performance.

For example, the electrical parameter of a lamp is: 6KW, lamp voltage is 600 V; This parameter should be set to 600V.

Note

Note: If lamps' parameters having errors, the machine can automatically correct 10% of the lamp voltage error. When the actual lamp voltage is higher than 10%, the machine will automatically protect.　When the actual lamp voltage is less than 10%, the machine will limit the power output.　If you want to give full play to the best performance, you can adjust the lamp to the rated power, monitor the output voltage of the machine, and reset the actual lamp voltage according to the output voltage value.

For example, the lamp rated voltage is 600V and the rated power is 6KW. due to the manufacturing error of the lamp, the actual lamp voltage is 640V, then the machine will automatically adjust to 640 V.

According to the rated nominal calculation, when the lamp works at 6KW, the working current should be 10A and the working voltage 600 V; Due to manufacturing errors, the actual working current is 9.375A and the working voltage is 640V.

FA.02 Digital power setting   Range Setting： 2~100%

Using the operation panel this parameter sets the power output ratio digitally in the control mode. this parameter works under the condition that FA.06 sets the power given channel as the given valid operation panel.

FA.03Lamp upper-limit current   Range setting：5.0A~Specified Model

This parameter is the maximum output current when the lamp tube is preheated or the power is increased. When the value is increased, the lamp's current is large and the acceleration is fast. When this parameter is reduced, the lamp accelerates slowly and is softer. Adjust according to actual demands.

FA.04   Lamp lower-limit current   Range setting： 1.5~5

This parameter is to limit the minimum working current of the lamp. If the lamp is extinguished when the lamp is adjusted to the minimum power, the value can be appropriately increased. Adjust according to actual needs.

FA.05   Lamp Lower-limit Power   Range setting： 2~50%

This parameter defines the minimum operating power ratio of the lamp. The lower-limit power parameter is to set the minimum output power of the machine (i.e.

standby power). This parameter is related to lamp characteristics. When the given power is less than the standby power, the machine operates according to the standby power, and when the given power is greater than the standby power, the machine outputs according to the given power. This parameter is specially set for energy-saving during intermittent production. When the machine is in standby output, the response time to return to the set power is 1 second.

For example, the equipment is 6KW, and when the standby power is set to 15%, the standby power is 900W. If the analog is given below 900W, the machine's actually outputs according to 900W. If the given power is greater than 900 W, the machine's outputs according to the given power.

Note

When the standby power setting is too small, the lamp will be extinguished in the standby state. because of different lamp characteristics, which can be adjusted according to actual conditions, generally 15%-20%.

FA.06 PSU control channel   Range setting： 0000～4276

This parameter divides a
4-bit parameter into groups.
Each parameter

Operation instruction	
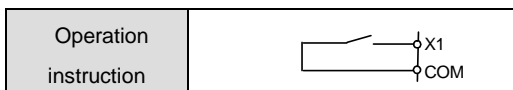
corresponds to the following:：

000**0**: Power start and stop mode

0: Operation panel startup

1: External terminal control X1

2: RS485 communication mode startup

3: Extended board

4: External terminal control X2

5: External terminal control X3

6: External terminal control X4

00**0**0: power given channel

0: Operation panel setting

The parameter is FA.02 or directly press the up and down button to adjust, but it should be noted that if the machine is currently in standby mode, after pressing the up and down keys, the given power will still change, but the power displayed by the progress bar is still standby power. Therefore, in standby mode, the given power should be based on the value of FA.02, and the progress bar shows the current effective power value.

　1: External analog AI1

　2: External analog AI2

　3: Given 485 communication

　4: Multi-segment power

This function is used for gear selection with the X terminal, and the gear control is matched with the value set by FB.01 – FB.03.

　5: Extended board

　6: Light intensity control

When this option is selected, the power supply is automatically adjusted according to the feedback value and target value of the light intensity sensor, and the correct light intensity sensor needs to be selected.

　7: RS485 given power value (memory)

The machine backs up the given current power value to FE.05 and saves it. when RS485 is not refreshed or just power-on, the machine will copy the FE.05 parameter to the power register

0**0**00: delayed standby

0: Close

1: Open

This function is suitable for connecting sensor switch. It is necessary to set one of the X terminals to the standby sensor function. The delayed standby time can be set to FA.24. When this function is enabled, the X terminal is connected, the power supply immediately outputs the target power. When the X terminal is disconnected, the machine will output the minimum set power at the time set by FA.24

2. Turn to standby after power is suspended

When the 0**0**00 delayed standby function is set to 2, the on-line signal disappears, and the power immediately enters the pause power set by FE.03. after FE.05 delay, the power is switched to standby power. if the on-line signal arrives during the period, the power is switched to strong light.

0000: standby switch selection

 0: operation panel

 1：X1

 2：X2

 3：X3

 4：X4

FA.07 Reservation	
FA.08 Digital output setting	*Range setting： 0000～9999*

This parameter defines the function programming of three OC terminals and one relay of this machine, and defines the contents represented by open-collector output terminals OC1, OC2, OC3 and relay output contacts.

The internal wiring diagram of the open-collector output terminal is shown in Figure 5-1. When the setting function is valid, the output is low level. When the function is

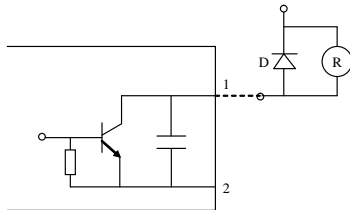invalid, the output is in a high-impedance state.

Chart 5-1 Internal wiring diagram of output terminal

Relay contact output: when setting output function is effective, the normally open contact TA-TC is turned on and the normally closed contact TA-TB is turned off

000**0**: relay

00**0**0: OC1

0**0**00: OC2

0000: OC3

 0: Lamp Exhaust

The lamp turning on after the power is in the running state and the lamp voltage is detected to reach the appropriate voltage, the valid signal is output, and the invalid signal is output after the time set by FA.14 after shutdown

   1.Fault alarm

When the external fault input signal of the digital power supply is valid, resulting in shutdown of the digital power supply, the terminal outputs an effective signal (low level), otherwise it outputs an invalid signal (high resistance)

   2. System Preparation Completed

After the power supply is powered on, it automatically detects various functions, and when normal, the terminal outputs valid signals (low level), otherwise it outputs invalid signals (high resistance)

3. Lamp Preheating completion

When the lamp is started, the power supply will automatically light the lamp and preheat it with the current value set by fa.03. after the lamp voltage is increased to FA.01*0.6, the power supply thinks that the lamp preheating is completed, and the OC terminal will give signal of lamp tube preheating completion at this time.

4: Output Power Arrival

When the output power of the digital power supply is higher than the value set by FA.27, an effective signal (low level) is output; otherwise, an invalid signal (high resistance) is output.

Chart 5-2
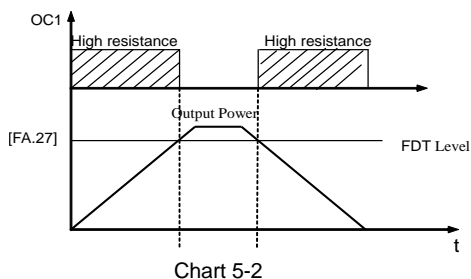
5: The lamp voltage arrival

When the digital power supply detects that the output voltage is higher than the voltage value set by FA.26, it outputs a valid signal (low level), otherwise it outputs an invalid signal (high resistance).

6: Output current arrival

When the digital power supply detects that the output voltage is higher than the voltage set by FA.28, it outputs a valid signal (low level), otherwise it outputs an invalid signal (high impedance).

7: Warning

8: Power Supply running

When the electronic power supply is in the running state, the valid signal is output, and when the power is off, the invalid signal is output.

9. Extended parameter FE.00 determination

FA.09 Analog output setting	Range setting：0000～9999

000**0**: Reserved

00**0**0: Reserved

0**0**00: AO1 output analog corresponding

0000: AO2 output analog corresponding

0: Output power

When this function is selected, the 0-10V (0-20mA) analog quantity corresponds to the power output value of 0-FB.07.

1: Output voltage

When this function is selected, the 0-10V (0-20mA) analog quantity corresponds to the voltage output value of 0-FB.06.

2: Output current

When this function is selected, the 0-10V (0-20mA) analog quantity corresponds to the current output value of 0-FB.05.

3: Lightbox temperature

When this function is selected, the 0-10V (0-20mA) analog quantity corresponds to the light box temperature value of 0-FB.09.

4: Lamp exhaust PID output

When this function is selected, the analog quantity (0-10V/0-20mA) is automatically adjusted to control the inverter's exhaust.

5: Conveyor speed control

For simple open-loop conveyor speed control, the output value of the selected terminal can be determined by setting the parameter value of FE.06.

FA.10 Function switch selection   Range setting：   0000～9999

000**0**: three-phase input phase-loss detection protection

0: On

1: off

00**0**0: machine temperature alarm protection

0: On

1: off

0**0**00: fan control

0: The cooling fan is running after the digital power supply startup.

The fan stops running after shutdown, and the fan runs automatically when the detected temperature is above 40 degrees.

1: The cooling fan runs immediately after the digital power is turned on.

Independent of the digital power running status.

0000: OC output status

0: All low level valid

1: all high level valid

2:001 (OC1 active high level, other active low level)

3:010 (OC2 active high level, other active low level)

4:011 (OC1 and OC2 are active high level, OC3 is active low level)

5:100 (OC3 active high level, other active low level)

6:101 (OC1 and OC3 are active high level and OC2 is active low level)

7:110 (OC2 and OC3 are active high level, OC1 is active low level)

FA.11 Parameter initialization   Range setting： 0～2

1: Restore factory settings

2: Clear fault records

FA.12	RS485Communication setting	Range setting： 0000～9999

000**0**： baud rate selection

 0: 1200 bps

 1: 2400 bps

 2: 4800 bps

 3: 9600 bps

 4: 19200 bps

00**0**0: data format selection

0: no inspection

1: odd inspection

2: Even inspection

0**0**00: Communication Protocol

0: MODBUS

0000: communication failure processing

0: keep the original state

1: stop

FA.13	RS485 communication address	Range setting： 0～247

 0: Broadcasting

 1-247: Slave Address

When RS485 communication address is 0, it is broadcast mode, and the device will respond to all commands with correct parameter address, but will not reply to any parameters.

> ### FA.14 CAN Communication setting

For setting baud rate value in CANOPEN mode, it is necessary to cooperate with CANOPEN communication board. For specific settings, please refer to our company's "Operation Instructions for CANOPEN Communication Board".

> ### FA.15   CAN Communication Address

1-247 is COB-ID value in CANOPEN mode. It needs to be used with CANOPEN communication board. Please refer to our " Instructions for CANOPEN Communication Board" for specific settings.

> ### FA.16
> ### Long-term allowable current   Range setting：lower limit-upper limit current

This parameter limits the long-term current allowed by the machine. When the lamp current exceeds this value for 10 minutes, the machine will stop outputting and report the fault code 13, and the power supply will be in an alarm state within 10 minutes.

> ### FA.17   panel lock   Range setting： 0～1

0: Open the operation panel control, at this time the operation panel can change the parameters.
1: Lock the operation panel control. The operation panel cannot change parameters other than FA.17 in this state.

> ### FA.18   Lamp Control Selection   Range setting： 0000～1711

000**0**: Lamp type selection (V series does not have this function, the setting is

invalid)

0: high pressure mercury lamp

1: metal halogen lamp

00**0**0: lamp preheat protection function

0: off

1: open

0**0**00: the longest time for lamp preheating:

  0：3min

  1：5min

  2：7min

  3：10min

  4：12min

  5：15min

  6：17min

  7：20min

0000: power supply control mode

0: Power supply control mode 0

This mode is the default control mode of the machine. If there is no special requirement, please use this mode.

1: power supply control mode 1

In this mode, when the adjusted lamp attenuation causes the lamp voltage to drop, the machine no longer replenishes the current to balance the power, but reduces the power to keep the machine running for a long time.

FA.19 Lightbox temp. control   Range setting： 0000～1472

000**0**: Lamp Exhaust PID Type:

0: closed loop output power

When this function is used, the lamp exhaust frequency is proportionally output according to the output power and the lamp rated power, wherein the initial frequency of the exhaust is FB.17*FA.00 and the maximum output corresponding to the exhaust is FB.18*FA.00

 1: Lightbox temperature control

 When using this function, an external temperature sensor is required, and the lamp is exhausted according to the actual temperature detection for temperature closed-loop control.

 2: Lamp voltage control

When this function is used, the lamp exhaust frequency is proportionally output according to the output power and the lamp rated power, wherein the initial frequency of the exhaust is FB.17*FA.01 and the maximum output corresponding to the exhaust is FB.18*FA.01

00**0**0: lightbox temperature detection channel

 0：AI1

 1：AI2

 2：RS485

 3: Extended board

 4: X1 temperature switch detection

 5: X2 temperature switch detection

 6: X3 temperature switch detection

 7: X4 temperature switch detection

 0**0**00:   given lightbox temperature channel

 0: AI1

 1: AI2

2: Digital setting

3: RS485

4: Extended board

0000: automatic voltage maintaining

0: off

1: open

When the automatic voltage maintaining function is turned on, it is used with the automatic voltage regulation start value (FB.15) and automatic voltage regulation stop value (FB.15) function, and the voltage fluctuates between FB.15-FB.16.

FA.20 Light intensity control　　　*Range setting：　00～43*

000**0**: light intensity feedback channel

0: Analog AI1

1: Analog AI2

2: RS485

3: board

00**0**0: given light intensity channel:

0: number setting

1: analog AI1;

2: analog AI2;

3: RS485;

4: Board

This function is effective when FA.06 sets the given power channel to light intensity control. The light intensity target value is selected by **0**000, and the actual light intensity detection channel is selected by 0**0**00.

FA.21 Given Lightbox temp. Value　　*Range setting：　30～300℃*

Lightbox temperature target value, valid when the lightbox temperature control type

is the lightbox temperature closed loop

> *FA.22 Given Light intensity Value   Range setting： 30～3000mw*

Lamp output light intensity target value.

> *FA.23 Reservation*

> *FA.24   Delayed Standby time   Range setting： 0～3000S*

This time is set when the X terminal standby, switch control is activated. The time unit is seconds.

> *FA.25 delayed lamp exhaust   Range setting： 1～100min*

When the OC terminal is set to the lamp exhaust signal, the exhaust is automatically started after the power is turned on. When the lamp is turned off, the exhaust signal is turned off after the set time is delayed. The time unit is minutes

> *FA.26   Voltage arrival   Range setting： 100～4000V*

OC signal output when the output voltage is higher than this value

> *FA.27   Power arrival   Range setting： 1.0～30.0KW*

When the output power is higher than this value, the OC signal is output.

> *FA.28   Current arrival   Range setting： 1.0～20A*

When the output current is higher than this value, the OC signal is output.

> *FA.29   Lamp excitation time   Range setting： 1-60S*

This parameter is the firing time when the lamp is started. When the lamp fails to fire normally during this time, the power supply stops outputting and alarms. The time unit is second.

5.2 FB Advanced Parameter Group

> *FB.00   Lamp exhaust lower limit   Range setting： 0～100％*

The exhaust lower limit power is the lower limit frequency of the inverter running. This value can be set by the inverter or set by machine. Setting 0, it is invalid. If setting non-zero value, it corresponds to the percentage of 10V. FA.09 is effective when setting the PID output of lamp exhaust. For example, if set to 10%, the selected terminal minimum output is 1V.

> *FB.01- FB.03   Multi-segment power   Range setting：20～100*

This value is classifying control power, which is a percentage. Two X terminals are selected as the gears by FB.20, and four states of 00, 01, 10, and 11 are combined; respectively, 00 corresponds to standby power, 01 outputs corresponding to FB.01, and 10 outputs corresponding to FB.02,11 When the output corresponds to FB.03

> *FB.04   Shutter Control   Range setting：0000～2344*

000**0**: Shutter open detection terminal

00**0**0: Shutter closed detection terminals

0: invalid

1: X1

2: X2

3: X3

4: X4

0**0**00: Shutter detection mode

0: Open and closing all tested

1: Normally open single switch detection

2: Normally closed single switch detection

3: Control only, not detecting the shutter's step

0000: Manual shutter response

0: Manual shutter control is not allowed

1: stop, delay exhaust, fault status can manually switch shutter

2: The shutter can be controlled manually at any time.

FB.05 AO corresponded upper limit current   Range setting：1～30A

This parameter is AO output reference value. When setting 20A, AO outputs 10V corresponding to output current is 20A.

FB.06 AO corresponded upper limit voltage Range setting：100～4000V

This parameter is AO output reference value. When setting 2000V, AO outputs 10V corresponding to output voltage is 2000V.

FB.07 AO corresponded upper limit power   Range setting：10～100

This parameter is AO output reference value. When setting 50W, AO output 10V corresponding to 50% output power

---

FB.08 AI、AO corresponded light intensity
Range setting：100～5000mW

This parameter is the conversion ratio. When setting 2000 mW, if AI voltage is 10 V, the light intensity is 2000 mW, and conversion value is displayed in D-10.

FB.09   AI、AO corresponded temp.   Range setting：100～300℃

This parameter is the conversion ratio. If the AI voltage is 10V when the temperature setting 200℃, the value of temperature is 200℃. The conversion value is displayed in D-11.

FB.10 Lightbox temp. alarm

When the lightbox temperature alarm function is turned on, the temperature value is detected to exceed this value and the fault signal is output.

FB.11 Lampbox temp. control Value P

When the parameter is controlled by the lampbox temp., the PID controls the adjusted value P.

FB.12 Lightbox temp. Control value I

When the parameter is controlled by the lampbox temp., the PID controls the adjusted value I.

FB.13 Light intensity Control Value P

When the parameter is controlled by the light intensity, the PID controls the adjusted value P.

FB.14 Light intensity closed Control Value I

When the parameter is controlled by the light intensity, the PID controls the adjusted value I.

FB.15 Start value of maintaining the lamp voltage
Range setting ：20%-80%

This parameter works when FA.19 **0**000 are selected 1.

FB.16 Closing Lamp Voltage Holding   Range setting：30%-100%

This parameter works when FA.19 **0**000 are selected 1.

FB.17 Corresponding value of 0V lamp exhaust
        Range setting：0～90％

This parameter is the percentage of power or tube voltage relative to the rated value. FA.09 sets the lamp exhaust PID output. It is valid when FA.19 000**0** setting to 0 or 2. When the parameter is smaller than this parameter, the corresponding AO output the lower limit which set by FB.00

FB.18 Corresponding value of 10V lamp exhaust
        Range setting：0～100％

This parameter is the percentage of power or lamp voltage relative to rated value. FA.09 sets PID output of lamp exhaust and FA.19 sets to 0 or 2. When the parameter is larger than this, the corresponding AO output is 10V.

FB.19 Low Voltage and Bus voltage Protection
        Range setting：0000～0011

000**0**: Voltage Protection in Low Power Grid

0: close

1: open

  When the grid voltage is too low, the machine can not operate normally. the grid voltage is lower than the undervoltage value of FE.39, the output undervoltage fault occurs.

00**0**0: bus voltage anomaly detection

0: close

1: open

Bus voltage anomaly detection is only carried out at the beginning of power-on. If detected the fault, it may cause internal damage of the machine, please do not light the lamp. power off for one minute, power-on again. If the fault still exists, please contact our after-sales department to solve.

FB.20 Multisegment Power setting   Range setting：0000～0032

000**0**: Multi-segment Power 000**0**.

00**0**0: Multi-segment power 00**0**0.

0:X1 terminal

1:X2 terminal

2:X3 terminal

3:X4 terminal

FB.21   Shutter operation timeout   Range setting：0.1-60.0S

When the shutter detection mode set by FB.04 is not 3, if the shutter does not operate smoothly within the time-out period, the output fault will occur.

FB.22 Lamp timing and delayed power off   Range setting：0000~1421

000**0**: enabled lamp timing function

0: close

1: open

00**0**0: The action while lamp life is over

0: No action

1: Alarm and continue operation

2: alarm when next startup

0**0**00: Delayed power off mode

0: Release self-power off and manually power on, light off signal trigger

1:X1 trigger

2:X2 trigger

3:X3 trigger

4:X4 trigger

0000: type of trigger switch for delayed power off

0: Normal closed type, disconnect output self-locking, close trigger and power off

1: Normal open, closed output self-locking, disconnection trigger and power off

---

FB.23 Lamp life availability   Range setting：0.1~6000.0H

---

lamp timing is on, this parameter is used to judge whether the lamp life over or not.

FB.24 Delayed power off time   Range setting：0~120min

When the delayed power-off is activated, the triggered power-off will pass through the time set by this parameter, and the set digital terminal will release the self-locking signal or output the release signal of the tripper. If this parameter is less than the delayed exhaust time, the power-off delay is calculated by the time of exhaust delay. After exhaust is completed, the power off signal is output. setting this value slightly larger than the time of exhaust delay to prevent the fan from power off before completely stop.

FB.25   Advanced Fault Function   Range setting：0000~1213

000**0**: External Fault Input Function

0：Invalid

1：X1

2：X2

2：X3

3：X4

When the corresponding X-terminal input is valid, the machine lights out and outputs faults, which can be used to monitor whether the exhausted frequency converter has faults etc.

00**0**0: lightbox temperature protection function

0: close

1: open

0**0**00: lightbox temperature sensor type

0: Temperature Transmitter

1: Normally Open Temperature Switch

2: Normally Closed Temperature Switch

0000: external fault input type

0: Frequently open fault input

1: Normally Closed Fault Input

FB.26 Lamp excitation intensity   Range setting：32-80

This value is the excitation intensity of lamp startup. The higher the value, the smaller the intensity. It is not recommended that the customers modify it casually. The manufacturer has matched the better condition. Please operate under the guidance of the manufacturer.

> *FB.27 Factory Password   Reservation*

> *FB.28 Proxy password   Range setting：00000～65535*

This parameter is used by the agent to set the password. Its valid range is 00000-65535. When the password setting is valid, the running time limit of the digital power supply can be set, that is, FB.29 is valid. If changing the password, you should input the current password correctly first, then you can change it. Enter the correct and valid password and press SET key to confirm and save the set password.

> *FB.29 Allowable running time   Range setting：0～65535H*

The allowable run time can only be changed when the proxy password is entered. When the machine runs longer than the allowable run time, the machine is locked and it is not allowed to continue running.

5.3 FE Extended Parameter Group

> *FE.00 Digital terminal digital function selection*
>   *Range setting：0000～3333*

000**0**: Relay Extension Function Selection

00**0**0: OC1 Extended Function Selection

0**0**00: OC2 Extended Function Selection

0000: OC3 Extended Function Selection

> *FE.01 Shutter closing delayed time   Range setting：0～60000MS*

When the on-line signal disappears, the shutter closes after delayed time.

FE.02 Default shutter status   Range setting：0000～1111

000**0**: shutter status during shutdown

00**0**0: shutter status during failure

0**0**00: shutter state during delayed exhaust

0: Default shutter closure

1: Default shutter open

0000: shutter trigger mode

0: Enter Standby Power Trigger

1: On-line signal triggering

FE.03 Pause power   Range setting：FA.05～100%

When the 0**0**00 of FA.06 is set to 2, the on-line signal will be transferred to the pause

power after it disappears, and the pause power will be set by this parameter.

FE.04   Power delayed time   Range setting：0~60000MS

After the on-line signal disappears, transferred to the suspension power after the

time set by this parameter.

FE.05 RS Given Power Holding Register Value
Range setting：0~100%

When the 00**0**0 power given channel of FA.06 is set to 7, this parameter is used to

backup power given value.

FE.06   Given AO Speed Value   Range setting：0~100

0-100 corresponds to 0-10V analog output for simple conveyor speed control

FE.07 AO Max. speed   Range setting：0~300.0M/min

Used to set the maximum conveyor speed when AO output 10V. Used to convert the current speed to display in the interface.

FE.08   AI1 Input range   Range setting：1~10V

When the external signal is not 0~10V input, this parameter can be adjusted to make the input correspondence to 0~10V input.

FE.09   AI2 Input range   Range setting：1~10V

FE.10   AO1 output range   Range setting：1~10V

When the external device is not 0~10V input, this parameter can be adjusted to make the input correspondence to 0~10V input.

FE.11   AO1 output range   Range setting：1~10V

FE.08~FE.11 is used to set the corresponding relationship of analog input and output when it is not standard analog 0-10V

FE.12 Running status lower limit   Range setting：0~1

In order to make the power of the device not less than a certain value in operation, this parameter can be set to 1 to enable this function. If this parameter is set to 1 and FE. 13 is set to 60, the lower limit of operation is still 60% when the given power is less than 60%. The standby power is independent of this parameter.

> *FE.13 Lower limit power while running   Range setting：FA.05~100%*

The lower limit power value in operation state is valid after setting FE. 12 to 1.

> *FE.14   Function setting while running   Range setting：0000~0014*

After running, only when the enabled signal is valid, can normally light the lamp. Otherwise, the machine will report No. 25 malfunction, indicating that there is no operation enabling signal. After lighting, if the enabling signal fails, the machine will stop immediately and

report No. 25 malfunction. This function can be used to detect whether the conveyor is working or not.

000**0**: Operating Enabled Terminal Selection

0: Function Invalid

1:X1

2:X2

3:X3

4:X4

00**0**0: Running enabled terminal type

0: normal open type

1: normal closed type

> *FE.39 Undervoltage Value of Power Grid   Range setting：160~400V*

When the grid voltage is below this value, the machine will no longer operate and

the output power grid is low voltage fault.

5.4 FF User Parameter Group

User parameter group is used to set operation panel to display related parameters.

> *FF.00   Language   Range setting：0~1*

0: Simplified Chinese

1: English

FF.01 Backlight property　　　　　Range setting：0~2

0: delayed shutdown while no operation

1: Always-on

2: Always-on while running, delayed shutdown while stop

FF.02 No Operational Screen Extinguishing Time
Range setting：0~300S

Closing Backlight while delayed operating panel

FF.03 Operational Panel Program Version　　　Range setting：Read only

---

FF.04 Operational Panel Property Table Version
Range setting：Read only

FF.03 and FF.04 are used to view the version number of the operation panel program and the version number of the parameter table.

FF.05 Read parameters to panel　　　Range setting：0~1

0: no operation

1: Copy the parameters of the machine into the operation panel

---

FF.06 Write parameters to machine　　　Range setting：0~1

0: no operation

1: Copy the parameters in the operation panel to the machine

When using parameter copy function, it is necessary to ensure that the model number and program version number of the two machines are identical (monitoring parameter group D-29), otherwise they cannot be copied successfully.

FF.07 Indicator light brightness   Range setting：0~20

Setting the brightness of the operation panel indicator, the smaller the value, the higher the brightness.

FF.10   Permission level   Range setting：0~1

This parameter can be displayed only after entering the agent's password. When this parameter is set to 1, the user can not change the parameters. Only after entering the agent's password (FB.28), the parameters can be changed.

FF.11 Top-level Display Pages Switching   Range setting：0~5

Press << to change the pages while switching monitoring status. If this parameter is set to 2, pressing <<, the top-level display page can only switch to display pages of the output voltage and output current and page of the given power and output power display page. Other pages will be hidden.

FF.12 System Information

Chapter 6 Communication Protocol

This machine adopts standard MODBUS protocol and supports 03 (H) to read multiple hold registers and 06 (H) to write two function codes to a single register. The physical layer adopts standard RS485 bus. The definition of V5000 series machine communication is compatible with V3000 series machine. The original V3000 control program can be used directly. When reading D0 monitoring parameter group, some parameter addresses have been adjusted.

6.1 Protocol Specification

Application layer protocol: MODBUS-RTU.

Physical layer: RS485

Special Provisions: In this application, additional constraints added to the starting conditions of data frames stipulate that the starting interval of each data frame is longer than 3.5byte transmission cycle (standard), but the minimum interval time should not be less than 0.5 ms.

6.2 Data Format

ADU							
Address	Functional code	Data 1	……	……	Data n	CRC Low	CRC High
	PDU						

Data structure: MODBUS-RTU standard format

The address and function code each occupy one byte, the High of 16-bit data is at the front, and the Low at the back.

Maximum capacity of per data frame.

256 bytes (ADU) containing the address and CRC verification code.

6.3 Standard General Function Codes

In PDU data area, besides the function code occupying one byte, the number of bytes occupied by each data has general rules:

1. Number of registers: 2 bytes, counted in words (16 bits)

2. Number of bytes (number of queries or writes to registers): 1 byte, unit counted in bytes (8 bits)

3. Subfunction code: 2bytes

4. Abnormal Response: Exception Code 1 byte

PDU	
80H+Function code	Exception code（01 ~ 08）

03 Read holding registers (multiple)

1）Query

Function code	1 Byte	03H
Initial address	2 Bytes	0 ~ FFH
No. Of Register N	2 Bytes	1 ~ 7DH（1 ~ 125）

2）Response

Function code	1 Byte	03H
Bytes	1 Bytes	2*N （N is reading the No. of Register）
Value of Register	N*2 bytes	

N：Query the No. of Register in the data

06 Writing to a single register

1) Query

Function code	1 Byte	06H
Register Address	2 Bytes	0 ~ 0FFFFH
Register Value	2 Bytes	0 ~ 0FFFFH

2）Response

Same as query data.

Exception code

When the system detects that the slave address of the communication is correct and the function code is correct, but the data does not meet the requirements of MODBUS-RTU, the error code with the error address of 8000 (H) will be replied.

Exception Code	
Code	Meaning
01	Illegal address
02	CRC Check Error

03	Illegal parameters
04	The command in the current state is invalid
05	Read parameters only, refuse to write
06	Write parameters only and refuse to read
07	No permission
08	Unknown error

6.4 Communication Parameter Address Definition Table

Register's Meaning	Register Address Space (Hexadecimal)	Reading and writing property	Parameter Description
Operating command	1000(H)	Writing	1: Start 2: Stop
Power reference	1001(H)	Reading & Writing	power reference, 0-100 integer indicates relative power rating
Forced Exhaust	1002(H)	Writing	Stop status is valid 1: Start 2: Stop
Forced shutter	1003(H)	Writing	Stop status is valid 1: Start 2: Stop
Timing Clearance	1004(H)	Writing	1：Clearing current lamp timing, running time of lamp less than 1 hour is invalid
Temperature detection	1005(H)	Writing	Using for current LightBox Temperature Writing While PID exhaust Control

Target Temperature	1006(H)	Writing	Using for current target Temperature Writing While PID exhaust Control		
Light Intensity Detection	1007(H)	Writing	Current Light Intensity Detection Value Writing While Light Intensity Closed-Loop Control		
Current intensity target	1008(H)	Writing	Current intensity target value writing while light intensity closed-loop control		
Power reference	1009(H)	Writing	Power reference, keeping power-off		
Terminal Control	4000(H)		Relay 1：pull-in 0 disconnected		
Terminal Control	4001(H)	Writing	OC1 1：valid 0：invalid		
Terminal Control	4002(H)		OC2 1：valid 0：invalid		
Terminal Control	4003(H)		OC3 1：valid 0：invalid		
Power status	D004(H) 2000(H) 3000(H)	Reading	D004(H) return	2000(H)return	3000(H) Bitwise return
			1: running 2: Excitation 3: stop 4: malfunction 5: Delay	1: Run (including excitation) 2: stop (including delay) 3: malfunction	1: Stop 2: Excitation 4: Running 8: Malfunction 16: delay
Monitor	D000(H)-D02	Reading	Corresponding status monitoring parameter list		

parameter	7(H)		
Fault information	D005(H) 5000(H)	Reading	Return 0 is no fault, other values are fault codes

Note

1. For details on the monitoring parameter address, please refer to "4.2 Status Monitoring Parameter Table";

2. The "power status" and "fault information" data shown in the above table have been integrated into the D0 monitoring parameter group. For the V3000 series machines, addresses of 2000 (H) and 5000 (H) are reserved. Users are advised to use the monitoring parameter group to read.

3. Fault information reading return value of 0 indicates no fault, and the fault returning code shown in the table of "6.3 Fault Phenomenon and Processing" when there is a fault.

6.5 Example

1. Start 1 # Digital Power Supply Operation

Host request:

Slave Address	Function code	Register Start Address		Register Data		CRC check	
		high	low	high	low	low	high
01	06	10	00	00	01	4C	CA

Slave Reply: The digital power supply runs and returns the same data as the host

requests.

2. Given power (0-100%) if rated power is 6KW and given power is 3KW, the given

percentage is 50%.

Host request:

Slave Address	Function code	Register Start Address		Register Data		CRC check	
		high	low	high	low	low	high
01	06	10	01	00	32	5D	1F

Slave Reply: The digital power supply runs and returns the same data as the host

requests.

3.Read the Current Operation State of Digital Power Supply

Host request:

Slave Address	Function code	Register Start Address		Number of modems		CRC check	
		high	low	high	low	low	high
01	03	20	00	00	01	8F	CA

Slave Reply：

Slave Address	Function code	Read bytes	1st Register Data		CRC check	
			high	low	low	high
01	03	02	00	01	79	84

4. Monitor the current output power of the digital power supply (read the value of a

single register)

Host request:

Slave Address	Function code	Register Start Address		Number of modems		CRC check	
		high	low	high	low	low	high
01	03	d0	00	00	01	BC	CA

Slave response: (power is 6 KW reserved one decimal)

Slave Address	Function code	Read bytes	1st Register Data		CRC Check	
			high	low	low	high
01	03	02	00	3C	B8	55

5. Monitor the current output power, voltage and current of digital power supply (read multiple register values)

Host request:

Slave Address	Function code	Register Start Address		Register No.		CRC check	
		high	low	high	low	low	high
01	03	d0	00	00	03	3D	0B

Salves Reply：

Slave Address	Function code	Reading Bytes	data of first register		data of second register		data of third register		CRC check	
01	03	06	high	low	high	low	high	low	low	high
			00	06	02	BC	00	0A	E9	2E

6. When RS485 master station equipment sends startup command to digital power supply with slave station number 1, but CRC is wrong, digital power supply replies abnormal code, and replies mechanism of other abnormal code is similar.

Host request:

Slave Address	Function code	Register Start Address		Register Data		CRC check	
		high	low	high	low	low	high
01	06	10	00	00	01	4B	CA

Slave Reply：Reply exception code

Slave Address	Function code	Register Start Address		Register Data		CRC check	
		high	low	high	low	low	high
01	06	80	00	00	02	21	CB

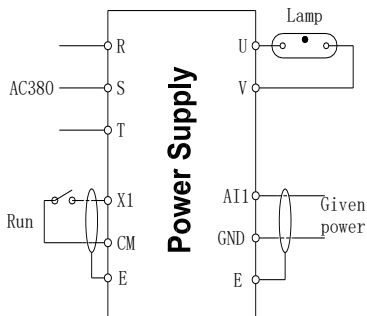# Chapter 7 Quick Application and Troubleshooting

This chapter provides users with two examples of fast use, based on X5000-4TA060, matching lamp is high-voltage mercury lamp, rated voltage 500V, to achieve 10%-100% stepless dimming, as follows:

7.1 Simple Application

This example is to provide users with a simple way to use, or provide operation panel to control for manufacturers.
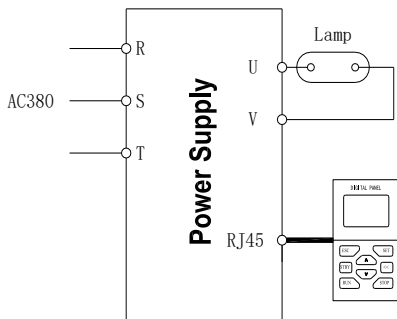
6-1 Simple Wiring Diagram of Operation Panel   6-2 Simple Wiring Diagram of Extern Terminal

Example 1. Controlling Power Supply Via Operation Panel

Under the factory default parameters:

1. Electrical connection: R, S, T are connected to three-phase 380V AC power supply, UV terminal is connected to the lamp as shown in Figure 6-1.

2, Lighting operation: press RUN to light, press STOP to turn off the light, press STBY to standby

3. Power adjustment: Press ∧/∨ to adjust the power or directly set the parameter FA.02 under the initial interface.

Example 2: Controlling Power Supply via External Terminal

1. Electrical connection: R, S, T are connected to three-phase 380V AC power supply, UV terminal is connected to the lamp as shown in Figure 6-2.

2.Lighting operation: close X1 and start lighting signal, give AI1 external analog to adjust power

3. Power adjustment: change the external analog value of AI1 to adjust the power

No.	Function code	Parameter description	Setting value	Setting value selected items
1	FA.00	Lamp rated power	6.0	Set the lamp rated power to 6.0KW
2	FA.01	Lamp rated voltage	500	Set the lamp rated voltage to 500V
3	FA.06	PSU control channel	0011	External terminal X1 is activated and AI1 adjusts power

7.2 High-end Applications

This example is to provide users with communication control , as follows:
Example, RS485 communication control
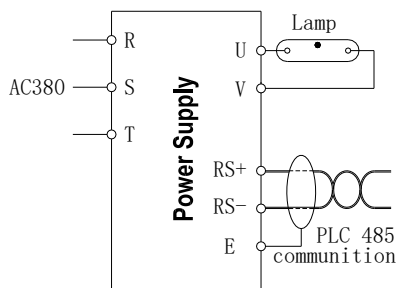
7.2.1 Electrical connection

Figure 6-3 Wiring Diagram of User Communication Application

1. Electrical connection: R, S, T are connected to three-phase 380V AC power supply, and the UV terminal as shown in Figure 6-3.

2. Lighting operation: send lighting instructions to light

3. Power adjustment: transmission data of power

(In the communication control mode, you can also select the external node to control the start and stop, refer to the simple application parameters and wiring.)

7.2.2Parameter Settings

No.	Function code	Parameter description	Setting Value	Setting value selected items
1	FA.00	Lamp rated power	6.0	Set the lamp rated power to 6.0KW
2	FA.01	Lamp rated voltage	500	Set the lamp rated voltage to 500V
3	FA.06	PSU control channel	0022	RS485 lighting and adjusting power
4	FA.12	Communication setting	0003	MODBUS baud rate is 9600, no verification
5	FA.13	Local address	1	Salve address 1

7.2.3 PLC Programming

Referring to the PLC routines provided by our company's website, the company's website will provide the PLC paradigm procedures of Mitsubishi, Siemens, Delta, Credit and other companies, or contact manufacturers for technical support and communication.

7.2.4 Lighting and Adjusting Output Power

1. To send a light-up instruction is to light a lamp.

2. Transmitting target power is changing output power

7.3 Fault Phenomena and Handling

This series have abundant function of fault alarm and warning. Fault alarm refers to the failure of the equipment and the failure of the machine. After the alarm occurs, the machine blockades the output, the fault indicator light of the operation panel is on, and the fault code and fault description are displayed.

The warning is that the current working state of the machine is beyond the normal working range, reminding users that there may be a fault in the machine. After the warning occurs, the machine continues to run, the warning code is displayed alternately in the operation panel, and the fault indicator flashes. When the machine returns to its normal state, the warning is automatically cancelled. Generally speaking, the warning of the lamp during the excitation stage or switching from low power to full power accompanied by short overcurrent is a normal phenomenon.

The malfunction alarm code table is as follows:

Malfunction Code	Malfunction Description	Possible Causes	Solutions
01	Output Short Circuit	1. Output Short Circuit 2. Module failure	1. Check lamp line. 2. Seeking Manufacturer's Service
02	Fault of temperature sensor	1. Poor contact of temperature sensor signal line 2. Temperature sensor damage	1. Inspection of socket wiring 2. Seeking Manufacturer's Service
03	Current	1. Current Detector or	

Malfunction Code	Malfunction Description	Possible Causes	Solutions
	Detection Faults	Circuit Damage 2. Auxiliary power fault	Seeking service from manufacturer
04	Module fault	1. Input phase missing 2. Output Short Circuit 3. Machine Module Fault	1. Check Input voltage 2. Check lamp line 3. Seeking Manufacturer's Service
05	Input Phase Missing	1. False disconnection of power input terminal 2. Input electricity supply shortage	Inspect Input electricity supply
06	Reservation		
07	Excessive Temp.	1. Air-duct Blockage 2.Excessive ambient temp. 3. Fan damage	1. Cleaning air-duct or improving ventilation conditions 2. Improving ventilation conditions and reducing carrier frequency 3. Replacement of Fans
08	Module Fault	1. Output Short Circuit 2. Module failure	1. Check lamp line. 2. Seeking Manufacturer's Service
09	Abnormal start-up	1. Overheating of lamp 2. Lamp disconnection.	1. Whether the startup interval is too short or not? 2. Lamp disconnection
10	Reservation		
11	Overvoltage protection	1.Lamp Overheating	1. Inspection of Exhaust

Malfunction Code	Malfunction Description	Possible Causes	Solutions
		caused by exhaust failure 2. Lamp disconnection 3. Error in setting lamp rated voltage	2. Lamp disconnection 3. Reset the lamp rated voltage
12	Reservation		
13	Over-current protection	1. Over-exhaust 2. Lamp Abnormal	1. Adjustment volume of exhaust 2. Replacement of lamp
14	EEPROM Storage Failure	Power Running Time Arrival	Consulting Agent or Manufacturer
15	Low grid voltage	That the grid voltage is lower than the set value of FE.39 lasts for 6 seconds.	Check the grid voltage or the parameters set by FE.39.
16	Shutter fault	Abnormal shutter switch	Check whether the shutter is working properly
17	Excessive temp. of lamp box	Poor heat dissipation of the lamp or malfunction of the temp. sensor	1. Increase the exhaust 2. Reducing Operating Power 3.Replacement of Temp. Sensor
18	External Input Faults	Fault input by X terminal	Check the corresponding fault output of equipment
19	Running time arrival of lamp	The lamp running time has reached the set lamp running time	Replace the lamp and zero the lamp running time.

Malfunction Code	Malfunction Description	Possible Causes	Solutions
20	Communication timeout	Given the power or start-stop of the communication, the communication does not respond.	Check the communication line
21	Bus voltage anomaly	Anomaly self-check	Power on again after three minutes power-off, still consult the manufacturer if there is fault
22	Allowable running time arrival		Contact the agent for resolution
23	Power- off trigger	Delayed power-off function triggered	Machine will be power-off
24	Preheating overtime, lamp voltage is too low.	Preheating is not completed within the prescribed time	1.Replacement of matched voltage lamp 2.Extending lamp preheating time 3. Consulting manufacturers.

The fault warning code is represented by a byte, as shown in the following table：

Binary Bits	BIT7-BIT4	BIT3	BIT2	BIT1	BIT0
Warning function	Reservation	Arrival of allowable	Arrival of lamp	1：over current	The machine

		running time	running time		temperature is too high

Common warning code table:

Code	Meaning
01	01 The internal temperature of the machine is too high, the fan is damaged or the ambient temperature is too high.
02	Over-current, the current exceeds the long-term allowable current, and the excitation state warning 02 is generally normal.
03	01Warning、02 Warning
04	Arrival of Lamp running time
05	04 Warning、01 Warning
06	04 Warning、02 Warning
07	04 Warning、02 Warning、01 Warning
08	Arrival of allowable running time, please contact the agent.

When the temperature of the machine module is over 70 degrees Celsius, the machine temperature is too high to take effect. At this time, the BIT0 of the warning code is 1, and when the temperature is below 69 degrees Celsius, the warning is canceled.

When the output current is greater than the long-term allowable current value defined by FA.16, the over-current warning occurs and warning code BIT1 is 1, the warning will be canceled when the output current is less than FA.16-0.2A.

That is, when the warning code is 01, the machine temperature is too high and the output current is too high when the code is 02. If the two warnings exist simultaneously, the warning code is 03.

Common alarm solutions are as follows:

1. Machine Reporting Faults 05

Solution: Detecting the following two items

a. Is the three-phase input voltage normal?

b. Abnormal power-off

2. Machine Reporting Fault 01

Solution: If the moment of start-up reporting is 01, the problem is output short circuit.

3. Machine Reporting Faults 09

Solution: This situation can be divided into several situations

a. First check whether the lamp is connected correctly;

b. If the lamp is connected correctly, make sure that the lamp is cooled down.

4 machines reporting faults 11

Solution: If there are alarms 11, there are two situations.

a. It indicates that the lamp working voltage is higher than 1.1 times of the lamp rated voltage that is set. At this time, it is necessary to increase the rated lamp rated voltage (FA.01).

b. If it is at the moment of standby, the lamp is extinguished, it should be that the lamp lower limit current is set too low, causing the lamp to extinguish the arc, and the value in FA.04 should be increased appropriately.

5. The lamp is on, but the power can't be adjusted.

Solution: first checking whether the given power is effectively transmitted to the power supply (see the given power). If the given power is normal, it needs to confirm whether the lamp exhaust is turned on or too large, if it is too large, it needs to reduce the exhaust or turn on the exhaust after the lamp is lit.

6 Power Supply Reporting Faults 13 While Running

Solution: Fault 13 is over-current protection. When the output current of power supply continuously exceeds the value set by FA.16 for more than 10 minutes, the power supply will stop output to prevent excessive current from burning the power

supply. It is recommended to check the equal voltage and replace the matched lamp.

Chapter 8 Maintenance and Care

Affected by many factors such as ambient temperature, humidity, dust, vibration and aging of power supply components, the power supply has hidden troubles. In order to ensure long-term and stable operation of the power supply, the power supply must be regularly maintained.

If the power supply is transported over long distances, check whether the components are intact and the screws are tight before using. During normal using, regularly clean the dust inside of the power supply and check if the screws are loose etc.

> ➢ The inspection must be carried out by a professional technician and the electricity of the power supply should be cut off.

8.1 Daily Inspection and Maintenance

Through daily inspection and maintenance, you can find all kinds of abnormal conditions in time, find out the cause of the abnormality in time, eliminate the hidden troubles early, ensure the normal operation of the equipment, and extend the service life of the power supply. Please refer to the table below for daily inspection and maintenance.

Chart of Inspection and Maintenance

Inspected object	Inspection Cycle		Inspected contents	Discrimination standard
	Anytime	Regular		
Operating environment	√		1. Temp., humidity 2. Dust, moisture 3. Gas	1. The power cover should be opened when the temp. is over 40 °C, the humidity is below 90%, no frost 2. No odor, no flammable, explosive gas
Cooling system		√	1.Installation environment 2.Fan of power supply	1. The installation environment is well ventilated and the air duct is non-blocking. 2. The fan runs normally without abnormal noise
Power supply	√		1.Vibration, temperature rise 2. Noise 3. Wires and terminals	1. Smooth vibration, normal air outlet temperature 2. No abnormal noise, no odor 3. The fastening screws are not loose
Lamp	√		1.Vibration, temperature rise 2. Noise	1. Smooth operation and normal temperature 2. No abnormalities, uneven noise
Input and output parameters	√		1. Input voltage 2. Output current	1. The input voltage is within the specified range. 2. The output current is below the rated value

> ⚠ ➢ The power supply has been tested for electrical insulation before leaving the factory, and the user does not have to perform the high-voltage insulation testing.
>
> ➢ If the power supply must be tested for insulation, all input and output terminals (R, S, T, U, V) must be connected reliably. It is strictly forbidden to test the insulation of a single terminal. Please use a 500V megger for testing.
>
> ➢ The control loop can't be measured by megaohmmeter.

8.2 Inspection and Replacement of Consumable Parts

Some components in the electronic power supply will wear out or degrade during using. To ensure stable and reliable operation of the power supply, preventive maintenance of the power supply and replacement of parts if necessary.

8.2.1 Filter Capacitor

The pulsating current of the main circuit affects the performance of the aluminum electrolytic filter capacitor. The degree of influence is related to the ambient temperature and the operating conditions. The power supply used under normal conditions should be replaced with the electrolytic capacitor every 4 to 5 years.

When the electrolyte of the electrolytic capacitor leaks, the safety valve pops out or the capacitor body expands, it should be replaced immediately.

8.2.2 Cooling fan

The life of all cooling fans inside the electronic power supply is about 15,000 hours (that is, the power supply is used continuously for about two years). If the fan has abnormal sound or vibration, it should be replaced immediately.

8.3 Storage

After bought if the electronic power supply is temporarily not used or stored for a long time, the following items should be noted:

（1） The storage environment should meet the following table:：

Environmental characteristics	Requirements	remark
Ambient temp.	－20℃～60℃	Long-term storage temp. is not over 30°C, so as to avoid deterioration of capacitor characteristics, avoid condensation and freezing due to sudden temperature changes.
Relative humidity	20～90％	Plastic film sealing and desiccant can be used
Storage environment	No direct sunlight, no dust, no corrosive, flammable gas, no oil, steam, gas, dripping, vibration, less salt	

（2) If the electronic power supply is not used for a long time, it should be powered once every half year to restore the characteristics of the filter capacitor and check other functions of the power supply. When power is on, the voltage should be gradually increased by an auto-transformer, and the power-on time should be over half an hour.

Attention	➢	If the power supply is not used for a long time, the internal filter capacitor characteristics will decrease.

8.4 Warranty

The company will provide repair services based on the following conditions:

(1) If the malfunction or damage occurs under normal use, the company provides free repair or replacement during the warranty period (within 12 months from the date of purchase). If it is over 12 months, reasonable repair fee will be charged.

(2) Even within the warranty period, certain maintenance cost should be charged for the failure caused by the following reasons:

① Failure caused by improper operation and not follow the operating manual or exceed the standard specifications.

② Failure caused by self-repair and modification without permission.

③ Failure due to poor storage.

④ Failure caused when power supply is used for abnormal functions.

⑤ Machine damage caused by fire, salt erosion, gas corrosion, earthquakes, storms, floods, lightning, voltage abnormalities or other force majeure.

⑥ Even if the warranty period is exceeded, the company also provides lifetime paid repair service.