INTEPRO SYSTEMS

Intepro Systems

AFC Series

IGBT - Type

USER MANUAL

Version 1

Version History

Version No.	Release date	Writer	Description	Hardware version applied
V1.0	3-2015		Rev 1	

Intepro Systems provides a full range of technical support for our customers. Customers can contact our offices or customer service centers nearby, or our headquarters. This manual is subject to change without notice.

Safety Precautions

Danger

Beware of the high temperature of this equipment. **DO NOT <u>open the chassis without technician present or authorization from Intepro Systems</u>**.

- When the AFC needs to be moved or rewired, please shut down the instrument completely by disconnecting the input power lines and wait at least 20 minutes for the capacitors in the instrument to discharge to prevent electric shock.
- In order to ensure the personal safety of users, this series of power products must be grounded before use.
- In case of fire, please use dry powder fire extinguishers instead of liquid fire extinguishers to avoid the risk of electric shock.
- Liquid or other foreign objects must not be allowed to enter the cabinet of the grid simulator.

Attention

The application environment and storage methods affect the service life and reliability of the product. Extended use in the following conditions should be avoided:

- Ambient high or low temperatures or humidity beyond technical specifications (temperature: -20℃to 40℃; relative humidity: 5% to 95%);
- In direct sunlight or exposed to heat sources;
- Places susceptible to vibration or collision;
- Environments with dust, corrosive substances, salt and combustible gases;

Keep the air inlets and outlets unblocked to promote ventilation to avoid a rise in the internal temperature, which may shorten the service life of components, and affect the service life of the product;

Grid simulators not in service for a long time should be stored in a dry environment. The temperature range for storage is -40℃to 70℃.

To properly protect the equipment, only the personnel of Intepro Systems are allowed to open the front door or side cover. If the quality assurance seal is broken, required services will incur charges and guaranty is void.

Danger: conditions that may cause serious equipment damages or human casualties.

Attention: Conditions that may cause moderate injuries or damages to equipment.

Content

Chapter 1 Introduction

Preface

Intepro Systems would like to express our thanks for your purchase of our AC Power Source with its state-of-the-art technology and highly effective components. This manual explains how to install, operate and maintain the server correctly to get the best performance from the unit. Please read this manual carefully before installing and keep it near the unit for reference during operation.

Section 1. Equipment Description

The AFC series converters are highly effective and advanced technology. As such, the AC power source provides not only a pure and stable sine wave, but is protection for over-temperature, overload, and over-voltage with an inner controlling circuit.

Section 2. Equipment Diagram

1. Please refer to Figure 1-1 for an example Front Panel view (Model AFC-11010 shown).
2. An example Equipment Overview is shown in Figure 1-2.
3. Examples of the inside of the cabinet from the front and the rear are shown in Figures 1-3 and 1-4

Figure 1-1 Front Panel View Example

THREE PHASE PANEL FIGURE

IGBT/SPWM

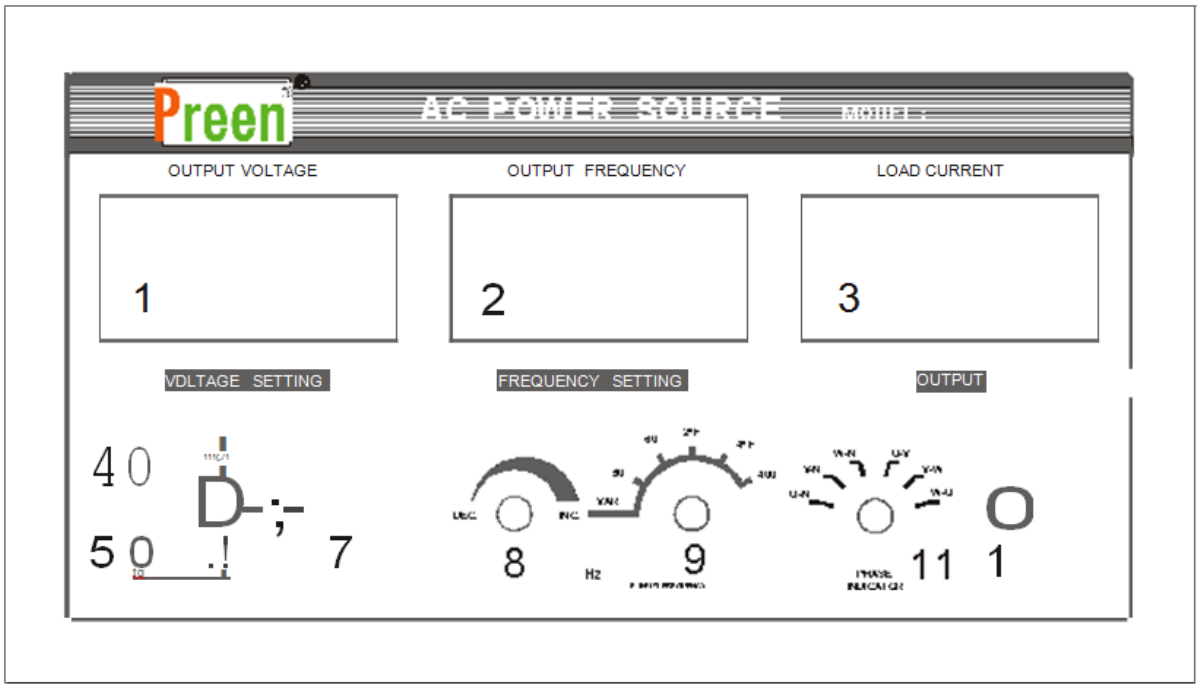


Figure 1-1a Diagram of Front Panel Controls
(See listing of labels on Page 8)

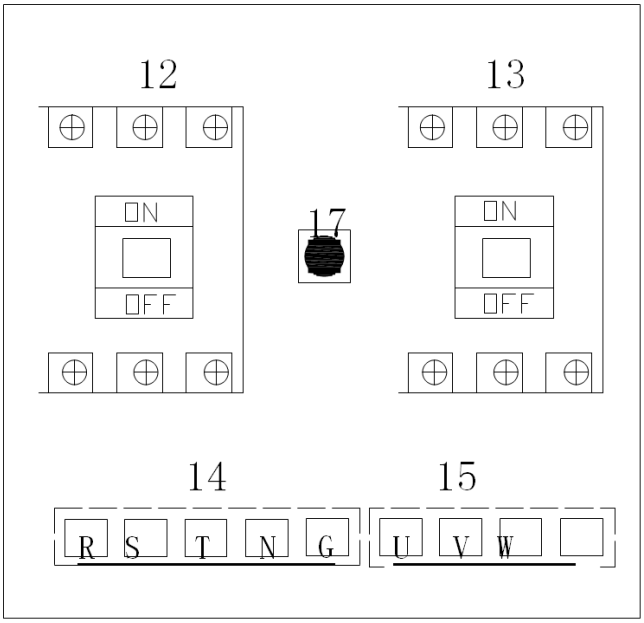


Figure 1-1b Three Front Panel

Chapter 1 Introduction

Section 3. Equipment Specification

Model			AFC-11500W	AFC-11001	AFC-11002	AFC-11003	AFC-11005	AFC-11008	AFC-11010	AFC-11015	AFC-11020	AFC-11030
Capacity (kVA)			0.5	1	2	3	5	8	10	15	20	30
Circuit Type			Transistor Amplifier		IGBT/PWM type							
Input	Phase		Single Phase									
	Wave		Sine Wave									
	Voltage		110V,120V,220V OR 277V		120V/208V, 220V/380V, OR 277V/480							
	Voltage Range		110V,120V,220,277 V±15%		120V±15%, 220V±15%, or 277V±15%							
	Frequency Range		50Hz±3Hz or 60Hz±3Hz									
	Power Range		0.85									
Output	Phase		Single Phase									
	Wave		Sine Wave									
	Voltage	Low	0~150V (L-N)		5V~150V (L-N)							
		High	0~300V (L-N)		10V~300V (L-N)							
	Frequency		47~63Hz, 50Hz, 60Hz; 2F, 4F, 400Hz (Option)									
	Frequency regulation		≦0.01%									
	Max Current	High(A)	2.1	4.2	8.3	12.5	20.8	33.3	41.7	62.5	83.3	125.0
		Low (A)	4.2	8.4	16.7	25	41.7	66.7	83.3	125.0	166.7	250.0
System	Line Regulation		≦0.5%		<1%							
	Load Regulation		≦±0.5%		<±1% (Linear Load)							
	Total harmonic distortion (THD)		≦0.5%		<2% (Linear Load)							
	Efficiency		≧70%		≧90%							
	Response Time		≦50 μ s		≦50ms							
	Crest Factor		1.4 : 1		3 : 1							
	Protection Device		Same as AFC-11002 plus output no fuse breaker		Input no fuse breaker, electronic circuit instant trip for over/low voltage, over current, over load, over temperature, and short circuit protection and alarm system							
Indicator	Display		LED									
	Voltage		Resolution 0.1V		Show Range: 0~600V, resolution 0.1V, accuracy: 0.15%FS+4Count							
	Current		0.001A	0.01A	Show Range: 0~700A, resolution 0.01A (<100A) / 0.1A (≧100A), accuracy: 0.15%FS+4Count							
	Power		0.1W	1W	Show Range: 3kW~75kW, resolution 0.01kW (<10kW) / 0.1kW (≧10kW), accuracy: 0.3%FS+4Count							
	Frequency		Resolution 0.1Hz		Show Range: 0~999.9Hz, resolution 0.1Hz, accuracy: 0.1%							
Environ-mental	Insulation equipment		≧DC500V 10MΩ									
	Withstand voltage insulation		AC 1800V 10mA/1 Min									
	Cooling system		Fan Cooling									
	Temperature		0°C ~ 45°C									
	Humidity		0 ~ 90% (Non-condensing)									
	Altitude		≦1500m									
Case Number			1	2				3			4	
Weight (Lb/Kg)			97/44	195/89	150/68	160/73	195/89	440/200	460/210	530/240	615/280	725/330

Section 3. Equipment Specification, continued

Model			AFC-31010	AFC-31015	AFC-31020	AFC-31030	AFC-31045	AFC-31060	AFC-31075
Capacity			10	15	20	30	45	60	75
Circuit Type			IGBT/PWM type						
Input	Phase		Three phase						
	Wave		Sine Wave						
	Voltage		120V/208V, 220V/380V, OR 277V/480V						
	Voltage range		120V/208V±15%, 220V/380V±15%, or 277V/480V±15%						
	Frequency range		50Hz±3Hz or 60Hz±3Hz						
	Power factor		0.85						
Output	Phase		Single phase						
	Wave		Sine						
	Voltage	Low	5V~150V (L-N)						
		High	10V~300V (L-N)						
	Frequency		47~63Hz, 50Hz, 60Hz; 2F, 4F, 400Hz (Option)						
	Frequency regulation		≦0.01%						
	Max Current	High (A)	47.1	62.5	83.3	125.0	187.5	250.0	312.5
		Low (A)	83.3	125.0	166.7	250.0	375.0	500.0	650.0
System	Line regulation		<1%						
	Load regulation		<±1% (Linear Load)						
	Total harmonic distortion (THD)		<2% (Linear Load)						
	Efficiency		≧90%						
	Response Time		≦50ms						
	Crest factor		3 : 1						
	Protection device		Input no fuse breaker, electronic circuit instant trip for over/low voltage, over current, over load, over temperature, and short circuit protection and alarm system						
Indicator	Display		LED						
	Voltage		Show Range: 0~600V, resolution 0.1V, accuracy: 0.15%FS+4Count						
	Current		Show Range: 0~700A, resolution 0.01A (<100A) / 0.1A (≧100A), accuracy: 0.15%FS+4Count						
	Power		Show Range: 3kW~75kW, resolution 0.01kW (<10kW) / 0.1kW (≧10kW), accuracy: 0.3%FS+4Count						
	Frequency		Show Range: 0~999.9Hz, resolution 0.1Hz, accuracy: 0.1%						
Environmental	Insulation resistance		≧DC500V 10MΩ						
	Withstand voltage insulation		AC 1800V 10mA/1 Min						
	Cooling System		Fan Cooling						
	Temperature		0°C ~ 45°C						
	Humidity		0 ~ 90% (Non-condensing)						
	Altitude		≦1500m						
Case No.			3		4		5		
Weight (Lb/Kg)			460/210	530/240	640/290	750/340	1190/540	1340/610	1470/670

Figure 1-2 Equipment Overview Example (Model AFC-11010 shown)

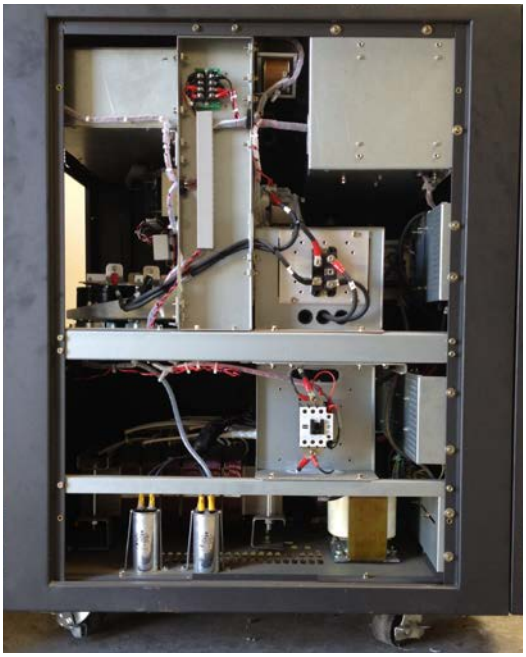


Figure 1-3 Example of Cabinet Inside
(Model AFC-11010)

Figure 1-4 Rear View Example
(Model AFC-11010)

Chapter 2 Operating

Please follow the steps of this manual to turn on the unit.

Section 1. Front panel instruction (please refer to Figures 1-1 and 1-1a, 1-1b as well as Figures 1-2 and 1-3)

「1」— Output voltage display meter: displays output voltage value digitally.

「2」— Output frequency display meter: displays output frequency value digitally.

「3」— Output current display meter: displays output current value digitally.

「4」— Upper limit voltage fine adjustment knob: setting voltage in the upper 10% ~ 25% of the standard voltage.

「5」— Lower limit voltage fine adjustment knob:setting voltage in the lower 10% ~ 30% of the standard voltage.

「6」— Three-segment voltage select switch: upper- upper limit voltage, middle- standard voltage, lower- lower limit voltage.

「7」— Standard output voltage fine adjustment knob

「8」— Frequency select switch: fixed frequency 50 Hz to 60Hz and variable frequency.

「9」— Variable frequency knob.

「10」— RESET button:the button to postpone starting-up or reset for shut down, buzzer alarm.

「11」—Three phase output current display select switch: selecting display of the R-S-T of each phase（only in three phase unit）.

「12」— Input breaker.

「13」— Output breaker.

「14」— Input Copper Bar: provides input cable for wiring.

「15」— Output Copper Bar: provides output cable for wiring.

「16」— Emergency button.

「17」— HI/LO selecting switch: press 「HI」 then output voltage 10V~300V；press 「LO」then output voltage 5V~150Vcontinuous variable.

Section 2. Operating procedure

1. Please refer to the specifications （Table 1.） for your model before installing the unit.
2. Please check the input power voltage is correct using a voltage meter before turning on the input power.
3. Turn the output voltage fine adjustment knob around the minimum
4. Please turn the breaker 「OFF」 before connecting the input power cable.
5. Make sure the voltage is as specified and connect the input power cable.
6. Once connections and settings are correct, turn on the power.

Section 3. Operating instruction

1. Please turn the breaker「OFF」first.
2. Check the switches of the unit by turning various function knobs on the panel to inspect whether they are loose or tight.
3. For safety, please make sure the input voltage is correct prior to connecting the input power.
4. Turn on the input power. The alarm should sound after 3 to 5 seconds. Press 「Reset」 on the panel. The unit will supply output voltage（device start-up is gradual.
5. Select the output frequency. You can select the frequency any time without turning off the unit, but turn off the load first.

   Fixed frequency output: directly switches to the setting on the panel. The frequency of the display meter is the output.

   Variable frequency output: select 「VAR」 and then fine adjust the VAR (variable frequency） to the output frequency needed using the knob.

For example,the required frequency is 55 Hz , switch「VAR」first, and fine adjust the variable frequency knob until the frequency is up to「55」.

6. Standard output voltage adjustment：switch the「Three-segment voltage select switch to the standard position..Then fine adjust the「standard output voltage adjustment knob」to set the required output voltage.

7. Upper limit voltage adjustment: switch the「Three-segment voltage select switch」to the upper position. Then fine adjust the upper right side knob using a small screwdriver to acquire the required output voltage.

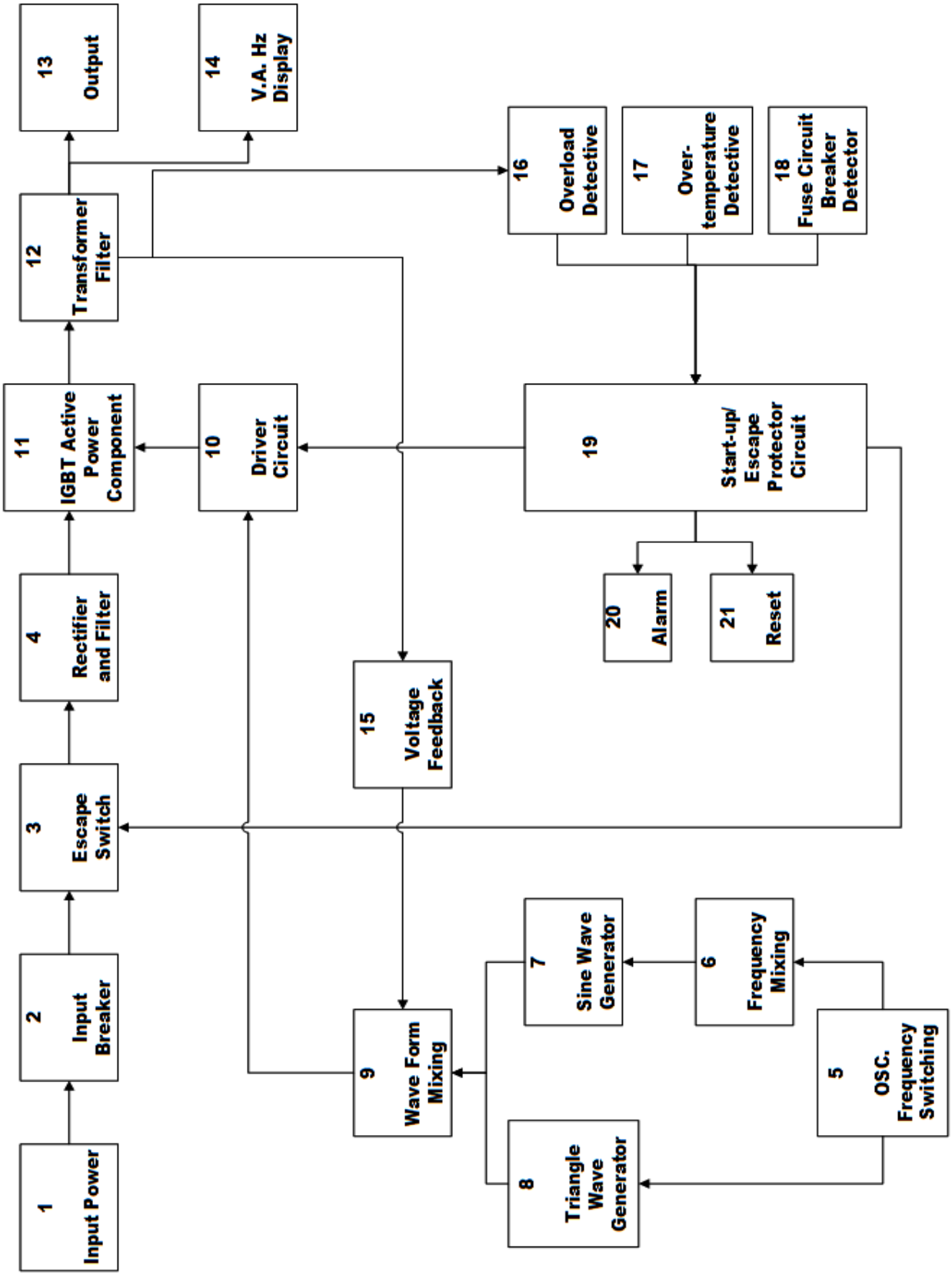
8. Lower limit voltage adjustment: switch the「Three-segment voltage select switch」to the lower position. Then fine adjust the down-right side knob using a small screwdriver to acquire the required output voltage.

9. After verifying the above steps are correct, the load can be connected to the terminal . block of the unit

Remarks:

This unit includes output overload and short-circuit protection. If an output overload or short-circuit occurs, this protection will cut down the output power and sound an alarm. When this occurs, please turn off the load and press「Reset」to stop the alarm. When the alarm is stopped, please confirm the output voltage is normal and turn on the load.

Section 1. The whole function diagram



Section 2. Function diagram instruction

1.Input power: the connection from the power terminal to the input terminal block of unit.

2.Input breaker: controls the electricity to connect the unit.

3.Escape switch: protector with sag、surge、overload and over-temperature.

4. Rectifier and filter: to convert AC voltage to stable DC voltage.

5.OSC frequency switching: the select switching of the fixed frequency and variable frequency.

6.Frequency mixing: the signal processing of the fixed frequency and the variable frequency.

7.Sine wave generator: generates sine wave.

8. Triangle wave generator: generates triangle wave.

9.Wave form mixing: PWM mixing of sine wave and triangle wave.

10.Driver circuit: To amplify PWM signal to drive IGBT power component.

11.IGBT active power component: generates output voltage（includes PWM）.

12.Transformer filter: steps up and filters the output voltage of the IGBT.

13.Output: outputs voltage to the output terminal block.

14.V、A、Hz display: output voltage, current and frequency digital display.

15.Voltage feedback: to stabilize output voltage amplitude.

16.Overload detective: feeds back overload signal to control circuit.

17.Over-temperature detective: feeds back over-temperature signal to control circuit.

18.FUSE circuit breaker detector: feeds back fuse circuit breaker signal to control circuit.

19.Start-up/escape protection circuit: receives the signal of the overload, over-temperature and trips the FUSE circuit breaker to escape.

20.Alarm: sounds when overload, over-temperature and fuse break occur

21.Reset: when the equipment is cut off and tripped automatically,press「Reset」to restart.

Chapter 4. Troubleshooting

Section 1. Introduction

Our qualified product must have passed the test calibration and detailed inspection by our Quality Assurance staff.

If the unit cannot operate normally, which may be caused by the environment, person or other unknown factors, please follow the steps outlined in the troubleshooting chart.

Section 2. Trouble shooting chart

NO.	Description	Analysis	Solution
1	Does not start up, and no response	The utility is abnormal, or connection is abnormal	Check the utility and the phase sequence of input voltage, eliminate the errors, and restart.
2	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “04” in the protection board.	Input under-voltage	Check the input voltage, eliminate the errors, and restart
3	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “07” in the protection board.	① R phase module error; ② R phase circuit short.	Please contact our service department or salesperson..
4	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “06” in the protection board.	③ S phase module error; ① S phase circuit short.	Please contact our service department or salesperson.
5	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “05” in the protection board.	④ T phase module error; ① T phase circuit short.	Please contact our service department or salesperson.
6	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “08” in the protection board.	Overload	Disconnect unnecessary load and restart.
7	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “02” in the protection board.	Internal FUSE has blown	Check whether the fuse has blown. If it did, please contact our service department or salesperson
8	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “01” in the protection board.	The output is over-voltage	Please contact our service department or salesperson.
9	Connect the utility to the input, but cannot RESET. At this time, LED indicator displays “03” in the protection board.	The temperature protection circuit is abnormal	Check if the internal temperature is abnormal in the temperature control switch and the circuit. Eliminate the errors, and restart.
10	There is something wrong with the fans	There is something in the air channel	Clear air channel
11	Display function is abnormal	Check that errors exist in the tables, or the sample circuit is abnormal.	Replace the tables and check the sample circuit.

Chapter 4. Trouble shooting

Common faults code table

Fault code	Cause	Fault code	Cause
00	Start normally	05	IGBT over-current in T phase
01	R、S、T phase over-voltage	06	IGBT over-current in S phase
02	Fault on the fuse breaker	07	IGBT over-current in R phase
03	Over-temperature	08	overload
04	Input under-voltage	c0	External error

When you contact our service department or salesperson, please provide the common fault code displayed by the LED indicator in the protection board. You will also need the model and serial number of the equipment.(see the rear of the chassis).

Chapter 5 Equipment maintenance

Regular and correct maintenance is essential to extend the life time of the equipment.

Section 1. Moving

1. Power off the input power source (breaker or switchboard） connected to the unit and disconnect all cables.
2. Do not move the converter while upside down.
3. Handle with care and avoid collisions.

Section 2. Positioning

1. Do not place the converter on uneven ground or slopes.
2. Keep the unit away from direct sunlight, rain or high humidity.
3. Keep the unit away from fire or other heat sources to avoid overheating.
4. For proper ventilation, position the converter with at least 6 inches (10 cm) clearance at rear panel and wall.
5. The working temperature is 0~45℃, humidity of 10~90%.
6. Keep the unit away from corrosive gases or liquids.

Section 3. Maintenance

1. Keep the working place clean and dry to prevent rodents in the unit.
2. Verify whether the function of the converter is correct.
3. Do not allow anything to rest on the power cord to avoid inadvertent damage or hazards that may occur. Avoid locating the power cord in high traffic areas.
4. Never put any kind of objects into the unit through the ventilation openings as they may touch dangerous voltage points or short out parts that could result in fire or electrical shock.
5. Service to the unit should be done by factory-trained person only. Opening or removing covers may expose dangerous voltage points or other hazards.

Chapter 5 Equipment maintenance

Section 4. After - Sales Service

Intepro Systems provides a full range of technical support to customers. Customers are encouraged to contact our branch office or our technical personnel when you have purchased our product.

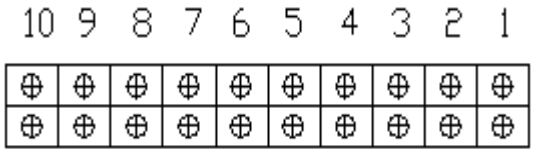
For the details of warranty, please refer to the terms of warranty. We provide paid customization service packages at different levels, including fast response, preventive maintenance, and warranty renewal service. Please contact the local service centers of our company.

- Service Telephone
  USA: +1.714.953.2686
  UK/Europe: +44.1251.875600
  Asia: +86.755.86500020

- On-line technical service: www.InteproATE.com

- Intepro Systems America, LP
  14712-A Franklin Avenue
  Tustin, CA 92780
  USA
  Tel: +1.714.953.2686
  Fax: +1.714.673.6567

☐ Adding terminals for remote control and terminals for remote control specification：



Remote control terminal panel

Input DC4-20mA at 1,2; control output voltage.

- Choose exterior(EXT) to control voltage
- Connect 1 to positive, connect 2 to negative
- No output voltage will be generated if wrong positive and negative connection occurs

3，4，5 Control output frequency：

- (EXT) choose exterior (EXT) to control frequency
- When short circuit occurs at 3,4, output frequency is 50Hz
- When short circuit occurs at 4,5, output frequency is 60Hz
- When short circuit occurs at 3,4,5, output frequency is adjustable; (VR controls the frequency through adjustment on the panel)

6，7 Alert control signal：

Short circuit occurs at 6、7: When the machine is in a normal state and the machine alerts and buzzer sounds, the open circuit has taken place at 6,7.

8，9: Signal at high voltage and low voltage contact joint

- When idle connection occurs at 8、9, output voltage is 5-150V（low）。
- When short circuit occurs at 8、9, output voltage is 10-300V（high）。

10. Screen grounding terminal

Additional Specifications

Input：△ 380V ， Y 220V/380V				Output1ψ	
Model	Input			Output	
AFC	Imax	NFB	Cable	Imax	Cable
☐1.5k	4A	10A	0.6mm^2	LO：12.5A HI：6.25A	1.25mm^2
□ 2k	5A	10A	0.6mm^2	LO：16.7A HI：8.3A	3.5mm^2
□ 3k	7A	10A	0.75mm^2	LO：25.0A HI：12.5A	5.5mm^2
□ 5k	12A	15A	1.25mm^2	LO：41.7A HI：20.8A	8.0mm^2
□ 6k	14A	15A	2.0mm^2	LO：50.0A HI：25.0A	14.0mm^2
☐7.5k	18A	20A	3.5mm^2	LO：62.5A HI：31.3A	22.0mm^2
□ 8k	19A	30A	3.5mm^2	LO：66.7A HI：33.3A	22.0mm^2
☐10k	24A	30A	5.5mm^2	LO：83.3A HI：41.7A	30.0mm^2
☐15k	36A	40A	8.0mm^2	LO：125.0A HI：62.5A	50.0mm^2
☐20k	48A	50A	14.0mm^2	LO：166.7A HI：83.3A	80.0mm^2
☐30k	72A	75A	22.0mm^2	LO：250.0A HI：125.0A	150.0mm^2
☐45k	108A	125A	50.0mm^2	LO：375.0A HI：187.5A	120mm^2*2
☐60k	144A	200A	80.0mm^2	LO：500.0A HI：250.0A	120mm^2*3
☐100k	212A	250A	120.0mm^2	LO：833.3A HI：416.7A	120mm^2*4
☐_					
Input：△ 220V ， Y 128V/220V				**Output1ψ**	
Model	**Input**			**Output**	
AFC	**Imax**	**NFB**	**Cable**	**Imax**	**Cable**
☐10K	41A	50A	8.0mm^2	LO：83.3A HI：41.7A	22.0mm^2
☐15k	61A	75A	14.0mm^2	LO：125.0A HI：62.5A	38.0mm^2
☐20k	82A	90A	22.0mm^2	LO：166.7A HI：83.3A	80.0mm^2
☐30k	122A	125A	38.0mm^2	LO：250.0A HI：125.0A	150.0mm^2
☐_					

Table 1-

Additional Specifications

Input：△220V ，Y128V/220V				Output1ψ	
Model	Input			Output	
AFC	Imax	NFB	Cable	Imax	Cable
□1.5k	11A	15A	2.0mm^2	LO：12.5A HI：6.25A	1.25mm^2
□2k	15A	20A	3.5mm^2	LO：16.7A HI：8.3A	3.5mm^2
□3k	20A	30A	3.5mm^2	LO：25.0A HI：12.5A	5.5mm^2
□5k	35A	40A	8.0mm^2	LO：41.7A HI：20.8A	14.0mm^2
□6k	43A	50A	14.0mm^2	LO：50.0A HI：25.0A	14.0mm^2
□7.5k	53A	60A	14.0mm^2	LO：62.5A HI：31.3A	22.0mm^2
□8k	57A	60A	22.0mm^2	LO：66.7A HI：33.3A	22.0mm^2
□10k	65A	100A	22.0mm^2	LO：83.3A HI：41.7A	30.0mm^2
□15k	98A	150A	38.0mm^2	LO：125.0A HI：62.5A	50.0mm^2
□20k	142A	200A	60.0mm^2	LO：166.7A HI：83.3A	80.0mm^2
□30k	213A	300A	100.0mm^2	LO：250.0A HI：125.0A	120.0mm^2
□					

Input：△220V ，Y128V/220V				Output3ψ	
Model	Input			Output	
AFC	Imax	NFB	Cable	Imax	Cable
□ 3k	12A	15A	2.0mm^2	LO：8.3A HI：4.2A	1.5mm^2
□ 6k	24A	30A	5.5mm^2	LO：16.7A HI：8.3A	3.5mm^2
□10k	41A	50A	8.0mm^2	LO：27.8A HI：13.9A	5.5mm^2
□15k	60A	75A	14.0mm^2	LO：41.7A HI：20.8A	8.0mm^2
□20k	82A	90A	22.0mm^2	LO：55.6A HI：27.8A	14.0mm^2
□30k	122A	125A	38.0mm^2	LO：83.3A HI：41.7A	22.0mm^2
□					

Table 1-2

Additional Specifications

Input：△ 380V ， Y 220V/380V				Output3ψ	
Model	Input			Output	
AFC	Imax	NFB	Cable	Imax	Cable
☐1.5k	4A	10A	0.6mm^2	LO：4.2A HI：2.1A	0.6mm^2
□ 2k	5A	10A	0.6mm^2	LO：5.6A HI：2.8A	0.6mm^2
□ 3k	8A	10A	0.75mm^2	LO：8.3A HI：4.2A	0.9mm^2
□ 5k	12A	15A	1.25mm^2	LO：13.9A HI：6.9A	2.0mm^2
□ 6k	14A	15A	2.0mm^2	LO：16.7A HI：8.3A	3.5mm^2
□ 8k	19A	30A	3.5mm^2	LO：22.2A HI：11.1A	5.5mm^2
☐10k	24A	30A	5.5mm^2	LO：27.8A HI：13.9A	5.5mm^2
☐15k	36A	40A	8.0mm^2	LO：41.7A HI：20.8A	8.0mm^2
☐20k	48A	50A	14.0mm^2	LO：55.6A HI：27.8A	14.0mm^2
☐30k	72A	75A	22.0mm^2	LO：83.3A HI：41.7A	22.0mm^2
☐45k	108A	125A	38.0mm^2	LO：125.0A HI：62.5A	38.0mm^2
☐60k	150A	150A	60.0mm^2	LO：166.7A HI：83.3A	60.0mm^2
☐75k	180A	187.5A	100.0mm^2	LO：208.3A HI：104.2A	100.0mm^2
☐90k	216A	225A	120.0mm^2	LO：250.0A HI：125.0A	150.0mm^2
☐100k	240A	250A	150.0mm^2	LO：277.8A HI：138.9A	150.0mm^2
☐120k	283A	300A	200.0mm^2	LO：333.3A HI：166.7A	200.0mm^2
☐150k	354A	400A	120mm^2*2	LO：416.7A HI：208.3A	120mm^2*2
☐200k	472A	500A	120mm^2*2	LO：555.6A HI：277.8A	120mm^2*3
☐300k	707A	800A	120mm^2*3	LO：833.3A HI：416.7A	120mm^2*4
☐400k	998A	1000A	120mm^2*5	LO：1111.1A HI：555.6A	120mm^2*5
☐500k	1248A	1300A	120mm^2*6	LO：1388.9A HI：694.4A	120mm^2*6
☐600k	1497A	1500A	120mm^2*7	LO：1666.7A HI：833.3A	120mm^2*7

Table 1-3

INTEPRO SYSTEMS

Quality

Service

Innovation

Warranty Card

Dear _____,

Thanks for your support and patronage. This card is to ensure that in case the grid simulators you have purchased (model: _____, serial number:_____fail in normal conditions of use within a year because of the process error or component deterioration, Intepro Systems, LP. will have responsibility to provide after-sales service for free.

Please note:

The machine is required to be installed and used properly. Do not modify the structure, circuit or component.

1. If the machine has faults, please call us or pack the machine properly and indicate the faults before sending back to our company. We will serve you as soon as possible.
2. If the warranty period expires, and the customer keeps the card, we will charge a reasonable fee after the completion of repair.

Attn: _____ Date:_____