

SERVICE MANUAL

Titan 6/10(S) DSP Model

Parallel Redundancy

The Second edition

forza
POWER TECHNOLOGIES

warning

- 1、 High voltage exists inside UPS. To avoid accidental harm , not_professional people please not open up the DOS shell .
- 2、 You must cut off the connection between the Line and Battery before the examine and repair.
- 3、 You shouldn't wear metal conductor such as watches and bracelets in time of the examine and repair.
- 4、 You should wear preventing_static_handring when you are taking apart , installing and repairing PCBA , otherwise CPU、IC、IGBT components tend to be harmed by static.
- 5、 Examining and Repairing tools must be assured credible and insulative.
- 6、 You'd better use DC steady power to turn on the machine while limiting the electric current when you are doing total_machine test and PCBA test, avoiding PCBA board to be badly injured.
- 7、 Please pay attention to make double_channels' probe _grounding_ line at the same level when you use double_trace oscillograph.

Directory

1、Electrical Standard	4
2、Circuit Chart	5
3、Work Principle.....	5
3.1 Work Power Circuit	5
3.2 Boot-strap Circuit	6
3.3 PFC/BOOST Circuit	6
3.4 Inverter Circuit	7
3.5 Bypass And Inverter Circuit	7
3.6 Charger Circuit (only for standard UPS)	8
3.7 Charger Circuit (only for long backup time UPS)	8
3.8 Control Circuit.....	9
4、Every PCB Function Description.....	10
5、Every Type's Model Port Setting	12
6、Indicator Lights' state And Meanings	13
7、Clients' Problems Analyze And Settle On The Spot	15
8、Voltage Wave	21
9、Total machine Frame Chart	24

Electrical Standard

Type	6K	6KS	10K	10KS
Rated capacity	6KVA/4.2KW		10KVA/7KW	
<i>Input</i>				
voltage	220VAC			
Frequency	50HZ \pm 8 %			
Power factor	\geq 0.98			
Phase connection	1 phase 3 connections			
Max current	31A		50A	
<i>Output</i>				
Voltage	220V \pm 1 %			
phase connection	1 phase 3 connections			
Frequency stability	Batte	0.1 %		
	Line	Be synchronous with \pm 4HZ		
Instantaneous response	<5% (50% - 100% - 50% linear load change)			
Wave distortion	<2% (linear load)			

Overload(line mode)	> 105% turn to bypass after 10 mins
overload (line mode)	> 130% turn to bypass after 1 seconds , turn off after 1 mins
overload (battery mode)	> 105% cut off output after 10 seconds and alarm
efficiency (fully loaded)	> 88%
<i>transfer time</i>	
Line mode-- battery mode	0ms
inverter mode -- bypass mode	0ms
bypass mode -- inverter mode	0ms
noise	≤55dB
temperature	0°C to 40°C
humidity	<95%
Alarm setting	BUZZER sounds and lights glitter double caution

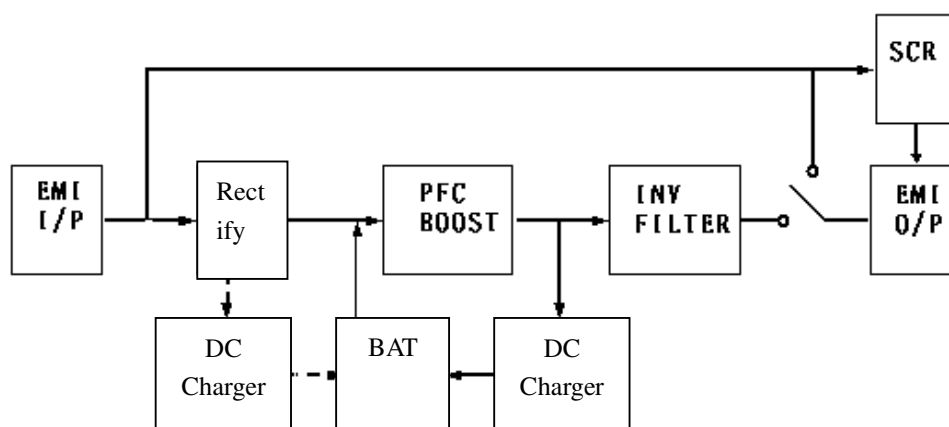
Communication ports	RS-232 , AS400 , RS485 , SNMP			
weight	84kg	35kg	93kg	38kg
Appearance measure W*D*H(mm)	260mm×717mm×570mm			

Reference data

item	data
+BUS voltage	345V±2V
-BUS voltage	-345V±2V
+BUS voltage absolute value difference	< 3V
balance voltage (empty load)	< 500mV
Charger voltage	274V±0.5% (leave factory specification : 274±0.5V)

Please check the machine if the data upwards exceed the rating.

Circuit Chart

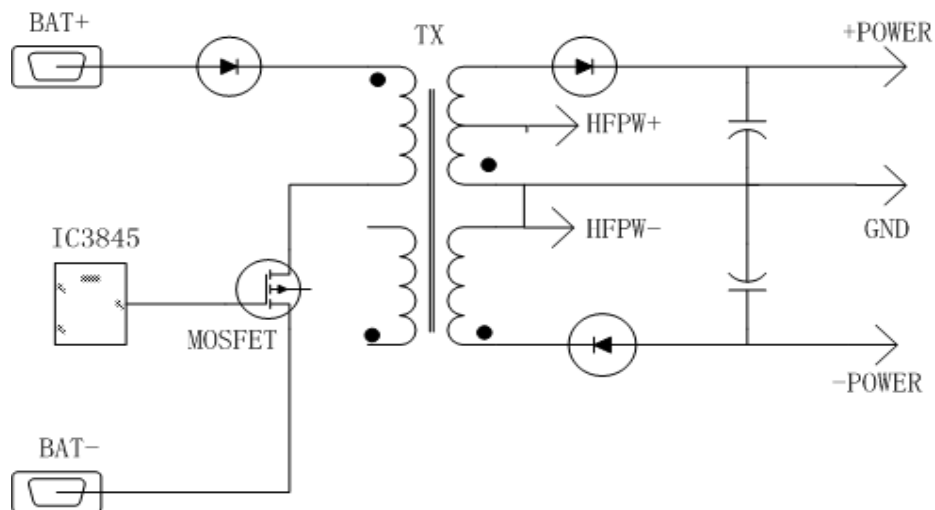


Circuit circle chart (broken line means charger board with the long backup time UPS, real line means charger board with the standard UPS)

work principle

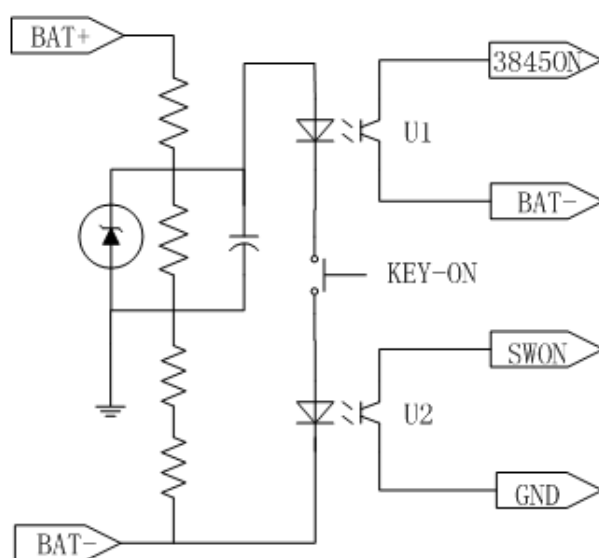
1 . Work power circuit

This work power circuit is a frame with isolated return, When you electrify under line mode or press the open key under battery mode, IC3845 Power will set up, 3845 starts to work, then will drive the MOSFET to work by export PWM wave .The transformer TX will Storage energy when MOSFET is open and it will supply for whole UPS system work power when MOSFET is shut down. This circuit supplies + 20V、 $\pm 15V$ 、+ 12V、+ 5V、12V(FAN) power, which provides work power for every component. At the same time, it also provides high frequency HFPW+/HFPW-, which supplies power to charger board and other drive board.



work power circuit

2 . boot-strap circuit



boot-strap circuit

Press the open key, then U1, U2 are open ; U1's connection can make work power set up, U2's connection will send out SW-ON signal. SWSTUTS boot -strap signals that be produced by Resistance's separate voltage then supply to CPU, when CPU receive this high level signal, it will boot-strap.

Press the shut down key, CPU will send out SHUTDOWN high level signal under battery mode, which will make S.D and SW-ON signal be low signal through a reverse implement of control board, UPS will stop working by lowering work power. If UPS work under line mode, PSDR board's work power will still exist, but turn to Bypass mode.

If UPS work under line INV mode, press boot-strap >0.5 secs, UPS will be at battery maintenance state, line indicator light, bypass indicator light, battery indicator light will work circularly, then turn to line INV state after 10secs. In period of battery maintenance, press boot-strap >0.5 sec again, it will turn to line INV state.

In period of battery Maintenance, UPS will turn to battery INV mode if line is break off; UPS will return to line INV mode if cut off the connection of the battery and UPS.

Press the boot-strap >0.5 secs when UPS work in battery state, the buzzer will stop alarming with one alarm/4sec(whist alarm), and press boot-strap again will come back to alarm with one alarm/4sec.

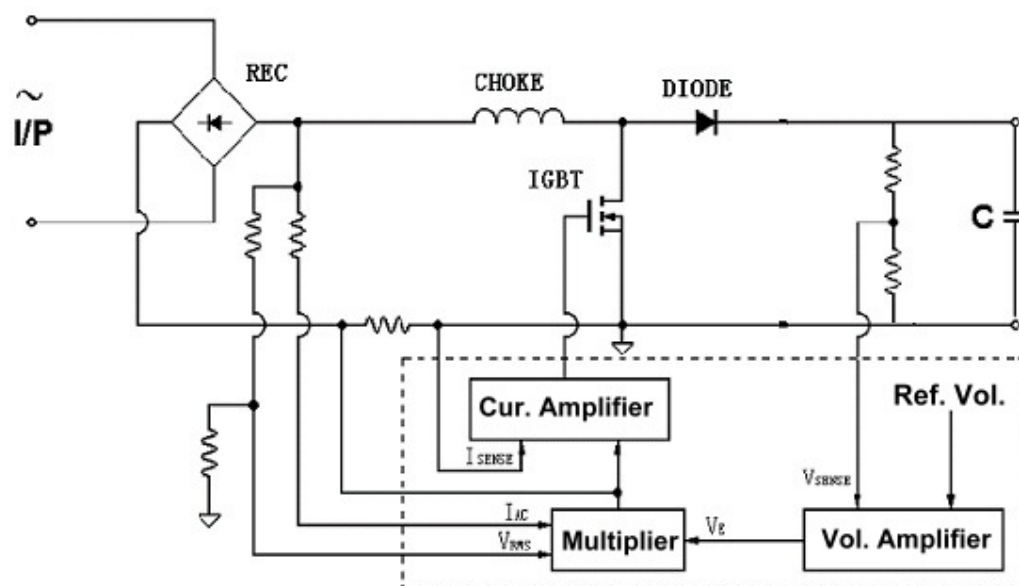
3 . PFC/boost circuit

PFC : Power Factor Correction

Only when positive pole voltage higher than cathode voltage, diode can lead, so diode current wave presents high tme characteristic through line commutate, such current wave not only has lots of low frequency wave, but also will reduce UPS input power factor.

Add one stair DC/DC PFC after commuting, you can correct current for sine wave by change switch, that will make input power factor close to 1.

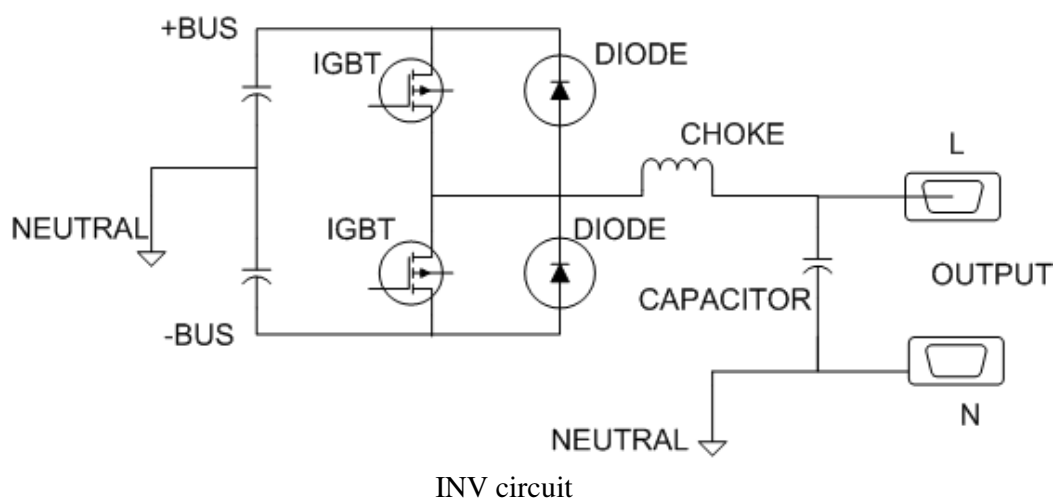
As following chart, when IGBT is open, DIODE is closed, Inductance CHOKE will store up energy and its current will increase by degrees; when IGBT is closed, inductance will release its energy, DIODE is open, and inductance current will decrease by degrees. So we can control inductance current wave by adjusting IGBT open and closed time.



PFC circuit

The correction of power factor is accomplished by DSP, broken line frame shows sketch map of DSP dealing with PFC. Firstly, hardware frame sends out sampling signal to DSP, then DSP output a set of pulse signal to drive IGBT 's on or off. The purpose of power factor correction (P.F.C.) circuit is to make the input current and voltage in phase, therefore achieve a high input power factor near to 1.

4 . Inverter Circuit



The PFC/BOOST circuit converters + , - DC BUS (absolute value is $345V \pm 5V$) voltage for the input of inverter circuit of half bridge configuration. The PWM signal, which is produced by control board, will drive INV IGBT to lead alternately through IGBT driver. The output of IGBT is filtered by a LC circuit to reduce the o/p voltage harmonics distortion and produces sine wave.

5 . Bypass And Inverter Circuit

UPS is changed between bypass and inverter mode through inverter relay and bypass SCR.

Bypass mode: Line arrives at UPS output port through input air switch, bypass switch, inverter relay often_ closed point and load sense transformer.

Inverter mode: Inverter output arrives at UPS output port through filter inductance, inverter relay, inverter relay often_ closed end (this point is closed at inverter mode) and load sense transformer.

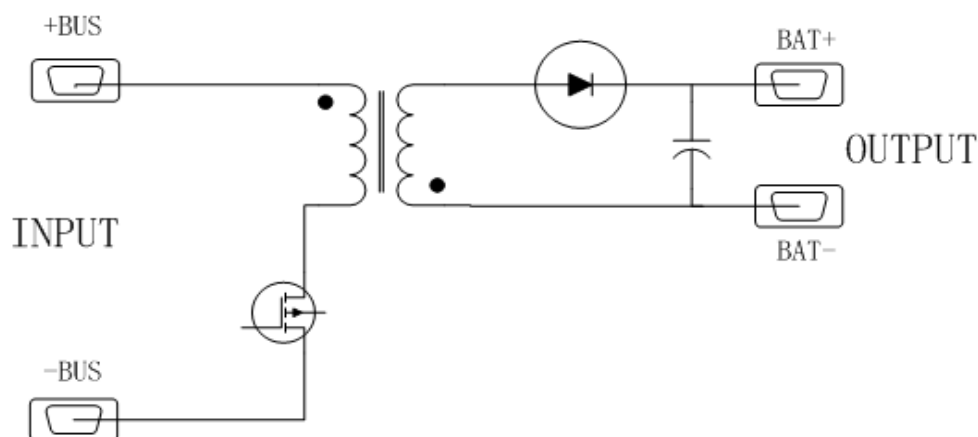
If inverter fault, bypass SCR will be driven and open at once, so can realize conversion between inverter and bypass with no interrupt.

6 . charger circuit (only for standard UPS)

Standard UPS has one DC charger board , input comes from BUS voltage, output max current is 2A ;

Standard UPS charger is a model isolated return transformer.

the basal circuit model of isolated return transformer



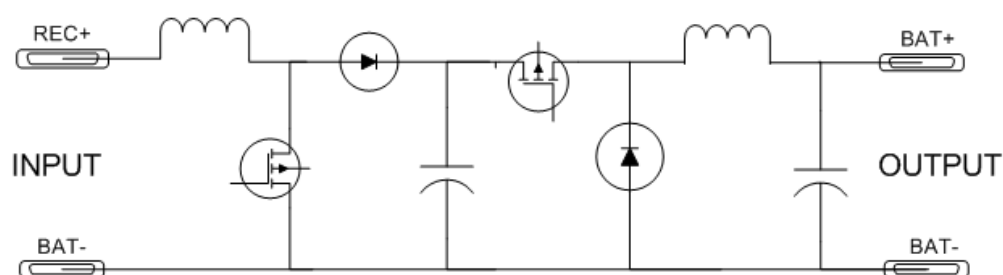
standard UPS charger circuit

Standard UPS charger work principle: 3845 outputs a series of rectangular wave with PWM adjustable, drives transformer elementary to get a AC pulse, induces accessory to produce two lines of pulse in-phase, controls MOSFET open or close, work mode according to the isolated return transformer forward.

charger characteristic,

It can be on-off . When under line mode, charger becomes to work and charge for battery; when under battery mode, charger stop working.

7 . charger circuit (only for long backup time UPS)



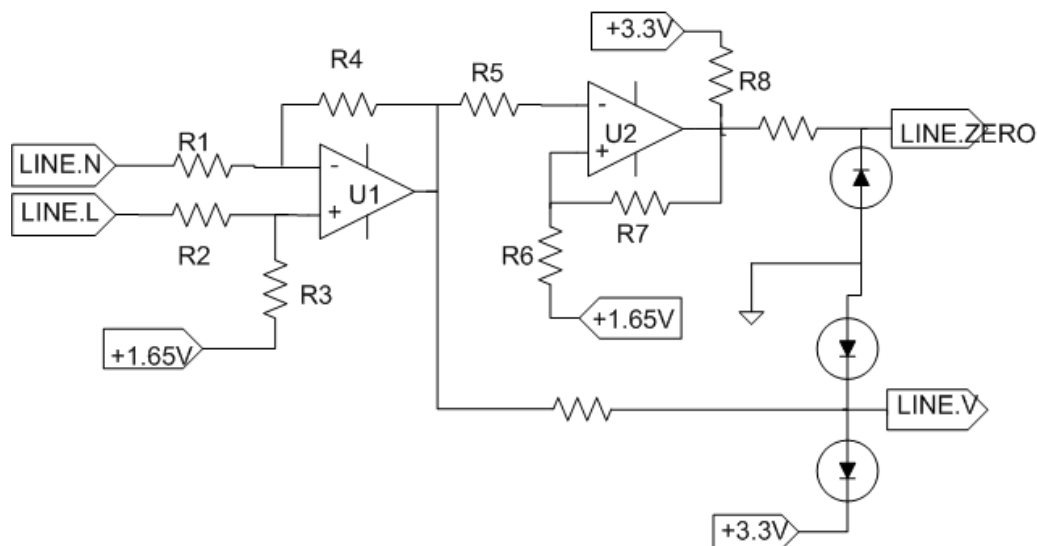
long backup time UPS charger circuit

The work frame of long backup time UPS charger circuit is a BOOST-BUCK frame; its input voltage , which comes from line commutating, firstly through a BOOST circuit, secondly through a BUCK circuit, afterward output for battery charging; when output voltage > input voltage, BOOST circuit begins to work; when output voltage < input voltage, BOOST circuit doesn't work, BUCK circuit

begins to work; so UPS can accomplish charging work under any mode.

8 . control circuit

line sense circuit



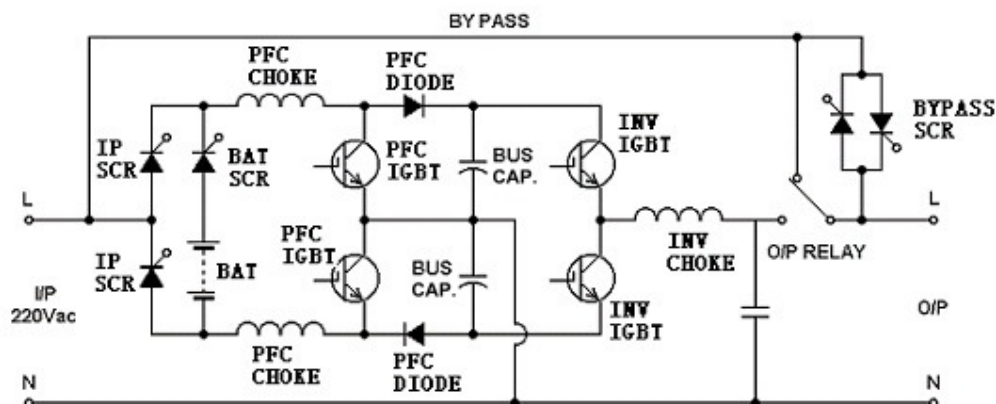
line sense circuit

work principle:

Systemic signal samplings all adopt different module input mode, in this way can restrain common module interferential signals effectively, advance anti-jamming ability of sampling signals; when line input, firstly through a attenuation circuitry, up to value which DSP can accept. This extent signal can send to DSP directly; afterward through a compared implement, so we can get frequency of line.

PCB function instructions

1、PSDR board(POWER STAGE DRIVER)



PSDR board frame circuit

PSDR includes power part, work power part; Normal input/output voltage of PSDR are all 220V/50Hz, work process includes RECTIFIER, BOOSTCIRCUIT and INVERTER ;

RECTIFIER : used for commuting input line to DC;

BOOST CIRCUIT : used for changing commuted voltage into steady 345VBUS voltage, at the same time , put up PFC to get higher power factor;

INVERTER : DC BUS voltage, through half_ bridge frame, changed into AC and produces steady AC output through LC low filter.

Work power part supplies 20V, $\pm 15V$, 12V, 5V, HFPW power for the whole UPS, at the same time, supplies power for fan.

2、CNTL board

CNTL board adopts DUAL MCU design, including one 2406A and one MR32; 2406A adopts DSP technique, used to control system normal running, samples and controls needed correlative signal; MR32 is used to control conversion under any mode, protect UPS and load under abnormal status; at the same time, MR32 takes charge for communication with PC.

3、parallel board

Parallel board is made up of a series of communicational circuits; mostly used to accomplish signal communication with other UPS.

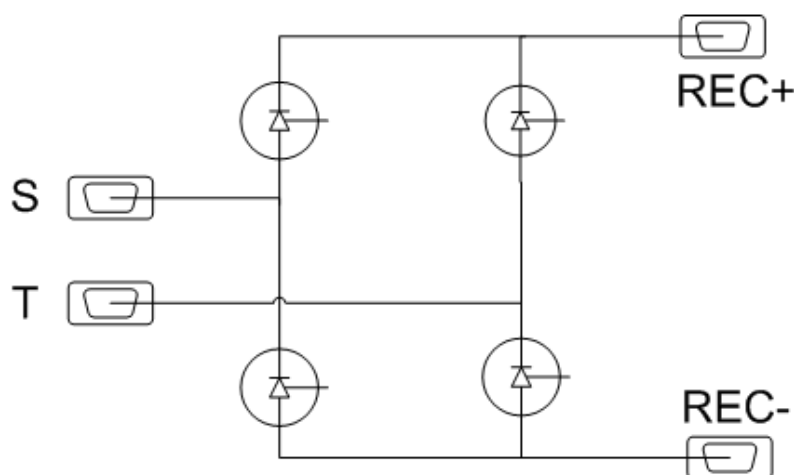
4、 charger board(long backup time UPS)

This charger board is designed for long backup time UPS, supplies charging ability for its outside battery ; its input comes from line commuting voltage, output mode is three_sect ; firstly, it charges UPS keeping steady current of 4.2A; it is changed to invariable voltage charging until battery voltage arrives about 270V; finally put up float charging until battery is full.

5、 charger board(standard UPS)

This charger board is designed for standard UPS, supply moderate charging current for standard UPS; its input comes from BUS voltage, starting charging current is 2A.

6、 commuting board(only for three phase input UPS)



commuting board frame chart

Commuting board circuitry is mostly composed of commuting circuitry and protection circuitry; its four SCR pipes make up S、T phase 's commuting bridge, its input port is connected with S、T phase line , output port is connected with commuting circuit on PSDR board. At the same time, its protective circuit can also supply high and low voltage protection.

7、 EMI board

EMI board includes input EMI board and output EMI board, can filt miscellaneous wave on input and output line, consequently, can achieve to purify power supply wave.

MODEL port setting

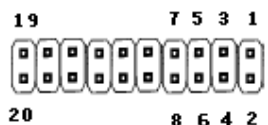
MODEL port(JP01)setting for using 01 edition CNTL board (710-01902-01)

as follows:

Note: 1 shows inserting jumper, 0 shows not inserting jumper, other pins not

listing show not inserting jumper.

	pin9andpin10	pin11andpin12	pin13andpin14	pin19andpin20
C6KNN	0	0	0	1
C6KNNS	0	0	0	0
C10KN	1	0	0	1
C10KNS	1	0	0	0

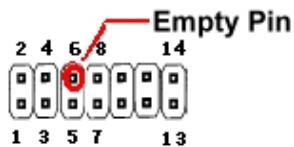


01edition CNTL board (710-01902-01) JP01

MODEL port (JP01)setting for using 02 edition or higher edition CNTL board

(710-01902-02) as follows:

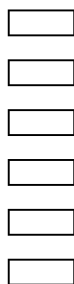
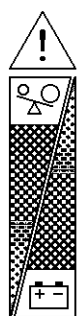
	pin11andpin12	pin9andpin10	pin7andpin8	pin1andpin2
C6KNN	0	0	0	1
C6KNNS	0	0	0	0
C10KN	1	0	0	1
C10KNS	1	0	0	0



02 edition CNTL board (710-01902-02) JP01

Note: the definition of 01 edition CNTL board JP01 and 02 edition CNTL board JP01 is opposite, take care when you are inserting jumper.

Indicators' state And Meanings



indicators compositor from up to down:

indicator 1 : red , fault indicator light, this light

shines , UPS sends out continuous alarm , show that

UPS is at abnormity state , equipments are supplied directly by line.

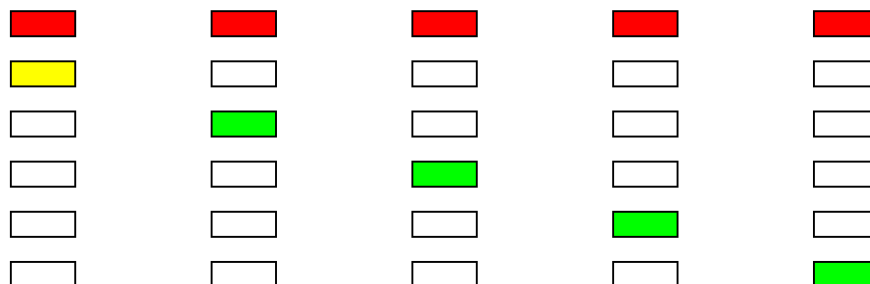
indicator 2 , yellow , indicator 3 ~ indicator 6 ,

green , show load and battery capacity.

indicator 1 shine ,indicators 2~6 display different state respectively.

UPS run at line mode or bypass mode, indicators display the capacity of load from up to down.

UPS run at battery mode, indicators display percentage of battery capacity.



1# , 2# indicators display overload	1# , 3# indicators display battery voltage too high	1# , 4# indicators display BUS voltage abnormity	1# , 5# indicators display inverter voltage abnormity	1# , 6# indicators display temperature too high
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fault instructions

fault	indicator display	instructions
charger abnormity	1# indicator shine	when battery voltage <240V and CHG control signal is on, give alarm if battery voltage doesn't increase at 1 hour.
overload	1# , 2# indicators shine	<ol style="list-style-type: none"> 1 . line inverter mode 105% ~ 130 % overload, turn to bypass after 10 mins; 2 . line inverter mode > 130% load, turn to bypass immediately; 3 . bypass mode 130% load, cut off output after 1 min , give an alarm 4 . battery mode 105% ~ 130 % load, give an alarm after 10 seconds and cut off output. 5 . battery mode more than 130% load, alarm immediately and cut off output.

Battery SCR destroyed	1# ,3# ,6# indicators shine	battery voltage > 300V
parallel communication abnormality	1# , 2# , 3# , 6# indicators shine	parallel UPS communication interrupted
Bus abnormality	1# , 4# indicators shine	<p>sense condition : PFC ON</p> <p>1 . +Bus voltage lasts higher than 450V or - Bus voltage lasts lower than -450V for 80 ms.</p> <p>2 . +Bus voltage lasts higher than 400V or - Bus voltage lasts lower than -400V for 1.5 ms.</p> <p>3 . +Bus voltage lasts lower than 230V or - Bus voltage lasts higher than -230V for 1.5 ms.</p> <p>4 . +Bus and - Bus absolute value difference lasts more than 40V for 2 mins.</p> <p>5 . PFC IGBT fault</p>
Inverter Fault	1# , 5# indicator shine	<p>sense condition : PWM ON</p> <p>1 . inverter voltage lasts higher than 276V or lower than 140 V for 128 ms</p>

inverter output short	1# , 2# , 5# indicator shine	inverter output voltage < 50V, output current > 10A more than 3 periods.
temperature too high	1# , 6# indicator shine	sense that PSDR PCB radiator's temperature higher than 75°C
inverter relay short	1# , 4# , 6# indicator shine	after Bus voltage has increased , PWM sense inverter voltage > 80 V
communicati on abnormality	1# , 3# , 4# indicator shine	bosom CPU can't set up communication
fan abnormality	1# , 2# , 6# indicator shine	sense fan signal abnormality
inverter bypass short	1# , 2# , 3# , 4# indicator shine	sense the power of inverter more than minus 800W

Clients' Problems Analyse And Settle On The Spot

I、repair tools

- 1、one computer with serial interface ,also installing“RS24” debug software, one normal RS232 serial wire;
- 2、suitcase or toolbox;
- 3、wire cutters and shelve cutters;
- 4、equalizer、 current limit resistance、 electric iron 、 sleeve 、 shelve

ports with different spec ;

5、multimeter、 oscillograph (or amperemeter);

6、 other tools in common use: tilted cutters 、 pipe cutter 、 cross screwdriver 、 small single screwdriver、 electrical adhesive plaster and so on ;

7、 Correlative semi-manufactured goods and correlative materiel with badness phenomenon

II、 Notes:

1. Make sure that cut off the connection between line and battery when you examine and repair UPS;

2. When maintenance switch at “UPS” place, the ends on the platform and UPS box inside are all electriferous;

3. When m maintenance switch at “UPS” place, the ends on the platform are all electriferous, the three_phase front line inside UPS box are all unelectriferous, but nought line is still connected with electrical net, so make insulative disposal through binding up nought line with insulating plaster. When you are serving inside UPS box, (1)if want to maintain at once, please release BUS voltage with releasing resistance. (2)if no releasing resistance, please wait for 5mins, serve UPS until BUS voltage <10V; if you don't follow two items above, you are in danger of getting an electric shock .

4. Make sure line input and battery input are natural first before boot-strap when you have examined and repaired UPS.

5. Make sure that +BUS and -BUS voltage can achieve standard value after boot-strap.

IV、UPS fault countermeasure and maintenance

fault	lights display	countermeasure and maintenance
charger board abnormality	1#light shine	For long backup time UPS, firstly check whether power line(from CN03/CN05 of charger to CN104/CN105 of PSDR)connects correctly, afterward change charger board if other connection correct. For standard UPS, no power line; if measure BUS voltage normal, please change charger board.
overload	1# , 2# lights shine	unload unimportant load to 90% below; if UPS have been fault ,you should turn UPS into inverter mode.
Battery SCR fault	1# ,3# ,6# lights shine	Maybe charger or PSDR board fault; mostly check whether battery SCR (Q305) on the PSDR board is fault or battery relays(RY3、 RY4) are fault, and then check whether components in

		battery driver part are normal, also need to check circuitry of line commutating part; if PSDR board is normal, charger output is likely to be fault.
parallel communication abnormality	1# , 2# , 3# , 6# lights shine	Need to check whether parallel line 、 parallel card 、 the connection between parallel card and CNTL board are normal.
Bus abnormality	1# , 4# lights shine	Maybe PSDR board fault; mostly check whether PFC part on PSDR board and such power components as IGBT、 SCR on line commutating part are fault, at the same time , check whether components of driving circuitry are fault.
Inverter Fault	1# , 5# lights shine	Maybe PSDR board fault; mostly check whether power components on PSDR INVERTER part and on driving circuitry are abnormal; at the same time ,check whether protecting circuitry of IGBT and PFC components are OK.
Inverter output short_circuit	1# ,2# ,5# lights shine	Check whether load switch of user jumps, and find out equipment power and input

		current's characteristic of user.
Temperature too high	1# , 6# lights shine	If temperature is assuredly too high inside the case, please unload redundant load and suggest user install an air-condition in UPS room; if sense is fault, maybe CNTL board estimates falsely, or NTC on PSDR board fault.
output relay short_circuit	1# ,4# ,6# lights shine	Check whether the shrapnel on inverter relays RY1、RY2 of PSDR board are fault.
communication abnormality	1# ,3# ,4# lights shine	CNTL board fault
fan abnormality	1# , 2# , 6# lights shine	Check whether fan runs normally, if OK, check fan detective circuitry.
Inverter Bypass short_circuit	1# , 2# , 3# , 4# lights shine	firstly check whether input 、 output connection are right; secondly check whether inverter relays RY1、RY2 of PSDR board are fault or bypass SCRQ207、Q208 and driving circuitry are fault.

V、PCB examine and repair

A. charger board**(A-1). charger board (standard UPS) :**

Item	Checked components	DVM function	Reference Value	Fail Condition
1	F901, F902, F903, F904, F905, F906,	Ω	0Ω	open
2	Q907, Q908,	(S, D)	$\approx 1.7M\Omega$	short
		(G, S)	32Ω	short or open
3	D901, D902, D903	DIODE	$\approx 0.4V$	0V
4	Q909	(A, K)	$\approx 20M\Omega$	short
		(G, K)	$\approx 42\Omega$	short

(A-2). charger board (long backup time UPS) :

Item	Checked components	DVM function	Reference Value	Fail Condition
1	F1	Ω	0Ω	open
2	Q301 Q105	(E,C)	$\approx 1M\Omega$	short
		(G,E)	$10k\Omega$	short or open
3	D303	DIODE	$\approx 0.4V$	0V
4	R315	Ω	10Ω	open
5	R319	Ω	$1k\Omega$	open
6	D106	DIODE	$\approx 0.4V$	0V
7	R112 , R159	Ω	10Ω	open
8	Q04	(A,K)	$\approx 1M\Omega$	short
		(G,K)	$\approx 12\Omega$	short
9	R320, R321, R322, R340, R339, R341	Ω	$\approx 0.5/6 \Omega$	open

B. PSDR board

(B-1). rectifier part:

Item	Checked components		DVM Function	Reference Value	Fail Condition
1	F301, F302		Ω	0 Ω	open
2	Q301	(A, K)	Ω	$\approx 1.4\text{M}\Omega$	short
	Q302	(G, K)	Ω	$\approx 10\Omega$	short

(B-2). voltage increase part:

Item	Checked components		DVM Function	Reference Value	Fail Condition
1	Q306, Q308, Q310	(E, C)	Ω	$\approx 800\text{k}\Omega$	short
	Q307, Q309, Q311	(G, E)	Ω	15.8k Ω	short or open
2	D308, D310		DIODE	$\approx 0.35\text{V}$	0V
3	R325, R331, R334, R342, R337, R328		Ω	10 Ω	open
4	R390, R388, R389, R393, R392, R391		Ω	2.2 Ω	open
4	D302, D304, D306, D303, D305, D307		DIODE	$\approx 12\Omega$	open

(B-3). battery voltage increase part:

Item	Checked components		DVM Function	Reference Value	Fail Condition
1	F303, F304		Ω	0 Ω	open
2	Q305	(A, K)	Ω	$\approx 2.5\text{M}\Omega$	short
		(G, K)	Ω	$\approx 10\Omega$	short

(B-4). inverter part:

Item	Checked components		DVM Function	Reference Value	Fail Condition
1	Q201, Q202, Q203, Q204	(E, C)	Ω	$\approx 100\text{k}\Omega$	short
		(G, E)	Ω	23.5k Ω	short or open
2	D201, D202, D203, D204		DIODE	$\approx 0.36\text{V}$	0V

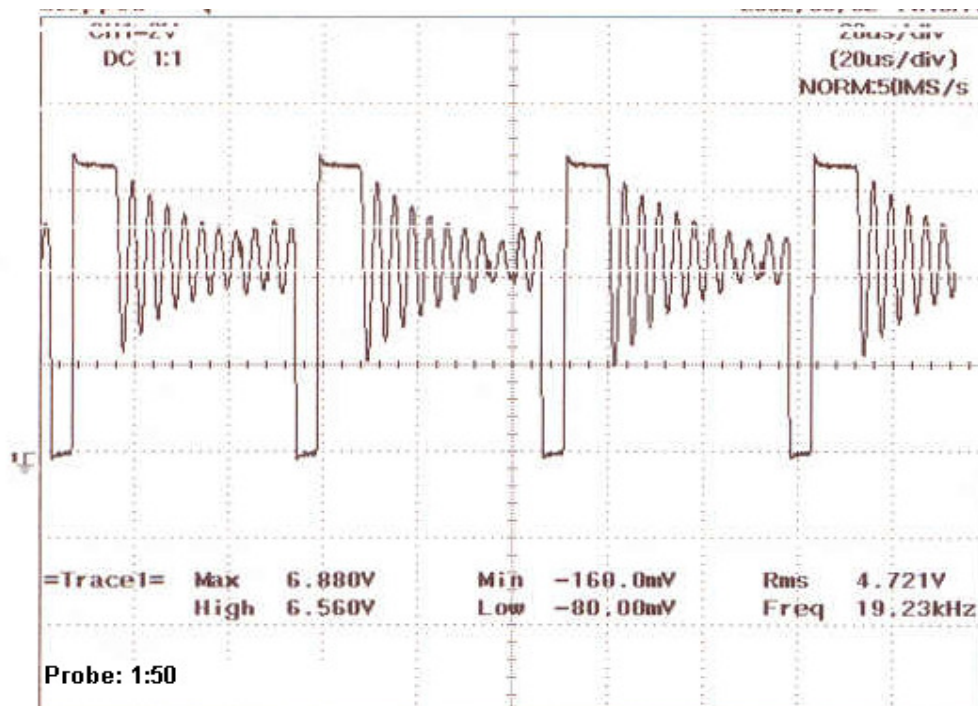
3	R201, R202, R208, R209	Ω	10 Ω	open
4	R203, R204, R210 R211	Ω	36 Ω	open
5	D210, D211, D212, D213	DIODE	46 Ω	open

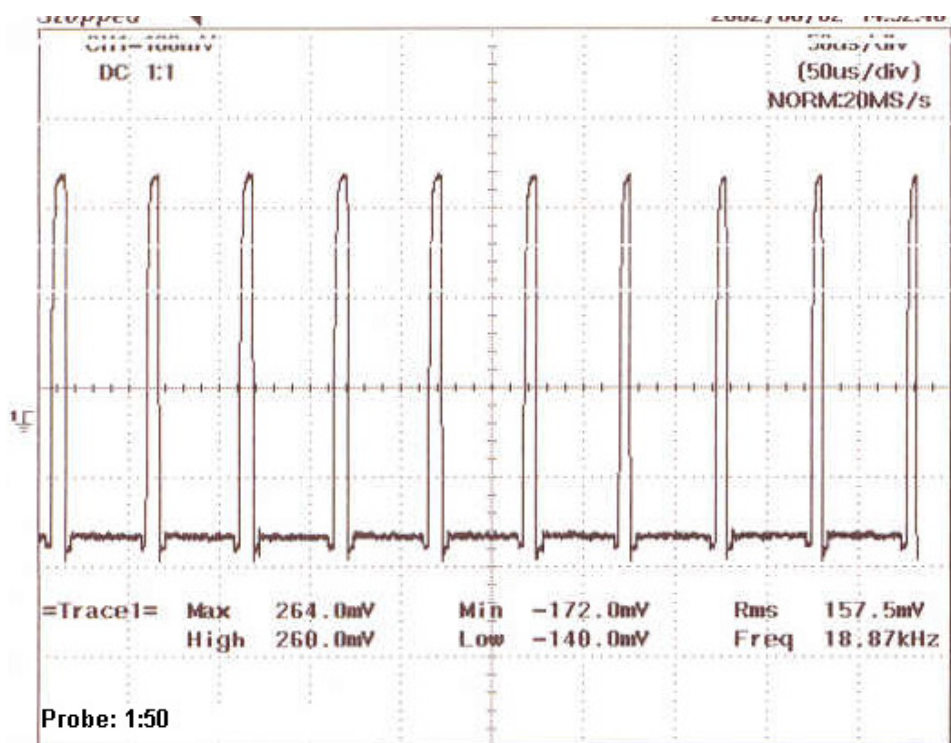
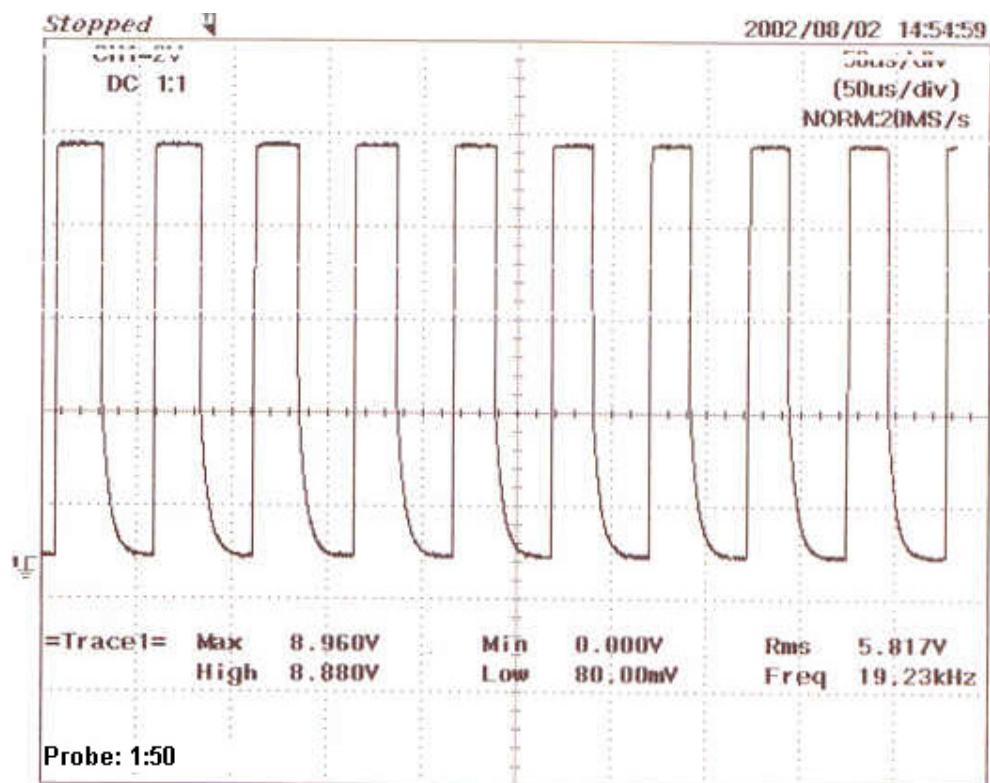
board

C. IP SCR board

Item	Checked components	DVM Function	Reference Value	Fail Condition
1	F1, F2	Ω	0 Ω	open
2	Q3, Q4, Q5, Q6	(A, K)	$\approx 2.5\text{M}\Omega$	short
		(G, K)	$\approx 10\Omega$	short

voltage wave

Empty load, PFC IGBT C、E pole's voltage wave(V_{CE})

IGBT G, E pole's drive voltage wave (V_{GE})INV IGBT C, E pole's voltage wave (V_{CE})

Parallel Redundancy Maintenance

This UPS system has parallel redundancy function. If the user wants to parallel up the UPS, please follow the process of connecting new UPS. On the other hand, if the load is decreased or UPS is damaged, the user needs disconnect the UPS, please follow the process of disconnecting parallel systems.

Connect new UPS as Parallel Redundancy Function:

- 1) Before connecting new UPS, the user should prepare input and output wire, and parallel cable.
- 2) Input & output breaker on the Power Panel for the new UPS should be turned off. Follow the instruction of terminal block and connect with the appropriate input or output wire and battery. In the meanwhile, please remove the jumper between JP1 and JP2.
- 3) Switch the operating UPS to bypass mode. After that, please take off the maintenance cover and turn the switch from 'UPS' to 'BPS'. Then turn off the input breakers on the rear panel of each UPS.
- 4) If the operating UPS is running in single mode, the user must remove the jumper on JP1 and JP2 of the UPS terminal block.
- 5) Take off the cover of parallel port of the new UPS, then using a parallel cable to connect the slot in the parallel port of the new UPS. After finish this step, please screw up the cover of the parallel port.
- 6) Switch on the battery breaker of the new UPS and switch on the input breaker on the "Power Panel"; measuring the difference between the Line(L) connector of new UPS and the Line(L) connector of Parallel System. If the difference is less than 1 Volt, the user switches on the output breaker for the load.
- 7) Take off the cover of parallel port that the UPS has already transferred to the bypass mode; then using a parallel cable to connect the slot of the parallel port of the other UPS. After finish this step, please screw up the cover of the parallel port again.
- 8) After recover the maintenance cover, close the input breaker of each UPS on its rear panel. When all the systems have transferred to the bypass mode, the user can switch on all the Parallel Systems; and then make sure that all

the UPS transfer to Inverter mode at the same time. After that, check the voltage between JP1 and JP2 of each UPS if they are all under 1Vac.

- 9) Please check the voltage difference between all JP2 on the UPS terminal blocks; the voltage should be less than 5 Volt. The average voltage rate is 2 Volt.
- 10) Turn off all UPS systems to let them switch to bypass mode, then please take off the maintenance cover and turn the switch from 'BPS' to 'UPS'. Also screw up all of the maintenance covers.
- 11) Turn on all of the UPS to let them switch to Inverter (Normal) mode.

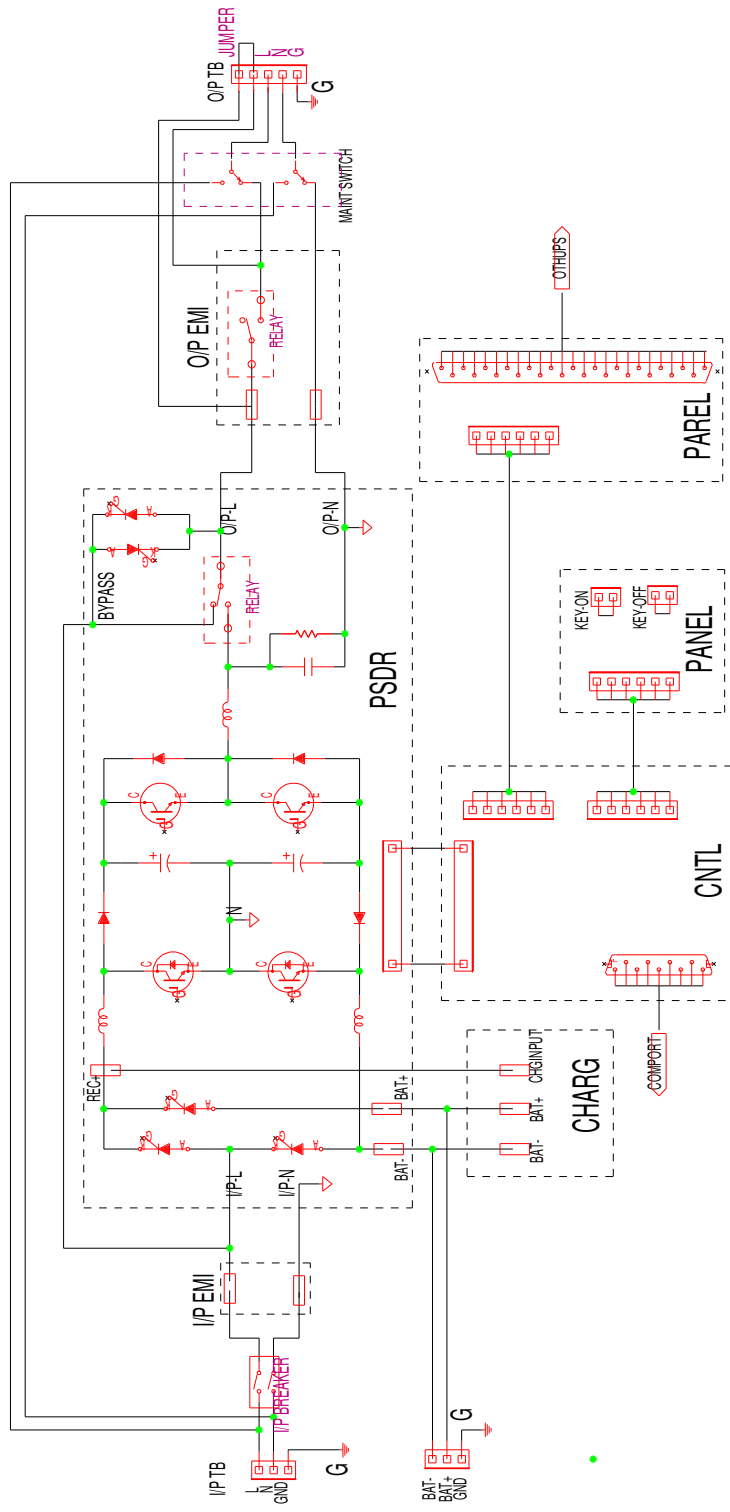
Note: If the state of UPS is abnormal in step 8&9, please follow the operation process of disconnecting UPS.

Operation process of disconnecting UPS:

- 1) If the user wants to disconnect an UPS, please press "OFF" button twice, the UPS output will be turned off.
- 2) Turn off the input breaker and battery breaker of the UPS and turn off the input breaker on the "Power Panel".
- 3) Turn off other UPS systems to let them switch to bypass mode, please take off the maintenance cover and turn the switch from 'UPS' to 'BPS'. Then turn off all UPS input breakers.
- 4) After disconnecting the UPS, if the rest UPS is running in single mode, you must connect JP1 and JP2 of the output terminal.
- 5) Take off the cover of parallel port and parallel cable from the other UPS. Then screw up the cover of parallel port again.
- 6) Close the input breaker of the rest of UPS on its rear panel and wait them transfer to bypass mode, then turn the maintenance switch from "BPS" and to "UPS". Also screws up the maintenance cover; Turn on all of the UPS to let them switch to Inverter (Normal) mode.
- 7) Please connect JP1 and JP2 of the terminal block for the UPS which has disconnected.

Parallel System Warning:

- 1) When parallel systems run into inverter mode, please make sure that all UPS maintain switches at the same place as a position for “UPS” or “BPS”.
- 2) Please make sure the power of UPS is “OFF” before parallel systems have been transferred to inverter mode.
- 3) During the system is in parallel, please do not operate any maintenance switch of the other UPS.



C6K(s)/C10K(s) UPS frame chart

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