Communication Protocol

For GRIPOWER

(WinPower_Version)

Protocol:	GriPowerCP_Winpower	
Author:	Jency	
Version:	0.0 26/04/2007	Establish protocol
	1.0 20/06/2007	Modify protocol for Winpower

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1 Introduction

The communication protocol is a half duplex protocol which the PC is the master and the UPS is the slave; Only the PC can send the command to the UPS, the UPS only send the response to the PC.

2 Default communication setting

The default communication setting is: 2400baud, 8 bits, No parity check, 1 stop bit.

3 Explanation

<<	Transmission from PC to UPS(PC command)
>>	Transmission from UPS to PC(UPS response)
UPS:	UPS's action

4 Protocol Format

4.1 Inquire Command

4.1.1 PI (For New GriPower)

<<Q1<cr>
>>(DD<cr>

Protocol ID definition

DD	UPS 类型
00	UNKNOWN
01	New C-Series 1~3K/6~20K Protocol
02	Old C-Series Protocol（RS232）
03	Relay Protocol
04	Ctloffline(Blazer)　Protocol
05	3C3 Protocol
06	ARRAY Protocol
07	RS485 Parallel Protocol

08	3A3 protocol
09	XP Protocol
0A	ERD Protocol
0B	Mini Array Protocol
0C	Claire Protocol
0D	Castle Protocol 1-3k
0E 0F 10	TelecomPower Magic castle20-40K Vigor
11	Gripower

4.1.2 CL (For New GriPower)

<< CL<X><cr>

X = 0, request setting command

X = 1, request status command

X = 2, request control command

Response:

X = 0:

Response all the setting command;

X = 1:

Response all the status command;

X = 2:

Response all the control command.

For example :
CL1
(Q1 QA Q2 WA Q6 QU...

4.2 Display Command

4.2.1 Q1

<<Q1<cr>

>>(VVV.V VVV.V VVV.V AAA FF.F B.BB TT.T b7b6b5b4b3b2b1b0<cr>

Input R Line Voltage: VVV.V

V is an integer number 0 to 9. The Unit is Volt.

Input Fault Voltage: VVV.V (always is 300.0)

V is an integer number 0 to 9. The Unit is Volt.

R Inverter Voltage: VVV.V

V is an integer number 0 to 9. The Unit is Volt.

R Load Current: AAA

A is an integer number 0 to 9. The Unit is A.

Input Frequency: FF.F

F is an integer number 0 to 9. The Unit is Hz.

Battery Cell: B.00 (always is 2.00)

B is an integer number 0 to 9. The Unit is Volt.

UPS Status: b7b6b5b4b3b2b1b0

byte	Description
7	1: Utility Fail (Immediate)
6	1: Battery Low
5	1: Bypass/Boost Active
4	1: UPS Failed
3	1: UPS Type is Standby (0 is On line)
2	1: Test in Progress
1	1: Shutdown Active
0	Reserved (always 0)

Stop Byte: <cr>

Total length (with stop byte): 47 bytes

4.2.2 Q2，XX，YY

<< Q2,XX,YY<cr>

Cabinet Address: XX (always is 01)

XX is ascii combination represent an integer number.

Module Address: YY

YY is ascii combination represent an integer number ranging from 01 to 08.

>>(XX YY MMM.M MMM.M MMM.M NNN.N PPP.P PPP.P PPP.P QQQ QQQ QQQ RR.R SSS.S SSS.S b7b6b5b4b3b2b1b0 ttt.tt CCC BB ff ff ff ff wwwwwwww <cr>

Input Voltage: MMM.M

M is an integer number 0 to 9. The Unit is Volt.

Three Phases will represent Phase R-S-T in sequence

I/P fault voltage: NNN.N (always is 300.0)

N is an integer number 0 to 9. The Unit is Volt.

Output Voltage: PPP.P

P is an integer number 0 to 9. The Unit is Volt.

Three Phases will represent Phase R-S-T in sequence

Output Current: QQQ

Q is an integer number 0 to 9. Represent absolute value of output current. The Unit is A.

Three Phases will represent Phase R-S-T in sequence

I/P frequency: RR.R

R is an integer number 0 to 9. The Unit is Hz.

Battery voltage: SSS.S

S is an integer number ranging from 0 to 9. The unit is Volt.

Battery voltage will represent positive and negative in sequence.

UPS Status: b7b6b5b4b3b2b1b0

byte	Description
7	1: Utility Fail (Immediate)
6	1: Battery Low
5	1: Bypass/Boost Active
4	1: UPS Failed
3	1: UPS Type is Standby (0 is On line)
2	1: Test in Progress
1	1: Shutdown Active
0	Reserved (always 0)

Estimated Runtime: ttt.tt

Estimated Runtime / Remaining Battery Backup time in ttt minutes and .tt seconds. These values will be defined by the S-Series UPS-Processor with High accuracy. In comparison to the existing PowerProtect interfacing the P-Series there will be no internal algorithm necessary !

Charge in Status in %: CCC

CCC is ascii combination represent an integer number ranging from 000 to 100.

Status of Battery test : BB

00: idle

01: processing

02: result: no failure

03: result: failure / warning

Fault code: ff

The Protocol has 4 fault containers which could be filled simultaneously.

ff is the fault NO., see Fault and Warning Table for detail

Warnings: wwwwwwww

11111111 11111111 11111111 11111111
$2^7 2^6$.....2^0 2^{15}..... 2^8 2^{23}.....2^{16} 2^{31}.....2^{24}

Bit 0(2^0) represents Warning 1

Bit 7(2^7) represents Warning 8

Bit 31(2^31) represents Warning 32

Theoretically each of the 32 warnings could come up, we'd like to limit the number of simultaneous displayed warnings to 6.
Shown example :
wwwwwwww=00160000(hex)
=00000000 00010110 00000000 00000000(bin)
$2^7 2^6$.....2^0 2^{15}..... 2^8 2^{23}.....2^{16} 2^{31}.....2^{24}
warning 8-1 warning16-9 warning 24-17 warning 32-18
means warning 10,11,13 ,then see Fault and Warning Table

Stop Byte: <cr>

Total length (with stop byte): 123 bytes

4.2.3 Q6 (For New GriPower)

<< Q6<cr>
>>(MMM.M MMM.M MMM.M NN.N PPP.P PPP.P PPP.P RR.R QQQ QQQ QQQ SSS.S SSS.S TT.T ttttt CCC KB ffffffff wwwwwwww YO<cr>

Input Voltage: MMM.M
M is an integer number 0 to 9. The Unit is Volt.
Three Phases will represent Phase R-S-T in sequence

Input Frequency: NN.N
N is an integer number ranging from 0 to 9. The unit is Hz

Output Voltage: PPP.P
P is an integer number 0 to 9. The Unit is Volt.
Three Phases will represent Phase R-S-T in sequence

Output Frequency: RR.R
R is an integer number ranging from 0 to 9. The unit is Hz

Output Current: QQQ
Q is an integer number 0 to 9. Represent absolute value of output current. The Unit is A.

Three Phases will represent Phase R-S-T in sequence

Battery voltage: SSS.S

S is an integer number ranging from 0 to 9. The unit is Volt. Battery voltage will represent positive and negative in sequence.

Temperature: TT.T

T is an integer number ranging from 0 to 9. The unit is degree of centigrade

Estimated Runtime: ttttt

Estimated Runtime / Remaining Battery Backup time in ttttt seconds

Charge in Status in %: CCC

CCC is ascii combination represent an integer number ranging from 000 to 100.

System mode: K

Code	Description
0	PowerOn mode
1	Standby mode
2	Bypass mode
3	Line mode
4	Bat mode
5	BatTest mode
6	Fault mode
7	Converter mode
8	ECO mode
9	ShutDown mode

Status of Battery test : B

Code	Description
0	idle
1	processing
2	result : no failure
3	result : failure / warning
4	Not possible or inhibited
5	Test cancel
6	Reserved
7	Other values

Fault code: ffffffff

The Protocol has 4 fault containers which could be filled simultaneously.

ff is the fault NO., see Warning & Fault Table(For New GriPower) for detail

Warnings: wwwwwwww

11111111 11111111 1111111111111111

	2^{31}.....2^{24} 2^{23}.....2^{16} 2^{15}..... 2^{8} 2^{7}.....2^{0}
	Bit0~Bit31 is warning.
	Shown example:
	WWWWWWWW=00160000(ascii)
	= 00000000 00010110 00000000 00000000
	Mean warning 20, 18, 17.,then find the Warning & Fault Table(For New GriPower)
Input transformer type:	Y
	Y is a binary number „0“ or „1“.
	Input transformer Delta or Y
	Y=1,Input transformer is Y type, LCD display Phase voltage
	Y=0,Input transformer is Delta type, LCD display Line voltage
Lcd Display Output Voltage Line or Phase:	O
	O is a binary number „0“ or „1“.
	LCD display Output voltage Line or Phase
	O=1, LCD display Output voltage is Phase
	O=0, LCD display Output voltage is Line
	If O=1(Phase voltage), but monitor software want to display Line voltage
	Line voltage = √3 ×Phase voltage
	If O=0(Line voltage), but monitor software want to display Phase voltage
	Phase voltage = Line voltage /√3
Stop Byte:	<cr>

Total length (with stop byte): 110 bytes

4.2.4 QA

<<QA<cr>
>>(MMM.M MMM.M MMM.M NNN.N PPP.P PPP.P PPP.P QQQ QQQ QQQ RR.R YYY.Y YYY.Y WWW.W WWW.W WWW.W VVV.V VVV.V VVV.V b7b6b5b4b3b2b1b0 ttt.tt CCC

UUU BB LLL AA 0 H ff ff ff ff wwwwwwww <cr>

Input Voltage: MMM.M

M is an integer number 0 to 9. The Unit is Volt.

Three Phases will represent Phase R-S-T in sequence

I/P fault voltage: NNN.N (always is 300.0)

N is an integer number 0 to 9. The Unit is Volt.

Output Voltage: PPP.P

P is an integer number 0 to 9. The Unit is Volt.

Three Phases will represent Phase R-S-T in sequence

Output Current: QQQ

Q is an integer number 0 to 9. Represent absolute value of output current. The Unit is A.

Three Phases will represent Phase R-S-T in sequence

I/P frequency: RR.R

R is an integer number 0 to 9. The Unit is Hz.

Battery voltage: YYY.Y

Y is an integer number ranging from 0 to 9. The unit is Volt.

Battery voltage will represent positive and negative in sequence.

Output power: WWW.W

W is an integer number 0 to 9. The Unit is KW.

Three Phases will represent Phase R-S-T in sequence

Output complex power: VVV.V

V is an integer number 0 to 9. The Unit is KVA.

Three Phases will represent Phase R-S-T in sequence

UPS Status: b7b6b5b4b3b2b1b0

byte	Description
7	1: Utility Fail (Immediate)
6	1: Battery Low
5	1: Bypass/Boost Active
4	1: UPS Failed
3	1: UPS Type is Standby (0 is On line)
2	1: Test in Progress
1	1: Shutdown Active
0	Reserved (always 0)

Estimated Runtime: ttt.tt

Estimated Runtime / Remaining Battery Backup time in ttt minutes and .tt seconds. These values will be defined by the S-Series UPS-Processor with High accuracy. In comparison to the existing PowerProtect interfacing the P-Series there will be no internal algorithm necessary !

Charge in Status in %: CCC

CCC is ascii combination represent an integer number ranging

	from 000 to 100.
Temperature of Cabinet:	UUU UUU range from 000 to 999. The unit is centigrade.
Status of Battery test :	BB 00: idle 01: processing 02: result: no failure 03: result: failure / warning
O/P load:	LLL LLL is maximum of the total three phase W% or VA%. VA% is a percent of maximum VA. W% is a percent of maximum real power.
O/P load sharing Module Number:	AA A is an integer number 0 to 9.
LCD Display Output	0
Voltage Line or Phase:	Always phase voltage (’0’) in 3A3 UPS.
Cabinet Display Hints:	H 0: do not display canbinet level 1: display canbinet level
Fault code:	ff The Protocol has 4 fault containers which could be filled simultaneously. ff is the fault NO., see Fault and Warning Table for detail
Warnings:	wwwwwwww 11111111 11111111 11111111 11111111 $2^7 2^6$.....2^0 2^{15}..... 2^8 2^{23}.....2^{16} 2^{31}.....2^{24} Bit 0(2^0) represents Warning 1 Bit 7(2^7) represents Warning 8 Bit 31(2^31) represents Warning 32 Theoretically each of the 32 warnings could come up, we’d like to limit the number of simultaneous displayed warnings to 6. Shown example : wwwwwwww=00160000(hex) =00000000 00010110 00000000 00000000(bin) $2^7 2^6$.....2^0 2^{15}..... 2^8 2^{23}.....2^{16} 2^{31}.....2^{24} warning 8-1 warning16-9 warning 24-17 warning 32-18 means warning 10,11,13 ,then see Fault and Warning Table
Stop Byte:	<cr>

Total length (with stop byte): 168bytes

4.2.5 QU，XX，YY (For New GriPower)

<< QU,XX,YY<cr>

Cabinet Address: XX (always is 01)
XX is ascii combination represent an integer number.

Module Address: YY
YY is ascii combination represent an integer number ranging from 01 to 08.

>>(XX YY UUU.U UUU.U UUU.U RR.R MMM.M MMM.M MMM.M FF.F SSS.S SSS.S PPP.P NNN.N TT.T M ffffffff wwwwwwww<cr>

Input Voltage: UUU.U
U is an integer number 0 to 9. The Unit is Volt.
Three Phases will represent Phase R-S-T in sequence

Input Frequency: RR.R
R is an integer number ranging from 0 to 9. The unit is Hz

Output Voltage: MMM.M
M is an integer number 0 to 9. The Unit is Volt.
Three Phases will represent Phase R-S-T in sequence

Output Frequency: FF.F
F is an integer number ranging from 0 to 9. The unit is Hz

Battery voltage: SSS.S
S is an integer number ranging from 0 to 9. The unit is Volt.
Battery voltage will represent positive and negative in sequence.

Positive Bus Volt: PPP.P
P is an integer number ranging from 0 to 9. The Unit is Volt.

Negative Bus Volt: NNN.N
N is an integer number ranging from 0 to 9. The Unit is Volt.

Module Temperature: TT.T
T is an integer number ranging from 0 to 9. The unit is degree of centigrade.

Working Mode: M
M - System mode as one of the following byte code :

Code	Description
0	PowerOn mode
1	Standby mode
2	Bypass mode
3	Line mode

4	Bat mode
5	BatTest mode
6	Fault mode
7	Converter mode
8	ECO mode
9	ShutDown mode

Fault code: ffffffff

The Protocol has 4 fault containers which could be filled simultaneously.

ff is the fault NO., see Warning & Fault Table(For New GriPower) for detail

Warnings: wwwwwwww

11111111 11111111 1111111111111111

2^{31}.....2^{24} 2^{23}.....2^{16} 2^{15}..... 2^{8} 2^{7}.....2^{0}

Bit0~Bit31 is warning.

Shown example:

WWWWWWWW=00160000(ascii)

= 00000000 00010110 00000000 00000000

Mean warning 20, 18, 17.,then find the Warning & Fault Table(For New GriPower)

Stop Byte: <cr>

Total length (with stop byte): 102 bytes

4.2.6 WA

WA (For New GriPower)

<< WA,XX,YY<cr>

>>(WWW.W WWW.W WWW.W VVV.V VVV.V VVV.V TTT.T SSS.S AAA.A AAA.A AAA.A QQQ b7b6b5b4b3b2b1b0<cr>

Output power: WWW.W

W is an integer number 0 to 9. The Unit is KW.

Three Phases will represent Phase R-S-T in sequence

Output complex power: VVV.V

V is an integer number 0 to 9. The Unit is KVA.

Three Phases will represent Phase R-S-T in sequence

Total power: TTT.T

W is an integer number 0 to 9. The Unit is KW.

Include of three phase R, S&T real power

Total complex power: SSS.S
V is an integer number 0 to 9. The Unit is KVA.
Include of three phase R, S&T complex power.

Output current: AAA.A
A is an integer number 0 to 9. The unit is A.
Three Phases will represent Phase R-S-T in sequence

O/P load: QQQ
QQQ is maximum of the three phase W% or VA%. W% is a percent of maximum real power. VA% is a percent of maximum VA.

UPS Status: b7b6b5b4b3b2b1b0

byte	Description
7	1: Utility Fail (Immediate)
6	1: Battery Low
5	1: Bypass/Boost Active
4	1: UPS Failed
3	1: UPS Type is Standby (0 is On line)
2	1: Test in Progress
1	1: Shutdown Active
0	Reserved (always 0)

Stop Byte: <cr>

Total length (with stop byte): 80 bytes

WA,XX,YY
<< WA,XX,YY<cr>

Cabinet Address: XX (always is 01)
XX is ascii combination represent an integer number.

Module Address: YY
YY is ascii combination represent an integer number ranging from 01 to 08.

>>(XX YY WWW.W WWW.W WWW.W VVV.V VVV.V VVV.V TTT.T SSS.S AAA.A AAA.A AAA.A QQQ <cr>

Output power: WWW.W
W is an integer number 0 to 9. The Unit is KW.
Three Phases will represent Phase R-S-T in sequence

Output complex power: VVV.V
V is an integer number 0 to 9. The Unit is KVA.
Three Phases will represent Phase R-S-T in sequence

Total power: TTT.T
W is an integer number 0 to 9. The Unit is KW.
Include of three phase R, S&T real power

Total complex power:	SSS.S V is an integer number 0 to 9. The Unit is KVA. Include of three phase R, S&T complex power.
Output current:	AAA.A A is an integer number 0 to 9. The unit is A. Three Phases will represent Phase R-S-T in sequence
O/P load:	QQQ QQQ is maximum of the three phase W% or VA%. W% is a percent of maximum real power. VA% is a percent of maximum VA.
Stop Byte:	<cr>

Total length (with stop byte): 78 bytes

4.2.7 WH

WH

<<WH<cr>

>>(VV.VV PP.PP

T29T28T27T26T25T24T23T22T21T20T19T18T17T16T15T14T13T12T11T10T9T8T7T6T5T4T3T2T1T0 MMM FF.FF MMM NNN FF.FF FF.FF Q7Q6Q5Q4Q3Q2Q1Q0 C7C6C5C4C3C2C1C0<cr>

UPS Firmware Version:	VV.VV V is an integer number ranging from 0 to 9.
Protocol Number:	PP.PP P is an integer number ranging from 0 to 9.
UPS Name (include type-volume table and total system volume):	TTTTTTTTTTTTTTTTTTTTTTTTTTTTTT (30 Char) Eg:

T29	T28	T27	T26	T25	T24	T23	T22	T21	T20
3	A	3		U	P	S			
T19	T18	T17	T16	T15	T14	T13	T12	T11	T10
					1	5		1	0
T9	T8	T7	T6	T5	T4	T3	T2	T1	T0
	2	0		2	5		3	0	0

T29-T16: UPS name
T14-T13: Capacity of type 1, 5
T11-T10: Capacity of type 2, 6
T8-T7: Capacity of type 3, 7
T5-T4: Capacity of type 4, 8
T2-T0: Total capacity of the parallel system.

Nominal Mains voltage:	MMM

M is an integer number ranging from 0 to 9

Nominal Output Frequency: FF.FF

F is an integer number ranging from 0 to 9.

Minimum Mains Voltage: MMM

M is an integer number ranging from 0 to 9. The unit is Volt

Maximum Mains Voltage: NNN

N is an integer number ranging from 0 to 9. The unit is Volt

Minimum Mains Frequency: FF.FF

F is an integer number ranging from 0 to 9. The unit is Hz.

Maximum Mains Frequency: FF.FF

F is an integer number ranging from 0 to 9. The unit is Hz

UPS Info: Q7Q6Q5Q4Q3Q2Q1Q0:

Where <Qn> is a binary number "0" or "1".

Q7Q6Q5Q4Q3Q2Q1Q0:

Bit	Description
7	Reserved
6	Reserved
5	Reserved
4	Reserved
3	Reserved
2	1: Maintain cover open
1	1: Bypass no output
0	1: single/three phase output

Cabinet Info: C7C6C5C4C3C2C1C0:

Where <Cn> is a binary number "0" or "1".

< C7C6C5C4C3C2C1C0>:

Bit	Description
7	1: Canbinet 8 (physical position) exist
6	1: Canbinet 7 (physical position) exist
5	1: Canbinet 6 (physical position) exist
4	1: Canbinet 5 (physical position) exist
3	1: Canbinet 4 (physical position) exist
2	1: Canbinet 3 (physical position) exist
1	1: Canbinet 2 (physical position) exist
0	1: Canbinet 1 (physical position) exist

Stop Byte: <cr>

Total length (with stop byte): 92 bytes

WH,XX

<< WH,XX<cr>

Cabinet Address: XX (always is 01)

XX is ascii combination represent an integer number.

>>(XX I11I10I9I8I7I6I5I4I3I2I1I0 TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T TT.T HH <cr>

Module Tip: I11I10I9I8I7I6I5I4I3I2I1I0:
Where <In> is a number from “0” to “9”
“0” means there is no module exist in that physical position
“1”-“4” means there is module exist and indicate different type of module by the different number and module checking is not needed.
“5”-“8” means there is module exist and indicate different type of module by the
different number and module checking (Q2&WA) is needed.
“9” is reserved.

Bit	Description
10	>0 : Module 11 (physical position) exist
9	>0 : Module 10 (physical position) exist
8	>0 : Module 9 (physical position) exist
7	>0 : Module 8 (physical position) exist
6	>0 : Module 7 (physical position) exist
5	>0 : Module 6 (physical position) exist
4	>0 : Module 5 (physical position) exist
3	>0 : Module 4 (physical position) exist
2	>0 : Module 3 (physical position) exist
1	>0 : Module 2 (physical position) exist
0	>0 : Module 1 (physical position) exist

Module Inverter Temperature: T is an integer number ranging from 0 to 9. The unit is degree of centigrade.

O/P load sharing Module Number: H is an integer number ranging from 0 to 9.

Stop Byte: <cr>

Total length (with stop byte): 81bytes

4.3 Control Command

4.3.1 10 seconds test command

T<cr>
<<T<cr>
UPS: Test for 10 seconds and return to utility.

If battery low occur during testing, UPS will return to utility immediately.

4.3.2 Test until battery low command

TL<cr>
<<TL<cr>
UPS: Test until battery low and return to utility.

4.3.3 Test for specified time command

T<n><cr>
<<T<n><cr>
UPS: Test for <n> minutes
<n> can be .1, .2, .3, …to .9, means 0.1~0.9 min
and also can be number ranging from01, 02, …, to 99, means 01~99 min

4.3.4 Shutdown command

S<n><cr>
<<S<n><cr>
UPS: Shut UPS output off in <n> minutes.

The UPS output will be off in <n> minutes, even if the utility is present.
But if the battery under occur before <n> minutes, the output is turned off immediately.
After UPS shut down, the controller of UPS monitors the utility. If the utility is there, the UPS will wait for 10 seconds and connect the utility to output.
<n> is a number ranging from.1,.2, ...,to.9, 01, 02,..., to 99.
For example: S.3<cr> --- shut output off in (.3) minutes

4.3.5 Shutdown and restore command

S<n>R<m><cr>
<<S<n>R<m><cr>
UPS: Shut UPS output off in <n> minutes and waiting for <m> minutes then turn on UPS output again.

The shut down sequence is the same as the previous command. When the <m> minutes expired, the utility do not restore, the UPS will wait until utility restore.
If UPS is in shut down waiting status, the “C” command can let the shut down command

cancelled.
If UPS is in restore waiting status, the “C” command can let the UPS output turned on, but UPS must be hold off at least 10 seconds. (if utility is present)
<n> is a number ranging from .1, .2, ..., to.9, 01, 02, ..., to 99.
<m> is a number ranging from 0001 to 9999.

4.3.6 Cancel shutdown command

C<cr>
<<C<cr>
UPS: Cancel the S<n><cr> and S<n>R<m><cr> command.
If UPS is in shut down waiting state, the shut down command is cancelled.
If UPS is in restore waiting state, the UPS output is turned on, but UPS must be hold off at least 10 seconds. (if utility is present)

4.3.7 Cancel test command

CT<cr>
<<CT<cr>
UPS: Cancel all test activity and connect the utility to output immediately.

4.3.8 Change Baud rate command

CB<n><cr>
<<CB<n><cr>
>>(<n><cr>
Baudrate rate: <n>
If baudrate change to 2400, <n>=24
If baudrate change to 4800, <n>=48
If baudrate change to 9600, <n>=96
Ex:
Computer:
CB96<cr>
UPS :
(96

Warning & Fault Table

NO.	FAULT TABLE	故障表
01	Over-temperature inverter	變流器過溫
02	Bypass mains failure	市電異常
03	Rectifier mains failure	市電異常
04	Load too high(i2-t-Supervision)	過載
05	Under-voltage intermediate circuit	電路低電壓
06	Over load	過載
07	Phase sequence incorrect in Bypass	輸入相序錯誤
08	Service bypass is on	Not used
09	Battery operation	電池供電
10	Battery rest time exceeded	供電時間太少
11	Battery under-voltage	電池低電壓
12	Operating condition commissioning,converter	執行設定模式
13	Battery switch not engaged	電池未接
14	Ventilator lifetime exceeded	建議更換風扇
15	Connection to charger lost	充電器未接
16	Internal warning 16	內部警告
17	EPO active	
18	Overcharged	
19	Turn UPS on abnormal	
20	Reserved	Reserved
21	Reserved	Reserved
22	Reserved	Reserved
23	Battery charger communicate failure	充電器無通訊
24	General battery charger failure	充電器異常
25	Eeprom fail	
26	Fan lock	
27	Line phase error	
28	N loss	
29	Reserved	Reserved
30	Reserved	Reserved
31	Load unbalance	負載不平衡
32	Internal warning 32	內部警告
33	Temperature in converter too high	轉換器過溫
34	Internal fault 34	內部故障
35	Incorrect parameter(Inverter MLFB)	錯誤參數
36	Inverter contactor defective	輸出電磁接觸器損壞
37	Multiple inverter cutoff as a result of over-current	變流器過電流切斷
38	Failure power supply electronic	工作電源不正常

39	Over-voltage in the intermediate circuit	內部電路過電壓
40	External Quick Shutdown active	Not used
41	Electronic defective(Signal Processor defective)	控制器損壞
42	Defect in the Power Electronic(Rectifier)	整流器電力元件損壞
43	Defect in the Power Electronic(UCE-supervision)	電力元件損壞
44	Overcurrent cutoff	過電流切斷
45	False parameter input during(H/W Init.)	錯誤參數輸入
46	UPS output out of tolerance	輸出超出規格
47	Output overload(i2t-supervision)	輸出過載
48	Not used	Not used
49	Not used	Not used
50	Bypass defective	旁路損壞
51	Bypass defective(during Transfer)	旁路轉換期間損壞
52	Bypass overload	旁路過載
53	Not used	Not used
54	Not used	Not used
55	Electronic defective(EEPROM Inverter)	控制器損壞
56	Communication with Battery Manager defective	電池管理通訊異常
57	Electronic defective(Check-sum EPROM)	控制器損壞
58	Environment temperature smaller than 0 grad or measurement defective	量測溫度異常
59	Optional module failed or not put in	外加模組訊號異常
60	Parallel Bypass failed	並聯旁路失敗
61	Signal fault in the Parallel Module	併聯版異常
62	Battery over charged	电池过冲
63	Bus over fault	Bus 电压过高保护
64	PFC Fail	PFC 坏
65	E2PROM Fail	E2PROM 损坏
66	Inverter Fail	逆变器损坏
67	Reactive Power Fail	实功fault
68	Site Fault	零火线接反
69	Negative power Fail	负功率Fault
70	Communication line fail	并机通讯线坏
71	Line Neutral loss	市电输入零线掉
72	Bus low fault	
73	P N Bus unbalance fault	
74	Bus soft timeout	
75	Inverter soft time out	
76	Inverter high fault	
77	Inverter low fail	
78	R Inverter short	
79	S Inverter short	

80	T Inverter short	
81	RS Inverter short	
82	ST Inverter short	
83	TR Inverter short	
84	R Inverter negative power fault	
85	S Inverter negative power fault	
86	T Inverter negative power fault	
87	Not used	Not used
88	Reserved for led test(no fault)	Not used
89	Not used	Not used
90	Not used	Not used
91	Load unbalance over 50%	負載不平衡超過50%

Warning & Fault Table (For New GriPower)

warning 表

Number	WarningTable	Comment
Bit1	cWC1_InternalWarning	内部警告
Bit 2	cWC1_EpoActive	EPO 有效
Bit 3	cWC1_ModuleUnLock	模块未锁
Bit 4	cWC1_LineLoss	市电异常
Bit 5	cWC1_IPNLoss	输入中线丢失
Bit 6	cWC1_LinePhaseErr	市电相序错误
Bit 7	cWC1_SiteFail	L、N 反接
Bit 8	cWC1_BypassLoss	旁路异常
Bit 9	cWC1_ByPassPhaseErr	旁路相序错误
Bit 10	cWC1_BatOpen	电池未接
Bit 11	cWC1_BatLow	电池电压低报警

Bit 12	cWC1_OverChg	电池过充
Bit 13	cWC1_BatReverse	电池反接
Bit 14	cWC1_OverLoad	过载预警
Bit 15	cWC1_OverLoadFail	过载报警
Bit 16	cWC1_FanLock	风扇故障
Bit 17	cWC1_MaintainOn	维修旁路盖板打开
Bit 18	cWC1_ChgFail	充电器故障
Bit 19	cWC1_ ErrorLocation	物理位置错误
Bit 20	cWC1H_cTurnOnAbornaml	不满足开机条件，无法开机
Bit 21	cWC1H_cRedundantLoss	冗余丢失
Bit 22	Reserved	
Bit 23	Reserved	
Bit 24	Reserved	
Bit 25	Reserved	
Bit 26	Reserved	
Bit 27	Reserved	
Bit 28	Reserved	
Bit 29	Reserved	
Bit 30	Reserved	
Bit 31	Reserved	
Bit 32	Reserved	

内部 warning 表

Number	WarningTable	Comment
Bit 1	cWC2_ cEepromFail	Eeprom 读写错误
Bit 2	cWC2_ ModuleAddrSame	模块地址相同

Bit 3	cWC2_ CommCanfail	CAN 通讯异常
Bit 4	cWC2_CommSynSigFail	同步信号线异常
Bit 5	cWC2_CommSynPulseFail	同步触发信号线异常
Bit 6	cWC2_CommHostLineFail	主机线异常
Bit 7	cWC2_ CommDisconnectFail	通讯线未接
Bit 8	cWC2_ CommMaleDisconnectFail	通讯线母线未连
Bit 9	cWC2_ CommFemaleDisconnectFail	通讯线公线未连
Bit 10	cWC2_PowerBad	工作电源异常
Bit 11	cWC2_ RPPFCFail	R 相正边 PFC 故障
Bit 12	cWC2_ RNPFCFail	R 相负边 PFC 故障
Bit 13	cWC2_ SPPFCFail	S 相正边 PFC 故障
Bit 14	cWC2_ SNPFCFail	S 相负边 PFC 故障
Bit 15	cWC2_ TPPFCFail	T 相正边 PFC 故障
Bit 16	cWC2_ TNPFCFail	T 相负边 PFC 故障
Bit 17	cWC2_InvPhaseErr	逆变输入相序错误
Bit 18	cWC2_UpsAllFault	UPS 模块全故障
Bit 19	cWC2_FuseOpen	保险丝熔断

Bit 20	cWC2_UnknownCabinetType	无法识别机种
Bit 21	cWC2_InvPhaseErr	逆变相序错误
Bit 22		
Bit 23		
Bit 24		
Bit 25		
Bit 26		
Bit 27		
Bit 28		
Bit 29		
Bit 30		
Bit 31		
Bit 32		

fault 表

Number	FaultTable	Comment
1	cBusSoftTimeOut	BUS 软启动超时
2	cBusOver	BUS 高压 Fault
3	cBusUnder	BUS 低压 Fault
4	cBusUnbalance	BUS 不平衡 Fault
5	cBusShort	Bus 短路故障
6	cInvSoftTimeOut	逆变软启动超时
7	cInvVoltHigh	逆变电压高压 Fault
8	cInvVoltLow	逆变电压低压 Fault
9	cOPVoltShort	输出电压短路
10	cRInvVoltShort	R 相逆变电压短路
11	cSInvVoltShort	S 相逆变电压短路
12	cTInvVoltShort	T 相逆变电压短路

13	cRSInvVoltShort	RS 相线电压短路
14	cSTInvVoltShort	ST 相线电压短路
15	cTRInvVoltShort	TR 相线电压短路
16	cInvNegPow	负功 Fault
17	cInvRNegPow	R 相负功 Fault
18	cInvSNegPow	S 相负功 Fault
19	cInvTNegPow	T 相负功 Fault
20	cTotalInvNegPow	三相总负功 Fault
21	cReactPowFault	不均流 Fault
22	cOverLoadFault	过载 Fault
23	cOverTemperature	过温 Fault
24	cInvRlyOpenFault	INV Rly 无法闭合
25	cInvRlyStickFault	INV Rly 粘死
26	cLineSCRFault	市电输入 SCR 故障
27	cBatScrFault	电池输入 SCR 故障
28	cByPassScrFault	旁路输入 SCR 故障
29	cConverterFailFault	整流器故障
30	cPFCOverCurrFault	输入过流故障
31	cWiringFault	输入输出接线错误
32	cCommLineLoss	通讯线未连
33	cHostlineFault	主机线故障
34	cCanFault	CAN 通讯线故障
35	cSynLineFault	同步信号线故障
36	cPowerFault	工作电源故障

37	cAllFansLockedFault	所有风扇全故障
38	cOCCoreFault	DSP 异常
39	cChgOpSoftTimeOut	充电器输出软启动超时
40	cUpsAllFault	UPS 模块全故障
41	cLineInNtcOpenFault	UPS 市电输入 NTC 开路故障
42	cLineInFuseOpenFault	市电输入 fuse 开路故障
43	cOutputCircuitFault	输出负载不平衡故障
44	cCoherencyFault	输入不一致故障