Voltronic Power

 UPS Communication Protocol

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# Document Description

## Goals

This document specifies the RS232 communication protocol used in the Galleon II UPS.

## Organization

There are three parts in this manual:

1. Introducing the Inquiry Command. By sending the commands you can get the information of the UPS you need. In the part some signals and their inquiry command are listed too.
2. Introducing the setting Command. By sending the control commands you can control the UPS.
3. Introducing the calibration Command. By sending the calibration Command you can calibration some parameter of the UPS.
4. Computer will control information exchange by a query followed by <cr>.
5. Computer and UPS respond both the "<cr>" as the end of a response.
6. UPS respond with “^” start, and with “,” separate the data.
7. In a UPS’s response, if there is no data, with “-” instead of data, and the length of the “-” as long as data.
8. In a UPS’s response, if some data length is less than the definition, type enough “#” before the data.

## Reference document

None

## Glossary – Abbreviations – Notations

None

# CRC Description

 The CRC in this document is a general standard of CRC-16 and is generated by the Half Byte look-up table method.

 The Table is as follows:

crc\_ta = {

0x0000,0x1021,0x2042,0x3063,0x4084,0x50a5,0x60c6,0x70e7,

 0x8108,0x9129,0xa14a,0xb16b,0xc18c,0xd1ad,0xe1ce,0xf1ef

}

The CRC generate method is show as below:

INT16U cal\_crc\_half(INT8U \*pin, INT8U len)

{

 INT16U crc;

 INT8U da;

 INT8U \*ptr;

 INT8U bCRCHign;

 INT8U bCRCLow;

 ptr=pin;

 crc=0;

 while(len--!=0) ……………………..1

 {

 da=((INT8U)(crc>>8))>>4;

 crc<<=4;

 crc^=crc\_ta[da^(((\*ptr)&0xFF)>>4)]; ……………………..2

 da=((INT8U)(crc>>8))>>4;

 crc<<=4;

 crc^=crc\_ta[da^(\*ptr&0x0f)];

 ptr++;

 }

 bCRCLow = (INT8U)(crc & 0x00FF);

 bCRCHign= (INT8U)(crc>>8);

 if(bCRCLow==0x28 || bCRCLow==0x0d || bCRCLow==0x0a)

 {

 bCRCLow++;

 }

 if(bCRCHign==0x28 || bCRCHign==0x0d || bCRCHign==0x0a)

 {

 bCRCHign++;

 }

 crc = ((INT16U)bCRCHign)<<8;

 crc += bCRCLow;

 return(crc);

}

For example:

UPS respond as follows data ^D007PI35<CRCH><CRCL><0x0d>

1,len means the length of data form ‘^’ to ‘5’,equal to 9;

2,\*ptr means get the data from the first responding data address, this is ‘^’.

When calculate the crc ,<CRCH> equal to (crc >>8 )&0xFF, means the high byte of CRC;

<CRCL> equal to crc&0xFF, means the low byte of CRC.

# Hardware Description

BAUD RATE...............: 2400 bps

DATA LENGTH..........: 8 bits

STOP BIT....................: 1 bit

PARITY.......................: NONE

Cabling:

 COMPUTER UPS

 ===================================

 RX (pin2) <----------> TX

 TX (pin3) <-----------> RX

 GND (pin5) <-----------> GND

(9 pins female D-type connector)

# UPS Respond Description

The UPS responding contents are as follows:

^DNNNAA,BBB.B,CCC.C,DDD.D…..<CRCH><CRCL><cr>

“^D” is a fixed form.

“NNN” means the length of the responding data (from the byte after NNN to byte <cr>).

“AA,BBB.B,CCC.C,DDD.D…..”:means responding data(refer to 5~7 chapter).

<CRCH>:means the high byte of CRC.

<CRCL>:means the low byte of CRC.

<cr>:means the end of a response.(This document also writes as <0x0d>)

# Inquiry Command

## ^P005Q3GS<0x0d>: The general status parameters inquiry

Computer: ^P005Q3GS<0x0d>

UPS:^D113AA,BBB.B,CCC.C,DDD.D,EE.E,FFF.F,GGG.G,HHH.H,II.I,JJJ.J,KKK.K,LLL.L,MMM.M,NNN.N,OOO.O,PPP.P,QQQ.Q,RRR.R,SSS,b9b8b7b6b5b4b3b2b1b0a0<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AA | UPS Work mode |
| BBB.B | Line Voltage R |
| CCC.C | Line Voltage S |
| DDD.D | Line Voltage T |
| EE.E | Line frequency |
| FFF.F | Output Voltage R |
| GGG.G | Output Voltage S |
| HHH.H | Output Voltage T |
| II.I | Output Frequency |
| JJJ.J | Output Current R |
| KKK.K | Output Current S |
| LLL.L | Output Current T |
| MMM.M | Load Percent R |
| NNN.N | Load Percent S |
| OOO.O | Load Percent T |
| PPP.P | Total Load Percent |
| QQQ.Q | Battery voltage P |
| RRR.R | Battery voltage N |
| SSS | Max temperature |
| b9b8 | Ups type 00: standby01: line-interactive10: on-line |
| b7 | Utility Fail |
| b6 | Battery Low |
| b5 | Bypass mode |
| b4 | UPS Failed |
| b3 | EPO active |
| b2 | Test in Progress |
| b1 | Shutdown Active |
| b0 | mute status (bat silence) |
| a0 | battery test ok |

## ^P005Q3LD<0x0d>: The Load Information Inquiry

Computer: ^P005Q3LD<0x0d>

UPS:^D0109AAA.A,BBB.B,CCC.C,DDD.D,EEE.E,FFF.F,GGG.G,HHH.H,III.I,JJJ.J,KKK.K,LLL.L,MMMMM,NNNNN,OOOOO,PPPPP,QQQQQ,RRRRR<CRCH><CRCL><0x0d>

|  |  |
| --- | --- |
| AAA.A | Max Load Percent R |
| BBB.B | Max Load Percent S |
| CCC.C | Max Load Percent T |
| DDD.D | Max Total Percent |
| EEE.E | Load VA Percent R |
| FFF.F | Load VA Percent S |
| GGG.G | Load VA Percent T |
| HHH.H | Load VA Total Percent |
| III.I | Load Watt Percent R |
| JJJ.J | Load Watt Percent S |
| KKK.K | Load Watt Percent T |
| LLL.L | Load Watt Total Percent |
| MMMMM | Load VA R |
| NNNNN | Load VA S |
| OOOOO | Load VA T |
| PPPPP | Load Watt R |
| QQQQQ | Load Watt S |
| RRRRR | Load Watt T |

## ^P004Q3Y<0x0d>: The Bypass Information Inquiry

Computer：^P004Q3Y<0x0d>

UPS: ^D043AAA.A,BBB.B,CCC.C,DDD.D,EEE.E,FFF.F,GG.G<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AAA.A | Bypass Voltage R |
| BBB.B | Bypass Voltage S |
| CCC.C | Bypass Voltage T |
| DDD.D | Bypass Current R |
| EEE.E | Bypass Current S |
| FFF.F | Bypass Current T |
| GG.G | Bypass Frequency |

## ^P005QBRT<0x0d>: The battery fixed paramater inquiry

Computer: ^P005QBRT<0x0d>

UPS: ^D033AA.A,BB.B,CCC,DDD.D,EE.E,FF.F,GG,HHH<CRC H><CRC L><0x0d>

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Description  | Range |  |
| AA.A | Reserved  | 120 |  |
| BB.B | Battery shutdown voltage | 10.5V~12.0V |  |
| CC.C | Battery Low voltage | (shutdown+0.1V)~(shutdown+2V) |  |
| DDD | Reserved | 0 |  |
| EEE.E | Reserved | 4.0 |  |
| FF.F | Battery High voltage | 14.0~15.0 |  |
| GG | battery cell number | 16~20/8~10 |  |
| HHH | Reserved | 0 |  |

## ^P005QBTT<0x0d>: Shut down time inquiry

Computer: ^P005QBTT<0x0d>

UPS: ^D011AAA,CC.C<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AAA | Shut down time (second) |
| CC.C | Shut down time (minute) |

## ^P004QBV<0x0d>: battery voltage paramater inquiry

Computer: ^P004QBV<0x0d>

UPS:^D049AAA.A,BBB.B,CCCC.C,DDD.D,EEE.E,FFFF.F,GGG,HHHH<CRC.H><CRC L><0x0d>

|  |  |  |
| --- | --- | --- |
| AAA.A | Battery Voltage P | V |
| BBB.B | Battery Discharging Current P | A |
| CCCC.C | Battery Charging Current P | A |
| DDD.D | Battery Voltage N | V |
| EEE.E | Battery Discharging Current N | A |
| FFFF.F | Battery Charging Current N | A |
| GGG | Battery Capacity | % |
| HHHH | Battery Remain time | Min |

## ^P005QFLG<0x0d>: Setting flag status inquiry

Computer: ^P005QFLG<0x0d>

UPS: ^D065A0B0C0…Z0a0…e1<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| **A** | Enable/disable all audible alarm（完全静音） |
| **B** | Enable/disable battery mode warning mute |
| **C** | Enable/disable code start(The gray means not support) |
| **D** | Enable/disable battery open status check |
| **E** | Enable/disable high efficiency mode（ECO mode） |
| **F** | Enable/disable bypass forbidden |
| **G** | Enable/disable energy saving |
| **H** | Enable/disable short restart 3 times |
| **I** | Enable/disable inverter short clear function |
| **J** | Enable/disable Output socket1 when the delay release time is over in battery mode . |
| **K** | Enable/disable Output socket2 when the delay release time is over in battery mode. |
| **L** | Enable/disable Site fault detect |
| **M** | Enable/disable hot standby function |
| **N** | Enable/disable deep high efficiency mode |
| **O** | Enable/disable bypass when UPS turn off.（bps enable/disable） |
| **P** | Enable/disable bypass audible warning |
| **Q** | Enable/disable Constant Phase Angle function |
| **R** | Enable/disable auto-restart |
| **S** | Enable/disable battery deep discharge protect |
| **T** | Enable/disable battery low protect (if disable, the battery will discharge to 6V) |
| **U** | Enable/disable Free run function |
| **V** | Enable/disable converter mode |
| **W** | Enable/disable limited runtime on battery mode |
| **X** | Enable/disable output parallel function in phase angle 0 |
| **Y** | Enable/disable phase auto adapt |
| **Z** | Enable/disable period battery test |
| **a** | Enable/disable power walk in delay function |
| **b** | Enable/disable battery test stop by time |
| **c** | Enable/disable battery test stop by voltage |
| **d** | Enable/disable work without battery |
| **e** | Enable/disable frequency auto detection |
| **f** | Enable/disable auto battery test function |
| **g** | Enable/disable warning mute |
| **h** | Enable/disable fault mute |
| **i** | Enable/disable all mode mute |

## ^P004QFS<0x0d>: The last fault code inquiry

Computer：^P004QFS<0x0d>

UPS: ^D006AAA<CRC H><CRC L><0x0d>

|  |  |  |  |
| --- | --- | --- | --- |
| Fault 类别 | Fault 名称 | Fault 代码 | Fault 描述 |
| Bus/converter fault | Bus start fail | 0x01 | 规定时间内，bus电压未达到设定值。 |
| Bus volt over | 0x02 | Bus电压超过上限值。 |
| Bus volt under | 0x03 | Bus电压低于下限值。 |
| Bus volt unbalance | 0x04 | 正负Bus电压之差超出允许范围。 |
| Bus short | 0x05 | Bus电压下降斜率过快。 |
| PFC over current | 0x06 | PFC输入电感电流过大。 |
| PFC IGBT over current | 0x07 | PFC IGBT电流过大 |
| Input contact fault | 0x08 | 输入接触器故障 |
| Inverter fault | Inverter soft start fail | 0x11 | 规定时间内，inverter电压未达到设定值。 |
| Inverter volt high | 0x12 | Inverter电压超过上限值。 |
| Inverter volt low | 0x13 | Inverter电压低于下限值。 |
| L1 inverter short | 0x14 | L1 inverter相短路。 |
| L2 inverter short | 0x15 | L2 inverter相短路。 |
| L3 inverter short | 0x16 | L3 inverter相短路。 |
| L1L2 inverter short | 0x17 | L1L2 inverter线短路。 |
| L2L3 inverter short | 0x18 | L2L3 inverter线短路。 |
| L3L1 inverter short | 0x19 | L3L1 inverter线短路。 |
| L1 inverter negative power | 0x1A | L1 inverter负功超出允许范围。 |
| L2 inverter negative power | 0x1B | L2 inverter负功超出允许范围。 |
| L3 inverter negative power | 0x1C | L3 inverter负功超出允许范围。 |
| Electric link fault | Bat SCR short fault | 0x21 | Battery scr短路故障 |
| Line SCR short fault | 0x22 | Line scr短路故障 |
| Inverter relay open fault | 0x23 | Inverter relay开路故障 |
| Inverter relay/STS short fault | 0x24 | Inverter relay或者STS短路故障 |
| Wiring fault | 0x25 | 输入输出线路反接故障 |
| Battery reverse fault | 0x26 | 电池反接故障 |
| Battery too high | 0x27 | 电池电压过高，远超出over charge点。 |
| Battery too low | 0x28 | 电池电压过低，远低于shut down点。 |
| Battery Fuse Open-Circuit Fault | 0x29 | 电池fuse开路故障 |
| Charger output short | 0x2A | Charger输出端短路 |
| BypScrFault | 0x2B | Bypass relay或者STS短路故障 |
| Parallel system fault | CAN communication fault | 0x31 | CAN bus通信故障。 |
| Host line fault | 0x32 | 主机信号线路故障。 |
| Synchronization line fault | 0x33 | 同步信号线路故障。 |
| Synchronization pulse line fault | 0x34 | 同步触发信号线路故障， |
| Parallel communication line loss | 0x35 | 并机通信线路丢失故障。 |
| Output circuit fault | 0x36 | 输出严重不均流故障。 |
| Others | Over temperature | 0x41 | UPS工作温度过高故障。 |
| CPU communication fault | 0x42 | 控制板中CPU间通信故障。 |
| Overload fault | 0x43 | 过载故障。 |
| Fan fault | 0x44 | 风扇模组故障。 |
| Charger fault | 0x45 | 充电器故障。 |
| Model fault | 0x46 | 机型设置错误 |
| MCU communication fault | 0x47 | 控制板与通讯板MCU通信故障 |
| DSP firmware version incompatible | 0x48 | 控制板软体版本不兼容 |
| IpOPPhaseError | 0x49 | 输入输出相序不兼容 |
| 　 | 0x4A | 　 |
| 　 | 0x4B | 　 |
| 　 | 0x4C | 　 |
| 　 | 0x4D | 　 |
| 　 | 0x4E | 　 |
| 　 | 0x4F | 　 |
| BypScrShort | 0x61 | 旁路SCR短路 |
| BypScrOpen | 0x62 | 旁路SCR开路 |
|  | RINVWaveAbnormal  | 0x63 | R相逆变波形不正常 |
|  | SINVWaveAbnormal  | 0x64 | S相逆变波形不正常 |
|  | TINVWaveAbnormal  | 0x65 | T相逆变波形不正常 |
|  | CTSatiation  | 0x66 | CT饱和 |
|  | BypassOutputShort(L-N) | 0x67 | 旁路相短路 |
|  | BypassOutputShort(L-L) | 0x68 | 旁路线短路 |
|  | InvScrShort | 0x69 | 逆变SCR短路 |
|  | Bus Volt Vary Fault | 0x6C | Bus电压下降斜率过快。 |
|  | Current Detect Fault | 0x6D | 电流侦测误差过大 |
|  | SPS Power Fault | 0x6E | SPS电源错误 |
|  | BAT Fault | 0x6F | 电池反接故障 |
|  | PFC R IGBT Fault | 0x71 | R相PFC IGBT 错误 |
|  | PFC S IGBT Fault | 0x72 | R相PFC IGBT 错误 |
|  | PFC T IGBT Fault | 0x73 | T相PFC IGBT 错误 |
|  | INV R IGBT Fault | 0x74 | R相INV IGBT 错误 |
|  | INV S IGBT Fault | 0x75 | S相INV IGBT 错误 |
|  | INV T IGBT Fault | 0x76 | T相INV IGBT 错误 |
|  | ISO Over Temp Fault | 0x77 | 变压器温度过高 |
|  | LCD&MCU Communication Fault | 0x78 | 彩屏与通讯板通讯失败 |
|  | EEPROM Fault | 0x79 | EEPROM 故障 |

\*GRAY: Not Support

## ^P004QID<0x0d>: UPS serial number inquiry

Computer: ^P004QID<0x0d>

UPS: ^D021AAAAAAAAAAAAAAAAAA<CRC H><CRC L><0x0d>

\*Fixed Length 17

## ^P004QMD<0x0d>: UPS Mode inquiry

Computer: ^P004QMD<0x0d>

UPS: ^D042AAxxxxxxxx,BBBBBB,CCC,DDD,EEE,FF,GG<CRC H><CRC L><0x0d>

|  |  |  |  |
| --- | --- | --- | --- |
| AAxxxxxxxx | unit Name (10 Bytes) |  | GALLE0N2 显示容量信息 |
| BBBBBB | Rating ouput VA (w) |  | 额定功率 |
| CCC | Output Factor | 090 means PF 0.9 |  |
| DDD | Input phase/Output phase | fixed 3/3 |  |
| EEE | Input Rating voltage |  |  |
| FFF | Output Rating voltage |  |  |
| GG | battery piece number |  | 电池节数 |
| HH | voltage per cell  | 12 | 固定显示12 |

\*This whole length is 10bits, if the model value less than 10 bits, use “#” instead before the UPS model, for example: GALLEON2 3-3 40KL Standard: #GAL2 40KL; GALLEON2 3-3 40KS Standard: ##GAL2 40K,

## ^P004QPI<0x0d>: Protocol ID Inquiry

Computer: ^P004QPI<0x0d>

UPS: ^D007PI38<CRC H><CRC L><0x0d>

\*Fixed PI38:Galleon2 3-3 UPS

## ^P005QRHL<0x0d> : UPS Range inquiry

Computer：^P005QRHL<0x0d>

UPS:^D052AAA,BBB,CC,DD,EEE,FFF,GG.G,HH.H,III,JJJ,KK.K,LL.L<CRCH><CRCL><0x0d>

|  |  |
| --- | --- |
| AAA | Line Voltage High |
| BBB | Line Voltage Low  |
| CC.C | Line Frequency High |
| DD.D | Line Frequency Low |
| EEE | Bypass Voltage High |
| FFF | Bypass Voltage Low  |
| GG.G | Bypass Frequency High |
| HH.H | Bypass Frequency Low |
| III | ECO Voltage High |
| JJJ | ECO Voltage Low |
| KK.K | ECO Frequency High |
| LL.L | ECO Frequency Low |

## ^P004QRI<0x0d>: UPS Rating Information inquiry

Computer: ^P004QRI<0x0d>

UPS: ^D022AAA.A,CCC.C,DDD,EE.E<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AAA.A | Rating output voltage |
|  |  |
| CCC.C | Rating battery voltage |
| DDD | Reserved |
| EE.E | Rating output frequency |

## ^P005QTPR<0x0d>: The temperature inquiry

Computer: ^P005QTPR<0x0d>

UPS: ^D018AAA,BBB,CCC,DDD<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AAA | temperature 1 |
| BBB | temperature 2 |
| CCC | Temperature 3 |
| DDD | Max temperature |

## ^P005QVFW<0x0d>::DSP and CPU Firmware version inquiry

Computer: ^P005QTPR<0x0d>

UPS: ^D024AAAA,BB.CC,DDDD,EE.FF,GGGG,HH.II<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| AAAA | DSP1 firmware number |
| BB | DSP1 firmware version |
| CC | DSP1 firmware extra version |
| DDDD | MCU firmware number |
| EE | MCU firmware version |
| FF | MCU firmware extra version |

## ^P004QWS<0x0D>: Warning Status Inquiry

Computer: ^P004QWS<0x0D>

UPS: ^D075a0a1…a71<CRC H><CRC L><0x0d>

|  |  |  |  |
| --- | --- | --- | --- |
| bit | code |  | note |
| a0 | 1 | Battery open | 电池未接报警。 |
| a1 | 2 | IP N loss | 输入N线丢失报警。 |
| a2 | 3 | IP site fail | 输入零火线接反报警。 |
| a3 | 4 | Line phase error | 三相输入时，市电L1/L2/L3相序错误。 |
| a4 | 5 | Bypass phase error | 三相输入时，旁路L1/L2/L3相序错误。 |
| a5 | 6 | Bypass frequency unstable | 旁路输入频率变化过快，超出UPS锁相能力。 |
| a6 | 7 | Battery over charge | 电池过充报警。 |
| a7 | 8 | Battery low | 电池低压报警。 |
| a8 | 9 | Overload warning | 过载报警。 |
| a9 | 0A | Fan lock warning | 风扇模组堵转报警。（GALLEON2加入） |
| a10 | 0B | EPO active | EPO开关生效。 |
| a11 | 0C | Turn on abnormal | 系统不允许开机。 |
| a12 | 0D | Over temperature | 过温报警。 |
| a13 | 0E | CHGFail | CHG故障（GALLEON2 更改） |
| a14 | 0F | Remote shut down | 远程自动关机报警。 |
| a15 | 10 | L1 IP fuse fail | L1输入保险开路报警。 |
| a16 | 11 | L2 IP fuse fail | L2输入保险开路报警。 |
| a17 | 12 | L3 IP fuse fail | L3输入保险开路报警。 |
| a18 | 13 | L1 PFC positive error | L1正边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a19 | 14 | L1 PFC negative error | L1负边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a20 | 15 | L2 PFC positive error | L2正边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a21 | 16 | L2 PFC negative error | L2负边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a22 | 17 | L3 PFC positive error | L3正边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a23 | 18 | L3 PFC negative error | L3负边 PFC工作异常，连续48个count PWM输出始终为满偏。 |
| a24 | 19 | CAN communication error | CAN bus通信报警。 |
| a25 | 1A | Synchronization line error | 同步信号线路报警。 |
| a26 | 1B | Synchronization pulse error | 同步触发信号线路报警。 |
| a27 | 1C | Host line error | 主机信号线路报警。 |
| a28 | 1D | Male connection error | 并机通信线公端连接脱落报警。 |
| a29 | 1E | Female connection error | 并机通信线母端连接脱落报警。 |
| a30 | 1F | Parallel line connection error | 并机通信线脱落报警 |
| a31 | 20 | Battery connect different | 并机系统各模块电池连接不一致。 |
| a32 | 21 | Line connect different | 并机系统各模块市电连接不一致。（GALLEON2 加入） |
| a33 | 22 | Bypass connect different | 并机系统各模块旁路连接不一致。（GALLEON2 加入） |
| a34 | 23 | Mode type different | 并机系统中各UPS机种类型不一致。 |
| a35 | 24 | Parallel inverter voltage setting different | 并机系统逆变电压设置不一致。 |
| a36 | 25 | Parallel output frequency setting different | 并机系统输出频率设置不一致。 |
| a37 | 26 | Battery cell over charge | 电池单体过充电 |
| a38 | 27 | Parallel output parallel setting different | 并机系统输出并联设置不一致。 |
| a39 | 28 | Parallel output phase setting different | 并机系统输出相角设置不一致。 |
| a40 | 29 | Parallel Bypass Forbidden setting different | 并机系统旁路禁止标志位设置不一致。 |
| a41 | 2A | Parallel Converter Enable setting different | 并机系统CVCF标志位设置不一致。 |
| a42 | 2B | Parallel Bypass Freq High loss setting different | 并机系统旁路频率丢失点上限设置不一致。 |
| a43 | 2C | Parallel Bypass Freq Low loss setting different | 并机系统旁路频率丢失点下限设置不一致。 |
| a44 | 2D | Parallel Bypass Volt High loss setting different | 并机系统旁路电压丢失点上限设置不一致。 |
| a45 | 2E | Parallel Bypass Volt Low Loss setting different | 并机系统旁路电压丢失点下限设置不一致。 |
| a46 | 2F | Parallel Line Freq High Loss setting different | 并机系统市电频率丢失点上限设置不一致。 |
| a47 | 30 | Parallel Line Freq Low Loss setting different | 并机系统市电频率丢失点下限设置不一致。 |
| a48 | 31 | Parallel Line Volt High Loss setting different | 并机系统市电电压丢失点上限设置不一致。 |
| a49 | 32 | Parallel Line Volt Low Loss setting different | 并机系统市电电压丢失点下限设置不一致。 |
| a50 | 33 | Locked in bypass after overload 3 times in 30min | 30分钟内过载三次锁在旁路告警。 |
| a51 | 34 | Warning for three-phase AC input current unbalance | PFC输入电流不平衡告警。 |
|
| a52 | 35 | Battery Phase loss | 电池相序丢失 |
| a53 | 36 | Inverter current unbalance | 逆变并板不均流告警。（GALLEON2 加入） |
| a54 | 37 | P1 cut off pre-alarm | P1切断预警 |
| a55 | 38 | Warning for Battery replace | 电池需要更换告警（彩屏程序才支持） |
| a56 | 39 | Warning for input phase error | 输入相角不正常告警 |
| a57 | 3A | Cover of maintain switch is open | 维护旁路开路报警 |
| a58 | 3B | Phase Auto Adapt Failed | 相位自动侦测失败 |
| a59 | 3C | Utility extremely unbalanced | 市电电压极度不平衡 |
| a60 | 3D | Bypass unstable | 旁路状态不稳定 |
| a61 | 3E | Battery Volt High | 电池电压过高 |
| a62 | 3F | Battery Volt Unbalance | 电池电压不平衡 |
| a63 | 40 | CHG Short | CHG短路（GALLEON2 对应告警码不一样） |
| a64 | 41 | Bypass Loss | 旁路丢失 |
| a65 | 42 | ISO Over Temperature | 变压器过温告警 |
| a66 | 43 | Bus Softstart Error | BUS电压软起失败 |
| a67 | 44 | EEPROM Fail | EEPROM错误（GALLEON3 加入） |
| a68 | 45 | Output Dry Switch Open | 输出干接点告警（高阶通讯板干接点功能） |
| a69 | 46 | Battery Dry Switch Open | 电池干接点告警（高阶通讯板干接点功能） |
| a70 | 47 | Bypass Dry Switch Open | 旁路干接点告警（高阶通讯板干接点功能） |
| a71 | 48 | Input Dry Switch Open | 输入干接点告警（高阶通讯板干接点功能） |

\*GRAY:Not Support Now

## ^P006QTYPE<0x0D>:INPUT TYPE INQUIRY

Computer: ^P006QTYPE<0x0D>

UPS: ^D012A……………<CRC H><CRC L><0x0d>

|  |  |
| --- | --- |
| A | Intype 0：line / 1:Generator |
| B | 0: single input/ 1: dual input |
| C | 0: HV / 1: LV |
| D | - |
| E | - |
| FFF | --- |

\*New Add

# Set Command

## ^S005BOFF<0x0d>: Silence buzzer beep

Computer: ^S005BOFF<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: The buzzer beep silence .

## ^S004BON<0x0d>: buzzer beep open

Computer: ^S004BON<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: The buzzer beep open

## ^S005CFTD<0x0d>: default calibration factor

Computer: ^S005CFTD<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Restore calibration factor

\*take effect when UPS turn on next time

## ^S009CHMC04.0<0x0d>: set charging current

Computer: ^S009CHMC04.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set the max charging current, unit is A

## ^S003CS<0x0d>:cancel shutdown and restore

Computer: ^S003CS<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Cancel the S<n><cr> and S<n>R<m><cr> **and SON** command.

If UPS is in waiting shutdown state, the shut down command is cancelled.

If UPS is in waiting restore state, the UPS output is turned on, but UPS must be hold off at least 10 seconds. (If utility is present)

##  ^S003CT<0x0d>: cancel battery test

Computer: ^S003CT<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Cancel all test activity and connect the utility to output immediately.

## ^S009PHFH52.0<0x0d>:set eco freq high loss point

Computer: ^S009PHFH52.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set ECO freq high loss point,unit is Hz;The max freq point is 52.0Hz

## ^S009PHFL48.0<0x0d>:set eco freq low loss point

Computer: ^S009PHFL48.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set ECO freq low loss point,unit is Hz;The min freq point is 48.0Hz

## ^S008PHVH240<0x0d>:set eco voltage high loss

Computer: ^S008PHVH240

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set ECO voltage high loss point,unit is V;The max freq point is (op volt+11V)

## ^S008PHVL200<0x0d>:seteco voltage Low loss

Computer: ^S008PHVL200<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set ECO voltage loss point,unit is V;The min voltage point is (op volt-11V)

## ^S005PFTD<0x0d>:default parameter Factor

Computer: ^S005PFTD<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set the bypass voltage and freq to default

 Set the ECO voltage and freq to default

 Set the Control Flag to default

## ^S009PSFH52.0<0x0d>:set bypass freq high loss point

Computer: ^S009PSFH52.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set bypass freq high loss point ,unit is Hz; The high freq range is 51~54Hz or 61~64Hz

## ^S009PSFL48.0<0x0d>:set bypass freq low loss point

Computer: ^S009PSFL48.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set bypass freq low loss point ,unit is Hz; The low freq range is 51~54Hz or 61~64Hz

## ^S010PSVH240.0<0x0d>:set bypass voltage high loss point

Computer: ^S010PSVH240.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set bypass voltage high loss point, unit isV; The high voltage range is 231~276V

## ^S010PSVL200.0<0x0d>:set bypass voltage low loss point

Computer: ^S010PSVL200.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set bypass voltage high loss point, unit is V; The high voltage range 176~209V

## ^S005REEP<0x0d>:restore eeprom date

Computer: ^S005REEP<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Restore eeprom date to default

\*take effect when UPS turn on next time

## ^S009SBHV15.0<0x0d>:set the battery high warning voltage

Computer: ^S009SBHV15.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set the battery high warning voltage, unit is V/pcs; The voltage range is 14.0~15.0V

## ^S009SBLV11.4<0x0d>:set the battery low warning voltage

Computer: ^S009SBLV11.4<0x0d

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set the battery low warning voltage, unit is V/pcs; The voltage range is (Under volt Point+0.1V)~( Under volt Point +2V)

## ^S009SBSV10.5<0x0d>:set the battery under(shutdown) voltage

Computer: ^S009SBSV10.5<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set the battery under(shutdown) voltage, unit is V/pcs; The voltage range is 10.5~12.0V

## ^S008SOPV220<0x0d>:set output voltage

Computer: ^S008SOPV220<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set output voltage,unit is V;The volt point is 208\220\230\240V

## ^S005SN.6<0x0d>:set shut down time in nn minute

Computer: ^S005SN.6<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set shut down time in nn minute

## ^S005SOFF<0x0d>:turn off the UPS

Computer: ^S005SOFF<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: turn off the UPS

## ^S004SON<0x0d>:turn on the UPS

Computer: ^S004SON<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: turn on the UPS

## ^S009SOPF60.0<0x0d>:set the output frequency

Computer: ^S009SOPF60.0<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set UPS output nominal frequency to 50Hz or 60Hz. (Only in bypass mode)

## ^S005SPDA<0x0d>:disable control flag

Computer: ^S005SPDA<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Disable control flag

|  |  |
| --- | --- |
| **No** | **Control setting** |
| **A** | Enable/disable all audible alarm（完全静音） |
| **B** | Enable/disable battery mode warning mute |
| **E** | Enable/disable high efficiency mode（ECO mode） |
| **F** | Enable/disable bypass forbidden |
| I | Enable/disable inverter short clear function |
| **M** | Enable/disable hot standby function |
| **O** | Enable/disable bypass when UPS turn off.（bps enable/disable） |
| **P** | Enable/disable bypass audible warning |
| **R** | Enable/disable auto-restart |
| **S** | Enable/disable battery deep discharge protect |
| **V** | Enable/disable converter mode |
| **i** | Enable/disable all mode mute |

\*GRAY: Not support now

## ^S005SPEA<0x0d>:enable control flag

Computer: ^S005SPEA<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Enable control flag

## ^S007SR0010<0x0d>:restart in nnnn minute

Computer: ^S007SR0010<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set restart time in nnnn minute

## ^S022STID0123456789abcedef<0x0d>:set ups serial number

Computer: ^S022STID0123456789abcedef<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Set the serial number of UPS

\*This whole length is 17bits, if the value less than 17bits, use “0” to instead

## ^S004T10<0x0d>:do battery test for 10 second

Computer: ^S004T10<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: do battery test for 10 second

## ^S003TL<0x0d>:do battery test until battery low

Computer: ^S003TL<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: do battery test until battery low

## ^S005TN.8<0x0d>:do battery test for nn minute

Computer: ^S005TN.8<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: do battery test for nn minute

## ^S009SINTYPE<n><0x0d>:set input Type Line or generator

Computer: ^S009SINTYPE<n><0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: set input Type Line or generator

\*’0’:normal line input;

’1’: generator input

# Calibration Command

## ^C008RLV+007<0x0d>: calibration R line voltage

Computer: ^C008RLV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

 Means: Calibration R line voltage percent value; The range of the value is 0~10%

## ^C008SLV+007<0x0d>: calibration S line voltage

Computer: ^C008SLV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

 Means: Calibration S line voltage percent value; The range of the value is 0~10%

## ^C008TLV+007<0x0d>: calibration T line voltage

Computer: ^C008TLV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

 Means: Calibration T line voltage percent value; The range of the value is 0~10%

## ^C008ROV+007<0x0d>: calibration R output voltage

Computer: ^C008ROV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration R Output voltage percent value; The range of the value is 0~10%.

## ^C008SOV+007<0x0d>: calibration S output voltage

Computer: ^C008SOV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration S Output voltage percent value; The range of the value is 0~10%.

## ^C008TOV+007<0x0d>: calibration T output voltage

Computer: ^C008TOV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration T Output voltage percent value; The range of the value is 0~10%.

## ^C008ROC+007<0x0d>: calibration R output current

Computer: ^C008ROC+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration R Output current percent value; The range of the value is 0~12.5%.

## ^C008SOC+007<0x0d>: calibration S output current

Computer: ^C008SOC+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration S Output current percent value; The range of the value is 0~12.5%.

## ^C008TOC+007<0x0d>: calibration T output current

Computer: ^C008TOC+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration T Output current percent value; The range of the value is 0~12.5%.

## ^C009RIVV+007<0x0d>:calibration R inverter voltage

Computer: ^C009RIVV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration R inverter voltage percent value; The range of the value is 0~10%.

## ^C009SIVV+007<0x0d>:calibration S inverter voltage

Computer: ^C009SIVV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration S inverter voltage percent value; The range of the value is 0~10%.

## ^C009TIVV+007<0x0d>:calibration T inverter voltage

Computer: ^C009TIVV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration T inverter voltage percent value; The range of the value is 0~10%.

## ^C009RBYV+007<0x0d>: calibration R bypass voltage

Computer: ^C009RBYV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration R Bypass voltage percent value; The range of the value is 0~10%.

## ^C009SBYV+007<0x0d>: calibration S bypass voltage

Computer: ^C009SBYV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration S Bypass voltage percent value; The range of the value is 0~10%.

## ^C009TBYV+007<0x0d>: calibration T bypass voltage

Computer: ^C009TBYV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration T Bypass voltage percent value; The range of the value is 0~10%.

## ^C010BUSPV+007<0x0d>:calibration actual positive bus voltage

Computer: ^C010BUSPV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration positive BUS voltage percent value; The range of the value is 0~10%.

##  ^C010BUSNV+007<0x0d>:calibration actual negative bus voltage

Computer: ^C010BUSNV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration negative BUS voltage percent value; The range of the value is 0~10%.

##  ^C010BATPV+007<0x0d>:calibration positive battery voltage

Computer: ^C010BATPV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration positive battery voltage percent value; The range of the value is 0~10%.

## ^C010BATNV+007<0x0d>:calibration negative battery voltage

Computer: ^C010BATNV+007<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration negative battery voltage percent value; The range of the value is 0~10%.

## ^C011BUS2PV+000<0x0d>: calibrate display positive bus voltage

Computer: ^C011BUS2PV+000<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration display positive BUS voltage percent value; The range of the value is 000~100(0~10%).

##   ^C011BUS2NV+000<0x0d>: calibrate display negative bus voltage

Computer: ^C011BUS2NV+000<0x0d>

UPS: ^D006ACK<CRC H><CRC L><0x0d>

if UPS accepts this command, otherwise, responds ^D006NAK<CRC H><CRC L><0x0d>

Means: Calibration display negative BUS voltage percent value; The range of the value is 000~100(0~10%).