SANTAK
山特电子(深圳)有限公司

山特3C3 EX UPS
RS232通讯协议

PROTOCOL COMMAND

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一. 硬件 Hardware:

BAUD RATE . . . . . : 2400 bps
DATA LENGTH . . . . . : 8 bits
STOP BIT . . . . . : 1 bits
PARITY . . . . . : NONE

二、命令

Commands :

Q2	Q2,XX	Status inquiry 2
WA	WA,XX	KW and KVA
S<n>	S<n>,XX	Shutdown

Computer: **Q2 <cr>**
UPS: (MMM.M MMM.M MMM.M NNN.N PPP.P PPP.P PPP.P QQQ QQQ QQQ RR.R SSS.S TT.T b7b6b5b4b3b2b1b0 ttt.tt CCC BB ff ff ff ff wwwwwwww YO<cr>

输入电压: MMM.M

M is an integer number 0 to 9. The Unit is Volt. 3 Phase system, three Phases will represent Phase R, S, T in sequence Split Phase system, three Phases will represent Phase R, S and RS in sequence

上次输入异常电压: NNN.N

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

输出电压: PPP.P

P is an integer number 0 to 9. The Unit is Volt.
3 Phase system, three Phases will represent Phase R, S, T in sequence
Split Phase system, three Phases will represent Phase R, S and RS in sequence

输出电流: QQQ

QQQ is a percent of maximum current, not an absolute value.
3 Phase system, three Phases will represent Phase R, S, T in sequence
Split Phase system, three Phases will represent Phase R, S and RS in sequence

输出频率: RR.R

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

电池电压: SSS.S

S is an integer number ranging from 0 to 9.

温度: TT.T

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

UPS 状态:<b7b6b5b4b3b2b1b0>.

<bn> is a binary number „0“ or „1“.
UPS status:

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 Offline (0 is On_line)
2	1 : Test in Progress
1	1 : Shutdown Active
0	Reserved (always 0) **(Extendable)**

预计电池备用时间: 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!

电池容量百分比 %:CCC

This 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!
According to our research and development results the battery capacity can be improved by the special maintenance and cultivation of the battery by the UPS. A charge status valued < 100% therefore can be the result.
Provided range for the program:
CCC = 000 ..to .. 133.
Values greater 133 % will be shown as the maximum. Values greater than 100 will be displayed graphically with a full light bar column (100%) and shown digitally as the received value <= 133.

电池测试状态: BB (Extendable)

00 idle

01 processing

02 result : no failure

03 result : failure / warning

04 Not possible or inhibite

05 Test cancel

06 Reserved

07 Other values

故障代码： ff

The Protocol has 4 fault containers which could be filled simultaneously. The range of fault numbers covers from 32 to 99. E.g. :
00 41 55 78 means for each container a certain fault message (in : 00 – INVERTER – BYPASS – OTHERS).
A text file which will contain 100 lines will represent all Faults and Warnings.
PowerProtect should show the fault number and message text as one line for each container. more see table1

警告代码:wwwwwwww (Hex character)

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
Mean warning 10,11,13 ,then find the warning table .more see table1

输入变压器类型: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显示输出电压为相电压或线电压 :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
mainly for three phase UPS

Computer: WA <cr>
UPS: (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>
The first of the UPS respond is very similar to the existing inquiry Q1 however

输出有功功率:WWW.W

W is an integer number 0 to 9. The Unit is KW.
3 Phase system, three Phases will represent Phase R, S, T in sequence
Split Phase system, three Phases will represent Phase R, S and RS in sequence

输出视在功率:VVV.V

V is an integer number 0 to 9. The Unit is KVA.
3 Phase system, three Phases will represent Phase R, S, T in sequence
Split Phase system, three Phases will represent Phase R, S and RS in sequence

总功率:TTT.T

T is an integer number 0 to 9. The Unit is KW.
3 Phase system, Include of three phase R,S,&T real power.
Split Phase system, Include of three phase R,S real power.

总视在功率:SSS.S

S is an integer number 0 to 9. The unit is KVA.
3 Phase system, Include of three phase R,S,&T complex power.
Split Phase system, Include of three phase R, S complex power.

输出电流:AAA.A

A is an integer number 0 to 9. The unit is A. R phase
3 Phase system, three Phases will represent Phase R, S, T in sequence
Split Phase system, three Phases will represent Phase R, S and RS in sequence

负载百分比:QQQ

QQQ is maximum of W% or VA%. VA% is a percent of maximum VA. W% is a percent of maximum real power.

UPS 状态:b7b6b5b4b3b2b1b0

The same of Q1 UPS status :

S<n>

Shutdown command:

Computer:

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, .3, ..., 01, 02,..., to 10.
For example: S.3<cr> --- shut out put off in 0.3 minutes (equal 3*60=18 seconds)