

Edition: AUG 2005

Preliminary:

UPS Communication Protocol (Phoenixtec Protocol)

This document specifies the RS232C communication protocol of UPS for PHOENIXTEC POWER Company. The protocol provided the following features.

- Monitor charger status.
- Monitor battery status and conditions.
- Monitor inverter status.
- Monitor UPS status.
- Monitor the utility status.
- Provide the power switch function for computer to turn on and off the utility on schedule for power saving.

<cr>: IBM PC ASCII code „ Carriage Return“. HEX – code : OD.

Computer will control information exchange by a query followed by <cr>, IBM PC ASCII code „ Carriage Return „ (HEX-code OD) . UPS will respond with information followed by a <cr> or action . Some data /functions will be different depending on whether the UPS is a standby or on_line system. UPS data will be provided at 2400 baud rate and consist of 8 data bits, one stop bite and no parity bite. All the information is provided in ASCII format.

Standby system will be capable of performing UPS test – short term, user specified term, or to low battery warning. All system will respond to inverter shut down and output shut down after a specified delay and for specified time.

They will also permit cancellation of the shut down sequence.

Hardware :

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

Commands :

Q1	Q1,XX	Status inquiry 1
T	T,XX	10 seconds test
TL	TL,XX	Test until battery low
T<n>	T<n>,XX	Test for specified time period
CT	CT,XX	Cancel Test
CB<n>	CB<n>,XX	Change Baudrate

Status inquiry 1 command:

Computer:

Q1 <cr>

UPS:

**(MMM.M NNN.N PPP.P QQQ RR.R S.SS TT.T
b7b6b5b4b3bb2b1b0<cr>**

I/P voltage:	MMM.M M is an integer number ranging from 0 to 9. The unit is Volt. R Phase
I/P fault voltage:	NNN.N N is an integer number ranging from 0 to 9. The unit is Volt. R,S,T Phase possible
O/P voltage:	PPP.P P is an integer number ranging from 0 to 9. The unit is Volt. R Phase
O/P load:	QQQ QQQ is maximum of W% or VA%. VA% is a percent of maximum VA. W% is a percent of maximum real power.
I/P frequency:	RR.R R is an integer number ranging from 0 to 9. The unit is Hz.
Battery cell voltage:	S.SS S is an integer number ranging from 0 to 9.
Temperature:	TT.T T is an integer number ranging from 0 to 9. The unit is degree of centigrade.
UPS Status:	b7b6b5b4b3b2b1b0 Where <bn> is a binary number „0“ or „1“. UPS status :

Bit	Description
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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>

The binary code is modified to 8 bytes ASCII code for avoiding the binary code confused with ASCII control code.

Between each data stream add one space for the data separation.

Example:

Computer: Q1<cr>

UPS: (208.4 140.0 208.4 034 59.9 2.05 35.0 00110000<cr>

Means: I/P voltage is 208.4 V.

 I/P fault voltage is 140.0 V.

 O/P voltage is 208,4 V

 O/P load is 34%.

 I/P frequency is 59.9 Hz

 Battery voltage is 2.05 V.

 Temperature is 35.0 degrees of centigrade.

 UPS type is on-line, UPS failed, Bypass active, and shutdown not active.

10 seconds test command:

Computer:

T<cr>

UPS: Test for 10 seconds and return to utility.

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

Test until battery low command:

Computer:

TL<cr>

UPS: Test until battery low and return to utility.

Test for specified time command:

Computer:

T<n><cr>

UPS: battery test for <n> minutes

Cancel test command :

Computer:

CT<cr>

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

Change Baud rate command:

Computer:

CB<n><cr>

UPS:

(<n><cr>

Baudrate rate:

<n>

n is an integer number ranging from 0 to 9.

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

Stop Byte:

<cr>

Status inquiry 1 with slave address command:

Computer:

Q1,XX<cr>

Slave Address (UPS ID):

XX

X is an integer number ranging from 0 to 9.

UPS:

**(XX MMM.M NNN.N PPP.P QQQ RR.R S.SS TT.T
b7b6b5b4b3b2b1b0<CR>**

The Q1,XX command has the same function with Q1 command.

10 seconds test with slave address command:

Computer:

T,XX<cr>

**Slave Address
(UPS ID):**

XX

X is an integer number ranging from 0 to 9.

The T,XX command has the same function with T command.

Test until battery low with slave address command:

Computer:

TL,XX<cr>

**Slave Address
(UPS ID):**

XX

X is an integer number ranging from 0 to 9.

The TL,XX command has the same function with TL command.

Test for specified time with slave address command:

Computer:

T<n>,XX<cr>

**Slave Address
(UPS ID):**

XX

X is an integer number ranging from 0 to 9.

Time Period

<n> is a number ranging from 01 to 99

The T<n>,XX command has the same function with T<n> command.

Cancel test with slave address command:

Computer:

CT,XX<cr>

**Slave Address
(UPS ID):**

XX

X is an integer number ranging from 0 to 9.

The CT,XX command has the same function with CT command.

Change Baud rate with slave address command:

Computer:

CB<n>, XX<cr>

UPS:

(XX <n><cr>

Baudrate rate:

<n>

n is an integer number ranging from 0 to 9.

The CB<n>,XX command has the same function with CB<n> command.