



MARATHON  
P O W E R

# **VAULT SERIES UPS**

**RS-232 Communication Protocol**

**For Version 2.7**

## MARATHON POWER UPS COMMUNICATION PROTOCOL

### A. GENERAL:

This document specifies the RS232C communication protocol for the Vault Series UPS.

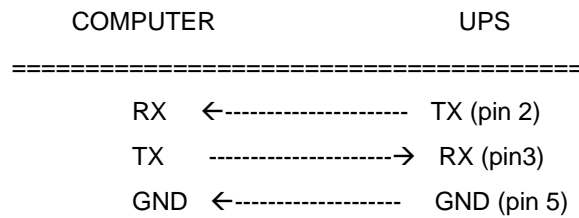
The protocol:

1. Monitors charger status.
2. Monitors battery status and condition.
3. Monitors utility (AC power) status.
4. Provides power on and off scheduling for a connected load (computer).

The computer will control information exchange by a query followed by <cr>. The UPS will respond with information followed by a <cr> or action.

### B. HARDWARE:

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



(9 pin female D-type connector)

## C. COMMUNICATION PROTOCOL:

### (1) Status Inquiry:

Computer: Q1<cr>

UPS: UPS status data stream, such as

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

UPS status data stream:

There should be a space between every field for data separation. The meaning of each field listed is as follows:

a) Start byte: (

b) I/P voltage: MMM.M

M is an integer (number) ranging from 0 to 9.

The unit is Volts.

c) I/P fault voltage: NNN.N

N is an integer (number) ranging from 0 to 9.

The unit is Volts.

Its function is to identify a short duration utility failure which will cause the UPS to go to battery mode. If this occurs, the input voltage will appear normal at query prior to failure and will still appear normal at the next query. The I/P fault voltage will retain the utility failure voltage until the next query. After the query, the I/P voltage will be same voltage until the next utility failure occurs.

d) O/P voltage: PPP.P

P is an integer (number) ranging form 0 to 9.

The unit is Volts.

e) O/P Load Percent: QQQ

Q is an integer (number) ranging form 0 to 9

f) I/P frequency: RR.R

R is an integer (number) ranging from 0 to 9.

The unit is Hz.

g) Battery Cell Voltage: S.SS

S is an integer (number) ranging from 0 to 9.

The unit is Volts

h) Temperature: TT.T

T is an integer (number) ranging from 0 to 9.

The unit is degrees centigrade.

i) UPS Status: <U>

<U>is one byte of binary information such as

<b7b6b5b4b3b2b1b0>

Where bn is an ASCII character '0' or '1'.

UPS status:

Bit	Description
7	1 : Utility Failure (Immediate)
6	1 : Battery Low
5	1 : Bypass Active
4	1 : UPS Failure
3	1 : UPS Type (On Line Type is 0)
2	1 : Test In Progress
1	1 : UPS Turn Off
0	1 : Silence On

j) Stop Byte: <cr>

For 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 208.4V.

I/P fault voltage is 140.0V.

O/P voltage is 208.4V.

O/P Load is 34%

I/P frequency is 59.9HZ.

Battery Cell voltage is 2.05V.

Temperature is 35.0 degrees centigrade.

UPS is of the on-line type, UPS has failed. Bypass is active

(2) Test for 10 seconds:

Computer: T<cr>

UPS: Test for 10 seconds and return to utility.

If a low battery condition occurs during testing, the UPS will return to utility immediately.

(3) Test until battery low:

Computer: TL<cr>

UPS: Test until battery low and return to utility.

(4) Test for specified time period :

Computer: T<n><cr>

UPS: Test for <n>minutes.

a. If during testing, a low battery condition occurs, the UPS will return to utility.

b. <n> is a number ranging from 01 to 99.

(5) Shutdown Command :

Computer: S<n><cr>

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

a. The UPS output will be turned off in <n> minutes, even if utility power is present.

b. If a low battery state occurs before <n> minutes, the output is turned off immediately.

c. After the UPS has shutdown, the internal controller monitors the utility power. If power is restored, the UPS will wait for 10 seconds and then apply utility power to the output.

d. <n> is a number ranging from .2,.3,...,01,02,...,up to 10.

For example: S.3<cr>---shut output off in (.3) minutes

(6) Shutdown and Restore Command:

Computer: S<n>R<m><cr>

UPS: Shut the UPS output off in <n> minutes, and wait for <m> minutes then turn the UPS output on again.

- a. The shutdown sequence is the same as the previous command.  
If after <m> minutes utility power has not been restored, the UPS will wait until it has.
- b. If the UPS is in a wait state for the power to be restored, the "C" command can cancel the shutdown procedure.
- c. If the UPS is in a wait state for the power to be restored, the "C" command can turn the UPS output on, but the UPS must be off for at least 10 seconds (if utility power is present).
- d. <n> is a number ranging from .2,.3,...,01,02,...,up to 10.
- e. <m> is a number ranging from 0001 to 9999.

(7) Cancel Shutdown Command:

Computer: C<cr>

UPS: Cancel the SN<n><cr> and SN<n>R<m><cr> command.

- a. If the UPS is in shutdown wait state, the shutdown command is cancelled.
- b. If the UPS is in restore wait state, the UPS output can be turned on, but the UPS must be off for at least 10 seconds (if utility power is present).

(8) Cancel Test Command :

Computer: CT<cr>

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

(9) UPS Information Command:

Computer: I<cr>

UPS: #Company\_Name UPS\_Model Version<cr>

This function will make the UPS respond with basic information

**D. COMMAND SUMMARY:**

ITEM	COMMAND	DESCRIPTION
1	Q1	Status Inquiry
2	T	10 Seconds Test
3	TL	Test Until Battery Low
4	T<n>	Test For Specified Time Period
5	S<n>	Shut Down Command
6	S<n>R<m>	Shut Down And Restore Command
7	C	Cancel Shut Down Command
8	CT	Cancel Test Command
9	I	UPS Information Command