Communication Protocol 0002

(Entry Level)

Paul Dickerson

Original Issue: 6/20/01

Revision History:

Revision	Date	By	Description
X1	9/28/2000	Paul Dickerson	Original issue
A	8/8/2001	Paul Dickerson	Completely rewritten to be similar to Pantera protocol (Gen 6.0)
B	8/9/2001	Ali Rizavi	Renamed from Gen 6.1 Entry Level Communication Protocol; Added the :0 query; Added note 7.
C	8/24/2001	Chuck Barnett	Reordered :0 query; Removed :P query; Removed :Z query.
D	9/4/2001	Paul Dickerson	Checksum added to :0 command; Swapped w and i parameters in the :S command; Restored the :Z command; Restored the :P command (without a divide by 10); Added note 8.
E	10/5/2001	Ali Rizavi	Removed the Gen 6.1 references from the file name and protocol description at the top of this document.

A. Controls: Command format is   **: opcode data <**   Response format is   **opcode <**

Command (3-7 bytes)	Response (2 bytes)	Function	Data Format	Data Type	Data Location	Comments
:Ggggg<	G<	Shutdown Inverter after delay	gggg = 0-2^{16} seconds of delay; g = hex digit	ASCII	RAM	
:C<	C<	Cancel Inverter Shutdown		ASCII	RAM	

B. Queries: Command format is   **: opcode <**   Response format is   **opcode data <**

Command (3 bytes)	Response (8 bytes)	Function	Data Format	Data Type	Data Location	Comments
:0#<	0ppxxxx<	Communication Protocol Identification	pp = 0002 (hex) which identifies this protocol	Hex	ROM	This opcode is 00 (hex); # is a checksum
:F<	Fffffrr<	uC Firmware (P/N, Rev)	Microcontroller P/N: 69-ffff Rev rr	ASCII	ROM	
:P<	Pppppx<	Power Rating	ppppp = VA rating	ASCII	ROM	ppppp = numeric; right justified
:S<	Slcwibx<	Status (Low Batt; Self-Test result; UPS mode; Inverter overload; % Battery Capacity)	l = 0/1 (battery low/OK); c = 0-5 (OK, Batt Fail, Testing, Overload, ... Unknown, Batt Fail & Overload) w = 0-2 (Normal, Rated Load, Overload) i = 0-3 (Line, Invert, Charge Only, Idle) b = 0-64 (0-100%);	l,c,i,w=ASCII b = hex byte	RAM	w = 1 may not be implemented b will be 00 (hex) if not implemented
:V<	Vaddxxx<	Model Version (Vac, Vdc)	a = 0-2 (100V, 120V, 230V); dd = (nominal battery voltage) / 6	ASCII	ROM	

C. Production Test: Command format is   **: opcode <**   Response format is   **opcode data <**

Command (3 bytes)	Response (8 bytes)	Function	Data Format	Data Type	Data Location	Comments
:Z<	Zzzxxxx<	Charger current	zz = 0 - 255 ADC count; z = hex digit	ASCII	RAM	zz = 00 if not implemented
:1<	1mmppbb<	USB ID (Mfg, Product, BCD Dev Rel)	mm = 09AE; pp = 0001; bb = 0001	Hex	ROM	Model codes may be different
:2<	2aaaaaa<	USB ID (Product Name ch1-6)	aaaaaa = TRIPP<blank>	ASCII	ROM	Model product names are unique
:3<	3aaaaaa<	USB ID (Product Name ch7-12)	aaaaaa = LITE<blank>O	ASCII	ROM	" " " " "
:4<	4aaaaaa<	USB ID (Product Name ch13-18)	aaaaaa = MNISMA	ASCII	ROM	" " " " "
:5<	5aaaaaa<	USB ID (Product Name ch19-24)	aaaaaa = RT500U	ASCII	ROM	" " " " "
:6<	6aaaaaa<	USB ID (Product Name ch25-30)	aaaaaa = SB<4 blanks>	ASCII	ROM	" " " " "

D. Notes:

1. All command and response characters are ASCII except for the responses in % Battery Capacity (:S) and Mfg/Product/BCD Dev Rel (:1) and :0 which are hex. The 0 in :0 is also hex.
2. "<" indicates an ASCII carriage return.
3. If a command is in process, then any new command is rejected until the in process command is finished.
4. This protocol is intended to work with both RS-232 and USB implementations
5. A RS-232 port uses 2400 Baud, 8 data bits, 1 stop bit and no parity (except PNP which is 1200 Baud and 7 data bits). A USB port uses low speed (1.5Mb/s) and the Control mode.
6. Changes from Pantera (Gen 6.0) protocol: :A, :E, :Q, :D commands deleted; tap state, frequency mode deleted from :S command; Battery capacity added in :S command;
    One unused character added to end of :S command; four unused characters added to end of :Z command; 0 command added; Divide by 10 removed from :P command.
7. :0< (colon hex zero) query has been added to identify this communication protocol. The value assigned is 2.
8. An "x" indicates an unused byte which is coded as an ASCII "X".