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GT Series RS232 Commands

Date:	03-Oct-2004	
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Revision History

Rev.	Date	Description of Change	Author
A	April30, 04	First revision.	H. Duong
B	May 05, 04	Added RESETDL cmd Added status column in table	H. Duong
C	May 20, 04	Replaced all xyz to abc Updated status columns Changed ROM? And IDN? Return Changed POWSEQ? And updated desc	H. Duong
D	June 14, 04	Added many new commands. Added Access Level column to show which users can access each command.	J. Fieldhouse
E	July 19, 04	Added new commands such as SCAL for single point calibration	J. Fieldhouse
F	July 21, 04	Added RECTIME?, IDCMPPT?, KWHLIFE, PDCMPPT?, POWLIMIT?, TEMPLIMIT?, VDCMPPT?, VDCREF?, NVMEMSPACE?, POWLIMIT?, TEMPLIMIT, VDCREF, *USER* Deleted TESTMODE, TESTMODE?, ROMUPDATE Organized into access levels Ordered alphabetically	H. Duong
	Jul-26-04	Updated POWSEQ? Bits	H. Duong
G	Aug-03-04	Updated MONAI?, MONAIPARAM? And MONAI	H. Duong
H	Aug-09-04	Changed IDN? And ROM? Added SERIAL	H. Duong
I	Aug-13-04	Added MODELID commands and others that had not been documented yet	J.Fieldhouse
J	Aug-16-04	Changed ROM? To add description for versions Modified MEASENGY? To return kwhlife in uint32 instead of float Modified MEASENGY? To return power data Deleted MEASSYS? Added MEASENGYSYS?, KWHTODAYSYS? KWHLIFESYS? POUTSYS?	H. Duong
K	Aug-18-04	Changed WARN?, FAULT?, IDN?, MEASTEMP? To use ":" instead of "," ERR? Returns number as well	H. Duong
L	Aug-30-04	ERR? Lists the different types of errors Removed Utility Access level Moved RESET to ADV level Moved STANDBY and STANDBY? To BASIC Removed access level column Removed Utility access level Moved CONT to BASIC level Moved EESTORE to OEM Removed IDCMPPT? Moved MPPTLEV to OEM Removed RAWINPOW? And RAWOUTPOW? Clarified POWLIMIT to be input power limit TEMPLIMIT changed to 0-1000 and is temporary Removed VDCMPPT? Modified CONT to be able to set level directly Added CONT? Added commands to build 2 custom LCD screens - CUSTOM11, CUSTOM12, CUSTOM21, CUSTOM22, CUSTOM1ERASE, and CUSTOM2ERASE Added DERATELIMIT? To get the derated input power limit Added WHLIFE? To return the lifetime watt hours as opposed to kilo watt hours returned by kwhlife?.	
M	14-Sep-04	Changed RESETFACT status to TBD Changed EESTORE status to done Moved EESTORE and EEERASE to ADV Moved all custom screen commands to BASIC Added two more commands for erasing custom screens so that individual lines on the screen can be erased POWSEQ? Had text errors EEERASE erase everything except Protected section. EEERASE now reboots system Added *EEERASE* Added SCID	H. Duong J. Fieldhouse

		Added POWSEQCLR Edited POWSEQ? To return last value Added BACKLIGHT MONAIPARAM was missing, so it was added Moved OFFSET to ADV Added Ripple Comp	
N	07-Feb-05	-Removed redundant SERIAL cmd - Added DCCOMPLEV - Replaced FAULT? With FAULTACTIVE?, FAULTLAST? And FAULTLOG? - Added MEASICMM? - Added MEMFREE? - Added MONENS? MONENSPARAM? MONENS - Added PROD? - Removed READALL? - Added CLRFAULTACT and CLRFAULTLOG - Added DISPMGRSTATE, DISPCLRSCR, DISPCLRLN, DISPSTRING - Deleted unimplemented PEEK, RAM?, WARN?, EEREAD, POKE, LEFT?	H. Duong
P	15-Feb-05	- Added DCCOMPLEV, DCCOMPLEV? And DCCOMPSAV - MODELID resets the device - Added FWHW?, OLDERLIM? OLDERLIM, PREFADDR, PREFADDR? - Fixed powseq bits - Meant for release version 1.3.0	H. Duong
Q	06-Jun-05	- Changed range of MPPTLEV from 1200 to 2400 - Added DISPTEST command - Fixed SCALE command type - Added to MODELID list - Added XBPREFADX?, XBPREFADX, XBADX?, XBNAME? - Removed PREFADDR, PREFADDR? - Added SCROLL? and SCROLL	H. Duong
R	03-Oct-05	- Added FAULTGND?, MEASRAW?, MPPTDBG?	

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1. Overview

The GT inverter is a grid-tied inverter harvesting the sun's energy from PV (photo-voltaic arrays) and converting it into an AC waveform. Within the inverter is a control board that contains the main processor. The main processor controls the energy conversion process as well as provides protection and communication to the user. There are 2 forms of communications available: RS232 and CANbus. The user can use either to configure the unit or simply query statuses.

2. Scope

This document outlines the RS232 protocol for the Main processor in the GT inverter. It describes the RS232 settings and lists the detailed command set. A secondary processor also resides on the control board. It has its own command set and protocol, which is covered in a separate document.

3. Protocol

The GT inverter implements a standard RS232 protocol. It is designed to be a data communication equipment (DCE); therefore, on the DB9, pin 2 is the transmit data pin and pin 3 is the receive pin. To connect to a computer (DTE) a straight through cable is needed.

The settings for the RS232 are 9600-N-8-1.

Data sent on the RS232 is a proprietary ASCII command set. Commands are typically either "ABCD" or "ABCD param" where ABCD is the command followed by a space and a parameter for that command. Queries are always of the form "ABCD?" where ABCD is the query command followed by the '?' character.

All commands/queries and responses are terminated with a "Carriage Return". An example of a query is:

ROM?<CR> (command sent to GT)
01.00.09<CR> (response returned by GT)

Multi-line responses will begin with a double quotation (") and end with a (") with each line terminated with a CR. An example of a multi-line response is:

"<CR>
MONAI ON<CR>
MONAUX ON<CR>
MONFB ON<CR>
MONGND ON<CR>
MONGRID ON<CR>
MONVIN ON<CR>
MONTEMP OFF<CR>
MONEXT ON<CR>
"<CR>

The commands are not case sensitive.

4. Commands

[ ] – Variable data/parameter

Access Permission:

Level	Abreviation	Who it's for
Basic	B	End user
Advanced	A	Installers/Utility
OEM	O	Xantrex Engineers

Command	Response	Range/Data	Description
BASIC LEVEL			
ACCESS [a]	N/A	a = Password to change access privledges ex. "ACCESS BASIC" changes the access level to basic. "ACCESS ADV" changes access level to advanced "ACCESS PASSWORD" changes access level to OEM	There are 3 access levels. Basic, Advanced, and OEM. Each level has different levels of access to the command set. OEM has access to all the commands, but requires a special password to obtain.
ACCESS?	[a]	a = BASIC, or ADVANCED or OEM (string)	Returns the present access privileges level
BACKLIGHT	[a]	0,OFF = Backlight off 1,ON = Backlight on	Turns on/off the display's backlight
CONT [a]	N/A	a = DEC, or INC, or STORE DEC – reduces the contrast INC – increases the contrast STORE – stores the contrast setpoint in the eeprom 0-1200, Contrast pwm level. 0 is maximum contrast	Change the LCD contrast voltage to improve the readability of the display. Also allows setpoint to be stored in the eeprom.
CONT?	[a]	a = Contrast pwm level currently set at. 0-1200, where 0 is max contrast	Returns the current contrast pwm level
CUSTOM11 [a]	N/A	a = Character string for custom screen number 1, line 1. (max 16 chars long)	Programs custom screen number 1, line 1. (To center on the display, pad beginning of screen with space characters.)
CUSTOM12 [a]	N/A	a = Desired character string for custom screen number 1, line 2. (max 16 chars long)	Programs custom screen number 1, line 2.
CUSTOM11?	[a]	a = Programmed character string for custom screen number 1, line 1.	Returns the programmed character string for custom screen 1, line 1.
CUSTOM12?	[a]	a = Programmed character string for custom screen number 1, line 2.	Returns the programmed character string for custom screen 1, line 2.
CUSTOM11ERASE	N/A	N/A	Erase custom LCD screen 1, line 1
CUSTOM12ERASE	N/A	N/A	Erase custom LCD screen 1, line 2
CUSTOM21 [a]	N/A	a = Character string for custom screen number 2, line 1. (max 16 chars long)	Programs custom screen number 2, line 1. (To center on the display, pad beginning of screen with space characters.)
CUSTOM22 [a]	N/A	a = Desired character string for custom screen number 2, line 2. (max 16 chars long)	Programs custom screen number 2, line 2.
CUSTOM21?	[a]	a = Programmed character string for custom screen number 2, line 1.	Returns the programmed character string for custom screen 2, line 1.
CUSTOM22?	[a]	a = Programmed character string for custom screen number 2, line 2.	Returns the programmed character string for custom screen 2, line 2.
CUSTOM21ERASE	N/A	N/A	Erase custom LCD screen 2, line 1
CUSTOM22ERASE	N/A	N/A	Erase custom LCD screen 2, line 2
DCCOMPLEV?	[a]	a = DC compensation PWM duty cycle level (0-12000)	Returns the level of duty cycle of the DC compensation PWM
DCDC?	[a]	a = ON,OFF	DCDC stage enabled/disabled

DERATELIMIT?	[a]	a = input power limit in watts	Returns the input power limit which has a nominal value that is reduced when the temperature gets too high
ERR?	[a],[b]	a = Error number (decimal) 0-1000 b = Error description (string) 00, No error 01, Error Queue overflow 02, Problem read error queue 10, Command syntax 11, Command too long 12, Invalid parameter 13, Parameter out of range 14, Inadequate access level 15, Command in wrong mode 51, Over temperature 52, Over input voltage 53, Under input voltage 100, Caution DCDC-relay order 101, Ensure MPPT is disabled 110, Select signal to calibrate 111, Bad Calib values, try again 120, LCD contrast is at maximum 121, LCD contrast is at minimum 122, LCD contrast is fixed 123, Invalid String 200, Communication error	RS232 error query. Multiple errors can exist in a FIFO queue.
FAULTACTIVE?	Multiline response “ [a], [b] ….. “	a = Fault number (decimal) 0-100 b = Fault description (string)	Active Fault query. Multiple faults can exist in a log.
FAULTGND?	[a]	a = ground fault status	Query whether ground fault is currently active
FAULTLAST?	[a], [b]	a = Fault number (decimal) 0-100 b = Fault description (string)	Query of the last (most recent) fault.
FAULTLOG?	Multiline response “ [a], [b] ….. “	a = Fault number (decimal) 0-100 b = Fault description (string)	Fault history log query. Multiple faults can exist in the log.
FREQ?	[a]	a = Op Frequency (Hz) 10.000-200.000	The line frequency being detected by the Motorola processor with 3 decimal digits of resolution
FWHW?	FW:[a] HW:[b]	a = Firmware rev custom for: (A+ or 3-) b = Hardware rev (A+ or 3-)	Returns the revisions of firmware and hardware. Used for compatibility. If FW and HW does not match, unit will not convert power.
IDN?	M:[a] X:[b] S:[c]	a = Model (string) b = Xanbus ID 0-4294967295 c = Unit serial number (20 char String)	Models programmed and identification
IIN?	[a]	a = Input Current 0-18.00	Input Current
INV?	[a]	a = ON,OFF	Inverter stage enabled/disabled
IOUT?	[a]	a = Output Current 0-18.00	Output Current
KNOCK	N/A	N/A	Simulates a user knock (turns backlight on, scrolls through LCD screens)
KWHLIFE?	[a]	a = Lifetime kWh for inverter 0 – 4294967295	Inverters lifetime energy production
KWHLIFESYS?	[a]	a = Lifetime kWh for system 0 – 4294967295	Inverters lifetime energy production
KWHTODAY?	[a]	a = Today’s kWh for inverter (float)	Inverters energy production today
KWHTODAYSYS?	[a]	a = Today’s kWh for system (float)	Inverters energy production today

MEASENGY?	P:[a] T:[b] L:[c]	a = Inverter calibrated Pout (W) 0-3500 b = Inverter energy harvested today (kWh) float c = Inverter energy harvested lifetime (kWh) 0-4294967295	Energy harvested data for the inverter
MEASENGYSYS?	P:[a] T:[b] L:[c]	a = System calibrated Pout (W) 0-4294967295 b = System energy harvested today (kWh) float c = System energy harvested lifetime (kWh)0-4294967295	Energy harvested data for the inverter
MEASICMM?	V:[a]	a = Icmm measured (V) 0-5v adc	Common mode current value
MEASIN?	V:[a] I:[b] P:[c]	a = Calibrated Vin (V) 0-650.0 b = Calibrated Iin (A) 0-18.00 c = Calibrated Pin (W) 0-3500	Calibrated input measurements.
MEASOUT?	V:[a] I:[b] P:[c] F:[d]	a = Calibrated Vout (V) 0-350.0 b = Calibrated Iout (A) 0-18.0 c = Calibrated Pout (W) 0-3500 d = Op Frequency (Hz) 10.0-200.0	Calibrated output measurements
MEASRAW?	[a] [b] [c] [d]	a = input voltage AtoD count b = input current AtoD count c = output voltage AtoD count d = output current AtoD count	Returns the last rms AtoD counts
MEASTEMP?	C:[a] F: [b]	a = Heatsink Temp I 0-125.0 b = Heatsink Temp (F) 32.0-257.0	Temperature measurements in Celsius and Fahrenheit
MEMFREE? [a]	MEM[b]: [c]/[d] free	a = memory to check 0 = System Heap 1 = Xanbus Heap 2 = Sci 1 Rx array 3 = Sci 1 Tx array 4 = Sci 2 Rx array 5 = Start stack 6 = Timer stack 7 = Non-volatile memory stack 8 = Slow Control stack 9 = Power Sequencer stack 10 = Protection Processor stack 11 = Screen Mgr stack 12 = Lcd service stack 13 = Command stack 14 = Xanbus stack b = memory checked c = # of bytes free d = # of bytes in memory type	Returns the number of bytes free in a particular type of memory. It uses a binary search to check for blocks of unwritten memory. There is a slight possibility an errant block of used memory is accepted as the end of used memory
MODELID?	[a]	a = unique model ID	Returns the model ID
MODELSTR?	[a]	a = GT2.5, GT3.0, etc	Returns the model string which is dependent on the programmed model ID
MONPARAM?	AI A:[a]ms I:[b]ms	a = Active Debounce time b = Inactive Debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the Anti-Islanding uP monitor
MONALL?	Multiline response “ [a] [b] … “	a = Monitor name (string) b = ON,OFF	Monitor enable/disable status
MONALLISTRIP?	Multiline response “ [a] [b] … “	a = Monitor name (string) b = Monitor fault status 0=Not Tripped, 1=Tripped (active fault)	Returns the status of all the monitors (tripped/not tripped)
MONAI?	[a]	a = ON,OFF	Anti-Islanding uP monitor (whether it is present or not) enabled/disabled
MONAIPARAM?	AI A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the anti-islanding monitor
MONAUX?	[a]	a = ON,OFF	Aux monitor enabled/disabled

MONAUXPARAM?	AUX A:[a]ms I:[b]ms	a = Active Debounce time b = Inactive Debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the auxiliary monitor
MONENS?	[a]	a = ON,OFF	ENS monitor enabled/disabled
MONENSPARAM?	ENS A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the ENS shutdown monitor
MONEXT?	[a]	a = ON,OFF	External shutdown monitor enabled/disabled
MONEXTPARAM?	EXT A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the external shutdown monitor
MONFB?	[a]	a = ON,OFF	Vfbsat monitor enabled/disabled
MONFBPARAM?	VFB A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the voltage feedback saturation monitor
MONGND?	[a]	a = ON,OFF	Ground fault monitor enabled/disabled
MONGNDPARAM?	GND A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the ground fault monitor
MONGRID?	[a]	a = ON,OFF	Grid fault monitor enabled/disabled
MONGRIDPARAM?	GRID A:[a]ms I:[b]ms	a = Active debounce time b = Inactive debounce time (0-4294967296 for both, ie. 32-bit number)	Returns the debounce times in milliseconds, used on the grid fault monitor
MONTEMP?	[a]	a = ON,OFF	Temperature fault monitor enabled/disabled
MONTEMPPARAM?	TMP A:[a]ms [b]C I:[c]ms [d]C	a = Active debounce time b = Active threshold (Celsius) c = Inactive debounce time d = Inactive threshold (Celsius) Debounce times are 32-bit unsigned ints. Thresholds are floating point numbers.	Returns the debounce times in milliseconds, used on the over temperature monitor. And returns the threshold temperatures for going active and inactive.
MONOVPARAM?	OV A:[a]ms [b]V I:[c]ms [d]V	a = Active debounce time b = Active threshold (volts) c = Inactive debounce time d = Inactive threshold (volts) Debounce times are 32-bit unsigned ints. Thresholds are floating point numbers.	Returns the debounce times in milliseconds, used on the over voltage monitor. And returns the threshold voltages for going active and inactive.
MONUVPARAM?	UV A:[a]ms [b]V I:[c]ms [d]V	a = Active debounce time b = Active threshold (volts) c = Inactive debounce time d = Inactive threshold (volts) Debounce times are 32-bit unsigned ints. Thresholds are floating point numbers.	Returns the debounce times in milliseconds, used on the under voltage monitor. And returns the threshold voltages for going active and inactive.
MONVIN?	[a]	a = ON,OFF	Input voltage monitor enabled/disabled
MPPT?	[a]	a = ON,OFF	MPPT enabled/disabled status
MPPTDBG?	[a] [b] [c] [d]	a = Severe foldback counts b = Medium foldback counts c = Small foldback counts d = The last foldback it was in (Severe=1, Medium=2, Small=3)	Debug information. Returns the number of times the unit has gone into their respective foldbacks.
MPPTLEV?	[a]	a = Mppt level (cnt) 0-1200	Returns MPPT PWM count for Vref
MPPTLEVM?	[a]	a = Max MPPT level	Returns the max MPPT PWM level for Vref. Used in MPPTLEV command
MPPTOFFSET?	[a]	a = MPPT PWM offset stored in EEPROM	Returns the stored PWM offset for the MPPT algorithm
MPPTSTAT?	V:[a] TD:[b] PL:[c]	a = Mppt voltage reference 0-650.0 b = Temperature derating 0=NO, 1=YES c = Power Limiting 0=NO, 1=YES	MPPT statistics

NVMEMSPACE?	[a]	a = Available memory space (decimal) 0-65535	Returns bytes unused in EEPROM
OFFSET?	VDC [a], IDC [b], VAC [c], IAC [d]	a = Calibration offset for VDC (+ or -) b = Calibration offset for IDC (+ or -) c = Calibration offset for VAC (+ or -) d = Calibration offset for IAC (+ or -)	Returns the calibration offsets for all the calibrated signals
OLDERLIM?	[a] [b]	a = First threshold of open loop derating b = Second threshold of open loop derating (0 – 100 deg Celsius X 10)	Queries the open loop derating thresholds
PDCMPPT?	[a]	a = DC power (decimal) -2147483646 – 2147483647	Returns input power used in Mppt algorithm
PIN?	[a]	A = Input Power 0-3500	Input Power
POUT?	[a]	a = Inverter output Power (W) 0-3500	Inverter Output Power
POUTSYS?	[a]	a = System output power (W) 0-4294967295	System Output Power
PROD?	[a]V [b]Hz [c]W	a = Nominal Voltage (V) 0-300 b = Nominal Frequency (Hz) 0-100 c = Power rating (W) 0-5000	Product information
POWLIMIT?	[a]	a = Power limit 0 – 3500000 (2800000 = 2.8kW)	Returns power limit of inverter in milli Watts
POWSEQ?	ST:[a] STS:[b] [c] [d] [e] FA:[f][g]	a = Unit state 0-6 0 = Shutdown complete 1 = Shutdown running 2 = Shutdown requested 3 = Startup complete 4 = Startup running 5 = Startup requested b = Current shutdown status (hex) 0-FFFF c = Accumulated shutdown status of current shutdown (hex) 0-FFFF d = Reason for previous shutdown e = Accumulated shutdown since power on. (can be cleared by POWSEQCLR) (hex) 0-FFFF bit definitions: 15 = Unit powered on 13 = Prot uP Failure 12 = Auxiliary off 11 = Over temp 10 = Ground fault 9 = External shutdown 8 = ENS shutdown 7 = Anti-Islanding voltage 6 = Anti-Islanding frequency 5 = Anti-Islanding impedance 4 = Anti-Islanding reconnecting 3 = DCDC saturated 2 = Input voltage high 1 = Input voltage low 0 = User shutdown f = Vfeedback saturated state 0=OFF,1=ON g = Auxiliary On status 0=OFF,1=ON	Startup/shutdown status (power sequencer)
POWSEQCLR	N/A	N/A	Clears the PON Accum reg in POWSEQ? Command
POWSTAGE?	D:[a] I:[b] M:[c] R[d]	a = DCDC stage 0=OFF,1=ON b = Inverter stage 0=OFF, 1=ON c = Mppt stage 0=OFF,1=ON d = Output Relay 0=OFF, 1=ON	Queries power stage enable/disable status
QUEUED?	[a]	a = Bytes queued in EEPROM (decimal) 0-200	Bytes queued in EEPROM
RECTIME?	[a]	a = Reconnection time left	Seconds left in reconnection delay

		(decimal) 0-65535	
RELAY?	[a]	a = ON,OFF	Output relay enabled/disabled status
RIPCOMP?	[a]	a = ON,OFF	Vdc ripple compensation enabled/disabled status
ROM?	B:[a] M:[b] X:[c] P:[d]	a = Main uP bootloader firmware (string) b = Main uP firmware (string) c = Xanbus version (string) d = Protection-uP firmware (string) All strings are of the format XX.YY.ZZ XX – major revision YY – minor revision ZZ – Factory Internal revision	Firmware version numbers
SCALE?	VDC [a], IDC [b], PDC [c] VAC [d], IAC [e], PAC [f]	a = Calibration scale for VDC (+ only) b = Calibration scale for IDC (+ only) c = Calibration scale for PDC (+ only) d = Calibration scale for VAC (+ only) e = Calibration scale for IAC (+ only) f = Calibration scale for PAC (+ only)	Returns the calibration scaling factors for all the calibrated signals
SCID?	[a]	a = Serial Chip ID. 7 bytes in hex format.	Returns the serial chip's ID
SCROLL?	[a]	a = Whether scrolling is enabled 0=OFF, 1=ON	Returns whether display scrolling is enabled
SCROLL [a]	N/A	a = Display scroll state 0=OFF, 1=ON	Enable/Disable display scrolling
STANDBY [a]	N/A	a = Standby state 0=OFF, 1=ON	Set standby state. Puts unit into shutdown if standby = 1,ON
STANDBY?	[a]	a = Standby state [OFF | ON]	Query standby state
TEMPLIMIT?	[a]	a = Temperature limit (decimal) 0 – 799 (799 = 79.9degC)	Returns temperature limit when derating output power
TEMPLIMITSTEP?	[a]	a = Power delta (in milli watts) for each step when thermal derating is active (-6000 to +6000)	Returns the power delta for thermal derating.
TIME?	[a]	a = Time online today (s) 0-864000	Time unit has been online today
VDCREF?	[a]	a = Voltage reference 0-6000	Returns voltage reference output by Mppt algorithm
VIN?	[a]	a = Input Voltage 0-650.0	Input Voltage
VOUT?	[a]	a = Output Voltage 0-350.0	Output Voltage
WHLIFE?	[a]	a = lifetime watt hours for the unit (0-4294967295)	Returns the accumulated lifetime watt hours that the inverter has produced
XBADX?	[a]	a = Xanbus address (0-254)	Returns the current address of node on Xanbus
XBNAME?	[a]	a = Xanbus name (8 bytes long)	Name created using SCID and other properties. This is used for arbitration and address claiming
XBPREFADX?	[a]	a = Xanbus Preferred address (0-254)	Returns preferred address used on Xanbus
XBPREFADX [a]	N/A	a = Xanbus Preferred address (0-254)	Sets the preferred address used on Xanbus

ADVANCED LEVEL

CLRFAULTACT	N/A	N/A	Clear the active fault log
CLRFAULTLOG	N/A	N/A	Clear the fault history log
EEERASE	N/A	N/A	Erases non-volatile memory (EEPROM) except for protected section. The result is restore to factory settings. This command resets the core processor
EESTORE	N/A	N/A	Ensures all items are stored to non-volatile memory (EEPROM)

KWHLIFE [a]	N/A	a = Lifetime kWh (0-4294967295)	Sets the inverters lifetime energy production in kilo watt hours. (This command will be phased out and replaced with WHLIFE)
MPPT [a]	N/A	a = MPPT algorithm 0=OFF, 1=ON	Enables/disables MPPT algorithm
OFFSET VDC [a], IDC [b], VAC [c], IAC [d]	N/A	a = Calibration offset for VDC (+ or -) b = Calibration offset for IDC (+ or -) c = Calibration offset for VAC (+ or -) d = Calibration offset for IAC (+ or -)	Restores the calibration offsets for all the calibrated signals
RESET	N/A	N/A	Resets the main processor
RESETDL	N/A	N/A	Resets the main processor to start in boot loader mode for file download
RESETFACT	N/A	N/A	Resets the main processor to factory settings
RIPCOMP	[a]	0, OFF = Ripple comp off 1, ON = Ripple comp on	Turns on/off ripple compensation
SCALE VDC [a], IDC [b], PDC [c], VAC [d], IAC [e], PAC [f]	N/A	a = Calibration scale for VDC (+ only) b = Calibration scale for IDC (+ only) c = Calibration scale for PDC (+ only) d = Calibration scale for VAC (+ only) e = Calibration scale for IAC (+ only) f = Calibration scale for PAC (+ only)	Restores the calibration scaling factor for all the calibrated signals
WHLIFE [a]	N/A	a = Lifetime watt hours (0-4294967295)	Sets the inverters lifetime energy production in watt hours
OEM LEVEL			
DCCOMPLEV [a]	N/A	a = DC compensation pwm duty cycle (0-12000)	Sets the duty cycle of the dc compensation's pwm
DCCOMPSAV	NA	NA	Saves the duty cycle of the dc compensation into EEPROM so it can be retrieved on startup
DCDC [a]	N/A	a = DCDC stage 0=OFF, 1=ON	Enables/disables DCDC stage
DISPMGRSTATE	[a]	a = 0, OFF Disable Screen mgr state machine 1, ON Enable Screen mgr state machine	Enables/disables screen manager's state machine so that the screen doesn't change automatically
DISPCLRSCR	NA	NA	Clears the screen
DISPCLRLN [a]	NA	a = line number to clear (1-2)	Clears a particular line on the screen
DISPSTRING [a] [b] [c]	NA	a = string to display (no spaces allowed) b = line # (1-2) c = position to display at (1-16)	Displays a string on the screen
DISPTEST [a]	NA	a = 0, OFF Disable screen test 1, ON Enable screen test.	Enables/disables screen test where all screens are scrolled through
ENDCAL	N/A	N/A	Tells the inverter to perform the calibration and store the calculated values in the EEPROM
FANENAB [a]	N/A	a = 0 or 1 0 = OFF, 1= ON	Turn the automatic fan control algorithm on/off
FANSPEED [a]	N/A	a = 0 or 1 0 = OFF, 1 = ON	Turns the fan on/off manually
HIGHCAL [a]	N/A	a = calibrated signal reading ie. 264.8 (could refer to 264.8V on the meter used to calibrate the inverter)	Tells the inverter to take the high point measurement for two point calibration (used on voltage and current readback calibration)
INV [a]	N/A	a = Inverter stage 0=OFF, 1=ON	Enables/disables inverter stage
LOWCAL [a]	N/A	a = calibrated signal reading ie. 210.8 (could refer to 210.8V on the meter used to calibrate the inverter)	Tells the inverter to take the low point measurement for two point calibration (used on voltage and current readback calibration)
MODELID [a]	N/A	a = unique model ID 0 = Default model (Invalid) 1 = GT3.0 2 = GT2.0	Sets the model ID for the unit which determines the power limit and the ID string

		3 = GT2.5 4 = GT4.0 5 = GT2.6 6 = GT2.7 7 = GT2.8 8 = GT2.9 9 = GT3.1 10 = GT3.2 11 = GT3.3 12 = GT3.4 13 = GT3.5 14 = GT3.6 15 = GT3.7 16 = GT3.8 17 = GT3.9	
MONAI [a]	N/A	a = Anti-Islanding uP monitor 0=DISABLE, 1=ENABLE	Enables/disables anti-islanding uP monitor
MONALL [a]	N/A	a = All monitors 0=DISABLE, 1=ENABLE	Enables/disables all the monitors
MONAUX [a]	N/A	a = Aux monitor 0=DISABLE, 1=ENABLE	Enables/disables aux monitor
MONENS [a]	NA	a = ENS monitor 0=DISABLE, 1=ENABLE	Enables/disables ENS monitor
MONEXT [a]	N/A	a = External Shutdown monitor 0=DISABLE, 1=ENABLE	Enables/disables external shutdown monitor
MONFB [a]	N/A	a = V feedback saturated monitor 0=DISABLE, 1=ENABLE	Enables/disables Vfbsat monitor
MONGND [a]	N/A	a = Ground fault monitor 0=DISABLE, 1=ENABLE	Enables/disables ground fault monitor
MONGRID [a]	N/A	a = Grid fault monitor 0=DISABLE, 1=ENABLE	Enables/disables grid fault monitor
MONTEMP [a]	N/A	a = Temperature monitor 0=DISABLE, 1=ENABLE	Enables/disables temperature monitor
MONVIN [a]	N/A	a = Input voltage monitor 0=DISABLE, 1=ENABLE	Enables/disables input voltage monitor
MPPTLEV [a]	N/A	a = Mppt level 0-2400	Sets the MPPT PWM count for Vref
MPPTNOSTART	N/A	N/A	Stops the MPPT algorithm from starting up automatically if the user sends the command “STANDBY 0”. In order to reverse this command, the power must be cycled
MPPTOFFSET [a]	N/A	a = MPPT PWM offset to store in EEPROM (0-255)	Sets the MPPT PWM offset and stores in EEPROM
OLDERLIM [a] [b]	N/A	a = First threshold of open loop derating b = Second threshold of open loop derating	Sets the open loop derating thresholds
POWLIMIT [a]	N/A	a = Input power limit (decimal) 0 - 3500	Sets the input power limit in watts. This is meant as an engineering bypass command. Power limit is normally set by the model ID.
RELAY [a]	N/A	a = Output relay state 0=OFF, 1=ON	Enables/disables output relay
SCALE [a]	N/A	a = calibrated signal reading Ie. 2050 (could refer to 2050W on the meter used to calibrate the inverter	Tells the inverter to take a single measurement for one point calibration (used on input and output power readback calibration)
SNUM [a]	N/A	a = Serial string (max 20 characters)	Programs the serial ID string
STARTCAL [a]	N/A	a = signal to calibrate VAC = AC output voltage readback IAC = AC output current readback VDC = DC input voltage readback IDC = DC input current readback	Selects which analog signal will be calibrated
TEMPLIMIT [a]	N/A	a = Temperature limit (decimal) 0 – 900 (900 = 90.0 degC)	Sets the temperature limit before unit thermally derates. Returns to default on reset

VDCREF [a]	N/A	a = Reference voltage (decimal) 0 – 6000 (4500 = 450.0volts)	Sets voltage reference signal to control inverter.
USER	N/A	N/A	Sets inverter to startup in user mode (standby 0, access=basic, all monitors enabled)
#FACTORY#	N/A	N/A	Sets the inverter to startup in factory mode (standby 1, access =OEM, some monitors disabled)
EEERASE	N/A	N/A	Erases the entire EEPROM. Also resets the core processor