



GTEC UPS MODEL:

AP160N – ZP120N - MUST

ModBus protocol

SERVICE DOCUMENT

➤ Appendix A - Index table comparison between hexadecimal and decimal

Address Index(hex)	Address Index(dec)	Description	Unit	Data representation
IDENTIFIERS				
0x00	1	UPS name (WORD 0 - 14)	Char	ASCII character
0x0F	16	Slave address (WORD 15)	Integer	##
0x10	17	Protocol number (WORD 15)	Integer	##.##
0x11	18	UPS firmware Version (WORD 15)	Integer	##.##
STATES				
0x30	49	States (WORD 0)	Bit	
0x31	50	States (WORD 1)	Bit	
FAULT CODE				
0x40	65	Fault code (WORD 0)	Bit	
0x41	66	Fault code (WORD 1)	Bit	
0x42	67	Fault code (WORD 2)	Bit	
0x43	68	Fault code (WORD 3)	Bit	
0x44	69	Fault code (WORD 4)	Bit	
WARNINGS				
0x50	81	Warnings (WORD 0)	Bit	
0x51	82	Warnings (WORD 1)	Bit	
0x52	83	Warnings (WORD 2)	Bit	
MEASUREMENTS				
0x60	97	I/P voltage_R	V	###.#
0x61	98	I/P voltage_S	V	###.#
0x62	99	I/P voltage_T	V	###.#
0x63	100	I/P fault voltage (R or S or T)	V	###.#
0x64	101	Bypass I/P voltage_R	V	###.#
0x65	102	Bypass I/P voltage_S	V	###.#
0x66	103	Bypass I/P voltage_T	V	###.#
0x67	104	I/P frequency	Hz	##.#
0x68	105	Bypass I/P frequency	Hz	##.#
0x69	106	O/P voltage_R	V	###.#
0x6A	107	O/P voltage_S	V	###.#
0x6B	108	O/P voltage_T	V	###.#
0x6C	109	O/P current_R	%	###
0x6D	110	O/P current_S	%	###
0x6E	111	O/P current_T	%	###
0x6F	112	O/P current_R	A	###.#
0x70	113	O/P current_S	A	###.#
0x71	114	O/P current_T	A	###.#
0x72	115	O/P power_R	KW	###.#
0x73	116	O/P power_S	KW	###.#
0x74	117	O/P power_T	KW	###.#

0x75	118	Total power	KW	###.#
0x76	119	O/P complex power_R	KVA	###.#
0x77	120	O/P complex power_S	KVA	###.#
0x78	121	O/P complex power_T	KVA	###.#
0x79	122	Total complex power	KVA	###.#
0x7A	123	O/P load	%	###
0x7B	124	Battery cell voltage	V	#.##
0x7C	125	Battery voltage	V	###.#
0x7D	126	Temperature	°C	##.#
0x7E	127	Charge in Status	%	###
0x7F	128	Recharge time to 95%	hours	###
0x80	129	Estimated run-time/ Remain battery backup time	min	###
0x81	130		sec	.##
0x82	131	Hold time at 100% Load	min	###
0x83	132		sec	.##
0x84	133	Hold time at 50% Load	min	###
0x85	134		sec	.##
CONFIGURATIONS				
0xA0	161	Nominal mains voltage	V	###
0xA1	162	Nominal mains frequency	Hz	##.##
0xA2	163	Nominal cell voltage	V	##.##
0xA3	164	Maximum mains voltage	V	###
0xA4	165	Minimum mains voltage	V	###
0xA5	166	Maximum mains frequency	Hz	##.##
0xA6	167	Minimum mains frequency	Hz	##.##
0xA7	168	Maximum mains ambient temperature	°C	##
0xA8	169	Minimum mains ambient temperature	°C	##
0xA9	170	Battery cell number	Integer	#
0xAA	171	Number of battery cells in series	Integer	###
0xAB	172	Input transformer type Y or Delta	Boolean	Y
0xAC	173	Lcd display output voltage Line or Phase	Boolean	O
0xAD 0xAF	174 176	Reserved		
COMMAND				
0xC0	193	Getting / Setting baud rate	Hz	This value can be only-- 1200 / 2400 / 4800 / 9600 / 19200
ERD DATA				
0xE0	225	Input Voltage	V	###
0xE1	226	Input Current	A	###
0xE2	227	Output Voltage	V	###
0xE3	228	Output Current	A	###
0xE4	229	Output Frequency	Hz	##.#
0xE5	230	Output Watt	KW	##
0xE6	231			.###

0xE7	232	Output VA	KVA	##
0xE8	233			.###
0xE9	234	Total Battery Voltage	V	###
0xEA	235	Battery discharge current	A	###
0xEB	236	Temperature	°C	##.#
0xEC	237	Load Percent	%	###
0xED	238	UPS States		
0xEE 0xEF	239 240	Reserved		
0xF0	241	Load Type	Boolean	##
0xF1	242	Load Value or Current Value	KW or KA	##
0xF2	243			.###
0xF3	244	Battery Low Value	V	###
0xF4	245	Battery High Value	V	###
0xF5	246	System Permit Low Voltage	V	###
0xF6	247	System Permit High Voltage	V	###
0xF7	248	System Permit Low Frequency	Hz	###
0xF8	249	System Permit High Frequency	Hz	###
0xF9	250	Battery Capacity	%	###
0xFA 0xFF	251 256	Reserved		

➤ Appendix B - States value table

- The comparison value between hexadecimal and decimal while states is enabled.

Code	Description	The value while states is enabled	
		Hex	Dec
WORLD0 (0x30)			
S00	Reserved (always 0)	0x0001	1
S01	1 : Shutdown active	0x0002	2
S02	1 : Test in process	0x0004	4
S03	1 : UPS type is standby 0 : UPS type is on line	0x0008	8
S04	1 : UPS failed	0x0010	16
S05	1 : Bypass/Boost active	0x0020	32
S06	1 : Battery low	0x0040	64
S07	1 : Utility fail (immediate)	0x0080	128
S08	1 : Idle	0x0100	256
S09	1 : Processing	0x0200	512
S10	1 : Result : no failure	0x0400	1024
S11	1 : Result : failue/warning	0x0800	2048
S12	1 : Not possible or inhibit	0x1000	4096
S13	1 : Test cancel	0x2000	8912

S14	1 : Reserved	0x4000	16384
S15	1 : Other values	0x8000	32768
WORD1 (0x31)			
S16-31	Reserved	0x0000	0

➤ Appendix C - Fault Code value table

• The comparison value between hexadecimal and decimal while fault is occurred.

Code	Description		The value while fault is occurred	
			Hex	Dec
WORD0 (0x40)				
F00	Temperature in converter too high		0x0001	1
F01	Internal fault 34		0x0002	2
F02	Incorrect parameter(Inverter MLFB)		0x0004	4
F03	Inverter contactor defective		0x0008	8
F04	Multiple inverter cutoff as a result of over-current		0x0010	16
F05	Failure power supply electronic		0x0020	32
F06	Over-voltage in the intermediate circuit		0x0040	64
F07	External Quick Shutdown active		0x0080	128
F08	Electronic defective(Signal Processor defective)		0x0100	256
F09	Defect in the Power Electronic(Rectifier)		0x0200	512
F10	Defect in the Power Electronic(UCE-supervision)		0x0400	1024
F11	Over current cutoff		0x0800	2048
F12	False parameter input during(H/W Init.)		0x1000	4096
F13	UPS output out of tolerance		0x2000	8912
F14	Output overload(i2t-supervision)		0x4000	16384
WORD1 (0x41)				
F17	Bypass defective		0x0002	2
F18	Bypass defective(during Transfer)		0x0004	4
F19	Bypass overload		0x0008	8
F22	Electronic defective(EEPROM Inverter)		0x0040	64
F23	Communication with Battery Manager defective		0x0080	128
F24	Electronic defective(Check-sum EPROM)		0x0100	256
F25	Environment temperature smaller than 0 grad or measurement defective measurement defective		0x0200	512
F26	Optional module failed or not put in		0x0400	1024
F27	Parallel Bypass failed		0x0800	2048
F28	Signal fault in the Parallel Module		0x1000	4096
WORD2 (0x42)				
F45	Charger over charging		0x2000	8912
WORD3 (0x43)				
F57	Psdr to bus fuse opne		0x0200	512
F58	Load unbalance over 50%		0x0400	1024

F61	Profibus fault		0x2000	8912
F62	System frequency out of tolerance		0x4000	16384
F63	System voltage out of tolerance		0x8000	32768
WORD4 (0x44)				
F66	LCD with Cudsmc Communication failure		0x0004	4
F67-79	Reserved		0x0000	0

➤ Appendix D - Warnings value table

- The comparison value between hexadecimal and decimal while warning is occurred.

Code	Description		The value while warning is occurred	
			Hex	Dec
WORD0 (0x50)				
A00	Over-temperature inverter		0x0001	1
A01	Bypass mains failure		0x0002	2
A02	Rectifier mains failure		0x0004	4
A03	Load too high(i2-t-Supervision)		0x0008	8
A04	Under-voltage intermediate circuit		0x0010	16
A05	Over load		0x0020	32
A06	Phase sequence incorrect in Bypass		0x0040	64
A07	Service bypass is on		0x0000	0
A08	Battery operation		0x0100	256
A09	Battery rest time exceeded		0x0200	512
A10	Battery under-voltage		0x0400	1024
A11	Operating condition commissioning,		0x0800	2048
A12	Battery switch not engaged		0x1000	4096
A13	Ventilator lifetime exceeded		0x2000	8912
A14	Connection to charger lost		0x4000	16384
A15	Internal warning 16		0x8000	32768
WORD1 (0x51)				
A22	Battery charger communicate failure		0x0040	64
A23	General battery charger failure		0x0080	128
A30	Load unbalance		0x4000	16384
A31	Internal warning 32		0x8000	32768