MODBUS RTU three-phase energy storage communication protocol

modifie the record

version number	change content	Responsible Person	Change Date
V100 Initial Version		Liu Shengli	2020.09.16

1. Overview

This protocol is applicable to the communication protocol between our three-phase energy storage inverter and the host computer monitoring and DSP. Adopt MODBUS RTU communication protocol. This protocol can read the operating information of the inverter in real time and control the operation of the inverter.

2. Physical interface

2.1. Adopt RS485/RS232, which is asynchronous sending and receiving mode, master-slave mode, fixed baud rate.

----Baud rate: 9600bps

---- Parity bit: None

----Data bits: 8

---- stop bit: 1

2.2. Inter-frame interval time requirements

3. Data frame format

Slave Address	Function code	Data	CRC Check
8-Bits	8-Bits	Nx8-Bits	16-Bits

Slave Address field: is the corresponding slave address, which must match the slave address of the inverter.

Function code field: function code, currently only 03H and 10H function codes are available.

Function code(Hex)	Chinese	register address	Function
02H	name read switch input		Read the contents of the fault information register
03H	status read holding	0~59/500~2000	Read setting register content
04H	register read input		Read inverter information content
05H	register write single coil		Switch setting function
06H	write single holding register		Set single-byte function
10H	write multiple holding registers	60-499	Set Multibyte Capability

Data field: including the starting register address, data length, number of data bytes, and data content. are high byte first,

The low byte comes after.

CRC Check field: CRC check table check mode, the low byte is in the front and the high byte is in the back.

4. Handling of error messages and data

Slave reply (hexadecimal):

Slave Address	Function code	Error code	CRC Check	
xx	xx|0x80	xx	low byte	high byte
			xx	xx

When the inverter communication module detects errors other than the CRC code error, it must send back information to the host, and the highest position of the function code is 1, that is,

Add 128 to the function code sent by the host.

The inverter communication module responds to the returned error code:

0x01 Illegal function code The server does not understand the function code

0x02 Illegal data address associated with the request

0x03 Illegal data value associated with the request

0x04 Service failure Inverter communication module cannot retrieve data during execution

5. Detailed protocol description

0-59 Register address is readable register type, **0x03** function code.

60-499 The register address is a readable and writable register type, **0x10** function code.

500-2000 The register address is a readable register type, **0x03** function code.

5.1. 03 Read inherent attribute area, corresponding to function code **0x03, address range 0~59**

Addr	Register meaning	R/W	data range	unit	note
000	Equipment type Device type	R			0X0200 String inverter 0X0300 single-phase energy storage machine hybrid 0X0400 MI microinverter 0X0500 Three-phase energy storage machine phase3 hybird
001	Modbus address	R	[1,247]		
002	Communication protocol version Communication protocol version	R	'0'~'9'; 'A'~'Z'		The version of this protocol that the firmware complies with, such as 0x0102 for version 1.2
003	SN byte 01 SN byte 02	R	'0'~'9'; 'A'~'Z'		The serial number is ten ASCII characters, If "AH12345678", Byte 01 is 0x41 (A), The 02nd byte is 0x48 (H), ... The 09th byte is 0x37 (7), The tenth byte is 0x38 (8).
004	SN byte 03 SN byte 04	R	'0'~'9'; 'A'~'Z'		
005	SN byte 05 SN byte 06	R	'0'~'9'; 'A'~'Z'		
006	SN byte 07 SN byte 08	R	'0'~'9'; 'A'~'Z'		
007	SN byte 09 SN byte 10	R	'0'~'9'; 'A'~'Z'		
008	power level Rated Power	R	0x0000	•	
009	reserved word undefined	R	0x0000		
010	reserved word undefined	R			
011	Control board auxiliary microcontroller software version number Assistant program version	R	0XFFFF		Bit0-7 Bootloader software Bit8-15 Assistant program

	Dashboard launcher version number bootloader software version				
012	reserved undefined	R			
013	reserved undefined	R			
014	Control Board Firmware Version - Field 2 Control panel firmware version-2	R			
015	Control Board Firmware Version - Major Version Control panel firmware master version	R			
016	Communication Board Firmware Version - Field 1 Comm panel firmware version-1	R			
017	Communication Board Firmware Version - Field 2 Comm panel firmware version-2	R			
018	Communication Board Firmware Version - Main Version Comm panel firmware master version	R			
019	Safety Type Safety type	R			
020	rated power low word Rated power low word	R		0.1W	
021	Rated power high word	R		0.1W	
022	Number of MPPT channels and phases MPPT number and phases	R	[1,8]/[1,3]		MI 0x0503: five-mppts three-phase
023	grid-connected voltage level/Rated Grid Voltage	R	[0-3]		0: 127/220V 1: 220/380V
024					
025	Reserved SN byte 01 Reserved SN byte				
026	02 Reserved SN byte 03 Reserved SN byte				
027	04 Reserved SN byte 05 Reserved SN byte				
028	06 Reserved SN byte 07 Reserved SN byte				
08 029 Reserved SN byte 09					

	Reserved SN byte 10				
030					
031					
059					

5.1. 10 The variable attribute area can be read and written, and the corresponding function code is **0x10.**

Addr	Register meaning	R/W data range		unit	note
60	Remote lock enable Remote Lock	R/W			0x0002 Shutdown turn off 0x0000 turn on
61	POST time self-check time	R/W [0,1000]		S	MI
62	System time 1st byte system time byte 01	R/W [0,255]		year Year	MI is based on the year 2000 Based on the year 2000
	System time byte 2 system time byte 02	R/W [1,12]		moon Month	
63	System time 3rd byte system time byte 03	R/W [1,31]		day Day	
	System time 4th byte system time byte 04	R/W [0,23]		Time Hour	
64	System time 5th byte system time byte 05	R/W [0,59]		Minute	
	System time 6th byte system time byte 06	R/W [0,59]		second Sec	
65	~~Insulation resistance lower limit~~ ~~Minimum insulation impedance~~	~~R/W [100,20000]~~		~~0.1Kÿ~~	
66	reserved Undefine				
67	reserved Undefine				
68	reserved Undefine				

69	reserved Undefine				
70	reserved Undefine				
71	reserved Undefine				
72	reserved Undefine				
73	reserved Undefine				
74	mailing address Communication address	R	0x0000	-	
75	Communication baud rate Communication baud rate MI: Zigbee or PLC	R	0x0000	-	
76	reserved Undefine	R/W			
77	Active power regulation Active power regulation R/W [0,1200] Reactive power			0.1%/1%	Such as 800 means adjust to 80.0% MI If 800, adjust to 80.0%
78	regulation Reactive power regulation R/W [0,1200] Apparent			0.1%	Such as 800 means adjust to 80.0% If 800, adjust to 80.0%
79	power regulation Apparent power regulation R/W [0,1200]			0.1%	Such as 800 means adjust to 80.0% If 800, adjust to 80.0%
80	switch enable Switch on and off enable R/W [0,1] Factory reset			-	0: Power off 1: Power on MI 2: Power off 0: power off 1: power on
81	enable Factory reset enable	R/W [0,1]			0: disable 1: enable
82	Self-test time Self-checking time	R/W [0,1]		-	0-360 seconds
83	island protection enable Island protection enable R/W [0,1]				0: disable 1: enable
84	Number of MPPT channels MPPT number	R/W [0,1]		-	0: disable 1: enable
85	GFDI enable GFDI enable	R/W [0,1]			0: disable 1: enable
86					
87	RISO enabled RISO enable	R/W [0,1]			0: disable 1: enable
88	Grid connection standard GridStandard	R/W [0,20]			1. China 2. Brazil 3. India

					4. EN50438 5. Other
89					
90	Low voltage ride through enable Low voltage across enable Control				0: disable 1: enable
91	board EEPROM initial enable can MCU-EEPROM initial enabled	R/W [0,2]		-	0: work normal 1: initialize the control board EEPROM init mcu eeprom
92	Communication board EEPROM initial use can Comm-EEPROM initial enabled	R/W			0: normal work normal 1: Initialize the communication board EEPROM init comm eeprom
93	Control Board Test Control Instructions Factory only				Bit0 open test enable (enable the latter to be effective) Test enable=1 if use later bit Bit1 Open all fans of the inverter open all fans Bit4 open Gen signal relay open Gen singal relay
94	Communication board test control command Factory only	R/W [0,3]		-	Bit0 open test enable (enable the latter to be effective) Test enable=1 if use later bit Bit2 All LEDs of the flash display board, honeypot, back light, showing red, yellow and blue Flash display board for all LEDs, honey maker, backlight, display red, yellow and blue Bit3 Enable lithium battery interface test Open lithium battery interface test Bit5 Restart LCD program Restart lcd
95					
96	Power generation correction factor PowerWH Factor	R/W		-0.01	100 mean 1 111 mean 1.11
97	Solar input as SPU TEST MODE				
98	Battery charge type Control Mode	R/W -		-	0x0000 Lead-Battery, four-stage charging method 0x0001 Lithium battery
99	Equalization V	R/W [3800,6100]		0.01V 1480	means 14.8v
100	Absorption V	R/W [3800,6100]		0.01V 1440	means 14.4v
101	Float V	R/W [3800,6100]		0.01V 1440	means 14.4v
102	battery capacity Batt Capacity	R/W [0,2000]		1 Ah 200	means 200AH
103	Empty_v	R/W		0.01V	

104	Minimum limit working power ZeroExport power	R/W			
105	Balanced charge once a few days Equalization day cycle	R/W [0 90]		Day	
106	Balance charge execution time Equalization time	R/W [0 20]		0.5Hour resolution 0.5 hours	Resolution 0.5h [0-20] corresponds to 0-10 hours But the MCU is [0-100]
107	temperature compensation value TEMPCO	R/W [0,50]		1mV/ÿ with positive and negative int type Signed int	
108	battery maximum charging current Max A Charge	R/W [0,185]		1A	0-185A
109	Maximum battery discharge current Max A discharge	R/W [0,185]		1A	0-185A
110	reserve undefined	R/W			
111	Battery operation depends on voltage or capacity amount battery operates according to voltage or capacity	R/W			According to the voltage According to the capacity 2 no battery no battery
112	Lithium battery wake-up flag Lithium battery wake up sign bit	R/W			0 enabled 1 Disable
113	Internal resistance of battery battery resistance value	R/W [0,6000]		mÿ	
114	battery charging efficiency Battery charging efficiency	R/W [0-100]		0.1% 983 means 98.3%	983 is 98.3%
115	Battery Capacity ShutDown battery capacity ShutDown	R/W [0,100]		1% low volume cut-off point	Low capacity cutoff point
116	Battery capacity Restart battery capacityRestart	R/W [0,100]		1% protection recovery point	Protection recovery point
117	Battery capacity LowBatt battery capacityLowBatt	R/W [0,100]		1%	
118	Battery Voltage ShutDown battery voltageShutDown	R/W [3800,6100]		0.01V low protection point cutoff	41V Low protection point cutoff 41V
119	Battery voltageRestart battery voltageRestart	R/W [3800,6100]		0.01V Reboot /recover 52V	
120	Battery VoltageLowBatt battery voltageLowBatt	R/W [3800,6100]		0.01V depth of discharge	46V Discharge depth 46V
121	Generator maximum running time Maximum operating time of generator			0.1 hours 120 means 12 hours	120 is 12 hours
122	Generator Cooldown Time Generator cooling time			0.1 hours 120 means 12 hours	120 is 12 hours

123	Generator charging starting voltage point Generator charging Starting voltage point	R/W	[0000 6300]	0.01V	battery voltage is less than this value, the generator starts charging The battery voltage is less than this value
124	Generator Charge Start Capacity Point Generator charging starting capacity point	R/W	[0000 6300]	1%	battery capacity is less than this value, the generator starts charging The battery capacity is less than this value
125	Generator charging current to battery Generator charges the battery current	R/W	[0000 185]	1A	alternator charging current to battery The generator charges the battery
126	Mains charging starting voltage point Grid charging Start voltage point o	R/W	[0000 6300]	0.01v	
127	Mains charging starting capacity point Grid charging start capacity point	R/W	[0000 6300]	1%	
128	Mains to battery charging current Grid charge the battery current	R/W	[0000 185]	1A	mains to battery charging current Grid charge the battery current
129	Generator Charge Enable Generator is charged to enable	R/W			
130	Mains charging enable Grid is charged to enable	R/W			
131	AC couple Frequency upper limit setting	R/W	5000-6500	Forced	5000-6500
132	to turn on the generator as the load function Force on generator as load function	R/W			The premise is that register 235 has been enabled 1 The premise is that register 234 has enabled 1 0 Do not force 1 force
133	Generator input as load output enable generator input is enabled as the load output	R/W			0 only Gen use as generator input 1 only smart load output 2 Enable as inverter input only microinverter input
134	Generator load OFF voltage SmartLoad OFF batt Voltage	R/W	[3800 6300]	0.01V	
135	Generator load OFF power SmartLoad OFF batt	R/W	[0000 100]	1%	
136	Generator load ON voltage SmartLoad ON batt Voltage	R/W	[3800 6300]	0.01V	
137	Generator load ON power SmartLoad ON batt	R/W	[0000 100]	1%	
138	Output voltage level setting	R/W			0 means 220V means 220V

	Output voltage level setting				1 means 230V means 230V 2 means 240V means 240V 3 means 120V means 120V 4 133VAC
139	Minimum solar power to start the generator minimum solar power required to start a generator	R/W [0,8000] rate		1W	
140	Generator grid connection signal Gen_Grid_Signal On				
141	energy management mode Energy management model				Bit0-1 10 battery priority mode battery first mode 11 load first mode Bit2-3 Indicates passive grid-connected power balance function Represents passive grid-connected power balance function 10 do not open colse 11 open open Bit4-5 Indicates active grid-connected power balance function Represents active grid-connection power balance function 10 do not open close 11 open open
142	limit control function limit control function	R/W		0/1	0x00 Enable selling electricity sell electricity enabled 0x01 enable built-in built-in enabled 0x02 Enable external extraposition enabled
143	Limit grid-connected maximum power output Limit the maximum power output of the grid connection	R/W [0,8000]		1W represents total power	Represents total power
144	External current sensor orientation External current sensor clamp phase	R/W [xx,00]		1W[11][12]	
145	Photovoltaic electricity sales Solar sell	R/W			0x00Solar Don't sell 0x01Light Volt sell electricity solar sell
146	Advanced peak clipping and valley filling function enabled Time of Use Selling enabled	R/W			Bit0 0 disable 1 enable Bit1 Monday 0-disable 1-enable Bit2 Tuesday

					... Bit7 Sunday
147	Three-phase ABC grid phase sequence setting Grid Phase	R/W			0 0 120 240 1 0 240 120
148	Electricity selling mode time point 1 Sell mode time point 1	R/W [0000 2359]			2359 means time 23:59 2359 means time 23:59 MCU
149	Sell mode time point 2	R/W [0000 2359]			internal operation range 0-287 Time sent to MCU and collector are both 2355
150	Electricity selling mode time point 3 Sell mode time point 3	R/W [0000 2359]			
151	Sell mode time point 4	R/W [0000 2359]			
152	Sell mode time point5	R/W [0000 2359]			
153	Sell mode time point6 Power	R/W [0000 2359]			
154	selling mode time point 1 Sell mode time point 1 the maximum discharge power of the battery	R/W [0000 8000] 1W Affected by the maximum discharge power of the battery Affected by			
155	power selling power mode time point 2 power Sell mode time point 2	R/W [0000 8000] 1W Power			
156	Sell mode time point 3	R/W [0000 8000] 1W power			
157	Sell mode time point 4 Power Sell mode time point 4	R/W [0000 8000] 1W power			
158	Sell mode time point 5 Sell	R/W [0000 8000] 1W power			
159	mode time point 6 Power Sell mode time point 6 Voltage	R/W [0000 8000] 1W power			
160	at time point 1 in selling mode power Sell mode time point 1 Sell	R/W [0000 6300]		0.01V affected by battery voltage	Is affected by the battery voltage
161	mode time point 2 voltage Sell mode time point 2 Voltage	R/W [0000 6300]		0.01V Voltage	
162	at time point 3 in selling mode voltage Sell mode time point 3 voltage	R/W [0000 6300]		0.01V	

163	Electricity selling mode time point 4 voltage Sell mode time point 4 voltage	R/W [0000 6300]		0.01V	
164	Electricity selling mode time point 5 voltage Sell mode time point 5 voltage	R/W [0000 6300]		0.01V	
165	Electricity selling mode time point 6 voltage Sell mode time point 6 voltage	R/W [0000 6300]		0.01V	
166	1 capacity1 capacity	R/W [0,100]		1%	Soc
167	2 capacity 2 capacity	168 R/W [0,100]		1%	
3 capacity 3 capacity	169 4	R/W [0,100]		1%	
capacity 4 capacity	170 5	R/W [0,100]		1%	
capacity 5 capacity	171 6	R/W [0,100]		1%	
capacity 6 capacity Time		R/W [0,100]		1%	
172	point 1 charge enable Time point 1 charge enable	R/W [0,1]			Bit0 means grid charging is enabled enable Bit1 means gen charging enable
173	Time point 2 charging enable Time point 2 charge enable	R/W [0,1]			Ditto 0 disable 1 enable
174	Time point 3 charging enable Time point 3 charge enable	R/W [0,1]			Ditto
175	Time point 4 charging enable Time point 4 charge enable	R/W [0,1]			Ditto
176	Time point 5 charging enable Time point 5 charge enable	R/W [0,1]			Ditto
177	Time point 6 charging enable Time point 6 charge enable	R/W [0,1]			Ditto

178	Control board special function bit 1 Microinverter export to grid cutoff	R/W [0,1]			All need to be changed to two bits control need two bits control -00 no action -01 no action -10 disable -11 enable -00Nowork-01Nowork-10Disable-11Enable Bit0-1 10: Disable 11:enable Bit2-3 10: Gen peak-shaving disable 11:Gen peak-shaving enable Bit4- 5: 10:Grid peak-shaving disable 11:Grid peak-shaving enable Bit6-7 10: On Grid always on disable 11:On Grid always on enable Bit8-9 10: external relay disable 11: external relay disable Bit10-11 10: The lithium battery is lost and the fault is disabled Loss of lithium battery report fault disable 11: Enable Loss of lithium battery report fault enable
179	Control board special function bit 2 1, external CT automatic detection direction 2, forced off-grid	R/W [0,1]			Bit0-1 10: External CT automatic detection direction disable Externl ct direction check disable 11: enable Bit12-13 10: DRM enable bit disable 11: DRM enable bit enable Bit14-15 10: US version ground fault disable Bit2-3 10: Forced off-grid work disable 11: U.S. version ground fault enable Forced off-grid work disable 11: enable

180	recovery time Restore connection time	R/W [10 300]			
181	Solar Arc Fault Mode On Solar Arc Fault Mode	R/W [0 1]			0x00 close Close 0x01 open open
182	turned on Grid connection standard Grid Mode	R/W [0 1]			0x02 The arc fault is cleared, and the inverter receives the 02 instruction liquid 0=general standard The crystal sends the clear flag and then automatically changes back to 01 1=UL1741&IEE1547 Arc fault reset, the inverter received 02 that 2= CPUC RULE21 the LCD issued a clear mark, and then 3= SRD-UL1741 automatically back to 01
183	Grid frequency setting Grid Frequency	R/W [0 1]			0x00 50HZ 0x01 60hz
184	Grid Type Settings Grid Type It's three-phase now, invalid	R/W [0 3]			0x00 Single-phase default 220V Single-phase 240v / 230v / 220v 0x01 means two-phase 120V/240V Stands for two-phase 120V/240V 0x02 means three-phase system 208V 120 degrees 120V Represents the three-phase system 208V 120 degrees 120V 0X03 120V Single Phase
185	Power grid high voltage protection point Grid Vol High	R/W [1800 2700]		0.1V	
186	Power grid low voltage protection point Grid Vol Low	R/W [1800 2700]		0.1V	
187	Grid frequency high protection point Grid Hz High	R/W [4500 6500]		0.01Hz	
188	Grid frequency low protection point Grid Hz Low	R/W [4500 6500]		0.01Hz	
189	Generator connected to grid input The generator is connected to the grid input	R/W [1 0]			0 disable 1 enabled
190	GEN peak shaving Power	R/W [0 16000]		1w	
191	GRID peak shaving Power	R/W [0 16000]		1w	
192	Smart Load Open Delay	R/W [1 120]	Output PF value	1Minute	
193	setting (active power regulation) Output PF value Settings	R/W [800 1200]			800 means adjust to 80% 1200 means adjust to 120% 800 for 80%, 1200 for 120%
194	External relay bits External relay bit	R/W [0 0xFFFF]			Bit0-8 correspond to 8 relay bits Bit0-8 corresponds to 8 relay bits
195	ARC_facTory_B high ARC_facTory_B high word	R/W [0,65535]			The combination of high position and position can be displayed in numerical value High and status combination, with numerical Page 15

					display can be
196	low low word	R/W [0,65535]			
197	ARC_facTory_I high ARC_facTory_I high word low	R/W [0,65535]			
198	order low word	R/W [0,65535]			
199	ARC_facTory_F high ARC_facTory_F high word low	R/W [0,65535]			
200	order low word	R/W [0,65535]			
201	ARC_facTory_D high ARC_facTory_D high word low	R/W [0,65535]			
202	low word	R/W [0,65535]			
203	ARC_facTory_T high ARC_facTory_T high word low	R/W [0,65535]			
204	order low word	R/W [0,65535]			
205	ARC_facTory_C high ARC_facTory_C high word low	R/W [0,65535]			
206	order low word	R/W [0,65535]			
207	ARC_facTory_Frz high ARC_facTory_Frz high word	R/W [0,65535]			
208	low low word	R/W [0,65535]			
209	Ups_delay time	R/W		1S	0 is default 1 1S
210	Charging voltage charging voltage	R/W		0.01V	
211	discharge voltage discharge voltage	R/W		0.01V	
212	charging current limiting charging current limiting discharge	R/W		1A	
213	current limiting Discharge current limiting	R/W		1A	
214	current capacity real time Capacity current voltage real	R/W		1%	
215	time voltage	R/W		0.01V	
216	Current current	R/W		1A	

	real time current				
217	Current Temperature real time temp	R/W		0.1C 1000 corresponds to 0 degrees 1200 means 20.0 degrees 800 means -20.0C	1000 corresponds to 0 degrees 1200 means 20.0 degrees 800 means -20.0C
218	Off-grid charging current limit maximum Maximum charge current limit	R/W		1A	
219	Off-grid discharge current limit maximum Maximum discharge current limiting	R/W			
220	Lithium battery alarm bit Lithium battery alarm position	R/W			0x0001
221	Lithium battery fault Lithium battery fault location	R/W [0,65535]			
222	Lithium battery sign 2 Lithium battery symbol 2	R/W [0,65535]			Bit0 Vacancy Bit1 Strong impact marks
223	Lithium battery type Lithium battery type	R/W			0x0000 ZTE Praneng Delangeng Lithium PYLON SOLAX Universal CAN Protocol 0x0001 Tianbangda RS485modbus protocol 0x0002 KOK Protocol 0x0003 keith 0X0004 Topology Protocol 0X0005 Paineng 485 protocol 0X0006 JELIS 485 protocol 0X0007 Xinwangda 485 Protocol 0X0008 Xinruineng 485 protocol 0X0009 Tianbangda 485 agreement 0X000A Shenggao Electric can protocol
224	Lithium battery SOH Lithium battery SOH				
225					
226					
227	Upgrade LCD test Communication	R/W [0,1]			
228	board setting function Comm board setting function	R/W			Bit0-1 Time calibration Bit2-3 beep Bit4-5 AM/PM

					Bit6-7 Auto dim -00 no action no work -01 no action no work -10 disable disable -11 enable enable
229					
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240 enters the factory preliminary test program		R/W			=12345 enter
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267					
268					
269	Grid1_I				
270	Grid2_I				
271	Grid3_I				
272	Grid_V_L1				
273	Grid_V_L2				
274	Grid_V_L3				
275	Limit1_I				
276	Limit2_I				
277	Limit3_I				
278	PV1_V				
279	PV1_I				
280	PV2_V				
281	PV2_I				
282	INV_A_I				
283	INV_B_I				
284	INV_C_I				
285	INV_A_V				
286	INV_B_V				
287	INV_C_V				
288	BAT_I				
289	BAT_V				
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310	Solar does Wind input enable Solar makes Wind input enable	R/W [0,1]			Bit0 Solar1 Bit1 Solar2
311	Voltage 1	R/W [500,5000]		0.1V	
312	Voltage 2	R/W		0.1V	
313	Voltage 3	R/W		0.1V	
314	Voltage 4	R/W		0.1V	
315	Voltage 5	R/W		0.1V	
316	Voltage 6	R/W		0.1V	
317	Voltage 7	R/W		0.1V	
318	Voltage 8	R/W		0.1V	
319	Voltage 9	R/W		0.1V	
320	Voltage 10	R/W		0.1V	
321	Voltage 11	R/W		0.1V	
322	Voltage 12	R/W		0.1V	
323	Current 1	R/W [0-200]		0.1A	
324	Current 2	R/W		0.1A	
325	Current 3	R/W		0.1A	
326	Current 4	R/W		0.1A	
327	Current 5	R/W		0.1A	
328	Current 6	R/W		0.1A	
329	Current 7	R/W		0.1A	
330	Current 8	R/W		0.1A	
331	Current 9	R/W		0.1A	
332	Current 10	R/W		0.1A	
333	Current 11	R/W		0.1A	
334	Current 12	R/W		0.1A	
335	reserved Undefine				
336	Parallel 1 Parallel-1				
337	Parallel 2 Parallel-2				
338	reserved Undefine				
339	reserved Undefine				
340	Photovoltaic maximum selling power Max Solar Sell Power		R/W	1W	
341	reserved Undefine				
342	reserved Undefine				

343	reserved Undefine				
344	Power grid information monitoring method Grid check from Meter or CT	R/W			BIT00: 0: CT 1: Meter BIT01: -BIT15: undefined
345					
346					
347	External CT ratio CT ratio	R/W		30<--> 30:1	U16
348	External Meter CT ratio Meter CT ratio	R/W		30<--> 30:1	U16
349					
350	Input Slope Control for Charge Ring number	R/W [0-500] positive		W Cycle-by-	cycle power variation Cycle by cycle power variation
351	Input Slope Control for Charge Ring Negative	R/W [0-500]		W Cycle-by-	cycle power variation Cycle by cycle power variation
359	Off-grid overload voltage less than 180V duration				
360					
380	low pressure and high pressure ride through in california CA_LHVRT enable California low pressure high pressure through CA_LHVRT enable	R/W [0,1]			0: disable 1: enable
381	CA_HV2	R/W [1000,3000]			
382	CA_HV1	R/W			
383	CA_LV1	R/W			
384	CA_LV2	R/W			
385	CA_LV3	R/W			
386	CA_HV2_Time	R/W [0,300]			0 is 0.16S
387	CA_HV1_Time	R/W			
388	CA_LV1_Time	R/W			
389	CA_LV2_Time	R/W			
390	CA_LV3_Time	R/W			
391	California Low Frequency Crossover CA_LHFRT enable California low frequency high frequency traverses CA_LHFRT enable	R/W			
392	CA_HF2	R/W [4500,6500]		0.01Hz	

393	CA_HF1	R/W			
394	CA_LF1	R/W			
395	CA_LF2	R/W			
396	CA_HF2_Time	R/W	[0,300]		
397	CA_HF1_Time	R/W			
398	CA_LF1_Time				
399	CA_LF2_Time				
400	California CA_QV Enable California CA_QV enable				
401	CA_QV_V1		[1000,3000]		
402	CA_QV_V2				
403	CA_QV_V3				
404	CA_QV_V4		[-44,+44]	0.01	
405	CA_QV_Q1				
406	CA_QV_Q2				
407	CA_QV_Q3				
408	CA_QV_Q4				
409	California CA_FW enabled California CA_FW enable				
410	CA_Fstart				
411	CA_Fstop				
412	California CA_VW Enable California CA_VW enable				
413	CA_Vstart				
414	CA_Vstop				
415	normal rising slope Normal upward slope	R/W	[1 100]	1%	
416	Soft Start Rise Rate Soft start rise rate	R/W	[1 100]	1%	
417	QV Response time	R/W	[0,90]	S	
418	VW Response time	R/W	[0,60]	S	
419	FW Response time				

5.2. 03 Read-only real-time attribute area, the corresponding function code is **0x03.**

Addr	Register meaning	R/W	data range	unit	note
500	Operating status run state	R	[0,5]	-	0000 Standby standby 0001 Self-check selfcheck 0002 normal normal 0003 Alarm alarm 0004 fault fault

501	Inverter grid side active power generation on the day quantity active power generation of today Inverter grid side reactive power generation of	R	[-32768,32767] 0.1kWh		
502	the day quantity reactive power generation of today	R	[-32768,32767] 0.1kVarh		
503	Grid connection time of todayR The total active		[0,65535]	S	
504	power generation on the grid side of the inverter low word active power generation of total low byte Inverter grid side total active power	R	[0,0xFFFFFFFF] 0.1kWh		
505	generation high character active power generation of total high byte total reactive power generation on the grid	R			
506	side of the inverter low word reactive power generation of total low byte				
507	Total reactive power generation on the grid side of the inverter high character reactive power generation of total high byte				
508	Inverter ~~Status Bit 1 509~~	R			**Debug only** for debugging, meaningless Bit0: Internal fan exists; 1 has 0 Bit1: External fan exists; 1 has 0
Inverter	~~Status Bit 1~~	R			**Debug only** for debugging, meaningless
510					
511					
512					
513					
514	Battery charge capacity of the day Today charge of the battery			0.1kwh	
515	Today discharge of the battery Low word of accumulative battery charge			0.1kwh	
516	Total charge of the battery low byte			0.1kwh	
517	accumulative battery charge high word Total charge of the battery			0.1kwh	

	high byte				
518	Low word of accumulative battery discharge Total discharge of the battery low byte			0.1kwh	
519	accumulative battery discharge high word Total discharge of the battery high byte			0.1kwh	
520	Day_GridBuy_Power Wh The electricity			0.1kwh	
521	sold by the grid on that day Day_GridSell_Power Wh The low word of the			0.1kwh	
522	accumulated electricity purchased by the grid Total_GridBuy_Power Wh_low word The high word of the			0.1kwh	
523	accumulated electricity purchased by the power grid Total_GridBuy_Power Wh_high word Low word of			0.1kwh	
524	accumulated electricity sold by the power grid Total_GridSell_Power Wh_low word The high word of			0.1kwh	
525	the accumulated electricity sold by the power grid Total_GridSell_Power Wh_high word daily			0.1kwh	
526	electricity consumption Day_Load_Power Wh Cumulative			0.1kwh	
527	power consumption low word Total_Load_Power Wh_low word			0.1kwh	
528	Cumulative power consumption high word Total_Load_Power Wh_high word The total PV			0.1kwh	
529	power generation of the day Day_PV_Power Wh	R	[0,65535]	0.1kWh	
530	PV 1 power generation on the day Day_PV 1_Power Wh PV 2			0.1kWh	
531	power generation on the day Day_PV 2_Power Wh PV 3			0.1kWh	
532	power generation on the day Day_PV 3_Power Wh PV 4			0.1kWh	
533	power generation on the day Day_PV 4_Power Wh Low word of			0.1kWh	
534	historical PV power generation Total PV_power Wh_low word	R		0.1kWh	

535	Historical PV power generation high word Total PV_power Wh_high word	R		0.1kWh	
536					
537					
538					
539	Generator working hours Generator working hours per day			0.1h	
540	DC transformer temperature (DCTransformer temperature) Heat	R	[0,3000]	0.1ÿ offset 1000	
541	sink temperature Heat sink temperature Reserve		[0,3000]	0.1ÿ	
542	temperature 1 undefined Reserve		[0,3000]	0.1ÿ	
543	temperature 2 undefined Reserve	R	[0,3000]	0.1ÿ	
544	temperature 3 undefined	R	[0,3000]	0.1ÿ	
545					
546					
547					
548	Fault status of the communication board Failure status of communication board R		[0,0xFFFF]		Bit0 Flash chip error Bit1 time error Bit2 EEPROM error
549	MCU test flag MCU test flag				Bit0 Arc pull communication sign Bit1 Parallel CAN communication
550	LCD test flag LCD test flag	R	0x0000		Bit8 Lithium electric interface RS485 Lithium electric interface RS485 Bit9 Lithium electric interface CAN Lithium electric interface CAN Bit10 key1234 key1234 Bit11 LCD interrupt status lcd interrupt status
551	On-off state Turn off/on status	R			The lower 4 bits represent the switch signal 0000 shutdown power off 0001 Power on
552	AC side relay status AC realy status	R			0 off 1 on Bit0 INV relay INV relay Bit1 Load relay reserved undefined Bit2 grid relay grid relay Bit3 Generator relay gen relay Bit4 grid give power to relay

					Bit5 Dry contact
553	Alarm message first word Warning message word 1	R	[0,65535]		Bit0: reserved Bit1: Fan failure FAN_WARN Bit2: grid phase wrong grid phase wrong Bit3:
554	Alarm message 2nd word Warning message word 2 R Error		[0,65535]		
555	message word 1 Fault information word 1 R		[0,65535]		
556	Error message 2nd word Fault information word 2 R		[0,65535]		
557	Error message 3rd word Fault information word 3 R		[0,65535]		
558	Error message 4th word Fault information word 4 R		[0,65535]		See the fault information code table
559 Reserved					
560 Reserved					
561	debugging data Debug Data				
	561-583 A total of 23 debugs test data				
583	debug data Debug Data	R	0x0000		
584	Reserved undefined				
585	reserved undefined				
586	battery temperature battery temperature	R	[0,3000]	0.1ÿ	
587	battery voltage battery voltage	R		0.01V	
588	battery capacity	R	[0,100]	1%	
589	reserved undefined	R			
590	battery output power Battery output power Battery	R		1W	S16
591	output current Battery output current	R		0.01A	S16
592	Corrected battery capacity Corrected_AH		[0,3000]	1AH 100 is 100AH	
593					
594					

595					
596					
597					
598	Grid side phase voltage A Grid phase voltage A	R		0.1V	
599	Grid phase voltage B Grid phase voltage B	R		0.1V	
600	Grid phase voltage C Grid phase voltage C	R		0.1V	
601	Grid side line voltage AB Grid line voltage AB Grid	R		0.1V	reserved
602	side line voltage BC Grid line voltage BC	R		0.1V	
603	Grid line voltage CA Grid line voltage CA Grid	R		0.1V	
604	side inner A-phase power A phase power on the inner side of the grid	R		1W	S16
605	B phase power on the inner side of the grid	R		1W	S16
606	C phase power on the inner side of the grid	R		1W	S16
607	Total active power from side to side of the grid	R		1W	
608	Grid side - inside total apparent power grid	R		1W	reserved
609	side frequency Grid -side frequency A				
610	grid side inner current A grid side inner current A	R		0.01A	S16
611	grid side inner current B grid side inner current B grid	R		0.01A	S16
612	side inner current C grid side inner current C grid	R		0.01A	S16
613	external-current A Out -of-grid - current A	R		0.01A	S16
614	Out -of-grid - current B	R		0.01A	S16
615	Out -of-grid - current C	R		0.01A	S16
616	Out -of-grid -power A	R		1W	S16
617	Out -of-grid -power B	R		1W	S16
618	Out -of grid -power C	R		1W	S16
619	Out -of-grid –total power	R		1W	S16
620		R		1VA S16	

	Out-of-grid –total apparent power grid-				
621	connected power factor PF Grid-connected power factor PF	R	R/W	[0,1000] true	value*1000
622	grid side A phase power Grid side A-phase power			1W	The following three registers change according to the built-in and external settings The following three registers vary according to the built-in and external Settings
623	Grid side B phase power Grid side B-phase power Grid			1W	
624	side C-phase power Grid side C-phase power Grid			1W	
625	side - total active power Grid side total power			1W	
626					
627	Inverter output phase voltage A Inverter output phase voltage A	R		0.1V	
628	Inverter output phase voltage B Inverter output phase voltage B	R		0.1V	
629	Inverter output phase voltage C Inverter output phase voltage C	R		0.1V	
630	Inverter output phase current A Inverter output phase current A			0.01A	S16
631	Inverter output phase current B Inverter output phase current B			0.01A	S16
632	Inverter output phase current C Inverter output phase current C Inverter output			0.01A	S16
633	phase power A Inverter output phase power A Inverter output	R		1W	S16
634	phase power B Inverter output phase power B Inverter output	R		1W	S16
635	phase power C Inverter output phase power C Inverter output			1W	S16
636	total active power Inverter output total power	R		1W	S16
637	Inverter output total apparent power Inverter output total apparent power			1W	S16

638	Inverter frequency Inverter frequency			0.01Hz	U16
639					
640	UPS load side phase power A UPS load -side phase power A			1W	U16
641	UPS load side phase power B UPS load -side phase power B			1W	U16
642	UPS load side phase power C UPS load -side phase power C			1W	U16
643	UPS load side total power C UPS load -sidetotal power load			1W	U16
644	phase voltage A Load phase voltage A	R		0.1V	U16
645	Load phase voltage B Load phase voltage B	R		0.1V	U16
646	Load phase voltage C Load phase voltage C Load			0.1V	U16
647	measurement current A is invalid Load phase current A no use Load	R		0.01A	S16
648	phase current B is invalid Load phase current B no use Load	R		0.01A	S16
649	phase current B no use Load phase current C no use Load	R		0.01A	S16
650	phase power A Load phase power A	R		1W	S16
651	Load phase power B Load phase power B	R		1W	S16
652	Load phase power C Load phase power C Total	R		1W	S16
653	active power on the load side Load totalpower Load	R		1W	S16
654	side total apparent power reserve Load phase apparent power undefined	R		1W	S16
655	load frequency Load frequency	R		0.01Hz	
656					
657					
658					
659					
660					
661	Phase voltage A of the Gen port Phase voltage of Gen port A			0.1V	
662	Phase voltage B of Gen port Phase voltage of Gen port B			0.1V	
663	Phase voltage C of Gen port Phase voltage of Gen port C			0.1V	
664	Power A of Gen Port Phase power of Gen port A	R		1W	

665	Power B of Gen Port Phase power of Gen port B			1W	
666	Power C of Gen Port Phase power of Gen port C			1W	
667	Total Power of Gen Ports total power of Gen port			1W	
668					
669					
670					
671					
672	PV1 input power PV1 input power	R		1W	
673	PV2 input power PV2 input power	R		1W	
674	PV3 input power PV3 input power	R		1W	
675	PV4 input power PV4 input power	R		1W	
676	DC voltage 1 Dc voltage 1	R[0,65535]		0.1V	
677	DC current 1 Dc current 1	R[0,65535]		0.1A	
678	DC voltage 2 Dc voltage 2	R[0,65535]		0.1V	
679	DC current 2 Dc current 2	R[0,65535]		0.1A	
680	DC voltage 3 Dc voltage 3	R[0,65535]		0.1V	
681	DC current 3 Dc current 3	R[0,65535]		0.1A	
682	DC voltage 4 Dc voltage 4	R[0,65535]		0.1V	
683	DC current 4 Dc current 4	R[0,65535]		0.1A	
	reserved				
	reserved				
	reserved				
1000 Grid	information monitoring methods Grid power check mode	R			BIT00: 0: CT 1: Meter BIT01-BIT15: undefined

5.3.03 Battery read-only area

Addr	Register meaning	R/W	data range	unit	note
2000-2999 is the lithium battery					
	register battery ID				
	Sacred Sun Battery No.				
500	1 No. 1 Byte No. 1 No. 2 Byte No. 1 3 Byte No.	R	'0' '9' 'A' 'Z'		ASCII characters
501	1 4 Byte No. 1 5 Byte No. 1 6 Byte No. 7 Byte	R			
502	1 No. 8 Byte 1 No. 9 Byte 1 No. 10 Byte 1 No.				
503	11 Byte 1 No. 12 Byte 2 No. 1 Byte 2 No. 2 Byte				
504	2 No. 3 Byte 2 No. 4 Byte 2 No. 5 Byte 2 No.				
505	6 byte				
506		R	'0' '9' 'A' 'Z'		ASCII characters
507		R			
508					

509	No. 2 No. 7 Byte No. 2				
510	No. 8 Byte No. 2 9 Byte				
511	No. 2 10 Byte No. 2 11 Byte				
512	No. 2 12 Byte No. 3 1 Byte	R	'0' '9' 'A' 'Z'		ASCII characters
513	No. 3 2 Byte No. 3 Byte No.	R			
514	3 4 Byte No. 3 No. 5 Byte No.				
515	3 6 Byte No. 7 Byte No. 3 8				
516	Byte No. 3 9 Byte No. 3 10				
517	Byte No. 3 11 Byte No. 3 12				
518	Byte No. 4 1 Byte 4 No. 2	R	'0' '9' 'A' 'Z'		ASCII characters
519	Byte No. 4 No. 3 Byte No. 4	R			
520	No. 4 Byte No. 5 Byte No. 4 6				
521	Byte No. 7 Byte No. 4 8 Byte				
522	No. 4 9 Byte No. 4 10 Byte				
523	No. 4 11 Byte No. 4 12 Byte				
524	No. 5 No. 1 Byte No. 5 2	R	'0' '9' 'A' 'Z'		ASCII characters
525	Byte No. 3 Byte No. 5 4 Byte	R			
526	No. 5 Byte No. 5 6 Byte No. 7				
527	Byte No. 8 Byte No. 9 Byte No.				
528	5 10 Byte No. 5, 11 bytes,				
529	No. 5, 12 bytes, No. 6, 1 byte				
530		R	'0' '9' 'A'		ASCII characters

	No. 6 2 Byte		'Z'		
531	No. 6 3 Byte 6 No. 4 Byte	R			
532	6 No. 5 Byte 6 No. 6 Byte				
533	6 No. 7 Byte 6 No. 8 Byte				
534	6 No. 9 Byte 6 No. 10 Byte				
535	No. 6 11 Byte No. 6 12 Byte				
536	No. 7 1 Byte 7 2 Byte 7 3	R	'0' '9' 'A' '_' 'Z'		ASCII characters
537	Byte 7 4 Byte 7 5 Byte 7 6	R			
538	Byte 7 7 Byte 7 8 Byte 7 9				
539	Byte No. 7 No. 10 Byte No. 7				
540	No. 11 Byte No. 7 12 Byte				
541	No. 8 1 Byte No. 8 2 Byte				
542	No. 8 3 Byte No. 8 4 Byte	R	'0' '9' 'A' '_' 'Z'		ASCII characters
543	No. 8 5 Byte No. 6 Byte No.	R			
544	8 7 Byte 8 bytes 8 bytes				
545	9 bytes 8 bytes 10 bytes 8				
546	bytes 11 bytes 8 bytes 12				
547	bytes 9 bytes 1 bytes 9 bytes				
548	2 bytes 9 bytes 3 bytes 9 bytes	R	'0' '9' 'A' '_' 'Z'		ASCII characters
549	4 bytes 9 bytes 5 bytes No. 9	R			
550	6 bytes No. 9 7 bytes No. 9				
551	8 bytes 				

552	No. 9 No. 9 Byte No. 9				
553	No. 10 Byte No. 9 No. 11				
554	Byte No. 9 No. 10 7	R	'0' '9' 'A' '_' 'Z'		ASCII characters
555	bytes No. 10 8 bytes 10	R			
556	No. 9 bytes 5 bytes 11 6				
557	bytes 11 7 bytes 11 8				
558	bytes 11 9 bytes 11 10				
559	bytes 11 11 bytes 11 12				
560	bytes 12 1 bytes 12 2	R	'0' '9' 'A' '_' 'Z'		ASCII characters
561	bytes No. 12 No. 3 Byte No.	R			
562	12 4 Byte No. 12 5 Byte No.				
563	12 6 Byte No. 12 7 Byte No.				
564	12 8 Byte No. 12 9 Byte No.				
565	13 1 byte No. 13 2 bytes No.				
566	13 3 bytes	R	'0' '9' 'A' '_' 'Z'		ASCII characters
567		R			
568					
569					
570					
571					
572		R	'0' '9' 'A' '_' 'Z'		ASCII characters
573		R			

	No. 13 4 bytes				
574	No. 13 5 bytes No. 13 6 bytes				
575	No. 13 7 bytes No. 13 8 bytes				
576	No. 14 2 bytes No. 14 3 bytes				
577	No. 14 4 bytes No. 14 5 bytes				
578	No. 14 6 14th 12th 15th 1st	R	' 0 ' ' 9 ' 'A' ' ' Z '		ASCII characters
579	15th 2th 15th 3rd 15th 4th	R			
580	15th 5th 15th 6th 15th 7th				
581	15th 8th 15th 9th No. 15 10				
582	bytes No. 15 11 bytes No.				
583	15 12 bytes 				
584	 	R	' 0 ' ' 9 ' 'A' ' ' Z '		ASCII characters
585	 	R			
586	 				
587	 				
588	 				
589	 				
600	PACK1 Module Voltage			0.01V	
601	Module Current			0.1A	
602	Temperate -AVE				1250 mean 25.0 ÿ
603	SOC			0.1	
604	Remain Capacity			0.1AH	

605		Total Capacity			0.1AH	
606		Charge Voltage			0.01V	
607		Charge Current			0.1A	
608		Discharge Current			0.1A	
609		Max Cell V			0.01V	
610		Min Cell V			0.01V	
611		Cycle number			1	
612		Warming			--	
613		Fault			--	
614	PACK2	Module Voltage				
615		Module Current				
616		Temperate -AVE				
617		SOC				
618		Remain Capacity				
619		Total Capacity				
620		Charge Voltage				
621		Charge Current				
622		Discharge Current				
623		Max Cell V				
624		Min Cell V				
625		Cycle number				
626		Warming				
627		Fault				
628	PACK3	Module Voltage				
629		Module Current				
630		Temperate -AVE				

631		SOC				
632		Remain Capacity				
633		Total Capacity				
634		Charge Voltage				
635		Charge Current				
636		Discharge Current				
637		Max Cell V				
638		Min Cell V				
639		Cycle number				
640		Warming				
641		Fault				
642	PACK4	Module Voltage				
643		Module Current				
644		Temperate -AVE				
645		SOC				
646		Remain Capacity				
647		Total Capacity				
648		Charge Voltage				
649		Charge Current				
650		Discharge Current				
651		Max Cell V				
652		Min Cell V				
653		Cycle number				
654		Warming				
655		Fault				
656	PACK5	Module Voltage				
657		Module				

		Current				
658		Temperate -AVE				
659		SOC				
660		Remain Capacity				
661		Total Capacity				
662		Charge Voltage				
663		Charge Current				
664		Discharge Current				
665		Max Cell V				
66 6		Min Cell V				
667		Cycle number				
668		Warming				
669		Fault				
670		Module Voltage				
671		Module Current				
672		Temperate -AVE				
673		SOC				
674		Remain Capacity				
675		Total Capacity				
676	PACK6	Charge Voltage				
677		Charge Current				
678		Discharge Current				
679		Max Cell V				
680		Min Cell V				
681		Cycle number				
682		Warming				
683		Fault				

684	PACK7	Module Voltage				
685		Module Current				
686		Temperate -AVE				
687		SOC				
688		Remain Capacity				
689		Total Capacity				
690		Charge Voltage				
691		Charge Current				
692		Discharge Current				
693		Max Cell V				
694		Min Cell V				
695		Cycle number				
696		Warming				
697		Fault				
698	PACK8	Module Voltage				
699		Module Current				
700		Temperate -AVE				
701		SOC				
702		Remain Capacity				
703		Total Capacity				
704		Charge Voltage				
705		Charge Current				
706		Discharge Current				
707		Max Cell V				
708		Min Cell V				
709		Cycle				

		number				
710		Warming				
711		Fault				
712	PACK9	Module Voltage				
713		Module Current				
714		Temperate -AVE				
715		SOC				
716		Remain Capacity				
717		Total Capacity				
718		Charge Voltage				
719		Charge Current				
720		Discharge Current				
721		Max Cell V				
722		Min Cell V				
723		Cycle number				
724		Warming				
725		Fault				
726	PACK10	Module Voltage				
727		Module Current				
728		Temperate -AVE				
729		SOC				
730		Remain Capacity				
731		Total Capacity				
732		Charge Voltage				
733		Charge Current				
734		Discharge Current				

735		Max Cell V				
736		Min Cell V				
737		Cycle number				
738		Warming				
739		Fault				
740	PACK11	Module Voltage				
741		Module Current				
742		Temperate -AVE				
743		SOC				
744		Remain Capacity				
745		Total Capacity				
746		Charge Voltage				
747		Charge Current				
748		Discharge Current				
749		Max Cell V				
750		Min Cell V				
751		Cycle number				
752		Warming				
753		Fault				
754	PACK12	Module Voltage				
755		Module Current				
756		Temperate -AVE				
757		SOC				
758		Remain Capacity				
759		Total Capacity				
760		Charge Voltage				
761		Charge				

		Current				
762		Discharge Current				
763		Max Cell V				
764		Min Cell V				
765		Cycle number				
766		Warming				
767		Fault				
768		Module Voltage				
769		Module Current				
770		Temperate -AVE				
771		SOC				
772		Remain Capacity				
773		Total Capacity				
774	PACK13	Charge Voltage				
775		Charge Current				
776		Discharge Current				
777		Max Cell V				
778		Min Cell V				
779		Cycle number				
780		Warming				
781		Fault				
782		Module Voltage				
783		Module Current				
784	PACK14	Temperate -AVE				
785		SOC				
786		Remain Capacity				
787		Total Capacity				

788		Charge Voltage				
789		Charge Current				
790		Discharge Current				
791		Max Cell V				
792		Min Cell V				
793		Cycle number				
794		Warming				
795		Fault				
796	PACK15	Module Voltage				
797		Module Current				
798		Temperate -AVE				
799		SOC				
800		Remain Capacity				
801		Total Capacity				
802		Charge Voltage				
803		Charge Current				
804		Discharge Current				
805		Max Cell V				
806		Min Cell V				
807		Cycle number				
808		Warming				
809		Fault				

5.4. Memory record table

memory record table					
Addr.	register meaning	R/W	Range	Unit	note
1000	Inverter fault information	R			The length range is 500
...		R			
...		R			

1499		R			

5.5. Fault code

warning code

Error code	Description /Describe	Solutions/Solutions
W01	the fan failure phase	
W02	error	

Fault code: Fault Code

Error code	Description /Description	Solutions/Solutions
F07	DC/DC_Softsart_Fault DC/DC soft start fault	DC/DC softstart fault 1. Check the battery fuse; 2. Restart and check whether it is in normal; 3. Seek help from us, if can't go back to noarmal state
F10	AuxPowerBoard_Failure Auxiliary power failure	Auxiliary power supply failure 1. Wait for minutes then check; 2. Remove wifi plug or other communicator; 3. Seek help from us, if can't go back to noarmal state
F13	Working mode change	Inverter work mode changed 1. wait for a minute and check; 2. Seek help from us, if can't go back to normal state.
F18	AC over current fault of hardware Hardware AC overcurrent	AC side over current fault 1. Please check whether the backup load power and common load power are within the range; 2. Restart and check whether it is in normal; 3. Seek help from us, if can not go back to normal state.
F20	DC over current fault of the hardware Hardware DC overcurrent	DC side over current fault 1. Check PV module connect and battery connect; 2. Turn off the DC switch and AC switch and then wait one minute, then turn on the DC/AC switch again; 3. Seek help from us, if can not go back to normal state.
F22	Tz_EmergSStop_Fault Emergency stop fault (inverter locked)	Tz_EmergSStop_Fault Seek help from us, This failure hardly happens.
F23	AC leakage current is transient over current Instantaneous leakage current fault	Leakage current fault 1. Check the cable of PV module and inverter; 2. Restart inverter; 3. Seek help from us, if can not go back to normal state.

F24	DC insulation impedance failure Phalanx insulation resistance fault	PV isolation resistance is too low 1. Check the connection of PV panels and inverter is firmly and correctly; 2. Check whether the PE cable of inverter is connected to ground; 3. Seek help from us, if can not go back to normal state.
F26	The DC busbar is unbalanced DC bus unbalance	1. Please wait for a while and check whether it is normal; 2. If still same, and turn off the DC switch and AC switch and wait for one minute and then turn on the DC/AC switch; 3. Seek help from us, if can not go back to normal state.
F29	Parallel_CANBus_Fault Parallel communication failure	This fualt only for inverters working in parallel mode 1. Check the parallel setting according to the instructions; 2. Check the connection of the CANBus; 3. Seek help from us No
F35	No AC grid	Utility 1. Please confirm grid is lost or not; 2. Check the grid connection is good or not; 3. Check the switch between inverter and grid is on or not; 4. Seek help from us, if can not go back to normal state.
F41	Parallel_system_Stop Parallel system shutdown fault	In parallel systems, due to other inverter faults. 1. Wait for minutes then check all inverters in this parallel system; 2. If the inverter can't go back to normal state, record fault codes of all inverters, then seek help from us.
F42	AC line low voltage Line voltage is too low fault	grid voltage fault 1. Check the AC voltage is in the range of standard voltage in specification; 2. Check whether grid AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F46/F49	Bcakup_Battery_Fault Backup battery failure	Backup battery fault. 1. Check the battery capacity; 2. Check the connection between batteries and inverters; 3. If inverter can't go back to normal after load reduction, seek help from us
F47	AC over frequency	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F48	AC lower frequency AC underfrequency	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.

F56	DC busbar voltage is too low Bus voltage too low	Battery voltage low 1. Check whether battery voltage is too low; 2. If the battery voltage is too low, using PV or grid to charge the battery; 3. Seek help from us, if can not go back to normal state.
F58	BMS communication fault BMS communication failure	
F63	ARC fault arc fault	1. ARC fault detection is only for US market; 2. Check PV module cable connection and clear the fault; 3. Seek help from us, if can not go back to normal state.
F64	Heat sink high temperature failure Heatsink temperature is too high	Heat sink temperature is too high 1. Check whether the work environment temperature is too high; 2. Turn off the inverter for 10mins and restart; 3. Seek help from us, if can not go back to normal state.

6. Appendix

6.1. Appendix I:

6.2. Appendix II:

6.3. Appendix III:

6.4. Appendix IV

6.5. Appendix V: