

Growatt Inverter Modbus RTU Protocol_II

V1.05

2018-04-19

Growatt New Energy CO.,LTD

No.	Version	Date	Notice	Signature
1	V1.00	2017-3-27	The first version	May
2	V1.01	2017-4-28	Modify max data length to 125 words. Add Input reg50-52 for line voltage	May
3	V1.02	2017-7-18	Add SP storage and offline inverter message Modify Input reg. First and Second group sequence Modify Holding register First group sequence Modigy stringPID fault code and warning code Modify fifth and sixth group for Gridfault record	May
4	V1.03	2017-8-2	Modify Hybrid Abnorm/Fault/warning bit definition	Ericxiong
5	V1.04	2018-3-29	Add Inputing178,179,180,181 for Warning Value1,Warning Value2,Warning Value3 and FaultCode Add Holding240 for aging Check Step Add Inputing112 for INV warn code Add Inputing113 for real Power Percent Add Inputing114 for inv start delay time Add Inputing115 for INV All Fault Code Add holding267-298 for DSP debugdata address Add Inputing182-197 for DSP debugdata value Add Inputing198 for USB Aging Test OK flag Add Inputing199 for USB Flash Aging Test OK flag Add Inputing200 for ISO check value Add holding299 for Active Over load Enable Add Inputing 201-203 for R、S、T DCI Current Add Inputing204 for PID Bus Volt Add Inputing205 for GFCI Curr Add Inputing 206-227 for APF/SVG information Add holding 300 for SVG/APF mode	
6	V1.05	2018-6-28	Add InputingReg 525~529 for Setting up GPRS IP Address Add HodlingReg 90 as the step to set up GPRS IP Address	huo.zhao

7	V1.06	2018.7.5	Add HoldingReg 301 for BDEW LVRT K Factor	Yimin.Yang

V1.00 2017-03-17:

First version

V1.01 2017-4-28

Modify max data length to 125 words.

Add Inputreg 50-52 for line voltage

V1.05 2018-6-28

Add InputingReg 525~529 for Setting up GPRS IP Address

Add HodlingReg 90 as the step to set up GPRS IP Address

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1 Data format

Address	Function	Data	CRC check
8 bits	8 bits	N×8bits	16bits

Valid slave device addresses are in the range of 0 – 254 decimal.

The individual slave devices are assigned addresses in the range of 1 – 254.

0 is the broadcast address

It is 16bits (two bytes) unsigned integer for each holding and input register;

2 Command Format

Function 3 Read holding register

QUERY	
Field Name	Example (Hex)
Slave Address	11
Function	03
Starting Address Hi	00
Starting Address Lo	6B
No. of Points Hi	00
No. of Points Lo	03
Error Check (LRC or CRC)	—

RESPONSE	
Field Name	Example (Hex)
Slave Address	11
Function	03
Byte Count	06
Data Hi (Register 40108)	02
Data Lo (Register 40108)	2B
Data Hi (Register 40109)	00
Data Lo (Register 40109)	00
Data Hi (Register 40110)	00
Data Lo (Register 40110)	64
Error Check (LRC or CRC)	—

Response Error:

11 0x80|0x03 Errornum CRC (Errornum as a byte)

Function 4 Read input register

QUERY	
Field Name	Example (Hex)
Slave Address	11
Function	04
Starting Address Hi	00
Starting Address Lo	08
No. of Points Hi	00
No. of Points Lo	01
Error Check (LRC or CRC)	—

RESPONSE	
Field Name	Example (Hex)
Slave Address	11
Function	04
Byte Count	02
Data Hi (Register 30009)	00
Data Lo (Register 30009)	0A
Error Check (LRC or CRC)	—

Response Error:

11 0x80|0x04 Errornum CRC (Errornum as a byte)

Function 6 Preset single register

QUERY	
Field Name	Example (Hex)
Slave Address	11
Function	06
Register Address Hi	00
Register Address Lo	01
Preset Data Hi	00
Preset Data Lo	03
Error Check (LRC or CRC)	—

RESPONSE	
Field Name	Example (Hex)
Slave Address	11
Function	06
Register Address Hi	00
Register Address Lo	01
Preset Data Hi	00
Preset Data Lo	03
Error Check (LRC or CRC)	—

Response Error:

11 0x80|0x06 Errornum CRC (Errornum as a byte)

Function 16 Preset multiple register

QUERY	
Field Name	Example (Hex)
Slave Address	11
Function	10
Starting Address Hi	00
Starting Address Lo	01
No. of Registers Hi	00
No. of Registers Lo	02
Byte Count	04
Data Hi	00
Data Lo	0A
Data Hi	01
Data Lo	02
Error Check (LRC or CRC)	—

RESPONSE	
Field Name	Example (Hex)
Slave Address	11
Function	10
Starting Address Hi	00
Starting Address Lo	01
No. of Registers Hi	00
No. of Registers Lo	02
Error Check (LRC or CRC)	—

Response Error:

11 0x80|0x10 Errornum CRC (Errornum as a byte)

3 Device Message Transmission Mode / Framing

RTU Mode

When controllers are setup to communicate on a Modbus network using RTU (Remote Terminal Unit) mode, each 8-bit byte in a message contains two 4-bit hexadecimal characters. Each message must be transmitted in a continuous stream.

The format for each byte in RTU mode is:

- Coding System: 8-bit binary, hexadecimal 0–9, A–F
- Two hexadecimal characters contained in each 8-bit field of the message

Bits per Byte:

- 1 start bit
- 8 data bits, least significant bit sent first
- None parity
- 1 stop bit
- Error Check Field: Cyclical Redundancy Check (CRC)

The baud rate of the transmission is:

- Default Baud Rate: 9600 bps
- Can be set through hold register 22

Minimum CMD period (RS485 Time out): 850ms.

- Wait for minimum 850ms to send a new CMD after last CMD. Suggestion is 1s;

Maximum Data Length Define:

- Maximum read data length is **125 words** in read command;
- Maximum update data length is 125 words in preset command;

Note:

Except the CEIO-21 and VDE-AR-N 4105 power management registers, you should refer the manufactory's suggestion when writing other registers;

4 Register map

It is 16bits (two bytes) unsigned integer for each holding and input register;

4.1 Holding Reg

Register NO.	Variable Name	Description	Write or not	Value	Unit	Initial value	Note
First group							
00	OnOff	Remote On/Off . On (1); Off (0)	W	0 or 1		1	When PV restart, recover 1.
01	SaftyFuncEn	Bit0: SPI enable Bit1: AutoTestStart Bit2: LVFRT enable Bit3: FreqDeratingEnable Bit4: Softstart enable Bit5: DRMS enable Bit6:PowerVoltFunc En Bit7~15:reserved	W	0 : disable 1: enable			SPI: system protection interface Bit0~3:for CEIO-21 Bit4~6:for SAA
02	PF CMD memory state	Set Holding register 3,4,5,99 CMD will be memory or not(1/0), if not, these settings are the initial value.	W	0 or 1		0	Means these settings will be acting or not when next power on
03	Active P Rate	Inverter Max output active power percent	W	0-100 or 255	%	255	255: power is not be limited
04	Reactive P Rate	Inverter max output reactive power percent	W	0-100 or 255	%	255	255: power is not be limited
05	Power factor	Inverter output power factor's 10000 times	W	0-20000, 0-10000 is underexcited, other is overexcited		0	
06	Pmax H	Normal power (high)				0.1VA	
07	Pmax L	Normal power (low)				0.1VA	
08	Vnormal	Normal work PV voltage				0.1V	

09	Fw version H	Firmware version (high)			ASCII		
10	Fw version M	Firmware version (middle)					
11	Fw version L	Firmware version (low)					
12	Fw version2 H	Control Firmware version (high)			ASCII		
13	Fw version2 M	Control Firmware version (middle)					
14	Fw version2 L	Control Firmware version (low)					
15	LCD language	LCD language	W	0-5			
16	CountrySelected	Country Selected or not	W	0: need to select; 1: have selected			
17	Vpv start	Input start voltage	W		0.1V		
18	Time start	Start time	W		1s		
19	RestartDelay Time	Restart Delay Time after fault back;	W		1s		
20	wPowerStart Slope	Power start slope	W	1-1000	0.1%		
21	wPowerRestartSlopeEE	Power restart slope	W	1-1000	0.1%		
22	wSelectBaud rate	Select communication baudrate 0: 9600bps 1:38400bps	W	0-1		0	
23	Serial NO. 5	Serial number 5			ASCII		
24	Serial No. 4	Serial number 4					
25	Serial No. 3	Serial number 3					
26	Serial No. 2	Serial number 2					
27	Serial No. 1	Serial number 1					
28	Module H	Inverter Module (high)		&*5			
29	Module L	Inverter Module (low)		&*5			
30	Com Address	Communicate address	W	1-254		1	
31	FlashStart	Update firmware	W	1			
32	Reset User Info	Reset User Information	W	0x0001			
33	Reset to factory	Reset to factory	W	0x0001			
34	Manufacturer Info 8	Manufacturer information (high)			ASCII		

35	Manufacturer Info 7	Manufacturer information (middle)					
36	Manufacturer Info 6	Manufacturer information (low)					
37	Manufacturer Info 5	Manufacturer information (high)					
38	Manufacturer Info 4	Manufacturer information (middle)					
39	Manufacturer Info 3	Manufacturer information (low)					
40	Manufacturer Info 2	Manufacturer information (low)					
41	Manufacturer Info 1	Manufacturer information (high)					
42	reserved						reserved
43	DTC	Device Type Code		&*6			
44	TP	Input tracker num and output phase num		Eg:0x0203 is two MPPT and 3ph output			
45	Sys Year	System time-year	W	Year offset is 0			Local time
46	Sys Month	System time- Month	W				
47	Sys Day	System time- Day	W				
48	Sys Hour	System time- Hour	W				
49	Sys Min	System time- Min	W				
50	Sys Sec	System time- Second	W				
51	Sys Weekly	System Weekly	W	0-6			
52	Vac low	Grid voltage low limit protect	W		0.1V		
53	Vac high	Grid voltage high limit protect	W		0.1V		
54	Fac low	Grid frequency low limit protect	W		0.01 Hz		
55	Fac high	Grid high frequency limit protect	W		0.01 Hz		
56	Vac low 2	Grid voltage low limit protect 2	W		0.1V		
57	Vac high 2	Grid voltage high limit protect 2	W		0.1V		
58	Fac low 2	Grid frequency low limit	W		0.01		

		protect 2			Hz		
59	Fac high 2	Grid high frequency limit protect 2	W		0.01 Hz		
60	Vac low 3	Grid voltage low limit protect 3	W		0.1V		
61	Vac high 3	Grid voltage high limit protect 3	W		0.1V		
62	Fac low 3	Grid frequency low limit protect 3	W		0.01Hz		
63	Fac high 3	Grid frequency high limit protect 3	W		0.01Hz		
64	Vac low C	Grid low voltage limit connect to Grid	W		0.1V		
65	Vac high C	Grid high voltage limit connect to Grid	W		0.1V		
66	Fac low C	Grid low frequency limit connect to Grid	W		0.01 Hz		
67	Fac high C	Grid high frequency limit connect to Grid	W		0.01 Hz		
68	Vac low1 time	Grid voltage low limit protect time 1	W		Cycle		
69	Vac high1 time	Grid voltage high limit protect time 1	W		Cycle		
70	Vac low2 time	Grid voltage low limit protect time 2	W		Cycle		
71	Vac high2 time	Grid voltage high limit protect time 2	W		Cycle		
72	Fac low1 time	Grid frequency low limit protect time 1	W		Cycle		
73	Fac high1 time	Grid frequency high limit protect time 1	W		Cycle		
74	Fac low2 time	Grid frequency low limit protect time 2	W		Cycle		
75	Fac high2 time	Grid frequency high limit protect time 2	W		Cycle		
76	Vac low3 time	Grid voltage low limit protect time 3	W		Cycle		
77	Vac high3 time	Grid voltage high limit protect time 3	W		Cycle		
78	Fac low3 time	Grid frequency low limit protect time 3	W		Cycle		
79	Fac high3	Grid frequency high	W		Cycle		

	time	limit protect time 3					
80	U10min	Volt protection for 10 min	W		0.1V	1.1Vn	
81	PV Voltage High Fault	PV Voltage High Fault	W		0.1V		
82	FW Build No. 5	FW Build version			ASCII		
83	FW Build No. 4	FW Build version			ASCII		
84	FW Build No. 3	DSP1 FW Build No.			ASCII		
85	FW Build No. 2	DSP2 FW Build No.			ASCII		
86	FW Build No. 1	M3 FW Build No.			ASCII		
87	FW Build No. 0	CPLD FW Build No.			ASCII		
88	ModbusVersion	Modbus Version		Eg: 207 is V2.07	Int(16bits)		
89	PFModel	Set PF function Model 0: PF=1 1: PF by set 2: default PF line 3: User PF line 4: UnderExcited (Inda) Reactive Power 5: OverExcited(Capa) Reactive Power 6: Q(v)model	W				
90	GPRS IP Flag	read:1;Set GPRS IP Succeeded Write:2;Read GPRS IP Succeeded	W	write:2 read:0~3			
91	FreqDerateStart	Frequency derating start point	W		0.01HZ		
92	FLrate	Frequency – load limit rate	W	0-100	10times		
93	V1S	CEI021 V1S Q(v)	W	V1S<V2S	0.1V		
94	V2S	CEI021 V2S Q(v)	W		0.1V		
95	V1L	CEI021 V1L Q(v)	W	V1L<V1S	0.1V		
96	V2L	CEI021 V2L Q(v)	W	V2L<V1L	0.1V		

97	Qlockinpower	Q(v) lock in active power of CEI021	W	0-100	Percent		
98	QlockOutpower	Q(v) lock Out active power of CEI021	W	0-100	Percent		
99	LIGridV	Lock in gird volt of CEI021 PF line	W	nVn	0.1V		
100	LOGridV	Lock out gird volt of CEI021 PF line	W	nVn	0.1V		
101	PFAdj1	PF adjust value 1		4096 is 1			
102	PFAdj2	PF adjust value 2		4096 is 1			
103	PFAdj3	PF adjust value 3		4096 is 1			
104	PFAdj4	PF adjust value 4		4096 is 1			
105	PFAdj5	PF adjust value 5		4096 is 1			
106	PFAdj6	PF adjust value 6		4096 is 1			
107	QVRPDelayTimeEE	QV Reactive Power delaytime	W	0-30	1S	3S	
108	OverFDeratDelayTimeEE	Overfrequency derating delaytime	W	0-20	50ms	0	
109	QpercentMax	Qmax for Q(V) curve	W	0-1000	0.1%		
110	PFLineP1_LP	PF limit line point 1 load percent	W	0-255	percent		255 means no this point
111	PFLineP1_PF	PF limit line point 1 power factor	W	0-20000			
112	PFLineP2_LP	PF limit line point 2 load percent	W	0-255	percent		255 means no this point
113	PFLineP2_PF	PF limit line point 2 power factor	W	0-20000			
114	PFLineP3_LP	PF limit line point 3 load percent	W	0-255	percent		255 means no this point
115	PFLineP3_PF	PF limit line point 3 power factor	W	0-20000			
116	PFLineP4_LP	PF limit line point 4 load percent	W	0-255	percent		255 means no this point
117	PFLineP4_PF	PF limit line point 4 power factor	W	0-20000			
118	BLVersion1	Boot loader version1	R				Reserved
119	BLVersion2	Boot loader version2	R				Reserved
120	BLVersion3	Boot loader version3	R				Reserved
121	BLVersion4	Boot loader version4	R				Reserved
122	INV-Lng	Inverter Longitude	W				

123	INV-Lat	Inverter Latitude	W				
124	TrakerModel	2 Traker Model	W	0,1,2	0:Independent 1:DC Source 2:Parallel		
Second group							
125	INV Type-1	Inverter type-1	R		ASCII		Reserved
126	INV Type-2	Inverter type-2	R		ASCII		
127	INV Type-3	Inverter type-3	R		ASCII		
128	INV Type-4	Inverter type-4	R		ASCII		
129	INV Type-5	Inverter type-5	R		ASCII		
130	INV Type-6	Inverter type-6	R		ASCII		
131	INV Type-7	Inverter type-7	R		ASCII		
132	INV Type-8	Inverter type-8	R		ASCII		
.....							Reserved
200							Reserved
201	PID Working Model	PID Working Model	W	0:Automatic 1:Continual 2:Overnight			
202	PID On/Off Ctrl	PID On/Off Control	W	0:On 1:Off			
203	PID Volt Option	PID Output Voltage Option	W	300~1000 V			
.....							Reserved
229							Reserved
230~249 for growatt debug setting							
230	Island Disable	Island Disable or not. 1:disable 0:Enable	W	0,1		0	
231	Fan Check	Start Fan Check	W	1			
232	EnableNLine	Enable N Line of grid	W	1		0	
233	wCheckHardware	wCheckHardware Bit0: GFCIBreak; Bit1:SPSDamage Bit8:EepromReadWarning Bit9:EEWriteWarning					

						
234	wCheckHardware2						reserved
235	ubNToGNDDetect	Dis/enable N to GND detect function	W	1:enable 0:disable		1	
236	NonStdVacEnable	Enable/Disable Nonstandard Grid voltage range	W	0-1;		0	0:Disable; 1:Enable;
237	uwEnableSpecSet	Disable/enable appointed spec setting	W	1:enable 0:disable	Binary	0x0000	Bit 0: Hungary
238	Fast MPPT enable	About Fast mppt		0,1,2		0	Reserved
...							
240	Check Step		W				
.....							Reserved
249							Reserved
250	Curve analysis	Enable a curve analysis of a road	W	0~1	0		
251	Faultrecorder Wave1	Preset Record Waveform Number	W	1001~1999	1001		
252	Faultrecorder Wave2	Preset Record Waveform Number	W	1001~1999	1002		
253	Faultrecorder Wave3	Preset Record Waveform Number	W	1001~1999	1003		
254	Faultrecorder Wave4	Preset Record Waveform Number	W	1001~1999	1004		
255	Faultrecorder Wave5	Preset Record Waveform Number	W	1~999	1		
256	Faultrecorder Wave6	Preset Record Waveform Number	W	1~999	2		
257	Faultrecorder Wave7	Preset Record Waveform Number	W	1~999	3		
258	Faultrecorder Wave8	Preset Record Waveform Number	W	1~999	4		
259	FaultRecorderEnable	FaultRecorderEnable	W	1~100	0		
260	recorderWave1	Preset Record Waveform Number	W	1~1999	1		
261	recorderWave2	Preset Record Waveform Number	W	1~1999	2		
262	recorderWave3	Preset Record Waveform Number	W	1~1999	3		

263	recorderWave4	Preset Record Waveform Number	W	1~1999	4		
264	WaveRecorderEnable	Real-time waveform recording	W	0~1	0		
265	Harmonic Check Enable	Harmonic Check Enable	W	0~1	0		
266	Impedance Enable	Impedance Enable	W	0~1	0		
267	067 Debug 1_H	067 Debug 1_H					
268	067 Debug1_L	067 Debug1_L					
269	067 Debug2_H	067 Debug2_H					
270	067 Debug2_L	067 Debug2_L					
271	067 Debug3_H	067 Debug3_H					
272	067 Debug3_L	067 Debug3_L					
273	067 Debug4_H	067 Debug4_H					
274	067 Debug4_L	067 Debug4_L					
275	067 Debug5_H	067 Debug5_H					
276	067 Debug5_L	067 Debug5_L					
277	067 Debug6_H	067 Debug6_H					
278	067 Debug6_L	067 Debug6_L					
279	067 Debug7_H	067 Debug7_H					
280	067 Debug7_L	067 Debug7_L					
281	067 Debug8_H	067 Debug8_H					
282	067 Debug8_L	067 Debug8_L					
283	075 Debug 1	075 Debug 1_H					

	_H						
284	075 Debug1_L	075 Debug1_L					
285	075 Debug2_H	075 Debug2_H					
286	075 Debug2_L	075 Debug2_L					
287	075 Debug3_H	075 Debug3_H					
288	075 Debug3_L	075 Debug3_L					
289	075 Debug4_H	075 Debug4_H					
290	075 Debug4_L	075 Debug4_L					
291	075 Debug5_H	075 Debug5_H					
292	075 Debug5_L	075 Debug5_L					
293	075 Debug6_H	075 Debug6_H					
294	075 Debug6_L	075 Debug6_L					
295	075 Debug7_H	075 Debug7_H					
296	075 Debug7_L	075 Debug7_L					
297	075 Debug8_H	075 Debug8_H					
298	075 Debug8_L	075 Debug8_L					
299	bActiveOverl oadEnable	Active Over load Enable					
300	bSvApfMod e	Svg Apf Mode		低4位: 0 : SVG/APF , 1 : APF/SVG, 2 :SVG, 3 : APF 高4位: 0: 全天模式 1: 夜间模			

				式		
301	bBdewLvrKFactor	BDEW LVRT K Factor		0-4		
待确定部分						
360	232T485Enable	232T485Enable	W	0: Disable; 1: Enable		
361	Decrease Power H	Decrease output watt	W			
362	Decrease Power L	Decrease output watt	W		0.1W	
363	Increase Power H	Increase output watt	W			
364	Increase Power L	Increase output watt	W		0.1W	
365	Factory	The ODM Info code				
366	Vac start by pf	Vac start adjust by pf	W		0.1V	
367	PF of vac limit	Max pf of adjust Vac	W			10000
368	LCMDTest	Local command test	W	1 to test		
369	ReactiveRate	Reactive Rate in LVFRT	W	0-100		2
370	LVFRT_LV1	LVFRT low fault value 1	W		0.1V	
371	LVFRT_LT1	LVFRT low fault time 1	W		1ms	
372	LVFRT_LV2	LVFRT low fault value 2	W		0.1V	
373	LVFRT_LT2	LVFRT low fault time 2	W		1ms	
374	LVFRT_LV3	LVFRT low fault value 3	W		0.1V	
375	LVFRT_LT3	LVFRT low fault time 3	W		1ms	
376	LVFRT_LV4	LVFRT low fault value 4	W		0.1V	
377	LVFRT_LT4	LVFRT low fault time 4	W		1ms	
378	LVFRT_HV1	LVFRT high fault value 1	W		0.1V	
379	LVFRT_HT1	LVFRT high fault time 1	W		1ms	
380	wLoadDerate StartVolt	Load derate start ac voltage		1.05Vn~1.2Vn	0.1V	
381	SpecPasswordType	Unlock or set Specpassword	W	0:unlock , auto lock in 5 minute; 1:change pw (should unlock first),		2

				2: lock, &*7			
382	SpecPassword3	SpecPassword3	W	For the spec setting change	ASCII	XX	
383	SpecPassword2	SpecPassword2	W	..	ASCII	XX	
384	SpecPassword1	SpecPassword1	W	..	ASCII	XX	
385	DCIshift	DCI offset		Center is 30000			Reserved
386	DCIAdj	DCI adjust		Center is 2000			Reserved
387	IniEEPROM	IniEEPROM	W	0xFF			Reserved
388	Balance 1	Phaseflag ErrorCode	W				Reserved
389	Balance 2	Power H	W				Reserved
390	Balance 3	Power L	W				Reserved
391	bHighACVDerateSlope	High ac voltage load derating slope	W	20	0-100		
392	BlanceModel	BlanceModel	W	1-3			
393	BalancePhase	BalancePhase	W	1-3			
394	DCIshift2	DCI offset 2	W	Center is 30000			Reserved
395	DCIshift3	DCI offset 3	W	Center is 30000			Reserved
396	EnergyLimitEnable	Output Energy Limit Enable	R	1 is enable			Reserved
397	EnergyRemain H	Output Energy Limit value High	W	0.1kWh			Reserved
398	EnergyRemain L	Output Energy Limit value low	W	0.1kWh			Reserved
399	TrakerModel	2 Traker Model	W	0,1,2			Reserved
400	PMcheck	Growatt Resaved	W				Reserved
401	INVWorkMode	INV work mode set	W	0:default 1:CV Mode 2:CC Mode 3:CP		0	

				Mode			
402	PV1VoltSet	Pv1 voltage set when CV Mode was chosed	W	StartPVVoltage-HighPV Volt			
403	PV2VoltSet	Pv2 voltage set when CV Mode was chosed	W	StartPVVoltage-HighPV Volt			
404	BT1CurrRefSet	BT1 current set when CC Mode was chosed	W	0-MaxBTC current			
405	BT2CurrRefSet	BT2current set when CC Mode was chosed	W	0-MaxBTC current			
406	WattACVRecoverDelayTime	Delay time for power recovering when ac voltage getting normal	W	3-90S			
407	TxDatalInterval	TxDatalInterval	W	1~600	0.1 mins	50	5mins
408	ChkCode NO.1	Datalogger Check Code 1	R		ASCII		
409	ChkCode NO.2	Datalogger Check Code 2	R		ASCII		
500	ChkCode NO.3	Datalogger Check Code 3	R		ASCII		
501	bISLDShiftDeltaEE	Growatt Resaved	W				Reserved
502	bLowPointer	Growatt Resaved	W				Reserved
505	GPRSIP Addr	GPRSIP Addr No.1	W	0~65536	ASCII		
506	GPRSIP Addr	GPRSIP Addr No.2	W	0~65536	ASCII		
507	GPRSIP Addr	GPRSIP Addr No.3	W	0~65536	ASCII		
508	GPRSIP Addr	GPRSIP Addr No.4	W	0~65536	ASCII		
509	GPRSIP Addr	GPRSIP Addr No.5	W	0~65536	ASCII		
510	GPRSIP Addr	GPRSIP Addr No.6	W	0~65536	ASCII		
511	GPRSIP Addr	GPRSIP Addr No.7	W	0~65536	ASCII		
512	GPRSIP Addr	GPRSIP Addr No.8	W	0~65536	ASCII		
513	GPRSIP Addr	GPRSIP Addr No.9	W	0~65536	ASCII		
514	GPRSIP Addr	GPRSIP Addr No.10	W	0~65536	ASCII		
515	GPRSIP Addr	GPRSIP Addr No.11	W	0~65536	ASCII		
516	GPRSIP Addr	GPRSIP Addr No.12	W	0~65536	ASCII		
517	GPRSIP Addr	GPRSIP Addr No.13	W	0~65536	ASCII		
518	GPRSIP Addr	GPRSIP Addr No.14	W	0~65536	ASCII		
519	GPRSIP Addr	GPRSIP Addr No.15	W	0~65536	ASCII		
520	GPRSIP Addr	GPRSIP Addr No.16	W	0~65536	ASCII		

521	GPRSIP Addr	GPRSIP Addr No.17	W	0~65536	ASCII		
522	GPRSIP Addr	GPRSIP Addr No.18	W	0~65536	ASCII		
523	GPRSIP Addr	GPRSIP Addr No.19	W	0~65536	ASCII		
524	GPRSIP Addr	GPRSIP Addr No.20	W	0~65536	ASCII		
525	GPRSIP Addr	GPRSIP Addr No.21	W	0~65536	ASCII		
526	GPRSIP Addr	GPRSIP Addr No.22	W	0~65536	ASCII		
527	GPRSIP Addr	GPRSIP Addr No.23	W	0~65536	ASCII		
528	GPRSIP Addr	GPRSIP Addr No.24	W	0~65536	ASCII		
529	GPRSIP Addr	GPRSIP Addr No.25	W	0~65536	ASCII		
Six group for Storage Power							
Register NO.	Variable Name	Description	Write or not	Value	Unit	Initial value	Note
1000.	Float charge current limit	When charge current battery need is lower than this value, enter into float charge	W		0.1A	600	CC current
1001.	PF CMD memory state	Set the following 19-22 CMD will be memory or not(1/0), if not, these settings are the initial value.	W	0or1,		0	Means these settings will be acting or not when next power on
1002.	VbatWarning	LoadPercent(only lead-Acid): <20% 20%~50% >50%	W		0.1V	<20% 48.0VDC [20%,50%] 47.0VDC >50% 45.0V	
1003.	VbatWarnClr	LoadPercent(only lead-Acid): <20% 20%~50% >50%	W		0.1V	<20% 49.0VDC [20%,50%] 48.0VDC >50% 45.5V	
1004.	Vbat stop for discharge	Should stop discharge when lower than this voltage(only lead-Acid):	W		0.01V	<20% 46.0VDC	

		<20% 20%~50% >50%				[20%,50%] 44.8VDC >50% 44.2V	
1005.	Vbat stop for charge	Should stop charge when higher than this voltage	W		0.01V	5800	
1006.	Vbat start for discharge	Should not discharge when lower than this voltage	W		0.01V	4800	
1007.	Vbat start for charge	Should charge when lower than this voltage	W		0.01V	5300	reserved
1008.	FlashStart	Update firmware	W	0x0001:own 0X0100:TIC2000			
1009.	Bat temp lower limit d	Battery temperature lower limit for discharge	W	0-200:0-20°C 1000-1400: -40-0°C	0.1°C	1170	
1010.	Bat temp upper limit d	Battery temperature upper limit for discharge	W	200-1000	0.1°C	420	
1011.	Bat temp lower limit c	Battery temperature lower limit for charge	W	0-200:0-20°C 1000-1400: -40-0°C	0.1°C	30	
1012.	Bat temp upper limit c	Battery temperature upper limit for charge	W	200-1000	0.1°C	370	
1013.	ForcedDischarge Min Start1	time- Min	W	0-60	1	0	
1014.	ForcedDischarge Hour Start1	time- Hour	W	0-24	1	0	
1015.	ForcedDischarge Min Start2	time- Min	W	0-60	1	0	
1016.	ForcedDischarge Hour	time- Hour	W	0-24	1	0	

	Start2						
1017.	ForcedDischarge Min Start3	time- Min	W	0-60	1	0	
1018.	ForcedDischarge Hour Start3	time- Hour	W	0-24	1	0	
1019.	ForcedDischarge Min Stop1	time- Min	W	0-60		0	
1020.	ForcedDischarge Hour Stop1	time- Hour	W	0-24		0	
1021.	ForcedDischarge Min Stop2	time- Min	W	0-60		0	
1022.	ForcedDischarge Hour Stop2	time- Hour	W	0-24		0	
1023.	ForcedDischarge Min Stop3	time- Min	W	0-60		0	
1024.	ForcedDischarge Hour Stop3	time- Hour	W	0-24		0	
1025.	ForcedCharge Min Start1	time- Min	W	0-60	1	0	
1026.	ForcedCharge Hour Start1	time- Hour	W	0-24	1	0	
1027.	ForcedCharge Min Start2	time- Min	W	0-60	1	0	
1028.	ForcedCharge Hour Start2	time- Hour	W	0-24	1	0	
1029.	ForcedCharge Min Start3	time- Min	W	0-60	1	0	
1030.	ForcedCharge Hour Start3	time- Hour	W	0-24	1	0	
1031.	ForcedCharge Min Stop1	time- Min	W	0-60	1	0	

1032.	ForcedCharge Hour Stop1	time- Hour	W	0-24	1	0	
1033.	ForcedCharge Min Stop2	time- Min	W	0-60	1	0	
1034.	ForcedCharge Hour Stop2	time- Hour	W	0-24	1	0	
1035.	ForcedCharge Min Stop3	time- Min	W	0-60	1	0	
1036.	ForcedCharge Hour Stop3	time- Hour	W	0-24	1	0	
1037.	bCTMode	Use the CTMode to Choose RFCT \ Cable CT\METER	W	2:METER 1:cWirelessCT 0:cWiredCT		0	
1038.	bCTAdjust	CTAdjust enable	W	0:disable 1:enable		0	
1039.	wDisChargeSOCLowLimit1	Stop soc1 when discharge	W	0-10	1%	5	Load first Mode
1040.	wDisChargeSOCLowLimit2	Stop soc2 when discharge	W	0-10	1%	5	grid first Mode
1041.	wChargeSOCLowLimit1	Stop soc1 when charge	W	50-100	1%	100	Load first Mode
1042.	wChargeSOCLowLimit2	Stop soc2 when charge	W	50-100	1%	100	battery first Mode
1043.	AC Charge Enable	AC Charge Enable	W/R	0:disable 1:enable		0	
1044.	Priority choose	Load(default)/Battery/Grid	W/R	0:Load 1:Battery 2:Grid		0	
1045.	ChargePowerCommand	Free Mode Charging Power Percent	0~100	1%		100	
1046.	DisChargePowerCommand	Free Mode DisCharging Power Percent	0~100	1%		100	
1047.	bAgingTestStep	Command for aging test		0: default 1: charge 2: discharge			

1048.	wBatteryType	Battery type choose of buck-boost input		0:Lithium 1:Lead-acid 2:other		0	
1045.							
Ups information							
1046.	UpsFunEn	Ups function enable or disable		0:disable 1:enable			
1047.	UPSVoltSet	UPS output voltage		0:230 1:208 2:240		230V	
1048.	UPSFreqSet	UPS output frequency		0:50Hz 1:60Hz		50Hz	
...							
1124.							

4.2 Input Reg

(Some of input Registers can be wrote by Manufacturer, write address offset is 0x1000, start at 0x1000. can not be wrote by customer.)

NO.	Variable Name	Description	Value	Unit	Note
First group					
0.	Inverter Status	Inverter run state	0:waiting, 1:normal, 3:fault		
1.	Ppv H	Input power (high)		0.1W	
2.	Ppv L	Input power (low)		0.1W	
3.	Vpv1	PV1 voltage		0.1V	
4.	PV1Curr	PV1 input current		0.1A	
5.	Ppv1 H	PV1 input power(high)		0.1W	
6.	Ppv1 L	PV1 input power(low)		0.1W	
7.	Vpv2	PV2 voltage		0.1V	
8.	PV2Curr	PV2 input current		0.1A	
9.	Ppv2 H	PV2 input power (high)		0.1W	
10.	Ppv2 L	PV2 input power (low)		0.1W	
11.	Vpv3	PV3 voltage		0.1V	
12.	PV3Curr	PV3 input current		0.1A	

13.	Ppv3 H	PV3 input power (high)		0.1W	
14.	Ppv3 L	PV3 input power (low)		0.1W	
15.	Vpv4	PV4 voltage		0.1V	
16.	PV4Curr	PV4 input current		0.1A	
17.	Ppv4 H	PV4 input power (high)		0.1W	
18.	Ppv4 L	PV4 input power (low)		0.1W	
19.	Vpv5	PV5 voltage		0.1V	
20.	PV5Curr	PV5 input current		0.1A	
21.	Ppv5H	PV5 input power(high)		0.1W	
22.	Ppv5 L	PV5 input power(low)		0.1W	
23.	Vpv6	PV6 voltage		0.1V	
24.	PV6Curr	PV6 input current		0.1A	
25.	Ppv6 H	PV6 input power (high)		0.1W	
26.	Ppv6 L	PV6 input power (low)		0.1W	
27.	Vpv7	PV7 voltage		0.1V	
28.	PV7Curr	PV7 input current		0.1A	
29.	Ppv7 H	PV7 input power (high)		0.1W	
30.	Ppv7 L	PV7 input power (low)		0.1W	
31.	Vpv8	PV8 voltage		0.1V	
32.	PV8Curr	PV8 input current		0.1A	
33.	Ppv8 H	PV8 input power (high)		0.1W	
34.	Ppv8 L	PV8 input power (low)		0.1W	
35.	Pac H	Output power (high)		0.1W	
36.	Pac L	Output power (low)		0.1W	
37.	Fac	Grid frequency		0.01Hz	
38.	Vac1	Three/single phase grid voltage		0.1V	
39.	Iac1	Three/single phase grid output current		0.1A	
40.	Pac1 H	Three/single phase grid output watt (high)		0.1VA	
41.	Pac1 L	Three/single phase grid output watt (low)		0.1VA	
42.	Vac2	Three phase grid voltage		0.1V	
43.	Iac2	Three phase grid output current		0.1A	
44.	Pac2 H	Three phase grid output power (high)		0.1VA	
45.	Pac2 L	Three phase grid output power (low)		0.1VA	
46.	Vac3	Three phase grid voltage		0.1V	
47.	Iac3	Three phase grid output current		0.1A	
48.	Pac3 H	Three phase grid output power (high)		0.1VA	
49.	Pac3 L	Three phase grid output power (low)		0.1VA	
50.	Vac_RS	Three phase grid voltage		0.1V	Line voltage
51.	Vac_ST	Three phase grid voltage		0.1V	Line voltage

52.	Vac_TR	Three phase grid voltage		0.1V	Line voltage
53.	Eac today H	Today generate energy (high)		0.1kWH	
54.	Eac today L	Today generate energy (low)		0.1kWH	
55.	Eac total H	Total generate energy (high)		0.1kWH	
56.	Eac total L	Total generate energy (low)		0.1kWH	
57.	Time total H	Work time total (high)		0.5s	
58.	Time total L	Work time total (low)		0.5s	
59.	Epv1_today H	PV1 Energy today (high)		0.1kWh	
60.	Epv1_today L	PV1 Energy today (low)		0.1kWh	
61.	Epv1_total H	PV1 Energy total (high)		0.1kWh	
62.	Epv1_total L	PV1 Energy total (low)		0.1kWh	
63.	Epv2_today H	PV2 Energy today (high)		0.1kWh	
64.	Epv2_today L	PV2 Energy today (low)		0.1kWh	
65.	Epv2_total H	PV2 Energy total (high)		0.1kWh	
66.	Epv2_total L	PV2 Energy total (low)		0.1kWh	
67.	Epv3_today H	PV3 Energy today (high)		0.1kWh	
68.	Epv3_today L	PV3 Energy today (low)		0.1kWh	
69.	Epv3_total H	PV3 Energy total (high)		0.1kWh	
70.	Epv3_total L	PV3 Energy total (low)		0.1kWh	
71.	Epv4_today H	PV4 Energy today (high)		0.1kWh	
72.	Epv4_today L	PV4 Energy today (low)		0.1kWh	
73.	Epv4_total H	PV4 Energy total (high)		0.1kWh	
74.	Epv4_total L	PV4 Energy total (low)		0.1kWh	
75.	Epv5_today H	PV5 Energy today (high)		0.1kWh	
76.	Epv5_today L	PV5 Energy today (low)		0.1kWh	
77.	Epv5_total H	PV5 Energy total (high)		0.1kWh	
78.	Epv5_total L	PV5 Energy total (low)		0.1kWh	
79.	Epv6_today H	PV6 Energy today (high)		0.1kWh	
80.	Epv6_today L	PV6 Energy today (low)		0.1kWh	
81.	Epv6_total H	PV6 Energy total (high)		0.1kWh	
82.	Epv6_total L	PV6 Energy total (low)		0.1kWh	
83.	Epv7_today H	PV7 Energy today (high)		0.1kWh	
84.	Epv7_today L	PV7 Energy today (low)		0.1kWh	
85.	Epv7_total H	PV7 Energy total (high)		0.1kWh	
86.	Epv7_total L	PV7 Energy total (low)		0.1kWh	
87.	Epv8_today H	PV8 Energy today (high)		0.1kWh	
88.	Epv8_today L	PV8 Energy today (low)		0.1kWh	
89.	Epv8_total H	PV8 Energy total (high)		0.1kWh	
90.	Epv8_total L	PV8 Energy total (low)		0.1kWh	

91.	Epv_total H	PV Energy total (high)		0.1kWh	
92.	Epv_total L	PV Energy total (low)		0.1kWh	
93.	Temp1	Inverter temperature		0.1C	
94.	Temp2	The inside IPM in inverter Temperature		0.1C	
95.	Temp3	Boost temperature		0.1C	
96.	Temp4				reserved
97.	Temp5				reserved
98.	P Bus Voltage	P Bus inside Voltage		0.1V	
99.	N Bus Voltage	N Bus inside Voltage		0.1V	
100.	IPF	Inverter output PF now	0-20000		
101.	RealOPPercent	Real Output power Percent		1%	
102.	OPFullwatt H	Output Maxpower Limited high			
103.	OPFullwatt L	Output Maxpower Limited low		0.1W	
104.	DeratingMode	DeratingMode	0:no derate; 1:PV; 2:*; 3:Vac; 4:Fac; 5:Tboost; 6:Tinv; 7:Control; 8:*; 9:*OverBack ByTime;		“*”is Reserved
105.	Fault code	Inverter fault code	&*1		
106.	Fault Bitcode H	Inverter fault code high	&*8		
107.	Fault Bitcode L	Inverter fault code low			
108.	Fault Bit_II H	Inverter fault code_II high	--预留 mix, 待定义		
109.	Fault Bit_II L	Inverter fault code_II low			
110.	Warning bit H	Warning bit H	&*8		
111.	Warning bit L	Warning bit L			
112.	bINVWarnCode	bINVWarnCode			
113.	real Power Percent	real Power Percent	0-100	%	
114.	inv start delay time	inv start delay time			
115.	bINVAllFaultCode	bINVAllFaultCode			
...	reserved				reserved
124.	reserved				reserved

Second group					
125.	PID PV1+ Voltage	PID PV1PE Volt	0~1000V	0.1V	
126.	PID PV1+ Current	PID PV1PE Curr	-10~10mA	0.1mA	
127.	PID PV2+ Voltage	PID PV2PE Volt	0~1000V	0.1V	
128.	PID PV2+ Current	PID PV2PE Curr	-10~10mA	0.1mA	
129.	PID PV3+ Voltage	PID PV3PE Volt	0~1000V	0.1V	
130.	PID PV3+ Current	PID PV3PE Curr	-10~10mA	0.1mA	
131.	PID PV4+ Voltage	PID PV4PE Volt	0~1000V	0.1V	
132.	PID PV4+ Current	PID PV4PE Curr	-10~10mA	0.1mA	
133.	PID PV5+ Voltage	PID PV5PE Volt	0~1000V	0.1V	
134.	PID PV5+ Current	PID PV5PE Curr	-10~10mA	0.1mA	
135.	PID PV6+ Voltage	PID PV6PE Volt	0~1000V	0.1V	
136.	PID PV6+ Current	PID PV6PE Curr	-10~10mA	0.1mA	
137.	PID PV7+ Voltage	PID PV7PE Volt	0~1000V	0.1V	
138.	PID PV7+ Current	PID PV7PE Curr	-10~10mA	0.1mA	
139.	PID PV8+ Voltage	PID PV8PE Volt	0~1000V	0.1V	
140.	PID PV8+ Current	PID PV8PE Curr	-10~10mA	0.1mA	
141.	PID Status	Bit0~7:PID Working Status 1:Wait Status 2:Normal Status 3:Fault Status Bit8~15:Reversed	0~3		
142.	V_String1	PV String1 voltage		0.1V	
143.	Curr_String1	PV String1 current	-15~15A	0.1A	
144.	V_String2	PV String2 voltage		0.1V	
145.	Curr_String2	PV String2 current	-15~15A	0.1A	
146.	V_String3	PV String3 voltage		0.1V	
147.	Curr_String3	PV String3 current	-15~15A	0.1A	
148.	V_String4	PV String4 voltage		0.1V	
149.	Curr_String4	PV String4 current	-15~15A	0.1A	
150.	V_String5	PV String5 voltage		0.1V	
151.	Curr_String5	PV String5 current	-15~15A	0.1A	
152.	V_String6	PV String6 voltage		0.1V	
153.	Curr_String6	PV String6 current	-15~15A	0.1A	
154.	V_String7	PV String7 voltage		0.1V	
155.	Curr_String7	PV String7 current	-15~15A	0.1A	
156.	V_String8	PV String8 voltage		0.1V	
157.	Curr_String8	PV String8 current	-15A~15A	0.1A	
158.	V_String9	PV String9 voltage		0.1V	
159.	Curr_String9	PV String9 current	-15A~15A	0.1A	
160.	V_String10	PV String10 voltage		0.1V	

161.	Curr_String10	PV String10 current	-15~15A	0.1A	
162.	V_String11	PV String11 voltage		0.1V	
163.	Curr_String11	PV String11 current	-15~15A	0.1A	
164.	V_String12	PV String12 voltage		0.1V	
165.	Curr_String12	PV String12 current	-15~15A	0.1A	
166.	V_String13	PV String13 voltage		0.1V	
167.	Curr_String13	PV String13 current	-15A~15A	0.1A	
168.	V_String14	PV String14 voltage		0.1V	
169.	Curr_String14	PV String14 current	-15~15A	0.1A	
170.	V_String15	PV String15 voltage		0.1V	
171.	Curr_String15	PV String15 current	-15~15A	0.1A	
172.	V_String16	PV String16 voltage		0.1V	
173.	Curr_String16	PV String16 current	-15~15A	0.1A	
174.	StrUnmatch	Bit0~15: String1~16 unmatched			suggestive
175.	StrCurrentUnbalance	Bit0~15: String1~16 current unbalance			suggestive
176.	StrDisconnect	Bit0~15: String1~16 disconnect			suggestive
177.	PIDFaultCode	Bit0: Output over voltage Bit1: ISO fault Bit2: BUS voltage abnormal Bit3~15: reserved			
178.	String Prompt	String Prompt Bit0: String Unmatch Bit1: StrDisconnect Bit2: StrCurrentUnbalance Bit3~15: reserved			
179.	PV Warning Value	PV Warning Value			
180.	DSP075 Warning Value	DSP075 Warning Value			
181.	DSP075 Fault Value	DSP075 Fault Value			
182.	DSP067 Debug Data1	DSP067 Debug Data1			
183.	DSP067 Debug Data2	DSP067 Debug Data2			
184.	DSP067 Debug Data3	DSP067 Debug Data3			
185.	DSP067 Debug Data4	DSP067 Debug Data4			
186.	DSP067 Debug Data5	DSP067 Debug Data5			

187	DSP067 Data6	Debug	DSP067 Debug Data6			
188	DSP067 Data7	Debug	DSP067 Debug Data7			
189	DSP067 Data8	Debug	DSP067 Debug Data8			
190	DSP075 Data1	Debug	DSP075 Debug Data1			
191	DSP075 Data2	Debug	DSP075 Debug Data2			
192	DSP075 Data3	Debug	DSP075 Debug Data3			
193	DSP075 Data4	Debug	DSP075 Debug Data4			
194	DSP075 Data55	Debug	DSP075 Debug Data5			
195	DSP075 Data6	Debug	DSP075 Debug Data6			
196	DSP075 Data7	Debug	DSP075 Debug Data7			
197	DSP075 Data8	Debug	DSP075 Debug Data8			
198	bUSBagingTestOk Flag		USB Aging Test Ok Flag	0-1		
199	bFlashEraseAging OkFlag		Flash Erase Aging Ok Flag	0-1		
200	PV ISO		PV ISO Value		KΩ	
201	R_DCI		R DCI Curr		0.1mA	
202	S_DCI		S DCI Curr		0.1mA	
203	T_DCI		T DCI Curr		0.1mA	
204	PID_Bus		PID Bus Volt		0.1V	
205	GFCI		GFCI Curr		mA	
206	SVG/APF Status		SVG/APF Status	0-3		
207	CT_I_R		R phase load side current for SVG		0.1A	
208	CT_I_S		S phase load side current for SVG		0.1A	
209	CT_I_T		T phase load side current for SVG		0.1A	
210	CT_Q_R H		R phase load side output reactive power for SVG(High)		0.1Var	
211	CT_Q_R L		R phase load side output reactive power for SVG(low)		0.1Var	
212	CT_Q_S H		S phase load side output reactive power for SVG(High)		0.1Var	

213	CT_Q_S L	S phase load side output reactive power for SVG(low)		0.1Var	
214	CT_Q_T H	T phase load side output reactive power for SVG(High)		0.1Var	
215	CT_Q_T L	T phase load side output reactive power for SVG(low)		0.1Var	
216	CT HAR_I_R	R phase load side harmonic		0.1A	
217	CT HAR_I_S	S phase load side harmonic		0.1A	
218	CT HAR_I_T	T phase load side harmonic		0.1A	
219	COMP_Q_R H	R phase compensate reactive power for SVG(High)		0.1Var	
220	COMP_Q_R L	R phase compensate reactive power for SVG(low)		0.1Var	
221	COMP_Q_S H	S phase compensate reactive power for SVG(High)		0.1Var	
222	COMP_Q_S L	S phase compensate reactive power for SVG(low)		0.1Var	
223	COMP_Q_T H	T phase compensate reactive power for SVG(High)		0.1Var	
224	COMP_Q_T L	T phase compensate reactive power for SVG(low)		0.1Var	
225	COMP HAR_I_R	R phase compensate harmonic for SVG		0.1A	
226	COMP HAR_I_S	S phase compensate harmonic for SVG		0.1A	
227	COMP HAR_I_T	T phase compensate harmonic for SVG		0.1A	
...	228~249				reserved
Third group					
250.	Grid Fault record 1 – code	Grid Fault record 1 – code			
251.	Grid Fault record 1 – year month	Grid Fault record 1 – year month	Year offset is 2000		
252.	Grid Fault record 1 – day hour	Grid Fault record 1 – day hour			
253.	Grid Fault record 1 – min sec	Grid Fault record 1 – min sec			
254.	Grid Fault record 1-value	Grid Fault record 1-value	&*2		
255.	Grid Fault record 2 – code	Grid Fault record 2 – code			
256.	Grid Fault record 2	Grid Fault record 2 – year month	Year offset is		

	– year month		2000		
257.	Grid Fault record 2 – day hour	Grid Fault record 2 – day hour			
258.	Grid Fault record 2 – min sec	Grid Fault record 2 – min sec			
259.	Grid Fault record 2-value	Grid Fault record 2-value			
260.	Grid Fault record 3 – code	Grid Fault record 3 – code			
261.	Grid Fault record 3 – year month	Grid Fault record 3 – year month	Year offset is 2000		
262.	Grid Fault record 3 – day hour	Grid Fault record 3 – day hour			
263.	Grid Fault record 3 – min sec	Grid Fault record 3 – min sec			
264.	Grid Fault record 3-value	Grid Fault record 3-value			
265.	Grid Fault record 4 – code	Grid Fault record 4 – code			
266.	Grid Fault record 4 – year month	Grid Fault record 4 – year month	Year offset is 2000		
267.	Grid Fault record 4 – day hour	Grid Fault record 4 – day hour			
268.	Grid Fault record 4 – min sec	Grid Fault record 4 – min sec			
269.	Grid Fault record 4-value	Grid Fault record 4-value			
270.	Grid Fault record 5 – code	Grid Fault record 5 – code			
271.	Grid Fault record 5 – year month	Grid Fault record 5 – year month	Year offset is 2000		
272.	Grid Fault record 5 – day hour	Grid Fault record 5 – day hour			
273.	Grid Fault record 5 – min sec	Grid Fault record 5 – min sec			
274.	Grid Fault record 5-value	Grid Fault record 5-value			
275.	bTestProcess<<8 bAutoTestStep	Auto test process or auto test step	&*3		
276.	wAutoTestResult	Auto test result	&*4		
277.	cTestStepStop	Auto test stop step	&*4		
278.	Value Limit	Safety voltage/frequency limit value		0.1V	

279.	Time Limit	Safety time limit value		1ms	
280.	Real value	Real voltage/frequency value		0.1V	
281.	Test value	Auto testing voltage/frequency value		0.1V	
282.	Test treat value	Auto test voltage/frequency treat value		0.1V	
283.	Test treat time	Auto test treat time		1ms	
284.	E_hour0 H	Energy hourly of this day			
285.	E_hour0 L	Energy hourly of this day			
286.	E_hour1 H	Energy hourly of this day			
287.	E_hour1 L	Energy hourly of this day			
...	E_hour	...			
...	E_hour	...			
330.	E_hour23 H	Energy hourly of this day			
331.	E_hour23 L	Energy hourly of this day			
332.	E_day0 H	Energy of latest day			
333.	E_day0 L	Energy of latest day			
334.	E_day1 H	Energy of latest 1st day			
335.	E_day1 L	Energy of latest 1st day			
...	E_day	...			
...	E_day	...			
344.	E_day 6 H	Energy of latest 6th day			
345.	E_day 6L	Energy of latest 6th day			
346.	E_month0 H	Energy of latest month			
347.	E_month0 L	Energy of latest month			
	E_month1 H	Energy of latest 1st month			
	E_month1 L	Energy of latest 1st month			
...	E_month	...			
...	E_month	...			
368.	E_month11 H	Energy of latest 11th month			
369.	E_month11L	Energy of latest 11th month			
...					reserved
374.					reserved
Fouth group					
375.	E_year0 H	Energy of latest year			
376.	E_year 0 L	Energy of latest year			
377.	E_year 1 H	Energy of latest 1st year			
378.	E_year 1 L	Energy of latest 1st year			
...	E_year	...			
...	E_year	...			
413.	E_year 18 H	Energy of latest 18th year			

414.	E_year18 L	Energy of latest 18th year			
...					
499.					reserved
Fifth group and sixth					
500.	Inverter Error record 1 – code	Inverter Error record 1 – code			
501.	Inverter Error record 1 – year month	Inverter Error record 1 – year month	Year offset is 2000		
502.	Inverter Error record 1 – day hour	Inverter Error record 1 – day hour			
503.	Inverter Error record 1 – min sec	Inverter Error record 1 – min sec			
504.	Inverter Error record 1-value	Inverter Error record 1-value			
505.	Inverter Error record 2 – code	Inverter Error record 2 – code			
506.	Inverter Error record 2 – year month	Inverter Error record 2 – year month	Year offset is 2000		
507.	Inverter Error record 2 – day hour	Inverter Error record 2 – day hour			
508.	Inverter Error record 2 – min sec	Inverter Error record 2 – min sec			
509.	Inverter Error record 2-value	Inverter Error record 2-value			
510.	Inverter Error record 2 – code	Inverter Error record 2 – code			
...	Inverter Error record.....	Inverter Error record.....			
740.	Inverter Error record49 – code	Inverter Error record 49- code			
741.	Inverter Error record49 – year month	Inverter Error record49 – year month	Year offset is 2000		
742.	Inverter Error record49 – day hour	Inverter Error record49 – day hour			

743.	Inverter Error record49 – min sec	Inverter Error record49 – min sec			
744.	Inverter Error record49-value	Inverter Error record49-value			
745.	Inverter Error record50 – code	Inverter Error record 50- code			
746.	Inverter Error record50 – year month	Inverter Error record50 – year month	Year offset is 2000		
747.	Inverter Error record50 – day hour	Inverter Error record50 – day hour			
748.	Inverter Error record50 – min sec	Inverter Error record50 – min sec			
749.	Inverter Error record50-value	Inverter Error record50-value			
Seventh group for debug					
750.	ISO fault Value	ISO Fault value		0.1V	
751.	GFCI fault Value	GFCI fault Value		1mA	
752.	DCI fault Value	DCI fault Value		0.01A	
753.	Vpv fault Value	PV voltage fault value		0.1V	
754.	Vac fault Value	AC voltage fault value		0.1V	
755.	Fac fault Value	AC frequency fault value		0.01 Hz	
756.	Temperature fault Value	Temperature fault value		0.1C	
757.	WarningValue1	Warning Value1 of slave CPU	&*9		
758.	WarningValue2	Warning Value2 of slave CPU	&*9		
759.	WarningValue3	Warning Value3 of main CPU or STM32	&*9		
760.	FaultValue	Inverter fault value	&*10		
...					
799.					
800.	Debug Reserved	Debug Reserved			Reserved
.....					
874.	Debug Reserved	Debug Reserved			Reserved
Eighth group for reserved					
.....					
999.					Reserved
Ninth group for Storage power					

1000.	uwSysWorkMode	System work mode	0x00:等待模式 0x01: 自检模式, 可选 0x02 : 保留 0x03 : SysFault 模式 0x04: Flash 模式 0x05 : PVBATOnline 模式: 0x06 : BatOnline 模式 0x07 : PVOOfflineMode 模式 0x08 : BatOfflineMode 模式		监控层给客户显示的工作模式为: 0x00:等待模式 0x01:自检模式 0x03:故障模式 0x04:升级中 0x05 0x06 0x07 0x08:正常模式
1001.		System fault word0			详见一体机故障说明
1002.		System fault word1			
1003.		System fault word2			
1004.		System fault word3			
1005.		System fault word4			
1006.		System fault word5			
1007.		System fault word6			
1008.		System fault word7			
1009.	Pdischarge1 H	Discharge power(high)		0.1W	
1010.	Pdischarge1 L	Discharge power (low)		0.1W	
1011.	Pcharge1 H	Charge power(high)		0.1W	
1012.	Pcharge1 L	Charge power (low)		0.1W	
1013.	Vbat	Battery voltage		0.1V	
1014.	SOC	State of charge Capacity	0-100	1%	
1015.	Pactouser R H	AC power to user H		0.1w	
1016.	Pactouser R L	AC power to user L		0.1w	
1017.	Pactouser S H			0.1w	
1018.	Pactouser S L			0.1w	
1019.	Pactouser T			0.1w	

	H				
1020.	Pactouser T L			0.1w	
1021.	PactouserTotal H	AC power to user total H		0.1w	
1022.	PactouserTotal L	AC power to user total L		0.1w	
1023.	Pactogrid R H	AC power to grid H		0.1w	
1024.	Pactogrid R L	AC power to grid L		0.1w	
1025.	Pactogrid S H			0.1w	
1026.	Pactogrid S L			0.1w	
1027.	Pactogrid T H			0.1w	
1028.	Pactogrid T L			0.1w	
1029.	Pactogrid total H	AC power to grid total H		0.1w	
1030.	Pactogrid total L	AC power to grid total L		0.1w	
1031.	PLocalLoad R H	INV power to local load H		0.1w	
1032.	PLocalLoad R L	INV power to local load L		0.1w	
1033.	PLocalLoad S H			0.1w	
1034.	PLocalLoad S L			0.1w	
1035.	PLocalLoadT H			0.1w	
1036.	PLocalLoadT L			0.1w	
1037.	PLocalLoad total H	INV power to local load total H		0.1w	
1038.	PLocalLoad total L	INV power to local load total L		0.1w	
1039.	IPM Temperature	REC Temperature		0.1 °C	
1040.	Battery Temperature	Battery Temperature		0.1 °C	
发电量数据					
1044.	Etouser_ today H	Energy to user today high		0.1kWh	
1045.	Etouser_ today L	Energy to user today low		0.1kWh	
1046.	Etouser_ total H	Energy to user total high		0.1kWh	
1047.	Etouser_ total L	Energy to user total high		0.1kWh	
1048.	Etogrid_ today H	Energy to grid today high		0.1kWh	
1049.	Etogrid_ today L	Energy to grid today low		0.1kWh	
1050.	Etogrid_ total H	Energy to grid total high		0.1kWh	
1051.	Etogrid_ total L	Energy to grid total high		0.1kWh	
1052.	Edischarge1_ today H	Discharge energy1 today		0.1kWh	

1053.	Edischarge1_today L	Discharge energy1 today		0.1kWh	
1054.	Edischarge1_total H	Total discharge energy1 (high)		0.1kWh	
1055.	Edischarge1_total L	Total discharge energy1 (low)		0.1kWh	
1056.	Echarge1_today H	Charge1 energy today		0.1kWh	
1057.	Echarge1_today L	Charge1 energy today		0.1kWh	
1058.	Echarge1_total H	Charge1 energy total		0.1kWh	
1059.	Echarge1_total L	Charge1 energy total		0.1kWh	
1060.	ELocalLoad_Today H	Local load energy today		0.1kWh	
1061.	ELocalLoad_Today L	Local load energy today		0.1kWh	
1062.	ELocalLoad_Total H	Local load energy total		0.1kWh	
1063.	ELocalLoad_Total L	Local load energy total		0.1kWh	
1064.	bAutoProofreadSt ep	Command for auto proofread			
1065.	RemoteCntlFailReason	The reason that why the Remote Control Command Fail	1 : StandardMode 2: SP Status unusual		
1066.					
Ups information					
1067.	Fac	UPS frequency		0.01Hz	
1068.	Vac1	Three/single phase UPS voltage		0.1V	
1069.	Iac1	Three/single phase UPS output current		0.1A	
1070.	Pac1 H	Three/single phase UPS output watt (high)		0.1VA	
1071.	Pac1 L	Three/single phase UPS output watt (low)		0.1VA	
1072.	Vac2	Three phase UPS voltage		0.1V	
1073.	Iac2	Three phase UPS output current		0.1A	
1074.	Pac2 H	Three phase UPS output power (high)		0.1VA	
1075.	Pac2 L	Three phase UPS output power (low)		0.1VA	
1076.	Vac3	Three phase UPS voltage		0.1V	

1077.	Iac3	Three phase UPS output current		0.1A	
1078.	Pac3 H	Three phase UPS output power (high)		0.1VA	
1079.	Pac3 L	Three phase UPS output power (low)		0.1VA	
1080.	Loadpercent	Load percent of UPS ouput	0-100	1%	
1081.	PF	Power factor	0-2	0.1	Primary Value+1
BMS 类信息					
1082.	BMS_StatusOld	StatusOld from BMS			
1083.	BMS_Status	Status from BMS			W/R
1084.	BMS_ErrorOld	Error info Old from BMS			
1085.	BMS_Error	Error infomation from BMS			
1086.	BMS_SOC	SOC from BMS			
1087.	BMS_BatteryVolt	Battery voltage from BMS			
1088.	BMS_BatteryCurr	Battery current from BMS			
1089.	BMS_BatteryTemp	Battery temperature from BMS			
1090.	BMS_MaxCurr	Max. charge/discharge current from BMS			
1091.	BMS_GaugeRM	Gauge RM from BMS			
1092.	BMS_GaugeFCC	Gauge FCC from BMS			
1093.	BMS_FW				
1094.	BMS_DeltaVolt	Delta V from BMS			
1095.	BMS_CycleCnt	Cycle Count from BMS			
1096.	BMS_SOH	SOH from BMS			
1097.	BMS_ConstantVolt	CV voltage from BMS			
1098.	BMS_WarnInfoOld	Warning info old from BMS			
1099.	BMS_WarnInfo	Warning info from BMS			
1100.	BMS_GaugeICCurr	Gauge IC current from BMS			
1101.	BMS_MCUVersion	MCU Software version from BMS			
1102.	BMS_GaugeVersion	Gauge Version from BMS			
1103.	BMS_wGaugeFRVersion_L	Gauge FR Version L16 from BMS			
1104.	BMS_wGaugeFRVersion_H	Gauge FR Version H16 from BMS			

1105.	BMS_ BMSInfo	BMS Information from BMS		
1106.	BMS_ PackInfo	Pack Information from BMS		
1107.	BMS_ UsingCap	Using Cap from BMS		
1108.	BMS_ Cell1_Volt	Cell1_Voltage from BMS		
1109.	BMS_ Cell2_Volt	Cell_Voltage from BMS		
...				
1124.	BMS_ Cell16_Volt	Cell16_Voltage from BMS		
Ninth group reserved for storage power				
1125.				
...				
1249.				
Tenth group for Storage power(历史信息查询, 存在本地 EEPROM 中)				
1250.	Ec_day0 H	Energy Charge of latest day		0.1kwh
1250.	Ec_day0 L	Energy Charge of latest day		0.1kwh
1251.	Ec_day1 H	Energy Charge of latest 1st day		0.1kwh
1252.	Ec_day1 L	Energy Charge of latest 1st day		0.1kwh
...	Ec_day	...		0.1kwh
...	Ec_day	...		0.1kwh
....	Ec_day 6 H	Energy Charge of latest 6th day		0.1kwh
1261.	Ec_day 6L	Energy Charge of latest 6th day		0.1kwh
1262.	Ec_month0 H	Energy Charge of latest month		0.1kwh
1263.	Ec_month0 L	Energy Charge of latest month		0.1kwh
1264.	Ec_month1 H	Energy Charge of latest 1st month		0.1kwh
1265.	Ec_month1 L	Energy Charge of latest 1st month		0.1kwh
...	Ec_month	...		0.1kwh
...	Ec_month	...		0.1kwh
1284.	Ec_month11 H	Energy Charge of latest 11th month		0.1kwh
1285.	Ec_month11L	Energy Charge of latest 11th month		0.1kwh
1286.	Ec_year0 H	Energy Charge of latest year		0.1kwh
1287.	Ec_year 0 L	Energy Charge of latest year		0.1kwh
1288.	Ed_day0 H	Energy Discharge of latest day		0.1kwh
1289.	Ed_day0 L	Energy Discharge of latest day		0.1kwh
1290.	Ed_day1 H	Energy Discharge of latest 1st day		0.1kwh
1291.	Ed_day1 L	Energy Discharge of latest 1st day		0.1kwh
...	Ed_day	...		0.1kwh
...	Ed_day	...		0.1kwh
1298.	Ed_day 6 H	Energy Discharge of latest 6th day		0.1kwh
1299.	Ed_day 6L	Energy Discharge of latest 6th day		0.1kwh
1300.	Ed_month0 H	Energy Discharge of latest month		0.1kwh
1301.	Ed_month0 L	Energy Discharge of latest month		0.1kwh
1302.	Ed_month1 H	Energy Discharge of latest 1st month		0.1kwh

1303.	Ed_month1 L	Energy Discharge of latest 1st month		0.1kwh	
...	Ed_month	...		0.1kwh	
...	Ed_month	...		0.1kwh	
1322.	Ed_month11 H	Energy Discharge of latest 11th month		0.1kwh	
1323.	Ed_month11L	Energy Discharge of latest 11th month		0.1kwh	
1324.	Ed_year0 H	Energy Discharge of latest year		0.1kwh	
1325.	Ed_year 0 L	Energy Discharge of latest year		0.1kwh	
1326.	Eg_day0 H	Energy to grid of latest day		0.1kwh	
1327.	Eg_day0 L	Energy to grid of latest day		0.1kwh	
1328.	Eg_day1 H	Energy to grid of latest 1st day		0.1kwh	
1329.	Eg_day1 L	Energy to grid of latest 1st day		0.1kwh	
...	Eg_day	...		0.1kwh	
...	Eg_day	...		0.1kwh	
1337.	Eg_day 6 H	Energy to grid of latest 6th day		0.1kwh	
1338.	Eg_day 6L	Energy to grid of latest 6th day		0.1kwh	
1339.	Eg_month0 H	Energy to grid of latest month		0.1kwh	
1340.	Eg_month0 L	Energy to grid of latest month		0.1kwh	
1341.	Eg_month1 H	Energy to grid of latest 1st month		0.1kwh	
1342.	Eg_month1 L	Energy to grid of latest 1st month		0.1kwh	
...	Eg_month	...		0.1kwh	
...	Eg_month	...		0.1kwh	
1361.	Eg_month11 H	Energy to grid of latest 11th month		0.1kwh	
1362.	Eg_month11L	Energy to grid of latest 11th month		0.1kwh	
1363.	Eg_year0 H	Energy to grid of latest year		0.1kwh	
1364.	Eg_year 0 L	Energy to grid of latest year		0.1kwh	
1365.	Eu_day0 H	Energy to user of latest day		0.1kwh	
1366.	Eu_day0 L	Energy to user of latest day		0.1kwh	
1367.	Eu_day1 H	Energy to user of latest 1st day		0.1kwh	
1368.	Eu_day1 L	Energy to user of latest 1st day		0.1kwh	
...	Eu_day	...		0.1kwh	
...	Eu_day	...		0.1kwh	
Eleventh group for Storage power					
1375.	Eu_day 6 H	Energy to user of latest 6th day		0.1kwh	
1376.	Eu_day 6L	Energy to user of latest 6th day		0.1kwh	
1377.	Eu_month0 H	Energy to user of latest month		0.1kwh	
1378.	Eu_month0 L	Energy to user of latest month		0.1kwh	
1379.	Eu_month1 H	Energy to user of latest 1st month		0.1kwh	
1380.	Eu_month1 L	Energy to user of latest 1st month		0.1kwh	
...	Eu_month	...		0.1kwh	
...	Eu_month	...		0.1kwh	

1399.	Eu_ month11 H	Energy to user of latest 11th month			0.1kwh	
1400.	Eu_ month11L	Energy to user of latest 11th month			0.1kwh	
1401.	Eu_ year0 H	Energy to user of latest year			0.1kwh	
1402.	Eu_ year 0 L	Energy to user of latest year			0.1kwh	
Twelfth group for buck-boost debug						
1500.	CurrentRecord_0x 22	OCD Date & Time(L) R			0-5:Second 6-11:minute 12-16:hour 17-21:day 22-25:month 26-31:year	
1501.	CurrentRecord_0x 23	OCD Date & Time(H)	R			
1502.	CurrentRecord_0x 24	Current SCD Protection Counts in Discharge	R	0-65534		
1503.	CurrentRecord_0x 25	SCD Date & Time(L)	R	0-5:Second 6-11:minute 12-16:hour 17-21:day 22-25:month 26-31:year		
1504.	CurrentRecord_0x 26	SCD Date & Time(H)	R			
1505.	CurrentRecordUp date		R	0: unrefreshed 1: refreshed		
1506.	CurrentRecord_0x 28		R	reversed		
1507.	CurrentRecord_0x 29		R	reversed		
1508.	CurrentRecord_0x 2A		R	reversed		
1509.	CurrentRecord_0x 2B		R	reversed		
1510.	CurrentRecord_0x 2C		R	reversed		
1511.	CurrentRecord_0x 2D		R	reversed		
1512.	CurrentRecord_0x 2E		R	reversed		
1513.	CurrentRecord_0x		R	reversed		

	2F					
1514.	VoltageRecord_0x31	High Voltage Protection Counts in Charge	R			
1515.	VoltageRecord_0x32	High Voltage Protection Counts in Discharge	R			
1516.	VoltageRecord_0x33	OVC Date & Time(L)	R			
1517.	VoltageRecord_0x34	OVC Date & Time(H)	R			
1518.	VoltageRecord_0x35	OVD Date & Time(L)				
1519.	VoltageRecord_0x36	OVD Date & Time(H)				
1520.	VoltageRecord_0x37	Low Voltage Protection Counts in Charge				
1521.	VoltageRecord_0x38	Low Voltage Protection Counts in Discharge				
1522.	VoltageRecord_0x39	UVC Date & Time(L)				
1523.	VoltageRecord_0x3A	UVC Date & Time(H)				
1524.	VoltageRecord_0x3B	UVD Date & Time(L)				
1525.	VoltageRecord_0x3C	UVD Date & Time(H)				
1526.	VoltageRecordUpdate			0: unrefreshed 1: refreshed		
1527.	VoltageRecord_0x3E			reversed		
1528.	VoltageRecord_0x3F			reversed		
1529.	TemperatureRecord_0x41	High Temperature Protection Counts in Charge				
1530.	TemperatureRecord_0x42	High Temperature Protection Counts in Discharge				
1531.	TemperatureRecord_0x43	OTC Date & Time(L)				

1532.	TemperatureRecord_0x44	OTC Date & Time(H)				
1533.	TemperatureRecord_0x45	OTD Date & Time(L)				
1534.	TemperatureRecord_0x46	OTD Date & Time(H)				
1535.	TemperatureRecord_0x47	Low Temperature Protection Counts in Charge				
1536.	TemperatureRecord_0x48	Low Temperature Protection Counts in Discharge				
1537.	TemperatureRecord_0x49	UTC Date & Time(L)				
1538.	TemperatureRecord_0x4A	UTC Date & Time(H)				
1539.	TemperatureRecord_0x4B	UTD Date & Time(L)				
1540.	TemperatureRecord_0x4C	UTD Date & Time(H)				
1541.	TemperatureRecordUpdate			reversed	0: unrefreshed 1: refreshed	
1542.	TemperatureRecord_0x4E			reversed		
1543.	TemperatureRecord_0x4F			reversed		
1544.	ChargeRecordUpdate		W/R	0: unrefreshed 1: refreshed	default:0	
1545.	ChargeRecord_0x51	Charge Counts (more than 60s)		0~65534		
1546.	ChargeRecord_0x52	Last charge Date & Time(L)				
1547.	ChargeRecord_0x53	Last charge Date & Time(H)				
1548.	ChargeRecord_0x54	Full Charge Counts		0~65534		
1549.	ChargeRecord_0x	Last full charge Date &				

	55	Time(L)				
1550.	ChargeRecord_0x56	Last full charge Date & Time(H)				
1551.	ChargeRecord_0x57	2nd Protection Active Date & Time(L)				
1552.	ChargeRecord_0x58	2nd Protection Active Date & Time(H)				
1553.	ChargeRecord_0x59			reversed		
1554.	ChargeRecord_0x5A			reversed		
1555.	StatusInfo_0x11	Date&Time(L)				
1556.	StatusInfo_0x12	Date&Time(H)				
1557.	StatusInfo_0x13	status		bit0-1:00-pre-charge; 01-standby; 10-charging; 11-discharging bit2: 0-no error; 1-error bit3: 0-unbalanc; 1-balance bit4: 0-wake; 1-sleep bit5: 0-mosfet off; 1-mosfet on bit6-8:reversed		
1558.	StatusInfo_0x14	Error code		bit0: OCD bit1: SCD bit2: OV bit3: UV bit4: OTD bit5: OTC bit6: UTD bit7: UTC		

1559.	StatusInfo_0x15	SOC		0-100	%	
1560.	StatusInfo_0x16	Voltage			10mV	
1561.	StatusInfo_0x17	Current			10mA	
1562.	StatusInfo_0x18	Temperature		-127~127	°C	
1563.	StatusInfo_0x19	Max. charge current			10mA	
1564.	BMSCompany	BMS company from BMS		0:Darfon 1:Pace	FF	
1565.	Discharge power limit	power limit for discharge(only Read)	W	0-100	percentage 100	
1566.	Charge power limit	power limit for charge(only read)	W	0-100	percentage 100	
1567.	Bat temp limit Hysteresis			0-110:0-11 °C	0.1°C	
1568.	DischargeToStandbyReason	Reason of state change from discharge to standby		1:Due to flash 2:Due to fault 3:PV and AC voltage both too low to support SPS 4:PV voltage high for discharge 5:Battery voltage low for discharge 6:Power to user low for discharge 7: AC State change 8: turn off order 9: Bat temp out of range 10: MPPT Trouble 11: forbid by BMS		
1569.	ChargeToStandbyReason	Reason of state change from charge to standby		1:Due to flash 2:Due to fault 3:PV and AC voltage both too low to support SPS 4:PV voltage low for		DEBUG

			charge 5: Battery voltage high for charge 6: PV power low for charge 7: AC State change 8: turn off order 9: Bat temp out of range 10: MPPT Trouble 11: forbid by BMS 12: PV volt high for charge 13: Over current detected 14: BUS voltage high 15: bus2 voltage softstart fail.		
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&*1: Inverter fault code Bit:

Fault type value	Means(The message showed on the inverter when the inverter has fault)
1~23	" Error: 99+x "
24	"Auto Test Failed",
25	"No AC Connection",
26	"PV Isolation Low",
27	" Residual I High",
28	" Output High DCI",
29	" PV Voltage High",
30	" AC V Outrange ",
31	" AC F Outrange ",
32	" Module Hot "

&*2: The value is 0.1V when the fault is the voltage, is 0.01Hz when the fault is the frequency;

&*3:

High byte value	Means	low byte value	Means
0	Auto test stop	0	No test
1	Auto test starting	1	Testing grid volt high pro
2	Auto testing	2	Testing grid volt low pro
		3	Testing grid frequency high pro

		4	Testing grid frequency low pro

&*4: The variable “wAutoTestResult” and “cTestStepStop”: wAutoTestResult is the step test time counter, when it reach cTestStepStop, this step test will stop and fail.

&*5: Inverter Model: A , could be show: “A1 B0 D0 T0 PF U1 M5 S1” or “1000F151”

```

Ax=(A&0XF0000000)>>28
Bx=(A&0XF0000000)>>24
Dx=(A&0XF0000000)>>20
Tx=(A&0XF0000000)>>16
Px=(A&0x00F000)>>12
Ux=(A&0x000F00)>>8
Mx=(A&0x0000F0)>>4
Sx=(A&0x00000F)
    
```

&*6: DTC(Device type code)

Code No.	Device type	Note
001xx	Inverter	1 tracker and 1phase Grid connect PV inverter TL
002xx	Inverter	2 tracker and 1phase Grid connect PV inverter TL
003xx	Inverter	1 tracker and 1phase Grid connect PV inverter HF
004xx	Inverter	2 tracker and 1phase Grid connect PV inverter HF
005xx	Inverter	1 tracker and 1phase Grid connect PV inverter LF
006xx	Inverter	2 tracker and 1phase Grid connect PV inverter LF
007xx	Inverter	1 tracker and 3phase Grid connect PV inverter TL
008xx	Inverter	2 tracker and 3phase Grid connect PV inverter TL
009xx	Inverter	1 tracker and 3phase Grid connect PV inverter LF
010xx	Inverter	2 tracker and 3phase Grid connect PV inverter LF
.....		
10001	Data logger	RF-ShineVersion
10002	Data logger	Web-ShinePano
10003	Data logger	Web-ShineWebBox
10004	Data logger	WL-WIFI Module
.....		
11001	Confluence box	Confluence box 1
.....		

&*7: Grid network power control command password:

Inverter is in lock state after power on; change the power control by network command should unlock inverter first; default pw is XXXXXX;

Unlock: send 0 to 3-135, then send password to 3-136~138; inverter will auto lock in 5min after unlocked;

Change PW: unlock first, then send 1 to 3-135, then send new password to 3-136~138;

Lock: send 0 or 2 to 3-135;

&*8: Inverter fault code and warning code

Fault code		Warning code	
0x00000001	\	0x0001	Fan warning
0x00000002	Communication error	0x0002	String communication abnormal
0x00000004	\	0x0004	StrPID config Warning
0x00000008	StrReverse or StrShort fault	0x0008	\
0x00000010	Model Init fault	0x0010	DSP and COM firmware unmatched
0x00000020	Grid Volt Sample different	0x0020	\
0x00000040	ISO Sample different	0x0040	SPD abnormal
0x00000080	GFCI Sample different	0x0080	GND and N connect abnormal
0x00000100	\	0x0100	PV1 or PV2 circuit short
0x00000200	\	0x0200	PV1 or PV2 boost driver broken
0x00000400	\	0x0400	\
0x00000800	\	0x0800	\
0x00001000	AFCI Fault	0x1000	\
0x00002000	\	0x2000	\
0x00004000	AFCI Module fault	0x4000	\
0x00008000	\	0x8000	\
0x00010000	\		
0x00020000	Relay check fault		
0x00040000	\		
0x00080000	\		
0x00100000	\		
0x00200000	Communication error		
0x00400000	Bus Voltage error		
0x00800000	AutoTest fail		
0x01000000	No Utility		
0x02000000	PV Isolation Low		
0x04000000	Residual I High		
0x08000000	Output High DCI		
0x10000000	PV Voltage high		
0x20000000	AC V Outrange		
0x40000000	AC F Outrange		
0x80000000	TemperatureHigh		

&*9 Warning Value

	Warning Value 1	Warning Value 2	Warning Value 3
0x0001	String1abnormal	PV1ShortCircuit	AC SPD abnormal
0x0002	String2abnormal	PV2ShortCircuit	DC SPD abnormal

0x0004	String3abnormal	PV3ShortCircuit	
0x0008	String4abnormal	PV4ShortCircuit	
0x0010	String5abnormal	PV5ShortCircuit	
0x0020	String6abnormal	PV6ShortCircuit	
0x0040	String7abnormal	PV7ShortCircuit	
0x0080	String8abnormal	PV8ShortCircuit	
0x0100	String9abnormal	BT1DriverFault	
0x0200	String10abnormal	BT2DriverFault	
0x0400	String11abnormal	BT3DriverFault	
0x0800	String12abnormal	BT4DriverFault	
0x1000	String13abnormal	BT5DriverFault	
0x2000	String14abnormal	BT6DriverFault	
0x4000	String15abnormal	BT7DriverFault	
0x8000	String16abnormal	BT8DriverFault	

Hybrid Abnormal/Fault/warning bit definition

(Abnormal:record event for debug,continue working;fault: record event and show for debug,stop working;Warning:record event and show,continue working)

Word definition		Bit definition		comment
System fault word0	Byte0	MasterForceINVFault	0.	M3 on/off control
		MasterForceSPFault	1.	
		BusVoltHigh_TZ	2.	restart PWM
		BusVoltHigh_ISR	3.	restart PWM
		reserved	4.	
		reserved	5.	
		reserved	6.	
		reserved	7.	
	Byte1	GridZClossFault	8.	Grid side abnormal
		reserved	9.	
		reserved	10.	
		GFCIHigh	11.	
		GridR_VFault	12.	
		GridS_VFault	13.	
		GridT_VFault	14.	
GridFFault	15.			
System fault word1	Byte2	RelayFault	0.	Grid side abnormal
		GFCIDamage	1.	
		GridR_VLowFault	2.	
		GridR_VHighFault	3.	
		GridS_VLowFault	4.	
GridS_VHighFault	5.			

批注 [U1]: modify

批注 [U2]: added

		GridT_VLowFault	6.	Grid side abnormal
		GridT_VHighFault	7.	
	Byte3	INVCurrOCP_ISR	8.	
		INVCurrOCP_TZ	9.	
		DCIHigh	10.	
		reserved	11.	
		INVR_CurrOCP_Rms	12.	
		INVS_CurrOCP_Rms	13.	
		INVT_CurrOCP_Rms	14.	
NoUtility	15.			
System fault word2	Byte4	GridFlowFault	0.	Grid side abnormal
		GridFHighFault	1.	
		GridVolt_Unbalance_Fault	2.	
		AC_PLL_Fault	3.	
		OverLoadFault	4.	
		reserved	5.	
		reserved	6.	
	reserved	7.		
	Byte5	EPS_LineVoltR_Loss	8.	EPS side abnormal
		EPS_LineVoltS_Loss	9.	
		EPS_LineVoltT_Loss	10.	
		reserved	11.	
		reserved	12.	
		reserved	13.	
		reserved	14.	
reserved		15.		
System fault word3	Byte6	BatTerminalReversed	0.	BAT Side abnormal
		BatTerminalOpen	1.	
		BMS Battery Open	2.	
		BatteryVoltageLow	3.	
		BatteryVoltageHigh	4.	
		reserved	5.	
		reserved	6.	
		reserved	7.	
	Byte7	reserved	8.	BAT Side abnormal
		reserved	9.	
		reserved	10.	
		reserved	11.	
		reserved	12.	
reserved	13.			

批注 [U3]: added

批注 [U4]: deleted

		reserved	14.		
		reserved	15.		
System fault word4	Byte8	reserved	0.	PV Side Abnormal	
		reserved	1.		
		reserved	2.		
		reserved	3.		
		reserved	4.		
		PV1_VoltLowWarn	5.		
		PV2-VoltLowWarn	6.		
		reserved	7.		
	Byte9			8.	PV Side Abnormal
				9.	
				10.	
		reserved		11.	
		reserved		12.	
		reserved		13.	
		reserved		14.	
reserved			15.		
System fault word5	Byte10	NE DetectFault	0.	Sytem fault	
		PVISOFault	1.		
		reserved	2.		
		BusVoltHighFault_ISR	3.		
		BusSampleFault	4.		
		UHCTFault	5.		
		AComFault	6.		
		BComFault	7.		
	Byte11	BusVoltHighFault_TZ		8.	Sytem fault
		AuotTestFault		9.	
		DCHigh		10.	
		NTCOpenFault		11.	
		reserved		12.	
		BBHeatsink_TempOver		13.	
		BBOCP_FaultISR		14.	
BBOCP_FaultTZ			15.		
System fault word6	Byte12	PV1_VoltHighFault	0.	Sytem fault	
		PV2_VoltHighFault	1.		
		BHeatsink_Overtemp	2.		
		INVHeatsink_Overtemp	3.		
		reserved	4.		
		reserved	5.		
		reserved	6.		

批注 [U5]: delete,repeat with Byte0.bit2

批注 [U6]: delete

批注 [U7]: rename

批注 [U8]: Buck-boost Over temperature

批注 [U9]: Added for boost over temperature

批注 [U10]: Added for inverter over temperature

		reserved	7.	
	Byte13	BoostDriver1Warn	8.	System warning
		BoostDriver2Warn	9.	
		WARN104	10.	
		PV1_ShortFault	11.	
		PV2_ShortFault	12.	
		Meter Comm Loss	13.	
		PairingTimeOut	14.	
		CT LN Reversed	15.	
System fault word6	Byte14	BMS COM Fault	0.	
		BMS Error: xxx	1.	
		Battery reversed	2.	
		BAT NTC Open	3.	
		SS Timeout	4.	
		Bat voltage low	5.	
		Bat T Outrange	6.	
		BATOutput_Overload	7.	
	Byte15	reserved	8.	
		reserved	9.	
		reserved	10.	
		reserved	11.	
		reserved	12.	
		reserved	13.	
		reserved	14.	
	reserved	15.		
System fault word7		reserved		

批注 [U11]: Delete,repeat with byte6.bit0

5 Set address

Refer to the Inverter user manual. Always is :

Knock the pv inverter to let the lcd display to the "COM Addr: xxx", then double knock, if displays "Move", you should another double knock, until it displays a address number, then you can give a single knock to change the address, this address will be remembered when the lcd backlight off.

6 Notice

- 1) It can drive mostly 32 pv inverters for one rs485 comport.
- 2) There are only read input and hold registers commands even the newest version.
- 3) App user could only care the input register.
- 4) App user could not care the holding registers.
- 5) Except the CEIO-21 and VDE-AR-N 4105 power management registers, you should refer the manufactory's suggestion when writing the other registers;