BYTEWATT Modbus_RTU Protocol (V1.12)

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Version information

Version	Date	Remarks	Author
V 1.00	2023.04.09		Yao
V 1.01	2023.08.21		王新宇
V 1.02	2024.05.16		王新宇
V 1.03	2024.05.31	新增客户逆变器型号，机型寄存器	王新宇
V1.04	2024.07.02	新增电池的报错信息	姚文军
V1.05	2024.07.29	删除掉户用 A 的寄存器地址	姚文军
V1.06	2024.08.30	增加 BB 增加激活失败报错	姚文军
V1.07	2024.09.10	增加电表取反、ups reserve 功能	姚文军
V1.08	2024.09.14	新增 AUX,GC（柴油机），EVC（充电桩）协议	王新宇
V1.09	2024.09.25	新增 NPE 检测功能	姚文军
V1.10	2024.10.30	新增电池 SN 最高/低电芯电压、温度编号	姚文军
V1.11	2024.11.01	更正 work mode	姚文军
V1.12	2024.11.05	新增并机设置	姚文军

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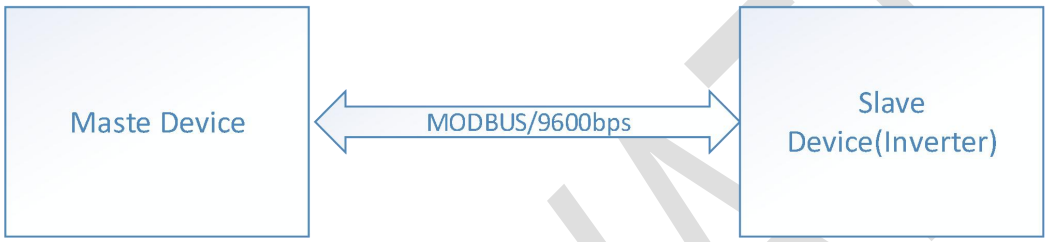
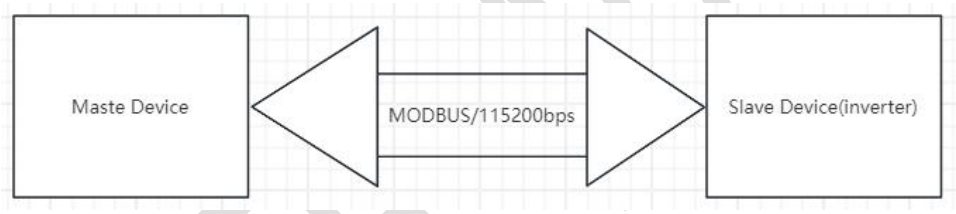
1.ModBus RTU

1.1Communication flow chart:

RS485:



RS232:



1.2 Communication description:

RS485/MODBUS-RTU Communication
Communication interface: RS485/RS232/UART
Communication connection mode: two-wire,shielded twisted pair conductors
Communication working mode: half-duplex
Communication speed: **RS485:9600bps RS232:115200bps**
Communication response time：less-than 300ms
Communication instruction interval：greater than 300ms
Communication timeout ： greater than 10S

1.3 Transmission mode :

The information transmit in asynchronous mode in bytes , The Communication information transmitting between the host computer and the slave computer is the 10 bits format, including one initial bit ,8 data bit(Firstly Transmitting the least effective bit). Without parity check bit . 1

stop bit .

Data frame format

Master:

Address code	Function	Data	CRC check code
1 byte	1 byte	N byte	2 byte

Slave

Address code	Function	Data	CRC check code
1 byte	1 byte	N byte	2 byte

Address code: address code is 5ocated at beginning of frame ,decimal system is 1~247 in the inverter. **The default address is 0x55. Data area’ s illustration at part 3.**

Function code: function code tell the target terminal to execute what function, Below table list: function code used in this inverter, and their meaning and function.

Data area: data area includes the data needed by terminal for executing specific function, or the collected data when terminal is responding enquiry.

CRC check code : Error check(CRC) domain occupies 2 byte, including one 16 bit binary system value. CRC value is calculated by transmission device . and then attached to the data frame, the receiving device . while receiving, it calculates the CRC value again ,then comparing it with the receiving CRC domain value ,if these two values are not equal, it an error occurs.

Base on C language for CRC check code :

```
u16   CRC16_Check(const u8 *P   ,u16 ubCRCNum)          //CRC check code
{
      u8 temp;
      u8 i;
      u16 c;
      u8 TT;
      u16 crc = 0xffff;
      for(c=0;c<ubCRCNum;c++)
      {
            temp = P[c];
            crc =crc^temp;
            for(i=0;i<8;i++)
            {
                  TT = crc & 1;
                  crc = crc>>1;
                  crc = crc&0x7fff;
                  if(TT == 1)
                  {
                        crc = crc^0xa001;
```

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```
                }
                crc = crc&0xffff;
            }
        }
        return crc;
}
```

2.Data area

Function code: function code tell the target terminal to execute what function, Below table list: function code used in this inverter, and their meaning and function.

Read hold register(0x03):

Frame Format From Master:

Data	Explain
0x03H (Hexadecimal)	Read data register
High Byte of Start Register Addr.	
Low Byte of Start Register Addr.	
High Byte of Register No.	
Low Byte of Register No.	

Frame Format From Slave(data reading successfully)

Data	Explain
03H (Hexadecimal)	Read data register
No. of Bytes(2*N)	Length of retruned data.
No.1 High Byte of Data	Data1 high byte.
No.1 Low Byte of Data	Data1 low byte.
.....	
.....	
No.N High Byte of Data	DataN high byte.
No.N High Byte of Data	DataN low byte.

Write register(0x10):

Frame Format From Master:

Data	Explain
0x10H (Hexadecimal)	Write data register
High Byte of Start Register Addr.	
Low Byte of Start Register Addr.	
High Byte of Register No.	
Low Byte of Register No.	
No. of Bytes	
No.1 High Byte of Data	Data1 high byte.

No.1 Low Byte of Data	Data1 low byte.
.....	
.....	
No.N High Byte of Data	DataN high byte.
No.N High Byte of Data	DataN low byte.

Frame Format From Slave(data writing successfully):

Data	Explain
0x10H (Hexadecimal)	Write data register
High Byte of Start Register Addr.	
Low Byte of Start Register Addr.	
High Byte of Register No.	
Low Byte of Register No.	

Write single register(0x06):

Frame Format From Master:

Data	Explain
0x06H (Hexadecimal)	Write data register
High Byte of Start Register Addr.	
Low Byte of Start Register Addr.	
High Byte of Data	high byte.
Low Byte of Data	low byte.

Frame Format From Slave(data writing successfully):

Data	Explain
0x06H (Hexadecimal)	Write data register
High Byte of Start Register Addr.	
Low Byte of Start Register Addr.	
High Byte of Data	high byte.
Low Byte of Data	low byte.

Error operation salve return:

	Explain
Unit Identifier	Device address
Function Code + 0x80	Error frame function code
Error Code	Error Code

3. Parameter address table

Address Register	variable	Belong to R/W	Data format	Data Model	Remarks
Household Meter					
Grid Meter Config					

0000H	Grid Meter CT Enable	R/W	Occupy 2byte	unsigned short	1/bit
0001H	Grid Meter CT Rate	R/W	Occupy 2byte	unsigned short	1/bit
Grid Meter Running Data					
0010H 0011H	Total energy feed to grid(Grid)	RO	Occupy 4 byte	unsigned int	0.01kWh
0012H 0013H	Total energy consume from grid(Grid)	RO	Occupy 4 byte	unsigned int	0.01kWh
0014H	Voltage of A phase(Grid)	RO	Occupy 2byte	unsigned short	1V
0015H	Voltage of B phase(Grid)	RO	Occupy 2byte	unsigned short	1V
0016H	Voltage of C phase(Grid)	RO	Occupy 2byte	unsigned short	1V
0017H	Current of A phase(Grid)	RO	Occupy 2byte	short	0.1A
0018H	Current of B phase(Grid)	RO	Occupy 2byte	short	0.1A
0019H	Current of C phase(Grid)	RO	Occupy 2byte	short	0.1A
001AH	Frequent(Grid)	RO	Occupy 2byte	unsigned short	0.01Hz
001BH 001CH	Active power of A phase(Grid)	RO	Occupy 4 byte	int	1W
001DH 001EH	Active power of B phase(Grid)	RO	Occupy 4 byte	int	1W
001FH 0020H	Active power of C phase(Grid)	RO	Occupy 4 byte	int	1W
0021H 0022H	Total Active power(Grid Meter)	RO	Occupy 4byte	int	1W
0023H 0024H	Reactive power of A phase(Grid)	RO	Occupy 4 byte	int	1var
0025H 0026H	Reactive power of B phase(Grid)	RO	Occupy 4 byte	int	1var
0027H 0028H	Reactive power of C phase(Grid)	RO	Occupy 4 byte	int	1var
0029H 002AH	Total reactive power(Grid)	RO	Occupy 4 byte	int	1var
002BH 002CH	Apparent power of A phase(Grid)	RO	Occupy 4 byte	int	1VA
002DH	Apparent power of B phase(Grid)	RO	Occupy 4	int	1VA

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002EH			byte		
002FH 0030H	Apparent power of C phase(Grid)	RO	Occupy 4 byte	int	1VA
0031H 0032H	Total apparent power(Grid)	RO	Occupy 4 byte	int	1VA
0033H	Power factor of A phase(Grid)	RO	Occupy 2byte	short	0.01
0034H	Power factor of B phase(Grid)	RO	Occupy 2byte	short	0.01
0035H	Power factor of C phase(Grid)	RO	Occupy 2byte	short	0.01
0036H	Total Power factor(Grid)	RO	Occupy 2byte	short	0.01
PV Meter config					
0080H	PV Meter CT Enable	R/W	Occupy 2byte	unsigned short	1/bit
0081H	PV Meter CT Rate	R/W	Occupy 2byte	unsigned short	1/bit
PV Meter Running Data					
0090H 0091H	Total energy feed to Grid(PV)	RO	Occupy 4 byte	unsigned int	0.01kWh
0092H 0093H	Total energy consume from Grid(PV)	RO	Occupy 4 byte	unsigned int	0.01kWh
0094H	Voltage of A phase(PV)	RO	Occupy 2byte	unsigned short	1V
0095H	Voltage of B phase(PV)	RO	Occupy 2byte	unsigned short	1V
0096H	Voltage of C phase(PV)	RO	Occupy 2byte	unsigned short	1V
0097H	Current of A phase(PV)	RO	Occupy 2byte	short	0.1A
0098H	Current of B phase(PV)	RO	Occupy 2byte	short	0.1A
0099H	Current of C phase(PV)	RO	Occupy 2byte	short	0.1A
009AH	Frequent(PV)	RO	Occupy 2byte	unsigned short	0.01HZ
009BH 009CH	Active power of A phase(PV)	RO	Occupy 4 byte	int	1W
009DH 009EH	Active power of B phase(PV)	RO	Occupy 4 byte	int	1W
009FH 00A0H	Active power of C phase(PV)	RO	Occupy 4 byte	int	1W

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00A1H 00A2H	Total Active power(PV Meter)	RO	Occupy 4byte	int	1W
00A3H 00A4H	Reactive power of A phase(PV)	RO	Occupy 4 byte	int	1var
00A5H 00A6H	Reactive power of B phase(PV)	RO	Occupy 4 byte	int	1var
00A7H 00A8H	Reactive power of C phase(PV)	RO	Occupy 4 byte	int	1var
00A9H 00AAH	Total reactive power(PV)	RO	Occupy 4 byte	int	1var
00ABH 00ACH	Apparent power of A phase(PV)	RO	Occupy 4 byte	int	1VA
00ADH 00AEH	Apparent power of B phase(PV)	RO	Occupy 4 byte	int	1VA
00AFH 00B0H	Apparent power of C phase(PV)	RO	Occupy 4 byte	int	1VA
00B1H 00B2H	Total apparent power(PV)	RO	Occupy 4 byte	int	1VA
00B3H	Power factor of A phase(PV)	RO	Occupy 2byte	short	0.01
00B4H	Power factor of B phase(PV)	RO	Occupy 2byte	short	0.01
00B5H	Power factor of C phase(PV)	RO	Occupy 2byte	short	0.01
00B6H	Total Power factor(PV)	RO	Occupy 2byte	short	0.01
Household Battery					
0100H	Battery voltage	RO	Occupy 2 byte	unsigned short	0.1V
0101H	Battery current	RO	Occupy 2 byte	short	0.1A
0102H	Battery SOC	RO	Occupy 2 byte	unsigned short	0.1
0103H	Battery status	RO	Occupy 2 byte	unsigned short	Note1
0104H	Battery relay status	RO	Occupy 2 byte	unsigned short	Note2
0105H	Pack ID of min cell voltage	RO	Occupy 2 byte	unsigned short	0.001V
0106H	Cell ID of min cell voltage	RO	Occupy 2 byte	unsigned short	0.001V
0107H	Min cell voltage	RO	Occupy 2	unsigned	0.001V

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			byte	short	
0108H	Pack ID of max cell voltage	RO	Occupy 2 byte	unsigned short	0.001V
0109H	Cell ID of max cell voltage	RO	Occupy 2 byte	unsigned short	0.001V
010AH	Max cell voltage	RO	Occupy 2 byte	unsigned short	0.001V
010BH	Pack ID of min cell temperature	RO	Occupy 2 byte	unsigned short	0.1℃
010CH	Cell ID of min cell temperature	RO	Occupy 2 byte	unsigned short	0.1℃
010DH	Min cell temperature	RO	Occupy 2 byte	short	0.01℃
010EH	Pack ID of max cell temperature	RO	Occupy 2 byte	unsigned short	0.1℃
010FH	Cell ID of max cell temperature	RO	Occupy 2 byte	unsigned short	0.1℃
0110H	Max cell temperature	RO	Occupy 2 byte	short	0.01℃
0111H	Battery max charge current	RO	Occupy 2 byte	unsigned short	0.1A
0112H	Battery max discharge current	RO	Occupy 2 byte	unsigned short	0.1A
0113H	Battery charge cut-off voltage	RO	Occupy 2 byte	unsigned short	0.1V
0114H	Battery discharge cut-off voltage	RO	Occupy 2 byte	unsigned short	0.1V
0115H	BMU software version	RO	Occupy 2 byte	unsigned short	
0116H	LMU software version	RO	Occupy 2 byte	unsigned short	
0117H	ISO software version	RO	Occupy 2 byte	unsigned short	
0118H	Battery num	RO	Occupy 2 byte	unsigned short	Battery module number
0119H	Battery capacity	RO	Occupy 2 byte	unsigned short	0.1kWh
011AH	Battery type	RO	Occupy 2 byte	unsigned short	Note3
011BH	Battery SOH	RO	Occupy 2 byte	unsigned short	0.1%
011CH	Battery protection	RO	Occupy 2 byte	unsigned int	Note6

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011DH	Battery warning	RO	Occupy 2 byte	unsigned int	Note4
011EH 011FH	Battery fault	RO	Occupy 4 byte	unsigned int	Note5
0120H 0121H	Battery charge energy	RO	Occupy 4 byte	unsigned int	0.1kWh
0122H 0123H	Battery discharge energy	RO	Occupy 4 byte	unsigned int	0.1kWh
0124H 0125H	Battery energy charge from grid	RO	Occupy 4 byte	unsigned int	0.1kWh
0126H	Battery Power	RO	Occupy 2 byte	short	1W（ -：Charge、 +：Discharge)
0127H	Battery remaining time	RO	Occupy 2 byte	unsigned short	1min
0128H	Battery Implementation Charge SOC	RO	Occupy 2 byte	unsigned short	0.1%(Rate_SOC-UPS_SOC)
0129H	Battery Implementation Discharge SOC	RO	Occupy 2 byte	unsigned short	0.1%(Rate_SOC-UPS_SOC)
012AH	Battery Remaining Charge SOC	RO	Occupy 2 byte	unsigned short	0.1%(Rate_SOC-Remain_SOC)
012BH	Battery Remaining Discharge SOC	RO	Occupy 2 byte	unsigned short	0.1%(Remain_SOC - UPS_SOC)
012CH	Battery Max charge power	RO	Occupy 2 byte	unsigned short	1W
012DH	Battery Max Discharge power	RO	Occupy 2 byte	unsigned short	1W
012EH	Battery MOS Control	R/W	Occupy 2 byte	unsigned short	0:Open, 1:Close
012FH	Battery SOC Calibration	RO	Occupy 2 byte	unsigned short	0:Disable, 1: Enable
0130H	Battery Single cut error code	RO	Occupy 2 byte	unsigned short	Reserve
0131H 0132H	Battery fault1	RO	Occupy 4 byte	unsigned int	Reserve
0133H 0134H	Battery fault2	RO	Occupy 4 byte	unsigned int	Reserve
0135H 0136H	Battery fault3	RO	Occupy 4 byte	unsigned int	Reserve
0137H 0138H	Battery fault4	RO	Occupy 4 byte	unsigned int	Reserve
0139H	Battery fault5	RO	Occupy 4	unsigned	Reserve

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013AH			byte	int	
013BH 013CH	Battery fault6	RO	Occupy 4 byte	unsigned int	Reserve
013DH 013EH	Battery warning1	RO	Occupy 4 byte	unsigned int	Reserve
013FH 0140H	Battery warning2	RO	Occupy 4 byte	unsigned int	Reserve
0141H 0142H	Battery warning3	RO	Occupy 4 byte	unsigned int	Reserve
0143H 0144H	Battery warning4	RO	Occupy 4 byte	unsigned int	Reserve
0145H 01346H	Battery warning5	RO	Occupy 4 byte	unsigned int	Reserve
0147H 0148H	Battery warning6	RO	Occupy 4 byte	unsigned int	Reserve
Household Inverter					
0500H	Grid rated voltage	RO	Occupy 2byte	unsigned short	0.1V
0501H	Grid rated frequency	RO	Occupy 2byte	unsigned short	0.01Hz
0502H 0503H	Total energy INV output	RO	Occupy 4byte	unsigned int	0.1kWh
0504H 0505H	Total energy INV input	RO	Occupy 4byte	unsigned int	0.1kWh
0506H 0507H	Total energy battery output	RO	Occupy 4byte	unsigned int	0.1kWh
0508H 0509H	Total energy battery input	RO	Occupy 4byte	unsigned int	0.1kWh
050AH 050BH	Total PV energy	RO	Occupy 4byte	unsigned int	0.1kWh
050CH 050DH	Total run time	RO	Occupy 4byte	unsigned int	0.1h
050EH	Work mode	RO	Occupy 2byte	unsigned short	Note7
050FH	Check count down	RO	Occupy 2byte	unsigned short	1S
0510H	INV module temperature	RO	Occupy 2byte	short	0.1℃
0511H	PV Boost temperature	RO	Occupy 2byte	short	0.1℃
0512H	Bat Buck Boost temperature	RO	Occupy	short	0.1℃

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			2byte		
0513H	Power board temperature	RO	Occupy 2byte	short	0.1℃
0514H	Control board temperature	RO	Occupy 2byte	short	0.1℃
0515H	Grid relay temperature	RO	Occupy 2byte	short	0.1℃
0516H	Pass relay temperature	RO	Occupy 2byte	short	0.1℃
0517H	Backup relay temperature	RO	Occupy 2byte	short	0.1℃
0518H ~ 051FH	Reverse temperature	RO	Occupy 16byte	short	0.1℃
0520H	Bus voltage	RO	Occupy 2byte	unsigned short	0.1V
0521H	PBus voltage	RO	Occupy 2byte	unsigned short	0.1V
0522H	NBus voltage	RO	Occupy 2byte	unsigned short	0.1V
0523H	PV connect state	RO	Occupy 2byte	unsigned short	0-无 PV 1-有 PV
0524H	PV1 voltage	RO	Occupy 2byte	unsigned short	0.1V
0525H	PV2 voltage	RO	Occupy 2byte	unsigned short	0.1V
0526H	PV3 voltage	RO	Occupy 2byte	unsigned short	0.1V
0527H	PV1 current	RO	Occupy 2byte	unsigned short	0.01A
0528H	PV2 current	RO	Occupy 2byte	unsigned short	0.01A
0529H	PV3 current	RO	Occupy 2byte	unsigned short	0.01A
052AH	PV1 power	RO	Occupy 2byte	unsigned short	1W
052BH	PV2 power	RO	Occupy 2byte	unsigned short	1W
052CH	PV3 power	RO	Occupy 2byte	unsigned short	1W
052DH	Total PV power	RO	Occupy 2byte	unsigned short	1W

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052EH	String1 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
052FH	String2 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
0530H	String3 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
0531H	String4 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
0532H	String5 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
0533H	String6 current	RO	Occupy 2byte	unsigned short	0.1A，Reserve
0534H	Battery front voltage	RO	Occupy 2byte	short	0.1V
0535H	Battery back voltage	RO	Occupy 2byte	short	0.1V
0536H	BuckBoost1 current	RO	Occupy 2byte	short	0.01A
0537H	BuckBoost2 current	RO	Occupy 2byte	short	0.01A
0538H	Total bat current	RO	Occupy 2byte	short	0.01A
0539H	BuckBoost1 power	RO	Occupy 2byte	short	1W
053AH	BuckBoost2 power	RO	Occupy 2byte	short	1W
053BH	Total bat power	RO	Occupy 2byte	short	1W
053CH	INV Voltage R	RO	Occupy 2byte	unsigned short	0.1V
053DH	INV Current R	RO	Occupy 2byte	short	0.01A
053EH	INV Voltage S	RO	Occupy 2byte	unsigned short	0.1V
053FH	INV Current S	RO	Occupy 2byte	short	0.01A
0540H	INV Voltage T	RO	Occupy 2byte	unsigned short	0.1V
0541H	INV Current T	RO	Occupy 2byte	short	0.01A
0542H	INV frequency	RO	Occupy 2byte	unsigned short	0.01Hz

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0543H 0544H	INV apparent power	RO	Occupy 4 byte	int	1VA
0545H 0546H	INV active power	RO	Occupy 4 byte	int	1W
0547H 0548H	INV reactive power	RO	Occupy 4 byte	int	1VA
0549H	INV power factor	RO	Occupy 2 byte	short	0.01
054AH	Grid voltage R	RO	Occupy 2 byte	unsigned short	0.1V
054BH	Grid voltage S	RO	Occupy 2 byte	unsigned short	0.1V
054CH	Grid voltage T	RO	Occupy 2 byte	unsigned short	0.1V
054DH	Grid voltage RS	RO	Occupy 2 byte	unsigned short	0.1V
054EH	Grid voltage RT	RO	Occupy 2 byte	unsigned short	0.1V
054FH	Grid voltage ST	RO	Occupy 2 byte	unsigned short	0.1V
0550H	Grid frequency	RO	Occupy 2 byte	unsigned short	0.01Hz
0551H	Backup voltage R	RO	Occupy 2 byte	unsigned short	0.1V
0552H	Backup current R	RO	Occupy 2 byte	short	0.01A
0553H	Backup voltage S	RO	Occupy 2 byte	unsigned short	0.1V
0554H	Backup current S	RO	Occupy 2 byte	short	0.01A
0555H	Backup voltage T	RO	Occupy 2 byte	unsigned short	0.1V
0556H	Backup current T	RO	Occupy 2 byte	short	0.01A
0557H	Backup voltage RS	RO	Occupy 2 byte	unsigned short	0.1V
0558H	Backup current RT	RO	Occupy 2 byte	unsigned short	0.1V
0559H	Backup voltage ST	RO	Occupy 2 byte	unsigned short	0.1V
055AH	Backup frequency	RO	Occupy 2 byte	unsigned short	0.01Hz
055BH	Backup power	RO	Occupy 4	int	1W

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055CH			byte		
055DH	Power limit state	RO	Occupy 2 byte	unsigned short	0-Disable 1-Enable
055EH 055FH	Inverter warning 1	RO	Occupy 4 byte	unsigned int	Note10
0560H 0561H	Inverter warning 2	RO	Occupy 4 byte	unsigned int	
0562H 0563H	Inverter fault 1	RO	Occupy 4 byte	unsigned int	Note11
0564H 0565H	Inverter fault 2	RO	Occupy 4 byte	unsigned int	
0566H 0567H	Inverter fault 3	RO	Occupy 4 byte	unsigned int	Note12
0568H 0569H	Inverter fault 4	RO	Occupy 4 byte	unsigned int	
056AH	Debug1	RO	Occupy 2 byte	short	
056BH	Debug2	RO	Occupy 2 byte	short	
056CH	Debug3	RO	Occupy 2 byte	short	
056DH	Debug4	RO	Occupy 2 byte	short	
056EH	Debug5	RO	Occupy 2 byte	short	
~ 063FH	Reserved				
Inverter info					
0640H~ 0644H	Inverter master software version	RO	Occupy 10byte	String(10)	
0645H~ 0649H	Inverter slave software version	RO	Occupy 10byte	String(10)	
System Info					
0740H	System_time : (year)-(month)	R/W	Occupy 2 byte	unsigned short	Data format hex; 0xYYMM, example: Send 0x1109; year:0x11(2017) month:0x09(09);
0741H	System_time : (day)-(hour)	R/W	Occupy 2 byte	unsigned short	Data format hex; 0xDDHH, example: Send 0x1109;

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					day:0x11(The 17 day) hour:0x09(09);
0742H	System_time：(minute)-(second)	R/W	Occupy 2 byte	unsigned short	Data format hex; 0xmmss, example：Send 0x1109; min:0x11(17) second:0x09(09);
0743H~ 074AH	EMS SN	RO	Occupy 16 byte	String(16)	
074BH	EMS Version High	R	Occupy 2 byte	unsigned short	
074CH	EMS Version Middle	R	Occupy 2 byte	unsigned short	
074DH	EMS Version Low	R	Occupy 2 byte	unsigned short	
074EH	Protocol Version	RO	Occupy 2 byte	unsigned short	
074FH~ 0752H	EMS Version Low Suffix	RO	Occupy 8 byte	String(8)	
System Config					
0800H	MAX Feed into grid percent	R/W	Occupy 2 byte	unsigned short	1%
0801H 0802H	PV Capacity Storage	R/W	Occupy 4 byte	unsigned int	1W
0803H 0804H	PV Capacity of Grid Inverter	R/W	Occupy 4 byte	unsigned int	1W
0805H	System mode	R/W	Occupy 2 byte	unsigned short	1：AC Mode 2：DC Mode 3：Hybird Mode
0806H	Meter CT Select	R/W	Occupy 2 byte	unsigned short	电表安装选项: 0:Grid&PV use CT; 1:Grid use CT、PV use Meter; 2:Grid use Meter、PV use CT; 3: Grid&PV use Meter;
0807H	Battery Ready	R/W	Occupy 2 byte	unsigned short	0：OFF 1：ON
0808H~ 080EH	Reserved				
080FH	Reserved				

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0810H	Reserved				
0811H	Reserved				
0812H	GRID_Meter_negate	R/W	Occupy 2 byte	unsigned short	0:正常 1:取反
0812H	PV_Meter_negate	R/W	Occupy 2 byte	unsigned short	0:正常 1:取反
Time period control					
084FH	Time period control flag	R/W	Occupy 2 byte	unsigned short	0 ： Disable Time period control 1： Enable Charge Time period control 2： Enable discharge Time period control 3： Enable Time period control
0850H	UPS Reserve Soc	R/W	Occupy 2 byte	unsigned short	1%
0851H	Time discharge start time1 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0852H	Time discharge stop time1 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0853H	Time discharge start time2 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0854H	Time discharge stop time2 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0855H	Charge Cut Soc	R/W	Occupy 2 byte	unsigned short	1%
0856H	Time charge start time1 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0857H	Time charge stop time1 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0858H	Time charge start time2 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
0859H	Time charge stop time2 hours	R/W	Occupy 2 byte	unsigned short	1h [0-23]
085AH	Time discharge start time1 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
085BH	Time discharge stop time1 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
085CH	Time discharge start time2 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
085DH	Time discharge stop time2	R/W	Occupy 2	unsigned	1min [0-59]

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	minutes		byte	short	
085EH	Time charge start time1 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
085FH	Time charge stop time1 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
0860H	Time charge start time2 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
0861H	Time charge stop time2 minutes	R/W	Occupy 2 byte	unsigned short	1min [0-59]
0862H	UPS reserve enable	R/W	Occupy 2 byte	unsigned short	0：disable 1：enable
System Running Data					
08D0H 08D1H	PV Inverter Energy	RO	Occupy 4 byte	unsigned int	0.1kWh
08D2H 08D3H	The system total PV energy	RO	Occupy 4 byte	unsigned int	0.1kWh
08D4H 08D5H	System fault	RO	Occupy 4 byte	unsigned int	Note8
Safety Config					
1000H	Grid_Regulation	R/W	Occupy 2 byte	unsigned short	Note9
1001H~ 101AH	Reserved				
Inverter modle					
1119H	Inv sub	RO	Occupy 2 byte	unsigned int	(十进制) 其他：单相机 3 7 10 13 19 20 22 23：三相机
AUX					
2200H	AUX_CHANNEL1_ENABLE	R/W	Occupy 2 byte	unsigned short	0:disable 1:enable
2201H	AUX_CONTROL_MODE1	R/W	Occupy 2 byte	unsigned short	Mode_on:1 Mode_off:2 Mode_auto:3
2202H	AUX_START_TIME1A	R/W	Occupy 2 byte	unsigned short	
2203H	AUX_END_TIME1A	R/W	Occupy 2 byte	unsigned short	

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2204H	AUX_START_TIME1B	R/W	Occupy 2 byte	unsigned short	
2205H	AUX_END_TIME1B	R/W	Occupy 2 byte	unsigned short	
2206H	AUX_DATE1_ENABLE	R/W	Occupy 2 byte	unsigned short	周一~周日：bit0~bit7 复选 (周二和周六) =34
2207H	AUX_CHARGE_SOC1	R/W	Occupy 2 byte	unsigned short	
2208H	AUX_CHARGE_MODE1	R/W	Occupy 2 byte	unsigned short	at last:1 at most:2 at disable:3 Note13
2209H	AUX_UPS1_ENABLE	R/W	Occupy 2 byte	unsigned short	
220AH	AUX_SWITCHON1_H	R/W	Occupy 2 byte	unsigned short	馈网功率大于等于闭合阀值闭合
220BH	AUX_SWITCHON1_L	R/W	Occupy 2 byte	unsigned short	
220CH	AUX_SWITCHOFF1_H	R/W	Occupy 2 byte	unsigned short	无馈网或者馈网总功率小于闭合设定阀值
220DH	AUX_SWITCHOFF1_L	R/W	Occupy 2 byte	unsigned short	
220EH	AUX_DELAY1	R/W	Occupy 2 byte	unsigned short	
220FH	AUX_DURATION1	R/W	Occupy 2 byte	unsigned short	
2210H	AUX_PAUSE1	R/W	Occupy 2 byte	unsigned short	
2211H	AUX_CHANNEL2_ENABLE	R/W	Occupy 2 byte	unsigned short	0:disable 1:enable
2212H	AUX_CONTROL_MODE2	R/W	Occupy 2 byte	unsigned short	Mode_on:1 Mode_off:2 Mode_auto:3
2213H	AUX_START_TIME2A	R/W	Occupy 2 byte	unsigned short	
2214H	AUX_END_TIME2A	R/W	Occupy 2 byte	unsigned short	
2215H	AUX_START_TIME2B	R/W	Occupy 2 byte	unsigned short	
2216H	AUX_END_TIME2B	R/W	Occupy 2 byte	unsigned short	
2217H	AUX_DATE2_ENABLE	R/W	Occupy 2	unsigned	

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			byte	short	
2218H	AUX_CHARGE_SOC2	R/W	Occupy 2 byte	unsigned short	
2219H	AUX_CHARGE_MODE2	R/W	Occupy 2 byte	unsigned short	
221AH	AUX_UPS2_ENABLE	R/W	Occupy 2 byte	unsigned short	
221BH	AUX_SWITCHON2_H	R/W	Occupy 2 byte	unsigned short	
221CH	AUX_SWITCHON2_L	R/W	Occupy 2 byte	unsigned short	
221DH	AUX_SWITCHOFF2_H	R/W	Occupy 2 byte	unsigned short	
221EH	AUX_SWITCHOFF2_L	R/W	Occupy 2 byte	unsigned short	
221FH	AUX_DELAY2	R/W	Occupy 2 byte	unsigned short	
2220H	AUX_DURATION2	R/W	Occupy 2 byte	unsigned short	
2221H	AUX_PAUSE2	R/W	Occupy 2 byte	unsigned short	
GC					
2250H	GC_GENERATOR_ENABLE	R/W	Occupy 2 byte	unsigned short	
2251H	GC_GENERATOR_MODE	R/W	Occupy 2 byte	unsigned short	SOC 模式：1 时间模式：2 手动模式：4
2252H	GC_SOC_START	R/W	Occupy 2 byte	unsigned short	1%
2253H	GC_SOC_END	R/W	Occupy 2 byte	unsigned short	1%
2254H	GC_START_TIME	R/W	Occupy 2 byte	unsigned short	1h [0-23]
2255H	GC_END_TIME	R/W	Occupy 2 byte	unsigned short	1h [0-23]
2256H	GC_OUTPUT_MODE	R/W	Occupy 2 byte	unsigned short	充电功率模式：1 额定功率模式：2
2257H	GC_CHARGE_POWER_H	R/W	Occupy 2 byte	unsigned short	
2258H	GC_CHARGE_POWER_L	R/W	Occupy 2 byte	unsigned short	
2259H	GC_RATED_POWER_H	R/W	Occupy 2	unsigned	

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			byte	short	
225AH	GC_RATED_POWER_L	R/W	Occupy 2 byte	unsigned short	
225BH	GC_RATE_PERCENT	R/W	Occupy 2 byte	unsigned short	1%
225CH	Reserved				
225DH	Reserved				
Function extend					
308AH	Wake up BAT	R/W	Occupy 2 byte	unsigned short	0:disenable 1:enable
308BH	Reserved				
308CH	Reserved				
308DH	NPE relay	R/W	Occupy 2 byte	unsigned short	0:闭合 1:断开
308EH	Reserved				
308FH	Reserved				
3090H	Grid paraller	R/W	Occupy 2 byte	unsigned short	0:single 1:fllow 2:host
3091H	Battery upgrade select	R/W	Occupy 2 byte	unsigned short	0:升级电池主控 1:升级电池从控
3092H	Battery SOC calibration	R/W	Occupy 2 byte	unsigned short	1：进行电池 SOC 校准
Backup Box					
3100H	BB load enable	R/W	Occupy 2 byte	unsigned short	0:disable 1:enable
3101H	BB prio_lx[0]	R/W	Occupy 2 byte	unsigned short	选择 1 2 3
3102H	BB soc_lx[0]	R/W	Occupy 2 byte	unsigned short	1%
3103H	BB prio_lx[1]	R/W	Occupy 2 byte	unsigned short	选择 1 2 3
3104H	BB soc_lx[1]	R/W	Occupy 2 byte	unsigned short	1%
3105H	BB prio_lx[2]	R/W	Occupy 2 byte	unsigned short	选择 1 2 3
3106H	BB soc_lx[2]	R/W	Occupy 2 byte	unsigned short	1%
EVC					
3110H	Incoming current	R/W	Occupy 2 byte	unsigned short	1A

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3111H	EV_Mode	R/W	Occupy 2 byte	unsigned short	
3112H	EVC_Enable	R/W	Occupy 2 byte	unsigned short	
3113H	charg_priority	R/W	Occupy 2 byte	unsigned short	
3114H	smart_mode	R/W	Occupy 2 byte	unsigned short	
3115H	charge_tactics	R/W	Occupy 2 byte	unsigned short	手动设置：0 时间段设置：1 即插即用：2
3116H	ev_phase	R/W	Occupy 2 byte	unsigned short	单相：1 三相：3
3117H	charge_plot1	R/W	Occupy 2 byte	unsigned short	慢速：1 普通：2 快速：3
3118H	time1_enable	R/W	Occupy 2 byte	unsigned short	
3119H	start_hour1	R/W	Occupy 2 byte	unsigned short	1h [0-23]
311AH	start_minute1	R/W	Occupy 2 byte	unsigned short	1min [0-59]
311BH	end_hour1	R/W	Occupy 2 byte	unsigned short	1h [0-23]
311CH	end_minute1	R/W	Occupy 2 byte	unsigned short	1min [0-59]
311DH	max_charge_curr1	R/W	Occupy 2 byte	unsigned short	1A
311EH	charge_plot2	R/W	Occupy 2 byte	unsigned short	
311FH	time2_enable	R/W	Occupy 2 byte	unsigned short	
3120H	start_hour2	R/W	Occupy 2 byte	unsigned short	1h [0-23]
3121H	start_minute2	R/W	Occupy 2 byte	unsigned short	1min [0-59]
3122H	end_hour2	R/W	Occupy 2 byte	unsigned short	1h [0-23]
3123H	end_minute2	R/W	Occupy 2 byte	unsigned short	1min [0-59]
3124H	max_charge_curr2	R/W	Occupy 2 byte	unsigned short	
3125H	charge_plot3	R/W	Occupy 2	unsigned	

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			byte	short	
3126H	time3_enable	R/W	Occupy 2 byte	unsigned short	
3127H	start_hour3	R/W	Occupy 2 byte	unsigned short	1h [0-23]
3128H	start_minute3	R/W	Occupy 2 byte	unsigned short	1min [0-59]
3129H	end_hour3	R/W	Occupy 2 byte	unsigned short	1h [0-23]
312AH	end_minute3	R/W	Occupy 2 byte	unsigned short	1min [0-59]
312BH	max_charge_curr3	R/W	Occupy 2 byte	unsigned short	
Battery info extend					
3150H~ 3157H	Battery1 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3158H~ 315FH	Battery2 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3160H~ 3167H	Battery3 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3168H~ 316FH	Battery4 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3170H~ 3177H	Battery5 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3178H~ 317FH	Battery6 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3180H~ 3187H	Battery7 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3188H~ 318FH	Battery8 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3190H~ 3197H	Battery9 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
3198H~ 319FH	Battery10 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
31A0H~ 31A7H	Battery11 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
31A8H~ 31AFH	Battery12 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
31B0H~ 31B7H	Battery13 SN	R/W	Occupy 2 byte	unsigned short	ascii 码
31B8H~ 31BFH	Battery14 SN	R/W	Occupy 2 byte	unsigned short	ascii 码

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31C0H	Battery1 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C1H	Battery1 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C2H	Battery2 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C3H	Battery2 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C4H	Battery3 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C5H	Battery3 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C6H	Battery4 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C7H	Battery4 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C8H	Battery5 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C9H	Battery5 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CAH	Battery6 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CBH	Battery6 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CCH	Battery7 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CDH	Battery7 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CEH	Battery8 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31CFH	Battery8 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D0H	Battery9 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D1H	Battery9 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D2H	Battery10 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D3H	Battery10 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D4H	Battery11 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31D5H	Battery11 high/low temp id	R/W	Occupy 2	unsigned	最高在前，最低在后

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			byte	short	
31D6H	Battery12 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C7H	Battery12 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C8H	Battery13 max/min volt id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后
31C9H	Battery13 high/low temp id	R/W	Occupy 2 byte	unsigned short	最高在前，最低在后

4.Update

4.1 0x20

Send start update command and firm information to EMS(0x20):

Frame Format From Master:

Data	Explain
Byte0	Address code: 0x55
Byte1	0x20H：Update firm Command
Byte2	1 :start update; 0:stop update
Byte3	Factory Code(“311”) Byte3: 0x33、byte4: 0x31、byte5:0x31
Byte4	
Byte5	
Byte6	Update Object 0x01:EMS; 0x02:BMU; 0x03:LMU; 0x04:ISO; 0x05:EMS BACKUP 0x06:INV Master 0x07:INV Slave 0x08:INV ARM 0x09:BMS
Byte7	0x00
Byte8	If object is EMS, this is hard version word For example:V2.01, Byte8:0x02、Byte9:0x01
Byte9	
Byte10	File MD5
.....	

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Byte25	
Byte26	File length
.....	
Byte29	

Success operation salve return:

Data	Explain
Byte1	0x20 :Update firm Command
Byte2	0x06

Error operation salve return:

Data	Explain
Byte1	0xA0 :Update firm Command Error
Byte2	0x15

4.2 0x21

Send firm content to EMS(0x21):

Frame Format From Master:

Data	Explain
Byte0	Address code: 0x55
Byte1	0x21H: Send Firm Content
Byte2	This content pack length(max 240)
Byte3	
Byte4	This pack content offset from firm' head.
Byte5	
Byte6	
Byte7	
Byte8	Firm contents
.....	
Byte247	

Success operation salve return:

Data	Explain
Byte1	0x21H : Send firm content OK
Byte2	0x06

Error operation salve return:

Data	Explain
Byte1	0xA1: Send firm content fail
Byte2	0x15

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5.Annex

Note1： Battery status

	Description	
Value	Charge	Discharge
0	0	0
1	0	1
256	1	0
257	1	1
512	2	0
513	2	1

Note2： Battery relay status

Value	Description
0	Charge discharge relays are disconnected
1	Only discharge relay is closed
2	Only charge relay is closed
3	Charge and discharge relays are closed

Note3： Battery type

Battery_ID	Battery product model
0~999	Reserve

Note4： Battery warning

Bit0	BLV: 电池单体低压告警 Single Cell Low Voltage Alarm
Bit1	BHV: 电池单体高压告警 Single Cell High Voltage Alarm
Bit2	PLV: 电池组放电低压告警 Discharge system Low Voltage Alarm
Bit3	PHV: 电池组充电高压告警 Charge system High Voltage Alarm
Bit4	CLT: 充电低温告警 Charge Cell Low Temperature Alarm
Bit5	CHT: 充电高温告警 Charge Cell High Temperature Alarm
Bit6	DLT: 放电低温告警 Discharge Cell Low Temperature Alarm
Bit7	DHT: 放电高温告警 Discharge Cell High Temperature Alarm
Bit8	COCA: 电池组充电过流告警 Charge Over Current Alarm
Bit9	DOCA: 电池组放电过流告警 Discharge Over Current Alarm
Bit10	MLV: 电池模块低压告警 Module Low Voltage Alarm
Bit11	MHV: 电池模块高压告警 Module High Voltage Alarm
Bit12	

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Bit13	
Bit14	
Bit15	

Note5： battery fault

Fault code	Description	
	Platform	EMS3.6
Bit0		VOLT_ERR/ 电压传感器故障
Bit1		TMPR_ERR/ 温度传感器故障 Temperature Sensor Error
Bit2		IN_COMM_ERR/ 内部通信故障 Internal Communication Error
Bit3		DCOV_ERR/ 输入过压故障 Input Over Voltage Error
Bit4		RV_ERR/ 输入反接故障 Input transposition Error
Bit5		RELAY_ERR/ 继电器检测故障 Relay Check Error
Bit6		电池损坏故障（电池过放等原因导致）/ Battery cell error
Bit7		关机电路异常/ Shutdown circuit error
Bit8		BMIC 异常/BMIC error
Bit9		内部总线异常/ Internal bus error
Bit10		开机自检异常/ Self-test error
Bit11		安全功能异常/ Chip error
Bit12		Reserve
Bit13		Reserve
Bit14		Reserve
Bit15		Reserve
Bit16		CAN 外部通信故障
Bit17		绝缘故障
Bit18		预充故障
Bit19		硬件过压
Bit20		硬件过温
Bit21		硬件充电过流
Bit22		硬件放电过流
Bit23		PCBA 过温故障
Bit24		Reserve
Bit25		Reserve
Bit26		Reserve
Bit27		Reserve
Bit28		Reserve
Bit29		Reserve
Bit30		Reserve
Bit31		Reserve

Note6： battery protection

Fault	Description

code	Platform	EMS3.6
Bit 0		Single Cell Under Voltage Protect
Bit 1		Single Cell Over Voltage Protect
Bit 2		Discharge system Under Voltage Protect
Bit 3		Charge system Over Voltage Protect
Bit 4		Charge Cell Under Temperature Protect
Bit 5		Charge Cell Over Temperature Protect
Bit 6		Discharge Cell Under Temperature Protect
Bit 7		Discharge Cell Over Temperature Protect
Bit 8		Charge Over Current Protect
Bit 9		Discharge Over Current Protect
Bit 10		Module Under Voltage Protect
Bit 11		Module Over Voltage Protect
Bit 12		Single Cell Under Voltage Protect2
Bit 13		Reserve
Bit 14		Reserve
Bit 15		Reserve
Bit 16		Reserve
Bit 17		Reserve
Bit 18		Reserve
Bit 19		Reserve
Bit 20		Reserve
Bit 21		Reserve
Bit 22		Reserve
Bit 23		Reserve
Bit 24		Reserve
Bit 25		Reserve
Bit 26		Reserve
Bit 27		Reserve
Bit 28		Reserve
Bit 29		Reserve
Bit 30		Reserve
Bit 31		Reserve

Note7: Inverter work mode

Value	Description
0	Wait Mode
1	SelfTest
2	CheckMode
3	NormalMode
4	UPS
5	ByPassMode
6	DCMode

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7	FaultMode
8	Update Master Mode
9	Update Slave Mode
10	Update ARM Mode

Note8： System fault

Alarm code	Description	
	Platform	EMS3.6
Bit 0		Network_Card_Fault
Bit 1		Rtc_Fault
Bit 2		EEprom_Fault
Bit 3		INV_Comms_Error
Bit 4		Grid_Meter_Lost
Bit 5		PV_Meter_Lost
Bit 6		BMS_Lost
Bit 7		UPS_Battery_Volt_Low
Bit 8		Backup_Overload
Bit 9		INV_Slave_Lost
Bit 10		INV_Master_Lost
Bit 11		Parallel_Comm_Error
Bit 12		Parallel_Mode_Differ
Bit 13		Flash_Fault
Bit 14		SDRAM error
Bit 15		Extension CAN error
Bit 16		inv type not specified
Bit 17		inv_lost_bat_shutdown
Bit 18		sampling_anomaly
Bit 19		force_bat_shutdown_handle
Bit 20		
Bit 21		
Bit 22		
Bit 23		
Bit 24		
Bit 25		
Bit 26		
Bit 27		
Bit 28		
Bit 29		
Bit 30		
Bit 31		

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Note9： Grid_Regulation

Safety code	Grid_Regulation	
	AL	AE
0	VDE0126-50Hz	
1	VDE4105/11.18	
2	AS4777.2	
3	G83_2	
4	C10/C11	
5	TOR Erzeuger	
6	EN50549-NL	
7	EN50549-DK	
8	CEB	
9	CEI-021	
10	NRS097-2-1	
11	EN50549-GR	
12	UTE_C15_712	
13	IEC61727	
14	G59_3	
15	RD1699	
16	G99	
17		
18	VDE0126-60Hz	
19	AS4777.2-SA	
20	G98	
21	EN50549-CZ	
22	PEA	
23	MEA	
24	BISI	
25	JET-GR Series	
26		
27		
28	50Hz Default	
29	60Hz Default	
30	WAREHOUSE	
31	AS4777.2-NZ	
32	Korea	
33	G98/G99-IE	
34	NC Rfg	
35	UL 1741	
36	UL1741-Rule 21	
37	UL1741-Hawaiian	
38	EN50549	

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Note10： Household Inverter warning code

Code Bit	Warning
Bit 0	电池过压告警
Bit 1	电池欠压告警
Bit 2	过载告警
Bit 3	温度传感器异常
Bit 4	直流功率告警
Bit 5	电池停止运行告警
Bit 6	过温告警
Bit 7	PV 电压高
Bit 8	电池开路
Bit 9	电池反接
Bit 10	bus 过压
Bit 11	电网丢失
Bit 12	电网电压异常
Bit 13	电网频率异常
Bit 14	10 分钟电网电压异常
Bit 15	grid volt inst over
Bit 16	地线丢失
Bit 17	零火反接
Bit 18	低温警告
Bit 19	GFCI
Bit 20	ISO
Bit 21	DCI
Bit 22	DCV
Bit 23	孤岛警告
Bit 24	风扇异常
Bit 25	零线丢失
Bit 26	SCI 通讯异常
Bit 27	CAN 通讯异常
Bit 28	flashid 异常
Bit 29	读 flash 异常
Bit 30	写 flash 异常
Bit 31	设备类型异常
Bit 32	逆变电压低
Bit 33	软件逆变过流
Bit 34	硬件逆变过流
Bit 35	bst 软件逆变过流
Bit 36	bst 硬件逆变过流
Bit 37	buckbst 软件逆变过流
Bit 38	buckbst 硬件逆变过流
Bit 39	bus 过低

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Bit 40	无 pv 输入
Bit 41	输入功率限制
Bit 42	输出功率限制
Bit 43	过频降载
Bit 44	过压降载
Bit 45	过温降载
Bit 46	高电压穿越
Bit 47	低电压穿越
Bit 48	热敏电阻异常
Bit 49	市电波形异常
Bit 50	离网电容衰减
Bit 51	并机警告
Bit 52	并机 ID 错误
Bit 53	平均过载
Bit 54	并机 ID 重复
Bit 55	新机无法加入
Bit 56	输出不均流
Bit 57	输入不一致
Bit 58	grid backup n lost（n-n 短接）
Bit 59	电池数量异常
Bit 60	Reserved
Bit 61	Reserved
Bit 62	Reserved
Bit 63	Reserved

055EH(warnning1)	055FH(warnning1)	0560H(warnning2)	0561H(warnning2)
Bit63~bit48	Bit47~bit32	Bit31~bit16	bit15~bit0
00000000000000000	0000000000000000	0000 0010 0000 0001	0000 0000 0000 0000

Note11： Household Inverter fault code

Code Bit	Fault
Bit 0	grid_ovp
Bit 1	grid_uvp
Bit 2	grid_ofp
Bit 3	grid_ufp
Bit 4	phase_locked_fault
Bit 5	bus_ovp1
Bit 6	bus_ovp2
Bit 7	insulation_fault
Bit 8	gfci_fault
Bit 9	gfci_test_fault

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Bit 10	grid_relay_fault
Bit 11	over_temperature
Bit 12	pv_reverse
Bit 13	pv_reverse
Bit 14	m_s_com_fault
Bit 15	display_com_fault
Bit 16	chip1_upgrade_fault
Bit 17	mppt1_ovp
Bit 18	mppt1_sw_ocp
Bit 19	mppt1_hw_ocp
Bit 20	mppt1_otp
Bit 21	mppt2_ovp
Bit 22	mppt2_ovp
Bit 23	mppt2_hw_ocp
Bit 24	mppt2_otp
Bit 25	bat_ovp
Bit 26	bat_uvp
Bit 27	battery_lose
Bit 28	bat_otp
Bit 29	bat1_charge_ocp
Bit 30	bat1_discharge_ocp
Bit 31	bat2_charge_ocp
Bit 32	bat2_discharge_ocp
Bit 33	bat1_hw_ocp
Bit 34	bat2_hw_ocp
Bit 35	inv_otp
Bit 36	inv_ovp
Bit 37	inv_uvp
Bit 38	output_dc_over_current
Bit 39	inv_ocp
Bit 40	inv_hw_ocp
Bit 41	output_dc_over_voltage
Bit 42	output_short
Bit 43	output_overload
Bit 44	apu_uvp
Bit 45	bat_relay_fault
Bit 46	dc_input_disturbance
Bit 47	grid_disturbance
Bit 48	gird_unbalance
Bit 49	freq_jitter
Bit 50	grid_overcurrent
Bit 51	grid_current_track_fault
Bit 52	backup_ovp

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Bit 53	dc_bus_unbalancevolt
Bit 54	dc_bus_undervolt
Bit 55	dc_bus_unbalancevolt2
Bit 56	igbt_over_current
Bit 57	grid_disturbance2
Bit 58	afci_check_protect
Bit 59	grid_current_sampling_abnormal
Bit 60	dsp_selfcheck
Bit 61	grid_short_time_over_current
Bit 62	bat_overvolt_hardware_fault
Bit 63	zero_ground_fault

Note12： Household Inverter fault extend1 code

Code Bit	Fault
Bit 0	ac_hct_check_failure
Bit 1	dci_consistency_failure
Bit 2	gfci_consistency_failure
Bit 3	relay_device_failure
Bit 4	ac_hct_failure
Bit 5	gournd_i_failure
Bit 6	utility_phase_failure
Bit 7	utility_loss
Bit 8	internal_fan_failure
Bit 9	fac_consistency_failure
Bit 10	vac_consitency_failure
Bit 11	phase_angle_failure
Bit 12	dsp_communication_failure
Bit 13	eeprom_rw_failure
Bit 14	vac_failure
Bit 15	fac_failure
Bit 16	external_fan_failure
Bit 17	afci_device_failure
Bit 18	bus 软起超时
Bit 19	bus 短路
Bit 20	逆变软起超时
Bit 21	backup、grid 反接
Bit 22	火线、地线反接
Bit 23	ems 串口通讯错误
Bit 24	emsCAN 通讯错误
Bit 25	12V 辅助电源参考错误
Bit 26	1.5V 电源错误

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Bit 27	0.5V 电源错误
Bit 28	热敏电阻丢失
Bit 29	逆变 hct 错误
Bit 30	load_ct
Bit 31	pv1_ct
Bit 32	pv2_ct
Bit 33	bat1_ct
Bit 34	bat1_ct
Bit 35	bypass relay 错误
Bit 36	load_rly
Bit 37	npe_rly
Bit 38	直流电流分量错误
Bit 39	watchdog
Bit 40	逆变开环错误
Bit 41	sw_consistency
Bit 42	n_n_reverse_lost
Bit 43	ini_fault
Bit 44	dsp_b_fault
Bit 45	逆变器线路异常
Bit 46	BOOST 线路异常(直流软起异常)
Bit 47	数据存储故障
Bit 48	para_can
Bit 49	para_synsignal_wrong
Bit 50	para_sw_diff
Bit 51	模块模式错误
Bit 52	负功故障
Bit 53	para_multi_master
Bit 54	开机异常
Bit 55	hw_ver_diff
Bit 56	bus_unbalance
Bit 57	inv_line_short
Bit 58	inv_cbc_over
Bit 59	middle_bridge_hw_ocp
Bit 60	bdc_sw_ocp
Bit 61	bdc_prechg_failure
Bit 62	bdc_selfcheck_failure
Bit 63	pe_fault

Note13: AUX 自动模式 SOC 模式说明：

当 SOC 设置为“at least”模式时，负载的 Aux 触点需要连接到 N/O 点。当电池 SOC 满足实际设定条件时，（不考虑设定延时），当馈入功率高于设置的“Switch on”功率时，N/O 点关闭（负载打开），当馈入-输入功率低于设置的“关闭”功率或购买电源时，N/O 点断开（负载关闭）。当供电功率

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在上述两个设定数据之间时，不进行任何操作。当 SOC 设置为“at most”模式时，负载的 Aux 触点需要连接到 N/C 点。 当电池 SOC 满足实际设定条件时，（不考虑设定延时），当馈入功率高于设定的“Switch on”功率时，N/C 点闭合（负载打开），当馈入功率小于设置的“关闭”电源或购买电源时，N/C 点断开（负载关闭）。 当供电功率在上述两个设定数据之间时，不进行任何操作。

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