**Modbus RTU Protocol**

（版权所有，翻版必究）

|  |  |  |  |
| --- | --- | --- | --- |
| Die Versionsnummer | 修改内容 | 修改人 | 时间+备注 |
| V107 | 55 号寄存器由原来的固件更新使能修  改为整机功能测试指令 1 | 陈旭东 | 2018-11-28 |
| 100 号寄存器，更改为测试标志位返回 | 陈旭东 | 2018-12-04 |
| V108 | 增加风机控制需要寄存器 |  | 2019-01-14 |
|  | 增加 California 寄存器 |  |  |
| V111 | 增加电池 SN 码寄存器 |  | 2019-04-28 |
| 增加德朗能的当月当年数据寄存器 |  | 2019-04-29 |
| V112 | 翻译英文 |  | 2019-05-xx |
| 增加并联功能 |  | 2019-06-21 |
| 增加微逆的过频降载（删除 mppt 高低压） |  | 2019-07-19 |
| V113 | 新增 8 个组件当日、历史发电量寄存  器 |  | 2019-07-24 |
| V114 | 整理表格格式。  增加组串 16 路功率以及电表相关寄存器 |  | 2019-09-29 |
| V115 | 增加每个 pack 的信息 |  | 2019-11-12 |
| V116 | 1、增加 Time of Use Selling enabled 的  bit8 位为工作模式 3（西班牙客户需求）。  2、储能可变区 274-279 寄存器时间点充电使能的bit2 被定义为GM 模式，bit3 为  BU 模式，bit4 为 CH 模式。  3、储能实时属性可变区 181 号地址被定义为Gen 口电压 |  | 2020/12/24 |
| V117 | 62 号：改为发电机日发电量  92 号：改为发电机总发电量低位  95 号：改为发电机总发电量高位 | Victor | 2021/04/08 |

2.6 function code of Modbus\_RTU protocol

The following table lists only the function codes to which this protocol applies.

|  |  |  |  |
| --- | --- | --- | --- |
| function code | Function code type | explain | remark |
| 0x03 | Public function code | Read the register | Contains reads to a single register and multiple registers |
| 0x10 | Public function code | write the register | Contains writes to a single register and multiple registers |

* + 1. read register (function code: 0x03)

（1）PDU Request the PDU

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | | |
|  | data structure |  |  | data length |  |  | data range |  |
| function code | | | 1 byte | | | 0x03 | | |
| Starting register address | | | 2 byte | | | 0x0000~0xFFFF | | |
| Number of registers | | | 2 byte | | | 0x0001~ 0x007D | | |

（2）PDU Normal response PDU

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | |
|  | data structure |  |  | data length |  | data range |  |
| function code | | | 1 byte | | | 0x03 | |
| byte count | | | 1 byte | | | N×2 | |
| Register values | | | N×2 byte | | |  | |

Note: N= number of registers

（3）PDU Abnormal response PDU

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | | data range |
|  | data structure |  |  | data length |  |
| wrong code | | | 1 byte | | | 0x83 |
| exception code | | | 1 byte | | | See "exception code" for details. |

（4）give a typical example

Request to read out three consecutive register values starting at address 107 (describe PDU only) :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| request |  | normal response | | exceptional response | |
| field name |  | field name |  | field name | field value |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | field value |  |  | field value |  |  |
| function code | 0x03 | | function code | 0x03 | wrong code | 0x83 |
| Starting address Hi | 0x00 | | byte count | 0x06 | exception code | 0x04 |
| Starting address Lo | 0x6B | | Register [107] Hi | 0x02 |  |  |
| Number of registers Hi | 0x00 | | Register [107] Lo | 0x2B |  |  |
| Register number Lo | 0x03 | | Register [108] Hi | 0x00 |  |  |
|  |  | | Register [108] Lo | 0x00 |  |  |
|  |  | | Register [109] Hi | 0x00 |  |  |
|  |  | | Register [109] Lo | 0x64 |  |  |

2.6.2 write register (function code: 0x10)

（1）Request the PDU

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | | |
|  | data structure |  |  | data length |  |  | data range |  |
| function code | | | 1 byte | | | 0x10 | | |
| Starting register address | | | 2 byte | | | 0x0000~0xFFFF | | |
| Number of registers | | | 2 byte | | | 0x0001~0x007B | | |
| byte count | | | 1 byte | | | N×2 | | |
| Register values | | | N×2 byte | | |  | | |

Note: N= number of registers

（2） 正常响应 PDU

Normal response PDU

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | | |
|  | data structure |  |  | data length |  |  | data range |  |
| function code | | | 1 byte | | | 0x10 | | |
| Starting register address | | | 2 byte | | | 0x0000~0xFFFF | | |
| Number of registers | | | 2 byte | | | 0x0001~0x007B | | |

（3）PDU

Abnormal response PDU

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | |  | | |
|  | data structure |  |  | data length |  |  | data range |  |
| wrong code | | | 1 byte | | | 0x90 | | |
| exception code | | | 1 byte | | | See "exception code" for details. | | |

（4） give a typical example

Request to write 0x000A and 0x0102 to the two registers starting at address 1 (describing only PDU) :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| request |  | normal response |  | exceptional response | |
| field name | field value | field name | field value | field name | field value |
| function code | 0x10 | function code | 0x10 | wrong code | 0x90 |
| Starting address Hi | 0x00 | Starting address Hi | 0x00 | exception code | 0x04 |
| Starting address Lo | 0x01 | Starting address Lo | 0x01 |  |  |
| Number of registers Hi | 0x00 | Number of registers Hi | 0x00 |  |  |
| Register number Lo | 0x02 | Register number Lo | 0x02 |  |  |
| byte count | 0x04 |  |  |  |  |
| Register value Hi | 0x00 |  |  |  |  |
| Register value Lo | 0x0A |  |  |  |  |
| Register value Hi | 0x01 |  |  |  |  |
| Register value Lo | 0x02 |  |  |  |  |

**[remark] Baud rate: 9600bps RS232 or RS485**

**[remark]** Reserved words, reserved bytes, reserved bits, and unsupported registers a re all filled with 0x00.

**[remark]** this protocol is for Microinverter,string inverter and storage inverter

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Addr** | **Register meaning** | **R/W** | **data range** | **unit** | **note** |
| Intrinsic attribute region | | | | | |
| 000 | Device type | R |  |  | 0X0200 String  0X0300 Hybrid 1 phase  0X0400 Microinverter MI  0X0500 Hybrid 3 phase |
| 001 | Modbus address | R | [1,247] |  | MI |
| 002 | Communication protocol version | R | ‘0’~’9’;  ‘A’~’Z’ |  | 固件所遵从的本协议的版本，如 0x  0102 代表 1.2 版MI |
| 003 | SN byte 01 | R | ‘0’~’9’;  ‘A’~’Z’ |  | The serial number is ten ASCII  characters,  If "AH12345678",  Byte 01 is 0x41 (A),  The 02nd byte is 0x48 (H),  ……  The 09th byte is 0x37 (7), The tenth byte is 0x38 (8). MI |
| SN byte 02 |
| 004 | SN byte 03 | R | ‘0’~’9’;  ‘A’~’Z’ |  |
| SN byte 04 |
| 005 | SN byte 05 | R | ‘0’~’9’;  ‘A’~’Z’ |  |
| SN byte 06 |
| 006 | SN byte 07 | R | ‘0’~’9’;  ‘A’~’Z’ |  |
| SN byte 08 |
| 007 | SN byte 09 | R | ‘0’~’9’;  ‘A’~’Z’ |  |
| SN byte 10 |
| 008 | Rated Power | R | 0x0000 |  | 1. single-phase inverter 2. three-phase inverter   8 Single-phase storage inverter |
| Microinverse System bits Flag |  | Bit0：1 使能 18 号寄存器 mppt 路数  0 使能，以额定功率决定路数 |
| 009 | Chip type | R | 0x0000 |  | 低 4 位：AT32F403A\_DEVICE 1  SXX32F103\_DEVICE 2  GD32F103\_DEVICE 3  GD32F303\_DEVICE 4 |
| 010 | Firmware Version communication board 2 |  |  |  |  |
| 011 | Dashboard version |  |  |  |  |
| 012 | Dashboard Firmware version  2 | R |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 013 | Firmware version of control board | R |  |  | MI |
| 014 | Firmware version of communication board | R |  |  |  |
| 015 | Safety type | R |  |  | MI  <3:48 battery  =3:24V battery |
| 016 | Rated power low word | R |  | 0.1W | MI |
| 017 | Rated power high word | R |  | 0.1W | MI |
| 018 | MPPT number and phases | R | [1,8]/[1,3] |  | MI 0x0503: five-mppts three-  phase |
| 019 | Rated  Grid Voltage | R/W | [0-3] |  | 0: 127/220V 1: 220/380V |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 可变属性区Variable attribute area | | | | | |
| 020 | Remote Lock | R/W |  |  | on 0x0002  off 0x0000 |
| 021 | self-check time | R/W | [0,1000] | S | MI |
| 022 | system time byte 01 | R/W | [0,255] | Year | MI  Based on the year 2000 |
| system time byte 02 |  | [1,12] | Month |
| 023 | system time byte 03 | R/W | [1,31] | Day |
| system time byte 04 |  | [0,23] | Hour |
| 024 | system time byte 05 | R/W | [0,59] | Minute |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | system time byte 06 |  | [0,59] | Sec |  |
| 025 | Minimum insulation impedance | R/W | [100,20000] | 0.1KΩ |  |
| 外部CT标志位 | Bit0：控制板的功率计算标志位  2020/10/21之后的新软件可以根据液晶的标志位判断，固定写1.以前的软件是0  Bit2：液晶板计算功率方法返回给控制板标志位。1：表示液晶自己计 算；0：表示直接读寄存器不计算 |
| 026 | Dc voltage upper limit | R/W | [2000,10000] | 0.1V |  |
| 027 | Grid voltage Upper limit | R/W | [1600,5500] | 0.1V | MI |
| 028 | Grid voltage Lower limit | R/W | [1600,5500] | 0.1V | MI |
| 029 | Grid frequency upper limit | R/W | [4500,6500] | 0.01 Hz | MI |
| 030 | Grid frequency lower limit | R/W | [4500,6500] | 0.01 Hz | MI |
| 031 | 电网电流上限  grid current Upper limit | R/W | [10,20000] | 0.1A |  |
|  |  |  |  |
| 032 | 开机电压上限  Starting voltage upper limit | R/W | [7000,9000] | 0.1V |  |
| 033 | 开机电压下限  Starting voltage lower limit | R/W | [4500,9000] | 0.1V |  |
| 034 | 过频降载起始点  OverFrq\_Derate\_point | R/W | [4500,6500] | 0.01HZ | MI |
| 035 | 过频降载百分比  OverFrq\_De\_rate | R/W | [0,100] |  | MI |
| 036 | 机内温度上限  Internal temperature upper limit | R/W | [500,3000] | 0.1℃ |  |
| 037 | 通讯地址  Communication address | R | 0x0000 | - | MI |
| 038 | 通讯波特率  Communication baud rate  MI:Zigbee or PLC | R | 0x0000 | - | MI 0:zigbee 1:plc |
| 039 | 功率因数调节  Power factor regulation | R/W | [0,2000] | 0.001 | The value after the true value is offset by +1000。For example：  -0.852 is 148 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | |  |  |  | 0 is 1000  0.982 is1982 |
| 040 | 有功功率调节  Active power regulation | | R/W | [0,1200] | 0.1%/1% | 如 800 表示调节到 80.0% MI  If 800, adjust to 80.0% |
| 041 | 无功功率调节  Reactive power regulation | | R/W | [0,1200] | 0.1% | 如 800 表示调节到 80.0%  If 800, adjust to 80.0% |
| 042 | 视在功率调节  Apparent power regulation | | R/W | [0,1200] | 0.1% | 如 800 表示调节到 80.0%  If 800, adjust to 80.0% |
| 043 | 开关机使能Switch on and off enable | | R/W | [0,1] | - | 0：关机 1：开机MI 2：关机  0: power off 1: power on |
| 044 | 恢复出厂使能  Factory reset enable | | R/W | [0,1] |  | 0: disable 1: enable |
| 045 | 自检时间  Self-checking time | | R/W | [0,1] | - | 0-360 seconds |
| 046 | 孤岛保护使能  Island protection enable | | R/W | [0,1] |  | MI  0: disable 1: enable |
| 047 | MPPT路数  MPPT number | | R/W | [0,1] | - | MI  0: disable 1: enable |
| 缓起使能MI | |
| 048 | GFDI使能(老)  GFDI enable | | R/W | [0,1] | - | MI  0: disable 1: enable |
| 电表使能(新) Meter enable | |
| 049 | RCD使能  RCD enable | | R/W | [0,1] | - | 0: disable 1: enable |
| 过频降载使能MI | |
| 050 | RISO 使能  RISO enable | | R/W | [0,1] |  | 0: disable 1: enable |
| 051 | 并网标准  GridStandard | | R/W | [0,20] |  | 1：INMETRO 2：EN50549  3：EN50438 4：IEC61727  5：CUSTOM 6：VDE\_AR\_N\_4105  7：UTE\_C15\_712\_1 8：RD\_1699  9：CEI\_0\_21 10：G98\_G99  11：AS4777 |
| 052 | PV曲线使能  PV curve enable | | R/W | [0,1] |  | 0: disable 1: enable |
| CT变比 | | [1,5000] |  |
| 053 | 最大光伏功率(老) MaxSolar\_Power |  | W |  |  |  |
| 硬件匹配（新）  Hardware Matching | | R/W | [0,65536] |  | 液晶单独一个界面操作该寄存器  Bit0-1:单相组串---0：500V系统 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 1：550V系统  2,3：预留Bit2-3:单相组串---0：PV-10A  1 : PV-12.5A  2,3:预留  Bit4-5 单相组串----0：VAC传感器  1：田村  2：西磁  3：预留  Bit5-15 预留 |
| 054 | EEPROM 初始使能EEPROM initial enabled | R/W | [0,2] | - | 0: 正常工作  1: 初始化控制板 EEPROM  Mi的恢复出厂设置  2: 初始化通讯板 EEPROM  0: normal operation  1: initialize the control board EEPROM 2: initialize the communication board EEPROM |
| 055 | 功能测试下的指令1  Factory only | R/W | [0,3] | - | Bit0 开测试使能(使能这后面的才有  效)  Bit1 开逆变器全部风扇  Bit2 闪显示板的所有LED，蜂蜜器，背光,显示红黄蓝  Bit3 开启锂电池接口测试  Bit4 开启Gen信号继电器  Bit5 重启液晶程序 |
| 056 | Limter功能使能  Limter function enable | R/W | 0x0000 | - |  |
| 057 | 发电量修正系数  PowerWH Factor | R/W |  | -0.01 | 100 mean 1 111 mean 1.11 |
| 058 | RSD使能  RSD enable | R/W | 0x0001 | - | 0x0001 |
| *通用设置* | *Bit0 Bit1：01显示16串 组串电流*  *00不显示16串组串电流Bit2 Bit3：01显示保护参数三阶设置*  *其他不显示保护参数三阶设置*  *Bit4： Bit5 ： Bit6 ：* |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 实时运行数据区Run the data area in real time | | | | | |
| 059 | 运行状态  run state | R | [0,5] | - | 0x0000 待 机  0x0001 自 检  0x0002 正 常  0x0003 告 警  0x0004 故 障 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 060 | 当日有功发电量  DayActive PowerWh | | | R | [-32768,32767] | 0.1kWh | 有符号整形MI  Signed int |
| 061 | 当日无功发电量  DayReactive PowerWh | | | R | [-32768,32767] | 0.1kVarh | 有符号整形  Signed int |
| 062 | 当日发电机发电量  Today\_Gen\_PowerWh | | | R | [0,65535] | 0.1kWh |  |
| 063 | 总有功发电量低字  Total\_Active\_PowerWh low word | | | R | [0,0xFFFFFFFF  ] | 0.1kWh | 有符号整形MI  Signed int |
| 064 | 总有功发电量高字  Total\_Active\_PowerWh high word | | | R |
| 065 | String | | 总无功发电量低字  Total\_Reactive\_PowerW h low word | R | [0,0xFFFF] | 0.1kVarh |  |
| Hybird | | 当月PV发电量  SG:Month\_PV\_PowerWh |  | 1kwh |
| MI |  | 组件1当日发电量 | 0.1kwh |
| 066 | String | | 总无功发电量高字  Total\_Reactive\_PowerW h high word | R | [0,0xFFFF] | 0.1kVarh |  |
| Hybird | | 当月用电量  Month\_Load\_PowerWh | 1kwh |
| 0.1kwh |
| MI |  | 组件2当日发电量 |
| 067 | String | | 总发电时间低字  Total Work time low word | R | [0,0xFFFF] | 0.1h |  |
| Hybird | | 电网当月卖电量  SG:  Month\_Grid\_PowerWh | 1kwh |
| MI |  | 组件3当日发电量 | 0.1kwh |
| 068 | String | | 总发电时间高字  Total Work time high word | R | [0,0xFFFF] | 0.1h | 液晶统计，DLN高地位取反LCD statistics, DLN high status reversed |
| Hybird | | PV当年发电量低位  Year\_PV\_PowerWh Low word | 0.1kwh |
| MI |  | 组件4当日发电量 | 0.1kwh |
| 069 | String | | 逆变效率  inverter efficiency | R | [0,999] | 0.1% |  |
| Hybird | | PV当年发电量高位  Year\_PV\_PowerWh high word | 0.1kwh |
| MI |  | 组件1累计发电量低字 |
| 070 | String | | 电网电压AB  Grid voltage AB | R | [0,9999] | 0.1V |  |
| Hybird | | 电池当日充电量  Day\_Batt\_Charge  \_PowerWh | 0.1kwh |
| MI |  | 组件 1 累计发电量高字 |
| 071 | String | | 电网电压 BC  Grid voltage BC | R | [0,9999] | 0.1V |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Hybird | | 电池当日放电量  Day\_Batt\_Discharge\_P owerWh |  |  | | 0.1kwh |  | |
| MI | | 组件 2 累计发电量低字 |
| 072 | String | | 电网电压AC  Grid voltage AC | R | [0,9999] | | 0.1V |  | |
| Hybird | | 电池累计充电量低字  tatol\_Batt\_charge\_Pow erWh\_low word | 0.1kwh |
| MI | | 组件 2 累计发电量高字 |
| 073 | String | | 电网电压A  Grid voltage A | R | [0,9999] | | 0.1V | MI | |
| Hybird | | 电池累计充电量高字  tatol\_Batt\_charge\_Pow erWh \_high\_word | 0.1kwh |
|  | |  |
| 074 | String inverter | | 电网电压B  Grid voltage B | R | [0,9999] | | 0.1V |  | |
| Hybird inverter | | 电池累计放电量低字  tatol\_Batt\_Discharge\_P owerWh\_low word | 0.1kwh |
| MI |  | 组件 3 累计发电量低字 |
| 075 | String | | 电网电压C  Grid voltage C | R | [0,9999] | 0.1V | |  | |
| Hybird | | 电池累计放电量高字  tatol\_Batt\_Discharge\_P owerWh\_high\_word | 0.1kwh | |
| MI |  | 组件 3 累计发电量高字 |
| 076 | String | | 电网电流A  Grid current A | R | [0,65535] | 0.1A | | MI | |
| Hybird | | 电网当日购电量  Day\_GridBuy\_Power Wh | 0.1kwh | |
| 077 | String | | 电网电流B  Grid current B | R | [0,65535] | 0.1A | |  | |
| Hybird | | 电网当日卖电量  Day\_GridSell\_Power Wh | 0.1kwh | |
| MI | | 组件4累计发电量低字 |
| 078 | String inverter | | 电网电流C  Grid current C | R | [0,65535] | 0.1A | |  | |
| Hybird | | 电网累计购电量低字  Total\_GridBuy\_Power Wh\_low word | 0.1kwh | |
| MI |  | 组件4累计发电量高字 |
| 079 | 电网频率 | | | R | [0,9999] | 0.01Hz | | MI |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Grid frequency | |  |  |  |  |
| 080 | String | 显示功率低字节  Displays low power bytes | R | 0x0000 | 0.1W |  |
| Hybird | 电网累计购电量高字  Total\_Grid Buy\_Power Wh\_high word | 0.1kwh |
|  |  |
| 081 | String | 显示功率高字节  Displays high power bytes | R | 0x0000 | 0.1W |  |
| Hybird | 电网累计卖电量低字  Total\_GridSell\_Power Wh\_low word | 0.1kwh |
|  |  |
| 082 | String inverter | 输入有功功率低字  Input\_active\_ power\_low word | R | [0,0xFFFFFFF F] | 0.1W |  |
| Hybird | 电网累计卖电量高字  Total\_GridSell\_Power Wh\_high word | 0.1kwh |
| 083 | String | 输入有功功率高字  Input active power high word | R |  | 0.1W |  |
| Hybird | 发电机日工作时间  Generator daily operating time | 0.1小时 | 240表示24小时 |
| 084 | String | 输出视在功率低字  output apparent power low word | R | [0,0xFFFF] | 0.1VA |  |
| Hybird | 当日用电量  SG:Day\_Load\_Power Wh | 0.1kwh |
| 085 | String | 输出视在功率高字  output apparent power high word | R | [0,0xFFFF] | 0.1VA |  |
| Hybird | 累计用电量低字  Total\_Load\_Power Wh\_low word | 0.1kwh |
| 086 | String | 输出有功功率低字  Output active power low word | R | [0,0xFFFF] | 0.1W | MI |
| Hybird | 累计用电量高字  Total\_Load\_Power Wh\_high word | 0.1kwh |
| 087 | String | 输出有功功率高字  Output active power high word | R | [0,0xFFFF] | 0.1W |
| Hybird | 当年用电量低字  Year\_Load\_Power Wh\_low word | 0.1kwh |
| 088 | String | 输出无功功率低字  Output reactive power low word | R | [0,0xFFFF] | 0.1Var |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Hybird | 当年用电量高字  Year\_Load\_Power Wh\_high word |  |  | 0.1kwh |  |
| 089 | 输出无功功率高字  Output reactive power high word | | R |  |  |  |
| 090 | 散热片温度(DC变压器温度)  Radiator temperature (DCTransformer temperature) | | R | [0,3000] | 0.1℃ | MI |
| 091 | IGBT 模块温度(储能式AC散热器温度)  IGBT temperature (Radiator temperature) | | R | [0,3000] | 0.1℃ | -56.2℃ 表示为 438  0℃ 表示为 1000  50.5 ℃表示为 1505  -56.2℃indicated as 438 0℃ indicated as 1000  50.5 ℃indicated as 1505 |
| 092 | 总发电机发电量低位  Total\_Gen\_powerWhL | | R | [0,65535] | 0.1kWh |  |
| 093 | 功率因数  power factor  发电机相位错误，电网相位错  误，非晶标志位 | | R | R/W | [0,1000] | Bit0 0： EE65 1：非晶  Bit1 0：电网相位正确 1：相位错误  Bit2 0 ：发电机相位正确1：错误 |
| 094 | SD卡状态  SD Card Status | | R | [0,3000] | 0.1℃ | 1000 表示SD故障，2000正常  1000 indicated as SD fault，2000 normal |
| 095 | 总发电机发电量高位  Total\_Gen\_powerWhH | | R | [0,65535] | 0.1kWh |  |
| 096 | 历史PV发电量低字  historyPV PowerWh low word | | R | [0,0xFFFFFFF F] | 0.1kWh |  |
| 097 | 历史PV发电量高字  historyPV PowerWh high word | | R | 0.1kWh |  |
| 098 | String inverter | RCD 漏电流  RCD leak current | R | [0,65535] | 0.01A |  |
| Hybird | 电网当年卖电量低字  Year\_GridSell\_Power Wh\_low word | 0.1kwh |
| 099 | String | Limter功率  Limter power | R | 0x0000 | 1W |  |
| Hybird | 电网当年卖电量高字  Year\_GridSell\_Power Wh\_high word | 0.1kwh |
| 100 | 其他测试标志位  Other test flag bits | | R | 0x0000 |  | Bit0 拉弧通讯标志  Bit1 可并联CAN通讯 1：正常  Bit8 锂电接口RS485  Bit9 锂电接口CAN  Bit10 按键1234  Bit0 arc communication sign  Bit8 li-ion battery interface RS485 |

Bit9 Li-ion battery interface CAN

Bit10 buttons 1 2 3 4

Bit11 液晶中断状态 1：正常

告警信息第 1 字

1. Warning message word 1 R [0,65535] -

告警信息第 2 字

1. Warning message word 2 R [0,65535]

故障信息第 1字

1. Fault information word 1 R [0,65535]

故障信息第 2字

1. Fault information word 2 R [0,65535]

故障信息第 3 字

1. Fault information word 3 R [0,65535]

故障信息第 4 字

1. Fault information word 4 R [0,65535]

见告警信息编码表

See the alarm information coding table

见告警信息编码表

See the alarm information coding table

见故障信息编码表MI

See the fault information coding table

见故障信息编码表

See the fault information coding table

见故障信息编码表

See the fault information coding table

见故障信息编码表

See the fault information coding table

1. 电池校正后的容量Corrected\_AH R [0,1000] 1AH 100 is 100AH

当日PV发电量

1. Day PV PowerWh R [0,65535] 0.1kWh

直流电压1

1. Dc voltage 1 R [0,65535] 0.1V MI

直流电流1

1. Dc current 1 R [0,65535] 0.1A MI

直流电压2

1. Dc voltage 2 R [0,65535] 0.1V MI

直流电流2

1. Dc current 2 R [0,65535] 0.1A MI

直流电压3

1. Dc voltage 3 R [0,65535] 0.1V MI

直流电流3

1. Dc current 3 R [0,65535] 0.1A MI

直流电压4

1. Dc voltage 4 R [0,65535] 0.1V MI

直流电流4

1. Dc current 4 R [0,65535] 0.1A MI
2. Alarms Status1 R 0x0000 - 根据采集器要求新增
3. Alarms Status1 R 0x0000

PV4 PV3 PV2 PV1

是否损坏

Whether the damage

调试数据

R 0x0000

0x0000表示无损坏，

Means no damage,

0x1000 表示PV4损坏

Indicates that PV4 is corrupt

0x0100 表示PV3 损坏

Denotes PV3 corruption

1. Debug Data R 0x0000

调试数据

1. Debug Data R 0x0000

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 122 | 调试数据  Debug Data | | R | | 0x0000 | |  | |  |
| 123 | 调试数据  Debug Data | | R | | 0x0000 | |  | |  |
| 124 | 调试数据  Debug Data | | R | | 0x0000 | |  | |  |
|  |  | |  | |  | |  | |  |
|  |  | |  | |  | |  | |  |
|  |  | |  | |  | |  | |  |
| This range is only for string inverter | | | | | | | | | |
| 150 | 组串1电流 | R | | [0,65535] | | 0.1A | |  | |
| 151 | 组串2电流 | R | | [0,65535] | | 0.1A | |  | |
| 152 | 组串3电流 | R | | [0,65535] | | 0.1A | |  | |
| 153 | 组串4电流 | R | | [0,65535] | | 0.1A | |  | |
| 154 | 组串5电流 | R | | [0,65535] | | 0.1A | |  | |
| 155 | 组串6电流 | R | | [0,65535] | | 0.1A | |  | |
| 156 | 组串7电流 | R | | [0,65535] | | 0.1A | |  | |
| 157 | 组串8电流 | R | | [0,65535] | | 0.1A | |  | |
| 158 | 组串9电流 | R | | [0,65535] | | 0.1A | |  | |
| 159 | 组串10电流 | R | | [0,65535] | | 0.1A | |  | |
| 160 | 组串11电流 | R | | [0,65535] | | 0.1A | |  | |
| 161 | 组串12电流 | R | | [0,65535] | | 0.1A | |  | |
| 162 | 组串13电流 | R | | [0,65535] | | 0.1A | |  | |
| 163 | 组串14电流 | R | | [0,65535] | | 0.1A | |  | |
| 164 | 组串15电流 | R | | [0,65535] | | 0.1A | |  | |
| 165 | 组串16电流 | R | | [0,65535] | | 0.1A | |  | |
| 166 | 组串1发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 167 | 组串1发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 168 | 组串2发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 169 | 组串2发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 170 | 组串3发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 171 | 组串3发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 172 | 组串4发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 173 | 组串4发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 174 | 组串5发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 175 | 组串5发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 176 | 组串6发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 177 | 组串6发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 178 | 组串7发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 179 | 组串7发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 180 | 组串8发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 181 | 组串8发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 182 | 组串9发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 183 | 组串9发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 184 | 组串10发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 185 | 组串10发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 186 | 组串11发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 187 | 组串11发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 188 | 组串12发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 189 | 组串12发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 190 | 组串13发电量低字节 | R | | [0,65535] | | 0.1kWh | |  | |
| 191 | 组串13发电量高字节 | R | | [0,65535] | | 0.1kWh | |  | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 192 | 组串14发电量低字节 | R | [0,65535] | 0.1kWh |  |
| 193 | 组串14发电量高字节 | R | [0,65535] | 0.1kWh |  |
| 194 | 组串15发电量低字节 | R | [0,65535] | 0.1kWh |  |
| 195 | 组串15发电量高字节 | R | [0,65535] | 0.1kWh |  |
| 196 | 组串16发电量低字节 | R | [0,65535] | 0.1kWh |  |
| 197 | 组串16发电量高字节 | R | [0,65535] | 0.1kWh |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 198 | 负载有功功率低字  Input\_active\_ power\_low word | R | 1W |  |  | |
| 199 | 负载有功功率高字  Input active power high word | R | 1W |  |  | |
| 200 | 当日用电量  Day\_Load\_Power Wh |  | 0.01kwh |  |  | |
| 201 | 累计用电量低字  history\_Load\_Power Wh\_low word |  | 0.1kwh |  |  | |
| 202 | 累计用电量高字  history\_Load\_Power Wh\_high word |  | 0.1kwh |  |  | |
| 203 | 电表有功功率低字  Meter\_active\_ power\_low word | R | 1W |  | 带有正负的int型 Signed int  购电为负，卖电为正 | |
| 204 | 电表有功功率高字  Meter active power high word | R | 1W |  |  | |
| 带有正负的int型 | Signed int |
| 205 | 当日卖电量  Day\_ GridSell \_Power Wh |  | 0.01kwh |  |  | |
| 206 | 累计卖电量低字  history\_ GridSell \_Power Wh\_low word |  | 0.1kwh |  |  | |
| 207 | 累计卖电量高字  history\_ GridSell \_Power Wh\_high word |  | 0.1kwh |  |  | |
| 208 | 当日购电量  Day\_ GridBuy \_Power Wh |  | 0.01kwh |  |  | |
| 209 | 累计购电量低字  history\_ GridBuy \_Power Wh\_low word |  | 0.1kwh |  |  | |
| 210 | 累计购电量高字  history\_ GridBuy \_Power Wh\_high word |  | 0.1kwh |  |  | |
| 211 | 直流电压5  Dc voltage 5 | R | [0,65535] | 0.1V |  | |
| 212 | 直流电流5  Dc current 5 | R | [0,65535] | 0.1A |  | |
| 213 | 直流电压6  Dc voltage 6 | R | [0,65535] | 0.1V |  | |
| 214 | 直流电流6  Dc current 6 | R | [0,65535] | 0.1A |  | |
| 215 | 直流电压7  Dc voltage 7 | R | [0,65535] | 0.1V |  | |
| 216 | 直流电流7 | R | [0,65535] | 0.1A |  | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Dc current 7 |  |  |  |  |  |
| 217 | 直流电压8 | | R | [0,65535] | 0.1V |  |
| Dc voltage 8 |  |
| 218 | 直流电流8 | | R | [0,65535] | 0.1A |  |
| Dc current 8 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 组串逆变器增加的可变属性区 | | | | | |
| 300 | 电网电压上限2阶  Grid voltage Upper limit | R/W | [1600,5500] | 0.1V |  |
| 301 | 电网电压上限3阶  Grid voltage Upper limit | R/W | [1600,5500] | 0.1V |  |
| 302 | 电网电压下限2阶  Grid voltage Lower limit | R/W | [1600,5500] | 0.1V |  |
| 303 | 电网电压下限3阶  Grid voltage Lower limit | R/W | [1600,5500] | 0.1V |  |
| 304 | 电网频率上限2阶  Grid frequency upper limit | R/W | [4500,6500] | 0.01 Hz |  |
| 305 | 电网频率上限3阶  Grid frequency upper limit | R/W | [4500,6500] | 0.01 Hz |  |
| 306 | 电网频率下限2阶  Grid frequency lower limit | R/W | [4500,6500] | 0.01 Hz |  |
| 307 | 电网频率下限3阶  Grid frequency lower limit | R/W | [4500,6500] | 0.01 Hz |  |
| 308 | 电网电压上限跳脱时间1  阶 | R/W | [5,65000] | 10ms |  |
| 309 | 电网电压上限跳脱时间2  阶 | R/W | [5, 65000] | 10ms |  |
| 310 | 电网电压上限跳脱时间3  阶 | R/W | [5, 65000] | 10ms |  |
| 311 | 电网电压下限跳脱时间1  阶 | R/W | [5, 65000] | 10ms |  |
| 312 | 电网电压下限跳脱时间2  阶 | R/W | [5, 65000] | 10ms |  |
| 313 | 电网电压下限跳脱时间3  阶 | R/W | [5, 65000] | 10ms |  |
| 314 | 电网频率上限跳脱时间1  阶 | R/W | [5, 65000] | 10ms |  |
| 315 | 电网频率上限跳脱时间2  阶 | R/W | [5, 65000] | 10ms |  |
| 316 | 电网频率上限跳脱时间3  阶 | R/W | [5, 65000] | 10ms |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| 317 | 电网频率下限跳脱时间1  阶 | R/W | [5, 65000] | 10ms |  |
| 318 | 电网频率下限跳脱时间2  阶 | R/W | [5, 65000] | 10ms |  |
| 319 | 电网频率下限跳脱时间3  阶 | R/W | [5, 65000] | 10ms |  |
| 320 |  | R/W |  |  |  |
| 321 |  | R/W |  |  |  |
| 322 |  | R/W |  |  |  |
| 323 |  | R/W |  |  |  |
| 324 |  | R/W |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 储能逆变器增加的实时属性区 | | | | | |
| 150 | 电网侧电压L1-N  Grid side voltage L1-N | R |  | 0.1V |  |
| 151 | 电网侧电压L2-N  Grid side voltage L2-N | R |  | 0.1V |  |
| 152 | 电网侧电压L1-L2  Grid side voltage L1- L2 | R |  | 0.1V |  |
| 153 | 继电器中间侧电压  L1-L2  Voltage at middle side of relay L1-L2 | R |  | 0.1V |  |
| 154 | 逆变器输出电压L1-N  inverter output voltage  L1-N | R |  | 0.1V |  |
| 155 | 逆变器输出电压L2-N  inverter output voltage | R |  | 0.1V |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | L2-N |  |  |  |  | | |
| 156 | 逆变器输出电压L1-L2  inverter output voltage  L1-L2 | R |  | 0.1V |  | | |
| 157 | 负载测电压L1  Load voltage L1 | R |  | 0.1V |  | | |
| 158 | 负载测电压L2  Load voltage L2 | R |  | 0.1V |  | | |
| 159 | 保留 | R |  |  |  | | |
| 160 | 电网侧电流L1  Grid side current L1 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 161 | 电网侧电流L2  Grid side current L2 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 162 | 电网外置Limter电流L1  Grid external Limter current L1 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 163 | 电网外置Limter电流L2 Grid external Limter current L2 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 164 | 逆变器输出电流L1 Inverter output current L1 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 165 | 逆变器输出电流L2 Inverter output current L2 | R |  | 0.01A | 带有正负的int型 Signed int | | |
| 166 | Gen做微逆输入的功率Gen Do micro inverse power input | R |  | 1W | 作为负载输出的时候：输出  功率是正值 | | |
| 作为微逆输入的时候：微逆  输出功率到储能机里面去是 | |  |
| 负值 |  | |
| 167 | 电网侧L1功率  Grid side L1 power | R |  | 1W | 带有正负的int型 Signed int | | |
| 168 | 电网侧L2功率  Grid side L2 power | R |  | 1W | 带有正负的int型 Signed int | | |
| 169 | 电网 | R |  | 1W | 带有正负的int型 大于0购电小  于0并网  Signed int  > 0 BUY  < 0 SELL | | |
| 170 | 电网外置Limter1功率  Grid external Limter1 power | R |  | 1W | 带有正负的int型 Signed int | | |
| 171 | 电网外置Limter2功率Grid external Limter2 power | R |  | 1W | 带有正负的int型 Signed int | | |
| 172 | 电网外置总功率Grid external Total Power | R |  | 1W | 带有正负的int型 Signed int | | |
| 173 | 逆变器输出L1功率inverter outputs L1 power | R |  | 1W | 带有正负的int型 Signed int | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 174 | 逆变器输出L2功率  inverter outputs L2 power | R |  | 1W | 带有正负的int型 Signed int |
| 175 | 逆变器输出总功率  inverter output Total power | R |  | 1W | 带有正负的int型 Signed int |
| 176 | 负载侧L1功率  Load side L1 power | R |  | 1W | 带有正负的int型 Signed int |
| 177 | 负载侧L2功率  Load side L2 power | R |  | 1W | 带有正负的int型 Signed int |
| 178 | 负载侧总功率  load side Total power | R |  | 1W | 带有正负的int型 Signed int |
| 179 | 负载测电流L1  Load current L1 | R |  | 0.01A | 带有正负的int型 Signed int |
| 180 | 负载测电流L2  Load current L2 | R |  | 0.01A | 带有正负的int型 Signed int |
| 181 | Gen口的电压 | R |  |  |  |
| 182 | 电池温度  battery temperature | R | [0,3000] | 0.1℃ | 真实值偏移+1000的值 1200指  的是20.0℃  Real value of offset + 1000 1200 is 20.0 ℃ |
| 183 | 电池电压  battery voltage | R |  | 0.01V | 4100标识41.0V  4100 mark of 41.0 V |
| 184 | 电池电量  battery capacity | R | [0,100] | 1% |  |
| 185 | 电池充电状态  battery Status | R |  |  |  |
| 186 | PV1输入功率  PV1 input power | R |  | 1W |  |
| 187 | PV2输入功率  PV2 input power | R |  | 1W |  |
| 188 | PV3输入功率  PV3 input power | R |  | 1W |  |
| 189 | PV4输入功率  PV4 input power | R |  | 1W |  |
| 190 | 电池输出功率  Battery output power | R |  | 1W | 带有正负的int型 Signed int |
| 191 | 电池输出电流  Battery output current | R |  | 0.01A | 带有正负的int型 Signed int |
| 192 | 负载频率  load frequency | R |  | 0.01Hz |  |
| 193 | 逆变器输出频率Inverter output frequency | R |  | 0.01Hz |  |
| 194 | 电网侧继电器状态  Grid side relay status | R |  |  | 1. 表示没有吸合   Disconnect   1. 表示吸合   closed |
| 195 | 发电机侧继电器状态  Generator side relay status | R |  |  | 低4为表示发电机继电器状态  Bit0-3  Low 4 indicates the state of generator relay  0没有吸合not attached  1 吸合actuation |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 2空缺vacancy  3表示发电机在工作下的吸合 Represents the suction and closing of the generator under operation  高4位表示开关信号  Bit4-7  The high 4 bits indicate the switch signal  0 关 机 power off  1开机 power on  Bit8-11  表示发电信号 |
| 196 | 发电机口的频率 | R |  | 0.01Hz |  |
| 197 |  | R |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 地址 | | 寄存器含义 | 读写 | | 取值范围 | 单位 | | 备注 |
| 为储能逆变器增加的可变属性区 | | | | | | | | |
| 200 | 电池充电类型Control Mode | | R/W | - | | - | 0x0000 Lead-Battery, four-stage charging method  0x0001 Lithium battery | |
| 201 | Equalization V | | R/W | [3800,6100] | | 0.01V | 1480 means 14.8v | |
| 202 | Absorption V | | R/W | [3800,6100] | | 0.01V | 1440 means 14.4v | |
| 203 | Float V | | R/W | [3800,6100] | | 0.01V | 1440 means 14.4v | |
| 204 | 电 池 容 量 Batt Capacity | | R/W | [0,2000] | | 1 Ah | 200 means 200AH | |
| 205 | Empty\_v | | R/W |  | | 0.01V |  | |
| 206 | ZeroExport power  最小limit起作用功率 | | R/W |  | |  |  | |
| 207 | 均衡充几天执行一次  Equalization day cycle | | R/W | [0 90] | | Day |  | |
| 208 | 均衡充执行时间  Equalization time | | R/W | [0 20] | | 0.5Hour | 分辨率 0.5小时  Resolution 0.5 h  [0-20]对应 0- 10小时  但是发MCU是[0-100] | |
| 209 | 温度补偿值  TEMPCO | | R/W | [0,50] | | 1mV/℃ | 带有正负的int型 Signed int | |
| 210 | 电池最大充电电流  Max A Charge | | R/W | [0,185] | | 1A | 0-185A | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 211 | 电池最大放电电流  Max A discharge | R/W | [0,185] | 1A | 0-185A |
| 212 | 保留  undefined | R/W |  |  |  |
| 213 | 电池工作根据电压还是容量  battery operates according to voltage or capacity | R/W |  |  | 1. 根据电压 According to the voltage 2. 根据容量 According to the capacity   2 没有电池 no battery |
| 214 | 锂电池唤醒标志位  Lithium battery wake up sign bit | R/W |  |  | 0 enabled 1 Disable |
| 215 | 电池内阻值  battery resistance value | R/W | [0,6000] | mΩ |  |
| 216 | 电池充电效率  Battery charging efficiency | R/W | [0-100] | 0.1% | 983表示98.3%  983 is 98.3% |
| 217 | 电池容量ShutDown  battery capacity ShutDown | R/W | [0,100] | 1% | 低容量截止点  Low capacity cutoff point |
| 218 | 电池容量Restart  battery capacityRestart | R/W | [0,100] | 1% | 保护恢复点  Protection recovery point |
| 219 | 电池容量LowBatt  battery capacityLowBatt | R/W | [0,100] | 1% |  |
| 220 | 电池电压ShutDown  battery voltageShutDown | R/W | [3800,6100] | 0.01V | 低 保 护 点 cutoff 41V  Low protection point cutoff 41V |
| 221 | 电池电压Restart  battery voltageRestart | R/W | [3800,6100] | 0.01V | Reboot /recover 52V |
| 222 | 电池电压LowBatt  battery voltageLowBatt | R/W | [3800,6100] | 0.01V | 放 电 深 度 46V  Discharge depth 46V |
| 223 | 发电机最大运行时间  Maximum operating time of generator |  |  | 0.1  hours | 120表示12小时  120 is 12 hours |
| 224 | 发电机冷却时间  Generator cooling time |  |  | 0.1  hours | 120表示12小时  120 is 12 hours |
| 225 | 发电机充电启动电压点  Generator charging Starting voltage point | R/W | [0000 6300] | 0.01V | 电池电压小于这个值发电机开启充电  The battery voltage is less than this value |
| 226 | 发电机充电启动容量点  Generator charging starting capacity point | R/W | [0000 6300] | 1% | 电池容量小于这个值发电机开启充电  The battery capacity is less than this value |
| 227 | 发电机对电池充电电流  Generator charges the battery current | R/W | [0000 185] | 1A | 发电机对电池充电电流  The generator charges the battery |
| 228 | 市电充电启动电压点  Grid charging Start voltage point o | R/W | [0000 6300] | 0.01v |  |
| 229 | 市电充电启动容量点  Grid charging start capacity point | R/W | [0000 6300] | 1% |  |
| 230 | 市电对电池充电电流 | R/W | [0000 185] | 1A | 市电对电池充电电流 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Grid charge the battery current |  |  |  | Grid charge the battery current |
| 231 | 发电机充电使能  Generator is charged to enable | R/W |  |  |  |
| 232 | 市电充电使能  Grid is charged to enable | R/W |  |  |  |
| 233 | Solar输入为PSU Solar Input as PSU | R/W | [0 1 ] |  | 0为solar 1为PSU  0 is solar 1 is PSU |
| 234 | 强制开启发电机作为负载功能  Force on generator as load function | R/W |  |  | 前提是235号寄存器已经使能1  The premise is that register 234 has enabled 1  0 不强制 Do not force  1 强 制 force |
| 235 | 发电机输入作为负载输出使能  generator input is enabled as the load output | R/W |  |  | 0 只作为发电机输入  Disable generator input  1 智能负载输出Enable generator input as load output  2 使能作为逆变器输入  Enable as inverter input |
| 236 | 发电机负载OFF电压SmartLoad OFF batt  Voltage | R/W | [3800 6300] | 0.01V |  |
| 237 | 发电机负载OFF电量SmartLoad OFF batt | R/W | [0000 100] | 1% |  |
| 238 | 发电机负载ON电压SmartLoad ON batt Voltage | R/W | [3800 6300] | 0.01V |  |
| 239 | 发电机负载ON电量SmartLoad ON batt | R/W | [0000 100] | 1% |  |
| 240 | PWM测试使能  PWM Test Enable | R/W |  |  | 0 默认值  default  1 要进入pwm测试功能  To enter the PWM test function |
| 241 | 开启发电机的最小solar 功率  minimum solar power required to start a generator | R/W | [0,8000] | 1W |  |
| 242 | Gen\_Grid\_Signal On |  |  |  |  |
| 243 | 能量管理模式  Energy management model |  |  |  | 0：电池优先模式  Battery priority mode  1：负载优先模式  Load first mode |
| 244 | limit控制功能  limit control function | R/W |  | 0/1 | 0x00 使能卖电  sell electricity enabled  0x01 使能内置 built-in enabled 0x02 使能外置  extraposition enabled |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 245 | 限制并网最大功率输出  Limit the maximum power output of the grid connection | R/W | [0,8000] | 1W | 代表总功率  Represents total power |
| 246 | 外置电流传感器方向  External current sensor clamp phase | R/W | [xx,00] | 1W | [11][12] |
| 247 | 光伏卖电Solar sell | R/W |  |  | 0x00光伏不卖电 solar Don't sell  0x01光伏卖电 solar sell |
| 248 | 高级削峰填谷功能使能  Time of Use Selling enabled | R/W |  |  | Bit0 0 disable  1 enable Bit1 Monday  0-disable 1-enable Bit2 Tuesday  ……  Bit7 Sunday  Bit8 工作模式3，西班牙客户需求 |
| 249 | 预留  undefined | R/W |  |  |  |
| 250 | 卖电模式时间点1  Sell mode time point 1 | R/W | [0000 2359] |  | 2359表示时间23：59  2359 means time 23:59  单片机内部运算范围0-287 发给mcu和采集器都是2355 |
| 251 | 卖电模式时间点2  Sell mode time point 2 | R/W | [0000 2359] |  | Time |
| 252 | 卖电模式时间点3  Sell mode time point 3 | R/W | [0000 2359] |  |  |
| 253 | 卖电模式时间点4  Sell mode time point 4 | R/W | [0000 2359] |  |  |
| 254 | 卖电模式时间点5  Sell mode time point5 | R/W | [0000 2359] |  |  |
| 255 | 卖电模式时间点6  Sell mode time point6 | R/W | [0000 2359] |  |  |
| 256 | 卖电模式时间点1功率  Sell mode time point 1 | R/W | [0000 8000] | 1W | 受到电池最大放电功率影响  Affected by the maximum |
| 257 | 卖电模式时间点2功率  Sell mode time point 2 | R/W | [0000 8000] | 1W | Power |
| 258 | 卖电模式时间点3功率  Sell mode time point 3 | R/W | [0000 8000] | 1W |  |
| 259 | 卖电模式时间点4功率  Sell mode time point 4 | R/W | [0000 8000] | 1W |  |
| 260 | 卖电模式时间点5功率  Sell mode time point 5 | R/W | [0000 8000] | 1W |  |
| 261 | 卖电模式时间点6功率  Sell mode time point 6 | R/W | [0000 8000] | 1W |  |
| 262 | 卖电模式时间点1电压  Sell mode time point 1 | R/W | [0000 6300] | 0.01V | 受到电池电压的影响  Is affected by the battery voltage |
| 263 | 卖电模式时间点2电压  Sell mode time point 2 | R/W | [0000 6300] | 0.01V | Voltage |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 264 | 卖电模式时间点3电压  Sell mode time point 3 | R/W | [0000 6300] | 0.01V |  | | |
| 265 | 卖电模式时间点4电压  Sell mode time point 4 | R/W | [0000 6300] | 0.01V |  | | |
| 266 | 卖电模式时间点5电压  Sell mode time point 5 | R/W | [0000 6300] | 0.01V |  | | |
| 267 | 卖电模式时间点6电压  Sell mode time point 6 | R/W | [0000 6300] | 0.01V |  | | |
| 268 | 1容量 1 capacity | R/W | [0,100] | 1% | Soc | | |
| 269 | 2容量 2 capacity | R/W | [0,100] | 1% |  | | |
| 270 | 3容量 3 capacity | R/W | [0,100] | 1% |  | | |
| 271 | 4容量 4 capacity | R/W | [0,100] | 1% |  | | |
| 272 | 5容量 5 capacity | R/W | [0,100] | 1% |  | | |
| 273 | 6容量 6 capacity | R/W | [0,100] | 1% |  | | |
| 274 | 时间点1充电使能  Time point 1 charge enable | R/W | [0,1] |  | Bit0 表示电网充电使能Bit1 表示发电机充电使能0 disable 1 enable Bit2 GM模式  Bit3 BU模式Bit4 CH模式 | | |
| 275 | 时间点2充电使能  Time point 2 charge enable | R/W | [0,1] |  | 同上 | | |
| 276 | 时间点3充电使能  Time point 3 charge | R/W | [0,1] |  | 同上 | | |
| 277 | 时间点4充电使能  Time point 4 charge | R/W | [0,1] |  | 同上 | | |
| 278 | 时间点5充电使能  Time point 5 charge | R/W | [0,1] |  | 同上 | | |
| 279 | 时间点6充电使能  Time point 6 charge | R/W | [0,1] |  | 同上 | | |
| 280 | Microinverter export to grid cutoff | R/W | [0,1] |  | Bit0-3 0:Disable  1:enable | | |
| Bit4-7 0:Gen peak-shaving disable | |  |
| 1:Gen peak-shaving enable | |
| Bit8-11 0:Grid peak-shaving disable | | |
| 1:Grid peak-shaving enable | |  |
| Bit12 On Grid always on |  | |
| Bit13 external relay  Bit14 锂电池丢失报故障使能位  Bit15 DRM使能位 | | |
| 281 | 外置传感器自动检测方向使能 | R/W | [0,1] |  |  | | |
| 282 | **恢复并网时间**  Restore connection time | R/W | [10 300] |  |  | | |
| 283 | Solar Arc Fault模式开启  Solar Arc Fault Mode turned on | R/W | [0 1] |  | 0x00 关闭 Close  0x01 开启 open  0x02 拉弧故障清零，逆变器收到02  说明液晶下发清零标志了，然后自 | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 动变回01  Arc fault reset, the inverter received 02 that the LCD issued a clear mark, and then automatically back to 01 |
| 284 | 并网标准Grid Mode | R/W | [0 1 ] |  | 0=通用标准 general standard 1= UL1741&IEE1547  2= CPUC RULE21  3= SRD-UL1741    …… |
| 285 | 电网频率设置Grid Frequency | R/W | [0 1] |  | 0x00 50HZ 0x01 60hz |
| 286 | 电网类型设置Grid Type | R/W | [0 3 ] |  | 0x00 单 相 240V/230V/220V Single-phase 240 v / 230 v / 220 v  0x01 表示两相120V/240V  Stands for two-phase 120V/240V 0x02 表示三相系统208V 120度  120V  Represents the three-phase system 208V 120 degrees 120V 0X03 120V Single Phase |
| 287 | 电网高压保护点Grid Vol High | R/W | [1800 2700] | 0.1V |  |
| 288 | 电网低压保护点Grid Vol Low | R/W | [1800 2700] | 0.1V |  |
| 289 | 电网频率高保护点Grid Hz High | R/W | [4500 6500] | 0.01Hz |  |
| 290 | 电网频率低保护点Grid Hz Low | R/W | [4500 6500] | 0.01Hz |  |
| 291 | 发电机连接到电网输入端 | R/W | [1 0] |  | 0 disable 1 enabled |
| 292 | GEN peak shaving Power | R/W | [0 16000] | 1w |  |
| 293 | GRID peak shaving Power | R/W | [0 16000] | 1w |  |
| 294 | SmartLoad Open Delay | R/W | [1 120] | 1Minute |  |
| 295 | 输出PF值设定（有功调节） | R/W | [800 1200] |  | 800表示调整到80% 1200标识调整到120%  800 for 80%, 1200 for 120% |
| 296 | 外部继电器位 | R/W | [0 OxFFFF] |  | Bit0-8 对应8个继电器位 |
| 297 | ARC\_facTory\_B高位  ARC\_facTory\_B high word | R/W | [0,65535] |  | 高位和地位组合，以数值显示即可  High and status combination, with numerical display can be |
| 298 | 低位  Low word | R/W | [0,65535] |  |
| 299 | ARC\_facTory\_I高位ARC\_facTory\_I high word | R/W | [0,65535] |  |  |
| 300 | 低位  Low word | R/W | [0,65535] |  |  |
| 301 | ARC\_facTory\_F高位 | R/W | [0,65535] |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ARC\_facTory\_F high word |  |  |  |  |
| 302 | 低位  Low word | R/W | [0,65535] |  |  |
| 303 | ARC\_facTory\_D高位  ARC\_facTory\_D high word | R/W | [0,65535] |  |  |
| 304 | 低位  Low word | R/W | [0,65535] |  |  |
| 305 | ARC\_facTory\_T高位  ARC\_facTory\_T high word | R/W | [0,65535] |  |  |
| 306 | 低位  Low word | R/W | [0,65535] |  |  |
| 307 | ARC\_facTory\_C高位  ARC\_facTory\_C high word | R/W | [0,65535] |  |  |
| 308 | 低位  Low word | R/W | [0,65535] |  |  |
| 309 | ARC\_facTory\_Frz高位  ARC\_facTory\_Frz high word | R/W | [0,65535] |  |  |
| 310 | 低位  Low word | R/W | [0,65535] |  |  |
| 311 | Ups\_time | R/W |  | 1S | 0 为默认  1 1S |
| 312 | 充电电压  charging voltage | R/W |  | 0.01V |  |
| 313 | 放电电压  discharge voltage | R/W |  | 0.01V |  |
| 314 | 充电限流  charging current limiting | R/W |  | 1A |  |
| 315 | 放电限流  Discharge current limiting | R/W |  | 1A |  |
| 316 | 当前容量  real time Capacity | R/W |  | 1% |  |
| 317 | 当前电压  real time voltage | R/W |  | 0.01V |  |
| 318 | 当前电流  real time current | R/W |  | 1A |  |
| 319 | 当前温度  real time temp | R/W |  | 0.1C | 1000对应0度 1200表示20.0度  800表示 -20.0C  1000 corresponds to 0 degrees  1200 means 20.0 degrees  800 means -20.0C |
| 320 | 充电限流 最大值Maximum charge current limit | R/W |  | 1A |  |
| 321 | 放电限流 最大值  Maximum discharge current limiting | R/W |  |  |  |
| 322 | 锂电池告警位  Lithium battery alarm | R/W |  |  | 0x0001 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | position |  |  |  |  |
| 323 | 锂电池故障位Lithium battery fault location | R/W | [0,65535] |  |  |
| 324 | 锂电池标志2  Lithium battery symbol 2 | R/W | [0,65535] |  | Bit0 空 缺 Vacancy  Bit1 强冲标志 Strong impact marks |
| 325 | 锂电池类型  Lithium battery type | R/W |  |  | 0x0000 中兴派能 德朗能锂  PYLON SOLAX  通用CAN协议  0x0001 天邦达RS485modbus协议  0x0002 KOK协议0x0003 keith 0X0004 拓派协议  0X0005 派能485协议  0X0006 杰力斯485协议  0X0007 欣旺达485协议  0X0008 欣瑞能485协议  0X0009 天邦达485协议  0X000A 晟高电气can协议 |
| 326 | Ex\_MeterCT |  |  |  | Bit0：1 使能 0使能Meter1 CT Bit1： 使能 A相  Bit2： 使能 B相  Bit3： 使能 C相  Bit6： 1 使能 0使能ActoGrid Bit7： 1 使能 0使能ActoLoad    Bit8-Bit11:电表1/2类型  4：正泰单相（DDSU666）  3：东鸿单相（SDM230）  2：正泰三相（DTSU666）  1： 东 鸿 三 相 （SDM630） Bit12：1 使能 0使能Meter2 CT Bit13：1 使能 0使能发电机强开Bit14：预留  Bit15：预留 |
| 327 | CT变比 |  | 200-8000 |  | 外置CT的倍数 |
| 328 | 特殊功能位 |  |  |  | Bit0 美版接地故障停机位0停机1不停 |
| 329 | AC couple 频率上限设置 | R/W | 5000-6500 |  | 5000-6500 |
| 330 | 通讯板设置功能 | R/W |  |  | Bit0-1 时间校时Bit2-3 beep  Bit4-5 AM/PM Bit6-7 Auto dim Bit8-9 Solarm Discern  Bit10-11 网页锂电池分包不显示  （11为不显示，10为显示）    -00无动作  -01无动作  -10失能 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | -11使能 |
| 331 | 加州低压高压穿越  CA\_LHVRT使能California low pressure high pressure through CA\_LHVRT enable | R/W | [0,1] |  | 0: disable 1: enable |
| 332 | CA\_HV2 | R/W | [1000,3000] | 0.1V |  |
| 333 | CA\_HV1 | R/W |  |  |  |
| 334 | CA\_LV1 | R/W |  |  |  |
| 335 | CA\_LV2 | R/W |  |  |  |
| 336 | CA\_LV3 | R/W |  |  |  |
| 337 | CA\_HV2\_Time | R/W | [0,300] |  | 0 is 0.16S |
| 338 | CA\_HV1\_Time | R/W |  |  |  |
| 339 | CA\_LV1\_Time | R/W |  |  |  |
| 340 | CA\_LV2\_Time | R/W |  |  |  |
| 341 | CA\_LV3\_Time | R/W |  |  |  |
| 342 | 加州低频高频穿越  CA\_LHFRT 使 能 California low frequency high frequency traverses CA\_LHFRT enable | R/W |  |  |  |
| 343 | CA\_HF2 | R/W | [4500,6500] | 0.01Hz |  |
| 344 | CA\_HF1 | R/W |  |  |  |
| 345 | CA\_LF1 | R/W |  |  |  |
| 346 | CA\_LF2 | R/W |  |  |  |
| 347 | CA\_HF2\_Time | R/W | [0,300] |  |  |
| 348 | CA\_HF1\_Time | R/W |  |  |  |
| 349 | CA\_LF1\_Time |  |  |  |  |
| 350 | CA\_LF2\_Time |  |  |  |  |
| 351 | 加州CA\_QV使能California CA\_QV enable |  |  |  |  |
| 352 | CA\_QV\_V1 |  | [1000,3000] |  |  |
| 353 | CA\_QV\_V2 |  |  |  |  |
| 354 | CA\_QV\_V3 |  |  |  |  |
| 355 | CA\_QV\_V4 |  | [-44,+44] | 0.01 |  |
| 356 | CA\_QV\_Q1 |  |  |  |  |
| 357 | CA\_QV\_Q2 |  |  |  |  |
| 358 | CA\_QV\_Q3 |  |  |  |  |
| 359 | CA\_QV\_Q4 |  |  |  |  |
| 360 | 加州CA\_FW使能  California CA\_FW enable |  |  |  |  |
| 361 | CA\_Fstart |  |  |  |  |
| 362 | CA\_Fstop |  |  |  |  |
| 363 | 加州CA\_VW使能  California CA\_VW enable |  |  |  |  |
| 364 | CA\_Vstart |  |  |  |  |
| 365 | CA\_Vstop |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 366 | 正常上升斜率  Normal upward slope | R/W | [1 100] | 1% |  |
| 367 | 软启动上升速率  Soft start rise rate | R/W | [1 100] | 1% | 默认100%  default 100% |
| 368 | QV Response time | R/W | [0,90] | S |  |
| 369 | VW Response time | R/W | [0,60] | S |  |
| 370 | FW Response time |  |  |  |  |
| 371 | reserved |  |  |  |  |
| 372 | reserved |  |  |  |  |
| 373 | reserved |  |  |  |  |
| 374 | reserved |  |  |  |  |
| 375 | reserved |  |  |  |  |
| 376 | Grid1\_I |  |  |  |  |
| 377 | Grid2\_I |  |  |  |  |
| 378 | Grid\_V\_L1 |  |  |  |  |
| 379 | Grid\_V\_L2 |  |  |  |  |
| 380 | Limit1\_I |  |  |  |  |
| 381 | Limit2\_I |  |  |  |  |
| 382 | PV1\_V |  |  |  |  |
| 383 | PV1\_I |  |  |  |  |
| 384 | PV2\_V |  |  |  |  |
| 385 | PV2\_I |  |  |  |  |
| 386 | INV\_I |  |  |  |  |
| 387 | INV\_V |  |  |  |  |
| 388 | BAT\_I |  |  |  |  |
| 389 | BAT\_V |  |  |  |  |
| 390 | Solar1做Wind输入使能Solar1 do Wind Input can make | R/W | [0,1] |  | 0: disable 1: enable |
| 391 | Solar2做Wind输入使能Solar2 do Wind Input can make | R/W | [0,1] |  | 0: disable 1: enable |
| 392 | Voltage 1 | R/W | [500,5000] | 0.1V |  |
| 393 | Voltage 2 | R/W |  | 0.1V |  |
| 394 | Voltage 3 | R/W |  | 0.1V |  |
| 395 | Voltage 4 | R/W |  | 0.1V |  |
| 396 | Voltage 5 | R/W |  | 0.1V |  |
| 397 | Voltage 6 | R/W |  | 0.1V |  |
| 398 | Voltage 7 | R/W |  | 0.1V |  |
| 399 | Voltage 8 | R/W |  | 0.1V |  |
| 400 | Voltage 9 | R/W |  | 0.1V |  |
| 401 | Voltage 10 | R/W |  | 0.1V |  |
| 402 | Voltage 11 | R/W |  | 0.1V |  |
| 403 | Voltage 12 | R/W |  | 0.1V |  |
| 404 | Current 1 | R/W | [0-200] | 0.1A |  |
| 405 | Current 2 | R/W |  | 0.1A |  |
| 406 | Current 3 | R/W |  | 0.1A |  |
| 407 | Current 4 | R/W |  | 0.1A |  |
| 408 | Current 5 | R/W |  | 0.1A |  |
| 409 | Current 6 | R/W |  | 0.1A |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 410 | Current 7 | R/W | |  | 0.1A |  |
| 411 | Current 8 | R/W | |  | 0.1A |  |
| 412 | Current 9 | R/W | |  | 0.1A |  |
| 413 | Current 10 | R/W | |  | 0.1A |  |
| 414 | Current 11 | R/W | |  | 0.1A |  |
| 415 | Current 12 | R/W | |  | 0.1A |  |
| 416 | 强制离网运行位 |  | |  |  |  |
| 417 | 并联寄存器1 | R/W | | -- | -- | Bit0 1:Parallel Enable 0: Parallel Disable  Bit1 1:Master 0:Slave  Bit2-7 Void  Bit8-9 Phase(00:A,01:B,10:C,11:void)  Bit10-15 Modbus SN(0-63) |
| 418 | 并联寄存器2 |  | R | -- | -- | Bit0-4 A Phase inverter Num Bit5-9 B Phase inverter Num Bit10-14 C Phase inverter Num Bit15 Void |
|  | |
| 419 | 锂电版本号低位 | R | |  |  | 多节并联只读最后一节 |
| 420 | 锂电版本号高位 | R | |  |  |  |
| 421 | 系统时间第 1 字节  system time byte 01 |  | |  | 年 | 如果液晶设置为从机，并且检测到  这里有时间。将会进行时间同步 |
| 系统时间第 2 字节  system time byte 02 | 月 |
| 422 | 系统时间第 3 字节  system time byte 03 |  | |  | 日 |  |
| 系统时间第 4 字节  system time byte 04 | 时 |
| 423 | 系统时间第 5 字节  system time byte 05 |  | |  | 分 |  |
| 系统时间第 6 字节  system time byte 06 | 秒 |
| 424 | 电表合相有功功率低字  Meter\_active\_ power\_low word | R | | 1W |  | 带有正负的int型 Signed int  购电为负，卖电为正 |
| 425 | 电表合相有功功率高字  Meter active power high word | R | | 1W |  | 带有正负的int型 Signed int |
| 426 | 电表A相有功功率低字节 | R | | 1W |  |  |
| 427 | 电表A相有功功率高字节 | R | | 1W |  |  |
| 428 | 电表B相有功功率低字节 | R | | 1W |  |  |
| 429 | 电表B相有功功率高字节 | R | | 1W |  |  |
| 430 | 电表C相有功功率低字节 | R | | 1W |  |  |
| 431 | 电表C相有功功率高字节 | R | | 1W |  |  |
| 432 | 电表当日卖电量  Day\_ GridSell \_Power Wh |  | | 0.01kwh |  |  |
| 433 | 电表累计卖电量低字  history\_ GridSell \_Power Wh\_low word |  | | 0.1kwh |  |  |
| 434 | 电表累计卖电量高字  history\_ GridSell \_Power Wh\_high word |  | | 0.1kwh |  |  |
| 435 | 电表当日购电量  Day\_ GridBuy \_Power Wh |  | | 0.01kwh |  |  |
| 436 | 电表累计购电量低字 |  | | 0.1kwh |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | history\_ GridBuy \_Power Wh\_low word |  |  |  |  |
| 437 | 电表累计购电量高字  history\_ GridBuy \_Power Wh\_high word |  | 0.1kwh |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Addr. | 寄存器含义 | | R/W | Range | Unit | note |
| For Hybird inverter Real-time data 3  Fifteen Battery packs ID num.(this is only for TIAN-POWER) | | | | | | |
|  | 电池ID | |  |  |  |  |
|  | 圣阳电池 |  |  |  |  |  |
| 500 | 1 号 1 字节 | | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 1 号 2 字节 | |
| 501 | 1 号 3 字节 | | R |  |  |  |
| 1 号 4 字节 | |
| 502 | 1 号 5 字节 | |  |  |  |  |
| 1 号 6 字节 | |
| 503 | 1 号 7 字节 | |  |  |  |  |
| 1 号 8 字节 | |
| 504 | 1 号 9 字节 | |  |  |  |  |
| 1 号 10 字节 | |
| 505 | 1 号 11 字节 | |  |  |  |  |
| 1 号 12 字节 | |
| 506 | 2 号 1 字节 | | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 2 号 2 字节 | |
| 507 | 2 号 3 字节 | | R |  |  |  |
| 2 号 4 字节 | |
| 508 | 2 号 5 字节 | |  |  |  |  |
| 2 号 6 字节 | |
| 509 | 2 号 7 字节 | |  |  |  |  |
| 2 号 8 字节 | |
| 510 | 2 号 9 字节 | |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2 号 10 字节 |  |  |  |  |
| 511 | 2 号 11 字节 |  |  |  |  |
| 2 号 12 字节 |
| 512 | 3 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 3 号 2 字节 |
| 513 | 3 号 3 字节 | R |  |  |  |
| 3 号 4 字节 |
| 514 | 3 号 5 字节 |  |  |  |  |
| 3 号 6 字节 |
| 515 | 3 号 7 字节 |  |  |  |  |
| 3 号 8 字节 |
| 516 | 3 号 9 字节 |  |  |  |  |
| 3 号 10 字节 |
| 517 | 3 号 11 字节 |  |  |  |  |
| 3 号 12 字节 |
| 518 | 4 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 4 号 2 字节 |
| 519 | 4 号 3 字节 | R |  |  |  |
| 4 号 4 字节 |
| 520 | 4 号 5 字节 |  |  |  |  |
| 4 号 6 字节 |
| 521 | 4 号 7 字节 |  |  |  |  |
| 4 号 8 字节 |
| 522 | 4 号 9 字节 |  |  |  |  |
| 4 号 10 字节 |
| 523 | 4 号 11 字节 |  |  |  |  |
| 4 号 12 字节 |
| 524 | 5 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 5 号 2 字节 |
| 525 | 5 号 3 字节 | R |  |  |  |
| 5 号 4 字节 |
| 526 | 5 号 5 字节 |  |  |  |  |
| 5 号 6 字节 |
| 527 | 5 号 7 字节 |  |  |  |  |
| 5 号 8 字节 |
| 528 | 5 号 9 字节 |  |  |  |  |
| 5 号 10 字节 |
| 529 | 5 号 11 字节 |  |  |  |  |
| 5 号 12 字节 |
| 530 | 6 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 6 号 2 字节 |
| 531 | 6 号 3 字节 | R |  |  |  |
| 6 号 4 字节 |
| 532 | 6 号 5 字节 |  |  |  |  |
| 6 号 6 字节 |
| 533 | 6 号 7 字节 |  |  |  |  |
| 6 号 8 字节 |
| 534 | 6 号 9 字节 |  |  |  |  |
| 6 号 10 字节 |
| 535 | 6 号 11 字节 |  |  |  |  |
| 6 号 12 字节 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 536 | 7 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 7 号 2 字节 |
| 537 | 7 号 3 字节 | R |  |  |  |
| 7 号 4 字节 |
| 538 | 7 号 5 字节 |  |  |  |  |
| 7 号 6 字节 |
| 539 | 7 号 7 字节 |  |  |  |  |
| 7 号 8 字节 |
| 540 | 7 号 9 字节 |  |  |  |  |
| 7 号 10 字节 |
| 541 | 7 号 11 字节 |  |  |  |  |
| 7 号 12 字节 |
| 542 | 8 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 8 号 2 字节 |
| 543 | 8 号 3 字节 | R |  |  |  |
| 8 号 4 字节 |
| 544 | 8 号 5 字节 |  |  |  |  |
| 8 号 6 字节 |
| 545 | 8 号 7 字节 |  |  |  |  |
| 8 号 8 字节 |
| 546 | 8 号 9 字节 |  |  |  |  |
| 8 号 10 字节 |
| 547 | 8 号 11 字节 |  |  |  |  |
| 8 号 12 字节 |
| 548 | 9 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 9 号 2 字节 |
| 549 | 9 号 3 字节 | R |  |  |  |
| 9 号 4 字节 |
| 550 | 9 号 5 字节 |  |  |  |  |
| 9 号 6 字节 |
| 551 | 9 号 7 字节 |  |  |  |  |
| 9 号 8 字节 |
| 552 | 9 号 9 字节 |  |  |  |  |
| 9 号 10 字节 |
| 553 | 9 号 11 字节 |  |  |  |  |
| 9 号 12 字节 |
| 554 | 10 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 10 号 2 字节 |
| 555 | 10 号 3 字节 | R |  |  |  |
| 10 号 4 字节 |
| 556 | 10 号 5 字节 |  |  |  |  |
| 10 号 6 字节 |
| 557 | 10 号 7 字节 |  |  |  |  |
| 10 号 8 字节 |
| 558 | 10 号 9 字节 |  |  |  |  |
| 10 号 10 字节 |
| 559 | 10 号 11 字节 |  |  |  |  |
| 10 号 12 字节 |
| 560 | 11 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 11 号 2 字节 |
| 561 | 11 号 3 字节 | R |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 11 号 4 字节 |  |  |  |  |
| 562 | 11 号 5 字节 |  |  |  |  |
| 11 号 6 字节 |
| 563 | 11 号 7 字节 |  |  |  |  |
| 11 号 8 字节 |
| 564 | 11 号 9 字节 |  |  |  |  |
| 11 号 10 字节 |
| 565 | 11 号 11 字节 |  |  |  |  |
| 11 号 12 字节 |
| 566 | 12 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 12 号 2 字节 |
| 567 | 12 号 3 字节 | R |  |  |  |
| 12 号 4 字节 |
| 568 | 12 号 5 字节 |  |  |  |  |
| 12 号 6 字节 |
| 569 | 12 号 7 字节 |  |  |  |  |
| 12 号 8 字节 |
| 570 | 12 号 9 字节 |  |  |  |  |
| 12 号 10 字节 |
| 571 | 12 号 11 字节 |  |  |  |  |
| 12 号 12 字节 |
| 572 | 13 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 13 号 2 字节 |
| 573 | 13 号 3 字节 | R |  |  |  |
| 13 号 4 字节 |
| 574 | 13 号 5 字节 |  |  |  |  |
| 13 号 6 字节 |
| 575 | 13 号 7 字节 |  |  |  |  |
| 13 号 8 字节 |
| 576 | 13 号 9 字节 |  |  |  |  |
| 13 号 10 字节 |
| 577 | 13 号 11 字节 |  |  |  |  |
| 13 号 12 字节 |
| 578 | 14 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 14 号 2 字节 |
| 579 | 14 号 3 字节 | R |  |  |  |
| 14 号 4 字节 |
| 580 | 14 号 5 字节 |  |  |  |  |
| 14 号 6 字节 |
| 581 | 14 号 7 字节 |  |  |  |  |
| 14 号 8 字节 |
| 582 | 14 号 9 字节 |  |  |  |  |
| 14 号 10 字节 |
| 583 | 14 号 11 字节 |  |  |  |  |
| 14 号 12 字节 |
| 584 | 15 号 1 字节 | R | ‘0’- ‘9’ ‘A’- ‘Z’ |  | ASCII 字符 |
| 15 号 2 字节 |
| 585 | 15 号 3 字节 | R |  |  |  |
| 15 号 4 字节 |
| 586 | 15 号 5 字节 |  |  |  |  |
| 15 号 6 字节 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 587 | 15 号 7 字节 | |  |  |  |  |
| 15 号 8 字节 | |
| 588 | 15 号 9 字节 | |  |  |  |  |
| 15 号 10 字节 | |
| 589 | 15 号 11 字节 | |  |  |  |  |
| 15 号 12 字节 | |
|  |  | |  |  |  |  |
| 600 | PACK1 | Module Voltage |  |  | 0.01V |  |
| 601 | Module Current |  |  | 0.1A |  |
| 602 | Temperater-AVE |  |  |  | 1250 mean 25.0℃ |
| 603 | SOC |  |  | 0.1 |  |
| 604 | Remain  Capacity |  |  | 0.1AH |  |
| 605 | Total Capacity |  |  | 0.1AH |  |
| 606 | Charge Voltage |  |  | 0.01V |  |
| 607 | Charge Current |  |  | 0.1A |  |
| 608 | Discharge  Current |  |  | 0.1A |  |
| 609 | Max Cell V |  |  | 0.01V |  |
| 610 | Min Cell V |  |  | 0.01V |  |
| 611 | Cycle number |  |  | 1 |  |
| 612 | Warming |  |  | -- |  |
| 613 | Fault |  |  | -- |  |
| 614 | PACK2 | Module Voltage |  |  |  |  |
| 615 | Module Current |  |  |  |  |
| 616 | Temperater-AVE |  |  |  |  |
| 617 | SOC |  |  |  |  |
| 618 | Remain  Capacity |  |  |  |  |
| 619 | Total Capacity |  |  |  |  |
| 620 | Charge Voltage |  |  |  |  |
| 621 | Charge Current |  |  |  |  |
| 622 | Discharge  Current |  |  |  |  |
| 623 | Max Cell V |  |  |  |  |
| 624 | Min Cell V |  |  |  |  |
| 625 | Cycle number |  |  |  |  |
| 626 | Warming |  |  |  |  |
| 627 | Fault |  |  |  |  |
| 628 | PACK3 | Module Voltage |  |  |  |  |
| 629 | Module Current |  |  |  |  |
| 630 | Temperater-AVE |  |  |  |  |
| 631 | SOC |  |  |  |  |
| 632 | Remain  Capacity |  |  |  |  |
| 633 | Total Capacity |  |  |  |  |
| 634 | Charge Voltage |  |  |  |  |
| 635 | Charge Current |  |  |  |  |
| 636 | Discharge  Current |  |  |  |  |
| 637 | Max Cell V |  |  |  |  |
| 638 | Min Cell V |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 639 |  | Cycle number |  |  |  |  |
| 640 | Warming |  |  |  |  |
| 641 | Fault |  |  |  |  |
| 642 | PACK4 | Module Voltage |  |  |  |  |
| 643 | Module Current |  |  |  |  |
| 644 | Temperater-AVE |  |  |  |  |
| 645 | SOC |  |  |  |  |
| 646 | Remain  Capacity |  |  |  |  |
| 647 | Total Capacity |  |  |  |  |
| 648 | Charge Voltage |  |  |  |  |
| 649 | Charge Current |  |  |  |  |
| 650 | Discharge  Current |  |  |  |  |
| 651 | Max Cell V |  |  |  |  |
| 652 | Min Cell V |  |  |  |  |
| 653 | Cycle number |  |  |  |  |
| 654 | Warming |  |  |  |  |
| 655 | Fault |  |  |  |  |
| 656 | PACK5 | Module Voltage |  |  |  |  |
| 657 | Module Current |  |  |  |  |
| 658 | Temperater-AVE |  |  |  |  |
| 659 | SOC |  |  |  |  |
| 660 | Remain  Capacity |  |  |  |  |
| 661 | Total Capacity |  |  |  |  |
| 662 | Charge Voltage |  |  |  |  |
| 663 | Charge Current |  |  |  |  |
| 664 | Discharge  Current |  |  |  |  |
| 665 | Max Cell V |  |  |  |  |
| 666 | Min Cell V |  |  |  |  |
| 667 | Cycle number |  |  |  |  |
| 668 | Warming |  |  |  |  |
| 669 | Fault |  |  |  |  |
| 670 | PACK6 | Module Voltage |  |  |  |  |
| 671 | Module Current |  |  |  |  |
| 672 | Temperater-AVE |  |  |  |  |
| 673 | SOC |  |  |  |  |
| 674 | Remain  Capacity |  |  |  |  |
| 675 | Total Capacity |  |  |  |  |
| 676 | Charge Voltage |  |  |  |  |
| 677 | Charge Current |  |  |  |  |
| 678 | Discharge  Current |  |  |  |  |
| 679 | Max Cell V |  |  |  |  |
| 680 | Min Cell V |  |  |  |  |
| 681 | Cycle number |  |  |  |  |
| 682 | Warming |  |  |  |  |
| 683 | Fault |  |  |  |  |
| 684 | PACK7 | Module Voltage |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 685 |  | Module Current |  |  |  |  |
| 686 | Temperater-AVE |  |  |  |  |
| 687 | SOC |  |  |  |  |
| 688 | Remain  Capacity |  |  |  |  |
| 689 | Total Capacity |  |  |  |  |
| 690 | Charge Voltage |  |  |  |  |
| 691 | Charge Current |  |  |  |  |
| 692 | Discharge  Current |  |  |  |  |
| 693 | Max Cell V |  |  |  |  |
| 694 | Min Cell V |  |  |  |  |
| 695 | Cycle number |  |  |  |  |
| 696 | Warming |  |  |  |  |
| 697 | Fault |  |  |  |  |
| 698 | PACK8 | Module Voltage |  |  |  |  |
| 699 | Module Current |  |  |  |  |
| 700 | Temperater-AVE |  |  |  |  |
| 701 | SOC |  |  |  |  |
| 702 | Remain  Capacity |  |  |  |  |
| 703 | Total Capacity |  |  |  |  |
| 704 | Charge Voltage |  |  |  |  |
| 705 | Charge Current |  |  |  |  |
| 706 | Discharge  Current |  |  |  |  |
| 707 | Max Cell V |  |  |  |  |
| 708 | Min Cell V |  |  |  |  |
| 709 | Cycle number |  |  |  |  |
| 710 | Warming |  |  |  |  |
| 711 | Fault |  |  |  |  |
| 712 | PACK9 | Module Voltage |  |  |  |  |
| 713 | Module Current |  |  |  |  |
| 714 | Temperater-AVE |  |  |  |  |
| 715 | SOC |  |  |  |  |
| 716 | Remain  Capacity |  |  |  |  |
| 717 | Total Capacity |  |  |  |  |
| 718 | Charge Voltage |  |  |  |  |
| 719 | Charge Current |  |  |  |  |
| 720 | Discharge  Current |  |  |  |  |
| 721 | Max Cell V |  |  |  |  |
| 722 | Min Cell V |  |  |  |  |
| 723 | Cycle number |  |  |  |  |
| 724 | Warming |  |  |  |  |
| 725 | Fault |  |  |  |  |
| 726 | PACK10 | Module Voltage |  |  |  |  |
| 727 | Module Current |  |  |  |  |
| 728 | Temperater-AVE |  |  |  |  |
| 729 | SOC |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 730 |  | Remain  Capacity |  |  |  |  |
| 731 | Total Capacity |  |  |  |  |
| 732 | Charge Voltage |  |  |  |  |
| 733 | Charge Current |  |  |  |  |
| 734 | Discharge  Current |  |  |  |  |
| 735 | Max Cell V |  |  |  |  |
| 736 | Min Cell V |  |  |  |  |
| 737 | Cycle number |  |  |  |  |
| 738 | Warming |  |  |  |  |
| 739 | Fault |  |  |  |  |
| 740 | PACK11 | Module Voltage |  |  |  |  |
| 741 | Module Current |  |  |  |  |
| 742 | Temperater-AVE |  |  |  |  |
| 743 | SOC |  |  |  |  |
| 744 | Remain  Capacity |  |  |  |  |
| 745 | Total Capacity |  |  |  |  |
| 746 | Charge Voltage |  |  |  |  |
| 747 | Charge Current |  |  |  |  |
| 748 | Discharge  Current |  |  |  |  |
| 749 | Max Cell V |  |  |  |  |
| 750 | Min Cell V |  |  |  |  |
| 751 | Cycle number |  |  |  |  |
| 752 | Warming |  |  |  |  |
| 753 | Fault |  |  |  |  |
| 754 | PACK12 | Module Voltage |  |  |  |  |
| 755 | Module Current |  |  |  |  |
| 756 | Temperater-AVE |  |  |  |  |
| 757 | SOC |  |  |  |  |
| 758 | Remain  Capacity |  |  |  |  |
| 759 | Total Capacity |  |  |  |  |
| 760 | Charge Voltage |  |  |  |  |
| 761 | Charge Current |  |  |  |  |
| 762 | Discharge  Current |  |  |  |  |
| 763 | Max Cell V |  |  |  |  |
| 764 | Min Cell V |  |  |  |  |
| 765 | Cycle number |  |  |  |  |
| 766 | Warming |  |  |  |  |
| 767 | Fault |  |  |  |  |
| 768 | PACK13 | Module Voltage |  |  |  |  |
| 769 | Module Current |  |  |  |  |
| 770 | Temperater-AVE |  |  |  |  |
| 771 | SOC |  |  |  |  |
| 772 | Remain  Capacity |  |  |  |  |
| 773 | Total Capacity |  |  |  |  |
| 774 | Charge Voltage |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 775 |  | Charge Current |  |  |  |  |
| 776 | Discharge  Current |  |  |  |  |
| 777 | Max Cell V |  |  |  |  |
| 778 | Min Cell V |  |  |  |  |
| 779 | Cycle number |  |  |  |  |
| 780 | Warming |  |  |  |  |
| 781 | Fault |  |  |  |  |
| 782 | PACK14 | Module Voltage |  |  |  |  |
| 783 | Module Current |  |  |  |  |
| 784 | Temperater-AVE |  |  |  |  |
| 785 | SOC |  |  |  |  |
| 786 | Remain  Capacity |  |  |  |  |
| 787 | Total Capacity |  |  |  |  |
| 788 | Charge Voltage |  |  |  |  |
| 789 | Charge Current |  |  |  |  |
| 790 | Discharge  Current |  |  |  |  |
| 791 | Max Cell V |  |  |  |  |
| 792 | Min Cell V |  |  |  |  |
| 793 | Cycle number |  |  |  |  |
| 794 | Warming |  |  |  |  |
| 795 | Fault |  |  |  |  |
| 796 | PACK15 | Module Voltage |  |  |  |  |
| 797 | Module Current |  |  |  |  |
| 798 | Temperater-AVE |  |  |  |  |
| 799 | SOC |  |  |  |  |
| 800 | Remain  Capacity |  |  |  |  |
| 801 | Total Capacity |  |  |  |  |
| 802 | Charge Voltage |  |  |  |  |
| 803 | Charge Current |  |  |  |  |
| 804 | Discharge  Current |  |  |  |  |
| 805 | Max Cell V |  |  |  |  |
| 806 | Min Cell V |  |  |  |  |
| 807 | Cycle number |  |  |  |  |
| 808 | Warming |  |  |  |  |
| 809 | Fault |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 内存记录表 | | | | | |
| Addr. | 寄存器含义 | R/W | Range | Unit | note |
| 1000 | 逆变器故障信息 | R |  |  | 长度范围是 500 |
| …… |  | R |  |  |  |
| …… |  | R |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1499 |  | R |  |  |  |
|  |  |  |  |  |  |

告警代码 Warn Code

|  |  |  |
| --- | --- | --- |
| Error code | Description /描述 | Solutions/解决方案 |
|  |  |  |
|  |  |  |
| W01 | reserve |  |
| W02 | FAN\_WARN |  |
| W03 | Grid phase wrong |  |
| W04 | meter\_Comm\_Fail |  |

故障代码：Fault Code

|  |  |  |
| --- | --- | --- |
| Error code | Description /描述 | Solutions/解决方案 |
| F07 | DC/DC\_Softsart\_Fault  DC/DC 软起故障 | DC/DC softstart fault   1. Check the battery fuse; 2. Restart and check whether it is in normal; 3. Seek help from us, if can’t go back to noarmal state |
| F10 | AuxPowerBoard\_Failure  辅助电源故障 | Auxiliary power supply failure   1. Wait for minutes then check; 2. Remove wifi plug or other communicator; 3. Seek help from us, if can’t go back to noarmal state |
| F13 | Working mode change  模式切换 | Inverter work mode changed   1. wait for a minute and check; 2. Seek help from us, if can't go back to normal state. |
| F17 | Active\_Battery\_Hold |  |
| F18 | AC over current fault of hardware  硬件交流过流 | AC side over current fault   1. Please check whether the backup load power and common   load power are within the range;   1. Restart and check whether it is in normal; 2. Seek help from us, if can not go back to normal state. |
| F20 | DC over current fault of the hardware  硬件直流过流 | DC side over current fault   1. Check PV module connect and battery connect; 2. Turn off the DC switch and AC switch and then wait one minute,then turn on the DC/AC switch again; 3. Seek help from us, if can not go back to normal state. |
| F22 | Tz\_EmergSStop\_Fault 急停故障（逆变器被锁定） | Tz\_EmergSStop\_Fault  Seek help from us,This failure hardly happens. |

|  |  |  |
| --- | --- | --- |
| F23 | AC leakage current is transient over current 瞬时漏电流故障 | Leakage current fault   1. Check the cable of PV module and inverter; 2. Restart inverter; 3. Seek help from us, if can not go back to normal state. |
| F24 | DC insulation impedance failure  方阵绝缘阻抗故障 | PV isolation resistance is too low   1. Check the connection of PV panels and inverter is firmly and   correctly;   1. Check whether the PE cable of inverter is connected to ground; 2. Seek help from us, if can not go back to normal state. |
| F25 | AC\_Active\_Batt\_Fault |  |
| F26 | The DC busbar is unbalanced  直流母线不平衡 | 1. Please wait for a while and check whether it is normal; 2. If still same, and turn off the DC switch and AC switch and   wait for one minute and then turn on the DC/AC switch;   1. Seek help from us, if can not go back to normal state. |
| F29 | Parallel\_CANBus\_Fault  并联通讯故障 | This 42ault only for inverters working in parallel mode   1. Check the parallel setting according to the instructions; 2. Check the connection of the CANBus; 3. Seek help from us |
| F31 | Soft\_Start\_Failed |  |
| F35 | No AC grid  无市电 | No Utility   1. Please confirm grid is lost or not; 2. Check the grid connection is good or not; 3. Check the switch between inverter and grid is on or not; 4. Seek help from us, if can not go back to normal state. |
| F37 | DCLLC\_Soft\_Over\_Cur |  |
| F39 | DCLLC\_Over\_Current |  |
| F40 | Batt\_Over\_Current |  |

|  |  |  |
| --- | --- | --- |
| F41 | Parallel\_system\_Stop  并联系统停机故障 | In parallel system,due to other inverter faults.   1. Wait for minutes then check all inverters in this parallel system; 2. If inverter can’t go back to normal state, record fault codes of all inverters, then seek help from us. |
| F42 | AC line low voltage  线电压过低故障 | Grid voltage fault   1. Check the AC voltage is in the range of standard voltage in   specification;   1. Check whether grid AC cables are firmly and correctly connected; 2. Seek help from us, if can not go back to normal state. |
| F46/F49 | Bcakup\_Battery\_Fault  备份电池故障 | Backup battery fault.   1. Check the battery capacity; 2. Check the connection between batteries and inverters; 3. If inverter can’t go back to normal after load reduction, seek help from us |
| F47 | AC over frequency  交流过频 | Grid frequency out of range   1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state. |
| F48 | AC lower frequency  交流欠频 | Grid frequency out of range   1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state. |
| F56 | DC busbar voltage is too low  母线电压过低 | Battery voltage low   1. Check whether battery voltage is too low; 2. If the battery voltage is too low, using PV or grid to charge the   battery;   1. Seek help from us, if can not go back to normal state. |
| F58 | BMS communication fault  BMS 通讯故障 |  |
| F60 | Gen\_Volt\_or\_Fre\_Fault |  |
| F61 | Button\_Manual\_OFF |  |
| F63 | ARC fault  拉弧故障 | 1. ARC fault detection is only for US market; 2. Check PV module cable connection and clear the fault; 3. Seek help from us, if can not go back to normal state. |
| F64 | Heat sink high temperature failure  散热器温度过高 | Heat sink temperature is too high   1. Check whether the work environment temperature is too high; 2. Turn off the inverter for 10mins and restart; 3. Seek help from us, if can not go back to normal state. |