Energy storage inverter MODBUS communication protocolrevision history

serial number	modify the content	Edited by	date	Version
1	1. Add two registers customized by Fusilicon (inverter fault status, charging status and uniqueID unique code) 2. The minimum value, maximum value, and default value are removed from the unit (for the processing of the protocol file conversion code) 3. Add BMS enable and BMS protocol registers. 4. Increase the start charging time and start discharge time registers (in order to realize the timing charge and discharge function) 5. Remove the status record register (this group of registers is not used and takes up more memory) 6. Modify the protocol document structure (refer to the controller protocol document)	zhengkk	2021.07.14	V1.4
2	1. Modify the definition of the current state value of the machine, 8: battery activation, 9: manual shutdown, 10: fault 2. The default value of some loop parameters is modified to 4096, and 4096 is used as the default value when used in the program. 3. The default value of the battery type is GEL (3). If there is a difference in the program, it can be customized according to the customer ID number. 4. The original Baudrate is changed to ParallelMode (parallel mode) 5. The default output priority is 2 (SBU), if there is any difference in the program, it can be customized according to the customer ID number.	zhengkk	2021.09.16	V1.5
3	When the Modbus protocol format specification and the register address table are merged into one file and released, the following points should be paid attention to: 1. There is a problem with the display of the version number on the page. Only the table name of the worksheet needs to be modified, and the title and version number at the header will be automatically updated. No manual modification is required. 2. When releasing the neutral version, you need to replace the company name on the pages of the two worksheets with "Agreement Document", do not delete the original characters, otherwise the format will change when the company name is added next time.	zhengkk	2021.09.24	V1.5
4	1. Revise the protocol, add registers, support stand-alone split-phase devices, support two-way PV input, three-way mains input and three-way inverter output data transmission. 2. Add the E218 register address, which is used to set the derating power of the machine.	wangqt	2022.6.14	V1.6
5	1. Added segment charging and discharging time and corresponding enable setting items. 2. Added grid-connected power generation and leakage current detection setting items.	wangzw	2022.06.01	V1.7
6	1. The stand-alone sub-phase machine borrows the adjustment parameter address of the phase-locked loop, DF43 and DF44 addresses to adjust the repetitive control parameters, and the data type is changed to signed, and the default value is changed. 2. Modify and increase the maximum charging and charging time of E102 to 900, which is consistent with the setting range of the display screen. 3. Add E21F address to set the grid-connected PF value. 12-L13, 13-L14) 5. Repair the problem that the unit and ratio of the accumulated charging amount of the mains power do not match the actual one, and change it to be consistent with the unit of the charging amount of the mains power of the day, and change the address of AH 6, 0x214 back to the mains A phase current (The third-generation parallel machine also uses this address as the parallel current) and adds 0x238-0x239 as the mains B-phase and C-phase current	wangqt	2022.07.28	V1.7
7	1. EOOF is used for discharge cut-off SOC setting, which is valid during BMS communication; 2. E01C is used for lithium battery stop charging current setting; 3. E01D is used for lithium battery stop charging SOC setting; 4. E01E is used for SOC low capacity alarm setting, It is valid during BMS communication; 5. E01F is used in SBU mode to switch the SOC capacity setting of the mains, and it is valid during BMS communication; 6. E020 is used in SBU mode to switch the SOC capacity setting of the inverter, and it is valid during BMS communication;	zhengkk	2022.08.02	V1.7
8	1. E207 is changed to enable the N-line grounding function, which is only valid for some models. 2. The historical fault records are expanded to 32.	zhengkk	2022.11.03	V1.80
9	1. Increase the relevant registers for grid-connected voltage protection; 2. Increase the setting registers for grid-connected active power, reactive power, and PF. 3. Increase the grid-connected electricity statistics register. 4. Increase the insulation resistance detection enable and threshold setting register 5. Increase the grid-connected current F02C of the day	zhengkk	2023.02.13	V1.90
10	1. Increase the PV output priority setting 2. The grid-connected parameters are independently placed in group 08.	zhengkk	2023.03.07	V1.91
11	1. Add DC load switch	zhengkk	2023.03.08	V1.92

Energy storage inverter MODBUS protocol format description

1. Document description

This document defines the RS485 monitoring communication protocol content of our energy storage inverter series products, including RS485 communication frame format, Modbus register address definition, quantity calibration, etc. The protocol follows the Modubus-RTU communication protocol, supports 03, 06, and 10 function codes, and the number of read and write registers does not exceed 32 at a time.

2. Serial communication parameters

9600,n,8,1, that is, baud rate 9600, 8 data bits, no parity. The RS485 connection mode is one master and multiple slaves, and the default address of the inverter is 1, which can be set. Support 255 universal address. In the case of a one-to-one connection between the host and the inverter, the inverter can be communicated and accessed through 255, and the address that the inverter responds to is the actual address.

3. Data format

slave address	function code		Data length or data content	CRC check
1 byte	1 byte		N bytes	2 bytes
Slave address range: 01H~FEH Master broadcast address: 0 Universal address: FFH	03H	read multiple registers	related to the order	Check range: from the address of the slave to all data before the CRC check. Transmission sequence: the result calculated by CRC is 16-bit data, and the actual transmission should be transmitted in the order of low-order bytes first and high-order bytes second .
	06H	write a single register		
	10H	write multiple registers		
	other	invalid		

3.1 Read data frame format

Host sends frame format:

slave address	function code	data field				CRC
1 byte	1 byte	4 bytes				2 bytes
physical address	03H	Register Address High Byte	Register Address Low Byte	The high byte of the number of registers N, usually 00H	The low byte of the number of registers N (N<=32)	CRC_L
1	3	02H	00H	00H	20H	45H

The data frame format returned by the slave machine:

slave address	function code	data field						CRC
1 byte	1 byte	(2*N+1) bytes						2 bytes
		1 byte	1 byte	1 byte	1 byte	1 byte	…	
		returned data						

physical address	03H	Returns the byte length of the data	value of register 1		The value of		...	CRC_L
			high byte	low byte	high byte	low byte	...	

Slave returns error frame format:

slave address	function code	error code	CRC check	
1 byte	1 byte	1 byte	2 bytes	
physical address	83H	see error code table	CRC_L	CRC_H

3.2 Write multiple data frame formats

Host sends frame format:

slave address	function code	data field						CRC
1 byte	1 byte	5+2*N bytes						2 bytes
		1 byte	1 byte	1 byte	1 byte	1 byte	2*N bytes	
physical address	10H	register address		Number of registers		Data length	The high byte of the value of N registers is in the front and the low byte is in the back	CRC_L
		high byte	low byte	high byte	low byte	2*N		

The format of the response frame returned by the slave:

slave address	function code	Data length				CRC check	
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	2 bytes	
physical address	10H	register address		Number of			
		high byte	low byte	high byte	low byte	CRC_L	CRC_H

Slave returns error frame format:

slave address	function code	error code	CRC check	
1 byte	1 byte	1 byte	2 bytes	
physical address	90H	see error code table	CRC_L	CRC_H

3.3 Write a single data frame format

Host sends frame format:

slave address	function code	data field				CRC check	
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	2 bytes	
physical address	06H	register address		register value		CRC_L	CRC_H
		high byte	low byte	high byte	low byte		

The format of the response frame returned by the slave:

slave address	function code	data field				CRC check	
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	2 bytes	
physical address	06H	register address		register value		CRC_L	CRC_H
		high byte	low byte	high byte	low byte		

Slave returns error frame format:

slave address	function code	error code	CRC check	
1 byte	1 byte	1 byte	2 bytes	
physical address	86H	see error code table	CRC_L	CRC_H

3.4 Error Code Table

the code	name	meaning
01H	illegal order	The slave may not support the command
02H	illegal data address	The register address requested by the master exceeds the legal register address range defined by the slave
03H	invalid data value	The value of the register requested by the master is outside the range defined by the slave
04H	operation failed	The parameter is set to an invalid setting in the parameter write operation, or the current state of the slave does not support the execution of the command
05H	wrong password	The password written in the password verification address is wrong
06H	data frame error	In the frame information sent by the host, the length of the data frame is incorrect, and the CRC check digit in the RTU format is different from the check calculation number of the lower computer.
07H	parameter is read-only	Parameters changed during host write operations are read-only parameters
08H	Parameters cannot be changed during operation	The parameters changed in the host write operation are parameters that cannot be changed during operation
09H	password protection	When the host reads or writes, if the user password is set and the password is not locked and unlocked, it will report that the system is locked.
0AH	wrong length	The number of read and write registers exceeds the maximum supported number of 32
0BH	Insufficient permissions	Insufficient permission for this operation

4. CRC check calculation

The CRC field checks the content of the entire frame, that is, all the data from the slave address to the CRC check, the slave recalculates the CRC check data and compares it with the check value in the received data stream to judge the reception Data Validity. The CRC field is two-byte 16-bit binary value data, and the transmission sequence is to transmit the low-order byte first, and then transmit the high-order byte. There are three ways to calculate the CRC check value. The calculation results of the three ways are the same, and you can choose freely according to the actual situation.

Method 1: Bitwise cycle calculation method

```
unsigned int crc_cal_value(unsigned char*data_value,unsigned char data_length) {     int i;     unsigned int crc_value=0xffff;     while(data_length--)     {         crc_value^=*data_value++;         for(i=0;i<8;i++)         { if(crc_value&0x0001)                 crc_value=(crc_value>>1)^0xa001;             else                 crc_value=crc_value>>1;         } }     return(crc_value); }
```

Method 2： byte searching method

```
/* CRC value of the high byte */ static unsigned int auchCRCHi[] = { 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80
```

/* CRC value of the high byte */ static unsigned int auchCRCHi[] = { 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, };

/* CRC value of low byte*/ static unsigned int auchCRCLo[] = { 0x00, 0xC0, 0xC1, 0x01, 0xC3, 0x03, 0x02, 0xC2, 0xC6, 0x06, 0x07, 0xC7, 0x05, 0xC5, 0xC4, 0x04, 0xCC, 0x0C, 0x0D, 0xCD, 0x0F, 0xCF, 0xCE, 0x0E, 0x0A, 0xCA, 0xCB, 0x0B, 0xC9, 0x09, 0x08, 0xC8, 0xD8, 0x18, 0x19, 0xD9, 0x1B, 0xDB, 0xDA, 0x1A, 0x1E, 0xDE, 0xDF, 0x1F, 0xDD, 0x1D, 0x1C, 0xDC, 0x14, 0xD4, 0xD5, 0x15, 0xD7, 0x17, 0x16, 0xD6, 0xD2, 0x12, 0x13, 0xD3, 0x11, 0xD1 , 0xD0, 0x10, 0xF0, 0x30, 0x31, 0xF1, 0x33, 0xF3, 0xF2, 0x32, 0x36, 0xF6, 0xF7, 0x37, 0xF5, 0x35, 0x34, 0xF4, 0x3C, 0xFC, 0xFD, 0x3D, 0xFF, 0x3F, 0x3 E, 0xFE, 0xFA, 0x3A, 0x3B, 0xFB, 0x39, 0xF9, 0xF8, 0x38, 0x28, 0xE8, 0xE9, 0x29, 0xEB, 0x2B, 0x2A, 0xEA, 0xEE, 0x2E, 0x2F, 0xEF, 0x2D, 0xED, 0xEC, 0x2C, 0 xE4, 0x24, 0x25, 0xE5, 0x27, 0xE7, 0xE6, 0x26, 0x22, 0xE2, 0xE3, 0x23, 0xE1, 0x21, 0x20, 0xE0, 0xA0, 0x60, 0x61, 0xA1, 0x63, 0xA3, 0xA2, 0x62, 0 x66, 0xA6, 0xA7, 0x67, 0xA5, 0x65, 0x64, 0xA4, 0x6C, 0xAC, 0xAD, 0x6D, 0xAF, 0x6F, 0x6E, 0xAE, 0xAA, 0x6A, 0x6B, 0xAB, 0x69, 0xA9, 0xA8, 0x68, 0x78, 0xB8, 0xB9, 0x79, 0xBB, 0x7B, 0x7A, 0xBA, 0xBE, 0x7E, 0x7F, 0xBF, 0x7D, 0xBD, 0xBC, 0x7C, 0xB4, 0x74, 0x75, 0xB5, 0x77, 0xB7, 0xB6, 0x76, 0x72, 0xB2, 0xB3, 0x73, 0xB1, 0x71, 0x70, 0xB0, 0x50, 0x90, 0x91, 0x51, 0x93, 0x53, 0x52, 0x92, 0x96, 0x56, 0x57, 0x97, 0x55, 0x95, 0x94, 0x54, 0x9C, 0x5C, 0x5D, 0 x9D, 0x5F, 0x9F, 0x9E, 0x5E, 0x5A, 0x9A, 0x9B, 0x5B, 0x99, 0x59, 0x58, 0x98, 0x88, 0x48, 0x49, 0x89, 0x4B, 0x8B, 0x8A, 0x4A, 0x4E, 0x8E, 0x8F, 0x4F, 0 x8D, 0x4D, 0x4C, 0x8C, 0x44, 0x84, 0x85, 0x45, 0x87, 0x47, 0x46, 0x86, 0x82, 0x42, 0x43, 0x83, 0x41, 0x81, 0x80, 0x40, }; /* The function returns CRC in unsigned short type */ /* Parameter puchMsg : for Calculate the message of CRC */ /* parameter usDataLen: the number of bytes in the message */ unsigned int CRC16(unsigned int * puchMsg, unsigned int usDataLen) { unsigned int uchCRCHi = 0xFF ; /* high byte initialization of CRC* / unsigned int uchCRCLo = 0xFF ; /* CRC low byte initialization */ unsigned int uIndex ; /* CRC lookup table index */ while (usDataLen--) /* complete the entire message buffer */ { uIndex = uchCRCLo ^ *puchMsg++ ; /* calculate CRC */ uchCRCLo = uchCRCHi ^ auchCRCHi[uIndex] ; uchCRCHi = auchCRCLo[uIndex] ; } return (uchCRCHi << 8 | uchCRCLo) ; }

Method 3: word look-up table method

Static unsigned int tblCRC[] = {
0x0000,0xC1C0,0x81C1,0x4001,0x01C3,0xC003,0x8002,0x41C2,0x01C6,0xC006,0x8007,0x41C7,0x0005,0xC1C5,0x81 C4, 0x4004, 0x01CC, 0xC00C, 0x800D, 0x41CD, 0x000F, 0xC1CF, 0x81CE, 0x400E, 0x000A, 0xC1CA, 0x81CB, 0x400B, 0x01C9, 0xC009, 0x8008, 0x41C8, 0x01D8, 0xC018, 0x8019, 0x41D9, 0x001B, 0xC1DB, 0x81 DA, 0x401A, 0x001E, 0xC1DE, 0x81DF, 0x401F, 0x01DD, 0xC01D, 0x801C, 0x41DC, 0x0014, 0xC1D4, 0x81D5, 0x4015, 0x01D7, 0xC017, 0x8016, 0x41D6, 0x01D2, 0xC012, 0x8013, 0x41D3, 0x0011, 0xC1D1, 0x81D0, 0 x4010, 0x01F0, 0xC030, 0x8031, 0x41F1, 0x0033, 0xC1F3, 0x81F2, 0x4032, 0x0036, 0xC1F6, 0x81F7, 0x4037, 0x01F5, 0xC035, 0x8034, 0x41F4, 0x003C, 0xC1FC, 0x81FD, 0x403D, 0x01FF, 0xC03F, 0x803E, 0x41FE, 0x 01FA, 0xC03A, 0x803B, 0x41FB, 0x0039, 0xC1F9, 0x81F8, 0x4038, 0x0028, 0xC1E8, 0x81E9, 0x4029, 0x01EB, 0xC02B, 0x802A, 0x41EA, 0x01EE, 0xC02E, 0x802F, 0x41EF, 0x002D, 0xC1ED, 0x81EC, 0x402C, 0x01E4, 0xC024
,0x8025,0x41E5,0x0027,0xC1E7,0x81E6,0x4026,0x0022, 0xC1E2, 0x81E3, 0x4023, 0x01E1, 0xC021, 0x8020, 0x41E0, 0x01A0, 0xC060, 0x8061, 0x41A1, 0x0063, 0xC1A3, 0x81A2, 0x4062, 0x0066, 0xC1A6, 0x81A7, 0x4067, 0x01A5, 0xC065, 0x8064, 0x41A4, 0x006C, 0xC1AC, 0x81AD, 0x406D, 0x01AF, 0xC06F, 0x806E, 0x41AE, 0x01AA, 0xC06A, 0x806B, 0x41AB, 0x0069, 0xC1A9, 0x81A8, 0x4068, 0x0078, 0xC1B8, 0x81B9, 0x40
79,0x01BB,0xC07B,0x807A,0x41BA,0x01BE,0xC07E,0x807F,
0x41BF,0x007D,0xC1BD,0x81BC,0x407C,0x01B4,0xC074,0x8075,0x41B5,0x0077,0xC1B7,0x81B6,0x4076,0x0072,0xC1B2,0x81B3,0x4073,0x 01B1,0xC071,0x8070,0x41B0,0x0050,0xC190,0x8191,0x4051,
0x0193,0xC053,0x8052,0x4192,0x0196,0xC056,0x8057,0x4197,0x0055,0xC195,0x8194,0x4054,0x019C,0xC05C,0x805D,0x419D,0x005F, 0xC19F, 0x819E, 0x405E, 0x005A, 0xC19A, 0x819B, 0x405B, 0x0199,
0xC059,0x8058,0x4198,0x0188,0xC048,0x8049,0x4189,0x004B,0xC18B,0x818A,0x404A,0x004E,0xC18E,0x818F,0x404F,0x018D,0xC04D, 0x804C, 0x418C, 0x0044, 0xC184, 0x8185, 0x4045, 0x0187, 0xC047, 0x8046, 0x4186,
0x0182, 0xC042, 0x8043, 0x4183, 0x0041, 0xC181, 0x8180, 0x4040, }; /* The function returns CRC in unsigned short type */ /* Parameter puchMsg: message used to calculate CRC*/ /* Parameter usDataLen: The number of bytes in the message */ unsigned int CRC16(unsigned int * puchMsg, unsigned int usDataLen) { unsigned int uchCRCHi = 0xFF ; /* CRC high byte initialization */ unsigned int uchCRCLo = 0xFF ; /* CRC low byte initialization */ unsigned int uIndex ; /* CRC lookup table index */ unsigned int hi,low; while (usDataLen--) /* complete the entire message buffer */ { uIndex = uchCRCLo ^ *puchMsg++ ; / * Calculate CRC */ hi = tblCRC[uIndex] >> 8; low = tblCRC[uIndex] & 0xff; uchCRCLo = uchCRCHi ^ hi; uchCRCHi = low; } return (uchCRCHi << 8 | uchCRCLo) ; }

4. Description of units and dimensions

physical quantity	unit	magnific	illustrate
Voltage (including AC and DC)	V	10	16-bit unsigned integer, range 0~65535, corresponding to 0V~6553.5V
Current (including AC and DC)	A	10	16-bit unsigned integer, range 0~65535, corresponding to 0A~6553.5A 16-bit signed integer, range -32767~32767, corresponding to -3276.7A~3276.7A
frequency	Hz	100	16-bit unsigned integer, range 0~65535, corresponding to 0Hz~655.35Hz
Power (including AC and DC)	W	1	16-bit unsigned integer, range 0~65535, corresponding to 0W~65535W
power factor	/	1000	16-bit signed integer, range -32767~32767. For example: 998 means the power factor is 0.998 For example: -900 (0xFC7C) means the power factor is -0.900

AC side power	kWh	10	16-bit unsigned integer, range 0~65535, corresponding to 0kWh~6553.5kWh 32-bit unsigned integer, range 0~4294967295, corresponding 0kWh~429496729.5kWh For example: 1 means 0.1kWh, 10 means 1kWh
Battery side capacity (power)	AH	1	16-bit unsigned integer, range 0~65535, corresponding to 0AH~65535AH 32-bit unsigned integer, range 0~4294967295, corresponding to 0AH~4294967295AH
temperature	°C	10	16-bit signed integer, range -32767~32767, corresponding to -3276.7°C~3276.7°C
Battery voltage setting value	V	10	All battery setting voltages in this agreement take 12V batteries as the unified dimension, that is, all battery setting voltage values are converted to the corresponding voltage of 12V. For example, the rated voltage of the battery is 48V, and the actual set voltage is

Note: When 32-bit data occupies two registers, the data is stored in the register using the little-endian mode, that is, the lower 16 bits of the data are in the lower address of the register, and the higher 16 bits of the data are in the higher address of the register. For example, the 32-bit data 0x12345678 is stored in two addresses 0x0001 and 0x0002, and the arrangement order in the register table is address 0x0001=0x5678, address 0x0002=0x1234.

Energy storage inverter MODBUS monitoring protocol register

Note: 1. The gray font indicates the register that is invalid for the energy storage inverter 2. The multiplier refers to the multiple of the actual value compared to the register value. For example, if the multiplier is 0.1, the actual value is the register value * 0.1

address	length	name	read and write	magnification	unit	display format	With or without sign	minimum value	maximum value	Defaults	Remark
P00 Product information area											
A	1	reserve	R	1	–	%d	none				reserve
B	1	product type	R	1	–	%d	none				Product type 00 (controller, household) 01 (controller, street
C	8	reserve	R	1	–	%s	none				reserve
14	2	Software version	R	1	–	%d	none				0x0014: APP version, such as 100, means V1.00 0x0015:
16	2	hardware version	R	1	–	%d	none				0x0016: Control board version, such as 100, means V1.00
18	2	reserve	R	1	–	%x	none				reserve
1A	1	Controller, device address	R	1	–	%d	none				Rs485 address, the
1B	1	model code	R	1	–	%d	none				
1C	2	RS485 protocol version	R	1	–	%x	none				0x001C: protocol version, such as 100,
1E	2	Production Date	R	1	–	%x	none				0x001E: high 8 bits: year, low 8 bits:
20	1	Origin code	R	1	–	%x	none				0: Shenzhen 1:
21	20	software compile time	R	1	–	%s	none				String format, the lower 8 bits of each
35	20	product serial number string	R	1	–	%s	none				String format, the lower 8 bits of each
49	1	reserve	R	1	–	%x	none				
P01 DC data area											
100	1	Battery power SOC	R	1	–	%d	none				Battery Remaining
101	1	battery voltage	R	0.1	V	%.1fV	none				Battery voltage, such
102	1	battery current	R	0.1	A	%.1fA	have				Battery current, such as 500, means 50.0A; current greater
103	1	Device temperature (controller)/battery	R	1	℃	%d	have				(high 8 digits) controller
104	1	reserve	R	0.1	V	%.1fV	none				reserve
105	1	reserve	R	0.01	A	%.2fA	none				reserve
106	1	reserve	R	1	W	%d	none				reserve
107	1	Solar panel 1 voltage	R	0.1	V	%.1fV	none				PV panel 1 voltage
108	1	Solar panel 1 current	R	0.1	A	%.1fA	none				PV1 current
109	1	Solar panel 1 power	R	1	W	%d	none				PV1 power
10A	1	Total power of solar panels	W	1	–	%d	none				PV total power
10B	1	battery charge status	R	1	–	%d	none				0x0000: Chgarge off 0x0001: Quik charge 0x0002: Const
10C	2	reserve	R	1	–	%d	none				reserve
10E	1	Total charging power	R	1	W	%dW	none				PV charging power +
10F	1	Solar panel 2 voltage	R	0.1	V	%.1fV	none				PV panel 2 voltage
110	1	Solar panel 2 current	R	0.1	A	%.1fA	none				PV2 current
111	1	Solar panel 2 power	R	1	W	%d	none				PV2 power
P02 Inverter data area											
200	4	current fault bit	R	1	–	%x	none				Fault bits, each representing a fault, a
204	4	current fault code	R	1	–	%d	none				The current fault code has 4 addresses in total, and each address stores a fault code corresponding to the current fault, and can
208	4	reserve	R	2	–	%x	none				reserve

20C	3	current time	RW	1	–	%zdt	none	0x020C: high 8 bits: year, low 8 bits: month 0x020D: high 8 bits: day, low 8
20F	1	reserve						
210	1	machine current status	R	1	–	%d	none	0: power-on delay 1: waiting state 2: initialization 3: soft start 4: mains operation 5: inverter operation 6: inverter to mains 7: mains to inverter 8: battery
211	1	Password protection status flag	R	1	–	%d	none	0: The user has not entered a password 1: The user password
212	1	total bus voltage	R	0.1	V	%.1fV	none	
213	1	Grid A phase voltage	R	0.1	V	%.1fV	none	Mains A phase
214	1	Grid A phase current	R	0.1	A	%.1fA	none	Mains A phase
215	1	grid frequency	R	0.01	Hz	%.2fHz	none	Mains frequency
216	1	Invert phase A voltage	R	0.1	V	%.1fV	none	Inverted phase A
217	1	Inverting phase A current	R	0.1	A	%.1fA	none	Inverter phase A
218	1	inverter frequency	R	0.01	Hz	%.2fHz	none	
219	1	Load phase A current	R	0.1	A	%.1fA	none	Load side A phase
21A	1	Load PF	R	0.01	–	%.2f	have	Unused
21B	1	Load phase A active power	R	1	W	%dW	none	phase load active
21C	1	Apparent power of load	R	1	VA	%dVA	none	A phase load
21D	1	Inverted DC component	R	1	mV	%dmV	have	Unused
21E	1	Mains charging current	R	0.1	A	%.1fA	none	The charging current
21F	1	A phase load rate	R	1	%	%d%	none	A phase load
220	1	Heat sink A temperature	R	0.1	℃	%.1f℃	have	DC-DC heat sink
221	1	Heat sink B temperature	R	0.1	℃	%.1f℃	have	DC-AC radiator
222	1	Heat sink C temperature	R	0.1	℃	%.1f℃	have	Transformer
223	1	ambient temperature	R	0.1	℃	%.1f℃	have	Unused
224	1	PV charging current	R	0.1	A	%.1fA	none	Charging current
225	1	Parallel load average	R	0.1	A	%.1fA	none	High voltage parallel
226	1	Inverter Fault Status (RV)	R	1	–	%d	none	Applies to custom
227	1	State of charge (RV)	R	1	–	%d	none	Applies to custom
228	1	positive bus voltage	R	0.1	V	%.1fV	none	Phase-splitting integrated machine
229	1	negative bus voltage	R	0.1	V	%.1fV	none	Phase-splitting integrated machine
22A	1	Grid B phase voltage	R	0.1	V	%.1fV	none	Mains B-phase
22B	1	Grid C phase voltage	R	0.1	V	%.1fV	none	Mains C-phase
22C	1	Invert B-phase voltage	R	0.1	V	%.1fV	none	Inverted B-phase
22D	1	Invert C-phase voltage	R	0.1	V	%.1fV	none	Inverted C-phase
22E	1	Invert B-phase current	R	0.1	A	%.1fA	none	Inverter phase B
22F	1	Inverted C-phase current	R	0.1	A	%.1fA	none	Inverting phase C
230	1	Load B-phase current	R	0.1	A	%.1fA	none	Load side B-phase
231	1	Load phase C current	R	0.1	A	%.1fA	none	Load side C-phase
232	1	Load phase B active power	R	1	W	%dW	none	
233	1	Load phase C active power	R	1	W	%dW	none	
234	1	Apparent power of load	R	1	VA	%dVA	none	
235	1	Apparent power of load	R	1	VA	%dVA	none	
236	1	Phase B load rate	R	1	%	%d%	none	Phase B load
237	1	C phase load rate	R	1	%	%d%	none	C phase load
238	1	Grid B-phase current	R	0.1	A	%.1fA	none	Mains B-phase
239	1	Grid C phase current	R	0.1	A	%.1fA	none	Mains C-phase
23A	1	A phase grid active power	R	1	A	%dW	have	Greater than 0: indicates the power consumed from the
23B	1	B-phase grid active power	R	1	A	%dW	have	Greater than 0: indicates the power consumed from the
23C	1	C-phase grid active power	R	1	A	%dW	have	Greater than 0: indicates the power consumed from the
23D	1	A phase grid apparent	R	1	VA	%dVA	none	
23E	1	B-phase grid apparent	R	1	VA	%dVA	none	
23F	1	Phase C grid apparent	R	1	VA	%dVA	none	
P03 Equipment control area								
DF00	1	Switch control	W	1	–	%x	none	0: Power off 1: Power
DF01	1	reset control	W	1	–	%x	none	1: Reset Others: no

DF02	1	restore factory defaults	W	1	–	%x	none				0xAA: restore0xBB: Clear statistics (power statistics) 0xCC: Clear historical fault
DF03	1	reserve	W	1	–	%x	none				reserve
DF04	1	reserve	W	1	–	%x	none				reserve
DF05	1	reserve	W	1	–	%x	none				reserve
DF06	2	Firmware upgrade	W	1	–	%x	none				Firmware upgrade
DF08	1	reserve	W	1	–	%x	none				reserve
DF09	3	reserve	W	1	–	%x	none				reserve
DF0C	1	reserve	W	1	–	%x	none				reserve
DF0D	1	Immediate equalization charge command	W	1		%d	none				0: Disabled 1: Enabled
P05 Battery related parameter setting area											
E000	1	reserve	RW	1	–	%d	none	0	1	0	
E001	1	Photovoltaic maximum charging current setting	RW	0.1	A	%dA	none	0	150	80	PV charging current limit. 1st generation machine 50A, 2nd
E002	1	Battery nominal capacity	RW	1	AH	%dAH	none	0	400	100	
E003	1	Battery rated voltage (read	RW	1	V	%dV	none	12	255	48	12: 12V 24: 24V 36:
E004	1	battery type	RW	1	–	%d	none	0	14	6	0 : User define 1 : SLD 2 : FLD 3 : GEL 4: Lithinum iron phosphate x 14 5: Lithinum iron phosphate x 15 6:
E005	1	Overvoltage	RW	0.1	V	%.1fV	none	9	15.5	15.5	Battery charging overvoltage protection point
E006	1	Charge limit voltage	RW	0.1	V	%.1fV	none	9	15.5	14.4	Overcharge
E007	1	Balanced charging voltage	RW	0.1	V	%.1fV	none	9	15.5	14.4	Balanced charging
E008	1	Boost charging voltage/overcharge voltage	RW	0.1	V	%.1fV	none	9	15.5	14.4	Lead-acid batteries are called boost
E009	1	Float charge voltage	RW	0.1	V	%.1fV	none	9	15.5	14	For lead-acid
E00A	1	Boost charge return voltage	RW	0.1	V	%.1fV	none	9	15.5	13.2	After the battery enters the floating charge, the battery
E00B	1	Over-discharge return voltage	RW	0.1	V	%.1fV	none	9	15.5	12.6	After the battery is over-discharged and under-voltage
E00C	1	Undervoltage warning	RW	0.1	V	%.1fV	none	9	15.5	11	Low battery voltage
E00D	1	Over-discharge voltage	RW	0.1	V	%.1fV	none	9	15.5	12.2	Low battery voltage
E00E	1	discharge limiting voltage	RW	0.1	V	%.1fV	none	9	15.5	11.2	During the battery over-discharge delay process, if the
E00F	1	Discharge cut-off SOC	RW	1	–	%d%	none	0	100	5	Discharge cut-off
E010	1	Over-discharge delay time	RW	1	S	%dS	none	0	120	60	
E011	1	Equalization charging time	RW	1	Min	%dmin	none	0	900	120	
E012	1	Improve charging time	RW	1	Min	%dmin	none	10	900	120	
E013	1	Equalization charge interval	RW	1	the day	%dDay	none	0	255	30	
E014	1	temperature compensation coefficient	RW	1	mV/℃/2V	%d	have	0	10	5	invalid
E015	1	Charging upper limit	RW	1	℃	%d	have	-40	100	60	invalid
E016	1	Charging lower limit	RW	1	℃	%d	have	-40	100	-30	invalid
E017	1	Discharge upper limit	RW	1	℃	%d	have	-40	100	60	invalid
E018	1	Discharge lower limit	RW	1	℃	%d	have	-40	100	-30	invalid
E019	1	Heating start temperature	RW	1	℃	%d	have	-40	100	0	invalid
E01A	1	Heating stop temperature	RW	1	℃	%d	have	-40	100	5	invalid
E01B	1	Mains switching voltage	RW	0.1	V	%.1fV	none	9	15.5	11.5	When the battery voltage is lower than
E01C	1	stop charging current	RW	0.1	A	%.1fA	none	0	10	2	Only lithium battery is valid, when the constant voltage
E01D	1	stop charging capacity	RW	1	%	%d	none	0	100	100	When the SOC capacity is greater
E01E	1	SOC low warning	RW	1	%	%d	none	0	100	15	SOC low capacity warning. Valid for
E01F	1	Switch mains SOC capacity point	RW	1	%	%d	none	0	100	10	In SBU mode, if the SOC capacity is less than or equal to this
E020	1	Switch battery SOC capacity point	RW	1	%	%d	none	1	100	100	In SBU mode, switch to inverter if the SOC capacity is greater
E021	1	reserve	RW	1	–	%d	none				

E022	1	Inverter switching voltage	RW	0.1	V	%.1fV	none	9	15.5	14	Switch back to the inverter when the
E023	1	Balanced charging timeout	RW	1	min	%dmin	none	5	900	240	Step +5
E024	1	Lithium battery activation	RW	0.1	A	%.1fA	none	0	20	3	
E025	1	BMS charging current limit mode setting	RW	1		%d	none	0	2	1	
E026	**1**	1 stage start charging time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E027	**1**	1 stage end charging time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E028	**1**	2 stages start charging	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E029	**1**	2 stages end charging time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E02A	**1**	3 stages start charging	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E02B	**1**	3 stages end charging time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E02C	**1**	Segment charging enable	RW	1	–	%d	none	0	1	0	0: Disabled 1:
E02D	**1**	1 segment start discharge	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E02E	**1**	1 stage end discharge time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E02F	**1**	2 stages of discharge start	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E030	**1**	2 end discharge time	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E031	**1**	3 segments start discharge	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E032	**1**	3 stages end discharge	RW	1	h/m	%d	none	0	5947	0	Hours and minutes:
E033	**1**	Segment discharge enable	RW	1	–	%d	none	0	1	0	0: Disabled 1:
E034	**3**	reserve	RW	1	–	%d	none	0	–	0	
E037	**1**	PV grid-connected function enabled	RW	1	–	%d	none	0	2	0	0: Disabled 1: Grid-connected enabled 2:
E038	**1**	Leakage current detection	RW	1	–	%d	none	0	1	0	0: Disabled 1:
E039	**1**	PV output priority setting	RW	1		%d	none	0	1	0	0: Charging priority 1:
P07 Inverter parameter user setting area											
E200	1	Inverter 485 address	RW	1	–	%d	none	1	254	1	Integer, range 1~254
E201	1	parallel mode	RW	1	–	%d	none	0	7	0	0: Single 1: Single-phase parallel 2: Two-phase parallel
E202	1	User password setting value	W	1	–	%d	none	0	65535	0	The password is a 4-digit decimal number. When it is 0, there is
E203	1	password input	W	1	–	%d	none	0	65535	0	
E204	1	output priority	RW	1	–	%d	none	0	2	1	0: solar 1: line 2: sbu
E205	1	Mains charge current limit	RW	0.1	A	%.1fA	none	0	100	60	Mains charging
E206	1	Balanced charging enable	RW	1	V	%d	none	0	1	0	
E207	1	NPE ground short function enable	RW	1		%d	none	0	1	0	The N and PE ground wire short circuit
E208	1	Output voltage (default	RW	0.1	V	%.1fV	none	100	264	120	
E209	1	Output frequency (default	RW	0.01	Hz	%.2fHz	none	45	65	50	
E20A	1	Maximum charging current	RW	0.1	A	%.1fA	none	0	150	80	
E20B	1	AC input range	RW	1		%d	none	0	1	1	0: wide range (APL)
E20C	1	energy saving mode	RW	1		%d	none	0	1	0	0: Disabled 1:
E20D	1	Overload automatic restart	RW	1		%d	none	0	1	1	0: Disabled 1:
E20E	1	Over temperature automatic	RW	1		%d	none	0	1	1	0: Disabled 1:
E20F	1	charging priority	RW	1		%d	none	0	3	2	0: Photovoltaic priority, the mains charging will be started only when the photovoltaic is invalid 1: Mains priority, the photovoltaic charging
E210	1	Alarm control	RW	1		%d	none	0	1	1	0: Disabled 1:
E211	1	Alarm enable when input source is interrupted	RW	1		%d	none	0	1	1	0: Disabled 1: Enabled
E212	1	Overload bypass enable	RW	1		%d	none	0	1	1	0: Disabled 1:
E213	1	record fault code	RW	1		%d	none	0	1	1	0: Disabled 1:
E214	1	split phase transformer	RW	1		%d	none	0	1	0	0: Disabled 1:
E215	1	BMS enabled	RW	1		%d	none	0	2	0	0: disabled 1: 485-
E216	1	DC load control	RW	1		%d	none	0	1	0	0: close 1: open
E217	1	reserve	RW	1		%d	none	0	0	0	reserve
E218	1	Machine derating power	RW	1		%.001fW	none	1000	15000	0	Reduce the rated
E219	2	unique code	R	1		%d	none	0	65535	0	Only applicable to
E21B	1	BMS protocol	RW	1		%d	none	0	30	7	
E21C	1	Bypass maximum input current	RW	0.1		%.1fA	none	0	100	40	Only applicable to some customized
E21D	1	Bypass maximum input power	RW	1		%d	none	0	65535	3000	Only applicable to some customized
E21E	1	Phase difference setting between separate phases of a single machine	RW	1		%d	none	0	2	0	Only applicable to stand-alone split-phase machine 0:
E21F	1	reserve	RW	1		%d	none	0	0	0	
P08 Inverter grid-connected parameter setting area											

E400	1	Grid-connected active	RW	1	%	%d	have	-100	100	0	
E401	1	Grid-connected power factor setting	RW	0.001		%.3f	have	-1	1	1	Only applicable to models that support
E402	1	Grid-connected reactive	RW	1	%	%d	have	-100	100	0	Grid-connected
E403	1	Grid-connected standard	RW	1		%d	have	0	3	0	Grid-connected
E404	1	Grid undervoltage	RW	0.1	V	%.1f	none	0	270	184	
E405	1	Grid undervoltage protection point 1 delay	RW	20	M	%d	none	20	600000	120	
E406	1	Grid undervoltage protection recovery point 1	RW	0.1	V	%.1f	none	0	270	198	
E407	1	Grid undervoltage protection recovery point 1	RW	20	M	%d	none	20	600000	120	
E408	1	Grid undervoltage	RW	0.1	V	%.1f	none	0	270	184	
E409	1	Grid undervoltage protection point 2 delay	RW	20	M	%d	none	20	600000	120	
E40A	1	Grid undervoltage protection recovery point 2	RW	0.1	V	%.1f	none	0	270	198	
E40B	1	Grid undervoltage protection recovery point 2	RW	20	M	%d	none	20	600000	120	
E40C	1	Grid overvoltage protection	RW	0.1	V	%.1f	none	0	270	280	
E40D	1	Grid overvoltage protection point 1 delay time	RW	20	M	%d	none	20	600000	120	
E40E	1	Grid overvoltage protection recovery point 1	RW	0.1	V	%.1f	none	0	320	270	
E40F	1	Grid overvoltage protection recovery point 1 delay time	RW	20	M	%d	none	20	600000	120	
E410	1	Grid overvoltage protection	RW	0.1	V	%.1f	none	0	320	280	
E411	1	Grid overvoltage protection point 2 delay time	RW	20	M	%d	none	20	600000	120	
E412	1	Grid overvoltage protection recovery point 2	RW	0.1	V	%.1f	none	0	320	270	
E413	1	Grid overvoltage protection recovery point 2 delay time	RW	20	M	%d	none	20	600000	120	
E414	1	Grid underfrequency	RW	0.01	Hz	%.2f	none	0	65	47	
E415	1	Grid underfrequency protection point 1 delay	RW	20	M	%d	none	20	600000	120	
E416	1	Grid underfrequency protection recovery point 1	RW	0.01	Hz	%.2f	none	0	65	48	
E417	1	Grid underfrequency protection recovery point 1	RW	20	M	%d	none	20	600000	120	
E418	1	Grid underfrequency	RW	0.01	Hz	%.2f	none	0	65	47	
E419	1	Grid underfrequency protection point 2 delay	RW	20	M	%d	none	20	600000	120	
E41A	1	Grid underfrequency protection recovery point 2	RW	0.01	Hz	%.2f	none	0	65	48	
E41B	1	Grid underfrequency protection recovery point 2	RW	20	M	%d	none	20	600000	120	
E41C	1	Grid overfrequency	RW	0.01	Hz	%.2f	none	0	65	52.5	
E41D	1	Grid overfrequency protection point 1 delay	RW	20	M	%d	none	20	600000	120	
E41E	1	Grid overfrequency protection recovery point 1	RW	0.01	Hz	%.2f	none	0	65	51	
E41F	1	Grid overfrequency protection recovery point 1	RW	20	M	%d	none	20	600000	120	
E420	1	Grid overfrequency	RW	0.01	Hz	%.2f	none	0	65	52.5	
E421	1	Grid overfrequency protection point 2 delay	RW	20	M	%d	none	20	600000	120	
E422	1	Grid overfrequency protection recovery point 2	RW	0.01	Hz	%.2f	none	0	65	51	
E423	1	Grid overfrequency protection recovery point 2	RW	20	M	%d	none	20	600000	120	
E424	1	Grid-connected restart time, in seconds	RW	1	S	%d	none	0	600	60	
E425	1	Insulation resistance	RW	1		%d	none	0	1	1	
E426	1	Insulation resistance detection threshold	RW	1		%d	none	10	65535	15	
E427	1	reserve	RW	1		%d	none	0	0	0	
P09 Historical data of electricity statistics											
F000	7	Historical data of PV power generation in the last 7	R	0.1	kWh	%.1fkWh	none				The daily power data occupies one register. For example, today is September 27, and the data of PV power generation in the last 7 days is as follows: F000:
F007	7	Historical data of battery charging capacity in the	R	1	AH	%dAH	none				
F00E	7	Historical data of battery discharge capacity in the	R	1	AH	%dAH	none				
F015	7	The historical data of the last 7 days of mains	R	1	AH	%dAH	none				

F01C	7	Historical data of load power consumption in the	R	0.1	kwh	%.1fkWh	none	Power generation on September 26 (yesterday) F001: Power generation on September 25 (the
F023	7	Historical data of the last 7 days of electricity consumption by the load	R	0.1	kwh	%.1fkWh	none	
F02A	2	Last day date record	R	0.1	kwh	%.1fkWh	none	
F02C	1	On-grid power of the day	R	0.1	kwh	%.1fkWh	none	
F02D	1	Battery charging hours per day	R	1	AH	%d	none	The total charge capacity (AH) of the
F02E	1	Ampere-hours of battery discharge per day	R	1	AH	%d	none	The total battery discharge capacity
F02F	1	PV power generation of the	R	0.1	kWh	%.1fkWh	none	The total PV power
F030	1	Load consumption of the	R	0.1	kWh	%.1fkWh	none	The total power
F031	1	total running days	R	1	d	%d	none	
F032	2	Cumulative grid-connected	R	0.1	kwh	%.1fkWh	none	Cumulative value of
F034	2	Battery accumulative	R	1	AH	%d	none	
F036	2	Cumulative battery discharge ampere hours	R	1	AH	%d	none	
F038	2	PV accumulative power	R	0.1	kWh	%.1fkWh	none	
F03A	2	load accumulative power	R	0.1	kWh	%.1fkWh	none	
F03C	1	Charging power of the day	R	1	AH	%d	none	Charging capacity of
F03D	1	The load consumes electricity from the mains	R	0.1	kWh	%.1fkWh	none	
F03E	1	Invert working hours of the	R	1	min	%dmin	none	
F03F	1	Bypass business hours of	R	1	min	%dmin	none	
F040	3	boot time	R	1		%d	none	The time format
F043	3	Last equalization charging completion time	R	1		%d	none	The time format refers to the current
F046	2	Cumulative battery charge	R	1	AH	%d	none	
F048	2	The load accumulatively consumes power from the	R	0.1	kWh	%.1fkWh	none	The load accumulates the power
F04A	1	Inverter accumulative	R	1	h	%dh	none	
F04B	1	Bypass cumulative working	R	1	h	%dh	none	
F04C	1	reserve	R	1		%d	none	
F04D	1	reserve	R	1		%d	none	
P10 Fault History								
F800	16	Fault record 0	RW	1		%d	none	Each fault record occupies 16 addresses, and a total of 16 fault records are stored. Definition of internal data format of fault record: (defined by internal offset address)**0x00:** For the specific definition of fault codes, please refer to the instruction manual. The value of the fault code is 0, indicating that the fault record
F810	16	Fault record 1	RW	1		%d	none	
F820	16	Fault record 2	RW	1		%d	none	
F830	16	Fault record 3	RW	1		%d	none	
F840	16	Fault record 4	RW	1		%d	none	
F850	16	Fault record 5	RW	1		%d	none	
F860	16	Fault record 6	RW	1		%d	none	
F870	16	Fault record 7	RW	1		%d	none	
F880	16	Fault record 8	RW	1		%d	none	
F890	16	Fault record 9	RW	1		%d	none	
F8A0	16	Fault record 10	RW	1		%d	none	
F8B0	16	Fault record 11	RW	1		%d	none	
F8C0	16	Fault record 12	RW	1		%d	none	
F8D0	16	Fault record 13	RW	1		%d	none	
F8E0	16	Fault record 14	RW	1		%d	none	
F8F0	16	Fault record 15	RW	1		%d	none	
F900	16	Fault record 16	RW	1		%d	none	
F910	16	Fault record 17	RW	1		%d	none	
F920	16	Fault record 18	RW	1		%d	none	
F930	16	Fault record 19	RW	1		%d	none	
F940	16	Fault record 20	RW	1		%d	none	
F950	16	Fault record 21	RW	1		%d	none	
F960	16	Fault record 22	RW	1		%d	none	
F970	16	Fault record 23	RW	1		%d	none	
F980	16	Fault record 24	RW	1		%d	none	
F990	16	Fault record 25	RW	1		%d	none	
F9A0	16	Fault record 26	RW	1		%d	none	
F9B0	16	Fault record 27	RW	1		%d	none	
F9C0	16	Fault record 28	RW	1		%d	none	
F9D0	16	Fault record 29	RW	1		%d	none	
F9E0	16	Fault record 30	RW	1		%d	none	
F9F0	16	Fault record 31	RW	1		%d	none	
FA00	16	Italian Parametric Test	RW	1		%d	none	
FA10	1	reserve	R	1		%d	none	
FA11	1	reserve	R	1		%d	none	
END								

Note: 0x0438~0x439 is the online upgrade command entry address.

MODBUS register partition

initial address	end address	length	partition name	Equipment type
000AH	00FFH	00F6H	Product parameter information	(Household controllers, control-inverter integrated machines, off-grid inverters, street lamp controllers)
0100H	01FFH	0100H	Device dynamic information data	(household controller, control and inverter integrated machine, street light controller)
0200H	02FFH	0100H	Device dynamic information data	(control-inverter integrated machine, off-grid inverter)
0300H	6FFFH	6D00H	reserved area	Reserved (lithium battery & BMS)
7000H	7FFFH	1000H	Device dynamic information data	Parallel/energy storage grid inverter
8000H	DFFFH	6000H	reserved area	Parallel/energy storage grid inverter
DF00H	DF1FH	0020H	Device control area	universal
DF20H	DFFFH	00E0H	debug data area	universal
E000H	E0FFH	0100H	Controller user parameter setting area	(Household controllers, control-inverter integrated machines, off-grid inverters, street lamp controllers)
E100H	E1FFH	0100H	Inverter manufacturer parameter setting area	(control-inverter integrated machine, off-grid inverter)
E200H	E2FFH	0100H	Inverter user parameter setting area	(control-inverter integrated machine, off-grid inverter)
E300H	E3FFH	0100H	Controller manufacturer parameter setting area	(household controller, street light controller)
E800H	E8FFH	0100H	Grid-connected product parameter information	Parallel/energy storage grid inverter
E900H	E97FH	0080H	Grid-connected user parameter settings	Parallel/energy storage grid inverter
E980H	EA7FH	00FFH	id-connected manufacturer parameter setting ar	Grid inverter
EA80H	EAFFH	0080H	ergy storage manufacturer parameter setting ar	Energy Storage Grid Inverter
F000H	F7FFH	0800H	historical data	home controller
F800H	FFFFH	0800H	historical data	Parallel/separate/energy storage grid inverter

On-grid and off-grid energy storage inverter data area

Grid-connected inverter data area:0x7000~0x70FF(256W)

Energy storage inverter data area:0x7100~0x717F(128W)

reserved area:0x7180~0xDEFF(28032W)

Device control area: 0xDF00~0xDF1F(32W)

debug data area: 0xDF20~0xDFFF(224W)

Occupied by other equipment : 0xE000~0xE7FF(2048W)

Product parameter information area:0xE800~0xE8FF(256W)

User parameter setting area:0xE900~0xE97F(128W)

Grid-connected inverter parameter area:0xE980~0xEA7F(256W)

Energy storage inverter parameter area:0xEA80~0xEAFF(128W)

SaveKeepdistrict:0xEB00~0xEFFF(1280W)

Occupied by other equipment : 0xF000~0xE7FF(2048W)

Grid-connected energy storage history:0xF800~0xFFFF