

Host controller and display panel communication protocol

1 Introduction

The energy storage inverter controller consists of a master controller, a slave controller, and a display panel controller. The master controller is mainly responsible for the grid-connected algorithm voltage outer loop, the Bus voltage regulation control loop, MPPT, related grid interface algorithms, power and electricity statistics, and system protection functions; the slave controller is mainly responsible for DC DCDC conversion, DC boost, master-slave Consistency detection, etc., the display board is mainly responsible for the display of system work information, so it is necessary to define the communication protocol between the main controller and the display board.

2 Definition of Communication Interface

The main controller and the display board use UART communication, the communication setting is: baud rate 115200bps, 8 data bits, 1 stop bit, no parity check, no flow control. The communication mode adopts half-duplex communication mode. At the same time, only one of the master and the slave can send data, and the other can receive data. The communication between the main controller and the display panel is initiated by the display panel, and the main controller responds (does not initiate communication actively). The communication frame is a MODBUS protocol frame.

3 Communication Frame Definition

Frame structure

Frame header	0xAA 0xAA
Slave address field	0-247 (decimal) (0 is broadcast address)
Functional domain	0x03: read multiple parameters 0x06: write a single parameter 0x10: write read multiple parameters 0x17: Master-slave synchronization data 0x41: Firmware upgrade
Data field	The data field includes the address field and the data load field
CRC field	16bit CRC check value
End of frame	0x55 0x55

Address	SIZE (Word)	register name	Type of data	magnification	Unit	Attributes	register description
001DH	1	PV1Volt	UInt16	0.1	V	R	PV1voltage

When Pv1 voltage is 300.5, Register address PV1Volt's value is 3005,

3.1 Communication frame command and frame description

The CRC check range is from the frame address to the CRC field (excluding the CRC field), and the frame header does not need to calculate the CRC check.

3.1.1 0x03 read multiple registers

The function code (command) is used to read the contents of a register in a continuous block.

The request protocol data unit specifies the starting register address and the number of registers

In the response register data, each register data contains two bytes (binary numbers are right-justified in each byte). For each register, the first byte is high and the second byte is low.

For example request to read register 0x0001-0x0002

Request	(Hex)	Answer	(Hex)
frame header	AA	frame header	AA
	AA		AA
slave address	0A	slave address	0A
Command	03	Command	03
Register start address high order	00	number of bytes	04
Register start address low order	01	register value high (01)	0F
Register number high bit	00	register value low (01)	A0
Register count low	02	register value high (02)	01
CRC low	---	register value low (02)	C2
CRC high	---	CRC low	---
end of frame	55	CRC high	---
	55		55
		end of frame	55

3.1.2 0x06 write a single register

This function code (command) is used to write a holding register in the slave device. The request specifies the address of the register to be written.

The normal response is the reply to the request, and then returns the value written in the contents of the register.

For example, it is required to write the value of 0xAAAA to the address of register 0x0008

Request	(Hex)	Answer	(Hex)
frame header	AA	frame header	AA
	AA		AA
slave address	0A	slave address	0A

Request	06	Answer	06
Register start address high order	00	Register start address high order	00
Register start address low order	08	Register start address low order	08
register value high	AA	register value high	AA
register value low	AA	register value low	AA
CRC low	----	CRC low	----
CRC high	---	CRC high	---
end of frame	55	end of frame	55
	55		55

3.1.3 0x10 write multiple registers

This function code (command) is used to write the value of a segment (string) of consecutive addresses to the register.

The value required to be written is the requirement specified in the data field. The data is a two-byte register.

A normal response returns the function code, start address, and number of registers written.

For example, the data written to the address of register 0x0001 is data 0x1194, and the data written to the address of register 0x0002 is data 0x01CC.

Request	(Hex)	Answer	(Hex)
frame header	AA	frame header	AA
	AA		AA
slave address	0A	slave address	0A
Request	10	Request	10
Register start address high order	00	Register start address high order	00
Register start address low order	01	Register start address low order	01
Register count high	00	Register count high	00
Register count low	02	Register count low	02
number of bytes	04	CRC low	----
register value high (01)	11	CRC high	---
register value low (01)	94	end of frame	55
register value high (02)	01		55
register value low (02)	CC		
CRC low	----		

CRC high	---		
end of frame	55		
	55		

3.1.4 0x17Read/write multiple registers (master-slave synchronous data)

This function code (command) is used to perform one read operation and one write operation in a single transfer, and read and write multiple data.

For example:

Request	(Hex)	Answer	(Hex)
frame header	AA	frame header	AA
	AA		AA
slave address	11	slave address	11
Command	17	Command	17
Read register start address high order	00	number of bytes	0C
Read register start address low order	04	register value high (04)	00
Read the high order of the number of registers	00	register value low (04)	FE
Read the low order of the number of registers	06	register value high (05)	0A
Write register start address high order	00	register value low (05)	CD
Write register start address low order	0F	register value high (06)	00
Write register number high bit	00	register value low (06)	01
Write register count low	03	register value high (07)	00
number of bytes	06	register value low (07)	03
Write register value high (0F)	00	register value high (08)	00
Write register value	FF	register value low	0D

low (0F)		(08)	
Write register value high (10)	00	register value high (09)	00
Write register value low (10)	FF	register value low (09)	FF
Write register value high (11)	00	CRC low	---
Write register value low (11)	FF	CRC high	---
CRC low	---	end of frame	55
CRC high	---		55
end of frame	55		
	55		

3.1.5 Error Response Frame Definition

•Once the slave (server) receives the request, there are two types of responses according to the processing result:

The code of the response function responds to the request function code.

•abnormal response:

In an abnormal response, the server sets the highest position of the function code to 1.

Return the function code value + 0x80 to the exception code.

exception code:

error code (Hex)	describe
01	illegal function code
02	invalid request address
03	Illegal request data value
04	server failure
06	server is busy
10	wrong password
11	Check error
12	Invalid argument
13	system locked

For example: the master reads data, and the slave responds abnormally.

Request	(Hex)	Response	(Hex)
frame header	AA	frame header	AA
	AA		AA
slave address	0A	slave address	0A

Command	03	Command	83
Register start address high order	00	error code	02
Register start address low order	01	CRC Low	---
Register number high bit	00	CRC High	---
Register count low	02	end of frame	55
CRC Low	---		55
CRC High	---		
end of frame	55		
	55		

4 Inverter Data Register Definition

4.1 Information register definition

address	SIZE(Word)	register name	type of data	magnitude	unit	Attributes	register description	Remark
8F00H	1	Type	UInt16	0		R	DeviceType	0x0052:Single-phase AC coupling integrated machine AS1 series
8F01H	1	SubType	UInt16			R	Subclass	
8F02H	1	CommProVersion	UInt16	-3		R	Comms Protocol Version	
8F03H	10	SN	String(20)			R	SerialNumber	invalid value: 0x00
8F0DH	10	PC	String(20)			R	ProductCode	invalid value: 0x00

8F17H	1	DV	UInt16	-3		R	Display Software Version	invalid value: 0xFFFF
8F18H	1	MCV	UInt16	-3		R	Master Ctrl Software Version	invalid value: 0xFFFF
8F19H	1	SCV	UInt16	-3		R	Slave Ctrl Software Version	invalid value: 0xFFFF
8F1AH	1	DispHWVersion	UInt16	-3		R	DispBoardHardware Version	invalid value: 0xFFFF
8F1BH	1	CtrlHWVersion	UInt16	-3		R	CtrlBoardHardware Version	invalid value: 0xFFFF
8F1CH	1	PowerHWVersion	UInt16	-3		R	PowerBoardHardware Version	invalid value: 0xFFFF
8F1DH	1	BatNum	UInt16	0		R	Number of batteries	Unused
8F1EH	10	CCID	String(20)			R	GPRS CCID	invalid value: 0x00
8F28H	10	SN_MOD	String(20)			R	SerialNumber	invalid value: 0x00
8F32H	10	PC_MOD	String(20)			R	ProductCode	invalid value: 0x00
8F3CH	1	MOD_Version	UInt16	-3		R	Module software version	invalid value: 0xFFFF
8F3DH	1	MOD_HWVersion	UInt16	-3		R	Module Hardware Version	invalid value: 0xFFFF
8F3EH	16	ServerIP	String(32)			R	Server domain name or IP	Can use domain name or IP, as string type
8F4EH	1	ServerPort	UInt16	0		R	server port	
8F4FH	16	Slave_ServerIP	String(32)			R	Server domain name or IP	Reserved
8F5FH	1	Slave_ServerPort	UInt16	0		R	slave server port	Reserved
8F60H	1	SIGNAL	UInt16	0		R	GPRS SIGNAL	Invalid Value: 0xFFFF
8F61H	10	Operator	String(20)	0		R	GPRS Operator	Reserve
8F6BH	10	IMEI	String(20)	0		R	GPRS IMEI	Invalid Value: 0x00
8F75H	1	BLE_FWVersion	UInt16	-3		R	Bluetooth Firmware Version	Invalid Value: 0xFFFF
8F76H	1	ReportWay	UInt16	0		R	Reporting Way	Invalid Value: 0xFFFF 0:No connection 1:4G 2:Ethernet

4.2 Peripheral_Information 寄存器定义

Address	SIZE(Word)	register name	type of data	magnification	Unit	Attributes	register description
8E00H	1	BMS1_type	UInt16			R	BMS1type
8E01H	8	BMS1_SN	String(16)			R	BMS 1 SN
8E09H	1	BMS1_software_Version	UInt16	-3		R	BMS firmware version1
8E0AH	1	BMS1_hardware_Version	UInt16	-3		R	BMS hardware version1
8E0BH	1	BAT1_type	UInt16			R	Battery 1 type
8E0CH	8	BAT1_SN	String(16)			R	Battery 1SN
8E14H	1	BMS2_type	UInt16			R	BMS2 Type
8E15H	8	BMS2_SN	String(16)			R	BMS 2 SN
8E1DH	1	BMS2_software_Version	UInt16	-3		R	BMS firmware version 2
8E1EH	1	BMS2_hardware_Version	UInt16	-3		R	BMS hardware version2
8E1FH	1	BAT2_type	UInt16			R	Battery2 type
8E20H	8	BAT2_SN	String(16)			R	Battery2SN
8E28H	1	BMS3_type	UInt16			R	BMS3type
8E29H	8	BMS3_SN	String(16)			R	BMS 3 SN
8E31H	1	BMS3_software_Version	UInt16	-3		R	BMSfirmware version3
8E32H	1	BMS3_hardware_Version	UInt16	-3		R	BMShardware version3
8E33H	1	BAT3_type	UInt16			R	Battery 3type
8E34H	8	BAT3_SN	String(16)			R	Battery3SN
8E3CH	1	BMS4_type	UInt16			R	BMS4type
8E3DH	8	BMS4_SN	String(16)			R	BMS 4 SN
8E45H	1	BMS4_software_Version	UInt16	-3		R	BMSfirmware version 4
8E46H	1	BMS4_hardware_Version	UInt16	-3		R	BMShardware version4
8E47H	1	BAT4_type	UInt16			R	Battery 4 type
8E48H	8	BAT4_SN	String(16)			R	Battery 4SN

4.3 Realtime Data register definition

Address	SIZE(Word)	register name	type of	magnific	Unit	Attribut	register description
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			data	ation		es	
4000H	4	Time	HEX	0		R/W	Inverter current time
4004H	1	MPVMode	Uint16			R	Inverter working mode
4005H	2	HFaultMSG	Uint32			R	Display board error messages
4007H	2	MFaultMSG	Uint32			R	Primary controller error message
4009H	2	MFaultMSG2	Uint32			R	Primary controller error message 2
400BH	2	SFaultMSG	Uint32			R	Error message from controller
400DH	2	SFaultMSG2	Uint32			R	Error message from controller2
400FH	1	Error_Count	Uint16	0		R	Number of inverter error warning messages
4010H	1	SinkTempC	Int16	-1	°C	R	Radiator temperature
4016H	1	ISO4	UInt16	0	kΩ	R	PV__ISO
4019H	1	ConnTime	Uint16	0	S	R	Countdown to grid connection
4031H	1	RGridVolt	Uint16	-1	V	R	R phase voltage
4032H	1	RGridCurr	Int16	-2	A	R	R phase current
4033H	1	RGridFreq	Uint16	-2	Hz	R	R phase frequency
4034H	1	RGridDCI	Int16	0	mA	R	R phase DC component of grid
4035H	1	RGridPowerWatt	Int16	0	W	R	R phase grid active power
4036H	1	RGridPowerVA	Uint16	0	W	R	Rphase grid reactive power
4037H	1	RGridPowerPF	Int16	-3		R	R phase grid power factor
4046H	1	RInvVolt	Uint16	-1	V	R	R phase Inversion voltage
4047H	1	RInvCurr	Int16	-2	A	R	R phase Inversion current

4048H	1	RInvFreq	Uint16	-2	Hz	R	R inv frequency
4049H	1	RInvPowerWatt	Int16	0	W	R	R inv active power
404AH	1	RInvPowerVA	Uint16	0	VA	R	R inv reactive power
4055H	1	ROutVolt	Uint16	-1	V	R	R export voltage
4056H	1	ROutCurr	Uint16	-2	A	R	R export current
4057H	1	ROutFreq	Uint16	-2	Hz	R	R export frequency
4058H	1	ROutDVI	Int16	0	mV	R	RDC component of output voltage
4059H	1	ROutPowerWatt	Uint16	0	W	R	R output active power
405AH	1	ROutPowerVA	Uint16	0	VA	R	R output apparent power
4067H	1	BusVoltMaster	Uint16	-1	V	R	Mast BUS voltage
4068H	1	BusVoltSlave	Uint16	-1	V	R	Slave BUS voltage
4069H	1	BatVolt	Uint16	-1	V	R	Battery voltage
406AH	1	BatCurr	Int16	-2	A	R	Battery current
406DH	1	BatPower	Int16	0	W	R	Battery power
406EH	1	BatTempC	Int16	-1	°C	R	Battery temperature
406FH	1	BatEnergyPercent	Uint16	-2	%	R	Battery SOC
4095H	1	PV_direction	Uint16	0		R	PV direction of energy flow
4096H	1	Battery_direction	int16	0		R	battery energy flow direction
4097H	1	Grid_direction	int16	0		R	Grid energy flow direction
4098H	1	OutPut_direction	Uint16	0		R	Output to load energy flow direction
4099H	1	PVConsumpWatt	Int16	0	W	R	Power flow from PV to load
409AH	1	GridConsumpWatt	Int16	0	W	R	Power flowing from the grid to the load
409BH	1	GridFeedInPVWatt	Int16	0	W	R	Power flow from PV to grid
409CH	1	GridFeedInBatWatt	Int16	0	W	R	Power flow from battery to grid
409DH	1	BatConsumpWatt	Int16	0	W	R	Power flow from battery to load
409EH	1	BatChgPVWatt	Int16	0	W	R	PV charging power to battery
409FH	1	BatChgGridWatt	Int16	0	W	R	Grid charging power to battery
40A0H	1	SysTotalLoadWatt	Int16	0	W	R	Total system load power consumption

40A1H	1	CT_GridPowerWatt	int16	0	W	R	CT grid active power
40A2H	1	CT_GridPowerVA	int16	0	VA	R	CT grid apparent power
40A3H	1	CT_PVPowerWatt	int16	0	W	R	CT PV active power
40A4H	1	CT_PVPowerVA	int16	0	VA	R	CT PV apparent power
40A5H	1	TotalPVPower	Int16	0	W	R	PV total power
40A6H	1	TotalBatteryPower	Int16	0	W	R	Total battery power
40A7H	1	TotalGridPowerWatt	Int16	0	W	R	The total active power of the grid
40A8H	1	TotalGridPowerVA	Int16	0	VA	R	The total apparent power of the grid
40A9H	1	TotalInvPowerWatt	Int16	0	W	R	Inverter total active power
40AAH	1	TotalInvPowerVA	Int16	0	VA	R	Inverter total apparent power
40ABH	1	BackupTotalLoadPowerWatt	UInt16	0	W	R	Backup Total load active power
40ACH	1	BackupTotalLoadPowerVA	UInt16	0	VA	R	Backup Total load apparent power
40ADH	1	BatChgPowerLimit	Int16	0	W	R	PV Charging power limit
40BCH	1	Today_Hour	UInt16	-1	H	R	PV Grid-connected daily power generation time
40BDH	2	Total_Hour	UInt32	-1	H	R	PV Grid-connected total power generation time
40BFH	2	Today_PVEnergy	UInt32	-2	Kwh	R	Daily PV power generation
40C1H	2	Month_PVEnergy	UInt32	-2	Kwh	R	Monthly PV power generation
40C3H	2	Year_PVEnergy	UInt32	-2	Kwh	R	Yearly PV power generation
40C5H	2	Total_PVEnergy	UInt32	-2	Kwh	R	Total PV power generation
40C7H	2	Today_BatChgEnergy	UInt32	-2	Kwh	R	Daily battery charge
40C9H	2	Month_BatChgEnergy	UInt32	-2	Kwh	R	Monthly battery charge
40CBH	2	Year_BatChgEnergy	UInt32	-2	Kwh	R	Annual battery charge
40CDH	2	Total_BatChgEnergy	UInt32	-2	Kwh	R	total battery charge
40CFH	2	Today_BatDisEnergy	UInt32	-2	Kwh	R	Today_BatDisEnergy
40D1H	2	Month_BatDisEnergy	UInt32	-2	kwh	R	Month_BatDisEnergy
40D3H	2	Year_BatDisEnergy	UInt32	-2	Kwh	R	Year_BatDisEnergy
40D5H	2	Total_BatDisEnergy	UInt32	-2	Kwh	R	Total_BatDisEnergy

40D7H	2	Today_InvGenEnergy	Uint32	-2	Kwh	R	Today_InvGenEnergy
40D9H	2	Month_InvGenEnergy	Uint32	-2	Kwh	R	Month_InvGenEnergy
40DBH	2	Year_InvGenEnergy	Uint32	-2	kwh	R	Year_InvGenEnergy
40DDH	2	Total_InvGenEnergy	Uint32	-2	Kwh	R	Total_InvGenEnergy
40DFH	2	Today_TotalLoadEnergy	Uint32	-2	Kwh	R	Today_TotalLoadEnergy
40E1H	2	Month_TotalLoadEnergy	Uint32	-2	Kwh	R	Month_TotalLoadEnergy
40E3H	2	Year_TotalLoadEnergy	Uint32	-2	Kwh	R	Year_TotalLoadEnergy
40E5H	2	Total_TotalLoadEnergy	Uint32	-2	Kwh	R	Total_TotalLoadEnergy
40E7H	2	Today_BackupLoadEnergy	Uint32	-2	Kwh	R	Today_BackupLoadEnergy
40E9H	2	Month_BackupLoadEnergy	Uint32	-2	Kwh	R	Month_BackupLoadEnergy
40EBH	2	Year_BackupLoadEnergy	Uint32	-2	Kwh	R	Year_BackupLoadEnergy
40EDH	2	Total_BackupLoadEnergy	Uint32	-2	Kwh	R	Total_BackupLoadEnergy
40EFH	2	Today_SellEnergy	Uint32	-2	kwh	R	Today_SellEnergy
40F1H	2	Month_SellEnergy	Uint32	-2	Kwh	R	Month_SellEnergy
40F3H	2	Year_SellEnergy	Uint32	-2	Kwh	R	Year_SellEnergy
40F5H	2	Total_SellEnergy	Uint32	-2	Kwh	R	Total_SellEnergy
40F7H	2	Today_FeedInEnergy	Uint32	-2	Kwh	R	Today_FeedInEnergy
40F9H	2	Month_FeedInEnergy	Uint32	-2	Kwh	R	Month_FeedInEnergy
40FBH	2	Year_FeedInEnergy	Uint32	-2	Kwh	R	Year_FeedInEnergy
40FDH	2	Total_FeedInEnergy	Uint32	-2	Kwh	R	Total_FeedInEnergy
40FFH	2	Today_PVConsumpEnergy	Uint32	-2	Kwh	R	Today_PVConsumpEnergy
4101H	2	Month_PVConsumpEnergy	Uint32	-2	Kwh	R	Month_PVConsumpEnergy
4103H	2	Year_PVConsumpEnergy	Uint32	-2	Kwh	R	Year_PVConsumpEnergy
4105H	2	Total_PVConsumpEnergy	Uint32	-2	Kwh	R	Total_PVConsumpEnergy
4107H	2	Today_GridConsumpEnergy	Uint32	-2	Kwh	R	Today_GridConsumpEnergy
4109H	2	Month_GridConsumpEnergy	Uint32	-2	Kwh	R	Month_GridConsumpEnergy
410BH	2	Year_GridConsumpEnergy	Uint32	-2	Kwh	R	Year_GridConsumpEnergy
410DH	2	Total_GridConsumpEnergy	Uint32	-2	Kwh	R	Total_GridConsumpEnergy
410FH	2	Today_GridFeedInPVEnergy	Uint32	-2	Kwh	R	Today_GridFeedInPVEnergy

4111H	2	Month_GridFeedInPVEnergy	Uint32	-2	Kwh	R	Month_GridFeedInPVEnergy
4113H	2	Year_GridFeedInPVEnergy	Uint32	-2	Kwh	R	Year_GridFeedInPVEnergy
4115H	2	Total_GridFeedInPVEnergy	Uint32	-2	Kwh	R	Total_GridFeedInPVEnergy
4117H	2	Today_GridFeedInBatEnergy	Uint32	-2	Kwh	R	Today_GridFeedInBatEnergy
4119H	2	Month_GridFeedInBatEnergy	Uint32	-2	Kwh	R	Month_GridFeedInBatEnergy
411BH	2	Year_GridFeedInBatEnergy	Uint32	-2	Kwh	R	Year_GridFeedInBatEnergy
411DH	2	Total_GridFeedInBatEnergy	Uint32	-2	Kwh	R	Total_GridFeedInBatEnergy
411FH	2	Today_BatConsumpEnergy	Uint32	-2	Kwh	R	Today_BatConsumpEnergy
4121H	2	Month_BatConsumpEnergy	Uint32	-2	Kwh	R	Month_BatConsumpEnergy
4123H	2	Year_BatConsumpEnergy	Uint32	-2	Kwh	R	Year_BatConsumpEnergy
4125H	2	Total_BatConsumpEnergy	Uint32	-2	Kwh	R	Total_BatConsumpEnergy
4127H	2	Today_BatChgPVEnergy	Uint32	-2	Kwh	R	Today_BatChgPVEnergy
4129H	2	Month_BatChgPVEnergy	Uint32	-2	Kwh	R	Month_BatChgPVEnergy
412BH	2	Year_BatChgPVEnergy	Uint32	-2	Kwh	R	Year_BatChgPVEnergy
412DH	2	Total_BatChgPVEnergy	Uint32	-2	Kwh	R	Total_BatChgPVEnergy
412FH	2	Today_BatChgGridEnergy	Uint32	-2	Kwh	R	Today_BatChgGridEnergy
4131H	2	Month_BatChgGridEnergy	Uint32	-2	Kwh	R	Month_BatChgGridEnergy
4133H	2	Year_BatChgGridEnergy	Uint32	-2	Kwh	R	Year_BatChgGridEnergy
4135H	2	Total_BatChgGridEnergy	Uint32	-2	Kwh	R	Total_BatChgGridEnergy
4137H	2	Today_PVEnergy2	Uint32	-2	Kwh	R	Today_PVEnergy2
4139H	2	Month_PVEnergy2	Uint32	-2	Kwh	R	Month_PVEnergy2
413BH	2	Year_PVEnergy2	Uint32	-2	Kwh	R	Year_PVEnergy2
413DH	2	Total_PVEnergy2	Uint32	-2	Kwh	R	Total_PVEnergy2
413FH	2	Today_PVEnergy3	Uint32	-2	Kwh	R	Today_PVEnergy3
4141H	2	Month_PVEnergy3	Uint32	-2	Kwh	R	Month_PVEnergy3

4143H	2	Year_PVEnergy3	Uint32	-2	Kwh	R	Year_PVEnergy3
4145H	2	Total_PVEnergy3	Uint32	-2	Kwh	R	Total_PVEnergy3
4147H	2	Today_SellEnergy2	Uint32	-2	kwh	R	Today_SellEnergy2
4149H	2	Month_SellEnergy2	Uint32	-2	Kwh	R	Month_SellEnergy2
414BH	2	Year_SellEnergy2	Uint32	-2	Kwh	R	Year_SellEnergy2
414DH	2	Total_SellEnergy2	Uint32	-2	Kwh	R	Total_SellEnergy2
414FH	2	Today_SellEnergy3	Uint32	-2	kwh	R	Today_SellEnergy3
4151H	2	Month_SellEnergy3	Uint32	-2	Kwh	R	Month_SellEnergy3
4153H	2	Year_SellEnergy3	Uint32	-2	Kwh	R	Year_SellEnergy3
4155H	2	Total_SellEnergy3	Uint32	-2	Kwh	R	Total_SellEnergy3
4157H	2	Today_FeedInEnergy2	Uint32	-2	Kwh	R	Today_FeedInEnergy2
4159H	2	Month_FeedInEnergy2	Uint32	-2	Kwh	R	Month_FeedInEnergy2
415BH	2	Year_FeedInEnergy2	Uint32	-2	Kwh	R	Year_FeedInEnergy2
415DH	2	Total_FeedInEnergy2	Uint32	-2	Kwh	R	Total_FeedInEnergy2
415FH	2	Today_FeedInEnergy3	Uint32	-2	Kwh	R	Today_FeedInEnergy3
4161H	2	Month_FeedInEnergy3	Uint32	-2	Kwh	R	Month_FeedInEnergy3
4163H	2	Year_FeedInEnergy3	Uint32	-2	Kwh	R	Year_FeedInEnergy3
4165H	2	Total_FeedInEnergy3	Uint32	-2	Kwh	R	Total_FeedInEnergy3

4.4 peripheral device data register definition

Address	SIZE (Word)	Register name	Data type	magnification	Unit	Attributes	register description
A000H	1	BatNum	Uint16	0		R	BatNum
A001H	1	BatCapacity	UInt16	0	AH	R	BatCapacity
A002H	1	Bat1FaultMSG	Uint16	0		R	Bat1FaultMSG
A003H	1	Bat1WarnMSG	Uint16	0		R	Bat1WarnMSG
A004H	1	Bat2FaultMSG	Uint16	0		R	Bat2FaultMSG
A005H	1	Bat2WarnMSG	Uint16	0		R	Bat2WarnMSG
A006H	1	Bat3FaultMSG	Uint16	0		R	Bat3FaultMSG
A007H	1	Bat3WarnMSG	Uint16	0		R	Bat3WarnMSG
A008H	1	Bat4FaultMSG	Uint16	0		R	Bat4FaultMSG
A009H	1	Bat4WarnMSG	Uint16	0		R	Bat4WarnMSG
A00AH	2	Reserve	Uint16	0		R	Reserve
A00CH	1	Bat1SOC	Uint16	-2	%	R	Bat1SOC
A00DH	1	Bat1SOH	Uint16	-2	%	R	Bat1SOH
A00EH	1	Bat1Voltage	Uint16	-1	V	R	Bat1Voltage
A00FH	1	Bat1Current	int16	-2	A	R	Bat1Current
A010H	1	Bat1Temperature	int16	-1	°C	R	Bat1Temperature

A011H	1	Bat1CycleNum	Uint16	0		R	Bat1CycleNum
A012H	1	Bat2SOC	Uint16	-2	%	R	Bat2SOC
A013H	1	Bat2SOH	Uint16	-2	%	R	Bat2SOH
A014H	1	Bat2Voltage	Uint16	-1	V	R	Bat2Voltage
A015H	1	Bat2Current	int16	-2	A	R	Bat2Current
A016H	1	Bat2Temperature	int16	-1	°C	R	Bat2Temperature
A017H	1	Bat2CycleNum	Uint16	0		R	Bat2CycleNum
A018H	1	Bat3SOC	Uint16	-2	%	R	Bat3SOC
A019H	1	Bat3SOH	Uint16	-2	%	R	Bat3SOH
A01AH	1	Bat3Voltage	Uint16	-1	V	R	Bat3Voltage
A01BH	1	Bat3Current	int16	-2	A	R	Bat3Current
A01CH	1	Bat3Temperature	int16	-1	°C	R	Bat3Temperature
A01DH	1	Bat3CycleNum	Uint16	0		R	Bat3CycleNum
A01EH	1	Bat4SOC	Uint16	-2	%	R	Bat4SOC
A01FH	1	Bat4SOH	Uint16	-2	%	R	Bat4SOH
A020H	1	Bat4Voltage	Uint16	-1	V	R	Bat4Voltage
A021H	1	Bat4Current	int16	-2	A	R	Bat4Current
A022H	1	Bat4Temperature	int16	-1	°C	R	Bat4Temperature
A023H	1	Bat4CycleNum	Uint16	0		R	Bat4CycleNum
A024H	20	Reserve	Uint16	0		R	Reserve
A038H	2	Meter_A_ImpEp	UInt32	-2	kwh	R	Meter_A_ImpEp
A03AH	2	Meter_A_ExpEp	UInt32	-2	kwh	R	Meter_A_ExpEp
A03CH	1	Meter_A_Status	Uint16	0		R	Meter_A_Status
A03DH	1	Meter_A_Volt1	Uint16	-1	V	R	Meter_A_Volt1
A03EH	1	Meter_A_Curr1	int16	-2	A	R	Meter_A_Curr1
A03FH	1	Meter_A_PowerWatt1	int16	0	W	R	Meter_A_PowerWatt1
A040H	1	Meter_A_PowerVA1	Uint16	0	VA	R	Meter_A_PowerVA1
A041H	1	Meter_A_PowerFactor1	Int16	-3		R	Meter_A_PowerFactor1
A042H	1	Meter_A_Freq1	Uint16	-2	Hz	R	Meter_A_Freq1
A043H	1	Meter_A_Volt2	Uint16	-1	V	R	Meter_A_Volt2
A044H	1	Meter_A_Curr2	int16	-2	A	R	Meter_A_Curr2
A045H	1	Meter_A_PowerWatt2	int16	0	W	R	Meter_A_PowerWatt2
A046H	1	Meter_A_PowerVA2	Uint16	0	VA	R	Meter_A_PowerVA2
A047H	1	Meter_A_PowerFactor2	Int16	-3		R	Meter_A_PowerFactor2
A048H	1	Meter_A_Freq2	Uint16	-2	Hz	R	Meter_A_Freq2
A049H	1	Meter_A_Volt3	Uint16	-1	V	R	Meter_A_Volt3

A04AH	1	Meter_A_Curr3	int16	-2	A	R	Meter_A_Curr3
A04BH	1	Meter_A_PowerWatt3	int16	0	W	R	Meter_A_PowerWatt3
A04CH	1	Meter_A_PowerVA3	Uint16	0	VA	R	Meter_A_PowerVA3
A04DH	1	Meter_A_PowerFactor3	Int16	-3		R	Meter_A_PowerFactor3
A04EH	1	Meter_A_Freq3	Uint16	-2	Hz	R	Meter_A_Freq3
A04FH	2	Meter_B_ImpEp	UInt32	-2	kwh	R	Meter_B_ImpEp
A051H	2	Meter_B_ExpEp	UInt32	-2	kwh	R	Meter_B_ExpEp
A053H	1	Meter_B_Status	Uint16	0		R	Meter_B_Status
A054H	1	Meter_B_Volt1	Uint16	-1	V	R	Meter_B_Volt1
A055H	1	Meter_B_Curr1	int16	-2	A	R	Meter_B_Curr1
A056H	1	Meter_B_PowerWatt1	int16	0	W	R	Meter_B_PowerWatt1
A057H	1	Meter_B_PowerVA1	Uint16	0	VA	R	Meter_B_PowerVA1
A058H	1	Meter_B_PowerFactor1	Int16	-3		R	Meter_B_PowerFactor1
A059H	1	Meter_B_Freq1	Uint16	-2	Hz	R	Meter_B_Freq1
A05AH	1	Meter_B_Volt2	Uint16	-1	V	R	Meter_B_Volt2
A05BH	1	Meter_B_Curr2	int16	-2	A	R	Meter_B_Curr2
A05CH	1	Meter_B_PowerWatt2	int16	0	W	R	Meter_B_PowerWatt2
A05DH	1	Meter_B_PowerVA2	Uint16	0	VA	R	Meter_B_PowerVA2
A05EH	1	Meter_B_PowerFactor2	Int16	-3		R	Meter_B_PowerFactor2
A05FH	1	Meter_B_Freq2	Uint16	-2	Hz	R	Meter_B_Freq2
A060H	1	Meter_B_Volt3	Uint16	-1	V	R	Meter_B_Volt3
A061H	1	Meter_B_Curr3	int16	-2	A	R	Meter_B_Curr3
A062H	1	Meter_B_PowerWatt3	int16	0	W	R	Meter_B_PowerWatt3
A063H	1	Meter_B_PowerVA3	Uint16	0	VA	R	Meter_B_PowerVA3
A064H	1	Meter_B_PowerFactor3	Int16	-3		R	Meter_B_PowerFactor3
A065H	1	Meter_B_Freq3	Uint16	-2	Hz	R	Meter_B_Freq3

4.5 Setting Data register definition

Addr ess	SIZE (Word)	register name	type of data	mag nif ica	Unit	Att rib ute	register description	Remark
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				tion		s		
3303H	1	EEVersion	UInt16			R	EEVersion	
3304H	1	CtrlHWVersion	UInt16			R/W	CtrlHWVersion	
3305H	1	PowerHWVersion	UInt16			R/W	PowerHWVersion	
3306H	1	MachType	UInt16			R/W	MachType	
3307H	1	MachPower	UInt16			R/W	MachPower	
3308H	1	SafetyType	UInt16			R/W	SafetyType	
3309H	1	FunMask	UInt16			R/W	FunMask	
330DH	1	BusVoltHigh	UInt16	-1	V	R/W	BusVoltHigh	
3311H	1	DCIMax	UInt16	0	mA	R/W	DCIMax	
3313H	1	GVConsisMax	UInt16	-1	V	R/W	GVConsisMax	
3314H	1	GFConsisMax	UInt16	-1	V	R/W	GFConsisMax	
3319H	1	ISOLimit	UInt16	0	kΩ	R/W	ISOLimit	
331AH	1	ReConnTime	UInt16	0	S	R/W	ReConnTime	
331BH	1	ErrClrTime	UInt16	0	S	R/W	ErrClrTime	
331CH	1	PowerLimited	UInt16	-1	kW	R/W	PowerLimited	0: No limit, allow to run at the maximum common rate
331DH	1	ReactiveMode	UInt16			R/W	ReactiveMode	0 is capacitive adjustment (kw), 1 is inductive adjustment (kw), 2 is capacitive power factor adjustment, 3 is inductive power factor adjustment, and 4 is curve mode
331EH	1	ReactiveValue	UInt16	-3		R/W	ReactiveValue	Unit kw or %
3324H	1	GridVolt10mHigh	UInt16	-1	V	R/W	GridVolt10mHigh	
3325H	1	GridVoltHigh	UInt16	-1	V	R/W	GridVoltHigh	
3326H	1	GridVoltLow	UInt16	-1	V	R/W	GridVoltLow	
3327H	1	GridFreqHigh	UInt16	-2	Hz	R/W	GridFreqHigh	
3328H	1	GridFreqLow	UInt16	-2	Hz	R/W	GridFreqLow	
3329H	1	GridVoltHigh2	UInt16	-1	V	R/W	GridVoltHigh2	
332AH	1	GridVoltLow2	UInt16	-1	V	R/W	GridVoltLow2	
332BH	1	GridFreqHigh2	UInt16	-2	Hz	R/W	GridFreqHigh2	
332CH	1	GridFreqLow2	UInt16	-2	Hz	R/W	GridFreqLow2	
332DH	1	GridVoltHighTripTime	UInt16	0	20ms	R/W	GridVoltHighTripTime	Unit 20ms For example: A value of 50 corresponds to 1000ms
332EH	1	GridVoltLowTripTime	UInt16	0	20ms	R/W	GridVoltLowTripTime	

332FH	1	GridVoltHighTripTime2	UInt16	0	20ms	R/W	GridVoltHighTripTime2	
3330H	1	GridVoltLowTripTime2	UInt16	0	20ms	R/W	GridVoltLowTripTime2	
3331H	1	GridFreqHighTripTime	UInt16	0	20ms	R/W	GridFreqHighTripTime	
3332H	1	GridFreqLowTripTime	UInt16	0	20ms	R/W	GridFreqLowTripTime	
3333H	1	GridFreqHighTripTime2	UInt16	0	20ms	R/W	GridFreqHighTripTime2	
3334H	1	GridFreqLowTripTime2	UInt16	0	20ms	R/W	GridFreqLowTripTime2	
3335H	1	PowerAdjCoff1	UInt16	0		R/W	PowerAdjCoff1	
3336H	1	PowerAdjCoff2	UInt16	0		R/W	PowerAdjCoff2	
3337H	1	InverterStop	UInt16	0		R/W	InverterStop	
3338H	1	FunMaskEx	UInt16	0		R/W	FunMaskEx	
3348H	1	GridChargPowerLimit	UInt16	0	W	R/W	GridChargPowerLimit	Default 2500W
3349H	1	GridFeedPowerLimit	UInt16	0	W	R/W	GridFeedPowerLimit	Default 2500W
334AH	1	BatType	UInt16	0		R/W	BatType	Default 0, 0=lead-acid battery, 1=lithium battery
334BH	1	BatCapacity	UInt16	0	AH	R/W	BatCapacity	Default 100AH
334CH	1	BatProtHigh	UInt16	-1	V	R/W	BatProtHigh	Default 60V, 50~60V
334DH	1	BatProtLow	UInt16	-1	V	R/W	BatProtLow	Default 46V, 40~52V
334EH	1	BatOpenVolt	UInt16	-1	V	R/W	BatOpenVolt	Default 38V, 12~42V
334FH	1	BatLowVolt	UInt16	-1	V	R/W	BatLowVolt	Default 42V, 40~48V
3350H	1	BatDisDepth	UInt16	0	%	R/W	BatDisDepth	Default 80%, 20~95% Valid in off-grid mode
3351H	1	BatFloatVolt	UInt16	-1	V	R/W	BatFloatVolt	Default 54V, 48~58V
3352H	1	BatFloatTime	UInt16	0	min	R/W	BatFloatTime	Default 120, 0~65535
3353H	1	BatChgCurrLimit	UInt16	-1	A	R/W	BatChgCurrLimit	Default 50A, 5~50A
3354H	1	BatDisCurrLimit	UInt16	-1	A	R/W	BatDisCurrLimit	Default 100A, 5~120A
3355H	1	BatAutoWakeEn	UInt16	0		R/W	BatAutoWakeEn	The default is 0, 0=disable, 1=enable, only allow setting when the battery type is lithium battery
3371H	1	ACC_UserMode	UInt16	0		R/W	ACC_UserMode	1: Automatic scheduling mode 2: Time-of-use electricity pricing model 3: Backup mode

								4: Manual maintenance mode
3372H	1	ACC_EPSEn	UInt16	0		R/W	ACC_EPSEn	0: Disable; 1: Enable
3373H	1	ACC_BatSetSOC_H	UInt16	0	%	R/W	ACC_BatSetSOC_H	The default value is 80, which is valid in grid-connected mode.
3374H	1	ACC_BatSetSOC_L	UInt16	0	%	R/W	ACC_BatSetSOC_L	The default value is 40, which is valid in grid-connected mode.
3375H	1	CommProtocolType	UInt16	0		R/W	CommProtocolType	1: SAJ 2: Alpha.ESS
3376H	1	SafetyModeCtrl	UInt16	0		R/W	SafetyModeCtrl	Bit 10 (DRM enable bit): 0: Off 1: On
3377H	1	BackModSOCRetain	UInt16	0	%	R/W	BackModSOCRetain	Default 80
3378H	1	DRMCertification	UInt16	0		R/W	DRMCertification	0: AS4777.2 1: AS4755.3

Address	SIZE (Word)	register name	type of data	magnification	Unit	Attributes	register description	Remark
3600H	1	GridchargeEnable	UInt16	0		R	Timed grid charging enable	1: Enable, 0: prohibit
3601H	1	DischargeEnable	UInt16	0		R	Timed grid-connected battery discharge enable	1: Enable, 0: prohibit
3602H	1	(PutOn/CutOff)Loader	UInt16	0		R	drop/cut	1: Drop load, 0: Cut load
3603H	1	Exc_Sell_Energy	UInt16	0		R	Selling surplus electricity	1: Enable, 0: prohibit
3604H	1	Charge_time_enable_control	UInt16	0		R/W	Charge time setting enable bit	Each bit is 1 to indicate which number of enable charging time, the 0th bit is the first one, the 1st bit is the second one...
3605H	1	Discharge_time_enable_control	UInt16	0		R/W	Discharge time setting enable bit	Each bit is 1 to indicate which bar enables the discharge time, the 0th bit is

								the first bar, the 1st bit is the second bar...
3606H	1	First_charge_start_time	HEX	0		R/W	The first charging start time	The high byte is the hour, the low byte is the minute; hh: mm
3607H	1	First_charge_end_time	HEX	0		R/W	The first charging end time	The high byte is the hour, the low byte is the minute; hh: mm
3608H	1	First_charge_power_time	HEX	0		R/W	The first charging date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3609H	1	Second_charge_start_time	HEX	0		R/W	The second charging start time	The high byte is the hour, the low byte is the minute; hh: mm
360AH	1	Second_charge_end_time	HEX	0		R/W	The second charging end time	The high byte is the hour, the low byte is the minute; hh: mm
360BH	1	Second_charge_power_time	HEX	0		R/W	The second charging date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
360CH	1	Third_charge_start_time	HEX	0		R/W	The third charging start time	高字节为小时，低字节为分钟；hh : mm
360DH	1	Third_charge_end_time	HEX	0		R/W	The third charging end time	高字节为小时，低字节为分钟；hh : mm

360EH	1	Third_charge_power_time	HEX	0	R/W	Article 3 Charging date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
360FH	1	Fourth_charge_start_time	HEX	0	R/W	Article 4 Charging start time	The high byte is the hour, the low byte is the minute; hh: mm
3610H	1	Fourth_charge_end_time	HEX	0	R/W	Article 4 Charging end time	The high byte is the hour, the low byte is the minute; hh: mm
3611H	1	Fourth_charge_power_time	HEX	0	R/W	Article 4 Charging date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3612H	1	Fifth_charge_start_time	HEX	0	R/W	Article 5 Charging start time	The high byte is the hour, the low byte is the minute; hh: mm
3613H	1	Fifth_charge_end_time	HEX	0	R/W	Article 5 Charging end time	The high byte is the hour, the low byte is the minute; hh: mm
3614H	1	Fifth_charge_power_time	HEX	0	R/W	Article 5 Charging date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the

							standard power of the model.
3615H	1	Sixth_charge_start_time	HEX	0		R/W	Article 6 Charging start time The high byte is the hour, the low byte is the minute; hh: mm
3616H	1	Sixth_charge_end_time	HEX	0		R/W	Article 6 Charging end time The high byte is the hour, the low byte is the minute; hh: mm
3617H	1	Sixth_charge_power_time	HEX	0		R/W	Article 6 Charging date and power The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3618H	1	Seventh_charge_start_time	HEX	0		R/W	Article 7 Charging start time The high byte is the hour, the low byte is the minute; hh: mm
3619H	1	Seventh_charge_end_time	HEX	0		R/W	Article 7 Charging end time The high byte is the hour, the low byte is the minute; hh: mm
361AH	1	Seventh_charge_power_time	HEX	0		R/W	Article 7 Charging date and power The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
361BH	1	First_discharge_start_time	HEX	0		R/W	The first discharge start time The high byte is the hour, the low byte is the minute; hh: mm

361CH	1	First_discharge_end_time	HEX	0		R/W	The first discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
361DH	1	First_discharge_power_time	HEX	0		R/W	The first discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
361EH	1	Second_discharge_start_time	HEX	0		R/W	The second discharge start time	The high byte is the hour, the low byte is the minute; hh: mm
361FH	1	Second_discharge_end_time	HEX	0		R/W	The second discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
3620H	1	Second_discharge_power_time	HEX	0		R/W	The second discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3621H	1	Third_discharge_start_time	HEX	0		R/W	The third discharge start time	The high byte is the hour, the low byte is the minute; hh: mm
3622H	1	Third_discharge_end_time	HEX	0		R/W	The third discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
3623H	1	Third_discharge_power_time	HEX	0		R/W	Article 3 Discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte

								indicates the power, such as 1, which indicates 1% of the standard power of the model.
3624H	1	Fourth_discharge_start_time	HEX	0		R/W	The fourth discharge start time	The high byte is the hour, the low byte is the minute; hh: mm
3625H	1	Fourth_discharge_end_time	HEX	0		R/W	Article 4 Discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
3626H	1	Fourth_discharge_power_time	HEX	0		R/W	Article 4 Discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3627H	1	Fifth_discharge_start_time	HEX	0		R/W	Article 5 Discharge start time	The high byte is the hour, the low byte is the minute; hh: mm
3628H	1	Fifth_discharge_end_time	HEX	0		R/W	Article 5 Discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
3629H	1	Fifth_discharge_power_time	HEX	0		R/W	Article 5 Discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
362AH	1	Sixth_discharge_start_time	HEX	0		R/W	Article 6 Discharge start time	The high byte is the hour, the low byte is the minute; hh: mm

362BH	1	Sixth_discharge_end_time	HEX	0		R/W	Article 6 Discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
362CH	1	Sixth_discharge_power_time	HEX	0		R/W	Article 6 Discharge start time	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
362DH	1	Seventh_discharge_start_time	HEX	0		R/W	Article 7 Discharge start time	The high byte is the hour, the low byte is the minute; hh: mm
362EH	1	Seventh_discharge_end_time	HEX	0		R/W	Article 7 Discharge end time	The high byte is the hour, the low byte is the minute; hh: mm
362FH	1	Seventh_discharge_power_time	HEX	0		R/W	Article 7 Discharge date and power	The high byte indicates the day of the week, and each bit is enabled, such as 0b0100, which indicates Wednesday; the low byte indicates the power, such as 1, which indicates 1% of the standard power of the model.
3630H	1	Meter_enable	Uint16	0		R/W	Meter enable	0: disable, 1: 1 meter 2: 2 meters
3631H	1	Meter_addr	Uint16	0		R/W	The communication address of the meter	1 - 255
3632H	1	Buzzer_on-off	Uint16	0		R/W	Buzzer switch enable	0: enable, 1: disable
3633H	1	RS485_Addr	Uint16			R/W	RS485 communication address	1~127
3634H	1	RS485_BaudRate	Uint16			R/W	RS485 Communication baud rate	0 is 9600, 1 is 4800, 2 is 2400, 3 is 1200

4.6 Error Code definition

Code	Host fault code definition(EN)	Host fault code definition(EN)
1	Lost Com.M<->S Err	Lost Com.M<->S Err
2	Temp.High Err	Temp.High Err
3	Temp.Low Err	Temp.Low Err
4	DCI Err	DCI Err
5	SynPulse Err	SynPulse Err
6	Relay Err	Relay Err
7	Eeprom Err	Eeprom Err
8	Bat Input Short Err	Bat Input Short Err
9	Bat Volt.High Err	Bat Volt.High Err
10	Bat Open Err	Bat Open Err
11	HWDC Curr.High Err	HWDC Curr.High Err
12	Bat Discharge Err	Bat Discharge Err
13	BatCtrl Curr.High Err	BatCtrl Curr.High Err
14	BusSoftTimeOut Err	BusSoftTimeOut Err
15	Bus Volt.High Err	Bus Volt.High Err
16	Bus Volt.Low Err	Bus Volt.Low Err
17	HWBus Volt.High Err	HWBus Volt.High Err
18	Inv Curr.High Err	Inv Curr.High Err

19	HWInv Curr.High Err	HWInv Curr.High Err
20	Inv Short Err	Inv Short Err
21	Over Load Err	Over Load Err
22	Reserved(bit 22)	Reserved(bit 22)
23	Reserved(bit 23)	Reserved(bit 23)
24	Reserved(bit 24)	Reserved(bit 24)
25	Grid Volt.High Warn	Grid Volt.High Warn
26	Grid Volt.Low Warn	Grid Volt.Low Warn
27	Grid Freq.High Warn	Grid Freq.High Warn
28	Grid Freq.Low Warn	Grid Freq.Low Warn
29	Grid Loss Warn	Grid Loss Warn
30	Grid Volt.10min Warn	Grid Volt.10min Warn
31	Over Load Warn	Over Load Warn
32	Reserved(bit 32)	Reserved(bit 32)

代码	Slave fault code definition(EN)	Slave fault code definition(EN)
33	Fan Err	Fan Err
34	Out Insert Err	Out Insert Err
35	Inv Wave Err	Inv Wave Err
36	BMS Lost.Conn Err	BMS Lost.Conn Err
37	Reserved(bit 37)	Reserved(bit 37)
38	Reserved(bit 38)	Reserved(bit 38)

39	Reserved(bit 39)	Reserved(bit 39)
40	Reserved(bit 40)	Reserved(bit 40)
41	Reserved(bit 41)	Reserved(bit 41)
42	Reserved(bit 42)	Reserved(bit 42)
43	Reserved(bit 43)	Reserved(bit 43)
44	Reserved(bit 44)	Reserved(bit 44)
45	Reserved(bit 45)	Reserved(bit 45)
46	Reserved(bit 46)	Reserved(bit 46)
47	Reserved(bit 47)	Reserved(bit 47)
48	Reserved(bit 48)	Reserved(bit 48)
49	Grid Volt.Consis Warn	Grid Volt.Consis Warn
50	Grid Freq.Consis Warn	Grid Freq.Consis Warn
51	GND Loss Warn	GND Loss Warn
52	LN Wrong Warn	LN Wrong Warn
53	Can Com Lost	Can Com Lost
54	Bat Soc Low Warn	Bat Soc Low Warn
55	Bat Volt High Warn	Bat Volt High Warn
56	Bat Volt Low Warn	Bat Volt Low Warn
57	Grid Volt.High Warn	Grid Volt.High Warn
58	Grid Volt.Low Warn	Grid Volt.Low Warn
59	Grid Freq.High Warn	Grid Freq.High Warn

60	Grid Freq.Low Warn	Grid Freq.Low Warn
61	Grid Loss Warn	Grid Loss Warn
62	Reserved(bit 62)	Reserved(bit 62)
63	Reserved(bit 63)	Reserved(bit 63)
64	Reserved(bit 64)	Reserved(bit 64)

代码	Display board fault code definition(EN)	Display board fault code definition(CN)
65	Lost Com.H<->M Err	Displayboard communication lost
66	HMI Eeprom Err	memory failure
67	HMI RTC Err	RTCerror
68	BMS Device Err	BMSdevice error
69	Reserved(bit 69)	Reserved(bit 69)
70	Reserved(bit 70)	Reserved(bit 70)
71	Reserved(bit 71)	Reserved(bit 71)
72	Reserved(bit 72)	Reserved(bit 72)
73	Reserved(bit 73)	Reserved(bit 73)
74	Reserved(bit 74)	Reserved(bit 74)
75	Reserved(bit 75)	Reserved(bit 75)
76	Reserved(bit 76)	Reserved(bit 76)
77	Reserved(bit 77)	Reserved(bit 77)

78	Reserved(bit 78)	Reserved(bit 78)
79	Reserved(bit 79)	Reserved(bit 79)
80	Reserved(bit 80)	Reserved(bit 80)
81	BMS Cell Volt.H Warn	Battery cell overvoltage warning
82	BMS Cell Volt.L Warn	Battery cell undervoltage warning
83	BMS CHG Curr.H Warn	Overcharge current warning
84	Reserved(bit 84)	Reserved(bit 84)
85	BMS DCHG Curr.H Warn	Excessive discharge current warning
86	BMS DCHG Temp Warn	Discharge temperature high warn
87	BMS CHG Temp Warn	Charge temperature high warn
88	BMS Voltage Low Warn	BMS Voltage Low Warn
89	BMS Lost.Conn Warn	BMS lost communication warn
90	Reserved(bit 90)	Reserved(bit 90)
91	Meter Lost Com Warn	Meter Lost Com Warn
92	DRM0 Warn	DRM0 Warn
93	Reserved(bit 93)	Reserved(bit 93)
94	Reserved(bit 94)	Reserved(bit 94)
95	Reserved(bit 95)	Reserved(bit 95)
96	Reserved(bit 96)	Reserved(bit 96)

4.7 BMS Error Code definition

	Falut MSG	Warn MSG
Bit 0	Reserved	Reserved
Bit 1	Over voltage	High voltage
Bit 2	Under voltage	Low voltage
Bit 3	Over temp.	High temp.
Bit 4	Under temp.	Low temp.
Bit 5	Over MOSFET temp.	Over MOSFET temp.
Bit 6	Over environment temp.	Over environment temp.
Bit 7	Over current discharge	High current discharge
Bit 8	Over current charge	High current charge
Bit 9	Short circuit	Short circuit
Bit 10	Reserved	Reserved
Bit 11	BMS internal	BMS internal
Bit 12	Voltage detection failure	Reserved
Bit 13	Current detection failure	Reserved
Bit 14	Temp. detection failure	Reserved
Bit 15	MOSFET detection failure	Reserved

4.8 0x3309 register definition

Address	BIT	Register name	type of data	magnification	Unit	Attributes	register description	Remark
0x3309	bit0	RelayCheck		0			Relay detection enable bit	0=disable、1=enable
	bit1	ISOCheck		0			ISO detection enable bit	0=disable、1=enable
	bit2	GFCIDevCheck		0			Earth leakage current device self-check enable bit	0=disable、1=enable
	bit3	GFCICheck		0			Earth leakage current detection enable bit	0=disable、1=enable
	bit4	DciCheck		0			Grid current DC component detection	0=disable、1=enable

						enable bit	
bit5	DciAdjust		0			Grid current DC component control enable bit	0=disable、1=enable
bit6	AntiIsland		0			Active Islanding Detection Enable Bit	0=disable、1=enable
bit7	FANCheck		0			Fan Detection Enable Bit	0=disable、1=enable
bit8	Rsvd8		0			Reserved8	0=disable、1=enable
bit9	Rsvd9		0			Reserved9	0=disable、1=enable
bit10	Rsvd10		0			Reserved10	0=disable、1=enable
bit11	LNPECheck		0			Grid connection detection enable bit	0=disable、1=enable
bit12	DviAdjust		0			Output voltage DC component control enable bit	0=disable、1=enable
bit13	OutInsertCheck		0			Output abnormal access detection enable bit	0=disable、1=enable
bit14	InvWaveCheck		0			Inverter wave detection enable bit	0=disable、1=enable
bit15	PvLoadFuncEn		0			PV Independent Load Enable Bit	0=disable、1=enable