ESS PCS ModBus Protocol

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	03、06 function code address：（24 Parallelenable , 38 Parallel RedundantNumber）	V2.2		2020/6/4
	03、06 function code address：（79 Frequency shift enable；118 CP nominal power setting）	V2.3		2020/6/8
	03、06 function code address：（303~308 HBITL shinemaster Anti- reflux parameter setting）	V2.4		2020/6/9

	04 function code address：（158~160 all model add INV active power INV reactive power、INV apparent power）	V2.5		2020/6/12
	03、06 function code address：126 Bypass Type setting；133~143：PBD Calibration 04 function code address：161 Bypass Type	V2.6		2020/6/15
	04 function code address：250~252 ATS/Bypass; DG grid select; DG/ grid power	V2.7		2020/6/23
	03 、 06 function code address ： 77 ： Number of parallel ； 119 ： Parallel address ； 265~275：EN-50549 certification function settings；276~284：Parallel settings	V2.8		2020/7/15
	04 function code address：216~227 DG current、power; DG grid select; Total/Daily power intake (time) from DG	V2.9		2020/7/24
	03、06 function code address：127add Boot and App Burn Selection ;set 0 will Burn App code ,set 1 will Burn Boot	V3.0		2020/7/29
	03、06 function code address：282 addParallel synchronization phase difference limiting coefficient	V3.1		2020/7/31
	Fault information sheet 5.3.5，change the “Reseverd_ Fault” to the “ShineMaster_Comunicate_Fault” Fault information sheet 4.3.8，change the “Reseverd_ Fault” to the “Parallel_Uneven_Flow_Warning”	V3.2		2020/8/5
	04 function code address：162~163：system battery current、dry contact state 03、06 function code address：144~147：system battery current calibration parameter. Address 148：DG synchronized state figure4.1.2 DTC model information，HBI7500TL	V3.3		2020/10/13

	03 、 06 function code address： 164~168： EMS droop mode. figure4.1.2 DTC model information， HBI30_V2/ HBI50_V2	V3.4		2020/11/5
	04 function code address：270-299：Hardware Softwareversion	V3.5		2020/11/18
	HBITL/PBD Fault information shee 03、06 function code address：149：system battery current calibration parameter.	V3.6		2020/12/18
	03、06 function code address：128：Starting voltage differential 129： DC soft star contactor enable 4 function code address： 229： CP power limit Fault information sheet 4.3.11	V3.7		2021/4/8
	DTC of new machine HBI15KTL-HBI40KTL， new insulation module related faults and insulation resistance	V3.8		2021/10/29
	03、06 function code address：202~203，227~238： Back power set, Frequence controlled power output enable, Constant discharge current, Grid charge enable, Forced charge enable, SOC calibration set, SOH calibtration set, Offline discharge cutoff SOC, Offline discharge restore SOC, DC contactor back check enable, Bypass communication station number, Bypass communication station number enable, Bypass numbers, Bypass shared enable 04 function code address：231~234: Max discharge power, Charging pile max power, Diesel generator demand power, HBI start request Fault information sheet 4.3.3 SmokealarmFault changed to Fire fault	V3.9		2021/12/16

	03、06 Function Code: Address 206-209，225、226、241-242 AC overvoltage protection time (20ms), output voltage direct calibration U, output voltage direct calibration V, output voltage direct calibration W；Grid charging power、Parallel signal test Enable、 SOC upper limit 1 , SOC lower limit 1. 03, 04, 06 Function code: Content renamed	V3.10		2022/5/27
	03、06 Function Code: Address 280, 281, 286, 287: active average flow KP, active average flow KI, reactive average flow KP, reactive average flow KI 26: Mode Select：Added mode 10 Grid load mode 04 Function Code: Address 192 Operation mode: added 15 grid load mode; Modify model information and DTC model information; Fault Information Update	V3.11		2022/6/1
	03, 06 Function code: Address 222, 221: week, meter communication station number; Off-peak season schedule time setting 04 Function code: Address 243-249:	V3.12		2202/6/29

Contents

1. Introduction

This document describes the internal and external communication protocol of monitoring software, which is applicable to HBI series, PCS series and PBD series model communication.
This agreement refers to <GBT 19582-2008 industrial automation network specification based on Modbus protocol>.
RS232 and RS485 can be used as physical interfaces.
Data signal transmission rate: 2400bps, 9600bps; default 9600bps.。
Note: the protocol is applicable to the following models:

Central type HBI：HBI 30、HBI 50、HBI 100、HBI 120、HBI 150。
String type HBI： HBI10 KTL、HBI 20KTL、HBI 10KTLS 、HBI 7500TLS、HBI 5KTLS、HBI 3500TLS 。
PCS：PCS 50、PCS 100 、PCS 250、PCS 500、PCS 630。
PBD： PBD 250、PBD 350 。

2. MODBUSProtocol description

2.1 ModbusAddress rule

Modbus is the master - slave communication mode. The communication is initiated by the master, and the slave corresponding to the address responds

The host has no address, and the slave address range is: 1 ~ 247; 0 is the broadcast address. The slave address is unique on the Modbus serial bus

2.2 ModbusProtocol frame

Modbus protocol frame consists of address field, function code, data field and check code.

Fig2.1.1 General MODBUS frame

Address field	Function code	Data field	Verification code

2.3 RTU Transmission mode

2.3.1 Byte format

Byte includes: 1 start bit, 8 data bits (first send least significant bit), No parity bit, 2 stop bits, 11 bits in total
Each character or byte is sent in sub order (left to right): least significant bit (LSB) Most significant bit (MSB)

Fig 2.3.1 RTU Byte order in transmission mode

Start bit	Data bit								Stop bit	Stop bit
1	1	2	3	1	1	2	3	1	1	2

2.3.2 RTU Message frame

RTU message frame includes slave address, function code, data field and CRC verification

The maximum frame size of RTU message is 256 bytes, and the maximum length of data field is 252 bytes

Fig2.3.2a RTU Message frame

Format	Slave address	Function code	Data	CRC verification	
Bytes	1byte	1byte	0~252bytes	2bytes	
				Low byte	High byte

In RTU mode, the message frame is separated by idle interval of at least 3.5 characters
The entire message frame must be sent in a continuous character stream
If the idle interval between two characters is more than 1.5 characters, the message frame is considered incomplete, and the receiving station should discard the message frame

Fig2.3.2b RTU Message frame sending sequence

	Modbus message				
Start	Slave address	Function code	Data	CRC verification	End
≥3.5 Character time	8 bytes	8 bytes	N*8 bytes	16 bytes	≥3.5 Character time

2.3.3 CRC verify

CRC contains a 16 bit value consisting of two 8-bit bytes
CRC field is attached to the message as the last field of the message. When this kind of addition is carried out, first attach the low byte of the field, then the high byte of the additional field. CRC high byte is the last byte sent in the message

Calculation of CRC:
The CRC calculation is started by preloading all 1 in a 16 bit register. Then, the 8-bit bytes in the subsequent message and the contents in the current register are calculated. Only 8 data bits in each character participate in the calculation of generating CRC. The start bit, stop bit and check bit do not participate in the CRC calculation
During the Generation of CRC, each 8-bit character is XOR with the value in the register. Then, move the result to the least significant bit (LSB), and fill the most significant bit (MSB) with zero. Extract and check LSB. If LSB is 1, the value in the register is XOR with a fixed preset value; if LSB is 0, no XOR operation is performed
This process will be repeated until 8 shifts are completed. After the last shift (bit 8), the next 8-bit byte is XOR with the current value of the register, and then repeat the process 8 times as described above. After all bytes in the message have been calculated, the final value of the register is CRC

2.4 ASCII transmission mode

2.4.1 Byte format

Byte frame includes: 1 start bit, 7 data bits (first send least significant bit), no check bit, 2 stop bits, a total of 10 bits
Each character or byte is sent in sub order (left to right): least significant bit (LSB) Most significant bit (MSB)

Fig 2.4.1 ASCII byte order in ASCII transmission mode

Start bit	Data bit							Stop bit	Stop bit
1	1	2	3	4	5	6	7	1	1

2.4.2 ASCII Message frame

ASCII message frame includes: start character, slave address, function code, data, LRC check, end character.
The maximum length of ASCII message frame is 513 bytes, and the maximum length of data field is 2x252 bytes.

Fig 2.4.2 ASCII Message frame

Start Character	Slave address	Function code	Data	LRCVerification	Terminator
1character	2 characters	2 characters	0~2x252 characters	2 characters	2 characters
:					CR, LF

2.4.3 LRC verification

The LRC field is a byte containing an 8-bit binary value.
LRC field is encoded as two byte ASCII code and placed before CRLF of ASCII mode message frame.
Calculation of LRC:
Sum up all consecutive 8-bit bytes in the message (excluding the fields from "colon" and "CRLF") and then calculate the binary complement of the result as the calculated LRC code

2.4.4 Data format

Data: the value is one byte char type. The transmission consists of two ASCII codes, first high and then low. The data range is as follows:
Signed char type: - 128 ~ + 127
Unsigned char type: 0 ~ 255
Data: the value is a two byte integer. The transmission consists of four ASCII codes, first high and then low. The data range is as follows:
Signed integer: - 32768 ~ + 32767
Unsigned integer: 0 ~ + 65535

2.5 Function code

Fig2.5.1 Only the function code applied in this agreement is listed

Fig2.5.1 Function code list

No	Function code	Description	Note
1	01H	Read output status	
2	02H	Read input status	
3	03H	Read holding register	
4	04H	Read input register	
5	05H	Write single output status	
6	06H	Write single register	
7	0FH	Write multiple output	

		states	
8	10H	Write multiple registers	
9	14H	Read file record	
10	2BH	Read device ID	

2.6 Exception code

Fig2.4.1 List of exception codes

Code	Description	Note
01H	Illegal Function code	Function code received in query is not allowed
02H	Illegal data address	The data address received in the query is not allowed
03H	Illegal data value	The value included in the query is not allowed
06H	Slave busy	
08H	Storage parity error	

2.7 MODBUS communication

2.7.1 Read output status(Function code0x01)

Read output status request:

Function code	1byte	0x01
Initial address	2byte	0x0000~0xFFFF
Number of output states	2byte	1~2000(0x7D0)

Read output status response:

Function code	1byte	0x01
Bytes	1byte	N *
Output status value	N *byte	
* N=Number of output states/8, If the remainder is not 0, then N=N+1		

Read output status error response:

Abnormal Function code	1byte	0x81
Exception code	1byte	01 or 02 or 03 or 04

i.e.: Request Read output status20~38.

Read out output status example

Request		Response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	01	Function code	01
Initial address Hi	00	Bytes	03
Initial address Lo	13	Output state20~27	CD
Output quantity Hi	00	Output state28~35	6B
Output quantity Lo	13	Output state36~38	05

Note:

1.Output state1 Corresponding address0x0000;

2.Output state20 Corresponding address 0x0013.

	Output state20~27								Output state28~35								Output state36~38							
Hexadecimal	CD								6B								05							
Binary	b0	b1	b2	b3	b4	b5	b6	b7	b0	b1	b2	b3	b4	b5	b6	b7	b0	b1	b2	b3	b4	b5	b6	b7
	1	0	1	1	0	0	1	1	1	1	0	1	0	1	1	0	1	0	1	0	0	0	0	0
Corresponding Output state	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	-	-	-	-	-

2.7.2 Read input status(Function code: 0x02)

Read input status request:

Function code	1byte	0x02
Initial address	2byte	0x0000~0xFFFF
Number of input states	2byte	1~2000(0x7D0)

Read input status response:

Function code	1byte	0x02
Bytes	1byte	N *
Input status value	N *byte	
* N=Number of output states/8, If the remainder is not 0, then N=N+1		

Read input status error response:

Abnormal Function code	1byte	0x82
Exception code	1byte	01or02or03or04

i.e.:Request Read input status197~218

Read input status example

request	response

Field name	Hexadecimal	Field name	Hexadecimal
Function code	02	Function code	02
Initial addressHi	00	Bytes	03
Initial addressLo	C4	Input state197~204	AC
輸入數量 Hi	00	Input state205~212	DB
輸入數量 Lo	16	Input state218~213	35

	Input state197~204								Input state205~212								Input state218~213							
Hexadecimal	AC								DB								35							
Binary	b0	b1	b2	b3	b4	b5	b6	b7	b0	b1	b2	b3	b4	b5	b6	b7	b0	b1	b2	b3	b4	b5	b6	b7
	0	0	1	1	0	1	0	1	1	1	0	1	1	0	1	1	1	0	1	0	1	1	0	0
Corresponding Output state	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	-	-

2.7.3 Read holding register(Function code: 0x03)

Read holding registerrequest:

Function code	1byte	0x03
Initial address	2byte	0x0000~0xFFFF
Number of registers	2byte	1~125(0x7D)

Read holding registerresponse:

Function code	1byte	0x03
Bytes	1byte	2×N *
Register value	N * ×2byte	
* N=Number of registers		

Read holding registererrorresponse:

Abnormal function code	1byte	0x83
Exception code	1byte	01or02or03or04

i.e.: Request to read holding register[108~110].

Read holding registerexample

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	03	Function code	03
Initial addressHi	00	Bytes	06
Initial addressLo	6B	Register[108]Hi	02
Number of registersHi	00	Register[108]Lo	2B

Number of registersLo	03	Register[109]Hi	00
		Register[109]Lo	00
		Register[110]Hi	00
		Register[110]Lo	64

Note:

1.Register[1] Correspondingaddress 0x0000;

2.Register[108] Corresponding address 0x006B.

2.7.4 Read input register(Function code: 0x04)

Read input register request:

Function code	1byte	0x04
Initial address	2byte	0x0000~0xFFFF
Number of registers	2byte	1~125(0x7D)

Read input register response:

Function code	1byte	0x04
Bytes	1byte	2×N *
Register value	N * ×2byte	
* N=Number of registers		

Read input register error response:

Abnormal Function code	1byte	0x84
Exception code	1byte	01or02or03or04

i.e.:Request Read input register9.

Read out input register example

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function	04	Function	04
Initial addressHi	00	Bytes	02
Initial addressLo	08	Register[09]Hi	00
Number of registersHi	00	Register[09]Lo	0A
Number of registersLo	01		

Note:

1.Address 0x0000 corresponds to register [1];

2.Address 0x0008 corresponds to register [9]

2.7.5Write single output status(Function code: 0x05)

Write single output status request

Function code	1byte	0x05
Output state address	2byte	0x0000~0xFFFF
Output status value	2byte	0x0000or0xFF00

Write single output status response

Function code	1byte	0x05
Output state address	2byte	0x0000~0xFFFF
Output status value	2byte	0x0000or0xFF00

Write single output status error response

Abnormal Function code	1byte	0x85
Exception code	1byte	01or02or03or04

i.e.:Request write status 173 as on.

Write single output status example

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	05	Function code	05
Output address Hi	00	Output address Hi	00
Output address Lo	AC	Output address Lo	AC
Output value Hi	FF	Output value Hi	FF
Output value Lo	00	Output value Lo	00

2.7.6 Write single holding register(Function code: 0x06)

Write single holding register request

Function code	1byte	0x06
Holding register address	2byte	0x0000~0xFFFF
Holding register value	2byte	0x0000~0xFFFF

Write single holding register response

Function code	1byte	0x06
Holding register address	2byte	0x0000~0xFFFF
Holding register value	2byte	0x0000~0xFFFF

Write single holding register error response

Abnormal function code	1byte	0x86
Exception code	1byte	01or02or03or04

i.e.:Request to write 0x0003 to holding register[2].

Example of writing a single holding register

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	06	Function	06
Holding register address Hi	00	Holding register address Hi	00
Holding register address Lo	01	Holding register address Lo	01
Holding register value Hi	00	Holding register value Hi	00
Holding register value Lo	03	Holding register value Lo	03

2.7.7 Write multiple output states(Function code: 0x0F)

Write multiple output states request

Function code	1byte	0x0F
Initial address	2byte	0x0000~0xFFFF
Number of output states	2byte	0x0001~0x07B0
Bytes	1byte	N
Output status value	N×1byte	value
* N=Output quantity/8, If the remainder is not equal to 0, then N=N+1		

Write multiple output states response

Function code	1byte	0x0F
Initial address	2byte	0x0000~0xFFFF
Number of output states	2byte	0x0001~0x07B0

Write multiple output states error response

Abnormal function code	1byte	0x8F
Exception code	1byte	01or02or03or04

i.e.:Request write starts from output state [20] and there are 10 output states in total.

Write multiple output states example

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	0F	Function code	0F
Initial address Hi	00	Initial address Hi	00
Initial address Lo	13	Initial address Lo	13

Number of output states Hi	00	Number of output states Hi	00
Number of output states Lo	0A	Number of output states Lo	0A
Bytes	02		
Output status value Hi	CD		
Output status value Lo	01		

	Output state20~27								Output state28~29							
Hexadecimal	CD								01							
Binary	b0	b1	b2	b3	b4	b5	b6	b7	b0	B1	b2	b3	b4	b5	b6	b7
	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0
Corresponding Output state	20	21	22	23	24	25	26	27	28	29	-	-	-	-	-	-

2.7.8 Write multiple registers(Function code: 0x10)

Write multiple registers request

Function code	1byte	0x10
Initial address	2byte	0x0000~0xFFFF
Number of registers	2byte	1~123（0x7B）
Bytes	1byte	2×N
Register value	N×2byte	value
* N=Number of registers		

Write multiple registers response

Function code	1byte	0x10
Initial address	2byte	0x0000~0xFFFF
Number of registers	2byte	1~123（0x7B）

Write multiple registers error response

Abnormal function code	1byte	0x90
Exception code	1byte	01or02or03or04

i.e.: Request to write two registers with address from 0x0001.

Write multiple registers example

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	10	Function code	10
Initial address Hi	00	Initial address Hi	00
Initial address Lo	01	Initial address Lo	01
Number of registers Hi	00	Number of registers Hi	00
Number of registers Lo	02	Number of registers Lo	02
Bytes	04		

Register value Hi	00		
Register value Lo	0A		
Register value Hi	01		
Register value Lo	02		

2.7.9 Read file record(Function code: 0x14)

Read file record request

Function code	1byte	0x14
Bytes	1byte	0x07~0xF5byte
Sub request x, reference type	1byte	0x06
Sub request x, Document number	2byte	0x0001~0xFFFF
Sub request x, Record number	2byte	0x0000~0x270F
Sub request x, Record length	2byte	N
Sub request x+1, …	…	…

Read file record response

Function code	1byte	0x14
Response data length	1byte	0x07~0xF5
Sub request x, File response length	1byte	0x05~0xF5（RUDY）
Sub request x, reference type	1byte	06
Sub request x, Recorded data	N×2byte	…
Sub request x+1, …	…	…

Read file record error response

Abnormal function code	1byte	0x94
Exception code	1byte	01or02or03or04or08

i.e.:Group 1 includes 2 registers in file 4, starting with register 1 (address 0x0001).
Group 2 includes 2 registers in file 3, starting with register 9 (address 0x0009).

Examples of requesting to read two reference group from a remote device

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	14	Function code	14
Bytes	0E	Response data length	0C
Sub request 1, reference type	06	Sub request 1, File response length	05
Sub request 1, Document number Hi	00	Sub request 1, reference type	06
Sub request 1, Document number Lo	04	Sub request 1, Register data Hi	0D
Sub request 1, Record number Hi	00	Sub request 1, Register data Lo	FE
Sub request 1, Record number Lo	01	Sub request 1, Register data Hi	00

Sub request 1, Record length Hi	00	Sub request 1, Register data Lo	20
Sub request 1, Record length Lo	02	Sub request 2, File response length	05
Sub request 2, reference type	06	Sub request 2, reference type	06
Sub request 2, Document number Hi	00	Sub request 2, Register data Hi	33
Sub request 2, Document number Lo	03	Sub request 2, Register data Lo	CD
Sub request 2, Record number Hi	00	Sub request 2, Register data Hi	00
Sub request 2, Record number Lo	09	Sub request 2, Register data Lo	40
Sub request 2, Record length Hi	00		
Sub request 2, Record length Lo	02		

2.7.10Read device ID(Function code: 0x2B)

Read device ID request

Function code	1byte	0x2B
MEI type	1byte	0x0E
Device ID code	1byte	01/02/03/04
Object ID	1byte	0x00~0xFF

Read device ID response

Function code	1byte	0x2B
MEI type	1byte	0x0E
Device ID code	1byte	01/02/03/04
Consistency level	1byte	0x01or0x02or0x03or0x81or0x82or0x83
Continuous marking	1byte	00/FF
Next object ID	1byte	Object ID number
Number of objects	1byte	…
List		
Object ID	1byte	…
Object length	1byte	…
Object value	Object length	Related to object ID

Read file record error response

Abnormal function code	1byte	0xAB
Exception code	1byte	01or02or03or04

Description:

1.Device ID code type（ReadDevId）

Device ID code	Description
01	Request get basic device ID (stream access)

02	Request get regular device ID (stream access)
03	Request get extended device ID (stream access)
04	Request get specific device ID (single access)

2. Object ID

Object ID	Object name / description	Type	M/O	Class
0x00	Manufacturer name	ASCII string	Mandatory	Basic
0x01	Product code	ASCII string	Mandatory	
0x02	Primary and secondary version No	ASCII string	Mandatory	
0x03	Manufacturer website	ASCII string	Optional	Regular
0x04	Product name	ASCII string	Optional	
0x05	Model name	ASCII string	Optional	
0x06	User application name	ASCII string	Optional	
0x07 … 0x7F	Reserved		Optional	
0x80 … 0xFF	Optionally define private objects The range (0x80 ~ 0xff) is related to the product	Equipment related	Optional	Expanded

2.Consistency level

Consistency level	Description
0x01	Basic identity (stream access only)
0x02	General identity (stream access only)
0x03	General identity (stream access only)
0x81	Basic identity (stream access and single access)
0x82	General identity (stream access and single access)
0x83	Extended identity (stream access and single access

Continuous marking

When the read device ID code is 01, 02 or (stream access): 00: no follow-up object; FF: there is follow-up object.

In case of reading device ID code 04: it must be set to 00.

Example 1: read device ID request for basic device ID.

Request basic device ID example

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function code	2B	Function code	2B
MEI type	0E	MEI type	0E
Device ID code	01	Device ID code	01
Object ID	00	Consistency level	01

		Continuous marking	00
		Next object ID	00
		Number of objects	03
		Object ID	00
		Object length	16
		Object value	“Company identification”
		Object ID	01
		Object length	0D
		Object value	“product code XX”
		Object ID	02
		Object length	05
		Object value	“V2.11”

Example 2:

Transaction 1

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function	2B	Function	2B
MEI type	0E	MEI type	0E
Read Device ID code	01	Read Device ID code	01
Object ID	00	Consistency level	01
		Continuous marking	00
		Next object ID	00
		Number of objects	03
		Object ID	00
		Object length	16
		Object value	“Company identification”
		Object ID	01
		Object length	0D
		Object value	“Product code XXXXXXXXXXXXXXX”

Example 3:

Transaction 2

request		response	
Field name	Hexadecimal	Field name	Hexadecimal
Function	2B	Function	2B
MEI type	0E	MEI type	0E
Read Device ID code	01	Read Device ID code	01
Object ID	02	Consistency level	01
		Continuous marking	00
		Next object ID	00

		Number of objects	03
		Object ID	02
		Object length	05
		Object value	“V2.11”

3、Read holding register address（function code：0x03）

Read holding register address	content	Subordinate aircraft	Size	Range	Unit	Note
0	on/off	all model	2Byte			0: Off;1: On
1	Island Protection Level	HBI/PCS /HBITL	2Byte			Input ranges from 0 to 9, with 1 to 9 indicating a level
2	Grid management enable		2Byte			0: Disable;1: Enable
3	GFDI enable		2Byte			0: Disable;1: Enable
4	GFCI enable		2Byte			0: Disable;1: Enable
5	Insulation Impedance Test Enable	all model	2Byte			0: Disable;1: Enable
6	Factory reset enable		2Byte			0: Invalid;1: Valid
7	GFDI Grounding Selection	HBI/PCS /HBITL	2Byte			0: Ungrounded;1: Grounded
8	Grid & PV Charge Together Enable		2Byte			0: Disable;1: Enable
9	Low voltage ride through enable		2Byte			0: Disable;1: Enable
10	Active power regulation enable		2Byte			0: Disable;1: Enable
11	Reactive power regulation enable		2Byte			0: Disable;1: Enable
12	Manual Adjustment Enable		2Byte			0: Disable;1: Enable
13	Bypass Cabinet Enable（PCS） ATS Enable（HBI）		2Byte			0: Disable;1: Enable
14	BMS communication enable	all model	2Byte			0: Disable;1: Enable
15	Fuse protection enable	HBI/PCS /HBITL	2Byte			0: Disable;1: Enable
16	Anti-reflux enable		2Byte			0: Disable;1: Enable
17	Generator enable		2Byte			0: Disable;1: Enable
18	CP enable	PCS	2Byte			0: Disable;1: Enable
19	PBD350 Enable		2Byte			0: Disable;1: Enable
20	Minimum insulation impedance	all model	2Byte	100~20000	0.1KΩ	
21	Type setting		2Byte	0~8		See fig4.1.1
22	Safety regulation setting		2Byte	0~6		See fig4.2.1
23	Communication Station		2Byte	1~32		

	Setting					
24	Parallel Enable		2Byte			0: Disable;1: Enable
25	hardware version choice		2Byte	0~100		
26	Mode selection		2Byte			0: load priority 1: Battery priority 2. Economic mode 3: peak shaving 4: multi period charging and discharging 5: manual dispatching 6: battery protection 7: backup power management 8: constant power discharge 9: forced charging 10 Gird load mode
27	Schneider contactor state	HBI	2Byte			0：off；1：on（Schneider project：non-standard）
28	Grid state	HBI	2Byte			0：abnormal；1：normal（Schneider project：non-standard）
29	Forced OnGrid to OffGrid switch enable	HBI/PCS	2Byte			0: Disable;1: Enable
30	Charging direction enable	PCS	2Byte			0: Discharge;1: Charge
31	PBD250Enable	PCS	2Byte			0: Disable;1: Enable
32	EMS enable	all model	2Byte			0: Disable;1: Enable
33	PV power setting		2Byte	0~500	1KW	
34	Inverter rectifier direction flag bit	HBI	2Byte			0: Invert;1: rectify
35	Inverter rectifier power setting		2Byte	0~500	1KW	
36	DC source mode enable	PCS	2Byte			0: Disable;1: Enable
37	Battery current calibration enable	all model	2Byte			0: Disable;1: Enable
38	Parallel RedundantNumber	HBI/PCS	2Byte	0/1		
39	Generator start condition	HBI/PCS	2Byte			0：Disable；1：Enable（Namibia project nonstandard）
40	SOC_Start enale	HBI/PCS	2Byte			0：Disable；1：Enable（Namibia project

						nonstandard）
41	Line voltage sampling enable	PCS	2Byte			0: Disable;1: Enable
42	Monitor parallel judgment mark	All model	2Byte	1~100		0：single unit The minimum parallel judgment value is 1; Same value: parallel (data accumulation)
43	DTC（protocol）	all model	2Byte	22001~22006		(Only HBI) See Fig4.1.2
				22008~22021		HBITL See Fig4.1.2
				21016~21039		PCS See Fig4.1.2
				23001~23003		PBD See Fig4.1.2
44	grid power compensation	HBI/PCS	2Byte	0~100	0.1KW	
45	PBD parallel number setting	PCS	2Byte	0~100	1	
46	Generator power Upper Limit	HBI/PCS /HBITL	2Byte	0~500	1KW	
47	Discharge cut-off SOC	HBI/PCS	2Byte	0~100	%	
48	Output voltage setting	HBI/PCS /HBITL	2Byte	380/400	1V	
49	Output Frequency setting		2Byte	50/60	1Hz	
50	Maximum DC voltage（PV）	All mode	2Byte	2000~10000	0.1V	
51	Grid voltage upper limit	HBI/PCS /HBITL	2Byte	1600~5500	0.1V	
52	Grid voltage lower limit		2Byte	1600~5500	0.1V	
53	Grid frequency upper limit		2Byte	4500~6500	0.01 Hz	
54	Grid frequency lower limit		2Byte	4500~6500	0.01 Hz	
55	AC output current upper limit		2Byte	10~20000	0.1A	
56	Check Time	All model	2Byte	0~1000	1S	
57	Shadow voltage variation		2Byte	1~150	0.1V	
58	Output power upper limit		2Byte	0~120	%	
59	Output power seting		2Byte	0~500	KW	
60	Start Voltage		2Byte	3000~8500	0.1V	
61	Max MPPT Voltage		2Byte	3000~15000	0.1V	
62	Min MPPT Voltage		2Byte	3000~15000	0.1V	

63	Start Power		2Byte	0~500	0.1kW	
64	Battery Charge Current		2Byte	0~800	1A/0.1A	Large and small inverters use different units HBI / PCS / PBD: 1A String type HBITL: 0.1A
65	Grid Power UP Limit	HBI/PCS /HBITL	2Byte	0~500	1kW	
66	SOC Up Limit	All mode	2Byte	0~100	%	
67	SOC Down Limit		2Byte	0~100	%	
68	Output voltage Up Limit	PBD	2Byte	2000~10000	0.1V	
69	Output voltage Down Limit		2Byte	2000~10000	0.1V	
70	PV Current Up Limit		2Byte	0~500	A	
71	PV Inductor Current Up Limit		2Byte	0~500	A	
72	Output Inductor Curr Up Limit		2Byte	0~500	A	
73	Output current Up Limit		2Byte	0~500	A	
74	Voltage reference	PCS/HBITL	2Byte	0~800	V	
75	BMS SOC Up Limit	HBITL	2Byte	0~100	%	
76	BMS SOC Down Limit		2Byte	0~100	%	
77	Number of parallel machines	HBI/PCS	2Byte	0~255	1	
78	Input power seting	PCS	2Byte	0~800	1	
79	Frequency shift enable	PCS	2Byte	0~2	1	0: Disable;1: mode1； 2：mode2
80	PV voltage	All mode	2Byte	2000~10000	0.1V	Calibration
81	Battery voltage		2Byte	2000~10000	0.1V	Calibration
82	Battery current		2Byte	10~20000	0.1A	Calibration
83	PV current		2Byte	10~20000	0.1A	Calibration
84	Output voltage U		2Byte	1600~5500	0.1V	Calibration
85	Output voltage V		2Byte	1600~5500	0.1V	Calibration
86	Output voltage W		2Byte	1600~5500	0.1V	Calibration
87	Grid current U		2Byte	10~20000	0.1A	Calibration
88	Grid current V		2Byte	10~20000	0.1A	Calibration
89	Grid current W		2Byte	10~20000	0.1A	Calibration
90	Grid voltage UV		2Byte	1600~5500	0.1V	Calibration
91	Grid voltage VW		2Byte	1600~5500	0.1V	Calibration
92	Grid voltage WU		2Byte	1600~5500	0.1V	Calibration
93	Load current U		2Byte	10~20000	0.1A	Calibration
94	Load current V		2Byte	10~20000	0.1A	Calibration

95	Load current W		2Byte	10~20000	0.1A	Calibration
99	Upper limit of battery voltage	HBI/PCS	2Byte	0~65535	0.001	Namibia：Nonstandard
100	Lower limit of battery voltage		2Byte	0~65535	0.001	
101	HBI/PCS upper temperature limit		2Byte	0~100	1℃	
102	HBI/PCS lower temperature limit		2Byte	0~100	1℃	
103	Upper limit of battery temperature		2Byte	0~100	1℃	
104	Lower limit of battery temperature		2Byte	0~100	1℃	
105						
106						
107	Load power upper limit		2Byte	0~500	1KW	
108	Lower limit of load power		2Byte	0~500	1KW	
109	time limit of Generator starting		2Byte	0~1000	1min	
110	Battery charging small current positive and negative bias flag	All mode	2Byte	0~1		0:positive 1：negetive
111	Small current bias value of battery charging		2Byte	0~200	0.1A	
112	Battery discharging small current positive and negative bias flag		2Byte	0~1		0:positive 1：negetive
113	Small current bias value of battery discharge		2Byte	0~200	0.1A	
114	Battery charging calibration LCD current 1		2Byte	0~8000	0.1A	
115	Battery charging calibration actual current 1		2Byte	0~8000	0.1 A	
116	Battery charging calibration LCD current 2		2Byte	0~8000	0.1 A	
117	Battery charging calibration actual current 2		2Byte	0~8000	0.1 A	

118	CP nominal power setting		2Byte	0~1000	1KW	
119	Parallel Address		2Byte	0~255		
120	High byte：year		1Byte	0~99	Year	Date of delivery
	Low byte：month		1Byte	1~12	Month	Date of delivery
121	High byte'：day		1Byte	1~31	Day	Date of delvery
122	Battery discharging calibration LCD current 1		2Byte	0~8000	0.1 A	
123	Battery discharging calibration actual current 1		2Byte	0~8000	0.1 A	
124	Battery discharging calibration LCD current 2		2Byte	0~8000	0.1 A	
125	Battery discharging calibration actual current 2		2Byte	0~8000	0.1 A	
126	Bypass Type setting	PCS	2Byte	0~100		Bypass30:1; Bypass50:2 Bypass120:3; Bypass150:4; Bypass250:5; Bypass500:6; Bypass630:7; Bypass1000:8;
127	Boot and App Burn selection	All mode	2Byte	0~1		0:Burn App;1:Burn Boot
128	Starting voltage differential	PBD	2Byte	0~200	1V	
129	DC soft start contactor enable	PCS	2Byte	0~1		0: Disable;1: Enable
130	High byte：year	All mode	1Byte	12~100	Year	System date time
	Low byte：month		1Byte	1~12	Month	System date time
131	High byte：day		1Byte	1~31	Day	System date time
	Low byte：hour		1Byte	0~23	Hour	System date time
132	High byte：minute		1Byte	0~59	Minute	System date time
	Lowe byte：second		1Byte	0~59	Second	System date time
133	PV1 Voltage	PBD	2Byte	2000~10000	0.1V	Calibration
134	PV2 Voltage		2Byte	2000~10000	0.1V	Calibration

135	PV3 Voltage		2Byte	2000~10000	0.1V	Calibration
136	PV4 Voltage		2Byte	2000~10000	0.1V	Calibration
137	PV5 Voltage		2Byte	2000~10000	0.1V	Calibration
138	PV1 current		2Byte	10~20000	0.1A	Calibration
139	PV2 current		2Byte	10~20000	0.1A	Calibration
140	PV3 current		2Byte	10~20000	0.1A	Calibration
141	PV4 current		2Byte	10~20000	0.1A	Calibration
142	PV5 current		2Byte	10~20000	0.1A	Calibration
143	OutVoltage		2Byte	2000~10000	0.1V	Calibration
144	Systembattery charging current positive and negative bias flag	PCS	2Byte	0~1		0:positive 1：negetive
145	current bias value of battery charging		2Byte	0~200	0.1A	
146	Systembattery discharge current positive and negative bias flag		2Byte	0~1		0:positive 1：negetive
147	Small current bias value of battery discharge		2Byte	0~200	0.1A	
148	Generator synchronized state	PCS	2Byte			0：unsynchronized ; 1:synchronized
149	Systembattery current calibration enable		2Byte			0：Disable；1：Enable
150	Battery charging satuation	All mode	2Byte	0~10	1	
151	Battery group number		2Byte	0~100	1	
152	Battery unit number		2Byte	0~50000	1	
153	Battery capacity		2Byte	0~50000	1AH	
154	Charging current limit		2Byte	0~10000	0.1A	
155	Discharging current limit		2Byte	0~10000	0.1A	
156	Floate charging voltage		2Byte	0~50000	0.001V	For each cell
157	Low voltage Warning		2Byte	0~50000	0.001V	For each cell
158	Low voltage fault		2Byte	0~50000	0.001V	For each cell
159	High voltage fault		2Byte	0~50000	0.001V	For each cell
160	Battery start voltage		2Byte	0~50000	0.001V	For each cell
161	Single PV to off-grid		2Byte	0~50000	0.001V	For each cell
162	Discharge cut-off voltage		2Byte	0~50000	0.001V	For each cell
163	Floate charge current limit point setting		2Byte	0~100	0.01V	For each cell
164	Command to Active /		2Byte			

	Deactive Droop Mode					
165	Frequency Offset		2Byte		0.01Hz	
166	Active power droop slope		2Byte		0.1%	
167	Voltage Offset		2Byte		0.1V	
168	Reactive power droop slope		2Byte		0.1%	
169	Upper limit power feed from grid	HBI/PCS /HBITL	2Byte	0~500	1kW	
170	Generator not charge enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable
171	Charging pile enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable
172	Battery discharging current	HBI	2Byte		1A	
173	Peak period limit power enable	PCS	2Byte	0~1		
174	Battery power export to grid set	HBI/PCS	2Byte	0~150	1kW	Poland 5 HBI
175	Generator charging power up limit		2Byte		0.1kW	
176	BMS voltage judge enable		2Byte	0~1		SOC judge logic are not used after BMS voltage judge enable
177	Discharge Recover SOC		2Byte	0~100		After entering discharge stop state, recover discharge
178	Charging cut off SOC		2Byte	0~100		The battery are not needed to charge to 100% SOC in some programs
179	Grid charge SOC		2Byte			Freedomcustomization
180	reserved					
180	Serial number 0 bit	All mode	1Byte	‘0’~’9’; ‘A’~’Z’		Serial number is 10 bit: ASIIaddress: 180
	Serial number 1 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
181	Serial number 2 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 3 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
182	Serial number 4 bit		1Byte	‘0’~’9’; ‘A’~’Z’		

	Serial number 5 bit		1Byte	'0'~'9'; 'A'~'Z'		
183	Serial number 6 bit		1Byte	'0'~'9'; 'A'~'Z'		
	Serial number 7 bit		1Byte	'0'~'9'; 'A'~'Z'		
184	Serial number 8 bit		1Byte	'0'~'9'; 'A'~'Z'		
	Serial number 9 bit		1Byte	'0'~'9'; 'A'~'Z'		
185	Serial number 10 bit		1Byte	'0'~'9'; 'A'~'Z'		
	Serial number 11 bit		1Byte	'0'~'9'; 'A'~'Z'		
186	Reserve					
187	Reserve					
188	Reserve					
189	Reserve					
190	BUCK current loop Kp	HBI/PCS/HBITL	2Byte	0~65535	0.001	PIDparameter
191	BUCK current loop Ki		2Byte	0~65535	0.0001	PIDparameter
192	BUCK voltage loop Kp		2Byte	0~65535	0.001	PIDparameter
193	BUCK voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
194	Impulse load current loop Kp		2Byte	0~65535	0.001	PID parameter
195	Impulse load current loop Ki		2Byte	0~65535	0.0001	PID parameter
196	Impulse load voltage loop Kp		2Byte	0~65535	0.001	PID parameter
197	Impulse load voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
198	Normal current loop Kp		2Byte	0~65535	0.001	PID parameter
199	Normal current loop Ki		2Byte	0~65535	0.0001	PID parameter
200	Normal voltage loop Kp		2Byte	0~65535	0.001	PID parameter
201	Normal voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
202	Back power set					
203	Frequence controlled power output enable					Non-standard

204						
205						
206	AC OverVolt time(20ms)					
207	Output voltage directly calibrated U		2Byte	1600~5500	0.1	
208	Output voltage directly calibrated V		2Byte	1600~5500	0.1	
209	Output voltage directly calibrated W		2Byte	1600~5500	0.1	
210~220：reserved						
221	Meter communication station number		2Byte			
222	week		2Byte	0-7		system time
223	Bat to non-critical enable		2Byte	0~1		0: disable; 1: enable
224	Cut-off charging power		2Byte		0.1kw	
225	Gird charging power		2Byte		0.1kw	
226	Parallel signal test Enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable
227	Constant discharge current					Non-standard
228	Grid charge enable					Non-standard
229	Forced charge enable					
230	SOC calibration set					Keep two decimal places
231	SOH calibtration set					Keep two decimal places
232	Offline discharge cutoff SOC					Non-standard

233	Offline discharge restore SOC					Non-standard
234	DC contactor back check enable					The default is 1
235	Bypass communication station number（PCS） ATS communication station number（HBI）	HBI/PCS				
236	Bypass communication station number enable（PCS）, ATS communication station number enable（HBI）					
237	Bypass numbers（PCS） ATS numbers（HBI）					
238	Bypass shared enable（PCS） ATS shared enable（HBI）					
239	Charging current limit	HBI/PCS	2Byte	0~10000	0.1A	from 154 to here
240	Discharge current limit	HBI/PCS	2Byte	0~10000	0.1A	from 155 to here
241	SOC Up Limit 1		2Byte	0~100	%	Non-standard
242	SOC Down Limit 1		2Byte	0~100	%	Non-standard
243	Fan opening temperature	HBI	2Byte	0~100	℃	Non-standard
244~249：reserve						
250	Reactive power regulation mode selection	HBI/PCS/ HBITL	2Byte	1~3		U16_RegIq_Mode_Select
251	Power factor reference symbol		2Byte	0~1		U16_RegIq_PF_Sign
252	Power factor reference		2Byte	0~1000	0.001	U16_RegIq_PF_Ref
253	Power reference point 1		2Byte	0~100	%	U16_RegIq_PF_P1
254	Power reference point 2		2Byte	0~100	%	U16_RegIq_PF_P2
255	Power reference point 3		2Byte	0~100	%	U16_RegIq_PF_P3

256	Power reference point 4		2Byte	0~100	%	U16_RegIq_PF_P4
257	Power reference point 5		2Byte	0~100	%	U16_RegIq_PF_P5
258	Power factor reference point 1		2Byte	0~1000	0.001	U16_RegIq_PF_PF1
259	Power factor reference point 2		2Byte	0~1000	0.001	U16_RegIq_PF_PF2
260	Power factor reference point 3		2Byte	0~1000	0.001	U16_RegIq_PF_PF3
261	Power factor reference point 4		2Byte	0~1000	0.001	U16_RegIq_PF_PF4
262	Power factor reference point 5		2Byte	0~1000	0.001	U16_RegIq_PF_PF5
263	Reactive reference symbol		2Byte	0~1		U16_RegIq_Q_Ref_Sign
264	Reactive reference		2Byte	0~300	kVar	U16_RegIq_Q_Ref
265	EN50549Enable	HBI(EN-50549 certification)	2Byte	0~1		0: Disable;1: Enable
266	ReductionFactorEnable		2Byte	0~1		0: Disable;1: Enable
267	ReactiveLockEnable		2Byte	0~1		0: Disable;1: Enable
268	Overfrequency download mode		2Byte	0~2		0: Disable; 1:Mode1;2:Mode2
269	Underfrequency loading mode		2Byte	0~2		0: Disable; 1:Mode1;2:Mode2
270	ResponseTime		2Byte	0~1000	S	
271	Power Rising Speed		2Byte	0~1000	1%/min	
272	Power Down Speed		2Byte	0~1000	1%/min	
273	Overvoltage drop active Enable		2Byte	0/1		0: Disable;1: Enable
274	StartVoltageU3		2Byte	0~1000	1V	
275	EndVoltageU4		2Byte	0~1000	1V	
276	ParallelPhaseSynCompensationCoefficient		2Byte	0~1000		
277	ParallelPhaseSynIntegralCoefficient		2Byte	0~1000		
278	ActiveSagCoefficient		2Byte	0~1000		
279	ReactiveSagCoefficient		2Byte	0~1000		
280	Active power flow Kp		2Byte	0~10000		
281	Active power flow Ki		2Byte	0~10000		
282	Parallel synchronization phase difference limiting coefficient		2Byte	0~1000		
283	reserve					
284	ParallelCirculationCaliE		2Byte	0/1		0: Disable;1: Enable

	nable					
285	Start up condition					0: not allowed turn on 1: allowed turn on
286	Reactive power flow Kp		2Byte	0~10000		
287	Reactive power flow Ki		2Byte	0~10000		
286~302：reserve						
303	inverter Rated power	HBITL	2Byte	0~100	0.1Kw	
304	shinemaster Anti-refluxfailure power setting		2Byte	0~1000	0.1%	
305	shinemaster Anti-refluxfailure flag		2Byte			0：communication normal； 1：Communication failure；
306	shinemaster Anti-reflux enable		2Byte			0: Disable;1: Enable
307	shinemaster Anti-refluxfailure time		2Byte	1~5000	1S	
308	shinemaster Anti-reflux inverter power		2Byte	0~1000	0.1%	
309~379：reserve						
380	Power point 1 of low voltage passing through	HBI/PCS/ HBITL	2Byte	0~100	%	U16_LVRT_Volt_P1
381	Power point 2 of low voltage passing through		2Byte	0~100	%	U16_LVRT_Volt_P2
382	Power point 3 of low voltage passing through		2Byte	0~100	%	U16_LVRT_Volt_P3
383	Power point 4 of low voltage passing through		2Byte	0~100	%	U16_LVRT_Volt_P4
384	Power point 1 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P1
385	Power point 2 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P2
386	Power point 3 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P3
387	Power point 4 of low voltage passing		2Byte	0~5000	2ms	U16_LVRT_Volt_P4

	through					
388~499：reserve						
500						RegIdByFreq_StepPerHz
501						RegIdByFreq_Freq_Start
502						RegIdByFreq_Freq_Recover
503~619：预留						
620						LVRT_Factor_K
621						LVRT_U0
622~749：预留						
750.						GridVolt_High_Limit
751.						GridVolt_High_Back
752.						GridVolt_High_SetTime
753.						GridVolt_High_ClearTime
754.						GridVolt_Low_Limit
755.						GridVolt_Low_Back
756.						GridVolt_Low_Set Time
757.						GridVolt_Low_Clear Time
758.						GridFreq_High_Limit
759.						GridFreq_High_Back
760.						GridFreq_High_SetTime
761.						GridFreq_High_ClearTime
762.						GridFreq_Low_Limit
763.						GridFreq_Low_Back
764.						GridFreq_Low_SetTime
765.						GridFreq_Low_ClearTime
766	Peak set power1	All mode	2Byte	1~500	1kw	Multistage power setting
767	Peak set power2		2Byte	1~500	1kw	Multistage power setting
768	Peak set power3		2Byte	1~500	1kw	Multistage power setting
769	Peak set power4		2Byte	1~500	1kw	Multistage power setting
770	Peak set power5		2Byte	1~500	1kw	Multistage power setting
771	Valley set power 1		2Byte	1~500	1kw	Multistage power setting
772	Valley set power 2		2Byte	1~500	1kw	Multistage power setting
773	Valley set power 3		2Byte	1~500	1kw	Multistage power setting
774	Valley set power 4		2Byte	1~500	1kw	Multistage power setting
775	Valley set power 5		2Byte	1~500	1kw	Multistage power setting
776	Power set in normal period1		2Byte	1~500	1kw	Multistage power setting
777	Power set in normal period2		2Byte	1~500	1kw	Multistage power setting
778	Power set in normal		2Byte	1~500	1kw	Multistage power setting

	period3					
779	Power set in normal period4		2Byte	1~500	1kw	Multistage power setting
780	Power set in normal period5		2Byte	1~500	1kw	Multistage power setting
781~799：reserved						
800	Peak time 1 high byte: Hour	all model	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
801	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
802	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
803	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
804	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
805	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
806	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
807	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
808	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time

809	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
810	Valley time1 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
811	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
812	Valley time2 High byte: Hour	all model	1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
813	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
814	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
815	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
816	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
817	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
818	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
819	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time

	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
820	Normal time1 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
821	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
822	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
823	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
824	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
825	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
826	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
827	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
828	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
829	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time

Set the time of off-season and peak season						
830	Off-season 1 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 1 low byte: day		1Byte	0~31	Day	Strat time
831	Off-season 1 high byte: month		1Byte	0~12	Month	End time
	Off-season 1 low byte: day		1Byte	0~31	Day	End time
832	Off-season 2 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 2 low byte: day		1Byte	0~31	Day	Strat time
833	Off-season 2 high byte: month		1Byte	0~12	Month	End time
	Off-season 2 low byte: day		1Byte	0~31	Day	End time
834	Off-season 3 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 3low byte: day		1Byte	0~31	Day	Strat time
835	Off-season 3 high byte: month		1Byte	0~12	Month	End time
	Off-season 3low byte: day		1Byte	0~31	Day	End time
836	Off-season 4 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 4 low byte: day		1Byte	0~31	Day	Strat time
837	Off-season 4 high byte: month		1Byte	0~12	Month	End time
	Off-season 4 low byte: day		1Byte	0~31	Day	End time
838	Peak season 1 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 1 low byte: day		1Byte	0~31	Day	Strat time
839	Peak season 1 high byte: month		1Byte	0~12	Month	End time
	Peak season 1 low byte: day		1Byte	0~31	Day	End time

840	Peak season 2 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 2 low byte: day		1Byte	0~31	Day	Strat time
841	Peak season 2 high byte: month		1Byte	0~12	Month	End time
	Peak season 2 low byte: day		1Byte	0~31	Day	End time
842	Peak season 3 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 3 low byte: day		1Byte	0~31	Day	Strat time
843	Peak season 3 high byte: month		1Byte	0~12	Month	End time
	Peak season 3 low byte: day		1Byte	0~31	Day	End time
844	Peak season 4 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 4 low byte: day		1Byte	0~31	Day	Strat time
845	Peak season 4 high byte: month		1Byte	0~12	Month	End time
	Peak season 4 low byte: day		1Byte	0~31	Day	End time
Off-season working day:						
846	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
847	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
848	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
849	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time

850	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
851	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
852	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
853	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
854	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
855	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
856	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
857	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
858	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
859	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
860	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time

	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
861	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
862	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
863	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
864	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
865	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
866	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
867	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
868	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
869	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
870	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time

871	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
872	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
873	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
874	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
875	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Off-season Saturday time						
876	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
877	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
878	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
879	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
880	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time

881	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
882	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
883	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
884	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
885	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
886	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
887	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
888	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
889	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
890	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
891	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time

	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
892	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
893	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
894	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
895	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
896	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
897	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
898	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
899	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
900	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
901	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time

902	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
903	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
904	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
905	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Off-season Sunday time						
906	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
907	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
908	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
909	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
910	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
911	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time

912	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
913	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
914	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
915	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
916	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
917	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
918	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
919	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
920	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
921	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
922	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time

	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
923	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
924	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
925	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
926	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
927	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
928	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
929	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
930	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
931	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
932	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time

933	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
934	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
935	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak season working day:						
936	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
937	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
938	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
939	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
940	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
941	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
942	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time

943	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
944	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
945	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
946	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
947	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
948	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
949	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
950	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
951	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
952	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
953	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time

	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
954	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
955	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
956	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
957	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
958	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
959	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
960	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
961	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
962	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
963	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time

964	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
965	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak-season Saturday time						
966	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
967	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
968	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
969	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
970	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
971	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
972	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
973	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time

974	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
975	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
976	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
977	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
978	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
979	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
980	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
981	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
982	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
983	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
984	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time

	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
985	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
986	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
987	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
988	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
989	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
990	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
991	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
992	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
993	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
994	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time

995	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak-season Sunday time						
996	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
997	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
998	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
999	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
1000	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
1001	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
1002	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1003	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
1004	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time

1005	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
1006	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
1007	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
1008	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
1009	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
1010	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
1011	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
1012	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1013	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
1014	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
1015	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time

	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
1016	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
1017	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
1018	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
1019	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
1020	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
1021	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
1022	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1023	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
1024	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
1025	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time

1026						
830~1000: Reserved						

4、Input register（Function code: 0x04）

Input register address	Name	Subordinate aircraft	Size	Range	Unit	Note
0	PV1 Voltage	all model（Except PCS）	2Byte	-15000~15000	0.1V	PCS50TL
1	Battery voltage	all model	2Byte	-9999~9999	0.1V	PCS50TL
2	Battery current		2Byte	-9999~9999	0.1A	PCS50TL
3	PV1 DC current	all model（Except PCS）	2Byte	-9999~9999	0.1A	PCS50TL
4	Output voltage UV	HBI/PCS /HBITL	2Byte	0~9999	0.1V	PCS50TL
5	Output voltage VW		2Byte	0~9999	0.1V	PCS50TL
6	Output voltage WU		2Byte	0~9999	0.1V	PCS50TL
7	Bypass currentU		2Byte	0~65535	0.1A	PCS50TL
8	Bypass currentV		2Byte	0~65535	0.1A	PCS50TL
9	Bypass currentW		2Byte	0~65535	0.1A	PCS50TL
10	inductance1currentA		2Byte	0~65535	0.1A	PCS50TL
11	inductance1currentB		2Byte	0~65535	0.1A	PCS50TL
12	inductance1currentC		2Byte	0~65535	0.1A	PCS50TL
13	Grid bypass voltageUV		2Byte	0~65535	0.1V	PCS50TL
14	Grid bypass voltageVW		2Byte	0~65535	0.1V	PCS50TL
15	Grid bypass voltageWU		2Byte	0~65535	0.1V	PCS50TL
16	Output frequency		2Byte	0~9999	0.01Hz	
17	Battery power	all model	2Byte	-9999~9999	0.1kW	
18	Bypass apparent power	HBI/PCS /HBITL	2Byte	0~9999	0.1kVA	
19	Bypass active power		2Byte	-9999~9999	0.1kW	
20	Bypass reactive power		2Byte	-9999~9999	0.1kVar	
21	Grid frequency		2Byte	0~9999	0.01Hz	
22	Power factor symbol (screen none)		2Byte	0~1		

23	Power factor		2Byte	0~1000	0.001	
24	Battery daily discharge capacity	all model	2Byte	0~65535	0.1KWh	
25	Battery daily discharge time		2Byte	0~65535	0.1Min	
26	Battery daily charge capacity		2Byte	0~65535	0.1KWh	
27	Battery daily charge time		2Byte	0~65535	0.1Min	
28	PV2 insulation test positive	HBITL	2Byte	0~65535	0.1KΩ	
29	PV2 insulation test negative		2Byte	0~65535	0.1KΩ	
30	Temperature of heat sink of converter	HBI/PCS /HBITL	2Byte	-999~999	0.1℃	
31	Buck fin temperature	HBI/PCS	2Byte	-999~999	0.1℃	
32	Inductance temperature of converter		2Byte	-999~999	0.1℃	
33	Buck inductance temperature		2Byte	-999~999	0.1℃	
34	Temperature of DC radiator	HBITL	2Byte	-999~999	0.1℃	
35	Transformer temperature	HBI/PCS	2Byte	-999~999	0.1℃	
36	Ambient temperature	all model	2Byte	-999~999	0.1℃	
37	Balance plate current	HBITL	2Byte	-999~999	0.1A	
38	PV1 positive insulation impedance	all model （Except PCS）	2Byte	0~65535	0.1KΩ	
39	PV1 negative insulation impedance		2Byte	0~65535	0.1KΩ	
40	Battery positive insulation impedance	HBI/PCS /PBD250/PBD350	2Byte	0~65535	0.1KΩ	
41	Battery negative insulation impedance		2Byte	0~65535	0.1KΩ	
42	GFDI1 Leakage current	HBI /PCS	2Byte	0~65535	0.1A	
43	GFDI2 Leakage current		2Byte	0~65535	0.1A	
44	Efficiency	HBITL	2Byte	0~1000	0.1%	
45	Post time	all model	2Byte	0~1000	S	
46	Unit battery voltage		2Byte	0~65535	0.001V	
47	Battery percentage		2Byte	0~100	1%	

48	Apparent power of load	HBI/PCS /HBITL	2Byte	0~9999	0.1kVA	
49	Load active power		2Byte	0~9999	0.1kW	
50	Load reactive power		2Byte	-9999~9999	0.1kVar	
51	PV1 power	all model（Except PCS）	2Byte	0~9999	0.1kW	
52	Load power factor	HBI/PCS /HBITL	2Byte	0~1000	0.001	
53	Load current A		2Byte	-9999~9999	0.1A	
54	Load current B		2Byte	-9999~9999	0.1A	
55	Load current C		2Byte	-9999~9999	0.1A	
56	Output voltage U	HBI/PCS	2Byte	0~9999	0.1V	
57	Output voltage V		2Byte	0~9999	0.1V	
58	Output voltage W		2Byte	0~9999	0.1V	
59	Busbar voltage	HBITL/ PBD250 /PBD350 /PCS	2Byte	-9999~9999	0.1V	
60	Busbar voltage positive	HBITL/ PCS	2Byte	-9999~9999	0.1V	
61	Busbar voltage negative		2Byte	-9999~9999	0.1V	
62	PV daily power generation	all model（Except PCS）	2Byte	0~65535	0.1KWh	
63	PV daily power generation time		2Byte	0~65535	0.1Min	
64	PV total power generation High		2Byte	0~999999999	0.1kWh	
65	PV total power generation Low		2Byte			
66	PV total power generation time High		2Byte	0~999999999	0.1h	
67	PV total power generation time Low		2Byte			
68	Total discharge capacity of battery High	all model	2Byte	0~999999999	0.1kWh	
69	Total discharge capacity of battery Low		2Byte			
70	Total battery discharge time High		2Byte	0~999999999	0.1h	
71	Total battery discharge time Low		2Byte			
72	Total charge capacity of		2Byte	0~999999999	0.1kWh	

	battery High					
73	Total charge capacity of battery Low		2Byte			
74	Total battery charge time High		2Byte	0~999999999	0.1h	
75	Total battery charge time Low		2Byte			
76	PV1 inductance current	all model（Except PCS）	2Byte	-9999~9999	0.1A	
77	PV2 inductance current	HBITL/PBD250/PBD350	2Byte	-9999~9999	0.1A	
78	Output apparent power	PCS	2Byte	0~9999	0.1kVA	
79	Output active power		2Byte	0~9999	0.1kW	
80	Output reactive power		2Byte	-9999~9999	0.1kVar	
81	Bypass frequency	HBI/PCS	2Byte	0~9999	0.01Hz	
82	Daily power consumption of load	HBI/PCS/HBITL	2Byte	0~65535	0.1KWh	
83	Daily power time of load		2Byte	0~65535	0.1Min	
84	Total load consumption High		2Byte	0~999999999	0.1KWh	
85	Total load consumption Low		2Byte			
86	Total power consumption time of load High		2Byte	0~999999999	0.1h	
87	Total power consumption time of load Low		2Byte			
88	Daily power intake from grid		2Byte	0~65535	0.1KWh	
89	Daily power intake time from grid		2Byte	0~65535	0.1Min	
90	Total power intake from grid High		2Byte	0~999999999	0.1KWh	
91	Total power intake from grid Low		2Byte			
92	Total power intake time from grid High		2Byte	0~999999999	0.1h	
93	Total power intake time		2Byte			

	from grid Low					
94	Daily power fed to grid		2Byte	0~65535	0.1KWh	
95	Daily power fed to grid time		2Byte	0~65535	0.1Min	
96	Total power fed to grid High		2Byte	0~999999999	0.1KWh	
97	Total power fed to grid Low		2Byte			
98	Total power fed to grid time High		2Byte	0~999999999	0.1h	
99	Total power fed to grid time Low		2Byte			
100	BMS Max.Charge current	all model	2Byte	0~65535	0.1A	Battery parameter
101	BMSMax.Discharge current		2Byte	0~65535	0.1A	
102	Invert Phase voltage U	HBITL	2Byte	0~9999	0.1V	
103	Invert Phase voltage V		2Byte	0~9999	0.1V	
104	Invert Phase voltage W		2Byte	0~9999	0.1V	
105	PV2 voltage	HBITL/ PBD250 /PBD350	2Byte	-15000~15000	0.1V	
106	PV2 DC current		2Byte	-9999~9999	0.1A	
107	PV2 power		2Byte	-9999~9999	0.1KW	
108	PV total power		2Byte	-9999~9999	0.1KW	
109	Output voltage	PBD250 /PBD350	2Byte	-9999~9999	0.1V	
110	Output current		2Byte	-9999~9999	0.1A	
111	Output inductance1current		2Byte	-9999~9999	0.1A	
112	Output inductance2current		2Byte	-9999~9999	0.1A	
113	Output power		2Byte	-9999~9999	0.1KW	
114	PV Module temperature		2Byte	-999~999	0.1℃	
115	OUT Module temperature		2Byte	-999~999	0.1℃	
116	PV inductance temperature		2Byte	-999~999	0.1℃	
117	OUT inductance temperature		2Byte	-999~999	0.1℃	
118	Bus positive insulation impedance		2Byte	0~65535	0.1KΩ	
119	Bus negative insulation impedance		2Byte	0~65535	0.1KΩ	
120	Output daily discharge		2Byte	0~6000	0.1KWh	
121	Output total discharge High		2Byte	0~999999999	0.1kWh	
122	Output total discharge Low		2Byte			
123	PV3 voltage		2Byte	-15000~15000	0.1V	
124	PV4 voltage		2Byte	-15000~15000	0.1V	
125	PV5 voltage		2Byte	-15000~15000	0.1V	
126	PV3 DC current		2Byte	-9999~9999	0.1A	
127	PV4 DC current		2Byte	-9999~9999	0.1A	

128	PV5 DC current		2Byte	-9999~9999	0.1A	
129	PV3inductancecurrent		2Byte	-9999~9999	0.1A	
130	PV4inductancecurrent		2Byte	-9999~9999	0.1A	
131	PV5 inductance current		2Byte	-9999~9999	0.1A	
132	PV3 power		2Byte	-9999~9999	0.1KW	
133	PV4 power		2Byte	-9999~9999	0.1KW	
134	PV5 power		2Byte	-9999~9999	0.1KW	
135	Output currentU	PCS	2Byte	-9999~9999	0.1A	
136	Output currentV		2Byte	-9999~9999	0.1A	
137	Output currentW		2Byte	-9999~9999	0.1A	
138	Battery inductance current	HBITL	2Byte	-9999~9999	0.1A	
139	BMS Status display	HBITL	2Byte	0/4/5		
140	SCR temperature	HBI	2Byte	-999~999	0.1℃	
141	BAT charge and discharge cycles	HBITL	2Byte	0~9999	1	
142	Bat full load discharge time	HBITL	2Byte	0~9999	0.1	
143	judgement symbol of parallel operation	All Model	2Byte	0~100	1	Same value：parallel Different value：single
144	Battery inductance cuuent 1	PCS50TL	2Byte	-9999~9999	0.1A	
145	Battery inductance cuuent 2		2Byte	-9999~9999	0.1A	
146	Busbar current		2Byte	-9999~9999	0.1A	
147	BAT mode temperature		2Byte	-999~999	0.1℃	
148	balance board mode temperature		2Byte	-999~999	0.1℃	
149	SCR state	HBI	2Byte			0：off；1：on（Schneider project: non-standard）
150	PCS battery charging power	PBD	2Byte	-9999~9999	0.1KW	
151	PCS output power		2Byte	-9999~9999	0.1KW	
152	PBD output power	PCS	2Byte	-9999~9999	0.1KW	
153	HBI Charge power limit	HBITL	2Byte	-9999~9999	0.1KW	
154	CP current U	PCS	2Byte	-9999~9999	0.1A	
155	CP current V		2Byte	-9999~9999	0.1A	
156	CP current W		2Byte	-9999~9999	0.1A	
157	CP active power		2Byte	-9999~9999	0.1KW	
158	INV active power	All model	2Byte	-9999~9999	0.1KW	
159	INV reactive power		2Byte	-9999~9999	0.1KW	
160	INV apparent power		2Byte	-9999~9999	0.1KW	
161	Bypass Type setting	HBI/PCS	2Byte	0~100		Bypass30:1; Bypass50:2 Bypass120:3; Bypass150:4; Bypass250:5;

						Bypass500:6; Bypass630:7; Bypass1000:8;
162	system battery current	PCS	2Byte	-9999~9999	0.1A	
163	dry contact state	PCS	2Byte			0：off；1：on（non-standard）
164	BMS total voltage	all model	2Byte	-9999~9999	0.1V	
165	BMS total current		2Byte	-9999~9999	0.1A	
166	SOH		2Byte	0~99	1	
167	BMS maximum temperature group number		1Byte	1~255	1	
	BMS minimum temperature group number		1Byte	1~255		
168	Maximum voltage Group No. of BMS		1Byte	0~99	1	
	BMS minimum voltage group number		1Byte	0~99		
169	BMS high voltage relay status		2Byte	0~99	1	
170	Max. temperature box no. of BMS		1Byte	1~255	1	
	BMS minimum temperature box No		1Byte	1~255	1	
171	BMS maximum temperature		1Byte	-128~127	℃	
	BMS minimum temperature		1Byte	-128~127	℃	
172	BMS unit minimum voltage number		1Byte	1~255		
	BMS unit minimum voltage box No		1Byte	1~255		
173	Maximum voltage number of BMS unit		1Byte	1~255		
	Maximum voltage box no. of BMS		1Byte	1~255		
174	Maximum unit voltage		2Byte	0~65535	0.001V	
175	Minimum cell voltage		2Byte	0~65535	0.001V	
176	BMS battery status		1Byte	1~255	By numerical value	0: Hold 1: Charging and discharging disable 2: Charging disable 3: Discharging disable 4: Charging 5: Discharging
	BMS system status		1Byte	1~255	Bitwise	Fig1.1.1
177	BMS level I alarm		2Byte		Bitwise	Fig1.1.2
178	BMS level II alarm		2Byte		Bitwise	Fig1.1.2

179	BMS level III Protection		2Byte		Bitwise	Fig1.1.3
180	Running state	HBI/PCS	2Byte	value		See Fig4.3.1
181	Fault alarm bit information1		2Byte	16bit, Low byte first		See Fig4.3.2
182	Fault alarm bit information2		2Byte	16bit, Low byte first		See Fig4.3.3
183	Fault alarm bit information3	HBI/PCS	2Byte	16bit, Low byte first		See Fig4.3.4
184	Fault alarm bit information4		2Byte	16bit, Low byte first		See Fig4.3.5
185	Fault alarm bit information5		2Byte	16bit, Low byte first		See Fig4.3.6
186	Fault alarm bit information6		2Byte	16bit, Low byte first		See Fig4.3.7
187	Fault alarm bit information7		2Byte	16bit, Low byte first		See Fig4.3.8
188	Fault alarm bit information8		2Byte	16bit, Low byte first		See Fig4.3.9
189	Reserved alarm		2Byte			Fixed data
190	running state		2Byte	Bitwise		See Fig4.3.10
191	BMS battery status		2Byte	1~255	By numerical value	0: Hold 1: Charging and discharging disable 2: Charging disable 3: Discharging disable 4: Charging 5: Discharging
192	Operation mode		2Byte	By numerical value		0: Peak 1: fair 2: Valley 3: DG 4: Battery priority 5: load priority 6: peak shaving 7: Time schedule 8: EMS mode 9: DC source mode 10: manual dispatching 11:battery protection 12: backup power management 13PCS dispatching 14Forced charging mode 15Gird load mode
193	running state	HBITL	2Byte	value		See Fig5.3.1
194	Fault alarm bit information1		2Byte	16bit, Low byte first		See Fig5.3.2
195	Fault alarm bit information2	HBITL	2Byte	16bit, Low byte first		See Fig5.3.3
196	Fault alarm bit information3		2Byte	16bit, Low byte		See Fig5.3.4

				first		
197	Fault alarm bit information4		2Byte	16bit, Low byte first		See Fig5.3.5
198	Fault alarm bit information5		2Byte	16bit, Low byte first		See Fig5.3.6
199	Fault alarm bit information6		2Byte	16bit, Low byte first		See Fig5.3.7
200	Fault alarm bit information7		2Byte	16bit, Low byte first		See Fig5.3.8
201	Fault alarm bit information8		2Byte	16bit, Low byte first		See Fig5.3.9
202	Reserved alarm		2Byte			Fixed data0
203	running state		2Byte	Bitwise		See Fig5.3.10
204	Reserved		2Byte			
205	Operation mode		2Byte	By numerical value		0: peak 1: fair 2: Valley 3: DG 4: Battery priority 5: load priority 6: Peak shaving 7: multi-stage charging and discharge 8: EMS mode 9: DC source mode 10: manual dispatching 11: battery protection 12: backup power management 13: constant power discharge 14: forced charge mode
206	running state	PBD	2Byte	value		See Fig6.3.1
207	Fault alarm bit information1		2Byte	16bit, Low byte first		See Fig6.3.2
208	Fault alarm bit information2		2Byte	16bit, Low byte first		See Fig6.3.3
209	Fault alarm bit information3		2Byte	16bit, Low byte first		See Fig6.3.4
210	Fault alarm bit information4		2Byte	16bit, Low byte first		See Fig6.3.5
211	Fault alarm bit information5		2Byte	16bit, Low byte first		See Fig6.3.6
212	Fault alarm bit information6		2Byte	16bit, Low byte first		See Fig6.3.7
213	running state		2Byte	Bitwise		See Fig6.3.10
214	Reserved		2Byte			
215	Operation mode		2Byte	By numerical value		0: Normal 1: EMSmode

216	DG currentU		2Byte	0~65535	0.1A	
217	DG currentV		2Byte	0~65535	0.1A	
218	DG currentW		2Byte	0~65535	0.1A	
219	DG apparent power		2Byte	0~9999	0.1kVA	
220	DG active power		2Byte	0~9999	0.1kW	
221	DG reactive power		2Byte	-9999~9999	0.1kVar	
222	Daily power intake from DG		2Byte	0~65535	0.1KWh	
223	Daily power intake time from DG		2Byte	0~65535	0.1Min	
224	Total power intake from DG High		2Byte	0~999999999	0.1KWh	
225	Total power intake from DG Low		2Byte			
226	Total power intake time from DG High		2Byte	0~999999999	0.1h	
227	Total power intake time from DG Low		2Byte			
228	System battery power	PCS	2Byte	-9999~9999	0.1KW	
229	CP power limit	PCS	2Byte	-9999~9999	0.1KW	
230	Max charge power	PCS	2Byte	-9999~9999	0.1KW	
231	Max discharge power	PCS	2Byte	-9999~9999	0.1KW	
232	Charging pile max power	PCS	2Byte	-9999~9999	0.1KW	
233	Diesel generator demand power	HBI	2Byte	-9999~9999	0.1KW	
234	HBI start request					0: no request 1: request start
235	Bypass communication number	HBI/PCS	2Byte	-9999~9999		
236	Insulation detection positive	Hbi40ktl	2Byte	0~65535	0.1KΩ	
237	Insulation detection negative	Hbi40ktl	2Byte	0~65535	0.1KΩ	
238						
239						
240						
241						
242						
243	Daily Energy From Meter		2Byte	0~65535	0.1kW.h	
244	Total Energy From Meter High bit		2Byte	0~999999999	0.1kW.h	
245	Total Energy From Meter Low bit		2Byte			
246	Daily Energy To Meter		2Byte	0~65535	0.1kW.h	
247	Total Energy To Meter High bit		2Byte	0~999999999	0.1 kW.h	

248	Total Energy To Meter Low bit		2Byte			
249	Meter Power		2Byte	-9999~9999	0.1KW	
250	ATS/Bypass	HBI/PCS	2Byte	0-1	1	0 nothing；1 have
251	DG grid select		2Byte	0-2	1	0 nothing；1 grid；2DG
252	DG/ grid power		2Byte	-9999~9999	0.1KW	Display 251 select power
						253~269：reserved
270	Hardware version 0 bit	All mode	1Byte	‘ ’; ’_’; ’.’; ‘0’~’9’; ‘A’~’Z		Hardware version20bit ASIIC Base address: 270
	Hardware version 1 bit		1Byte			
271	Hardware version 2 bit		1Byte			
	Hardware version 3 bit		1Byte			
272	Hardware version 4 bit		1Byte			
	Hardware version 5 bit		1Byte			
273	Hardware version 6 bit		1Byte			
	Hardware version 7 bit		1Byte			
274	Hardware version 8 bit		1Byte			
	Hardware version 9 bit		1Byte			
275	Hardware version 10 bit		1Byte			
	Hardware version 11 bit		1Byte			
276	Hardware version 12 bit		1Byte			
	Hardware version 13 bit		1Byte			
277	Hardware version 14 bit		1Byte			
	Hardware version 15 bit		1Byte			
278	Hardware version 16 bit		1Byte			
	Hardware version 17 bit		1Byte			
279	Hardware version 18 bit		1Byte			
	Hardware version 19 bit		1Byte			
280	Software version 0 bit	All mode	1Byte	‘ ’; ’_’; ’.’; ‘0’~’9’; ‘A’~’Z		Software version 40 bit ASIIC Base address: 280
	Software version 1bit		1Byte			
281	Software version 2 bit		1Byte			
	Software version 3 bit		1Byte			
282	Software version 4 bit		1Byte			
	Software version 5 bit		1Byte			
283	Software version 6 bit		1Byte			
	Software version 7 bit		1Byte			
284	Software version 8 bit		1Byte			
	Software version 9 bit		1Byte			
285	Software version 10 bit		1Byte			
	Software version 11 bit		1Byte			
286	Software version 12 bit		1Byte			
	Software version 13 bit		1Byte			
287	Software version 14 bit		1Byte			

	Software version 15 bit		1Byte			
288	Software version 16 bit		1Byte			
	Software version 17 bit		1Byte			
289	Software version 18 bit		1Byte			
	Software version 19 bit		1Byte			
290	Software version 20 bit		1Byte			
	Software version 21 bit		1Byte			
291	Software version 22 bit		1Byte			
	Software version 23 bit		1Byte			
292	Software version 24 bit		1Byte			
	Software version 25 bit		1Byte			
293	Software version 26 bit		1Byte			
	Software version 27 bit		1Byte			
294	Software version 28 bit		1Byte			
	Software version 29 bit		1Byte			
295	Software version 30 bit		1Byte			
	Software version 31bit		1Byte			
296	Software version 32 bit		1Byte			
	Software version 33 bit		1Byte			
297	Software version 34 bit		1Byte			
	Software version 35 bit		1Byte			
298	Software version 36 bit		1Byte			
	Software version 37 bit		1Byte			
299	Software version 38 bit		1Byte			
	Software version 39 bit		1Byte			
300	Daily charge capacity 1	all model	2Byte	0~1200	KWh	Daily charge capacity 60 data in total 300-359
…	…		2Byte	0~1200	KWh	
359	Daily charge capacity 60		2Byte	0~1200	KWh	
360	Daily discharge capacity 1		2Byte	0~1200	KWh	Daily discharge capacity 60 data in total 360-419
…	…		2Byte	0~1200	KWh	
419	Daily discharge capacity 60		2Byte	0~1200	KWh	
420	Fault warning bit information 1	HBI/PCS	2Byte	16bit, low byte first		See Fig4.3.2
421	Fault warning bit information 2		2Byte	16bit, low byte first		See Fig4.3.3
422	Fault warning bit information 3		2Byte	16bit, low byte first		See Fig4.3.4
423	Fault warning bit information 4		2Byte	16bit, low byte first		See Fig4.3.5
424	Fault warning bit information 5		2Byte	16bit, low byte first		See Fig4.3.6
425	Fault warning bit		2Byte	16bit, low byte		See Fig4.3.7

	information 6			first		
426	Fault warning bit information 7		2Byte	16bit, low byte first		See Fig4.3.8
427	Fault warning bit information 8		2Byte	16bit, low byte first		See Fig4.3.9
428	Fault warning bit information 9		2Byte	16bit, low byte first		See Fig4311
429	Fault warning bit information 1	HBITL	2Byte	16bit, low byte first		See Fig5. 3. 2
430	Fault warning bit information 2		2Byte	16bit, low byte first		See Fig5.3.3
431	Fault warning bit information 3		2Byte	16bit, low byte first		See Fig5.3.4
432	Fault warning bit information 4		2Byte	16bit, low byte first		See Fig5.3.5
433	Fault warning bit information 5		2Byte	16bit, low byte first		See Fig5. 3. 6
434	Fault warning bit information 6		2Byte	16bit, low byte first		See Fig5.3.7
435	Fault warning bit information 7		2Byte	16bit, low byte first		See Fig5.3.8
436	Fault warning bit information 8		2Byte	16bit, low byte first		See Fig5.3.9
437	reserved		2Byte	16bit, low byte first		Fixed data 0
438	Fault warning bit information 1	PBD	2Byte	16bit, low byte first		See Fig6. 3. 2
439	Fault warning bit information 2		2Byte	16bit, low byte first		See Fig6.3.3
440	Fault warning bit information 3		2Byte	16bit, low byte first		See Fig6.3.4
441	Fault warning bit information 4		2Byte	16bit, low byte first		See Fig6.3.5
442	Fault warning bit information 5		2Byte	16bit, low byte first		See Fig6. 3. 6
443	Fault warning bit information 6		2Byte	16bit, low byte first		See Fig6. 3. 7
444	reserved		2Byte			Fixed data 0
						445~469: reserved
470	Monthly charge capacity 1	all model	2Byte	0~12000	KWh	Monthly charge capacity 31 data in total 470~500
…	…		2Byte	0~12000	KWh	
500	Monthly charge capacity 31		2Byte	0~12000	KWh	

501	Monthly discharge capacity 1		2Byte	0~12000	KWh	Monthly discharge capacity 31 data in total 501~531
…	…		2Byte	0~12000	KWh	
531	Monthly discharge capacity 31		2Byte	0~12000	KWh	
						532~549:Reserved
550	Annual charge capacity 1	all model	2Byte	0~37200	10KWh	Annual charge capacity 12 data in total 550~561
…	…		2Byte	0~37200	10KWh	
561	Annual charge capacity 12		2Byte	0~37200	10KWh	
562	Annual discharge capacity 1		2Byte	0~37200	10KWh	Annual discharge capacity 12 data in total 562~573
…	…		2Byte	0~37200	10KWh	
573	Annual discharge capacity 12		2Byte	0~37200	10KWh	
						574~579: Reserved
580	10Annual charge capacity 1	all model	2Byte	0~4464	100KWh	10Annual charge capacity 10 data in total 580~589
…	…		2Byte	0~4464	100KWh	
589	10Annual charge capacity 10		2Byte	0~4464	100KWh	
590	10Annual discharge capacity 1		2Byte	0~4464	100KWh	10Annual discharge capacity 10 data in total 590~599
…	…		2Byte	0~4464	100KWh	
599	10Annual discharge capacity 10		2Byte	0~4464	100KWh	
						600~629: Reserved
630	Hardware version 0 bit	All mode	1Byte	‘ ’; ’_’; ’.’; ‘0’~’9’; ‘A’~’Z		Hardware version20bit ASIIC Base address: 630
	Hardware version 1 bit		1Byte			
631	Hardware version 2 bit		1Byte			
	Hardware version 3 bit		1Byte			
632	Hardware version 4 bit		1Byte			
	Hardware version 5 bit		1Byte			
633	Hardware version 6 bit		1Byte			
	Hardware version 7 bit		1Byte			
634	Hardware version 8 bit		1Byte			
	Hardware version 9 bit		1Byte			
635	Hardware version 10 bit		1Byte			
	Hardware version 11 bit		1Byte			
636	Hardware version 12 bit		1Byte			
	Hardware version 13 bit		1Byte			
637	Hardware version 14 bit		1Byte			
	Hardware version 15 bit		1Byte			

638	Hardware version 16 bit		1Byte			
	Hardware version 17 bit		1Byte			
639	Hardware version 18 bit		1Byte			
	Hardware version 19 bit		1Byte			
640	Software version 0 bit	All mode	1Byte	‘ ’; ’_’; ’.’; ‘0’~’9’; ‘A’~’Z		Software version 40 bit ASIIC Base address: 640
	Software version 1bit		1Byte			
641	Software version 2 bit		1Byte			
	Software version 3 bit		1Byte			
642	Software version 4 bit		1Byte			
	Software version 5 bit		1Byte			
643	Software version 6 bit		1Byte			
	Software version 7 bit		1Byte			
644	Software version 8 bit		1Byte			
	Software version 9 bit		1Byte			
645	Software version 10 bit		1Byte			
	Software version 11 bit		1Byte			
646	Software version 12 bit		1Byte			
	Software version 13 bit		1Byte			
647	Software version 14 bit		1Byte			
	Software version 15 bit		1Byte			
648	Software version 16 bit		1Byte			
	Software version 17 bit		1Byte			
649	Software version 18 bit		1Byte			
	Software version 19 bit		1Byte			
650	Software version 20 bit		1Byte			
	Software version 21 bit		1Byte			
651	Software version 22 bit		1Byte			
	Software version 23 bit		1Byte			
652	Software version 24 bit		1Byte			
	Software version 25 bit		1Byte			
653	Software version 26 bit		1Byte			
	Software version 27 bit		1Byte			
654	Software version 28 bit		1Byte			
	Software version 29 bit		1Byte			
655	Software version 30 bit		1Byte			
	Software version 31bit		1Byte			
656	Software version 32 bit		1Byte			
	Software version 33 bit		1Byte			
657	Software version 34 bit		1Byte			
	Software version 35 bit		1Byte			
658	Software version 36 bit		1Byte			

	Software version 37 bit		1Byte			
659	Software version 38 bit		1Byte			
	Software version 39 bit		1Byte			
660	High byte：year	All mode	1Byte	0~99	year	
	Low byte：month		1Byte	1~12	month	
661	High byte：day		1Byte	1~31	day	
	Low byte：hour		1Byte	0~23	hour	
662	High byte：minute		1Byte	0~59	minute	
	Low byte：second		1Byte	0~59	second	
663	High byte：information bit		1Byte	0~8	**Different nodes correspend to different faults**	
	Low byte：fault bit		1Byte	0~15		
664	fault 1 sampling record1		2Byte	-9999~9999	表 1.15	
665	fault 1 sampling record2		2Byte	-9999~9999		
666	fault 1 sampling record3		2Byte	-9999~9999		
667	fault 1 sampling record4		2Byte	-9999~9999		
668	fault 1 sampling record5		2Byte	-9999~9999		
669	fault 1 sampling record6		2Byte	-9999~9999		
670	fault 1 sampling record7		2Byte	-9999~9999		
671	fault 1 sampling record8		2Byte	-9999~9999		
672	fault 1 sampling record9		2Byte	-9999~9999		
673	fault 1 sampling record10		2Byte	-9999~9999		
674	fault 1 sampling record11		2Byte	-9999~9999		
675	fault 1 sampling record12		2Byte	-9999~9999		
676	fault 1 sampling record13		2Byte	-9999~9999		
677	fault 1 sampling record14		2Byte	-9999~9999		
.....	.....		.....	.....		
1002	high byte：year		1Byte	0~99	year	
	low byte：month		1Byte	1~12	month	
1003	high byte：day		1Byte	1~31	day	
	low byte：hour		1Byte	0~23	hour	
1004	high byte：minute		1Byte	0~59	minute	
	low byte：second		1Byte	0~59	second	
1005	high byte：information bit		1Byte	0~8	**Different nodes correspend to different faults**	
	low byte：fault bit		1Byte	0~15		
1006	fault 20 samping record1		2Byte	-9999~9999	fig1.15	
1007	fault 20 samping record2		2Byte	-9999~9999		

1008	fault 20 samping record3		2Byte	-9999~9999		
1009	fault 20 samping record4		2Byte	-9999~9999		
1010	fault 20 samping record5		2Byte	-9999~9999		
1011	fault 20 samping record6		2Byte	-9999~9999		
1012	fault 20 samping record7		2Byte	-9999~9999		
1013	fault 20 samping record8		2Byte	-9999~9999		
1014	fault 20 samping record9		2Byte	-9999~9999		
1015	fault 20 samping record10		2Byte	-9999~9999		
1016	fault 20 samping record11		2Byte	-9999~9999		
1017	fault 20 samping record12		2Byte	-9999~9999		
1018	fault 20 samping record13		2Byte	-9999~9999		
1019	fault 20 samping record14		2Byte	-9999~9999		
Reserved						

5、Write holding register（Function code: 0x06）

Read holding register address	content	Subordinate aircraft	Size	Range	Unit	Note
0	on/off	all model	2Byte			0: Off;1: On
1	Island Protection Level	HBI/PCS /HBITL	2Byte			Input ranges from 0 to 9, with 1 to 9 indicating a level
2	Grid management enable		2Byte			0: Disable;1: Enable
3	GFDI enable		2Byte			0: Disable;1: Enable
4	GFCI enable		2Byte			0: Disable;1: Enable
5	Insulation Impedance Test Enable	all model	2Byte			0: Disable;1: Enable
6	Factory reset enable		2Byte			0: Invalid;1: Valid
7	GFDI Grounding Selection	HBI/PCS /HBITL	2Byte			0: Ungrounded;1: Grounded
8	Grid & PV Charge Together Enable		2Byte			0: Disable;1: Enable
9	Low voltage ride through enable		2Byte			0: Disable;1: Enable
10	Active power regulation enable		2Byte			0: Disable;1: Enable
11	Reactive power regulation enable		2Byte			0: Disable;1: Enable
12	Manual Adjustment Enable		2Byte			0: Disable;1: Enable
13	Bypass Cabinet Enable		2Byte			0: Disable;1: Enable

	（PCS） ATS Enable（HBI）					
14	BMS communication enable	all model	2Byte			0: Disable;1: Enable
15	Fuse protection enable	HBI/PCS /HBITL	2Byte			0: Disable;1: Enable
16	Anti-reflux enable		2Byte			0: Disable;1: Enable
17	Generator enable		2Byte			0: Disable;1: Enable
18	CP enable	PCS	2Byte			0: Disable;1: Enable
19	PBD350 Enable		2Byte			0: Disable;1: Enable
20	Minimum insulation impedance	all model	2Byte	100~20000	0.1KΩ	
21	Type setting		2Byte	0~8		See fig4.1.1
22	Safety regulation setting		2Byte	0~6		See fig4.2.1
23	Communication Station Setting		2Byte	1~32		
24	Parallel Enable		2Byte			0: Disable;1: Enable
25	hardware version choice		2Byte	0~100		
26	Mode selection		2Byte			0: load priority 1: Battery priority 2. Economic mode 3: peak shaving 4: multi period charging and discharging 5: manual dispatching 6: battery protection 7: backup power management 8: constant power discharge 9: forced charging 10 Gird load mode
27	Schneider contactor state	HBI	2Byte			0：off；1：on（Schneider project：non-standard）
28	Grid state	HBI	2Byte			0：abnormal；1：normal（Schneider project：non-standard）
29	Forced OnGrid to OffGrid switch enable	HBI/PCS	2Byte			0: Disable;1: Enable
30	Charging direction enable	PCS	2Byte			0: Discharge;1: Charge
31	PBD250Enable	PCS	2Byte			0: Disable;1: Enable
32	EMS enable	all model	2Byte			0: Disable;1: Enable
33	PV power setting		2Byte	0~500	1KW	

34	Inverter rectifier direction flag bit	HBI	2Byte			0: Invert;1: rectify
35	Inverter rectifier power setting		2Byte	0~500	1KW	
36	DC source mode enable	PCS	2Byte			0: Disable;1: Enable
37	Battery current calibration enable	all model	2Byte			0: Disable;1: Enable
38	Parallel RedundantNumber	HBI/PCS	2Byte	0/1		
39	Generator start condition	HBI/PCS	2Byte			0：Disable；1：Enable（Namibia project nonstandard）
40	SOC_Start enale	HBI/PCS	2Byte			0：Disable；1：Enable（Namibia project nonstandard）
41	Line voltage sampling enable	PCS	2Byte			0: Disable;1: Enable
42	Monitor parallel judgment mark	All model	2Byte	1~100		0：single unit The minimum parallel judgment value is 1; Same value: parallel (data accumulation)
43	DTC（protocol）	all model	2Byte	22001~22006		(Only HBI) See Fig4.1.2
				22008~22021		HBITL See Fig4.1.2
				21016~21039		PCS See Fig4.1.2
				23001~23003		PBD See Fig4.1.2
44	grid power compensation	HBI/PCS	2Byte	0~100	0.1KW	
45	PBD parallel number setting	PCS	2Byte	0~100	1	
46	Generator power Upper Limit	HBI/PCS /HBITL	2Byte	0~500	1KW	
47	Discharge cut-off SOC	HBI/PCS	2Byte	0~100	%	
48	Output voltage setting	HBI/PCS /HBITL	2Byte	380/400	1V	
49	Output Frequency setting		2Byte	50/60	1Hz	
50	Maximum DC voltage（PV）	All mode	2Byte	2000~10000	0.1V	
51	Grid voltage upper limit	HBI/PCS /HBITL	2Byte	1600~5500	0.1V	
52	Grid voltage lower limit		2Byte	1600~5500	0.1V	
53	Grid frequency upper		2Byte	4500~6500	0.01 Hz	

	limit					
54	Grid frequency lower limit		2Byte	4500~6500	0.01 Hz	
55	AC output current upper limit		2Byte	10~20000	0.1A	
56	Check Time	All model	2Byte	0~1000	1S	
57	Shadow voltage variation		2Byte	1~150	0.1V	
58	Output power upper limit		2Byte	0~120	%	
59	Output power seting		2Byte	0~500	KW	
60	Start Voltage		2Byte	3000~8500	0.1V	
61	Max MPPT Voltage		2Byte	3000~15000	0.1V	
62	Min MPPT Voltage		2Byte	3000~15000	0.1V	
63	Start Power		2Byte	0~500	0.1kW	
64	Battery Charge Current		2Byte	0~800	1A/0.1A	Large and small inverters use different units HBI / PCS / PBD: 1A String type HBITL: 0.1A
65	Grid Power UP Limit	HBI/PCS /HBITL	2Byte	0~500	1kW	
66	SOC Up Limit	All mode	2Byte	0~100	%	
67	SOC Down Limit		2Byte	0~100	%	
68	Output voltage Up Limit	PBD	2Byte	2000~10000	0.1V	
69	Output voltage Down Limit		2Byte	2000~10000	0.1V	
70	PV Current Up Limit		2Byte	0~500	A	
71	PV Inductor Current Up Limit		2Byte	0~500	A	
72	Output Inductor Curr Up Limit		2Byte	0~500	A	
73	Output current Up Limit		2Byte	0~500	A	
74	Voltage reference	PCS/HBITL	2Byte	0~800	V	
75	BMS SOC Up Limit	HBITL	2Byte	0~100	%	
76	BMS SOC Down Limit		2Byte	0~100	%	
77	Number of parallel machines	HBI/PCS	2Byte	0~255	1	
78	Input power seting	PCS	2Byte	0~800	1	
79	Frequency shift enable	PCS	2Byte	0~2	1	0: Disable;1: mode1；2：mode2
80	PV voltage	All mode	2Byte	2000~10000	0.1V	Calibration

81	Battery voltage		2Byte	2000~10000	0.1V	Calibration
82	Battery current		2Byte	10~20000	0.1A	Calibration
83	PV current		2Byte	10~20000	0.1A	Calibration
84	Output voltage U		2Byte	1600~5500	0.1V	Calibration
85	Output voltage V		2Byte	1600~5500	0.1V	Calibration
86	Output voltage W		2Byte	1600~5500	0.1V	Calibration
87	Grid current U		2Byte	10~20000	0.1A	Calibration
88	Grid current V		2Byte	10~20000	0.1A	Calibration
89	Grid current W		2Byte	10~20000	0.1A	Calibration
90	Grid voltage UV		2Byte	1600~5500	0.1V	Calibration
91	Grid voltage VW		2Byte	1600~5500	0.1V	Calibration
92	Grid voltage WU		2Byte	1600~5500	0.1V	Calibration
93	Load current U		2Byte	10~20000	0.1A	Calibration
94	Load current V		2Byte	10~20000	0.1A	Calibration
95	Load current W		2Byte	10~20000	0.1A	Calibration
99	Upper limit of battery voltage	HBI/PCS	2Byte	0~65535	0.001	Namibia：Nonstandard
100	Lower limit of battery voltage		2Byte	0~65535	0.001	
101	HBI/PCS upper temperature limit		2Byte	0~100	1℃	
102	HBI/PCS lower temperature limit		2Byte	0~100	1℃	
103	Upper limit of battery temperature		2Byte	0~100	1℃	
104	Lower limit of battery temperature		2Byte	0~100	1℃	
105						
106						
107	Load power upper limit		2Byte	0~500	1KW	
108	Lower limit of load power		2Byte	0~500	1KW	
109	time limit of Generator starting		2Byte	0~1000	1min	
122	Battery charging small current positive and negative bias flag	All mode	2Byte	0~1		0:positive 1：negetive
123	Small current bias value of battery charging		2Byte	0~200	0.1A	
124	Battery discharging small current positive and negative bias flag		2Byte	0~1		0:positive 1：negetive

125	Small current bias value of battery discharge		2Byte	0~200	0.1A	
126	Battery charging calibration LCD current 1		2Byte	0~8000	0.1A	
127	Battery charging calibration actual current 1		2Byte	0~8000	0.1 A	
128	Battery charging calibration LCD current 2		2Byte	0~8000	0.1 A	
129	Battery charging calibration actual current 2		2Byte	0~8000	0.1 A	
130	CP nominal power setting		2Byte	0~1000	1KW	
131	Parallel Address		2Byte	0~255		
132	High byte：year		1Byte	0~99	Year	Date of delivery
	Low byte：month		1Byte	1~12	Month	Date of delivery
133	High byte'：day		1Byte	1~31	Day	Date of delvery
127	Battery discharging calibration LCD current 1		2Byte	0~8000	0.1 A	
128	Battery discharging calibration actual current 1		2Byte	0~8000	0.1 A	
129	Battery discharging calibration LCD current 2		2Byte	0~8000	0.1 A	
130	Battery discharging calibration actual current 2		2Byte	0~8000	0.1 A	
131	Bypass Type setting	PCS	2Byte	0~100		Bypass30:1; Bypass50:2 Bypass120:3; Bypass150:4; Bypass250:5; Bypass500:6; Bypass630:7; Bypass1000:8;
127	Boot and App Burn	All mode	2Byte	0~1		0:Burn App;1:Burn Boot

	selection					
128	Starting voltage differential	PBD	2Byte	0~200	1V	
129	DC soft start contactor enable	PCS	2Byte	0~1		0: Disable;1: Enable
130	High byte：year	All mode	1Byte	12~100	Year	System date time
	Low byte：month		1Byte	1~12	Month	System date time
131	High byte：day		1Byte	1~31	Day	System date time
	Low byte：hour		1Byte	0~23	Hour	System date time
132	High byte：minute		1Byte	0~59	Minute	System date time
	Lowe byte：second		1Byte	0~59	Second	System date time
133	PV1 Voltage	PBD	2Byte	2000~10000	0.1V	Calibration
134	PV2 Voltage		2Byte	2000~10000	0.1V	Calibration
135	PV3 Voltage		2Byte	2000~10000	0.1V	Calibration
136	PV4 Voltage		2Byte	2000~10000	0.1V	Calibration
137	PV5 Voltage		2Byte	2000~10000	0.1V	Calibration
138	PV1 current		2Byte	10~20000	0.1A	Calibration
139	PV2 current		2Byte	10~20000	0.1A	Calibration
140	PV3 current		2Byte	10~20000	0.1A	Calibration
141	PV4 current		2Byte	10~20000	0.1A	Calibration
142	PV5 current		2Byte	10~20000	0.1A	Calibration
143	OutVoltage		2Byte	2000~10000	0.1V	Calibration
144	Systembattery charging current positive and negative bias flag	PCS	2Byte	0~1		0:positive 1：negetive
145	current bias value of battery charging		2Byte	0~200	0.1A	
146	Systembattery discharge current positive and negative bias flag		2Byte	0~1		0:positive 1：negetive
147	Small current bias value of battery discharge		2Byte	0~200	0.1A	
148	Generator synchronized state	PCS	2Byte			0：unsynchronized ; 1:synchronized
149	Systembattery current calibration enable		2Byte			0：Disable；1：Enable
150	Battery charging satuation	All mode	2Byte	0~10	1	
151	Battery group number		2Byte	0~100	1	
152	Battery unit number		2Byte	0~50000	1	
153	Battery capacity		2Byte	0~50000	1AH	

154	Charging current limit		2Byte	0~10000	0.1A	
155	Discharging current limit		2Byte	0~10000	0.1A	
156	Floate charging voltage		2Byte	0~50000	0.001V	For each cell
157	Low voltage Warning		2Byte	0~50000	0.001V	For each cell
158	Low voltage fault		2Byte	0~50000	0.001V	For each cell
159	High voltage fault		2Byte	0~50000	0.001V	For each cell
160	Battery start voltage		2Byte	0~50000	0.001V	For each cell
161	Single PV to off-grid		2Byte	0~50000	0.001V	For each cell
162	Discharge cut-off voltage		2Byte	0~50000	0.001V	For each cell
163	Floate charge current limit point setting		2Byte	0~100	0.01V	For each cell
164	Command to Active / Deactive Droop Mode		2Byte			
165	Frequency Offset		2Byte		0.01Hz	
166	Active power droop slope		2Byte		0.1%	
167	Voltage Offset		2Byte		0.1V	
168	Reactive power droop slope		2Byte		0.1%	
169	Upper limit power feed from grid	HBI/PCS /HBITL	2Byte	0~500	1kW	
170	Generator not charge enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable
171	Charging pile enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable
172	Battery discharging current	HBI	2Byte		1A	
173	Peak period limit power enable	PCS	2Byte	0~1		
174	Battery power export to grid set	HBI/PCS	2Byte	0~150	1kW	Poland 5 HBI
175	Generator charging power up limit		2Byte		0.1kW	
176	BMS voltage judge enable		2Byte	0~1		SOC judge logic are not used after BMS voltage judge enable
177	Discharge Recover SOC		2Byte	0~100		After entering discharge stop state, recover discharge
178	Charging cut off SOC		2Byte	0~100		The battery are not needed

						to charge to 100% SOC in some programs
179	Grid charge SOC		2Byte			Freedomcustomization
180	Serial number 0 bit	All mode	1Byte	‘0’~’9’; ‘A’~’Z’		Serial number is 10 bit：ASIIaddress: 180
	Serial number 1 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
181	Serial number 2 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 3 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
182	Serial number 4 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 5 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
183	Serial number 6 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 7 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
184	Serial number 8 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 9 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
185	Serial number 10 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
	Serial number 11 bit		1Byte	‘0’~’9’; ‘A’~’Z’		
186	Reserve					
187	Reserve					
188	Reserve					
189	Reserve					
190	BUCK current loop Kp	HBI/PCS/HBITL	2Byte	0~65535	0.001	PIDparameter
191	BUCK current loop Ki		2Byte	0~65535	0.0001	PIDparameter
192	BUCK voltage loop Kp		2Byte	0~65535	0.001	PIDparameter
193	BUCK voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
194	Impulse load current loop Kp		2Byte	0~65535	0.001	PID parameter
195	Impulse load current loop Ki		2Byte	0~65535	0.0001	PID parameter
196	Impulse load voltage		2Byte	0~65535	0.001	PID parameter

	loop Kp					
197	Impulse load voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
198	Normal current loop Kp		2Byte	0~65535	0.001	PID parameter
199	Normal current loop Ki		2Byte	0~65535	0.0001	PID parameter
200	Normal voltage loop Kp		2Byte	0~65535	0.001	PID parameter
201	Normal voltage loop Ki		2Byte	0~65535	0.0001	PID parameter
202	Back power set					
203	Frequence controlled power output enable					Non-standard
204						
205						
206	AC OverVolt time(20ms)					
207	Output voltage directly calibrated U		2Byte	1600~5500	0.1	
208	Output voltage directly calibrated V		2Byte	1600~5500	0.1	
209	Output voltage directly calibrated W		2Byte	1600~5500	0.1	
210~220：reserved						
221	Meter communication station number		2Byte			
222	week		2Byte	0-7		system time
223	Bat to non-critical enable		2Byte	0~1		0: disable; 1: enable
224	Cut-off charging power		2Byte		0.1kw	
225	Gird charging power		2Byte		0.1kw	
226	Parallel signal test Enable	HBI/PCS	2Byte	0~1		0: disable; 1: enable

227	Constant discharge current					Non-standard
228	Grid charge enable					Non-standard
229	Forced charge enable					
230	SOC calibration set					Keep two decimal places
231	SOH calibtration set					Keep two decimal places
232	Offline discharge cutoff SOC					Non-standard
233	Offline discharge restore SOC					Non-standard
234	DC contactor back check enable					The default is 1
235	Bypass communication station number（PCS） ATS communication station number（HBI）	HBI/PCS				
236	Bypass communication station number enable（PCS）, ATS communication station number enable（HBI）					
237	Bypass numbers（PCS） ATS numbers（HBI）					
238	Bypass shared enable（PCS） ATS shared enable（HBI）					
239	Charging current limit	HBI/PCS	2Byte	0~10000	0.1A	from 154 to here
240	Discharge current limit	HBI/PCS	2Byte	0~10000	0.1A	from 155 to here
241	SOC Up Limit 1		2Byte	0~100	%	Non-standard
242	SOC Down Limit 1		2Byte	0~100	%	Non-standard

243	Fan opening temperature	HBI	2Byte	0~100	℃	Non-standard
244~249：reserve						
250	Reactive power regulation mode selection	HBI/PCS/ HBITL	2Byte	1~3		U16_RegIq_Mode_Select
251	Power factor reference symbol		2Byte	0~1		U16_RegIq_PF_Sign
252	Power factor reference		2Byte	0~1000	0.001	U16_RegIq_PF_Ref
253	Power reference point 1		2Byte	0~100	%	U16_RegIq_PF_P1
254	Power reference point 2		2Byte	0~100	%	U16_RegIq_PF_P2
255	Power reference point 3		2Byte	0~100	%	U16_RegIq_PF_P3
256	Power reference point 4		2Byte	0~100	%	U16_RegIq_PF_P4
257	Power reference point 5		2Byte	0~100	%	U16_RegIq_PF_P5
258	Power factor reference point 1		2Byte	0~1000	0.001	U16_RegIq_PF_PF1
259	Power factor reference point 2		2Byte	0~1000	0.001	U16_RegIq_PF_PF2
260	Power factor reference point 3		2Byte	0~1000	0.001	U16_RegIq_PF_PF3
261	Power factor reference point 4		2Byte	0~1000	0.001	U16_RegIq_PF_PF4
262	Power factor reference point 5		2Byte	0~1000	0.001	U16_RegIq_PF_PF5
263	Reactive reference symbol		2Byte	0~1		U16_RegIq_Q_Ref_Sign
264	Reactive reference		2Byte	0~300	kVar	U16_RegIq_Q_Ref
265	EN50549Enable	HBI(EN-50549 certification)	2Byte	0~1		0: Disable;1: Enable
266	ReductionFactorEnable		2Byte	0~1		0: Disable;1: Enable
267	ReactiveLockEnable		2Byte	0~1		0: Disable;1: Enable
268	Overfrequency download mode		2Byte	0~2		0: Disable; 1:Mode1;2:Mode2
269	Underfrequency loading mode		2Byte	0~2		0: Disable; 1:Mode1;2:Mode2
270	ResponseTime		2Byte	0~1000	S	
271	Power Rising Speed		2Byte	0~1000	1%/min	
272	Power Down Speed		2Byte	0~1000	1%/min	
273	Overvoltage drop active Enable		2Byte	0/1		0: Disable;1: Enable
274	StartVoltageU3		2Byte	0~1000	1V	
275	EndVoltageU4		2Byte	0~1000	1V	

276	ParallelPhaseSynCompensationCoefficient		2Byte	0~1000		
277	ParallelPhaseSynIntegralCoefficient		2Byte	0~1000		
278	ActiveSagCoefficient		2Byte	0~1000		
279	ReactiveSagCoefficient		2Byte	0~1000		
280	Active power flow Kp		2Byte	0~10000		
281	Active power flow Ki		2Byte	0~10000		
282	Parallel synchronization phase difference limiting coefficient		2Byte	0~1000		
283	reserve					
284	ParallelCirculationCaliEnable		2Byte	0/1		0: Disable;1: Enable
285	Start up condition					0: not allowed turn on 1: allowed turn on
286	Reactive power flow Kp		2Byte	0~10000		
287	Reactive power flow Ki		2Byte	0~10000		
286~302：reserve						
303	inverter Rated power	HBITL	2Byte	0~100	0.1Kw	
304	shinemaster Anti-refluxfailure power setting		2Byte	0~1000	0.1%	
305	shinemaster Anti-refluxfailure flag		2Byte			0：communication normal； 1：Communication failure；
306	shinemaster Anti-reflux enable		2Byte			0: Disable;1: Enable
307	shinemaster Anti-refluxfailure time		2Byte	1~5000	1S	
308	shinemaster Anti-reflux inverter power		2Byte	0~1000	0.1%	
309~379：reserve						
380	Power point 1 of low voltage passing through	HBI/PCS/HBITL	2Byte	0~100	%	U16_LVRT_Volt_P1
381	Power point 2 of low voltage passing through		2Byte	0~100	%	U16_LVRT_Volt_P2
382	Power point 3 of low voltage passing through		2Byte	0~100	%	U16_LVRT_Volt_P3
383	Power point 4 of low		2Byte	0~100	%	U16_LVRT_Volt_P4

	voltage passing through					
384	Power point 1 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P1
385	Power point 2 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P2
386	Power point 3 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Time_P3
387	Power point 4 of low voltage passing through		2Byte	0~5000	2ms	U16_LVRT_Volt_P4
388~499：reserve						
500						RegIdByFreq_StepPerHz
501						RegIdByFreq_Freq_Start
502						RegIdByFreq_Freq_Recover
503~619：预留						
620						LVRT_Factor_K
621						LVRT_U0
622~749：预留						
750.						GridVolt_High_Limit
751.						GridVolt_High_Back
752.						GridVolt_High_SetTime
753.						GridVolt_High_ClearTime
754.						GridVolt_Low_Limit
755.						GridVolt_Low_Back
756.						GridVolt_Low_Set Time
757.						GridVolt_Low_Clear Time
758.						GridFreq_High_Limit
759.						GridFreq_High_Back
760.						GridFreq_High_SetTime
761.						GridFreq_High_ClearTime
762.						GridFreq_Low_Limit
763.						GridFreq_Low_Back
764.						GridFreq_Low_SetTime
765.						GridFreq_Low_ClearTime
766	Peak set power1	All mode	2Byte	1~500	1kw	Multistage power setting
767	Peak set power2		2Byte	1~500	1kw	Multistage power setting

768	Peak set power3		2Byte	1~500	1kw	Multistage power setting
769	Peak set power4		2Byte	1~500	1kw	Multistage power setting
770	Peak set power5		2Byte	1~500	1kw	Multistage power setting
771	Valley set power 1		2Byte	1~500	1kw	Multistage power setting
772	Valley set power 2		2Byte	1~500	1kw	Multistage power setting
773	Valley set power 3		2Byte	1~500	1kw	Multistage power setting
774	Valley set power 4		2Byte	1~500	1kw	Multistage power setting
775	Valley set power 5		2Byte	1~500	1kw	Multistage power setting
776	Power set in normal period1		2Byte	1~500	1kw	Multistage power setting
777	Power set in normal period2		2Byte	1~500	1kw	Multistage power setting
778	Power set in normal period3		2Byte	1~500	1kw	Multistage power setting
779	Power set in normal period4		2Byte	1~500	1kw	Multistage power setting
780	Power set in normal period5		2Byte	1~500	1kw	Multistage power setting
781~799：reserved						
800	Peak time 1 high byte: Hour	all model	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
801	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
802	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
803	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
804	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
805	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time

	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
806	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
807	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
808	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
809	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
810	Valley time1 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
811	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
812	Valley time2 High byte: Hour	all model	1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
813	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
814	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
815	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time

816	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
817	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
818	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
819	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
820	Normal time1 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
821	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
822	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
823	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
824	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
825	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
826	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time

	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
827	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
828	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
829	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Set the time of off-season and peak season						
830	Off-season 1 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 1 low byte: day		1Byte	0~31	Day	Strat time
831	Off-season 1 high byte: month		1Byte	0~12	Month	End time
	Off-season 1 low byte: day		1Byte	0~31	Day	End time
832	Off-season 2 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 2 low byte: day		1Byte	0~31	Day	Strat time
833	Off-season 2 high byte: month		1Byte	0~12	Month	End time
	Off-season 2 low byte: day		1Byte	0~31	Day	End time
834	Off-season 3 high byte: month		1Byte	0~12	Month	Strat time
	Off-season 3low byte: day		1Byte	0~31	Day	Strat time
835	Off-season 3 high byte: month		1Byte	0~12	Month	End time
	Off-season 3low byte: day		1Byte	0~31	Day	End time
836	Off-season 4 high		1Byte	0~12	Month	Strat time

	byte: month					
	Off-season 4 low byte: day		1Byte	0~31	Day	Strat time
837	Off-season 4 high byte: month		1Byte	0~12	Month	End time
	Off-season 4 low byte: day		1Byte	0~31	Day	End time
838	Peak season 1 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 1 low byte: day		1Byte	0~31	Day	Strat time
839	Peak season 1 high byte: month		1Byte	0~12	Month	End time
	Peak season 1 low byte: day		1Byte	0~31	Day	End time
840	Peak season 2 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 2 low byte: day		1Byte	0~31	Day	Strat time
841	Peak season 2 high byte: month		1Byte	0~12	Month	End time
	Peak season 2 low byte: day		1Byte	0~31	Day	End time
842	Peak season 3 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 3 low byte: day		1Byte	0~31	Day	Strat time
843	Peak season 3 high byte: month		1Byte	0~12	Month	End time
	Peak season 3 low byte: day		1Byte	0~31	Day	End time
844	Peak season 4 high byte: month		1Byte	0~12	Month	Strat time
	Peak season 4 low byte: day		1Byte	0~31	Day	Strat time
845	Peak season 4 high byte: month		1Byte	0~12	Month	End time
	Peak season 4 low byte: day		1Byte	0~31	Day	End time
Off-season working day:						

846	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
847	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
848	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
849	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
850	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
851	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
852	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
853	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
854	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
855	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
856	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time

	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
857	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
858	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
859	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
860	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
861	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
862	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
863	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
864	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
865	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
866	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time

867	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
868	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
869	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
870	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
871	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
872	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
873	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
874	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
875	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Off-season Saturday time						
876	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte:		1Byte	0~59	Minute	Strat time

	Minute					
877	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
878	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
879	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
880	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
881	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
882	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
883	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
884	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
885	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
886	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
887	Valley time1 High		1Byte	0~23	Hour	End time

	byte: Hour					
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
888	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
889	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
890	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
891	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
892	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
893	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
894	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
895	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
896	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
897	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low		1Byte	0~59	Minute	End time

	byte: Minute					
898	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
899	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
900	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
901	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
902	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
903	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
904	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
905	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Off-season Sunday time						
906	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
907	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte:		1Byte	0~59	Minute	End time

	Minute					
908	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
909	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
910	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
911	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
912	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
913	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
914	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
915	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
916	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
917	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
918	Valley time2 High		1Byte	0~23	Hour	Strat time

	byte: Hour					
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
919	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
920	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
921	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
922	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
923	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
924	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
925	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
926	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
927	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
928	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low		1Byte	0~59	Minute	Strat time

	byte: Minute					
929	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
930	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
931	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
932	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
933	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
934	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
935	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak season working day:						
936	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
937	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
938	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time

	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
939	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
940	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
941	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
942	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
943	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
944	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
945	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
946	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
947	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
948	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time

949	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
950	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
951	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
952	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
953	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
954	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
955	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
956	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
957	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
958	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
959	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time

	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
960	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
961	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
962	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
963	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
964	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
965	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak-season Saturday time						
966	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
967	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
968	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
969	Peak time2 High byte:		1Byte	0~23	Hour	End time

	Hour					
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time
970	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
971	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
972	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
973	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
974	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
975	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
976	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
977	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
978	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
979	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low		1Byte	0~59	Minute	End time

	byte: Minute					
980	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
981	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
982	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
983	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
984	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
985	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
986	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
987	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
988	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
989	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
990	Normal time3 High		1Byte	0~23	Hour	Strat time

	byte: Hour					
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
991	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
992	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
993	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
994	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
995	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
Peak-season Sunday time						
996	Peak time 1 high byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	Strat time
997	Peak time 1 high byte: Hour		1Byte	0~23	Hour	End time
	Peak time 1 low byte: Minute		1Byte	0~59	Minute	End time
998	Peak time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
999	Peak time2 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time2 Low byte: Minute		1Byte	0~59	Minute	End time

1000	Peak time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
1001	Peak time3 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time3 Low byte: Minute		1Byte	0~59	Minute	End time
1002	Peak time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1003	Peak time4 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time4 Low byte: Minute		1Byte	0~59	Minute	End time
1004	Peak time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
1005	Peak time5 High byte: Hour		1Byte	0~23	Hour	End time
	Peak time5 Low byte: Minute		1Byte	0~59	Minute	End time
1006	Valley time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
1007	Valley time1 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time1 Low byte: Minute		1Byte	0~59	Minute	End time
1008	Valley time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
1009	Valley time2 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time2 Low byte: Minute		1Byte	0~59	Minute	End time
1010	Valley time3 High byte: Hour		1Byte	0~23	Hour	Strat time

	Valley time3 Low byte: Minute		1Byte	0~59	Minute	Strat time
1011	Valley time3 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time3 Low byte: Minute		1Byte	0~59	Minute	End time
1012	Valley time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1013	Valley time4 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time4 Low byte: Minute		1Byte	0~59	Minute	End time
1014	Valley time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
1015	Valley time5 High byte: Hour		1Byte	0~23	Hour	End time
	Valley time5 Low byte: Minute		1Byte	0~59	Minute	End time
1016	Normal time1 High byte: Hour	HBI	1Byte	0~23	Hour	Strat time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	Strat time
1017	Normal time1 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time1 Low byte: Minute		1Byte	0~59	Minute	End time
1018	Normal time2 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	Strat time
1019	Normal time2 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time2 Low byte: Minute		1Byte	0~59	Minute	End time
1020	Normal time3 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	Strat time

1021	Normal time3 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time3 Low byte: Minute		1Byte	0~59	Minute	End time
1022	Normal time4 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	Strat time
1023	Normal time4 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time4 Low byte: Minute		1Byte	0~59	Minute	End time
1024	Normal time5 High byte: Hour		1Byte	0~23	Hour	Strat time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	Strat time
1025	Normal time5 High byte: Hour		1Byte	0~23	Hour	End time
	Normal time5 Low byte: Minute		1Byte	0~59	Minute	End time
1026						
830~1000: Reserved						

6. Information description

6.1 batterystate and alarm protection

Fig1.1.1 BMS System status (logic 1 fig shows that the event is true; logic 0 fig shows that the event is false)

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
System preparation	Charge done	Discharge done	level I alarm	level II alarm	level III protection	Reserved	Reserved

Fig1.1.2BMS level I and level II alarm (logic 1 fig shows that the event is true; logic 0 fig shows that the event is false)

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
High temperature	Low temperature	Large temperature	Total voltage high	Total voltage low	High cell voltage	Low cell voltage	Large cell temperature difference

		difference					
Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
Charge current high	Discharge current high	SOC high	SOC low	Low insulation resistance	Reserved	Reserved	Reserved

Fig1.1.3BMSlevel III protection(logic 1 fig shows that the event is true; logic 0 fig shows that the event is false)

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
High temperature	Low temperature	Large temperature difference	Total voltage high	Total voltage low	High cell voltage	Low cell voltage	Large cell temperature difference
Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
Charge current high	Discharge current high	Charge short circuit	DisCharge short circuit	Battery short circuit	Data acquisition failure	Master slave board communication failure	Main communication failure

6.2 fault information code

Fig1.1.4 Fault information code

item Item	D0~D15bit	Represent information content		Note
		english	chinese	
1	0x01	電網 BypassACovervoltage	AC_OverVolt_Fault(V)	0.1V
2	0x02	電網 BypassACundervoltage	AC_UnderVolt_Fault(V)	0.1V
3	0x03	電網 Bypass 頻率 over frequency	AC_OverFreq_Fault(Hz)	0.01Hz
4	0x04	電網 Bypass 頻率 underfrequency	AC_UnderFreq_Fault(Hz)	0.01Hz
5	0x05	直流 overvoltage 保護	DC_OverVolt_Fault(V)	0.1V
6	0x06	ACovervoltage 保護	DC_OverCurr_Fault(Hz)	0.1V
7	0x07	ACcurrent 不平衡	AC_Curr_Unbalance_Fault(%)	%
8	0x08	電網 voltage 不平衡	AC_Volt_Unbalance_Fault(%)	%
9	0x09	直流接地 fault 保護	AC_Ground_Fault(KΩ)	0.1KΩ
10	0x0A	AC 側 over current 保護	AC_OverCurr_Fault（V）	0.1V
11	0x0B	低 voltage 穿越保護	LVRT_Fault	
12	0x0C	逆變器自身 fault 保護	Inverter_Self_Fault	
13	0x0D	DSPfault 保護	DSP_Fault	
14	0x0E	直流斷路器 open circuit	DC_Switch_Open_Fault	
15	0x0F	逆變器溫度警報	Inverter_Temp_Warning(℃)	
16	0x10	逆變器溫度超高	Inverter_OverTemp_Fault(℃)	0.1℃

17	0x11	防雷器 fault	SPD_Fault	
18	0x12	過熱保護	OverTemp_Fault(℃)	
19	0x13	防反放電保護	Reverse_Discharge_Fault(A)	0.1A
20	0x14	陽性反接	DC_Inverse_Fault	
21	0x15	normal 停機	Normal_Stop	
22	0x16	fault 停機	Fault_Stop	
23	0x17	alarmrunning	Warning	

6.3 Fault log information sheet

firgue1.15fault log information sheet

Input register address	HBI/PCS/HBITL	PBD
660	Faultyearmonth	Faultyearmonth
661	Faultdayhour	Faultdayhour
662	Faultminutesecond	Faultminutesecond
663	Fault information fault code	Fault information fault code
664	PV1voltage	PV1voltage
665	PV2voltage	PV2voltage
666	PV1 induction current	PV3voltage
667	PV2 induction current	PV4voltage
668	Batteryvoltage	PV5voltage
669	Battery nduction current	PV1induction current
670	Busbar voltage positive	PV2induction current
671	Busbar Voltage negetive	PV3inductioncurrent/outputinductioncurrent
672	Inverting phase voltageA/inverting line voltageAB	PV4inductioncurrent/outputinductioncurrent
673	Inverting phase voltageB/inverting line voltageBC	PV5induction current
674	Inverting phase voltage C/inverting line voltageAC	Battery voltage
675	InductioncurrentA	Batterycurrent
676	InductioncurrentB	Outputvoltage
677	InductioncurrentC	Outputcurrent
.....	.....	.....
1002	Faultyearmonth	Faultyearmonth
1003	Faultdayhour	Faultdayhour
1004	Faultminutesecond	Faultminutesecond
1005	Fault information fault code	Fault information fault code
1006	PV1voltage	PV1voltage
1007	PV2voltage	PV2voltage
1008	PV1inductioncurrent	PV3voltage
1009	PV2inductioncurrent	PV4voltage
1010	Batteryvoltage	PV5voltage

1011	Batteryinductioncurrent	PV1inductioncurrent
1012	Busbar voltage positive	PV2inductioncurrent
1013	Busbar voltage negetive	PV3inductioncurrent/outputnductioncurrent
1014	Inverting phase voltage A/inverting line voltageAB	PV4induction current/output induction current
1015	Inverting phase voltageB/inverting line voltageBC	PV5induction current
1016	Inverting phase voltage C/inverting line voltageAC	Battery voltage
1017	InductioncurrentA	Batterycurrent
1018	InductioncurrentB	Outputvoltage
1019	InductioncurrentC	Outputcurrent

6.4 model information and DTC

figure 4.1.1 model information

No	decimalism	Represent information content	New old mode note	notice
1	0000	HBI30/ HBI30_V2	New old model	
2	0001	HBI50/HBI50_V2		
3	0002	HBI100		
4	0003	HBI120		
5	0004	HBI150		
6	0005	HBI250		
7	0006	HBI30_V2		
8	0007	HBI50_V2		
9	0000	HBI20KTL	new model	
10	0001	HBI10KTL		
11	0000	HBI10 KTLS		
12	0001	HBI75 00TLS		
13	0002	HBI5 KTLS		
14	0003	HBI3500TLS		
15	0004	HBI20KTLS		
16	0005	HBI15KTL		
17	0006	HBI30KTL		
18	0007	HBI40KTL		
19	0000	PCS50	old model	
20	0001	PCS50TL		
21	0002	PCS50U		
22	0003	PCS100		
23	0004	PCS100TL		
24	0005	PCS100U		
25	0006	PCS250		
26	0007	PCS250TL		
27	0008	PCS250U		

28	0009	PCS500		
29	0010	PCS500TL		
30	0011	PCS500U		
31	0000	PCS50	new model	
32	0001	PCS50TL		
33	0002	PCS50U		
34	0003	PCS100		
35	0004	PCS100TL		
36	0005	PCS100U		
37	0006	PCS250		
38	0007	PCS250TL		
39	0008	PCS250U		
40	0009	PCS500		
41	0010	PCS500TL		
42	0011	PCS500U		
43	0012	PCS630		
44	0000	PBD350	old model	
45	0000	PBD350	new model	
46	0001	PBD250	new model	

figure4.1.2 DTC model information

No	decimalism	Represent information content	New old model note	notice
1	22001	HBI30	New old model	
2	22002	HBI50		
3	22003	HBI100		
4	22004	HBI120		
5	22005	HBI150		
6	22006	HBI250		
7	22007	HBI7500TL	new model	
8	22008	HBI20KTL		
9	22009	HBI10KTL		
10	22010	HBI10KTLS		
11	22011	HBI7500TLS		
12	22012	HBI5KTLS		
13	22013	HBI3500TLS		
14	22014	HBI20KTLS		
15	22015	HBI15KTL		
16	22016	HBI30KTL		
17	22017	HBI40KTL		
18	21016	PCS50	old model	
19	21017	PCS50TL		

20	21018	PCS50U		
21	21019	PCS100		
22	21020	PCS100TL		
23	21021	PCS100U		
24	21022	PCS250		
25	21023	PCS250TL		
26	21024	PCS250U		
27	21025	PCS500		
28	21026	PCS500TL		
29	21027	PCS500U		
30	21028	PCS50	new model	
31	21029	PCS50TL		
32	21030	PCS50U		
33	21031	PCS100		
34	21032	PCS100TL		
35	21033	PCS100U		
36	21034	PCS250		
37	21035	PCS250TL		
38	21036	PCS250U		
39	21037	PCS500		
40	21038	PCS500TL		
41	21039	PCS500U		
42	21040	PCS630		
43	23001	PBD350	old model	
44	23002	PBD350	new model	
45	23003	PBD250		

6.5 safety standard information definition

figure4.2.1safety standard information

No	hexadecimal	respresentinformationcontent	notice
1	0x0000	UL	
2	0x0001	CE	
3	0x0002	Golden sun	
4	0x0003	TUV	
5	0x0004	DK5940	
6	0x0005	AS4777	
7	0x0006	RD1663	

6.6 state alarminformation

Figure 4.3.1running state （based on value）

No	hexadecimal value（based on value）	Respresent information content	notice
1	0x0000	waiting	
2	0x0001	inspection	
3	0x0002	on-grid	
4	0x0003	fault	
5	0x0004	permanentfault	
6	0x0005	off-grid	
7	0x0006	Single PVmode	
8	0x0007	Parallel operation switch to off-grid	
9	0x0008	Parallel operation switch to on-grid	

figure4.3.10runningstate （based on bit）

No	D0~D15bit	Respresentinformation content	notice
1	D0	waiting	
2	D1	inspection	
3	D2	on-grid	
4	D3	fault	
5	D4	Permanent fault	
6	D5	off-grid	
7	D6	Single PV mode	
8	D7	Parallel operationswitch to off-grid	
9	D8	Parallel operation switch to on-grid	

figure4.3.2faultalarmbitinformation1

No	D0~D15bit	Respresent information content		notice
		english	chinese	
1	D0	PV_Inverse_Failure	PV 接反永久故障	1: the status is valid 0: the status is invalid
2	D1	IGBT_Failure	IGBT 永久故障	
3	D2	EEPROM_Write_Failure	EEPROM 寫永久故障	
4	D3	EEPROM_Read_Failure	EEPROM 讀永久故障	
5	D4	AC_MainContactor_Failure	主接觸器永久故障	
6	D5	AC_SlaveContactor_Failure	輔接觸器永久故障	
7	D6	GFDI_Failure	GFDI 永久故障	
8	D7	GFCI_Failure	GFCI 永久故障	
9	D8	RISO_Failure	絕緣阻抗永久故障	
10	D9	Reseverd_Failure	預留	
11	D10	Reseverd_Failure	預留	

12	D11	Reseverd_Failure	預留	
13	D12	Reseverd_Failure	預留	
14	D13	Reseverd_Failure	預留	
15	D14	Reseverd_Failure	預留	
16	D15	Reseverd_Failure	預留	

figure4.3.3faultalarmbitinformation2

No	D0~D15bit	figure 示 informationcontent		notice
		english	chinese	
1	D0	PV_VoltHigh_Fault	PV 電壓高故障	1： state valid 0：state invalid
2	D1	CANb_Communication_Fault（HBI） Bypass_Communication_Fault（PCS）	CANb 通信故障（HBI） 旁路櫃通信故障（PCS）	
3	D2	PV_CurrHigh_Fault	PV 電流過流故障	
4	D3	BMS_Communication_Fault	BMS 通信故障	
5	D4	PV_Insulation_Fault	PV 對地絕緣阻抗故障	
6	D5	BMS_Fault	BMS 故障	
7	D6	DC_OCP_Fault	直流過流故障（Trip）	
8	D7	Fire_Fault	消防故障	
9	D8	INT_PV_OverVolt_Fault	PV 過壓故障（INT）	
10	D9	PBD250_Communication_Fault（PCS）	PBD250 通訊故障（PCS）	
11	D10	INT_PV_OverCurr_Fault	PV 過流故障（INT）	
12	D11	EMS_Communication_Fault	EMS 通訊故障	
13	D12	IGBT_Converter_Fault	變流器 IGBT 故障	
14	D13	IGBT_Buck_Fault	BuckIGBT 故障	
15	D14	Converter_L_OCP_Fault	變流器電感過流故障（Trip）	
16	D15	Buck_L_OCP_Fault	Buck 電感過流故障（Trip）	

Fig4.3.4Fault alarm bit information3

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	AC_NoUtility_Fault	交流無市電故障	1: Valid 0: Invalid
2	D1	AC_GridPhaseSeque_Fault	交流電網相序反故障	
3	D2	AC_PLL_Fault	交流鎖相故障	
4	D3	AC_Volt_Unbalance_Fault	交流電壓不平衡故障	
5	D4	AC_Curr_Unbalance_Fault	交流電流不平衡故障	
6	D5	Reseverd_Fault	預留	
7	D6	Reseverd_Fault	預留	
8	D7	Reseverd_Fault	預留	
9	D8	AC_WU_OverVolt_Fault	交流 WU 過壓故障	

10	D9	AC_WU_UnderVolt_Fault	交流 WU 欠壓故障	
11	D10	AC_VW_OverVolt_Fault	交流 VW 過壓故障	
12	D11	AC_VW_UnderVolt_Fault	交流 VW 欠壓故障	
13	D12	AC_UV_OverVolt_Fault	交流 UV 過壓故障	
14	D13	AC_UV_UnderVolt_Fault	交流 UV 欠壓故障	
15	D14	AC_OverFreq_Fault	交流過頻故障	
16	D15	AC_UnderFreq_Fault	交流欠頻故障	

Fig4.3.5Fault alarm bit information4

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	AC_GridCurr_DcHigh_Fault	電網直流量高故障	1: Valid 0: Invalid
2	D1	Converter_LCurr_DcHigh_Fault	變流器電感直流量高故障	
3	D2	Buck_LCurr_DcHigh_Fault	Buck 電感直流量高故障	
4	D3	GridCurr_High_Fault	電網電流高故障	
5	D4	Converter_LCurr_High_Fault	變流器電感過流故障（RMS）	
6	D5	Buck_LCurr_High_Fault	Buck 電感過流故障（RMS）	
7	D6	AC_Overload_Fault	過載故障	
8	D7	AC_Lightload_Fault	輕載故障	
9	D8	AC_BackFeed_Fault	交流反灌故障	
10	D9	LVRT_Fault	低壓穿越故障	
11	D10	Converter_Module_OverTemp_Fault	變流器模塊過溫故障	
12	D11	Buck_Module_OverTemp_Fault	Buck 模塊過溫故障	
13	D12	Converter_L_OverTemp_Fault	變流器電感過溫故障	
14	D13	Buck_L_OverTemp_Fault	Buck 電感過溫故障	
15	D14	Transformer_OverTemp_Fault	變壓器過溫故障	
16	D15	LowTemp_Fault	低溫故障	

Fig4.3.6Fault alarm bit information5

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	EPO_Stop	緊急停機	1: the status is valid 0: the status is invalid
2	D1	KeyEmergencyStop	手動關機	
3	D2	LcdEmergencyStop	LCD 關機	
4	D3	CP_Communication_Fault	CP 通訊故障	
5	D4	AC_MainContactor_Fault	交流主接觸器故障	
6	D5	DC_MainContactor_Fault	直流主接觸器故障	
7	D6	PBD350_Communication_Fault（PCS）	PBD350 通訊故障（PCS）	
8	D7	AC_SlaveContactor_Fault	交流輔接觸器故障	

9	D8	GFDI_Ground_Fault	GFDI 接地故障	
10	D9	GFDI_HallSense_Fault	GFDI Hall 故障	
11	D10	GFDI_AirSwitch_Fault	GFDI 空開故障	
12	D11	PV_Thunder_Fault	PV 直流防雷器故障	
13	D12	AC_Thunder_Fault	交流防雷器故障	
14	D13	BAT_Thunder_Fault	BAT 直流防雷器故障	
15	D14	Converter_L_Rly_Fault	變流器電感溫度繼電器故障	
16	D15	Buck_L_Rly_Fault	Buck 電感溫度繼電器故障	

Fig4.3.7Fault alarm bit information6

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	DC_GFDI_Fault	直流 GFDI 故障	1: the status is valid 0: the status is invalid
2	D1	AC_GFDI_Fault	交流 GFDI 故障	
3	D2	PV_RISO_Fault	PV 絕緣阻抗故障	
4	D3	BAT_RISO_Fault	BAT 絕緣阻抗故障	
5	D4	DC_GFCI_Fault	直流 GFCI 故障	
6	D5	AC_GFCI_Fault	交流 GFCI 故障	
7	D6	DC_Fuse_Fault	直流 Fuse 故障	
8	D7	AC_Fuse_Fault	交流 Fuse 故障	
9	D8	DC_SoftStart_Fault	DC 軟啟故障	
10	D9	INV_SoftStart_Fault	交流軟啟故障	
11	D10	INT_ConverterL_OverCurr_Fault	變流器電感過流故障（INT）	
12	D11	INT_BuckL_OverCurr_Fault	Buck 電感過流故障（INT）	
13	D12	Batt_OverVolt_Fault	電池過壓故障	
14	D13	Batt_UnderVolt_Fault	電池欠壓故障	
15	D14	Batt_OverCurr_Fault	電池過流故障	
16	D15	Batt_OverCharge_Fault	電池過充故障	

Fig4.3.8Fault alarm bit information7

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	Fault_Feedback_Warning	故障反饋告警	1: the status is valid 0: the status is invalid
2	D1	Fan_Buck_Fault_Warning	Buck 風扇故障告警	
3	D2	Fan_Inv_Fault_Warning	Inv 風扇故障告警	
4	D3	Parallel_Uneven_Flow_Warning	併機不均流告警	
5	D4	Temp_Derating_Warning	過溫減載告警	
6	D5	Batt_UnderVolt_Warning	電池欠壓告警	
7	D6	DCFuseOp_Alarm_Warning	DC FUSE 開路告警	
8	D7	ACFuseOp_Alarm_Warning	AC FUSE 開路告警	
9	D8	AC_WU_OverVolt_Rmt_Warning	交流旁路 WU 過壓	

10	D9	AC_WU_UnderVolt _Rmt_Warning	交流旁路 WU 欠壓	
11	D10	AC_VW_OverVolt_Rmt_Warning	交流旁路 VW 過壓	
12	D11	AC_VW_UnderVolt _Rmt_Warning	交流旁路 VW 欠壓	
13	D12	AC_UV_OverVolt_Rmt_Warning	交流旁路 UV 過壓	
14	D13	AC_UV_UnderVolt _Rmt_Warning	交流旁路 UV 欠壓	
15	D14	AC_OverFreq_Rmt_Warning	交流旁路過頻	
16	D15	AC_UnderFreq_Rmt_Warning	交流旁路欠壓	

Fig4.3.9Fault alarm bit information8

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	Batt_UnderVolt_Protect_Warning	電池低壓警告（關逆變）	
2	D1	TimeSet_Warning	時間設置警告	
3	D2	Bypass_Contactor_Warning	旁路接觸氣警告	
4	D3	Bypass_Inter_Comm_Warning	旁路内部通信警告	
5	D4	Bypass_Volt_different_Warning	旁路電壓不同告警	
6	D5	PBD_Communication_ Warning	PBD 通信告警	
7	D6			
8	D7			1: Valid
9	D8	PBD250 _Fault	PBD250 故障	0: Invalid
10	D9	PBD350 _Fault	PBD350 故障	
11	D10	CP _Fault	CP 故障	
12	D11	CANb_Communication_Fault （PCS）	CANb 通信故障（PCS）	
13	D12			
14	D13			
15	D14	Parallel_PLL_Signal_Fault	關機鎖相同步信號故障	
16	D15	Parallel_Sync_Signal_Fault	關機切換同步信號故障	

表 4.3.11 故障告警位信息 9

序号	D0~D15 位	表示信息内容		备注
		英文	中文	
1	D0	DC_CurrOver_Fault	直流過流故障	
2	D1	Bypass_Switch_shutdown_Fault	旁路開關關閉故障	
3	D2	DC_Contactor_Fault	直流接觸器故障	
4	D3			
5	D4			1: the status is valid
6	D5			0: the status is invalid
7	D6			
8	D7			
9	D8			
10	D9			
11	D10			

12	D11			
13	D12			
14	D13			
15	D14			
16	D15			

6.7Status alarm information

Fig5.3.1running state（By numerical value ）

No	Hexadecimalvalue （By numerical value ）	Represent information content	Note
1	0x0000	Hold	
2	0x0001	Check	
3	0x0002	Grid connected	
4	0x0003	Error	
5	0x0004	Permanent Error	
6	0x0005	Off-grid	
7	0x0006	Single PV mode	

Fig5.3.10running state（Bitwise）

No	D0~D15 bit	Represent information content	Note
1	D0	Hold	
2	D1	Check	
3	D2	Grid connected	
4	D3	Error	
5	D4	Permanent Error	
6	D5	Off-grid	
7	D6	Single PV mode	

Fig5.3.2Fault alarm bit information1

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	PV_ Reseverd _Failure	PV 反接永久故障	1: Valid 0: Invalid
2	D1	IGBT_Failure	IGBT 永久故障	
3	D2	EEPROM_Write_Failure	EEPROM 寫永久故障	
4	D3	EEPROM_Read_Failure	EEPROM 讀永久故障	
5	D4	AC_MainContactor_Failure	主接觸器永久故障	
6	D5	AC_SlaveContactor_Failure	輔接觸器永久故障	
7	D6	GFDI_Failure	GFDI 永久故障	
8	D7	GFCI_Failure	GFCI 永久故障	
9	D8	RISO_Failure	絕緣阻抗永久故障	

10	D9	BAT_MainContactor_Failure	電池主接觸器永久故障	
11	D10	AC_BypassOverPower_Failure	電網功率過載故障	
12	D11	AC_U_BypassOverPower_Failure	電網 U 相功率過載故障	
13	D12	AC_V_BypassOverPower_Failure	電網 V 相功率過載故障	
14	D13	AC_W_BypassOverPower_Failure	電網 W 相功率過載故障	
15	D14	BAT_ Reseverd _Failure	電池反接永久故障	
16	D15	Reseverd_Failure	預留	

Fig5.3.3Fault alarm bit information2

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	PV2_OverVolt_Fault	PV2 過壓故障	1: Valid 0: Invalid
2	D1	BL_OCP_Fault	平衡板過流故障（Trip）	
3	D2	PV_ OCP _Fault	PV 過流故障（Trip）	
4	D3	BMS_Communication_Fault	BMS 通信故障	
5	D4	INT_PV2_OverCurr_Fault	PV2 過流故障（INT）	
6	D5	BMS_Fault	BMS 故障	
7	D6	BAT_OCP_Fault	BAT 過流故障（Trip）	
8	D7	INT_BUS_unbalance_Fault	母線電壓不平衡故障 INT）	
9	D8	PV1_OverVolt_Fault	PV1 過壓故障	
10	D9	INT_BAT_OverVolt_Fault	BAT 過壓故障（INT）	
11	D10	INT_PV1_OverCurr_Fault	PV1 過流故障（INT）	
12	D11	INT_BAT_OverCurr_Fault	BAT 過流故障（INT）	
13	D12	INT_INV_OverVolt_Fault	INV 過壓故障 INT）	
14	D13	INT_INV_OverCurr_Fault	INV 過流故障（INT）	
15	D14	INT_BL_OverCurr_Fault	平衡板過流故障（INT）	
16	D15	INT_BUS_OverVolt_Fault	BUS 過壓故障（INT）	

Fig5.3.4Fault alarm bit information3

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	AC_NoUtility_Fault	交流無市電故障	1: Valid 0: Invalid
2	D1	AC_GridPhaseSeque_Fault	交流電網相序反故障	
3	D2	AC_PLL_Fault	交流鎖相故障	
4	D3	AC_Volt_Unbalance_Fault	交流電壓不平衡故障	
5	D4	AC_Curr_Unbalance_Fault	交流電流不平衡故障	
6	D5	INV_A_OCP_Fault	A 相過流故障（Trip）	
7	D6	INV_B_OCP_Fault	B 相過流故障 Trip）	
8	D7	INV_C_OCP_Fault	C 相過流故障 Trip）	
9	D8	AC_WU_OverVolt_Fault	交流 WU 過壓故障	
10	D9	AC_WU_UnderVolt_Fault	交流 WU 欠壓故障	
11	D10	AC_VW_OverVolt_Fault	交流 VW 過壓故障	

12	D11	AC_VW_UnderVolt_Fault	交流 VW 欠壓故障	
13	D12	AC_UV_OverVolt_Fault	交流 UV 過壓故障	
14	D13	AC_UV_UnderVolt_Fault	交流 UV 欠壓故障	
15	D14	AC_OverFreq_Fault	交流過頻故障	
16	D15	AC_UnderFreq_Fault	交流欠頻故障	

Fig5.3.5Fault alarm bit information4

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	AC_GridCurr_DcHigh_Fault	電網直流量高故障	1: Valid 0: Invalid
2	D1	PV1_CurrHigh_Fault	PV1 過流故障	
3	D2	PV2_CurrHigh_Fault	PV2 過流故障	
4	D3	AC_GridCurr_High_Fault	電網電流高故障	
5	D4	AC_L1Curr_High_Fault	逆變電感過流故障（RMS）	
6	D5	AC_L1CurrDc_High_Fault	逆變電感直流量故障	
7	D6	AC_Overload_Fault	過載故障	
8	D7	AC_Lightload_Fault	輕載故障	
9	D8	AC_BackFeed_Fault	交流反灌故障	
10	D9	ShineMaster_Comunicate_Fault	Shinemaster 通訊故障	
11	D10	AC_OverTemp_Fault	變流器模塊過溫故障	
12	D11	DC_OverTemp_Fault	直流器模塊過溫故障	
13	D12	AC_BypassOverPower_Fault	電網過載故障	
14	D13	AC_U_BypassOverPower_Fault	電網 U 相過載故障	
15	D14	AC_V_BypassOverPower_Fault	電網 V 相過載故障	
16	D15	AC_W_BypassOverPower_Fault	電網 W 相過載故障	

Fig5.3.6Fault alarm bit information5

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	EPO_Stop	緊急停機	1: Valid 0: Invalid
2	D1	KeyEmergencyStop	手動關機	
3	D2	LcdEmergencyStop	LCD 關機	
4	D3	NO_Bat_Fault	預留	
5	D4	BAT_MainContactor_Fault	電池主接觸器故障	
6	D5	AC_U_Overload_Fault	負載 U 相過載	
7	D6	AC_V_Overload_Fault	負載 V 相過載	
8	D7	AC_W_Overload_Fault	負載 W 相過載	
9	D8	GFDI_Ground_Fault	GFDI 接地故障	
10	D9	GFDI_HallSense_Fault	GFDI Hall 故障	
11	D10	GFDI_AirSwitch_Fault	GFDI 空開故障	

12	D11	PV_Thunder_Fault	PV 直流防雷器故障	
13	D12	AC_Thunder_Fault	交流防雷器故障	
14	D13	BAT_Thunder_Fault	BAT 直流防雷器故障	
15	D14	BusVolt_Unbalance_Fault	變流器電感溫度繼電器故障	
16	D15	INT_PV3_OverCurr_Fault	PV3 過流故障（INT）	

Fig5.3.7Fault alarm bit information6

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	DC_GFDI_Fault	直流 GFDI 故障	
2	D1	BMS_Warning	BMS 告警	
3	D2	PV1_RISO_Fault	PV1 絕緣阻抗故障	
4	D3	PV2_RISO_Fault	PV2 絕緣阻抗故障	
5	D4	DC_GFCI_Fault	直流 GFCI 故障	
6	D5	AC_GFCI_Fault	交流 GFCI 故障	
7	D6	DC_Fuse_Fault	直流 Fuse 故障	
8	D7	AC_Fuse_Fault	交流 Fuse 故障	1: Valid
9	D8	DC_SoftStart_Fault	DC 軟啟故障	0: Invalid
10	D9	INV_SoftStart_Fault	交流軟啟故障	
11	D10	INT_L1_OverCurr_Fault	逆變電感過流（INT）	
12	D11	INT_Bypass_Volt_Fault	電網過壓（INT）	
13	D12	Batt_OverVolt_Fault	電池過壓故障	
14	D13	Batt_UnderVolt_Fault	電池欠壓故障	
15	D14	Batt_OverCurr_Fault	電池過流故障	
16	D15	Batt_OverCharge_Fault	電池過充故障	

Fig5.3.8Fault alarm bit information7

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	Fan1_Feedback_Warning	風扇 1 故障告警	
2	D1	Fan2_Feedback _Warning	風扇 2 故障告警	
3	D2	Fan3_Feedback _Warning	風扇 3 故障告警	
4	D3	Fan4_Feedback _Warning	風扇 4 故障告警	
5	D4	Temp_Derating_Warning	過溫減載告警	
6	D5	Batt_UnderVolt_Warning	電池欠壓告警	
7	D6	DCFuseOp_Alarm_Warning	DC FUSE 開路告警	1: Valid
8	D7	ACFuseOp_Alarm_Warning	AC FUSE 開路告警	0: Invalid
9	D8	AC_WU_OverVolt_Rmt_Warning	交流旁路 WU 過壓	
10	D9	AC_WU_UnderVolt _Rmt_Warning	交流旁路 WU 欠壓	
11	D10	AC_VW_OverVolt_Rmt_Warning	交流旁路 VW 過壓	
12	D11	AC_VW_UnderVolt _Rmt_Warning	交流旁路 VW 欠壓	
13	D12	AC_UV_OverVolt_Rmt_Warning	交流旁路 UV 過壓	

14	D13	AC_UV_UnderVolt _Rmt_Warning	交流旁路 UV 欠壓	
15	D14	AC_OverFreq_Rmt_Warning	交流旁路過頻	
16	D15	AC_UnderFreq_Rmt_Warning	交流旁路欠頻	

Fig5.3.9Fault alarm bit information8

No	D0~D15 bit	Represent information content		Note
No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	Batt_UnderVolt_Protect_Warning	電池低壓告警（關逆變）	
2	D1	Hbi_10min_3times_StopAlarm	直流電壓啟動不足故障	
3	D2	Reseverd	預留	
4	D3	Fan_5_Fault_Warning	風扇 5 告警	
5	D4	Reseverd	預留	
6	D5	Reseverd	預留	
7	D6	Reseverd	預留	
8	D7	Reseverd	預留	1: Valid
9	D8	PV3_OverVolt_Fault	PV3 過壓故障	0: Invalid
10	D9	PV3_Curr_High_Fault	PV3 過流故障	
11	D10	BATModule_OverTemp_Fault	電池模塊過溫故障	
12	D11	INSUL_Rly_Fault	絕緣繼電器故障	
13	D12	RISO_Fault	絕緣電阻故障	
14	D13	INSUL_Comunicate_Fault	絕緣模塊通信故障	
15	D14	INSUL_Modul_Fault	絕緣模塊故障	
16	D15	Reseverd	預留	

Fig6.3.1running state（By numerical value ）

No	Hexadecimalvalue （By numerical value ）	Represent information content	Note
8	0x0000	Hold	
9	0x0001	Check	
10	0x0002	Run	
11	0x0003	Error	
12	0x0004	Permanent Error	
13	0x0006	Single PV mode	

Fig6.3.10running state（Bitwise）

No	D0~D15 bit	Represent information content	(Note
8	D0	Hold	(
9	D1	Check	
10	D2	Run	

11	D3	Error	
12	D4	Permanent Error	
13	D6	Single PV mode	

Fig6.3.2Fault alarm bit information1

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	PV_Inverse_Failure	PV 接反永久故障	1: Valid 0: Invalid
2	D1	IGBT_Failure	IGBT 永久故障	
3	D2	EEPROM_Write_Failure	EEPROM 寫永久故障	
4	D3	EEPROM_Read_Failure	EEPROM 讀永久故障	
5	D4	MainContactor_Failure	主接觸器永久故障	
6	D5	SlaveContactor_Failure	輔接觸器永久故障	
7	D6	RISO_Failure	絕緣阻抗永久故障	
8	D7	Reseverd_Failure	預留	
9	D8	PV1_VoltHigh_Fault	PV1 過壓故障	
10	D9	PV2_VoltHigh_Fault	PV2 過壓故障	
11	D10	PV1_CurrHigh_Fault	PV1 過流故障	
12	D11	PV2_CurrHigh_Fault	PV2 過流故障	
13	D12	BAT_OverVolt_Fault	電池過壓故障	
14	D13	BAT_UnderVolt_Fault	電池欠壓故障	
15	D14	BAT_OverCurr_Fault	電池放電過流故障	
16	D15	BAT_OverCharge_Fault	電池充電過流故障	

Fig6.3.3Fault alarm bit information2

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	OUT_OverVolt_Fault	輸出過壓故障	1: Valid 0: Invalid
2	D1	OUT_OverCurr_Fault	輸出過流故障	
3	D2	PV_L1_BuckOverCurr_Fault	PV 電感 1 過流故障	
4	D3	PV_L2_BuckOverCurr_Fault	PV 電感 2 過流故障	
5	D4	OUT_L1_BuckOverCurr_Fault	輸出電感 1 過流故障	
6	D5	OUT_L2_BuckOverCurr_Fault	輸出電感 2 過流故障	
7	D6	BMS_Communication_Fault	BMS 通訊故障	
8	D7	BMS_Fault	BMS 故障	
9	D8	PV_L1_BuckOverCurr_Fault(INT)	PV 電感 1 過流故障(INT)	
10	D9	PV_L2_BuckOverCurr_Fault(INT)	PV 電感 2 過流故障(INT)	
11	D10	OUT_L1_BuckOverCurr_Fault(INT)	輸出電感 1 過流故障(INT)	
12	D11	OUT_L2_BuckOverCurr_Fault(INT)	輸出電感 2 過流故障(INT)	
13	D12	PV1_OverVolt_Fault(INT)	PV1 過壓故障(INT)	

14	D13	PV2_OverVolt_Fault(INT)	PV2 過壓故障(INT)	
15	D14	BAT_OverVolt_Fault(INT)	電池過壓故障(INT)	
16	D15	OUT_OverVolt_Fault(INT)	輸出過壓故障(INT)	

Fig6.3.4Fault alarm bit information3

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D1	BUS_OverVolt_Fault(INT)	母線過壓故障(INT)	1: Valid 0: Invalid
2	D2	PV1_OverCurr_Fault(INT)	PV1 過流故障(INT)	
3	D2	PV2_OverCurr_Fault(INT)	PV2 過流故障(INT)	
4	D3	BAT_OverCurr_Fault(INT)	電池過流故障(INT)	
5	D4	OUT_OverCurr_Fault(INT)	輸出過流故障(INT)	
6	D5	PV_L3_OverCurr_Fault(INT)	PV 電感 3 過流故障(INT)	
7	D6	PV_L4_OverCurr_Fault(INT)	PV 電感 4 過流故障(INT)	
8	D7	PV_L5_OverCurr_Fault(INT)	PV 電感 5 過流故障(INT)	
9	D8	OUT1_OCP_Fault	輸出電感 1 過流故障 Trip）	
10	D9	OUT2_OCP_Fault	輸出電感 2 過流故障 Trip）	
11	D10	PV1_L1_OCP_Fault	PV 電感 1 過流故障（Trip）	
12	D11	PV2_L2_OCP_Fault	PV 電感 2 過流故障（Trip）	
13	D12	DC1_Thunder_Fault	直流 1 防雷器故障	
14	D13	DC2_Thunder_Fault	直流 2 防雷器故障	
15	D14	BAT_SoftStart_Fault	電池軟啟故障	
16	D15	OUT_SoftStart_Fault	輸出軟啟故障	

Fig6.3.5Fault alarm bit information4

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	PV_Module_OverTemp_Fault	PV 模塊過溫故障	1: Valid 0: Invalid
2	D1	OUT_Module_OverTemp_Fault	輸出模塊過溫故障	
3	D2	PV_Inductor_OverTemp_Fault	PV 電感過溫故障	
4	D3	OUT_Inductor2_OverTemp_Fault	輸出電感過溫故障	
5	D4	LowTemp_Fault	低溫故障	
6	D5	BUS_Insulation_Fault	母線對地絕緣阻抗故障	
7	D6	PV_IGBT_Fault	PV_ IGBT 故障	
8	D7	OUT_IGBT_Fault	OUT_IGBT 故障	
9	D8	EPO_Stop	緊急停機	
10	D9	KeyEmergencyStop	手動關機	
11	D10	LcdEmergencyStop	LCD 關機	
12	D11	BAT_MainContactor1_Fault	電池主接觸器故障	
13	D12	OUT_MainContactor2_Fault	輸出主接觸器故障	
14	D13	BAT_SlaveContactor_Fault	電池輔接觸器故障	
15	D14	OUT_SlaveContactor_Fault	輸出輔接觸器故障	

16	D15	Reseverd_Failure	預留	

Fig6.3.6Fault alarm bit information5

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	Fault_Feedback_Warning	脫扣告警	
2	D1	Fan_1_Fault_Warning	風扇 1 故障告警	
3	D2	Fan_2_Fault_Warning	風扇 2 故障告警	
4	D3	Fan_3_Fault_Warning	風扇 3 故障告警	
5	D4	Temp_Derating_Warning	過溫減載告警	
6	D5	BAT_UnderVolt_Warning	電池欠壓告警	
7	D6	PCS _Communication_ Warning	PCS 通訊提醒	
8	D7	Reseverd_Failure	預留	1: Valid
9	D8	PV3_VoltHigh_Fault	PV3 過壓故障	0: Invalid
10	D9	PV4_VoltHigh_Fault	PV4 過壓故障	
11	D10	PV5_VoltHigh_Fault	PV5 過壓故障	
12	D11	PV3_CurrHigh_Fault	PV3 過流故障	
13	D12	PV4_CurrHigh_Fault	PV4 過流故障	
14	D13	PV5_CurrHigh_Fault	PV5 過流故障	
15	D14	PV_L3_OverCurr_Fault	PV 電感 3 過流故障	
16	D15	PV_L4_OverCurr_Fault	PV 電感 4 過流故障	

Fig6.3.7Fault alarm bit information6

No	D0~D15 bit	Represent information content		Note
		English	Chinese	
1	D0	PV_L5_OverCurr_Fault	PV 電感 5 過流故障	
2	D1	PV3_OverVolt_Fault(INT)	PV3 過壓故障(INT)	
3	D2	PV4_OverVolt_Fault(INT)	PV4 過壓故障(INT)	
4	D3	PV5_OverVolt_Fault(INT)	PV5 過壓故障(INT)	
5	D4	PV3_OverCurr_Fault(INT)	PV3 過流故障(INT)	
6	D5	PV4_OverCurr_Fault(INT)	PV4 過流故障(INT)	
7	D6	PV5_OverCurr_Fault(INT)	PV5 過流故障(INT)	
8	D7	PVVolt_higher_Output	PV 電壓高於輸出	1: Valid
9	D8	DC3_Thunder_Fault	直流 3 防雷器故障	0: Invalid
10	D9	DC4_Thunder_Fault	直流 4 防雷器故障	
11	D10	DC5_Thunder_Fault	直流 5 防雷器故障	
12	D11	PV1_L3_OCP_Fault	PV 電感 3 過流故障 Trip)	
13	D12	PV2_L4_OCP_Fault	PV 電感 4 過流故障 Trip)	
14	D13	PV2_L5_OCP_Fault	PV 電感 5 過流故障 Trip)	
15	D14	Reseverd_Failure	預留	
16	D15	Reseverd_Failure	預留	