

# RS485\_MODBUS RTU Hybrid Inverter Protocol

## Ver3.0

### Content

1. General .....	2
2. Physical Interface .....	2
3. Communication Description.....	2
3.1. Data type .....	2
3.2. Inter-frame interval requirement .....	2
3.3. Data frame.....	2
4. Error information and data process .....	3
5. Detail description of the Protocol.....	4
5.1. Inverter Model Parameter Address Definition .....	4
5.2. Inverter operating information parameter address .....	5
5.3. Inverter setting parameter address .....	49
6. Example.....	83
6.1. Error messages .....	83
6.2. 04 Function code.....	84
6.3. 03 function code.....	84
6.4. 06 function code.....	85
6.5. 10 function code.....	85
7. Appendix .....	86
7.1. Appendix 1 .....	86
7.2. Appendix 2.....	86
7.3. Appendix 3.....	89
7.4. Appendix 4.....	96
7.5. Appendix 5.....	98
7.6. Appendix 6.....	98
7.7. Appendix 7.....	99
7.8. Appendix 8.....	99
7.9. Appendix 9.....	100
7.10. Appendix 10.....	100
7.11. Appendix 11 .....	101
7.12. Appendix 12.....	102
7.13. Appendix 13.....	103
7.14. Appendix 14.....	104
7.15. Appendix 15.....	105
7.16. Appendix 16.....	105

## 1. General

This protocol is suitable for the communication between the hybrid grid-tied inverters and the upper computer monitoring system. MODBUS RTU is applied. This protocol can read the real-time operating information of the inverter and control the inverter as well.

## 2. Physical Interface

Using RS485, asynchronous transmitting and receiving method, Master-slave mode, Fixed Baud rate.

----Baud Rate: 9600bps

----Odd-even check: None

----Data Bits: 8

----Stop Bit: 1

## 3. Communication Description

### 3.1. Data type

U16: 2-byte unsigned integer, high first and then low;

S16: 2-byte signed integer, high first and then low;

U32: 4-byte unsigned integer, the high byte is in front of the low byte, and the high word is in the front and the low word is behind;

S32: 4-byte signed integer, the high byte is in front of the low byte, and the high word is in the front and the low word is behind;

### 3.2. Inter-frame interval requirement

More than 300ms communications frame interval is required. Recommended max data frame 100 bytes (50 registers)

### 3.3. Data frame

Slave Address	Function code	Data	CRC Check
8-Bits	8-Bits	Nx8-Bits	16-Bits

**Slave Address:** Is the corresponding slave address, it must be match with inverter address.

Broadcast Address 0xFF, only used for remote control.

**Function code:** 03H、04H、06H and 10H are available.

Function code(Hex)	Name	Reg Address	Function
03H	Read the holding registers	40001-49999	Read the setting content of holding registers
04H	Read the input registers	30001-39999	Read the detail information of the inverter
06H	Write a single holding registers	40001-49999	Set single-byte functions

10H	Write multiple holding registers	40001-49999	Set multi-byte function
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**Data:** Including the start register address, data length, the number of data bytes, data content. 02H low-byte and follow high-byte, others high-byte first, and follow by low byte.

**CRC Check:** CRC look-up table checking mode. High-byte first, and follow by low Byte.

**When the slave device receives address 0xFF and the function code is “write”, receive the command but not response.**

## 4. Error information and data process

Slave Response (Hex)

Slave Address	Function code	Error code	CRC Check	
			Low byte	High byte
xx	xx 0x80	xx	xx	xx

When the inverter communication module detected an error other than CRC error, it must response to the master device. (High byte of function code is 1 which is adding 128 to the function code)

### Inverter com module response to the Error Code

0x01 illegal function code, the server doesn't understand the function code

0x02 illegal data address, in relation to requests

0x03 illegal data, in relation to requests.

0x04 Service failure, Inverter com module can't get access to the data during execution

0x05 HMI and Dsp communication failure;

## 5. Detail description of the Protocol

### 5.1. Inverter Model Parameter Address Definition

Corresponding function code is 0x04. The following table has the same address with the actual address of the message frame. No need extra offset or transform.

Register (Dec)	Meaning	Data Type	Note
35000	LEDVANCE F2 Inverter  Model definition	U16	<p>Explanation:</p> <p>0000---no definition</p> <p>1010---1phase grid-tied inverter(Note: Models 0.7-8K1P / 7-10K1P)</p> <p>1020---3 phase grid-tied inverter (Note: Models 3-20K 3P)</p> <p>1021---3 phase grid-tied inverter (Note: Models 25-50K/50-70K/80-110K/90-136K/125K/250K)</p> <p>2030---1 phase LV Hybrid inverter</p> <p>2031---1 phase LV AC Couple energy storage inverter</p> <p>2032---5-15kWh all in one hybrid</p> <p>2040---1 phase HV Hybrid inverter</p> <p>2050---3 phases LV Hybrid inverter</p> <p>2060---3 phases HV Hybrid inverter 5G</p> <p>2070---3 phases HV Hybrid inverter F2</p> <p>2080---1 phase HV Hybrid inverter F2</p> <p>2090---1phase LV Hybrid inverter F2</p> <p>1070---External EPM device</p> <p>3010---OGI Off-grid inverter</p> <p><b>Description:</b></p> <p>1、 high 8 bit means protocol version, low 8 bit means inverter model.</p> <p>2、 0000H-no definition model. Master device can choose the device UI of related model.</p> <p>3、 this address will not be limited with wake up time,it can get address information as soon as LCD is powered up</p>

## 5.2. Inverter operating information parameter address

Corresponding function code is 0x04. The following table has the same address with the actual address of the message frame. No need extra offset or transform.

Register (Dec)	Meaning	Data Type	Unit	Note
33000	Model No.	U16		
33001	DSP version	U16		(Hex) Note: Here is the main version for master and slave DSP, the high byte represents the main version of the slave DSP (reserved), and the low byte represents the main version of the master DSP.
33002	HMI version	U16		(Hex) Note: Main HMI version, the high byte is empty, and the low byte represents the main HMI version. Together with 33069, it forms the complete version number of the HMI;
33003	Protocol version	U16		(Hex)
33004-3 3019	SN	U16		"32 bit ASCII direct display Eg: 33004 = '01' 33005 = '23' Corresponding display: '0123' LEDVANCE only takes the high 15 bit as effective SN number In the case of a four-digit model number, only the upper 16 digits are taken as the valid SN number; 33004 Highest, 33019 Lowest. "
33020	One click opening setting flag bit	U16		"1 - represents the completion of one click start setting. 0 -- represents that the one-button start setting has not been made. Note: If the upper computer receives a value of 0, it indicates that the one-button start has not been set. The APP needs to enter the one-button start setting interface and ask the customer to set it.Note: It is mainly used for the APP point-to-point setting function."
33021	DSP software sub version	U16		"(Hex) Sub master DSP version number; Work with 33001 lower bytes For example, 33001 low byte 0x01, 33021=0x02 indicates the DSP software version number V01B02"
33022	Year	U16		0-99
33023	Month	U16		1-12
33024	Day	U16		1-31
33025	Hour	U16		0-23
33026	Minute	U16		0-59
33027	Second	U16		0-59
...	...			
33029-3	PV Total energy	U32	1kWh	Note: For the Hybrid model, it shows the PV power generation

3030	generation			data of the machine, and for the AC Coupled model, it shows the power generation data of the parallel PV inverters
33031-3 3032	PV Current month energy generation	U32	1kWh	
33033-3 3034	PV Last month energy generation	U32	1kWh	
33035	PV Inverting Today energy generation	U16	0.1kWh	Note: For the Hybrid model, it shows the PV power generation data of the machine, and for the AC Coupled model, it shows the power generation data of the parallel PV inverters
33036	PV Inverting Yesterday energy generation	U16	0.1kWh	
33037-3 3038	PV Inverting This year energy generation	U32	1kWh	
33039-3 3040	PV Inverting Last year energy generation	U32	1kWh	
33046	Inverter Battery MOS Temperature	S16	0.1°C	10<->1°C Only for F2 hybrid models
33047	AC output Type	U16		0- Single Phase 1- Three phase four wires 2- Three phase three wires 3- Three phase four wires OR Three phase three wires
33048	DC input Type	U16		0-1 input 1-2 inputs 2-3 inputs 3-4 inputs .....
33049	DC Voltage 1	U16	0.1V	
33050	DC Current 1	U16	0.1A	
33051	DC Voltage 2	U16	0.1V	
33052	DC Current 2	U16	0.1A	
33053	DC Voltage 3	U16	0.1V	
33054	DC Current 3	U16	0.1A	
33055	DC Voltage 4	U16	0.1V	
33056	DC Current 4	U16	0.1A	
33057-3 3058	Total DC output power	U32	1W	PV Power
33067	Inverter Rated Apparent Power	U16	10VA	1<->10VA
33068	Safety Version	U16		
33069	HMI Sub Version	U16		Form complete HMI version with 33002

33070	Alarm code data	U16		Add Alarm code data to distinguishing displayed Alarm code For external fan failure, each bit indicates the status of one fan; In conjunction with the 33095 register address, it is used for subdivided fault information display. Example: 33095 register read information is 0x1020, The 33070 register is one of 0000-0004
33071	DC bus voltage	U16	0.1V	
33072	DC bus half voltage	U16	0.1V	
33073	AB line voltage/A phase voltage	U16	0.1V	1PH RHI use phase A voltage
33074	BC line voltage /B phase voltage	U16	0.1V	
33075	CA line voltage /C phase voltage	U16	0.1V	
33076	A phase current	U16	0.1A	1PH RHI use phase A current
33077	B phase current	U16	0.1A	
33078	C phase current	U16	0.1A	
33079-3 3080	Active power	S32	1W	Note: 1PH RHI xx version and before is PV power and changed to inverting power as the 33157
33081-3 3082	Reactive power	S32	1Var	
33083-3 3084	Apparent power	S32	1VA	
...	...			
33090	AFCI/ARC Fault Count	U16		AFCI/ ARC Fault Cumulative Count Number; When the number of times reaches 5 and the fault code of 33095 is 0x1040 or 0x1041, set 43313 to clear the AFCI fault and make the inverter resume operation;
33091	Standard working modes	U16		Working modes 00---No response mode 01---Volt-watt default 02---Volt-var 03---Fixed power factor 04---Fix reactive power 05---Power-PF 06---Rule21 Volt-watt 0C---IEEE1547-2018 Required P-Q Operating Mode Note: Working Mode 06 and 0C Only for US models
33092	Grid Standards	U16		See Appendix 3
33093	Inverter module temperature	S16	0.1℃	Note : AC NTC (IGBT)
33094	Grid frequency	U16	0.01Hz	
33095	Inverter current	U16		See Appendix 2

	status			
33096	Lead-acid battery temperature	S16	0.1°C	
33097	Function status	U16		<p>BIT00: DRM function, 0 OFF, 1 ON</p> <p>BIT01: Parallel running status, 0 stops and 1 runs</p> <p>BIT02: master-slave status, 0 slave, 1 master Note: APP read BIT01=1 AND BIT02=1, read each inverter data from address 1 based on 43388 parallel inverter number</p> <p>BIT03: 3PH Unbalance Operating Status, 0 Balanced, 1 Unbalanced</p> <p>BIT04: Generator start control conditions are met, 0 No, 1 Yes</p> <p>BIT05: Generator started successfully, 0 No, 1 Yes</p> <p>BIT06: Battery independent/parallel state, 0 Parallel, 1 Independent</p> <p>BIT07: AFCI board presence flag 0 No, 1 Yes</p> <p>BIT08: AFCI board self-test status 0 No Self-Test, 1 Self-Test Finished</p> <p>Explanation: The upper computer gets the "self-test completed", sends the AFCI self-test stop (43302BIT03 = 0) command, and then sends the "start" command;</p> <p>BIT09-15: Reserved</p>
33098	Current DRM code status	U16		
33099	Inverter cabinet temperature	S16	0.1°C	For off-grid inverter;
33104	Limited power actual value	U16	0.01%	10000<-->100% Setting range (0-100%) 100%-> Rated power。
33105	PF adjustment actual value	S16	0.001	<p>PF Low: (800&lt;--&gt;0.80, 1000&lt;--&gt;1.00) (-800&lt;--&gt;-0.80, -1000&lt;--&gt;-1.00) (PF 1.00 &amp; -1.00 are the same)) Setting range (-1.00--- -0.80, 0.80-1.00)</p>
33106	Limited reactive power	S16	0.01%	<p>Setting range (-6000- +6000)</p> <p>Default: 0</p> <p>This function is only for Working mode 4</p>
33107	Inverter module temperature 2	S16	0.1°C	<p>For off grid temperature;</p> <p>Same function as 33093, NTC different position;</p>
33108	Volt-var- real-time value	Vref U16	0.1V	<p>10&lt;--&gt;1V;</p> <p>IEEE1547-2018</p>
33110	BMS charging voltage limit	U16	0.1V	10<-->1V; (From BMS)

33111	Battery BMS Status	U16		0 - normal, 1-BMS (CAN or RS485) communication is abnormal, 2-BMS Warning (see 33145-33146 for details). other invalid;
33112	Inverter initial setting state	U16		Note: It is mainly the initial setting state returned by DSP. See Appendix 1 for details
33113	If it supports batch upgrade	U16		Bit0: 0<-->DSP doesn't support; 1<-->DSP support Bit4: 0<-->ARM doesn't support; 1<-->ARM support
33114	FCAS mode Running status	U16		0 not running, 1 running; Default 0
33115	Setting flag bit	U16		See Appendix 7
33116	Fault code 01	U16		See Appendix 4
33117	Fault code 02	U16		See Appendix 4
33118	Fault code 03	U16		See Appendix 4
33119	Fault code 04	U16		See Appendix 4
33120	Fault code 05	U16		See Appendix 4
33121	Operating status	U16		See Appendix 5
33122	Operating Mode	U16		Only one bit is valid at any time, that is, only one mode is currently running, see Appendix 8 for details
33123	Working Mode Running Status	U16		Every Bit represent one working mode Running status. 0 Stop. 1 Run BIT00: Volt-watt, BIT01: Volt-var BIT02: Fixed power factor BIT03: Fix reactive power BIT04: Power-PF BIT05-BIT15: Reserved Among them, only one reactive power mode of BIT01-04 is turned on; For (4777-A, 4777-B, 4777-C, 4777-N, TOR, UL0240-18) Use 33123 BIT to indicates the on/off status of working mode for Hawaii standard Other standards use 33091
33124	Fault code 06	U16		See Appendix 4
33125	Fault code 07	U16		See Appendix 4
33132	Storage control switching value	U16		See Appendix 6
33133	Battery voltage	U16	0.1V	10<-->1V
33134	Battery current	S16	0.1A	10<-->1A +: charge

				-: discharge Not support negative value. Direction is determined by 33135
33135	Battery current direction	U16		Indicate charge/discharge 0: charge 1: discharge
33136	LLC bus voltage	U16	0.1V	10<-->1V
33137	Backup AC voltage	U16	0.1V	10<-->1V Backup AC voltage (Phase A)
33138	Backup AC current	U16	0.1A	10<-->1A Backup AC voltage (Phase A)
33139	Battery capacity SOC	U16		100<-->100%
33140	Battery health SOH	U16		100<-->100%
33141	Battery voltage	U16	0.01V	100<-->1V (From BMS)
33142	Battery current	S16	0.1A	10<-->1A (From BMS)
33143	Battery charge current limitation	U16	0.1A	10<-->1A (From BMS)
33144	Battery discharge current limitation	U16	0.1A	10<-->1A (From BMS)
33145	Battery fault status01	U16		See Appendix 9, (From BMS) For high-voltage battery warning, please refer to the corresponding battery information.
33146	Battery fault status02	U16		See Appendix 9, (From BMS)) For high-voltage battery warning, please refer to the corresponding battery information.
33147	Household load power	U16	1W	1<-->1W Only for loads on grid port, not include backup loads
33148	Backup load power	U16	1W	1<-->1W
33149-3 3150	Battery power	S32	1W	1<-->1W
33151-3 3152	Inverter AC Grid Port Power	S32	1W	1<-->1W + to grid, - From grid Note: Include backup load power. Inverter AC grid port active power
33153	Backup AC voltage (Phase B)	U16	0.1V	10<-->1V
33154	Backup AC current (Phase B)	U16	0.1A	10<-->1A
33155	Backup AC voltage (Phase C)	U16	0.1V	10<-->1V
33156	Backup AC current (Phase C)	U16	0.1A	10<-->1A
33157	Inverting	S16	10W	1<-->10W

	Power/Rectifying Power			Note: DSP calculated inverting power,PV active + BAT active
33158	DSP read battery model	U16		See Appendix 11
33159	battery identification flag	U16		Only limited to single-phase high-voltage series energy storage (meaningless for APP, for internal testing) 1: recognized 0: not recognized
33160	Current Battery Model	U16		See Appendix 11
33161-3 3162	Battery total charge energy	U32	1kWh	1<-->1kWh
33163	Today battery charge energy	U16	0.1kWh	10<-->1kWh
33164	Yesterday battery charge energy	U16	0.1kWh	10<-->1kWh
33165-3 3166	Battery total discharge energy	U32	1kWh	1<-->1kWh
33167	Today battery discharge energy	U16	0.1kWh	10<-->1kWh
33168	Yesterday battery discharge energy	U16	0.1kWh	10<-->1kWh
33169-3 3170	Total energy imported from grid	U32	1kWh	1<-->1kWh
33171	Today energy imported from grid	U16	0.1kWh	10<-->1kWh
33172	Yesterday energy imported from grid	U16	0.1kWh	10<-->1kWh
33173-3 3174	Total energy fed into grid	U32	1kWh	1<-->1kWh
33175	Today energy fed into grid	U16	0.1kWh	10<-->1kWh
33176	Yesterday energy fed into grid	U16	0.1kWh	10<-->1kWh
33177-3 3178	Yesterday energy fed into grid	U32	1kWh	1<-->1kWh Note: House Load+ Backup load
33179	Today load energy consumption	U16	0.1kWh	10<-->1kWh Note: House Load+ Backup load
33180	Yesterday energy consumption	U16	0.1kWh	10<-->1kWh Note: House Load+ Backup load
33181	Clear energy record status	U16	1%	1<-->1%, Range:0-100%, Default 0%
33182-3 3183	Inverting export total energy	U32	1kWh	1<-->1kWh

33184-3 3185	Grid charge battery total energy	U32	1kWh	1<-->1kWh
33186-3 3187	Inverter AC Grid Port Export Energy	U32	1kWh	1<-->1kWh
33188-3 3189	Inverter AC Grid Port Import Energy	U32	1kWh	1<-->1kWh
33200	Backup circuit enable/disable	U16		0000H--Disable , 0001H--Enable, Default: Enable
33201	Backup circuit Reference voltage	U16	0.1V	10<-->1V, Default: 230V
33202	Backup circuit Reference voltage	U16	0.01Hz	100<-->1Hz, Default:50Hz
33203	Battery charge/discharge Enable/Disable	U16		0000H--Disable , 0001H - Enable. Default: Enable
33204	Battery charge/discharge Direction	U16		0000H--Charge , 0001H--Discharge, Default: Charge
33205	Battery charge/discharge Current	U16	0.1A	10<-->1A , Max Charge current is settable, range: 0-70A.; Max Discharge current is settable. Range: 0-70A. Accuracy:1A
33206	Battery Max charge Current	U16	0.1A	10<-->1A, Max 70A, Default:70A,Accuracy:1A
33207	Battery Max discharge Current	U16	0.1A	10<-->1A, Max 70A, Default:70A,Accuracy:1A
33208	Battery under-voltage Protection	U16	0.1V	10<-->1V; LV Series--Default: 46; Range: 40—48; Protection hysteresis 2V HV Series—Default: 120; Range: 100-999
33209	Battery floating-charge Voltage	U16	0.1V	10<-->1V; LV Series -- Default: 53.5; Range: 50-58 HV Series—Default: 550; Range: 100-999
33210	Battery equal-charge Voltage	U16	0.1V	10<-->1V; LV Series -- Default: 56.4; Range: 54-60 HV Series—Default: 550; Range: 100-999
33211	Battery over-voltage Protection	U16	0.1V	10<-->1V; LV Series -- Default: 59.5; Range: 54-62 HV Series—Default: 556; Range: 500-999
33212	Voltage Droop	U16		0000H--Ddisable, 0001H--Enable, Default:Disable
33213	Over discharge SOC	U16	1%	100<-->100%, Default 20%。
33214	Force charge SOC	U16	1%	100<-->100%, Default10%
33215	AFCI Fault String Number	U16		"1: Frist string AFCI Fault 2: Second string AFCI Fault ..."
33216	Leakage current	U16	1mA	1<-->1mA

	RMS			
33217	Battery Current 2	S16	0.1A	10<-->1A, Inverter- Battery Current
33218	Battery rated capacity connected under inverter parallel mode	U16	0.1kWh	10<--> 1kWh Same as 43387, only used for parallel system;
33219	One Click Reset Enable Command Status	U16		0000H---Disable 0059H---Enable Use Function Code 06 Address 43322。 Note: One Click Reset, Function: Factory Reset and Clear Energy Data
33220	One Click Reset Operating Command Status	U16		0000H---Disable 0045H---Enable Use Function Code 06 Address 43323 If not receive 0045H End flag, HMI will stay in waiting until 5mins timeout Note: If the operating command is not received within 10s after the enable command is sent, the enable command will automatically become invalid.
33221	Italy Singe Self-Test	U16		Value: Start Single Protection Test 00---Null 01---59.S1(253.0V 3000ms) 02---59.S2(264.5V 200ms) 03---27.S1(195.5V 1500ms) 04---27.S2( 34.5V 200ms) 05---81>.S1(50.2Hz 100ms) 06---81<.S1(49.8 Hz 100ms) 07---81>.S2F(51.5Hz 100ms) 08---81<.S2F(47.5 Hz 100ms) 09---81>.S2S(51.5Hz 1000ms) 10---81<.S2S(47.5 Hz 4000ms) 11---59.S1 PhaseB(253.0V 3000ms) 12---59.S2 PhaseB (264.5V 200ms) 13---27.S1 PhaseB (195.5V 1500ms) 14---27.S2 PhaseB ( 34.5V 200ms) 15---81>.S1 PhaseB (50.2Hz 100ms) 16---81<.S1 PhaseB (49.8 Hz 100ms) 17---81>.S2F PhaseB (51.5Hz 100ms) 18---81<.S2F PhaseB (47.5 Hz 100ms) 19---81>.S2S PhaseB (51.5Hz 1000ms) 20---81<.S2S PhaseB (47.5 Hz 4000ms) 21---59.S1 PhaseC (253.0V 3000ms) 22---59.S2 PhaseC (264.5V 200ms) 23---27.S1 PhaseC (195.5V 1500ms)

				24---27.S2 PhaseC ( 34.5V 200ms) 25---81>.S1 PhaseC (50.2Hz 100ms) 26---81<.S1 PhaseC (49.8 Hz 100ms) 27---81>.S2F PhaseC (51.5Hz 100ms) 28---81<.S2F PhaseC (47.5 Hz 100ms) 29---81>.S2S PhaseC (51.5Hz 1000ms) 30---81<.S2S PhaseC (47.5 Hz 4000ms) PhaseB and PhaseC Only support 3ph hybrid inverter
33222	Italy Full Self-test	U16		Value: Start Complete Self Test 1— In Single self-test condition. 2— In Full Self-test condition
33223	59.S1 Voltage	U16	0.1V	10←→1V
33224	59.S1 Time	U16	1ms	1←→1ms
33225	59.S2 Voltage	U16	0.1V	10←→1V
33226	59.S2 Time	U16	1ms	1←→1ms
33227	27.S1 Voltage	U16	0.1V	10←→1V
33228	27.S1 Time	U16	1ms	1←→1ms
33229	27.S2 Voltage	U16	0.1V	10←→1V
33230	27.S2 Time	U16	1ms	1←→1ms
33231	81>.S1 Frequency	U16	0.01Hz	100←→1Hz
33232	81>.S1 Time	U16	1ms	1←→1ms
33233	81<.S1 Frequency	U16	0.01Hz	100←→1Hz
33234	81<.S1 Time	U16	1ms	1←→1ms
33235	81>.S2F Frequency	U16	0.01Hz	100←→1Hz
33236	81>.S2F Time	U16	1ms	1←→1ms
33237	81<.S2F Frequency	U16	0.01Hz	100←→1Hz
33238	81<.S2F Time	U16	1ms	1←→1ms
33239	81>.S2S Frequency	U16	0.01Hz	100←→1Hz
33240	81>.S2S Time	U16	1ms	1←→1ms
33241	81<.S2S Frequency	U16	0.01Hz	100←→1Hz
33242	81<.S2S Time	U16	1ms	1←→1ms
33243	Parallel PV inverter AC current	U16	0.1A	10←→1A; Apply AC Coupled;
33244	Parallel PV inverter AC Voltage	U16	0.1V	10←→1V; Apply AC Coupled;
33245	Parallel PV inverter AC power	U16	0.1kW	10←→1kW; Apply AC Coupled;
33246	Parallel Inverter CT Detection Switch	U16		Value=: 0: OFF, The value of the 33245 register is greater than 500W, indicating that the parallel inverter has a CT installed and there is power.; 1: ON, Regardless of the value of the 33245 register, the host computer needs to display the power value;

				For AC Coupled;
33247	EPM Backflow power	S16	100W	Value=: 1 $\leftrightarrow$ 100W + to grid; - From grid
33248	EPM/FailSafe Switch	U16		BIT00: EPM switch, 0 OFF, 1 ON; BIT01: FailSafe switch, 0 OFF, 1 ON; BIT02-BIT15: Reserved Compatible with LV hybrid display
33249	EPM real time backflow power	S16	100W	Value: 1 $\leftrightarrow$ 100W
33250	Meter/CT Position	U16		See Appendix 10
33251	Meter ac voltage A	U16	0.1V	10 $\leftrightarrow$ 1V
33252	Meter ac current A	U16	0.01A	100 $\leftrightarrow$ 1A
33253	Meter ac voltage B	U16	0.1V	10 $\leftrightarrow$ 1V
33254	Meter ac current B	U16	0.01A	100 $\leftrightarrow$ 1A
33255	Meter ac voltage C	U16	0.1V	10 $\leftrightarrow$ 1V
33256	Meter ac current C	U16	0.01A	100 $\leftrightarrow$ 1A
33257-33258	Meter active power A	S32	0.001kW	1000 $\leftrightarrow$ 1kW
33259-33260	Meter active power B	S32	0.001kW	1000 $\leftrightarrow$ 1kW
33261-33262	Meter active power C	S32	0.001kW	1000 $\leftrightarrow$ 1kW
33263-33264	Meter total active power	S32	0.001kW	1000 $\leftrightarrow$ 1kW
33265-33266	Meter reactive power A	S32	1Var	1 $\leftrightarrow$ 1Var
33267-33268	Meter reactive Power B	S32	1Var	1 $\leftrightarrow$ 1Var
33269-33270	Meter reactive power C	S32	1Var	1 $\leftrightarrow$ 1Var
33271-33272	Meter total reactive power	S32	1Var	1 $\leftrightarrow$ 1Var
33273-33274	Meter apparent power A	S32	1VA	1 $\leftrightarrow$ 1VA
33275-33276	Meter apparent power B	S32	1VA	1 $\leftrightarrow$ 1VA
33277-33278	Meter apparent power C	S32	1VA	1 $\leftrightarrow$ 1VA
33279-33280	Meter total apparent power	S32	1VA	1 $\leftrightarrow$ 1VA
33281	Meter PF	S16	0.01	100 $\leftrightarrow$ 1.0 -1.0~-0.8 +0.8~+1.0

33282	Meter grid frequency	U16	0.01Hz	100<-->1Hz
33283-33284	Meter total active energy from grid	U32	0.01kWh	100<-->1kWh
33285-33286	Meter total active energy to grid	U32	0.01kWh	100<-->1kWh
33290	Single function operation result	U16		"0: Invalid 1. Not meeting the detection conditions 2: Testing 3: Normal 100: Abnormal CT connection detection (direction or phase)"
33293	Battery Fault Code 1	U16		When Battery Fault Status in Appendix 5 is tripped, acquire 33293-33294 alarm details
33294	Battery Fault Code 2	U16		
33296	Master/Slave Status under Parallel mode	U16		0: offline; 1: master; 2: slave; other invalid; Note: only for S5 off-grid energy storage machine
33297	Off-Grid Overdischarge SOC	U16	1%	1 <--> 1%      10%-100%
33298	EPS OverdischargeSOC	U16	1%	1 <--> 1%      10%-100%
33299	EPS Switching Time	U16	10ms	1 <--> 10ms,      10~99990ms 0 means EPS parameters invalid
33300	Meter1 Type and location	U16		High byte indicates location 0x0100 Grid 0x0200 Load 0x0300 Grid+PV (Two Meter) Low byte indicates meter type 0x0001 General 1Ph 0x0002 Acrel 3Ph 0x0003 General 3Ph 0x0004 Standard Eastron 1Ph 0x0005 Standard Eastron 3Ph 0x0006 No Meter Mode
33302	Meter2 AC Voltage A	U16	0.1V	10<-->1V; The data of meter 2 is temporarily used for the Eastron meter; In two meter mode, second meter shows the paralleled PV inverter output data
33303	Meter2AC Current A	U16	0.01A	100<-->1A
33304	Meter2 AC Voltage B	U16	0.1V	10<-->1V
33305	Meter2AC Current B	U16	0.01A	100<-->1A
33306	Meter2 AC	U16	0.1V	10<-->1V

	Voltage C			
33307	Meter2AC Current C	U16	0.01A	100<-->1A
33308-3 33309	Meter2 Active power A	S32	0.001kW	1000<-->1kW
33310- 33311	Meter2 Active power B	S32	0.001kW	1000<-->1kW
33312- 33313	Meter2 Active power C	S32	0.001kW	1000<-->1kW
33314- 33315	Meter2 Total Active power	S32	0.001kW	1000<-->1kW
33316- 33317	Meter2 Reactive power A	S32	1Var	1<-->1Var
33318- 33319	Meter2 Reactive power B	S32	1Var	1<-->1Var
33320- 33321	Meter2 Reactive power C	S32	1Var	1<-->1Var
33322- 33323	Meter2 Total Reactive power	S32	1Var	1<-->1Var
33324- 33325	Meter2 Apparent Power A	S32	1VA	1<-->1VA
33326- 33327	Meter2 Apparent Power B	S32	1VA	1<-->1VA
33328- 33329	Meter2 Apparent Power C	S32	1VA	1<-->1VA
33330- 33331	Meter2 Total Apparent Power	S32	1VA	1<-->1VA
33332	Meter2 PF	S16	0.01	100<--> 1.0 -1.0~-0.8 +0.8~+1.0
33333	Meter2 Grid Frequency	U16	0.01Hz	100<-->1Hz
33334- 33335	Meter2 Grid import total energy	U32	0.01kWh	100<-->1kWh
33336- 33337	Meter2 Grid export total energy	U32	0.01kWh	100<-->1kWh
33338	Online status of each inverter in the parallel system	U16		Each BIT represents the online status of the corresponding inverter ID;; BIT00: Not Used, BIT01~15: Indicates the online status of the inverter with ID 1~15, 0 is not online, 1 is online; Explanation: When the App reads that BIT01 and BIT02 of 33097 are both 1, it determines that it is a parallel host. Then, based on the online status of 33338, it operates (including reading and writing) each inverter register according to the

				corresponding inverter ID;
33339	Inverter Warning	U16		"BIT00: Generator start abnormal alarm 0 normal, 1 alarm BIT01: Generator stop abnormal alarm 0 normal, 1 alarm BIT02-15: Reserved"
33340	IV curve 128 point scanning status	U16		"0x00: Not configured 0x10: Request processing 0x11: Request failed 0x12: Request succeeded 0x20: Starting IV scan 0x21: Failed to start IV scan 0x22: Enable IV scan successfully 0x30: Scanning 0x31: Scan failed 0x32: Scan succeeded 0x40: HMI obtains data scanned by DSP 0x41: HMI failed to obtain data scanned by DSP 0x42: HMI successfully obtained data scanned by DSP 0x50 timeout fault (Timeout description: The DSP replies that this path of PV can be scanned, and if it does not wait for the A1 command to return the scan completion flag for 3 minutes, the scan timeout ends for this path of PV, and switches to the next path to continue scanning until the scan is completed.) 0x51 Communication failure 0x52 Data storage failure (CRC verification failed) 0x53 The PV is not connected 0x54 frame error fault 0x55 Data acquisition succeeded"
33341	IV curve number	U16		0- No IV curve; 1---1 IV curve, 2---2 IV curve....., Max 30
33342	Current IV curve No.	U16		1- No IV curve; 1---1 IV curve, 2---2 IV curve....., Max 30
33343	PV V 1	U16	0.1V	10<-->1V
33344	PV I 1	S16	0.1A	10<-->1A
33345	PV V 2	U16	0.1V	10<-->1V
33346	PV I 2	S16	0.1A	10<-->1A
33347	PV V 3	U16	0.1V	10<-->1V
33348	PV I 3	S16	0.1A	10<-->1A

33349	PV V 4	U16	0.1V	10<-->1V
33350	PV I 4	S16	0.1A	10<-->1A
33351	PV V 5	U16	0.1V	10<-->1V
33352	PV I 5	S16	0.1A	10<-->1A
33353-3 3460	.....	...	...	.....
33461	PV V 60	U16	0.1V	10<-->1V
33462	PV I 60	S16	0.1A	10<-->1A
33470	59.S1 Voltage Phase B	U16	0.1V	10<→>1V Note: 33470-33509 are used for the B-phase and C-phase results of the Italian CEI 0-21 standard self-test function, and are only applicable to three-phase energy storage inverter
33471	59.S1 Time Phase B	U16	1ms	1<→>1ms
33472	59.S2 Voltage Phase B	U16	0.1V	10<→>1V
33473	59.S2 Time Phase B	U16	1ms	1<→>1ms
33474	27.S1 Voltage Phase B	U16	0.1V	10<→>1V
33475	27.S1 Time Phase B	U16	1ms	1<→>1ms
33476	27.S2 Voltage Phase B	U16	0.1V	10<→>1V
33477	27.S2 TimePhase B	U16	1ms	1<→>1ms
33478	81>.S1 Frequency Phase B	U16	0.01Hz	100<→>1Hz
33479	81>.S1 Time Phase B	U16	1ms	1<→>1ms
33480	81<.S1 Frequency Phase B	U16	0.01Hz	100<→>1Hz
33481	81<.S1Time Phase B	U16	1ms	1<→>1ms
33482	81>.S2FFrequency Phase B	U16	0.01Hz	100<→>1Hz
33483	81>.S2 FTime Phase B	U16	1ms	1<→>1ms
33484	81<.S2FFrequency Phase B	U16	0.01Hz	100<→>1Hz
33485	81<.S2FTime Phase B	U16	1ms	1<→>1ms
33486	81>.S2SFFrequency Phase B	U16	0.01Hz	100<→>1Hz

33487	81>.S2STime Phase B	U16	1ms	1↔1ms
33488	81<.S2SFrequency Phase B	U16	0.01Hz	100↔1Hz
33489	81<.S2STime Phase B	U16	1ms	1↔1ms
33490	59.S1Voltage Phase C	U16	0.1V	10↔1V
33491	59.S1Time Phase C	U16	1ms	1↔1ms
33492	59.S2Voltage Phase C	U16	0.1V	10↔1V
33493	59.S2Time Phase C	U16	1ms	1↔1ms
33494	27.S1Voltage Phase C	U16	0.1V	10↔1V
33495	27.S1Time Phase C	U16	1ms	1↔1ms
33496	27.S2Voltage Phase C	U16	0.1V	10↔1V
33497	27.S2Time Phase C	U16	1ms	1↔1ms
33498	81>.S1Frequency Phase C	U16	0.01Hz	100↔1Hz
33499	81>.S1Time Phase C	U16	1ms	1↔1ms
33500	81<.S1Frequency Phase C	U16	0.01Hz	100↔1Hz
33501	81<.S1Time Phase C	U16	1ms	1↔1ms
33502	81>.S2FFrequency Phase C	U16	0.01Hz	100↔1Hz
33503	81>.S2FTime Phase C	U16	1ms	1↔1ms
33504	81<.S2FFrequency Phase C	U16	0.01Hz	100↔1Hz
33505	81<.S2FTime Phase C	U16	1ms	1↔1ms
33506	81>.S2SFrequency Phase C	U16	0.01Hz	100↔1Hz
33507	81>.S2STime Phase C	U16	1ms	1↔1ms
33508	81<.S2SFrequency	U16	0.01Hz	100↔1Hz

	Phase C			
33509	81<.S2STime Phase C	U16	1ms	1 $\leftrightarrow$ 1ms
33512	Inverter AC Grid side grid power Phase A active power	S16	10w	"1 $\leftrightarrow$ 10W, range: - 327680W to 327680W; Notes: The single-phase energy storage machine uses A-phase data by default; The split phase energy storage machine uses phase A and phase B data by default;"
33513	Inverter AC Grid side grid power Phase A reactive power	S16	10Var	1 $\leftrightarrow$ 10Var, Range : -327680Var~327680Var
33514	Inverter AC Grid side grid power phase A apparent power	S16	10VA	1 $\leftrightarrow$ 10VA, Range : 0VA~327680VA;
33515	Inverter AC Grid side grid power Phase B active power	S16	10W	1 $\leftrightarrow$ 10W, Range : -327680W~327680W;
33516	Inverter AC Grid side grid power B-phase reactive power	S16	10Var	1 $\leftrightarrow$ 10Var, Range : -327680Var~327680Var
33517	Inverter AC Grid side grid power phase B apparent power	S16	10VA	1 $\leftrightarrow$ 10VA, Range : 0VA~327680VA;
33518	Inverter AC Grid side grid power Phase C active power	S16	10W	1 $\leftrightarrow$ 10W, Range : -327680W~327680W;
33519	Inverter AC Grid side grid power C-phase reactive power	S16	10Var	1 $\leftrightarrow$ 10Var, Range : -327680Var~327680Var
33520	Inverter AC Grid Side Grid Power Phase C Apparent Power	S16	10VA	1 $\leftrightarrow$ 10VA, Range : 0VA~327680VA;
33521	Inverter Backup side power Phase A active power	S16	10W	1 $\leftrightarrow$ 10W, Range : -327680W~327680W;
33522	Inverter Backup	S16	10Var	1 $\leftrightarrow$ 10Var, Range : -327680Var~327680Var

	side power Phase A reactive power			
33523	Inverter Backup side power phase A apparent power	S16	10VA	1<-->10VA, Range : 0VA~327680VA;
33524	Inverter Backup side power Phase B active power	S16	10W	1<-->10W, Range : -327680W~327680W;
33525	Inverter Backup side power Phase B reactive power	S16	10 Var	1<-->10Var, Range : -327680Var~327680Var
33526	Inverter Backup side power phase B apparent power	S16	10 VA	1<-->10VA, Range : 0VA~327680VA;
33527	Inverter Backup side power Phase C active power	S16	10 W	1<-->10W, Range : -327680W~327680W;
33528	Inverter Backup side power Phase C reactive power	S16	10 Var	1<-->10Var, Range : -327680Var~327680Var
33529	Inverter Backup Side Power Phase C Apparent Power	S16	10 VA	1<-->10VA, Range : 0VA~327680VA;
33530	Real time power of generator	S16	10 W	100<-->1kW
33531	Generator's daily power generation	U16	0.1 kWh	10<-->1kWh
33532	Total generator output	U32	1 kWh	1<-->1kWh
33540	AC voltage A at public grid side	U16	0.1 V	10->1V; Load side ammeter voltage A explanation: 1. 33540-33575 represents the public grid side data when the meter is installed on the grid side load; 2. When the electricity meter is installed on the network side load, the upper computer reads the data corresponding to 33540-33575; 3. F2 energy storage machine is temporarily supported; 4. Single-phase energy storage machine uses A-phase data;
33541	AC current A on public grid side	U16	0.01 A	100<-->1A Ia = ABS(Inverter AC side phase A current - load side ammeter phase A current)
33542	AC voltage B on public grid side	U16	0.1 V	10<->1V Load side ammeter voltage B
33543	AC current B on	U16	0.01 A	100<-->1A Ib = ABS(Inverter AC side B-phase current -

	public grid side			load side ammeter B-phase current)
33544	AC voltage C on public grid side	U16	0.1 V	10<-->1V Load side ammeter voltage C
33545	AC current C on public grid side	U16	0.01 A	100<-->1A $I_c = ABS(\text{Inverter AC side C-phase current} - \text{load side ammeter C-phase current})$
33546	Public grid side active power A	S32	1 W	1000<-->1kW $P_a = \text{Inverter AC side phase A active power} - \text{load side ammeter phase A active power}$
33548	Public grid side active power B	S32	1 W	1000<-->1kW $P_b = \text{Inverter AC side B-phase active power} - \text{load side ammeter B-phase active power}$
33550	Public grid side active power C	S32	1 W	1000<-->1kW $P_c = \text{Inverter AC side C-phase active power} - \text{load side ammeter C-phase active power}$
33552	Total active power on public grid side	S32	1 W	"1000<-->1kW $P_t = \text{Public grid side active power A} + \text{Public grid side active power B} + \text{Public grid side active power C}$ "
33554	Reactive power A on public grid side	S32	1 Var	1<-->1Var $Q_a = \text{Inverter AC side phase A reactive power} - \text{load side meter phase A reactive power}$
33556	Reactive power B on public grid side	S32	1 Var	1<-->1Var $Q_b = \text{Inverter AC side B-phase reactive power} - \text{load side ammeter B-phase reactive power}$
33558	Reactive power C on public grid side	S32	1 Var	1<-->1Var $Q_c = \text{Inverter AC side C-phase reactive power} - \text{load side ammeter C-phase reactive power}$
33560	Total reactive power on public grid side	S32	1 Var	"1<-->1Var $Q_t = \text{Reactive power A on public grid side} + \text{Reactive power B on public grid side} + \text{Reactive power C on public grid side}$ "
33562	Public grid side apparent power A	S32	1 VA	1<-->1VA
33564	Public grid side apparent power B	S32	1 VA	1<-->1VA $S_b =$
33566	Public grid side apparent power C	S32	1 VA	1<-->1VA $S_c =$
33568	Total apparent power at public grid side	S32	1 VA	1<-->1VA $S_t =$
33570	Public grid side power factor	S16	0.01	100<-->1PF = Total active power on public grid side $P_t \div$ Total apparent power on public grid side $S_t$
33571	Grid frequency on public grid side	U16	0.01 Hz	100<-->1Hz Load side meter frequency
33572	Total active electric energy taken from the public grid side	U32	0.01 kWh	100<-->1kWh Real-time power acquisition on the public grid side, active power integration of each phase
33574	Total active electric energy of public grid side power	U32	0.01 kWh	100<-->1kWh Active power integration of each phase of real-time power transmission on the public grid side

	transmission			
33580-3 3581	Household load Total Energy	U32	1kWh	Only Household load;
33582-3 3583	Household load This year energy	U32	1kWh	
33584-3 3585	Household load This month energy	U32	1kWh	
33586	Household load today energy	U16	0.1kWh	
33587	Household load yesterday energy	U16	0.1kWh	
33590-3 3591	Backup load Total Energy	U32	1kWh	Only Backup load;
33592-3 3593	Backup load This year energy	U32	1kWh	
33594-3 3595	Backup load This month energy	U32	1kWh	
33596	Backup load today energy	U16	0.1kWh	
33597	Backup load yesterday energy	U16	0.1kWh	
33600	Spec Sheet Version	U16		The high byte indicates the major version, and the low byte indicates the minor version; For example: 0x010A means V1.10;
33601	Energy reading progress	U16	1%	0%, it means that it has not started, or the Bluetooth connection is disconnected and cleared to 0 after 1 minute; 1~99%, indicating the progress of the inverter reading the local power data, the data starts to accumulate from 1% after receiving the historical power record reading command; 100% indicates that the inverter reads the local power data end; other data invalid; After the host computer sends the historical power record reading command, it can start or end the reading of the power record data register according to this state;
33602	Energy reading method	U16		1. Query by monthly data, that is, query the details of the day; corresponding to the data of 33604-33634, up to 31 days; 2. Query by yearly data, that is, query the monthly details; the data corresponding to 33635-33658; 3. Query according to the total data, that is, query the annual data of ten years; the data corresponding to 33659-33678; other invalid;
33603	Energy details Type	U16		1: PV Generation , 2: Grid Export Energy 3: Grid import Energy, Others are invalid; synchronize with the data of 43503;

33604	X Year Y Month 1Day	U16	0.1kWh	According to the year and month to be queried, query the detailed data of electricity for all days in the month;
...	...	...	...	
33634	X Year Y Month 31 Day	U16	0.1kWh	
33635	X Year 1 Month	U32	0.1kWh	"Query the detailed electricity data of all months in the year according to the year to be queried; 33635 means high 16bit data, 33636 means low 16bit data;"
33657	X Year 12 Month	U32	0.1 kWh	
33659	0 Year	U32	1 kWh	"10 years of annual data read; 33659 means high 16bit data, 33660 means low 16bit data;"
...	...	...	...	
33677	9 Year	U32	1 kWh	
33679	Historical fault/warning data read progress	U16	1%	"0%, it means that it has not started, or the Bluetooth connection is disconnected and cleared to 0 after 1 minute; 1~99%, indicating the progress of the inverter reading historical fault/alarm data, this data starts to accumulate from 1% after receiving the historical fault/warning data read command; 100% means that the inverter reads local historical faults /Warning data end; other data invalid;"
33680	Serial numbers of 5 historical fault/warning data	U16	1	5 pieces of data are queried each time, and each record data occupies 5 registers; Range: 1~8, others are invalid; 1: The most recent 1-5; 2: The most recent 6-10; 3: The most recent 11-15; 4: The most recent 16-20; 5: The most recent 21-25; 6: The most recent 26-30; 7: The most recent 31-35; 8: The most recent 36-40;
33681	Date of occurrence of fault/alert 1: year	U16	1	
33682	Date of occurrence of fault/alert 1: mm-dd	U16	1	High byte: month, 01-12 Low byte: day, 01-31
33683	Time of occurrence of fault/alert 1: hours: minutes	U16	1	High byte: hour, 00-23 Low byte: minutes, 00-59
33684	Fault/Alert 1 Status	U16	1	
33685	Fault/Alert 1 data	U16	1	
33686	Date of occurrence of fault/alert 2: year	U16	1	
33687	Date of occurrence of fault/alert 2: mm-dd	U16	1	High byte: month, 01-12 Low byte: day, 01-31

33688	Time of occurrence of fault/alert 2: hours: minutes	U16	1	High byte: hour, 00-23 Low byte: minutes, 00-59
33689	Fault/Alert 2 Status	U16	1	
33690	Fault/Alert 2 data	U16	1	
33691	Date of occurrence of fault/alert 3: year	U16	1	
33692	Date of occurrence of fault/alert 3: mm-dd	U16	1	High byte: month, 01-12 Low byte: day, 01-31
33693	Time of occurrence of fault/alert 3: hours: minutes	U16	1	High byte: hour, 00-23 Low byte: minutes, 00-59
33694	Fault/Alert 3 Status	U16	1	
33695	Fault/Alert 3 data	U16	1	
33696	Date of occurrence of fault/alert 4: year	U16	1	
33697	Date of occurrence of fault/alert 4: mm-dd	U16	1	High byte: month, 01-12 Low byte: day, 01-31
33698	Time of occurrence of fault/alert 4: hours: minutes	U16	1	High byte: hour, 00-23 Low byte: minutes, 00-59
33699	Fault/Alert 4 Status	U16	1	
33700	Fault/Alert 4 data	U16	1	
33701	Date of occurrence of fault/alert 5: year	U16		Year: 00-99
33702	Date of occurrence of fault/alert 5: mm-dd	U16		High byte: month, 01-12 Low byte: day, 01-31
33703	Time of occurrence of fault/alert 5: hours: minutes	U16		High byte: hour, 00-23 Low byte: minutes, 00-59
33704	Fault/Alert 5 Status	U16		
33705	Fault/Alert 5 data	U16		
33710	Active power at rated full load state PF=+0.8	U32	1 W	"1000-1KW High active power level at PF=+0.8 at rated full load Description: 33710-33732 is used for American version energy storage machines;"
33712	Leading power factor+0.8	U16	0.01	1->0.01
33713	Active power at rated full load state	U32	1 W	1000-1KW High level of active power at rated full load state PF=-0.8

	PF=-0.8			
33715	Lagged power factor - 0.8	U16	0.01	-1 -> -0.01
33716	Normal operation performance category	U16		"Other - None 1-CAT_A 2-CAT_B"
33717	Abnormal operation performance category	U16		Other - None 1-CAT_I 2-CAT_II CAT_III
33718	AC rated voltage	U16	1 V	480->480V
33719	Upper limit of AC 1st overvoltage	U16	0.1 V	"3326->332.6V Upper limit of AC primary overvoltage"
33720	Lower limit of AC 1st undervoltage	U16	0.1 V	138->13.8V Lower limit of AC primary undervoltage
33721	control model	U16		Bit0: Over frequency and load shedding Bit 1: voltage active Bit2: voltage reactive power Bit3: fixed reactive power Bit4: Fixed PF Bit5: Active Reactive P-Q
33722	Electrical admittance parameters	U16	0.001	"1000 ->1 -- 80-110K series 10000000->1-10K Description: Due to different accuracy requirements for 1-10K (excluding 6-10K-4G) series single cameras, LEDVANCE RE is identified through 35000 addresses"
33723	manufacturer	U16		"0-None 1-LEDVANCE GmbH"
33724	Hardware version number (motherboard)	U16		0-None
33725	Capacitive maximum reactive power, 60% apparent power	U32	1	
33727	Inductive maximum reactive power, 60% apparent power	U32	1	"1000-1KW High active power level at PF=+0.8 at rated full load"
33729	Rated output power of battery	U32	1	Rated value of corresponding model
33731	Charging maximum active power	U32	1	Rated value of corresponding model

33750	(Upper Limit) OV-G-V01 ForCEI-021, 59.S2	U16	0.1	10<-->1V  Note: A total of 42 registers in 33750-33791 indicate the upper limit value of the electrical protection parameters of the national standard, which is related to the corresponding national standard;
33751	(Upper Limit) OV-G-V-T 01 (59.S2 Time for CEI021)	U16	10	1<-->10mS
33752	(Upper Limit) OV-G-V02	U16	0.1	10<-->1V
33753	(Upper Limit) OV-G-V-T 02	U16	10ms	1<-->10mS
33754	(Upper Limit) UN-G-V01 ForCEI-021, 27.S1	U16	1V	10<-->1V
33755	(Upper Limit) UN-G-V-T 01 (27.S1 Time for CEI021)	U16	10ms	1<-->10mS
33756	(Upper Limit) UN-G-V02 ForCEI-021, 27.S2	U16	0.1V	10<-->1V
33757	(Upper Limit) UN-G-V-T 02 (27.S2 Time for CEI021)	U16	10ms	1<-->10mS
33758	(Upper Limit) OV-G-F 01	U16	0.1Hz	10<-->1Hz
33759	(Upper Limit) OV-G-F-T 01	U16	10ms 20ms	1<-->10mS For Hawaii and New American Standard UL1547-2018 standard; Note: Since the upper limit of the parameter range is 1000S, when 1<-->10mS, the upper limit of the data of a register is 655.35S, which cannot meet the safety requirements;
33760	(Upper Limit) OV-G-F 02	U16	0.01Hz	100<-->1Hz
33761	(Upper Limit) OV-G-F-T 02	U16	10ms 20ms	1<-->10mS For Hawaii and New American Standard UL1547-2018 standard, 1<-->20mS;
33762	(Upper Limit) UN-G-F 01	U16	0.01Hz	10<-->1Hz
33763	(Upper Limit)	U16	10ms	1<-->10mS

	UN-G-F-T 01		20ms	For Hawaii and New American Standard UL1547-2018 standard, 1<-->20mS;
33764	(Upper Limit) UN-G-F 02	U16	0.01Hz	100<-->1Hz
33765	(Upper Limit) UN-G-F-T 02	U16	10ms 20ms	1<-->10mS For Hawaii and New American Standard UL1547-2018 standard, 1<-->20mS;
33766	(Upper Limit) Startup time	U16	1s	1<-->1s
33767	(Upper Limit) Reconnect time	U16	1s	1<-->1s
33768	(Upper Limit) 10mins Overvoltage (59.S1 for CEI021)	U16	0.1V	10<-->1V;
33769	(Upper Limit) 10mins Overvoltage Time Delay	U16	1s	1<-->1s
33770	(Upper Limit) Startup Grid Voltage Upper limit	U16	0.1V	10<-->1V;
33771	(Upper Limit) Startup Grid Voltage Lower limit	U16	0.1V	10<-->1V;
33772	(Upper Limit) Startup Grid Frequency Upper limit	U16	0.01Hz	100<-->1Hz;
33773	(Upper Limit) Startup Grid Frequency Lower limit	U16	0.01Hz	100<-->1Hz;
33774	(Upper Limit) Fault Recovery Grid Voltage Upper limit	U16	0.1V	10<-->1V;
33775	(Upper Limit) Fault Recovery Grid Voltage Lower limit	U16	0.1V	10<-->1V;
33776	(Upper Limit) Fault Recovery Grid Frequency Upper limit	U16	0.01Hz	100<-->1Hz;
33777	(Upper Limit)	U16	0.01Hz	100<-->1Hz;

	Fault Recovery Grid Frequency Lower limit			
33778	(Upper Limit) UN-G-V03	U16	0.1V	10<-->1V For Hawaii and New American Standard UL1547-2018 standard;
33779	(Upper Limit) UN-G-V03-T	U16	10ms	1<-->10mS For Hawaii and New American Standard UL1547-2018 standard;
33780	(Upper Limit) 81>S1	U16	0.01Hz	100<-->1Hz; CEI 0-21
33781	(Upper Limit) 81>S1 Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33782	(Upper Limit) 81<S1	U16	0.01Hz	100<-->1Hz; CEI 0-21
33783	(Upper Limit) 81<S1 Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33784	(Upper Limit) 81>S2F	U16	0.01Hz	100<-->1Hz; CEI 0-21
33785	(Upper Limit) 81>S2F Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33786	(Upper Limit) 81<S2F	U16	0.01Hz	100<-->1Hz; CEI 0-21
33787	(Upper Limit) 81<S2F Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33788	(Upper Limit) 81>S2S	U16	0.01Hz	100<-->1Hz; CEI 0-21
33789	(Upper Limit) 81>S2S Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33790	(Upper Limit) 81<S2S	U16	0.01Hz	100<-->1Hz; CEI 0-21
33791	(Upper Limit) 81<S2S Time	U16	0.01Hz	100<-->1Hz; CEI 0-21
33792	(Lower Limit) OV-G-V01 ForCEI-021, 59.S2	U16	0.1 V	
33793	(Lower Limit) OV-G-V-T 01 (59.S2 Time for CEI021)	U16	10 ms	
33794	(Lower Limit) OV-G-V02	U16	0.1 V	
33795	(Lower Limit) OV-G-V-T 02	U16	10 ms	

33796	(Lower Limit) UN-G-V01 ForCEI-021, 27.S1	U16	0.1 V	
33797	(Lower Limit) UN-G-V-T 01 (27.S1 Time for CEI021)	U16	10 ms	
33798	(Lower Limit) UN-G-V02 ForCEI-021, 27.S2	U16	0.1 V	
33799	(Lower Limit) UN-G-V-T 02 (27.S2 Time for CEI021)	U16	10 ms	
33800	(Lower Limit) OV-G-F 01	U16	0.1 Hz	
33801	(Lower Limit) OV-G-F-T 01	U16	10 ms	
33802	(Lower Limit) OV-G-F 02	U16	0.1 Hz	
33803	(Lower Limit) OV-G-F-T 02	U16	10 ms	
33804	(Lower Limit) UN-G-F 01	U16	0.1 Hz	
33805	(Lower Limit) UN-G-F-T 01	U16	10 ms	
33806	(Lower Limit) UN-G-F 02	U16	0.1 Hz	
33807	(Lower Limit) UN-G-F-T 02	U16	10 ms	
33808	(Lower Limit) Startup time	U16	1 s	
33809	(Lower Limit) Reconnect time	U16	1 s	
33810	(Lower Limit) 10mins Overvoltage (59.S1 for CEI021)	U16	0.1 V	
33811	(Lower Limit) 10mins Overvoltage Time Delay	U16	1 s	
33812	(Lower Limit) Startup Grid	U16	0.1 V	

	Voltage Upper limit			
33813	(Lower Limit) Startup Grid Voltage Lower limit	U16	0.1 V	
33814	(Lower Limit) Startup Grid Frequency Upper limit	U16	0.01 Hz	
33815	(Lower Limit) Startup Grid Frequency Lower limit	U16	0.01 Hz	
33816	(Lower Limit) Fault Recovery Grid Voltage Upper limit	U16	0.1 V	
33817	(Lower Limit) Fault Recovery Grid Voltage Lower limit	U16	0.1 V	
33818	(Lower Limit) Fault Recovery Grid Frequency Upper limit	U16	0.01 Hz	
33819	(Lower Limit) Fault Recovery Grid Frequency Lower limit	U16	0.01 Hz	
33820	(Lower Limit) UN-G-V03	U16	0.1 V	
33821	(Lower Limit) UN-G-V03-T	U16	10 ms	
33822	(Lower Limit)81 > S1	U16	0.01Hz	
33823	(Lower Limit)81 > S1 Time	U16	0.01 Hz	
33824	(Lower Limit)81 < S1	U16	0.01 Hz	
33825	(Lower Limit)81 < S1 Time	U16	0.01 Hz	
33826	(Lower Limit)81 > S2F	U16	0.01 Hz	
33827	(Lower Limit)81 >	U16	0.01 Hz	

	S2F Time			
33828	(Lower Limit)81<S2F	U16	0.01 Hz	
33829	(Lower Limit)81<S2F Time	U16	0.01 Hz	
33830	(Lower Limit)81>S2S	U16	0.01 Hz	
33831	(Lower Limit)81>S2S Time	U16	0.01 Hz	
33832	(Lower Limit)81<S2S	U16	0.01 Hz	
33833	(Lower Limit)81<S2S Time	U16	0.01 Hz	
33834	(Upper Limit)01Working Mode V1Set	U16	0.1V	10<-->1V; Note: A total of 79 registers in 33834-33912 indicate the upper limit of each parameter in the national standard working mode, which is related to the national standard;
33835	(Upper Limit)01Working Mode V2Set	U16	0.1V	10<-->1V;
33836	(Upper Limit)01Working Mode V3Set	U16	0.1V	10<-->1V;
33837	(Upper Limit)01Working Mode V4Set	U16	0.1V	10<-->1V;
33838	(Upper Limit)01Working Mode P1 (P1% Set)	U16	0.01%	10000<-->100% 100%-Rated
33839	(Upper Limit)01Working Mode P2 (P2% Set)	U16	0.01%	10000<-->100% 100%-Rated
33840	(Upper Limit)01Working Mode P3 (P3% Set)	U16	0.01%	10000<-->100% 100%-Rated
33841	(Upper Limit)01Working Mode P4 (P4% Set)	U16	0.01%	10000<-->100% 100%-Rated
33842	(Upper Limit)01Working Mode P3Tau	U16	0.01s	100<-->1s
33843	(Upper Limit)	U16	0.1V	10<-->1V;

	02Working Mode V1Set			
33844	(Upper Limit) 02Working Mode V2Set	U16	0.1V	10<-->1V;
33845	(Upper Limit) 02Working Mode V3Set	U16	0.1V	10<-->1V;
33846	(Upper Limit) 02Working Mode V4Set	U16	0.1V	10<-->1V;
33847	(Upper Limit) 02Working Mode LeadingQ ( MaxLeadingVar% )	U16	0.01%	10000<-->100%
33848	(Upper Limit) 02Working Mode LaggingQ ( MaxLaggingVar %)	S16	0.01%	10000<-->100%
33849	(Upper Limit) 02 Working Mode Plock-in	U16	1%	1<-->1%
33850	(Upper Limit) 02 Working Mode Plock-out	U16	1%	1<-->1%
33851	(Upper Limit) 02Working Mode K Parameter	U16	0.01	100<-->1 CEI 0-21
33852	(Upper Limit) 02/03/04/05Working mode Q response 3Tau	U16	0.01s	100<-->1s
33853	(Upper Limit) IEEE1547-2018 Volt-var Vref-time	U16	0.1s	10<-->1s
33854	(Upper Limit) NTS631 Volt-var Qdroop	U16	0.01%	10000<-->100% For Spain NTS631
33855	(Upper Limit) 02 Working mode V2 Reactive Power %	S16	0.01%	10000<-->100% -10000<-->-100%

33856	(Upper Limit) 02 Working mode V3 Reactive Power %	S16	0.01%	10000<-->100% -10000<-->-100%
33857	(Upper Limit) 02 Working Mode Vref	U16	0.1V	10<-->1V For Hawaii、IEEE1547-2018;
33858	(Upper Limit) 03 Working mode Fixed PF	S16	0.001	1000<-->1.000
33859	(Upper Limit) 04 Working Mode fixed reactive power	S16	0.01%	10000<-->100%
33860	(Upper Limit) 05 Working Mode B Power (Pb% Set)	U16	0.01%	(10000<-->100%); Range: 50---100%; Default:100%
33861	(Upper Limit) 05 Working Mode C Power (Pc% Set)	U16	0.01%	(10000<-->100%); Range: 50---100%; Default:100%
33862	(Upper Limit) 05 Working Mode C PF (PFcSet)	S16	0.001	1000<-->1.00
33863	(Upper Limit) 05 Working mode (lockout Vset)	U16	0.1V	10<-->1V; For Dubai;
33864	(Upper Limit) DRM3 Mode Q Percent Set	S16	0.01%	10000<-->100% -10000<-->-100% For AS4777.2-2020
33865	(Upper Limit) DRM7 Mode Q Percent Set	S16	0.01%	10000<-->100% -10000<-->-100%
33866	(Upper Limit) 0C Working Mode Grid Export P/Q 1 Reactive power %	S16	0.01%	10000<-->100%
33867	(Upper Limit) 0C Working Mode Grid Export P/Q 2 Reactive power %	S16	0.01%	10000<-->100%
33868	(Upper Limit) 0C Working Mode Grid Export P/Q 3 Reactive power %	S16	0.01%	10000<-->100%
33869	(Upper Limit)	S16	0.01%	10000<-->100%

	0C Working Mode Grid Import P/Q 1 Reactive power %			
33870	(Upper Limit) 0C Working Mode Grid Import P/Q 2 Reactive power %	S16	0.01%	10000<-->100%
33871	(Upper Limit) 0C Working Mode Grid Import P/Q 3 Reactive power %	S16	0.01%	10000<-->100%
33872	(Upper Limit) 0C Working Mode Grid Export P/Q 4 Reactive power %	S16	0.01%	10000<-->100%
33873	(Upper Limit) 0C Working Mode Grid Export P/Q 5 Reactive power %	S16	0.01%	10000<-->100%
33874	(Upper Limit) 0C Working Mode Grid Export P/Q 1 Active power %	U16	0.01%	10000<-->100%
33875	(Upper Limit) 0C Working Mode Grid Export P/Q 2 Active power %	U16	0.01%	10000<-->100%
33876	(Upper Limit) 0C Working Mode Grid Export P/Q 3 Active power %	U16	0.01%	10000<-->100%
33877	(Upper Limit) 0C Working Mode Grid Export P/Q 4 Active power %	U16	0.01%	10000<-->100%
33878	(Upper Limit) 0C Working Mode Grid Export P/Q 5 Active power %	U16	0.01%	10000<-->100%
33879	(Upper Limit) Power ramp rate limit Wgra	U16	0.01%	100<-->1%
33880	(Upper Limit) Slope of change in	U16	0.01%/se cond	10000<-->100%; For Hawaii、IEEE1547-2018;

	power surge (Wnor)			
33881	(Upper Limit) Slope of change for connection and reconnection (Wcon)	U16	0.01%/se cond	10000<-->100%; For Hawaii、IEEE1547-2018;
33882	(Upper Limit) EN50549 Fault Trip Restart P_Ramp Rate	U16	0.1%	1000<-->100%
33883	(Upper Limit) EN50549 Startup P_Ramp Rate	U16	0.1%	1000<-->100%
33884	(Upper Limit) Power reduce Slop Limit (Wgra-)	U16	0.01%	10000<-->100%; For AS4777.2-2020
33885	(Upper Limit) 01Freq Derate Mode OV-F Derate(Fstop)	U16	0.01Hz	100<-->1Hz For AU Grid Code
33886	(Upper Limit) 01Freq Derate Mode UN-F Derate(Grid-Charge Battery) (Fstop_ch)	U16	0.01Hz	100<-->1Hz
33887	(Upper Limit) 01Freq Derate Mode OV-F Derate (Fstart)	U16	0.01Hz	100<-->1Hz
33888	(Upper Limit) 01Freq Derate Mode AU UN-F Ramping Up Fdstart	U16	0.01Hz	100<-->1Hz For AU Grid Code
33889	(Upper Limit) 01Freq Derate Mode UN-F Ramping Up (Fpmax)	U16	0.01Hz	100<-->1Hz For AU Grid Code
33890	(Upper Limit) 01Freq Derate Mode OV-F Derate Ftransition	U16	0.01Hz	100<-->1Hz For AU Grid Code
33891	(Upper Limit) 03H/11H/12H/0AH/ 0CH/13HFreq Derate Mode OV-F	U16	0.01Hz	100<-->1Hz 0x03 Mode Grid Code: VDE4105, NTS631(RD1699), VDE4110, EN50438, PN-50549

	Derate (Fstart)			0x11 Mode Grid Code: France 0x12 Mode Grid Code: TOR 0x0A Mode Grid Code: G98,G99 0x0C Mode Grid Code: Denmark DK1/DK2, VIETNAM, Israel 0x13 Mode Grid Code: Hawaii, New 1547, KS3-LVRT
33892	(Upper Limit) 03H/11H/12H/0AH/ 0CH/13HFreq Derate Mode OV-F Derate (Fdroop)	U16	0.01%	10000<-->100%;
33893	(Upper Limit) 04Freq Derate Mode OV-F Derate (Fstart)	U16	0.01Hz	100<-->1Hz 0x04 Mode Grid Code: Rule21
33894	(Upper Limit) 04Freq Derate Mode OV-F Derate(Fstop)	U16	0.01Hz	100<-->1Hz
33895	(Upper Limit) 09Freq Derate Mode OV-F Derate (Fstop)	U16	0.01Hz	100<-->1Hz 0x09 Mode Grid Code: Dubai
33896	(Upper Limit) 09Freq Derate Mode OV-F Derate Fstart	U16	0.01Hz	100<-->1Hz
33897	(Upper Limit) 0DHFreq Derate Mode OV-F Derate (Fdroop)	U16	0.01Hz	0x0D Mode Grid Code: China 2018
33898	(Upper Limit) 0EHFreq Derate Mode OV-F Derate (f1)	U16	0.01Hz	100<-->1Hz 0x0E Mode Grid Code: EN50549, C10/11, EIFS-SW, 342RENBLAD
33899	(Upper Limit) 0EHFreq Derate Mode Hysteresis enable switch	U16		Upper limit 1, Lower limit 0

33900	(Upper Limit) 0EHFreq Derate Mode Hysteresis Freq (fstop)	U16	0.01Hz	100<-->1Hz
33901	(Upper Limit) 0EHFreq Derate Mode Hysteresis Freq Response time (Tstop)	U16	1s	1<-->1s
33902	(Upper Limit) 0EHFreq Derate Mode OV-F Derate (Droop)	U16	0.01%	10000<-->100%
33903	(Upper Limit) 0EHFreq Derate Mode OV-F Derate (Tintendelay)	U16	0.01s	100<-->1s
33904	(Upper Limit) UN-F Ramping Up (FDstart)	U16	0.01Hz	100<-->1Hz Grid Code: Vde4105、50549、NTS631, Sweden and Denmark; Hwaih, New 1547, KS3-LVRT;
33905	(Upper Limit) UN-F Ramping Up (FDdroop)	U16	0.01%	10000<-->100% Grid Code: Vde4105、50549、NTS631, Swden and Denmark; Hwaih, New 1547, KS3-LVRT;
33906	(Upper Limit) 13H Freq Derate Mode OV-F Derate Response Time	U16	0.01s	100<-->1s 0x13 Mode Grid Code: Hwaih, New 1547, KS3-LVRT;
33907	(Upper Limit) Sweden FSM Power Change limit %	U16	0.01%	10000<-->100%
33908	(Upper Limit) Sweden FSM Droop	U16	0.01%	10000<-->100%
33909	(Upper Limit) Sweden FSM Response Dead	U16	0.001Hz	100<-->0.1Hz

	band			
33910	(Upper Limit) PowerControl Slope	U16	0.01%/min in	10000<-->100%/min
33911	(Upper Limit) Power up control slope	U16	0.01%/min in	10000<-->100%/min
33912	(Upper Limit) Power down control slope	U16	0.01%/min in	10000<-->100%/min
33913-3 3991	(Lower Limit) The same parameters for 33834-33910	U16		Total 79 Registers
34200	LG Battery 10H/16H Main Battery SOC	U16	0.001	"1000<-->100% From LG high-voltage battery BMS"
34201	LG Battery 10H/16H Main Battery SOH	U16	0.001	1000<-->100%
34202	LG Battery 10H/16H Main Battery Voltage	U16	0.1 V	10<-->1V
34203	LG Battery 10H/16H Main Battery Current	S16	0.1 A	"10<-->1A Positive indicates charging, negative indicates discharge"
34204	LG Battery 10H/16H Main Battery Max charge power	U16	1 W	1<-->1W
34205	LG Battery 10H/16H Main Battery Max discharge power	U16	1 W	1<-->1W
34206	LG Battery 10H/16H Main Battery DCDC Version (main)	U16		
34207	LG Battery 10H/16H Main Battery DCDC Version (test)	U16		

34208	LG Battery 10H/16H Main Battery BMS Version High	U16		
34209	LG Battery 10H/16H Main Battery BMS Version Low	U16		
34210	LG Battery 10H/16H Main Battery Fault ID	U16		
34211	LG Battery 10H/16H Main Battery diagnostic result	U16		0: No abnormality detected 1: Level 1 warning Warning1 (limiting the available charging and discharging power of the battery) 2: Secondary warning Warning2 (the battery actively jumps to the Standby state) 3: Fault (the battery actively jumps to the Fault state)
34212	LG Battery 10H/16H Main Battery status/mode	U16		0: initial state 1: Standby state 3: Operation state 4: Update state (upgrade the battery firmware through the inverter) 5: Fault state (cannot be automatically restored) 6: Battery sefl update 10: Power-saving state
34213	LG Battery 10H/16H Main Battery current power	S16	1 W	1<-->1W A positive value indicates charging
34214	LG Battery 10H/16H Main Battery max temperature	S16	0.1 DegC	10<-->1DegC
34215	LG Battery 10H/16H Main Battery status flag	U16		BIT00: fully charged flag, 0 is not fully charged, 1 is fully charged BIT01: full discharge flag, 0 is not full discharge, 1 is full discharge BIT02: CB status, 0 is open, 1 is closed BIT03: Enter the power saving mode flag, 0 available, 1 not available BIT04~15: Reserved
34216	LG Battery 10H/16H	U16	0.001	1000<-->100% From LG High Voltage Battery BMS

	Second Battery SOC			
34217	LG Battery 10H/16H Second Battery SOH	U16	0.001	1000<-->100%
34218	LG Battery 10H/16H Second Battery Voltage	U16	0.1 V	10<-->1V
34219	LG Battery 10H/16H Second Battery Current	S16	0.1 A	10<-->1A Positive means charging, negative means discharging
34220	LG Battery 10H/16H Second Battery Max charge power	U16	1 W	1<-->1W
34221	LG Battery 10H/16H Second Battery Max discharge power	U16	1 W	1<-->1W
34222	LG Battery 10H/16H Second Battery DCDC Version (main)	U16		
34223	LG Battery 10H/16H Second Battery DCDC Version (test)	U16		
34224	LG Battery 10H/16H Second Battery BMS Version High	U16		
34225	LG Battery 10H/16H Second Battery BMS Version Low	U16		
34226	LG Battery 10H/16H Second Battery	U16		

	Fault ID			
34227	LG Battery 10H/16H Second Battery diagnostic result	U16		0: No abnormality detected 1: Level 1 warning Warning1 (limiting the available charging and discharging power of the battery) 2: Secondary warning Warning2 (the battery actively jumps to the Standby state) 3: Fault (the battery actively jumps to the Fault state)
34228	LG Battery 10H/16H Second Battery status/mode	U16		0: initial state 1: Standby state 3: Operation state 4: Update state (upgrade the battery firmware through the inverter) 5: Fault state (cannot be automatically restored) 6: Battery self update 10: Power-saving state
34229	LG Battery 10H/16H Second Battery current power	S16	1 W	1<-->1W A positive value indicates charging
34230	LG Battery 10H/16H Second Battery max temperature	S16	0.1 DegC	10<-->1DegC
34231	LG Battery 10H/16H Second Battery status flag	U16		BIT00: fully charged flag, 0 is not fully charged, 1 is fully charged BIT01: full discharge flag, 0 is not full discharge, 1 is full discharge BIT02: CB status, 0 is open, 1 is closed BIT03: Enter the power saving mode flag, 0 available, 1 not available BIT04~15: Reserved
34240	AFCI board software version number	U16		"(Hexadecimal display) Explanation: This is the version number of the AFCI detection board High bytes represent the main version number of the AFCI detection board, while low bytes represent the sub version number of the AFCI detection board. For example, 0xAABB, where AA represents the main version number of the AFCI detection board and BB represents the sub version number of the AFCI detection board."
34241	Hardware Fault Detection Results of AFCI Board CT	U16		Module fault detection results: Bit0: Module 1 malfunction Bit1: Module 2 faulty

	Module			Bit2: Module 3 faulty Bit3: Module 4 malfunction Bit4: Module 5 faulty Bit5~Bit15: Reserved
34242	AFCI board arc fault detect result	U16		"Arc fault detection result: 0 no fault, 1 fault Bit0: MPPT0~1 channel failure Bit1: MPPT2~3 channel failure Bit2: MPPT4~5 channel failure Bit3: MPPT6~7 channel failure Bit4: MPPT8~9 channel failure Bit5~Bit15: Reserved
34243	Parallel Synchronization Setting Parameter Result	U16		0 - not set 1- Full sync setup successful (The number of online slaves is equal to the set number) 2- Synchronous setting communication timeout failed 3- The online slave synchronization setting is successful (The number of online slaves is less than the set number) 4-No slave online
34244	SPH software version number	U16		The high byte represents the major version number, and the low byte represents the minor version number.
34245	SPH running status	U16		
34246	SPH load total power	U16	0.1 kW	
34247	Total power consumption of SPH load	U32	1 kWh	
34249	AFCI board communication send count	U16		
34250	AFCI board communication receive count	U16		
34251	AFCI board communication receiving check correct count	U16		
36000	Mapping function version number	U16		"High byte: large version number, 0x01 means version V01 Only adjust the major version number when the map content changes; Low byte: small version number, 0x01 means version V01 Adjust the minor version number when the number of registers changes under the condition that the major version number is fixed: It is used to read the inverter information by continuous

				<p>register address of App</p> <p>The register value (such as 0x0000, etc.) is inconsistent with the defined version number, indicating that the mapping function is not supported;</p> <p>Note: Only support F2 energy storage models: "</p>
36001	Number of Mappingped function registers	U16		<p>Indicates the number of registers starting from 36002 (including);</p> <p>1. When the major version of the mapping version number is V01 and the minor version is V01, 0x40=64 registers;</p>
36002	Mapping machine serial number SN	Str		<p>"32 bit ASCII direct display</p> <p>Eg: 33004 = '01'</p> <p>33005 = '23'</p> <p>Corresponding display: '0123'</p> <p>LEDVANCE only takes the high 15 bit as effective SN number In the case of a four-digit model number, only the upper 16 digits are taken as the valid SN number; 33004 Highest, 33019 Lowest.</p>
36018	Mapping system time year	U16		0-99
36019	Mapping system time month	U16		0-12
36020	Mapping system time day	U16		1-31
36021	Mapping system time hour	U16		0-23
36022	Mapping system time min	U16		0-59
36023	Mapping system time second	U16		0-59
36024	Mapping inverter current status	U16		See Appendix 2
36025	Mapping function switch status	U16		<p>BIT00: DRM function, 0 OFF, 1 ON</p> <p>BIT01: Parallel running status, 0 stops and 1 runs</p> <p>BIT02: master-slave status, 0 slave, 1 master Note: APP read BIT01=1 AND BIT02=1, read each inverter data from address 1 based on 43388 parallel inverter number</p> <p>BIT03: 3PH Unbalance Operating Status, 0 Balanced, 1 Unbalanced</p> <p>BIT04: Generator start control conditions are met, 0 No, 1 Yes</p> <p>BIT05: Generator started successfully, 0 No, 1 Yes</p> <p>BIT06: Battery independent/parallel state, 0 Parallel, 1 Independent</p>

				<p>BIT07: AFCI board presence flag 0 No, 1 Yes</p> <p>BIT08: AFCI board self-test status 0 No Self-Test, 1 Self-Test Finished</p> <p>Explanation: The upper computer gets the "self-test completed", sends the AFCI self-test stop (43302BIT03 = 0) command, and then sends the "start" command;</p> <p>BIT09-15: Reserved</p>
36026	Mapping inverter working status	U16		See Appendix 5
36027	Mapping parallel unit number setting value	U16		Range: 2-10; Default 2; Others Invalid; For parallel systems only
36028	Mapping the online status of each inverter in the parallel system	U16		<p>Each BIT represents the online status of the corresponding inverter ID;;</p> <p>BIT00: Not Used,</p> <p>BIT01~15: Indicates the online status of the inverter with ID 1~15, 0 is not online, 1 is online;</p> <p>Explanation: When the App reads that BIT01 and BIT02 of 33097 are both 1, it determines that it is a parallel host. Then, based on the online status of 33338, it operates (including reading and writing) each inverter register according to the corresponding inverter ID;</p>
36029	Mapping generator settings switch:	U16		<p>BIT00: Generator connection position, 0 generator port, 1 power grid port; Default 0;</p> <p>BIT01: With Generator, 0No, 1Yes; Default 0;</p> <p>BIT02: Generator enable signal, 0: not enabled, 1: enabled; Default 0;</p> <p>BIT03: AC Coupling Position, 0 GEN port, 1 Backup port; Default 0;</p> <p>BIT04-15: Reserved</p> <p>Instructions for writing BTIxx: The upper computer first reads the current value of this register, and then changes the corresponding BIT value based on the current value as needed before writing;</p>
36030	Mapping Meter Installation Locations	U16		<p>High byte indicates location 0x0100 Grid 0x0200 Load 0x0300 Grid+PV (Two Meter)</p> <p>Low byte indicates meter type 0x0001 Acrel 1Ph 0x0002 Acrel 3Ph</p>

				0x0003 General 3Ph 0x0004 Standard Eastron 1Ph 0x0005 Standard Eastron 3Ph 0x0006 No Meter Mode The content is the same as 43140;
36031	Mapping battery type	U16		See Battery Model
36032	Mapping total input power in pV	U32	1 W	PV Power
36034	Mapping pV power generation of the day	U16	0.1 kWh	Note: For the Hybrid model, it shows the PV power generation data of the machine, and for the AC Coupled model, it shows the power generation data of the parallel PV inverters
36035	Mapping Backup load enable	U16		0000H--Disable , 0001H--Enable, Default: Enable
36036	Mapping the active power of phase A of the backup side power	S16	10 W	1<-->10W, Range : -327680W~327680W;
36037	Mapping the active power of phase B of the backup side power	S16	10 W	1<-->10W, Range : -327680W~327680W;
36038	Mapping the active power of phase C of the backup side power	S16	10 W	1<-->10W, Range : -327680W~327680W;
36039	Mapping the electricity consumption of the backup load TODAY	U16	0.1 kWh	Same as 33596
36040	Mapping grid-side load power	U16	1 W	1<-->1W Only for loads on grid port, not include backup loads
36041	Mapping grid-side load power consumption TODAY	U16	0.1 kWh	Same as 33586
36042	Mapping generator input power	S16	10 W	100<-->1kW
36043	Mapping the daily power generation of the generator	U16	0.1 kWh	10<-->1kWh
36044	Mapping Inverter	U16	0.1 V	10<-->1V

	Battery Voltage			
36045	Mapping Inverter Battery Current	S16	0.1 A	"10<-->1A '+' : charge '-' : discharge Not support negative value. Direction is determined by 33135"
36046	Mapping inverter battery current direction	U16		"Indicate charge/discharge 0: charge 1: discharge"
36047	Mapping inverter battery power	S32	1 W	1<-->1W
36049	Mapping battery charging capacity today	U16	0.1 kWh	10<-->1kWh
36050	Mapping battery discharging capacity today	U16	0.1 kWh	10<-->1kWh
36051	Mapping BMS battery capacity SOC	U16		100<-->100%
36052	Mapping BMS battery voltage	U16	0.01 V	100<-->1V (From BMS)
36053	Mapping BMS battery current,	S16	0.1 A	10<-->1A (From BMS)
36054	Mapping AC voltage A on the public grid side	U16	0.1 V	10<-->1V
36055	Mapping AC voltage B on the public grid side	U16	0.1 V	10<-->1V
36056	Mapping AC voltage C on the public grid side	U16	0.1 V	10<-->1V
36057	Mapping the total active power on the public grid side (the meter is on the public grid side)	S32	1 W	1000<-->1kW
36059	Mapping the total active power on the public grid side (the meter is on the load side)	S32	1 W	"1000<-->1kW Pt = Public grid side active power A+ Public grid side active power B+ Public grid side active power C"
36061	Mapping the grid	U16	0.1 kWh	10<-->1kWh

	sell electricity TODAY			
36062	Mapping the grid purchase electricity TODAY	U16	0.1 kWh	10<-->1kWh

Note: METER SN: Use inverter SN + inverter slave address = meter SN, to identify whether the inverter has a meter or not. Single phase use data of phase A. Meter active power : "+" means power to grid. "-" means power from grid.

### 5.3. Inverter setting parameter address

Corresponding function code is 0x03、0x06 and 0x10。The following table has the same address with the actual address of the message frame. No need extra offset or transform.

Reg ister (Dec)	Meaning	Data Type	Unit	Note
43000	Year	U16		00-99
43001	Month	U16		1-12
43002	Day	U16		1-31
43003	Hour	U16		0-23
43004	Minute	U16		0-59
43005	Second	U16		0-59
43006	Slave address	U16		Range: 1-99, Default 1; Only Support 0x06 function code;
43007	ON/OFF	U16		0xBE-ON 0xDE-OFF
43008	initial startup setting	U16		Initial startup setting saving command: 1---setting write completed。 0---setting write not completed。 The specific setting function is defined by the upper computer, here only to do whether the upper computer completes the initial startup setting saving function。 Use 04 function code 33020 to check as well For APP point to point setting function
43009	Current battery Model	U16		See Appendix 11
43010	Overcharge SOC	U16	1%	100<-->100% Range (70-100%) 95% - rated。
43011	Overdischarge SOC	U16	1%	100 100%, Default 20% ; Range (5-40%), And not smaller than forcecharge SOC 43018;
43012	Max charge current	U16	0. 1A	10<-->1A LV Hybrid: 50.0-100.0A Default 62.5A HV Hybrid: 5.0-100.0A Default: 25.0A
43013	Max discharge current	U16	0. 1A	10<-->1A LV Hybrid: 50.0-100.0A Default 62.5A HV Hybrid: 5.0-100.0A Default: 25.0A

43014	Charge overvoltage threshold	U16	0.1V	10<-->1V LV Hybrid: 54.0-62.0V Default 59.5V HV Hybrid: 500-999V Default: 556V
43015	Discharge undervoltage threshold	U16	0.1V	10<-->1V LV Hybrid: 40.0-46.0V Default 46.0V HV Hybrid: 100-999V Default: 120V
43016	Floating charge voltage threshold	U16	0.1V	10<-->1V LV Hybrid: 50.0-60.0V Default 53.5V HV Hybrid: 100-999V Default: 550V Only Support User-def and Lead-acid battery
43017	Equalizing charge voltage threshold	U16	0.1V	10<-->1V LV Hybrid: 54.0-60.0V Default 56.5V HV Hybrid: 100-999V Default: 550V Only Support User-def and Lead-acid battery
43018	Force Charge SOC	U16	1%	1<-->1% 4% to overdischarge SOC, Default 10% (Note: Overdischarge SOC is 43011)
43019	Rated Capacity	U16	1Ah	1<-->1Ah, 50-500, Default: 100Ah; Only Support User-def and Lead-acid battery
43020	Overdischarge Voltage	U16	0.1V	10<-->1V, 40.0-48.0V, Default: 44.5V Only for lead-acid
43021	Forcecharge Voltage	U16	0.1V	10<-->1V,40.0-48.0V, 默认 43.8V Only for lead-acid
43022	Lead-acid battery Temperature compensation parameter	U16	1mV/°C	1<-->1mV/°C, Range:0-180mV/°C, Default: 72mV/°C; Only for Lead-acid battery
43023	Ambient temperature setting	U16		1 Normal, 2 Low, 3 High Default 1; Only support Lead-acid battery
43024	Backup SOC	U16	1%	1<-->1%,Range: Overdischarge SOC-100%, Default 80% Parameters for Backup Mode (Note: Overdischarge SOC is 43011)
43025	Temperature compensation-lower limit	S16	0.1°C	1<-->0.1°C; Range: 5-25°C; Default:5°C; Only for lead-acid battery;
43026	Temperature compensation-upper limit	S16	0.1°C	1<-->0.1°C; Range: 25-45°C; Default:45°C; Only for lead-acid battery;
43027	Battery Force-charge Power Limitation	U16	10W	1<-->10W LV Hybrid: 300W – Rated Max Charge Power; Default as Rated Max Charge Power per Inverter Model. Outrange is not effective
43028	Battery Force	U16		0: Limit Grid to charge the battery;

	Charge Source			1: Limit both PV and Grid to charge the battery Default is 0, others not effective
43029	Meter CT Connecting Direction Setting	U16		0 Positive, 1 Reverse, Others not effective; Normal direction is towards grid and positive. When actual direction is from grid, set to 1
43031	Restart HMI	U16		0xAA55 Effective, Others invalid Only support single register write 0x06 function code
43032	Power calibration	U16		1<-->1, Range: 800-1200, Default 1000 For PV total power calibration
43033	Factory setting restore;	U16		1, Restore factory settings; Only single register write; Used to restore the default values of related parameters. After restoring factory Settings, please restart the HMI.
43034	OV-G-V01 For CEI-021, 59.S2	U16	0.1V	10<-->1V 1PH: 236-335V Default: 254V 3PH: 410-580V Default: 440V
43035	OV-G-V02	U16	0.1V	10<-->1V 1PH: 248-341V Default: 265V 3PH: 430-590V Default: 460V
43036	UN-G-V01 For CEI-021, 27.S1	U16	0.1V	10<-->1V 1PH: 173-236V Default: 190V 3PH: 300-410V Default: 330V
43037	UN-G-V02 For CEI-021, 27.S2	U16	0.1V	10<-->1V 1PH: 132-219V Default: 173V 3PH: 230-380V Default: 300V
43038	81>S1	U16	0.01Hz	100<-->1Hz, 48-53Hz, Default 50.2Hz 43038-43049 Only available when CEI 0-21 is selected
43039	81>S1-T	U16	0.01s	100<-->1S, 0.05-0.5S, , Default 0.10S
43040	81<S1	U16	0.01Hz	100<-->1Hz, 48-53Hz, Default 49.8Hz
43041	81<S1-T	U16	0.01s	100<-->1S, 0.05-0.5S, Default 0.10S
43042	81>S2F	U16	0.01Hz	100<-->1Hz, 48-53Hz, Default 51.5Hz
43043	81>S2F-T	U16	0.01s	100<-->1S, 0.05-0.5S, Default 0.10S
43044	81<S2F	U16	0.01Hz	100<-->1Hz, 45-49Hz, Default 47.5Hz
43045	81<S2F-T	U16	0.01s	100<-->1S, 0.05-0.5S, Default 0.10S
43046	81>S2S	U16	0.01Hz	100<-->1Hz, 48-53Hz, Default 51.5Hz

43047	81>S2S-T	U16	0.01s	100<-->1S, 0.05-5.0S, Default 1.0S
43048	81<S2S	U16	0.01Hz	100<-->1Hz, 45-49Hz, Default 47.5Hz
43049	81<S2S-T	U16	0.01s	100<-->1S, 0.05-5.0S, Default 4.0S
43050	Working Mode Set	U16		Working Mode 00---No response mode 01---Volt-watt default 02---Volt-var 03---Fixed power factor 04---Reactive power 05---Power-PF 0C---IEEE1547-2018 Required P-Q Operating Mode
43051	Limit reactive power setting	S16	0.01% (Actual 1%)	10000<-->100% Range (-6000- +6000) Default: 0 This function is only for mode 4
43052	Limited power setting	U16	0.01% (Actual 1%)	10000<-->100% Range 100% is rated power 5G/S5: (0-110%) F2 1P LV3-8K: (0-110%) F2 1P/3P HV: (0-100%) (Actual 1%)
43053	PF setting	S16	0.001 (actual 0.01)	PF: (800<-->0.80, 1000<-->1.00) (-800<-->-0.80, -1000<-->-1.00) (PF 1.00 and -1.00 are the same) Range (-1.0~-0.80, +0.80~+1.0) (Actual 0.01)
43054	PF Setting 02	S16	0.001 (Actual 0.01)	PF 02: (800<-->0.80, 1000<-->1.00) (-800<-->-0.80, -1000<-->-1.00) (PF 1.00 and -1.00 are the same) Range (-1.0~-0.80, +0.80~+1.0) This function is only for mode 3
43055	Clear energy record	U16		1, Clear energy record; Automatically change to 0 after finished Only support single register write
43056-43057	Calibrate total energy	U32	1kWh	43056-43067 are calibrated for 33029-33040 PV power generation respectively; Use the value set by the register to replace the previously counted generation data;
43058-43059	Calibrate this month energy	U32	1kWh	
43060-43061	Calibrate last month energy	U32	1kWh	

43062	Calibrate today energy	U16	0.1kWh	
43063	Calibrate yesterday energy	U16	0.1kWh	
43064-43065	Calibrate this year energy	U32	1kWh	
43066-43067	Calibrate last year energy	U32	1kWh	
43068	Grid standard	U16		See appendix 3
43069	Power off saving function	U16		BIT00: 0-Active power control power off not save; 1- Active power control power off save; For 43052: Need to write Bit00=1 and then write 43052 BIT01: 0-PF control power off not save; 1- PF control power off save; For 43053: Need to write Bit00=1 and then write 43053
43071	Internal EPM –Har Limit ON/OFF Only valid for AU 2020 standard	U16		00: Default – No valid; 01: ON; 02: OFF; Only valid for AU 2020 standard
43072	Internal EPM –Har Limit Backflow power	S16	100W	1 $\leftrightarrow$ 100W ; Range: 0 ~ Rated AC power; +: to grid; -: from grid Only valid for AU 2020 standard
43073	METER/CT Position	U16		See appendix 12
43074	Backflow Power ( Note : for AU 2020 standard, it is EPM soft limit backflow power)	S16	100W/	RHI-(3-6)K-48ES-5G: 1 $\leftrightarrow$ 100W Range: 0~99;
			1W	RHI-1P(5-10)K-HVES-5G/RHI-3P(5-10)KHVES-5G/RAI-3K-48ES-5G: 1 $\leftrightarrow$ 1W Range: 0~30000;
			1W	F2 models: 1 $\leftrightarrow$ 100W Range: 0~120
43076	AFCI Function ON/OFF	U16		1---ON 0---OFF
43077	Italy Standard Switching Mode	U16		0: OFF, Default OFF (81>S1—50.2Hz/0.1s-Inverter 81<S1—49.8Hz/0.1s-Inverter) 1: Local Control (81>S2—51.5Hz/0.1s-Local 81<S2—47.5Hz/0.1s-Local) 2: External Signal (81>S2—51.5Hz/1.0s-External 81<S2—47.5Hz/4.0s-External)

				Note: The setting has power-off saving function only available under Italy standard.
43078	Italy Single Test	U16		See appendix 13
43079	Italy Full Test	U16		Value: Start Complete Self Test 0---Full Test stop or not start 2---Full Test start
43080	Battery P <sub>max</sub> (%) setting	U16	0.01%	10000<-->100%, 0-120%, Default100% Only support CEI021 standard, to control the max battery charge power under Over Frequency Derating
43081	Grid standard parameters accuracy	U16		43090-43105 register rate set and read; 1-Set accuracy Voltage 0.1V, Time 0.01s and Frequency 0.01Hz 0- Set accuracy oltage 1V, Time 0.1s and Frequency 0.1Hz 5G/S5 Default 0 , F2 Default 1 , power off not save。 Note: This function is use upper computer to select and inverter set based on the setting accuracy
43082	Fault Recovery Grid Voltage Upper limit	U16	0.1V	10<-->1V; Accuracy 0.1V; Default is OV-G-V01, if not required by grid standard, follow the default
43083	Fault Recovery Grid Voltage Lower limit	U16	0.1V	10<-->1V; Accuracy 0.1V; Default is UN-G-V01, if not required by grid standard, follow the default
43084	Fault Recovery Grid Frequency Upper limit	U16	0.01Hz	100<-->1Hz; Accuracy 0.1Hz; Default is OV-G-F01, if not required by grid standard, follow the default
43085	Fault Recovery Grid Frequency Lower limit	U16	0.01Hz	100<-->1Hz; Accuracy 0.1Hz; Default is UN-G-F01, if not required by grid standard, follow the default
43086	Startup Grid Voltage Upper limit	U16	0.1V	10<-->1V; Accuracy 0.1V; Default is 253.0V--- if not required by grid standard, follow the default
43087	Startup Grid Voltage Lower limit	U16	0.1V	10<-->1V; Accuracy 0.1V; Default is 195.5V--- if not required by grid standard, follow the default
43088	Startup Grid Frequency Upper limit	U16	0.01Hz	100<-->1Hz; Accuracy 0.1Hz; Default is 50.1Hz--- if not required by grid standard, follow the default
43089	Startup Grid Frequency Lower limit	U16	0.01Hz	100<-->1Hz; Accuracy 0.1Hz; Default is 49.5Hz--- if not required by grid standard, follow the default
43090	OV-G-V 01	U16	1V	1<-->1V 1P range: 236-335V default: 254V 3P range: 410-580V default: 440V (59.S2 for CEI021)
43091	OV-G-V-T 01	U16	100ms	1<-->100mS

				0.10-9.0s default: 1.0s (59.S2 Time for CEI021)
43092	OV-G-V 02	U16	1V	1<-->1V 1P range: 248-341V default: 265V 3P range: 430-590V default: 460V
43093	OV-G-V-T 02 门限	U16	100ms	1<-->100mS 0.10-1.0s default: 0.2s
43094	UN-G-V 01	U16	1V	10<-->1V 1P range: 173-236V default: 190V 3P range: 300-410V default: 330V (27.S1 for CEI021)
43095	UN-G-V-T 01	U16	100ms	1<-->100mS Range: 0.10-9.0s default: 1.0s (27.S1 Time for CEI021)
43096	UN-G-V 02	U16	1V	1<-->1V 1P range: 132-219V default: 173V 3P range: 230-380V default: 300V (27.S2 for CEI021)
43097	UN-G-V-T 02	U16	100ms	1<-->100mS 0.10-1.0s default: 0.2s (27.S2 Time for CEI021)
43098	OV-G-F 01	U16	0.1Hz	10<-->1Hz Range: 50.2-53.0Hz default: 51.0Hz Range: 60.2-63.0Hz default: 61.0Hz
43099	OV-G-F-T 01	U16	100ms	1<-->100mS Range: 0.10-9.0s default: 1.0s When 43081=1, For Hawaii and New American Standard UL1547-2018 standard 1->20ms; Note: Since the upper limit of the parameter range is 1000S, when 1<-->10mS, the upper limit of the data of a register is 655.35S, which cannot meet the safety requirements;
43100	OV-G-F 02	U16	0.1Hz	10<-->1Hz Range: 51.0-53.0Hz default: 51.0Hz Range: 61.0-63.0Hz default: 51.0Hz
43101	OV-G-F-T 02	U16	100ms	1<-->100mS Range: 0.10-9.0s default: 0.2s When 43081=1, For Hawaii and New American Standard UL1547-2018 standard 1->20ms;
43102	UN-G-F 01	U16	0.1Hz	10<-->1Hz Range: 47.0-49.5Hz default: 48.0Hz Range: 57.0-59.5Hz default: 48.0Hz
43103	UN-G-F-T 01	U16	100ms	1<-->100mS Range: 0.10-9.0s default: 1.0s When 43081=1, For Hawaii and New American Standard

				UL1547-2018 standard 1->20ms;
43104	UN-G-F 02	U16	0.1Hz	10<-->1Hz Range: 47.0-49.0Hz default: 47.0Hz Range: 57.0-59.0Hz default: 47.0Hz
43105	UN-G-F-T 02	U16	100ms	1<-->100mS Range: 0.10-9.0s default: 0.2s When 43081=1, For Hawaii and New American Standard UL1547-2018 standard 1->20ms;
43106	Startup time	U16	1s	1<-->1s Range: 10-600s default: 60s
43107	Reconnect time	U16	1s	1<-->1s Range: 10-600s default: 60s
43108	10mins Overvoltage	U16	0.1V	10<-->1V; Range based on standard requirement 59.S1 for CEI021
43110	Storage control Switch value	U16		See appendix 6 BIT00 and BIT06 can't be turned on at the same time Instructions for writing to BTIxx: The upper computer first reads the current value of this register, and then writes the value of the corresponding BIT as needed based on the current value;
43111	Backup circuit setting	U16		0000H--disable , 0001H--enable, default: enable
43112	Backup reference Voltage setting	U16	0.1V	10<-->1V, default 230V Accuracy 0.1Hz
43113	Backup reference Frequency setting	U16	0.01Hz	100<-->1Hz, default 50Hz, Accuracy 0.1Hz
43117	Battery max charge current	U16	0.1A	10<-->1A, accuracy 0.1A Range 1 - the maximum rated charging current of the corresponding model, the default is the maximum rated charging current of the corresponding model; For example: The maximum charging current of S5 single-phase low-voltage energy storage inverter is 100A, and the maximum charging current of F2 single-phase low-voltage energy storage inverter is 120A
43118	Battery max discharge current	U16	0.1A	10<-->1A, accuracy 0.1A Range 1 - the maximum rated discharging current of the corresponding model, the default is the maximum rated discharging current of the corresponding model; For example: The maximum discharging current of S5 single-phase low-voltage energy storage inverter is 100A, and the maximum discharging current of F2 single-phase low-voltage energy storage inverter is 120A

43119	Battery undervoltage protection	U16	0.1V	10<-->1V; default: 46; range: 40—48; Protection return diff 2V
43120	Battery floating charge voltage setting	U16	0.1V	10<-->1V; default: 53.5; range: 50-58
43121	Battery equalizing charge voltage setting	U16	0.1V	10<-->1V; default: 56.4; range: 54-60
43122	Battery overvoltage protection	U16	0.1V	10<-->1V; default: 59.5; range: 54-62
43123	Voltage Droop Setting	U16		0000H--disable , 0001H--enable, default:disable
43125	Phase A Backflow Power Setting	S16	100W	1<-->100W, Range 0-99, Default 0; Effective when 43073 BIT06 is 1 Only for F2 3P HV Hybrid
43126	Phase B Backflow Power Setting	S16	100W	1<-->100W, Range 0-99, Default 0; Effective when 43073 BIT06 is 1 Only for F2 3P HV Hybrid
43127	Phase C Backflow Power Setting	S16	100W	1<-->100W, Range 0-99, Default 0; Effective when 43073 BIT06 is 1 Only for F2 HV Hybrid
43128	Remote Control – Active Power on inverter AC grid port	S16	10W	1<--> 10W +: Export; -: Import
43129	Remote Control – Force Battery discharge power	U16	10W	1 <--> 10W; Range 10W- Device Back-up output power;
43130	Battery charge limit power	U16	10W	1 <--> 10W; Range 10W- Device Back-up output power; Default 0 Invalid; Not save in Flash;
43131	Battery discharge limit power	U16	10W	1 <--> 10W; Range 10W- Device Back-up output power; Default 0 Invalid; Not save in Flash;
43132	Remote Control –Grid Adjustment	U16		0 OFF, 1 ON with “system grid connection point”, 2 ON with “Inverter AC grid port” Rest values, OFF.After received ON command, 5mins delay.If there is not another ON command received, it will be OFF automatically. When set the function as ON, the “remotecomtrol – Force battery charge “function will be OFF.
43133	Remote Control – Active Power on System grid connection point	S16	10W	1<-> 10W +: Export to grid; -: Import from grid; Only available when “Remote Control-Grid Adjustment” is ON with “system grid connection point”..
43134	Remote Control – Reactive Power on System grid connection point	S16	10Var	1<--> 10Var +: Export to grid; -: Import from grid; Only available when “Remote Control-Grid Adjustment” is ON with “system grid connection point”..

43135	Remote Control – Force Battery Charge/discharge	U16		0:OFF; 1:Battery charge(use PV power to charge battery); 2: Battery discharge Rest values: OFF When set the function as ON, the “Remote Control –Grid Adjustment” function will be OFF.
43136	Remote Control – Force Battery Charge Power	U16	10W	1<-->10W Only available when “Remote Control-Force Battery Charge” is ON.
43137	Off-Grid Overdischarge SOC	U16	1%	1 <--> 1% 10%-100%, Default 30%;
43138	EPS Overdischarge SOC	U16	1%	1 <--> 1%; Range 10%-100%; LV Hybrid, Default 20%; 3PH HV Hybrid, Default 10%;
43139	EPS Switching Time	U16	10ms	1 <--> 10ms, 10~99990ms 0 means EPS parameters invalid
43140	Meter1 Type and location	U16		High byte indicates location: 0x0100 Grid 0x0200 Load 0x0300 Grid+PV (Two Meter) Low byte indicates meter type 0x0001 General 1Ph 0x0002 Acrel 3Ph 0x0003 General 3Ph 0x0004 Standard Eastron 1Ph 0x0005 Standard Eastron 3Ph 0x0006 No Meter Mode
43141	Time-chargeing charge current	U16	0.1A	1<-->0.1A, Range 0-100A, Default 50A, Accuracy 0.1A For example: S5 single-phase low-voltage energy storage inverter charging current up to 100A F2 single-phase low-voltage energy storage inverter charging current up to 120A
43142	Time-chargeing discharge current	U16	0.1A	1<-->0.1A, Range 0-100A, Default 50A, Accuracy 0.1A For example: S5 single-phase low-voltage energy storage inverter charging current up to 100A F2 single-phase low-voltage energy storage inverter charging current up to 120A
43143	Time-chargeing charge start hour	U16	1hour	1<-->1h
43144	Time-chargeing charge start minute	U16	1min	1<-->1m
43145	Time-chargeing	U16	1hour	1<-->1h

	charge end hour			
43146	Time-chargeing charge end minute	U16	1min	1<-->1m
43147	Time-chargeing discharge start hour	U16	1hour	1<-->1h
43148	Time-chargeing discharge start minute	U16	1min	1<-->1m
43149	Time-chargeing discharge end hour	U16	1hour	1<-->1h
43150	Time-chargeing discharge end minute	U16	1min	1<-->1m
43153	Time-chargeing charge start hour 2	U16	1hour	1<-->1h
43154	Time-chargeing charge start minute 2	U16	1min	1<-->1m
43155	Time-chargeing charge end hour 2	U16	1hour	1<-->1h
43156	Time-chargeing charge end minute 2	U16	1min	1<-->1m
43157	Time-chargeing discharge start hour 2	U16	1hour	1<-->1h
43158	Time-chargeing discharge start minute 2	U16	1min	1<-->1m
43159	Time-chargeing discharge end hour 2	U16	1hour	1<-->1h
43160	Time-chargeing discharge end minute 2	U16	1min	1<-->1m
43163	Time-chargeing charge start hour 3	U16	1hour	1<-->1h
43164	Time-chargeing charge start minute 3	U16	1min	1<-->1m
43165	Time-chargeing charge end hour 3	U16	1hour	1<-->1h
43166	Time-chargeing charge end minute 3	U16	1min	1<-->1m
43167	Time-chargeing discharge start hour 3	U16	1hour	1<-->1h
43168	Time-chargeing	U16	1min	1<-->1m

	discharge start minute 3			
43169	Time-chargeing discharge end hour 3	U16	1 hour	1<-->1h
43170	Time-chargeing discharge end minute 3	U16	1 min	1<-->1m
43173	Time-chargeing charge start hour 4	U16	1 hour	1<-->1h
43174	Time-chargeing charge start minute 4	U16	1 min	1<-->1m
43175	Time-chargeing charge end hour 4	U16	1 hour	1<-->1h
43176	Time-chargeing charge end minute 4	U16	1 min	1<-->1m
43177	Time-chargeing discharge start hour 4	U16	1 hour	1<-->1h
43178	Time-chargeing discharge start minute 4	U16	1 min	1<-->1m
43179	Time-chargeing discharge end hour 4	U16	1 hour	1<-->1h
43180	Time-chargeing discharge end minute 4	U16	1 min	1<-->1m
43183	Time-chargeing charge start hour 5	U16	1 hour	1<-->1h
43184	Time-chargeing charge start minute 5	U16	1 min	1<-->1m
43185	Time-chargeing charge end hour 5	U16	1 hour	1<-->1h
43186	Time-chargeing charge end minute 5	U16	1 min	1<-->1m
43187	Time-chargeing discharge start hour 5	U16	1 hour	1<-->1h
43188	Time-chargeing discharge start	U16	1 min	1<-->1m

	minute 5			
43189	Time-chargeing discharge end hour 5	U16	1 hour	1<-->1h
43190	Time-chargeing discharge end minute 5	U16	1 min	1<-->1m
43191	Power control mode	U16		0: 3PH balance control, inverter output balanced current; 1: 3PH individual control, inverter can output unbalanced current; 43191-43194 are only for 3PH Hybrid Default is 0, Rest are invalid; Save to Flash.Don't frequently write
43192	A Phase Rated power Limit percentage	U16	0.01% (Actual 2%)	A Phase Rated power Limit percentage (10000<-->100%) Range (0-110%) 100% is A phase rated power Allowed power is the set value divided by 100%
43193	B Phase Rated power Limit percentage	U16	0.01% (Actual 2%)	B Phase Rated power Limit percentage (10000<-->100%) Range (0-110%) 100% is B phase rated power Allowed power is the set value divided by 100%
43194	C Phase Rated power Limit percentage	U16	0.01% (Actual 2%)	C Phase Rated power Limit percentage (10000<-->100%) Range (0-110%) 100% is C phase rated power Allowed power is the set value divided by 100%
43196	IV curve starting setting	U16		1- Start, 0- Don't scan, Default is 0 Note: After start the IV curve scanning, use function code 04, read 3341Reg. If READ THE IV curve number, the scan ends. If no number after 5mins, end with timeout. If 3 times of timeout, scanning error。
43197	IV curve start voltage	U16	1V	1<-->1V
43198	IV curve interval voltage	U16	1V	1<-->1V
43199	Get current IV curve number	U16		Note: Max number is 30 Step 1: Send IV curve scanning command, wait it ends Step 2: Send function 06 to this register to set IV curve number, get IV curve info Step 3: Use function 04 read IV curve info Reg from 33341-33462
43200	01/06 Working Mode V1Set	U16	0.1V	10<-->1V;
43201	01/06 Working Mode V2Set	U16	0.1V	10<-->1V;
43202	01/06 Working Mode V3Set	U16	0.1V	10<-->1V;

43203	01/06Working Mode V4Set	U16	0.1V	10<-->1V;
43204	01/06Working Mode P1 (P1% Set)	U16	0.01%	10000<-->100% Range (0-100%) 100% is rated P
43205	01/06Working Mode P2 (P2% Set)	U16	0.01%	10000<-->100% Range (0-100%) 100% is rated P
43206	01/06Working Mode P3 (P3% Set)	U16	0.01%	10000<-->100% Range (0-100%) 100% is rated P
43207	01/06Working Mode P4 (P4% Set)	U16	0.01%	10000<-->100% Range (0-100%) 100% is rated P
43208	02Working Mode V1Set	U16	0.1V	10<-->1V;
43209	02Working Mode V2Set	U16	0.1V	10<-->1V;
43210	02Working Mode V3Set	U16	0.1V	10<-->1V;
43211	02Working Mode V4Set	U16	0.1V	10<-->1V;
43212	02Working Mode LeadingQ (MaxLeadingVar%)	U16	0.01%	10000<-->100% Range: 0---60%; Default:30%
43213	02Working Mode LaggingQ (MaxLaggingVar%)	S16	0.01%	10000<-->100% range: 0--- (-60%); Default:-30%
43214	02 Working Mode Plock-in	U16	1%	1<-->1%, Default 20%, range0~100%;
43215	02 Working Mode Plock-out	U16	1%	1<-->1%, Default 5%, range0~100%;
43216	02Working Mode K Parameter	U16	0.01	100<-->1, Default 0.1 , range (-1.0~+1.0) CEI 0-21 Only
43217	02/03/04/05Working mode Q response 3Tau	U16	0.01s	100<-->1s, Default 10s, range(6~60s) For CEI-016, range 0-30s, default 3s
43218	05Working Mode B Power (Pb% Set)	U16	0.01%	(10000<-->100%); range: 50---100%; Default:100%
43219	05Working Mode C Power (Pc% Set)	U16	0.01%	(10000<-->100%); range: 50---100%; Default:100%
43220	05Working Mode C PF (PFcSet)	S16	0.001	range: (-0.90---0.90); Default:-0.95 (800<-->0.80, 1000<-->1.00)
43221	Standard Mode control switch	U16		BIT00, OverVolt Auto PLmt,0 OFF(Default), 1 ON BIT01, IEEE1547-2018 standard Vref automatic adjustment function switch in V-Q,

				Vref-Autonomous (0-disable; 1-enable; default is 0) BIT02-15, Reserved
43222	Power ramp rate limit Wgra	U16	0.01%	100<-->1% Range: 5%---600%; Default:16.67%
43223	EN50549 Fault Trip Restart P_Ramp Rate	U16	0.1%	1000<-->100% Range: 5%---3000%; Default:10%
43224	EN50549 Startup P_Ramp Rate	U16	0.1%	1000<-->100% Range: 5%---3000%; Default:600%
43225	Working mode reset	U16		One reset each time 1, AUS DRM ON; 2, AUS DRM OFF; 3, Working Mode Reset; 4, Ramp rate Reset; 5, Freq derate Reset; 6, 10mins overvoltage rest;
43226	Frequency derating mode	U16		See Appendix 14
43227	Frequency Derating Parameter 1	U16	0.01Hz	01 mode overfrequency derating (Fstop) setpoint. (100<-->1Hz);Range:51.00-52.00Hz; Default:52Hz;Accuracy:0.05Hz
				0C mode Denmark and 0A mode UK overfrequency derating start point (FR) setpoint. (100<-->1Hz);Range:51.00-52.00Hz; Default:52Hz; Accuracy:0.01Hz
				03 mode VDE-2018 and 11H mode France and 12H mode Austria overfrequency derating start point (Fstart) setpoint.(100<-->1Hz);Range:50.20-50.5Hz;Default:50.2Hz;Accuracy:0.01Hz;
				13 mode Hawaii overfrequency derating start point(Fstart) setpoint.(100<-->1Hz);Range: 60.017-61.00Hz Default:60.036Hz Accuracy:0.001Hz;
				04 mode overfrequency derating start point (Fstart) setpoint. (100<-->1Hz);Range:60.20-62.00Hz; Default:60.2Hz; Accuracy:0.05Hz;
				08 mode overfrequency derating start point (Fstart) setpoint. (100<-->1Hz);Range:60.05-62.00Hz; Default:60.2Hz;Accuracy:0.01Hz;
				0D mode China 2018 new code overfrequency derating slope(Fdroop)setpoint.(100<-->1.0%)Range: 10%-100%; Default:40%;Accuracy:1%;

				0E mode EN50549 overfrequency derating start point (f1) setpoint.(100<->1Hz) Range:50.2-52Hz Default:50.2Hz; Accuracy:0.01Hz;
43228	Frequency Derating Parameter 2	U16	0.01Hz	01 mode underfrequency ramping (grid charge battery) (Fstop_ch) setpoint (100<->1Hz) Range: 47.00-49.00Hz; Default:49Hz; Accuracy:0.05Hz;
			0.01%	0C mode Denmark and 0A mode UK overfrequency derating slope(Fdroop) setpoint. (100<->1.0%) Range:2.0-12.0%; Default:4% Accuracy:0.1%;
				03 mode VDE-2018 and 11H mode France and 12H mode Austria overfrequency derating slope (Fdroop)setpoint.(100<->1.0%) Range:2.0-12.0%; Default:5% Accuracy:0.1%
				13 mode Hawaii overfrequency derating slope (Fdroop)setpoint.(100<->1.0%) Range:2.0-7.0%; Default:4% Accuracy:0.1%;
				04 mode overfrequency derating stop frequency (Fstop) setpoint (100<->1Hz) Range:61.00-64.00Hz; Default:62Hz; Accuracy:0.05Hz; Note: Fstop >Fstart
				08 mode overfrequency derating slope (WGra)setpoint.(10000<->100%); Range:10%-100%; Default:40%; Accuracy:1%;
			0E mode EN50549 overfrequency derating hysteresis switch (fstop:active/deactive).Deactive Active Default:0	
43229	Frequency Derating Parameter 3	U16	0.01Hz	01 mode overfrequency derating (Fstart), 100<->1Hz ; Range : 50.10--50.50Hz, Default:50.25Hz; Accuracy 0.05Hz;
				08 mode overfrequency derating recoverable stop frequency (Fstop)set point.(100<->1Hz). Range:60.00-Fstart; Default:60.05Hz; Accuracy:0.01Hz;
				0E mode EN50549 overfrequency derating hysteresis frequency (fstop) setpoint.(100<->1Hz). Range: 50.0-f1;

				Default:50.2Hz; Accuracy:0.01Hz;
			0.01s	Hawaii overfrequency derating response time set high byte (1<->10ms)Range:5-300 Default: 50 <->500ms Accuracy:0.01s
43230	Frequency Derating Parameter 4	U16	1s	08 mode overfrequency derating hysteresis switch (HystEna) setpoint 1 – Enable 2 – Disable
				0E mode EN50549 overfrequency derating hysteresis frequency response time (Tstop) setpoint (1<->1s) Range: 0-600s; Default:30s; Accuracy:1s
			0.01Hz	01 mode EN50549 overfrequency derating Ftransition (For Hybrid AU2020), 100<->1Hz, Range: 50.5Hz-52Hz, Default 50.75Hz; Accuracy 0.01Hz;
43231	Frequency Derating Parameter 5	U16	0.01%	0E mode EN50549 overfrequency derating slope (Droop) setpoint.(100<->1.0%) Range:2-12%;
43232	Frequency Derating Parameter 6	U16	0.01s	0E mode EN50549 overfrequency derating frequency response delay(Tintendelay) setpoint.(100<->1s) Range:0-2s Default:0s; Accuracy:0.1s
43233	Underfrequency ramping up start frequency point	U16	0.01Hz	VDE4105,EN50549 standard mode underfrequency ramping start frequency(FDstart) setpoint. (100<->1Hz); Range:50.00Hz-46Hz; Default:49.80Hz; Accuracy:0.01Hz;
				Hawaii underfrequency ramping start frequency (FDstart) setpoint.(100<->1Hz); Range:59-59.98Hz; Default:59.8Hz Accuracy:0.01Hz;
				01 underfrequency ramping Fdstart (For Hybrid AUS2020); 100<->1Hz;Range 49.5Hz-49.9Hz; Default: 49.75Hz; Accuracy 0.01Hz;
43234	Underfrequency ramping up slope	U16	0.01%	VDE4105,EN50549 standard mode underfrequency ramping slope(Grid charge battery)(FDdroop) etpoint(100<->1.0%) Range:2.0-12.0% Default:5%; Accuracy:0.1%
				Hawaii underfrequency ramping slope(Grid charge battery)(FDdroop) setpoint (100<->1.0%) Range:2.0-7.0% Default:4%; Accuracy:0.1%.

			0.01Hz	01 underfrequency ramping (Fpmax) (ForHybrid AUS2020); 100<-->1Hz; Range: 47.00Hz---49.00Hz; Default:48.00Hz; Accuracy 0.05Hz
43235	Grid Voltage compensation Vgrid-A-Zero	S16	0.1V	10<-->1V Range: -5.0V~+5.0V; Accuracy 0.1V; Default 0; For 1ph inverter, phase A is effective
43236	Grid Voltage compensation Vgrid-B-Zero	S16	0.1V	10<-->1V Range: -5.0V~+5.0V; Accuracy 0.1V; Default 0; For 1ph inverter, phase A is effective
43237	Grid Voltage compensation Vgrid-C-Zero	S16	0.1V	10<-->1V Range: -5.0V~+5.0V; Accuracy 0.1V; Default 0; For 1ph inverter, phase A is effective
43238	Grid current sampling middle point compensation Igrid-A-Zero	S16		1<-->1 Range: -10---10; Default 0
43239	Grid current sampling middle point compensation Igrid-B-Zero	S16		1<-->1 Range: -10---10; Default 0
43240	Grid current sampling middle point compensation Igrid-C-Zero	S16		1<-->1 Range: -10---10; Default 0
43241	Grid feedforward parameter VFB-Adj-Scale	U16		1<-->1 Range: 50--90, Default 80
43245	Leakage current Protection ILeakLim	U16	1mA	1<-->1mA Range: 50---800mA; Default 240mA
43246	PV iso protection RisoLim	U16	1K	1<-->1K Range: 20k---1000k; Default 200K
43247	LVRT Setting	U16		BIT00, Reserved BIT01, LVRT Var Specification 0 Capacitive, 1 Resistive, Default 0 BIT02, US Rule21 VRT Enable 0 disable, 1 enable. Default:1 BIT03, US Rule21 FRT Enable 0-disable;1 enable. Default:1 BIT04,Brazil LVRT Enable 0-disable;1 enable. Default:1
43248	Const Voltage Mode	U16	0.1V	Constant DC voltage Mode Range 100V---850V, Default 600V
43249	Special Settings	U16		See Appendix 15
43250-	Datalogger SN	U32		Transfer the SN number to Dec and display

43251				it
43252	Reserved	U16		Datalogger SN reserved
43253	Reserved	U16		Datalogger SN reserved
43254	Reserved	U16		Datalogger SN reserved
43255-43256	Datalogger IP Address	U32		Transfer the IP address to Dec and display it
43257	Datalogger signal strength	U16		Reserved for wireless devices
43258	Datalogger status word 1	U16		All 0000 = normal operation; BIT00: 0---INV&logger COM normal 1--- INV&logger COM fail BIT01: 0---logger& Server COM normal 1--- logger& Server COM fail BIT02: Reserved BIT03-BIT15:Reserved
43290	Standard Special Function code	U16		BIT01: G100 2022 Standard Manual Recovery Limit Selection, 0 Resi, 1 non-Resi, default 0; BIT02-BIT15: Reserved
43301	Internal fan self-check function ON/OFF	U16		0000H—Self Check OFF 0001H—Self Check ON Note: Send the fan self check command, check the 04 code 33095. If it has fan alarm (F011H/F015H), indicates fan alarm.
43302	Special function control word	U16		See Appendix 16
43303	FCAS Droop Switch	U16		0 OFF, 1 ON; Set FCAS parameters through Modbus,power off not save
43304	LSB Parameter	U16	0.01Hz	FCAS norminal band underfrequency boundary
43305	HSB Parameter	U16	0.01Hz	FCAS norminal band pverfrequency boundary
43306	LDB Parameter	U16	0.01Hz	FCAS Droop response stop underfrequency value
43307	HDB Parameter	U16	0.01Hz	FCAS Droop response stop overfrequency value
43308	Pcharge	U16	10W	Charge power
43309	Pdischarge	U16	10W	Discharge power
43310	FCAS Frequency adjust mode	U16		0x09 step mode, 0x0A droop mode;
43311	Passive mode setting			0 OFF, 0xAA55 ON, default 0; For single register 0x06 write
43312	Clear grid backup overload alarm	U16		For backup overload alarm after 3 times when the backup is forced to disconnect. Use this to force reconnect the backup port 0xAA55 Enable For single register 0x06 write
43313	Clear AFCI Alarm	U6		Used for when AFCI alarm account 5 times per day. Requires manual clear Clear the alarm: 0xAA55 Enable, others not effective Only support 0x06 function code write;

43314	HMI Alarm Led Disable Setting	U16		0 Not Disable, 1 Disable; Default 0; Others not effective; Only support 0x06 function code write; Only support 5G,S5 1PH LV RHI
43321	Factory Open Loop Test Mode Enable	U16		0x0000-Disable, 0xAA55-Enable; others are invalid; In order to prevent misoperation, it can only be set when there is PV and when it is in the standby state. Currently only supports off-grid energy storage inverter;
43322	One Click Reset Enable Command	U16		0000H---Disable 0001H---Enable, Use Function Code 04 Address 33219 Get random value xxxxH for enable Note: One Click Reset, Function: Factory Reset and Clear Energy Data
43323	One Click Reset Operating Command	U16		0000H---Disable xxxxH---Enable, 1、xxxxH Enable Value is from function code 04 address 33219 2、 Read the 33220 register address through the 04 function code, and get 0045H ('E'), which means the end of one click reset. Or force a wait of 5 minutes and the timeout expires Note: If the operating command is not received within 10s after the enable command is sent, the enable command will automatically become invalid.
43324	One Click Charge Enable Command	U16		0-Disable, 1-Charge, Others not effective;
43325	One Click Charge Operating Command	U16		0x0000-Disable, 0xAA55 Enable; Others invalid; If One Click Charge Enable Command is disabled, One Click Charge Operating Command will disable as well. If One Click Charge Enable Command is enabled but not receive the One Click Charge Operating Command enable, it will automatically disable
43326	Total Backflow Current Setting	S16	0.1A	10<-->1A, Range 0-500, Default 0; 43073 BIT07 needs to be Enabled; For 3ph RHI, needs to have 43073BIT06 =0;
43327	Phase A Backflow Current Setting	S16	0.1A	10<-->1A, Range 0-170, Default 0; 43073 BIT07 needs to be Enabled; Needs to have 43073BIT06 =1; Only for F2 3PH RHI
43328	Phase B Backflow Current Setting	S16	0.1A	10<-->1A, Range 0-170, Default 0; 43073 BIT07 needs to be Enabled; Needs to have 43073BIT06 =1; Only for F2 3PH RHI
43329	Phase C Backflow Current Setting	S16	0.1A	10<-->1A, Range 0-170, Default 0; 43073 BIT07 needs to be Enabled;

				Needs to have 43073BIT06 =1; Only for F2 3PH RHI
43330	VRT Enable Switch	U16		0xA5 –VRT Disable, 0x5A –VRT Enable, Others invalid; Default values are determined according to national standards;
43331	Discharge SOC	U16	1%	1<-->1% Range: 0~100%; Default:90% When reach this SOC, battery switch to discharge For off grid inverter
43332	Discharge Voltage (Lead-acid)	U16	0.1V	1<-->0.1V Range: 50~60V; Default: 54V; When reach this voltage, battery switch to discharge For off grid inverter
43333	Lead-acid Equalizing Enable/disable	U16		0: Disable 1:Enable Default 0;
43334	Lead-acid Equalizing Voltage	U16	0.1V	1<-->0.1V Range: 48~65V; Default 60V
43335	Lead-acid Equalizing Time	U16	1min	1<-->1min Range: 5~900min, Default 60min;
43336	Lead-acid Equalizing Overtime	U16	1min	1<-->1min Range: 5~900min, Default 120min;
43337	Lead-acid Equalizing Interval	U16	1day	1<-->1day Range: 1~90day; Default: 30day;
43338	Lead-acid Equalizing Activate immediately	U16		0:Disable, 1:Enable, Default 0; Need to Enable 43333 first;
43339	Lead-acid Floating charge current limit value	U16	0.1A	10<-->1A Range 4.0-10.0A, Default 4.0A
43340	Generator Set Enable Switch	U16		BIT00: Generator Input Mode, 0 Manual, 1 Auto, Default 0; BIT01: Generator Charge Enable, 0 Enable, 1 Disable, Default 0; BIT02-15: Reserved
43341	AC input type	U16		0:Grid, 1:Generator; Others not valid; Default 0;
43342	Max grid charging current	U16	0.1A	Range: 0~100A (Limited by max charging current); Default 80A;
43344	Generator charge Lithium Battery start up SOC	U16	0.01	Under Generator mode, start up generator and charge Lithium battery SOC 1<-->1%, Range (Overdischarge SOC+5%) ~ 100%, Default (Overdischarge SOC+5%)
43345	Generator charge Lithium battery stop SOC	U16	0.01	1<-->1%, Range(Start up SOC+5%) ~ 100%, Default 80% Note: Startup SOC< Stop SOC
43346	Generator charge	U16	0.1 V	10<-->1V, range 40~55V, default 46V

	lead acid battery startup voltage			For the time being, only F2 low-voltage energy storage is supported
43347	Generator charge lead acid battery stop voltage	U16	0.1 V	10<-->1V, range (start-up voltage +2V) ~ 60V, Default 55V For the time being, only F2 low-voltage energy storage is supported
43348	Battery Wake Up Voltage Setting	U16	0.1 V	10<->1V LV RHI: 40-60V, Default 40V Off-Grid: 40-60V, Default 40V 1P HV RHI: 120V-500V, Default 120V 3P HV RHI:120V-600V, Default 120V Note: 43348-43349 needs to work with 43110 BIT03
43349	Battery Wake Up Time Setting	U16	1 S	1<->1S Range: 20-1200s, Default : 20s
43350	Reset DSP	U16		Writing 0xAA55 is valid, others are invalid; After successful execution, 0x55AA is automatically assigned; Only support 0x06 function code writing;
43351	Buzzer switch	U16		0: Disable 1:Enable, Others not valid; Default 1; For off grid inverter
43352	Battery cable resistance	U16	1m $\Omega$	1<-> 1m $\Omega$ , 0: No compensation; Range: 1~999m $\Omega$ , Others not valid; For off grid inverter
43353	With grid, PV supports loads	U16		0: Disable 1:Enable Default 0; For off grid inverter
43354	No Battery, PV supports loads	U16		0:Disable 1:Enable ; Default 0; For off grid inverter
43355	Overload Backup Enable	U16		0: Disable 1:Enable; Default 1; For off grid inverter
43356	Output priority	U16		0: Self-use 1: Battery reserve 2: Backup Default 0; For off grid inverter
43357	Charging priority	U16		0: PV Only 1: PV&GRIG Default 0; For off grid inverter
43361	MPPT Scanning Interval	U16	1 S	1<-->1 sec; Default 1800 (30 minutes), range 600-10800 (10 minutes-180 minutes))
43362	CT transformation ratio	U16		Range: 1~30000; Explanation: When 43073BIT13 is set to CT, this register

				takes effect;
43363	Forced start of generator	U16		0 is invalid, 1 is valid; Default 0; Other invalid; After a single write of "1", the inverter is immediately connected to the starting generator, and once the conditions for stopping the generator are met, the data in this register is automatically cleared to 0;
43364	Rated input power of generator	U16	0.1 kW	10<-->1kW;
43365	Generator setting switch	U16		BIT00: Generator connection position, 0 generator port, 1 power grid port; Default 0; BIT01: With Generator, 0No, 1Yes; Default 0; BIT02: Generator enable signal, 0: not enabled, 1: enabled; Default 0; BIT03: AC Coupling Position, 0 GEN port, 1 Backup port; Default 0; BIT04-15: Reserved Instructions for writing BTlxx: The upper computer first reads the current value of this register, and then changes the corresponding BIT value based on the current value as needed before writing;
43366	Forced stop of generator	U16		0 is invalid, 1 is valid; Default 0; Other invalid; When the generator is in the startup state, the inverter immediately stops the generator after a single write of "1" in this register;
43367	Maximum allowable percentage of generator	U16	0.01	Gen_Max_Run_Pct; 1<-->1%; Range 50%~100%, default to 100%
43368	Generator target power	U16	0.1 kW	10<-->1kW; Gen_Target_Power, default to 90% of the rated input power of the generator;
43369	Generator charging power	U16	0.1 kW	1<-->1W, range 0 - maximum charging power of the corresponding model, default 0;
43370	Parallel Operation Total Backflow Power Setting	S16	100W	1<-->100W, Range 0-1100, Default 0; Effective when 43073BIT10 Enabled, and 43073BIT12 = 0; For F2 hybrids parallel operation
43371	Parallel Operation Phase A Backflow Power Setting	S16	100W	1<-->100W, Range 0-1100, Default 0; Effective when 43073BIT10 Enabled, and 43073BIT12 = 1; For F2 hybrids parallel operation
43372	Parallel Operation Phase B Backflow Power Setting	S16	100W	1<-->100W, Range 0-1100, Default 0; Effective when 43073BIT10 Enabled, and 43073BIT12 = 1; For F2 hybrids parallel operation

43373	Parallel Operation Phase C Backflow Power Setting	S16	100W	1<-->100W, Range 0-1100, Default 0; Effective when 43073BIT10 Enabled, and 43073BIT12 = 1; For F2 hybrids parallel operation
43374	Function setting enable switch	U16		BIT00: AC output control switch 0: Disable, 1: Enable; When Enable is selected, when the inverter detects that there is a power grid, it forces (regardless of the Backup enable switch) to stop the Backup side output; When no power grid is detected, force (independent of the Backup enable switch) to turn on the Backup side output; When Disable is selected, the Backup output is controlled based on the Backup enable switch and off grid battery over discharge logic;; Disable by default; BIT01: Automatic battery wake-up switch 0: Disable, 1: Enable; Disable by default; After setting Enable, the inverter performs a wake-up action with a duration of 43376 when the battery voltage is not detected when powered on; BIT02: Reserved BIT03: Digital control signal switch , 0-OFF,1-ON, Default 0 BIT04: Analog control signal switch , 0-OFF,1-ON, Default 0 BIT05-15: Reserved; Note: Operating instructions for writing BTIxx: The upper computer first reads the current value of this register, and then changes the corresponding BIT value based on the current value as needed before writing;
43375	Dry contact function selection	U16		Low byte indicates dry contact output function: 1: Generator control; 2: Parallel and offline synchronization signal; Default 1; Other invalid; High Bytes: Reserved
43376	Automatic battery wake-up duration setting	U16		1<-->1S Range: 20-300S, default value: 60S
43377	Upgrade Type Selection	U16		00 represents the upgrade of the main DSP; 05 represents AFCI board upgrade; Note: Before executing the upgrade, each time the upgrade is sent, the corresponding enable command is sent (for example, the main DSP sends 0 and the AFCI board sends 5)
43378	Single function operation	U16		0x0000: Invalid 0x0001: CT detection function After setting, read register 33290 to obtain the detection

				<p>result;</p> <p>0x0002: G100-2022 fault manual clearing;</p> <p>0x0003: G100-2022 Fault Limit Clearance;</p> <p>The specific removal method is related to 43290BIT01, see G100 standard for details;</p> <p>0x0004: The in-plant test mode is on;</p> <p>0x0005: In-plant test mode is turned off;</p> <p>0x0006~0xFFFF: Undefined</p> <p>This register is used for single function settings to take effect;</p>
43380	Parallel Physical Address ID	U16		<p>Range: 0-10; Default 0;</p> <p>0-Not Set, 1-10-Physical Address ID; Others not effective</p>
43381	Master Create Method	U16		<p>Range: 0-1; Default 1;</p> <p>0: Automatic competition; 1: Manual Set; Others not effective</p>
43382	Manual Set Master/Slave	U16		<p>Range: 0-1; Default 0; 0: Slave; 1: Master;</p> <p>Others not effective</p>
43383	Critical Load capacity connected on this phase (where this inverter is on)	U16	0.1kVA	<p>10&lt;-&gt; 1.0kVA</p> <p>1PH LV Off-grid inverter , Range:0-50.0kVA;</p> <p>Default 4.0kVA; Outrange not effective</p>
43384	Inverter Connected Phase Setting	U16		<p>Range: 0-9; Default 0;</p> <p>0: Not Set;</p> <p>1: 1PH Sysem;</p> <p>2: Phase A of 3PH system;</p> <p>3: Phase B of 3PH system;</p> <p>4: Phase C of 3PH system;</p> <p>5: Split phase system;</p> <p>6: AB phase (three-phase forming)</p> <p>7: BC phase (three-phase forming)</p> <p>8: CA phase (three-phase forming)</p> <p>9: ABC phase (three-phase system)</p> <p>other invalid;</p>
43385	Battery Connected Mode Setting	U16		<p>Range: 0-1; Default 0;</p> <p>0 : Battery Parallel, Battery equilibrium based on inverters' rated power in off grid</p> <p>1: Battery Individual, Battery equilibrium based on battery actual capacity Others not effective</p>
43386	Parallel parameter synchronization request	U16		<p>Range: 0-1; default 0; other invalid;</p> <p>0: no synchronization required, 1: synchronization required;</p> <p>The datalogger reads this register at a fixed time interval. When 1 is read, the parallel parameters are synchronized based on the this inverter parameters, and this register is set to 0 after completion;</p> <p>For off-grid energy storage inverter;</p>

43387	Parallel operation - Rated capacity of connected batteries	U16	0.1kWh	10<-> 1kWh Range: 0-50.0kWh; Default 3.0kWh;
43388	Parallel operation – Number of inverters connected	U16		Range: 2-10; Default 2; Others Invalid; For parallel systems only
43389	Parallel communication master slave settings	U16		0-host, 1-slave, default 1; Other invalid Note: The collector and electricity meter need to be connected to the host for parallel communication;
43390	Parallel synchronization lock	U16		0- Unlocked, 1- Locked; Default 0; explain: 1. In a parallel system, after each inverter is locked from the machine, except for the "parallel synchronous locking" parameter, other parameters cannot be set; 2. When the app reads' parallel synchronization lock 'as' locked', it prompts' inverter settings locked 'when setting other parameters;
43391	Single machine/parallel machine settings	U16		0-single machine, 1-parallel machine; Default 0; Can't use with 43483BIT00;
43392	Power limit setting for battery strong charging in parallel systems	U16	10 W	1<-> 10W Scope: 1000W~rated total power of parallel system (local rated power * total number of parallel units, temporarily only supporting parallel operation of inverters in the same power rate range)
43393	Charging power of parallel system generator	U16	0.1 kW	10<-> 1kW Range: 0~rated total power of parallel system (local rated power * total number of parallel units, temporarily only supporting parallel operation of inverters in the same power rate range)
43394	Grid charge power limit for battery reserve function	U16	10 W	1<-> 10W Range: 300W (the lower limit of the parallel system is 1000W) ~ rated power (under the parallel system, the machine's calibrated power * the total number of parallel units, temporarily only support the same power section inverter parallel), the default rated power
43398	IV curve 128 point scan request flag bits	U16		0: No operation 1: Request IV curve scan
43399	Serial number of 128 point data sets of IV curve	U16		The low byte indicates the group serial number, High bytes indicate the number of string reads; (After sending, the 04 function code reads the 33343-33406

				register to obtain the IV curve data of the corresponding string Times 1: 1-64 point voltage value Times 2: 65-128 point voltage value Times 3: 1-64 point current value Times 4: 65-128 point current value)
43400	P and Q control OFF Command	U16		01: OFF Volt-Watt 02: OFF all the Q mode: Volt-var, Fixed Q, Fixed PF, etc. Others not effective
43401	DRM3 Mode Q Percent Set	U16	0.01%	10000<-->100%; Range: 0---60%; Default:30%;
43402	DRM7 Mode Q Percent Set	S16	0.01%	-10000<-->-100%; Range: 0--- (-60%); Default:-30%;
43403	Volt-watt 01 Mode P response Time P3Tau	U16	0.01s	6000<-->60s; Hawaii Code, Range: 0.5-60s; Default:10s; Set Accuracy 0.1s; Austria Code, Range: 3-60s; Default 5s; Set Accuracy 1s
43404	Power reduce Slop Limit (Wgra-)	U16	0.01%	10000<-->100% ; Range : 5%---600% ; Default:16.67%; Set Accuracy 1%;
43405	Battery Psmax Percent Set	U16	0.01%	10000<-->100%, Range:0-120%, Default 100%; Only Support CEI-021 underfrequency ramping, control battery max discharge power
43406	Standard working mode: Reactive power percentage corresponding to V2 in 0x02 mode	S16	0.01%	10000<-->100%, -10000<-->-100% Range: -60%---60%; Default:0%
43407	Standard working mode: Reactive power percentage corresponding to V3 in 0x02 mode	S16	0.01%	10000<-->100%, -10000<-->-100% Range: -60%---60%; Default:0%
43408	Qdroop of Volt-var under Spanish NTS631 standard	U16	0.01%	10000 <-->100% Range2%-7%, Default2%
43409	0C Working Mode Grid Export P/Q 1 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43410	0C Working Mode Grid Export P/Q 2 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43411	0C Working Mode Grid Export P/Q 3	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:-44%

	Reactive power %			
43412	0C Working Mode Grid Import P/Q 1 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43413	0C Working Mode Grid Import P/Q 2 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43414	0C Working Mode Grid Import P/Q 3 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:+44%
43415	Standard working mode: Response time of Volt-Var under IEEE1547-2018 (UL240-A2 and other new American standards)	U16	0.1s	100<-->10s Range: (300s-5000s); Default:300s Vref-time;
43416	0C Working Mode Grid Export P/Q 4 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43417	0C Working Mode Grid Export P/Q 5 Reactive power %	S16	0.01%	10000<-->100% Range: (-60%) --- (+60%); Default:0%
43418	0C Working Mode Grid Export P/Q 1 Active power %	U16	0.01%	10000<-->100% Range: (0%) --- (100%); Default:0%
43419	0C Working Mode Grid Export P/Q 2 Active power %	U16	0.01%	10000<-->100% Range: (0%) --- (100%); Default:50%
43420	0C Working Mode Grid Export P/Q 3 Active power %	U16	0.01%	10000<-->100% Range: (0%) --- (100%); Default:60%
43421	0C Working Mode Grid Export P/Q 4 Active power %	U16	0.01%	10000<-->100% Range: (0%) --- (100%); Default:90%
43422	0C Working Mode Grid Export P/Q 5 Active power %	U16	0.01%	10000<-->100% Range: (0%) --- (100%); Default:100%
43423	Standard working mode: Reference voltage Vref in 0x02 Volt-Var mode	U16	0.1V	10<-->1V Used in Hawaii and IEEE1547-2018 standards;

43424	Power Control Slope	U16	0.01%/min	(3000<-->30%/min; Range: 10%—100%; Default: German Vde Code30%/min, Others 0. Note: Set to 0, at this time the power slope is immediate, not limited by the setting) (When the HMI performs epm control by detecting Ct or meter, the power control slope must be set to 0 to ensure its fast response.)
43425	Remote Active Power Limit Percentage	U16	0.01%	10000<-->100%; Range (0-110%) Default 110%; 100%->Rated Power (Note: This value only takes effect when the 43426BIT00 remote power control enable bit is 1, and it needs to be saved after power off)
43426	Power Control Command Word	U16		BIT00: Remote power control enable flag 1--Enable; 0--Disable; Default 0 Power off saving BIT01: Maximum power limit sign 0—Default1.09 Rated; 1—1.1 Rated; Power off saving BIT02-BIT15: Reserved
43427	UN-G-V 03	U16	0.1V	1<-->0.1V R14-208Range: 41.6-183.0VDefault: 104.0V R14-240Range: 48.0-211.2VDefault: 120.0V Used in Hawaii and IEEE1547-2018 standards;;
43428	UN-G-V 03-T	U16	10ms	1<-->10mS Range: 0.5-21.0s Default: 2.0s Used in Hawaii and IEEE1547-2018 standards;;
43429	Slope of change in power surge (Wnor)	U16	0.01%/second	10000<-->100%; Range1%-100%,Default100%; Used in Hawaii and IEEE1547-2018 standards;;
43430	Change slope of connection and reconnection (Wcon)	U16	0.01%/second	10000<-->100%; Range0.10%-100%,Default0.33%; Used in Hawaii and IEEE1547-2018 standards;;
43431	Power up control slope	U16	0.01%/min	3000<-->30%/min; Range: 10%—100%; Default: 16.66%
43432	Power down control slope	U16	0.01%/min	3000<-->30%/min; Range: 10%—100%; Default: 50%
43433	Standard operating mode: D-point power factor (PFdSet) setting in 05 mode	S16	0.001	
43434	Standard operating mode:	U16	0.1 V	

	05 mode P-PF and Dubai standard or Italian CEI 0-21 Standard enable(lock in) Grid Voltage (Vset) Settings			
43435	Standard operating mode: 05 mode P-PF and Dubai standard or Italian CEI 0-21 Standard disable(lockout) Grid Voltage (Vset) Settings	U16	0.1 V	
43436	Active or reactive priority control settings	U16		
43482	Battery healing SOC	U16	0.01	
43483	Hybrid function control word	U16		
43484	AC Coupling stop SOC	U16	0.01	
43485	AC Coupling stop voltage	U16	0.1 V	
43486	AC Coupling Max Fre	U16	0.01 Hz	
43487	Peak SOC	U16	0.01	
43488	Peak-shaving max usable grid power	U16	100 W	
43493	Time-chargeing charge start hour 6	U16	1 hour	
43494	Time-chargeing charge start minute 6	U16	1 min	
43495	Time-chargeing charge end hour 6	U16	1 hour	
43496	Time-chargeing charge end minute 6	U16	1 min	
43497	Time-chargeing discharge start hour	U16	1 hour	

	6			
43498	Time-charging discharge start minute 6	U16	1 min	
43499	Time-charging discharge end hour 6	U16	1 hour	
43500	Time-charging discharge end minute 6	U16	1 min	
43501	The way of historical energy query	U16		1. Query by monthly data, that is, query the details of the day; 2. Query by year data, that is, query monthly details; 3. Query by total data, that is, query the annual data for ten years; other invalid; 43501-43503 must be written at the same time, and when the corresponding data Range is valid, the query action is valid, and the data of 33601-33603 is read after at least 200ms interval;
43502	Year/month of historical energy query	U16		High byte: year, Range0-99, others are invalid; Low byte: month, Range1-12, others are invalid; When querying by month, the values of the year and month are required to be valid; When querying by year, the value of the year needs to be valid, and the value of the month can be written into 0x00; When querying by total data, this register can be written to 0x00;
43503	Data Types of Historical Energy Query	U16		1: PV Generation , 2: Grid Export 3: Grid Import,
43506	Query method of fault/warning record	U16		1: fault record, 2: warning record, other invalid; 43506-43507 must be written at the same time, and the corresponding data Range is valid, the query action is valid, and the data of 33679 is read after at least 200ms interval;
43507	The query sequence number of the fault/alarm record	U16		1: The latest 1-5; 2: The latest 6-10; 3: The most recent 11-15; 4: The most recent 16-20; 5: The most recent 21-25; 6: The most recent 26-30; 7: The most recent 31-35; 8: The most recent 36-40; other invalid;
43600	Bluetooth connection status	U16		Start from 43600 for 100 registers are for all in one hybrid; Write from external: monitoring stick, APP, etc. 1 no connect, 2 connecting, 3 connected;
43601	Ethernet connection status	U16		1 no connect, 2 connecting, 3 connected;

43602	WIFI connection status	U16		1 no connect, 2 connecting, 3 connected;
43603	WIFI signal strength	U16	%	0-100
43604	Default work mode Indicator work mode	U16		1 Mode one, 2 mode two, 3 mode threeE; Default 1; Save to Flash;
43605	Indicator off delay time set	U16	sec	Set 1-60 seconds; Default 0; Save to Flash;
43606	Alarm indicator enable set	U16		1 ON, 2 OFF; Default 1 Save to Flash;
43607	Alarm indicator time set	U16	min	0, Constant ON and sound ; can set 1-60 mins; Default 0; Save to Flash;
43608	Dry contact	U16		0 off, 1 closed; Default 0 OFF For single register write
43609	Indicator board switch set	U16		Bit00, buzzer switch, 0 ON 1OFF; Bit01-15, Reserved
43620	Password Level	U16		1 installer, 2 End users, 3 Administrators, others are invalid; When using the 0x06 command to write to this register, you can read 43621~43623 to obtain the password of the corresponding user level; use the 0x10 command to write to 43620~43623 at the same time, you can modify the password corresponding to the user level; Password save when power off; used for F2 energy storage inverter;
43621	1st and 2nd digit password	U16		The initial password is ASCII "00"; For F2 energy storage inverter;
43622	3rd and 4th digit password	U16		The initial password is ASCII "00"; For F2 energy storage inverter;
43623	5th and 6th digit password	U16		The initial password is ASCII "00"; For F2 energy storage inverter;
43624	AFCI detection enable switch	U16		0 not enabled, 1 enabled; Default 0 BIT0: PV1 AFCI detection enable bit BIT1: PV2 AFCI detection enable position BIT2: PV3 AFCI detection enable position BIT3: PV4 AFCI detection enable position BIT4: PV5 channel AFCI detection enable bit BIT5: PV6 AFCI detection enable bit BIT6: PV7 AFCI detection enable bit BIT7, PV8 AFCI detection enable bit BIT8: PV9 AFCI detection enable bit BIT9: PV10 AFCI detection enable bit BIT10-15: Reserved
43630	LG high-voltage battery parallel switch	U16		0: Off, 1: On;
43631	LG High Voltage	U16	0.1 V	Range: 350~450V; Default 410V;

	Battery Deadband Lower Limit			
43632	LG High Voltage Battery Deadband Upper Limit	U16	0.1 V	Range: 350~450V; Default 420V;
43633	LG high-voltage battery charging slope	U16	1 W/V	Scope: 20-2000; The default for 10H batteries is 250, and the default for 16H batteries is 350;
43634	Maximum charging voltage of LG high-voltage battery	U16	0.1 V	Range: 350~450V; Default 450V;
43635	Discharge slope of LG high-voltage battery	U16	1 W/V	Scope: 20-2000; The default for 10H batteries is 250, and the default for 16H batteries is 350;
43636	Maximum discharge voltage of LG high-voltage battery	U16	0.1 V	Range: 350~450V; Default 350V;
43637	LG high-voltage battery charging limit power	U16	1 W	10H battery range: 0-5000W; 16H battery range: 0-7000W;
43638	LG high-voltage battery discharge limit power	U16	1 W	10H battery range: 0-7000W; 16H battery range: 0-11000W;
43639	LG high-voltage battery communication failure timeout	U16	0.5 min	Range: 0.5~1440min; Default 10 minutes;
43640	LG high-voltage battery sleep retention time	U32	1 s	Range: 0-86400; Default 86400;
43642	LG high-voltage battery black start enable	U16		Range: 0-1; Default 0; In the case of parallel connection of batteries, only for the main battery transmission;
43643	LG high-voltage battery black start initialization time	U16	1 s	Range: 5-200s; Default 15s;
43650	Backup voltage droop min voltage set	U16	0.1 V	10<-->1V; Range 120~230V, default 180V;
43652	POE Enable Setting	U16		BIT00: POE switch setting, 0 not enabled, 1 enabled, default 1; BIT01: DHCP setting, 0 dynamic, 1 static, default 0;

				BIT02-15: Reserved Note: Only for models that support POE interface and its functions;
43653	POE IP Address	U32		Data format description: For example, the IP address is 192.168.0.2 then 43653 = 0xC0A8 (where hexadecimal 0xC0 = decimal 192, hexadecimal 0xA8 = decimal 168), 43654 = 0x0002 (where hexadecimal 0x00 = decimal 0, hexadecimal 0x02 = decimal 2);
43655	POE Subnet mask	U32		The data format is the same as 43653-43654
43657	POE gateway	U32		The data format is the same as 43653-43654
43659	DNS server address	U32		The data format is the same as 43653-43654
43661	Backup DNS server address	U32		The data format is the same as 43653-43654
43663	Port number	U32		The default port number is 502
43665	LEDVANCE Hub Control Switch	U16		Bit0: Load 1 relay control switch, 0 open, 1 closed; Default 0; Bit1: load 2 relay control switch, 0 open, 1 closed; Default 0; Bit2: load 3 relay control switch, 0 open, 1 closed; Default 0; Bit3: load 4 relay control switch, 0 open, 1 closed; Default 0; Bit4~Bit15: Reserved Write BTIxx operation instructions: the host computer first reads the current value of this register, and changes the value of the corresponding BIT as needed on the basis of the current value before writing;
43680	Calibrate the total battery charge energy	U32	1 kWh	Only 0x10 function code settings are supported; 43680 is high, 43681 is low; For the time being, it is only used in S5 low-voltage energy storage V48 and later versions;
43682	Calibrate the total battery discharge energy	U32	1 kWh	Only 0x10 function code settings are supported; 43682 is high, 43683 is low; For the time being, it is only used in S5 low-voltage energy storage V48 and later versions;
43684	Calibrate the total load consumption	U32	1 kWh	Only 0x10 function code settings are supported; 43684 is high, 43685 is low; For the time being, it is only used in S5 low-voltage energy storage V48 and later versions;
43700	Over feed in power under digital control signal	U16	10 W	1<--->10W;

43701	Minimum delay time for digital control signals	U16		
43702	Maximum set feeder power at analog control signals	U16		
43703	Minimum set feeder power for analog control signals	U16		
43704	Minimum delay time at analog control signals	U16		
43705	EPS function	U16		"0xA5 - Not enabled, Backup relay is bypassed according to register address 43111" The electrical enable setting is controlled 0x5A-Enable, when connected to the grid, the Backup relay is forcibly disconnected, when it is not connected to the grid, Delay (time can be set) closed; Default 0xA5, others are invalid; "
43706	LEDVANCE Hub connection setting	U16		0 not connected, 1 connected, default 0;

## 6. Example

### 6.1. Error messages

Send (HEX):		Response (HEX):	
01 04 88 B8 00 01 9A 4F		01 84 02 C2 C1	
01	Address	01	Address
04	Function code	84	Function code
88 B8	Register Start Addr	02	error code 02 (Invalid data address)
00 01	1 register	C2 C1	CRC Check
9A 4F	CRC Check		

## 6.2. 04 Function code

Acquire 1 operating message

Send (HEX):		Response (HEX):	
01 04 88 B8 00 01 9A 4F		01 04 02 20 30 A0 E4	
01	Address	01	Address
04	Function code	04	Function code
88 B8	Register Start Addr	02	Byte number
00 01	1 register	20 30	Data
9A 4F	CRC Check	A0 E4	CRC Check

Acquire multiple operating message

Send (HEX):		Response (HEX):	
01 04 80 E8 00 03 19 FF		01 04 06 00 F8 00 0C 00 0E 80 80	
01	Address	01	Address
04	Function code	04	Function code
80 E8	Register Start Addr	06	Byte number
00 03	3 register	00 F8	Data 1
19 FF	CRC Check	00 0C	Data 2
		00 0E	Data 3
		80 80	CRC Check

## 6.3. 03 function code

Acquire 1 setting

Send (HEX):		Response (HEX):	
01 03 A8 01 00 01 F5 AA		01 03 02 00 64 B9 AF	
01	Address	01	Address
03	Function code	03	Function code
A8 01	Register Start Addr	02	Byte number
00 01	3 register	00 64	Data
F5 AA	CRC Check	B9 AF	CRC Check

Acquire multiple settings

Send (HEX):		Response (HEX):	
01 03 A7 F8 00 03 A7 4E		01 03 06 00 16 00 0A 00 17 08 BA	
01	Address	01	Address
03	Function code	03	Function code
A7 F8	Register Start Addr	06	Byte number
00 03	3 register	00 16	Data 1
A7 4E	CRC Check	00 0A	Data 2
		00 17	Data 3
		08 BA	CRC Check

#### 6.4. 06 function code

Set 1 setting

Send (HEX):		Response (HEX):	
01 06 A7 FF 00 BE 1A FE		01 06 A7 FF 00 BE 1A FE	
01	Address	01	Address
06	Function code	06	Function code
A7 FF	Register Start Addr	0B FE	Register Start Addr
00 BE	ON	00 A1	ON
1A FE	CRC Check	2B A6	CRC Check

#### 6.5. 10 function code

Set multiple settings

Send (HEX):		Response (HEX):	
01 10 A7 F8 00 03 06 00 16 00 0A 00 17 53 10		01 10 A7 F8 00 03 22 8D	
01	Address	01	Address
10	Function code	10	Function code
A7 F8	Register Start Addr	A7 F8	Register Start Addr
00 03	3 registers	00 03	3 registers
06	Byte number	22 8D	CRC Check
00 16	Data 1		
00 0A	Data 2		
00 17	Data 3		
53 10	CRC Check		

## 7. Appendix

### 7.1. Appendix 1

BIT	Description
BIT0	Model setting is complete.
BIT1	National standard setting is completed.
BIT2	Power curve setting is complete.
BIT3	Module identification mark (for 110kW models: 0---Onsemi module; 1---Infinoen module).
BIT4	Fan detection hardware ID identification flag (for 5-20kW models: 1--supports fan detection, 0--does not support fan detection)
BIT5	Australian energy storage inverter FCAS function status flag (0, the FCAS function is not running, other working modes can be executed; 1, the FCAS function is running and does not respond to other working modes)
BIT6	AFCI self-test end flag: 1---self-test is over, 0---self-test is not over or self-test is not completed
BIT7	AFCI self-test result flag bit: 1---self-test with arc, 0-self-test without arc
BIT8, BIT9	Main DSP chip type: 00---F28062, 01---F28374S (Analysis: BIT9 is in the front, BIT8 is in the back, 01---BIT9 is 0, BIT8 is 1), this flag is used for external and remote upgrades distinction.
BIT10	IGBT screening completion flag bit: 0--screening is not completed or has not been screened, 1--screening is completed.
BIT11~BIT13	Resv.
BIT14	DSP waveform data flag (0---no waveform; 1---waveform ready). (The default is 0, after the initial setting is successful, it is set to 1, and it can only run after the model and national standard settings are completed)

### 7.2. Appendix 2

33095 Register	Status		Display	
	1P 2G	1、30KW series 2、15KW 3P 3、all 4G	1P 2G	1、30kW series 2、15KW 3P 3、all 4G
0000H	Normal operation	waiting	Generating	Waiting
0001H	\	OpenRun	\	OpenRun
0002H	Waiting	SoftRun	Waiting	SoftRun
0003H	Initializing	Generating	Initializing	Generating
0004H	\	Bypass inverting Running	\	Standby
0005H	\	Bypass inverting	\	StandbySynoch

		synchronize		
0006H	\	Bypass grid running	\	GridToLoad
000FH	\	Normal running	\	Normal
1004H	Grid Off	\	Grid Off	\
.....	.....		.....	
F010H	Grid surge(Warn)		Surge Alarm	
F011H	Fan fault(Warn)		Fan Alarm	
F015H	Fan fault(Warn External)		Fan_H Alarm	
.....	.....		.....	
1010H	Grid overvoltage		OV-G-V	
1011H	Grid undervoltage		UN-G-V	
1012H	Grid overfreq		OV-G-F	
1013H	Grid underfreq		UN-G-F	
1014H	reverse current		Reve-Grid	
1015H	No-grid		NO-Grid	
1016H	Unbalanced grid		G-PHASE	
1017H	Grid Frequency Fluctuation		G-F-FLU	
1018H	Grid Over Current		OV-G-I	
1019H	Grid current sampling error		IGFOL-F	
.....	.....		.....	
1020H	DC Over Voltage		OV-DC	
1021H	DC Bus Over Voltage		OV-BUS	
1022H	DC Bus Unbalance		UNB-BUS	
1023H	DC Bus Under Voltage		UN-BUS	
1024H	DC Bus Unbalance 2		UNB2-BUS	
1025H	DC(Channel A ) Over Current		OV-DCA-I	
1026H	DC(Channel B ) Over Current		OV-DCB-I	
1027H	DC interference		DC-INTF.	
1028H	DC reverse connection		Reve-DC	
1029H	PV midpoint grounding fault		PvMidIso	
.....	.....		.....	
1030H	The Grid Interference Protection		OC-AC-TRANS	
1031H	The DSP Initial Protection		INI-FAULT	
1032H	Over temperature protection		OV-TEM	
1033H	PV insulation fault		PV ISO-PRO	
1034H	Leakage current Protection		ILeak-PRO	
1035H	Relay Check Protection		RelayChk-FAIL	
1036H	DSP_B Protection		DSP-B-FAULT	
1037H	DC Injection Protection		DCInj-FAULT	
1038H	12V Under Voltage Faulty		12Power-FAULT	

1039H	Leakage Current Check Protection	ILeak-Check
103AH	Under temperature protection	UN-TEM
.....	.....	.....
1040H	AFCI Check Fault	AFCI-Check
1041H	AFCI Fault	ARC- FAULT
1046H	The Grid Interference 02 Protection	GRID-INTF02
1047H	The Grid Current Sampling Error	IG-AD
1048H	IGBT Over Current	IGBT-OV-I
.....	.....	.....
1050H	Grid transient overcurrent	OV-IgTr
1051H	Battery hardware overvoltage fault	OV-Vbatt-H
1052H	LLC hardware overcurrent	OV-ILLC
1053H	Battery overvoltage	OV-Vbatt
1054H	Battery undervoltage	UN-Vbatt
1055H	Battery not connected	NO-Battery
1056H	<b>Backup overvoltage</b>	OV-VBackup
1057H	<b>Backup overload</b>	Over-Load
1058H	DSP Selfcheck error	DspSelfChk
105BH	DSP Detected Battery Overcurrent	BAT-DOC
.....	.....	.....
1060H	Slave Sync Signal Loss	SlaveLoseErr
1061H	Master Sync Signal Loss	MasterLoseErr
1062H	Slave Sync Signal Period Error	SlavePrd-Err
1063H	Master Sync Signal Period Error	MasterPrd-Err
1064H	Physical Address Conflict	Addr-Conflict
1065H	Heartbeat Loss	HeartbeatLose
1066H	DCAN Register Error	DCanErr
1067H	Multiple Master Error	MulMasterErr
1068H	Master Slave On-grid Off-grid Mode Conflict	ModeConflict
1069H	Master Off-grid Salve Connect Voltage Conflict	S-PlugVoltErr
106AH	Other Device Fault Flag	Others' Fault
...	...	
1070H	Battery hardware overvoltage 02	OV-Vbatt2-H

1071H	Battery hardware overcurrent	OV-Ibatt-H
1072H	Off grid Backup undervoltage	UN-VBackup
1073H	Bus midpoint hardware overcurrent	OV-Ibusmp-H
1074H	Battery startup fail	Batt-ON-Fail
1075H	DC 3 average overcurrent	OV-DC03-I
1076H	DC 4 average overcurrent	OV-DC04-I
1077H	Softrun timeout	Softrun-Tout
1078H	Off-grid to Grid Time out	GridConn-Tout
...	...	
2010H	Fail Safe	Fail Safe
2011H	Meter COM fail	MET_Comm_FAIL
2012H	Battery COM fail	CAN_Comm_FAIL
2014H	DSP COM fail	DSP_Comm_FAIL
2015H	BMS Alarm	Alarm-BMS
2016H	Battery selection not the same	BatName-FAIL
2017H	Alarm2-BMS	Alarm2-BMS
2018H	DRM Connect Fail	DRM_LINK_FAIL
2019H	Meter select fail	MET_SEL_FAIL
...	...	
2020H	Lead-acid battery High temperature	HighTemp.AMB
2021H	Lead-acid battery Low temperature	LowTemp.AMB
.....	.....	.....
2030H	Grid backup overload	BKAC Overload
...		
2040H	EPM Hard Limit Protection	EPM-HardLimit
2041H	AFCI-Comm-Fail	AFCI-Comm-Fail
2042H	AFCI-CTModule-Fail	AFCI-CTModule-Fail
2043H	G100_OVI_PRO	G100_OVI_PRO

### 7.3. Appendix 3

3309 2H	Grid Code			
	3PH (5-136K) (3PH Hybrid)	1PH 4G (1PH Hybrid)	3PH(125K-1500V )	3PH(225K-1500V)
01H	G59/3	G59/3	G59/3	G59/3(600V)
02H	UL480-13(60Hz480V)( Description: Low voltage60Hz270V)	UL240-13	UL600-13	UL600-13
03H	VDE0126(380V)	VDE0126	VDE0126	VDE0126
04H	Reserve1	Reserve1	AS4777-15	AS4777-15(Temporar ily unused)

05H	Reserve2	Reserve2	AS4777-02	AS4777-02(Temporarily unused)
06H	CQC-380A Note: The 80-136K series displays CQC-B-380A (B class)	CQC (B class)	CQC-600(A class)	CQC-800(A class)
07H	EN50438IE	EN50438IE	EN50438IE	ENEL(Temporarily unused)
08H	UL-380V(60Hz380V) Note: Low voltage UL-220V(60Hz220V)	UL-208V	UL-380V(60Hz380V)	MEX-CFE
09H	MEX-CFE	MEX-CFE	MEX-CFE	MEX-800
0AH	custom	custom	custom	custom
0BH	VDE4105(380V)	VDE4105	VDE4105(380V)	CEA800NT
0CH	DK1	DK1	EN50438DK	DK1
0DH	EN50549PO	EN50549PO	EN50549PO	EN50549PO
0EH	EN50549NL	EN50549NL	EN50549NL	EN50549NL
0FH	EN50549ES(Estonia)	EN50549ES	EN50549ES	EN50549ES
10H	EN50438L	EN50438L	EN50438L	EN50438L(800V)
11H	UL-480V-A	UL-240V-A	UL-600V-A	UL800-13
12H	UL-380V-A	UL-208V-A	UL-380V-A	UL-380V-A(Temporarily unused)
13H	BRAZIL	BRAZIL	BRAZIL	BRAZIL
14H	Reserve3	Reserve3	AUS-Q-0.9	AUS-Q-0.9(Temporarily unused)
15H	Reserve4	Reserve4	AUS-Q-0.8	AUS-Q-0.8(Temporarily unused)
16H	G83/1	G83/1	G83/1	G83/1(Temporarily unused)
17H	RD1699	RD1699	RD1699	RD1699(Temporarily unused)
18H	IEC61727	IEC61727	IEC61727	IEC61727
19H	GN-380L	G83/1-A	GN-600L	GN-800L
1AH	CQC-480A Note: The 80-136K series displays CQC-B-480A (B class)	GNB	CQC-480V	CQC-480V(Temporarily unused)
1BH	GN-HV-L	GNC	GN-HV-L	GN-HV-L(Temporarily unused)
1CH	G59/3-A	NewZeal	G59/3-A	G59/3-A (600V)
1DH	4105/480(480V)	G83/3	4105/480(480V)	4105/480(480V)(Temporarily unused)
1EH	Reserve5	Chile	AS4777_480	AS4777_480(Temporarily unused)

1FH	NewZeal	NRS097	NewZeal	NewZeal(Temporarily unused)
20H	CQC-500A (B class)	Philippin	CQC500	CQC500(Temporarily unused)
21H	CQC-540A Note: The 80-136K series displays CQC-B-540A (B class)	N4105-BEL	CQC540	CQC540(Temporarily unused)
22H	GN-540L	IEC61727L	GN540L	GN540L(Temporarily unused)
23H	N4105-BEL	KS1 <del>KSC856415</del>	N4105-BEL	N4105-BEL(Temporarily unused)
24H	CHILE	France	CHILE	CHILE(Temporarily unused)
25H	NRS097	ISONE240	NRS097	NRS097
26H	GN380L-A	ISONE208	GN600L-A	GN800L-A
27H	GNHVL-A	ISONE240A	GNHVL-A	GNHVL-A(Temporarily unused)
28H	NRS480	ISONE208A	NRS480	NRS480(Temporarily unused)
29H	CQC380DZ	GN300V	CQC600DZ	CQC800DZ
2AH	GN380DZL	MEA(THAILAND)	GN600DZL	GN800DZL
2BH	ISONE480	R21P3-240	ISONE600	ISONE600
2CH	ISONE480A	R21P3-208	ISONE600A	ISONE800
2DH	KS1	R21P3-24A	KS1	KS4
2EH	R21P3-480	R21P3-20A	R21P3-600	R21P3-600
2FH	R21P3-48A	Sri Lanka	R21P3-60A	R21P3-800
30H	Philippin	PEA(THAILAND)	Philippin	Philippin(Temporarily unused)
31H	France	Reserve5	France	France
32H	Sri Lanka	Mala230LV	SRILANKA	SRILANKA
33H	MEA	Indon230V	THAILANDMEAE	MEA 800V
34H	PEA	G98	THAILANDPEAE	PEA 800V
35H	Reserve6	G99	4777SA-48(480)	4777SA-48(480)(Temporarily unused)
36H	Mala230LV	GEN50	Mala230LV	Reserve1(Temporarily unused)
37H	Mala277LV	GEN60	Mala277LV	Reserve2(Temporarily unused)
38H	Mala277MV	TW220(TAIWAN)	Mala277MV	Mala800MV
39H	Indon230V	TW110(TAIWAN)	Indon230V	Indon800V
3AH	Dubai-A(Dubai Medium)	DK230V	DEWA230LV	DEWA230LV(Tempo

	Voltage)			rarily unused)
3BH	Dubai-B(Dubai Medium Voltage)	Barbados	DEWA277LV	DEWA277LV(Temporary unused)
3CH	DEWA277MV	BRAZIL-H	DEWA277MV	DEWA277MV(Temporary unused)
3DH	G98	G99-N	G98	G98
3EH	G99	CEI 0-21(Italy)	G99	G99
3FH	BDEW230V	MEX-220V(MEX-110V>Note: Low voltage display)	BDEW230V	BDEW230V(Temporary unused)
40H	BDEW277V	MEX220-A(MEX110-A>Note: Low voltage display)	BDEW277V	BDEW277V(Temporary unused)
41H	GEN50	SG1	GEN50	GEN50(Temporary unused)
42H	GEN60	Reserve6	GEN60	GEN60(Temporary unused)
43H	Reserve7	Reserve7	4777SA-40(380)	4777SA-40(380)(Temporary unused)
44H	KS2(Korean non-standard)	EN50549	KS2(Korean non-standard)	KS2(Korean non-standard)(Temporary unused)
45H	TW220(TAIWAN)	PH-L(Philippin)	TW220(TAIWAN)	TW220(TAIWAN)(Temporary unused)
46H	DK277V	C10/11(Belgium)	DK277V	DK277V(Temporary unused)
47H	DK230V	DK2	DK230V	DK230V(Temporary unused)
48H	Barbados	G98-NI	Barbados	Barbados(Temporary unused)
49H	IEC61727L	G99-NI	IEC61727L	IEC61727L
4AH	SG1	IRAN	SG1	SG1
4BH	G99N	EIFS-SW(Sweden)	G99-N	G99-N
4CH	MEX-480V(MEX-220V Note: Low voltage display)	R14-240A (Hawaii)	MEX-480V	MEX-480V(Temporary unused)
4DH	MEX480V-A(MEX220V-A>Note: Low voltage display)	R14-208A (Hawaii)	MEX480-A	MEX480-A(Temporary unused)
4EH	Reserve8	TOR(Austria)	4777WA-40(380)	4777-A-EH
4FH	Reserve9	R14-240 (Austria)	4777WA-48(480)	4777-B-EH

50H	Reserve10	R14-208 (Austria)	4777NW-40(380)	4777-C-EH
51H	Reserve11	Reserve8	4777NW-48(480)	4777-N-EH
52H	EN50549	GREECE	EN50549L	EN50549L
53H	CEI 0-21(Italy)	HK220(Hong Kong)	CEI 0-21(Italy)	CEI 0-16(Italy)
54H	PH-L(Philippin)	RENBLAD(Norway 342)	PH-L(Philippin)	PH-L(Philippin)(Temporarily unused)
55H	C10/11(Belgium)	4777-A(AS4777-2020A)	C10/11(Belgium)	C10/11(Belgium)
56H	DK2	4777-B	DK2	DK2
57H	G98-NI	4777-C	G98-NI	G98-NI
58H	G99-NI	4777-N(New Zealand)	G99-NI	G99-NI
59H	IRAN	NTS631(Reserve9 Note: This display is only for grid connected users using LCD display, and the rest remains unchanged)	Iran	Iran
5AH	EIFS-SW(Sweden)	UL-240-18(Note: UL-1574 requirementsA is the old UL1547-2014 A2 is the new UL1547-2018)	EIFS-SW(Sweden)	EIFS-SW(Sweden)
5BH	KS3	UL-208-18	EN50549-2 (600V)	EN50549-2(800V)
5CH	TOR(Austria)	EN50549IE	CEA600(India)	CEA800(India)
5DH	BRAZIL-H	VIETNAM	Puerto600(Puerto Rico)	Puerto600(Puerto Rico)
5EH	CQC-A-380(Only for the 80-110K/90-136K series (A class))	GNSD(Shandong, China)	BRAZIL-H	SG-800V(Singapore)
5FH	CQC-A-480(only for 80-110K/90-136K series (A class))	PN-50549(Poland)	VIETNAM	G99-B
60H	CQC-A-540(only for 80-110K/90-136K series (A class))	ESB-Micro(Note: New Ireland EN50549)	VDE4110	GREECE800(Greece)
61H	G99-B	ESB-Mini(Note: New Ireland)		NTS631(800V)

		EN50549)		
62H	Reserve12	Israel		VIETNAM
63H	Reserve13	R14H-240 (Hawaii)		VDE4110
64H	GREECE(Greece)	R14H-208 (Hawaii)		UL800-18(Note: UL-1574 requirementsA is the old UL1547-2014 A2 is the new UL1547-2018)
65H	HK220(hong kong)	EN50549FI(Finland )		UL600-18(Note: UL-1574 requirementsA is the old UL1547-2014 A2 is the new UL1547-2018)
66H	REN342(RENBLAD Norway 342)	BRA-N220(BRA-N 22LNote: Low voltage display)		PN-50549(poland)
67H	CEI 0-16	EN50549TR		TR-2(Türkiye 50549-2)
68H	NTS631(Reserve14 Note: This display is only for grid connected users using LCD display, and the rest remain unchanged)	MEX-22N(MEX-11 NNote: Low voltage display, only applicable for energy storage)		SI-2 (Slovenia 50549-2Explanation: Ground power stations only operate -2)
69H	4777-A(AS477-2020)	LTU-1(Lithuania 50549-1)		
6AH	4777-B			
6BH	4777-C			
6CH	4777-N(NEW ZEALAND)			
6DH	4777-A-H			
6EH	4777-B-H			
6FH	4777-C-H			
70H	4777-N-H			
71H	UL480-18(Note: UL-1574 requirementsA is the old UL1547-2014 A2 is the new UL1547-2018)			
72H	EN50549IE			
73H	EN50549-2			
74H	VIETNAM			

75H	VDE4110			
76H	GNSD-A380			
77H	GNSD-A-HV			
78H	GNSD-A540			
79H	GNSD-B380			
7AH	GNSD-B-HV			
7BH	GNSD-B540			
7CH	PN-50549(poland)			
7DH	ESB-Micro(Note: New Ireland EN50549)			
7EH	ESB-Mini(Note: New Ireland EN50549)			
7FH	Israel			
80H	Egypt			
81H	KS3-LVRT			
82H	CQC3310(Note: Energy storage machine is dedicated, reserved for grid connected machines)			
83H	EN50549FI(Finland)			
84H	BRA-N380(BRA-N38L Note: Low voltage display)			
85H	EN50549TR(Türkiye50549-1)			
86H	TR-2(Türkiye50549-2)			
87H	SI-1 (Slovenia 50549-1Description: For household use only -1)			
88H	SI-2(Slovenia 50549-2)			
89H	PH-480(Philippine High Voltage)			
8AH	VN-480 (Vietnam High Voltage)			
8BH	LTU-1(Lithuania50549-1)			
8CH	LTU-2(Lithuania50549-2)			
8DH	KSC8565-D (Only applicable to Korean version machines 60K)			
8EH	KSC8565-T (Only			

	applicable to Korean version machines 60K)			
8FH	MEX-48N(MEX-22NN ote: Low voltage display)			

#### 7.4. Appendix 4

33116	Fault status	Status Code	33117	Fault status	Status Code
BIT00	No grid	0—No 1—Yes	BIT00	Backup vervoltage fault	0—No 1—Yes
BIT01	Grid overvoltage	0—No 1—Yes	BIT01	Backup overload fault	0—No 1—Yes
BIT02	Grid undervoltage	0—No 1—Yes	BIT02	Grid Backup overload	0—No 1—Yes
BIT03	Grid overfreq	0—No 1—Yes	BIT03	Off grid Backup Undervoltage	0—No 1—Yes
BIT04	Grid underfreq	0—No 1—Yes	BIT04	Reserved	0—No 1—Yes
BIT05	Unbalanced grid	0—No 1—Yes	BIT05	Reserved	0—No 1—Yes
BIT06	Gird frequency Fluctuation	0—No 1—Yes	BIT06	Reserved	0—No 1—Yes
BIT07	Grid reverse current	0—No 1—Yes	BIT07	Reserved	0—No 1—Yes
BIT08	Grid current tracking error	0—No 1—Yes	BIT08	Reserved	0—No 1—Yes
BIT09	METER COM Fail	0—No 1—Yes	BIT09	Reserved	0—No 1—Yes
BIT10	FailSafe	0—No 1—Yes	BIT10	Reserved	0—No 1—Yes
BIT11	Meter Select Fail	0—No 1—Yes	BIT11	Reserved	0—No 1—Yes
BIT12	EPM Hard Limit Protection	0—No 1—Yes	BIT12	Reserved	0—No 1—Yes
BIT13	Reserved	0—No 1—Yes	BIT13	Reserved	0—No 1—Yes
BIT14	Reserved	0—No 1—Yes	BIT14	Reserved	0—No 1—Yes
BIT15	Reserved	0—No 1—Yes	BIT15	Reserved	0—No 1—Yes

33118	Fault status	Status Code	33119	Fault status	Status Code
BIT00	Battery not connected	0—No 1—Yes	BIT00	DC overvoltage	0—No 1—Yes
BIT01	Battery overvoltage Check	0—No 1—Yes	BIT01	DC Bus overvoltage	0—No 1—Yes
BIT02	Battery undervoltage Check	0—No 1—Yes	BIT02	DC Bus unbalanced voltage	0—No 1—Yes
BIT03	Battery BMS Alarm	0—No 1—Yes	BIT03	DC Bus undervoltage	0—No 1—Yes
BIT04	Battery Name Alarm	0—No 1—Yes	BIT04	DC Bus unbalanced voltage 2	0—No 1—Yes
BIT05	Lead-acid battery temperature too low	0—No 1—Yes	BIT05	DC overcurrent on A circuit	0—No 1—Yes
BIT06	Lead-acid battery temperature too high	0—No 1—Yes	BIT06	DC overcurrent on B circuit	0—No 1—Yes

BIT07	Reserved	0—No 1—Yes	BIT07	DC input interference	0—No 1—Yes
BIT08	Reserved	0—No 1—Yes	BIT08	Grid overcurrent	0—No 1—Yes
BIT09	Reserved	0—No 1—Yes	BIT09	IGBT overcurrent	0—No 1—Yes
BIT10	Reserved	0—No 1—Yes	BIT10	Grid interference 02	0—No 1—Yes
BIT11	Reserved	0—No 1—Yes	BIT11	AFCI self-check	0—No 1—Yes
BIT12	Reserved	0—No 1—Yes	BIT12	Arc fault reserved	0—No 1—Yes
BIT13	Reserved	0—No 1—Yes	BIT13	Grid current sampling fault	0—No 1—Yes
BIT14	Reserved	0—No 1—Yes	BIT14	DSP self-check error	0—No 1—Yes
BIT15	Reserved	0—No 1—Yes	BIT15	Battery Discharge Overcurrent	0—No 1—Yes
<b>33120</b>	<b>Fault status</b>	<b>Status Code</b>	<b>33124</b>	<b>Fault status</b>	<b>Status Code</b>
BIT00	Grid interference	0—No 1—Yes	BIT00	SlaveLoseErr	0—No 1—Yes
BIT01	Over dc components	0—No 1—Yes	BIT01	MasterLoseErr	0—No 1—Yes
BIT02	Over temperature Protection	0—No 1—Yes	BIT02	SlavePrd-Err	0—No 1—Yes
BIT03	Relay check pro	0—No 1—Yes	BIT03	MasterPrd-Err	0—No 1—Yes
BIT04	Under temperature protection	0—No 1—Yes	BIT04	Addr-Conflict	0—No 1—Yes
BIT05	PV insulation fault	0—No 1—Yes	BIT05	HeartbeatLose	0—No 1—Yes
BIT06	12V undervoltage pro	0—No 1—Yes	BIT06	DCanErr	0—No 1—Yes
BIT07	Leak current pro	0—No 1—Yes	BIT07	MulMasterErr	0—No 1—Yes
BIT08	Leak current self check pro	0—No 1—Yes	BIT08	ModeConflict	0—No 1—Yes
BIT09	DSP initial pro	0—No 1—Yes	BIT09	S-PlugVoltErr	0—No 1—Yes
BIT10	DSP B pro	0—No 1—Yes	BIT10	Others' Fault	0—No 1—Yes
BIT11	Battery overvoltage hardware fault	0—No 1—Yes	BIT11	Reserved	0—No 1—Yes
BIT12	LLC hardware overcurrent	0—No 1—Yes	BIT12	Reserved	0—No 1—Yes
BIT13	Grid transient overcurrent	0—No 1—Yes	BIT13	Reserved	0—No 1—Yes
BIT14	CAN COM FAIL	0—No 1—Yes	BIT14	Reserved	0—No 1—Yes
BIT15	DSP COM FAIL	0—No 1—Yes	BIT15	Reserved	0—No 1—Yes

<b>33125</b>	<b>Fault status</b>	<b>Status Code</b>
BIT00	Reve-DC	0—No 1—Yes
BIT01	Battery hardware overvoltage 02	0—No 1—Yes
BIT02	Battery hardware overcurrent	0—No 1—Yes
BIT03	Bus midpoint hardware overcurrent	0—No 1—Yes
BIT04	Battery startup fail	0—No 1—Yes

BIT05	DC 3 average overcurrent	0—No 1—Yes
BIT06	DC 4 average overcurrent	0—No 1—Yes
BIT07	Softrun timeout	0—No 1—Yes
BIT08	Off-grid to Grid Time out	0—No 1—Yes
BIT09	DRM Not Connect	0—No 1—Yes
BIT10	Reserved	0—No 1—Yes
BIT11	Reserved	0—No 1—Yes
BIT12	Reserved	0—No 1—Yes
BIT13	Reserved	0—No 1—Yes
BIT14	Reserved	0—No 1—Yes
BIT15	Reserved	0—No 1—Yes

## 7.5. Appendix 5

Operation Status:

BIT	Fault status	Status Code
BIT00	Normal Operation	0—No 1—Yes
BIT01	Initializing	0—No 1—Yes
BIT02	Controlled turning OFF	0—No 1—Yes
BIT03	Fault leads to turning OFF	0—No 1—Yes
BIT04	Stand-by	0—No 1—Yes
BIT05	Limited Operation (Caused by temperature, frequency, etc.)	0—No 1—Yes
BIT06	Limited Operation (Caused by external reason)	0—No 1—Yes
BIT07	Backup overload	0—No 1—Yes
BIT08	Load fault (Is the load normal)	0—No 1—Yes
BIT09	Grid fault (Is the Grid normal)	0—No 1—Yes
BIT10	Battery fault (Is the battery normal)	0—No 1—Yes
BIT11	Reserved	0—No 1—Yes
BIT12	Grid Surge(Warn)	0—No 1—Yes
BIT13	Fan fault(Warn)	0—No 1—Yes
BIT14	External fan failure (supports all-in-one)	0—No 1—Yes
BIT15	Reserved	0—No 1—Yes

## 7.6. Appendix 6

Storage control switching:

BIT	Status	Code
BIT00	Self-Use Mode	0—OFF 1—ON
BIT01	Time of use mode	0—OFF 1—ON
BIT02	OFF-grid mode	0—OFF 1—ON
BIT03	Battery wakeup switch	0—OFF 1—ON
BIT04	Reserve battery mode	0—OFF 1—ON
BIT05	Allow grid to charge the battery	0—NotAllow

		1—Allow
BIT06	Feed in priority mode	0—OFF 1—ON
BIT07	Reserved	0—OFF 1—ON
BIT08	Reserved	0—OFF 1—ON
BIT09	Reserved	0—OFF 1—ON
BIT10	Reserved	0—OFF 1—ON
BIT11	Reserved	0—OFF 1—ON
BIT12	Reserved	0—OFF 1—ON
BIT13	Reserved	0—OFF 1—ON
BIT14	Reserved	0—OFF 1—ON
BIT15	Reserved	0—OFF 1—ON

## 7.7. Appendix 7

Factory setting flag

BIT	Status	Code
BIT00	FLASH read and write timeout	0—No 1—Yes
BIT01	Clear energy flag	0—No 1—Done
BIT02	Reserved	0—No 1—Yes
BIT03	Reserved	0—No 1—Yes
BIT04	Reserved	0—No 1—Yes
BIT05	Reserved	0—No 1—Yes
BIT06	Reserved	0—No 1—Yes
BIT07	Reserved	0—No 1—Yes
BIT08	Reset datalogger flag	0—No 1—Reset
BIT09	Return factory setting of datalogger flag	0—No 1—Recover
BIT10	Reserved	0—No 1—Yes
BIT11	Reserved	0—No 1—Yes
BIT12	Reserved	0—No 1—Yes
BIT13	Reserved	0—No 1—Yes
BIT14	Reserved	0—No 1—Yes
BIT15	Reserved	0—No 1—Yes

## 7.8. Appendix 8

BIT	Status	Code
BIT00	BIT00:UPS Mode (Inverter off grid and running without alarm)	0—Stop 1—Run
BIT01	Slef-Use Mode	0—Invalid 1—Valid
BIT02	Time of Use In Self-Use Mode	0—Invalid 1—Valid
BIT03	Feed in Priority Mode	0—Invalid 1—Valid
BIT04	Time of Use In Feed in Priority Mode	0—Invalid 1—Valid
BIT05	Backup Mode	0—Invalid 1—Valid

BIT06	Off Grid Mode	0—Invalid 1—Valid
BIT07	Remote control of battery charge and discharge mode, specifically the immediate battery charge mode using PV via 43135 and 43136 settings	0—Invalid 1—Valid
BIT08	Passive mode, specifically refers to setting the passive mode through 43311 to be effective;	0—Invalid 1—Valid
BIT09-BIT15	Reserved	

## 7.9. Appendix 9

33145	3-5K LV Hybrid	5-10K HV Hybrid	33146	3-5K LV Hybrid	5-10K HV Hybrid
BIT00	Reserved	Charge overvoltage	BIT00	Chargeover currentPRO	Different core
BIT01	Overvoltage PRO	Discharge Undervoltage	BIT01	Reserved	System low Temperature 1
BIT02	UndervoltagePRO	Core over temperature	BIT02	Reserved	System low Temperature 2
BIT03	Over temperature PRO	Core under temperature	BIT03	BMS Internal PRO	System high temperature
BIT04	Under Temperature PRO	Charge overcurrent	BIT04	Unbalanced Battery modules	Reserved
BIT05	Over temperature charge PRO	Discharge overcurrent	BIT05	Reserved	Reserved
BIT06	Under temperature charge PRO	Battery internal COM fail	BIT06	Full charge request	Reserved
BIT07	Discharge Overcurrent PRO	System reboot	BIT07	Force charge request	Reserved

## 7.10. Appendix 10

BIT	Status	Code
BIT01	Meter in grid	
BIT02	CT in grid	Note: AC Couple inverter ONLY, to avoid uploading meter com fail alarm
BIT03	Reserved	
BIT04	EPM Switch	Note: To indicate EPM ON/OFF status
BIT05	Failsafe Switch	
BIT06	Power Control Mode	0: 3phase Balanced Control. For output balanced current 1: 3phase Individual Control. For output unbalanced current
BIT07	EPM Current Setting Switch	0 OFF, 1 ON;

BIT08	External EPM ON/OFF Status , Only for 3PH RHI 5G	0 OFF, 1 ON;
BIT09	External EPM Failsafe Switch Status, Only for 3PH RHI 5G	0 OFF, 1 ON;
BIT10	Parallel epm power setting switch	0 OFF, 1 ON;
BIT11	Parallel epm current setting switch	0 OFF, 1 ON;
BIT12	Parallel power control mode Valid when BIT10 or BIT11 is turned on	0: Three-phase unified control, the inverter outputs balanced current; 1: Three-phase independent control, the inverter can output unbalanced current;
BIT13-BIT15	Reserved	

### 7.11. Appendix 11

LV hybrid & AC coupled:		HV hybrid:	
0x0000:	No battery	0x0000	No battery
0x0001	PYLON_LV	0x0100	PYLON_HV
0x0002	User define	0x0200	User define
0x0003	B_BOX_LV BYD	0x0300	B_BOX_HV BYD
0x0004	Dyness LV(For AC coupled, it is LG LV bat)	0x0400	LG_HV LG
0x0005	PureDrive	0x0500	SOLUNA_HV
0x0006	LG Chem LV LG (For AC coupled, it is Dyness)	0x0600	Dyness HV
0x0007	AoBo LV	0x0700	Aoboet HV
0x0008	JiaWei LV	0x0800	WECO HV
0x0009	WECO LV	0x0900	Alpha HV
0x000A	FreedomWon LV	0x0A00	GS Energy
0x000B	Soluna LV	0x0B00	BYD HVL
0x000C	GSL LV	0x0C00	Jinko
0x000D	Rita LV	0x0D00	FOX
0x000E	RiSheng	0x0E00	LG_16H
0x000F	Alpha	0x0F00	PureDrive
0x0010	CATL	0x1000	UZ ENERGY
0x0011	ATL	0x1100	BMZ
0x0012	Zeta		
0x0013	Highstar		
0x0014	KODAK		
0x0015	FOX		
0x0016	EXIDE LV		
0x0017	HD Energy LV		
0x0018	Pytes		
0x0019	ARVIO		

0x001A	PAND		
0x001B	WANKE		
0x001C	Dowell		
0x001D	ROSEN ESS		
0x001E	ZRGP		
0x001F	Narada		
0x0020	BST		
0x0021	Cegasa		
0x0022	Meterboost		
0x0023	MOURA		
0x0024	Tecloman		
0x0025	Upower UE-H		
0x0026	Upower UE-I		
0x0027	SUNWODA		
0x0028	CFE		
0x0064	Lead Acid		

## 7.12. Appendix 12

BIT	Status	Code
BIT00	Reserved	
BIT01	Reserved	
BIT02	CT in grid	AC Couple inverter ONLY, to avoid uploading meter com fail alarm
BIT03	Parallel PV inverter CT detection switch	1、 If 33250 BIT03=0 and 33245 has value over 500W, it means there is CT connected for parallel PV inverter and power flow exists 2、 If 33250=0, 33245 value needs to be displayed.
BIT04	EPM Switch (Note: To indicate EPM ON/OFF status)	(Note: for AU 2020 standard, it is EPM soft limit ON/OFF)
BIT05	Failsafe Switch	0 OFF, 1 ON
BIT06:	Power Control Mode 0: 3phase Balanced Control. For output balanced current 1: 3phase Individual Control. For output nbalanced current Default 0	Effective when EPM function (BIT04or BIT07) Enabled;
BIT07:	EPM current setting switch, 0 is off, 1 is on; the default is off;	After opening, set 43326 or 43327-43329 according to the mode corresponding to BIT06; (Note: temporarily supported from F2 models)
BIT08:	External EPM ON/OFF Status	Not support BIT 04 to be ON at the same

	0 OFF, 1 ON; Only used for 3ph HV hybrid 5G models Default 0.	time. If need to turn on BIT08, need to set BIT04=0 and BIT08=1.
BIT09	External EPM Failsafe Switch Status 0 OFF, 1 ON	Only used for 3ph HV hybrid 5G models
BIT10	Parallel epm power setting switch 0 OFF, 1 ON; Default OFF	
BIT11	BIT11 : Parallel epm current setting switch 0 OFF, 1 ON; Default OFF	
BIT12:	Parallel power control mode Valid when BIT10 or BIT11 is turned on 0: Three-phase unified control, the inverter outputs balanced current; 1: Three-phase independent control, the inverter can output unbalanced current; ; Default 0; Poweroff saving;	Effective when BIT10 or BIT11 Enabled
BIT13-BIT15	Reserved	

### 7.13. Appendix 13

Value: Start Single Protection Test	
00	Null
01	59.S1(253.0V 3000ms)
02	59.S2(264.5V 200ms)
03	27.S1(195.5V 1500ms)
04	27.S2( 34.5V 200ms)
05	81>.S1(50.2Hz 100ms)
06	81<.S1(49.8 Hz 100ms)
07	81>.S2F(51.5Hz 100ms)
08	81<.S2F(47.5 Hz 100ms)
09	81>.S2S(51.5Hz 1000ms)
10	81<.S2S(47.5 Hz 4000ms)
11	59.S1 PhaseB(253.0V 3000ms)
12	59.S2 PhaseB (264.5V 200ms)
13	27.S1 PhaseB (195.5V 1500ms)
14	27.S2 PhaseB ( 34.5V 200ms)
15	81>.S1 PhaseB (50.2Hz 100ms)
16	81<.S1 PhaseB (49.8 Hz 100ms)
17	81>.S2F PhaseB (51.5Hz 100ms)

18	81<.S2F PhaseB (47.5 Hz 100ms)
19	81>.S2S PhaseB (51.5Hz 1000ms)
20	81<.S2S PhaseB (47.5 Hz 4000ms)
21	59.S1 PhaseC (253.0V 3000ms)
22	59.S2 PhaseC (264.5V 200ms)
23	27.S1 PhaseC (195.5V 1500ms)
24	27.S2 PhaseC ( 34.5V 200ms)
25	81>.S1 PhaseC (50.2Hz 100ms)
26	81<.S1 PhaseC (49.8 Hz 100ms)
27	81>.S2F PhaseC (51.5Hz 100ms)
28	81<.S2F PhaseC (47.5 Hz 100ms)
29	81>.S2S PhaseC (51.5Hz 1000ms)
30	81<.S2S PhaseC (47.5 Hz 4000ms)
PhaseB and PhaseC Only support 3ph hybrid inverter	

### 7.14. Appendix 14

	Description
00H	None
01H	Australia overfrequency derating and underfrequency(Hybrid) ramping up. Default
02H	
03H	VDE4105, Spain NTS631 (RD1699), VDE4110, EN50438, Poland NC_RFG (PN-50549) Type of Overfrequency derating .
04H	US Rule21 Frequency derating.OR selfdefined derating(can set star and stop point for both 50Hz and 60Hz)
05H	Brazil frequency derating
06H	SouthAfrica frequency derating
07H	US Rule21Phase1 Frequency derating
08H	US Rule21Phase3 Frequency derating
09H	Dubai Frequency derating
0AH	UK G98 and G99 Frequency derating (DSP will select based on standard G98 or G99)
0BH	Germany BDEW Frequency derating
0CH	Denmark Frequency derating
0DH	China 2018 Frequency derating
0EH	EN50549 Frequency derating
0FH	CEI 0-21 Frequency derating
10H	South Africa levelise Hybrid Over/underfrequency control
11H	France Frequency derating
12H	Austria Frequency derating
13H	Hawaii Frequency derating
14H	Over-under-frequency power response mode required by Australian FCAS

### 7.15. Appendix 15

	Description	Note
BIT00	MPPT Parallel Function	0---Individual MPPT Operation(Default) 1---Parallel MPPT Operation
BIT01	IgFollow (Increase the grid OFF judge speed, default Enable for Italy Standard)	0---Disable 1---Enable, default 0;
BIT02	Relay protection , Relay-Fault-Func.	0 Enable, 1 Disable, Default 0;
BIT03	I-leak protection ILeak-Fault Func.	0 Enable, 1 Disable, Default 0;
BIT04	PV iso Protection, PV-G-Fault Func	0 Enable, 1 Disable, Default 0;
BIT05	Grid-interference protection GRID-INTF.02 Func.	0 Enable, 1 Disable, Default 0;
BIT06	grid current sampling protection IgADCheckPro	0 Enable, 1 Disable, Default 0;
BIT07	Const Voltage Mode Enable Const Voltage	0 Enable, 1 Disable, Default 0;
BIT08- BIT11	Grid filter level 0-7	Default 0;
BIT12- BIT15	Afci Sensitivity 0-7	Default 0;

### 7.16. Appendix 16

	Description	State	Note
BIT00	Boost not generate wave function off control	0-Function ON; 1-Function OFF; Default 0 OFF this function, boost will always work with generating wave mode	Instructions for writing to BTIxx: The upper computer first reads the current value of this register, and then writes the value of the corresponding BIT as needed based on the current
BIT01	DC injection adjustment function off control	0-Function ON; 1-Function OFF; Default 0 OFF this function, Inverter will not actively adjust DC injection, for test purpose	
BIT02	Reserved		
BIT03	AFCI Self-Check	0-Disable, 1-Self-Check Start; Default 0; Power off not saving;	
BIT04	AFCI Self-check mode	0- Self-test runs normal (no arc) data, 1- Self-test runs abnormal (with arc) data ; Default 0; Power off not saving;	
BIT05- BIT07	Reserved		
BIT08	US 1PH HV Hybrid Grid Connect Setting	0: L1-L2-N, 1: L1-L2, Default 0; Power off saving;	

BIT09	PV Enable Switch	0-PV Enable, 1-PV OFF, Default 0, Power off not saving ; 。 Currently only applicable to Alpha all-in-one;	value;
BIT10- BIT15	Reserved		