Commercial 1000VDC String Inverter

Solectria PVI 25TL

Modbus Manual

Model(s): PVI 25TL-480-R

1. DATA TYPES

1.1 Not Implemented Value

Leave unused or unsupported data points in the SOLECTRIA MODBUS protocol as the “Not Implemented” value specified in the model mapping. Here are the Not Implemented values for the following data types:

int8	0x80.
uint8	0xFF.
int16	0x8000.
uint16	0xFFFF.
int32	0x80000000.
uint32	0xFFFFFFFF.
string	0x00.

1.2 SOLECTRIA Units

Units and Scale Factors are defined by SOLECTRIA Units. As an alternative to floating point format, values are represented by integer values with a signed scale factor applied. For example:

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Contents	Description
0x001F	0x001F	1	RO	U_{ab}	uint16	0.1V		Grid voltage U_{ab}

The U_{ab} unit is V, if current real-time value is U_{ab}=389.5V, the value U_{ab} in register 0x001F is 3895 decimal (0x0F37 hex). So 0.1V indicates that the Uint is V, and Scale factor was Magnified 10 times, so real-time value is 3895/10=389.5

1.3 Scale Factor

As an alternative to floating point format, values are represented by integer values with a signed scaled factor applied. The scale factor explicitly shifts the decimal point to the left (negative value) or the right (positive value). Scale factors had been fixed and specified in the documentation of a value. Scale factor signed range:-10----10. For example

Start	End	Size	R/W	Name	Type	Unit	Scale Factor	Description
0x001F	0x001F	1	RO	U_{ab}	uint16	V	-1	Grid voltage U_{ab}

The U_{ab} unit is V, if current real-time value is U_{ab}=389.5V, the value U_{ab} in register 0x001F is 3895 decimal (0x0F37 hex).Scale Factor is -1, it explicitly shifts the decimal point to the left one bit, then real-time value is 389.5,

1.4 Data Encoding

The MODBUS specification is not explicit on how to encode numbers other than 16-bit integers. Differences do exist between one manufacturer's implementation and another's.

1.4.1 32-bit integer Value

Values are stored in big-endian order per the MODBUS specification and consist of a single register.

MODBUS Register	1		2	
byte	0	1	2	3
bits	31---24	23---16	15---8	7---0

1.4.2 64-bit integer Value

64-bit integers are stored using for registers in big-endian order.

MODBUS Register	1		2	
byte	0	1	2	3
bits	63---56	55---48	47---40	39---32

MODBUS Register	3		4	
byte	4	5	6	7
bits	31---24	23---16	15---8	7---0

1.4.3 String Value

Store variable length string values in a fixed size register range using a NULL(0 value)to terminate or pad the string. For example, up to 14 characters can be stored in 7 contiguous registers as follows:

MODBUS Register	1		2		3		4		5		6		7	
byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
character	S	C	1	0	0	K	T	L	/	C	N	0	0	0

Not_Implemented value:all registers filled with 0x0000.

1.4.4 asic register address

The basic register address is 0x0000.

2. Abbreviations

ADU Application Data Unit

IP Internet Protocol

MB MODBUS

MBAP MODBUS Application Protocol

PDU Protocol Data Unit

TCP Transport Control Protocol

uint8 unsigned char

uint16 unsigned int

uint32 unsigned long

Int8 signed char

int16 signed int

int32 signed long

3. Protocol Description

3.1 Protocol Type: Modbus RTU

3.2 Communication Port Parameters:

BaudRate: optional

DataBits: 8

Parity: None

StopBit: 1

DTR: Disable

RTS: Disable

3.3 Frame Format:

start	Addr	Function Code	Data	CRC16	end
T1-T2-T3-T4	1Byte	1Byte	N	2Byte	T1-T2-T3-T4

4. Inverter Input Registers Data Mapping

The MODBUS read function code is 0x04, and the basic register address is 0x0000.

4.1 Input Registers Data Mapping

Start Addr	End Addr	Size	R/W	Name	Type	SOLECTRIA Units	Unit	Scale factor	Min value	Max value	Contents	Description
0x0000	0x0000	1	RO	Device	uint16	1	N/A	0	N/A	N/A	0x4036	a value that uniquely identifies the type of device model。 0x4031：20kWG2 and 30_36kW inverter 0x4032：60kW inverter old MCU 0x4033：Energy storage 30kW 0x4034：60kW inverter new MCU 0x4035：100(125)kW_1500V inverter 0x4036：25(20)kW inverter
0x0001	0x0001	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x0002	0x0002	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x0003	0x0003	1	RO	RegNum	uint16	1	registers	0	N/A	N/A	N/A	Number of readable registers(R/W=RO) supported by this device, count from the register ProVer to the last input register, and one register consists of 16-bit.
0x0004	0x0004	1	RO	ProVer	uint16	0.01	N/A	-2	N/A	N/A	N/A	a value that identifies the latest supported communication protocol version.
0x0005	0x0005	1	RO	MinorVer	uint16	0.01	N/A	-2	N/A	N/A	N/A	A manufacturer specific value that identifies

												the minor version of this device; The data format of FirmVer is 0xAABB. 0xAAindicates DSP firmware revision, and0xBBindicatesMCUfirmware revision. Remark: The register “MinorVer”is associated with the register” MajorVer”.
0x0006	0x0009	4	RO	SN	Uint64	BCD	N/A	0	N/A	N/A	N/A	a manufacturer specific value that uniquely identifies this device within the manufacturer name space. Remark: Serial number is composed of 16 characters(8 bytes)， the most significant 3 characters is not used, only used the left 13 characters. Such as 0x0001010091114001, it represents the inverter serial number is 1010091114001
0x000a	0x0013	10	RO	model	String20	1	N/A	0	N/A	N/A	N/A	a value that identifies the current device model serial descriptor, e.g. SC20KTL-DO/IT
0x0014	0x0014	1	RO	RWRegSum	uint16	1	N/A	0	N/A	N/A	N/A	number of R/W registers supported by this device
0x0015	0x0015	1	RO	RWRegAdd	uint16	1	N/A	0	N/A	N/A	0x1000	R/W register start address offset
0x0016	0x0017	2	RO	TYield	uint32	1kWh	Kwh	0	0	0	0xFFFFFFFF	Total energy to grid Note: the register has the same function as the 25 (20) kW inverter register (address =0X2B3E~0X2B3F) mapping. The difference is that the unit of precision is different
0x0018	0x0018	1	RO	DYield	uint16	0.1kWh	Kwh	-1	0	N/A	N/A	The accumulated kWh of that day Note: the register has the same function as the 25 (20) kW inverter register (address =0X2B38~0X2B39) mapping.

0x0019	0x0019	1	RO	Eff	uint16	0.1%	%	-3	0	1000	N/A	Inverter efficiency. When reading this register is 0x0320, representing Eff actual value =0x0320 *0.001=0.80=80.0%
0x001A	0x001A	1	RO	PF	int16	0.001	N/A	-3	N/A	1000	N/A	Power factor. When reading this register is 0x0320, representing PF actual value =0x0320 *0.001=0.8
0x001B	0x001B	1	RO	Pmax	uint16	0.1kW	Kw	-1	N/A	N/A	N/A	AC maximum active power of that day
0x001C	0x001C	1	RO	RunT	uint16	0.1Min	Min	-1	N/A	N/A	N/A	The cumulative time from the start feeding grid to the current
0x001D	0x001D	1	RO	Pac	uint16	0.1kW	Kw	-1	N/A	N/A	N/A	AC active power
0x001E	0x001E	1	RO	Sac	uint16	0.1kVA	KVA	-1	N/A	N/A	N/A	AC Apparent power
0x001F	0x001F	1	RO	Uab	uint16	0.1V	V	-1	N/A	N/A	N/A	Grid voltage Uab
0x0020	0x0020	1	RO	Ubc	uint16	0.1V	V	-1	N/A	N/A	N/A	Grid voltage Ubc
0x0021	0x0021	1	RO	Uca	uint16	0.1V	V	-1	N/A	N/A	N/A	Grid voltage Uca
0x0022	0x0022	1	RO	Ia	uint16	0.1A	A	-1	N/A	N/A	N/A	Grid A phase current
0x0023	0x0023	1	RO	Ib	uint16	0.1A	A	-1	N/A	N/A	N/A	Grid B phase current
0x0024	0x0024	1	RO	Ic	uint16	0.1A	A	-1	N/A	N/A	N/A	Grid C phase current
0x0025	0x0025	1	RO	Upv1	uint16	0.1V	V	-1	N/A	N/A	N/A	PV voltage
0x0026	0x0026	1	RO	Ipv1	int16	0.1A	A	-1	N/A	N/A	N/A	PV current
0x0027	0x0027	1	RO	Upv2	uint16	0.1V	V	-1	N/A	N/A	N/A	PV2 voltage
0x0028	0x0028	1	RO	Ipv2	int16	0.1A	A	-1	N/A	N/A	N/A	PV2 current

0x0029	0x0029	1	RO	Upv3	uint16	0.1V	V	-1	N/A	N/A	N/A	PV3 voltage
0x002A	0x002A	1	RO	Ipv3	int16	0.1A	A	-1	N/A	N/A	N/A	PV3 current
0x002B	0x002B	1	RO	Freq	uint16	0.1Hz	Hz	-1	N/A	N/A	N/A	Grid frequency
0x002C	0x002C	1	RO	Tmod	int16	0.1C	C	-1	N/A	N/A	N/A	Heatsink temperature
0x002D	0x002D	1	RO	Tamb	int16	0.1C	C	-1	N/A	N/A	N/A	Ambient temperature
0x002E	0x002E	1	RO	Tcoil	int16	0.1C	C	-1	N/A	N/A	N/A	Reserved Transformer temperature
0x002F	0x002F	1	RO	Mode	uint16	1	N/A	0	N/A	N/A	N/A	0x8000: Fault 0x4000: Check 0x2000: Standby 0x1000: Running 0x0800: Derate
0x0030	0x0033	4	RO	Time	uint64	BCD	N/A	0	N/A	N/A	N/A	Error timestamp(yyyy-mm-dd-hh-mm-ss-N/A) of model 0,eg.0X2012071615181000=2012-7-16 15:18:10
0x0034	0x0034	1	RO	PFault	uint16	1	N/A	0	N/A	N/A	N/A	permanent fault code of model 0, for details see Table8-1 or Table8-2 “Fault Code"
0x0035	0x0035	1	RO	Warn	uint16	1	N/A	0	N/A	N/A	N/A	Warn code of model 0, for details see Table8-1 or Table8-2 “Fault Code"
0x0036	0x0036	1	RO	Fault0	uint16	1	N/A	0	N/A	N/A	N/A	Fault code0 of model 0
0x0037	0x0037	1	RO	Fault1	uint16	1	N/A	0	N/A	N/A	N/A	Fault code1 of model 0
0x0038	0x0038	1	RO	Fault2	uint16	1	N/A	0	N/A	N/A	N/A	Fault code2 of model 0

0x0039	0x0039	1	RO	Fault3	uint16	1	N/A	0	N/A	N/A	N/A	Fault code3 of model 0
0x003A	0x003A	1	RO	Fault4	uint16	1	N/A	0	N/A	N/A	N/A	Fault code4 of model 0
0x003B	0x003B	1	RO	Qac	int16	0.1kVA	KVA	-1	N/A	N/A	N/A	AC ractive power
0x003C	0x003C	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x003D	0x003D	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x003E	0x003E	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x003F	0x003F	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x0040	0x0040	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved
0x0041	0x0041	1	RO	MajorVer	uint16	N/A	N/A	N/A	N/A	N/A	N/A	A manufacturer specific value that identifies the major version of this device; The data format of FirmVer is 0XAABB. 0XAA indicates DSP firmware revision, and 0XBB indicates MCU firmware revision. Remark: The register “MinorVer”is associated with the register” MajorVer”.
0x0042	0x0042	1	RO	Reserved	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserved

5. Inverter Holding Registers Mapping

The MODBUS read function code is 0x03,and write function codes are 0x06.

5.1 Holding Registers Mapping(For remote scheduling)

Note: Remote means off-site via Internet and not via the WiFi Linkit

Start Addr	End Addr	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x1000	0x1000	1	RW	OnOff	uint16	1	N/A	0	0x5555	0xAAAA	0x5555/ 0xAAAA	device power on or off command, 0xAAAA power on, 0x5555 power off Note: the register has the same function as the 25 (20) kW inverter register (address =0X2700) mapping.
0x1001	0x1001	1	RW	PSet	uint16	0.1%	N/A	-3	0	1000	actual value	Remote electric dispatch Active Power setting value, range [0.0%,100.0%], E.g. 70.7%,then PSet =0x02c3 Note: the register has the same function as the 25 (20) kW inverter register (address =0X2708) mapping.
0x1002	0x1002	1	RW	PFSet	int16	0.001	N/A	-3	-1000 -800	800 1000	actual value	Remote electric dispatch Power factor Setting, Rang [-1.000,-0.800]U[0.800, 1.000], E.g. 0.931, then PFSet =0X03A3； -0.931 PFSet =0xFC5D Note: the register has the same function as the 25 (20) kW inverter register (address =0X2707) mapping.
0x1003	0x1003	1	RW	QSet	int16	0.1%	N/A	-1	-600	600	actual value	Remote electric dispatch Reactive Power setting value, range [-100.0%,100.0%],

												E.g. 70.7%,then QSet =0x02c3 Note: the register has the same function as the 25 (20) kW inverter register (address =0X2709) mapping.
0x1004	0x1007	4	RW	TimeSet	uint64	BCD	N/A	0	N/A	N/A	actual value	System time setting,format as :yyyy-mm-dd-hh-mm-ss-NUL, eg.0x2012071615181000=2012-7-16 15:18:10 Note: the register is related to the mapping function of the 25 kW inverter register (address =0X 2B02~0X2B05), and the function is the same.

5.2 Holding Registers Map（For Ethernet Network Card）

Start Addr	End Addr	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x1100	0x1103	4	R/W	SN of Communication card	uint64	BCD	N/A	0	N/A	N/A	N/A	a manufacturer specific value that uniquely identifies this device within the manufacturer name space. Remark: Serial number is composed 16 characters(8 bytes)，the most significant 3 characters is not used, only used the left 13 characters. Such as 0X0001010091114001,it represents the inverter serial number is 1010091114001

0x1104	0x1105	2	R/W	IP of the connected Communication card	uint32	1	N/A	0	N/A	N/A	N/A	Example: 0x0A7A0136 represents the IP address 10.122.1.5
0x1106	0x1107	2	R/W	Subnet mask	uint32	1	N/A	0	N/A	N/A	N/A	The same as above
0x1108	0x1109	2	R/W	Default gateway	uint32	1	N/A	0	N/A	N/A	N/A	The same as above
0x110a	0x110b	2	R/W	DNS server	uint32	1	N/A	0	N/A	N/A	N/A	The same as above
0x110c	0x110c	1	R/W	Address range	uint16	1	N/A	0	1	8	N/A	The address range that communicati card is used. value=1: 1-32 value=2: 33-64 value=3: 65-96 value=4: 97-128 value=5: 129-160 value=6: 161-192 value=7: 193-224 value=8: 225-255

5.3 Holding Registers Mapping

Assignment of Holding Register Groups

Address Range	Group Name
0x2000 ~ 0x20FF	Grid Protection Parameters
0x2100 ~ 0x21FF	Active Power Derating Parameters
0x2200 ~ 0x22FF	Reactive Power Derating Parameters
0x2300 ~ 0x23FF	Arc Detection Parameters
0x2400 ~ 0x24FF	LVRT/HVRT Parameters
0x2500 ~ 0x25FF	Others Parameters
0x2600 ~ 0x26FF	Enable/disable control Parameters
0x2700 ~ 0x27FF	Control Command
0x2800 ~ 0x28FF	N/A
0x2900 ~ 0x29FF	Inverter Basic Information

Holding Registers Data Mapping

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
Group 0 Grid Protection Parameters												
0x2000	0x2000	1	RW	GridVoltMax1	uint16	0.01%	%	-2	10000	13500	actual value	The first maximum operational grid voltage

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2001	0x2001	1	RW	VoltMaxTripT1	uint16	0.01s	s	-2	0	65500	actual value	The first maximum grid voltage trip time
0x2002	0x2002	1	RW	GridVoltMax2	uint16	0.01%	%	-2	10000	13500	actual value	The 2nd maximum operational grid voltage
0x2003	0x2003	1	RW	VoltMaxTripT2	uint16	0.01s	s	-2	0	65500	actual value	The 2nd maximum grid voltage trip time
0x2004	0x2004	1	RW	GridVoltMax3	uint16	0.01%	%	-2	10000	13500	actual value	The 3rd maximum operational grid voltage
0x2005	0x2005	1	RW	VoltMaxTripT3	uint16	0.01s	s	-2	0	65500	actual value	The 3rd maximum grid voltage trip time
0x2006	0x2006	1	RW	GridVoltMin1	uint16	0.01%	%	-2	3000	10000	actual value	The first minimum operational grid voltage
0x2007	0x2007	1	RW	VoltMinTripT1	uint16	0.01s	s	-2	0	65500	actual value	The first minimum grid voltage trip time
0x2008	0x2008	1	RW	GridVoltMin2	uint16	0.01%	%	-2	3000	10000	actual value	The 2nd minimum operational grid voltage
0x2009	0x2009	1	RW	VoltMinTripT2	uint16	0.01s	s	-2	0	65500	actual value	The 2nd minimum grid voltage trip time
0x200A	0x200A	1	RW	GridVoltMin3	uint16	0.01%	%	-2	3000	10000	actual value	The 3rd minimum operational grid voltage
0x200B	0x200B	1	RW	VoltMinTripT3	uint16	0.01s	s	-2	0	65500	actual value	The 3rd minimum grid voltage trip time

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x200C	0x200C	1	RW	VoltMax	uint16	0.01%	1%	-2	8000	13500	actual value	The upper limit grid voltage recovery
0x200D	0x200D	1	RW	VoltMin	uint16	0.01%	%	-2	2000	10000	actual value	The lower limit grid voltage recovery
0x200E	0x200E	1	RW	VoltRecoveryT	uint16	0.01s	s	-2	0	65500	actual value	The time of grid voltage recovery
0x200F	0x200F	1	RW	GridFrqMax1	uint16	0.01Hz	Hz	-2	5000@50Hz 6000@60Hz	5500@50Hz 6600@60Hz	actual value	The first maximum operational grid frequency
0x2010	0x2010	1	RW	FrqMaxTripT1	uint16	0.01s	s	-2	0	65500	actual value	The first maximum grid frequency trip time
0x2011	0x2011	1	RW	GridFrqMax2	uint16	0.01Hz	Hz	-2	5000@50Hz 6000@60Hz	5500@50Hz 6600@60Hz	actual value	The 2nd maximum operational grid frequency
0x2012	0x2012	1	RW	FrqMaxTripT2	uint16	0.01s	s	-2	0	65500	actual value	The 2nd maximum grid frequency trip time
0x2013	0x2013	1	RW	GridFrqMax3	uint16	0.01Hz	Hz	-2	5000@50Hz 6000@60Hz	5500@50Hz 6600@60Hz	actual value	The 3rd maximum operational grid frequency

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2014	0x2014	1	RW	FrqMaxTripT3	uint16	0.01s	s	-2	0	65500	actual value	The 3rd maximum grid frequency trip time
0x2015	0x2015	1	RW	GridFrqMin1	uint16	0.01Hz	Hz	-2	4000@50Hz 4800@60Hz	5000@50Hz 6000@60Hz	actual value	The first minimum operational grid frequency
0x2016	0x2016	1	RW	FrqMinTripT1	uint16	0.01s	s	-2	0	65500	actual value	The first minimum grid frequency trip time
0x2017	0x2017	1	RW	GridFrqMin2	uint16	0.01Hz	Hz	-2	4000@50Hz 4800@60Hz	5000@50Hz 6000@60Hz	actual value	The 2nd minimum operational grid frequency
0x2018	0x2018	1	RW	FrqMinTripT2	uint16	0.01s	s	-2	0	65500	actual value	The 2nd minimum grid frequency trip time
0x2019	0x2019	1	RW	GridFrqMin3	uint16	0.01Hz	Hz	-2	4000@50Hz 4800@60Hz	5000@50Hz 6000@60Hz	actual value	The 3rd minimum operational grid frequency
0x201A	0x201A	1	RW	FrqMinTripT3	uint16	0.01s	s	-2	0	65500	actual value	The 3rd minimum grid frequency trip time
0x201B	0x201B	1	RW	FrqMax	uint16	0.01Hz	Hz	-2	4500@50Hz	5500@50Hz	actual value	The upper limit grid frequency recovery

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
									5400@60Hz	6600@60Hz		
0x201C	0x201C	1	RW	FrqMin	uint16	0.01Hz	Hz	-2	4000@50Hz 4800@60Hz	5000@50Hz 6000@60Hz	actual value	The lower limit grid frequency recovery
0x201D	0x201D	1	RW	FrqRecoveryT	uint16	0.01s	s	-2	0	65500	actual value	The time of grid frequency recovery
0x201E	0x201E	1	RW	VoltMax	uint16	0.01%	%	-2	10000	13500	actual value	The upper limit grid voltage of moving average filter
0x201F	0x201F	1	RW	MaxTripT	uint16	0.01s	s	-2	0	65500	actual value	The trip time of the upper limit grid voltage of moving average filter
0x2020	0x2020	1	RW	VoltMin	uint16	0.01%	%	-2	8000	10000	actual value	The lower limit grid voltage of moving average filter
0x2021	0x2021	1	RW	MinTripT	uint16	0.01s	s	-2	0	65500	actual value	The trip time of the lower limit grid voltage of moving average filter
0x2022	0x2022	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2023	0x2023	1	RW	GridVoltUnbalance	uint16	0.01%	%	-2	1	1000	actual value	Unbalance rate of grid voltage
0x2024	0x2024	1	RW	Phase-PETripVolt	uint16	0.01%	%	-2	1	10000	actual value	The trip voltage of Phase-PE
0x2025	0x2025	1	RW	Phase-PERcvVolt	uint16	0.01%	%	-2	1	10000	actual value	The recovery voltage of

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												Phase-PE
0x2026	0x20FE	NA	RW	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0x20FF	0x20FF	1	RW	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Group 1 Active Power Derating Parameters												
0x2100	0x2100	1	RW	Reserve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserve
0x2101	0x2101	1	RW	Reserve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserve
0x2102	0x2102	1	RW	Reserve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserve
0x2103	0x2103	1	RW	Reserve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserve
0x2104	0x2104	1	RW	OvrFrqMin	uint16	0.01Hz	Hz	-2	5000@50Hz 6000@60Hz	6000@50Hz 7200@60Hz	actual value	The trigger frequency of OverFrequency derating
0x2105	0x2105	1	RW	OvrFrqMax	uint16	0.01Hz	Hz	-2	5000@50Hz 6000@60Hz	6000@50Hz 7200@60Hz	actual value	The end frequency or Rate of Overfrequency derating (Depends on the specific standard)
0x2106	0x2106	1	RW	OvrFrqSlop	uint16	0.01%	%	-2	1	10000	actual value	The Rate of Overfrequency derating.
0x2107	0x2107	1	RW	RecoveryFrq	uint16	0.01Hz	Hz	-2	4900@5	5500@	actual value	The recovery frequency of

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
									0Hz 5880@60Hz	50Hz 6600@60Hz		OverFrequency derating
0x2108	0x2108	1	RW	OvrFrqRecoveryT	uint16	1s	s	0	0	1200	actual value	The recovery time of OverFrequency derating
0x2109	0x2109	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x210A	0x210A	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x210B	0x210B	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x210C	0x210C	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x210D	0x210D	1	RW	VirtualDamping	uint16	0.001Ω	Ω	-3	0	5000	actual value	Resonance damping coefficient
0x210E	0x210E	1	RW	OperationOverVol	uint16	0.01%	%	-2	10000	13500	actual value	Operating overvoltage protection value
0x210F	0x210F	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x2110	0x2110	1	RW	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x2111	0x2111	1	RW	VwCurveV1	uint16	0.01%	%	-2	10000	11000	actual value	Grid overvoltage derating starting voltage V1
0x2112	0x2112	1	RW	VwCurveP1	uint16	0.1%	%	-1	0	1100	actual value	Grid overvoltage derating starting power P1
0x2113	0x2113	1	RW	VwCurveV2	uint16	0.01%	%	-2	10000	11000	actual value	Grid overvoltage derating end

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												voltage V2
0x2114	0x2114	1	RW	VwCurveP2	uint16	0.1%	%	-1	0	1100	actual value	Grid overvoltage derating end power P2
0x2115	0x2115	1	RW	OpenLoopRespT	uint16	0.1s	s	-1	5	900	actual value	Open loop response time
0x2116	0x21FE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0x21FF	0x21FF	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Group 2 Reactive Power Derating Parameters												
0x2200	0x2200	1	RW	PFSetValue	int16	0.001		-3	-1000 ~ -800	800 ~ 1000	actual value	Local Power Factor Setting
0x2201	0x2201	1	RW	PFpCurveP1	uint16	0.1%	%	-1	0	1100	actual value	Power of PF(P)Curve point 1
0x2202	0x2202	1	RW	PFpCurvePF1	int16	0.001		-3	-1000 ~ -800	800 ~ 1000	actual value	PF of PF(P)Curve point 1
0x2203	0x2203	1	RW	PFpCurveP2	uint16	0.1%	%	-1	0	1100	actual value	Power of PF(P)Curve point 2
0x2204	0x2204	1	RW	PFpCurvePF2	int16	0.001		-3	-1000 ~ -800	800 ~ 1000	actual value	PF of PF(P)Curve point 2
0x2205	0x2205	1	RW	PFpCurveTriVolt	uint16	0.01%	%	-2	10000	11000	actual value	The trigger voltage of PF(P)Curve

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2206	0x2206	1	RW	PFpCurveUndoVolt	uint16	0.01%	%	-2	9000	10000	actual value	The end voltage of PF(P)Curve
0x2207	0x2207	1	RW	QuCurveU1	uint16	0.01%	%	-2	10000	11000	actual value	Voltage of Q(U)Curve point 1
0x2208	0x2208	1	RW	QuCurveQ1	int16	0.1%	%	-1	-660	660	actual value	Reactive power of Q(U)Curve point 1
0x2209	0x2209	1	RW	QuCurveU2	uint16	0.01%	%	-2	10000	11000	actual value	Voltage of Q(U)Curve point 2
0x220A	0x220A	1	RW	QuCurveQ2	int16	0.1%	%	-1	-660	660	actual value	Reactive power of Q(U)Curve point 2
0x220B	0x220B	1	RW	QuCurveU1i	uint16	0.01%	%	-2	9000	9900	actual value	Voltage of Q(U)Curve point 1i
0x220C	0x220C	1	RW	QuCurveQ1i	int16	0.1%	%	-1	-660	660	actual value	Reactive power of Q(U)Curve point 1i
0x220D	0x220D	1	RW	QuCurveU2i	uint16	0.01%	%	-2	8000	10000	actual value	Voltage of Q(U)Curve point 2i
0x220E	0x220E	1	RW	QuCurveQ2i	int16	0.1%	%	-1	-660	660	actual value	Reactive power of Q(U)Curve point 2i
0x220F	0x220F	1	RW	QuCurveTriPower	uint16	0.1%	%	-1	50	1000	actual value	The trigger power of Q(U)Curve
0x2210	0x2210	1	RW	QuCurveUndoPower	uint16	0.1%	%	-1	50	1000	actual value	The end power of Q(U)Curve
0x2211	0x2211	1	RW	QpCurveP1	uint16	0.1%	%	-1	0	1100	actual value	Q(P)CurveP1
0x2212	0x2212	1	RW	QpCurveQ1	Int16	0.1%	%	-1	-660	660	actual value	Q(P)CurveQ1
0x2213	0x2213	1	RW	QpCurveP2	uint16	0.1%	%	-1	0	1100	actual value	Q(P) CurveP2
0x2214	0x2214	1	RW	QpCurveQ2	Int16	0.1%	%	-1	-660	660	actual value	Q(P) CurveQ2

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2215	0x2215	1	RW	QpCurveP3	uint16	0.1%	%	-1	0	1100	actual value	Q(P) CurveP3
0x2216	0x2216	1	RW	Qp CurveQ3	Int16	0.1%	%	-1	-660	660	actual value	Q(P) CurveQ3
0x2217	0x2217	1	RW	QpCurveOpenLoopRespTime	uint16	0.1S	S	-1	0	900	actual value	Q(P) Curve open loop response time
0x2211	0x22FE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x22FF	0x22FF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Group 3 ARC Parameters												
0x2300	0x2300	1	RW	Bandwidth1	uint16	1K	K	0	0	100	actual value	ArcFactoryB1
0x2301	0x2301	1	RW	StartFrq1	uint16	1K	K	0	0	100	actual value	ArcFactoryI1
0x2302	0x2302	1	RW	Proportion1	uint16	1	N/A	0	0	1000	actual value	ArcFactoryF1
0x2303	0x2303	1	RW	Filter1	uint16	1%	%	0	0	100	actual value	ArcFactoryD1
0x2304	0x2304	1	RW	Threshold1	uint16	1dB	dB	0	0	2000	actual value	ArcFactoryT1
0x2305	0x2305	1	RW	SigPerApdLmt1	uint16	1dB	dB	0	0	100	actual value	ArcFactoryC1
0x2306	0x2306	1	RW	Bandwidth2	uint16	1K	K	0	0	100	actual value	ArcFactoryB2
0x2307	0x2307	1	RW	StartFrq2	uint16	1K	K	0	0	100	actual value	ArcFactoryI2
0x2308	0x2308	1	RW	Proportion2	uint16	1	N/A	0	0	1000	actual value	ArcFactoryF2
0x2309	0x2309	1	RW	Filter2	uint16	1%	%	0	0	100	actual value	ArcFactoryD2

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x230A	0x230A	1	RW	Threshold2	uint16	1dB	dB	0	0	2000	actual value	ArcFactoryT2
0x230B	0x230B	1	RW	SigPerApdLmt2	uint16	1dB	dB	0	0	100	actual value	ArcFactoryC2
0x230C	0x230C	1	RO	Bandwidth1base	uint16	1K	K	0	0	100	actual value	Bandwidth1base
0x230D	0x230D	1	RO	Bandwidth2base	uint16	1K	K	0	0	100	actual value	Bandwidth2base
0x230E	0x230E	1	RW	Bandwidth1differ	uint16	1K	K	0	0	100	actual value	Bandwidth1differ
0x230F	0x230F	1	RW	Bandwidth2differ	uint16	1K	K	0	0	100	actual value	Bandwidth2differ
0x2310	0x2310	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2311	0x2311	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2312	0x2312	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2313	0x2313	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2314	0x2314	1	RW	ArcErrRecoveryT	uint16	1S	S	0	5	600	actual value	ARC error recovery time
0x2315	0x23FE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x23FF	0x23FF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Group 4 LVRT/HVRT												
0x2400	0x2400	1	RW	LVRTVolt1	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara1
0x2401	0x2401	1	RW	LVRTTime1	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara1

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2402	0x2402	1	RW	LVRTVolt2	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara2
0x2403	0x2403	1	RW	LVRTTime2	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara2
0x2404	0x2404	1	RW	LVRTVolt3	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara3
0x2405	0x2405	1	RW	LVRTTime3	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara3
0x2406	0x2406	1	RW	LVRTVolt4	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara4
0x2407	0x2407	1	RW	LVRTTime4	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara4
0x2408	0x2408	1	RW	LVRTVolt5	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara5
0x2409	0x2409	1	RW	LVRTTime5	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara5
0x240A	0x240A	1	RW	LVRTVolt6	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara6
0x240B	0x240B	1	RW	LVRTTime6	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara6
0x240C	0x240C	1	RW	LVRTVolt7	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara7
0x240D	0x240D	1	RW	LVRTTime7	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara7
0x240E	0x240E	1	RW	LVRTVolt8	uint16	0.01%	%	-2	0	10000	actual value	LVRTVoltPara8
0x240F	0x240F	1	RW	LVRTTime8	uint16	0.01s	s	-2	0	65500	actual value	LVRTTimePara8
0x2410	0x2410	1	RW	HVRTVolt1	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara1
0x2411	0x2411	1	RW	HVRTTime1	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara1
0x2412	0x2412	1	RW	HVRTVolt2	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara2
0x2413	0x2413	1	RW	HVRTTime2	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara2

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2414	0x2414	1	RW	HVRTVolt3	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara3
0x2415	0x2415	1	RW	HVRTTime3	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara3
0x2416	0x2416	1	RW	HVRTVolt4	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara4
0x2417	0x2417	1	RW	HVRTTime4	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara4
0x2418	0x2418	1	RW	HVRTVolt5	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara5
0x2419	0x2419	1	RW	HVRTTime5	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara5
0x241A	0x241A	1	RW	HVRTVolt6	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara6
0x241B	0x241B	1	RW	HVRTTime6	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara6
0x241C	0x241C	1	RW	HVRTVolt7	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara7
0x241D	0x241D	1	RW	HVRTTime7	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara7
0x241E	0x241E	1	RW	HVRTVolt8	uint16	0.01%	%	-2	10000	13500	actual value	HVRTVoltPara8
0x241F	0x241F	1	RW	HVRTTime8	uint16	0.01s	s	-2	0	65500	actual value	HVRTTimePara8
0x2420	0x24FE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x24FF	0x24FF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Group 5 Others Parameters												
0x2500	0x2500	1	RW	PowerOnDelay	uint16	1s	s	0	1	1200	actual value	Startup delay time

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2501	0x2501	1	RW	PVStartupVolt	uint16	1V	V	0	200	400	actual value	PV start-up voltage
0x2502	0x2502	1	RW	PVSlowStartPwDelta	uint16	0.01%	%	-2	1	1000	actual value	The output power should be slow increased due to the change of PV illumination at the Rule21 standard.
0x2503	0x2503	1	RW	ErrSoftStartP	uint16	0.01%	%	-2	1	10000	actual value	Power startup step after Grid Fault
0x2504	0x2504	1	RW	NormSoftStopP	uint16	0.01%	%	-2	1	10000	actual value	Normal power step in soft stop
0x2505	0x2505	1	RW	NormSoftStartP	uint16	0.01%	%	-2	1	10000	actual value	Normal power step in soft startup
0x2506	0x2506	1	RW	NormDeratingStep	uint16	0.01%	%	-2	1	10000	actual value	Normal power derating step
0x2507	0x2507	1	RW	StartUpMinTemp	uint16	0.1℃	℃	0	-350	-200	actual value	The minimum startup temperature
0x2508	0x2508	1	RW	FaultPowerT	uint16	0.1℃	℃	0	950	950	actual value	The trigger temperature of module
0x2509	0x2509	1	RO	FaultEnvT	uint16	0.1℃	℃	0	830	830	actual value	The trigger temperature of enviroment
0x250A	0x250A	1	RW	HVRTTripVolt	uint16	0.1%	%	-1	1000	1350	actual value	The trigger voltage of HVRT
0x250B	0x250B	1	RW	LVRTTripVolt	uint16	0.1%	%	-1	700	1000	actual value	The trigger voltage of LVRT
0x250C	0x250C	1	RW	LVRTPstReactiveI	uint16	0.1%	%	-1	0	3000	actual value	The coefficient of positive sequence reactive current

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x250D	0x250D	1	RW	LVRTNegReactiveI	uint16	0.1%	%	-1	0	3000	actual value	The coefficient of negtive sequence reactive current
0x250E	0x250E	1	RW	Percentage	uint16	0.1%	%	-1	0	1100	actual value	Loacl electric dispatch Active Power setting value
0x250F	0x250F	1	RW	Percentage	int16	0.1%	%	-1	-660	660	actual value	Local electric dispatch Reactive Power setting value
0x2510	0x2510	1	RW	ISOProtection	uint16	1KΩ	KΩ	0	1	2000	actual value	Minimum insulation resistance
0x2511	0x2511	1	RW	GFCIStaticValue	uint16	1mA	mA	1	100	1000	actual value	The threshold value of Leakage current
0x2512	0x2512	1	RW	GFCIStaticT	uint16	0.01s	s	-2	0	65500	actual value	The upper limit of Leakage current
0x2513	0x2513	1	RW	GFCIDynProFactor	uint16	0.1%	%	-1	0	2000	actual value	The upper limit of Leakage current
0x2514	0x2514	1	RW	DCIProtection1	uint16	0.01%	%	-2	10	500	actual value	maximun DCI value1
0x2515	0x2515	1	RW	DCIProtectionT1	uint16	0.01s	s	-2	0	12000	actual value	Trip time 1 of DCI value
0x2516	0x2516	1	RW	DCIProtection2	uint16	1mA	mA	0	5	5000	actual value	maximun DCI value2
0x2517	0x2517	1	RW	DCIProtectionT2	uint16	0.01s	s	-2	0	12000	actual value	Trip time 2 of DCI value
0x2518	0x2518	1	RW	DuplicationControl	uint16	1%	%	0	0	100	actual value	Parameter of repetitive control
0x2519	0x2519	1	RW	MPPTScanPeriod	uint16	10s	s	1	30	540	actual value	MPPTScan Cycle
0x251A	0x251A	1	RW	NA	uint16	NA	NA	NA	NA	NA	NA	NA

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x251B	0x251B	1	RW	PhaseLoseCoeff	uint16	0.1%	%	-1	5	300	actual value	PhaseLoseCoeff
0x251C	0x251C	1	RW	PhaseLoseRcvCoeff	uint16	0.1%	%	-1	5	300	actual value	PhaseLoseRcvCoeff
0x251D	0x251D	1	RW	PhaseLoseVUnbalance	uint16	0.01%	%	-2	1	1000	actual value	PhaseLoseVUnbalance
0x251E	0x251E	1	RW	ReactivePowerStep	uint16	0.01%	%	-2	1	60000	actual value	Reactive power step
0x251F	0x251F	1	RW	PVSlowStartStep	uint16	0.01%	%	-2	1	1000	actual value	PVSlowStartStep
0x2520	0x2520	1	RW	OptiVoltMinMppt1	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt1
0x2521	0x2521	1	RW	OptiVoltMaxMppt1	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt1
0x2522	0x2522	1	RW	OptiVoltMinMppt2	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt2
0x2523	0x2523	1	RW	OptiVoltMaxMppt2	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt2
0x2524	0x2524	1	RW	OptiVoltMinMppt3(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt3
0x2525	0x2525	1	RW	OptiVoltMaxMppt3(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt3
0x2526	0x2526	1	RW	OptiVoltMinMppt4(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt4
0x2527	0x2527	1	RW	OptiVoltMaxMppt4(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt4
0x2528	0x2528	1	RW	OptiVoltMinMppt5(Re	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt5

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
				serve)								
0x2529	0x2529	1	RW	OptiVoltMaxMppt5(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt5
0x252A	0x252A	1	RW	OptiVoltMinMppt6(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt6
0x252B	0x252B	1	RW	OptiVoltMaxMppt6(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt6
0x252C	0x252C	1	RW	OptiVoltMinMppt7(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt7
0x252D	0x252D	1	RW	OptiVoltMaxMppt7(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt7
0x252E	0x252E	1	RW	OptiVoltMinMppt8(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt8
0x252F	0x252F	1	RW	OptiVoltMaxMppt8(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt8
0x2530	0x2530	1	RW	OptiVoltMinMppt9(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt9
0x2531	0x2531	1	RW	OptiVoltMaxMppt9(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt9
0x2532	0x2532	1	RW	OptiVoltMinMppt10(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt10

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2533	0x2533	1	RW	OptiVoltMaxMppt10(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt10
0x2534	0x2534	1	RW	OptiVoltMinMppt11(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt11
0x2535	0x2535	1	RW	OptiVoltMaxMppt11(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt11
0x2536	0x2536	1	RW	OptiVoltMinMppt12(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMinMppt12
0x2537	0x2537	1	RW	OptiVoltMaxMppt12(Reserve)	uint16	0.1V	V	-1	2000	9500	actual value	OptiVoltMaxMppt12
0x2538	0x2538	1	RW	PhaseLoseCoeff	uint16	0.1%	%	-1	5	300	actual value	PhaseLoseCoeff
0x2539	0x25FE	N/A	N/A	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
0x25FF	0x25FF	N/A	N/A	Reserver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Reserver
Group 6 Enable/disable control Parameters												
0x2600	0x2600	1	RW	CtrParaGroup	Uint16	0	0	0	0	4	actual value	The enabled control parameters group. 0.Article 5 groups, control parameter setting of inverter

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												loop 1 : Article 1 groups, control parameter setting of inverter loop 2 : Article 2 groups, control parameter setting of inverter loop 3 : Article 3 groups, control parameter setting of inverter loop 4 : Article 4 groups, control parameter setting of inverter loop
0x2601	0x2601	1	RW	CtrMode	uint16	0	0	0	0	6	actual value	The control mode of reactive power 0: Disable dispatch mode. 1: Remote dispatch mode. 2: Local control ,by Q 3: Local control ,by PF 4: PF(P)curve 5: Q(U) curve (Association register address=

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												0x2200. 0x250F.0x2707. 0x2709) 6:Q(P)Curve
0x2602	0x2602	1	RW	CtrMode	uint16	0	0	0	0	2	actual value	The control mode of active power 0: Disable dispatch mode. 1: Remote dispatch mode. 2: Local control. (Association register address=0x250E.0x2708)
0x2603	0x2603	1	RW	MPPTScanEn	uint16	0	0	0	0	1	actual value	MPPT scan enable/disable control 0: Disable 1: Enable (Association register address=0x2519)
0x2604	0x2604	1	RW	ARCEnable	uint16	0	0	0	0	1	actual value	Arc detection enable/disable control 0: Disable 1: Enable (Association register

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												address=0x2300~0x230D)
0x2605	0x2605	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2606	0x2606	1	RW	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x2607	0x2607	1	RW	Island Protect	uint16	0	0	0	0	1	actual value	Island enable/disable control 0: Disable 1: Enable
0x2608	0x2608	1	RW	LVRTModeSetting	uint16	0	0	0	0	3	actual value	0: Disable 1: Enable, no reactive power output 2:Enable, reactive power output (Association register address=0x250B.0x250C.0x250D) 3：Allow low wear, active support

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2609	0x2609	1	RW	HVRTModeSetting	uint16	0	0	0	0	3	actual value	0: Disable 1: Enable, no reactive power output 2:Enable, reactive power output (Association register address=0x250A) 3：Allow high wear, active support
0x260A	0x260A	1	RW	NormSoftStopPEn	uint16	0	0	0	0	1	actual value	soft stop enable/disable control (Association register address=0x2504)
0x260B	0x260B	1	RW	PIDCheckEn	uint16	0	0	0	0	3	actual value	0:No external connection PID-Box 1:Have external connectionPID-Box 2:Reserver 3：Reserver
0x260C	0x260C	1	RW	GridVoltMax1En	uint16	0	0	0	0	1	actual value	Over grid voltage triggering enable/disable control 0: Disable

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												1: Enable (Association register address=0x2000.0x2001)
0x260D	0x260D	1	RW	GridVoltMax2En	uint16	0	0	0	0	1	actual value	Over grid voltage triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2002.0x2003)
0x260E	0x260E	1	RW	GridVoltMax3En	uint16	0	0	0	0	1	actual value	Over grid voltage triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2004.0x2005)
0x260F	0x260F	1	RW	GridVoltMin1En	uint16	0	0	0	0	1	actual value	Under grid voltage triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2006.0x2007)

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2610	0x2610	1	RW	GridVoltMin2En	uint16	0	0	0	0	1	actual value	Under grid voltage triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2008.0x2009)
0x2611	0x2611	1	RW	GridVoltMin3En	uint16	0	0	0	0	1	actual value	Under grid voltage triggering enable/disable control 0: Disable 1: Enable (Association register address=0x200A.0x200B)
0x2612	0x2612	1	RW	GridFrqMax1En	uint16	0	0	0	0	1	actual value	Over grid frequency triggering enable/disable control 0: Disable 1: Enable (Association register address=0x200F.0x2010)
0x2613	0x2613	1	RW	GridFrqMax2En	uint16	0	0	0	0	1	actual value	Over grid frequency triggering enable/disable control 0: Disable

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												1: Enable (Association register address=0x20110x2012)
0x2614	0x2614	1	RW	GridFrqMax3En	uint16	0	0	0	0	1	actual value	Over grid frequency triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2013.0x2014)
0x2615	0x2615	1	RW	GridFrqMin1En	uint16	0	0	0	0	1	actual value	Under grid frequency triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2015.0x2016)
0x2616	0x2616	1	RW	GridFrqMin2En	uint16	0	0	0	0	1	actual value	Under grid frequency triggering enable/disable control 0: Disable 1: Enable (Association register address=0x20170x2018)

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2617	0x2617	1	RW	GridFrqMin3En	uint16	0	0	0	0	1	actual value	Under grid frequency triggering enable/disable control 0: Disable 1: Enable (Association register address=0x2019.0x201A)
0x2618	0x2618	1	RW	VoltMaxMovAvgEn	uint16	0	0	0	0	1	actual value	Enable/disable control of limiting the upper of moving average filter 0: Disable 1: Enable (Association register address=0x201E.0x201F)
0x2619	0x2619	1	RW	VoltMinMovAvgEn	uint16	0	0	0	0	1	actual value	Enable/disable control of limiting the lower of moving average filter 0: Disable 1: Enable (Association register address=0x2020.0x2021)
0x261A	0x261A	1	RW	GFCIStaticEn	uint16	0	0	0	0	1	actual value	GFCI static detection

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												enable/disable control 0: Disable 1: Enable (Association register address=0x2511.0x2512)
0x261B	0x261B	1	RW	GFCIDynProEn	uint16	0	0	0	0	1	actual value	GFCI dynamic detection enable/disable control (Association register address=0x2513)
0x261C	0x261C	1	RW	OvrFrqDeratingMode	uint16	0	0	0	0	5	actual value	Over frequency derating enable/disable control 0: Disable 1~5: Enabling corresponding function 1：Enable 2：Reserver 3：Reserver 4：Reserver 5：Reserver (Association register

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												address=0x2104.0x2105.0x2106. 0x2107.0x2108)
0x261D	0x261D	1	RW	DCIProtection1En	uint16	0	0	0	0	1	actual value	DCI protection1 enable/disable control 0: Disable 1: Enable (Association register address=0x2514.0x2515)
0x261E	0x261E	1	RW	DCIProtection2En	uint16	0	0	0	0	1	actual value	DCI protection2 enable/disable control 0: Disable 1: Enable (Association register address=0x2516.0x2517)
0x261F	0x261F	1	RW	GridVoltUnbalanceEn	uint16	0	0	0	0	1	actual value	Unbalance rate of grid voltage detection enable/disable control 0: Disable 1: Enable (Association register

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												address=0x2023)
0x2620	0x2620	1	RW	UFDerEn	uint16	0	0	0	0	1	actual value	Under frequency derating enable/disable control 0: Disable 1: Enable
0x2621	0x2621	1	RW	OvrVoltDerEn	uint16	0	0	0	0	1	actual value	Grid voltage derating enable/disable control 0: Disable 1: Enable (Association register address=0x2100.0X2102.0X2103)
0x2622	0x2622	1	RW	PVSlowStartSEn	uint16	0	0	0	0	1	actual value	soft startup function after power saltation 0: Disable 1: Enable (Association register address=0x2502)
0x2623	0x2623	1	RW	ISOProtectionEn	uint16	0	0	0	0	1	actual value	ISO detection enable/disable control 0: Disable

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												1: Enable (Association register address=0x2510)
0x2624	0x2624	1	RW	FANDetect	uint16	0	0	0	0	1	actual value	Fan detection enable/disable control 0: Disable 1: Enable
0x2625	0x2625	1	RW	ACSPDDetectEnSet	uint16	0	0	0	0	1	actual value	The AC SPD test enables settings 0: Disable 1: Enable
0x2626	0x2626	1	RW	OperationOverVolEn	uint16	0	0	0	0	1	actual value	Operating overvoltage detection enables setting 0: Disable 1: Enable (Association register address=0x210E)
0x2627	0x2627	1	RW	ActivePowerOver	uint16	0	0	0	0	1	actual value	Active power over matching enables control 0: Disable 1: Enable

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
0x2628	0x2628	1	RW	ReactivePowerOver	uint16	0	0	0	0	1	actual value	Reactive power over matching enables control 0: Disable 1: Enable
0x2629	0x2629	1	RW	PhaseLoseCoeffEnable	uint16	0	0	0	0	3	actual value	R/W 0: Disable 1：Enable 2：Always enabled 3：Always enabled and associated voltage imbalance assisted protection
0x262A	0x262A	1	RW	Phase-PEEnable	uint16	0	0	0	0	1	actual value	R/W 0: Disable 1：Enable
0x262B	0x262B	1	RW	MPPTRangEnable	uint16	0	0	0	0	1	actual value	R/W

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												0: Disable 1：Enable
0x262C	0x262C	1	RW	RapidShutdownEnabBit	uint16	0	0	0	0	1	actual value	R/W 0: Disable 1：Enable
0x262D	0x26EF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x26F0	0x26F0	1	R	Number of valid registers in the "Enable Control Parameters" area	NA	NA	NA	NA	NA	NA	NA	N/A
0x06F1	0x06F1	1	R	Bit0 Reg “0x0600” Read/write control bit	NA	NA	NA	NA	NA	NA	NA	″Controller Parameter Group Selection″ read/write control bit; 1：R/W 0：RO
				Bit1 Register "0x0601" read/write control								″Reactive mode setting″ read/write control bit;; 1：R/W

Start	End	Size	R/W	Name		Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
					bit								0：RO
				Bit2	Register "0x0602" read/write control bit								"active mode setting" read/write control bit; 1：R/W 0：RO
				Bit3 ~ Bit15	Register "0x0603~0x060F" read/write control bit								1：R/W 0：RO
0x26F2	0x26FF	1	R	ditto	ditto	NA	NA	NA	NA	NA	NA	NA	1：R/W 0：RO
Group 7 Control Command													
0x2700	0x2700	1	RW	PowerOnOff		uint16	NA	NA	NA	NA	NA	actual value	Power on or power off device command, 0x5555 power on，0x7777 power off
0x2701	0x2701	1	RW	ForceRestart		uint16	NA	NA	NA	NA	NA	actual value	Device force restart command, valid value is 0x5AAA
0x2702	0x2702	1	RW	FactoryDefaults		uint16	NA	NA	NA	NA	NA	actual	Device factory reset command, valid value is

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
											value	0x5AAA
0x2703	0x2703	1	RW	AutoTest(CEI)	uint16	NA	NA	NA	NA	NA	actual value	Device auto test command, valid value is 0x5AAA
0x2704	0x2704	1	RW	MPPTScan	uint16	NA	NA	NA	NA	NA	actual value	MPPT scan command, valid value is 0x5AAA
0x2705	0x2705	1	RW	ARCDetect	uint16	NA	NA	NA	NA	NA	actual value	Arc Detection command, valid value is 0x5AAA
0x2706	0x2706	1	RW	ARCClear	uint16	NA	NA	NA	NA	NA	actual value	Clear Arc alarm, valid value is 0x5AAA
0x2707	0x2707	1	RW	PFSetValueRemote	uint16	0.001	NA	NA	-1000 ~ -800	800~1000	actual value	Remote electric dispatch Power Factor setting value
0x2708	0x2708	1	RW	PSetPercentRemote	uint16	0.1%	NA	NA	0	1100	actual value	Remote electric dispatch Active Power setting value
0x2709	0x2709	1	RW	QSetPercentRemote	uint16	0.1%	NA	NA	-660	660	actual value	Remote electric dispatch Reactive Power setting value
0x270A	0x270A	1	RW	FreqLv2PrtEn(CEI)	uint16	NA	NA	NA	NA	NA	NA	0x5555：Enable 0x7777：Disable
0x270B	0x27FE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0x27FF	0x27FF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
Group 9 Inverter Basic Information												
0x2900	0x2900	1	RO	MachineVersion	BCD	NA	NA	NA	NA	NA	actual value	MachineVersion
0x2901	0x2901	1	RO	DSP(App)FW Version	BCD	NA	NA	NA	NA	NA	actual value	DSP Firmware Version
0x2902	0x2902	1	RO	DSP(App)FW ChkSum	Hex	NA	NA	NA	NA	NA	actual value	DSP Firmware Code CheckSum
0x2903	0x2903	1	RO	(Dsp)BootFWVersion	BCD	NA	NA	NA	NA	NA	actual value	Boot Loader Firmware Version
0x2904	0x2904	1	RO	(Dsp)BootFWCodeChkSum	Hex	NA	NA	NA	NA	NA	actual value	Boot Loader Firmware Code CheckSum
0x2905	0x2905	1	RO	CPLDVersion	BCD	NA	NA	NA	NA	NA	actual value	CPLD Version
0x2906	0x2906	1	RW	SN20~17	BCD	NA	NA	NA	NA	NA	actual value	A storage space (Word) that corresponds to a 4 bit BCD code, and according to the encoding rule of the SN number, the eleventh bit must be "1""
0x2907	0x2907	1	RW	SN16~13	BCD	NA	NA	NA	NA	NA	actual value	
0x2908	0x2908	1	RW	SN12~9	BCD	NA	NA	NA	NA	NA	actual value	
0x2909	0x2909	1	RW	SN8~5	BCD	NA	NA	NA	NA	NA	actual value	
0x290A	0x290A	1	RW	SN4~1	BCD	NA	NA	NA	NA	NA	actual	

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
											value	
0x290B	0x290B	1	RO	ProductCode	BCD	NA	NA	NA	NA	NA	actual value	Product Code 0X1634 , as BCD code SOLECTRIA SCA25KTL-DO-R/US-480
0x290C	0x290C	1	RW	GridConnectionRule	Hex	NA	NA	NA	NA	NA	actual value	GridConnectionRule. 0 = NONE 10= IEEE1547 19= CA Rule 21 20= HECO-HM 21= HECO-ML 28= IEEE1547-2018
0x290D	0x290D	1	RW	NeutralLineSetting	Hex	NA	NA	NA	NA	NA	actual value	NeutralLineSetting 0x5A5A：connected to N line 0xA5A5：not connected to N line
0x290E	0x290E	1	RW	PVInputMode	Hex	NA	NA	NA	NA	NA	actual value	PVInputMode 0x5A5A: independent connection

Start	End	Size	R/W	Name	Type	SOLECTRIA Units	Uint	Scale factor	Min value	Max value	Contents	Description
												0xA5A5: parallel connection
0x290F	0x290F	1	RO	DSP Safety Firmware Code CheckSum	Hex	NA	NA	NA	NA	NA	actual value	N/A
0x2910	0x2910	1	RO	miniMCU Firmware Version	BCD	NA	NA	NA	NA	NA	actual value	N/A
0x2911	0x2911	1	RO	This field CheckSum	Hex	NA	NA	NA	NA	NA		
0x2912	0x2912	1	RO	SafetyVerNum	Hex	NA	NA	NA	NA	NA	actual value	Safety Version Number
0x2913	0x29FE	N/A	N/A	Reserver	NA	NA	NA	NA	NA	NA	NA	NA
0x29FF	0x29FF	1	N/A	Reserver	NA	NA	NA	NA	NA	NA	NA	NA

6. Inverter Work Mode Descriptor

Inverter work mode descriptor

Start	End	Size	R/W	Name	Type	Units	Contents	Description
0x002F	0x002F	1	R	Mode	uint16	1	0x8000/ 0x4000/ 0x2000/ 0x1000/ 0x0800/	0x8000: Fault 0x4000:Check 0x2000:Standby 0x1000:Running 0x0800: Derate

7. Inverter Events Descriptor

When a bit is set to "1", it indicates that the representative of the fault is occurring, and if the bit is set to "0", it indicates that the representative of the fault has not occurred.

Table 7-1 Fault Codes of the PVI 25TL-480-R Inverter

Register address	Storage data		LCD show(English)	Fault description
0x0035	Warn	Bit15	Reserved	NULL
		Bit14	Reserved	NULL
		Bit13	PVStrErr	1: PVStrErr 0:Normal
		Bi12	Pid Box communication fail	1:Pid Box CommErr 0:Normal
		Bit11	Pid Box fail	1:Pid Box Err 0:Normal
		Bit10	AC side MOV is abnormal	1:Warn0100 0:Normal
		Bit9	Reserved	NULL

		Bit8	Reserved	NULL
		Bit7	AC side lightning arrester is abnormal	1:Warn0070 0:Normal
		Bit6	Reserved	NULL
		Bit5	Temperature sensor is abnormal	1:Warn0050 0:Normal
		Bit4	DC side lightning protection device is abnormal	1:Warn0040 0:Normal
		Bit3	Eeprom problem	1:Warn0030 0:Normal
		Bit2	Internal communication failed	1:CommErr 0:Normal
		Bit1	Internal fan alarm	1:IntFanErr 0:Normal
		Bit0	External fan alarm	1:ExtFanErr 0:Normal
0x0036	Fault0	Bit15	Inverter current bias	1:Protect0010 0:Normal
		Bit14	Over-temperature protection	1:TempOver 0:Normal
		Bit13	Grid relay protection	1:Protect0020 0:Normal
		Bi12	Out of phase	1:GridV.OutLim 0:Normal
		Bit11	Grid frequency is low	1:GridF.OutLim 0:Normal

		Bit10	Grid frequency is high	1:GridF.OutLim 0:Normal
		Bit9	High inverter current	1:Protect0030 0:Normal
		Bit8	Grid phase voltage overrun	1:GridV.OutLim 0:Normal
		Bit7	Power line voltage exceeds the limit	1:GridV.OutLim 0:Normal
		Bit6	PV1 high current	1:Protect0040 0:Normal
		Bit5	Reserved	NULL
		Bit4	Inverter soft start overtime	1:Protect0050 0:Normal
		Bit3	Bus soft start overtime	1:Protect0060 0:Normal
		Bit2	Bus voltage difference is high	1:Protect0070 0:Normal
		Bit1	Reserved	NULL
		Bit0	Bus voltage and high	1:Protect0090 0:Normal
0x0037	Fault1	Bit15	Leakage current sensor is abnormal	1:Protect0100 0:Normal
		Bit14	Bus hardware overvoltage	1:Protect0110 0:Normal
		Bit13	Reserved	NULL
		Bit12	Power module protection	1:Protect0120

				0:Normal
		Bit11	Inverter current imbalance	1:Protect0130 0:Normal
		Bit10	Reserved	NULL
		Bit9	Grid voltage is unbalanced	1:GridV.OutLim 0:Normal
		Bit8	Inverter hardware overcurrent	Protect0140
		Bit7	MCU protection	Protect0150
		Bit6	Reserved	NULL
		Bit5	Abnormal frequency selection	Protect0160
		Bit4	Leakage current is too high	GFCIErr
		Bit3	Insulation resistance is too low	IsolationErr
		Bit2	DCI current is too high	Protect0170
		Bit1	DCI current bias	Protect0180
		Bit0	Reserved	NULL
0x0038	Fault2	Bit15	Reserved	NULL
		Bit14	Reserved	NULL
		Bit13	Reserved	NULL
		Bi12	PV3 voltage is too high	PV3VoltOver
		Bit11	PV3 input reverse	PV3Reverse
		Bit10	PV1 voltage is too high	PV1VoltOver
		Bit9	PV1 input is reversed	PV1Reverse
		Bit8	Reserved	NULL
		Bit7	Power inverter open-loop self-test	Protect0230
		Bit6	PV source input is abnormal	1: Protect0260 0:Normal

		Bit5	PV2 voltage is too high	PV2VoltOver
		Bit4	PV2 input overcurrent	Protect0240
		Bit3	PV2 input is reversed	PV2Reverse
		Bit2	Reserved	NULL
		Bit1	Internal hardware error	Protect0210
		Bit0	Reserved	NULL
0x0039	Fault3	Bit15	ARC protection	ARC Protect
		Bit14	Reserved	NULL
		Bit13	Hardware driver power supply is abnormal	Protect0330
		Bi12	Reserved	NULL
		Bit11	Reserved	NULL
		Bit10	Reserved	NULL
		Bit9	Reserved	NULL
		Bit8	Reserved	NULL
		Bit7	Reserved	NULL
		Bit6	Reserved	NULL
		Bit5	Reserved	NULL
		Bit4	Reserved	NULL
		Bit3	Reserved	NULL
		Bit2	Reserved	NULL
		Bit1	Reserved	NULL
		Bit0	Reserved	NULL
0x003A	Fault4	Bit15	Phase-to-ground voltage anomaly protection	Protect0470
		Bit14	Reserved	NULL

		Bit13	Reserved	NULL
		Bi12	Reserved	NULL
		Bit11	Reserved	NULL
		Bit10	CPLD clock is abnormal	Protect0520
		Bit9	CPLD program version is abnormal	Protect0530
		Bit8	Abnormal product model	Protect0540
		Bit7	Bst hardware overcurrent	Protect0550
		Bit6	Control board voltage is low 3.3V	Protect0560
		Bit5	Capture PLL lock exception	Protect0570
		Bit4	PV3 input overcurrent	Protect0580
		Bit3	Battery overboard	Protect0590
		Bit2	Arc board failure	Arcboard Err
		Bit1	Steady-state GFCI protection	Protect0610
		Bit0	Control board voltage is low 5V	Protect0620
0x0034	PFault	Bit15	Control board voltage and drive power failure	Fault0160
		Bit14	Open-loop self-test failed failure	Fault0150
		Bit13	Internal hardware failure	Fault0140
		Bit12	Permanent power module failure	Fault0010
		Bit11	Bus hardware overvoltage fault	Fault0020
		Bit10	Reserved	NULL
		Bit9	Reserved	NULL
		Bit8	Inverter hardware overcurrent fault	Fault0050
		Bit7	CPLD clock is faulty	Fault0060
		Bit6	DCI is too high	Fault0070
		Bit5	Bst Hardware overcurrent fault	Fault0080

		Bit4	Steady-state GFCI failure	Fault0090
		Bit3	Relay failure	Fault0100
		Bit2	Bus high failure	Fault0110
		Bit1	Reserved	NULL
		Bit0	Bus and high fault	Fault0130

8. Input Registers Data Mapping

As with the holding register, the input register is allocated as a number of blocks according to the data type, and the address range of each block is as shown in the following table "Input register block address allocation table"; the parameter definition in each block And address assignments, as shown in the following table "Input Register Assignment Table". Use the 0x04 function code to read.

Input register block address allocation table

Address range	Data type
0x8000 ~ 0x80FF	Grid Status Information Data Area
0x8100 ~ 0x81FF	Inverter Output Status Information Data Area
0x8200 ~ 0x82FF	Inverter (PV) Input Status Information Data Area
0x8300 ~ 0x83FF	Inverter Internal Status Information Data Area
0x8400 ~ 0x84FF	Inverter Fault Status Information Data Area
0x8500 ~ 0x85FF	Failure Resolution Information Data Area

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8000	Uab	0.1 V /Hex	R	NULL
0x8001	Ubc	0.1 V /Hex	R	NULL
0x8002	Uca	0.1 V /Hex	R	NULL
0x8003	Ua	0.1 V /Hex	R	NULL
0x8004	Ub	0.1 V /Hex	R	NULL
0x8005	Uc	0.1 V /Hex	R	NULL
0x8006	A phase grid frequency	0.1Hz /Hex	R	NULL
0x8007	B phase grid frequency	0.1Hz /Hex	R	NULL
0x8008	C phase grid frequency	0.1Hz /Hex	R	NULL
0x8009	Power grid phase sequence	0: NA, 1: Positive,2: negative	R	NULL
0x800A	Unbalance degree of power network voltage	0.1% /Hex	R	NULL
0x800B	Power system frequency	0.1Hz / Hex	R	NULL
0x800C	Voltage between N line and PE ground of power grid	1V /Hex	R	NPEVolt
0x800D	MCU detection of R phase current in power grid	1A /Hex	R	NULL
0x800E	MCU detection of S phase current in power grid	1A /Hex	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x800F	MCU detection of T phase current in power grid	1A /Hex	R	NULL
0x8010	MCU detection of R phase voltage in power grid	1V/Hex	R	NULL
0x8011	MCU detection of S phase voltage in power grid	1V/Hex	R	NULL
0x8012	MCU detection of T phase voltage in power grid	1V/Hex	R	NULL
0x8013	Voltage harmonics(L1)	0.01%	R	Voltage harmonics(L1) for 70kW
0x8014	Voltage harmonics(L2)	0.01%	R	Voltage harmonics(L2) for 70kW
0x8015	Voltage harmonics(L3)	0.01%	R	Voltage harmonics(L3) for 70kW
0x8016	Current harmonics(L1)	0.01%	R	Current harmonics(L1) for 70kW
0x8017	Current harmonics(L2)	0.01%	R	Current harmonics(L2) for 70kW
0x8018	Current harmonics(L3)	0.01%	R	Current harmonics(L3) for 70kW
0x8019~ 0x80FE	Reserved area of power grid state information	NULL	R	NULL
0x80FF	The number of registers in this zone (temporarily not used)	Hex	R	NULL
0x8100	A phase current	0.1A/ Hex	R	NULL
0x8101	B phase current	0.1A/ Hex	R	NULL
0x8102	C phase current	0.1A/ Hex	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8103	Active power of A phase	0.1KW/ Hex	R	NULL
0x8104	Active power of B phase	0.1KW/ Hex	R	NULL
0x8105	Active power of C phase	0.1KW/ Hex	R	NULL
0x8106	3 phase total active power	0.1KW/ Hex	R	NULL
0x8107	Reactive power of A phase	0.1KVar/ Hex	R	NULL
0x8108	Reactive power of B phase	0.1KVar/ Hex	R	NULL
0x8109	Reactive power of C phase	0.1KVar/ Hex	R	NULL
0x810A	3 phase total reactive power	0.1KVar/ Hex	R	NULL
0x810B	A phase power factor	0.01/ Hex	R	NULL
0x810C	B phase power factor	0.01/Hex	R	NULL
0x810D	C phase power factor	0.01/ Hex	R	NULL
0x810E	Three phase power factor	0.01	R	NULL
0x810F	Inverting A phase voltage	0.1V/Hex	R	NULL
0x8110	Inverting B phase voltage	0.1V/Hex	R	NULL
0x8111	Inverting C phase voltage	0.1V/Hex	R	NULL
0x8112	P Ref	0.1%	R	P Ref

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8113	Q Ref	0.1%	R	if the value that LCD get from DSP is 0xaaaa, LCD don't display this value.
0x8114	PF Ref	0.001	R	PF Ref
0x8115 ~ 0x81FE	Reserved area of inverter output state information	NULL	R	NULL
0x81FF	The number of registers in this zone (temporarily not used)	Hex	R	NULL
0x8200	Pv Link Type	Parallel / independent	R	NULL
0x8201	DC total input power	0.1KW /Hex	R	NULL
0x8202	PV voltage1	0.1V /Hex	R	NULL
0x8203	PV current 1	0.1A /Hex	R	NULL
0x8204	PV voltage 2	0.1V /Hex	R	NULL
0x8205	PV current 2	0.1A /Hex	R	NULL
0x8206	Reserve	0.1V /Hex	R	Reserve
0x8207	Reserve	0.1A /Hex	R	Reserve
0x8208	Boost1 Current	0.1A /Hex	R	NULL
0x8209	Boost2 Current	0.1A /Hex	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x820A	Boost3 Current	0.1A /Hex	R	NULL
0x820B	Boost4 Current	0.1A /Hex	R	NULL
0x820C	Boost5 Current	0.1A /Hex	R	NULL
0x820D	Boost6 Current	0.1A /Hex	R	NULL
0x820E	PV1 MPPT Current	0.1A /Hex	R	NULL
0x820F	PV2 MPPT2 Current	0.1A /Hex	R	NULL
0x8210	Reserve	0.1A /Hex	R	Reserve
0x8211	First line PV voltage curve 1-25 data	1V/Hex	R	25 16-bit data
0x8212	First line PV voltage curve 26-50 data	1V/Hex	R	25 16-bit data
0x8213	First line PV voltage curve 51-75 data	1V/Hex	R	25 16-bit data
0x8214	First line PV voltage curve 76-100 data	1V/Hex	R	25 16-bit data
0x8215	First line PV current curve 1-25 data	0.1A/Hex	R	25 16-bit data
0x8216	First line PV current curve 26-50 data	0.1A/Hex	R	25 16-bit data
0x8217	First line PV current curve 51-75 data	0.1A/Hex	R	25 16-bit data
0x8218	First line PV current curve 76-100 data	0.1A/Hex	R	25 16-bit data

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8219	Second line PV voltage curve 1-25 data	1V/Hex	R	25 16-bit data
0x821A	Second line PV voltage curve 26-50 data	1V/Hex	R	25 16-bit data
0x821B	Second line PV voltage curve 51-75 data	1V/Hex	R	25 16-bit data
0x821C	Second line PV voltage curve 76-100 data	1V/Hex	R	25 16-bit data
0x821D	Second line PV current curve 1-25 data	0.1A/Hex	R	25 16-bit data
0x821E	Second line PV current curve 26-50 data	0.1A/Hex	R	25 16-bit data
0x821F	Second line PV current curve 51-75 data	0.1A/Hex	R	25 16-bit data
0x8220	Second line PV current curve 76-100 data	0.1A/Hex	R	25 16-bit data
0x8221	Reserve	1V/Hex	R	Reserve
0x8222	Reserve	1V/Hex	R	Reserve
0x8223	Reserve	1V/Hex	R	Reserve
0x8224	Reserve	1V/Hex	R	Reserve
0x8225	Reserve	0.1A/Hex	R	Reserve
0x8226	Reserve	0.1A/Hex	R	Reserve

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8227	Reserve	0.1A/Hex	R	Reserve
0x8228	Reserve	0.1A/Hex	R	Reserve
0x8229	The first PV IV curve reads the data and completes the sign	NULL	R	The value of 3 means read completion
0x822A	The second PV IV curve reads the data and completes the sign	NULL	R	The value of 3 means read completion
0x822B	Reserve	NULL	R	Reserve
0x822C	The first road mppt scans the maximum power point power	0.1kw/Hex	R	NULL
0x822D	The first road mppt scans the maximum power point voltage	1V/Hex	R	NULL
0x822E	The second road mppt scans the maximum power point power	0.1kw/Hex	R	NULL
0x822F	The second road mppt scans the maximum power point voltage	1V/Hex	R	NULL
0x8230	Reserve	0.1kw/Hex	R	NULL
0x8231	Reserve	1V/Hex	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8232 ~ 0x82FE	Reserve		R	NULL
0x82FF	Reserve	Hex	R	NULL
0x8300	Inverter operating mode	NULL	R	Refer to the table below
0x8301	LCD switch machine command execution status feedback	NULL	R	If the LCD does not send a switch machine command, then reply 0xFFFF.
0x8302	Module temperature	0.1℃/Hex	R	NULL
0x8303	Internal temperature	0.1℃/Hex	R	NULL
0x8304	Insulation resistance detection（ISO）	1KΩ /Hex	R	NULL
0x8305	Leakage current detection value（GFCI）	1mA /Hex	R	NULL
0x8306	A phase DC component（DCI）	1mA /Hex	R	NULL
0x8307	B phase DC component（DCI）	1mA /Hex	R	NULL
0x8308	C phase DC component（DCI）	1mA /Hex	R	NULL
0x8309	Positive bus voltage	1V /Hex	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x830A	Negative bus voltage	1V /Hex	R	NULL
0x830B	Positive and negative bus voltage	1V /Hex	R	NULL
0x830C	Start countdown	0.1s /Hex	R	NULL
0x830D	ISO sampling circuit detection voltage	1V /Hex	R	NULL
0x830E	Bus capacitance	1uF	R	NULL
0x830F	AC capacitance	1uF	R	NULL
0x8310	Reserve	NULL	NULL	NULL
0x8311	Reserve	NULL	NULL	NULL
0x8312	Reserve	NULL	NULL	NULL
0x8313	Boost Module temperature	0.1℃ / int16	R	NULL
0x8310 ~ 0x83FE	"Inverter internal status information" reserved area	NULL	R	NULL
0x83FF	The number of this area register (temporarily not used)	NULL	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8400	Internal warning failure	Hex	R	Bit analysis, see "Fault Code of PVI 25TL-480-R" table.
0x8401	Internal recoverable failure 1			
0x8402	Internal recoverable failure 2			
0x8403	Internal recoverable failure 3			
0x8404	Internal recoverable failure 4			
0x8405	Internal recoverable failure 5			
0x8406	Internal permanent failure			
0x8407 ~ 0x84FE	"Inverter fault status information" reserved area.	NULL	R	NULL
0x84FF	The number of this area register (temporarily not used)	NULL	R	
0x8500	Alarm resolution message number 1	NULL	R	Note: When the fault occurs, in order to be able to read the operation information with the fault response, therefore, in
0x8501	Alarm resolution message data 1	NULL	R	
0x8502	Alarm resolution message number 2	NULL	R	
0x8503	Alarm resolution message data 2	NULL	R	

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8504	Alarm resolution message number 3	NULL	R	the event of failure, must match the operation of the fault information stored, and then passed to the LCD, in order to facilitate the scene analysis of the cause of the malfunction. The specific data storage format is as follows: "60KW software system fault information finishing instructions 20160330.doc" as shown in the 485 protocol, the transfer data register is 0x8500 ~ 0x85FF.
0x8505	Alarm resolution message data 3	NULL	R	
0x8506	Alarm resolution message number 4	NULL	R	
0x8507	Alarm resolution message data 4	NULL	R	
0x8508	Alarm resolution message number 5	NULL	R	
0x8509	Alarm resolution message data 5	NULL	R	
0x850A	Alarm resolution message number 6	NULL	R	
0x850B	Alarm resolution message data 6	NULL	R	
0x850C	Alarm resolution message number 7	NULL	R	NULL
0x850D	Alarm resolution message data 7	NULL	R	NULL
0x850E	Alarm resolution message number 8	NULL	R	NULL
0x850F	Alarm resolution message data 8	NULL	R	NULL
0x8510	Alarm resolution message number 9	NULL	R	NULL
0x8511	Alarm resolution message data 9	NULL	R	NULL
0x8512	Alarm resolution message number 10	NULL	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8513	Alarm resolution message data 10	NULL	R	NULL
0x8514	Recover fault resolution information number 1	NULL	R	NULL
0x8515	Recover fault resolution information data 1	NULL	R	NULL
0x8516	Recover fault resolution information number 2	NULL	R	NULL
0x8517	Recover fault resolution information data 2	NULL	R	NULL
0x8518	Recover fault resolution information number 3	NULL	R	NULL
0x8519	Recover fault resolution information data 3	NULL	R	NULL
0x851A	Recover fault resolution information number 4	NULL	R	NULL
0x851B	Recover fault resolution information data 4	NULL	R	NULL
0x851C	Recover fault resolution information number 5	NULL	R	NULL
0x851D	Recover fault resolution information data 5	NULL	R	NULL
0x851E	Recover fault resolution information number 6	NULL	R	NULL
0x851F	Recover fault resolution information data 6	NULL	R	NULL
0x8520	Recover fault resolution information number 7	NULL	R	NULL
0x8521	Recover fault resolution information data 7	NULL	R	NULL
0x8522	Recover fault resolution information number 8	NULL	R	NULL
0x8523	Recover fault resolution information data 8	NULL	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8524	Recover fault resolution information number 9	NULL	R	NULL
0x8525	Recover fault resolution information data 9	NULL	R	NULL
0x8526	Recover fault resolution information number 10	NULL	R	NULL
0x8527	Recover fault resolution information data 10	NULL	R	NULL
0x8528	Permanent fault resolution information number 1	NULL	R	NULL
0x8529	Permanent fault resolution information data 1	NULL	R	NULL
0x852A	Permanent fault resolution information number 2	NULL	R	NULL
0x852B	Permanent fault resolution information data 2	NULL	R	NULL
0x852C	Permanent fault resolution information number 3	NULL	R	NULL
0x852D	Permanent fault resolution information data 3	NULL	R	NULL
0x852E	Permanent fault resolution information number 4	NULL	R	NULL
0x852F	Permanent fault resolution information data 4	NULL	R	NULL
0x8530	Permanent fault resolution information number 5	NULL	R	NULL
0x8531	Permanent fault resolution information data 5	NULL	R	NULL
0x8532	Permanent fault resolution information number 6	NULL	R	NULL
0x8533	Permanent fault resolution information data 6	NULL	R	NULL
0x8534	Permanent fault resolution information number 7	NULL	R	NULL

Register address (1Word)	Data variable description	Unit / Storage format	Read and write rule	Description (1Word)
0x8535	Permanent fault resolution information data 7	NULL	R	NULL
0x8536	Permanent fault resolution information number 8	NULL	R	NULL
0x8537	Permanent fault resolution information data 8	NULL	R	NULL
0x8538	Permanent fault resolution information number 9	NULL	R	NULL
0x8539	Permanent fault resolution information data 9	NULL	R	NULL
0x853A	Permanent fault resolution information number 10	NULL	R	NULL
0x853B	Permanent fault resolution information data 10	NULL	R	NULL
0x853C ~ 0x85FE	"Fault resolution information" reservation area	NULL	R	NULL
0x85FF	The number of this area register (temporarily not used)	NULL	R	NULL

9. Operating Instructions

Suppose the RS485 address of the inverter is 1.

9.1 Example of reading a single input register (read the AB phase voltage)

Send: 01 (communication address) 04 (function code) 00 1F (register address) 0001 (register number) 00 0C (CRC16 check code)

Receive: 01 (communication address) 04 (function code) 02 (register word total number) 0E D9 (register value) 7C CA (CRC16 check code)

Description: "AB phase voltage" register value is 0x0ED9, by Table2-1 know "AB phase voltage" is uint16 type, unit is 0.1V, so AB phase voltage is 380.1V.

9.2 Examples of reading multiple input registers (read three phase voltage, three phase current)

Send: 01 (communication address) 04 (function code) 00 1F (register address) 0006 (register number) 41 CE (CRC16 check code)

Receive: 01 (communication address) 04 (function code) 0C (register total bytes) 0E D9 (Uab) 0E DA (Ubc) 0E D6 (Uca) 0E D9 (Uab) 0E D9 (Uab) 0E D9 (Uab) 7C CA (CRC16 check code)

Description：Uab =0x0ED9*0.1V =380.1V，Ubc =0x0EDA*0.1V =380.2V，Uca =0x0ED6*0.1V =379.8V，Ia =0x033A*0.1A =82.6A，Ib =0x033F*0.1A =83.1A，Ic =0x033E*0.1A =83.0A。

9.3 Example of reading a single hold register (read the upper limit of the two level of the grid voltage)

Send: 01 (communication address) 03 (function code) 2002 (register address) 0001 (register number) 2E 0A (CRC16 check code)

Receive: 01 (communication address) 03 (function code) 02 (read the total number of register words) 10 6A (register value) 35 AB (CRC16 check code)

Description: "grid voltage two upper limit" register value is 0x106A, by Table4-2 know "grid voltage two upper limit" is uint16 type, unit is 0.1V, so the grid voltage level two upper limit is 420.2V.

9.4 Examples of read multiple memory registers (read the upper limit and protection time of the grid voltage two)

Send: 01 (communication address) 03 (function code) 2002 (register address) 0002 (register number) 6E 0B (CRC16 check code)

Receive: 01 (communication address) 03 (function code) 04 (read the total number of bytes register) 10 6A (GridV.Max2) 2713 (VolMaxTripTime_2) 84 D2 (CRC16 checksum) Description：GridV.Max2 =0x106A*0.1V =420.2V，VolMaxTripTime_2 =0x2713*0.01s=100.03s。

9.5 Write a single hold register for example (write the upper limit of the grid voltage two)

Send: 01 (communication address) 06 (function code) 2002 (register address) 10 6A (register value) AE 25 (CRC16 check code)

Receive: 01 (communication address) 06 (function code) 2002 (register address) 10 6A (register value) AE 25 (CRC16 check code), that is, return as original.

Description：The "grid voltage two upper limit" written as 420.2V, by Table4-2 know "grid voltage two upper limit" is uint16 type, unit is 0.1V, so the grid voltage two level upper limit should write "0x106A"".

9.6 Examples of writing multiple holding registers (write two upper limit and protection time of grid voltage)

Send:01(communication address) 10 (function code) 2002 (register number) 04 (register bytes) 10 6A ("two level voltage limit register value) 2713 (" voltage level two cap protection time ") 9556 (CRC16 check code)

Receive: 01 (communication address) 10 (function code) 2002 (register address) 0002 (register number) EB C8 (CRC16 check code)

Description：The "upper limit of grid voltage two" is written as "420.2V", and the "upper limit time of grid voltage two" is written as "the protection time of the upper limit of the grid voltage".