GoodWe Modbus Protocol of Inverter

Grid-tied MTG2/SMT/SDTG2/MS/DNS/XS series (Customer Version)

CONTENTS

Version Change Record Form				
Version. NO	DATE	Compiler	Change log	
V1.0	2023.02.08	frank	1. Initial version	
V1.1	2023.03.01	frank	1. Modify the remarks of register 257	
V1.2	2023.08.16	frank	1. Registers 256, 257, 258, 260, 263~268, 291, 292, 293, 551, 553, 555, 556, 558, 559, 561, 562, 886, 893, and 2000 have been updated with the note: indicating supported models. 2. Register 814 (Power Factor) has been added for SMT models only. 3. Registers 546, 548, 784, 786, 788, 850, and 893 have been changed to 32-bit (U32/S32) format. 4. Registers 304, 305, 307, 308, 547, 549, 785, 787, 789, 832, 833, 851, 854, and 894 have been removed.	
V1.3	2024.01.15	Song.liu	1. Update the comments for registers 256 and 258. 2. Correct the instructions on setting the machine address in Chapter 5. 3. Add hexadecimal representation of addresses. 4. Add explanation for TBD.	
V1.4	2024.02.02	Song.liu	1. Correct CRC high/low bit order. 2. Delete Taiwan VPC curve-related registers (263, 264, 266, 268). 3. Remove reserved registers 792, 794, 795, 798. 4. Delete registers 260, 781, 875~878. 5. Adjust the name of register 265. 6. Adjust Modbus address comments, remove English. 7. Update test examples.	MTG2：V1.17.17.23. SMT25~36K(domestic): V1.12.12.20 SMT25~36K(overseas): V1.14.14.20 SMT40K-CN ：V1.05.05.20 SMT40K-JP ：V1.02.02.20 SMT50~60K(domestic): V1.07.07.20 SMT50~60K(overseas: V1.06.06.20 SMT-US ：V1.02.02.20 SDTG2：V1.20.20.21

			8. Add software version matching.	
V1.5	2024.02.26	Song.liu	1. Supplement the software version of the SDTG2 GD chip. 2. Change the name of address 293, 799. 3. Adjustment of address 256 Remarks: Add single-phase non-storage description. 4. Chapter 9 add active/reactive scheduling instruction summary.	MTG2：V1.17.17.23. SMT25~36K(domestic): V1.12.12.20 SMT25~36K(overseas): V1.14.14.20 SMT40K-CN　　: V1.05.05.20 SMT40K-JP　　: V1.02.02.20 SMT50~60K(domestic): V1.07.07.20 SMT50~60K(overseas: V1.06.06.20 SMT-US　　　: V1.02.02.20 SDTG2　　　: V1.20.20.21 or 　　　　　　　V1.20.20.57
V1.6	2024.02.28	Song.liu	1. Adjust active/reactive dispatch instruction summary table 8-7. 2. Adjust 257, 258, and 265 remarks. 3. Update the software version of SDTG2 to support 265 addresses.	MTG2：V1.17.17.23. SMT25~36K(domestic): V1.12.12.20 SMT25~36K(overseas): V1.14.14.20 SMT40K-CN　　: V1.05.05.20 SMT40K-JP　　: V1.02.02.20 SMT50~60K(domestic): V1.07.07.20 SMT50~60K(overseas: V1.06.06.20 SMT-US　　　: V1.02.02.20 SDTG2　　　: V1.22.22.21 or 　　　　　　　V1.22.22.57

RTU mode is applied in this protocol. Baudrate of data transmitting is 9600bps.

1.Byte Format
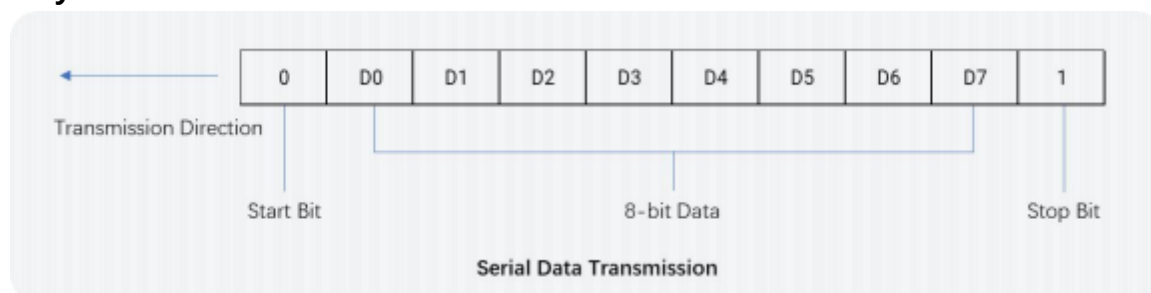
A byte is of 8 binary digits working together with 1 start bit (0) and 1 stop bit (1) in transmission, 10 bits in total. As illustrated below, D0 is the least significant bit (LSB) and D7 is the most significant bit (MSB). Pass to the least significant bit first, then to the most significant bit.

2. Communication Data Format

Data are exchanged in the form of word or doubleword:

Data Type	Register Size	Byte Size	Description
Byte Data	1	1	
Integer Data	1	2	One forwarding at one time, from the most significant bit to the least significant bit.
Long Integer Data	2	4	Two separate forwarding, from the most significant bit to the least significant bit.
Floating-point Data			

3. Frame Format

3.1 Read the Content of Register (Function code: 03H)

3.1.1 Frame format from host device

No.	Code	Example	Description
1	Device Address	1	The device's communication address range 1-247
2	03H	03H	Function code
3	MSB of First Register	00H	The address of first register
4	LSB of First Register	01H	
5	MSB of Register Number	00H	Register number
6	LSB of register Number	02H	
7	CRC16 LSB of Checksum	95H	CRC Checksum Data
8	CRC16 MSB of Checksum	CBH	

3.1.2 Frame format by device (normal data)

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No.	Code	Description
1	Device Address	The device's communication address range 1-247
2	03H	Function code
3	Byte Number of Receiving Data (2N)	Number of data
4	MSB of First Register Data	High bit of Data 1
5	LSB of First Register Data	Low bit of Data 1
...	...	...
2N+2	MSB of Register Data N	High bit of Data N
2N+3	LSB of Register Data N	Low bit of Data N
2N+4	CRC16 LSB of Checksum	CRCCRC checksum data
2N+5	CRC16 MSB of Checksum	

3.1.3 Frame format by device (error of first register address or number)

No.	Code	Description
1	Device Address	The device's communication address range 1-247
2	83H	Function code
3	02H	Error Code
4	CRC16 LSB of Checksum	CRCCRC checksum data
5	CRC16 MSB of Checksum	

3.2 Set the Content of Register (Function code: 10H)

3.2.1 Frame format from host device

No.	Code	Example	Description
1	Device address	1	The device's communication address range 1-247
2	10H	10H	Function code
3	MSB of First Register	00H	Address of register 0000H
4	LSB of First Register	00H	
5	MSB of Register Number	00H	Register number 01H
6	LSB of Register Number	01H	
7	Byte Number (N)	02H	Byte number of register 02H
8	MSB of Data	0AH	Data 0AF0H
9	LSB of Data	F0H	
10	CRC16 LSB of Checksum	A0H	CRC Checksum Data
11	CRC16 MSB of Checksum	B4H	

3.2.2 Frame format by device (write successful)

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No.	Code	Example	Description
1	Device Address	1	The device's communication address range 1-247
2	10H	10H	Function code
3	MSB of First Register	00H	Address of register 0000H
4	LSB of First Register	00H	
5	MSB of Register Number	00H	Register number 01H
6	LSB of Register Number	01H	
7	CRC16 LSB of Checksum	01H	CRC Checksum Data
8	CRC16 MSB of Checksum	C9H	

3.2.3 Format of the frame returned by the machine (data overrun error)

No.	Code	Description
1	Device Address	The device's communication address range 1-247
2	90H	Function code
3	03H	Error code
4	CRC16 LSB of Checksum	CRC Checksum Data
5	CRC16 MSB of Checksum	

3.2.4 Frame format by device (error of register address or number)

No.	Code	Description
1	Device Address	The device's communication address range 1-247
2	90H	Function code
3	02H	Error code
4	CRC16 LSB of Checksum	CRC Checksum Data
5	CRC16 MSB of Checksum	

4.Baud Rate of Communication：9600bps

5.Device Address：The range of device address is 1 – 247 with 247 as default setting before delivery. Please set the machine address on-site using SolarGo or the machine display screen

6.Function Code

03H: read (Note: read of one or more consecutive addresses are supported.)

10H: write (Note: Only support single data write, RTC time should be written together.)

7. Communication CRC checksum

The CRC checksum starts at the first byte and ends at the byte before the CRC checksum low byte.

8. Register Address of Device

#Address (Dec)	English Name	#R/W	#Type	#Length	#SF Gain	#Units	Range	Note
0	Power on voltage	RW	U16	1	10	V	[0, 0]	(60.0~600.0V)
1	Reconnect time	RW	U16	1	1	s	[0, 1200]	
2	Lower limit of grid voltage	RW	U16	1	10	V	[0, 0]	[0.15*Vn,1*Vn]
3	Upper limit of grid voltage	RW	U16	1	10	V	[0, 0]	[1*Vn,1.36*Vn]
4	Lower limit of grid frequency	RW	U16	1	100	Hz	[4500, 6000]	
5	Upper limit of grid frequency	RW	U16	1	100	Hz	[5000, 6500]	
16	Device RTC time Year/Month	RW	U16	1	1	NA	[0, 0]	MSB Year/LSB Month 13-99/1-12
17	Device RTC time Day/Hour	RW	U16	1	1	NA	[0, 0]	MSB Day/LSB Hour 1-31/0-23
18	Device RTC time Minute/Second	RW	U16	1	1	NA	[0, 0]	MSB Minute/LSB Second 0-59/0-59
256	Active power adjust	RW	U16	1	1	%	[0,100]	Corresponds to 0%-100% active power (1547 use) Note: Single-phase models support writing only and do not store
257	PF reactive power adjust	RW	U16	1	1	NA	[1,20]，[80,100]	Notes: Single-phase models support writing only; 1-20: PF = (set value - 100)/100, corresponding to a hysteresis of 0.99-0.8; 80-100: PF=set value/100, corresponding to overrun 0.80-1;
258 _	Reactive power adjust	RW	S32	2	1	Var	[0, 0]	Note: Single-phase model is not supported. The setting range is [-60%*Pn, 60%*Pn].

262	ARP Limt Adjust Range	WO	S16	1	1	%	High byte: 0-100，-100-0，128; Low byte: 0~256,	High byte: load reduction or recovery margin (less than 0 for load reduction, greater than 0 for load increasing, 128 for full recovery), in %. Low byte: instruction ID
265	reactive power adjust	RW	S16	1	1	%	[-60, 60]	-60%~60% Note: single-phase model is not supported
267	Export power limit Communication Overtime set	RW	U16		1	s	1-65535	Unit: second (For Taiwan safety regulations) Note: SMT support only.
288	Power On(Allow on grid self-test)	WO	U16	1	1	NA	0	Write 0 to active
289	Power Off(Not allow on grid self-test)	WO	U16	1	1	NA	0	Write 0 to active
290	Restart	WO	U16	1	1	NA	0	Write 0 to active
291	On Grid Export Power Limit Switch	RW	U16	1	1	NA	[0, 1]	0-off,1-on Note :Only SDT G2/SMT are supported
292	Set the ARP power percentage(Limit switches need to be turned on)	RW	U16	1	1	%	[0, 100]	Only SDT G2/SMT are supported
293	Active Control adjust	RW	U16	1	10	%	[0, 1000]	ARM 11 version Import (Note: MT support only
312	Shadow mode switch	RW	U16	1	1	NA	[0, 1]	0-Off,1-On
512	Device Serial Number	RO	STR	8	1	NA		ASCII code, 16 bytes
528	Device Type	RO	STR	5	1	NA		ASCII code, 16 bytes
Address 544-566 for non-MT models only								
544	Error Message	RO	U32	2	1	NA		Detail for Table8-2
546	Total Feed Energy to grid	RO	U32	2	10	KWH		Total Feed Power to grid
548	Total feeding hours	RO	U32	2	1	Hr		Total feeding hours
550	Vpv1 /PPV1 input voltage	RO	U16	1	10	V		PV1 voltage

551	Vpv2 /PV2 input voltage	RO	U16	1	10	V		PV2 voltage Note: Single mppt models are not supported.
552	Ipv1 /PV1 input current	RO	U16	1	10	A		PV1 current
553	Ipv2 /PV2 input current	RO	U16	1	10	A		PV2 current Note: Single mppt models are not supported.
554	Vac1 /L1 Phase voltage	RO	U16	1	10	V		Phase L1 voltage
555	Vac2 /L2 Phase voltage	RO	U16	1	10	V		Phase L2 voltage Note: Single-phase models are not supported
556	Vac3 /L3 Phase voltage	RO	U16	1	10	V		Phase L3 voltage Note: Single-phase models are not supported
557	Iac1 /L1 Phase current	RO	U16	1	10	A		Phase L1 current
558	Iac2 /L2 Phase current	RO	U16	1	10	A		Note: Single-phase models are not supported
559	Iac3 /L3 Phase current	RO	U16	1	10	A		Note: Single-phase models are not supported
560	Fac1 /L1 Phase frequency	RO	U16	1	100	Hz		
561	Fac2 /L2 Phase frequency	RO	U16	1	100	Hz		Note: Single-phase models are not supported
562	Fac3 /L3 Phase frequency	RO	U16	1	100	Hz		Note: Single-phase models are not supported
563	Pac L /Inverter current output power	RO	U16	1	1	W		Non-MT/SMT model use
564	Work Mode	RO	U16	1	1	NA		0:cWaitMode 1:cNormalMode 2:cFaultMode
565	Inverter internal temperature	RO	U16	1	10	degre e C		Inverter internal temperature
566	E-Day /Daily power generation	RO	U16	1	10	KWH		Feed power to grid in today
The following registers are only applicable to MT/SMT inverters								
768	Vpv1 /PV1 input voltage	RO	U16	1	10	V		PV1 voltage
769	Vpv2 /PV2 input voltage	RO	U16	1	10	V		PV2 voltage
770	Ipv1 /PV1 input current	RO	U16	1	10	A		PV1 current

771	Ipv2 /PV2 input current	RO	U16	1	10	A		PV2 current
772	Vac1 /L1 Phase voltage	RO	U16	1	10	V		Phase L1 voltage
773	Vac2 /L2 Phase voltage	RO	U16	1	10	V		Phase L2 voltage
774	Vac3 /L3 Phase voltage	RO	U16	1	10	V		Phase L3 voltage
775	Iac1 /L1 Phase current	RO	U16	1	10	A		Phase L1 current
776	Iac2 /L2 Phase current	RO	U16	1	10	A		Phase L2 current
777	Iac3 /L3 Phase current	RO	U16	1	10	A		Phase L3 current
778	Fac1 /L1 Phase frequency	RO	U16	1	100	Hz		Phase L1 frequency
779	Fac2 /L2 Phase frequency	RO	U16	1	100	Hz		Phase L2 frequency
780	Fac3 /L3 Phase frequency	RO	U16	1	100	Hz		Phase L3 frequency
782	Work Mode	RO	U16	1	1	NA		0:cWaitMode 1:cNormalMode 2:cFaultMode
783	Inverter internal temperature	RO	U16	1	10	degre e C		Inverter internal temperature
784	Error Message	RO	U32	2	1	NA		Failure description for status 'failure' Table8-2
786	Total Feed Energy to grid	RO	U32	2	10	KWH		Total Feed Power to grid
788	Total feeding hours	RO	U32	2	1	Hr		Total feeding hours
790	Firmware Version	RO	U16	1	1	NA		Firmware Version
791	Warning Code	RO	U16	1	1	NA		Warning Code
793	Function Status Bits	RO	U16	1	1	N/A		Table 8-3
796	BUS Voltage	RO	U16	1	10	V		BUS Voltage
797	NBUS Voltage	RO	U16	1	10	V		NBUS Voltage
799	Safety Code	RO	U16	1	1			Safety Code
800	Feed Power to grid in today/ Daily power generation	RO	U16	1	10	KWH		Feed Power to grid in today
804	Vpv5 /PV5 input voltage	RO	U16	1	10	V		For SMT50/60K
805	Ipv5 /PV5 input current	RO	U16	1	10	V		For SMT50/60K

806	Vpv6 /PV6 input voltage	RO	U16	1	10	A		For SMT50/60K
807	Ipv6 /PV6 input current	RO	U16	1	10	A		For SMT50/60K
814	Power Factor	RO	S16	1	1000	NA		SMT Only
827	Year :Month	RO	U16	1	1	NA		High byte :Year; Low byte:Month
828	Date :Hour	RO	U16	1	1	NA		High byte :Date; Low byte:Hour
829	Minute :Second	RO	U16	1	1	NA		High byte :Minute; low byte:Second
830	Manufacture ID	RO	U16	1	1	NA		Manufacturer Identifier for Hanneng
831	Wireless signal strength	RO	U16	1	1	%		Strength of Signal (WiFi/GPRS Effective)
850	Feeding power	RO	U32	2	1	W		
852	Firmware Version of ARM	RO	U16	1	1	NA		Firmware Version of ARM
853	GPRS Burn-in Mode	RO	U16	1	1	NA		0x00: normal mode
855	Vpv3 /PV3 input voltage	RO	U16	1	10	V		PV3 voltage
856	Vpv4 /PV4 input voltage	RO	U16	1	10	V		PV4 voltage
857	Ipv3 /PV3 input current	RO	U16	1	10	A		PV3 current
858	Ipv4 /PV4 input current	RO	U16	1	10	A		PV4 current
859	Istr1/PV String1 Current	RO	U16	1	10	A		PV String1 Current
860	Istr2/PV String2 Current	RO	U16	1	10	A		PV String2 Current
861	Istr3/PV String3 Current	RO	U16	1	10	A		PV String3 Current
862	Istr4/PV String4 Current	RO	U16	1	10	A		PV String4 Current
863	Istr5/PV String5 Current	RO	U16	1	10	A		PV String5 Current
864	Istr6/PV String6 Current	RO	U16	1	10	A		PV String6 Current
865	Istr7/PV String7 Current	RO	U16	1	10	A		PV String7 Current
866	Istr8/PV String8 Current	RO	U16	1	10	A		PV String8 Current
867	Istr9/PV String9 Current	RO	U16	1	10	A		PV String9 Current
868	Istr10/PV String10 Current	RO	U16	1	10	A		PV String10 Current

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869	Istr11/PV String11 Current	RO	U16	1	10	A		PV String11 Current
870	Istr12/PV String12 Current	RO	U16	1	10	A		PV String12 Current
871	Istr13/PV String13 Current	RO	U16	1	10	A		PV String13 Current
872	Istr14/PV String14 Current	RO	U16	1	10	A		PV String14 Current
873	Istr15/PV String15 Current	RO	U16	1	10	A		PV String15 Current
874	Istr16/PV String16 Current	RO	U16	1	10	A		PV String16 Current
879	PID&SPD Status	RO	U16	1	1	NA		Table 8-6
880	Output control state	RO	U16	1	1	NA		For Japanese models: 0-unprotected, 1-protected
886	Power Factor	RO	U16	1	1000	NA		Power Factor Note: For MT/SDTG2 only
893	AC Reactive Power	RO	S32	2	1000	kVar		AC reactive power Note: For MT/SMT/SDTG2 only
895	ISO detection value	RO	U16	1	1	K		ISO Detection value
896	Leak current Value	RO	U16	1	1	mA		leak current Value
The following registers are only applicable to MT/SMT inverters with Korean safety regulations								
1000	Current R phase size	RO	U32	2	10	A		
1002	Current S phase size	RO	U32	2	10	A		
1004	Current T phase size	RO	U32	2	10	A		
1006	Current R phase size	RO	U32	2	10	V		
1008	Current S phase size	RO	U32	2	10	V		
1010	Current T phase size	RO	U32	2	10	V		
1012	3 phase effective power	RO	U32	2	10	KW		
1014	3 phase ineffective power	RO	U32	2		KW		
1016	3 Phase force rate	RO	S32	2	1000	0.001	(+ PF): 800~1000 (-PF):-800~-1000,-1000 Handled as PF=1	
1018	Frequency	RO	U32	2	10	Hz		

1020	Status Flag1	RO	U32	2		Bit Field	Bit 1:Working Status (set: Stop,Reset: Work) Bit2:CB Working Status (set:fail,Reset:normal) Bit3:Operation mode status (set:separate,Reset:contact1)	
2000	PF	WR	S16	1	1000	0.001	(+ PF): 800~1000 (-PF):-800~-990	Note: MT support only
2001	Work and Mode	WR	U16	1		0	0: Separate operation 2: Power rate operation 5: Q(v)operation	
2002	Reactive power adjust	WR	S16	1	10	%	[-600, 600]	
2003	Active Control adjust	WR	U16	1	10	%	[0, 1000]	

Note：

- **U16: 16 bit unsigned number**
- **S16: 16 bit signed number**
- **U32: 32 bit unsigned number. High 16 bits in the front, low 16 bits in the back**
- **S32: 32 bit signed number. High 16 bits in the front, low 16 bits in the back**
- **RO:read only WO:write only   R/W:read & write**
- **Register setting range column [0,0] indicates that no range limit is set. If there are special instructions in the remarks, the instructions shall prevail**
- **Register setting range represents the data range that communication can fill in, the actual setting range may be slightly different according to different models. The data result of the frame returned by MODBUS writing data shall prevail.**
- **Working model:**
  cWaitMode: Machine in waiting, self-test state
  cNormalMode：The machine is in power generation mode
  cFaultMode：The machine is in an error state

Table 8-2 Error code table

Bit NO	DEC	HEX	Error message	Description
Bit31	2147483648	0x80000000	SPI Fail	1. An occasional situation, caused by external factors like external magnetic field etc.|2. Control board has a problem.
Bit30	1073741824	0x40000000	EEPROM R/W Fail	1. An occasional situation, caused by external factors like external magnetic field etc.|2.Inverter Inside components fail.
Bit29	536870912	0x20000000	Grid frequency overrun	1. Safety country of Inverter is set wrong.|2. Grid frequency is not stable.
Bit28	268435456	0x10000000	AFCI Fault	1. Poor contact of PV string | 2. Abnormal insulation of PV string to ground

Bit27	134217728	0x08000000	Night SPS Fail	1. The device is abnormal
Bit26	67108864	0x04000000	L-PE Short Circuit	The live wire connection of the inverter output terminal is abnormal
Bit25	33554432	0x02000000	Relay Check Fail	1. Cable between control board and power board (for DT) is not tight.|2. Neutral & ground cable are not connected well on AC side. |3. Control board problem.
Bit24	16777216	0x01000000	N-PE Fail	1. The connection between the N line and the earth is abnormal|2. Abnormal wiring of the N wire at the output of the inverter
Bit23	8388608	0x00800000	Export Power Limit Fault -Hardware	1. Abnormal Export Power Limit function (Australian safety regulations)
Bit22	4194304	0x00400000	PV Reverse Fault	1. PV string reverse connection
Bit21	2097152	0x00200000	String Over Current	Some string current is too high.
Bit20	1048576	0x00100000	LCD Communication Fail	The cable inside for communication of LCD gets loosen.
Bit19	524288	0x00080000	High DC component	Inverter detects a higher DC component in AC output.
Bit18	262144	0x00040000	Isolation Fail	1. The Ground cable of panels is not connected or not connected well.|2. DC cable is broken.|3. Neutral & ground cable are not connected well on AC side.|4. The ISO failure happens on rainy days or early morning or sunset, when the humidity is comparatively heavy.
Bit17	131072	0x00020000	Vac Fail (Grid voltage overrun)	1. Safety country of Inverter is set wrong.|2. Grid voltage is not stable.|3. AC (to grid) cable too small or too long which makes resistance value is high.|4. AC cables are not connected well, which cause a abnormal voltage on AC side.
Bit16	65536	0x00010000	External Fan Fail	1. External fan is blocked by something.|2. Fan cable is not connected well in the inverter.
Bit15	32768	0x00008000	PV Over Voltage	The total voltage (open-circuit voltage) of each PV string is higher than the max DC input voltage of the inverter.
Bit14	16384	0x00004000	00004000	Please contact after sales.
Bit13	8192	0x00002000	Over temperature	1. Inverter stays in a high-temperature environment for long time.|2. Installing place is not good for cooling system working.
Bit12	4096	0x00001000	Internal Fan Fail	1. Internal fan is blocked by something.|2. Fan cable is not connected well in the inverter.
Bit11	2048	0x00000800	DC Bus High	1. The total voltage of PV string is higher than max DC input voltage.|2. There is a problem of control board.
Bit10	1024	0x00000400	Ground I Fail	1. Neutral & ground cable are not connected well on AC side.|2. The Ground I Failure happens on rainy days or early morning or sunset, when the humidity is comparatively heavy.
Bit9	512	0x00000200	Utility Loss	1. Grid power fails.|2. AC connection is not good.|3. AC breaker fails 4. Grid is not connected.
Bit8	256	0x00000100	AC HCT Fail	1. An occasional situation, caused by external factors like external magnetic field etc.|2. Control board has a problem.
Bit7	128	0x00000080	Relay Fail	1. An occasional situation, caused by external

				factors like external magnetic field etc.|2. Control board has a problem.
Bit6	64	0x00000040	GFCI Fail	1. An occasional situation, caused by external factors like external magnetic field etc.|2. Control board has a problem.
Bit5	32	0x00000020	00000020	Please contact after sales.
Bit4	16	0x00000010	DC SPD Fail	Inverter suffering from lighting strike
Bit3	8	0x00000008	DC Switch Fail	The number of times of use of the DC trip switch exceeds the service life
Bit2	4	0x00000004	Ref 1.5V Fail	1. An occasional situation, caused by external factors like external magnetic field etc.|2. Control board has a problem.
Bit1	2	0x00000002	AC HCT Check Fail	1. Try to restart inverter, check if it still happens, if not, means it is just an occasional situation.|2. If restart cannot solve the problem, Please contact after sales.
Bit0	1	0x00000001	GFCI Check Fail	1. Try to restart inverter, check if it still happens, if not, means it is just an occasional situation.|2. If restart cannot solve the problem, Please contact after sales.

Table 8-3

Bit No	Definition	Status	
		1	0
Bit15	High Impedance Flag	-	
Bit14			
Bit13	Ground Fault Flag	NG	OK
Bit12	Battery activation function (for ES)	ON	OFF
Bit11	Export Power Limit (for ES)	ON	OFF
Bit10	EMS Mode(for ES)	ON	OFF
Bit9	Auto battery management mode (for ES)	ON	OFF
Bit8	Meter	OK	NG
Bit7	MPPT shadow scan	ON	OFF
Bit6	TBD	ON	OFF
Bit5	TBD	ON	OFF
Bit4	TBD	ON	OFF
Bit3	Power Limit Function	ON	OFF
Bit2	Burn-in Mode	ON	OFF
Bit1	LVRT	ON	OFF
Bit0	Anti-Islanding Function	ON	OFF

Notes:

TBD indicates reserved.

OK means normal; NG means abnormal.

ON means on; OFF means off.

Table 8-4

Bit No	Definition	Status	
		1	**0**
Bit15	TBD	-	-
Bit14	TBD	-	-
Bit13	TBD	-	-
Bit12	Wietap5	Normal	Failure
Bit11	Wietap4	Normal	Failure
Bit10	Wietap3	Normal	Failure
Bit9	Wietap2	Normal	Failure
Bit8	Wietap1	Normal	Failure
Bit7	TBD	-	-
Bit6	TBD	-	-
Bit5	TBD	-	-
Bit4	TBD	-	-
Bit3	TBD	-	-
Bit2	TBD	-	-
Bit1	PID Box Status	Normal	Failure
Bit0	PID Box	Connect	Disconnect

Note: TBD indicates reserved

Table 8-5

	ID	Bit(0...31)	Remark
Status Flag1	Working Status	1	Set : Stop, Reset : Work
	CB Working Status	2	Set : Fail, Reset : Normal
	Operation mode status	3	Set : Separate, Reset : Contact 1

Table 8-6

	ID	Value(decimal)	Remark
Working Mode	Operation Mode	0,2,5	0: Separate operation
			2 or 5: Contact operation
			(2: Power rate operation，5:
			Q(V) operation

9. Example

Table 8-7

Function		Modbus address	Description
Active dispatching	Active regulation (%)	256	Common to all models (single-phase only supports writing), range: [1,20], [80,100]
		293	Only MT support, unit: 0.1%。
	Back-flow power	292	Only MT/SMT support, unit: 1%
Reactive dispatching	PF Regulation	257	Common to all models (single-phase only supports writing), range: [1,20], [80,100]
	Amount of reactive power regulation (reactive power value)	258	Only MT/SMT/SDTG2 support, unit: Var
	Reactive power regulation (per cent)	265	Only MT/SMT/SDTG2 support, unit:1%

The active/reactive power scheduling instructions are summarized in the table above. In this case, different active scheduling commands will take effect at the same time and eventually take the smaller output; while reactive scheduling will only respond to the last command issued. Some examples of send/receive commands are:

9.1 Setting the active regulation amount

Host device sending

F7H	10H	01H	00H	00H,01H	02H	00H	32H	18H	E1H
Device Address	writing function	Register Starting Address		Register number	Byte count	Data		CRC Checksum	

Setting the active regulation amount to 50 means that the upper limit of the active output is set to 50% x rated power.

Device Return

F7H	10H	01H	00H	00H,01H	14H	A3H
Device Address	writing function	Register Starting Address		Register number	CRC Checksum	

9.2 Reading the set value of the active regulation volume

Host device sending

F7H	03H	01H	00H	00H,01H	91H	60H
Device Address	Read function	Register Starting Address		Register number	CRC Checksum	

Device Return

F7H	03H	02H	00H	32H	F1H	84H
Device Address	Read function	Byte number	high byte	low byte	CRC Checksum	

An active regulation amount of 50 means that the active power limit is set to 50% x rated power

9.3 Telemetric active power (SMT/MT address 850~851)

Host device sending

F7H	03H	03H	52H	00H,02H	71H	08H
Device Address	Read function	Register Starting Address		Register number	CRC Checksum	

Device Return

F7H	03H	04H	00H	00H	04H	56H	EEH	C2H
Device Address	Read function	Byte number	16-high byte		16-low byte		CRC Checksum	

Indicates that the current output active power is 1110W.

9.4 Telemetric active power (SDTG2 address 563)

Host device sending

F7H	03H	02H	33H	00H,01H	61H	2BH
Device Address	Read function	Register Starting Address		Register number	CRC Checksum	

Device Return

F7H	03H	02H	01H	DDH	B1H	98H
Device Address	Read function	byte count	16-high byte	16-low byte	CRC Checksum	

Indicates that the current output active power is 477W.

9.5 Setting the amount of reactive power regulation

Host device sending

F7H	10H	01H	02H	00H,02H	04H	00H	00H	0CH	94H	66H	C2H
Device Address	Read function	Register Starting Address		Register count	byte count	16-high byte		16-low byte		CRC Checksum	

Set the reactive power regulation to 3220Var.

Device Return

F7H	10H	01H	02H	00H,02H	F5H	62H
Device Address	Read function	Register Starting Address		Register count	CRC Checksum	

9.6 Reading the set value of the reactive power regulation

Host device sending

F7H	03H	01H	02H	00H,02H	70H	A1H
Device Address	Read function	Register Starting Address		Register count	CRC Checksum	

Device Return

F7H	03H	04H	00H	00H	0CH	94H	68H	93H
Device Address	Read function	byte count	16-high byte		16-low byte		CRC Checksum	

The value of the reactive power regulation amount setting is 3220Var.

9.7 Telemetric reactive power

Host device sending

F7H	03H	03H	7DH	00H,02H	40H	C1H
Device Address	Read function	Register Starting Address		Register count	CRC Checksum	

Device Return

F7H	03H	04H	00H	00H	07H	D8H	6EH	56H
Device Address	Read function	byte count	16-high byte		16-low byte		CRC Checksum	

Indicates that the current output reactive power is 2008Var.

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9.8 Setting the PF adjustment amount

Host device sending

F7H	10H	01H	01H	00H,01H	02H	00H	5AH	18H	DEH
Device Address	Read function	Register Starting Address		Register count	byte count	Data		CRC Checksum	

Set the PF adjustment to +0.9.

Device Return

F7H	10H	01H	01H	00H,01H	45H	63H
Device Address	Read function	Register Starting Address		Register count	CRC Checksum	

9.9 Reading the set value of the PF adjustment

Host device sending

F7H	03H	01H	01H	00H,01H	C0H	A0H
Device Address	Read function	Register Starting Address		Register count	CRC Checksum	

Device Return

F7H	03H	02H	00H	5AH	F0H	6AH
Device Address	Read function	byte count	16-high byte	16-low byte	CRC Checksum	

A PF adjustment amount of 90 means that the PF setting is +0.9.