Energy Storage Inverter Modbus TCP&RTU Communication protocols

V3.28

History list：

Data	Name	detail	Version	other
2015-9-23	Weir	Draft	V3.0	
2016-11-2	wangjianxing	fix	V3.01	
2017-1-19	wangjianxing	Fix wrong Bat adjust registers	V3.02	
2017-2-4	wangjianxing	Delete useless registers	V3.03	
2017-3-24	Wangjianxing	Add effective range describe Add Mac Adress refisters Fix Machine switch register	V3.04	
2017-4-22	wangjianxing	Add three phase feed in power registers(0x0082~0x0087) Add system run time registers(0x0088~0x008B) Add BMS Communication State(0x0017) Fix some registers uint	V3.05	
2017-5-31	wangjianxing	Fix SolarChargerUseMode（0x008B）register describe Delete some useless registers (0x0096~0x0099/0x009E~0x00A1) Add Backup mode registers (0x00FD~0x0101) Add Remote control register (0x0103) Fix inverterr and manager error code describe	V3.06	
2017-6-5	wangjianxing	Compitable with X1 protocol	V3.07	
2017-6-28	wangjanxing	Add some energy regiseters 0x0020~0x0023(func code 04) 0x0090~0x009B(func code 04)	V3.08	
2017-7-18	wangjianxing	Add BOSCH demand registers	V3.09	
2017-10-25	wangjianxing	Add Power Control registers	V3.10	
2018-1-11	wangajianxing	Add Meter Parallel W/R registers Fix X3 Italy safety selftest registers(0x00C5~0xD6)	V3.11	
2018-1-23	wangjianxing	Add Selftest Registers (Function code :0x04 Register:0x0180~0x01DA)	V3.12	
2018-4-3	wangjianxing	X3 Add Israel Safety setting Add BMS Charge/Discharge Current	V3.13	

		limit(Function 0x04 Registers 0x0024/0x0025) Fix Function 0x03 Registers 0x0090/91 precision describe		
2018-4-24	wangjianxing	Fix Function 0x03 Registers 0x0090/91 precision describe	V3.14	
2018-7-13	wangjianxing	Fix dwSolarEnergyTotal and SolarEnergyToday registers describe Add Lead Acid battery W/R Registers	V3.15	
2018-10-11	wangjianxing	Add Parallel input registers	V3.16	
2018-10-22	gaorui	Add Write Multiple Regiter(Function code:0x10;Register:0x07C~0x080)	V3.17	
2019-01-22	wangjianxing	Add communication example describe	V3.18	
2019-04-16	wangjianxing	Add Read Holding Registers (0x010F~0x0114) Add Write Single Registers (0x00A4~0x00A9) Add some new safeties	V3.19	
2019-6-4	wangjianxing	Add Read Holding Registers (0x0115 CTMeterSetting) Add Write Single Registers (0x00AA CTMeterSetting) Supplement BMS Warning code bit18~bit27	V3.20	
2019-7-5	wangjianxing	Add description of compatible Modbus RTU	V3.21	
2020-2-19	wangjianxing	**Add Read Holding Registers** 0x00E1:VirtualMeterEn 0x00E2:VirtualMeterPower 0x00E3:wItalinQuKvalue 0x00E45:QuDelayTimer **Add Write Single Registers** 0x0061:VirtualMeterEn 0x0062:VirtualMeterPower 0x0063:wItalinQuKvalue 0x0064:QuDelayTimer Add BMS_Precharge_Fault、BMS_Precharge_Fault BMS warning describe	V3.22	
2020-3-30	wangjianxing	Add **Write Multiple Register** 0x0081~0x0087:Split Phase ModbusPowerControl	V3.23	

2020-8-20	Wangjianxing	Add **Read Input Register** 0x00CB:BatteryForceChargeFlag	V3.24	
2020-8-27	wangjianxing	Add "Notice"explain about use "**Write Single Registers**"and"**Write Multiple Registers**"attentions	V3.25	
2020-11-26	wangjianxing	Upgrade support safety describe Add **Read Holding Registers** 0x00AA~0xAE:Registration code(for external module)	V3.26	
2021-03-22	wangjianxing	Add **Read Holding Registers** 0x00E8:BatteryInstallCapacity 0x00E9~0x00F2:InverterModelNumber	V3.27	
2021-5-18	wangjianxing	Read Input Register 0x04: 0x00CE Add BMS_RelayState register 0x00CF Add Battery_Tem_High register 0x00D0 Add Battery_Tem_Low register 0x00D1Add Cell_Voltage_High register 0x00D2Add Cell_Voltage_Low register Add Read Holding Register (BMS info) Add CTMeterDirection Setting Read Holding Register **0x0116** Write Single Register **0x00AB**		

1. Protocols general

protocols type：Modbus TCP(**for lan**)

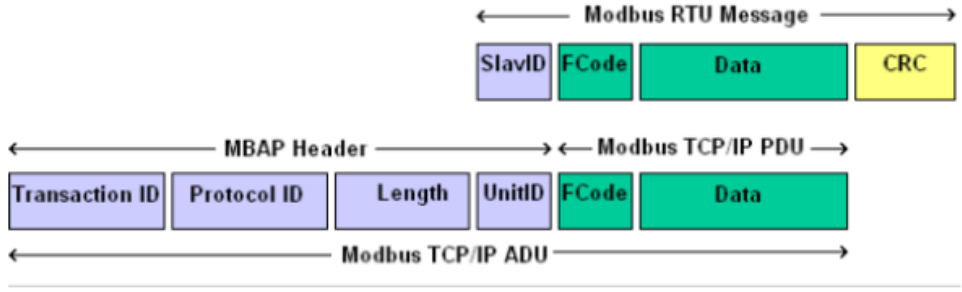
port：502

Transaction ID:No compulsory requirements

Protocol ID:No compulsory requirements

UnitID:No compulsory requirements, use 0x01 by default

frame format:



protocols type：Modbus RTU(**for 485**)

Address: 1(defualt)

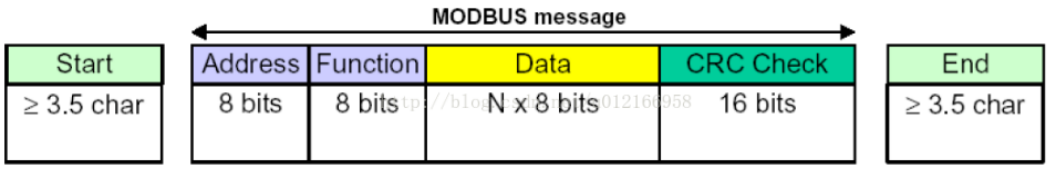
Braud Rate：115200(default)

Data bits: 8

Stop Bit: 1

Parity: None

frame format:



2. time request:

Timing parameter	Value
The least interval time between two instructions	1 Sec
Character-gap time out(silent time between 2 package)	>100ms
Response timeout	1 Sec

Notice:When use"**Write Single Registers**"and"**Write Multiple Registers**"function,some registers will be write in EEprom if they are changed(these parameters can be saved after power failure).But the EEprom has the write times limit,Usually 1Million times.Too frequent operation will lead to irreversible hardware damage.Related registers are marked with ★.If there is any

doubt about the use, please contact the technical personnel in time.

Add new sign with ☆,the register will be save to EEprom after 5 minutes if the register had be changed.

3. Read Holding Register

Function Code	Read Holding Register						
	Register	Variable	W/R	descripton	Unit	data format	length
0X03	0x0000 ~0x0006	SeriesNumber	R	14Chars, MSB=SN[14]	14Char	Uint16	7
	0x0007 ~0x000D	FactoryName	R	14Chars, MSB=SN[14]	14Char	Uint16	7
	0x000E -~x0014	ModuleName	R	14Chars, MSB=SN[14]	14Char	Uint16	7
	0x0015	VpvStart(Hbrid)	R	launch voltge threshold	0.1V	Uint16	1
	0x0016	TimeStart	R	launch wait time	1s	Uint16	1
	0x0017	VpvHighStop(Hbrid)	R	input high voltage protect threshold	0.1V	Uint16	1
	0x0018	VpvLowStop(Hbrid)	R	input low voltage stop thershold	0.1V	Uint16	1
	0x0019	VacMinProtect	R	allowed minimum grid voltage	0.1V	Uint16	1
	0x001A	VacMaxProtect	R	allowed maximum grid voltage	0.1V	Uint16	1
	0x001B	FacMinProtect	R	allowed minimum grid frequency	0.01Hz	Uint16	1
	0x001C	FacMaxProtect	R	allowed maximum grid frequency	0.01Hz	Uint16	1
	0x001D	Safety	R	safty type case 0: VDE0126 case 1: ARN4105 case 2: AS4777_AU case 3: G98/1 case 4: C10/11 --- case5: OVE/ONORME8001(X1) case5:TOR(X3) --- case 6: EN50438_NL case 7: Denmark2019_W	—	Uint16	1

				case 8: CEB case 9: CEI021 case 10:NRS097_2_1 case 11: VDE0126_Gr_Is case 12: UTE_C15_712 case 13:IEC61727 Case14:G99/1 Case15:VDE0126_Gr_Co ---------- Case16:France_VFR2014(X1) Case16:Guyana(X3) ---------- Case17:C15_712_is_50 Case18:C15_712_is_60 Case19:AS4777_NZ Case20:RD1699 Case21:Chile ---------(X3)--------- Case22:Israel Case23:Czech_CEZ Case24:UNE_206 Case25:EN50438_Poland Case26:EN50438_Portugal Case27:PEA Case28:MEA Case29:EN50549_Sweden Case30:Philippines Case31:EN50438_Slovenia Case32:CEI0_16 Case33:G98 Case34:G99 Case35:EN50549_EU Case36:Denmark2019_E Case37:Suriname ---------(X3)--------- ---------(X1)--------- Case22:EN50438_Ireland Case23:Philippines Case24:Czech_PPDS Case25:Czech_50438 Case26:EN50549 Case27:Denmark2019_E ---------(X1)---------			

0x001E	REV	R		—		1
0x001F	Grid10MinAvgProtect	R	10minutes over voltage protect	0.1V	Uint16	1
0x0020	VacMinSlowProtect	R	grid undervoltage protect value	0.1V	Uint16	1
0x0021	VacMaxSlowProtect	R	grid overvoltage protect value	0.1V	Uint16	1
0x0022	FacMinSlowProtect	R	grid underfrequency protect value	0.01HZ	Uint16	1
0x0023	FacMaxSlowProtect	R	grid overfrequency protect value	0.01HZ	Uint16	1
0x0024	DciLimits	R	DC component limits	1mA	Uint16	1
0x0025	PowerLimitsPercent	R	output power limits precent	0~100	Uint16	1
0x0026	PowerfactorMode	R	Power factor Mode	1	Uint16	1
0x0027	PowerfactorData	R	Power factor data	0.01	Uint16	1
0x0028	UpperLimit	R	overexcite limits	0.01	Uint16	1
0x0029	LowerLimit	R	underexcite limits	0.01	Uint16	1
0x002A	PowerLow	R	power ratio change upper limits	0.01	Uint16	1
0x002B	PowerUp	R	power ratio change lower limits	0.01	Uint16	1
0x002C-0x007B	PowerManagerConfigData(Rev)	R	PowerManagerConfigData	—	Uint16	80
0x007C	PowerManagerEnable(Rev)	R	PowerManagerEnable	—	Uint16	1
0x007D	FirmwareVersion_InverterMaster	R	FirmwareVersion_InverterMaster	1	Uint16	1
0x007E-0x0081	REV	R				
0x0082	FirmwareVersion_ModbusTCP_minor	R	FirmwareVersion_ModbusTCP_minor	1	Uint16	1
0x0083	FirmwareVersion_Manager	R	FirmwareVersion_Manager	1	Uint16	1
0x0084	FirmwareVersion_Manager_Bootloader	R	FirmwareVersion_Manager_Bootloader	1	Uint16	1
0x0085	RTC-Seconds	R	RTC-Seconds	—	Uint16	1
0x0086	RTC-Minutes	R	RTC-Minutes	—	Uint16	1
0x0087	RTC-Hours	R	RTC-Hours	—	Uint16	1
0x0088	RTC-Days	R	RTC-Days	—	Uint16	1
0x0089	RTC-Months	R	RTC-Months	—	Uint16	1
0x008A	RTC-Years	R	RTC-Years	—	Uint16	1
0x008B	SolarChargerUseMode	R	SolarChargerUseMode: 0:Self use mode 1:ForceTimeUse 2:Back Up Mode 3:Feedin Priority	—	Uint16	1

0x008C	Battery_MinCapacity	R	Battery Min Capacity	1%	Uint16	1
0x008D	wBattery1_Type	R	0: Lead Acid 1: Lithium	1	Uint16	1
0x008E	Charge_floatVolt	R	Charge_floatVolt	0.1V	Uint16	1
0x008F	Battery_DischargeCutVoltage	R	battery discharge cut off voltage	0.1V	Uint16	1
0x0090	Battery_ChargeMaxCurrent	R	Battery charge Maximum Current	0.1A	Uint16	1
0x0091	Battery_DischargeMaxCurrent	R	Battery Discharge Maximum Current	0.1A	Uint16	1
0x0092	ChargerStartTime1_Hours	R	ChargerStartTime1_Hours	0-23	Uint16	1
0x0093	ChargerStartTime1_Minutes	R	ChargerStartTime1_Minutes	0-59	Uint16	1
0x0094	ChargerEndTime1_Hours	R	ChargerEndTime1_Hours	0-23	Uint16	1
0x0095	ChargerEndTime1_Minutes	R	ChargerEndTime1_Minutes	0-59	Uint16	1
0x0096~0x0099	REV				Uint16	1
0x009A	ChargerStartTime2_Hours	R	ChargerStartTime2_Hours	0-23	Uint16	1
0x009B	ChargerStartTime2_Minutes	R	ChargerStartTime2_Minutes	0-59	Uint16	1
0x009C	ChargerEndTime2_Hours	R	ChargerEndTime2_Hours	0-23	Uint16	1
0x009D	ChargerEndTime2_Minutes	R	ChargerEndTime2_Minutes	0-59	Uint16	1
0x009E~0x00A1	REV	R			Uint16	1
0x00A2	MAC address(for lan)	R	MAC[0] = LSB MAC[1] = LMB	-	Uint16	1
0x00A3	MAC adress(for lan)	R	MAC[2] = LSB MAC[3] = LMB	-	Uint16	1
0x00A4	MAC adress(for lan)	R	MAC[4] = LSB MAC[5] = LMB	-	Uint16	1
0x00A5	Rev					
0x00A6	ModbusPowerControl	R	0:disable 1:total 2:Split Phase (it will turn to disable if no power target received within **PowerControl_timeout** second)	1	Uint16	1
0x00A7	absorpt_voltage	R	absorpt_voltage	0.1V	Uint16	1
0x00A8-0x00A9	REV	R				
0x00AA-0x00AE	Registration code **(for external module)**		Registration code[10]	10Char	Uint16	5
0x00AF-0x00B3	Registration code **(for inverter lan)**	R	Registration code[10]	10Char	Uint16	5

0x00B4	Allow_Grid_Charge	R	Is Charge from Grid allowed (0(forbidden)/ 1 (period1 allow) /2(period2 allow) /3(both allow))	-	Uint16	1
0x00B5	Export control_factory limit	R	Export control_factory limit	1w	Uint16	1
0x00B6	Export control user limit	R	Export_control user limit	1w	Uint16	1
0x00B7	EPS_Mute	R	0(off)/1(on)	1	Uint16	1
0x00B8	EPS Frequency	R	0(50Hz)/1(60Hz)	1	Uint16	1
0x00B9	REV					
0x00BA	Inverter Type	R	Inverter rate power	1w	Uint16	1
0x00BB	Language(**for screen show**)	R	Langage: 0:English 1:German 2:French 3:Polish	0/1	Uint16	1
0x00BC	IP Method	R	0:DHCP Method 1:Static Method	0/1	Uint16	1
0x00BD	wTimeVacMin_FastAdj	R	wTimeVacMin_FastAdj (for Italy)	1ms	Uint16	1
0x00BE	wTimeVacMax_FastAdj	R	wTimeVacMax_FastAdj(for Italy)	1ms	Uint16	1
0x00BF	wTimeFacMin_FastAdj	R	wTimeFacMin_FastAdj(for Italy)	1ms	Uint16	1
0x00C0	wTimeFacMax_FastAdj	R	wTimeFacMax_FastAdj(for Italy)	1ms	Uint16	1
0x00C1	wTimeVacMin_SlowAdj	R	wTimeVacMin_SlowAdj(for Italy)	1ms	Uint16	1
0x00C2	wTimeVacMax_SlowAdj	R	wTimeVacMax_SlowAdj(for Italy)	1ms	Uint16	1
0x00C3	wTimeFacMin_SlowAdj	R	wTimeFacMin_SlowAdj(for Italy)	1ms	Uint16	1
0x00C4	wTimeFacMax_SlowAdj	R	wTimeFacMax_SlowAdj(for Italy)	1ms	Uint16	1
0x00C5	TestStep	R	TestStep 1 means test Ovp(59.S2) 2 means test Uvp(27.S1) 3 means test Uvp(27.S2) 4 means test Ofp(81>.S1) 5 means test Ufp(81<.S1) 6 means test Ofp2(81>.S2) 7 means test Ufp2(81<.S2) 8 means test Ovp_10(59.S1) 9 means success SelfTest_Time:the remaining time of each test	1~8	Uint16	1
0x00C6	OvpValue(Ovp(59.S2))	R		0.1V	Uint16	1
0x00C7	OvpTime(Ovp(59.S2))	R		1ms	Uint16	1
0x00C8	UvpValue(Uvp(27.S1))	R		0.1V	Uint16	1
0x00C9	UvpTime(Uvp(27.S1))	R		1ms	Uint16	1
0x00CA	OfpValue(Ofp(81>.S1))	R		0.01Hz	Uint16	1
0x00CB	OfpTime(Ofp(81>.S1))	R		1ms	Uint16	1
0x00CC	UfpValue(Ufp(81<.S1))	R		0.01Hz	Uint16	1
0x00CD	UfpTime(Ufp(81<.S1))	R		1ms	Uint16	1
0x00CE	SelfTestOvp10mAvgVal (Ovp_10(59.S1))	R		0.1V	Uint16	1
0x00CF	SelfTestOvp10mAvgTime (Ovp_10(59.S1))	R		1S	Uint16	1
0x00D0	SelfTestOfpVal_Restrictive (Ofp2(81>.S2))	R		0.01Hz	Uint16	1

0x00D1	SelfTestOfpTime_Restrictive (Ofp2(81>.S2))	R		1ms	Uint16	1
0x00D2	SelfTestUfpVal_Restrictive (Ufp2(81<.S2))	R		0.01Hz	Uint16	1
0x00D3	SelfTestUfpTime_Restrictive (Ufp2(81<.S2))	R		1ms	Uint16	1
0x00D4	SelfTest_UvpRestrictive_Val (Uvp(27.S2))	R		0.1V	Uint16	1
0x00D5	SelfTest_UvpRestrictive_Time (Uvp(27.S2))	R		1ms	Uint16	1
0x00D6	SelfTest_Time			1s	Uint16	1
0x00D7	REV					
0x00D8	PfLockInPoint	R	Set Power Factor parameter	105~110	uint16	1
0x00D9	PfLockOutPoint	R		98~90	uint16	1
0x00DA	wInverter_OutPut_Switch	R	1=ON;0=Off	-	uint16	1
0x00DB	FreqSetPoint	R	Over Frequency drop output set point	0.01Hz	uint16	1
0x00DC	FreqDroopRate	R	drop output slope	1%	uint16	1
0x00DD	FreDroopDelayTime	R	FreDroopDelayTime	1ms	uint16	1
0x00DE	QuVrateUp	R	Q(U) curve up set point	1%	uint16	1
0x00DF	QuVrateLow	R	Q(U) curve low set point	1%	uint16	1
0x00E0	REV					
0x00E1	VirtualMeterEn	R	0:disable 1:enable	1	uint16	1
0x00E2	VirtualMeterPower	R	VirtualMeterPower	1w	uint16	1
0x00E3	wItalinQuKvalue	R	wItalinQuKvalueP{1,-1}	1	uint16	1
0x00E4	QuDelayTimer		QuDelayTimer (0~30)	1S	uint16	1
0x00E5 ~0x0E7	REV					
0x00E8	BatteryInstallCapacity	R	BatteryInstallCapacity	0.1kWh	uint16	1
0x00E9 ~0x00F2	InverterModelNumber	R	InverterModelNumber	20Char	uint16	1
0x00F3	wPowerLimitGra	R	wPowerLimitGra	0.0001	uint16	1
0x00F4	VoltResponse_V2	R	Volt-watt Mode	0.1V	uint16	1
0x00F5	VoltResponse_V3	R	Parameter	0.1V	uint16	1
0x00F6	VoltResponse_V4	R		0.1V	uint16	1

0x00F7	VoltResponse_Ratio1	R	Volt-var Mode	0.01	uint16	1
0x00F8	VoltResponse_Ratio4	R	Parameter	0.01	uint16	1
0x00F9	PUFuncEnable	R	0:disable 1:enable	1	uint16	1
0x00FA	Qpower_set	R	Qpower_set	1Var	uint16	1
0x00FB	bQpower_set_Max	R	bQpower_set_Max	1Var	uint16	1
0x00FC	bQpower_set_Min	R	bQpower_set_Min	1Var	uint16	1
0x00FD	BackUp_GridChargeEN	R	0:disable 1:enable	1	uint16	1
0x00FE	BackUp_chr_Strat_H	R	BackUp_chr_Strat_H	1Hour	uint16	1
0x00FF	BackUp_chr_Strat_M	R	BackUp_chr_Strat_M	1min	uint16	1
0x0100	BackUp_chr_End_H	R	BackUp_chr_End_H	1Hour	uint16	1
0x0101	BackUp_chr_End_M	R	BackUp_chr_End_M	1min	uint16	1
0x0102	wAS4777Power ManagerEnable	R	0:disable 1:enable	1	uint16	1
0x0103	CloudControlEN	R	0:disable 1:enable	1	uint16	1
0x0104	wGlobalMPPTFuncEnable(X1)	R	0:disable 1:enable	1	uint16	1
0x0105	Grid service(X3)	R	0: disable 1:enable	1	uint16	1
0x0106	PhasePowerBalance(X3)	R	0:disable 1:enable	1	uint16	1
0x0107	wMachineStyle	R	0:X-Hybrid 1:X-RETRO FIT	1	uint16	1
0x0108	MeterFunction	R	0:disable 1:enable	1	uint16	1
0x0109	Meter1ID	R	Meter1ID 1~200	1	uint16	1
0x010A	Meter2ID	R	Meter2ID 1~200	1	uint16	1
0x010B	PowerControl_timeout	R	Remote Power Control timeout set 5~65535 effect,if set 0xffff(65535),system will don't check timeout	1s	uint16	1
0x010C	EPS_AutoRestart	R	0:disable 1:enable	1	uint16	1
0x010D	EPS_MinEscVolt	R	EPS_MinEscVolt	1V	uint16	1
0x010E	EPS_MinEscSoc	R	EPS_MinEscSoc	1%	uint16	1
0x010F	ForceTimeUse_P1_MaxCapacity	R	ForceTimeUse_P1_MaxCapacity	1%	uint16	1
0x0110	ForceTimeUse_P2_MaxCapacity	R	ForceTimeUse_P2_MaxCapacity	1%	uint16	1
0x0111	DischCutOffPoint_DifferentEN	R	0:disable 1:enable	1	uint16	1
0x0112	DischCutOffCapacity_GridMode	R	DischCutOffCapacity_GridMode	1%	uint16	1
0x0113	DischCutOffVoltage_GridMode	R	DischCutOffVoltage_GridMode	0.1V	uint16	1
0x0114	wEarthDetectEn(X3)	R	0:disable 1:enable	1	uint16	1
0x0115	CTMeterSetting(X1)	R	0:Meter 1:CT	1	uint16	1

	0x0116	CTMeterDirection	R	0:Positive 1:Negative	1	Uint16	1

Example:

request	Bytes number	Content format
Function code	1 byte	0x03
Start address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Register number	2byte Data MSB Data LSB	N

Normal response		
Function code	1 byte	0x03
Byte number	1 byte Data	2*N
Register date	N*2byte Data MSB Data LSB	

Fault response		
Fault code	1byte	0x83
Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04

Example			
request		respons	
areas	HEX	areas	HEX
Function code	0x03	Function code	0x03
Address Hi	0x00	Byte number	0x06
Address Lo	0x6B	Date （Hi 108）	0x02
Regs num Hi	0x00	Date（Lo 108）	0x2B
Regs num Lo	0x03	Date （Hi 109）	0x00
		Date （Lo 109）	0x00
		Date （Hi 110）	0x00
		Date （Lo 110）	0x64

Tcp example:

Tx:000-00 00 00 00 00 06 01 03 00 00 00 07

Rx:001-00 00 00 00 00 11 01 03 0E 58 31 2D 41 43 5F 74 65 73 74 5F 77 6A 78

Request “SeriesNumber”(0x00~0x06):

Transaction ID	Protocol ID	Length	UnitID	Fcode	Data
00 00	00 00	00 06	01	03	00 00(Address) 00 07(request number)

Answer:

Transaction ID	00 00
Protocol ID	00 00
Length	00 11
UnitID	01
Fcode	03
Data Lenth	0E
Data	58 31 2D 41 43 5F 74 65 73 74 5F 77 6A 78

Data analysis: “58 31 2D 41 43 5F 74 65 73 74 5F 77 6A 78” ->”X1-AC_test_wjx”(ASCII)

commdata 0x03.txt

The whole communicate process:

4. Read Holding Register（BMS Info）

Function code	Read Input Register(BMS Info)						
	register	variable	W/R	decription	unit	data format	lenth
0x03	0x0180	Subsystem_Num	R	Subsystem_Num	1	Uint16	1
	0x0181	BMS_MasterVersion	R	Version type describe x.y x = Uint8(Hi) y = Uint8(Low)	1	Uint16	1
	0x0182	BMS_Slave1Version	R		1	Uint16	1
	0x0183	BMS_Slave2Version	R		1	Uint16	1
	0x0184	BMS_Slave3Version	R		1	Uint16	1
	0x0185	BMS_Slave4Version	R		1	Uint16	1
	0x0186	BMS_Slave5Version	R		1	Uint16	1
	0x0187	BMS_Slave6Version	R		1	Uint16	1
	0x0188	BMS_Slave7Version	R		1	Uint16	1

	0x0189	BMS_Slave8Version	R		1	Uint16	1
	0x018A~ 0x0190	masterSN	R	masterSN	1	14char	7
	0x0191~ 0x0197	slave1_2SN	R	slave1_2SN	1	14char	7
	0x0198~ 0x019E	slave3_4SN	R	slave3_4SN	1	14char	7
	0x019F~ 0x0195	slave5_6SN	R	slave5_6SN	1	14char	7
	0x0196~ 0x019C	Slave7_8SN	R	Slave7_8SN	1	14char	7

5. Read Input Register

Function code	Read Input Register						
	register	variable	W/R	decription	unit	data format	lenth
0X04	0x0000	GridVoltage(X1)	R	GridVoltage	0.1V	Uint16	1
	0x0001	GridCurrent(X1)	R	GridCurrent	0.1V	Int16	1
	0x0002	GridPower(X1)	R	GridPower	1W	Int16	1
	0x0003	PvVoltage1(Hybrid)	R	PvVoltage1	0.1V	Uint16	1
	0x0004	PvVoltage2(Hybrid)	R	PvVoltage2	0.1V	Uint16	1
	0x0005	PvCurrent1(Hybrid)	R	PvCurrent1	0.1A	Uint16	1
	0x0006	PvCurrent2(Hybrid)	R	PvCurrent2	0.1A	Uint16	1
	0x0007	GridFrequency(X1)	R	GridFrequency	0.01Hz	Uint16	1
	0x0008	Temperature	R	radiator temperature	1℃	int16	1
	0x0009	RunMode	R	RunMode	—	Uint16	1
	0x000A	Powerdc1(Hybrid)	R	Powerdc1	1W	Uint16	1
	0x000B	Powerdc2(Hybrid)	R	Powerdc2	1W	Uint16	1
	0x000C	TemperFaultValue	R	TemperFaultValue	1℃	int16	1
	0x000D	Pv1VoltFaultValue	R	Pv1VoltFaultValue	0.1V	Uint16	1
	0x000E	Pv2VoltFaultValue	R	Pv2VoltFaultValue	0.1V	Uint16	1
	0x000F	GfciFaultValue	R	GfciFaultValue	1mA	Uint16	1
	0x0010	GridVoltFaultValue	R	GridVoltFaultValue	0.1V	Uint16	1

0x0011	GridFreqFaultValueT	R	GridFreqFaultValueT	0.01Hz	Uint16	1
0x0012	DciFaultValue	R	DciFaultValue	1mA	Uint16	1
0x0013	TimeCountDown	R	TimeCountDown	1ms	Uint16	1
0x0014	BatVoltage_Charge1	R	BatVoltage_Charge1	0.1V	Int16	1
0x0015	BatCurrent_Charge1	R	BatCurrent_Charge1	0.1A	int16	1
0x0016	Batpower_Charge1	R	Batpower_Charge1	1W	int16	1
0x0017	BMS_Connect_State	R	0:Disconnected 1:Connected	-	Uint16	1
0x0018	TemperatureBat	R	TemperatureBat	1℃	int16	1
0x0019	REV	R	REV			
0x001A	REV	R	REV			
0x001B	REV	R	REV			
0x001C	Battery Capacity	R	Battery capacity	1%	Uint16	1
0x001D	OutputEnergy_Charge.LSB	R	OutputEnergy_Charge	0.1KWh	Uint16	1
0x001E	OutputEnergy_Charge.MSB	R	OutputEnergy_Charge	0.1KWh	Uint16	1
0x001F	BMS Warning LSB	R	BMS Warning code	1	Uint16	1
0x0020	OutputEnergy_Charge_today	R	OutputEnergy_Charge_today	0.1KWh	Uint16	1
0x0021	InputEnergy_Charge.LSB	R	InputEnergy_Charge	0.1KWh	Uint16	1
0x0022	InputEnergy_Charge.MSB	R	InputEnergy_Charge	0.1KWh	Uint16	1
0x0023	InputEnergy_Charge_today	R	InputEnergy_Charge_today	0.1KWh	Uint16	1
0x0024	BMS ChargeMaxCurrent	R	BMS ChargeMaxCurrent (real time)	0.1A	Uint16	1
0x0025	BMS DischargeMaxCurrent	R	BMS DischargeMaxCurrent (real time)	0.1A	Uint16	1
0x0026	BMS Warning MSB	R	BMS Warning code	1	Uint16	1
0x0027-0x003E	REV	R	REV			
0x003F	REV	R	REV	-		
0x0040	InvFaultMessage.LSB	R	Inverter fault message LSB		Uint16	1
0x0041	InvFaultMessage.MSB	R	Inverter fault message MSB		Uint16	1
0x0042	REV	R	REV	-		1
0x0043	Mgr FaultMessage	R	Mgr FaultMessage		Uint16	1
0x0044	REV	R	REV	-		1
0x0045	REV	R	REV	-		1
0x0046	feedin_power(meter)	R	power to the grid (**Postive mean generate power;** **Negative mean Consumed power**)	1w	Int32	2

			(0x46:LSB,0x47:MSB)			
0x0048	feedin_energy_total(meter)	R	energy to the grid (0x48:LSB,0x49:MSB)	0.01kwh	Uint32	2
0x004A	consum_energy_total(meter)	R	energy form the grid (0x4A:LSB,0x4B:MSB)	0.01kwh	Uint32	2
0x004C	EPS_Volt(X1)	R	EPS_Volt	0.1V	Uint16	1
0x004D	EPS_Current(X1)	R	EPS_Current	0.1A	Uint16	1
0x004E	EPS_Power(X1)	R	EPS power	1VA	Uint16	1
0x004F	EPS_Frequency(X1)	R	EPS_Frequency	0.01Hz	Uint16	1
0x0050	Etoday_togrid	R	Today Energy (Inverter AC Port)	0.1kwh	Uint16	1
0x0051	Rev	R	Rev	-	Uint16	1
0x0052~x0053	Etotal_togrid	R	Total Energy (Inverter AC Port) (0x52:LSB,0x53:MSB)	0.001kwh	Uint32	2
0x0054	Lock State	R	0:locked 1:unlocked	-	Uint16	1
0x0055 ~0x0065	REV	R	REV			
0x0066	BusVolt	R	BusVolt	0.1V	Uint16	1
0x0067	wDcvFaultVal	R	wDcvFaultVal	0.1V	Uint16	1
0x0068	wOverLoadFaultval	R	wOverLoadFaultval	W	Uint16	1
0x0069	wBatteryVoltFaultVal	R	wBatteryVoltFaultVal	0.1V	Uint16	1
0x006A	GridVoltage_R(X3)	R	GridVoltage_R	0.1V	Uint16	1
0x006B	GridCurrent_R(X3)	R	GridCurrent_R	0.1A	Int16	1
0x006C	GridPower_R(X3)	R	GridPower_R	1W	Int16	1
0x006D	GridFrequency_R(X3)	R	GridFrequency_R	0.01Hz	Uint16	1
0x006E	GridVoltage_S(X3)	R	GridVoltage_S	0.1V	Uint16	1
0x006F	GridCurrent_S(X3)	R	GridCurrent_S	0.1A	Int16	1
0x0070	GridPower_S(X3)	R	GridPower_S	1W	Int16	1
0x0071	GridFrequency_S(X3)	R	GridFrequency_S	0.01Hz	Uint16	1
0x0072	GridVoltage_T(X3)	R	GridVoltage_T	0.1V	Uint16	1
0x0073	GridCurrent_T(X3)	R	GridCurrent_T	0.1A	Int16	1
0x0074	GridPower_T(X3)	R	GridPower_T	1W	Int16	1
0x0075	GridFrequency_T(X3)	R	GridFrequency_T	0.01Hz	Uint16	1
0x0076	EPS_Volt_R(X3)	R	EPS_Volt_R	0.1V	Uint16	1
0x0077	EPS_Current_R(X3)	R	EPS_Current_R	0.1A	Uint16	1

0x0078	EpsPowerActive_R(X3)	R	EpsPowerActive_R	1W	Uint16	1
0x0079	EpsPowerS_R(X3)	R	EpsPowerS_R	1VA	Uint16	1
0x007A	EPS_Volt_S(X3)	R	EPS_Volt_S	0.1V	Uint16	1
0x007B	EPS_Current_S(X3)	R	EPS_Current_S	0.1A	Uint16	1
0x007C	EpsPowerActive_S(X3)	R	EpsPowerActive_S	1W	Uint16	1
0x007D	EpsPowerS_S(X3)	R	EpsPowerS_S	1VA	Uint16	1
0x007E	EPS_Volt_T(X3)	R	EPS_Volt_T	0.1V	Uint16	1
0x007F	EPS_Current_T(X3)	R	EPS_Current_T	0.1A	Uint16	1
0x0080	EpsPowerActive_T(X3)	R	EpsPowerActive_T	1W	Uint16	1
0x0081	EpsPowerS_T(X3)	R	EpsPowerS_T	1VA	Uint16	1
0x0082 ~0x0083	FeedinPower_Rphase(X3)	R	FeedinPower_Rphase (meter) (082:LSB,0x83:MSB)	1W	Int32	2
0x0084 ~0x0085	FeedinPower_Sphase(X3)	R	FeedinPower_Sphase (meter) (0x84:LSB,0x85:MSB)	1W	Int32	2
0x0086 ~0x0087	FeedinPower_Tphase(X3)	R	FeedinPower_Tphase (meter) (0x86:LSB,0x87:MSB)	1W	Int32	2
0x0088 ~0x0089	GridModeRunTime(X3)	R	GridModeRunTime (0x88:LSB,0x89:MSB)	0.1H	Int32	2
0x008A ~0x008B	EpsModeRunTime(X3)	R	EpsModeRunTime (0x8A:LSB,0x8B:MSB)	0.1H	Int32	2
0x008C ~0x008D	NoramlRunTime(X1)	R	NoramlRunTime (0x8C:LSB,0x8D:MSB)	0.1H	Int32	2
0x008E ~0x008F	EpsYieldTotal	R	EpsYieldTotal (0x8E:LSB,0x8F:MSB)	0.1KWh	Uint32	2
0x0090	EpsYieldToday	R	EpsYieldToday	0.1KWh	Uint16	1
0x0091	EchargeToday	R	EchargeToday (Inverter AC Port)	1KWh	Uint16	1
0x0092 ~0x0093	EchargeTotal	R	EchargeTotal (Inverter AC Port) (0x92:LSB,0x93:MSB)	1KWh	Uint32	2
0x0094 ~0x0095	SolarEnergyTotal	R	SolarEnergyTotal (0x94:LSB,0x95:MSB)	0.1KWh	Uint32	2
0x0096	SolarEnergyToday	R	SolarEnergyToday	0.1KWh	Uint16	1
0x0097	rev	R	rev			

0x0098 ~0x0099	feedin_energy_today	R	energy to the grid (meter) (0x98:LSB,0x99:MSB)	0.01kwh	Uint16	2
0x009A ~0x009B	consum_energy_today	R	energy form the grid(meter) (0x9A:LSB,0x9B:MSB)	0.01kwh	Uint16	2
0x009C ~0x009D	wActivePower (0x9C:LSB,0x9D:MSB)	R	Modbus power control (Positive mean charge;Negative mean discharge)	1W	Int32	2
0x009E ~0x009F	wReactivePower (0x9E:LSB,0x9F:MSB)	R		1Var	Int32	2
0x00A0 ~0x00A1	wActivePower_Upper (0xA0:LSB,0xA1:MSB)	R		1W	Int32	2
0x00A2 ~0x00A3	wActivePower_Lower (0xA2:LSB,0xA3:MSB)	R		1W	Int32	2
0x00A4 ~0x00A5	wReactivePowe_Upper (0xA4:LSB,0xA5:MSB)	R		1Var	Int32	2
0x00A6 ~0x00A7	wReactivePower_Lower (0xA6:LSB,0xA7:MSB)	R		1Var	Int32	2
0x00A8 ~0x00A9	feedin_power_Meter2	R	power to the grid (0xA8:LSB,0xA9:MSB)	1w	Int32	2
0x00AA ~0x00AB	feedin_energy_total_Meter2	R	energy to the grid (0xAA:LSB,0xAB:MSB)	0.01kwh	Uint32	2
0x00AC ~0x00AD	consum_energy_total_Meter2	R	energy form the grid (0xAC:LSB,0xAD:MSB)	0.01kwh	Uint32	2
0x00AE ~0x00AF	feedin_energy_today_Meter2	R	energy to the grid (0xAE:LSB,0xAF:MSB)	0.01kwh	Uint16	2
0x00B0 ~0x00B1	consum_energy_today_Meter2	R	energy form the grid (0xB0:LSB,0xB1:MSB)	0.01kwh	Uint16	2
0x00B2 ~0x00B3	FeedinPower_Rphase_Meter2	R	FeedinPower_Rphase(X3) (0xB2:LSB,0xB3:MSB)	1W	Int32	2
0x00B4 ~0x00B5	FeedinPower_Sphase_Meter2	R	FeedinPower_Sphase(X3) (0xB4:LSB,0xB5:MSB)	1W	Int32	2
0x00B6 ~0x00B7	FeedinPower_Tphase_Meter2	R	FeedinPower_Tphase(X3) (0xB6:LSB,0xB7:MSB)	1W	Int32	2
0x00B8	Meter1CommunicationSate	R	0:Com Error 1:Normal	1	Uint16	1
0x00B9	Meter2CommunicationSate	R	0:Com Error 1:Normal	1	Uint16	1
0x00BA	GridVoltage	R	GridVoltage	0.1V	Uint16	1

	0x00BB	GridCurrent	R	GridCurrent	0.1V	Int16	1
	0x00BC	GridPower	R	GridPower	1W	Int16	1
	0x00BD	GridFrequency	R	GridFrequency	0.01Hz	Uint16	1
	0x00BE	Temperature	R	radiator temperature	1℃	Int16	1
	0x00BF	RunMode	R	RunMode	—	Uint16	1
	0x00C0 ~0x00C1	feedin_power	R	Power to the grid (Postive mean generate power; Negative mean consumed power) (0xC9:LSB,0xCA:MSB)	1w	Int32	2
	0x00C2	BatVoltage_Charge1	R	BatVoltage_Charge1	0.1V	Int16	1
	0x00C3	BatCurrent_Charge1	R	BatCurrent_Charge1	0.1A	int16	1
	0x00C4	Batpower_Charge1	R	Batpower_Charge1	1W	int16	1
	0x00C5	BMS_Connect_State	R	0:Disconnected 1:Connected	—	Uint16	1
	0x00C6	TemperatureBat	R	TemperatureBat	1℃	int16	1
	0x00C7	Capacity_Charge1	R	Charge1 capacity	0.01	Uint16	1
	0x00C8	BMS_WarningCode.LSB	R	BMS Warning code	1	Uint16	1
	0x00C9	BMS ChargeMaxCurrent	R	BMS ChargeMaxCurrent (real time)	0.1A	Uint16	1
	0x00CA	BMS DischargeMaxCurrent	R	BMS DischargeMaxCurrent (real time)	0.1A	Uint16	1
	0x00CB	BatteryForceChargeFlag(X1)	R	0:No Action 1:Force Charge	-	Uint16	1
	0x00CC ~0x00CD	BMS Energy Throughput	R	BMS Energy Throughput Total throughput of battery charge and discharge (0xCC:LSB,0xCD:MSB)	1Wh	Uint32	2
	0x00CE	BMS_RelayState	R	0:OFF 1:ON	-	Uint16	1
	0x00CF	Battery_Tem_High	R	Battery_Tem_High	0.1℃	int16	1
	0x00D0	Battery_Tem_Low	R	Battery_Tem_Low	0.1℃	int16	1
	0x00D1	Cell_Voltage_High	R	Cell_Voltage_High	0.001V	Uint16	1
	0x00D2	Cell_Voltage_Low	R	Cell_Voltage_Low	0.001V	Uint16	1

example：

request		
Function code	1byte	0x04
Start address	2byte Adr MSB Adr LSB	0x0000-0xFFFF
Register numbers	2byte Reg num MSB Reg num LSB	N

Normal response		
Function date	1byte	0x04
Byte number	1byte	2*N
Data	N*2byte	

Fault code		
Fault code	1byte	0x84
Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04

Example			
request		response	
items	hexadecimal	items	hexadecimal
function code	0x04	function code	0x04
start address (higher)	0x00	byte numbers	0x06
start address (lower)	0x6B	data (108 higher)	0x2B
register number msb	0x00	data (108 lower)	0x00
register number lsb	0x03	data (109 higher)	0x00
		data (109 lower)	0x00
		data (110 higher)	0x00
		data (110 lower)	0x64

Tcp example:

Tx:1454-10 40 00 00 00 06 01 04 00 00 00 03
Rx:1455-10 40 00 00 00 09 01 04 06 08 98 00 55 07 4E

Request (0x0000~0x0002):

Transaction ID	Protocol ID	Length	UnitID	Fcode	Data
10 40	00 00	00 06	01	04	00 00(Address) 00 03(request number)

Answer:

Transaction ID	10 40
Protocol ID	00 00
Length	00 09
UnitID	01
Fcode	04
Data Lenth	06
Data	08 98 00 55 07 4E

Data analysis: GridVoltage 08 98(220.0V) GridCurrent 00 55(8.5A)
GridPower 07 4E(1870W)

RunMode description	
code	description
0	WaitMode
1	CheckMode
2	NormalMode
3	FaultMode
4	PermanentFaultMode
5	UpdateMode
6	EPS check mode
7	EPS mode
8	Self Test
9	IdleMode

Inverter Error Code(X3)		
Byte num	bit	fault
BYTE0	BIT0	HardwareTrip
	BIT1	MainsLostFault

	BIT2	GridVoltFault
	BIT3	GridFreqFault
	BIT4	PvVoltFault
	BIT5	BusVoltFault
	BIT6	Bat Volt Fault
	BIT7	Ac10Mins_Voltage_Fault
BYTE1	BIT8	Dci_OCP_Fault
	BIT9	Dcv_OCP_Fault
	BIT10	SW_OCP_Fault
	BIT11	RC_OCP_Fault
	BIT12	IsolationFault
	BIT13	TemperatureOverFault
	BIT14	BatConDir_Fault
	BIT15	SampleConsistenceFault
BYTE2	BIT16	EpsOverLoad
	BIT17	EPS_OCP_Fault
	BIT18	InputConfigFault
	BIT19	FirmwareVerFault
	BIT20	EPSBatPowerLow
	BIT21	PhaseAngleFault
	BIT22	PLL_OverTime
	BIT23	ParallelFault
BYTE3	BIT24	Inter_Com_Fault
	BIT25	Fan Fault
	BIT26	HCT_AC_DeviceFault
	BIT27	EepromFault
	BIT28	ResidualCurrent_DeviceFault
	BIT29	EpsRelayFault
	BIT30	GridRelayFault
	BIT31	BatRelayFault

Inverter Error Code(X1)		
Byte num	bit	fault
BYTE0	BIT0	HardwareTrip
	BIT1	MainsLostFault

	BIT2	GridVoltFault
	BIT3	GridFreqFault
	BIT4	PvVoltFault
	BIT5	BusVoltFault
	BIT6	Bat Volt Fault
	BIT7	Ac10Mins_Voltage_Fault
BYTE1	BIT8	Dci_OCP_Fault
	BIT9	Dcv_OCP_Fault
	BIT10	SW_OCP_Fault
	BIT11	RC_OCP_Fault
	BIT12	IsolationFault
	BIT13	TemperatureOverFault
	BIT14	BatConDir_Fault
	BIT15	SampleConsistenceFault
BYTE2	BIT16	EpsOverLoad
	BIT17	OverLoad
	BIT18	InputConfigFault
	BIT19	EPSBatPowerLow
	BIT20	Hybrid_IRelayFault
	BIT21	Rev
	BIT22	Rev
	BIT23	BMS_Lost
BYTE3	BIT24	Inter_Com_Fault
	BIT25	Fan Fault
	BIT26	HCT_AC_DeviceFault
	BIT27	EepromFault
	BIT28	ResidualCurrent_DeviceFault
	BIT29	EpsRelayFault
	BIT30	GridRelayFault
	BIT31	Other_DeviceFault

Manager Err Code		
Byte num	bit	fault
BYTE0	BIT0	Rev

	BIT1	Rev
	BIT2	E2promError
	BIT3	DSPVerFault
	BIT4	NTC_SampleInvalid
	BIT5	Rev
	BIT6	Rev
	BIT7	Rev
BYTE1	BIT8	InterCommsError
	BIT9	Meter Fault
	BIT10	Rev
	BIT11	Rev
	BIT12	Rev
	BIT13	Rev
	BIT14	Rev
	BIT15	Rev

BMS Warning Code		
Byte num	bit	fault
BYTE0	BIT0	BMS_External_Err
	BIT1	BMS_Internal_Err
	BIT2	BMS_OverVoltage
	BIT3	BMS_LowerVoltage
	BIT4	BMS_ChargeOverCurrent
	BIT5	BMS_DishargeOverCurrent
	BIT6	BMS_TemHigh
	BIT7	BMS_TemLow
BYTE1	BIT8	BMS_CellImblance
	BIT9	BMS_Hardware_Prot
	BIT10	BMS_Inlock_Fault
	BIT11	BMS_ISO_Fault
	BIT12	BMS_VolSen_Fault
	BIT13	BMS_TempSen_Fault
	BIT14	BMS_CurSen_Fault
	BIT15	BMS_Relay_Fault
BYTE2	BIT16	BMS_Type_Unmatch
	BIT17	BMS_Ver_Unmathch

	BIT18	BMS_Manufacturer_Unmatch
	BIT19	BMS_SW&HW_Unmatch
	BIT20	BMS_ M&S_Unmatch
	BIT21	BMS_CR_Unresponsive
	BIT22	BMS_Software_Protect
	BIT23	BMS_536_Fault
BYTE3	BIT24	BMS_ Selfchecking_Fault
	BIT25	BMS_Tempdiff_Fault
	BIT26	BMS_Break
	BIT27	BMS_Flash_Fault
	BIT28	BMS_Precharge_Fault
	BIT29	BMS_AirSwitch_Break
	BIT30	Rev
	BIT31	Rev

6. Read Input Register(Selftest)

Function code	Read Input Register(Selftest)						
	register	variable	W/R	decription	unit	data format	lenth
0x04	0x0180	wSelfTest_step	R	TestStep 1 means test Ovp(59.S2) 2 means test Uvp(27.S1) 3 means test Uvp(27.S2) 4 means test Ofp(81>.S1) 5 means test Ufp(81<.S1) 6 means test Ofp2(81>.S2) 7 means test Ufp2(81<.S2) 8 means test Ovp_10(59.S1) 9 means success	1	Uint16	1
	0x0181	wSelfTest_Time	R	The remaining time of each test	1s	Uint16	1

	0x0182	wSelfTest_State	R	bit0:OvpTestState bit1:UvpTestState bit2:Uvp_RestriTestState bit3:OfpTestState bit4:UfpTestState bit5:Ofp_RestriTestState bit6:Ufp_RestriTestState bit7:Ovp10mAvgTestState 1-finish 0-testing	1	Uint16	1
	0x0183	Ovp_Threshold_Target	R	Ovp(59.S2)test	0.1V	Uint16	1
	0x0184	Ovp_Threshold_Time	R		1ms	Uint16	1
	0x0185	Ovp_Outcome_Sample_R	R		0.1V	Uint16	1
	0x0186	Outcome_TripValue_R	R		0.1V	Uint16	1
	0x0187	Ovp_Outcome_Time_R	R		1ms	Uint16	1
	0x0188	Ovp_Outcome_Sample_S(X3)	R		0.1V	Uint16	1
	0x0189	Ovp_Outcome_TripValue_S(X3)	R		0.1V	Uint16	1
	0x018A	Ovp_Outcome_Timel_S(X3)	R		1ms	Uint16	1
	0x018B	Ovp_Outcome_Sample_T(X3)	R		0.1V	Uint16	1
	0x018C	Ovp_Outcome_TripValue_T(X3)	R		0.1V	Uint16	1
	0x018D	Ovp_Outcome_Timel_T(X3)	R		1ms	Uint16	1
	0x018E	Uvp_Threshold_Target	R	Uvp(27.S1)test	0.1V	Uint16	1
	0x018F	Uvp_Threshold_Time	R		1ms	Uint16	1
	0x0190	Uvp_Outcome_Sample_R	R		0.1V	Uint16	1
	0x0191	Uvp_Outcome_TripValue_R	R		0.1V	Uint16	1
	0x0192	Uvp_Outcome_Time_R	R		1ms	Uint16	1
	0x0193	Uvp_Outcome_Sample_S(X3)	R		0.1V	Uint16	1
	0x0194	Uvp_Outcome_TripValue_S(X3)	R		0.1V	Uint16	1
	0x0195	Uvp_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x0196	Uvp_Outcome_Sample_T(X3)	R		0.1V	Uint16	1
	0x0197	Uvp_Outcome_TripValue_T(X3)	R		0.1V	Uint16	1
	0x0198	Uvp_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x0199	UvpRestric_Threshold_Target	R	Uvp(27.S2)test	0.1V	Uint16	1
	0x019A	UvpRestric_Threshold_Time	R		1ms	Uint16	1
	0x019B	UvpRestric_Outcome_Sample_R	R		0.1V	Uint16	1
	0x019C	UvpRestric_Outcome_TripValue_R	R		0.1V	Uint16	1
	0x019D	UvpRestric_Outcome_Time_R	R		1ms	Uint16	1

	0x019E	UvpRestric_Outcome_Sample_S(X3)	R		0.1V	Uint16	1
	0x019F	UvpRestric_Outcome_TripValue_S(X3)	R		0.1V	Uint16	1
	0x01A0	UvpRestric_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x01A1	UvpRestric_Outcome_Sample_T(X3)	R		0.1V	Uint16	1
	0x01A2	UvpRestric_Outcome_TripValue_T(X3)	R		0.1V	Uint16	1
	0x01A3	UvpRestric_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x01A4	Ofp_Threshold_Target	R		0.01Hz	Uint16	1
	0x01A5	Ofp_Threshold_Time	R		1ms	Uint16	1
	0x01A6	Ofp_Outcome_Sample_R	R		0.01Hz	Uint16	1
	0x01A7	Ofp_Outcome_TripValue_R	R		0.01Hz	Uint16	1
	0x01A8	Ofp_Outcome_Time_R	R		1ms	Uint16	1
	0x01A9	Ofp_Outcome_Sample_S(X3)	R	Ofp(81>.S1)test	0.01Hz	Uint16	1
	0x01AA	Ofp_Outcome_TripValue_S(X3)	R		0.01Hz	Uint16	1
	0x01AB	Ofp_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x01AC	Ofp_Outcome_Sample_T(X3)	R		0.01Hz	Uint16	1
	0x01AD	Ofp_Outcome_TripValue_T(X3)	R		0.01Hz	Uint16	1
	0x01AE	Ofp_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x01AF	Ufp_Threshold_Target	R		0.01Hz	Uint16	1
	0x01B0	Ufp_Threshold_Time	R		1ms	Uint16	1
	0x01B1	Ufp_Outcome_Sample_R	R		0.01Hz	Uint16	1
	0x01B2	Ufp_Outcome_TripValue_R	R		0.01Hz	Uint16	1
	0x01B3	Ufp_Outcome_Time_R	R		1ms	Uint16	1
	0x01B4	Ufp_Outcome_Sample_S(X3)	R	Ufp(81<.S1)test	0.01Hz	Uint16	1
	0x01B5	Ufp_Outcome_TripValue_S(X3)	R		0.01Hz	Uint16	1
	0x01B6	Ufp_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x01B7	Ufp_Outcome_Sample_T(X3)	R		0.01Hz	Uint16	1
	0x01B8	Ufp_Outcome_TripValue_T(X3)	R		0.01Hz	Uint16	1
	0x01B9	Ufp_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x01BA	OfpRestric_Threshold_Target	R		0.01Hz	Uint16	1
	0x01BB	OfpRestric_Threshold_Time	R		1ms	Uint16	1
	0x01BC	OfpRestric_Outcome_Sample_R	R		0.01Hz	Uint16	1
	0x01BD	OfpRestric_Outcome_TripValue_R	R	Ofp2(81>.S2)test	0.01Hz	Uint16	1
	0x01BE	OfpRestric_Outcome_Time_R	R		1ms	Uint16	1
	0x01BF	OfpRestric_Outcome_Sample_S(X3)	R		0.01Hz	Uint16	1

	0x01C0	OfpRestric_Outcome_TripValue_S(X3)	R		0.01Hz	Uint16	1
	0x01C1	OfpRestric_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x01C2	OfpRestric_Outcome_Sample_T(X3)	R		0.01Hz	Uint16	1
	0x01C3	OfpRestric_Outcome_TripValue_T(X3)	R		0.01Hz	Uint16	1
	0x01C4	OfpRestric_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x01C5	UfpRestric_Threshold_Target	R		0.01Hz	Uint16	1
	0x01C6	UfpRestric_Threshold_Time	R		1ms	Uint16	1
	0x01C7	UfpRestric_Outcome_Sample_R	R		0.01Hz	Uint16	1
	0x01C8	UfpRestric_Outcome_TripValue_R	R		0.01Hz	Uint16	1
	0x01C9	UfpRestric_Outcome_Time_R	R		1ms	Uint16	1
	0x01CA	UfpRestric_Outcome_Sample_S(X3)	R	Ufp2(81<.S2)test	0.01Hz	Uint16	1
	0x01CB	UfpRestric_Outcome_TripValue_S(X3)	R		0.01Hz	Uint16	1
	0x01CC	UfpRestric_Outcome_Time_S(X3)	R		1ms	Uint16	1
	0x01CD	UfpRestric_Outcome_Sample_T(X3)	R		0.01Hz	Uint16	1
	0x01CE	UfpRestric_Outcome_TripValue_T(X3)	R		0.01Hz	Uint16	1
	0x01CF	UfpRestric_Outcome_Time_T(X3)	R		1ms	Uint16	1
	0x01D0	Ovp10mAvg_Threshold_Target	R		0.1V	Uint16	1
	0x01D1	Ovp10mAvg_Threshold_Time	R		1s	Uint16	1
	0x01D2	Ovp10mAvg_Outcome_Sample_R	R		0.1V	Uint16	1
	0x01D3	Ovp10mAvg_Outcome_TripValue_R	R		0.1V	Uint16	1
	0x01D4	Ovp10mAvg_Outcome_Time_R	R		1s	Uint16	1
	0x01D5	Ovp10mAvg_Outcome_Sample_S(X3)	R	Ovp10(59.S1)test	0.1V	Uint16	1
	0x01D6	Ovp10mAvg_Outcome_TripValue_S(X3)	R		0.1V	Uint16	1
	0x01D7	Ovp10mAvg_Outcome_Time_S(X3)	R		1s	Uint16	1
	0x01D8	Ovp10mAvg_Outcome_Sample_T(X3)	R		0.1V	Uint16	1
	0x01D9	Ovp10mAvg_Outcome_TripValue_T(X3)	R		0.1V	Uint16	1
	0x01DA	Ovp10mAvg_Outcome_Time_T(X3)	R		1s	Uint16	1

7. Read Input Register(Parallel)

32bit data use little endian format

Function code	Read Input Register(Parallel State)						
	register	variable	W/R	decription	unit	data format	lenth

0x04	0x01DD	SystemInvNum	R	SystemInvNum	1	Uint16	1
	0x01DE	Rev	R	Rev	1		1
	0x01DF	Rev	R	Rev	1		1
	0x01E0	InvActivePower_R_All	R	InvActivePower_R_All	1W	int32	2
	0x01E1						
	0x01E2	InvActivePower_S_All	R	InvActivePower_S_All	1W	int32	2
	0x01E3						
	0x01E4	InvActivePower_T_All	R	InvActivePower_T_All	1W	int32	2
	0x01E5						
	0x01E6	InvReactiveOrApparentPower_R_All	R	InvReactiveOrApparentPower_R_All	1VA	int32	2
	0x01E7						
	0x01E8	InvReactiveOrApparentPower_S_All	R	InvReactiveOrApparentPower_S_All	1VA	int32	2
	0x01E9						
	0x01EA	InvReactiveOrApparentPower_T_All	R	InvReactiveOrApparentPower_T_All	1VA	int32	2
	0x01EB						
	0x01EC	InvCurrent_R_All	R	InvCurrent_R_All	0.1A	int32	2
	0x01ED						
	0x01EE	InvCurrent_S_All	R	InvCurrent_S_All	0.1A	int32	2
	0x01EF						
	0x01F0	InvCurrent_T_All	R	InvCurrent_T_All	0.1A	int32	2
	0x01F1						
	0x01F2	PvPower_ChannelA_All	R	PvPower_ChannelA_All	1W	Uint32	2
	0x01F3						
	0x01F4	PvPower_ChannelB_All	R	PvPower_ChannelB_All	1W	Uint32	2
	0x01F5						
	0x01F6	PvCurrent_ChannelA_All	R	PvCurrent_ChannelA_All	0.1A	Uint32	2
	0x01F7						
	0x01F8	PvCurrent_ChannelB_All	R	PvCurrent_ChannelB_All	0.1A	Uint32	2
	0x01F9						
	0x01FA	BatPower_All	R	BatPower_All	1W	int32	2
	0x01FB						
	0x01FC	BatCurrent_All	R	BatCurrent_All	0.1A	int32	2
	0x01FD						
	0x01FE	ChargePowerLimit_All	R	ChargePowerLimit_All	1W	int32	2

	0x01FF						
	0x0200 0x0201	DischargePowerLimit_All	R	DischargePowerLimit_All	1W	int32	2
	0x0202	Rev	R	Rev			1
	0x0203	Rev	R	Rev			1
	0x0204	InvActivePower_R	R	slave1 data	1W	int16	1
	0x0205	InvActivePower_S	R		1W	int16	1
	0x0206	InvActivePower_T	R		1W	int16	1
	0x0207	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x0208	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x0209	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x020A	InvCurrent_R	R		0.1A	int16	1
	0x020B	InvCurrent_S	R		0.1A	int16	1
	0x020C	InvCurrent_T	R		0.1A	int16	1
	0x020D	PvPower_Channel1A	R		1W	Uint16	1
	0x020E	PvPower_Channel1B	R		1W	Uint16	1
	0x020F	PvVoltage_Channel1A	R		0.1V	Uint16	1
	0x0210	PvVoltage_Channel1B	R		0.1V	Uint16	1
	0x0211	PvCurrent_Channel1A	R		0.1A	Uint16	1
	0x0212	PvCurrent_Channel1B	R		0.1A	Uint16	1
	0x0213	BatPower	R		1W	Uint16	1
	0x0214	BatVoltage	R		0.1V	Uint16	1
	0x0215	BatCurrent	R		0.1A	Uint16	1
	0x0216	ChargePowerLimit	R		1W	Uint16	1
	0x0217	DischargePowerLimit	R		1W	Uint16	1
	0x0218	BatFaultMessage	R		1	Uint16	1
	0x0219	BatCapacity	R		1%	Uint16	1
	0x021A 0x021B	Rev	R		1	Uint32	2
	0x021C 0x021D	Rev	R		1	Uint32	2
	0x021E	InvActivePower_R	R	slave2 data	1W	int16	1
	0x021F	InvActivePower_S	R		1W	int16	1
	0x0220	InvActivePower_T	R		1W	int16	1

	0x0221	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x0222	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x0223	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x0224	InvCurrent_R	R		0.1A	int16	1
	0x0225	InvCurrent_S	R		0.1A	int16	1
	0x0226	InvCurrent_T	R		0.1A	int16	1
	0x0227	PvPower_ChannelA	R		1W	Uint16	1
	0x0228	PvPower_ChannelB	R		1W	Uint16	1
	0x0229	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x022A	PvVoltage_ChannelB	R		0.1V	Uint16	1
	0x022B	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x022C	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x022D	BatPower	R		1W	Uint16	1
	0x022E	BatVoltage	R		0.1V	Uint16	1
	0x022F	BatCurrent	R		0.1A	Uint16	1
	0x0230	ChargePowerLimit	R		1W	Uint16	1
	0x0231	DischargePowerLimit	R		1W	Uint16	1
	0x0232	BatFaultMessage	R		1	Uint16	1
	0x0233	BatCapacity	R		1%	Uint16	1
	0x0234 0x0235	Rev	R		1	Uint32	2
	0x0236 0x0237	Rev	R		1	Uint32	2
	0x0238	InvActivePower_R	R		1W	int16	1
	0x0239	InvActivePower_S	R		1W	int16	1
	0x023A	InvActivePower_T	R		1W	int16	1
	0x023B	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x023C	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x023D	InvReactiveOrApparentPower_T	R	slave3 data	1VA	int16	1
	0x023E	InvCurrent_R	R		0.1A	int16	1
	0x023F	InvCurrent_S	R		0.1A	int16	1
	0x0240	InvCurrent_T	R		0.1A	int16	1
	0x0241	PvPower_ChannelA	R		1W	Uint16	1
	0x0242	PvPower_ChannelB	R		1W	Uint16	1

	0x0243	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x0244	PvVoltage_ChannelB	R		0.1V	Uint16	1
	0x0245	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x0246	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x0247	BatPower	R		1W	Uint16	1
	0x0248	BatVoltage	R		0.1V	Uint16	1
	0x0249	BatCurrent	R		0.1A	Uint16	1
	0x024A	ChargePowerLimit	R		1W	Uint16	1
	0x024B	DischargePowerLimit	R		1W	Uint16	1
	0x024C	BatFaultMessage	R		1	Uint16	1
	0x024D	BatCapacity	R		1%	Uint16	1
	0x024E 0x024F	Rev	R		1	Uint32	2
	0x0250 0x0251	Rev	R		1	Uint32	2
	0x0252	InvActivePower_R	R		1W	int16	1
	0x0253	InvActivePower_S	R		1W	int16	1
	0x0254	InvActivePower_T	R		1W	int16	1
	0x0255	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x0256	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x0257	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x0258	InvCurrent_R	R		0.1A	int16	1
	0x0259	InvCurrent_S	R		0.1A	int16	1
	0x025A	InvCurrent_T	R		0.1A	int16	1
	0x025B	PvPower_ChannelA	R	slave4 data	1W	Uint16	1
	0x025C	PvPower_ChannelB	R		1W	Uint16	1
	0x025D	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x025E	PvVoltage_ChannelB	R		0.1V	Uint16	1
	0x025F	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x0260	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x0261	BatPower	R		1W	Uint16	1
	0x0262	BatVoltage	R		0.1V	Uint16	1
	0x0263	BatCurrent	R		0.1A	Uint16	1
	0x0264	ChargePowerLimit	R		1W	Uint16	1

	0x0265	DischargePowerLimit	R		1W	Uint16	1
	0x0266	BatFaultMessage	R		1	Uint16	1
	0x0267	BatCapacity	R		1%	Uint16	1
	0x0268 0x0269	Rev	R		1	Uint32	2
	0x026A 0x026B	Rev	R		1	Uint32	2
	0x026C	InvActivePower_R	R	slave5 data	1W	int16	1
	0x026D	InvActivePower_S	R		1W	int16	1
	0x026E	InvActivePower_T	R		1W	int16	1
	0x026F	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x0270	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x0271	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x0272	InvCurrent_R	R		0.1A	int16	1
	0x0273	InvCurrent_S	R		0.1A	int16	1
	0x0274	InvCurrent_T	R		0.1A	int16	1
	0x0275	PvPower_ChannelA	R		1W	Uint16	1
	0x0276	PvPower_ChannelB	R		1W	Uint16	1
	0x0277	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x0278	PvVoltage_ChannelB	R		0.1V	Uint16	1
	0x0279	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x027A	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x027B	BatPower	R		1W	Uint16	1
	0x027C	BatVoltage	R		0.1V	Uint16	1
	0x027D	BatCurrent	R		0.1A	Uint16	1
	0x027E	ChargePowerLimit	R		1W	Uint16	1
	0x027F	DischargePowerLimit	R		1W	Uint16	1
	0x0280	BatFaultMessage	R		1	Uint16	1
	0x0281	BatCapacity	R		1%	Uint16	1
	0x0282 0x0283	Rev	R		1	Uint32	2
	0x0284 0x0285	Rev	R		1	Uint32	2
	0x0286	InvActivePower_R	R	slave6 data	1W	int16	1

	0x0287	InvActivePower_S	R		1W	int16	1
	0x0288	InvActivePower_T	R		1W	int16	1
	0x0289	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x028A	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x028B	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x028C	InvCurrent_R	R		0.1A	int16	1
	0x028D	InvCurrent_S	R		0.1A	int16	1
	0x028E	InvCurrent_T	R		0.1A	int16	1
	0x028F	PvPower_ChannelA	R		1W	Uint16	1
	0x0290	PvPower_ChannelB	R		1W	Uint16	1
	0x0291	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x0292	PvVoltage_ChannelB	R		0.1V	Uint16	1
	0x0293	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x0294	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x0295	BatPower	R		1W	Uint16	1
	0x0296	BatVoltage	R		0.1V	Uint16	1
	0x0297	BatCurrent	R		0.1A	Uint16	1
	0x0298	ChargePowerLimit	R		1W	Uint16	1
	0x0299	DischargePowerLimit	R		1W	Uint16	1
	0x029A	BatFaultMessage	R		1	Uint16	1
	0x029B	BatCapacity	R		1%	Uint16	1
	0x029C 0x029D	Rev	R		1	Uint32	2
	0x029E 0x029F	Rev	R		1	Uint32	2
	0x02A0	InvActivePower_R	R	slave7 data	1W	int16	1
	0x02A1	InvActivePower_S	R		1W	int16	1
	0x02A2	InvActivePower_T	R		1W	int16	1
	0x02A3	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x02A4	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x02A5	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x02A6	InvCurrent_R	R		0.1A	int16	1
	0x02A7	InvCurrent_S	R		0.1A	int16	1
	0x02A8	InvCurrent_T	R		0.1A	int16	1

	0x02A9	PvPower_Channel1A	R		1W	Uint16	1
	0x02AA	PvPower_Channel1B	R		1W	Uint16	1
	0x02AB	PvVoltage_Channel1A	R		0.1V	Uint16	1
	0x02AC	PvVoltage_Channel1B	R		0.1V	Uint16	1
	0x02AD	PvCurrent_Channel1A	R		0.1A	Uint16	1
	0x02AE	PvCurrent_Channel1B	R		0.1A	Uint16	1
	0x02AF	BatPower	R		1W	Uint16	1
	0x02B0	BatVoltage	R		0.1V	Uint16	1
	0x02B1	BatCurrent	R		0.1A	Uint16	1
	0x02B2	ChargePowerLimit	R		1W	Uint16	1
	0x02B3	DischargePowerLimit	R		1W	Uint16	1
	0x02B4	BatFaultMessage	R		1	Uint16	1
	0x02B5	BatCapacity	R		1%	Uint16	1
	0x02B6 0x02B7	Rev	R		1	Uint32	2
	0x02B8 0x02B9	Rev	R		1	Uint32	2
	0x02BA	InvActivePower_R	R	slave8 data	1W	int16	1
	0x02BB	InvActivePower_S	R		1W	int16	1
	0x02BC	InvActivePower_T	R		1W	int16	1
	0x02BD	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x02BE	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x02BF	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x02C0	InvCurrent_R	R		0.1A	int16	1
	0x02C1	InvCurrent_S	R		0.1A	int16	1
	0x02C2	InvCurrent_T	R		0.1A	int16	1
	0x02C3	PvPower_Channel1A	R		1W	Uint16	1
	0x02C4	PvPower_Channel1B	R		1W	Uint16	1
	0x02C5	PvVoltage_Channel1A	R		0.1V	Uint16	1
	0x02C6	PvVoltage_Channel1B	R		0.1V	Uint16	1
	0x02C7	PvCurrent_Channel1A	R		0.1A	Uint16	1
	0x02C8	PvCurrent_Channel1B	R		0.1A	Uint16	1
	0x02C9	BatPower	R		1W	Uint16	1
	0x02CA	BatVoltage	R		0.1V	Uint16	1

	0x02CB	BatCurrent	R		0.1A	Uint16	1
	0x02CC	ChargePowerLimit	R		1W	Uint16	1
	0x02CD	DischargePowerLimit	R		1W	Uint16	1
	0x02CE	BatFaultMessage	R		1	Uint16	1
	0x02CF	BatCapacity	R		1%	Uint16	1
	0x02D0 0x02D1	Rev	R		1	Uint32	2
	0x02D2 0x02D3	Rev	R		1	Uint32	2
	0x02D4	InvActivePower_R	R		1W	int16	1
	0x02D5	InvActivePower_S	R		1W	int16	1
	0x02D6	InvActivePower_T	R		1W	int16	1
	0x02D7	InvReactiveOrApparentPower_R	R		1VA	int16	1
	0x02D8	InvReactiveOrApparentPower_S	R		1VA	int16	1
	0x02D9	InvReactiveOrApparentPower_T	R		1VA	int16	1
	0x02DA	InvCurrent_R	R		0.1A	int16	1
	0x02DB	InvCurrent_S	R		0.1A	int16	1
	0x02DC	InvCurrent_T	R		0.1A	int16	1
	0x02DD	PvPower_ChannelA	R		1W	Uint16	1
	0x02DE	PvPower_ChannelB	R		1W	Uint16	1
	0x02DF	PvVoltage_ChannelA	R		0.1V	Uint16	1
	0x02E0	PvVoltage_ChannelB	R	slave9 data	0.1V	Uint16	1
	0x02E1	PvCurrent_ChannelA	R		0.1A	Uint16	1
	0x02E2	PvCurrent_ChannelB	R		0.1A	Uint16	1
	0x02E3	BatPower	R		1W	Uint16	1
	0x02E4	BatVoltage	R		0.1V	Uint16	1
	0x02E5	BatCurrent	R		0.1A	Uint16	1
	0x02E6	ChargePowerLimit	R		1W	Uint16	1
	0x02E7	DischargePowerLimit	R		1W	Uint16	1
	0x02E8	BatFaultMessage	R		1	Uint16	1
	0x02E9	BatCapacity	R		1%	Uint16	1
	0x02EA 0x02EB	Rev	R		1	Uint32	2
	0x02EC	Rev	R		1	Uint32	2

	0x02ED						