Energy Storage Inverter Modbus TCP&RTU Communication protocols

V3.24

History list：

Date	Name	detail	Version	other
2020-6-16	GaoRui	1.Delete RF related data; 2.Modify work mode related data; 3.The communication format is changed from the original Modbus TCP to Modbus RTU.	V3.01	Completed according to the ModBus TCP X1&X3 G3 V3.19 Protacal
2020-8-14	GaoRui	1.Modify the corresponding meaning of language .(0:English1:German2:French3:Polish4:Spanish 5: Portuguese) 2.Modify the Feedin power description (0x0046 register). 3.Write single register and Read holding register add EnableMPPT. 4.Modify read holding register 0x00BA, Inverter power type description,delete the 7kW type.	V3.02	
2020-8-28	GaoRui	1.Add safety type description.(0x03Read Holding Register, 0x001D Safety.)	V3.03	
2020-10-7	WangJian Xing	Add Vpp Control function registers	V3.04	
2020-10-9	GaoRui	1.Modify the Vpv_High_Stop, Vpv_Low_Stop parameter to Adjust_Battery_U,Adjust_Battery_I. 2.Delet the Vpv_Start parameter,Write Single Register 0x0001 variable Reserve. 3.Delet these ModbusPowerControl, Modbus ActivePower, ModbusReactivePower, PowerControl_timeout parameters.Write Sigle Register 0x0051、0x0052、0x0053、0x009F, And ModbusPowerControl、PowerControl_timeout Read Holding Register 0x00A6 、0x010B variable reserve。	V3.05	
2020-11-11	GaoRui	1.Add SelfUse_NightCharge_Enable, Feedin_NightCharge_UpperSoC,BackUp_NightCharge_Upper SoC; .(0x03Read Holding Register , 0x0092(Hi),0x0094(Lo),0x0095(Lo).) 2.Add Safety type description: 28 RD1699_Island. 3. Add ReconnectionTime Read Holding Register 0x0017, Write Single Register 0x0001. 4.Modify 0x5F Reset_Manger_EE parameter‘s decription (0x06: Write Single Register). 4.Add MateBoxEnable parameter. (1) Write Single Register 0x000A. (2) Read Holding Register 0x001E.	V 3.06	
2020-12-2	GaoRui	1.Delete PowerManagerConfigData、PowerManagerEnable	V3.07	

2		parameters. 2.Add HardwareVersionDSP parameter, which at 0x007D Holding Register. 3.Modify absorpt_voltage parameter position, which from 0x00A7 to 0x0092 at Holding Register. 4.Delete wDcvFaultVal parameter. 5. Modify the Eps description to Off-grid in the full text. 6.Add MissedCTFault description at Table 2-4 Inverter error code(X1).		
2021-01-29	GaoRui	1.Add Registration Code(for external module) parameter, which from 0x00AA to 0x00AE at Read Holding Register. 2.Modify 0x0116 register LVRT_Function parameter's description, which at Holding Register.	V3.08	
2021-03-02	wangjianxing	1、Add Adjust_CT parameters, which from 0x0034 to 0x0037 at Write Single Register. 2、Modify some BMS warning Spelling mistake	V3.09	
2021-06-21	wangjianxing	Add "Notice"explain about use "**Write Single Registers**"and"**WriteMultiple Registers**"attentions Add Write single registers 0x0029~0x002E about CalibGainInvVolt and CalibEPSDcvAdj Add Read Input registers 0x009C~0x009E about InvVoltR、InvVoltS、InvVoltT	V3.10	
2021-08-19	wangjianxing	Add Write single registers 0x00A4 : DirectionMeterCT1 0x00A5 : DirectionMeter2 Add Read Input registers 0x010B : DirectionMeterCT1 0x010C : DirectionMeter2	V3.11	
2021-9-3	wangjianxing	Add safety types(AS 4777_2020_B 、AS 4777_2020_C 、User-Defined、EN50549_Romania、CEI016) Add Read Input Registers 0x00BA Battery_Tem_High 0x00BB Battery_Tem_Low 0x00BC Cell_Voltage_High 0x00BD Cell_Voltage_Low Add Write single register 0x0046 AgeingMode(for ATE use)	V3.12	
2021-9-28	Tangyanchong	Add Read Holding Registers 0x11C bPVConnectionMode(X1) Add Write Single Registers 0x0051 PVConnectipon(X1) 0x00AE PuFuncEnable	V3.13	

		0x00AF PuFunc_ResponseV1 0x00B0 PuFunc_ResponseV2 0x00B1 PuFunc_ResponseV3 0x00B2 PuFunc_ResponseV4 0x00B3 PuFunc_3Tau		
2021-11-2	wangjianxing	**Add Read Holding Registers** 0x00A8 wBatteryDischargeBackupVoltage **Add Write Single Registers** 0x0026 wBatteryDischargeBackupVoltage **Add Upgrade W/R Register and Example describe**	V3.14	
2021-11-22	Tangyanchong	**Add Read Holding Registers** 0x011C ShutDown 0x011D MicroGrid 0x011E SelfuseModeBackupEn 0x011F bSelfUse_BackupSoc 0x0120 bLeaseModeEnable 0x0121 bDeviceLockFlag 0x0122~0x012E: DryContact Regisers 0x012F DryContactMode 0x0130 Parallel Setting **Add Write Single Registers** 0x0052 ShutDown 0x0053 MicroGrid 0x00B4 LeaseModeEnable 0x00B5 DeviceLockFlag 0x00B6~0x00C3:DryContact Regisers 0x00C4 SelfuseModeBackupEn 0x00C5 SelfUse_BackupSoc 0x00C6 Parallel Setting	V3.15	
2022-01-04	Tangyanchong	**Add Upgrade Example For X1G4(File DSP)**	V3.16	
2022-01-11	wangjianxing	**Add Read Holding Registers** 0x00A9 MatchResistanceSet(X3) 0x0131 ExternalGenEn 0x0132 ExternalGenMaxCharge **Add Write Single Registers** 0x00C6 MatchResistanceSet(X3) 0x00C7 ExternalGenEn 0x00C8 ExternalGenMaxCharge	V3.17	
2022-01-13	tangyanchong	Add Read Holding Register（BMS Info） **Add Read Input Registers** 0x011F wBatteryForceChargeFlag	V3.18	

		0x0120 wBMSRelayState **Add Read Holding Registers** 0x00B9 Off-grid Frequncy		
2022-1-29	wangjianxing	**Add Read Holding Registers** 0x0103 CtType(X3) **Add Write Single Registers** 0x0027 CtType(X3) **Sync app settings parameters**	V3.19	
2022-4-14	wangjiaxing	**Adjust the protection range of some parameters（0x0005、0x0006、0x0008、0x000D、0x000F）** **Add Read Holding Registers** 0x00A0 EpsRestartSoc 0x00A1 HotStandbyEN 0x00A2 ExtendBmsSetting 0x00B2 PgridBias **Add Write Single Registers** 0x008E EpsRestartSoc 0x0099 HotStandbyEN 0x009A ExtendBmsSetting 0x008C EpsBatLowAutoRecoverVoltage 0x008D PgridBias	V3.20	
2022-6-21	wangjianxing	**Add Read Holding Registers** 0x00F2 SetpointTimeout 0x0110 InPutDI1 0x0114 ShadowFixFuncEnable2 0x007F FirmwareVersion_DSP_Major 0x0080 FirmwareVersion_ARM_Major **Add Write Single Registers** 0x0098 ShadowFixFuncEnable2	V3.21	
2022-10-14	tangyanchong	**Add Read Holding Registers** 0x010E BatteryChargeMaxSoc 0x010F bBatterToEVCharge **Add Write Single Registers** 0x00E0 BatteryChargeMaxSoc 0x00E1 bBatterToEVCharge **Add Table Read Holding Register（Data Hub）** **Add Table Read Input Register(Data Hub)** **Add Table Write Multiple Register(Data Hub)** Adjust “Export control user limit” accuracy description(X1 1W、X3 10W)	V3.22	

2023-1-6	wangjianxing	**Add Read Input Registers:** 0x0121:BMS_RestartFlag **Add Write Single Registers:** 0x00E2: BMS_Restart **Repair function code 0x04 regriters 0x00BD~0x00C4 and function code 0x06 regriters 0x004A~0x0050 data format mistake.(1ms(X1) 10ms(X3))** **Add Gen Fuction Registers:** **Read Holding Registers 0x0x0140~0x0147** **Write Single Registers 0x00E3~0x00EB** **Update partial write parameter range.** **Add Read Holding Register:** VPPPExitIdleEn(0x00B4) PeakShvingMode parameter (0x0150~0x0159) **Add Write Single Registers:** PeakShvingMode parameter (0x00EA~0x0F3) VPPPExitIdleEn(0x00F4)	V3.23	
2023-3-17	tangyanchong	**Add Read Holding Registers:** 0x00B3: FastCtCheckEn 0x015C: EVChargerAddr 0x015E: AdaptBoxG2Addr **Add Write Single Registers:** 0x00F5: FastCtCheckEn 0x00F9: EVChargerAddr 0x00FB: AdaptBoxG2Addr **Revise Write Single Registers** PeakShvingMode Parameter (0x00EA~0x00ED) BatteryHeating Parameter(0x00D0~0x00D3) Gen Allow Work Time(0x00E8~0x00E9)	V3.24	

Version matching information

Protocol version	ARM version(X1)	ARM version(X3)
V3.01	V1.01~V1.03	V1.01~V1.03
V3.02		
V3.03		
V3.04		
V3.05		
V3.06		
V3.07	V1.04~1.14	
V3.08		
V3.09		V1.04~V1.09
V3.10		
V3.11	1.15	V1.10~V1.19
V3.12		
V3.13		
V3.14	1.16	
V3.15		
V3.16		
V3.17		1.20
V3.18		

Protocols general

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

Address: 1(defualt)

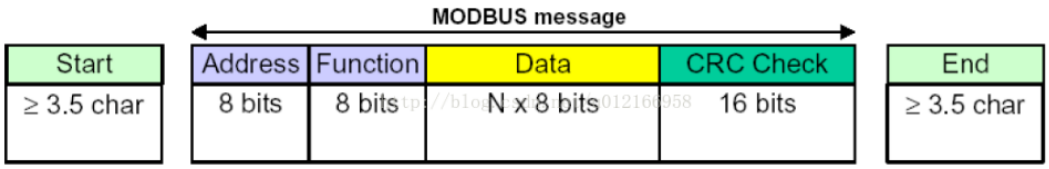
Braud Rate：19200(default)

Data bits: 8

Stop Bit: 1

Parity: None

Frame format:



protocols type：Modbus TCP(**for Monitoring module**)

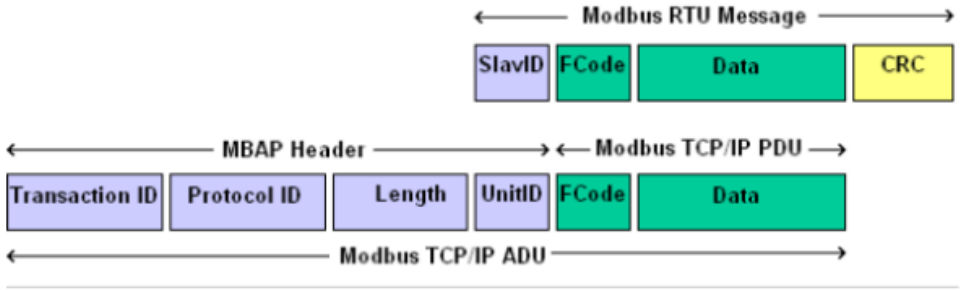
port：502

Transaction ID:No compulsory requirements

Protocol ID:No compulsory requirements

UnitID:No compulsory requirements, use 0x01 by default

frame format:



Note:The inverter itself does not support modbus tcp function,function expansion must be completed through the monitoring module of solax.Since it is used for external expansion, the query cycle is expected to be controlled at about 1 second.

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.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.

0x03:Read Holding Register

32bit data use little endian format

Function Code	Read Holding Register						
	Register	Variable	W/R	descripton	Unit	Data format	Length
0X03	0x0000 ~0x0006	InverterSN	R	14Chars, MSB=SN[14]	14Char	uint16	7
	0x0007 ~0x000D	FactoryName	R	14Chars, MSB=SN[14]	14Char	uint16	7
	0x000E ~0x0014	ModuleName	R	14Chars, MSB=SN[14]	14Char	uint16	7
	0x0015	REV				uint16	1
	0x0016	TimeStart	R	launch wait time	1s	uint16	1
	0x0017	ReconnectionTime	R	Reconnection Time	1s	uint16	1
	0x0018	CheckingTime	R	CheckingTime	1s	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	SafetyCode	R	Safety type	—	uint16	1

				0: VDE0126 1: VDE4105 2: AS 4777_2020_A 3: G98/1 （X1/X3） 4: C10/11 5: TOR(X1/X3) 6: EN50438_NL 7: Denmark2019_W(X3) 8: CEB 9: CEI021 10:NRS097_2_1 11:VDE0126_Gr_Is 12:UTE_C15_712 13:IEC61727(X1/X3) 14:G99/1 15:VDE0126_Gr_Co 16：Guyana 17:C15_712_is_50 18:C15_712_is_60 19:New Zealand 20:RD1699 21:Chile ----------(X3)---------- 22:Israel 23:Czech_PPDS_2020 24:RD1699_Island 25:EN50549_Poland 26:EN50438_Portugal 27:PEA 28:MEA 29:EN50549_Sweden 30:Philippines 31:EN50438_Slovenia 32:Denmark2019_E 33:EN50549_EU 34:AS 4777_2020_B 35:AS 4777_2020_C 36:User-Defined 37:EN50549_Romania 38:CEI016 39：ACEA ----------(X3)---------- ----------(X1)----------			

			22:EN50438_Ireland 23:Philippines 24:Czech PPDS_2020 25:Czech_50438 26: EN50549_EU 27: Denmark2019_E 28:RD1699_Island 29: EN50549_Poland 30:MEA_Thailand 31:PEA_Thailand 32:ACEA 33:AS 4777_2020_B 34:AS 4777_2020_C 35:User Define 36:EN50549_Romania ----------(X1)----------			
0x001E	MateBoxEnable	R	0:Disable 1:Enable	1	uint16	
0x001F	Grid10MinAvgProtect	R	10minutes over voltage protect	0.1V	uint16	
0x0020	VacMinSlowProtect	R	grid undervoltage protect value	0.1V	uint16	
0x0021	VacMaxSlowProtect	R	grid overvoltage protect value	0.1V	uint16	
0x0022	FacMinSlowProtect	R	grid underfrequency protect value	0.01HZ	uint16	
0x0023	FacMaxSlowProtect	R	grid overfrequency protect value	0.01HZ	uint16	
0x0024	REV	R	-	-	uint16	
0x0025	PowerLimitsPercent	R	output power limits precent	0~100	uint16	
0x0026	PowerfactorMode	R	0: Off 1:Over Excited 2:Under Excited 3:Curve 4:Qu 5:Fix Q Power	1	uint16	
0x0027	PowerfactorData	R	Power factor data	0.01	uint16	1
0x0028	PowerFactor_Curve_PF1	R	PowerFactor_Curve_PF1	0.01	uint16	1
0x0029	PowerFactor_Curve_PF2	R	PowerFactor_Curve_PF2	0.01	uint16	1
0x002A	PowerFactor_Curve_PF3	R	PowerFactor_Curve_PF3	0.01	uint16	1
0x002B	PowerFactor_Curve_PF4	R	PowerFactor_Curve_PF4	0.01	uint16	1
0x002C	PowerFactor_Curve_Power1	R	PowerFactor_Curve_Power1	1%	uint16	1
0x002D	PowerFactor_Curve_Power2	R	PowerFactor_Curve_Power2	1%	uint16	1
0x002E	PowerFactor_Curve_Power3	R	PowerFactor_Curve_Power3	1%	uint16	1
0x002F	PowerFactor_Curve_Power4	R	PowerFactor_Curve_Power4	1%	uint16	1
0x0030	PowerFactor_Curve_PfLockInPoint	R	PowerFactor_Curve_PfLockInPoint	0.01	uint16	1
0x0031	PowerFactor_Curve_PfLockOutPoint	R	PowerFactor_Curve_PfLockOutPoint	0.01	uint16	1

0x0032	PowerFactor_Curve_3Tau	R	PowerFactor_Curve_3Tau	1s	uint16	1
0x0033	PowerFactor_Qu_VoltRatio1	R	PowerFactor_Qu_VoltRatio1	1%	uint16	1
0x0034	PowerFactor_Qu_VoltRatio4	R	PowerFactor_Qu_VoltRatio4	1%	uint16	1
0x0035	PowerFactor_Qu_QuResponseV1	R	PowerFactor_Qu_QuResponseV1	0.1V	uint16	1
0x0036	PowerFactor_Qu_QuResponseV2	R	PowerFactor_Qu_QuResponseV2	0.1V	uint16	1
0x0037	PowerFactor_Qu_QuResponseV3	R	PowerFactor_Qu_QuResponseV3	0.1V	uint16	1
0x0038	PowerFactor_Qu_QuResponseV4	R	PowerFactor_Qu_QuResponseV4	0.1V	uint16	1
0x0039	PowerFactor_Qu_K	R	PowerFactor_Qu_K	0.1	int16	1
0x003A	PowerFactor_Qu_3Tau	R	PowerFactor_Qu_3Tau	1s	uint16	1
0x003B	PowerFactor_Qu_QuDelayTimer	R	PowerFactor_Qu_QuDelayTimer	1s	uint16	1
0x003C	PowerFactor_Qu_QuLockEn	R	PowerFactor_Qu_QuLockEn 0:Disable 1::Enable	1	uint16	1
0x003D	PowerFactor_Qu_QuLockIn	R	PowerFactor_Qu_QuLockIn	1%	uint16	1
0x003E	PowerFactor_Qu_QuLockOut	R	PowerFactor_Qu_QuLockOut	1%	uint16	1
0x003F	PowerFactor_FixQPower	R	PowerFactor_FixQPower	1Var	int16	1
0x0040	PowerFactor_FixQPower_Max	R	PowerFactor_FixQPower_Max	1Var	int16	1
0x0041	PowerFactor_FixQPower_Min	R	PowerFactor_FixQPower_Min	1Var	int16	1
0x0042	wConnection_FL	R	Connection Low frequency	0.01Hz	int16	1
0x0043	wConnection_FH	R	Connection High frequency	0.01Hz	int16	1
0x0044	wConnection_VL	R	Connection Low voltage	0.1V	int16	1
0x0045	wConnection_VH	R	Connection High voltage	0.1V	int16	1
0x0046	wConnection_ObserveT	R	Connection Observation time	1S	int16	1
0x0047	wConnection_GradientEn	R	Connection Gradient Select	1	int16	1
0x0048	wReconnection_FL	R	Reconnection Low frequency	0.01HZ	int16	1
0x0049	wReconnection_FH	R	Reconnection High frequency	0.01Hz	int16	1
0x004A	wReconnection_VL	R	Reconnection Low voltage	0.1V	int16	1
0x004B	wReconnection_VH	R	Reconnection High voltage	0.1V	int16	1
0x004C	wReconnection_ObserveT	R	Reconnection Observation time	1S	int16	1
0x004D	wReconnection_GradientEn	R	Reconnection Gradient Select	1	int16	1
0x004E	wReconnection_Gradient	R	Reconnection Gradient	1%	int16	1
0x004F ~0x007C	Reserv	R	-	-	uint16	59
0x007D	FirmwareVersion_DSP_Minor	R	FirmwareVersion_DSP_Minor	1	uint16	1
0x007E	HardwareVersion_DSP	R	HardwareVersion_DSP	1	uint16	1
0x007F	FirmwareVersion_DSP_Major	R	FirmwareVersion_DSP_Major	1	uint16	1
0x0080	FirmwareVersion_ARM_Major	R	FirmwareVersion_ARM_Major	1	uint16	1
0x0081	Rev					
0x0082	FirmwareVersion_ModbusRTU	R	Current version matches FirmwareVersion_ARM	1	uint16	1
0x0083	FirmwareVersion_ARM_Minor	R	FirmwareVersion_ARM_Minor	1	uint16	1

0x0084	FirmwareVersion_ARM_Bootloader	R	FirmwareVersion_ARM_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: Feedin Priority 2:Back up mode 3:Manual mode	1	uint16	1
0x008C	Manual mode	R	0:Stop charge&discharge 1:Force charge 2:Force discharge	1	uint16	1
0x008D	wBattery1_Type	R	0：Lead Acid 1：Lithium	1	uint16	1
0x008E	Charge_floatVolt	R	Lead-acid battery charge_float voltage	0.1V	uint16	1
0x008F	Battery_DischargeCutVoltage	R	Lead-acid battery discharge cut-off voltage	0.1V	uint16	1
0x0090	Battery_ChargeMaxCurrent	R	Lead-acid battery charge maximum current	0.1A	uint16	1
0x0091	Battery_DischargeMaxCurrent	R	Lead-acid battery discharge maximum Current	0.1A	uint16	1
0x0092	absorpt_voltage	R	Lead-acid battery absorpt_voltage	0.1V	uint16	1
0x0093	SelfUse_Discharge_MinSoC	R	10% ~100%	1%	uint8(Hi)	1
	SelfUse_NightCharge_Enable	R	Whether to allow electricity from the grid 0:Disable 1:Enable	1	uint8(Lo)	
0x0094	SelfUse_NightCharge_UpperSoC	R	This value will be enabled if SelfUse_NightCharge_Enable is 1. 10%~100%	1%	uint16	1
0x0095	Feedin_NightCharge_UpperSoC	R	10%~100%	1%	uint8(Hi)	1
	Feedin_Discharge_MinSoC	R	10%~100%	1%	uint8(Lo)	
0x0096	BackUp_NightCharge_UpperSoC	R	30%~100%	1%	uint8(Hi)	1
	BackUp_Discharge_MinSoC		30%~100%	1%	uint8(Lo)	

0x0097	ChargePeriod1_StartMinute	R	0-59	1M	uint8(Hi)	1
	ChargePeriod1_StartHour	R	0-23	1H	uint8(Lo)	
0x0098	ChargePeriod1_EndMinute	R	0-59	1M	uint8(Hi)	1
	ChargePeriod1_EndHour	R	0-23	1H	uint8(Lo)	
0x0099	DischargePeriod1_StartMinute	R	0-59	1M	uint8(Hi)	1
	DischargePeriod1_StartHour	R	0-23	1H	uint8(Lo)	
0x009A	DischargePeriod1_EndMinute	R	0-59	1M	uint8(Hi)	1
	DischargePeriod1_EndHour	R	0-23	1H	uint8(Lo)	
0x009B	Set_Chrg&DischrgPeriod2_Enable	R	Whether to use period 2. 0:Disable 1:Enable	1	uint16	1
0x009C	ChargePeriod2_StartMinute	R	0-59	1M	uint8(Hi)	1
	ChargePeriod2_StartHour	R	0-23	1H	uint8(Lo)	
0x009D	ChargePeriod2_EndMinute	R	0-59	1M	uint8(Hi)	1
	ChargePeriod2_EndHour	R	0-23	1H	uint8(Lo)	
0x009E	DischargePeriod2_StartMinute	R	0-59	1M	uint8(Hi)	1
	DischargePeriod2_StartHour	R	0-23	1H	uint8(Lo)	
0x009F	DischargePeriod2_EndMinute	R	0-59	1M	uint8(Hi)	1
	Discharge Period2_EndHour	R	0-23	1H	uint8(Lo)	
0x00A0	EpsRestartSoc	R	10~100	1%	uint16	1
0x00A1	HotStandbyEN	R	0:enable 1:disable	1	uint16	1
0x00A2	ExtendBmsSetting	R	0:disable 1:enable	1	uint16	1
0x00A3	BatteryHeatingEn	R	0:disable 1:enable	-	uint16	1
0x00A4	HeatingPeriod1_StartMinute	R	0-59	1M	uint8(Hi)	1

	HeatingPeriod1_StartHour	R	0-23	1H	uint8(Lo)	
0x00A5	HeatingPeriod1_EndMinute	R	0-59	1M	uint8(Hi)	1
	HeatingPeriod1_EndHour	R	0-23	1H	uint8(Lo)	
0x00A6	HeatingPeriod2_StartMinute	R	0-59	1M	uint8(Hi)	1
	HeatingPeriod2_StartHour	R	0-23	1H	uint8(Lo)	
0x00A7	HeatingPeriod2_EndMinute	R	0-59	1M	uint8(Hi)	1
	HeatingPeriod2_EndHour	R	0-23	1H	uint8(Lo)	
0x00A8	wBatteryDischargeBackupVoltage	R	wBatteryDischargeBackupVoltage	0.1V	uint16	1
0x00A9	MatchResistanceSet (X3)	R	0:disable 1:enable	-	uint16	1
0x00AA	Registration Code (for external module)	R	Registration Code[10]	10char	uint16	1
0x00AF	ModBusRTU_Address	R	ModBusRTU_Address	1	uint16	1
0x00B0	ModBusRTU_BraudRate	R	0:115200 1:57600 2:56000 3:38400 4:19200 5:14400 6:9600	bit/s	uint16	1
0x00B1	InvVoltZeroResultj(X3)	R	1:校准完成 其他：校准失败	1	uint16	1
0x00B2	PgridBias	R	0:Disable 1:Grid 2:INV	-	uint16	1
0x00B3	FastCtCheckEn	R	0:disable 1:enable	1	uint16	1
0x00B4	VPPExitIdleEn	R	0:Disable 1:Enable	1	uint16	1
0x00B5	Factorylimit	R	Factorylimit	1W	uint16	1
0x00B6	Export control user limit	R	Export_control user limit	1W(X1) 10W(X3)	uint16	1
0x00B7	Off-grid_Mute	R	0(off)/1(on)	1	uint16	1
0x00B8	Off-grid_MinSoC	R	Off-grid_MinSoC	1%	uint16	1
0x00B9	Off-grid Frequncy	R	Off-grid Frequncy	1	uint16	1
0x00BA	Inverter Power Type	R	X1G4: 3000/3680/5000 /6000/7500 X3G4: 15K/12K/10k/8K /6K/5K	1W	uint16	1
0x00BB	Language	R	0:English 1:German 2:French 3:Polish 4:Spanish 5:Portuguese 6:Italian	0~5	uint16	1

0x00BC	EnableMPPT	R	1:enable 0:Disable	0/1	uint16	1
0x00BD	wTuvp_L2	R	wTuvp_L2	1ms(X1) 10ms(X3)	uint16	1
0x00BE	wTovp_L2	R	wTovp_L2	1ms(X1) 10ms(X3)	uint16	1
0x00BF	wTufp_L2	R	wTufp_L2	1ms(X1) 10ms(X3)	uint16	1
0x00C0	wTofp_L2	R	wTofp_L2	1ms(X1) 10ms(X3)	uint16	1
0x00C1	wTuvp_L1	R	wTuvp_L1	1ms(X1) 10ms(X3)	uint16	1
0x00C2	wTovp_L1	R	wTovp_L1	1ms(X1) 10ms(X3)	uint16	1
0x00C3	wTufp_L1	R	wTufp_L1	1ms(X1) 10ms(X3)	uint16	1
0x00C4	wTofp_L1	R	wTofp_L1	1ms(X1) 10ms(X3)	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)	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	9 means success	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	R		1s	uint16	1
0x00D7	MainBreakerCurrentLimit	R	32A~100A	1A	uint16	1
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	0/1	uint16	1
0x00DB	OFPL_Point	R	Overfrequency load reduction point.	0.01Hz	uint16	1
0x00DC	OFPL_SetRate	R	Overfrequency load reduction rate.	1%	uint16	1
0x00DD	OFPL_DelayTime	R	Overfrequency load reduction delay time.	1ms	uint16	1
0x00DE	OFPL_fstop_disch	W	OFPL_fstop_disch	0.01Hz	uint16	1
0x00DF	OFPL_fPmin	W	OFPL_fPmin	0.01Hz	uint16	1
0x00E0	UserPassword	R	UserPassword	1	uint16	1
0x00E1	AdvancePassword	R	AdvancePassword	1	uint16	1
0x00E2	UFPL_Point	R	Underfrequency load increase point.	0.01Hz	uint16	1
0x00E3	UFPL_SetRate	R	Underfrequency load increase rate.	1%	uint16	1
0x00E4	UFPL_DelayTime	R	Underfrequency load increase delay time.	1ms	uint16	1
0x00E5	OFPL_CurveType	R	Overfrequency load reduction curve type selction. 0:Symmetry curve 1:Asymmetry curve	0/1	uint16	1
0x00E6	OFPL_Tstop	R	Overfrequency load reduction asymmetry curve stop time.	1s	uint16	1

0x00E7	OFPL_RemovePoint	R	Overfrequency load reduction frequency remove point.	0.01Hz	uint16	1
0x00E8	UFPL_RemovePoint	R	Underfrequency load increase frequency remove point.	0.01Hz	uint16	1
0x00E9	ExportSoftLimitEn	R	ExportSoftLimitEn	-	uint16	1
0x00EA	ExportHardLimitEn	R	ExportHardLimitEn	-	uint16	1
0x00EB	GeneralSoftLimitEn	R	GeneralSoftLimitEn	-	uint16	1
0x00EC	GeneralHardLimitEn	R	GeneralHardLimitEn	-	uint16	1
0x00ED	wAcPowerLimit	R	wAcPowerLimit	1VA(X1) 10VA(X3)	uint16	1
0x00EE	ConnectSlop(X3)	R	ConnectSlop	1%	uint16	1
0x00EF	ReconnectSlop(X3)	R	ReconnectSlop	1%	uint16	1
0x00F0	HardExportPower	R	HardExportPower	1W(X1) 10W(X3)	uint16	1
0x00F1	HardAcPowertLimit	R	HardAcPowertLimit	1VA(X1) 10VA(X3)	uint16	1
0x00F2	SetpointTimeout	R	SetpointTimeout	1ms	uint16	1
0x00F3	wPowerLimitGra	R	wPowerLimitGra	0.0001	uint16	1
0x00F4	PuFunc_VoltResponse_V2	R	PuFunction Voltage	0.1V	uint16	1
0x00F5	PuFunc_VoltResponse_V3	R		0.1V	uint16	1
0x00F6	PuFunc_VoltResponse_V4	R		0.1V	uint16	1
0x00F7	PuFunc_VoltResponse_V1	R		0.1V	uint16	1
0x00F8	PuFunc_3Tau	R	PuFunc_3Tau	0.01	uint16	1
0x00F9	PUFuncEnable	R	0:disable 1:enable	1	uint16	1
0x00FA	SetPuPower1	R	SetPuPower1	1%	uint16	1
0x00FB	SetPuPower2	R	SetPuPower2	1%	uint16	1
0x00FC	SetPuPower3	R	SetPuPower3	1%	uint16	1
0x00FD	SetPuPower4	R	SetPuPower4	1%	uint16	1
0x00FE	Rev					
0x00FF	Pu_Tpye	R	Pu_Tpye	1	uint16	1
0x0100	UFPL_fstop_ch	R	UFPL_fstop_ch	0.01Hz	uint16	1
0x0101	UFPL_fPmax	R	UFPL_fPmax	0.01Hz	uint16	1
0x0102	DRMFunctionEnable	R	0:disable 1:enable	1	uint16	1
0x0103	CtType（X3）	R	0:100A 1:200A	1	uint16	1
0x0104	wShadowFixFuncEnable	R	0:Off, 1:Low, 2:Middle, 3:Hight	1	uint16	1
0x0105	MachineType_X1orX3	R	1:X1 3:X3	-	uint16	1

0x0106	PhasePowerBalance(X3)	R	0:disable 1:enable	1	uint16	1
0x0107	wMachineStyle	R	0:X-Hybrid 1:X-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	DirectionMeterCT1	R	0:Positive 1:Negative	1	uint16	1
0x010C	DirectionMeter2	R	0:Positive 1:Negative	1	uint16	1
0x010D	ExternalInv	R	0:Enable1:Disable	1	uint16	1
0x010E	BatteryChargeMaxSoc	R	Charger upper limit	1%	uint16	1
0x010F	bBatterToEVCharge	R	0:Enable1:Disable	1	uint16	1
0x0110	InPutDI1	R	0:低电平 1:高电平	1	uint16	1
0x0111	DischCutOffPoint_DifferentEN	R	Whether Lead-acid Battery discharge cut-off voltage point is enable. 0:disable 1:enable	1	uint16	1
0x0112	REV	R	-	-	uint16	1
0x0113	DischCutOffVoltage_GridMode	R	Lead-acid Battery discharge cut-off voltage in on-grid mode	0.1V	uint16	1
0x0114	ShadowFixFuncEnable2	R	-0:Off, 1:Low, 2:Middle, 3:Hight	1	uint16	1
0x0115	Meter/CT select	R	0:Meter 1:CT	1	uint16	1
0x0116	FVRT_Function	R	0:Disable 1:Enable	1	uint16	1
0x0117	FVRT_VacUpper	R	If FVRT_Function is enable, FVRT Vac upper limit is available.	0.1V	uint16	1
0x0118	FVRT_VacLower	R	If FVRT_Function is enable, FVRT Vac lower limit is available.	0.1V	uint16	1
0x0119	REV	R	-	-	uint16	1
0x011A	REV	R	-	-	uint16	1
0x011B	bPVConnectionMode(X1)	R	PV connection.	1	uint16	1
0x011C	ShutDown(X1)	R	0:Disable 1:Enable	1	uint16	1
0x011D	MicroGrid(X1)	R	0:Disable 1:Enable	1	uint16	1
0x011E	SelfuseModeBackupEn	R	0:Disable 1:Enable	1	uint16	1
0x011F	bSelfUse_BackupSoc	R	10~100	1%	uint16	1
0x0120	bLeaseModeEnable	R	0:Disable 1:Enable	1	uint16	1
0x0121	bDeviceLockFlag	R	0:Disable 1:Enable	1	uint16	1
0x0122	ManualModeControl	R	0:OFF 1:ON	1	uint16	1
0x0123	FeedinOnPower	R	Grid connected pull in power point	1W	uint16	1
0x0124	bSwitchOnSoc	R	SOC trigger point of pull in action	1%	uint16	1
0x0125	ConsumeOffPower	R	Power consumption off trigger point	1W	uint16	1
0x0126	bSwitchOffSoc	R	SOC trigger point of breaking action	1%	uint16	1

0x0127	MinimumPerOnSignal	R	Minimum duration of single pull in	1min	uint16	1
0x0128	MaximumPerDayOn	R	Maximum cumulative pickup time of the day		uint16	1
0x0129	bScheduleEnable	R	0:Disable 1:Enable	1	uint16	1
0x012A	bP1_StartMinute	R	0-59	1	uint8(Hi)	1
	bP1_StartHour	R	0-23	1	uint8(Lo)	
0x012B	bP1_StopMinute	R	0-59	1	uint8(Hi)	1
	bP1_StopHour	R	0-23	1	uint8(Lo)	
0x012C	bP2_StartMinute	R	0-59	1	uint8(Hi)	1
	bP2_StartHour	R	0-23	1	uint8(Lo)	
0x012D	bP2_StopMinute	R	0-59	1	uint8(Hi)	1
	bP2_StopHour	R	0-23	1	uint8(Lo)	
0x012E	WorkMode	R	0:Disable 1:manual 2:SmartSave	1	uint16	1
0x012F	DryContactMode	R	0:Load Management 1:Generator Control	1	uint16	1
0x0130	Parallel Setting	R	0:Free 1: Master 2:Slave	1	uint16	1
0x0131	ExternalGenEn	R	0:Disable 1:ATS Control 2:Dry Contact	1	uint16	1
0x0132	ExternalGenMaxCharge	R	ExternalGenMaxCharge	1W(X1) 10W(X3)	uint16	1
0x0133 ~0x013D	Rev					
0x013E	485CommFunSelect	R	0:modbus 485 1:EV Charge	1	uint16	1
0x013F	Rev					
0x0140	Start Gen Method	R	0:reference soc 1:immediately	1	uint16	1
0x0141	Switch on SoC	R	Switch on SoC(reference soc)	1%	uint16	1
0x0142	Switch off SoC	R	Switch off SoC(reference soc)	1%	uint16	1
0x0143	MaxRunTime	R	MaxRunTime	1Min	uint16	1
0x0144	Rev	R				

0x0145	MinRestTime	R	MinRestTime	1Min	uint16	1
0x0146	Allow Work start time Minute	R	Allow Work start time Minute	1M	uint8(Hi)	1
	Allow Work start time Hour	R	Allow Work start time Hour	1H	uint8(Lo)	1
0x0147	Allow Work stop time Minute	R	Allow Work start time Minute	1M	uint8(Hi)	1
	Allow Work stop time Hour	R	Allow Work start time Hour	1H	uint8(Lo)	1
0x0148 ~0x014E	Rev					
0x014F	PeakShavingDischarPeriod.bP1_StartMinute	R	0-59	1M	uint8(Hi)	
	PeakShavingDischarPeriod.bP1_StartHour	R	0-23	1H	uint8(Lo)	
0x0150	PeakShavingDischarPeriod.bP1_StopMinute	R	0-59	1M	uint8(Hi)	
	PeakShavingDischarPeriod.bP1_StopHour	R	0-23	1H	uint8(Lo)	
0x0151	PeakShavingDischarPeriod.bP2_StartMinute	R	0-59	1M	uint8(Hi)	
	PeakShavingDischarPeriod.bP2_StartHour	R	0-23	1H	uint8(Lo)	
0x0152	PeakShavingDischarPeriod.bP2_StopMinute	R	0-59	1M	uint8(Hi)	
	PeakShavingDischarPeriod.bP2_StopHour	R	0-23	1H	uint8(Lo)	
0x0153	PeakShaving.PeriodBPeakLimits1	R	Peak Shaving Mode Discharge Period 1 Power Limit	1W	uint8(Lo)	
0x0154	PeakShaving. PeriodDPeakLimits2	R	Peak Shaving Mode Discharge Period 2 Power Limit	1W	uint16	
0x0155	PeakShaving. PeriodAChargeFromGridEn	R	From Grid charging switch	1	uint16	
0x0156	PeakShaving .PeriodAChargePowerLimits	R	Charging power value from grid	1W	uint16	1
0x0157	PeakShaving .PeriodAMax_SOC	R	Maximum SOC charged from grid	1%	uint16	1
0x0158	PeakShaving .PeriodCReserved_SOC	R	Peak shaving mode reserved SOC	1%	uint16	1
0x0159	Rev					
0x015A	Rev					
0x015B	Rev					

	0x015C	EVChargerAddr	R	0~255	1	uint16	1
	0x015D	Rev					
	0x015E	AdaptBoxG2Addr	R	0~255	1	uint16	1
	0x015F						

Table 1-1 Data format description

Master request format		
	Bytes number	Content format
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x03**
Start register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Register number	2byte Data MSB Data LSB	N
CRC	2byte CRC MSB CRC MSB	
Slave normal response		
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x03**
Byte number	1 byte Data	2*N
Register date	N*2byte Data MSB Data LSB	

CRC	2byte CRC MSB CRC MSB	
Slave fault response		
Slave ID	1byte	0x00~0xFF (Inverter default 0x01)
Fault code	1byte	**0x83**
Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04
CRC	2byte CRC MSB CRC MSB	

Example: read InverterSN(register:0x0000~0x006).
Master request: 01 03 00 00 00 07 04 08
Slave response: 01 03 0E 48 34 37 35 32 32 5A 48 45 4E 47 57 45 4E 63 26

0x03:Read Holding Register（BMS Info）

Function code	Read Input Register(BMS Info)						
	register	**variable**	**W/R**	**decription**	**unit**	**data format**	**lenth**
0x03	**0x0200**	Subsystem_Num	R	Subsystem_Num	1	Uint16	1
	0x0201	BMS_MasterVersion	R	Version type describe x.y x = Uint8(Hi) y = Uint8(Low)	1	Uint16	1
	0x0202	BMS_Slave1Version	R		1	Uint16	1
	0x0203	BMS_Slave2Version	R		1	Uint16	1
	0x0204	BMS_Slave3Version	R		1	Uint16	1
	0x0205	BMS_Slave4Version	R		1	Uint16	1
	0x0206	BMS_Slave5Version	R		1	Uint16	1
	0x0207	BMS_Slave6Version	R		1	Uint16	1
	0x0208	BMS_Slave7Version	R		1	Uint16	1
	0x0209	BMS_Slave8Version	R		1	Uint16	1
	0x020A~ 0x0210	masterSN	R	masterSN	1	14char	7
	0x0211~ 0x0217	slave1_2SN	R	slave1_2SN	1	14char	7
	0x0218~ 0x021E	slave3_4SN	R	slave3_4SN	1	14char	7

	0x021F~ 0x0225	slave5_6SN	R	slave5_6SN	1	14char	7
	0x0226~ 0x022C	Slave7_8SN	R	Slave7_8SN	1	14char	7

0x03:Read Holding Register（Data Hub）

Function code	**Read Holding Register(**Data Hub**)**						
	register	**variable**	**W/R**	**decription**	**unit**	**data format**	**lenth**
0x03	0x3098~ 0x30A9	ReadBlockCheckResult	R	DataHub Upgrade results	1	Uint16	/
	0x30AA~ 0xF000	Rev					
	0xF000	SetLength	R	number of Set item	1	Uint16	1
	0xF001-	ReadSetValue	R	value of each setting item	/	Uint16	/

Note:Only for internal device communication

0x04:Read Input Register

32bit data use little endian format

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	0.1A	int16	1
	0x0002	GridPower**(X1)**	R	GridPower	1W	int16	1
	0x0003	PvVoltage1	R	PvVoltage1	0.1V	uint16	1
	0x0004	PvVoltage2	R	PvVoltage2	0.1V	uint16	1
	0x0005	PvCurrent1	R	PvCurrent1	0.1A	uint16	1
	0x0006	PvCurrent2	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	Table 2-2 Run mode description	—	uint16	1
	0x000A	Powerdc1	R	Powerdc1	1W	uint16	1
	0x000B	Powerdc2	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	BDCStatus	R	0: discharge 1: charge 2: stop	-	uint16	1
0x001A	GridStatus	R	0: OnGrid 1: OffGrid	-	uint16	1
0x001B	MPPTCount	R	MPPTCount	1	uint16	1
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	REV					
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 ~0x0027	BMS_BatteryCapacity	R	BMS_BatteryCapacity	Wh	uint16	1
0x0028 ~0x003D						
0x003E	PCSMajorFault	R	PCSMajorFault	-	uint16	1
0x003F	BatteryMajorFault	R	BatteryMajorFault	-	uint16	1
0x0040	InvFaultMessage.LSB	R	Inverter error code X1:Table2-4 X3:Table2-3	-	uint16	1
0x0041	InvFaultMessage.MSB	R		-	uint16	1
0x0042	REV	R	REV	-	uint16	1
0x0043	Mgr FaultMessage	R	Table 2-5 Manager error code	-	uint16	1
0x0044	Bat_BMS_FaultMessage.LSB	R	Table 2-6 BMS error code	-	uint16	1

0x0045	Bat_BMS_FaultMessage.MSB	R		-	uint16	1
0x0046	feedin_power	R	Feedin power is obtained from Meter or CT. (Postive mean generate power; Negative mean consumed power) (0x46:LSB,0x47:MSB)	1W	int32	2
0x0047						
0x0048	feedin_energy_total(meter)	R	energy to the grid (0x48:LSB,0x49:MSB)	0.01kWh	uint32	2
0x0049						
0x004A	consum_energy_total(meter)	R	energy form the grid (0x4A:LSB,0x4B:MSB)	0.01kWh	uint32	2
0x004B						
0x004C	Off-gridVoltage**(X1)**	R	Off-grid Voltage	0.1V	uint16	1
0x004D	Off-gridCurrent**(X1)**	R	Off-grid Current	0.1A	uint16	1
0x004E	Off-gridPower**(X1)**	R	Off-grid power	1VA	uint16	1
0x004F	Off-gridFrequency**(X1)**	R	Off-grid _Frequency	0.01Hz	uint16	1
0x0050	Etoday_togrid	R	Today Energy (Inverter AC Port)	0.1kWh	uint16	1
0x0051	Rev	R	Rev	-	uint6	1
0x0052	Etotal_togrid	R	Total Energy (Inverter AC Port) (0x52:LSB,0x53:MSB)	0.1kWh	uint32	2
0x0053						
0x0054	Lock State	R	0:locked 1:unlocked	-	uint16	1
0x0055	REV	R	REV	-	uint16	17
~0x0065						
0x0066	BusVolt	R	BusVolt	0.1V	uint16	1
0x0067	wDcvFaultVal	R	wDcvFaultVal	0.1V	uint16	1
0x0068	wOverLoadFaultval	R	wOverLoadFaultval	1W	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	Off-grid_Volt_R**(X3)**	R	Off-grid_Volt_R	0.1V	uint16	1

0x0077	Off-grid_Current_R**(X3)**	R	Off-grid_Current_R	0.1A	uint16	1
0x0078	Off-grid_PowerActive_R**(X3)**	R	Off-grid_PowerActive_R	1W	int16	1
0x0079	Off-grid_PowerS_R**(X3)**	R	Off-grid_PowerS_R	1VA	uint16	1
0x007A	Off-grid_Volt_S**(X3)**	R	Off-grid_Volt_S	0.1V	uint16	1
0x007B	Off-grid_Current_S**(X3)**	R	Off-grid_Current_S	0.1A	uint16	1
0x007C	Off-gridPowerActive_S**(X3)**	R	Off-gridPowerActive_S	1W	int16	1
0x007D	Off-gridPowerS_S**(X3)**	R	Off-gridPowerS_S	1VA	uint16	1
0x007E	Off-grid_Volt_T**(X3)**	R	Off-grid_Volt_T	0.1V	uint16	1
0x007F	Off-grid_Current_T**(X3)**	R	Off-grid_Current_T	0.1A	uint16	1
0x0080	Off-gridPowerActive_T**(X3)**	R	Off-gridPowerActive_T	1W	int16	1
0x0081	Off-gridPowerS_T**(X3)**	R	Off-gridPowerS_T	1VA	uint16	1
0x0082 ~0x0083	FeedinPower_Rphase**(X3)**	R	FeedinPower_Rphase (meter/CT) (082:LSB,0x83:MSB)	1W	int32	2
0x0084 ~0x0085	FeedinPower_Sphase**(X3)**	R	FeedinPower_Sphase (meter/CT) (0x84:LSB,0x85:MSB)	1W	int32	2
0x0086 ~0x0087	FeedinPower_Tphase**(X3)**	R	FeedinPower_Tphase (meter/CT) (0x86:LSB,0x87:MSB)	1W	int32	2
0x0088 ~0x0089	On-gridRunTime	R	On-gridRunTime (0x88:LSB,0x89:MSB)	0.1h	int32	2
0x008A ~0x008B	Off-gridRunTime	R	Off-gridRunTime (0x8A:LSB,0x8B:MSB)	0.1h	int32	2
0x008C ~0x008D	REV	R	REV	-	uint16	2
0x008E ~0x008F	Off-gridYieldTotal	R	Off-gridYieldTotal (0x8E:LSB,0x8F:MSB)	0.1kWh	uint32	2
0x0090	Off-gridYieldToday	R	Off-gridYieldToday	0.1kWh	uint16	1
0x0091	EchargeToday	R	EchargeToday (Inverter AC Port)	0.1kWh	uint16	1
0x0092 ~0x0093	EchargeTotal	R	EchargeTotal (Inverter AC Port) (0x92:LSB,0x93:MSB)	0.1kWh	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	-	-	uint16	1
0x0098 ~0x0099	feedin_energy_today	R	energy to the grid (meter) (0x98:LSB,0x99:MSB)	0.01kWh	uint32	2

0x009A ~0x009B	consum_energy_today	R	energy form the grid (meter) (0x9A:LSB,0x9B:MSB)	0.01kWh	uint16	2
0x009C	**InvVoltR(X3)**	R	**InvVoltR(X3)**	0.1V	uint16	2
0x009D	**InvVoltS(X3)**	R	**InvVoltS(X3)**	0.1V	uint16	2
0x009E	**InvVoltT(X3)**	R	**InvVoltT(X3)**	0.1V	uint16	2
0x009F ~0x00A7	Rev	R	-	-	uint16	12
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	Battery_Tem_High	R	Battery_Tem_High	0.1℃	int16	1
0x00BB	Battery_Tem_Low	R	Battery_Tem_Low	0.1℃	int16	1
0x00BC	Cell_Voltage_High	R	Cell_Voltage_High	0.001V	Uint16	1
0x00BD	Cell_Voltage_Low	R	Cell_Voltage_Low	0.001V	Uint16	1
0x00BE	BMS_UserSOC	R	BMS_UserSOC	1%	Uint16	1
0x00BF	BMS_UserSOH	R	BMS_UserSOH	1%	Uint16	1
0x00C0	GridReactivePower_Total_Meter	R	GridReactivePower_Total_Meter	1Var	int16	1
0x00C1	GridReactivePower_R_Meter	R	GridReactivePower_R_Meter	1Var	int16	1
0x00C2	GridReactivePower_S_Meter	R	GridReactivePower_S_Meter	1Var	int16	1
0x00C3	GridReactivePower_T_Meter	R	GridReactivePower_T_Meter	1Var	int16	1
0x00C4	GridPowerFactor_Total_Meter	R	GridPowerFactor_Total_Meter	0.01	int16	1
0x00C5	GridPowerFactor_R_Meter	R	GridPowerFactor_R_Meter	0.01	int16	1
0x00C6	GridPowerFactor_S_Meter	R	GridPowerFactor_S_Meter	0.01	int16	1

0x00C7	GridPowerFactor_T_Meter	R	GridPowerFactor_T_Meter	0.01	int16	1
0x00C8	GridFrequency_Meter	R	GridFrequency_Meter	0.01Hz	Uint16	1
0x00C9	GridVoltage_Total_Meter	R	GridVoltage_Total_Meter	0.1V	Uint16	1
0x00CA	GridVoltage_R_Meter	R	GridVoltage_R_Meter	0.1V	Uint16	1
0x00CB	GridVoltage_S_Meter	R	GridVoltage_S_Meter	0.1V	Uint16	1
0x00CC	GridVoltage_T_Meter	R	GridVoltage_T_Meter	0.1V	Uint16	1
0x00CD	GridCurrent_Total_Meter	R	GridCurrent_Total_Meter	0.1A	int16	1
0x00CE	GridCurrent_R_Meter	R	GridCurrent_R_Meter	0.1A	int16	1
0x00CF	GridCurrent_S_Meter	R	GridCurrent_S_Meter	0.1A	int16	1
0x00D0	GridCurrent_T_Meter	R	GridCurrent_T_Meter	0.1A	int16	1
0x00D1 ~0x00FF	Rev	R	-	-	uint16	70
0x0100	ModbusPowerControl	R	0:disable remote control 1:enable power control 2:enable electric quantity control 3:enable SOC target control	1	uint16	1
0x0101	TargetFinishFlag	R	0:unfinished 1:finish	-	uint16	1
0x0102	ActivePowerTarget	R	ActivePowerTarget	1W	int32	2
0x0103						
0x0104	wReactivePowerTarget	R	wReactivePowerTarget	1Var	int32	2
0x0105						
0x0106	wActivePowerReal	R	wActivePowerReal (0x106:LSB,0x107:MSB)	1W	int32	2
0x0107						
0x0108	wReactivePowerReal	R	wReactivePowerReal (0x108:LSB,0x109:MSB)	1Var	int32	2
0x0109						
0x010A	wActivePower_Upper	R	wActivePower_Upper (0x10A:LSB,0x10B:MSB)	1W	int32	2
0x010B						
0x010C	wActivePower_Lower	R	wActivePower_Lower (0x10C:LSB,0x10D:MSB)	1W	int32	2
0x010D						
0x010E	wReactivePowe_Upper	R	wReactivePowe_Upper (0x10E:LSB,0x10F:MSB)	1Var	int32	2
0x010F						
0x0110	wReactivePower_Lower	R	wReactivePower_Lower (0x110:LSB,0x111:MSB)	1Var	int32	2
0x0111						
0x0112	TargetEnergy	R	TargetEnergy	1Wh	int32	2
0x0113						
0x0114	Charge_Discharg_Power	R	Charge_Discharg_Power (0x114:LSB,0x115:MSB)	1W	int32	2
0x0115						
0x0116	ChargeableElectricCapacity	R	ChargeableElectricCapacity (0x116:LSB,0x117:MSB)	1Wh	uint32	2
0x0117						
0x0118	DischargeableElectricCapacity	R	DischargeableElectricCapacity	1Wh	uint32	2

0x0119			(0x118:LSB,0x119:MSB)			
0x011A	Time_of_Duration	R	Time_of_Duration	1s	uint16	1
0x011B	TargetSoc	R	TargetSoc	1%	uint16	1
0x011C	SocUpper	R	SocUpper	1%	uint16	1
0x011D	SocLower	R	SocLower	1%	uint16	1
0x011E	RemoteCtrlTimeOut	R	RemoteCtrlTimeOut (4~65535)	1s	uint16	1
0x011F	wBatteryForceChargeFlag	R	0:No Action 1:Force Charge	1	uint16	1
0x0120	wBMSRelayState	R	0:OFF 1:ON	1	uint16	1
0x0121	BMS_RestartFlag	R	0:Intial 1:Restert	1	uint16	1

Table 2-1 Data format description

Master request format		
	Bytes number	Content format
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x04**
Start register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Register number	2byte Data MSB Data LSB	N
CRC	2byte CRC MSB CRC MSB	
Slave normal response		
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x04**
Byte number	1 byte Data	2*N
Register date	N*2byte Data MSB	

	Data LSB	
CRC	2byte CRC MSB CRC MSB	
Slave fault response		
Slave ID	1byte	0x00~0xFF (Inverter default 0x01)
Fault code	1byte	**0x84**
Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04
CRC	2byte CRC MSB CRC MSB	

Example: read Mgr FaultMessage, Bat_BMS_FaultMessage (Register:0x0043~0x0045)
Master request: 01 04 00 43 00 03 41 DF
Slave response: 01 04 06 00 00 00 00 00 00 60 93

Table 2-2 Run mode description

Run mode	
Code	**Description**
0	Waiting
1	Checking
2	Normal
3	Fault
4	Permanent Fault
5	Update
6	Off-grid waiting
7	Off-grid
8	Self Testing
9	Idle
10	Standby

Table 2-3 Inverter error code(X3)

Inverter error code(X3)		
Byte num	**Bit**	**Fault**
BYTE0	BIT0	TZ Protect Fault
	BIT1	Grid Lost Fault
	BIT2	Grid Volt Fault
	BIT3	Grid Freq Fault
	BIT4	PV Volt Fault
	BIT5	Bus Volt Fault
	BIT6	Bat Volt Fault
	BIT7	AC10mins Volt Fault
BYTE1	BIT8	DCI OCP Fault
	BIT9	DCV OCP Fault
	BIT10	SW OCP Fault
	BIT11	RC OCP Fault
	BIT12	Isolation Fault
	BIT13	Temp Over Fault
	BIT14	BatConnDir Fault
	BIT15	Off-grid Overload
BYTE2	BIT16	Overload
	BIT17	Bat Power Low
	BIT18	BMS Lost
	BIT19	Fan Fault
	BIT20	Low Temp Fault
	BIT21	Parallel Fault
	BIT22	Hard Limit Fault
	BIT23	INV Volt Sample Fault
BYTE3	BIT24	Inner Comm Fault
	BIT25	INV EEPROM Fault
	BIT26	RCD Fault
	BIT27	Grid Relay Fault
	BIT28	Off-grid Relay Fault
	BIT29	PV ConnDir Fault

	BIT30	Charger Relay Fault
	BIT31	Earth Relay Fault

Table 2-4 Inverter error code(X1)

Inverter error code(X1)		
Byte num	**Bit**	**Fault**
BYTE0	BIT0	TZ Protect Fault
	BIT1	Grid Lost Fault
	BIT2	Grid Volt Fault
	BIT3	Grid Freq Fault
	BIT4	PV Volt Fault
	BIT5	Bus Volt Fault
	BIT6	Bat Volt Fault
	BIT7	AC10mins Volt Fault
BYTE1	BIT8	DCI OCP Fault
	BIT9	Reserve9
	BIT10	SW OCP Fault
	BIT11	RC OCP Fault
	BIT12	Isolation Fault
	BIT13	Temp Over Fault
	BIT14	BatConnDir Fault
	BIT15	Missed CT Fault
BYTE2	BIT16	Off-grid Overload Fault
	BIT17	Overload Fault
	BIT18	PV ConnDir Fault
	BIT19	Bat Power Low
	BIT20	Low Temp Fault
	BIT21	Parallel Fault
	BIT22	Charger Relay Fault
	BIT23	BMS Lost
BYTE3	BIT24	Inner Comm Fault
	BIT25	Fan Fault
	BIT26	Earth Relay Fault
	BIT27	INV EEPROM Fault

	BIT28	RCD Fault
	BIT29	Off-grid Relay Fault
	BIT30	Grid Relay Fault
	BIT31	Other Device Fault

Table 2-5 Manager error code

Manager error code		
Byte num	**Bit**	**Fault**
BYTE0	BIT0	Power Type Fault
	BIT1	Port OC Warning
	BIT2	Mgr EEPROM Fault
	BIT3	Reserve3
	BIT4	NTC Sample Invalid
	BIT5	Bat Temp Low
	BIT6	Bat Temp High
	BIT7	Reserve7
BYTE1	BIT8	Reserve8
	BIT9	Meter Fault
	BIT10	Bypass Relay Fault
	BIT11	Fan 2 Fault
	BIT12	Reserve12
	BIT13	Reserve13
	BIT14	Reserve14
	BIT15	Reserve15

Table 2-6 BMS warning code

BMS warning code		
Byte num	**Bit**	**Fault**
BYTE0	BIT0	BMS_External_Err
	BIT1	BMS_Internal_Err

	BIT2	BMS_OverVoltage
	BIT3	BMS_LowerVoltage
	BIT4	BMS_ChargeOCP
	BIT5	BMS_DischargeOCP
	BIT6	BMS_TemHigh
	BIT7	BMS_TemLow
BYTE1	BIT8	BMS_CellImbalance
	BIT9	BMS_Hardware_Protect
	BIT10	BMS_Circuit_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_MFR_Unmathch
	BIT19	BMS_SW_Unmathch
	BIT20	BMS_ M&S_Unmatch
	BIT21	BMS_CR_NORespond
	BIT22	BMS_SW_Protect
	BIT23	BMS_536_Fault
BYTE3	BIT24	BMS_SelfcheckErr
	BIT25	BMS_TempdiffErr
	BIT26	MS_BreakFault
	BIT27	BMS_Flash_Fault
	BIT28	BMS_Precharge_Fault
	BIT29	BMS_AirSwitch_Break
	BIT30	Rev
	BIT31	Rev

0x04:Read Input Register(Selftest)

32bit data use little endian format

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_TimeI_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_TimeI_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	Ofp(81>.S1)test	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		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	Ufp(81<.S1)test	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		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	Ofp2(81>.S2)test	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		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	Ufp2(81<.S2)test	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		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	Ovp10(59.S1)test	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		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

0x04: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	uint16	1
	0x01DF	Rev	R	Rev	1	uint16	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	DischargePowerLimit_All	R	DischargePowerLimit_All	1W	int32	2
	0x0201						
	0x0202	Rev	R	Rev	-	uint16	1
	0x0203	Rev	R	Rev	-	uint16	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_ChannelA	R		1W	uint16	1
	0x020E	PvPower_ChannelB	R		1W	uint16	1
	0x020F	PvVoltage_ChannelA	R		0.1V	uint16	1
	0x0210	PvVoltage_ChannelB	R		0.1V	uint16	1
	0x0211	PvCurrent_ChannelA	R		0.1A	uint16	1
	0x0212	PvCurrent_ChannelB	R		0.1A	uint6	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	Rev	R		1	uint32	2
	0x021B						
	0x021C	Rev	R		1	uint32	2
	0x021D						

	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	uint6	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	slave3 data	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		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	slave4 data	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		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_ChannelA	R		1W	uint16	1
	0x02AA	PvPower_ChannelB	R		1W	uint16	1
	0x02AB	PvVoltage_ChannelA	R		0.1V	uint16	1
	0x02AC	PvVoltage_ChannelB	R		0.1V	uint16	1
	0x02AD	PvCurrent_ChannelA	R		0.1A	uint16	1

	0x02AE	PvCurrent_ChannelB	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_ChannelA	R		1W	uint16	1
	0x02C4	PvPower_ChannelB	R		1W	uint16	1
	0x02C5	PvVoltage_ChannelA	R		0.1V	uint16	1
	0x02C6	PvVoltage_ChannelB	R		0.1V	uint16	1
	0x02C7	PvCurrent_ChannelA	R		0.1A	uint16	1
	0x02C8	PvCurrent_ChannelB	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	slave9 data	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		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 0x02ED	Rev	R		1	uint32	2

0x04:Read Input Register(Data Hub)

Function code	Read Input Register(Data Hub)						
	register	variable	W/R	decription	unit	data format	lenth
	0x06DF	total_length	R		1	uint16	1
	0x06E0	PallerLen	R		1	uint16	1
	0x06E1	bDHWakeUpSlaver	R		1	uint16	1

0x04	0x06E2	bDHMasterBmsSwitchState	R		1	uint16	1
	0x06E3	bDHMasterBmsComState	R		1	uint16	1
	0x06E4	bDHMasterBypassConfig	R		1	uint16	1
	0x06E5	bDHMasterBypassWorkState	R		1	uint16	1
	0x06E6	bDHExternalGen	R		1	uint16	1
	0x06E7	bDHMasterRunMode	R		1	uint16	1
	0x06E8	bDHMasterCom485State	R	Only X1	1	uint16	1
	0x06E9	bDHBatteryChargeMaxSoc	R	Only X1			
	0x06EA~0x06FF	Rev[22]	R		1	uint16	1
	0x0700	ChargeLen	R	Ev Charge	1	uint16	1
	0x0701	RefPowerToEV	R		1	uint16	1
	0x0702	PowerToEV	R		1	uint32	2
	0x0703		R		1		
	0x0704	PvRef	R		1	uint16	1
	0x0705	FeedinPower_Rphase(X3)/ FeedinPower(X1)	R		1	uint32	2
	0x0706		R		1		
	0x0707	FeedinPower_Sphase(X3)	R		1	uint32	2
	0x0708		R		1		
	0x0709	FeedinPower_Tphase(X3)	R		1	uint32	2
	0x070A		R		1		
	0x070B~0xEEFF	Rev	R		1	\	\
	0xEF00	bGetChargePower	R	CurrentChargingPower Only X3	1	uint16	1
	0xEF01~0xEFFF	Rev			1	uint16	1
	0xF000-0xF01D	Error	R	Error/Warning data	1	Uint16	30
	0xF01E	RealTime Length	R	number of Set item	1	Uint16	1
	0xF01F-	RealTime Data	R	RealTime Data	1	Uint16	N

Note:Only for internal device communication

0x06:Write Single Register

Function Code	Write Single Register							
	Register	Variable	W/R	Decription	Unit	Data format	lenth	EE Save
0X06	0x0000	UnlockPassword	W	UnlockPassword	1	uint16	1	
	0x0001	Reconnection Time	W	(15~600)	1s	uint16	1	★
	0x0002	CheckingTime	W	0~1500(X1) 0~1000(X3)	1s	uint16	1	★
	0x0003	Adjust_Battery_U	W	(0~3900)	0.1V	uint16	1	★
	0x0004	Adjust_Battery_I	W	Postive mean charge; negative mean discharge.	0.1A	int16	1	★

			(-350~350)				
0x0005	Vac_Min	W	Vac_Min (230~3000)	0.1V	uint16	1	★
0x0006	Vac_Max	W	Vac_Max (1000~3000)(X1) (1500~3120)(X3)	0.1V	uint16	1	★
0x0007	Fac_Min	W	Fac_Min (4000~6500)	0.01Hz	uint16	1	★
0x0008	Fac_Max	W	Fac_Max (4500~7000)(X1) (4000~7000)(X3)	0.01Hz	uint16	1	★
0x0009	SafetyCode	W	Safety type 0: VDE0126 1: VDE4105 2: AS 4777_2020_A 3: G98/1 （X1/X3） 4: C10/11 5: TOR(X1/X3) 6: EN50438_NL 7: Denmark2019_W(X3) 8: CEB 9: CEI021 10:NRS097_2_1 11:VDE0126_Gr_Is 12:UTE_C15_712 13:IEC61727(X1/X3) 14:G99/1 15:VDE0126_Gr_Co 16：Guyana 17:C15_712_is_50 18:C15_712_is_60 19:New Zealand 20:RD1699 21:Chile ----------(X3)---------- 22:Israel 23:Czech_PPDS_2020 24:RD1699_Island 25:EN50549_Poland 26:EN50438_Portugal 27:PEA	—	uint16	1	★

			28:MEA 29:EN50549_Sweden 30:Philippines 31:EN50438_Slovenia 32:Denmark2019_E 33:EN50549_EU 34:AS 4777_2020_B 35:AS 4777_2020_C 36:User-Defined 37:EN50549_Romania 38:CEI016 39：ACEA 40：Chile2021 MT_R 41：Chile2021 MT_U 42：Czech_2021_2 43：G98/NI-1 44：G99/NI-1 ----------(X3)---------- ----------(X1)---------- 22:EN50438_Ireland 23:Philippines 24:Czech PPDS_2020 25:Czech_50438 26: EN50549_EU 27: Denmark2019_E 28:RD1699_Island 29: EN50549_Poland 30:MEA_Thailand 31:PEA_Thailand 32:ACEA 33:AS 4777_2020_B 34:AS 4777_2020_C 35:User Define 36:EN50549_Romania 37：G98/NI-1 38：G99/NI-1 39：Chile2021 MT_R 40：Chile2021 MT_U 41：Slovenia ----------(X1)----------				
0x000A	MateBoxEnable	W	0: Disable 1:Enable	1	uint16	1	★
0x000B	Grid_10Min_high	W	Grid_10Min_high (1500~3000)	0.1V	uint16	1	★

0x000C	Vac_Min_slow_protect	W	Vac_Min_slow_protect (1500~3000) (X1) (230~3000) (X3)	0.1V	uint16	1	★
0x000D	Vac_Max_slow_protect	W	Vac_Max_slow_protect (1000~3120)(X1) (1500~3120)(X3)	0.1V	uint16	1	★
0x000E	Fac_Min_slow_Protect	W	Fac_Min_slow_Protect (4000~6500)	0.01Hz	uint16	1	★
0x000F	Fac_Max_slow_Protect	W	Fac_Max_slow_Protect (4500~7000)(X1) (4000~7000)(X3)	0.01Hz	uint16	1	★
0x0010	DCI_Limit	W	DCI_Limit (20~1000)	1mA	uint16	1	★
0x0011	active_Power_Limit	W	active_Power_Limit (0~100)	0-100	uint16	1	★
0x0012	Adjust_Pv1_Current	W	Adjust_Pv1_Current (10~3000)	0.01A	uint16	1	★
0x0013	Adjust_Pv2_Current	W	Adjust_Pv2_Current (10~3000)	0.01A	uint16	1	★
0x0014	Adjust_Pv1_Volt	W	Adjust_Pv1_Volt (100~10000)	0.1V	uint16	1	★
0x0015	Adjust_Pv2_Volt	W	Adjust_Pv2_Volt (100~10000)	0.1V	uint16	1	★
0x0016	Adjust_AC_Current_R	W	Adjust_AC_Current_R (10~300)	0.1A	uint16	1	★
0x0017	Adjust_AC_Volt_R	W	Adjust_AC_Volt_R (1500~3000)	0.1V	uint16	1	★
0x0018 ~0x001 A	REV	W	REV	—	uint16	1	
0x001B	MatchResistanceSet	W	0:disable 1:enable	—	uint16	1	★
0x001C	SystemON_OFF	W	0:OFF 1:ON	1	uint16	1	★
0x001D	FactoryReset	W	1 effect	1	unt16	1	
0x001E	Inverter_Clear_History	W	1 effect	1	uint16	1	
0x001F	SolarChargerUseMode	W	0:Self use mode 1:Feed-in priority 2:Back up mode 3:Menual mode	—	uint16	1	★
0x0020	Manual mode	w	0:Stop force charge&discharge 1:Force charge 2:Force discharge	1	uint16	1	
0x0021	wBattery1_Type	W	0：Lead Acid 1：Lithium	1%	unt16	1	★

0x0022	Charge_floatVolt	W	Lead-acid battery charge float voltage (X1:850~4000 X3:1600~8000)	0.1V	uint16	1	★
0x0023	Discharge_CutVolt	W	Lead-acid battery discharge cut-off voltage (X1:850~4000 X3:1600~8000)	0.1V	uint16	1	★
0x0024	Battery1_ChargeMaxCurrent	W	Lead-acid battery Charge MaxCurrent (0~300)	0.1A	uint16	1	★
0x0025	Battery1_DischargeMaxCurrent	W	Lead-acid battery discharge MaxCurrent (0~300)	0.1A	uint16	1	★
0x0026	wBatteryDischargeBackupVoltage	W	wBatteryDischargeBackupVoltage (X1:850~4000 X3:1600~8000)	0.1V	uint16	1	★
0x0027	CtType（X3）	R	0:100A 1:200A	—	uint16	1	★
0x0028	EpsDcvAdjEn(X3)		0：Disable 1：Enable	-	uint16	1	
0x0029	CalibGainInvVoltR(X3)	W	CalibGainInvVoltR(X3)	0.1V	uint16	1	★
0x002A	CalibGainInvVoltS(X3)	W	CalibGainInvVoltS(X3)	0.1V	uint16	1	★
0x002B	CalibGainInvVoltT(X3)	W	CalibGainInvVoltT(X3)	0.1V	uint16	1	★
0x002C	CalibEPSDcvAdjR(X3)	W	CalibEPSDcvAdjR(X3)	0.01V	int16	1	★
0x002D	CalibEPSDcvAdjS(X3)	W	CalibEPSDcvAdjS(X3)	0.01V	int16	1	★
0x002E	CalibEPSDcvAdjT(X3)	W	CalibEPSDcvAdjT(X3)	0.01V	int16	1	★
0x002F	ClearEnergy_Meter/CT_1	W	1 effect	1	uint16	1	
0x0030	Adjust_AC_Current_S**(X3)**	W	Adjust_AC_Current_S (10~300)	0.1A	uint16	1	★
0x0031	Adjust_AC_Volt_S**(X3)**	W	Adjust_AC_Volt_S (1500~3000)	0.1V	uint16	1	★
0x0032	Adjust_AC_Current_T**(X3)**	W	Adjust_AC_Current_T (10~300)	0.1A	uint16	1	★
0x0033	Adjust_AC_Volt_T**(X3)**	W	Adjust_AC_Volt_T (1500~3000)	0.1V	uint16	1	★
0x0034	Adjust_CT_Zero**(X3)**	W	1 effect	1	uint16	1	
0x0035	Adjust_CT_Power_R**(X3)**	W	0~65535	1W	uint16	1	★
0x0036	Adjust_CT_Power_S**(X3)**	W	0~65535	1W	uint16	1	★
0x0037	Adjust_CT_Power_T**(X3)**	W	0~65535	1W	uint16	1	★
0x0038	EpsPhaseSeqDetect	W	0:disable 1:enable	1	uint16	1	
0x0039	UserPassword	W	UserPassword 0000~9999	-	uint16	1	★
0x003A	AdvancedPassword	W	AdvancedPassword 0000~9999	-	uint16	1	★

0x0041	Export control Factory_Limit	W	Export control User_Limit (0~60000)(X1) (0~30000)(X3)	1W(X1) 10W(X3)	uint16	1	★
0x0042	Export control User_Limit	W	Export control User_Limit (0~60000)(X1) (0~30000)(X3)	1W(X1) 10W(X3)	uint16	1	★
0x0043	Off-grid_Mute	W	0： disable 1:enable	1	uint16	1	★
0x0044	Off-grid_MinSoC	W	10~25	1%	uint16	1	★
0x0045	Off-grid Frequncy	W	0: 50Hz 1:60HZ	1	uint16	1	
0x0046	AgeingMode	W	1:Enable 0:Disable	1	uint16	1	
0x0047	Language	W	Language: 0:English 1:German 2:French 3:Polish 4:Spanish 5: Portuguese 6:Italian	1	uint16	1	★
0x0048	EnableMPPT	W	1:Enable 0:Disable	1	uint16	1	
0x0049	wTuvp_L2	W	TripTime_UnderVoltage_Level2 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x004A	wTovp_L2	W	TripTime_OverVoltage_Level2 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x004B	wTufp_L2	W	TripTime_UnderFrequency_Level2 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x004C	wTofp_L2	W	TripTime_OverFrequency_Level2 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x004D	wTuvp_L1	W	TripTime_UnderVoltage_Level1 0~50000(X1) 0~10000(X3)	1ms(X1) 10ms(X3)	uint16	1	★
0x004E	wTovp_L1	W	TripTime_OverVoltage_Level1 0~60000(X1) 0~10000(X3)	1ms(X1) 10ms(X3)	uint16	1	★

0x004F	wTufp_L1	W	TripTime_UnderFrequency_Level1 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x0050	wTofp_L1	W	TripTime_OverFrequency_Level1 (0~10000)	1ms(X1) 10ms(X3)	uint16	1	★
0x0051	PVConnectipon	W	0：MULTI 1：COMM	1	uint16	1	★
0x0052	ShutDown	W	0:Disable 1:Enable	1	uint16	1	★
0x0053	MicroGrid	W	0:Disable 1:Enable	1	uint16	1	★
0x0054	Self Test start	W	0：stop 1:test Ovp(59.S2) 2:test Uvp(27.S1) 3:test Uvp(27.S2) 4: test Ofp(81>.S1) 5: test Ufp(81<.S1) 6: test Ofp2(81>.S2) 7:test Ufp2(81<.S2) 8: test Ovp_10(59.S1) 10:test all	1	uint16	1	
0x0055	Clear overload fault	W	Write 1 effcet	1	uint16	1	
0x0056	Bat_Awaken	W	Write 1 effcet (Lead-acid battery)	1	uint16	1	
0x0057	OFPL_CurveType	W	0:Symmetry curve 1:Asymmetry curve	1	uint16	1	★
0x0058	OFPL_Tstop	W	0~600	1s	uint16	1	★
0x0059	OFPL_RemovePoint	W	4955~5200(X1) 5000~6200(X3)	0.01Hz	uint16	1	★
0x005A	OFPL_StartPoint	W	Over Frequency drop load output start point 5010~5200(X1) 5000~6200(X3)	0.01Hz	uint16	1	★
0x005B	OFPL_SetRate	W	drop output slope (2~12)	1%	uint16	1	★
0x005C	OFPL_DelayTime	W	FreDroopDelayTime (0~2000)(X1) (0~1000)(X3)	1ms	uint16	1	★
0x005D	OFPL_fstop_disch	W	5050~5200(X1) 5050~6200(X3)	0.01Hz	uint16	1	★
0x005E	OFPL_fPmin	W	5100~5300(X1) 5100~6300(X3)	0.01Hz	uint16	1	★

0x005F	Reset_Mgr_EE	W	1:Reset normal configuration.	1	uint16	1	
0x0060	absorpt_voltage	W	Lead acide battery absorpt_voltage (X1:850~4000 X3:1600~8000)	0.1V	uint16	1	★
0x0061	SelfUse_Discharge_MinSoC	W	10%~100%	1%	uint16	1	★
0x0062	SelfUse_NightCharge_Enable	W	0：Disable 1：Enable	1	uint16	1	★
0x0063	SelfUse_NightCharge_UpperSoC	W	This value will be enabled if SelfUse_NightCharge_Enable is 1. 10%~100%	1%	uint16	1	★
0x0064	Feedin_NightCharge_UpperSoC	W	10%~100%	1%	uint16	1	★
0x0065	Feedin_Discharge_MinSoC	W	10%~100%	1%	uint16	1	★
0x0066	BackUp_NightCharge_UpperSoC	W	30%~100%	1%	uint16	1	★
0x0067	BackUp_Discharge_MinSoC	W	15%~100%	1%	uint16	1	★
0x0068	NightCharge_Period1_StartTime	W	StartHour	0~23	uint8(Hi)	1	★
		W	StartMinute	0~59	uint8(Lo)		
0x0069	NightCharge_Period1_EndTime	W	EndHour	0~23	uint8(Hi)	1	★
		W	EndMinute	0~59	uint8(Lo)		
0x006A	Discharge_Period1_StartTime	W	StartHour	0~23	uint8(Hi)	1	★
		W	StartMinute	0~59	uint8(Lo)		
0x006B	Discharge_Period1_EndTime	W	EndHour	0~23	uint8(Hi)	1	★
		W	EndMinute	0~59	uint8(Lo)		
0x006C	Set_Chrg&DischrgPeriod2_Enable	W	1:Enable 0:Disable	1	uint16	1	★
0x006D	NightCharge_Period2_StartTimee	W	StartHour	0~23	uint8(Hi)	1	★
		W	StartMinute	0~59	uint8(Lo)		
0x006E	NightCharge_Period2_EndTime	W	EndHour	0~23	uint8(Hi)	1	★
		W	EndMinute	0~59	uint8(Lo)		
0x006F	Discharge_Period2_ StartTime	W	StartHour	0~23	uint8(Hi)	1	★
		W	StartMinute	0~59	uint8(Lo)		
0x0070	Discharge_Period2_EndTime	W	EndHour	0~23	uint8(Hi)	1	★
		W	EndMinute	0~59	uint8(Lo)		
0x0071	MainBreakerCurrentLimit	W	10~100(X1) 10~250(X3)	1A	uint16	1	★
0x0072	PowerfactorMode	W	0: Off 1:Over Excited 2:Under Excited 3:Curve 4:Qu 5:Fix Q Power	1	uint16	1	★
0x0073	PowerfactorData	W	80~100	0.01	uint16	1	★
0x0074	PowerFactor_Curve_PF1	W	80~100	0.01	uint16	1	★
0x0075	PowerFactor_Curve_PF2	W	80~100	0.01	uint16	1	★
0x0076	PowerFactor_Curve_PF3	W	80~100	0.01	uint16	1	★

0x0077	PowerFactor_Curve_PF4	W	80~100	0.01	uint16	1	★
0x0078	PowerFactor_Curve_Power1	W	0~100	1%	uint16	1	★
0x0079	PowerFactor_Curve_Power2	W	0~100	1%	uint16	1	★
0x007A	PowerFactor_Curve_Power3	W	0~100	1%	uint16	1	★
0x007B	PowerFactor_Curve_Power4	W	0~100	1%	uint16	1	★
0x007C	PowerFactor_Curve_PfLockInPoint	W	105~110	0.01	uint16	1	★
0x007D	PowerFactor_Curve_PfLockOutPoint	W	90~98	0.01	uint16	1	★
0x007E	PowerFactor_Curve_3Tau	W	6~180	1s	uint16	1	★
0x007F	PowerFactor_Qu_VoltRatio1	W	0~60	1%	uint16	1	★
0x0080	PowerFactor_Qu_VoltRatio4	W	-60~-30(X1) 0~60(X3)	1%	Int16	1	★
0x0081	PowerFactor_Qu_QuResponseV1	W	1800~2530(X1) 1800~2300(X3)	0.1V	uint16	1	★
0x0082	PowerFactor_Qu_QuResponseV2	W	1800~2530(X1) 1800~2300(X3)	0.1V	uint16	1	★
0x0083	PowerFactor_Qu_QuResponseV3	W	2070~2650(X1) 1955~2530(X3)	0.1V	uint16	1	★
0x0084	PowerFactor_Qu_QuResponseV4	W	2070~2650(X1) 1955~2530(X3)	0.1V	uint16	1	★
0x0085	PowerFactor_Qu_K	W	-100~100	1%	Int16	1	★
0x0086	PowerFactor_Qu_3Tau	W	6~180	1s	uint16	1	★
0x0087	PowerFactor_Qu_QuDelayTimer	W	0~30(X1) 0~200(X3)	1s	uint16	1	★
0x0088	PowerFactor_Qu_QuLockEn	W	{0,1}	1	uint16	1	★
0x0089	PowerFactor_Qu_QuLockIn	W	0~20	1%	uint16	1	★
0x008A	PowerFactor_Qu_QuLockOut	W	0~20	1%	uint16	1	★
0x008B	PowerFactor_FixQPower	W	PowerFactor_FixQPower_Min ~PowerFactor_FixQPower_Max	1Var(X1) 10Var(X3)	int16	1	★
0x008C	InvVoltZeroAdj(X3)	W	1:准备校准 2：开始校准 3：校准结果检查	1	uint16	1	
0x008D	PgridBias	W	0:Disable 1:Grid 2:INV	-	uint16	1	★
0x008E	EpsRestartSoc	W	EpsRestartSoc	1%	uint16	1	★
0x008F	485CommFunSelect	W	0:modbus 485 1:EV Charge 2:DadaHub	1	uint16	1	★
0x0090	ConnectSlop(X3)	W	1~10000	1%	uint16	1	★
0x0091	ReconnectSlop(X3)	W	1~10000	1%	uint16	1	★

0x0092	UFPL_StartPoint	W	Under Frequency Safe load output start point 4600~4990 (X1) 4600~6000 (X3)	0.01Hz	uint16	1	★
0x0093	UFPL_SetRate	W	Under Frequency drop output slope (2~12)	1%	uint16	1	★
0x0094	UFPL_DelayTime	W	FreDroopDelayTime (0~1000)	1ms	uint16	1	★
0x0095	UFPL_RemovePoint	W	4600~5045(X1) 4600~5000(X3)	0.01Hz	uint16	1	★
0x0096	UFPL_fstop_ch	W	4800~4950(X1) 4800~5950(X3)	0.01Hz	uint16	1	★
0x0097	UFPL_fPmax	W	4700~4900(X1) 4700~5900(X3)	0.01Hz	uint16	1	★
0x0098	ShadowFixFuncEnable2	R	-0:Off, 1:Low, 2:Middle, 3:Hight	-	uint16	1	★
0x0099	HotStandbyEN	W	0:enable 1:disable	1	uint16	1	★
0x009A	ExtendBmsSetting	W	0:disable 1:enable	1	uint16	1	★
0x009B	ATE Test	W	1effect	1	uint16	1	
0x009C	wShadowFixFuncEnable	W	0:Off 1:Low 2:Middle 3:Hight	1	uint16	1	★
0x009D	ExternalSignal	W	ExternalSignal	1	uint16	1	★
0x009E	PhasePowerBalance**(X3)**	W	0:disable 1:enable	1	uint16	1	★
0x009F	OFPL_Wgra	W	500~10000	0.0001	uint16	1	★
0x00A0	MeterFunction	W	0:disable 1:enable	1	uint16	1	★
0x00A1	Meter1_ID	W	Meter1 ID 1~200	1	uint16	1	★
0x00A2	Meter2_ID	W	Meter2 ID 1~200	1	uint16	1	★
0x00A3	Reset Meter2 Energy	W	1effect	1	uint16	1	
0x00A4	DirectionMeterCT1	W	0:Positive 1:Negative	1	uint16	1	★
0x00A5	DirectionMeter2	W	0:Positive 1:Negative	1	uint16	1	★
0x00A6	DischCutOffPoint_DifferentEN	W	Lead acide battery 0:disable 1:enable	1	uint16	1	★
0x00A7	ExternalInv	W	0:Enable1:Disable	1	uint16	1	★
0x00A8	DischCutOffVoltage_GridMode	W	Lead acide battery DischargeCutVoltage~8000	0.1V	uint16	1	★
0x00A9	DRMFunctionEnable	R	0:disable 1:enable	1	uint16	1	★
0x00AA	Meter/CT_Select	W	0:Meter 1:CT	1	uint16	1	★
0x00AB	FVRT_Function	W	0:Disable 1:Enable	1	uint16	1	★
0x00AC	FVRT_VacUpper	W	230~288(X1) 230~276(X3)	1V	uint16	1	★

0x00AD	FVRT_VacLower	W	46~240(X1) 30~230(X3)	1V	uint16	1	★
0x00AE	PuFuncEnable	W	0:disable 1:enable	1	uint16	1	★
0x00AF	PuFunc_ResponseV1	W	207.0~276.0	0.1V	uint16	1	★
0x00B0	PuFunc_ResponseV2	W	207.0~276.0	0.1V	uint16	1	★
0x00B1	PuFunc_ResponseV3	W	207.0~276.0	0.1V	uint16	1	★
0x00B2	PuFunc_ResponseV4	W	207.0~276.0	0.1V	uint16	1	★
0x00B3	PuFunc_3Tau	W	6~180(X1) 3~180(X3)	1s	uint16	1	★
0x00B4	LeaseModeEnable	W	0:Disable 1:Enable	1	uint16	1	★
0x00B5	DeviceLockFlag	W	0:UnLock 1:Lock	1	uint16	1	★
0x00B6	ManualModeControl	W	0:OFF 1:ON	1	uint16	1	★
0x00B7	FeedinOnPower	W	0~8000	1W	uint16	1	★
0x00B8	SwitchOnSoc	W	0~100	1%	uint16	1	★
0x00B9	ConsumeOffPower	W	0~8000	1W	uint16	1	★
0x00BA	SwitchOffSoc	W	0~100	1%	uint16	1	★
0x00BB	MinimumPerOnSignal	W	5~100	1Min	uint16	1	★
0x00BC	MiaximumPerDayOn	W	5~1200	1Min	uint16	1	★
0x00BD	ScheduleEnable	W	0：disable 1:enable	1	uint16	1	★
0x00BE	WorkStartTime1	W	bP1_StartHour	0~23	uint8(Hi)	1	★
		W	bP1_StartMinute	0~59	uint8(Lo)		
0x00BF	WorkEndTime1	W	bP1_StopHour	0~23	uint8(Hi)	1	★
		W	bP1_StopMinute	0~59	uint8(Lo)		
0x00C0	WorkStartTime2	W	bP2_StartHour	0~23	uint8(Hi)	1	★
		W	bP2_StartMinute	0~59	uint8(Lo)		
0x00C1	WorkEndTime2	W	bP2_StopHour	0~23	uint8(Hi)	1	★
		W	bP2_StopMinute	0~59	uint8(Lo)		
0x00C2	LoadManagementWorkMode	W	0:Disable 1:manual 2:SmartSave	1	uint16	1	★
0x00C3	DryContactMode	W	0:Load Management 1:Generator Control	1	uint16	1	★
0x00C4	SelfuseModeBackupEn	W	0:disable 1:enable	1	uint16	1	★
0x00C5	SelfUse_BackupSoc	W	10~100	1%	uint16	1	★
0x00C6	Parallel Setting	W	0:Free 1: Master	1	uint16	1	★
0x00C7	ExternalGenEn	W	0:Disable 1:ATS Control 2:Dry Contact	1	uint16	1	★
0x00C8	ExternalGenMaxCharge	W	ExternalGenMaxCharge	1W(X1) 10W(X3)	uint16	1	★
0x00C9	ModBusRTU_Address	W	ModBusRTU_Address	1	uint16	1	★

0x00CA	ModBusRTU_BraudRate	W	0:115200 1:57600 2:56000 3:38400 4:19200 5:14400 6:9600	bit/s	uint16	1	★
0x00CB	SetPuPower1	W	0~20	1%	uint16	1	★
0x00CC	SetPuPower2	W	0~100	1%	uint16	1	★
0x00CD	SetPuPower3	W	0~100	1%	uint16	1	★
0x00CE	SetPuPower4	W	0~20	1%	uint16	1	★
0x00CF	BatteryHeatingEn	W	BatteryHeatingEn	—	uint16	1	★
0x0D0	HeatingPeriod1_StartHour	W	HeatingPeriod1_StartHour	0~23	uint8(Hi)	1	★
	HeatingPeriod1_StartMinute	W	HeatingPeriod1_StartMinute	0~59	uint8(Lo)		
0x00D1	HeatingPeriod1_EndHour	W	HeatingPeriod1_EndHour	0~23	uint8(Hi)	1	★
	HeatingPeriod1_EndMinute	W	HeatingPeriod1_EndMinute	0~59	uint8(Lo)		
0x00D2	HeatingPeriod2_StartHour	W	HeatingPeriod2_StartHour	0~23	uint8(Hi)	1	★
	HeatingPeriod2_StartMinute	W	HeatingPeriod2_StartMinute	0~59	uint8(Lo)		
0x00D3	HeatingPeriod2_EndHour	W	HeatingPeriod2_EndHour	0~23	uint8(Hi)	1	★
	HeatingPeriod2_EndMinute	W	HeatingPeriod2_EndMinute	0~59	uint8(Lo)		
0x00D4	ExportSoftLimitEn	W	0:Disable 1:Enable	–	uint16	1	★
0x00D5	ExportHardLimitEn	W	0:Disable 1:Enable	–	uint16	1	★
0x00D6	HardExportPower	W	0~15000	1W(X1) 10W(X3)	uint16	1	★
0x00D7	GeneralSoftLimitEn	W	0:Disable 1:Enable	–	uint16	1	★
0x00D8	GeneralHardLimitEn	W	0:Disable 1:Enable	–	uint16	1	★
0x00D9	SoftAcPowertLimit	W	0~15000	1VA(X1) 10VA(X3)	uint16	1	★
0x00DA	HardAcPowertLimit	W	0~15000	1VA(X1) 10VA(X3)	uint16	1	★
0x00DB	ResetErrorLog	W	Write 1 effcet	-	uint16	1	
0x00DC	ResetINVEnergy	W	Write 1 effcet	-	uint16	1	
0x00DD 0x00DF	reserve	W		-	uint16	3	
0x00E0	BatteryChargeMaxSoc	W	10~100	1%	uint16	1	★
0x00E1	mBatterToEVCharge	W	0:Disable 1:Enable	1	uint16	1	★
0x00E2	BMS_Restart	W	1:effect	1	uint16	1	
0x00E3	Start Gen Method	W	0:reference soc 1:immediately	1	uint16	1	★
0x00E4	Switch on SoC	W	Switch on SoC(reference soc)	1%	uint16	1	★
0x00E5	Switch off SoC	W	Switch off SoC(reference soc)	1%	uint16	1	★

0x00E6	MaxRunTime	W	MaxRunTime(1~60000)	1Min	uint16	1	★
0x00E7	MinRestTime	W	MinRestTime(1~60000)	1Min	uint16	1	★
0x00E8	Allow Work start time Hour	W	Allow Work start time Hour	0~23	uint8(Hi)	1	★
	Allow Work start time Minute	W	Allow Work start time Minute	0~59	uint8(Lo)		
0x00E9	Allow Work stop time Hour	W	Allow Work start time Hour	0~23	uint8(Hi)	1	★
	Allow Work stop time Minute	W	Allow Work start time Minute	0~59	uint8(Lo)		
0x00EA	PeakShavingDischarPeriod.bP1_StartHour	W	0-23	1	uint8(Hi)	1	★
	PeakShavingDischarPeriod.bP1_StartMinute	W	0-59	1	uint8(Lo)	1	★
0x00EB	PeakShavingDischarPeriod.bP1_StopHour	W	0-23	1	uint8(Hi)	1	★
	PeakShavingDischarPeriod.bP1_StopMinute	W	0-59	1	uint8(Lo)	1	★
0x00EC	PeakShavingDischarPeriod.bP2_StartHour	W	0-23	1	uint8(Hi)	1	★
	PeakShavingDischarPeriod.bP2_StartMinute	W	0-59	1	uint8(Lo)	1	★
0x00ED	PeakShavingDischarPeriod.bP2_StopHour	W	0-23	1	uint8(Hi)	1	★
	PeakShavingDischarPeriod.bP2_StopMinute	W	0-59	1	uint8(Lo)	1	★
0x00EE	PeakShaving.PeriodBPeakLimits1	W	0~60000(X1) 0~3000(X3)	1W(X1) 10W(X3)	uint16	1	★
0x00EF	PeakShaving. PeriodDPeakLimits2	W	0~60000(X1) 0~3000(X3)	1W(X1) 10W(X3)	uint16	1	★
0x00F0	PeakShaving. PeriodAChargeFromGridEn	W	0:Disable 1:Enable	1	uint16	1	★
0x00F1	PeakShaving .PeriodAChargePowerLimits	W	0~7500(X1) 0~15000(X3)	1W	uint16	1	★
0x00F2	PeakShaving .PeriodAMax_SOC	W	10~100	1%	uint16	1	★
0x00F3	PeakShaving.PeriodCReserved_SOC	W	10~100	1%	uint16	1	★
0x00F4	VPPExitIdleEn	W	0:Disable 1:Enable	1	uint16	1	★
0x00F5	FastCtCheckEn	W	0:disable 1:enable	1	uint16	1	★
0x00F6	Rev						
0x00F7	Rev						
0x00F8	Rev						
0x00F9	EVChargerAddr	W	0~255	1	uint16	1	★
0x00FA	Rev						
0x00FB	AdaptBoxG2Addr	W	0~255	1	uint16	1	★

Table 3-1 Data format description

Master request format		
	Bytes number	Content format
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x06**
Register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Value	2byte Data MSB Data LSB	0x0000-0xFFFF
CRC	2byte CRC MSB CRC MSB	
Slave normal response		
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x06**
Register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Value	2byte Data MSB Data LSB	0x0000-0xFFFF
CRC	2byte CRC MSB CRC MSB	
Slave fault response		
Slave ID	1byte	0x00~0xFF (Inverter default 0x01)
Fault code	1byte	**0x86**

Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04
CRC	2byte CRC MSB CRC MSB	

Example: Write CheckingTime 60s (Register:0x0002)
Master request: 01 06 00 02 00 3C 28 1B
Slave response: 01 06 00 02 00 3C 28 1B

0x10:Write Multiple Register

Function Code	Write multiple register							
	Register	Variable	W/R	Decription	Unit	Data format	Lenth	EE Save
0x10	0x0000 -0x0005	RTC-Seconds	W	RTC-Seconds 0~59	1s	uint16	6	
		RTC-Minutes	W	RTC-Minutes 0~59	1min	uint16		
		RTC-Hours	W	RTC-Hours	0~23	uint16		
		RTC-Days	W	RTC-Days	1~31	uint16		
		RTC-Months	W	RTC-Months	1~12	uint16		
		RTC-Years	W	RTC-Years	0~99	uint16		
	0x0006 -0x001A	REV	W	REV	-	uint16	21	
	0x001B ~0x001E	NightCharge_P1_StartTime	W	StartHour	0~23	uint8(Hi)	1	★
				StartMinute	0~24	uint8(Lo)		
		NightCharge_P1_EndTime	W	StartHour	0~23	uint8(Hi)	1	
				StartMinute	0~24	uint8(Lo)		
		DisCharge_P1_StartTime	W	StartHour	0~23	uint8(Hi)	1	
				StartMinute	0~24	uint8(Lo)		
		DisCharge_P1_EndTime	W	StartHour	0~23	uint8(Hi)	1	
				StartMinute	0~24	uint8(Lo)		
	0x001F ~0x0026	REV	W	REV	-	uint16	8	
	0x0027 ~0x007B	REV	W	REV	-	uint16	85	

	0x007C	ModbusPowerControl	W	0:disable remote control 1:enable power control 2:enable electric quantity control 3:enable SOC target control	1	uint16	1	
	0x007D	TargetSetType	W	1：set 2：update	1	uint16	1	
	0x007E ~0x007F	RemoteControl ActivePower	W	0x007E(LSB) 0x007F(MSB) (Postive mean charge; Negative mean discharge)	1W	int32	2	
	0x0080 ~0x0081	RemoteControl ReactivePower	W	0x0080(LSB) 0x0081(MSB) (Positive mean Inductive reactive power;Negative mean Capacitive reactive power)	1Var	int32	2	
	0x0082	Time_of_Duration	W	power control mode Time of Duration	1s	Uint16	1	
	0x0083	TargetSoc	W	Target soc	1%	Uint16	1	
	0x0084	TargetEnergy	W	0x0084(LSB) 0x0085(MSB)	1Wh	Uint32	2	
	0x0086 ~0x0087	Charge_Discharg_Power	W	0x0086(LSB) 0x0087(MSB) The power of charging or discharging (Postive mean charge; Negative mean discharge)	1W	Int32	2	
	0x0088	RemoteCtrlTimeOut	W	Timeout counter	1s	Uint16	1	

0x10:Write Multiple Register(Data Hub)

Function code	**Write multiple register**(Data Hub)						
	Register	**Variable**	**W/R**	**Decription**	**Unit**	**Data format**	**EE Save**

0x10	0xF000-0xF013	WriteSetValue	W	write the value of the setting item	1	Uint16	★

Note:Only for internal device communication

Table 4-1 Data format description

Master request format		
	Bytes number	Content format
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x10**
Register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Register number	2byte Number MSB Number LSB	0x0001-0x007B
Byte number	1Byte	2*N
Value	2*N byte Data MSB Data LSB	0x0000-0xFFFF
CRC	2byte CRC MSB CRC MSB	
Slave normal response		
Slave ID	1 byte	0x00~0xFF (Inverter default 0x01)
Function code	1 byte	**0x10**
Register address	2 byte Address MSB Address LSB	0x0000-0xFFFF
Register number	2byte Number MSB Number LSB	0x0001-0x007B
CRC	2byte	

	CRC MSB CRC MSB	
Slave fault response		
Slave ID	1byte	0x00~0xFF (Inverter default 0x01)
Fault code	1byte	**0x90**
Abnormal code	1byte	0x01 or 0x02 or 0x03 or 0x04
CRC	2byte CRC MSB CRC MSB	

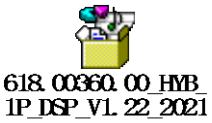
Example: Write RTCTime (Register: 0x0000~0x0005).
Master request: 01 10 00 00 00 06 0C 00 38 00 15 00 0E 00 0C 00 01 00 15 42 E9
Slave response: 01 10 00 00 00 06 40 0B

Upgrade W/R Register and Example

Function Code	Update W/R register						
	Register	Variable	W/R	Decription	Unit	Data	Lenth
0x03	0x3000 ~0x3001	BootloaderVersion	R	BootloaderVersion	-	uint16	2
0x03/0x10	0x3002	IAP_Protocol	WR	bit0:data transfer protocol bit1:high power upgrade protocol	-	uint16	1
	0x3003	UpgradeModule	WR	0：Rev 1：ARM 2：MDSP 3：SDSP 4：ARC 5：ARM+DSP 6：BMS_M 7：BMS_S	-	uint16	1
	0x3004	UpgradeTimeOut	WR	UpgradeTimeOut	1S	uint16	1
	0x3005 ~0x3006	UpgradeKey	WR	UpgradeKey	-	uint16	2
0x03	0x3007 ~0x3008	UpgradeSeed	R	UpgradeSeed	-	uint16	2
	0x3009 ~0x300F	Rev	R	Rev		uint16	7

0x03/0x10	0x3010	UpgradeMachineType	WR	UpgradeMachineType	-	uint16	1
	0x3011 ~0x3012	FileCheckSum	WR	FileCheckSum	-	uint16	2
	0x3013	DownLoadBlockNum	WR	data transfer mode:1 high power transfer mdoe:DownLoadBlockNum	-	uint16	1
	0x3014 ~0x3015	EraseStartAddr	WR	EraseStartAddr	-	uint16	2
	0x3016 ~0x3017	EraseLength	WR	EraseLength	-	uint16	2
	0x3018 ~0x3019	BlockStartAddr	WR	BlockStartAddr	-	uint16	2
	0x301A ~0x301B	BlockLength	WR	BlockLength	-	uint16	2
	0x301C	CurrentBlockNum	WR	data transfer mode:1 high power transfer mdoe:CurrentBlockNum	-	uint16	1
	0x301D ~0x301E	BlockCheckSum	WR	BlockCheckSum	-	uint16	2
	0x301F	UpgradeDataPackageNum	WR	UpgradeDataPackageNum	-	uint16	1
	0x3020 ~0x3097	UpgradeData	WR	UpgradeData	-	uint16	120
0x03	0x3098	BlockCheckResult	R	BlockCheckResult	-	uint16	1
	0x3099	McuDownLoadCheckResult	R	McuDownLoadCheckResult	-	uint16	1
	0x309A ~0x30A3	Rev	R	Rev	-	uint16	10
	0x30A4	ToBeDownloadMcuInfor	R	ToBeDownloadMcuInfor	-	uint16	1
	0x30A5	DownloadedMcuInfor	R	DownloadedMcuInfor	-	uint16	1
	0x30A6	UpgradeMcuInfor	R	UpdateMcuInfor	-	uint16	1
	0x30A7	IapState	R	0x0000:AppCommonRunStatus 0x0001:AppResumeWaitStatus 0x0002:EraseProgramStatus 0x0003:ProgramDownloadStatus 0x0004:UpgradeSuccessStatus 0x0005:UpgradeFailStatus 0x8000:bootloaderCommonRunStatus 0x8001:BootloaderResumeWaitStatus	-	uint16	1
	0x30A8	DownloadedBlockNum	R	DownloadedBlockNum	-	uint16	1
	0x30A9	DownloadedPackageNum	R	DownloadedPackageNum	-	uint16	1

0x03/0x10	0x30AA ~0x30C2	File_Name	WR	File_Name	-	uint16	25

Example DSP(X1G4) file : 

Example Upgrade Process Message: 

Process Explain(X1G4UpgradeProcessData.TXT):

First step: **Send the upgrade object and set the timeout period.**

User → Inverter: 01 10 30 02 00 05 0A 00 00 00 02 00 1E 00 00 00 01 78 2C

Inverter → User : 01 10 30 02 00 05 AE CA

Second step: **Send the upgrade machine type , the overall checksum of the upgrade file and file size of the upgrade file.The inverter will erase the flash and wait to receive the upgrade package.**

User → Inverter: 01 10 30 10 00 0F 1E 00 0F 14 3C 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 **B2 68 00 08** 00 01 00 00 00 00 EA A5

Inverter → User : 01 10 30 10 00 0F 8E C8

Third step: Send the name of the upgrade file, the following message file name is "618.00360.00_HYB_1P_DSP_V1.22_20211216.usb",default information zero padding.

User → Inverter:01 10 30 AA 00 19 32 36 31 38 2E 30 30 33 36 30 2E 30 30 5F 48 59 42 5F 31 50 5F 44 53 50 5F 56 31 2E 32 32 5F 32 30 32 31 31 32 31 36 2E 75 73 62 00 00 00 00 00 00 00 00 E9 D1

Inverter → User : 01 10 30 AA 00 19 2E E3

Fourth step: Send the packtage number and the datas of the upgrade file to inverter,send 240 bytes at a time.The last packet is less than 240 bytes to fill with 0.

User → Inverter: 01 10 30 1F 00 79 F2 00 01 3A 30 32 30 30 30 30 30 34 30 30 30 38 46 32 0D 0A 3A 30 34 34 30 30 32 30 30 43 45 38 32 30 30 30 31 36 39 0D 0A 3A 30 32 30 30 30 30 30 34 30 30 30 38 46 32 0D 0A 3A 30 34 34 30 30 34 30 30 30 30 34 39 44 41 43 32 44 33 0D 0A 3A 32 30 34 30 30 38 30 30 37 36 31 46 30 34 35 32 39 32 32 34 36 30 30 39 37 36 31 46 30 34 39 30 32 42 33 38 37 36 31 46 30 34 34 30 31 38 30 31 46 45 46 46 36 46 30 42 37 36 31 46 30 34 39 30 30 41 33 38 39 32 33 38 36 34 0D 0A 3A 32 30 34 30 31 38 30 30 35 32 33 43 36 39 30 35 37 36 31 46 30 34 34 30 31 41 30 31 30 31 30 30 30 30 30 36 46 45 30 36 37 36 31 46 30 34 36 32 39 32 30 43 39 36 34 31 39 32 30 44 39 36 34 32 39 32 30 45 39 36 34 33 32 44 0D 0A 3A 32 30 34 30 32 38 30 30 35 0B 70

Inverter → User : 01 10 30 1F 00 79 3F 2D

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Subsequent data interaction processing is similar to the fourth step,Relevant information can be obtained through the document《X1G4UpgradeProcessData.TXT》

Example DSP(X3G4) file :  618.00405.00_HYB_3P_DSP_V1.1(

Example Upgrade Process Message:  UpgradeProcesData.TXT

Process Explain(UpgradeProcessData.TXT):

First step: **Send the upgrade object and set the timeout period.**

User → Inverter: 01 10 30 02 00 05 0A 00 00 00 02 00 1E 00 00 00 01 78 2C

Inverter → User : 01 10 30 02 00 05 AE CA

Second step: **Send the upgrade machine type , the overall checksum of the upgrade file and file size of the upgrade file.The inverter will erase the flash and wait to receive the upgrade package.**

User → Inverter: 01 10 30 10 00 0F 1E 00 00 8D 6B 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 60 96 00 09 00 01 00 00 00 00 ED B4

Inverter → User : 01 10 30 10 00 0F 8E C8

Third step: Send the name of the upgrade file, the following message file name is "618.00405.00_HYB_3P_DSP_V1.10_1009.usb",default information zero padding.

User → Inverter: 01 10 30 AA 00 19 32 36 31 38 2E 30 30 34 30 35 2E 30 30 5F 48 59 42 5F 33 50 5F 44 53 50 5F 56 31 2E 31 30 5F 31 30 30 39 2E 75 73 62 00 00 00 00 00 00 00 00 00 00 00 00 35 23

Inverter → User : 01 10 30 AA 00 19 2E E3

Fourth step: Send the packtage number and the datas of the upgrade file to inverter,send 240 bytes at a time.The last packet is less than 240 bytes to fill with 0.

User → Inverter: 01 10 30 1F 00 79 F2 00 01 3A 30 32 30 30 30 30 30 34 30 30 30 38 46 32 0D 0A 3A 30 34 34 30 30 32 30 30 46 32 42 32 30 30 30 31 31 35 0D 0A 3A 30 32 30 30 30 30 30 34 30 30 30 38 46 32 0D 0A 3A 30 34 34 30 30 34 30 30 30 30 34 39 45 34 32 33 36 38 0D 0A 3A 32 30 34 30 30 38 30 30 37 36 31 46 30 35 32 41 30 41 33 43 39 32 33 43 35 32 32 38 36 39 30 35 37 36 31 46 30 34 38 30 31 41 30 31 30 31 30 30 30 30 30 36 46 45 30 36 37 36 31 46 30 35 30 30 39 32 30 43 39 36 34 31 38 41 0D 0A 3A 32 30 34 30 31 38 30 30 39 32 30 44 39 36 34 32 39 32 30 45 39 36 34 33 35 38 34 33 38 46 30 31 34 30 30 39 44 38 30 36 39 32 39 34 39 36 34 34 35 38 34 33 44 38 30 37 39 32 39 34 39 36 34 35 35 38 34 33 44 38 30 38 35 30 0D 0A 3A 32 30 34 30 32 38 30 30 39 62 59

Inverter → User : 01 10 30 1F 00 79 3F 2D

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Subsequent data interaction processing is similar to the fourth step,Relevant information can be obtained through the document《UpgradeProcessData.TXT》

Supplement:

1、The part marked in yellow is the register of the main function currently used. Other parameters are not currently used, and are prepared for the future upgrade of the function expansion. You do not need to pay attention to it at present.

2、In order to facilitate the capture of data packets, the response delay on the inverter side has been adjusted, and the response delay in the actual upgrade process will be lower.

3、The baud rate has a direct impact on the overall time of the upgrade, it is recommended to use 19200 or 38400.

4、After the file download is complete, the inverter will initiate the subsequent upgrade process, and it will take a certain time to complete the upgrade operation of the corresponding object.

5、In the second step, the erasing process is initiated. Since the inverter takes a certain time to erase the Flash, it is recommended to wait for a 10-second timeout for this response.

6、The UpgradeMachineType(0x3010) in the second step is currently not used,default fill 0.

7、In the second step, the file verification also uses the modbus CRC16 calculation method.

8、Complete the write operation by 0x10 function code, and 0x03 function code for query response processing

9、For the upgrade objects supported by X1G4 and X3G4 models (UpgradeModule 0x3003):
1:ARM　2:MDSP　5:ARM+DSP　6:BMS_M　7: BMS_S

10、The function upgraded through modbus is in the development stage, and the incomplete part can be adjusted and improved in the future.

11、Follow-up supplements for the failure of the upgrade, such as illegal file name, mismatch between the upgrade object and the file, file verification mismatch, etc.