

AC EvCharger Modbus RTU Communication protocols



History list:

Date	Name	detail	Version	other
2022-11-18	Shi MingLiang	None	V2.0	None
2023-1-31	Shi MingLiang	1.New Holding Register,control_command and adjust_current.	V2.1	None
2023-2-7	Shi MingLiang	1.New upgrade function.Holding Register 0x3000-0x30C2.	V2.2	None
2023-2-9	Shi MingLiang	1.New TIGO_SN.Holding Register 0x0629-0x0633.	V2.3	None
2023-2-10	Shi MingLiang	1.Changed ElectronicLock descripton,unlock:0, lock:1.Holding Register 0x0615. 2.Changed control_command descripton.Holding Register 0x0627.	V2.4	None
2023-3-16	Shi MingLiang	1.Holding Register 0x060E ECOGear and 0x060F GreenGear addition description. 2.New Holding Register 0x0634-0x063A about boost function. 3.New Holding Register 0x063B-0x063D about three-phase unbalance function.	V2.5	None
2023-3-31	Shi MingLiang	1.New Holding Register 0x063E about the manual button.	V2.6	None
2023-4-6	Shi MingLiang	1.Changed Holding Register 0x063E ModeButton descripton.0: None 1: Short press 2:Long press	V2.7	None
2023-4-13	Shi MingLiang	1.New Read Input Register 0x0100-0x0103.	V2.8	None
2023-4-13	Shi MingLiang	1.New Holding Register 0x070A.	V2.9	None
2023-4-24	Shi MingLiang	1.New Holding Register 0x063F about the minimum AC line current. 2.New Holding Register 0x0640 about slave address.	V3.0	None
2023-7-3	baogaoying	1. New Holding Register 0x0641	V3.1	None

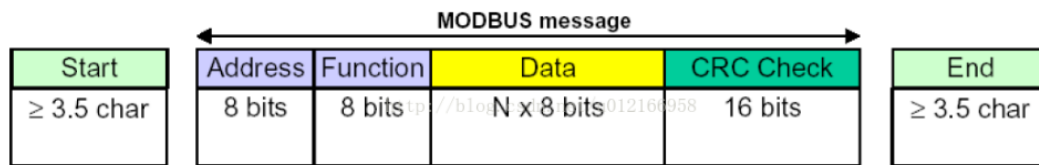
Version matching information

Protocol version	Manager soft version (Match the lowest version)
V2.1	V1.09
V2.2	V1.10
V2.3	EV Charger V1.11 TIGO EVC V001.00
V2.4	EV Charger V1.11 TIGO EVC V001.00
V2.5	EV Charger V1.11 TIGO EVC V001.07
V2.6	EV Charger V1.12 TIGO EVC V001.08
V2.7	EV Charger V1.12 TIGO EVC V001.13
V2.8	EV Charger V1.12 TIGO EVC V001.13
V2.9	EV Charger V1.12 TIGO EVC V001.13
V3.0	EV Charger V1.12 TIGO EVC V001.13
V3.1	EV Charger V1.14
V3.2	EV Charger V1.12
V3.3	EV Charger V1.13 EV Charger G1.1 V3.37
V3.4	EV Charger V1.13 EV Charger G1.1 V4.11

Protocols general

Protocol type: Modbus RTU

Frame format:



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.

0x03/0x06/0x10:Holding Register

32bit data use little endian format

Function Code	Holding Register						
	Register	Variable	W/R	descripton	Unit	Data format	Length
0X03 0x06 0x10	0x0600 ~0x0606	SN	W/R	14Chars, MSB=SN[14]	14Char	uint16	7
	0x0607 ~0x060B	WifiSN	W/R	10Chars, MSB=SN[10]	10Char	uint16	5
	0x060C	DeviceType	W/R	0: External CT 1: External meter 2: Inverter	-	uint16	1
	0x060D	DeviceMode	W/R	0:STOP 1:FAST 2:ECO 3:GREEN	-	uint16	1
	0x060E	ECOGear	W/R	ECO gears 6A:1 10A:2 16A:3 20A:4 25A:5	-	uint16	1
	0x060F	GreenGear	W/R	Green gears 3A:1 6A:2	-	uint16	1
	0x0610	StartChargeMode	W/R	0: Plug and charge 1: Swipe card to start	-	uint16	1
	0x0611	OverVoltSet	W/R	Over voltage setting	1V	uint16	1
	0x0612	UnderVoltSet	W/R	Under voltage setting	1V	uint16	1
	0x0613	BoostMode	W/R	0:Normal 1:Timer Boost 2:Smart Boost	-	uint16	1
	0x0614	MainBreakerLimit	W/R	Main breaker limit current	1A	uint16	1
	0x0615	ElectronicLock	W/R	0:unlock 1:lock	-	uint16	1
	0x0616	CardActivateSwitch	W/R	Card activation	-	uint16	1

				0:Turn off 1:Turn on			
0x0617	RestoreFactorySettings	W/R	Restore factory setting	-	uint16	1	
0x0618	EVChargerReset	W/R	Software resets	-	uint16	1	
0x0619	EQ_Total	W/R	Accumulated charging capacity	0.1kwh	uint32(Lo)	2	
0x061A					uint32(Hi)		
0x061B	OCPP_ChargeCurrent	W/R	OCPP charging current	0.001A	int16	1	
0x061C	OCPP_offline_mode	W/R	OCPP convert to private scenarios 0:Private scenarios 1:OCPP	-	uint16	1	
0x061D	Timezone	W/R	Time zone	-12~12	uint16	1	
0x061E	RTC_Seconds	W/R	RTC Seconds	0~59	uint16	1	
0x061F	RTC_Minutes	W/R	RTC Minutes	0~59	uint16	1	
0x0620	RTC_Hours	W/R	RTC Hours	0~23	uint16	1	
0x0621	RTC_Days	W/R	RTC Days	1~31	uint16	1	
0x0622	RTC_Months	W/R	RTC Months	1~12	uint16	1	
0x0623	RTC_Years	W/R	RTC Years	0~99	uint16	1	
0x0624	DatahubChargeCurrent	W/R	Datahub control EV Charger's current,the scope is 6.0A-32.0A	0.01A	uint16	1	
0x0625	ChargePhase	W/R	0:three phase 1:The single-phase EV charger is connected to the first phase 2:Second phase charge 3:Third phase charge	-	uint16	1	
0x0626	UK_safety_ATE	W/R	ATE switch 0:Turn off 1:Turn on	-	uint16	1	
0x0627	control_command	W/R	1:Available 2:Unavailable 3:Stop charging 4:Start charging	-	uint16	1	

				5:Reserve 6:Cancel the reservation Clear when slave received			
	0x628	adjust_current	W/R	Master equipment indicates an adjustment to the maximum AC line current.	0.01A	uint16	1
	0x0629~0x0633	customlzed_SN	W/R	22Chars, MSB=SN[22]	22Char	uint16	11
	0x0634	timerBoostStartHours	W/R	Hours	1~12	uint16	1
	0x0635	timerBoostStartMinutes	W/R	Minutes	0~59	uint16	1
	0x0636	timerBoostEndHours	W/R	Hours	1~12	uint16	1
	0x0637	timerBoostEndMinutes	W/R	Minutes	0~59	uint16	1
	0x0638	smartBoostEndHours	W/R	Hours	1~12	uint16	1
	0x0639	smartBoostEndMinutes	W/R	Minutes	0~59	uint16	1
	0x063A	smartBoostSetEnergy	W/R	Preset charge capacity	0~100 /kWh	uint16	1
	0x063B	ChargePhase	W/R	0:three phase 1:The single-phase EV charger is connected to the first phase 2:Second phase charge 3:Third phase charge	-	Uint16	1
	0x063C	UnbalancedPower	W/R	Setting of unbalanced power,the scope is 1300W-7200W	1W	uint16	1
	0x063D	UnbalancedSwitch	W/R	Three-phase unbalanced switch 0:Turn off 1:Turn on	-	uint16	1
	0x063E	ModeButton	W/R	The manual button has been pressed. 0: None 1: Short press	-	uint16	1

				2: Long press			
	0x063F	MinCurrent	W/R	Master equipment indicates an adjustment to the minimum AC line current.	0.01A	uint16	1
	0x0640	slave_address	W/R	Own 485 address	0-250	uint16	1
	0x0641	Mode_Value	W/R	Mode_FAST Mode_ECO Mode_GREEN	0-2	uint16	1
	0x0642	Parallel_enable	W/R	0:disable 1:enable	0-1	uint16	1
	0x643	datahub_charge_power	W/R	max_ charge_powe r	0-32000 w	uint16	1
	0x644	Green_30sDelay	W/R	When two EVCs are connected in parallel, if this value >= 60, turn off the forced charging of the slave in green mode.		uint16	1
	0x64F	limit_current_fastmode	W/R	Current limit in all modes	0.01A	uint16	1
	0x660	MainBreakLimit.Switch	W/R	Enable/disable "contracting current"; (Only for the MIX version (G1.1))		uint16	1
	0x0700	RefPowerToEV	W/R	PID reference power value of EV Charger	1W	int16	1
	0x0701	PowerToEV	W/R	1. if the DSP is communicating, this value = total power at grid meter + battery power 2. if the DSP is not communicating, the value = total	1W	int32 (Lo)	2
	0x0702					int32 (Hi)	

				power at grid meter			
	0x0703	PvRef	W/R	This variable is "0" in the following cases: 1. when there is no PV 2. when the sum of the battery and Export limiting power is greater than 2100 W and the power fed back to the EVC is less than 2100 W. The value of this variable is 0	-	uint16	1
	0x0704	FeedinPower_Rphase(X3)	W/R	Power of the R-phase of the grid meter	1W	int32 (Lo)	2
	0x0705					int32 (Hi)	
	0x0706	FeedinPower_Sphase(X3)	W/R	Power of the S-phase of the grid meter	1W	int32 (Lo)	2
	0x0707					int32 (Hi)	
	0x0708	FeedinPower_Tphase(X3)	W/R	Power of the T-phase of the grid meter	1W	int32 (Lo)	2
	0x0709					int32 (Hi)	
	0x070A	OffGrid5kwChargingFlag	W/R	0:Not off grid 1:Off grid	-	uint16	1
	0x070B	MainBreakerLimit	W/R	Main breaker limit current	1A	uint16	1

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	

0x04:Read Input Register

32bit data use little endian format

Function Code	Read Input Register						
	Register	Variable	W/R	description	Unit	Data format	Length
0X04	0x0000	VoltageA	R	First phase voltage	0.01V	uint16	1
	0x0001	VoltageB	R	Second phase voltage	0.01V	uint16	1
	0x0002	VoltageC	R	Third phase voltage	0.01V	uint16	1
	0x0003	VoltagePE	R	PE voltage	0.01V	uint16	1
	0x0004	CurrentA	R	First phase current	0.01A	uint16	1
	0x0005	CurrentB	R	Second phase current	0.01A	uint16	1
	0x0006	CurrentC	R	Third phase current	0.01A	uint16	1
	0x0007	CurrentPE	R	PE current	1mA	uint16	1
	0x0008	ChargePowerA	R	First phase power	1W	uint16	1
	0x0009	ChargePowerB	R	Second phase power	1W	uint16	1
	0x000A	ChargePowerC	R	Third phase power	1W	uint16	1
	0x000B	TotalChargePower	R	Total charging power	1W	uint16	1
	0x000C	Freq_A	R	First phase frequency	0.01HZ	uint16	1
	0x000D	Freq_B	R	Second phase frequency	0.01HZ	uint16	1
	0x000E	Freq_C	R	Third phase frequency	0.01HZ	uint16	1
	0x000F	EQ_Single	R	Single charging capacity	0.1kwh	uint16	1
	0x0010	EQ_Total	R	Accumulated charging capacity	0.1kwh	uint32(Lo)	2
	0x0011					uint32(Hi)	
	0x0012	ExternCurrentA	R	First phase current at the grid-connected side	0.01A	int16	1
	0x0013	ExternCurrentB	R	Second phase current at the grid-connected side	0.01A	int16	1
	0x0014	ExternCurrentC	R	Third phase current at the grid-connected side	0.01A	int16	1
	0x0015	ExternPowerA	R	First phase power at the grid-connected side	1W	int16	1
	0x0016	ExternPowerB	R	Second phase power at the grid-connected side	1W	int16	1
	0x0017	ExternPowerC	R	Third phase power at the grid-connected side	1W	int16	1

	0x0018	ExternTotalPower	R	Total phase power at the grid-connected side	1W	uint16	1
	0x0019	CC_Volt	R	CC voltage	0.1V	uint16	1
	0x001A	CP_Volt	R	CP voltage	0.01V	uint16	1
	0x001B	Duty	R	Charge duty cycle	0.1%	uint16	1
	0x001C	TempPCB	R	PCB temperature	1°C	uint16	1
	0x001D	State	R	0: Available 1: Preparing 2: Charging 3: Finishing 4: Faulted 5: Unavailable 6: Reserved 7: SuspendedEV 8: SuspendedEVSE 9: Update 10:Card Activation	-	uint16	1
	0x001E	FaultCode	R	Fault code	-	uint32(Lo)	2
	0x001F					uint32(Hi)	
	0x0020	TypeCase	R	0: CaseB 1: CaseC	-	uint16	1
	0x0021	TypePower	R	0: 7kW 1:11kW 2:22kW	-	uint16	1
	0x0022	TpyePhase	R	0:single phase 1:three phase	-	uint16	1
	0x0023	TypeCharger	R	0: Home 1: OCPP	-	uint16	1
	0x0024	TypeScreen	R	0: No screen 1: Screen	-	uint16	1
	0x0025	FirmwareVersion	R	Firmware version	-	uint16	1
	0x0026	OCPP_Network	R	0:OCPP offline 1:OCPP online	-	uint16	1
	0x0027	RSSI	R	Received Signal Strength Indicator	1%	uint16	1
	0x0028	ChargePhase	R	0:three phase 1:The single-phase EV charger is connected to the first phase 2:Second phase charge 3:Third phase charge	-	Uint16	1

	0x0029	UnbalancedPower	R	Setting of unbalanced power,the scope is 1300W-7200W	1W	uint16	1
	0x002A	UnbalancedSwitch	R	Three-phase unbalanced switch 0:Turn off 1:Turn on	-	uint16	1
	0x002B	Charging_time	R	Duration time of charging	1s	uint32(Lo)	2
	0x002C					uint32(Hi)	
	0x002D	max_power	R	The evcharge max power	1W	uint16	1
	0x002E	Bootup_power	R	The evcharge bootup power	1W	uint16	1
	...						
	0x0100	ChargePowerA	R	First phase power	1W	uint16	1
	0x0101	ChargePowerB	R	Second phase power	1W	uint16	1
	0x0102	ChargePowerC	R	Third phase power	1W	uint16	1
	0x0103	MaxPowerChargingFlag	R	0:Not at maximum power 1:Maximum power	-	uint16	1
	0x0104	Mode_Value	R	Mode_FAST Mode_ECO Mode_GREEN	-	uint16	1
	0x0105	Power_green_start	R		1W-	uint16	1
	0x106	State	R	0: Available 1: Preparing 2: Charging 3: Finishing 4: Faulted 5: Unavailable 6: Reserved 7: SuspendedEV 8: SuspendedEVSE 9: Update 10:Card Activation	-	uint16	1
	0x0107	Is_support_parallel	R	0:no support 0Xaa55: support		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	

0x06:Write Single Register

32bit data use little endian format

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	

0x10:Write Multiple Register

32bit data use little endian format

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	

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 10:EVC	-	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:boot loaderCommonRunStatus 0x8001:Boot loaderResumeWaitStatus	-	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 :

618.00360.00.HMB
IP_DSP_V1.22.2021



Example Upgrade Process Message:

X1G4UpgradeProcessData.TXT

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 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 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 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 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_H
YB_3P_DSP_V1.1C



Example Upgrade Process Message: UpgradeProcessData.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 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 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 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 34
30 30 30 38 46 32 0D 0A 3A 30 34 34 30 30 34 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 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.