Modbus-RTU protocol of Solax Power three phase inverter

X1-BOOST/MINI-G4 V3.6

History list：

Data	Name	detail	Protocol Version	ARM version	other
2021-08-03	zhangxiangping	Draft	V1.0	V001	
2022-04-27	zhangxiangping	与内部通讯协议保持一致，包括实时数据、配置参数、参数设置	V1.1	V001	
2022-05-06	zhangxiangping	1.增加老化使能 0x68F 2.增加兼容韩华版本使能 0x695	V1.2	V001	
2022-05-19	zhangxiangping	1、扩展多写指令，控制功率百分比	V1.3	V001	
2022-06-07	zhangxiangping	1.CT 校准（DSP 侧）	V1.4	V001	
2022-06-23	zhangxiangping	1、去掉多写指令里的功率因素设置 2、增加 FCT 寄存器	V1.5	V001	
2022-07-06	zhangxiangping	1、FCT 增加对按键以及 LCD 的 IO 口检测	V1.6	V002	
2022-07-08	zhangxiangping	1、为了便于 DataHub 处理逆变器的软件版本号，把 0x394 寄存器重定义成了 DSP 版本号	V1.7	V002	
2022-07-12	zhangxiangping	1、容性与感性的取值颠倒了，改成与代码里一致	V1,8	V002	
2022-07-25	zhangxiangping	1、增加 0x734 寄存器	V1.9	V004	
2022-08-05	zhangxiangping	1、增加机型值的定义	V2.0	V007	
2022-10-18	WuJunLei	1、增加 0x69A 寄存器定义	V2.1	V012	
2022-11-21	Gaolin	1.增加 0x69B-0x69D,0x395-0x399 寄存器定义	V2.2		
2022-12-12	WuJunLei	增加 0x39A-0x39B 寄存器定义	V2.3		
2023-1-29	WujunLei	增加 0x69E 寄存器定义	V2.4		
2023-3-2	Sunjiawei	增加 0x69F 单写保持寄存器定义；增加 0x39D 单读保持寄存器定义	V2.5		
2023-4-10	Sunjiawei	增加 0x36E-0x3A1 单读保持寄存器定义；增加 0x6A0-0x6A5 单写寄存器定义	V2.6		

2023-4-17	Sunjiawei	增加 0x3A2-0x3A4 单读保存寄存器定义。	V2.7		
2023-5-8	Wujunlei	增加 0x3A5 读保持寄存器地址 MINi G4 DSP 软件版本	V2.8		
2023-5-16	Wujunlei	增加 Power type 下新增功率段机器	V2.9		
2023-8-15	wujunlei	增加寄存器地址设置干节点输出（ATE 模式下）	V3.0		
2023-11-22	wujunlei	增加读取机器语言寄存器，更新设置语言寄存器语种内容（0x693）	V3.1		
2023-12-29	wushaobo	增加 0x444-0x450,2030.5 并机读从机多读寄存器定义 增加 2030.5 并机向从机发送斜率寄存器（0x680） 增加 2030.5 并机向从机控功率多写寄存器（0x1810-0x181E）	V3.2		
2024-04-26	wushaobo	增加寄存器地址 0x3A7-0x3AE 用以读取 ODM 客户 15 位 SN 号 增加寄存器地址 0x3AF 用以读取 Bus 电压 增加寄存器地址 0x1021-0x1028 用以写入 ODM 客户 15 位 SN 号 X1-MINI-G4 中 PowerType 增加功率类型 12，表示 3.3KW 默认 1.1 倍输出	V3.3		
2024-7-10	Wushaobo	1.增加寄存器地址 0x3B0-0x3B2 用以读取拉弧相关数据信息 2.增加寄存器地址 0x6A7 与 0x6A8 用以写入拉弧方案及使能拉弧 CT 磁环检测 3.增加寄存器地址 0x44B 用以读取按键状态	V3.4		
2024-7-25	Wujunlei	补充添加寄存器 0x44B 的内容，添加 up、down、enter、cancel 长按故障检测	V3.5		
2024-7-10	Zhaojianpeng	1、补充添加寄存器 0x6A9-0x6AC 的内容；不存 EEPROM 的写入操作； 2、补充添加寄存器 0x44C，读取无功功率。	V3.6		

1. RS485 Parameter:

Parameter	Value
Baud rate	9600bps
Data bit	8
Parity	None
Stop bit	1
RS485 bus	A(Data+); B(Data-)

2. Communication timing:

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

Read holding register

Function Code	Register	Name	R/W	Detail	Unit	Type	Len
	0x00-0x2FF	Reserved	NA	System Reserved	NA	NA	NA
	0x300-0x306	SeriesNumber	R	14 Chars,MSB=SN[14]	14Chars	Uint16	7
	0x307-0x30D	FactoryName	R	14 Chars,MSB=FactoryName[14]	14Chars	Uint16	7
	0x30E-0x314	ModuleName	R	14 Chars,MSB=ModuleName[14]	14Chars	Uint16	7
	0x315-0x317	FirmwareVersion	R	6 Chars,MSB=Firmware[5]	6Chars	Uint16	3
	0x318	RTC-Second	R	RTC-Second	/	Uint16	1
	0x319	RTC-Minute	R	RTC-Minute	/	Uint16	1
	0x31A	RTC-Hour	R	RTC-Hour	/	Uint16	1
	0x31B	RTC-Day	R	RTC-Day	/	Uint16	1
	0x31C	RTC-Month	R	RTC-Month	/	Uint16	1
	0x31D	RTC-Year	R	RTC-Year	/	Uint16	1
0x03	0x31E	Reserved	R	Reserved	/	Uint16	1

0x31F	PowerType	R	Machine Power	1	Uint16	1
0x320	ScanMode	R	Mppt Scan Mode	0~3	Uint16	1
0x321	PowerRatio	R	PowerLimitPercent	1%	Uint16	1
0x322	ExportPower	R	Export Power(Meter)	1W	Uint16	1
0x323	Reserved	NA	Reserved	/	UInt16	1
0x324	Safety	R	Country Safety Code	1	Uint16	1
0x325	GridServicesEnable_t	R	Grid Service Enable Bit	/	Uint16	1
0x326	CheckingTime	R	Connection time	1S	Uint16	1
0x327	ReConnectionTime	R	Reconnection Time	1S	Uint16	1
0x328	VacOvp1st	R	Upper limits of grid voltage1	0.1V	Uint16	1
0x329	VacOvp2nd	R	Upper limits of grid voltage2	0.1V	Uint16	1
0x32A	VacOvp3rd	R	Upper limits of grid voltage3	0.1V	Uint16	1
0x32B	VacUvp1st	R	Lower limits of grid voltage1	0.1V	Uint16	1
0x32C	VacUvp2nd	R	Lower limits of grid voltage2	0.1V	Uint16	1
0x32D	VacUvp3rd	R	Lower limits of grid voltage3	0.1V	Uint16	1
0x32E	Vac10MinOvp	R	10Mins Avg Over Votage	0.1V	Uint16	1
0x32F	VacStartUp	R	Upper Start Votage	0.1V	Uint16	1
0x330	VacStartLo	R	Lower Start Votage	0.1V	Uint16	1
0x331	VacOvpRecover	R	Over Votage Recover	0.1V	Uint16	1
0x332	VacUvpRecover	R	Under Votage Recover	0.1V	Uint16	1
0x333	VacOvp1stTime	R	The first time of Over Votage	10ms	Uint16	1
0x334	VacOvp2ndTime	R	The second time of Over Votage	10ms	Uint16	1
0x335	VacUvp1stTime	R	The first time of Under Votage	10ms	Uint16	1
0x336	VacUvp2ndTime	R	The second time of Under Votage	10ms	Uint16	1
0x337	FacOfp1st	R	The first level Over frequency	0.01Hz	Uint16	1
0x338	FacOfp2nd	R	The second level Over frequency	0.01Hz	Uint16	1
0x339	FacUfp1st	R	The first level Under frequency	0.01Hz	Uint16	1
0x33A	FacUfp2nd	R	The second level Under frequency	0.01Hz	Uint16	1
0x33B	FacStartUp	R	Start Frequency Upper	0.01Hz	Uint16	1
0x33C	FacStartLo	R	Start Frequency Lower	0.01Hz	Uint16	1
0x33D	FacOfpRecover	R	Over Frequency Recover	0.01Hz	Uint16	1
0x33E	FacUfpRecover	R	Under Frequency Recover	0.01Hz	Uint16	1
0x33F	FacOfp1stTime	R	The first time of Over Frequency	10ms	Uint16	1
0x340	FacOfp2ndTime	R	The second time of Over Frequency	10ms	Uint16	1
0x341	FacUfp1stTime	R	The first time of Under Frequency	10ms	Uint16	1
0x342	FacUfp2ndTime	R	The second time of Under Frequency	10ms	Uint16	1
0x343	RPBF_FreqOverPoint	R	Over Frequency Point	0.01Hz	Uint16	1

0x344	RPBF_FreqOverRecoverPoint	R	RPBF FreqOverRecoverPoint	0.01Hz	Uint16	1
0x345	RPBF_FreqOverRampEn	R	RPBF FreqOverRamp Enable	0~1	Uint16	1
0x346	RPBF_FreqOverRamp	R	RPBF FreqOverRamp	0.1%	Uint16	1
0x347	RPBF_S	R	RPBF Slope	0.1%	Uint16	1
0x348	RPBF_EntryDelayTime	R	RPBF EntryDelayTime	1S	Uint16	1
0x349	RPBF_ExitDelayTime	R	RPBF ExitDelayTime	1S	Uint16	1
0x34A	RPBF_CurveType	R	RPBF CurveType	0~1	Uint16	1
0x34B	IPBF_FreqUnderPoint	R	IPBF FreqUnderPoint	0.01Hz	Uint16	1
0x34C	IPBF_FreqUnderRecoverPoint	R	IPBF FreqUnderRecoverPoint	0.01Hz	Uint16	1
0x34D	IPBF_FreqOverRampEn	R	IPBF FreqOverRampEn	0~1	Uint16	1
0x34E	IPBF_FreqOverRamp	R	IPBF FreqOverRamp	0.1%	Uint16	1
0x34F	IPBF_S	R	IPBF Slope	0.1%	Uint16	1
0x350	IPBF_EntryDelayTime	R	IPBF EntryDelayTime	1S	Uint16	1
0x351	IPBF_ExitDelayTime	R	IPBF ExitDelayTime	1S	Uint16	1
0x352	IPBF_CurveType	R	IPBF_CurveType	0~1	Uint16	1
0x353	Pu_GridV1	R	Pu GridV1	0.1V	Uint16	1
0x354	Pu_GridV2	R	Pu GridV2	0.1V	Uint16	1
0x355	Pu_GridV3	R	Pu GridV3	0.1V	Uint16	1
0x356	Pu_GridV4	R	Pu GridV4	0.1V	Uint16	1
0x357	Pu_Power1	R	Pu Power1	0.1%	Uint16	1
0x358	Pu_Power2	R	Pu Power2	0.1%	Uint16	1
0x359	Pu_Power3	R	Pu Power3	0.1%	Uint16	1
0x35A	Pu_Power4	R	Pu Power4	0.1%	Uint16	1
0x35B	Pu_Tau3	R	Pu Tau3	1S	Uint16	1
0x35C	QCurve_SetMode	R	无功模式 0~5 0: off 1:OverExcited 2:UnderExcited 3:PF(p) 4:Q(u) 5:FixQPower	0~5	Uint16	1
0x35D	QCurve_FixQPowe	R	QCurve FixQPower	1Var	Uint16	1

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0x35E	QCurve_SetPf	R	QCurve SetPf	0.01	Uint16	1
0x35F	QCurve_PfLimitUp	R	Upper Limits Point1	0.01	Uint16	1
0x360	QCurve_PfLimitDn	R	Lower Limts Point2	0.01	Uint16	1
0x361	QCurve_CosP_Pf1	R	Pf1	0.01	Uint16	1
0x362	QCurve_CosP_Pf2	R	Pf2	0.01	Uint16	1
0x363	QCurve_CosP_EntryVolt	R	QCurve CosP EntryVolt	0.1V	Uint16	1
0x364	QCurve_CosP_ExitVolt	R	QCurve CosP ExitVolt	0.1V	Uint16	1
0x365	QCurve_CosP_PowerRatio1	R	Power Ratio Point3	0.1%	Uint16	1
0x366	QCurve_CosP_PowerRatio2	R	Power Ratio Point4	0.1%	Uint16	1
0x367	QCurve_CosP_Tau3	R	QCurve CosP Tau3	1S	Uint16	1
0x368	QCurve_CosP_CurveType		QCurve_CosP CurveType		Uint16	1
0x369	QCurve_Qu_GridV1	R	QCurve Qu GridV1	0.1V	Uint16	1
0x36A	QCurve_Qu_GridV2	R	QCurve Qu GridV2	0.1V	UInt16	1
0x36B	QCurve_Qu_GridV3	R	QCurve Qu GridV3	0.1V	Uint16	1
0x36C	QCurve_Qu_GridV4	R	QCurve Qu GridV4	0.1V	Uint16	1
0x36D	QCurve_Qu_Ratio1	R	QCurve Qu Ratio1	0.1%	Uint16	1
0x36E	QCurve_Qu_Ratio4	R	QCurve Qu Ratio4	0.1%	Uint16	1
0x36F	QCurve_Qu_LockIn	R	QCurve Qu LockIn	0.1%	Uint16	1
0x370	QCurve_Qu_LockOut	R	QCurve Qu LockOut	0.1%	Uint16	1
0x371	QCurve_Qu_Tau3	R	QCurve Qu Tau3	1S	Uint16	1
0x372	QCurve_Qu_QuLockEnable	R	QCurve_Qu_QuLock Enable	0~1	Uint16	1
0x373	QCurve_Qu_CurveType	R	QCurve Qu CurveType	0~1	Uint16	1
0x374	SoftStartSlope	R	SoftStart Slope	0.01	Uint16	1
0x375	Reserved		Reserved	/	Uint16	1

	SafetyEnableByte0		SafetyEnable Byte0			
0x376	SafetyEnableByte1	R	SafetyEnable Byte1		Uint16	1
	SafetyEnableByte2		SafetyEnable Byte2			
0x377	SafetyEnableByte3	R	SafetyEnable Byte3		Uint16	1
	SafetyEnableByte4		SafetyEnable Byte4			
0x378	SafetyEnableByte5	R	SafetyEnable Byte5		Uint16	1
	SafetyEnableByte6		SafetyEnable Byte6			
0x379	SafetyEnableByte7	R	SafetyEnable Byte7		Uint16	1
0x37A	QCurve_CosP_Pf3	R	0.01		Uint16	1
0x37B	QCurve_CosP_Pf4	R	0.01		Uint16	1
0x37C	QCurve_CosP_PowerRatio3	R	QCurve_CosP_PowerRatio3	0.1%	Uint16	1
0x37D	QCurve_CosP_PowerRatio4	R	QCurve_CosP_PowerRatio4	0.1%	Uint16	1
0x37E	Frt_EntryVoltUp	R	Frt_EntryVoltUp	0.1V	Uint16	1
0x37F	Frt_EntryVoltDn	R	Frt_EntryVoltDn	0.1V	Uint16	1
0x380	RPBF_FreqStopPoint	R	RPBF FreqStopPoint	0.01Hz	Uint16	1
0x381	ExtSetAcActPower	R	ExtSetAcActPower	1W	Uint16	1
0x382	PvConnectionType	R	PvConnectionType	0~1	Uint16	1
0x383	Reserved	NA	Reserved	/	Uint16	1
0x384	ExportDevice	R	ExportDevice	0~2	Uint16	1
0x385	ExportCheckEnable	R	ExportCheckEnable	See below	Uint16	1
0x386	ExtSetExpAppPower	R	ExtSetExpAppPower	1W	Uint16	1
0x387	RPBF_FreqMaxPoint	R	RPBF FreqMaxPoint	0.01Hz	Uint16	1
0x388	IPBF_FreqMinPoint	R	IPBF FreqMinPoint	0.01Hz	Uint16	1
0x389	ExtSetExportPowerHard	R	ExtSetExportPowerHard	1W	Uint16	1
0x38A	ExtSetExpAppPow	R	ExtSetExpAppPowerHard	1W	Uint16	1

	erHard					
0x38B	SoftStartReconSlop	R	SoftStartReconSlop			
0x38C	ObservationTime	R	ObservationTime	1S	Uint16	1
0x38D	ReObservationTime	R	ReObservationTime	1S	Uint16	1
0x38E	SoftStartFirstEn	R	SoftStartFirstEn	0~1	Uint16	1
0x38F	SoftStartProtectEn	R	SoftStartProtectEn	0~1	Uint16	1
0x390	ArmFirmwareVer	R	ARM Firmware Verson	1	Uint16	1
0x391	VacOvp3rdTime	R	VacOvp3rdTime	1s	Uint16	1
0x392	VacUvp3rdTime	R	VacUvp3rdTime	1s	Uint16	1
0x393	DataLoggerEnable	R	1:Enable 0:Disable	0~1	Uint16	1
0x394	DSPFirmwareVer	R	DSP Firmware Verson (BOOST G4)	1	Uint16	1
0x395	QCurve_Qu_Ratio2	R	QCurve_Qu_Ratio2	0.1%	Uint16	1
0x396	QCurve_Qu_Ratio3	R	QCurve_Qu_Ratio3	0.1%	Uint16	1
0x397	ExternalSignal	R	0:宽频 1:窄频	0`1	Uint16	1
0x398	LocalCommand	R	0:宽频 1:窄频	0`1	Uint16	1
0x399	ExternalFailed	R	1：丢失	1	Uint16	1
0x39A	UnlockPassword	R	0：为解锁，1/2 解锁	0~2	Uint16	1
0X39B	SystemOn/Off	R	0:关机 1：开机	0~1	Uint16	1
0x39C	Makers	R	0：SOLAX 1:HOWD(印度 ODM)		Uint16	1
0x39D	wLeaseMode	R	0:关闭 1:打开		Uint16	1
0x39E	wArcEnable	R	0:Disable 1:Enable	0~1	Uint16	1
0x39F	wArcThreshold	R	ArcThreshold	0~4	Uint16	1
0x3A0	bBiasMode	R	0:disabled 1:INV 偏曲电		Uint8	1
0x3A1	bBiasValue	R	BiasValue	40~100	Uint8	1
0x3A2	wGridVolt	R	RTDB.wGridVolt		Uint16	1
0x3A3	wInvCurrent	R	RTDB.wInvCurrent		Uint16	1
0x3A4	wGridFreq	R	RTDB.wGridFreq		Uint16	1
0x3A5	DSPFirmwareVer	R	DSP Firmware Verson (Mini G4)		Uint16	1
0x3A6	Select Language	R	Select Language 0: English—英语	1~9	Uint16	1

			1：German—德语 2：Polish—波兰语 3：Franch—法语 4：Portugue—葡萄牙语 5：Chinese—中文 6：Spanish—西班牙语 7:Italian—意大利语 8:Dutch—荷兰语 9：Nemcina--捷克			
0x3A7-0x3AE	ODM:UTL 的 SN	R	16 Chars,MSB=SN[16]	16Chars	Uint16	8
0x3AF	BusVol	R	Bus voltage		Uint16	1
0x3B0	获取当前 ARC 方案	R	0xBB：ST 方案拉弧 0：凌石拉弧		Uint16	1
0x3B1	ARC 软件版本号	R	ARC_SoftVision		Uint16	1
0x3B2	ARC_ATE 中 CT2 的值	R	FFFF：默认值 非 FFFF：正确值		Uint16	1

PowerType（X1-BOOST G4）

#define	X1-BOOST-3.0K-G4	1
#define	X1-BOOST-3.3K-G4	2
#define	X1-BOOST-3.6K-G4	3
#define	X1-BOOST-4.2K-G4	4
#define	X1-BOOST-5.0K-G4	5
#define	X1-BOOST-6.0K-G4	6
#define	X1-BOOST-2.5K-G4	7
#define	X1-BOOST-4.0K-G4	8

PowerType（X1-MINI G4）

#define	X1-MINI-0.6K-G4	1
#define	X1-MINI-0.7K-G4	2
#define	X1-MINI-1.1K-G4	3
#define	X1-MINI-1.5K-G4	4
#define	X1-MINI-2.0K-G4	5
#define	X1-MINI-2.5K-G4	6
#define	X1-MINI-3.0K-G4	7
#define	X1-MINI-3.3K-G4	8
#define	X1-MINI-0.8K-G4	9
#define	X1-MINI-4.0K-G4	10
#define	X1-MINI-3.7K-G4	11
#define	X1-MINI-3.3k-G4(1.1)	12

Example:

QUERY Field Name	Example (Hex)
Slave Address	11
Function	03
Starting Address Hi	00
Starting Address Lo	6B
No. of Points Hi	00
No. of Roints Lo	03
Error Check (LRC or CRC)	—

RESPONSE Field Name	Example (Hex)
Slave Address	11
Function	03
Byte Count	06
Data Hi (Register 40108)	02
Data Lo(Register 40108)	2B
Data Hi(Register 40109)	00
Data Lo(Register 40109)	00
Data Hi(Register 40110)	00
Data Lo(Register 40110)	64
Error Check (LRC or CRC)	—

Read input register

Function Code	Register	Name	R/W	Detail	Unit	Type	Length
	0x00-0x3FF	Reserved	NA	System Reserved	NA	NA	NA
	0x400	Vac	R	Grid voltage	0.1V	Uint16	1
	0x401	Reserved	NA	Reserved	/	Uint16	1
	0x402	Reserved	NA	Reserved	/	Uint16	1
	0x403	Iac	R	Output Current	0.1A	Uint16	1
	0x404	Reserved	NA	Reserved	/	Uint16	1
	0x405	Reserved	NA	Reserved	/	Uint16	1
	0x406	Fac	R	Grid Frequency	0.01Hz	Uint16	1
	0x407	Reserved	NA	Reserved	/	Uint16	1
	0x408	CT Power	R	CT Power	1W	Uint16	1
	0x409	Pac	R	Ac Power	1W	Uint16	1
	0x40A	Pv1Voltage	R	PV1 Voltage	0.1V	Uint16	1
	0x40B	Pv2Voltage	R	PV2 Voltage	0.1V	Uint16	1
0x04	0x40C	Reserved	NA	Reserved	/	Uint16	1

0x40D	Pv1 Current	R	Pv1 Current	0.1A	Uint16	1
0x40E	Pv2 Current	R	Pv2 Current	0.1A	Uint16	1
0x40F	Reserved	NA	Reserved	/	Uint16	1
0x410	Pv1 Power	R	Pv1 Power	1W	Uint16	1
0x411	Pv2 Power	R	Pv2 Power	1W	Uint16	1
0x412	Reserved	NA	Reserved	/	Uint16	1
0x413	Inv Temperature	R	Radiator Temperature	1℃	Uint16	1
0x414	Ctrl Temperature	R	Control Board Temperature	1℃	Uint16	1
0x415	RunMode	R	Run Mode	0~6	Uint16	1
0x416	FaultValCode	R	Fault Code Value	See detail	Uint16	1
0x417	FaultValPv1Volt	R	Pv1 Voltage Fault Value	0.1V	Uint16	1
0x418	FaultValPv2Volt	R	Pv2 Voltage Fault Value	0.1V	Uint16	1
0x419	Reserved	NA	Reserved	/	Uint16	1
0x41A	FaultValGridVoltage	R	Grid Voltage Fault Value	0.1V	Uint16	1
0x41B	Reserved	NA	Reserved	/	Uint16	1
0x41C	Reserved	NA	Reserved	/	Uint16	1
0x41D	FaultValGridFreq	R	Grid Frequency Fault Value	0.01Hz	Uint16	1
0x41E	Reserved	NA	Reserved	/	Uint16	1
0x41F	Reserved	NA	Reserved	/	Uint16	1
0x420	FaultValDci	R	DCI Fault Value	1mA	Uint16	1
0x421	Reserved	NA	Reserved	/	Uint16	1
0x422	FaultValBoostTemp	R	Boost Temperature Fault Value	1℃	Uint16	1
0x423	FaultValRcRms	R	RcRms Fault Value	1mA	Uint16	1
0x424	FaultValInvTemp	R	Radiator Temperature Fault Value	1℃	Uint16	1
0x425	FaultValCtrlTemp	R	Ctrl BoardTemperature Fault Value	1℃	Uint16	1
0x426	Reserved	NA	Reserved	/	Uint16	1
0x427~0x428	SysInfoFaultMessage	R	Inverter FaultMessage	See Detail	**Uint32**	**2**
0x429	ConnTimerCountDown	R	Checking Time Counter Down	1	Uint16	1
0x42A	OutputSwitch	R	Inverter Status	0~1	Uint16	1

0x42B~0x42C	InvTotalEnergy	R	Inverter Total Energy	0.1Kwh	Uint32	2
0x42D~0x42E	TotalRunTime	R	Inverter Total Run Time	0.1h	Uint32	2
0x42F~0x430	EnergyExportOut	R	Total Energy ExportOut	0.1Kwh	Uint32	2
0x431~0x432	EnergyExportIn	R	Total Energy ExportIn	0.1Kwh	Uint32	2
0x433	BurnInFlag	R	Burn Flag	0~1	Uint16	1
0x434	Reserved	NA	Reserved	/	Uint16	1
0x435~0x436	Reserved	NA	Reserved	/	Uint32	2
0x437	EnergyTodayAcOut	R	Today Energy	0.1Kwh		1
	IvScanStaus1		PV1 Scan Status		Uint8_Lo	
0x438	IvScanStatus	R	PV2 Scan Status	See Detail	Uint8_Hi	1
0x439	Reserved	NA	Reserved	/	Uint16	1
0x43A	Reserved	NA	Reserved	/	Uint16	1
0x43B	Reserved	NA	Reserved	/	Uint16	1
0x43C	Reserved	NA	Reserved	/	Uint16	1
0x43D	Reserved	NA	Reserved	/	Uint16	1
0x43E	Reserved	NA	Reserved	/	Uint16	1
0x43F	Reserved	NA	Reserved	/	Uint16	1
0x440	Reserved	NA	Reserved	/	Uint16	1
0x441	Reserved	NA	Reserved	/	Uint16	1
0x442	Manager_FaultMessage.ALL	R	ControlBoard ARM fault message	/	Uint16	1
0x443	ATE_DRM0	R	0:关机 1:开机	/	Uint16	1
0x444	ParallelRunMode	R	并机运行状态	详见 Run Mode	Uint16	1
0x445	ParallelActpower	R	并机 AC 侧有功功率	1W	Uint16	1
0x446	ParallelACCurrent	R	并机 AC 侧电流	0.1A	Uint16	1
0x447	ParallelACReactpower	R	并机 AC 侧无功功率	1Var	Uint16	1
0x448	ParallelPVPower	R	并机 PV 总输入功率	1W	Uint16	1
0x449	MachinePower	R	机型功率	1W	Uint16	1
0x44A	SelectPhase	R	并机选择接入逆变	0:A(R)	Uint16	1

				1:B(S) 2:C(T)		
		R		Bit0:1 表示 up Bit1:1 表示 down Bit2:1 表示 Enter Bit3:1 表示 Cancel Bit4:1 表示检测到 Up 发生错误一直被按压 Bit5:1;表示检测到 Down 发生错误一直被按压 Bit6 1: 表示检测到 Enter 发生错误一直被按压 Bit7 1: 表示检测到 Cancel 发生错误一直被按压		
0x44B	Button		按键信息		Uint16	1

器的电表相位

0x44C	Reactpower	R	无功功率	1Var	int16	1
0x450~0x460	Reserved	NA	Reserved	/	Uint16	1
以下是 FCT 读取的采样数据						
0x461	PVVolt_1	R			Uint16	1
0x462	PVCurrent_1	R			Uint16	1
0x463	PVCurrent_Protect_1	R			Uint16	1
0x464	PVVolt_2	R			Uint16	1
0x465	PVCurrent_2	R			Uint16	1
0x466	PVCurrent_Protect_2	R			Uint16	
0x467	GridVolt	R			Uint16	1
0x468	GridFreq	R			Uint16	1
0x469	InvCurrent	R			Uint16	1
0x46A	InvCurrent_Protect	R			Uint16	1
0x46B	DcInjCurr	R			Uin1t6	1
0x46C	InvVolt	R			Uint16	1
0x46D	NLineVolt	R			Uint16	1
0x46E	ISOVolt	R			Uint16	1
0x46F	TEMP_INV	R			int16	1
0x470	TEMP_BOOST	R			int16	1
0x471	TEMP_ENV	R			int16	1
0x472	BUSVolt	R			Uin1t6	1
0x473	BUSVolt_Protect	R			Uin1t6	1
0x474	GFCIVolt	R			Uin1t6	1
0x475	CTCheck	R			Uin1t6	1
0x476	DspSampleFinished	R	1:采样结束 0: 采样未结束		Uint16	1
0x477	Reserved	R			Uint16	1
0x478	Reserved	R			Uint16	1
0x479	Reserved	R			Uint16	1
0x47A	Reserved	R			Uint16	1
0x47B	Reserved	R			Uint16	1
0x47C	Reserved	R			Uint16	1
0x47D	Reserved	R			Uint16	1
0x47E	Reserved	R			Uint16	1
0x47F	Reserved	R			Uint16	1
0x480	Reserved	R			Uint16	1
0x481	DRMO Sample	R			Uint16	1
0x482	CT Sample	R			Uint16	1

0x483	WIFICheck	R	1：WIFI 检测 OK 0：失败		Uint16	1
0x484	USBCheck	R	1：U 盘检测 OK 0：失败		Uint16	1
0x485	KeyUpCheck	R	1:高电平 0：低电平		Uint16	1
0x486	KeyDownCheck	R	1：高电平 0：低电平		Uint16	1

Example:

```
QUERY
                              Example
Field Name                    (Hex)

Slave Address                 11
Function                      04
Starting Address Hi           00
Starting Address Lo           08
No. of Points Hi              00
No. of Roints Lo              01
Error Check (LRC or CRC)      —
```

```
RESPONSE
                              Example
Field Name                    (Hex)

Slave Address                 11
Function                      04
Byte Count                    02
Data Hi(Register 30009)       00
Data Lo(Register 30009)       0A
Error Check (LRC or CRC)      —
```

The detail of "Run Mode":

Value	Mode
0	Wait Mode
1	Check Mode
2	Normal Mode
3	Fault Mode
4	Permanent Fault Mode

5	UpdateMode
6	EpsCheckMode
7	EpsMode

The detail of "Inverter_FaultMessage":

BIT31	Other_DeviceFault	
BIT30	GridRelayFault	
BIT29	PvConnDirFault	
BIT28	RcDeviceFault	
BIT27	EepromFault	
BIT26	EpsRelayFault	
BIT25	Reserved	
BIT24	InternalCommsFault	
BIT23	Reserved	
BIT22	Reserved	
BIT21	Reserved	
BIT20	LowTempFault	
BIT19	Reserved	
BIT18	Reserved	
BIT17	Reserved	
BIT16	Reserved	
BIT15	Reserved	
BIT14	Reserved	
BIT13	OverTempFault	
BIT12	IsoFault	
BIT11	ResidualOcp	
BIT10	SwOcp	
BIT09	Reserved	
BIT08	DcInjOcp	
BIT07	GridVolt10MinFault	
BIT06	Reserved	
BIT05	BusVoltFault	
BIT04	PvVoltFault	
BIT03	GridFreqFault	
BIT02	GridVoltFault	
BIT01	MainsLostFault	
BIT00	TzProtectFault	

The detail of "Manager_FaultMessage":

BIT15	Reserved	
BIT14	Reserved	

BIT13	Reserved	
BIT12	Reserved	
BIT11	Reserved	
BIT10	Reserved	
BIT09	Reserved	
BIT08	Reserved	
BIT07	Reserved	
BIT06	Reserved	
BIT05	Reserved	
BIT04	Meter_Error	
BIT03	ArmDspCommsError	
BIT02	E2promError	
BIT01	Reserved	
BIT00	Reserved	

Write single register

Function Code	Register	Name	R/W	Detail	Unit	Type	Length
0x06	0x00-0x5FF	Reserved	NA	System Reserved	NA	NA	NA
	0x600	Password	W	Unlock input	/	Uint16	1
	0x601	MpptScanMode	W	阴影扫描模式 0: off 1: low frequency scan 2:middle frequency scan 3:high frequency scan	/	Uint16	1
	0x602	MpptEnable	W	MPPT 使能开关 0:自由追踪 1:不追踪	/	Uint16	1
	0x603	PowerRatio	W	设置限功率比值	1%	Uint16	1
	0x604	ExportPower	W	设置并网功率	1W	Uint16	1
	0x605	Adjust_Pv4_Volt	W	设置 PV4 电压校准	0.1V	Uint16	1
	0x606	Adjust_Pv1_Volt	W	设置 PV1 电压校准	0.1V	Uint16	1
	0x607	Adjust_Pv2_Volt	W	设置 PV2 电压校准	0.1V	Uint16	1
	0x608	Adjust_Pv3_Volt	W	设置 PV3 电压校准	0.1V	Uint16	1
	0x609	Adjust_Pv1_Current	W	设置 PV1 电流校准	0.1A	Uint16	1
	0x60A	Adjust_Pv2_Current	W	设置 PV2 电流校准	0.1A	Uint16	1
	0x60B	Adjust_Pv3_Curre	W	设置 PV3 电流校准	0.1A	Uint16	1

			nt			
	0x60C	Adjust_AC_Volt	W	设置市电电压校准	0.1V	Uint16	
	0x60D	Adjust_Pv4_Current	W	设置 PV4 电流校准	0.1A	Uint16	1
	0x60E	Reserved	NA	保留	/	Uint16	
	0x60F	Adjust_AC_Current	W	设置市电电流校准	0.1A	Uint16	1
	0x610	Reserved	NA	保留	/	Uint16	
	0x611	Reserved	NA	保留	/	Uint16	
	0x612	ActivePower	W	设置有功功率校准	1W	Uint16	1
	0x613	Reserved	NA	保留	/	Uint16	
	0x614	Reserved	NA	保留	/	Uint16	
	0x615	Reserved	NA	保留	/	Uint16	
	0x616	Safety	W	设置安规	/	Uint16	1
	0x617	CheckingTime	W	设置自检时间	1S	Uint16	1
	0x618	ReConnectionTime	W	设置重连时间	1S	Uint16	1
	0x619	DCILimits	W	设置 DCI 限值	1mA	Uint16	1
	0x61A	VacOvp3rd	W	三级快速过压点	0.1V	Uint16	1
	0x61B	VacUvp3rd	W	三级快速欠压点	0.1V	Uint16	1
	0x61C	VacOvp2nd	W	快速过压点	0.1V	Uint16	1
	0x61D	VacUvp2nd	W	快速欠压点	0.1V	Uint16	1
	0x61E	VacOvp1st	W	慢速过压点	0.1V	Uint16	1
	0x61F	VacUvp1st	W	慢速欠压点	0.1V	Uint16	1
	0x620	FacOfp2nd	W	快速过频点	0.01Hz	Uint16	1
	0x621	FacUfp2nd	W	快速欠频点	0.01Hz	Uint16	1
	0x622	FacOfp1st	W	慢速过频点	0.01Hz	Uint16	1
	0x623	FacUfp1st	W	慢速欠频点	0.01Hz	Uint16	1
	0x624	Grid10MinAvgProtect	W	十分钟过压点	0.1V	Uint16	1
	0x625	VacOvp1stTime	W	一级过压保护时间	10ms	Uint16	1
	0x626	VacOvp2ndTime	W	二级过压保护时间	10ms	Uint16	1
	0x627	VacOvp3rdTime	W	三级过压保护时间	10ms	Uint16	1
	0x628	VacUvp1stTime	W	一级欠压保护时间	10ms	Uint16	1
	0x629	VacUvp2ndTime	W	二级欠压保护时间	10ms	Uint16	1
	0x62A	VacUvp3rdTime	W	三级欠压保护时间	10ms	Uint16	1
	0x62B	FacOfp1stTime	W	一级过频保护时间	10ms	Uint16	1
	0x62C	FacOfp2ndTime	W	二级过频保护时间	10ms	Uint16	1
	0x62D	FacUfp1stTime	W	一级欠频保护时间	10ms	Uint16	1
	0x62E	FacUfp2ndTime	W	二级欠频保护时间	10ms	Uint16	1
	0x62F	QCurve_SetMode	W		/	Uint16	1
	0x630	QCurve_SetPf	W	固定功率因数 80~100	0.01	Uint16	1

	0x631	QCurve_FixQset	W	固定无功设定	1Var	Uint16	1
	0x632	QCurve_CosP_EntryVolt	W	PF(P)使能进入电压	0.1V	Uint16	1
	0x633	QCurve_CosP_ExitVolt	W	PF(P)使能退出电压	0.1V	Uint16	1
	0x634	QCurve_CosP_PowerRatio1	W	Q(u)下的功率因素1	0.1%	Uint16	1
	0x635	QCurve_CosP_PowerRatio2	W	Q(u)下的功率因素2	0.1%	Uint16	1 1
	0x636	QCurve_CosP_Tau3	W	PF(P)无功阶跃响应时间常数设定	1S	Uint16	1
	0x637	QCurve_Qu_GridV1	W	Q(u)下的市电电压值1	0.1V	Uint16	1
	0x638	QCurve_Qu_GridV2	W	Q(u)下的市电电压值2	0.1V	Uint16	1
	0x639	QCurve_Qu_GridV3	W	Q(u)下的市电电压值3	0.1V	Uint16	1
	0x63A	QCurve_Qu_GridV4	W	Q(u)下的市电电压值4	0.1V	Uint16	1
	0x63B	QCurve_Qu_Ratio1	W		0.1%	Uint16	1
	0x63C	QCurve_Qu_Ratio4	W		0.1%	Uint16	1
	0x63D	QCurve_Qu_LockIn	W		0.1%	Uint16	1
	0x63E	QCurve_Qu_LockOut	W		0.1%	Uint16	1
	0x63F	QCurve_Qu_Tau3	W	U)无功阶跃响应时间常设定	1S	Uint16	1
	0x640	GridServicesALLEnable	W	市电服务使能项	见下面结构	Uint16	1
	0x641	Reserved	W	保留	/	Uint16	1
	0x642	PuGridV1	W		0.1V	Uint16	1
	0x643	PuGridV2	W		0.1V	Uint16	1
	0x644	PuGridV3	W		0.1V	Uint16	1
	0x645	PuGridV4	W		0.1V	Uint16	1
	0x646	PuPowerRatio1	W		0.1%	Uint16	1
	0x647	PuPowerRatio2	W		0.1%	Uint16	1
	0x648	PuPowerRatio3	W		0.1%	Uint16	1
	0x649	PuPowerRatio4	W		0.1%	Uint16	1
	0x64A	PuDroop	W		0.1%	Uint16	1
	0x64B	Pu3Tau	W		1S	Uint16	1
	0x64C	RPBF_CurveType	W	过频降载曲线类型选择	/	Uint16	1
	0x64D	RPBF_FreqOverPoint	W	过频降载进入点	0.01Hz	Uint16	1
	0x64E	RPBF_FreqStopPoint	W	过频降载截止点	0.01Hz	Uint16	1
	0x64F	RPBF_FreqOverRecoverPoint	W	过频降载退出点	0.01Hz	Uint16	1

	地址	名称	读写	描述	精度	类型	数量
	0x650	RPBF_FreqOverRamp	W	过频降载退出缓启斜率	0.1%	Uint16	1
	0x651	RPBF_S	W	过频降载 droop 斜率	0.1%	Uint16	1
	0x652	RPBF_EntryDelayTime	W	过频降载进入延时时间	10ms	Uint16	1
	0x653	RPBF_ExitDelayTime	W	过频降载退出延时时间	10ms	Uint16	1
	0x654	IPBF_CurveType	W	欠频降载曲线类型选择	/	Uint16	1
	0x655	IPBF_FreqUnderPoint	W	欠频降载进入点	0.01Hz	Uint16	1
	0x656	IPBF_FreqUnderRecovPoint	W	欠频降载截止点	0.01Hz	Uint16	1
	0x657	IPBF_FreqUnderRamp	W	欠频降载退出缓启斜率	0.1%	Uint16	1
	0x658	IPBF_S	W	欠频降载 droop 斜率	0.1%	Uint16	1
	0x659	IPBF_EntryDelayTime	W	欠频降载进入延时时间	10ms	Uint16	1
	0x65A	IPBF_ExitDelayTime	W	欠频降载退出延时时间	10ms	Uint16	1
	0x65B	RPBF_FreqMaxPoint	W	降载到最小功率对应的频率	0.01Hz	Uint16	1
	0x65C	RPBF_FreqMinPoint	W	加载到最大功率对应的频率	0.01Hz	Uint16	1
	0x65D	SoftStartSlope	W	软件斜率	1=0.01%	Uint16	1
	0x65E	Reserved	NA	保留	0.01	Uint16	1
	0x65F	Reserved	NA	保留	0.01	Uint16	1
	0x660	QCurve.sCosP.f32Pf1	W	功率因数上限值	0.01 80~100	Uint16	1
	0x661	QCurve.sCosP.f32Pf2	W	功率因数下限值	0.01 80~100	Uint16	1
	0x662	QCurve.sCosP.f32Pf3	W	功率因数上限值	0.01 80~100	Uint16	1
	0x663	QCurve.sCosP.f32Pf4	W	功率因数下限值	0.01 80~100	Uint16	1
	0x664	QCurve.sCosP.f32PowerRatio3			0.1%	Uint16	1
	0x665	QCurve.sCosP.f32PowerRatio4			0.1%	Uint16	1
	0x666	Frt_EntryVoltUp	W	高穿进入电压值	0.1V	Uint16	1
	0x667	Frt_EntryVoltDn	W	低穿进入电压值	0.1V	Uint16	1
	0x668	QCurve_Qu_QuLockEnable	W	Q(U)模式 Plock 进入退出使能	/	Uint16	1

				0:Disable 1:Enable			
0x669	SetAcActPower	W	用户设置 AC 有功功率限制值 0~60000	1W	Uint16	1
0x66A	Pv12ConnectionType	W	PV1+PV2 连接类型 0：Multi 1: Comm	/	Uint16	1
0x66B	Pv34ConnectionType	W	PV3+PV4 连接类型 0：Multi 1: Comm	/	Uint16	1
0x66C	ExportDevice	W	0:Disable 1:Meter 2:CT	/	Uint16	1
0x66D	ExportCheck.Enable.All	W	澳规并网口功率保护使能开关	Bit0: export soft Bit1: export hard Bit2: generation soft Bit3: generation hard	Uint16	1
0x66E	ExpAppPower	W	澳规 generation control limit 视在功率限值 软限制	1VA	Uint16	1
0x66F	ExportPowerHard	W	澳规 export control limit 功率限值 硬限制	1VA	Uint16	1
0x670	ExpAppPowerHard	W	澳规 generation control limit 视在功率限值 硬限制	1VA	Uint16	1
0x671	SoftStart.ReconSlope	W	重连缓起斜率		Uint16	1

	0x672	Observation Time	W	上电观测时间 1~600S	1S	Uint16	1
	0x673	ReObservationTime	W	重连观测时间 1~600S	1S	Uint16	1
	0x674	Vac.StartLo	W	开机启动电压下限 46~300V	0.1V	Uint16	1
	0x675	Vac.StartUp	W	开机启动电压上限 46~300V	0.1V	Uint16	1
	0x676	Fac.f32StartLo	W	开机启动频率下限	0.01Hz	Uint16	1
	0x677	Fac.f32StartUp	W	开机启动频率上限	0.01hZ	Uint16	1
	0x678	Vac.f32UvpRecover	W	重连电压恢复下限 46~300	0.1V	Uint16	1
	0x679	Vac.f32OvpRecover	W	重连电压恢复上限 46~300	0.1V	Uint16	1
	0x67A	Fac.f32UfpRecover	W	重连频率恢复下限	0.01Hz	Uint16	1
	0x67B	Fac.f32OfpRecover	W	重连频率恢复上限	0.01Hz	Uint16	1
	0x67C	SoftStart.u16FirstEn	W	上电缓起使能	0:Disable 1:Enable	Uint8	1
	0x67D	SoftStart.ProtectEn	W	报错缓起使能	0:Disable 1:Enable	Uint8	1
	0x67E	VacOvp3rdTime	W	三级过压保护时间	1s	Uint16	1
	0x67F	VacUvp3rdTime	W	三级欠压保护时间	1s	Uint16	1
	0x680	RTDB.bparallelRamp	W	并机 2030.5 斜率标志	0:Dsiabale 1: Enable	Uint16	1
	0x681	Reserved	NA	Reserved	/	Uint16	1
	0x682	Reserved	NA	Reserved	/	Uint16	1
	0x683	Reserved	NA	Reserved	/	Uint16	1
	0x684	Reserved	NA	Reserved	/	Uint16	1
	0x685	Reserved	NA	Reserved	/	Uint16	1
	0x686	Reserved	NA	Reserved	/	Uint16	1
	0x687	Reserved	NA	Reserved	/	Uint16	1
	0x688	Reserved	NA	Reserved	/	Uint16	1
	0x689	Reserved	NA	Reserved	/	Uint16	1

	0x68A	Reserved	NA	Reserved	/	Uint16	1
	0x68B	Reserved	NA	Reserved	/	Uint16	1
	0x68C	Reserved	NA	Reserved	/	Uint16	1
	0x68D	Reserved	NA	Reserved	/	Uint16	1
	0x68F	AgeingEnableFlag	W	1:Enable 0:Null	1	Uint16	1
	0x690	RemoteControlSwitch	W	0: 关机 1: 开机	0~1	Uint16	1
	0x691	Clean Yield History	W	Clear energy and error record	0~1	Uint16	1
	0x692	EEPROM Load Default Value	W	Restore dsp eeprom	0~1	Uint16	1
	0x693	Select Language	W	Select Language 0：English—英语 1：German—德语 2：Polish—波兰语 3：Franch—法语 4：Portugue—葡萄牙语 5：Chinese—中文 6：Spanish—西班牙语 7:Italian—意大利语 8:Dutch—荷兰语 9：Nemcina--捷克	0~8	Uint16	1
	0x694	CT Calibration Enable(ARM 采样的零漂基准值)	W	1:CT calibration 0: Not Calibration	0~1	Uint16	1
	0x695	Support X1-BOOST G3 agreement	W	1:Support 0:Not Support	0~1	Uint16	1
	0x696	CT Calibration Enable(DSP 采样的零漂基准值)	W	1:CT calibration 0: Not Calibration	0~1	Uint16	1
	0x697	CT Calibration Power	W	0~65535	W	Uint16	1
	0x698	ParallelEnable	W	1:Enable 0:Disable	0~1	Uint16	1
	0x699	EvChargerEnable	W	1:Enable 0:Disable	0~1	Uint16	1
	0x69A	ATEModeEnable	W	1:Enable 0:Disable	0~1	Uint16	1
	0x69B	ExternalSignal		0:宽频 1:窄频	0~1	Uint16	1
	0x69C	LocalCommand		0:宽频 1:窄频	0~1	Uint16	1

	0x69D	ExternalFailed		1：丢失	1	Uint16	1
	0x69E	Makers	w	0：SOLAX 1：HOWD（印度 ODM)		Uint16	1
	0x69F	wLeaseMode	w	1：打开 0：关闭	0~1	Uint16	1
	0x6A0	wArcEnable	w	1:Enable 0:Disable	0~1	Uint16	1
	0x6A1	wArcClear	w	1:Enable 0:Disable	0~1	Uint16	1
	0X6A2	wArcSelfCheck	w	1:Enable 0:Disable	0~1	Uint16	1
	0x6A3	wArcThreshold	w	ArcThreshold	0~4	Uint16	1
	0x6A4	wBiasMode	w	0:Disable INV:打开		Uint16	1
	0x6A5	WBiasValue	w	bBiasValue	40~100	Uint16	1
	0x6A6	wATEDRYCtrl	w	ATE 控制干接点输出，设备不保存断电恢复 0:不输出 1:输出	0~1	Uint16	1
	0x6A7	ARC_ST	w	BB:Enable ST 方案 0：Disable ST 方案		Uint16	1
	0x6A8	ARC_ATE 拉弧 ATE 检测指令	w	0：DIsabel 1：Enable		Uint16	1
	0x6A9	PowerLimit_Special	w	有功输出百分比限制（特殊处理不存 EEPROM）	0~110	uint16	1
	0x6AA	Pfvalue_Special	w	固定 PF 设置（特殊处理不存 EEPROM）	0~100	uint16	1
	0x6AB	ReactiveMode_Special	w	无功模式选择（特殊处理不存 EEPROM）	0~6	uint16	1
	0x6AC	FixQ_Special	w	固定无功设置（特殊处理不存 EEPROM）	\	int16	1
	0x6AD~0x730	Reserved	NA	Reserved	/	Uint16	1
以下是 FCT 操作的寄存器							
FCT	0x731	DSP I/O OUT	W	Open DSP I/O Output(see Table 1)	/	Uint16	1
	0x732	ARM I/O OUT	W	打开 RY_OUT_ON 打开运行灯、指示灯 打开 LCD 端口 1:ON 0:OFF	/	Uint16	1

	0x733	DspSampleStart	W	Notify DSP start sample 1:StartSample 0:Null	/	Uint16	1
	0x734	Test Mode	W	1：让 ARM 进入测试模式不要刷屏 0：正常模式		Uint16	1
	0x735						
	0x736						
	0x737						
	0x738						
	0x739						
	0x73A						
	0x73B						
	0x73C						
	0x73D						
	0x73E						
	0x73F						
	0x740						
	0x741						

Table 1:
(1) DSP I/O Output

BIT15	RESERVED	
BIT14	S_RELAY_N	
BIT13	S_RELAY_L	
BIT12	M_RELAY_N	
BIT11	M_RELAY_L	
BIT10	FAN_ON	
BIT09	GFCI_50MA_TEST	
BIT08	SPS_OFF	
BIT07	ISO_RY2	
BIT06	ISO_RY1	
BIT05	BOOST2_PWM	
BIT04	BOOST1_PWM	
BIT03	INV_PWM2B	
BIT02	INV_PWM1B	
BIT01	INV_PWM2A	
BIT00	INV_PWM1A	

```
typedef union GridServicesEnable_t
{
    uint16_t ALL;
    struct
```

```
{
    uint8_t BYTE0:8;
    uint8_t BYTE1:8;
} BYTE;
struct
{
    //BYTE0
    uint8_t bSoftStart:1;
    uint8_t bVac10Min:1;
    uint8_t bFacRocof:1;      //频率变化比
    uint8_t bRPBF:1;          //过频降载
    uint8_t bIPBF:1;          //欠频升载
    uint8_t bPu:1;
    uint8_t bQu:1;
    uint8_t bPf:1;
    //BYTE1
    uint8_t bDcInj:1;
    uint8_t bVrt:1;
    uint8_t bDRM:1;
    uint8_t bSelfTest:1;
    uint8_t BIT012:1;
    uint8_t BIT013:1;
    uint8_t BIT014:1;
    uint8_t BIT015:1;
} BIT;
}GridServicesEnable_t;
```

Attention:

Write the correct password to this register(0x600) and the inverter will unlock the write command. Write a incorrect password to this register(0x600) and the inverter will lock the write command again. All the writeable register except 0x600 are unusable when the system is locked.

Example:

```
QUERY

Field Name                          Example
                                    (Hex)

Slave Address                       11
Function                            06
Register Address Hi                 00
Register Address Lo                 01
Preset Data Hi                      00
Preset Data Lo                      03
Error Check (LRC or CRC)            —
```

```
RESPONSE

Field Name                          Example
                                    (Hex)

Slave Address                       11
Function                            06
Register Address Hi                 00
Register Address Lo                 01
Preset Data Hi                      00
Preset Data Lo                      03
Error Check (LRC or CRC)            —
```

Detail:

```
/*Safety definition*/
#define   cVDE0126                      0 //德国0126安规
#define   cARN4105                      1 //德国4105安规
#define   cAS4777_A                     2 //澳规A
#define   cG98                          3 //英国-3.0K~3.7K
#define   cEN50549_C10_11               4 //50549-比利时
#define   cE8001                        5 //奥地利
#define   cEN50438_Netherlands          6 //荷兰
#define   cEN50438_Denmark2019_W        7 //西丹麦
#define   cCEB                          8
#define   cCEI0_21                      9 //意大利
#define   cNRS097_South_Africa         10 //南非
#define   cVDE0126_Greece_Island       11
#define   cFrance_Mainland             12 //法国本土
#define   cIEC61727_In                 13 //印度
#define   cG99                         14 //英国-5.0K~7.5K
#define   cVDE0126_Greece_Continent    15
#define   cFrance_Guyana_50Hz          16 //法属岛屿圭亚那50Hz
#define   cFrance_Island_50Hz          17 //法国岛屿50Hz
#define   cFrance_Island_60Hz          18 //法国岛屿60Hz
#define   cAS4777_NZ                   19 //澳规-新西兰
#define   cRD1699                      20 //西班牙
#define   cChile                       21 //智利
#define   cEN50438_Ireland             22
#define   cG98_Philippines             23
```

```
#define    cEN50549_Czech_PPDS          24//50549-捷克
#define    cEN50438_Czech               25
#define    cEN50549_EU                  26//50549-欧盟通用
#define    cEN50438_Denmark2019_E       27//东丹麦
#define    cRD1699_Island               28//西班牙岛屿
#define    cEN50549_Poland              29//50549-波兰
#define    cMEA_Thailand                30//泰国京都电力公司认证，主管曼谷
地区电力
#define    cPEA_Thailand                31//泰国地方电力公司认证，主管曼谷
之外电力
#define    cCEI0_21_ACEA                32
#define    cAS4777_B                    33//澳规B
#define    cAS4777_C                    34//澳规C

#define    cUser_Defined                35//用户自定义安规

#define    cCEI0_16                     36//意大利016
#define    cIEC61727                    37//
```

PvConnectionMode:
0: Multi-String
1: Comm-String

RemoteControl:
0:Stop
1:Start

Write multiple register

Function Code	Register	Name	R/W	Detail	Unit	Type	Length
0x10 (WRITE_MULTIPLE_REGISTER)	0x00-0x0FFA	Reserved	NA	System Reserved	NA	NA	NA
	0x0FFB-0x0FFF	Reserved	W	10 Chars	/	Uint 16	5
	0x1000-0x1006	Reserved	W	14 Chars,MSB=SN[14]	/	Uint 16	7
	0x1007-0x100D	Reserved	W	14 Chars,MSB=Factory Name[14]	/	Uint 16	7
	0x100E-0x1014	Reserved	W	14 Chars,MSB=ModuleName[14]	/	Uint 16	7

	0x1015	RTC-Second	W	RTC-Second	/	Uint 16	1
	0x1016	RTC-Minute	W	RTC-Minute	/	Uint 16	1
	0x1017	RTC-Hour	W	RTC-Hour	/	Uint 16	1
	0x1018	RTC-Day	W	RTC-Day	/	Uint 16	1
	0x1019	RTC-Month	W	RTC-Month	/	Uint 16	1
	0x101A	RTC-Year	W	RTC-Year	/	Uint 16	1
	0x101B	Reserved	W	Reserved	1	Uint 16	1
	0x101C	Reserved	W	Reserved	0.01	Uint 16	1
	0x101D	Reserved	W	Reserved	0.01	Uint 16	1
	0x101E	Reserved	W	Reserved	0.01	Uint 16	1
	0x101F	Reserved	W	Reserved	0.1	Uint 16	1
	0x1020	Reserved	W	Reserved	0.1	Uint 16	1
	0x1021-0x1029	ODM SN	W	16 Chars,MSB=SN[16]	/	Uint 16	8
	0x1800~0x1801	DataLoggerPowerRatioLimit	W	DataLogger set PowerRatio Limit	0.001% 10000=100%	Uint 32	2
	0x1810-0x1811	SystemExportPower	W	系统控功率值	1W	Uint 32	2
	0x1812-0x1813	ParallelPower	W	系统并机功率	1W	Uint 32	2
	0x1814	ParallelNum	W	并机总数量	0~5	Uint 16	1
	0x1815	ParallelMachinePower	W	总并机机型额定功率	1W	Uint 16	1
	0x1816-0x1817	actpower_R	W	R 相有功功率	1W	Uint 32	2
	0x1818-0x1819	actpower_S	W	S 相有功功率	1W	Uint 32	2

	0x181A-0x181B	actpower_T	W	T 相有功功率	1W	Uint 32	2
	0x181C	ParallelNum_R	W	R 相并机数量	0~5	Uint 16	1
	0x181D	ParallelNum_S	W	S 相并机数量	0~5	Uint 16	1
	0x181E	ParallelNum_T	W	T 相并机数量	0~5	Uint 16	1
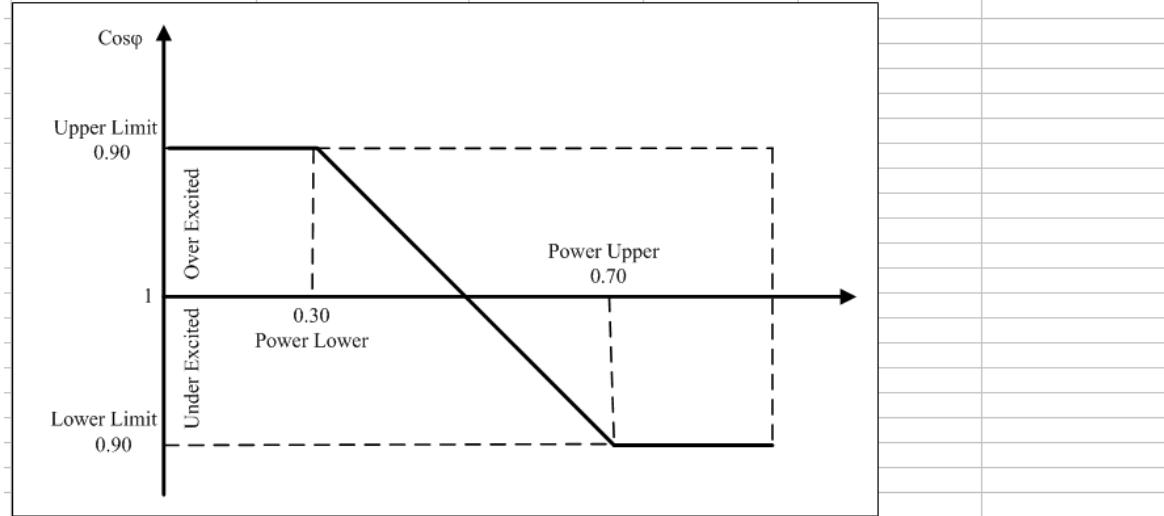
Example:

```
QUERY
                              Example
Field Name                    (Hex)
Slave Address                 11
Function                      10
Starting Address Hi           00
Starting Address Lo           01
No. of Registers Hi           00
No. of Registers Lo           02
Byte Count                    04
Data Hi                       00
Data Lo                       0A
Data Hi                       01
Data Lo                       02
Error Check (LRC or CRC)      —
```

```
PESPONSE
                              Example
Field Name                    (Hex)

Slave Address                 11
Function                      10
Starting Address Hi           00
Starting Address Lo           01
No. of Registers Hi           00
No. of Registers Lo           02
Error Check (LRC or CRC)      —
```

Detail of power factor setting:

PowerFactorP1	PowerFactorP2	PowerFactorP3	PowerFactorP4	PowerFactorP5	PowerFactorP6
byte1	byte2	byte3	byte4	byte5	byte6
1(Over excited mode)	PowerFactor value	upper limit	power lower	Power Upper	lower limit
2(Under excited mode)	PowerFactor value	upper limit	power lower	Power Upper	lower limit
3(curve mode)	PowerFactor value	upper limit	power lower	Power Upper	lower limit

3. Calc CheckSum

Uint16 sGetCrc16(Uint8 *pData, Uint16 wDataLenth)

{

    static const Uint16 wCRCTable[] = {

    0X0000, 0XC0C1, 0XC181, 0X0140, 0XC301, 0X03C0, 0X0280, 0XC241,

    0XC601, 0X06C0, 0X0780, 0XC741, 0X0500, 0XC5C1, 0XC481, 0X0440,

0XCC01, 0X0CC0, 0X0D80, 0XCD41, 0X0F00, 0XCFC1, 0XCE81, 0X0E40,
0X0A00, 0XCAC1, 0XCB81, 0X0B40, 0XC901, 0X09C0, 0X0880, 0XC841,
0XD801, 0X18C0, 0X1980, 0XD941, 0X1B00, 0XDBC1, 0XDA81, 0X1A40,
0X1E00, 0XDEC1, 0XDF81, 0X1F40, 0XDD01, 0X1DC0, 0X1C80, 0XDC41,
0X1400, 0XD4C1, 0XD581, 0X1540, 0XD701, 0X17C0, 0X1680, 0XD641,
0XD201, 0X12C0, 0X1380, 0XD341, 0X1100, 0XD1C1, 0XD081, 0X1040,
0XF001, 0X30C0, 0X3180, 0XF141, 0X3300, 0XF3C1, 0XF281, 0X3240,
0X3600, 0XF6C1, 0XF781, 0X3740, 0XF501, 0X35C0, 0X3480, 0XF441,
0X3C00, 0XFCC1, 0XFD81, 0X3D40, 0XFF01, 0X3FC0, 0X3E80, 0XFE41,
0XFA01, 0X3AC0, 0X3B80, 0XFB41, 0X3900, 0XF9C1, 0XF881, 0X3840,
0X2800, 0XE8C1, 0XE981, 0X2940, 0XEB01, 0X2BC0, 0X2A80, 0XEA41,
0XEE01, 0X2EC0, 0X2F80, 0XEF41, 0X2D00, 0XEDC1, 0XEC81, 0X2C40,
0XE401, 0X24C0, 0X2580, 0XE541, 0X2700, 0XE7C1, 0XE681, 0X2640,
0X2200, 0XE2C1, 0XE381, 0X2340, 0XE101, 0X21C0, 0X2080, 0XE041,
0XA001, 0X60C0, 0X6180, 0XA141, 0X6300, 0XA3C1, 0XA281, 0X6240,
0X6600, 0XA6C1, 0XA781, 0X6740, 0XA501, 0X65C0, 0X6480, 0XA441,
0X6C00, 0XACC1, 0XAD81, 0X6D40, 0XAF01, 0X6FC0, 0X6E80, 0XAE41,
0XAA01, 0X6AC0, 0X6B80, 0XAB41, 0X6900, 0XA9C1, 0XA881, 0X6840,
0X7800, 0XB8C1, 0XB981, 0X7940, 0XBB01, 0X7BC0, 0X7A80, 0XBA41,
0XBE01, 0X7EC0, 0X7F80, 0XBF41, 0X7D00, 0XBDC1, 0XBC81, 0X7C40,
0XB401, 0X74C0, 0X7580, 0XB541, 0X7700, 0XB7C1, 0XB681, 0X7640,
0X7200, 0XB2C1, 0XB381, 0X7340, 0XB101, 0X71C0, 0X7080, 0XB041,
0X5000, 0X90C1, 0X9181, 0X5140, 0X9301, 0X53C0, 0X5280, 0X9241,
0X9601, 0X56C0, 0X5780, 0X9741, 0X5500, 0X95C1, 0X9481, 0X5440,
0X9C01, 0X5CC0, 0X5D80, 0X9D41, 0X5F00, 0X9FC1, 0X9E81, 0X5E40,
0X5A00, 0X9AC1, 0X9B81, 0X5B40, 0X9901, 0X59C0, 0X5880, 0X9841,
0X8801, 0X48C0, 0X4980, 0X8941, 0X4B00, 0X8BC1, 0X8A81, 0X4A40,
0X4E00, 0X8EC1, 0X8F81, 0X4F40, 0X8D01, 0X4DC0, 0X4C80, 0X8C41,
0X4400, 0X84C1, 0X8581, 0X4540, 0X8701, 0X47C0, 0X4680, 0X8641,
0X8201, 0X42C0, 0X4380, 0X8341, 0X4100, 0X81C1, 0X8081, 0X4040 };

```
    Uint8 nTemp;
    Uint16 wCRCWord = 0xFFFF;

    while(wDataLenth --)
    {
        nTemp = *pData++ ^ wCRCWord;
        wCRCWord >>= 8;
        wCRCWord   ^= wCRCTable[nTemp];
    }
    return wCRCWord;


} // End: CRC16
```