X90 Modbus Protocol

Item	Time	content	editor
1	2021/07/06	Add addr 910 support “Setting each module interval time when system mode transfer”.	Huangyong
2	2021/07/08	FW version addr change to 1368	Hungyong

Protocol in X90-2S

1. Warning item

Hex	Dec	Size	Content	Bit value	type
0x0000	0	bit15	bit15 = EPO is Active		
		bit14	bit14 = Load is over load level and reach countdown delay		
		bit13	bit13= CAN bus is abnormal	0:FALSE/1:TRUE	Read only
		bit12	bit12= Load level is over Overload Alarm Level	0:FALSE/1:TRUE	Read only
		bit11	bit11= Battery is not connected. (Battery voltage is less than 9V)	0:FALSE/1:TRUE	Read only
		bit10	bit10 = Battery is over 15V		
		bit9	bit9 = Module is not locked		
		bit8	bit8 = Including: EPO is active, Maintain Bypass is active, DC start, But DC start setting is disable Line Status is not OK. (Voltage or Frequency is out of range, Phase sequence is not correct, Neutral Loss) SYNCHRO signal is abnormal TRIG0 signal is abnormal		
		bit7	bit7 = Charger is abnormal		
		bit6	bit6 = Checksum value of Eeprom Data saved in MCU is not correct		
		bit5	bit5 = Fan Locked		
		bit4	bit4 = Line Phase sequence is not correct		
		bit3	bit3 = Bypass Phase sequence is not correct		
		bit2	bit2 = Neutral is absent		
		bit1	bit1 = Initial communication between DSP & MCU is abnormal		
		bit0	bit0 = SYNCHRO signal is abnormal		
0x0001	1	bit15	bit15 = TRIG0 signal is abnormal		
		bit14	bit14 = Power Module number is not consistent with setting		
		bit13	bit13 = No STS in system		
		bit12	bit12 = Maintain Bypass is active		
		Bit11	Bit11 =		
			bit10- bit0 = Reservation		
0x0002	2	bit15	bit15-bit7 = Reservation		
		bit6	bit6 = Reservation		
		bit5	bit5 = Reservation		

		bit4	bit4 = Reservation		
		bit3	bit3 = Reservation		R
		bit2	bit2=Alarm:P1 cut off pre-alarm	0:FALSE/1:TRUE	Read only
		bit1	bit1 = Reservation		
		bit0	bit0=Alarm:Battery open	0:FALSE/1:TRUE	Read only
0x0003	3	bit15	bit15 = Reservation		
		bit14	bit14=Alarm:IP site fail	0:FALSE/1:TRUE	Read only
		bit13	bit13=Alarm:Battery over charge	0:FALSE/1:TRUE	Read only
		bit12	bit12=Alarm:Overload warning	0:FALSE/1:TRUE	Read only
		bit11	bit11=Alarm:Fan lock warning	0:FALSE/1:TRUE	Read only
		bit10	bit10=Alarm:EPO active	0:FALSE/1:TRUE	Read only
		bit9	bit9 = Reservation		
		bit8	bit8=Alarm:Over temperature	0:FALSE/1:TRUE	Read only
		Bit7	bit7-bit0 = Reservation		

2. Capability setting（look for Application example 1）

Hex	Dec	Size	Content	Bit value	Register value	type
0x00 0E	14	bit15	bit15=Enable/disable audible alarm	0:FALSE/1:TRUE	E:8000/D:7FFF	Write only
		bit14	bit14=Enable/disable battery mode audible warning	0:FALSE/1:TRUE	E:4000/D:BFFF	Write only
		bit13	bit13=Enable/disable battery open status check	0:FALSE/1:TRUE	E:2000/D:DFFF	Write only
		bit12	bit12=Enable/disable Site fault detect	0:FALSE/1:TRUE	E:1000/D:EFFF	Write only
		bit11	bit11=Set hot standby master/slave, PEM means master, PD	0:FALSE/1:TRUE	E:800/D:F7FF	Write only
		bit10	bit10=Enable/disable auto-Restart.	0:FALSE/1:TRUE	E:400/D:FBFF	Write only
		bit9	bit9=Enable/disable battery deep discharge protect	0:FALSE/1:TRUE	E:200/D:FDFF	Write only
		bit8	bit8=Enable/disable battery low protect	0:FALSE/1:TRUE	E:100/D:FEFF	Write only
		bit7	bit7=Enable/disable code start	0:FALSE/1:TRUE	E:80/D:FF7F	Write only
		bit6	bit6=Enable/disable bypass forbidding	0:FALSE/1:TRUE	E:40/D:FFBF	Write only
		bit5	bit5=Enable/disable short restart 3 times	0:FALSE/1:TRUE	E:20/D:FFDF	Write only
		bit4	bit4=Enable/disable inverter short clear function	0:FALSE/1:TRUE	E:10/D:FFEF	Write only
		bit3	bit3=Enable/disable bypass when	0:FALSE/1:TRUE	E:8/D:FFF7	Write only

			device turn off.			
		bit2	bit2=Enable/disable bypass audible warning	0:FALSE/1:TRUE	E:4/D:FFFB	Write only
		bit1	bit1=Enable/disable high efficiency mode	0:FALSE/1:TRUE	E:2/D:FFFD	Write only
		bit0	bit0=Enable/disable energy saving		E:1/D:FFFE	Write only
0x000F	15	bit15	bit15=Enable/disable Output socket1 when the delay release	0:FALSE/1:TRUE	E:8000/D:7FFF	Write only
		bit14	bit14=Enable/disable Output socket2 when the delay release	0:FALSE/1:TRUE	E:4000/D:BFFF	Write only
		bit13	bit13=Enable/disable deep high efficiency mode	0:FALSE/1:TRUE	E:2000/D:DFFF	Write only
		bit12	bit12=Enable/disable converter mode	0:FALSE/1:TRUE	E:1000/D:EFFF	Write only
			Bit11-bit10 = Reservation			
		Bit7	Bit7 = Enable/disable period self test Z	0:FALSE/1:TRUE	E:80/D:FF7F	Write only
		Bit6	Bit6 = Enable/disable limited runtime on battery mode,	0:FALSE/1:TRUE	E:40/D:FFBF	Write only
			bit0 - b11 =Reservation			

3. Support Capability list

Hex	Dec	Size	Content	Bit value	Type
0x0010	16	bit15	Support: Enable/disable audible alarm	0:FALSE/1:TRUE	Read Only
		bit14	Support: Enable/disable battery mode audible warning	0:FALSE/1:TRUE	Read Only
		bit13	Support: Enable/disable battery open status check	0:FALSE/1:TRUE	Read Only
		bit12	Support: Enable/disable Site fault detect	0:FALSE/1:TRUE	Read Only
		bit11	Support: Set hot standby master/slave, PEM means master, PD	0:FALSE/1:TRUE	Read Only
		bit10	Support: Enable/disable auto-Restart.	0:FALSE/1:TRUE	Read Only
		bit9	Support: Enable/disable battery deep discharge protect	0:FALSE/1:TRUE	Read Only
		bit8	Support: Enable/disable battery low protect	0:FALSE/1:TRUE	Read Only
		bit7	Support: Enable/disable code start	0:FALSE/1:TRUE	Read Only
		bit6	Support: Enable/disable bypass forbidding	0:FALSE/1:TRUE	Read Only
		bit5	Support: Enable/disable short restart 3 times	0:FALSE/1:TRUE	Read Only
		bit4	Support: Enable/disable inverter short	0:FALSE/1:TRUE	Read Only

			clear function		
		bit3	Support: Enable/disable bypass when device turn off.	0:FALSE/1:TRUE	Read Only
		bit2	Support: Enable/disable bypass audible warning	0:FALSE/1:TRUE	Read Only
		bit1	Support: Enable/disable high efficiency mode	0:FALSE/1:TRUE	Read Only
		bit0	Support: Enable/disable energy saving	0:FALSE/1:TRUE	Read Only
0x0011	17	bit15	Support: Enable/disable Output socket1 when the delay release	0:FALSE/1:TRUE	Read Only
		bit14	Support: Enable/disable Output socket2 when the delay release	0:FALSE/1:TRUE	Read Only
		bit13	Support: Enable/disable deep high efficiency mode	0:FALSE/1:TRUE	Read Only
		bit12	Support: Enable/disable converter mode	0:FALSE/1:TRUE	Read Only
			bit0 - bit11 =Reservation		
		Bit7	Bit7 = Enable/disable period self test Z	0:FALSE/1:TRUE	Read Only
		Bit6	Bit6 = Enable/disable limited runtime on battery mode,	0:FALSE/1:TRUE	Read Only

4. Control item（look for Application example 2）

Hex	Dec	Size	Content	Bit value	Register value	Type
0x001A	26	bit15	bit15=Silence buzzer beep	0:FALSE/1:TRUE	Y:8000/N:7FFF	Write only
		bit14	bit14=buzzer beep open	0:FALSE/1:TRUE	Y:4000/N:BFFF	Write only
		bit13	bit13=Test until battery low	0:FALSE/1:TRUE	Y:2000/N:DFFF	Write only
		bit12	bit12=Remote turn off UPS	0:FALSE/1:TRUE	Y:1000/N:EFFF	Write only
		bit11	bit11=Remote turn on UPS	0:FALSE/1:TRUE	Y:800/N:F7FF	Write only
		bit10	bit10=Cancel shutdown	0:FALSE/1:TRUE	Y:400/N:FBFF	Write only
		bit9	bit9=Cancel test	0:FALSE/1:TRUE	Y:200/N:FDFF	Write only
		bit8	bit8=10 seconds test	0:FALSE/1:TRUE	Y:100/N:FEFF	Write only
		bit7	bit7= Reservation			
		bit6	bit6 = Reservation			
		bit5	bit5= Reservation			
		bit4	bit4 = Reservation			
			b3-b0 = Reservation			
0x001B	27		b15-b11 = Reservation			
		Bit10	UPS turn to bypass	0:FALSE/1:TRUE	Y:0400/N:FFFB	Write only

0x0422	1058	Bit15	EPO function open	0:FALSE/1:TRUE	Y:8000/N:7FFF	Write only
		Bit14	EPO function close	0:FALSE/1:TRUE	Y:4000/N:BFFF	Write only
		Bit13	modeoutputfrequency 50Hz	0:FALSE/1:TRUE	Y:2000/N:DFFF	Write only
		Bit12	mode output frequency 60Hz	0:FALSE/1:TRUE	Y:1000/N:EFFF	Write only
		Bit11	charger On	0:FALSE/1:TRUE	Y:0800/N:F7FF	Write only
		Bit10	charger Off	0:FALSE/1:TRUE	Y:0400/N:FBFF	Write only
		Bit9	Enable independent battery	0:FALSE/1:TRUE	Y:0200/N:F7FF	Write only
		Bit8	Disable independent battery	0:FALSE/1:TRUE	Y:0100/N:FBFF	Write only
		Bit7	Select rack1	0:FALSE/1:TRUE	Y:0080/N:F7FF	Write only
		Bit6	Select rack2	0:FALSE/1:TRUE	Y:00400/N:FBFF	Write only

5. The result of control

Hex	Dec	Size	Content	Bit value	Type
0x0025	37	bit15	bit15=Flag:Silence buzzer beep	0:FAIL/1:SUCCESS	Read Only
		bit14	bit14=Flag:buzzer beep open	0:FAIL/1:SUCCESS	Read Only
		bit13	bit13=Flag:Test until battery low	0:FAIL/1:SUCCESS	Read Only
		bit12	bit12=Flag:Remote turn off UPS	0:FAIL/1:SUCCESS	Read Only
		bit11	bit11=Flag:Remote turn on UPS	0:FAIL/1:SUCCESS	Read Only
		bit10	bit10=Flag:Cancel shutdown	0:FAIL/1:SUCCESS	Read Only
		bit9	bit9=Flag:Cancel test	0:FAIL/1:SUCCESS	Read Only
		bit8	bit8=Flag:10 seconds test	0:FAIL/1:SUCCESS	Read Only
		bit7	bit7= Reservation	0:FAIL/1:SUCCESS	Read Only
		bit6	bit6 = Reservation	0:FAIL/1:SUCCESS	Read Only
		bit5	bit5= Reservation	0:FAIL/1:SUCCESS	Read Only
		bit4	bit4 = Reservation	0:FAIL/1:SUCCESS	Read Only
			b3-b0 = Reservation	0:FAIL/2:SUCCESS	Read Only
Hex	Dec	Size	Content	Bit value	Type
0x0026	38		b15-b12 = Reservation	0:FAIL/1:SUCCESS	Read Only
		Bit10	Bit10 = UPS turn to bypass	0:FAIL/1:SUCCESS	Read Only
			B9-b0 = Reservation	0:FAIL/2:SUCCESS	Read Only
0x0423	1059	Bit15	EPO function in normal open	0:FAIL/1:SUCCESS	Read Only
		Bit14	EPO function in normal close.	0:FAIL/1:SUCCESS	Read Only
		Bit13	mode output frequency 50	0:FAIL/1:SUCCESS	Read only
		Bit12	mode output frequency 60	0:FAIL/1:SUCCESS	Read only
		Bit11	charger On	0:FAIL/1:SUCCESS	Read only
		Bit10	charger Off	0:FAIL/1:SUCCESS	Read only
		Bit9	Enable independent battery	0:FAIL/1:SUCCESS	Read only
		Bit8	Disable independent battery	0:FAIL/1:SUCCESS	Read only
		Bit7	Select rack1	0:FAIL/1:SUCCESS	Read only

		Bit6	Select rack2	0:FAIL/1:SUCCESS	Read only

6. Setting Parameter to default value

Hex	Dec	Size	Content	Bit value	Type
0x0030	48	bit15	bit15=Seting control parameter to default value	0:FAIL/1:SUCCESS	Read/Write
			b14-b0 = Reservation		
0x003B	59	bit15	bit15=Flag:Seting control parameter to default value	0:FAIL/1:SUCCESS	Read Only
			b14-b0 = Reservation		

7. UPS working status

Hex	Dec	Size	Content	units	Type
0x031E	798	1	R Input voltage	0.1V	ReadOnly
0x031F	799	1	S Input voltage	0.1V	ReadOnly
0x0320	800	1	T Input voltage	0.1V	ReadOnly
0x0321	801	1	Input frequency	0.1Hz	ReadOnly
0x0322	802	1	R Output voltage	0.1V	ReadOnly
0x0323	803	1	S Output voltage	0.1V	ReadOnly
0x0324	804	1	T Output voltage	0.1V	ReadOnly
0x0325	805	1	Output frequency	0.1Hz	ReadOnly
0x0326	806	1	R Output current	0.1A	ReadOnly
0x0327	807	1	S Output current	0.1A	ReadOnly
0x0328	808	1	T Output current	0.1A	ReadOnly
0x0329	809	1	R Output load percent	1%	ReadOnly
0x032A	810	1	S Output load percent	1%	ReadOnly
0x032B	811	1	T Output load percent	1%	ReadOnly
0x032C	812	1	P Battery voltage	0.1V	ReadOnly
0x032D	813	1	N Battery voltage	0.1V	ReadOnly
0x032E	814	1	Max Temperature of the detecting pointers	0.1C	ReadOnly
0x032F	815	1	Note1	Note1	ReadOnly

8. UPS battery information (sys or rack info inquiry addr)

0x00BC	188	1	P Battery voltage	0.1V	ReadOnly
0x00BD	189	1	P Battery piece number		Read/write
0x00BE	190	1	P Battery nominal capacity(Ah)	Ah	Read/Write
0x00BF	191	1	P Battery capacity	%	ReadOnly
0x00C0	192	1	P Battery remain time	minutes	ReadOnly

0x00C1	193	1	N Battery voltage	0.1V	ReadOnly
0x00C2	194	1	N Battery piece number		ReadOnly
0x00C3	195	1	N Battery nominal capacity(Ah)	Ah	Read/Write
0x00C4	196	1	N Battery capacity	%	ReadOnly
0x00C5	197	1	N Battery remain time	minutes	ReadOnly
0x0318	792	1	P Battery charge current	0.1A	ReadOnly
0x0319	793	1	N Battery charge current	0.1A	ReadOnly
0x0307	775	1	The battery Total AH information Inquiry	AH	ReadOnly
0x0308	776	1	EPO status QREPO	8000: open/ 7FFF: close	ReadOnly

9.The temperature inquiry

0x00CC	204	1	temperature1	℃	Read only
0x00CD	205	1	Temperature2	℃	Read only
0x00CE	206	1	Temperature3	℃	Read only
0x00CF	207	1	Temperature4	℃	Read only

10. The three phase load inquiry

0x00DD	221	1	R phase of load	0.1%	Read only
0x00FC	252	1	S phase of load	0.1%	Read only
0x00FD	253	1	T phase of load	0.1%	Read only
0x00FE	254	1	The whole load	0.1%	Read only

11. The bypass three phase info

0x011A	282	1	R voltage of bypass	0.1V	Read only
0x011B	283	1	S voltage of bypass	0.1V	Read only
0x011C	284	1	T voltage of bypass	0.1V	Read only
0x011D	285	1	R current of bypass	0.1A	Read only
0x011E	286	1	S current of bypass	0.1A	Read only
0x011F	287	1	T current of bypass	0.1A	Read only
0x0123	291	1	frequency of bypass	0.1Hz	Read only

12. The output power factor inquiry

0x030F	783	1	R output power factor		Read only
0x0310	784	1	S output power factor		Read only
0x0311	785	1	T output power factor		Read only

13. Load level inquiry

0x0312	786	1	R Watt percent	%	Read only

0x0313	787	1	S Watt percent	%	Read only
0x0314	788	1	T Watt percent	%	Read only
0x0315	789	1	R VA percent	%	Read only
0x0316	790	1	S VA percent	%	Read only
0x0317	791	1	T VA percent	%	Read only

14. UPS working Mode

0x00D0	208	1	UPS Mode inquiry	Note2	ReadOnly

15. UPS fault information

0x02A3	675	1	Fault kind ASC	Note3	ReadOnly
0x02A4	676	1	Battery voltage before fault	0.1V	ReadOnly
0x02A5	677	1	I/P frequency before fault	0.1Hz	ReadOnly
0x02A6	678	1	I/P voltage before fault	0.1V	ReadOnly
0x02A7	679	1	Inverter O/P frequency before fault	0.1Hz	ReadOnly
0x02A8	680	1	Inverter O/P voltage before fault	0.1V	ReadOnly
0x02A9	681	1	Negative Bus voltage before fault	0.1V	ReadOnly
0x02AA	682	1	Positive Bus voltage before fault	0.1A	ReadOnly
0x02AB	683	1	O/P load before fault	0.1V	ReadOnly
0x02AC	684	1	O/P current before fault	0.1V	ReadOnly
0x02AD	685	1	Temperature before fault	0.1℃	ReadOnly
0x02AE	686	1	UPS running status before fault	Note4	ReadOnly

16. Output Socket

Hex	Dec	Size	Content	Bit value/ units	Type
0x0346	838	Bit15	b0=Output socket 1 status inquiry	0:OFF / 1:ON	ReadOnly
		bit14	b1=Output socket 2 status inquiry	0:OFF / 1:ON	ReadOnly
			b13-b0 = Reservation		
0x038B	907	1	Output socket releasel delay time inquiry in battery mode	minutes	Read/Write

17. Loss point

Hex	Dec	Size	Content	Units	Type
0x034A	842	1	High efficiency modeVoltage high loss point	V	Read Only
0x034B	843	1	High efficiency modeVoltage low loss point	V	Read Only
0x034C	844	1	Free run mode frequency high loss point	Hz	Read Only
0x034D	845	1	Free run mode frequency low loss point	Hz	Read Only

0x034E	846	1	The bypass Freq high loss point	0.1Hz	Read Only
0x034F	847	1	The bypass Freq low loss point（1 2 or 4）	0.1Hz	Read/Write
0x0350	848	1	The bypass Voltage high loss point	V	Read/Write
0x0351	849	1	The bypass Voltage low loss point	V	Read/Write

18. Setting Parameter item

0x02ED	749	1	Setting the battery shut down delay time	second	Read/Write
0x02EE	750	1	Battery Cut-off minimum voltage per cell	0.01V	Read Only
0x02EF	751	1	Cut off voltage per PCS（!!!） BATCO(10.00~11.00)	0.01V	Read/Write
0x02f0	752	1	Battery low voltage per PCS	0.01V	Read/Write
0x02f1	753	1	Battery low capacity(%)	%	Read/Write
0x02f2	754	1	Battery shutdown capacity(%)	%	Read/Write
0x02f3	755	1	The Period of period Self test Inquiry	Day	Read/Write
0x0309	777	1	Bat test stop time	S	ReadOnly
0x030A	778	1	Bat test stop capacity	%	ReadOnly
0x030B	779	1	Bat test stop voltage	0.01V/PCS	ReadOnly
0x034A	842	1	High efficiency mode Voltage high loss point	V	Read Only
0x034B	843	1	High efficiency mode Voltage low loss point	V	Read Only
0x034E	846	1	The bypass Freq high loss point	0.1Hz	Read Only
0x034F	847	1	The bypass Freq low loss point（1 2 or 4）	0.1Hz	Read/Write
0x0350	848	1	The bypass Voltage high loss point 10 20 30	V ; write: 10 20 30	Read/Write
0x0351	849	1	The bypass Voltage low loss point 10 20 30	V ; write: 10 20 30	Read/Write
0x0381	910	1	Setting each module interval time when system mode transfer.	Sec	Read/Write
0x0424	1060	1	Setting battery Total AH	AH	Read/Write
0x05ED	1457	1	Setting Charging current	02 to 64.	Read/Write

19. Setting Parameter succeed or fail

Hex	Dec	Size	Content	Bit value	type
0x0384	900	Bit15	The Period of period Self test Inquiry	0:FALSE/1:TRUE	Read only
		Bit14	Battery Cut-off minimum voltage per cell	0:FALSE/1:TRUE	Read only
		Bit13	Battery low voltage per PCS	0:FALSE/1:TRUE	Read only
		Bit12	Battery low capacity(%)	0:FALSE/1:TRUE	Read only
		Bit11	Battery shutdown capacity(%)	0:FALSE/1:TRUE	Read only
		Bit10	Bat test stop voltage	0:FALSE/1:TRUE	Read only
		Bit9	Bat test stop capacity	0:FALSE/1:TRUE	Read only
		Bit8	Bat test stop time	0:FALSE/1:TRUE	Read only
		Bit7	Setting the battery shut down delay time	0:FALSE/1:TRUE	Read only
0x0385	901	bit15	Flag: High efficiency mode Voltage high loss point	0:FALSE/1:TRUE	Read only

		bit14	Flag: High efficiency mode Voltage low loss point	0:FALSE/1:TRUE	Read only
		bit13	Flag: Reservation	0:FALSE/1:TRUE	Read only
		bit12	Flag: Reservation	0:FALSE/1:TRUE	Read only
		bit11	Flag: The bypass Freq high loss point	0:FALSE/1:TRUE	Read only
		bit10	Flag: The bypass Freq low loss point	0:FALSE/1:TRUE	Read only
		bit9	Flag: The bypass Voltage high loss point	0:FALSE/1:TRUE	Read only
		bit8	Flag: The bypass Voltage low loss point	0:FALSE/1:TRUE	Read only
			bit7-bit0 = Reservation		
	1517	Bit14	Setting Charging current	0:FALSE/1:TRUE	Read only

20. Remote shutdown and test

Hex	Dec	Size	Content	Units/Bit value	Type
0x03AB	939	1	Shutdown	minutes(ASCII)	Read/Write
0x03AC	940	1	Test for specified time	minutes(ASCII)	Read/Write
0x03AD	941	1	Shutdown and restore(N)	minutes(ASCII)	Read/Write
0x03AE	942	2	Shutdown and restore(M)	minutes(ASCII)	Read/Write
0x03DA	986	bit15	B15=flag:Shutdown	0:FAIL/1:SUCCESS	Read only
		bit14	B14=flag:Test for specified time	0:FAIL/1:SUCCESS	Read only
		bit13	B13=flag:Shutdown and restore	0:FAIL/1:SUCCESS	Read only
			b12-b0=Reservation		
0x030F	783	1	Get shutdown time	Unit: second	Read only
0x0310	784	2	Get Restore time	Unit: second	Read only

21. CPU information

Hex	Dec	Size	Content	Units	Type
0x03E0	992	1	Protocol ID Inquiry	ASCII	Read only
0x03E1	993	10	Main CPU Firmware version	ASCII	Read only

22. UPS model and rating information

0x03EB	1003	7	Main Production type	ASCII	Read only
			Sub Production type	ASCII	Read only
			VA type	ASCII	Read only
			H/LV type	ASCII	Read only
			Year	ASCII	Read only
			Month	ASCII	Read only
			Manufacturer ID	ASCII	Read only
			Serial number	ASCII	Read only
0x03F2	1010	1	Battery Piece Number		Read only
0x03F3	1011	1	Battery standard voltage per unit	0.1V	Read only
0x03F4	1012	1	Input phase		Read only
0x03F5	1013	1	Output phase		Read only

0x03F6	1014	1	Nominal I/P Voltage	V	Read only
0x03F7	1015	1	Nominal O/P Voltage	V	Read only
0x03F8	1016	1	Output power factor		Read only
0x03F9	1017	2	Output rated VA	W	Read only
0x03FB	1019	8	Device model	ASCII	Read only
0x048A	1162	1	Battery Voltage	0.1V	Read only
0x048B	1163	1	Rating Output Current	0.1A	Read only
0x048C	1164	1	Rating Output Frequency	0.1Hz	Read only
0x048D	1165	1	Rating Output Voltage	0.1V	Read only
0x048E	1166	1	The parallel number.		Read only
0x031A	794	1	The setting redundant number		Read only

23. The parller inquiry

0x02F4	756	1	The paraller setting ASCII	01:enable;00:disable	Read only
0x02F5	757	1	The independent battery setting ASCII	01:enable;00:disable	Read only

24.Date inquiry (sys or rack info inquiry addr)

0x03F3	759	2	BatMaintenYear	ASC	Read only
0x03F4	761	1	BatMaintenMonth	ASC	Read only
0x03F5	762	1	BatMaintenDay	ASC	Read only
0x03F6	763	2	BatInstalYear	ASC	Read only
0x03F7	765	1	BatInstalMonth	ASC	Read only
0x03F8	766	1	BatInstalDay	ASC	Read only
0x03F9	767	2	SysMaintenYear	ASC	Read only
0x03FB	769	1	SysMaintenMonth	ASC	Read only
0x048A	770	1	SysMaintenDay	ASC	Read only
0x048B	771	2	SysInstalYear	ASC	Read only
0x048C	773	1	SysInstalMonth	ASC	Read only
0x048D	774	1	SysInstalDay	ASC	Read only

25.Set date (sys or rack info set addr)

0x03F3	1061	4	Set SysInstalDate	ASC	Write only
0x03F4	1065	4	Set SysMaintenDate	ASC	Write only
0x03F5	1069	4	Set BatInstalDate	ASC	Write only
0x03F6	1073	4	Set BatMaintenDate	ASC	Write only

26.On line module ID number inquiry and select

0x02F6	758	1	One module inquiry over flag	0：over/other：fause	Read/Write
0x0330	816	1	Select on line module ID number	0xFFFF：sys Defau: 0xFFFF	Read/Write
0x0331	817	16	On line module ID number inquiry		Read only

Note

1. Note1

Note 1:	

815
（bit15-bit8）
	bit15-bit14 =00: standy;
	bit15-bit14 =01: line-interactive;
	bit15-bit14 =10: on-line.
	bit13: Utility Fail
	bit12: Battery Low
	bit11: Bypass/Boost Active
	bit10: UPS Failed
	bit9: EPO
	bit8: Test in Progress

815 （bit7-bit4）	Reserve
815 （bit3-bit0）	Bit3: Shutdown Active bit2: bat silence Bit1: Bat test fail Bit0: Bat test OK

2. Note2

Note 2: (H means High eight bit . eg. If you read 0x4C00 in the address 0x00D0, the current mode is Line mode)		
0x00D0H	0x50	Power on mode
	0x53	Standby mode
	0x59	Bypass mode
	0x4C	Line mode
	0X42	Battery mode
	0X54	Battery test mode

	0X46	Fault mode
	0X45	HE/ECO mode
	0X43	Converter mode
	0X44	Shutdown mode

3. Note3

Code(FF)	Name	Definition
01	cBusOver	BUS Voltage is over 450V
02	cBusUnder	BUS Voltage is under 320V, 200 ms
03	cBusUnbalance	+BUS, -BUS difference is over 50V, 200 ms
04	cBusShort	Hardware Signal Trigged
06	cBusSoftTimeOut	BUS softstart time is over 120 sec
07	cInvSoftTimeOut	Inverter Softstart time is over 120 sec
08	cInvVoltHigh	Inverter RMS is over 250V, 200ms
09	cInvVoltLow	Inverter RMS is under 150V, 200 ms
10	cRInvVoltShort	R phase Voltage is less 70V & Current is over 50A
11	cSInvVoltShort	S phase Voltage is less 70V & Current is over 50A
12	cTInvVoltShort	T phase Voltage is less 70V & Current is over 50A
13	cRSInvVoltShort	RS phase Voltage is less 70V & Current is over 50A
14	cSTInvVoltShort	ST phase Voltage is less 70V & Current is over 50A
15	cTRInvVoltShort	TR phase Voltage is less 70V & Current is over 50A
16	cInvRNegPow	800Watt, 40ms; 400Watt, 100ms
17	cInvSNegPow	800Watt, 40ms; 400Watt, 100ms
18	cInvTNegPow	800Watt, 40ms; 400Watt, 100ms
19	cOverLoadFault	Overload happened, but bypass is not good
20	cBatteryFault	Battery is connected reversely
22	cOverTemperature	The max. temperature sensor is over 80 degree C
25	cCanFault	CAN bus is abnormal and Droop Source need to be changed
26	cSynSigFault	SYNCHRO Signal Fail
27	cTRIG0Fault	TRIG0 Signal
28	cRelayFault	Inverter Relay Short
29	cLineSCRFail	I/P SCR is Open
31	cSPSFault	SPS output is abnormal
32	cParaCableLoosenFault	Parallel Cable is lossen
33	cDSPMCUStopComm	DSP and MCU do not communicate
34	cBypassSCRFault	STS's Bypass SCR is fail
35	cBypassTemperatureFault	STS is over temperature
36	cInvVoltOver	Inverter Sample voltage is over 380V, 156 us

4. Note4

	Bit	Remarks
0x02AEH	7	1:DCTODC on
	6	1:PFC on
	5	1: INVERTER on
	4	Reserved(always 0)
	3	1:input relay on
	2	1:O/P relay on
	1	Reserved(always 0)
	0	Reserved(always 0)

Application example

1. Audible alarm Enable or Disable

Look for Enable audible alarm, It in table address 0x000E bit15.Then you may write 0x8000 to

0x000E to Enable audible alarm or write 0xEFFF to 0x0E to disable audible alarm.

For example:

[XX 10 00 0E 00 01 02 80 00 CRCL CRCH]Mean: Enable audible alarm.

[XX 10 00 0E 00 01 02 7F FF CRCL CRCH]Mean: Disable audible alarm.

Inquire the result of execute, you may read the follow address 0x10 bit15.

For example:

[XX 03 00 10 00 01 CRCL CRCH]

[XX 03 02 80 00 CRCL CRCH]Mean: Execute success

[XX 03 02 00 00 CRCL CRCH]Mean: Execute fail

2. Setting buzzer beeps Silent.

Look for silence buzzer beep in address 0x001A bit 15 。Then you may write 0x8000 to 0x001A.

For example:

[XX 10 00 1A 00 01 02 80 00 CRCL CRCH]Silence buzzer beep.

Inquire the execution result. You may read 0x0025

[XX 03 00 25 00 01 CRCL CRCH] to inquire the results of command.

3. Setting control parameter to default value

Look for setting control parameter to default value it ,then write 0x8000 to 0x0030.If execute success then set 0x003B bit15 to 1;

For example:

[XX 10 00 30 00 01 02 80 00 CRCL CRCH]Setting control parameter to default value.

[XX 03 00 3B 00 01 CRCL CRCH]to inquire the results of command.

4. Get input voltage

Look for input voltage in address 0x00AA, when read 0x00AA to get input voltage and it units is 0.1V

For example:

PC:[XX 03 00 AA 00 01 CRCL CRH]

DEVICE:[XX 03 02 08 89 CRCL CRCH]

Mean: HEX [0x0889] to DEC[2185] .Input voltage:218.5V.

5. Output socket status

Inquire output socket status, Write socket number to 0x0345,then read 0x0346 to inquire socket status.

For example:

PC:[XX 10 03 45 00 01 02 01 00 CRCL CRCH] 01:Means inquire socket 1 status.

PC:[XX 03 03 46 00 01 CRCL CRCH]

DEVICE:[XX 03 02 01 00 CRCL CRCH] 01:Means socket1 was on.

6. Remote shut down the UPS

Remote shut down the UPS, then write is a number ranging from (.2, .3, ..., 01, 02,..., to 10)to the 0x3AB.If execute success then 0x003DA bit0 was set to 1.

For example:

PC:[XX 10 03 AB 00 01 02 2E 32]Mean: Shut down the UPS in 0.2 minutes

7. Shut down UPS and auto restart later

Cut UPS output off in <n> minutes and waiting for <m> minutes and then turn on UPS output again. Then write n to 0x03AD and write m to 0x003AE.

For example:

PC:[XX 10 03 AD 00 03 06 2E 32 30 30 30 32 CRCL CRCH]Mean: Shut down the UPS in 0.2 minutes and waiting
for 0002 minutes turn on the UPS.

8. Setting Parameter item

Set The bypass Voltage high loss point of UPS ,You want to Set the value 286V . Then write 0x011E to 0x0350 .

For example:

PC:[XX 10 03 50 00 01 02 01 1E CRCL CRCH]Mean: Set The bypass Voltage high loss point of UPS for 286V.