

MODBUS PROTOCOL FOR PV INVERTER

Modbus format:RTU

Address (Hex)	Address (Dec)	Size	Content	units
Warning Item				
3	3	bit15	Reservation	
		bit14	Reservation	
		bit13	Reservation	
		bit12	Reservation	
		bit11	Reservation	
		bit10	Reservation	
		bit9	Reservation	
		bit8	Reservation	
		bit7	PV fail	0:FALSE/1:TRUE
		bit6	Auto adjust processing	0:FALSE/1:TRUE
		bit5	External flash fail	0:FALSE/1:TRUE
		bit4	PV loss	0:FALSE/1:TRUE
		bit3	PV low	0:FALSE/1:TRUE
		bit2	Islanding detect	0:FALSE/1:TRUE
		bit1	Initial fail	0:FALSE/1:TRUE
		bit0	Grid voltage high loss	0:FALSE/1:TRUE
4	4	bit15	Grid voltage low loss	0:FALSE/1:TRUE
		bit14	Grid frequency high loss	0:FALSE/1:TRUE
		bit13	Grid frequency low loss	0:FALSE/1:TRUE
		bit12	Feeding average voltage over	0:FALSE/1:TRUE
		bit11	Negative Power	0:FALSE/1:TRUE
		bit10	EPO active	0:FALSE/1:TRUE
		bit9	Reservation	
		bit8	Reservation	
		bit7	Reservation	
		bit6	Reservation	
		bit5	Reservation	
		bit4	Reservation	
		bit3	Reservation	
		bit2	Reservation	
		bit1	Reservation	
		bit0	Reservation	
Enable/Disable Item				
E	14	bit15	Enable/disable audible alarm	0:DISABLE/1:ENABLE
		bit14	Enable/disable battery mode audible warning	0:DISABLE/1:ENABLE
		bit13	Enable/disable battery open status check	0:DISABLE/1:ENABLE
		bit12	Enable/disable Site fault detect	0:DISABLE/1:ENABLE
		bit11	Set hot standby master/slave, PEM means master, PDM means slave	0:DISABLE/1:ENABLE
		bit10	Enable/disable auto-Restart.	0:DISABLE/1:ENABLE
		bit9	Enable/disable battery deep discharge protect	0:DISABLE/1:ENABLE
		bit8	Enable/disable battery low protect	0:DISABLE/1:ENABLE
		bit7	Enable/disable code start	0:DISABLE/1:ENABLE
		bit6	Enable/disable bypass forbiding	0:DISABLE/1:ENABLE
		bit5	Enable/disable short restart 3 times	0:DISABLE/1:ENABLE
		bit4	Enable/disable inverter short clear function	0:DISABLE/1:ENABLE
		bit3	Enable/disable bypass when device turn off.	0:DISABLE/1:ENABLE
		bit2	Enable/disable bypass audible warning(standby mode for pv)	0:DISABLE/1:ENABLE
		bit1	Reservation	
		bit0	Reservation	
Control Item (About bits)				
1A	26	bit15	Silence buzzer beep	0:FALSE/1:TRUE
		bit14	buzzer beep open	0:FALSE/1:TRUE
		bit13	Test until battery low	0:FALSE/1:TRUE
		bit12	Remote turn off UPS	0:FALSE/1:TRUE
		bit11	Remote turn on UPS	0:FALSE/1:TRUE
		bit10	Cancel shutdown	0:FALSE/1:TRUE
		bit9	Cancel test	0:FALSE/1:TRUE
		bit8	10 seconds test	0:FALSE/1:TRUE
		bit7	Reservation	
		bit6	Reservation	
bit5	Reservation			
bit4	Reservation			

Address (Hex)	Address (Dec)	Size	Content	units
		bit3	Grid test	0:FALSE/1:TRUE
		bit2	Canecl grid test	0:FALSE/1:TRUE
		bit1	EPO Enable	0:FALSE/1:TRUE
		bit0	EPO Disable	0:FALSE/1:TRUE
1B	27	10	Reservation	
Flag of Control Item(About bits)				
25	37	bit15	Flag:Silence buzzer beep	0:FAIL/1:SUCCESS
		bit14	Flag:buzzer beep open	0:FAIL/1:SUCCESS
		bit13	Flag:Test until battery low	0:FAIL/1:SUCCESS
		bit12	Flag:Remote turn off UPS	0:FAIL/1:SUCCESS
		bit11	Flag:Remote turn on UPS	0:FAIL/1:SUCCESS
		bit10	Flag:Cancel shutdown	0:FAIL/1:SUCCESS
		bit9	Flag:Cancel test	0:FAIL/1:SUCCESS
		bit8	Flag:10 seconds test	0:FAIL/1:SUCCESS
		bit7	Reservation	
		bit6	Reservation	
		bit5	Reservation	
		bit4	Reservation	
		bit3	Flag:Grid test	0:FAIL/1:SUCCESS
		bit2	Flag:Cancel grid test	0:FAIL/1:SUCCESS
bit1	Flag:EPO Enable	0:FALSE/1:TRUE		
bit0	Flag:EPO Disable	0:FALSE/1:TRUE		
Setting parameter item(About bits)				
30	48	bit15	Seting control parameter to default value	0:FALSE/1:TRUE
		bit14	Self test	
		bit13	Reservation	
		bit12	Reservation	
		bit11	Reservation	
		bit10	Reservation	
		bit9	Reservation	
		bit8	Reservation	
		bit0		
Flag of parameter item(About bits)				
3B	59	bit15	Flag:Seting control parameter to default value	0:FAIL/1:SUCCESS
		bit14	Flag:Self test	0:FAIL/1:SUCCESS
		bit13	Reservation	
		bit12	Reservation	
		bit11	Reservation	
		bit10	Reservation	
		bit9	Reservation	
		bit8	Reservation	
		bit0		
Real Information				
BC	188	1	Battery voltage	0.1v
BD	189	1	Battery piece number	
BE	190	1	Battery group number[(battery total capacity)for hybrid]	(Ah)
BF	191	1	Battery capacity	%
C0	192	1	Battery remain time	minutes
C1	193	1	Battery voltage	1%
C2	194	1	Battery piece number	
C3	195	1	Battery group number[(battery total capacity)for hybrid]	(Ah)
C4	196	1	Battery capacity	minutes
C5	197	1	Battery remain time	0.1V
CD	205	1	Temperature2 (Boost temperature)	0.1℃
CE	206	1	Temperature3 (Inverter temperature)	0.1℃
CF	207	1	Temperature4 (Inner temperature)	0.1℃
D0	208	1	Machine mode inquiry	Label 1
D1	209	1	Grid voltage R	0.1V
D2	210	3	Grid power R	(+-)W
D5	213	1	Grid frequency	0. 1Hz
D6	214	2	Grid current R	(+-)0. 1A
D8	216	1	AC output voltage R	0. 1V

Address (Hex)	Address (Dec)	Size	Content	units
D9	217	2	AC output power R	W
DB	219	1	AC output R frequency	0.1Hz
DC	220	1	AC output current R	0.1A
DD	221	1	AC output load percent	
DE	222	1	P BUS voltage	0.1V
DF	223	1	S BUS voltage	0.1V
E0	224	1	P battery voltage	0.1V
E1	225	1	N battery voltage	0.1V
E2	226	1	Battery capacity	1%
E3	227	1	Charging current	0.1A
E4	228	2	PV Input power 1	W
E6	230	2	PV Input power 2	W
E8	232	2	PV Input power 3	W
EA	234	1	PV Input voltage 1	0.1V
EB	235	1	PV Input voltage 2	0.1V
EC	236	1	PV Input voltage 3	0.1V
ED	237	1	Max Temperature of the detecting pointers	0.1°C
EE	238	1	PV status	
EF	239	1	AC Output current S	0.1A
F0	240	1	AC Output current T	0.1A
F1	241	2	AC Output power S	W
F3	243	2	AC Output power T	W
F5	245	2	AC Output power	W
F7	247	1	AC Output voltage S	0.1V
F8	248	1	AC Output voltage T	0.1V
F9	249	1	AC Output power RS	0.2V
FA	250	1	AC Output voltage RT	0.3V
FB	251	1	AC Output voltageST	0.4V
FC	252	1	AC Output load S	1%
FD	253	1	AC Output load T	1%
FE	254	1	AC Output load	1%
FF	255	1	Grid currentL S	0.1A
100	256	1	Grid currentL T	0.1A
101	257	2	Grid power S	W
103	259	2	Grid power T	W
105	261	2	Grid whole power	W
107	263	1	Grid voltage S	0.1V
108	264	1	Grid voltage T	0.1V
109	265	1	Grid voltage RS	0.1V
10A	266	1	Grid voltage RT	0.1V
10B	267	1	Grid voltage ST	0.1V
10C	268	1	Inverter voltage R	0.1V
10D	269	1	Inverter voltage S	0.1V
10E	270	1	Inverter voltage T	0.1V
10F	271	1	Inverter frequency	0.1Hz
110	272	1	Inverter current R	0.1A
111	273	1	Inverter current S	0.1A
112	274	1	Inverter current T	0.1A
113	275	7	Time	Label 2
199	409	2	Total energy an the hour	KWh
19B	411	2	Total energy in the day	KWh
19D	413	2	Total energy in the month	Wh
19F	415	2	Total energy in the year	Wh
1A1	417	2	Total energy an the hour(PAEL USE)	KWh
1A3	419	2	Total energy in the day(PAEL USE)	KWh
1A5	421	2	Total energy in the month(PAEL USE)	Wh
1A7	423	2	Total energy in the year(PAEL USE)	Wh
1C0	448	5	The date of the hourly energy	ASCII
1C5	453	4	The date of the daily energy	ASCII
1C9	457	3	The date of the monthly energy	ASCII
1CC	460	2	The date of the yearly energy	ASCII
1CE	462	5	The date of the hourly energy (PAEL USE)	ASCII
1D3	467	4	The date of the daily energy (PAEL USE)	ASCII
1D7	471	3	The date of the monthly energy (PAEL USE)	ASCII

Address (Hex)	Address (Dec)	Size	Content	units
1DA	474	2	The date of the yearly energy (PAEL USE)	ASCII
254	596	1	Self test result	0:testing1:succesed2:fail
255	597	1	Self test grid output high voltage	0.1V
256	598	1	Self test grid output low voltage	0.1V
257	599	1	Self test grid output high frequency	0.1Hz
258	600	1	Self test grid output low frequency	0.1Hz
259	601	1	The check time of self test grid output high voltage	MS
25A	602	1	The check time of self test grid output low voltage	MS
25B	603	1	The check time of self test grid output high frequency	MS
25C	604	1	The check time of self test grid output low frequency	MS
25D	605	1	Fault kind	Label 3
25E	606	7	Fault time	ASCII (YYYYMMDDHHMMSS)
265	613	1	PV1 input voltage before fault	0.1V
266	614	1	PV1 current before fault	0.1A
267	615	1	PV2 input voltage before fault	0.1V
268	616	1	PV2 current before fault	0.1A
269	617	1	PV3 input voltage before fault	0.1V
26A	618	1	PV3 current before fault	0.1A
26B	619	1	Inverter R voltage before fault	0.1V
26C	620	1	Inverter R current before fault	0.1A
26D	621	1	Grid R voltage before fault	0.1V
26E	622	1	Grid R Frequency before fault	0.1Hz
26F	623	2	Grid R current before fault	±0.1A
271	625	1	Output load percentage before fault	%
272	626	1	Output R Load current before fault	0.1A
273	627	1	Output R load voltage before fault	0.1V
274	628	1	Output R load frequency before fault	0.1Hz
275	629	1	Battery voltage before fault	0.1V
276	630	1	Max Temperature before fault	0.1°C
277	631	1	PV running status before fault	
Setting parameter item				
34E	846	1	The bypass Freq high loss point	0.1Hz
34F	847	1	The bypass Freq low loss point	0.1Hz
350	848	1	The bypass Voltage high loss point	V
351	849	1	The bypass Voltage low loss point	V
352	850	1	The feeding voltage high loss point	V
353	851	1	The feeding voltage low loss point	V
354	852	1	The feeding freq high loss point	0.1Hz
355	853	1	The feeding freq low loss point	0.1Hz
356	854	2	The test feeding wait time	S(ASCII)
358	856	2	The feeding wait time	S(ASCII)
Flag of setting parameter item				
385	901	bit15	Reservation	0:FALSE/1:TRUE
		bit14	Reservation	0:FALSE/1:TRUE
		bit13	Reservation	0:FALSE/1:TRUE
		bit12	Reservation	0:FALSE/1:TRUE
		bit11	Flag:The bypass Freq high loss point	0:FALSE/1:TRUE
		bit10	Flag:The bypass Freq low loss point	0:FALSE/1:TRUE
		bit9	Flag:The bypass Voltage high loss point	0:FALSE/1:TRUE
		bit8	Flag:The bypass Voltage low loss point	0:FALSE/1:TRUE
		bit7	Flag:The feeding voltage high loss point	0:FALSE/1:TRUE
		bit6	Flag:The feeding voltage low loss point	0:FALSE/1:TRUE
		bit5	Flag:The feeding freq high loss point	0:FALSE/1:TRUE
		bit4	Flag:The feeding freq low loss point	0:FALSE/1:TRUE
		bit3	Flag:The test feeding wait time	0:FALSE/1:TRUE
		bit2	Flag:The feeding wait time	0:FALSE/1:TRUE
		bit1	Reservation	
bit0	Reservation			
Control Item				
3AB	939	1	Shutdown	minutes(ASCii)
3AC	940	1	Test for specified time	minutes(ASCii)
3AD	941	1	Shutdown and restore(N)	minutes(ASCii)
3AE	942	2	Shutdown and restore(M)	minutes(ASCii)
3DA	986	bit15	flag:Shutdown	0:FAIL/1:SUCCESS
		bit14	flag:Test for specified time	0:FAIL/1:SUCCESS
		bit13	flag:Shutdown and restore	0:FAIL/1:SUCCESS
		bit12		
		bit11		

Address (Hex)	Address (Dec)	Size	Content	units
		bit10		
		bit9		
		bit8		
		bit0		
Fixed information				
3E0	992	1	Protocol ID Inquiry	ASCII
3E1	993	10	Main CPU Firmware version	ASCII
3EB	1003	7	Main Production type	ASCII
3F2			Sub Production type	ASCII
3F2			VA type	ASCII
3F2			H/LV type	ASCII
3F2			Year	ASCII
3F2			Month	ASCII
3F2			Manufacturer ID	ASCII
3F2			Serial number	ASCII
3F2	1010	1	Battery Piece Number	
3F3	1011	1	Battery standard voltage per unit	0.1V
3F4	1012	1	Input phase	
3F5	1013	1	Output phase	
3F6	1014	1	Nominal I/P Voltage	V
3F7	1015	1	Nominal O/P Voltage	V
3F8	1016	1	Output power factor	
3F9	1017	2	Output rated VA	W
3FB	1019	8	Device model	ASCII
40D	1037	2	The lowest limit of output power	W
40F	1039	1	The lowest limit of input voltage	V
410	1040	1	The upper limit of input voltage	V
411	1041	1	The LCD sleep time inquiry	unit is 30s
Rated information				
48F	1167	1	Grid rating voltage	0.1V
490	1168	1	Grid rating frequency	0.1Hz
491	1169	1	Grid rating current	0.1A
492	1170	1	AC output rating frequency	0.1Hz
493	1171	1	AC output rating voltage	0.1V
494	1172	1	AC output rating current	0.1A
497	1175	1	Per MPPT rating current	0.1A
498	1176	1	Battery rating voltage	0.1V
499	1177	1	MPPT track Number	
49A	1178	1	Machine type	
49B	1179	1	Topology	0:transformerless /1:transformer(ASCII)
49C	1180	4	Slave CPU Firmware version inquiry	ASCII
4A0	1184	1	Grid output voltage high loss point	0.1V
4A1	1185	1	Grid output voltage low loss point	0.1V
4A2	1186	1	Grid output frequency high loss point	0.1Hz
4A3	1187	1	Grid output frequency low loss point	0.1Hz
4A4	1188	1	Grid input voltage high loss point	0.1V
4A5	1189	1	Grid input voltage low loss point	0.1V
4A6	1190	1	Grid input frequency high loss point	0.1Hz
4A7	1191	1	Grid input frequency low loss point	0.1Hz
4A8	1192	1	The upper limit of PV input voltage	V
4A9	1193	1	The lowest limit of PV input voltage	V
4AA	1194	1	The PV input high voltage for MPPT	V
4AB	1195	1	The PV input low voltage for MPPT	V
4AC	1196	2	Max output power	W
4AE	1198	1	Long time grid average voltage high loss point	V
4AF	1199	1	LCD sleep time	ASCII(S)
4B0	1200	1	Battery piece number	
4B1	1201	1	Battery total capacity	Ah
4B2	1202	1	Charger current	A
4B3	1203	5	The time when the user fist storage capacity	
Inner command				
519	1305	4	Password	

Address (Hex)	Address (Dec)	Size	Content	units
51D	1309	1	Area of inner command Protect enable	0xAAAA:Portect disable/0x1111:Protect enable
51E	1310	4	Set password	
522	1314	bit15	Set PV output rating frequency to 50Hz	0:FALSE/1:TRUE
		bit14	Set PV output rating frequency to 60Hz	0:FALSE/1:TRUE
		bit13	Reservation	
		bit12	Set EEPROM to default except UPS ID	0:FALSE/1:TRUE
		bit11	Reservation	
		bit10	Clear whole flash	
		bit9	Reservation	
		bit8	Reservation	
		bit0		
52D	1325	bit15	Flag:set PV output rating frequency to 50Hz	0:FAIL/1:SUCCESS
		bit14	Flag:set PV output rating frequency to 60Hz	0:FAIL/1:SUCCESS
		bit13		
		bit12	Flag:set EEPROM to default except UPS ID	0:FAIL/1:SUCCESS
		bit11	Reservation	
		bit10	Flag:Clear whole flash	
		bit9	Reservation	
		bit8	Reservation	
		bit0		
Adjust				
570	1392	1	P Bus voltage adjust	±n
571	1393	1	S Bus voltage adjust	±n
572	1394	1	Line1 voltage adjust	±n
573	1395	1	Line2 voltage adjust	±n
574	1396	1	Line3 voltage adjust	±n
575	1397	1	Inverter1 voltage adjust	±n
576	1398	1	Inverter 2 voltage adjust	±n
577	1399	1	Inverter3 voltage adjust	±n
578	1400	1	PV 1 voltage adjust	±n
579	1401	1	PV 2 voltage adjust	±n
57A	1402	1	PV 3 voltage adjust	±n
57B	1403	1	Slave Line1 voltage adjust	±n
57C	1404	1	Slave Line2 voltage adjust	±n
57D	1405	1	Slave Line3 voltage adjust	±n
57E	1406	1	P Bus voltage adjust	No unit
57F	1407	1	S Bus voltage adjust	No unit
580	1408	1	Line1 voltage adjust	No unit
581	1409	1	Line2 voltage adjust	No unit
582	1410	1	Line3 voltage adjust	No unit
583	1411	1	Inverter1 voltage adjust	No unit
584	1412	1	Inverter 2 voltage adjust	No unit
585	1413	1	Inverter3 voltage adjust	No unit
586	1414	1	PV 1 voltage adjust	No unit
587	1415	1	PV 2 voltage adjust	No unit
588	1416	1	PV 3 voltage adjust	No unit
589	1417	1	Slave Line1 voltage adjust	No unit
58A	1418	1	Slave Line2 voltage adjust	No unit
58B	1419	1	Slave Line3 voltage adjust	No unit
5AB	1451	bit15	reservation	
		bit14	reservation	
		bit13	reservation	
		bit12	reservation	
		bit11	reservation	
		bit10	reservation	
		bit9	Flag:P Bus voltage adjust	0:FAIL/1:SUCCESS
		bit8	Flag:S Bus voltage adjust	0:FAIL/1:SUCCESS
		bit7	Flag:Line1 voltage adjust	0:FAIL/1:SUCCESS
		bit6	Flag:Line2 voltage adjust	0:FAIL/1:SUCCESS
		bit5	Flag:Line3 voltage adjust	0:FAIL/1:SUCCESS
		bit4	Flag:Inverter1 voltage adjust	0:FAIL/1:SUCCESS
		bit3	Flag:Inverter 2 voltage adjust	0:FAIL/1:SUCCESS
		bit2	Flag:Inverter3 voltage adjust	0:FAIL/1:SUCCESS
		bit1	Flag:PV 1 voltage adjust	0:FAIL/1:SUCCESS
bit0	Flag:PV 2 voltage adjust	0:FAIL/1:SUCCESS		
		bit15	Flag:PV 3 voltage adjust	0:FAIL/1:SUCCESS
		bit14	Flag:Slave Line1 voltage adjust	0:FAIL/1:SUCCESS
		bit13	Flag:Slave Line2 voltage adjust	0:FAIL/1:SUCCESS

Address (Hex)	Address (Dec)	Size	Content	units
5AC	1452	bit12	Flag:Slave Line3 voltage adjust	0:FAIL/1:SUCCESS
		bit11	Reservation	0:FAIL/1:SUCCESS
		bit10	Reservation	0:FAIL/1:SUCCESS
		bit9	Reservation	0:FAIL/1:SUCCESS
		bit8	Reservation	0:FAIL/1:SUCCESS
		bit0		
Control/Seeting parameter				
5B1	1457	1	Setting charging current	A
5B2	1458	1	Setting feeding rating voltage	V
5B3	1459	1	Setting feeding rating frequency	Hz
5B4	1460	1	MAX charging current	A
5B5	1461	7	ID	ASCII
5BC	1468	1	Output rating voltage	V
5C2	1474	1	PV number	
5C4	1476	7	reservation	
5CB	1483	1	The bypass long time average voltage low loss point	V
5CC	1484	1	The bypass long time average voltage high loss point	V
5CD	1485	1	PV input high voltage for MPPT	V
5CE	1486	1	PV input low voltage for MPPT	V
5CF	1487	1	Auto adjust Line voltage	V
5D0	1488	1	Auto adjust PV1 voltage	V
5D1	1489	1	Auto adjust PV2 voltage	V
5D2	1490	1	Auto adjust PV3 voltage	
5ED	1517	bit15	Flage:Setting charging current	0:FAIL/1:SUCCESS
		bit14	Flage:Setting feeding rating voltage	0:FAIL/1:SUCCESS
		bit13	Flage:Setting feeding rating frequency	0:FAIL/1:SUCCESS
		bit12	Flage:MAX charging current	0:FAIL/1:SUCCESS
		bit11	Flage:ID	0:FAIL/1:SUCCESS
		bit10	Flage:Output rating voltage	0:FAIL/1:SUCCESS
		bit9	reservation	
		bit8	reservation	
		bit7	reservation	
		bit6	Flage:Baud rate	0:FAIL/1:SUCCESS
		bit5	Flage:Machine model	0:FAIL/1:SUCCESS
		bit4	Flage:The bypass long time average voltage low loss point	0:FAIL/1:SUCCESS
		bit3	Flage:The bypass long time average voltage high loss point	0:FAIL/1:SUCCESS
		bit2	Flag:FPV input high voltage for MPPT	0:FAIL/1:SUCCESS
		bit1	Flag:PV input low voltage for MPPT	0:FAIL/1:SUCCESS
		bit0	Flag:Auto adjust Line voltage	0:FAIL/2:SUCCESS
5EE	1518	bit15	Flage:PV number	0:FAIL/1:SUCCESS
		bit14	Flage:Current Sensor	0:FAIL/1:SUCCESS
		bit13	reservation	
		bit12	reservation	
		bit11	reservation	
		bit10	reservation	
		bit9	reservation	
		bit8	reservation	
		bit7	reservation	
		bit6	reservation	
		bit5	reservation	
		bit4	reservation	
		bit3	reservation	
		bit2	reservation	
		bit1	reservation	
bit0	reservation			

Label 1	
Mode	Code(M)
Power on mode	P
Standby mode	S
Bypass mode	Y
Line mode	L
Battery mode	B
Battery test mode	T
Fault mode	F
HE/ECO mode	E
Converter mode	C
Shutdown mode	D
Grid mode	G

Label 2

Address (Hex)	Address (Dec)	Size	Content	units
			YYYYMMDDHHMMSS	
			Label 3	
			Inverter fault	
			Bus over voltage	1
			Bus under voltage	2
			Bus soft start time out	3
			Inverter soft start time out	4
			Inverter short	5
			Over temperature	6
			Relay fault	7
			DC current fail	8
			PV high voltage	9
			Power down	10
			PV input short	11
			GFCI over	12
			PV isolation low	13
			Inverter DC current over	14
			Line value consistent fail between MCU & DSP	15
			GFCI sensor fail	16
			Connect fail between MCU & DSP	17
			Communication fail between MCU & DSP	18
			Ground loss	19