PowerHill Series

Modbus Interface Definitions

Issue 01

Date 2024-04-24

Change History

Issue	Date	Change Description
01	2024-04-24	Initial release.

Content

1. EMS Register Definitions

Table 1-1 EMS Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
1	0x0001	RO	Operating status	U16	N/A	N/A	1 Shutdown 2 Running 3 Fault
2	0x0002	RO	Operating mode	U16	N/A	N/A	1 P/Q 2 Off grid 3 On&Off grid 4 Peak-Valley mode 5 Backup mode
3	0x0003	RO	Control mode	U16	N/A	N/A	1 Local 0 Remote
4	0x0004	RO	Allowable Discharging Active Power Limit	U16	0.1	kW	
5	0x0005	RO	Allowable Charging Active Power Limit	U16	0.1	kW	
6	0x0006	RO	System active power	I16	0.1	kW	
7	0x0007	RO	Load active power	I16	0.1	kW	
8	0x0008	RO	Grid active power	I16	0.1	kW	
9	0x0009	RO	MPPT power	I16	0.1	kW	
10	0x000A	RO	Grid input active energy high byte	U16	0.01	kWh	
11	0x000B	RO	Grid input active energy low byte	U16	0.01	kWh	
12	0x000C	RO	Grid output active energy high byte	U16	0.01	kWh	
13	0x000D	RO	Grid output active energy low byte	U16	0.01	kWh	
14	0x000E	RO	Load output active energy high byte	U16	0.1	kWh	
15	0x000F	RO	Load output active energy low byte	U16	0.1	kWh	
16	0x0010	RO	ESS Cabinet1 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault

17	0x0011	RO	ESS Cabinet2 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
18	0x0012	RO	ESS Cabinet3 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
19	0x0013	RO	ESS Cabinet4 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
20	0x0014	RO	ESS Cabinet5 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
21	0x0015	RO	ESS Cabinet6 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
22	0x0016	RO	ESS Cabinet7 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
23	0x0017	RO	ESS Cabinet8 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
24	0x0018	RO	ESS Cabinet9 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
25	0x0019	RO	ESS Cabinet10 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
26	0x001A	RO	System SOC	U16	1	%	
27	0x001B	RO	System alarm 0	U16	N/A	N/A	Bit0 remote TCP communication disconnection Bit1 remote 485 communication disconnection Bit2 billing meter 1 communication disconnection Bit3 billing meter 2 communication disconnection Bit4-15 reserved

28	0x001C	RO	System alarm 1	U16	N/A	N/A	Bit0 PowerHill1 communication disconnection Bit1 PowerHill2 communication disconnection Bit2 PowerHill3 communication disconnection Bit3 PowerHill4 communication disconnection Bit4 PowerHill5 communication disconnection Bit5 PowerHill6 communication disconnection Bit6 PowerHill7 communication disconnection Bit7 PowerHill8 communication disconnection Bit8 PowerHill9 communication disconnection Bit9 PowerHill10 communication disconnection Bit10 PowerHill11 communication disconnection Bit11 PowerHill12 communication disconnection
29	0x001D	RO	System Fault 0	U16	N/A	N/A	Bit0 No PowerHill available Bit1 No ACU available Bit2~Bit9 Reserved Bit10 Power meter 1 communication disconnection Bit11 Power meter 2 communication

							disconnection Bit12 Communication disconnection with Host Bit13 Communication disconnection with MC Bit14~Bit15 reserved
30	0x001E	RO	System Fault 1	U16	N/A	N/A	Bit0 MC Backflow Fault Bit1 MC Overpower Fault Bit2 MC meter 1 communication disconnection Bit3 MC meter 2 communication disconnection Bit4 MC meter 3 communication disconnection Bit5 MC meter 4 communication disconnection Bit6 MC meter 5 communication disconnection Bit7~Bit11 Reserved
31	0x001F	RO	Days of Fault-Free Operation	U16	N/A	N/A	
32	0x0020	RO	System alarm 2	U16	N/A	N/A	Bit0 ACU1 communication disconnection Bit1 ACU2 communication disconnection Bit2 ACU3 communication disconnection Bit3 ACU4 communication disconnection Bit4 ACU5 communication disconnection Bit5 ACU6 communication disconnection
33	0x0021	RO	P-Total Positive Active Energy high byte	U16	1	kWh	
34	0x0022	RO	P- Total Positive Active Energy low byte	U16	1	kWh	

35	0x0023	RO	P- Total Reverse Active energy high byte	U16	1	kWh	
36	0x0024	RO	P- Total Reverse Active energy low byte	U16	1	kWh	
37	0x0025	RO	Grid voltage	U16	0.1	V	
38	0x0026	RO	Grid current	I16	0.1	A	
39	0x0027	RO	Grid power factor	U16	0.001	N/A	
40	0x0028	RO	year	U16	1	N/A	
41	0x0029	RO	month	U16	1	N/A	
42	0x002A	RO	day	U16	1	N/A	
43	0x002B	RO	hour	U16	1	N/A	
44	0x002C	RO	minute	U16	1	N/A	
45	0x002D	RO	second	U16	1	N/A	
46	0x002E	RO	version number	U16	N/A	N/A	
47	0x002F	RO	E- Total Positive Active Energy high byte	U16	1	kWh	
48	0x0030	RO	E- Total Positive Active Energy low byte	U16	1	kWh	
49	0x0031	RO	E- Total Reverse Active energy high byte	U16	1	kWh	
50	0x0032	RO	E- Total Reverse Active energy low byte	U16	1	kWh	
51	0x0033	RO	Program Version Number collection	U16	N/A	N/A	
52	0x0034	RO	Web server version number	U16	N/A	N/A	
60	0x003C	WR	System Mode Control	U16	1	N/A	1 P/Q 2 Off grid 3 On&Off Grid 4 Peak-Valley mode 5 Backup mode

61	0x003D	WR	System state control	U16	1	N/A	2 Stop 6 Running
62	0x003E	WR	Control model	U16	N/A	N/A	1 Local 0 Remote
63	0x003F	WR	Active power control	I16	0.1	kW	-600~600, negative represents charging
64	0x0040	WR	Reactive power control	I16	0.1	kvar	
65	0x0041	WR	SOC-H	U16	1	N/A	
66	0x0042	WR	SOC-L	U16	1	N/A	
67	0x0043	WR	Backup charging power	I16	1	N/A	
72	0x0048	WR	Clear fault	U16	1	N/A	
73	0x0049	WR	Program Version Number collection	U16	1	N/A	
74	0x004A	WR	Web server version number	U16	1	N/A	
75	0x004B	WR	PowerHill Control Authority	U16	1	N/A	1 Remote control - customer 0 Local control - EMS
90	0x005A	WR	year	U16	1	N/A	
91	0x005B	WR	month	U16	1	N/A	
92	0x005C	WR	day	U16	1	N/A	
93	0x005D	WR	hour	U16	1	N/A	
94	0x005E	WR	minute	U16	1	N/A	
95	0x005F	WR	second	U16	1	N/A	

2. ESS Cabinet Register Definitions

Table 2-1 ESS Cabinet Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
100	0x0064	RO	Operating status	U16	N/A	N/A	1 Shutdown 2 Running 3 Fault
101	0x0065	RO	Operating mode	U16	N/A	N/A	1 P/Q 2 Off grid 3 On&Off grid
102	0x0066	RO	Control mode	U16	N/A	N/A	1 Local 0 Remote
103	0x0067	RO	Start/Stop Button Status	U16	N/A	N/A	1 Start 2 Stop
104	0x0068	RO	Allowable Discharging Active Power Limit	U16	0.1	kW	
105	0x0069	RO	Allowable Charging Active Power Limit	U16	0.1	kW	
106	0x006A	RO	Grid voltage	U16	0.1	V	
107	0x006B	RO	Grid active power	I16	0.1	kW	
108	0x006C	RO	Load voltage	U16	0.1	V	
109	0x006D	RO	Load active power	I16	0.1	kW	
110	0x006E	RO	MPPT power	I16	0.1	kW	
111	0x006F	RO	Grid input active energy high byte	U16	0.01	kWh	
112	0x0070	RO	Grid input active energy low byte	U16	0.01	kWh	
113	0x0071	RO	Grid output active energy high byte	U16	0.01	kWh	
114	0x0072	RO	Grid output active energy low byte	U16	0.01	kWh	
115	0x0073	RO	Load output active energy high byte	U16	0.1	kWh	
116	0x0074	RO	Load output active energy low byte	U16	0.1	kWh	
117	0x0075	RO	Battery Cabinet humidity	U16	0.1	N/A	

118	0x0076	RO	Battery Cabinet temperature	I16	0.1	℃	
119	0x0077	RO	IO status	U16	1	N/A	Bit0: AC circuit breaker Bit1: Load circuit breaker Bit2: PV circuit breaker Bit3: AC Surge Arrester Bit4: Load Surge Arrester Bit5: PV Surge Arrester Bit6: Smoke sensor 1 status Bit7: Smoke sensor 2 status Bit8: Fire extinguishing agent release Bit9: Water immersion state Bit10: Emergency stop signal Bit11: Trip signal Bit12: PCS fan start/stop Bit13~Bit14: reserved Bit15: External emergency signal
120	0x0078	RO	System alarm 0	U16	1	N/A	Bit0: AC meter communication disconnection Bit1: Load meter communication disconnection Bit2: Air conditioning communication disconnection Bit3: PCS1 communication disconnection Bit4: DCDC communication disconnection Bit5: MPPT1 communication disconnection Bit6: static transmission switch communication disconnection Bit7: MPPT2 communication disconnection Bit8: RS485 slave communication

							disconnection Bit9: DC circuit breaker disconnected Bit10: PCS2 communication disconnection
121	0x0079	RO	System alarm 1	U16	1	N/A	
122	0x007A	RO	System Fault 0	U16	1	N/A	Bit0: AC Surge Arrester Bit1: Load Surge Arrester Bit2: PV Surge Arrester Bit3: Smoke sensor 1 triggered Bit4: Smoke sensor 2 triggered Bit5: Fire Sprinkler System Inspection Bit6: Water immersion trigger Bit7: Jump action/EPO Bit8: Fire Release Control Bit9: Combustible gas fault Bit10: reserved Bit11: reserved Bit12: External emergency signal
123	0x007B	RO	System Fault 1	U16	1	N/A	Bit0: ASS communication disconnection Bit1: reserved Bit2: BMS communication disconnection Bit3: Reserved Bit4: Reserved Bit5: Reserved Bit6: IO controller communication disconnection Bit7: External meter communication disconnection Bit8: Continuous startup failure
124	0x007C	RO	Static transmission switch1 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid

							4 Bypass
125	0x007D	RO	Static transmission switch 2 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Bypass
126	0x007E	RO	Static transmission switch 3 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Bypass
127	0x007F	RO	PCS1 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
128	0x0080	RO	PCS2 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
129	0x0081	RO	PCS3 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
130	0x0082	RO	PCS4 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
131	0x0083	RO	PCS5 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
132	0x0084	RO	PCS6 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
133	0x0085	RO	PCS7 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
134	0x0086	RO	PCS8 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
135	0x0087	RO	PCS9 working status	U16	1	N/A	1 Fault 2 On Grid

							3 Off Grid 4 Fault
136	0x0088	RO	PCS10 working status	U16	1	N/A	1 Fault 2 On Grid 3 Off Grid 4 Fault
137	0x0089	RO	BMS1 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
138	0x008A	RO	BMS2 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
139	0x008B	RO	BMS3 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
140	0x008C	RO	BMS4 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
141	0x008D	RO	BMS5 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
142	0x008E	RO	BMS6 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
143	0x008F	RO	BMS7 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
144	0x0090	RO	BMS8 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
145	0x0091	RO	BMS9 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
146	0x0092	RO	BMS10 working status	U16	1	N/A	1 Shutdown 2 Running 3 Fault
147	0x0093	RO	MPPT1 working status	U16	1	N/A	1 Stop 2 Run 3 Fault 4 Soft start
148	0x0094	RO	MPPT2 working status	U16	1	N/A	1 Stop 2 Run 3 Fault 4 Soft start

149	0x0095	RO	MPPT3 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
150	0x0096	RO	MPPT4 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
151	0x0097	RO	MPPT5 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
152	0x0098	RO	MPPT6 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
153	0x0099	RO	MPPT7 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
154	0x009A	RO	MPPT8 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
155	0x009B	RO	MPPT9 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
156	0x009C	RO	MPPT10 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
157	0x009D	RO	DCDC1 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
158	0x009E	RO	DCDC2 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
159	0x009F	RO	DCDC3 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start

160	0x00A0	RO	DCDC4 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
161	0x00A1	RO	DCDC5 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
162	0x00A2	RO	DCDC6 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
163	0x00A3	RO	DCDC7 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
164	0x00A4	RO	DCDC8 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
165	0x00A5	RO	DCDC9 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
166	0x00A6	RO	DCDC10 working status	U16	1	N/A	1 Stop 2 Running 3 Fault 4 Soft start
167	0x00A7	RO	Air conditioning1 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
168	0x00A8	RO	Air conditioning2 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
169	0x00A9	RO	Air conditioning3 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
170	0x00AA	RO	Air conditioning4 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
171	0x00AB	RO	Air conditioning5 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault

172	0x00AC	RO	Air conditioning6 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
173	0x00AD	RO	Air conditioning7 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
174	0x00AE	RO	Air conditioning8 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
175	0x00AF	RO	Air conditioning9 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
176	0x00B0	RO	Air conditioning10 status	U16	1	N/A	1 Shutdown 2 Power on 3 Fault
177	0x00B1	RO	Zero Power Protection State	U16	1	N/A	0 Unprotected 1 Protected
200	0x00C8	RO	year	U16	1	N/A	
201	0x00C9	RO	month	U16	1	N/A	
202	0x00CA	RO	day	U16	1	N/A	
203	0x00CB	RO	hour	U16	1	N/A	
204	0x00CC	RO	minute	U16	1	N/A	
205	0x00CD	RO	second	U16	1	N/A	
206	0x00CE	RO	Battery Cabinet version number	U16	N/A	N/A	
207	0x00CF	RO	ASS version number	U16	N/A	N/A	
208	0x00D0	RO	Boot version number	U16	N/A	N/A	
209	0x00D1	RO	PCS1 version number- H	U16	N/A	N/A	
210	0x00D2	RO	PCS1 version number- L	U16	N/A	N/A	
211	0x00D3	RO	PCS2 version number- H	U16	N/A	N/A	
212	0x00D4	RO	PCS2 version number- L	U16	N/A	N/A	
213	0x00D5	RO	PCS3 version number- H	U16	N/A	N/A	
214	0x00D6	RO	PCS3 version number- L	U16	N/A	N/A	
215	0x00D7	RO	PCS4 version number- H	U16	N/A	N/A	

216	0x00D8	RO	PCS4 version number- L	U16	N/A	N/A	
217	0x00D9	RO	PCS5 version number- H	U16	N/A	N/A	
218	0x00DA	RO	PCS5 version number- L	U16	N/A	N/A	
219	0x00DB	RO	MPPT1 version number- H	U16	N/A	N/A	
220	0x00DC	RO	MPPT1 version number- L	U16	N/A	N/A	
221	0x00DD	RO	MPPT2 version number- H	U16	N/A	N/A	
222	0x00DE	RO	MPPT2 version number- L	U16	N/A	N/A	
223	0x00DF	RO	MPPT3 version number- H	U16	N/A	N/A	
224	0x00E0	RO	MPPT3 version number- L	U16	N/A	N/A	
225	0x00E1	RO	MPPT4 version number- H	U16	N/A	N/A	
226	0x00E2	RO	MPPT4 version number- L	U16	N/A	N/A	
227	0x00E3	RO	MPPT5 version number- H	U16	N/A	N/A	
228	0x00E4	RO	MPPT5 version number- L	U16	N/A	N/A	
229	0x00E5	RO	DCDC1 version number-H	U16	N/A	N/A	
230	0x00E6	RO	DCDC1 version number-L	U16	N/A	N/A	
231	0x00E7	RO	DCDC2 version number-H	U16	N/A	N/A	
232	0x00E8	RO	DCDC2 version number-L	U16	N/A	N/A	
233	0x00E9	RO	DCDC3 version number-H	U16	N/A	N/A	
234	0x00EA	RO	DCDC3 version number-L	U16	N/A	N/A	
235	0x00EB	RO	DCDC4 version number-H	U16	N/A	N/A	
236	0x00EC	RO	DCDC4 version number-L	U16	N/A	N/A	
237	0x00ED	RO	DCDC5 version number-H	U16	N/A	N/A	
238	0x00EE	RO	DCDC5 version number-L	U16	N/A	N/A	
239	0x00EF	RO	Summary of PCS status	U16	1	N/A	1 Stop 2 Running 3 Fault
240	0x00F0	RO	Total PCS AC active power	I16	0.1	kW	

241	0x00F1	RO	Total PCS AC current	I16	0.1	A	
242	0x00F2	RO	Total PCS Phase A voltage	U16	0.1	V	
243	0x00F3	RO	Total PCS phase B voltage	U16	0.1	V	
244	0x00F4	RO	Total PCS phase C voltage	U16	0.1	V	
245	0x00F5	RO	Summary of BMS status	U16	1	N/A	1 Stop 2 Running 3 Fault
246	0x00F6	RO	Summary of BMS battery voltage	U16	0.1	V	
247	0x00F7	RO	Summary of BMS battery current	I16	0.1	A	Range: -3000 ~ 3000A Deviation: -3000A
248	0x00F8	RO	Summary of BMS battery SOC	U16	1	%	
249	0x00F9	RO	Summary of BMS battery SOH	U16	1	N/A	
250	0x00FA	RO	Summary of DCDC status	U16	1	N/A	1 Stop 2 Running 3 Fault
251	0x00FB	RO	Summary of DCDC high voltage side voltage	U16	0.1	V	
252	0x00FC	RO	Summary of DCDC high voltage side current	I16	0.1	A	
253	0x00FD	RO	Summary of DCDC high voltage side total power	I16	0.1	kW	
254	0x00FE	RO	Summary of DCDC low voltage side voltage	U16	0.1	V	
255	0x00FF	RO	Summary of DCDC low voltage side current	I16	0.1	A	
256	0x0100	RO	Summary of DCDC low voltage side total power	I16	0.1	kW	
257	0x0101	RO	Summary of MPPT status	U16	1	N/A	1 Stop 2 Running 3 Fault
258	0x0102	RO	Summary of MPPT high voltage side voltage	U16	0.1	V	

259	0x0103	RO	Summary of MPPT high voltage side current	I16	0.1	A	
260	0x0104	RO	Summary of MPPT high voltage side total power	I16	0.1	kW	
261	0x0105	RO	Summary of MPPT low voltage side voltage	U16	0.1	V	
262	0x0106	RO	Summary of MPPT low voltage side current	I16	0.1	A	
263	0x0107	RO	Summary of MPPT low voltage side total power	I16	0.1	kW	
300	0x012C	WR	System Mode Control	U16	1	N/A	1 P/Q 2 Off grid 3 On&Off Grid
301	0x012D	WR	System state control	U16	1	N/A	2 Stop 6 Run
302	0x012E	WR	Active power control	I16	0.1	kW	-600~600, negative represent charging
303	0x012F	WR	Reactive power control	I16	0.1	kvar	
304	0x0130	RO	MPPT power limitation	I16	0.1	kW	
306	0x0132	WR	DCDC module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
310	0x0136	WR	PCS module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
311	0x0137	WR	PCS2 module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
314	0x013A	WR	BMS module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
318	0x013E	WR	MPPT module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
319	0x013F	WR	MPPT2 module start/stop control	U16	1	N/A	2 Not allowed to start 6 Allow to start
321	0x0141	WR	Comparison of Temperature Values between ASS and UC	U16	1	N/A	1 consistency 0 inconsistency
322	0x0142	WR	Start air conditioner at high temperature	U16	1	N/A	
323	0x0143	WR	Stop air conditioner at high temperature	U16	1	N/A	
324	0x0144	WR	Start air conditioner at low temperature	U16	1	N/A	
325	0x0145	WR	Stop air conditioner at low temperature	U16	1	N/A	

326	0x0146	WR	High SOC	U16	1	N/A	
328	0x0148	WR	Clear fault	U16	1	N/A	0 Unclear 1 Clear
330	0x014A	WR	Modify local ID	U16	1	N/A	1-255
331	0x014B	WR	control rights	U16	1	N/A	1 Remote control -customer 0 Local control-EMS
332	0x014C	WR	Power output mode	U16	1	N/A	0 Command priority 1. PV priority
333	0x014D	WR	RS485-2 baud rate	U16	N/A	N/A	1 9600 2 19200 3 38400
334	0x014E	WR	RS485-1 baud rate	U16	N/A	N/A	1 9600 2 19200 3 38400
346	0x015A	WR	Modify ASS ID	U16	1	N/A	1-255
347	0x015B	WR	RS485 slave station communication detection function	U16	1	N/A	0 Disabled 1 Enabled
349	0x015D	WR	Internal fan startup temperature	U16	1	℃	Default 35 ℃
350	0x015E	WR	EMS Fan Start Temperature	U16	1	℃	Default 35 ℃
352	0x0160	WR	Power command type	U16	1	N/A	0 Power command 1 Proportional command
358	0x0166	WR	zero power protection	U16	1	N/A	0 Disabled 1 Enabled
359	0x0167	WR	CAN2 communication detection	U16	1	N/A	0 Disabled 1 Enabled
365	0x016D	WR	Air conditioning operation mode	U16	1	N/A	1 Normal Operation 2 Extended Operation

3. ESS Battery Register Definitions

Table 3-1 ESS Battery Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
4000	0x0FA0	RO	Battery Rack Status	U16	1	N/A	1 Stop 2 Running 3 Fault
4001	0x0FA1	RO	Battery Rack Total Voltage	U16	0.1	V	0~1000V
4002	0x0FA2	RO	Battery Rack Current	U16	0.1	A	Range: -3000 ~ 3000A Deviation: -3000A
4003	0x0FA3	RO	Battery Rack SOC	U16	1	%	0~105
4004	0x0FA4	RO	Battery Rack SOH	U16	1	%	0~100
4005	0x0FA5	RO	Maximum Charging Current	U16	0.1	A	Range: -3000 ~ 3000A Deviation: -3000A
4006	0x0FA6	RO	Maximum Discharging Current	U16	0.1	A	Range: -3000 ~ 3000A Deviation: -3000A
4007	0x0FA7	RO	DO Status	U16	1	N/A	Bit0 Main Contactor Bit1 Reserved Bit2 Intermediate Contactor
4008	0x0FA8	RO	DI Status	U16	1	N/A	Bit0 Main Contactor Bit1 Intermediate Contactor Bit2 Maintenance Switch Bit3 Isolation Switch Bit4 Emergency Stop Signal
4009	0x0FA9	RO	Highest Single Cell Voltage	U16	0.001	V	Range 1~ 4.5V
4010	0x0FAA	RO	Lowest Single Cell Voltage	U16	0.001	V	Range 1~ 4.5V
4011	0x0FAB	RO	Battery Cell Number with Highest Voltage	U16	1	N/A	Range 0~ 300
4012	0x0FAC	RO	Battery Cell Number with Lowest Voltage	U16	1	N/A	Range 0~ 300
4013	0x0FAD	RO	Highest Single Cell Temperature	U16	1	℃	Range：-40~ 120℃ Deviation: -40℃
4014	0x0FAE	RO	Lowest Single Cell Temperature	U16	1	℃	Range：-40~ 120℃ Deviation: -40℃

4015	0x0FAF	RO	Battery cell Number with Highest Temperature	U16	1	N/A	Range: 0~ 300
4016	0x0FB0	RO	Battery cell Number with Lowest Temperature	U16	1	N/A	Range: 0~ 300
4017	0x0FB1	RO	High Voltage Charge Prohibition Flag	U16	1	N/A	0 Normal 1 Prohibited charging
4018	0x0FB2	RO	Voltage Discharge Prohibition Flag	U16	1	N/A	0 Normal 1 Prohibited discharging
4030	0x0FBE	RO	Battery Rack Alarm 0	U16	1	N/A	Bit0 Battery Single Cell Low Voltage Alarm Bit1 Battery Single Cell High Voltage Alarm Bit2 Battery Pack Low Voltage Alarm Bit3 Battery Pack High Voltage Alarm Bit4 Charging Low Temperature Alarm Bit5 Charging High Temperature Alarm Bit6 Discharging Low Temperature Alarm Bit7 Discharging High Temperature Alarm Bit8 Battery Pack Charging Overcurrent Alarm Bit9 Battery Pack Discharging Overcurrent Alarm Bit10 Battery Module Low Voltage Alarm Bit11 Battery Module High Voltage Alarm Bit12 Single Cell Voltage Difference Alarm Bit13 Low SOC Alarm Bit14 Low Insulation Resistance (KΩ) Alarm Bit15 High SOC Alarm
4031	0x0FBF	RO	Battery Rack Alarm 1	U16	1	N/A	

4032	0x0FC0	RO	Battery Rack Fault 0	U16	1	N/A	Bit0 Battery Single Cell Low Voltage Fault Bit1 Battery Single Cell High Voltage Fault Bit2 Battery Pack Low Voltage Fault Bit3 Battery Pack High Voltage Fault Bit4 Charging Low Temperature Fault Bit5 Charging High Temperature Fault Bit6 Discharging Low Temperature Fault Bit7 Discharging High Temperature Fault Bit8 Battery Pack Overcurrent During Charging Fault Bit9 Battery Pack Overcurrent During Discharging Fault Bit10 Battery pack Low Voltage Fault Bit11 Battery pack High Voltage Fault Bit12 Individual Cell Voltage Imbalance Fault Bit13 Low SOC Fault Bit14 Low Insulation Resistance (KΩ) Fault Bit15 High SOC Fault
4033	0x0FC1	RO	Battery Rack Fault 1	U16	1	N/A	Bit0 Single Cell Voltage Measurement Fault Bit1 Single Cell Temperature Measurement Fault Bit2 Battery Management Module Communication Fault Bit3 Input Overvoltage Fault Bit4 Input Reverse Polarity Fault Bit5 Circuit Breaker/Contactor Fault

							Bit6 Temperature Rise Fault Bit7 Other Faults

4. PCS Register Definitions

Table 4-1 PCS Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
1000	0x03E8	RO	Phase A Voltage	U16	0.1	V	
1001	0x03E9	RO	Phase B Voltage	U16	0.1	V	
1002	0x03EA	RO	Phase C Voltage	U16	0.1	V	
1003	0x03EB	RO	Phase A Current	I16	0.1	A	
1004	0x03EC	RO	Phase B Current	I16	0.1	A	
1005	0x03ED	RO	Phase C Current	I16	0.1	A	
1006	0x03EE	RO	AC Active Power	I16	0.1	kW	
1007	0x03EF	RO	AC Reactive Power	I16	0.1	kVar	
1008	0x03F0	RO	AC Apparent Power	I16	0.1	kVA	
1009	0x03F1	RO	Frequency	U16	0.01	Hz	
1010	0x03F2	RO	Power Factor	U16	0.001	N/A	
1011	0x03F3	RO	DC Voltage	U16	0.1	V	
1012	0x03F4	RO	DC Current	I16	0.1	A	
1013	0x03F5	RO	DC Power	I16	0.1	kW	
1014	0x03F6	RO	IGBT1 Temperature	U16	0.1	℃	
1015	0x03F7	RO	IGBT2 Temperature	U16	0.1	℃	
1016	0x03F8	RO	IGBT3 Temperature	U16	0.1	℃	
1017	0x03F9	RO	IGBT4 Temperature	U16	0.1	℃	
1018	0x03FA	RO	IGBT5 Temperature	U16	0.1	℃	
1019	0x03FB	RO	IGBT6 Temperature	U16	0.1	℃	
1020	0x03FC	RO	Inlet Air Temperature	U16	0.1	℃	

1021	0x03FD	RO	Outlet Air Temperature	U16	0.1	℃	
1022	0x03FE	RO	Phase A Active Power	I16	0.1	kW	
1023	0x03FF	RO	Phase B Active Power	I16	0.1	kW	
1024	0x0400	RO	Phase C Active Power	I16	0.1	kW	
1025	0x0401	RO	DC Bus Voltage	U16	0.1	V	
1026	0x0402	RO	DCAC Operating Status	U16	1	N/A	Bit10 Device Fault 0 No Fault) 1 Fault Bit9 Master-Slave Identity 0 Slave 1 Master Bit6-8 Power Reduction Status 0 No Power Reduction 1 Temperature Reduction 2 AC Voltage Too Low Reduction 3 DC Voltage Too High Reduction Bit4-5 Charge/Discharge Status 0 Standby 1 Charging 2 Discharging Bit1-3 Operating Status 1 Stop 2 Self-Check 3 On grid Operation 4 Off grid Operation Bit0 Power On/Off Status 0 Power Off 1 Power On
1027	0x0403	RO	DCAC Fault Code 01	U16	1	N/A	Bit0 Phase-Locked Loop (PLL) Alarm Bit1 DC Side Hardware Soft

							Start Fault Bit2 AC Side Hardware Soft Start Fault Bit3 DC Soft Start Software Fault Bit4 Grid Resonance Fault Bit5 Input Impedance Fault Bit6 Input Impedance Alarm Bit7 CANB Communication Abnormal Alarm Bit8 System Address Conflict Fault Bit9 System Master Address Conflict Fault Bit10 Module Address Abnormal Fault Bit11 DC Voltage Sampling Fault Alarm Bit12 AC Voltage Sampling Abnormal Alarm Bit13 DC Side Main Relay Alarm Bit14 Bus Bar Voltage Imbalance Alarm Bit15 Overload Alarm
1028	0x0404	RO	DCAC Fault Code 02	U16	1	N/A	Bit0 Positive Busbar Second Level Overvoltage Alarm Bit1 Negative Busbar Second Level Overvoltage Alarm Bit2 Module A1 Phase Overcurrent Alarm Bit3 Module B1 Phase Overcurrent Alarm Bit4 Module C1 Phase Overcurrent Alarm Bit5 Module A2 Phase Overcurrent Alarm Bit6 Module B2 Phase Overcurrent Alarm Bit7 Module C2 Phase Overcurrent Alarm Bit8 Auxiliary Power Supply Fault

							Bit9 Parallel CANA Communication Fault Bit10 Fan 1 Fault Bit11 Fan 2 Fault Bit12 Fan 3 Fault Bit13 Inverter Overvoltage Alarm Bit14 Inverter Undervoltage Alarm Bit15 Emergency Stop Fault
1029	0x0405	RO	DCAC Fault Code 03	U16	1	N/A	Bit0 High Grid Voltage Alarm Bit1 Grid Low Voltage Alarm Bit2 Grid High Frequency Alarm Bit3 Grid Low Frequency Alarm Bit4 Busbar High Voltage Alarm Bit5 Busbar Low Voltage Alarm Bit6 Positive Busbar First Level Overvoltage Alarm Bit7 Negative Busbar First Level Overvoltage Alarm Bit8 DC Port Overvoltage Alarm Bit9 DC Port Undervoltage Alarm Bit10 Grid Phase Sequence Alarm Bit11 Inverter Phase Sequence Alarm Bit12 Inverter Amplitude Locking Alarm Bit13 AC Output Short Circuit Fault Bit14 AC Current Sampling Fault Bit15 RS485 Communication Fault
1030	0x0406	RO	DCAC Fault Codde 04	U16	1	N/A	Bit0 Inlet High Ambient Temperature Alarm

							Bit1 Outlet High Ambient Temperature Alarm Bit2 Module A2 High Temperature Alarm Bit3 Module B2 High Temperature Alarm Bit4 Module C2 High Temperature Alarm Bit5 Module A1 High Temperature Alarm Bit6 Module B1 High Temperature Alarm Bit7 Module C1 High Temperature Alarm Bit8 Module A2 Temperature Sensor Fault Bit9 Module B2 Temperature Sensor Fault Bit10 Module C2 Temperature Sensor Fault Bit11 Module A1 Temperature Sensor Fault Bit12 Module B1 Temperature Sensor Fault Bit13 Module C1 Temperature Sensor Fault Bit14 AC Constant Voltage Mode Grid Connection Fault Bit15 DSP Software Version Mismatch Fault
1031	0x0407	RO	DCAC Software Version – High byte	U16	1	N/A	
1032	0x0408	RO	DCAC Software Version – Low byte	U16	1	N/A	
1033	0x0409	RO	DCAC Hardware Version- High byte	U16	1	N/A	
1034	0x040A	RO	DCAC Hardware Version – Low byte	U16	1	N/A	
1035	0x040B	RO	DCAC Fault Code 05	U16	1	N/A	Bit0 IGBT Overcurrent Protection Fault Bit1 Busbar Hardware Overcurrent Fault Bit2 IGBT Hardware Overcurrent Fault

							Bit3 Board Connection Fault Bit4 AC Fuse Damage Indicator Bit5 AC Surge Protector Fault Bit6 Power Module Overtemperature Indicator Bit7 Grid Voltage Imbalance Bit8 Grid Current Imbalance Bit9 Grid Phase Loss Bit10 N-line Overcurrent Bit11 Positive and Negative Busbar Imbalance Fault Bit12 Undervoltage in Current Source Mode Bus Bit13 DC Pre-charge Overcurrent Bit14 DC Overcurrent
1036	0x040C	RO	DCAC Fault Code 06	U16	1	N/A	Bit0 Control Board RAM Fault Bit1 Control Board EEPROM Fault Bit2 Zero Drift Excessive Bit3 Backend Communication Protocol Fault Bit4 CAN Communication Protocol Fault Bit5 CPLD Communication Protocol Fault Bit14 CAN Communication Fault Bit15 EMS Communication Fault
1037	0x040D	RO	DCAC Fault Code 07	U16	1	N/A	Bit0 Pre-charge Relay Close Error Bit1 Pre-charge Relay Open Error Bit2 Pre-charge Relay Close State Error Bit3 Pre-charge Relay Open State Error Bit4 Main AC Contactor Close Error

							Bit5 Main AC Contactor Open Error Bit6 Main AC Contactor Close State Error Bit7 Main AC Contactor Open State Error
1038	0x040E	RO	DCAC Fault Code 08	U16	1	N/A	Bit0 Overvoltage Fault in Inverter Phase A Bit1 Overvoltage Fault in Inverter Phase B Bit2 Overvoltage Fault in Inverter Phase C Bit3 Grid Islanding Fault Indicator Bit4 Bit5 System Resonance Fault Indicator Bit6 Software Overvoltage Overcurrent Bit7 Bit8 Module Dip Switch Address Mismatch Bit9 Undervoltage Fault in Inverter Phase A Bit10 Undervoltage Fault in Inverter Phase B Bit11 Undervoltage Fault in Inverter Phase C Bit12 Off-grid Lack of Synchronization Signal Fault Indicator Bit13 Bit14 Off-grid Short Circuit Fault Indicator Bit15
1040	0x0410	RO	AC start/stop	U16	1	N/A	
1041	0x0411	RO	AC working mode setting	U16	1	N/A	1-DC constant voltage 2-DC constant current 3-DC constant power 4-AC constant voltage 5-AC constant current 6-AC constant power
1042	0x0412	RO	Active Power setting	U16	1	N/A	

1043	0x0413	RO	Module RS485 communication address	U16	1	N/A	
1044	0x0414	RO	Module CAN communication address	U16	1	N/A	
1045	0x0415	RO	RS485 communication baud rate	U16	1	N/A	
1046	0x0416	RO	CAN communication baud rate	U16	1	N/A	
1047	0x0417	RO	Grid code	U16	1	N/A	1 China 2 Australia 3 Germany 4 United Kingdom 5 Italy 6 Belgium 7 South Africa 8 Czech Republic 9 60Hz 10 315V
1048	0x0418	RO	Single/parallel logo	U16	1	N/A	
1049	0x0419	RO	Number of parallel device	U16	1	N/A	
1050	0x041A	RO	Local parallel address	U16	1	N/A	
1051	0x041B	RO	Master and slave identities	U16	1	N/A	

5. DCDC Register Definitions

Table 5-1 DCDC Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
2000	0x07D0	RO	High Voltage Side Voltage	U16	0.1	V	
2001	0x07D1	RO	High Voltage Side Current	I16	0.1	A	
2002	0x07D2	RO	High Voltage Side Power	I16	0.1	kW	
2003	0x07D3	RO	Module IGBT1 Temperature	I16	0.1	℃	
2004	0x07D4	RO	Module IGBT2 Temperature	I16	0.1	℃	
2005	0x07D5	RO	Module IGBT3 Temperature	I16	0.1	℃	
2006	0x07D6	RO	Module IGBT4 Temperature	I16	0.1	℃	
2007	0x07D7	RO	Module IGBT5 Temperature	I16	0.1	℃	
2008	0x07D8	RO	Module IGBT6 Temperature	I16	0.1	℃	
2009	0x07D9	RO	Module Inlet Air Temperature	I16	0.1	℃	
2010	0x07DA	RO	Module Outlet Air Temperature	I16	0.1	℃	
2015	0x07DF	RO	Low Voltage Side Access Voltage	U16	0.1	V	
2016	0x07E0	RO	Low Voltage Side Access Current	I16	0.1	A	
2017	0x07E1	RO	Low Voltage Side Access Power	I16	0.1	kW	
2019	0x07E3	RO	Low Voltage Side Access Voltage	U16	N/A	N/A	
2023	0x07E7	RO	Low Voltage Side Access Voltage	U16	N/A	N/A	
2027	0x07EB	RO	Low Voltage Side Access Voltage	U16	N/A	N/A	

2031	0x07EF	RO	Low Voltage Side Access Voltage	U16	N/A	N/A	
2035	0x07F3	RO	Low Voltage Side Access Voltage	U16	N/A	N/A	
2039	0x07F7	RO	Device Status Code 1	U16	N/A	N/A	Bit0 Alarm 0 No alarm 1 Alarm Bit1 Fault 0 No fault 1 Fault Bit2-3 Device State 1 Stop 2 Soft start 3 Running Bit4-6 Derating State 0 No derating 1 Temperature derating 2 High DC voltage derating
2040	0x07F8	RO	Device Status Code 2	U16	N/A	N/A	Bit0 DC Access 1 State Alarm 0 No alarm 1 Alarm Bit1 DC Access 1 State Fault 0 No fault 1 Fault Bit2-4 DC Access 1 State 0 Stopped 1 Neither charging nor discharging 2 Battery charging 3 Battery discharging, 4 PV generate power 5 Supercapacitor charging, 6 Supercapacitor discharging 7 PV voltage stabilization
2041	0x07F9	RO	Device Status Code 3	U16	N/A	N/A	
2042	0x07FA	RO	Device Status Code 4	U16	N/A	N/A	Bit0-1 DC Access 1 Type 0 Other

							1 PV 2 Battery, 3 Supercapacitor
2043	0x07FB	RO	Fault Code 1 (Parallel Fault Code)	U16	N/A	N/A	Bit0 Reserved Bit1 Reserved Bit2 Parallel Host Conflict Fault Bit3 Parallel Line Fault Bit4 Parallel Address Conflict Fault Bit5 Parallel Address Out of Range Fault
2044	0x07FC	RO	Fault Code 2 (System Fault Code)	U16	N/A	N/A	Bit0 Auxiliary Power Supply Fault Bit1 Radiator High Temperature Alarm Bit2 DC Bus High Voltage Alarm Bit3 DC Bus Low Voltage Warning Bit4 DC Bus Voltage Asymmetrical Alarm Bit5 DC Hardware Soft Start Fault Bit6 Fan 1 Alarm Bit7 Fan 2 Alarm Bit8 Fan 3 Alarm Bit9 Temperature Sensor Fault Bit10 High Voltage side and Low Voltage Side Voltage Setting Mismatch Alarm Bit11 CAN Communication Address Conflict Fault Bit12 485 Communication Alarm Bit13 Emergency Stop Shutdown Alarm Bit14 CAN Communication Alarm
2045	0x07FD	RO	DC Access Fault Code 1	U16	N/A	N/A	Bit0 Reserved Bit1 Reserved Bit2 DC Access 1 Overvoltage Alarm

							Bit3 DC Access 1 Undervoltage Alarm Bit4 DC Access 1 Low Voltage Side Soft Start Fault Bit5 DC Access 1 Overload Alarm Bit6 DC Access 1 Overcurrent Alarm
2046	0x07FE	RO	DC Access Fault Code 2	U16	N/A	N/A	
2047	0x07FF	RO	DC Access Fault Code 3	U16	N/A	N/A	
2048	0x0800	RO	DC Access Fault Code 4	U16	N/A	N/A	
2049	0x0801	RO	DC Access Fault Code 5	U16	N/A	N/A	
2050	0x0802	RO	DC Access Fault Code 6	U16	N/A	N/A	
2051	0x0803	RO	Software Version Number - High Byte	U16	N/A	N/A	
2052	0x0804	RO	Software Version Number - Low Byte	U16	N/A	N/A	
2053	0x0805	RO	Hardware Version Number - High Byte	U16	N/A	N/A	
2054	0x0806	RO	Hardware Version Number - Low Byte	U16	N/A	N/A	

6. MPPT Register Definitions (Optional)

Table 6-1 MPPT Register Definitions

NO	Register Address (HEX)	read/ write	Signal Name	Data Type	Gain Coeff.	Unit	Explanation
3000	0x0BB8	RO	High Voltage Side Voltage	U16	0.1	V	
3001	0x0BB9	RO	High Voltage Side Current	I16	0.1	A	
3002	0x0BBA	RO	High Voltage Side Power	I16	0.1	kW	
3003	0x0BBB	RO	Module IGBT1 Temperature	I16	0.1	℃	
3004	0x0BBC	RO	Module IGBT2 Temperature	I16	0.1	℃	
3005	0x0BBD	RO	Module IGBT3 Temperature	I16	0.1	℃	
3006	0x0BBE	RO	Module IGBT4 Temperature	I16	0.1	℃	
3007	0x0BBF	RO	Module IGBT5 Temperature	I16	0.1	℃	
3008	0x0BC0	RO	Module IGBT6 Temperature	I16	0.1	℃	
3009	0x0BC1	RO	Module Inlet Air Temperature	I16	0.1	℃	
3010	0x0BC2	RO	Module Outlet Air Temperature	I16	0.1	℃	
3015	0x0BC7	RO	Low Voltage Side Access Voltage	U16	0.1	V	
3016	0x0BC8	RO	Low Voltage Side Access Current	I16	0.1	A	
3017	0x0BC9	RO	Low Voltage Side Access Power	I16	0.1	kW	
3039	0x0BDF	RO	Device Status Code 1	U16	N/A	N/A	Bit0 Alarm 0 No alarm 1 Alarm Bit1 Fault 0 No fault

							1 Fault Bit2-3 Device State 1 Stopped 2 Soft start 3 Running Bit4-6 Derating State 0 No derating 1 Temperature derating 2 High DC voltage derating
3040	0x0BE0	RO	Device Status Code 2	U16	N/A	N/A	Bit0 DC Access 1 State Alarm 0 No alarm 1 Alarm Bit1 DC Access 1 State Fault 0 No fault 1 Fault Bit2-4 DC Access 1 State 0 Stopped 1 Neither charging nor discharging 2 Battery charging 3 Battery discharging, 4 PV generate power 5 Supercapacitor charging, 6 Supercapacitor discharging 7 PV voltage stabilization
3042	0x0BE2	RO	Device Status Code 4	U16	N/A	N/A	Bit0-1 DC Access 1 Type 0 Other 1 PV 2 Battery, 3 Supercapacitor
3043	0x0BE3	RO	Fault Code 1 (Parallel Fault Code)	U16	N/A	N/A	Bit0 Reserved Bit1 Reserved Bit2 Parallel Host Conflict Fault Bit3 Parallel Line Fault Bit4 Parallel Address Conflict Fault Bit5 Parallel Address Out of Range Fault

3044	0x0BE4	RO	Fault Code 2 (System Fault Code)	U16	N/A	N/A	Bit0 Auxiliary Power Supply Fault Bit1 Radiator High Temperature Alarm Bit2 DC Bus High Voltage Alarm Bit3 DC Bus Low Voltage Warning Bit4 DC Bus Voltage Asymmetrical Alarm Bit5 DC Hardware Soft Start Fault Bit6 Fan 1 Alarm Bit7 Fan 2 Alarm Bit8 Fan 3 Alarm Bit9 Temperature Sensor Fault Bit10 High Voltage side and Low Voltage Side Voltage Setting Mismatch Alarm Bit11 CAN Communication Address Conflict Fault Bit12 485 Communication Alarm Bit13 Emergency Stop Shutdown Alarm Bit14 CAN Communication Alarm
3045	0x0BE5	RO	DC Access Fault Code 1	U16	N/A	N/A	Bit0 Reserved Bit1 Reserved Bit2 DC Access 1 Overvoltage Alarm Bit3 DC Access 1 Undervoltage Alarm Bit4 DC Access 1 Low Voltage Side Soft Start Fault Bit5 DC Access 1 Overload Alarm Bit6 DC Access 1 Overcurrent Alarm
3051	0x0BEB	RO	Software Version Number - High Byte	U16	N/A	N/A	
3052	0x0BEC	RO	Software Version Number - Low Byte	U16	N/A	N/A	

3053	0x0BED	RO	Hardware Version Number - High Byte	U16	N/A	N/A	
3054	0x0BEE	RO	Hardware Version Number - Low Byte	U16	N/A	N/A	

7. Assignment Table

The Modbus Application Protocol is a widely used communication protocol that is currently used in PV and ESS communication. The Modbus protocol has been developed for reading data from or writing data to clearly defined data areas.

This document describes the Modbus protocol for Dunext EMS and devices manage by the EMS such as ESS, DCDC and MPPT. It can be used to regulate subsequent development for third-party integration.

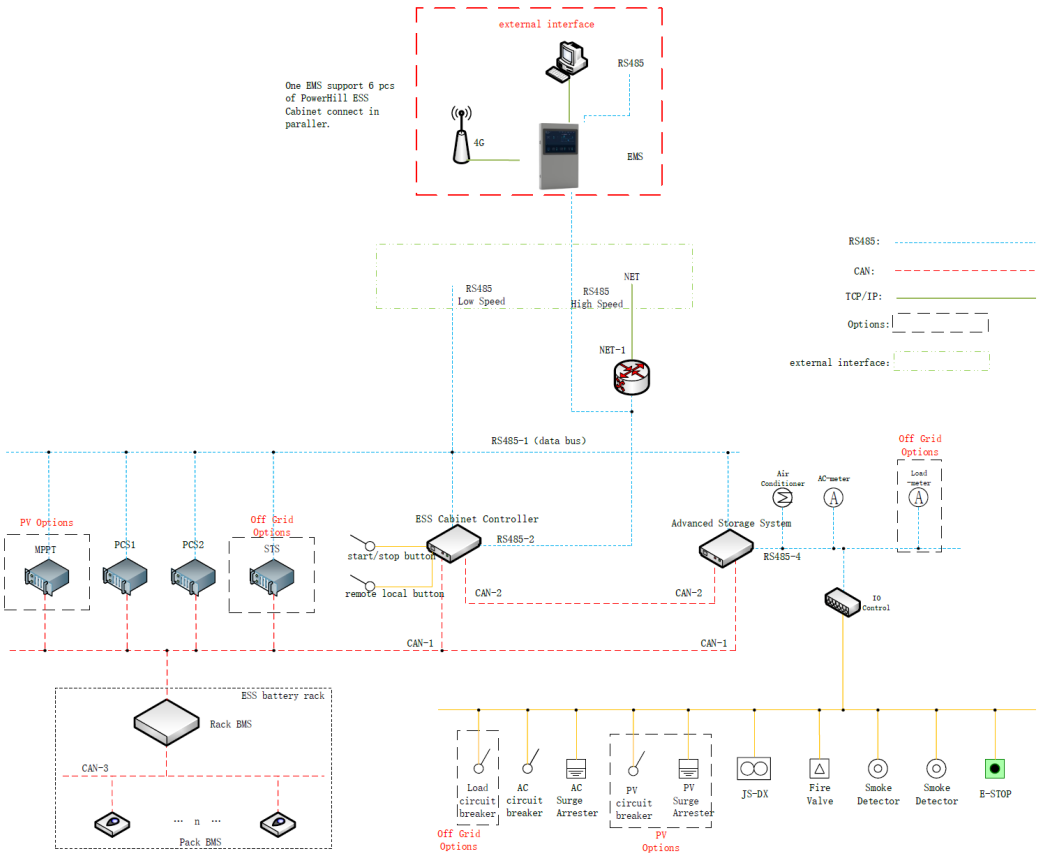

Figure 7-1 Communication Overview

- The default ID for EMS is 0x01.
- The external interface of the EMS:
  TCP/IP：IP：192.168.1.200/192.168.1.199 Port:502

Table 7-1 Terms and Abbreviations

Terms	Description
U16	16-bit unsigned integer
I16	16-bit signed integer
RO	Read-only data
WR	Data that is readable and writable
Gain Coefficient	The read data multiplied by the coefficient equals the real data
ASS	Advanced Storage System

Table 7-2 Function Code

Function Code	Modbus Command	Function
0x03	Read Register	Obtain one or more register values
0x06	Set single Register	Write the specified values into a register

Table 7-3 Modbus Read Data Message Format

Host transmission	slave address	function code	initial address	Number of registers	Check code
	01	03	00 04	00 02	85 CA

Slave transmission	slave address	function code	Number of bytes	Number of bytes	Data	Data	Check code
	01	03	04	04	00 00	00 00	FA 33