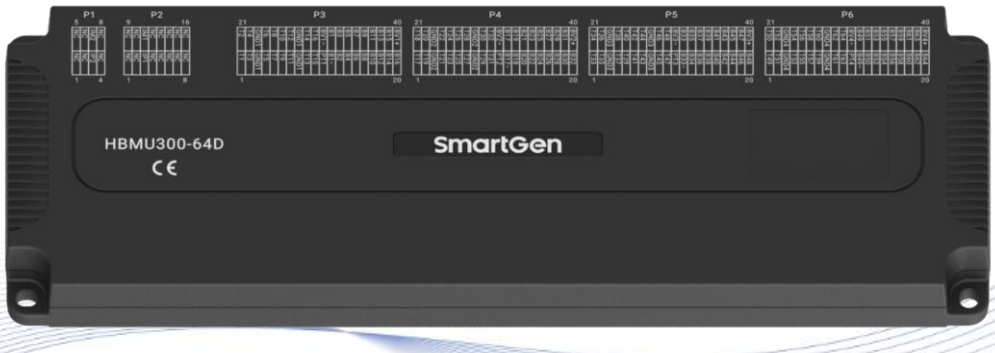
SmartGen

MAKING CONTROL SMARTER

HBMU300-64D

BMS SLAVE CONTROL MODULE

USER MANUAL



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CONTENT

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Table 1 Software Version

Date	Version	Content
2024-09-08	1.0	Original release.

Glossary and List of Abbreviations
BMS: Battery Management System
BCU: Battery Control Unit
BMU: Battery Management Unit

1 OVERVIEW

HBMU300-64D is the slave control module of BMS. Up to 64 strings of battery voltage, 64-channel temperature and 2-channel temperature of high-voltage connector can be collected, and passive balance function of 64-channel battery is supported. The module can upload the slave sampling information to the master module via isoSPI communication. It is suitable for energy storage system or power station using lithium iron phosphate, ternary lithium, lithium titanate and other materials as medium.

2 PERFORMANCE AND CHARACTERISTICS

——Support isoSPI communication;
——Support 32-64 strings of single battery voltage detection;
——Up to 64-channel temperature detection is supported, NTC for temperature sensor,
——Support 1500VDC energy storage system;
——Modular design, screw installation, flame retardant ABC/PC shell, compact structure and easy installation.

3 SPECIFICATION

Table 2 Specification Parameters

Item	Content
Cell Voltage Sampling	Range: (0~5)VDC Resolution: 1mV Accuracy: ±5mV
Temp. Sampling Input	Range: -40°C~+125°C Resolution: 1°C Accuracy: ±1°C Temp. sensor type: NTC 10K-3950
IsoSPI Comm. Rate	1Mb/s
EMC Standard	GB/T 34131-2023
Vibration	5Hz~8Hz: displacement=±7.5mm 8Hz~500Hz: a=±2g IEC 60068-2-6
Shock	50g, 11ms, half-sine, IEC 60068-2-27
Bump Test	25g, 16ms, half-sine IEC 60255-21-2
Overall Dimensions	287mmx95mmx25mm
Installation Dimensions	274.5mmx82.5mm
Working Temperature	(-40~+70)°C
Working Humidity	(20~93)%RH
Storage Temperature	(-40~+80)°C
Protection Level	IP20
Weight	0.36kg

4 MODULE PANELS

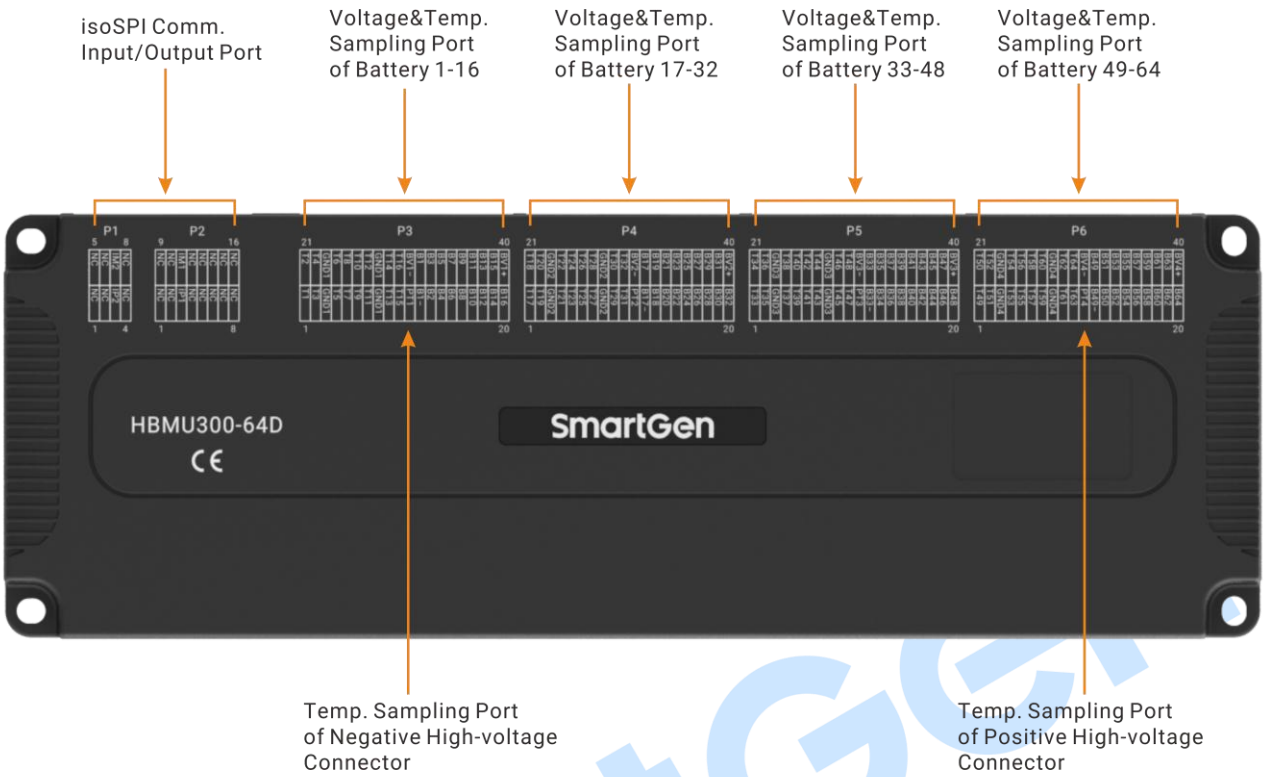

Fig.1 Panel Drawing

Table 3 Terminal Model Comparison

No.	Board Model	Cable Model	Pin Model	Remark
P1(8PIN)	IMSA-13065B-2-08Y 900	IMSA-13065S-2-08Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm^2 AWG22
P2(16PIN)	IMSA-13065B-2-16Y 900	IMSA-13065S-2-16Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm2 AWG22
P3(40PIN)	IMSA-13065B-2-40Y 900	IMSA-13065S-2-40Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm2 AWG22
P4(40PIN)	IMSA-13065B-2-40Y 900	IMSA-13065S-2-40Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm2 AWG22
P5(40PIN)	IMSA-13065B-2-40Y 900	IMSA-13065S-2-40Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm2 AWG22
P6(40PIN)	IMSA-13065B-2-40Y 900	IMSA-13065S-2-40Y 500	IPS-13065T-01A-T	Wire diameter 0.3mm^2 AWG22

Table 4 P1 Terminal Definition

P1(8PIN)			
4	3	2	1
NC	IP2	NC	NC
8	7	6	5
NC	IM2	NC	NC

Table 5 P1 Terminal Function Description

Pin No.	Definition	Description
3	IP2	isoSPI communication for connecting next slave or master module. The wire harness adopts ordinary twisted pair.
7	IM2	
Other Terminal	NC	It must be hung in the air.

Table 6 P2 Terminal Definition

P2(16PIN)							
8	7	6	5	4	3	2	1
NC	NC	NC	NC	NC	IP1	NC	NC
16	15	14	13	12	11	10	9
NC	NC	NC	NC	NC	IM1	NC	NC

Table 7 P2 Terminal Function Description

Pin No.	Definition	Description
3	IP1	isoSPI communication for connecting last slave or master module. The wire harness adopts ordinary twisted pair.
11	IM1	
Other Terminal	NC	It must be hung in the air.

Table 8 P3 Terminal Definition

P3(40PIN)																			
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
B16	B14	B12	B10	B8	B6	B4	B2	B1-	PT1	T15	T13	GND1	T11	T9	T7	T5	GND1	T3	T1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
BV1+	B15	B13	B11	B9	B7	B5	B3	B1	BV1-	T16	T14	GND1	T12	T10	T8	T6	GND1	T4	T2

Table 9 P3 Terminal Function Description

Pin No. (P3)	Definition	Description
1	T1	Temp. sampling of No.1 battery.
21	T2	Temp. sampling of No.2 battery.
2	T3	Temp. sampling of No.3 battery.
22	T4	Temp. sampling of No.4 battery.
3	GND1	Common terminal 1 of temp. sampling negative
23	GND1	
4	T5	Temp. sampling of No.5 battery.
24	T6	Temp. sampling of No.6 battery.
5	T7	Temp. sampling of No.7 battery.

Pin No. (P3)	Definition	Description
25	T8	Temp. sampling of No.8 battery.
6	T9	Temp. sampling of No.9 battery.
26	T10	Temp. sampling of No.10 battery.
7	T11	Temp. sampling of No.11 battery.
27	T12	Temp. sampling of No.12 battery.
8	GND1	Common terminal 1 of temp. sampling negative
28	GND1	
9	T13	Temp. sampling of No.13 battery.
29	T14	Temp. sampling of No.14 battery.
10	T15	Temp. sampling of No.15 battery.
30	T16	Temp. sampling of No.16 battery.
11	PT1	Temp. sampling of high-voltage connector negative
31	BV1-	Total power negative input of sampling unit 1
12	B1-	No.1 battery negative
32	B1	No.1 battery positive
13	B2	No.2 battery positive
33	B3	No.3 battery positive
14	B4	No.4 battery positive
34	B5	No.5 battery positive
15	B6	No.6 battery positive
35	B7	No.7 battery positive
16	B8	No.8 battery positive
36	B9	No.9 battery positive
17	B10	No.10 battery positive
37	B11	No.11 battery positive
18	B12	No.12 battery positive
38	B13	No.13 battery positive
19	B14	No.14 battery positive
39	B15	No.15 battery positive
20	B16	No.16 battery positive
40	BV1+	Total power positive input of sampling unit 1

Table 10 P4 Terminal Definition

P4(40PIN)																			
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
B32	B30	B28	B26	B24	B22	B20	B18	B17-	PT2	T31	T29	GND2	T27	T25	T23	T21	GND2	T19	T17
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
BV2+	B31	B29	B27	B25	B23	B21	B19	B17	BV2-	T32	T30	GND2	T28	T26	T24	T22	GND2	T20	T18

Table 11 P4 Terminal Function Description

Pin No. (P3)	Definition	Description
1	T17	Temp. sampling of No.17 battery.
21	T18	Temp. sampling of No.18 battery.
2	T19	Temp. sampling of No.19 battery.

Pin No. (P3)	Definition	Description
22	T20	Temp. sampling of No.20 battery.
3	GND2	Common terminal 2 of temp. sampling negative
23	GND2	
4	T21	Temp. sampling of No.21 battery.
24	T22	Temp. sampling of No.22 battery.
5	T23	Temp. sampling of No.23 battery.
25	T24	Temp. sampling of No.24 battery.
6	T25	Temp. sampling of No.25 battery.
26	T26	Temp. sampling of No.26 battery.
7	T27	Temp. sampling of No.27 battery.
27	T28	Temp. sampling of No.28 battery.
8	GND2	Common terminal 2 of temp. sampling negative
28	GND2	
9	T29	Temp. sampling of No.29 battery.
29	T30	Temp. sampling of No.30 battery.
10	T31	Temp. sampling of No.31 battery.
30	T32	Temp. sampling of No.32 battery.
11	PT2	Reserved temp. sampling
31	BV2-	Total power negative input of sampling unit 2
12	B17-	No.17 battery negative
32	B17	No.17 battery positive
13	B18	No.18 battery positive
33	B19	No.19 battery positive
14	B20	No.20 battery positive
34	B21	No.21 battery positive
15	B22	No.22 battery positive
35	B23	No.23 battery positive
16	B24	No.24 battery positive
36	B25	No.25 battery positive
17	B26	No.26 battery positive
37	B27	No.27 battery positive
18	B28	No.28 battery positive
38	B29	No.29 battery positive
19	B30	No.30 battery positive
39	B31	No.31 battery positive
20	B32	No.32 battery positive
40	BV2+	Total power positive input of sampling unit 2

Table 12 P5 Terminal Definition

P5(40PIN)																			
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
B48	B46	B44	B42	B40	B38	B36	B34	B33-	PT3	T47	T45	GND3	T43	T41	T39	T37	GND3	T35	T33
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
BV3+	B47	B45	B43	B41	B39	B37	B35	B33	BV3-	T48	T46	GND3	T44	T42	T40	T38	GND3	T36	T34

Table 13 P5 Terminal Function Description

Pin No. (P3)	Definition	Description
1	T33	Temp. sampling of No.33 battery.
21	T34	Temp. sampling of No.34 battery.
2	T35	Temp. sampling of No.35 battery.
22	T36	Temp. sampling of No.36 battery.
3	GND3	Common terminal 3 of temp. sampling negative
23	GND3	
4	T37	Temp. sampling of No.37 battery.
24	T38	Temp. sampling of No.38 battery.
5	T39	Temp. sampling of No.39 battery.
25	T40	Temp. sampling of No.40 battery.
6	T41	Temp. sampling of No.41 battery.
26	T42	Temp. sampling of No.42 battery.
7	T43	Temp. sampling of No.43 battery.
27	T44	Temp. sampling of No.44 battery.
8	GND3	Common terminal 3 of temp. sampling negative
28	GND3	
9	T45	Temp. sampling of No.45 battery.
29	T46	Temp. sampling of No.46 battery.
10	T47	Temp. sampling of No.47 battery.
30	T48	Temp. sampling of No.48 battery.
11	PT3	Reserved temp. sampling
31	BV3-	Total power negative input of sampling unit 3
12	B33-	No.33 battery negative
32	B33	No.33 battery positive
13	B34	No.34 battery positive
33	B35	No.35 battery positive
14	B36	No.36 battery positive
34	B37	No.37 battery positive
15	B38	No.38 battery positive
35	B39	No.39 battery positive
16	B40	No.40 battery positive
36	B41	No.41 battery positive
17	B42	No.42 battery positive
37	B43	No.43 battery positive
18	B44	No.44 battery positive
38	B45	No.45 battery positive
19	B46	No.46 battery positive
39	B47	No.47 battery positive
20	B48	No.48 battery positive
40	BV3+	Total power positive input of sampling unit 3

Table 14 P6 Terminal Definition

P6(40PIN)																			
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
B64	B62	B60	B58	B56	B54	B52	B50	B49-	PT4	T63	T61	GND4	T59	T57	T55	T53	GND4	T51	T49
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
BV4+	B63	B61	B59	B57	B55	B53	B51	B49	BV4-	T64	T62	GND4	T60	T58	T56	T54	GND4	T52	T50

Table 15 P6 Terminal Function Description

Pin No. (P3)	Definition	Description
1	T49	Temp. sampling of No.49 battery.
21	T50	Temp. sampling of No.50 battery.
2	T51	Temp. sampling of No.51 battery.
22	T52	Temp. sampling of No.52 battery.
3	GND4	Common terminal 4 of temp. sampling negative
23	GND4	
4	T53	Temp. sampling of No.53 battery.
24	T54	Temp. sampling of No.54 battery.
5	T55	Temp. sampling of No.55 battery.
25	T56	Temp. sampling of No.56 battery.
6	T57	Temp. sampling of No.57 battery.
26	T58	Temp. sampling of No.58 battery.
7	T59	Temp. sampling of No.59 battery.
27	T60	Temp. sampling of No.60 battery.
8	GND4	Common terminal 4 of temp. sampling negative
28	GND4	
9	T61	Temp. sampling of No.61 battery.
29	T62	Temp. sampling of No.62 battery.
10	T63	Temp. sampling of No.63 battery.
30	T64	Temp. sampling of No.64 battery.
11	PT4	Temp. sampling of high-voltage connector positive
31	BV4-	Total power negative input of sampling unit 4
12	B49-	No.49 battery negative
32	B49	No.49 battery positive
13	B50	No.50 battery positive
33	B51	No.51 battery positive
14	B52	No.52 battery positive
34	B53	No.53 battery positive
15	B54	No.54 battery positive
35	B55	No.55 battery positive
16	B56	No.56 battery positive
36	B57	No.57 battery positive
17	B58	No.58 battery positive
37	B59	No.59 battery positive
18	B60	No.60 battery positive

Pin No. (P3)	Definition	Description
38	B61	No.61 battery positive
19	B62	No.62 battery positive
39	B63	No.63 battery positive
20	B64	No.64 battery positive
40	BV4+	Total power positive input of sampling unit 4

5 CASE DIMENSIONS AND PANEL CUTOUT

Unit: mm

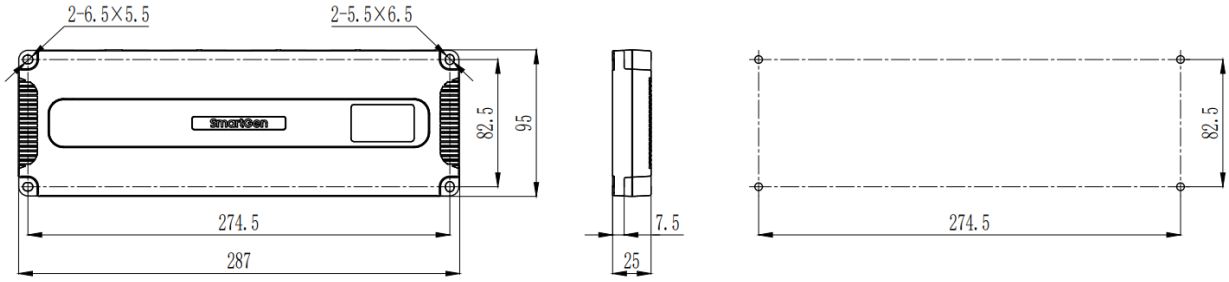

Fig.2 Case Dimensions and Panel Cutout

6 TYPICAL APPLICATION DIAGRAM

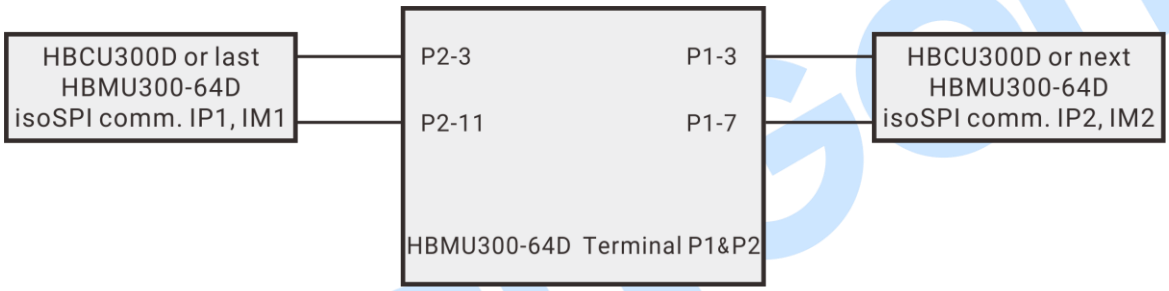

Fig.3 Terminal P1, P2 Application Diagram

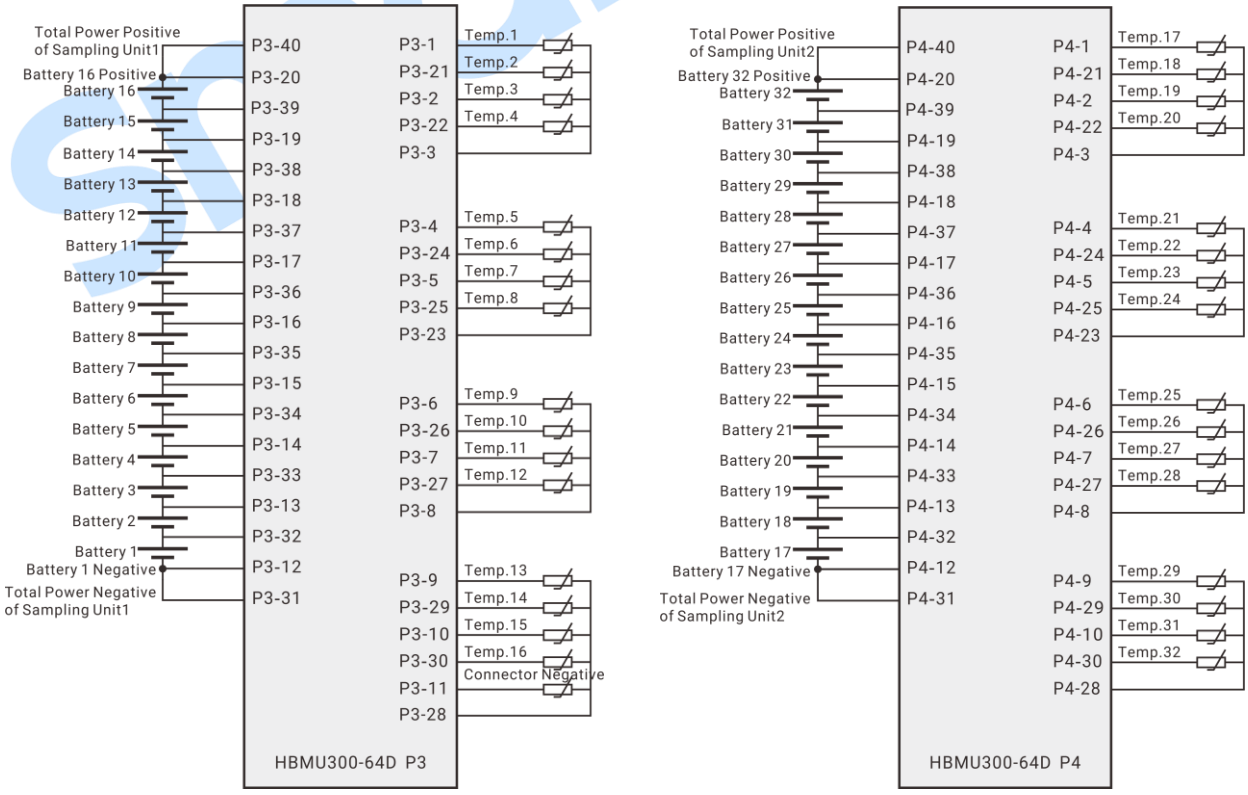

Fig.4 64-String Application Diagram of Terminal P3, P4

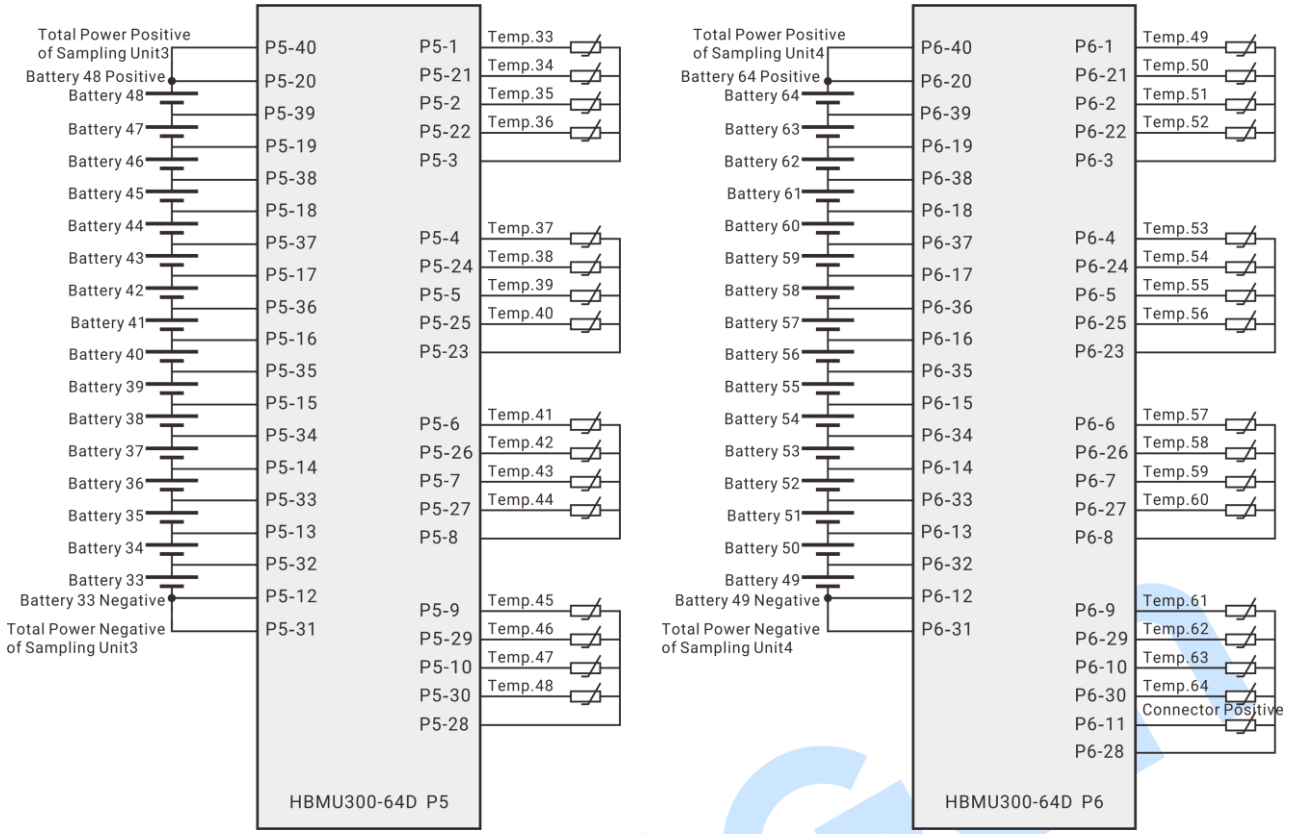

Fig.5 64-String Application Diagram of Terminal P5, P6

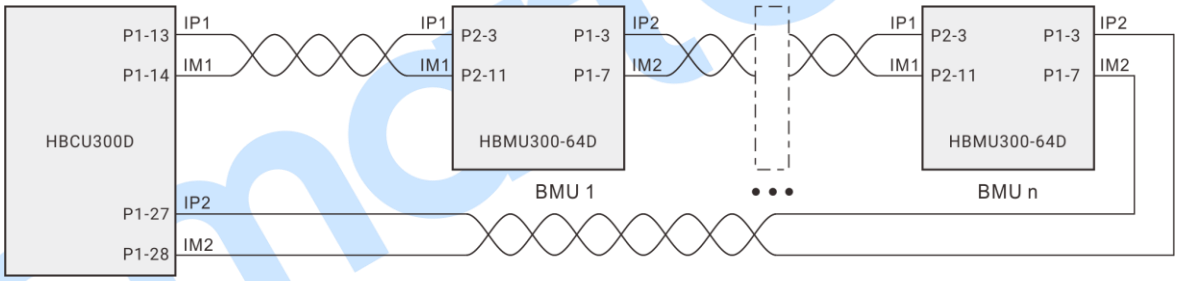

Fig.6 Communication Application Diagram Between HBCU300D and HBMU300-64D

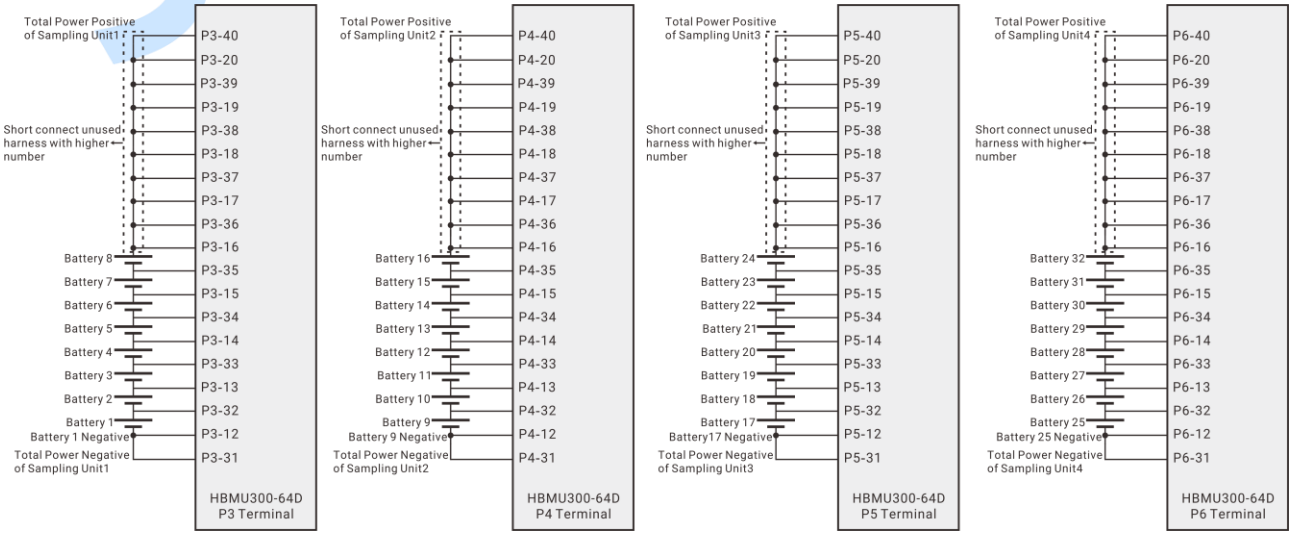

Fig.7 32-String Battery Voltage Sampling Line Connection Diagram

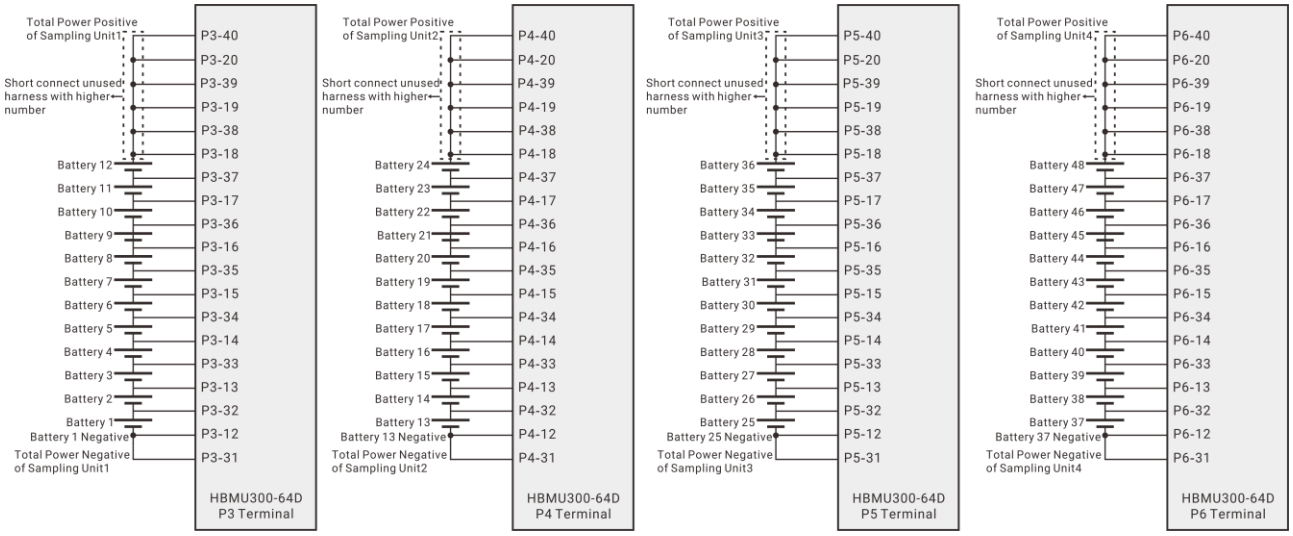

Fig.8 48-String Battery Voltage Sampling Line Connection Diagram

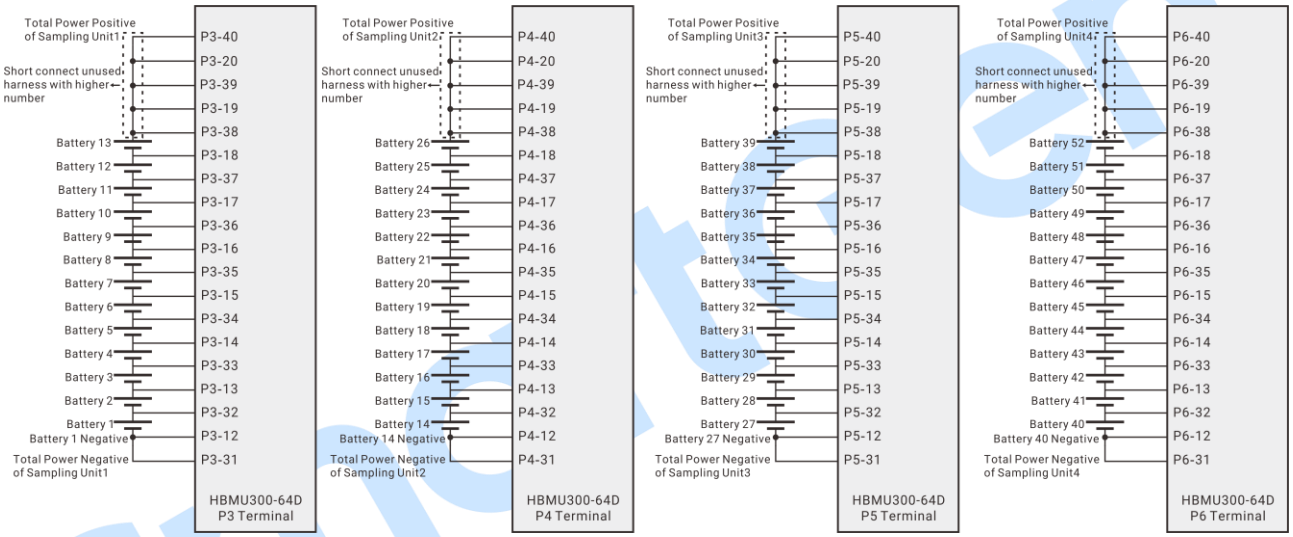

Fig.9 52-String Battery Voltage Sampling Line Connection Diagram

7 COMMISSIONING

It is recommended to do the following checks before the system is operating:

——Check all the wirings are correct and the diameters are suitable;

——Test a single battery module to ensure that the voltage and temperature data of the cell are within the normal range;

Please contact our service personnel in time if there is any question.

8 FAUT FINDING

Table 16 Fault Finding

Fault Symptom	Possible Measures
Battery volt. & temp data abnormal	Check the wirings; Check whether the connector is tightly inserted.

9 OPTIONAL ACCESSORIES

Table 17 Optional Accessories

Material Name	Name
Wire Connector	IMSA-13065S-2-8Y500 (One set with 1)
Wire Connector	IMSA-13065S-2-16Y500 (One set with 1)
Wire Connector	IMSA-13065S-2-40Y500 (One set with 4)
Pin	IPS-13065T-01A-T (One set with 184)