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TESTING
CNAS L3584



TEST REPORT IEC 60529:1989+AMD1:1999+AMD2:2013 TUV SUD Test Report for TUV SUD Test Report for Degrees of protection provided by enclosures (IP Code)	
Report No.:	64.290.26.30777.01
Date of issue:	2026-05-19
Project handler:	Kaen Lin, Erin Chen
Name of Testing Laboratory preparing the Report:	TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
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Client:	Anker Solix Innovations Limited
Client number:	135260
Address:	Flat/RM 829, 8/F, Tower 2, Admiralty Centre, 18 Harcourt Road Central and Western District, HONG KONG
Contact person:	Marks Chen
Standard:	This TUV SUD test report form is based on the following requirements: IEC 60529:1989+AMD1:1999+AMD2:2013 incl. Corrigendum EN 60529:1991+A1:2000+A2:2013 incl. Corrigendum DIN EN 60529:2014 incl. Corrigendum
TRF number and revision:	TRF IEC_60529A:2022 rev.0:2022
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TRF originated by:	TUV SUD Product Service, Mr. Sebastian Leibrandt
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Scheme:	☐ TUV Mark ☐ without certification ☒ other: with CNAS symbol
Non-standard test method:	☒ No ☐ Yes, see details under <i>Summary of testing</i>
National deviations:	NA
Number of pages (Report):	65
Number of pages (Attachments):	53-65
Tested by (name, function, signature)	Kaen Lin, Erin Chen (Project Handler) <i>Kaen Lin</i> <i>Erin Chen</i>
Approved by (name, function, signature)	Lincoln Zhang (Designated Reviewer) <i>Lincoln Zhang</i>

Test sample:	Hybrid battery energy storage system
Type of test object:	Prototype
Trademark:	ANKER SOLIX
Model and/ or type reference:	AE111TZ1, AE111TZ1-1, AE111TZ1-2, AE111TZ1-3, AE111TZ1-4, AE111TZ1-5. AE111GZ1, AE111GZ1-1, AE111GZ1-2, AE111GZ1-3, AE111GZ1-4, AE111GZ1-5. AE1114Z1, AE1114Z1-1, AE1114Z1-2, AE1114Z1-3, AE1114Z1-4, AE1114Z1-5. AE1113Z1-8, AE1113Z1-8-1, AE1113Z1-8-2, AE1113Z1-8-3, AE1113Z1-8-4, AE1113Z1-8-5. AE1113Z1-25, AE1113Z1-25-1, AE1113Z1-25-2, AE1113Z1-25-3, AE1113Z1-25-4, AE1113Z1-25-5. AE1113Z1-35, AE1113Z1-35-1, AE1113Z1-35-2, AE1113Z1-35-3, AE1113Z1-35-4, AE1113Z1-35-5. AE111Z1-46, AE111Z1-46-1, AE1113Z1-46-2, AE1113Z1-46-3, AE1113Z1-46-4, AE1113Z1-46-5. AE1113Z1-50, AE1113Z1-50-1, AE1113Z1-50-2, AE1113Z1-50-3, AE1113Z1-50-4, AE1113Z1-50-5. A17E23Z1-80, A17E23Z1-81.
Rating(s):	See Parameter table at page 7-20
Manufacturer:	Anker Solix Innovations Limited
Manufacturer number:	135260
Address:	Flat/RM 829, 8/F, Tower 2, Admiralty Centre, 18 Harcourt Road Central and Western District, HONG KONG
Name and address of factory(ies) Factory1: Huizhou Huazhi New Energy Technology Co., Ltd. Address: No.8, Xinhua Avenue, Chenjiang Street, Zhongkai High-tech Zone, 516032 Huizhou, PEOPLE'S REPUBLIC OF CHINA Factory 2: Huizhou Desay Battery Co., Ltd. Address: No.12 Guangtai Road, Huinan High-tech Industrial Park, 516025 Huizhou, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA	
Sub-contractors / tests (clause):	NA
Name:	NA
Order description:	☒ Complete test according to TRF
	☐ Partial test according to manufacturer's specifications
	☐ Preliminary test
	☐ Spot check
	☐ Others:
Date of order:	2026-04-15
Date of receipt of test item:	2026-05-06
Date(s) of performance of test:	2026-05-06 to 2026-05-09
Test item particulars:	

Enclosure/Product: ☒ Empty enclosure ☐ End product ☐ other: ...

Drain holes: ☒ None ☐ Yes :

IP code (specified): IP 66

End- Product Standard: ☒ N/A ☐ to be considered :

Enclosure have differing degrees of protection: NA

Purpose of the product (description of intended use):

- The products covered by this report are Hybrid battery energy storage systems, which are modular assembled, including 1 main module (model AE1113Z1-8, AE1113Z1-25, AE1113Z1-35, AE1113Z1-46, AE1113Z1-50, AE111GZ1, AE1114Z1 and AE111TZ1) and 0-5 expansion battery packs (model A17E23Z1-80 and A17E23Z1-81) connected in parallel.
- The units shall be used at specified ambient range:
 - Outdoor,
 - Ambient temperature range: -20°C to 55°C (derating above 40°C),
 - Altitude: ≤ 4000m (Only clearance for insulation requirement for using at altitude up to 4000m is considered in this report),
 - Environment pollution degree: less than or equal to PD3,
 - Relative humidity range: 0 to 100 % (condensing),
 - Overvoltage category: II (Battery, PV), III (Grid).

Model difference:

There are eight series models of BESS with different combination: AE1113Z1-8, AE1113Z1-25, AE1113Z1-35, AE1113Z1-46, AE1113Z1-50, AE111GZ1, AE1114Z1 and AE111TZ1 series, each model consist of 1 main module (model AE1113Z1-8, AE1113Z1-25, AE1113Z1-35, AE1113Z1-46, AE1113Z1-50, AE111GZ1, AE1114Z1 and AE111TZ1) and 0-5 expansion battery packs (model A17E23Z1-80 and A17E23Z1-81) connected in parallel.

- Main module model AE111TZ1, AE111GZ1 and AE1114Z1 are identical with each other, except for different operating parameters controlled by software.
- Main module model AE1113Z1-8, AE1113Z1-25, AE1113Z1-35, AE1113Z1-46 and AE1113Z1-50 are identical with each other, except for different operating parameters controlled by software.
- Main module model AE111TZ1 and AE1113Z1-50 are identical with each other, except for:
 - Different operating parameters controlled by software;
 - Different front cover designed;
 - Battery isolator is only provided for model AE111TZ1;
 - For Backup output connection: socket-Outlet is provided for model AE1113Z1-50, while connector provided for model AE111TZ1.
- Expansion battery model A17E23Z1-80 and A17E23Z1-81 are completely identical in hardware and software design, expect different model names defined to be used in different BESS series due to market sales demands.

Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE111TZ1	AE111TZ1	Integrated	connector	A17E23Z1-81	0	76.5
AE111TZ1-1					1	139.5
AE111TZ1-2					2	202.5
AE111TZ1-3					3	265.5
AE111TZ1-4					4	328.5
AE111TZ1-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE111GZ1	AE111GZ1	Integrated	connector	A17E23Z1-81	0	76.5
AE111GZ1-1					1	139.5
AE111GZ1-2					2	202.5
AE111GZ1-3					3	265.5
AE111GZ1-4					4	328.5

AE111GZ1-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE1114Z1	AE1114Z1	Integrated	connector	A17E23Z1-81	0	76.5
AE1114Z1-1					1	139.5
AE1114Z1-2					2	202.5
AE1114Z1-3					3	265.5
AE1114Z1-4					4	328.5
AE1114Z1-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE1113Z1-8	AE1113Z1-8	N/A	Socket-Outlet	A17E23Z1-80	0	76.5
AE1113Z1-8-1					1	139.5
AE1113Z1-8-2					2	202.5
AE1113Z1-8-3					3	265.5
AE1113Z1-8-4					4	328.5
AE1113Z1-8-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE1113Z1-25	AE1113Z1-25	N/A	Socket-Outlet	A17E23Z1-80	0	76.5
AE1113Z1-25-1					1	139.5
AE1113Z1-25-2					2	202.5
AE1113Z1-25-3					3	265.5
AE1113Z1-25-4					4	328.5
AE1113Z1-25-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE1113Z1-35	AE1113Z1-35	N/A	Socket-Outlet	A17E23Z1-80	0	76.5
AE1113Z1-35-1					1	139.5
AE1113Z1-35-2					2	202.5
AE1113Z1-35-3					3	265.5
AE1113Z1-35-4					4	328.5
AE1113Z1-35-5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]

AE1113Z1-46	AE1113Z 1-46	N/A	Socket- Outlet	A17E23Z1- 80	0	76.5
AE1113Z1-46- 1					1	139.5
AE1113Z1-46- 2					2	202.5
AE1113Z1-46- 3					3	265.5
AE1113Z1-46- 4					4	328.5
AE1113Z1-46- 5					5	391.5
Model	Main module model	Battery isolator	Backup output connection	Expansion battery module model	Number of expansion battery modules	Total weight [kg]
AE1113Z1-50	AE1113Z 1-50	N/A	Socket- Outlet	A17E23Z1- 80	0	76.5
AE1113Z1-50- 1					1	139.5
AE1113Z1-50- 2					2	202.5
AE1113Z1-50- 3					3	265.5
AE1113Z1-50- 4					4	328.5
AE1113Z1-50- 5					5	391.5

Characteristic data (not shown on the marking plate):

Parameter table:

Model:	AE1113Z1-8	AE1113Z1-8-1	AE1113Z1-8-2	AE1113Z1-8-3	AE1113Z1-8-4	AE1113Z1-8-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230Va.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [Aac]	16	16	16	16	16	16
Max. continuous output current[Aac]	3.6	3.6	3.6	3.6	3.6	3.6
Max. output apparent power [kVA]	0.8	0.8	0.8	0.8	0.8	0.8
Max. output active power [kW]	0.8	0.8	0.8	0.8	0.8	0.8
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	4.48	4.48	4.48	4.48	4.48

Max. continuous discharging current [A _{dc}]	9.7	12.4	12.4	12.4	12.4	12.4
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 / 18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						
Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	16					
Maximum output apparent power [kVA]	3.68					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					
Ingress protection	IP66					

Model:	AE1113Z1-25	AE1113Z1-25-1	AE1113Z1-25-2	AE1113Z1-25-3	AE1113Z1-25-4	AE1113Z1-25-5
Grid input/output terminal parameters:						
Rated voltage [V _{ac}]	220/230V a.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [A _{ac}]	16	16	16	16	16	16

Max. continuous output current[Aac]	11.4	11.4	11.4	11.4	11.4	11.4
Max. output apparent power [kVA]	2.5	2.5	2.5	2.5	2.5	2.5
Max. output active power [kW]	2.5	2.5	2.5	2.5	2.5	2.5
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5
Max. continuous discharging current [Adc]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 /18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						

Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	16					
Maximum output apparent power [kVA]	3.68					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					
Ingress protection	IP66					
Model:	AE1113Z1-35	AE1113Z1-35-1	AE1113Z1-35-2	AE1113Z1-35-3	AE1113Z1-35-4	AE1113Z1-35-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230Va.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [Aac]	16	16	16	16	16	16
Max. continuous output current[Aac]	16	16	16	16	16	16
Max. output apparent power [kVA]	3.68	3.68	3.68	3.68	3.68	3.68
Max. output active power [kW]	3.5	3.5	3.5	3.5	3.5	3.5
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42

Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5
Max. continuous discharging current [Adc]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 / 18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						
Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	16					
Maximum output apparent power [kVA]	3.68					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					

Ingress protection	IP66					
Model:	AE1113Z1-46	AE1113Z1-46-1	AE1113Z1-46-2	AE1113Z1-46-3	AE1113Z1-46-4	AE1113Z1-46-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230Va.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [Aac]	20.9	20.9	20.9	20.9	20.9	20.9
Max. continuous output current[Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. output apparent power [kVA]	5	5	5	5	5	5
Max. output active power [kW]	4.6	4.6	4.6	4.6	4.6	4.6
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5

Max. continuous discharging current [A _{DC}]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 /18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						
Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	16					
Maximum output apparent power [kVA]	3.68					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					
Ingress protection	IP66					

Model:	AE1113Z1-50	AE1113Z1-50-1	AE1113Z1-50-2	AE1113Z1-50-3	AE1113Z1-50-4	AE1113Z1-50-5
Grid input/output terminal parameters:						
Rated voltage [V _{ac}]	220/230V _{a.c.} , L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [A _{ac}]	22.7	22.7	22.7	22.7	22.7	22.7

Max. continuous output current[Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. output apparent power [kVA]	5	5	5	5	5	5
Max. output active power [kW]	5	5	5	5	5	5
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5
Max. continuous discharging current [Adc]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 /18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						

Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	16					
Maximum output apparent power [kVA]	3.68					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					
Ingress protection	IP66					
Model:	AE1114Z1	AE1114Z1-1	AE1114Z1-2	AE1114Z1-3	AE1114Z1-4	AE1114Z1-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230Va.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [Aac]	20.9	20.9	20.9	20.9	20.9	20.9
Max. continuous output current[Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. output apparent power [kVA]	5	5	5	5	5	5
Max. output active power [kW]	4.6	4.6	4.6	4.6	4.6	4.6
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42

Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5
Max. continuous discharging current [Adc]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 / 18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						
Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	22.7					
Maximum output apparent power [kVA]	5					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					

Ingress protection	IP66					
Model:	AE111GZ1	AE111GZ1-1	AE111GZ1-2	AE111GZ1-3	AE111GZ1-4	AE111GZ1-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230Va.c., L+N+PE					
Rated frequency [Hz]	50 / 60Hz					
Max. continuous input current [Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. continuous output current[Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. output apparent power [kVA]	5	5	5	5	5	5
Max. output active power [kW]	5	5	5	5	5	5
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	7	14	21	28	35	42
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360-600					
Max. charging power [kW]	3.5	7	10	10	10	10
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	5	5	5	5	5

Max. continuous discharging current [A _{dc}]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18 / 18 /18					
Isc PV [A _{DC}]	25 / 25 / 25					
Backup terminal parameters:						
Rated output voltage [V _{AC}]	1P+N+PE, 220/230					
Rated output frequency [Hz]	50/60Hz					
Maximum output current [A _{AC}]	22.7					
Maximum output apparent power [kVA]	5					
General						
Operating temperature range [°C]	-20~55 (derating above 40)					
Protective class	Class I					
Ingress protection	IP66					
Model:	AE111TZ1	AE111TZ1-1	AE111TZ1-2	AE111TZ1-3	AE111TZ1-4	AE111TZ1-5
Grid input/output terminal parameters:						
Rated voltage [Vac]	220/230, 1P+N+PE					
Rated frequency [Hz]	50/60					
Max. continuous input current [A _{ac}]	22.7	22.7	22.7	22.7	22.7	22.7

Max. continuous output current[Aac]	22.7	22.7	22.7	22.7	22.7	22.7
Max. output apparent power [kVA]	4.99	4.99	4.99	4.99	4.99	4.99
Max. output active power [kW]	4.99	4.99	4.99	4.99	4.99	4.99
Power factor range	0.8 lagging - 0.8 leading					
Battery system parameters:						
Battery type	LFP					
Battery capacity [Ah]	314	628	942	1256	1570	1884
Battery energy [kWh]	6.99	13.99	20.99	27.9	34.99	41.99
Rated voltage [Vdc]	400					
Battery voltage range [Vdc]	360~600					
Max. charging power [kW]	3.5	7.0	10.0	10.0	10.0	10.0
Max. continuous charging current [Adc]	9.7	19.4	27.8	27.8	27.8	27.8
Max. discharging power [kW]	3.5	4.99	4.99	4.99	4.99	4.99
Max. continuous discharging current [Adc]	9.7	13.9	13.9	13.9	13.9	13.9
PV terminal parameters:						
Maximum PV voltage [V _{DC}]	600					
MPPT voltage range [V _{DC}]	30-550					
Maximum input current [A _{DC}]	18/18/18					
Isc PV [A _{DC}]	25/25/25					
Backup terminal parameters:						

Rated output voltage [V _{AC}]	1P+N+PE, 220/230
Rated output frequency [Hz]	50/60
Maximum output current [A _{AC}]	22.7
Maximum output apparent power [kVA]	4.99
General	
Operating temperature range [°C]	-20~55 (derating above 40)
Protective class	Class I
Ingress protection	IP66
Attachments: See the test photo documentation on page 53-65.	

If additional information is necessary, please provide

NA

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

1. Below label is applicable to four series of BESS models:

AE1113Z1-8 series: AE1113Z1-8, AE1113Z1-8-1, AE1113Z1-8-2, AE1113Z1-8-3, AE1113Z1-8-4, AE1113Z1-8-5.

AE1113Z1-35 series (3500W power rating): AE1113Z1-35, AE1113Z1-35-1, AE1113Z1-35-2, AE1113Z1-35-3, AE1113Z1-35-4, AE1113Z1-35-5.

AE1113Z1-46 series (4600W power rating): AE1113Z1-46, AE1113Z1-46-1, AE1113Z1-46-2, AE1113Z1-46-3, AE1113Z1-46-4, AE1113Z1-46-5.

AE1113Z1-50 series (5000W power rating): AE1113Z1-50, AE1113Z1-50-1, AE1113Z1-50-2, AE1113Z1-50-3, AE1113Z1-50-4, AE1113Z1-50-5.

The model's name shall be selected with a "√" by the manufacturer, and only one specific model shall be selected at the same time.

Anker SOLIX Solarbank Max							Battery System Parameters																
Power Rating	Model	Expansion Battery Quantity	Rated Capacity / Energy	Nominal Voltage	Weight	Battery Designation Code	Power Rating	800 W				3500 W				4600 W				5000 W			
							Rechargeable Li-ion Battery (LFP)																
							Terminal Nominal Voltage																
							400 Vd.c.																
							Battery Voltage Range																
							360 ~ 600 Vd.c.																
							Maximum Charging / Discharging Power																
							3.5 kW / 7 / 10 / 13.9 Adc.																
							Maximum Continuous Charging / Discharging Current																
							97 Adc. / 194 / 278 / 339 Adc.																
800 W	AE1113Z1-8	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFP73/175/208(TS)E/O+50/90																	
	AE1113Z1-8-1	1	628 Ah / 14 kWh		139.5 kg	IFP73/175/208(TS)E/O+50/90																	
	AE1113Z1-8-2	2	942 Ah / 21 kWh		202.5 kg	IFP73/175/208(TS)E/O+50/90																	
	AE1113Z1-8-3	3	1256 Ah / 28 kWh		265.5 kg	IFP73/175/208(TS)E/O+50/90																	
	AE1113Z1-8-4	4	1570 Ah / 35 kWh		328.5 kg	IFP73/175/208(TS)E/O+50/90																	
	AE1113Z1-8-5	5	1884 Ah / 42 kWh		391.5 kg	IFP73/175/208(TS)E/O+50/90																	
3500 W	AE1113Z1-35	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-35-1	1	628 Ah / 14 kWh		139.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-35-2	2	942 Ah / 21 kWh		202.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-35-3	3	1256 Ah / 28 kWh		265.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-35-4	4	1570 Ah / 35 kWh		328.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-35-5	5	1884 Ah / 42 kWh		391.5 kg	IFP73/175/208(TS)M/O+50/90																	
4600 W	AE1113Z1-46	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-46-1	1	628 Ah / 14 kWh		139.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-46-2	2	942 Ah / 21 kWh		202.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-46-3	3	1256 Ah / 28 kWh		265.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-46-4	4	1570 Ah / 35 kWh		328.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-46-5	5	1884 Ah / 42 kWh		391.5 kg	IFP73/175/208(TS)M/O+50/90																	
5000 W	AE1113Z1-50	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-50-1	1	628 Ah / 14 kWh		139.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-50-2	2	942 Ah / 21 kWh		202.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-50-3	3	1256 Ah / 28 kWh		265.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-50-4	4	1570 Ah / 35 kWh		328.5 kg	IFP73/175/208(TS)M/O+50/90																	
	AE1113Z1-50-5	5	1884 Ah / 42 kWh		391.5 kg	IFP73/175/208(TS)M/O+50/90																	

Grid Input / Output Parameters				
Power Rating	800 W	3500 W	4600 W	5000 W
Rated Input / Output Voltage	220 / 230 Vd.c., L+N+PE			
Rated Frequency	50 / 60 Hz			
Rated Input Current	15.2 Aa.c.	20 Aa.c.	21.7 Aa.c.	
Maximum Continuous Input Current	16 Aa.c.	20.9 Aa.c.	22.7 Aa.c.	
Rated Output Current	3.5 Aa.c.	15.2 Aa.c.	20 Aa.c.	21.7 Aa.c.
Maximum Continuous Output Current	3.6 Aa.c.	16 Aa.c.	22.7 Aa.c.	
Rated Output Active / Apparent Power	0.8 kW / 0.8 kVA	3.5 kW / 3.5 kVA	4.6 kW / 4.6 kVA	5 kW / 5 kVA
Maximum Output Active / Apparent Power	0.8 kW / 0.8 kVA	3.5 kW / 3.6 kVA	4.6 kW / 5 kVA	5 kW / 5 kVA
Power Factor	0.8 lagging ~ 0.8 leading			

AC Backup Output Parameters				
Rated Output Voltage	220 / 230 Vd.c., L+N+PE			
Rated Output Frequency	50 / 60 Hz			
Rated Output Current	15.2 Aa.c.			
Maximum Continuous Output Current	16 Aa.c.			
Rated Output Apparent Power	3.5 kVA			
Maximum Continuous Output Apparent Power	3.6 kVA			
Power Factor	0.8 lagging ~ 0.8 leading			

General Parameters				
Inverter Topology Type	Non-isolated			
Operating Temperature Range	-20 to 55 °C			
Protective Class	I			
Ingress Protection	IP66			
Operating Altitude Range	≤ 4000 m			
Overvoltage Category	III (Mains), II (BAT)			
Manufacturer	Anker Solix Innovations Limited			
Made in	China			

PV Input	
MPPT Voltage Range	30 ~ 550 V
Max. Input Voltage	600 V
Max. Input Current	18 A / 18 A / 18 A
Isc PV Max. Short Circuit Current	25 A / 25 A / 25 A

SN (40X10mm)

For User Guide / Support

2. Below label is applicable to one series of BESS models:

AE1113Z1-25 series: AE1113Z1-25, AE1113Z1-25-1, AE1113Z1-25-2, AE1113Z1-25-3, AE1113Z1-25-4, AE1113Z1-25-5.

The model's name shall be selected with a "√" by the manufacturer, and only one specific model shall be selected at the same time.



Anker SOLIX Solarbank Max

Power Rating	Model	Expansion Battery Quantity	Rated Capacity / Energy	Nominal Voltage	Weight	Battery Designation Code
2500 W	AE1114Z1-0	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFpP73/175/208(TS)E/O+50/90
	AE1114Z1-1	1	628 Ah / 14 kWh		139.5 kg	IFpP73/175/208(TS)2P/E/O+50/90
	AE1114Z1-2	2	942 Ah / 21 kWh		202.5 kg	IFpP73/175/208(TS)3P/E/O+50/90
	AE1114Z1-3	3	1256 Ah / 28 kWh		265.5 kg	IFpP73/175/208(TS)4P/E/O+50/90
	AE1114Z1-4	4	1570 Ah / 35 kWh		328.5 kg	IFpP73/175/208(TS)5P/E/O+50/90
	AE1114Z1-5	5	1884 Ah / 42 kWh		391.5 kg	IFpP73/175/208(TS)6P/E/O+50/90

PV Input

MPPT Voltage Range	30 ~ 550 V
Max. Input Voltage	600 V
Max. Input Current	18 A / 18 A / 18 A
Isc PV Max. Short Circuit Current	25 A / 25 A / 25 A

Battery System Parameters

Power Rating	2500 W
Expansion Battery Quantity	0 1 2 ~ 5
Battery Type	Rechargeable Li-ion Battery (LFP)
Terminal Nominal Voltage	400 Vd.c.
Battery Voltage Range	360 ~ 600 Vd.c.
Maximum Charging / Discharging Power	3.5 kW 7 / 5 kW 10 / 5 kW
Maximum Continuous Charging / Discharging Current	9.7 Ad.c. 19.4 / 13.9 Ad.c. 27.8 / 13.9 Ad.c.

Manufacturer: Anker Solix Innovations Limited
Made in China



Grid Input / Output Parameters

Rated Input / Output Voltage	220 / 230 V a.c., L+N+PE
Rated Frequency	50 / 60 Hz
Rated Input Current	15.2 A a.c.
Maximum Continuous Input Current	16 A a.c.
Rated Output Current	10.9 A a.c.
Maximum Continuous Output Current	11.4 A a.c.
Rated Output Active Power	2.5 kW
Rated Output Apparent Power	2.5 kVA
Maximum Output Active Power	2.5 kW
Maximum Output Apparent Power	2.5 kVA
Power Factor	0.8 lagging - 0.8 leading

AC Backup Output Parameters

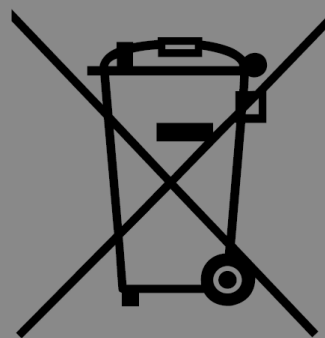
Rated Output Voltage	220 / 230 V a.c., L+N+PE
Rated Output Frequency	50 / 60 Hz
Rated Output Current	15.2 A a.c.
Maximum Continuous Output Current	16 A a.c.
Rated Output Apparent Power	3.5 kVA
Maximum Continuous Output Apparent Power	3.68 kVA
Power Factor	0.8 lagging - 0.8 leading

General Parameters

Inverter Topology Type: Isolated
Operating Temperature Range: -20 to 55 °C
Protective Class: I
Ingress Protection: IP66
Operating Altitude Range: ≤ 4000 m
Overvoltage Category: III (MAINS), II (BAT)



For User
Guide / Support



SN (40X10mm)

3. Below label is applicable to one series of BESS models:

AE1114Z1 series: AE1114Z1, AE1114Z1-1, AE1114Z1-2, AE1114Z1-3, AE1114Z1-4, AE1114Z1-5.

The model's name shall be selected with a “√” by the manufacturer, and only one specific model shall be selected at the same time.

Anker SOLIX XE

Power Rating	Model	Expansion Battery Quantity	Rated Capacity / Energy	Nominal Voltage	Weight	Battery Designation Code
4600 W	AE1114Z1-0	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFpP73/175/208(TS)M/O+50/90
	AE1114Z1-1	1	628 Ah / 14 kWh		139.5 kg	IFpP73/175/208(TS)2P/E/O+50/90
	AE1114Z1-2	2	942 Ah / 21 kWh		202.5 kg	IFpP73/175/208(TS)3P/E/O+50/90
	AE1114Z1-3	3	1256 Ah / 28 kWh		265.5 kg	IFpP73/175/208(TS)4P/E/O+50/90
	AE1114Z1-4	4	1570 Ah / 35 kWh		328.5 kg	IFpP73/175/208(TS)5P/E/O+50/90
	AE1114Z1-5	5	1884 Ah / 42 kWh		391.5 kg	IFpP73/175/208(TS)6P/E/O+50/90

PV Input

MPPT Voltage Range	30 ~ 550 V
Max. Input Voltage	600 V
Max. Input Current	18 A / 18 A / 18 A
Isc PV Max. Short Circuit Current	25 A / 25 A / 25 A

Battery System Parameters

Power Rating	4600 W
Expansion Battery Quantity	0 1 2 ~ 5
Battery Type	Rechargeable Li-ion Battery (LFP)
Terminal Nominal Voltage	400 Vd.c.
Battery Voltage Range	360 ~ 600 Vd.c.
Maximum Charging / Discharging Power	3.5 kW 7 / 5 kW 10 / 5 kW
Maximum Continuous Charging / Discharging Current	9.7 Ad.c. 19.4 / 13.9 Ad.c. 27.8 / 13.9 Ad.c.

Manufacturer: Anker Solix Innovations Limited
Made in China



Grid Input / Output Parameters

Rated Input / Output Voltage	220 / 230 V a.c., L+N+PE
Rated Frequency	50 / 60 Hz
Rated Input Current	20 A a.c.
Maximum Continuous Input Current	20.9 A a.c.
Rated Output Current	20 A a.c.
Maximum Continuous Output Current	22.7 A a.c.
Rated Output Active Power	4.6 kW
Rated Output Apparent Power	4.6 kVA
Maximum Output Active Power	4.6 kW
Maximum Output Apparent Power	5 kVA
Power Factor	0.8 lagging - 0.8 leading

AC Backup Output Parameters

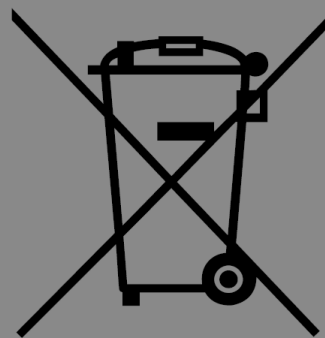
Rated Output Voltage	220 / 230 V a.c., L+N+PE
Rated Output Frequency	50 / 60 Hz
Rated Output Current	21.7 A a.c.
Maximum Continuous Output Current	22.7 A a.c.
Rated Output Apparent Power	5 kVA
Maximum Continuous Output Apparent Power	5 kVA
Power Factor	0.8 lagging - 0.8 leading

General Parameters

Inverter Topology Type: Non-Isolated
Operating Temperature Range: -20 to 55 °C
Protective Class: I
Ingress Protection: IP66
Operating Altitude Range: ≤ 4000 m
Overvoltage Category: III (MAINS), II (BAT)



For User
Guide / Support



SN (40X10mm)

4. Below label is applicable to one series of BESS models:

AE111GZ1 series: AE111GZ1, AE111GZ1-1, AE111GZ1-2, AE111GZ1-3, AE111GZ1-4, AE111GZ1-5.

The model's name shall be selected with a “√” by the manufacturer, and only one specific model shall be selected at the same time.

Anker SOLIX XE

Model	Expansion Battery Quantity	Rated Capacity / Energy	Nominal Voltage	Weight	Battery Designation Code
AE111GZ1	0	314 Ah / 7 kWh	22.4 Vd.c.	76.5 kg	IFpP73/175/208(TS)M/O+50/90
AE111GZ1-1	1	628 Ah / 14 kWh		139.5 kg	IFpP73/175/208(TS)2P/E/O+50/90
AE111GZ1-2	2	942 Ah / 21 kWh		202.5 kg	IFpP73/175/208(TS)3P/E/O+50/90
AE111GZ1-3	3	1256 Ah / 28 kWh		265.5 kg	IFpP73/175/208(TS)4P/E/O+50/90
AE111GZ1-4	4	1570 Ah / 35 kWh		328.5 kg	IFpP73/175/208(TS)5P/E/O+50/90
AE111GZ1-5	5	1884 Ah / 42 kWh		391.5 kg	IFpP73/175/208(TS)6P/E/O+50/90

Battery System Parameters

Expansion Battery Quantity	0 1 2 ~ 5
Battery Type	Rechargeable Li-ion Battery (LFP)
Terminal Nominal Voltage	400 Vd.c.
Battery Voltage Range	360 ~ 600 Vd.c.
Maximum Charging / Discharging Power	3.5 kW 7 / 5 kW 10 / 5 kW
Maximum Continuous Charging / Discharging Current	9.7 Ad.c. 19.4 / 13.9 Ad.c. 27.8 / 13.9 Ad.c.

PV Input

MPPT Voltage Range	30 ~ 550 V
Max. Input Voltage	600 V
Max. Input Current	18 A / 18 A / 18 A
Isc PV Max. Short Circuit Current	25 A / 25 A / 25 A

General Parameters

Inverter Topology Type: Non-Isolated
Operating Temperature Range: -20 to 55 °C
Protective Class: I
Ingress Protection: IP66
Operating Altitude Range: ≤ 4000 m
Overvoltage Category: III (AC), II (PV, BAT)

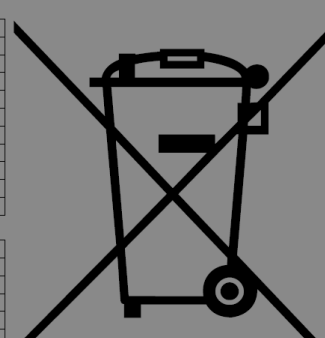
Manufacturer:
Anker Solix Innovations Limited
Made in China



For User
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SN贴纸 (40X10mm)



5. Below label is applicable to one series of BESS models:

AE111TZ1 series: AE111TZ1, AE111TZ1-1, AE111TZ1-2, AE111TZ1-3, AE111TZ1-4, AE111TZ1-5.

The model's name shall be selected with a "√" by the manufacturer, and only one specific model shall be selected at the same time.

Anker SOLIX XE

Model	Expansion Battery Quantity	Rated Capacity / Energy	Nominal Voltage	Weight	Battery Designation Code
AE111TZ1	0	314 Ah / 6.99 kWh	22.4 Vd.c.	76.5 kg	IFP73/175/208[7S]M/0+50/90
AE111TZ1-1	1	628 Ah / 13.99 kWh		139.5 kg	IFP73/175/208[7S]2PE/0+50/90
AE111TZ1-2	2	942 Ah / 20.99 kWh		202.5 kg	IFP73/175/208[7S]3PE/0+50/90
AE111TZ1-3	3	1256 Ah / 27.99 kWh		265.5 kg	IFP73/175/208[7S]4PE/0+50/90
AE111TZ1-4	4	1570 Ah / 34.99 kWh		328.5 kg	IFP73/175/208[7S]5PE/0+50/90
AE111TZ1-5	5	1884 Ah / 41.99 kWh		391.5 kg	IFP73/175/208[7S]6PE/0+50/90

Battery System Parameters

Expansion Battery Quantity	0	1	2 - 5
Battery Type	Rechargeable Li-ion Battery (LFP)		
Terminal Nominal Voltage	400 Vd.c.		
Battery Voltage Range	360 - 600 Vd.c.		
Maximum Charging / Discharging Power	3.5 kW	7 / 4.99 kW	10 / 4.99 kW
Maximum Continuous Charging / Discharging Current	9.7 Ad.c.	19.4 / 13.9 Ad.c.	27.8 / 13.9 Ad.c.

PV Input

MPPT Voltage Range	30 - 550 V	DRM 0	☒	DRM 1	☐	DRM 2	☐
Max. Input Voltage	600 V	DRM 3	☐	DRM 4	☐	DRM 5	☐
Max. Input Current	18 A / 18 A / 18 A	DRM 6	☐	DRM 7	☐	DRM 8	☐
Isc PV Max. Short Circuit Current	25 A / 25 A / 25 A						

General Parameters

COM Port: 12 Vd.c. DVC As
 Inverter Topology Type: Non-isolated
 Operating Temperature Range: -20 to 55 °C
 Protective Class: I
 Ingress Protection: IP66
 Operating Altitude Range: ≤ 4000 m

Overvoltage Category: III (AC), II (PV, BAT)
 PV Side Switch: 16A solar 40 °C / 60 °C 3x18A
 Certificate No.: XXXXXXXX
 Manufacturer: Anker Solix Innovations Limited
 Made in China

Grid Input / Output Parameters

Rated Input / Output Voltage	220 / 230 Vd.c., L+N+PE
Rated Frequency	50 / 60 Hz
Rated Input Current	21.7 Aa.c.
Maximum Continuous Input Current	22.7 Aa.c.
Rated Output Current	21.7 Aa.c.
Maximum Continuous Output Current	22.7 Aa.c.
Rated Output Active Power	4.99 kW
Rated Output Apparent Power	4.99 kVA
Maximum Output Active Power	4.99 kW
Maximum Output Apparent Power	4.99 kVA
Power Factor	0.8 lagging - 0.8 leading

AC Backup Output Parameters

Rated Output Voltage	220 / 230 Vd.c., L+N+PE
Rated Output Frequency	50 / 60 Hz
Rated Output Current	21.7 Aa.c.
Rated Output Apparent Power	4.99 kVA
Maximum Continuous Output Current	22.7 Aa.c.
Maximum Continuous Output Apparent Power	4.99 kVA
Power Factor	0.8 lagging - 0.8 leading

For User Guide / Support

SN贴纸 (40X10mm)

6. Below label is applicable for expansion battery pack model A17E23Z1-81.

Product Name: Anker SOLIX XE Battery
 Model: A17E23Z1-81
 Battery Type: Rechargeable Li-ion Battery (LFP)
 Rated Capacity / Energy: 314 Ah / 7 kWh
 Battery Nominal Voltage: 22.4 Vd.c.
 Terminal Nominal Voltage: 400 Vd.c.
 Terminal Voltage Range: 360 - 600 Vd.c.
 Operating Temperature Range: -20 °C to 55 °C
 Enclosure Type: IP66
 Protective Class: Class I
 Maximum Battery Port Input / Output Current After Expanded: 27.8 Ad.c.
 Rated Charging / Discharging Power: 3.5 kW
 Maximum Charging / Discharging Power: 3.5 kW
 Weight: 63 kg
 Battery Designation Code: IFP73/175/208[7S]M/0+50/90
 Manufacturer: Anker Solix Innovations Limited
 Made in China

ANKER SOLIX

CE, TUV SUD, and other safety symbols.

ALWAYS HERE TO HELP
 — <https://support.ankersolix.com> —
 support@ankersolix.com

SN (40X10mm)

7. Below label is applicable for expansion battery pack model A17E23Z1-80.

Product Name: Anker SOLIX BP7000 Expansion Battery
 Model: A17E23Z1-80
 Battery Type: Rechargeable Li-ion Battery (LFP)
 Rated Capacity / Energy: 314 Ah / 7 kWh
 Battery Nominal Voltage: 22.4 Vd.c.
 Terminal Nominal Voltage: 400 Vd.c.
 Terminal Voltage Range: 360 - 600 Vd.c.
 Operating Temperature Range: -20 °C to 55 °C
 Enclosure Type: IP66
 Protective Class: Class I
 Maximum Battery Port Input / Output Current After Expanded: 27.8 Ad.c.
 Rated Charging / Discharging Power: 3.5 kW
 Maximum Charging / Discharging Power: 3.5 kW
 Weight: 63 kg
 Battery Designation Code: IFP73/175/208[7S]M/0+50/90
 Manufacturer: Anker Solix Innovations Limited
 Made in China

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CE, TUV SUD, and other safety symbols.

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 support@ankersolix.com

SN (40X10mm)

Pictures of the product:

Overview of Maximum Configuration System



Overview of model AE111TZ1-5, AE111GZ1-5,
AE1114Z1-5

Remark: All models have the same front view.



Overview of model AE1113Z1-8-5, AE1113Z1-25-
5, AE1113Z1-35-5, AE1113Z1-46-5, AE1113Z1-
50-5

Remark: All models have the same front view.



Overview of model AE111TZ1, AE111GZ1,
AE1114Z1 (Without mounting Base)



Overview of model AE1113Z1-8, AE1113Z1-25,
AE1113Z1-35, AE1113Z1-46, AE1113Z1-50
(Without mounting Base)



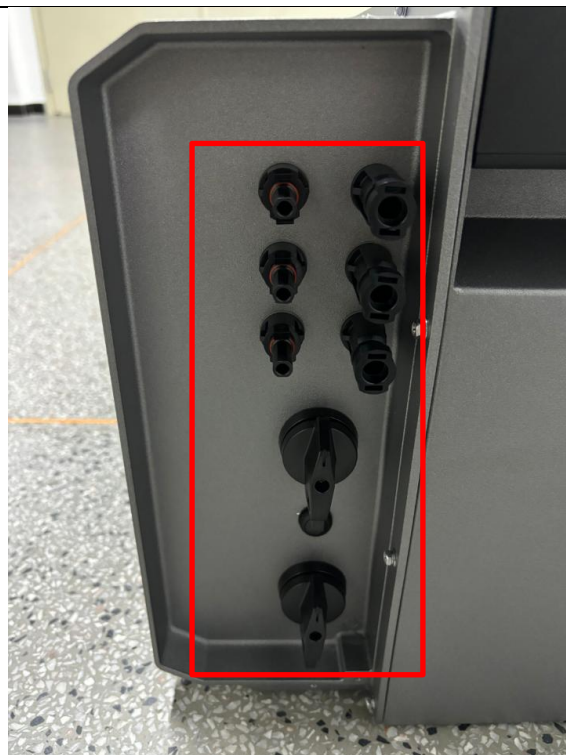
Overview of model AE111TZ1, AE111GZ1,
AE1114Z1 (With mounting Base)



Overview of model AE1113Z1-8, AE1113Z1-25, AE1113Z1-35, AE1113Z1-46,
AE1113Z1-50 (With mounting Base)



Detail view of AC grid connector, backup connector, and communication ports.



Detail view of PV connectors, PV switch and Battery isolation switch.



Detail view of Battery connector



Detail view of Battery connector



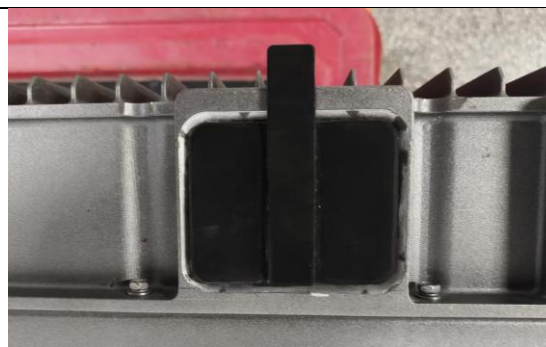
Detail view of Mounting Base (optional)



Detail view of mounting base (optional)



Detail view of the bottom of the battery connector
without the mounting base (optional)



Detail view of the bottom of the battery connector
without the mounting base (optional)

Test sample overview for model AE1113Z1-8-1, AE1113Z1-25-1, AE1113Z1-35-1, AE1113Z1-46-1, AE1113Z1-50-1 (including expansion battery pack model A17E23Z1-81)



Front view



Rear view



Left view



Right view

Remark: The white area is the exhaust hole.

Test sample overview for model AE111TZ1-1, AE111GZ1-1, AE1114Z1-1 (including expansion battery pack model A17E23Z1-81)



Front view



Rear view



Left view



Right view

Remark: The white area is the exhaust hole.

Summary of testing:

The product fulfils the requirements of:

- ☒ IEC 60529:1989 + AMD1:1999 + AMD2:2013
- ☐ EN 60529 :1991 + A1: 2000+ A2:2013
- ☐ DIN EN 60529:2014
- ☐ Additional End-Product Standard : cl.

Remark: The standard IEC 60529, EN 60529 and DIN EN 60529 are identical and do not contain common or national technical deviations.

☐ deviation(s) found
☒ no deviations found

Due to the fact that stacked battery systems differ only in the number of battery modules, according to the standard requirements, smaller equipment having the same full-scale design details shall be tested. Therefore, testing is performed on the minimal system, which consists of one battery module, one inverter and one mounting base. The test result of this system can be applied to all models (systems with varying numbers of battery modules). IP66 test was carried out for the model AE111TZ1-1 and AE1113Z1-8 (including expansion battery pack model A17E23Z1-81), due to this system can be optionally equipped with a base or not by customer requirement, test was conducted on both the cases with and without the base, the test results comply with the requirements 12, 13.4, 13.6, 14.2.5, 14.3 of standard IEC 60529:1989+AMD1:1999+ AMD2:2013.

Tests performed (name of test and test clause):

Clause	Requirement
12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral
13	Tests for protection against solid foreign objects indicated by the first characteristic numeral
14	Tests for protection against water indicated by the second characteristic numeral

Testing location:

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
 Building D1, No. 63 Chuangqi Road,
 Shilou Town, Panyu District,
 Guangzhou 511447, China

Additional information on non-standard test method(s)

Sub clause: N/A
 Page: N/A
 Rational: N/A

Test Report History

N/A

Possible test case verdicts:

test case does not apply to the test object: N/A (not applicable / not included in the order)
 test object does meet the requirement: P (Pass)
 test object does not meet the requirement: F (Fail)

General remarks:

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see Testing, Certification, Validation and Verification Regulations, chapter A-3.3.

Decision rule according to IEC Guide 115:2023, clause 4.3.3 was applied.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

*Throughout this report a **point** is used as the decimal separator.*

The test results presented in this report relate only to the object tested.

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Clause	Requirement + Test	Result – Remark	Verdict
0	End Product Standard		N/A
	Are additional requirement of an End-Product Standard considered	End- Product Standard: -	N/A
5	Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral		P
	The designation with a first characteristic numeral implies that conditions stated in both 5.1 and 5.2 are met. The first characteristic numeral indicates that: the enclosure provides protection of persons against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person; and simultaneously: the enclosure provides protection of equipment against the ingress of solid foreign objects.	The first characteristic number is 6	P
5.1	Protection against access to hazardous parts		P
	To comply with the conditions of the first characteristic numeral, adequate clearance shall be kept between the access probe and hazardous parts	The access probe of 1,0 mm Ø do not access hazardous parts	P
	The tests acc. to Clause 12 performed		P

Clause	Requirement + Test	Result – Remark	Verdict
	Table 1 – Degrees of protection against access to hazardous parts indicated by the first characteristic numeral		-
	First characteristic numeral	Test conditions (Clause)	-
	0	-	Non-protected
	1	12.2	Protected against access to hazardous parts with the back of a hand
	2	12.2	Protected against access to hazardous parts with a finger
	3	12.2	Protected against access to hazardous parts with a tool
	4	12.2	Protected against access to hazardous parts with a wire
	5	12.2	Protected against access to hazardous parts with a wire
	6	12.2	Protected against access to hazardous parts with a wire
	Supplementary information: -		
	<i>Note: In the case of the first characteristic numerals 3, 4, 5 and 6, protection against access to hazardous parts is satisfied if adequate clearance is kept.</i> <i>The adequate clearance should be specified by the relevant product committee in accordance with 12.3.</i>		-
	<i>Note: Due to the simultaneous requirement specified in Table 2, the definition "shall not penetrate" is given in Table 1.</i>		-
5.2	Protection against solid foreign objects		P
	The protection against the ingress of solid foreign objects implies that the object probes up to numeral 2 in Table 2 shall not fully penetrate the enclosure. This means that the full diameter of the sphere shall not pass through an opening in the enclosure.		N/A
	Object probes for numerals 3 and 4 shall not penetrate the enclosure at all.		N/A
	Dust-protected enclosures to numeral 5 allow a limited quantity of dust to penetrate under certain conditions.		N/A
	Dust-tight enclosures to numeral 6 do not allow any dust to penetrate.		P

Clause	Requirement + Test		Result – Remark	Verdict
	<i>Note: Enclosures assigned a first characteristic numeral of 1 to 4 generally exclude both regularly and irregularly shaped solid foreign objects provided that three mutually perpendicular dimensions of the object exceed the appropriate figure in column 3 of Table 2</i>			-
	The tests acc. to clause 13 performed			P
	Table 2 – Degrees of protection against solid foreign objects indicated by the first characteristic numeral			-
	First characteristic numeral	Test conditions (Clause)	Description	-
	0	-	Non-protected	N/A
	1	13.2	Protected against solid foreign objects of 50 mm Ø and greater	N/A
	2	13.2	Protected against solid foreign objects of 12,5 mm Ø and greater	N/A
	3	13.2	Protected against solid foreign objects of 2,5 mm Ø and greater	N/A
	4	13.2	Protected against solid foreign objects of 1,0 mm Ø and greater	N/A
	5	13.4 13.5	Dust-protected	N/A
	6	13.4 13.6	Dust-tight	P
	Supplementary information: - Pre-conditioning: 20.5°C ambient temperature, 60% relative humidity, 101.2kPa atmospheric pressure, Maintain 4H. - Drain hole size & position: - - Deposition of dust: Test for 8 hours.			

Clause	Requirement + Test	Result – Remark	Verdict
6	Degrees of protection against ingress of water indicated by the second characteristic numeral		P
	The second characteristic numeral indicates the degree of protection provided by enclosures with respect to harmful effects on the equipment due to the ingress of water. The tests for the second characteristic numeral are carried out with fresh water. The actual protection may not be satisfactory if cleaning operations with high pressure and temperature water jet outside the requirements of second characteristic numeral 9 and/or solvents are used.	IPX6	P
	The tests acc. to clause 14 performed		P
	Up to and including second characteristic numeral 6, the designation implies compliance also with the requirements for all lower characteristic numerals. However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests obviously would be met if applied.	IPX6	P
	An enclosure designated with second characteristic numeral 9 only is considered unsuitable for exposure to water jets (designated by second characteristic numeral 5 or 6) and immersion in water (designated by second characteristic numeral 7 or 8) and need not comply with requirements for numeral 5, 6, 7 or 8 unless it is multiple coded as follows:		N/A

Clause	Requirement + Test	Result – Remark	Verdict
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	Table 3 – Degrees of protection against water indicated by the second characteristic numeral			-
	Second characteristic numeral	Test conditions (Clause)		-
	0	-	Non-protected	N/A
	1	14.2.1	Protected against vertically falling water drops	N/A
	2	14.2.2	Protected against vertically falling water drops when enclosure tilted up to 15°	N/A
	3	14.2.3	Protected against spraying water	N/A
	4	14.2.4	Protected against splashing water	N/A
	5	14.2.5	Protected against water jets	N/A
	6	14.2.6	Protected against powerful water jets	P
	7	14.2.7	Protected against the effects of temporary immersion in water	N/A
	8	14.2.8	Protected against the effects of continuous immersion in water	N/A
	9	14.2.9	Protected against high pressure and temperature water jets	N/A
	Supplementary information: - Pre-conditioning: 20.5°C ambient temperature, 60% relative humidity, 101.2kPa atmospheric pressure, Maintain 4H. - Mounting/Position of sample: Stand on the floor - Application time: 4min - Water temperature: 21.6°C - Depth and time: - - Drain hole size & position: - - Ingress of water (where and amount): No water ingress			

Clause	Requirement + Test		Result – Remark	Verdict
7	Degrees of protection against access to hazardous parts indicated by the additional letter			N/A
	The additional letter indicates the degree of protection of persons against access to hazardous parts.		No additional letters	N/A
	Additional letters are only used			-
	if the actual protection against access to hazardous parts is higher than that indicated by the first characteristic numeral			N/A
	or if only the protection against access to hazardous parts is indicated, the first characteristic numeral being then replaced by an X.			N/A
	Table 4 gives access probes considered by convention as representative of parts of the human body or objects held by a person and the definitions for the degrees of protection against access to hazardous parts, indicated by additional letters.			N/A
	Table 4 – Degrees of protection against access to hazardous parts indicated by the additional letter			N/A
	Additional letter	Test conditions (Clause)		-
	A	15.2	Protected against access with the back of the hand	N/A
	B	15.2	Protected against access with a finger	N/A
	C	15.2	Protected against access with a tool	N/A
	D	15.2	Protected against access with a wire	N/A
	Supplementary information: -			

Clause	Requirement + Test	Result – Remark	Verdict
8	Supplementary letters		N/A
	In the relevant product standard, supplementary information may be indicated by a supplementary letter following the second characteristic numeral or the additional letter.	End-Product Standard Requirements: -	N/A
	The letters listed below have already been designated and have the significance as stated:		N/A
	Letter	Significance	-
	H	High-voltage apparatus	N/A
	M	the movable parts of the equipment (for example, the rotor of a rotating machine) are in motion	N/A
	S	Tested for harmful effects due to the ingress of water when the movable parts of the equipment (for example, the rotor of a rotating machine) are stationary	N/A
	W	Suitable for use under specified weather conditions and provided with additional protective features or processes	N/A
	Supplementary information: -		
	<i>Note: In the first edition of IEC 60529 the letter "W" with the same meaning was placed immediately after the code letters "IP".</i>		-
	Other letters may be used in product standards.	End-Product Standard Requirements: -	N/A

Clause	Requirement + Test	Result – Remark	Verdict
10	Markings		P
	The requirements for marking shall be specified in the relevant product standard.	End-Product Standard Requirements: No special requirements	P
	Where appropriate, such a standard should also specify the method of marking which is to be used when		N/A
	one part of an enclosure has a different degree of protection to that of another part of the same enclosure;		N/A
	the mounting position has an influence on the degree of protection;	Mounted according to installation manual	N/A
	the maximum immersion depth and time are indicated.	No need to immersion	N/A

Clause	Requirement + Test	Result – Remark	Verdict
11	General requirements for tests		P
11.1	Atmospheric conditions for water or dust tests		P
	Unless otherwise specified in the relevant product standard, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.	End-Product Standard Requirements: No special requirements	P
	The recommended atmospheric conditions during the tests are as follows:		P
	Temperature range: 15 to 35°C	20.5°C	P
	Relative humidity: 25 to 75%	60%RH	P
	Air pressure: 86 to 106 kPa	101.2kPa	P
11.2	Test samples		P
	Unless otherwise specified in a relevant product standard, the test samples for each test shall be in a clean and new condition, with all parts in place and mounted in the manner stated by the manufacturer.	End-Product Standard Requirements: No special requirements	P
	If it is impracticable to test the complete equipment, representative parts or smaller equipment having the same full-scale design details shall be tested.		P
	The relevant product standard shall specify details such as:		-
	the number of samples to be tested;		P
	conditions for mounting, assembling and positioning of the samples, for example by the use of an artificial surface (ceiling, floor or wall); <i>NOTE This also applies to equipment intended to be united with other relevant equipment, for example, components which can be used either alone or in an assembly;</i>	Stand on the floor	P
	the pre-conditioning, if any, which is to be used;		N/A
	whether to be tested energized or not;	Do not energize	N/A
	whether to be tested with its parts in motion or not.	Without motion	N/A
	In the absence of such specification, the manufacturer's instructions shall apply.		P

Clause	Requirement + Test		Result – Remark	Verdict
11.3	Application of test requirements and interpretation of test results			N/A
	The application of the general requirements for tests and the acceptance conditions for equipment containing drain-holes or ventilation openings is the responsibility of the relevant technical committee. In the absence of such specification the requirement of this standard shall apply. The interpretation of test results is the responsibility of the relevant technical committee. In the absence of a specification the acceptance conditions of this standard shall at least apply.	End-Product Standard Requirements: -		N/A
11.4	Combination of test conditions for the first characteristic numeral			P
	Designation with a first characteristic numeral implies that all test conditions are met for this numeral:			P
	Table 5 – Test conditions for degrees of protection indicated by the first characteristic numeral			-
	First characteristic numeral	Test for protection against:		-
		access to hazardous parts	solid foreign objects	
	0	No test required	No test required	N/A
	1	The sphere of 50 mm Ø shall not fully penetrate and adequate clearance shall be kept		N/A
	2	The jointed test finger may penetrate up to its 80 mm length, but adequate clearance shall be kept	The sphere of 12.5 mm Ø shall not fully penetrate	N/A
	3	The test rod of 2.5 mm Ø shall not penetrate and adequate clearance shall be kept		N/A
	4	The test wire of 1.0 mm Ø shall not penetrate and adequate clearance shall be kept		N/A
	5	The test wire of 1.0 mm shall not penetrate and adequate clearance shall be kept	Dust-protected as specified in table 2	N/A
	6	The test wire of 1.0 mm shall not penetrate and adequate clearance shall be kept	Dust-tight as specified in table 2	P
	Supplementary information: -			



Clause	Requirement + Test	Result – Remark	Verdict
	In the case of the first characteristic numerals 1 and 2, “not fully penetrate” means that the full diameter of the sphere shall not pass through an opening of the enclosure.		P
11.5	Empty enclosures		P
	If the enclosure is tested without equipment inside, detailed requirements shall be indicated by the enclosure manufacturer in his instructions for the arrangement and spacing of hazardous parts or parts which might be affected by the penetration of foreign objects or water.		P

Clause	Requirement + Test			Result – Remark	Verdict
12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral				P
12.1	Access probes				P
	Access probes to test the protection of persons against access to hazardous parts are given in table 6.				P
12.2	Test conditions				P
	The access probe is pushed against or (in case of the test for first characteristic numeral 2) inserted through any openings of the enclosure with the force specified in table 6.				P
	Internal moving parts may be operated slowly, where this is possible.				N/A
	Table 6 – Access probes for the tests for protection of persons against access to hazardous parts				
	<i>First numeral</i>	<i>Additional Letter</i>	<i>Test force</i>		-
	1	A	50 N ± 10 %		N/A
	2	B	10 N ± 10 %		N/A
	3	C	3 N ± 10 %		N/A
	4, 5, 6	D	1 N ± 10 %		P
	Supplementary information: -				
12.3	Acceptance conditions				P
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.				P
	For the test of first characteristic numeral 1, the access probe 50 mm diameter shall not completely pass through the opening.				N/A
	For the test of first characteristic numeral 2, the jointed test finger may penetrate to its 80 mm length, but the stop face (ø 50 mm x 20 mm) shall not pass through the opening. Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.				N/A

Clause	Requirement + Test	Result – Remark	Verdict
	Adequate clearance means:		-
12.3.1	For low-voltage equipment (rated voltages not exceeding 1 000 V a.c. and 1 500 V d.c.)		P
	The access probe shall not touch hazardous live parts.		P
12.3.2	For high-voltage equipment (rated voltages exceeding 1 000 V a.c. and 1 500 V d.c.)		N/A
	When the access probe is placed in the most unfavourable position(s), the equipment shall be capable of withstanding the dielectric tests as specified in the relevant product standard applicable to the equipment.	End-Product Standard Requirements: No special requirements	N/A
	Verification may be made either by dielectric test or by inspection of the specified clearance dimension in air which would ensure that the tests would be satisfactory under the most unfavourable electric field configuration (see IEC 60071-2).		N/A
	<i>Note: The attention of relevant technical committees is drawn to the fact that in some types of electrical equipment the maximum voltage produced internally (r.m.s. value or d.c. value of the working voltage) is higher than the rated voltage of the equipment. This maximum voltage should be considered when the dielectric test voltage and the adequate clearance are determined.</i>		-
12.3.3	For equipment with hazardous mechanical parts:		N/A
	The access probe shall not touch hazardous mechanical parts.		N/A

Clause	Requirement + Test		Result – Remark		Verdict
13	Tests for protection against solid foreign objects indicated by the first characteristic numeral				P
13.1	Test means				P
	Applicable test means of table 7 applied				P
	Table 7 – Test means for the tests for protection against solid foreign objects				
	First characteristic numeral	Test means	Test force	Test conditions	-
	0	No test required	-	-	N/A
	1	Rigid sphere without handle or guard 50 0 mm diameter	50 N ± 10 %	13.2	N/A
	2	Rigid sphere without handle or guard 12.5 mm diameter	30 N ± 10 %	13.2	N/A
	3	Rigid steel rod 2.5 mm diameter with edges free from burrs	3 N ± 10 %	13.2	N/A
	4	Rigid steel rod 1.0 mm diameter with edges free from burrs	1 N ± 10 %	13.2	N/A
	5	Dust chamber figure 2, with or without under-pressure	-	13.4 + 13.5	N/A
	6	Dust chamber figure 2, with under- pressure	-	13.4 + 13.6	P
	Supplementary information: -				
13.2	Test conditions for first characteristic numerals 1, 2, 3, 4				N/A
	The object probe is pushed against any openings of the enclosure with the force specified in table 7.				N/A
13.3	Acceptance conditions for first characteristic numerals 1, 2, 3, 4				N/A
	The protection is satisfactory if the full diameter of the probe specified in table 7 does not pass through any opening.				N/A
	Note: For first characteristic numerals 3 and 4 the probes specified in table 7 are intended to simulate foreign objects which may be spherical. Where an enclosure has an indirect or tortuous entry path and there is any doubt about ingress of a spherical object capable of motion, it may be necessary to examine drawings or to provide special access for the object probe to be applied with the specified force to the opening(s) where ingress has to be checked.				-

Clause	Requirement + Test	Result – Remark	Verdict
13.4	Dust test for first characteristic numerals 5 and 6		P
	The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 µm and the nominal width of a gap between wires 75 µm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.		P
	<i>Note: Health and safety regulations should be observed in selecting the type of talcum powder and its use.</i>		-
	Enclosures are of necessity in one of two categories:		P
	Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.		P
	Category 2: Enclosures where no pressure difference relative to the surrounding air is present.		N/A
13.5	Special conditions for first characteristic numeral 5		N/A
13.5.1	Test conditions for first characteristic numeral 5		N/A
	The enclosure shall be deemed category 1 unless the relevant product standard for the equipment specifies that the enclosure is category 2.	End-Product Standard Requirements: -	N/A

Clause	Requirement + Test	Result – Remark	Verdict
13.5.2	Acceptance conditions for first characteristic numeral 5		N/A
	The protection is satisfactory if, on inspection, talcum powder has not accumulated in a quantity or location such that, as with any other kind of dust, it could interfere with the correct operation of the equipment or impair safety. Except for special cases to be clearly specified in the relevant product standard, no dust shall deposit where it could lead to tracking along the creepage distances.	End-Product Standard Requirements: -	N/A
13.6	Special conditions for first characteristic numeral 6		P
13.6.1	Test conditions for first characteristic numeral 6		P
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		P
13.6.2	Acceptance conditions for first characteristic numeral 6		P
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.		P

Clause	Requirement + Test		Result – Remark			Verdict
14	Tests for protection against water indicated by the second characteristic numeral					P
14.1	Test means					P
	Applicable test means of table 8 applied					P
	Table 8 – Test means and main test conditions for the tests for protection against water					
	Second characteristic numeral	Test means	Water flow rate	Duration of test	Test conditions	-
	0	No test required	-	-	-	N/A
	1	Drip box Figure 3 Enclosure on turntable	1 mm/min	10 min	14.2.1	N/A
	2	Figure 3 Enclosure in 4 fixed positions of 15° tilt	3 mm/min	2,5 min for each position of tilt	14.2.2	N/A
	3	Oscillating tube Figure 4 Spray ± 60° from vertical, distance max. 200 mm or	0,07 l/min ± 5 % per hole, multiplied by number of holes	10 min	14.2.3 a)	N/A
		Spray nozzle Figure 5 Spray ± 60° from vertical	10 l/min ± 5 %	1 min/m² at least 5 min	14.2.3 b)	
	4	As for numeral 3 Spray ± 180° from vertical	As for numeral 3		14.2.4	N/A
	5	Water jet hose nozzle Figure 6 Nozzle 6.3 mm diameter, distance 2.5 m to 3 m	12,5 l/min ± 5 %	1 min/m² at least 3 min	14.2.5	N/A
	6	Water jet hose nozzle Figure 6 Nozzle 12.5 mm diameter, distance 2.5 m to 3 m	100 l/min ± 5 %	1 min/m² at least 3 min	14.2.6	P
	7	Immersion tank Water-level on enclosure: 0,15 m above top 1 m above bottom	-	30 min	14.2.7	N/A
	8	Immersion tank Water-level: by agreement	-	by agreement	14.2.8	N/A
	9	Fan jet nozzle Figure 7 Test of small enclosure on turntable Figure 12 Turntable speed (5 ± 1) r/min Spray at 0°, 30°, 60°, 90° or	(15 ± 1) l/min	30 s per Position	14.2.9 a)	N/A
		Test of large enclosures as per intended use Spray from all practical directions Distance (175 ± 25) mm		1 min/m² at least 3 min	14.2.9 b)	

Clause	Requirement + Test	Result – Remark	Verdict
	Supplementary information: -		
14.2	Test conditions		P
	Test means and main test conditions are given in table 8.		P
	Details concerning compliance of degrees of protection – in particular for second characteristic numerals 5/6/9 (water jets) and numerals 7/8 (immersion) – are given in Clause 6.		P
14.2.1	Test for second characteristic numeral 1 with the drip box		N/A
	The test is made with a device which produces a uniform flow of water drops over the whole area of the enclosure.		N/A
	<i>Note: When the base of the drip box is smaller than that of the enclosure under test, the latter may be divided into several sections, the area of each section being large enough to be covered by the dripping water. The test is continued until the whole area of the enclosure has been sprinkled for the specified time.</i>		-
14.2.2	Test for second characteristic numeral 2 with the drip box		N/A
	The dripping device is the same as specified in 14.2.1 adjusted to provide the water flow rate specified in table 8.		N/A
14.2.3	Test for second characteristic numeral 3 with oscillating tube or spray nozzle		N/A
	The test is made using one of the two test devices described in figure 4 and in figure 5 in accordance with the relevant product standard.	End-Product Standard Requirements: -	N/A
	a) Conditions when using the test device as in figure 4 (oscillating tube)		N/A
	b) Conditions when using the test device as in figure 5 (spray nozzle)		N/A
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle		N/A
	The test is made using one of the two test devices described in figure 4 and in figure 5 in accordance with the relevant product standard.	End-Product Standard Requirements: -	N/A
	a) Conditions when using the test device as in figure 4 (oscillating tube)		N/A
	b) Conditions when using the test device as in figure 5 (spray nozzle)		N/A

Clause	Requirement + Test	Result – Remark	Verdict																																																
	Table 9 – Total water flow rate q_v under IPX3 and IPX4 test conditions – Mean flow rate per hole $q_{vl} = 0,07$ l/min		-																																																
	<table><tr><th rowspan="2">Tube radius R mm</th><th colspan="2">Degree IPX3</th><th colspan="2">Degree IPX4</th></tr><tr><th>Number of open holes $N^{1)}$</th><th>Total water flow q_v l/min</th><th>Number of open holes $N^{1)}$</th><th>Total water flow q_v l/min</th></tr><tr><td>200</td><td>8</td><td>0,56</td><td>12</td><td>0,84</td></tr><tr><td>400</td><td>16</td><td>1,1</td><td>25</td><td>1,8</td></tr><tr><td>600</td><td>25</td><td>1,8</td><td>37</td><td>2,6</td></tr><tr><td>800</td><td>33</td><td>2,3</td><td>50</td><td>3,5</td></tr><tr><td>1 000</td><td>41</td><td>2,9</td><td>62</td><td>4,3</td></tr><tr><td>1 200</td><td>50</td><td>3,5</td><td>75</td><td>5,3</td></tr><tr><td>1 400</td><td>58</td><td>4,1</td><td>87</td><td>6,1</td></tr><tr><td>1 600</td><td>67</td><td>4,7</td><td>100</td><td>7,0</td></tr></table> ¹⁾ Depending on the actual arrangement of the hole centres at the specified distance, the number of open holes N may be increased by 1.	Tube radius R mm	Degree IPX3		Degree IPX4		Number of open holes $N^{1)}$	Total water flow q_v l/min	Number of open holes $N^{1)}$	Total water flow q_v l/min	200	8	0,56	12	0,84	400	16	1,1	25	1,8	600	25	1,8	37	2,6	800	33	2,3	50	3,5	1 000	41	2,9	62	4,3	1 200	50	3,5	75	5,3	1 400	58	4,1	87	6,1	1 600	67	4,7	100	7,0	-
Tube radius R mm	Degree IPX3		Degree IPX4																																																
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1 200	50	3,5	75	5,3																																															
1 400	58	4,1	87	6,1																																															
1 600	67	4,7	100	7,0																																															
14.2.5	Test for second characteristic numeral 5 with the 6.3 mm nozzle		N/A																																																
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6.		N/A																																																
14.2.6	Test for second characteristic numeral 6 with the 12.5 mm nozzle		P																																																
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6.		P																																																
14.2.7	Test for second characteristic numeral 7: temporary immersion between 0.15 m and 1 m		N/A																																																
14.2.8	Test for second characteristic numeral 8: continuous immersion subject to agreement		N/A																																																
	Unless there is a relevant product standard, the test conditions are subject to agreement between manufacturer and user, but they shall be more severe than those prescribed in 14.2.7 and they shall take account of the condition that the enclosure will be continuously immersed in actual use.	End-Product Standard Requirements: -	N/A																																																

Clause	Requirement + Test	Result – Remark	Verdict
14.2.9	Test for second characteristic numeral 9 by high pressure and temperature water jetting		N/A
	The test is made by spraying the enclosure with a stream of water from a standard test nozzle as shown in Figures 7, 8 and 9. The set-up for measuring the impact force of the water jet is given in Figure 10. The distribution force shall be verified at upper and lower limits of distance tolerance range (see Figure 11).		N/A
14.3	Acceptance conditions		P
	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.9, the enclosure shall be inspected for ingress of water.		P
	It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.		P
	In general, if any water has entered, it shall not:		-
	be sufficient to interfere with the correct operation of the equipment or impair safety;		P
	deposit on insulation parts where it could lead to tracking along the creepage distances;		P
	reach live parts or windings not designed to operate when wet;		P
	near the cable end or enter the cable if any.		P
	For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.	End-Product Standard Requirements: No special requirements	P

Clause	Requirement + Test	Result – Remark	Verdict
15	Tests for protection against access to hazardous parts indicated by the additional letter		N/A
15.1	Access probes		N/A
	Access probes to verify the protection of persons against access to hazardous parts are given in table 6.		N/A
15.2	Test conditions		N/A
	The access probe is pushed against any openings of the enclosure with the force specified in table 6. If it partly or fully penetrates, it is placed in every possible position, but in no case shall the stop face fully penetrate through the opening.		N/A
	Internal barriers are considered part of the enclosure as defined in 3.1.		N/A
15.3	Acceptance conditions		N/A
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.		N/A
	In the case of the test for the additional letter B, the jointed test finger may penetrate to its 80 mm length, but the stop face ($\varnothing 50 \text{ mm} \pm 20 \text{ mm}$) shall not pass through the opening. Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.		N/A
	In case of the tests for the additional letters C and D, the access probe may penetrate to its full length, but the stop face shall not fully penetrate through the opening. See annex A for further clarification.		N/A
	Conditions for verification of adequate clearance are identical with those given in 12.3.1, 12.3.2 and 12.3.3.		N/A

Clause	Requirement + Test	Result – Remark	Verdict
	Annex ZA (normative) (EN 60529:1991+A1:2000+A2:2013)		N/A
	When the International Publication as been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.		N/A

Picture 1-2: Dust test for IP6X (Before test)

Test model for AE1113Z1-8-1, AE1113Z1-25-1, AE1113Z1-35-1, AE1113Z1-46-1, AE1113Z1-50-1
(including expansion battery pack model A17E23Z1-81)



Without Mounting Base



With Mounting Base

Picture 3-4: Dust test for IP6X (After test)

Test model for AE1113Z1-8-1, AE1113Z1-25-1, AE1113Z1-35-1, AE1113Z1-46-1, AE1113Z1-50-1
(including expansion battery pack model A17E23Z1-81)



Without mounting Base



With mounting Base

Picture 5-6: Waterproof test for IPX6 (During test)

Test model for AE1113Z1-8-1, AE1113Z1-25-1, AE1113Z1-35-1, AE1113Z1-46-1, AE1113Z1-50-1
(including expansion battery pack model A17E23Z1-81)

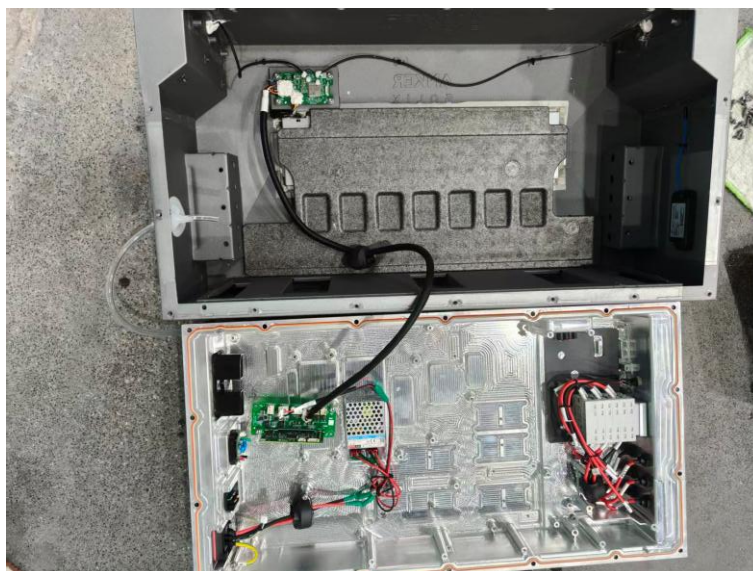


Without mounting Base



With mounting Base

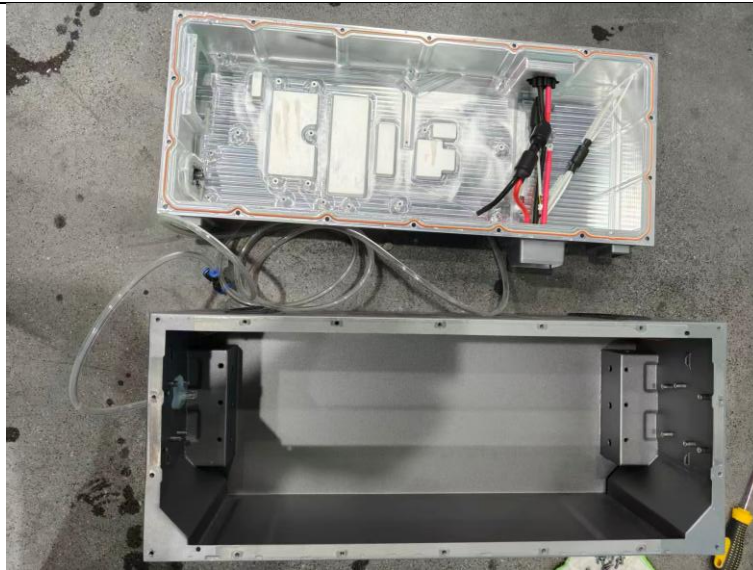
Picture 7-14: Internal view after IP66 test for model AE1113Z1-8-1, AE1113Z1-25-1, AE1113Z1-35-1, AE1113Z1-46-1, AE1113Z1-50-1 (including expansion battery pack model A17E23Z1-81)



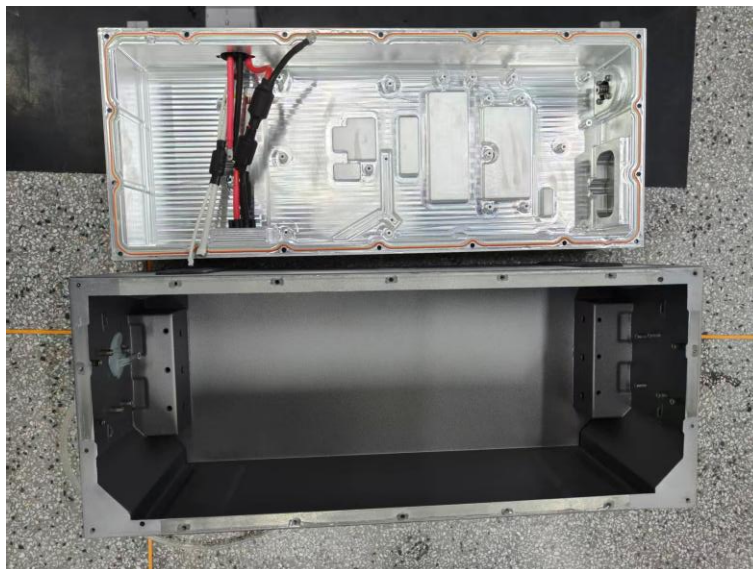
Inside of main module (Test without mounting Base)



Inside of main module (Test with mounting Base)



Inside of expansion battery pack(Test without mounting Base)



Inside of expansion battery pack(Test with mounting Base)



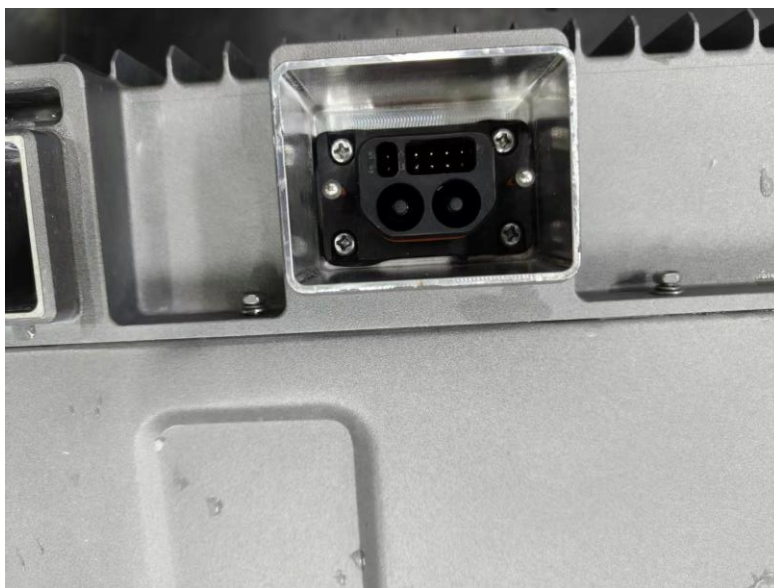
Battery connector of main module (Test without mounting Base)



Battery connector of main module (Test with mounting Base)



Battery connector of the expansion battery pack (Test without mounting Base)



Battery connector of the expansion battery pack (Test with mounting Base)

Picture 15-16: Dust test for IP6X (Before test)

Test model for AE111TZ1-1, AE111GZ1-1, AE1114Z1-1 (including expansion battery pack model A17E23Z1-81)



Without Mounting Base



With Mounting Base

Picture 17-18: Dust test for IP6X (After test)

Test model for AE111TZ1-1, AE111GZ1-1, AE1114Z1-1 (including expansion battery pack model A17E23Z1-81)



Without mounting Base



With mounting Base

Picture 19-20: Waterproof test for IPX6 (During test)

Test model for AE111TZ1-1, AE111GZ1-1, AE1114Z1-1 (including expansion battery pack model A17E23Z1-81)



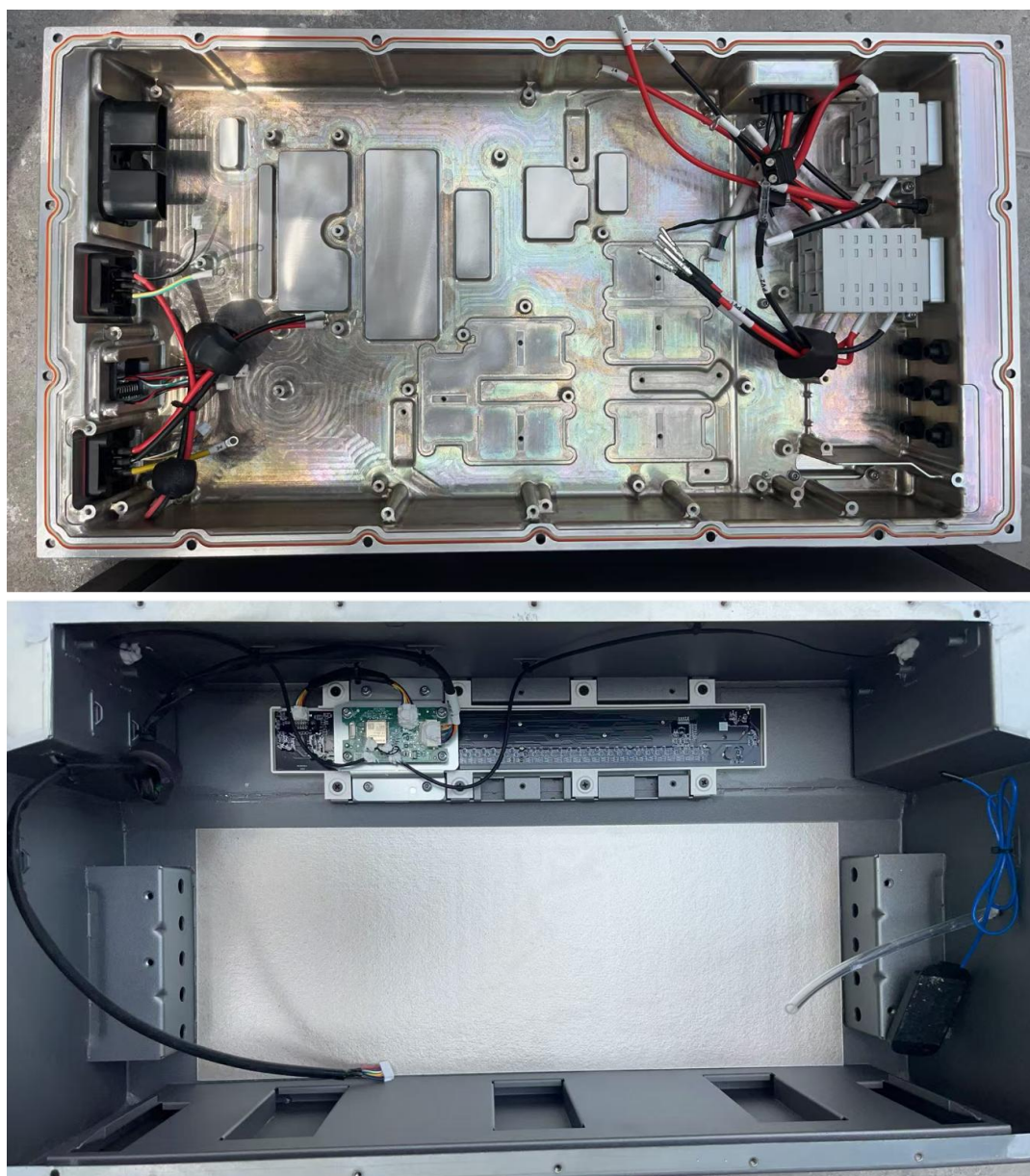
Without mounting Base



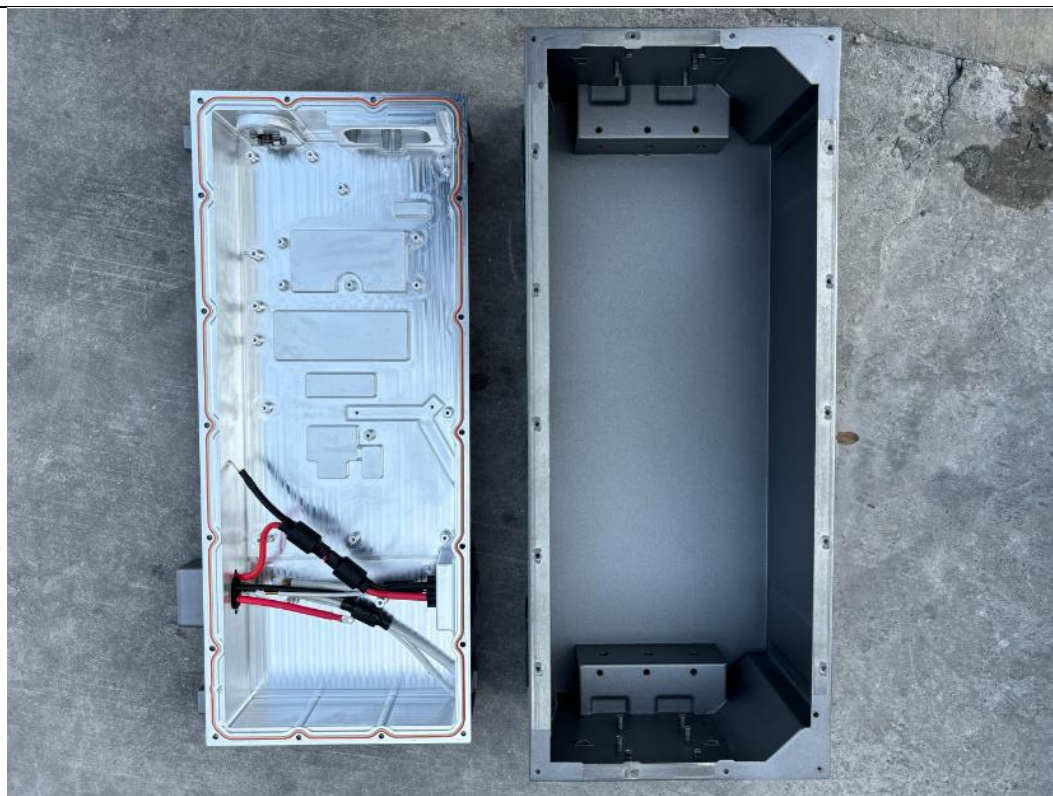
With mounting Base

Attachment
photo documentation

Picture 21-26: Internal view after IP66 test for model AE111TZ1-1, AE111GZ1-1, AE1114Z1-1 (including expansion battery pack model A17E23Z1-81)



Inside of main module



Inside of expansion battery pack



Battery connector of main module



Battery connector of the expansion battery pack



Mounting base

.....End of test report.....