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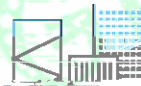
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TGPRO New Energy Technology Co., Ltd

Energy Storage Project Specification



HYB



Factory address No. 16, Hengxing Road, Liaobu Town, Dongguan City, Guangdong Province

Specification For Approval

History of specification

[illegible]

Specification For Approval

1	Scope of application documents/		1
2	The Specification Amendment/		1
3	Product or Cell testing conditions/		1
4	Standard /		1
4.1	Reference Standard/		1
4.2	Measuring Instrument and Apparatus/		1



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1 Scope of application documents/

This product specification only applies to the protection parameters of rechargeable lithium-ion battery products and batteries designed by Dong guan TGPRO New Energy Technology Co., Ltd.

2 The Specification Amendment/

If the raw materials, production processing, production system or battery usage environments & other conditions need to be changed, the amendment side needs provide the written advice to the other side, only the both sides come to agreement, the amendment will be effective.

3 Product or Cell testing conditions/

It is recommended to use newly produced battery pad

4.3 Testing Conditions (Unless Specially Requirements)

Atmosphere Pressure	86~106kPa	86~106kPa
Temperature	20 ± 5	20 ± 5
Relative Humidity	≤ 75%	≤ 75%

5 Model Description

Our company's product model definition rules are as follows:

TG-eBank-xxx□□2					
1	2	3	4	5	6
Number	Code Name		Code Description		
1					

6 Main specifications

6.1 System Parameter

No	Item	General Parameter	Remark
1	system energy	241.152KWh	
2	MPPT power MPPT	120KW	
3	PCS power PCS	100KW	
4	STS power STS	2 0KW	
5	STS	have	
6	GEN	have	
7	Communication access method	3P4W	
8	rated output voltage	380/400V	
9	Rated output power	100KW	
10	Cooling method	Liquid cooling	
11	Placement environment	Outdoor	Suggest a cool and ventilated place
12	Fire Protection System	Have	Pack level and cabinet level pack
13	Size	W1700*D1350*H2050mm	
14	Weight	2.8T	
15	protection grade	IP54	

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6.3 Technical parameters of battery cluster

No	Item	General Parameter	Remark
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6.4 MPPT parameters MPPT

	Model	MPPT 120KW
DC low voltage side	Rated power	120kW
	Rated current	360A
	Rated voltage	350V
	Maximum voltage	1000V
	Voltage range	150~1000V
	Minimum voltage at full power	340V
	Voltage requirements for low voltage side in step-down mode	$150V \leq \text{low voltage terminal voltage} \leq \text{high voltage terminal voltage, up to 1000V}$ $150V \leq \leq 1000V$
	Low voltage side starting voltage	150V
DC high voltage side	Rated power	120kW
	Rated current	200A
	Rated voltage	600V
	Maximum voltage	1000V
	Voltage range	350~1000V
	Full power voltage range	600~950V
	Voltage requirements for high voltage side in boost mode	$1000V \geq \text{high voltage terminal voltage} \geq \text{low voltage terminal voltage, minimum 350V}$ $1000V \geq \geq 350V$
	High voltage side starting voltage	350V
system parameter		Reverse connection protection, fuse protection, overcurrent protection, overvoltage/undervoltage protection.
	Protection and functionality	overheating protection, low voltage side short circuit protection, insulation impedance detection /



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6.5 PCS parameters PCS

	Model	PCS 100KW
DC side parameters	Number of input channels	1
	minimum voltage	600 V
	Rated voltage range	15~950 3W+PE 680~950 3W+N+PE
	Maximum input current	170 A
AC grid connection parameters	rated voltage V	230/400
	Deviation	-10%~+15%
	Communication output type	3W+PE / 3W+N+PE
	Rated output power kW	105
	Maximum output power kW	116
	Maximum current A	167
	Rated grid frequency Hz	50/60
	Power factor	0.99
	Power factor range	1 ~1(1 (leading)~1 (lagging)
	Current distortion rate	3%(Rated power) 3%
	DC Component	0.5%
	Overload capacity	110% long-term 110%
	Maximum discharge efficiency	98.5%
Communication off grid parameters	rated output voltage	230/400
	AC voltage harmonics	<3% (linear load) 3%
	Rated frequency Hz	50/60
	Rated output power kW	105
	Maximum apparent power kVA	116
	Maximum output current A	167
General parameters	Capable of functionality	AC overcurrent protection, AC overvoltage protection, AC surge protection, AC short circuit protection, anti islanding protection, DC reverse connection protection, DC surge protection
	Size mm	544*717*271.5
	Weight kg	48
	Altitude m	4000(Used for downgrading over

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		2000)
		2000
Operation temperature	-30 55 45	(Used for derating above 45)
Storage temperature	-45 70	
Humidity	0%RH~95% RH	No condensation
Cooling method	Intelligent forced air cooling	
Protection level	IP20	
Communication interface	CAN/RS485	
Compliant with standards	GB/T 34120-2017 , GB/T 34133-2017 , EN 62477 , EN IEC 61000	
Power grid support	L/HVRT, L/HVRT, Active and reactive power control	
Authentication	CE/CQC	

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6.6 STS parameters STS

	Model	STS 200KW
Electrical specifications	Rated grid side power	200kW
	Rated grid side current	304A
	PCS side power PCS	100kW
	Load power	100kW
	Rated grid voltage	380V/400V
	Voltage range of power grid	±15%
	Rated grid frequency	50Hz/60Hz
	Grid frequency range	±5Hz
	Long term overload capacity	110% (ambient temperature below 40℃) 110% 40℃
	Time of grid connection to off grid	<10ms
	Wiring method	Three phase five wire
	Maximum efficiency	99.5%
system parameter	topological structure	Non isolated
	Protection level	IP20
	Working temperature range	-40-60℃ (>45℃ derating operation) -40~60℃ >45℃
	Storage temperature range	-40~70℃
	relative humidity	0~95%, no condensation 0~95%
	Maximum working altitude	4000m (>3000m derating operation) 4000m >3000m
	Cooling method	Intelligent air cooling
	Noise (typical value)	<70dB
	human-computer interaction	LED
	Communication method	RS485/CAN/EtherNet/DIO
	Weight	27kg

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	Size	440mm*175mm*550mm
	Installation method	Modular rack installation



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6.7 Parameters of 5KW liquid cooling machine 5KW

No	project	Unit	Data
1	Power supply system	1/PE AC 220V±10% 50Hz 1/PE AC 220V±10% 60Hz	
2	Maximum power/current /	kW/A	2.8/13.4
3	VWDQGE\SRZHU	W	≤20
4	Self circulating power	kW	0.2
5	Communication protocol	/	RS485
6	Refrigeration capacity	kW	5 (L35 /W20)
7	Cooling power/current /	kW/A	2.0/9.3 (L35 /W20)
8	Heating capacity	kW	2
9	Heating power/current /	kW/A	2.2/10.3
10	Working mode	Automatic control mode, cooling mode, heating mode, standby mode, self cycling mode	
11	Liquid temperature setting range		15-35 (liquid temperature factory set at 20) 15 35 20
12	Refrigerant	R410A	
13	Condensed air volume	m3/h	1800
14	Noise	dB(A)	≤72
15	Rated flow rate	L/min	30
16	Rated pressure difference	kPa	100
17	protection grade	IP55 (electrical control cabinet) IP55	
18	Medium	Concentration ≤ 60% ethylene glycol aqueous solution; ≤60%	

6.8 Specification for Single Cluster Battery Management System

6.8.1 BMS function introduction,BMS

1 :BMS is designed for high-voltage energy storage series lithium batteries
BMS

2 The BMS have all functions which are :
BMS

.1 overcharge detection function

.2 over discharge detection function

.3 over current detection function

.4 short detection function

.5 Temperature detection function

.6 balance function

.7 communicate function

.8 Alarm function

.9 Total capacity function

.10 Storage history function

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6.8.2 BMS Protect parameter

Items	Details	General Parameter
Cell overcharge Protection	Overcharge detection voltage	$3.65 \pm 0.025V$
	Overcharge detection delay time	Typical:1.0s
	Overcharge release voltage	$3.4 \pm 0.05V$
Cell over-discharge protection	Over-discharge detection voltage	$2.7 \pm 0.5V$
	Over-discharge detection delay time	Typical:1.0s
	Over-discharge release voltage	$3.1 \pm 0.1V$ or charge release
Over-current Protection	discharge Over-current protection current1	162A
	discharge Over-current detection delay time 1	1S
	discharge Over-current protection current 2	167A
	discharge Over-current detection delay time 2	$\leq 200m \pm 50ms$
	Charge Over-current protection current	162A
	Protection condition	Load short
	Detection delay time	$\leq 30ms$
	Protection release condition	Charging release
Temperature(T) protection	Charge high T protection	55 ± 3
	Charge high T recover	47 ± 4
	Discharge high T protection	60 ± 3
	Discharge high T recover	50 ± 4

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	Charge low T protection T	0 ± 3
	Charge low T recover T	5 ± 4
	Discharge low T protection T	-20 ± 3
	Discharge low T recover T	-10 ± 4
Balance	Balance threshold voltage	3.4V
Communication	It has CAN and RS485 ,RS232 standard communication interface, it real-time monitoring the capacity of battery bank, the voltage, current,environment temperature, and charging/discharging current, RS485,RS232,Baud rate:9600Kb/S,CAN common Baud rate:500K/S, CAN RS485 RS232 RS485 RS232 9600Kb/S CAN 500K/S	
Alarm	It has over-temperature, over charge, under-voltage, over-current, short circuit alarm Function.	



7 Appearance and structural dimensions

The surface of the battery pack should have no obvious scratches, burrs and mechanical scratches, and the exposed metal terminals should be free of oxidation and rust.



8 Storage and Others

Long Time Storage

If stored for a long time(don't used, exceed three months), the cell and pack should be stored in drying and cooling place. The PACK is to be stored in a condition that the temperature of 23 ± 2 and the humidity of 45%- 75%. Long-term use of unused batteries to recharge every 3 months Ensure that the battery voltage is within the above range

, 3
3

PACK

23 ± 2

45%- 75%

Appendix

Li-ion battery operation instructions and precautions

Preface

This document of 'Handling Precautions and Guideline Li-ion Rechargeable Batteries' shall be applied to the battery cells manufactured by TGPRO.

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Caution!

Do not use or store the battery where is exposed to extremely hot, such as under window of a car in direct sunlight in a hot day. Otherwise, the battery may be overheated. This can also reduce



