PRODUCT SPECIFICATION

Product Name: High Voltage Box

Product Model: TB-PD500V(100A, 250)A

Version: V1.0

Compiler: Bin	Reviewer: Ethan	Ratify: Gary
2025-4-15	2025-4-15	2025-4-15

Revision Record			
Date	Revised Version	Revision Note	Reviser
2025-4-15	V1.0	Newly formulate	Bin

Catalog

1. Overview

1.1. Introduction

The High-Voltage Box is a power loop management unit in high-voltage energy storage systems. The TB-PD500V is designed for battery energy storage systems with voltage ratings ≤ DC500V. Its primary functions include battery cluster voltage/current acquisition, relay control for battery cluster circuits, and battery cluster protection. It supports data processing and charge/discharge control management for individual battery modules within the cluster.

1.2. Application environment

Index item	Parameter
Use ambient temperature range	-20℃ ~ 70℃
Storage environment temperature range	-40℃ ~ 85℃
Use ambient humidity range	5 ~ 95（45℃±2℃）%RH
Storage environment humidity range	≤95（45℃±2℃）%RH
Atmospheric pressure	76 ~ 106 Kpa
Altitude	Meets GB/T-7251.1
Heat dissipation mode	Natural heat dissipation
IP rating	IP20

2. Key components List

2.1. TB-PD500V100A

No.	Component	Qty.	Unit	Sign	Parameters	Function
1	Control Board	1	PC	BCU	TBA-C1500	Brand: TG-EP Battery Cluster Master Control Board

2	Display	1	PC	Display	TB-DP43	Brand: TG-EP
3	Molded Case Circuit Breaker	1	PC	QF1	NDB6Z-125 C125/2+MX6 DC24V	Manual switching and automatic tripping for battery cluster circuits
4	Pre - charge Contactor	1	PC	KM1	NDZ3W-50 DC24V(1000V)	Automatic switching for pre-charge circuits
5	Main circuit Contactor	2	PC	KM2/KM3	NDZ3W-10010 DC24V(1000V)	Automatic switching for battery cluster positive/negative circuits
6	DC Fuse	1	PC	FU1	FWP-125C 700V/125A	Overcurrent protection for main circuits
7	Pre - charge Resistor	1	PC	R1	RXLG-100W50RJ	Current limiting for pre-charge and circulation circuits
8	Switch	1	PC	QF2	LA38-11BN	Control circuit switching
9	DC Shunt	1	PC	R2	FL-2 100A 75mV ±0.5%	Current measurement
10	DC/DC	1	PC	DY1	RSDH-150-24	Power supply for BCU

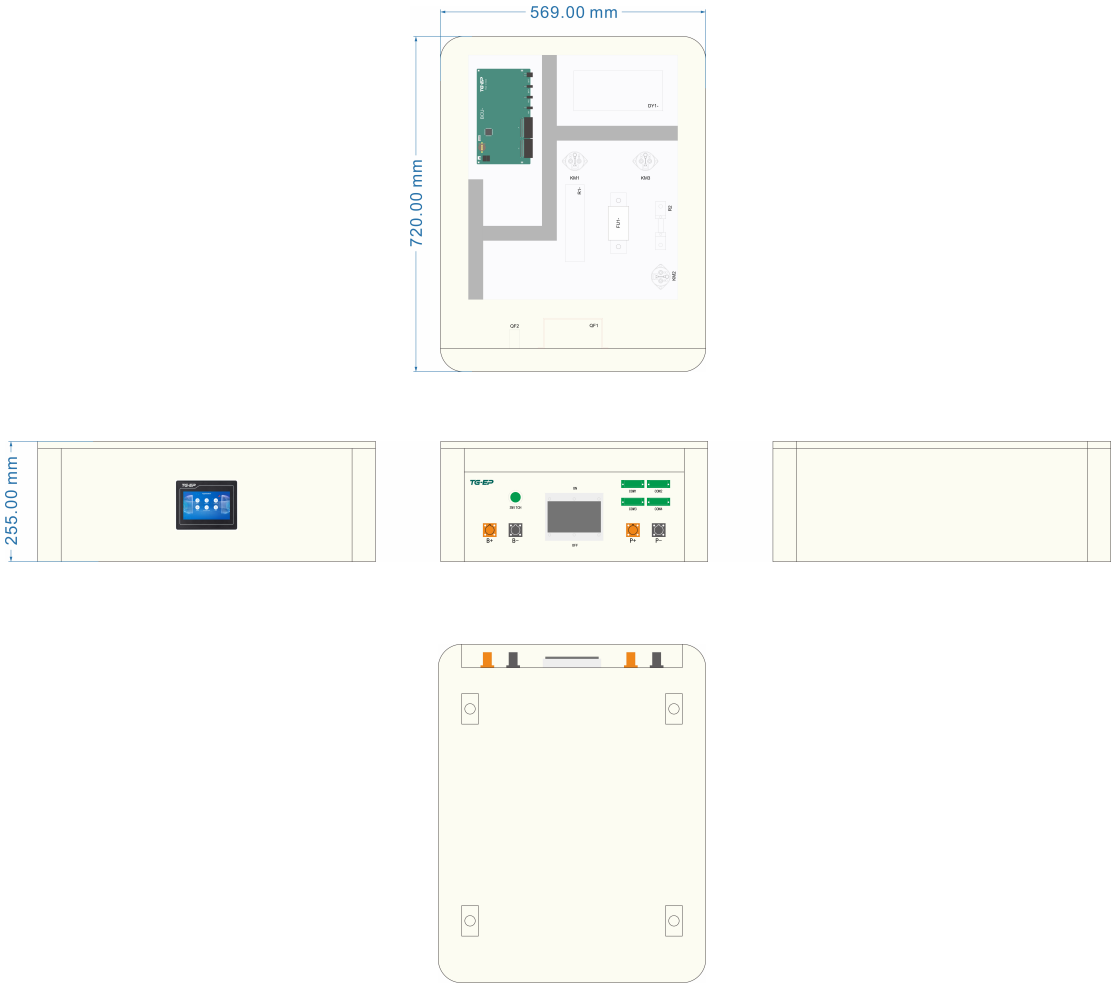
2.2. TB-PD500V250A

No.	Component	Qty.	Unit	Sign	Parameters	Function
1	Control Board	1	PC	BCU	TBA-C1500	Brand: TG-EP Battery Cluster Master Control Board
2	Display	1	PC	Display	TB-DP43	Brand: TG-EP
3	Molded Case Circuit Breaker	1	PC	QF1	NDM3Z-250VM/2341 250A DC24V	Manual switching and automatic tripping for battery cluster circuits
4	Pre - charge Contactor	1	PC	KM1	NDZ3W-50 DC24V(1000V)	Automatic switching for pre-charge circuits
5	Main circuit Contactor	2	PC	KM2/KM3	NDZ3W-25010 DC9V-36V(1000V)	Automatic switching for battery cluster positive/negative circuits
6	DC Fuse	1	PC	FU1	FWP-300C 700V/300A	Overcurrent protection for main circuits
7	Pre - charge Resistor	1	PC	R1	RXLG-200W100RJ	Current limiting for pre-charge and circulation circuits

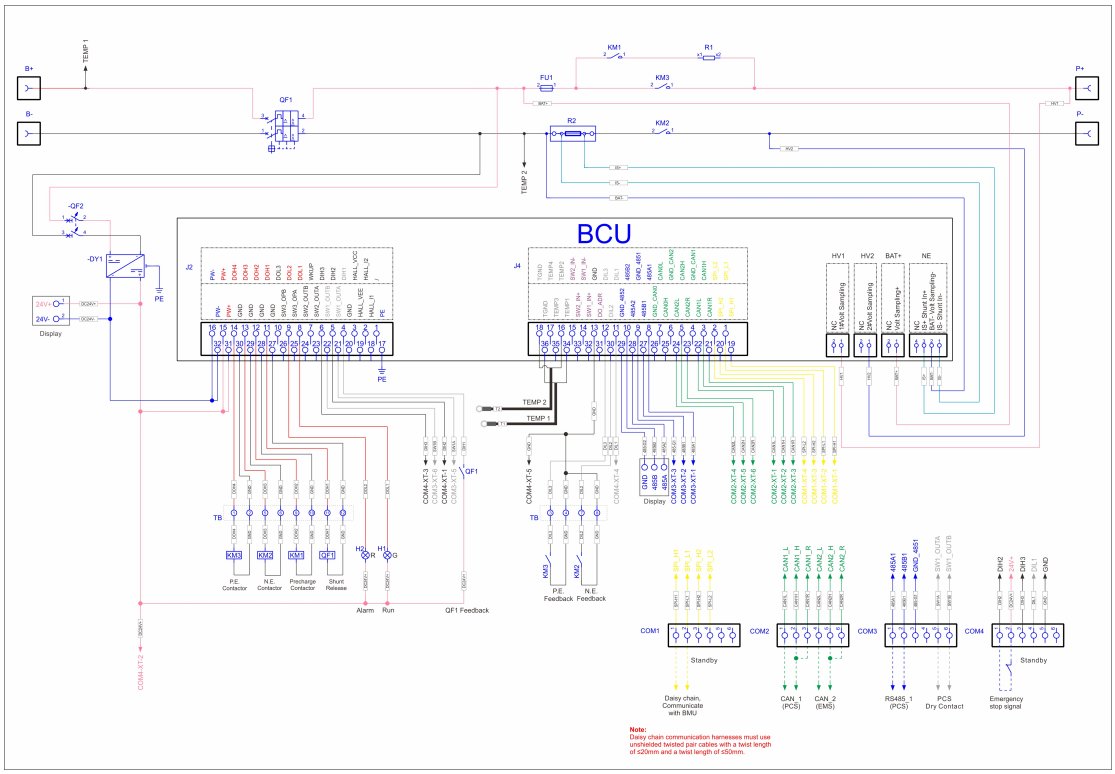
8	Switch	1	PC	QF2	LA38-11BN	Control circuit switching
9	DC Shunt	1	PC	R2	FL-2 200A 75mV ±0.5%	Current measurement
10	DC/DC	1	PC	DY1	RSDH-150-24	Power supply for BCU

3. Structural Dimensions And Layout

This dimension and layout diagram is applicable to both TB-PD500V100A and TB-PD500V250A.



4. Wiring diagram



5. Precautions

- Prevent electrostatic discharge, moisture, and water ingress during use.
- Ensure correct polarity when connecting battery modules; reverse polarity is prohibited.Verify full insertion of terminals during harness-to-module connections.
- Avoid excessive power harness lengths and crossing with communication cables.
- Wear insulating gloves when handling HV terminals (Total Positive/Negative).
- Confirm input voltage is within specifications before powering on the HV box.
- Never touch HV terminals while the unit is energized.
- Strictly follow sequential power-on/shutdown procedures.
- Use twisted-pair shielded cables for CAN/RS485 communication (when connected to RCU-01K8CC/RCU-01K8CN master controllers).
- The Company reserves the final right to interpret this document.

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