Rayleigh Instruments
EST. 1964

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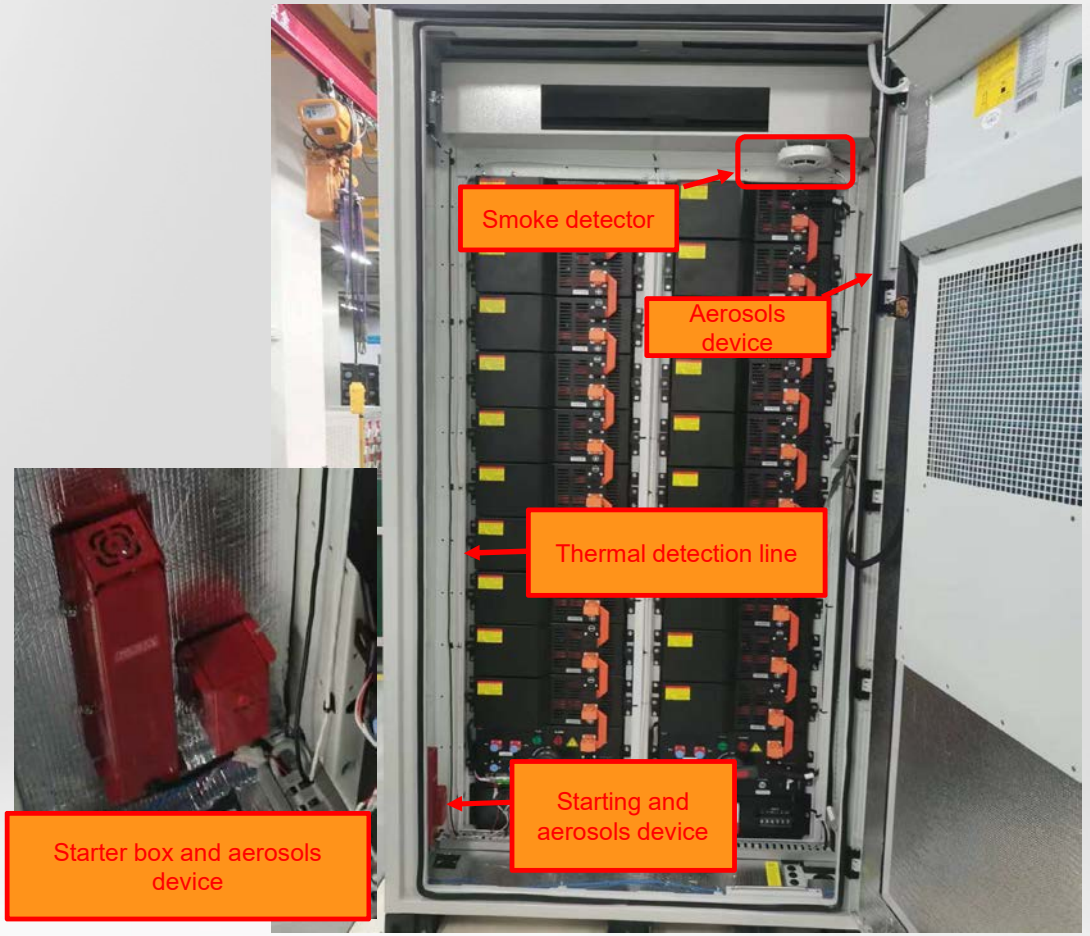
RI-ENERGYSET-3P-ESS-50-100 - *Protection Systems*

Fire and Other Protection Systems

Fire Protection Specification

Cabinet level

Composed of
1) smoke detection device,
2) fire protection thermal line
3) starting and aerosols device



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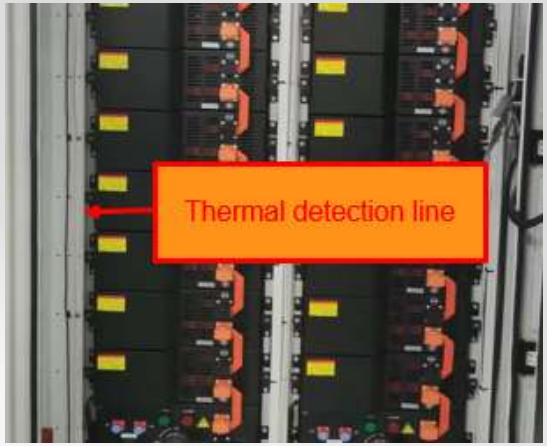
Fire Protection Specification

Cabinet level

Fire protection logic:
After the fire signal is triggered, it is connected to the DI4 dry contact of the SBMU through the dry contact, and DI4 is pulled high (H) to indicate the fire signal. The SBMU detects the fire trigger signal and lasts for 2s. Then the SBMU reports Fire fault and disconnect the battery system. Manual restoration is needed to remove the fault.

1) Smoke trigger: When the smoke detector detects smoke in the battery cabinet, the device will give an audio alarm and upload the signal to the J10-DI5 port of the EMS through dry contact. After the EMS receives the smoke signal, it stops the system operation. The battery circuit breaker is disconnected, and the AC auxiliary power switch in the battery cabinet trips.

2) Thermal trigger: When the thermal line detects a high temperature, the thermal wire transmits the fire signal to the booster circuit and the electric trigger circuit, and starts the aerosol device



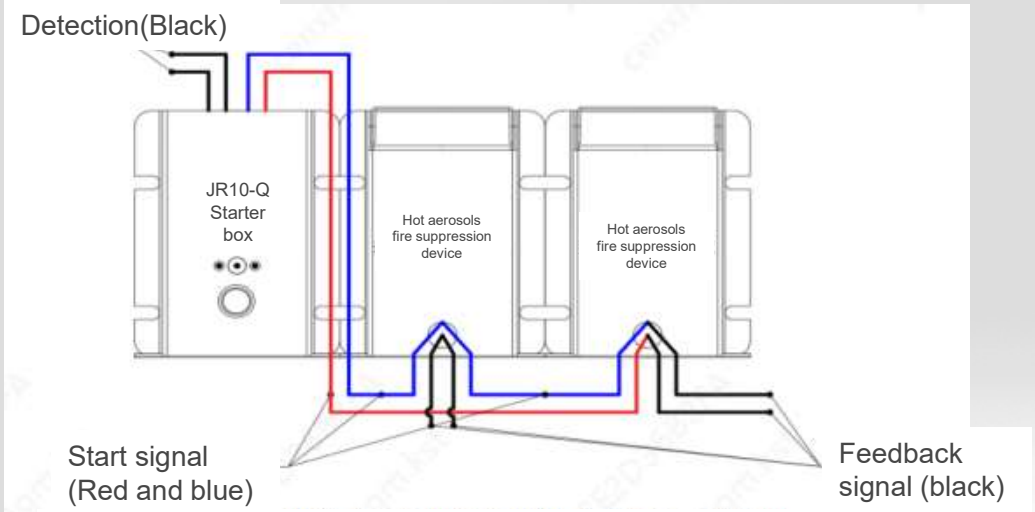
Fire Protection Specification

Cabinet level

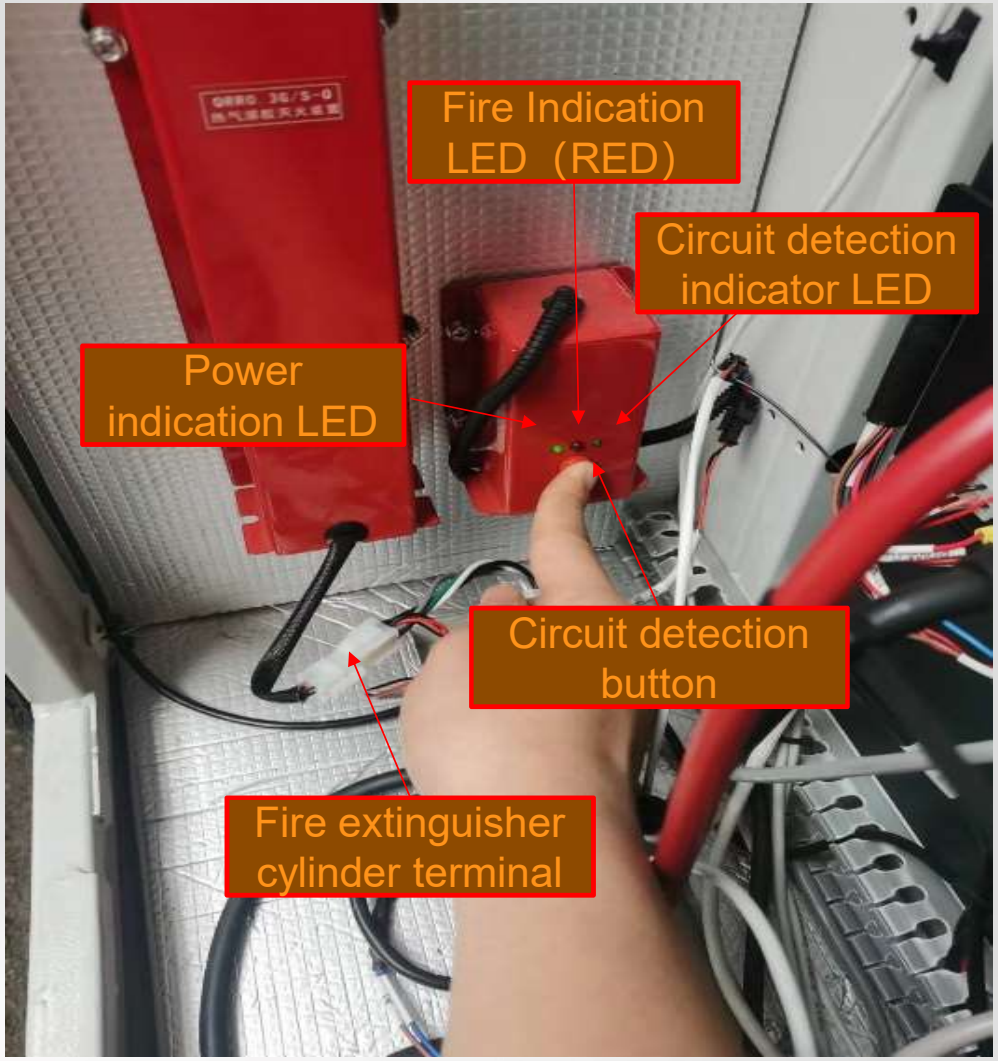
1) During installation & commissioning, or regular inspections, please ensure that the starter box has sufficient power.

2) During inspections, press the test button to check the battery indicator lights and circuit detection.

3) It is strictly prohibited to connect the fire extinguisher cylinder terminals while the fire start indicator light is on.



Schematic diagram of the starter box and fire suppression device



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Fire Protection Specification

Cabinet level

1) JR10-Q Power detection

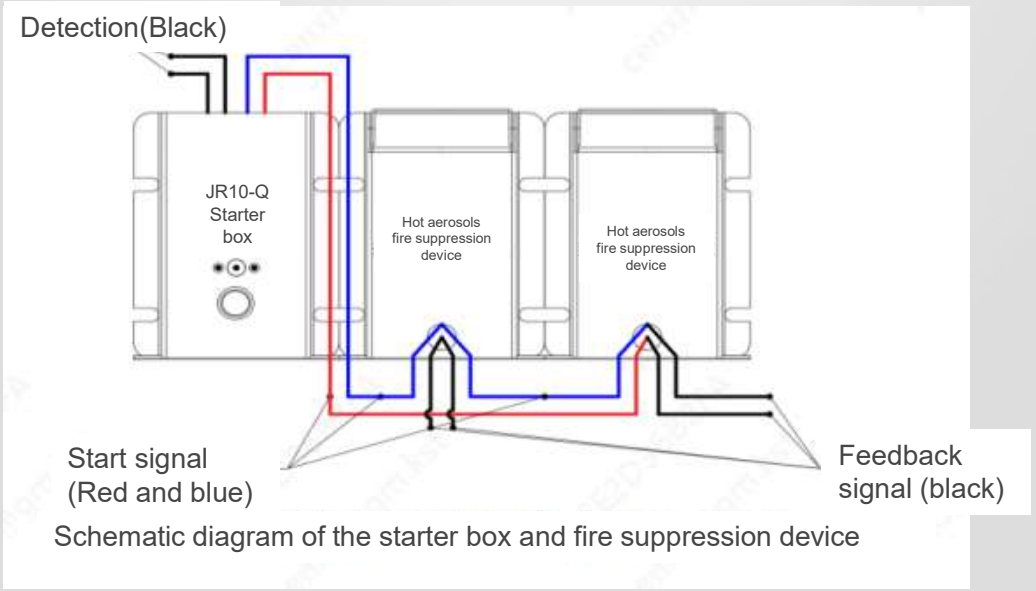
Pressing the test button, if the battery indicator light on the left side of the control panel is on, it indicates that the battery pack has sufficient power. If not, please check the battery connection or contact the manufacturer for battery replacement.
The effective working time of the power supply is 6 years.

2) JR10-Q Circuit detection

Pressing the test button, if the circuit detection indicator light on the right side of the control panel is on, it indicates that the fire suppression system is properly connected. If not, should check for any disconnections in the wiring between the starter box and the fire suppression system.

3) JR10-Q Starter indication

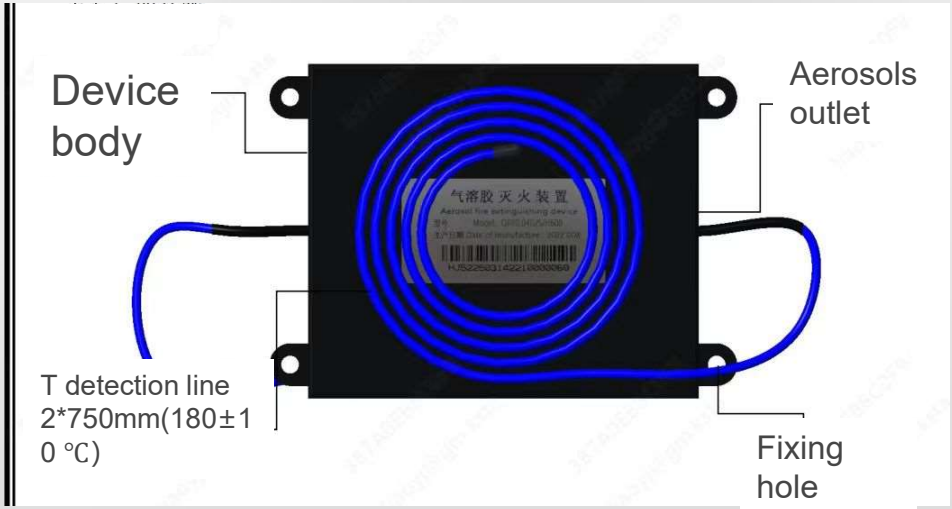
When the JR10-Q starter box receives a passive DI, it initiates the startup process, and the red startup indicator light in the middle of the starter box panel will be on.



Schematic diagram of the starter box and fire suppression device

Fire Protection Specification

Module level



- Pack-level fire protection is packaged in the battery module and placed on the top of the pack, integrating automatic fire detection and fire extinguishing functions.

- When the thermal wire detects the fire source signal (about 180°C), the thermal wire is immediately activated and transmitted to the fire extinguishing device (hot aerosol), and the full cover fire extinguishing is activated.

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Other Protection Specification

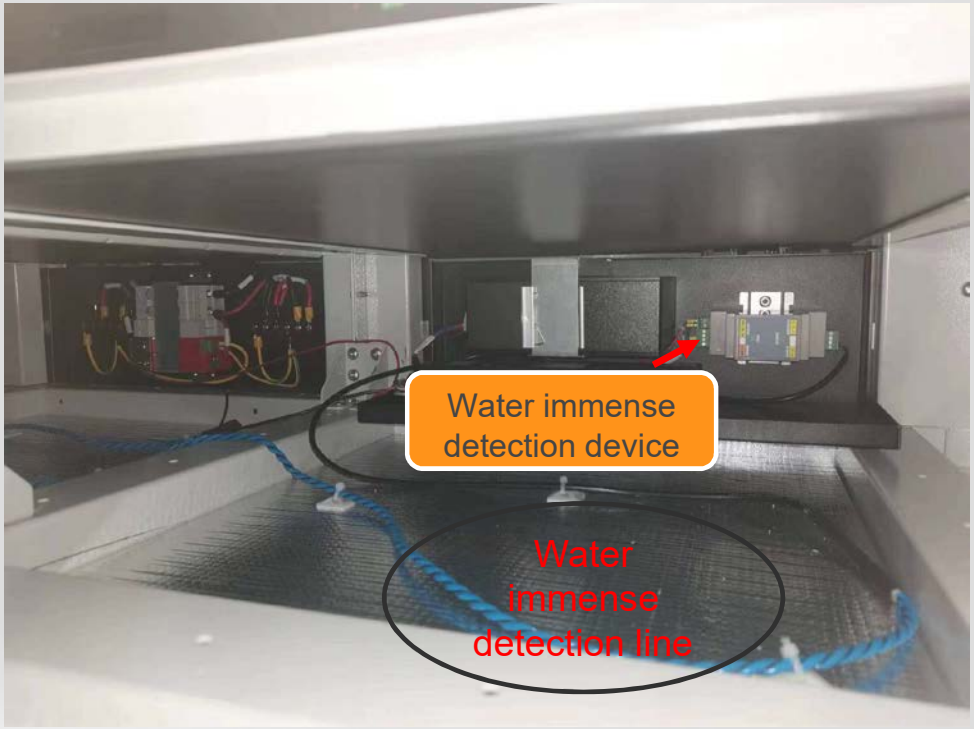
Water immense

The water immersion detection line is laid around the bottom of the battery box. When the detection line is immersed for 60 seconds, the detection device emits a "beep" alarm and sends the signal to the SBMU.

1) When the SBMU detects that DI5_H has been continuously pulled high for 1 minute, the SBMU should report a fourth-level water immersion fault, disconnect the batteries.

2) In the case when the high voltage is not energized, it is prohibited to energize the high voltage. The fault is also reported to the MBMU and EMS, and all battery racks managed by this MBMU are prohibited from being powered on.

3) If this alarm is detected while the high voltage is already energized, the relays and disconnectors will be disconnected. Additionally, all SBMUs managed by the MBMU will also disconnect their relays and disconnectors accordingly.

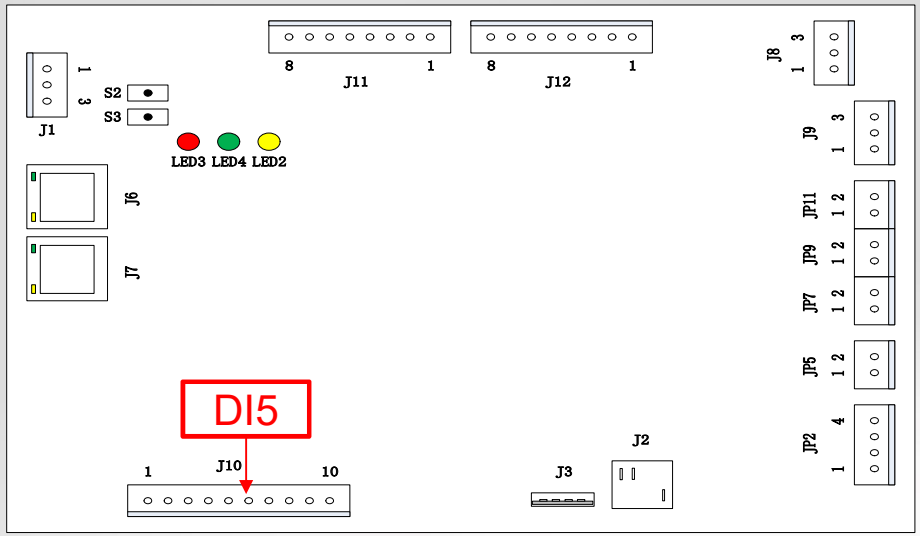


Other Protection Specification

EPO

The EPO (Emergency Power Off) button is located outside the battery cabinet, and its dry contact signal is connected to the EMS‘s J10 DI5 (marked on the physical machine chassis). ′

- When the EPO button is pressed, the normally open contact changes to a normally closed contact, and the AC auxiliary breaker of the battery cabinet trips.
- At the same time, the EMS detects the change in the dry contact and sends a system shutdown command, causing the entire system to stop operating. The HMI displays an "Emergency Stop Alarm" message.



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