CLAIMS

1. A battery management system, comprising:

a detection board, connected to a vehicle-mounted power battery and configured for detecting a cell thermal runaway state of the power battery; and

a control board, connected to the detection board and comprising a power supply chip and a controller,

wherein the detection board is disposed independently of the control board, the detection board is connected to the power supply chip, and the power supply chip is connected to the controller.

2. The battery management system according to claim 1, wherein when the battery management system is offline, in response to detecting that thermal runaway occurs in a cell of the power battery, the detection board is further configured for generating a wake-up signal, and waking up the controller via the power supply chip to enable the battery management system to operate.

3. The battery management system according to claim 2, wherein when the thermal runaway occurs in the cell of the power battery, the controller is further configured for issuing a thermal runaway alarm.

4. The battery management system according to claim 2, wherein the detection board comprises a cell collection board, and the cell collection board is configured for collecting a cell voltage and/or a cell temperature of the power battery online and/or offline at a predetermined sampling period.

5. The battery management system according to claim 4, wherein

the cell collection board is configured for comparing the collected cell voltage of the power battery with a predetermined voltage limit and/or comparing the collected cell temperature of the power battery with a predetermined temperature limit; and when the battery management system is offline, in response to the cell voltage of the power battery exceeding the predetermined voltage limit and/or the cell temperature of the power battery exceeding the

predetermined temperature limit, generating the wake-up signal.

6. The battery management system according to claim 2, wherein the detection board further comprises a high-voltage current collection board, and the high-voltage current collection board is configured for collecting a current of the power battery.

7. The battery management system according to claim 6, wherein the high-voltage current collection board is configured for obtaining the current of the power battery by collecting a voltage across a detection resistor connected in series in a load circuit, wherein the load circuit comprises the power battery and a load connected in series.

8. The battery management system according to claim 6, wherein in response to the collected current of the power battery exceeding an overcurrent protection current limit, the high-voltage current collection board is further configured for generating an overcurrent hardware signal to the controller, such that the controller is configured for performing overcurrent protection on the power battery.

9. The battery management system according to claim 6 or 8, wherein in response to the collected current of the power battery exceeding a short-circuit protection current limit, the high-voltage current collection board is further configured for generating a short-circuit hardware signal to the controller, such that the controller is configured for controlling a pyrofuse connected in series in a load circuit to blow.

10. The battery management system according to claim 1, wherein the control board further comprises a low-voltage uninterruptible power supply and a pressure detection module, the low-voltage uninterruptible power supply is configured for supplying power to the pressure detection module, the pressure detection module is connected to the power supply chip, and the pressure detection module is configured for detecting a pressure of the power battery online and/or offline.

11. The battery management system according to claim 10, wherein when the battery management system is offline, in response to the detected pressure of the power battery exceeding a predetermined pressure limit, the pressure detection module is further configured for generating a wake-up signal, and waking up the controller via the power supply chip to enable the battery management system to operate.

12. An electric vehicle, comprising the battery management system according to any one of claims 1 to 11.

13. A power battery protection method, comprising:

detecting a cell thermal runaway state of a vehicle-mounted power battery;

generating a wake-up signal in response to detecting that thermal runaway occurs in a cell of the power battery when a battery management system is offline; and

waking up the battery management system to operate via the wake-up signal and issuing a thermal runaway alarm.

14. The method according to claim 13, wherein detecting the cell thermal runaway state of the vehicle-mounted power battery comprises:

collecting a cell voltage and/or a cell temperature of the power battery online and/or offline at a predetermined sampling period;

comparing the collected cell voltage of the power battery with a predetermined voltage limit and/or comparing the collected cell temperature of the power battery with a predetermined temperature limit; and

in response to the cell voltage of the power battery exceeding the predetermined voltage limit and/or the cell temperature of the power battery exceeding the predetermined temperature limit, determining that the thermal runaway occurs in the cell of the power battery;

and/or

wherein detecting the cell thermal runaway state of the vehicle-mounted power battery comprises:

detecting a pressure of the power battery online and/or offline;

comparing the detected pressure of the power battery with a predetermined pressure limit; and

determining that the thermal runaway occurs in the cell of the power battery in response to the pressure of the power battery exceeding the predetermined pressure limit.

15. The method according to claim 13, wherein detecting the cell thermal runaway state of the vehicle-mounted power battery comprises:

collecting a current of the power battery; and

determining that the thermal runaway occurs in the cell of the power battery in response to the collected current of the power battery exceeding a short-circuit protection current limit;

the method further comprising:

in response to the collected current of the power battery exceeding an overcurrent protection current limit, generating an overcurrent hardware signal to the battery management system to perform overcurrent protection on the power battery; and

in response to the collected current of the power battery exceeding the short-circuit protection current limit, generating a short-circuit hardware signal to the battery management system, such that the battery management system controls a pyrofuse connected in series in a load circuit to blow, wherein the load circuit comprises the power battery and a load connected in series.