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(54)

BATTERY MODULE OF ELECTRIC VEHICLE AND TEMPERATURE DETECTION ELECTRICALLY CONTROLLED SYSTEM THEREOF.

(57)

The present invention discloses a battery module of an electric vehicle and a temperature detection electrically controlled system. The battery module includes a lower shell, an upper shell and array-distributed batteries located between the lower shell and the upper shell. Array-distributed supporting plates are arranged between the lower shell and the upper shell. Temperature sensors are arranged on the supporting plates. The temperature detection electrically controlled system of a battery of an electric vehicle includes a temperature sensor located on one side of the battery, a transmission module, an identification module, a control module and an alarm module. The battery module of the present invention separates two adjacent batteries by a first separation plate and a second separation plate, which is favorable for heat dissipation of the batteries and improves the operational performance and safety of the batteries. The temperature of each battery is detected through the temperature sensor, and is identified through the identification module, so that a maintainer may technically find out a battery with high temperature. The maintenance efficiency is improved, and the labor intensity of a worker is reduced.

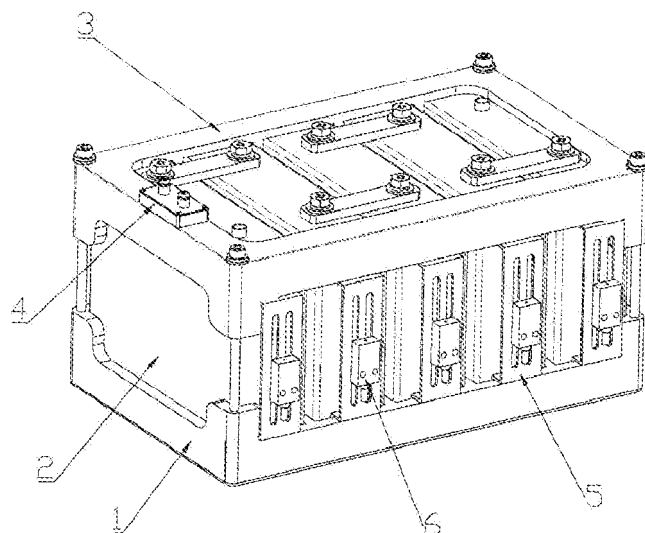


FIG. 1

NR. P100371LU00

**BATTERY MODULE OF ELECTRIC VEHICLE AND
TEMPERATURE DETECTION ELECTRICALLY CONTROLLED
SYSTEM THEREOF**

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BACKGROUND

Technical Field

The present invention relates to the field of vehicle batteries, and more particularly relates to a battery module of an electric vehicle and a temperature detection electrically controlled system thereof.

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Related Art

A battery module of an electric vehicle will generate a large amount of heat in a working process, which affects the operational performance and safety of the battery module. Batteries in the battery module of the prior art are in contact with each other, causing poor heat dissipation. A temperature detection system can only detect the overall battery module, but cannot find in time the specific battery having higher temperature in the battery module, which results in low maintenance efficiency of a worker.

SUMMARY

The present invention aims to provide a battery module of an electric vehicle and a temperature detection electrically controlled system thereof. Two adjacent batteries are separated by a first separation plate and a second separation plate, which is favorable for heat dissipation of the batteries and improves the operational performance and safety of the batteries. The temperature of each battery is detected through a temperature sensor, and is identified through an identification module, so that a maintainer may technically find out a battery with high temperature. The maintenance efficiency is improved, and the labor intensity of a worker is reduced.

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The objective of the present invention is achieved through the following technical solutions.

A battery module of an electric vehicle is provided, including a lower shell, an upper shell and array-distributed batteries located between the lower shell and the upper shell. Array-distributed supporting plates are arranged between the lower shell and the upper shell. Temperature sensors are arranged on the supporting plates.

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The lower shell includes a lower shell main body. A placement trough is formed in

the lower shell main body. Array-distributed first separation plates are arranged in the placement trough.

Array-distributed first supporting blocks are arranged on the lower shell main body, and threaded holes are formed in the first supporting blocks.

5 The upper shell includes an upper shell main body. A fastening slot is arranged below the upper shell main body. Array-distributed second separation plates are arranged in the fastening slot. Array-distributed second supporting blocks are arranged below the upper shell main body. Through holes are formed in the second supporting blocks, and run through the upper shell main body.

10 Further, each temperature sensor corresponds to one battery, and an output wiring terminal is arranged on the upper shell.

Further, heat dissipation holes are formed in the placement trough.

Further, the batteries are located in the placement trough, and two adjacent batteries are separated by the first separation plates and the second separation plates.

15 Further, screws pass through the through holes and are matched with the threaded holes, so that the lower shell and the upper shell fasten and fix the batteries.

A temperature detection electrically controlled system of a battery of an electric vehicle is provided, including a temperature sensor located on one side of the battery, a transmission module, an identification module, a control module and an alarm module.

20 Further, the temperature detection electrically controlled system includes a plurality of temperature sensors, each corresponding to each battery in a battery pack.

Further, the transmission module is electrically connected with the plurality of temperature sensors, and transmits signals of the temperature sensors to the identification module.

25 Further, the identification module identifies signals of the batteries, and the control module receives signals identified by the identification module, and the alarm module is electrically connected with the control module.

The present invention has the following beneficial effects.

30 1. The battery module of the present invention separates two adjacent batteries through the first separation plates and the second separation plates, which is favorable for the heat dissipation of the batteries and improves the operational performance and safety of the batteries.

2. The temperature detection electrically controlled system of the present invention

detects the temperature of each battery through the temperature sensors, and identifies the temperature through the identification module, so that a maintainer can technically find out a battery with high temperature. The maintenance efficiency is improved, and the labor intensity of a worker is reduced.

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BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is further described below with reference to the accompanying drawings.

Fig. 1 is a schematic structural diagram of a battery module of the present invention;

Fig. 2 is a schematic structural diagram of a lower shell of the present invention;

10 Fig. 3 is a schematic structural diagram of an upper shell of the present invention;
and

Fig. 4 is a flow diagram of an electrically controlled system of the present invention.

DETAILED DESCRIPTION

15 The following clearly and completely describes the technical solutions in the
embodiments of the present invention with reference to the accompanying drawings in
the embodiments of the present invention. Obviously, the described embodiments are
only some embodiments instead of all embodiments of the present invention. All other
embodiments obtained by a person of ordinary skill in the art based on the embodiments
of the present invention without creative efforts shall fall within the protection scope of
20 the present invention.

A battery module of an electric vehicle is provided, including a lower shell 1, an
upper shell 3 and array-distributed batteries 2 located between the lower shell 1 and the
upper shell 3. As shown in Fig. 1, array-distributed supporting plates 5 are arranged
between the lower shell 1 and the upper shell 3. Temperature sensors 6 are arranged on
25 the supporting plates 5. Each temperature sensor 6 corresponds to one battery 2. An output
wiring terminal 4 is arranged on the upper shell 3.

The lower shell 1 includes a lower shell main body 11. As shown in Fig. 2, a
placement trough 12 is formed in the lower shell main body 11. Array-distributed first
separation plates 13 are arranged in the placement trough 12, and heat dissipation holes
30 14 are formed in the placement trough 12.

Array-distributed first supporting blocks 15 are arranged on the lower shell main
body 11, and threaded holes 16 are formed in the first supporting blocks 15.

The upper shell 3 includes an upper shell main body 31. As shown in Fig. 3, a

fastening slot 32 is arranged below the upper shell main body 31. Array-distributed second separation plates 33 are arranged in the fastening slot 32. Array-distributed second supporting blocks 34 are arranged below the upper shell main body 31. Through holes 35 are formed in the second supporting blocks 34. The through holes 35 run through the upper shell main body 31.

The batteries 2 are located in the placement trough 12. Two adjacent batteries 2 are separated by the first separation plates 13 and the second separation plates 33 to facilitate heat dissipation. Screws pass through the through holes 35 and are matched with the threaded holes 16, so that the lower shell 1 and the upper shell 3 fasten and fix the batteries 2.

A temperature detection electrically controlled system of a battery of an electric vehicle is provided, including a temperature sensor 6 located on one side of the battery 2, a transmission module 10, an identification module 20, a control module 30 and an alarm module 40, as shown in Fig. 4.

The temperature detection electrically controlled system includes a plurality of temperature sensors 6, each of the plurality of temperature sensors 6 being corresponding to each battery 2 in a battery pack to detect the temperature of each battery 2. The transmission module 10 is electrically connected with the plurality of temperature sensors 6. The transmission module 10 transmits signals of the temperature sensors 6 to the identification module 20. The identification module 20 identifies a signal of each battery 2, and the control module 30 receives the signals identified by the identification module 20, so as to determine whether the received temperature signals are normal. The alarm module 40 is electrically connected with the control module 30, and continues to work when the detected temperatures are normal. The alarm module 40 sounds an alarm when a temperature exceeds a safety value. At the same time, the identification module 20 identifies which battery 2 has the abnormal temperature, realizing convenient and rapid treatment.

In the descriptions of this specification, descriptions using reference terms such as "an embodiment", "an example", or "a specific example" mean that specific characteristics, structures, materials, or features described with reference to the embodiment or example are included in at least one embodiment or example of the present invention. In this specification, schematic descriptions of the foregoing terms do not necessarily directed at a same embodiment or example. Moreover, the specific

features, structures, materials, or characteristics described may be combined in any one or more embodiments or examples in an appropriate manner.

5 The basic principles, main features and advantages of the present invention have been shown and described above. Those skilled in the art should understand that the present invention is not limited by the foregoing embodiments, descriptions in the foregoing embodiments and the specification merely describe the principles of the present invention, various changes and improvements may be made to the present invention without departing from the spirit and scope of the present invention, and such changes and improvements shall all fall within the protection scope of the present invention.

CLAIMS

1. A battery module of an electric vehicle, comprising: a lower shell (1), an upper shell (3) and array-distributed batteries (2) located between the lower shell (1) and the upper shell (3), wherein array-distributed supporting plates (5) are arranged between the lower shell (1) and the upper shell (3); temperature sensors (6) are arranged on the supporting plates (5);

the lower shell (1) comprises a lower shell main body (11); a placement trough (12) is formed in the lower shell main body (11); array-distributed first separation plates (13) are arranged in the placement trough (12);

array-distributed first supporting blocks (15) are arranged on the lower shell main body (11), and threaded holes (16) are formed in the first supporting blocks (15);

the upper shell (3) comprises an upper shell main body (31); a fastening slot (32) is arranged below the upper shell main body (31); array-distributed second separation plates (33) are arranged in the fastening slot (32); array-distributed second supporting blocks (34) are arranged below the upper shell main body (31); and through holes (35) are formed in the second supporting blocks (34), and the through holes (35) run through the upper shell main body (31).

2. The battery module of the electric vehicle according to claim 1, wherein each temperature sensor (6) corresponds to one battery (2), and an output wiring terminal (4) is arranged on the upper shell (3).

3. The battery module of the electric vehicle according to claim 1, wherein heat dissipation holes (14) are formed in the placement trough (12).

4. The battery module of the electric vehicle according to claim 1, wherein the batteries (2) are located in the placement trough (12), and two adjacent batteries (2) are separated by the first separation plates (13) and the second separation plates (33).

5. The battery module of the electric vehicle according to claim 1, wherein screws pass through the through holes (35) and are matched with the threaded holes (16), so that the lower shell (1) and the upper shell (3) fasten and fix the batteries (2).

6. A temperature detection electrically controlled system of a battery of an electric vehicle, comprising a temperature sensor (6) located on one side of the battery (2), a transmission module (10), an identification module (20), a control module (30) and an alarm module (40).

7. The temperature detection electrically controlled system of the battery of the electric vehicle according to claim 6, wherein the temperature detection electrically controlled system comprises a plurality of temperature sensors (6), each of the plurality of temperature sensors (6) being corresponding to each battery (2) in a battery pack.
- 5 8. The temperature detection electrically controlled system of the battery of the electric vehicle according to claim 6, wherein the transmission module (10) is electrically connected with the plurality of temperature sensor (6), and the transmission module (10) transmits signals of the temperature sensors (6) to the identification module (20).
- 10 9. The temperature detection electrically controlled system of the battery of the electric vehicle according to claim 6, wherein the identification module (20) identifies signals of the batteries (2), and the control module (30) receives signals identified by the identification module (20), and the alarm module (40) is electrically connected with the control module (30).

REVENDICATIONS

1. Module de batterie de véhicule électrique comprenant un boîtier inférieur (1), un boîtier supérieur (3) et des batteries (2) répartis entre le boîtier inférieur (1) et le boîtier supérieur (3), caractérisé en ce que des plaques de support (5) sont réparties entre le
5 boîtier inférieur (1) et le boîtier supérieur (3), et un capteur de température (6) est prévu sur la plaque de support (5) ;

ledit le boîtier inférieur (1) comprend un corps de boîtier inférieur (11), une rainure de maintien (12) est prévue sur le corps de boîtier inférieur (11) et des premières
10 cloisons (13) sont réparties en matrice dans la rainure de maintien (12) ;

des premiers blocs de support (15) sont répartis en matrice sur ledit corps de boîtier inférieur (11) et chacun des premiers blocs de support (15) est pourvu d'un trou fileté (16) ;

le boîtier supérieur (3) comprend un corps de boîtier supérieur (31), une rainure d'engagement (32) est prévue au-dessous du corps de boîtier supérieur (31), des
15 deuxièmes cloisons (33) sont réparties en matrice dans la rainure d'engagement (32), des deuxièmes blocs de support (34) sont répartis en matrice au-dessous du corps de boîtier supérieur (31), un trou traversant (35) est prévu au deuxième bloc de support (34) et pénètre dans le corps de boîtier supérieur (31).

20 2. Module de batterie de véhicule électrique selon la revendication 1, caractérisé en ce que chacun des capteurs de température (6) correspond à une batterie (2) et une borne de sortie (4) est prévue sur le boîtier supérieur (3).

3. Module de batterie de véhicule électrique selon la revendication 1, caractérisé en ce qu'un trou de radiation (14) est prévu à l'intérieur de la rainure de maintien (12).

25 4. Module de batterie de véhicule électrique selon la revendication 1, caractérisé en ce que la batterie (2) est disposée dans la rainure de maintien (12) et deux batteries adjacentes (2) se séparent l'une et l'autre par la premier cloison (13) et la deuxième cloison (33).

5. Module de batterie de véhicule électrique selon la revendication 1, caractérisé en ce qu'une vis mère traverse le trou traversant (35) et coopère avec le trou fileté (16), de
30 sorte que le boîtier inférieur (1) et le boîtier supérieur (3) se coopèrent pour fixer la batterie (2).

6. Système de détection de température sous commande électronique pour les batteries de véhicules électriques, caractérisé en ce que ledit système de détection de

température sous commande électronique comprend un capteur de température (6) à un côté de la batterie (2), un module de transmission (10), un module d'identification (20), un module de commande (30) et un module d'alarme (40).

5 7. Système de détection de température sous commande électronique pour les batteries de véhicules électriques selon la revendication 6, caractérisé en ce qu'il comprend une pluralité de capteurs de température (6), chacun des capteurs de température (6) correspondant à une batterie du module de batterie (2).

10 8. Système de détection de température sous commande électronique pour les batteries de véhicules électriques selon la revendication 6, caractérisé en ce que ledit module de transmission (10) est connecté de manière électrique à une pluralité de capteurs de température (6) et le module de transmission (10) transmet les signaux du capteur de température (6) au module d'identification (20).

15 9. Système de détection de température sous commande électronique pour les batteries de véhicules électriques selon la revendication 6, caractérisé en ce que le module d'identification (20) identifie un signal de la batterie (2), et le module de commande (30) reçoit ledit signal identifié par le module d'identification (20), le module d'alarme (40) étant connecté de manière électrique au module de commande (30).

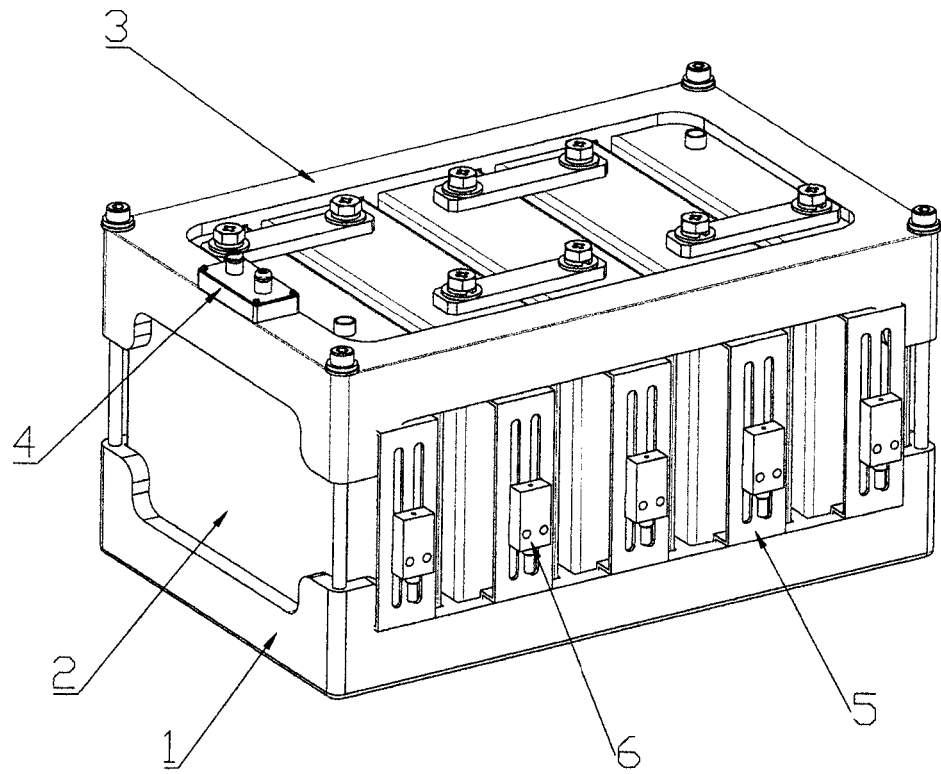


FIG. 1

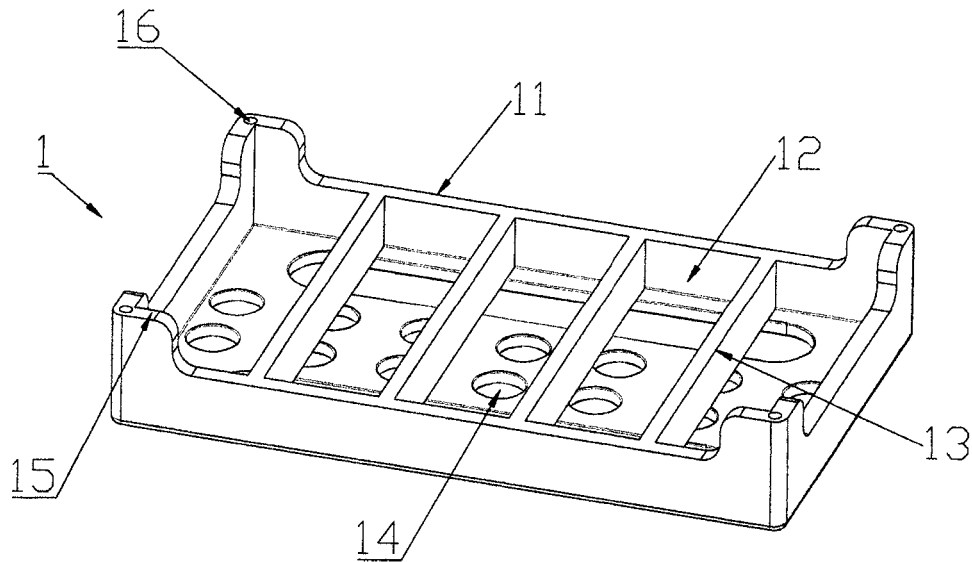


FIG. 2

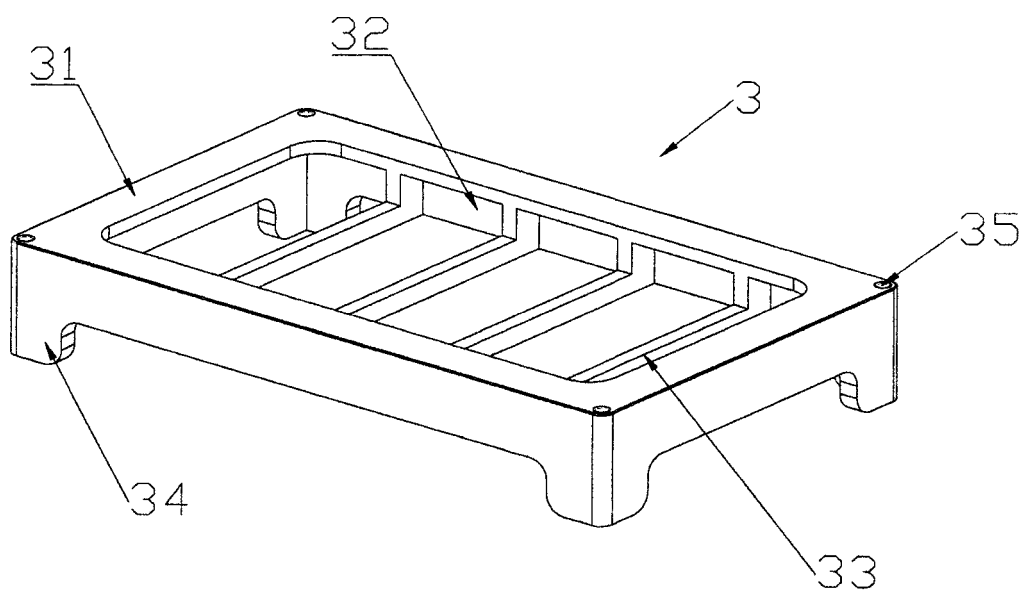


FIG. 3

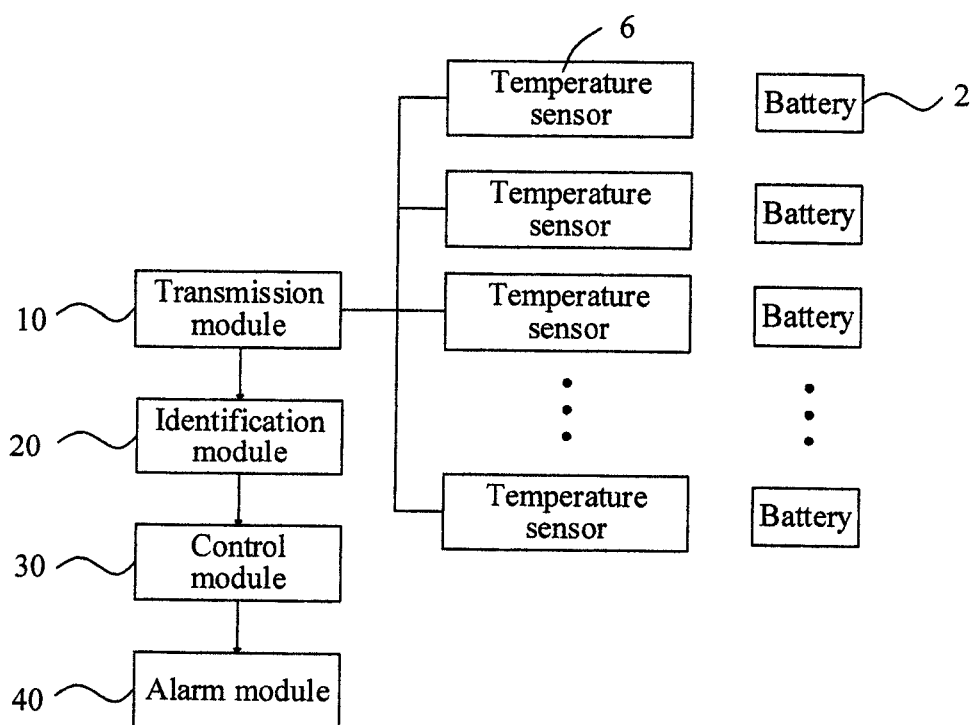


FIG. 4