

Anti-single-plug protection door for multinational power converter

Technical field

The invention relates to the technical field of power converters, in particular to an anti-single-plug protection door for multinational power converters.

Technical background

Because the specifications of plugs and sockets in different countries are different, they can't be used universally. If you need to insert the plugs into sockets with mismatched specifications, you need to go through a power converter. The power converter is a switching tool. When in use, the power converter is inserted into the target socket, and then the target plug is inserted into the matching socket hole on the power converter to realize the conversion. The appearance of power converter improves the convenience of people's life outside, especially when they travel internationally, so there is no need to worry about the trouble caused by the mismatch between the plug of the electronic equipment they carry and the local power socket.

However, when plugs or other objects are inserted into only one jack of the power converter, they will also be conductive. For example, when children play with inserting conductive objects into the socket of the power converter, there will be the risk of electric shock and the safety is low. Therefore, the safety door protection structure is added to the existing power converter. However, due to the limitation of the design of the safety door protection structure, the safety door will be stuck and cannot be reset during use, resulting in poor safety door protection function and unable to effectively protect consumers' electricity safety.

Summary of the invention

In view of the above shortcomings, the purpose of the present invention is to provide an anti-single-plug protection door for multinational power converters. During normal use, the first protection door and the second protection door can keep moving in the same direction

along a straight line, so as to prevent the phenomenon that the safety door is stuck and cannot be reset, so that the first protection door and the second protection door can play a better safety protection role.

The technical scheme adopted by the invention for achieving the above purpose is as follows:

An anti-single-plug protection door for multinational power converters is characterized in that: Comprises a main body upper cover, a bracket matched with the main body upper cover, a first protective door arranged on the bracket, a second protective door arranged on the bracket, a spring set arranged between the first protective door and the front end of the bracket, Wherein, the first protective door and the second protective door contact and interfere with each other, and the first protective door and the second protective door move in the same direction.

As a further improvement of the present invention, the rear end of the first protective door and the front end of the second protective door contact and interfere with each other.

As a further improvement of the invention, two sides of the rear end of the first protective door are respectively provided with a sliding column protruding through the second protective door.

As a further improvement of the invention, two sides of the front end of the second protective door are respectively provided with a sliding column protruding through the first protective door.

As a further improvement of the invention, the first protective door is in a zigzag shape as a whole, and a downward extending and concave through hole is opened in the middle of the first protective door.

As a further improvement of the invention, two sides of the rear end of the first protective door are respectively formed with a front inclined limit guide surface extending obliquely from the inner lower side to the outer upper side.

As a further improvement of the invention, at least one front limit block is convexly arranged on the side of the middle part of the upper surface of the bracket.

As a further improvement of the invention, the second protective door is concave or T-shaped as a whole, and a through slot is formed in the middle of the second protective door.

As a further improvement of the invention, the lower surfaces of the two sides of the second protective door are respectively formed with a rear inclined limit guide surface extending obliquely from the inner lower side to the outer upper side.

As a further improvement of the invention, at least one rear limit block matched with the shape of the lower end of the second protective door is formed on the rear end of the upper surface of the bracket.

As a further improvement of the invention, the front end of the second protective door is also formed with a limit table which can be pressed against the front end of the upper surface of the bracket.

As a further improvement of the invention, two sides of the rear end of the upper surface of the bracket are symmetrically provided with a rear lower guide block, and a rear lower guide inclined plane extending obliquely from the rear end of the upper surface of the bracket to the lower part of the middle part of the bracket is also formed on the rear lower guide block.

As a further improvement of the invention, two sides of the front end of the first protective door are respectively provided with a first connecting column, and two side walls of the front end of the upper surface of the bracket are respectively provided with a second connecting column extending towards the middle of the bracket; The spring group includes a first spring connected between one of the first connecting columns and one of the second connecting columns, and a second spring connected between another first connecting column and another second connecting column.

As a further improvement of the invention, a ground wire yielding groove is formed in the middle of the bracket, and both sides of the ground wire yielding groove are first guiding arc surfaces respectively extending to the front and rear ends of the bracket; The two sides of the middle part of the lower surface of the first protective door are respectively formed with a front inclined movable guide inclined plane matched with the first guide arc surface, and the two

sides of the middle part of the lower surface of the second protective door are respectively formed with a back inclined movable guide inclined plane matched with the first guide arc surface.

As a further improvement of the invention, the front inclined movable guide inclined plane and the rear inclined movable guide inclined plane are both in the shape of an upward concave arc surface.

As a further improvement of the invention, the upper cover of the main body is provided with a combined jack group, which comprises a first jack, a second jack, a third jack, a fourth jack, a fifth jack, a sixth jack, a seventh jack, an eighth jack, a ninth jack, a tenth jack, an eleventh jack and a twelfth jack, Wherein, the third jack, the fourth jack, the twelfth jack and the seventh jack are arranged in a straight line from front to back, the third jack is located at the uppermost end, the fourth jack is formed at the upper end of the twelfth jack, the first jack and the second jack are located at the left side of the twelfth jack, and the fifth jack and the sixth jack are located at the right side of the twelfth jack, The eighth jack and the ninth jack are both located on the left side of the seventh jack, and the tenth jack and the eleventh jack are both located on the right side of the seventh jack; The second jack, the fifth jack and the seventh jack are combined to form an American standard jack, the first jack, the twelfth jack and the sixth jack are combined to form an Italian jack, the third jack, the eighth jack and the eleventh jack are combined to form an English standard jack, and the fourth jack, the ninth jack and the tenth jack are combined to form China and Australian standard jacks.

As a further improvement of the invention, the two sides of the through hole of the first protective door are respectively formed with American standard pin guide inclined planes which are correspondingly matched with the second jack and the fifth jack and extend obliquely from the upper end of the front end to the lower end of the rear end, The outer side of the American gauge pin guiding slope is formed with an Italian gauge pin guiding slope which is matched with the first jack or the sixth jack and extends obliquely from the front end to the rear end, and the lower end of the jack of the first protection door is also formed with an American

gauge ground pin guiding slope which is matched with the seventh jack and extends obliquely from the front end to the rear end.

As a further improvement of the invention, China gauge and Australian gauge pin guide inclined surfaces which are matched with the ninth jack and the tenth jack and extend obliquely from the outer upper direction of the front end to the inner lower direction of the rear end are respectively formed on both sides of the through slot of the second protection door, The outer side of the China gauge and the Australian gauge pin guide bevel is formed with a British gauge pin guide bevel which is matched with the eighth jack or the eleventh jack correspondingly and extends obliquely from the front end to the rear end.

As a further improvement of the present invention, both sides of the through hole of the first protective door are also respectively formed with a limit post which extends upward and can press against the front end of the upper surface of the bracket.

As a further improvement of the present invention, the combined jack group further comprises a thirteenth jack arranged in the middle of the third jack, a fourteenth jack arranged in the middle of the eighth jack, and a fifteenth jack arranged in the middle of the eleventh jack, wherein the thirteenth jack, the fourteenth jack and the fifteenth jack are combined to form an Indian gauge jack.

As a further improvement of the invention, an Indian gauge ground yielding hole matched with the thirteenth jack is formed in the middle of the through hole, and Indian gauge pin guiding inclined planes which are respectively matched with the fourteenth jack and the fifteenth jack and extend obliquely from the outer upper direction of the front end to the inner lower direction of the rear end are also formed between the British gauge pin guiding inclined plane and the China gauge pin guiding inclined plane.

The invention has the beneficial effects that:

By arranging the spring group between the first protective door and the bracket, the first protective door is provided with a connecting column that passes through the second protective door, so that when the first protective door moves under the force, the spring group gives the

first protective door an elastic restoring force to reset; when the second protective door moves under the force, the second protective door pushes the first protective door to squeeze the spring group through the connecting column, and the first protective door and the second protective door keep moving in the same direction. So as to avoid the phenomenon that the second protective door moves left and right or is stuck and cannot be reset, and the spring group gives the first protective door an elastic resetting force, and the first protective door drives the second protective door to reset, so that the first protective door and the second protective door can play a better safety protection role.

The above is an overview of the technical scheme of the invention, and the invention will be further explained with the attached drawings and specific embodiments.

Brief description of drawings

Figure 1 is an overall schematic diagram of embodiment 1;

Figure 2 is a schematic front view of embodiment 1;

Figure 3 is an explosion diagram of the first embodiment;

Figure 4 is a schematic structural view of embodiment 1 with the upper cover of the main body removed;

Figure 5 is a schematic structural view of the bracket in the first embodiment;

Figure 6 is a schematic structural diagram of the primary protection door in the first embodiment;

Figure 7 is a bottom view of the primary protection door in the first embodiment;

Figure 8 is a rear view of the primary protection door in the first embodiment;

Figure 9 is a schematic structural view of the second protection door in the first embodiment;

Figure 10 is a bottom view of the second protective door in the first embodiment;

Figure 11 is a rear view of the second protective door in the first embodiment;

Figure 12 is a schematic diagram of the insertion of an external power pin in the first embodiment;

Figure 13 is a schematic diagram of the internal structure of the external power pin insertion in the first embodiment;

Figure 14 is an overall schematic diagram of the second embodiment;

Figure 15 is an explosion diagram of the second embodiment;

Figure 16 is a schematic structural view of embodiment 2 with the upper cover of the main body removed;

Figure 17 is a schematic structural view of the bracket in the second embodiment;

Figure 18 is a structural schematic diagram of the primary protection door in the second embodiment;

Figure 19 is a bottom view of the primary protection door in the second embodiment;

Figure 20 is a rear view of the primary protection door in the second embodiment;

Figure 21 is a schematic structural view of the second protective door in the second embodiment;

Figure 22 is a bottom view of the second protective door in the second embodiment;

Figure 23 is a rear view of the second protective door in the second embodiment;

In the picture: 1. Main body upper cover; 101. A first jack; 102. A second jack; 103. A third jack; 104. A fourth jack; 105. A fifth jack; 106. A sixth jack; 107. A seventh jack; 108. The eighth jack; 109. The ninth jack; 110. Tenth jack; 111. Eleventh jack; 112. Twelfth jack; 113. Thirteenth jack; 114. Fourteenth jack; 115. Fifteenth jack; 2. Bracket; 21. Front limit block; 22. Rear limit block; 23. A second connecting column; 24. Ground wire yielding groove; 241. A first guide arc surface; 25. A rear lower guide block; 251. The rear lower guide inclined plane; 3. Primary protection door; 31. Sliding column; 32. Through hole; 321. Indian gauge ground gives way to the hole; 33. Front inclined limit guide surface; 34. The first company catches it; 35. Front inclined movable guide inclined plane; 36. American standard pin guide inclined plane; 37. Guide inclined plane of Italian gauge pin; 38. American gauge ground pin guide

inclined plane; 39. Limit column; 4. The second protective door; 41. Through groove; 42. Rear inclined limit guide surface; 43. A backward inclined movable guide inclined plane; 44. China gauge and Australian gauge pin guide inclined plane; 45. British standard pin guide inclined plane; 46. Limit table; 47. Indian gauge pin guide inclined plane; 5. Spring group; 51. A first spring; 52. The second spring.

Embodiments

In order to further illustrate the technical means and effects adopted by the present invention to achieve the predetermined purpose, the specific embodiments of the present invention will be described in detail with the attached drawings and preferred embodiments.

In the description of the present invention, it should be understood that the directional or positional relationships indicated by the terms "length", "width", "up", "down", "front", "back", "left", "right", "vertical", "horizontal", "top", "bottom", "inside", "outside", etc. are based on the directional or positional relationships shown in the accompanying drawings, It is only for the convenience of describing the present invention and simplifying the description, and does not indicate or imply that the referred devices or elements must have a specific orientation, be constructed and operated in a specific orientation, so it cannot be understood as limiting the present invention.

In addition, the terms "first" and "second" are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the features defined as "first" and "second" may include one or more of these features explicitly or implicitly. In the description of the present invention, "plural" means two or more, unless otherwise specifically defined.

In the present invention, unless otherwise specified and limited, the terms "installation", "connection", "connection" and "fixation" should be broadly understood, for example, they can be fixed connection, detachable connection or integrated; It can be a mechanical connection or an electrical connection; Can be directly connected, can also be indirectly connected through an intermediary, can be the internal connection of two elements or the interaction between two

elements. For those skilled in the art, the specific meanings of the above terms in the present invention can be understood according to specific situations.

Embodiment 1

Please refer to Figure 1 to Figure 13. An embodiment of the present invention provides an anti-single-plug protection door for multinational power converters, which comprises a main body cover 1. A bracket matched with the upper cover 1 of the main body 2. A primary protection door arranged at the front end of the upper surface of the bracket 2. 3. A second protective door arranged at the rear end of the upper surface of the bracket 2. 4. A spring group 5 arranged between the primary protection door 3 and the front end of the upper surface of the bracket 2. , The first protective door 3 and the second protective door 4 contact and interfere with each other, and the first protective door 3 and the second protective door 4 move in the same direction.

Preferably, the rear end of the primary protection door 3 and the front end of the second protection door 4 contact and interfere with each other.

For the specific way that the rear end of the first protective door is matched with the front end of the second protective door, two sliding columns 31 protruding from both sides of the rear end of the first protective door 3 respectively penetrate the second protective door 4.

By arranging the spring group 5 between the first protective door 3 and the bracket 2, a sliding column 31 penetrating through the second protective door 4 is arranged on the first protective door 3, So that when the first protective door 3 is moved by the acting force, the spring group 5 gives the first protective door 3 an elastic restoring force to reset, When the second protective door 4 moves under the force, the second protective door 4 pushes the first protective door 3 to press the spring group 5 through the sliding column 31 arranged on the first protective door 3, and the first protective door 3 and the second protective door 4 keep moving in the same direction, thus avoiding the phenomenon that the second protective door 4 moves left and right or falls off or is stuck and cannot be reset, Moreover, the spring group 5 gives the first protective door 3 an elastic resetting force, and the first protective door 3 drives

the second protective door 4 to reset, so that the first protective door 3 and the second protective door 4 can play a better safety protection role.

A sliding column can also be arranged on the second protective door 4, that is, two sides of the front end of the second protective door 4 are respectively provided with a sliding column which penetrates the first protective door 3. When the second protective door 4 is moved by a force, the second protective door 4 pushes the first protective door 3 to press the spring group 5 through the sliding column arranged on it, so that the first protective door 3 and the second protective door 4 keep moving in the same direction. So as to avoid the phenomenon that the second protective door 4 moves left and right or falls off, and the spring group 5 gives the first protective door 3 an elastic resetting force, and the first protective door 3 drives the second protective door 4 to reset, so that the first protective door 3 and the second protective door 4 can play a better safety protection role.

There may be no sliding column between the first protective door 3 and the second protective door 4, and the second protective door 4 is directly attached to the first protective door 3 to push the first protective door 3 and squeeze the spring group 5, so that the first protective door 3 and the second protective door 4 move in the same direction.

As for the specific structural arrangement of the first protective door 3, as shown in Figures 3 to 4 and 6 to 8, the first protective door 3 is in a zigzag shape as a whole, and a through hole 32 extending downward and recessed is opened in the middle of the first protective door 3, so that an externally inserted power pin can pass through the through hole 32 to be connected with a conducting component in the power converter, and the ground wire of the power pin can be conducted; On the lower surfaces of the two sides of the rear end of the first protective door 3, a front inclined limit guide surface 33 extending obliquely from the inner bottom to the outer top is respectively formed, and at least one front limit block 21 is protruded on the side edge of the middle part of the upper surface of the bracket 2. Preferably, two side walls of the middle part of the upper surface of the bracket 2 are respectively provided with a front limit block 21 extending towards the middle part of the bracket 2. When a single

pin or a sharp object is inserted into the corresponding position of the first protective door 3, The inserted side of the first protective door 3 drives the whole first protective door 3 to turn downwards under the guidance of the front inclined limit guide surface 33, Therefore, the inserted side of the first protective door 3 is pressed against the front limit block 21, so that the first protective door 3 cannot move, and the single pin or sharp object can be prevented from being inserted alone, so that the electric shock phenomenon caused by children playing with the power converter is prevented, and the safety is improved.

As for the specific structural arrangement of the second protective door 4, as shown in Figures 3 to 4 and 9 to 11, the second protective door 4 is concave or T-shaped as a whole, and a through slot 41 is formed in the middle of the second protective door 4. The through slot 41 is used to make way for the lower end of the through hole 32 of the first protective door 3, and the power pin which is convenient for external insertion is connected with the conducting component in the power converter through the through slot 41, so as to realize the conduction of the ground wire of the power pin; The lower surfaces of the two sides of the second protective door 4 are respectively formed with a rear inclined limit guide surface 42 extending obliquely from the inner lower side to the outer upper side; At least one rear limit block 22 matched with the shape of the lower end of the second protective door 4 is formed on the rear end of the upper surface of the bracket 2. When a single pin or sharp object is inserted into the corresponding position of the second protective door 4 alone, the inserted side of the second protective door 4 drives the whole second protective door 4 to turn down under the guidance of the rear inclined limit guide surface 42, and under the drive of the connecting column 31, Therefore, the first protective door 3 is driven to turn sideways at the same time, and then the first protective door 3 is pressed against the front limit block 21, so that the first protective door 3 and the second protective door 4 cannot move, thereby preventing a single pin or a sharp object from being inserted alone, further preventing the electric shock phenomenon caused by children playing with the power converter, and further improving the safety. If a single pin or sharp object is inserted between the first protective door 3 and the second protective door 4

alone, the second protective door 4 abuts against the rear limit block 22, so that the second protective door 4 cannot move, and the first protective door 3 abuts against the front limit block 21, so that the first protective door 3 and the second protective door 4 cannot move, thus preventing the single pin or sharp object from being inserted alone, further preventing the electric shock phenomenon caused by children playing with the power converter, and further improving the safety.

In order to prevent the second protective door 4 from moving up excessively, as shown in figs. 9 to 11, the front end of the second protective door 4 is also formed with a limit table 46 which can be pressed against the front end of the upper surface of the bracket 2, When the external power pin is normally pressed against the second protective door 4, the second protective door 4 drives the first protective door 3 to move upwards until the limit table 46 at the front end of the second protective door 4 is pressed against the front end of the upper surface of the bracket 2, and the second protective door 4 stops moving upwards. So as to effectively prevent the situation that the second protective door 4 cannot be reset or damaged to other structures due to excessive upward movement.

In order to further improve the efficiency of driving the first protective door 3 to move when the second protective door 4 is inserted by an external power pin, as shown in Figure 5, a rear lower guide block 25 is symmetrically arranged at the rear ends on both sides of the upper surface of the bracket 2, and a rear lower guide inclined surface 251 extending obliquely from the rear end of the upper surface of the bracket 2 to the lower part of the middle of the bracket 2 is also formed on the rear lower guide block 25. When an external power supply pin is inserted into the lower end of the second protection door 4, the second protection door 4 drives the first protection door 3 to press against the rear lower guide inclined surface 251, and moves towards the front end of the bracket 2 under the inclined guidance of the rear lower guide inclined surface 251, thus resisting the insertion of other external power supply pins, improving the efficiency and accuracy of the second protection door 4 driving the first protection door 3 to move, and further improving the safety.

As for the specific way that the spring group 5 acts on the first protective door 3, as shown in Figures 3 to 6, a first connecting column 34 is protruded on both sides of the front end of the first protective door 3, and a second connecting column 23 extending towards the middle of the bracket 2 is protruded on both side walls of the front end of the upper surface of the bracket 2; The spring group 5 includes a first spring 51 connected between one of the first connecting posts 34 and one of the second connecting posts 23, and a second spring 52 connected between another first connecting post 34 and another second connecting post 23. When the external power pin is normally inserted, the first protective door 3 or the second protective door 4 is pressed by the forward force to squeeze the first spring 51 and the second spring 52. After the power pin is pulled out, the first protective door 3 or the second protective door 4 is reset under the elastic restoring force of the first spring 51 and the second spring 52, which is convenient for next use. The first spring 51 and the second spring 52 are respectively arranged on both sides of the first protective door 3, so that the stress on the first protective door 3 is uniform, the problem of rollover displacement caused by uneven stress on the first protective door 3 is reduced, and the safety is further improved.

In order to improve the movement accuracy of the first protective door 3 and the second protective door 4, as shown in figs. 5 to 11, a ground wire yielding groove 24 is formed in the middle of the bracket 2, and both sides of the ground wire yielding groove 24 are first guiding arc surfaces 241 respectively extending to the front and rear ends of the bracket, and the structure of the arc surfaces is designed so that the first protective door 3 and the second protective door 4 sliding above them can slide more easily and smoothly; On both sides of the middle part of the lower surface of the first protective door 3, a front inclined movable guide inclined plane 35 matched with the ground wire yielding groove 24 is formed respectively, and on both sides of the middle part of the lower surface of the second protective door 4, a rear inclined movable guide inclined plane 43 matched with the ground wire yielding groove 24 is formed respectively. Preferably, the front inclined movable guide inclined plane 35 and the rear inclined movable guide inclined plane 43 are both in the shape of an upward concave arc

surface, and the two groups are matched with each other, which is beneficial to the cooperation among various components, so that when the first protective door 3 slides on the ground line abdication groove 24, the two groups of front inclined movable guide inclined planes 35 respectively guide the first protective door 3 to slide in the middle of both sides of the ground line abdication groove 24, So as to prevent the first protective door 3 from shifting and falling off during the sliding process; and when the second protective door 4 slides on the ground line yielding groove 24, the two groups of rear inclined movable guide inclined surfaces 43 respectively guide the second protective door 4 to slide in the middle of both sides of the ground line yielding groove 24, so as to prevent the second protective door 4 from shifting and falling off during the sliding process. The front inclined movable guide inclined plane 35 and the rear inclined movable guide inclined plane 43 cooperate with the ground wire yielding groove 24, so that when the first protective door 3 and the second protective door 4 move under the force, they can provide a straight wire function, further improving the movement accuracy of the first protective door 3 and the second protective door 4 and further improving the safety.

As for the specific way of inserting the external power pin into the power converter, as shown in Figures 1 to 3, the upper cover 1 of the main body is provided with a combined jack group, The combined jack group includes a first jack 101, a second jack 102, a third jack 103, a fourth jack 104, a fifth jack 105, a sixth jack 106, a seventh jack 107, an eighth jack 108, a ninth jack 109, a tenth jack 110, an eleventh jack 111 and a twelfth jack 112. Wherein, the third jack 103, the fourth jack 104, the twelfth jack 112 and the seventh jack 107 are arranged in a straight line from front to back, the third jack 103 is located at the uppermost end, the fourth jack 104 is formed at the upper end of the twelfth jack 112, and the first jack 101 and the second jack 102 are located at the left side of the twelfth jack 112, The fifth jack 105 and the sixth jack 106 are located on the right side of the twelfth jack 112, the eighth jack 108 and the ninth jack 109 are located on the left side of the seventh jack 107, and the tenth jack 110 and the eleventh jack 111 are located on the right side of the seventh jack 107; The second jack 102, the fifth jack 105 and the seventh jack 107 are combined to form an American jack, and the first jack

101, the twelfth jack 112 and the sixth jack 106 are combined to form an Italian jack. The third jack 103, the eighth jack 108 and the eleventh jack 111 are combined to form a British jack, and the fourth jack 104, the ninth jack 109 and the tenth jack 110 are combined to form a China jack and an Australian jack. This embodiment is designed by the special combined jack group structure on the upper cover 1 of the main body, and matched with the pins of multinational standards, which can be suitable for the conversion between multinational plugs and jacks, and greatly improves its application range.

As for the specific way of inserting external pins into the first protective door 3, as shown in figs. 3 and 6, both sides of the through hole 32 of the first protective door 3 are respectively formed with American standard pin guide inclined surfaces 36 which are matched with the second jack 102 and the fifth jack 105 and extend obliquely from the front end to the rear end. The outer side of the U.S. standard pin guide inclined plane 38 is formed with a standard pin guide inclined plane 37 which is matched with the first jack 101 or the sixth jack 106 and extends obliquely from the upper front end to the lower rear end. The lower end of the insertion hole of the first protective door 3 is also formed with an American standard ground pin guide inclined plane 38 which is matched with the seventh insertion hole 107 and extends obliquely from the upper end of the front end to the lower end of the rear end. When the external American gauge pin is inserted into the main body upper cover 1, the live wire of the American gauge pin passes through the second insertion hole 102 and abuts against the American gauge pin guide inclined plane 38 on the left, the zero wire passes through the fifth insertion hole 105 and abuts against the American gauge pin guide inclined plane 36 on the right, and the ground wire passes through the seventh insertion hole 107 and abuts against the American gauge ground pin guide inclined plane 38. Under the guiding function of the American gauge pin guiding inclined plane 36 and the American gauge ground pin guiding inclined plane 38, the American gauge pin pushes the first protection door 3 toward the spring group 5, so that the American gauge pin is connected with the conducting component of the power converter arranged in the bracket 2, and the pin conversion is realized. When the external gauge pin is

inserted into the upper cover 1 of the main body, the live wire of the gauge pin passes through the first insertion hole 101 and abuts against the guide inclined plane 37 of the gauge pin on the left, the zero wire passes through the sixth insertion hole 106 and abuts against the guide inclined plane 37 of the gauge pin on the right, and the ground wire passes through the twelfth insertion hole 112. Under the guiding function of the inclined plane 37 of the gauge pin, the gauge pin pushes the first protection door 3 toward the spring group 5, so that the gauge pin is connected with the conducting component of the power converter arranged in the bracket 2, and the pin conversion is realized.

As for the specific way of inserting external pins into the second protective door 4, as shown in Figures 3 and 9, China gauge and Australian gauge pin guide ramps 44 are respectively formed on both sides of the through slot 41 of the second protective door 4, which are matched with the ninth jack 109 and the tenth jack 110, and extend obliquely from the outer top of the front end to the inner bottom of the rear end as a whole. On the outer side of the China gauge and Australian gauge pin guide bevel 44, a British gauge pin guide bevel 45 is formed, which is matched with the eighth jack 108 or the eleventh jack 111 and extends obliquely from the front end to the rear end. When an external national standard pin or European pin is inserted into the main body upper cover 1, the live wire of the national standard pin or European pin passes through the ninth jack 109 and abuts against the left China gauge and Australian gauge pin guide slope 44, the zero wire passes through the tenth jack 110 and abuts against the right China gauge and Australian gauge pin guide slope 44, and the ground wire passes through the fourth jack 104. Under the guidance of the China gauge and the Australian gauge pin guide inclined surface 44, the national standard pin or the European pin pushes the second protection door 4 toward the spring group 5, and the second protection door 4 drives the first protection door 3 to move to the front end, so that the national standard pin or the European pin is correspondingly connected with the conduction component of the power converter arranged in the bracket 2, and the pin conversion is realized. When an external British pin is inserted into the main body upper cover 1, the live wire of the British pin passes through

the eighth jack 108 and abuts against the British pin guide inclined surface 45 on the left, the zero wire passes through the eleventh jack 111 and abuts against the British pin guide inclined surface 45 on the right, and the ground wire passes through the third jack 103. Under the guiding function of the guide inclined surface 45 of the British standard pin, the British standard pin pushes the second protection door 4 toward the spring group 5, and the second protection door 4 drives the first protection door 3 to move to the front end, so that the British standard pin is connected with the conducting component of the power converter arranged in the bracket 2, and the pin conversion is realized.

Embodiment 2

In the first embodiment, the structure of the protection door against single insertion is explained. In this embodiment, the differences from other embodiments are mainly described, and the same structure is not repeated in this embodiment.

As shown in Figure 14 to Figure 23, the main difference between the second embodiment and the first embodiment is that in this embodiment, a limit post 39 which extends upward and can be pressed against the front end of the upper surface of the bracket 2 is also formed on both sides of the through hole 32 of the first protection door 3, instead of a limit table 46 which is integrated with the front end of the second protection door 4. When the external power pin is normally pressed against the first protective door 3 or the second protective door 4, the first protective door 3 moves upward alone or the second protective door 4 drives the first protective door 3 to move upward until the limit post 39 of the first protective door 3 presses against the front end of the upper surface of the bracket 2. The first protective door 3 stops moving upwards, thus effectively preventing the situation that the first protective door 3 moves upwards excessively, so that it cannot be reset or other structures are damaged.

In order to further improve the practicability of the anti-single-insertion protection door, as shown in figs. 14 to 15, the combined jack group further includes a thirteenth jack 113, a fourteenth jack 114 and a fifteenth jack 115 which are arranged in the middle of the third jack

103, the eighth jack 108 and the eleventh jack 111, and the thirteenth jack 113, the fourteenth jack 114 and the fifteenth jack 115 are combined, The special combined jack group structure design, combined with multinational standard pins, can be suitable for the conversion between multinational plugs and jacks, further improving its application scope.

As for the specific way of inserting the external Indian gauge pin into the anti-single-insertion protection door, as shown in figs. 18 to 23, an Indian gauge ground yielding hole 321 matched with the thirteenth jack 113 is formed in the middle of the through hole 32. An Indian gauge pin guide bevel 47 is also formed between the British gauge pin guide bevel 45, the China gauge pin guide bevel 44, which is matched with the fourteenth jack 114 and the fifteenth jack 115 respectively, and extends obliquely from the outer upper direction of the front end to the inner lower direction of the rear end. When the external Indian gauge pin is inserted into the upper cover 1 of the main body, the live wire of the Indian gauge pin passes through the fifteenth jack 115 and abuts against the Indian gauge pin guide inclined surface 47 on the left, the zero wire passes through the fourteenth jack 114 and abuts against the Indian gauge pin guide inclined surface 47 on the right, and the ground wire passes through the thirteenth jack 113 and enters the Indian gauge ground wire abdication hole 321. Under the guiding function of the Indian gauge pin guiding inclined surface 47, the external Indian gauge pin pushes the first protection door 3 and the second protection door 4 towards the spring group 5, so that the Indian gauge pin is connected with the conducting component of the power converter arranged in the bracket 2, and the pin conversion is realized.

It should be noted here that the anti-single-plug protection door for multinational power converters disclosed by the invention is an improvement on the specific structure, but it is not an innovation of the invention for the specific control mode. The spring, American gauge pin, British gauge pin, national standard pin, Italian gauge pin, European pin and other parts involved in the invention can be common standard parts or parts known to those skilled in the art, and their structures, principles and control methods are known to those skilled in the art through technical manuals or conventional experimental methods.

The above is only a preferred embodiment of the present invention, and does not limit the technical scope of the present invention, so other structures obtained by adopting the same or similar technical features as the above embodiment of the present invention are within the protection scope of the present invention.

Claims

1. An anti-single-plug protection door for multinational power converters is characterized in that: Comprises a main body upper cover, a bracket matched with the main body upper cover, a first protective door arranged on the bracket, a second protective door arranged on the bracket and a spring set arranged between the first protective door and the front end of the bracket, wherein the first protective door and the second protective door contact and interfere with each other, and the first protective door and the second protective door move in the same direction.

2. The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: The rear end of the primary protection door and the front end of the second protection door contact and interfere with each other.

3. The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: Two sides of the rear end of the first protective door are respectively provided with a sliding column protruding through the second protective door.

4. The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: Two sides of the front end of the second protective door are respectively provided with a sliding column protruding through the first protective door.

5. The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: The first protective door is in a zigzag shape as a whole, and the middle part of the first protective door is provided with a downward extending concave through hole.

6. The anti-single-plug protection door for multinational power converters according to claim 5 is characterized in that: The two sides of the rear end of the first protective door are respectively provided with a front inclined limit guide surface extending obliquely from the inner lower side to the outer upper side.

7. The anti-single-plug protection door for multinational power converters according to claim 5 is characterized in that: At least one front limit block is convexly arranged on the side

edge of the middle part of the upper surface of the bracket.

8.The anti-single-plug protection door for multinational power converters according to claim 5 is characterized in that: The second protective door is concave or T-shaped as a whole, and a through slot is formed in the middle of the second protective door.

9.The anti-single-plug protection door for multinational power converters according to claim 8 is characterized in that: The lower surfaces of the two sides of the second protective door are respectively formed with a rear inclined limit guide surface extending obliquely from the inner lower side to the outer upper side.

10.The anti-single-plug protection door for multinational power converters according to claim 8 is characterized in that: At least one rear limit block matched with the shape of the lower end of the second protective door is formed on the rear end of the upper surface of the bracket.

11.The anti-single-plug protection door for multinational power converters according to claim 8 is characterized in that: The front end of the second protective door is also formed with a limit table which can be pressed against the front end of the upper surface of the bracket.

12.The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: A rear lower guide block is symmetrically arranged on both sides of the rear end of the upper surface of the bracket, and a rear lower guide inclined plane extending obliquely from the rear end of the upper surface of the bracket to the lower part of the middle part of the bracket is also formed on the rear lower guide block.

13.The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: Two sides of the front end of the first protective door are respectively provided with a first connecting column, and two side walls of the front end of the upper surface of the bracket are respectively provided with a second connecting column extending towards the middle of the bracket; The spring group includes a first spring connected between one of the first connecting columns and one of the second connecting columns, and a second spring connected between another first connecting column and another second

connecting column.

14.The anti-single-plug protection door for multinational power converters according to claim 1 is characterized in that: A ground wire yielding groove is formed in the middle of the bracket, and both sides of the ground wire yielding groove are first guiding arc surfaces respectively extending to the front and rear ends of the bracket; The two sides of the middle part of the lower surface of the first protective door are respectively formed with a front inclined movable guide inclined plane matched with the first guide arc surface, and the two sides of the middle part of the lower surface of the second protective door are respectively formed with a back inclined movable guide inclined plane matched with the first guide arc surface.

15.The anti-single-plug protection door for multinational power converters according to claim 14 is characterized in that: The front inclined movable guide inclined plane and the rear inclined movable guide inclined plane are both in the shape of an upward concave arc surface.

16.The anti-single-plug protection door for multinational power converters according to claim 8 is characterized in that: The upper cover of the main body is provided with a combined jack group which comprises a first jack, a second jack, a third jack, a fourth jack, a fifth jack, a sixth jack, a seventh jack, an eighth jack, a ninth jack, a tenth jack, an eleventh jack and a twelfth jack. Wherein, the third jack, the fourth jack, the twelfth jack and the seventh jack are arranged in a straight line from front to back, the third jack is located at the uppermost end, the fourth jack is formed at the upper end of the twelfth jack, the first jack and the second jack are located at the left side of the twelfth jack, the fifth jack and the sixth jack are located at the right side of the twelfth jack, and the eighth jack and the ninth jack are located at the left side of the seventh jack, The tenth jack and the eleventh jack are both located on the right side of the seventh jack; The second jack, the fifth jack and the seventh jack are combined to form an American standard jack, the first jack, the twelfth jack and the sixth jack are combined to form an Italian jack, the third jack, the eighth jack and the eleventh jack are combined to form an English standard jack, and the fourth jack, the ninth jack and the tenth jack are combined to form China and Australian standard jacks.

17.The anti-single-plug protection door for multinational power converters according to claim 16 is characterized in that: The two sides of the through hole of the first protective door are respectively formed with American standard pin guiding slopes which are matched with the second jack and the fifth jack and extend obliquely from the front end to the rear end, and the outer side of the American standard pin guiding slopes is formed with Italian standard pin guiding slopes which are matched with the first jack or the sixth jack and extend obliquely from the front end to the rear end, The lower end of the through hole of the first protective door is also formed with an American standard ground pin guide inclined plane which is matched with the seventh jack and extends obliquely from the upper end of the front end to the lower end of the rear end.

18.The anti-single-plug protection door for multinational power converters according to claim 16 is characterized in that: Two sides of the through slot of the second protection door are respectively formed with China gauge and Australian gauge pin guide inclined surfaces which are correspondingly matched with the ninth jack and the tenth jack and extend obliquely from the outer upper direction of the front end to the inner lower direction of the rear end as a whole, The outer side of the China gauge and the Australian gauge pin guide bevel is formed with a British gauge pin guide bevel which is matched with the eighth jack or the eleventh jack correspondingly and extends obliquely from the front end to the rear end.

19.The anti-single-plug protection door for multinational power converters according to claim 5 is characterized in that: The two sides of the through hole of the first protective door are also respectively provided with a limiting column which extends upwards and can be pressed against the front end of the upper surface of the bracket.

20.The anti-single-plug protection door for multinational power converters according to claim 16 is characterized in that: The combined jack group also comprises a thirteenth jack arranged in the middle of the third jack, a fourteenth jack arranged in the middle of the eighth jack and a fifteenth jack arranged in the middle of the eleventh jack, wherein the thirteenth jack, the fourteenth jack and the fifteenth jack are combined to form an Indian gauge jack.

21. The anti-single-plug protection door for multinational power converters according to claim 20 is characterized in that: An Indian gauge ground yielding hole matched with the thirteenth jack is formed in the middle of the through hole, and an Indian gauge pin guiding inclined plane which is matched with the fourteenth jack and the fifteenth jack respectively and extends obliquely from the outer upper front end to the inner lower rear end is also formed between the British gauge pin guiding inclined plane and the China gauge pin guiding inclined plane.