

Description

The present invention relates to a modular shielded electrical connector for mating with another shielded electrical connector as set forth in claim 1.

In the electronics industry, particularly the computer industry, it is extremely desirable to reduce the amount of space on the printed circuit board that is utilized by board mounted electrical connectors. The typical computer application utilizes a plurality of individual female electrical connectors mounted on a main printed circuit board and which project through a rear panel of the computer. Individual male connectors can be mated with the female connectors on the printed circuit board as required to achieve the desired configuration of the computer and its various electronic attachments.

As disclosed in US-A-5,102,353, assigned to the assignee of the present invention, a configuration for reducing the board space utilized by the electrical connectors involves offsetting the jack screws commonly used to secure mating electrical connectors.

EP-A-0 323 114 discloses a distribution panel for selective interconnection of shielded cables, each of which is terminated to an electrical connector, called shielded sub-assembly. Here the jack screws positioned on the side of the electrical connectors or shielded sub-assemblies are eliminated and replaced with latching means located at the top of each sub-assembly.

The present invention further reduces the required space by eliminating some or all of the individual connectors located on the printed circuit board and replacing them with a single electrical connector. The individual male connectors that are mated with the female connectors in the prior art are replaced by a modular shielded electrical connector in which each of the male connectors is replaced by a modular sub-assembly that is secured to the shielded connector assembly. Modules can be added or removed from the connector assembly as desired in order to change the connections between the main printed circuit board and other components such as printers, terminals and the like.

An object, therefore, of the invention is to provide an improved shielded and modular electrical connector in which the components may be added and removed as desired to change the configuration of the electrical connections between the computer and the devices to which it is connected.

The invention is defined by the features of claim 1. Further embodiments are set forth in the sub-claims.

Accordingly, an electrical connector is provided having a molded dielectrical frame member a shield and frame member wherein at least a portion thereof is conductive, a plurality of modular sub-assemblies with each module having a dielectric housing in which

a plurality of terminals are mounted, and a conductive shield member is secured to conductive shielding of at least one shielded cable. Each terminal is electrically connected to a conductor contained within one of the at least one shielded cable. A latch mechanism is provided for removably securing each modular sub-assembly to the shield and frame member. An interconnection mechanism is also provided for electrically connecting the electrically conductive portion of the shield and frame member to the conductive shield member to complete the ground circuit between the conductive shielding of the shielded cable and the conductive portion of the shield and frame member.

These and other objects, features and advantages of the present invention will be clearly understood through a consideration of the following detailed description.

Brief Description of the Drawings

In the course of this description, reference will be made to the attached drawings in which:

FIGURE 1 is perspective view of the electrical connector embodying the present invention;

FIGURE 2 is a partially exploded perspective view of the electrical connector of Fig. 1 with certain parts removed;

FIGURE 3 is a vertical section taken generally along line 3-3 of Fig. 2; and

FIGURE 4 is a perspective view of a connector with which the connector of Fig. 1 is mated.

Detailed Description of the Preferred Embodiment

Referring to Fig. 1, an electrical connector forming a representative embodiment of the invention is indicated generally at 10. More particularly, electrical connector 10 includes a stamped and formed metal shield 12 secured to a dielectric frame member 36. Shield 12 includes a shroud 14 which defines a receptacle 16 for receiving the mating portion 100 of a complementary connector 102 (Fig. 4). In the preferred embodiment, a plurality of leaf-type terminals 42 (Figs. 1 and 3) are located in the center portion of receptacle 16 and cylindrical-type terminals 20 (Fig. 1) project outwardly at the two sides of the receptacle.

The electrical connector 10 includes a removable, two piece dielectric cover 22. It is anticipated that the cover 22 could also be made from a conductive material. The cover halves are secured together by fastening means such as, for example, screws 23 to permit the cover to be secured and removed from the connector as desired in order to change the configuration of the modules 30 contained within the connector as is further discussed below. Conventional jack screws 24 having a threaded end 26 project through shield 12 and frame member 36 for securing the electrical connector 10 to the mating connector

102 (Fig. 4). A plurality of cables 28 project rearwardly from electrical connector 10.

As best seen in Figs. 2 and 3, shield 12 includes a plurality of rearwardly projecting tabs 32 located along and extending from the top and bottom edges of the shield. Each tab 32 has a locking slot 34 located therein for securing the modular sub-assemblies 30. The shield 12 is mounted upon a dielectric frame member 36 which has an opening 38 through which a portion of projecting wall 40 and terminals 42 project (Fig. 3).

As shown in Fig. 2, connector 10 includes a plurality of modular sub-assemblies indicated generally at 30. Each sub-assembly includes its own multi-conductor cable 28 which extends rearwardly therefrom. The individual insulated conductors 48 contained within each cable 28 are terminated to individual insulation displacement terminals contained within a terminal and wire management block indicated generally at 50.

The terminal and wire management block 50 includes two dielectric members 52 and 54 and a plurality of terminals 42. Front dielectric member 52 includes a projecting wall 40 that protrudes into the shroud portion 14 of shield 12 to support leaf-type terminals 42. The front member 52 also includes front walls 57 and a plurality of receptacles 60 on opposite sides of projecting wall 40 through which the terminals 42 project against opposite sides of the wall for engaging complimentary terminals 103 of a mating connector 100 (Fig. 4). An insulation displacement portion 70 of each terminal 42 is secured between the rear wall 72 of front member 52 and the front wall 74 of the rear dielectric member 54. This sandwiching of the insulation displacement portion 70 of each terminal 42 supports the terminal to prevent the insulation displacement portion from buckling when the terminal is terminated to an insulated conductor 48.

In assembly, the terminals 42 are inserted into the receptacles 60 in front member 52. Rear member 54 is then assembled to the front member 52 to sandwich and support the insulation displacement portions 70 of the terminals 42. A tab 76 on front member 52 is shown projecting through an opening in rear member 54 and heat staked in order to secure the front and rear members 52 and 54 together. The individual conductors 48 can then be individually forced into the insulation displacement portion 70 of the terminals as is known in the art to terminate each of the conductors to one of the terminals 42.

As best seen in Fig. 3, each modular sub-assembly 30 includes a dielectric housing comprised from a pair of hermaphroditic halves 82. These halves 82 can be assembled by known internal or external fastening methods (not shown). The housing halves 82 have slots 80 in their sidewalls and are dimensioned to securely receive the assembled terminal and wire management block 50 therein. Thus, once the block 50

and housing halves 82 are assembled, the sub-assembly 30 becomes a rigid structure.

Each sub-assembly 30 also includes a pair of upper and lower stamped and formed inner shield members 84 that also function as a latch mechanism. Beginning at the end closest the terminals 42, each shield member 84 includes a projection 86 for mating with slot 34 in tab 32 of the main shield. Projections 86 have a tapered leading end 88 so that the projections are forced towards the center of the sub-assembly while the sub-assembly 30 is mated to tab 32. The projection 88 then snaps into the slot 34 of tab 32 to retain the sub-assembly 30 in place. A button portion 90 is stamped and formed in the inner shield member 84 and dimensioned so as to project through an opening 92 in modular sub-assembly 30. By pressing upon the top and bottom button portions 90, the front half of inner shield 84 is able to bend about point 93 which rotates projection 86 out of slot 34 in order to release the sub-assembly 30 from the frame member 36 and shield 12. Proceeding rearwardly from point 92, semi-circular portions 94 are formed at the rear of inner shield 84 to surround and engage the braid 96 of cable 28, which has been exposed.

To assemble sub-assembly 30, a portion of the outer insulator (not shown) of cable 28 is stripped to expose the outer shielding braid 96. The individual insulated conductors 48 are then terminated to the terminals 42 contained within terminal and wire management block 50. The inner shield members 84 are loaded into the halves 82 of the modular sub-assembly 30. The block 50 together with the terminated terminals 42 is then loaded between the two halves 82 of the housing 80 with the inner shield members 84 secured therein. The halves 82 are fastened together to create a module 30. The semi-circular rear portion 94 of the inner shield wraps around the exposed braid 96 and a crimpable ferrule 99 is crimped over the semi-circular portions 94 and the exposed braid 96 to complete the ground between inner shield 84 and the braid 96 as well as to provide a strain relief for the cable 28.

The modules 30 can then be snapped onto tabs 32 in order to secure the modules to shield 12 in the desired order. This interconnects braid 96 with inner shield members 84 and shield 12 to complete the ground circuit. Once the desired configuration of sub-assemblies 30 is mounted to the shield 12 and frame 36, outer cover 22 is secured over the sub-assemblies to complete the connector 10.

By utilizing a plurality of modular sub-assemblies 30, a combination of terminals can be easily added or removed from the connector 10. The outer cover 22 is merely removed and the modules removed or added as desired. The cover is then replaced.

If desired, keying projections 91 can be added to frame member 36 and a mating receptacle 93 located in front wall 57 of front member 52. Such projections

can also be utilized to provide polarization to ensure that the modules 30 are not inserted upside down. An additional feature to ease assembly of the modules 30 to shield 12 would be to provide color coding for the sequence of the modules. Different color markings could be provided on each tab 32 and modules 32 would either have similarly colored markings or the cover halves 82 could be molded of appropriately colored plastic.

In an instance in the prior art where a male connector would not have been mated to a female connector mounted on a printed circuit board, the present invention contemplates utilizing a "dummy" module (not shown) that would not have any electrical conductors or terminals secured thereto. If, at a later time, it is desired to remove the "dummy" module and replace it with a functional sub-assembly, such a conversion can easily be made. Similarly, an operational sub-assembly 30 can likewise be easily replaced by another operational sub-assembly or a "dummy" module with minimal effort.

In the embodiment shown, six or fewer modules can be secured to shield 12 and frame member 36. Of course the number of modules, the types of terminals contained within each module 30 as well as the positioning of the modules can be altered provided that the mating connector 100 is similarly modified.

As is shown in Figs. 1 and 2, the sub-assemblies 30 located on the two sides of the connector include cylindrical shaped terminals 20 that can be used for high-speed video transmissions keying or fiber optics, or any combination thereof. The center four sub-assemblies have leaf-type terminals of known type. As shown in Fig. 4, the array of cylindrical-shaped terminals adjacent side 106 includes a fiber optic connector 108 in order to provide additional flexibility in the connector assembly. In the array of cylindrical-shaped terminals adjacent side 104, one of the circular openings for receiving the terminals 20 is blocked to act as a keying mechanism. With such a configuration, the connector 10 would mate with the female connector 100 shown in Fig. 4. Such female connector would be mounted to a printed circuit board (not shown) and is substantially identical to that disclosed in U.S. Patent No. 5,102,353. The principal difference between the connectors shown in U.S. Patent No. 5,102,353 and that of the present invention is that the connector of Fig. 4 includes the cylindrical shaped terminals 20 at both sides 104 and 106.

It will also be understood that the embodiments of the present invention which have been described herein are merely illustrative of an application of the principles of the invention. Numerous modifications may be made by those skilled in the art without departing from the spirit of the scope of the invention.

Claims

1. A modular shielded electrical connector (10) for mating with another shielded electrical connector (102) including:
 - a shield and frame member (12, 36) wherein at least a portion thereof is conductive;
 - a plurality of modular sub-assemblies (30), each module having a dielectric housing (82) in which a plurality of terminals (42) are mounted, and a conductive shield member (84) secured to conductive shielding (96) of at least one shielded cable (28), each said terminal (42) being electrically connected to a conductor (48) contained within one of said at least one shielded cable (28);
 - latch means (34, 86) for removably securing each said modular sub-assembly (30) to said shield and frame member (12, 36), said latch means (34, 86) mechanically and electrically directly engaging and connecting said conductive shield member (84) of each said modular sub-assembly (30) and the conductive portion of said shield and frame member (12, 36); and
 - interconnection means (32, 84) for electrically connecting said electrically conductive portion of said shield and frame member (12, 36) to said conductive shield member (84) of each said modular sub-assembly (30) to complete the ground circuit between the conductive shielding (96) of said shielded cable (28) and said conductive portion of said shield and frame member (12, 36).
2. The electrical connector assembly of claim 1 wherein said shield and frame member (12, 36) includes a dielectrical frame member (36) having aperture means (38) for receiving said plurality of modular sub-assemblies (30).
3. The electrical connector assembly of claim 1 wherein said conductive portion (12) of said shield and frame member comprises a plurality of projections (32), said projections forming a part of said interconnection means and being adapted to be received within said modules.
4. The electrical connector assembly of claim 3 wherein said conductive portion (12) of said shield and frame member (12, 36) includes a stamped and formed metal component.
5. The electrical connector assembly of claim 1 further comprising an insulative cover (22) surrounding said modular sub-assemblies (30) when said sub-assemblies are secured to said shield and frame member (12, 36).
6. The modular electrical connector of claim 1 wherein each said module (30) includes a dielec-



can also be utilized to provide polarization to ensure that the modules 30 are not inserted upside down. An additional feature to ease assembly of the modules 30 to shield 12 would be to provide color coding for the sequence of the modules. Different color markings could be provided on each tab 32 and modules 32 would either have similarly colored markings or the cover halves 82 could be molded of appropriately colored plastic.

In an instance in the prior art where a male connector would not have been mated to a female connector mounted on a printed circuit board, the present invention contemplates utilizing a "dummy" module (not shown) that would not have any electrical conductors or terminals secured thereto. If, at a later time, it is desired to remove the "dummy" module and replace it with a functional sub-assembly, such a conversion can easily be made. Similarly, an operational sub-assembly 30 can likewise be easily replaced by another operational sub-assembly or a "dummy" module with minimal effort.

In the embodiment shown, six or fewer modules can be secured to shield 12 and frame member 36. Of course the number of modules, the types of terminals contained within each module 30 as well as the positioning of the modules can be altered provided that the mating connector 100 is similarly modified.

As is shown in Figs. 1 and 2, the sub-assemblies 30 located on the two sides of the connector include cylindrical shaped terminals 20 that can be used for high-speed video transmissions keying or fiber optics, or any combination thereof. The center four sub-assemblies have leaf-type terminals of known type. As shown in Fig. 4, the array of cylindrical-shaped terminals adjacent side 106 includes a fiber optic connector 108 in order to provide additional flexibility in the connector assembly. In the array of cylindrical-shaped terminals adjacent side 104, one of the circular openings for receiving the terminals 20 is blocked to act as a keying mechanism. With such a configuration, the connector 10 would mate with the female connector 100 shown in Fig. 4. Such female connector would be mounted to a printed circuit board (not shown) and is substantially identical to that disclosed in U.S. Patent No. 5,102,353. The principal difference between the connectors shown in U.S. Patent No. 5,102,353 and that of the present invention is that the connector of Fig. 4 includes the cylindrical shaped terminals 20 at both sides 104 and 106.

It will also be understood that the embodiments of the present invention which have been described herein are merely illustrative of an application of the principles of the invention. Numerous modifications may be made by those skilled in the art without departing from the spirit of the scope of the invention.

Claims

1. A modular shielded electrical connector (10) for mating with another shielded electrical connector (102) including:
 - a shield and frame member (12, 36) wherein at least a portion thereof is conductive;
 - a plurality of modular sub-assemblies (30), each module having a dielectric housing (82) in which a plurality of terminals (42) are mounted, and a conductive shield member (84) secured to conductive shielding (96) of at least one shielded cable (28), each said terminal (42) being electrically connected to a conductor (48) contained within one of said at least one shielded cable (28);
 - latch means (34, 86) for removably securing each said modular sub-assembly (30) to said shield and frame member (12, 36), said latch means (34, 86) mechanically and electrically directly engaging and connecting said conductive shield member (84) of each said modular sub-assembly (30) and the conductive portion of said shield and frame member (12, 36); and
 - interconnection means (32, 84) for electrically connecting said electrically conductive portion of said shield and frame member (12, 36) to said conductive shield member (84) of each said modular sub-assembly (30) to complete the ground circuit between the conductive shielding (96) of said shielded cable (28) and said conductive portion of said shield and frame member (12, 36).
2. The electrical connector assembly of claim 1 wherein said shield and frame member (12, 36) includes a dielectrical frame member (36) having aperture means (38) for receiving said plurality of modular sub-assemblies (30).
3. The electrical connector assembly of claim 1 wherein said conductive portion (12) of said shield and frame member comprises a plurality of projections (32), said projections forming a part of said interconnection means and being adapted to be received within said modules.
4. The electrical connector assembly of claim 3 wherein said conductive portion (12) of said shield and frame member (12, 36) includes a stamped and formed metal component.
5. The electrical connector assembly of claim 1 further comprising an insulative cover (22) surrounding said modular sub-assemblies (30) when said sub-assemblies are secured to said shield and frame member (12, 36).
6. The modular electrical connector of claim 1 wherein each said module (30) includes a dielec-



tric outer housing (82) and said conductive shield member (84) is located within said outer housing (82), said conductive shield member (84) comprising a pair of stamped and formed components (84), each stamped and formed component (84) having a tail portion (94) for contacting the conductive shielding (96) of the shielded cable (28), a latching portion (84, 86) for mating with said electrically conductive portion of said frame member (12), and a portion (90) that projects through an opening (92) in said outer housing (82) to permit said latching portion (86) to be unmated from said conductive portion (32) of said frame means.

7. The modular electrical connector of claim 6 wherein said conductive portion (12) of said shield and frame member (12, 36) comprises a stamped and formed shield having a plurality of projections (32) that project away from the mating face defined by the modules and mate with said latch means (34, 86) to create an electrical connection between said shield, said stamped and formed components (84) and the conductive shielding (96) of the shielded cable (28).

Patentansprüche

1. Modularer abgeschirmter elektrischer Steckverbinder (10), passend zu einem anderen abgeschirmten elektrischen Steckverbinder (102), mit folgenden Merkmalen:
 ein Abschirm- und Rahmenelement (12, 36), von dem mindestens ein Teil leitfähig ist;
 eine Mehrzahl von modularen Untereinheiten (30), die jeweils ein dielektrisches Gehäuse (82), in dem eine Mehrzahl von Klemmen (42) montiert ist, und ein leitfähiges Abschirmteil (84) aufweisen, die an der leitfähigen Abschirmung (96) von mindestens einem abgeschirmten Kabel (28) befestigt sind, wobei jede Klemme (42) elektrisch mit einem Leiter (48) verbunden ist, der innerhalb von mindestens einem abgeschirmten Kabel (28) enthalten ist;
 Rasteinrichtungen (34, 86) zum entfernbaren Befestigen der jeweiligen modularen Untereinheit (30) an dem Abschirm- und Rahmenelement (12, 36), wobei die Rasteinrichtung (34, 86) das leitfähige Abschirmteil (84) der jeweiligen modularen Untereinheit (30) und den leitfähigen Teil des Abschirm- und Rahmenelements (12, 36) mechanisch und elektrisch verbindet und an diesen direkt anlegt;
 eine Verbindungseinrichtung (32, 84) zur elektrischen Verbindung des elektrisch leitfähigen Teils des Abschirm- und Rahmenelements (12, 36) mit dem leitfähigen Abschirmteil (84) der jeweiligen

modularen Untereinheit (30), um die Erdungsschaltung zwischen der leitfähigen Abschirmung (96) des abgeschirmten Kabels (28) und dem leitfähigen Teil des Abschirm- und Rahmenelements (12, 36) zu vervollständigen.

2. Elektrische Steckverbinderanordnung nach Anspruch 1, dadurch gekennzeichnet, daß das Abschirm- und Rahmenelement (12, 36) ein dielektrisches Rahmenteil (36) mit Öffnungseinrichtungen (38) umfaßt, um die Vielzahl der modularen Untereinheiten (30) aufzunehmen.
3. Elektrische Steckverbinderanordnung nach Anspruch 1, dadurch gekennzeichnet, daß der leitfähige Teil (12) des Abschirm- und Rahmenelements ein Mehrzahl von Vorsprüngen (32) umfaßt, die einen Teil der Verbindungseinrichtung bilden und zur Aufnahme innerhalb der Module angepaßt ausgebildet sind.
4. Elektrische Steckverbinderanordnung nach Anspruch 3, dadurch gekennzeichnet, daß der leitfähige Teil (12) des Abschirm- und Rahmenelements (12, 36) ein gestanztes, geformtes Metallteil umfaßt.
5. Elektrische Steckverbinderanordnung nach Anspruch 1, dadurch gekennzeichnet, daß ein isolierender Deckel (22) vorgesehen ist, um die modularen Untereinheiten (30) zu umgeben, wenn die Untereinheiten an dem Abschirm- und Rahmenelement (12, 36) befestigt sind.
6. Modularer elektrischer Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, daß jedes Modul (30) ein dielektrisches äußeres Gehäuse (82) umfaßt, daß das leitfähige Abschirmteil (84) innerhalb des äußeren Gehäuses (82) angeordnet ist, daß das leitfähige Abschirmteil (84) zwei ausgestanzte und geformte Bauteile (84) umfaßt, die jeweils einen lötfahnenartigen Abschnitt (94) zur Kontaktierung mit der leitfähigen Abschirmung (96) des abgeschirmten Kabels (28), ein Rastteil (84, 86) zum Eingriff an dem elektrisch leitfähigen Teil des Rahmenelements (12) und ein Teil (90) aufweisen, das durch eine Öffnung (92) in dem äußeren Gehäuse (82) vorsteht, um dem Verrastteil (86) zu ermöglichen, von dem leitfähigen Teil (32) der Rahmeneinrichtung freizukommen.
7. Modularer elektrischer Steckverbinder nach Anspruch 6, dadurch gekennzeichnet, daß der leitfähige Teil (12) des Abschirm- und Rahmenelements (12, 36) eine gestanzte und geformte Ab-



schirmung mit einer Mehrzahl von Vorsprüngen (32) umfaßt, die von der von den Modulen bestimmten Paßfläche vorstehen und mit den Rasteinrichtungen (34, 86) zusammenpassen, um eine elektrische Verbindung zwischen der Abschirmung, den ausgestanzten und geformten Bauteilen (84) und der leitfähigen Abschirmung (96) des abgeschirmten Kabels (28) zu schaffen.

Revendications

1. Connecteur électrique blindé modulaire (10) pour s'accoupler avec un autre connecteur électrique blindé (102) comprenant :

un élément formant blindage et cadre (12, 36) dont au moins une partie est conductrice ; plusieurs sous-ensembles modulaires (30), chaque module comportant un boîtier diélectrique (82) dans lequel plusieurs bornes (42) sont montées et un élément de blindage conducteur (84) fixé au blindage conducteur (96) d'au moins un câble blindé (28), chaque borne (42) étant connectée électriquement à un conducteur (48) contenu dans l'un dudit au moins un câble blindé (28) ;

un moyen de verrouillage (34, 86) pour fixer de façon amovible chacun desdits sous-ensembles modulaires (30) audit élément formant blindage et cadre (12, 36), ledit moyen de verrouillage (34, 86) bloquant et connectant directement, mécaniquement et électriquement, ledit élément de blindage conducteur (84) de chacun desdits sous-ensembles modulaires (30) et la partie conductrice dudit élément formant blindage et cadre (12, 36) ; et

un moyen d'interconnexion (32, 84) pour connecter électriquement ladite partie conductrice de l'électricité dudit élément formant blindage et cadre (12, 36) audit élément de blindage conducteur (84) de chacun desdits sous-ensembles modulaires (30) pour compléter le circuit de masse entre le blindage conducteur (96) dudit câble blindé (28) et ladite partie conductrice dudit élément formant blindage et cadre (12, 36).

2. Ensemble connecteur électrique selon la revendication 1, dans lequel ledit élément formant blindage et cadre (12, 36) comprend un élément cadre diélectrique (36) comportant un moyen formant ouverture (38) pour recevoir lesdits plusieurs sous-ensembles modulaires (30).

3. Ensemble connecteur électrique selon la revendication 1, dans lequel ladite partie conductrice (12) dudit élément formant blindage et cadre comprend plusieurs saillies (32), lesdites saillies faisant partie dudit moyen d'interconnexion et

étant conçues pour être logées à l'intérieur desdits modules.

4. Ensemble connecteur électrique selon la revendication 3, dans lequel ladite partie conductrice (12) dudit élément formant blindage et cadre (12, 36) comprend un composant métallique découpé et formé à la presse.

5. Ensemble connecteur électrique selon la revendication 1, comprenant en outre une enveloppe isolante (22) entourant lesdits sous-ensembles modulaires (30) lorsque lesdits sous-ensembles sont fixés audit élément formant blindage et cadre (12, 36).

6. Connecteur électrique modulaire selon la revendication 1, dans lequel chaque module (30) comprend un boîtier extérieur diélectrique (82), et dans lequel ledit élément blindé conducteur (84) est situé à l'intérieur dudit boîtier extérieur (82), ledit élément de blindage conducteur (84) comprenant une paire de composants découpés et formés à la presse (84), chaque composant découpé et formé à la presse (84) ayant une partie queue (94) pour contacter le blindage conducteur (96) du câble blindé (28), une partie de verrouillage (84, 86) pour s'accoupler avec ladite partie conductrice de l'électricité dudit élément formant cadre (12), et une partie (90) qui fait saillie à travers une ouverture (92) dans ledit boîtier extérieur (82) pour permettre à ladite partie de verrouillage (86) d'être désaccouplée de ladite partie conductrice (32) dudit moyen formant cadre.

7. Connecteur électrique modulaire selon la revendication 6, dans lequel ladite partie conductrice (12) dudit élément formant blindage et cadre (12, 36) comprend un blindage découpé et formé à la presse ayant plusieurs saillies (32) qui s'écarte de la face d'accouplement définie par les modules et qui s'accouple avec ledit moyen de verrouillage (34, 86) pour créer une connexion électrique entre ledit blindage, lesdits composants découpés et formés à la presse (84) et le blindage conducteur (96) du câble blindé (28).