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(54) **LOW-VOLTAGE CONNECTOR**

NIEDERSPANNUNGSVERBINDER

CONNECTEUR BASSE TENSION

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## Description

### TECHNICAL FIELD

**[0001]** The present disclosure relates to an electric-circuit connector, and particularly relates to a low-voltage connector.

### BACKGROUND

**[0002]** Low-voltage connectors are frequently utilized in vehicles; for example, the signal line for connecting an electric-motor controller to a vehicle computer is required to use a low-voltage connector. Because of the vibration generated during the travelling of vehicles, the connector heads tend to separate at the position of low-voltage connectors, resulting in that the signal line would be disconnected, and thus the vehicle computer would lose control on the electric motor, which would cause a serious potential safety hazard.

**[0003]** Document US10153587B1 discloses a plug-and-socket connector assembly includes an electrical plug connector which includes two retaining tongues each having an actuating free end and a retaining region, and an electrical socket connector which includes two lugs each having a locking hole. When the electrical socket connector is brought into mating engagement with the electrical plug connector, the retaining region is snap-fitted in the locking hole of a corresponding one of the lugs. The actuating free ends of the retaining tongues can be manually pressed toward each other against the biasing forces of the retaining tongues to disengage the retaining regions of the retaining tongues from the locking holes of the lugs so as to permit removal of the electrical plug connector.

**[0004]** Document JP2008166046A discloses two pieces each of backlash tightening ribs with a cross-sectional crest shape are formed on each face on the outer circumference of tube part of a front wall member which constitutes a terminal housing part in a female housing. An engaging groove of trapezoidal cross-section in which the backlash tightening rib is engaged is formed on the inner circumference face of the small hood portion of a male housing. The width A of an opening edge of the engaging groove is established to be smaller than the width B of a skirt portion of the backlash tightening rib. Since the both skirt portions of the backlash tightening rib and the corresponding opening edges of the engaging groove are mutually crushed, backlash tightening is carried out. Vibration is prevented at the positions close to the position where male and female terminal fittings are engaged and connected. Thereby, backlash tightening rib and the engaging groove can be established throughout the whole circumference and backlash can be tightened uniformly from the whole circumference.

**[0005]** Document US20040166744A1 discloses a junction terminal is accommodated in a connector housing to connect a pin terminal fitted on a case of an electric

instrument with a receptacle terminal of a wiring harness connector. The junction terminal includes a female electrical contact portion to electrically connect with the pin terminal of the electric instrument, a male electrical contact portion to electrically connect with the receptacle terminal of the wiring harness connector, and a bridging portion to connect the female electrical contact portion with the male electrical contact portion. The male electrical contact portion is constructed so as to be correctly positioned by a positioning member attached to the connector housing. The male electrical contact portion is arranged such that a first longitudinal line passing an intermediate point of the male electrical contact portion aligns with a second longitudinal line passing an intermediate point of the female electrical contact portion.

**[0006]** Document US5588858A discloses A connector system is provided wherein each connector has a grommet retainer that retains a grommet at the rear of the connector, and wherein when the connectors are mated they securely hold a first connector within a mounting wall. Each connector has a retainer lying rearward of a grommet and having a plurality of retainer holes that pass wires that extend through the grommet, the retainer having walls which engage the grommet to retain it and assure proper orientation of the retainer so the holes of the retainer and grommet are aligned. A first connector which can be inserted into a hole of a mounting wall, has resilient tines that press against the hole surface and that have latch parts at their front ends that form shoulders that engage a face of the wall. The second connector has a plurality of wedges that each move immediately inward of a corresponding tine as the connectors move together for mating, to prevent the tines from being radially inwardly deflected, to thereby lock the first connector to the mounting wall.

**[0007]** Document JPS49102290U discloses a latch arm having a male housing portion and a female housing portion capable of being fitted, one end of the male housing portion being fixed at one end to provide elastic force and having a locking projection, An electrical connector housing, characterized in that a female housing part is formed with an engaging part which can be held to the latching projection of the latch arm.

**[0008]** Document KR200467383Y1 discloses a vacuum connector, and in particular, the time to be installed on the line is greatly reduced, thereby improving work efficiency, and reducing the size of the product to cope with the miniaturization of the equipment. It relates to a vacuum connector that can be supplied. The vacuum connector of the present invention includes a vacuum connector body connected to a line installed to control various equipment installed in a vacuum chamber after vacuuming a predetermined space in an industrial facility for manufacturing an article in a vacuum state. The vacuum connector body has a flange having a diameter larger than the diameter of one end at an outer diameter of the other end, and one side of the flange is inclined so that the width of the cross section decreases from the

shaft center side toward the outer circumferential surface thereof. It is characterized in that the inclined surface is formed.

**[0009]** Document DE112013003359T5 discloses a connector comprises: a housing in which a communication slot is formed in a partition wall connecting between adjacent terminal accommodating chambers; and a connection terminal having a terminal body portion connected to a wire connection portion. The terminal body portion includes: a first side wall on which a male connection portion is formed, a second side wall having a slit; and an elastic portion contacting portions disposed in the terminal body portion and contacting the male connection portion inserted in the slit. The connection slot is disposed at a position offset from the center in the vertical direction of the terminal accommodation chamber. The male connection terminal and the slot are arranged at a position offset from the center in the vertical direction of the terminal body portion so as to coincide with the connection slot.

**[0010]** Document US3671921A discloses a multi-contact Connector Assembly comprises plug and receptacle which contain matable contact terminals. Both plug and receptacle comprise a molded plastic shell member and a molded insert having contact cavities therein, terminals being contained in the insert cavities.

**[0011]** Document JPH10241790A discloses a trapezoidal guide rib as a projecting part in the upper and lower middle part of the sidewall of a male connector housing along the insertion direction. A guide groove as a recessed part is provided in the vertically intermediate part of a side wall opposite the fitting hood part of a female connector housing. The section of the trapezoidal guide rib is formed to be trapezoidal, so as to be expanded to a tip side, and a slope symmetrical with respect to upper and lower sides is formed. The section of the guide groove is expanded to the deep side of the sidewall and formed to be trapezoidal corresponding to the section of the guide rib, and a slope which is symmetrical in upper and lower sides is formed. When the female and male connector housings are engaged with each other, the trapezoidal guide rib is fitted from its tip in the guide groove.

#### SUMMARY

**[0012]** Aiming at the above problem in the prior art, the present disclosure provides a low-voltage connector, which, by providing snap-fitting structures having different functions, realizes a good anti-vibration capacity and a reliable connection structure.

**[0013]** To achieve the above objective, the technical solutions of the present disclosure are realized as follows:

The present disclosure provides a low-voltage connector, wherein the low-voltage connector comprises an adaptor and a connector main body, the adap-

tor is provided with a first connector head and a second connector head respectively at a front end and a rear end, the connector main body is plug-connected to the second connector head, and a rear end of the connector main body is connected to one or more signal lines;

the second connector head is provided with first clipping slots on a left side and a right side, and the connector main body is provided with elastic arms on a left side and a right side that are snap-fitted to the first clipping slots, to prevent the connector main body from disengaging from the second connector head;

the second connector head is provided with second clipping slots on an upper side and a lower side, and the connector main body is provided with longitudinal convex strips on an upper side and a lower side that are snap-fitted to the second clipping slots, to prevent the connector main body from shaking in a left-and-right direction in the second connector head; the adaptor is provided with an engaging lug that protrudes outwardly on a left side or a right side, the engaging lug is provided with a connecting hole, and the adaptor is fixed to a housing of another component via the engaging lug;

the first connector head is provided with a plurality of matching poles on an outer wall in a length direction; and steps are provided inside the first connector head to gradually reduce internal dimensions; and the matching poles are proximal to the side where the engaging lug is located.

**[0014]** Optionally, the second connector head is provided with one slot on an inner wall on one side in a length direction, the connector main body is correspondingly provided with one projection on an outer wall in a length direction, the projection and the slot form a fool proofing structure, and after the projection and the slot are matched the connector main body is capable of being plug-connected to the second connector head.

**[0015]** Optionally, several circumferential positioning grooves are provided on a periphery of the second connector head, and sealing rings are provided in the positioning grooves.

**[0016]** Optionally, the elastic arms are provided with clipping blocks that protrude laterally, the second connector head is correspondingly provided with clipping holes on sidewalls in a width direction, and after the connector main body has been plug-connected to the second connector head, the clipping blocks are snap-fitted to the clipping holes.

**[0017]** Optionally, the connector main body is provided with stopping parts at the rear end for limiting an insertion depth of the connector main body into the second connector head, and the stopping parts are provided with clearances for the elastic arms.

**[0018]** Optionally, a partition plate is provided between the first connector head and the second connector head,

the partition plate is provided with a pin array that extend in a front-and-rear direction, a plurality of plug holes are provided inside the connector main body, and after the connector main body has been plug-connected to the second connector head, front ends of the plug holes are connected to the pin array, and rear ends of the plug holes are connected to terminals of the signal lines, to realize electrical connection inside the plug holes between the pin array and the signal lines.

**[0019]** Optionally, the connector main body is provided with pressing blocks on an outer wall in a length direction that correspond to the plug holes, and the pressing blocks press the terminals of the signal lines inside the plug holes.

**[0020]** Optionally, the low-voltage connector further comprises a depressor, and the depressor is inserted into the rear end of the connector main body, to depress and lock the signal lines into rear ends of the plug holes.

**[0021]** Optionally, the depressor comprises a sheet body, the sheet body is provided with a clipping block on one side, the connector main body is correspondingly provided with a clipping hole on an outer wall in the length direction, and when the depressor is inserted into the rear end of the connector main body, and the clipping block is snap-fitted to the clipping hole on the connector main body.

**[0022]** Optionally, the sheet body is provided with a stopping part at a rear end for limiting an insertion depth of the depressor into the connector main body.

**[0023]** The low-voltage connector, by employing the above technical solutions, has the following advantages: The low-voltage connector according to the present disclosure, by providing the snap-fitting structures having the different functions, has a good anti-vibration capacity and a reliable structure, and significantly improves the functions of preventing the low-voltage connector from falling due to vibration and preventing disconnection of the signal lines.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### **[0024]**

Fig. 1 is an exploded view of the low-voltage connector according to an embodiment of the present disclosure;

Fig. 2 is a perspective view of the adaptor according to an embodiment of the present disclosure;

Fig. 3 is a perspective view of the adaptor according to an embodiment of the present disclosure;

Fig. 4 is a front view of the adaptor according to an embodiment of the present disclosure;

Fig. 5 is a rear view of the adaptor according to an embodiment of the present disclosure;

Fig. 6 is a perspective view of the connector main body according to an embodiment of the present disclosure; and

Fig. 7 is a perspective view of the depressor accord-

ing to an embodiment of the present disclosure.

**[0025]** In the drawings: 1. adaptor; 1-1. first connector head; 1-2. steps; 1-3. partition plate; 1-4. pin array; 1-5. matching poles; 1-6. positioning grooves; 1-7. engaging lug; 1-8. second connector head; 1-9. first clipping slots; 1-10. second clipping slots; 1-11. slot; 1-12. clipping hole; 2. connector main body; 2-1. connecting seat; 2-2. clipping holes; 2-3. longitudinal convex strips; 2-4. pressing blocks; 2-5. elastic arms; 2-6. clipping blocks; 2-7. plug holes; 2-8. projection; 2-9. stopping parts; 3. depressor; 3-1. sheet body; 3-2. clipping blocks; and 3-3. stopping part.

#### DETAILED DESCRIPTION

**[0026]** In order to make the objects, the technical solutions and the advantages of the present disclosure clearer, the embodiments of the present disclosure will be described below in further detail in conjunction with the drawings.

The first embodiment

**[0027]** Figs. 1, 2, 3 and 6 show the first embodiment of the present disclosure. In the present embodiment, a low-voltage connector comprises an adaptor 1 and a connector main body 2, the adaptor 1 is provided with a first connector head 1-1 and a second connector head 1-8 respectively at the front end and the rear end, the connector main body 2 is plug-connected to the second connector head 1-8, and the rear end of the connector main body 2 is connected to one or more signal lines. The signal lines may be connected to an electric-motor controller.

**[0028]** The first connector head 1-1 may be a female connector head, which is connected to a male connector head, and the male connector head is in turn connected to a vehicle computer via the signal lines.

**[0029]** As shown in Figs. 3 and 5, the second connector head 1-8 is provided with first clipping slots 1-9 on the left side and the right side, and the connector main body 2 is provided with elastic arms 2-5 on the left side and the right side that are snap-fitted to the first clipping slots 1-9, to prevent the connector main body 2 from disengaging from the second connector head 1-8.

**[0030]** The second connector head 1-8 is provided with second clipping slots 1-10 on the upper side and the lower side, and the connector main body 2 is provided with longitudinal convex strips 2-3 on the upper side and the lower side that are snap-fitted to the second clipping slots 1-10, to prevent the connector main body 2 from shaking in the left-and-right direction in the second connector head 1-8.

**[0031]** Four second clipping slots 1-10 are provided, and correspondingly four longitudinal convex strips 2-3 are provided.

**[0032]** By providing the above snap-fitting structures

having different functions, the connector main body 2, when it is in the second connector head 1-8, does not easily disengage, and does not easily loosen, which obviously enhances the anti-vibration capacity.

**[0033]** In order to realize blind insertion, and prevent erroneous connection between the connector main body 2 and the adaptor 1, the second connector head 1-8 is provided with one slot 1-11 on the inner wall on one side in the length direction, and the connector main body 2 is correspondingly provided with one projection 2-8 on the outer wall in the length direction. The projection 2-8 and the slot 1-11 form a fool proofing structure, and after the projection 2-8 and the slot 1-11 have been matched the connector main body 2 is capable of being plug-connected to the second connector head 1-8.

**[0034]** If the orientation of the connector main body 2 is reversed, the connector main body 2 cannot be inserted into the second connector head 1-8, which prevents the possibility of wiring errors.

**[0035]** In order to realize the fixing of the adaptor 1, the adaptor 1 is provided with an engaging lug 1-7 that protrudes outwardly on the left side or the right side, the engaging lug 1-7 is provided with a connecting hole, and the adaptor 1 is fixed to the housing of another component via the engaging lug 1-7. For example, it may be fixed to the housing of an electric-motor controller, or fixed to the housing of a vehicle computer. Such fixing of the adaptor 1 further improves the stability of the circuit. The one-sided providing of the engaging lug 1-7 is also in order to prevent the reverse connection between the first connector head 1-1 and another connector head (for example, the male connector head), and is also a fool proofing structure.

**[0036]** As shown in Figs. 1 and 4, the first connector head 1-1 is provided with a plurality of matching poles 1-5 on the outer wall in the length direction. The matching poles 1-5 are for realizing matching when being plug-connected to another connector head (for example, the male connector head), and may further prevent loosening and disengaging. Preferably, the first connector head 1-1 is provided with four matching poles 1-5 on the outer wall.

**[0037]** The four matching poles 1-5 are not centering on the outer wall of the first connector head 1-1, but are proximal to the side where the engaging lug 1-7 is located. Such a structure can prevent reverse connection between the first connector head 1-1 and another connector head (for example, the male connector head), and is also a fool proofing structure.

**[0038]** As shown in Figs. 2 and 4, steps 1-2 are provided inside the first connector head 1-1 to gradually reduce internal dimensions. The steps 1-2 can realize guiding for plug connection, to facilitate the plug connection between the first connector head 1-1 and another connector head (for example, the male connector head).

**[0039]** As shown in Figs. 1 and 3, a plurality of circumferential positioning grooves 1-6 are provided on a periphery of the second connector head 1-8, and sealing rings are provided in the positioning grooves 1-6. The

sealing rings can serve to seal and resist moisture. When the housing of an electric-motor controller is provided with a wiring hole, the second connector head 1-8 may block the wiring hole, in which case the sealing rings serve to seal the gap between the second connector head 1-8 and the wiring hole.

**[0040]** As shown in Figs. 1 and 6, the elastic arms 2-5 of the connector main body 2 are provided with clipping blocks 2-6 that protrude laterally, the second connector head 1-8 is correspondingly provided with clipping holes 1-12 on the sidewalls in the width direction, and after the connector main body 2 has been plug-connected to the second connector head 1-8, the clipping blocks 2-6 are snap-fitted to the clipping holes 1-12. Such a snap-fitting structure can further prevent the connector main body 2 from disengaging from the second connector head 1-8.

**[0041]** The connector main body 2 is provided with stopping parts 2-9 at the rear end for limiting the insertion depth of the connector main body 2 into the second connector head 1-8, and the stopping parts 2-9 are provided with clearances for the elastic arms 2-5.

**[0042]** As shown in Figs. 2 and 6, a partition plate 1-3 is provided between the first connector head 1-1 and the second connector head 1-8, the partition plate 1-3 is provided with a pin array 1-4 that extend in a front-and-rear direction, a plurality of plug holes 2-7 are provided inside the connector main body 2, and after the connector main body 2 has been plug-connected to the second connector head 1-8, the front ends of the plug holes 2-7 are connected to the pin array 1-4, and the rear ends of the plug holes 2-7 are connected to the terminals of the signal lines, to realize the electrical connection inside the plug holes 2-7 between the pin array 1-4 and the signal lines.

**[0043]** The connector main body 2 has totally two lines of the plug holes 2-7, which are arranged vertically, and can be used for the access of a plurality of leads.

**[0044]** In order to fix the terminals of the signal lines in the plug holes 2-7, as shown in Figs. 1 and 6, the connector main body 2 is provided with pressing blocks 2-4 on the outer wall in the length direction that correspond to the plug holes 2-7, and the pressing blocks 2-4 press the terminals of the signal lines inside the plug holes 2-7.

**[0045]** The low-voltage connector according to the present embodiment, by providing the snap-fitting structures having the different functions, has a good anti-vibration capacity and a reliable structure, and significantly improves the functions of preventing the low-voltage connector from falling due to vibration and preventing disconnection of the signal lines.

The second embodiment

**[0046]** The present embodiment differs from the first embodiment in that, as shown in Figs. 1 and 7, the low-voltage connector further comprises a depressor 3, and the depressor 3 is inserted into the rear end of the connector main body 2, to depress and lock the signal lines into the rear ends of the plug holes 2-7.

**[0047]** The depressor 3 comprises a sheet body 3-1, the sheet body is provided with clipping blocks 3-2 on one side, the connector main body 2 is correspondingly provided with clipping holes 2-2 on the outer wall in the length direction, and when the depressor 3 is inserted into the rear end of the connector main body 2, the clipping blocks 3-2 are snap-fitted to the clipping holes 2-2 on the connector main body 2.

**[0048]** The sheet body 3-1 is provided with a stopping part 3-3 at the rear end for limiting the insertion depth of the depressor 3 into the connector main body 2.

**[0049]** The depressor 3 can further prevent the terminals of the signal lines from disengaging from the connector main body 2.

**[0050]** The other structures of the low-voltage connector of the present embodiment are the same as those of the first embodiment, and are not described repeatedly here.

**[0051]** The above descriptions are merely preferable embodiments of the present disclosure, and are not limiting the protection scope of the present disclosure.

## Claims

1. A low-voltage connector, comprising an adaptor (1) and a connector main body (2), the adaptor (1) is provided with a first connector head (1-1) and a

second connector head (1-8) respectively at a front end and a rear end, the connector main body (2) is plug-connected to the second connector head (1-8), and a rear end of the connector main body (2) is adapted to be connected to one or more signal lines;

the second connector head (1-8) is provided with first clipping slots (1-9) on a left side and a right side, and the connector main body (2) is provided with elastic arms (2-5) on a left side and a right side that are snap-fitted to the first clipping slots (1-9), to prevent the connector main body (2) from disengaging from the second connector head (1-8); and

the second connector head (1-8) is provided with second clipping slots (1-10) on an upper side and a lower side, and the connector main body (2) is provided with longitudinal convex strips (2-3) on an upper side and a lower side that are snap-fitted to the second clipping slots (1-10), to prevent the connector main body (2) from shaking in a left-and-right direction in the second connector head (1-8),

wherein

the adaptor (1) is provided with an engaging lug (1-7) that protrudes outwardly on a left side or a right side, the engaging lug is provided with a connecting hole, and the adaptor (1) is adapted to be fixed to a housing of another component

via the engaging lug,

the first connector head (1-1) is provided with a plurality of matching poles (1-5) on an outer wall in a length direction; and steps are provided inside the first connector head (1-1) to gradually reduce internal dimensions,

the matching poles (1-5) are not centered on the outer wall of the first connector head (1-1), but are proximal to the side where the engaging lug (1-7) is located.

2. The low-voltage connector according to claim 1, **characterized in that:** the second connector head (1-8) is provided with one slot on an inner wall on one side in a length direction, the connector main body (2) is correspondingly provided with one projection (2-8) on an outer wall in a length direction, the projection (2-8) and the slot form a fool proofing structure, and after the projection (2-8) and the slot have been matched the connector main body (2) is capable of being plug-connected to the second connector head (1-8).

3. The low-voltage connector according to claim 1, **characterized in that:** a plurality of circumferential positioning grooves (1-6) are provided on a periphery of the second connector head (1-8), and sealing rings are provided in the positioning grooves (1-6).

4. The low-voltage connector according to claim 1, **characterized in that:** the elastic arms (2-5) are provided with clipping blocks (2-6) that protrude laterally, the second connector head (1-8) is correspondingly provided with clipping holes (1-12) on sidewalls in a width direction, and after the connector main body (2) has been plug-connected to the second connector head (1-8), the clipping blocks (2-6) are snap-fitted to the clipping holes (1-12); and the connector main body (2) is provided with stopping parts (2-9) at the rear end for limiting an insertion depth of the connector main body (2) into the second connector head (1-8), and the stopping parts (2-9) are provided with clearances for the elastic arms (2-5).

5. The low-voltage connector according to claim 1, **characterized in that:** a partition plate (1-3) is provided between the first connector head (1-1) and the second connector head (1-8), the partition plate (1-3) is provided with a pin array (1-4) that extend in a front-and-rear direction, a plurality of plug holes (2-7) are provided inside the connector main body (2), and after the connector main body (2) has been plug-connected to the second connector head (1-8), front ends of the plug holes (2-7) are connected to the pin array (1-4), and rear ends of the plug holes (2-7) are connected to terminals of the signal lines, to realize electrical connection inside the plug holes (2-7) be-

tween the pin array (1-4) and the signal lines.

6. The low-voltage connector according to claim 1, **characterized in that:** the connector main body (2) is provided with pressing blocks (2-4) on an outer wall in a length direction that correspond to the plug holes (2-7), and the pressing blocks (2-4) press the terminals of the signal lines inside the plug holes (2-7).
7. The low-voltage connector according to claim 6, **characterized in that:** the low-voltage connector further comprises a depressor (3), and the depressor (3) is inserted into the rear end of the connector main body (2), to depress and lock the signal lines into rear ends of the plug holes (2-7).
8. The low-voltage connector according to claim 7, **characterized in that:** the depressor (3) comprises a sheet body (3-1), the sheet body (3-1) is provided with a clipping block (2-6) on one side, the connector main body (2) is correspondingly provided with a clipping hole (2-2) on an outer wall in the length direction, and when the depressor (3) is inserted into the rear end of the connector main body (2), the clipping block is snap-fitted to the clipping hole (2-2) on the connector main body (2); and the sheet body (3-1) is provided with a stopping part (2-9) at a rear end for limiting an insertion depth of the depressor (3) into the connector main body (2).

### Patentansprüche

1. Niederspannungsverbinder, umfassend einen Adapter (1) und einen Verbinderhauptkörper (2), wobei der Adapter (1) mit einem ersten Verbinderkopf (1-1) und einem zweiten Verbinderkopf (1-8) jeweils an einem vorderen Ende und einem hinteren Ende versehen ist, wobei der Verbinderhauptkörper (2) ist mit dem zweiten Verbinderkopf (1-8) steckverbunden und ein hinteres Ende des Verbinderhauptkörpers (2) ist geeignet, mit einer oder mehreren Signalleitungen verbunden zu werden; der zweite Verbinderkopf (1-8) mit ersten Klemmschlitz (1-9) auf einer linken Seite und einer rechten Seite versehen ist, und der Verbinderhauptkörper (2) mit elastischen Armen (2-5) auf einer linken Seite und einer rechten Seite versehen ist, die in die ersten Klemmschlitz (1-9) eingerastet sind, um zu verhindern, dass sich der Verbinderhauptkörper (2) von dem zweiten Verbinderkopf (1-8) löst; und der zweite Verbinderkopf (1-8) mit zweiten

Klemmschlitz (1-10) auf einer oberen Seite und einer unteren Seite versehen ist, und der Verbinderhauptkörper (2) mit länglichen konvexen Streifen (2-3) auf einer oberen Seite und einer unteren Seite versehen ist, die in die zweiten Klemmschlitz (1-10) eingerastet sind, um zu verhindern, dass der Verbinderhauptkörper (2) im zweiten Verbinderkopf (1-8) nach links und rechts wackelt, wobei der Adapter (1) mit einer Eingriffsflasche (1-7) versehen ist, die auf einer linken Seite oder einer rechten Seite nach außen vorsteht, die Eingriffsflasche mit einem Verbindungsloch versehen ist und der Adapter (1) geeignet ist, über die Eingriffsflasche an einem Gehäuse einer anderen Komponente befestigt zu werden, der erste Verbinderkopf (1-1) mit einer Vielzahl von passenden Polen (1-5) an einer Außenwand in einer Längsrichtung versehen ist; und im Inneren des ersten Verbinderkopfes (1-1) Stufen vorgesehen sind, um die inneren Abmessungen allmählich zu verringern, die passenden Pole (1-5) nicht auf der Außenwand des ersten Verbinderkopfes (1-1) zentriert sind, sondern sich in der Nähe der Seite befinden, an der sich die Eingriffsflasche (1-7) befindet.

2. Der Niederspannungsverbinder nach Anspruch 1, **dadurch gekennzeichnet, dass:** der zweite Verbinderkopf (1-8) mit einem Schlitz an einer Innenwand auf einer Seite in einer Längsrichtung versehen ist, der Verbinderhauptkörper (2) entsprechend mit einem Vorsprung (2-8) an einer Außenwand in einer Längsrichtung versehen ist, der Vorsprung (2-8) und der Schlitz eine narrensichere Struktur bilden, und nachdem der Vorsprung (2-8) und der Schlitz zusammengesetzt worden sind, der Verbinderhauptkörper (2) mit dem zweiten Verbinderkopf (1-8) zusammengesteckt werden kann.
3. Der Niederspannungsverbinder nach Anspruch 1, **dadurch gekennzeichnet, dass:** eine Vielzahl von umlaufenden Positionierungsnuten (1-6) an einem Umfang des zweiten Verbinderkopfes (1-8) vorgesehen sind, und Dichtungsringe in den Positionierungsnuten (1-6) vorgesehen sind.
4. Der Niederspannungsverbinder nach Anspruch 1, **dadurch gekennzeichnet, dass:** die elastischen Arme (2-5) mit seitlich vorstehenden Klippblöcken (2-6) versehen sind, der zweite Verbinderkopf (1-8) entsprechend mit Klipplöchern (1-12) an Seitenwänden in einer Breitenrichtung versehen ist und nach dem Einstecken des Verbinderhauptkörpers (2) in den zweiten Verbinderkopf (1-8) die Klippblöcke (2-6) in die Klipplöcher (1-12) eingerastet sind; und

der Verbinderhauptkörper (2) mit Anschlagteilen (2-9) am hinteren Ende versehen ist, um eine Einstecktiefe des Verbinderhauptkörpers (2) in den zweiten Verbinderkopf (1-8) zu begrenzen, und die Anschlagteile (2-9) mit Freiräumen für die elastischen Arme (2-5) versehen sind.

5. Der Niederspannungsverbinder nach Anspruch 1, **dadurch gekennzeichnet, dass:** eine Trennplatte (1-3) zwischen dem ersten Verbinderkopf (1-1) und dem zweiten Verbinderkopf (1-8) vorgesehen ist, die Trennplatte (1-3) mit einer Anordnung von Stiften (1-4) versehen ist, die sich in einer vorderen und hinteren Richtung erstrecken, eine Vielzahl von Stecklöchern (2-7) innerhalb des Verbinderhauptkörpers (2) vorgesehen ist, und nachdem der Verbinderhauptkörper (2) mit dem zweiten Verbinderkopf (1-8) steckverbunden worden ist, sind die vorderen Enden der Steckerlöcher (2-7) mit der Stifftanordnung (1-4) verbunden, und die hinteren Enden der Steckerlöcher (2-7) sind mit den Anschlüssen der Signalleitungen verbunden, um eine elektrische Verbindung innerhalb der Steckerlöcher (2-7) zwischen der Stifftanordnung (1-4) und den Signalleitungen zu realisieren.
6. Der Niederspannungsverbinder nach Anspruch 1, **dadurch gekennzeichnet, dass:** der Verbinderhauptkörper (2) mit Pressblöcken (2-4) an einer Außenwand in einer Längsrichtung versehen ist, die den Stecklöchern (2-7) entsprechen, und die Pressblöcke (2-4) die Anschlüsse der Signalleitungen innerhalb der Stecklöcher (2-7) drücken.
7. Der Niederspannungsverbinder nach Anspruch 6, **dadurch gekennzeichnet, dass:** der Niederspannungsverbinder ferner einen Niederdrücker (3) umfasst und der Niederdrücker (3) in das hintere Ende des Verbinderhauptkörpers (2) eingeführt wird, um die Signalleitungen in die hinteren Enden der Stecklöcher (2-7) zu drücken und zu verriegeln.
8. Der Niederspannungsverbinder nach Anspruch 7, **dadurch gekennzeichnet, dass:** der Niederdrücker (3) einen Blechkörper (3-1) umfasst, der Blechkörper (3-1) auf einer Seite mit einem Klippblock (2-6) versehen ist, der Verbinderhauptkörper (2) entsprechend mit einem Klipploch (2-2) auf einer Außenwand in der Längsrichtung versehen ist, und wenn der Niederdrücker (3) in das hintere Ende des Verbinderhauptkörpers (2) eingeführt wird, der Klippblock in das Klipploch (2-2) auf dem Verbinderhauptkörper (2) eingerastet wird; und der Blechkörper (3-1) mit einem Anschlagteil (2-9) an einem hinteren Ende versehen ist, um eine Einführtiefe des Niederdrückers (3) in den Verbinderhauptkörper (2) zu begrenzen.

## Revendications

1. Un connecteur basse tension, comprenant un adaptateur (1) et un corps principal de connecteur (2), l'adaptateur (1) est pourvu d'une première tête de connecteur (1-1) et une seconde tête de connecteur (1-8) respectivement à une extrémité avant et à une extrémité arrière, le corps principal de connecteur (2) est connecté par fiche à la seconde tête de connecteur (1-8), et une extrémité arrière du corps principal de connecteur (2) est adaptée pour être

connectée à une ou plusieurs lignes de signal ; la seconde tête de connecteur (1-8) est pourvue de premières fentes de clipsage (1-9) sur un côté gauche et un côté droit, et le corps principal de connecteur (2) est pourvu de bras élastiques (2-5) sur un côté gauche et un côté droit qui sont encliquetés aux premières fentes de clipsage (1-9), afin d'empêcher le corps principal de connecteur (2) de se désengager de la seconde tête de connecteur (1-8) ;

et

la seconde tête de connecteur (1-8) est pourvue de secondes fentes de clipsage (1-10) sur un côté supérieur et un côté inférieur, et le corps principal de connecteur (2) est pourvu de bandes convexes longitudinales (2-3) sur un côté supérieur et un côté inférieur qui sont encliquetées sur les secondes fentes de clipsage (1-10), afin d'empêcher le corps principal de connecteur (2) de vaciller dans une direction gauchedroite dans la seconde tête de connecteur (1-8), dans lequel

l'adaptateur (1) est pourvu d'une patte d'engagement (1-7) qui fait saillie vers l'extérieur sur un côté gauche ou un côté droit, la patte d'engagement est pourvue d'un trou de connexion, et l'adaptateur (1) est adapté pour être

fixé à un boîtier d'un autre composant par l'intermédiaire de la patte d'engagement, la première tête de connecteur (1-1) est pourvue d'une pluralité de pôles correspondants (1-5) sur une paroi extérieure dans la direction de la longueur ; et des marches sont prévues à l'intérieur de la première tête de connecteur (1-1) pour réduire progressivement les dimensions internes,

les pôles correspondants (1-5) ne sont pas centrés sur la paroi extérieure de la première tête de connecteur (1-1), mais sont proches du côté où se trouve la patte d'engagement (1-7).

2. Le connecteur basse tension selon la revendication 1, **caractérisé en ce que :** la seconde tête de connecteur (1-8) est pourvue d'une fente sur une paroi interne d'un côté dans une direction de longueur, le corps principal de connecteur (2) est pourvu de ma-

- nière correspondante avec une saillie (2-8) sur une paroi externe dans une direction de longueur, la saillie (2-8) et la fente forment une structure infaillible, et après que la saillie (2-8) et la fente ont été mises en correspondance, le corps principal de connecteur (2) peut être connecté par fiche à la seconde tête de connecteur (1-8).
3. Le connecteur basse tension selon la revendication 1, **caractérisé en ce que** : une pluralité de rainures de positionnement circonférentielles (1-6) sont prévues sur une périphérie de la seconde tête de connecteur (1-8), et des bagues d'étanchéité sont prévues dans les rainures de positionnement (1-6).
4. Le connecteur basse tension selon la revendication 1, **caractérisé en ce que** : les bras élastiques (2-5) sont pourvus de blocs de clipsage (2-6) qui font saillie latéralement, la seconde tête de connecteur (1-8) est pourvue de façon correspondante de trous de clipsage (1-12) sur les parois latérales dans une direction de largeur, et après que le corps principal de connecteur (2) a été connecté par fiche à la seconde tête de connecteur (1-8), les blocs de clipsage (2-6) sont encliquetés dans les trous de clipsage (1-12) ; et le corps principal de connecteur (2) est pourvu de pièces d'arrêt (2-9) à l'extrémité arrière pour limiter la profondeur d'insertion du corps principal de connecteur (2) dans la seconde tête de connecteur (1-8), et les pièces d'arrêt (2-9) sont pourvues d'espaces libres pour les bras élastiques (2-5).
5. Le connecteur basse tension selon la revendication 1, **caractérisé en ce que** : une plaque de séparation (1-3) est prévue entre la première tête de connecteur (1-1) et la seconde tête de connecteur (1-8), la plaque de séparation (1-3) est pourvue d'un réseau de broches (1-4) qui s'étendent dans une direction avant et arrière, une pluralité de trous de fiche (2-7) sont prévus à l'intérieur du corps principal du connecteur (2), et après que le corps principal de connecteur (2) a été connecté à la seconde tête de connecteur (1-8), les extrémités avant des trous de fiche (2-7) sont connectées au réseau de broches (1-4), et les extrémités arrière des trous de fiche (2-7) sont connectées aux bornes des lignes de signal, afin de réaliser une connexion électrique à l'intérieur des trous de fiche (2-7) entre le réseau de broches (1-4) et les lignes de signal.
6. Le connecteur basse tension selon la revendication 1, **caractérisé en ce que** : le corps principal de connecteur (2) est pourvu de blocs de pression (2-4) sur une paroi externe dans une direction de longueur qui correspondent aux trous de fiche (2-7), et les blocs de pression (2-4) pressent les bornes des lignes de signal à l'intérieur des trous de fiche (2-7).
7. Le connecteur basse tension selon la revendication 6, **caractérisé en ce que** : le connecteur basse tension comprend en outre un enfonceur (3), et l'enfonceur (3) est inséré dans l'extrémité arrière du corps principal de connecteur (2), pour enfoncer et verrouiller les lignes de signal dans les extrémités arrière des trous de fiche (2-7).
8. Le connecteur basse tension selon la revendication 7, **caractérisé en ce que** :
- L'enfonceur (3) comprend un corps en feuille (3-1), le corps en feuille (3-1) est pourvu d'un bloc de clipsage (2-6) sur un côté, le corps principal de connecteur (2) est pourvu de manière correspondante d'un trou de clipsage (2-2) sur une paroi externe dans la direction de longueur, et lorsque l'enfonceur (3) est inséré dans l'extrémité arrière du corps principal de connecteur (2), le bloc de clipsage est encliqueté dans le trou de clipsage (2-2) sur le corps principal de connecteur (2) ; et le corps en feuille (3-1) est pourvu d'une pièce d'arrêt (2-9) à une extrémité arrière pour limiter la profondeur d'insertion de l'enfonceur (3) dans le corps principal de connecteur (2).

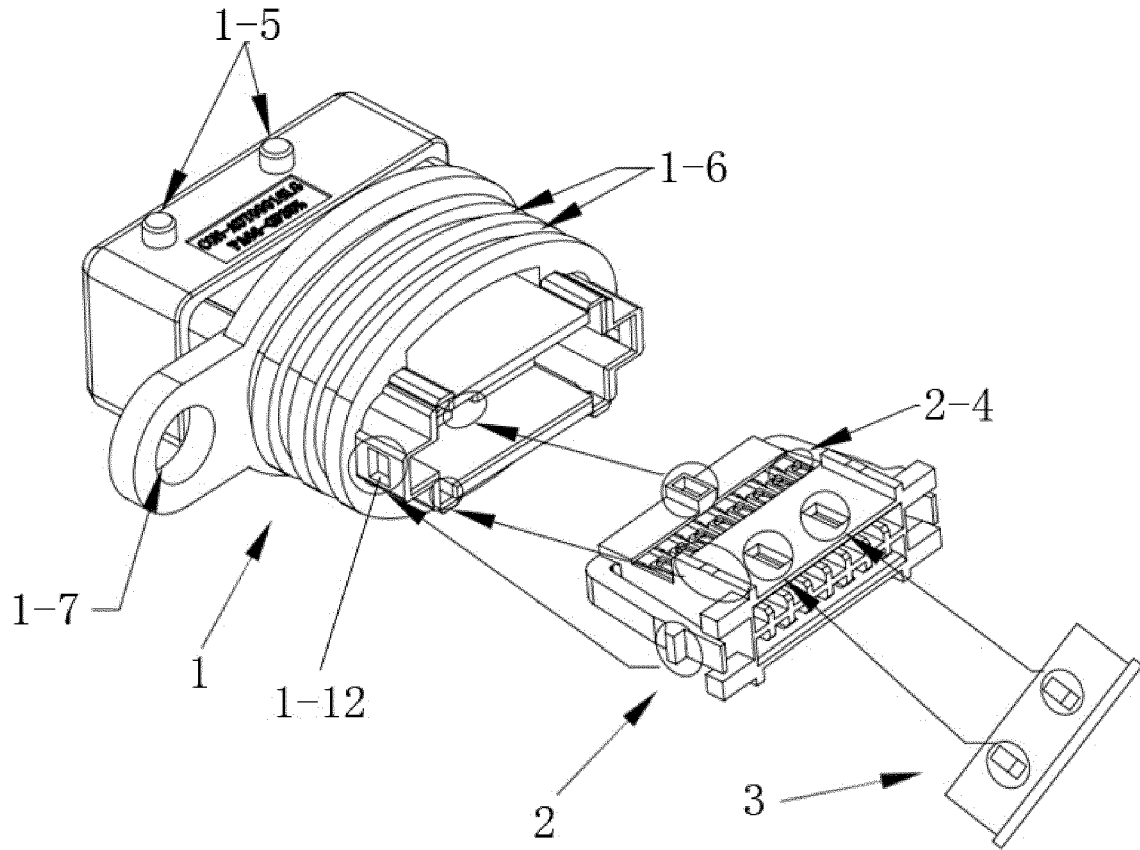


FIG.1

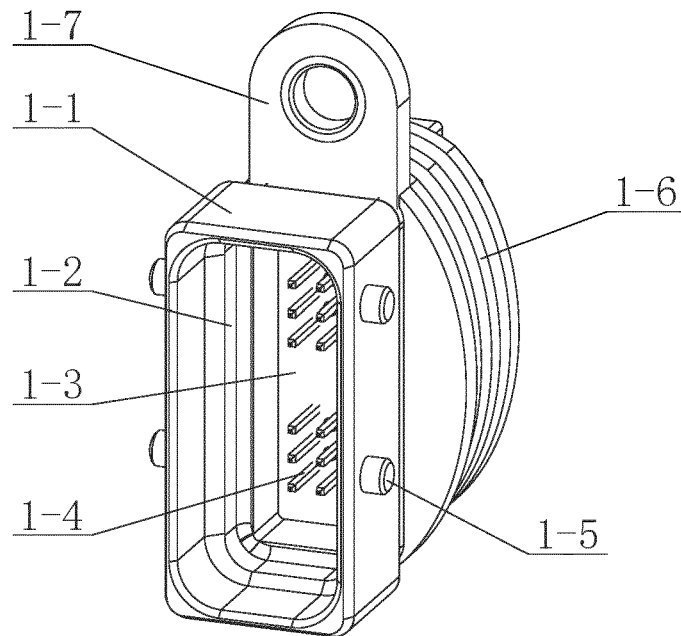
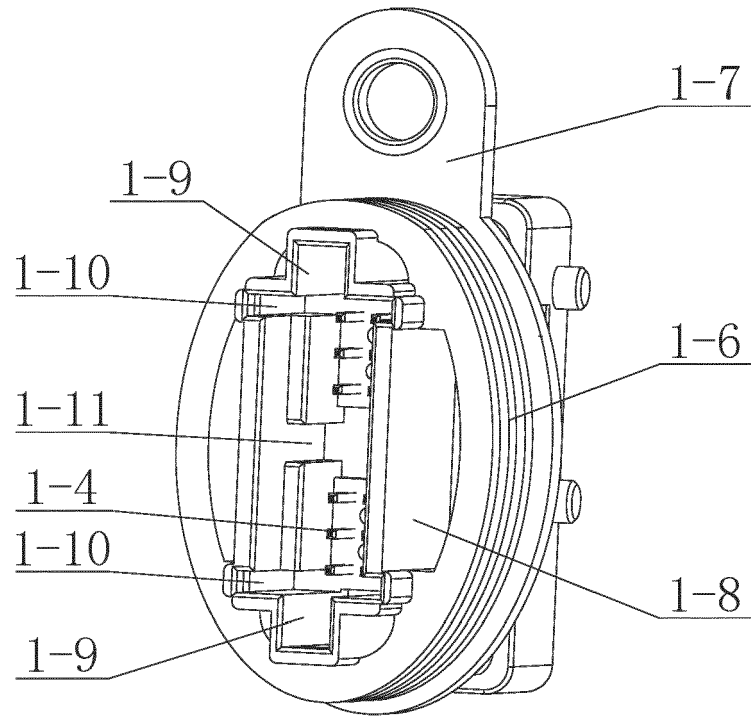
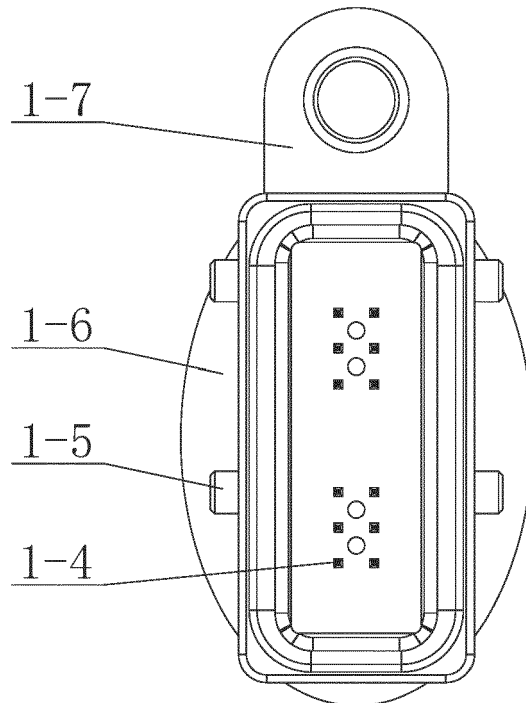


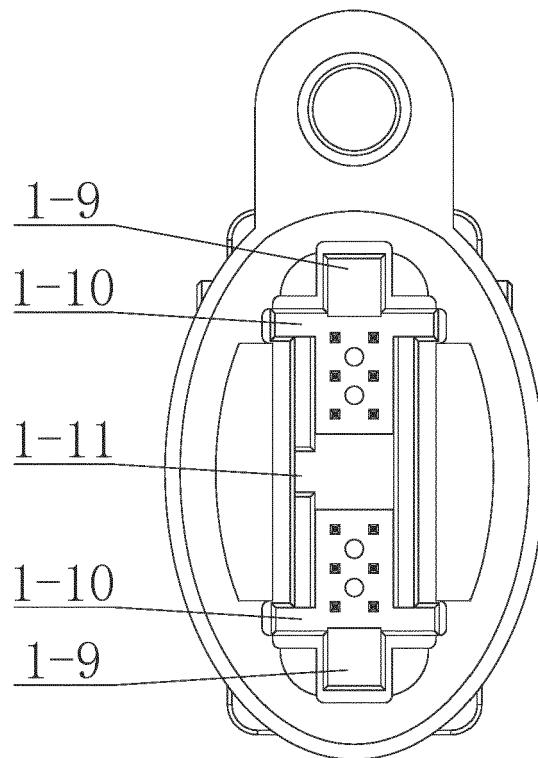
FIG.2



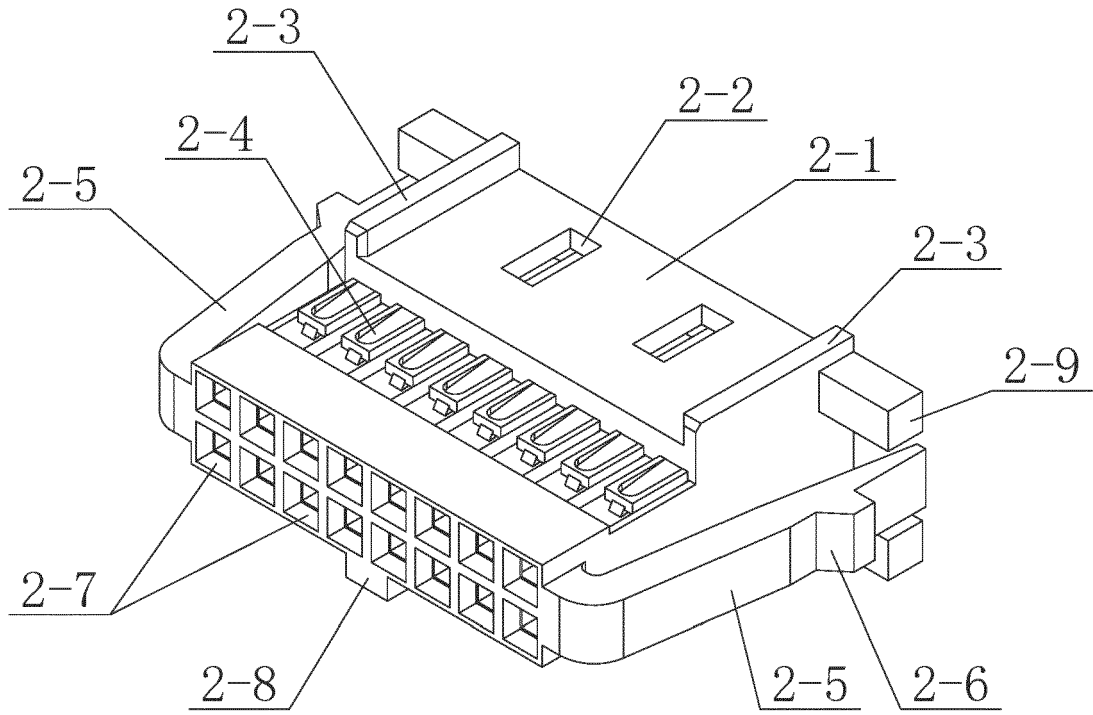
**FIG.3**



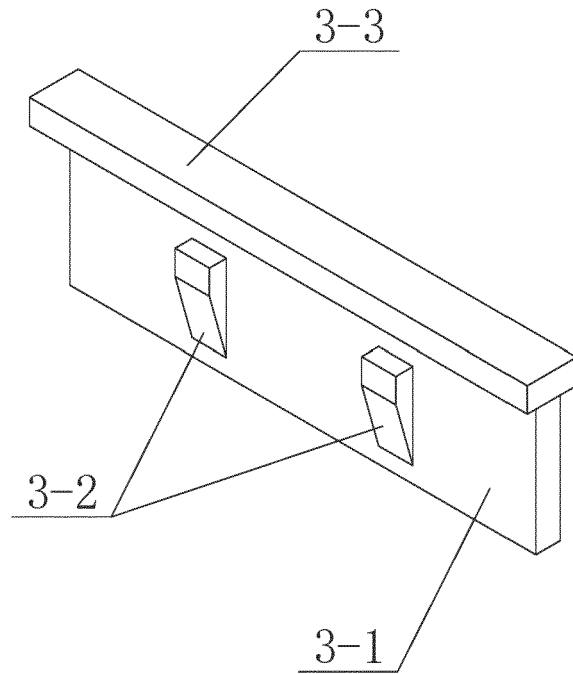
**FIG.4**



**FIG.5**



**FIG.6**



**FIG.7**

**REFERENCES CITED IN THE DESCRIPTION**

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