

Title (en)  
Connecting structure for relay terminal

Title (de)  
Connecting structure for relay terminal

Title (fr)  
Structure de connexion pour une borne de relais

Publication  
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Application  
**EP 11005945 A 20110720**

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Abstract (en)

The connecting structure for a relay terminal (10), is claimed. The relay terminal: is made of an enameled wire; is adapted to electrically connect a first device side terminal (51) provided on a first device (50) and a second device side terminal provided on a second device; and comprises a first connecting portion (11) connected to the first device side terminal, a second connecting portion (12) connected to the second device side terminal and a vibration absorbing portion (13) electrically conductively connecting the first and second connecting portions and having a wound configuration. The connecting structure for a relay terminal (10), is claimed. The relay terminal: is made of an enameled wire; is adapted to electrically connect a first device side terminal (51) provided on a first device (50) and a second device side terminal provided on a second device; and comprises a first connecting portion (11) connected to the first device side terminal, a second connecting portion (12) connected to the second device side terminal and a vibration absorbing portion (13) electrically conductively connecting the first and second connecting portions and having a wound configuration. The vibration absorbing portion: is spirally wound about a line connecting the first and second connecting portions as an axial center; comprises a coil spring extending in a direction of the axial center of the vibration absorbing portion; is arranged near a side surface of a terminal block; and is partly covered by a protection cover. The relay terminals are provided and arranged so that the positions of the axial centers of the respective vibration absorbing portions are aligned. The enamel wires are arranged at intervals in a circumferential direction about the axial centers of the vibration absorbing portion. The coil springs: are placed in a cross section of the vibration absorbing portion perpendicular to a direction of the axial centers; are spirally wound together with the positions of axial centers of vibration absorbing portion aligned to have a plural spiral structure; and have a same diameter. The first device is a three-phase motor fixed to an engine. The first device side terminal comprises three motor side terminals provided on the three-phase motor. The second device is an inverter. The second device side terminal comprises three inverter side terminals provided on the inverter. The corresponding pairs of the three motor side terminals and the three inverter side terminals are individually connected by three relay terminals. The first connecting portion to be fastened is fixed to the first device side terminal and to a portion of a terminal block by partly inserting a fastening bolt through a bolt insertion hole of the first device side terminal and the inside of the first connecting portion and tightening the fastening bolt to the terminal block. The second connecting portion to be fastened is fixed to the second device side terminal and to a portion of the terminal block by partly inserting a fastening bolt through a bolt insertion hole of the second device side terminal and an inside of the second connecting portion and tightening the fastening bolt to the terminal block. The first connecting portion includes a first relay wire, which is bent at an angle of 0 or 180[deg] perpendicularly or upward after extending straight up to a side surface of a terminal block. The second connecting portion includes a second side relay wire, which is bent at an angle of 0 or 180[deg] perpendicularly or downward after extending straight up to the side surface of the terminal block. The protection cover is mounted to a terminal block by tapping screws that are partly inserted through respective mounting pieces. A slit is formed in the protection cover through which the respective first relay wire extending from the first connecting portion is to be inserted into the protection cover, and is dimensioned so that small clearances are formed between the first relay wire and an edge portion of the slit in a state, where the first relay wire extending from the first connecting portion are inserted.

Abstract (de)

An object of the present invention is to suppress damage of a relay terminal due to metal fatigue by absorbing vibrations transmitted from devices. A connecting structure for relay terminals 10 made of enameled wires and adapted to electrically connect motor side terminals 51 provided on a motor 50 and inverter side terminals 61 provided on an inverter 60 includes motor side annular connecting portions 11 to be connected to the motor side terminals 51, inverter side annular connecting portions 12 to be connected to the inverter side terminals 61 and coil springs 13 spirally wound and electrically conductively connecting the motor side annular connecting portions 11 and the inverter side annular connecting portions 12.

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JP 2004215355 A 20040729 - AISIN AW CO

Citation (search report)  
• [XA] US 2006132268 A1 20060622 - HIRABAYASHI TAKASHI [JP]  
• [A] JP 2007066807 A 20070315 - OMRON TATEISI ELECTRONICS CO

Cited by  
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