integrated circuits. These components can be accommodated outside a sleeve, but being exposed outside the sleeve, these components may be damaged, affected by environmental conditions, experience short circuit, or may cause a risk of personal injury by an electrical shock. It would thus be desirable to arrange electric components in a manner that avoids these risks. It is further desirable to arrange the electric components in a mechanically stable and orderly manner, close to each other for facilitating electrical connections between them. The sleeve, that is to protect the cable in the section where a voltage sensor is installed, should furthermore be easy to apply to the cable.

Summary

The invention provides, in a first aspect, a sleeve for a high- or medium-voltage power cable, the cable comprising an inner conductor defining axial and radial directions, wherein the sleeve comprises a tubular sleeve body having a first axial electrode section, which section is electrically conductive or semiconductive, characterized in that the sleeve is radially expandable and arrangeable radially outward of the inner conductor when expanded, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer, and in that the sleeve further comprises a circuit board, at least partially arranged radially outward of the sleeve body, comprising a first electrical contact which is electrically connected with the first axial electrode section. The sleeve further comprises an expandable, electrically non-conductive jacket, at least partially arranged radially outward of the sleeve body, and at least partially arranged radially outward of the circuit board.

In a second aspect, the invention provides a sleeve for a high- or medium-voltage power cable, the cable comprising an inner conductor defining axial and radial directions, wherein the sleeve comprises a tubular sleeve body having a first axial electrode section, which section is electrically conductive or semiconductive, characterized in that the sleeve is radially shrinkable into a position radially outward of the inner conductor when shrunk, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer, and in that the sleeve further comprises a circuit board, at least partially arranged radially outward of the sleeve body, comprising a first electrical contact which is electrically connected with the first axial electrode section. The sleeve further comprises a shrinkable, electrically non-conductive jacket, at least partially arranged radially outward of the sleeve body, and at least partially arranged radially outward of the circuit board.

The word "sleeve" implies an arrangement around a cable or elements of a cable. The sleeve according to the disclosure comprises a body and a circuit board. It may further comprise an electrically non-conductive jacket, arranged radially outward of the sleeve body, and at least a part of which is arranged over the circuit board. The circuit board is thereby arranged between the sleeve body and the jacket, i.e. in the sleeve, at least partially. In other words, it is

Claims

1. Sleeve for a high- or medium-voltage power cable, the cable comprising an inner conductor defining axial and radial directions,
wherein the sleeve comprises
- a tubular sleeve body having a first axial electrode section, which section is electrically conductive or semiconductive,
wherein the sleeve is radially expandable and arrangeable radially outward of the inner conductor when expanded, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer,
~~and~~ wherein the sleeve further comprises a circuit board, at least partially arranged radially outward of the sleeve body, comprising a first electrical contact which is electrically connected with the first axial electrode section, and
wherein the sleeve further comprises an expandable, electrically non-conductive jacket, at least partially arranged radially outward of the sleeve body, and at least partially arranged radially outward of the circuit board.

2. Sleeve for a high- or medium-voltage power cable, the cable comprising an inner conductor defining axial and radial directions,
wherein the sleeve comprises
- a tubular sleeve body having a first axial electrode section, which section is electrically conductive or semiconductive,
wherein the sleeve is radially shrinkable into a position radially outward of the inner conductor when shrunk, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer,
~~and~~ wherein the sleeve further comprises a circuit board, at least partially arranged radially outward of the sleeve body, comprising a first electrical contact which is electrically connected with the first axial electrode section, and
wherein the sleeve further comprises a shrinkable, electrically non-conductive jacket, at least partially arranged radially outward of the sleeve body, and at least partially arranged radially outward of the circuit board.

~~3. Sleeve according to claim 1 or claim 2, further comprising an electrically non-conductive jacket, at least partially arranged radially outward of the sleeve body, and at least partially arranged radially outward of the circuit board.~~

~~4.~~3. Sleeve according to any one of claims 1 to ~~3~~2, wherein the first axial electrode section is operable to form an electrode of a sensing capacitor of a voltage sensor for sensing a voltage of the inner conductor of the power cable.

5.4. Sleeve according to any one of claims 1 to 43, wherein the circuit board comprises a first major surface and a second major surface, and wherein the first electrical contact is arranged on the first major surface and comprises a conductive region, arranged on the first major surface, wherein the conductive region provides an extended contact area and is in mechanical and electrical contact with the first axial electrode section.

6.5. Sleeve according to any one of claims 3 1 to 54, wherein the circuit board comprises an extension section, which extends, in an axial direction, further than the jacket, so that a portion of the extension section is externally accessible.

7.6. Sleeve according to any one of the preceding claims, wherein the sleeve body comprises a second axial electrode section, which is coaxially aligned with the first axial electrode section, and which is electrically conductive or semiconductive, wherein the first axial electrode section and the second axial electrode section are separated by a first axial separation section which is electrically non-conductive.

8.7. Sleeve according to claim 76, wherein the circuit board comprises a first major surface and a second major surface and a second electrical contact, and wherein the first electrical contact and the second electrical contact are arranged on the first major surface, wherein the first electrical contact comprises a first conductive region providing an extended contact area, wherein the second electrical contact comprises a second conductive region providing an extended contact area, and wherein the first conductive region is in mechanical and electrical contact with the first axial electrode section, and wherein the second conductive region is in mechanical and electrical contact with the second axial electrode section.

9.8. Sleeve according to claim 7 6 or claim 87, wherein the sleeve body comprises a third axial electrode section, which is coaxially aligned with the first axial electrode section and the second axial electrode section, and which is electrically conductive or semiconductive, wherein the first axial electrode section and the third axial electrode section are separated by a second axial separation section which is electrically non-conductive.

~~10.~~9. Sleeve according to claim ~~9~~8, wherein the circuit board is operable to provide an electrical contact between the second axial electrode section and the third axial electrode section.

~~11.~~10. Sleeve according to any one of claims ~~3~~1 to ~~10~~9, wherein a first portion of the jacket is arranged on a radially outer surface of the circuit board, and wherein a second portion of the jacket is arranged on a radially outer surface of the sleeve body.

~~12.~~11. Sleeve according to any one of the preceding claims, wherein the spacer layer is comprised in the sleeve.

~~13.~~12. Sleeve according to any one of claims 1 to ~~11~~10, wherein the spacer layer is comprised in the power cable, and wherein the spacer layer comprises at least a portion of an insulator layer of the power cable, the insulator layer being arranged concentrically around the inner conductor of the power cable.

~~14.~~13. Method of providing ~~a~~ an expandable sleeve according to any one of claims 1 and 3 to ~~13~~12, comprising, in this sequence, the steps of:

a) providing an expandable sleeve for a high- or medium-voltage power cable, wherein the sleeve comprises a tubular sleeve body having a first axial electrode section, which section is electrically conductive or semiconductive, wherein the sleeve is radially expandable and arrangeable radially outward of an inner conductor of the cable when expanded, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer;

providing an electrically non-conductive jacket; and

providing a circuit board comprising opposed first and second major surfaces and a first electrical contact, arranged on the first major surface;

b) arranging at least a part of the circuit board radially outward of the sleeve body such that the first electrical contact is electrically connected with the first axial electrode section;

c) arranging at least a part of the jacket radially outward of the circuit board and radially outward of the sleeve body.

~~15.~~14. High- or medium-voltage current-carrying device for a power network, such as a high- or medium-voltage power cable, comprising an inner conductor for carrying the current, further comprising a sleeve according to any one of claims 1 to ~~13~~12, the sleeve being arranged radially outward of the inner conductor, such that the first axial electrode section is radially separated from the inner conductor by at least an electrically insulating spacer layer.

~~16.~~15. Electrical power distribution network, comprising a high- or medium-voltage current-carrying device for a power network, such as a high- or medium-voltage power cable, according to claim ~~15~~14.