~~What is claimed:~~**CLAIMS**

1. A sealed electrical plug, comprising:

two or more pins comprising a live pin including a first plurality of grooves formed around the live pin and a neutral pin including a second plurality of grooves formed around the neutral pin;

a bridge through which the two or more pins extend;

a first temperature sensor for monitoring ~~an internal~~a temperature of the live pin, wherein the first temperature sensor is positioned on the bridge adjacent to the live pin, and a second temperature sensor for monitoring ~~an internal~~a temperature of the neutral pin, wherein the second temperature sensor is positioned on the bridge adjacent to the neutral pin;

a first housing for holding the first temperature sensor in a first position on an inward facing surface of the bridge and configured to receive the live pin;

a second housing for holding the second temperature sensor in a second position on the inward facing surface of the bridge and configured to receive the neutral pin;

a first groove seal formed between the first plurality of grooves and the bridge, and/or between the first plurality of grooves and the first housing,

wherein, for the first groove seal formed between the first plurality of grooves and the bridge, the first groove seal is formed by molding materials of the bridge to fill the first plurality of grooves;

wherein, for the first groove seal formed between the first plurality of grooves and the first housing, the first groove seal is formed by molding materials of the first housing to fill the first plurality of grooves; and

wherein the first groove seal seals a passage between the live pin and the bridge to at least one of air and water;

a second groove seal of the neutral pin formed between the second plurality of grooves and the bridge, and/or between the second plurality of grooves and the second housing,

wherein, for the second groove seal formed between the second plurality of grooves and the bridge, the second groove seal is formed by molding materials of the bridge to fill the second plurality of grooves;

wherein, for the second groove seal formed between the second plurality of grooves and the second housing, the second groove seal is formed by molding materials of the the second housing to fill the second plurality of grooves; and

wherein the second groove seal seals a passage between the neutral pin and the bridge to at least one of air and water;

~~a first seal formed between the first plurality of grooves and the first housing, and a second seal formed between the second plurality of grooves and the second housing, wherein the first seal is formed by molding a material of the bridge to fill the first plurality of grooves, wherein the second seal is formed by molding the material of the bridge to fill the second plurality of grooves, wherein the first seal seals a passage between the live pin and the bridge to at least one of air and water, and the second seal seals a passage between the neutral pin and the bridge to at least one of air and water;~~

a cable including:

a first ~~conductors configured to be~~conductor and first insulation crimped together ~~with the live pin~~to form a first crimped seal at a first crimped portion ~~and~~where the first conductor is connected with the live pin;

a second conductor ~~configured to be~~and second insulation crimped together ~~with the neutral pin~~to form a second crimped seal at a second crimped portion where the second conductor is connected with the neutral pin~~,~~;

a first data cable for conveying data from the first temperature sensor; and

a second data cable for conveying data from the second temperature sensor;

a first ~~complementary~~adhesive seal between the ~~live pin~~first conductor and the ~~bridge~~first insulation formed by ~~a first adhesive tape applied around a circumference of the live pin~~ adhesive at the first crimped portion ~~and a first heat-shrink tubing surrounding the first adhesive tape~~;

~~a second complementary~~ a second adhesive seal between the ~~neutral pin~~second conductor and the ~~bridge~~second insulation formed by ~~a second adhesive tape applied around a circumference of the neutral pin~~ adhesive at the second crimped portion ~~and a second heat-shrink tubing surrounding the second adhesive tape~~;

an inner-mold covering the first and second temperature sensors, the inward facing surface of the bridge and the first and second ~~complementary~~adhesive seals, and the first and second housing; and

an outer-mold covering the inner-mold.

~~2. The sealed electrical plug of claim 1, wherein each of the first temperature sensor and the second temperature sensor is a thermistor or an integrated circuit chip.~~

~~3. The sealed electrical plug of claim 1, wherein each of the first housing and the second housing comprises a cover portion, a hinge portion, and a base portion.~~

~~4. The sealed electrical plug of claim 3, wherein each of the first housing and the second housing further comprises at least one first connecting member for removably joining the cover portion and the base portion together.~~

~~5. The sealed electrical plug of claim 4, wherein the at least one first connecting member comprises a protruding part and a first receptacle, the protruding part being configured to removably fit into the first receptacle.~~

~~6. The sealed electrical plug of claim 4, further comprising a second connecting member for removably attaching the at least one housing to the bridge.~~

~~7. The sealed electrical plug of claim 6, wherein the second connecting member comprises a pair of cantilevers formed on the housing and a second receptacle formed on the pin bridge, the pair of cantilevers configured to removably engage the second receptacle.~~

~~8. The sealed electrical plug of claim 1, wherein each of the first housing and the second housing is formed of a thermally conductive material.~~

~~9~~2. The sealed electrical plug of claim 1, wherein the first housing ~~has an elongated shape and further~~ comprises a first pin receptacle for receiving an end of the live pin and ~~wherein~~a first temperature sensor receptacle for receiving the first temperature sensor, and the second housing ~~has the elongated shaped and further~~ comprises a second pin receptacle for receiving an end of the neutral pin and ~~each of the first housing and the second housing includes at least one~~ a second temperature sensor receptacle for receiving the ~~first and~~ second temperature sensor.

~~10. The sealed electrical plug of claim 9, wherein the at least one temperature sensor receptacle is disposed in an approximate line between the first pin receptacle and the second pin receptacle.~~

~~11~~3. The sealed electrical plug of claim ~~10~~2, further comprising a thermally conductive adhesive filled into a gap between the ~~at least one~~ first temperature sensor receptacle and the first temperature sensor ~~receptacle,~~ and a gap between the ~~first and~~ second temperature sensor~~.~~ receptacle and the second temperature sensor.

~~12~~4. The sealed electrical plug of claim 1, further comprising a third seal formed between the cable and the inner-mold.

5. The sealed electrical plug of claim 1, wherein the first temperature sensor and the second temperature sensor are a thermistor or an integrated circuit chip.

6. The sealed electrical plug of claim 1, wherein the first and second housing are formed of a thermally conductive material.

7. The sealed electrical plug of claim 6, wherein the thermally conductive material is a thermally conductive ceramic.

8. The sealed electrical plug of claim 1, wherein first tubing surrounds the first data cable and second tubing surrounds the second data cable for insulation and protection.

9. The sealed electrical plug of claim 1, wherein the first housing is separate from the second housing.

~~13~~10. A method of assembling a sealed electrical plug having two or more pins, comprising:

positioning a first temperature sensor on an inward facing surface of a bridge adjacent to a live pin among the two or more pins and placing a second temperature sensor on the inward facing surface of the bridge adjacent a neutral pin among the two or more pins, the live pin extending through the bridge and including a first plurality of grooves formed around the live pin, the neutral pin extending through the bridge and including a second plurality of grooves formed around the neutral pin, the first temperature sensor configured to monitor ~~an internal~~a temperature of the live pin and the second temperature sensor configured to monitor ~~an internal~~a temperature of the neutral pin;

holding the first temperature sensor in a first position on the bridge using a first housing configured to receive the live pin and holding the second temperature sensor in a second position on the bridge using a second housing configured to receive the neutral pin;

forming a first groove seal between the first plurality of grooves and the bridge, and/or between the first plurality of grooves and the first housing,

wherein, for the first groove seal formed between the first plurality of grooves and the bridge, the first groove seal is formed by molding the material of the bridge to fill the first plurality of grooves; and

wherein, for the first groove seal formed between the first plurality of grooves and the first housing, the first groove seal is formed by molding the material of the first housing to fill the first plurality of grooves;

forming a second groove seal between the second plurality of grooves and the bridge, and/or between the second plurality of grooves and the second housing,

wherein, for the second groove seal formed between the second plurality of grooves and the bridge, the second groove seal is formed by molding the material of the bridge to fill the second plurality of grooves; and

wherein, for the second groove seal formed between the second plurality of grooves and the second housing, the second groove seal is formed by molding the material of the second housing to fill the second plurality of grooves;

~~forming a first seal between the first plurality of grooves and the first housing by molding a material of the bridge to fill the first plurality of grooves;~~

~~forming a second seal between the second plurality of grooves and the second housing by molding the material of the bridge to fill the second plurality of grooves;~~

connecting the live ~~pins~~pin to a first ~~conductors by crimping the live pin to the first conductor at a first crimped portion~~conductor;

connecting the neutral pin to a second conductor ~~by crimping the neutral pin to the second conductor at a second crimped portion~~;

forming a first crimped seal between the first conductor and the first insulation by crimping the first conductor and the first insulation together at a first crimped portion;

forming a first ~~complementary~~adhesive seal between the ~~live pin~~first conductor and the ~~bridge formed by a~~ first insulation by applying adhesive ~~tape applied around a circumference of the live pin~~ at the first crimped portion ~~and a first heat-shrink tubing surrounding the first adhesive tape~~;

forming a second crimped seal between the second conductor and a second insulation by crimping the second conductor and the second insulation together at a second crimped portion;

forming a second ~~complementary~~adhesive seal between ~~the neutral pin and~~ the ~~bridge formed by a second adhesive tape applied around a circumference of~~second conductor and the ~~neutral pin~~ second insulation by applying adhesive at the second crimped portion ~~and a second heat-shrink tubing surrounding the second adhesive tape~~;

connecting the first temperature sensor to a first data cable and connecting the second temperature sensor to a second data cable;

forming an inner-mold covering the first and second temperature sensors, the inward facing surface of the bridge and the first and second ~~complementary~~adhesive seals, and the first and second housing; and

an outer-mold covering the inner-mold.

~~14~~11. The ~~plug of claim 1 or~~ method of claim ~~13~~10, wherein ~~each of~~ the first temperature sensor and the second temperature sensor ~~is~~are a thermistor or an integrated circuit chip.

~~15~~12. The method of claim ~~13~~10, wherein the first and second housing are formed of a thermally conductive ~~ceramic~~material.

13. The method of claim 12, wherein the thermally conductive material is a thermally conductive ceramic.

~~16~~14. The ~~plug of claim 1~~method of claim 10, wherein first tubing surrounds the first data cable and second tubing surrounds the second data cable for insulation and protection.

~~17~~15. The ~~plug of claim 1~~method of claim 10, wherein the first housing is separate from the second housing.

~~18. The method of claim 13, wherein first tubing surrounds the first data cable and second tubing surrounds the second data cable for insulation and protection.~~

~~19. The method of claim 13, wherein the first housing is separate from the second housing.~~