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UL-recognised mains input resistors fuse safely and silently

Bedlington, UK, XX Month 2009: Welwyn Components has introduced a new series of mains input resistors that uses an advanced coating and production process to ensure safe, silent operation in overload conditions, whilst matching the thermal and electrical insulating properties of standard silicone cement. This allows designers to more easily meet the requirements of UL approval, whilst eliminating the need to put additional fuses in series with the input resistor.

The ULW series wire-wound resistors overcome the problems associated with conventional flameproof resistors caused by the ceramic rod at the resistor's core acting as a heat sink for the wire element. This can delay fusing, resulting in high enough temperatures to fragment the coating and ionise the air near to where fusing occurs. If ionisation occurs close to the cap edge and at a voltage peak in the mains cycle, it can initiate a momentary flashover outside the component body, releasing far more energy than is required to fuse the wire element. Although the opening of the circuit is safe for most applications, it's far from silent.

Welwyn's new coating material and process delivers silent fusing performance without adversely affecting either safety or cost. The new multi-layer coating has a flammability rating of UL94V-0 and shares the same high temperature and insulating properties as standard silicone cement. However, it is more compliant so can absorb thermal and mechanical stresses without fragmenting. The resistor coating does not burn or emit incandescent particles under any condition of applied temperature or power overload.

These UL-certified resistors are available in standard values from 10 to 100Ω. Three types are offered: ULW2 is rated 2W and provides a 5s overload of 10W along with 250V isolation; 3W-rated ULW3 ensures a 15W overload with 350V isolation; and the ULW4 model protects overloads up to 20W with 500V isolation and a 4W nominal rating.

The devices are designed to withstand inrush and surge conditions. For example the ULW4-10RJ has an energy limit of 4.3J and a 1.2/50μs peak voltage limit of 1.1kV. Fusing performance is characterised by typical fusing times of 8s at 45W initial power (ULW2) and 10s at 90W initial power for ULW3 and ULW4 resistors, although rapid fusing in a fraction of a second is achieved under mains short circuit conditions.

All the ULW series operate in ambient temperatures from -55 to +155°C and are classified in climatic category 55/200/56 according to IEC 68-1. They are RoHS-compliant and available in optional surface-mount as well as standard through-hole leadforms.

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About Welwyn Components

Welwyn Components Limited is a manufacturing subsidiary of technology group TT electronics plc, specialising in a wide range of multi-market resistive products, custom micro assembly & packaging technologies.

TT electronics plc is a focused, global electronics company supplying the world's leading manufacturers in the automotive, avionics, defence and industrial electronics markets. The Group operates in four key sectors: sensors and electronic systems, electronic components, electronic manufacturing services and secure power and industrial. TT electronics operates from headquarters based in Weybridge, Surrey. From this base the Group controls operations across the world in both developed and developing economies.



Additional information is available from our corporate website:

<http://www.ttelectronics.com/>

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