



Earth leakage utilising the EL731 AC/DC Earth Leakage Relay – VSD Applications

Following on from Tech-Aware issue 3 and issue 4, Littelfuse Startco has in the last 12 months released the EL731 AC/DC Earth leakage Relay (See attached data sheet), which is AS2081-2011 Compliant.

Utilising distinguishing principles of engineering, the EL731 has been designed to monitor a frequency range from Zero Hz (DC) to 6 kHz, utilising a standard CT.

Conforming to the requirements of AS2081-2011, this new development is ideally suited to meet the ever growing demands of VSD's installations in the mining industry and the associated problems of harmonics and EMI.

AS2081-2011 states:

Section 1: Scope and General

Clause 1.1: Scope:

NOTES:

- 1 Whereas this Standard is based upon 50 Hz supply systems, it is envisaged that the equipment described may also be installed in systems with higher, lower or variable frequencies, or in d.c. supplied systems.

The effect of current upon the human body in 50 Hz supplied installations needs to be considered as detailed in AS/NZS 3000.

AS/NZS 60479, Parts 1 and 2 should be referenced for consideration of the effects of current at other supply frequencies upon the human body.

Also, Appendix B which says in part:

A1 SYSTEMS AT OTHER THAN 50 Hz CYCLIC FREQUENCY

Where equipment is installed and operated within systems at other than a constant 50 Hz cyclic frequency, the characteristics in Paragraph B2 are not immediately applicable. In such instances, individual calculation to determine requirements at the frequency or frequencies in question will be required.

Standards AS/NZS 60479.1 and AS/NZS 60479.2 should be referenced in relation to the effects upon the human body of other supply frequencies.

So, As VSD systems or any non-linear load introduces harmonics and EMI the associated frequency will have an apparent voltage and current associated with that frequency. Hence, adding to the touch and step potential..... so higher order frequencies can no longer be ignored.

The EL731 uses two (2) CT's for earth leakage monitoring. The system can utilise either of the following configurations:

- a) A single CT (CT1 input) to monitor DC – 90 Hz
- b) A single CT (CT2 input) to monitor 20 – 6,000 Hz (with band pass filtering options)
- c) A combination of both CT1 and CT2 to monitor DC to 6,000 Hz.



The Band Pass Filtering options available for CT2 include: a) Full Range (20 – 6kHz), b) 20-90 Hz, c) 190-6Khz and d) 20-3Khz.

For more information regarding the EL731, please contact our office or visit the Littelfuse website:
<http://www.littelfuse.com/products/relays-controls-and-systems/protection-relays/ground-fault-relays/el731.aspx>