APPLICATION NOTE

# EARTH LEAKAGE RELAY 4-20mA FAILURE

**Electrical Protection Relays**

It has been identified that some customers are experiencing failures of the 4-20mA circuit in our discrete EL relays. The fault has no impact on the relay's trip function capability, which remains fully functional as designed. The fault is unveiled as an incorrect 4-20mA output regulation. The 4-20mA output is provided for remote monitoring of the effective EL current being detected by the relay.

The failure itself is not an instantaneous fault, instead all known failures have occurred over a number of consecutive days where the output slowly degrades. The fault can be identified if a 4-20mA output starts to rise over time until it reaches a clipping point of ~20mA. The time over which the failure occurs is not consistent and will vary from relay to relay.

Less than 2% of all relays sold have reported the 20mA output failure. Ampcontrol understands this may not include relays that are not utilising the 4-20mA output feature, have not been reported / sent back for repair, or those that were disposed of. Despite the low failure rate, Ampcontrol recognises the impacts to those that have experienced the fault, and as a result have looked to eliminate the fault from our design.

Ampcontrol was able to identify the component that was failing and although the component was operating within its design limits, Ampcontrol has replaced the component with an alternative item and exhaustively tested to confirm its robustness. Field testing of all relays utilising the new component have performed as designed.

The relays effected by the potential 4-20mA failure include the following products:

- All ELD Series with serial number pre 2009xxxxxx.
- All ELV Series with serial number pre 2009xxxxxx.
- All ELM Series with serial number pre 2009xxxxxx.

All new products and repairs going forward will incorporate the component change.

## ACTION

Ampcontrol recommends that all sites perform a risk assessment to identify any potential safety impacts. Ampcontrol also recommends that the 4-20mA output should be used as monitoring only, primary tripping implementation should be carried out by the protection relay's control outputs.

For installations not utilising the 4-20mA output, this failure mode will not pose any concern. For sites that are utilising the 4-20mA output for monitoring purposes, relay replacement is only recommended if a failure is detected. Site stock levels should be reviewed to eliminate any downtime associated when replacing a relay if a failure was to occur.

## IDENTIFICATION

Relay's that have had the component change can be identified by the presence of a FW label added to the relay.

## FIND OUT MORE

For more information on this product, please contact Ampcontrol Customer Service on +61 1300 267 373 or customerservice@ampcontrolgroup.com or visit the Ampcontrol website: www.ampcontrolgroup.com



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