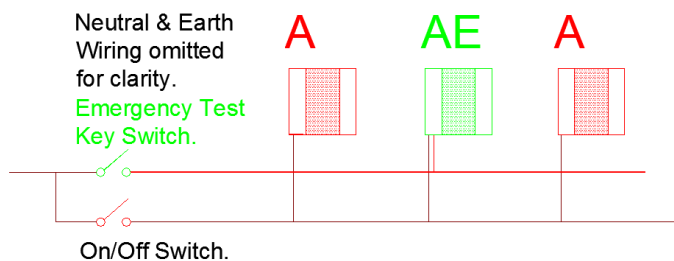


## ICEL Technical Statement No. 5

### LED Emergency Luminaire Test Switch Circuits

Many customers are confused about the operation of the new LED emergency luminaires.

Traditionally, high frequency (HF) fluorescent luminaires are wired with the key switch wired as below:



With the light switch on, operating the test key switch causes the emergency luminaires to enter the emergency mode. The inverter module in the fluorescent fitting AE loses its emergency (charging) supply, the changeover relay drops out, connecting the emergency lamp to the inverter circuitry powered from the internal battery and the lamp produces the emergency lumens. The fifth pole (mains switching) of the relay, included within the inverter module, disconnects the supply to the (mains) ballast which then shuts down. In this mode only, the emergency lamp is giving off light and it's easy to recognise that the emergency circuit is functioning.

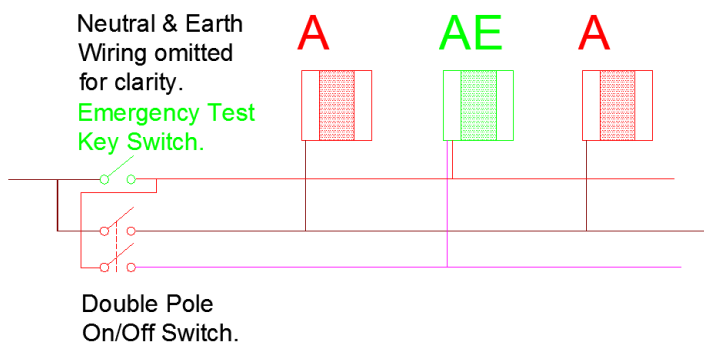
LED luminaires generally use two types of emergency circuits:

1. Using a standard LED control gear in conjunction with an emergency converted similar to that used with fluorescent lamps including both a change over relay (2 pole) to switch the LED from normal to emergency converter, and a mains switching (3<sup>rd</sup> pole) to switch the supply to the normal control gear. With this type of circuit it is usual that the same LEDs are used for both normal and emergency lighting.
2. Using a standard LED control gear in conjunction with a standalone emergency converter to operate separate emergency only LEDs either incorporated on the main LED printed circuit board or as a separate board. This type of circuit has the benefit of more stable emergency output over time.

The Type 1 circuit reacts in exactly the same way as the normal fluorescent circuit and emergency operation is easy to see and monitor since the main LEDs are switched off by the 3<sup>rd</sup> pole relay during emergency test.

However with a Type 2 circuit the emergency unit often has no mains switching relay (3<sup>rd</sup> pole) and hence the main LEDs remain switched on during the emergency test. This makes it difficult to see if the emergency LEDs are operating correctly.

It is usually not practical to turn off the normal room lighting in order to perform the emergency lighting testing so with a Type 2 circuit it's necessary to use a Double Pole On/Off Switch as indicated below:



This circuit ensures that the normal supply to the emergency luminaire AE is disconnected when the emergency key switch is operated but leaving the other luminaires illuminated.

For further information contact [info@icel.co.uk](mailto:info@icel.co.uk)