

SWDEE emergency lighting in M3 vehicles

This report outlines a preliminary investigation into the use of emergency lighting in M3 category vehicles. The findings are not exhaustive but are indicative of the systems available and their limitations.

There are two primary groups of emergency lighting:

1. Functional enhancement emergency lighting.
2. Self maintained emergency lighting.

Functional enhancement emergency lighting.

This is where existing or dedicated lighting within a vehicle is enhanced to give the users of the vehicle emergency functions but rely on the lighting and vehicle circuitry being fully functioning during the emergency.

Examples include adding logic to an emergency door to activate the saloon floor lighting when open. Or similarly if a vehicle is fitted with an R36 switch, logic can be added which activates various lighting within the saloon when this switch is engaged. The use of acceleration switches can be added to similar logic to activate lighting if the vehicle experiences severe deceleration in the direction of the switch.

The major limitation of this type of system is that it relies on the integrity of the power, logic and switching circuitry to be fully operational following the event which initiates the emergency lighting.

Self maintained emergency lighting.

This type of system employs autonomous self powered and self contained lighting systems. The lights are positioned appropriately within the vehicle and a constant power supply is fed to the unit. This power trickle charges an internal battery. When the trickle charge is lost the battery illuminates the light. It is possible to apply logic to these lights by breaking the trickle feed. Therefore the emergency door, acceleration switch or R36 switch can still cause the emergency light to illuminate.

Issues with emergency lighting:

- Applying logic is relatively simple on a multiplexed vehicle but requires additional wires and circuitry for conventionally wired vehicles.
- The conditions to cause emergency illumination are not standardised,
 - crash, deceleration rates and direction
 - fire, heat or smoke, zones on the vehicle
 - Rollover, angle of activation
 - Activation of an emergency control?
- In a minor emergency where the vehicle integrity is intact then both approaches would be fully operable and could be initiated by the driver and/or passengers. In a severe emergency only