EN54-13 - CIE MONITORING

EN54-13 is mandatory in many parts of Europe, although not currently a requirement in the UK. Often termed the 'System Standard', it is used as an early warning system to identify potential weaknesses in a fire system design/installation where voltage/current demands are higher than expected or can be delivered. The CIE calculates this demand using Ohms Law (V=IR) to ensure that a system design can be operate within acceptable parameters.

The characteristics that need to be considered to satisfy EN54-13 are as follows:

• Loop cable resistance – determined by cable variation (1.5mm cable –1km & 2.5mm cable – 2km)
• Typical voltage output from loop card – 24vdc-32vdc
• Loop current driver capacity – 500mA (max)
• Permissible voltage drop based upon resistive load – 7v (max)

If loop calculations are performed at system design stage, they will confirm the expected installation results, but should they deviate from the maximums stated above, the CIE will report a 'High Resistance Fault' for the given loop.

Results can be checked on the panel using the menu option Access Level 3 > Next Menu > EN54-13, as shown in the image below.

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[EN54-13]

1st Loop Load    :  500 mA (Max) 22%
Sounder A Load   :    0 mA (Max)
Sounder B Load   :    0 mA (Max)
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The factory default for all loop drivers is 500mA and the target percentage is 80% (equivalent to a 5.5. V drop), but if this percentage is exceeded the panel will bring this to the attention of the engineer who can make adjustments using the panel keyboard.

It is the cable path that is used to calculate the circuit resistive load of a loop and not the device loading, which is calculated by the designer to obtain a better understanding of the parameters they must meet, taking into account the overall resistive load that has a bearing on the eventual voltage drop.

FACP Connections

Data/Power (+) OUT
Data/Power (-) OUT
ISOLATOR
Data Power (+) IN
Data Power (-) IN
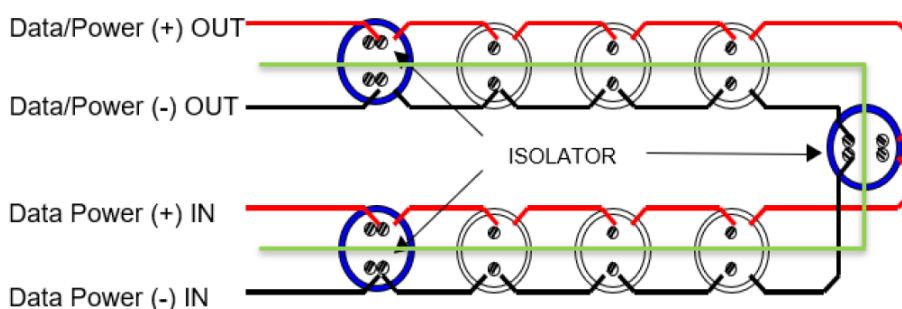
Whilst there is an option on the CIE to turn off the EN54-13 monitoring to prevent error reporting, this should be carefully considered since it is a warning of a potential issue that could arise if the system were placed under full voltage/current/resistive load.