



Security.Improved

## INFORMATION REQUIRED IN FIRE PROJECT FILES

It is expected that fire project files will contain, as a minimum, the following information:

- Site survey notes
- System design proposal
- Loop continuity test results (addressable systems only)
- Insulation resistance test results (testing carried out at 500vDC)
- Commissioning documentation, containing evidence that, at least:
  - The system has been fully inspected and tested
  - All devices have been functionally tested
  - Cause and effect has been proved
  - Sound pressure level measurements were taken recorded
  - Device addresses have been confirmed as correct for each addressable device
  - Battery capacity is adequate for the category of the system
- As fitted drawings, showing, at least:
  - Cable types, routes and sizes
  - Device locations
- Copy of relevant BS 5839-1 certificates issued
- Evidence of transmittal of certificates, logbook, “as fitted” drawings and system O&M manuals to the client

## DURATION OF STANDBY SUPPLIES

**Is the specified standby power supply period suitable for the system type and the level of supervision?**

**BS 5839-1:2013; clause 25.4**

For category **M** or **L** systems the battery standby capacity should be sufficient to maintain the system in an operational condition for **at least 24 hours** after which there should still be sufficient capacity to provide an “Evacuate” signal in all alarm zones for a minimum of **30 minutes**.

If a category **M** or **L** system is installed in a building with an automatically started standby generator and it supplies the fire alarm system then the battery standby capacity should be sufficient to maintain the system in an operational condition for **at least 6 hours** after which there should still be sufficient capacity to provide an “Evacuate” signal in all alarm zones for a minimum of **30 minutes**.

For a category **P** system the battery standby capacity should be sufficient to maintain the system in an operational condition for **at least 24 hours** after which there should still be sufficient capacity to provide an “Evacuate” signal in all alarm zones for a minimum of **30 minutes** *provided that either of the following conditions are met:*

- a) the building is continuously staffed, or inspected outside of normal working hours and that staff would be aware of a power supply fault indication on the system within **6 hours** of its occurrence; **or**
- b) power supply fault signals are transmitted automatically to an alarm receiving centre (ARC) and a keyholder is notified by the ARC on receipt of a fault indication from the protected premises.

If neither of the above requirements are met then the battery standby capacity should be sufficient to maintain the system in an operational condition for **at least 24 hours longer than the maximum period the premises is likely to be unoccupied, or for 72 hours in total, whichever is less**, after which there should still be sufficient capacity to provide an “Evacuate” signal in all alarm zones for a minimum of **30 minutes**.

# CALCULATION OF STANDBY BATTERY CAPACITY

## BS 5839-1:2013; annex D

$$C_{min} = 1.25((T1*I1) + D(I2*T2))$$

*C<sub>min</sub>* = minimum capacity of battery when new at a 20 hour discharge rate at 20° in ampere-hours (Ah)

1.25 = ageing factor allowing 5% per year over 4 years

T1 = battery standby period in hours

T2 = alarm time in hours (usually 0.5)

I1 = battery standby load in amperes

I2 = battery alarm load in amperes

D = battery de-rating factor (usually assumed at 1.75). This allows for the inefficiency of the battery under high load conditions

### Example

Assume standby load of 250mA, alarm load of 750mA and a standby period of 24 hours with 30 minutes in alarm condition:

$$\begin{aligned} C_{min} &= 1.25((24 \times 0.25) + 1.75(0.75 \times 0.5)) \\ &= 1.25((6 + 0.66)) \\ &= 8.32 \text{ Ah} \end{aligned}$$

### **Simplified Calculation**

The calculation can be simplified by assuming a de-rating factor of 2 but this makes very little difference to the final figure:

$$C_{min} = 1.25(T1*I1 + I2)$$

**NOTE:** This formula is only valid if a de-rating factor of 2 is assumed and the alarm period is 0.5 hours (30 minutes). If this is not the case then the formula at the top of the page should be used.

### Example using simplified formula

Assume standby load of 250mA, alarm load of 750mA and a standby period of 24 hours with 30 minutes in alarm condition:

$$\begin{aligned} C_{min} &= 1.25((24 \times 0.25) + 0.75) \\ &= 1.25((6 + 0.75)) \\ &= 8.43 \text{ Ah} \end{aligned}$$