EVCS Standby Battery Calculation Guide

The standby time of the EVCS, after the mains has failed, depends on the quiescent loading of the system, the alarm load of the system and the capacity of the batteries.

To determine the capacity of batteries required for any given standby period, the following formula should be used:

Battery Capacity (in Ah) = 1.25 x [(T x A) + H x (P + Z)]

The multiplier 1.25 is present to account for lost capacity over the life of the batteries.

T = Total off-hook time for the outstations

A = Total off-hook current for the outstations

H = Number of hours standby required

P = Quiescent current of the ECU-8 (85 mA) + ECU-8S (75 mA) = 0.16 A

Z = Total quiescent current of outstations

Example:
The EVCS has one Master Control Unit (ECU-8), one Expansion Unit (ECU-8S), six Type A fire telephone outstations (THS1-E) each consuming 0.001 A and seven Type B disabled refuge outstations (EVC302) each consuming 0.0032 A.
When off-hook, there will be a load of 0.025 A with a required off-hook time of 3 hours. The required standby time is 24 hours.

Calculate the alarm capacity: **(T x A)**
T = 3 hours; **A** = 0.025 A

The alarm capacity = (3 x 0.025)
= 0.075 Ah

Calculate the quiescent capacity: **H x (P + Z)**

H = 24 hours; **P** = 0.16 A; **Z** = (6 x 0.001 A) + (7 x 0.0032 A)

The quiescent capacity = 24 x (0.16 + 0.029)
= 4.54 Ah

Therefore, battery capacity = 1.25 x [0.075 + 4.54]
= 5.77 Ah