Security Systems quick battery calculator

THE VOICE OF THE **PROFESSIONAL SECURITY INDUSTRY**

bsia
british security industry association

Security Systems Quick Battery Calculator (12 Hours Standby including 30 minutes of alarm)

This ready reckoner assumes that the control equipment and associated PSUs are type A (as described in BS EN 50131 1:2006+A3:2020), i.e. mains supply, and an alternative power source recharged by the control equipment/ PSU, where the alternative power source is a sealed lead acid rechargeable battery. The battery capacity is calculated as per BS 9263 Annex C as follows:

$C = 1.25 \times [(I1 \times T1) + (I2 \times T2)]$

C = minimum capacity of battery in Ampere hours (Ah)
1.25 ageing factor (this represents a 25% deficit in battery life over the expected life of the battery)
I1 = Quiescent current (A) for ease of use this Quick Battery Calculator it is converted into mA
T1 = 11.5 hours quiescent standby time (h)
I2 = Alarm current (A) for ease of use this Quick Battery Calculator it is converted into mA
T2 = 30 minutes of alarm time (h)

Quiescent Current (I1) in mA	Alarm Current (I2) in mA																																								
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	3.2	3.2	3.2
100	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
150	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4	4	4	4	4	4	4	4
200	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4.5	4.5	4.5	4.5	4.5
250	4	4	4	4	4	4	4	4	4	4	4	4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5	5	5	5	5	5	5	5	5	5
300	4.5	4.5	4.5	4.5	4.5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
350	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
400	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
450	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
500	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
550	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	10	10
600	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
650	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
700	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
750	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	15
800	12	12	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
850	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
900	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
950	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
1000	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

Instructions on use of this quick battery calculator

Using a suitable test meter, such as a digital volt meter (DVM), set the meter to read DC Amps (select a high range such as 10 A).

1. Connect DVM in series with the battery fuse or lead.
2. Ensure the system is in a normal unset state.
3. Disconnect the mains supply, let any communications take place and wait for the system to settle, then take a reading from the DVM in mA, this is known as the quiescent current (I1).
4. Set the system and trigger an alarm, with all WDs and ATE activated, then take a reading from the DVM in mA, this is known as the alarm current (I2).
5. Find the point in the table where the readings from I1 and I2 cross, this will be the minimum size battery that will be required in Ampere hours (Ah).
*6. Remove the DVM, **reconnect the mains power** and reset the system if necessary.*

Important note: Please be aware these are minimum size battery requirements, do not install a smaller battery, however a larger battery may be installed.

Security Systems Quick Battery Calculator (24 Hours Standby including 30 minutes of alarm)

This ready reckoner assumes that the control equipment and associated PSUs are type A (BS EN 50131 1:2006+A3:2020), i.e. mains supply, and an alternative power source recharged by the control equipment/ PSU, where the alternative power source is a sealed lead acid rechargeable battery. The battery capacity is calculated as per BS 9263 Annex C as follows:

$C = 1.25 \times [(I1 \times T1) + (I2 \times T2)]$

C = minimum capacity of battery in Ampere hours (Ah)
1.25 ageing factor (this represents a 25% deficit in battery life over the expected life of the battery)
I1 = Quiescent current (A) for ease of use this Quick Battery Calculator it is converted into mA
T1 = 23.5 hours quiescent standby time (h)
I2 = Alarm current (A) for ease of use this Quick Battery Calculator it is converted into mA
T2 = 30 minutes of alarm time (h)

Quiescent Current (I1) in mA	Alarm Current (I2) in mA																																							
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
50	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
100	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4.5	4.5	4.5	4.5	4.5	4.5	4.5
150	4.5	4.5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
200	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
250	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
300	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	12	12	12	12
350	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
400	12	12	12	12	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
450	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
500	15	15	15	15	15	15	15	15	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
550	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
600	18	18	18	18	18	18	18	18	18	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
650	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	24	24	24	24	24	24	24	24	24	24	24	24	24
700	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
750	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
800	24	24	24	24	24	24	24	24	24	24	24	24	24	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
850	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	28	28	28	28	28	28	28	28	28
900	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
950	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
1000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31

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4. Set the system and trigger an alarm, with all WDs and ATE activated, then take a reading from the DVM in mA, this is known as the alarm current (I2).
5. Find the point in the table where the readings from I1 and I2 cross, this will be the minimum size battery that will be required in Ampere hours (Ah).
*6. Remove the DVM, **reconnect the mains power** and reset the system if necessary.*

Important note: Please be aware these are minimum size battery requirements, do not install a smaller battery, however a larger battery may be installed.

About **the BSIA**

The British Security Industry Association (BSIA) is the trade association representing over 70% of the UK's private security industry. Its membership includes companies specialising in all sectors of security. For security buyers, BSIA membership is an assurance of quality, with all member companies required to adhere to strict quality standards.