BATTERY BACKUP UNITS CAPACITY CALCULATIONS

The first step to calculate the BBU Capacity in hours is to know the parameter that we have:

Parameters	Equations to use	Data to use
Nominal Battery Current = 1C = current specified by the battery provider for 8 hours of discharge to final voltage • **55W BBU, 1C** = 6.8Amp • **100W BBU, 1C** = 11.5Amp **Nominal Voltage of the Battery** = 12V	**Nominal Battery Capacity [NBC]** = 1C x 12 = X Wh **BBU NBC** = NBC x 2 **BBU Capacity in Hrs** = BBU NBC [Watts Hr] / BDA Consumption [Watts]	Discharge current ratio at 24 hours based on our standard products power consumption: • **80 W** for DH7S BDA family • **100 W** for DH14 BDA family

So, Discharging Current vs Nominal Battery Current ratio are:

80 W of Power Consumption @ 24 hours = 80/24 = 3.33
- 55W BBU Capacity, Nominal Current at 24hr for 80W of power consumption is = 3.33/1C, = 3.33/6.8 = 0.5C
- 100W BBU Capacity, Nominal Current at 24hr for 80W of power consumption is = 3.33/1C, = 3.33/11.5 = 0.3C

100 W of Power Consumption @ 24 hours = 100/24 = 4.17
- 55W BBU Capacity, Nominal Current at 24hr for 100W of power consumption is = 4.17/1C, = 4.17/6.8 = 0.6C
- 100W BBU Capacity, Nominal Current at 24hr for 100W of power consumption is = 4.17/1C, = 4.17/11.5 = 0.36C

As specified in the Battery Backup Datasheet, the Capacity at Nominal current (1C) @ 8 hours, now that we know the nominal current @ 24 hours, we know the capacity of the batteries at 24 hours.

55W BBU Capacity, At a Discharge Current of 1C = 55Ahr
55W BBU Capacity, At a Discharge Current of 0.5C = 60Ahr @ 80W of power Consumption
55W BBU Capacity, At a Discharge Current of 0.6C = 58Ahr @ 100W of power Consumption

100W BBU Capacity, At a Discharge Current of 1C = 90Ahr
100W BBU Capacity, At a Discharge Current of 0.3C = 103Ahr @ 80W of power Consumption
100W BBU Capacity, At a Discharge Current of 0.36C = 101Ahr @ 100W of power Consumption

The BBU Nominal Capacity at 80 W and 100W per power consumption are:

55W BBU Capacity, = 60 Ahr x 12 x 2 = 1440 Whr @ 80W of power Consumption
55W BBU Capacity, = 58 Ahr x 12 x 2 = 1392 Whr @ 100W of power Consumption

100W BBU Capacity, = 103 Ahr x 12 x 2 = 2472 Whr @ 80W of power Consumption
100W BBU Capacity, = 101 Ahr x 12 x 2 = 2424 Whr @ 100W of power Consumption

So, the BBU Capacity in hour for our standard products consumption are:

55W BBU Capacity, = 1440 Whr / 80 W = 18 hrs 55W BBU Capacity, = 1392 Whr / 100 W = 13.9hrs
100W BBU Capacity, = 2472 Whr / 80 W = 31 hrs 100W BBU Capacity, = 2424 Whr / 100 W = 24.2 hrs