BATTERY SIZING

Sizing the AERL Kakadu 120 with the Selectronic SP PRO SPLC1202

Pairing rule: 1 × SPLC1202 inverter ↔ 1 × Kakadu 120 battery cabinet.

AERL KAKADU 120 BATTERY CABINET

This application note calculates the minimum battery sizing using the Selectronic SPLC1202 with the Kakadu 120c battery.

Key parameters

SPLC1202 (INVERTER)	VALUE	KAKADU 120 (BATTERY)	VALUE
Nominal DC input	120 V (100–162 V range)	Nominal voltage	140.8 V (112.2–165 V range)
Continuous AC output	20.0 kW	Max continuous discharge	300 A (150 A/string)
Peak efficiency	97.2 %	Peak discharge (1 min)	315 A
Max continuous charge	20.0 kW / 167 A	Peak discharge (5 s)	400 A / 42.2 kW
		Usable capacity	88.4 kWh / 628 Ah (≤90 % DoD)

Voltage Window

The operating voltage of the Kakadu battery with a nominal voltage of **nominal (140.8 V)** sits within the SPLC12xx DC input range throughout charge/discharge range.

DC current draw vs. battery limit

DC current is calculated from the SP PRO AC load ratings, referred back through the inverter:

$$I_{dc} = P_{ac} \div (\eta \times V_{dc}) \quad \text{with } \eta = 97.2\ \%.$$

Two voltages are shown: **nominal (140.8 V)** for the typical case, and **minimum (112.2 V)** for the worst case near end-of-discharge, where current is highest.

LOAD PERIOD	SP PRO AC POWER	DC POWER (÷97.2 %)	I_DC @ 140.8 V	I_DC @ 112.2 V (WORST CASE)	KAKADU LIMIT	RESULT
Continuous 24/7	20.0 kW	20.58 kW	146 A	183 A	300 A continuous	✓ Pass
60 minutes	24.0 kW	24.69 kW	175 A	220 A	300 A continuous	✓ Pass
30 minutes	30.0 kW	30.86 kW	219 A	275 A	300 A continuous	✓ Pass
1 minute	35.0 kW	36.01 kW	256 A	321 A	315 A (1 min peak)	✓ Pass*

At the simultaneous worst case of full 1-minute power **and worst case minimum battery voltage without any additional AC coupled load support, the draw (~321 A) reaches the cabinet's 1-minute peak rating (315 A). This is a brief transient within BMS tolerance; at nominal voltage the draw is 256 A, well inside the limit.*

Conclusion

A **single Kakadu 120 cabinet correctly pairs with a single SPLC1202.** Continuous, 60-minute and 30-minute load draws all sit comfortably below the 300 A continuous discharge rating, and the 1-minute surge is matched to the cabinet's 1-minute peak rating.

Notes & assumptions

- Any AC current support from AC coupled devices or DC couple charge controllers is discounted to create a worst case scenario.
- Currents use the inverter's **peak** efficiency (97.2 %). Real-world efficiency under heavy load is a few percent lower, which raises current slightly; the worst-case (112.2 V) column provides the margin to cover this.
- The 30 s / 38 kW surge can be provided by the Kakadu's 5 s / 400 A peak for 5 s after which the BMS will reduce power to the 1 min rating.
- Charge side: the SPLC1202 continuous charge (167 A) is within the Kakadu's 200 A continuous charge limit.
- Calculations at 25 °C for the SPLC1202; derate per the Kakadu temperature curves outside the managed operating range.