DEFENCE AND SPACE
Space Products

STELLAR-BATT

A batteries product line made for LEO Constellation

P o w e r

STELLAR-BATT is an Airbus Space product line developed to address LEO constellations. It benefits from a strong **flight heritage**, as this product was used in the frame of the OneWeb satellites constellation, with more than **630** satellites in orbits (first launch in February 2019).

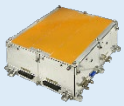
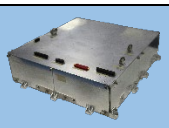
Stellar product line is composed of 2 different modules, that can be used standalone or in series/parallel:

- **STELLAR-BATT Low-Power** (LP) – offering ≈ 1700 Wh, designed for an external mounting configuration, thermally insulated from the spacecraft. The module embeds its own radiator.
- **STELLAR-BATT High-Power** (HP) – offering from 900 to 3600 Wh. Unit thermal management is ensured by a direct contact between unit baseplate and spacecraft panel.

In order to face the new challenges of the space industry and to provide a breakthrough in the battery market, the module is equipped with EEE automotive COTS components and COTS Lithium-ion cells, fully qualified by Airbus for Space applications and with flight heritage.

Thanks to its industrial design, STELLAR-BATT offers competitive lead-times and high production rates on Airbus dedicated Battery Assembly Line in Toulouse (France).

AIRBUS

						
		STELLAR Low-Power (-LP)	**STELLAR High-Power (-HP)**			
			1 BRICK	**2 BRICKS**	**3 BRICKS**	**4 BRICKS**
Electrical	Battery type	COTS Li-ion				
	Voltage range	22,5 to 37,8 V Recommended use at 36,9V during cycling operations				
	Nominal capacity[1]	51 Ah	27,2 Ah	54,4 Ah	81,6 Ah	108,8 Ah
	Nominal energy[1]	1685 Wh	900 Wh	1800 Wh	2700 Wh	3600 Wh
	Energy density	170 Wh/kg	90 Wh/kg	135 Wh/kg	155 Wh/kg	170 Wh/kg
	Max. continuous charge current	15 A	27,2 A	30 A	30 A	30 A
	Max. continuous discharge current	15 A	27,2 A	54,4 A	81,6 A	108,8 A
	Max. pulse discharge current	55 A (< 22,5 min) 70 A (< 1 min)	41 A (< 1 min)	82 A (< 1 min)	122 A (< 1 min)	140 A (< 1 min)
Electronical functions	Based on an optimized and smart design in order to reduce the number of elements and improve the reliability, a single PCB provides different electronical functions: ▪ Passive balancing function, ▪ Shunt current telemetry, ▪ Power switches ON/OFF, based on straps connection/disconnection, ▪ Timer (delay between strap removal and ON state)					
Physical characteristics	Dimensions (L x W x H)	338 x 275 x 110 mm	434 x 400 x 114 mm			
	Weight	9,8 kg	10 kg	13,7 kg	17,4 kg	21,1 kg
Environment	Mounting configuration	External to the S/C	Internal to the S/C			
	Thermal control	Radiative through module own radiator on top	Conductive coupling between unit baseplate and S/C panel			
	Vibrations	Sine: 20 g Random: 8,5 g RMS in plane, 11,6 g RMS out of plane	Sine: 20 g Random: 9,3 g RMS in plane, 12,6 g RMS out of plane			
	Shocks	20 g 100Hz, 2000 g 2kHz, 2000 g 10kHz	20 g 100Hz, 1000 g 2kHz, 1000 g 10kHz			
	Radiations	8,5 years in LEO orbit, SEP tolerant	9,5 years in LEO orbit, SEP tolerant			
Embedded functions	Thermal hardware	3 regulation thermistors 4 heaters, 2 nominal and 2 redundant	3 regulation thermistors 4 double layers heaters			
	Electronical	Passive balancing function Timer Power switch ON/OFF Shunt current measurement				

Airbus Defence and Space
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