

PRODUCT



SOLARWATT C&I ESS-Aelio

Hybrid ESS Cabinet

Robustly engineered, intelligently controlled

The storage system combines proven technology with modern intelligence: AI-supported algorithms increase accuracy and efficiency, while smart control profiles and variable electricity tariffs ensure economical and reliable operation around the clock. Fully networked and VPP-ready for virtual power plants.

Four-level fire protection, an IP66 inverter, AC and DC surge protection, and intelligent I-V curve scanning for early fault detection in PV modules provide dependable day-to-day safety. With up to 200% PV oversizing, up to 200 kWh per cabinet, scalability into the MWh range, grid-connected or off-grid operation, up to 40 A maximum input current per MPPT, two battery inputs, backup at board level and up to six MPPT trackers.

SOLARWATT supports you with planning, energy management and after-sales service from a single source.

PRODUCT FEATURES

- Complete integrated C&I solution
- All-in-one hybrid ESS cabinet for commercial and industrial applications
- PV integration with up to 200% PV oversizing
- Available with 50 kW or 60 kW, storage capacities of 100 kWh or 200 kWh LFP battery (280 Ah)
- Scalable through parallel connection of up to 10 systems
Air cooling (forced ventilation)
- Flexible: On-Grid / Off-Grid, Microgrid, PV, EV, Generator
- Four-level fire protection system
- Intelligent energy management: BMS / EMS / PCS, VPP-ready, cloud monitoring
- Real-time data and monitoring (10-second intervals), 1-year local data storage
- 10-year performance warranty* on the battery system

SOLARWATT SERVICE

Project Consulting & Planning

Personalised consulting, technical feasibility assessment and system design with the appropriate storage selection.

Business Case Analysis

Calculation of returns, payback periods and optimisation potential for the project with different usage scenarios.

Advanced Storage Solutions

With Aelio and Trene commercial storage systems, we provide powerful solutions for a wide range of requirements

Technical & Commissioning Support

Remote or on-site assistance for initial commissioning, configuration and integration.

ESS-AELIO

DC SIDE				
	AELIO-P50B100	AELIO-P50B200	AELIO-P60B100	AELIO-P60B200
Max. recommended PV array power	100 kWp		120 kWp	
Maximum PV input voltage ¹			1.000 V	
Start-up voltage			180 V	
Rated PV input voltage			650 V	
MPPT voltage range ²			160 - 950 V	
MPPTs / Strings per MPPT	5 / 2		6 / 2	
Max. input current per MPPT			40 A	
PV short-circuit current (Isc) per MPPT			50 A	
AC SIDE				
Rated output power	50 kW		60 kW	
Rated output current	75.8 A @ 220 V		91.0 A @ 220 V	
	72.5 A @ 230 V		87.0 A @ 230 V	
	69.5 A @ 240 V		83.4 A @ 240 V	
Max. apparent power	55 kVA		66 kVA	
Max. continuous output current	83.4 A @ 220 V		100.0 A @ 220 V	
	79.8 A @ 230 V		95.7 A @ 230 V	
	76.4 A @ 240 V		91.7 A @ 240 V	
AC rated voltage			3 / N / PE, 220 / 380 V 3 / N / PE, 230 / 400 V 3 / N / PE, 240 / 415 V	
AC rated frequency			50 Hz / 60 Hz	
Power factor			1 (adjustable from 0.8 leading to 0.8 lagging)	
THDi (rated power)			< 3%	
BATTERY				
Battery type			LFP / 280 Ah	
Total battery capacity	100 kWh	200 kWh	100 kWh	200 kWh
Battery nominal voltage	358.4 V	716.8 V	358.4 V	716.8 V
Battery voltage range			160 - 820 V	
Rated charge/discharge current			140 A	
ALLGEMEIN				
Dimensions (incl. inverter) (W × H × D)	1,310 × 2,300 × 1,140 mm	2,070 × 2,420 × 1,200 mm	1,310 × 2,300 × 1,140 mm	2,070 × 2,420 × 1,200 mm
Dimensions (without inverter) (W × H × D)	1,020 × 2,300 × 1,150 mm	1,680 × 2,420 × 1,200 mm	1,020 × 2,300 × 1,150 mm	1,680 × 2,420 × 1,200 mm
Weight (incl. inverter)	1,600 kg	2,800 kg	1,600 kg	2,800 kg
Weight (without inverter)	1,500 kg	2,700 kg	1,500 kg	2,700 kg
Operating temperature range	-30 - 55 °C	-30 - 50 °C	-30 - 55 °C	-30 - 50 °C
Relative humidity			0 - 100% (non-condensing)	
Max. operating altitude			3.000 m	
Cooling concept			Intelligent air cooling	
Protection ratings			Cabinet: IP55; Inverter: IP66	
Fire protection			Aerosol / Water	
Topology			Transformerless	
Certifications and approvals			IEC62619, IEC63056:2000, IEC61000, IEC62477-1, UN38.3	

1) The maximum input voltage is the upper limit of the DC voltage. Higher DC input voltages are likely to damage the inverter.

2) Input voltages exceeding the MPPT voltage range may trigger inverter protection.

3) The short-circuit current (Isc) for a single PV input string is 35 A.

HYBRID ESS CABINET INVERTER

PV INPUT					
	X3-AELIO-49.9K	X3-AELIO-49.9K-P	X3-AELIO-50K	X3-AELIO-60K	X3-AELIO-61K
Max. recommended PV array power	100 kWp	120 kWp	100 kWp		120 kWp
Max. PV input voltage ¹			1,000 V		
Start-up voltage			180 V		
Rated PV input voltage			650 V		
MPPT voltage range ²			160 - 950 V		
MPPTs / Strings per MPPT	5 / 2	6 / 2	5 / 2		6 / 2
Max. input current per MPPT			40 A		
PV short-circuit current (Isc) per MPPT ³			50 A		
AC INPUT AND OUTPUT (GRID-CONNECTED)					
Rated output power	49.9 kW	49.9 kW	50.0 kW	60.0 kW	61.0 kW
Rated output current	75.7 A @ 220 V	75.7 A @ 220 V	75.8 A @ 220 V	91.0 A @ 220 V	92.5 A @ 220 V
	72.4 A @ 230 V	72.4 A @ 230 V	72.5 A @ 230 V	87.0 A @ 230 V	88.5 A @ 230 V
	69.4 A @ 240 V	69.4 A @ 240 V	69.5 A @ 240 V	83.4 A @ 240 V	84.8 A @ 240 V
Max. apparent output power	49.9 kVA	49.9 kVA	55.0 kVA	66.0 kVA	66.0 kVA
Max. continuous output current	75.7 A @ 220 V	75.7 A @ 220 V	83.4 A @ 220 V	100.0 A @ 220 V	100.0 A @ 220 V
	72.4 A @ 230 V	72.4 A @ 230 V	79.8 A @ 230 V	95.7 A @ 230 V	95.7 A @ 230 V
	69.4 A @ 240 V	69.4 A @ 240 V	76.4 A @ 240 V	91.7 A @ 240 V	91.7 A @ 240 V
AC rated voltage			3 / N / PE, 220 / 380 V 3 / N / PE, 230 / 400 V 3 / N / PE, 240 / 415 V		
AC rated frequency			50 Hz / 60 Hz		
AC frequency range ³			50 ± 5 Hz / 60 ± 5 Hz		
Power factor			1 (adjustable from 0.8 leading to 0.8 lagging)		
THDi (at rated power)			< 3%		
BATTERY					
Battery type			LFP		
Battery voltage range			160 - 820 V		
Max. charge/discharge current			160 A (80 A × 2)		
EPS (OFF-GRID) OUTPUT					
EPS rated output voltage, frequency			3 / N / PE, 220 / 380 V, 50 Hz / 60 Hz 3 / N / PE, 230 / 400 V, 50 Hz / 60 Hz 3 / N / PE, 240 / 415 V, 50 Hz / 60 Hz		
EPS rated output power	49.9 kVA	49.9 kVA	50.0 kVA	60.0 kVA	61.0 kVA
Peak EPS output power	75 kVA, 10s	75 kVA, 10s	75 kVA, 10s	90 kVA, 10s	90 kVA, 10s
Switch time			< 10 ms		
EFFICIENCY					
Max. efficiency			98,0 %		
European efficiency			97,2 %		
ENVIRONMENTAL CONDITIONS					
Protection rating			IP66		
Operating temperature range ⁴			-35 - 60 °C		
Maximum operating altitude			3,000 m above sea level		
Relative humidity			0 - 100 % (condensing)		
Overvoltage category			Grid: III, Battery: II, PV: II		

1) The maximum input voltage is the upper limit of the DC voltage. Higher DC input voltages are likely to damage the inverter.

2) Input voltages exceeding the MPPT voltage range may trigger inverter protection.

3) The AC frequency range may vary depending on the selected country code.

4) Power derating applies above +45°C.

HYBRID ESS CABINET INVERTER

GENERAL DATA					
	X3-AELIO-49.9K	X3-AELIO-49.9K-P	X3-AELIO-50K	X3-AELIO-60K	X3-AELIO-61K
Dimensions (W × H × D)	820 × 670 × 257 mm				
Net weight	< 100 kg	< 105 kg	< 100 kg	< 105 kg	< 105 kg
Cooling concept	Intelligent air cooling				
Communication interfaces	RS485-Meter, RS485-Monitor, RS485-Parallel(daisy-chain), CAN-BMS, CAN-Parallel(daisy-chain), USB, DI×2, DO×1, RCR(DI×4), DRM				
Topology	Transformerless				
Certifications and approvals	CE, VDE4105, VDE-AR-N 4110 (Prototype Confirmation), VDE-AR-N 4120 (Prototype Confirmation), G99, AS4777, EN50549, CEI 0-21, IEC61727, PEA/MEA, NRS-097-2-1, RD1699, TOR				

SAFETY	
Over-/undervoltage protection	yes
DC insulation monitoring	yes
DC reverse-polarity protection	yes
Grid monitoring	yes
DC Feed-in Monitoring	yes
Feed-Back Current Monitoring	yes
Residual current detection	yes
Overtemperature protection	yes
Anti-islanding protection	Frequency shift
Surge protection (DC / AC)	DC: type II, AC: type II
Arc Fault Circuit Interrupter (AFCI)	optional
Auxiliary Power Supply (APS)	Integrated

HYBRID ESS CABINET PACK

GENERAL DATA	
Battery type	TB-HR140
Battery capacity	LFP 280 Ah
Battery configuration	14.3 kWh
Nominal cell voltage	1P16S
Battery voltage range	51.2 V
Net weight	40 - 58.4 V
Charge/discharge rate	115 kg
Dimensions (W × H × D)	≤ 0,5 C
Protection rating	461 × 228 × 778 mm
	IP20