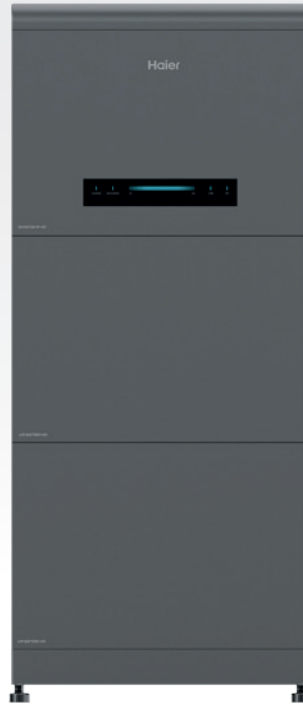




-Tower HV

Flexible Integration

HAH3P



The modular, streamlined system for smart and reliable energy storage



Smart

Dynamic tariffs ready
Faulty battery modules can be bypassed, ensuring uninterrupted system functionality for the user



Efficient

DC:AC ratio up to 2.0 for a fully charged battery at all times (1C rate capability) and 3MPPTs for all roof configurations



Flexible

IP65 for outdoor applications ground or wall mounted. Scalable capacity from 1 module 4.8kWh up to 6 modules 28,8kWh on 2 clusters



Worry-free

Backup available at maximum power size in <10ms and AFCI included in both PV and battery sides



All-In-One

It combines a hybrid inverter and battery packs into one elegant all-in-one unit without adding an external BMS – also available in a split version for flexible installations



Advance load balancing

Supports up to 150% 3ph unbalanced loads

Hybrid inverter							
Model	HAH3P-4KB1	HAH3P-5KB1	HAH3P-6KB1	HAH3P-8KB1	HAH3P-10KB1	HAH3P-12KB1	HAH3P-15KB1
PV string input data							
Max. PV input power	8 kW	10 kW	12 kW	16 kW	20 kW	22.5 kW	22.5 kW
Max. PV input power per MPPT						7 kW	8 kW
Max PV input voltage						1100 V	1000 V
Full load MPPT voltage range						140 ~ 950 V	
Startup voltage						85 V	
Max. input current						16 A / 16A / 16 A	
Max. short circuit current						24 A / 24 A / 24 A	
Number of string per MPPT						1 / 1 / 1	
Battery port							
Battery voltage range						90~700 V	
Max. charge current						50 A	
Max. discharge current						50 A	
Grid port							
Rated output power	4 kW	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Max. output current	6.7 A	8.3 A	10 A	13.3 A	16.7 A	20 A	22.8 A
Max. apparent output power	4.4 kVA	5.5 kVA	6.6 kVA	8.8 kVA	11 kVA	13.2 kVA	15.75 kVA
Max. input power	8 kW	10 kW	12 kW	16 kW	20 kW		
Rated grid voltage	220V, 230 / 400Vac, 3L / N / PE						
Grid voltage range	150 ~ 288Vac						
Rated grid frequency	50 / 60 Hz						
Power factor	Leading -0.8 ~ Lagging+0.8						
THDi	<3%						
Backup port							
Grid max power	8 kW	10 kW	12 kW	16 kW	10 kW	20 kW	
Rated backup power	4 kW	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Rated backup voltage	220/380 Vac, 230 / 400 Vac, 3L/N/PE						
Rated backup frequency	50 / 60 Hz						
THDv	<3% (linear load) / <5% (non-linear load)						
Switching time	<10 ms						
Efficiency							
Max. efficiency	98%		98.2%		98.4%		
Europe efficiency	97.5%		97.7%		97.9%		98%
MPPT efficiency	99.9%						
General data							
Operating temperature range ¹	-25°C ~ 60°C						
Relative humidity	0~100% (no condensing)						
Operating altitude	≤ 3000 m (without derating)						
Cooling	Natural convection					Intelligent Air Cooling	
Noise	< 30 dB					< 45 dB	
Topology	Transformerless						
Dimensions W x H x D	590 x 416 x 205 mm						
Weight	29 kg						
Features							
Communication with BMS	CAN / RS-485						
External communication	RS-485 / WIFI / Ethernet						
User interface	LED/ App						
Certifications							
Grid regulation	VDE-AR-N 4105:2018, G98, G99, C10 / 11:2021, NTS 631, RD647:2020						
Certification	UNE 217002:2020, CEI0-21, VDE 0126-1-1, NRS 097-2-1, AS / NZS 4777.2:2020, EN 50549-1						
EMC	EC / EN 61000-6, IEC / EN 62109-1&2, IEC / 62477-1:2012						
	EC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 61000-6-4						
Battery module							
Model	HBHS-4.8KB1 / LPP						
Battery type	LiFePO ₄						
Rated voltage	96 V						
Rated energy	4.8 kWh						
Usable capacity	4.5 kWh						
Working voltage range	90 ~ 108 V						
Rated charge / discharge current	50 A						
Max. Charge / discharge current	50 A						
Depth of discharge (DoD)	95%						
Life cycles	≥ 6000 cycles ¹						
Operating temperature ²	Charging 0°C < T < 50°C Discharging -10°C < T < 50°C						
Dimensions W x H x D	620 x 430 x 206 mm						
Protection rate	IP65						
Communication	CAN						
Weight	54 ± 2 kg						
Certification	UN 38.3, EN 61000-6, IEC 62619						
Safety features	Pressure relief device (PRD) / Fire suppression module / Aerosol gel pad						
Protections							
Integrated Protections	SPD Type II DC/AC, DC reverse polarity protection, overcurrent / overvoltage / short - circuit protection, insulation monitoring, ground fault RCM, anti-islanding protection, grid monitoring						
System parameters							
Production configuration	HAH3P-4 / 5 / 6 / 8 / 10 / 12 / 15 KB1						
	HBHS-4.8 KB1 / LPP	2x HBHS-4.8 KB1 / LPP	3x HBHS-4.8 KB1 / LPP	4x HBHS-4.8 KB1 / LPP	5x HBHS-4.8KB1 / LPP	6x HBHS-4.8KB1 / LPP	
System capacity	4.8 kWh	9.6 kWh	14.4 kWh	19.2 kWh	24 kWh	28.8 kWh	
System weight ³	86.5 ± 2 kg	140.5 ± 2 kg	194.5 ± 2 kg	252 ± 2 kg	306 ± 2 kg	360 ± 2 kg	
No. of battery modules	1	2	3	4	5	6	
Working humidity	0~95% (no condensing)						
Dimensions W x H x D	620x935x206 mm	620x1365x206 mm	629x1795x206 mm	629x1795x206 (cluster 1); 629x519x206 (cluster 2)	629x1795x206 (cluster 1); 629x949x206 (cluster 2)	629x1795x206 (cluster 1); 629x1379x206 (cluster 2)	
Warranty	10 years						

¹ The guaranteed performance applies only under these condition: 25°C, 0.5C rate, 95% DOD, EOL at 80%, one cycle/day. Under any other conditions, the product will deliver ≥ 5,000 cycles.

² Possible derating occurring

³ System weight is calculated including the base. In case of wall-mounted installation, the base is not required